**Appendix F - Attachment 1**

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## F1.1 Revised Modeled Alternatives

The U.S. Bureau of Reclamation (Reclamation) developed model simulations to support the May 2019 EIS Administrative Draft Analysis for the Re-initiation of Consultation on the long-term operations of the Central Valley Project (CVP) and State Water Project (SWP) (ROC on LTO).

Following the development of these model simulations, Reclamation refined the modeled representation of Alternative 1 and the No Action Alternative. These refinements include improved description of Alternative 1 as well as changes to the models as a result of further quality assurance reviews and responses to comments received in response to the Draft EIS.

This attachment presents a sensitivity analysis including a description of the revisions to the CalSim II and DSM2 model for the revised Alternative 1 and the revised No Action Alternative and reports of model results comparing the revised model simulations and the model simulations presented in the Draft EIS. Model results presented include results from the CalSim II, HEC5Q and Reclamation Temperature Model, DSM2-QUAL and Martin and Anderson Winter Run Chinook Temperature Dependent Egg Mortality models.

The following model simulations are included in this sensitivity analysis:

- No Action Alternative 011319
- Revised No Action Alternative 093019
- Alternative 1 011519
- Revised Alternative 1 100419

The assumptions used for each model simulation listed above are documented in the following sections:

- Section F1.1.1 Revisions in Model Assumptions
- Section F1.1.2 Revisions in CalSim II Model Assumptions Callouts
- Section F1.1.3 Revisions in DSM2 Model Assumptions Callouts

The results of model simulations are provided for informational purposes. Please do not use any information contained in these products for any purpose other than related to Reclamation ROC on LTO process. If there are any questions regarding the results of these model simulations, please contact the Reclamation ROC on LTO team.

## F1.2 Modeled Results for Revised Modeled Alternatives

The results of the model simulations included in this sensitivity analysis for each model are compiled in tables and charts in the following sections:

- Section F1.2.1 Storage and Elevation Results (CalSim II)
- Section F1.2.2 Flow Results (CalSim II)
- Section F1.2.3 Diversion Results (CalSim II)
- Section F1.2.4 Temperature Results (HEC5Q)
- Section F1.2.5 Temperature Results (Reclamation Temperature Model)
- Section F1.2.6 Salinity (EC) Results (DSM2-QUAL)
- Section F1.2.7 X2 Position Results (DSM2-QUAL)
- Section F1.2.8 Winter Run Chinook Temperature Dependent Egg Mortality Results (Martin and Anderson Models)
- Section F1.2.9 Water Supply Results (CalSim II)
- Section F1.2.10 Chloride Results (DSM2-QUAL)

Each section includes a catalog of results included.

The following formats are provided:

- Monthly tables comparing two alternatives (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all alternatives
- Monthly exceedance charts (all months) including all alternatives

As noted in the Introduction of Appendix F, any use of results of model simulations should observe limitations of the models used as well as the limitations to the modeled alternatives. These results should only be used for comparative purposes. More information regarding limitations of the models used as well as the limitations to the modeled alternatives is included Appendix F Attachment 2-7 Model Limitations.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.1 Revisions to Model Assumptions

# Section F1.1.1

# Revised Alternative 1 Sensitivity Analysis Revisions to Model Assumptions

## F1.1.1.1 Introduction

For Reclamation's ROC on LTO, a sensitivity analysis has been prepared with revised model simulations for the No Action Alternative and Alternative 1.

The following model simulations are included in this sensitivity analysis:

- No Action Alternative 011319 (NAA)
- Revised No Action Alternative 093019 (NAA Revised)
- Alternative 1 011519 (ALT1)
- Revised Alternative 1 100419 (ALT1 Revised)

Section F1.1.1.2 describes the revisions to the No Action Alternative. Section F1.1.1.3 describes the revisions to Alternative 1. Refer to Appendix F Attachment 2-1 Model Assumptions, Attachment 2-2 CalSim II Model Assumptions Callouts, and Attachment 2-3 DSM2 Model Assumptions Callouts for a full description of the model assumptions for the No Action Alternative and Alternative 1 prior to the revisions discussed in this attachment. There are no revisions included for the HEC5Q and Reclamation Temperature Model or Winter Run Chinook Temperature-Dependent Egg Mortality Modeling.

## F1.1.1.2 Assumptions for Revised No Action Alternative

This section presents the revisions to the model assumptions and CalSim II, and DSM2 included in this sensitivity analysis. The changes between the revised No Action Alternative 093019 and the No Action Alternative 011319 are described. A summary of the changes is tabulated in Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts and Section F1.1.3 Revisions to DSM2 Model Assumptions Callouts.

Changes include:

- Model correction to include Contra Costa Water District's water rights transfer to ECCID
- Updates to the Los Vaqueros representation to be consistent with the latest modeling by CCWD
- Correction on the health and safety override of OMR export limits
- Correction on sharing of unused export capacity under SWRCB D-1641 Vernalis flow-based export limits
- Correction on the CVP allocation logic where north-of-Delta allocation is adjusted for high Shasta Lake storage

- Montezuma Slough Salinity Control Gate Operations: gate operations were never modeled in CalSim II; since a new methodology was developed for representation of Alternative 1, similar methodology was added to represent the D-1641 salinity control gate operations that take place between October and May

# F1.1.1.2.1 CalSim II Assumptions for Revised No Action Alternative

The following is a description of the revised assumptions listed in Appendix F1 Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts, specifically the entries in column "Revisions to No Action Alternative (NAA Revised)". All other assumptions for the No Action Alternative described in Appendix F Attachment 2-1 Model Assumptions and Attachment 2-2 CalSim II Model Assumptions Callouts are unchanged in the Revised No Action Alternative.

### Hydrology

#### *Demands, Water Rights, CVP/SWP Contracts*

**CCWD**

Contra Costa Water District's (CCWD) annual service area demands are met by CVP service contract deliveries and other CCWD diversions. To be consistent with CCWD's latest modeling, the No Action Alternative was revised to include in-Delta transfers to meet CCWD demands not otherwise met by CVP service contract deliveries and other CCWD diversions.

### Facilities

#### *CCWD Intakes*

CCWD's facilities include intakes located on Rock Slough, Old River and Victoria Canal. CCWD can divert water to the Los Vaqueros Reservoir. To be consistent with CCWD's latest Los Vaqueros modeling, the No Action Alternative was revised to include updated local inflow, precipitation and evaporation values for Los Vaqueros Reservoir.

#### *Montezuma Slough Salinity Control Gates*

The Suisun Marsh Salinity Control Gates (SMSCG) are located on Montezuma Slough about 2 miles downstream from the confluence of the Sacramento and San Joaquin Rivers, near Collinsville. The objective of the SMSCG operation is to decrease the salinity of the water in Montezuma Slough. The gates control salinity by restricting the flow of higher salinity water from Grizzly Bay into Montezuma Slough during incoming tides and retaining lower salinity Sacramento River water from the previous ebb tide. Operation of the gates in this fashion lowers salinity in Suisun Marsh channels and results in a net movement of water from east to west through Suisun Marsh.

During SMSCG operations, the net flow from east to west through the Montezuma Slough generally increases by 2,200 to 2,800 CFS, and salinity is reduced in Suisun Marsh channels. Concurrently, salinity may increase in the Sacramento River unless Delta outflow is increased to counteract the effect of the SMSCG operations. Through iterative testing with the CalSim II and DSM2 models, it was determined that Delta outflow had to be increased by 450 to 500 CFS in order to balance the potential effect of

SMSCG operations on the X2 position when the X2 position is estimated to be between 77 km and 89 km.

The CalSim II model used for the No Action Alternative was revised to include an adjustment to Artificial Neural Network (ANN) flow-salinity calculations when the SMSCG are being operated. In the ANN calculations for X2 position, the input value for Delta outflow for the ANN was reduced by 500 CFS for months in which SMSCG was assumed to operate. In the ANN calculations for EC at the compliance locations used in CalSim II, the input value for net DICU for the ANN was increased by 500 CFS for months in which SMSCG was assumed to operate. This adjustment allows the ANN calculations in the CalSim II model to recognize the potential salinity effect of the SMSCG operations when determining reservoir releases for maintaining Delta outflow and compliance with SWRCB D-1641 and other flow-salinity related model functions. When X2 or salinity conditions control water operations, these adjustments result in an increase in Delta outflow for a given salinity condition.

Reclamation considers this revision to the CalSim II model as an approximate method for use in evaluating changes in water operations due to changes in SMSCG operations between alternatives evaluated for ROC on LTO. A more complete approach would be the use of ANN models that consider SMSCG operations directly as part of the flow-salinity calculations used in CalSim II.

## Regulatory Criteria

### *Combined Old and Middle River Flows*

Regulatory requirements for the combined Old and Middle River (OMR) flow may restrict the amount of export permitted at Jones and Banks Pumping Plants. At times, the OMR requirements may restrict the amount of export to levels that cannot be sustained due to concerns for the safety of communities that rely on water delivered by the SWP or CVP and the integrity of water conveyance and storage structures. For Jones and Banks Pumping Plants, a minimum health and safety pumping of 1,500 cfs is assumed from January through June. Due to health and safety concerns, an off-ramp of the OMR requirement is provided.

The CalSim II model used for the No Action Alternative was revised to correct the health and safety off-ramp of OMR when exports are low. The model calculates two OMR flow thresholds at low export levels, one for a zero-export condition and one for a health and safety condition. The zero-export threshold had been inadvertently used for the off-ramp of the OMR requirement. The model has been corrected to instead us the threshold calculated for health and safety.

### *Exports at the South Delta Intakes*

The CalSim II model used for the No Action Alternative was revised to correct the CVP and SWP sharing of export capacity under SWRCB D-1641 export restrictions in the months of April and May. Without this correction, exports for the CVP or the SWP could drop below minimum levels or even be zero. The model has been corrected to instead us a weight-based approach that allows minimum levels to control.

## Operations Criteria

### *Montezuma Slough Salinity Control Gates*

The SMSCG are operated on an as needed basis to meet SWRCB D-1641 water quality standards in Montezuma Slough. The water quality standard includes the period between October through May. Operations are determined from data at SWRCB D-1641 compliance stations, hydrologic conditions,

weather, Delta outflow, tide, fishery considerations, and other factors. The duration of gate operation may range from no use to full use for the entire October through May period.

The No Action Alternative was revised to consider the effect of SMSCG operations, when SMSCG is used to meet SWRCB D-1641 water quality standards in Montezuma Slough. The revisions included the adjustment to Artificial Neural Network (ANN) flow-salinity calculations previously discussed. For CalSim II modeling purposes, during the months October through February, if the sum of previous and current month Delta outflow is less than 1,200 TAF (1.2 MAF) the SMSCG are assumed to operate for the month. A threshold of a two-month sum of Delta outflow of 1,200 TAF (two- month average of approximately 10,000 CFS) is equivalent in occurrence to an average Martinez EC of 20,000 umhos/cm.

#### *Allocation Decisions*

CalSim II includes allocation logic for determining deliveries to north-of-Delta and south-of-Delta CVP and SWP contractors. The delivery logic uses runoff forecast information, which incorporates uncertainty in the hydrology, and standardized rule curves (i.e. Water Supply Index versus Demand Index Curve). Updates of delivery levels occur monthly from January 1 through May 1 for the SWP and March 1 through May 1 for the CVP as runoff forecasts become more certain.

For the north-of-Delta CVP allocations to Agricultural Service and Municipal and Industrial service contracts, deliveries may be adjusted when Shasta Reservoir storage is high. The final delivery decision occurs May 1. At that time, if previous end-of-April Shasta Reservoir storage is high (> 4 MAF), and allocations exceed 75%, then allocations for north-of-Delta CVP service contracts are increased to 100%. Else, if previous end-of-April Shasta Reservoir storage is high, and allocations exceed 60%, then allocations for north-of-Delta CVP service contracts are increased by another 20%. Otherwise allocations previously determined are not changed.

The CalSim II model used for the No Action Alternative was revised to correct an error which caused the North-of-Delta CVP allocations in May to be overwritten in following months. Without this correction, deliveries for north-of-Delta CVP service contracts never received the intended adjustment for high Shasta Reservoir storage conditions. The model has been corrected and the allocation adjustment now extends to the remainder of the CVP contract year (March through February).

## F1.1.1.2.2 DSM2 Assumptions for Revised No Action Alternative

The following is a description of the revised assumptions listed in Appendix F1 Section F1.1.3 Revisions to DSM2 Model Assumptions Callouts, specifically the entries in column “Revisions to No Action Alternative (NAA Revised)”. All other assumptions for the No Action Alternative described in Appendix F Attachment 2-1 Model Assumptions and Attachment 2-3 DSM2 Model Assumptions Callouts are unchanged in the Revised No Action Alternative.

#### *Montezuma Slough Salinity Control Gates*

The DSM2 model used for the No Action Alternative was revised to read in CalSim II output as an input to determine which months to operate the SMSCG. Refer to Section F1.1.1.2.1 CalSim II Assumptions for Revised No Action Alternative, Montezuma Slough Salinity Control Gates description for more information.

Previously, based on interpretation of SWRCB D-1641 requirements only, DSM2 determined gate operations from October through February as gates open when upstream water level is 0.3 ft above

downstream water level, and gates close when current is less than negative 0.1 fps. DSM2 kept the gates are open from March through September.

## F1.1.1.3 Assumptions for Revised Alternative 1

This section presents the revisions to the model assumptions and CalSim II, and DSM2 included in this sensitivity analysis. The changes between the revised Alternative 1 100419 and the Alternative 1 011519 are described. A summary of the changes is tabulated in Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts and Section F1.1.3 Revisions to DSM2 Model Assumptions Callouts.

Changes include:

- All changes in the revised No Action Alternative, and,
- Clear Creek flow management as described in Alternative 1
- Upper Sacramento River flow management as described in Alternative 1 including
    - Fall flows
    - Spring pulse flows
- Delta Outflow and Montezuma Slough Gate Operations for Delta Smelt Habitat Action as described in Alternative 1
- Revised OMR schedule as described in Alternative 1

## F1.1.1.3.1 CalSim II Assumptions for Revised Alternative 1

The following is a description of the revised assumptions listed in Appendix F1 Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts, specifically the entries in column "Revisions to Alternative 1 (ALT1 Revised)". All other assumptions for the Alternative 1 described in Appendix F Attachment 2-1 Model Assumptions and Attachment 2-2 CalSim II Model Assumptions Callouts are unchanged in the Revised Alternative 1.

### Hydrology

#### *Demands, Water Rights, CVP/SWP Contracts*

**CCWD**

Revisions for the Revised Alternative 1, to include in-Delta transfers to meet CCWD demands, are the same as those included in the Revised No Action Alternative.

### Facilities

#### *CCWD Intakes*

Revisions for the Revised Alternative 1, to be consistent with CCWD's latest Los Vaqueros modeling, are the same as those included in the Revised No Action Alternative.

#### *Montezuma Slough Salinity Control Gates*

Revisions for the Revised Alternative 1, to include an adjustment to ANN flow-salinity calculations when the SMSCG are being operated, are the same as those included in the Revised No Action Alternative.

Changes to SMSCG operations as part of the Delta Smelt Summer/Fall Habitat Action of the Alternative 1 are described in the Operations Criteria section below.

## Regulatory Criteria

### *Clear Creek*

The CalSim II model used for the Alternative 1 was revised to more fully describe the water operations of Clear Creek. Previously, the regulated condition under Alternative 1 was assumed to be similar to the No Action Alternative, therefore the model implementation has been assumed to be same as the No Action Alternative.

Reclamation proposes to release Clear Creek flows in accordance with the 1960 Memorandum of Agreement (MOA) with CDFW, and the April 15, 2002 SWRCB permit, which established minimum flows to be released to Clear Creek at Whiskeytown Dam. Reclamation proposes a minimum base flow in Clear Creek of 200 cfs from October through May and 150 cfs from June to September in all year types except Critical year types. In Critical years, Clear Creek base flows may be reduced below 150 cfs based on available water from Trinity Reservoir. Additional flow may be required for temperature management during the fall. A ramping rate of no more than 25 cfs per hour during nocturnal hours will be used to reduce potential stranding risks to juvenile salmonids during Whiskeytown controlled flow reductions.

In addition, Reclamation proposes to create pulse flows for both channel maintenance and spring attraction flows. For spring attraction flows, Reclamation would release 10 TAF (measured at the release), with daily release up to the safe release capacity (approximately 900 cfs, depending on reservoir elevation and downstream capacity), in all year-types except for Critical year-types to be shaped by the Clear Creek Implementation Team in coordination with CVO. For channel maintenance flows, Reclamation would release 10 TAF from Whiskeytown, with a daily release up to the safe release capacity, in all year-types except for Dry and Critical year-types (based on the Sacramento Valley index) to be shaped by the Clear Creek Implementation Team in coordination with CVO. Pulses would be scheduled with CVO. No channel maintenance flows would be scheduled before January 1. For each storm event that results in a Whiskeytown Gloryhole spill of at least 3,000 cfs for 3 days, Reclamation will reduce the channel maintenance flow volume for this year or the following year by 5,000 acre-feet. If two Gloryhole spills occur that meet this criterion in a year, additional channel maintenance flows would not be released in that year. In Critical years, Reclamation would release one spring attraction flow of up to the safe release capacity (approximately 900 cfs) for up to 3 days and would not release any channel maintenance flows. Reclamation could instead, or in addition, use mechanical methods to mobilize gravel or shape the channel if needed to meet biological objectives.

The Clear Creek operations, for CalSim II modeling purposes, are assumed as follows:

- Minimum flow of 200 CFS from October through May and 150 CFS from June through September in all years except critical years. Minimum flow of 150 CFS in all months in critical years (water-year type based on SWRCB D-1641 40-30-30 index).

- Spring pulse flow totaling a volume of 10 TAF in June of all years (volume in addition to minimum flow; distributed to the whole month's average flow rate).

- Channel maintenance flow totaling a volume of 10 TAF in February of all years except dry and critically dry years (volume in addition to minimum flow; distributed to the whole month's average flow rate).

As CalSim II is a monthly model, ramping rates and release capacity limitations that constrain actual operations are not included. Other flow adjustments for consideration of actual storage and temperature operations are not included.

Previously modeled Clear Creek operations were removed from the CalSim II model, including CVPIA 3406(b)(2) related flows pre-processed from 2008 OCAP BA model studies and the 2009 NMFS RPA Action 1.1.1 pulse flows.

### *Upper Sacramento River*

In the revised Alternative 1, SWRCB WR 90-5 requirements are included. In addition, seasonal operations for Fall flows and Spring Pulse flows are included.

**Fall flows**

In the revised Alternative 1, fall flow releases from Keswick Dam are managed to reduce redd dewatering and rebuild cold water pool as described in Alternative 1.

Reclamation proposes to rebuild storage and cold water pool for the subsequent year. Maintaining releases to keep late spawning Winter-Run Chinook Salmon redds underwater may drawdown storage necessary for temperature management in a subsequent year.

If Reclamation determines reduced releases are needed to rebuild storage, targets for winter base flows (December 1 through the end of February) from Keswick would be set in October based on Shasta Reservoir end-of-September storage. The following table shows the initial schedule for Keswick Releases based on Shasta Reservoir storage condition; these would be refined through future modeling efforts as part of the seasonal operations planning.

Table 1. Keswick Dam Release Target Schedule based on Shasta Reservoir End-of-September Storage

| Shasta Reservoir End-of-September Storage | Keswick Dam Release Target |
|---|---|
| ≤ 2.2 MAF | 3,250 CFS |
| ≤ 2.8 MAF | 4,000 CFS |
| ≤ 3.2 MAF | 4,500 CFS |
| > 3.2 MAF | 5,000 CFS |

For CalSim II modeling purposes, the Keswick Dam release targets were specified as weighted goals. The weighted goals cause the model to increase or decrease the flow release as the model is able to meet the target flow. The selected weights for the goals would not prevent the model from releasing water from Shasta Reservoir for CVP project regulatory environmental, flood control or water supply purposes.

**Spring pulse flows**

In the revised Alternative 1, spring pulse flows are included in the releases from Keswick Dam as described in Alternative 1.

Reclamation would release spring pulse flows of up to 150 TAF in coordination with the Upper Sacramento Scheduling Team when the projected total May 1st Shasta Reservoir storage indicates a likelihood of sufficient cold water to support summer cold water pool management, and the pulse does not interfere with the ability to meet performance objectives or other anticipated operations of the reservoir. Reclamation would evaluate the projected May 1st Shasta Reservoir storage at the time of the

February forecast to determine whether a spring pulse would be allowed in March and would evaluate the projected May 1st Shasta Reservoir storage at the time of the March forecast to determine whether a spring pulse would be allowed in April. Reclamation anticipates that a projected May 1st storage greater than 4 MAF provides sufficient cold water pool management for Tier 1 and may release the spring pulse if it does not impact the ability to meet project objectives. Reclamation could also determine, in coordination with the Upper Sacramento scheduling team, that while the reservoir is less than 4 MAF, there is sufficient water to do a pulse of up to 150 TAF. The Upper Sacramento Scheduling Team would determine the timing, duration, and frequency of the spring pulse within the 150 TAF volume. Wet hydrology downstream of Keswick Dam may meet the need for pulse flows without increased releases.

The determination of when to make the spring pulse in the CalSim II model depends on the forecasted May 1st storage. For modeling purposes a regression-based relationship was developed to estimate the storage forecast. The forecast is done in March and uses end-of previous month storage and forecasted inflows to Shasta until May. The May 1st Shasta Reservoir storage threshold of 4.1 MAF was used consistent with the storage threshold for Tier 1 in the tiered temperature management approach. The model does not consider spring pulses when the estimated May 1st Shasta storage is below 4.1 MAF. In addition, the spring pulses are limited to wet and above normal years (based on Sacramento River 40-30-30 index) as the 4.1 MAF storage threshold in below normal and drier years may not be adequate to identify conditions where the spring pulse will not adversely affect the temperature management or other obligations of the CVP. The model calculates flood control releases from Shasta Reservoir in March and April. If the flood control releases are sufficient to meet the 150 TAF pulse objective then no additional releases are made. If not, Shasta Reservoir releases are increased to up to 75 TAF in March and then in April, up to a total of 150 TAF of pulse flow in two months.

### *Delta Outflow*

In the revised Alternative 1, the Delta Smelt Habitat Action is included along with SWRCB D-1641 requirements.

**Delta Smelt Habitat Action**

The Delta Smelt Habitat Action is intended to improve Delta Smelt food supply and habitat, thereby contributing to the recruitment, growth, and survival of Delta Smelt. Reclamation and DWR propose to use structured decision making to implement Delta Smelt habitat actions as described in Alternative 1.

The action will initially include modifying project operations to maintain a monthly average 2 ppt isohaline at 80 km from the Golden Gate in above normal and wet water years in September and October. Reclamation and DWR will also implement additional measures that are expected to achieve additional benefits. These measures include, but are not limited to:

- Suisun Marsh Salinity Control Gate (SMSCG) operations for up to 60 additional days (not necessarily consecutive) from June 1 through October 31 of below normal and above normal, years. This action may also be implemented in wet years if preliminary analysis shows expected benefits;

- Food enhancement actions as described in Alternative 1

- If the measures above (or others developed through collaborative science processes) result in benefits that are determined to provide similar or better protection than the 80 km salinity management action, Reclamation and DWR will work with USFWS to modify this component of the Alternative 1 to implement the new actions in lieu of the salinity management action.

In the Delta Smelt Habitat Action Plan, the specifics of the flow and habitat actions will be more fully defined through a structured decision making or other review process.

For CalSim II modeling purposes, the Delta Outflow action is assumed as maintaining an X2 position of 80 km in September through October of wet and above normal years (based on the 40-30-30 Sacramento River Index). A ramping up of outflow preceding the action is assumed as achieving an X2 position of 82 km for last 14 days of August. The model tries to meet Delta outflow augmentation in the fall primarily through export reductions. CVP water operations were adjusted to balance reservoir operations in response to these reductions.

In addition to the 80 km X2 flow action, a representation of up to 60 days of SMSCG operations from June 1 through October 31 is simulated. These SMSCG operations are in addition to the gate operations required by D1641. The SMSCG operations are discussed in the Section F1.1.1.3.1 CalSim II Assumptions for Revised Alternative 1 Montezuma Slough Salinity Control Gates.

### *Combined Old and Middle River Flows*

In the revised Alternative 1, OMR management has been modified from Alternative 1. The revised assumptions for OMR management include: potential triggering of the "first flush" action in December or January, potential turbidity bridge avoidance from January through March and a revised OMR target of negative 3,500 cfs in March, April and May of non-critically dry years.

The revised Alternative 1 OMR management as described in Alternative 1 is modeled as follows:

Projects operate to an OMR index no more negative than a 14-day moving average of -5,000 CFS between January 1 and June 30 except for the following conditions:

- Integrated Early Winter Pulse Protection (“First Flush”): After December 1 and through January 31, when running 3-day average of the daily flows at Freeport is greater than 25,000 cfs and running 3-day average of the daily turbidity at Freeport is 50 NTU or greater, or real-time monitoring indicates a high risk of migration and dispersal into areas at high risk of future entrainment, but not be required if ripe or spent female Delta Smelt are collected in monitoring surveys. Reclamation and DWR propose to operate to OMR index of negative 2,000 CFS for 14 days. The model index of SACRI is used to determine first flush conditions (SACRI greater than or equal to 20,000 CFS).
- Turbidity Bridge Avoidance: January through March in any water year type, if first flush occurred in December and if the turbidity trigger is reached (SACRI greater than or equal to 20,000 CFS), Projects operate to OMR Index of negative 2,000 CFS for five days.
- WIIN Act Storm-Related OMR Flexibility: It is assumed that there may be storm-related OMR management flexibility in January and February. In wet years, it is assumed that storm events will coincide with turbidity bridge events and no OMR flexibility is modeled. In above normal and below normal years, it is assumed that there will be one opportunity in January and one opportunity in February to operate to a more negative OMR index than negative 5,000 CFS. This is modeled as an OMR index of negative 6,000 CFS for 7 days in each month. In dry years, it is assumed that one opportunity occurs either in January or February but not both months.
- Species-specific cumulative salvage or loss threshold: Since salvage or loss cannot be modeled in CalSim II, historic salvage data at the fish facilities at Banks and Jones Pumping Plants and fish catch data at Chipps Island trawl during water years 2010 – 2018 were analyzed. Historic salvage data provides the potential timing of triggering the 50% and 75% levels of the proposed single year loss

thresholds. The Chipps Island catch data provides the migration timing and estimates for when the 95% of Winter-Run and Steelhead have migrated out of the Delta, which is the proposed offramp for the real-time OMR management for these species. Based on this historic data, the modeling used an OMR index of negative 3,500 CFS in April and May of all non-critically dry year-types when it is assumed that the 50% of the proposed single year loss thresholds for one or more of the species will be exceeded.

Revisions for the revised Alternative 1 compared to Alternative 1 as presented in Appendix F are summarized in the following tables showing the assumptions and differences in OMR management for the months January through June.

In addition, revisions for the Revised Alternative 1, to correct the health and safety off-ramp of OMR when exports are low, are the same as those included in the Revised No Action Alternative.

Table 2. Comparison of OMR Criteria for Months for December and January
(revisions to Alternative 1 are shown by shaded rows).

| Month | Year type condition | Prior month condition | First flush condition | Turbidity bridge avoidance condition | Alternative 1 OMR criteria | Revised Alternative 1 OMR criteria |
|---|---|---|---|---|---|---|
| **December** | Any year | n/a | If first flush triggered | n/a | 14 days at negative 2,000 CFS; background (negative 8,000 CFS) for remainder | 14 days at negative 2,000 CFS; background (negative 8,000 CFS) for remainder |
| | Otherwise | n/a | n/a | n/a | n/a | n/a |
| **January** | Any year | If first flush triggered in December | n/a | If SACRI exceeds turbidity threshold | 5 days at negative 2,000 CFS; negative 5,000 CFS for remainder | 5 days at negative 2,000 CFS; negative 5,000 CFS for remainder |
| | Any year | If first flush not triggered in December | If first flush triggered | n/a | n/a | 14 days at negative 2,000 CFS; negative 5,000 CFS for remainder |
| | WIIN Wet year | n/a | If first flush not triggered | If turbidity bridge avoidance not triggered | negative 5,000 CFS | negative 5,000 CFS |
| | WIIN Above Normal, Below Normal or Dry year | n/a | If first flush not triggered | n/a | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder |
| | Otherwise | n/a | n/a | n/a | negative 5,000 CFS | negative 5,000 CFS |

Table 3. Comparison of OMR Criteria for Months for February and March
(revisions to Alternative 1 are shown by shaded rows).

| Month | Year type condition | Prior month condition | Turbidity bridge avoidance condition | Alternative 1 OMR criteria | Revised Alternative 1 OMR criteria |
|---|---|---|---|---|---|
| **February** | Any year | n/a | If turbidity bridge avoidance triggered | 5 days at negative 2,000 CFS; negative 5,000 CFS for remainder | 5 days at negative 2,000 CFS; negative 5,000 CFS for remainder |
| | WIIN Wet year | n/a | If turbidity bridge avoidance not triggered | negative 5,000 CFS | negative 5,000 CFS |
| | WIIN Above Normal or Below Normal year | n/a | If turbidity bridge avoidance not triggered | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder |
| | WIIN Dry year | If no storm action in January | If turbidity bridge avoidance not triggered | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder | 7 days at negative 6,000 CFS; negative 5,000 CFS for remainder |
| | Otherwise | n/a | n/a | negative 5,000 CFS | negative 5,000 CFS |
| **March** | Wet or Above Normal year | n/a | If turbidity bridge avoidance triggered* | 5 days at negative 2,000 CFS*; negative 5,000 CFS for remainder | 5 days at negative 2,000 CFS; negative 3,500 CFS for remainder |
| | Below Normal or Dry year | n/a | If turbidity bridge avoidance triggered | n/a | 5 days at negative 2,000 CFS; negative 3,500 CFS for remainder |
| | Wet, Above Normal, Below Normal or Dry year | n/a | If turbidity bridge avoidance NOT tirggered | n/a | negative 3,500 CFS |
| | Critically Dry year | n/a | If turbidity bridge avoidance triggered | n/a | 5 days at negative 2,000 CFS; negative 5,000 CFS for remainder |
| | Otherwise | n/a | n/a | negative 5,000 CFS | negative 5,000 CFS |

** For Alternative 1 it is assumed that in March turbidity avoidance is triggered in wet and above normal years regardless of whether or not SACRI exceeds the turbidity threshold*

Table 4. Comparison of OMR Criteria for Months for April, May and June
(revisions to Alternative 1 are shown by shaded rows).

| Month | Year type condition | Prior month condition | Alternative 1 OMR criteria | Revised Alternative 1 OMR criteria |
|---|---|---|---|---|
| **April or May** | Wet year | If turbidity bridge avoidance triggered* | 5 days at negative 2,000 CFS*; negative 5,000 CFS for remainder | n/a |
| | Above Normal year | If turbidity bridge avoidance triggered* | 5 days at negative 2,000 CFS*; negative 3,500 CFS for remainder | n/a |
| | Wet and Above Normal year | n/a | n/a | negative 3,500 CFS |
| | Below Normal year | | negative 3,500 CFS | negative 3,500 CFS |
| | Dry year | | negative 5,000 CFS | negative 3,500 CFS |
| | Critically Dry year | | negative 5,000 CFS | negative 5,000 CFS |
| **June** | Wet or Above Normal year | If turbidity bridge avoidance triggered* | 5 days at negative 2,000 CFS*; negative 5,000 CFS for remainder | n/a |
| | Wet and Above Normal year | n/a | n/a | negative 5,000 CFS |
| | Below Normal, Dry or Critically Dry year | | negative 5,000 CFS | negative 5,000 CFS |

** For Alternative 1 it is assumed that in April, May and June turbidity avoidance is triggered in wet and above normal years regardless of whether or not SACRI exceeds the turbidity threshold*

### *Exports at the South Delta Intakes*

Revisions for the Revised Alternative 1, to correct the CVP and SWP sharing of export capacity under SWRCB D-1641 export restrictions in the months of April and May, are the same as those included in the Revised No Action Alternative. Other assumptions for Alternative 1 for exports at the south Delta intakes are unchanged and documented in Appendix F Attachment 2-1 Modeling Assumptions.

### Operations Criteria

#### *Montezuma Slough Salinity Control Gates*

As in the revised No Action Alternative, the SMSCG are operated on an as needed basis to meet SWRCB D-1641 water quality standards in Montezuma Slough in the period between October through May. In addition, the SMSCG are operated as a component of the Delta Smelt Habitat Action.

The Alternative 1 was revised to consider the effect of SMSCG operations, when SMSCG is used to meet SWRCB D-1641 water quality standards in Montezuma Slough, and when SMSCG is used to achieve the goals of the Delta Smelt Habitat Action Plan. The revisions included the adjustment to Artificial Neural Network (ANN) flow-salinity calculations previously discussed.

The SMSCG operations to the meet SWRCB D-1641 water quality standards in Montezuma Slough, for CalSim II modeling purposes, are as discussed in the Section F1.1.1.2.1 CalSim II Assumptions for Revised No Action Alternative Montezuma Slough Salinity Control Gates.

The SMSCG operations to achieve the goals of the Delta Smelt Habitat Action Plan, for CalSim II modeling purposes, are assumed as follows: for the below normal, above normal, and wet year types, during the months June through September, if the X2 position is estimated to be between 77 km and 89 km and 60 days of SMSCG operations have not occurred since June 1 the SMSCG are assumed to operate for the month. These assumptions represent the maximum extent of the SMSCG operations in support of the Delta Smelt Habitat Action.

#### *Allocation Decisions*

Revisions for the Revised Alternative 1, to correct an error which caused the North-of-Delta CVP allocations in May to be overwritten in following months, are the same as those included in the Revised No Action Alternative.

## F1.1.1.3.2 DSM2 Assumptions for Revised Alternative 1

The following is a description of the revised assumptions listed in Appendix F1 Section F1.1.2 Revisions to DSM2 Model Assumptions Callouts, specifically the entries in column “Revisions to Alternative 1 (ALT1 Revised)”. All other assumptions for the Alternative 1 described in Appendix F Attachment 2-1 Model Assumptions and Attachment 2-3 DSM2 Model Assumptions Callouts are unchanged in the suisun Revised Alternative 1.

#### *Suisun Marsh Salinity Control Gates*

The DSM2 model used for the Alternative 1 was revised to read in CalSim II output as an input to determine which months to operate the SMSCG. Refer to Section F1.1.1.3.1 CalSim II Assumptions for Revised Alternative 1, Suisun Marsh Salinity Control Gates description for more information.

Previously, DSM2 did not include an implementation of the SMSCG operations to represent the Delta Smelt Habitat Action of Alternative 1.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts

# Section F1.1.2

# Revised Alternative 1 Sensitivity Analysis Revisions to CalSim II Model Assumptions Callouts

## F1.1.2.1 Introduction

For Reclamation's ROC on LTO, a sensitivity analysis has been prepared with revised model simulations for the No Action Alternative and Alternative 1.

For CalSim II modeling, the No Action Alternative was updated to correct for some recent modifications to the CalSim II model as well as adding in the operations of the Suisun Marsh Salinity Control Gate on Montezuma Slough. The Alternative 1 was updated for to be consistent with the No Action Alternative where necessary as well as updated to be consistent with the most recent Alternative 1 description and for improvements in the model to better reflect the alternative.

## F1.1.2.2 CalSim II Modeling Assumptions Callouts

The following matrix summarizes the assumptions used for the CalSim II models:

- No Action Alternative 011319 (NAA)
- Revised No Action Alternative 093019 (NAA Revised)
- Alternative 1 011519 (ALT1)
- Revised Alternative 1 100419 (ALT1 Revised)

The No Action Alternative (NAA) and Alternative 1 (ALT1) columns are unchanged from the scenarios presented in the ROC on LTO DEIS. The revised No Action Alternative (NAA Revised) and revised Alternative 1 (ALT1 Revised) columns only specify the revisions included in the revised model simulations. Callouts do note included refinements due to and based on standard CalSim II modeling protocols (i.e. retrained WSI-DI curves, export estimate tables, San Luis operations etc).

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| **GENERAL** | | | | |
| **Planning horizon**[a] | Year 2030 | | Same as NAA | |
| **Period of simulation** | 82 years (1922-2003) | | Same as NAA | |
| **HYDROLOGY** | | | | |
| **Climate Condition** | ELT Q5 projected changes in temperature, and precipitation; Sea level rise increased by 15cm. | | Same as NAA | |
| **Inflows/Supplies** | Modified inflows based on historical hydrology and projected climate condition. | | Same as NAA | |
| **Level of development** | Projected 2030 level[c] | | Same as NAA | |
| **DEMANDS, WATER RIGHTS, CVP/SWP CONTRACTS** | | | | |
| **Sacramento River Region** (excluding American River) | | | | |
| CVP[d] | Land-use based, full build-out of contract amounts, except for Settlement Contractors represented with historical diversions. | | Same as NAA | |
| SWP (FRSA)[e] | Land-use based, limited by contract amounts | | Same as NAA | |
| Non-project | Land use based, limited by water rights and SWRCB Decisions for Existing Facilities | | Same as NAA | |
| Antioch Water Works | Pre-1914 water right | | Same as NAA | |
| Federal refuges | Firm Level 2 water supply needs | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| **Sacramento River Region - American River**[g] | | | | |
| Water rights | Year 2025, full water rights | | Same as NAA | |
| CVP | Year 2025, full contracts except for Settlement Contractors at historical diversions, including Freeport Regional Water Project | | Same as NAA | |
| **San Joaquin River Region**[h] | | | | |
| Friant Unit | Limited by contract amounts, based on current allocation policy | | Same as NAA | |
| Lower Basin | Land-use based, based on district level operations and constraints | | Same as NAA | |
| Stanislaus River | Land-use based, Revised Operations Plan (2008 model assumptions) and NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 | | Land-use based, Stepped Release Plan (SRP) | |
| **San Francisco Bay, Central Coast, Tulare Lake and South Coast Regions** (CVP/SWP project facilities) | | | | |
| CVP[d] | Demand based on contract amounts | | Same as NAA | |
| CCWD[j] | 195 TAF/yr CVP contract supply and water rights | Same as NAA; and updated to include in-Delta transfers | Same as NAA | Same as NAA Revised |
| SWP[e,k] | Demand based on Table A amounts | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| Article 56 | Based on 2001-08 contractor requests | | Same as NAA | |
| Article 21 | MWD demand up to 200 TAF/month from December to March subject to conveyance capacity, KCWA demand up to 180 TAF/month and other contractor demands up to 34 TAF/month in all months, subject to conveyance capacity | | Same as NAA | |
| North Bay Aqueduct (NBA) | 77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville and Benecia Settlement Agreement | | Same as NAA | |
| Federal refuges | Firm Level 2 water needs | | Same as NAA | |
| **FACILITIES** | | | | |
| **Systemwide** | | | | |
| Systemwide | Existing facilities | | Same as NAA | |
| **Sacramento River Region** | | | | |
| Shasta Lake | Existing, 4,552 TAF capacity | | Same as NAA | |
| Red Bluff Diversion Dam | Diversion dam gates out all year, Pumping Plant operated to deliver CVP water | | Same as NAA | |
| Fremont Weir | Notched Fremont Weir as represented in Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | Alternative 1 (preferred alternative) | | | |
| Colusa Basin | Existing conveyance and storage facilities | | Same as NAA | |
| Upper American River[g,l] | PCWA American River Pump Station | | Same as NAA | |
| Lower Sacramento River | Freeport Regional Water Project[n] | | Same as NAA | |
| **San Joaquin River Region** | | | | |
| Millerton Lake (Friant Dam) | Existing, 520 TAF capacity | | Same as NAA | |
| Lower San Joaquin River | City of Stockton Delta Water Supply Project, 30-mgd capacity | | Same as NAA | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| SWP Banks Pumping Plant (South Delta) | Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep for reducing impact of NMFS BO (Jun 2009) Action IV.2.1 Phase II on SWP | | Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep for reducing impact of OMR action on SWP exports | |
| CVP C.W. Bill Jones Pumping Plant (Tracy PP) | Permit capacity is 4,600 cfs in all months (allowed for by the Delta-Mendota Canal–California Aqueduct Intertie) | | Same as NAA | |
| Upper Delta-Mendota Canal Capacity | Existing plus 400 cfs Delta-Mendota Canal– | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | California Aqueduct Intertie | | | |
| CCWD Intakes | Los Vaqueros Reservoir with existing storage capacity (160 TAF), and existing intakes except for Mallard Slough Intake | Same as NAA; updated to be consistent with latest Los Vaqueros modeling; and intake WQ conditions updated based on DSM2 | Same as NAA | Same as NAA Revised; and intake WQ conditions updated based on DSM2 |
| Montezuma Slough Salinity Control Gates | Not modeled | Delta salinity conditions are adjusted for months in which the salinity control gate is operated (see operations) | Not modeled | Delta salinity conditions are adjusted for months in which the salinity control gate is operated (see operations) |
| **San Francisco Bay Region** | | | | |
| South Bay Aqueduct (SBA) | SBA rehabilitation, 430 cfs capacity from junction with California Aqueduct to Alameda County FC&WSD Zone 7 diversion point | | Same as NAA | |
| **South Coast Region** | | | | |
| California Aqueduct East Branch | Existing capacity | | Same as NAA | |
| **REGULATORY STANDARDS** | | | | |
| **North Coast Region** | | | | |
| Trinity River | | | | |
| Minimum flow below Lewiston Dam | Trinity EIS Preferred Alternative (369-815 TAF/yr) | | Same as NAA | |
| Trinity River Fall Augmentation Flows | 420 cfs August 1 through September 30 in all but wet years | | Same as NAA | |
| Trinity Reservoir end-of-September minimum storage | Trinity EIS Preferred Alternative (600 TAF as able) | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **Sacramento River Region** | | | | |
| Clear Creek | | | | |
| Minimum flow below Whiskeytown Dam | Downstream water rights, 1963 USBR Proposal to USFWS and NPS, predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.1.1 | | Downstream water rights, 1963 USBR Proposal to USFWS and NPS, 150 cfs year-round and pulse flows, model representation same as NAA | Downstream water rights, 1963 USBR Proposal to USFWS and NPS; and 200 cfs October through May or 150 cfs in Critical years and 150 cfs June through September with 10 TAF for channel maintenance in February of BN, AN and Wet years and 10 TAF for Spring pulse flows in June of all years |
| Upper Sacramento River | | | | |
| Shasta Lake end-of-September minimum storage | NMFS 2004 Winter-run Biological Opinion, (1900 TAF in non-critically dry years), and NMFS BO (Jun 2009) Action I.2.1 (NMFS BiOp storage objectives not explicitly modeled; achieved through project allocation procedures when hydrologically feasible) | | 1900 TAF in non-critically dry years (not explicitly modeled - achieved through project allocation profiles when hydrologically feasible) | |
| Minimum flow below Keswick Dam | SWRCB WR 90-5; NMFS BO (Jun 2009) Action I.2.2 achieved as possible through other modeled actions | | SWRCB WR 90-5 | SWRCB WR 90-5; and stabilize fall flows to reduce redd dewatering and rebuild cold water pool; and spring pulse flow up to 150 TAF if projected May 1 storage > 4.1 MAF |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Feather River | | | | |
| Minimum flow below Thermalito Diversion Dam | 2006 Settlement Agreement (700 / 800 cfs) | | Same as NAA | |
| Minimum flow below Thermalito Afterbay outlet | 1983 DWR, DFG Agreement (750-1,700 cfs) | | Same as NAA | |
| Yuba River | | | | |
| Minimum flow below Daguerre Point Dam | D-1644 Operations (Lower Yuba River Accord)[r] | | Same as NAA | |
| American River | | | | |
| Minimum flow below Nimbus Dam | American River Flow Management (2006) as required by NMFS BO (Jun 2009) Action II.1[v] | | American River Flow Management Standard, per 2017 Water Forum Agreement with a planning minimum end of December storage target of 275 TAF | |
| Minimum Flow at H Street Bridge | SWRCB D-893 | | Same as NAA | |
| Lower Sacramento River | | | | |
| Minimum flow near Rio Vista | SWRCB D-1641 | | Same as NAA | |
| **San Joaquin River Region** | | | | |
| Mokelumne River | | | | |
| Minimum flow below Camanche Dam | FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs) | | Same as NAA | |
| Minimum flow below Woodbridge Diversion Dam | FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs) | | Same as NAA | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| | | | | |
| Stanislaus River | | | | |
| Minimum flow below Goodwin Dam | 1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Action III.1.2 and III.1.3[v] | | Flows per New Melones SRP | |
| Minimum dissolved oxygen | SWRCB D-1422 | | Model representation Same as NAA | |
| Merced River | | | | |
| Minimum flow below Crocker-Huffman Diversion Dam | Davis-Grunsky (180-220 cfs, Nov-Mar), and Cowell Agreement | | Same as NAA | |
| Minimum flow at Shaffer Bridge | FERC 2179 (25-100 cfs) | | Same as NAA | |
| Tuolumne River | | | | |
| Minimum flow at Lagrange Bridge | FERC 2299-024, 1995 (Settlement Agreement) (94-301 TAF/yr) | | Same as NAA | |
| San Joaquin River | | | | |
| San Joaquin River below Friant Dam/ Mendota Pool | San Joaquin River Restoration-full flows, not constrained by current river capacity, model implementation does not include any recapture/recirculation | | Same as NAA | |
| Maximum salinity near Vernalis | SWRCB D-1641 | | Stanislaus contribution per New Melones SRP | |
| Minimum flow near Vernalis | SWRCB D-1641, and NMFS BO (Jun 2009) Action IV.2.1[v] | | Stanislaus contribution per New Melones SRP | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| Delta Outflow Index (Flow, NDOI) | SWRCB D-1641 and FWS BO (Dec 2008) Action 4 | | SWRCB D-1641 | SWRCB D-1641 and for Summer/Fall Delta Smelt habitat operate to meet X2 of 80 km for September and October of AN, and Wet years with transitional flows in last half of August |
| Delta Cross Channel gate operation | SRWCB D-1641 with additional days closed from Oct 1 – Jan 31 based on NMFS BO (Jun 2009) Action IV.1.2 (closed during flushing flows from Oct 1 – Dec 14 unless adverse water quality conditions would result) | | Gate operations per Multi Year Study Program; model representation Same as NAA | |
| South Delta export limits (Jones PP and Banks PP) | SWRCB D-1641, Vernalis flow-based export limits Apr 1 – May 31 as required by NMFS BO (Jun, 2009) Action IV.2.1 (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP) | Same as NAA; and revised to correct for sharing of unused export capacity under D1641 | SWRCB D-1641 Vernalis flow-based export limits Apr 1 – May 31, (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP) | Same as ALT1; and revised to correct for sharing of unused export capacity under D1641 |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Combined Flow in Old and Middle River (OMR) | FWS BO (Dec 2008) Actions 1 through 3 and NMFS BO (Jun 2009) Action IV.2.3 | Same as NAA; and revised to correct H&S offramp when exports are low | OMR target of -5,000 cfs January through June except for 5 days of -2,000 cfs when turbidity bridge occurs and 7 days of -6,000 cfs when increased pumping due to storm is possible, followed by "first flush" action only if it occurs in December (14 days of -2,000 cfs), and OMR target of 3,500 cfs in April and May of AN and BN years | Same as ALT1; and OMR target of -3,500 cfs in March, April and May of non-Critical years; revised to include triggering of "first flush" action in December or January and consideration of turbidity bridge from January through March only; revised to correct H&S off-ramp when exports are low |
| **OPERATIONS CRITERIA: RIVER-SPECIFIC** | | | | |
| **Sacramento River Region** | | | | |
| Upper Sacramento River: Flow objective for navigation (Wilkins Slough) | Flow objective for Wilkins Slough based on month, CVP allocation, and Shasta storage condition to reflect CVP operations for local delivery | | Same as NAA | |
| American River: Folsom Dam flood control | Variable 400/600 flood control diagram (without outlet modifications) | | Same as NAA | |
| Feather River: Flow at Mouth of Feather River (above Verona) | Maintain DFG/DWR flow target of 2,800 cfs for Apr – Sep when flows available dependent on Oroville inflow and FRSA allocation | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **San Joaquin River Region** | | | | |
| Stanislaus River: Flow below Goodwin Dam[i] | 1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Action III.1.2 and III.1.3[v] | | Flows per New Melones SRP | |
| San Joaquin River: Salinity at Vernalis | Grasslands Bypass Project (full implementation) | | Same as NAA | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| Montezuma Slough Salinity Control Gates | Not modeled | Operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May | Not modeled | Operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May; and for Summer/Fall Delta Smelt habitat operate for up to 60 days June through October of BN, AN, and Wet years |
| **OPERATIONS CRITERIA: SYSTEMWIDE** | | | | |
| **CVP water allocation** | | | | |
| Settlement / Exchange | 100% (75% in Shasta critical years) | | Same as NAA | |
| Refuges | 100% (75% in Shasta critical years) | | Same as NAA | |
| Agriculture Service | 100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions | Same as NAA; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage | 100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action | Same as ALT1; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Municipal & Industrial Service | 100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions[v] | Same as NAA; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage | 100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action | Same as ALT1; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage |
| **SWP water allocation** | | | | |
| North of Delta (FRSA) | Contract specific | | Same as NAA | |
| South of Delta (including North Bay Aqueduct) | Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions[v] | | Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and OMR action | |
| **CVP-SWP coordinated operations** | | | | |
| Sharing of responsibility for in-basin-use | Revised Coordinated Operations Agreement | | Same as NAA | |
| Sharing of surplus flows | Revised Coordinated Operations Agreement | | Same as NAA | |
| Sharing of restricted export capacity for project- specific priority pumping | Revised Coordinated Operations Agreement | | Same as NAA | |
| Water transfers | Acquisitions by SWP contractors are wheeled at priority in Banks Pumping Plant over non-SWP users; | | Same as NAA | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| | LYRA included for SWP contractors | | | |
| Sharing of export capacity for lesser priority and wheeling-related pumping | Cross Valley Canal wheeling (max of 128 TAF/yr), CALFED ROD defined Joint Point of Diversion (JPOD) | | Same as NAA | |
| San Luis Reservoir | San Luis Reservoir is allowed to operate to a minimum storage of 100 TAF | | Same as NAA | |
| **CVPIA 3406(b)(2)**[u,v] | | | | |
| Policy Decision | Per May 2003 Dept. of Interior Decision: | | N/A | |
| Allocation | 800 TAF, 700 TAF in 40-30-30 dry years, and 600 TAF in 40-30-30 critical years as a function of Ag allocation | | No B2 Allocation modeled | |
| Actions | Pre-determined upstream fish flow objectives below Whiskeytown Dam, non-discretionary NMFS BO (Jun 2009) actions for the American and Stanislaus Rivers, and NMFS BO (Jun 2009) and FWS BO (Dec 2008) actions leading to export restrictions | | Pre-determined upstream fish flow objectives below Whiskeytown | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Accounting[w] | Releases for non-discretionary FWS BO (Dec 2008) and NMFS BO (Jun 2009) actions may or may not always be deemed (b)(2) actions; in general, it is anticipated, that accounting of these actions using (b)(2) metrics, the sum would exceed the (b)(2) allocation in many years; therefore no additional actions are considered and no accounting logic is included in the model | | No B2 Accounting modeled | |
| **WATER MANAGEMENT ACTIONS** | | | | |
| **Water Transfer Supplies** (long term programs) | | | | |
| Lower Yuba River Accord[w] | Yuba River acquisitions for reducing impact of NMFS BO export restrictions on SWP | | Yuba River acquisitions for reducing impact of D-1641 and OMR Action export restrictions on SWP | |
| Phase 8 | None | | None | |

Notes:

[a] These assumptions have been developed under the direction of the Bureau of Reclamation (Reclamation) management team for the Re-initiation of Consultation on long-term operations of the Central Valley Project (CVP) and State Water Project (SWP).

[b] Footnote not used

[c] The Sacramento Valley hydrology used in the Future Conditions CALSIM II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation. Development of Future-level projected land-use are being coordinated with the California Water Plan Update for future models.

[d] Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[e] Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[f] Footnote not used

g Assumptions regarding American River water rights and CVP contracts with the Sacramento River Water Reliability Project are documented in the Delivery Specifications attachments. The Sacramento Area Water Forum agreement, its dry year diversion reductions, Middle Fork Project operations and water is not included. Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

h The CALSIM II representation of the San Joaquin River reflects the difficulties on-going groundwater overdraft problems. The 2030 level of development representation of the San Joaquin River Basin does not make any attempt to offer solutions to groundwater overdraft problems. In addition a dynamic groundwater simulation is not yet developed for the San Joaquin River Valley. Groundwater extraction/ recharge and stream-groundwater interaction are static assumptions and may not accurately reflect a response to simulated actions. These limitations should be considered in the analysis of results.

i Footnote not used

j The actual amount diverted is operated is conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 160 TAF. Associated water rights to fill Los Vaqueros with Delta excess flows are included, but CCWD's water right permit and water right license on Mallard Slough are not included.

k It is assumed that SWP Contractors can take delivery of all Table A allocations and Article 21 supplies. Article 56 provisions are assumed and allow for SWP Contractors to manage storage and delivery conditions such that full Table A allocations can be delivered. Detailed analysis of the South Coast and Tulare regions support these assumptions. NBA Article 21 deliveries are dependent on excess conditions only, all other Article 21 deliveries also require that San Luis Reservoir be at capacity and that Banks PP and the California Aqueduct has available capacity to divert from the Delta for direct delivery.

l PCWA American River pumping facility upstream of Folsom Lake is included.

m Footnote not used

n Mokelumne River flows are modified to reflect modified operations associated with EBMUD supplies from the Freeport Regional Water Project.

o Current ACOE permit for Banks PP allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis during Dec 15th – Mar 15th up to a maximum diversion of 10,300 cfs, if Vernalis flow exceeds 1,000 cfs.

p Footnote not used

q Delta actions, under USFWS discretionary use of CVPIA 3406(b)(2) allocations, are no longer dynamically operated and accounted for in the CALSIM II model. The Combined Old and Middle River Flow and Delta Export restrictions under the FWS BO (Dec 15th 2008) and the NMFS BO (June 4th 2009) severely limit any discretion that would have been otherwise assumed in selecting Delta actions under the CVPIA 3406(b)(2) accounting criteria. Therefore, it is anticipated that CVPIA 3406(b)(2) account availability for upstream river flows below Whiskeytown, Keswick and Nimbus Dams would be very limited. The future of these operations is uncertain. For these baseline simulations, upstream flows on the Clear Creek and Sacramento River are pre-determined based on CVPIA 3406(b)(2) based operations from the Aug 2008 BA Study 7.0 and Study 8.0 for Existing and Future Conditions respectively. The procedures for dynamic operation and accounting of CVPIA 3406(b)(2) are not included in the CALSIM II model.

r D-1644 and the Lower Yuba River Accord is assumed to be implemented . The Yuba River is not dynamically modeled in CALSIM II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and the Lower Yuba River Accord EIS/EIR study team.

s Footnote not used

t Footnote not used

u Footnote not used

v In cooperation with Reclamation, National Marine Fisheries Service, Fish and Wildlife Service, and Ca Department of Fish and Game, the Ca Department of Water Resources has developed assumptions for implementation of the FWS BO (Dec 15th 2008) and NMFS BO (June 4th 2009) in CALSIM II. The FWS BO and NMFS BO assumptions are documented in the Appendix 5A of the LTO EIS (Reclamation 2015b).

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.3 Revisions to DSM2 Model Assumptions Callouts

# Section F1.1.3

# Revised Alternative 1 Sensitivity Analysis Revisions to DSM2 Model Assumptions Callouts

## F1.1.3.1 Introduction

For Reclamation's ROC on LTO, a sensitivity analysis has been prepared with revised model simulations for the No Action Alternative and Alternative 1. See the CalSim II Model Assumptions Callouts for more information.

For DSM2 modeling, the No Action Alternative and Alternative 1 were updated to use CalSim II results to schedule operations of the Suisun Marsh Salinity Control Gate on Montezuma Slough.

## F1.1.3.2 DSM2 Modeling Assumptions Callouts

The following matrix summarizes the assumptions used for the DSM2 models:

- No Action Alternative 011319 (NAA)
- Revised No Action Alternative 093019 (NAA Revised)
- Alternative 1 011519 (ALT1)
- Revised Alternative 1 100419 (ALT1 Revised)

The No Action Alternative (NAA) and Alternative 1 (ALT1) columns are unchanged from the scenarios presented in the ROC on LTO DEIS. The revised No Action Alternative (NAA Revised) and revised Alternative 1 (ALT1 Revised) columns only specify the revisions included in the revised model simulations.

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| Period of simulation | 82 years (1922-2003)[a] | | Same as NAA | |
| BOUNDARY CONDITIONS | | | | |
| Boundary flows | Monthly timeseries from CalSim II output (alternatives provide different flows and exports)[c] | | Monthly timeseries from CalSim II output (alternatives provide different flows and exports)[c] | |
| Ag flows (DICU) | 2020 Level, DWR Bulletin 160-98[d] | | Same as NAA | |
| Martinez stage | 15-minute adjusted astronomical tide with 15 cm sea level rise[a] | | Same as NAA | |
| Vernalis EC | Monthly time series from CalSim II output[e] | | Same as NAA | |
| Agricultural Return EC | Municipal Water Quality Investigation Program analysis | | Same as NAA | |
| Martinez EC | Monthly net Delta Outflow from CalSim output & G-model[f] | | Same as NAA | |
| FACILITIES | | | | |
| Freeport Regional Water Project | Monthly output from CalSim II | | Same as NAA | |
| Delta Cross Channel | Monthly time series of number of days open from CalSim II output | | Monthly time series of number of days open from CalSim II output | |
| Stockton Delta Water Supply Project | Monthly output from CalSim II | | Same as NAA | |
| Delta Habitat Improvements | None | | None | |
| Franks Tract Program | None | | None | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| Veale Tract Drainage Relocation | The Veale Tract Water Quality Improvement Project, funded by CALFED, relocates the agricultural drainage outlet was relocated from Rock Slough channel to the southern end of Veale Tract, on Indian Slough[g] | | Same as NAA | |
| Clifton Court Forebay | Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels | | Same as NAA | |
| Contra Costa Water District Delta Intakes | Rock Slough Pumping Plant, Old River at Highway 4 Intake and Alternate Improvement Project Intake on Victoria Canal | | Same as NAA | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| South Delta barriers | Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB installed[i] Sep 16 – Nov 30; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers[h]. | | Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB is not installed; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers[h]. | |
| Antioch Water Works | Monthly output from CalSim II | | Same as NAA | |
| Montezuma Slough Salinity Control Gates | Gate operations occur in October through February. Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps. Gates are open in March through September. | Based on monthly output from CalSim II; operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May | Model representation same as NAA. Gate operations occur in October through February, and June through September. Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps. Gates are open in March through May. | Based on monthly output from CalSim II; operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May; and for Summer/Fall Delta Smelt habitat operate for up to 60 days June through October of BN, AN, and Wet years |

Notes:

[a] A new adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Bay Delta Office Modeling Support Branch Delta Modeling Section in cooperation with the Common Assumptions workgroup. This tide is based on a more extensive observed dataset and covers the entire 82-year period of record. Martinez stage boundary condition is augmented by 15 cm based on equations used for Bay-Delta Conservation Plan to simulate expected sea level rise in 2030.

[b] Footnote not used

[c] Although monthly CalSim output was used as the DSM2-HYDRO input, the Sacramento and San Joaquin rivers were interpolated to daily values in order to smooth the transition from high to low and low to high flows. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.

[d] The Delta Island Consumptive Use (DICU) model is used to calculate diversions and return flows for all Delta islands based on the level of development assumed. The projected 2020 land-use assumptions are found in Bulletin 160-98.

[e] CalSim II calculates monthly EC for the San Joaquin River, which was then converted to daily EC using the monthly EC and flow for the San Joaquin River. Fixed concentrations of 150, 175, and 125 µmhos/cm were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.

[f] Net Delta outflow based on the CalSim II flows was used with an updated G-model to calculate Martinez EC. Under changed climate conditions Martinez EC is modified to account for the sea level rise at early (15 cm) and late (45 cm) long-term phases (Year 2060).

[g] Information was obtained based on the information from the draft final "Delta Region Drinking Water Quality Management Plan" dated June 2005 prepared under the CALFED Water Quality Program and a presentation by David Briggs at SWRCB public workshop for periodic review. The presentation "Compliance location at Contra Costa Canal at Pumping Plant #1 – Addressing Local Degradation" notes that the Veale Tract drainage relocation project will be operational in June 2005. The DICU drainage currently simulated at node 204 is moved to node 202 in DSM2.

[h] Based on the FWS Delta Smelt BO Action 5 and the project description provided in the page 119.

[i] Based on the FWS Delta Smelt BO Action 5, Head of Old River Barrier (HORB) is assumed to be not installed in April or May; therefore HORB is only installed in the Fall as shown.

[j] Based on tidal marsh restoration analysis conducted in Appendix 5A Section D Attachment 2 in the Bay Delta Conservation Plan Final EIR-EIS: Numerical Modeling in Support of Bay Delta Conservation Plan Technical Study #4 – Evaluation of Tidal Marsh Restoration Effects.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.2 Revisions to CalSim II Model Assumptions Callouts

# Section F1.1.2

# Revised Alternative 1 Sensitivity Analysis Revisions to CalSim II Model Assumptions Callouts

## F1.1.2.1 Introduction

For Reclamation's ROC on LTO, a sensitivity analysis has been prepared with revised model simulations for the No Action Alternative and Alternative 1.

For CalSim II modeling, the No Action Alternative was updated to correct for some recent modifications to the CalSim II model as well as adding in the operations of the Suisun Marsh Salinity Control Gate on Montezuma Slough. The Alternative 1 was updated for to be consistent with the No Action Alternative where necessary as well as updated to be consistent with the most recent Alternative 1 description and for improvements in the model to better reflect the alternative.

## F1.1.2.2 CalSim II Modeling Assumptions Callouts

The following matrix summarizes the assumptions used for the CalSim II models:

- No Action Alternative 011319 (NAA)
- Revised No Action Alternative 093019 (NAA Revised)
- Alternative 1 011519 (ALT1)
- Revised Alternative 1 100419 (ALT1 Revised)

The No Action Alternative (NAA) and Alternative 1 (ALT1) columns are unchanged from the scenarios presented in the ROC on LTO DEIS. The revised No Action Alternative (NAA Revised) and revised Alternative 1 (ALT1 Revised) columns only specify the revisions included in the revised model simulations. Callouts do note included refinements due to and based on standard CalSim II modeling protocols (i.e. retrained WSI-DI curves, export estimate tables, San Luis operations etc).

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| **GENERAL** | | | | |
| **Planning horizon**[a] | Year 2030 | | Same as NAA | |
| **Period of simulation** | 82 years (1922-2003) | | Same as NAA | |
| **HYDROLOGY** | | | | |
| **Climate Condition** | ELT Q5 projected changes in temperature, and precipitation; Sea level rise increased by 15cm. | | Same as NAA | |
| **Inflows/Supplies** | Modified inflows based on historical hydrology and projected climate condition. | | Same as NAA | |
| **Level of development** | Projected 2030 level[c] | | Same as NAA | |
| **DEMANDS, WATER RIGHTS, CVP/SWP CONTRACTS** | | | | |
| **Sacramento River Region** (excluding American River) | | | | |
| CVP[d] | Land-use based, full build-out of contract amounts, except for Settlement Contractors represented with historical diversions. | | Same as NAA | |
| SWP (FRSA)[e] | Land-use based, limited by contract amounts | | Same as NAA | |
| Non-project | Land use based, limited by water rights and SWRCB Decisions for Existing Facilities | | Same as NAA | |
| Antioch Water Works | Pre-1914 water right | | Same as NAA | |
| Federal refuges | Firm Level 2 water supply needs | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| **Sacramento River Region - American River**[g] | | | | |
| Water rights | Year 2025, full water rights | | Same as NAA | |
| CVP | Year 2025, full contracts except for Settlement Contractors at historical diversions, including Freeport Regional Water Project | | Same as NAA | |
| **San Joaquin River Region**[h] | | | | |
| Friant Unit | Limited by contract amounts, based on current allocation policy | | Same as NAA | |
| Lower Basin | Land-use based, based on district level operations and constraints | | Same as NAA | |
| Stanislaus River | Land-use based, Revised Operations Plan (2008 model assumptions) and NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 | | Land-use based, Stepped Release Plan (SRP) | |
| **San Francisco Bay, Central Coast, Tulare Lake and South Coast Regions** (CVP/SWP project facilities) | | | | |
| CVP[d] | Demand based on contract amounts | | Same as NAA | |
| CCWD[j] | 195 TAF/yr CVP contract supply and water rights | Same as NAA; and updated to include in-Delta transfers | Same as NAA | Same as NAA Revised |
| SWP[e,k] | Demand based on Table A amounts | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| Article 56 | Based on 2001-08 contractor requests | | Same as NAA | |
| Article 21 | MWD demand up to 200 TAF/month from December to March subject to conveyance capacity, KCWA demand up to 180 TAF/month and other contractor demands up to 34 TAF/month in all months, subject to conveyance capacity | | Same as NAA | |
| North Bay Aqueduct (NBA) | 77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville and Benecia Settlement Agreement | | Same as NAA | |
| Federal refuges | Firm Level 2 water needs | | Same as NAA | |
| **FACILITIES** | | | | |
| **Systemwide** | | | | |
| Systemwide | Existing facilities | | Same as NAA | |
| **Sacramento River Region** | | | | |
| Shasta Lake | Existing, 4,552 TAF capacity | | Same as NAA | |
| Red Bluff Diversion Dam | Diversion dam gates out all year, Pumping Plant operated to deliver CVP water | | Same as NAA | |
| Fremont Weir | Notched Fremont Weir as represented in Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | Alternative 1 (preferred alternative) | | | |
| Colusa Basin | Existing conveyance and storage facilities | | Same as NAA | |
| Upper American River[g,l] | PCWA American River Pump Station | | Same as NAA | |
| Lower Sacramento River | Freeport Regional Water Project[n] | | Same as NAA | |
| **San Joaquin River Region** | | | | |
| Millerton Lake (Friant Dam) | Existing, 520 TAF capacity | | Same as NAA | |
| Lower San Joaquin River | City of Stockton Delta Water Supply Project, 30-mgd capacity | | Same as NAA | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| SWP Banks Pumping Plant (South Delta) | Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep for reducing impact of NMFS BO (Jun 2009) Action IV.2.1 Phase II on SWP | | Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep for reducing impact of OMR action on SWP exports | |
| CVP C.W. Bill Jones Pumping Plant (Tracy PP) | Permit capacity is 4,600 cfs in all months (allowed for by the Delta-Mendota Canal–California Aqueduct Intertie) | | Same as NAA | |
| Upper Delta-Mendota Canal Capacity | Existing plus 400 cfs Delta-Mendota Canal– | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | California Aqueduct Intertie | | | |
| CCWD Intakes | Los Vaqueros Reservoir with existing storage capacity (160 TAF), and existing intakes except for Mallard Slough Intake | Same as NAA; updated to be consistent with latest Los Vaqueros modeling; and intake WQ conditions updated based on DSM2 | Same as NAA | Same as NAA Revised; and intake WQ conditions updated based on DSM2 |
| Montezuma Slough Salinity Control Gates | Not modeled | Delta salinity conditions are adjusted for months in which the salinity control gate is operated (see operations) | Not modeled | Delta salinity conditions are adjusted for months in which the salinity control gate is operated (see operations) |
| **San Francisco Bay Region** | | | | |
| South Bay Aqueduct (SBA) | SBA rehabilitation, 430 cfs capacity from junction with California Aqueduct to Alameda County FC&WSD Zone 7 diversion point | | Same as NAA | |
| **South Coast Region** | | | | |
| California Aqueduct East Branch | Existing capacity | | Same as NAA | |
| **REGULATORY STANDARDS** | | | | |
| **North Coast Region** | | | | |
| Trinity River | | | | |
| Minimum flow below Lewiston Dam | Trinity EIS Preferred Alternative (369-815 TAF/yr) | | Same as NAA | |
| Trinity River Fall Augmentation Flows | 420 cfs August 1 through September 30 in all but wet years | | Same as NAA | |
| Trinity Reservoir end-of-September minimum storage | Trinity EIS Preferred Alternative (600 TAF as able) | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **Sacramento River Region** | | | | |
| Clear Creek | | | | |
| Minimum flow below Whiskeytown Dam | Downstream water rights, 1963 USBR Proposal to USFWS and NPS, predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.1.1 | | Downstream water rights, 1963 USBR Proposal to USFWS and NPS, 150 cfs year-round and pulse flows, model representation same as NAA | Downstream water rights, 1963 USBR Proposal to USFWS and NPS; and 200 cfs October through May or 150 cfs in Critical years and 150 cfs June through September with 10 TAF for channel maintenance in February of BN, AN and Wet years and 10 TAF for Spring pulse flows in June of all years |
| Upper Sacramento River | | | | |
| Shasta Lake end-of-September minimum storage | NMFS 2004 Winter-run Biological Opinion, (1900 TAF in non-critically dry years), and NMFS BO (Jun 2009) Action I.2.1 (NMFS BiOp storage objectives not explicitly modeled; achieved through project allocation procedures when hydrologically feasible) | | 1900 TAF in non-critically dry years (not explicitly modeled - achieved through project allocation profiles when hydrologically feasible) | |
| Minimum flow below Keswick Dam | SWRCB WR 90-5; NMFS BO (Jun 2009) Action I.2.2 achieved as possible through other modeled actions | | SWRCB WR 90-5 | SWRCB WR 90-5; and stabilize fall flows to reduce redd dewatering and rebuild cold water pool; and spring pulse flow up to 150 TAF if projected May 1 storage > 4.1 MAF |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Feather River | | | | |
| Minimum flow below Thermalito Diversion Dam | 2006 Settlement Agreement (700 / 800 cfs) | | Same as NAA | |
| Minimum flow below Thermalito Afterbay outlet | 1983 DWR, DFG Agreement (750-1,700 cfs) | | Same as NAA | |
| Yuba River | | | | |
| Minimum flow below Daguerre Point Dam | D-1644 Operations (Lower Yuba River Accord)[r] | | Same as NAA | |
| American River | | | | |
| Minimum flow below Nimbus Dam | American River Flow Management (2006) as required by NMFS BO (Jun 2009) Action II.1[v] | | American River Flow Management Standard, per 2017 Water Forum Agreement with a planning minimum end of December storage target of 275 TAF | |
| Minimum Flow at H Street Bridge | SWRCB D-893 | | Same as NAA | |
| Lower Sacramento River | | | | |
| Minimum flow near Rio Vista | SWRCB D-1641 | | Same as NAA | |
| **San Joaquin River Region** | | | | |
| Mokelumne River | | | | |
| Minimum flow below Camanche Dam | FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs) | | Same as NAA | |
| Minimum flow below Woodbridge Diversion Dam | FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs) | | Same as NAA | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| | | | | |
| Stanislaus River | | | | |
| Minimum flow below Goodwin Dam | 1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Action III.1.2 and III.1.3[v] | | Flows per New Melones SRP | |
| Minimum dissolved oxygen | SWRCB D-1422 | | Model representation Same as NAA | |
| Merced River | | | | |
| Minimum flow below Crocker-Huffman Diversion Dam | Davis-Grunsky (180-220 cfs, Nov-Mar), and Cowell Agreement | | Same as NAA | |
| Minimum flow at Shaffer Bridge | FERC 2179 (25-100 cfs) | | Same as NAA | |
| Tuolumne River | | | | |
| Minimum flow at Lagrange Bridge | FERC 2299-024, 1995 (Settlement Agreement) (94-301 TAF/yr) | | Same as NAA | |
| San Joaquin River | | | | |
| San Joaquin River below Friant Dam/ Mendota Pool | San Joaquin River Restoration-full flows, not constrained by current river capacity, model implementation does not include any recapture/recirculation | | Same as NAA | |
| Maximum salinity near Vernalis | SWRCB D-1641 | | Stanislaus contribution per New Melones SRP | |
| Minimum flow near Vernalis | SWRCB D-1641, and NMFS BO (Jun 2009) Action IV.2.1[v] | | Stanislaus contribution per New Melones SRP | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| Delta Outflow Index (Flow, NDOI) | SWRCB D-1641 and FWS BO (Dec 2008) Action 4 | | SWRCB D-1641 | SWRCB D-1641 and for Summer/Fall Delta Smelt habitat operate to meet X2 of 80 km for September and October of AN, and Wet years with transitional flows in last half of August |
| Delta Cross Channel gate operation | SRWCB D-1641 with additional days closed from Oct 1 – Jan 31 based on NMFS BO (Jun 2009) Action IV.1.2 (closed during flushing flows from Oct 1 – Dec 14 unless adverse water quality conditions would result) | | Gate operations per Multi Year Study Program; model representation Same as NAA | |
| South Delta export limits (Jones PP and Banks PP) | SWRCB D-1641, Vernalis flow-based export limits Apr 1 – May 31 as required by NMFS BO (Jun, 2009) Action IV.2.1 (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP) | Same as NAA; and revised to correct for sharing of unused export capacity under D1641 | SWRCB D-1641 Vernalis flow-based export limits Apr 1 – May 31, (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP) | Same as ALT1; and revised to correct for sharing of unused export capacity under D1641 |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Combined Flow in Old and Middle River (OMR) | FWS BO (Dec 2008) Actions 1 through 3 and NMFS BO (Jun 2009) Action IV.2.3 | Same as NAA; and revised to correct H&S offramp when exports are low | OMR target of -5,000 cfs January through June except for 5 days of -2,000 cfs when turbidity bridge occurs and 7 days of -6,000 cfs when increased pumping due to storm is possible, followed by "first flush" action only if it occurs in December (14 days of -2,000 cfs), and OMR target of 3,500 cfs in April and May of AN and BN years | Same as ALT1; and OMR target of -3,500 cfs in March, April and May of non-Critical years; revised to include triggering of "first flush" action in December or January and consideration of turbidity bridge from January through March only; revised to correct H&S off-ramp when exports are low |
| **OPERATIONS CRITERIA: RIVER-SPECIFIC** | | | | |
| **Sacramento River Region** | | | | |
| Upper Sacramento River: Flow objective for navigation (Wilkins Slough) | Flow objective for Wilkins Slough based on month, CVP allocation, and Shasta storage condition to reflect CVP operations for local delivery | | Same as NAA | |
| American River: Folsom Dam flood control | Variable 400/600 flood control diagram (without outlet modifications) | | Same as NAA | |
| Feather River: Flow at Mouth of Feather River (above Verona) | Maintain DFG/DWR flow target of 2,800 cfs for Apr – Sep when flows available dependent on Oroville inflow and FRSA allocation | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| **San Joaquin River Region** | | | | |
| Stanislaus River: Flow below Goodwin Dam[i] | 1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Action III.1.2 and III.1.3[v] | | Flows per New Melones SRP | |
| San Joaquin River: Salinity at Vernalis | Grasslands Bypass Project (full implementation) | | Same as NAA | |
| **Sacramento River–San Joaquin Delta Region** | | | | |
| Montezuma Slough Salinity Control Gates | Not modeled | Operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May | Not modeled | Operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May; and for Summer/Fall Delta Smelt habitat operate for up to 60 days June through October of BN, AN, and Wet years |
| **OPERATIONS CRITERIA: SYSTEMWIDE** | | | | |
| **CVP water allocation** | | | | |
| Settlement / Exchange | 100% (75% in Shasta critical years) | | Same as NAA | |
| Refuges | 100% (75% in Shasta critical years) | | Same as NAA | |
| Agriculture Service | 100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions | Same as NAA; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage | 100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action | Same as ALT1; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Municipal & Industrial Service | 100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions[v] | Same as NAA; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage | 100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action | Same as ALT1; and revised to correct North-of-Delta allocation May adjustment for high Shasta Lake storage |
| **SWP water allocation** | | | | |
| North of Delta (FRSA) | Contract specific | | Same as NAA | |
| South of Delta (including North Bay Aqueduct) | Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions[v] | | Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and OMR action | |
| **CVP-SWP coordinated operations** | | | | |
| Sharing of responsibility for in-basin-use | Revised Coordinated Operations Agreement | | Same as NAA | |
| Sharing of surplus flows | Revised Coordinated Operations Agreement | | Same as NAA | |
| Sharing of restricted export capacity for project- specific priority pumping | Revised Coordinated Operations Agreement | | Same as NAA | |
| Water transfers | Acquisitions by SWP contractors are wheeled at priority in Banks Pumping Plant over non-SWP users; | | Same as NAA | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | LYRA included for SWP contractors | | | |
| Sharing of export capacity for lesser priority and wheeling-related pumping | Cross Valley Canal wheeling (max of 128 TAF/yr), CALFED ROD defined Joint Point of Diversion (JPOD) | | Same as NAA | |
| San Luis Reservoir | San Luis Reservoir is allowed to operate to a minimum storage of 100 TAF | | Same as NAA | |
| **CVPIA 3406(b)(2)**[u,v] | | | | |
| Policy Decision | Per May 2003 Dept. of Interior Decision: | | N/A | |
| Allocation | 800 TAF, 700 TAF in 40-30-30 dry years, and 600 TAF in 40-30-30 critical years as a function of Ag allocation | | No B2 Allocation modeled | |
| Actions | Pre-determined upstream fish flow objectives below Whiskeytown Dam, non-discretionary NMFS BO (Jun 2009) actions for the American and Stanislaus Rivers, and NMFS BO (Jun 2009) and FWS BO (Dec 2008) actions leading to export restrictions | | Pre-determined upstream fish flow objectives below Whiskeytown | |

| | No Action Alternative (NAA) | Revisions to No Action Alternative (NAA Revised) | Alternative 1 (ALT1) | Revisions to Alternative 1 (ALT1 Revised) |
|---|---|---|---|---|
| | | | | |
| Accounting[w] | Releases for non-discretionary FWS BO (Dec 2008) and NMFS BO (Jun 2009) actions may or may not always be deemed (b)(2) actions; in general, it is anticipated, that accounting of these actions using (b)(2) metrics, the sum would exceed the (b)(2) allocation in many years; therefore no additional actions are considered and no accounting logic is included in the model | | No B2 Accounting modeled | |
| **WATER MANAGEMENT ACTIONS** | | | | |
| **Water Transfer Supplies** (long term programs) | | | | |
| Lower Yuba River Accord[w] | Yuba River acquisitions for reducing impact of NMFS BO export restrictions on SWP | | Yuba River acquisitions for reducing impact of D-1641 and OMR Action export restrictions on SWP | |
| Phase 8 | None | | None | |

Notes:

[a] These assumptions have been developed under the direction of the Bureau of Reclamation (Reclamation) management team for the Re-initiation of Consultation on long-term operations of the Central Valley Project (CVP) and State Water Project (SWP).

[b] Footnote not used

[c] The Sacramento Valley hydrology used in the Future Conditions CALSIM II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation. Development of Future-level projected land-use are being coordinated with the California Water Plan Update for future models.

[d] Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[e] Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[f] Footnote not used

g Assumptions regarding American River water rights and CVP contracts with the Sacramento River Water Reliability Project are documented in the Delivery Specifications attachments. The Sacramento Area Water Forum agreement, its dry year diversion reductions, Middle Fork Project operations and water is not included. Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

h The CALSIM II representation of the San Joaquin River reflects the difficulties on-going groundwater overdraft problems. The 2030 level of development representation of the San Joaquin River Basin does not make any attempt to offer solutions to groundwater overdraft problems. In addition a dynamic groundwater simulation is not yet developed for the San Joaquin River Valley. Groundwater extraction/ recharge and stream-groundwater interaction are static assumptions and may not accurately reflect a response to simulated actions. These limitations should be considered in the analysis of results.

i Footnote not used

j The actual amount diverted is operated is conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 160 TAF. Associated water rights to fill Los Vaqueros with Delta excess flows are included, but CCWD's water right permit and water right license on Mallard Slough are not included.

k It is assumed that SWP Contractors can take delivery of all Table A allocations and Article 21 supplies. Article 56 provisions are assumed and allow for SWP Contractors to manage storage and delivery conditions such that full Table A allocations can be delivered. Detailed analysis of the South Coast and Tulare regions support these assumptions. NBA Article 21 deliveries are dependent on excess conditions only, all other Article 21 deliveries also require that San Luis Reservoir be at capacity and that Banks PP and the California Aqueduct has available capacity to divert from the Delta for direct delivery.

l PCWA American River pumping facility upstream of Folsom Lake is included.

m Footnote not used

n Mokelumne River flows are modified to reflect modified operations associated with EBMUD supplies from the Freeport Regional Water Project.

o Current ACOE permit for Banks PP allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis during Dec 15th – Mar 15th up to a maximum diversion of 10,300 cfs, if Vernalis flow exceeds 1,000 cfs.

p Footnote not used

q Delta actions, under USFWS discretionary use of CVPIA 3406(b)(2) allocations, are no longer dynamically operated and accounted for in the CALSIM II model. The Combined Old and Middle River Flow and Delta Export restrictions under the FWS BO (Dec 15th 2008) and the NMFS BO (June 4th 2009) severely limit any discretion that would have been otherwise assumed in selecting Delta actions under the CVPIA 3406(b)(2) accounting criteria. Therefore, it is anticipated that CVPIA 3406(b)(2) account availability for upstream river flows below Whiskeytown, Keswick and Nimbus Dams would be very limited. The future of these operations is uncertain. For these baseline simulations, upstream flows on the Clear Creek and Sacramento River are pre-determined based on CVPIA 3406(b)(2) based operations from the Aug 2008 BA Study 7.0 and Study 8.0 for Existing and Future Conditions respectively. The procedures for dynamic operation and accounting of CVPIA 3406(b)(2) are not included in the CALSIM II model.

r D-1644 and the Lower Yuba River Accord is assumed to be implemented . The Yuba River is not dynamically modeled in CALSIM II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and the Lower Yuba River Accord EIS/EIR study team.

s Footnote not used

t Footnote not used

u Footnote not used

v In cooperation with Reclamation, National Marine Fisheries Service, Fish and Wildlife Service, and Ca Department of Fish and Game, the Ca Department of Water Resources has developed assumptions for implementation of the FWS BO (Dec 15th 2008) and NMFS BO (June 4th 2009) in CALSIM II. The FWS BO and NMFS BO assumptions are documented in the Appendix 5A of the LTO EIS (Reclamation 2015b).

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.3 Revisions to DSM2 Model Assumptions Callouts

# Section F1.1.3

# Revised Alternative 1 Sensitivity Analysis Revisions to DSM2 Model Assumptions Callouts

## F1.1.3.1 Introduction

For Reclamation's ROC on LTO, a sensitivity analysis has been prepared with revised model simulations for the No Action Alternative and Alternative 1. See the CalSim II Model Assumptions Callouts for more information.

For DSM2 modeling, the No Action Alternative and Alternative 1 were updated to use CalSim II results to schedule operations of the Suisun Marsh Salinity Control Gate on Montezuma Slough.

## F1.1.3.2 DSM2 Modeling Assumptions Callouts

The following matrix summarizes the assumptions used for the DSM2 models:

- No Action Alternative 011319 (NAA)
- Revised No Action Alternative 093019 (NAA Revised)
- Alternative 1 011519 (ALT1)
- Revised Alternative 1 100419 (ALT1 Revised)

The No Action Alternative (NAA) and Alternative 1 (ALT1) columns are unchanged from the scenarios presented in the ROC on LTO DEIS. The revised No Action Alternative (NAA Revised) and revised Alternative 1 (ALT1 Revised) columns only specify the revisions included in the revised model simulations.

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| Period of simulation | 82 years (1922-2003)[a] | | Same as NAA | |
| BOUNDARY CONDITIONS | | | | |
| Boundary flows | Monthly timeseries from CalSim II output (alternatives provide different flows and exports)[c] | | Monthly timeseries from CalSim II output (alternatives provide different flows and exports)[c] | |
| Ag flows (DICU) | 2020 Level, DWR Bulletin 160-98[d] | | Same as NAA | |
| Martinez stage | 15-minute adjusted astronomical tide with 15 cm sea level rise[a] | | Same as NAA | |
| Vernalis EC | Monthly time series from CalSim II output[e] | | Same as NAA | |
| Agricultural Return EC | Municipal Water Quality Investigation Program analysis | | Same as NAA | |
| Martinez EC | Monthly net Delta Outflow from CalSim output & G-model[f] | | Same as NAA | |
| FACILITIES | | | | |
| Freeport Regional Water Project | Monthly output from CalSim II | | Same as NAA | |
| Delta Cross Channel | Monthly time series of number of days open from CalSim II output | | Monthly time series of number of days open from CalSim II output | |
| Stockton Delta Water Supply Project | Monthly output from CalSim II | | Same as NAA | |
| Delta Habitat Improvements | None | | None | |
| Franks Tract Program | None | | None | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| Veale Tract Drainage Relocation | The Veale Tract Water Quality Improvement Project, funded by CALFED, relocates the agricultural drainage outlet was relocated from Rock Slough channel to the southern end of Veale Tract, on Indian Slough[g] | | Same as NAA | |
| Clifton Court Forebay | Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels | | Same as NAA | |
| Contra Costa Water District Delta Intakes | Rock Slough Pumping Plant, Old River at Highway 4 Intake and Alternate Improvement Project Intake on Victoria Canal | | Same as NAA | |

| | **No Action Alternative (NAA)** | **Revisions to No Action Alternative (NAA Revised)** | **Alternative 1 (ALT1)** | **Revisions to Alternative 1 (ALT1 Revised)** |
|---|---|---|---|---|
| South Delta barriers | Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB installed[i] Sep 16 – Nov 30; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers[h]. | | Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB is not installed; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers[h]. | |
| Antioch Water Works | Monthly output from CalSim II | | Same as NAA | |
| Montezuma Slough Salinity Control Gates | Gate operations occur in October through February. Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps. Gates are open in March through September. | Based on monthly output from CalSim II; operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May | Model representation same as NAA. Gate operations occur in October through February, and June through September. Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps. Gates are open in March through May. | Based on monthly output from CalSim II; operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May; and for Summer/Fall Delta Smelt habitat operate for up to 60 days June through October of BN, AN, and Wet years |

Notes:

[a] A new adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Bay Delta Office Modeling Support Branch Delta Modeling Section in cooperation with the Common Assumptions workgroup. This tide is based on a more extensive observed dataset and covers the entire 82-year period of record. Martinez stage boundary condition is augmented by 15 cm based on equations used for Bay-Delta Conservation Plan to simulate expected sea level rise in 2030.

[b] Footnote not used

[c] Although monthly CalSim output was used as the DSM2-HYDRO input, the Sacramento and San Joaquin rivers were interpolated to daily values in order to smooth the transition from high to low and low to high flows. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.

[d] The Delta Island Consumptive Use (DICU) model is used to calculate diversions and return flows for all Delta islands based on the level of development assumed. The projected 2020 land-use assumptions are found in Bulletin 160-98.

[e] CalSim II calculates monthly EC for the San Joaquin River, which was then converted to daily EC using the monthly EC and flow for the San Joaquin River. Fixed concentrations of 150, 175, and 125 µmhos/cm were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.

[f] Net Delta outflow based on the CalSim II flows was used with an updated G-model to calculate Martinez EC. Under changed climate conditions Martinez EC is modified to account for the sea level rise at early (15 cm) and late (45 cm) long-term phases (Year 2060).

[g] Information was obtained based on the information from the draft final "Delta Region Drinking Water Quality Management Plan" dated June 2005 prepared under the CALFED Water Quality Program and a presentation by David Briggs at SWRCB public workshop for periodic review. The presentation "Compliance location at Contra Costa Canal at Pumping Plant #1 – Addressing Local Degradation" notes that the Veale Tract drainage relocation project will be operational in June 2005. The DICU drainage currently simulated at node 204 is moved to node 202 in DSM2.

[h] Based on the FWS Delta Smelt BO Action 5 and the project description provided in the page 119.

[i] Based on the FWS Delta Smelt BO Action 5, Head of Old River Barrier (HORB) is assumed to be not installed in April or May; therefore HORB is only installed in the Fall as shown.

[j] Based on tidal marsh restoration analysis conducted in Appendix 5A Section D Attachment 2 in the Bay Delta Conservation Plan Final EIR-EIS: Numerical Modeling in Support of Bay Delta Conservation Plan Technical Study #4 – Evaluation of Tidal Marsh Restoration Effects.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.1 Storage and Elevation Results (CalSim II)

The following results of the CalSim II model are included for reservoir storage conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Trinity Lake Storage | S1 | 1-1 to 1-4 | 1-1 to 1-18 |
| Trinity Lake Elevation | Post-processed | 1a-1 to 1a-4 | 1a-1 to 1a-18 |
| Shasta Lake Storage | S4 | 3-1 to 3-4 | 3-1 to 3-18 |
| Shasta Lake Elevation | Post-processed | 3a-1 to 3a-4 | 3a-1 to 3a-18 |
| Lake Oroville Storage | S6 | 4-1 to 4-4 | 4-1 to 4-18 |
| Lake Oroville Elevation | Post-processed | 4a-1 to 4a-4 | 4a-1 to 4a-18 |
| Folsom Lake Storage | S8 | 5-1 to 5-4 | 5-1 to 5-18 |
| Folsom Lake Elevation | Post-processed | 5a-1 to 5a-4 | 5a-1 to 5a-18 |
| San Luis Reservoir Storage | S11+S12 | 6-1 to 6-4 | 6-1 to 6-18 |
| San Luis Reservoir Elevation | Post-processed | 6a-1 to 6a-4 | 6a-1 to 6a-18 |
| CVP San Luis Reservoir Storage | S11 | 6b-1 to 6b-4 | 6b-1 to 6b-18 |
| SWP San Luis Reservoir Storage | S12 | 6c-1 to 6c-4 | 6c-1 to 6c-18 |
| New Melones Reservoir Storage | S10 | 7-1 to 7-4 | 7-1 to 7-18 |
| New Melones Reservoir Elevation | Post-processed | 7a-1 to 7a-4 | 7a-1 to 7a-18 |
| Millerton Lake Storage | S18 | 8-1 to 8-4 | 8-1 to 8-18 |
| Millerton Lake Elevation | Post-processed | 8a-1 to 8a-4 | 8a-1 to 8a-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 1-1. Trinity Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,839 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,314 | 2,261 | 2,130 | 1,934 |
| 20% | 1,804 | 1,749 | 1,809 | 1,885 | 2,000 | 2,100 | 2,270 | 2,282 | 2,221 | 2,094 | 1,964 | 1,855 |
| 30% | 1,510 | 1,551 | 1,656 | 1,765 | 1,950 | 2,096 | 2,226 | 2,163 | 2,059 | 1,914 | 1,759 | 1,600 |
| 40% | 1,430 | 1,445 | 1,537 | 1,668 | 1,775 | 2,011 | 2,151 | 2,080 | 1,960 | 1,806 | 1,619 | 1,437 |
| 50% | 1,245 | 1,275 | 1,391 | 1,529 | 1,684 | 1,782 | 1,942 | 1,881 | 1,795 | 1,652 | 1,479 | 1,336 |
| 60% | 1,169 | 1,185 | 1,274 | 1,345 | 1,529 | 1,667 | 1,802 | 1,724 | 1,657 | 1,506 | 1,337 | 1,224 |
| 70% | 1,072 | 1,078 | 1,134 | 1,205 | 1,285 | 1,432 | 1,580 | 1,597 | 1,479 | 1,395 | 1,229 | 1,097 |
| 80% | 901 | 945 | 983 | 1,005 | 1,122 | 1,276 | 1,443 | 1,383 | 1,328 | 1,176 | 1,024 | 924 |
| 90% | 655 | 666 | 668 | 697 | 828 | 922 | 1,018 | 978 | 924 | 854 | 755 | 673 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,264 | 1,271 | 1,334 | 1,415 | 1,543 | 1,670 | 1,815 | 1,792 | 1,728 | 1,602 | 1,455 | 1,319 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,696 | 1,681 | 1,698 | 1,769 | 1,937 | 2,063 | 2,233 | 2,257 | 2,203 | 2,091 | 1,958 | 1,791 |
| Above Normal (16%) | 1,477 | 1,467 | 1,507 | 1,511 | 1,723 | 1,908 | 2,094 | 2,068 | 1,981 | 1,852 | 1,686 | 1,534 |
| Below Normal (13%) | 1,171 | 1,185 | 1,262 | 1,496 | 1,584 | 1,687 | 1,844 | 1,769 | 1,677 | 1,521 | 1,346 | 1,203 |
| Dry (24%) | 1,029 | 1,070 | 1,213 | 1,208 | 1,302 | 1,434 | 1,571 | 1,523 | 1,454 | 1,304 | 1,158 | 1,050 |
| Critical (15%) | 579 | 586 | 627 | 817 | 859 | 941 | 990 | 955 | 929 | 842 | 711 | 621 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,850 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,314 | 2,261 | 2,130 | 1,975 |
| 20% | 1,836 | 1,844 | 1,850 | 1,900 | 2,000 | 2,100 | 2,272 | 2,281 | 2,233 | 2,099 | 1,981 | 1,902 |
| 30% | 1,574 | 1,613 | 1,713 | 1,820 | 1,991 | 2,100 | 2,238 | 2,179 | 2,083 | 1,938 | 1,777 | 1,622 |
| 40% | 1,429 | 1,484 | 1,617 | 1,718 | 1,861 | 2,045 | 2,172 | 2,104 | 1,971 | 1,813 | 1,638 | 1,457 |
| 50% | 1,314 | 1,334 | 1,461 | 1,653 | 1,744 | 1,869 | 2,034 | 1,933 | 1,840 | 1,667 | 1,482 | 1,356 |
| 60% | 1,238 | 1,243 | 1,323 | 1,427 | 1,545 | 1,740 | 1,842 | 1,822 | 1,735 | 1,578 | 1,397 | 1,283 |
| 70% | 1,128 | 1,160 | 1,236 | 1,295 | 1,405 | 1,543 | 1,642 | 1,630 | 1,613 | 1,433 | 1,264 | 1,137 |
| 80% | 971 | 1,007 | 1,012 | 1,058 | 1,166 | 1,361 | 1,547 | 1,476 | 1,386 | 1,261 | 1,111 | 1,000 |
| 90% | 683 | 703 | 754 | 780 | 834 | 921 | 1,071 | 1,047 | 1,005 | 906 | 781 | 684 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,304 | 1,322 | 1,384 | 1,463 | 1,587 | 1,710 | 1,856 | 1,833 | 1,767 | 1,631 | 1,479 | 1,354 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,727 | 1,742 | 1,758 | 1,781 | 1,950 | 2,071 | 2,245 | 2,269 | 2,213 | 2,097 | 1,960 | 1,821 |
| Above Normal (16%) | 1,508 | 1,528 | 1,570 | 1,554 | 1,747 | 1,925 | 2,111 | 2,085 | 1,990 | 1,851 | 1,685 | 1,540 |
| Below Normal (13%) | 1,206 | 1,213 | 1,288 | 1,571 | 1,659 | 1,746 | 1,901 | 1,824 | 1,720 | 1,561 | 1,377 | 1,245 |
| Dry (24%) | 1,090 | 1,124 | 1,266 | 1,276 | 1,369 | 1,502 | 1,639 | 1,590 | 1,534 | 1,375 | 1,222 | 1,112 |
| Critical (15%) | 615 | 617 | 658 | 885 | 928 | 1,008 | 1,059 | 1,024 | 992 | 871 | 734 | 640 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| 20% | 32 | 95 | 41 | 15 | 0 | 0 | 3 | -1 | 12 | 5 | 18 | 47 |
| 30% | 64 | 62 | 58 | 55 | 41 | 4 | 12 | 16 | 24 | 24 | 18 | 22 |
| 40% | -1 | 39 | 79 | 50 | 86 | 34 | 21 | 25 | 12 | 7 | 18 | 20 |
| 50% | 69 | 59 | 70 | 124 | 60 | 87 | 92 | 52 | 45 | 14 | 3 | 20 |
| 60% | 70 | 58 | 49 | 82 | 16 | 72 | 41 | 98 | 79 | 71 | 60 | 59 |
| 70% | 57 | 82 | 103 | 90 | 120 | 111 | 62 | 33 | 134 | 38 | 35 | 40 |
| 80% | 70 | 62 | 29 | 53 | 44 | 85 | 105 | 93 | 58 | 85 | 87 | 76 |
| 90% | 28 | 37 | 86 | 83 | 6 | 0 | 53 | 69 | 81 | 52 | 26 | 11 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 40 | 51 | 50 | 48 | 45 | 40 | 41 | 40 | 39 | 29 | 24 | 34 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 31 | 61 | 60 | 12 | 13 | 8 | 12 | 12 | 10 | 6 | 2 | 31 |
| Above Normal (16%) | 31 | 61 | 63 | 44 | 25 | 17 | 17 | 17 | 9 | 0 | -1 | 5 |
| Below Normal (13%) | 35 | 28 | 26 | 75 | 75 | 59 | 57 | 55 | 43 | 40 | 30 | 43 |
| Dry (24%) | 61 | 54 | 53 | 68 | 68 | 69 | 68 | 67 | 80 | 71 | 65 | 62 |
| Critical (15%) | 36 | 31 | 31 | 68 | 69 | 67 | 69 | 69 | 63 | 29 | 24 | 19 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-2. Trinity Lake Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,833 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,299 | 2,248 | 2,127 | 1,920 |
| 20% | 1,775 | 1,749 | 1,805 | 1,871 | 2,000 | 2,100 | 2,270 | 2,281 | 2,212 | 2,093 | 1,958 | 1,854 |
| 30% | 1,506 | 1,545 | 1,653 | 1,749 | 1,945 | 2,092 | 2,222 | 2,163 | 2,059 | 1,914 | 1,759 | 1,597 |
| 40% | 1,410 | 1,407 | 1,529 | 1,668 | 1,764 | 1,998 | 2,141 | 2,070 | 1,944 | 1,796 | 1,580 | 1,422 |
| 50% | 1,254 | 1,262 | 1,380 | 1,512 | 1,674 | 1,781 | 1,910 | 1,859 | 1,775 | 1,642 | 1,469 | 1,338 |
| 60% | 1,171 | 1,182 | 1,264 | 1,322 | 1,520 | 1,663 | 1,796 | 1,718 | 1,650 | 1,498 | 1,323 | 1,203 |
| 70% | 1,053 | 1,063 | 1,148 | 1,193 | 1,277 | 1,417 | 1,559 | 1,591 | 1,488 | 1,390 | 1,236 | 1,098 |
| 80% | 880 | 921 | 982 | 1,002 | 1,123 | 1,254 | 1,405 | 1,365 | 1,284 | 1,125 | 1,008 | 911 |
| 90% | 654 | 652 | 657 | 687 | 830 | 925 | 1,005 | 977 | 925 | 853 | 754 | 672 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,257 | 1,263 | 1,325 | 1,406 | 1,534 | 1,663 | 1,807 | 1,784 | 1,720 | 1,591 | 1,443 | 1,310 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,690 | 1,675 | 1,691 | 1,761 | 1,931 | 2,059 | 2,229 | 2,254 | 2,200 | 2,087 | 1,954 | 1,787 |
| Above Normal (16%) | 1,465 | 1,452 | 1,494 | 1,501 | 1,712 | 1,898 | 2,084 | 2,058 | 1,971 | 1,842 | 1,673 | 1,527 |
| Below Normal (13%) | 1,159 | 1,173 | 1,250 | 1,485 | 1,573 | 1,680 | 1,837 | 1,762 | 1,668 | 1,508 | 1,333 | 1,189 |
| Dry (24%) | 1,024 | 1,065 | 1,208 | 1,195 | 1,289 | 1,421 | 1,559 | 1,511 | 1,442 | 1,292 | 1,151 | 1,043 |
| Critical (15%) | 568 | 576 | 616 | 812 | 854 | 934 | 978 | 944 | 918 | 817 | 679 | 600 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,850 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,351 | 2,314 | 2,243 | 2,130 | 1,975 |
| 20% | 1,816 | 1,843 | 1,850 | 1,900 | 2,000 | 2,100 | 2,270 | 2,281 | 2,205 | 2,094 | 1,995 | 1,870 |
| 30% | 1,572 | 1,610 | 1,707 | 1,789 | 1,989 | 2,096 | 2,232 | 2,189 | 2,086 | 1,957 | 1,784 | 1,617 |
| 40% | 1,421 | 1,455 | 1,595 | 1,717 | 1,854 | 2,032 | 2,167 | 2,097 | 2,003 | 1,791 | 1,602 | 1,454 |
| 50% | 1,298 | 1,309 | 1,436 | 1,595 | 1,704 | 1,823 | 1,985 | 1,891 | 1,780 | 1,647 | 1,452 | 1,328 |
| 60% | 1,196 | 1,223 | 1,300 | 1,315 | 1,521 | 1,707 | 1,814 | 1,811 | 1,679 | 1,503 | 1,351 | 1,247 |
| 70% | 1,112 | 1,132 | 1,211 | 1,240 | 1,378 | 1,478 | 1,613 | 1,621 | 1,574 | 1,412 | 1,231 | 1,118 |
| 80% | 939 | 978 | 989 | 1,046 | 1,154 | 1,315 | 1,487 | 1,461 | 1,365 | 1,216 | 1,054 | 959 |
| 90% | 689 | 699 | 732 | 763 | 811 | 915 | 1,068 | 1,045 | 1,013 | 913 | 788 | 691 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,287 | 1,306 | 1,369 | 1,444 | 1,568 | 1,692 | 1,837 | 1,813 | 1,745 | 1,613 | 1,462 | 1,340 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,716 | 1,735 | 1,754 | 1,777 | 1,946 | 2,066 | 2,237 | 2,261 | 2,203 | 2,089 | 1,951 | 1,812 |
| Above Normal (16%) | 1,485 | 1,506 | 1,546 | 1,545 | 1,739 | 1,922 | 2,108 | 2,082 | 1,984 | 1,846 | 1,674 | 1,526 |
| Below Normal (13%) | 1,205 | 1,210 | 1,286 | 1,556 | 1,642 | 1,731 | 1,888 | 1,811 | 1,715 | 1,543 | 1,366 | 1,242 |
| Dry (24%) | 1,058 | 1,099 | 1,240 | 1,246 | 1,339 | 1,472 | 1,608 | 1,559 | 1,492 | 1,346 | 1,192 | 1,083 |
| Critical (15%) | 596 | 592 | 632 | 838 | 880 | 961 | 1,010 | 974 | 945 | 841 | 709 | 630 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 17 | 0 | 0 | 0 | 0 | 0 | -3 | 15 | -5 | 3 | 55 |
| 20% | 40 | 94 | 45 | 29 | 0 | 0 | 0 | 0 | -6 | 1 | 37 | 16 |
| 30% | 66 | 66 | 54 | 40 | 44 | 3 | 11 | 26 | 26 | 43 | 25 | 20 |
| 40% | 11 | 48 | 66 | 50 | 90 | 34 | 27 | 27 | 59 | -5 | 22 | 31 |
| 50% | 44 | 47 | 56 | 83 | 29 | 42 | 75 | 32 | 5 | 5 | -16 | -10 |
| 60% | 25 | 42 | 36 | -7 | 1 | 43 | 18 | 93 | 29 | 5 | 28 | 44 |
| 70% | 58 | 68 | 63 | 47 | 101 | 61 | 54 | 30 | 86 | 21 | -5 | 20 |
| 80% | 59 | 57 | 7 | 44 | 31 | 61 | 82 | 96 | 81 | 91 | 46 | 47 |
| 90% | 35 | 47 | 74 | 76 | -19 | -10 | 63 | 68 | 88 | 60 | 34 | 19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 30 | 43 | 43 | 38 | 34 | 29 | 30 | 29 | 26 | 23 | 18 | 29 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 26 | 60 | 63 | 16 | 15 | 7 | 8 | 7 | 4 | 2 | -2 | 24 |
| Above Normal (16%) | 19 | 54 | 51 | 44 | 27 | 24 | 24 | 24 | 12 | 3 | 1 | -1 |
| Below Normal (13%) | 46 | 37 | 36 | 71 | 69 | 51 | 51 | 49 | 47 | 35 | 34 | 54 |
| Dry (24%) | 35 | 33 | 33 | 51 | 50 | 50 | 49 | 48 | 50 | 54 | 42 | 41 |
| Critical (15%) | 28 | 15 | 16 | 26 | 26 | 27 | 32 | 31 | 27 | 25 | 30 | 31 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-3. Trinity Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,839 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,314 | 2,261 | 2,130 | 1,934 |
| 20% | 1,804 | 1,749 | 1,809 | 1,885 | 2,000 | 2,100 | 2,270 | 2,282 | 2,221 | 2,094 | 1,964 | 1,855 |
| 30% | 1,510 | 1,551 | 1,656 | 1,765 | 1,950 | 2,096 | 2,226 | 2,163 | 2,059 | 1,914 | 1,759 | 1,600 |
| 40% | 1,430 | 1,445 | 1,537 | 1,668 | 1,775 | 2,011 | 2,151 | 2,080 | 1,960 | 1,806 | 1,619 | 1,437 |
| 50% | 1,245 | 1,275 | 1,391 | 1,529 | 1,684 | 1,782 | 1,942 | 1,881 | 1,795 | 1,652 | 1,479 | 1,336 |
| 60% | 1,169 | 1,185 | 1,274 | 1,345 | 1,529 | 1,667 | 1,802 | 1,724 | 1,657 | 1,506 | 1,337 | 1,224 |
| 70% | 1,072 | 1,078 | 1,134 | 1,205 | 1,285 | 1,432 | 1,580 | 1,597 | 1,479 | 1,395 | 1,229 | 1,097 |
| 80% | 901 | 945 | 983 | 1,005 | 1,122 | 1,276 | 1,443 | 1,383 | 1,328 | 1,176 | 1,024 | 924 |
| 90% | 655 | 666 | 668 | 697 | 828 | 922 | 1,018 | 978 | 924 | 854 | 755 | 673 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,264 | 1,271 | 1,334 | 1,415 | 1,543 | 1,670 | 1,815 | 1,792 | 1,728 | 1,602 | 1,455 | 1,319 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,696 | 1,681 | 1,698 | 1,769 | 1,937 | 2,063 | 2,233 | 2,257 | 2,203 | 2,091 | 1,958 | 1,791 |
| Above Normal (16%) | 1,477 | 1,467 | 1,507 | 1,511 | 1,723 | 1,908 | 2,094 | 2,068 | 1,981 | 1,852 | 1,686 | 1,534 |
| Below Normal (13%) | 1,171 | 1,185 | 1,262 | 1,496 | 1,584 | 1,687 | 1,844 | 1,769 | 1,677 | 1,521 | 1,346 | 1,203 |
| Dry (24%) | 1,029 | 1,070 | 1,213 | 1,208 | 1,302 | 1,434 | 1,571 | 1,523 | 1,454 | 1,304 | 1,158 | 1,050 |
| Critical (15%) | 579 | 586 | 627 | 817 | 859 | 941 | 990 | 955 | 929 | 842 | 711 | 621 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,833 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,299 | 2,248 | 2,127 | 1,920 |
| 20% | 1,775 | 1,749 | 1,805 | 1,871 | 2,000 | 2,100 | 2,270 | 2,281 | 2,212 | 2,093 | 1,958 | 1,854 |
| 30% | 1,506 | 1,545 | 1,653 | 1,749 | 1,945 | 2,092 | 2,222 | 2,163 | 2,059 | 1,914 | 1,759 | 1,597 |
| 40% | 1,410 | 1,407 | 1,529 | 1,668 | 1,764 | 1,998 | 2,141 | 2,070 | 1,944 | 1,796 | 1,580 | 1,422 |
| 50% | 1,254 | 1,262 | 1,380 | 1,512 | 1,674 | 1,781 | 1,910 | 1,859 | 1,775 | 1,642 | 1,469 | 1,338 |
| 60% | 1,171 | 1,182 | 1,264 | 1,322 | 1,520 | 1,663 | 1,796 | 1,718 | 1,650 | 1,498 | 1,323 | 1,203 |
| 70% | 1,053 | 1,063 | 1,148 | 1,193 | 1,277 | 1,417 | 1,559 | 1,591 | 1,488 | 1,390 | 1,236 | 1,098 |
| 80% | 880 | 921 | 982 | 1,002 | 1,123 | 1,254 | 1,405 | 1,365 | 1,284 | 1,125 | 1,008 | 911 |
| 90% | 654 | 652 | 657 | 687 | 830 | 925 | 1,005 | 977 | 925 | 853 | 754 | 672 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,257 | 1,263 | 1,325 | 1,406 | 1,534 | 1,663 | 1,807 | 1,784 | 1,720 | 1,591 | 1,443 | 1,310 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,690 | 1,675 | 1,691 | 1,761 | 1,931 | 2,059 | 2,229 | 2,254 | 2,200 | 2,087 | 1,954 | 1,787 |
| Above Normal (16%) | 1,465 | 1,452 | 1,494 | 1,501 | 1,712 | 1,898 | 2,084 | 2,058 | 1,971 | 1,842 | 1,673 | 1,527 |
| Below Normal (13%) | 1,159 | 1,173 | 1,250 | 1,485 | 1,573 | 1,680 | 1,837 | 1,762 | 1,668 | 1,508 | 1,333 | 1,189 |
| Dry (24%) | 1,024 | 1,065 | 1,208 | 1,195 | 1,289 | 1,421 | 1,559 | 1,511 | 1,442 | 1,292 | 1,151 | 1,043 |
| Critical (15%) | 568 | 576 | 616 | 812 | 854 | 934 | 978 | 944 | 918 | 817 | 679 | 600 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -6 | 0 | 0 | 0 | 0 | 0 | 0 | -15 | -12 | -4 | -14 |
| 20% | -29 | 0 | -4 | -14 | 0 | 0 | 0 | -1 | -9 | 0 | -6 | -2 |
| 30% | -4 | -6 | -3 | -15 | -5 | -3 | -4 | 0 | 0 | 0 | 0 | -3 |
| 40% | -21 | -38 | -8 | 0 | -11 | -13 | -11 | -10 | -15 | -10 | -39 | -14 |
| 50% | 9 | -13 | -11 | -18 | -10 | -1 | -32 | -22 | -20 | -11 | -11 | 2 |
| 60% | 3 | -3 | -10 | -22 | -9 | -4 | -6 | -7 | -7 | -8 | -14 | -21 |
| 70% | -18 | -15 | 14 | -12 | -8 | -16 | -21 | -6 | 8 | -4 | 7 | 1 |
| 80% | -22 | -24 | -1 | -4 | 1 | -22 | -37 | -18 | -44 | -51 | -16 | -13 |
| 90% | -1 | -13 | -10 | -11 | 2 | 4 | -13 | -1 | 1 | -1 | -1 | -1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -8 | -8 | -9 | -9 | -9 | -8 | -8 | -8 | -9 | -11 | -12 | -9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -5 | -6 | -8 | -8 | -5 | -4 | -4 | -4 | -4 | -4 | -4 | -4 |
| Above Normal (16%) | -12 | -15 | -12 | -10 | -11 | -10 | -10 | -10 | -10 | -9 | -13 | -7 |
| Below Normal (13%) | -11 | -11 | -12 | -11 | -11 | -7 | -7 | -7 | -9 | -13 | -13 | -14 |
| Dry (24%) | -5 | -5 | -5 | -13 | -13 | -12 | -12 | -12 | -12 | -13 | -7 | -7 |
| Critical (15%) | -11 | -10 | -11 | -5 | -5 | -7 | -12 | -11 | -11 | -26 | -32 | -22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-4. Trinity Lake Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,850 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,354 | 2,314 | 2,261 | 2,130 | 1,975 |
| 20% | 1,836 | 1,844 | 1,850 | 1,900 | 2,000 | 2,100 | 2,272 | 2,281 | 2,233 | 2,099 | 1,981 | 1,902 |
| 30% | 1,574 | 1,613 | 1,713 | 1,820 | 1,991 | 2,100 | 2,238 | 2,179 | 2,083 | 1,938 | 1,777 | 1,622 |
| 40% | 1,429 | 1,484 | 1,617 | 1,718 | 1,861 | 2,045 | 2,172 | 2,104 | 1,971 | 1,813 | 1,638 | 1,457 |
| 50% | 1,314 | 1,334 | 1,461 | 1,653 | 1,744 | 1,869 | 2,034 | 1,933 | 1,840 | 1,667 | 1,482 | 1,356 |
| 60% | 1,238 | 1,243 | 1,323 | 1,427 | 1,545 | 1,740 | 1,842 | 1,822 | 1,735 | 1,578 | 1,397 | 1,283 |
| 70% | 1,128 | 1,160 | 1,236 | 1,295 | 1,405 | 1,543 | 1,642 | 1,630 | 1,613 | 1,433 | 1,264 | 1,137 |
| 80% | 971 | 1,007 | 1,012 | 1,058 | 1,166 | 1,361 | 1,547 | 1,476 | 1,386 | 1,261 | 1,111 | 1,000 |
| 90% | 683 | 703 | 754 | 780 | 834 | 921 | 1,071 | 1,047 | 1,005 | 906 | 781 | 684 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,304 | 1,322 | 1,384 | 1,463 | 1,587 | 1,710 | 1,856 | 1,833 | 1,767 | 1,631 | 1,479 | 1,354 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,727 | 1,742 | 1,758 | 1,781 | 1,950 | 2,071 | 2,245 | 2,269 | 2,213 | 2,097 | 1,960 | 1,821 |
| Above Normal (16%) | 1,508 | 1,528 | 1,570 | 1,554 | 1,747 | 1,925 | 2,111 | 2,085 | 1,990 | 1,851 | 1,685 | 1,540 |
| Below Normal (13%) | 1,206 | 1,213 | 1,288 | 1,571 | 1,659 | 1,746 | 1,901 | 1,824 | 1,720 | 1,561 | 1,377 | 1,245 |
| Dry (24%) | 1,090 | 1,124 | 1,266 | 1,276 | 1,369 | 1,502 | 1,639 | 1,590 | 1,534 | 1,375 | 1,222 | 1,112 |
| Critical (15%) | 615 | 617 | 658 | 885 | 928 | 1,008 | 1,059 | 1,024 | 992 | 871 | 734 | 640 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,850 | 1,850 | 1,850 | 1,900 | 2,000 | 2,100 | 2,300 | 2,351 | 2,314 | 2,243 | 2,130 | 1,975 |
| 20% | 1,816 | 1,843 | 1,850 | 1,900 | 2,000 | 2,100 | 2,270 | 2,281 | 2,205 | 2,094 | 1,995 | 1,870 |
| 30% | 1,572 | 1,610 | 1,707 | 1,789 | 1,989 | 2,096 | 2,232 | 2,189 | 2,086 | 1,957 | 1,784 | 1,617 |
| 40% | 1,421 | 1,455 | 1,595 | 1,717 | 1,854 | 2,032 | 2,167 | 2,097 | 2,003 | 1,791 | 1,602 | 1,454 |
| 50% | 1,298 | 1,309 | 1,436 | 1,595 | 1,704 | 1,823 | 1,985 | 1,891 | 1,780 | 1,647 | 1,452 | 1,328 |
| 60% | 1,196 | 1,223 | 1,300 | 1,315 | 1,521 | 1,707 | 1,814 | 1,811 | 1,679 | 1,503 | 1,351 | 1,247 |
| 70% | 1,112 | 1,132 | 1,211 | 1,240 | 1,378 | 1,478 | 1,613 | 1,621 | 1,574 | 1,412 | 1,231 | 1,118 |
| 80% | 939 | 978 | 989 | 1,046 | 1,154 | 1,315 | 1,487 | 1,461 | 1,365 | 1,216 | 1,054 | 959 |
| 90% | 689 | 699 | 732 | 763 | 811 | 915 | 1,068 | 1,045 | 1,013 | 913 | 788 | 691 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,287 | 1,306 | 1,369 | 1,444 | 1,568 | 1,692 | 1,837 | 1,813 | 1,745 | 1,613 | 1,462 | 1,340 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,716 | 1,735 | 1,754 | 1,777 | 1,946 | 2,066 | 2,237 | 2,261 | 2,203 | 2,089 | 1,951 | 1,812 |
| Above Normal (16%) | 1,485 | 1,506 | 1,546 | 1,545 | 1,739 | 1,922 | 2,108 | 2,082 | 1,984 | 1,846 | 1,674 | 1,526 |
| Below Normal (13%) | 1,205 | 1,210 | 1,286 | 1,556 | 1,642 | 1,731 | 1,888 | 1,811 | 1,715 | 1,543 | 1,366 | 1,242 |
| Dry (24%) | 1,058 | 1,099 | 1,240 | 1,246 | 1,339 | 1,472 | 1,608 | 1,559 | 1,492 | 1,346 | 1,192 | 1,083 |
| Critical (15%) | 596 | 592 | 632 | 838 | 880 | 961 | 1,010 | 974 | 945 | 841 | 709 | 630 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | 0 | -18 | -1 | 0 |
| 20% | -20 | -1 | 0 | 0 | 0 | 0 | -3 | 0 | -28 | -5 | 14 | -33 |
| 30% | -2 | -2 | -7 | -31 | -2 | -4 | -5 | 11 | 2 | 19 | 7 | -5 |
| 40% | -8 | -29 | -22 | -1 | -7 | -13 | -5 | -7 | 32 | -22 | -36 | -3 |
| 50% | -16 | -25 | -25 | -59 | -41 | -46 | -49 | -42 | -60 | -20 | -30 | -28 |
| 60% | -42 | -19 | -23 | -111 | -24 | -33 | -28 | -11 | -57 | -75 | -45 | -36 |
| 70% | -17 | -29 | -25 | -55 | -27 | -65 | -28 | -9 | -40 | -21 | -33 | -19 |
| 80% | -32 | -29 | -23 | -12 | -13 | -46 | -60 | -15 | -21 | -45 | -57 | -41 |
| 90% | 7 | -3 | -22 | -18 | -23 | -7 | -3 | -3 | 8 | 7 | 7 | 7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -17 | -16 | -15 | -19 | -19 | -18 | -19 | -20 | -22 | -17 | -17 | -14 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -10 | -7 | -5 | -4 | -3 | -4 | -8 | -8 | -10 | -8 | -9 | -10 |
| Above Normal (16%) | -24 | -22 | -24 | -10 | -9 | -3 | -3 | -3 | -7 | -5 | -11 | -14 |
| Below Normal (13%) | 0 | -3 | -1 | -15 | -17 | -16 | -13 | -13 | -5 | -19 | -10 | -3 |
| Dry (24%) | -31 | -26 | -25 | -30 | -30 | -31 | -31 | -31 | -42 | -30 | -30 | -28 |
| Critical (15%) | -19 | -26 | -26 | -47 | -48 | -47 | -49 | -50 | -46 | -30 | -26 | -10 |

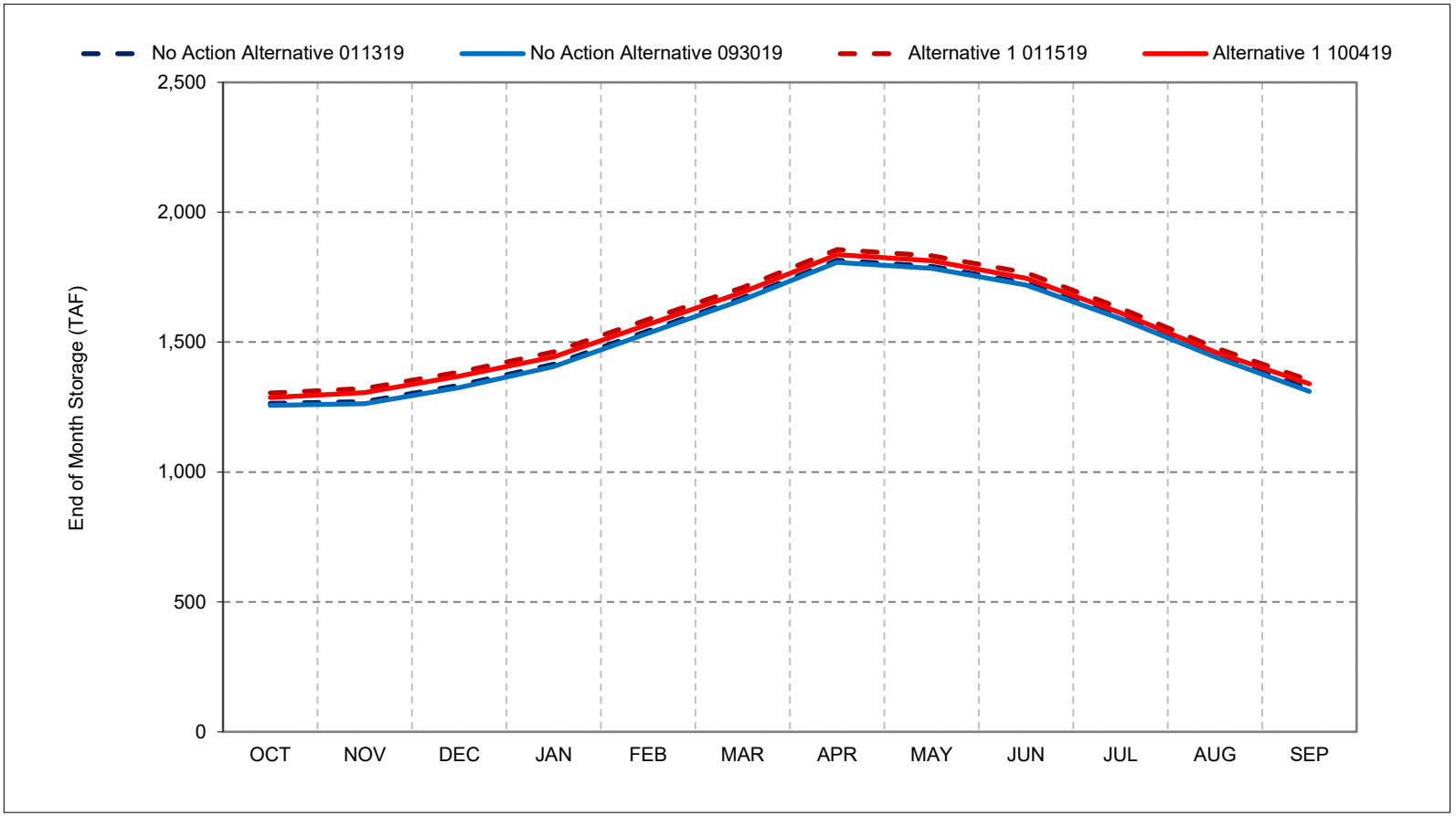
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-1. Trinity Lake Storage, Long-Term Average Storage

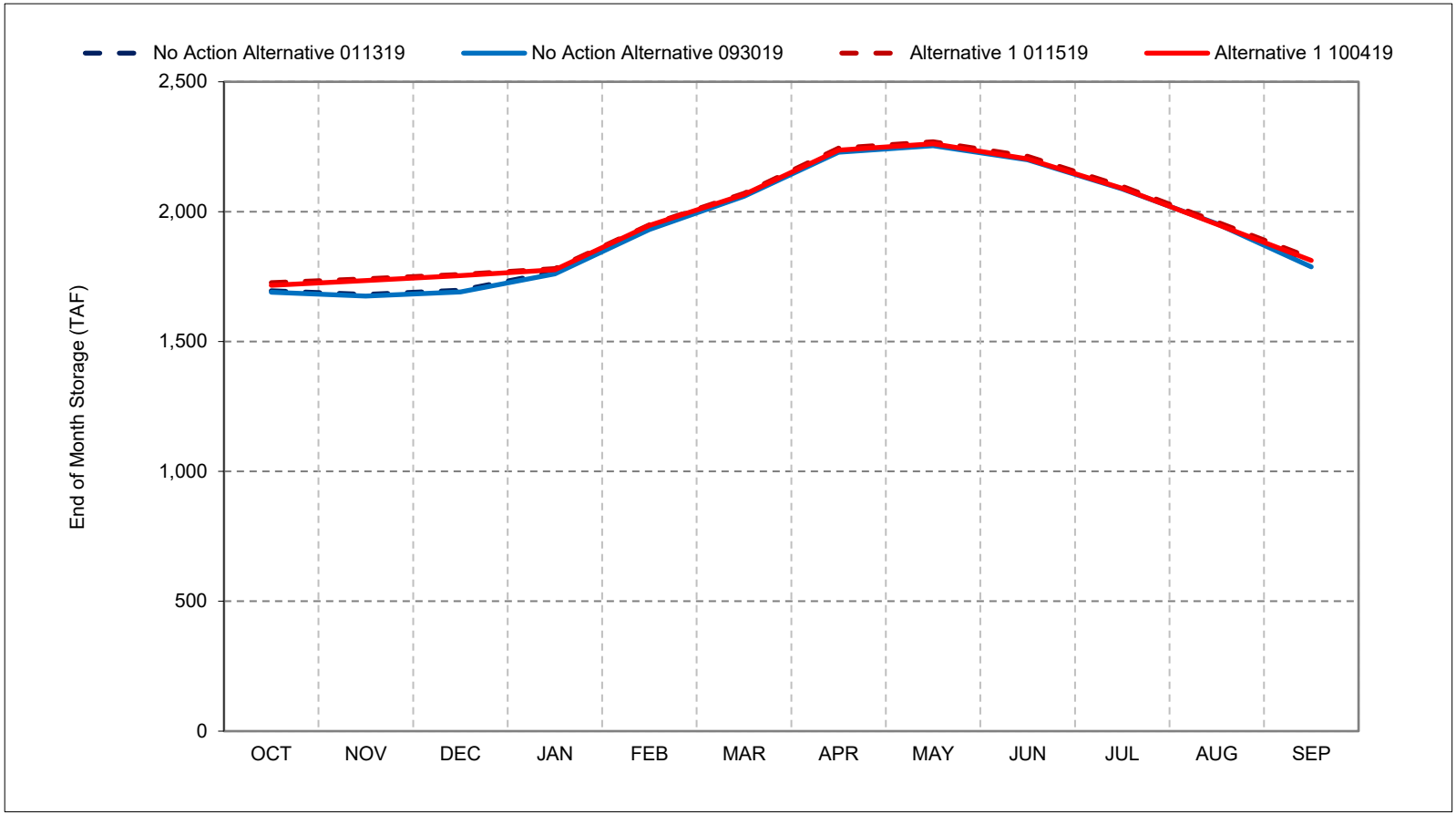



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-2. Trinity Lake Storage, Wet Year Average Storage

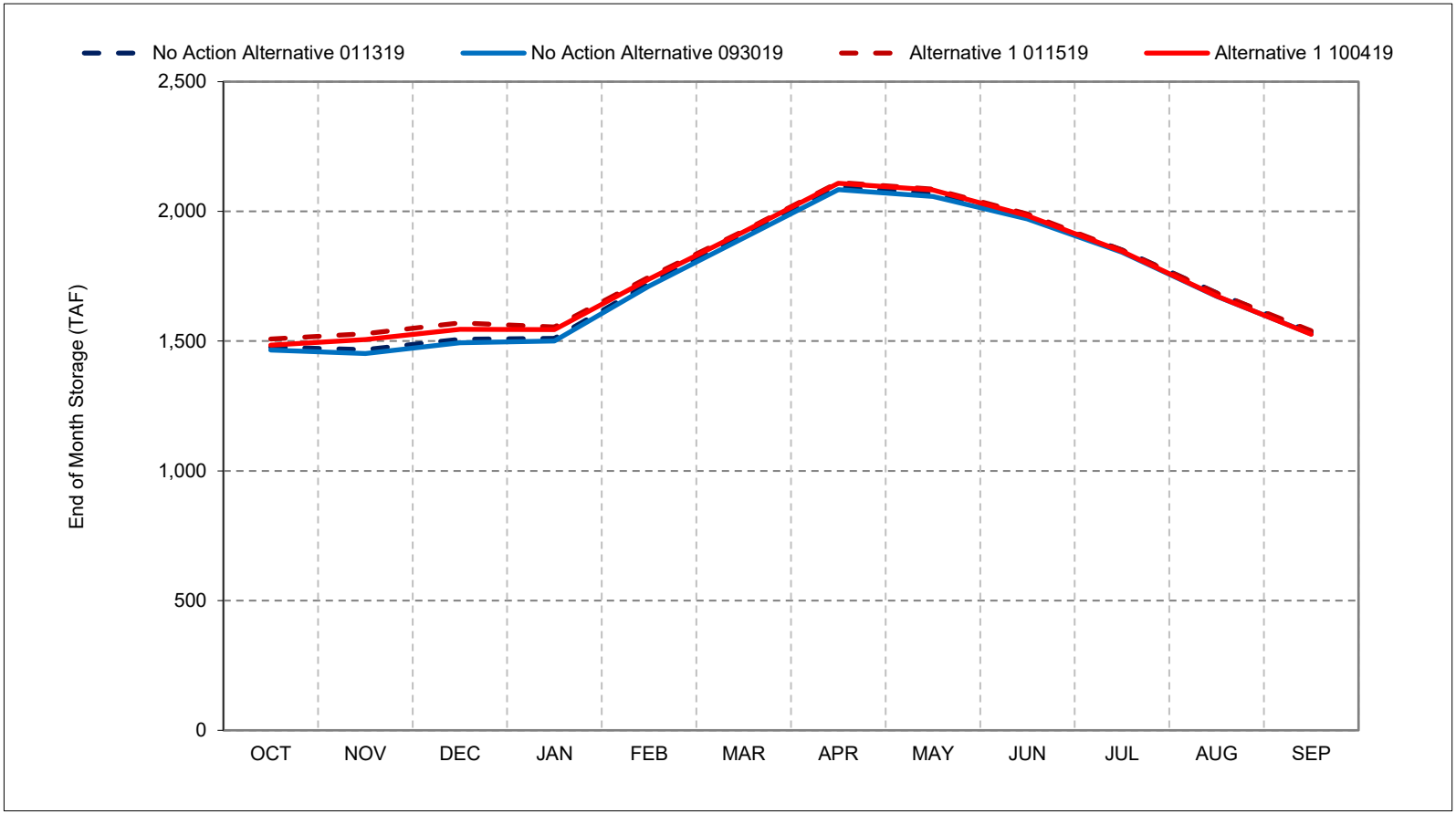



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-3. Trinity Lake Storage, Above Normal Year Average Storage

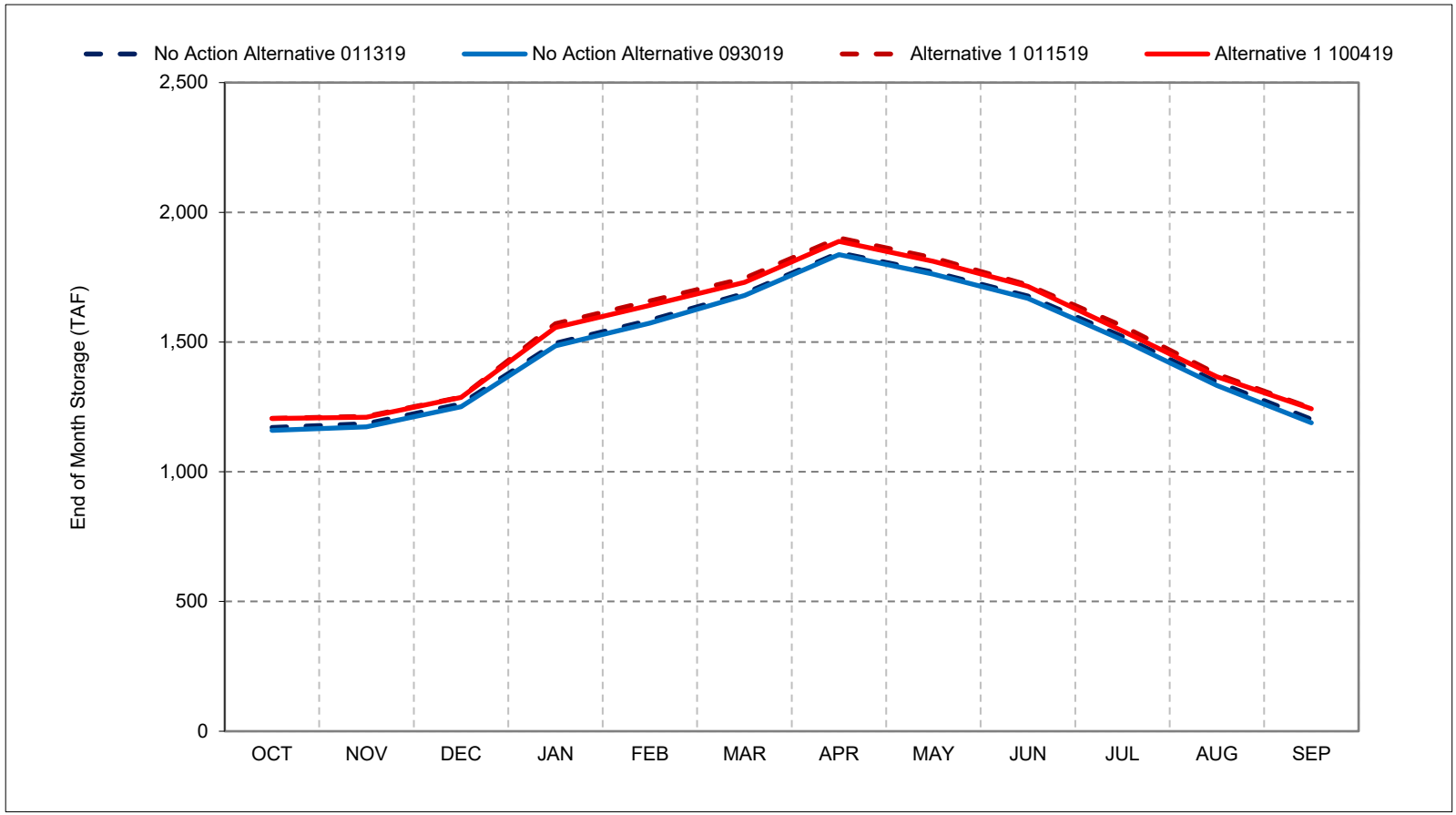



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-4. Trinity Lake Storage, Below Normal Year Average Storage

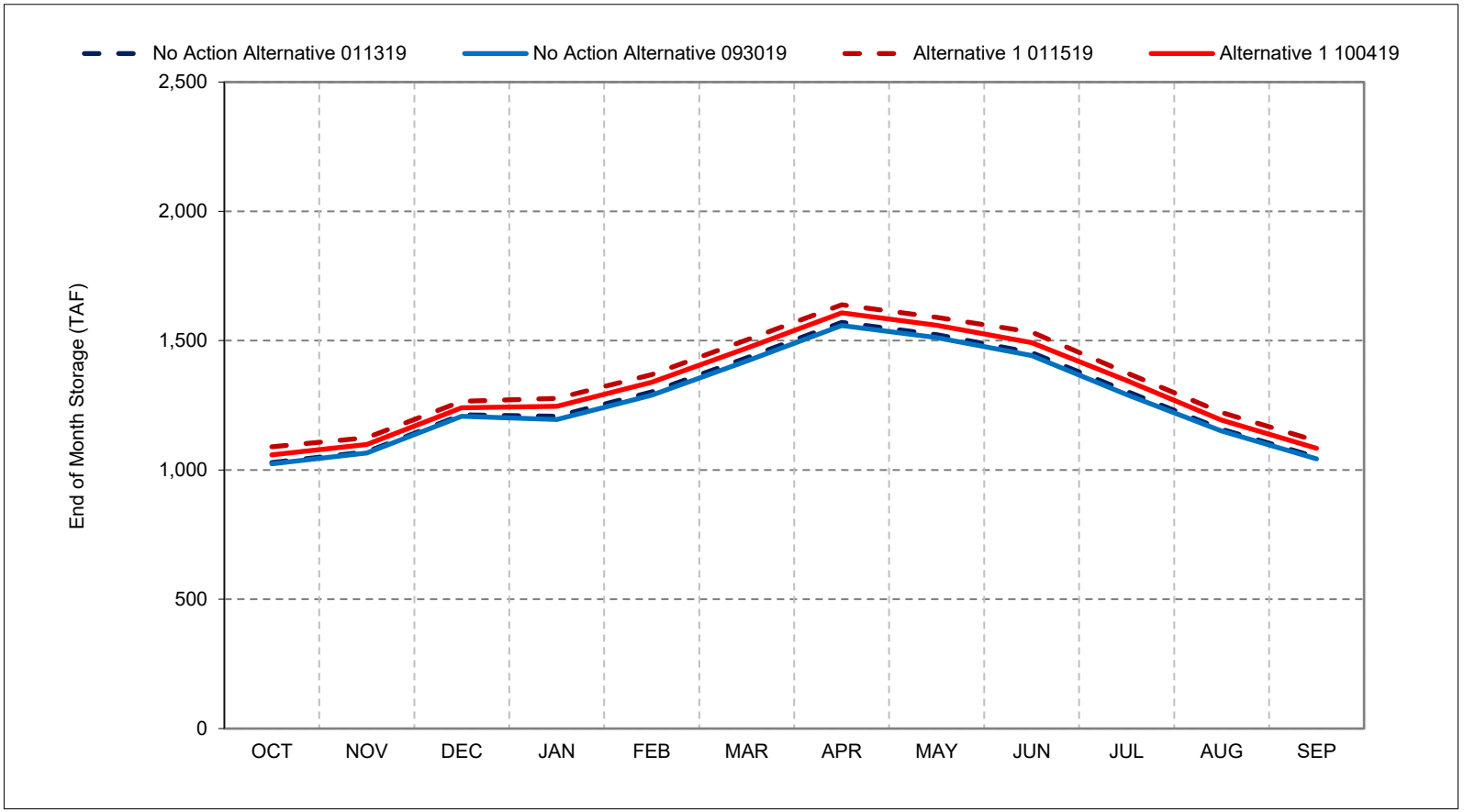



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-5. Trinity Lake Storage, Dry Year Average Storage

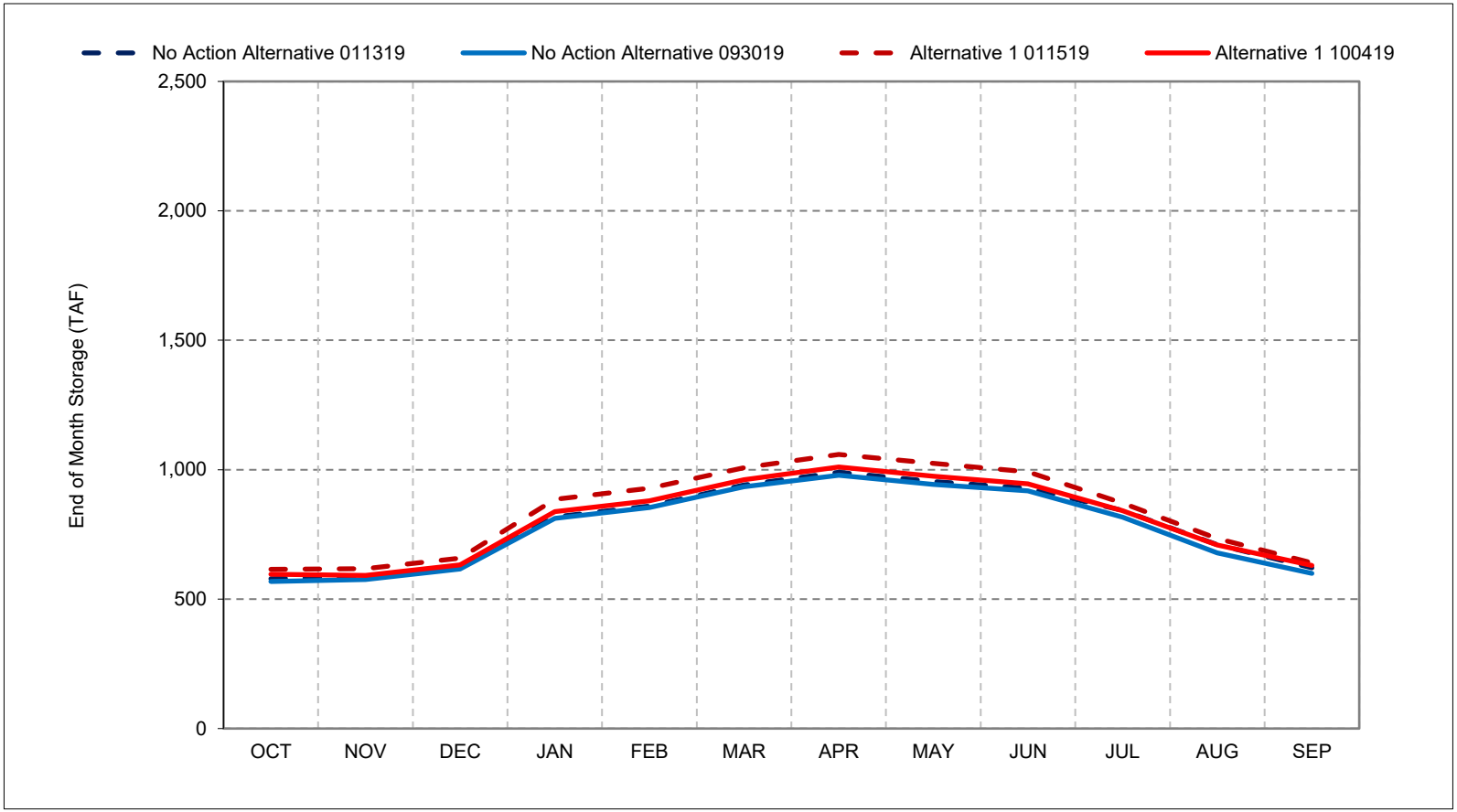



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-6. Trinity Lake Storage, Critical Year Average Storage

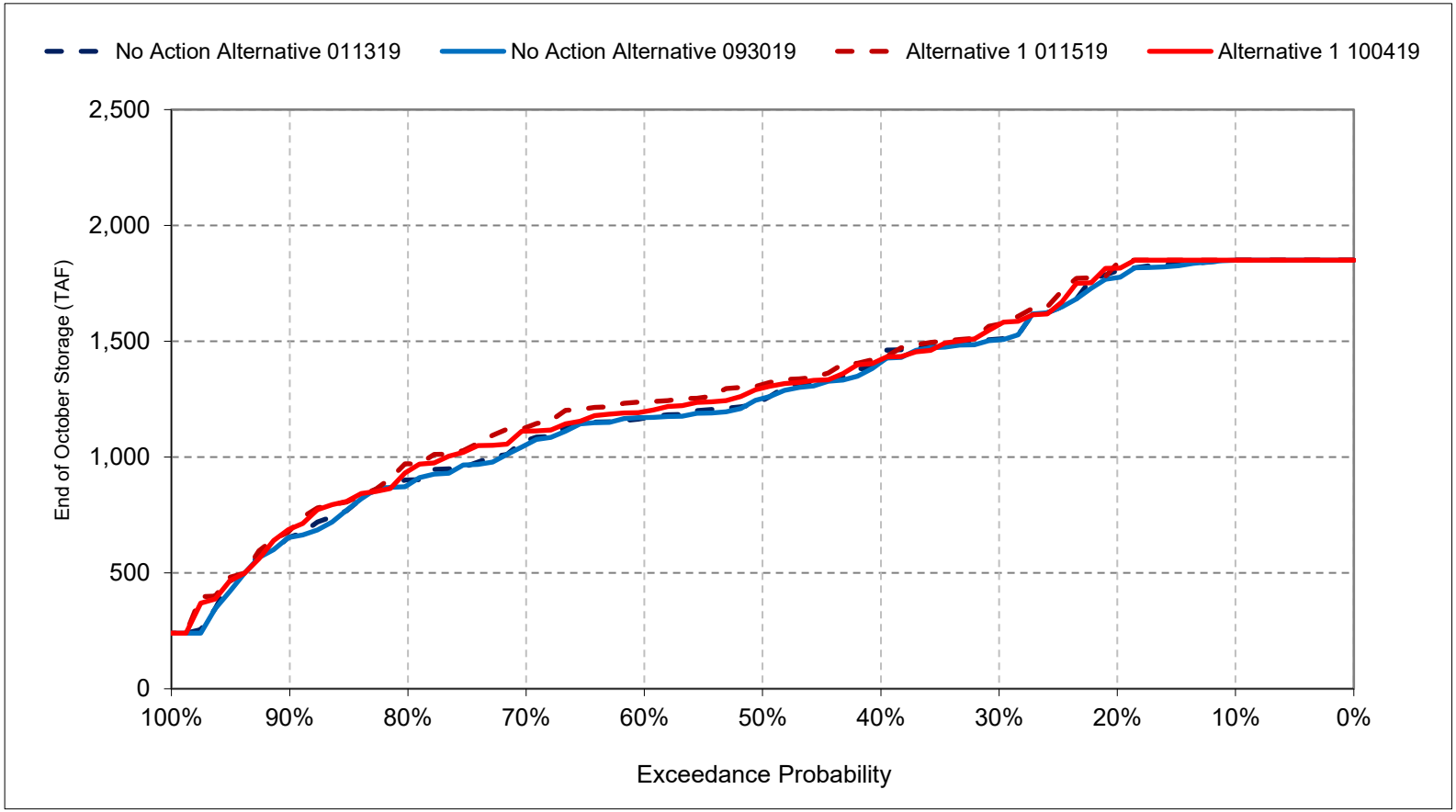



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

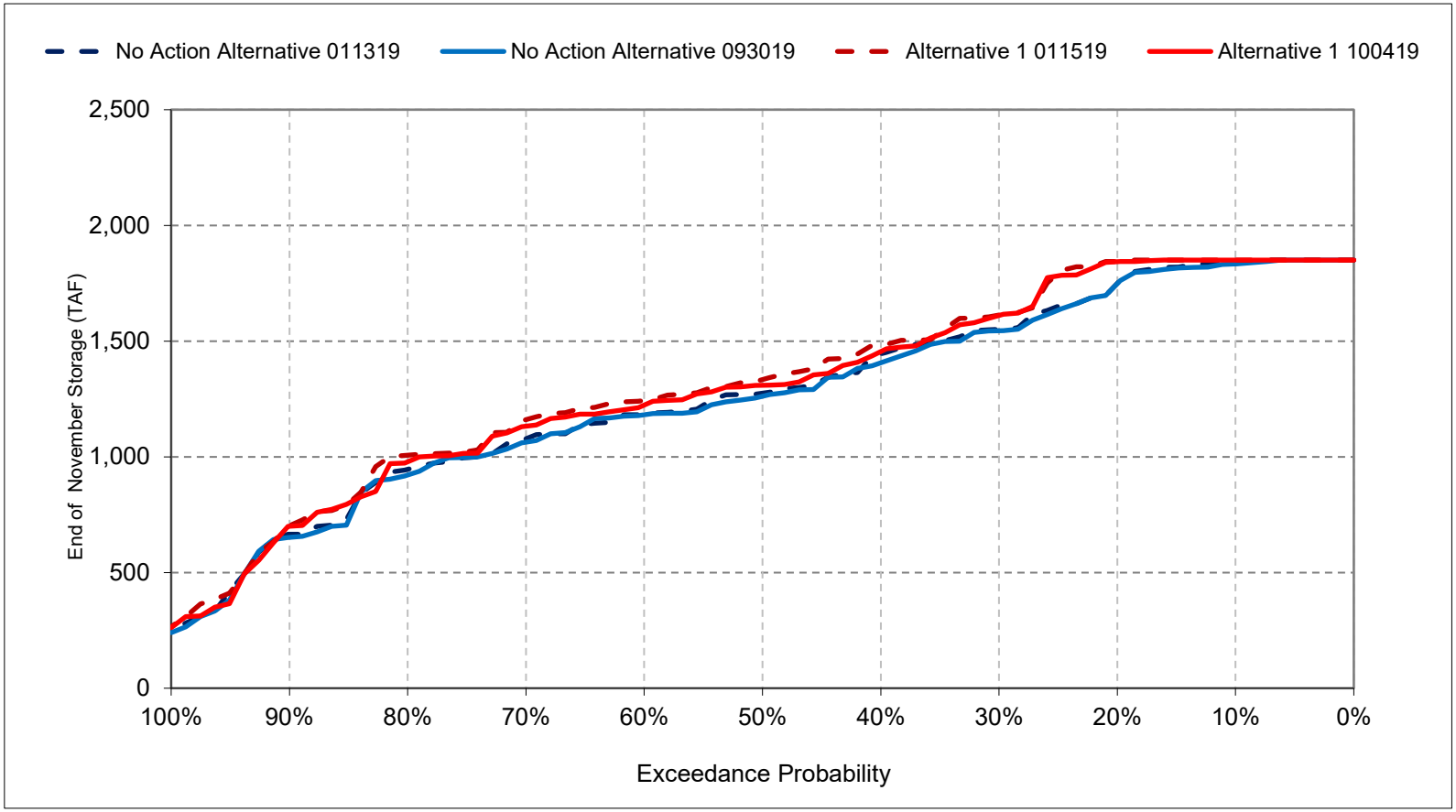
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-7. Trinity Lake Storage, End of October Storage



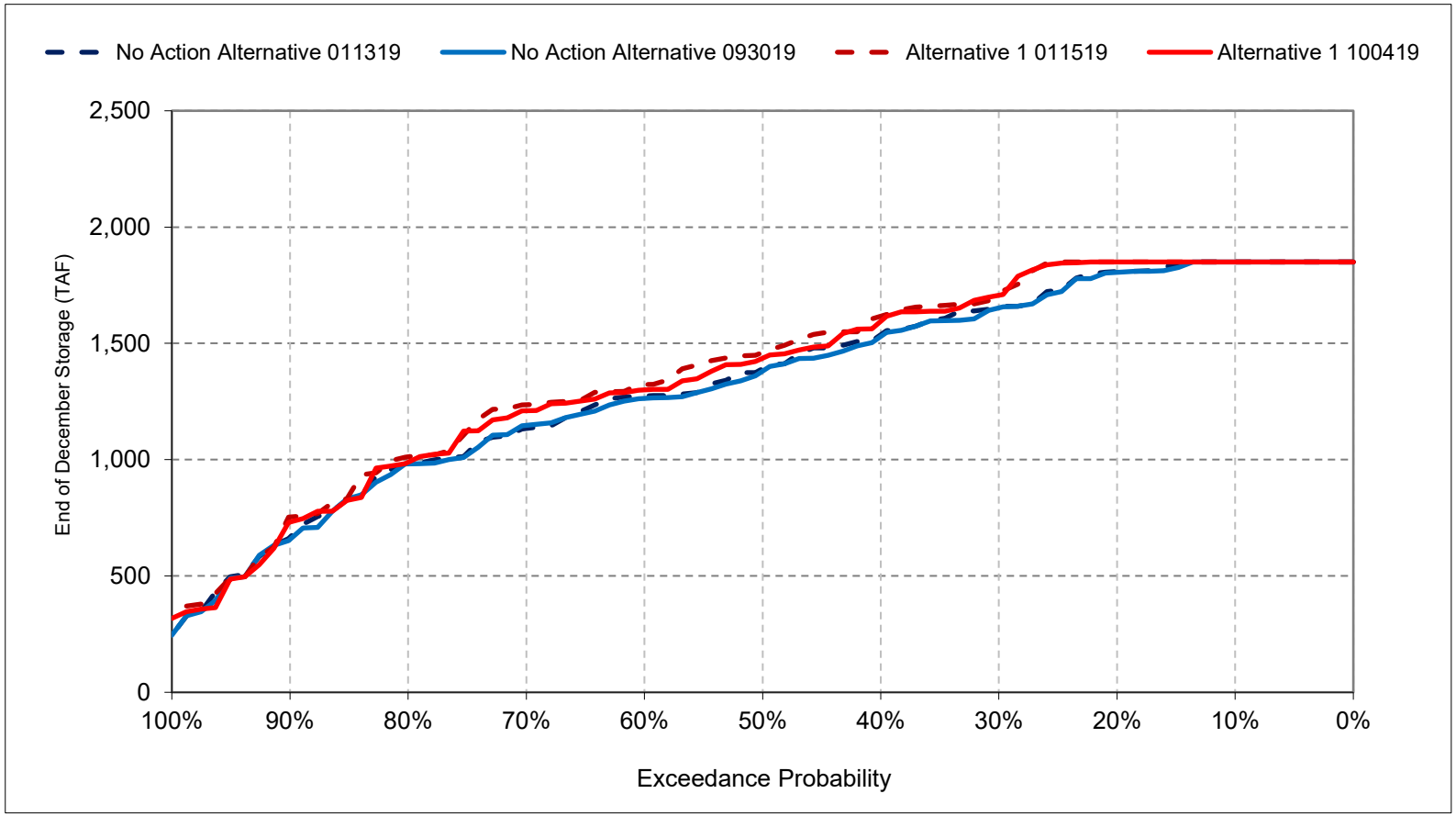

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-8. Trinity Lake Storage, End of November Storage



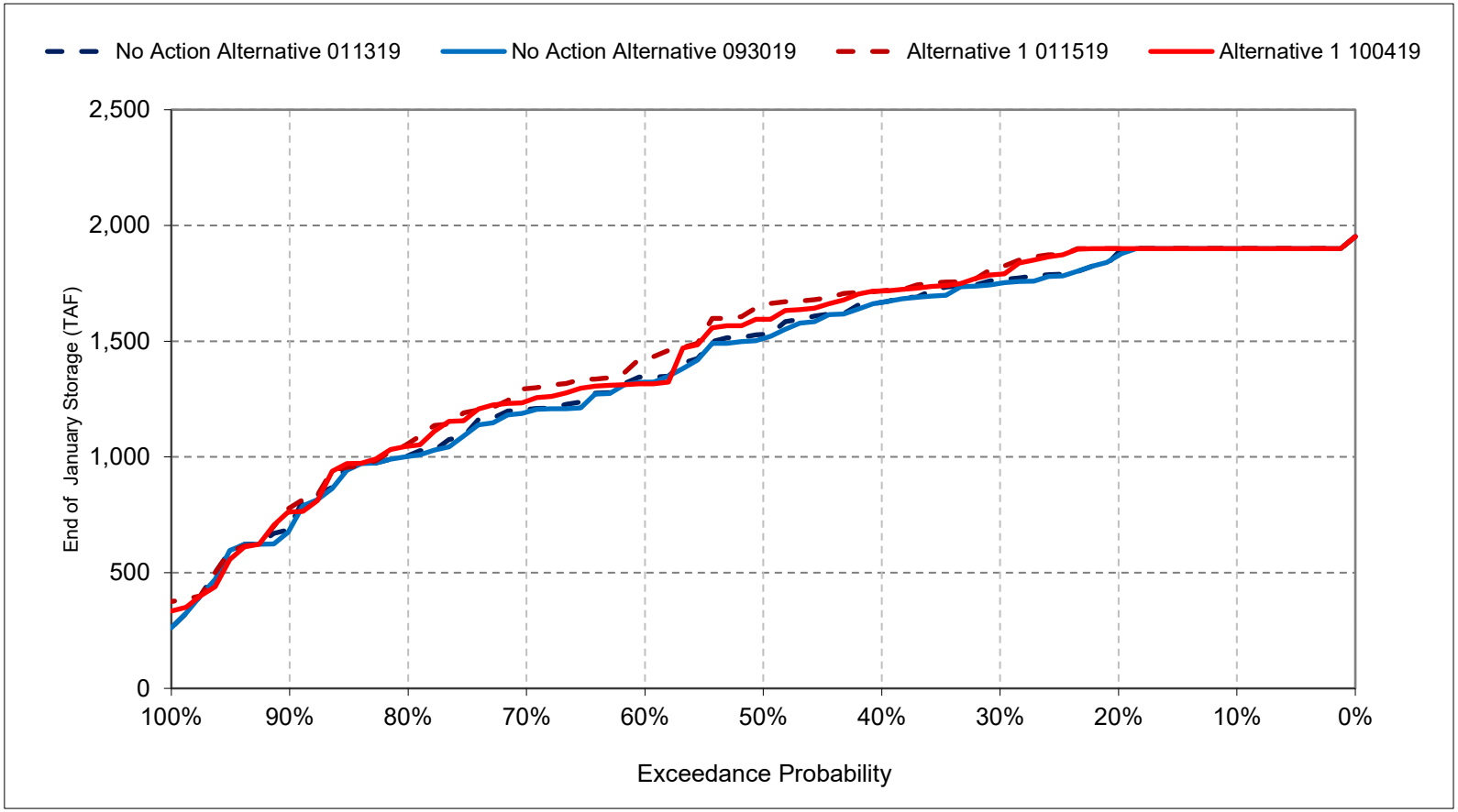

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-9. Trinity Lake Storage, End of December Storage



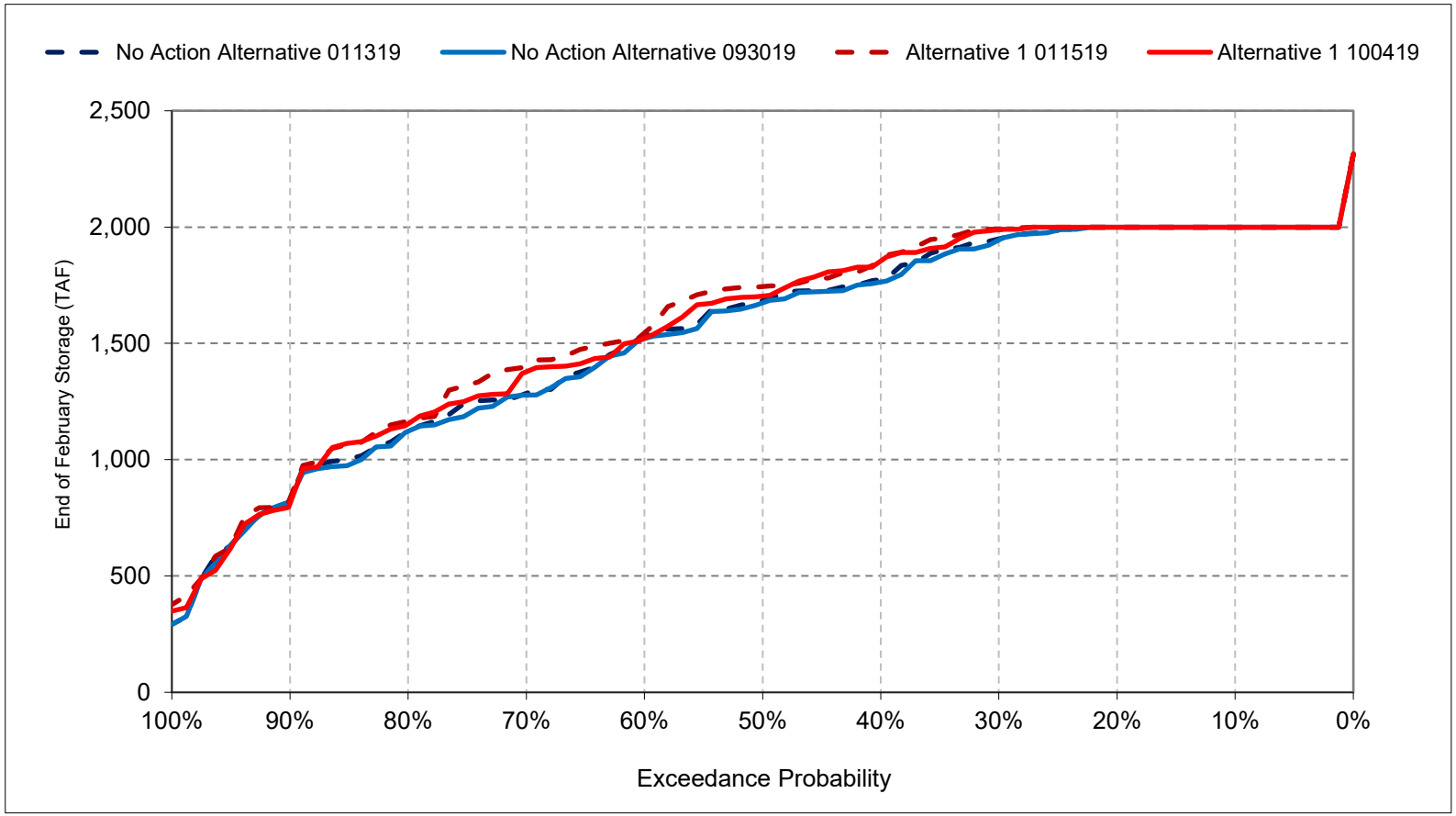

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-10. Trinity Lake Storage, End of January Storage



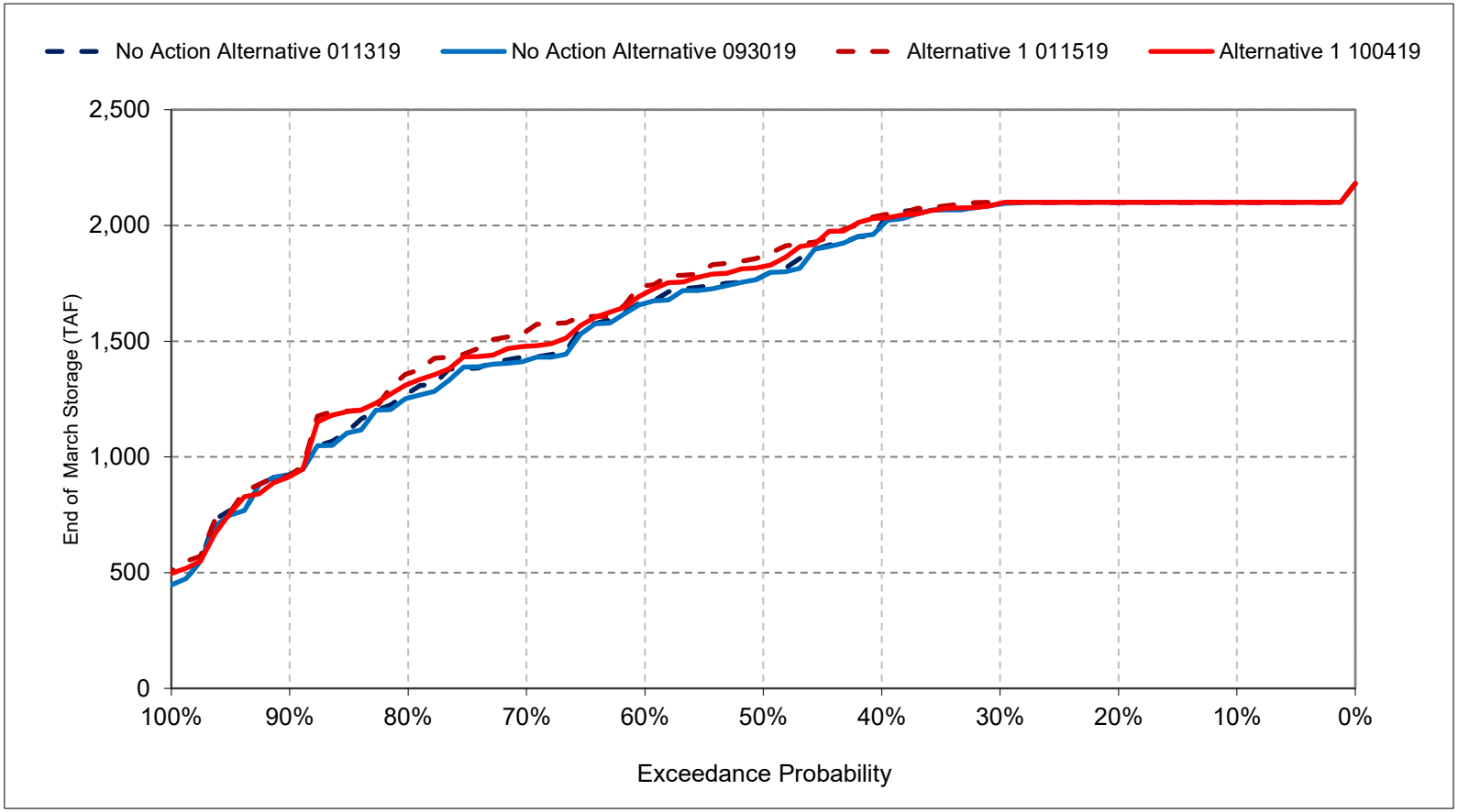

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-11. Trinity Lake Storage, End of February Storage



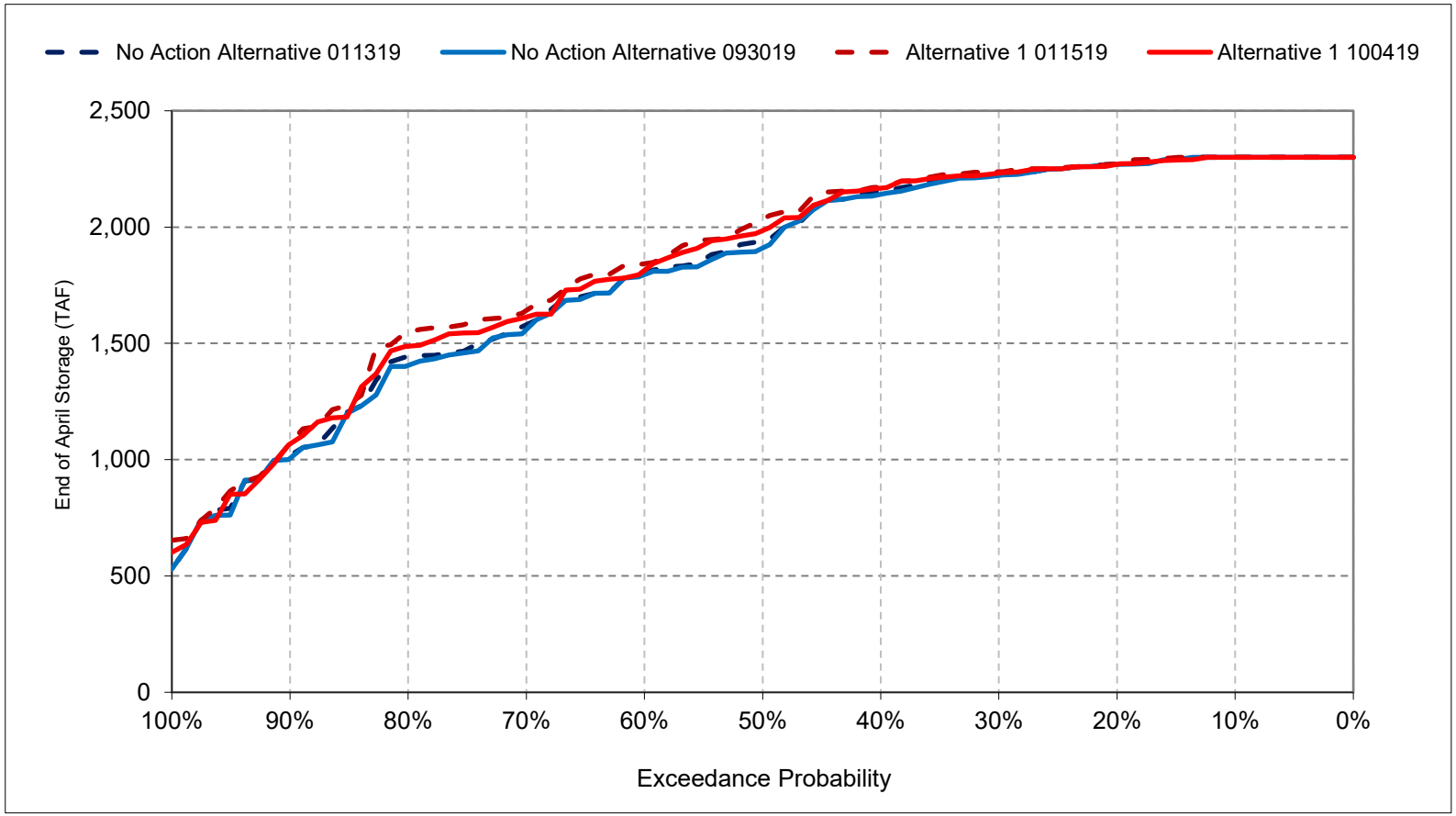

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-12. Trinity Lake Storage, End of March Storage



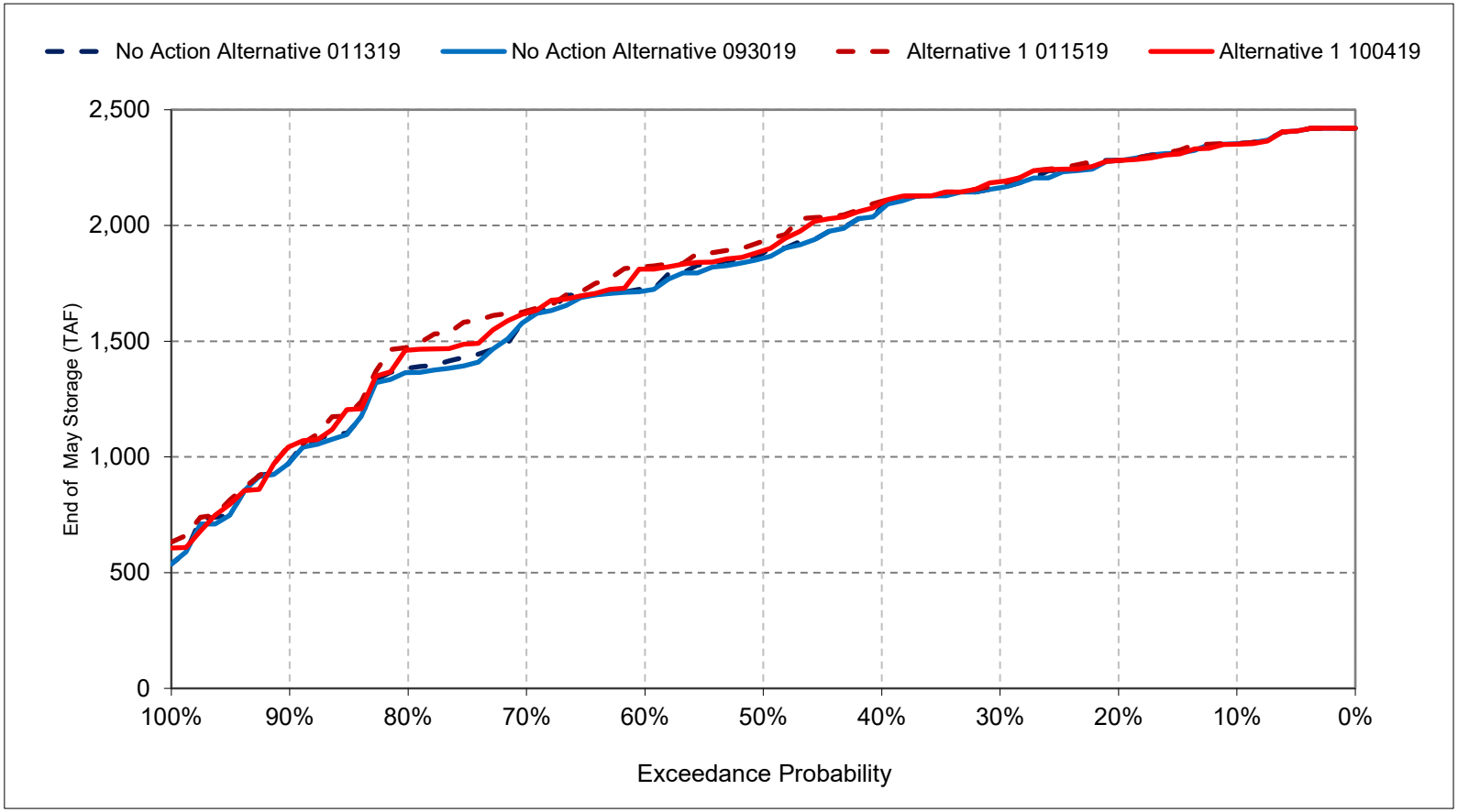

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-13. Trinity Lake Storage, End of April Storage



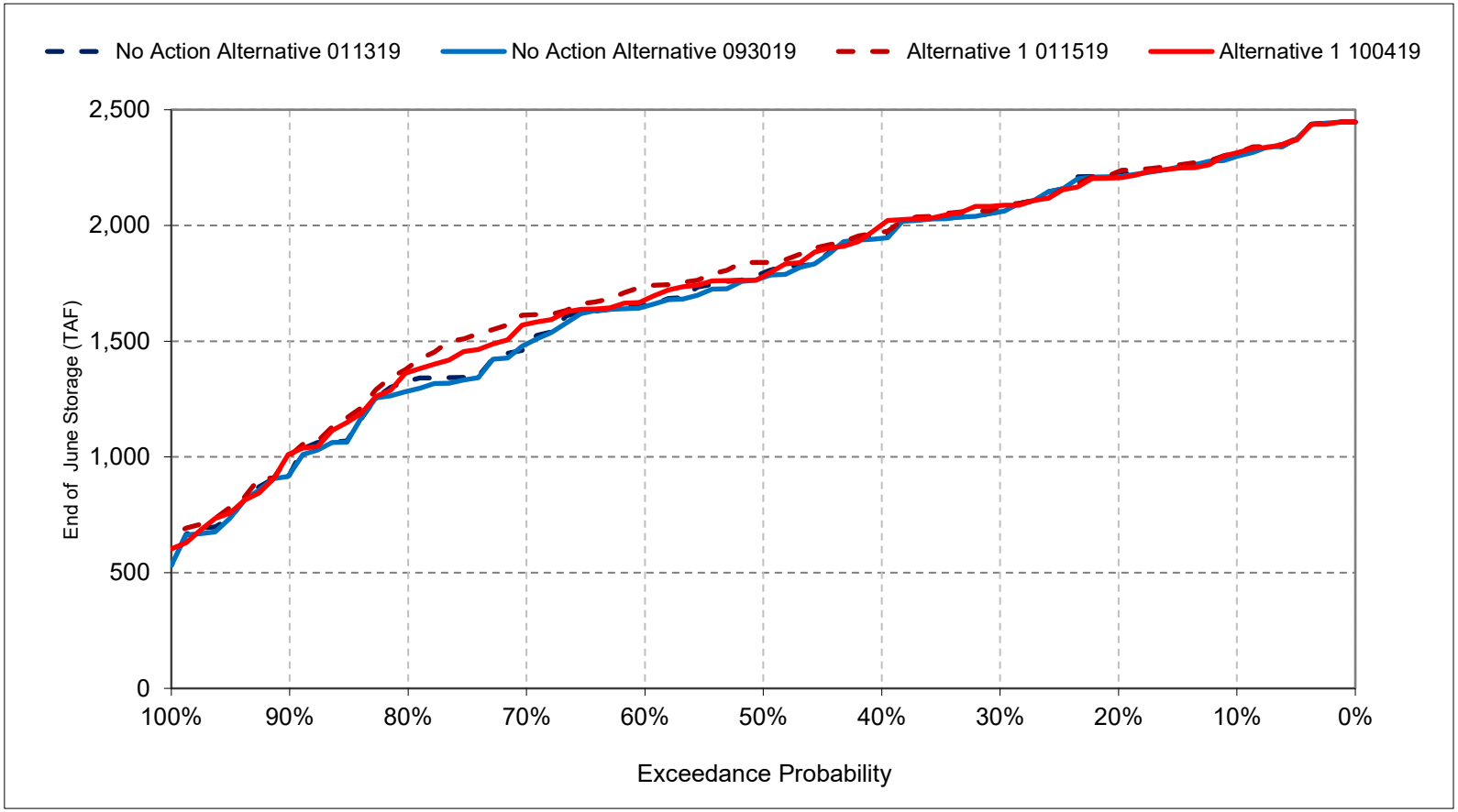

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-14. Trinity Lake Storage, End of May Storage



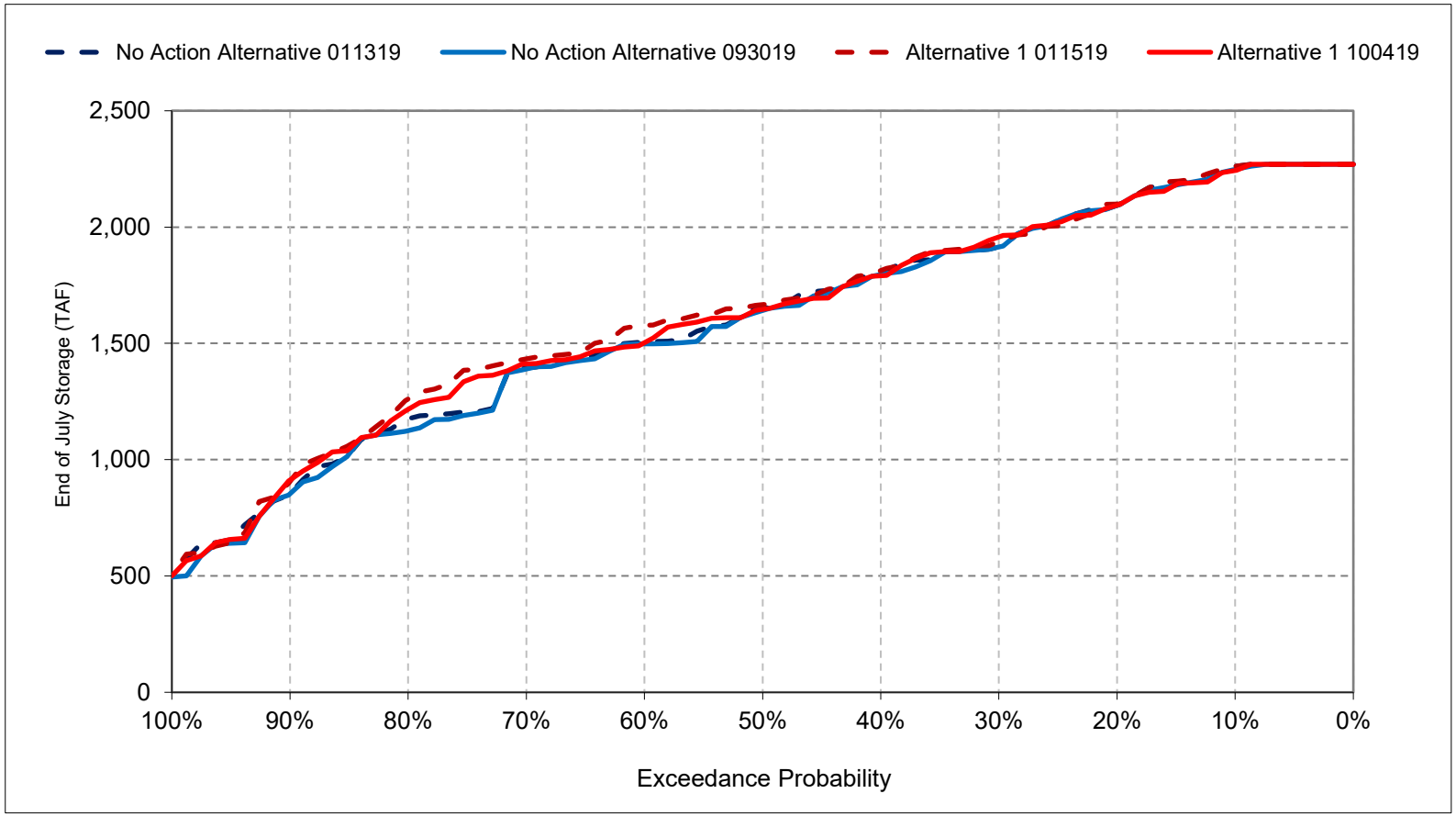

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-15. Trinity Lake Storage, End of June Storage



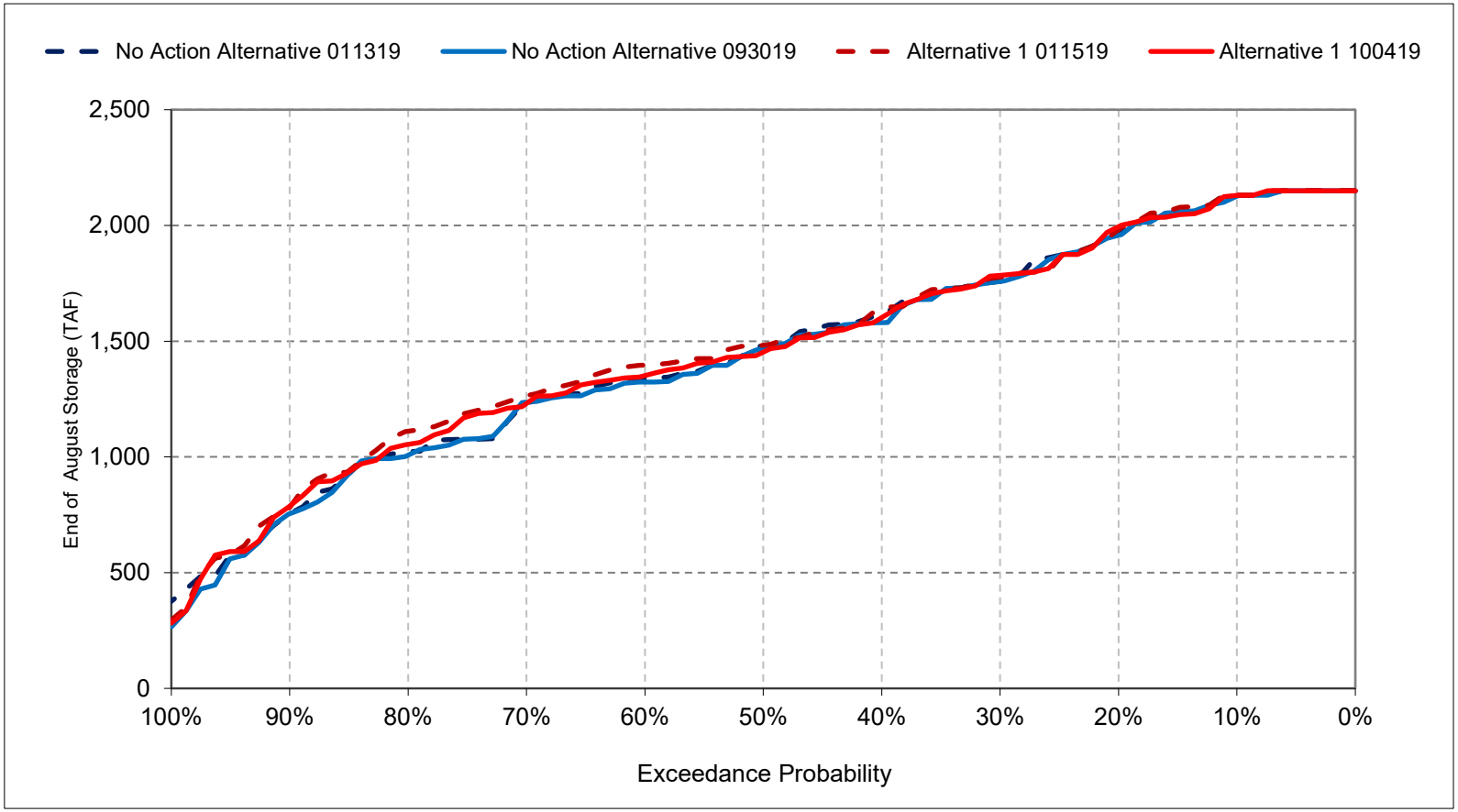

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-16. Trinity Lake Storage, End of July Storage



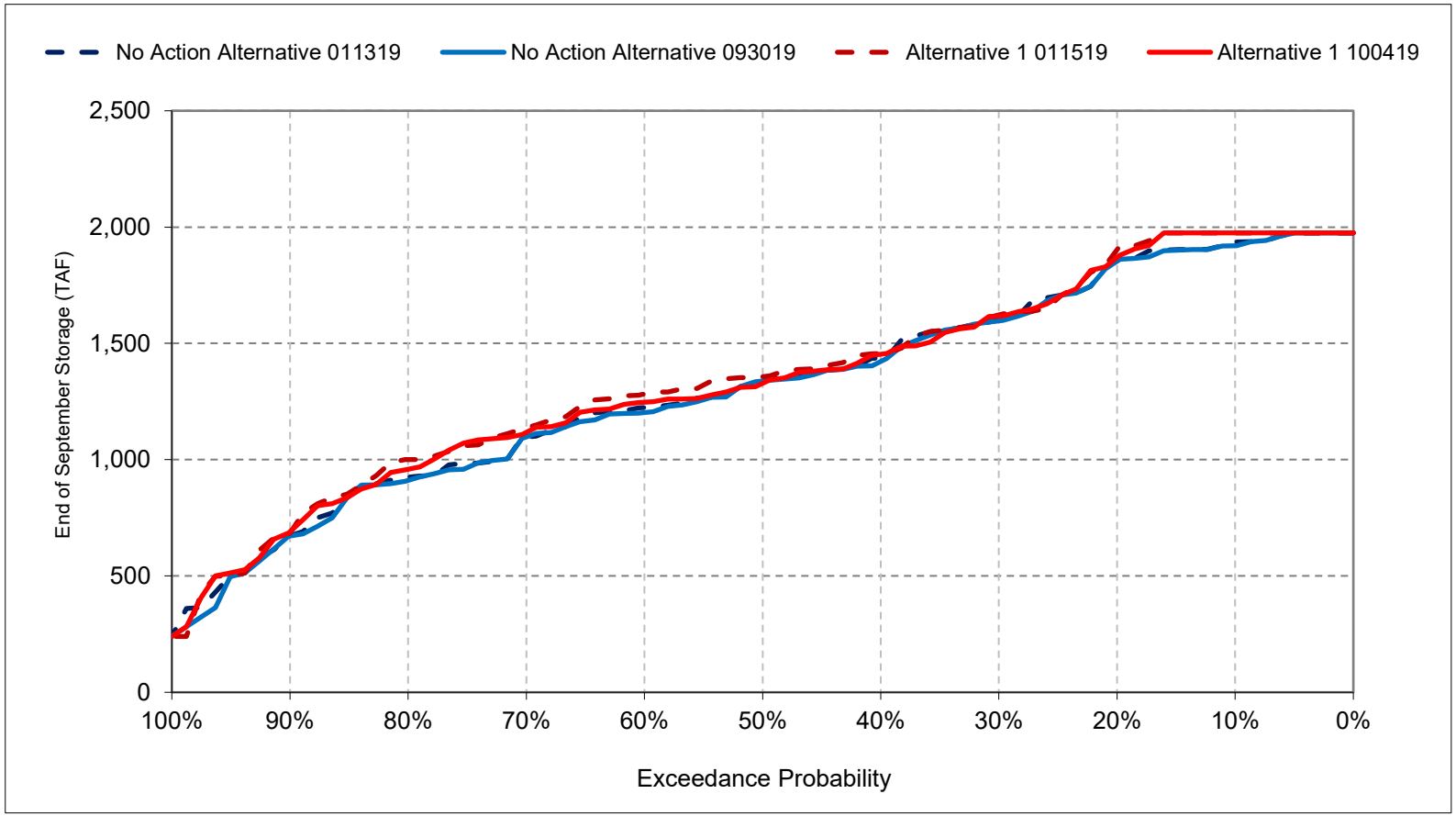

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-17. Trinity Lake Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-18. Trinity Lake Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 1a-1. Trinity Lake Elevation, End of Month Elevation

## No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,331 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,359 | 2,352 | 2,339 |
| 20% | 2,328 | 2,324 | 2,329 | 2,335 | 2,345 | 2,350 | 2,359 | 2,360 | 2,357 | 2,350 | 2,342 | 2,333 |
| 30% | 2,303 | 2,307 | 2,316 | 2,325 | 2,341 | 2,350 | 2,357 | 2,354 | 2,348 | 2,338 | 2,324 | 2,311 |
| 40% | 2,297 | 2,298 | 2,306 | 2,317 | 2,326 | 2,345 | 2,353 | 2,349 | 2,342 | 2,328 | 2,313 | 2,297 |
| 50% | 2,280 | 2,283 | 2,293 | 2,305 | 2,318 | 2,326 | 2,340 | 2,335 | 2,328 | 2,315 | 2,301 | 2,289 |
| 60% | 2,273 | 2,275 | 2,283 | 2,289 | 2,305 | 2,317 | 2,328 | 2,322 | 2,316 | 2,303 | 2,289 | 2,278 |
| 70% | 2,263 | 2,264 | 2,269 | 2,276 | 2,284 | 2,297 | 2,309 | 2,311 | 2,301 | 2,294 | 2,279 | 2,266 |
| 80% | 2,244 | 2,249 | 2,253 | 2,256 | 2,268 | 2,284 | 2,298 | 2,293 | 2,288 | 2,274 | 2,258 | 2,246 |
| 90% | 2,210 | 2,211 | 2,212 | 2,216 | 2,234 | 2,246 | 2,257 | 2,252 | 2,246 | 2,238 | 2,224 | 2,212 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,275 | 2,276 | 2,282 | 2,290 | 2,302 | 2,313 | 2,324 | 2,322 | 2,317 | 2,307 | 2,294 | 2,281 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,319 | 2,318 | 2,319 | 2,325 | 2,339 | 2,348 | 2,357 | 2,359 | 2,355 | 2,348 | 2,339 | 2,327 |
| Above Normal (16%) | 2,300 | 2,299 | 2,303 | 2,302 | 2,321 | 2,336 | 2,348 | 2,347 | 2,341 | 2,332 | 2,318 | 2,305 |
| Below Normal (13%) | 2,270 | 2,271 | 2,278 | 2,300 | 2,308 | 2,317 | 2,329 | 2,324 | 2,317 | 2,303 | 2,288 | 2,274 |
| Dry (24%) | 2,256 | 2,261 | 2,274 | 2,272 | 2,282 | 2,295 | 2,307 | 2,303 | 2,297 | 2,284 | 2,270 | 2,259 |
| Critical (15%) | 2,185 | 2,190 | 2,198 | 2,224 | 2,231 | 2,243 | 2,250 | 2,246 | 2,244 | 2,233 | 2,214 | 2,197 |

## Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,359 | 2,352 | 2,343 |
| 20% | 2,331 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,360 | 2,360 | 2,357 | 2,350 | 2,343 | 2,337 |
| 30% | 2,309 | 2,312 | 2,321 | 2,330 | 2,344 | 2,350 | 2,358 | 2,355 | 2,349 | 2,340 | 2,326 | 2,313 |
| 40% | 2,297 | 2,301 | 2,312 | 2,321 | 2,333 | 2,347 | 2,354 | 2,351 | 2,343 | 2,329 | 2,314 | 2,299 |
| 50% | 2,287 | 2,289 | 2,299 | 2,316 | 2,323 | 2,334 | 2,347 | 2,339 | 2,331 | 2,317 | 2,301 | 2,290 |
| 60% | 2,280 | 2,280 | 2,288 | 2,296 | 2,306 | 2,323 | 2,332 | 2,330 | 2,323 | 2,309 | 2,294 | 2,284 |
| 70% | 2,269 | 2,272 | 2,280 | 2,285 | 2,295 | 2,306 | 2,315 | 2,314 | 2,312 | 2,297 | 2,282 | 2,270 |
| 80% | 2,252 | 2,256 | 2,256 | 2,262 | 2,273 | 2,291 | 2,307 | 2,301 | 2,293 | 2,282 | 2,267 | 2,255 |
| 90% | 2,214 | 2,217 | 2,224 | 2,228 | 2,235 | 2,246 | 2,263 | 2,260 | 2,256 | 2,244 | 2,228 | 2,214 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,279 | 2,281 | 2,287 | 2,295 | 2,307 | 2,317 | 2,328 | 2,326 | 2,321 | 2,310 | 2,296 | 2,284 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,322 | 2,323 | 2,324 | 2,326 | 2,340 | 2,348 | 2,358 | 2,360 | 2,356 | 2,349 | 2,339 | 2,330 |
| Above Normal (16%) | 2,303 | 2,305 | 2,308 | 2,305 | 2,323 | 2,337 | 2,349 | 2,348 | 2,342 | 2,332 | 2,318 | 2,306 |
| Below Normal (13%) | 2,274 | 2,274 | 2,281 | 2,307 | 2,315 | 2,322 | 2,333 | 2,328 | 2,320 | 2,307 | 2,290 | 2,278 |
| Dry (24%) | 2,263 | 2,266 | 2,279 | 2,278 | 2,288 | 2,300 | 2,313 | 2,309 | 2,304 | 2,290 | 2,276 | 2,265 |
| Critical (15%) | 2,193 | 2,197 | 2,205 | 2,234 | 2,240 | 2,251 | 2,258 | 2,254 | 2,251 | 2,236 | 2,216 | 2,197 |

## Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 20% | 3 | 8 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 4 |
| 30% | 5 | 5 | 5 | 5 | 4 | 0 | 1 | 1 | 1 | 2 | 2 | 2 |
| 40% | 0 | 3 | 7 | 4 | 7 | 2 | 1 | 1 | 1 | 1 | 2 | 2 |
| 50% | 6 | 5 | 6 | 10 | 5 | 7 | 7 | 4 | 4 | 1 | 0 | 2 |
| 60% | 7 | 6 | 4 | 7 | 1 | 6 | 3 | 8 | 7 | 6 | 5 | 6 |
| 70% | 6 | 8 | 10 | 9 | 10 | 9 | 5 | 3 | 11 | 3 | 3 | 4 |
| 80% | 8 | 7 | 3 | 6 | 4 | 7 | 9 | 8 | 5 | 8 | 9 | 9 |
| 90% | 4 | 5 | 12 | 12 | 1 | 0 | 6 | 8 | 9 | 6 | 4 | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 2 | 3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 3 |
| Above Normal (16%) | 3 | 5 | 6 | 4 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Below Normal (13%) | 4 | 3 | 2 | 7 | 7 | 5 | 5 | 4 | 4 | 3 | 3 | 4 |
| Dry (24%) | 7 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 6 | 6 | 7 |
| Critical (15%) | 8 | 7 | 7 | 10 | 9 | 8 | 8 | 8 | 7 | 3 | 2 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1a-2. Trinity Lake Elevation, End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,331 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,361 | 2,358 | 2,352 | 2,338 |
| 20% | 2,326 | 2,324 | 2,328 | 2,334 | 2,345 | 2,350 | 2,359 | 2,360 | 2,356 | 2,350 | 2,341 | 2,333 |
| 30% | 2,303 | 2,306 | 2,316 | 2,324 | 2,340 | 2,350 | 2,357 | 2,354 | 2,348 | 2,338 | 2,324 | 2,311 |
| 40% | 2,295 | 2,295 | 2,305 | 2,317 | 2,325 | 2,344 | 2,353 | 2,349 | 2,340 | 2,328 | 2,309 | 2,296 |
| 50% | 2,281 | 2,282 | 2,292 | 2,304 | 2,317 | 2,326 | 2,337 | 2,333 | 2,326 | 2,315 | 2,300 | 2,289 |
| 60% | 2,273 | 2,274 | 2,282 | 2,288 | 2,304 | 2,316 | 2,328 | 2,321 | 2,315 | 2,302 | 2,288 | 2,276 |
| 70% | 2,261 | 2,262 | 2,271 | 2,275 | 2,284 | 2,296 | 2,308 | 2,310 | 2,302 | 2,293 | 2,280 | 2,266 |
| 80% | 2,241 | 2,246 | 2,253 | 2,255 | 2,268 | 2,281 | 2,295 | 2,291 | 2,284 | 2,269 | 2,256 | 2,245 |
| 90% | 2,210 | 2,209 | 2,210 | 2,214 | 2,235 | 2,246 | 2,256 | 2,252 | 2,246 | 2,238 | 2,224 | 2,212 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,274 | 2,275 | 2,281 | 2,289 | 2,302 | 2,313 | 2,323 | 2,321 | 2,317 | 2,306 | 2,292 | 2,280 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,319 | 2,317 | 2,319 | 2,325 | 2,339 | 2,347 | 2,357 | 2,359 | 2,355 | 2,348 | 2,339 | 2,327 |
| Above Normal (16%) | 2,299 | 2,298 | 2,302 | 2,301 | 2,320 | 2,335 | 2,347 | 2,346 | 2,340 | 2,331 | 2,317 | 2,305 |
| Below Normal (13%) | 2,269 | 2,270 | 2,277 | 2,299 | 2,307 | 2,316 | 2,328 | 2,323 | 2,316 | 2,302 | 2,286 | 2,273 |
| Dry (24%) | 2,256 | 2,260 | 2,273 | 2,271 | 2,281 | 2,293 | 2,306 | 2,302 | 2,296 | 2,283 | 2,269 | 2,258 |
| Critical (15%) | 2,183 | 2,188 | 2,196 | 2,223 | 2,230 | 2,242 | 2,249 | 2,245 | 2,242 | 2,229 | 2,206 | 2,192 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,358 | 2,352 | 2,343 |
| 20% | 2,329 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,359 | 2,360 | 2,356 | 2,350 | 2,345 | 2,334 |
| 30% | 2,309 | 2,312 | 2,320 | 2,327 | 2,344 | 2,350 | 2,357 | 2,355 | 2,350 | 2,341 | 2,327 | 2,312 |
| 40% | 2,296 | 2,299 | 2,311 | 2,321 | 2,333 | 2,347 | 2,354 | 2,350 | 2,345 | 2,327 | 2,311 | 2,299 |
| 50% | 2,286 | 2,286 | 2,297 | 2,311 | 2,320 | 2,330 | 2,344 | 2,336 | 2,326 | 2,315 | 2,299 | 2,288 |
| 60% | 2,276 | 2,278 | 2,286 | 2,287 | 2,304 | 2,320 | 2,329 | 2,329 | 2,318 | 2,303 | 2,290 | 2,281 |
| 70% | 2,267 | 2,269 | 2,277 | 2,280 | 2,292 | 2,301 | 2,312 | 2,313 | 2,309 | 2,295 | 2,279 | 2,268 |
| 80% | 2,248 | 2,252 | 2,254 | 2,260 | 2,271 | 2,287 | 2,301 | 2,299 | 2,291 | 2,278 | 2,261 | 2,250 |
| 90% | 2,215 | 2,216 | 2,221 | 2,225 | 2,232 | 2,245 | 2,263 | 2,260 | 2,257 | 2,245 | 2,229 | 2,215 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,277 | 2,279 | 2,286 | 2,293 | 2,305 | 2,315 | 2,326 | 2,324 | 2,319 | 2,308 | 2,294 | 2,283 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,321 | 2,322 | 2,324 | 2,326 | 2,340 | 2,348 | 2,358 | 2,359 | 2,355 | 2,348 | 2,339 | 2,329 |
| Above Normal (16%) | 2,301 | 2,303 | 2,306 | 2,304 | 2,322 | 2,337 | 2,349 | 2,347 | 2,341 | 2,331 | 2,317 | 2,305 |
| Below Normal (13%) | 2,274 | 2,274 | 2,281 | 2,305 | 2,313 | 2,320 | 2,332 | 2,327 | 2,320 | 2,305 | 2,289 | 2,278 |
| Dry (24%) | 2,260 | 2,264 | 2,277 | 2,276 | 2,285 | 2,298 | 2,311 | 2,307 | 2,301 | 2,288 | 2,274 | 2,262 |
| Critical (15%) | 2,190 | 2,192 | 2,200 | 2,228 | 2,234 | 2,246 | 2,253 | 2,249 | 2,246 | 2,233 | 2,212 | 2,198 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| 20% | 3 | 8 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 30% | 6 | 6 | 5 | 3 | 4 | 0 | 1 | 1 | 1 | 4 | 2 | 2 |
| 40% | 1 | 4 | 6 | 4 | 8 | 2 | 1 | 1 | 5 | 0 | 2 | 3 |
| 50% | 4 | 4 | 5 | 7 | 2 | 4 | 6 | 3 | 0 | 0 | -1 | -1 |
| 60% | 2 | 4 | 3 | -1 | 0 | 4 | 2 | 8 | 2 | 0 | 2 | 4 |
| 70% | 6 | 7 | 6 | 5 | 9 | 5 | 5 | 3 | 7 | 2 | -1 | 2 |
| 80% | 7 | 7 | 1 | 5 | 3 | 6 | 7 | 8 | 7 | 9 | 5 | 5 |
| 90% | 5 | 7 | 11 | 11 | -3 | -1 | 7 | 8 | 10 | 7 | 5 | 3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2 | 5 | 5 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| Above Normal (16%) | 2 | 5 | 5 | 4 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 |
| Below Normal (13%) | 5 | 4 | 3 | 6 | 6 | 4 | 4 | 4 | 4 | 3 | 3 | 5 |
| Dry (24%) | 4 | 4 | 3 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 5 |
| Critical (15%) | 7 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1a-3. Trinity Lake Elevation, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,331 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,359 | 2,352 | 2,339 |
| 20% | 2,328 | 2,324 | 2,329 | 2,335 | 2,345 | 2,350 | 2,359 | 2,360 | 2,357 | 2,350 | 2,342 | 2,333 |
| 30% | 2,303 | 2,307 | 2,316 | 2,325 | 2,341 | 2,350 | 2,357 | 2,354 | 2,348 | 2,338 | 2,324 | 2,311 |
| 40% | 2,297 | 2,298 | 2,306 | 2,317 | 2,326 | 2,345 | 2,353 | 2,349 | 2,342 | 2,328 | 2,313 | 2,297 |
| 50% | 2,280 | 2,283 | 2,293 | 2,305 | 2,318 | 2,326 | 2,340 | 2,335 | 2,328 | 2,315 | 2,301 | 2,289 |
| 60% | 2,273 | 2,275 | 2,283 | 2,289 | 2,305 | 2,317 | 2,328 | 2,322 | 2,316 | 2,303 | 2,289 | 2,278 |
| 70% | 2,263 | 2,264 | 2,269 | 2,276 | 2,284 | 2,297 | 2,309 | 2,311 | 2,301 | 2,294 | 2,279 | 2,266 |
| 80% | 2,244 | 2,249 | 2,253 | 2,256 | 2,268 | 2,284 | 2,298 | 2,293 | 2,288 | 2,274 | 2,258 | 2,246 |
| 90% | 2,210 | 2,211 | 2,212 | 2,216 | 2,234 | 2,246 | 2,257 | 2,252 | 2,246 | 2,238 | 2,224 | 2,212 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,275 | 2,276 | 2,282 | 2,290 | 2,302 | 2,313 | 2,324 | 2,322 | 2,317 | 2,307 | 2,294 | 2,281 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,319 | 2,318 | 2,319 | 2,325 | 2,339 | 2,348 | 2,357 | 2,359 | 2,355 | 2,348 | 2,339 | 2,327 |
| Above Normal (16%) | 2,300 | 2,299 | 2,303 | 2,302 | 2,321 | 2,336 | 2,348 | 2,347 | 2,341 | 2,332 | 2,318 | 2,305 |
| Below Normal (13%) | 2,270 | 2,271 | 2,278 | 2,300 | 2,308 | 2,317 | 2,329 | 2,324 | 2,317 | 2,303 | 2,288 | 2,274 |
| Dry (24%) | 2,256 | 2,261 | 2,274 | 2,272 | 2,282 | 2,295 | 2,307 | 2,303 | 2,297 | 2,284 | 2,270 | 2,259 |
| Critical (15%) | 2,185 | 2,190 | 2,198 | 2,224 | 2,231 | 2,243 | 2,250 | 2,246 | 2,244 | 2,233 | 2,214 | 2,197 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,331 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,361 | 2,358 | 2,352 | 2,338 |
| 20% | 2,326 | 2,324 | 2,328 | 2,334 | 2,345 | 2,350 | 2,359 | 2,360 | 2,356 | 2,350 | 2,341 | 2,333 |
| 30% | 2,303 | 2,306 | 2,316 | 2,324 | 2,340 | 2,350 | 2,357 | 2,354 | 2,348 | 2,338 | 2,324 | 2,311 |
| 40% | 2,295 | 2,295 | 2,305 | 2,317 | 2,325 | 2,344 | 2,353 | 2,349 | 2,340 | 2,328 | 2,309 | 2,296 |
| 50% | 2,281 | 2,282 | 2,292 | 2,304 | 2,317 | 2,326 | 2,337 | 2,333 | 2,326 | 2,315 | 2,300 | 2,289 |
| 60% | 2,273 | 2,274 | 2,282 | 2,288 | 2,304 | 2,316 | 2,328 | 2,321 | 2,315 | 2,302 | 2,288 | 2,276 |
| 70% | 2,261 | 2,262 | 2,271 | 2,275 | 2,284 | 2,296 | 2,308 | 2,310 | 2,302 | 2,293 | 2,280 | 2,266 |
| 80% | 2,241 | 2,246 | 2,253 | 2,255 | 2,268 | 2,281 | 2,295 | 2,291 | 2,284 | 2,269 | 2,256 | 2,245 |
| 90% | 2,210 | 2,209 | 2,210 | 2,214 | 2,235 | 2,246 | 2,256 | 2,252 | 2,246 | 2,238 | 2,224 | 2,212 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,274 | 2,275 | 2,281 | 2,289 | 2,302 | 2,313 | 2,323 | 2,321 | 2,317 | 2,306 | 2,292 | 2,280 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,319 | 2,317 | 2,319 | 2,325 | 2,339 | 2,347 | 2,357 | 2,359 | 2,355 | 2,348 | 2,339 | 2,327 |
| Above Normal (16%) | 2,299 | 2,298 | 2,302 | 2,301 | 2,320 | 2,335 | 2,347 | 2,346 | 2,340 | 2,331 | 2,317 | 2,305 |
| Below Normal (13%) | 2,269 | 2,270 | 2,277 | 2,299 | 2,307 | 2,316 | 2,328 | 2,323 | 2,316 | 2,302 | 2,286 | 2,273 |
| Dry (24%) | 2,256 | 2,260 | 2,273 | 2,271 | 2,281 | 2,293 | 2,306 | 2,302 | 2,296 | 2,283 | 2,269 | 2,258 |
| Critical (15%) | 2,183 | 2,188 | 2,196 | 2,223 | 2,230 | 2,242 | 2,249 | 2,245 | 2,242 | 2,229 | 2,206 | 2,192 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | -1 |
| 20% | -2 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 30% | 0 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | -2 | -3 | -1 | 0 | -1 | -1 | -1 | -1 | -1 | -1 | -3 | -1 |
| 50% | 1 | -1 | -1 | -1 | -1 | 0 | -3 | -2 | -2 | -1 | -1 | 0 |
| 60% | 0 | 0 | -1 | -2 | -1 | 0 | -1 | -1 | -1 | -1 | -1 | -2 |
| 70% | -2 | -2 | 1 | -1 | -1 | -1 | -2 | -1 | 1 | 0 | 1 | 0 |
| 80% | -2 | -3 | 0 | 0 | 0 | -2 | -3 | -2 | -4 | -5 | -2 | -2 |
| 90% | 0 | -2 | -1 | -2 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -2 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| Below Normal (13%) | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| Dry (24%) | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| Critical (15%) | -2 | -2 | -2 | -1 | -1 | -1 | -1 | -1 | -1 | -4 | -7 | -5 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1a-4. Trinity Lake Elevation, End of Month Elevation

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,359 | 2,352 | 2,343 |
| 20% | 2,331 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,360 | 2,360 | 2,357 | 2,350 | 2,343 | 2,337 |
| 30% | 2,309 | 2,312 | 2,321 | 2,330 | 2,344 | 2,350 | 2,358 | 2,355 | 2,349 | 2,340 | 2,326 | 2,313 |
| 40% | 2,297 | 2,301 | 2,312 | 2,321 | 2,333 | 2,347 | 2,354 | 2,351 | 2,343 | 2,329 | 2,314 | 2,299 |
| 50% | 2,287 | 2,289 | 2,299 | 2,316 | 2,323 | 2,334 | 2,347 | 2,339 | 2,331 | 2,317 | 2,301 | 2,290 |
| 60% | 2,280 | 2,280 | 2,288 | 2,296 | 2,306 | 2,323 | 2,332 | 2,330 | 2,323 | 2,309 | 2,294 | 2,284 |
| 70% | 2,269 | 2,272 | 2,280 | 2,285 | 2,295 | 2,306 | 2,315 | 2,314 | 2,312 | 2,297 | 2,282 | 2,270 |
| 80% | 2,252 | 2,256 | 2,256 | 2,262 | 2,273 | 2,291 | 2,307 | 2,301 | 2,293 | 2,282 | 2,267 | 2,255 |
| 90% | 2,214 | 2,217 | 2,224 | 2,228 | 2,235 | 2,246 | 2,263 | 2,260 | 2,256 | 2,244 | 2,228 | 2,214 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,279 | 2,281 | 2,287 | 2,295 | 2,307 | 2,317 | 2,328 | 2,326 | 2,321 | 2,310 | 2,296 | 2,284 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,322 | 2,323 | 2,324 | 2,326 | 2,340 | 2,348 | 2,358 | 2,360 | 2,356 | 2,349 | 2,339 | 2,330 |
| Above Normal (16%) | 2,303 | 2,305 | 2,308 | 2,305 | 2,323 | 2,337 | 2,349 | 2,348 | 2,342 | 2,332 | 2,318 | 2,306 |
| Below Normal (13%) | 2,274 | 2,274 | 2,281 | 2,307 | 2,315 | 2,322 | 2,333 | 2,328 | 2,320 | 2,307 | 2,290 | 2,278 |
| Dry (24%) | 2,263 | 2,266 | 2,279 | 2,278 | 2,288 | 2,300 | 2,313 | 2,309 | 2,304 | 2,290 | 2,276 | 2,265 |
| Critical (15%) | 2,193 | 2,197 | 2,205 | 2,234 | 2,240 | 2,251 | 2,258 | 2,254 | 2,251 | 2,236 | 2,216 | 2,197 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,332 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,361 | 2,364 | 2,362 | 2,358 | 2,352 | 2,343 |
| 20% | 2,329 | 2,332 | 2,332 | 2,337 | 2,345 | 2,350 | 2,359 | 2,360 | 2,356 | 2,350 | 2,345 | 2,334 |
| 30% | 2,309 | 2,312 | 2,320 | 2,327 | 2,344 | 2,350 | 2,357 | 2,355 | 2,350 | 2,341 | 2,327 | 2,312 |
| 40% | 2,296 | 2,299 | 2,311 | 2,321 | 2,333 | 2,347 | 2,354 | 2,350 | 2,345 | 2,327 | 2,311 | 2,299 |
| 50% | 2,286 | 2,286 | 2,297 | 2,311 | 2,320 | 2,330 | 2,344 | 2,336 | 2,326 | 2,315 | 2,299 | 2,288 |
| 60% | 2,276 | 2,278 | 2,286 | 2,287 | 2,304 | 2,320 | 2,329 | 2,329 | 2,318 | 2,303 | 2,290 | 2,281 |
| 70% | 2,267 | 2,269 | 2,277 | 2,280 | 2,292 | 2,301 | 2,312 | 2,313 | 2,309 | 2,295 | 2,279 | 2,268 |
| 80% | 2,248 | 2,252 | 2,254 | 2,260 | 2,271 | 2,287 | 2,301 | 2,299 | 2,291 | 2,278 | 2,261 | 2,250 |
| 90% | 2,215 | 2,216 | 2,221 | 2,225 | 2,232 | 2,245 | 2,263 | 2,260 | 2,257 | 2,245 | 2,229 | 2,215 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,277 | 2,279 | 2,286 | 2,293 | 2,305 | 2,315 | 2,326 | 2,324 | 2,319 | 2,308 | 2,294 | 2,283 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,321 | 2,322 | 2,324 | 2,326 | 2,340 | 2,348 | 2,358 | 2,359 | 2,355 | 2,348 | 2,339 | 2,329 |
| Above Normal (16%) | 2,301 | 2,303 | 2,306 | 2,304 | 2,322 | 2,337 | 2,349 | 2,347 | 2,341 | 2,331 | 2,317 | 2,305 |
| Below Normal (13%) | 2,274 | 2,274 | 2,281 | 2,305 | 2,313 | 2,320 | 2,332 | 2,327 | 2,320 | 2,305 | 2,289 | 2,278 |
| Dry (24%) | 2,260 | 2,264 | 2,277 | 2,276 | 2,285 | 2,298 | 2,311 | 2,307 | 2,301 | 2,288 | 2,274 | 2,262 |
| Critical (15%) | 2,190 | 2,192 | 2,200 | 2,228 | 2,234 | 2,246 | 2,253 | 2,249 | 2,246 | 2,233 | 2,212 | 2,198 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 |
| 20% | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 1 | -3 |
| 30% | 0 | 0 | -1 | -3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 |
| 40% | -1 | -2 | -2 | 0 | -1 | -1 | 0 | 0 | 2 | -2 | -3 | 0 |
| 50% | -1 | -2 | -2 | -5 | -3 | -4 | -3 | -4 | -5 | -2 | -3 | -2 |
| 60% | -4 | -2 | -2 | -9 | -2 | -3 | -2 | -1 | -5 | -6 | -4 | -3 |
| 70% | -2 | -3 | -3 | -5 | -2 | -6 | -2 | -1 | -3 | -2 | -3 | -2 |
| 80% | -4 | -3 | -3 | -1 | -1 | -4 | -5 | -1 | -2 | -5 | -6 | -5 |
| 90% | 1 | 0 | -3 | -3 | -3 | -1 | 0 | 0 | 1 | 1 | 1 | 1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 |
| Above Normal (16%) | -2 | -2 | -2 | -1 | -1 | 0 | 0 | 0 | -1 | 0 | -1 | -1 |
| Below Normal (13%) | 0 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | 0 | -2 | -1 | 0 |
| Dry (24%) | -3 | -3 | -2 | -3 | -3 | -3 | -3 | -3 | -4 | -3 | -3 | -3 |
| Critical (15%) | -3 | -4 | -4 | -6 | -6 | -5 | -5 | -5 | -5 | -4 | -4 | 1 |

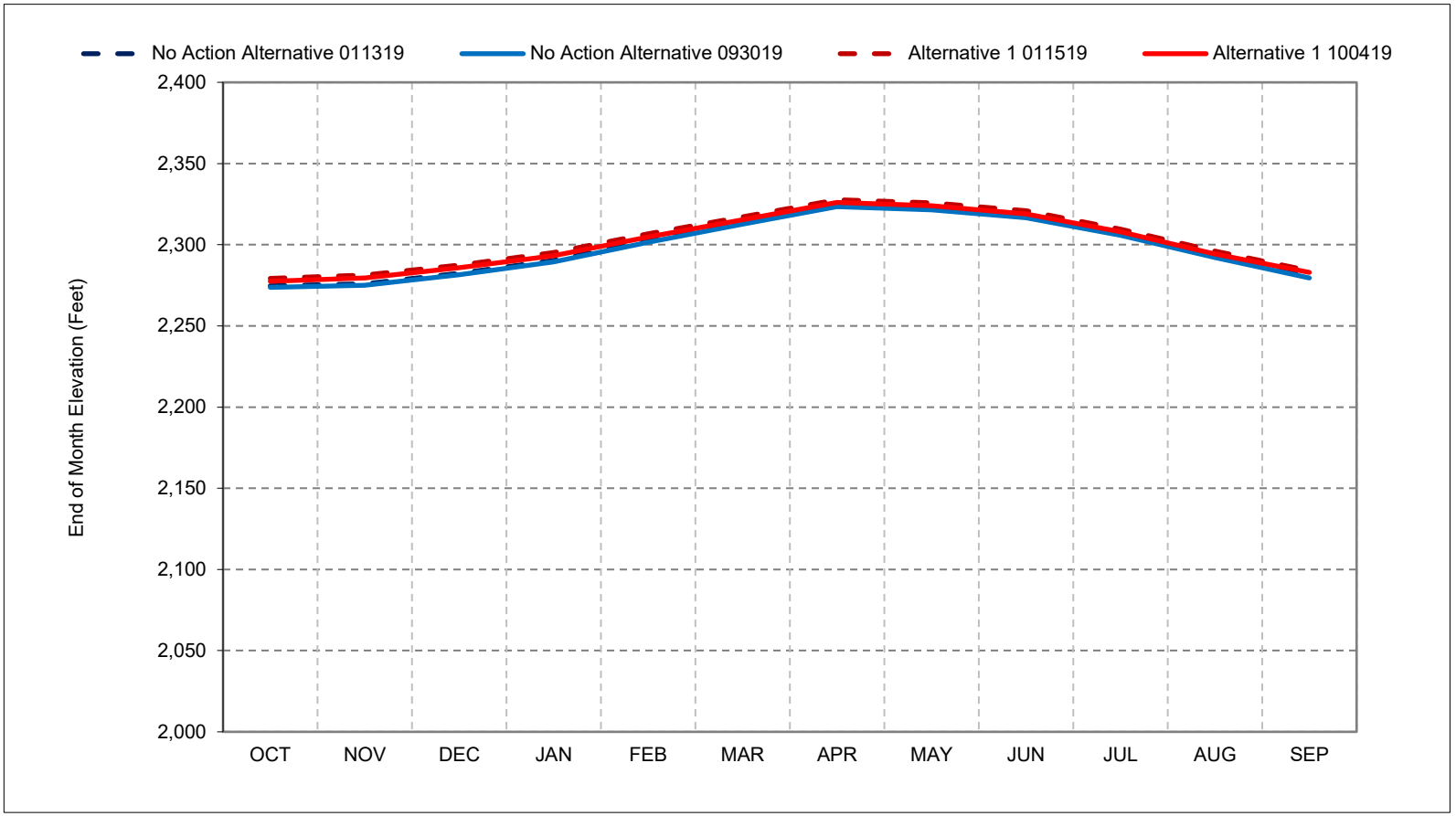
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-1. Trinity Lake Elevation, Long-Term Average Elevation

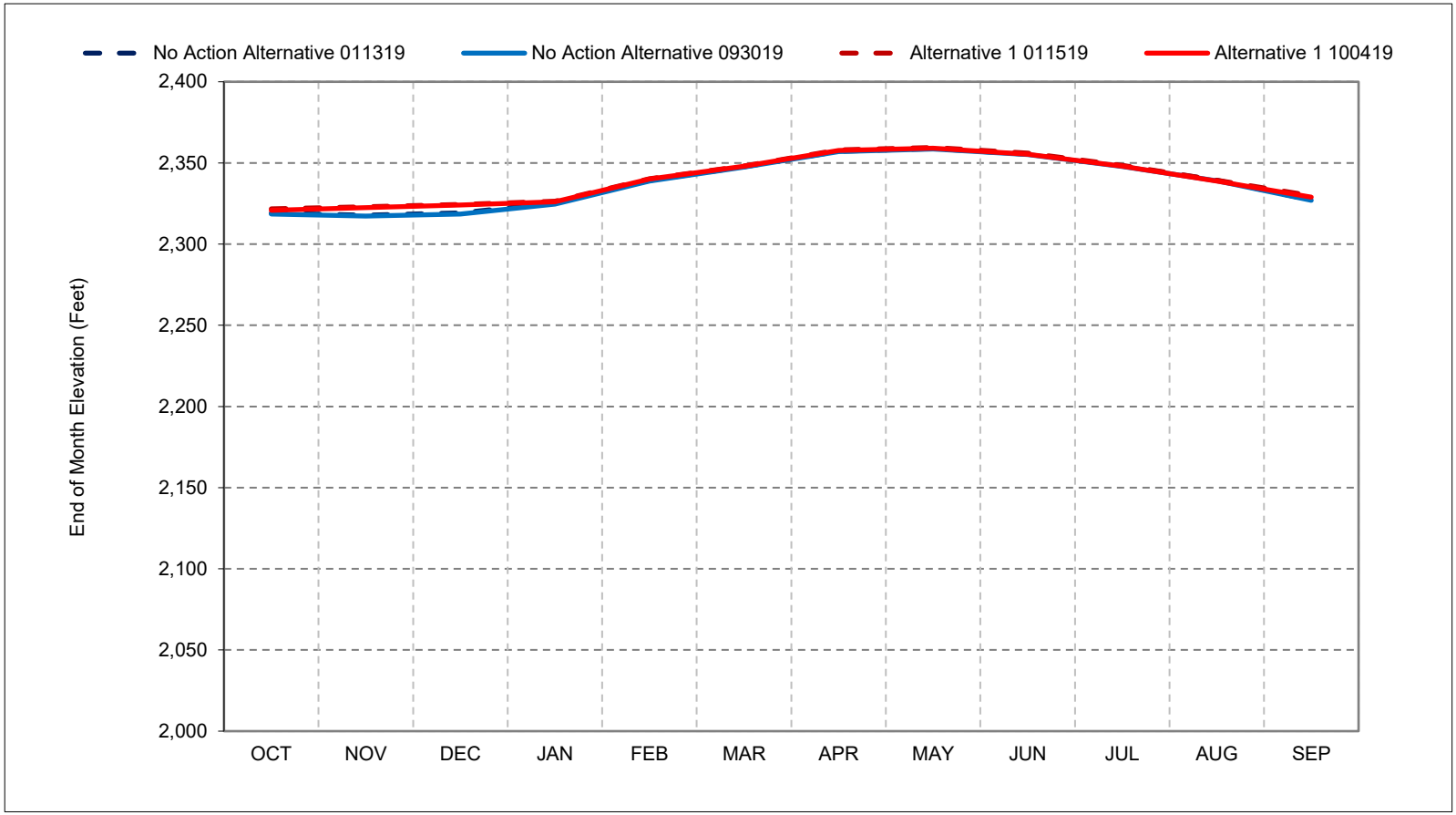



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-2. Trinity Lake Elevation, Wet Year Average Elevation

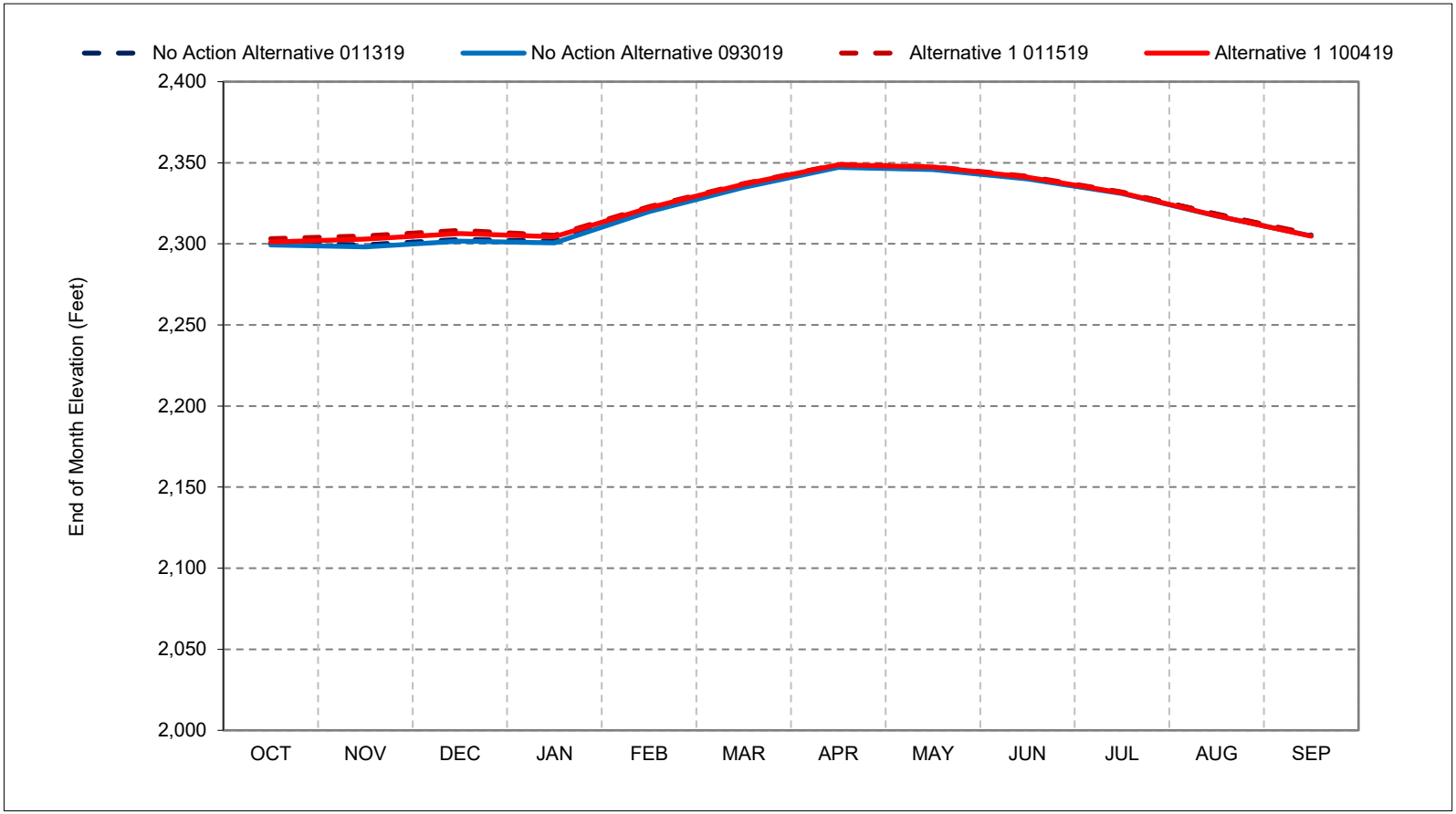



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-3. Trinity Lake Elevation, Above Normal Year Average Elevation

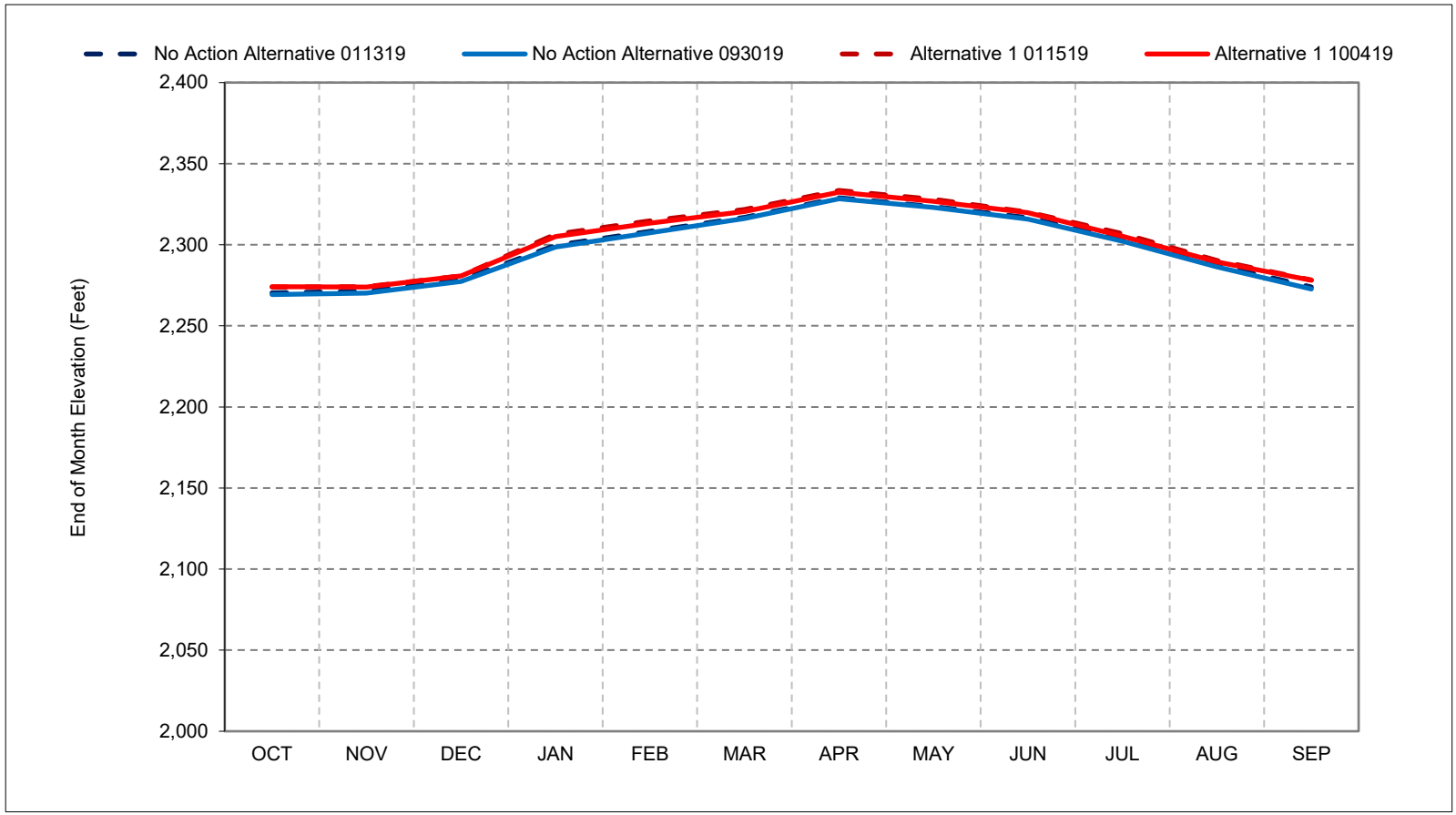



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-4. Trinity Lake Elevation, Below Normal Year Average Elevation

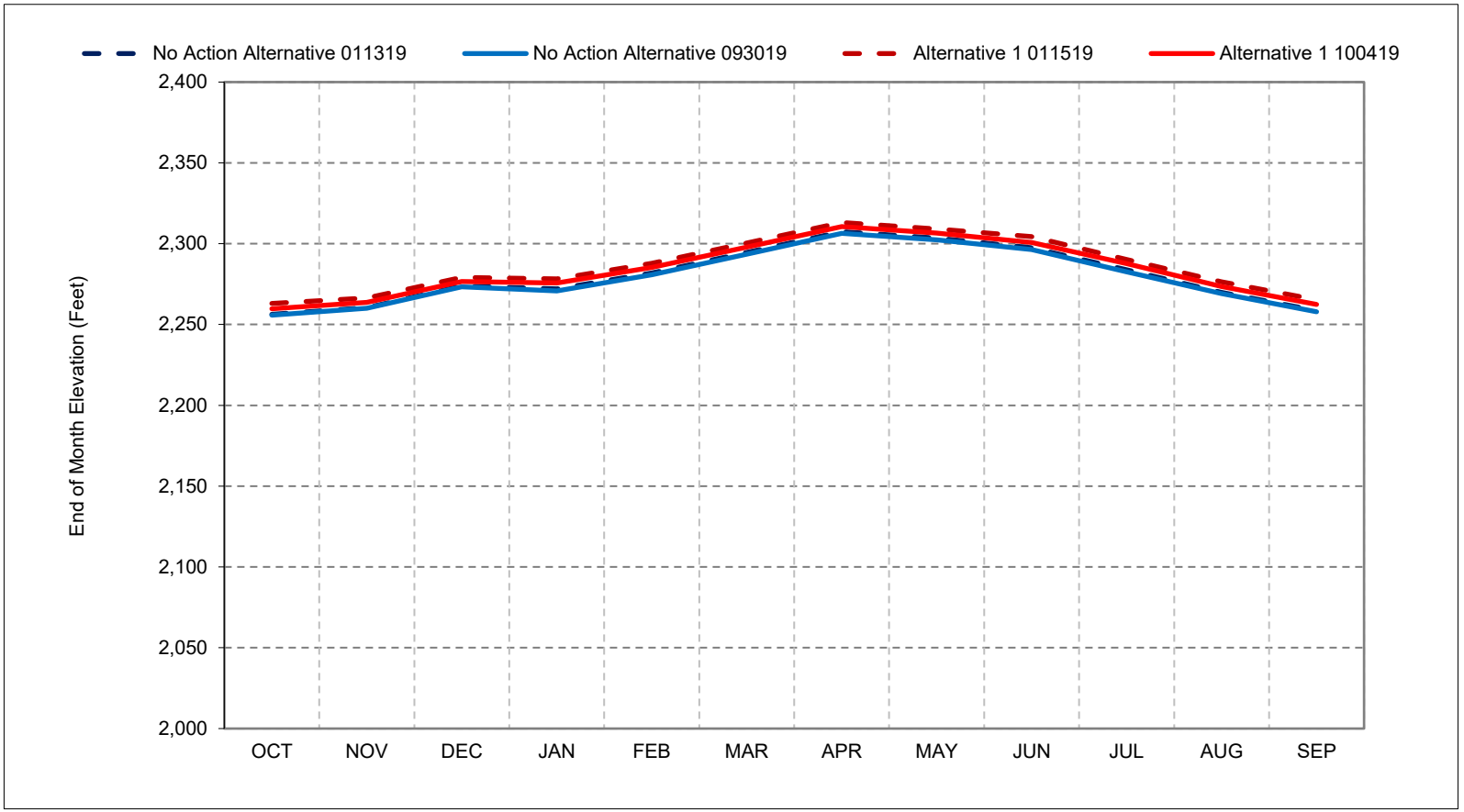



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-5. Trinity Lake Elevation, Dry Year Average Elevation

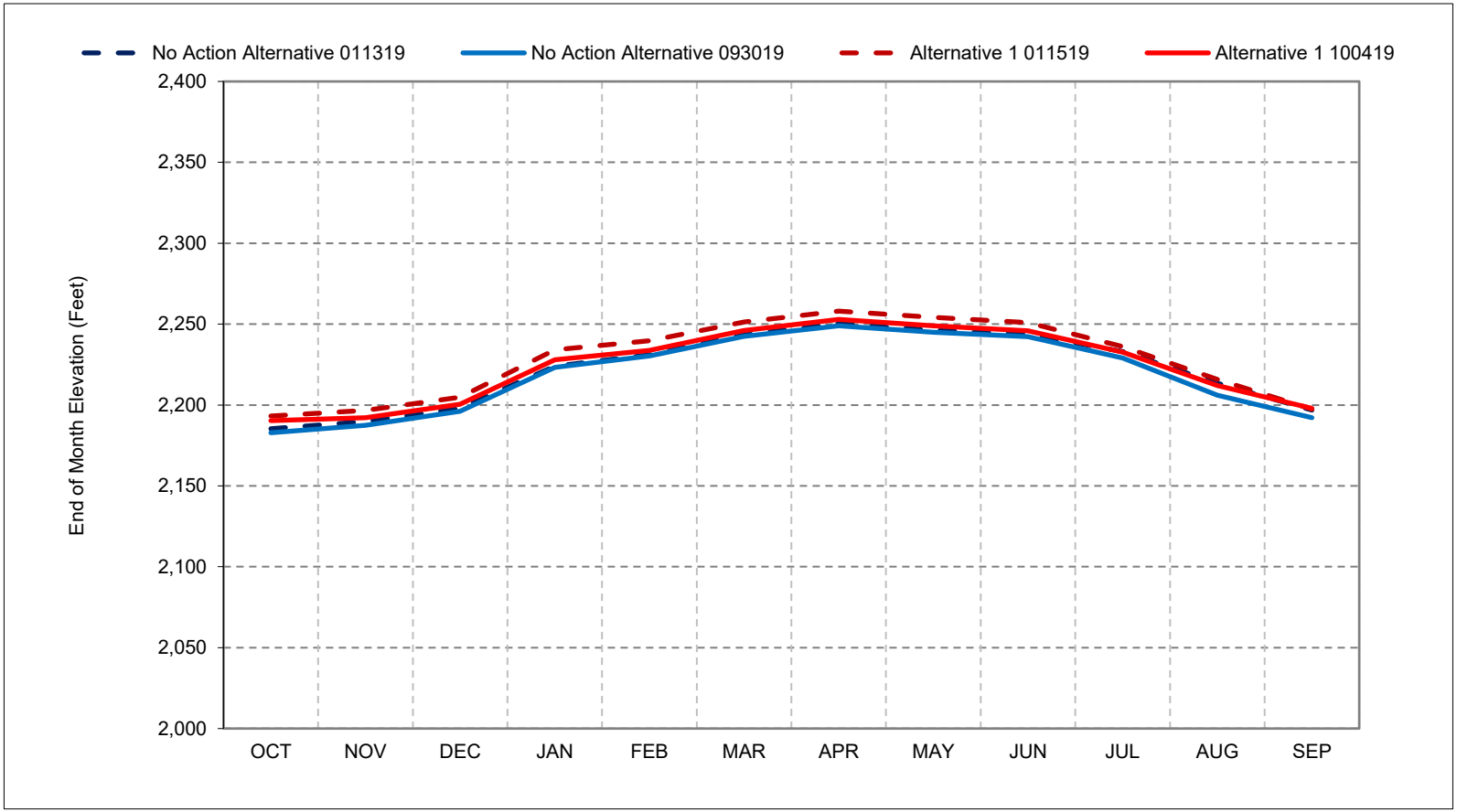



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1a-6. Trinity Lake Elevation, Critical Year Average Elevation

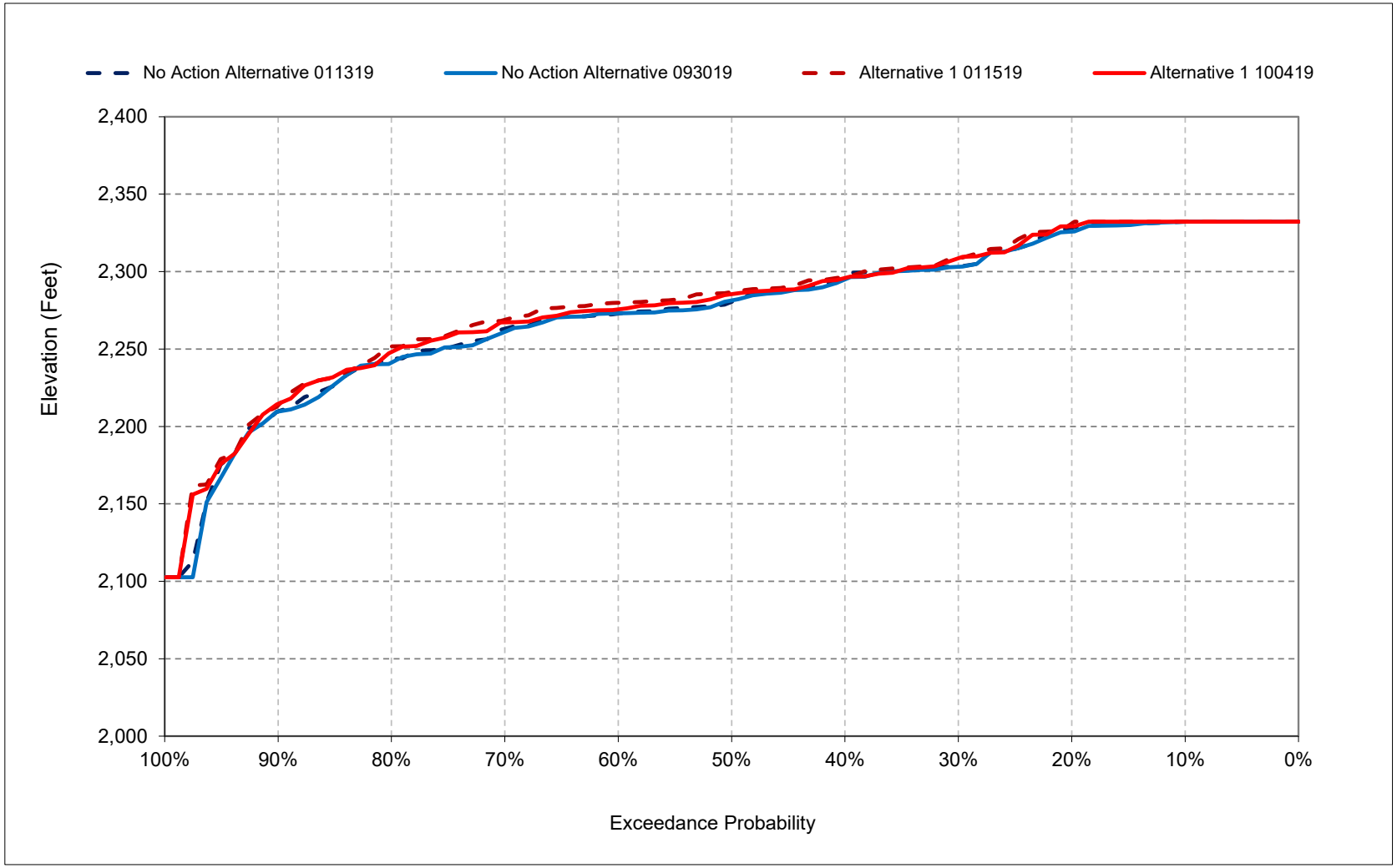



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

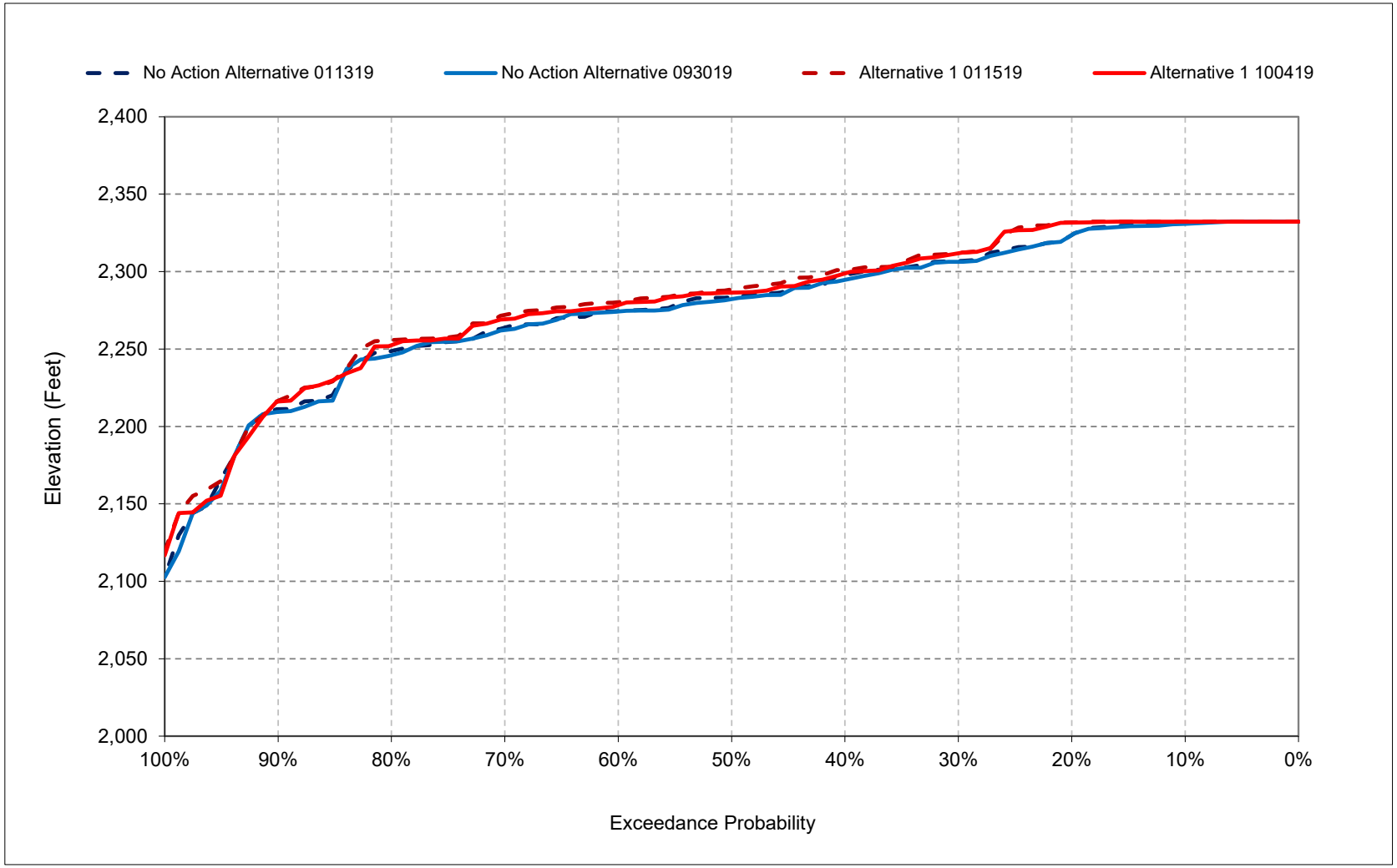
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-7. Trinity Lake, Reservoir Pool Elevation, October**



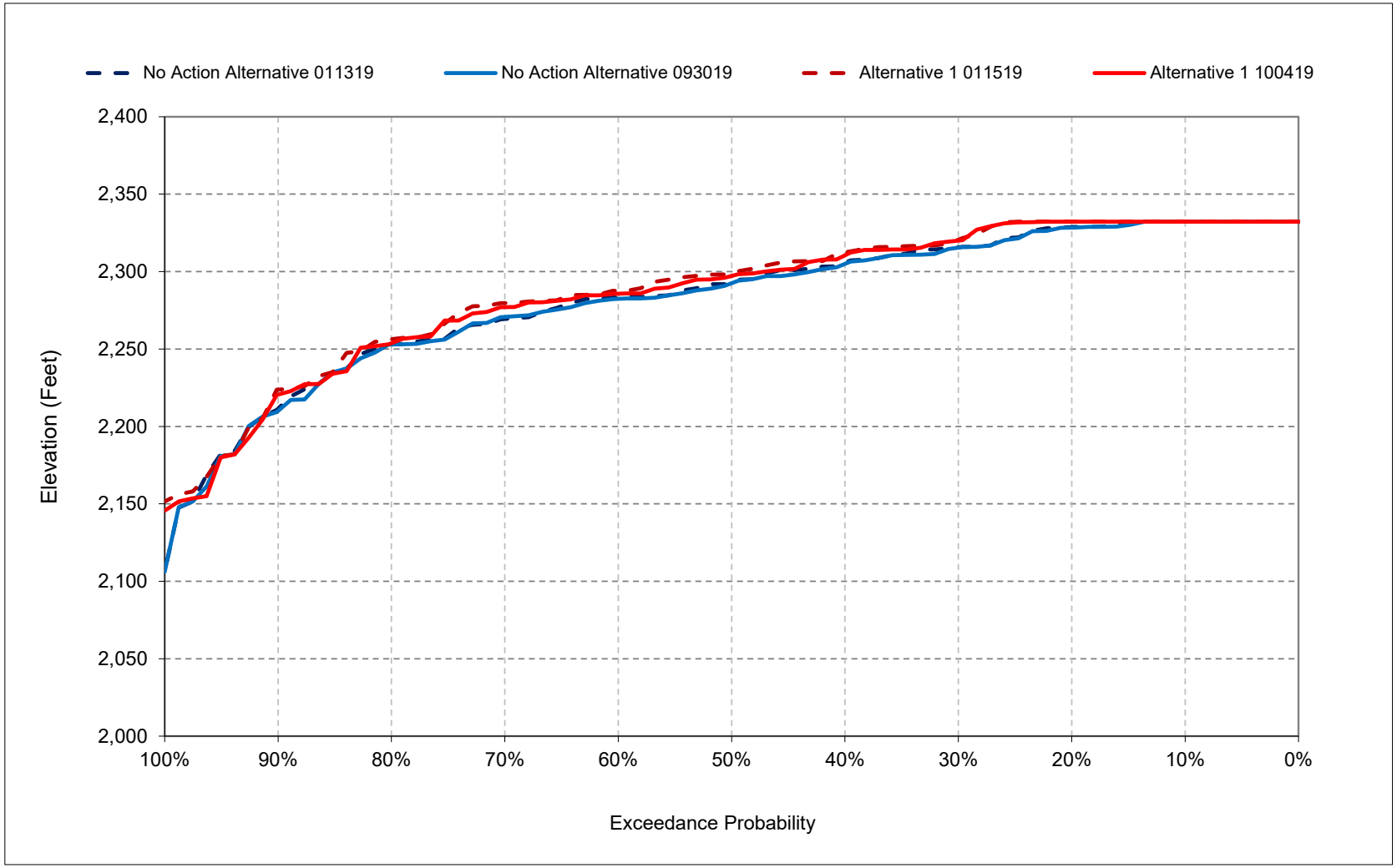

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-8. Trinity Lake, Reservoir Pool Elevation, November**



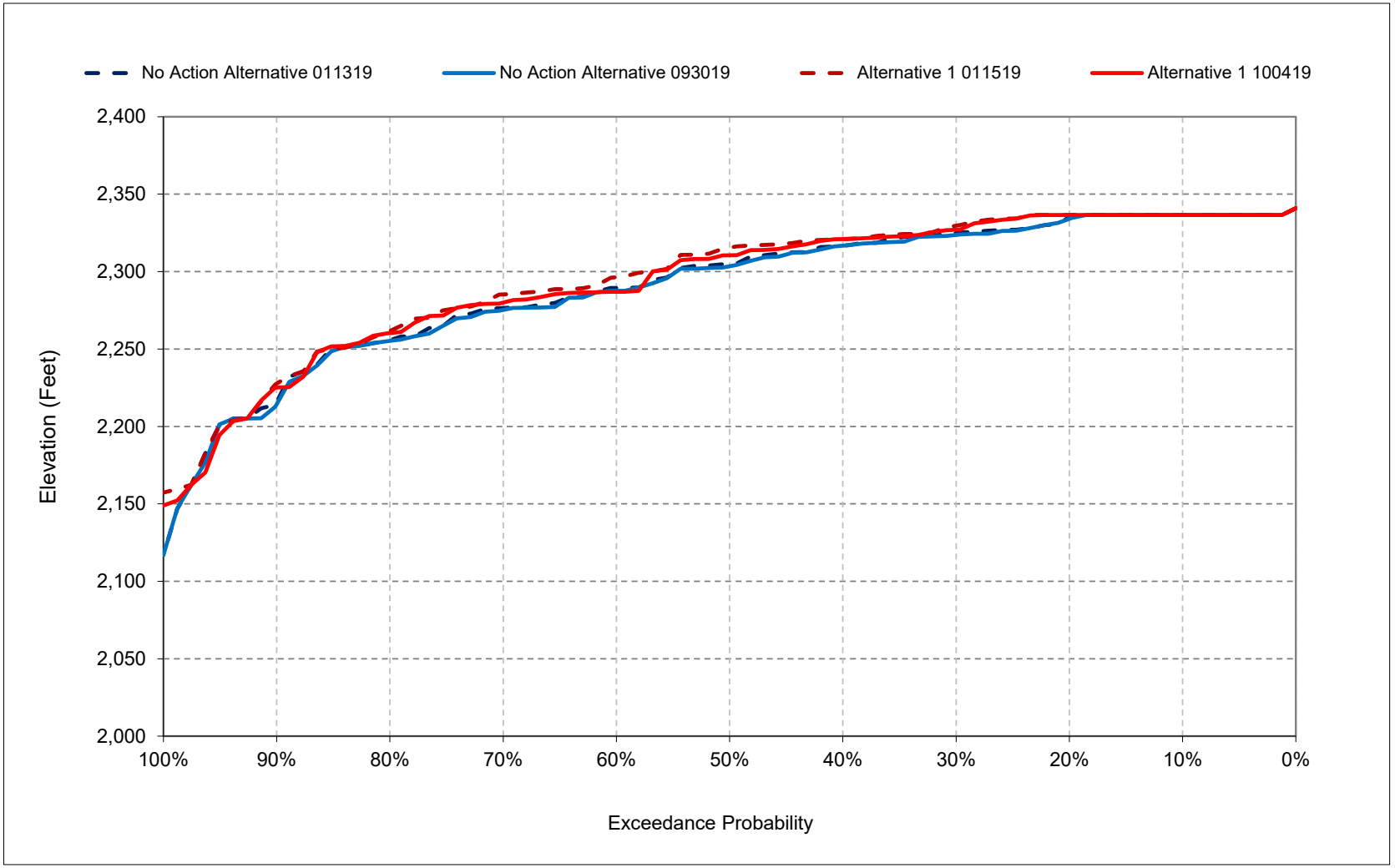

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-9. Trinity Lake, Reservoir Pool Elevation, December**



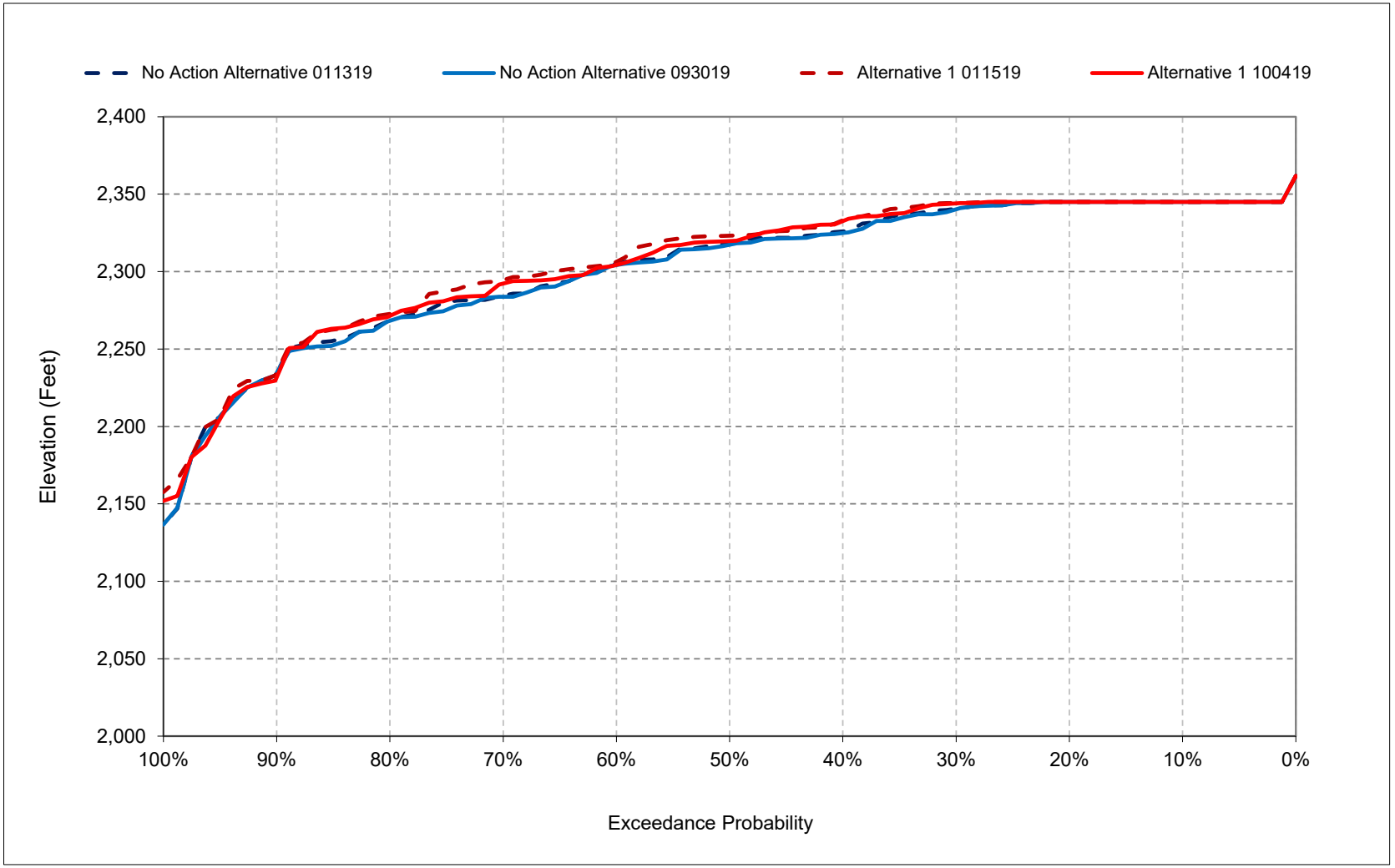

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-10. Trinity Lake, Reservoir Pool Elevation, January**



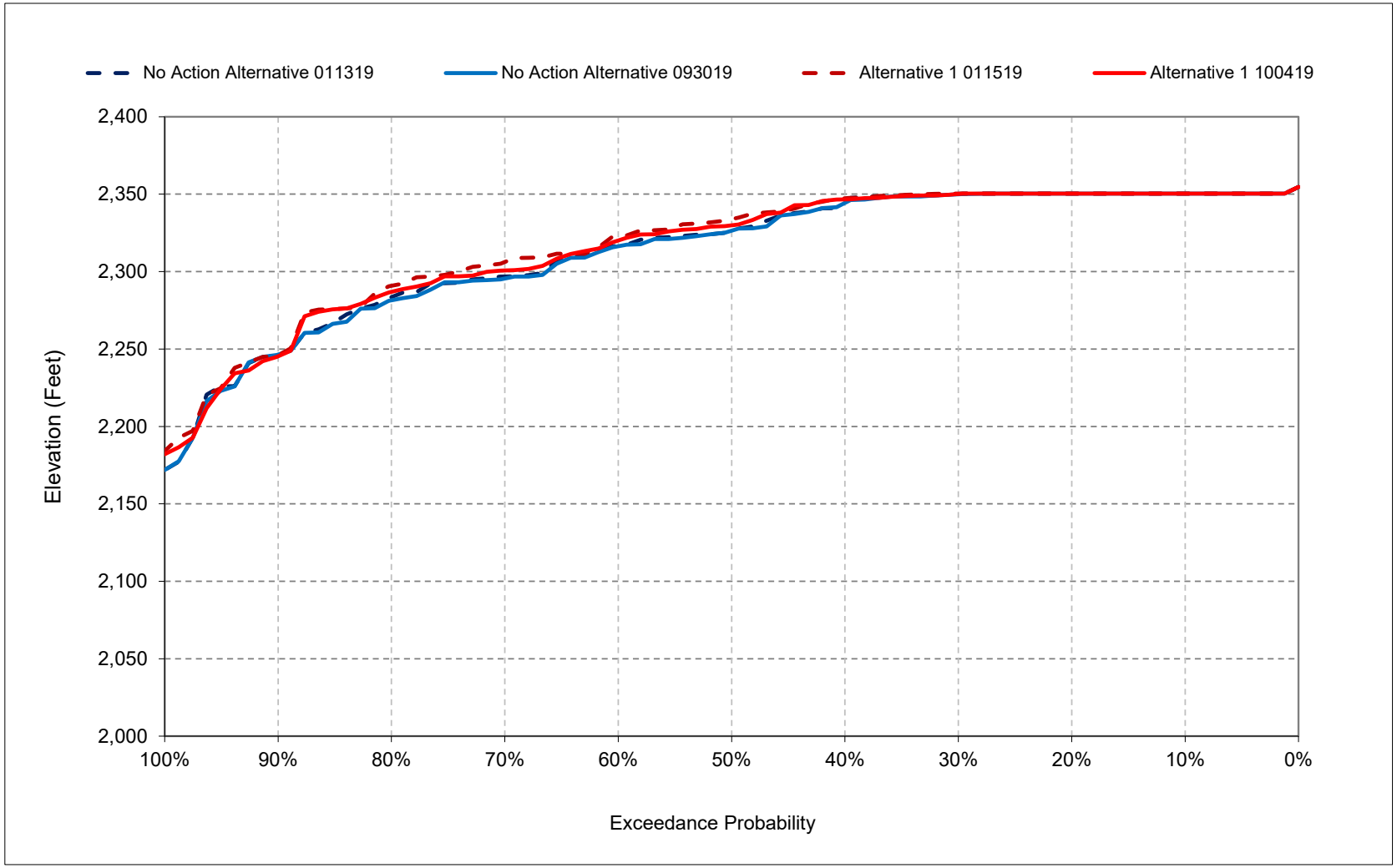

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-11. Trinity Lake, Reservoir Pool Elevation, February**



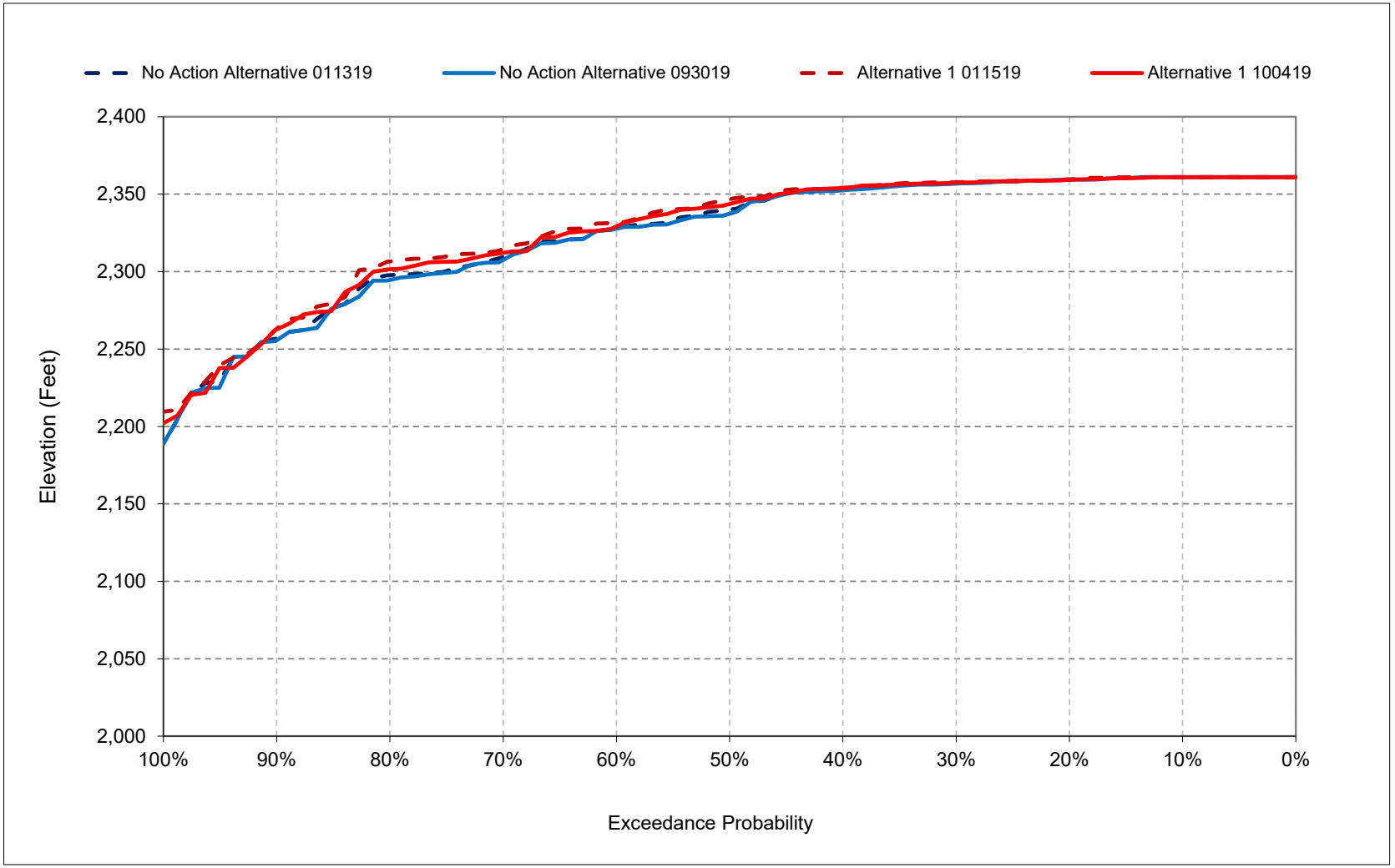

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-12. Trinity Lake, Reservoir Pool Elevation, March**



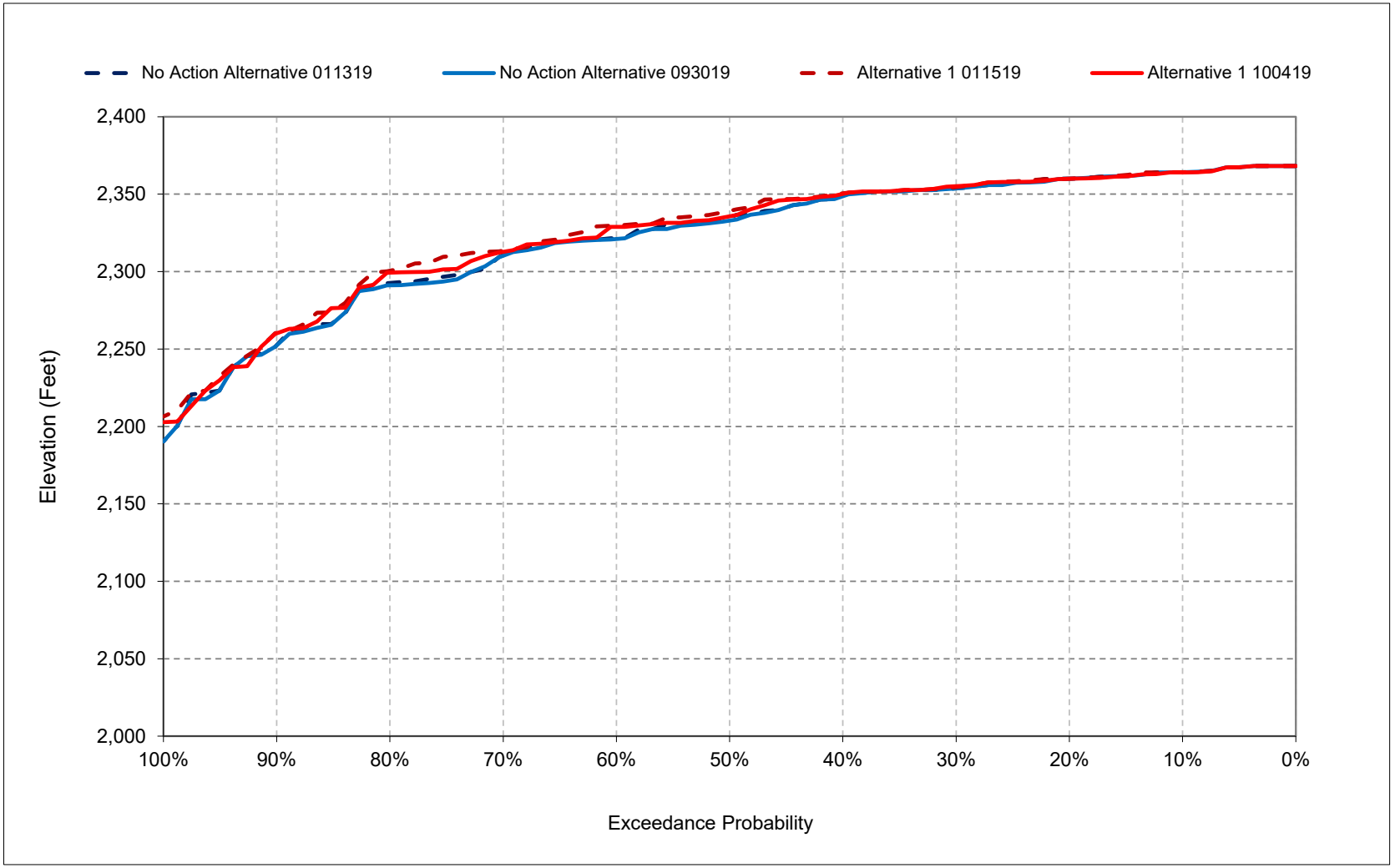

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-13. Trinity Lake, Reservoir Pool Elevation, April**



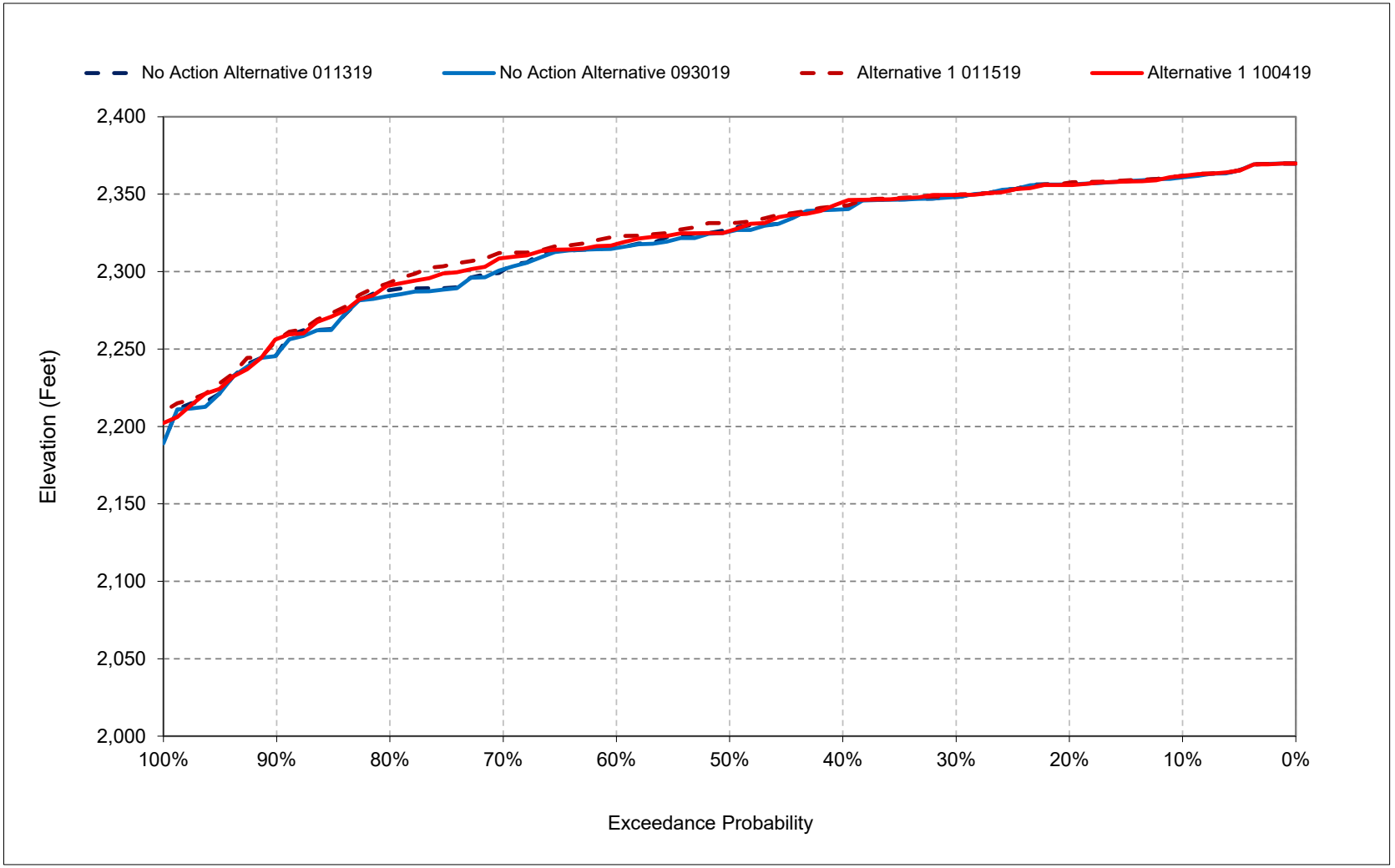

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-14. Trinity Lake, Reservoir Pool Elevation, May**



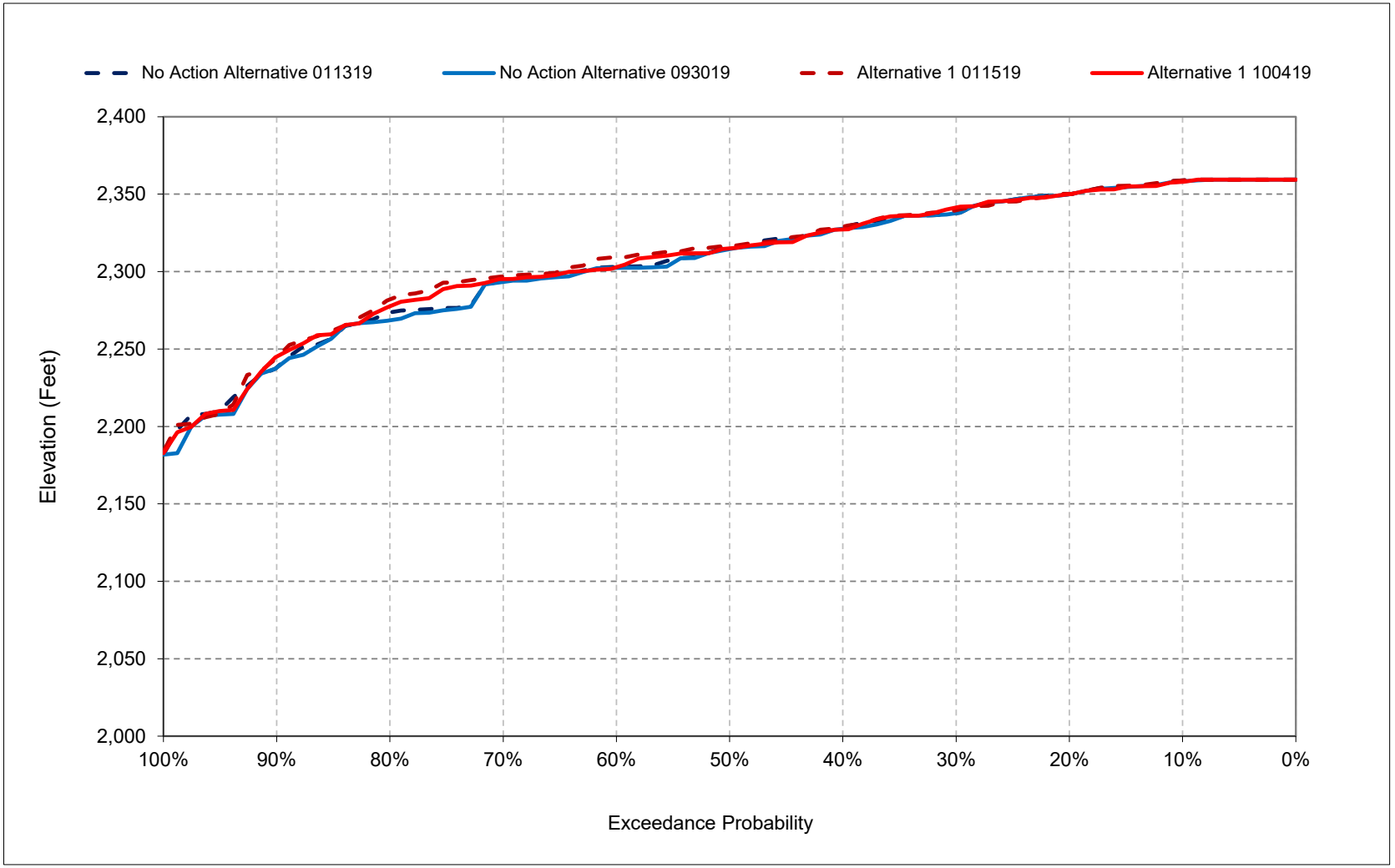

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-15. Trinity Lake, Reservoir Pool Elevation, June**



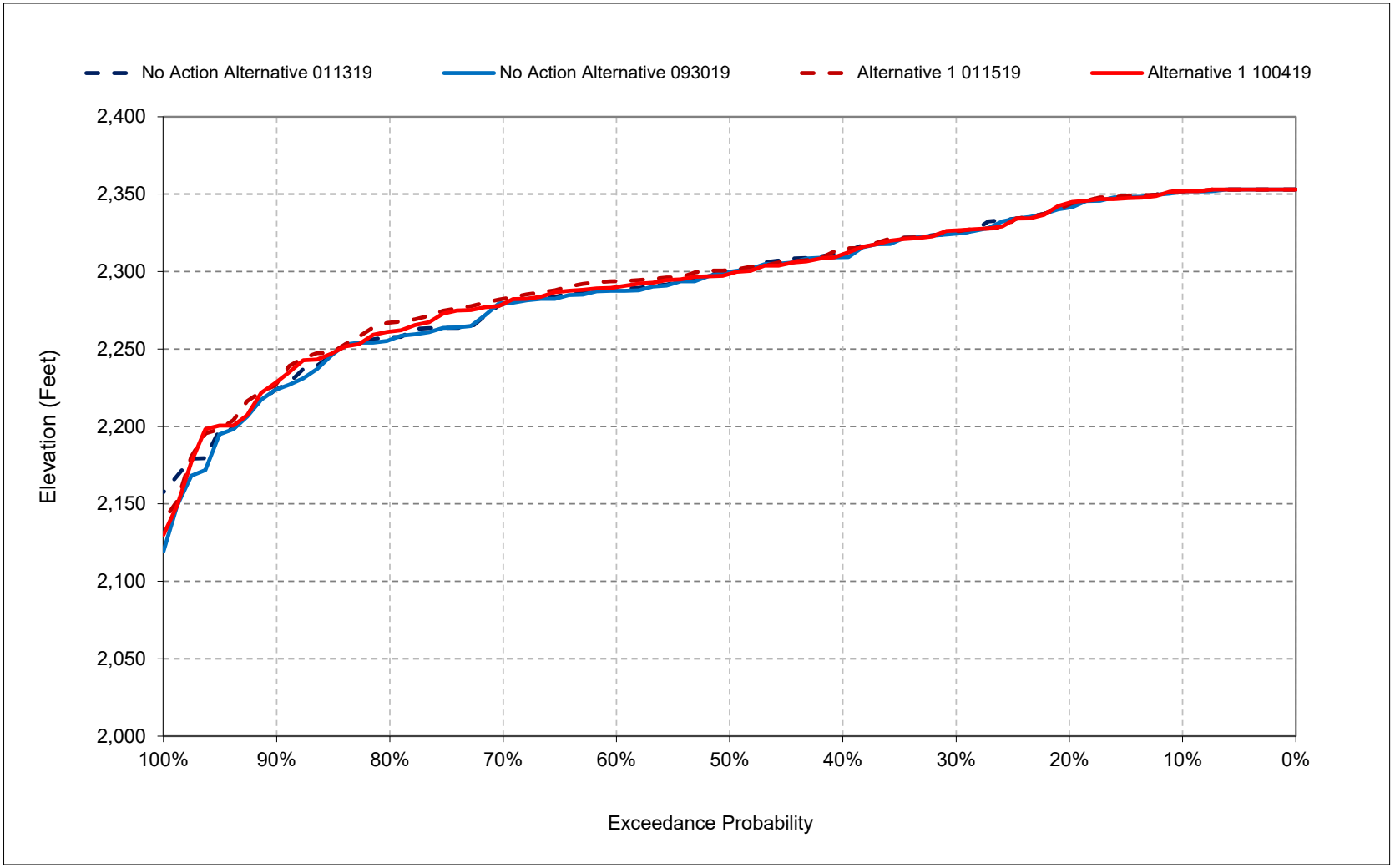

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-16. Trinity Lake, Reservoir Pool Elevation, July**



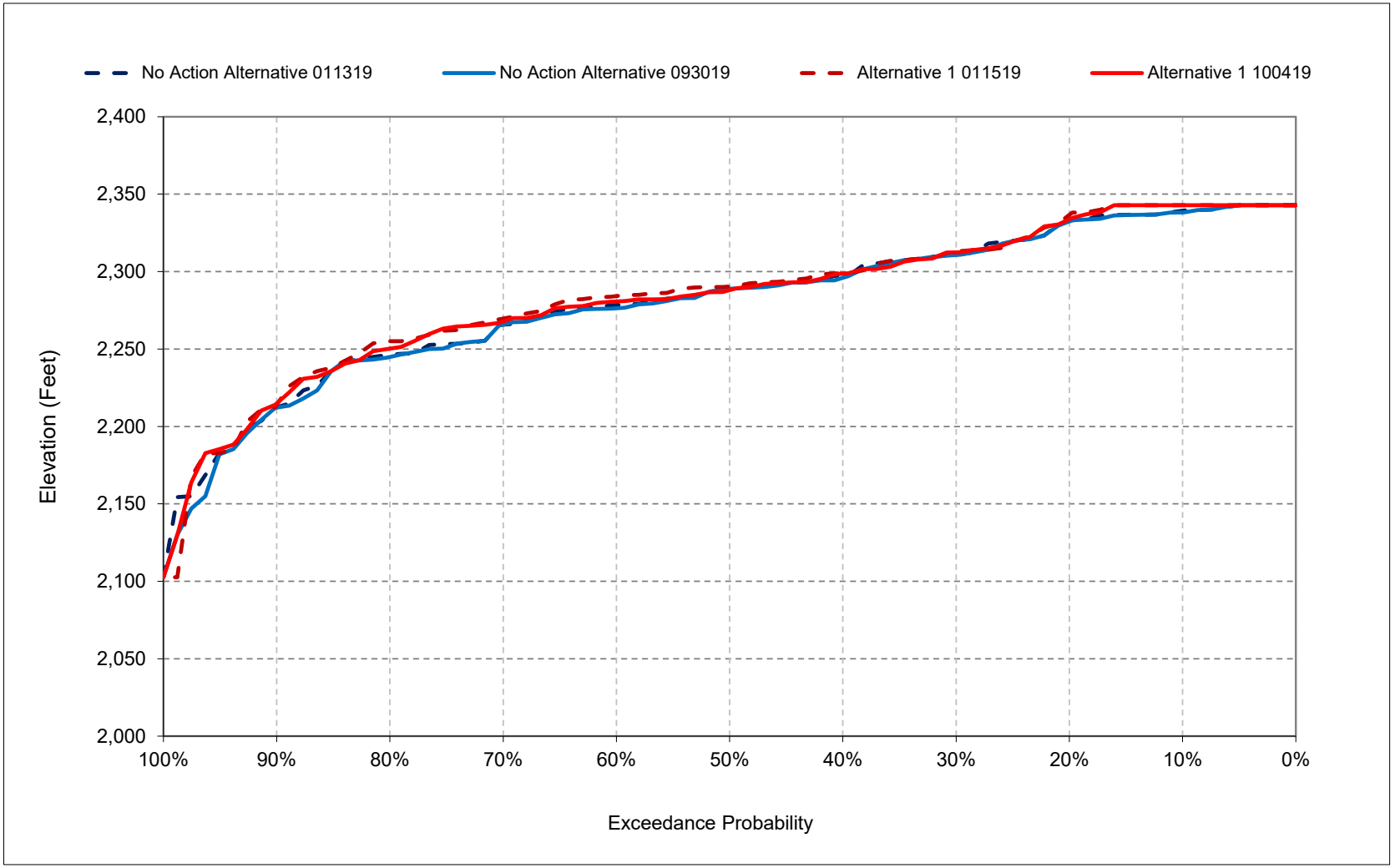

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-17. Trinity Lake, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1a-18. Trinity Lake, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-1. Shasta Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,218 | 3,252 | 3,335 | 3,621 | 3,875 | 4,229 | 4,552 | 4,552 | 4,500 | 4,011 | 3,670 | 3,199 |
| 20% | 3,036 | 2,926 | 3,309 | 3,539 | 3,744 | 4,127 | 4,544 | 4,552 | 4,402 | 3,789 | 3,477 | 3,106 |
| 30% | 2,903 | 2,807 | 3,266 | 3,397 | 3,649 | 4,046 | 4,475 | 4,552 | 4,288 | 3,622 | 3,275 | 3,005 |
| 40% | 2,771 | 2,709 | 3,027 | 3,318 | 3,529 | 3,980 | 4,389 | 4,486 | 4,101 | 3,466 | 3,160 | 2,923 |
| 50% | 2,677 | 2,579 | 2,793 | 3,247 | 3,477 | 3,875 | 4,265 | 4,347 | 3,909 | 3,380 | 3,043 | 2,809 |
| 60% | 2,547 | 2,500 | 2,656 | 3,032 | 3,358 | 3,724 | 4,144 | 4,225 | 3,800 | 3,149 | 2,860 | 2,660 |
| 70% | 2,294 | 2,305 | 2,426 | 2,836 | 3,252 | 3,513 | 3,971 | 3,960 | 3,450 | 2,883 | 2,631 | 2,476 |
| 80% | 2,033 | 2,102 | 2,233 | 2,544 | 2,948 | 3,348 | 3,619 | 3,344 | 2,986 | 2,509 | 2,251 | 2,198 |
| 90% | 1,553 | 1,409 | 1,720 | 2,061 | 2,314 | 2,593 | 2,749 | 2,579 | 2,276 | 1,947 | 1,729 | 1,673 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,482 | 2,450 | 2,669 | 2,976 | 3,273 | 3,630 | 3,972 | 3,958 | 3,668 | 3,125 | 2,816 | 2,579 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,849 | 2,698 | 2,932 | 3,392 | 3,652 | 3,892 | 4,360 | 4,492 | 4,342 | 3,821 | 3,481 | 2,989 |
| Above Normal (16%) | 2,711 | 2,597 | 2,852 | 3,255 | 3,529 | 4,065 | 4,501 | 4,489 | 4,138 | 3,464 | 3,120 | 2,833 |
| Below Normal (13%) | 2,690 | 2,736 | 2,863 | 3,170 | 3,518 | 3,893 | 4,213 | 4,108 | 3,735 | 3,129 | 2,774 | 2,729 |
| Dry (24%) | 2,538 | 2,640 | 2,896 | 2,722 | 3,135 | 3,594 | 3,889 | 3,811 | 3,449 | 2,951 | 2,680 | 2,611 |
| Critical (15%) | 1,158 | 1,173 | 1,345 | 2,021 | 2,180 | 2,413 | 2,474 | 2,330 | 2,002 | 1,540 | 1,309 | 1,225 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,250 | 3,252 | 3,359 | 3,666 | 3,939 | 4,262 | 4,552 | 4,552 | 4,500 | 4,011 | 3,669 | 3,400 |
| 20% | 3,250 | 3,252 | 3,337 | 3,612 | 3,837 | 4,182 | 4,536 | 4,552 | 4,402 | 3,785 | 3,455 | 3,400 |
| 30% | 3,213 | 3,244 | 3,314 | 3,538 | 3,732 | 4,080 | 4,478 | 4,552 | 4,253 | 3,607 | 3,303 | 3,304 |
| 40% | 2,997 | 3,128 | 3,280 | 3,410 | 3,653 | 4,012 | 4,433 | 4,483 | 4,058 | 3,431 | 3,151 | 3,058 |
| 50% | 2,752 | 2,897 | 3,226 | 3,329 | 3,564 | 3,966 | 4,291 | 4,344 | 3,879 | 3,282 | 2,981 | 2,914 |
| 60% | 2,648 | 2,718 | 3,098 | 3,252 | 3,484 | 3,855 | 4,183 | 4,159 | 3,661 | 3,139 | 2,812 | 2,804 |
| 70% | 2,518 | 2,622 | 2,789 | 2,985 | 3,283 | 3,638 | 4,087 | 3,913 | 3,484 | 2,921 | 2,664 | 2,589 |
| 80% | 2,261 | 2,279 | 2,411 | 2,720 | 3,113 | 3,418 | 3,854 | 3,660 | 3,177 | 2,723 | 2,429 | 2,377 |
| 90% | 1,542 | 1,441 | 1,798 | 2,122 | 2,607 | 2,690 | 2,753 | 2,930 | 2,552 | 2,135 | 1,748 | 1,676 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,626 | 2,674 | 2,833 | 3,093 | 3,370 | 3,706 | 4,041 | 3,994 | 3,667 | 3,141 | 2,828 | 2,730 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,152 | 3,180 | 3,280 | 3,412 | 3,662 | 3,899 | 4,355 | 4,473 | 4,318 | 3,806 | 3,460 | 3,280 |
| Above Normal (16%) | 2,899 | 2,940 | 3,118 | 3,358 | 3,567 | 4,069 | 4,503 | 4,461 | 4,096 | 3,427 | 3,084 | 3,070 |
| Below Normal (13%) | 2,637 | 2,690 | 2,818 | 3,404 | 3,695 | 4,031 | 4,328 | 4,164 | 3,724 | 3,109 | 2,752 | 2,664 |
| Dry (24%) | 2,586 | 2,689 | 2,922 | 2,915 | 3,330 | 3,765 | 4,058 | 3,928 | 3,489 | 3,007 | 2,730 | 2,668 |
| Critical (15%) | 1,247 | 1,251 | 1,423 | 2,127 | 2,293 | 2,501 | 2,566 | 2,406 | 2,039 | 1,642 | 1,413 | 1,331 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 32 | 0 | 24 | 45 | 64 | 33 | 0 | 0 | 0 | 0 | -2 | 201 |
| 20% | 214 | 326 | 28 | 73 | 93 | 56 | -8 | 0 | 0 | -4 | -22 | 294 |
| 30% | 309 | 437 | 48 | 141 | 83 | 34 | 3 | 0 | -35 | -15 | 28 | 298 |
| 40% | 226 | 419 | 253 | 93 | 125 | 32 | 44 | -2 | -43 | -34 | -9 | 136 |
| 50% | 75 | 318 | 433 | 82 | 87 | 91 | 25 | -2 | -30 | -98 | -63 | 105 |
| 60% | 100 | 218 | 442 | 220 | 126 | 131 | 39 | -66 | -140 | -11 | -48 | 143 |
| 70% | 223 | 318 | 363 | 149 | 31 | 125 | 116 | -47 | 33 | 39 | 33 | 113 |
| 80% | 228 | 177 | 178 | 177 | 165 | 69 | 236 | 315 | 192 | 214 | 177 | 179 |
| 90% | -11 | 33 | 78 | 62 | 293 | 97 | 4 | 351 | 276 | 188 | 19 | 3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 143 | 224 | 164 | 117 | 97 | 76 | 69 | 37 | -1 | 15 | 12 | 151 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 302 | 482 | 348 | 21 | 10 | 7 | -5 | -20 | -24 | -15 | -22 | 292 |
| Above Normal (16%) | 188 | 343 | 266 | 104 | 38 | 4 | 2 | -28 | -42 | -37 | -36 | 237 |
| Below Normal (13%) | -53 | -46 | -45 | 234 | 176 | 138 | 114 | 56 | -11 | -20 | -22 | -65 |
| Dry (24%) | 48 | 48 | 26 | 193 | 195 | 170 | 169 | 117 | 40 | 56 | 50 | 56 |
| Critical (15%) | 88 | 78 | 78 | 107 | 112 | 88 | 92 | 76 | 37 | 102 | 104 | 106 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-2. Shasta Lake Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,222 | 3,252 | 3,335 | 3,602 | 3,875 | 4,229 | 4,552 | 4,552 | 4,500 | 4,002 | 3,670 | 3,200 |
| 20% | 3,004 | 2,926 | 3,303 | 3,539 | 3,744 | 4,117 | 4,544 | 4,552 | 4,402 | 3,789 | 3,476 | 3,085 |
| 30% | 2,874 | 2,799 | 3,260 | 3,388 | 3,635 | 4,032 | 4,475 | 4,548 | 4,279 | 3,614 | 3,277 | 2,989 |
| 40% | 2,729 | 2,654 | 3,013 | 3,300 | 3,515 | 3,980 | 4,389 | 4,486 | 4,079 | 3,441 | 3,152 | 2,895 |
| 50% | 2,629 | 2,554 | 2,756 | 3,231 | 3,453 | 3,863 | 4,232 | 4,347 | 3,886 | 3,326 | 3,015 | 2,789 |
| 60% | 2,519 | 2,482 | 2,618 | 3,007 | 3,358 | 3,713 | 4,103 | 4,203 | 3,791 | 3,151 | 2,843 | 2,661 |
| 70% | 2,247 | 2,278 | 2,394 | 2,737 | 3,252 | 3,426 | 3,960 | 3,951 | 3,406 | 2,891 | 2,655 | 2,446 |
| 80% | 2,008 | 2,064 | 2,169 | 2,518 | 2,884 | 3,360 | 3,605 | 3,352 | 2,946 | 2,516 | 2,222 | 2,167 |
| 90% | 1,399 | 1,236 | 1,702 | 1,934 | 2,302 | 2,591 | 2,710 | 2,569 | 2,239 | 1,805 | 1,592 | 1,539 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,456 | 2,421 | 2,641 | 2,951 | 3,251 | 3,609 | 3,951 | 3,936 | 3,640 | 3,109 | 2,799 | 2,561 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,839 | 2,685 | 2,920 | 3,390 | 3,652 | 3,892 | 4,360 | 4,492 | 4,340 | 3,818 | 3,477 | 2,984 |
| Above Normal (16%) | 2,683 | 2,573 | 2,832 | 3,232 | 3,517 | 4,065 | 4,501 | 4,489 | 4,133 | 3,458 | 3,115 | 2,821 |
| Below Normal (13%) | 2,670 | 2,713 | 2,840 | 3,139 | 3,504 | 3,874 | 4,199 | 4,094 | 3,725 | 3,126 | 2,763 | 2,711 |
| Dry (24%) | 2,496 | 2,595 | 2,854 | 2,680 | 3,095 | 3,551 | 3,845 | 3,766 | 3,400 | 2,916 | 2,645 | 2,579 |
| Critical (15%) | 1,120 | 1,124 | 1,295 | 1,976 | 2,121 | 2,356 | 2,419 | 2,268 | 1,914 | 1,499 | 1,277 | 1,196 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,250 | 3,252 | 3,349 | 3,650 | 3,928 | 4,223 | 4,552 | 4,552 | 4,500 | 4,015 | 3,672 | 3,400 |
| 20% | 3,250 | 3,252 | 3,321 | 3,604 | 3,793 | 4,123 | 4,518 | 4,552 | 4,408 | 3,806 | 3,464 | 3,377 |
| 30% | 3,170 | 3,162 | 3,305 | 3,526 | 3,705 | 4,044 | 4,454 | 4,535 | 4,251 | 3,594 | 3,257 | 3,197 |
| 40% | 3,008 | 3,029 | 3,268 | 3,383 | 3,615 | 3,998 | 4,369 | 4,440 | 4,019 | 3,444 | 3,120 | 3,023 |
| 50% | 2,793 | 2,818 | 3,209 | 3,322 | 3,514 | 3,964 | 4,268 | 4,324 | 3,872 | 3,288 | 3,008 | 2,940 |
| 60% | 2,721 | 2,702 | 2,920 | 3,226 | 3,434 | 3,831 | 4,139 | 4,173 | 3,681 | 3,164 | 2,798 | 2,735 |
| 70% | 2,427 | 2,500 | 2,624 | 2,927 | 3,263 | 3,605 | 4,038 | 3,892 | 3,467 | 2,889 | 2,708 | 2,580 |
| 80% | 2,241 | 2,321 | 2,311 | 2,601 | 2,989 | 3,405 | 3,792 | 3,520 | 3,087 | 2,681 | 2,430 | 2,357 |
| 90% | 1,559 | 1,415 | 1,859 | 2,042 | 2,519 | 2,682 | 2,772 | 2,781 | 2,426 | 2,012 | 1,741 | 1,628 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,616 | 2,626 | 2,791 | 3,062 | 3,330 | 3,666 | 3,996 | 3,961 | 3,637 | 3,127 | 2,822 | 2,713 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,133 | 3,120 | 3,224 | 3,422 | 3,655 | 3,880 | 4,336 | 4,474 | 4,312 | 3,783 | 3,436 | 3,260 |
| Above Normal (16%) | 2,781 | 2,750 | 2,960 | 3,353 | 3,561 | 4,046 | 4,471 | 4,437 | 4,059 | 3,399 | 3,054 | 2,922 |
| Below Normal (13%) | 2,732 | 2,762 | 2,879 | 3,381 | 3,670 | 4,005 | 4,304 | 4,153 | 3,699 | 3,139 | 2,818 | 2,767 |
| Dry (24%) | 2,608 | 2,675 | 2,921 | 2,828 | 3,239 | 3,691 | 3,977 | 3,854 | 3,448 | 3,008 | 2,743 | 2,687 |
| Critical (15%) | 1,229 | 1,213 | 1,374 | 2,063 | 2,218 | 2,441 | 2,497 | 2,338 | 1,977 | 1,601 | 1,379 | 1,296 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 28 | 0 | 14 | 47 | 53 | -5 | 0 | 0 | 0 | 13 | 2 | 200 |
| 20% | 246 | 326 | 18 | 65 | 49 | 7 | -26 | 0 | 6 | 18 | -13 | 293 |
| 30% | 296 | 363 | 45 | 138 | 70 | 12 | -21 | -13 | -27 | -20 | -20 | 208 |
| 40% | 278 | 375 | 256 | 83 | 101 | 18 | -21 | -47 | -59 | 3 | -31 | 127 |
| 50% | 164 | 264 | 453 | 91 | 60 | 102 | 36 | -22 | -15 | -39 | -7 | 152 |
| 60% | 202 | 220 | 302 | 219 | 76 | 118 | 36 | -30 | -110 | 13 | -45 | 74 |
| 70% | 180 | 222 | 230 | 190 | 11 | 179 | 78 | -59 | 62 | -2 | 53 | 134 |
| 80% | 233 | 257 | 141 | 84 | 106 | 44 | 187 | 167 | 140 | 165 | 208 | 190 |
| 90% | 160 | 179 | 158 | 108 | 217 | 91 | 62 | 212 | 187 | 207 | 150 | 89 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 160 | 205 | 150 | 111 | 80 | 57 | 45 | 26 | -3 | 19 | 23 | 152 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 293 | 435 | 303 | 32 | 3 | -12 | -24 | -18 | -28 | -35 | -41 | 275 |
| Above Normal (16%) | 98 | 177 | 128 | 121 | 44 | -19 | -30 | -52 | -74 | -59 | -61 | 101 |
| Below Normal (13%) | 63 | 49 | 39 | 241 | 166 | 131 | 104 | 59 | -26 | 13 | 55 | 55 |
| Dry (24%) | 112 | 80 | 68 | 148 | 144 | 139 | 132 | 88 | 48 | 91 | 98 | 108 |
| Critical (15%) | 109 | 90 | 79 | 87 | 97 | 85 | 78 | 70 | 63 | 102 | 102 | 100 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-3. Shasta Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,218 | 3,252 | 3,335 | 3,621 | 3,875 | 4,229 | 4,552 | 4,552 | 4,500 | 4,011 | 3,670 | 3,199 |
| 20% | 3,036 | 2,926 | 3,309 | 3,539 | 3,744 | 4,127 | 4,544 | 4,552 | 4,402 | 3,789 | 3,477 | 3,106 |
| 30% | 2,903 | 2,807 | 3,266 | 3,397 | 3,649 | 4,046 | 4,475 | 4,552 | 4,288 | 3,622 | 3,275 | 3,005 |
| 40% | 2,771 | 2,709 | 3,027 | 3,318 | 3,529 | 3,980 | 4,389 | 4,486 | 4,101 | 3,466 | 3,160 | 2,923 |
| 50% | 2,677 | 2,579 | 2,793 | 3,247 | 3,477 | 3,875 | 4,265 | 4,347 | 3,909 | 3,380 | 3,043 | 2,809 |
| 60% | 2,547 | 2,500 | 2,656 | 3,032 | 3,358 | 3,724 | 4,144 | 4,225 | 3,800 | 3,149 | 2,860 | 2,660 |
| 70% | 2,294 | 2,305 | 2,426 | 2,836 | 3,252 | 3,513 | 3,971 | 3,960 | 3,450 | 2,883 | 2,631 | 2,476 |
| 80% | 2,033 | 2,102 | 2,233 | 2,544 | 2,948 | 3,348 | 3,619 | 3,344 | 2,986 | 2,509 | 2,251 | 2,198 |
| 90% | 1,553 | 1,409 | 1,720 | 2,061 | 2,314 | 2,593 | 2,749 | 2,579 | 2,276 | 1,947 | 1,729 | 1,673 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,482 | 2,450 | 2,669 | 2,976 | 3,273 | 3,630 | 3,972 | 3,958 | 3,668 | 3,125 | 2,816 | 2,579 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,849 | 2,698 | 2,932 | 3,392 | 3,652 | 3,892 | 4,360 | 4,492 | 4,342 | 3,821 | 3,481 | 2,989 |
| Above Normal (16%) | 2,711 | 2,597 | 2,852 | 3,255 | 3,529 | 4,065 | 4,501 | 4,489 | 4,138 | 3,464 | 3,120 | 2,833 |
| Below Normal (13%) | 2,690 | 2,736 | 2,863 | 3,170 | 3,518 | 3,893 | 4,213 | 4,108 | 3,735 | 3,129 | 2,774 | 2,729 |
| Dry (24%) | 2,538 | 2,640 | 2,896 | 2,722 | 3,135 | 3,594 | 3,889 | 3,811 | 3,449 | 2,951 | 2,680 | 2,611 |
| Critical (15%) | 1,158 | 1,173 | 1,345 | 2,021 | 2,180 | 2,413 | 2,474 | 2,330 | 2,002 | 1,540 | 1,309 | 1,225 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,222 | 3,252 | 3,335 | 3,602 | 3,875 | 4,229 | 4,552 | 4,552 | 4,500 | 4,002 | 3,670 | 3,200 |
| 20% | 3,004 | 2,926 | 3,303 | 3,539 | 3,744 | 4,117 | 4,544 | 4,552 | 4,402 | 3,789 | 3,476 | 3,085 |
| 30% | 2,874 | 2,799 | 3,260 | 3,388 | 3,635 | 4,032 | 4,475 | 4,548 | 4,279 | 3,614 | 3,277 | 2,989 |
| 40% | 2,729 | 2,654 | 3,013 | 3,300 | 3,515 | 3,980 | 4,389 | 4,486 | 4,079 | 3,441 | 3,152 | 2,895 |
| 50% | 2,629 | 2,554 | 2,756 | 3,231 | 3,453 | 3,863 | 4,232 | 4,347 | 3,886 | 3,326 | 3,015 | 2,789 |
| 60% | 2,519 | 2,482 | 2,618 | 3,007 | 3,358 | 3,713 | 4,103 | 4,203 | 3,791 | 3,151 | 2,843 | 2,661 |
| 70% | 2,247 | 2,278 | 2,394 | 2,737 | 3,252 | 3,426 | 3,960 | 3,951 | 3,406 | 2,891 | 2,655 | 2,446 |
| 80% | 2,008 | 2,064 | 2,169 | 2,518 | 2,884 | 3,360 | 3,605 | 3,352 | 2,946 | 2,516 | 2,222 | 2,167 |
| 90% | 1,399 | 1,236 | 1,702 | 1,934 | 2,302 | 2,591 | 2,710 | 2,569 | 2,239 | 1,805 | 1,592 | 1,539 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,456 | 2,421 | 2,641 | 2,951 | 3,251 | 3,609 | 3,951 | 3,936 | 3,640 | 3,109 | 2,799 | 2,561 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,839 | 2,685 | 2,920 | 3,390 | 3,652 | 3,892 | 4,360 | 4,492 | 4,340 | 3,818 | 3,477 | 2,984 |
| Above Normal (16%) | 2,683 | 2,573 | 2,832 | 3,232 | 3,517 | 4,065 | 4,501 | 4,489 | 4,133 | 3,458 | 3,115 | 2,821 |
| Below Normal (13%) | 2,670 | 2,713 | 2,840 | 3,139 | 3,504 | 3,874 | 4,199 | 4,094 | 3,725 | 3,126 | 2,763 | 2,711 |
| Dry (24%) | 2,496 | 2,595 | 2,854 | 2,680 | 3,095 | 3,551 | 3,845 | 3,766 | 3,400 | 2,916 | 2,645 | 2,579 |
| Critical (15%) | 1,120 | 1,124 | 1,295 | 1,976 | 2,121 | 2,356 | 2,419 | 2,268 | 1,914 | 1,499 | 1,277 | 1,196 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4 | 0 | 0 | -19 | 0 | 0 | 0 | 0 | 0 | -8 | 0 | 1 |
| 20% | -31 | 0 | -6 | 0 | 0 | -10 | 0 | 0 | 0 | 0 | -1 | -21 |
| 30% | -30 | -7 | -6 | -9 | -14 | -14 | 0 | -4 | -9 | -8 | 2 | -17 |
| 40% | -42 | -54 | -15 | -18 | -14 | 0 | 0 | 1 | -23 | -25 | -8 | -27 |
| 50% | -48 | -24 | -37 | -16 | -24 | -13 | -33 | 0 | -23 | -54 | -29 | -20 |
| 60% | -29 | -18 | -38 | -24 | 0 | -11 | -42 | -22 | -9 | 2 | -17 | 0 |
| 70% | -47 | -26 | -32 | -100 | 0 | -87 | -11 | -9 | -45 | 8 | 24 | -30 |
| 80% | -25 | -38 | -64 | -26 | -65 | 12 | -13 | 8 | -39 | 6 | -29 | -31 |
| 90% | -155 | -173 | -19 | -127 | -12 | -2 | -39 | -10 | -37 | -141 | -137 | -134 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -26 | -29 | -28 | -25 | -22 | -21 | -21 | -22 | -28 | -17 | -17 | -18 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -10 | -13 | -12 | -2 | 0 | 0 | 0 | 0 | -2 | -3 | -4 | -5 |
| Above Normal (16%) | -28 | -24 | -20 | -23 | -12 | 0 | 0 | 0 | -5 | -6 | -5 | -13 |
| Below Normal (13%) | -20 | -23 | -23 | -31 | -14 | -18 | -14 | -13 | -10 | -3 | -11 | -18 |
| Dry (24%) | -42 | -45 | -42 | -43 | -39 | -43 | -44 | -45 | -49 | -35 | -35 | -32 |
| Critical (15%) | -38 | -49 | -50 | -45 | -60 | -57 | -55 | -63 | -88 | -42 | -31 | -29 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-4. Shasta Lake Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,250 | 3,252 | 3,359 | 3,666 | 3,939 | 4,262 | 4,552 | 4,552 | 4,500 | 4,011 | 3,669 | 3,400 |
| 20% | 3,250 | 3,252 | 3,337 | 3,612 | 3,837 | 4,182 | 4,536 | 4,552 | 4,402 | 3,785 | 3,455 | 3,400 |
| 30% | 3,213 | 3,244 | 3,314 | 3,538 | 3,732 | 4,080 | 4,478 | 4,552 | 4,253 | 3,607 | 3,303 | 3,304 |
| 40% | 2,997 | 3,128 | 3,280 | 3,410 | 3,653 | 4,012 | 4,433 | 4,483 | 4,058 | 3,431 | 3,151 | 3,058 |
| 50% | 2,752 | 2,897 | 3,226 | 3,329 | 3,564 | 3,966 | 4,291 | 4,344 | 3,879 | 3,282 | 2,981 | 2,914 |
| 60% | 2,648 | 2,718 | 3,098 | 3,252 | 3,484 | 3,855 | 4,183 | 4,159 | 3,661 | 3,139 | 2,812 | 2,804 |
| 70% | 2,518 | 2,622 | 2,789 | 2,985 | 3,283 | 3,638 | 4,087 | 3,913 | 3,484 | 2,921 | 2,664 | 2,589 |
| 80% | 2,261 | 2,279 | 2,411 | 2,720 | 3,113 | 3,418 | 3,854 | 3,660 | 3,177 | 2,723 | 2,429 | 2,377 |
| 90% | 1,542 | 1,441 | 1,798 | 2,122 | 2,607 | 2,690 | 2,753 | 2,930 | 2,552 | 2,135 | 1,748 | 1,676 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,626 | 2,674 | 2,833 | 3,093 | 3,370 | 3,706 | 4,041 | 3,994 | 3,667 | 3,141 | 2,828 | 2,730 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,152 | 3,180 | 3,280 | 3,412 | 3,662 | 3,899 | 4,355 | 4,473 | 4,318 | 3,806 | 3,460 | 3,280 |
| Above Normal (16%) | 2,899 | 2,940 | 3,118 | 3,358 | 3,567 | 4,069 | 4,503 | 4,461 | 4,096 | 3,427 | 3,084 | 3,070 |
| Below Normal (13%) | 2,637 | 2,690 | 2,818 | 3,404 | 3,695 | 4,031 | 4,328 | 4,164 | 3,724 | 3,109 | 2,752 | 2,664 |
| Dry (24%) | 2,586 | 2,689 | 2,922 | 2,915 | 3,330 | 3,765 | 4,058 | 3,928 | 3,489 | 3,007 | 2,730 | 2,668 |
| Critical (15%) | 1,247 | 1,251 | 1,423 | 2,127 | 2,293 | 2,501 | 2,566 | 2,406 | 2,039 | 1,642 | 1,413 | 1,331 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,250 | 3,252 | 3,349 | 3,650 | 3,928 | 4,223 | 4,552 | 4,552 | 4,500 | 4,015 | 3,672 | 3,400 |
| 20% | 3,250 | 3,252 | 3,321 | 3,604 | 3,793 | 4,123 | 4,518 | 4,552 | 4,408 | 3,806 | 3,464 | 3,377 |
| 30% | 3,170 | 3,162 | 3,305 | 3,526 | 3,705 | 4,044 | 4,454 | 4,535 | 4,251 | 3,594 | 3,257 | 3,197 |
| 40% | 3,008 | 3,029 | 3,268 | 3,383 | 3,615 | 3,998 | 4,369 | 4,440 | 4,019 | 3,444 | 3,120 | 3,023 |
| 50% | 2,793 | 2,818 | 3,209 | 3,322 | 3,514 | 3,964 | 4,268 | 4,324 | 3,872 | 3,288 | 3,008 | 2,940 |
| 60% | 2,721 | 2,702 | 2,920 | 3,226 | 3,434 | 3,831 | 4,139 | 4,173 | 3,681 | 3,164 | 2,798 | 2,735 |
| 70% | 2,427 | 2,500 | 2,624 | 2,927 | 3,263 | 3,605 | 4,038 | 3,892 | 3,467 | 2,889 | 2,708 | 2,580 |
| 80% | 2,241 | 2,321 | 2,311 | 2,601 | 2,989 | 3,405 | 3,792 | 3,520 | 3,087 | 2,681 | 2,430 | 2,357 |
| 90% | 1,559 | 1,415 | 1,859 | 2,042 | 2,519 | 2,682 | 2,772 | 2,781 | 2,426 | 2,012 | 1,741 | 1,628 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,616 | 2,626 | 2,791 | 3,062 | 3,330 | 3,666 | 3,996 | 3,961 | 3,637 | 3,127 | 2,822 | 2,713 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,133 | 3,120 | 3,224 | 3,422 | 3,655 | 3,880 | 4,336 | 4,474 | 4,312 | 3,783 | 3,436 | 3,260 |
| Above Normal (16%) | 2,781 | 2,750 | 2,960 | 3,353 | 3,561 | 4,046 | 4,471 | 4,437 | 4,059 | 3,399 | 3,054 | 2,922 |
| Below Normal (13%) | 2,732 | 2,762 | 2,879 | 3,381 | 3,670 | 4,005 | 4,304 | 4,153 | 3,699 | 3,139 | 2,818 | 2,767 |
| Dry (24%) | 2,608 | 2,675 | 2,921 | 2,828 | 3,239 | 3,691 | 3,977 | 3,854 | 3,448 | 3,008 | 2,743 | 2,687 |
| Critical (15%) | 1,229 | 1,213 | 1,374 | 2,063 | 2,218 | 2,441 | 2,497 | 2,338 | 1,977 | 1,601 | 1,379 | 1,296 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | -10 | -16 | -11 | -39 | 0 | 0 | 0 | 5 | 3 | 0 |
| 20% | 0 | 0 | -16 | -9 | -44 | -59 | -19 | 0 | 7 | 22 | 9 | -23 |
| 30% | -43 | -82 | -9 | -12 | -27 | -36 | -24 | -17 | -1 | -12 | -46 | -107 |
| 40% | 11 | -99 | -12 | -27 | -38 | -14 | -64 | -44 | -39 | 13 | -31 | -36 |
| 50% | 41 | -79 | -17 | -7 | -50 | -2 | -22 | -20 | -8 | 5 | 27 | 26 |
| 60% | 73 | -16 | -178 | -26 | -50 | -24 | -44 | 15 | 20 | 26 | -14 | -69 |
| 70% | -91 | -122 | -165 | -58 | -21 | -33 | -49 | -21 | -16 | -33 | 43 | -9 |
| 80% | -20 | 42 | -101 | -119 | -124 | -13 | -62 | -140 | -91 | -42 | 2 | -20 |
| 90% | 17 | -27 | 61 | -81 | -88 | -8 | 19 | -149 | -126 | -123 | -6 | -48 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -9 | -48 | -42 | -32 | -40 | -40 | -44 | -33 | -30 | -14 | -5 | -17 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -19 | -60 | -57 | 10 | -7 | -19 | -19 | 1 | -6 | -23 | -24 | -21 |
| Above Normal (16%) | -118 | -190 | -158 | -6 | -6 | -23 | -32 | -24 | -37 | -28 | -30 | -149 |
| Below Normal (13%) | 95 | 72 | 61 | -23 | -24 | -25 | -24 | -11 | -25 | 30 | 65 | 103 |
| Dry (24%) | 22 | -14 | -1 | -87 | -91 | -74 | -81 | -73 | -41 | 0 | 13 | 19 |
| Critical (15%) | -18 | -38 | -49 | -65 | -75 | -60 | -69 | -68 | -62 | -41 | -34 | -35 |

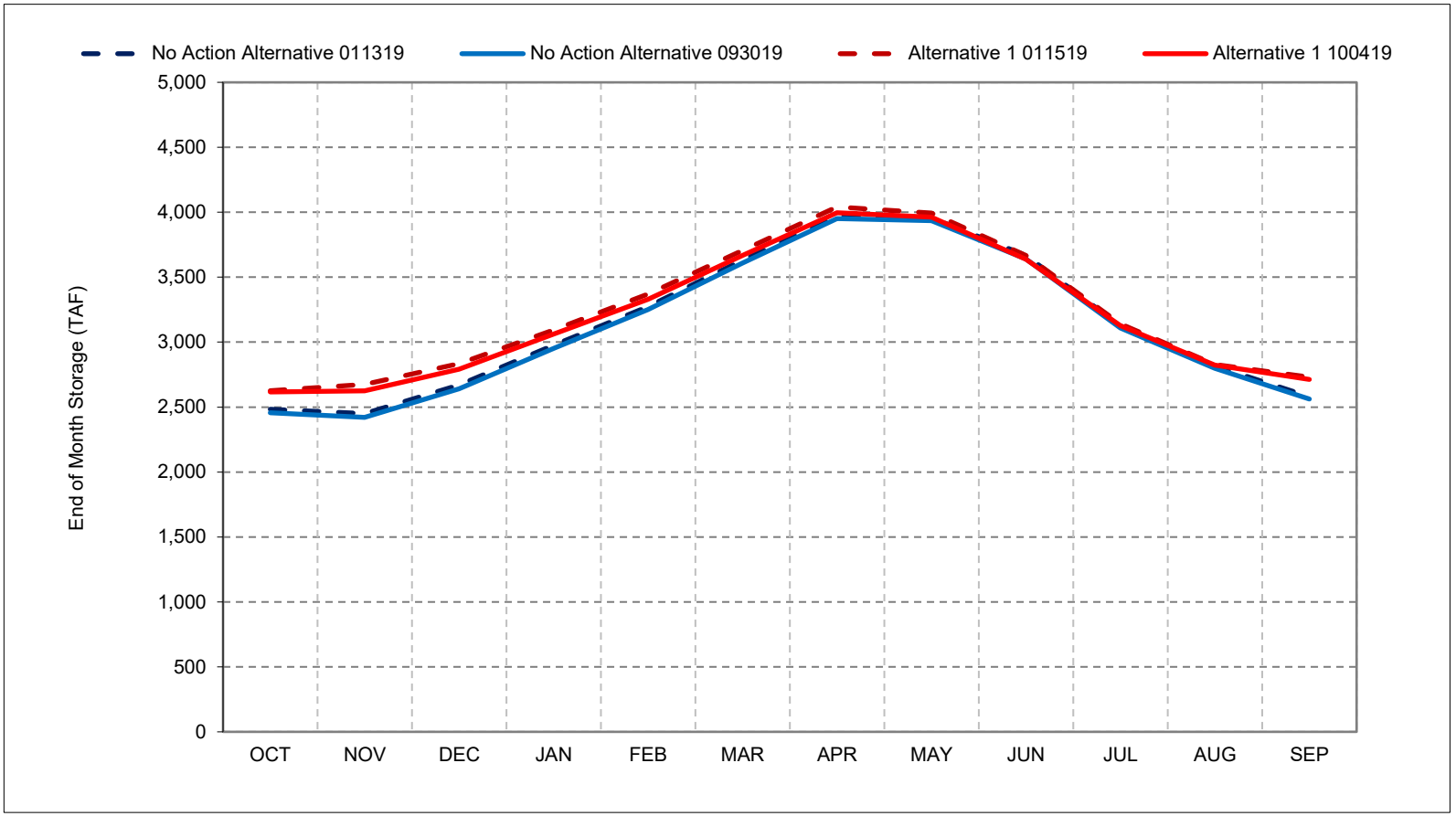
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-1. Shasta Lake Storage, Long-Term Average Storage

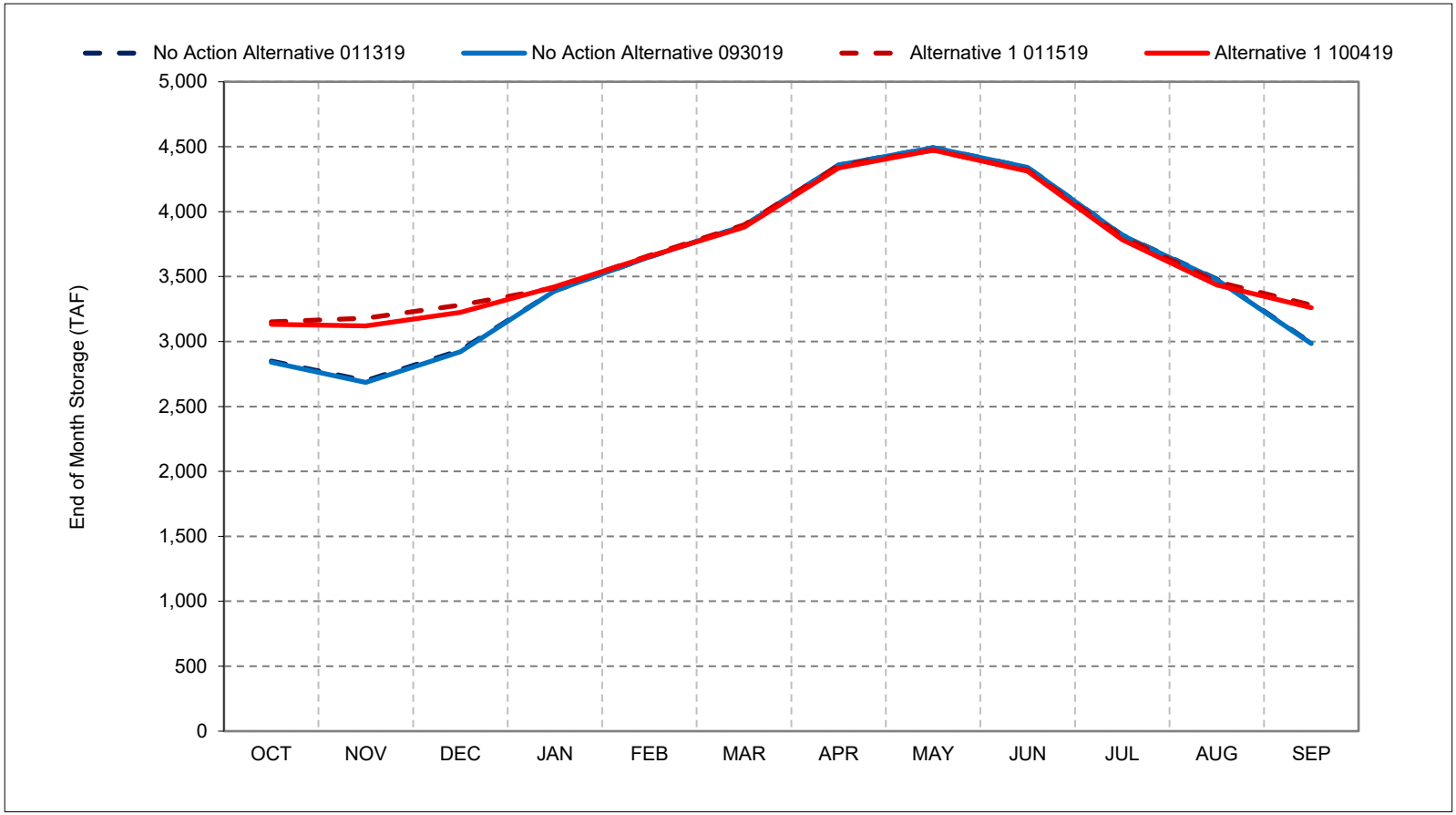



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-2. Shasta Lake Storage, Wet Year Average Storage

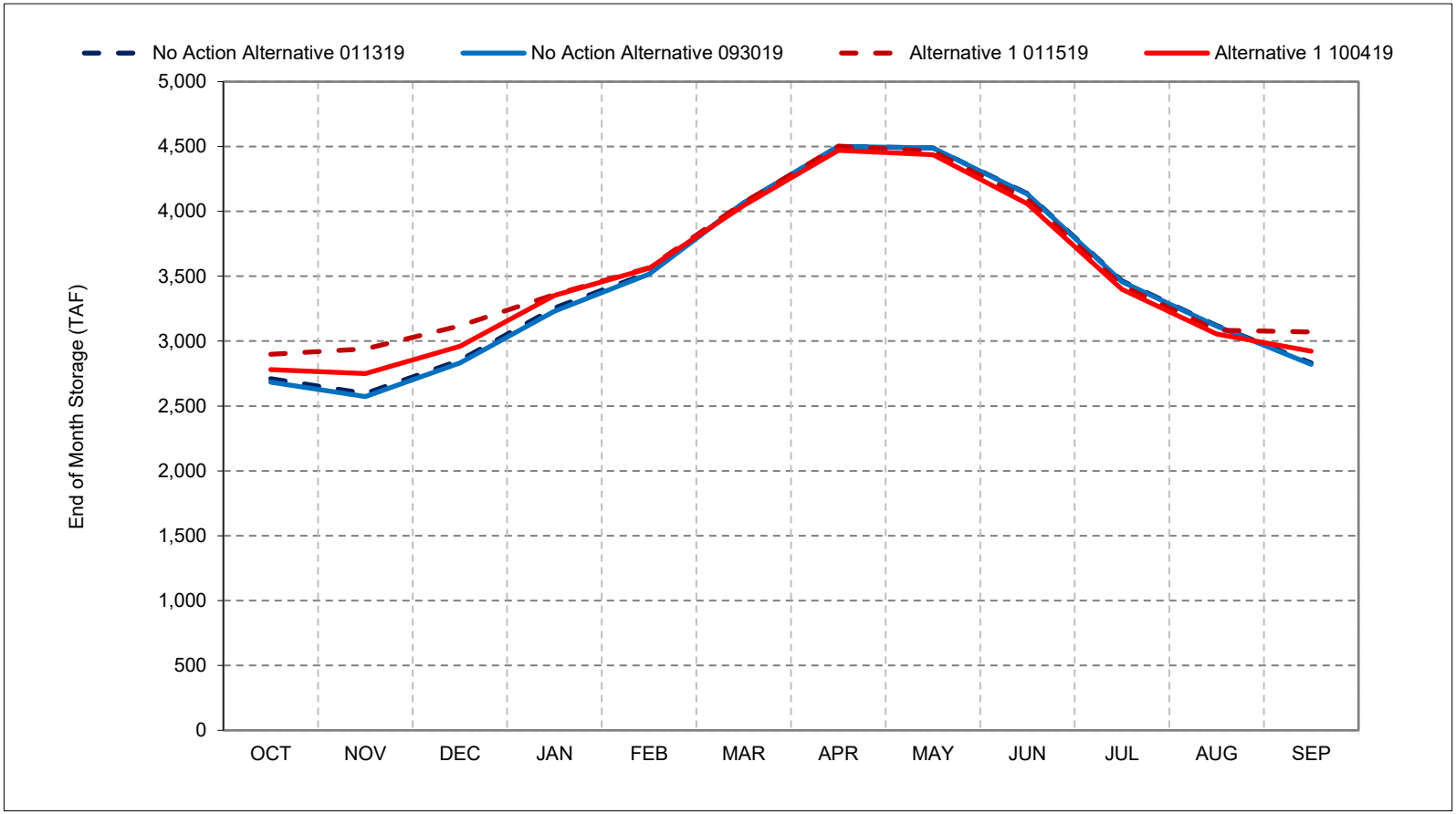



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-3. Shasta Lake Storage, Above Normal Year Average Storage

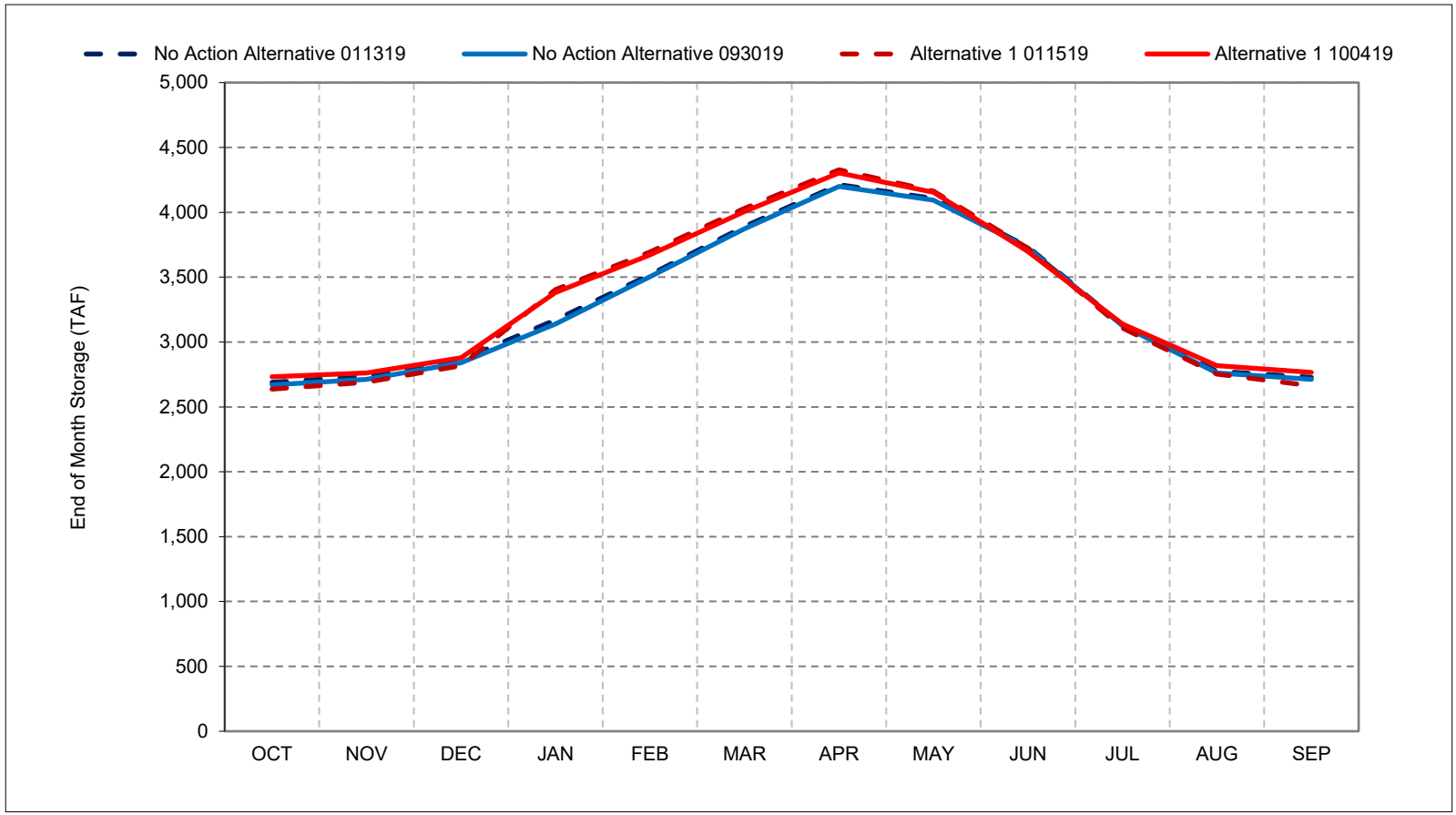



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-4. Shasta Lake Storage, Below Normal Year Average Storage

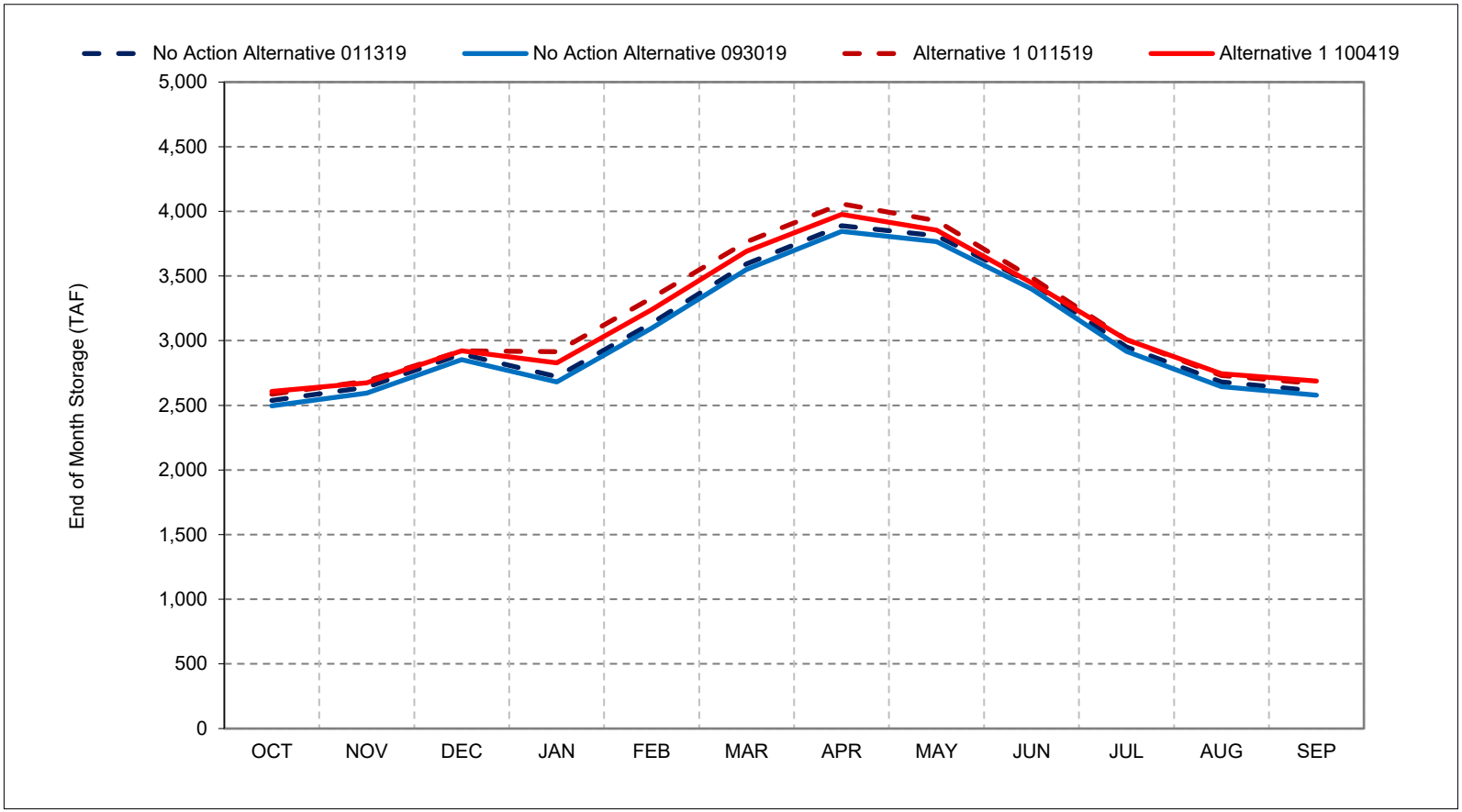



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-5. Shasta Lake Storage, Dry Year Average Storage

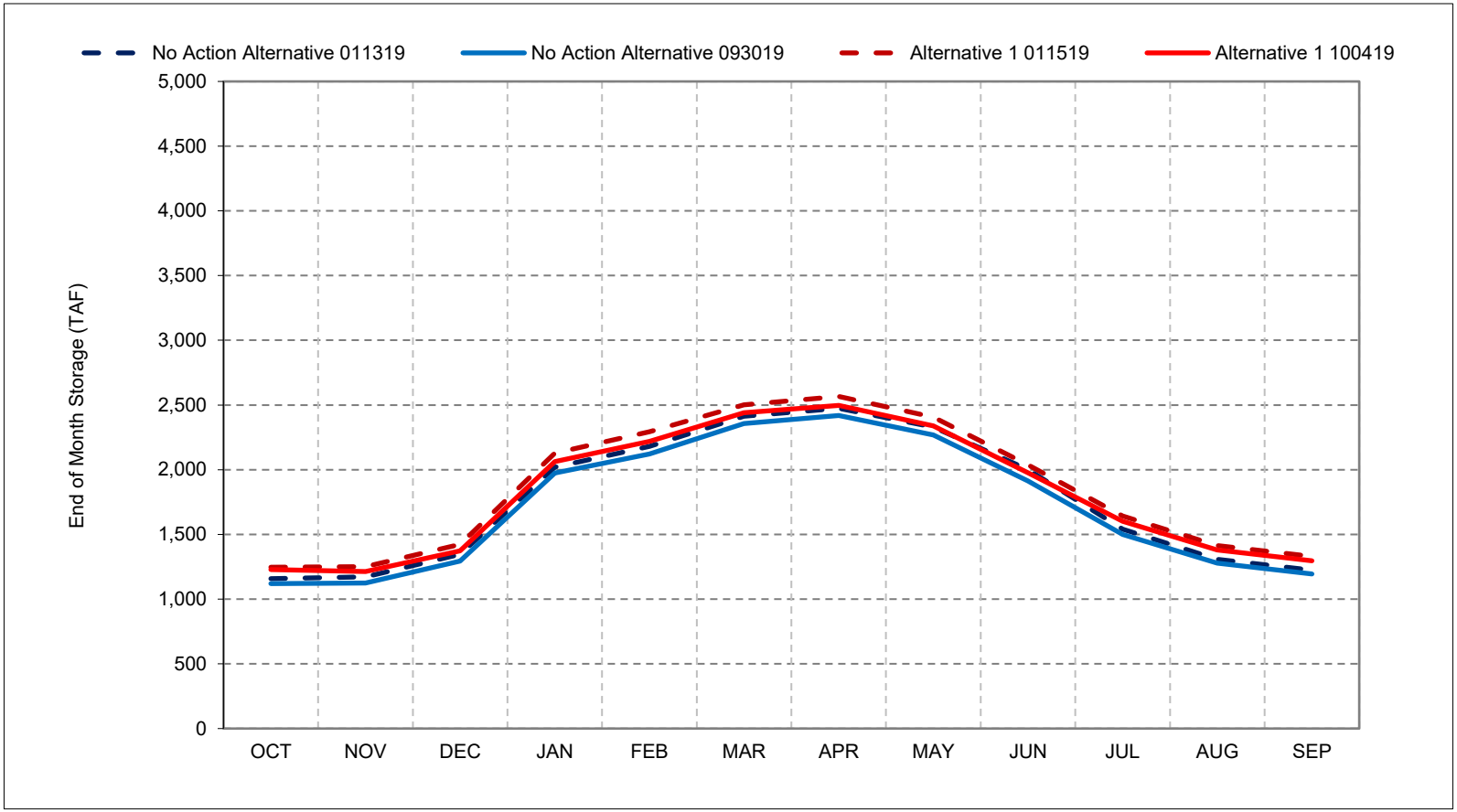



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-6. Shasta Lake Storage, Critical Year Average Storage

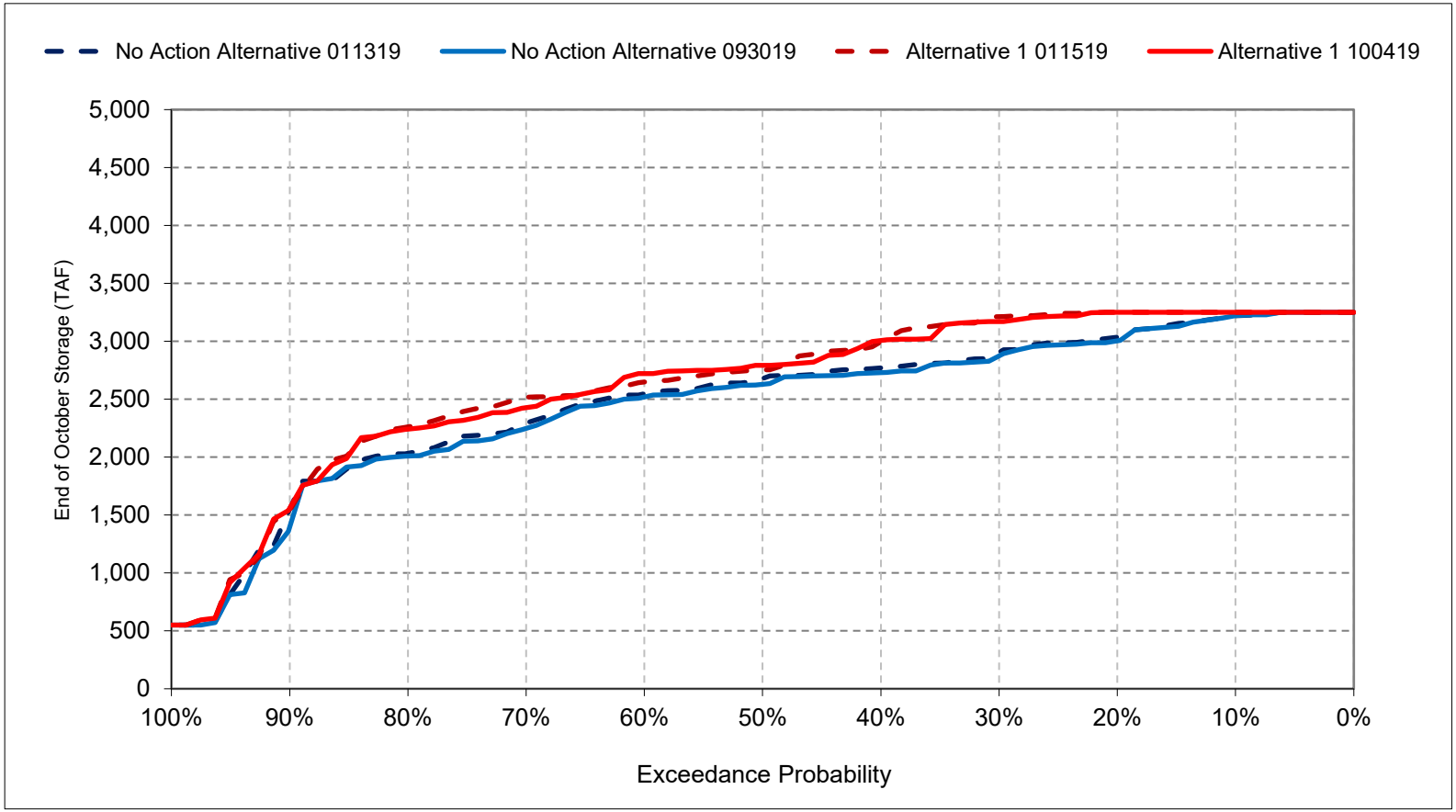



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

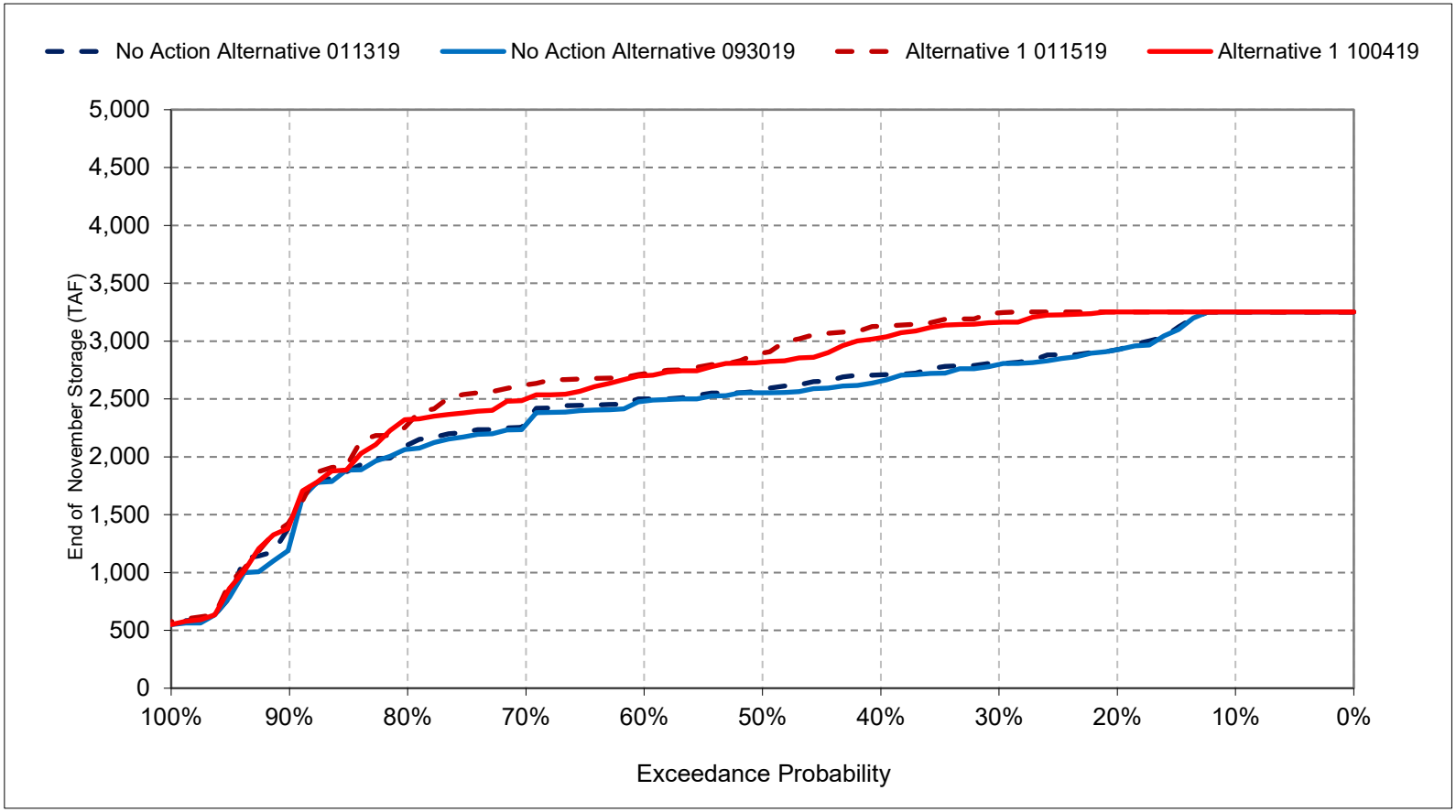
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-7. Shasta Lake Storage, End of October Storage



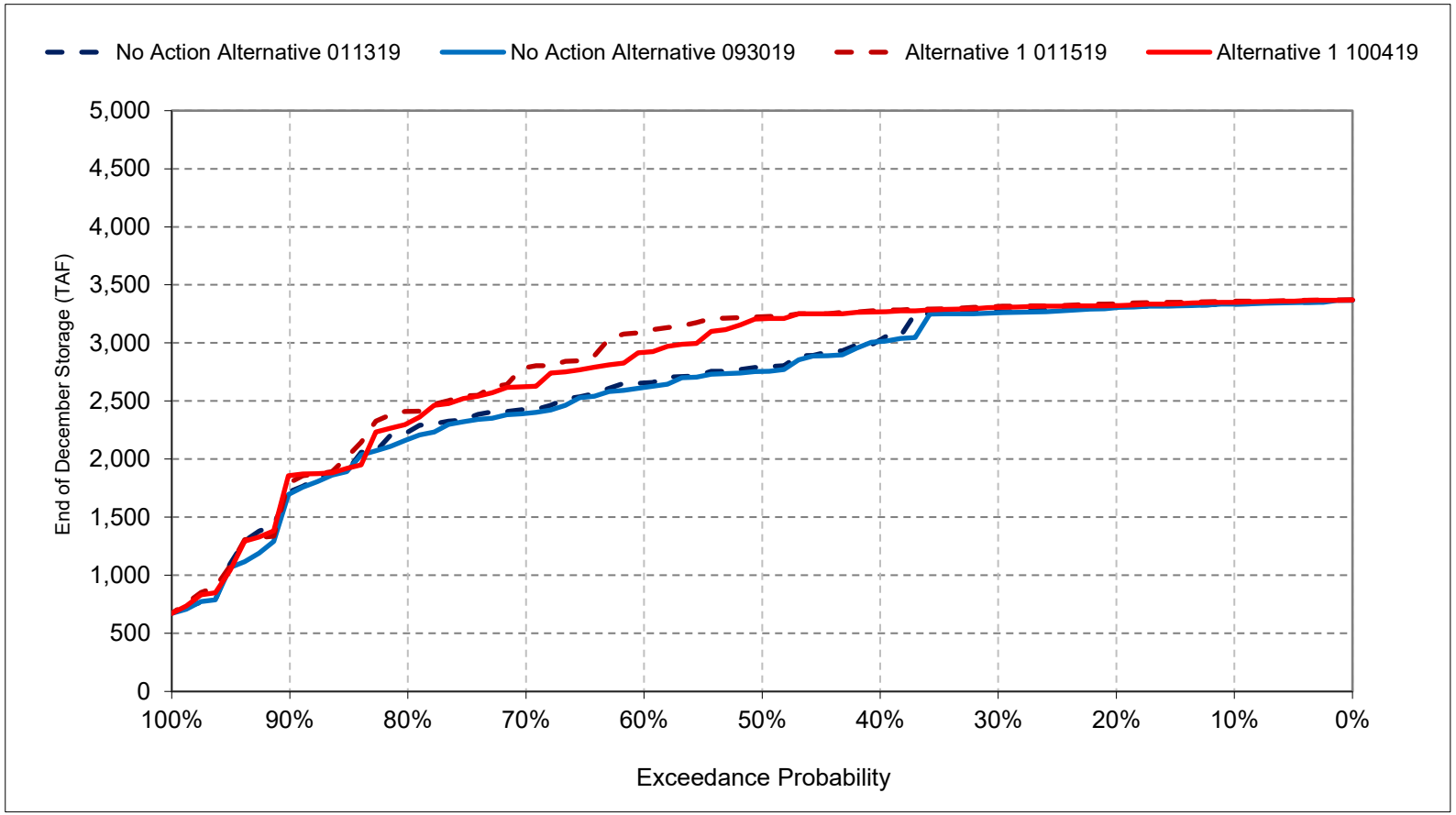

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-8. Shasta Lake Storage, End of November Storage



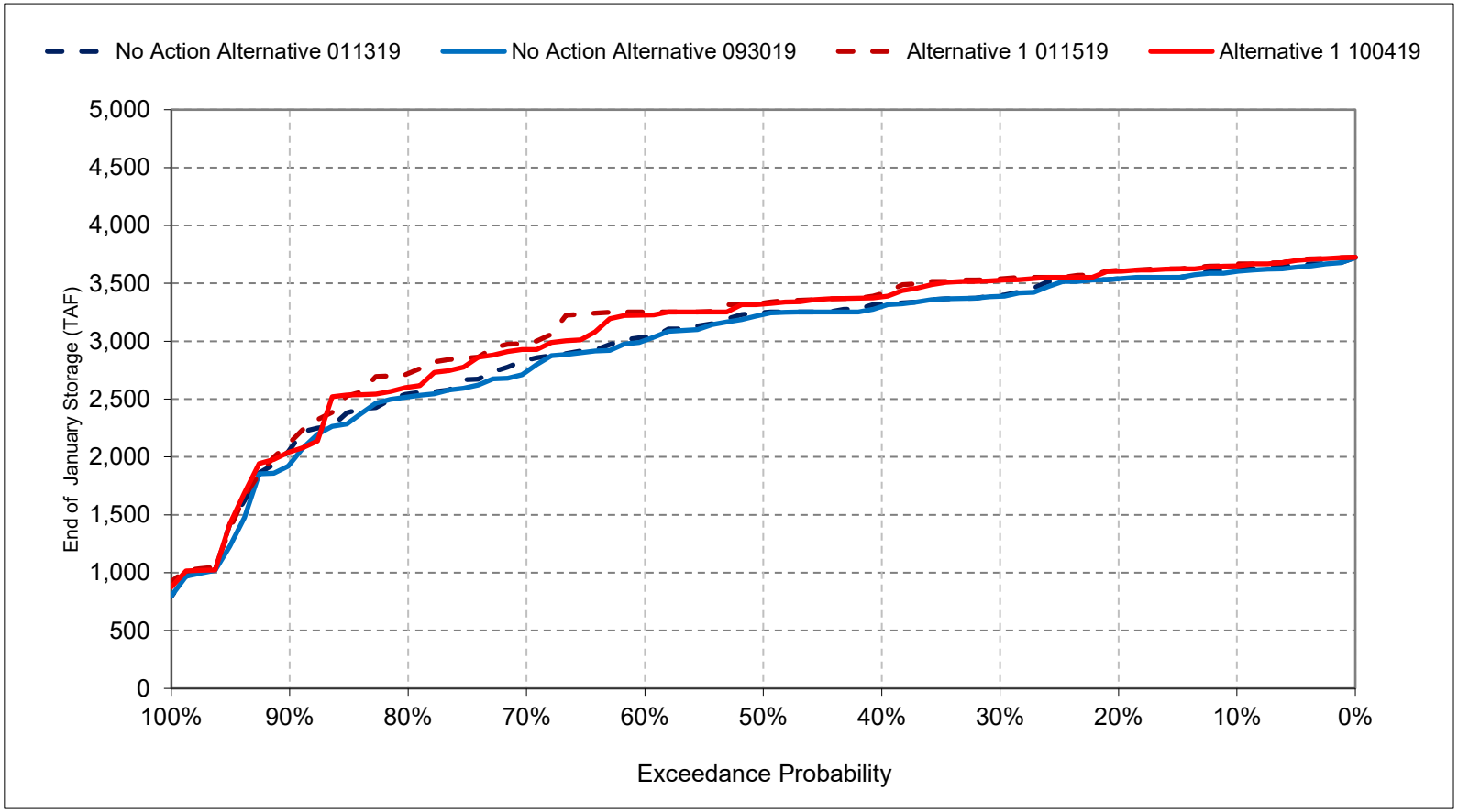

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-9. Shasta Lake Storage, End of December Storage



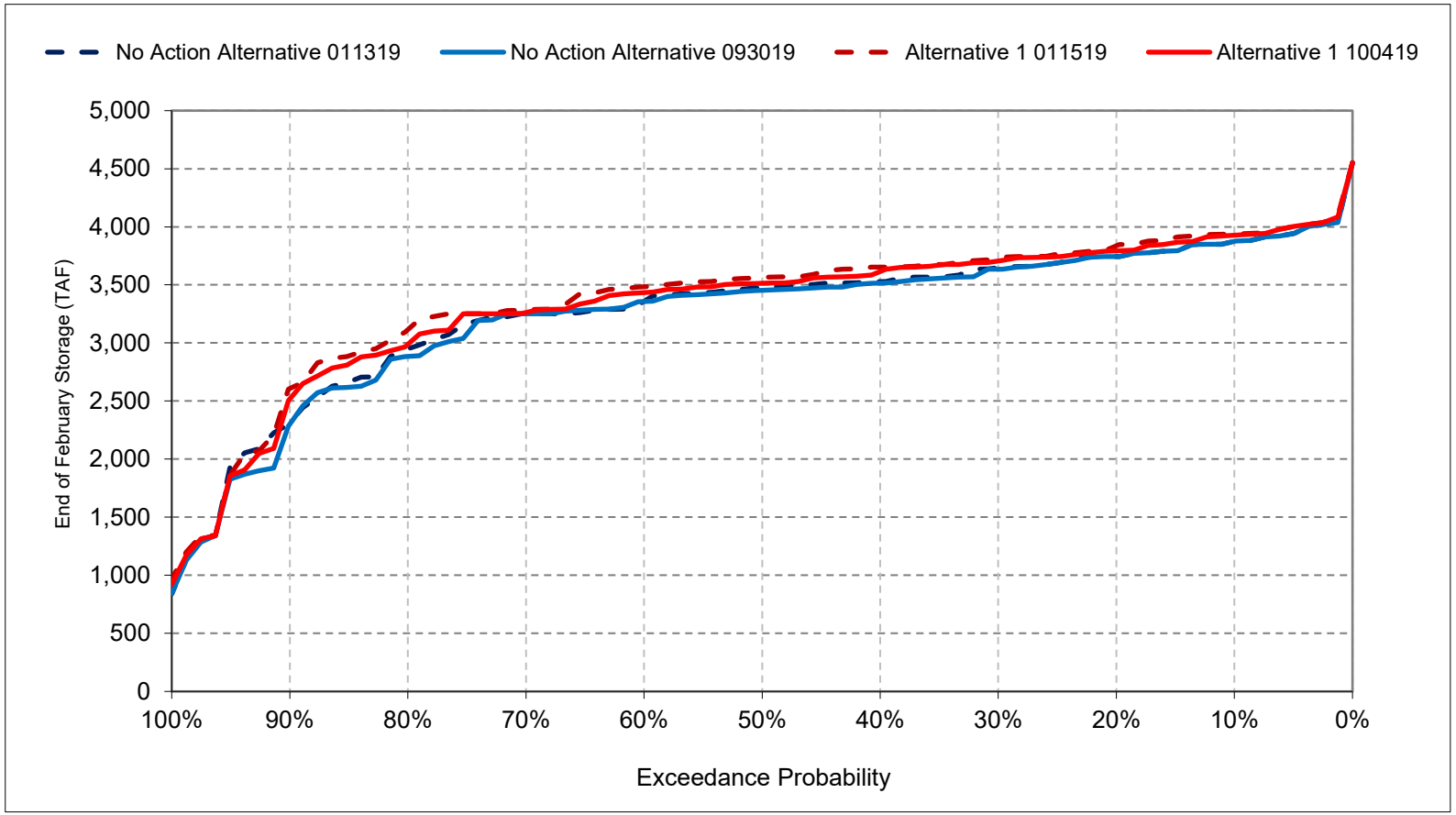

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-10. Shasta Lake Storage, End of January Storage



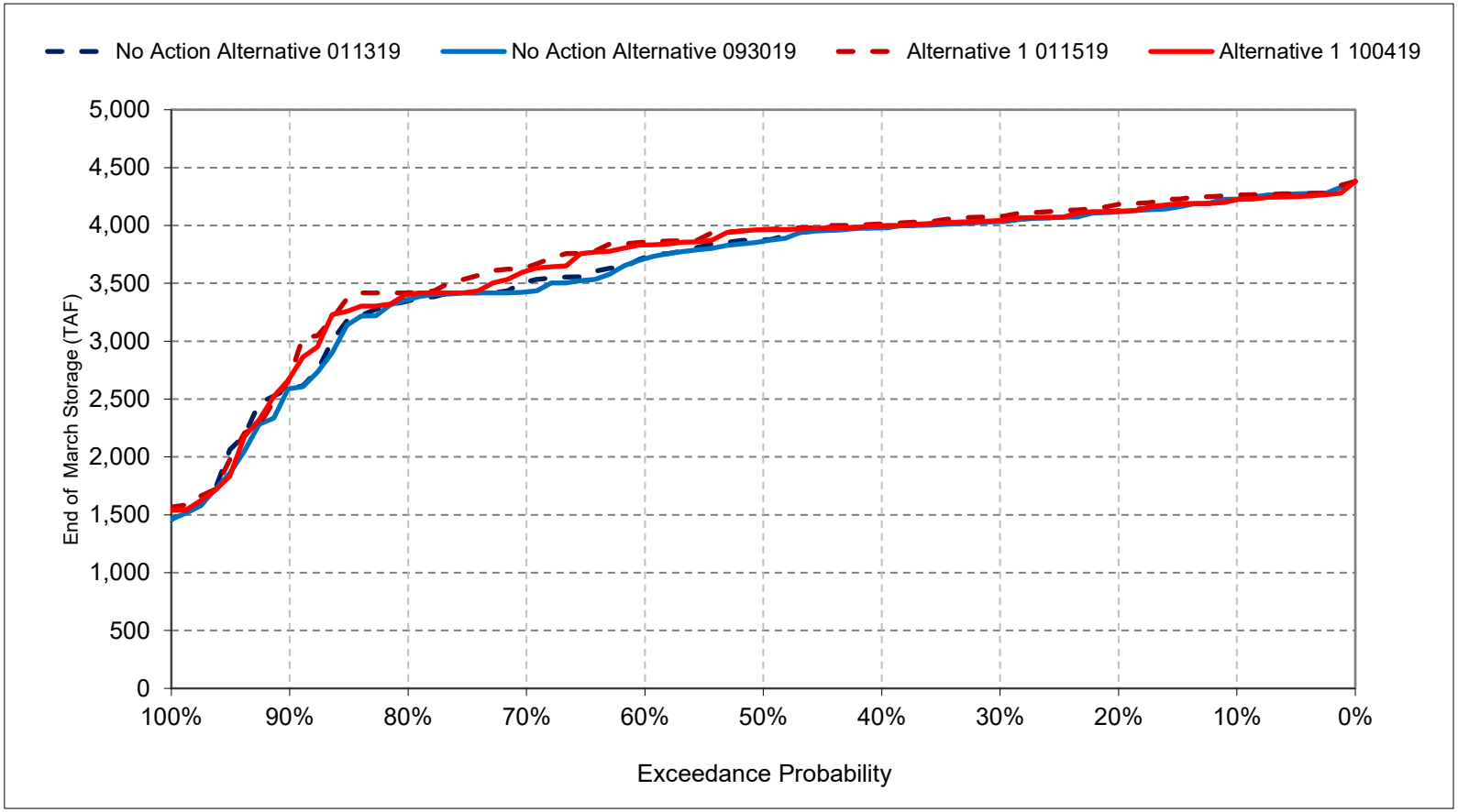

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-11. Shasta Lake Storage, End of February Storage



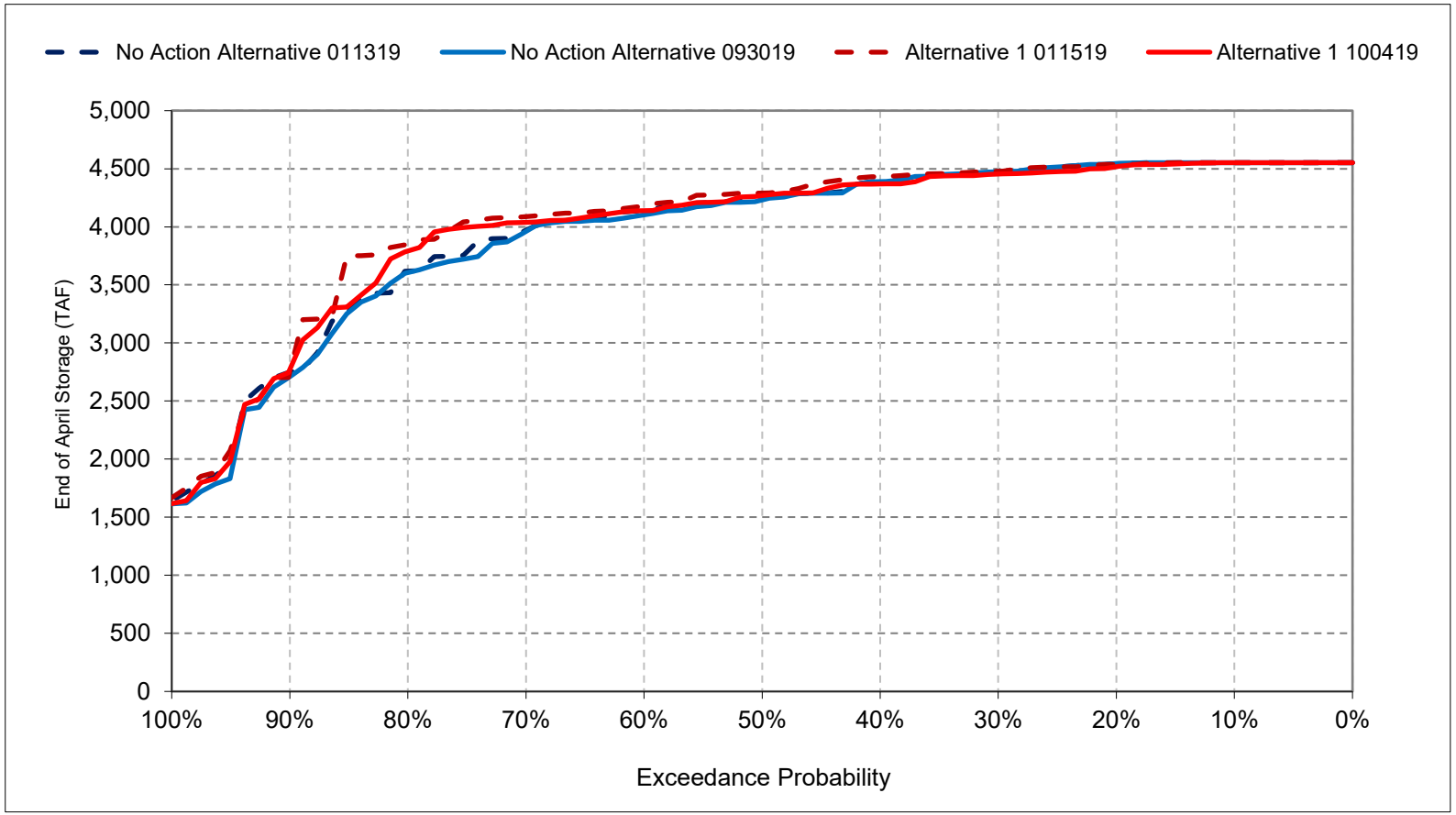

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-12. Shasta Lake Storage, End of March Storage



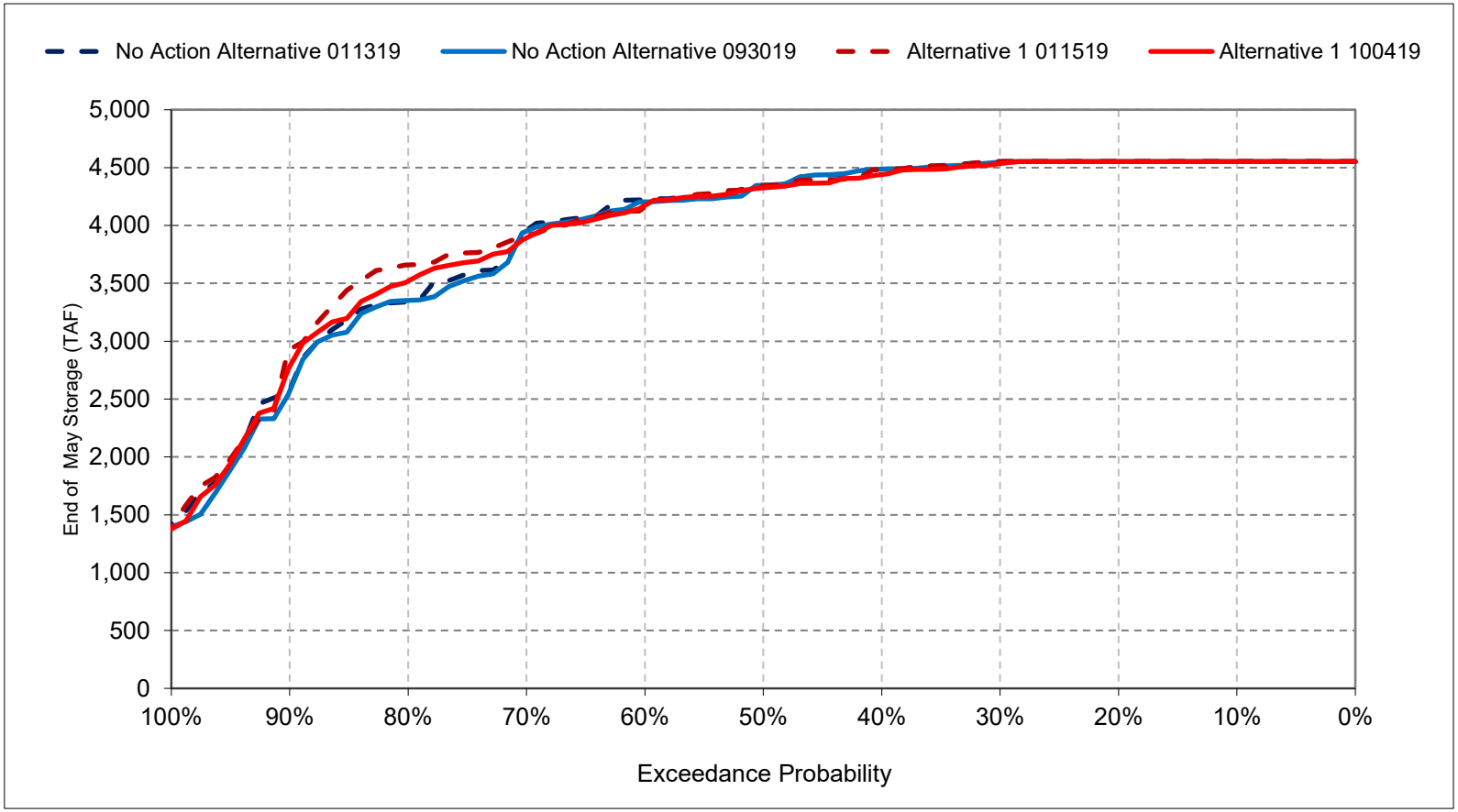

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-13. Shasta Lake Storage, End of April Storage



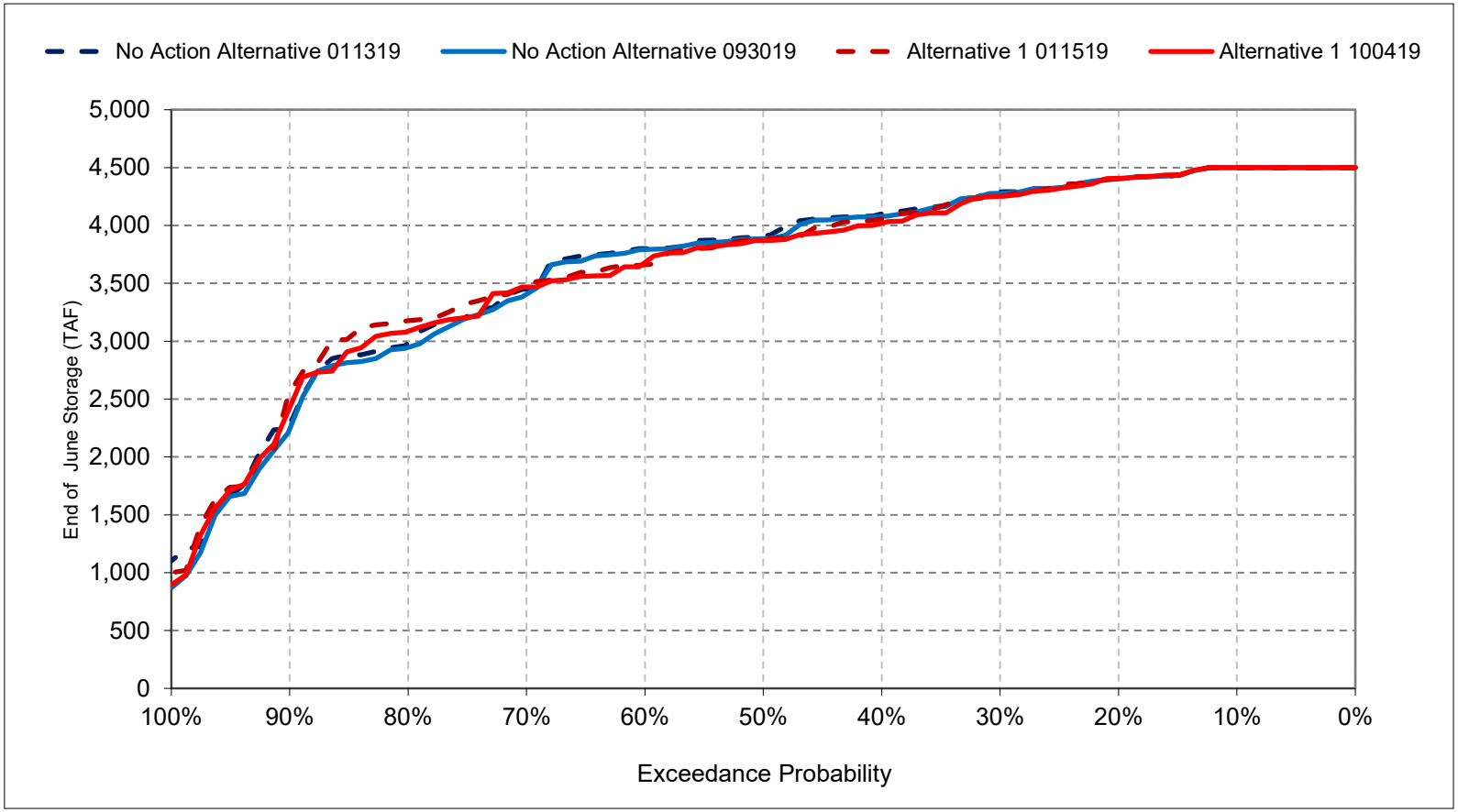

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-14. Shasta Lake Storage, End of May Storage



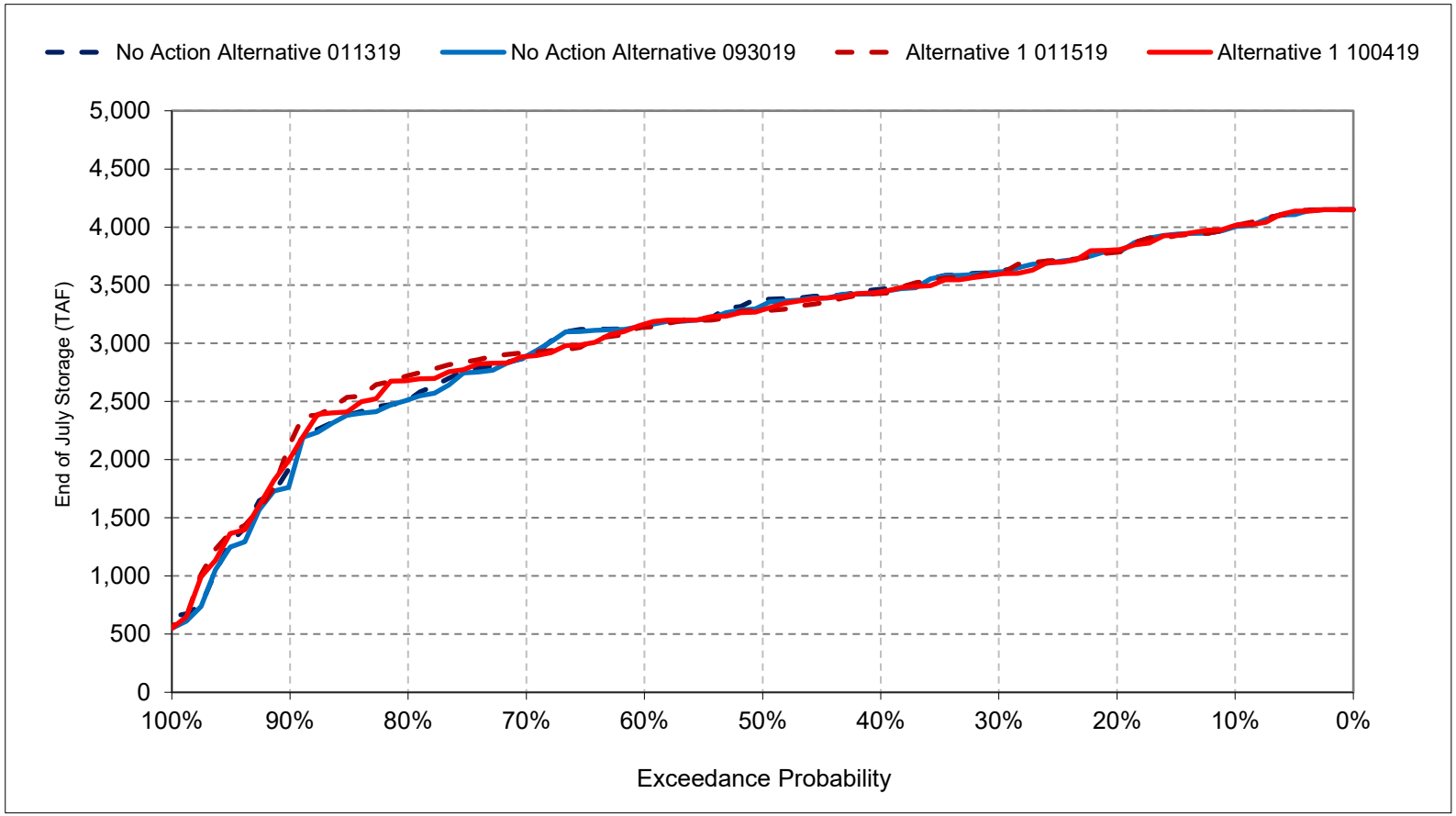

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-15. Shasta Lake Storage, End of June Storage



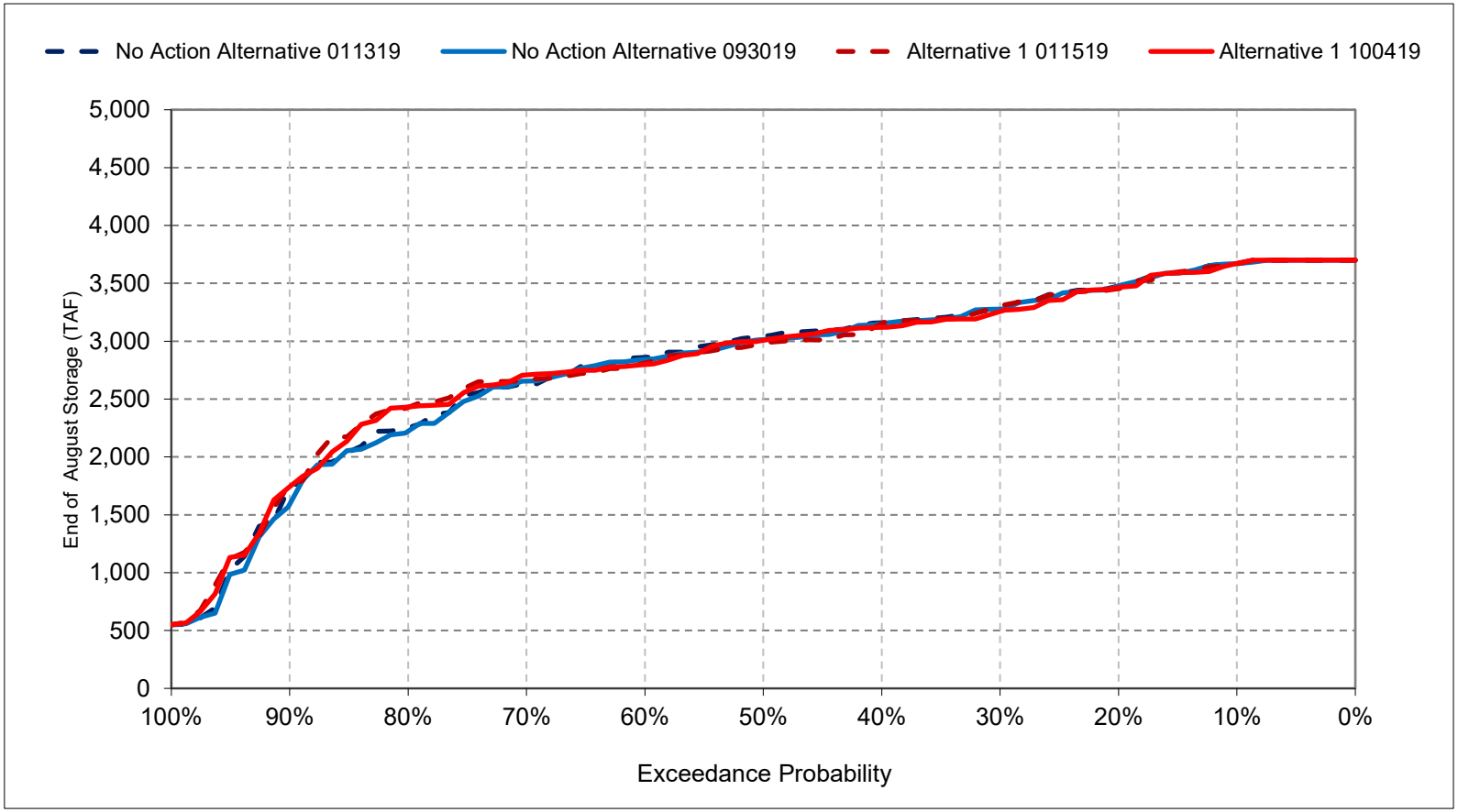

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-16. Shasta Lake Storage, End of July Storage



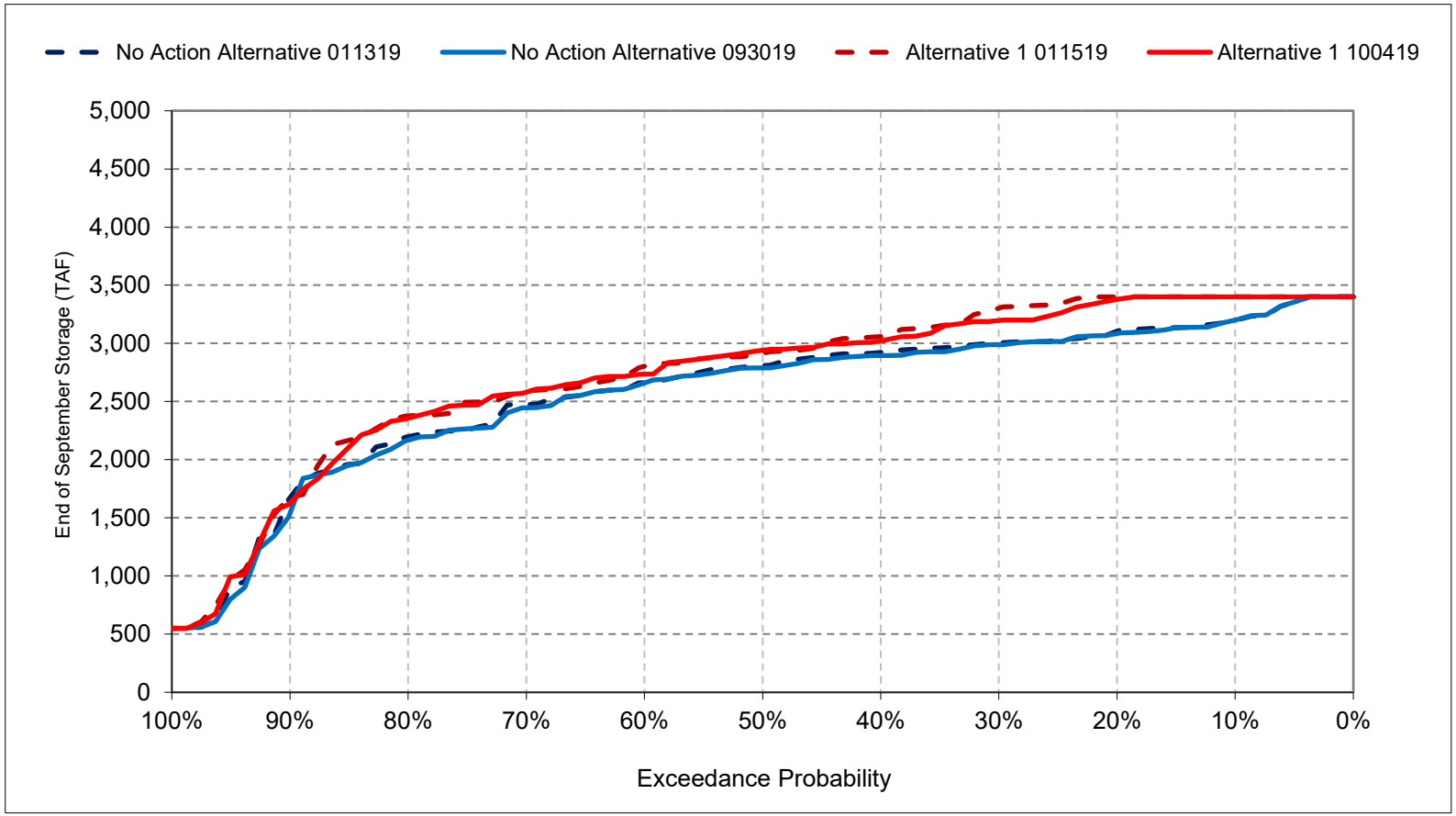

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-17. Shasta Lake Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-18. Shasta Lake Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 3a-1. Shasta Lake Elevation, End of Month Elevation

## No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,016 | 1,017 | 1,021 | 1,033 | 1,043 | 1,055 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,015 |
| 20% | 1,008 | 1,003 | 1,019 | 1,029 | 1,038 | 1,052 | 1,067 | 1,067 | 1,062 | 1,040 | 1,027 | 1,011 |
| 30% | 1,002 | 998 | 1,018 | 1,023 | 1,034 | 1,049 | 1,064 | 1,067 | 1,058 | 1,033 | 1,018 | 1,006 |
| 40% | 996 | 993 | 1,007 | 1,020 | 1,029 | 1,047 | 1,061 | 1,065 | 1,051 | 1,026 | 1,013 | 1,003 |
| 50% | 992 | 988 | 997 | 1,017 | 1,027 | 1,043 | 1,057 | 1,060 | 1,044 | 1,023 | 1,008 | 998 |
| 60% | 986 | 984 | 991 | 1,007 | 1,022 | 1,037 | 1,052 | 1,055 | 1,040 | 1,013 | 1,000 | 991 |
| 70% | 972 | 973 | 980 | 999 | 1,017 | 1,028 | 1,046 | 1,046 | 1,026 | 1,001 | 990 | 983 |
| 80% | 958 | 962 | 969 | 986 | 1,004 | 1,021 | 1,033 | 1,021 | 1,005 | 984 | 970 | 967 |
| 90% | 928 | 918 | 940 | 959 | 974 | 988 | 995 | 988 | 971 | 953 | 940 | 937 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 977 | 976 | 987 | 1,002 | 1,016 | 1,031 | 1,044 | 1,043 | 1,031 | 1,007 | 993 | 982 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 999 | 992 | 1,003 | 1,023 | 1,034 | 1,043 | 1,060 | 1,065 | 1,059 | 1,040 | 1,027 | 1,005 |
| Above Normal (16%) | 993 | 987 | 999 | 1,017 | 1,029 | 1,049 | 1,065 | 1,065 | 1,052 | 1,026 | 1,011 | 998 |
| Below Normal (13%) | 991 | 993 | 999 | 1,013 | 1,028 | 1,043 | 1,055 | 1,051 | 1,037 | 1,011 | 995 | 993 |
| Dry (24%) | 984 | 989 | 1,000 | 991 | 1,010 | 1,030 | 1,042 | 1,039 | 1,025 | 1,003 | 991 | 987 |
| Critical (15%) | 890 | 892 | 907 | 950 | 960 | 976 | 979 | 971 | 952 | 920 | 902 | 895 |

## Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,017 | 1,017 | 1,022 | 1,035 | 1,045 | 1,057 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,023 |
| 20% | 1,017 | 1,017 | 1,021 | 1,033 | 1,041 | 1,054 | 1,066 | 1,067 | 1,062 | 1,040 | 1,026 | 1,023 |
| 30% | 1,015 | 1,017 | 1,020 | 1,029 | 1,038 | 1,050 | 1,064 | 1,067 | 1,056 | 1,032 | 1,019 | 1,019 |
| 40% | 1,006 | 1,012 | 1,018 | 1,024 | 1,034 | 1,048 | 1,063 | 1,065 | 1,049 | 1,025 | 1,013 | 1,009 |
| 50% | 995 | 1,002 | 1,016 | 1,020 | 1,031 | 1,046 | 1,058 | 1,060 | 1,043 | 1,018 | 1,005 | 1,002 |
| 60% | 991 | 994 | 1,010 | 1,017 | 1,027 | 1,042 | 1,054 | 1,053 | 1,035 | 1,012 | 998 | 998 |
| 70% | 985 | 990 | 997 | 1,005 | 1,018 | 1,034 | 1,050 | 1,044 | 1,027 | 1,003 | 991 | 988 |
| 80% | 971 | 972 | 979 | 994 | 1,011 | 1,024 | 1,042 | 1,035 | 1,014 | 994 | 980 | 977 |
| 90% | 927 | 920 | 944 | 963 | 989 | 993 | 995 | 1,003 | 987 | 963 | 942 | 937 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 984 | 986 | 995 | 1,008 | 1,020 | 1,034 | 1,047 | 1,045 | 1,031 | 1,009 | 994 | 989 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,013 | 1,014 | 1,018 | 1,024 | 1,034 | 1,043 | 1,060 | 1,064 | 1,059 | 1,040 | 1,026 | 1,018 |
| Above Normal (16%) | 1,001 | 1,003 | 1,011 | 1,021 | 1,030 | 1,050 | 1,065 | 1,064 | 1,051 | 1,025 | 1,010 | 1,009 |
| Below Normal (13%) | 988 | 991 | 997 | 1,024 | 1,036 | 1,048 | 1,059 | 1,053 | 1,036 | 1,010 | 994 | 990 |
| Dry (24%) | 987 | 991 | 1,002 | 1,000 | 1,019 | 1,037 | 1,049 | 1,044 | 1,027 | 1,006 | 994 | 991 |
| Critical (15%) | 896 | 897 | 912 | 956 | 966 | 980 | 983 | 975 | 953 | 926 | 909 | 902 |

## Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 9 |
| 20% | 9 | 14 | 1 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | -1 | 13 |
| 30% | 13 | 19 | 2 | 6 | 3 | 1 | 0 | 0 | -1 | -1 | 1 | 13 |
| 40% | 10 | 18 | 11 | 4 | 5 | 1 | 2 | 0 | -2 | -1 | 0 | 6 |
| 50% | 3 | 14 | 19 | 4 | 4 | 3 | 1 | 0 | -1 | -4 | -3 | 5 |
| 60% | 4 | 10 | 19 | 10 | 5 | 5 | 1 | -2 | -5 | 0 | -2 | 6 |
| 70% | 13 | 17 | 17 | 6 | 1 | 5 | 4 | -2 | 1 | 2 | 1 | 5 |
| 80% | 13 | 10 | 10 | 8 | 7 | 3 | 9 | 14 | 8 | 10 | 10 | 10 |
| 90% | -1 | 2 | 4 | 3 | 15 | 4 | 0 | 15 | 15 | 11 | 1 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7 | 11 | 8 | 5 | 4 | 3 | 3 | 2 | 0 | 1 | 1 | 7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14 | 22 | 16 | 1 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | 13 |
| Above Normal (16%) | 9 | 16 | 12 | 4 | 1 | 0 | 0 | -1 | -1 | -2 | -2 | 11 |
| Below Normal (13%) | -3 | -2 | -2 | 10 | 7 | 5 | 4 | 2 | 0 | -1 | -1 | -3 |
| Dry (24%) | 3 | 3 | 1 | 9 | 8 | 7 | 7 | 5 | 2 | 3 | 3 | 3 |
| Critical (15%) | 6 | 5 | 5 | 6 | 6 | 4 | 4 | 3 | 1 | 7 | 8 | 8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3a-2. Shasta Lake Elevation, End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,016 | 1,017 | 1,021 | 1,032 | 1,043 | 1,055 | 1,067 | 1,067 | 1,065 | 1,047 | 1,035 | 1,015 |
| 20% | 1,006 | 1,003 | 1,019 | 1,029 | 1,038 | 1,051 | 1,067 | 1,067 | 1,062 | 1,040 | 1,027 | 1,010 |
| 30% | 1,001 | 997 | 1,017 | 1,023 | 1,034 | 1,048 | 1,064 | 1,067 | 1,057 | 1,033 | 1,018 | 1,006 |
| 40% | 994 | 991 | 1,007 | 1,019 | 1,028 | 1,047 | 1,061 | 1,065 | 1,050 | 1,025 | 1,013 | 1,002 |
| 50% | 990 | 987 | 995 | 1,016 | 1,026 | 1,042 | 1,056 | 1,060 | 1,043 | 1,020 | 1,007 | 997 |
| 60% | 985 | 983 | 989 | 1,006 | 1,022 | 1,037 | 1,051 | 1,055 | 1,040 | 1,013 | 999 | 991 |
| 70% | 970 | 972 | 978 | 995 | 1,017 | 1,025 | 1,046 | 1,046 | 1,024 | 1,001 | 991 | 981 |
| 80% | 956 | 959 | 965 | 985 | 1,001 | 1,022 | 1,032 | 1,021 | 1,004 | 985 | 968 | 965 |
| 90% | 917 | 905 | 939 | 952 | 973 | 988 | 993 | 987 | 969 | 945 | 931 | 927 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 976 | 974 | 985 | 1,001 | 1,015 | 1,030 | 1,043 | 1,042 | 1,029 | 1,007 | 992 | 981 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 998 | 992 | 1,002 | 1,023 | 1,034 | 1,043 | 1,060 | 1,065 | 1,059 | 1,040 | 1,027 | 1,005 |
| Above Normal (16%) | 991 | 986 | 998 | 1,016 | 1,028 | 1,049 | 1,065 | 1,065 | 1,052 | 1,026 | 1,011 | 998 |
| Below Normal (13%) | 990 | 992 | 998 | 1,012 | 1,028 | 1,042 | 1,054 | 1,050 | 1,036 | 1,011 | 995 | 992 |
| Dry (24%) | 982 | 987 | 998 | 989 | 1,009 | 1,028 | 1,041 | 1,037 | 1,023 | 1,002 | 989 | 986 |
| Critical (15%) | 887 | 887 | 903 | 947 | 957 | 972 | 976 | 967 | 945 | 916 | 899 | 892 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,017 | 1,017 | 1,021 | 1,034 | 1,045 | 1,055 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,023 |
| 20% | 1,017 | 1,017 | 1,020 | 1,032 | 1,040 | 1,052 | 1,066 | 1,067 | 1,062 | 1,040 | 1,026 | 1,022 |
| 30% | 1,013 | 1,013 | 1,019 | 1,029 | 1,037 | 1,049 | 1,063 | 1,066 | 1,056 | 1,032 | 1,017 | 1,015 |
| 40% | 1,006 | 1,007 | 1,018 | 1,023 | 1,033 | 1,047 | 1,060 | 1,063 | 1,048 | 1,025 | 1,011 | 1,007 |
| 50% | 997 | 998 | 1,015 | 1,020 | 1,028 | 1,046 | 1,057 | 1,059 | 1,043 | 1,019 | 1,006 | 1,003 |
| 60% | 994 | 993 | 1,003 | 1,016 | 1,025 | 1,041 | 1,052 | 1,053 | 1,036 | 1,013 | 997 | 995 |
| 70% | 980 | 984 | 990 | 1,003 | 1,017 | 1,032 | 1,049 | 1,043 | 1,026 | 1,001 | 993 | 988 |
| 80% | 969 | 974 | 973 | 989 | 1,006 | 1,024 | 1,040 | 1,029 | 1,010 | 992 | 980 | 976 |
| 90% | 929 | 918 | 948 | 958 | 985 | 992 | 996 | 997 | 980 | 956 | 941 | 934 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 984 | 984 | 993 | 1,006 | 1,018 | 1,032 | 1,045 | 1,043 | 1,030 | 1,008 | 994 | 988 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,012 | 1,011 | 1,016 | 1,024 | 1,034 | 1,043 | 1,059 | 1,064 | 1,058 | 1,039 | 1,025 | 1,017 |
| Above Normal (16%) | 996 | 994 | 1,004 | 1,021 | 1,030 | 1,049 | 1,064 | 1,063 | 1,049 | 1,023 | 1,008 | 1,003 |
| Below Normal (13%) | 993 | 994 | 1,000 | 1,023 | 1,035 | 1,047 | 1,058 | 1,053 | 1,035 | 1,012 | 997 | 995 |
| Dry (24%) | 987 | 991 | 1,002 | 996 | 1,015 | 1,034 | 1,046 | 1,041 | 1,025 | 1,006 | 994 | 991 |
| Critical (15%) | 895 | 894 | 908 | 952 | 962 | 977 | 980 | 971 | 949 | 923 | 907 | 900 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 0 | 1 | 2 | 2 | **0** | 0 | 0 | 0 | 0 | 0 | 9 |
| 20% | 11 | 14 | 1 | 3 | 2 | 0 | **-1** | 0 | 0 | 1 | **-1** | 13 |
| 30% | 13 | 16 | 2 | 6 | 3 | 0 | **-1** | **0** | **-1** | **-1** | **-1** | 9 |
| 40% | 12 | 16 | 11 | 4 | 4 | 1 | **-1** | **-2** | **-2** | 0 | **-1** | 6 |
| 50% | 7 | 11 | 20 | 4 | 3 | 4 | 1 | **-1** | **-1** | **-2** | **0** | 7 |
| 60% | 9 | 10 | 13 | 9 | 3 | 4 | 1 | **-1** | **-4** | 1 | **-2** | 3 |
| 70% | 10 | 12 | 12 | 8 | 0 | 8 | 3 | **-2** | 3 | **0** | 2 | 7 |
| 80% | 13 | 15 | 8 | 4 | 5 | 2 | 8 | 7 | 6 | 7 | 12 | 11 |
| 90% | 12 | 13 | 9 | 6 | 12 | 4 | 3 | 9 | 10 | 12 | 10 | 7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 8 | 10 | 7 | 5 | 4 | 2 | 2 | 1 | 0 | 1 | 2 | 7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 13 | 20 | 14 | 1 | 0 | **0** | **-1** | **-1** | **-1** | **-2** | **-2** | 12 |
| Above Normal (16%) | 5 | 8 | 6 | 5 | 2 | **-1** | **-1** | **-2** | **-3** | **-3** | **-3** | 5 |
| Below Normal (13%) | 3 | 3 | 2 | 10 | 7 | 5 | 4 | 2 | **-1** | 1 | 3 | 3 |
| Dry (24%) | 6 | 4 | 3 | 7 | 6 | 6 | 5 | 4 | 2 | 4 | 5 | 6 |
| Critical (15%) | 9 | 7 | 6 | 5 | 5 | 4 | 4 | 4 | 4 | 7 | 8 | 8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3a-3. Shasta Lake Elevation, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,016 | 1,017 | 1,021 | 1,033 | 1,043 | 1,055 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,015 |
| 20% | 1,008 | 1,003 | 1,019 | 1,029 | 1,038 | 1,052 | 1,067 | 1,067 | 1,062 | 1,040 | 1,027 | 1,011 |
| 30% | 1,002 | 998 | 1,018 | 1,023 | 1,034 | 1,049 | 1,064 | 1,067 | 1,058 | 1,033 | 1,018 | 1,006 |
| 40% | 996 | 993 | 1,007 | 1,020 | 1,029 | 1,047 | 1,061 | 1,065 | 1,051 | 1,026 | 1,013 | 1,003 |
| 50% | 992 | 988 | 997 | 1,017 | 1,027 | 1,043 | 1,057 | 1,060 | 1,044 | 1,023 | 1,008 | 998 |
| 60% | 986 | 984 | 991 | 1,007 | 1,022 | 1,037 | 1,052 | 1,055 | 1,040 | 1,013 | 1,000 | 991 |
| 70% | 972 | 973 | 980 | 999 | 1,017 | 1,028 | 1,046 | 1,046 | 1,026 | 1,001 | 990 | 983 |
| 80% | 958 | 962 | 969 | 986 | 1,004 | 1,021 | 1,033 | 1,021 | 1,005 | 984 | 970 | 967 |
| 90% | 928 | 918 | 940 | 959 | 974 | 988 | 995 | 988 | 971 | 953 | 940 | 937 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 977 | 976 | 987 | 1,002 | 1,016 | 1,031 | 1,044 | 1,043 | 1,031 | 1,007 | 993 | 982 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 999 | 992 | 1,003 | 1,023 | 1,034 | 1,043 | 1,060 | 1,065 | 1,059 | 1,040 | 1,027 | 1,005 |
| Above Normal (16%) | 993 | 987 | 999 | 1,017 | 1,029 | 1,049 | 1,065 | 1,065 | 1,052 | 1,026 | 1,011 | 998 |
| Below Normal (13%) | 991 | 993 | 999 | 1,013 | 1,028 | 1,043 | 1,055 | 1,051 | 1,037 | 1,011 | 995 | 993 |
| Dry (24%) | 984 | 989 | 1,000 | 991 | 1,010 | 1,030 | 1,042 | 1,039 | 1,025 | 1,003 | 991 | 987 |
| Critical (15%) | 890 | 892 | 907 | 950 | 960 | 976 | 979 | 971 | 952 | 920 | 902 | 895 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,016 | 1,017 | 1,021 | 1,032 | 1,043 | 1,055 | 1,067 | 1,067 | 1,065 | 1,047 | 1,035 | 1,015 |
| 20% | 1,006 | 1,003 | 1,019 | 1,029 | 1,038 | 1,051 | 1,067 | 1,067 | 1,062 | 1,040 | 1,027 | 1,010 |
| 30% | 1,001 | 997 | 1,017 | 1,023 | 1,034 | 1,048 | 1,064 | 1,067 | 1,057 | 1,033 | 1,018 | 1,006 |
| 40% | 994 | 991 | 1,007 | 1,019 | 1,028 | 1,047 | 1,061 | 1,065 | 1,050 | 1,025 | 1,013 | 1,002 |
| 50% | 990 | 987 | 995 | 1,016 | 1,026 | 1,042 | 1,056 | 1,060 | 1,043 | 1,020 | 1,007 | 997 |
| 60% | 985 | 983 | 989 | 1,006 | 1,022 | 1,037 | 1,051 | 1,055 | 1,040 | 1,013 | 999 | 991 |
| 70% | 970 | 972 | 978 | 995 | 1,017 | 1,025 | 1,046 | 1,046 | 1,024 | 1,001 | 991 | 981 |
| 80% | 956 | 959 | 965 | 985 | 1,001 | 1,022 | 1,032 | 1,021 | 1,004 | 985 | 968 | 965 |
| 90% | 917 | 905 | 939 | 952 | 973 | 988 | 993 | 987 | 969 | 945 | 931 | 927 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 976 | 974 | 985 | 1,001 | 1,015 | 1,030 | 1,043 | 1,042 | 1,029 | 1,007 | 992 | 981 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 998 | 992 | 1,002 | 1,023 | 1,034 | 1,043 | 1,060 | 1,065 | 1,059 | 1,040 | 1,027 | 1,005 |
| Above Normal (16%) | 991 | 986 | 998 | 1,016 | 1,028 | 1,049 | 1,065 | 1,065 | 1,052 | 1,026 | 1,011 | 998 |
| Below Normal (13%) | 990 | 992 | 998 | 1,012 | 1,028 | 1,042 | 1,054 | 1,050 | 1,036 | 1,011 | 995 | 992 |
| Dry (24%) | 982 | 987 | 998 | 989 | 1,009 | 1,028 | 1,041 | 1,037 | 1,023 | 1,002 | 989 | 986 |
| Critical (15%) | 887 | 887 | 903 | 947 | 957 | 972 | 976 | 967 | 945 | 916 | 899 | 892 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 30% | -1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 40% | -2 | -2 | -1 | -1 | -1 | 0 | 0 | 0 | -1 | -1 | 0 | -1 |
| 50% | -2 | -1 | -2 | -1 | -1 | 0 | -1 | 0 | -1 | -2 | -1 | -1 |
| 60% | -1 | -1 | -2 | -1 | 0 | 0 | -1 | -1 | 0 | 0 | -1 | 0 |
| 70% | -3 | -1 | -2 | -4 | 0 | -4 | 0 | 0 | -2 | 0 | 1 | -2 |
| 80% | -1 | -2 | -4 | -1 | -3 | 1 | -1 | 0 | -2 | 0 | -2 | -2 |
| 90% | -11 | -13 | -1 | -7 | -1 | 0 | -2 | 0 | -2 | -8 | -10 | -10 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -2 | -2 | -1 | -1 | -1 | -1 | -1 | -2 | -1 | -1 | -1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -1 | -1 | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| Below Normal (13%) | -1 | -1 | -1 | -1 | -1 | -1 | 0 | 0 | 0 | 0 | -1 | -1 |
| Dry (24%) | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 |
| Critical (15%) | -3 | -5 | -4 | -3 | -4 | -3 | -3 | -4 | -7 | -3 | -3 | -3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3a-4. Shasta Lake Elevation, End of Month Elevation

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,017 | 1,017 | 1,022 | 1,035 | 1,045 | 1,057 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,023 |
| 20% | 1,017 | 1,017 | 1,021 | 1,033 | 1,041 | 1,054 | 1,066 | 1,067 | 1,062 | 1,040 | 1,026 | 1,023 |
| 30% | 1,015 | 1,017 | 1,020 | 1,029 | 1,038 | 1,050 | 1,064 | 1,067 | 1,056 | 1,032 | 1,019 | 1,019 |
| 40% | 1,006 | 1,012 | 1,018 | 1,024 | 1,034 | 1,048 | 1,063 | 1,065 | 1,049 | 1,025 | 1,013 | 1,009 |
| 50% | 995 | 1,002 | 1,016 | 1,020 | 1,031 | 1,046 | 1,058 | 1,060 | 1,043 | 1,018 | 1,005 | 1,002 |
| 60% | 991 | 994 | 1,010 | 1,017 | 1,027 | 1,042 | 1,054 | 1,053 | 1,035 | 1,012 | 998 | 998 |
| 70% | 985 | 990 | 997 | 1,005 | 1,018 | 1,034 | 1,050 | 1,044 | 1,027 | 1,003 | 991 | 988 |
| 80% | 971 | 972 | 979 | 994 | 1,011 | 1,024 | 1,042 | 1,035 | 1,014 | 994 | 980 | 977 |
| 90% | 927 | 920 | 944 | 963 | 989 | 993 | 995 | 1,003 | 987 | 963 | 942 | 937 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 984 | 986 | 995 | 1,008 | 1,020 | 1,034 | 1,047 | 1,045 | 1,031 | 1,009 | 994 | 989 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,013 | 1,014 | 1,018 | 1,024 | 1,034 | 1,043 | 1,060 | 1,064 | 1,059 | 1,040 | 1,026 | 1,018 |
| Above Normal (16%) | 1,001 | 1,003 | 1,011 | 1,021 | 1,030 | 1,050 | 1,065 | 1,064 | 1,051 | 1,025 | 1,010 | 1,009 |
| Below Normal (13%) | 988 | 991 | 997 | 1,024 | 1,036 | 1,048 | 1,059 | 1,053 | 1,036 | 1,010 | 994 | 990 |
| Dry (24%) | 987 | 991 | 1,002 | 1,000 | 1,019 | 1,037 | 1,049 | 1,044 | 1,027 | 1,006 | 994 | 991 |
| Critical (15%) | 896 | 897 | 912 | 956 | 966 | 980 | 983 | 975 | 953 | 926 | 909 | 902 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,017 | 1,017 | 1,021 | 1,034 | 1,045 | 1,055 | 1,067 | 1,067 | 1,065 | 1,048 | 1,035 | 1,023 |
| 20% | 1,017 | 1,017 | 1,020 | 1,032 | 1,040 | 1,052 | 1,066 | 1,067 | 1,062 | 1,040 | 1,026 | 1,022 |
| 30% | 1,013 | 1,013 | 1,019 | 1,029 | 1,037 | 1,049 | 1,063 | 1,066 | 1,056 | 1,032 | 1,017 | 1,015 |
| 40% | 1,006 | 1,007 | 1,018 | 1,023 | 1,033 | 1,047 | 1,060 | 1,063 | 1,048 | 1,025 | 1,011 | 1,007 |
| 50% | 997 | 998 | 1,015 | 1,020 | 1,028 | 1,046 | 1,057 | 1,059 | 1,043 | 1,019 | 1,006 | 1,003 |
| 60% | 994 | 993 | 1,003 | 1,016 | 1,025 | 1,041 | 1,052 | 1,053 | 1,036 | 1,013 | 997 | 995 |
| 70% | 980 | 984 | 990 | 1,003 | 1,017 | 1,032 | 1,049 | 1,043 | 1,026 | 1,001 | 993 | 988 |
| 80% | 969 | 974 | 973 | 989 | 1,006 | 1,024 | 1,040 | 1,029 | 1,010 | 992 | 980 | 976 |
| 90% | 929 | 918 | 948 | 958 | 985 | 992 | 996 | 997 | 980 | 956 | 941 | 934 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 984 | 984 | 993 | 1,006 | 1,018 | 1,032 | 1,045 | 1,043 | 1,030 | 1,008 | 994 | 988 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,012 | 1,011 | 1,016 | 1,024 | 1,034 | 1,043 | 1,059 | 1,064 | 1,058 | 1,039 | 1,025 | 1,017 |
| Above Normal (16%) | 996 | 994 | 1,004 | 1,021 | 1,030 | 1,049 | 1,064 | 1,063 | 1,049 | 1,023 | 1,008 | 1,003 |
| Below Normal (13%) | 993 | 994 | 1,000 | 1,023 | 1,035 | 1,047 | 1,058 | 1,053 | 1,035 | 1,012 | 997 | 995 |
| Dry (24%) | 987 | 991 | 1,002 | 996 | 1,015 | 1,034 | 1,046 | 1,041 | 1,025 | 1,006 | 994 | 991 |
| Critical (15%) | 895 | 894 | 908 | 952 | 962 | 977 | 980 | 971 | 949 | 923 | 907 | 900 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | -1 | 0 | -2 | -2 | -1 | 0 | 0 | 1 | 0 | -1 |
| 30% | -2 | -4 | 0 | -1 | -1 | -1 | -1 | -1 | 0 | -1 | -2 | -5 |
| 40% | 0 | -4 | -1 | -1 | -2 | -1 | -2 | -2 | -1 | 1 | -1 | -2 |
| 50% | 2 | -3 | -1 | 0 | -2 | 0 | -1 | -1 | 0 | 0 | 1 | 1 |
| 60% | 3 | -1 | -8 | -1 | -2 | -1 | -2 | 1 | 1 | 1 | -1 | -3 |
| 70% | -5 | -6 | -7 | -3 | -1 | -1 | -2 | -1 | -1 | -1 | 2 | 0 |
| 80% | -1 | 2 | -6 | -5 | -5 | -1 | -2 | -6 | -4 | -2 | 0 | -1 |
| 90% | 1 | -2 | 3 | -5 | -4 | 0 | 1 | -6 | -7 | -7 | 0 | -4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | -2 | -2 | -1 | -2 | -2 | -2 | -1 | -1 | -1 | 0 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | -3 | -2 | 0 | 0 | -1 | -1 | 0 | 0 | -1 | -1 | -1 |
| Above Normal (16%) | -5 | -9 | -7 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | -1 | -6 |
| Below Normal (13%) | 5 | 4 | 3 | -1 | -1 | -1 | -1 | 0 | -1 | 1 | 3 | 5 |
| Dry (24%) | 1 | -1 | 0 | -4 | -4 | -3 | -3 | -3 | -2 | 0 | 0 | 1 |
| Critical (15%) | -1 | -3 | -3 | -3 | -4 | -3 | -3 | -4 | -4 | -3 | -2 | -2 |

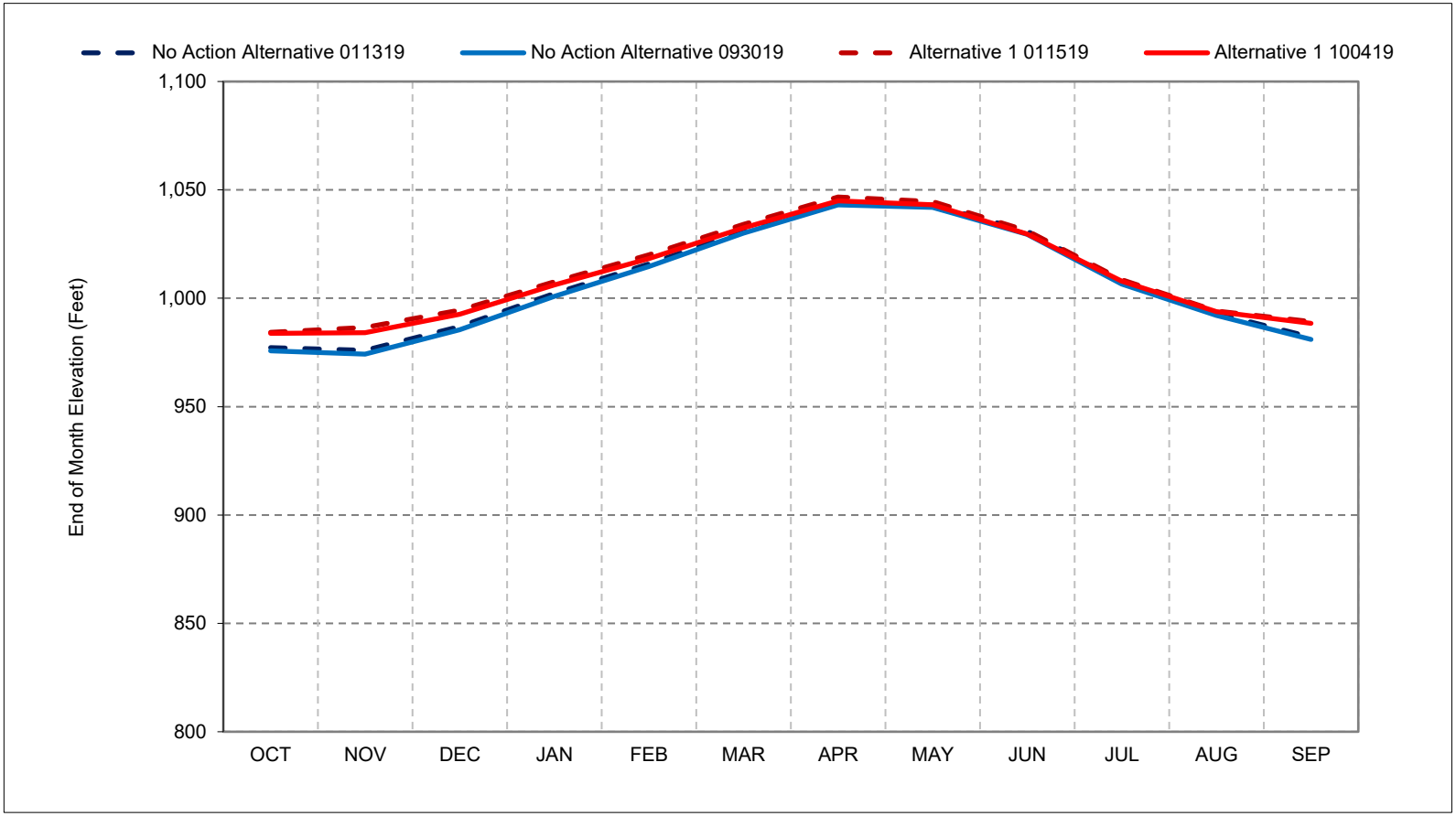
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-1. Shasta Lake Elevation, Long-Term Average Elevation

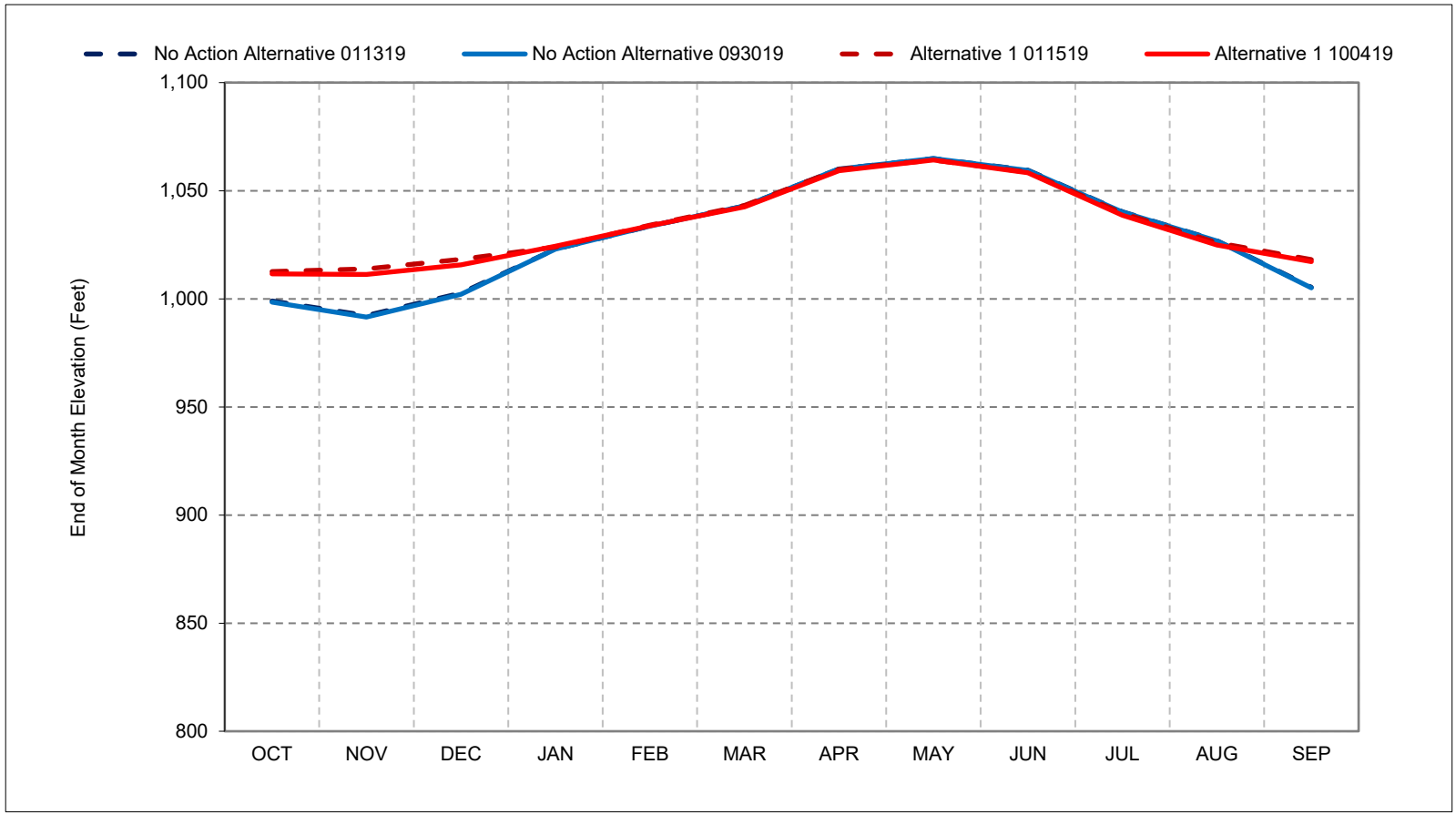



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-2. Shasta Lake Elevation, Wet Year Average Elevation

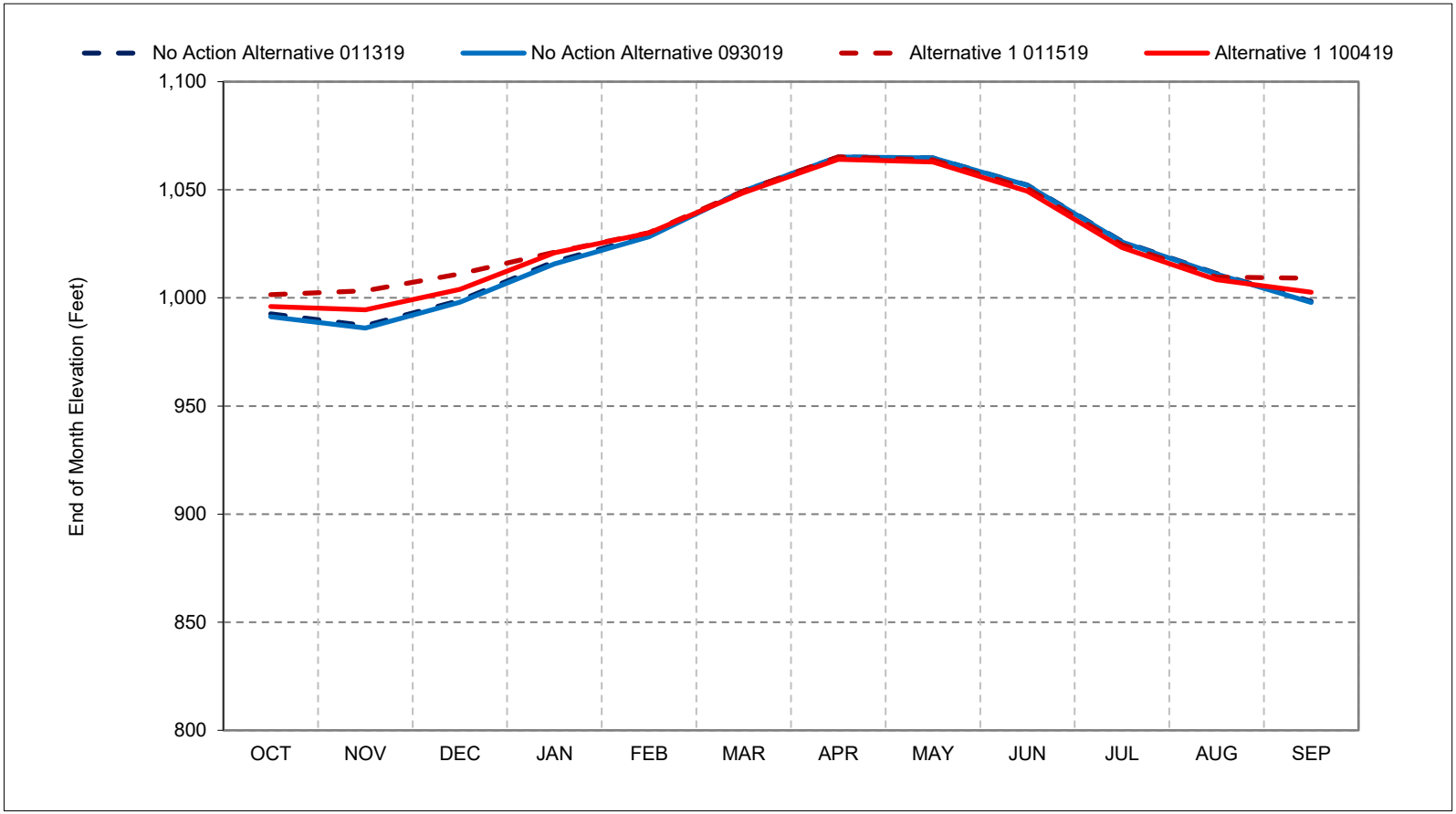



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-3. Shasta Lake Elevation, Above Normal Year Average Elevation

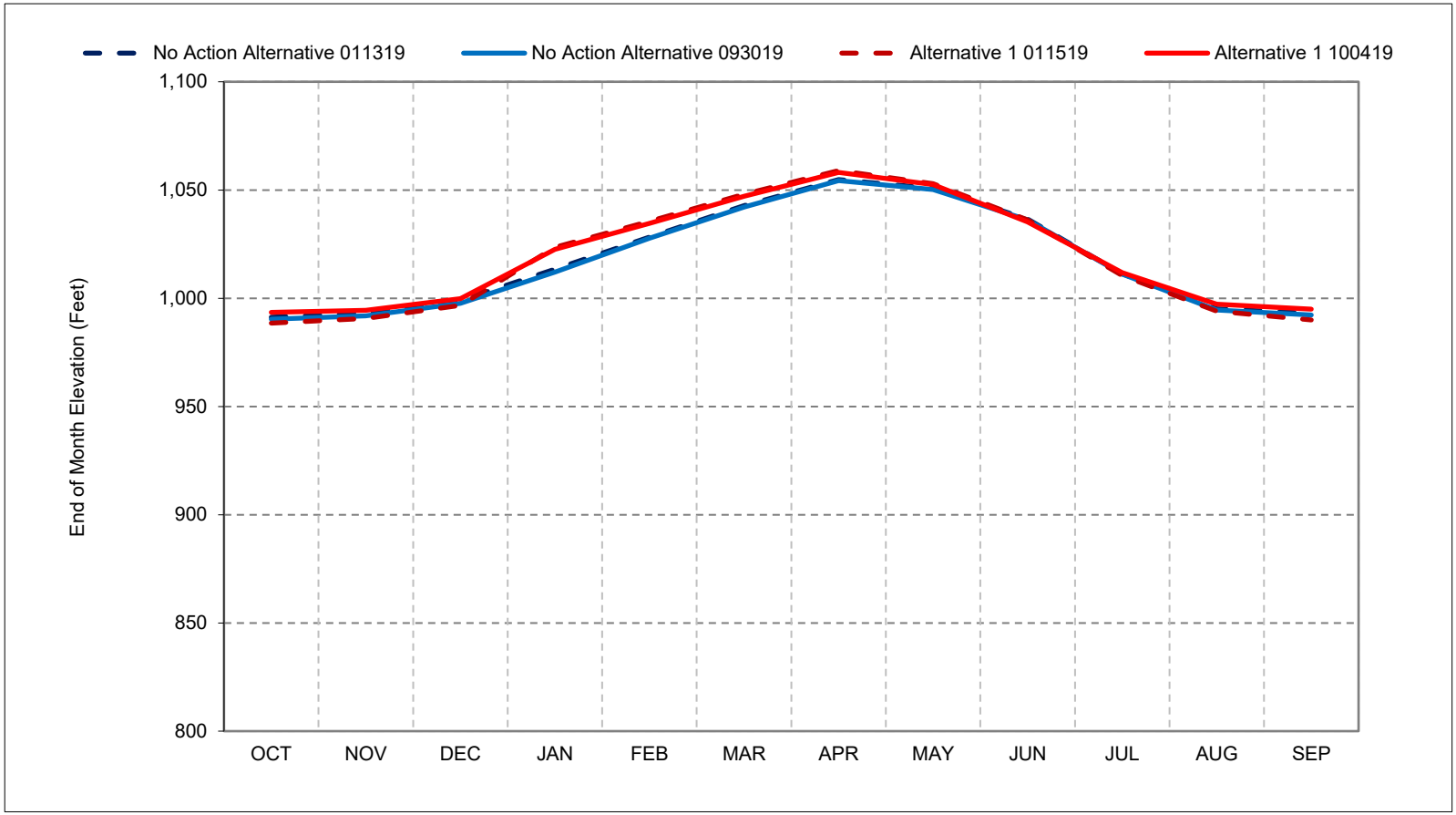



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-4. Shasta Lake Elevation, Below Normal Year Average Elevation

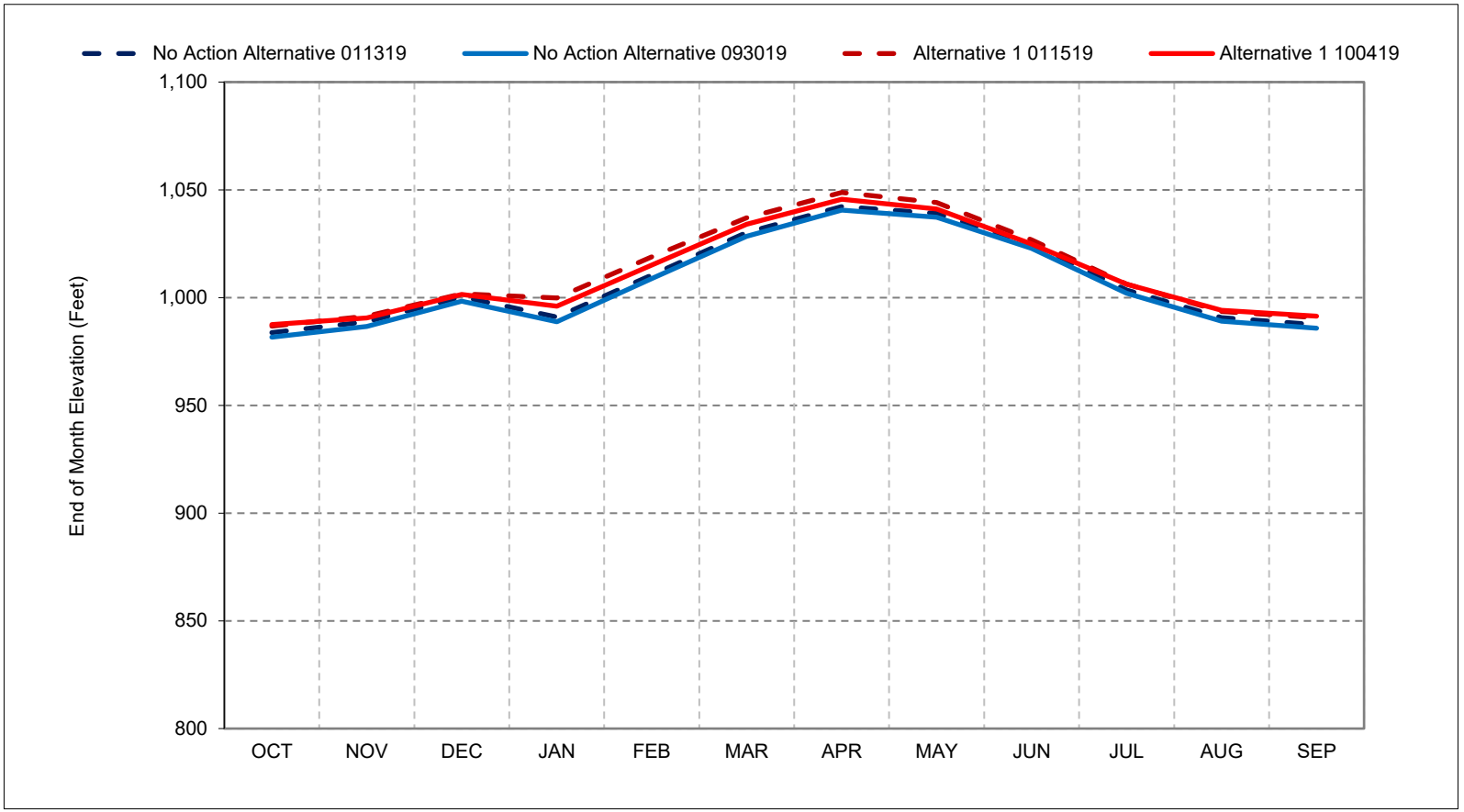



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-5. Shasta Lake Elevation, Dry Year Average Elevation

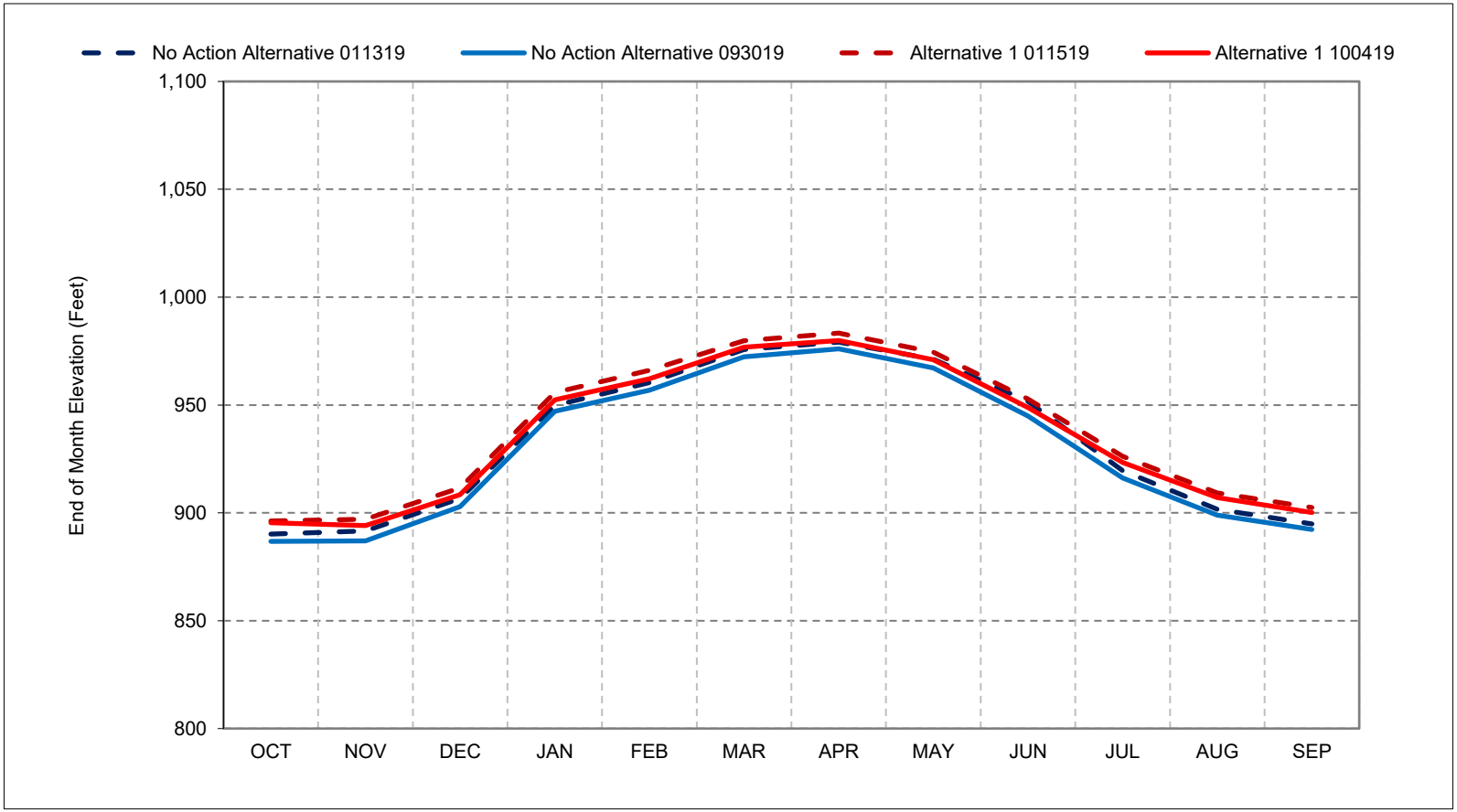



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3a-6. Shasta Lake Elevation, Critical Year Average Elevation

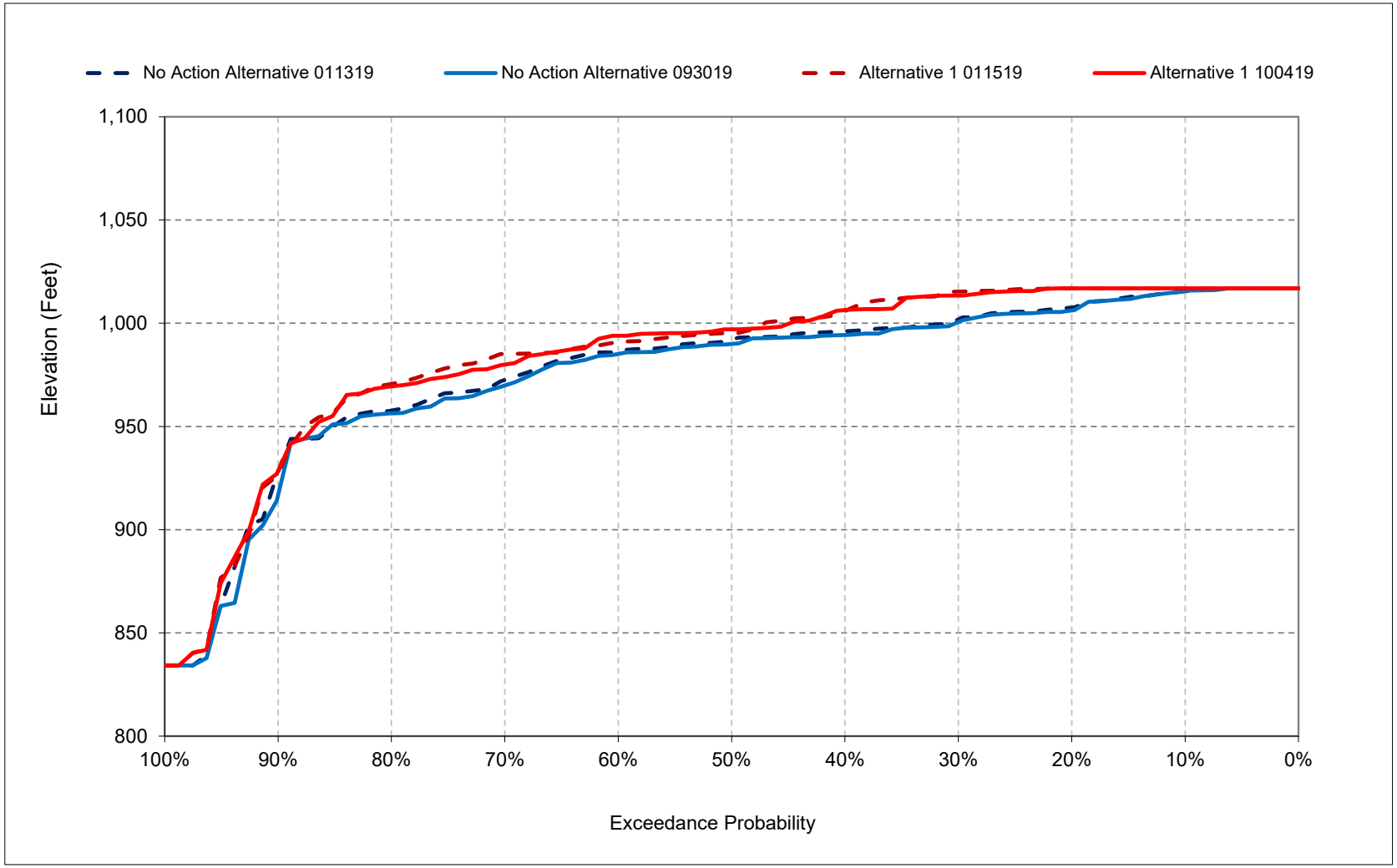



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

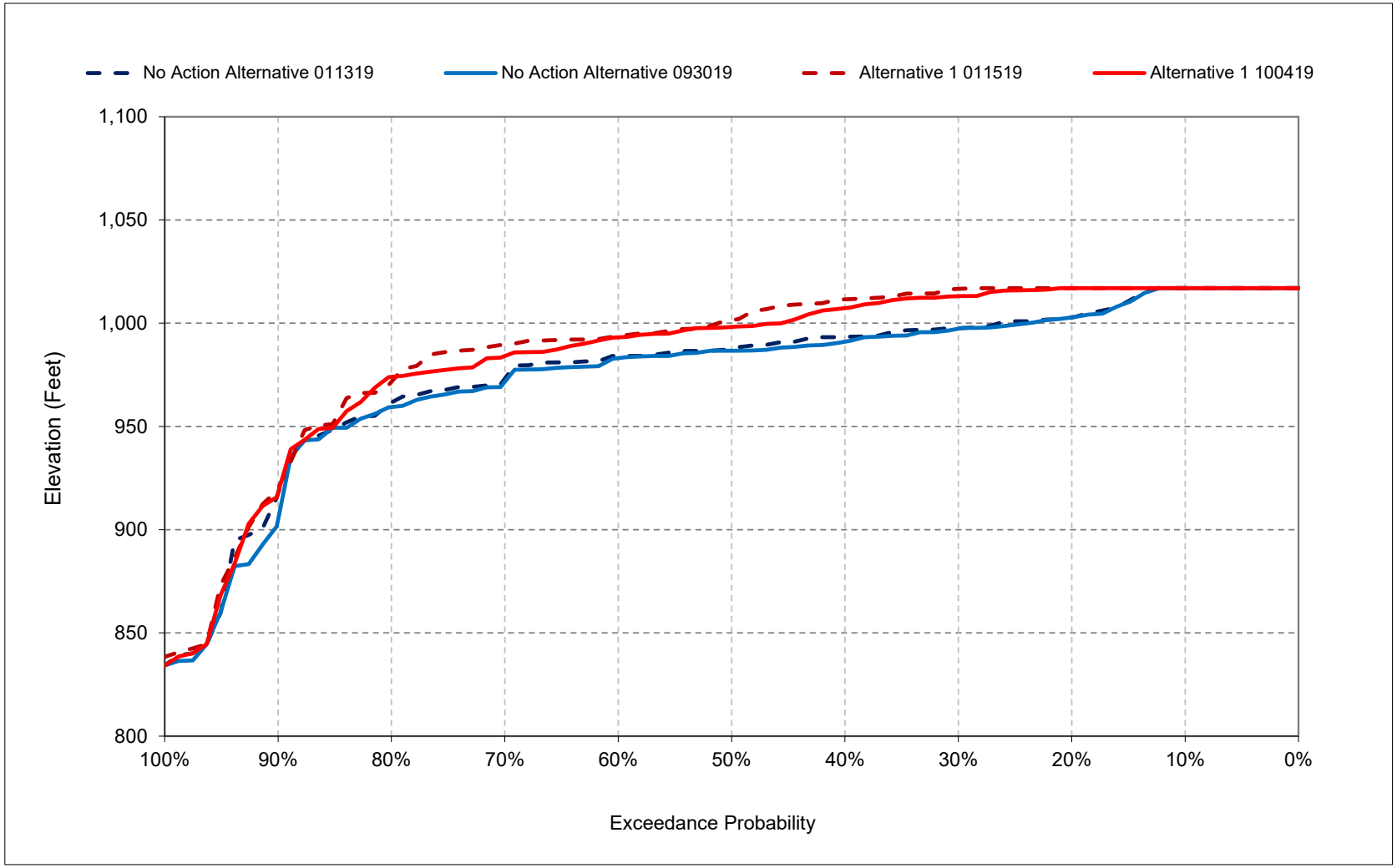
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-7. Shasta Lake, Reservoir Pool Elevation, October**



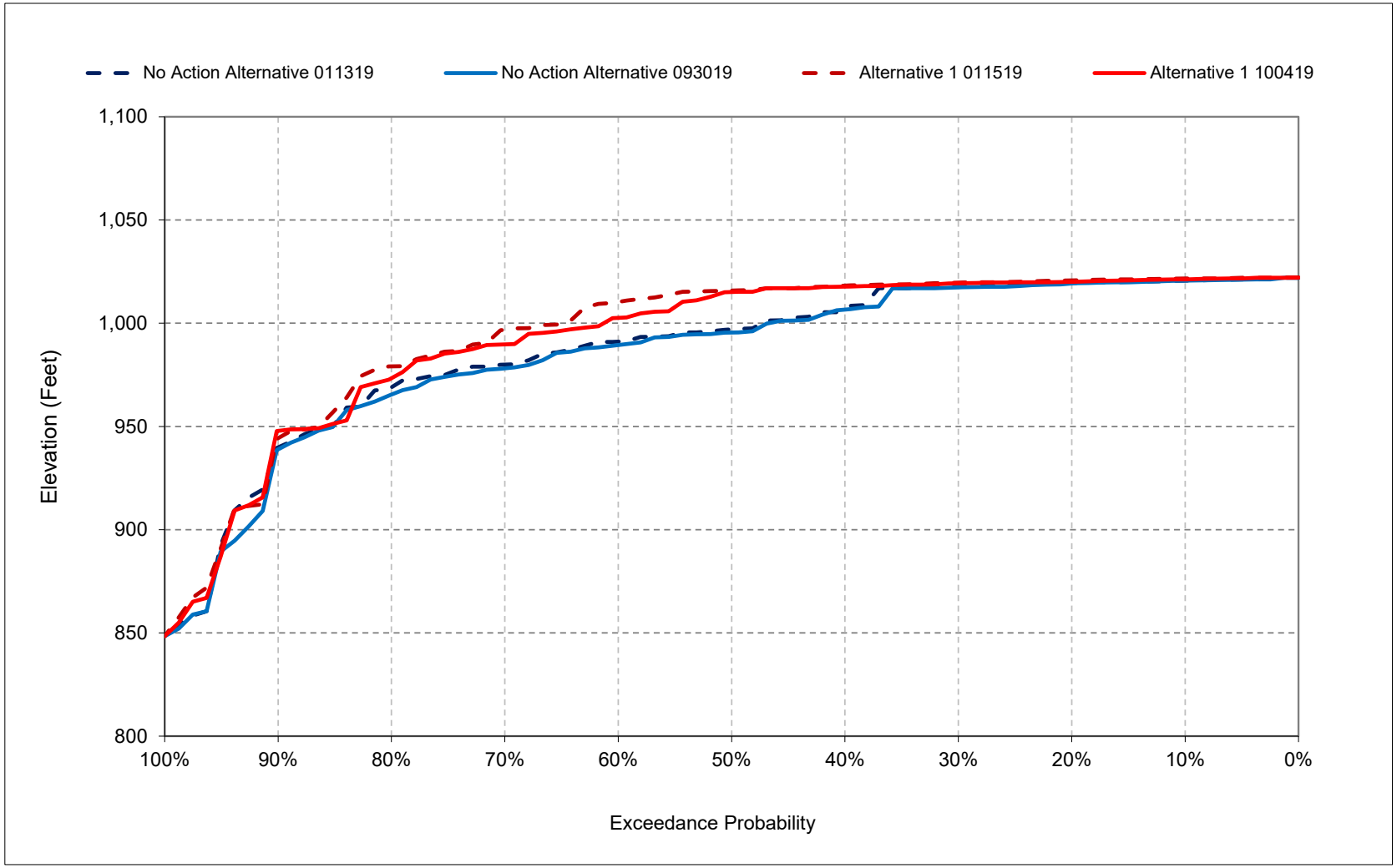

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-8. Shasta Lake, Reservoir Pool Elevation, November**



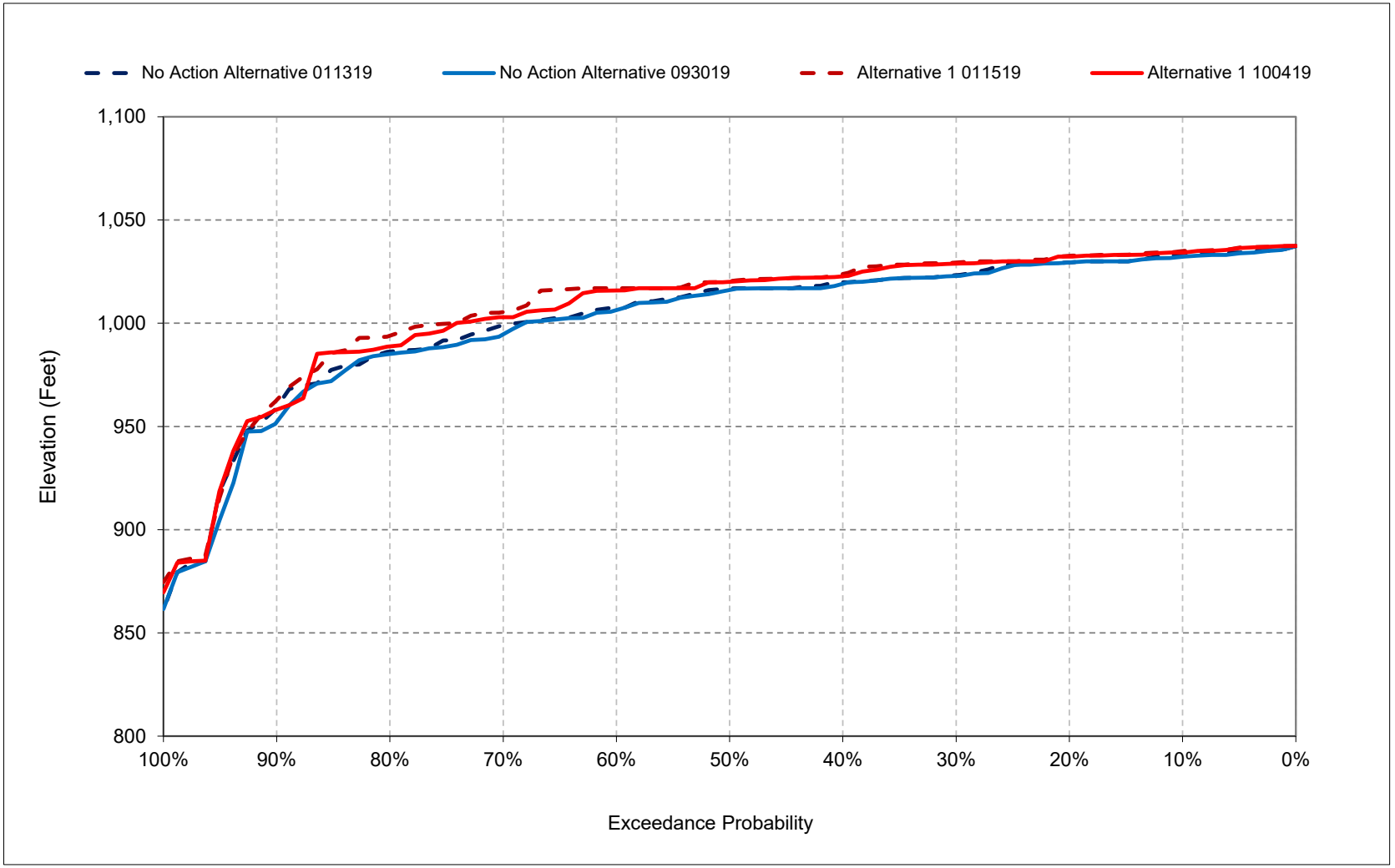

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-9. Shasta Lake, Reservoir Pool Elevation, December**



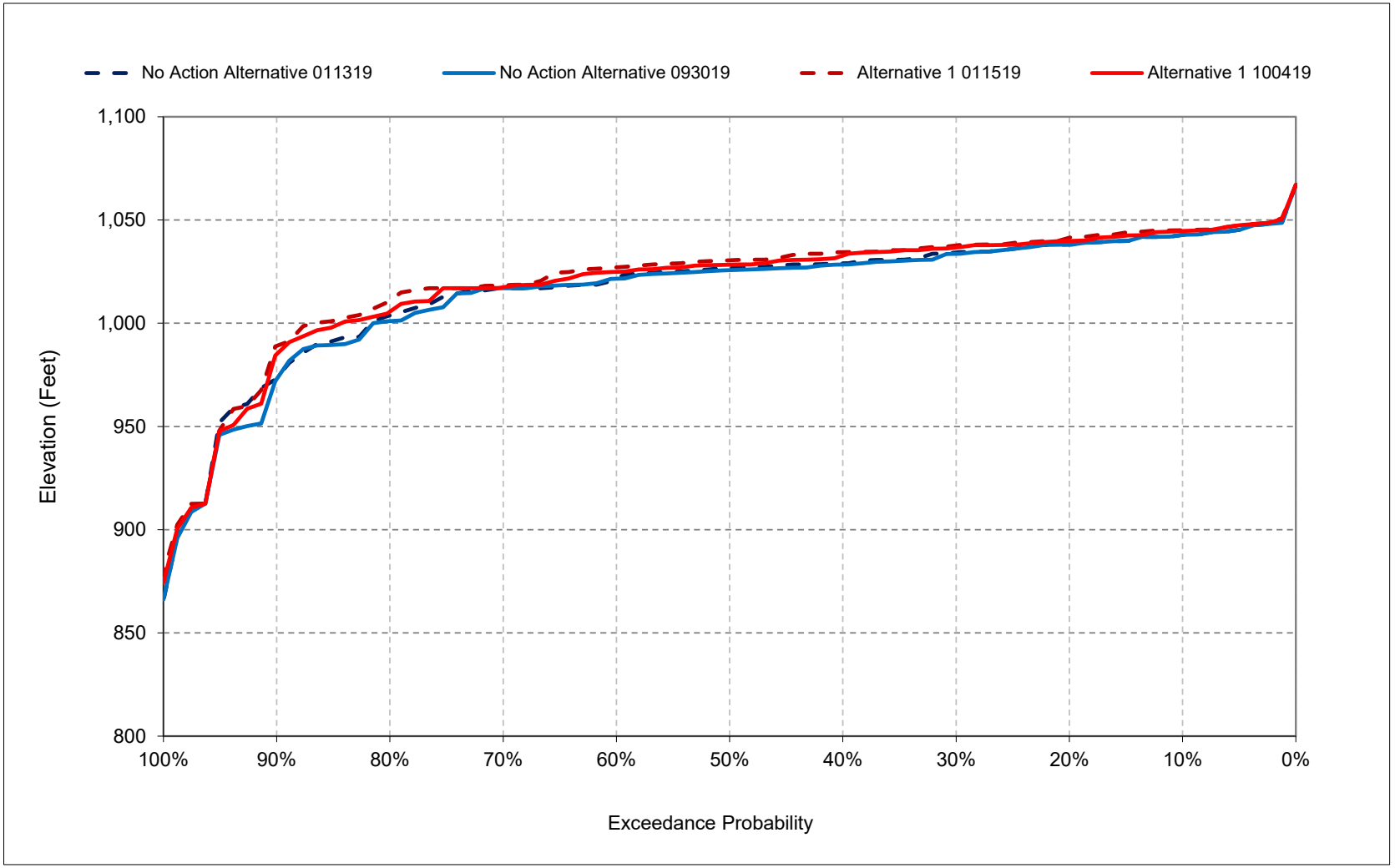

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-10. Shasta Lake, Reservoir Pool Elevation, January**



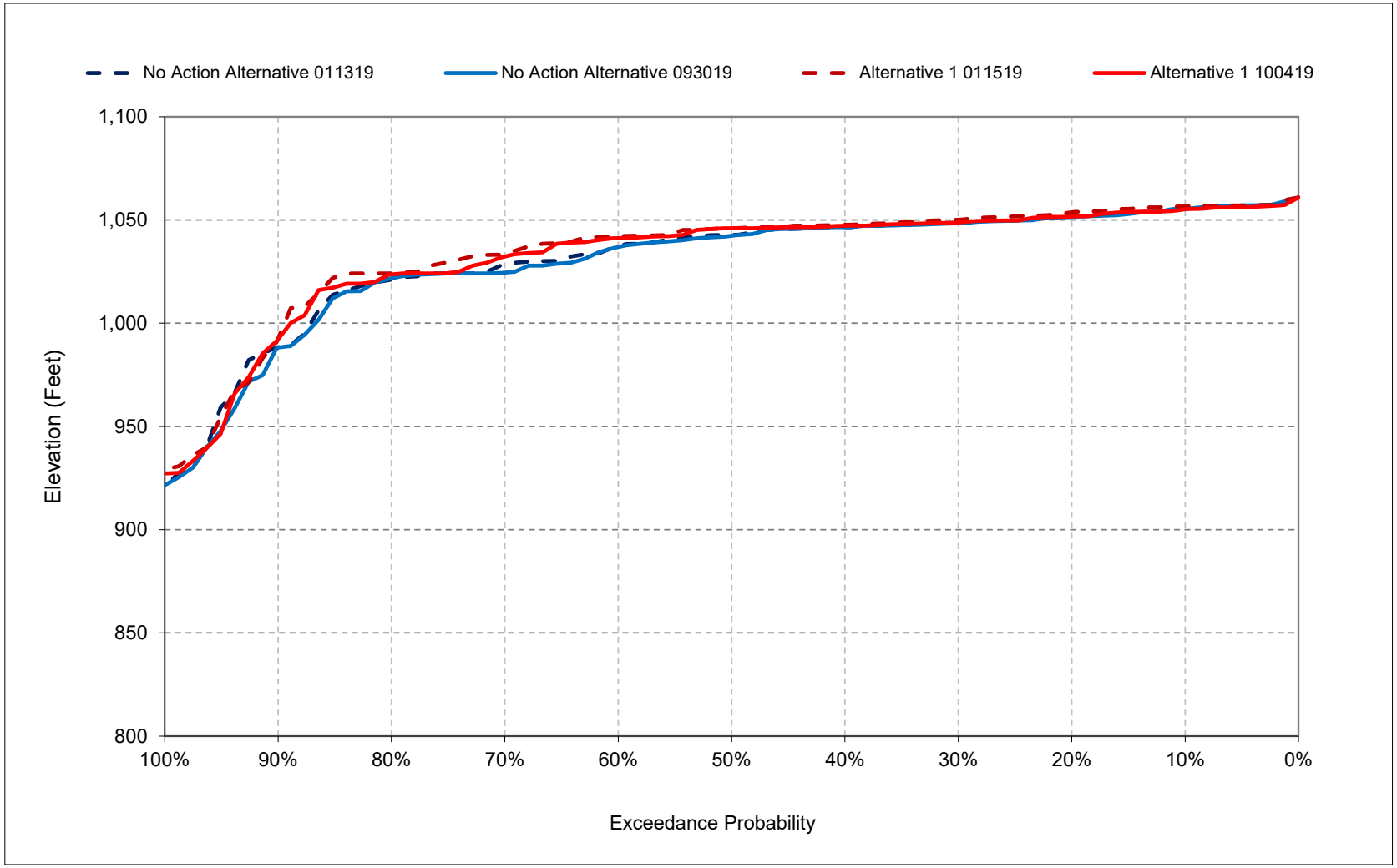

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-11. Shasta Lake, Reservoir Pool Elevation, February**



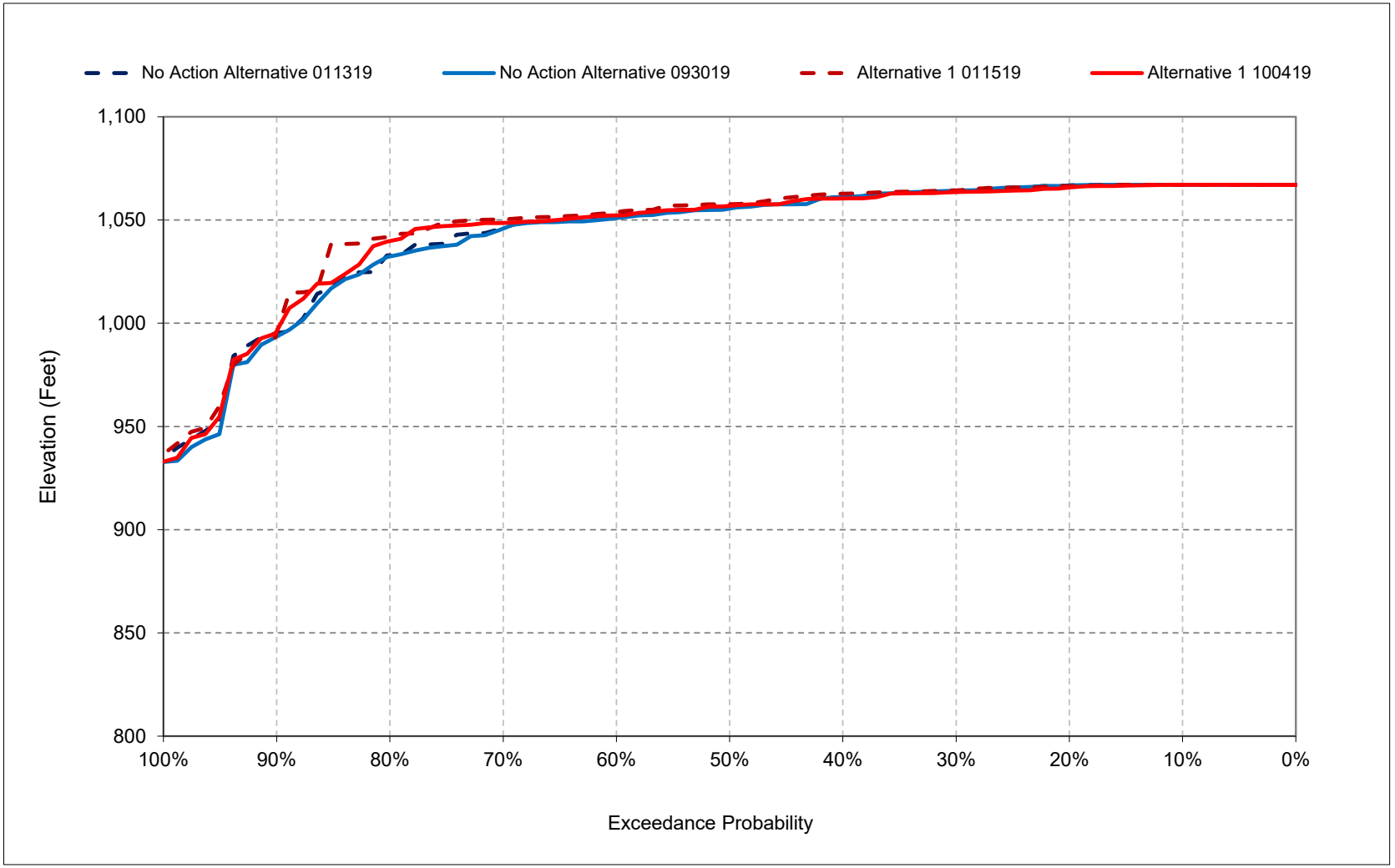

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-12. Shasta Lake, Reservoir Pool Elevation, March**



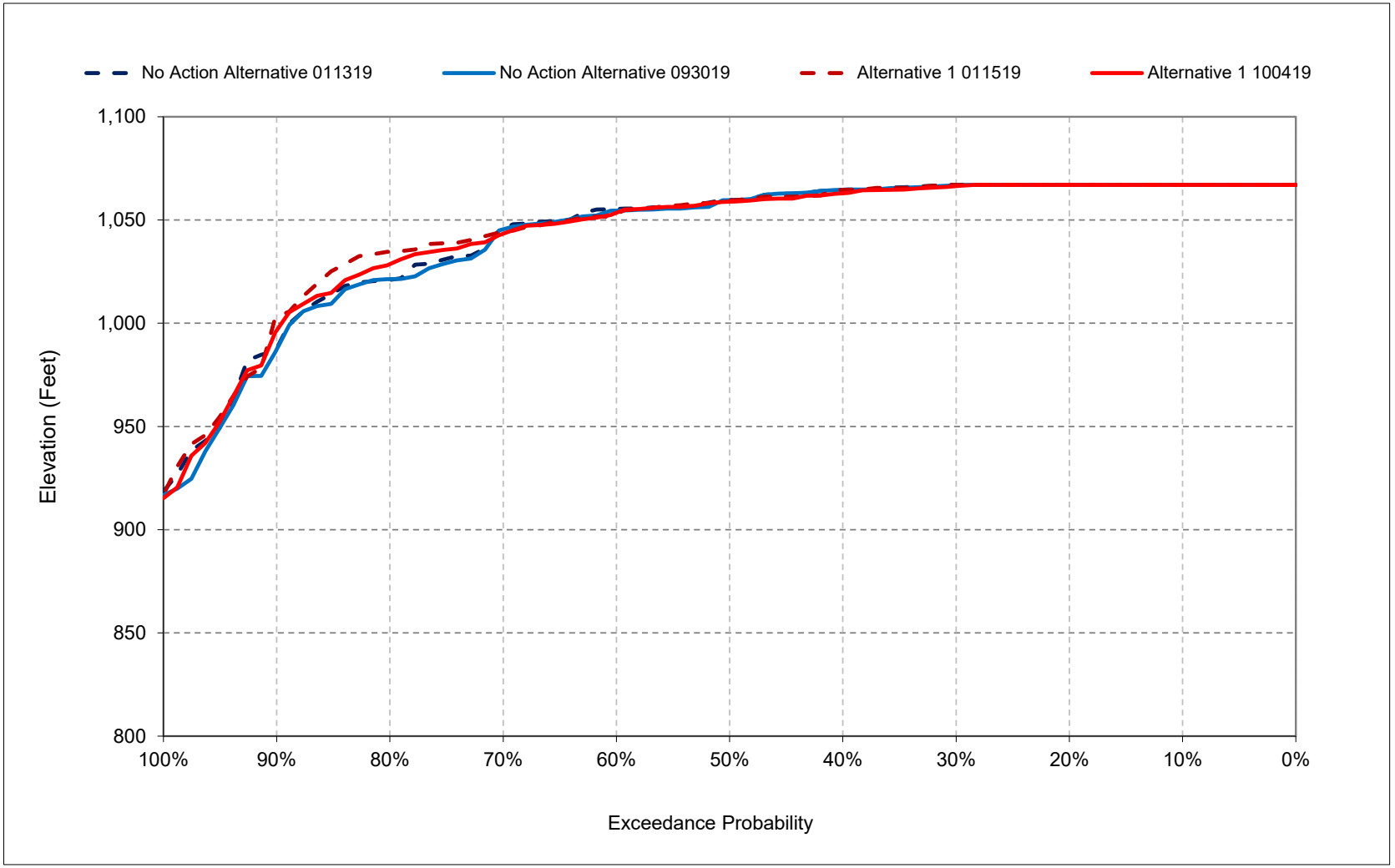

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-13. Shasta Lake, Reservoir Pool Elevation, April**



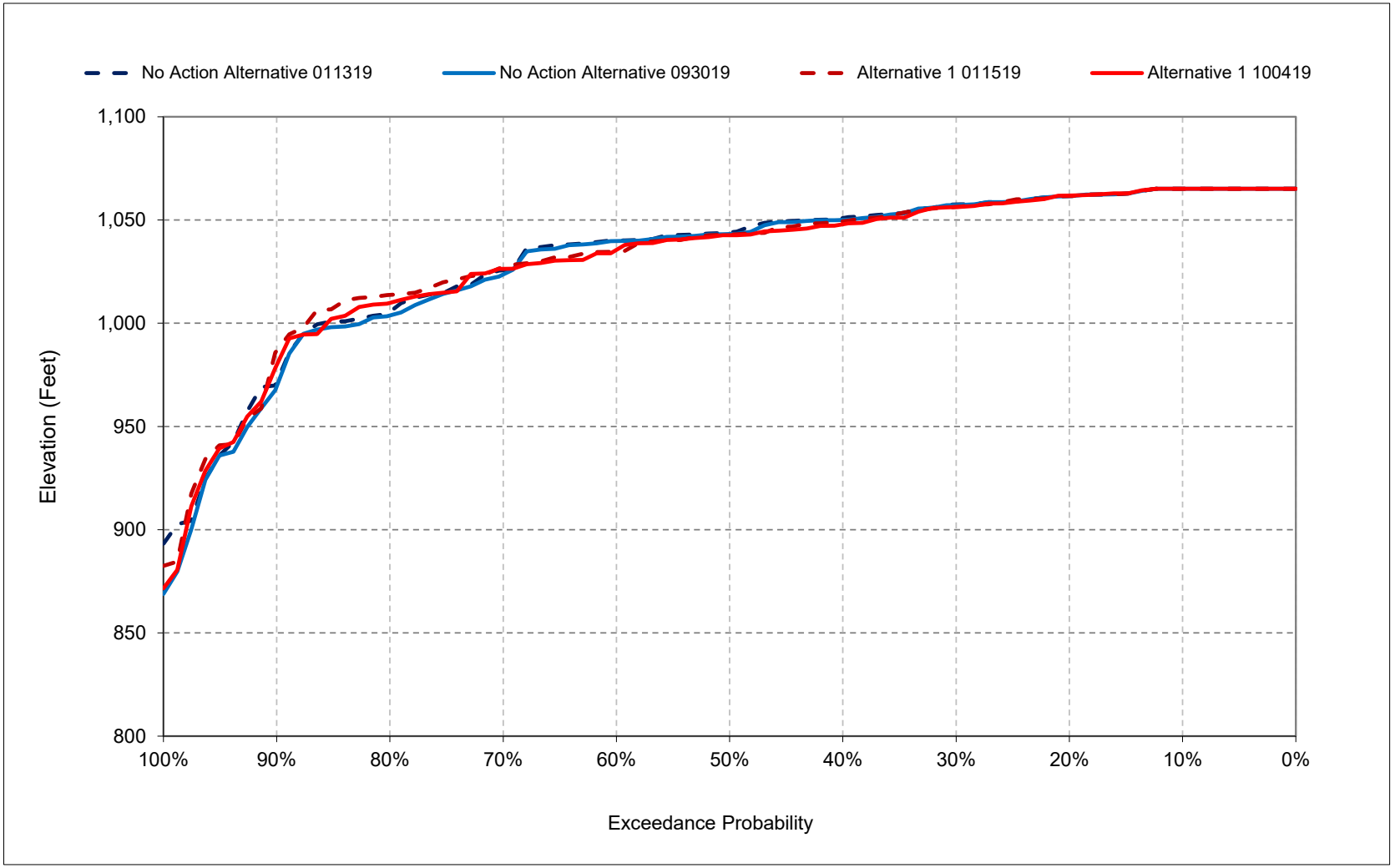

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-14. Shasta Lake, Reservoir Pool Elevation, May**



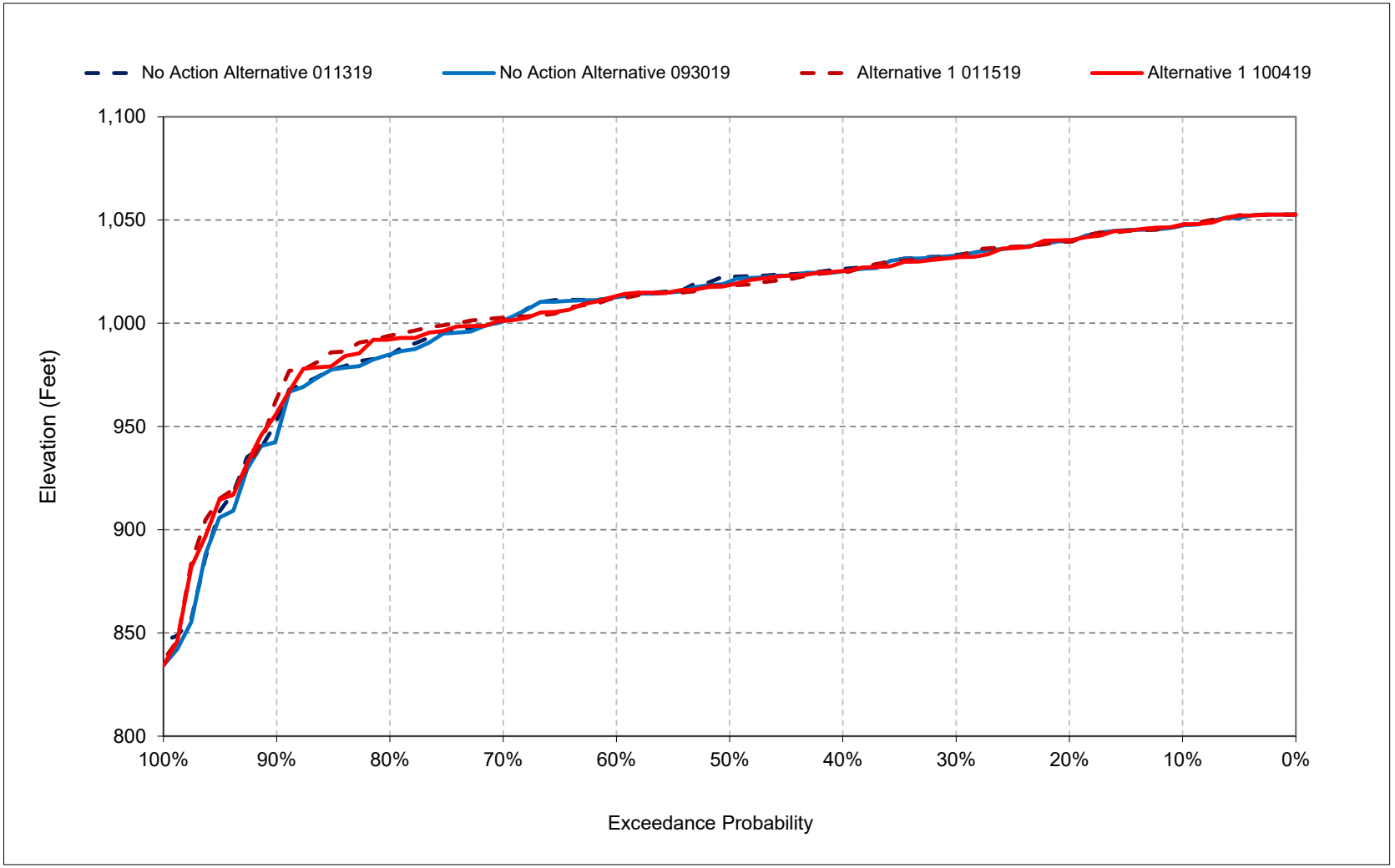

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-15. Shasta Lake, Reservoir Pool Elevation, June**



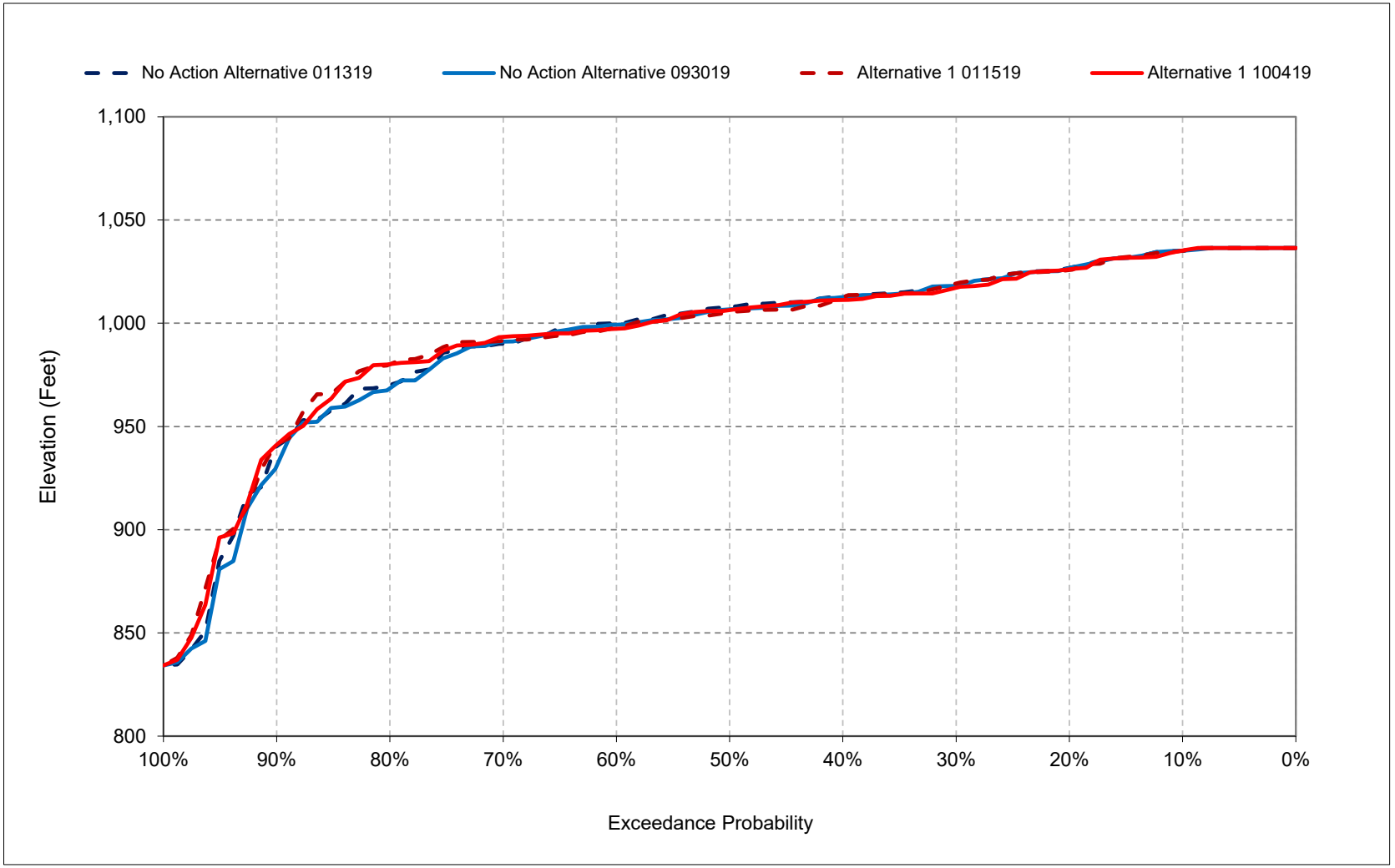

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-16. Shasta Lake, Reservoir Pool Elevation, July**



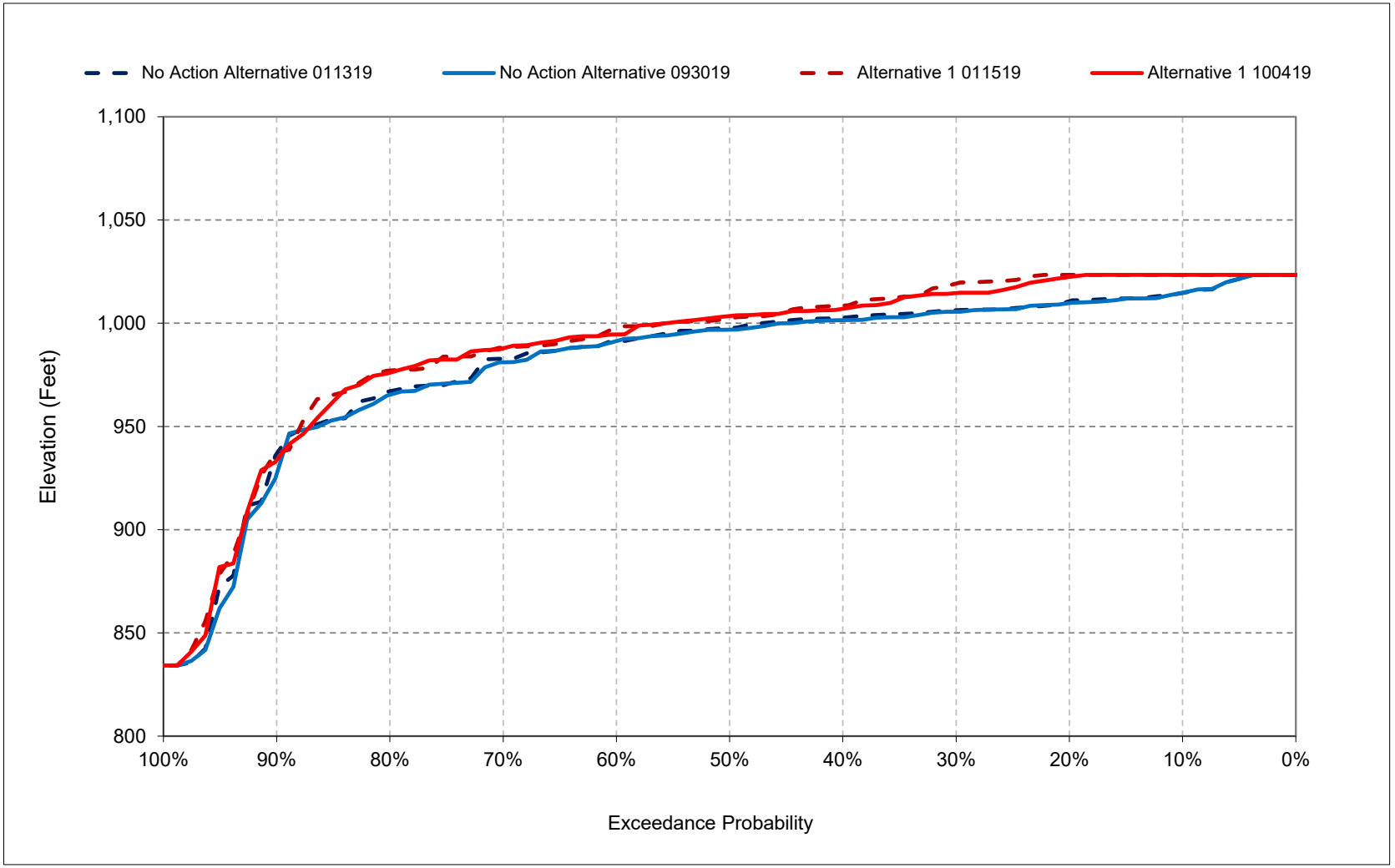

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-17. Shasta Lake, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3a-18. Shasta Lake, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-1. Lake Oroville Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,151 | 2,150 | 2,784 | 2,788 | 2,925 | 3,040 | 3,352 | 3,538 | 3,538 | 3,060 | 2,750 | 2,224 |
| 20% | 1,834 | 1,862 | 2,136 | 2,764 | 2,788 | 2,964 | 3,302 | 3,538 | 3,534 | 2,975 | 2,550 | 2,016 |
| 30% | 1,704 | 1,734 | 1,893 | 2,405 | 2,788 | 2,921 | 3,273 | 3,487 | 3,366 | 2,843 | 2,389 | 1,896 |
| 40% | 1,548 | 1,550 | 1,730 | 1,961 | 2,676 | 2,788 | 3,209 | 3,356 | 3,192 | 2,614 | 2,131 | 1,690 |
| 50% | 1,487 | 1,463 | 1,553 | 1,807 | 2,204 | 2,691 | 2,908 | 3,002 | 2,891 | 2,290 | 1,821 | 1,543 |
| 60% | 1,370 | 1,292 | 1,453 | 1,557 | 2,026 | 2,372 | 2,662 | 2,719 | 2,461 | 1,836 | 1,541 | 1,461 |
| 70% | 1,237 | 1,189 | 1,200 | 1,473 | 1,747 | 2,119 | 2,263 | 2,330 | 2,065 | 1,540 | 1,424 | 1,352 |
| 80% | 1,137 | 1,053 | 1,067 | 1,242 | 1,558 | 1,875 | 2,015 | 1,996 | 1,814 | 1,533 | 1,367 | 1,266 |
| 90% | 898 | 906 | 927 | 1,084 | 1,259 | 1,471 | 1,578 | 1,649 | 1,399 | 1,137 | 997 | 951 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,492 | 1,474 | 1,639 | 1,894 | 2,193 | 2,430 | 2,695 | 2,788 | 2,640 | 2,182 | 1,889 | 1,612 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,006 | 1,967 | 2,086 | 2,617 | 2,858 | 2,942 | 3,300 | 3,487 | 3,447 | 3,009 | 2,676 | 2,190 |
| Above Normal (16%) | 1,658 | 1,639 | 1,758 | 1,995 | 2,518 | 2,922 | 3,265 | 3,414 | 3,298 | 2,718 | 2,239 | 1,799 |
| Below Normal (13%) | 1,428 | 1,352 | 1,467 | 1,793 | 2,196 | 2,468 | 2,724 | 2,776 | 2,612 | 2,023 | 1,644 | 1,494 |
| Dry (24%) | 1,228 | 1,266 | 1,585 | 1,380 | 1,659 | 2,007 | 2,252 | 2,283 | 2,012 | 1,563 | 1,417 | 1,323 |
| Critical (15%) | 697 | 688 | 790 | 1,165 | 1,287 | 1,455 | 1,478 | 1,448 | 1,249 | 986 | 818 | 750 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,687 | 2,692 | 2,788 | 2,807 | 2,949 | 3,058 | 3,352 | 3,538 | 3,538 | 3,060 | 2,748 | 2,718 |
| 20% | 2,206 | 2,226 | 2,467 | 2,788 | 2,829 | 2,994 | 3,302 | 3,538 | 3,531 | 2,959 | 2,512 | 2,299 |
| 30% | 1,954 | 2,061 | 2,215 | 2,530 | 2,788 | 2,937 | 3,273 | 3,474 | 3,314 | 2,761 | 2,341 | 2,061 |
| 40% | 1,660 | 1,719 | 1,979 | 2,406 | 2,788 | 2,831 | 3,209 | 3,377 | 3,153 | 2,530 | 2,147 | 1,817 |
| 50% | 1,525 | 1,485 | 1,719 | 2,092 | 2,606 | 2,788 | 3,128 | 3,137 | 2,928 | 2,292 | 1,847 | 1,574 |
| 60% | 1,376 | 1,297 | 1,495 | 1,594 | 2,055 | 2,617 | 2,805 | 2,788 | 2,572 | 1,951 | 1,541 | 1,510 |
| 70% | 1,226 | 1,171 | 1,216 | 1,497 | 1,779 | 2,191 | 2,329 | 2,464 | 2,079 | 1,540 | 1,423 | 1,353 |
| 80% | 1,142 | 1,051 | 1,082 | 1,244 | 1,683 | 1,894 | 2,190 | 2,066 | 1,771 | 1,529 | 1,368 | 1,260 |
| 90% | 970 | 951 | 926 | 1,126 | 1,283 | 1,455 | 1,593 | 1,724 | 1,485 | 1,251 | 1,132 | 1,091 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,632 | 1,618 | 1,761 | 1,998 | 2,269 | 2,489 | 2,753 | 2,829 | 2,642 | 2,182 | 1,885 | 1,741 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,394 | 2,365 | 2,413 | 2,671 | 2,882 | 2,942 | 3,300 | 3,478 | 3,420 | 2,977 | 2,656 | 2,534 |
| Above Normal (16%) | 1,733 | 1,722 | 1,840 | 2,129 | 2,611 | 2,957 | 3,294 | 3,428 | 3,281 | 2,679 | 2,203 | 1,888 |
| Below Normal (13%) | 1,456 | 1,379 | 1,497 | 2,105 | 2,409 | 2,675 | 2,927 | 2,948 | 2,728 | 2,102 | 1,673 | 1,516 |
| Dry (24%) | 1,247 | 1,283 | 1,602 | 1,468 | 1,749 | 2,099 | 2,345 | 2,353 | 2,018 | 1,596 | 1,442 | 1,340 |
| Critical (15%) | 676 | 663 | 769 | 1,187 | 1,310 | 1,481 | 1,503 | 1,461 | 1,226 | 967 | 805 | 739 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 536 | 542 | 4 | 19 | 24 | 17 | 0 | 0 | 0 | 0 | -2 | 495 |
| 20% | 371 | 364 | 331 | 24 | 41 | 30 | 0 | 0 | -2 | -16 | -38 | 283 |
| 30% | 251 | 328 | 321 | 125 | 0 | 16 | 0 | -13 | -52 | -82 | -48 | 166 |
| 40% | 112 | 169 | 250 | 445 | 111 | 43 | 0 | 21 | -39 | -85 | 16 | 127 |
| 50% | 38 | 22 | 166 | 285 | 401 | 97 | 220 | 135 | 37 | 2 | 27 | 31 |
| 60% | 6 | 5 | 42 | 37 | 29 | 244 | 142 | 69 | 112 | 115 | 0 | 49 |
| 70% | -12 | -17 | 16 | 24 | 32 | 73 | 66 | 134 | 14 | 0 | -1 | 1 |
| 80% | 5 | -2 | 15 | 2 | 124 | 19 | 175 | 70 | -43 | -4 | 1 | -7 |
| 90% | 72 | 45 | 0 | 42 | 24 | -16 | 15 | 75 | 86 | 114 | 135 | 139 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 140 | 144 | 122 | 105 | 77 | 60 | 58 | 41 | 3 | 0 | -4 | 129 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 387 | 398 | 327 | 54 | 24 | 0 | 0 | -9 | -27 | -32 | -20 | 344 |
| Above Normal (16%) | 75 | 83 | 83 | 133 | 94 | 34 | 29 | 14 | -17 | -39 | -35 | 90 |
| Below Normal (13%) | 28 | 27 | 30 | 312 | 214 | 207 | 203 | 171 | 116 | 80 | 29 | 22 |
| Dry (24%) | 19 | 17 | 16 | 88 | 91 | 92 | 93 | 70 | 7 | 33 | 25 | 17 |
| Critical (15%) | -21 | -25 | -21 | 22 | 23 | 26 | 25 | 14 | -23 | -18 | -13 | -10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-2. Lake Oroville Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,147 | 2,150 | 2,784 | 2,788 | 2,924 | 3,042 | 3,352 | 3,538 | 3,538 | 3,060 | 2,750 | 2,223 |
| 20% | 1,832 | 1,854 | 2,100 | 2,753 | 2,788 | 2,964 | 3,302 | 3,538 | 3,534 | 2,977 | 2,546 | 2,008 |
| 30% | 1,704 | 1,734 | 1,896 | 2,396 | 2,788 | 2,909 | 3,273 | 3,488 | 3,366 | 2,826 | 2,370 | 1,893 |
| 40% | 1,548 | 1,550 | 1,721 | 1,966 | 2,673 | 2,788 | 3,209 | 3,356 | 3,191 | 2,598 | 2,127 | 1,686 |
| 50% | 1,483 | 1,463 | 1,553 | 1,804 | 2,206 | 2,655 | 2,904 | 2,993 | 2,876 | 2,271 | 1,813 | 1,543 |
| 60% | 1,357 | 1,259 | 1,407 | 1,554 | 2,009 | 2,365 | 2,653 | 2,699 | 2,449 | 1,812 | 1,541 | 1,481 |
| 70% | 1,202 | 1,148 | 1,198 | 1,432 | 1,735 | 2,109 | 2,251 | 2,307 | 2,010 | 1,540 | 1,410 | 1,327 |
| 80% | 1,123 | 1,016 | 1,031 | 1,218 | 1,550 | 1,835 | 1,998 | 1,991 | 1,772 | 1,527 | 1,365 | 1,259 |
| 90% | 882 | 890 | 901 | 1,000 | 1,223 | 1,448 | 1,570 | 1,603 | 1,381 | 1,119 | 977 | 932 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,472 | 1,452 | 1,618 | 1,874 | 2,172 | 2,410 | 2,677 | 2,767 | 2,613 | 2,161 | 1,871 | 1,595 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,004 | 1,965 | 2,080 | 2,613 | 2,858 | 2,942 | 3,300 | 3,487 | 3,446 | 3,005 | 2,671 | 2,184 |
| Above Normal (16%) | 1,654 | 1,636 | 1,754 | 1,980 | 2,502 | 2,916 | 3,264 | 3,413 | 3,297 | 2,708 | 2,228 | 1,794 |
| Below Normal (13%) | 1,410 | 1,330 | 1,447 | 1,777 | 2,179 | 2,452 | 2,708 | 2,755 | 2,585 | 1,995 | 1,630 | 1,482 |
| Dry (24%) | 1,210 | 1,245 | 1,564 | 1,354 | 1,630 | 1,978 | 2,224 | 2,253 | 1,977 | 1,556 | 1,409 | 1,312 |
| Critical (15%) | 612 | 601 | 714 | 1,112 | 1,224 | 1,392 | 1,418 | 1,373 | 1,153 | 903 | 739 | 676 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,551 | 2,548 | 2,788 | 2,788 | 2,961 | 3,058 | 3,352 | 3,538 | 3,538 | 3,059 | 2,611 | 2,579 |
| 20% | 2,242 | 2,290 | 2,428 | 2,788 | 2,838 | 2,994 | 3,302 | 3,538 | 3,534 | 2,972 | 2,505 | 2,368 |
| 30% | 2,116 | 2,127 | 2,271 | 2,603 | 2,788 | 2,941 | 3,276 | 3,474 | 3,312 | 2,791 | 2,356 | 2,246 |
| 40% | 1,972 | 1,920 | 2,124 | 2,440 | 2,788 | 2,863 | 3,223 | 3,377 | 3,170 | 2,564 | 2,112 | 2,025 |
| 50% | 1,551 | 1,585 | 1,774 | 2,255 | 2,697 | 2,788 | 3,143 | 3,136 | 2,925 | 2,365 | 1,892 | 1,608 |
| 60% | 1,396 | 1,337 | 1,553 | 1,686 | 2,147 | 2,671 | 2,835 | 2,770 | 2,500 | 1,871 | 1,541 | 1,512 |
| 70% | 1,276 | 1,202 | 1,219 | 1,527 | 1,923 | 2,272 | 2,543 | 2,491 | 2,136 | 1,568 | 1,453 | 1,409 |
| 80% | 1,128 | 1,011 | 1,061 | 1,272 | 1,617 | 1,890 | 2,152 | 2,159 | 1,805 | 1,532 | 1,369 | 1,256 |
| 90% | 953 | 899 | 904 | 1,068 | 1,307 | 1,530 | 1,641 | 1,637 | 1,460 | 1,239 | 1,112 | 1,057 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,672 | 1,651 | 1,788 | 2,019 | 2,293 | 2,504 | 2,768 | 2,844 | 2,653 | 2,189 | 1,875 | 1,779 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,412 | 2,380 | 2,439 | 2,695 | 2,892 | 2,942 | 3,300 | 3,484 | 3,427 | 2,995 | 2,605 | 2,542 |
| Above Normal (16%) | 1,955 | 1,927 | 2,002 | 2,161 | 2,641 | 2,957 | 3,293 | 3,424 | 3,273 | 2,698 | 2,221 | 2,087 |
| Below Normal (13%) | 1,462 | 1,380 | 1,495 | 2,057 | 2,417 | 2,679 | 2,935 | 2,956 | 2,721 | 2,107 | 1,687 | 1,529 |
| Dry (24%) | 1,238 | 1,267 | 1,576 | 1,520 | 1,806 | 2,156 | 2,401 | 2,398 | 2,059 | 1,583 | 1,442 | 1,341 |
| Critical (15%) | 677 | 659 | 770 | 1,198 | 1,314 | 1,483 | 1,506 | 1,466 | 1,234 | 976 | 813 | 749 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 404 | 399 | 4 | 0 | 37 | 16 | 0 | 0 | 0 | 0 | -139 | 355 |
| 20% | 410 | 436 | 328 | 35 | 50 | 30 | 0 | 0 | 0 | -5 | -41 | 360 |
| 30% | 412 | 393 | 376 | 207 | 0 | 32 | 3 | -14 | -54 | -35 | -14 | 353 |
| 40% | 424 | 370 | 403 | 475 | 115 | 75 | 14 | 21 | -21 | -34 | -15 | 339 |
| 50% | 68 | 122 | 221 | 451 | 492 | 133 | 239 | 143 | 49 | 93 | 78 | 65 |
| 60% | 39 | 78 | 146 | 132 | 138 | 306 | 182 | 71 | 52 | 59 | 0 | 31 |
| 70% | 74 | 54 | 21 | 94 | 188 | 163 | 292 | 184 | 126 | 29 | 43 | 82 |
| 80% | 5 | -4 | 30 | 54 | 67 | 55 | 154 | 168 | 33 | 6 | 4 | -3 |
| 90% | 70 | 9 | 3 | 69 | 84 | 82 | 71 | 34 | 79 | 119 | 135 | 125 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 200 | 198 | 171 | 146 | 121 | 93 | 91 | 77 | 40 | 28 | 4 | 184 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 408 | 415 | 359 | 82 | 35 | 0 | 0 | -3 | -19 | -10 | -66 | 358 |
| Above Normal (16%) | 301 | 290 | 248 | 182 | 139 | 41 | 29 | 11 | -23 | -10 | -8 | 293 |
| Below Normal (13%) | 52 | 51 | 48 | 281 | 238 | 227 | 226 | 201 | 136 | 112 | 57 | 47 |
| Dry (24%) | 28 | 22 | 11 | 167 | 177 | 178 | 177 | 145 | 82 | 27 | 33 | 29 |
| Critical (15%) | 65 | 59 | 56 | 86 | 89 | 90 | 88 | 94 | 81 | 74 | 74 | 72 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-3. Lake Oroville Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,151 | 2,150 | 2,784 | 2,788 | 2,925 | 3,040 | 3,352 | 3,538 | 3,538 | 3,060 | 2,750 | 2,224 |
| 20% | 1,834 | 1,862 | 2,136 | 2,764 | 2,788 | 2,964 | 3,302 | 3,538 | 3,534 | 2,975 | 2,550 | 2,016 |
| 30% | 1,704 | 1,734 | 1,893 | 2,405 | 2,788 | 2,921 | 3,273 | 3,487 | 3,366 | 2,843 | 2,389 | 1,896 |
| 40% | 1,548 | 1,550 | 1,730 | 1,961 | 2,676 | 2,788 | 3,209 | 3,356 | 3,192 | 2,614 | 2,131 | 1,690 |
| 50% | 1,487 | 1,463 | 1,553 | 1,807 | 2,204 | 2,691 | 2,908 | 3,002 | 2,891 | 2,290 | 1,821 | 1,543 |
| 60% | 1,370 | 1,292 | 1,453 | 1,557 | 2,026 | 2,372 | 2,662 | 2,719 | 2,461 | 1,836 | 1,541 | 1,461 |
| 70% | 1,237 | 1,189 | 1,200 | 1,473 | 1,747 | 2,119 | 2,263 | 2,330 | 2,065 | 1,540 | 1,424 | 1,352 |
| 80% | 1,137 | 1,053 | 1,067 | 1,242 | 1,558 | 1,875 | 2,015 | 1,996 | 1,814 | 1,533 | 1,367 | 1,266 |
| 90% | 898 | 906 | 927 | 1,084 | 1,259 | 1,471 | 1,578 | 1,649 | 1,399 | 1,137 | 997 | 951 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,492 | 1,474 | 1,639 | 1,894 | 2,193 | 2,430 | 2,695 | 2,788 | 2,640 | 2,182 | 1,889 | 1,612 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 2,006 | 1,967 | 2,086 | 2,617 | 2,858 | 2,942 | 3,300 | 3,487 | 3,447 | 3,009 | 2,676 | 2,190 |
| Above Normal (16%) | 1,658 | 1,639 | 1,758 | 1,995 | 2,518 | 2,922 | 3,265 | 3,414 | 3,298 | 2,718 | 2,239 | 1,799 |
| Below Normal (13%) | 1,428 | 1,352 | 1,467 | 1,793 | 2,196 | 2,468 | 2,724 | 2,776 | 2,612 | 2,023 | 1,644 | 1,494 |
| Dry (24%) | 1,228 | 1,266 | 1,585 | 1,380 | 1,659 | 2,007 | 2,252 | 2,283 | 2,012 | 1,563 | 1,417 | 1,323 |
| Critical (15%) | 697 | 688 | 790 | 1,165 | 1,287 | 1,455 | 1,478 | 1,448 | 1,249 | 986 | 818 | 750 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,147 | 2,150 | 2,784 | 2,788 | 2,924 | 3,042 | 3,352 | 3,538 | 3,538 | 3,060 | 2,750 | 2,223 |
| 20% | 1,832 | 1,854 | 2,100 | 2,753 | 2,788 | 2,964 | 3,302 | 3,538 | 3,534 | 2,977 | 2,546 | 2,008 |
| 30% | 1,704 | 1,734 | 1,896 | 2,396 | 2,788 | 2,909 | 3,273 | 3,488 | 3,366 | 2,826 | 2,370 | 1,893 |
| 40% | 1,548 | 1,550 | 1,721 | 1,966 | 2,673 | 2,788 | 3,209 | 3,356 | 3,191 | 2,598 | 2,127 | 1,686 |
| 50% | 1,483 | 1,463 | 1,553 | 1,804 | 2,206 | 2,655 | 2,904 | 2,993 | 2,876 | 2,271 | 1,813 | 1,543 |
| 60% | 1,357 | 1,259 | 1,407 | 1,554 | 2,009 | 2,365 | 2,653 | 2,699 | 2,449 | 1,812 | 1,541 | 1,481 |
| 70% | 1,202 | 1,148 | 1,198 | 1,432 | 1,735 | 2,109 | 2,251 | 2,307 | 2,010 | 1,540 | 1,410 | 1,327 |
| 80% | 1,123 | 1,016 | 1,031 | 1,218 | 1,550 | 1,835 | 1,998 | 1,991 | 1,772 | 1,527 | 1,365 | 1,259 |
| 90% | 882 | 890 | 901 | 1,000 | 1,223 | 1,448 | 1,570 | 1,603 | 1,381 | 1,119 | 977 | 932 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,472 | 1,452 | 1,618 | 1,874 | 2,172 | 2,410 | 2,677 | 2,767 | 2,613 | 2,161 | 1,871 | 1,595 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 2,004 | 1,965 | 2,080 | 2,613 | 2,858 | 2,942 | 3,300 | 3,487 | 3,446 | 3,005 | 2,671 | 2,184 |
| Above Normal (16%) | 1,654 | 1,636 | 1,754 | 1,980 | 2,502 | 2,916 | 3,264 | 3,413 | 3,297 | 2,708 | 2,228 | 1,794 |
| Below Normal (13%) | 1,410 | 1,330 | 1,447 | 1,777 | 2,179 | 2,452 | 2,708 | 2,755 | 2,585 | 1,995 | 1,630 | 1,482 |
| Dry (24%) | 1,210 | 1,245 | 1,564 | 1,354 | 1,630 | 1,978 | 2,224 | 2,253 | 1,977 | 1,556 | 1,409 | 1,312 |
| Critical (15%) | 612 | 601 | 714 | 1,112 | 1,224 | 1,392 | 1,418 | 1,373 | 1,153 | 903 | 739 | 676 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -4 | 0 | 0 | 0 | -1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | -2 | -8 | -36 | -11 | 0 | 0 | 0 | 0 | 0 | 2 | -4 | -8 |
| 30% | 0 | 0 | 3 | -9 | 0 | -11 | 0 | 1 | 0 | -17 | -19 | -3 |
| 40% | 0 | 0 | -8 | 5 | -3 | 0 | 0 | 0 | -1 | -16 | -5 | -5 |
| 50% | -4 | 0 | 0 | -2 | 1 | -36 | -3 | -9 | -16 | -19 | -7 | 0 |
| 60% | -12 | -33 | -45 | -4 | -17 | -8 | -9 | -20 | -12 | -24 | 0 | 21 |
| 70% | -35 | -41 | -2 | -40 | -13 | -9 | -12 | -23 | -55 | 0 | -15 | -25 |
| 80% | -13 | -38 | -36 | -25 | -9 | -40 | -17 | -5 | -42 | -6 | -2 | -7 |
| 90% | -16 | -16 | -26 | -84 | -36 | -22 | -9 | -46 | -18 | -17 | -20 | -20 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -20 | -22 | -21 | -20 | -21 | -19 | -18 | -21 | -27 | -20 | -19 | -17 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -2 | -2 | -6 | -4 | 0 | 0 | 0 | 0 | 0 | -4 | -5 | -6 |
| Above Normal (16%) | -4 | -3 | -4 | -16 | -15 | -6 | -1 | -1 | -2 | -9 | -10 | -4 |
| Below Normal (13%) | -18 | -22 | -20 | -17 | -17 | -15 | -15 | -22 | -27 | -28 | -15 | -12 |
| Dry (24%) | -18 | -21 | -21 | -26 | -29 | -29 | -29 | -30 | -35 | -7 | -8 | -10 |
| Critical (15%) | -85 | -87 | -76 | -53 | -63 | -63 | -60 | -75 | -96 | -83 | -79 | -73 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-4. Lake Oroville Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,687 | 2,692 | 2,788 | 2,807 | 2,949 | 3,058 | 3,352 | 3,538 | 3,538 | 3,060 | 2,748 | 2,718 |
| 20% | 2,206 | 2,226 | 2,467 | 2,788 | 2,829 | 2,994 | 3,302 | 3,538 | 3,531 | 2,959 | 2,512 | 2,299 |
| 30% | 1,954 | 2,061 | 2,215 | 2,530 | 2,788 | 2,937 | 3,273 | 3,474 | 3,314 | 2,761 | 2,341 | 2,061 |
| 40% | 1,660 | 1,719 | 1,979 | 2,406 | 2,788 | 2,831 | 3,209 | 3,377 | 3,153 | 2,530 | 2,147 | 1,817 |
| 50% | 1,525 | 1,485 | 1,719 | 2,092 | 2,606 | 2,788 | 3,128 | 3,137 | 2,928 | 2,292 | 1,847 | 1,574 |
| 60% | 1,376 | 1,297 | 1,495 | 1,594 | 2,055 | 2,617 | 2,805 | 2,788 | 2,572 | 1,951 | 1,541 | 1,510 |
| 70% | 1,226 | 1,171 | 1,216 | 1,497 | 1,779 | 2,191 | 2,329 | 2,464 | 2,079 | 1,540 | 1,423 | 1,353 |
| 80% | 1,142 | 1,051 | 1,082 | 1,244 | 1,683 | 1,894 | 2,190 | 2,066 | 1,771 | 1,529 | 1,368 | 1,260 |
| 90% | 970 | 951 | 926 | 1,126 | 1,283 | 1,455 | 1,593 | 1,724 | 1,485 | 1,251 | 1,132 | 1,091 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,632 | 1,618 | 1,761 | 1,998 | 2,269 | 2,489 | 2,753 | 2,829 | 2,642 | 2,182 | 1,885 | 1,741 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,394 | 2,365 | 2,413 | 2,671 | 2,882 | 2,942 | 3,300 | 3,478 | 3,420 | 2,977 | 2,656 | 2,534 |
| Above Normal (16%) | 1,733 | 1,722 | 1,840 | 2,129 | 2,611 | 2,957 | 3,294 | 3,428 | 3,281 | 2,679 | 2,203 | 1,888 |
| Below Normal (13%) | 1,456 | 1,379 | 1,497 | 2,105 | 2,409 | 2,675 | 2,927 | 2,948 | 2,728 | 2,102 | 1,673 | 1,516 |
| Dry (24%) | 1,247 | 1,283 | 1,602 | 1,468 | 1,749 | 2,099 | 2,345 | 2,353 | 2,018 | 1,596 | 1,442 | 1,340 |
| Critical (15%) | 676 | 663 | 769 | 1,187 | 1,310 | 1,481 | 1,503 | 1,461 | 1,226 | 967 | 805 | 739 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,551 | 2,548 | 2,788 | 2,788 | 2,961 | 3,058 | 3,352 | 3,538 | 3,538 | 3,059 | 2,611 | 2,579 |
| 20% | 2,242 | 2,290 | 2,428 | 2,788 | 2,838 | 2,994 | 3,302 | 3,538 | 3,534 | 2,972 | 2,505 | 2,368 |
| 30% | 2,116 | 2,127 | 2,271 | 2,603 | 2,788 | 2,941 | 3,276 | 3,474 | 3,312 | 2,791 | 2,356 | 2,246 |
| 40% | 1,972 | 1,920 | 2,124 | 2,440 | 2,788 | 2,863 | 3,223 | 3,377 | 3,170 | 2,564 | 2,112 | 2,025 |
| 50% | 1,551 | 1,585 | 1,774 | 2,255 | 2,697 | 2,788 | 3,143 | 3,136 | 2,925 | 2,365 | 1,892 | 1,608 |
| 60% | 1,396 | 1,337 | 1,553 | 1,686 | 2,147 | 2,671 | 2,835 | 2,770 | 2,500 | 1,871 | 1,541 | 1,512 |
| 70% | 1,276 | 1,202 | 1,219 | 1,527 | 1,923 | 2,272 | 2,543 | 2,491 | 2,136 | 1,568 | 1,453 | 1,409 |
| 80% | 1,128 | 1,011 | 1,061 | 1,272 | 1,617 | 1,890 | 2,152 | 2,159 | 1,805 | 1,532 | 1,369 | 1,256 |
| 90% | 953 | 899 | 904 | 1,068 | 1,307 | 1,530 | 1,641 | 1,637 | 1,460 | 1,239 | 1,112 | 1,057 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,672 | 1,651 | 1,788 | 2,019 | 2,293 | 2,504 | 2,768 | 2,844 | 2,653 | 2,189 | 1,875 | 1,779 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,412 | 2,380 | 2,439 | 2,695 | 2,892 | 2,942 | 3,300 | 3,484 | 3,427 | 2,995 | 2,605 | 2,542 |
| Above Normal (16%) | 1,955 | 1,927 | 2,002 | 2,161 | 2,641 | 2,957 | 3,293 | 3,424 | 3,273 | 2,698 | 2,221 | 2,087 |
| Below Normal (13%) | 1,462 | 1,380 | 1,495 | 2,057 | 2,417 | 2,679 | 2,935 | 2,956 | 2,721 | 2,107 | 1,687 | 1,529 |
| Dry (24%) | 1,238 | 1,267 | 1,576 | 1,520 | 1,806 | 2,156 | 2,401 | 2,398 | 2,059 | 1,583 | 1,442 | 1,341 |
| Critical (15%) | 677 | 659 | 770 | 1,198 | 1,314 | 1,483 | 1,506 | 1,466 | 1,234 | 976 | 813 | 749 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -136 | -143 | 0 | -19 | 12 | 0 | 0 | 0 | 0 | 0 | -137 | -140 |
| 20% | 36 | 64 | -38 | 0 | 8 | 0 | 0 | 0 | 2 | 12 | -6 | 69 |
| 30% | 162 | 65 | 57 | 73 | 0 | 5 | 3 | 0 | -2 | 30 | 15 | 184 |
| 40% | 312 | 201 | 144 | 34 | 0 | 32 | 14 | 0 | 17 | 35 | -36 | 208 |
| 50% | 27 | 100 | 55 | 163 | 92 | 0 | 15 | -1 | -3 | 73 | 45 | 34 |
| 60% | 20 | 40 | 58 | 92 | 92 | 55 | 31 | -18 | -72 | -80 | 0 | 2 |
| 70% | 50 | 31 | 4 | 30 | 144 | 81 | 214 | 27 | 58 | 29 | 30 | 57 |
| 80% | -14 | -40 | -21 | 28 | -66 | -4 | -38 | 93 | 34 | 3 | 1 | -3 |
| 90% | -17 | -52 | -23 | -57 | 24 | 75 | 47 | -87 | -25 | -12 | -20 | -34 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 40 | 33 | 27 | 21 | 23 | 15 | 15 | 14 | 11 | 7 | -11 | 38 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 18 | 15 | 26 | 24 | 11 | 0 | 0 | 6 | 7 | 18 | -51 | 8 |
| Above Normal (16%) | 222 | 205 | 162 | 33 | 30 | 0 | -1 | -4 | -8 | 19 | 17 | 199 |
| Below Normal (13%) | 6 | 1 | -2 | -48 | 8 | 4 | 8 | 8 | -7 | 5 | 13 | 13 |
| Dry (24%) | -9 | -16 | -26 | 53 | 57 | 57 | 56 | 45 | 40 | -13 | -1 | 1 |
| Critical (15%) | 1 | -3 | 1 | 11 | 3 | 1 | 2 | 5 | 8 | 9 | 9 | 9 |

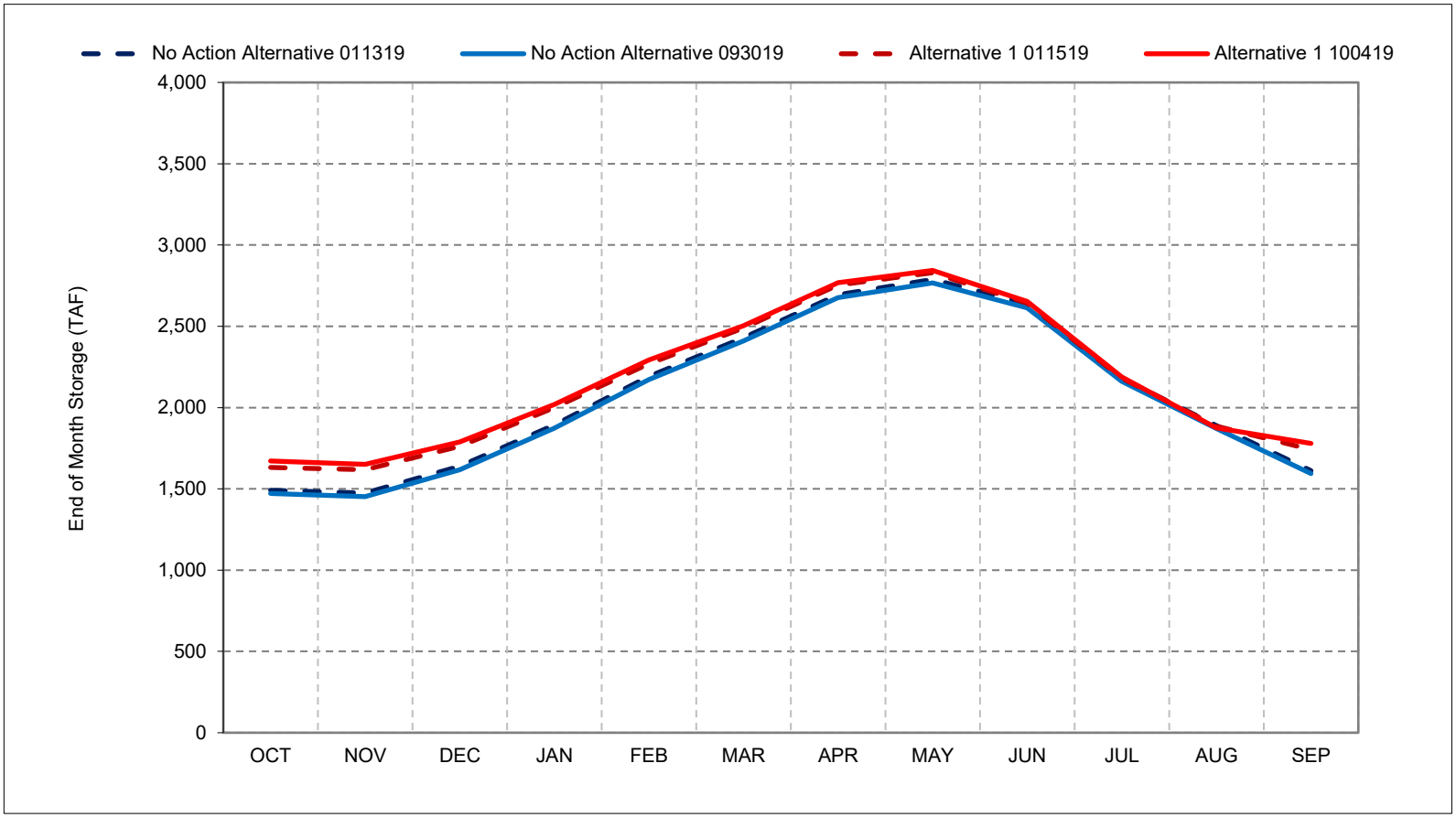
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-1. Lake Oroville Storage, Long-Term Average Storage

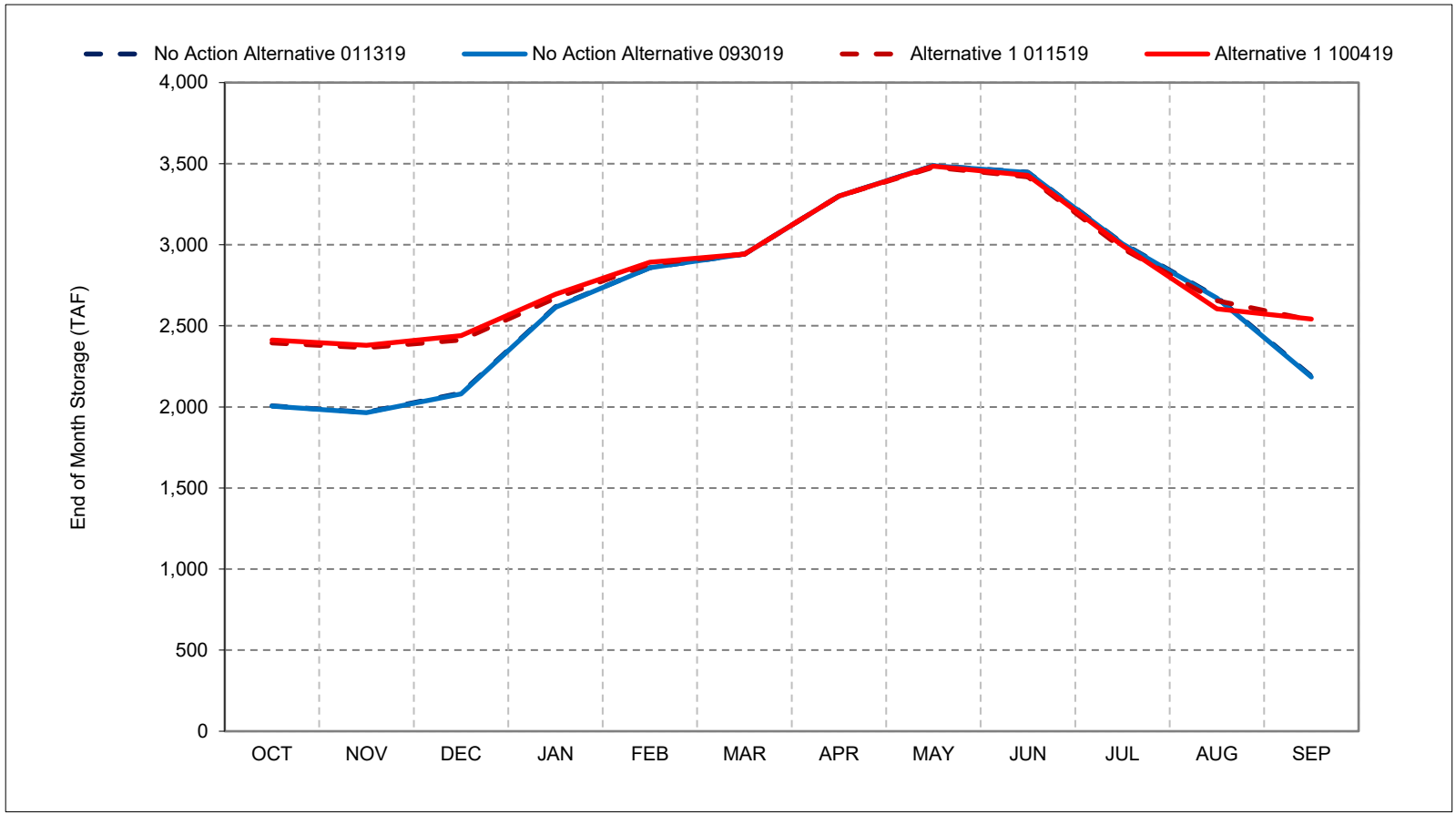



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-2. Lake Oroville Storage, Wet Year Average Storage

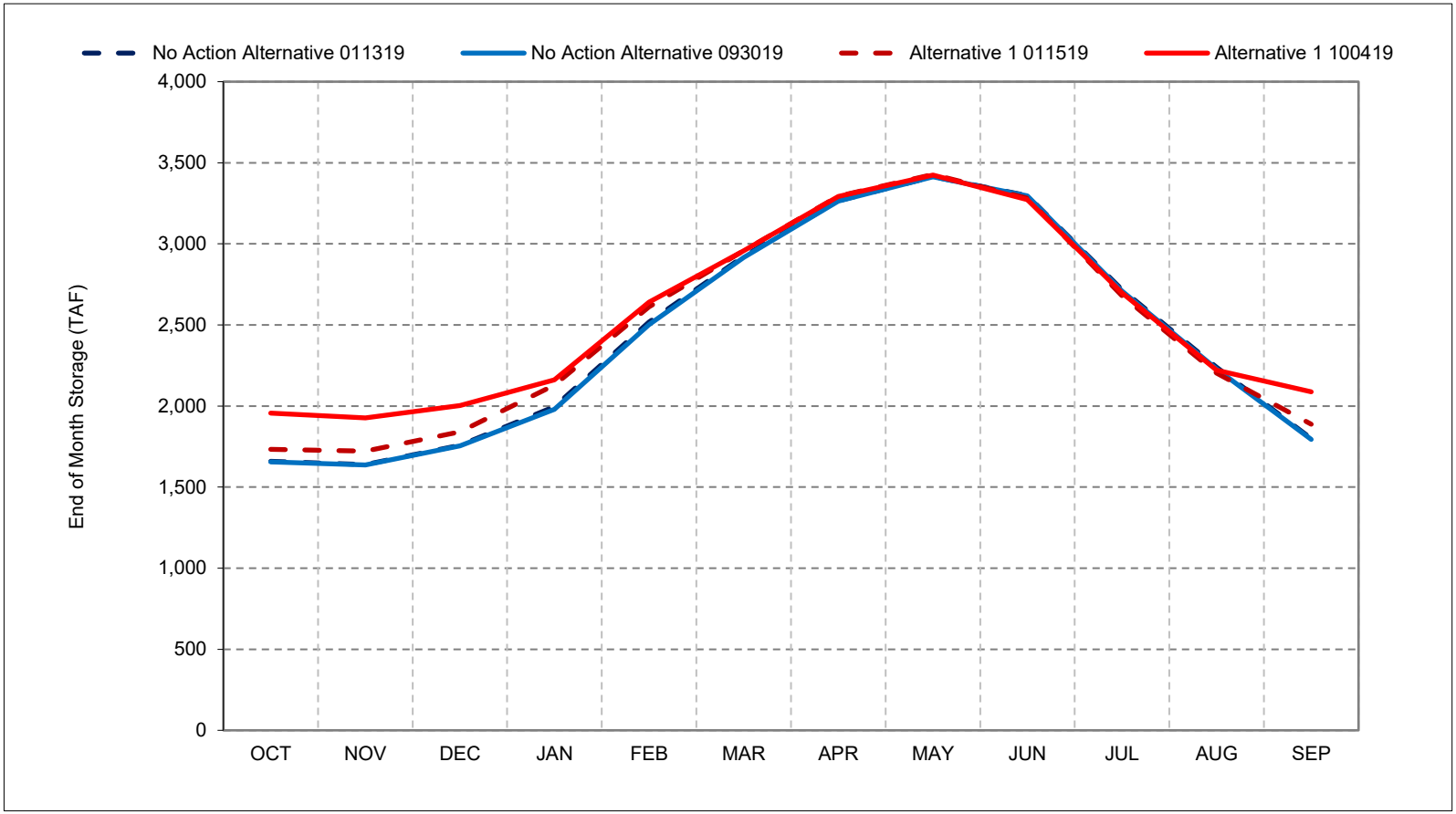



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-3. Lake Oroville Storage, Above Normal Year Average Storage

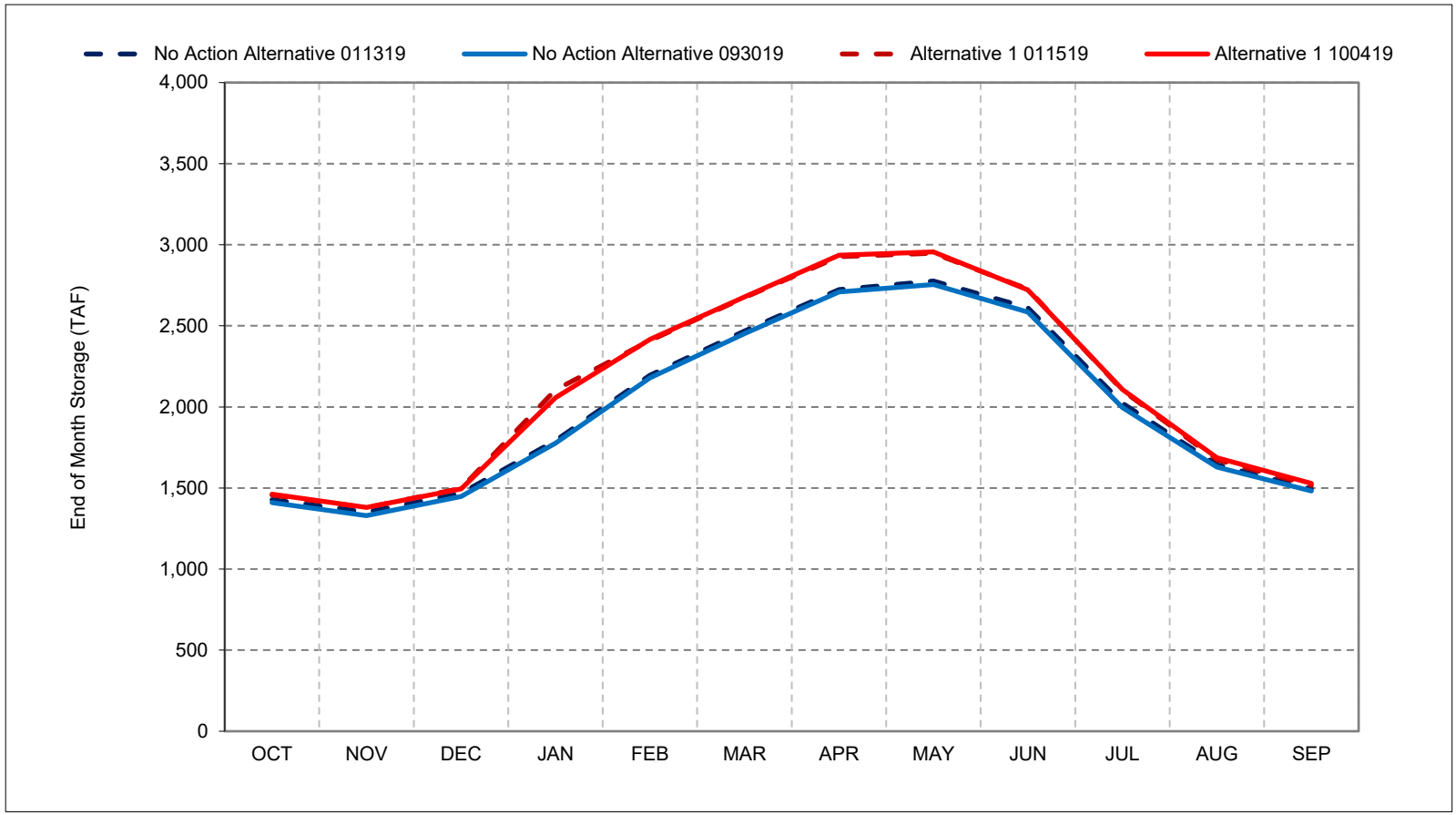



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-4. Lake Oroville Storage, Below Normal Year Average Storage

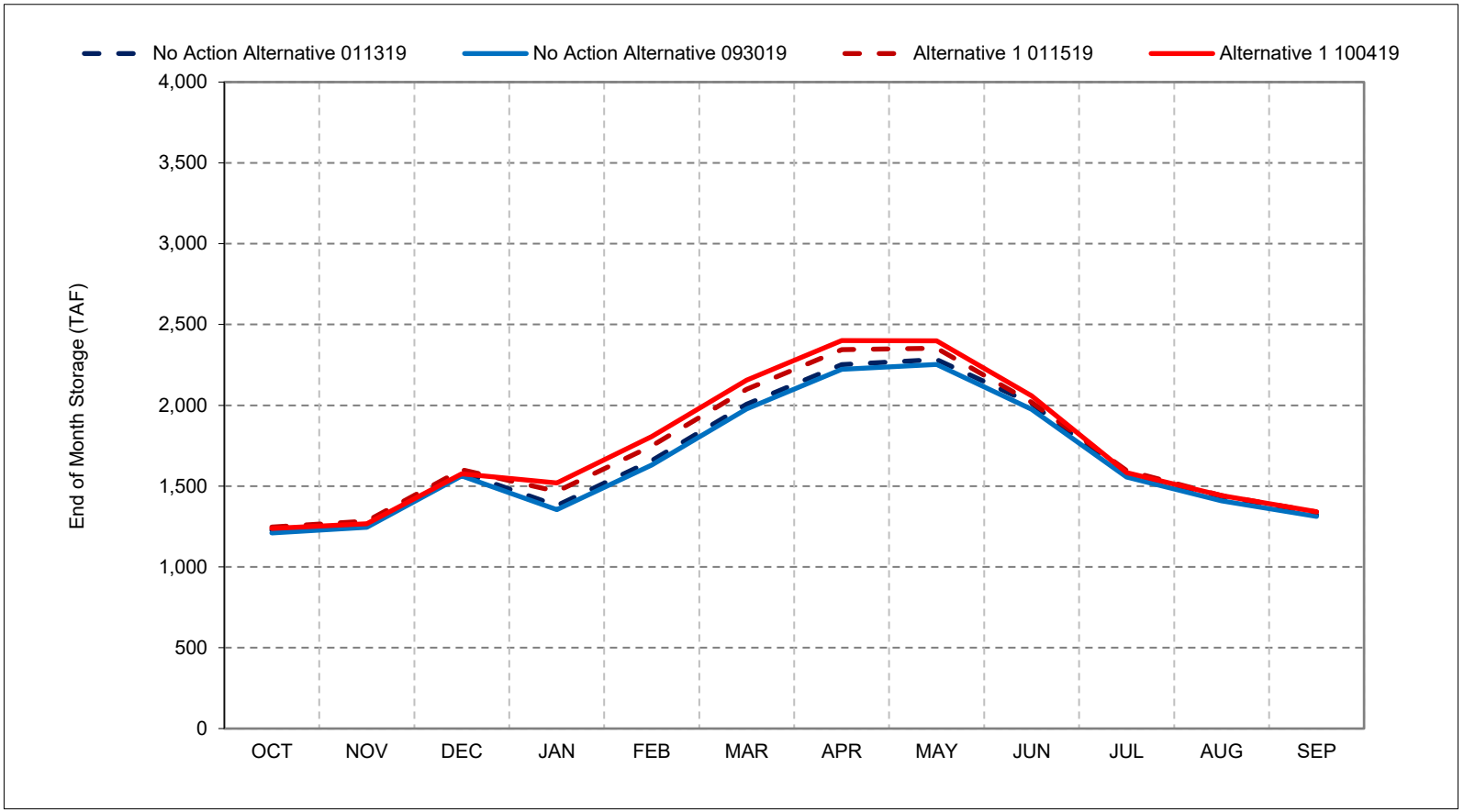



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-5. Lake Oroville Storage, Dry Year Average Storage

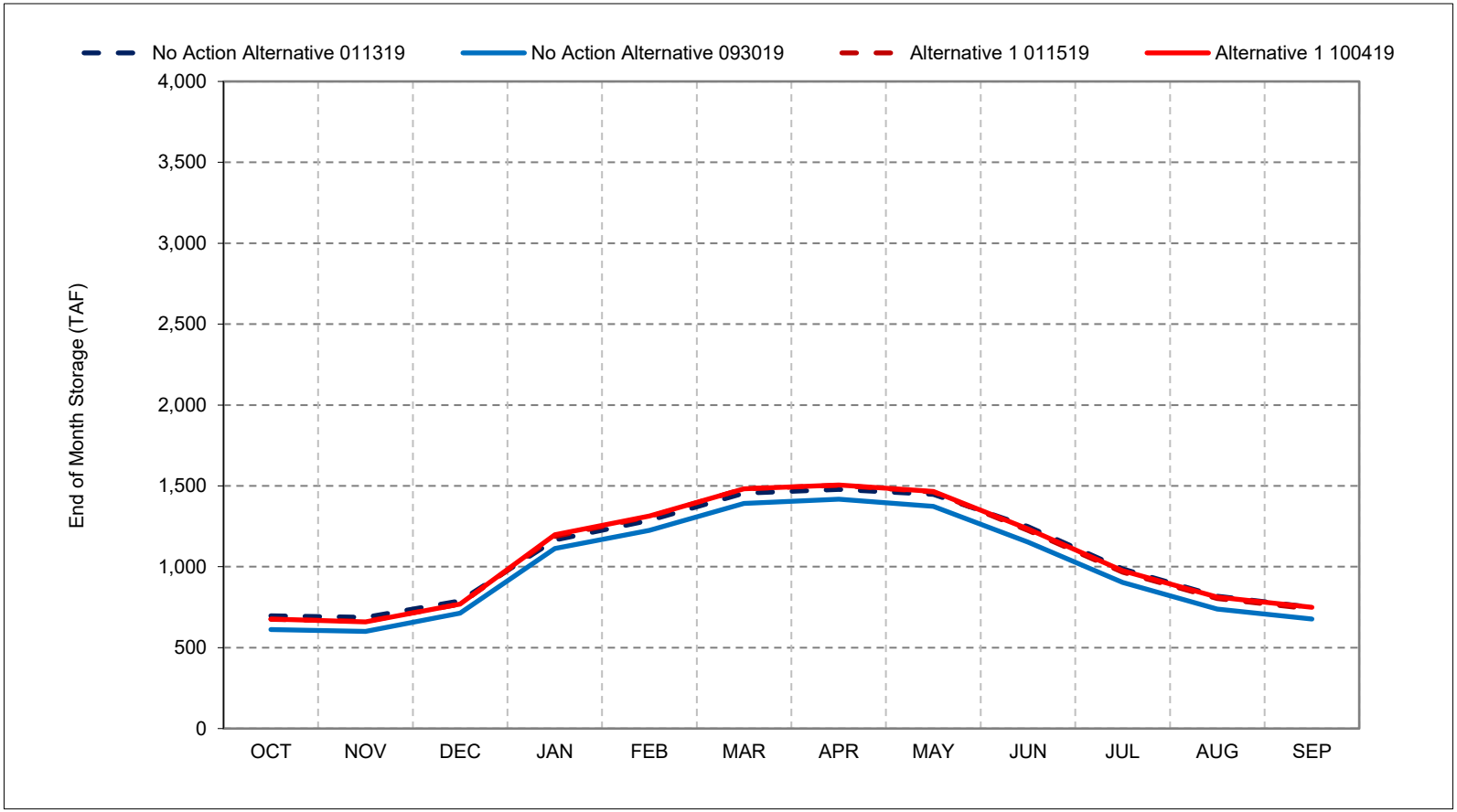



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-6. Lake Oroville Storage, Critical Year Average Storage

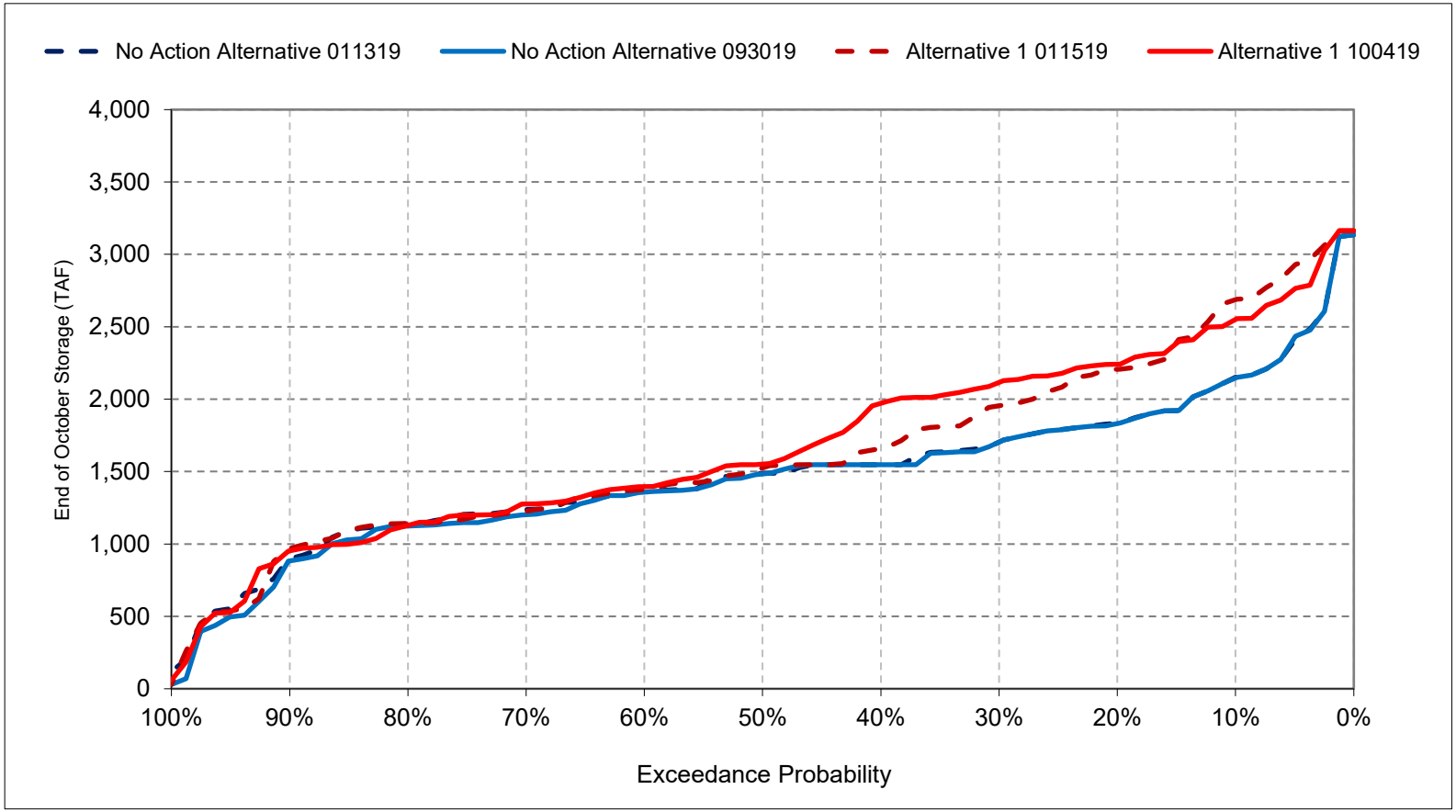



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

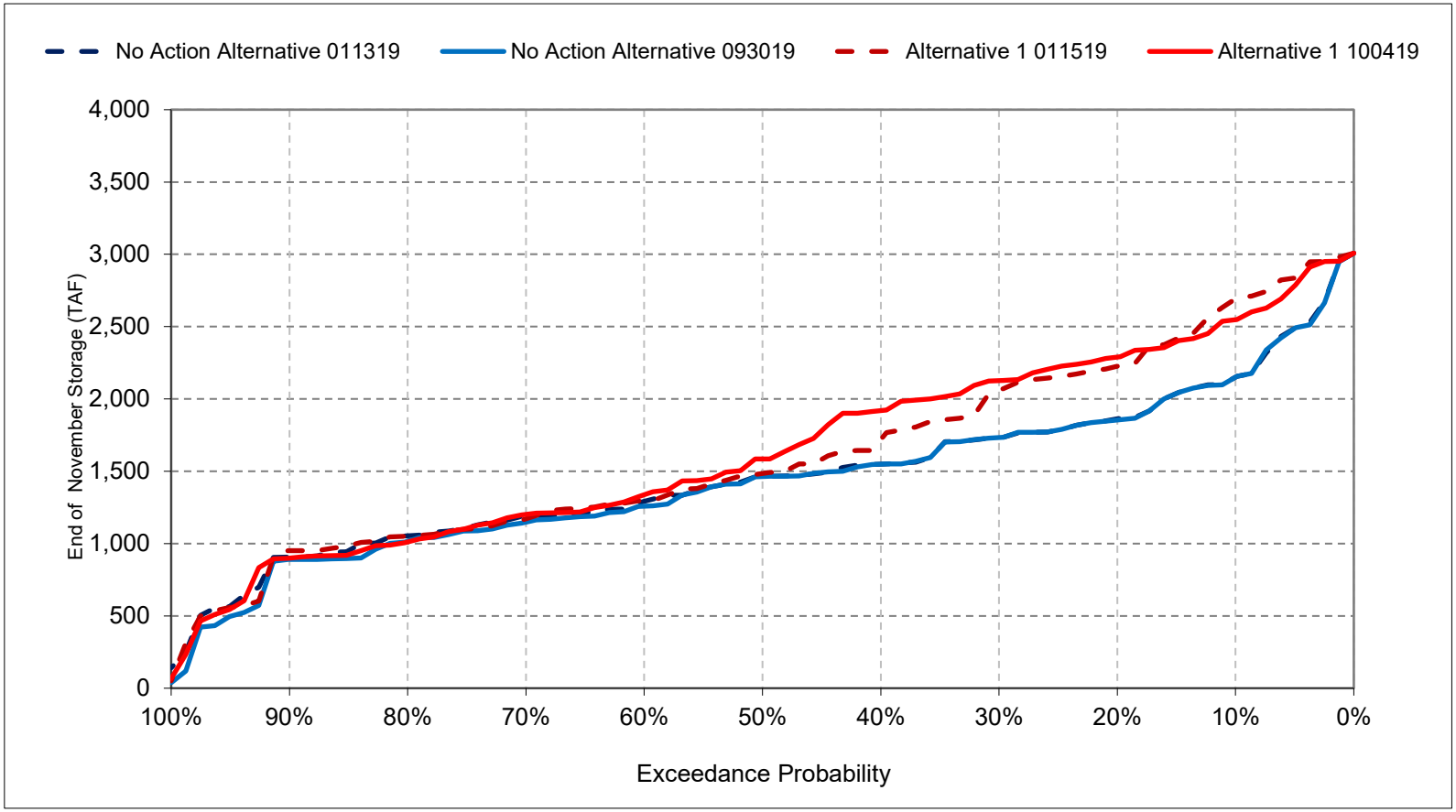
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-7. Lake Oroville Storage, End of October Storage



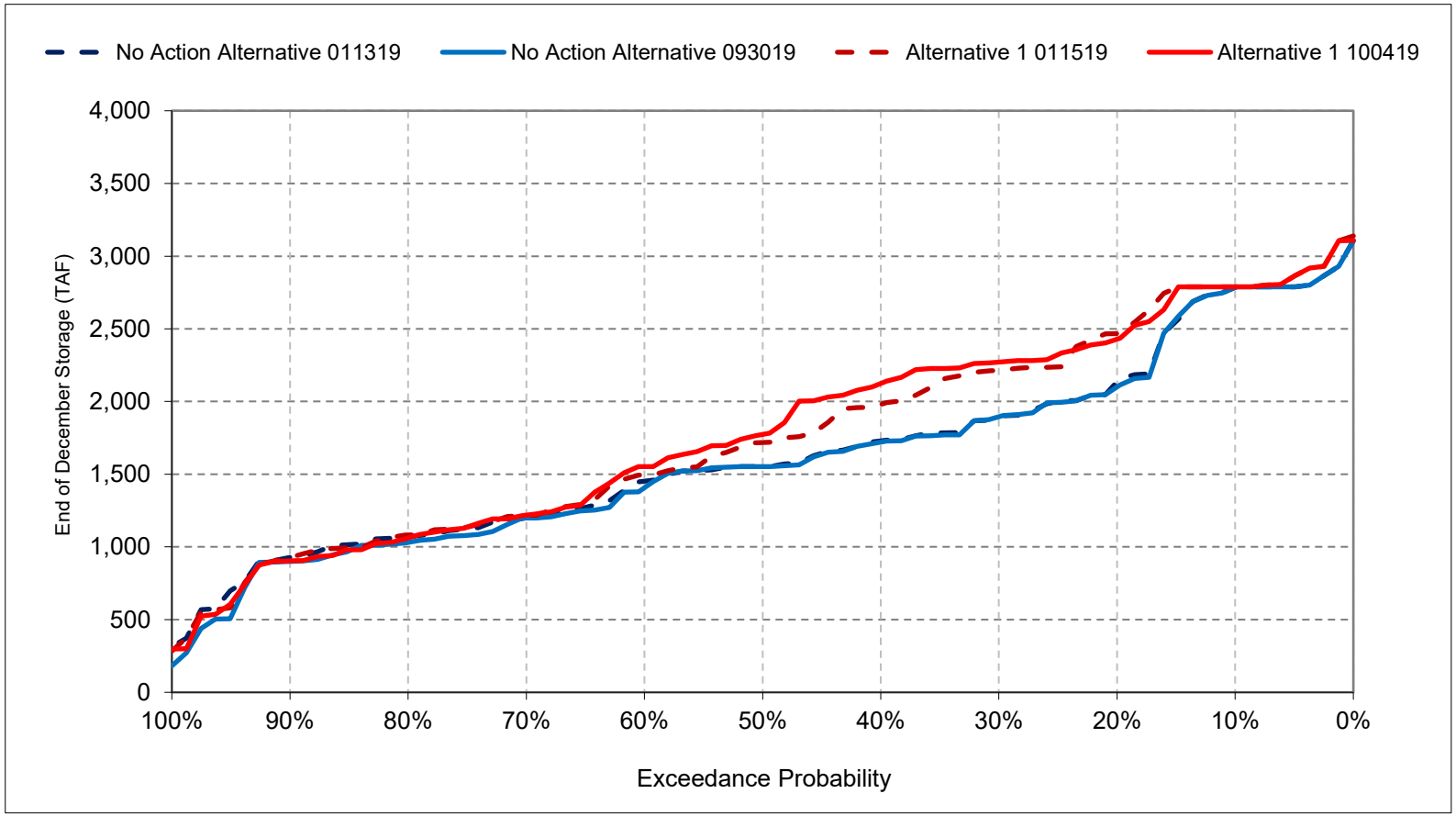

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-8. Lake Oroville Storage, End of November Storage



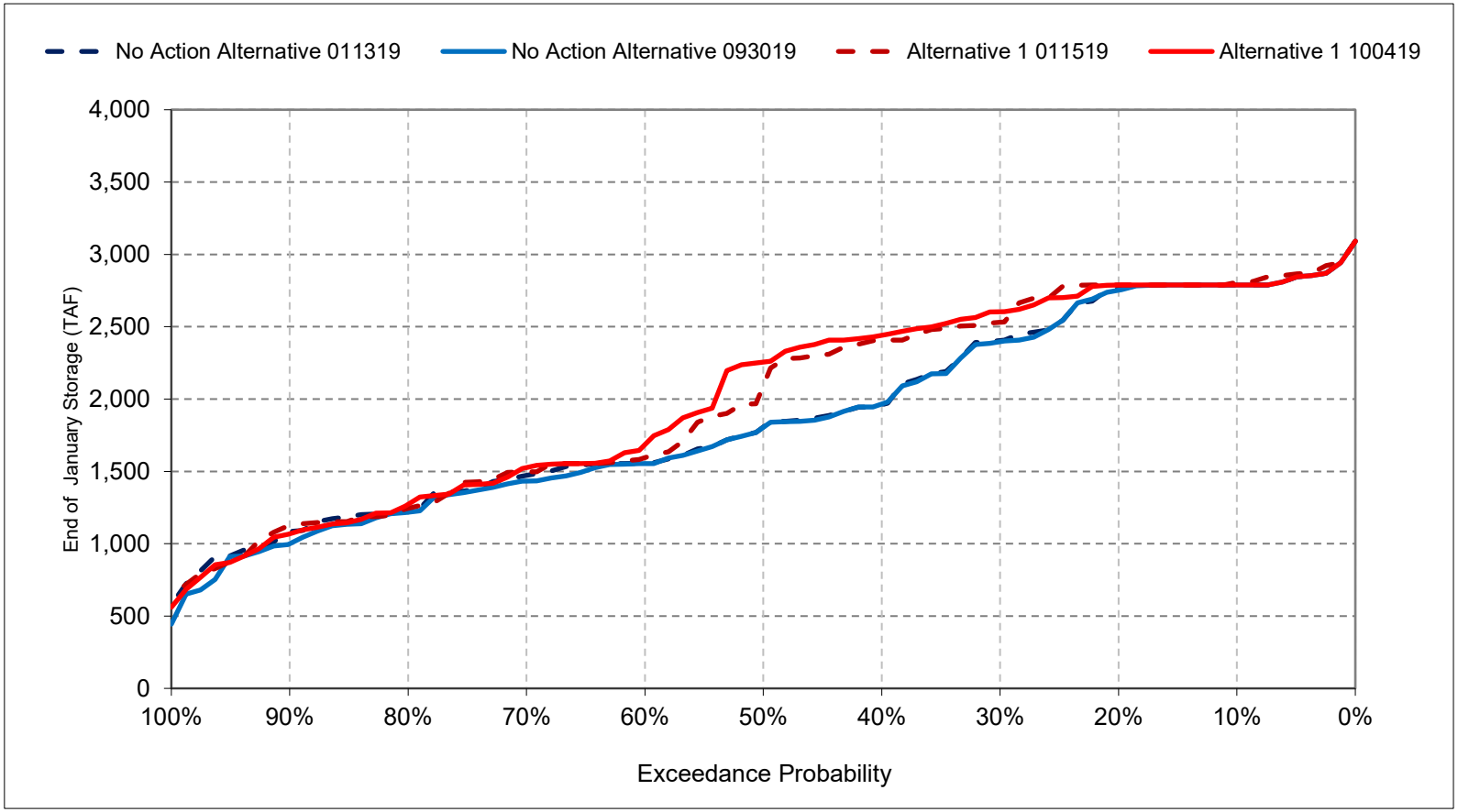

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-9. Lake Oroville Storage, End of December Storage



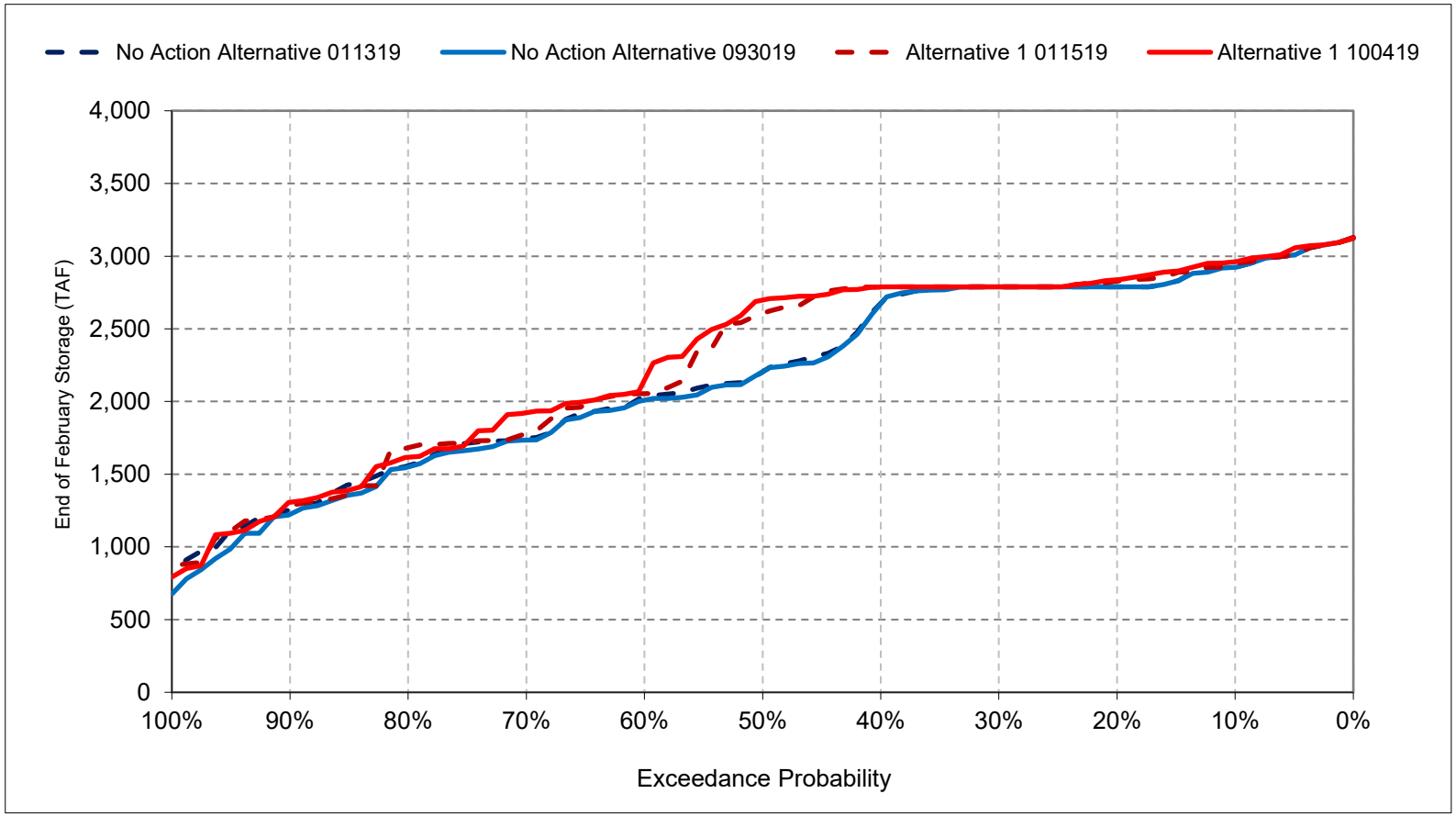

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-10. Lake Oroville Storage, End of January Storage



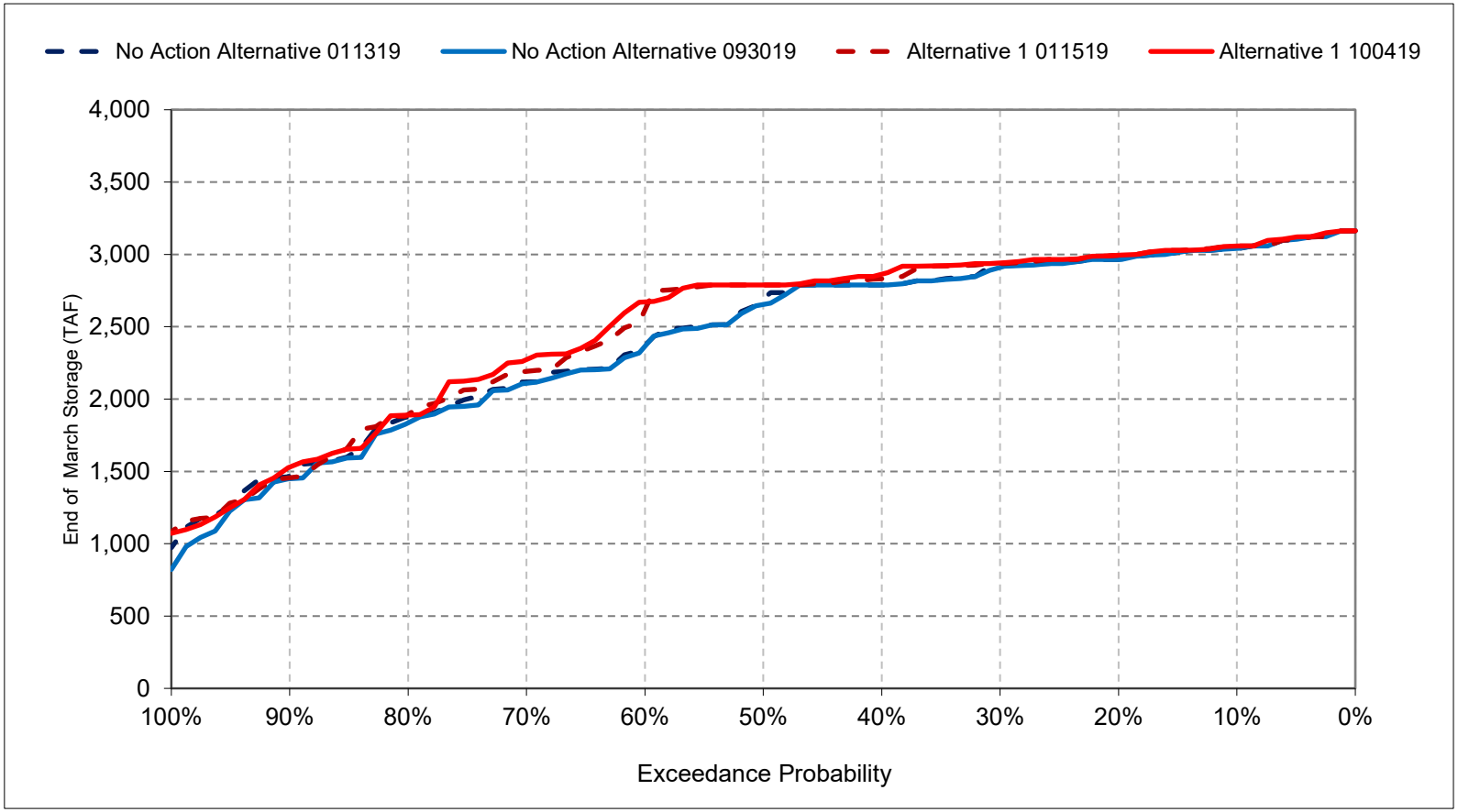

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-11. Lake Oroville Storage, End of February Storage



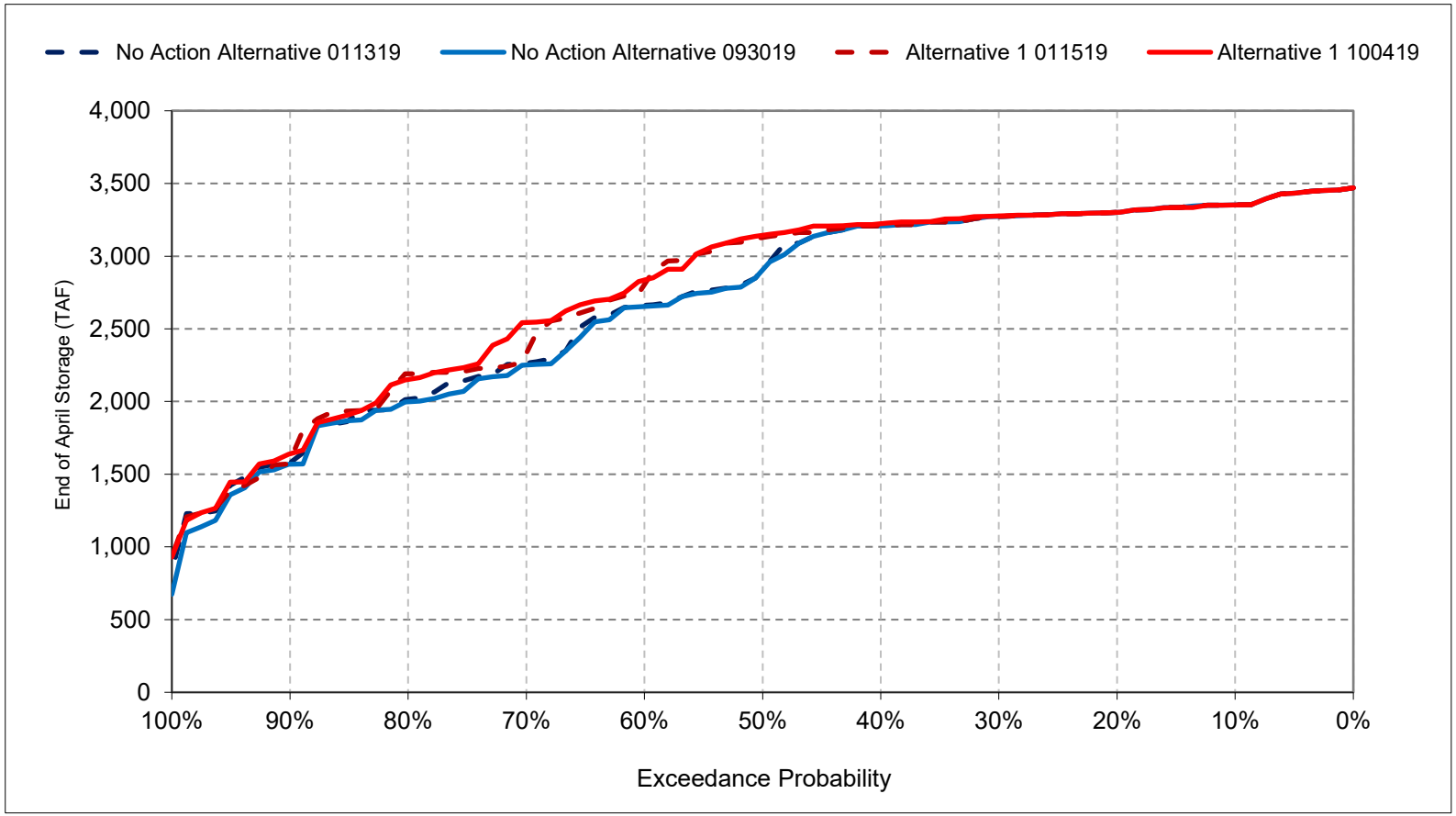

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-12. Lake Oroville Storage, End of March Storage



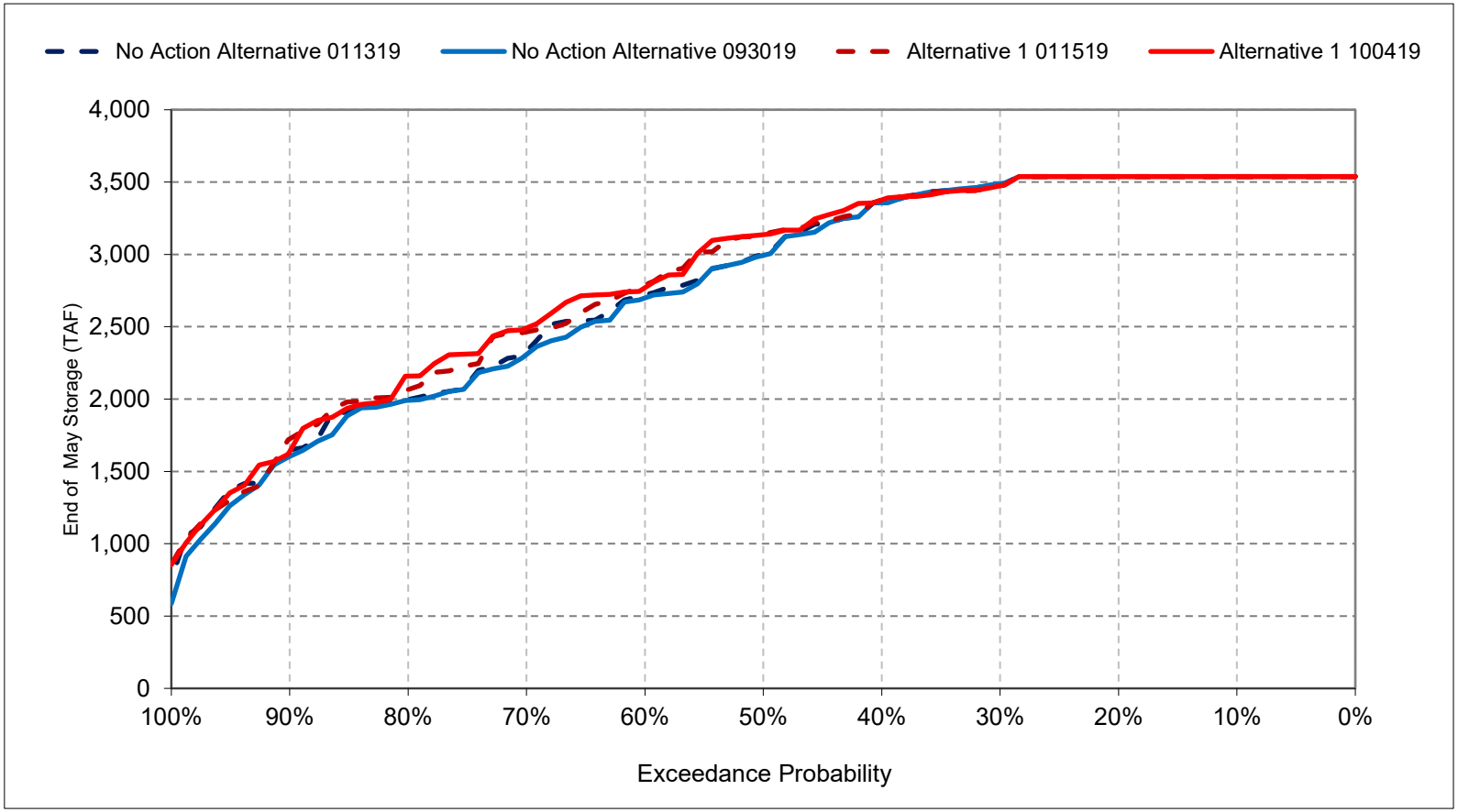

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-13. Lake Oroville Storage, End of April Storage



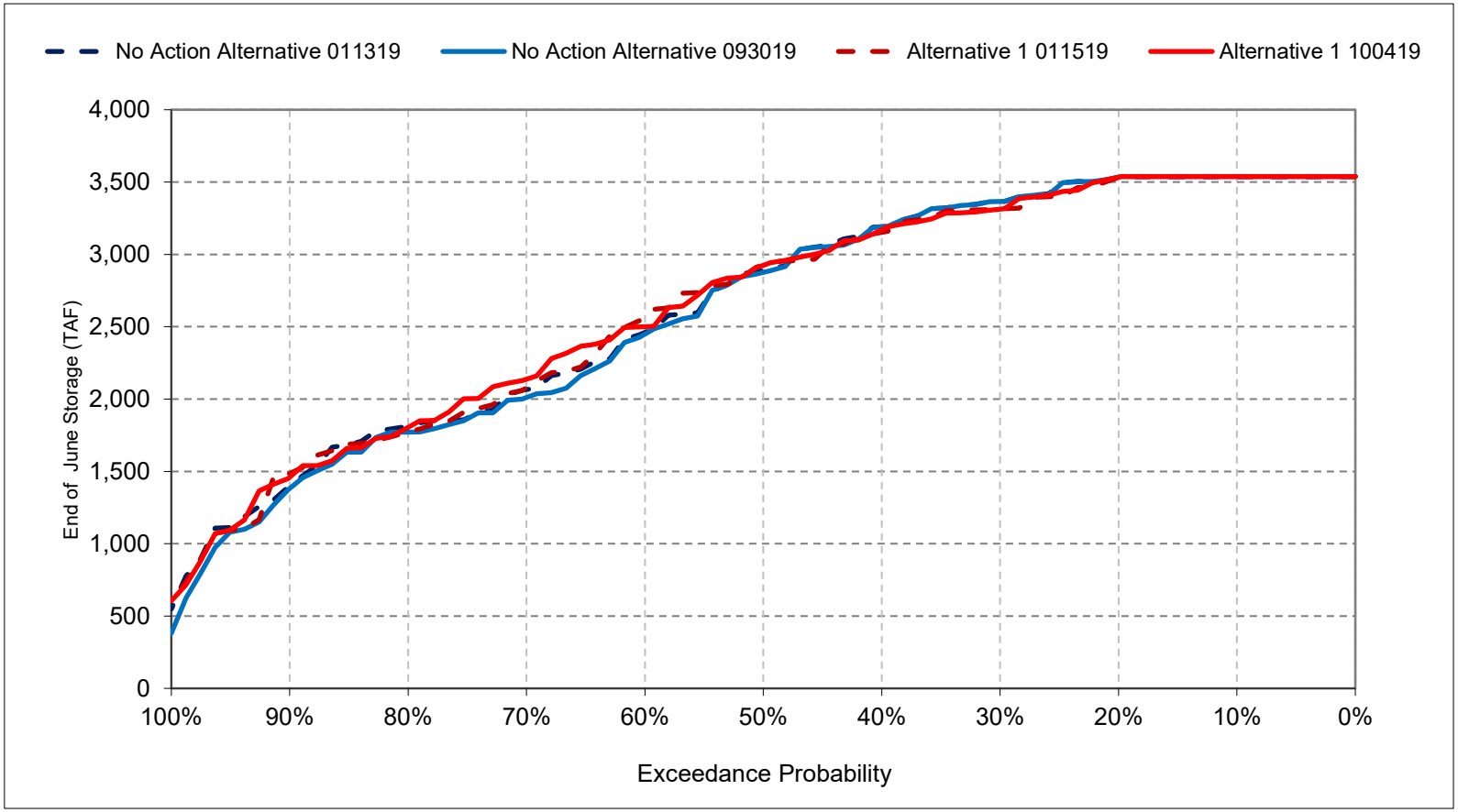

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-14. Lake Oroville Storage, End of May Storage



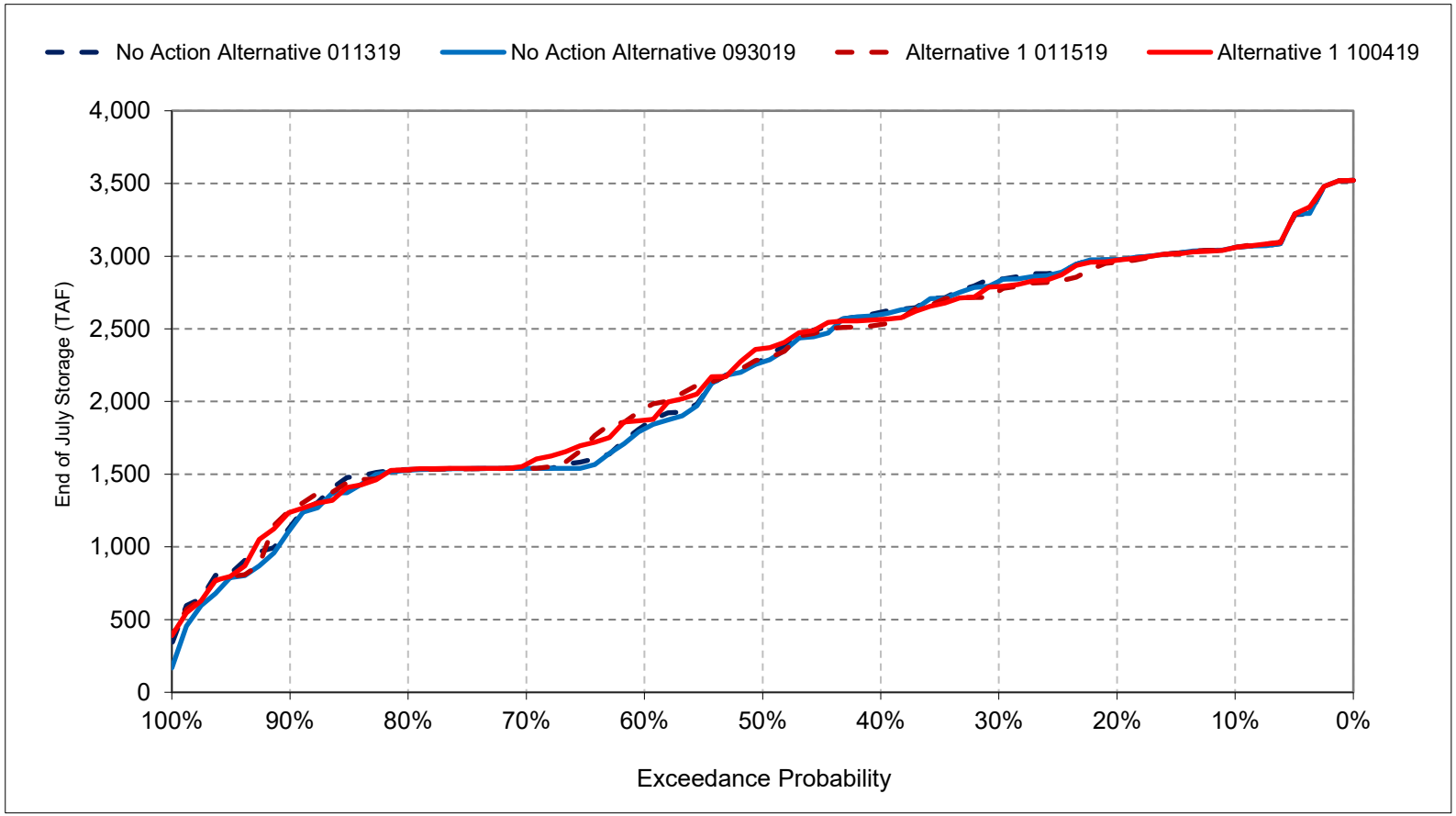

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-15. Lake Oroville Storage, End of June Storage



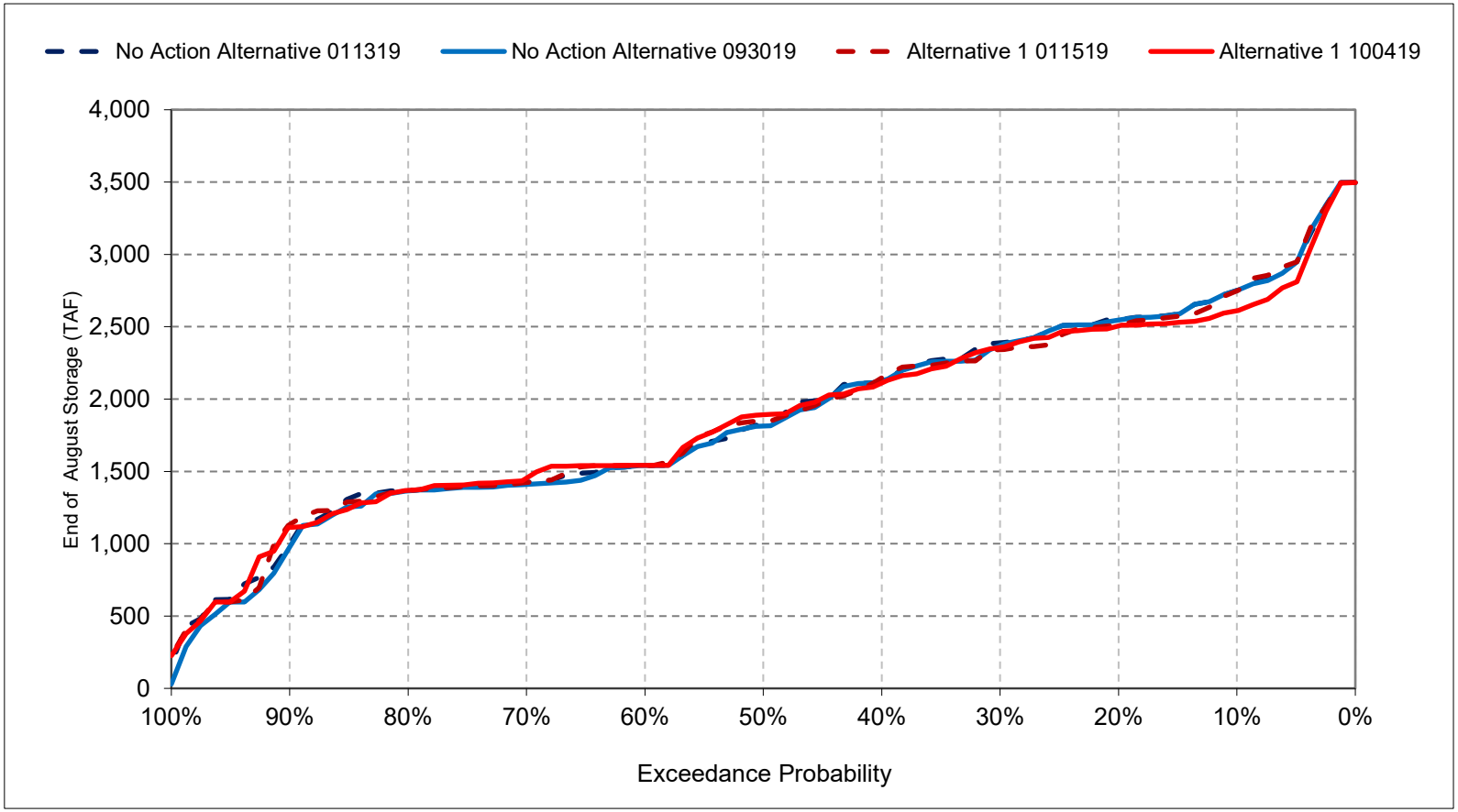

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-16. Lake Oroville Storage, End of July Storage



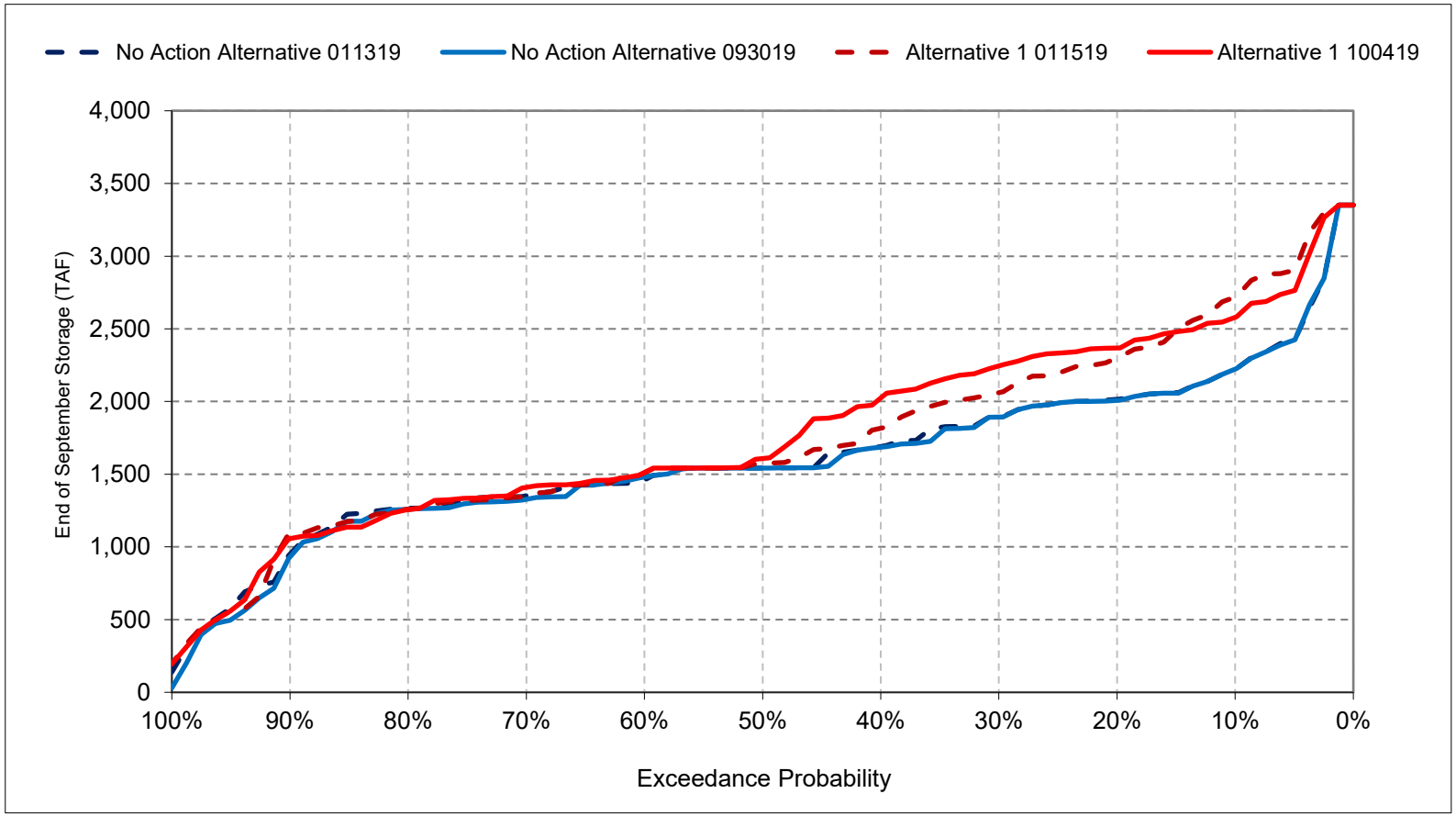

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-17. Lake Oroville Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-18. Lake Oroville Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4a-1. Lake Oroville Elevation, End of Month Elevation

### No Action Alternative 011319

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 798 | 798 | 848 | 849 | 858 | 866 | 887 | 900 | 900 | 867 | 846 | 806 |
| 20% | 766 | 769 | 797 | 847 | 849 | 861 | 884 | 900 | 900 | 862 | 832 | 785 |
| 30% | 752 | 756 | 772 | 823 | 849 | 858 | 882 | 896 | 888 | 853 | 822 | 772 |
| 40% | 734 | 734 | 755 | 779 | 841 | 849 | 877 | 888 | 876 | 837 | 796 | 751 |
| 50% | 726 | 724 | 734 | 763 | 804 | 842 | 857 | 863 | 856 | 813 | 764 | 733 |
| 60% | 712 | 703 | 722 | 735 | 786 | 820 | 840 | 844 | 826 | 766 | 733 | 723 |
| 70% | 696 | 690 | 691 | 725 | 757 | 795 | 810 | 816 | 790 | 733 | 719 | 710 |
| 80% | 684 | 674 | 675 | 697 | 735 | 770 | 784 | 782 | 764 | 732 | 712 | 700 |
| 90% | 648 | 650 | 653 | 677 | 699 | 724 | 738 | 746 | 716 | 684 | 665 | 658 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 719 | 717 | 735 | 763 | 793 | 815 | 835 | 841 | 828 | 788 | 760 | 733 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 780 | 777 | 786 | 835 | 854 | 859 | 884 | 896 | 894 | 864 | 840 | 798 |
| Above Normal (16%) | 746 | 742 | 755 | 778 | 827 | 858 | 881 | 892 | 884 | 844 | 806 | 762 |
| Below Normal (13%) | 718 | 709 | 721 | 759 | 800 | 824 | 843 | 847 | 834 | 784 | 745 | 727 |
| Dry (24%) | 694 | 698 | 730 | 710 | 745 | 782 | 806 | 808 | 783 | 735 | 718 | 706 |
| Critical (15%) | 598 | 600 | 622 | 685 | 701 | 721 | 724 | 719 | 693 | 653 | 622 | 608 |

### Alternative 1 011519

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 842 | 842 | 849 | 850 | 860 | 867 | 887 | 900 | 900 | 867 | 846 | 844 |
| 20% | 804 | 806 | 827 | 849 | 852 | 863 | 884 | 900 | 899 | 860 | 830 | 814 |
| 30% | 778 | 789 | 805 | 831 | 849 | 859 | 882 | 896 | 885 | 847 | 818 | 789 |
| 40% | 748 | 754 | 781 | 823 | 849 | 852 | 877 | 889 | 874 | 831 | 798 | 764 |
| 50% | 731 | 726 | 754 | 792 | 836 | 849 | 872 | 873 | 858 | 813 | 767 | 737 |
| 60% | 713 | 703 | 727 | 740 | 788 | 837 | 850 | 849 | 834 | 778 | 733 | 729 |
| 70% | 695 | 688 | 693 | 728 | 760 | 802 | 815 | 827 | 791 | 733 | 719 | 710 |
| 80% | 684 | 673 | 677 | 697 | 750 | 772 | 802 | 790 | 759 | 732 | 712 | 699 |
| 90% | 661 | 658 | 653 | 682 | 702 | 723 | 739 | 755 | 726 | 698 | 683 | 678 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 731 | 730 | 747 | 773 | 800 | 820 | 840 | 845 | 828 | 788 | 760 | 744 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 816 | 814 | 818 | 839 | 855 | 859 | 884 | 896 | 892 | 862 | 838 | 828 |
| Above Normal (16%) | 754 | 751 | 764 | 791 | 834 | 860 | 883 | 892 | 882 | 841 | 803 | 771 |
| Below Normal (13%) | 722 | 712 | 725 | 787 | 817 | 838 | 858 | 860 | 844 | 792 | 748 | 730 |
| Dry (24%) | 697 | 700 | 732 | 720 | 754 | 790 | 813 | 814 | 783 | 739 | 721 | 708 |
| Critical (15%) | 589 | 591 | 618 | 686 | 703 | 724 | 727 | 721 | 690 | 650 | 620 | 608 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 44 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 38 |
| 20% | 38 | 37 | 30 | 2 | 3 | 2 | 0 | 0 | 0 | -1 | -3 | 29 |
| 30% | 26 | 34 | 33 | 9 | 0 | 1 | 0 | -1 | -4 | -6 | -4 | 17 |
| 40% | 14 | 20 | 26 | 44 | 8 | 3 | 0 | 1 | -3 | -6 | 2 | 13 |
| 50% | 5 | 3 | 20 | 29 | 32 | 7 | 15 | 9 | 3 | 0 | 3 | 4 |
| 60% | 1 | 1 | 5 | 5 | 3 | 17 | 10 | 5 | 8 | 12 | 0 | 6 |
| 70% | -1 | -2 | 2 | 3 | 3 | 7 | 6 | 10 | 1 | 0 | 0 | 0 |
| 80% | 1 | 0 | 2 | 0 | 15 | 2 | 18 | 7 | -4 | 0 | 0 | -1 |
| 90% | 13 | 8 | 0 | 5 | 3 | -2 | 2 | 8 | 10 | 14 | 18 | 21 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 12 | 13 | 12 | 10 | 6 | 5 | 5 | 3 | 0 | 1 | 0 | 12 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 35 | 37 | 31 | 5 | 2 | 0 | 0 | -1 | -2 | -2 | -2 | 30 |
| Above Normal (16%) | 8 | 9 | 9 | 13 | 7 | 2 | 2 | 1 | -1 | -3 | -3 | 9 |
| Below Normal (13%) | 3 | 4 | 4 | 27 | 17 | 15 | 14 | 13 | 10 | 8 | 3 | 3 |
| Dry (24%) | 3 | 2 | 2 | 9 | 9 | 8 | 8 | 6 | 1 | 4 | 3 | 2 |
| Critical (15%) | -9 | -9 | -4 | 1 | 2 | 3 | 3 | 2 | -3 | -2 | -2 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4a-2. Lake Oroville Elevation, End of Month Elevation

### No Action Alternative 093019

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 798 | 798 | 848 | 849 | 858 | 866 | 887 | 900 | 900 | 867 | 846 | 806 |
| 20% | 766 | 768 | 793 | 846 | 849 | 861 | 884 | 900 | 900 | 862 | 832 | 784 |
| 30% | 752 | 755 | 772 | 822 | 849 | 857 | 882 | 897 | 888 | 851 | 820 | 772 |
| 40% | 734 | 734 | 754 | 779 | 841 | 849 | 877 | 888 | 876 | 836 | 796 | 751 |
| 50% | 726 | 724 | 734 | 763 | 804 | 840 | 857 | 863 | 855 | 811 | 764 | 733 |
| 60% | 711 | 699 | 717 | 735 | 784 | 819 | 840 | 843 | 826 | 764 | 733 | 726 |
| 70% | 692 | 685 | 691 | 720 | 756 | 794 | 809 | 814 | 784 | 733 | 717 | 707 |
| 80% | 682 | 669 | 671 | 694 | 734 | 766 | 783 | 782 | 759 | 731 | 712 | 699 |
| 90% | 645 | 647 | 649 | 666 | 694 | 722 | 737 | 741 | 714 | 682 | 662 | 654 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 714 | 712 | 731 | 761 | 791 | 813 | 833 | 839 | 824 | 785 | 756 | 729 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 780 | 776 | 786 | 834 | 854 | 859 | 884 | 896 | 894 | 864 | 840 | 798 |
| Above Normal (16%) | 746 | 742 | 754 | 777 | 826 | 858 | 881 | 891 | 883 | 843 | 805 | 761 |
| Below Normal (13%) | 716 | 706 | 719 | 757 | 799 | 822 | 842 | 845 | 832 | 782 | 743 | 726 |
| Dry (24%) | 692 | 695 | 727 | 706 | 741 | 779 | 803 | 805 | 779 | 734 | 717 | 705 |
| Critical (15%) | 571 | 574 | 604 | 677 | 692 | 713 | 715 | 709 | 678 | 636 | 598 | 586 |

### Alternative 1 100419

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 833 | 832 | 849 | 849 | 861 | 867 | 887 | 900 | 900 | 867 | 837 | 834 |
| 20% | 808 | 813 | 824 | 849 | 852 | 863 | 884 | 900 | 900 | 861 | 829 | 820 |
| 30% | 795 | 796 | 811 | 836 | 849 | 859 | 882 | 896 | 885 | 849 | 819 | 808 |
| 40% | 780 | 775 | 796 | 825 | 849 | 854 | 878 | 889 | 875 | 833 | 794 | 785 |
| 50% | 734 | 738 | 760 | 809 | 843 | 849 | 873 | 873 | 858 | 820 | 772 | 741 |
| 60% | 715 | 708 | 734 | 750 | 798 | 841 | 852 | 848 | 829 | 770 | 733 | 730 |
| 70% | 701 | 692 | 694 | 731 | 775 | 811 | 832 | 828 | 797 | 736 | 722 | 717 |
| 80% | 683 | 668 | 674 | 700 | 742 | 772 | 798 | 799 | 763 | 732 | 712 | 698 |
| 90% | 658 | 648 | 649 | 675 | 705 | 732 | 745 | 744 | 723 | 696 | 681 | 674 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 736 | 734 | 749 | 775 | 802 | 821 | 841 | 846 | 829 | 789 | 760 | 749 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 819 | 817 | 821 | 841 | 856 | 859 | 884 | 896 | 892 | 863 | 835 | 830 |
| Above Normal (16%) | 778 | 774 | 781 | 795 | 837 | 860 | 883 | 892 | 882 | 843 | 804 | 792 |
| Below Normal (13%) | 723 | 713 | 725 | 783 | 817 | 839 | 858 | 860 | 843 | 793 | 749 | 732 |
| Dry (24%) | 696 | 697 | 728 | 725 | 759 | 795 | 818 | 818 | 788 | 738 | 721 | 709 |
| Critical (15%) | 591 | 590 | 616 | 688 | 703 | 725 | 727 | 722 | 691 | 652 | 622 | 610 |

### Alternative 1 100419 minus No Action Alternative 093019

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 35 | 34 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | -9 | 29 |
| 20% | 42 | 45 | 31 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | -3 | 36 |
| 30% | 42 | 40 | 39 | 14 | 0 | 2 | 0 | -1 | -4 | -2 | -1 | 36 |
| 40% | 46 | 41 | 41 | 46 | 8 | 5 | 1 | 1 | -1 | -2 | -2 | 35 |
| 50% | 8 | 15 | 25 | 46 | 39 | 9 | 16 | 10 | 3 | 9 | 8 | 8 |
| 60% | 5 | 10 | 18 | 16 | 14 | 22 | 12 | 5 | 4 | 6 | 0 | 4 |
| 70% | 9 | 7 | 3 | 11 | 19 | 17 | 23 | 14 | 13 | 3 | 5 | 10 |
| 80% | 1 | -1 | 4 | 7 | 8 | 6 | 16 | 17 | 3 | 1 | 0 | 0 |
| 90% | 13 | 2 | 1 | 9 | 10 | 10 | 9 | 4 | 10 | 15 | 19 | 20 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 22 | 22 | 18 | 15 | 11 | 8 | 8 | 7 | 5 | 4 | 4 | 20 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 39 | 41 | 36 | 7 | 2 | 0 | 0 | 0 | -1 | -1 | -4 | 33 |
| Above Normal (16%) | 32 | 31 | 27 | 18 | 11 | 3 | 2 | 1 | -2 | -1 | -1 | 31 |
| Below Normal (13%) | 6 | 7 | 6 | 25 | 19 | 16 | 16 | 15 | 11 | 12 | 6 | 6 |
| Dry (24%) | 4 | 2 | 1 | 18 | 18 | 16 | 15 | 12 | 9 | 3 | 4 | 4 |
| Critical (15%) | 20 | 16 | 12 | 11 | 12 | 12 | 12 | 13 | 14 | 16 | 24 | 24 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4a-3. Lake Oroville Elevation, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 798 | 798 | 848 | 849 | 858 | 866 | 887 | 900 | 900 | 867 | 846 | 806 |
| 20% | 766 | 769 | 797 | 847 | 849 | 861 | 884 | 900 | 900 | 862 | 832 | 785 |
| 30% | 752 | 756 | 772 | 823 | 849 | 858 | 882 | 896 | 888 | 853 | 822 | 772 |
| 40% | 734 | 734 | 755 | 779 | 841 | 849 | 877 | 888 | 876 | 837 | 796 | 751 |
| 50% | 726 | 724 | 734 | 763 | 804 | 842 | 857 | 863 | 856 | 813 | 764 | 733 |
| 60% | 712 | 703 | 722 | 735 | 786 | 820 | 840 | 844 | 826 | 766 | 733 | 723 |
| 70% | 696 | 690 | 691 | 725 | 757 | 795 | 810 | 816 | 790 | 733 | 719 | 710 |
| 80% | 684 | 674 | 675 | 697 | 735 | 770 | 784 | 782 | 764 | 732 | 712 | 700 |
| 90% | 648 | 650 | 653 | 677 | 699 | 724 | 738 | 746 | 716 | 684 | 665 | 658 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 719 | 717 | 735 | 763 | 793 | 815 | 835 | 841 | 828 | 788 | 760 | 733 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 780 | 777 | 786 | 835 | 854 | 859 | 884 | 896 | 894 | 864 | 840 | 798 |
| Above Normal (16%) | 746 | 742 | 755 | 778 | 827 | 858 | 881 | 892 | 884 | 844 | 806 | 762 |
| Below Normal (13%) | 718 | 709 | 721 | 759 | 800 | 824 | 843 | 847 | 834 | 784 | 745 | 727 |
| Dry (24%) | 694 | 698 | 730 | 710 | 745 | 782 | 806 | 808 | 783 | 735 | 718 | 706 |
| Critical (15%) | 598 | 600 | 622 | 685 | 701 | 721 | 724 | 719 | 693 | 653 | 622 | 608 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 798 | 798 | 848 | 849 | 858 | 866 | 887 | 900 | 900 | 867 | 846 | 806 |
| 20% | 766 | 768 | 793 | 846 | 849 | 861 | 884 | 900 | 900 | 862 | 832 | 784 |
| 30% | 752 | 755 | 772 | 822 | 849 | 857 | 882 | 897 | 888 | 851 | 820 | 772 |
| 40% | 734 | 734 | 754 | 779 | 841 | 849 | 877 | 888 | 876 | 836 | 796 | 751 |
| 50% | 726 | 724 | 734 | 763 | 804 | 840 | 857 | 863 | 855 | 811 | 764 | 733 |
| 60% | 711 | 699 | 717 | 735 | 784 | 819 | 840 | 843 | 826 | 764 | 733 | 726 |
| 70% | 692 | 685 | 691 | 720 | 756 | 794 | 809 | 814 | 784 | 733 | 717 | 707 |
| 80% | 682 | 669 | 671 | 694 | 734 | 766 | 783 | 782 | 759 | 731 | 712 | 699 |
| 90% | 645 | 647 | 649 | 666 | 694 | 722 | 737 | 741 | 714 | 682 | 662 | 654 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 714 | 712 | 731 | 761 | 791 | 813 | 833 | 839 | 824 | 785 | 756 | 729 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 780 | 776 | 786 | 834 | 854 | 859 | 884 | 896 | 894 | 864 | 840 | 798 |
| Above Normal (16%) | 746 | 742 | 754 | 777 | 826 | 858 | 881 | 891 | 883 | 843 | 805 | 761 |
| Below Normal (13%) | 716 | 706 | 719 | 757 | 799 | 822 | 842 | 845 | 832 | 782 | 743 | 726 |
| Dry (24%) | 692 | 695 | 727 | 706 | 741 | 779 | 803 | 805 | 779 | 734 | 717 | 705 |
| Critical (15%) | 571 | 574 | 604 | 677 | 692 | 713 | 715 | 709 | 678 | 636 | 598 | 586 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -1 | -4 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 30% | 0 | 0 | 0 | -1 | 0 | -1 | 0 | 0 | 0 | -1 | -1 | 0 |
| 40% | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | -2 | 0 | -1 | -1 | -2 | -1 | 0 |
| 60% | -2 | -4 | -6 | 0 | -2 | -1 | -1 | -1 | -1 | -2 | 0 | 3 |
| 70% | -4 | -5 | 0 | -5 | -1 | -1 | -1 | -2 | -6 | 0 | -2 | -3 |
| 80% | -2 | -5 | -4 | -3 | -1 | -4 | -2 | -1 | -4 | -1 | 0 | -1 |
| 90% | -3 | -3 | -5 | -11 | -4 | -3 | -1 | -6 | -2 | -2 | -3 | -3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -5 | -5 | -4 | -3 | -3 | -2 | -2 | -2 | -3 | -3 | -4 | -4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| Above Normal (16%) | 0 | 0 | 0 | -2 | -1 | 0 | 0 | 0 | 0 | -1 | -1 | 0 |
| Below Normal (13%) | -2 | -3 | -3 | -2 | -2 | -1 | -1 | -2 | -2 | -3 | -2 | -2 |
| Dry (24%) | -2 | -3 | -3 | -4 | -4 | -3 | -3 | -2 | -4 | -1 | -1 | -1 |
| Critical (15%) | -28 | -26 | -18 | -8 | -9 | -8 | -8 | -10 | -15 | -17 | -24 | -22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4a-4. Lake Oroville Elevation, End of Month Elevation

### Alternative 1 011519

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 842 | 842 | 849 | 850 | 860 | 867 | 887 | 900 | 900 | 867 | 846 | 844 |
| 20% | 804 | 806 | 827 | 849 | 852 | 863 | 884 | 900 | 899 | 860 | 830 | 814 |
| 30% | 778 | 789 | 805 | 831 | 849 | 859 | 882 | 896 | 885 | 847 | 818 | 789 |
| 40% | 748 | 754 | 781 | 823 | 849 | 852 | 877 | 889 | 874 | 831 | 798 | 764 |
| 50% | 731 | 726 | 754 | 792 | 836 | 849 | 872 | 873 | 858 | 813 | 767 | 737 |
| 60% | 713 | 703 | 727 | 740 | 788 | 837 | 850 | 849 | 834 | 778 | 733 | 729 |
| 70% | 695 | 688 | 693 | 728 | 760 | 802 | 815 | 827 | 791 | 733 | 719 | 710 |
| 80% | 684 | 673 | 677 | 697 | 750 | 772 | 802 | 790 | 759 | 732 | 712 | 699 |
| 90% | 661 | 658 | 653 | 682 | 702 | 723 | 739 | 755 | 726 | 698 | 683 | 678 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 731 | 730 | 747 | 773 | 800 | 820 | 840 | 845 | 828 | 788 | 760 | 744 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 816 | 814 | 818 | 839 | 855 | 859 | 884 | 896 | 892 | 862 | 838 | 828 |
| Above Normal (16%) | 754 | 751 | 764 | 791 | 834 | 860 | 883 | 892 | 882 | 841 | 803 | 771 |
| Below Normal (13%) | 722 | 712 | 725 | 787 | 817 | 838 | 858 | 860 | 844 | 792 | 748 | 730 |
| Dry (24%) | 697 | 700 | 732 | 720 | 754 | 790 | 813 | 814 | 783 | 739 | 721 | 708 |
| Critical (15%) | 589 | 591 | 618 | 686 | 703 | 724 | 727 | 721 | 690 | 650 | 620 | 608 |

### Alternative 1 100419

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 833 | 832 | 849 | 849 | 861 | 867 | 887 | 900 | 900 | 867 | 837 | 834 |
| 20% | 808 | 813 | 824 | 849 | 852 | 863 | 884 | 900 | 900 | 861 | 829 | 820 |
| 30% | 795 | 796 | 811 | 836 | 849 | 859 | 882 | 896 | 885 | 849 | 819 | 808 |
| 40% | 780 | 775 | 796 | 825 | 849 | 854 | 878 | 889 | 875 | 833 | 794 | 785 |
| 50% | 734 | 738 | 760 | 809 | 843 | 849 | 873 | 873 | 858 | 820 | 772 | 741 |
| 60% | 715 | 708 | 734 | 750 | 798 | 841 | 852 | 848 | 829 | 770 | 733 | 730 |
| 70% | 701 | 692 | 694 | 731 | 775 | 811 | 832 | 828 | 797 | 736 | 722 | 717 |
| 80% | 683 | 668 | 674 | 700 | 742 | 772 | 798 | 799 | 763 | 732 | 712 | 698 |
| 90% | 658 | 648 | 649 | 675 | 705 | 732 | 745 | 744 | 723 | 696 | 681 | 674 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 736 | 734 | 749 | 775 | 802 | 821 | 841 | 846 | 829 | 789 | 760 | 749 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 819 | 817 | 821 | 841 | 856 | 859 | 884 | 896 | 892 | 863 | 835 | 830 |
| Above Normal (16%) | 778 | 774 | 781 | 795 | 837 | 860 | 883 | 892 | 882 | 843 | 804 | 792 |
| Below Normal (13%) | 723 | 713 | 725 | 783 | 817 | 839 | 858 | 860 | 843 | 793 | 749 | 732 |
| Dry (24%) | 696 | 697 | 728 | 725 | 759 | 795 | 818 | 818 | 788 | 738 | 721 | 709 |
| Critical (15%) | 591 | 590 | 616 | 688 | 703 | 725 | 727 | 722 | 691 | 652 | 622 | 610 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -9 | -10 | 0 | -1 | 1 | 0 | 0 | 0 | 0 | 0 | -9 | -10 |
| 20% | 4 | 7 | -3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 30% | 17 | 7 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 19 |
| 40% | 32 | 21 | 15 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | -4 | 21 |
| 50% | 3 | 12 | 6 | 17 | 6 | 0 | 1 | 0 | 0 | 7 | 5 | 4 |
| 60% | 2 | 5 | 7 | 11 | 9 | 4 | 2 | -1 | -5 | -8 | 0 | 0 |
| 70% | 6 | 4 | 0 | 4 | 15 | 8 | 17 | 2 | 6 | 3 | 4 | 7 |
| 80% | -2 | -5 | -3 | 3 | -8 | 0 | -4 | 10 | 3 | 0 | 0 | 0 |
| 90% | -3 | -9 | -4 | -7 | 3 | 9 | 6 | -10 | -3 | -2 | -2 | -4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5 | 4 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | -3 | 2 |
| Above Normal (16%) | 24 | 22 | 17 | 3 | 3 | 0 | 0 | 0 | -1 | 1 | 1 | 21 |
| Below Normal (13%) | 1 | 0 | 0 | -4 | 0 | 0 | 1 | 0 | -1 | 1 | 2 | 2 |
| Dry (24%) | -1 | -3 | -4 | 5 | 5 | 5 | 4 | 4 | 4 | -1 | 0 | 0 |
| Critical (15%) | 1 | -1 | -2 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 |

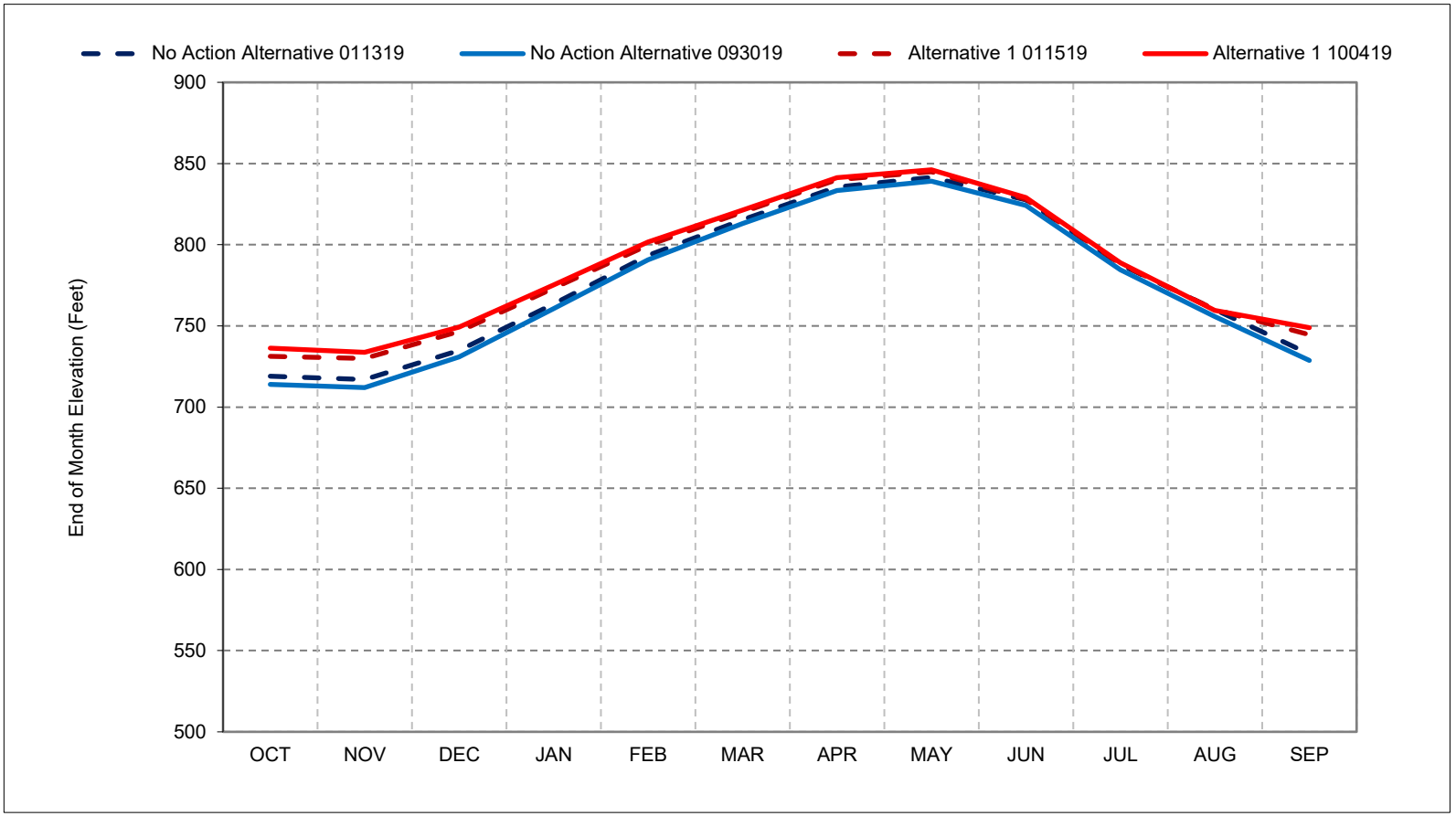
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-1. Lake Oroville Elevation, Long-Term Average Elevation

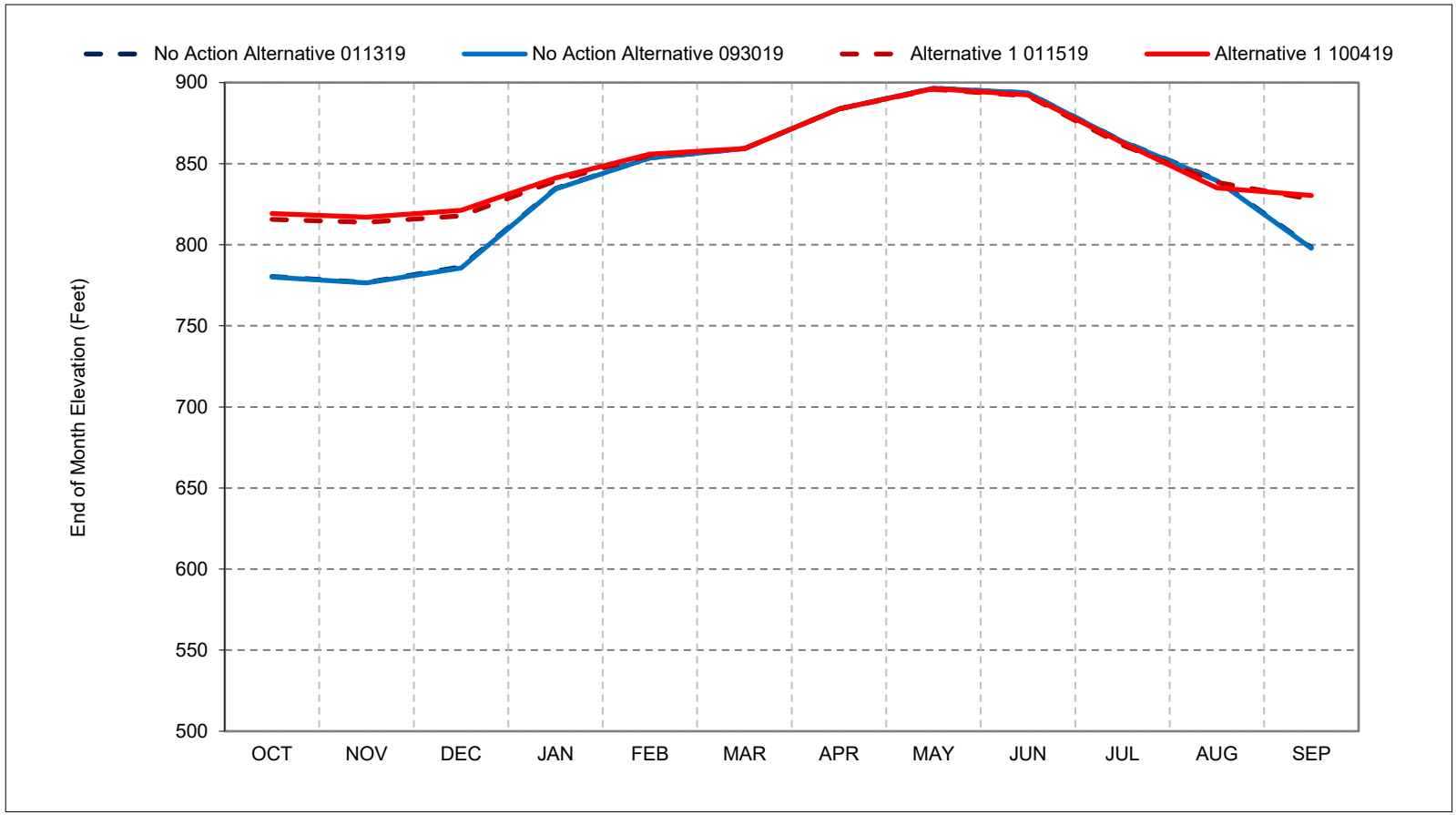



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-2. Lake Oroville Elevation, Wet Year Average Elevation

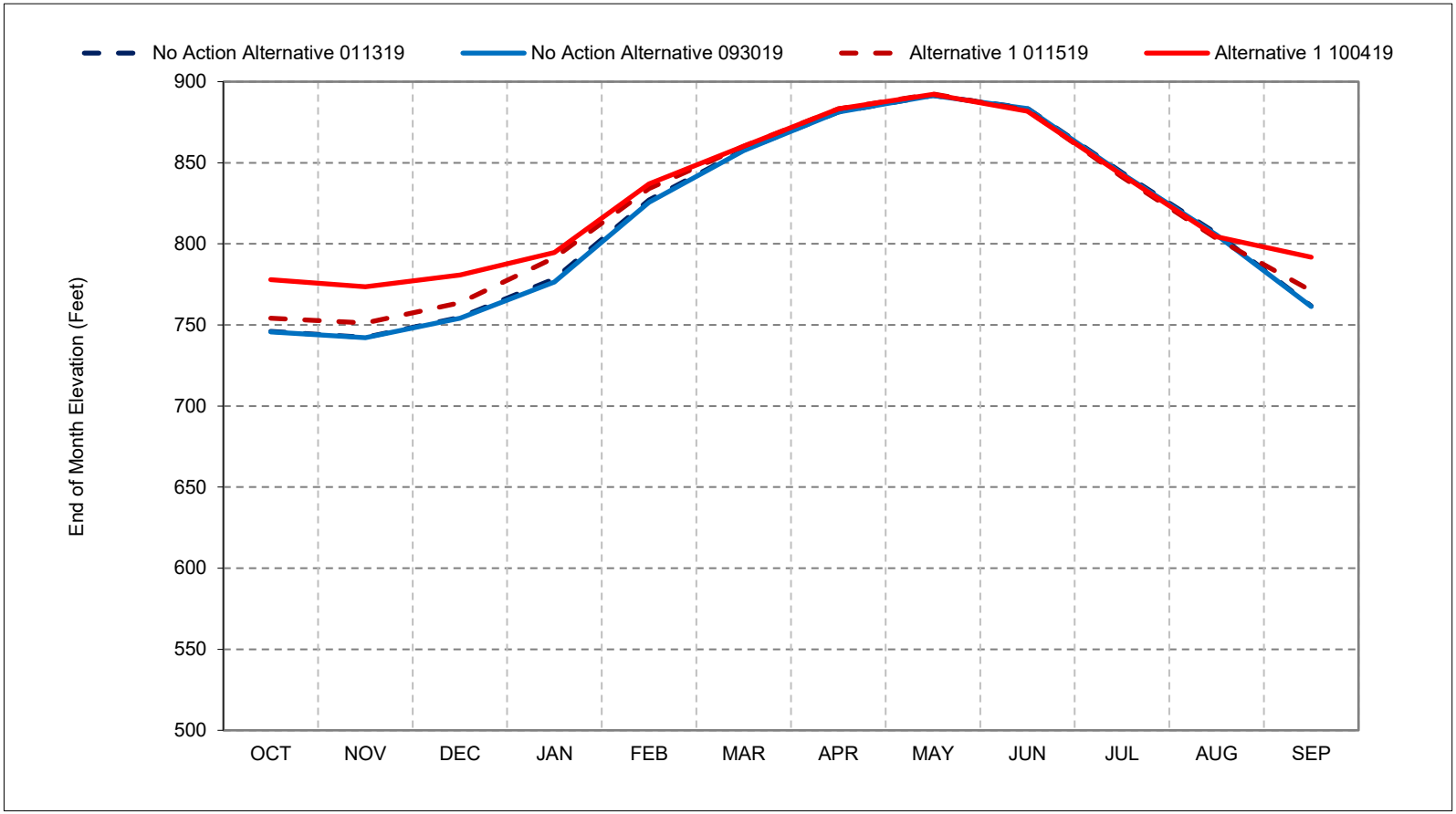



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-3. Lake Oroville Elevation, Above Normal Year Average Elevation

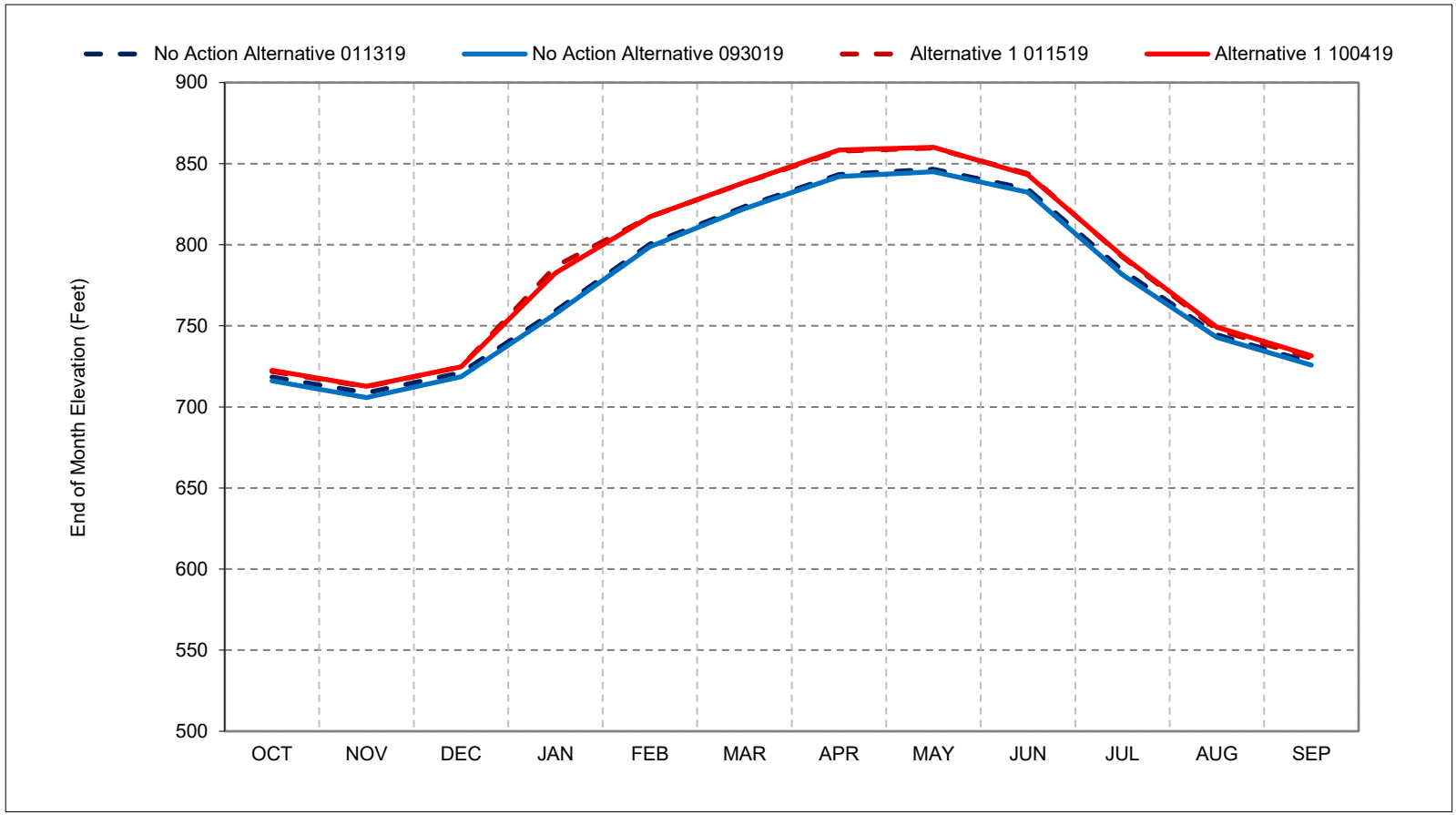



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-4. Lake Oroville Elevation, Below Normal Year Average Elevation

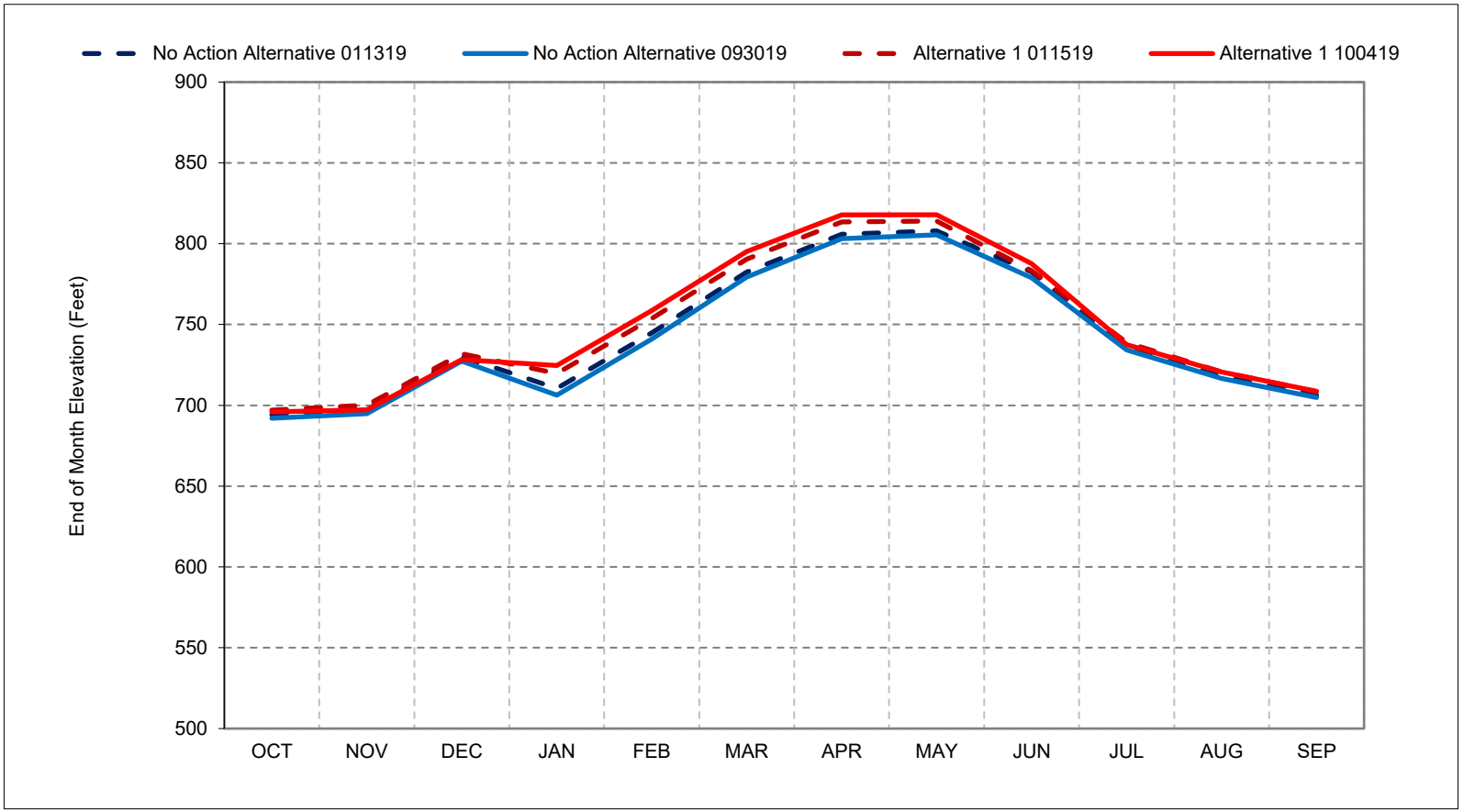



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-5. Lake Oroville Elevation, Dry Year Average Elevation

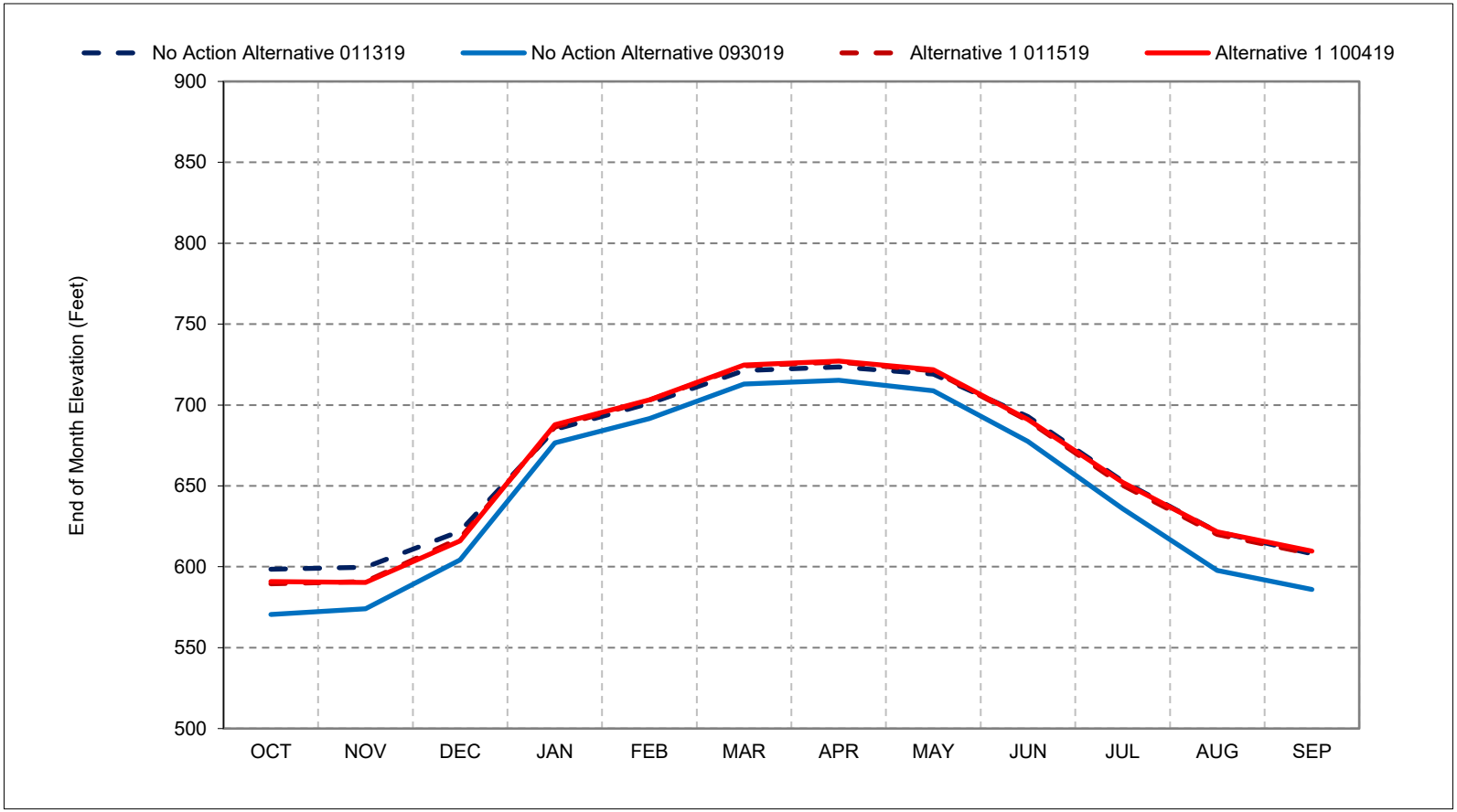



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4a-6. Lake Oroville Elevation, Critical Year Average Elevation

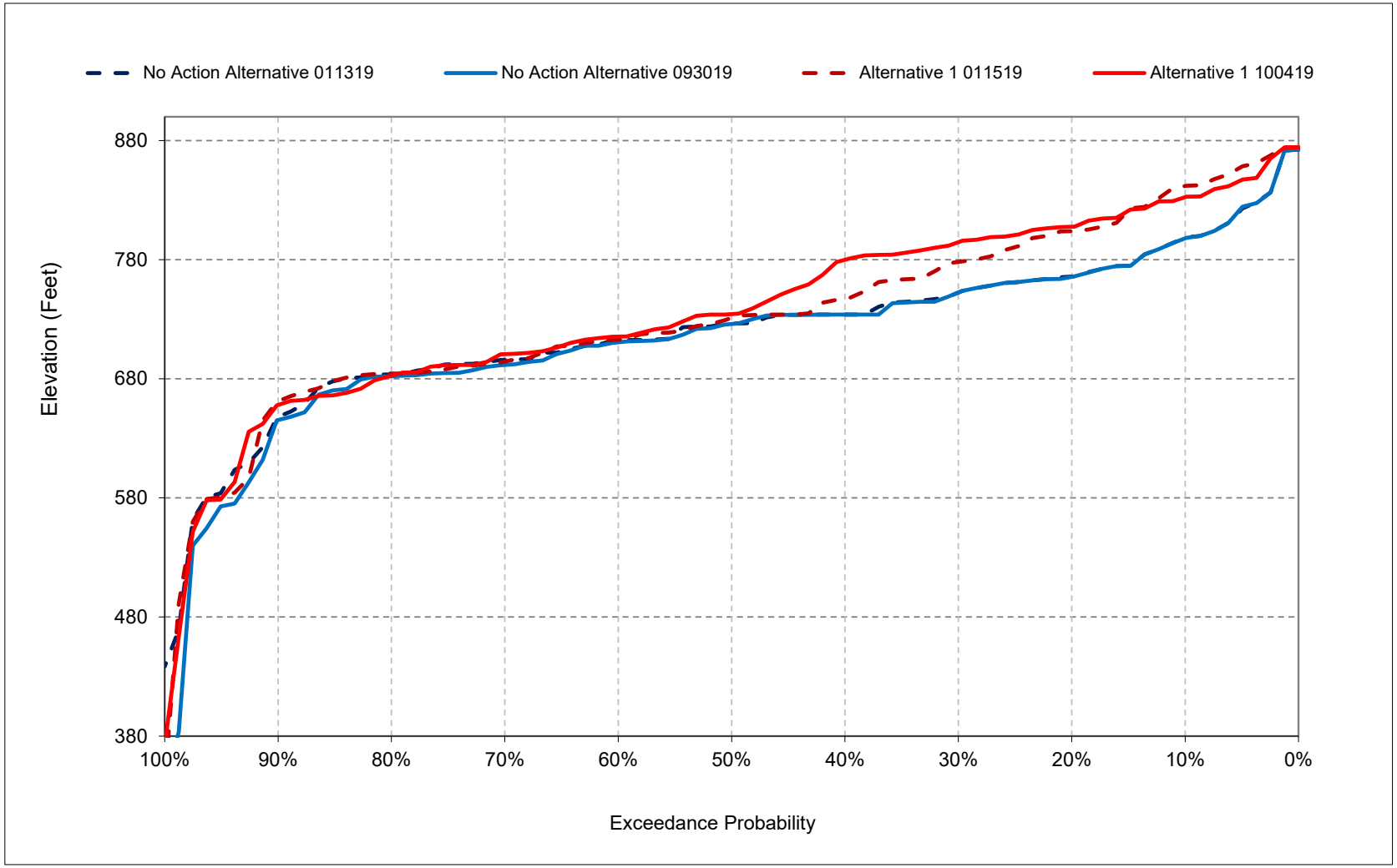



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

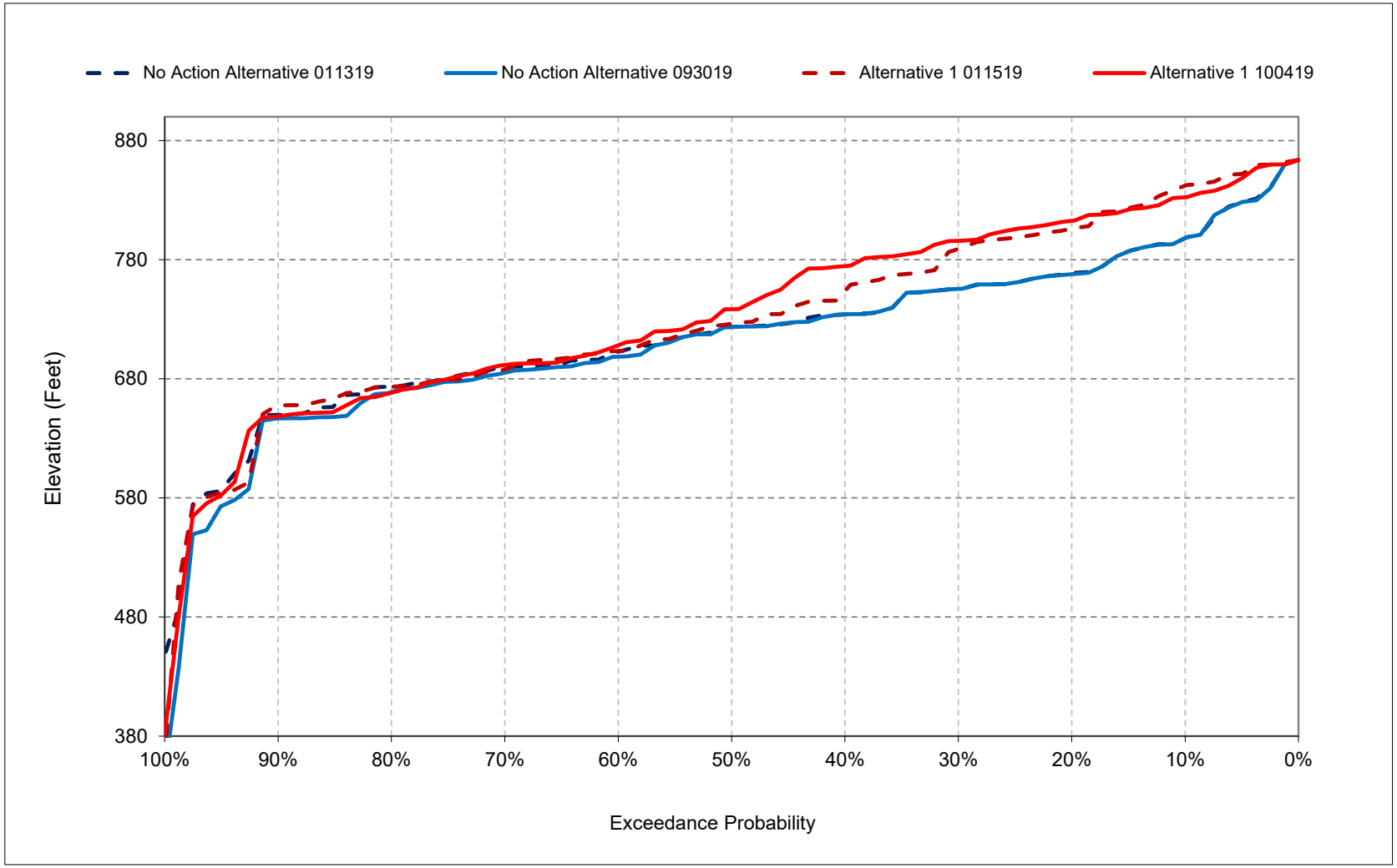
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-7. Lake Oroville, Reservoir Pool Elevation, October**



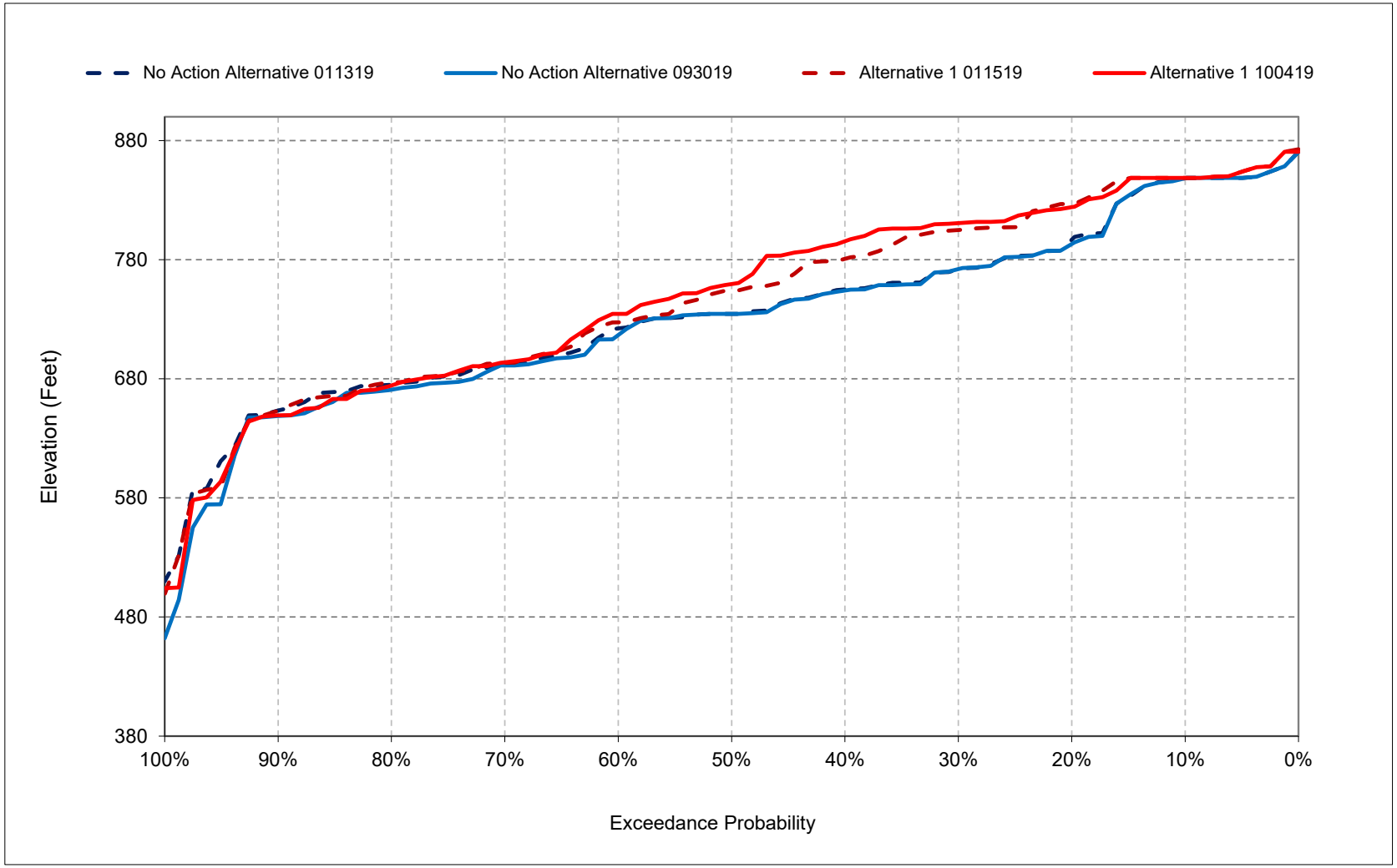

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-8. Lake Oroville, Reservoir Pool Elevation, November**



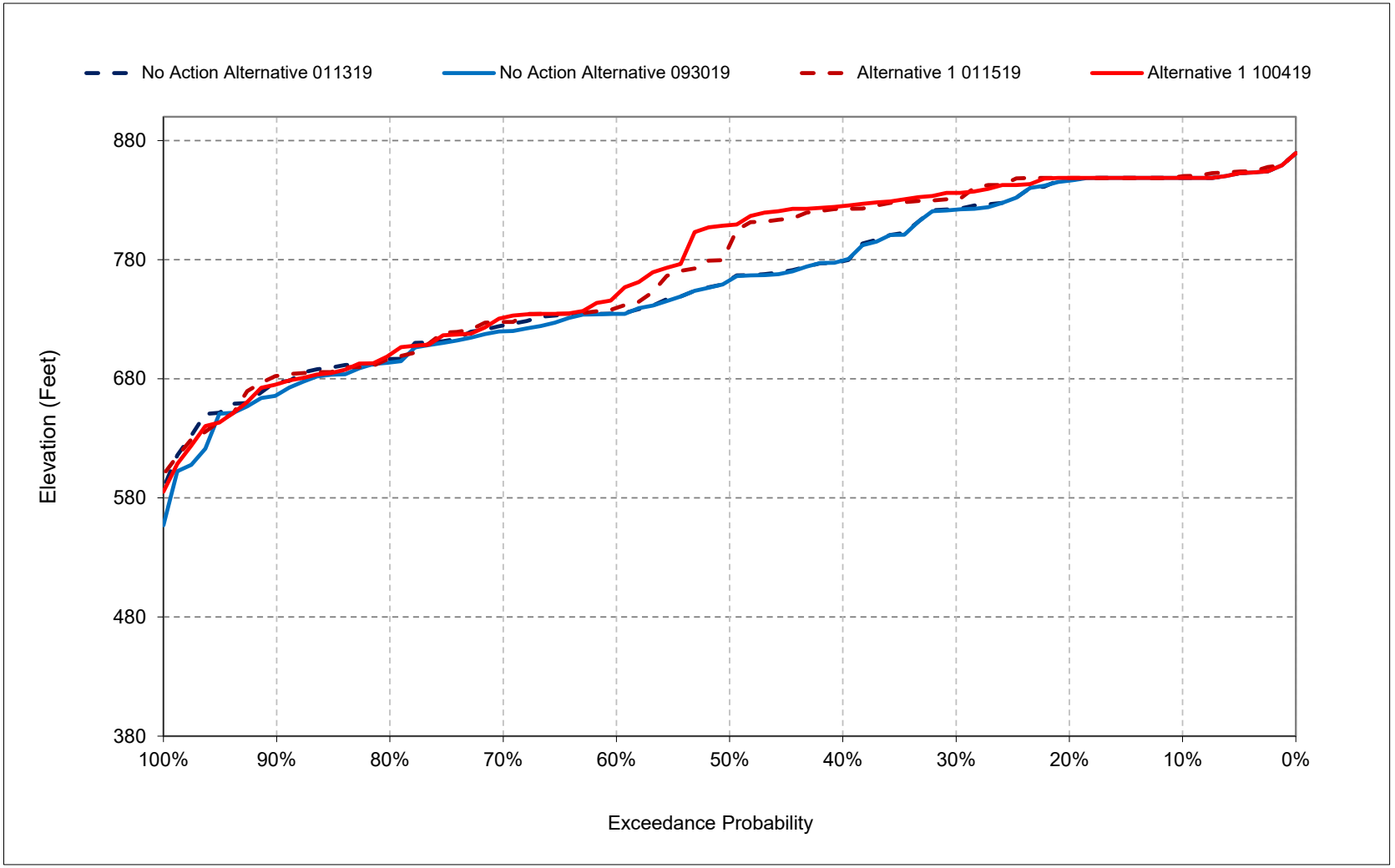

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-9. Lake Oroville, Reservoir Pool Elevation, December**



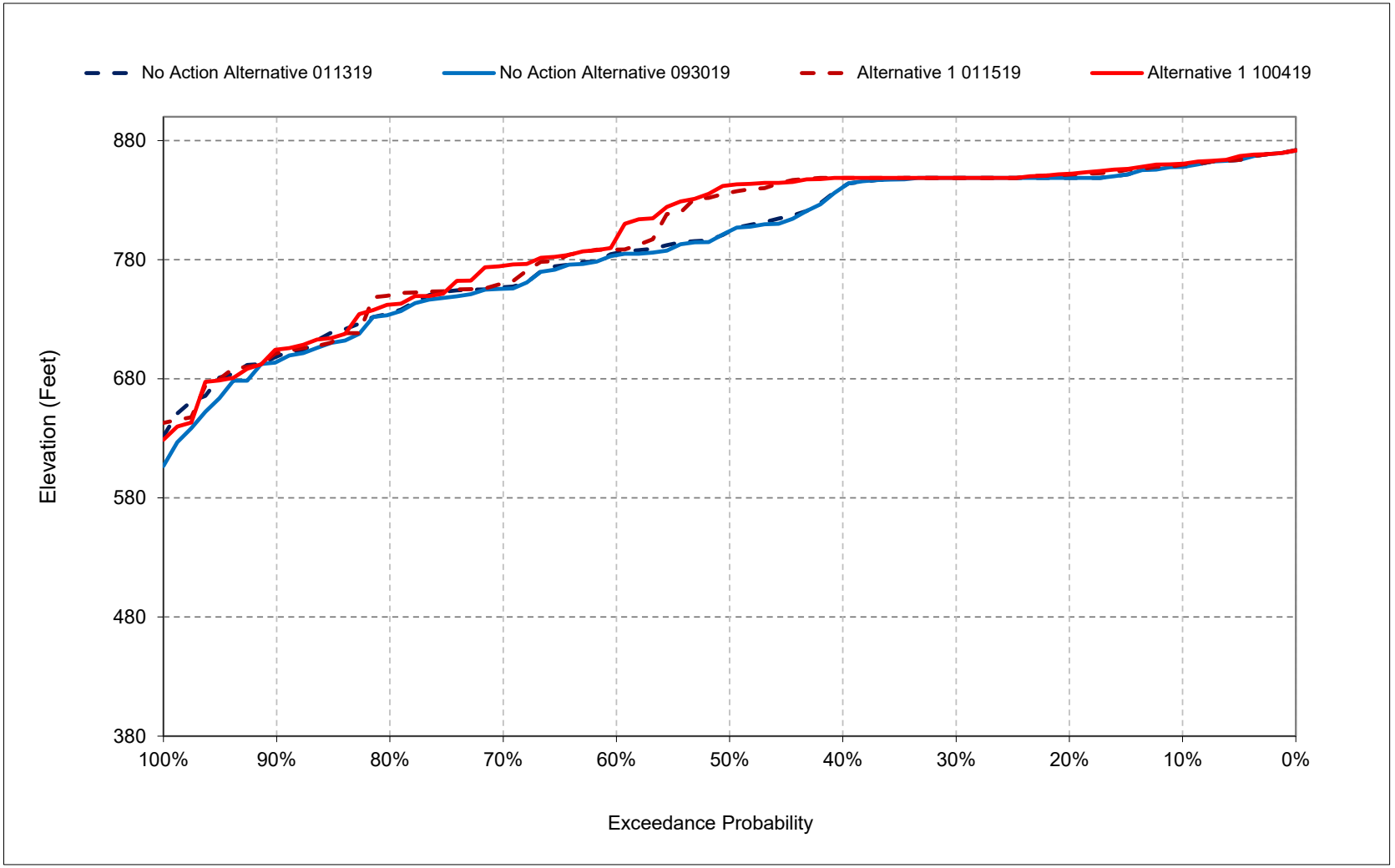

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-10. Lake Oroville, Reservoir Pool Elevation, January**



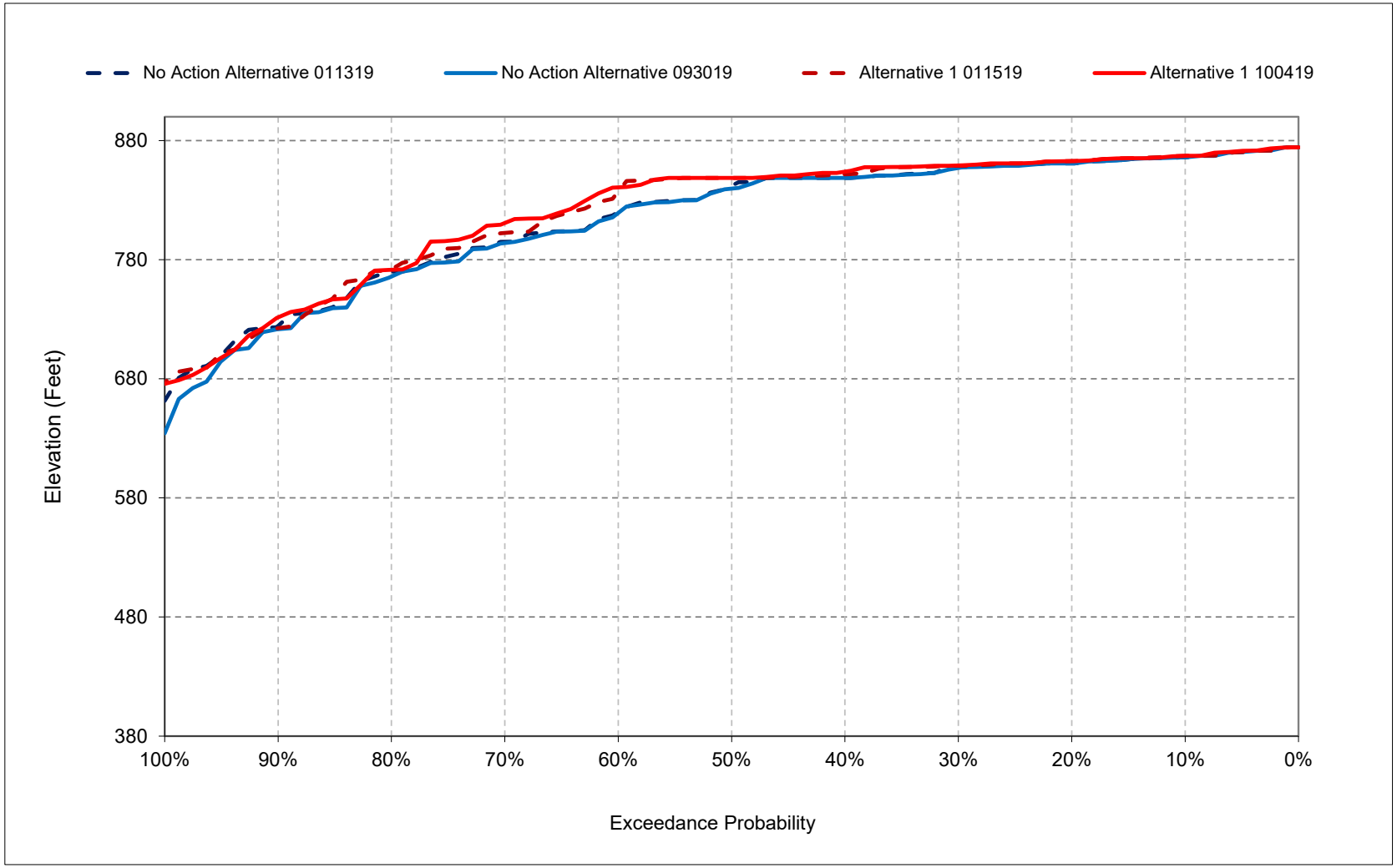

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-11. Lake Oroville, Reservoir Pool Elevation, February**



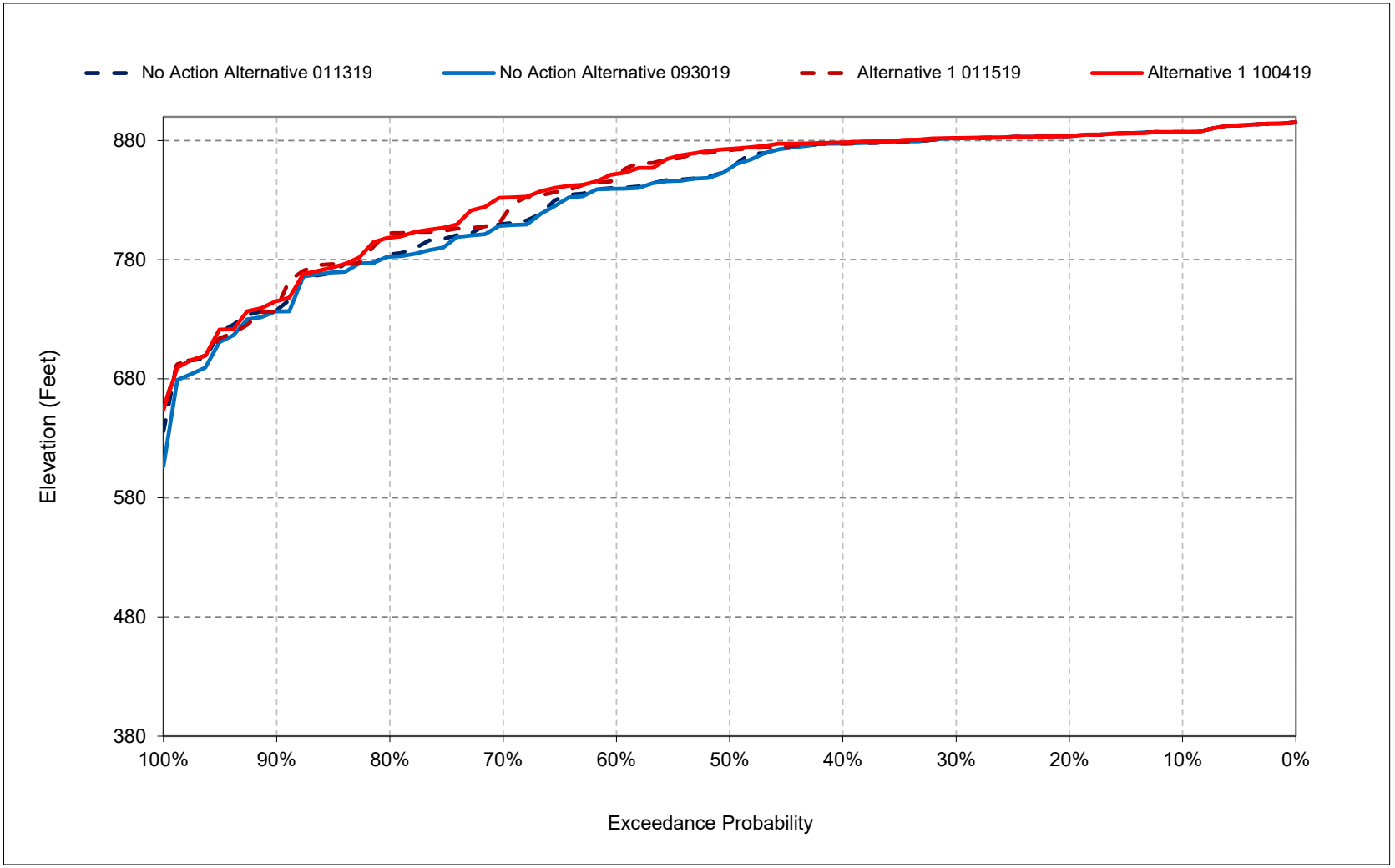

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-12. Lake Oroville, Reservoir Pool Elevation, March**



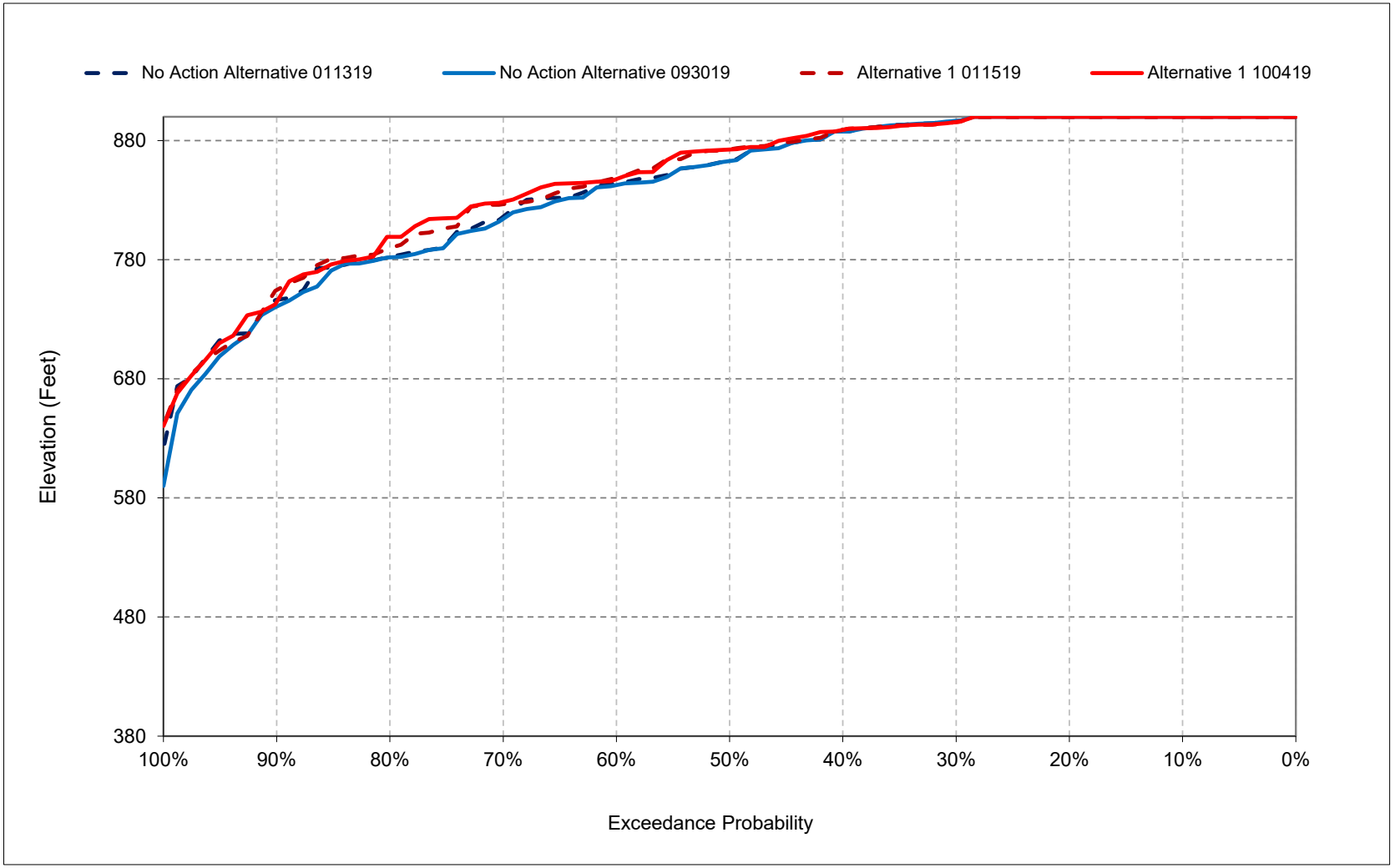

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-13. Lake Oroville, Reservoir Pool Elevation, April**



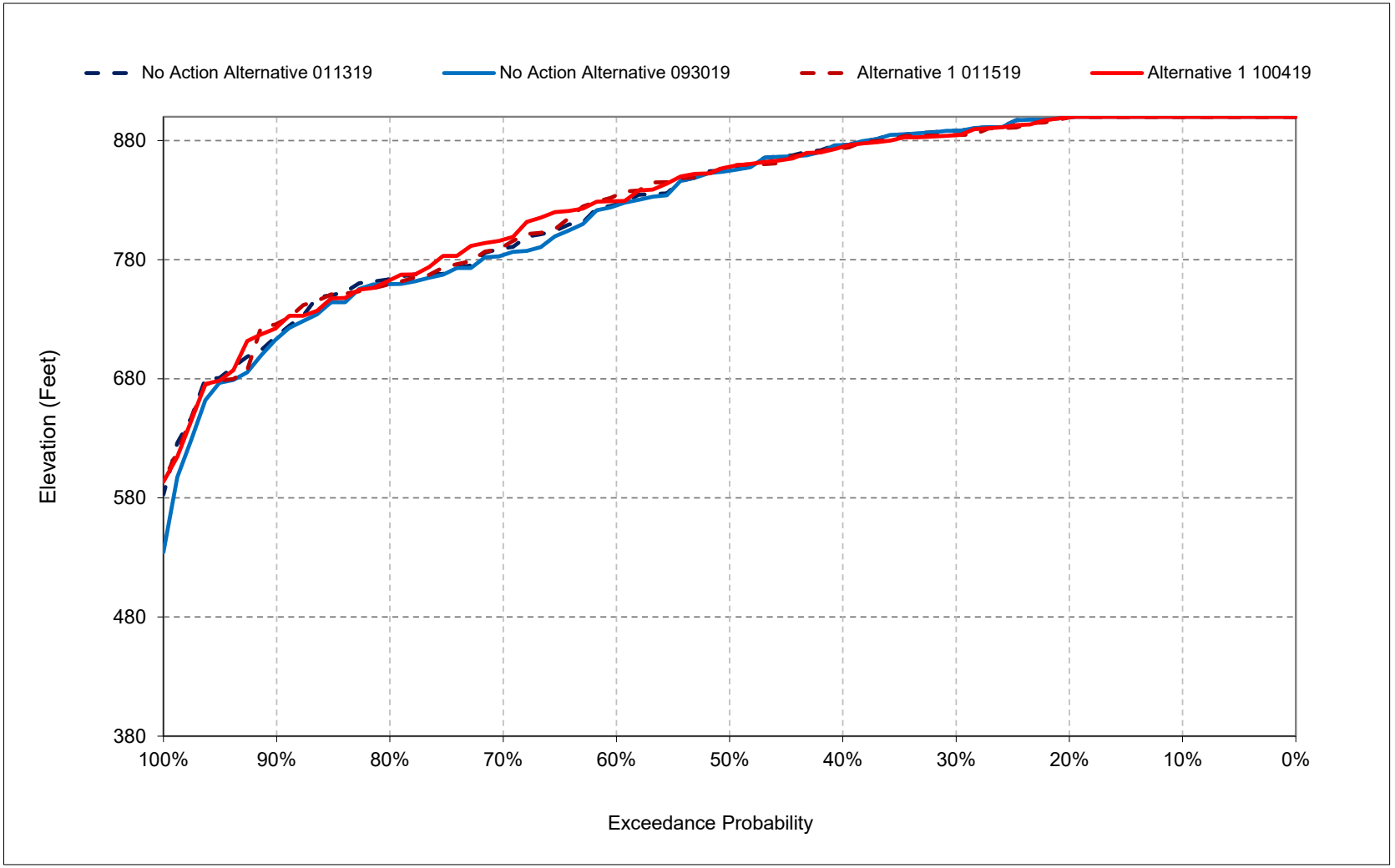

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-14. Lake Oroville, Reservoir Pool Elevation, May**



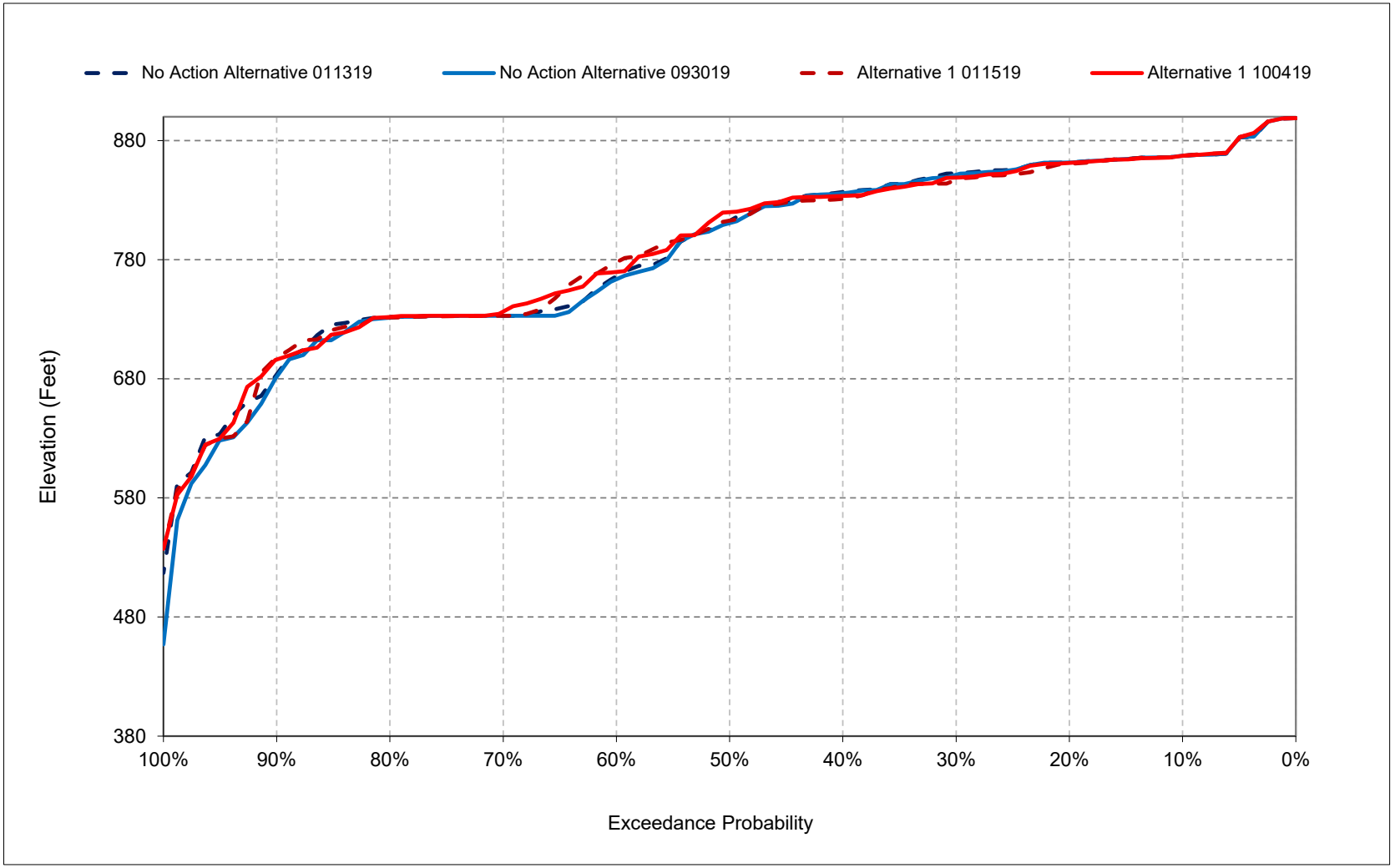

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-15. Lake Oroville, Reservoir Pool Elevation, June**



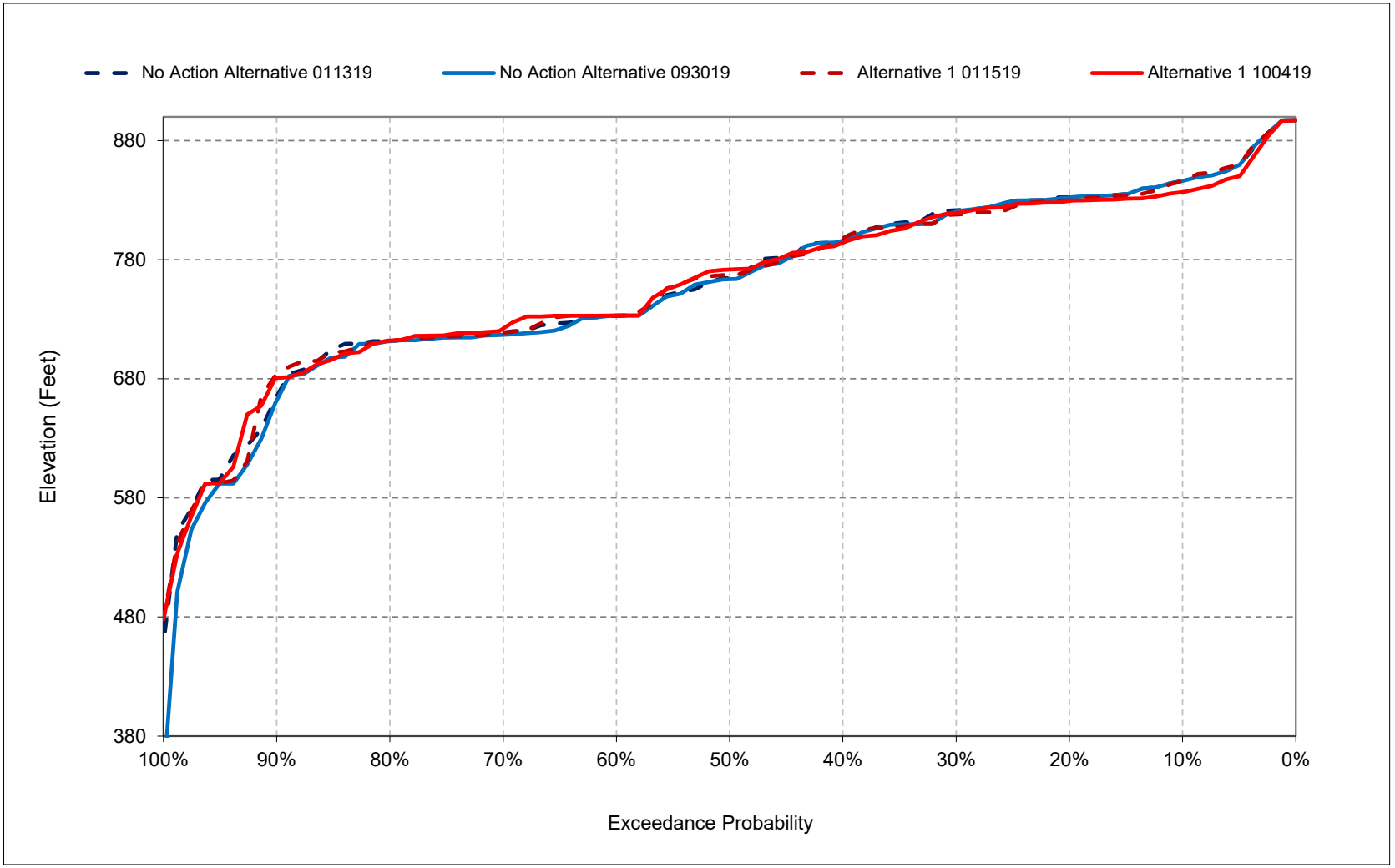

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-16. Lake Oroville, Reservoir Pool Elevation, July**



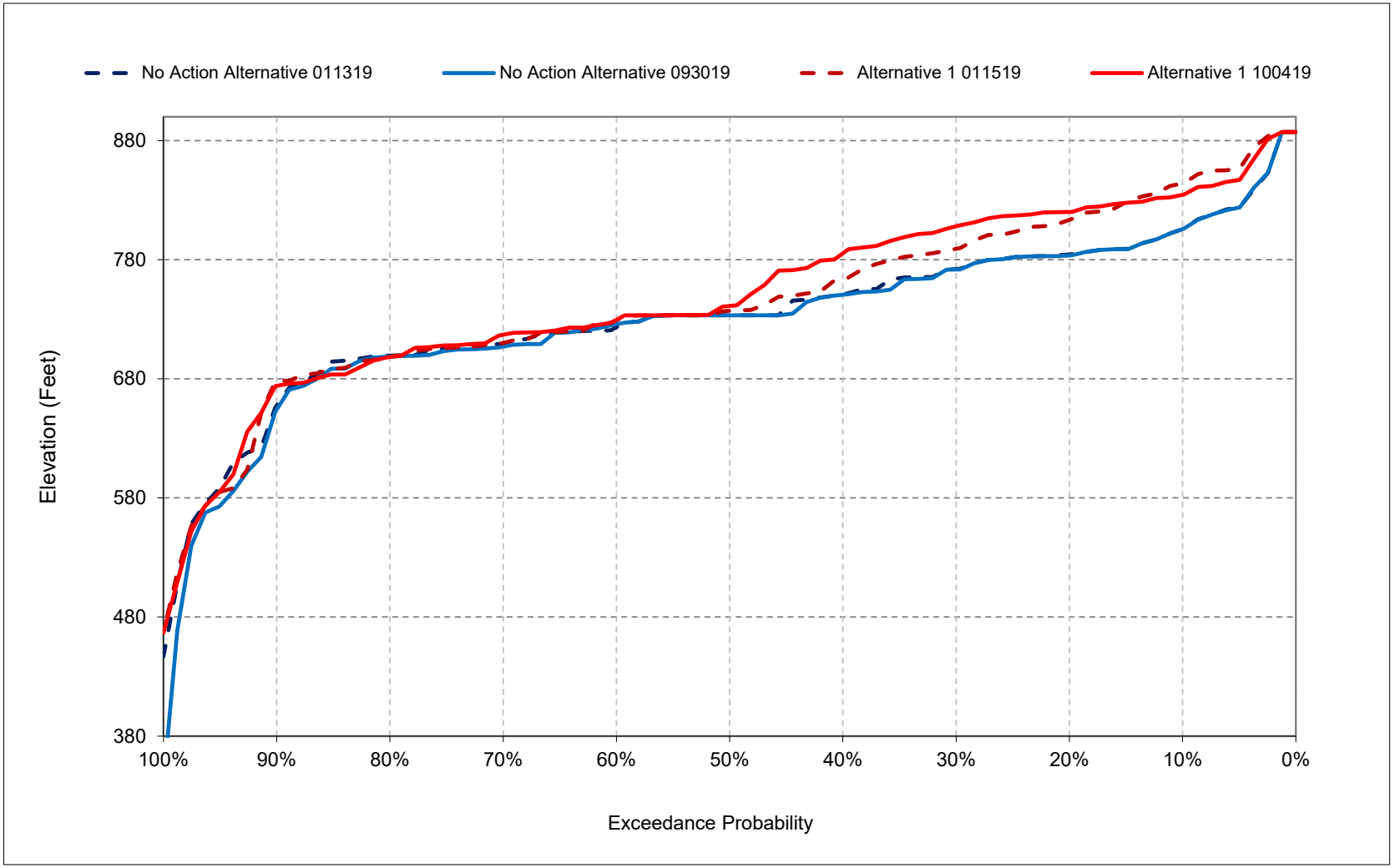

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-17. Lake Oroville, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4a-18. Lake Oroville, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-1. Folsom Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 592 | 542 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 913 | 792 | 681 |
| 20% | 534 | 489 | 567 | 564 | 566 | 656 | 792 | 967 | 967 | 849 | 755 | 618 |
| 30% | 492 | 457 | 521 | 557 | 558 | 652 | 792 | 967 | 955 | 755 | 683 | 570 |
| 40% | 452 | 425 | 484 | 525 | 553 | 646 | 792 | 967 | 910 | 663 | 574 | 516 |
| 50% | 403 | 413 | 447 | 482 | 530 | 632 | 792 | 960 | 842 | 599 | 532 | 474 |
| 60% | 358 | 392 | 414 | 436 | 491 | 621 | 787 | 852 | 767 | 522 | 460 | 408 |
| 70% | 327 | 347 | 382 | 412 | 457 | 599 | 731 | 751 | 667 | 450 | 399 | 380 |
| 80% | 282 | 304 | 345 | 369 | 408 | 524 | 598 | 613 | 533 | 412 | 350 | 303 |
| 90% | 256 | 240 | 257 | 294 | 368 | 409 | 488 | 481 | 433 | 350 | 305 | 262 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 411 | 396 | 437 | 457 | 486 | 586 | 709 | 816 | 763 | 606 | 531 | 465 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 500 | 439 | 477 | 517 | 515 | 632 | 784 | 950 | 935 | 795 | 698 | 583 |
| Above Normal (16%) | 416 | 412 | 455 | 506 | 527 | 640 | 786 | 944 | 873 | 607 | 540 | 475 |
| Below Normal (13%) | 420 | 411 | 447 | 484 | 531 | 617 | 754 | 834 | 771 | 549 | 483 | 451 |
| Dry (24%) | 389 | 407 | 433 | 419 | 475 | 568 | 682 | 751 | 665 | 531 | 462 | 429 |
| Critical (15%) | 242 | 250 | 331 | 314 | 358 | 430 | 463 | 477 | 428 | 374 | 318 | 271 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 697 | 567 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 915 | 792 | 745 |
| 20% | 635 | 565 | 567 | 567 | 567 | 656 | 792 | 967 | 967 | 851 | 747 | 670 |
| 30% | 573 | 538 | 567 | 566 | 564 | 652 | 792 | 967 | 952 | 773 | 692 | 633 |
| 40% | 495 | 521 | 541 | 558 | 558 | 642 | 792 | 967 | 883 | 669 | 587 | 531 |
| 50% | 417 | 461 | 508 | 543 | 553 | 631 | 792 | 959 | 825 | 597 | 524 | 472 |
| 60% | 390 | 423 | 470 | 502 | 528 | 621 | 788 | 880 | 766 | 551 | 488 | 437 |
| 70% | 369 | 382 | 423 | 453 | 477 | 606 | 729 | 751 | 657 | 515 | 452 | 398 |
| 80% | 341 | 353 | 385 | 417 | 448 | 556 | 653 | 649 | 577 | 435 | 373 | 349 |
| 90% | 250 | 283 | 305 | 348 | 394 | 467 | 534 | 547 | 483 | 371 | 304 | 269 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 459 | 444 | 472 | 488 | 503 | 594 | 716 | 824 | 765 | 623 | 544 | 495 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 612 | 533 | 527 | 523 | 515 | 632 | 786 | 954 | 930 | 809 | 712 | 663 |
| Above Normal (16%) | 451 | 449 | 487 | 538 | 539 | 640 | 789 | 948 | 867 | 628 | 558 | 505 |
| Below Normal (13%) | 397 | 405 | 447 | 544 | 548 | 623 | 756 | 828 | 754 | 547 | 461 | 415 |
| Dry (24%) | 418 | 445 | 463 | 442 | 498 | 581 | 697 | 769 | 680 | 562 | 489 | 442 |
| Critical (15%) | 261 | 282 | 373 | 383 | 405 | 460 | 484 | 496 | 447 | 382 | 331 | 283 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 105 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 64 |
| 20% | 101 | 76 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | -8 | 52 |
| 30% | 81 | 81 | 46 | 9 | 6 | 0 | 0 | 0 | -3 | 18 | 9 | 63 |
| 40% | 43 | 96 | 57 | 33 | 5 | -4 | 0 | 0 | -28 | 6 | 13 | 15 |
| 50% | 14 | 47 | 60 | 62 | 23 | -2 | 0 | 0 | -17 | -2 | -7 | -2 |
| 60% | 32 | 32 | 56 | 66 | 37 | 0 | 1 | 28 | -1 | 29 | 28 | 29 |
| 70% | 42 | 34 | 41 | 41 | 20 | 7 | -2 | -1 | -11 | 65 | 53 | 18 |
| 80% | 59 | 49 | 40 | 48 | 40 | 31 | 55 | 36 | 44 | 22 | 23 | 47 |
| 90% | -6 | 43 | 48 | 54 | 26 | 57 | 46 | 65 | 50 | 20 | -1 | 7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 48 | 49 | 35 | 31 | 17 | 8 | 8 | 8 | 2 | 17 | 13 | 30 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 113 | 94 | 50 | 6 | 0 | 0 | 2 | 4 | -4 | 15 | 14 | 80 |
| Above Normal (16%) | 35 | 37 | 32 | 32 | 13 | 0 | 3 | 4 | -6 | 21 | 18 | 30 |
| Below Normal (13%) | -22 | -6 | 0 | 60 | 17 | 6 | 2 | -6 | -16 | -2 | -22 | -35 |
| Dry (24%) | 29 | 39 | 31 | 23 | 23 | 13 | 15 | 18 | 15 | 31 | 28 | 13 |
| Critical (15%) | 20 | 31 | 43 | 69 | 47 | 30 | 20 | 19 | 19 | 8 | 14 | 12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-2. Folsom Lake Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 592 | 545 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 913 | 792 | 681 |
| 20% | 534 | 482 | 567 | 564 | 565 | 656 | 792 | 967 | 967 | 847 | 767 | 622 |
| 30% | 484 | 452 | 520 | 556 | 558 | 652 | 792 | 967 | 955 | 765 | 683 | 558 |
| 40% | 438 | 421 | 479 | 522 | 553 | 644 | 792 | 967 | 911 | 657 | 571 | 508 |
| 50% | 401 | 402 | 437 | 476 | 528 | 632 | 792 | 960 | 833 | 595 | 521 | 467 |
| 60% | 351 | 375 | 410 | 435 | 485 | 621 | 783 | 852 | 765 | 519 | 458 | 408 |
| 70% | 318 | 344 | 377 | 405 | 453 | 595 | 731 | 747 | 667 | 453 | 395 | 372 |
| 80% | 288 | 304 | 345 | 346 | 403 | 515 | 596 | 614 | 532 | 397 | 350 | 298 |
| 90% | 256 | 255 | 241 | 296 | 358 | 410 | 469 | 474 | 422 | 342 | 296 | 278 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 407 | 391 | 434 | 454 | 484 | 584 | 707 | 813 | 761 | 603 | 529 | 463 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 495 | 435 | 476 | 517 | 515 | 632 | 784 | 950 | 935 | 792 | 696 | 579 |
| Above Normal (16%) | 413 | 407 | 451 | 506 | 526 | 640 | 786 | 944 | 872 | 607 | 538 | 473 |
| Below Normal (13%) | 411 | 405 | 444 | 483 | 529 | 615 | 753 | 831 | 766 | 540 | 477 | 442 |
| Dry (24%) | 386 | 403 | 428 | 411 | 468 | 564 | 678 | 748 | 659 | 529 | 463 | 431 |
| Critical (15%) | 239 | 245 | 324 | 306 | 355 | 427 | 457 | 467 | 427 | 369 | 318 | 271 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 702 | 567 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 910 | 792 | 742 |
| 20% | 591 | 558 | 567 | 567 | 567 | 656 | 792 | 967 | 967 | 868 | 745 | 654 |
| 30% | 546 | 539 | 566 | 565 | 564 | 652 | 792 | 967 | 948 | 763 | 677 | 597 |
| 40% | 498 | 503 | 527 | 557 | 558 | 642 | 792 | 967 | 900 | 682 | 589 | 547 |
| 50% | 439 | 456 | 496 | 543 | 553 | 629 | 792 | 959 | 805 | 604 | 535 | 479 |
| 60% | 390 | 421 | 456 | 495 | 516 | 621 | 792 | 880 | 760 | 567 | 491 | 438 |
| 70% | 352 | 379 | 425 | 450 | 472 | 606 | 726 | 747 | 659 | 521 | 456 | 407 |
| 80% | 333 | 349 | 379 | 415 | 444 | 556 | 648 | 629 | 536 | 429 | 375 | 342 |
| 90% | 295 | 303 | 308 | 329 | 380 | 456 | 522 | 545 | 477 | 395 | 331 | 295 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 456 | 443 | 468 | 487 | 501 | 593 | 716 | 823 | 760 | 629 | 545 | 493 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 603 | 531 | 526 | 525 | 515 | 632 | 786 | 954 | 926 | 809 | 705 | 649 |
| Above Normal (16%) | 441 | 434 | 473 | 539 | 539 | 640 | 789 | 948 | 859 | 643 | 555 | 498 |
| Below Normal (13%) | 422 | 427 | 458 | 541 | 545 | 620 | 756 | 828 | 750 | 575 | 488 | 438 |
| Dry (24%) | 412 | 442 | 461 | 439 | 494 | 580 | 693 | 763 | 670 | 561 | 489 | 443 |
| Critical (15%) | 256 | 276 | 358 | 378 | 401 | 457 | 485 | 499 | 451 | 386 | 332 | 283 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | 0 | 61 |
| 20% | 57 | 76 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 21 | -22 | 32 |
| 30% | 62 | 87 | 47 | 9 | 6 | 0 | 0 | 0 | -7 | -2 | -7 | 40 |
| 40% | 60 | 81 | 48 | 34 | 5 | -2 | 0 | 0 | -11 | 25 | 19 | 39 |
| 50% | 38 | 54 | 60 | 67 | 25 | -3 | 0 | -1 | -28 | 9 | 14 | 13 |
| 60% | 39 | 47 | 47 | 60 | 31 | 0 | 9 | 28 | -6 | 48 | 33 | 31 |
| 70% | 34 | 35 | 48 | 45 | 19 | 11 | -5 | 0 | -8 | 68 | 62 | 36 |
| 80% | 45 | 46 | 34 | 69 | 41 | 41 | 52 | 15 | 4 | 33 | 25 | 44 |
| 90% | 39 | 48 | 68 | 33 | 22 | 45 | 53 | 70 | 55 | 53 | 35 | 17 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 49 | 52 | 34 | 33 | 17 | 9 | 9 | 10 | 0 | 26 | 16 | 30 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 108 | 96 | 51 | 9 | 0 | 0 | 2 | 4 | -9 | 17 | 9 | 70 |
| Above Normal (16%) | 28 | 27 | 22 | 33 | 13 | 0 | 3 | 4 | -13 | 37 | 17 | 25 |
| Below Normal (13%) | 11 | 23 | 14 | 58 | 16 | 5 | 3 | -4 | -16 | 35 | 11 | -5 |
| Dry (24%) | 26 | 39 | 33 | 27 | 26 | 16 | 15 | 15 | 11 | 31 | 26 | 12 |
| Critical (15%) | 18 | 31 | 34 | 72 | 47 | 30 | 27 | 32 | 25 | 17 | 14 | 12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-3. Folsom Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 592 | 542 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 913 | 792 | 681 |
| 20% | 534 | 489 | 567 | 564 | 566 | 656 | 792 | 967 | 967 | 849 | 755 | 618 |
| 30% | 492 | 457 | 521 | 557 | 558 | 652 | 792 | 967 | 955 | 755 | 683 | 570 |
| 40% | 452 | 425 | 484 | 525 | 553 | 646 | 792 | 967 | 910 | 663 | 574 | 516 |
| 50% | 403 | 413 | 447 | 482 | 530 | 632 | 792 | 960 | 842 | 599 | 532 | 474 |
| 60% | 358 | 392 | 414 | 436 | 491 | 621 | 787 | 852 | 767 | 522 | 460 | 408 |
| 70% | 327 | 347 | 382 | 412 | 457 | 599 | 731 | 751 | 667 | 450 | 399 | 380 |
| 80% | 282 | 304 | 345 | 369 | 408 | 524 | 598 | 613 | 533 | 412 | 350 | 303 |
| 90% | 256 | 240 | 257 | 294 | 368 | 409 | 488 | 481 | 433 | 350 | 305 | 262 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 411 | 396 | 437 | 457 | 486 | 586 | 709 | 816 | 763 | 606 | 531 | 465 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 500 | 439 | 477 | 517 | 515 | 632 | 784 | 950 | 935 | 795 | 698 | 583 |
| Above Normal (16%) | 416 | 412 | 455 | 506 | 527 | 640 | 786 | 944 | 873 | 607 | 540 | 475 |
| Below Normal (13%) | 420 | 411 | 447 | 484 | 531 | 617 | 754 | 834 | 771 | 549 | 483 | 451 |
| Dry (24%) | 389 | 407 | 433 | 419 | 475 | 568 | 682 | 751 | 665 | 531 | 462 | 429 |
| Critical (15%) | 242 | 250 | 331 | 314 | 358 | 430 | 463 | 477 | 428 | 374 | 318 | 271 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 592 | 545 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 913 | 792 | 681 |
| 20% | 534 | 482 | 567 | 564 | 565 | 656 | 792 | 967 | 967 | 847 | 767 | 622 |
| 30% | 484 | 452 | 520 | 556 | 558 | 652 | 792 | 967 | 955 | 765 | 683 | 558 |
| 40% | 438 | 421 | 479 | 522 | 553 | 644 | 792 | 967 | 911 | 657 | 571 | 508 |
| 50% | 401 | 402 | 437 | 476 | 528 | 632 | 792 | 960 | 833 | 595 | 521 | 467 |
| 60% | 351 | 375 | 410 | 435 | 485 | 621 | 783 | 852 | 765 | 519 | 458 | 408 |
| 70% | 318 | 344 | 377 | 405 | 453 | 595 | 731 | 747 | 667 | 453 | 395 | 372 |
| 80% | 288 | 304 | 345 | 346 | 403 | 515 | 596 | 614 | 532 | 397 | 350 | 298 |
| 90% | 256 | 255 | 241 | 296 | 358 | 410 | 469 | 474 | 422 | 342 | 296 | 278 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 407 | 391 | 434 | 454 | 484 | 584 | 707 | 813 | 761 | 603 | 529 | 463 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 495 | 435 | 476 | 517 | 515 | 632 | 784 | 950 | 935 | 792 | 696 | 579 |
| Above Normal (16%) | 413 | 407 | 451 | 506 | 526 | 640 | 786 | 944 | 872 | 607 | 538 | 473 |
| Below Normal (13%) | 411 | 405 | 444 | 483 | 529 | 615 | 753 | 831 | 766 | 540 | 477 | 442 |
| Dry (24%) | 386 | 403 | 428 | 411 | 468 | 564 | 678 | 748 | 659 | 529 | 463 | 431 |
| Critical (15%) | 239 | 245 | 324 | 306 | 355 | 427 | 457 | 467 | 427 | 369 | 318 | 271 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -7 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | -2 | 12 | 4 |
| 30% | -8 | -5 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | -12 |
| 40% | -14 | -4 | -5 | -3 | 0 | -2 | 0 | 0 | 1 | -5 | -3 | -8 |
| 50% | -2 | -12 | -11 | -6 | -2 | 0 | 0 | 0 | -9 | -4 | -11 | -7 |
| 60% | -7 | -17 | -5 | -1 | -6 | 0 | -4 | 0 | -2 | -3 | -2 | 0 |
| 70% | -9 | -3 | -5 | -8 | -4 | -4 | 0 | -4 | 0 | 2 | -4 | -8 |
| 80% | 6 | 0 | 1 | -23 | -5 | -10 | -2 | 0 | -1 | -16 | 0 | -5 |
| 90% | 0 | 15 | -17 | 2 | -10 | 1 | -19 | -7 | -12 | -8 | -10 | 16 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -5 | -4 | -3 | -2 | -2 | -2 | -3 | -2 | -3 | -2 | -2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -5 | -4 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | -4 |
| Above Normal (16%) | -3 | -5 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -2 | -2 |
| Below Normal (13%) | -8 | -6 | -3 | -1 | -2 | -2 | -2 | -2 | -5 | -9 | -7 | -8 |
| Dry (24%) | -3 | -4 | -4 | -8 | -6 | -3 | -3 | -4 | -6 | -1 | 1 | 3 |
| Critical (15%) | -3 | -5 | -6 | -7 | -3 | -4 | -6 | -10 | -1 | -5 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-4. Folsom Lake Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 697 | 567 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 915 | 792 | 745 |
| 20% | 635 | 565 | 567 | 567 | 567 | 656 | 792 | 967 | 967 | 851 | 747 | 670 |
| 30% | 573 | 538 | 567 | 566 | 564 | 652 | 792 | 967 | 952 | 773 | 692 | 633 |
| 40% | 495 | 521 | 541 | 558 | 558 | 642 | 792 | 967 | 883 | 669 | 587 | 531 |
| 50% | 417 | 461 | 508 | 543 | 553 | 631 | 792 | 959 | 825 | 597 | 524 | 472 |
| 60% | 390 | 423 | 470 | 502 | 528 | 621 | 788 | 880 | 766 | 551 | 488 | 437 |
| 70% | 369 | 382 | 423 | 453 | 477 | 606 | 729 | 751 | 657 | 515 | 452 | 398 |
| 80% | 341 | 353 | 385 | 417 | 448 | 556 | 653 | 649 | 577 | 435 | 373 | 349 |
| 90% | 250 | 283 | 305 | 348 | 394 | 467 | 534 | 547 | 483 | 371 | 304 | 269 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 459 | 444 | 472 | 488 | 503 | 594 | 716 | 824 | 765 | 623 | 544 | 495 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 612 | 533 | 527 | 523 | 515 | 632 | 786 | 954 | 930 | 809 | 712 | 663 |
| Above Normal (16%) | 451 | 449 | 487 | 538 | 539 | 640 | 789 | 948 | 867 | 628 | 558 | 505 |
| Below Normal (13%) | 397 | 405 | 447 | 544 | 548 | 623 | 756 | 828 | 754 | 547 | 461 | 415 |
| Dry (24%) | 418 | 445 | 463 | 442 | 498 | 581 | 697 | 769 | 680 | 562 | 489 | 442 |
| Critical (15%) | 261 | 282 | 373 | 383 | 405 | 460 | 484 | 496 | 447 | 382 | 331 | 283 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 702 | 567 | 567 | 567 | 567 | 659 | 792 | 967 | 967 | 910 | 792 | 742 |
| 20% | 591 | 558 | 567 | 567 | 567 | 656 | 792 | 967 | 967 | 868 | 745 | 654 |
| 30% | 546 | 539 | 566 | 565 | 564 | 652 | 792 | 967 | 948 | 763 | 677 | 597 |
| 40% | 498 | 503 | 527 | 557 | 558 | 642 | 792 | 967 | 900 | 682 | 589 | 547 |
| 50% | 439 | 456 | 496 | 543 | 553 | 629 | 792 | 959 | 805 | 604 | 535 | 479 |
| 60% | 390 | 421 | 456 | 495 | 516 | 621 | 792 | 880 | 760 | 567 | 491 | 438 |
| 70% | 352 | 379 | 425 | 450 | 472 | 606 | 726 | 747 | 659 | 521 | 456 | 407 |
| 80% | 333 | 349 | 379 | 415 | 444 | 556 | 648 | 629 | 536 | 429 | 375 | 342 |
| 90% | 295 | 303 | 308 | 329 | 380 | 456 | 522 | 545 | 477 | 395 | 331 | 295 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 456 | 443 | 468 | 487 | 501 | 593 | 716 | 823 | 760 | 629 | 545 | 493 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 603 | 531 | 526 | 525 | 515 | 632 | 786 | 954 | 926 | 809 | 705 | 649 |
| Above Normal (16%) | 441 | 434 | 473 | 539 | 539 | 640 | 789 | 948 | 859 | 643 | 555 | 498 |
| Below Normal (13%) | 422 | 427 | 458 | 541 | 545 | 620 | 756 | 828 | 750 | 575 | 488 | 438 |
| Dry (24%) | 412 | 442 | 461 | 439 | 494 | 580 | 693 | 763 | 670 | 561 | 489 | 443 |
| Critical (15%) | 256 | 276 | 358 | 378 | 401 | 457 | 485 | 499 | 451 | 386 | 332 | 283 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -5 | 0 | -3 |
| 20% | -43 | -7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | -2 | -17 |
| 30% | -27 | 1 | -1 | -1 | -1 | 0 | 0 | 0 | -4 | -10 | -16 | -35 |
| 40% | 3 | -18 | -14 | -2 | 0 | 0 | 0 | 0 | 18 | 13 | 2 | 17 |
| 50% | 22 | -5 | -11 | 0 | 0 | -1 | 0 | 0 | -20 | 6 | 11 | 8 |
| 60% | 0 | -2 | -13 | -6 | -12 | 0 | 4 | 1 | -6 | 16 | 3 | 1 |
| 70% | -17 | -3 | 2 | -3 | -5 | 0 | -3 | -3 | 2 | 5 | 5 | 9 |
| 80% | -8 | -4 | -5 | -2 | -5 | 0 | -5 | -21 | -41 | -5 | 3 | -8 |
| 90% | 45 | 20 | 3 | -19 | -14 | -11 | -12 | -2 | -6 | 24 | 27 | 26 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -3 | -2 | -4 | -1 | -2 | -1 | -1 | -1 | -5 | 6 | 1 | -2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -9 | -2 | -1 | 2 | 0 | 0 | 0 | 0 | -4 | 0 | -7 | -13 |
| Above Normal (16%) | -10 | -15 | -14 | 1 | 0 | 0 | 0 | 0 | -7 | 15 | -3 | -7 |
| Below Normal (13%) | 25 | 23 | 11 | -3 | -2 | -2 | -1 | 0 | -4 | 28 | 27 | 23 |
| Dry (24%) | -6 | -3 | -2 | -4 | -3 | 0 | -3 | -6 | -10 | -1 | 0 | 1 |
| Critical (15%) | -5 | -6 | -15 | -4 | -4 | -4 | 1 | 3 | 4 | 4 | 1 | 0 |

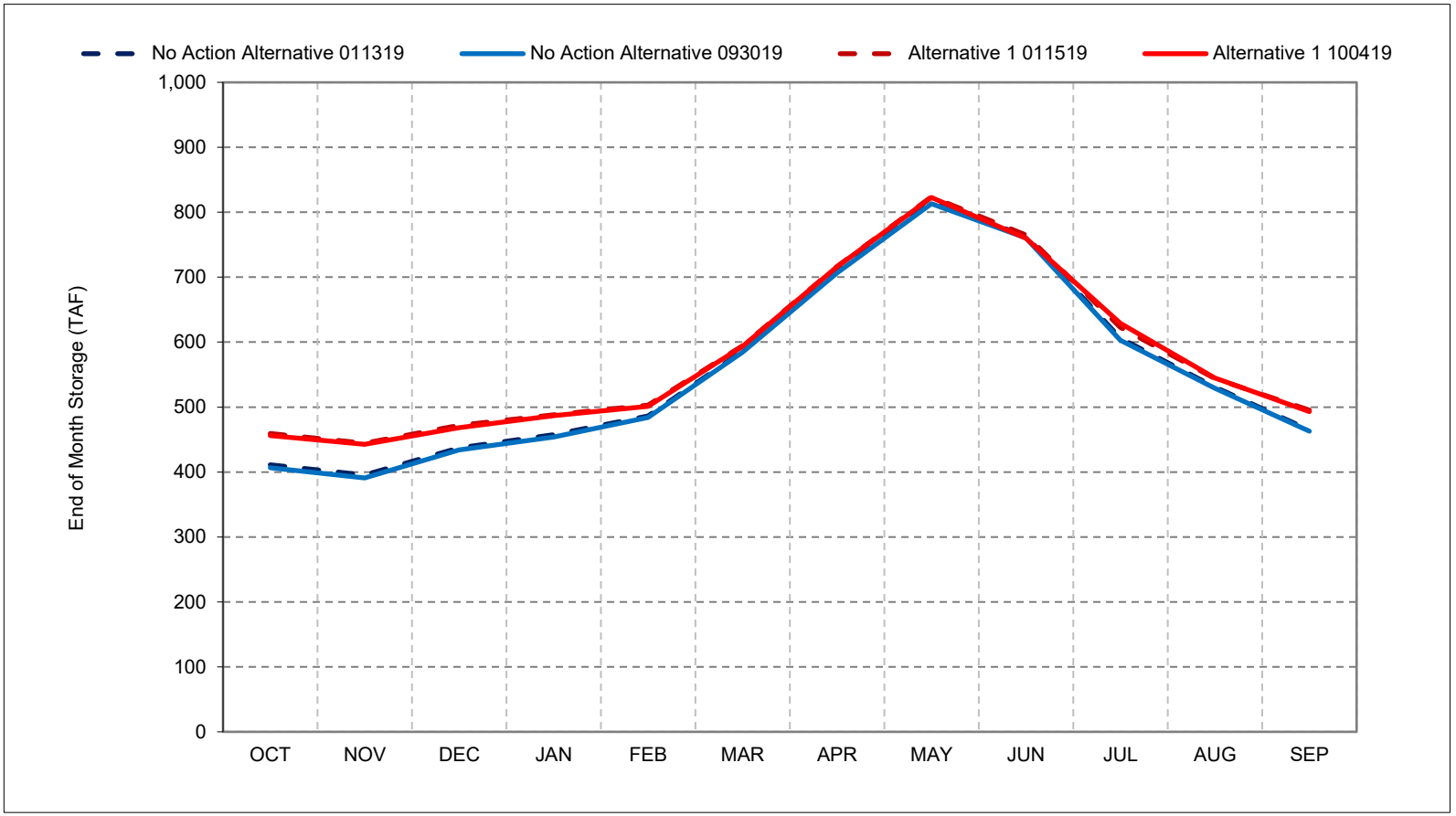
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-1. Folsom Lake Storage, Long-Term Average Storage

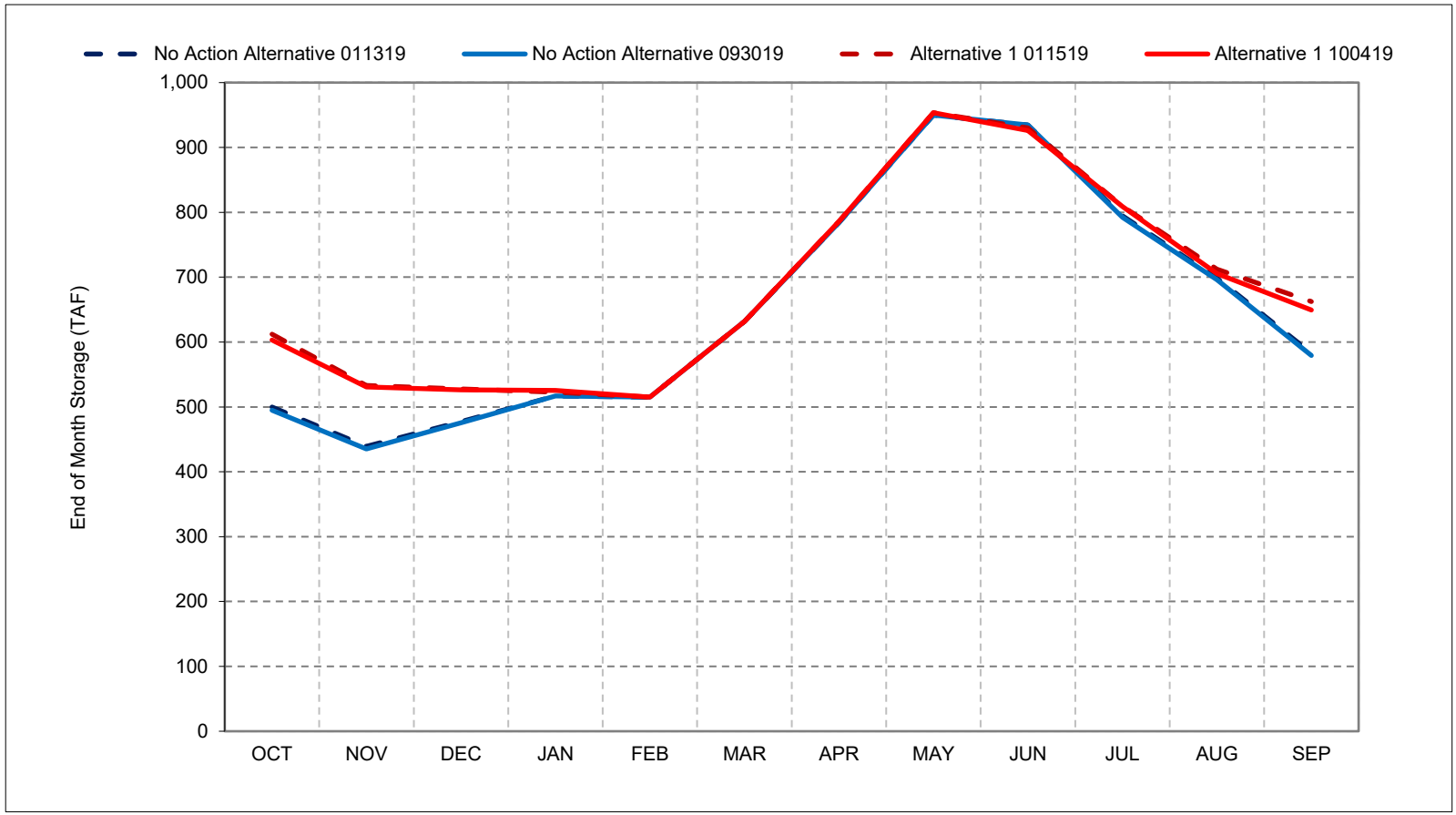



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-2. Folsom Lake Storage, Wet Year Average Storage

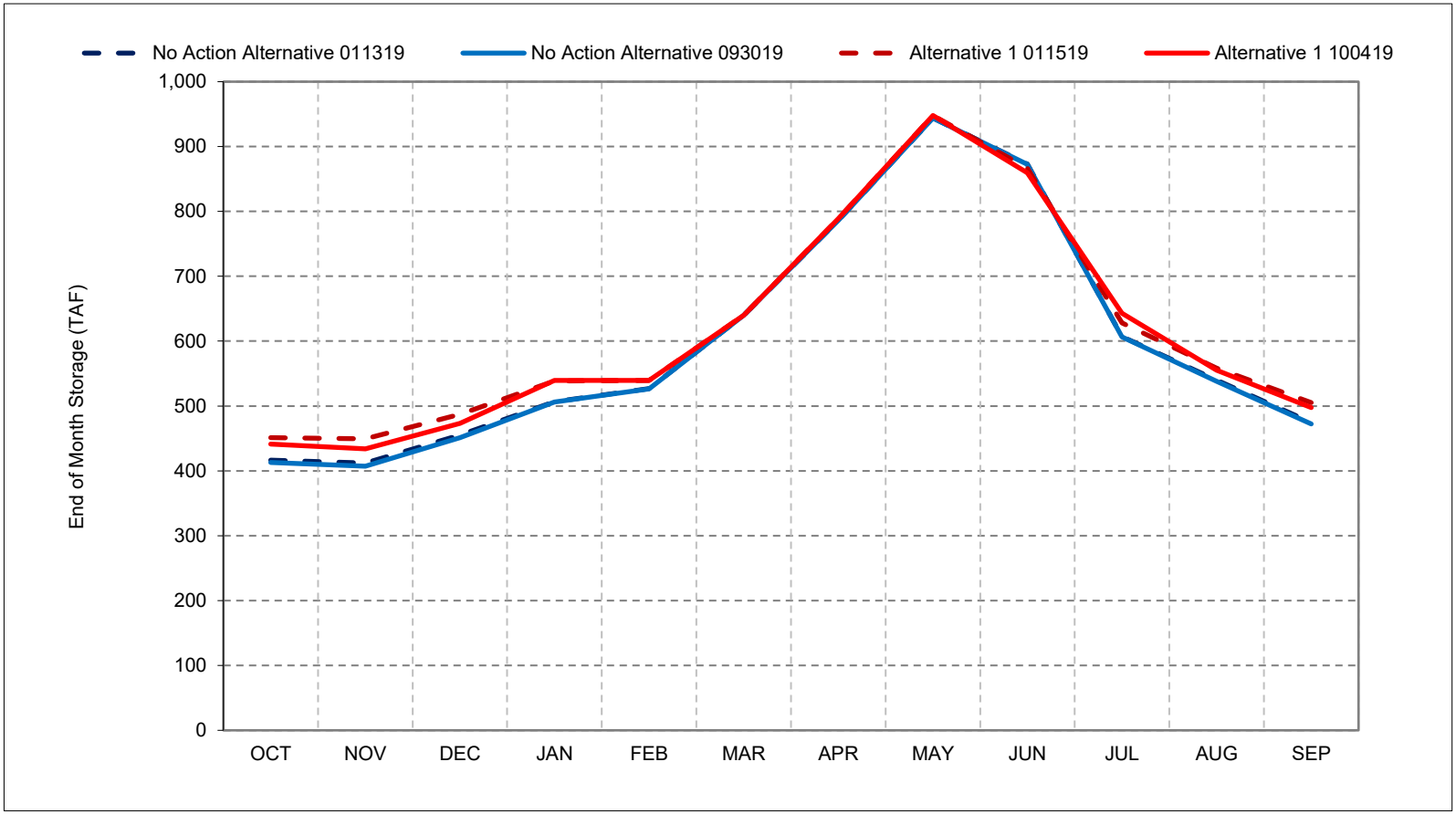



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-3. Folsom Lake Storage, Above Normal Year Average Storage

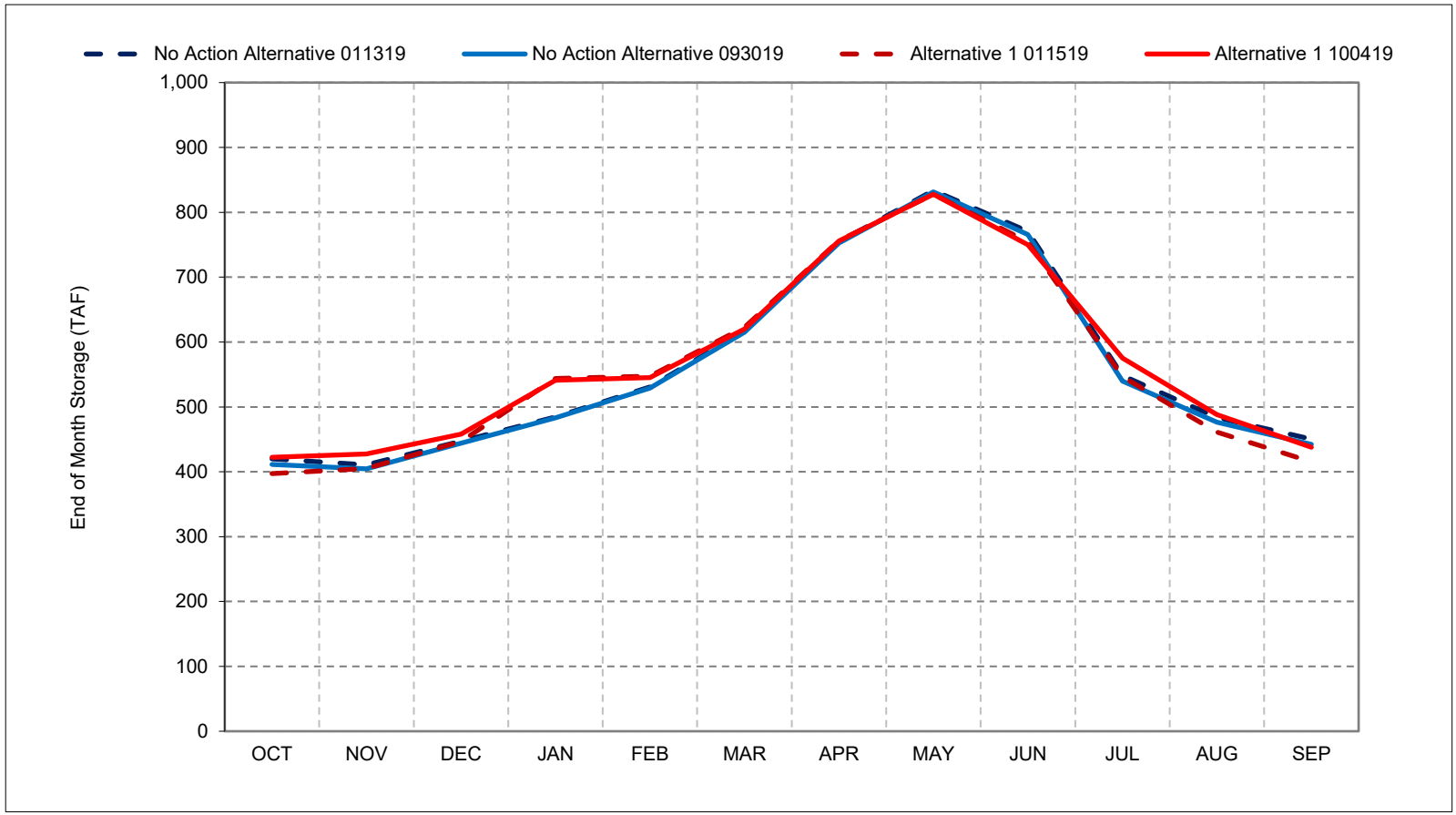



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-4. Folsom Lake Storage, Below Normal Year Average Storage

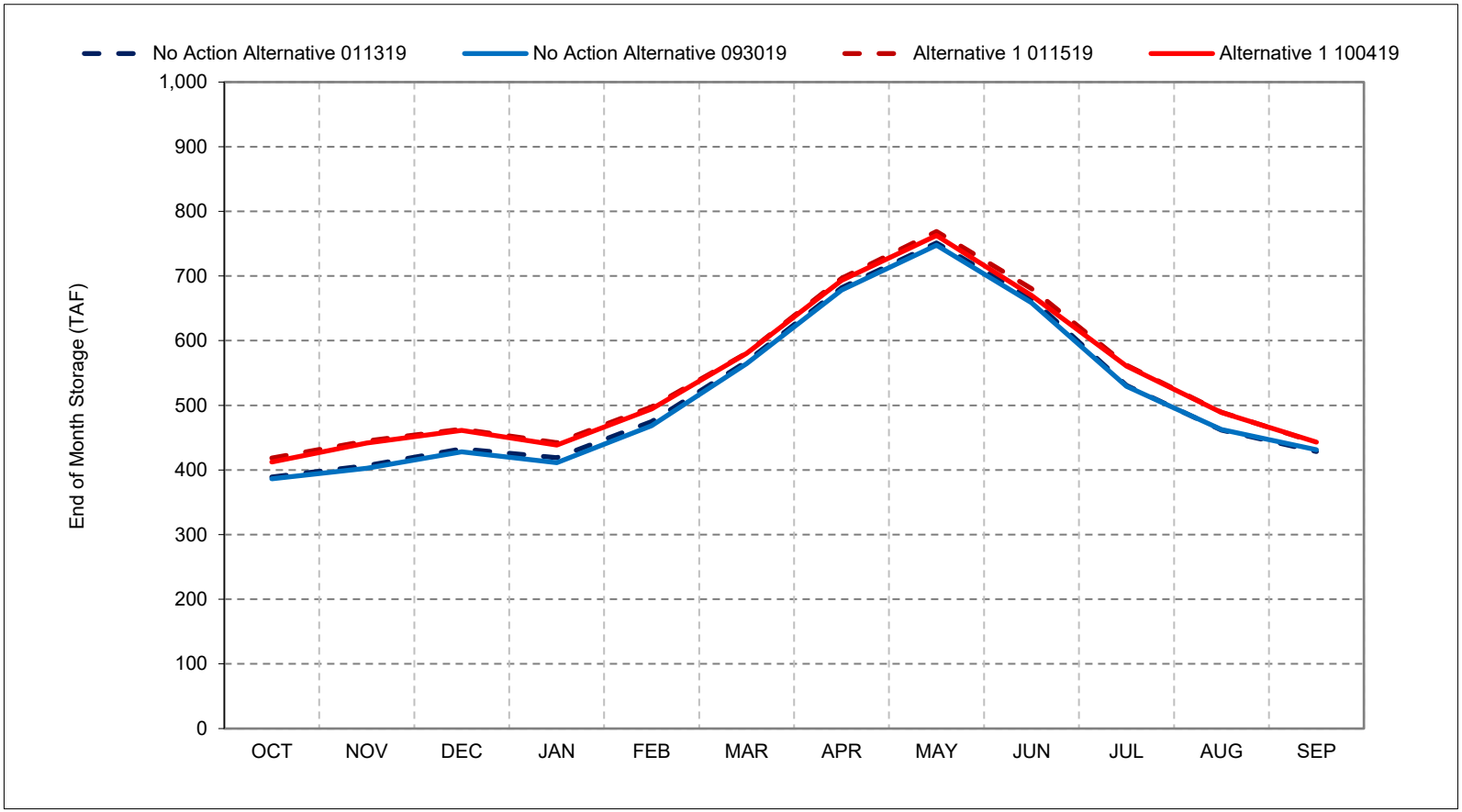



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-5. Folsom Lake Storage, Dry Year Average Storage

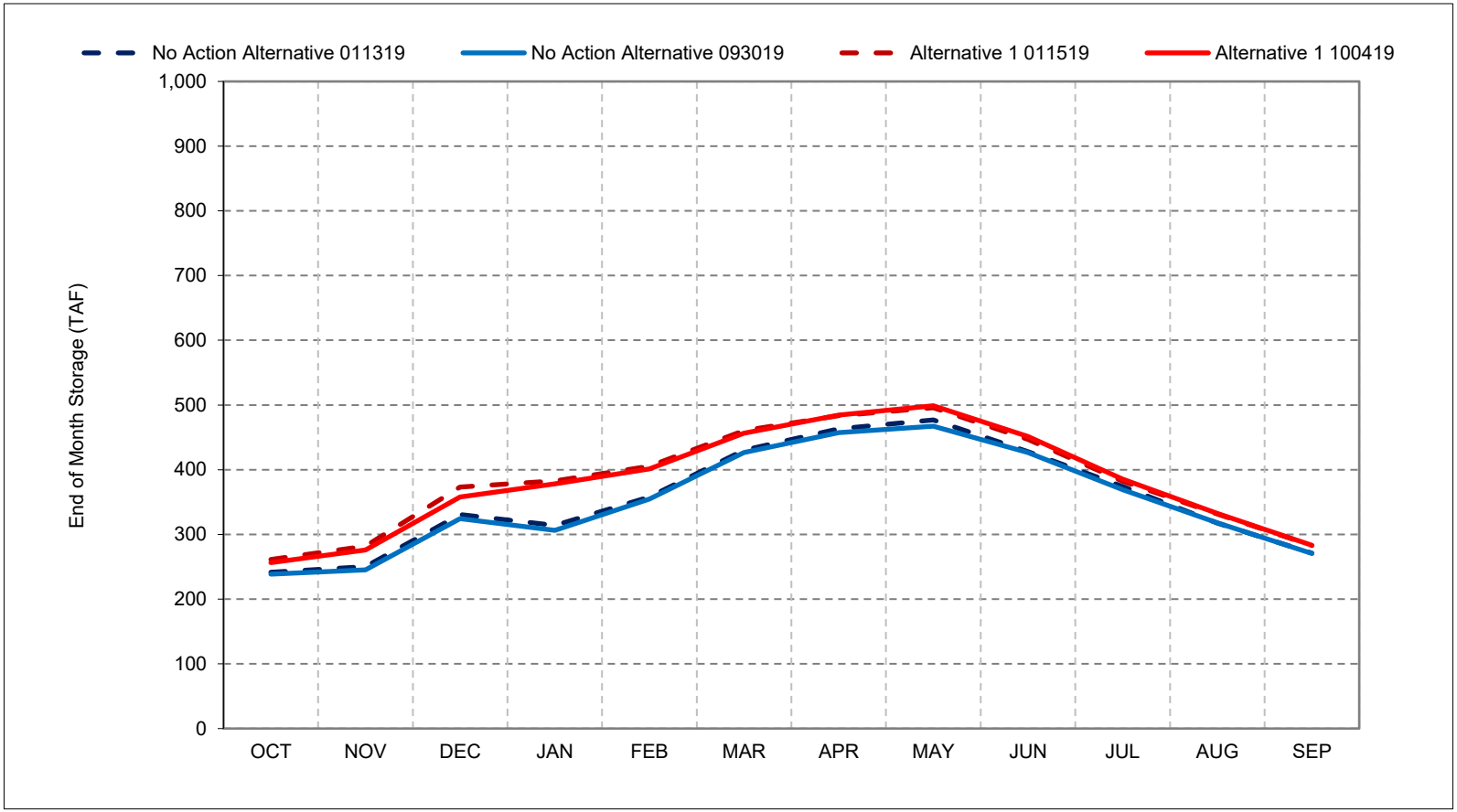



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-6. Folsom Lake Storage, Critical Year Average Storage

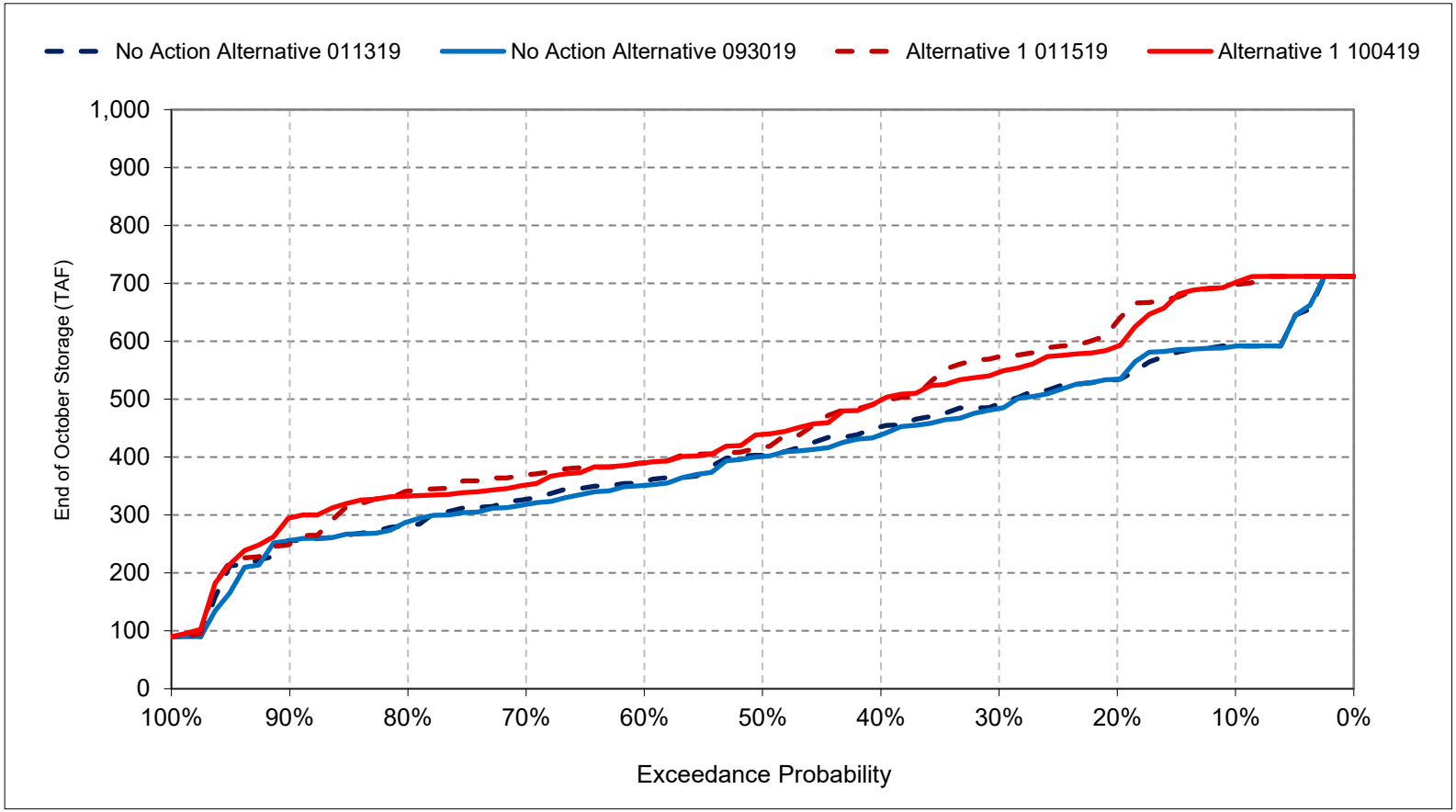



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

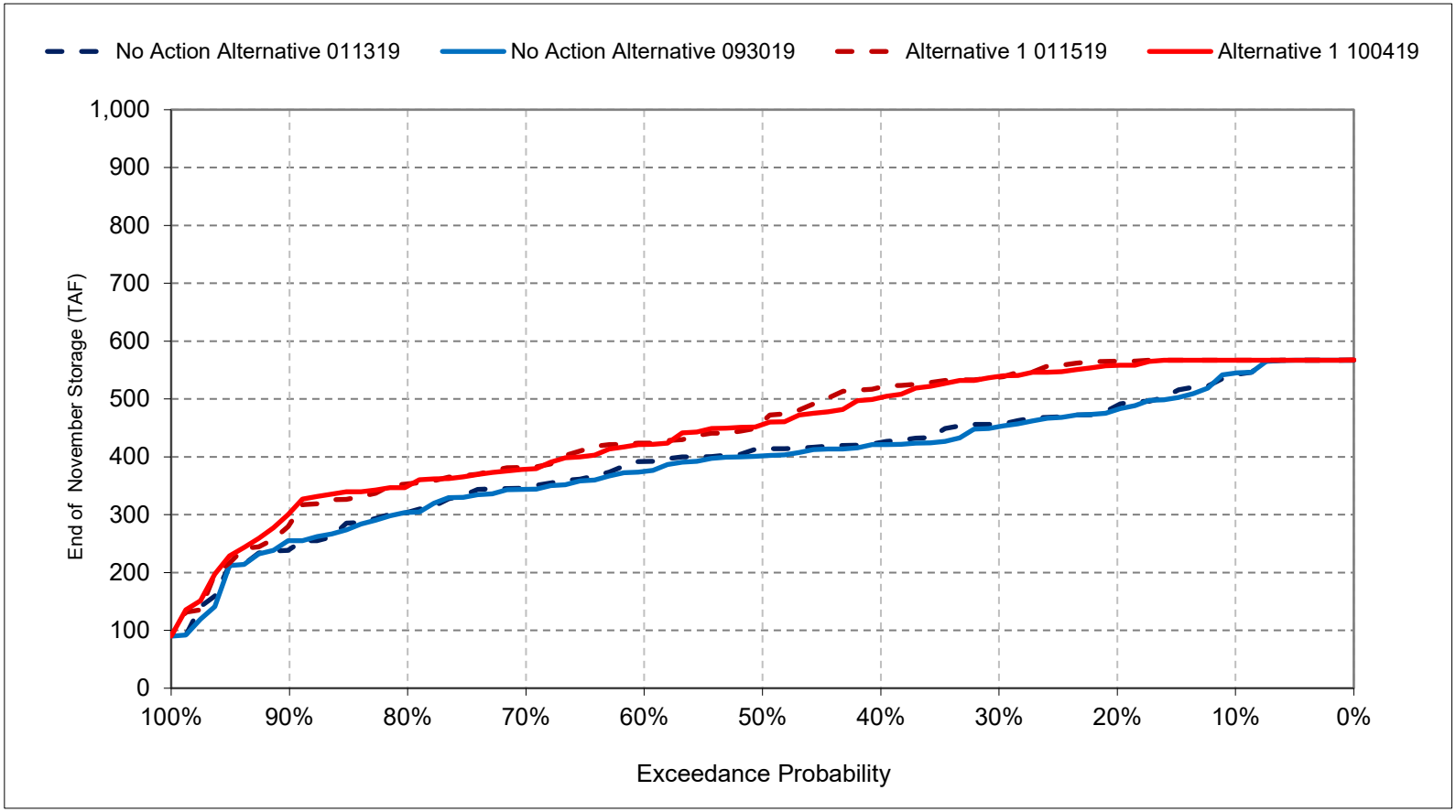
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-7. Folsom Lake Storage, End of October Storage



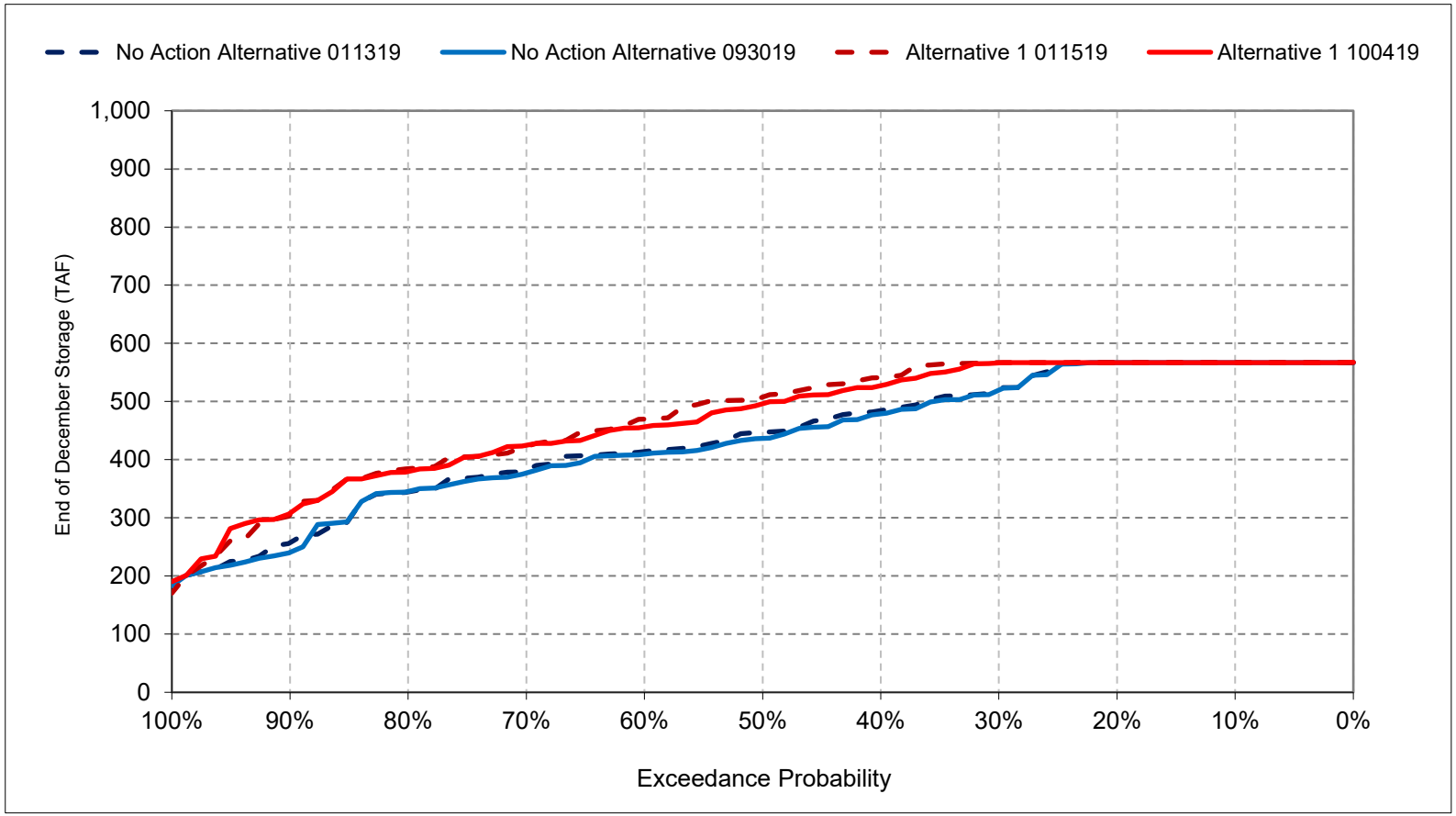

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-8. Folsom Lake Storage, End of November Storage



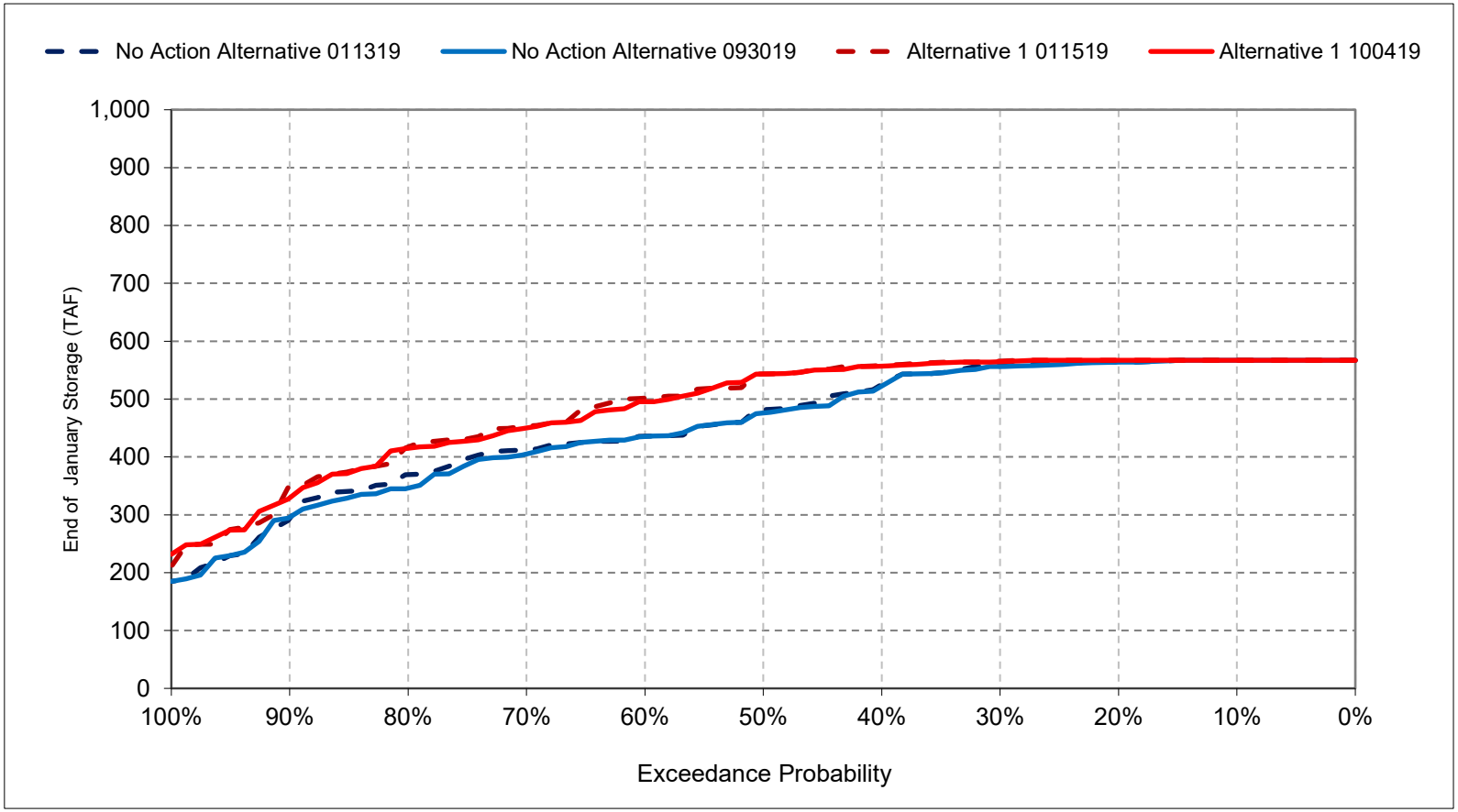

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-9. Folsom Lake Storage, End of December Storage



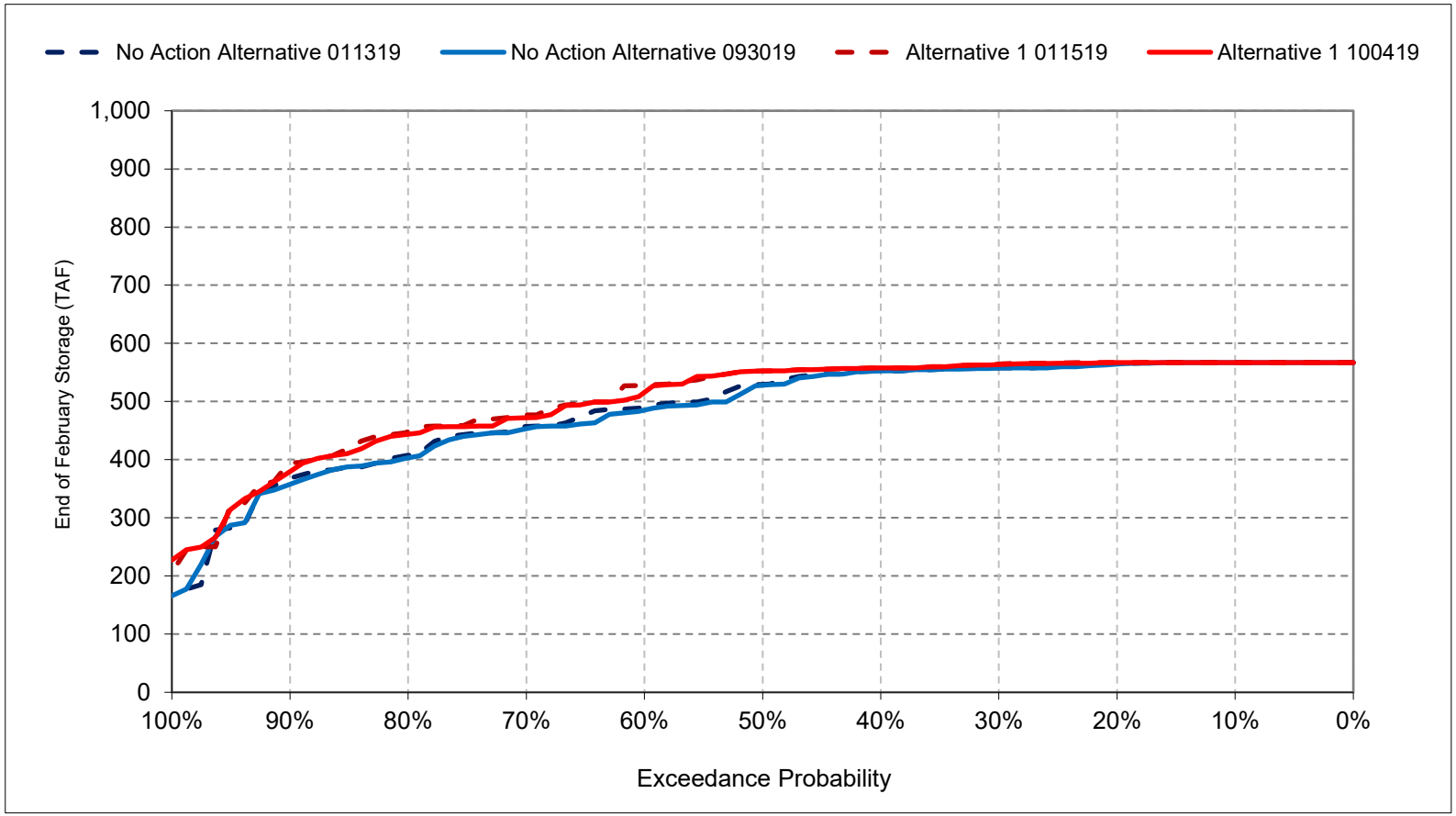

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-10. Folsom Lake Storage, End of January Storage



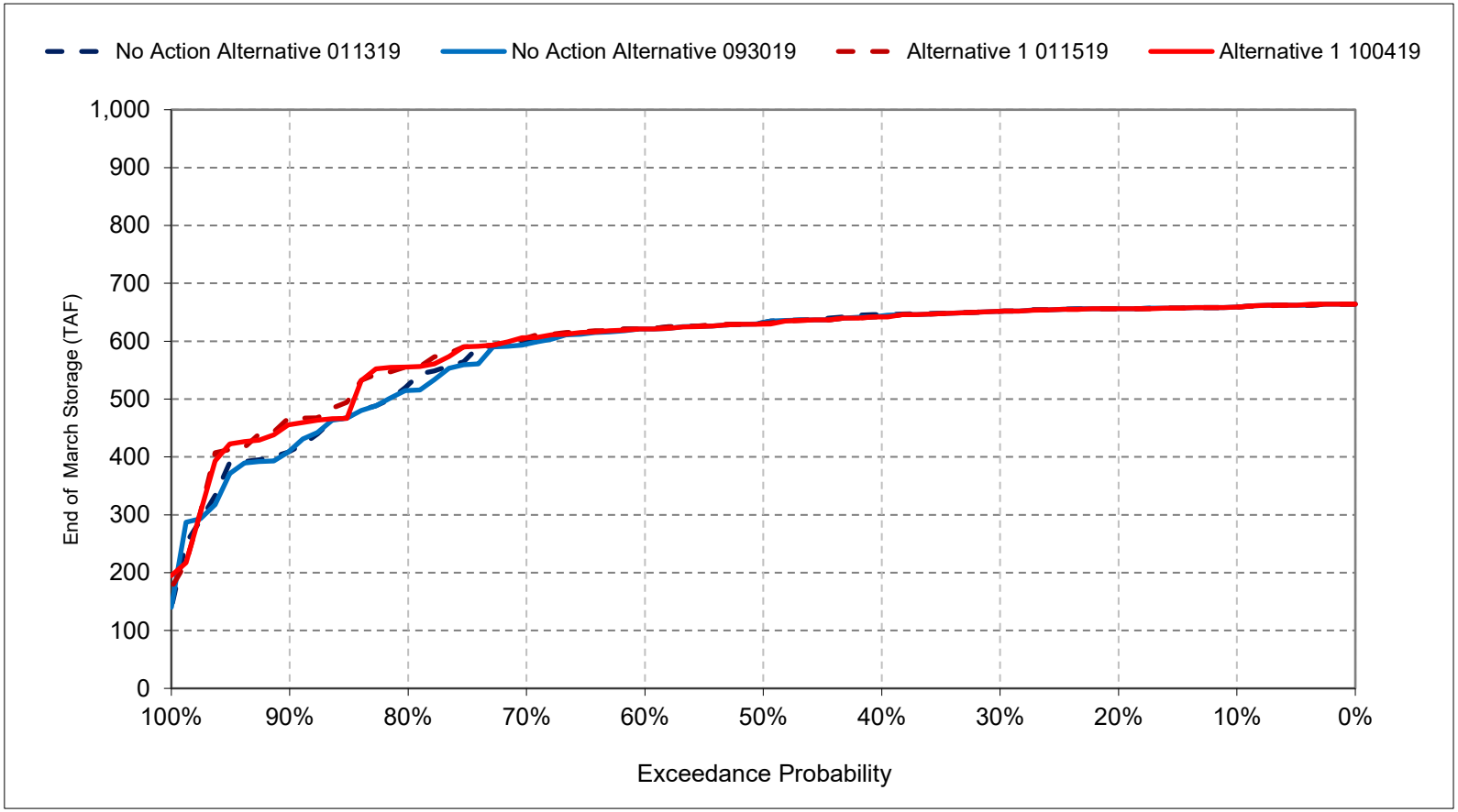

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-11. Folsom Lake Storage, End of February Storage



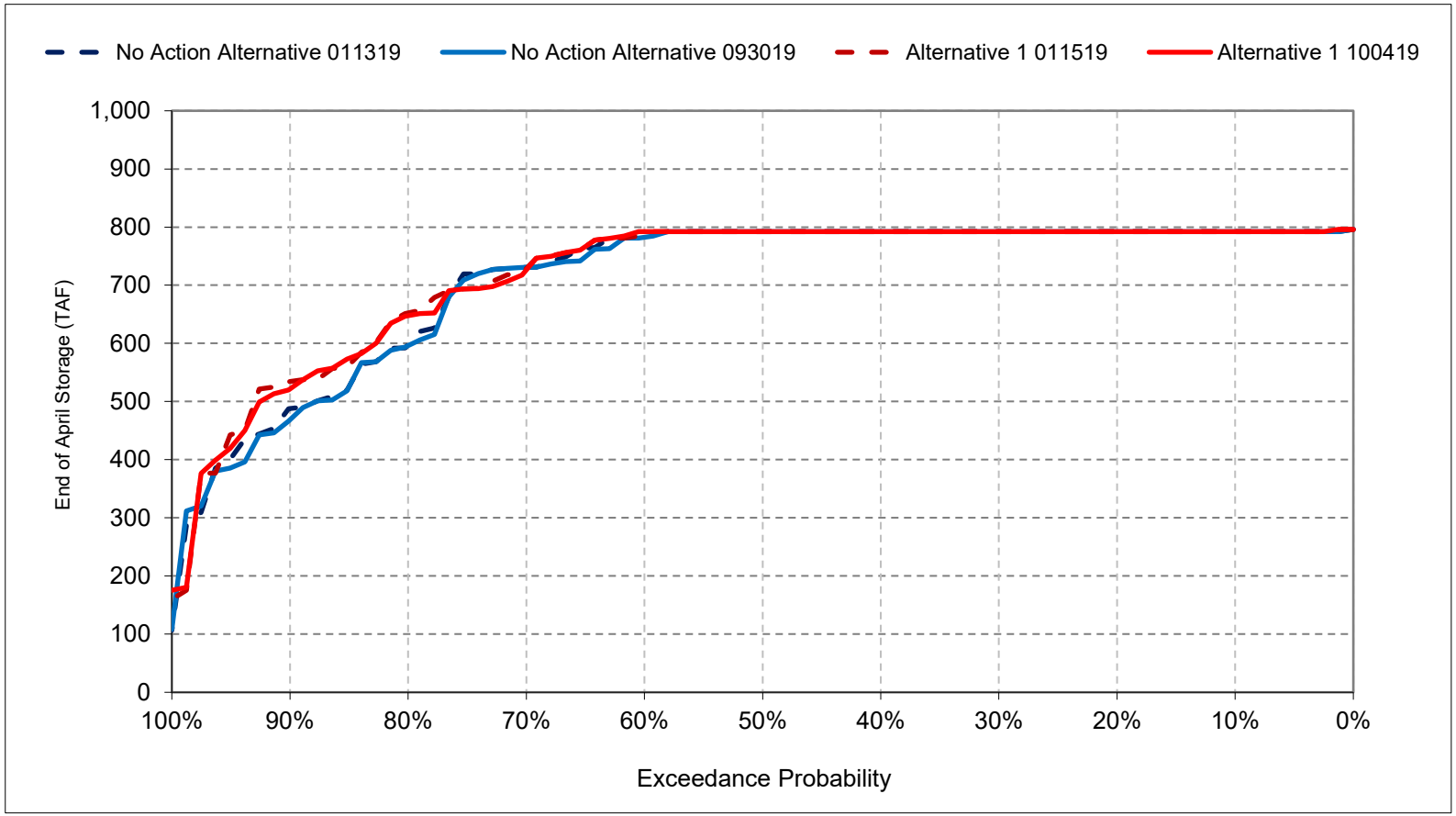

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-12. Folsom Lake Storage, End of March Storage



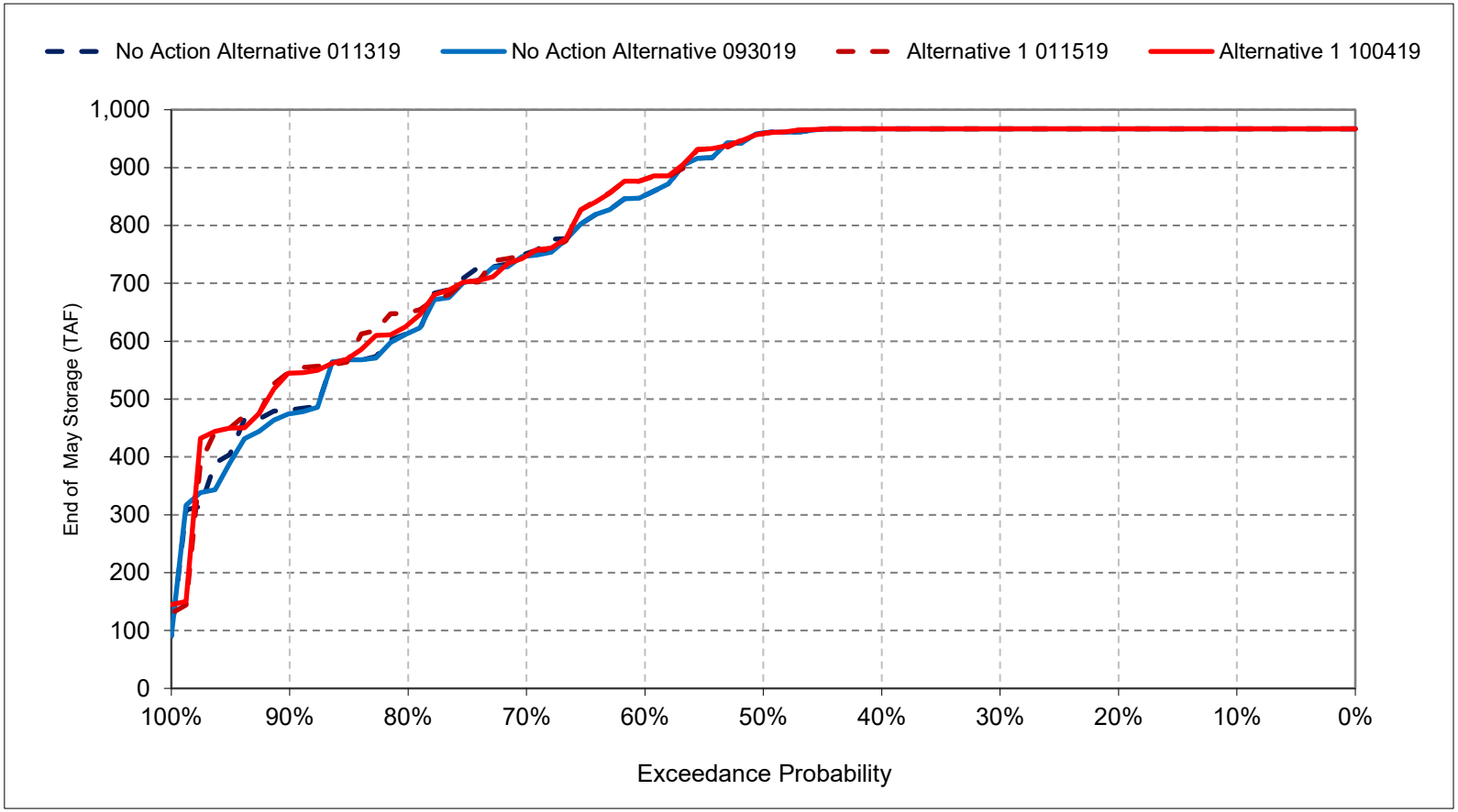

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-13. Folsom Lake Storage, End of April Storage



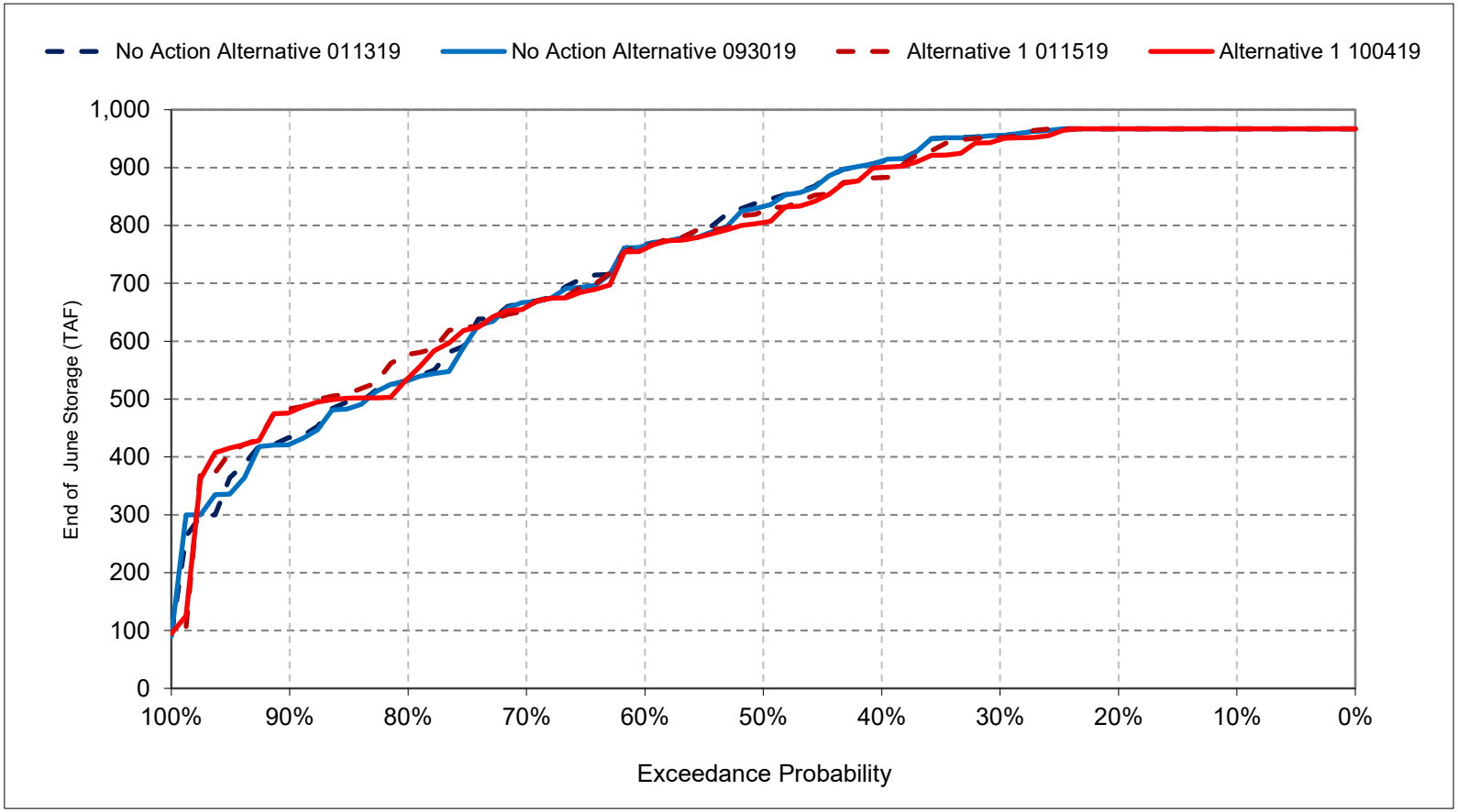

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-14. Folsom Lake Storage, End of May Storage



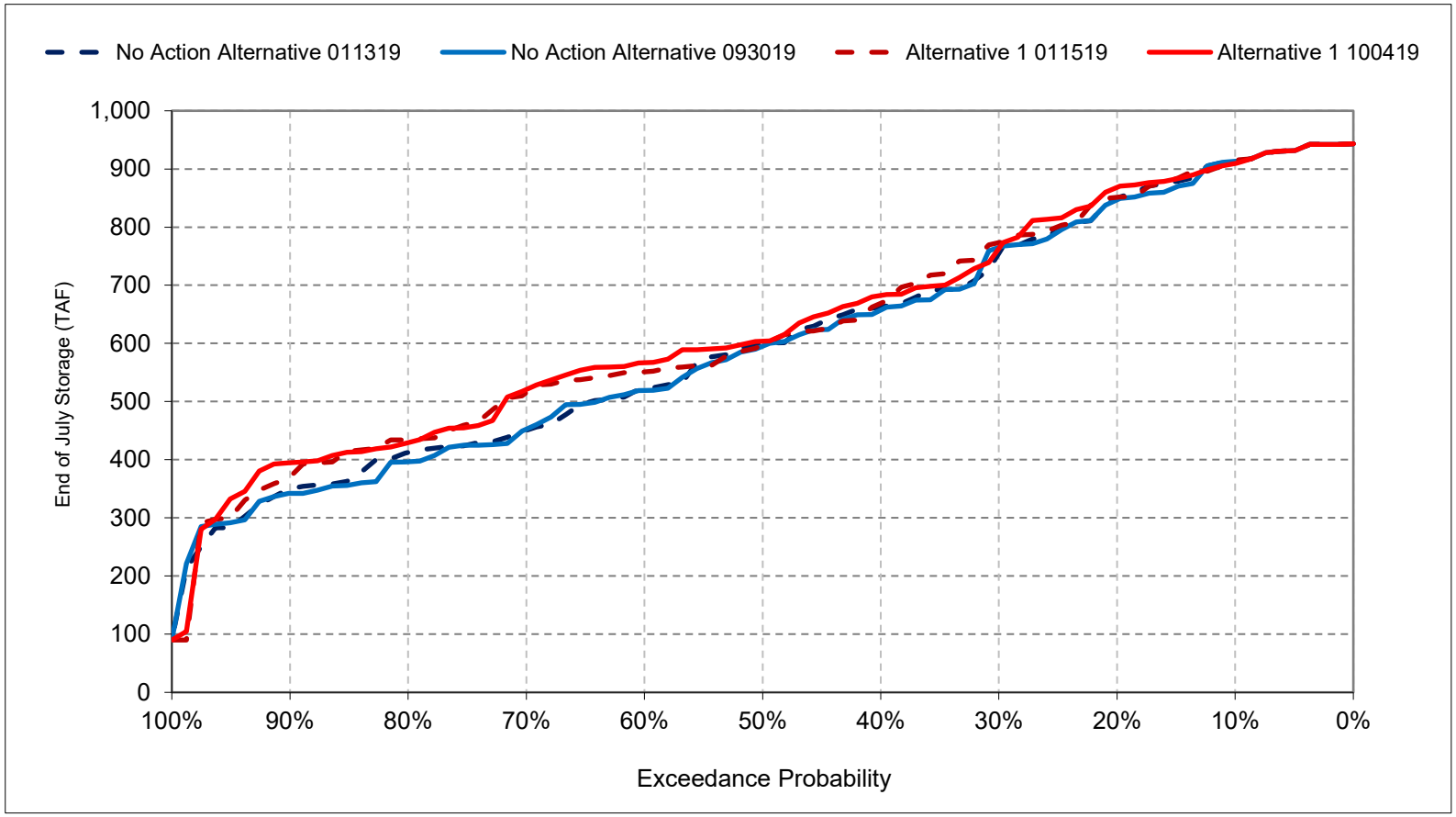

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-15. Folsom Lake Storage, End of June Storage



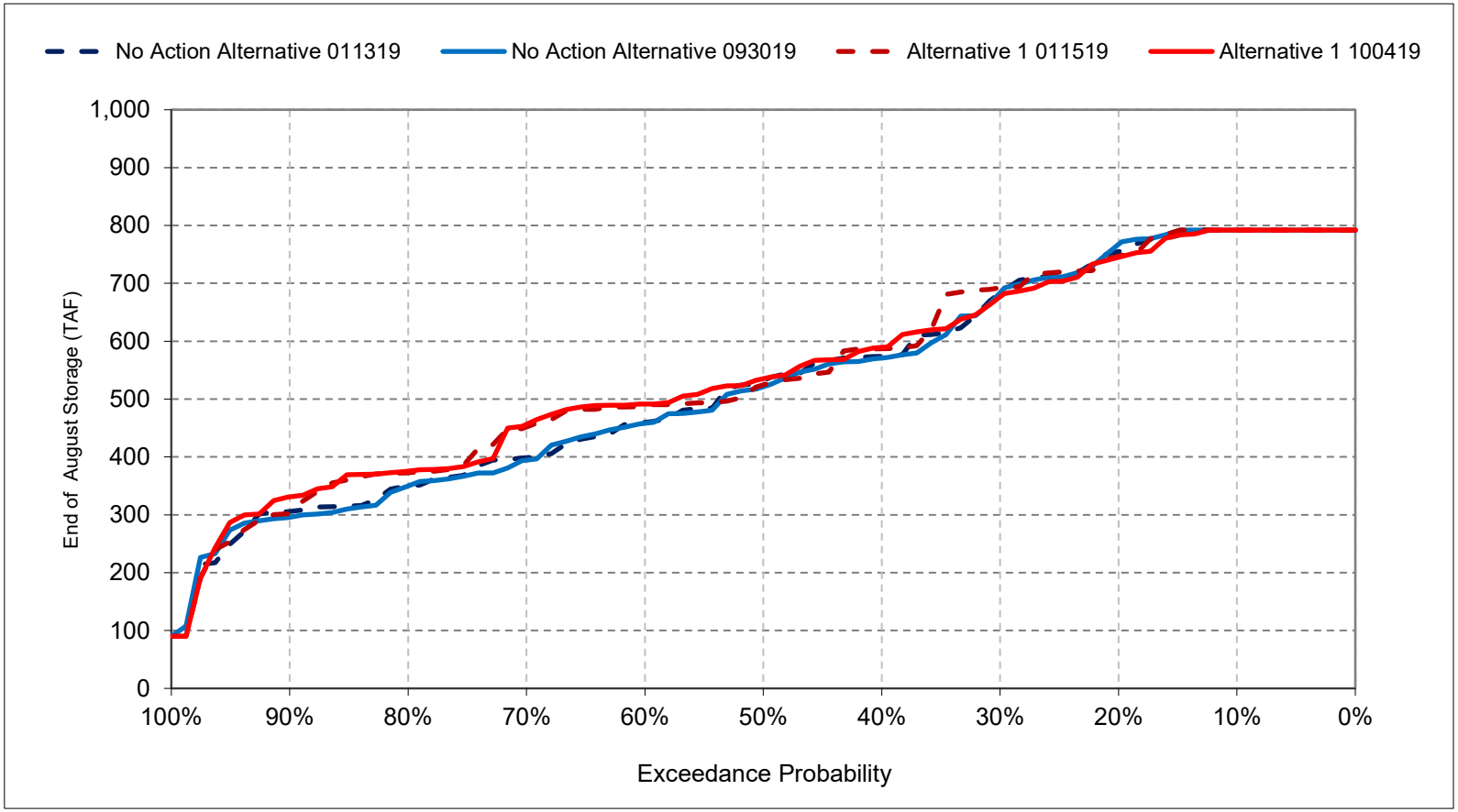

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-16. Folsom Lake Storage, End of July Storage



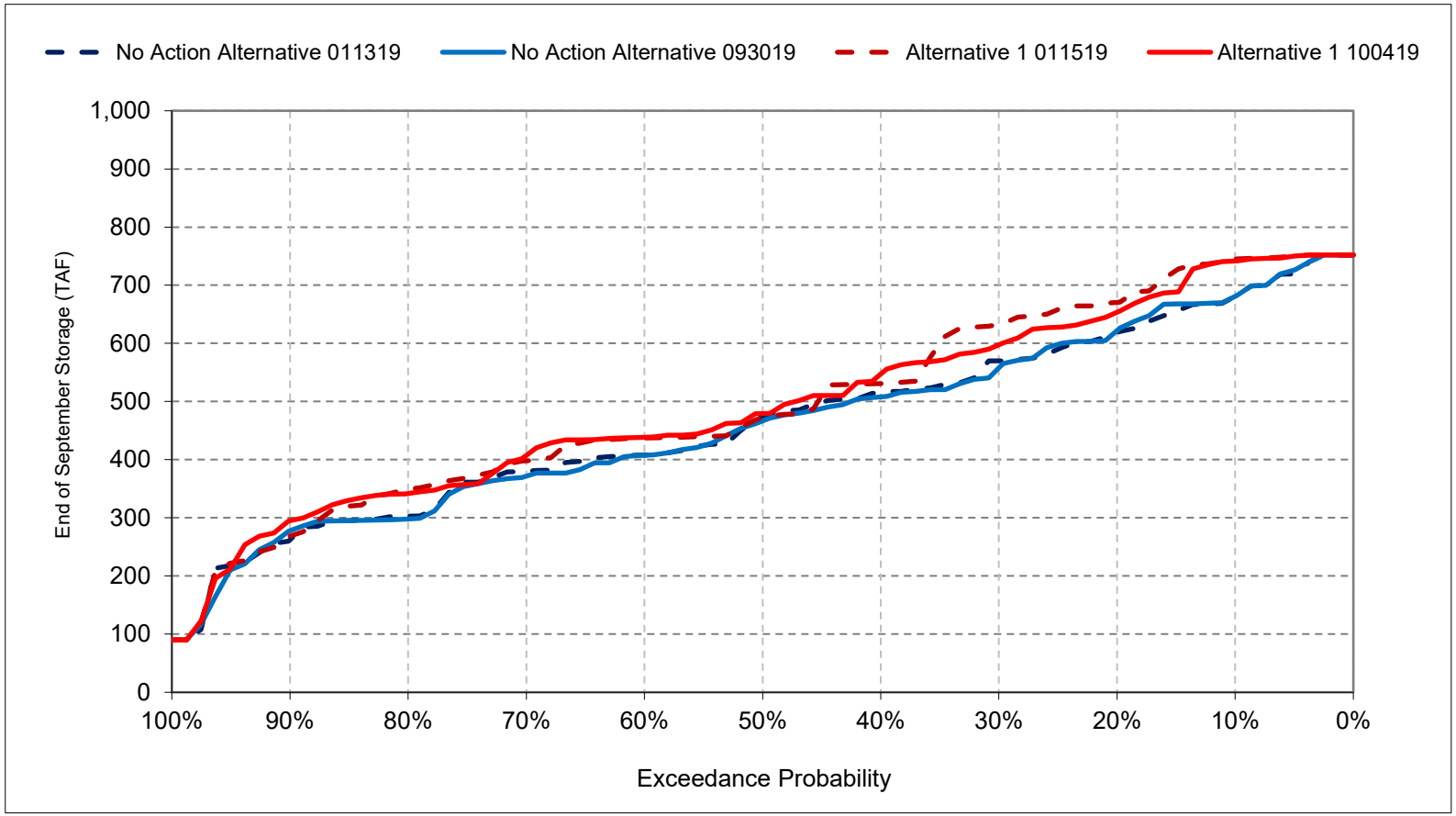

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-17. Folsom Lake Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-18. Folsom Lake Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 5a-1. Folsom Lake Elevation, End of Month Elevation

## No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 427 | 421 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 438 |
| 20% | 420 | 415 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 455 | 445 | 431 |
| 30% | 415 | 411 | 419 | 423 | 423 | 435 | 449 | 466 | 465 | 445 | 438 | 425 |
| 40% | 410 | 407 | 414 | 419 | 423 | 434 | 449 | 466 | 461 | 436 | 425 | 418 |
| 50% | 404 | 405 | 409 | 414 | 420 | 432 | 449 | 465 | 454 | 428 | 420 | 413 |
| 60% | 397 | 403 | 405 | 408 | 415 | 431 | 449 | 455 | 447 | 419 | 411 | 405 |
| 70% | 392 | 396 | 401 | 405 | 411 | 428 | 443 | 445 | 437 | 410 | 403 | 401 |
| 80% | 385 | 389 | 395 | 399 | 405 | 419 | 428 | 430 | 420 | 405 | 396 | 388 |
| 90% | 380 | 377 | 380 | 387 | 399 | 405 | 415 | 414 | 408 | 396 | 389 | 381 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 402 | 401 | 407 | 410 | 414 | 426 | 439 | 450 | 444 | 427 | 418 | 409 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 415 | 408 | 413 | 418 | 418 | 432 | 448 | 464 | 463 | 448 | 439 | 425 |
| Above Normal (16%) | 405 | 404 | 410 | 417 | 419 | 433 | 448 | 464 | 457 | 429 | 421 | 413 |
| Below Normal (13%) | 404 | 403 | 407 | 414 | 420 | 431 | 445 | 453 | 446 | 421 | 413 | 409 |
| Dry (24%) | 400 | 403 | 406 | 405 | 413 | 424 | 437 | 444 | 435 | 419 | 410 | 406 |
| Critical (15%) | 371 | 373 | 391 | 388 | 394 | 405 | 408 | 409 | 402 | 395 | 385 | 376 |

## Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 424 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 444 |
| 20% | 433 | 424 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 455 | 445 | 437 |
| 30% | 425 | 421 | 424 | 424 | 424 | 435 | 449 | 466 | 465 | 447 | 439 | 433 |
| 40% | 415 | 419 | 421 | 423 | 423 | 434 | 449 | 466 | 458 | 437 | 427 | 420 |
| 50% | 406 | 411 | 417 | 421 | 423 | 432 | 449 | 465 | 452 | 428 | 419 | 412 |
| 60% | 402 | 406 | 412 | 416 | 420 | 431 | 449 | 458 | 446 | 422 | 415 | 408 |
| 70% | 399 | 401 | 406 | 410 | 413 | 429 | 443 | 445 | 436 | 418 | 410 | 403 |
| 80% | 395 | 397 | 402 | 406 | 410 | 423 | 435 | 435 | 426 | 408 | 400 | 396 |
| 90% | 379 | 385 | 389 | 396 | 403 | 412 | 420 | 422 | 414 | 399 | 389 | 382 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 408 | 407 | 412 | 414 | 416 | 427 | 440 | 451 | 444 | 428 | 419 | 413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 430 | 420 | 419 | 419 | 418 | 432 | 448 | 465 | 462 | 450 | 440 | 435 |
| Above Normal (16%) | 410 | 409 | 414 | 421 | 421 | 433 | 449 | 464 | 456 | 431 | 423 | 417 |
| Below Normal (13%) | 400 | 402 | 408 | 421 | 422 | 431 | 445 | 452 | 445 | 421 | 409 | 403 |
| Dry (24%) | 405 | 409 | 411 | 408 | 415 | 426 | 439 | 446 | 437 | 423 | 414 | 408 |
| Critical (15%) | 374 | 380 | 397 | 399 | 402 | 409 | 411 | 411 | 403 | 394 | 387 | 378 |

## Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 20% | 13 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 6 |
| 30% | 10 | 10 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 8 |
| 40% | 5 | 12 | 7 | 4 | 1 | 0 | 0 | 0 | -3 | 1 | 2 | 2 |
| 50% | 2 | 6 | 8 | 8 | 3 | 0 | 0 | 0 | -2 | 0 | -1 | 0 |
| 60% | 5 | 4 | 7 | 8 | 5 | 0 | 0 | 3 | 0 | 4 | 4 | 4 |
| 70% | 7 | 6 | 5 | 5 | 2 | 1 | 0 | 0 | -1 | 8 | 7 | 2 |
| 80% | 10 | 8 | 6 | 6 | 5 | 4 | 7 | 4 | 5 | 3 | 4 | 8 |
| 90% | -1 | 8 | 9 | 9 | 4 | 7 | 6 | 8 | 6 | 3 | 0 | 1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7 | 7 | 5 | 4 | 2 | 1 | 1 | 1 | 0 | 2 | 2 | 4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14 | 12 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 10 |
| Above Normal (16%) | 5 | 5 | 4 | 4 | 2 | 0 | 0 | 0 | -1 | 3 | 2 | 4 |
| Below Normal (13%) | -4 | -1 | 0 | 8 | 2 | 1 | 0 | 0 | -2 | 0 | -3 | -6 |
| Dry (24%) | 5 | 6 | 5 | 3 | 3 | 2 | 2 | 2 | 2 | 4 | 4 | 2 |
| Critical (15%) | 4 | 6 | 6 | 11 | 8 | 4 | 3 | 2 | 1 | -1 | 2 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5a-2. Folsom Lake Elevation, End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 427 | 422 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 438 |
| 20% | 420 | 414 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 454 | 447 | 431 |
| 30% | 414 | 410 | 418 | 423 | 423 | 435 | 449 | 466 | 465 | 446 | 438 | 423 |
| 40% | 408 | 406 | 413 | 419 | 423 | 434 | 449 | 466 | 461 | 436 | 425 | 417 |
| 50% | 404 | 404 | 408 | 413 | 419 | 432 | 449 | 465 | 453 | 428 | 419 | 412 |
| 60% | 396 | 400 | 405 | 408 | 414 | 431 | 448 | 455 | 446 | 418 | 411 | 405 |
| 70% | 391 | 395 | 401 | 404 | 410 | 428 | 443 | 445 | 437 | 410 | 403 | 400 |
| 80% | 386 | 389 | 395 | 395 | 404 | 418 | 428 | 430 | 420 | 403 | 396 | 387 |
| 90% | 380 | 380 | 377 | 387 | 397 | 405 | 412 | 413 | 406 | 395 | 387 | 384 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 401 | 400 | 406 | 409 | 413 | 426 | 439 | 449 | 444 | 426 | 417 | 409 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 414 | 407 | 413 | 418 | 418 | 432 | 448 | 464 | 463 | 448 | 438 | 425 |
| Above Normal (16%) | 405 | 404 | 410 | 417 | 419 | 433 | 448 | 464 | 457 | 429 | 421 | 413 |
| Below Normal (13%) | 403 | 402 | 407 | 414 | 420 | 430 | 445 | 453 | 446 | 420 | 412 | 407 |
| Dry (24%) | 400 | 403 | 406 | 403 | 412 | 424 | 436 | 444 | 434 | 419 | 410 | 406 |
| Critical (15%) | 370 | 372 | 390 | 387 | 394 | 404 | 407 | 408 | 402 | 394 | 385 | 376 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 424 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 460 | 449 | 444 |
| 20% | 427 | 423 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 456 | 444 | 435 |
| 30% | 422 | 421 | 424 | 424 | 424 | 435 | 449 | 466 | 464 | 446 | 438 | 428 |
| 40% | 416 | 416 | 419 | 423 | 423 | 434 | 449 | 466 | 460 | 438 | 427 | 422 |
| 50% | 408 | 411 | 416 | 421 | 423 | 432 | 449 | 465 | 450 | 429 | 420 | 413 |
| 60% | 402 | 406 | 411 | 415 | 418 | 431 | 449 | 458 | 446 | 424 | 415 | 408 |
| 70% | 396 | 401 | 407 | 410 | 413 | 429 | 443 | 445 | 436 | 419 | 411 | 404 |
| 80% | 393 | 396 | 401 | 405 | 409 | 423 | 434 | 432 | 421 | 407 | 400 | 395 |
| 90% | 387 | 388 | 389 | 393 | 401 | 410 | 419 | 422 | 413 | 403 | 393 | 387 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 408 | 407 | 411 | 414 | 416 | 427 | 440 | 450 | 444 | 429 | 420 | 413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 428 | 420 | 419 | 419 | 418 | 432 | 448 | 465 | 462 | 450 | 440 | 434 |
| Above Normal (16%) | 409 | 407 | 412 | 421 | 421 | 433 | 449 | 464 | 456 | 433 | 423 | 416 |
| Below Normal (13%) | 405 | 406 | 409 | 421 | 422 | 431 | 445 | 452 | 444 | 425 | 414 | 407 |
| Dry (24%) | 404 | 409 | 411 | 407 | 415 | 426 | 438 | 445 | 435 | 423 | 414 | 408 |
| Critical (15%) | 374 | 379 | 395 | 399 | 401 | 409 | 411 | 412 | 404 | 395 | 387 | 378 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 13 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 20% | 7 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | -2 | 4 |
| 30% | 8 | 11 | 6 | 1 | 1 | 0 | 0 | 0 | -1 | 0 | -1 | 5 |
| 40% | 7 | 10 | 6 | 4 | 1 | 0 | 0 | 0 | -1 | 3 | 2 | 5 |
| 50% | 5 | 7 | 7 | 8 | 3 | 0 | 0 | 0 | -3 | 1 | 2 | 2 |
| 60% | 6 | 6 | 6 | 7 | 4 | 0 | 1 | 3 | -1 | 6 | 4 | 4 |
| 70% | 6 | 6 | 6 | 6 | 2 | 1 | 0 | 0 | -1 | 9 | 8 | 5 |
| 80% | 7 | 8 | 6 | 10 | 5 | 5 | 6 | 2 | 1 | 4 | 4 | 7 |
| 90% | 7 | 9 | 12 | 5 | 4 | 6 | 7 | 9 | 7 | 8 | 6 | 3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7 | 7 | 5 | 5 | 2 | 1 | 1 | 1 | 0 | 3 | 2 | 4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14 | 12 | 7 | 1 | 0 | 0 | 0 | 0 | -1 | 2 | 1 | 9 |
| Above Normal (16%) | 4 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | -1 | 4 | 2 | 3 |
| Below Normal (13%) | 2 | 3 | 2 | 8 | 2 | 1 | 0 | 0 | -2 | 5 | 2 | -1 |
| Dry (24%) | 4 | 6 | 5 | 4 | 3 | 2 | 2 | 2 | 1 | 4 | 4 | 2 |
| Critical (15%) | 4 | 7 | 6 | 12 | 8 | 4 | 4 | 4 | 2 | 1 | 1 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5a-3. Folsom Lake Elevation, End of Month Elevation

### No Action Alternative 011319

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 427 | 421 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 438 |
| 20% | 420 | 415 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 455 | 445 | 431 |
| 30% | 415 | 411 | 419 | 423 | 423 | 435 | 449 | 466 | 465 | 445 | 438 | 425 |
| 40% | 410 | 407 | 414 | 419 | 423 | 434 | 449 | 466 | 461 | 436 | 425 | 418 |
| 50% | 404 | 405 | 409 | 414 | 420 | 432 | 449 | 465 | 454 | 428 | 420 | 413 |
| 60% | 397 | 403 | 405 | 408 | 415 | 431 | 449 | 455 | 447 | 419 | 411 | 405 |
| 70% | 392 | 396 | 401 | 405 | 411 | 428 | 443 | 445 | 437 | 410 | 403 | 401 |
| 80% | 385 | 389 | 395 | 399 | 405 | 419 | 428 | 430 | 420 | 405 | 396 | 388 |
| 90% | 380 | 377 | 380 | 387 | 399 | 405 | 415 | 414 | 408 | 396 | 389 | 381 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 402 | 401 | 407 | 410 | 414 | 426 | 439 | 450 | 444 | 427 | 418 | 409 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 415 | 408 | 413 | 418 | 418 | 432 | 448 | 464 | 463 | 448 | 439 | 425 |
| Above Normal (16%) | 405 | 404 | 410 | 417 | 419 | 433 | 448 | 464 | 457 | 429 | 421 | 413 |
| Below Normal (13%) | 404 | 403 | 407 | 414 | 420 | 431 | 445 | 453 | 446 | 421 | 413 | 409 |
| Dry (24%) | 400 | 403 | 406 | 405 | 413 | 424 | 437 | 444 | 435 | 419 | 410 | 406 |
| Critical (15%) | 371 | 373 | 391 | 388 | 394 | 405 | 408 | 409 | 402 | 395 | 385 | 376 |

### No Action Alternative 093019

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 427 | 422 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 438 |
| 20% | 420 | 414 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 454 | 447 | 431 |
| 30% | 414 | 410 | 418 | 423 | 423 | 435 | 449 | 466 | 465 | 446 | 438 | 423 |
| 40% | 408 | 406 | 413 | 419 | 423 | 434 | 449 | 466 | 461 | 436 | 425 | 417 |
| 50% | 404 | 404 | 408 | 413 | 419 | 432 | 449 | 465 | 453 | 428 | 419 | 412 |
| 60% | 396 | 400 | 405 | 408 | 414 | 431 | 448 | 455 | 446 | 418 | 411 | 405 |
| 70% | 391 | 395 | 401 | 404 | 410 | 428 | 443 | 445 | 437 | 410 | 403 | 400 |
| 80% | 386 | 389 | 395 | 395 | 404 | 418 | 428 | 430 | 420 | 403 | 396 | 387 |
| 90% | 380 | 380 | 377 | 387 | 397 | 405 | 412 | 413 | 406 | 395 | 387 | 384 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 401 | 400 | 406 | 409 | 413 | 426 | 439 | 449 | 444 | 426 | 417 | 409 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 414 | 407 | 413 | 418 | 418 | 432 | 448 | 464 | 463 | 448 | 438 | 425 |
| Above Normal (16%) | 405 | 404 | 410 | 417 | 419 | 433 | 448 | 464 | 457 | 429 | 421 | 413 |
| Below Normal (13%) | 403 | 402 | 407 | 414 | 420 | 430 | 445 | 453 | 446 | 420 | 412 | 407 |
| Dry (24%) | 400 | 403 | 406 | 403 | 412 | 424 | 436 | 444 | 434 | 419 | 410 | 406 |
| Critical (15%) | 370 | 372 | 390 | 387 | 394 | 404 | 407 | 408 | 402 | 394 | 385 | 376 |

### No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 30% | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | -2 |
| 40% | -2 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 |
| 50% | 0 | -1 | -1 | -1 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | -1 |
| 60% | -1 | -2 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | -2 | -1 | -1 | -1 | -1 | -1 | 0 | 0 | 0 | 0 | -1 | -1 |
| 80% | 1 | 0 | 0 | -4 | -1 | -1 | 0 | 0 | 0 | -2 | 0 | -1 |
| 90% | 0 | 3 | -3 | 0 | -2 | 0 | -2 | -1 | -1 | -1 | -2 | 3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| Above Normal (16%) | 0 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 |
| Dry (24%) | 0 | 0 | -1 | -1 | -1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| Critical (15%) | -1 | -1 | -1 | -1 | 0 | 0 | -1 | -1 | 0 | -1 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5a-4. Folsom Lake Elevation, End of Month Elevation

### Alternative 1 011519

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 424 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 461 | 449 | 444 |
| 20% | 433 | 424 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 455 | 445 | 437 |
| 30% | 425 | 421 | 424 | 424 | 424 | 435 | 449 | 466 | 465 | 447 | 439 | 433 |
| 40% | 415 | 419 | 421 | 423 | 423 | 434 | 449 | 466 | 458 | 437 | 427 | 420 |
| 50% | 406 | 411 | 417 | 421 | 423 | 432 | 449 | 465 | 452 | 428 | 419 | 412 |
| 60% | 402 | 406 | 412 | 416 | 420 | 431 | 449 | 458 | 446 | 422 | 415 | 408 |
| 70% | 399 | 401 | 406 | 410 | 413 | 429 | 443 | 445 | 436 | 418 | 410 | 403 |
| 80% | 395 | 397 | 402 | 406 | 410 | 423 | 435 | 435 | 426 | 408 | 400 | 396 |
| 90% | 379 | 385 | 389 | 396 | 403 | 412 | 420 | 422 | 414 | 399 | 389 | 382 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 408 | 407 | 412 | 414 | 416 | 427 | 440 | 451 | 444 | 428 | 419 | 413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 430 | 420 | 419 | 419 | 418 | 432 | 448 | 465 | 462 | 450 | 440 | 435 |
| Above Normal (16%) | 410 | 409 | 414 | 421 | 421 | 433 | 449 | 464 | 456 | 431 | 423 | 417 |
| Below Normal (13%) | 400 | 402 | 408 | 421 | 422 | 431 | 445 | 452 | 445 | 421 | 409 | 403 |
| Dry (24%) | 405 | 409 | 411 | 408 | 415 | 426 | 439 | 446 | 437 | 423 | 414 | 408 |
| Critical (15%) | 374 | 380 | 397 | 399 | 402 | 409 | 411 | 411 | 403 | 394 | 387 | 378 |

### Alternative 1 100419

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 424 | 424 | 424 | 424 | 436 | 449 | 466 | 466 | 460 | 449 | 444 |
| 20% | 427 | 423 | 424 | 424 | 424 | 435 | 449 | 466 | 466 | 456 | 444 | 435 |
| 30% | 422 | 421 | 424 | 424 | 424 | 435 | 449 | 466 | 464 | 446 | 438 | 428 |
| 40% | 416 | 416 | 419 | 423 | 423 | 434 | 449 | 466 | 460 | 438 | 427 | 422 |
| 50% | 408 | 411 | 416 | 421 | 423 | 432 | 449 | 465 | 450 | 429 | 420 | 413 |
| 60% | 402 | 406 | 411 | 415 | 418 | 431 | 449 | 458 | 446 | 424 | 415 | 408 |
| 70% | 396 | 401 | 407 | 410 | 413 | 429 | 443 | 445 | 436 | 419 | 411 | 404 |
| 80% | 393 | 396 | 401 | 405 | 409 | 423 | 434 | 432 | 421 | 407 | 400 | 395 |
| 90% | 387 | 388 | 389 | 393 | 401 | 410 | 419 | 422 | 413 | 403 | 393 | 387 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 408 | 407 | 411 | 414 | 416 | 427 | 440 | 450 | 444 | 429 | 420 | 413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 428 | 420 | 419 | 419 | 418 | 432 | 448 | 465 | 462 | 450 | 440 | 434 |
| Above Normal (16%) | 409 | 407 | 412 | 421 | 421 | 433 | 449 | 464 | 456 | 433 | 423 | 416 |
| Below Normal (13%) | 405 | 406 | 409 | 421 | 422 | 431 | 445 | 452 | 444 | 425 | 414 | 407 |
| Dry (24%) | 404 | 409 | 411 | 407 | 415 | 426 | 438 | 445 | 435 | 423 | 414 | 408 |
| Critical (15%) | 374 | 379 | 395 | 399 | 401 | 409 | 411 | 412 | 404 | 395 | 387 | 378 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | -5 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | -2 |
| 30% | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -2 | -4 |
| 40% | 0 | -2 | -2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 |
| 50% | 3 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | -2 | 1 | 1 | 1 |
| 60% | 0 | 0 | -2 | -1 | -2 | 0 | 0 | 0 | -1 | 2 | 0 | 0 |
| 70% | -3 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 80% | -1 | -1 | -1 | 0 | -1 | 0 | -1 | -3 | -5 | -1 | 0 | -1 |
| 90% | 8 | 3 | 1 | -3 | -2 | -1 | -2 | 0 | -1 | 3 | 4 | 5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -2 |
| Above Normal (16%) | -1 | -2 | -2 | 0 | 0 | 0 | 0 | 0 | -1 | 2 | 0 | -1 |
| Below Normal (13%) | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| Dry (24%) | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |

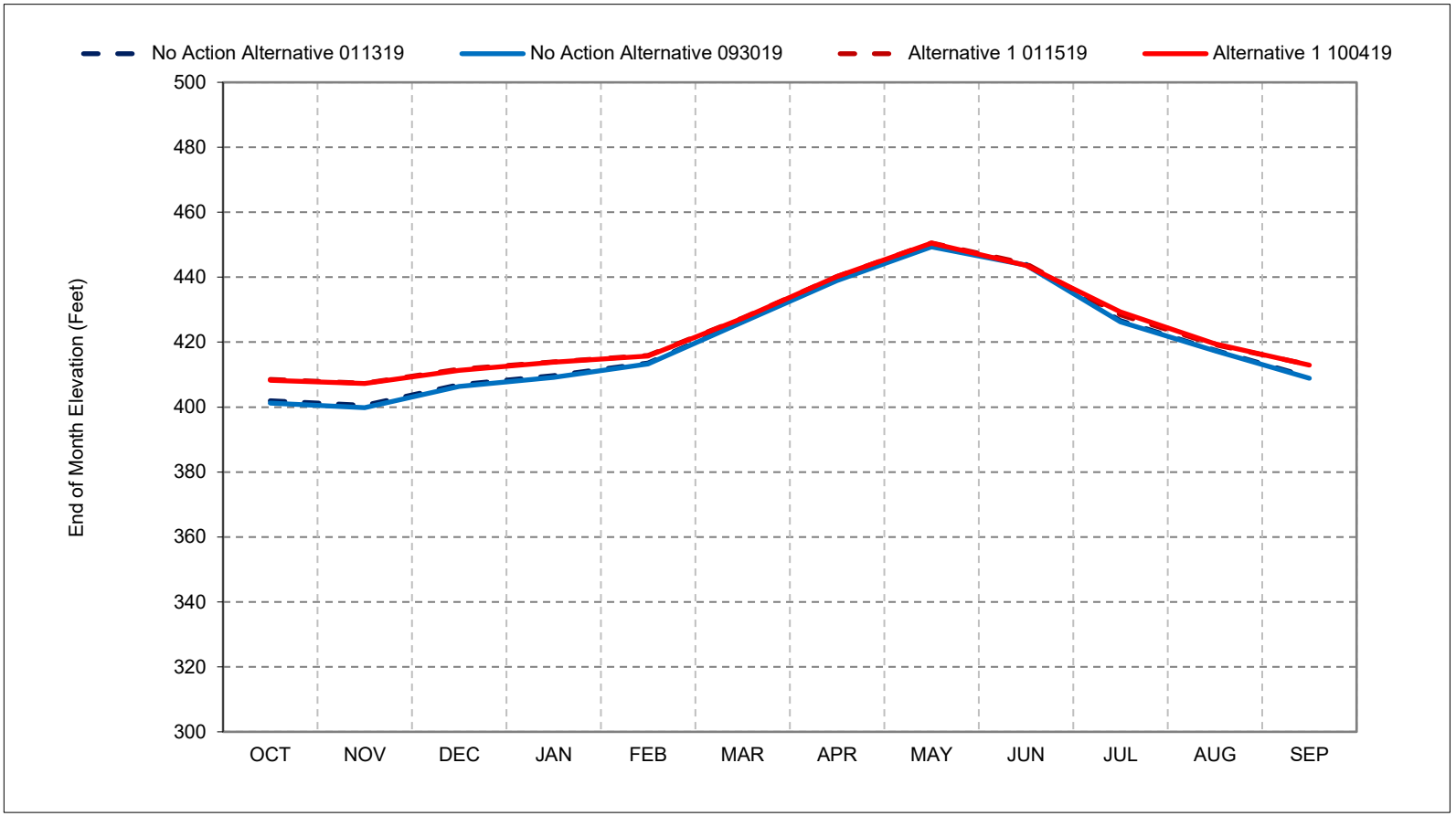
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-1. Folsom Lake Elevation, Long-Term Average Elevation

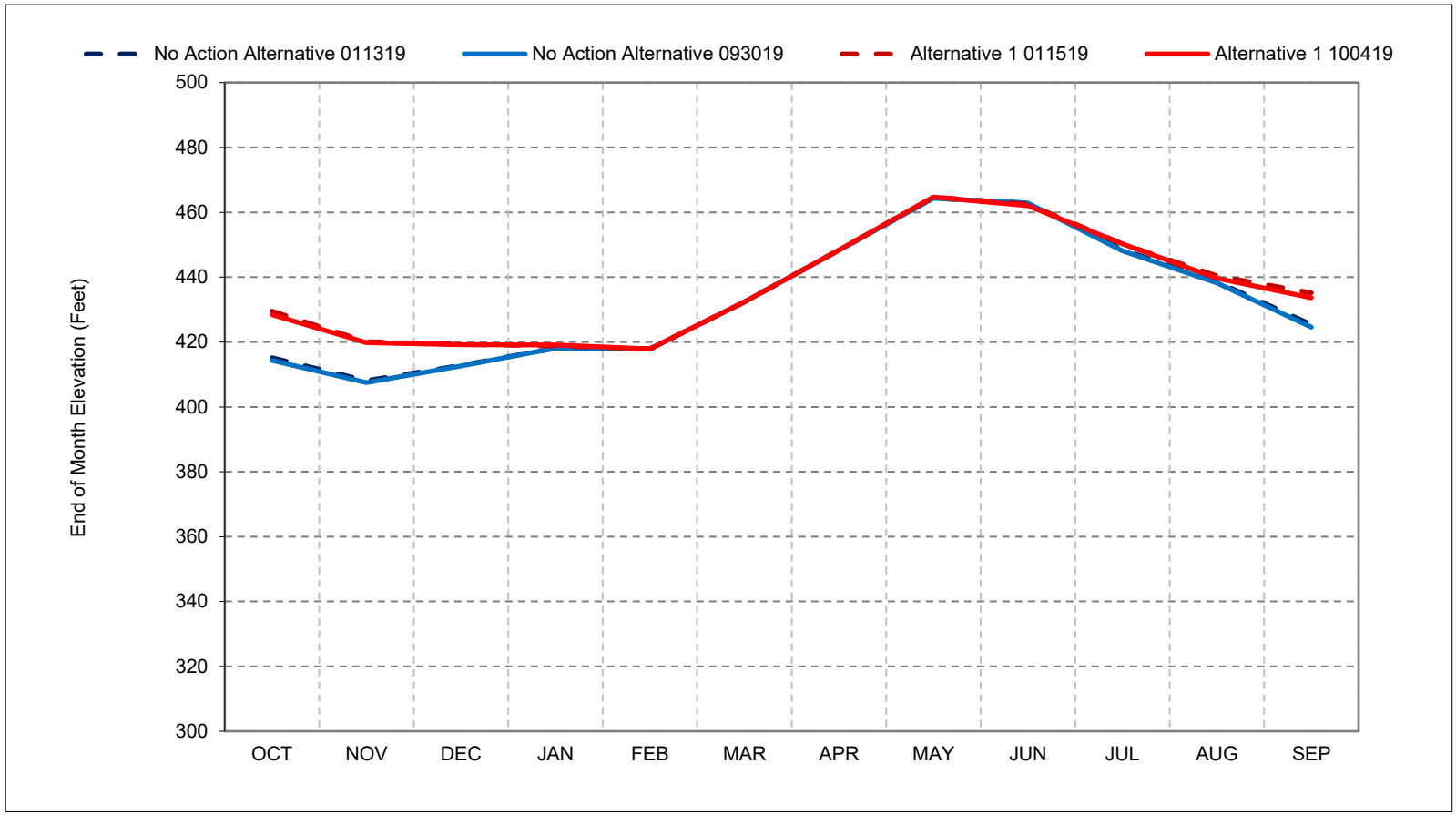



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-2. Folsom Lake Elevation, Wet Year Average Elevation

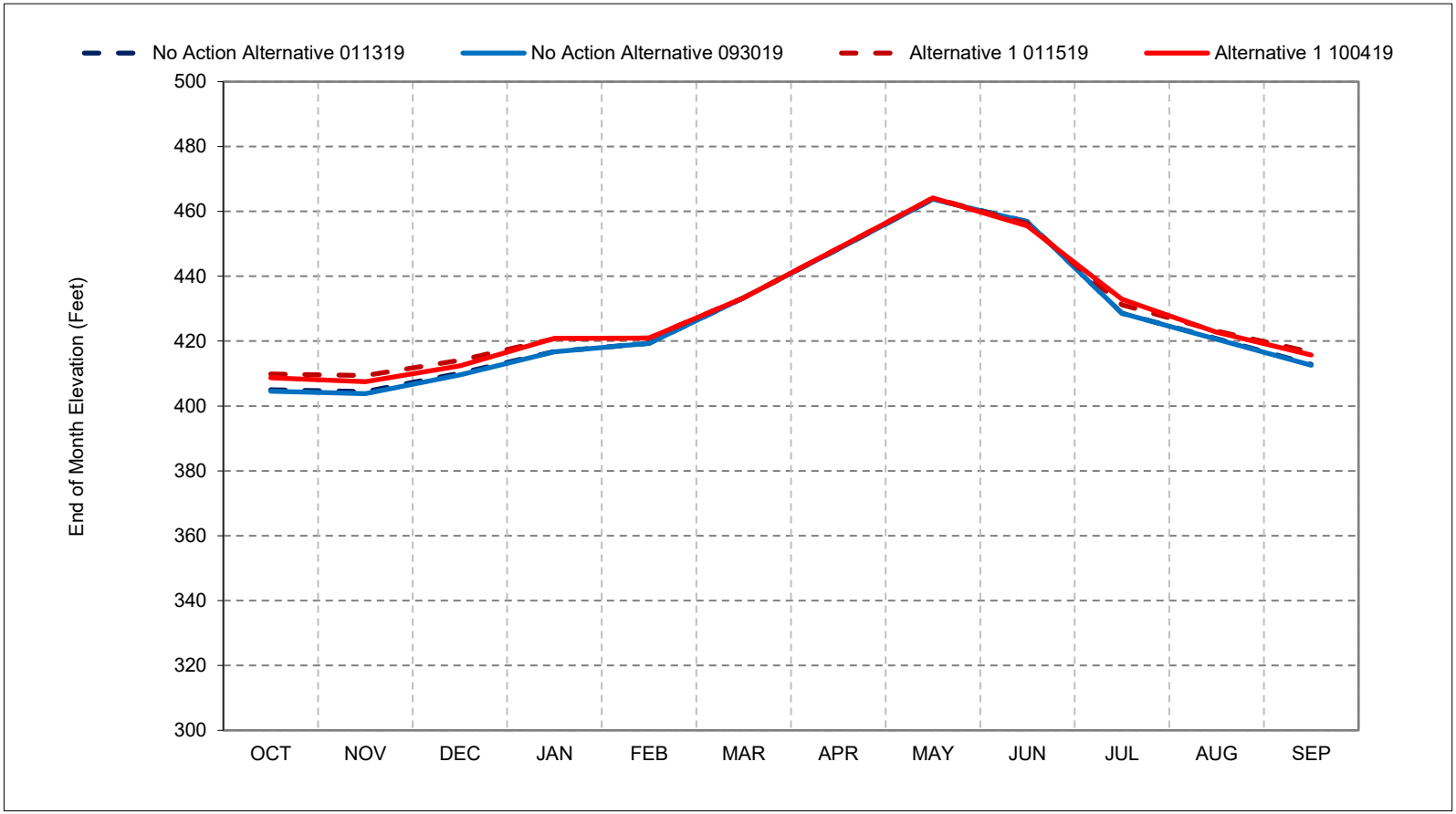



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-3. Folsom Lake Elevation, Above Normal Year Average Elevation

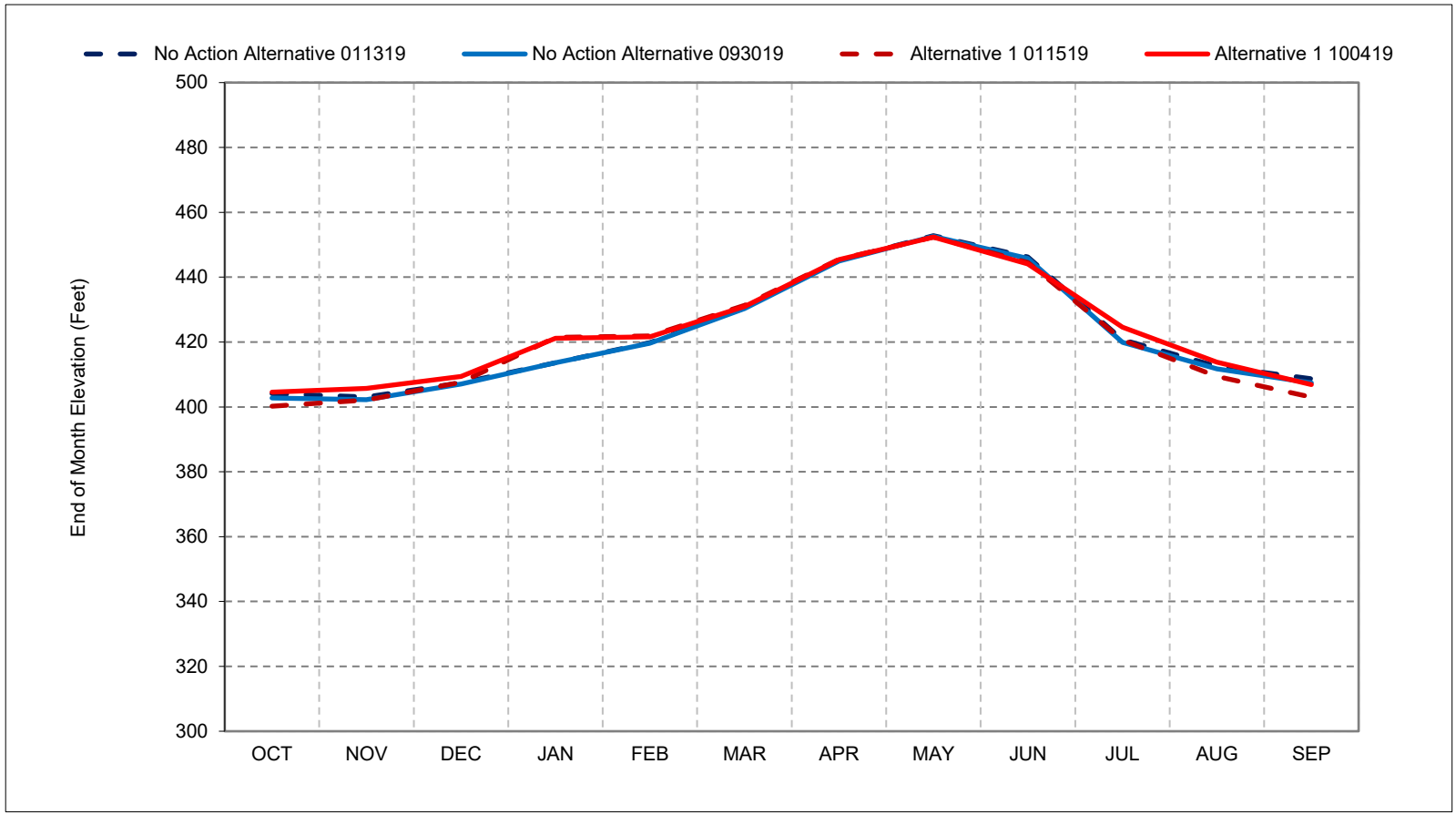



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-4. Folsom Lake Elevation, Below Normal Year Average Elevation

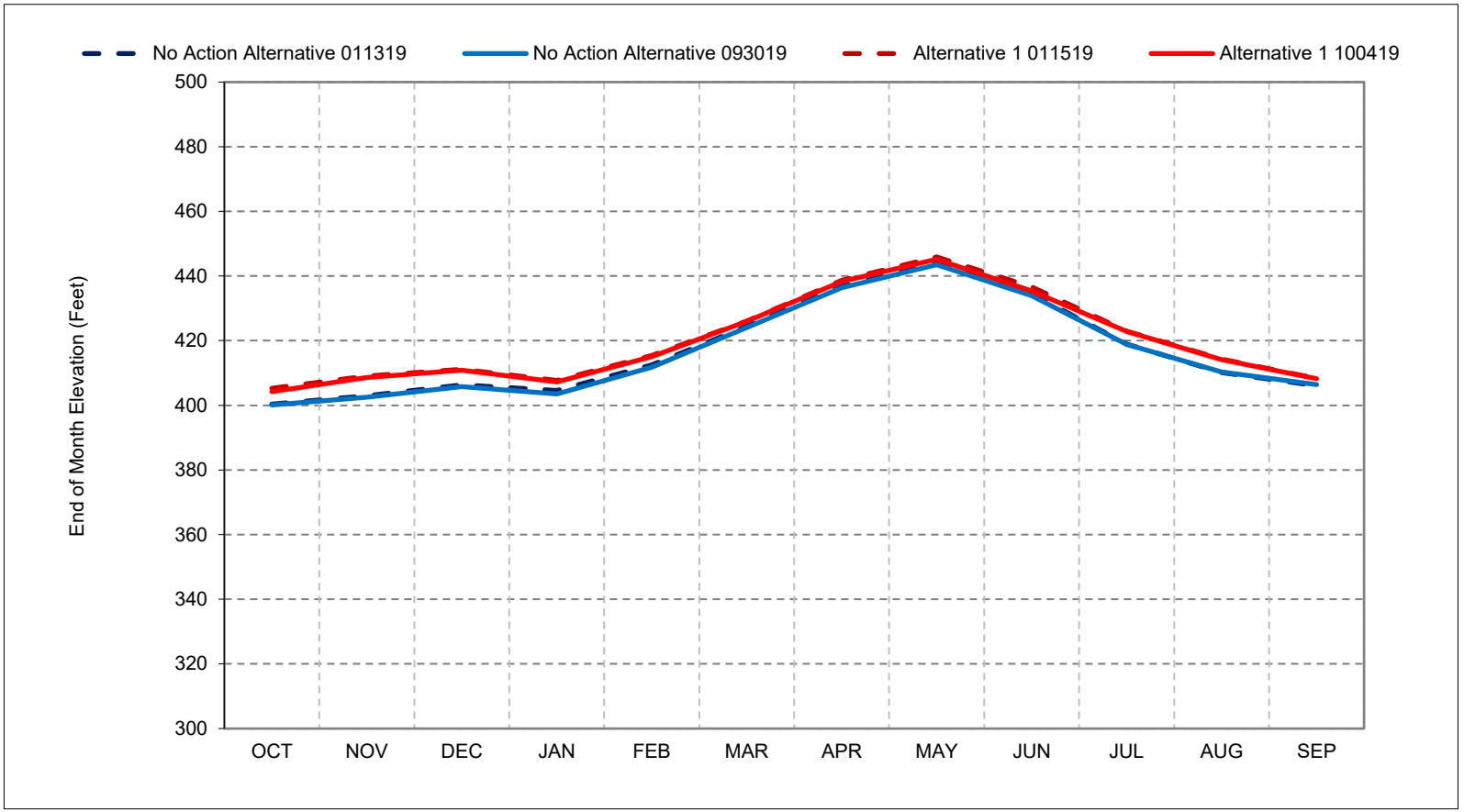



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-5. Folsom Lake Elevation, Dry Year Average Elevation

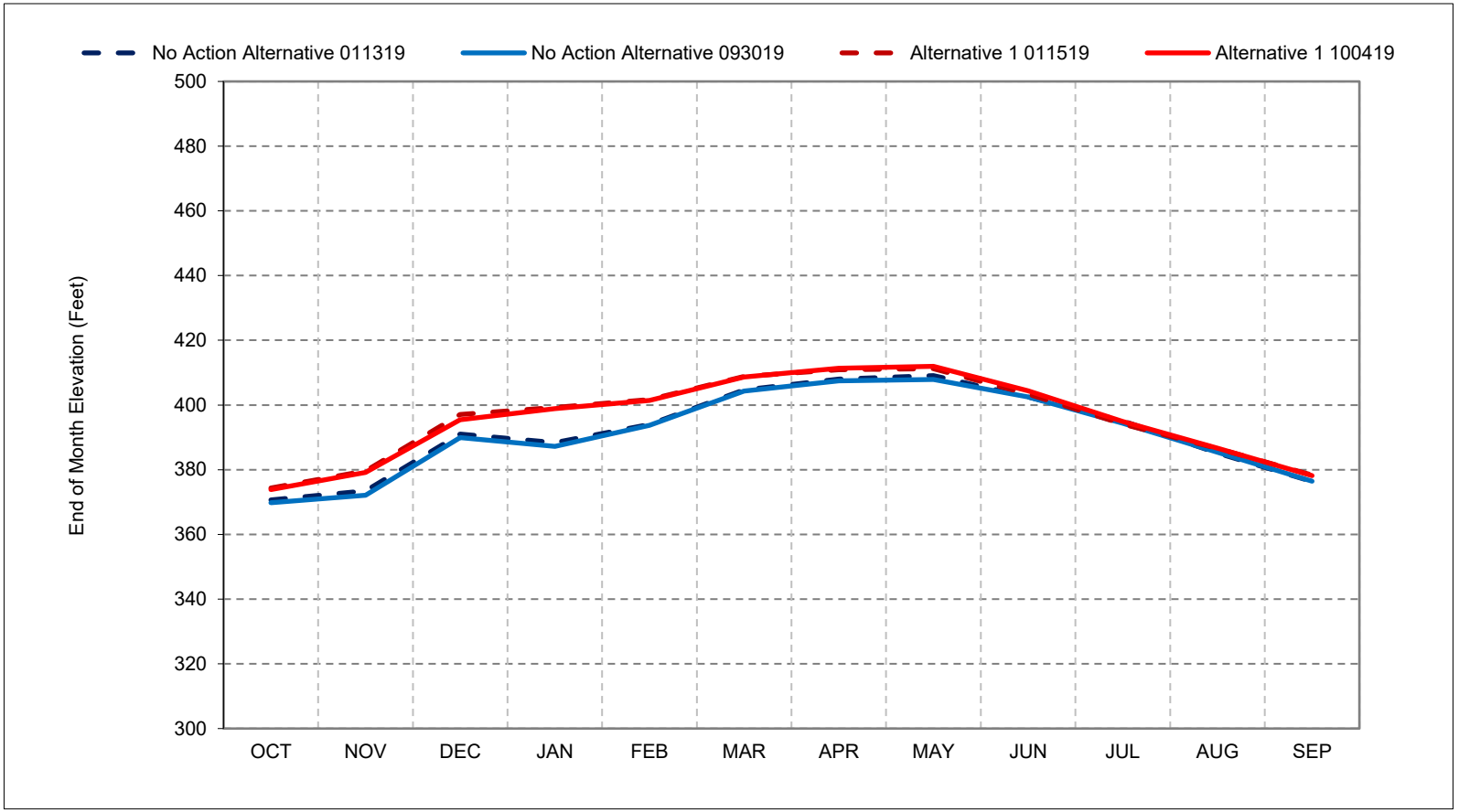



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5a-6. Folsom Lake Elevation, Critical Year Average Elevation

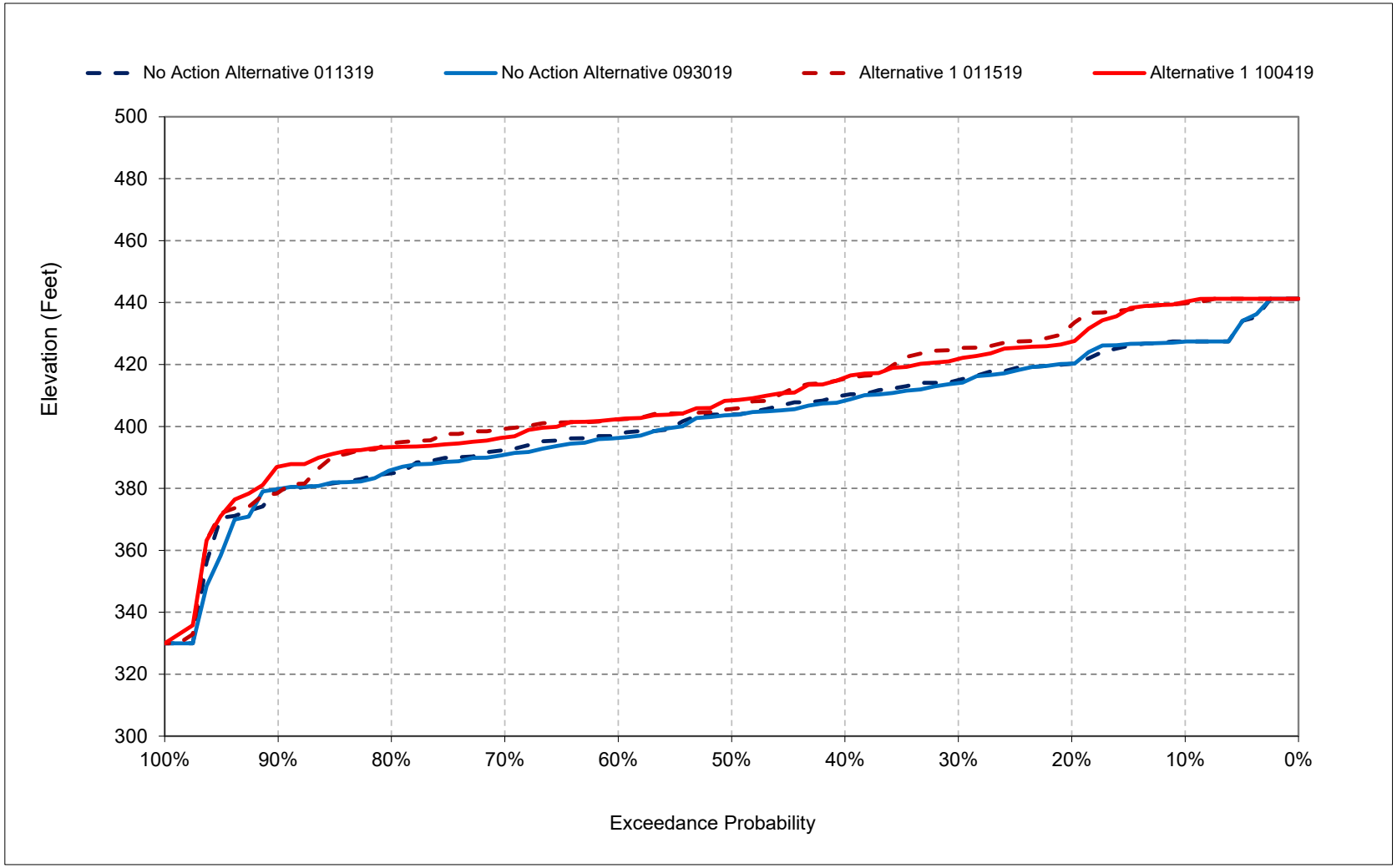



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

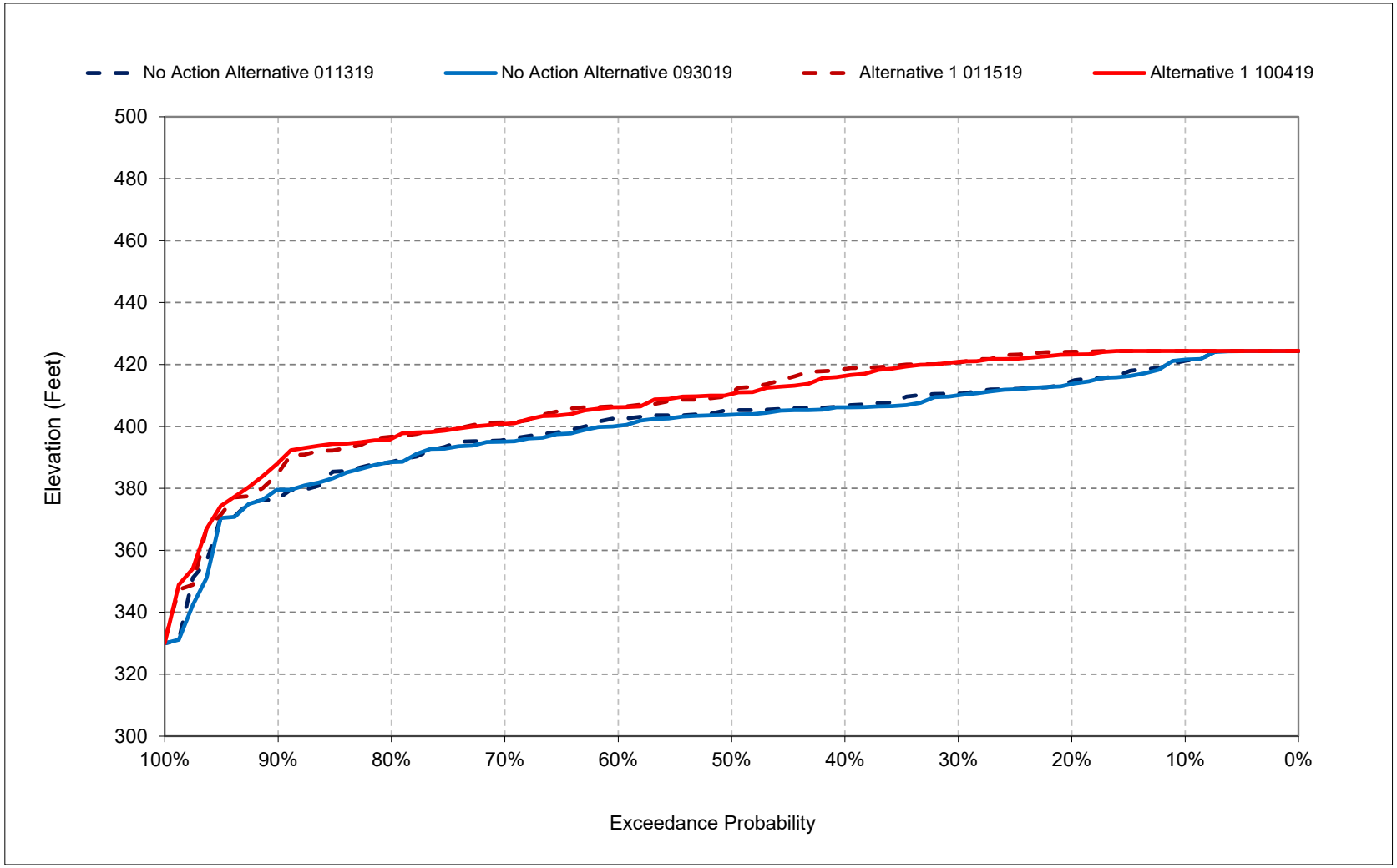
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-7. Folsom Lake, Reservoir Pool Elevation, October**



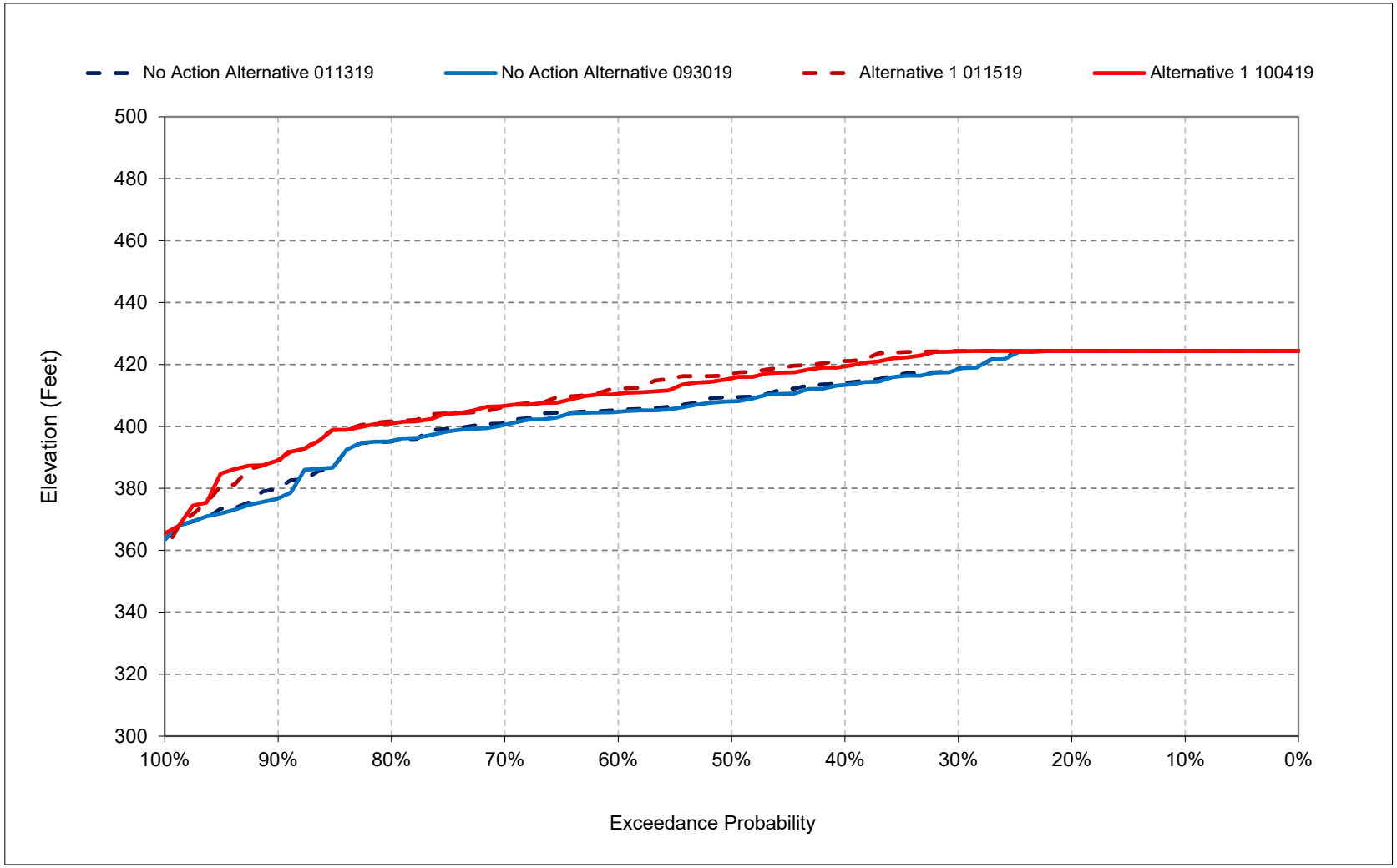

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-8. Folsom Lake, Reservoir Pool Elevation, November**



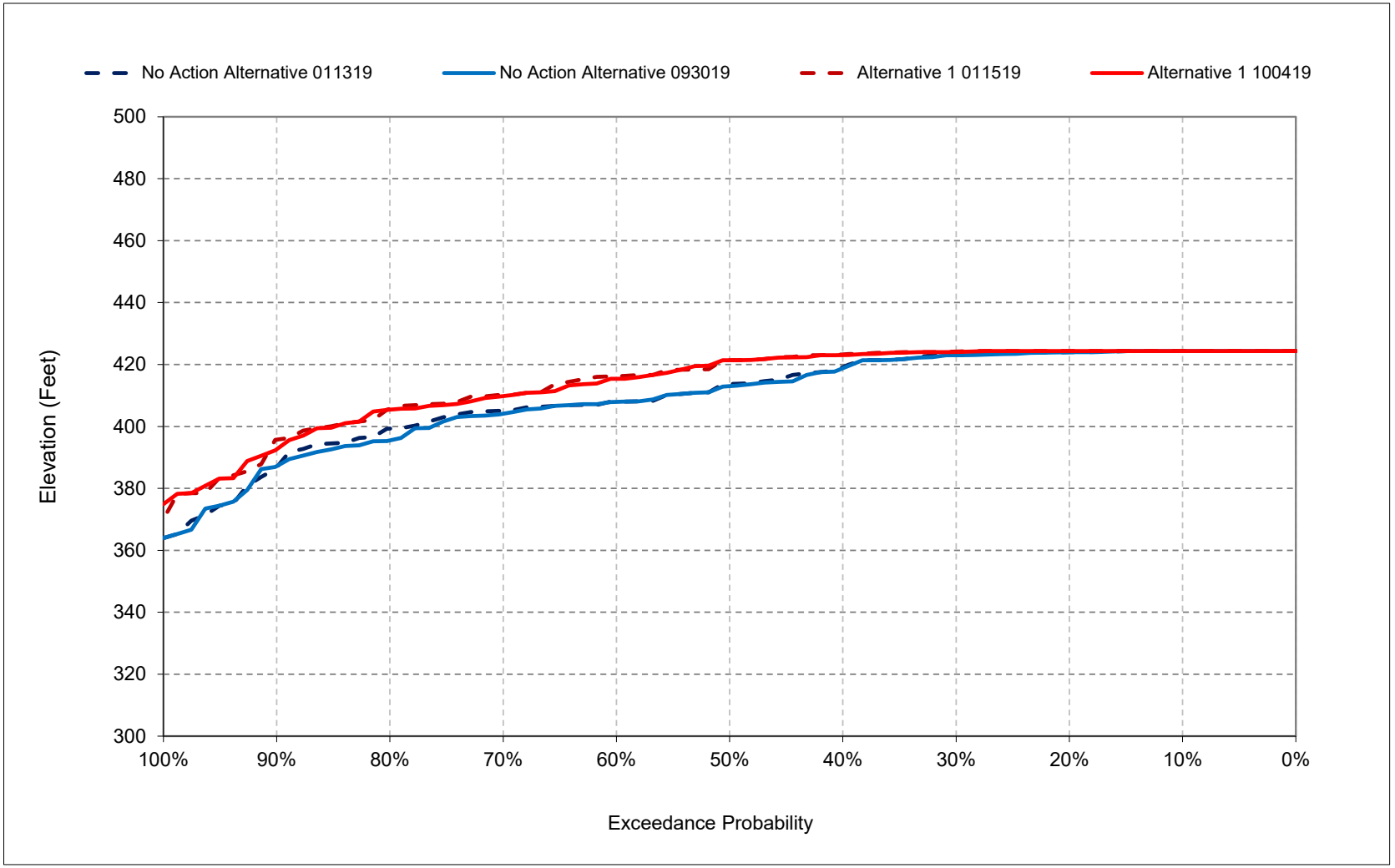

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-9. Folsom Lake, Reservoir Pool Elevation, December**



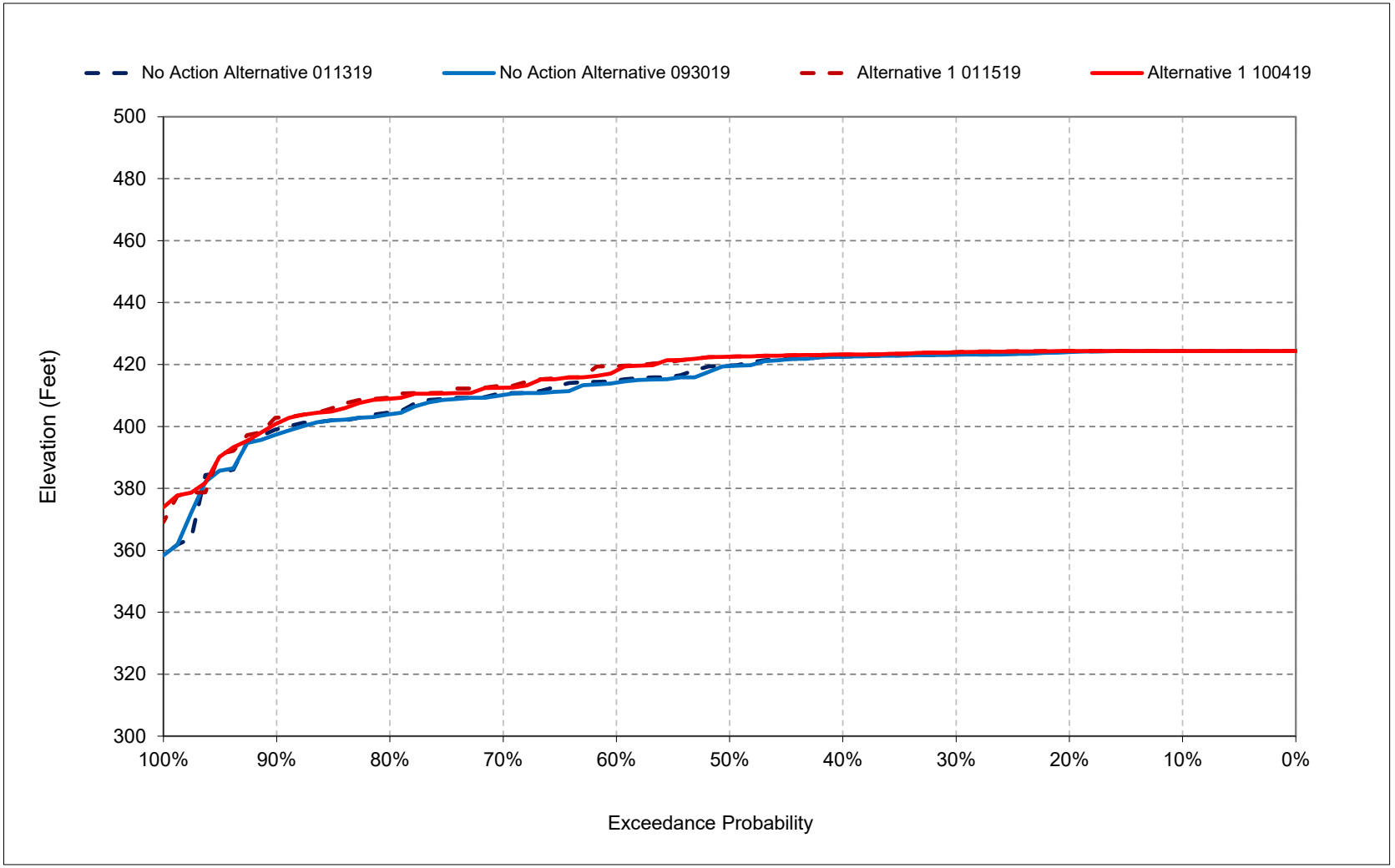

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-10. Folsom Lake, Reservoir Pool Elevation, January**



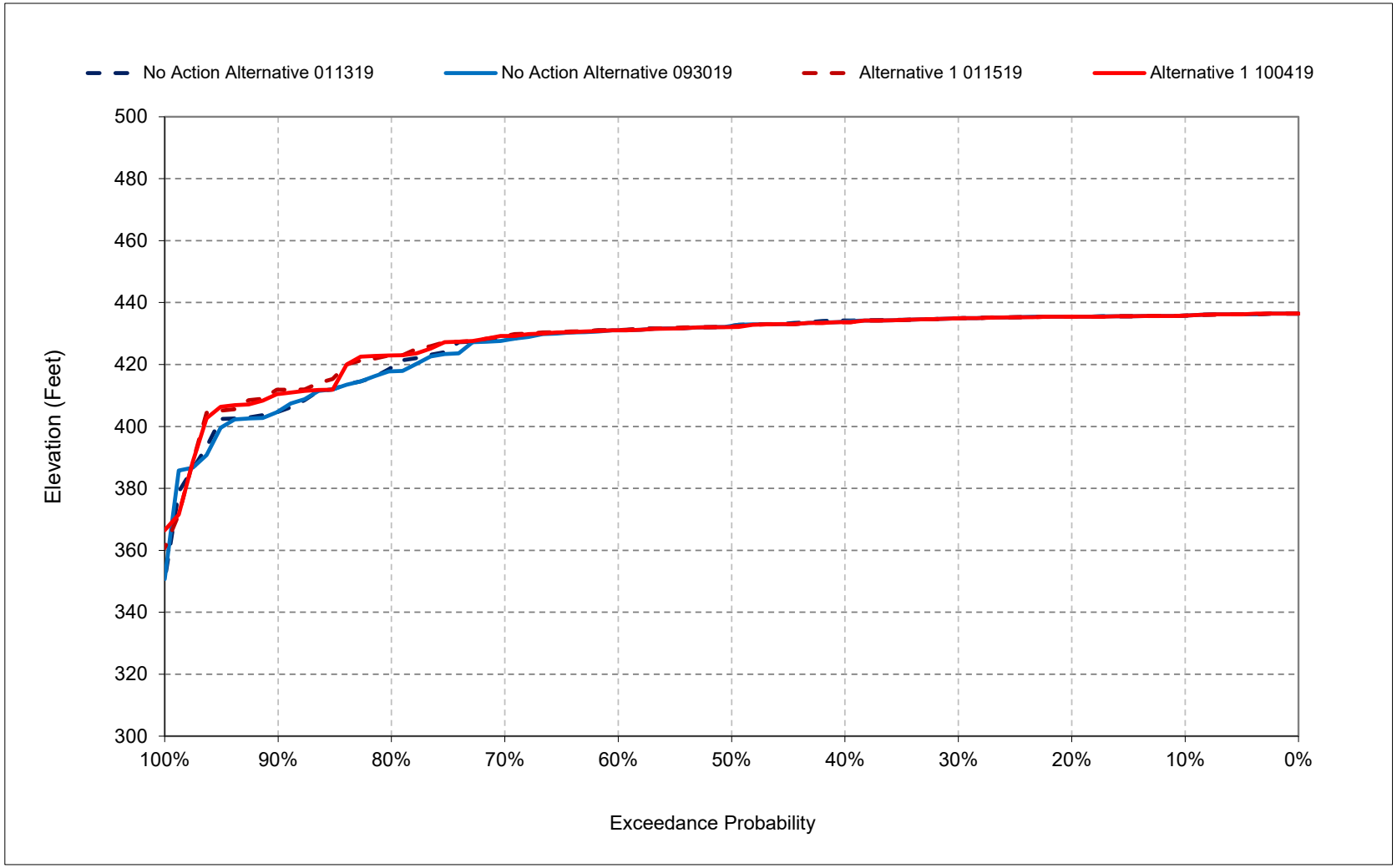

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-11. Folsom Lake, Reservoir Pool Elevation, February**



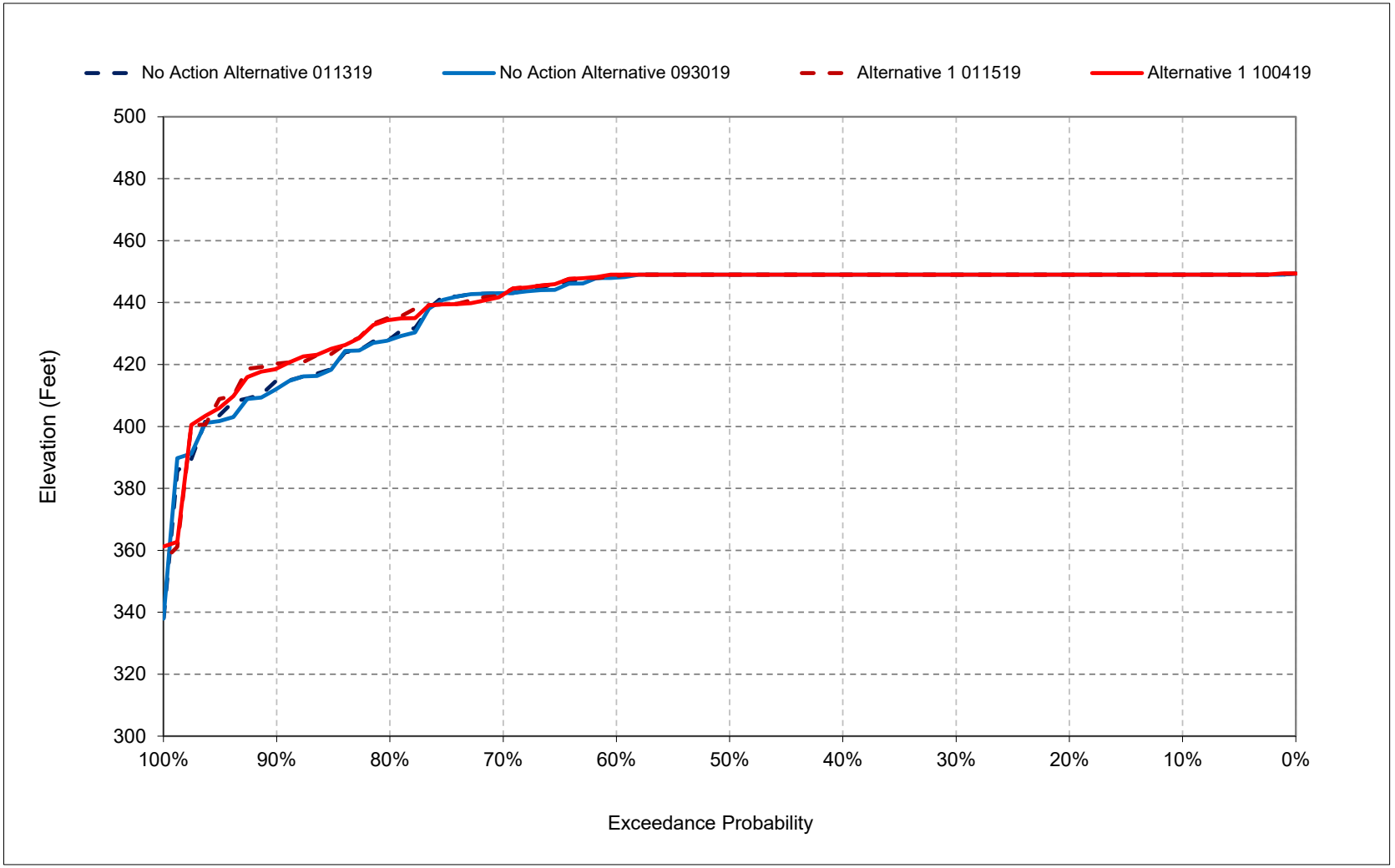

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-12. Folsom Lake, Reservoir Pool Elevation, March**



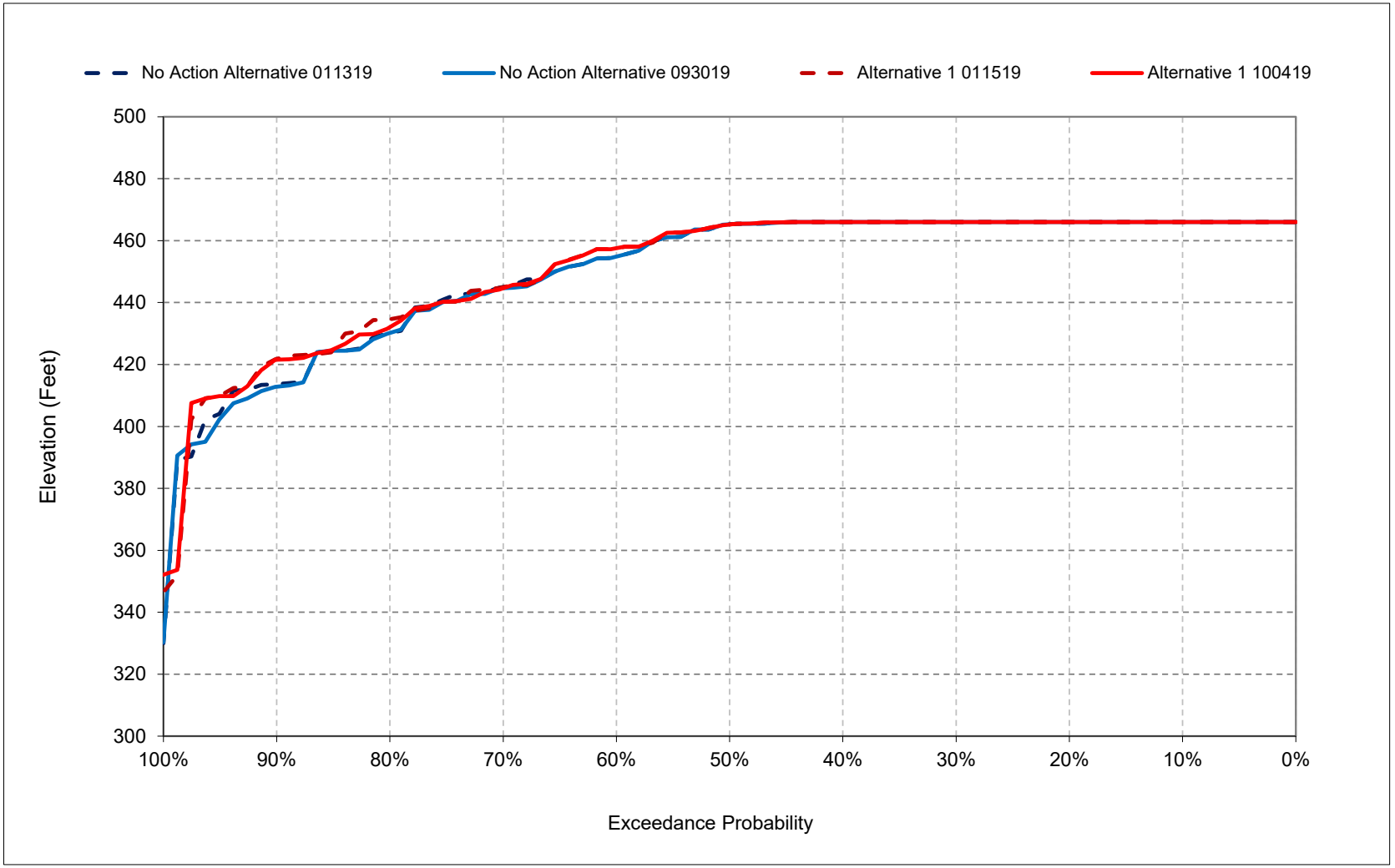

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-13. Folsom Lake, Reservoir Pool Elevation, April**



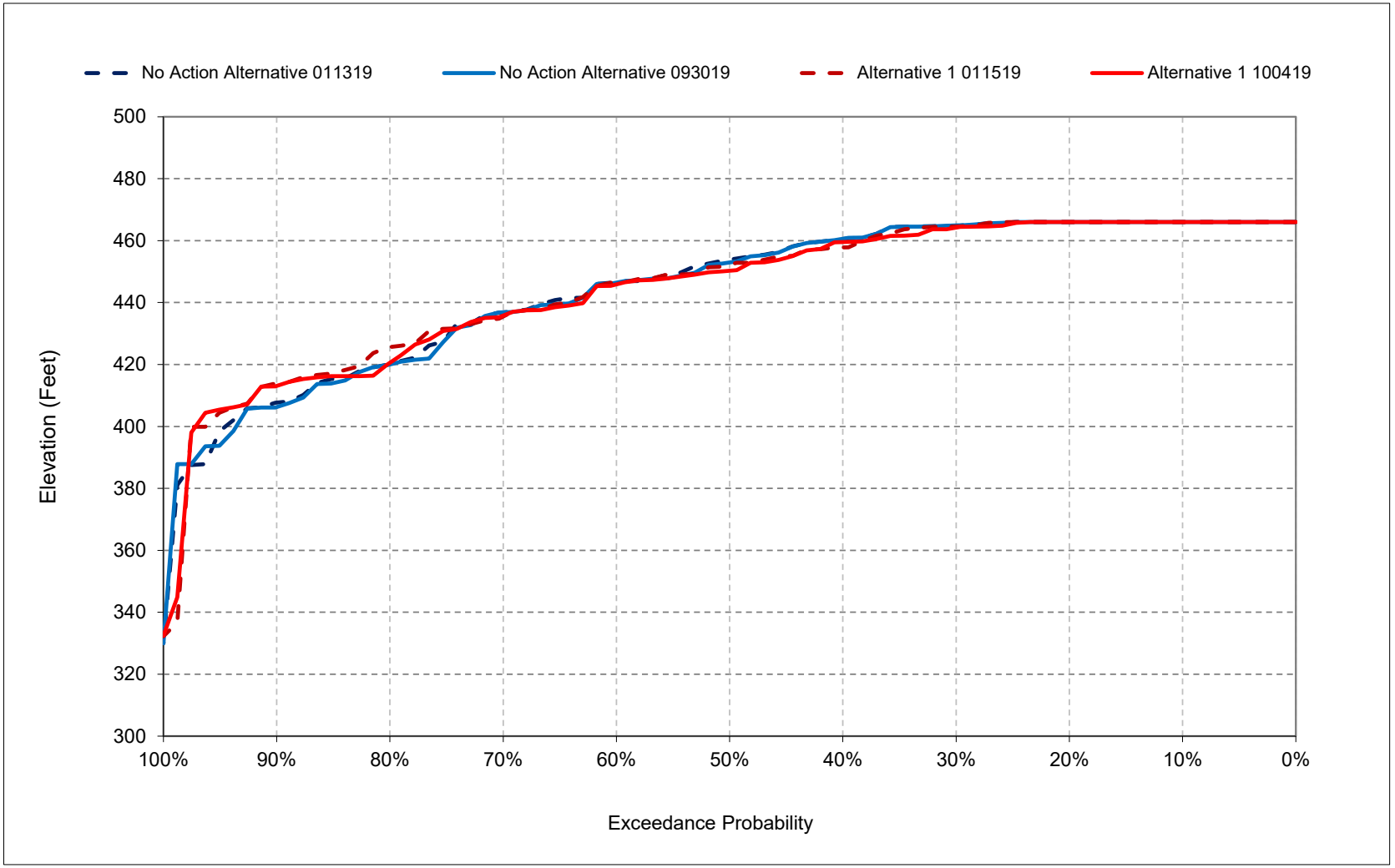

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-14. Folsom Lake, Reservoir Pool Elevation, May**



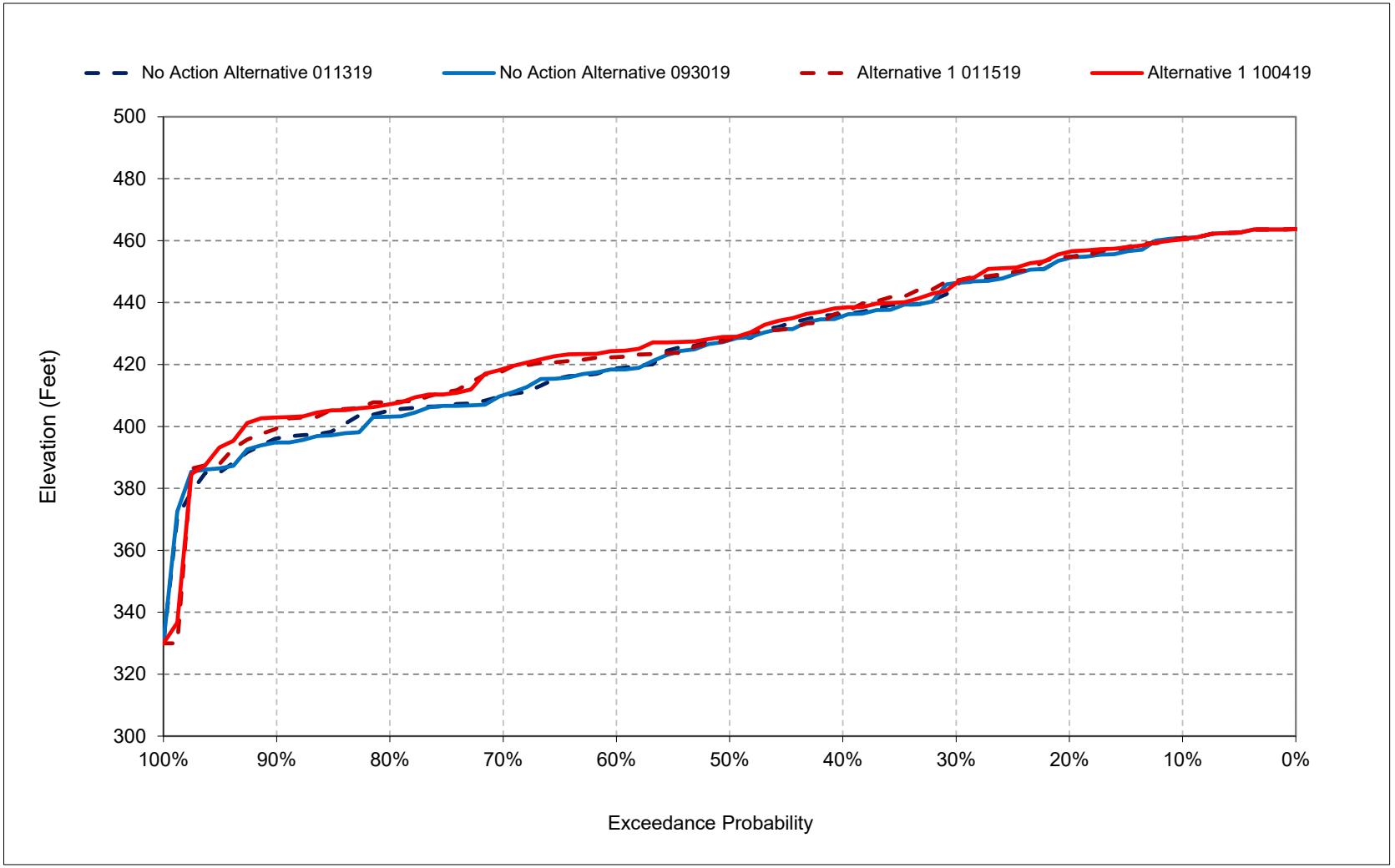

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-15. Folsom Lake, Reservoir Pool Elevation, June**



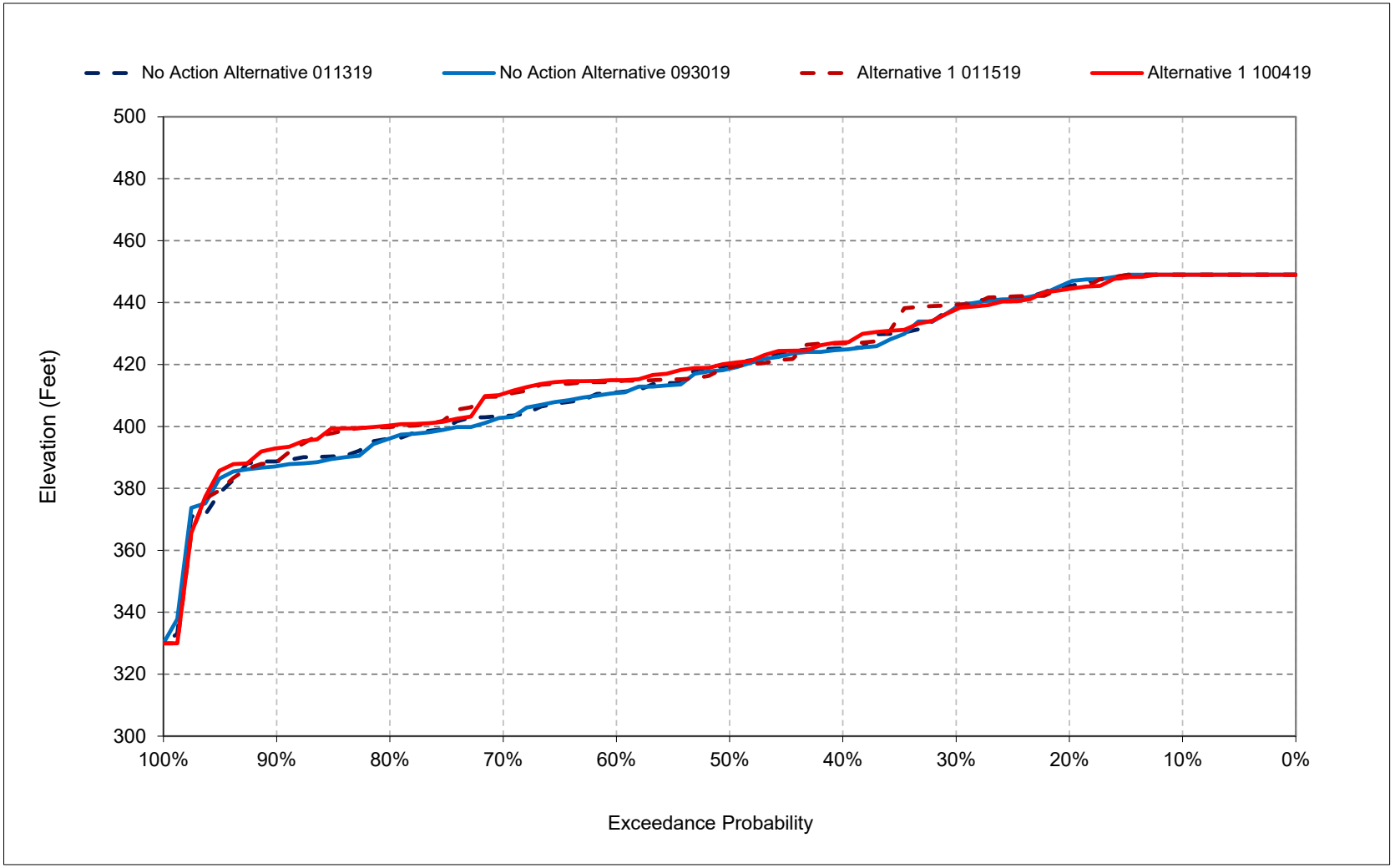

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-16. Folsom Lake, Reservoir Pool Elevation, July**



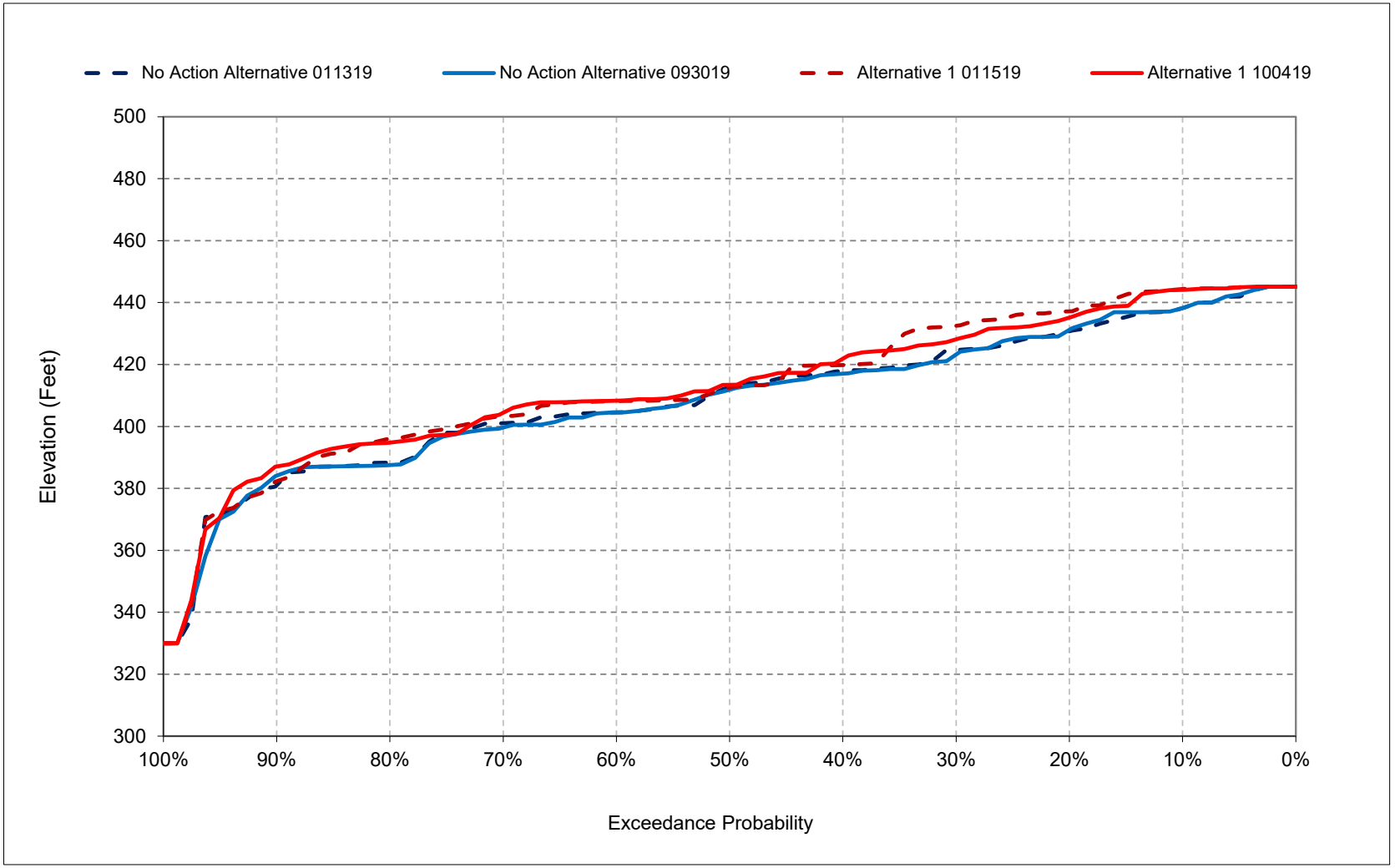

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-17. Folsom Lake, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5a-18. Folsom Lake, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-1. San Luis Storage (CVP and SWP), End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 687 | 875 | 1,128 | 1,514 | 1,871 | 2,039 | 1,837 | 1,473 | 1,217 | 932 | 679 | 699 |
| 20% | 509 | 685 | 1,037 | 1,321 | 1,578 | 1,961 | 1,751 | 1,350 | 956 | 735 | 529 | 572 |
| 30% | 467 | 601 | 925 | 1,235 | 1,513 | 1,776 | 1,618 | 1,256 | 853 | 627 | 449 | 505 |
| 40% | 427 | 547 | 854 | 1,147 | 1,445 | 1,714 | 1,499 | 1,157 | 785 | 528 | 366 | 443 |
| 50% | 383 | 500 | 779 | 1,033 | 1,322 | 1,553 | 1,416 | 1,071 | 717 | 468 | 305 | 380 |
| 60% | 333 | 436 | 708 | 974 | 1,225 | 1,442 | 1,305 | 996 | 621 | 407 | 265 | 339 |
| 70% | 270 | 422 | 635 | 911 | 1,066 | 1,316 | 1,176 | 906 | 577 | 352 | 207 | 232 |
| 80% | 213 | 367 | 556 | 859 | 1,011 | 1,220 | 1,119 | 820 | 474 | 292 | 165 | 178 |
| 90% | 191 | 285 | 454 | 757 | 912 | 1,069 | 942 | 749 | 409 | 232 | 127 | 149 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 420 | 545 | 798 | 1,092 | 1,334 | 1,549 | 1,409 | 1,109 | 764 | 545 | 379 | 423 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 574 | 616 | 890 | 1,209 | 1,521 | 1,813 | 1,629 | 1,274 | 955 | 711 | 584 | 647 |
| Above Normal (16%) | 448 | 568 | 863 | 1,101 | 1,379 | 1,621 | 1,412 | 1,027 | 642 | 398 | 353 | 465 |
| Below Normal (13%) | 380 | 529 | 738 | 979 | 1,180 | 1,391 | 1,238 | 915 | 519 | 409 | 297 | 327 |
| Dry (24%) | 297 | 513 | 762 | 1,068 | 1,265 | 1,460 | 1,381 | 1,132 | 776 | 573 | 271 | 275 |
| Critical (15%) | 301 | 433 | 646 | 970 | 1,133 | 1,190 | 1,135 | 978 | 690 | 422 | 220 | 227 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 948 | 1,206 | 1,484 | 1,714 | 1,992 | 2,039 | 2,018 | 1,885 | 1,469 | 1,137 | 859 | 854 |
| 20% | 821 | 989 | 1,150 | 1,346 | 1,703 | 2,027 | 1,966 | 1,806 | 1,339 | 955 | 695 | 749 |
| 30% | 545 | 740 | 981 | 1,274 | 1,539 | 1,791 | 1,889 | 1,646 | 1,241 | 860 | 583 | 556 |
| 40% | 464 | 591 | 819 | 1,142 | 1,461 | 1,630 | 1,638 | 1,467 | 1,038 | 694 | 440 | 448 |
| 50% | 376 | 524 | 690 | 1,008 | 1,291 | 1,540 | 1,499 | 1,333 | 952 | 591 | 351 | 344 |
| 60% | 296 | 479 | 620 | 931 | 1,183 | 1,399 | 1,377 | 1,139 | 820 | 526 | 275 | 257 |
| 70% | 245 | 412 | 579 | 829 | 1,048 | 1,300 | 1,288 | 1,031 | 713 | 453 | 188 | 198 |
| 80% | 232 | 334 | 512 | 768 | 993 | 1,177 | 1,139 | 938 | 630 | 376 | 159 | 168 |
| 90% | 187 | 266 | 408 | 700 | 941 | 1,105 | 1,063 | 869 | 517 | 280 | 116 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 500 | 653 | 831 | 1,113 | 1,356 | 1,551 | 1,535 | 1,351 | 991 | 675 | 444 | 455 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 766 | 926 | 1,111 | 1,250 | 1,499 | 1,706 | 1,732 | 1,577 | 1,201 | 881 | 676 | 707 |
| Above Normal (16%) | 415 | 542 | 665 | 1,115 | 1,344 | 1,473 | 1,438 | 1,195 | 758 | 433 | 312 | 359 |
| Below Normal (13%) | 371 | 484 | 605 | 1,135 | 1,357 | 1,540 | 1,466 | 1,186 | 759 | 543 | 370 | 374 |
| Dry (24%) | 388 | 580 | 809 | 1,031 | 1,284 | 1,549 | 1,530 | 1,372 | 1,062 | 726 | 374 | 353 |
| Critical (15%) | 322 | 456 | 648 | 931 | 1,180 | 1,311 | 1,281 | 1,149 | 883 | 526 | 266 | 257 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 262 | 331 | 357 | 200 | 121 | 0 | 181 | 411 | 252 | 205 | 180 | 155 |
| 20% | 312 | 304 | 113 | 24 | 126 | 66 | 214 | 456 | 383 | 220 | 166 | 178 |
| 30% | 78 | 139 | 55 | 39 | 26 | 15 | 270 | 391 | 387 | 234 | 134 | 52 |
| 40% | 36 | 44 | -35 | -4 | 16 | -85 | 140 | 310 | 253 | 166 | 73 | 5 |
| 50% | -7 | 25 | -90 | -24 | -31 | -13 | 83 | 262 | 235 | 123 | 46 | -36 |
| 60% | -37 | 43 | -88 | -43 | -43 | -43 | 72 | 143 | 199 | 118 | 9 | -83 |
| 70% | -26 | -9 | -56 | -82 | -18 | -16 | 111 | 125 | 136 | 100 | -19 | -33 |
| 80% | 19 | -32 | -44 | -90 | -18 | -43 | 20 | 119 | 156 | 84 | -7 | -10 |
| 90% | -4 | -18 | -46 | -57 | 29 | 36 | 121 | 120 | 109 | 48 | -12 | -10 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 80 | 108 | 32 | 22 | 23 | 2 | 125 | 243 | 227 | 130 | 64 | 32 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 191 | 310 | 221 | 41 | -22 | -107 | 104 | 303 | 246 | 170 | 92 | 60 |
| Above Normal (16%) | -33 | -26 | -198 | 14 | -35 | -148 | 26 | 168 | 117 | 35 | -40 | -106 |
| Below Normal (13%) | -9 | -45 | -133 | 157 | 177 | 149 | 228 | 271 | 240 | 134 | 72 | 47 |
| Dry (24%) | 91 | 66 | 46 | -37 | 18 | 89 | 148 | 240 | 286 | 153 | 104 | 78 |
| Critical (15%) | 21 | 22 | 2 | -38 | 47 | 120 | 147 | 171 | 193 | 104 | 46 | 30 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-2. San Luis Storage (CVP and SWP), End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 686 | 889 | 1,129 | 1,532 | 1,935 | 2,039 | 1,838 | 1,443 | 1,223 | 911 | 672 | 687 |
| 20% | 528 | 689 | 1,029 | 1,311 | 1,572 | 1,960 | 1,751 | 1,346 | 951 | 717 | 522 | 588 |
| 30% | 473 | 599 | 910 | 1,221 | 1,492 | 1,773 | 1,583 | 1,241 | 853 | 602 | 467 | 505 |
| 40% | 440 | 540 | 835 | 1,137 | 1,398 | 1,677 | 1,490 | 1,145 | 772 | 529 | 362 | 446 |
| 50% | 382 | 480 | 734 | 1,014 | 1,332 | 1,527 | 1,371 | 1,071 | 714 | 443 | 313 | 377 |
| 60% | 321 | 436 | 694 | 933 | 1,196 | 1,384 | 1,273 | 1,002 | 628 | 408 | 256 | 313 |
| 70% | 270 | 422 | 599 | 870 | 1,066 | 1,314 | 1,182 | 919 | 582 | 380 | 201 | 236 |
| 80% | 211 | 346 | 515 | 813 | 970 | 1,223 | 1,105 | 814 | 509 | 304 | 167 | 197 |
| 90% | 170 | 275 | 423 | 716 | 914 | 1,054 | 936 | 737 | 390 | 233 | 129 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 419 | 542 | 781 | 1,073 | 1,319 | 1,533 | 1,397 | 1,102 | 768 | 544 | 380 | 424 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 578 | 619 | 892 | 1,202 | 1,517 | 1,808 | 1,623 | 1,276 | 954 | 709 | 587 | 649 |
| Above Normal (16%) | 440 | 555 | 845 | 1,097 | 1,369 | 1,608 | 1,402 | 1,019 | 634 | 394 | 356 | 465 |
| Below Normal (13%) | 360 | 493 | 683 | 980 | 1,180 | 1,394 | 1,242 | 917 | 528 | 415 | 289 | 322 |
| Dry (24%) | 299 | 520 | 763 | 1,029 | 1,226 | 1,421 | 1,355 | 1,114 | 780 | 558 | 267 | 274 |
| Critical (15%) | 303 | 442 | 592 | 930 | 1,118 | 1,167 | 1,114 | 961 | 712 | 441 | 233 | 239 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 815 | 993 | 1,331 | 1,723 | 1,990 | 2,039 | 2,039 | 2,000 | 1,655 | 1,209 | 956 | 859 |
| 20% | 573 | 773 | 1,003 | 1,276 | 1,614 | 1,952 | 2,013 | 1,814 | 1,411 | 1,061 | 785 | 610 |
| 30% | 478 | 663 | 865 | 1,177 | 1,447 | 1,612 | 1,766 | 1,731 | 1,296 | 921 | 698 | 454 |
| 40% | 336 | 561 | 794 | 1,081 | 1,374 | 1,517 | 1,609 | 1,449 | 1,139 | 813 | 557 | 361 |
| 50% | 290 | 494 | 707 | 1,001 | 1,266 | 1,444 | 1,481 | 1,273 | 972 | 701 | 476 | 325 |
| 60% | 233 | 417 | 652 | 942 | 1,206 | 1,344 | 1,380 | 1,211 | 891 | 595 | 433 | 238 |
| 70% | 202 | 367 | 584 | 880 | 1,140 | 1,283 | 1,292 | 1,142 | 799 | 546 | 285 | 210 |
| 80% | 160 | 348 | 521 | 813 | 1,055 | 1,202 | 1,171 | 1,030 | 751 | 458 | 231 | 147 |
| 90% | 100 | 302 | 439 | 740 | 969 | 1,123 | 1,115 | 926 | 638 | 411 | 186 | 102 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 399 | 589 | 801 | 1,087 | 1,346 | 1,502 | 1,544 | 1,406 | 1,076 | 779 | 544 | 404 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 519 | 737 | 976 | 1,204 | 1,495 | 1,710 | 1,808 | 1,701 | 1,357 | 1,052 | 849 | 573 |
| Above Normal (16%) | 150 | 371 | 614 | 1,123 | 1,357 | 1,471 | 1,536 | 1,379 | 969 | 634 | 466 | 188 |
| Below Normal (13%) | 451 | 587 | 721 | 1,080 | 1,319 | 1,422 | 1,414 | 1,203 | 826 | 606 | 446 | 435 |
| Dry (24%) | 409 | 610 | 846 | 1,009 | 1,262 | 1,425 | 1,438 | 1,303 | 1,027 | 747 | 396 | 381 |
| Critical (15%) | 341 | 470 | 621 | 930 | 1,178 | 1,289 | 1,277 | 1,155 | 896 | 557 | 301 | 284 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 129 | 104 | 202 | 191 | 54 | 0 | 201 | 556 | 432 | 298 | 283 | 172 |
| 20% | 45 | 83 | -26 | -36 | 43 | -7 | 262 | 468 | 460 | 344 | 264 | 22 |
| 30% | 5 | 64 | -44 | -44 | -45 | -161 | 183 | 490 | 443 | 319 | 230 | -51 |
| 40% | -104 | 21 | -41 | -56 | -23 | -160 | 120 | 304 | 367 | 284 | 196 | -85 |
| 50% | -92 | 14 | -27 | -14 | -66 | -83 | 111 | 202 | 258 | 257 | 164 | -52 |
| 60% | -88 | -19 | -42 | 9 | 10 | -40 | 107 | 209 | 263 | 186 | 177 | -75 |
| 70% | -68 | -54 | -15 | 10 | 74 | -31 | 109 | 223 | 217 | 166 | 84 | -26 |
| 80% | -51 | 2 | 7 | 0 | 85 | -21 | 66 | 216 | 242 | 154 | 64 | -50 |
| 90% | -70 | 27 | 16 | 24 | 55 | 69 | 178 | 189 | 247 | 178 | 57 | -48 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -20 | 47 | 20 | 14 | 27 | -30 | 147 | 304 | 308 | 235 | 163 | -20 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -59 | 119 | 84 | 3 | -22 | -98 | 185 | 425 | 403 | 343 | 262 | -76 |
| Above Normal (16%) | -290 | -185 | -231 | 26 | -12 | -138 | 134 | 359 | 335 | 240 | 110 | -277 |
| Below Normal (13%) | 90 | 94 | 38 | 100 | 139 | 29 | 172 | 286 | 299 | 191 | 157 | 113 |
| Dry (24%) | 110 | 90 | 84 | -20 | 36 | 4 | 83 | 189 | 247 | 189 | 130 | 107 |
| Critical (15%) | 38 | 28 | 28 | 0 | 60 | 122 | 163 | 193 | 184 | 116 | 69 | 46 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-3. San Luis Storage (CVP and SWP), End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 687 | 875 | 1,128 | 1,514 | 1,871 | 2,039 | 1,837 | 1,473 | 1,217 | 932 | 679 | 699 |
| 20% | 509 | 685 | 1,037 | 1,321 | 1,578 | 1,961 | 1,751 | 1,350 | 956 | 735 | 529 | 572 |
| 30% | 467 | 601 | 925 | 1,235 | 1,513 | 1,776 | 1,618 | 1,256 | 853 | 627 | 449 | 505 |
| 40% | 427 | 547 | 854 | 1,147 | 1,445 | 1,714 | 1,499 | 1,157 | 785 | 528 | 366 | 443 |
| 50% | 383 | 500 | 779 | 1,033 | 1,322 | 1,553 | 1,416 | 1,071 | 717 | 468 | 305 | 380 |
| 60% | 333 | 436 | 708 | 974 | 1,225 | 1,442 | 1,305 | 996 | 621 | 407 | 265 | 339 |
| 70% | 270 | 422 | 635 | 911 | 1,066 | 1,316 | 1,176 | 906 | 577 | 352 | 207 | 232 |
| 80% | 213 | 367 | 556 | 859 | 1,011 | 1,220 | 1,119 | 820 | 474 | 292 | 165 | 178 |
| 90% | 191 | 285 | 454 | 757 | 912 | 1,069 | 942 | 749 | 409 | 232 | 127 | 149 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 420 | 545 | 798 | 1,092 | 1,334 | 1,549 | 1,409 | 1,109 | 764 | 545 | 379 | 423 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 574 | 616 | 890 | 1,209 | 1,521 | 1,813 | 1,629 | 1,274 | 955 | 711 | 584 | 647 |
| Above Normal (16%) | 448 | 568 | 863 | 1,101 | 1,379 | 1,621 | 1,412 | 1,027 | 642 | 398 | 353 | 465 |
| Below Normal (13%) | 380 | 529 | 738 | 979 | 1,180 | 1,391 | 1,238 | 915 | 519 | 409 | 297 | 327 |
| Dry (24%) | 297 | 513 | 762 | 1,068 | 1,265 | 1,460 | 1,381 | 1,132 | 776 | 573 | 271 | 275 |
| Critical (15%) | 301 | 433 | 646 | 970 | 1,133 | 1,190 | 1,135 | 978 | 690 | 422 | 220 | 227 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 686 | 889 | 1,129 | 1,532 | 1,935 | 2,039 | 1,838 | 1,443 | 1,223 | 911 | 672 | 687 |
| 20% | 528 | 689 | 1,029 | 1,311 | 1,572 | 1,960 | 1,751 | 1,346 | 951 | 717 | 522 | 588 |
| 30% | 473 | 599 | 910 | 1,221 | 1,492 | 1,773 | 1,583 | 1,241 | 853 | 602 | 467 | 505 |
| 40% | 440 | 540 | 835 | 1,137 | 1,398 | 1,677 | 1,490 | 1,145 | 772 | 529 | 362 | 446 |
| 50% | 382 | 480 | 734 | 1,014 | 1,332 | 1,527 | 1,371 | 1,071 | 714 | 443 | 313 | 377 |
| 60% | 321 | 436 | 694 | 933 | 1,196 | 1,384 | 1,273 | 1,002 | 628 | 408 | 256 | 313 |
| 70% | 270 | 422 | 599 | 870 | 1,066 | 1,314 | 1,182 | 919 | 582 | 380 | 201 | 236 |
| 80% | 211 | 346 | 515 | 813 | 970 | 1,223 | 1,105 | 814 | 509 | 304 | 167 | 197 |
| 90% | 170 | 275 | 423 | 716 | 914 | 1,054 | 936 | 737 | 390 | 233 | 129 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 419 | 542 | 781 | 1,073 | 1,319 | 1,533 | 1,397 | 1,102 | 768 | 544 | 380 | 424 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 578 | 619 | 892 | 1,202 | 1,517 | 1,808 | 1,623 | 1,276 | 954 | 709 | 587 | 649 |
| Above Normal (16%) | 440 | 555 | 845 | 1,097 | 1,369 | 1,608 | 1,402 | 1,019 | 634 | 394 | 356 | 465 |
| Below Normal (13%) | 360 | 493 | 683 | 980 | 1,180 | 1,394 | 1,242 | 917 | 528 | 415 | 289 | 322 |
| Dry (24%) | 299 | 520 | 763 | 1,029 | 1,226 | 1,421 | 1,355 | 1,114 | 780 | 558 | 267 | 274 |
| Critical (15%) | 303 | 442 | 592 | 930 | 1,118 | 1,167 | 1,114 | 961 | 712 | 441 | 233 | 239 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -1 | 14 | 1 | 17 | 64 | 0 | 1 | -30 | 6 | -21 | -6 | -12 |
| 20% | 19 | 4 | -8 | -10 | -6 | -1 | -1 | -4 | -4 | -18 | -7 | 16 |
| 30% | 5 | -2 | -15 | -14 | -21 | -3 | -35 | -14 | 0 | -25 | 19 | 0 |
| 40% | 13 | -7 | -19 | -10 | -47 | -38 | -9 | -12 | -13 | 1 | -5 | 3 |
| 50% | -1 | -20 | -45 | -18 | 10 | -26 | -46 | 0 | -3 | -25 | 8 | -3 |
| 60% | -12 | 0 | -14 | -40 | -29 | -58 | -32 | 6 | 7 | 1 | -9 | -26 |
| 70% | 0 | 0 | -36 | -41 | 0 | -2 | 6 | 12 | 4 | 28 | -6 | 5 |
| 80% | -2 | -20 | -42 | -46 | -42 | 3 | -13 | -6 | 35 | 12 | 2 | 19 |
| 90% | -21 | -10 | -31 | -41 | 2 | -15 | -6 | -13 | -19 | 1 | 1 | 1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -3 | -17 | -18 | -15 | -16 | -12 | -7 | 4 | -1 | 1 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4 | 2 | 2 | -7 | -4 | -5 | -5 | 2 | -1 | -2 | 3 | 2 |
| Above Normal (16%) | -8 | -13 | -18 | -5 | -10 | -12 | -10 | -8 | -8 | -4 | 4 | 0 |
| Below Normal (13%) | -20 | -36 | -55 | 1 | 0 | 3 | 4 | 2 | 8 | 6 | -8 | -5 |
| Dry (24%) | 2 | 7 | 0 | -39 | -39 | -39 | -26 | -18 | 4 | -14 | -4 | -2 |
| Critical (15%) | 3 | 8 | -54 | -40 | -15 | -23 | -21 | -17 | 23 | 19 | 12 | 12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-4. San Luis Storage (CVP and SWP), End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 948 | 1,206 | 1,484 | 1,714 | 1,992 | 2,039 | 2,018 | 1,885 | 1,469 | 1,137 | 859 | 854 |
| 20% | 821 | 989 | 1,150 | 1,346 | 1,703 | 2,027 | 1,966 | 1,806 | 1,339 | 955 | 695 | 749 |
| 30% | 545 | 740 | 981 | 1,274 | 1,539 | 1,791 | 1,889 | 1,646 | 1,241 | 860 | 583 | 556 |
| 40% | 464 | 591 | 819 | 1,142 | 1,461 | 1,630 | 1,638 | 1,467 | 1,038 | 694 | 440 | 448 |
| 50% | 376 | 524 | 690 | 1,008 | 1,291 | 1,540 | 1,499 | 1,333 | 952 | 591 | 351 | 344 |
| 60% | 296 | 479 | 620 | 931 | 1,183 | 1,399 | 1,377 | 1,139 | 820 | 526 | 275 | 257 |
| 70% | 245 | 412 | 579 | 829 | 1,048 | 1,300 | 1,288 | 1,031 | 713 | 453 | 188 | 198 |
| 80% | 232 | 334 | 512 | 768 | 993 | 1,177 | 1,139 | 938 | 630 | 376 | 159 | 168 |
| 90% | 187 | 266 | 408 | 700 | 941 | 1,105 | 1,063 | 869 | 517 | 280 | 116 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 500 | 653 | 831 | 1,113 | 1,356 | 1,551 | 1,535 | 1,351 | 991 | 675 | 444 | 455 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 766 | 926 | 1,111 | 1,250 | 1,499 | 1,706 | 1,732 | 1,577 | 1,201 | 881 | 676 | 707 |
| Above Normal (16%) | 415 | 542 | 665 | 1,115 | 1,344 | 1,473 | 1,438 | 1,195 | 758 | 433 | 312 | 359 |
| Below Normal (13%) | 371 | 484 | 605 | 1,135 | 1,357 | 1,540 | 1,466 | 1,186 | 759 | 543 | 370 | 374 |
| Dry (24%) | 388 | 580 | 809 | 1,031 | 1,284 | 1,549 | 1,530 | 1,372 | 1,062 | 726 | 374 | 353 |
| Critical (15%) | 322 | 456 | 648 | 931 | 1,180 | 1,311 | 1,281 | 1,149 | 883 | 526 | 266 | 257 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 815 | 993 | 1,331 | 1,723 | 1,990 | 2,039 | 2,039 | 2,000 | 1,655 | 1,209 | 956 | 859 |
| 20% | 573 | 773 | 1,003 | 1,276 | 1,614 | 1,952 | 2,013 | 1,814 | 1,411 | 1,061 | 785 | 610 |
| 30% | 478 | 663 | 865 | 1,177 | 1,447 | 1,612 | 1,766 | 1,731 | 1,296 | 921 | 698 | 454 |
| 40% | 336 | 561 | 794 | 1,081 | 1,374 | 1,517 | 1,609 | 1,449 | 1,139 | 813 | 557 | 361 |
| 50% | 290 | 494 | 707 | 1,001 | 1,266 | 1,444 | 1,481 | 1,273 | 972 | 701 | 476 | 325 |
| 60% | 233 | 417 | 652 | 942 | 1,206 | 1,344 | 1,380 | 1,211 | 891 | 595 | 433 | 238 |
| 70% | 202 | 367 | 584 | 880 | 1,140 | 1,283 | 1,292 | 1,142 | 799 | 546 | 285 | 210 |
| 80% | 160 | 348 | 521 | 813 | 1,055 | 1,202 | 1,171 | 1,030 | 751 | 458 | 231 | 147 |
| 90% | 100 | 302 | 439 | 740 | 969 | 1,123 | 1,115 | 926 | 638 | 411 | 186 | 102 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 399 | 589 | 801 | 1,087 | 1,346 | 1,502 | 1,544 | 1,406 | 1,076 | 779 | 544 | 404 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 519 | 737 | 976 | 1,204 | 1,495 | 1,710 | 1,808 | 1,701 | 1,357 | 1,052 | 849 | 573 |
| Above Normal (16%) | 150 | 371 | 614 | 1,123 | 1,357 | 1,471 | 1,536 | 1,379 | 969 | 634 | 466 | 188 |
| Below Normal (13%) | 451 | 587 | 721 | 1,080 | 1,319 | 1,422 | 1,414 | 1,203 | 826 | 606 | 446 | 435 |
| Dry (24%) | 409 | 610 | 846 | 1,009 | 1,262 | 1,425 | 1,438 | 1,303 | 1,027 | 747 | 396 | 381 |
| Critical (15%) | 341 | 470 | 621 | 930 | 1,178 | 1,289 | 1,277 | 1,155 | 896 | 557 | 301 | 284 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -134 | -213 | -153 | 9 | -2 | 0 | 21 | 115 | 186 | 73 | 97 | 5 |
| 20% | -248 | -216 | -147 | -70 | -89 | -75 | 47 | 7 | 73 | 106 | 91 | -139 |
| 30% | -68 | -77 | -115 | -97 | -91 | -179 | -123 | 84 | 55 | 60 | 115 | -102 |
| 40% | -128 | -31 | -25 | -62 | -86 | -113 | -29 | -17 | 101 | 119 | 118 | -87 |
| 50% | -86 | -31 | 17 | -7 | -25 | -97 | -18 | -60 | 20 | 110 | 125 | -19 |
| 60% | -63 | -62 | 31 | 11 | 24 | -55 | 3 | 72 | 71 | 69 | 158 | -18 |
| 70% | -43 | -45 | 5 | 51 | 91 | -17 | 4 | 111 | 85 | 93 | 97 | 12 |
| 80% | -72 | 14 | 9 | 44 | 61 | 26 | 32 | 91 | 120 | 83 | 72 | -21 |
| 90% | -87 | 35 | 31 | 40 | 28 | 18 | 52 | 57 | 120 | 131 | 70 | -37 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -102 | -64 | -30 | -26 | -10 | -48 | 9 | 54 | 85 | 104 | 100 | -51 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -247 | -189 | -135 | -45 | -4 | 4 | 76 | 123 | 155 | 171 | 173 | -134 |
| Above Normal (16%) | -264 | -172 | -51 | 8 | 13 | -2 | 98 | 183 | 211 | 201 | 153 | -171 |
| Below Normal (13%) | 79 | 104 | 115 | -55 | -38 | -118 | -52 | 17 | 67 | 63 | 76 | 61 |
| Dry (24%) | 21 | 30 | 38 | -22 | -22 | -124 | -92 | -69 | -35 | 21 | 22 | 28 |
| Critical (15%) | 19 | 14 | -27 | -1 | -2 | -22 | -5 | 6 | 13 | 30 | 35 | 27 |

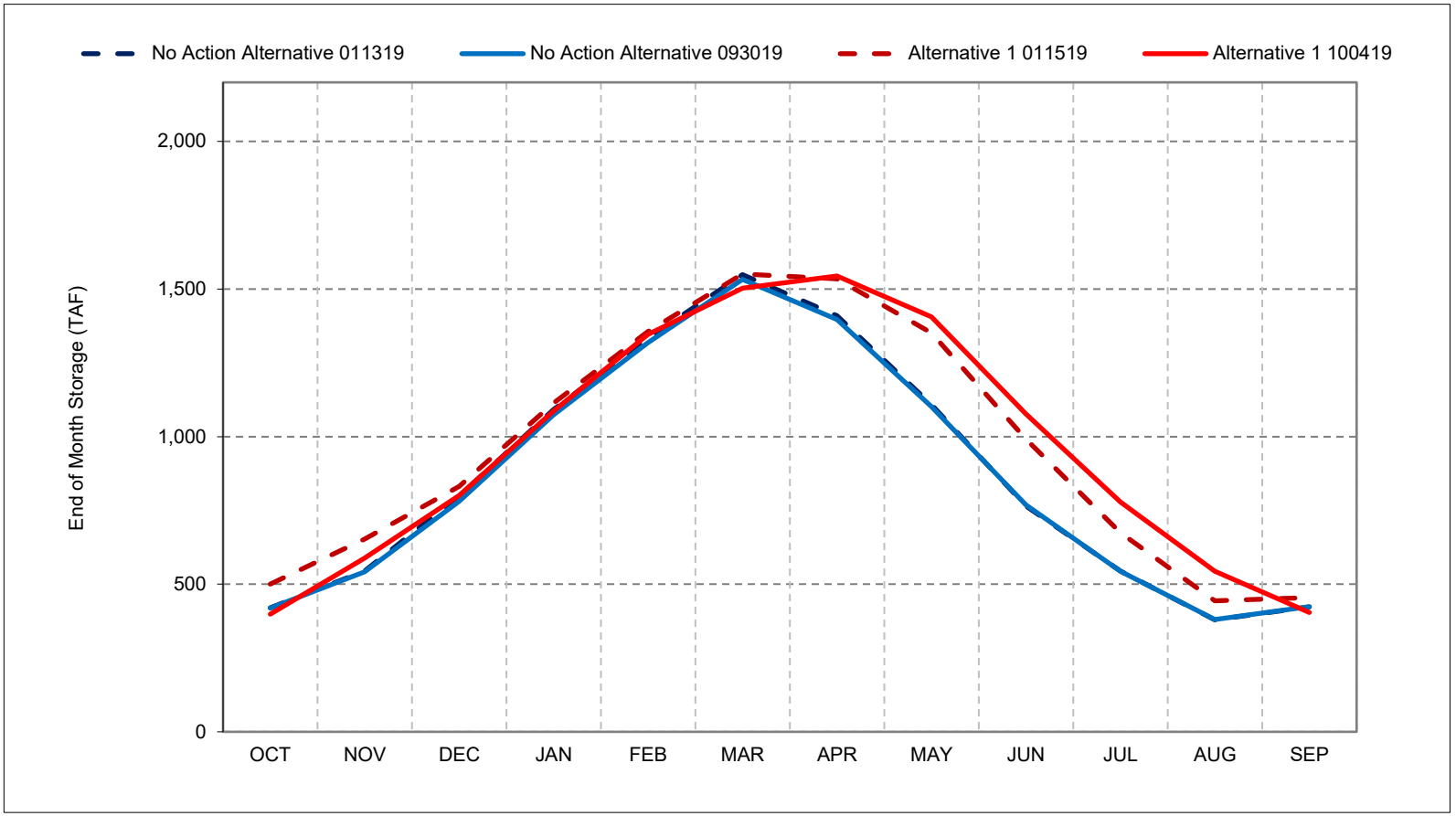
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-1. San Luis Storage (CVP and SWP), Long-Term Average Storage

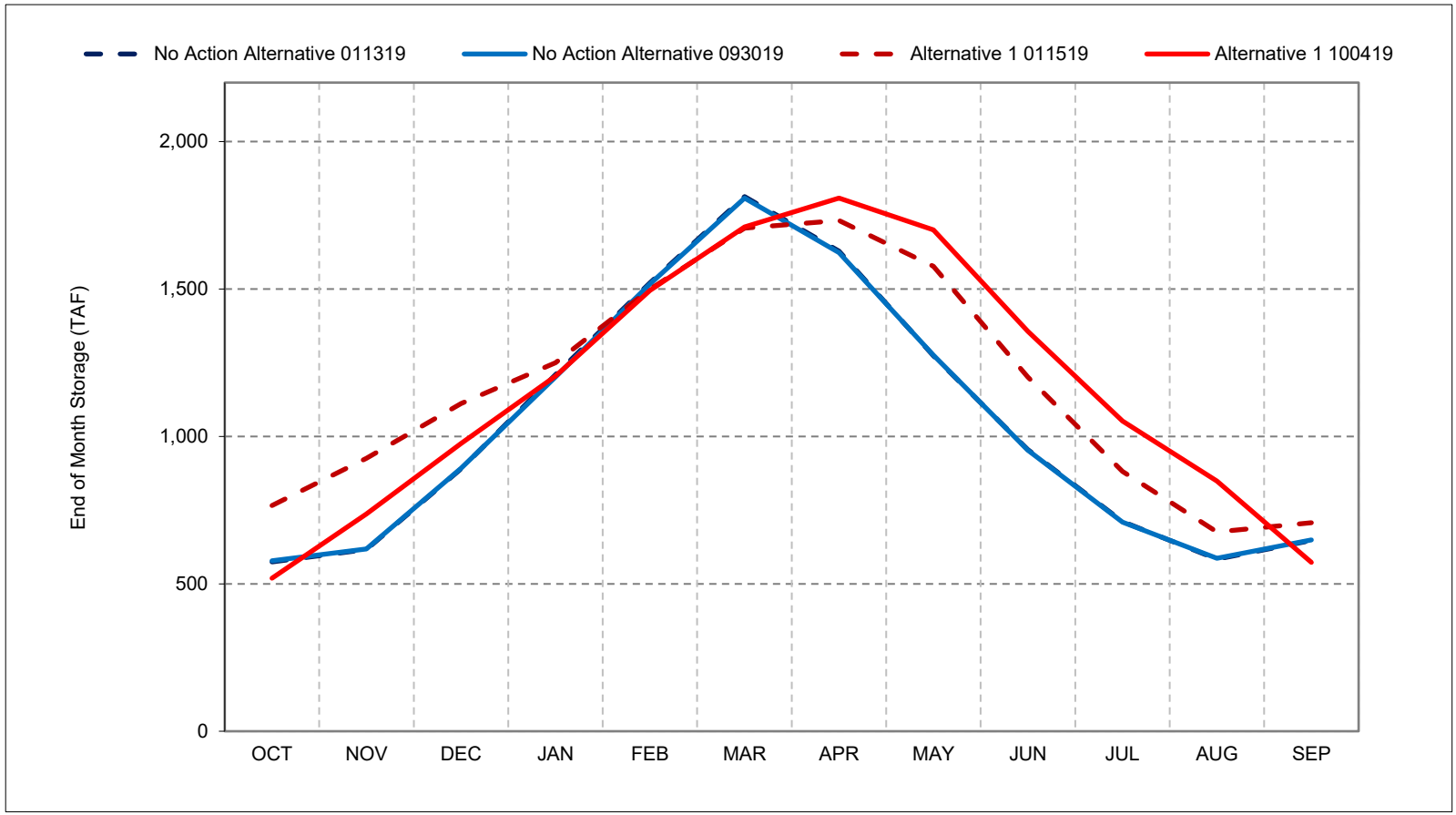



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-2. San Luis Storage (CVP and SWP), Wet Year Average Storage

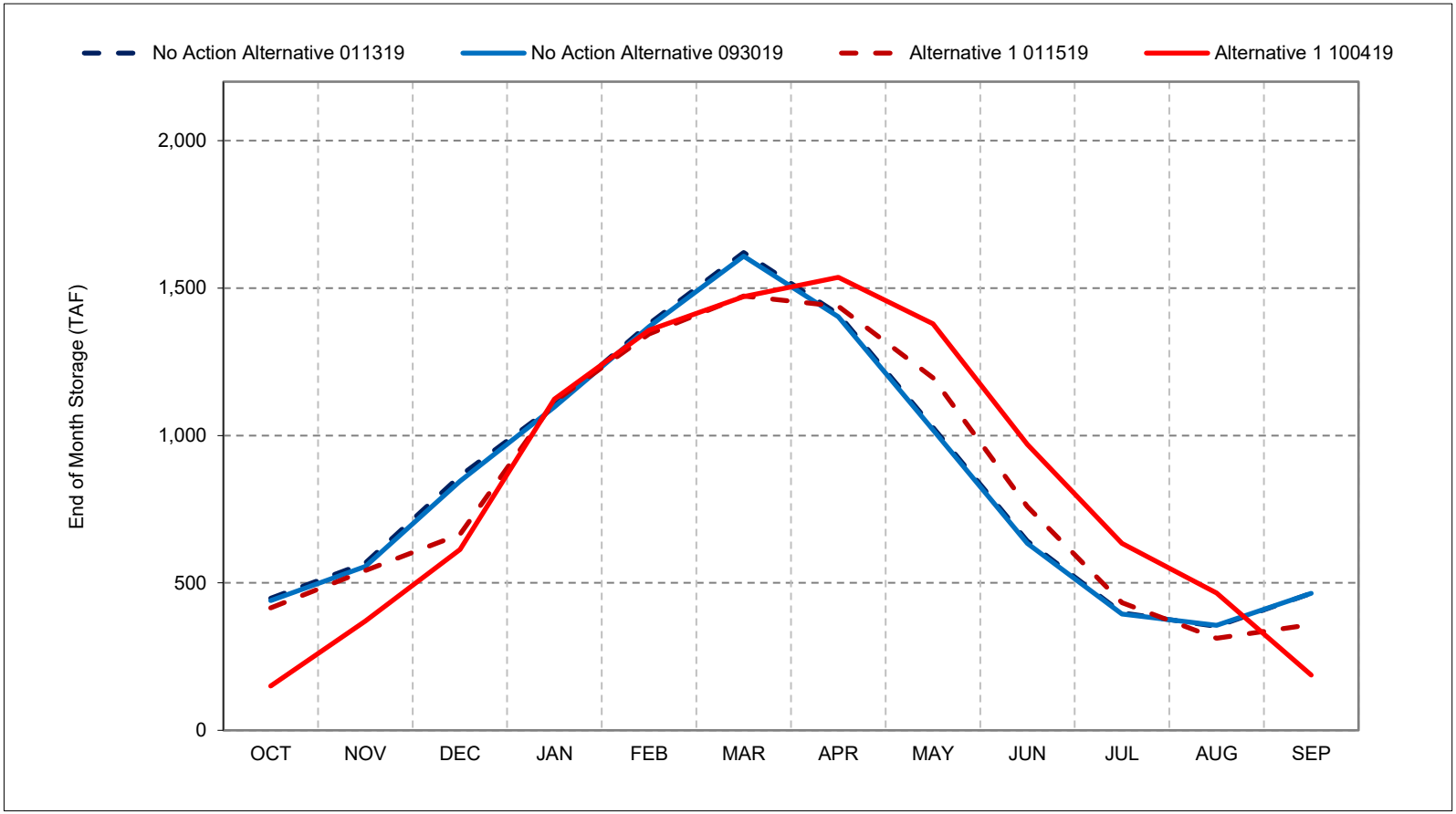



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-3. San Luis Storage (CVP and SWP), Above Normal Year Average Storage

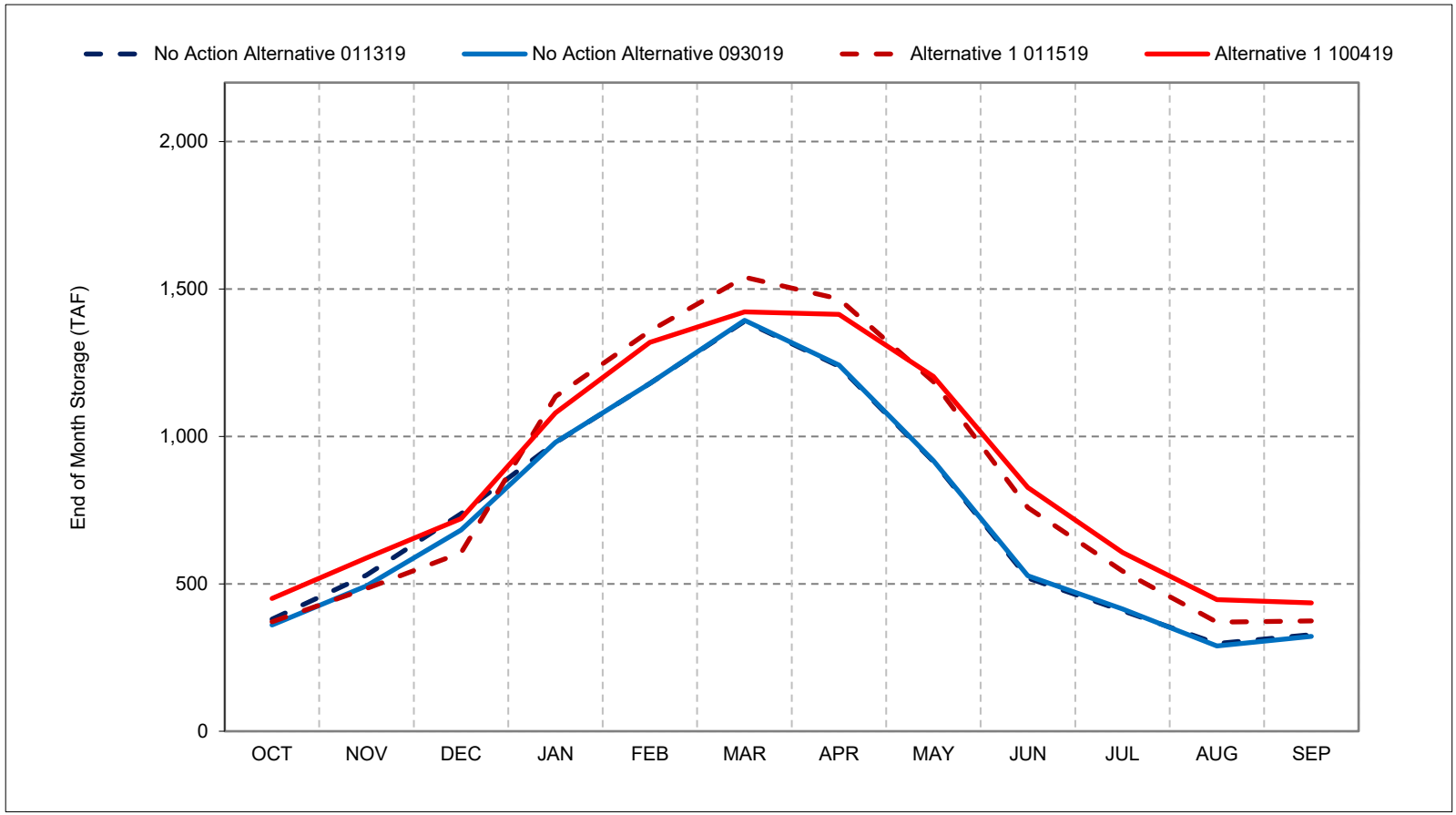



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-4. San Luis Storage (CVP and SWP), Below Normal Year Average Storage

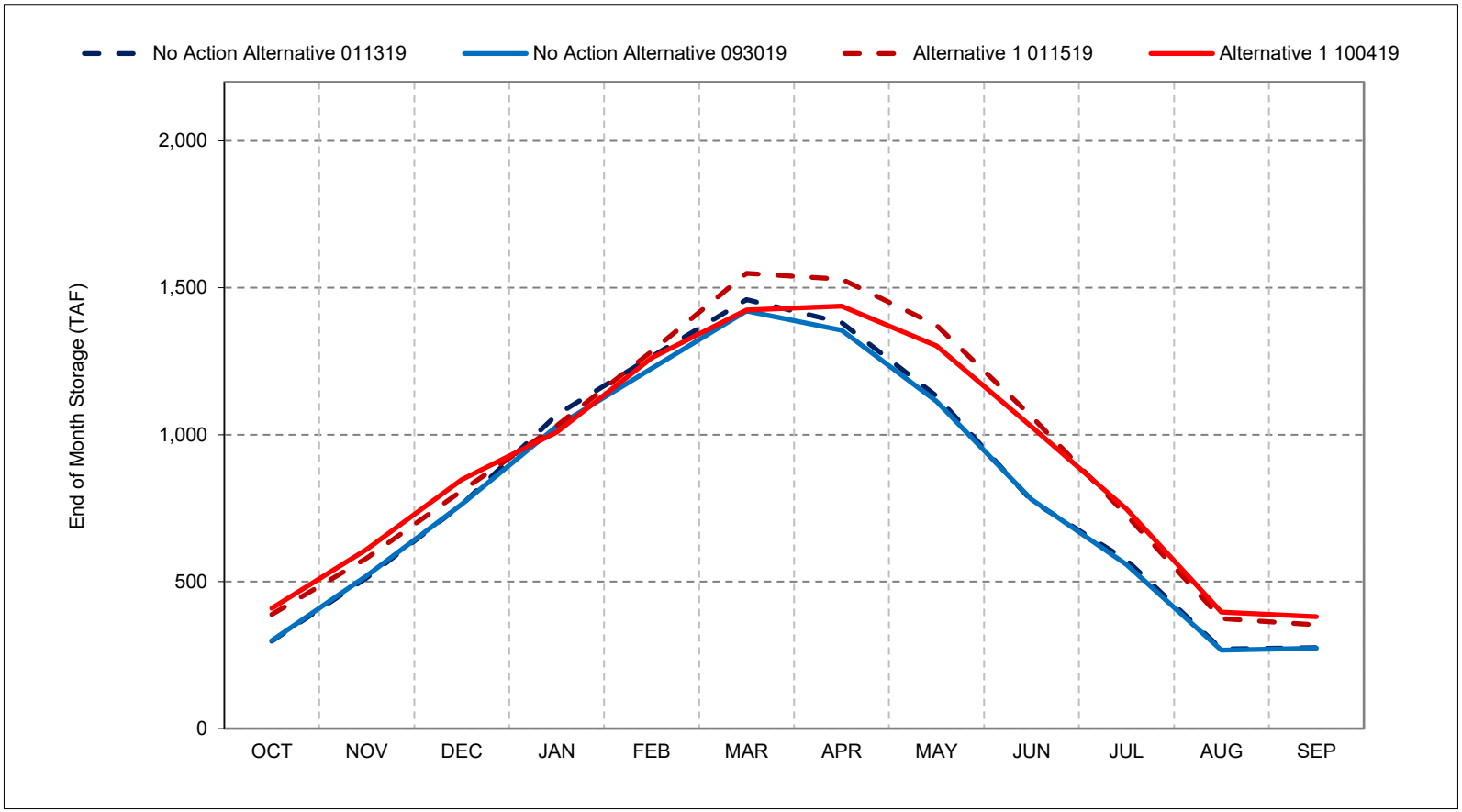



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-5. San Luis Storage (CVP and SWP), Dry Year Average Storage

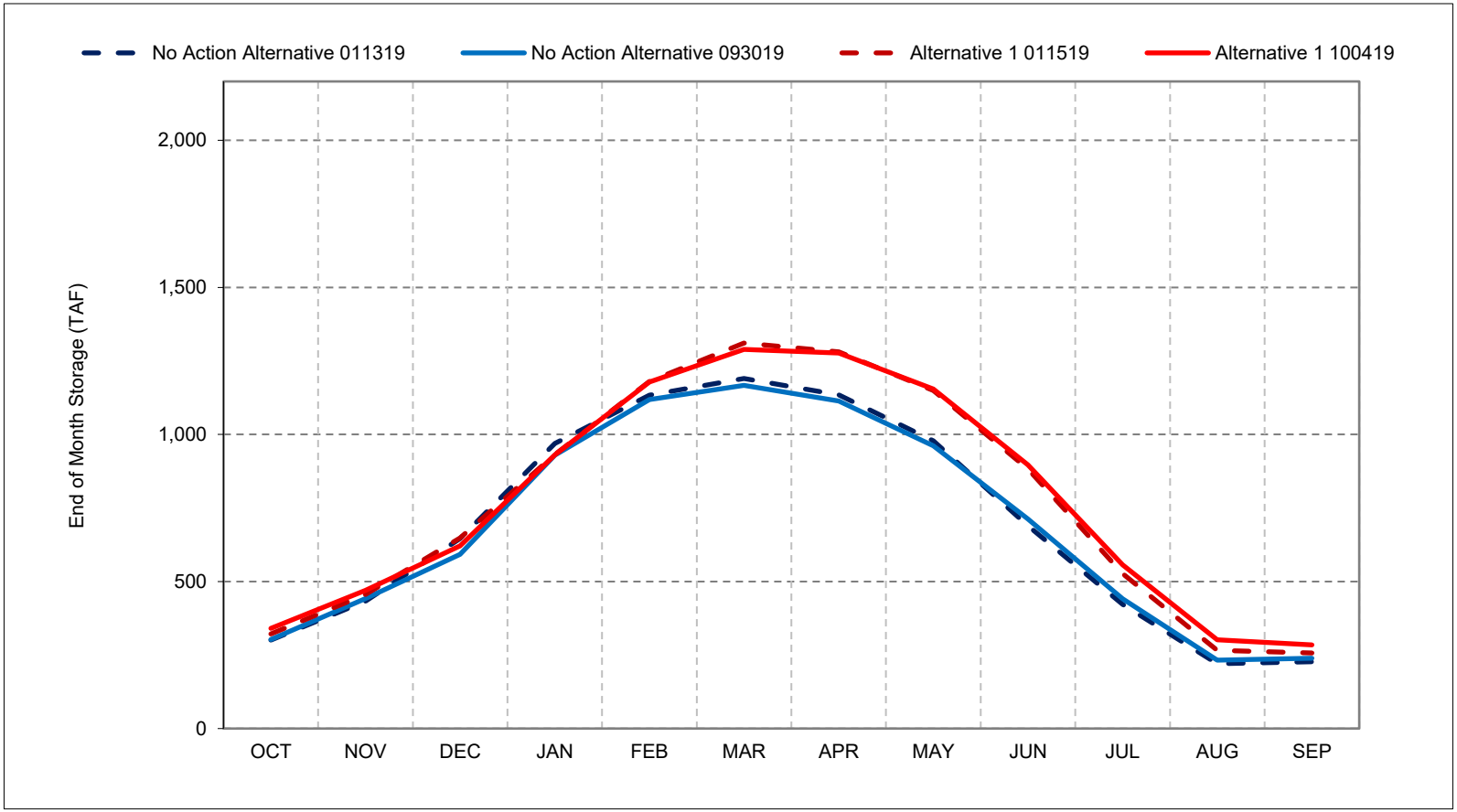



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-6. San Luis Storage (CVP and SWP), Critical Year Average Storage

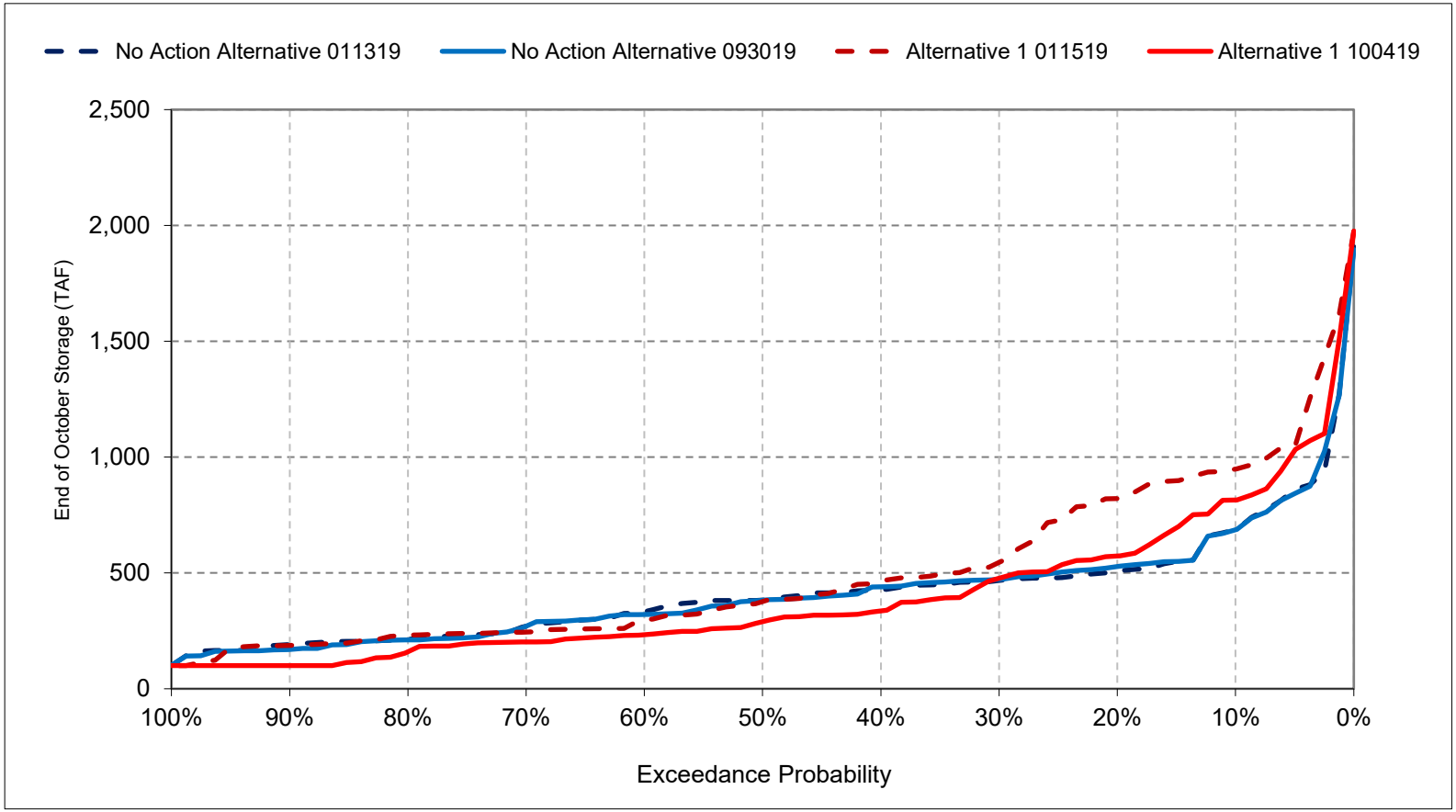



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

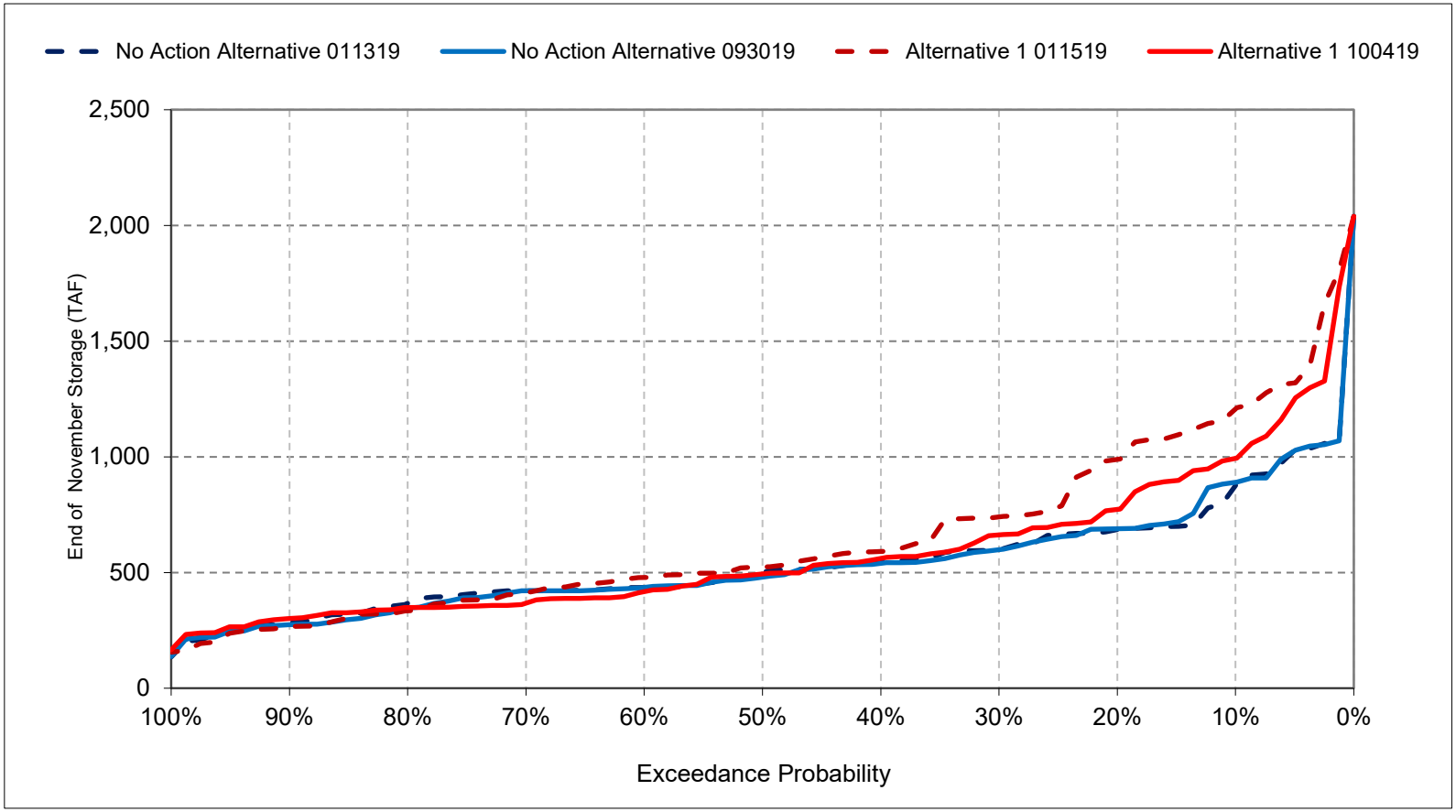
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-7. San Luis Storage (CVP and SWP), End of October Storage



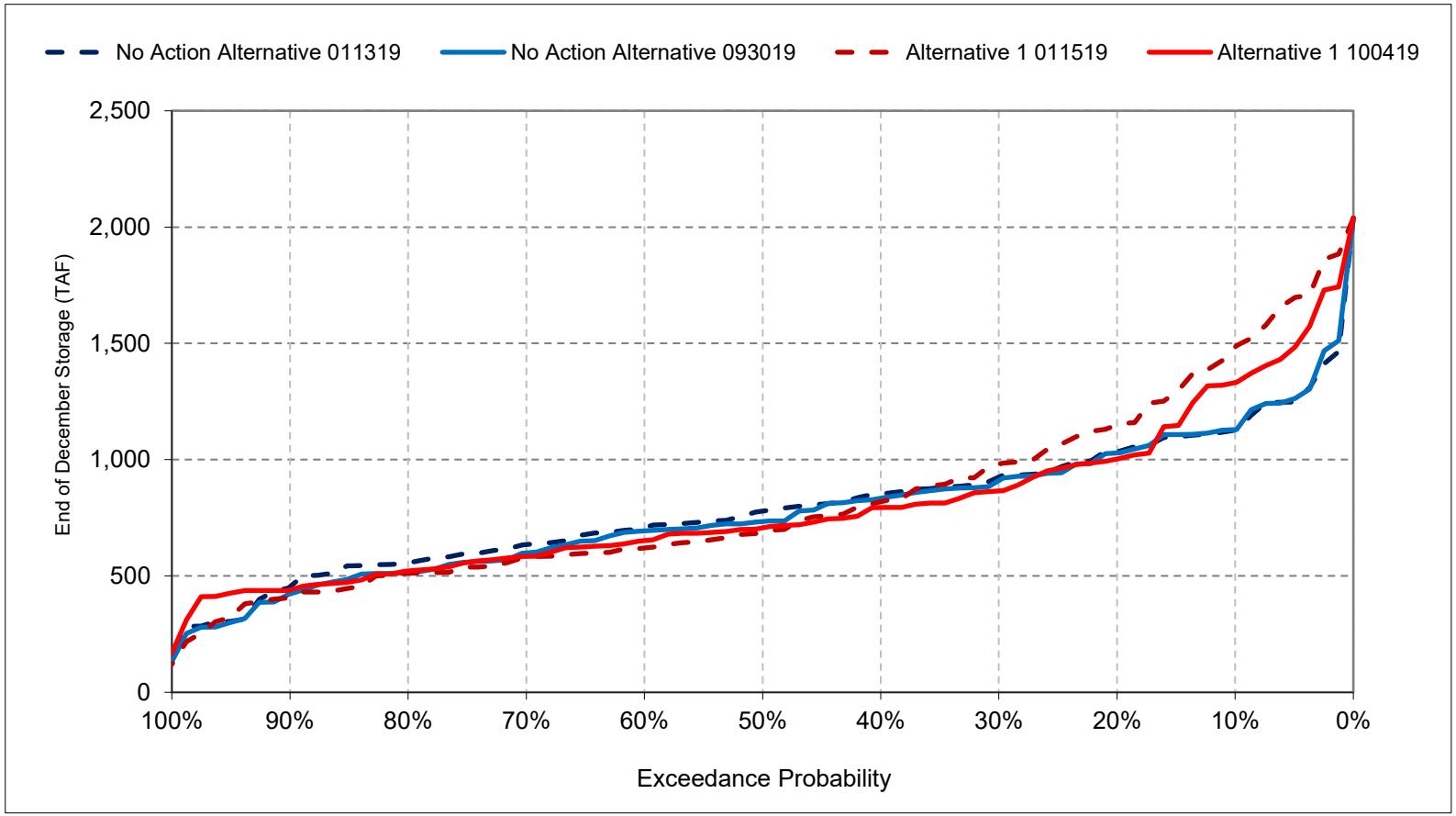

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-8. San Luis Storage (CVP and SWP), End of November Storage



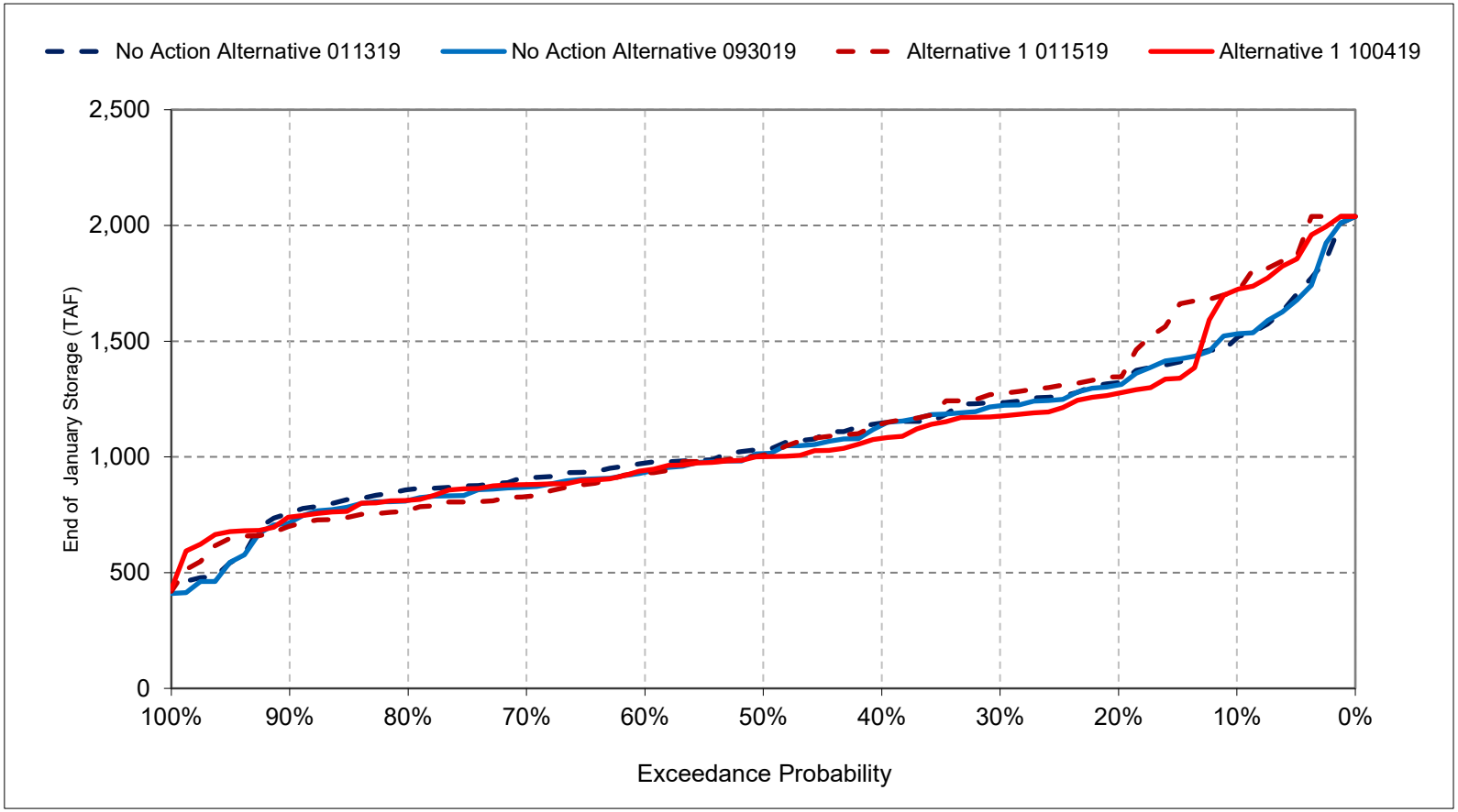

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-9. San Luis Storage (CVP and SWP), End of December Storage



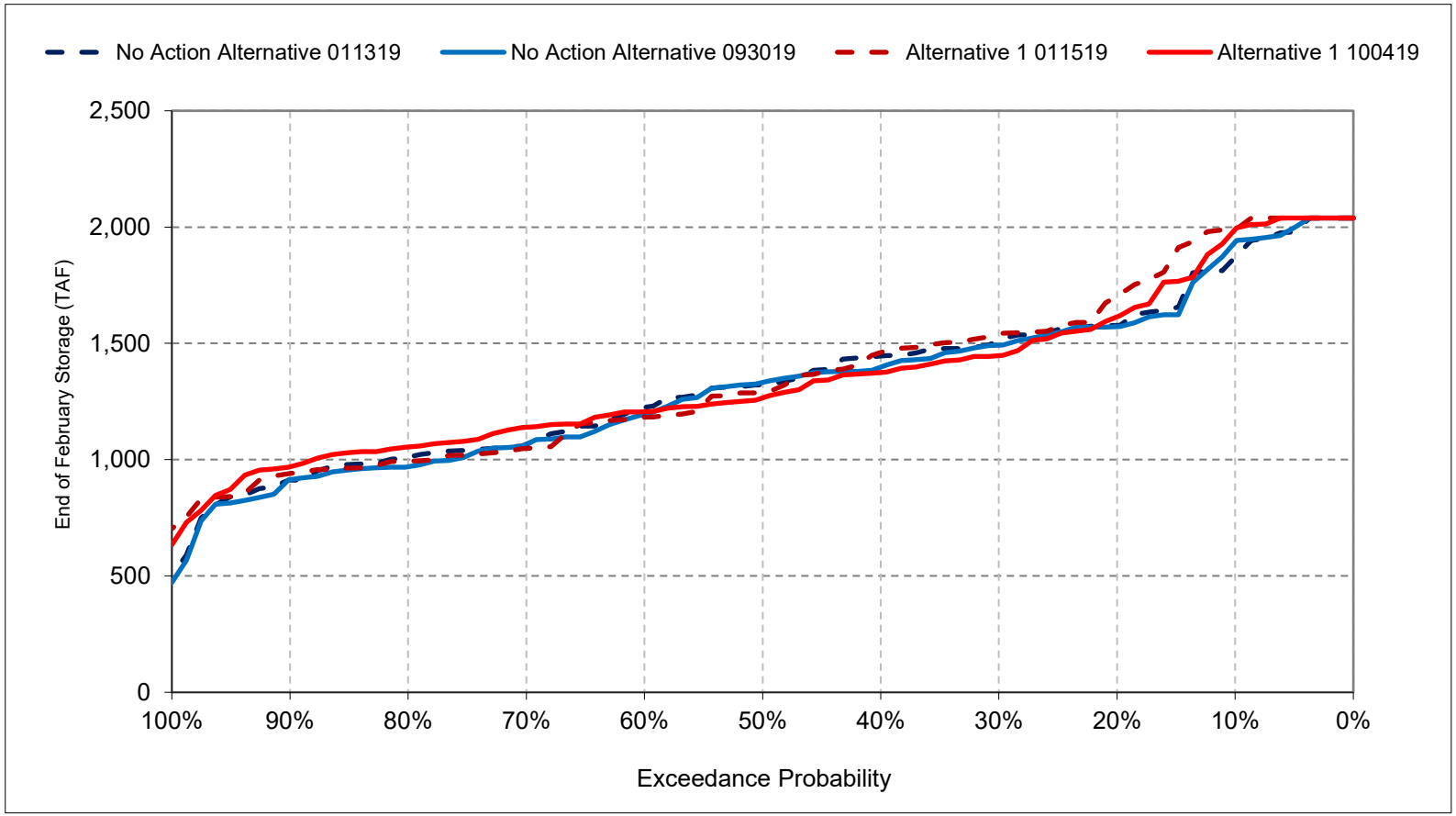

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-10. San Luis Storage (CVP and SWP), End of January Storage



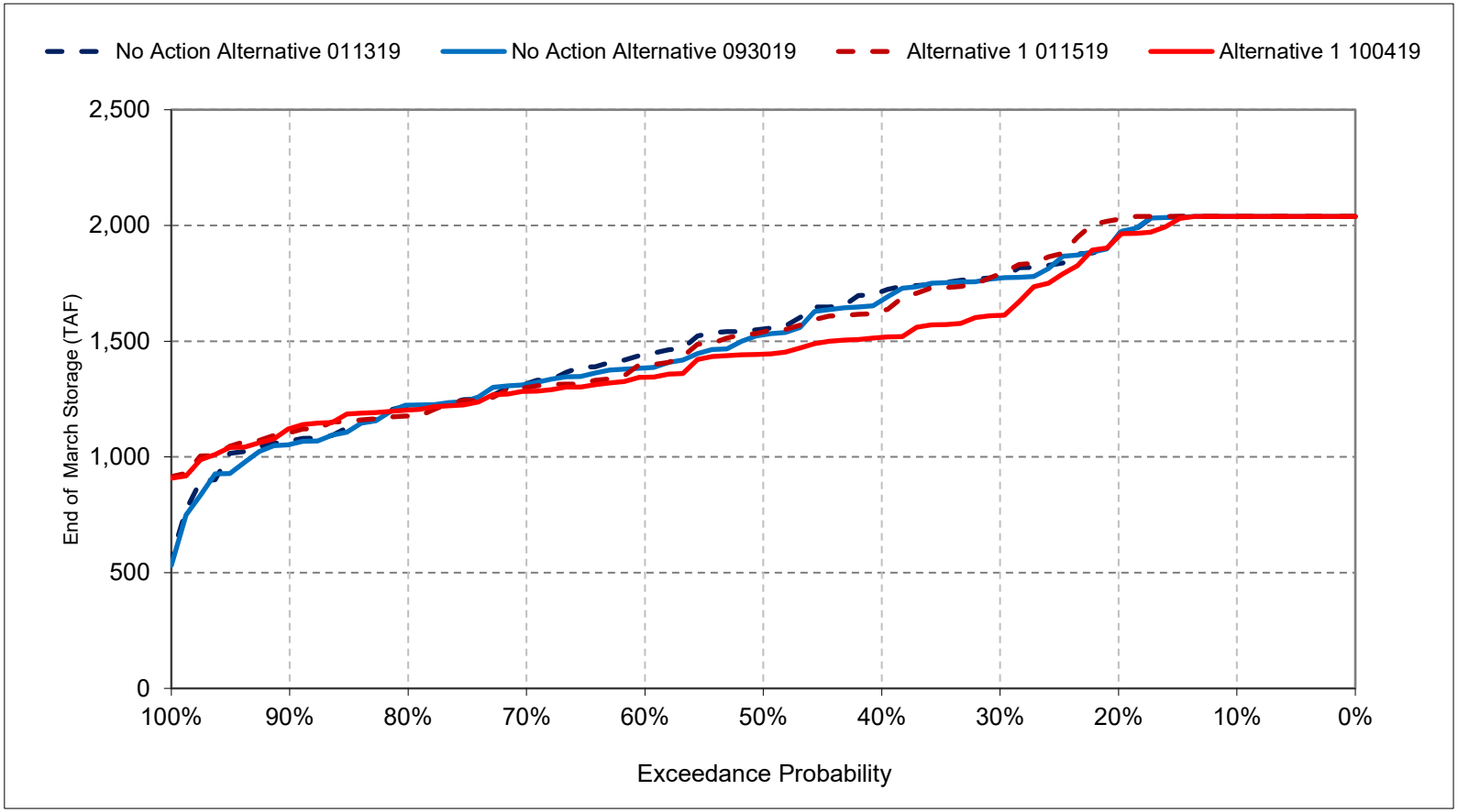

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-11. San Luis Storage (CVP and SWP), End of February Storage



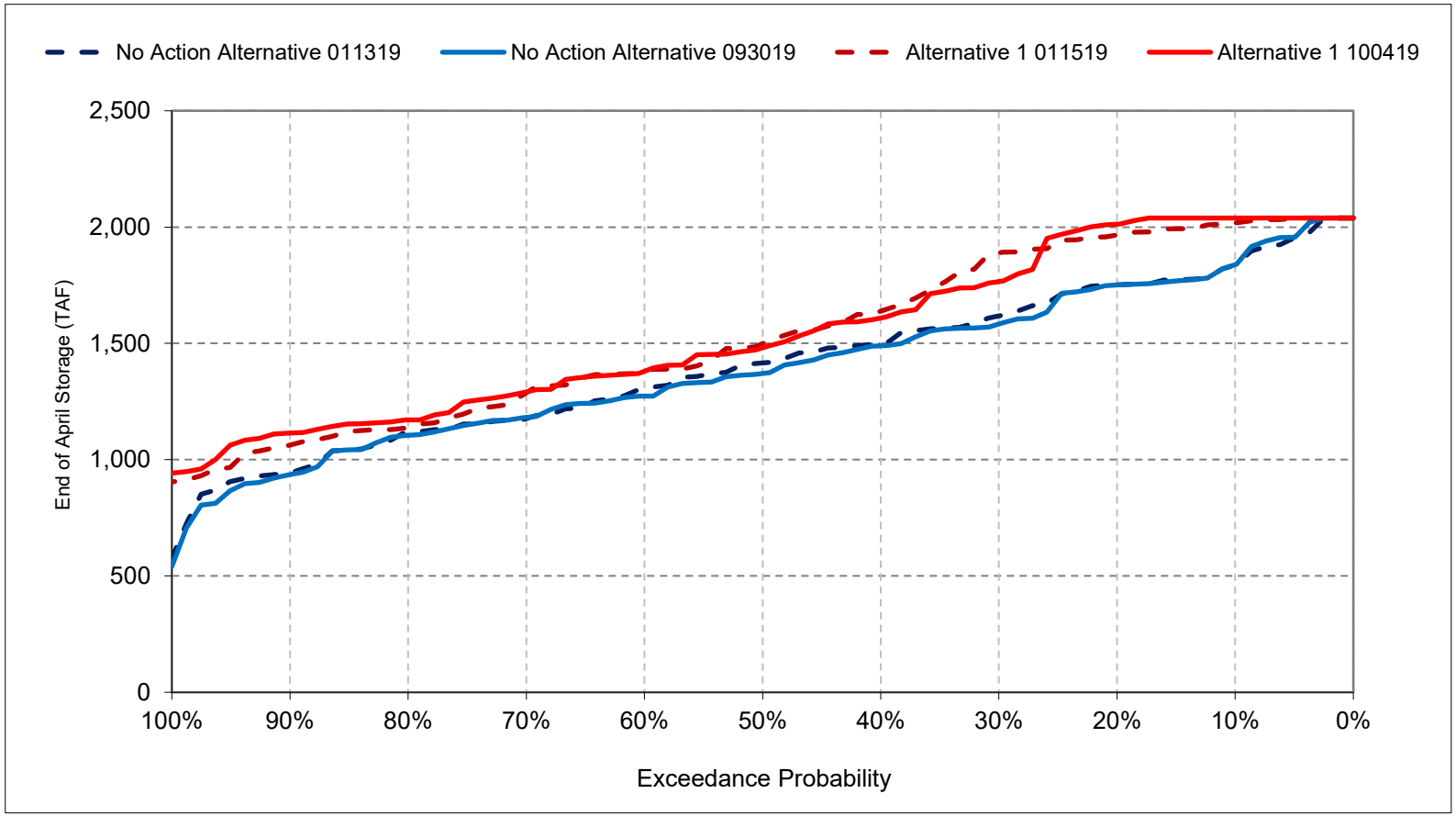

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-12. San Luis Storage (CVP and SWP), End of March Storage



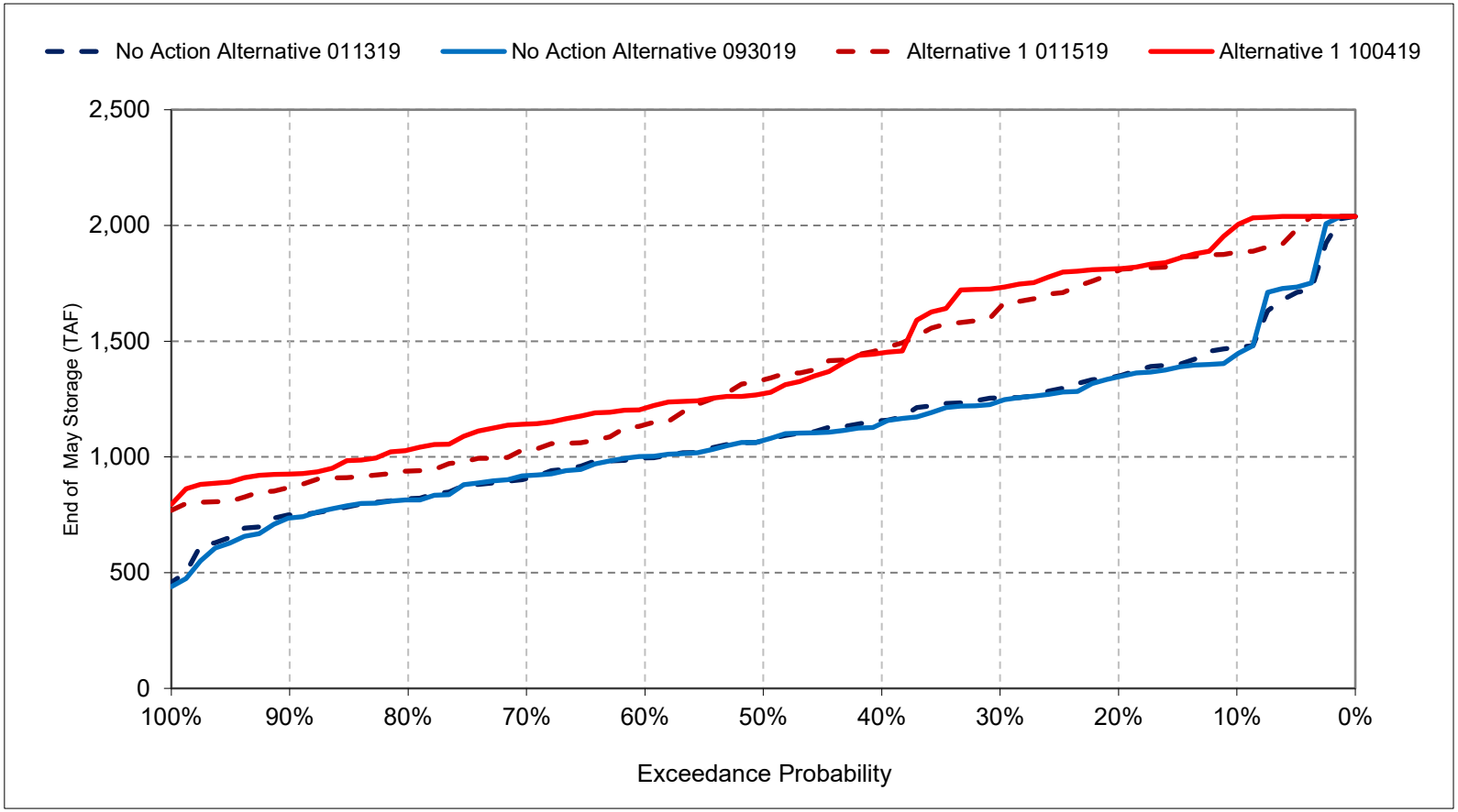

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-13. San Luis Storage (CVP and SWP), End of April Storage



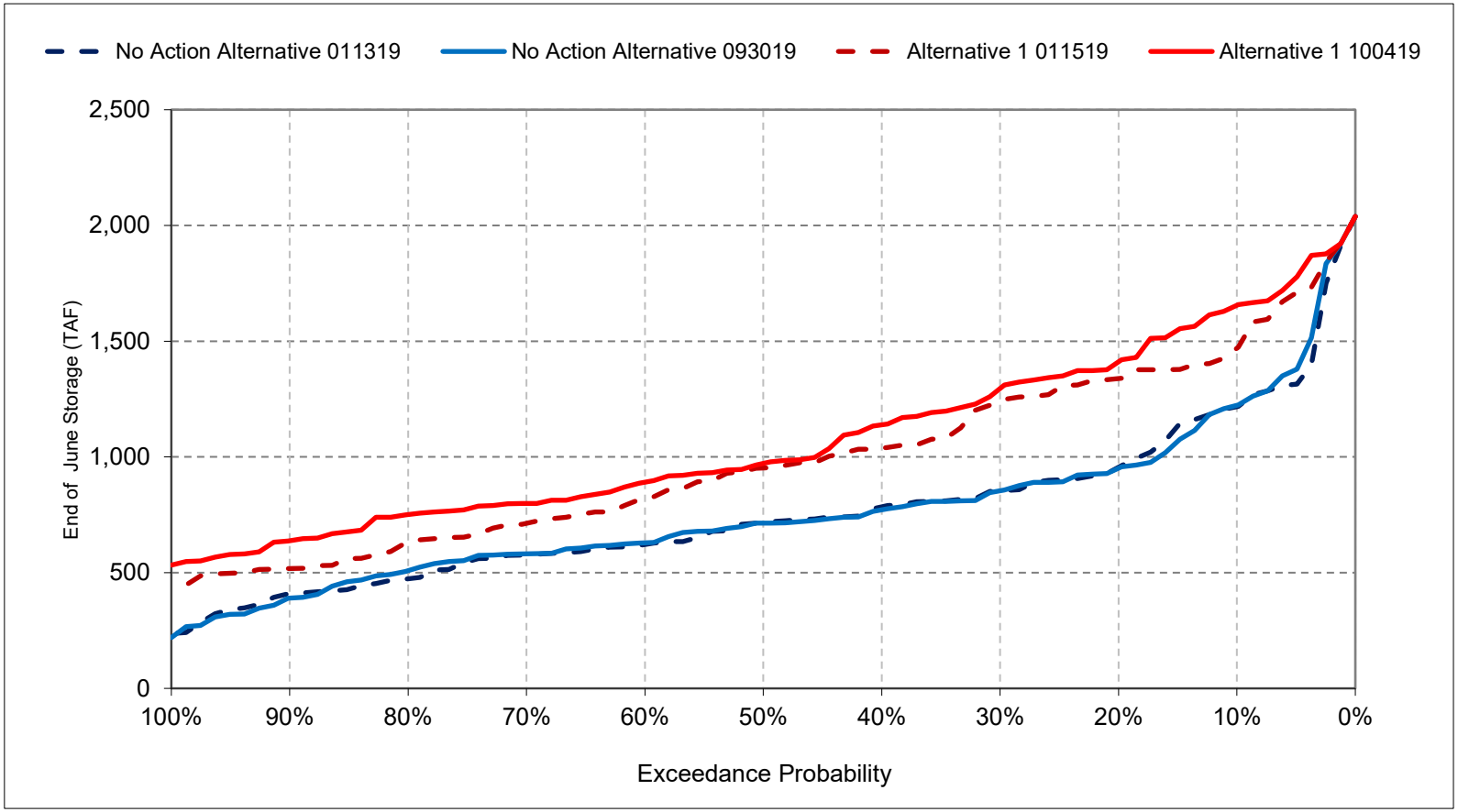

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-14. San Luis Storage (CVP and SWP), End of May Storage



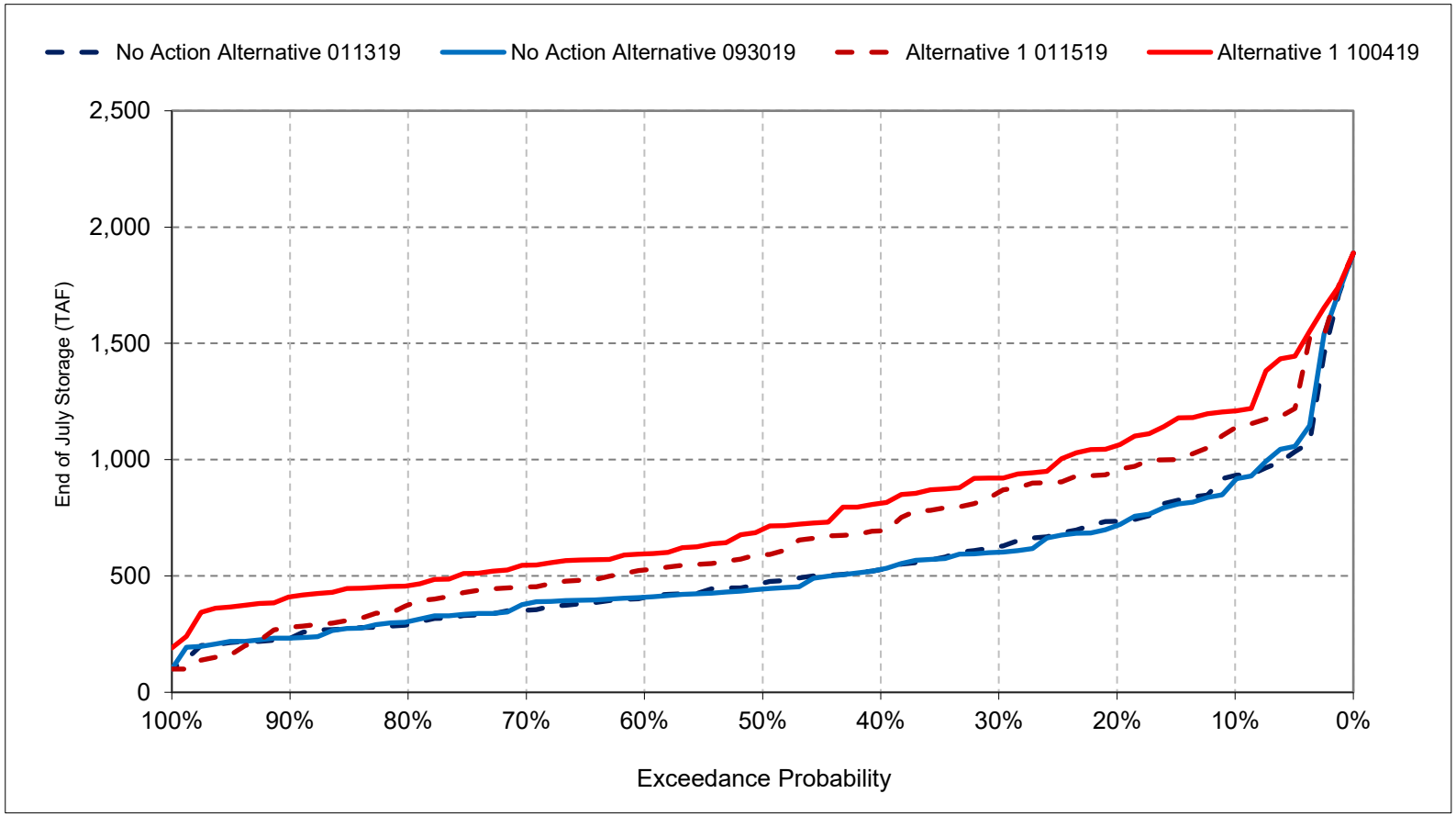

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-15. San Luis Storage (CVP and SWP), End of June Storage



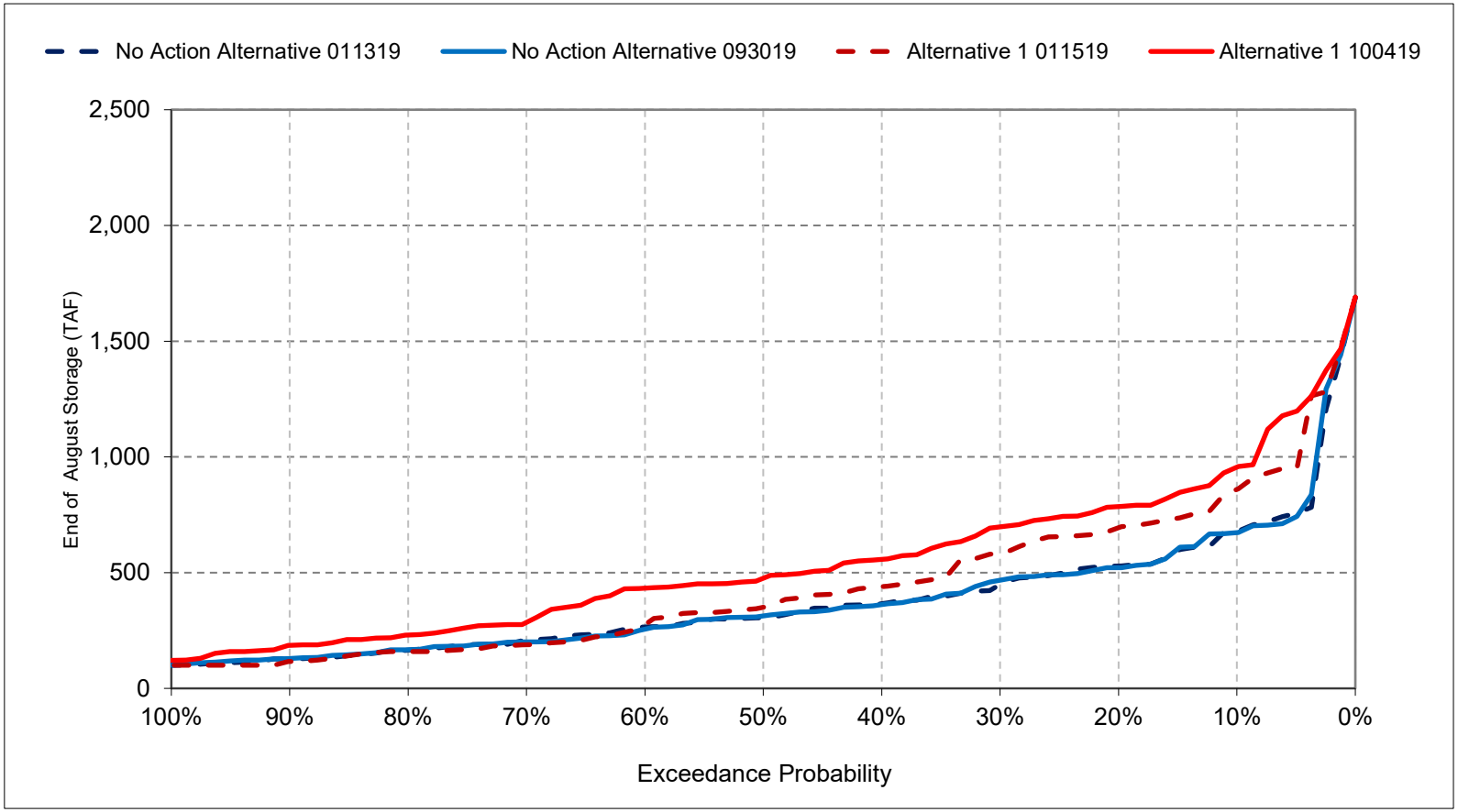

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-16. San Luis Storage (CVP and SWP), End of July Storage



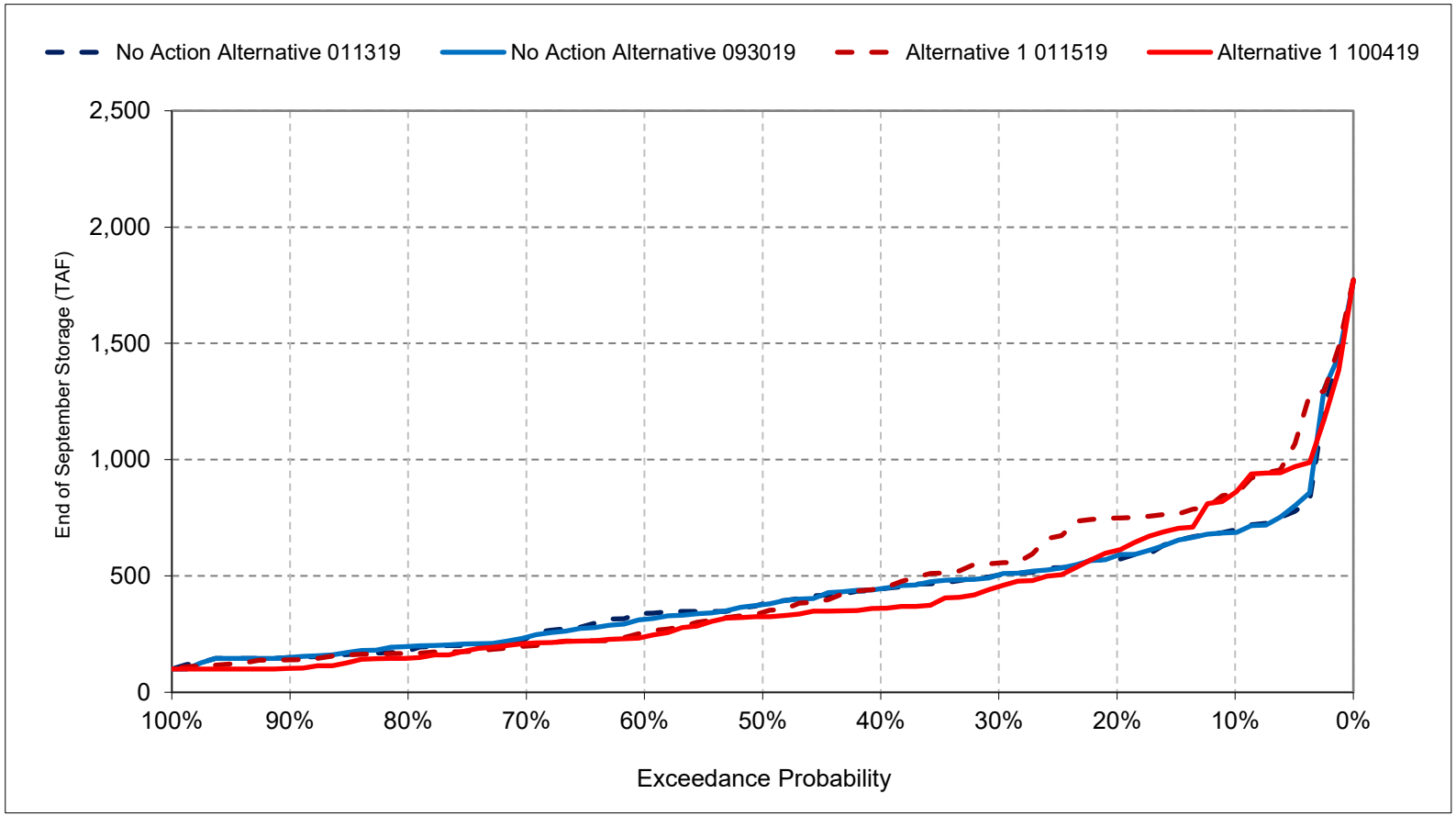

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-17. San Luis Storage (CVP and SWP), End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-18. San Luis Storage (CVP and SWP), End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6a-1. San Luis Reservoir (SWP and CVP), End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 443 | 480 | 506 | 541 | 544 | 536 | 515 | 500 | 450 | 412 | 419 |
| 20% | 396 | 429 | 469 | 500 | 529 | 544 | 529 | 508 | 478 | 422 | 383 | 390 |
| 30% | 386 | 429 | 466 | 495 | 525 | 544 | 525 | 489 | 454 | 403 | 363 | 375 |
| 40% | 381 | 423 | 462 | 491 | 514 | 534 | 521 | 482 | 444 | 399 | 353 | 370 |
| 50% | 379 | 416 | 455 | 488 | 503 | 524 | 510 | 477 | 431 | 391 | 350 | 360 |
| 60% | 375 | 407 | 449 | 482 | 495 | 518 | 505 | 469 | 423 | 387 | 347 | 356 |
| 70% | 372 | 399 | 442 | 472 | 489 | 506 | 492 | 461 | 420 | 377 | 337 | 351 |
| 80% | 370 | 390 | 430 | 460 | 477 | 494 | 483 | 454 | 409 | 365 | 331 | 348 |
| 90% | 361 | 380 | 409 | 449 | 464 | 470 | 464 | 442 | 401 | 349 | 329 | 345 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 385 | 414 | 451 | 481 | 502 | 517 | 506 | 478 | 441 | 396 | 362 | 373 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 428 | 466 | 492 | 517 | 536 | 525 | 498 | 468 | 414 | 378 | 387 |
| Above Normal (16%) | 379 | 412 | 456 | 479 | 504 | 525 | 509 | 473 | 438 | 372 | 347 | 365 |
| Below Normal (13%) | 380 | 409 | 442 | 476 | 493 | 511 | 496 | 463 | 418 | 382 | 347 | 364 |
| Dry (24%) | 378 | 407 | 443 | 480 | 496 | 513 | 503 | 476 | 434 | 399 | 360 | 369 |
| Critical (15%) | 382 | 404 | 433 | 469 | 482 | 484 | 474 | 456 | 421 | 389 | 358 | 364 |

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 456 | 488 | 526 | 544 | 544 | 544 | 544 | 544 | 525 | 466 | 436 | 440 |
| 20% | 429 | 451 | 485 | 513 | 540 | 544 | 544 | 544 | 507 | 445 | 405 | 411 |
| 30% | 411 | 442 | 469 | 501 | 528 | 544 | 544 | 533 | 488 | 430 | 382 | 391 |
| 40% | 390 | 427 | 460 | 490 | 521 | 542 | 539 | 523 | 474 | 416 | 370 | 380 |
| 50% | 382 | 414 | 451 | 483 | 505 | 529 | 532 | 515 | 463 | 404 | 357 | 376 |
| 60% | 379 | 404 | 439 | 475 | 497 | 519 | 525 | 501 | 453 | 398 | 353 | 360 |
| 70% | 371 | 391 | 431 | 463 | 488 | 509 | 508 | 494 | 446 | 393 | 349 | 355 |
| 80% | 365 | 384 | 425 | 457 | 477 | 502 | 492 | 475 | 442 | 386 | 336 | 348 |
| 90% | 341 | 373 | 404 | 437 | 462 | 485 | 484 | 466 | 434 | 370 | 329 | 339 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 395 | 422 | 453 | 483 | 505 | 522 | 521 | 508 | 471 | 414 | 372 | 382 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 414 | 450 | 483 | 500 | 520 | 535 | 541 | 534 | 497 | 436 | 392 | 402 |
| Above Normal (16%) | 389 | 417 | 448 | 470 | 493 | 513 | 520 | 507 | 463 | 385 | 352 | 367 |
| Below Normal (13%) | 387 | 406 | 433 | 492 | 511 | 527 | 521 | 501 | 461 | 408 | 366 | 377 |
| Dry (24%) | 388 | 410 | 445 | 476 | 499 | 519 | 513 | 498 | 462 | 412 | 370 | 377 |
| Critical (15%) | 381 | 402 | 428 | 468 | 491 | 502 | 493 | 478 | 447 | 403 | 363 | 367 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 33 | 45 | 46 | 38 | 3 | 0 | 8 | 29 | 25 | 16 | 24 | 22 |
| 20% | 33 | 22 | 16 | 13 | 11 | 0 | 15 | 35 | 29 | 23 | 22 | 21 |
| 30% | 24 | 13 | 2 | 6 | 3 | 0 | 19 | 44 | 35 | 27 | 19 | 16 |
| 40% | 9 | 4 | -2 | -1 | 6 | 8 | 18 | 41 | 30 | 17 | 16 | 9 |
| 50% | 4 | -2 | -4 | -5 | 1 | 6 | 22 | 38 | 32 | 13 | 8 | 16 |
| 60% | 4 | -3 | -10 | -7 | 3 | 1 | 20 | 32 | 31 | 11 | 6 | 4 |
| 70% | -1 | -8 | -10 | -9 | -1 | 3 | 16 | 33 | 27 | 17 | 12 | 5 |
| 80% | -5 | -6 | -5 | -3 | 1 | 8 | 9 | 21 | 33 | 21 | 4 | 0 |
| 90% | -20 | -7 | -4 | -13 | -2 | 15 | 20 | 24 | 33 | 22 | 0 | -5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 10 | 8 | 3 | 2 | 4 | 5 | 15 | 30 | 30 | 18 | 11 | 9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 15 | 21 | 16 | 8 | 3 | 0 | 16 | 36 | 29 | 22 | 14 | 15 |
| Above Normal (16%) | 10 | 5 | -8 | -9 | -11 | -12 | 11 | 34 | 25 | 14 | 5 | 2 |
| Below Normal (13%) | 7 | -2 | -9 | 16 | 18 | 16 | 25 | 38 | 42 | 26 | 19 | 13 |
| Dry (24%) | 10 | 3 | 2 | -4 | 2 | 7 | 11 | 22 | 28 | 12 | 10 | 9 |
| Critical (15%) | -1 | -2 | -5 | -1 | 8 | 19 | 19 | 21 | 26 | 13 | 4 | 3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6a-2. San Luis Reservoir (SWP and CVP), End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 439 | 480 | 506 | 538 | 544 | 536 | 514 | 500 | 445 | 412 | 417 |
| 20% | 395 | 429 | 468 | 500 | 527 | 544 | 529 | 499 | 475 | 422 | 383 | 396 |
| 30% | 386 | 429 | 467 | 493 | 519 | 543 | 523 | 488 | 454 | 403 | 362 | 374 |
| 40% | 381 | 421 | 463 | 490 | 511 | 529 | 515 | 481 | 443 | 399 | 352 | 368 |
| 50% | 379 | 415 | 452 | 485 | 503 | 521 | 510 | 477 | 430 | 392 | 349 | 361 |
| 60% | 377 | 409 | 447 | 477 | 494 | 515 | 503 | 468 | 423 | 386 | 347 | 356 |
| 70% | 373 | 399 | 435 | 471 | 489 | 505 | 494 | 462 | 418 | 377 | 336 | 351 |
| 80% | 369 | 389 | 430 | 459 | 477 | 494 | 483 | 454 | 412 | 365 | 331 | 348 |
| 90% | 356 | 376 | 399 | 442 | 458 | 476 | 465 | 443 | 404 | 348 | 329 | 344 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 385 | 413 | 448 | 479 | 500 | 516 | 504 | 477 | 441 | 395 | 361 | 372 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 429 | 466 | 491 | 516 | 535 | 524 | 497 | 466 | 411 | 375 | 384 |
| Above Normal (16%) | 378 | 411 | 455 | 477 | 502 | 523 | 507 | 472 | 437 | 368 | 346 | 365 |
| Below Normal (13%) | 379 | 404 | 435 | 474 | 492 | 510 | 495 | 462 | 418 | 382 | 347 | 367 |
| Dry (24%) | 378 | 408 | 442 | 477 | 493 | 509 | 500 | 474 | 433 | 399 | 360 | 368 |
| Critical (15%) | 378 | 400 | 424 | 466 | 483 | 484 | 474 | 456 | 425 | 393 | 360 | 366 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 451 | 475 | 508 | 537 | 544 | 544 | 544 | 544 | 526 | 465 | 433 | 440 |
| 20% | 421 | 452 | 487 | 509 | 538 | 544 | 544 | 544 | 510 | 448 | 407 | 407 |
| 30% | 400 | 429 | 466 | 498 | 519 | 540 | 544 | 533 | 495 | 436 | 389 | 391 |
| 40% | 382 | 413 | 455 | 487 | 513 | 531 | 539 | 524 | 480 | 424 | 380 | 378 |
| 50% | 374 | 410 | 448 | 479 | 507 | 526 | 532 | 516 | 474 | 416 | 373 | 368 |
| 60% | 369 | 400 | 439 | 475 | 497 | 519 | 520 | 506 | 468 | 409 | 368 | 355 |
| 70% | 352 | 391 | 435 | 465 | 488 | 510 | 507 | 490 | 457 | 402 | 358 | 348 |
| 80% | 329 | 386 | 424 | 457 | 486 | 499 | 496 | 481 | 446 | 397 | 352 | 329 |
| 90% | 329 | 379 | 411 | 450 | 477 | 487 | 483 | 471 | 443 | 388 | 346 | 329 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 383 | 418 | 453 | 483 | 506 | 520 | 521 | 510 | 478 | 423 | 382 | 376 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 442 | 480 | 495 | 516 | 534 | 541 | 534 | 503 | 448 | 404 | 391 |
| Above Normal (16%) | 340 | 396 | 442 | 479 | 503 | 518 | 526 | 516 | 482 | 411 | 364 | 338 |
| Below Normal (13%) | 387 | 409 | 437 | 488 | 510 | 522 | 517 | 502 | 469 | 413 | 371 | 379 |
| Dry (24%) | 388 | 414 | 448 | 474 | 498 | 512 | 509 | 495 | 461 | 410 | 372 | 379 |
| Critical (15%) | 385 | 406 | 430 | 471 | 495 | 505 | 497 | 484 | 454 | 413 | 377 | 378 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 28 | 35 | 28 | 31 | 7 | 0 | 8 | 30 | 27 | 20 | 21 | 23 |
| 20% | 26 | 24 | 19 | 9 | 11 | 0 | 16 | 46 | 35 | 26 | 23 | 11 |
| 30% | 14 | 0 | 0 | 5 | 0 | -3 | 22 | 44 | 41 | 32 | 27 | 17 |
| 40% | 1 | -8 | -8 | -3 | 2 | 2 | 25 | 43 | 37 | 25 | 28 | 10 |
| 50% | -5 | -6 | -4 | -6 | 4 | 5 | 22 | 39 | 44 | 24 | 24 | 7 |
| 60% | -7 | -8 | -8 | -2 | 2 | 5 | 17 | 38 | 44 | 24 | 22 | -1 |
| 70% | -21 | -7 | 0 | -6 | -1 | 5 | 13 | 29 | 39 | 25 | 22 | -3 |
| 80% | -40 | -2 | -6 | -2 | 9 | 5 | 14 | 26 | 34 | 31 | 22 | -19 |
| 90% | -27 | 3 | 12 | 7 | 19 | 10 | 18 | 28 | 38 | 40 | 16 | -15 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | 5 | 5 | 4 | 6 | 4 | 17 | 33 | 36 | 28 | 21 | 4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 14 | 14 | 4 | 0 | -1 | 16 | 36 | 36 | 37 | 28 | 7 |
| Above Normal (16%) | -39 | -14 | -12 | 2 | 1 | -5 | 19 | 45 | 45 | 42 | 18 | -27 |
| Below Normal (13%) | 9 | 5 | 2 | 14 | 18 | 12 | 22 | 40 | 50 | 30 | 24 | 12 |
| Dry (24%) | 10 | 6 | 6 | -2 | 5 | 3 | 9 | 21 | 28 | 12 | 12 | 11 |
| Critical (15%) | 7 | 6 | 6 | 5 | 12 | 21 | 23 | 28 | 29 | 20 | 17 | 11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6a-3. San Luis Reservoir (SWP and CVP), End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 443 | 480 | 506 | 541 | 544 | 536 | 515 | 500 | 450 | 412 | 419 |
| 20% | 396 | 429 | 469 | 500 | 529 | 544 | 529 | 508 | 478 | 422 | 383 | 390 |
| 30% | 386 | 429 | 466 | 495 | 525 | 544 | 525 | 489 | 454 | 403 | 363 | 375 |
| 40% | 381 | 423 | 462 | 491 | 514 | 534 | 521 | 482 | 444 | 399 | 353 | 370 |
| 50% | 379 | 416 | 455 | 488 | 503 | 524 | 510 | 477 | 431 | 391 | 350 | 360 |
| 60% | 375 | 407 | 449 | 482 | 495 | 518 | 505 | 469 | 423 | 387 | 347 | 356 |
| 70% | 372 | 399 | 442 | 472 | 489 | 506 | 492 | 461 | 420 | 377 | 337 | 351 |
| 80% | 370 | 390 | 430 | 460 | 477 | 494 | 483 | 454 | 409 | 365 | 331 | 348 |
| 90% | 361 | 380 | 409 | 449 | 464 | 470 | 464 | 442 | 401 | 349 | 329 | 345 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 385 | 414 | 451 | 481 | 502 | 517 | 506 | 478 | 441 | 396 | 362 | 373 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 428 | 466 | 492 | 517 | 536 | 525 | 498 | 468 | 414 | 378 | 387 |
| Above Normal (16%) | 379 | 412 | 456 | 479 | 504 | 525 | 509 | 473 | 438 | 372 | 347 | 365 |
| Below Normal (13%) | 380 | 409 | 442 | 476 | 493 | 511 | 496 | 463 | 418 | 382 | 347 | 364 |
| Dry (24%) | 378 | 407 | 443 | 480 | 496 | 513 | 503 | 476 | 434 | 399 | 360 | 369 |
| Critical (15%) | 382 | 404 | 433 | 469 | 482 | 484 | 474 | 456 | 421 | 389 | 358 | 364 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 439 | 480 | 506 | 538 | 544 | 536 | 514 | 500 | 445 | 412 | 417 |
| 20% | 395 | 429 | 468 | 500 | 527 | 544 | 529 | 499 | 475 | 422 | 383 | 396 |
| 30% | 386 | 429 | 467 | 493 | 519 | 543 | 523 | 488 | 454 | 403 | 362 | 374 |
| 40% | 381 | 421 | 463 | 490 | 511 | 529 | 515 | 481 | 443 | 399 | 352 | 368 |
| 50% | 379 | 415 | 452 | 485 | 503 | 521 | 510 | 477 | 430 | 392 | 349 | 361 |
| 60% | 377 | 409 | 447 | 477 | 494 | 515 | 503 | 468 | 423 | 386 | 347 | 356 |
| 70% | 373 | 399 | 435 | 471 | 489 | 505 | 494 | 462 | 418 | 377 | 336 | 351 |
| 80% | 369 | 389 | 430 | 459 | 477 | 494 | 483 | 454 | 412 | 365 | 331 | 348 |
| 90% | 356 | 376 | 399 | 442 | 458 | 476 | 465 | 443 | 404 | 348 | 329 | 344 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 385 | 413 | 448 | 479 | 500 | 516 | 504 | 477 | 441 | 395 | 361 | 372 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 429 | 466 | 491 | 516 | 535 | 524 | 497 | 466 | 411 | 375 | 384 |
| Above Normal (16%) | 378 | 411 | 455 | 477 | 502 | 523 | 507 | 472 | 437 | 368 | 346 | 365 |
| Below Normal (13%) | 379 | 404 | 435 | 474 | 492 | 510 | 495 | 462 | 418 | 382 | 347 | 367 |
| Dry (24%) | 378 | 408 | 442 | 477 | 493 | 509 | 500 | 474 | 433 | 399 | 360 | 368 |
| Critical (15%) | 378 | 400 | 424 | 466 | 483 | 484 | 474 | 456 | 425 | 393 | 360 | 366 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -4 | 0 | 0 | -3 | 0 | 0 | -1 | -1 | -5 | 1 | -2 |
| 20% | -1 | 0 | -1 | 1 | -2 | 0 | 0 | -10 | -3 | 0 | 0 | 6 |
| 30% | 0 | 0 | 0 | -3 | -6 | -1 | -3 | -1 | 0 | 0 | -1 | -1 |
| 40% | 0 | -1 | 1 | -1 | -3 | -5 | -6 | -1 | -1 | 0 | -1 | -2 |
| 50% | 0 | -1 | -3 | -3 | 0 | -3 | 0 | 0 | -1 | 1 | 0 | 1 |
| 60% | 1 | 2 | -3 | -5 | 0 | -3 | -2 | -1 | 0 | -1 | -1 | 0 |
| 70% | 1 | 0 | -7 | -1 | 0 | 0 | 2 | 1 | -2 | 1 | -1 | 0 |
| 80% | -1 | -2 | 0 | -1 | 0 | 0 | -1 | 0 | 2 | 0 | 0 | 0 |
| 90% | -5 | -4 | -9 | -7 | -6 | 6 | 1 | 1 | 3 | 0 | 0 | -1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -1 | -3 | -2 | -2 | -2 | -1 | -1 | 0 | -1 | -1 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | -2 | -3 | -2 | -3 |
| Above Normal (16%) | 0 | -1 | -1 | -2 | -3 | -2 | -2 | -2 | -1 | -3 | -1 | 0 |
| Below Normal (13%) | -1 | -5 | -6 | -2 | -2 | -1 | -1 | -1 | 0 | 0 | 0 | 3 |
| Dry (24%) | 0 | 1 | -1 | -3 | -4 | -4 | -3 | -2 | -1 | -1 | 0 | 0 |
| Critical (15%) | -4 | -3 | -9 | -3 | 1 | 0 | 0 | 0 | 4 | 4 | 2 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6a-4. San Luis Reservoir (SWP and CVP), End of Month Elevation

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 456 | 488 | 526 | 544 | 544 | 544 | 544 | 544 | 525 | 466 | 436 | 440 |
| 20% | 429 | 451 | 485 | 513 | 540 | 544 | 544 | 544 | 507 | 445 | 405 | 411 |
| 30% | 411 | 442 | 469 | 501 | 528 | 544 | 544 | 533 | 488 | 430 | 382 | 391 |
| 40% | 390 | 427 | 460 | 490 | 521 | 542 | 539 | 523 | 474 | 416 | 370 | 380 |
| 50% | 382 | 414 | 451 | 483 | 505 | 529 | 532 | 515 | 463 | 404 | 357 | 376 |
| 60% | 379 | 404 | 439 | 475 | 497 | 519 | 525 | 501 | 453 | 398 | 353 | 360 |
| 70% | 371 | 391 | 431 | 463 | 488 | 509 | 508 | 494 | 446 | 393 | 349 | 355 |
| 80% | 365 | 384 | 425 | 457 | 477 | 502 | 492 | 475 | 442 | 386 | 336 | 348 |
| 90% | 341 | 373 | 404 | 437 | 462 | 485 | 484 | 466 | 434 | 370 | 329 | 339 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 395 | 422 | 453 | 483 | 505 | 522 | 521 | 508 | 471 | 414 | 372 | 382 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 414 | 450 | 483 | 500 | 520 | 535 | 541 | 534 | 497 | 436 | 392 | 402 |
| Above Normal (16%) | 389 | 417 | 448 | 470 | 493 | 513 | 520 | 507 | 463 | 385 | 352 | 367 |
| Below Normal (13%) | 387 | 406 | 433 | 492 | 511 | 527 | 521 | 501 | 461 | 408 | 366 | 377 |
| Dry (24%) | 388 | 410 | 445 | 476 | 499 | 519 | 513 | 498 | 462 | 412 | 370 | 377 |
| Critical (15%) | 381 | 402 | 428 | 468 | 491 | 502 | 493 | 478 | 447 | 403 | 363 | 367 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 451 | 475 | 508 | 537 | 544 | 544 | 544 | 544 | 526 | 465 | 433 | 440 |
| 20% | 421 | 452 | 487 | 509 | 538 | 544 | 544 | 544 | 510 | 448 | 407 | 407 |
| 30% | 400 | 429 | 466 | 498 | 519 | 540 | 544 | 533 | 495 | 436 | 389 | 391 |
| 40% | 382 | 413 | 455 | 487 | 513 | 531 | 539 | 524 | 480 | 424 | 380 | 378 |
| 50% | 374 | 410 | 448 | 479 | 507 | 526 | 532 | 516 | 474 | 416 | 373 | 368 |
| 60% | 369 | 400 | 439 | 475 | 497 | 519 | 520 | 506 | 468 | 409 | 368 | 355 |
| 70% | 352 | 391 | 435 | 465 | 488 | 510 | 507 | 490 | 457 | 402 | 358 | 348 |
| 80% | 329 | 386 | 424 | 457 | 486 | 499 | 496 | 481 | 446 | 397 | 352 | 329 |
| 90% | 329 | 379 | 411 | 450 | 477 | 487 | 483 | 471 | 443 | 388 | 346 | 329 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 383 | 418 | 453 | 483 | 506 | 520 | 521 | 510 | 478 | 423 | 382 | 376 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 398 | 442 | 480 | 495 | 516 | 534 | 541 | 534 | 503 | 448 | 404 | 391 |
| Above Normal (16%) | 340 | 396 | 442 | 479 | 503 | 518 | 526 | 516 | 482 | 411 | 364 | 338 |
| Below Normal (13%) | 387 | 409 | 437 | 488 | 510 | 522 | 517 | 502 | 469 | 413 | 371 | 379 |
| Dry (24%) | 388 | 414 | 448 | 474 | 498 | 512 | 509 | 495 | 461 | 410 | 372 | 379 |
| Critical (15%) | 385 | 406 | 430 | 471 | 495 | 505 | 497 | 484 | 454 | 413 | 377 | 378 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -5 | -13 | -18 | -8 | 0 | 0 | 0 | 0 | 1 | -1 | -3 | -1 |
| 20% | -8 | 2 | 2 | -4 | -2 | 0 | 0 | 1 | 3 | 3 | 2 | -4 |
| 30% | -11 | -13 | -3 | -4 | -9 | -5 | 0 | 0 | 6 | 6 | 7 | 0 |
| 40% | -8 | -13 | -5 | -3 | -7 | -11 | 0 | 1 | 6 | 8 | 10 | -1 |
| 50% | -9 | -4 | -3 | -5 | 3 | -4 | 0 | 1 | 11 | 11 | 16 | -8 |
| 60% | -10 | -4 | -1 | 0 | -1 | 1 | -6 | 5 | 14 | 12 | 15 | -5 |
| 70% | -19 | 1 | 4 | 2 | 0 | 1 | -1 | -4 | 11 | 8 | 9 | -8 |
| 80% | -35 | 2 | 0 | 0 | 8 | -3 | 4 | 5 | 4 | 11 | 17 | -19 |
| 90% | -12 | 5 | 7 | 13 | 15 | 1 | -2 | 5 | 8 | 18 | 16 | -10 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -12 | -4 | 0 | 0 | 0 | -2 | 0 | 2 | 7 | 9 | 9 | -6 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -15 | -7 | -3 | -5 | -5 | -2 | 0 | 0 | 5 | 11 | 12 | -11 |
| Above Normal (16%) | -49 | -21 | -6 | 9 | 9 | 5 | 7 | 9 | 20 | 25 | 12 | -29 |
| Below Normal (13%) | 0 | 3 | 4 | -3 | -2 | -5 | -4 | 1 | 8 | 5 | 5 | 2 |
| Dry (24%) | 1 | 4 | 2 | -1 | 0 | -8 | -4 | -3 | -1 | -1 | 2 | 2 |
| Critical (15%) | 4 | 4 | 2 | 4 | 4 | 3 | 4 | 6 | 7 | 10 | 14 | 10 |

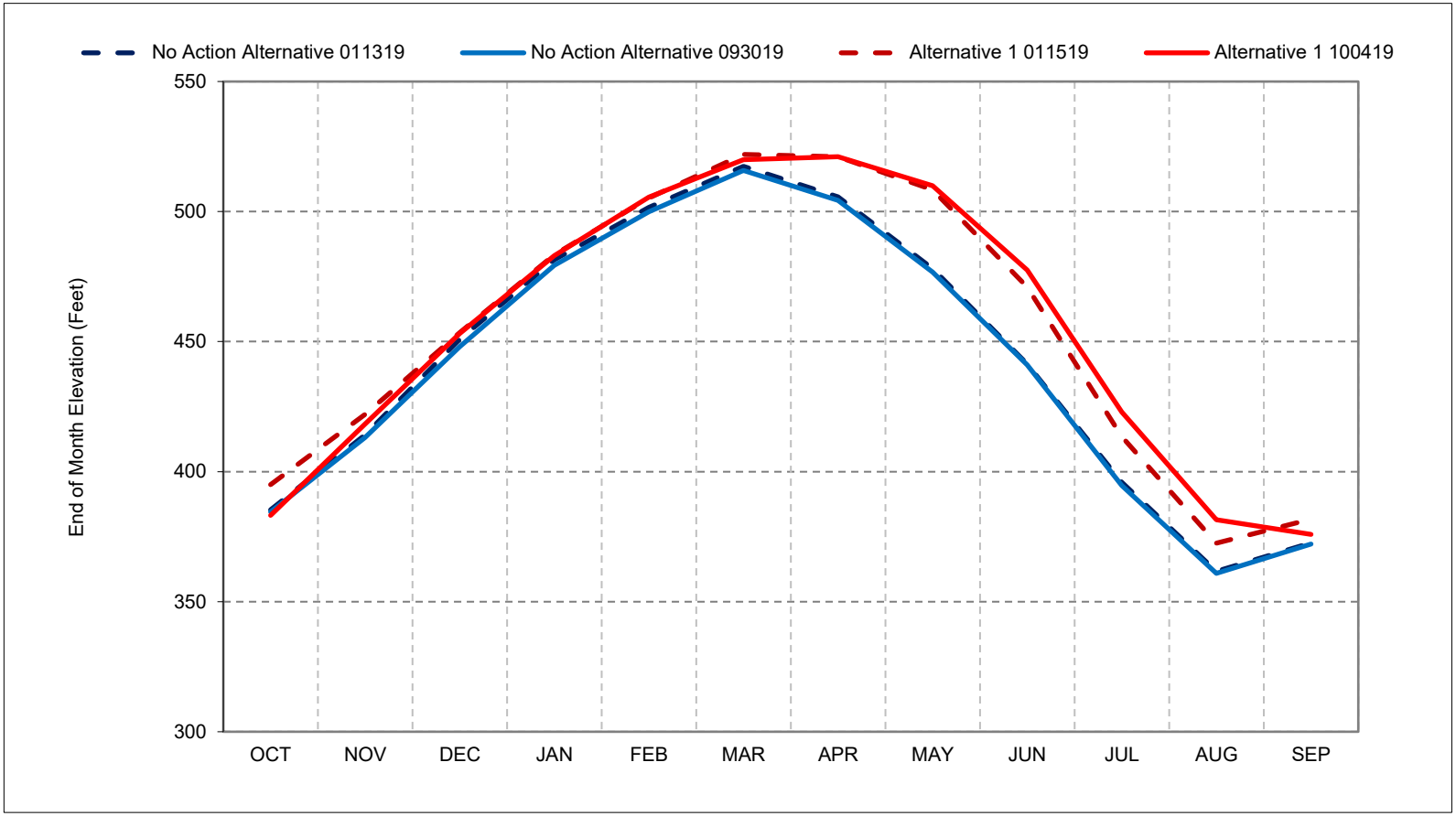
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-1. San Luis Reservoir (SWP and CVP), Long-Term Average Elevation

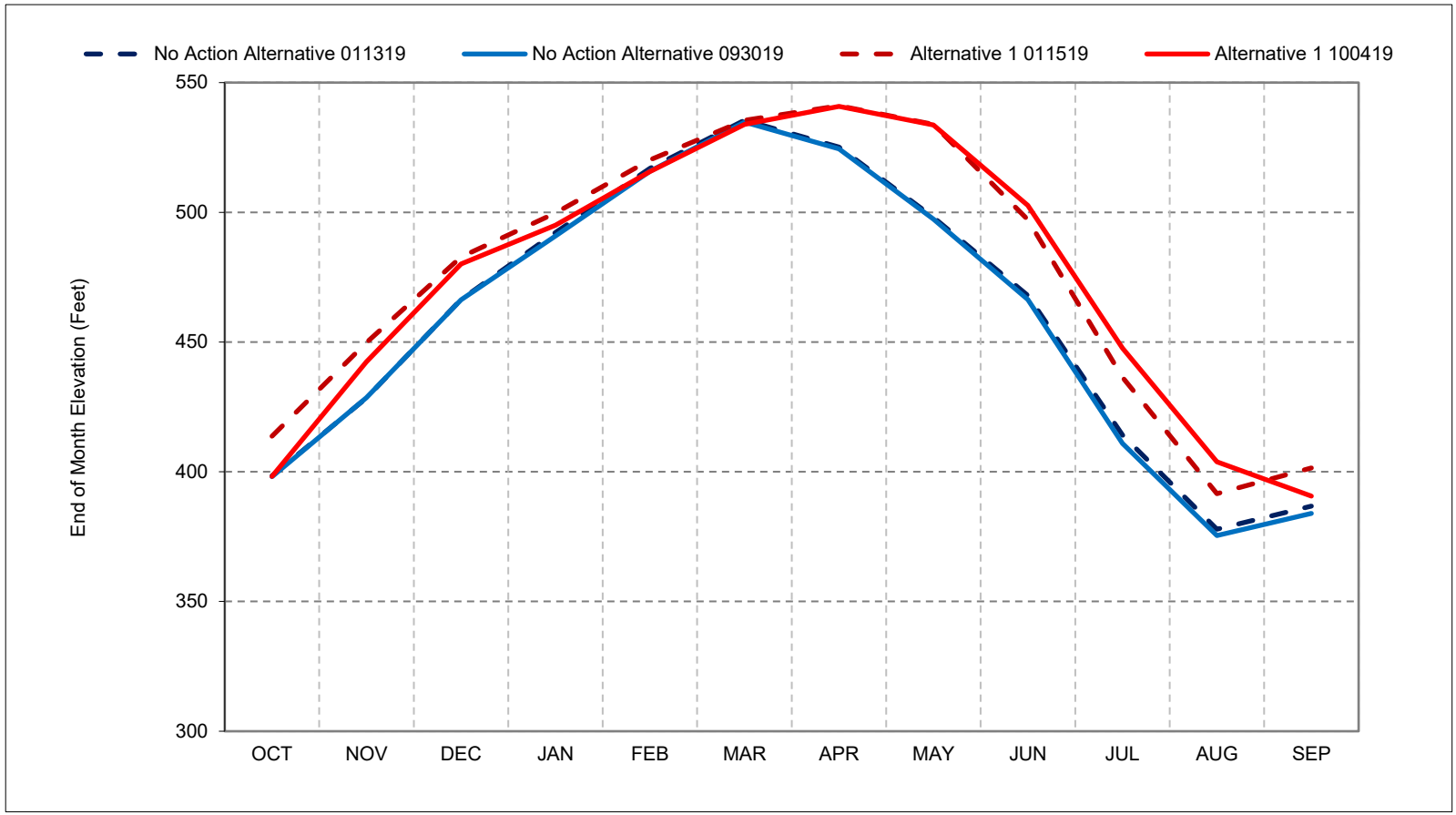



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-2. San Luis Reservoir (SWP and CVP), Wet Year Average Elevation

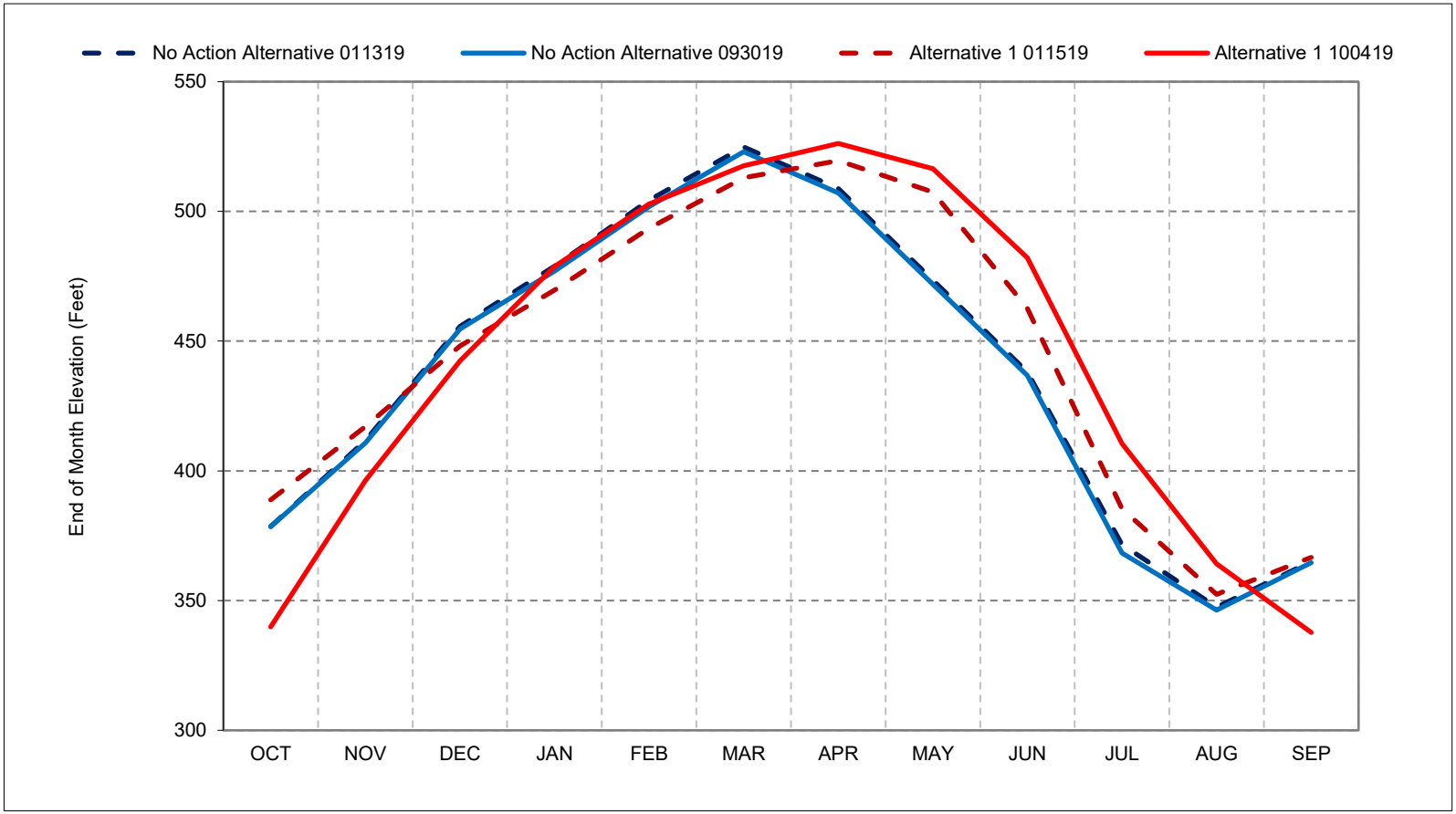



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-3. San Luis Reservoir (SWP and CVP), Above Normal Year Average Elevation

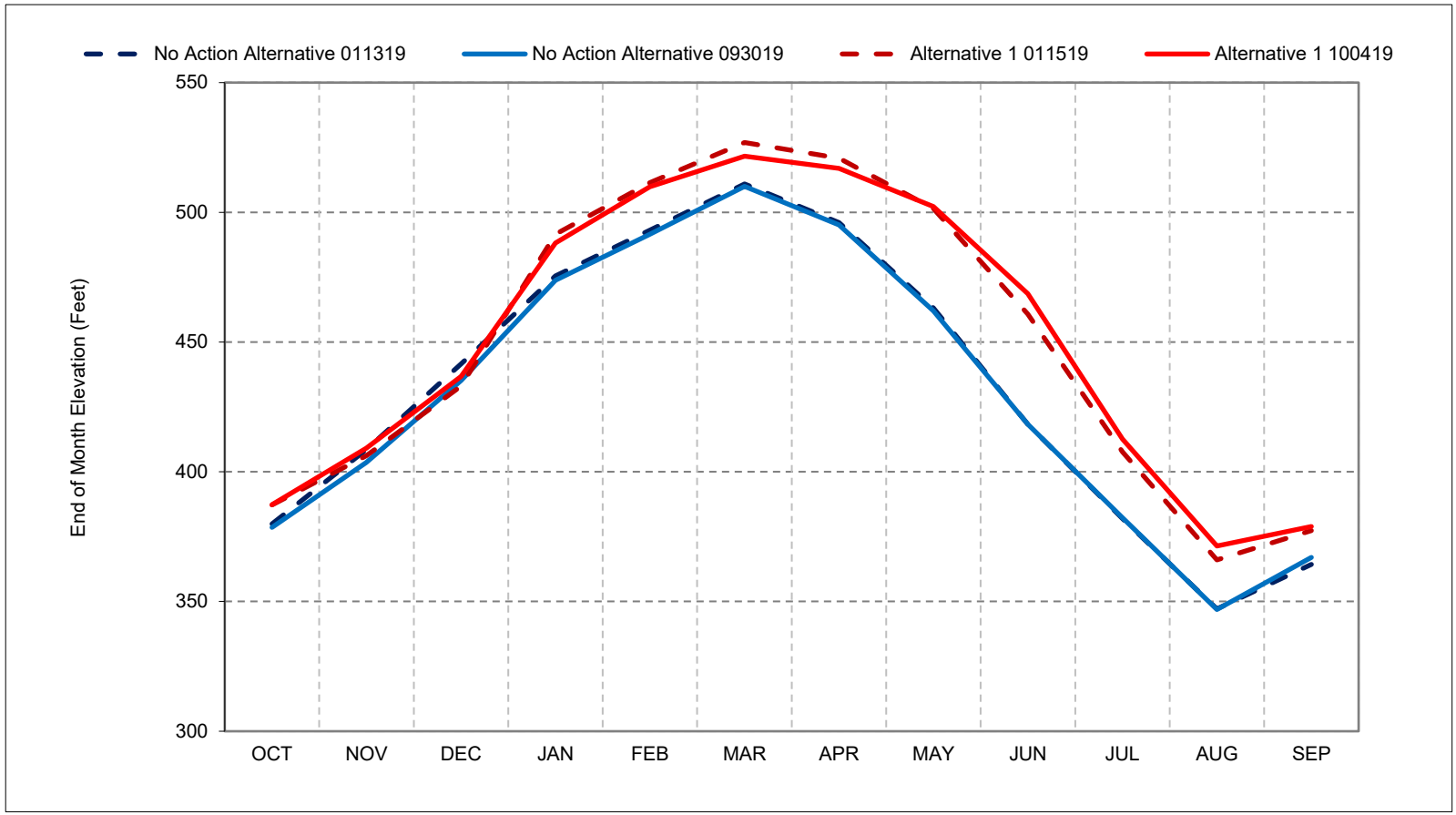



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-4. San Luis Reservoir (SWP and CVP), Below Normal Year Average Elevation

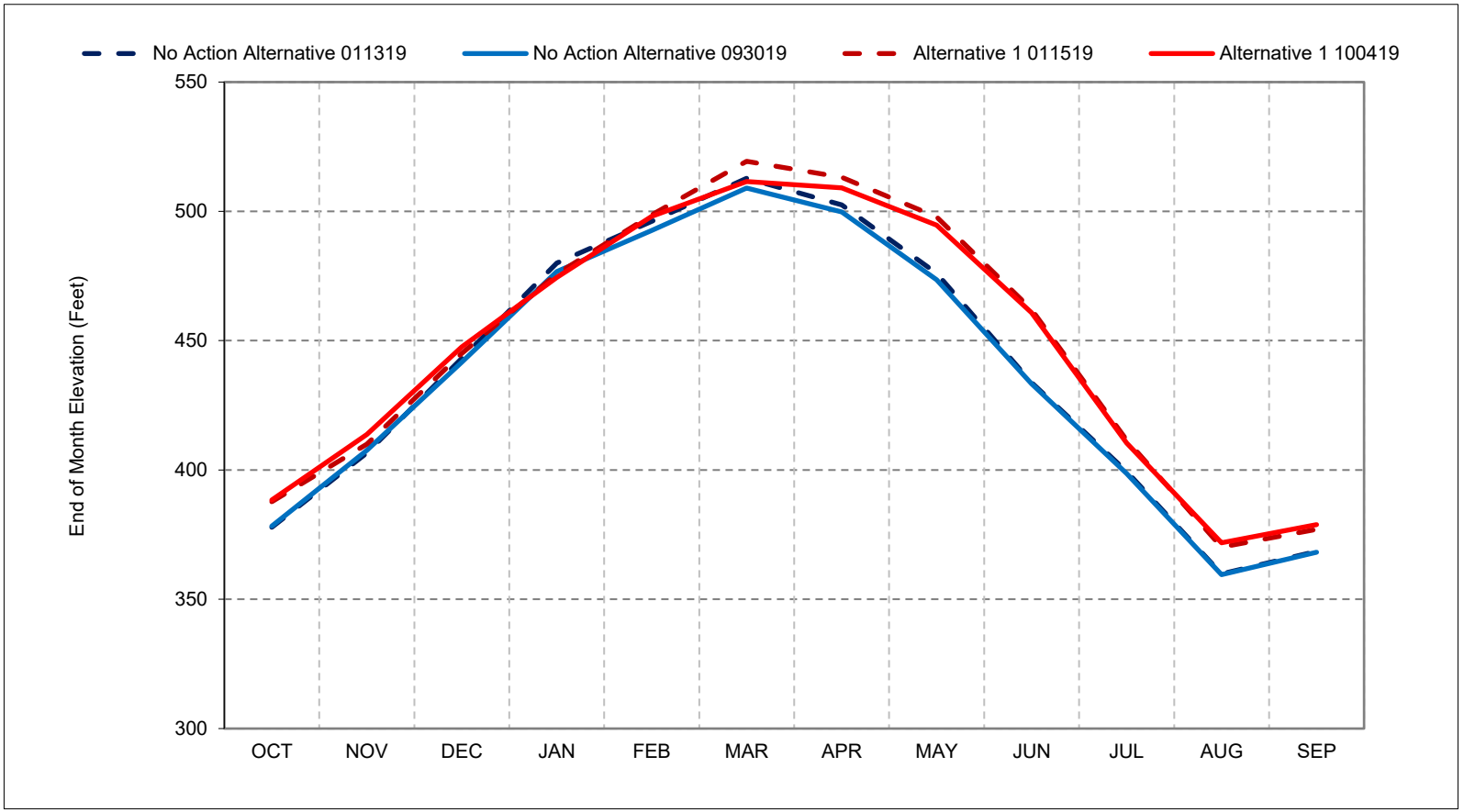



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-5. San Luis Reservoir (SWP and CVP), Dry Year Average Elevation

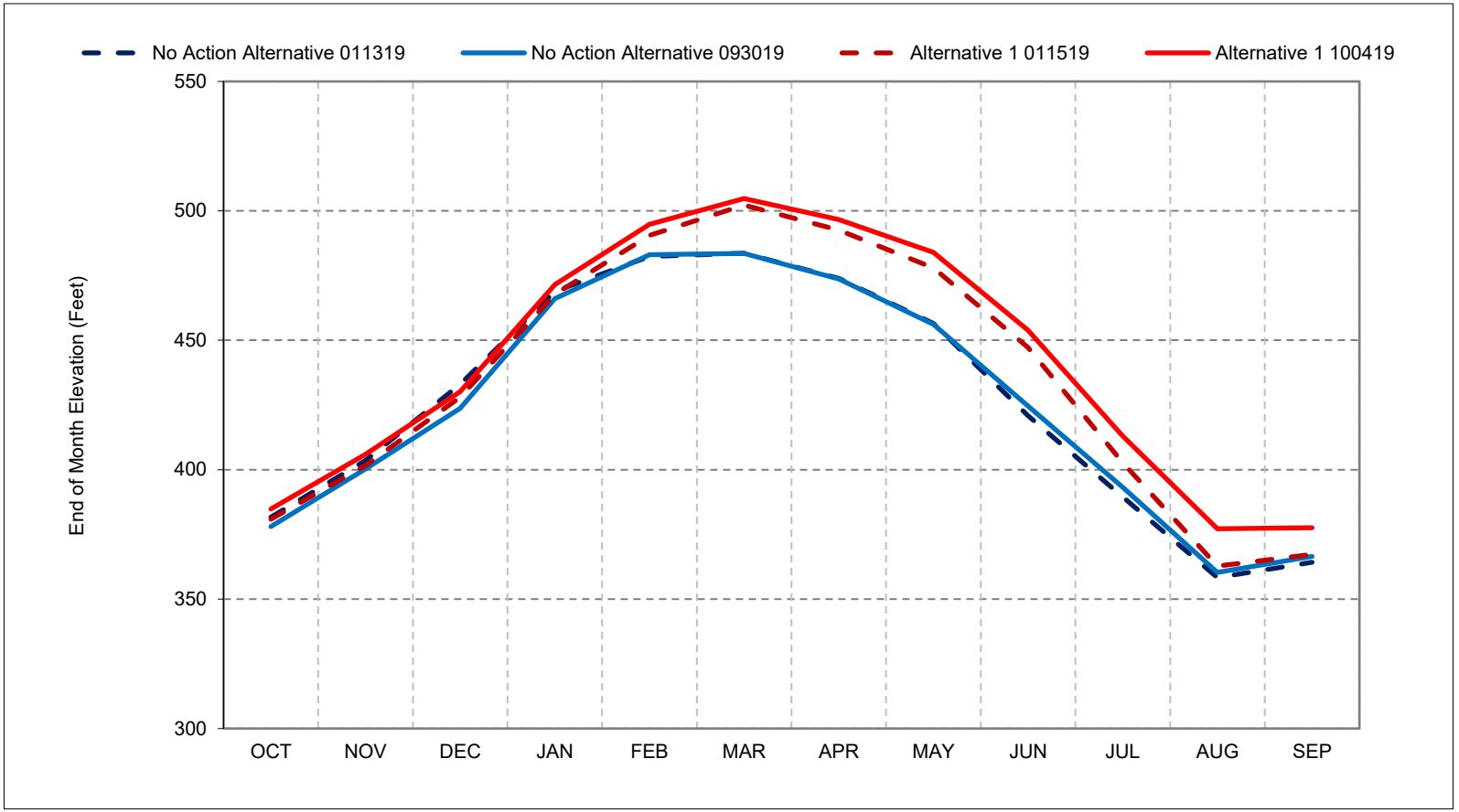



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6a-6. San Luis Reservoir (SWP and CVP), Critical Year Average Elevation

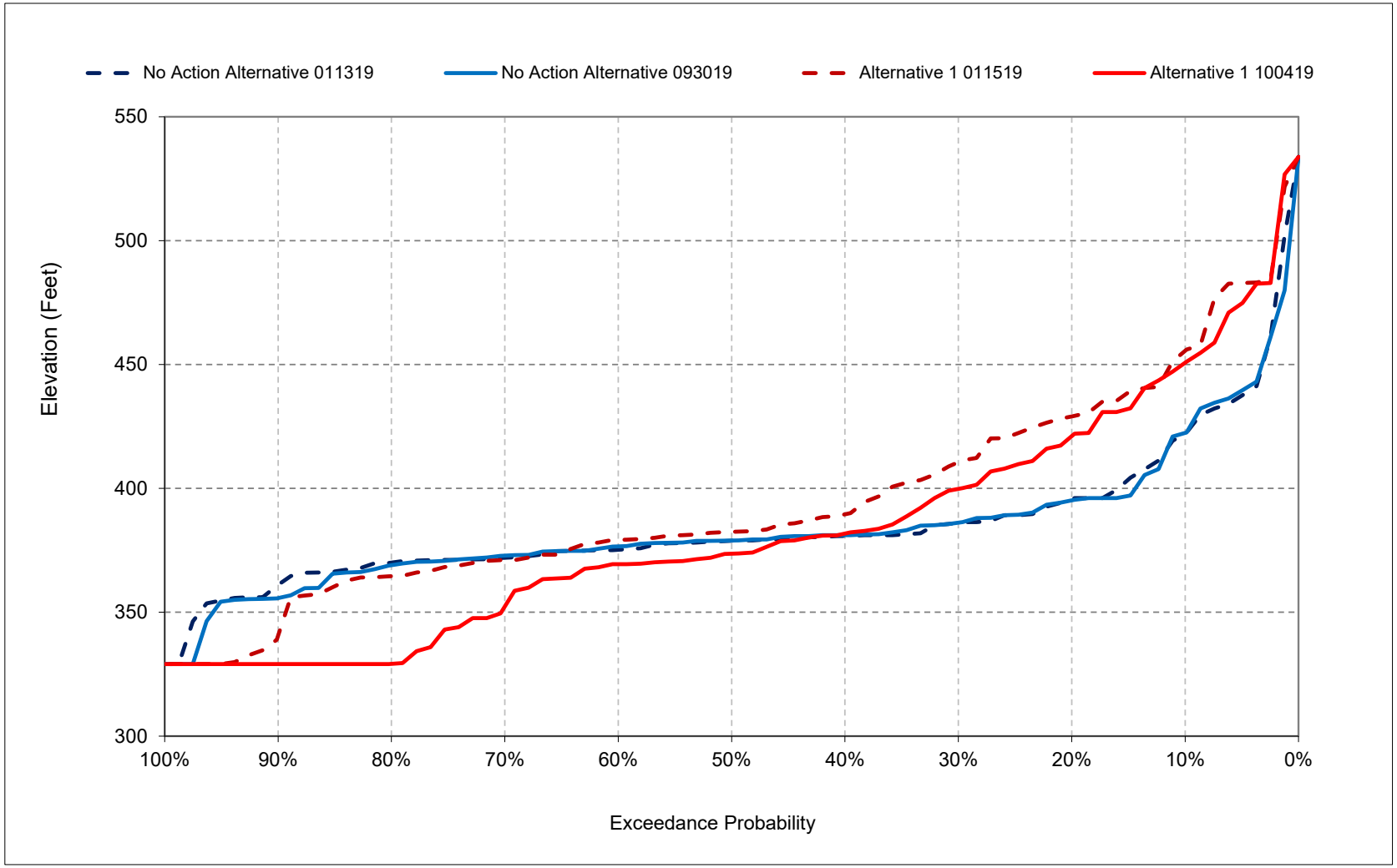



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

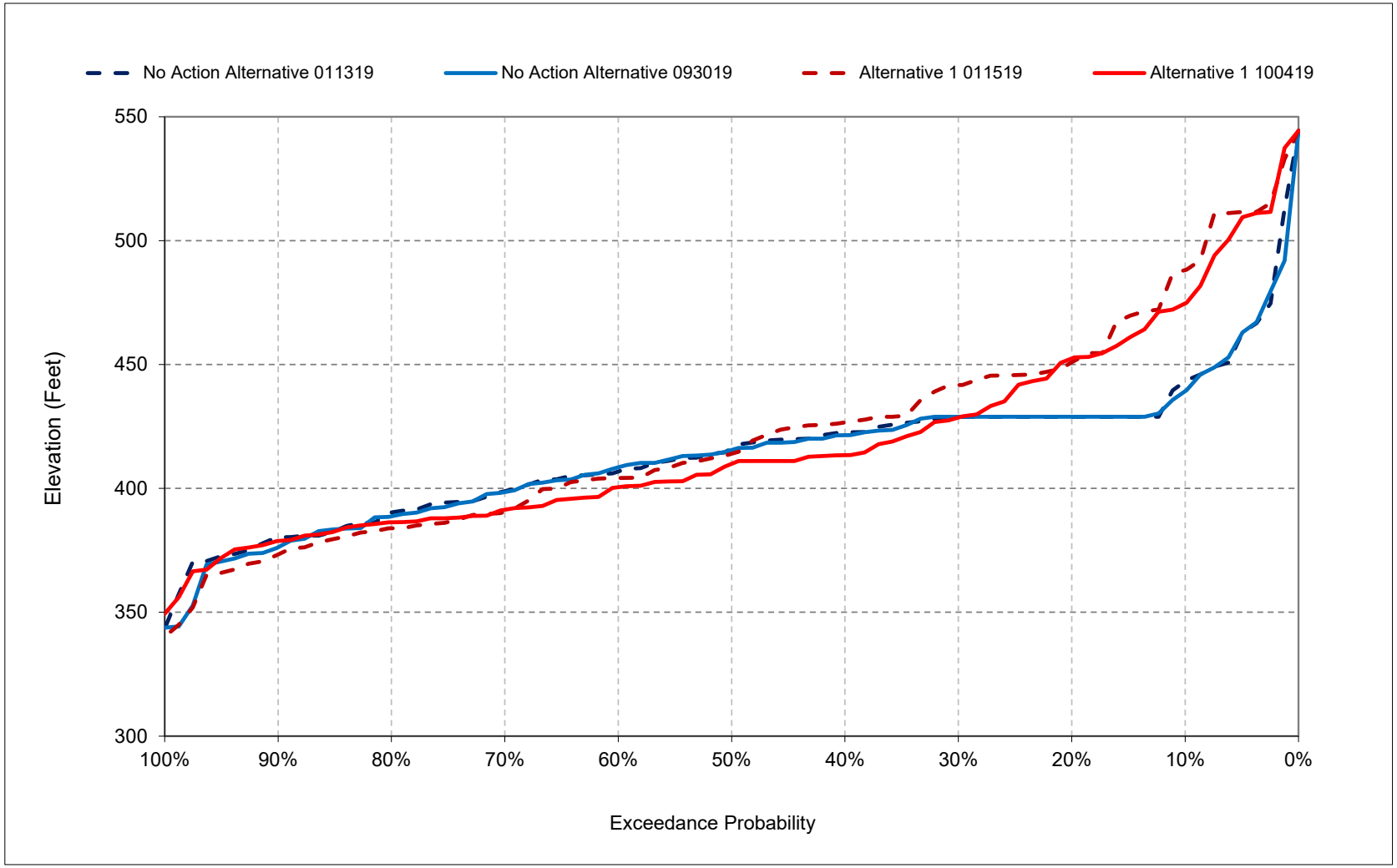
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-7. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, October**



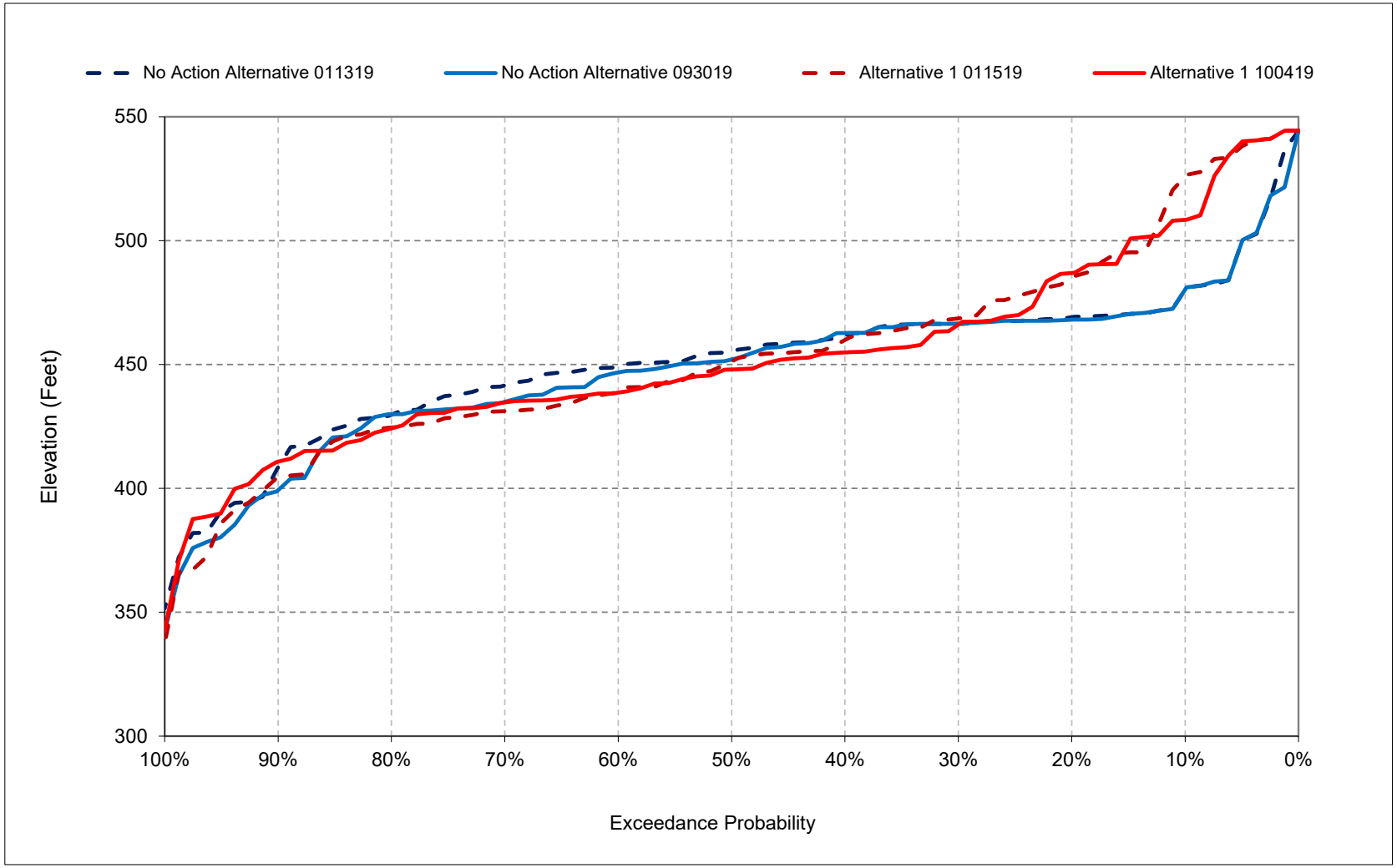

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-8. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, November**



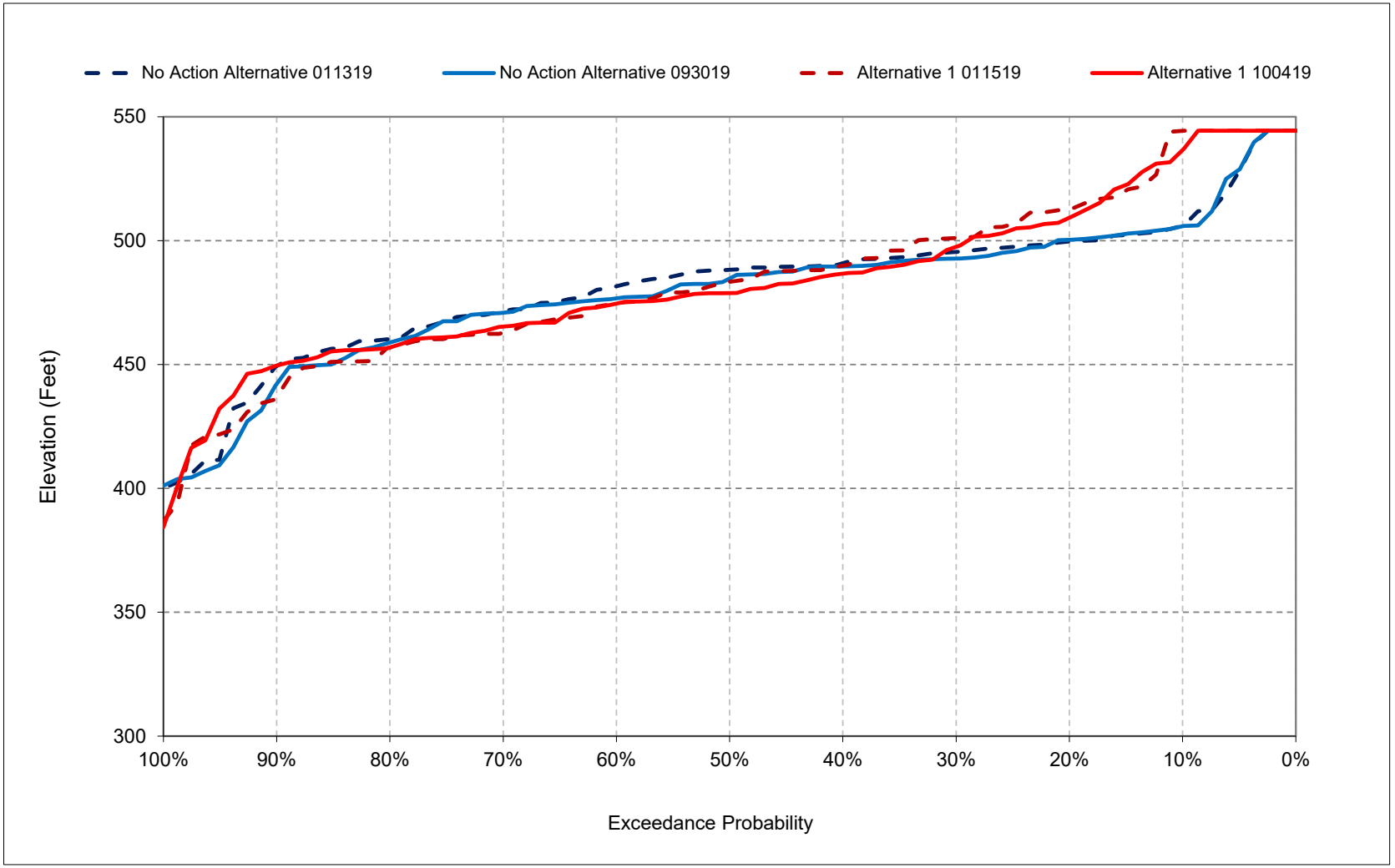

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-9. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, December**



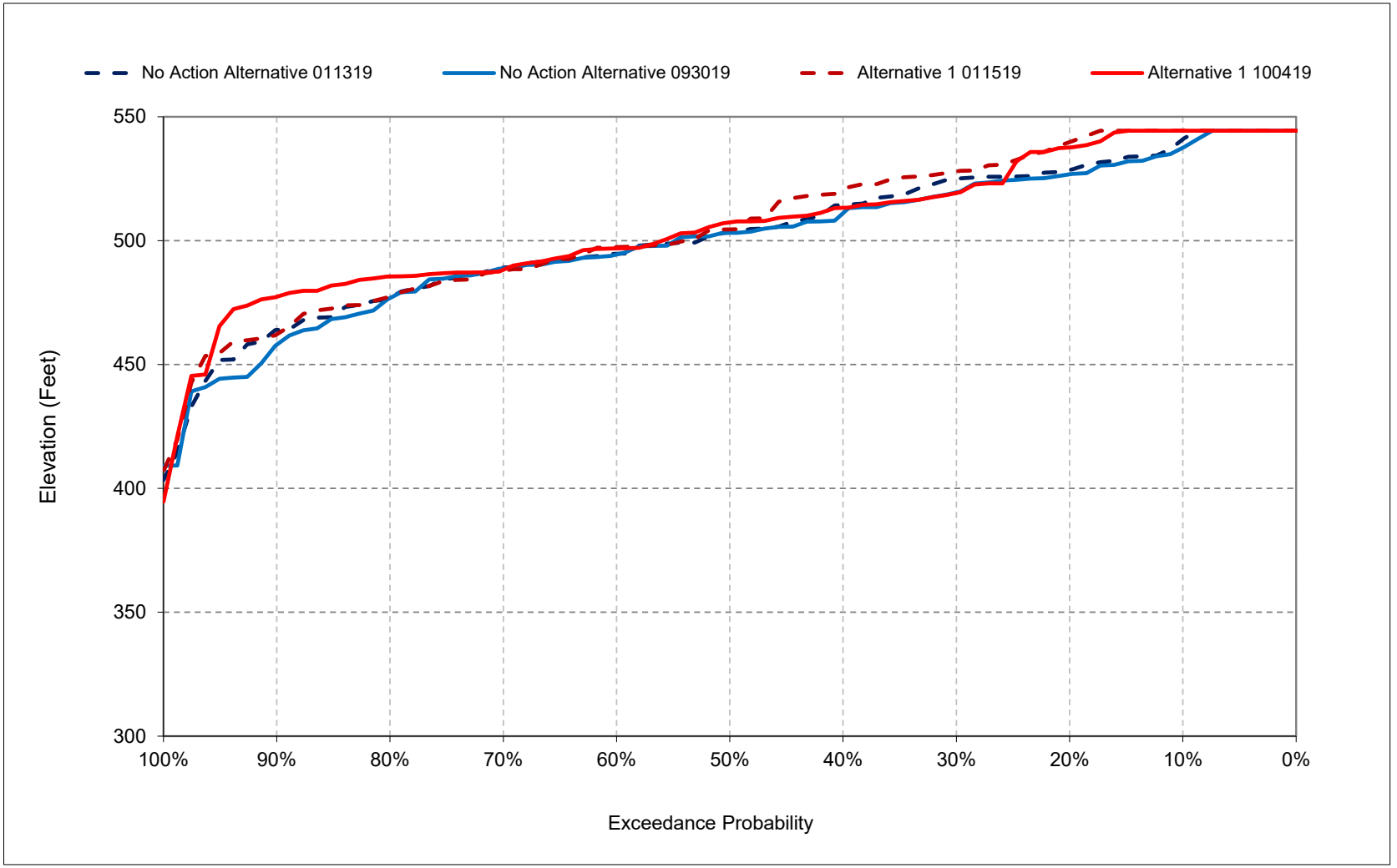

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-10. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, January**



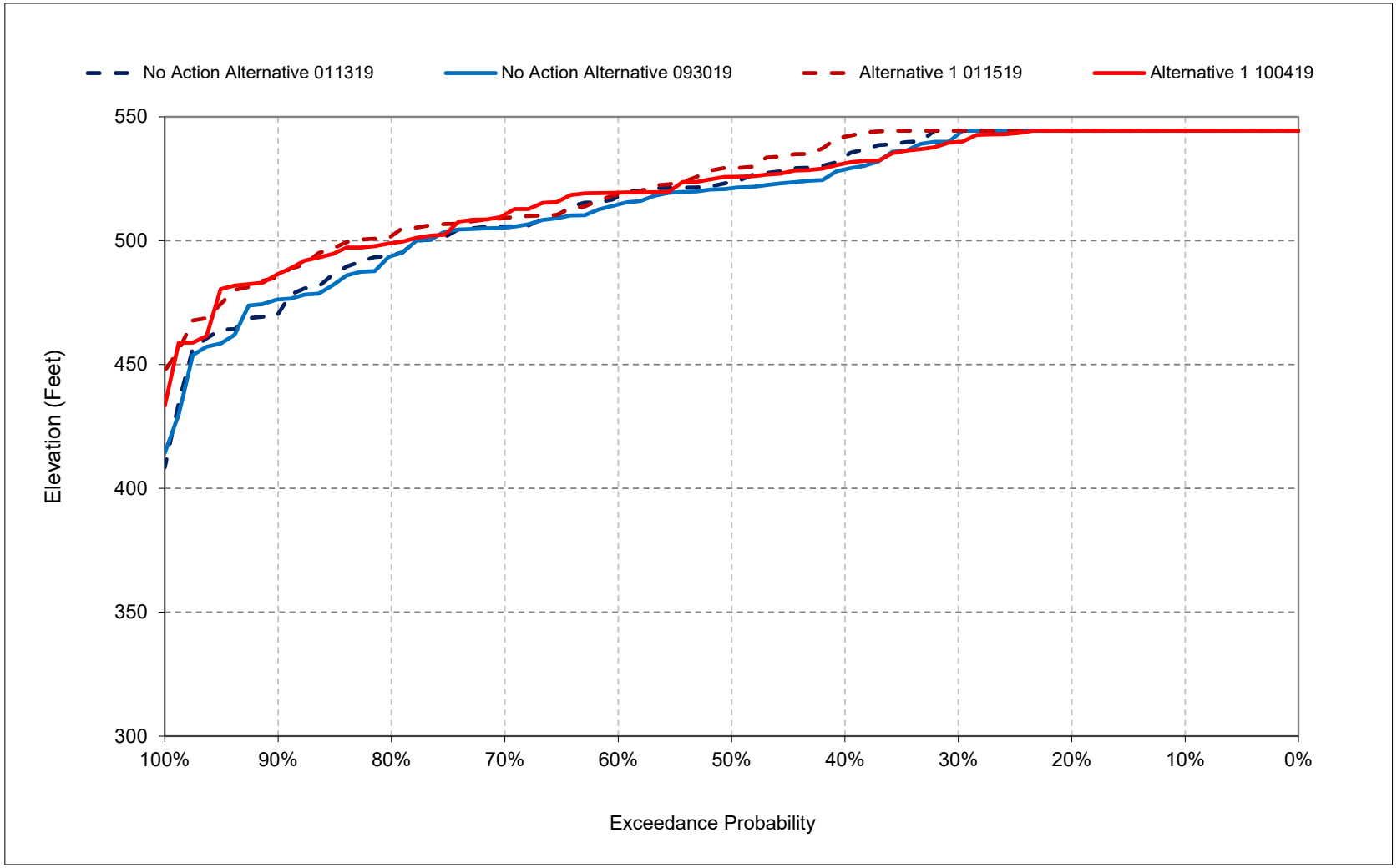

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-11. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, February**



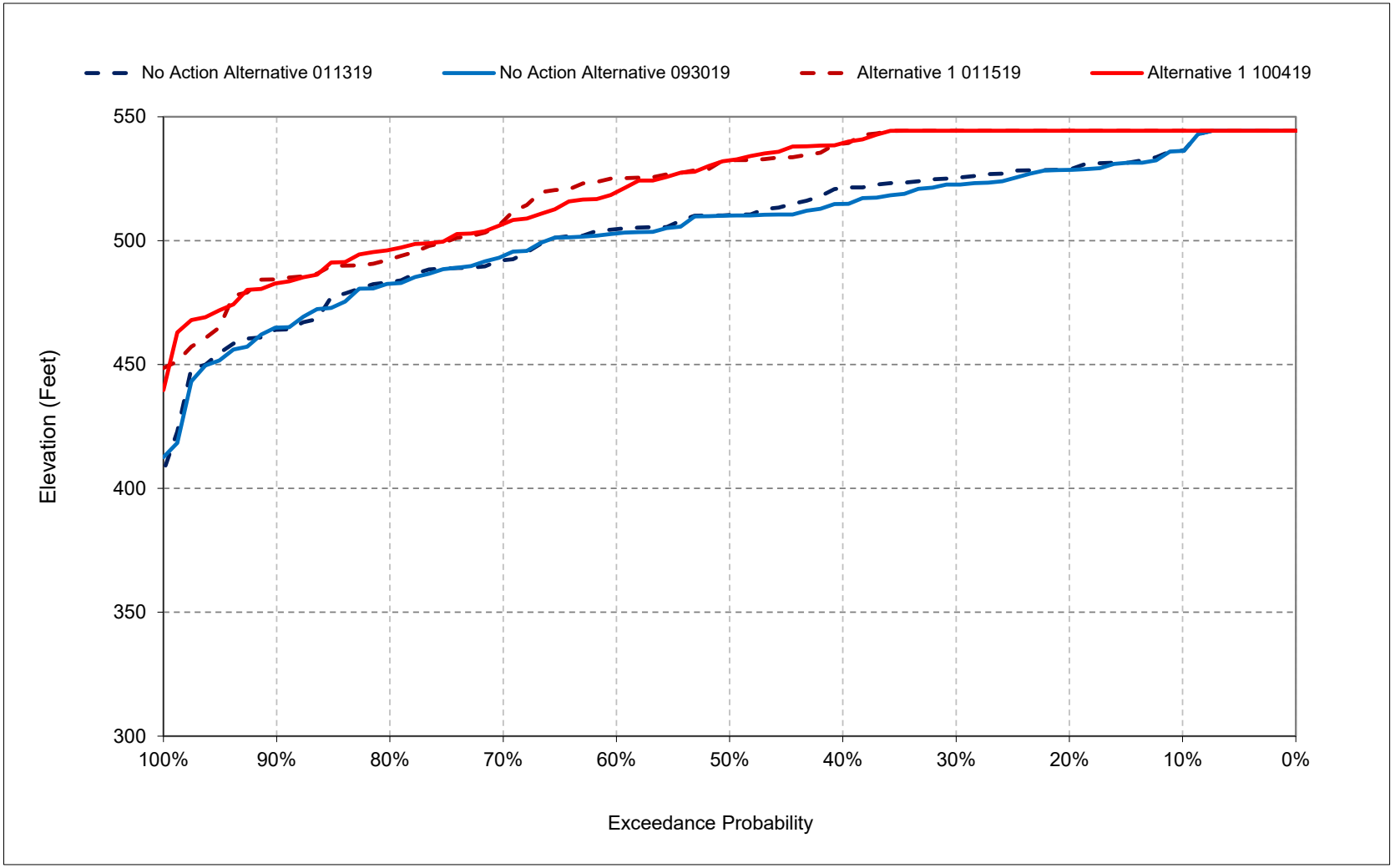

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-12. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, March**



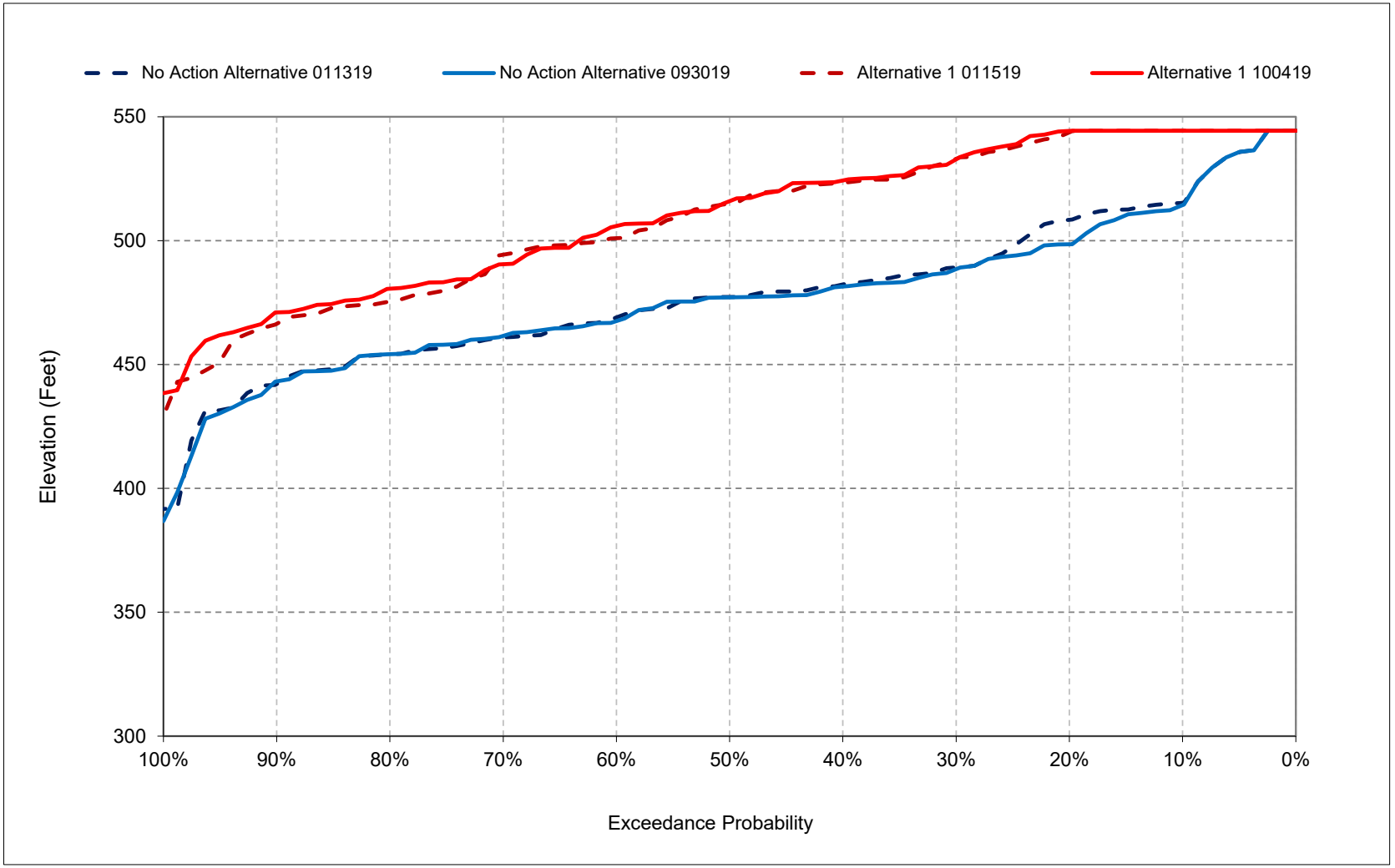

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-13. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, April**



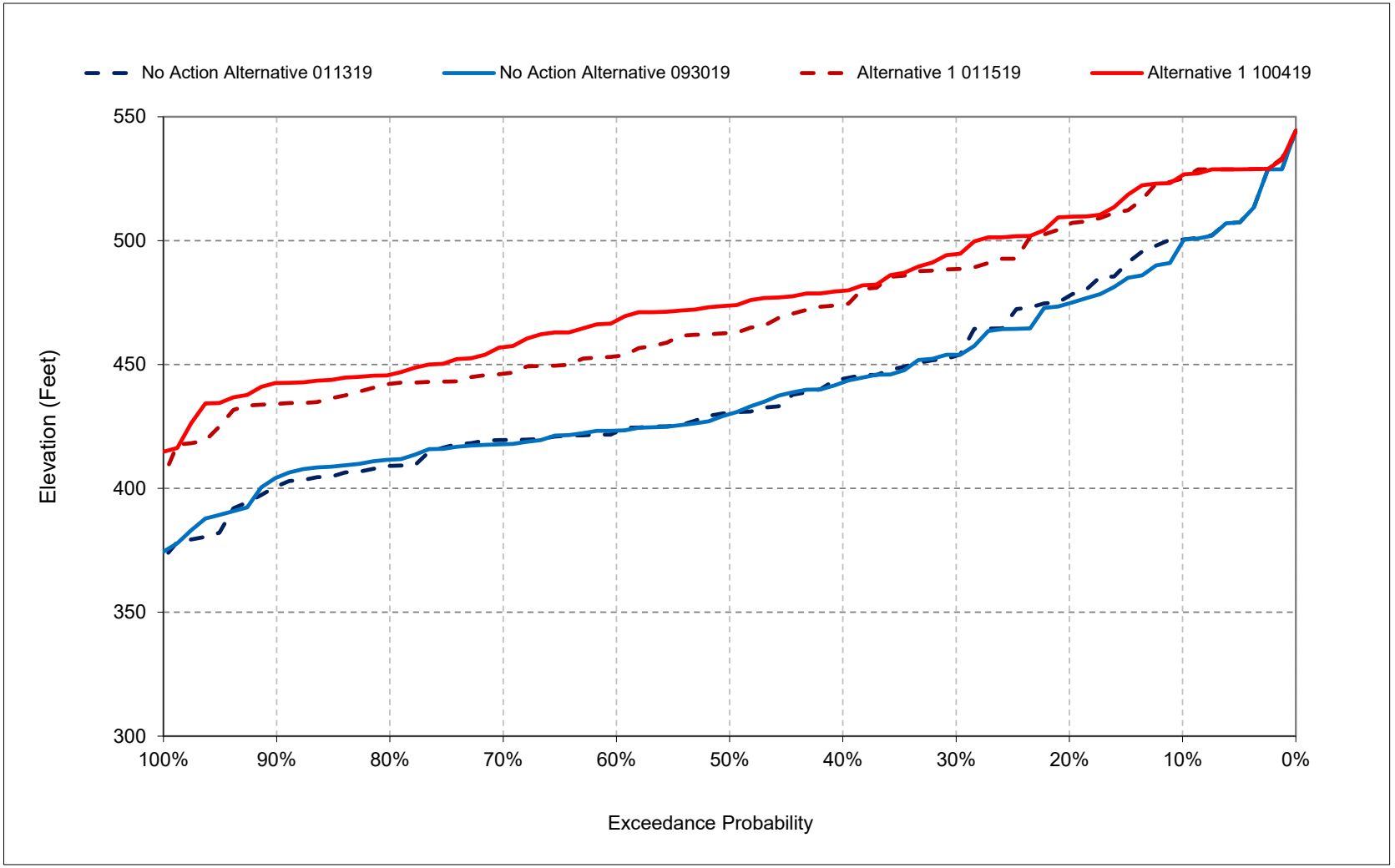

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-14. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, May**



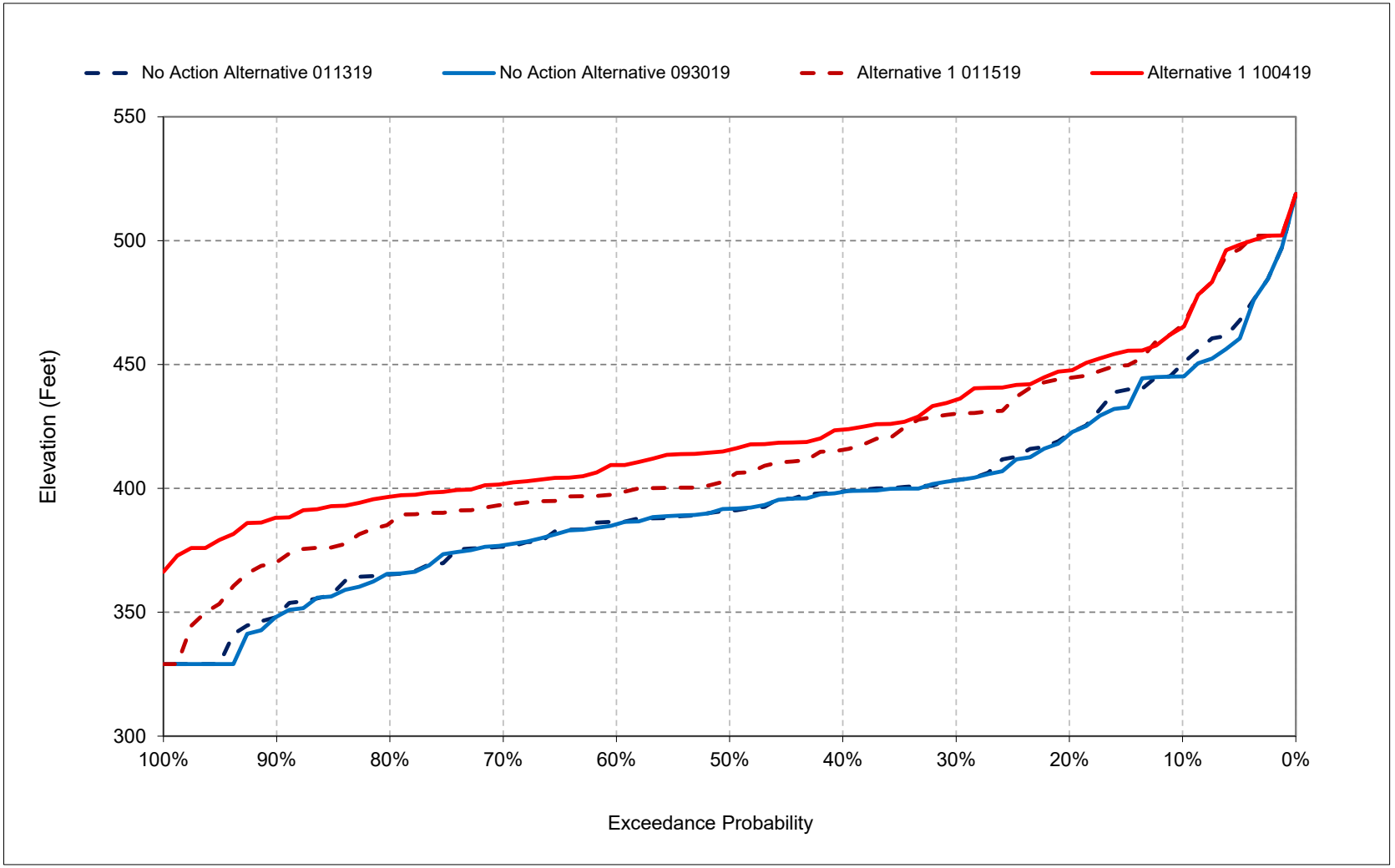

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-15. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, June**



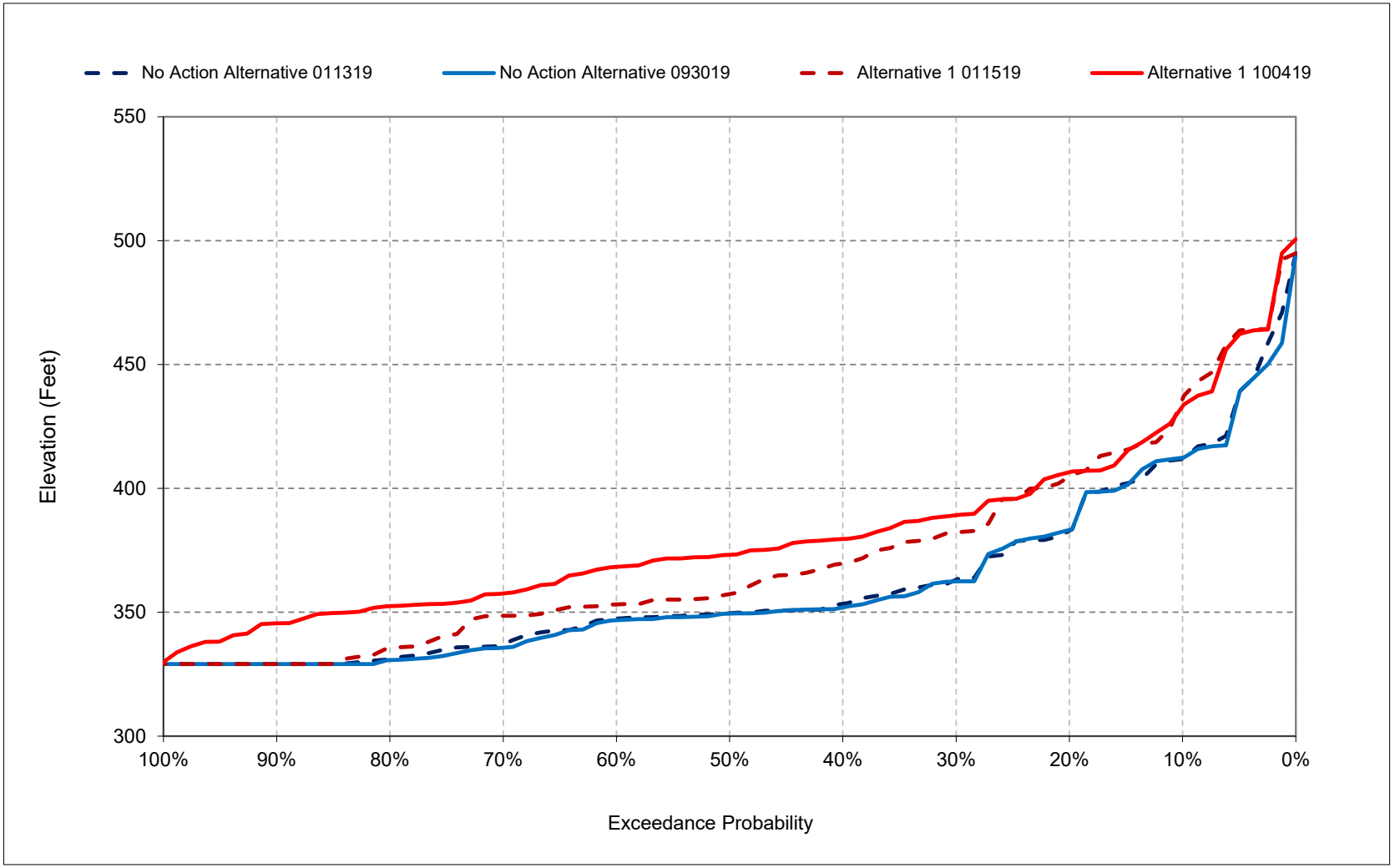

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-16. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, July**



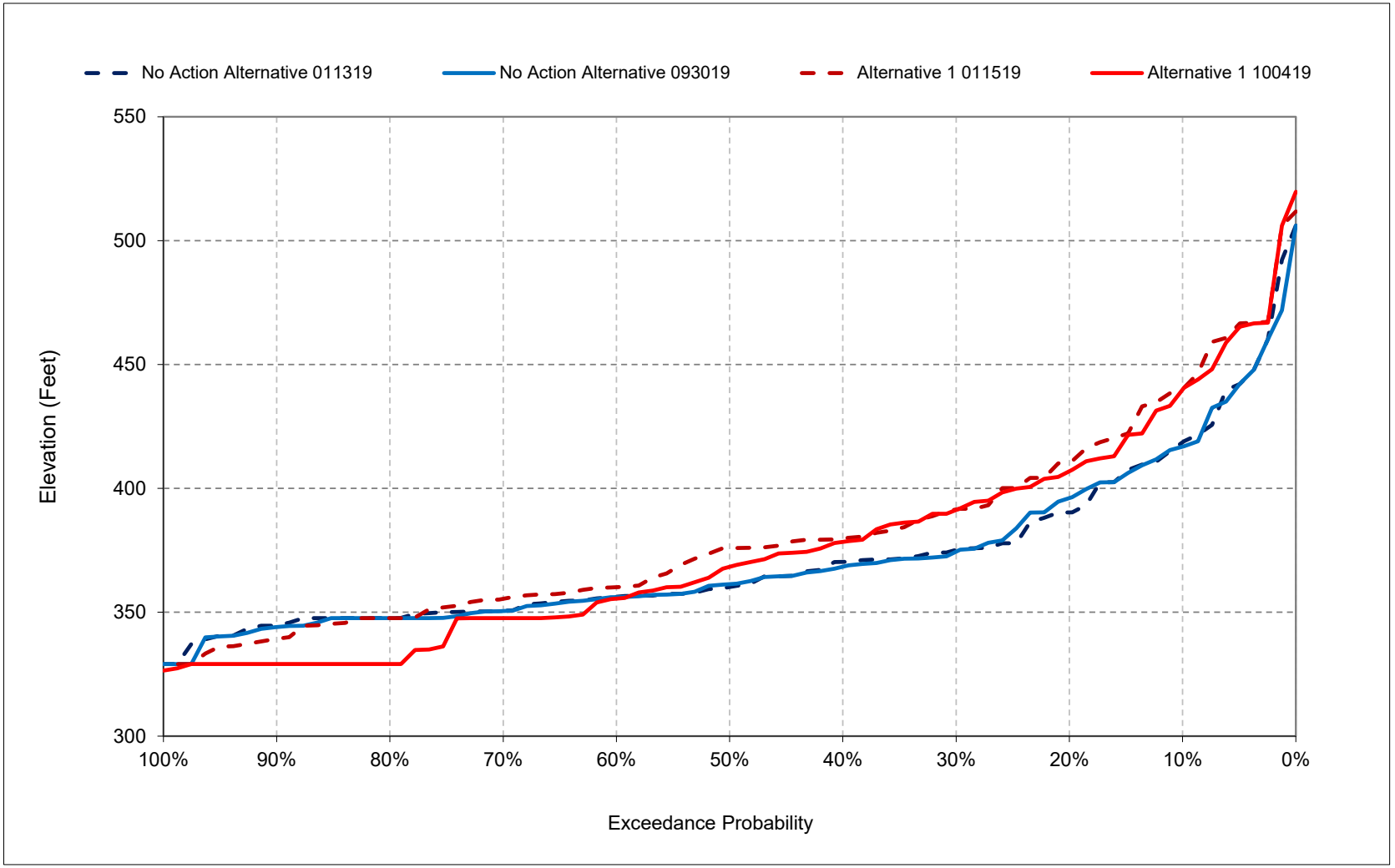

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-17. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6a-18. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-1. San Luis CVP Storage, End of Month Storage

### No Action Alternative 011319

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 338 | 432 | 614 | 750 | 951 | 972 | 924 | 801 | 720 | 464 | 296 | 324 |
| 20% | 234 | 367 | 557 | 716 | 878 | 972 | 880 | 763 | 601 | 338 | 190 | 215 |
| 30% | 201 | 367 | 544 | 692 | 857 | 972 | 859 | 659 | 479 | 262 | 128 | 163 |
| 40% | 182 | 340 | 520 | 667 | 797 | 910 | 835 | 624 | 436 | 244 | 104 | 146 |
| 50% | 176 | 314 | 488 | 654 | 736 | 849 | 774 | 598 | 374 | 217 | 95 | 121 |
| 60% | 163 | 276 | 459 | 620 | 688 | 816 | 743 | 556 | 341 | 202 | 90 | 111 |
| 70% | 152 | 245 | 424 | 569 | 658 | 749 | 674 | 516 | 328 | 168 | 64 | 97 |
| 80% | 145 | 215 | 370 | 513 | 596 | 685 | 629 | 482 | 285 | 133 | 50 | 90 |
| 90% | 123 | 181 | 283 | 459 | 531 | 564 | 532 | 427 | 252 | 92 | 45 | 83 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 207 | 314 | 476 | 625 | 733 | 820 | 754 | 609 | 436 | 251 | 140 | 170 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 256 | 373 | 547 | 682 | 816 | 920 | 860 | 711 | 561 | 330 | 198 | 222 |
| Above Normal (16%) | 176 | 299 | 492 | 611 | 746 | 860 | 769 | 582 | 414 | 169 | 94 | 138 |
| Below Normal (13%) | 182 | 287 | 434 | 596 | 689 | 784 | 702 | 534 | 332 | 193 | 90 | 134 |
| Dry (24%) | 181 | 285 | 442 | 614 | 700 | 791 | 735 | 598 | 398 | 251 | 127 | 154 |
| Critical (15%) | 203 | 277 | 399 | 564 | 634 | 640 | 589 | 502 | 343 | 223 | 134 | 154 |

### Alternative 1 011519

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 489 | 653 | 863 | 972 | 972 | 972 | 972 | 972 | 858 | 541 | 399 | 419 |
| 20% | 367 | 466 | 637 | 788 | 944 | 972 | 972 | 968 | 754 | 438 | 268 | 293 |
| 30% | 291 | 425 | 555 | 723 | 874 | 972 | 972 | 904 | 655 | 372 | 187 | 219 |
| 40% | 212 | 356 | 511 | 662 | 831 | 958 | 941 | 848 | 583 | 311 | 144 | 179 |
| 50% | 188 | 305 | 468 | 629 | 742 | 882 | 900 | 799 | 525 | 266 | 114 | 166 |
| 60% | 177 | 266 | 414 | 585 | 703 | 820 | 858 | 723 | 478 | 241 | 104 | 120 |
| 70% | 149 | 216 | 377 | 526 | 652 | 767 | 760 | 686 | 445 | 225 | 92 | 109 |
| 80% | 131 | 193 | 348 | 496 | 599 | 727 | 676 | 589 | 427 | 200 | 61 | 90 |
| 90% | 73 | 157 | 266 | 402 | 522 | 640 | 634 | 544 | 390 | 146 | 45 | 70 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 252 | 356 | 495 | 638 | 753 | 844 | 840 | 770 | 574 | 318 | 176 | 205 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 335 | 481 | 637 | 724 | 834 | 920 | 952 | 911 | 709 | 420 | 251 | 282 |
| Above Normal (16%) | 219 | 327 | 458 | 570 | 692 | 794 | 831 | 763 | 530 | 219 | 111 | 148 |
| Below Normal (13%) | 210 | 282 | 403 | 682 | 788 | 873 | 838 | 730 | 519 | 284 | 141 | 177 |
| Dry (24%) | 216 | 301 | 452 | 595 | 714 | 828 | 794 | 713 | 527 | 299 | 158 | 181 |
| Critical (15%) | 207 | 277 | 382 | 559 | 676 | 735 | 682 | 606 | 456 | 269 | 149 | 166 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 151 | 221 | 249 | 222 | 21 | 0 | 48 | 171 | 138 | 77 | 103 | 95 |
| 20% | 134 | 100 | 80 | 72 | 66 | 0 | 92 | 205 | 153 | 100 | 78 | 78 |
| 30% | 91 | 58 | 11 | 31 | 17 | 0 | 113 | 245 | 176 | 110 | 59 | 56 |
| 40% | 30 | 17 | -10 | -5 | 35 | 48 | 105 | 224 | 147 | 67 | 40 | 32 |
| 50% | 12 | -9 | -20 | -24 | 7 | 33 | 126 | 201 | 151 | 49 | 19 | 45 |
| 60% | 14 | -10 | -45 | -35 | 15 | 4 | 115 | 166 | 137 | 39 | 14 | 9 |
| 70% | -3 | -29 | -47 | -44 | -6 | 19 | 86 | 170 | 118 | 58 | 28 | 12 |
| 80% | -14 | -22 | -22 | -17 | 3 | 43 | 47 | 107 | 141 | 67 | 11 | 0 |
| 90% | -50 | -24 | -17 | -57 | -9 | 76 | 103 | 117 | 138 | 54 | 0 | -13 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 45 | 42 | 19 | 13 | 20 | 24 | 85 | 161 | 138 | 67 | 36 | 35 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 80 | 108 | 90 | 42 | 18 | 0 | 93 | 199 | 147 | 90 | 53 | 60 |
| Above Normal (16%) | 42 | 28 | -35 | -42 | -54 | -65 | 62 | 181 | 116 | 50 | 17 | 10 |
| Below Normal (13%) | 27 | -5 | -31 | 86 | 99 | 89 | 136 | 196 | 187 | 92 | 51 | 42 |
| Dry (24%) | 36 | 17 | 10 | -19 | 14 | 37 | 59 | 115 | 129 | 47 | 30 | 28 |
| Critical (15%) | 4 | 0 | -17 | -5 | 42 | 95 | 93 | 104 | 113 | 47 | 15 | 12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-2. San Luis CVP Storage, End of Month Storage

### No Action Alternative 093019

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 339 | 414 | 614 | 749 | 931 | 972 | 923 | 796 | 715 | 441 | 299 | 317 |
| 20% | 232 | 367 | 552 | 719 | 868 | 972 | 878 | 709 | 585 | 337 | 191 | 235 |
| 30% | 201 | 367 | 544 | 678 | 825 | 964 | 844 | 655 | 481 | 262 | 126 | 161 |
| 40% | 183 | 336 | 525 | 660 | 779 | 879 | 799 | 619 | 430 | 244 | 101 | 140 |
| 50% | 176 | 311 | 471 | 636 | 735 | 835 | 773 | 598 | 372 | 220 | 94 | 123 |
| 60% | 168 | 283 | 448 | 595 | 686 | 797 | 733 | 549 | 343 | 199 | 88 | 111 |
| 70% | 155 | 243 | 394 | 566 | 656 | 746 | 684 | 519 | 321 | 169 | 61 | 97 |
| 80% | 142 | 210 | 371 | 506 | 596 | 683 | 625 | 482 | 295 | 133 | 49 | 90 |
| 90% | 110 | 167 | 246 | 427 | 501 | 593 | 536 | 432 | 266 | 92 | 45 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 205 | 310 | 464 | 615 | 723 | 811 | 747 | 602 | 433 | 247 | 138 | 169 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 254 | 373 | 547 | 676 | 810 | 916 | 856 | 708 | 554 | 320 | 192 | 214 |
| Above Normal (16%) | 175 | 295 | 488 | 603 | 732 | 849 | 759 | 573 | 407 | 160 | 90 | 137 |
| Below Normal (13%) | 177 | 269 | 404 | 588 | 681 | 780 | 698 | 529 | 332 | 193 | 90 | 143 |
| Dry (24%) | 183 | 289 | 438 | 597 | 681 | 770 | 720 | 585 | 396 | 249 | 127 | 153 |
| Critical (15%) | 192 | 265 | 358 | 549 | 636 | 638 | 586 | 499 | 355 | 231 | 136 | 157 |

### Alternative 1 100419

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 466 | 585 | 764 | 925 | 972 | 972 | 972 | 972 | 865 | 536 | 386 | 416 |
| 20% | 334 | 473 | 647 | 768 | 931 | 972 | 972 | 972 | 770 | 451 | 275 | 277 |
| 30% | 248 | 365 | 542 | 704 | 824 | 945 | 972 | 903 | 687 | 398 | 211 | 218 |
| 40% | 186 | 303 | 486 | 646 | 790 | 893 | 942 | 853 | 611 | 344 | 178 | 174 |
| 50% | 158 | 289 | 453 | 606 | 758 | 862 | 900 | 805 | 581 | 312 | 156 | 140 |
| 60% | 143 | 250 | 411 | 585 | 700 | 825 | 826 | 750 | 550 | 287 | 140 | 109 |
| 70% | 101 | 219 | 393 | 538 | 654 | 775 | 754 | 665 | 496 | 256 | 114 | 90 |
| 80% | 45 | 201 | 347 | 496 | 640 | 712 | 697 | 615 | 444 | 237 | 102 | 45 |
| 90% | 45 | 175 | 292 | 460 | 599 | 645 | 626 | 567 | 428 | 208 | 85 | 45 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 216 | 338 | 491 | 636 | 754 | 833 | 840 | 778 | 606 | 352 | 200 | 189 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 283 | 446 | 622 | 699 | 808 | 911 | 951 | 909 | 737 | 462 | 282 | 249 |
| Above Normal (16%) | 72 | 238 | 429 | 617 | 741 | 819 | 867 | 812 | 627 | 301 | 140 | 68 |
| Below Normal (13%) | 213 | 295 | 418 | 663 | 778 | 843 | 815 | 734 | 557 | 303 | 157 | 181 |
| Dry (24%) | 219 | 313 | 462 | 587 | 710 | 784 | 771 | 695 | 520 | 295 | 164 | 190 |
| Critical (15%) | 222 | 294 | 387 | 576 | 699 | 749 | 704 | 637 | 487 | 308 | 187 | 196 |

### Alternative 1 100419 minus No Action Alternative 093019

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 127 | 172 | 150 | 176 | 41 | 0 | 49 | 176 | 151 | 96 | 87 | 99 |
| 20% | 102 | 107 | 95 | 49 | 64 | 0 | 94 | 262 | 185 | 114 | 84 | 42 |
| 30% | 47 | -1 | -2 | 26 | -1 | -19 | 128 | 248 | 207 | 136 | 85 | 58 |
| 40% | 2 | -33 | -39 | -15 | 12 | 14 | 143 | 234 | 181 | 101 | 78 | 34 |
| 50% | -18 | -23 | -18 | -30 | 23 | 27 | 127 | 207 | 209 | 91 | 62 | 17 |
| 60% | -25 | -33 | -37 | -11 | 14 | 27 | 93 | 200 | 207 | 88 | 52 | -1 |
| 70% | -54 | -25 | -1 | -28 | -3 | 29 | 71 | 146 | 176 | 87 | 53 | -7 |
| 80% | -97 | -8 | -25 | -10 | 44 | 28 | 72 | 133 | 148 | 103 | 53 | -45 |
| 90% | -65 | 9 | 46 | 34 | 97 | 52 | 90 | 135 | 162 | 116 | 40 | -36 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11 | 28 | 27 | 21 | 30 | 22 | 93 | 176 | 173 | 105 | 62 | 20 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 29 | 73 | 75 | 23 | -2 | -5 | 95 | 201 | 183 | 143 | 90 | 35 |
| Above Normal (16%) | -104 | -57 | -59 | 14 | 8 | -30 | 108 | 239 | 220 | 141 | 49 | -70 |
| Below Normal (13%) | 36 | 27 | 14 | 75 | 97 | 63 | 117 | 205 | 225 | 110 | 66 | 38 |
| Dry (24%) | 37 | 23 | 24 | -10 | 29 | 13 | 51 | 109 | 125 | 46 | 38 | 37 |
| Critical (15%) | 30 | 29 | 29 | 27 | 63 | 112 | 119 | 139 | 132 | 77 | 52 | 39 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-3. San Luis CVP Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 338 | 432 | 614 | 750 | 951 | 972 | 924 | 801 | 720 | 464 | 296 | 324 |
| 20% | 234 | 367 | 557 | 716 | 878 | 972 | 880 | 763 | 601 | 338 | 190 | 215 |
| 30% | 201 | 367 | 544 | 692 | 857 | 972 | 859 | 659 | 479 | 262 | 128 | 163 |
| 40% | 182 | 340 | 520 | 667 | 797 | 910 | 835 | 624 | 436 | 244 | 104 | 146 |
| 50% | 176 | 314 | 488 | 654 | 736 | 849 | 774 | 598 | 374 | 217 | 95 | 121 |
| 60% | 163 | 276 | 459 | 620 | 688 | 816 | 743 | 556 | 341 | 202 | 90 | 111 |
| 70% | 152 | 245 | 424 | 569 | 658 | 749 | 674 | 516 | 328 | 168 | 64 | 97 |
| 80% | 145 | 215 | 370 | 513 | 596 | 685 | 629 | 482 | 285 | 133 | 50 | 90 |
| 90% | 123 | 181 | 283 | 459 | 531 | 564 | 532 | 427 | 252 | 92 | 45 | 83 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 207 | 314 | 476 | 625 | 733 | 820 | 754 | 609 | 436 | 251 | 140 | 170 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 256 | 373 | 547 | 682 | 816 | 920 | 860 | 711 | 561 | 330 | 198 | 222 |
| Above Normal (16%) | 176 | 299 | 492 | 611 | 746 | 860 | 769 | 582 | 414 | 169 | 94 | 138 |
| Below Normal (13%) | 182 | 287 | 434 | 596 | 689 | 784 | 702 | 534 | 332 | 193 | 90 | 134 |
| Dry (24%) | 181 | 285 | 442 | 614 | 700 | 791 | 735 | 598 | 398 | 251 | 127 | 154 |
| Critical (15%) | 203 | 277 | 399 | 564 | 634 | 640 | 589 | 502 | 343 | 223 | 134 | 154 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 339 | 414 | 614 | 749 | 931 | 972 | 923 | 796 | 715 | 441 | 299 | 317 |
| 20% | 232 | 367 | 552 | 719 | 868 | 972 | 878 | 709 | 585 | 337 | 191 | 235 |
| 30% | 201 | 367 | 544 | 678 | 825 | 964 | 844 | 655 | 481 | 262 | 126 | 161 |
| 40% | 183 | 336 | 525 | 660 | 779 | 879 | 799 | 619 | 430 | 244 | 101 | 140 |
| 50% | 176 | 311 | 471 | 636 | 735 | 835 | 773 | 598 | 372 | 220 | 94 | 123 |
| 60% | 168 | 283 | 448 | 595 | 686 | 797 | 733 | 549 | 343 | 199 | 88 | 111 |
| 70% | 155 | 243 | 394 | 566 | 656 | 746 | 684 | 519 | 321 | 169 | 61 | 97 |
| 80% | 142 | 210 | 371 | 506 | 596 | 683 | 625 | 482 | 295 | 133 | 49 | 90 |
| 90% | 110 | 167 | 246 | 427 | 501 | 593 | 536 | 432 | 266 | 92 | 45 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 205 | 310 | 464 | 615 | 723 | 811 | 747 | 602 | 433 | 247 | 138 | 169 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 254 | 373 | 547 | 676 | 810 | 916 | 856 | 708 | 554 | 320 | 192 | 214 |
| Above Normal (16%) | 175 | 295 | 488 | 603 | 732 | 849 | 759 | 573 | 407 | 160 | 90 | 137 |
| Below Normal (13%) | 177 | 269 | 404 | 588 | 681 | 780 | 698 | 529 | 332 | 193 | 90 | 143 |
| Dry (24%) | 183 | 289 | 438 | 597 | 681 | 770 | 720 | 585 | 396 | 249 | 127 | 153 |
| Critical (15%) | 192 | 265 | 358 | 549 | 636 | 638 | 586 | 499 | 355 | 231 | 136 | 157 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | -18 | 0 | -1 | -20 | 0 | 0 | -5 | -5 | -23 | 2 | -7 |
| 20% | -2 | 0 | -5 | 3 | -10 | 0 | -3 | -54 | -15 | -1 | 1 | 20 |
| 30% | 0 | 0 | 1 | -15 | -32 | -8 | -16 | -4 | 2 | 0 | -2 | -2 |
| 40% | 1 | -4 | 5 | -7 | -18 | -31 | -37 | -5 | -7 | -1 | -4 | -6 |
| 50% | 0 | -3 | -17 | -17 | -1 | -15 | -1 | -1 | -2 | 3 | 0 | 3 |
| 60% | 5 | 7 | -12 | -25 | -2 | -18 | -9 | -7 | 2 | -3 | -2 | 0 |
| 70% | 3 | -1 | -30 | -3 | -2 | -3 | 10 | 3 | -7 | 2 | -3 | 0 |
| 80% | -3 | -5 | 1 | -7 | 0 | -1 | -3 | 0 | 10 | 1 | -1 | 0 |
| 90% | -13 | -14 | -37 | -33 | -30 | 29 | 4 | 5 | 14 | -1 | 0 | -2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -4 | -12 | -11 | -9 | -9 | -7 | -7 | -2 | -4 | -2 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | 0 | 0 | -6 | -6 | -4 | -4 | -4 | -7 | -11 | -7 | -8 |
| Above Normal (16%) | -1 | -3 | -5 | -8 | -14 | -11 | -10 | -8 | -7 | -9 | -3 | -1 |
| Below Normal (13%) | -5 | -19 | -30 | -8 | -8 | -5 | -4 | -5 | 0 | 0 | 0 | 9 |
| Dry (24%) | 2 | 5 | -4 | -17 | -19 | -21 | -14 | -12 | -3 | -3 | 0 | -1 |
| Critical (15%) | -11 | -12 | -40 | -15 | 2 | -2 | -3 | -4 | 12 | 8 | 2 | 3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-4. San Luis CVP Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 489 | 653 | 863 | 972 | 972 | 972 | 972 | 972 | 858 | 541 | 399 | 419 |
| 20% | 367 | 466 | 637 | 788 | 944 | 972 | 972 | 968 | 754 | 438 | 268 | 293 |
| 30% | 291 | 425 | 555 | 723 | 874 | 972 | 972 | 904 | 655 | 372 | 187 | 219 |
| 40% | 212 | 356 | 511 | 662 | 831 | 958 | 941 | 848 | 583 | 311 | 144 | 179 |
| 50% | 188 | 305 | 468 | 629 | 742 | 882 | 900 | 799 | 525 | 266 | 114 | 166 |
| 60% | 177 | 266 | 414 | 585 | 703 | 820 | 858 | 723 | 478 | 241 | 104 | 120 |
| 70% | 149 | 216 | 377 | 526 | 652 | 767 | 760 | 686 | 445 | 225 | 92 | 109 |
| 80% | 131 | 193 | 348 | 496 | 599 | 727 | 676 | 589 | 427 | 200 | 61 | 90 |
| 90% | 73 | 157 | 266 | 402 | 522 | 640 | 634 | 544 | 390 | 146 | 45 | 70 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 252 | 356 | 495 | 638 | 753 | 844 | 840 | 770 | 574 | 318 | 176 | 205 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 335 | 481 | 637 | 724 | 834 | 920 | 952 | 911 | 709 | 420 | 251 | 282 |
| Above Normal (16%) | 219 | 327 | 458 | 570 | 692 | 794 | 831 | 763 | 530 | 219 | 111 | 148 |
| Below Normal (13%) | 210 | 282 | 403 | 682 | 788 | 873 | 838 | 730 | 519 | 284 | 141 | 177 |
| Dry (24%) | 216 | 301 | 452 | 595 | 714 | 828 | 794 | 713 | 527 | 299 | 158 | 181 |
| Critical (15%) | 207 | 277 | 382 | 559 | 676 | 735 | 682 | 606 | 456 | 269 | 149 | 166 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 466 | 585 | 764 | 925 | 972 | 972 | 972 | 972 | 865 | 536 | 386 | 416 |
| 20% | 334 | 473 | 647 | 768 | 931 | 972 | 972 | 972 | 770 | 451 | 275 | 277 |
| 30% | 248 | 365 | 542 | 704 | 824 | 945 | 972 | 903 | 687 | 398 | 211 | 218 |
| 40% | 186 | 303 | 486 | 646 | 790 | 893 | 942 | 853 | 611 | 344 | 178 | 174 |
| 50% | 158 | 289 | 453 | 606 | 758 | 862 | 900 | 805 | 581 | 312 | 156 | 140 |
| 60% | 143 | 250 | 411 | 585 | 700 | 825 | 826 | 750 | 550 | 287 | 140 | 109 |
| 70% | 101 | 219 | 393 | 538 | 654 | 775 | 754 | 665 | 496 | 256 | 114 | 90 |
| 80% | 45 | 201 | 347 | 496 | 640 | 712 | 697 | 615 | 444 | 237 | 102 | 45 |
| 90% | 45 | 175 | 292 | 460 | 599 | 645 | 626 | 567 | 428 | 208 | 85 | 45 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 216 | 338 | 491 | 636 | 754 | 833 | 840 | 778 | 606 | 352 | 200 | 189 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 283 | 446 | 622 | 699 | 808 | 911 | 951 | 909 | 737 | 462 | 282 | 249 |
| Above Normal (16%) | 72 | 238 | 429 | 617 | 741 | 819 | 867 | 812 | 627 | 301 | 140 | 68 |
| Below Normal (13%) | 213 | 295 | 418 | 663 | 778 | 843 | 815 | 734 | 557 | 303 | 157 | 181 |
| Dry (24%) | 219 | 313 | 462 | 587 | 710 | 784 | 771 | 695 | 520 | 295 | 164 | 190 |
| Critical (15%) | 222 | 294 | 387 | 576 | 699 | 749 | 704 | 637 | 487 | 308 | 187 | 196 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -23 | -68 | -99 | -47 | 0 | 0 | 0 | 0 | 8 | -5 | -14 | -2 |
| 20% | -33 | 7 | 10 | -20 | -13 | 0 | 0 | 3 | 17 | 13 | 7 | -16 |
| 30% | -44 | -59 | -13 | -19 | -50 | -27 | 0 | -1 | 32 | 25 | 24 | -1 |
| 40% | -27 | -54 | -25 | -16 | -41 | -65 | 1 | 5 | 28 | 33 | 34 | -5 |
| 50% | -30 | -17 | -15 | -23 | 15 | -21 | 0 | 6 | 56 | 45 | 42 | -25 |
| 60% | -34 | -15 | -3 | 0 | -3 | 4 | -32 | 27 | 72 | 46 | 37 | -11 |
| 70% | -47 | 3 | 16 | 12 | 2 | 8 | -6 | -21 | 51 | 31 | 22 | -19 |
| 80% | -86 | 8 | -1 | 0 | 41 | -16 | 21 | 26 | 17 | 37 | 41 | -45 |
| 90% | -28 | 19 | 26 | 58 | 77 | 5 | -8 | 23 | 38 | 62 | 40 | -25 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -37 | -18 | -4 | -3 | 1 | -12 | 0 | 8 | 32 | 33 | 24 | -16 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -52 | -35 | -15 | -26 | -26 | -9 | -1 | -1 | 28 | 42 | 31 | -33 |
| Above Normal (16%) | -147 | -89 | -28 | 47 | 49 | 25 | 37 | 49 | 97 | 82 | 29 | -81 |
| Below Normal (13%) | 3 | 13 | 15 | -19 | -10 | -30 | -23 | 4 | 38 | 18 | 16 | 4 |
| Dry (24%) | 3 | 11 | 10 | -8 | -3 | -44 | -23 | -18 | -7 | -4 | 7 | 9 |
| Critical (15%) | 15 | 17 | 5 | 17 | 23 | 15 | 23 | 31 | 31 | 39 | 38 | 31 |

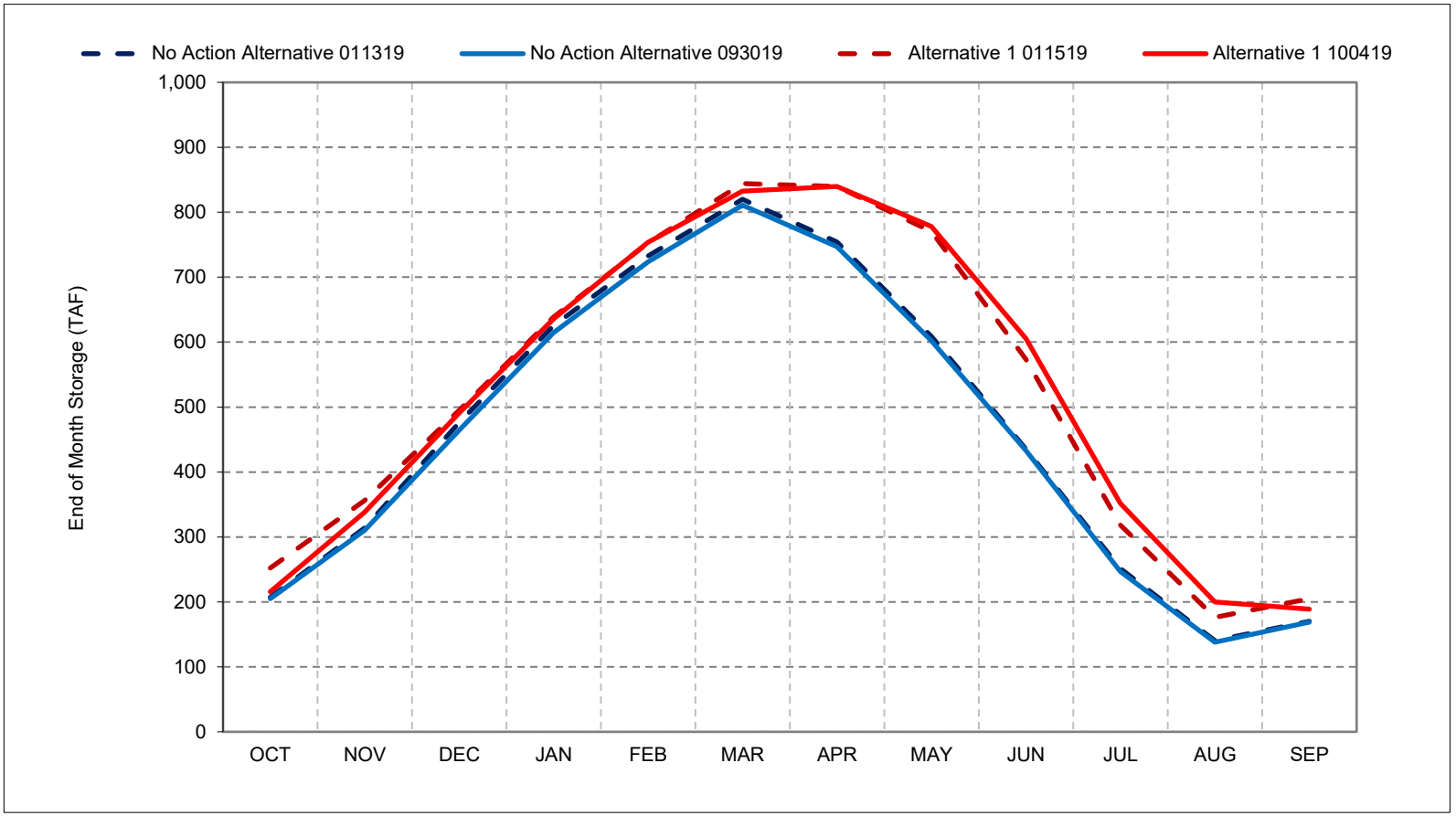
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-1. San Luis CVP Storage, Long-Term Average Storage

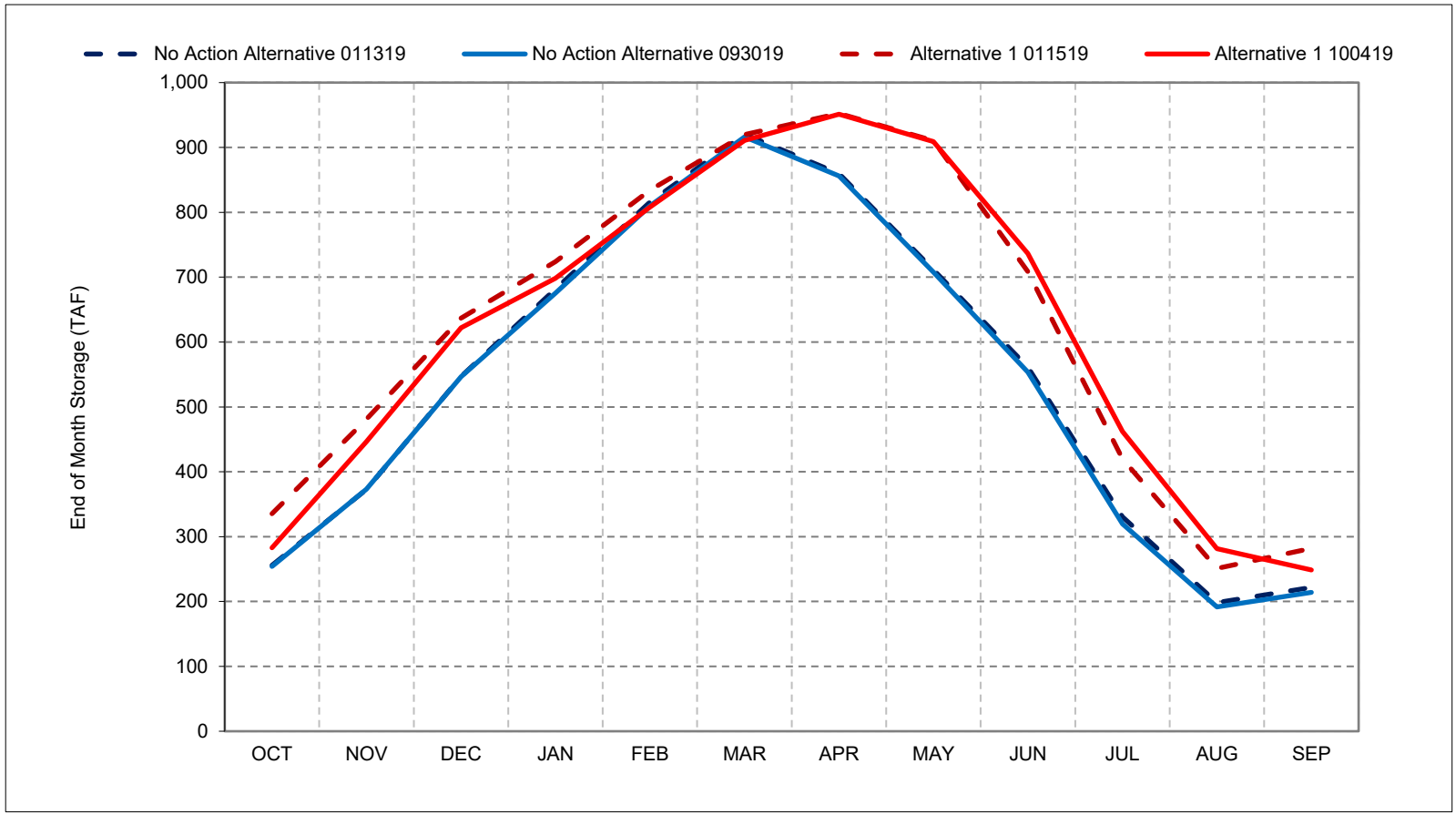



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-2. San Luis CVP Storage, Wet Year Average Storage

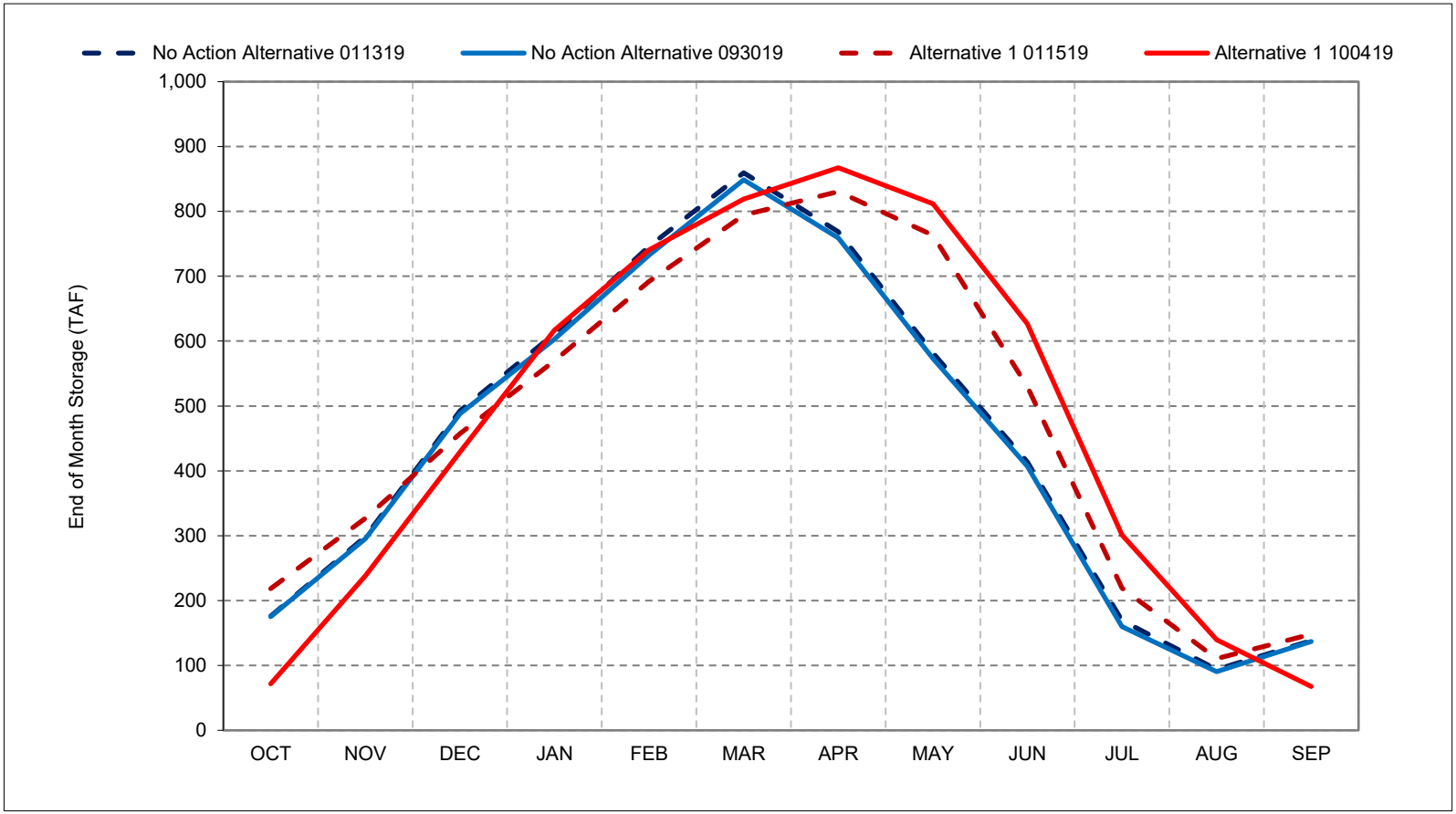



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-3. San Luis CVP Storage, Above Normal Year Average Storage

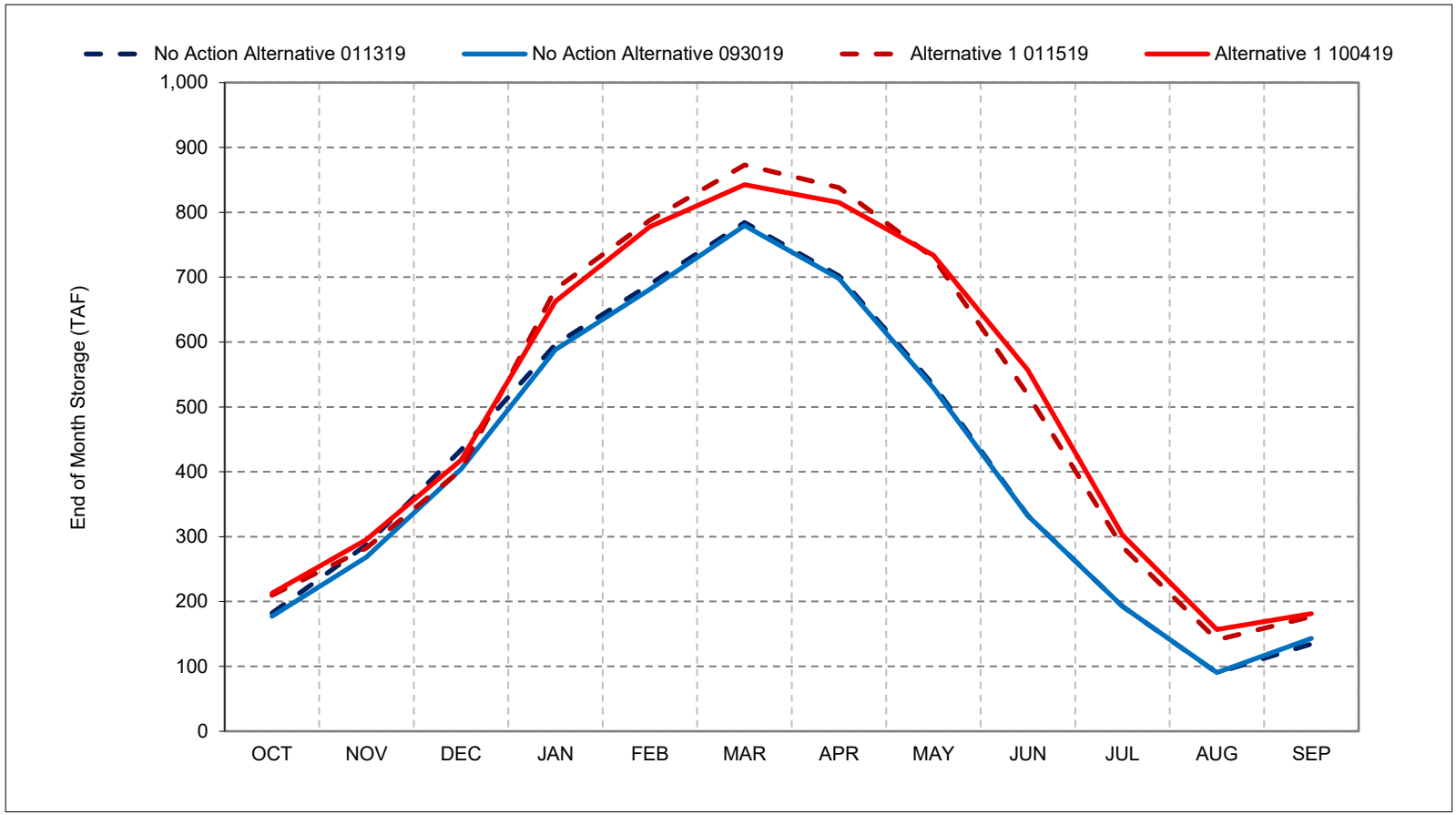



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-4. San Luis CVP Storage, Below Normal Year Average Storage

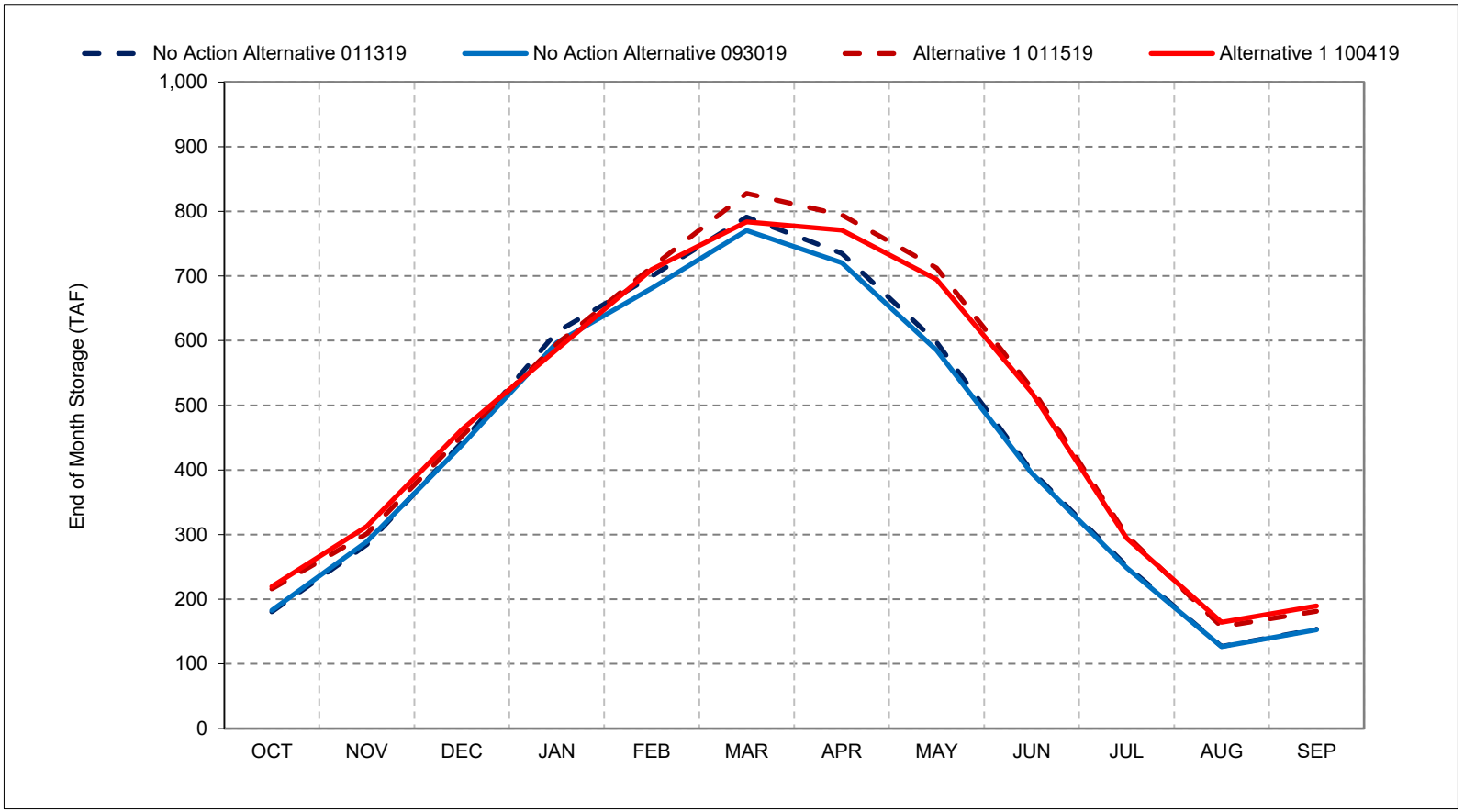



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-5. San Luis CVP Storage, Dry Year Average Storage

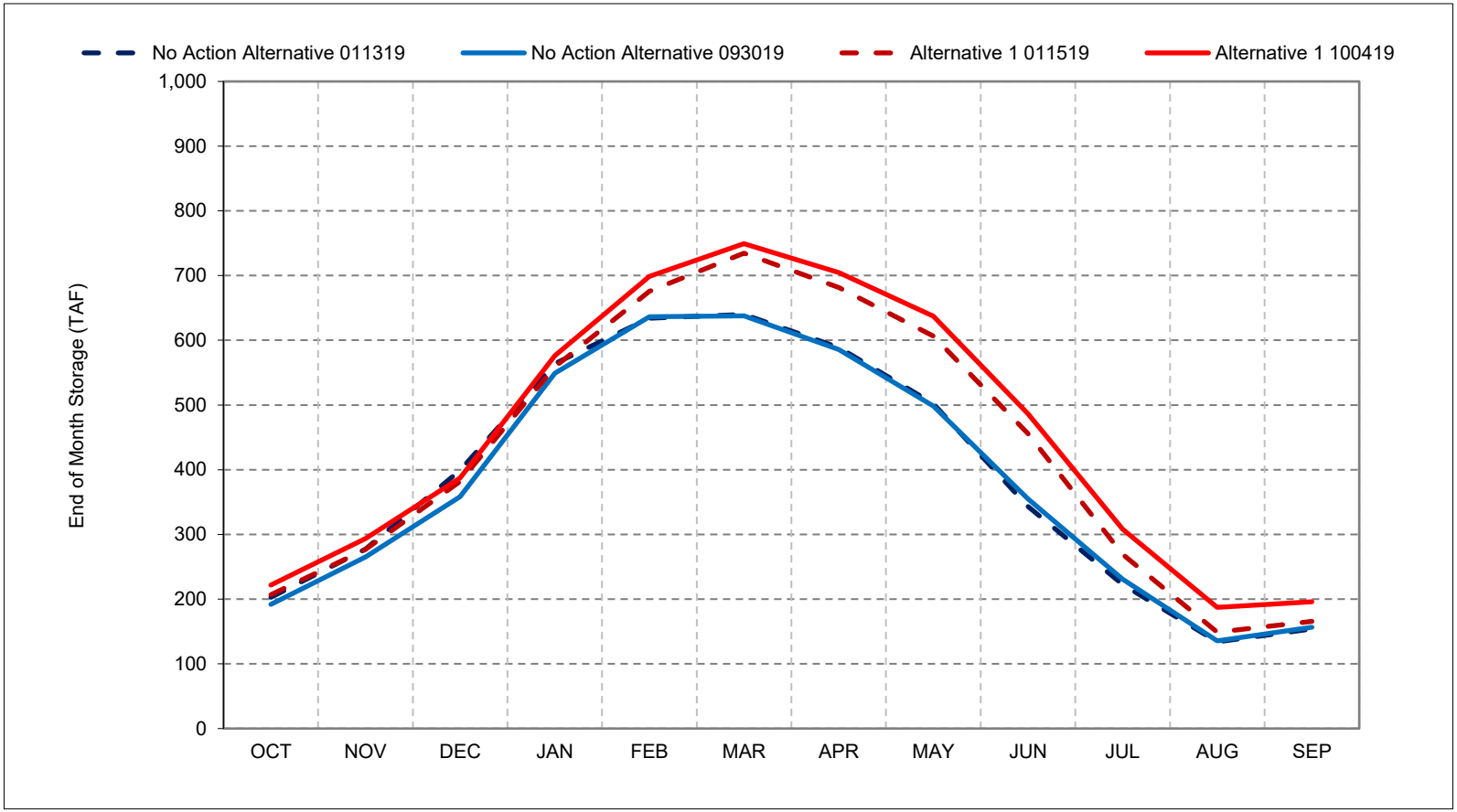



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-6. San Luis CVP Storage, Critical Year Average Storage

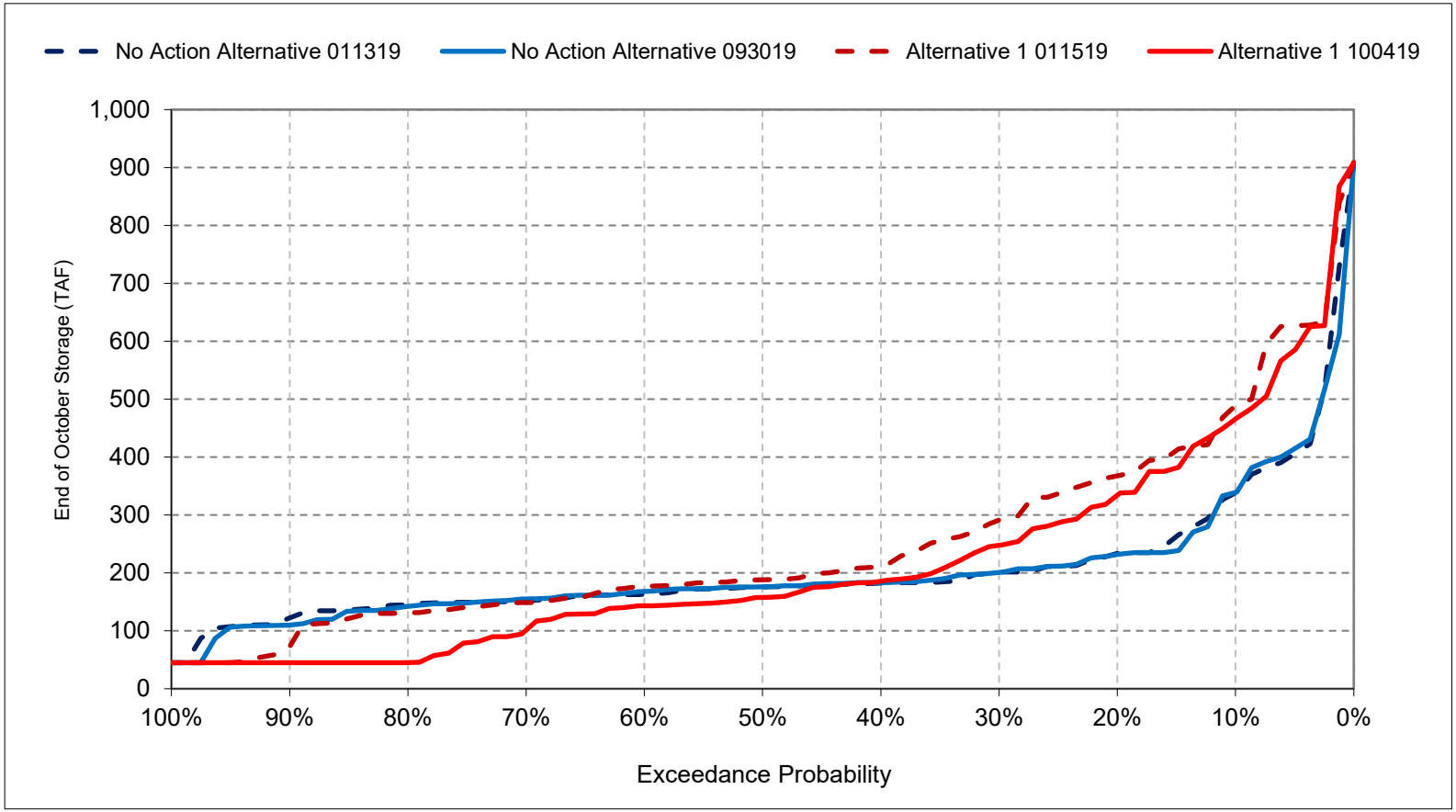



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

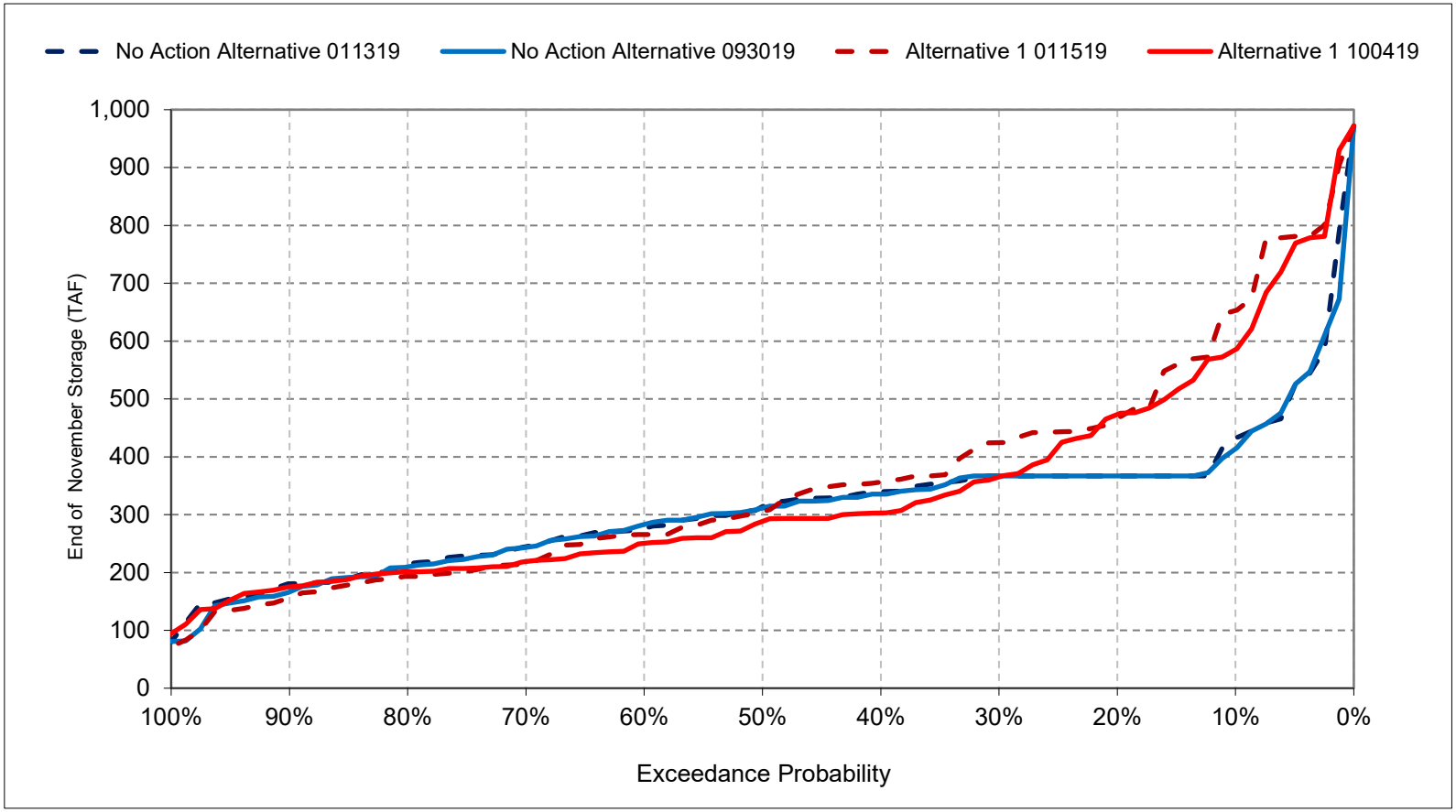
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-7. San Luis CVP Storage, End of October Storage



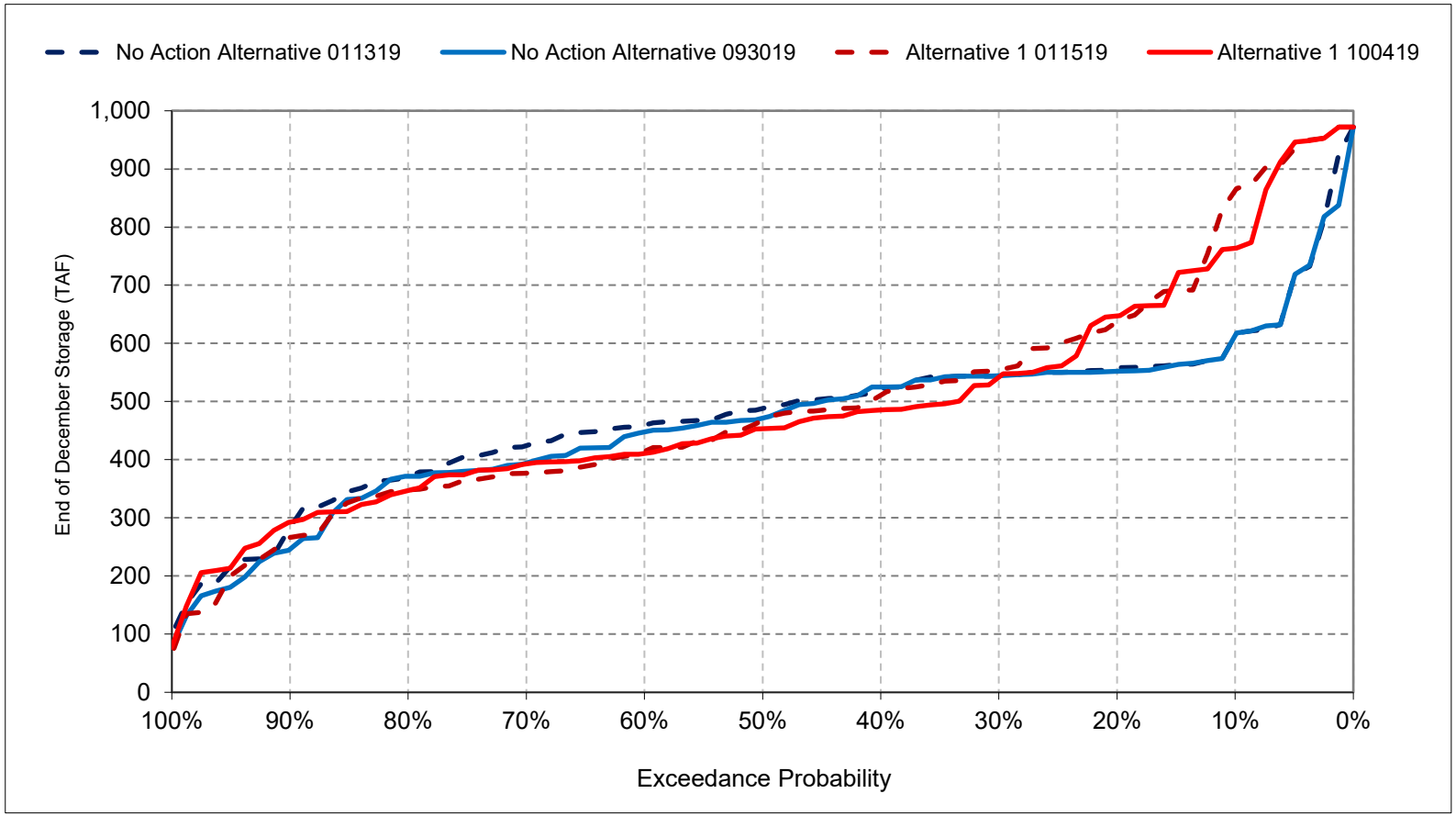

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-8. San Luis CVP Storage, End of November Storage



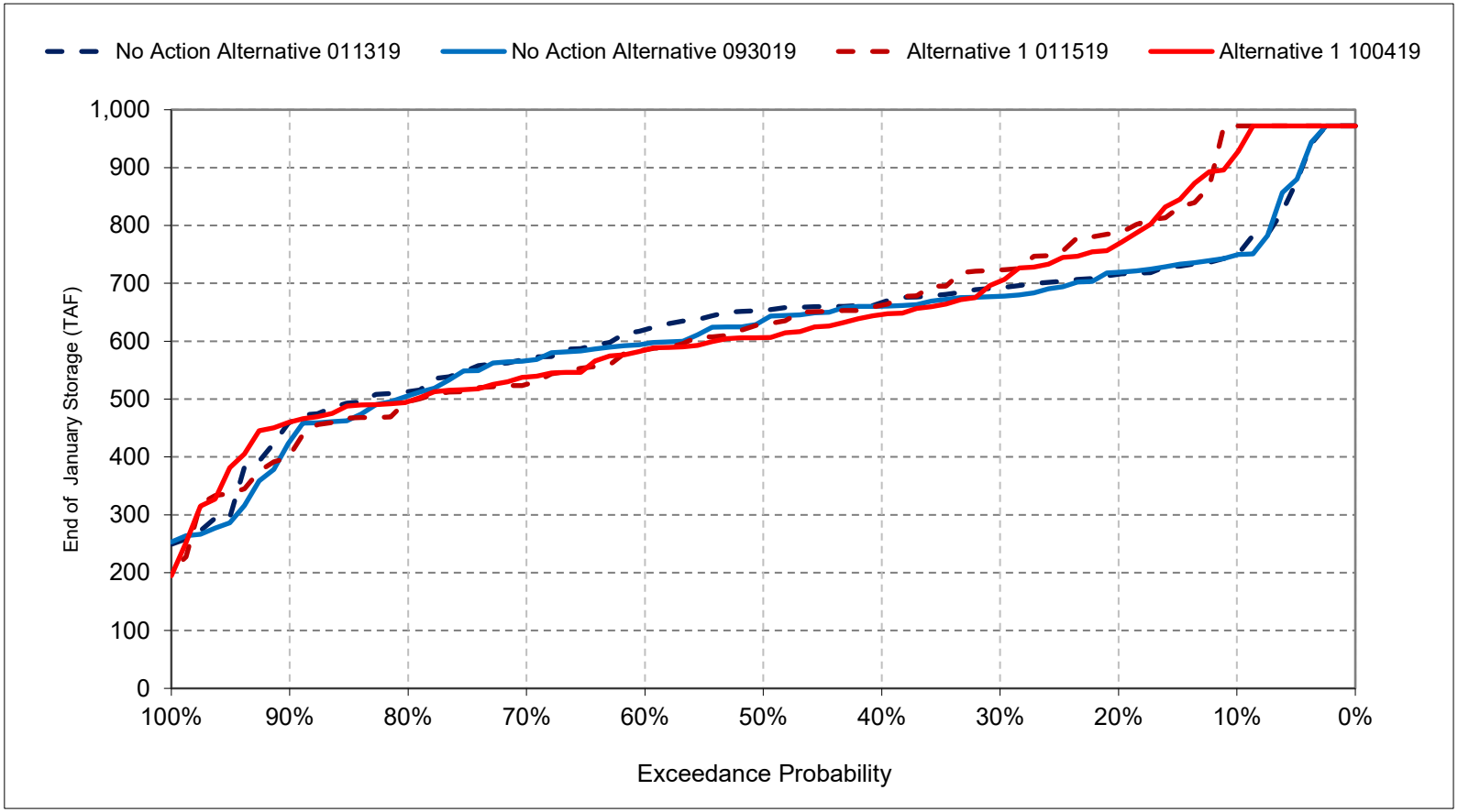

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-9. San Luis CVP Storage, End of December Storage



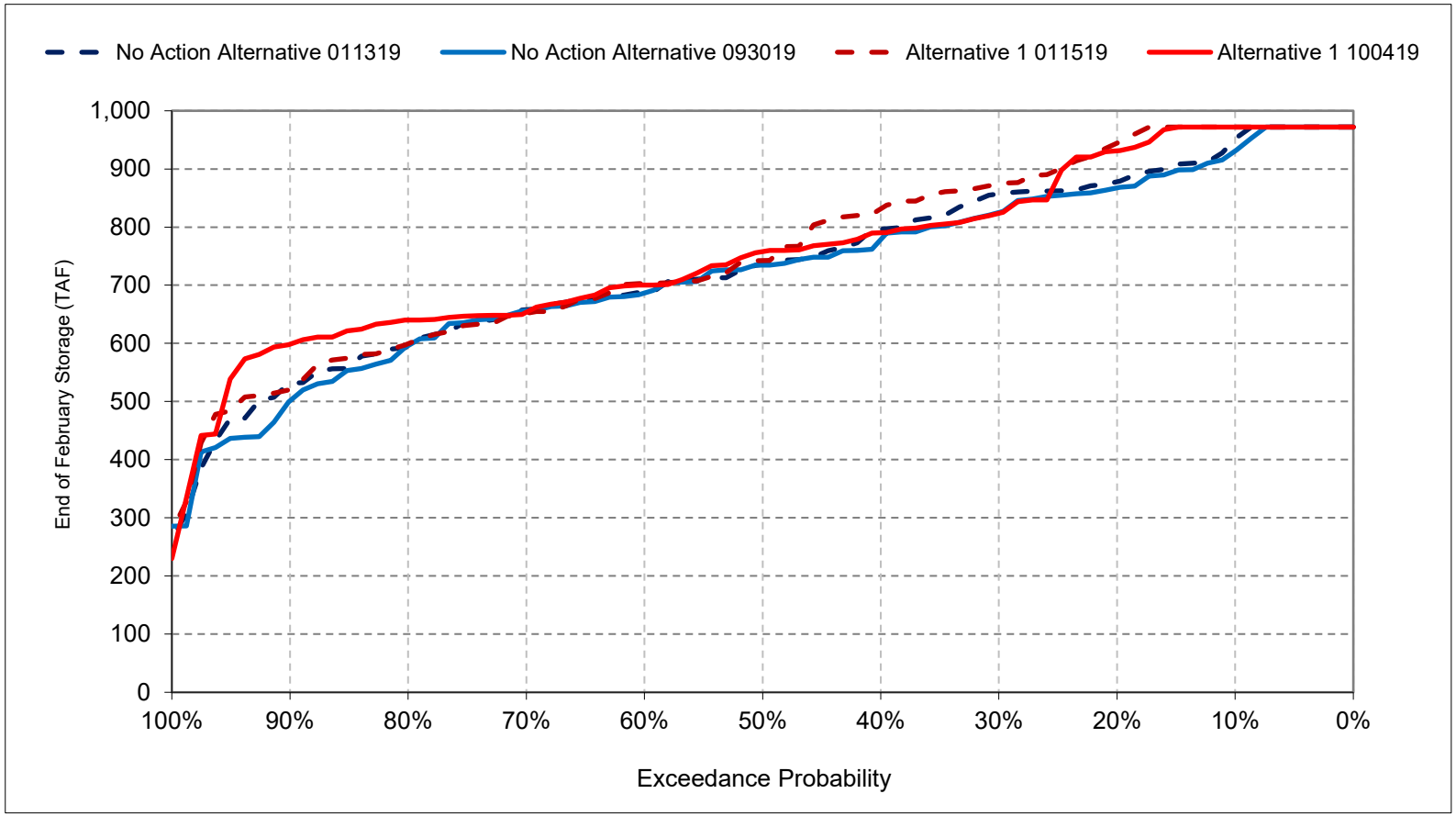

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-10. San Luis CVP Storage, End of January Storage



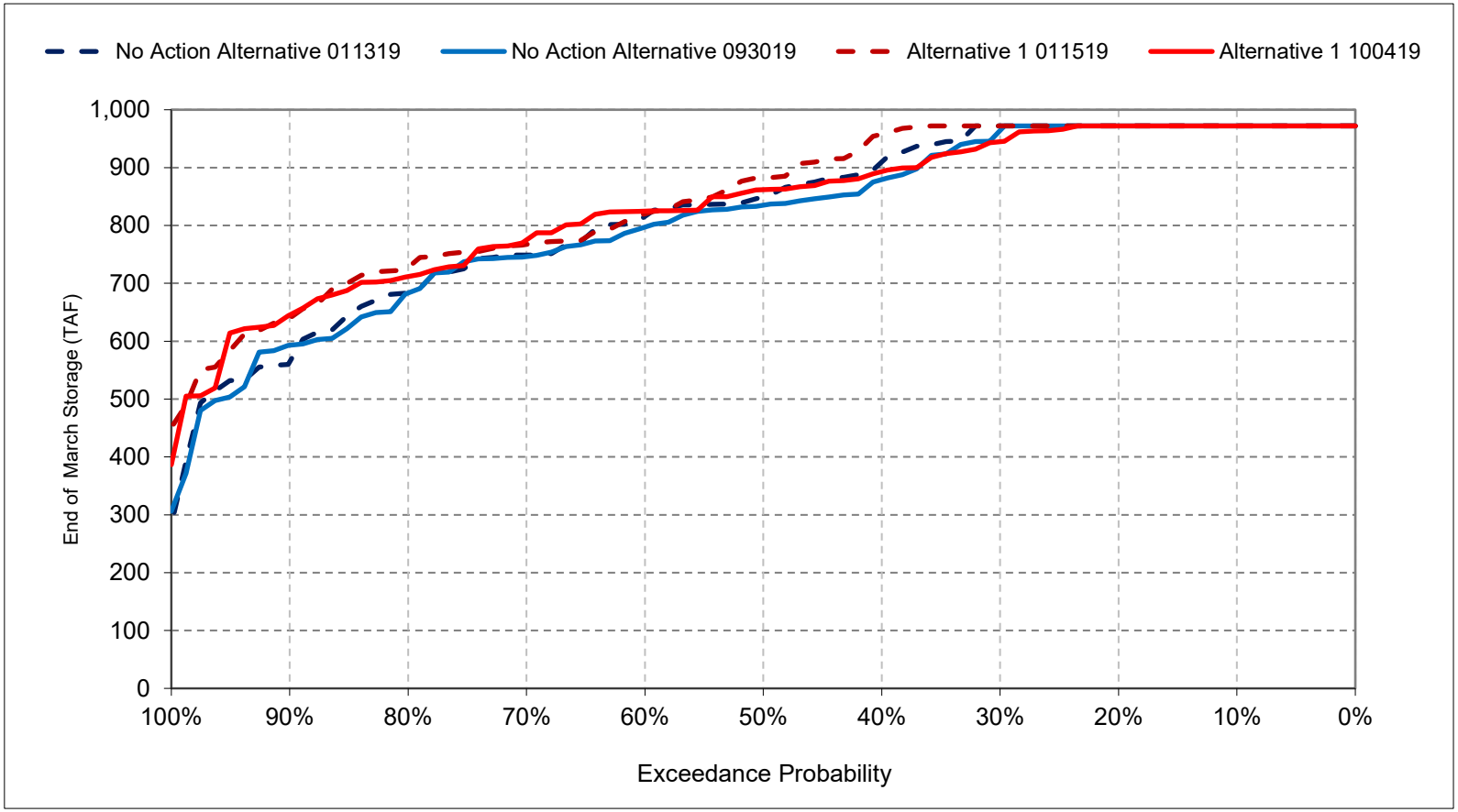

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-11. San Luis CVP Storage, End of February Storage



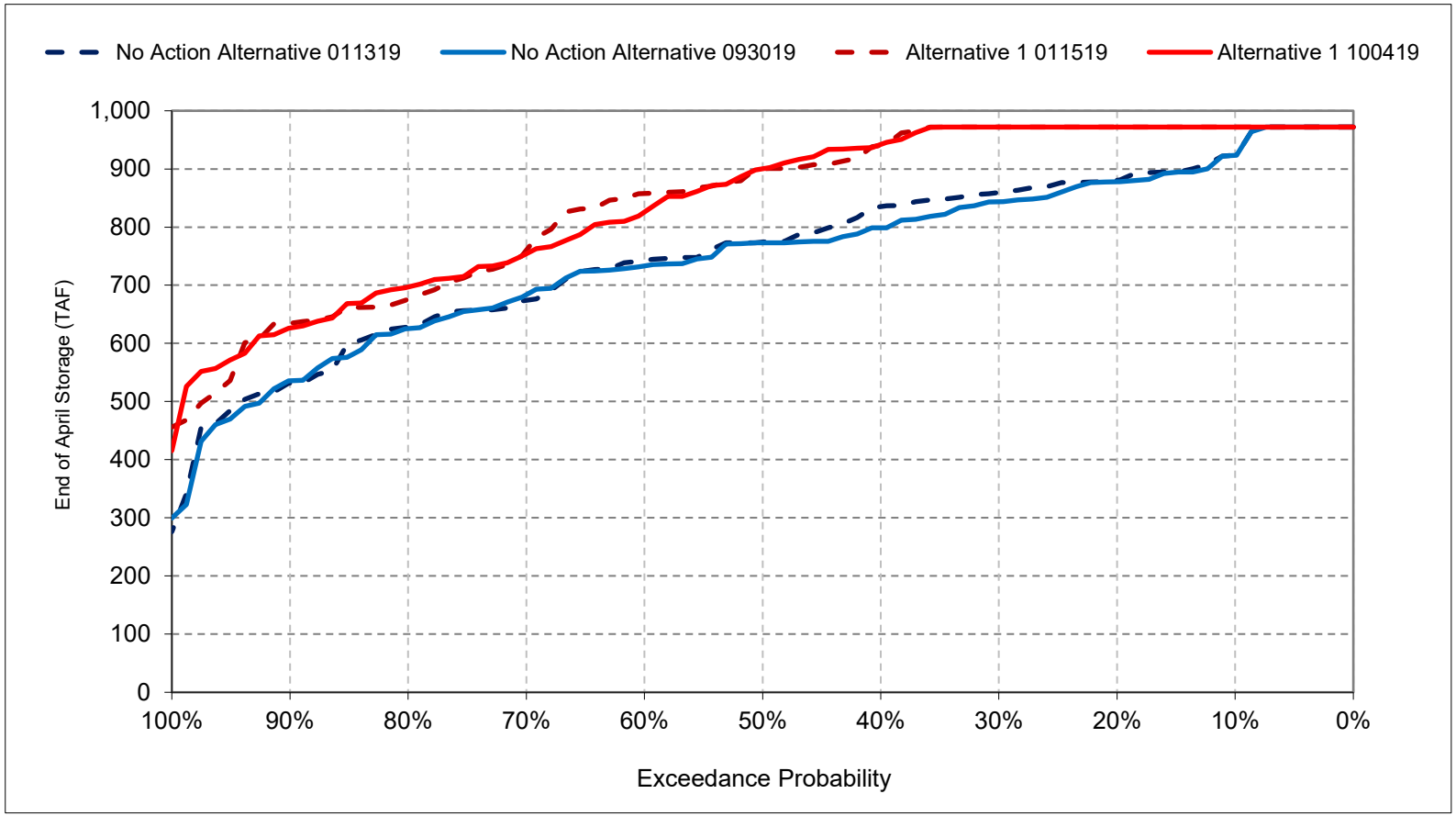

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-12. San Luis CVP Storage, End of March Storage



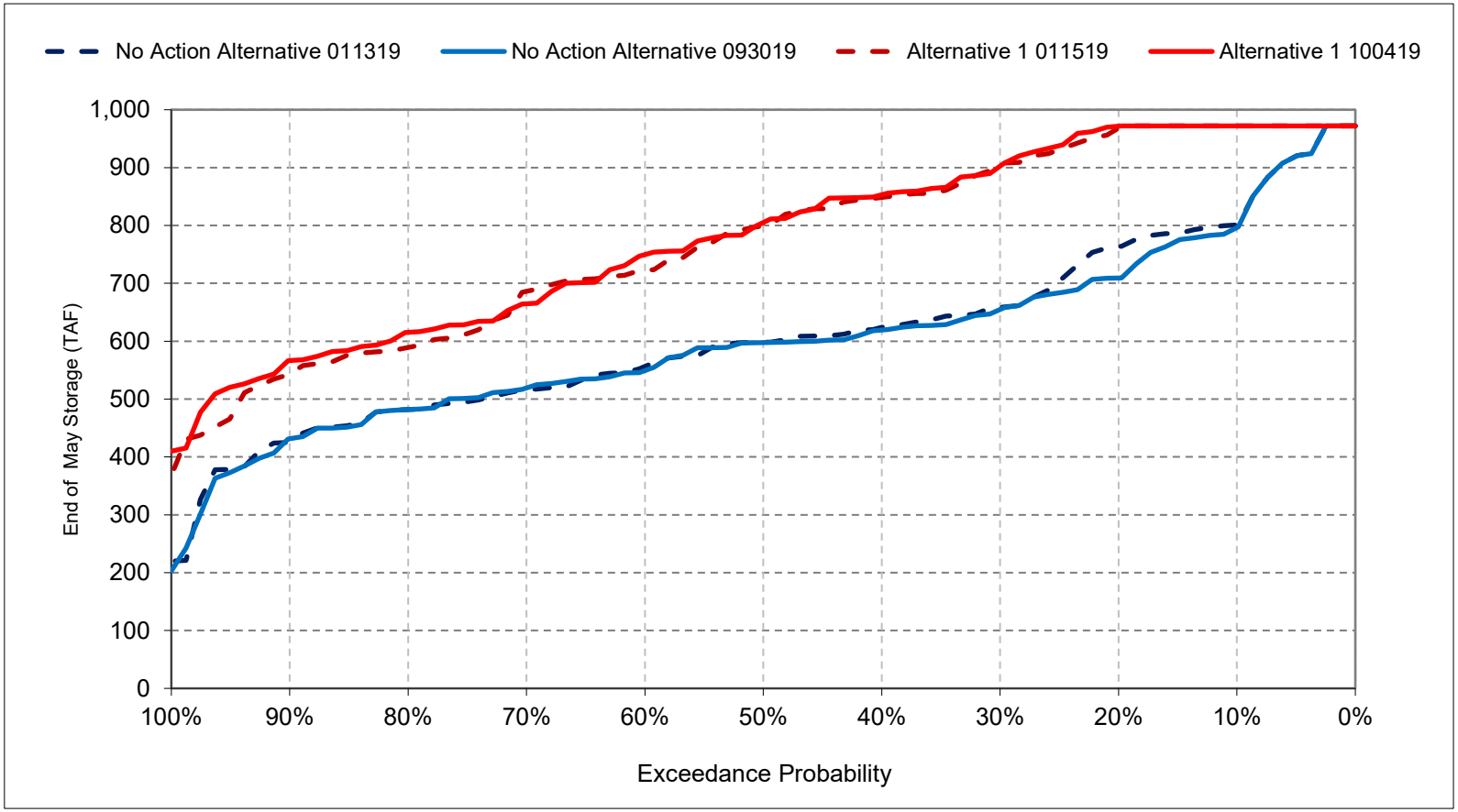

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-13. San Luis CVP Storage, End of April Storage



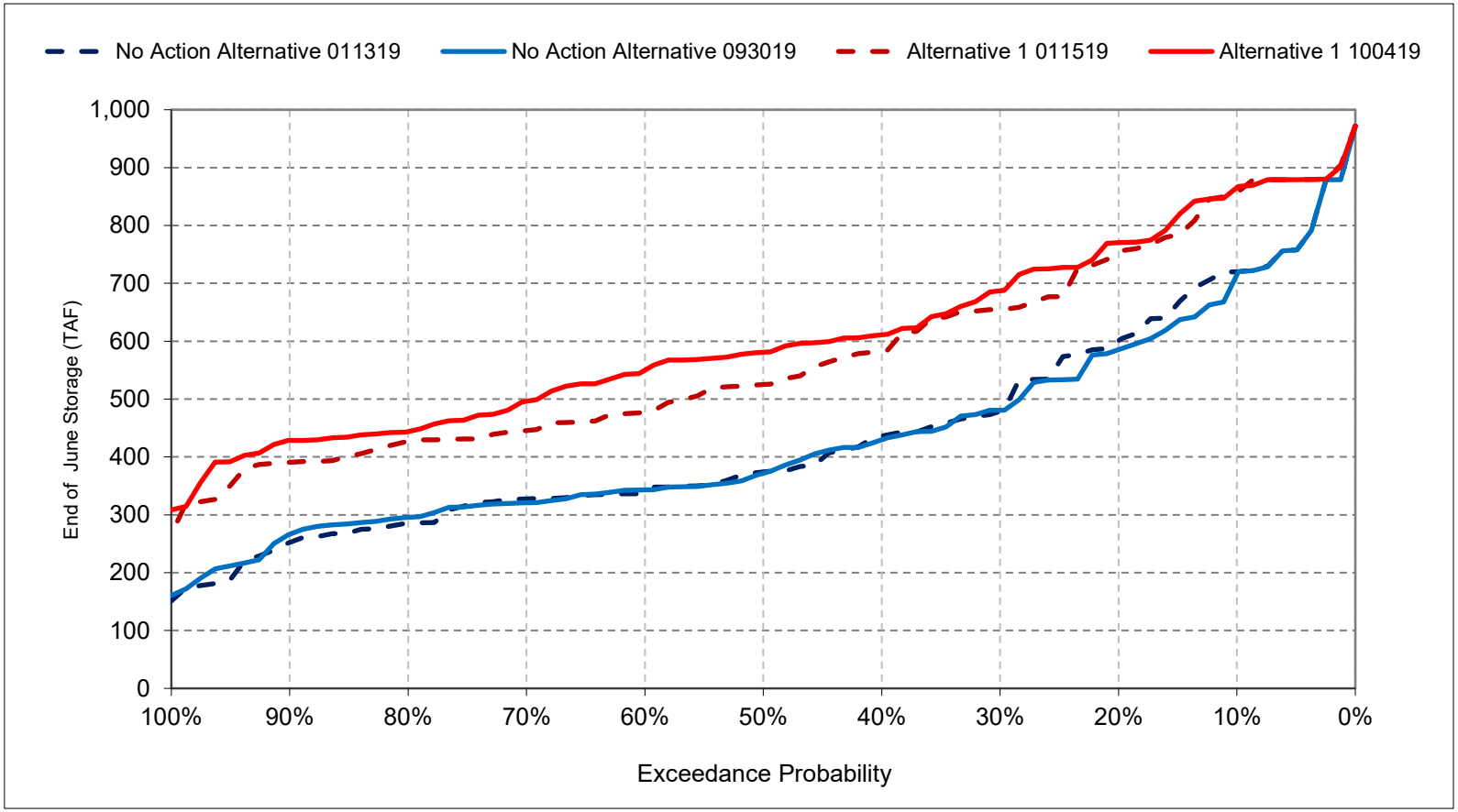

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-14. San Luis CVP Storage, End of May Storage



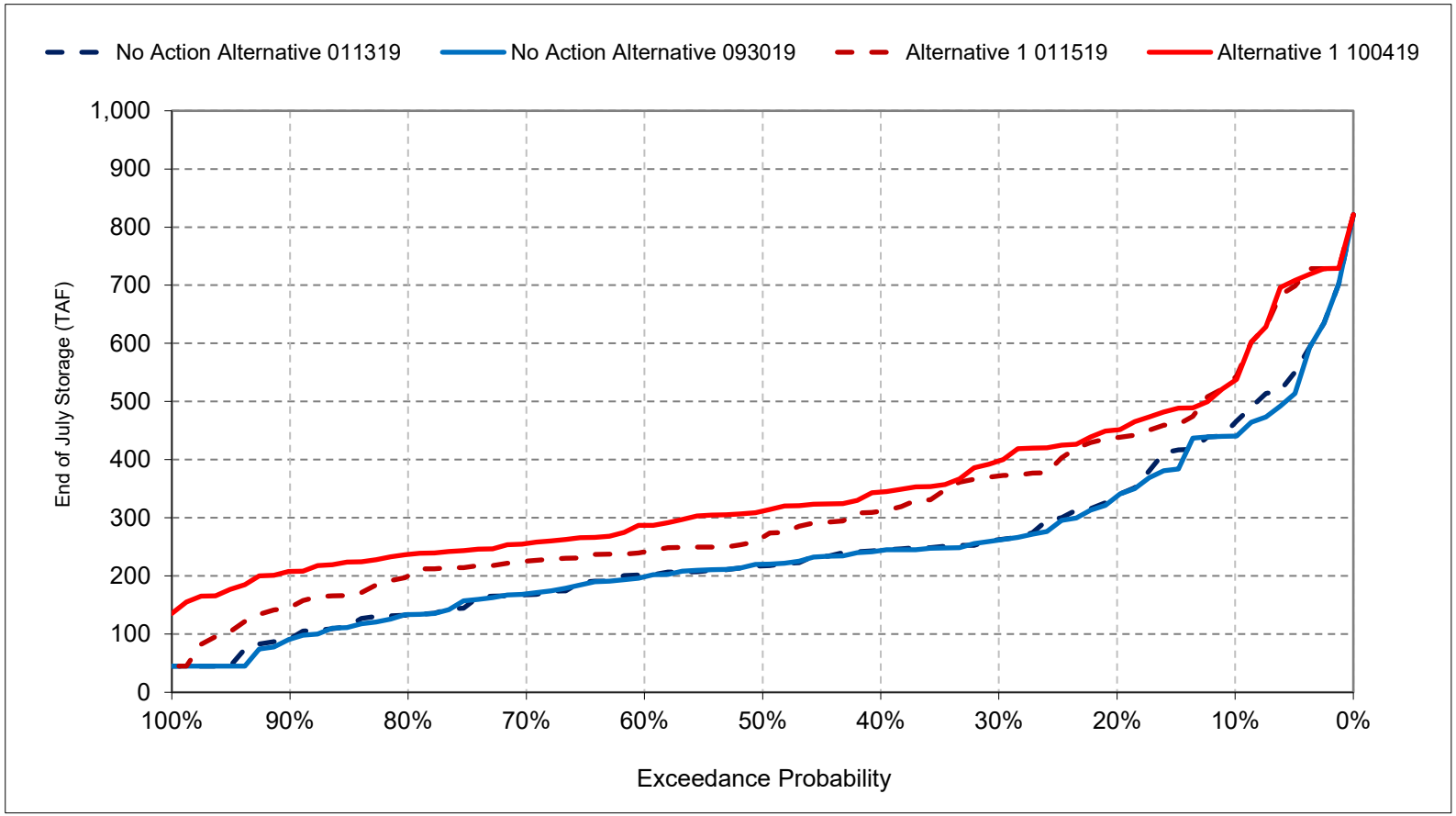

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-15. San Luis CVP Storage, End of June Storage



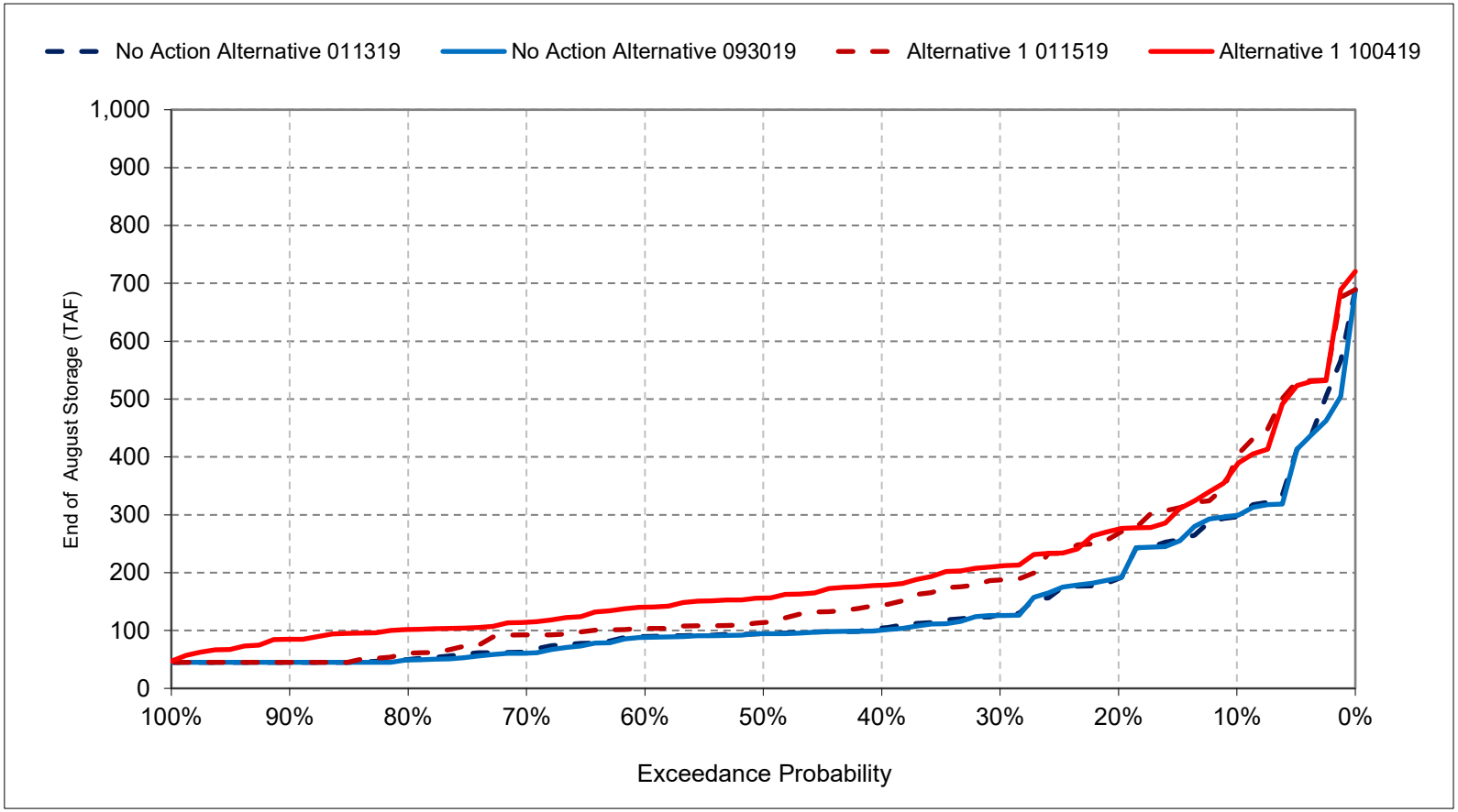

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-16. San Luis CVP Storage, End of July Storage



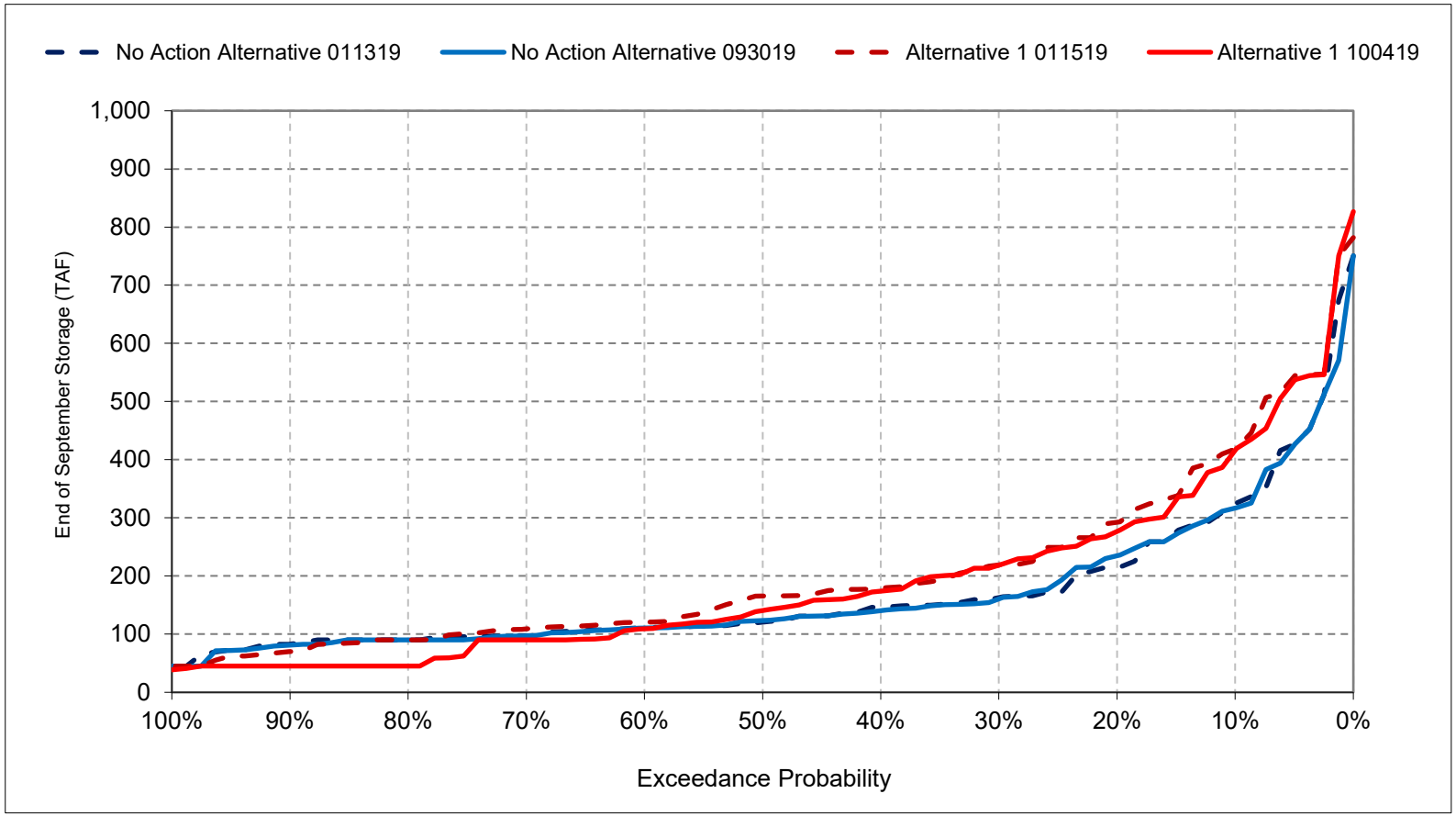

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-17. San Luis CVP Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-18. San Luis CVP Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6c-1. San Luis SWP Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 461 | 467 | 648 | 764 | 967 | 1,067 | 931 | 734 | 558 | 476 | 429 | 453 |
| 20% | 293 | 352 | 510 | 672 | 786 | 1,015 | 896 | 643 | 453 | 418 | 352 | 408 |
| 30% | 268 | 311 | 413 | 579 | 724 | 900 | 797 | 621 | 412 | 366 | 312 | 342 |
| 40% | 227 | 228 | 354 | 496 | 657 | 811 | 730 | 557 | 360 | 306 | 238 | 272 |
| 50% | 186 | 189 | 294 | 425 | 587 | 720 | 666 | 483 | 291 | 249 | 198 | 229 |
| 60% | 128 | 155 | 244 | 354 | 520 | 656 | 589 | 434 | 247 | 219 | 168 | 158 |
| 70% | 70 | 70 | 177 | 289 | 435 | 586 | 494 | 373 | 224 | 187 | 117 | 98 |
| 80% | 55 | 55 | 97 | 232 | 333 | 457 | 429 | 308 | 181 | 137 | 66 | 55 |
| 90% | 55 | 55 | 55 | 200 | 299 | 391 | 348 | 266 | 90 | 100 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 213 | 231 | 323 | 466 | 601 | 729 | 655 | 500 | 329 | 293 | 239 | 253 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 319 | 244 | 343 | 527 | 705 | 893 | 769 | 563 | 394 | 381 | 386 | 425 |
| Above Normal (16%) | 272 | 269 | 370 | 490 | 633 | 761 | 643 | 446 | 228 | 229 | 259 | 326 |
| Below Normal (13%) | 198 | 242 | 305 | 383 | 491 | 606 | 536 | 381 | 187 | 216 | 207 | 193 |
| Dry (24%) | 116 | 229 | 320 | 454 | 566 | 669 | 647 | 534 | 378 | 321 | 144 | 122 |
| Critical (15%) | 98 | 156 | 247 | 406 | 500 | 550 | 546 | 476 | 346 | 199 | 86 | 73 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 618 | 636 | 808 | 950 | 1,067 | 1,067 | 1,059 | 944 | 763 | 652 | 560 | 587 |
| 20% | 439 | 483 | 561 | 708 | 879 | 1,065 | 1,021 | 887 | 626 | 559 | 487 | 429 |
| 30% | 302 | 397 | 486 | 633 | 765 | 934 | 928 | 775 | 553 | 474 | 337 | 317 |
| 40% | 233 | 317 | 348 | 498 | 632 | 788 | 810 | 682 | 491 | 391 | 260 | 249 |
| 50% | 163 | 245 | 238 | 394 | 575 | 674 | 654 | 559 | 401 | 325 | 208 | 174 |
| 60% | 96 | 175 | 171 | 287 | 482 | 618 | 587 | 483 | 340 | 285 | 173 | 91 |
| 70% | 55 | 62 | 80 | 233 | 370 | 516 | 502 | 398 | 255 | 208 | 77 | 55 |
| 80% | 55 | 55 | 55 | 215 | 347 | 428 | 443 | 329 | 161 | 144 | 55 | 55 |
| 90% | 55 | 55 | 55 | 200 | 318 | 355 | 335 | 215 | 55 | 55 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 248 | 296 | 336 | 475 | 604 | 707 | 695 | 581 | 418 | 357 | 268 | 250 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 430 | 445 | 474 | 525 | 665 | 787 | 780 | 667 | 493 | 461 | 425 | 425 |
| Above Normal (16%) | 196 | 216 | 207 | 545 | 652 | 679 | 608 | 432 | 228 | 214 | 202 | 211 |
| Below Normal (13%) | 162 | 201 | 202 | 453 | 569 | 667 | 628 | 456 | 240 | 259 | 229 | 197 |
| Dry (24%) | 172 | 278 | 357 | 436 | 570 | 721 | 735 | 659 | 535 | 427 | 217 | 172 |
| Critical (15%) | 115 | 179 | 266 | 372 | 505 | 576 | 600 | 542 | 427 | 257 | 117 | 91 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 157 | 169 | 160 | 186 | 100 | 0 | 128 | 211 | 205 | 177 | 130 | 134 |
| 20% | 146 | 131 | 51 | 36 | 94 | 50 | 125 | 244 | 173 | 140 | 135 | 21 |
| 30% | 34 | 86 | 73 | 55 | 41 | 34 | 132 | 154 | 142 | 108 | 25 | -25 |
| 40% | 6 | 89 | -7 | 1 | -25 | -24 | 80 | 125 | 131 | 86 | 23 | -23 |
| 50% | -23 | 56 | -56 | -31 | -12 | -45 | -12 | 76 | 110 | 75 | 10 | -55 |
| 60% | -32 | 20 | -72 | -67 | -37 | -38 | -2 | 48 | 94 | 66 | 5 | -66 |
| 70% | -15 | -9 | -96 | -55 | -64 | -70 | 8 | 25 | 32 | 21 | -39 | -43 |
| 80% | 0 | 0 | -42 | -18 | 14 | -29 | 14 | 20 | -20 | 7 | -11 | 0 |
| 90% | 0 | 0 | 0 | 0 | 19 | -36 | -13 | -51 | -35 | -45 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 35 | 65 | 14 | 9 | 3 | -22 | 40 | 81 | 89 | 63 | 29 | -3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 112 | 201 | 131 | -2 | -40 | -106 | 11 | 104 | 99 | 80 | 39 | 0 |
| Above Normal (16%) | -75 | -54 | -163 | 55 | 19 | -82 | -35 | -13 | 1 | -15 | -57 | -115 |
| Below Normal (13%) | -36 | -40 | -102 | 71 | 78 | 61 | 92 | 75 | 53 | 43 | 22 | 5 |
| Dry (24%) | 56 | 50 | 36 | -18 | 5 | 53 | 89 | 125 | 158 | 106 | 73 | 50 |
| Critical (15%) | 17 | 22 | 19 | -33 | 5 | 26 | 54 | 67 | 80 | 58 | 31 | 18 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6c-2. San Luis SWP Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 467 | 490 | 655 | 762 | 990 | 1,067 | 941 | 788 | 564 | 478 | 424 | 451 |
| 20% | 297 | 382 | 500 | 679 | 804 | 1,021 | 892 | 641 | 466 | 409 | 361 | 424 |
| 30% | 268 | 318 | 407 | 566 | 719 | 897 | 809 | 612 | 396 | 358 | 315 | 364 |
| 40% | 229 | 224 | 359 | 492 | 649 | 813 | 725 | 520 | 352 | 310 | 234 | 278 |
| 50% | 179 | 185 | 285 | 400 | 578 | 710 | 630 | 494 | 303 | 263 | 204 | 228 |
| 60% | 128 | 142 | 204 | 342 | 513 | 636 | 579 | 440 | 250 | 208 | 174 | 164 |
| 70% | 61 | 68 | 144 | 272 | 418 | 549 | 495 | 357 | 219 | 186 | 104 | 97 |
| 80% | 55 | 55 | 89 | 217 | 329 | 456 | 417 | 293 | 181 | 145 | 75 | 55 |
| 90% | 55 | 55 | 55 | 199 | 296 | 378 | 344 | 238 | 77 | 100 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 214 | 231 | 317 | 459 | 595 | 722 | 650 | 499 | 335 | 297 | 242 | 255 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 324 | 245 | 345 | 526 | 707 | 892 | 767 | 568 | 400 | 390 | 395 | 435 |
| Above Normal (16%) | 264 | 260 | 357 | 494 | 636 | 759 | 643 | 446 | 227 | 235 | 266 | 328 |
| Below Normal (13%) | 183 | 224 | 279 | 392 | 499 | 614 | 544 | 388 | 195 | 222 | 199 | 179 |
| Dry (24%) | 116 | 231 | 325 | 432 | 545 | 651 | 635 | 528 | 385 | 310 | 140 | 121 |
| Critical (15%) | 111 | 177 | 234 | 381 | 482 | 529 | 528 | 463 | 357 | 210 | 97 | 82 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 381 | 476 | 614 | 770 | 1,067 | 1,067 | 1,067 | 1,029 | 793 | 723 | 640 | 459 |
| 20% | 281 | 378 | 477 | 653 | 840 | 1,007 | 1,056 | 891 | 710 | 642 | 562 | 332 |
| 30% | 225 | 332 | 389 | 534 | 680 | 809 | 840 | 837 | 620 | 587 | 480 | 278 |
| 40% | 167 | 261 | 348 | 425 | 585 | 647 | 747 | 669 | 533 | 478 | 367 | 229 |
| 50% | 107 | 184 | 274 | 371 | 493 | 611 | 633 | 547 | 454 | 378 | 306 | 161 |
| 60% | 55 | 154 | 208 | 327 | 435 | 535 | 585 | 487 | 372 | 300 | 277 | 102 |
| 70% | 55 | 94 | 125 | 277 | 408 | 483 | 533 | 427 | 255 | 263 | 183 | 55 |
| 80% | 55 | 55 | 92 | 226 | 377 | 445 | 459 | 381 | 214 | 223 | 89 | 55 |
| 90% | 55 | 55 | 55 | 210 | 344 | 386 | 410 | 328 | 189 | 156 | 61 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 183 | 251 | 310 | 451 | 593 | 670 | 704 | 628 | 471 | 427 | 344 | 215 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 236 | 291 | 354 | 506 | 687 | 799 | 857 | 791 | 620 | 590 | 567 | 324 |
| Above Normal (16%) | 79 | 132 | 184 | 506 | 616 | 652 | 669 | 567 | 343 | 333 | 326 | 120 |
| Below Normal (13%) | 238 | 292 | 303 | 417 | 541 | 580 | 599 | 469 | 269 | 303 | 290 | 254 |
| Dry (24%) | 190 | 297 | 384 | 422 | 551 | 641 | 666 | 608 | 507 | 452 | 232 | 191 |
| Critical (15%) | 119 | 176 | 233 | 354 | 479 | 540 | 572 | 517 | 409 | 249 | 114 | 88 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -86 | -13 | -41 | 8 | 77 | 0 | 126 | 241 | 228 | 245 | 216 | 8 |
| 20% | -16 | -4 | -23 | -26 | 36 | -14 | 164 | 250 | 244 | 233 | 200 | -92 |
| 30% | -43 | 14 | -18 | -31 | -40 | -88 | 31 | 225 | 224 | 229 | 166 | -86 |
| 40% | -62 | 37 | -11 | -67 | -63 | -166 | 23 | 149 | 181 | 169 | 133 | -49 |
| 50% | -71 | -1 | -11 | -28 | -85 | -98 | 2 | 54 | 152 | 115 | 102 | -67 |
| 60% | -73 | 12 | 4 | -15 | -78 | -101 | 5 | 47 | 121 | 92 | 103 | -62 |
| 70% | -6 | 25 | -19 | 5 | -10 | -66 | 38 | 70 | 36 | 76 | 79 | -42 |
| 80% | 0 | 0 | 3 | 9 | 49 | -11 | 42 | 88 | 33 | 78 | 15 | 0 |
| 90% | 0 | 0 | 0 | 11 | 49 | 8 | 66 | 90 | 112 | 56 | 6 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -31 | 19 | -7 | -7 | -3 | -52 | 54 | 128 | 136 | 130 | 101 | -40 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -88 | 46 | 9 | -20 | -20 | -93 | 90 | 223 | 220 | 200 | 172 | -111 |
| Above Normal (16%) | -186 | -128 | -173 | 12 | -20 | -108 | 26 | 121 | 116 | 98 | 60 | -208 |
| Below Normal (13%) | 55 | 68 | 24 | 25 | 43 | -34 | 54 | 81 | 74 | 81 | 91 | 75 |
| Dry (24%) | 74 | 67 | 59 | -10 | 6 | -10 | 32 | 80 | 123 | 143 | 92 | 70 |
| Critical (15%) | 8 | -1 | 0 | -27 | -3 | 11 | 44 | 55 | 52 | 39 | 17 | 6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6c-3. San Luis SWP Storage, End of Month Storage

### No Action Alternative 011319

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 461 | 467 | 648 | 764 | 967 | 1,067 | 931 | 734 | 558 | 476 | 429 | 453 |
| 20% | 293 | 352 | 510 | 672 | 786 | 1,015 | 896 | 643 | 453 | 418 | 352 | 408 |
| 30% | 268 | 311 | 413 | 579 | 724 | 900 | 797 | 621 | 412 | 366 | 312 | 342 |
| 40% | 227 | 228 | 354 | 496 | 657 | 811 | 730 | 557 | 360 | 306 | 238 | 272 |
| 50% | 186 | 189 | 294 | 425 | 587 | 720 | 666 | 483 | 291 | 249 | 198 | 229 |
| 60% | 128 | 155 | 244 | 354 | 520 | 656 | 589 | 434 | 247 | 219 | 168 | 158 |
| 70% | 70 | 70 | 177 | 289 | 435 | 586 | 494 | 373 | 224 | 187 | 117 | 98 |
| 80% | 55 | 55 | 97 | 232 | 333 | 457 | 429 | 308 | 181 | 137 | 66 | 55 |
| 90% | 55 | 55 | 55 | 200 | 299 | 391 | 348 | 266 | 90 | 100 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 213 | 231 | 323 | 466 | 601 | 729 | 655 | 500 | 329 | 293 | 239 | 253 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 319 | 244 | 343 | 527 | 705 | 893 | 769 | 563 | 394 | 381 | 386 | 425 |
| Above Normal (16%) | 272 | 269 | 370 | 490 | 633 | 761 | 643 | 446 | 228 | 229 | 259 | 326 |
| Below Normal (13%) | 198 | 242 | 305 | 383 | 491 | 606 | 536 | 381 | 187 | 216 | 207 | 193 |
| Dry (24%) | 116 | 229 | 320 | 454 | 566 | 669 | 647 | 534 | 378 | 321 | 144 | 122 |
| Critical (15%) | 98 | 156 | 247 | 406 | 500 | 550 | 546 | 476 | 346 | 199 | 86 | 73 |

### No Action Alternative 093019

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 467 | 490 | 655 | 762 | 990 | 1,067 | 941 | 788 | 564 | 478 | 424 | 451 |
| 20% | 297 | 382 | 500 | 679 | 804 | 1,021 | 892 | 641 | 466 | 409 | 361 | 424 |
| 30% | 268 | 318 | 407 | 566 | 719 | 897 | 809 | 612 | 396 | 358 | 315 | 364 |
| 40% | 229 | 224 | 359 | 492 | 649 | 813 | 725 | 520 | 352 | 310 | 234 | 278 |
| 50% | 179 | 185 | 285 | 400 | 578 | 710 | 630 | 494 | 303 | 263 | 204 | 228 |
| 60% | 128 | 142 | 204 | 342 | 513 | 636 | 579 | 440 | 250 | 208 | 174 | 164 |
| 70% | 61 | 68 | 144 | 272 | 418 | 549 | 495 | 357 | 219 | 186 | 104 | 97 |
| 80% | 55 | 55 | 89 | 217 | 329 | 456 | 417 | 293 | 181 | 145 | 75 | 55 |
| 90% | 55 | 55 | 55 | 199 | 296 | 378 | 344 | 238 | 77 | 100 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 214 | 231 | 317 | 459 | 595 | 722 | 650 | 499 | 335 | 297 | 242 | 255 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 324 | 245 | 345 | 526 | 707 | 892 | 767 | 568 | 400 | 390 | 395 | 435 |
| Above Normal (16%) | 264 | 260 | 357 | 494 | 636 | 759 | 643 | 446 | 227 | 235 | 266 | 328 |
| Below Normal (13%) | 183 | 224 | 279 | 392 | 499 | 614 | 544 | 388 | 195 | 222 | 199 | 179 |
| Dry (24%) | 116 | 231 | 325 | 432 | 545 | 651 | 635 | 528 | 385 | 310 | 140 | 121 |
| Critical (15%) | 111 | 177 | 234 | 381 | 482 | 529 | 528 | 463 | 357 | 210 | 97 | 82 |

### No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 6 | 22 | 7 | -2 | 23 | 0 | 10 | 54 | 6 | 2 | -6 | -2 |
| 20% | 4 | 31 | -10 | 7 | 18 | 6 | -4 | -2 | 13 | -9 | 9 | 15 |
| 30% | -1 | 7 | -6 | -13 | -5 | -3 | 12 | -9 | -16 | -8 | 2 | 22 |
| 40% | 2 | -5 | 5 | -5 | -8 | 2 | -5 | -37 | -8 | 4 | -4 | 6 |
| 50% | -7 | -3 | -9 | -25 | -10 | -10 | -36 | 11 | 12 | 13 | 6 | -1 |
| 60% | 0 | -13 | -40 | -12 | -7 | -20 | -9 | 6 | 4 | -11 | 6 | 6 |
| 70% | -9 | -2 | -32 | -17 | -16 | -37 | 2 | -16 | -5 | -1 | -13 | -1 |
| 80% | 0 | 0 | -8 | -16 | -5 | -1 | -12 | -15 | 0 | 8 | 9 | 0 |
| 90% | 0 | 0 | 0 | -1 | -3 | -13 | -4 | -29 | -13 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | -6 | -7 | -5 | -7 | -5 | -1 | 6 | 3 | 4 | 3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 5 | 2 | 2 | -1 | 2 | -1 | -2 | 6 | 6 | 9 | 9 | 10 |
| Above Normal (16%) | -7 | -9 | -13 | 4 | 4 | -2 | 0 | 0 | -1 | 6 | 7 | 2 |
| Below Normal (13%) | -15 | -17 | -26 | 9 | 8 | 8 | 8 | 7 | 9 | 6 | -9 | -14 |
| Dry (24%) | 0 | 2 | 5 | -22 | -21 | -18 | -12 | -6 | 7 | -12 | -4 | -1 |
| Critical (15%) | 13 | 21 | -14 | -25 | -18 | -21 | -17 | -13 | 11 | 10 | 11 | 9 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6c-4. San Luis SWP Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 618 | 636 | 808 | 950 | 1,067 | 1,067 | 1,059 | 944 | 763 | 652 | 560 | 587 |
| 20% | 439 | 483 | 561 | 708 | 879 | 1,065 | 1,021 | 887 | 626 | 559 | 487 | 429 |
| 30% | 302 | 397 | 486 | 633 | 765 | 934 | 928 | 775 | 553 | 474 | 337 | 317 |
| 40% | 233 | 317 | 348 | 498 | 632 | 788 | 810 | 682 | 491 | 391 | 260 | 249 |
| 50% | 163 | 245 | 238 | 394 | 575 | 674 | 654 | 559 | 401 | 325 | 208 | 174 |
| 60% | 96 | 175 | 171 | 287 | 482 | 618 | 587 | 483 | 340 | 285 | 173 | 91 |
| 70% | 55 | 62 | 80 | 233 | 370 | 516 | 502 | 398 | 255 | 208 | 77 | 55 |
| 80% | 55 | 55 | 55 | 215 | 347 | 428 | 443 | 329 | 161 | 144 | 55 | 55 |
| 90% | 55 | 55 | 55 | 200 | 318 | 355 | 335 | 215 | 55 | 55 | 55 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 248 | 296 | 336 | 475 | 604 | 707 | 695 | 581 | 418 | 357 | 268 | 250 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 430 | 445 | 474 | 525 | 665 | 787 | 780 | 667 | 493 | 461 | 425 | 425 |
| Above Normal (16%) | 196 | 216 | 207 | 545 | 652 | 679 | 608 | 432 | 228 | 214 | 202 | 211 |
| Below Normal (13%) | 162 | 201 | 202 | 453 | 569 | 667 | 628 | 456 | 240 | 259 | 229 | 197 |
| Dry (24%) | 172 | 278 | 357 | 436 | 570 | 721 | 735 | 659 | 535 | 427 | 217 | 172 |
| Critical (15%) | 115 | 179 | 266 | 372 | 505 | 576 | 600 | 542 | 427 | 257 | 117 | 91 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 381 | 476 | 614 | 770 | 1,067 | 1,067 | 1,067 | 1,029 | 793 | 723 | 640 | 459 |
| 20% | 281 | 378 | 477 | 653 | 840 | 1,007 | 1,056 | 891 | 710 | 642 | 562 | 332 |
| 30% | 225 | 332 | 389 | 534 | 680 | 809 | 840 | 837 | 620 | 587 | 480 | 278 |
| 40% | 167 | 261 | 348 | 425 | 585 | 647 | 747 | 669 | 533 | 478 | 367 | 229 |
| 50% | 107 | 184 | 274 | 371 | 493 | 611 | 633 | 547 | 454 | 378 | 306 | 161 |
| 60% | 55 | 154 | 208 | 327 | 435 | 535 | 585 | 487 | 372 | 300 | 277 | 102 |
| 70% | 55 | 94 | 125 | 277 | 408 | 483 | 533 | 427 | 255 | 263 | 183 | 55 |
| 80% | 55 | 55 | 92 | 226 | 377 | 445 | 459 | 381 | 214 | 223 | 89 | 55 |
| 90% | 55 | 55 | 55 | 210 | 344 | 386 | 410 | 328 | 189 | 156 | 61 | 55 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 183 | 251 | 310 | 451 | 593 | 670 | 704 | 628 | 471 | 427 | 344 | 215 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 236 | 291 | 354 | 506 | 687 | 799 | 857 | 791 | 620 | 590 | 567 | 324 |
| Above Normal (16%) | 79 | 132 | 184 | 506 | 616 | 652 | 669 | 567 | 343 | 333 | 326 | 120 |
| Below Normal (13%) | 238 | 292 | 303 | 417 | 541 | 580 | 599 | 469 | 269 | 303 | 290 | 254 |
| Dry (24%) | 190 | 297 | 384 | 422 | 551 | 641 | 666 | 608 | 507 | 452 | 232 | 191 |
| Critical (15%) | 119 | 176 | 233 | 354 | 479 | 540 | 572 | 517 | 409 | 249 | 114 | 88 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -237 | -160 | -193 | -180 | 0 | 0 | 8 | 85 | 30 | 71 | 80 | -128 |
| 20% | -159 | -104 | -84 | -56 | -39 | -58 | 35 | 5 | 84 | 84 | 75 | -97 |
| 30% | -77 | -65 | -97 | -99 | -86 | -125 | -89 | 63 | 67 | 113 | 143 | -39 |
| 40% | -66 | -56 | 0 | -73 | -46 | -140 | -62 | -13 | 42 | 87 | 106 | -20 |
| 50% | -56 | -61 | 36 | -22 | -83 | -63 | -21 | -12 | 53 | 53 | 98 | -13 |
| 60% | -41 | -21 | 36 | 40 | -47 | -83 | -2 | 5 | 31 | 15 | 104 | 11 |
| 70% | 0 | 32 | 45 | 43 | 38 | -33 | 31 | 29 | -1 | 55 | 106 | 0 |
| 80% | 0 | 0 | 37 | 11 | 30 | 16 | 15 | 52 | 53 | 79 | 34 | 0 |
| 90% | 0 | 0 | 0 | 10 | 27 | 32 | 74 | 112 | 134 | 101 | 6 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -65 | -46 | -26 | -23 | -11 | -37 | 9 | 46 | 53 | 71 | 76 | -35 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -194 | -154 | -120 | -20 | 22 | 13 | 77 | 125 | 127 | 129 | 142 | -101 |
| Above Normal (16%) | -117 | -83 | -23 | -39 | -36 | -27 | 61 | 134 | 114 | 119 | 124 | -91 |
| Below Normal (13%) | 76 | 91 | 100 | -36 | -28 | -87 | -30 | 13 | 29 | 45 | 60 | 57 |
| Dry (24%) | 18 | 19 | 27 | -14 | -19 | -80 | -69 | -51 | -28 | 25 | 15 | 19 |
| Critical (15%) | 4 | -2 | -33 | -18 | -26 | -36 | -28 | -25 | -17 | -8 | -3 | -3 |

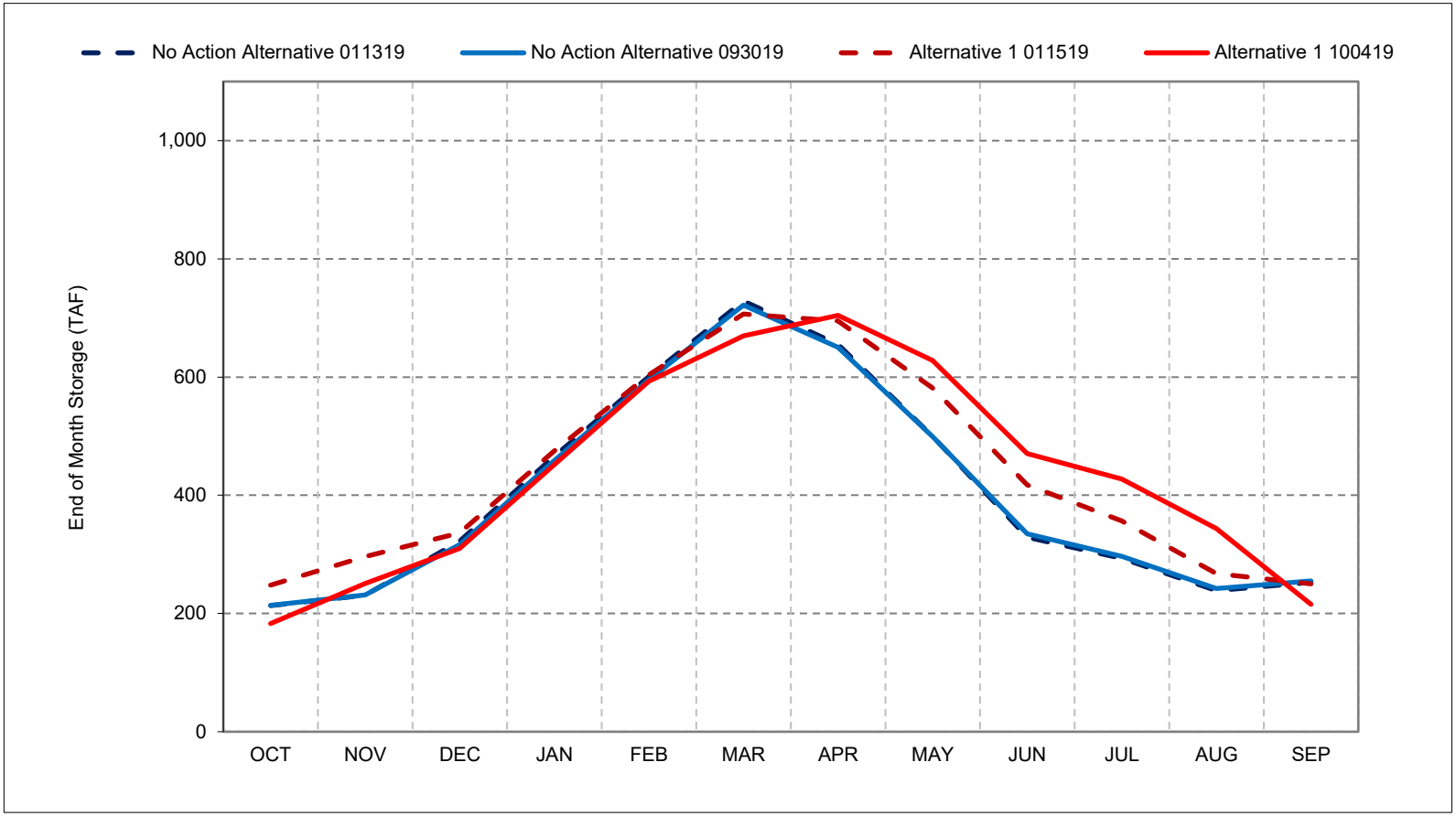
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-1. San Luis SWP Storage, Long-Term Average Storage

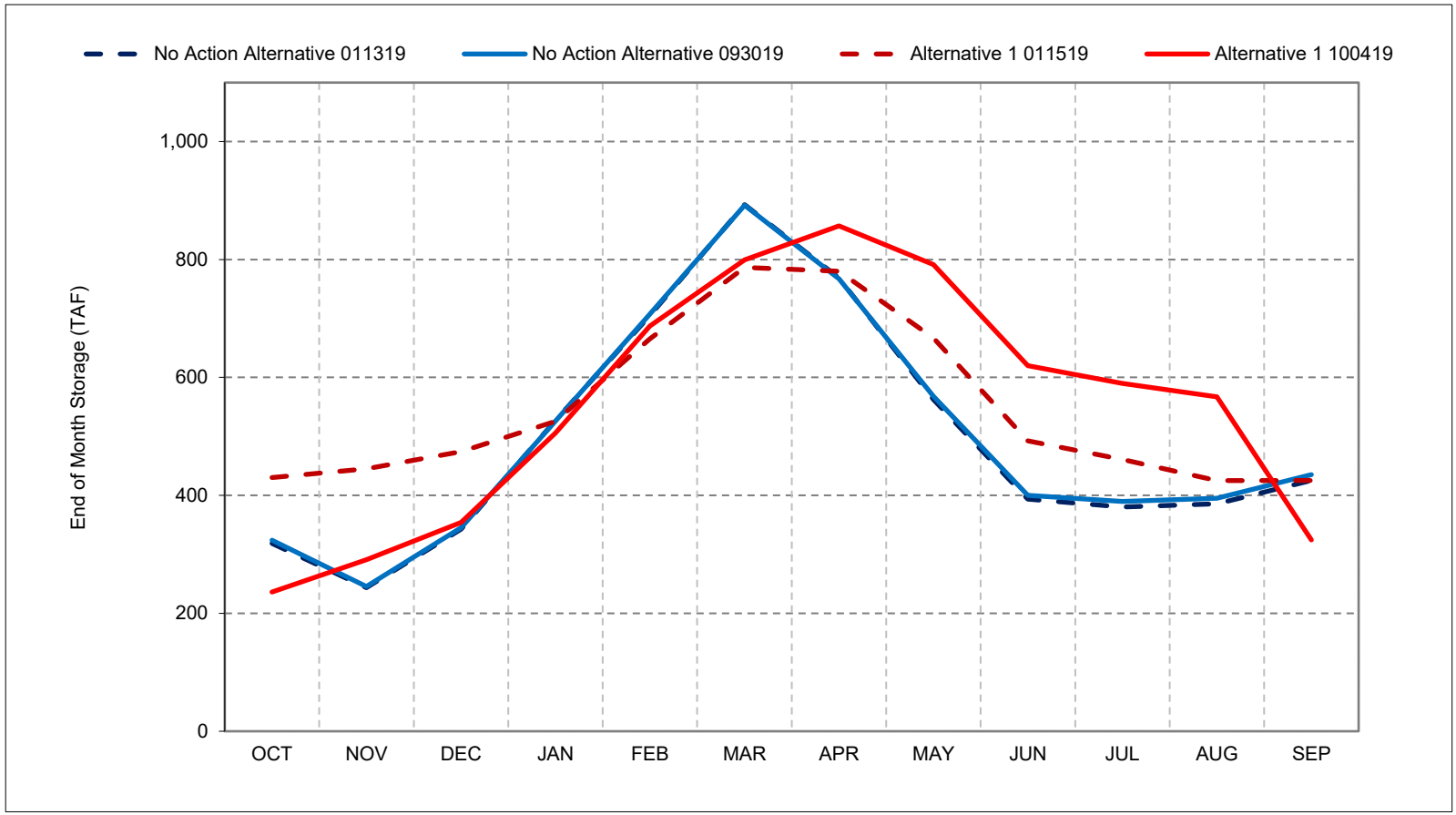



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-2. San Luis SWP Storage, Wet Year Average Storage

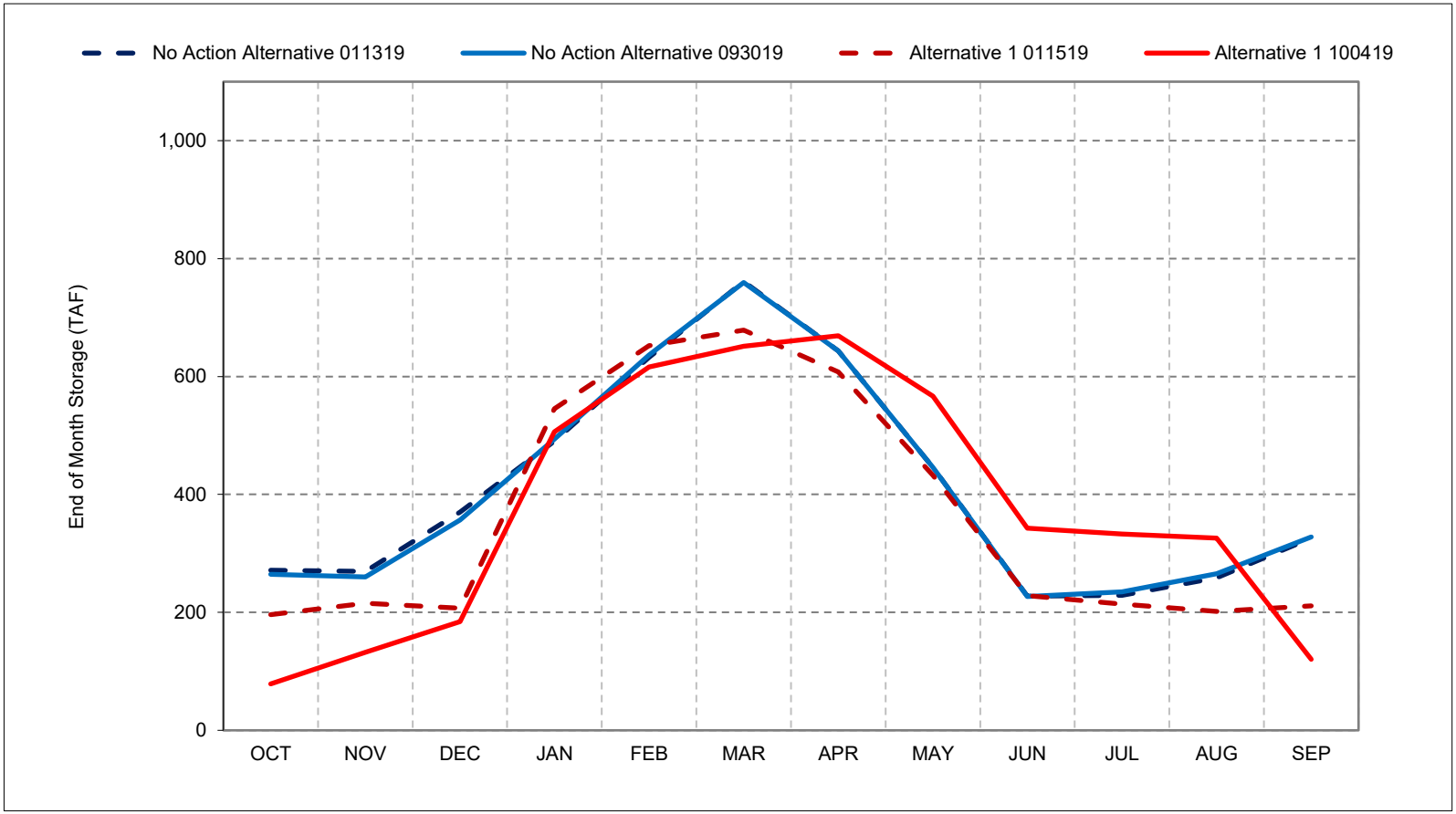



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-3. San Luis SWP Storage, Above Normal Year Average Storage

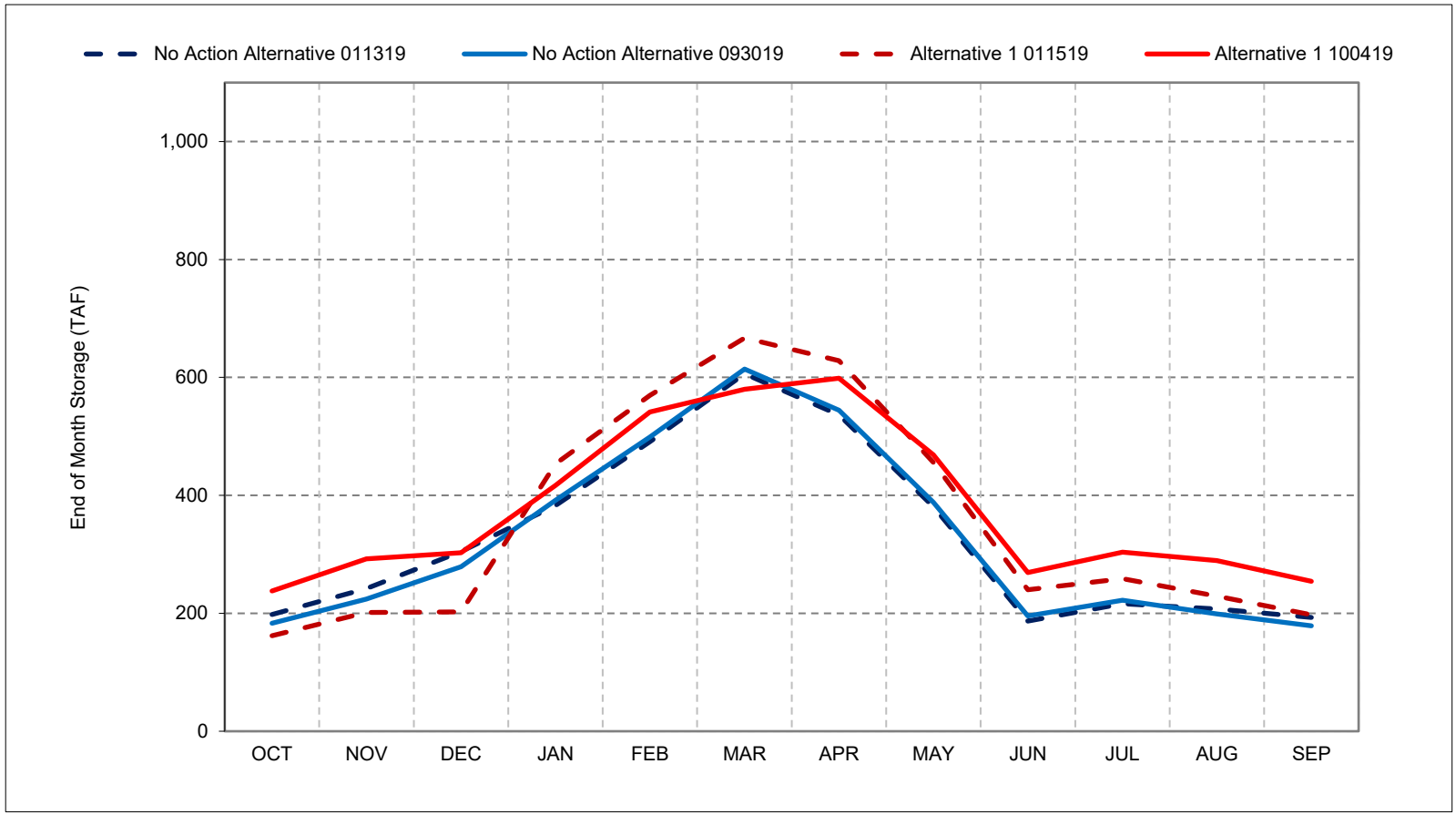



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-4. San Luis SWP Storage, Below Normal Year Average Storage

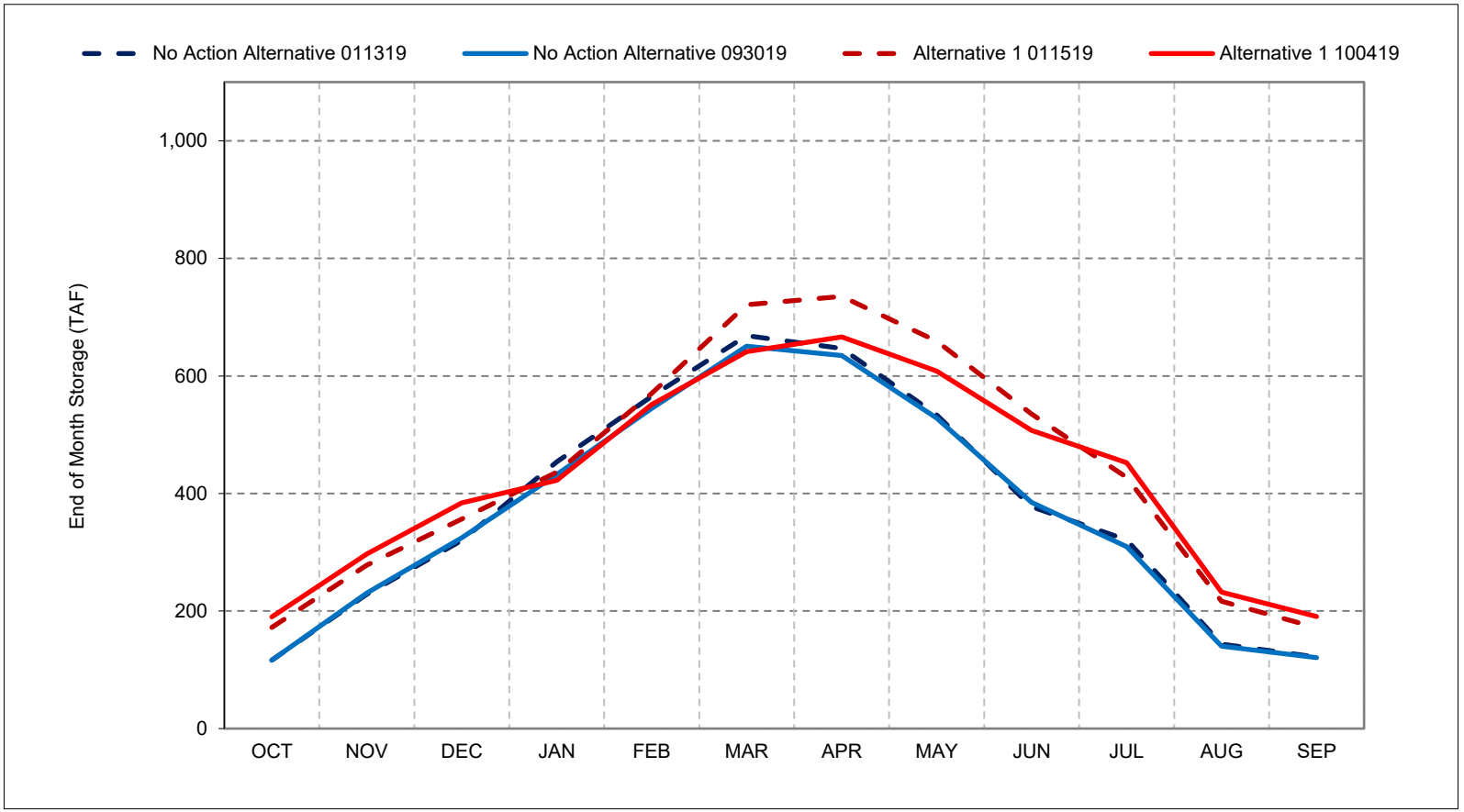



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-5. San Luis SWP Storage, Dry Year Average Storage

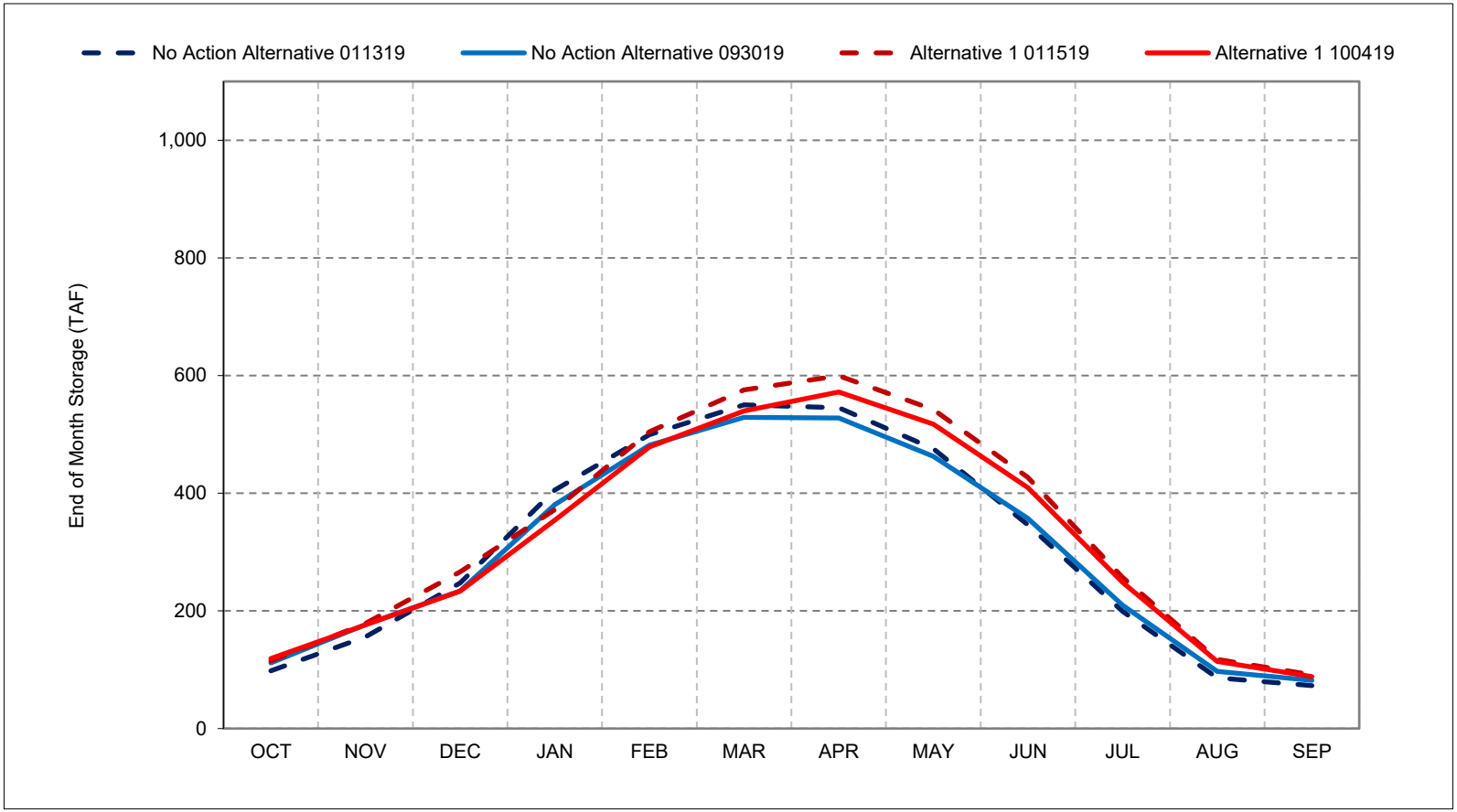



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-6. San Luis SWP Storage, Critical Year Average Storage

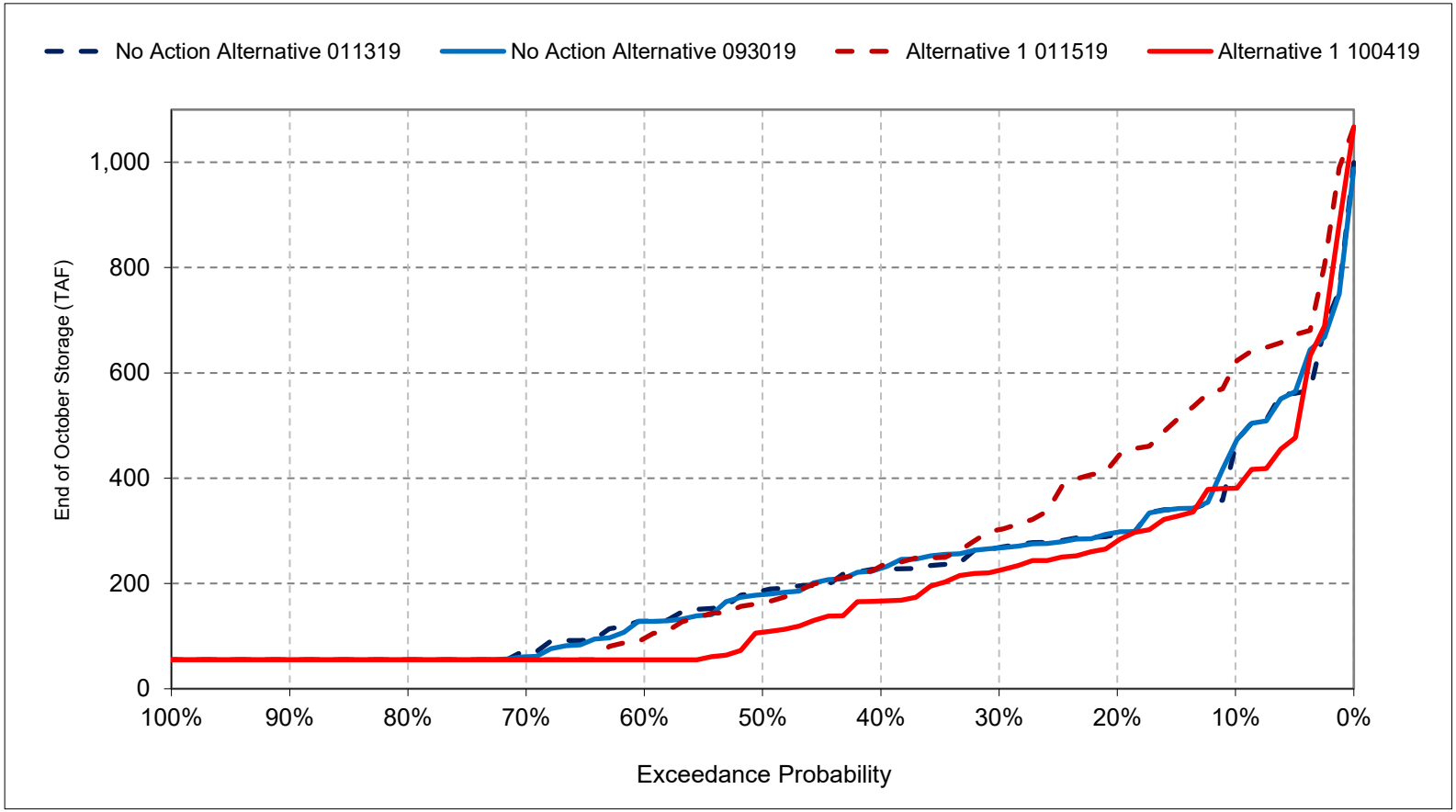



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

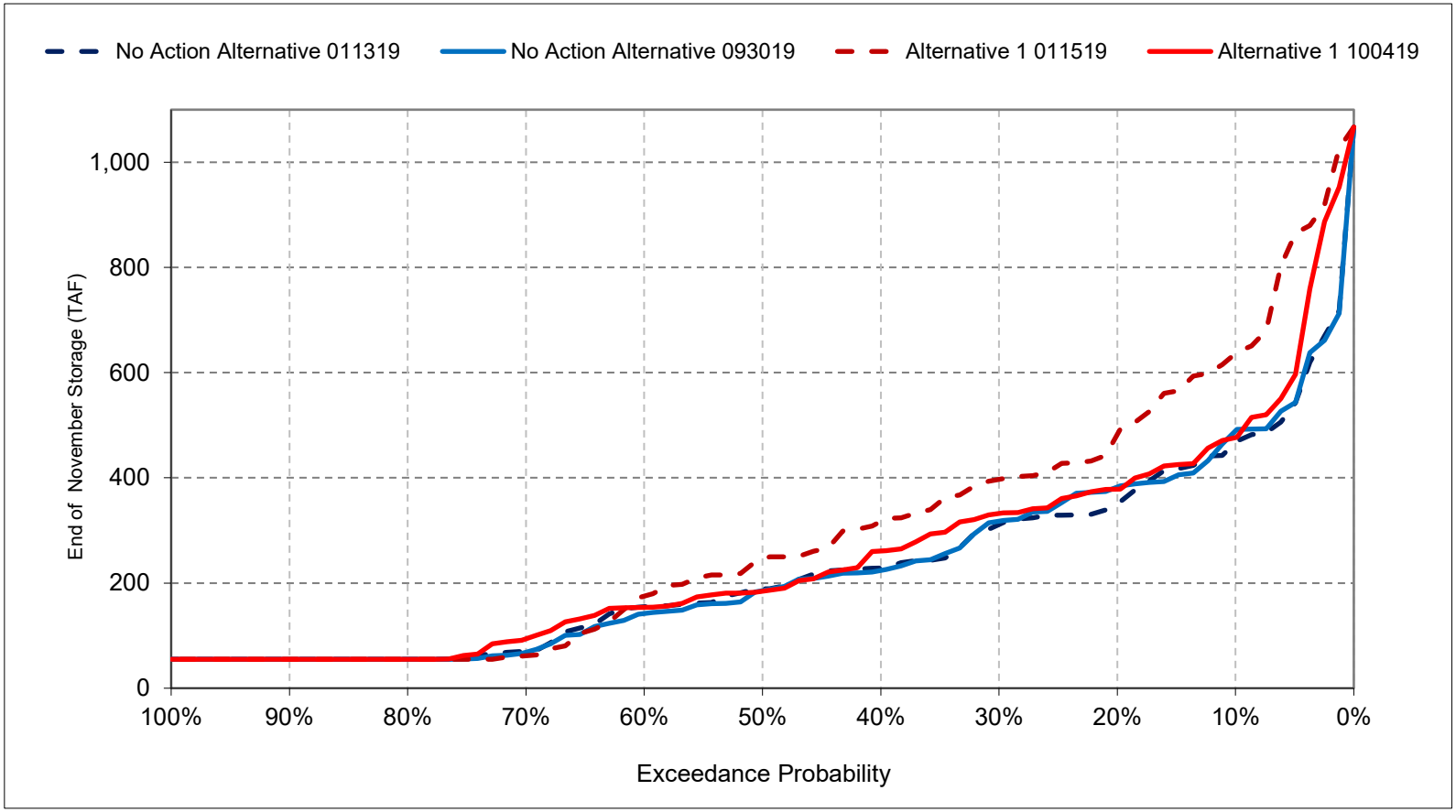
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-7. San Luis SWP Storage, End of October Storage



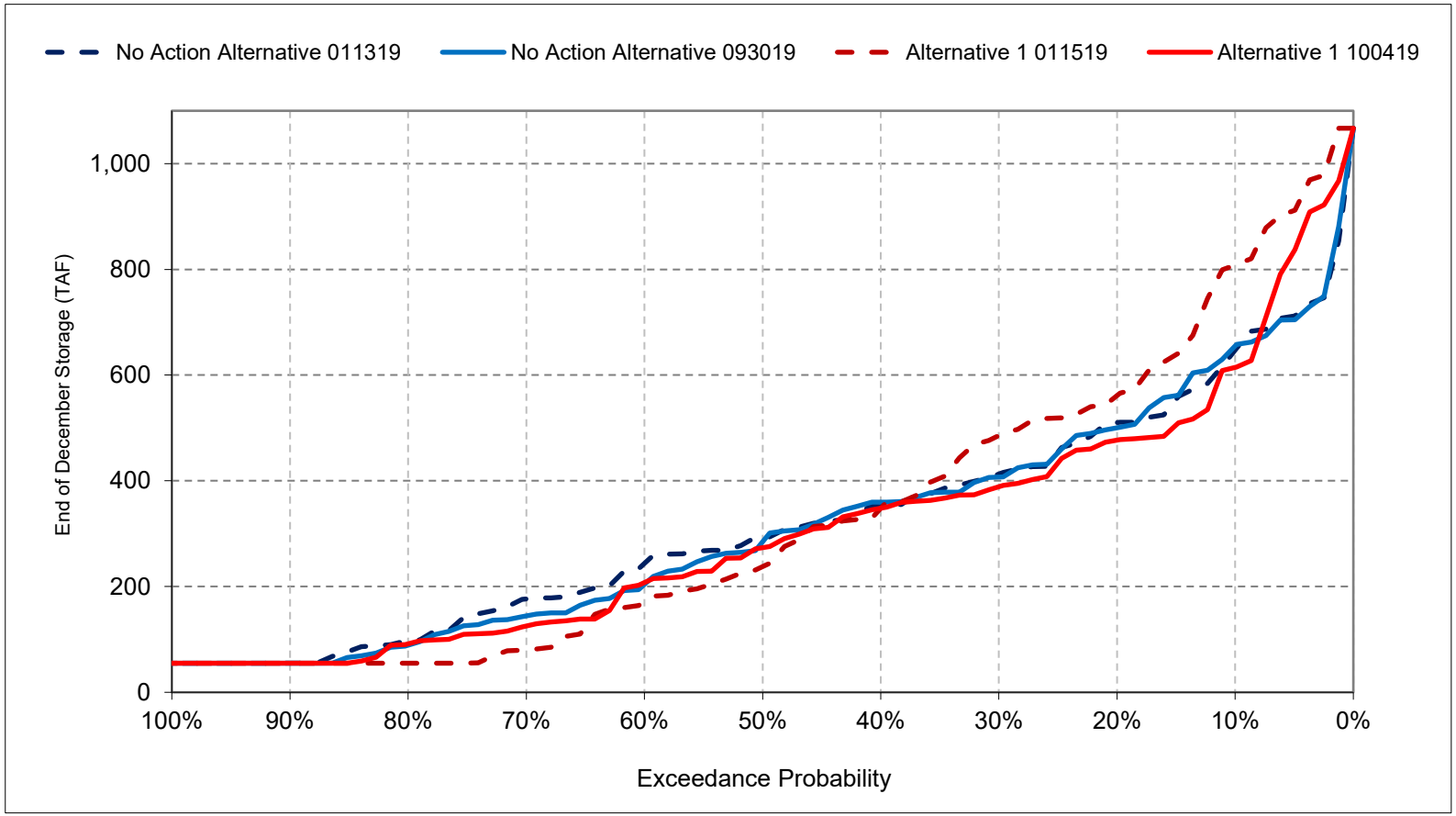

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-8. San Luis SWP Storage, End of November Storage



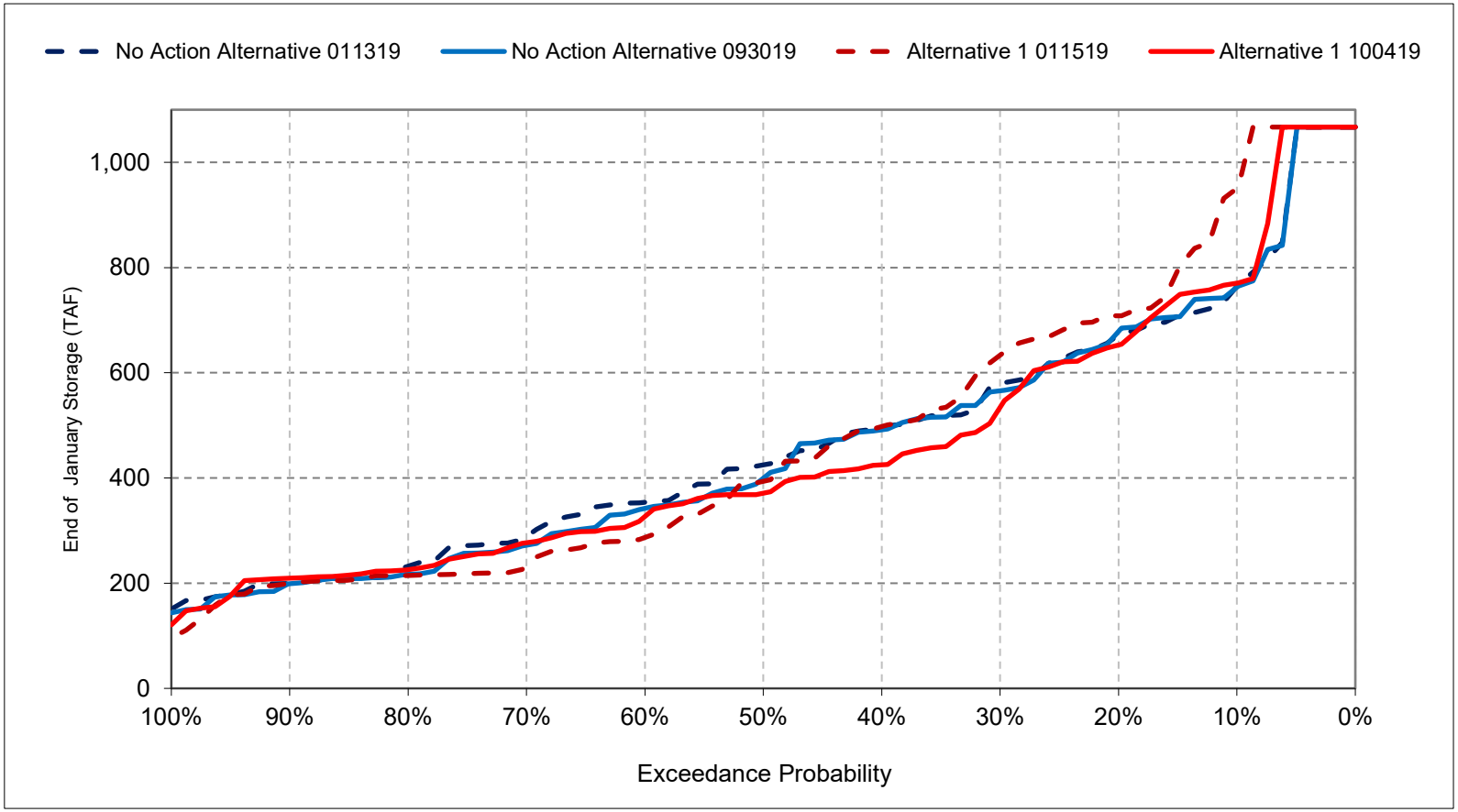

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-9. San Luis SWP Storage, End of December Storage



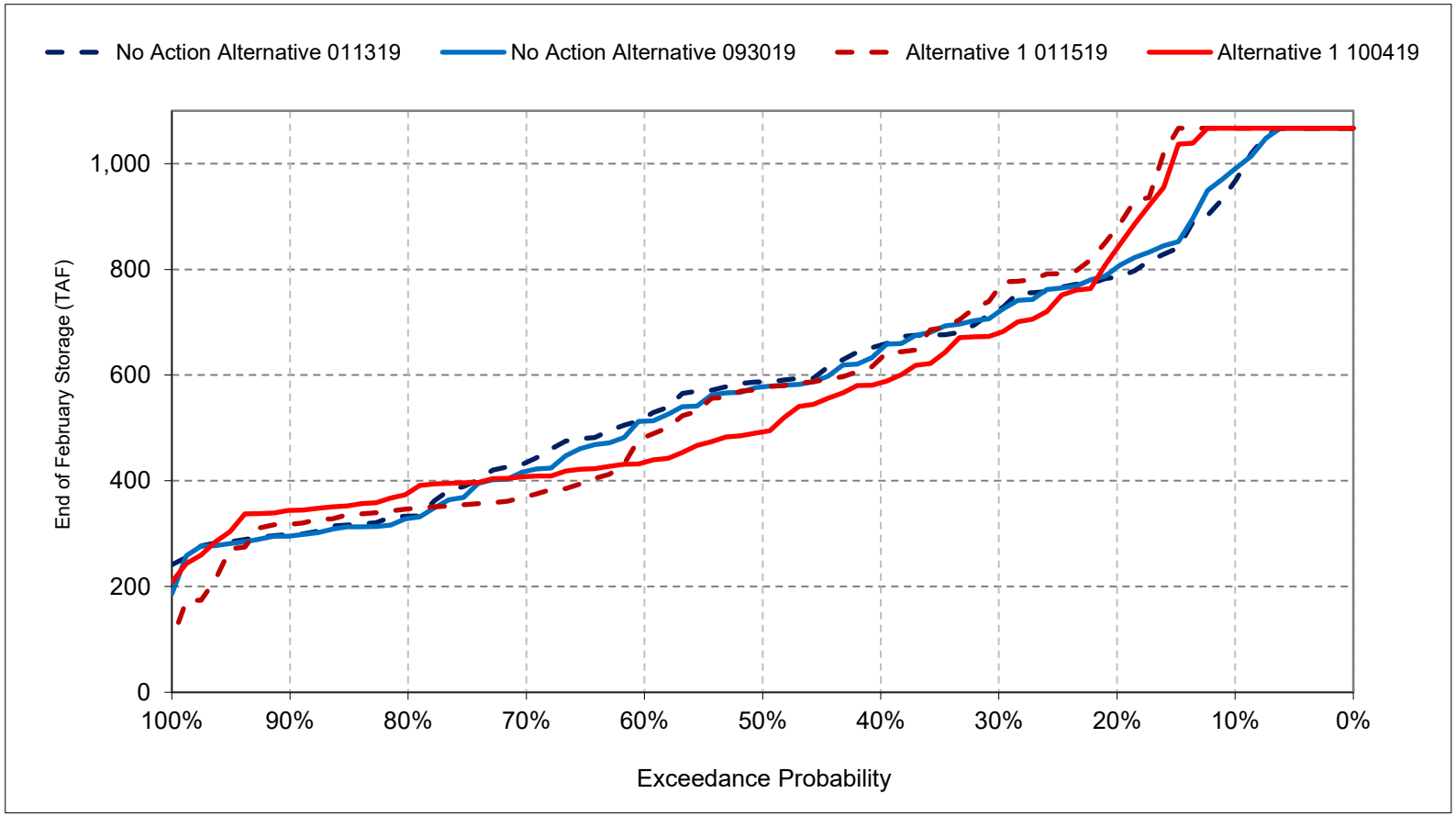

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-10. San Luis SWP Storage, End of January Storage



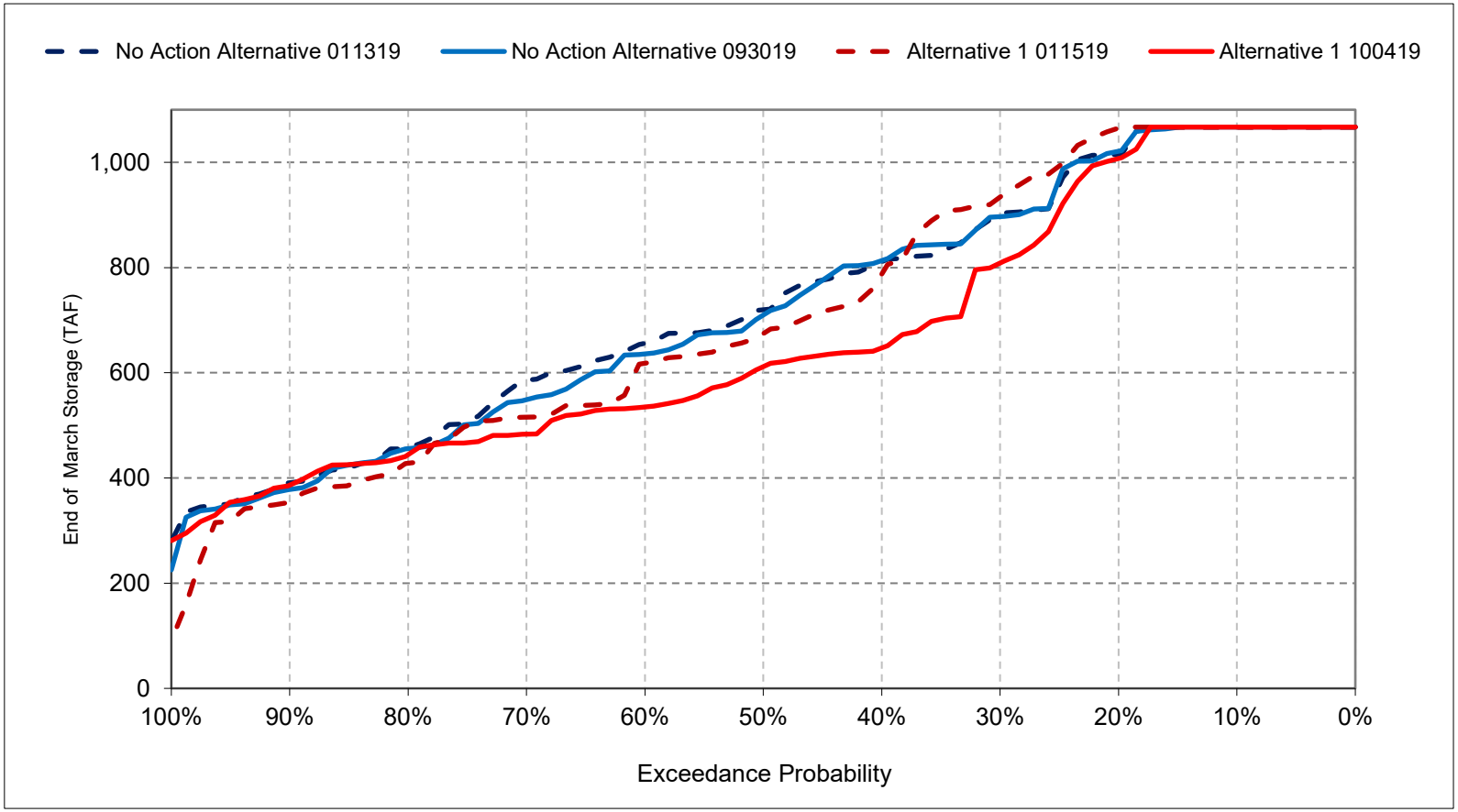

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-11. San Luis SWP Storage, End of February Storage



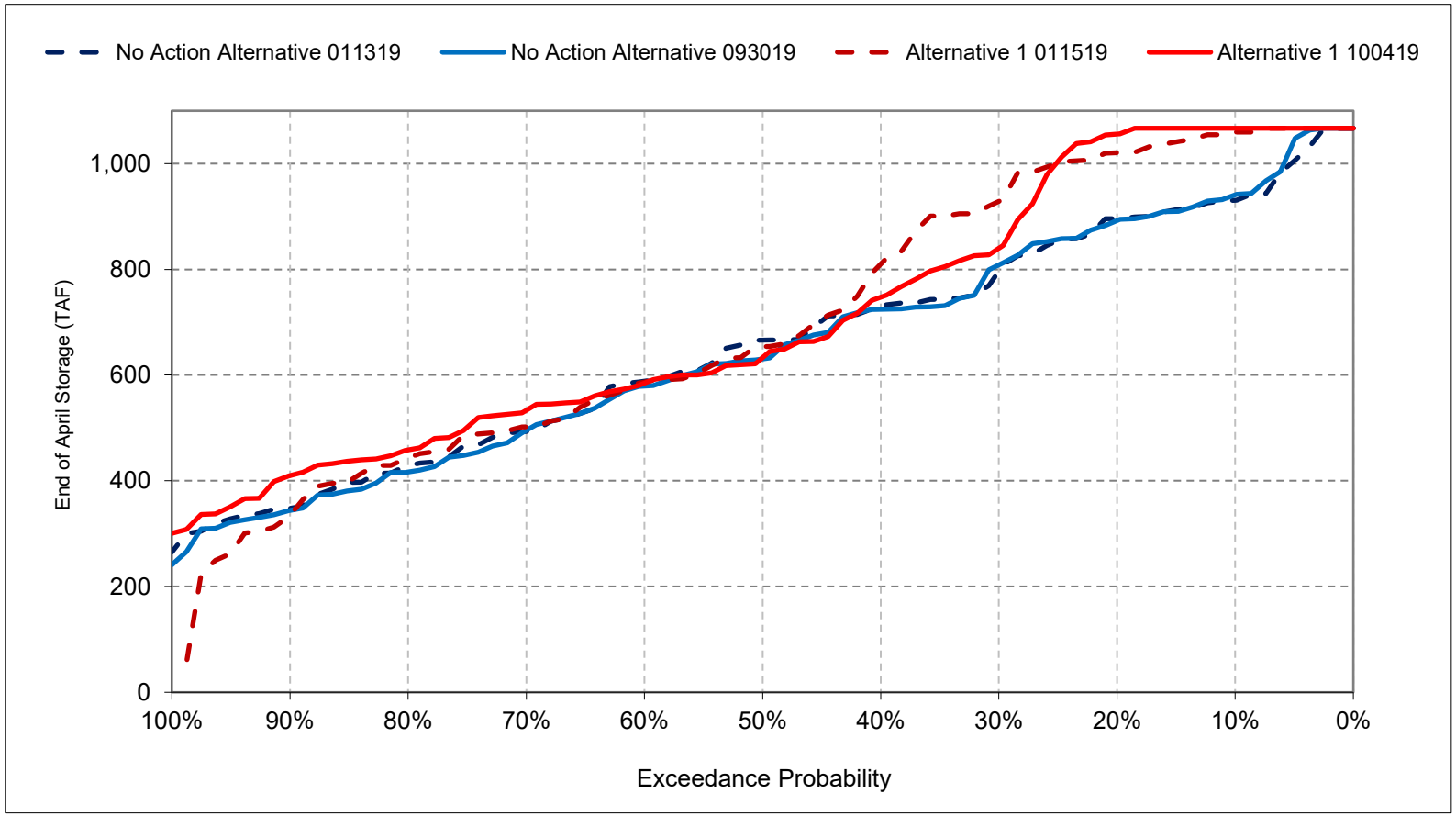

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-12. San Luis SWP Storage, End of March Storage



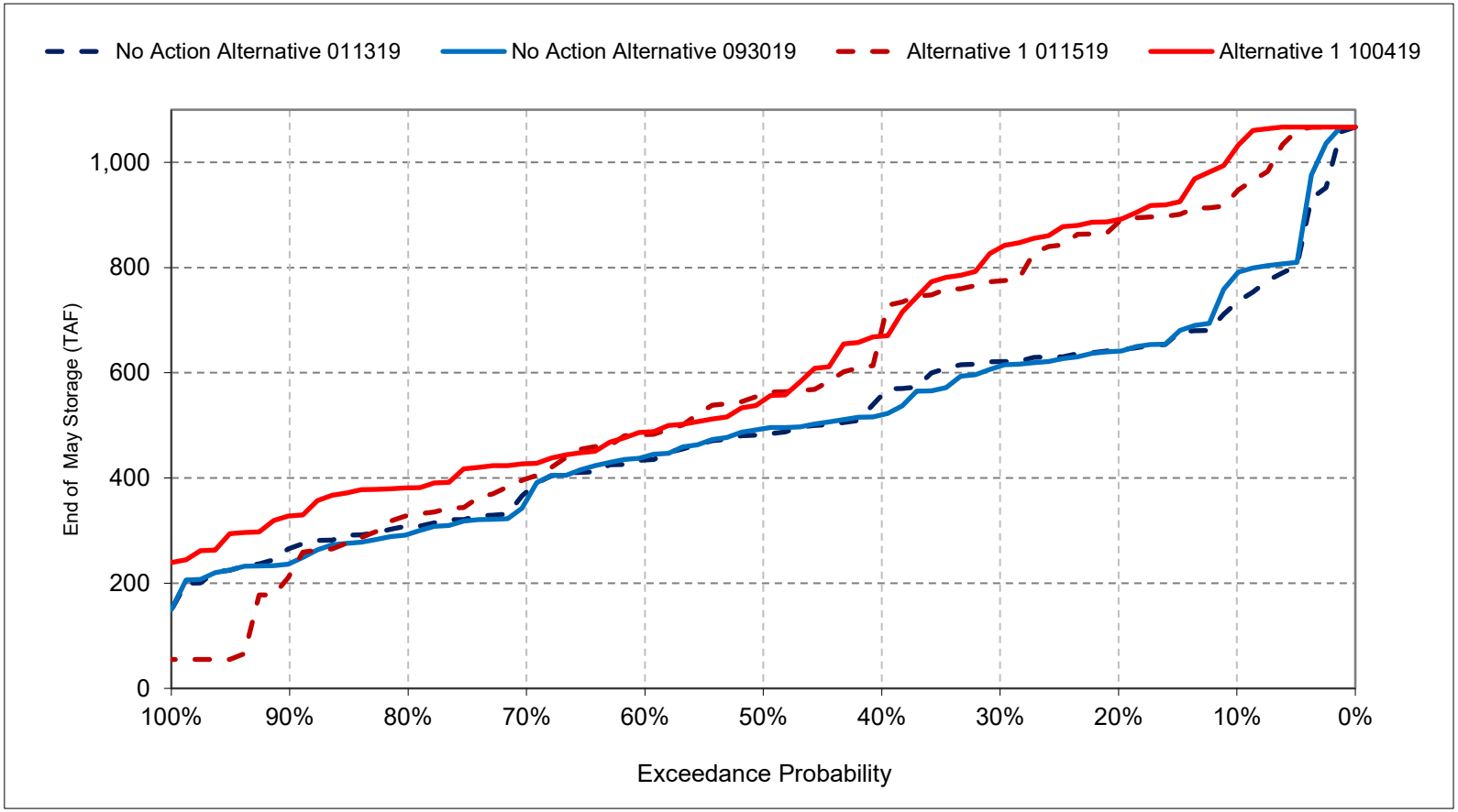

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-13. San Luis SWP Storage, End of April Storage



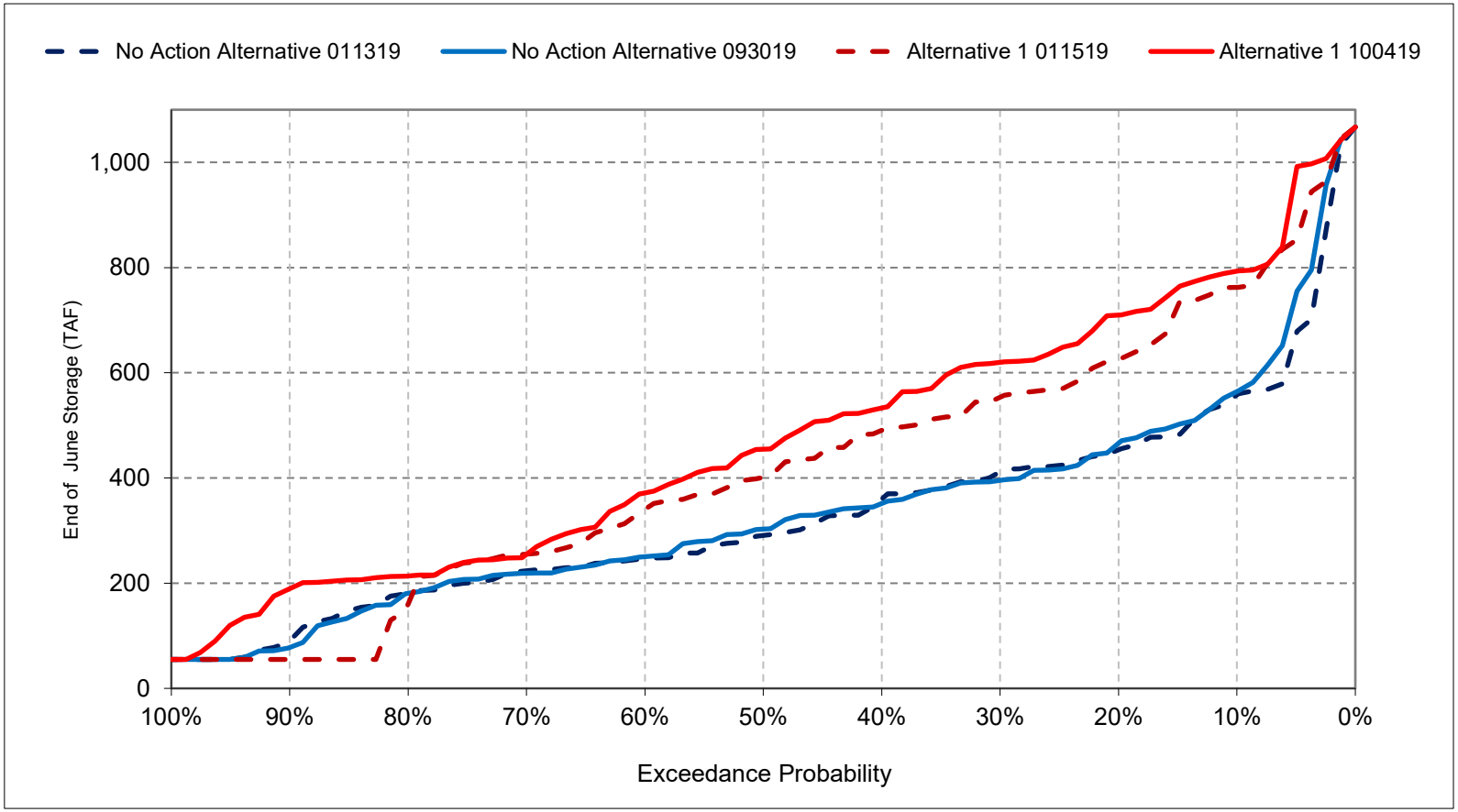

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-14. San Luis SWP Storage, End of May Storage



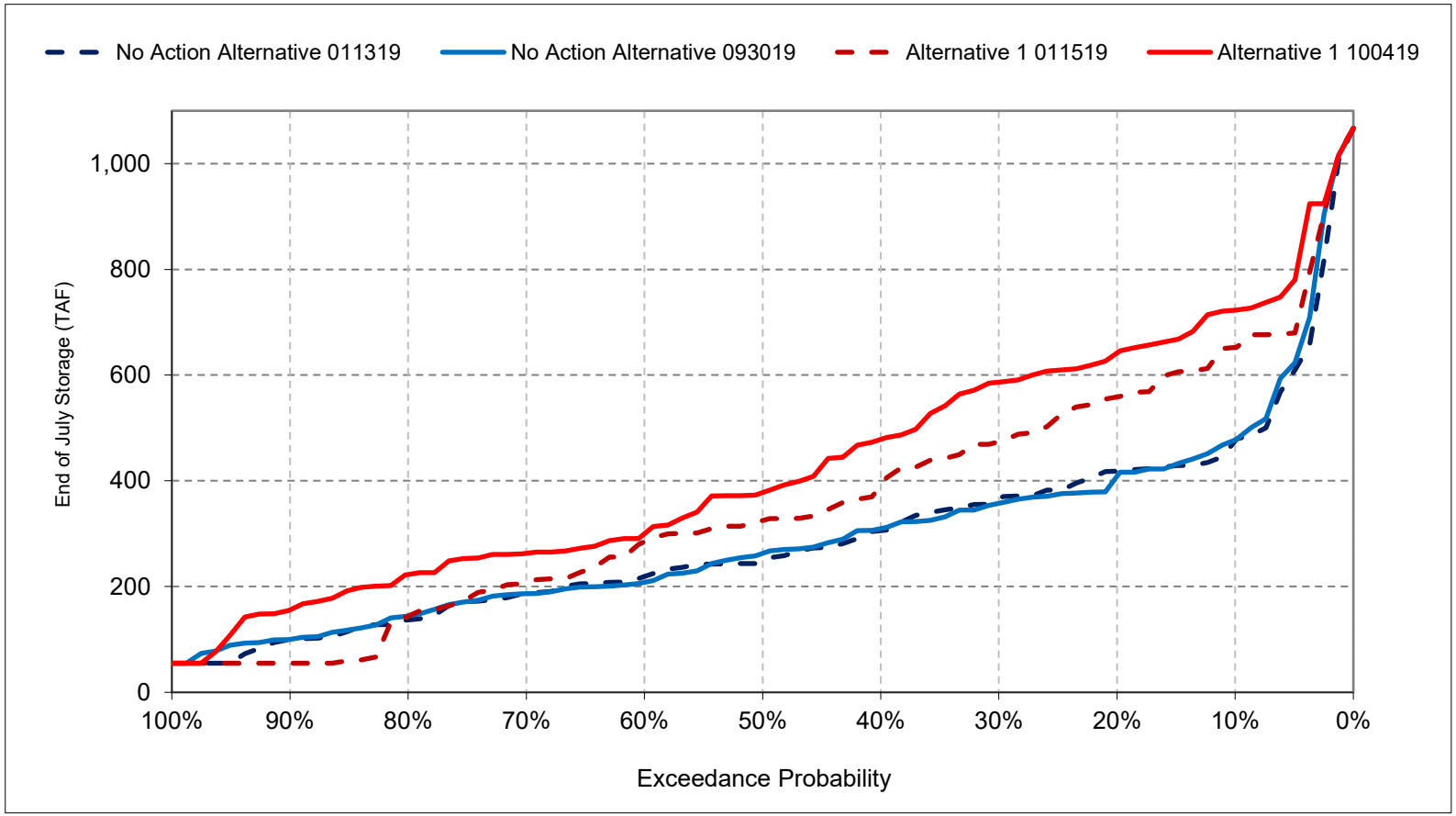

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-15. San Luis SWP Storage, End of June Storage



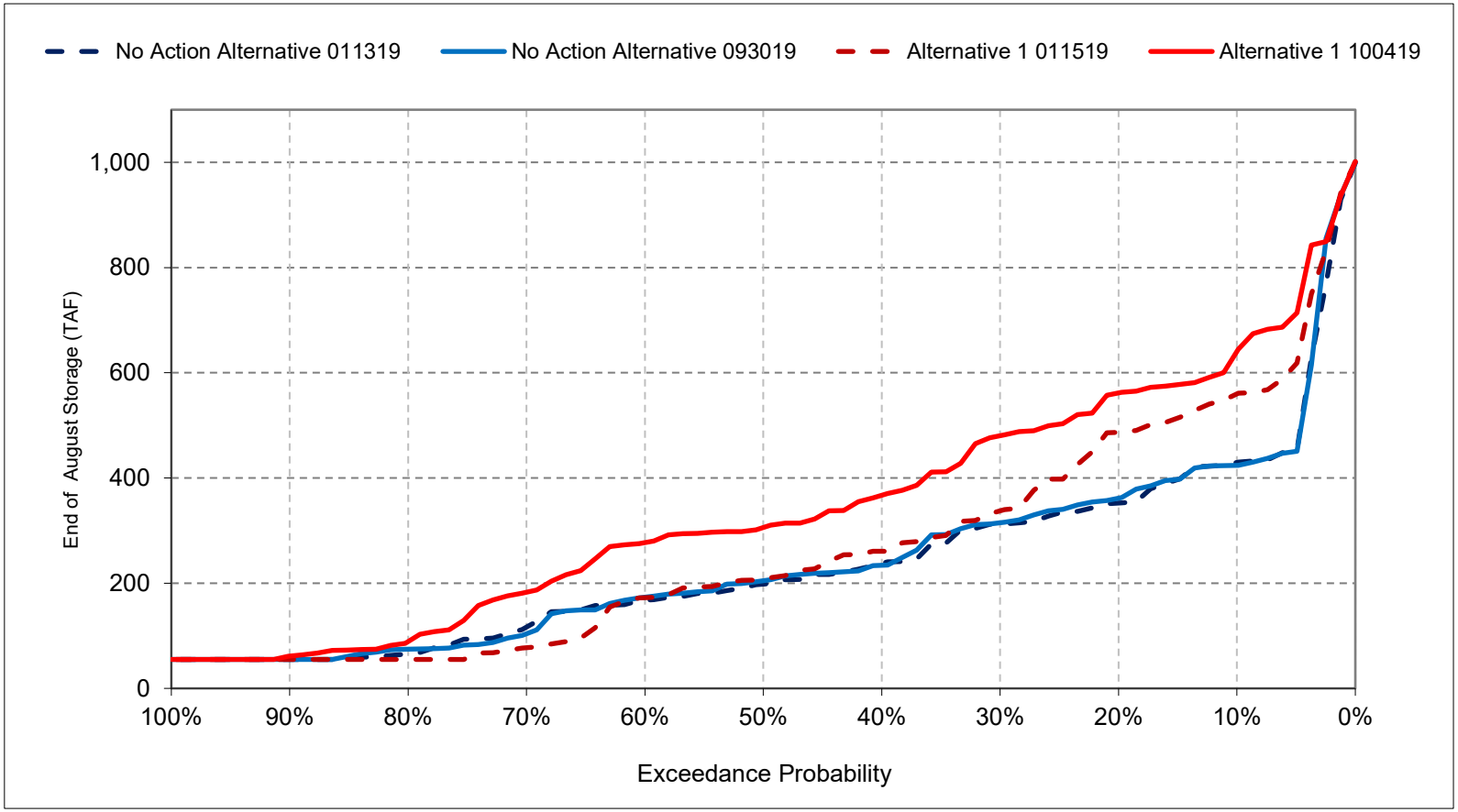

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-16. San Luis SWP Storage, End of July Storage



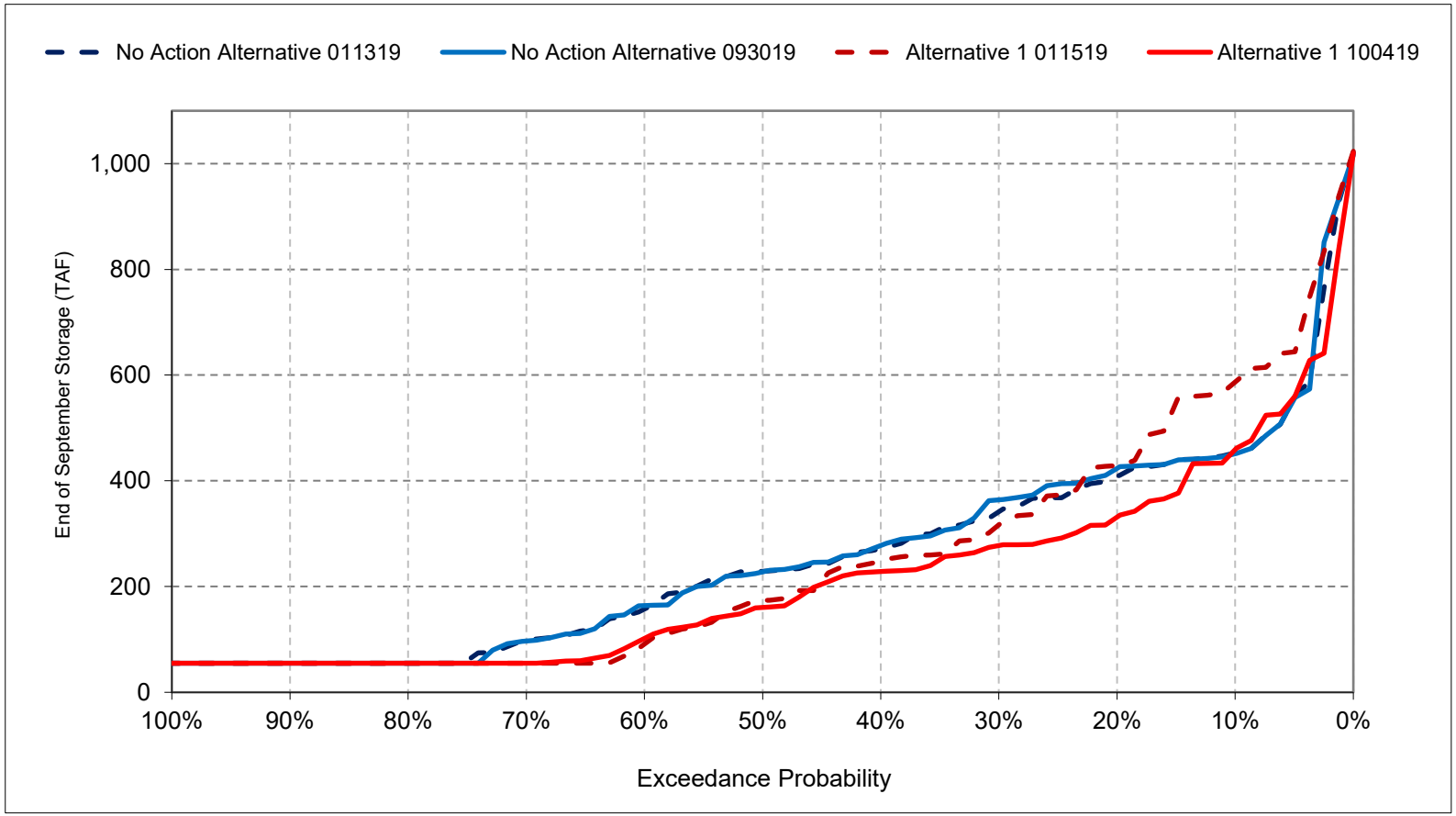

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-17. San Luis SWP Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6c-18. San Luis SWP Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-1. New Melones Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,765 | 1,759 | 1,823 | 1,880 | 1,931 | 1,980 | 1,946 | 2,053 | 2,075 | 1,978 | 1,870 | 1,806 |
| 20% | 1,612 | 1,631 | 1,647 | 1,687 | 1,768 | 1,799 | 1,834 | 1,901 | 1,877 | 1,798 | 1,692 | 1,633 |
| 30% | 1,533 | 1,537 | 1,555 | 1,597 | 1,686 | 1,729 | 1,687 | 1,745 | 1,786 | 1,707 | 1,605 | 1,557 |
| 40% | 1,272 | 1,274 | 1,432 | 1,515 | 1,594 | 1,618 | 1,592 | 1,534 | 1,539 | 1,433 | 1,333 | 1,274 |
| 50% | 1,120 | 1,127 | 1,154 | 1,308 | 1,436 | 1,535 | 1,461 | 1,443 | 1,392 | 1,283 | 1,190 | 1,156 |
| 60% | 1,024 | 1,042 | 1,079 | 1,146 | 1,199 | 1,273 | 1,279 | 1,335 | 1,277 | 1,200 | 1,103 | 1,054 |
| 70% | 882 | 911 | 986 | 1,015 | 1,039 | 1,057 | 1,083 | 1,090 | 1,087 | 994 | 910 | 868 |
| 80% | 646 | 658 | 683 | 684 | 735 | 808 | 835 | 878 | 871 | 808 | 733 | 692 |
| 90% | 430 | 435 | 440 | 486 | 541 | 569 | 574 | 586 | 630 | 566 | 507 | 473 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,132 | 1,142 | 1,180 | 1,237 | 1,305 | 1,348 | 1,338 | 1,373 | 1,381 | 1,300 | 1,208 | 1,159 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,725 | 1,729 | 1,754 | 1,496 | 1,637 | 1,703 | 1,757 | 1,913 | 2,035 | 1,968 | 1,845 | 1,771 |
| Above Normal (24%) | 1,229 | 1,239 | 1,271 | 1,174 | 1,267 | 1,342 | 1,366 | 1,470 | 1,480 | 1,387 | 1,290 | 1,240 |
| Below Normal (10%) | 1,201 | 1,206 | 1,228 | 1,464 | 1,518 | 1,550 | 1,495 | 1,502 | 1,502 | 1,408 | 1,307 | 1,249 |
| Dry (16%) | 931 | 965 | 1,040 | 1,254 | 1,277 | 1,315 | 1,265 | 1,226 | 1,175 | 1,080 | 996 | 958 |
| Critical (27%) | 614 | 616 | 657 | 978 | 993 | 994 | 935 | 860 | 805 | 734 | 674 | 643 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,884 | 1,877 | 1,911 | 1,965 | 1,970 | 2,030 | 2,010 | 2,086 | 2,207 | 2,117 | 2,008 | 1,942 |
| 20% | 1,745 | 1,748 | 1,780 | 1,860 | 1,942 | 1,975 | 1,918 | 1,989 | 2,023 | 1,919 | 1,828 | 1,785 |
| 30% | 1,619 | 1,628 | 1,685 | 1,781 | 1,833 | 1,857 | 1,818 | 1,867 | 1,900 | 1,817 | 1,713 | 1,655 |
| 40% | 1,504 | 1,539 | 1,586 | 1,652 | 1,738 | 1,765 | 1,752 | 1,759 | 1,753 | 1,653 | 1,569 | 1,527 |
| 50% | 1,411 | 1,432 | 1,456 | 1,522 | 1,620 | 1,669 | 1,628 | 1,662 | 1,623 | 1,560 | 1,483 | 1,439 |
| 60% | 1,317 | 1,341 | 1,361 | 1,408 | 1,473 | 1,554 | 1,531 | 1,552 | 1,560 | 1,485 | 1,384 | 1,349 |
| 70% | 1,131 | 1,160 | 1,254 | 1,299 | 1,369 | 1,403 | 1,379 | 1,376 | 1,369 | 1,277 | 1,211 | 1,173 |
| 80% | 974 | 974 | 1,013 | 1,027 | 1,055 | 1,112 | 1,068 | 1,174 | 1,166 | 1,103 | 1,045 | 1,004 |
| 90% | 594 | 580 | 589 | 597 | 616 | 690 | 672 | 734 | 834 | 765 | 692 | 642 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,316 | 1,326 | 1,366 | 1,422 | 1,483 | 1,526 | 1,516 | 1,558 | 1,572 | 1,490 | 1,398 | 1,349 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,753 | 1,758 | 1,791 | 1,593 | 1,703 | 1,758 | 1,816 | 1,973 | 2,073 | 1,997 | 1,874 | 1,800 |
| Above Normal (24%) | 1,339 | 1,349 | 1,379 | 1,304 | 1,396 | 1,474 | 1,475 | 1,570 | 1,610 | 1,515 | 1,413 | 1,361 |
| Below Normal (10%) | 1,383 | 1,387 | 1,407 | 1,675 | 1,719 | 1,758 | 1,691 | 1,692 | 1,695 | 1,597 | 1,493 | 1,433 |
| Dry (16%) | 1,234 | 1,270 | 1,347 | 1,495 | 1,523 | 1,563 | 1,528 | 1,509 | 1,469 | 1,380 | 1,299 | 1,264 |
| Critical (27%) | 938 | 940 | 983 | 1,245 | 1,262 | 1,266 | 1,224 | 1,168 | 1,121 | 1,056 | 997 | 968 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 118 | 118 | 88 | 85 | 39 | 50 | 64 | 33 | 132 | 138 | 138 | 137 |
| 20% | 134 | 117 | 133 | 173 | 173 | 176 | 84 | 88 | 146 | 121 | 136 | 152 |
| 30% | 86 | 91 | 130 | 184 | 147 | 128 | 132 | 122 | 115 | 110 | 108 | 99 |
| 40% | 233 | 264 | 154 | 137 | 143 | 147 | 161 | 226 | 214 | 219 | 236 | 254 |
| 50% | 291 | 305 | 303 | 214 | 183 | 134 | 167 | 218 | 231 | 277 | 293 | 283 |
| 60% | 293 | 299 | 282 | 262 | 274 | 281 | 252 | 216 | 283 | 285 | 281 | 294 |
| 70% | 249 | 249 | 268 | 284 | 330 | 347 | 296 | 285 | 282 | 282 | 301 | 304 |
| 80% | 328 | 316 | 330 | 343 | 320 | 305 | 233 | 296 | 295 | 295 | 312 | 311 |
| 90% | 164 | 146 | 149 | 111 | 76 | 121 | 98 | 147 | 204 | 198 | 185 | 170 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 186 | 185 | 178 | 177 | 179 | 184 | 191 | 190 | 190 | 190 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 28 | 29 | 37 | 97 | 67 | 56 | 59 | 60 | 37 | 29 | 29 | 29 |
| Above Normal (24%) | 111 | 110 | 108 | 130 | 129 | 132 | 109 | 100 | 129 | 128 | 123 | 121 |
| Below Normal (10%) | 181 | 180 | 180 | 211 | 201 | 207 | 196 | 190 | 193 | 189 | 186 | 184 |
| Dry (16%) | 303 | 305 | 307 | 242 | 247 | 248 | 263 | 283 | 294 | 300 | 304 | 306 |
| Critical (27%) | 324 | 324 | 327 | 267 | 269 | 271 | 289 | 308 | 316 | 321 | 323 | 324 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-2. New Melones Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,765 | 1,759 | 1,823 | 1,880 | 1,931 | 1,980 | 1,946 | 2,053 | 2,075 | 1,978 | 1,870 | 1,806 |
| 20% | 1,612 | 1,631 | 1,647 | 1,687 | 1,768 | 1,799 | 1,834 | 1,901 | 1,877 | 1,798 | 1,692 | 1,634 |
| 30% | 1,533 | 1,537 | 1,555 | 1,597 | 1,687 | 1,730 | 1,687 | 1,745 | 1,786 | 1,707 | 1,605 | 1,557 |
| 40% | 1,272 | 1,274 | 1,432 | 1,515 | 1,594 | 1,618 | 1,592 | 1,534 | 1,539 | 1,433 | 1,333 | 1,274 |
| 50% | 1,120 | 1,127 | 1,154 | 1,308 | 1,436 | 1,535 | 1,462 | 1,443 | 1,392 | 1,283 | 1,190 | 1,156 |
| 60% | 1,024 | 1,042 | 1,079 | 1,146 | 1,199 | 1,273 | 1,279 | 1,336 | 1,277 | 1,200 | 1,103 | 1,055 |
| 70% | 882 | 911 | 986 | 1,015 | 1,038 | 1,057 | 1,083 | 1,090 | 1,087 | 994 | 910 | 868 |
| 80% | 646 | 658 | 682 | 684 | 735 | 808 | 835 | 878 | 871 | 808 | 733 | 692 |
| 90% | 430 | 435 | 440 | 486 | 541 | 569 | 574 | 586 | 630 | 566 | 507 | 473 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,132 | 1,142 | 1,180 | 1,237 | 1,305 | 1,348 | 1,338 | 1,373 | 1,381 | 1,300 | 1,208 | 1,159 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,725 | 1,729 | 1,754 | 1,496 | 1,637 | 1,703 | 1,757 | 1,913 | 2,035 | 1,968 | 1,845 | 1,772 |
| Above Normal (24%) | 1,229 | 1,239 | 1,271 | 1,174 | 1,267 | 1,342 | 1,366 | 1,470 | 1,480 | 1,387 | 1,290 | 1,241 |
| Below Normal (10%) | 1,201 | 1,206 | 1,228 | 1,464 | 1,518 | 1,550 | 1,495 | 1,502 | 1,502 | 1,408 | 1,307 | 1,249 |
| Dry (16%) | 931 | 965 | 1,040 | 1,254 | 1,277 | 1,315 | 1,265 | 1,226 | 1,175 | 1,080 | 996 | 958 |
| Critical (27%) | 614 | 615 | 656 | 978 | 993 | 994 | 935 | 860 | 804 | 734 | 674 | 643 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,884 | 1,877 | 1,911 | 1,965 | 1,970 | 2,030 | 2,010 | 2,086 | 2,207 | 2,117 | 2,008 | 1,942 |
| 20% | 1,745 | 1,748 | 1,780 | 1,860 | 1,942 | 1,975 | 1,918 | 1,989 | 2,023 | 1,919 | 1,828 | 1,785 |
| 30% | 1,619 | 1,628 | 1,685 | 1,781 | 1,833 | 1,857 | 1,818 | 1,867 | 1,900 | 1,817 | 1,713 | 1,655 |
| 40% | 1,504 | 1,539 | 1,586 | 1,652 | 1,738 | 1,765 | 1,752 | 1,759 | 1,753 | 1,653 | 1,569 | 1,527 |
| 50% | 1,411 | 1,432 | 1,456 | 1,522 | 1,620 | 1,669 | 1,628 | 1,662 | 1,623 | 1,560 | 1,483 | 1,439 |
| 60% | 1,317 | 1,341 | 1,361 | 1,408 | 1,473 | 1,554 | 1,531 | 1,552 | 1,560 | 1,485 | 1,384 | 1,349 |
| 70% | 1,131 | 1,160 | 1,254 | 1,299 | 1,369 | 1,403 | 1,379 | 1,376 | 1,369 | 1,277 | 1,211 | 1,173 |
| 80% | 974 | 974 | 1,013 | 1,027 | 1,055 | 1,112 | 1,068 | 1,174 | 1,166 | 1,103 | 1,045 | 1,004 |
| 90% | 594 | 580 | 589 | 597 | 616 | 690 | 672 | 734 | 834 | 765 | 692 | 642 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,316 | 1,326 | 1,366 | 1,422 | 1,483 | 1,526 | 1,516 | 1,558 | 1,572 | 1,490 | 1,398 | 1,349 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,753 | 1,758 | 1,791 | 1,593 | 1,703 | 1,758 | 1,816 | 1,973 | 2,073 | 1,997 | 1,874 | 1,800 |
| Above Normal (24%) | 1,339 | 1,349 | 1,379 | 1,304 | 1,396 | 1,474 | 1,475 | 1,570 | 1,610 | 1,515 | 1,413 | 1,361 |
| Below Normal (10%) | 1,383 | 1,387 | 1,407 | 1,675 | 1,719 | 1,758 | 1,691 | 1,692 | 1,695 | 1,597 | 1,493 | 1,433 |
| Dry (16%) | 1,234 | 1,270 | 1,347 | 1,495 | 1,523 | 1,563 | 1,528 | 1,509 | 1,469 | 1,380 | 1,299 | 1,264 |
| Critical (27%) | 938 | 940 | 983 | 1,245 | 1,262 | 1,266 | 1,224 | 1,168 | 1,121 | 1,056 | 997 | 968 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 118 | 118 | 88 | 85 | 39 | 50 | 64 | 33 | 132 | 138 | 138 | 137 |
| 20% | 134 | 117 | 133 | 173 | 173 | 176 | 84 | 88 | 146 | 121 | 136 | 151 |
| 30% | 86 | 91 | 130 | 184 | 147 | 128 | 131 | 122 | 115 | 110 | 108 | 99 |
| 40% | 233 | 264 | 154 | 137 | 143 | 146 | 160 | 226 | 214 | 219 | 236 | 254 |
| 50% | 290 | 305 | 303 | 214 | 183 | 134 | 166 | 218 | 231 | 277 | 292 | 283 |
| 60% | 293 | 299 | 282 | 262 | 274 | 281 | 252 | 216 | 283 | 285 | 281 | 294 |
| 70% | 249 | 249 | 268 | 284 | 330 | 347 | 296 | 285 | 282 | 282 | 301 | 304 |
| 80% | 329 | 316 | 331 | 343 | 320 | 305 | 233 | 297 | 296 | 295 | 312 | 312 |
| 90% | 164 | 146 | 149 | 110 | 76 | 121 | 98 | 147 | 204 | 198 | 185 | 170 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 186 | 185 | 178 | 177 | 179 | 184 | 191 | 190 | 190 | 190 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 28 | 29 | 37 | 97 | 67 | 55 | 59 | 60 | 37 | 29 | 29 | 28 |
| Above Normal (24%) | 111 | 110 | 108 | 130 | 129 | 132 | 109 | 100 | 129 | 128 | 123 | 121 |
| Below Normal (10%) | 181 | 180 | 180 | 211 | 201 | 207 | 196 | 190 | 193 | 189 | 186 | 184 |
| Dry (16%) | 303 | 305 | 307 | 242 | 247 | 248 | 263 | 283 | 294 | 300 | 304 | 306 |
| Critical (27%) | 324 | 325 | 327 | 267 | 269 | 271 | 289 | 308 | 316 | 321 | 323 | 325 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-3. New Melones Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,765 | 1,759 | 1,823 | 1,880 | 1,931 | 1,980 | 1,946 | 2,053 | 2,075 | 1,978 | 1,870 | 1,806 |
| 20% | 1,612 | 1,631 | 1,647 | 1,687 | 1,768 | 1,799 | 1,834 | 1,901 | 1,877 | 1,798 | 1,692 | 1,633 |
| 30% | 1,533 | 1,537 | 1,555 | 1,597 | 1,686 | 1,729 | 1,687 | 1,745 | 1,786 | 1,707 | 1,605 | 1,557 |
| 40% | 1,272 | 1,274 | 1,432 | 1,515 | 1,594 | 1,618 | 1,592 | 1,534 | 1,539 | 1,433 | 1,333 | 1,274 |
| 50% | 1,120 | 1,127 | 1,154 | 1,308 | 1,436 | 1,535 | 1,461 | 1,443 | 1,392 | 1,283 | 1,190 | 1,156 |
| 60% | 1,024 | 1,042 | 1,079 | 1,146 | 1,199 | 1,273 | 1,279 | 1,335 | 1,277 | 1,200 | 1,103 | 1,054 |
| 70% | 882 | 911 | 986 | 1,015 | 1,039 | 1,057 | 1,083 | 1,090 | 1,087 | 994 | 910 | 868 |
| 80% | 646 | 658 | 683 | 684 | 735 | 808 | 835 | 878 | 871 | 808 | 733 | 692 |
| 90% | 430 | 435 | 440 | 486 | 541 | 569 | 574 | 586 | 630 | 566 | 507 | 473 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,132 | 1,142 | 1,180 | 1,237 | 1,305 | 1,348 | 1,338 | 1,373 | 1,381 | 1,300 | 1,208 | 1,159 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,725 | 1,729 | 1,754 | 1,496 | 1,637 | 1,703 | 1,757 | 1,913 | 2,035 | 1,968 | 1,845 | 1,771 |
| Above Normal (24%) | 1,229 | 1,239 | 1,271 | 1,174 | 1,267 | 1,342 | 1,366 | 1,470 | 1,480 | 1,387 | 1,290 | 1,240 |
| Below Normal (10%) | 1,201 | 1,206 | 1,228 | 1,464 | 1,518 | 1,550 | 1,495 | 1,502 | 1,502 | 1,408 | 1,307 | 1,249 |
| Dry (16%) | 931 | 965 | 1,040 | 1,254 | 1,277 | 1,315 | 1,265 | 1,226 | 1,175 | 1,080 | 996 | 958 |
| Critical (27%) | 614 | 616 | 657 | 978 | 993 | 994 | 935 | 860 | 805 | 734 | 674 | 643 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,765 | 1,759 | 1,823 | 1,880 | 1,931 | 1,980 | 1,946 | 2,053 | 2,075 | 1,978 | 1,870 | 1,806 |
| 20% | 1,612 | 1,631 | 1,647 | 1,687 | 1,768 | 1,799 | 1,834 | 1,901 | 1,877 | 1,798 | 1,692 | 1,634 |
| 30% | 1,533 | 1,537 | 1,555 | 1,597 | 1,687 | 1,730 | 1,687 | 1,745 | 1,786 | 1,707 | 1,605 | 1,557 |
| 40% | 1,272 | 1,274 | 1,432 | 1,515 | 1,594 | 1,618 | 1,592 | 1,534 | 1,539 | 1,433 | 1,333 | 1,274 |
| 50% | 1,120 | 1,127 | 1,154 | 1,308 | 1,436 | 1,535 | 1,462 | 1,443 | 1,392 | 1,283 | 1,190 | 1,156 |
| 60% | 1,024 | 1,042 | 1,079 | 1,146 | 1,199 | 1,273 | 1,279 | 1,336 | 1,277 | 1,200 | 1,103 | 1,055 |
| 70% | 882 | 911 | 986 | 1,015 | 1,038 | 1,057 | 1,083 | 1,090 | 1,087 | 994 | 910 | 868 |
| 80% | 646 | 658 | 682 | 684 | 735 | 808 | 835 | 878 | 871 | 808 | 733 | 692 |
| 90% | 430 | 435 | 440 | 486 | 541 | 569 | 574 | 586 | 630 | 566 | 507 | 473 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,132 | 1,142 | 1,180 | 1,237 | 1,305 | 1,348 | 1,338 | 1,373 | 1,381 | 1,300 | 1,208 | 1,159 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,725 | 1,729 | 1,754 | 1,496 | 1,637 | 1,703 | 1,757 | 1,913 | 2,035 | 1,968 | 1,845 | 1,772 |
| Above Normal (24%) | 1,229 | 1,239 | 1,271 | 1,174 | 1,267 | 1,342 | 1,366 | 1,470 | 1,480 | 1,387 | 1,290 | 1,241 |
| Below Normal (10%) | 1,201 | 1,206 | 1,228 | 1,464 | 1,518 | 1,550 | 1,495 | 1,502 | 1,502 | 1,408 | 1,307 | 1,249 |
| Dry (16%) | 931 | 965 | 1,040 | 1,254 | 1,277 | 1,315 | 1,265 | 1,226 | 1,175 | 1,080 | 996 | 958 |
| Critical (27%) | 614 | 615 | 656 | 978 | 993 | 994 | 935 | 860 | 804 | 734 | 674 | 643 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-4. New Melones Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,884 | 1,877 | 1,911 | 1,965 | 1,970 | 2,030 | 2,010 | 2,086 | 2,207 | 2,117 | 2,008 | 1,942 |
| 20% | 1,745 | 1,748 | 1,780 | 1,860 | 1,942 | 1,975 | 1,918 | 1,989 | 2,023 | 1,919 | 1,828 | 1,785 |
| 30% | 1,619 | 1,628 | 1,685 | 1,781 | 1,833 | 1,857 | 1,818 | 1,867 | 1,900 | 1,817 | 1,713 | 1,655 |
| 40% | 1,504 | 1,539 | 1,586 | 1,652 | 1,738 | 1,765 | 1,752 | 1,759 | 1,753 | 1,653 | 1,569 | 1,527 |
| 50% | 1,411 | 1,432 | 1,456 | 1,522 | 1,620 | 1,669 | 1,628 | 1,662 | 1,623 | 1,560 | 1,483 | 1,439 |
| 60% | 1,317 | 1,341 | 1,361 | 1,408 | 1,473 | 1,554 | 1,531 | 1,552 | 1,560 | 1,485 | 1,384 | 1,349 |
| 70% | 1,131 | 1,160 | 1,254 | 1,299 | 1,369 | 1,403 | 1,379 | 1,376 | 1,369 | 1,277 | 1,211 | 1,173 |
| 80% | 974 | 974 | 1,013 | 1,027 | 1,055 | 1,112 | 1,068 | 1,174 | 1,166 | 1,103 | 1,045 | 1,004 |
| 90% | 594 | 580 | 589 | 597 | 616 | 690 | 672 | 734 | 834 | 765 | 692 | 642 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,316 | 1,326 | 1,366 | 1,422 | 1,483 | 1,526 | 1,516 | 1,558 | 1,572 | 1,490 | 1,398 | 1,349 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,753 | 1,758 | 1,791 | 1,593 | 1,703 | 1,758 | 1,816 | 1,973 | 2,073 | 1,997 | 1,874 | 1,800 |
| Above Normal (24%) | 1,339 | 1,349 | 1,379 | 1,304 | 1,396 | 1,474 | 1,475 | 1,570 | 1,610 | 1,515 | 1,413 | 1,361 |
| Below Normal (10%) | 1,383 | 1,387 | 1,407 | 1,675 | 1,719 | 1,758 | 1,691 | 1,692 | 1,695 | 1,597 | 1,493 | 1,433 |
| Dry (16%) | 1,234 | 1,270 | 1,347 | 1,495 | 1,523 | 1,563 | 1,528 | 1,509 | 1,469 | 1,380 | 1,299 | 1,264 |
| Critical (27%) | 938 | 940 | 983 | 1,245 | 1,262 | 1,266 | 1,224 | 1,168 | 1,121 | 1,056 | 997 | 968 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,884 | 1,877 | 1,911 | 1,965 | 1,970 | 2,030 | 2,010 | 2,086 | 2,207 | 2,117 | 2,008 | 1,942 |
| 20% | 1,745 | 1,748 | 1,780 | 1,860 | 1,942 | 1,975 | 1,918 | 1,989 | 2,023 | 1,919 | 1,828 | 1,785 |
| 30% | 1,619 | 1,628 | 1,685 | 1,781 | 1,833 | 1,857 | 1,818 | 1,867 | 1,900 | 1,817 | 1,713 | 1,655 |
| 40% | 1,504 | 1,539 | 1,586 | 1,652 | 1,738 | 1,765 | 1,752 | 1,759 | 1,753 | 1,653 | 1,569 | 1,527 |
| 50% | 1,411 | 1,432 | 1,456 | 1,522 | 1,620 | 1,669 | 1,628 | 1,662 | 1,623 | 1,560 | 1,483 | 1,439 |
| 60% | 1,317 | 1,341 | 1,361 | 1,408 | 1,473 | 1,554 | 1,531 | 1,552 | 1,560 | 1,485 | 1,384 | 1,349 |
| 70% | 1,131 | 1,160 | 1,254 | 1,299 | 1,369 | 1,403 | 1,379 | 1,376 | 1,369 | 1,277 | 1,211 | 1,173 |
| 80% | 974 | 974 | 1,013 | 1,027 | 1,055 | 1,112 | 1,068 | 1,174 | 1,166 | 1,103 | 1,045 | 1,004 |
| 90% | 594 | 580 | 589 | 597 | 616 | 690 | 672 | 734 | 834 | 765 | 692 | 642 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,316 | 1,326 | 1,366 | 1,422 | 1,483 | 1,526 | 1,516 | 1,558 | 1,572 | 1,490 | 1,398 | 1,349 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,753 | 1,758 | 1,791 | 1,593 | 1,703 | 1,758 | 1,816 | 1,973 | 2,073 | 1,997 | 1,874 | 1,800 |
| Above Normal (24%) | 1,339 | 1,349 | 1,379 | 1,304 | 1,396 | 1,474 | 1,475 | 1,570 | 1,610 | 1,515 | 1,413 | 1,361 |
| Below Normal (10%) | 1,383 | 1,387 | 1,407 | 1,675 | 1,719 | 1,758 | 1,691 | 1,692 | 1,695 | 1,597 | 1,493 | 1,433 |
| Dry (16%) | 1,234 | 1,270 | 1,347 | 1,495 | 1,523 | 1,563 | 1,528 | 1,509 | 1,469 | 1,380 | 1,299 | 1,264 |
| Critical (27%) | 938 | 940 | 983 | 1,245 | 1,262 | 1,266 | 1,224 | 1,168 | 1,121 | 1,056 | 997 | 968 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

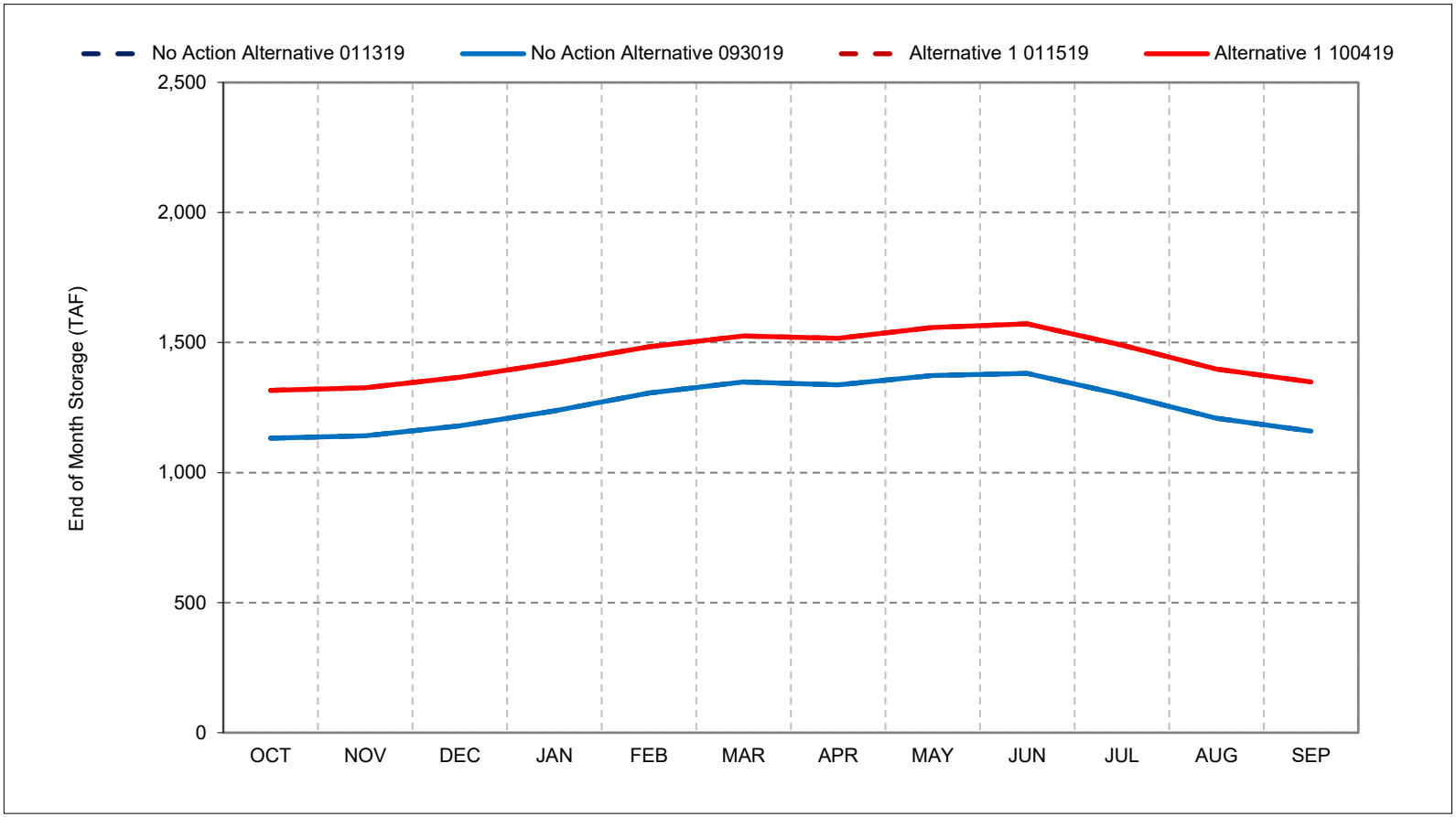
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-1. New Melones Storage, Long-Term Average Storage

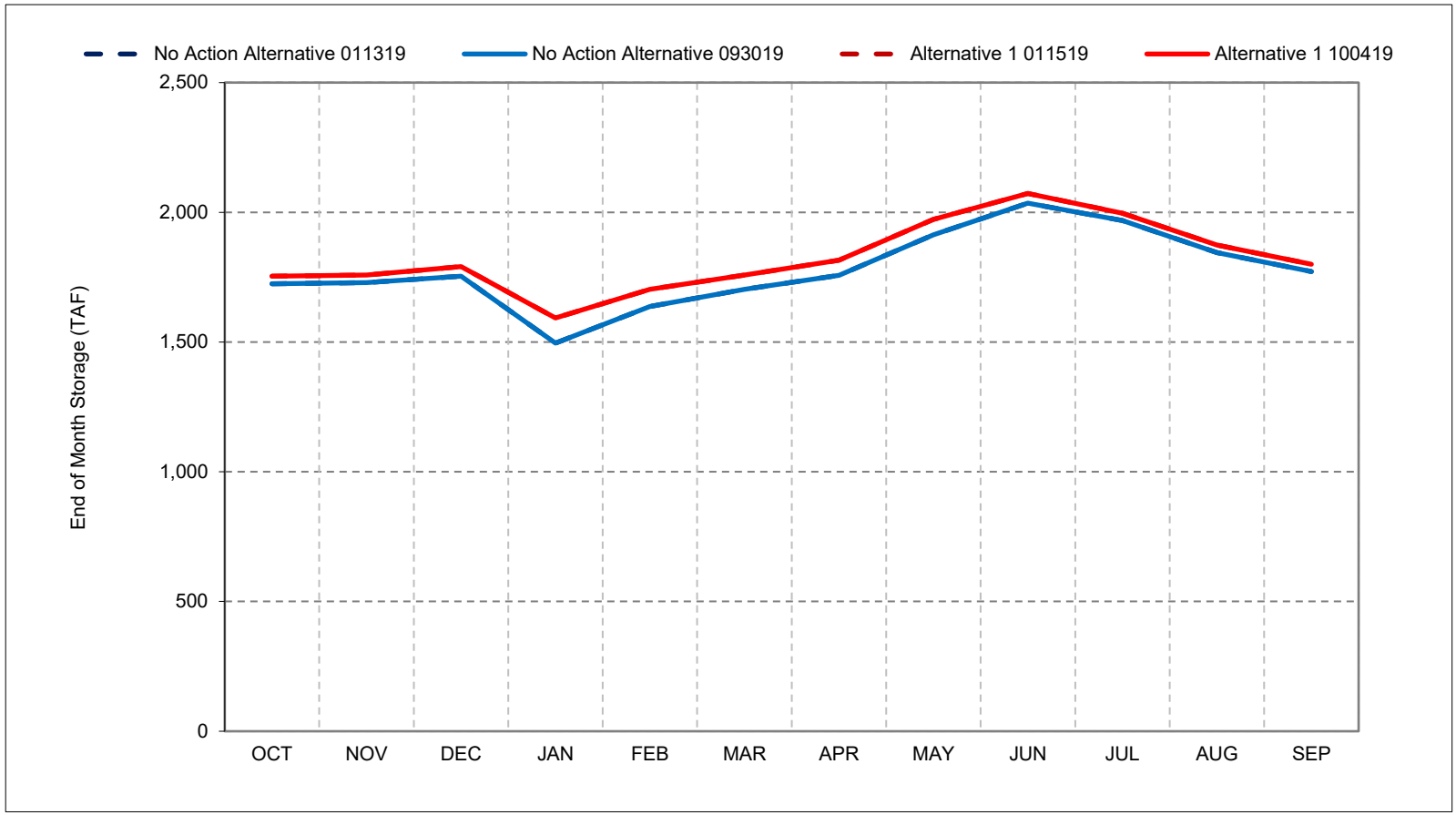



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-2. New Melones Storage, Wet Year Average Storage

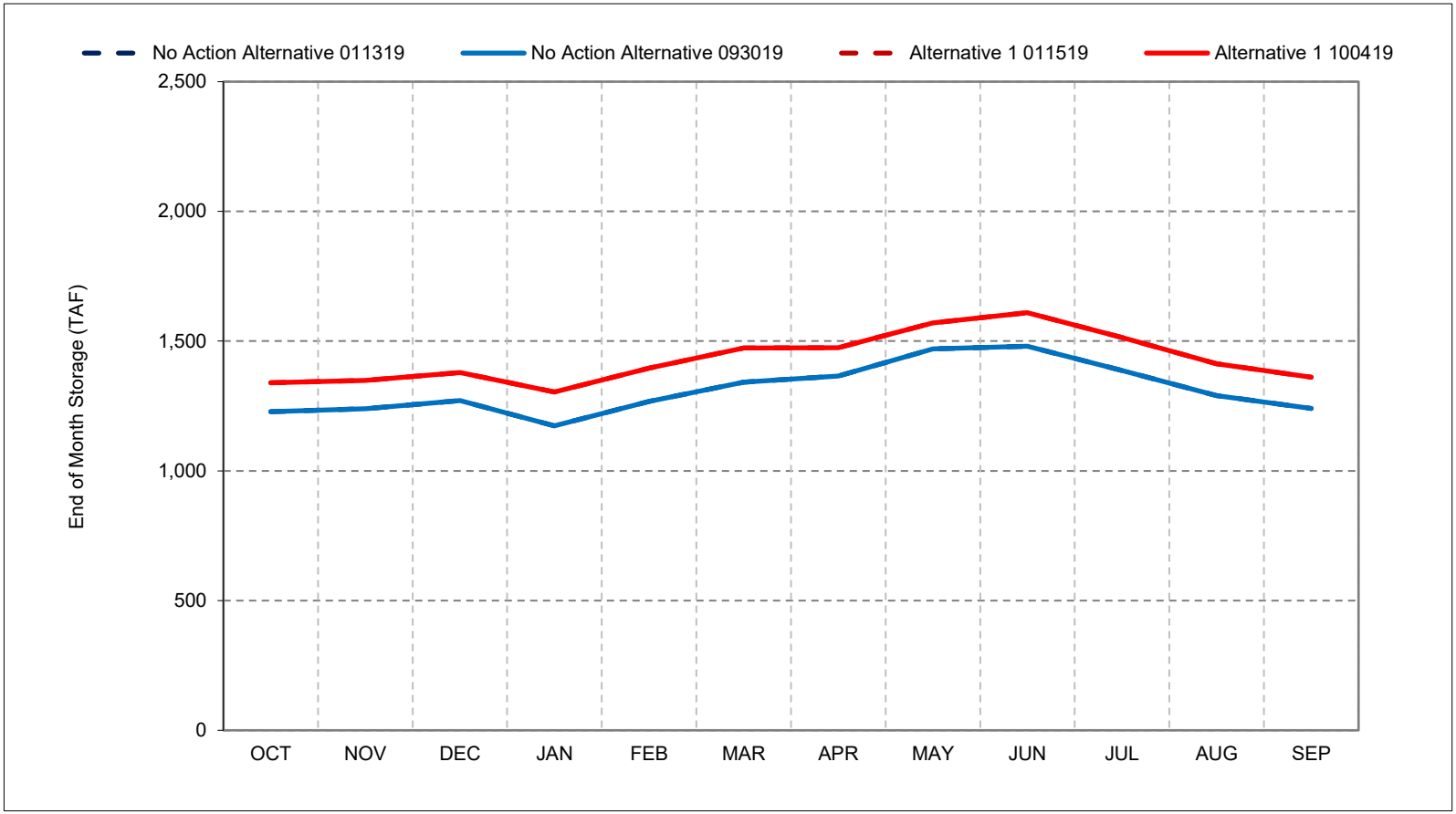



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-3. New Melones Storage, Above Normal Year Average Storage

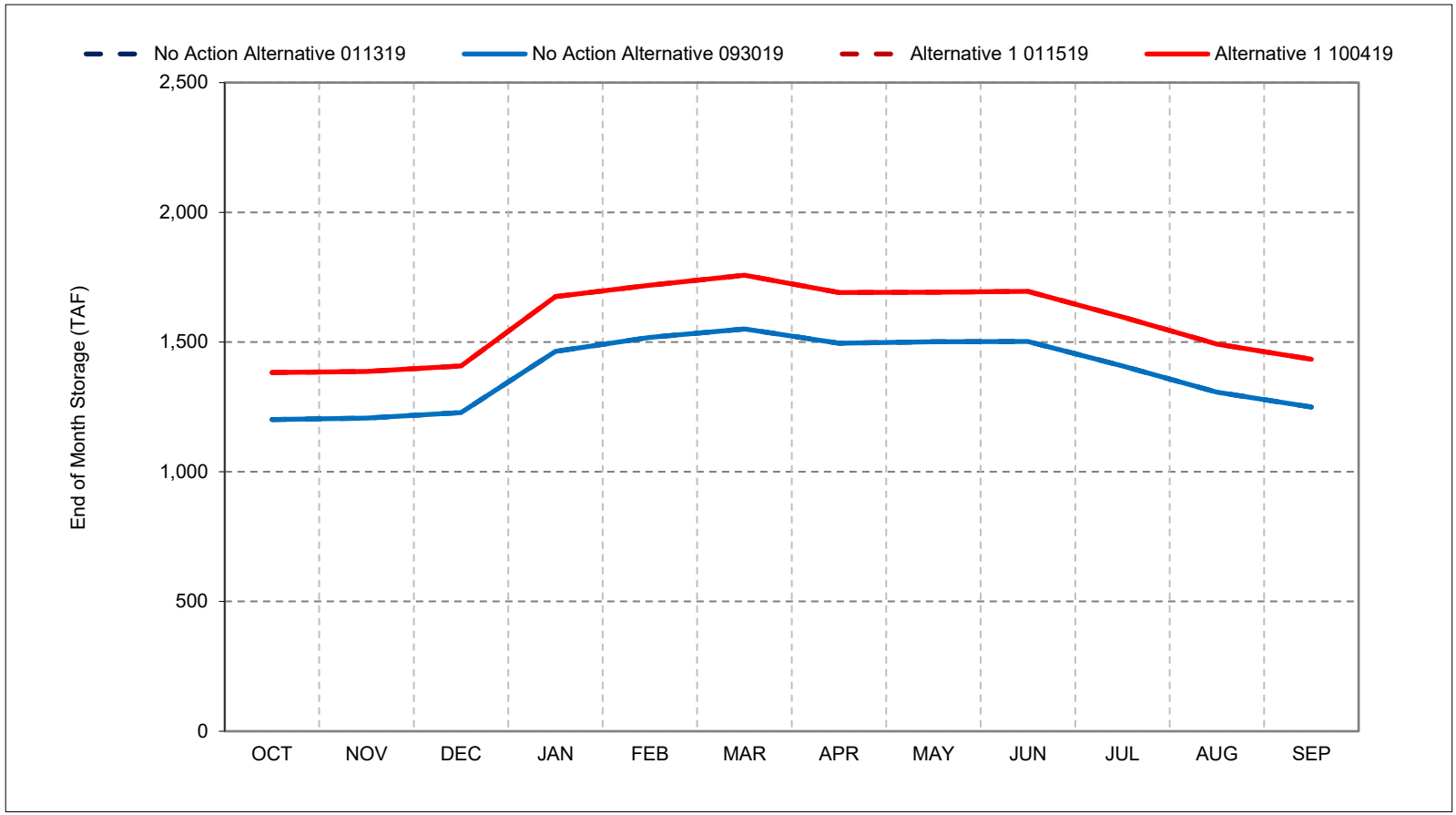



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-4. New Melones Storage, Below Normal Year Average Storage

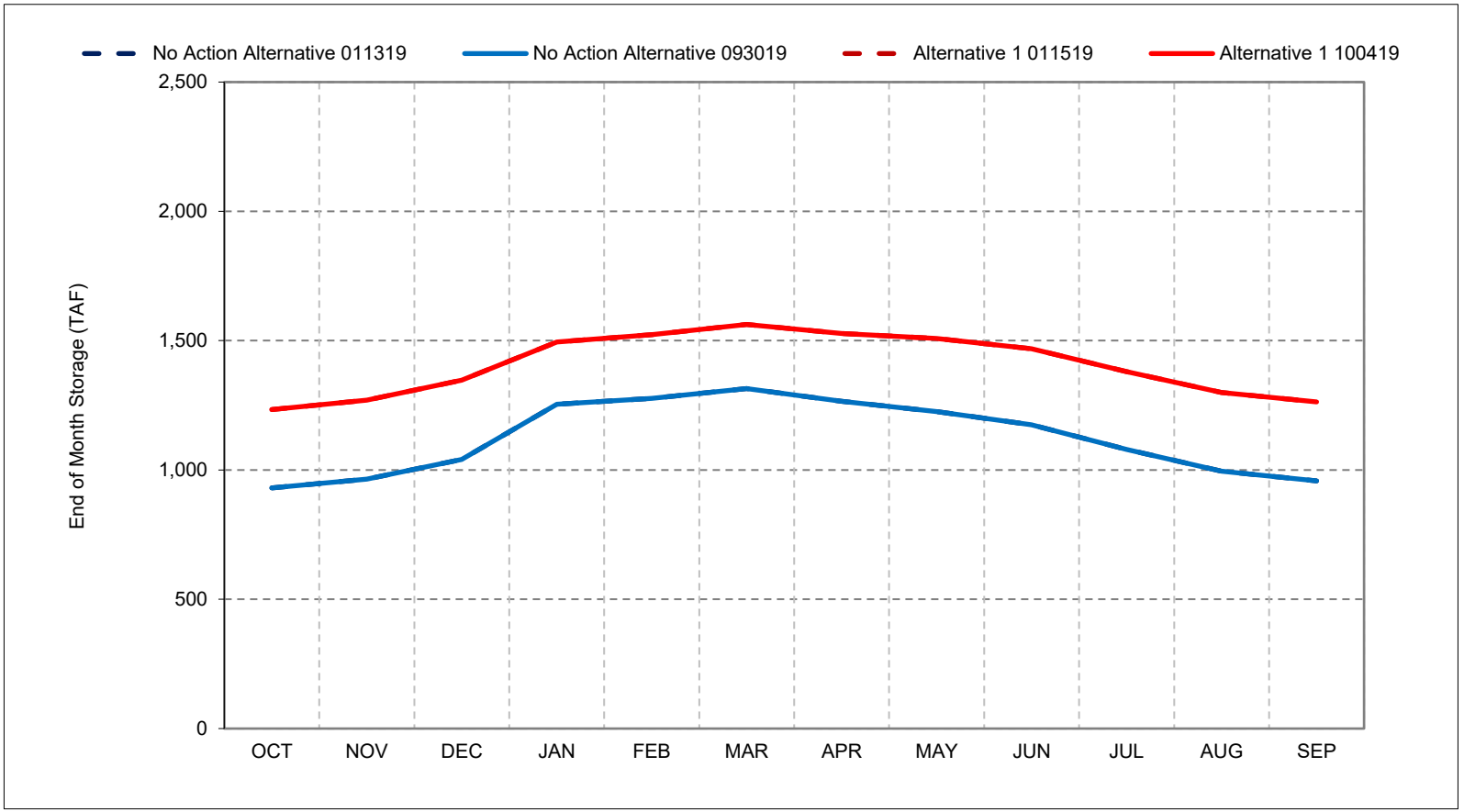



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-5. New Melones Storage, Dry Year Average Storage

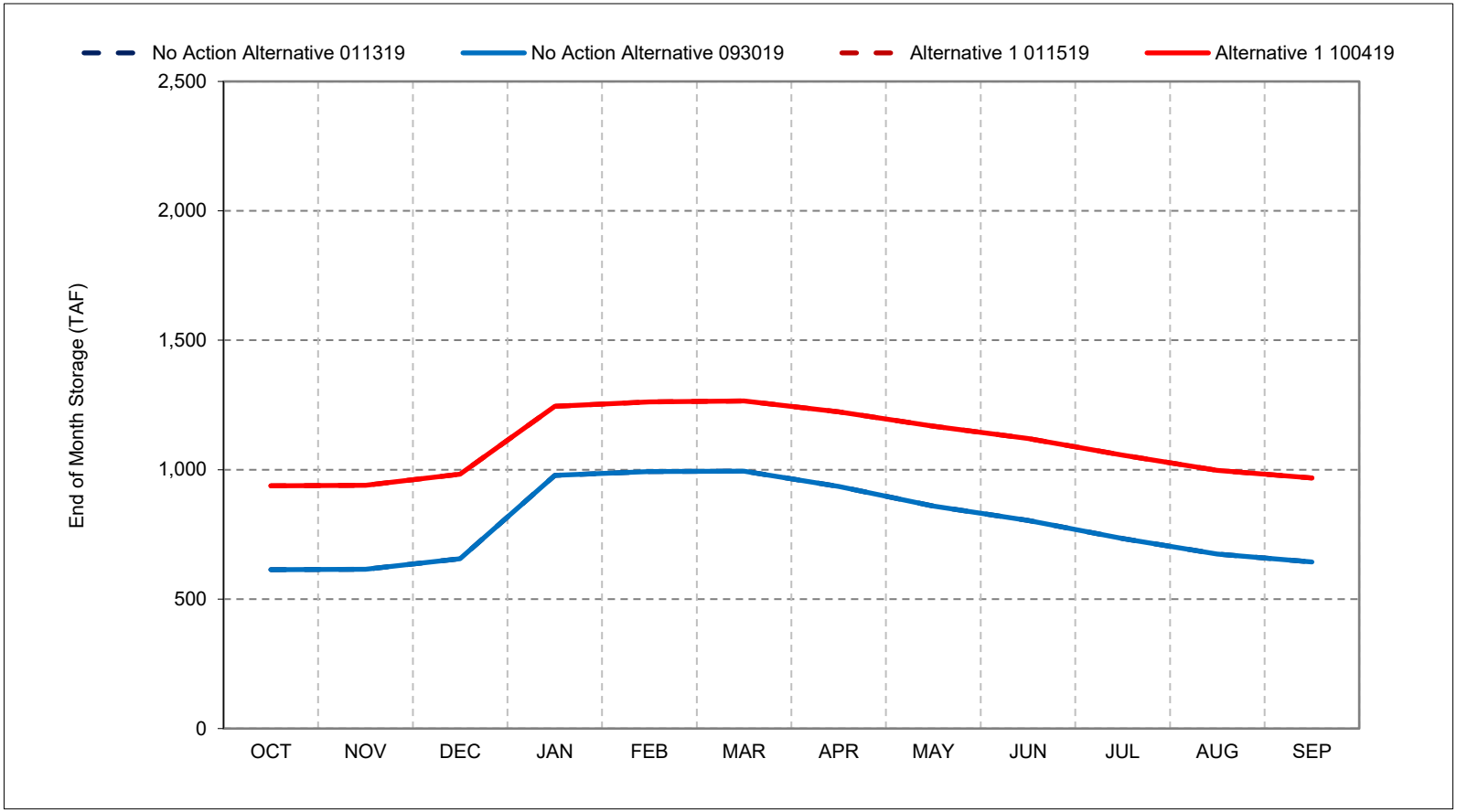



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-6. New Melones Storage, Critical Year Average Storage

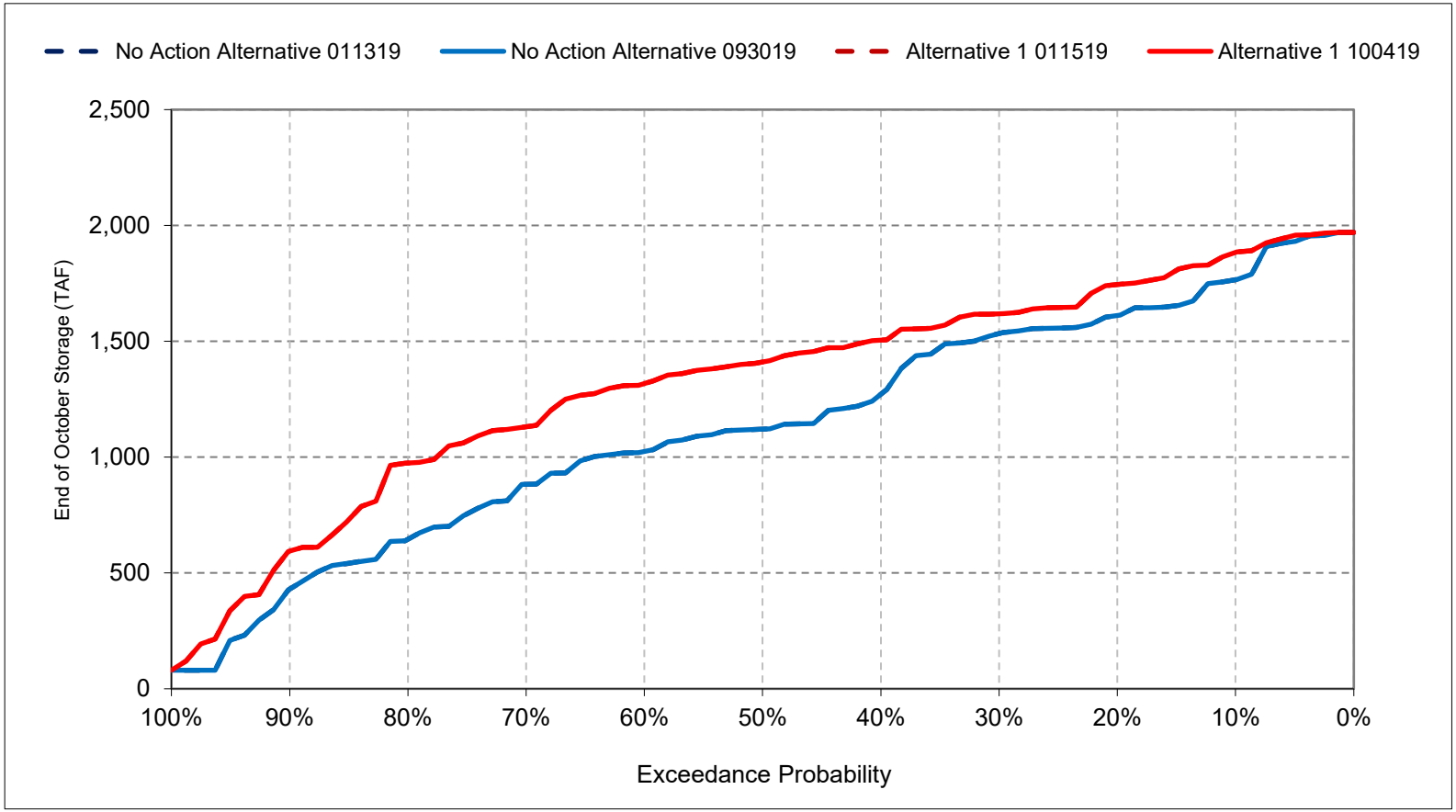



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

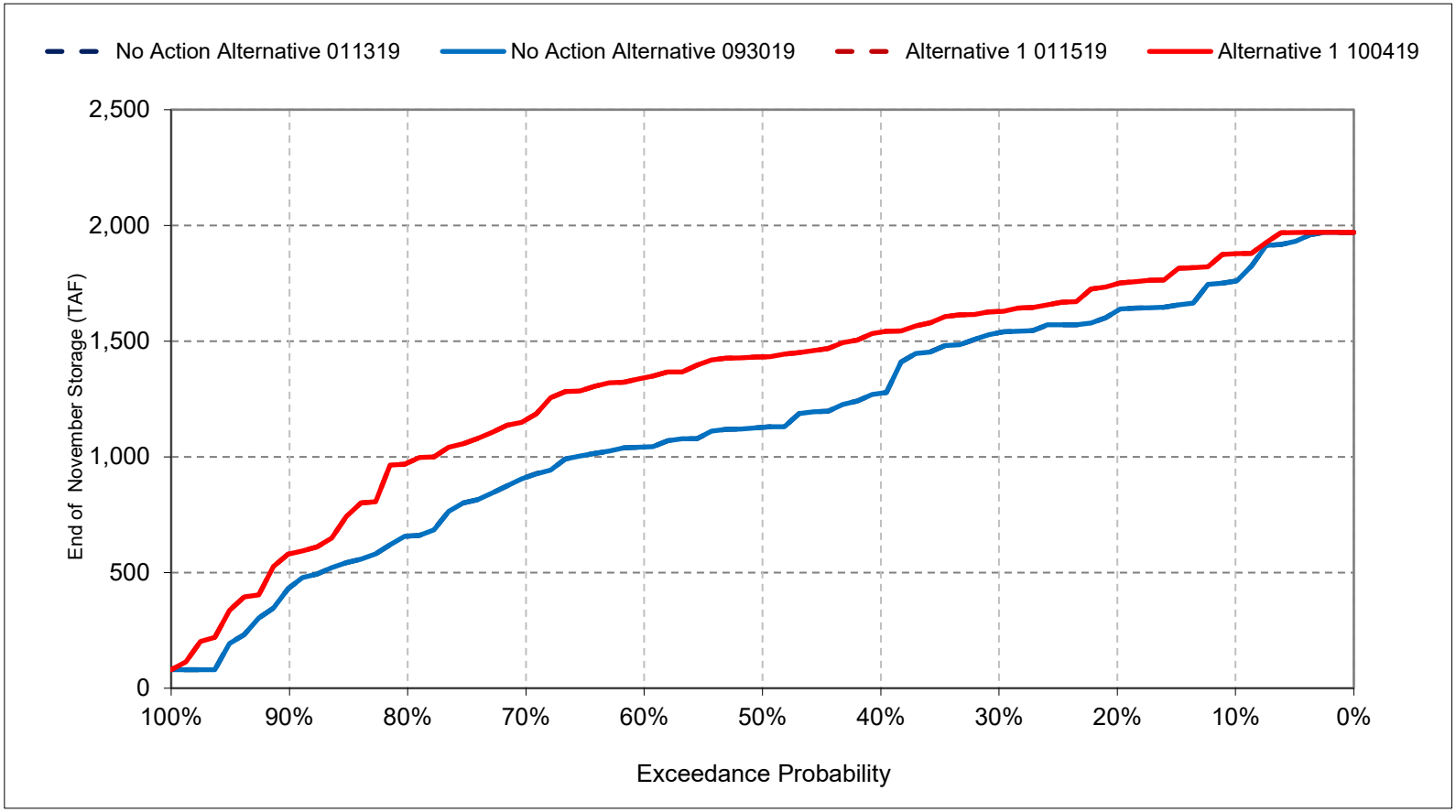
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-7. New Melones Storage, End of October Storage



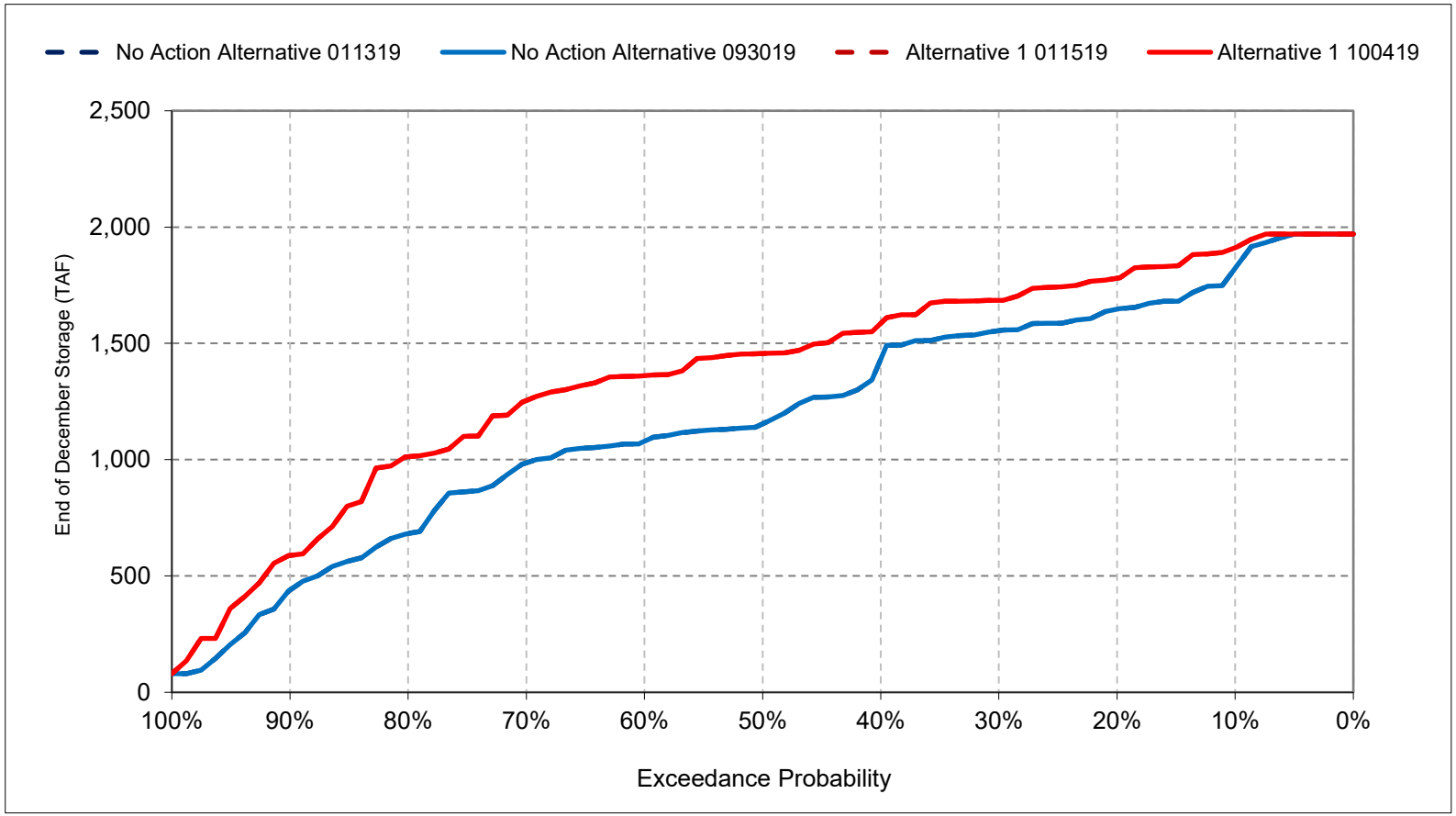

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-8. New Melones Storage, End of November Storage



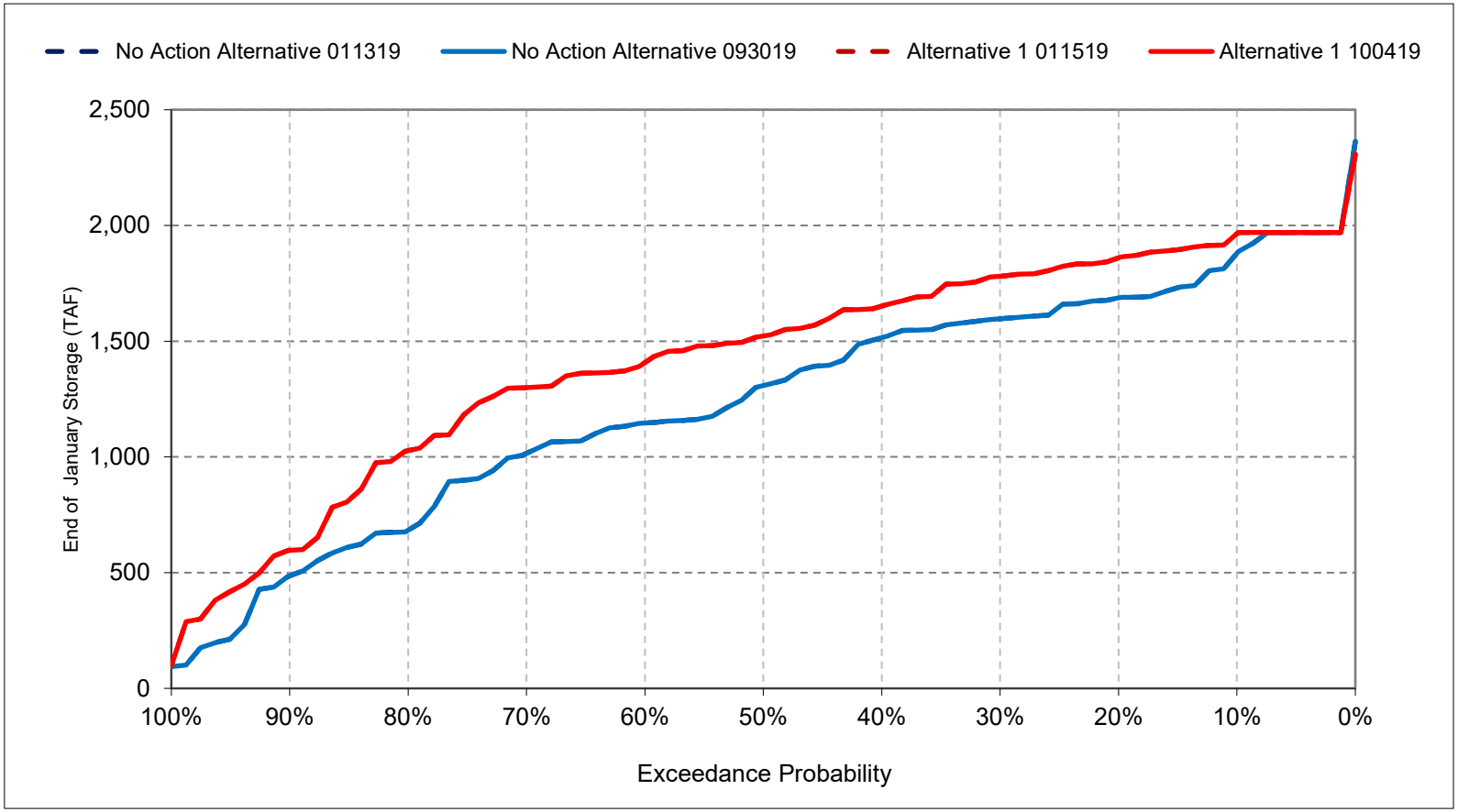

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-9. New Melones Storage, End of December Storage



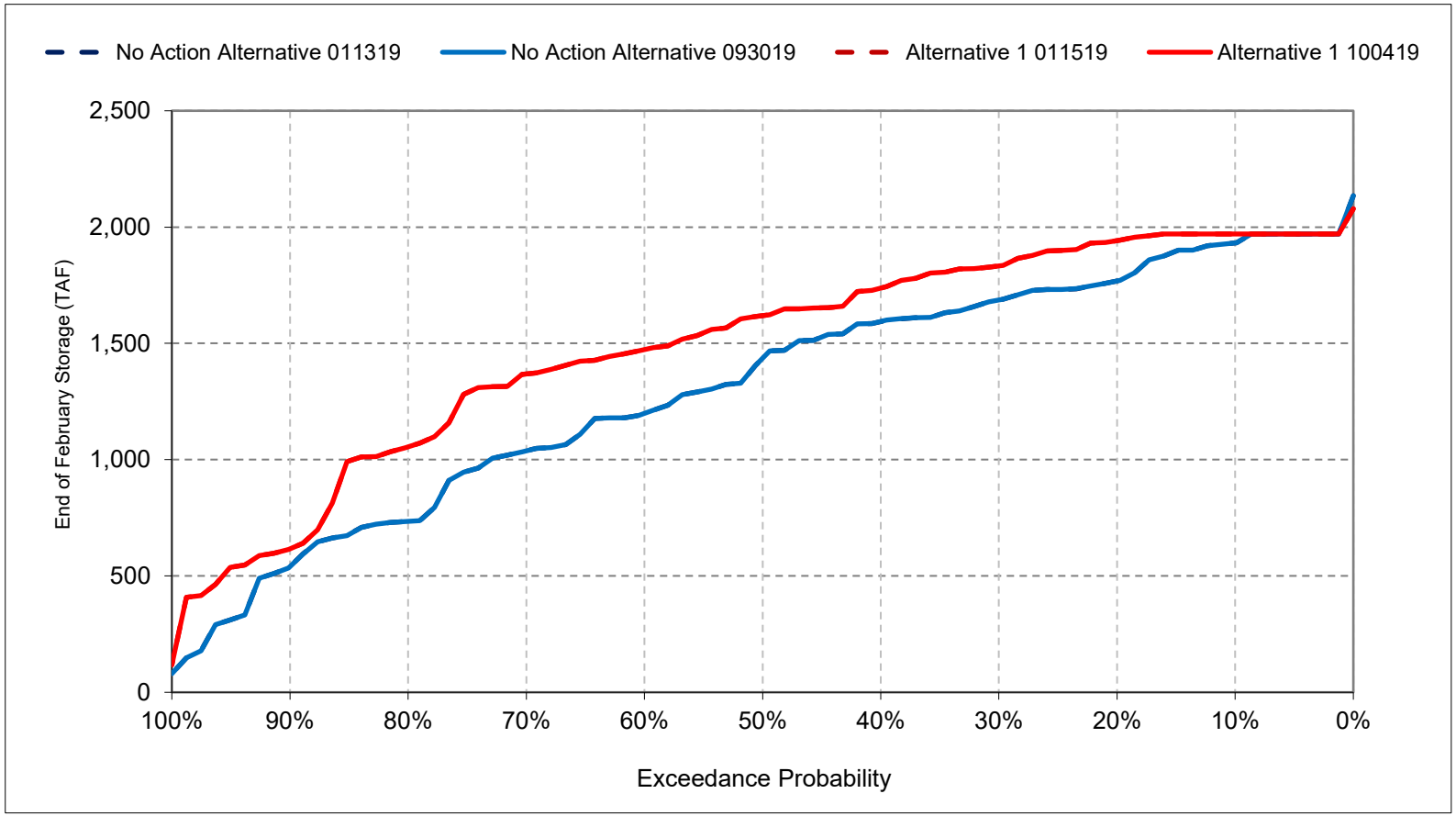

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-10. New Melones Storage, End of January Storage



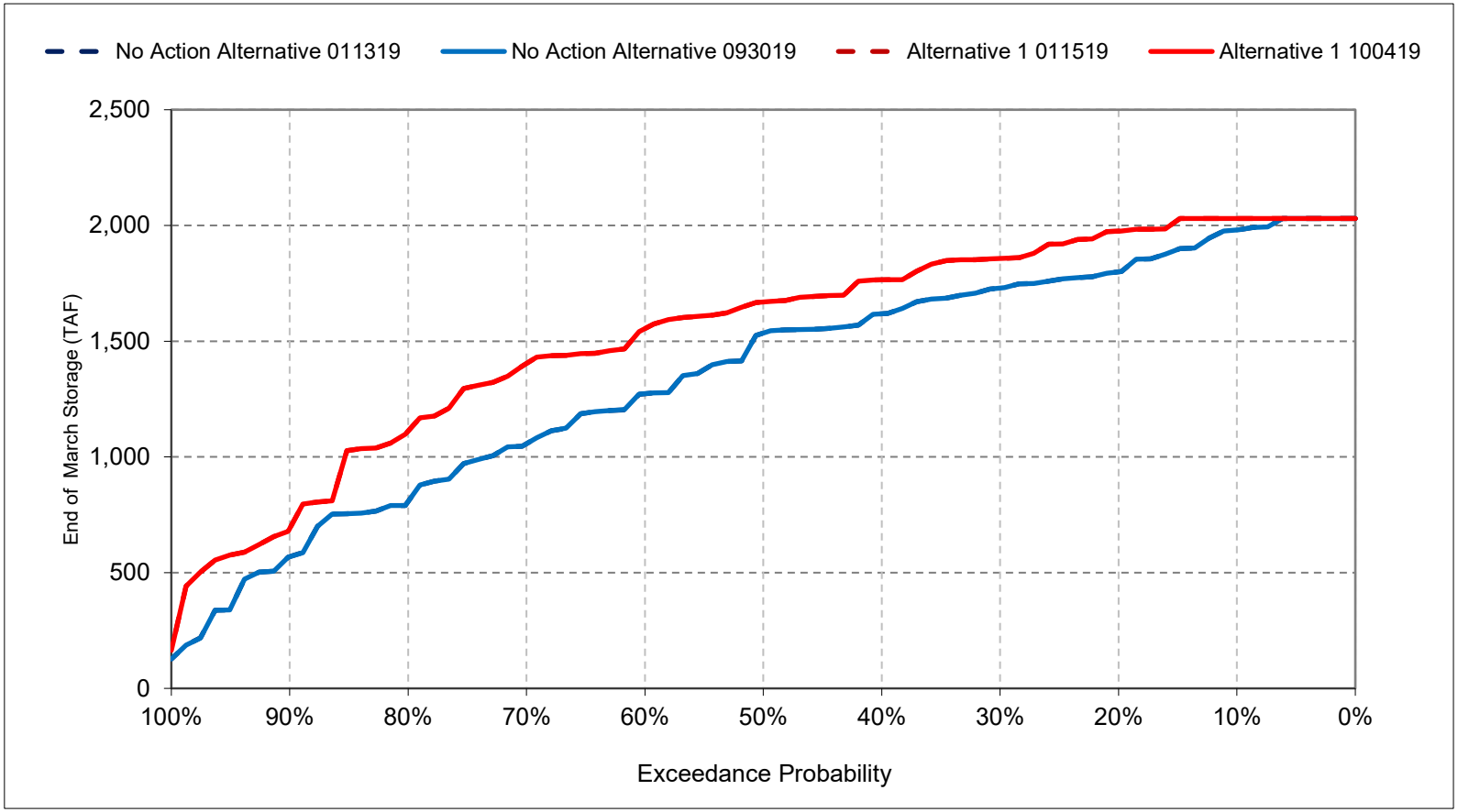

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-11. New Melones Storage, End of February Storage



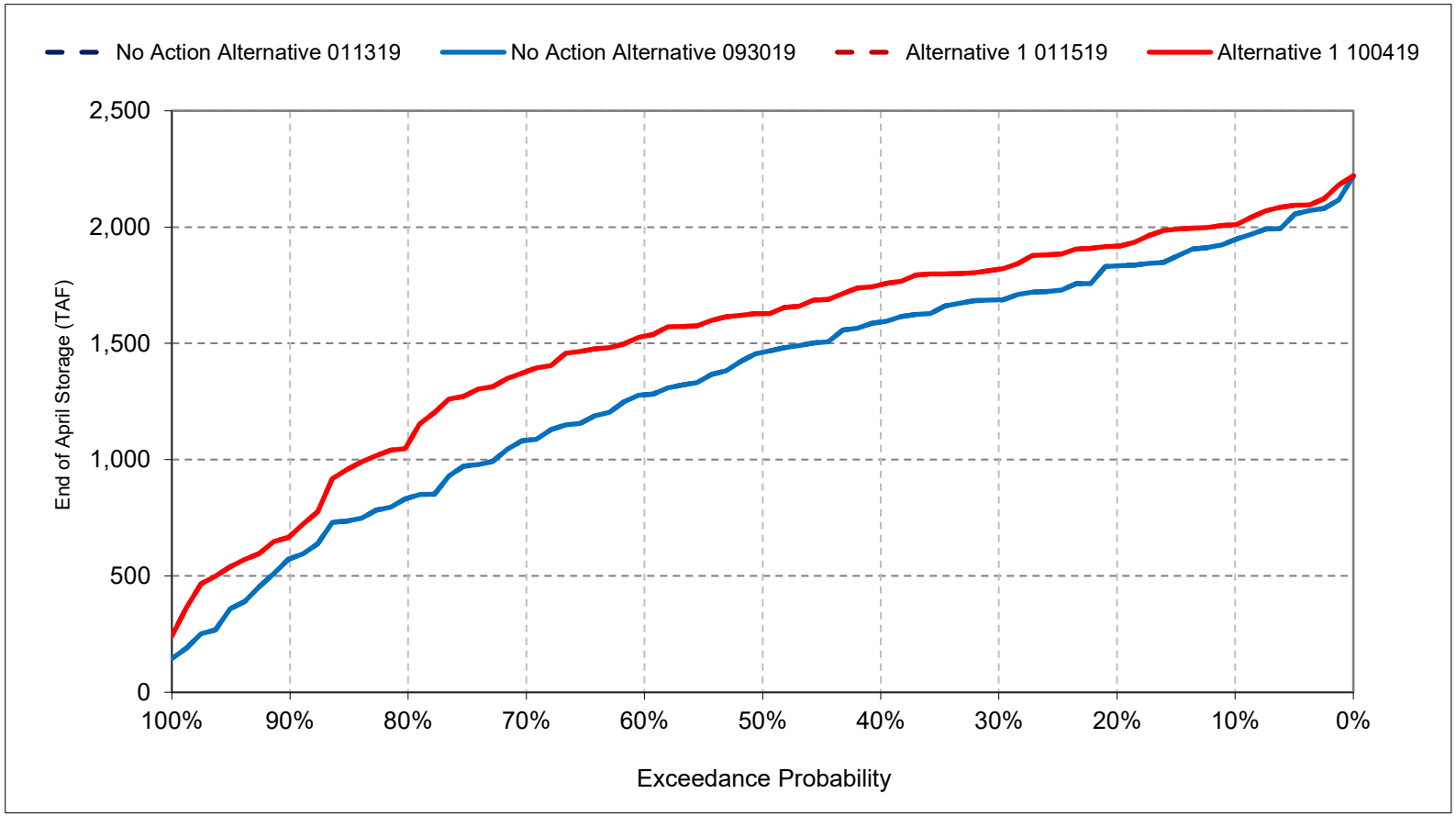

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-12. New Melones Storage, End of March Storage



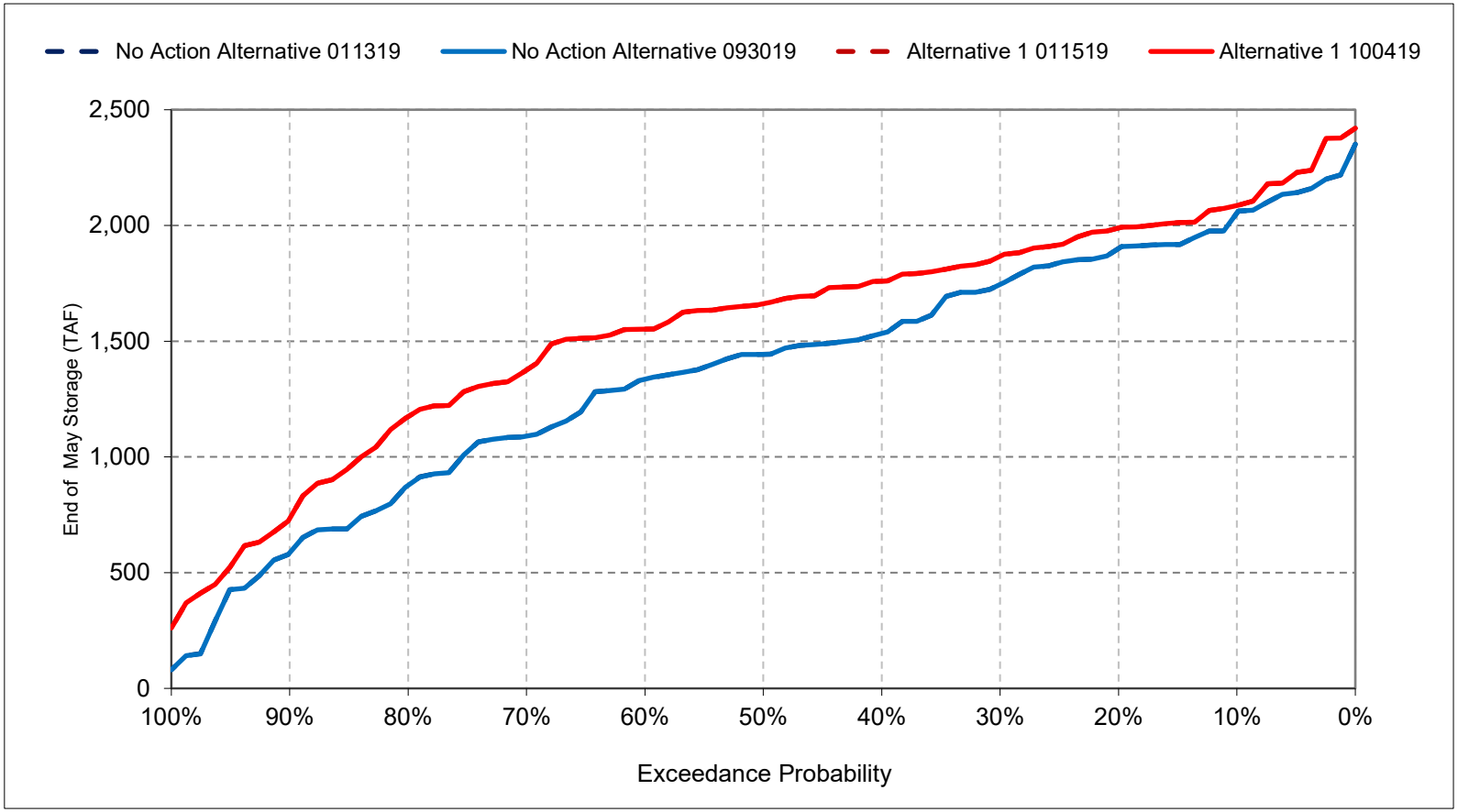

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-13. New Melones Storage, End of April Storage



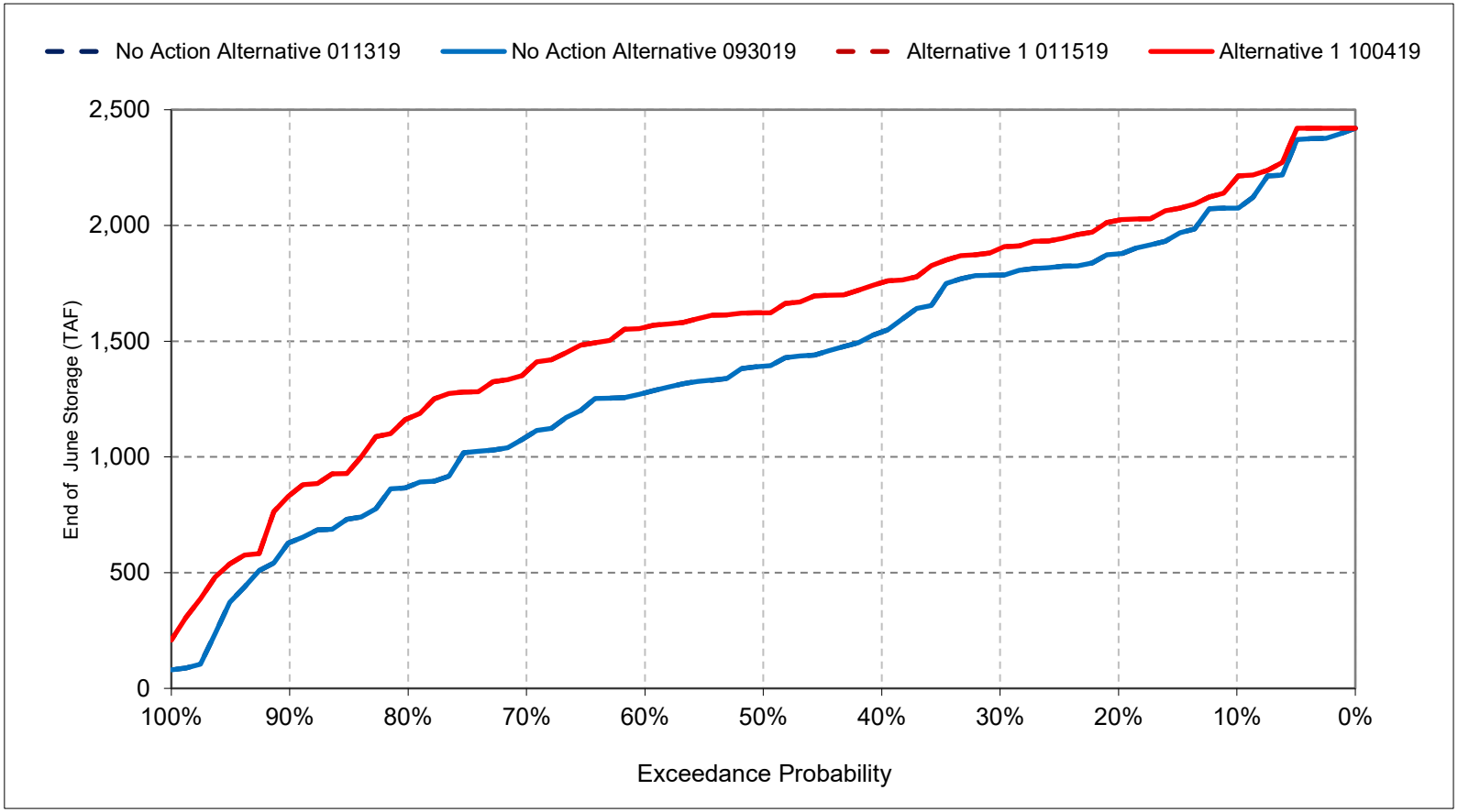

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-14. New Melones Storage, End of May Storage



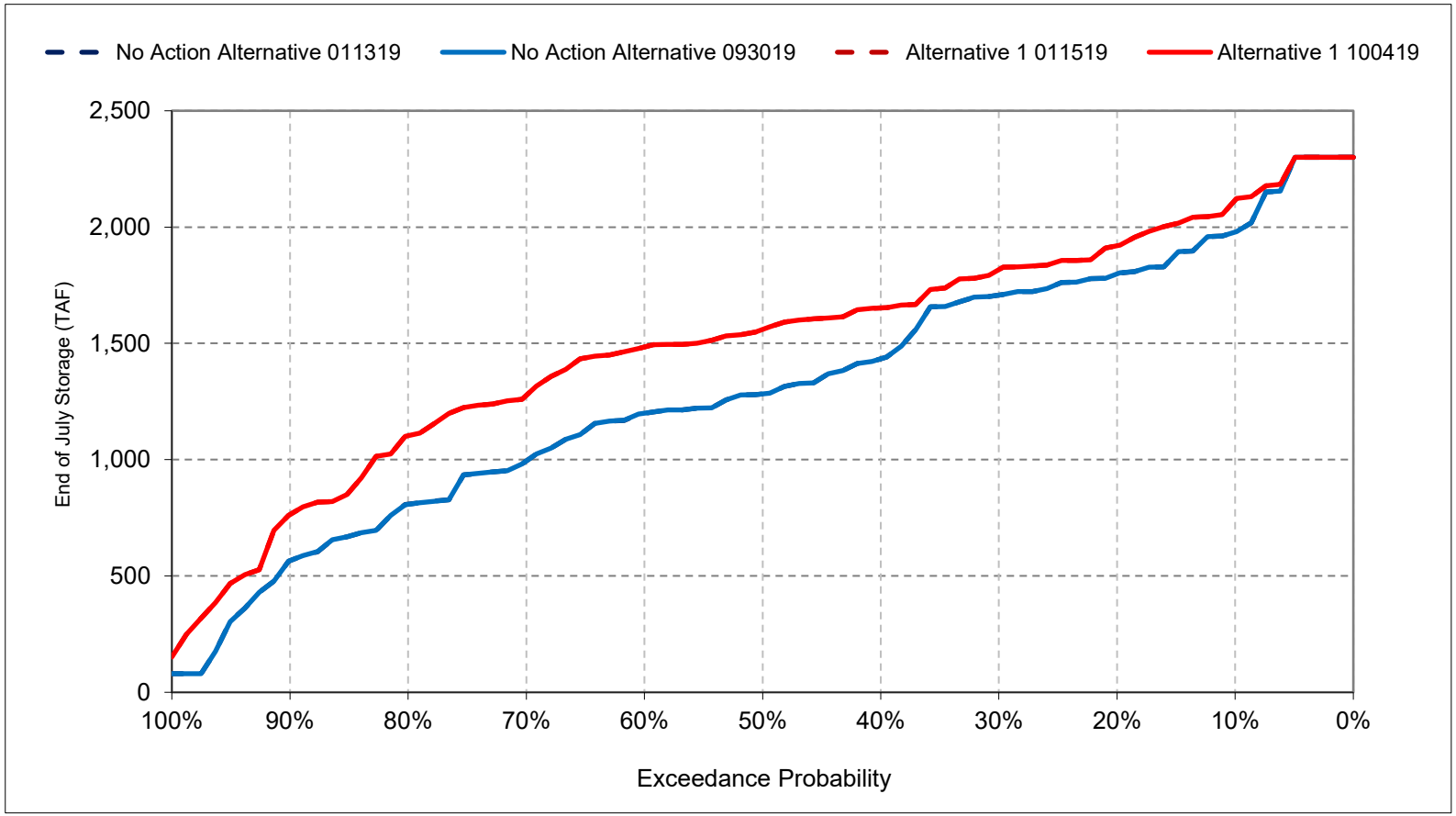

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-15. New Melones Storage, End of June Storage



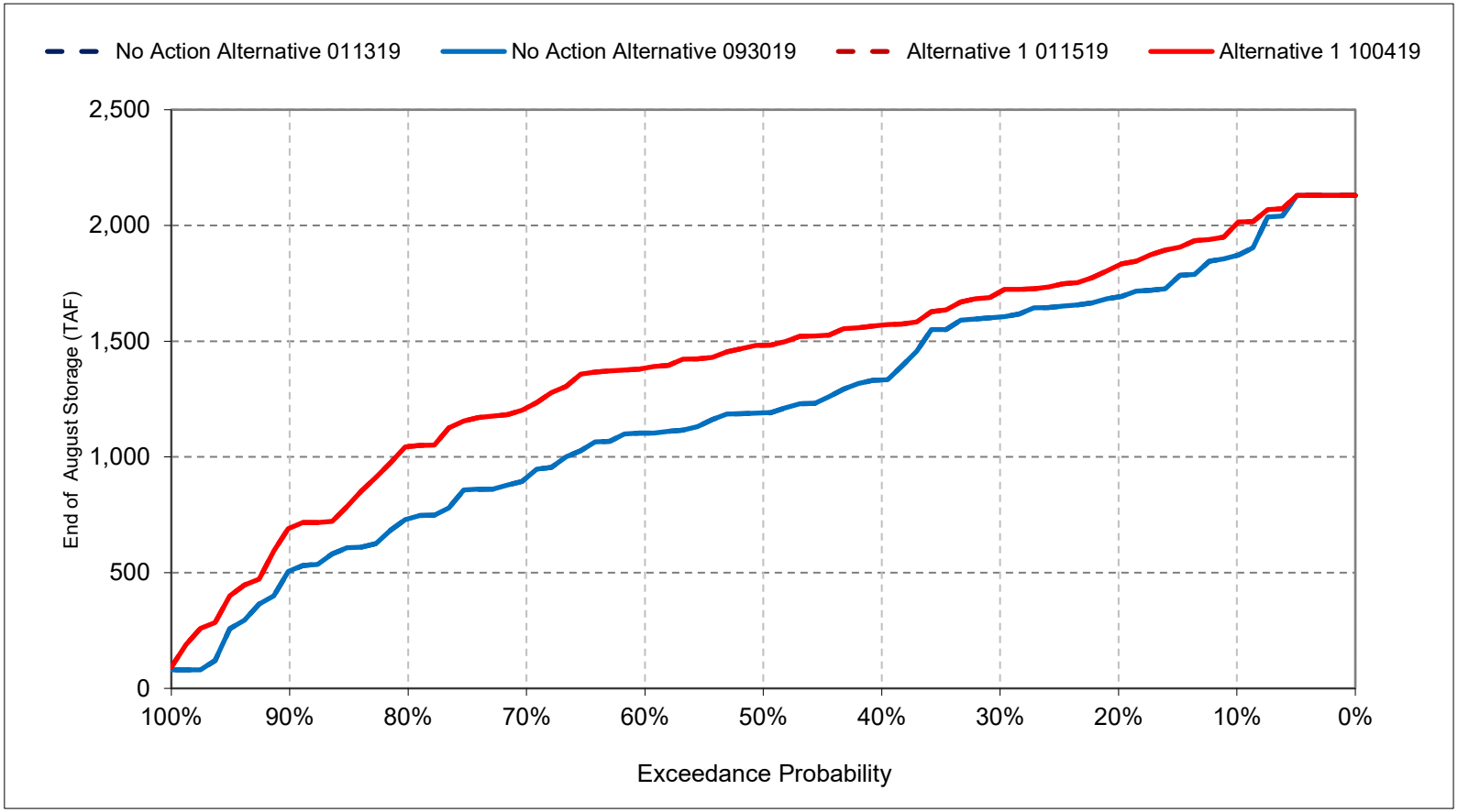

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-16. New Melones Storage, End of July Storage



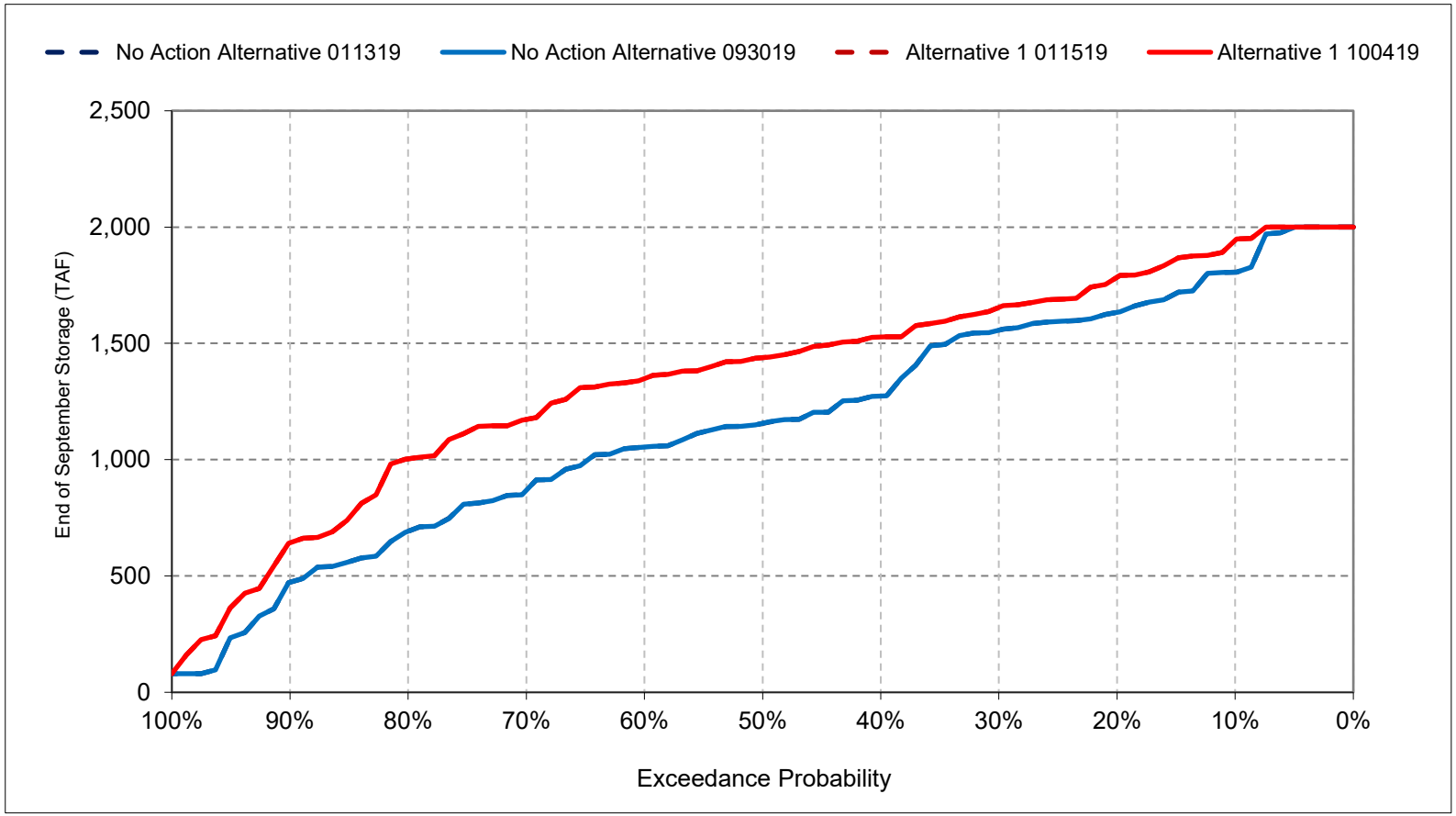

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-17. New Melones Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-18. New Melones Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7a-1. New Melones Reservoir, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 1,029 | 1,028 | 1,035 | 1,040 | 1,046 | 1,050 | 1,047 | 1,057 | 1,059 | 1,050 | 1,039 | 1,033 |
| **20%** | 1,013 | 1,015 | 1,017 | 1,021 | 1,029 | 1,032 | 1,036 | 1,043 | 1,040 | 1,032 | 1,021 | 1,016 |
| **30%** | 1,006 | 1,006 | 1,008 | 1,012 | 1,021 | 1,025 | 1,021 | 1,027 | 1,031 | 1,023 | 1,013 | 1,008 |
| **40%** | 975 | 976 | 995 | 1,004 | 1,012 | 1,014 | 1,011 | 1,006 | 1,006 | 995 | 983 | 976 |
| **50%** | 956 | 957 | 960 | 980 | 996 | 1,006 | 998 | 996 | 991 | 977 | 965 | 960 |
| **60%** | 943 | 945 | 950 | 959 | 966 | 976 | 976 | 984 | 976 | 966 | 953 | 947 |
| **70%** | 925 | 928 | 938 | 942 | 945 | 947 | 951 | 952 | 951 | 939 | 928 | 923 |
| **80%** | 879 | 881 | 886 | 887 | 897 | 912 | 918 | 924 | 923 | 912 | 897 | 888 |
| **90%** | 835 | 836 | 837 | 846 | 857 | 863 | 864 | 867 | 876 | 863 | 850 | 843 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 944 | 945 | 950 | 958 | 968 | 974 | 973 | 976 | 976 | 965 | 954 | 947 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 1,024 | 1,025 | 1,027 | 996 | 1,012 | 1,021 | 1,026 | 1,042 | 1,054 | 1,047 | 1,036 | 1,029 |
| **Above Normal (24%)** | 963 | 965 | 969 | 945 | 959 | 970 | 976 | 991 | 994 | 983 | 971 | 965 |
| **Below Normal (10%)** | 963 | 963 | 966 | 990 | 998 | 1,001 | 996 | 998 | 999 | 988 | 976 | 969 |
| **Dry (16%)** | 924 | 929 | 939 | 967 | 970 | 975 | 969 | 965 | 960 | 947 | 935 | 929 |
| **Critical (27%)** | 858 | 859 | 867 | 922 | 925 | 927 | 917 | 903 | 893 | 881 | 870 | 864 |

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 1,041 | 1,040 | 1,044 | 1,049 | 1,050 | 1,055 | 1,053 | 1,060 | 1,070 | 1,062 | 1,053 | 1,047 |
| **20%** | 1,027 | 1,027 | 1,030 | 1,038 | 1,047 | 1,050 | 1,044 | 1,051 | 1,054 | 1,044 | 1,035 | 1,031 |
| **30%** | 1,014 | 1,015 | 1,021 | 1,031 | 1,036 | 1,038 | 1,034 | 1,039 | 1,043 | 1,034 | 1,024 | 1,018 |
| **40%** | 1,003 | 1,006 | 1,011 | 1,017 | 1,026 | 1,029 | 1,028 | 1,028 | 1,028 | 1,018 | 1,009 | 1,005 |
| **50%** | 993 | 995 | 998 | 1,004 | 1,014 | 1,019 | 1,015 | 1,018 | 1,015 | 1,008 | 1,000 | 996 |
| **60%** | 981 | 984 | 987 | 993 | 999 | 1,008 | 1,005 | 1,007 | 1,008 | 1,001 | 990 | 985 |
| **70%** | 957 | 961 | 973 | 979 | 988 | 992 | 989 | 989 | 988 | 976 | 968 | 963 |
| **80%** | 937 | 937 | 942 | 943 | 947 | 955 | 949 | 963 | 962 | 953 | 946 | 941 |
| **90%** | 868 | 865 | 867 | 869 | 873 | 888 | 884 | 897 | 917 | 903 | 888 | 878 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 970 | 972 | 977 | 984 | 992 | 997 | 996 | 1,000 | 1,001 | 992 | 981 | 975 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 1,027 | 1,028 | 1,031 | 1,007 | 1,019 | 1,026 | 1,032 | 1,048 | 1,057 | 1,050 | 1,039 | 1,032 |
| **Above Normal (24%)** | 972 | 973 | 977 | 962 | 976 | 986 | 987 | 1,001 | 1,006 | 995 | 982 | 975 |
| **Below Normal (10%)** | 987 | 988 | 990 | 1,018 | 1,023 | 1,027 | 1,020 | 1,020 | 1,021 | 1,011 | 1,000 | 993 |
| **Dry (16%)** | 966 | 971 | 979 | 998 | 1,001 | 1,005 | 1,001 | 999 | 995 | 985 | 975 | 971 |
| **Critical (27%)** | 916 | 916 | 923 | 964 | 966 | 967 | 961 | 953 | 946 | 936 | 926 | 921 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 12 | 12 | 9 | 9 | 4 | 4 | 6 | 3 | 11 | 12 | 13 | 14 |
| **20%** | 13 | 12 | 13 | 17 | 17 | 18 | 8 | 9 | 14 | 12 | 14 | 15 |
| **30%** | 9 | 9 | 13 | 19 | 15 | 13 | 13 | 12 | 12 | 11 | 11 | 10 |
| **40%** | 27 | 30 | 16 | 14 | 14 | 15 | 16 | 23 | 22 | 22 | 26 | 29 |
| **50%** | 38 | 39 | 38 | 24 | 18 | 14 | 17 | 22 | 24 | 31 | 36 | 36 |
| **60%** | 38 | 39 | 37 | 34 | 34 | 32 | 29 | 24 | 32 | 35 | 37 | 38 |
| **70%** | 32 | 32 | 35 | 37 | 43 | 45 | 39 | 37 | 37 | 37 | 39 | 40 |
| **80%** | 58 | 55 | 55 | 57 | 50 | 43 | 31 | 39 | 38 | 41 | 49 | 52 |
| **90%** | 34 | 30 | 31 | 23 | 15 | 25 | 20 | 30 | 42 | 41 | 38 | 35 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 27 | 27 | 26 | 25 | 24 | 23 | 23 | 24 | 26 | 27 | 27 | 28 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 3 | 3 | 4 | 11 | 7 | 6 | 6 | 6 | 4 | 3 | 3 | 3 |
| **Above Normal (24%)** | 9 | 9 | 9 | 17 | 16 | 16 | 11 | 9 | 12 | 12 | 11 | 11 |
| **Below Normal (10%)** | 24 | 24 | 24 | 28 | 26 | 25 | 24 | 22 | 22 | 22 | 24 | 25 |
| **Dry (16%)** | 42 | 41 | 40 | 31 | 31 | 30 | 32 | 34 | 35 | 38 | 40 | 42 |
| **Critical (27%)** | 57 | 57 | 56 | 41 | 41 | 40 | 44 | 49 | 53 | 55 | 56 | 57 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7a-2. New Melones Reservoir, End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,029 | 1,028 | 1,035 | 1,040 | 1,046 | 1,050 | 1,047 | 1,057 | 1,059 | 1,050 | 1,039 | 1,033 |
| 20% | 1,013 | 1,015 | 1,017 | 1,021 | 1,029 | 1,032 | 1,036 | 1,043 | 1,040 | 1,032 | 1,022 | 1,016 |
| 30% | 1,006 | 1,006 | 1,008 | 1,012 | 1,021 | 1,025 | 1,021 | 1,027 | 1,031 | 1,023 | 1,013 | 1,008 |
| 40% | 975 | 976 | 995 | 1,004 | 1,012 | 1,014 | 1,011 | 1,006 | 1,006 | 995 | 983 | 976 |
| 50% | 956 | 957 | 960 | 980 | 996 | 1,006 | 998 | 996 | 991 | 977 | 965 | 960 |
| 60% | 943 | 945 | 950 | 959 | 966 | 976 | 976 | 984 | 976 | 966 | 953 | 947 |
| 70% | 925 | 928 | 938 | 942 | 945 | 947 | 951 | 952 | 951 | 939 | 928 | 923 |
| 80% | 879 | 881 | 886 | 887 | 897 | 912 | 918 | 924 | 923 | 912 | 897 | 888 |
| 90% | 835 | 836 | 837 | 846 | 857 | 863 | 864 | 867 | 876 | 863 | 850 | 843 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 944 | 945 | 950 | 958 | 968 | 974 | 973 | 976 | 976 | 965 | 954 | 947 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,024 | 1,025 | 1,027 | 996 | 1,012 | 1,021 | 1,026 | 1,042 | 1,054 | 1,047 | 1,036 | 1,029 |
| Above Normal (24%) | 963 | 965 | 969 | 945 | 959 | 970 | 976 | 991 | 994 | 983 | 971 | 965 |
| Below Normal (10%) | 963 | 963 | 966 | 990 | 998 | 1,001 | 996 | 998 | 999 | 988 | 976 | 969 |
| Dry (16%) | 924 | 929 | 939 | 967 | 970 | 975 | 969 | 965 | 960 | 947 | 935 | 929 |
| Critical (27%) | 858 | 859 | 867 | 922 | 925 | 927 | 917 | 903 | 893 | 881 | 870 | 864 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,041 | 1,040 | 1,044 | 1,049 | 1,050 | 1,055 | 1,053 | 1,060 | 1,070 | 1,062 | 1,053 | 1,047 |
| 20% | 1,027 | 1,027 | 1,030 | 1,038 | 1,047 | 1,050 | 1,044 | 1,051 | 1,054 | 1,044 | 1,035 | 1,031 |
| 30% | 1,014 | 1,015 | 1,021 | 1,031 | 1,036 | 1,038 | 1,034 | 1,039 | 1,043 | 1,034 | 1,024 | 1,018 |
| 40% | 1,003 | 1,006 | 1,011 | 1,017 | 1,026 | 1,029 | 1,028 | 1,028 | 1,028 | 1,018 | 1,009 | 1,005 |
| 50% | 993 | 995 | 998 | 1,004 | 1,014 | 1,019 | 1,015 | 1,018 | 1,015 | 1,008 | 1,000 | 996 |
| 60% | 981 | 984 | 987 | 993 | 999 | 1,008 | 1,005 | 1,007 | 1,008 | 1,001 | 990 | 985 |
| 70% | 957 | 961 | 973 | 979 | 988 | 992 | 989 | 989 | 988 | 976 | 968 | 963 |
| 80% | 937 | 937 | 942 | 943 | 947 | 955 | 949 | 963 | 962 | 953 | 946 | 941 |
| 90% | 868 | 865 | 867 | 869 | 873 | 888 | 884 | 897 | 917 | 903 | 888 | 878 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 970 | 972 | 977 | 984 | 992 | 997 | 996 | 1,000 | 1,001 | 992 | 981 | 975 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,027 | 1,028 | 1,031 | 1,007 | 1,019 | 1,026 | 1,032 | 1,048 | 1,057 | 1,050 | 1,039 | 1,032 |
| Above Normal (24%) | 972 | 973 | 977 | 962 | 976 | 986 | 987 | 1,001 | 1,006 | 995 | 982 | 975 |
| Below Normal (10%) | 987 | 988 | 990 | 1,018 | 1,023 | 1,027 | 1,020 | 1,020 | 1,021 | 1,011 | 1,000 | 993 |
| Dry (16%) | 966 | 971 | 979 | 998 | 1,001 | 1,005 | 1,001 | 999 | 995 | 985 | 975 | 971 |
| Critical (27%) | 916 | 916 | 923 | 964 | 966 | 967 | 961 | 953 | 946 | 936 | 926 | 921 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 12 | 12 | 9 | 9 | 4 | 4 | 6 | 3 | 11 | 12 | 13 | 14 |
| 20% | 13 | 12 | 13 | 17 | 17 | 18 | 9 | 9 | 14 | 12 | 14 | 15 |
| 30% | 9 | 9 | 13 | 19 | 15 | 13 | 13 | 12 | 12 | 11 | 11 | 10 |
| 40% | 27 | 30 | 16 | 14 | 14 | 15 | 16 | 23 | 22 | 22 | 26 | 29 |
| 50% | 38 | 39 | 38 | 24 | 18 | 14 | 17 | 22 | 23 | 31 | 36 | 36 |
| 60% | 38 | 39 | 37 | 34 | 34 | 32 | 29 | 24 | 32 | 35 | 37 | 38 |
| 70% | 32 | 32 | 35 | 37 | 43 | 45 | 39 | 37 | 37 | 37 | 39 | 40 |
| 80% | 58 | 55 | 55 | 57 | 50 | 43 | 31 | 39 | 39 | 41 | 49 | 52 |
| 90% | 34 | 30 | 30 | 23 | 15 | 25 | 20 | 30 | 42 | 41 | 38 | 35 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 27 | 27 | 26 | 25 | 24 | 23 | 23 | 24 | 26 | 27 | 27 | 28 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3 | 3 | 4 | 11 | 7 | 6 | 6 | 6 | 4 | 3 | 3 | 3 |
| Above Normal (24%) | 9 | 9 | 9 | 17 | 16 | 16 | 11 | 9 | 12 | 12 | 11 | 11 |
| Below Normal (10%) | 24 | 24 | 24 | 28 | 26 | 25 | 24 | 22 | 22 | 22 | 24 | 24 |
| Dry (16%) | 42 | 41 | 40 | 31 | 31 | 30 | 32 | 34 | 35 | 38 | 40 | 42 |
| Critical (27%) | 57 | 57 | 56 | 41 | 41 | 40 | 44 | 49 | 53 | 55 | 56 | 57 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7a-3. New Melones Reservoir, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,029 | 1,028 | 1,035 | 1,040 | 1,046 | 1,050 | 1,047 | 1,057 | 1,059 | 1,050 | 1,039 | 1,033 |
| 20% | 1,013 | 1,015 | 1,017 | 1,021 | 1,029 | 1,032 | 1,036 | 1,043 | 1,040 | 1,032 | 1,021 | 1,016 |
| 30% | 1,006 | 1,006 | 1,008 | 1,012 | 1,021 | 1,025 | 1,021 | 1,027 | 1,031 | 1,023 | 1,013 | 1,008 |
| 40% | 975 | 976 | 995 | 1,004 | 1,012 | 1,014 | 1,011 | 1,006 | 1,006 | 995 | 983 | 976 |
| 50% | 956 | 957 | 960 | 980 | 996 | 1,006 | 998 | 996 | 991 | 977 | 965 | 960 |
| 60% | 943 | 945 | 950 | 959 | 966 | 976 | 976 | 984 | 976 | 966 | 953 | 947 |
| 70% | 925 | 928 | 938 | 942 | 945 | 947 | 951 | 952 | 951 | 939 | 928 | 923 |
| 80% | 879 | 881 | 886 | 887 | 897 | 912 | 918 | 924 | 923 | 912 | 897 | 888 |
| 90% | 835 | 836 | 837 | 846 | 857 | 863 | 864 | 867 | 876 | 863 | 850 | 843 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 944 | 945 | 950 | 958 | 968 | 974 | 973 | 976 | 976 | 965 | 954 | 947 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,024 | 1,025 | 1,027 | 996 | 1,012 | 1,021 | 1,026 | 1,042 | 1,054 | 1,047 | 1,036 | 1,029 |
| Above Normal (24%) | 963 | 965 | 969 | 945 | 959 | 970 | 976 | 991 | 994 | 983 | 971 | 965 |
| Below Normal (10%) | 963 | 963 | 966 | 990 | 998 | 1,001 | 996 | 998 | 999 | 988 | 976 | 969 |
| Dry (16%) | 924 | 929 | 939 | 967 | 970 | 975 | 969 | 965 | 960 | 947 | 935 | 929 |
| Critical (27%) | 858 | 859 | 867 | 922 | 925 | 927 | 917 | 903 | 893 | 881 | 870 | 864 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,029 | 1,028 | 1,035 | 1,040 | 1,046 | 1,050 | 1,047 | 1,057 | 1,059 | 1,050 | 1,039 | 1,033 |
| 20% | 1,013 | 1,015 | 1,017 | 1,021 | 1,029 | 1,032 | 1,036 | 1,043 | 1,040 | 1,032 | 1,022 | 1,016 |
| 30% | 1,006 | 1,006 | 1,008 | 1,012 | 1,021 | 1,025 | 1,021 | 1,027 | 1,031 | 1,023 | 1,013 | 1,008 |
| 40% | 975 | 976 | 995 | 1,004 | 1,012 | 1,014 | 1,011 | 1,006 | 1,006 | 995 | 983 | 976 |
| 50% | 956 | 957 | 960 | 980 | 996 | 1,006 | 998 | 996 | 991 | 977 | 965 | 960 |
| 60% | 943 | 945 | 950 | 959 | 966 | 976 | 976 | 984 | 976 | 966 | 953 | 947 |
| 70% | 925 | 928 | 938 | 942 | 945 | 947 | 951 | 952 | 951 | 939 | 928 | 923 |
| 80% | 879 | 881 | 886 | 887 | 897 | 912 | 918 | 924 | 923 | 912 | 897 | 888 |
| 90% | 835 | 836 | 837 | 846 | 857 | 863 | 864 | 867 | 876 | 863 | 850 | 843 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 944 | 945 | 950 | 958 | 968 | 974 | 973 | 976 | 976 | 965 | 954 | 947 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,024 | 1,025 | 1,027 | 996 | 1,012 | 1,021 | 1,026 | 1,042 | 1,054 | 1,047 | 1,036 | 1,029 |
| Above Normal (24%) | 963 | 965 | 969 | 945 | 959 | 970 | 976 | 991 | 994 | 983 | 971 | 965 |
| Below Normal (10%) | 963 | 963 | 966 | 990 | 998 | 1,001 | 996 | 998 | 999 | 988 | 976 | 969 |
| Dry (16%) | 924 | 929 | 939 | 967 | 970 | 975 | 969 | 965 | 960 | 947 | 935 | 929 |
| Critical (27%) | 858 | 859 | 867 | 922 | 925 | 927 | 917 | 903 | 893 | 881 | 870 | 864 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7a-4. New Melones Reservoir, End of Month Elevation

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,041 | 1,040 | 1,044 | 1,049 | 1,050 | 1,055 | 1,053 | 1,060 | 1,070 | 1,062 | 1,053 | 1,047 |
| 20% | 1,027 | 1,027 | 1,030 | 1,038 | 1,047 | 1,050 | 1,044 | 1,051 | 1,054 | 1,044 | 1,035 | 1,031 |
| 30% | 1,014 | 1,015 | 1,021 | 1,031 | 1,036 | 1,038 | 1,034 | 1,039 | 1,043 | 1,034 | 1,024 | 1,018 |
| 40% | 1,003 | 1,006 | 1,011 | 1,017 | 1,026 | 1,029 | 1,028 | 1,028 | 1,028 | 1,018 | 1,009 | 1,005 |
| 50% | 993 | 995 | 998 | 1,004 | 1,014 | 1,019 | 1,015 | 1,018 | 1,015 | 1,008 | 1,000 | 996 |
| 60% | 981 | 984 | 987 | 993 | 999 | 1,008 | 1,005 | 1,007 | 1,008 | 1,001 | 990 | 985 |
| 70% | 957 | 961 | 973 | 979 | 988 | 992 | 989 | 989 | 988 | 976 | 968 | 963 |
| 80% | 937 | 937 | 942 | 943 | 947 | 955 | 949 | 963 | 962 | 953 | 946 | 941 |
| 90% | 868 | 865 | 867 | 869 | 873 | 888 | 884 | 897 | 917 | 903 | 888 | 878 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 970 | 972 | 977 | 984 | 992 | 997 | 996 | 1,000 | 1,001 | 992 | 981 | 975 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,027 | 1,028 | 1,031 | 1,007 | 1,019 | 1,026 | 1,032 | 1,048 | 1,057 | 1,050 | 1,039 | 1,032 |
| Above Normal (24%) | 972 | 973 | 977 | 962 | 976 | 986 | 987 | 1,001 | 1,006 | 995 | 982 | 975 |
| Below Normal (10%) | 987 | 988 | 990 | 1,018 | 1,023 | 1,027 | 1,020 | 1,020 | 1,021 | 1,011 | 1,000 | 993 |
| Dry (16%) | 966 | 971 | 979 | 998 | 1,001 | 1,005 | 1,001 | 999 | 995 | 985 | 975 | 971 |
| Critical (27%) | 916 | 916 | 923 | 964 | 966 | 967 | 961 | 953 | 946 | 936 | 926 | 921 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,041 | 1,040 | 1,044 | 1,049 | 1,050 | 1,055 | 1,053 | 1,060 | 1,070 | 1,062 | 1,053 | 1,047 |
| 20% | 1,027 | 1,027 | 1,030 | 1,038 | 1,047 | 1,050 | 1,044 | 1,051 | 1,054 | 1,044 | 1,035 | 1,031 |
| 30% | 1,014 | 1,015 | 1,021 | 1,031 | 1,036 | 1,038 | 1,034 | 1,039 | 1,043 | 1,034 | 1,024 | 1,018 |
| 40% | 1,003 | 1,006 | 1,011 | 1,017 | 1,026 | 1,029 | 1,028 | 1,028 | 1,028 | 1,018 | 1,009 | 1,005 |
| 50% | 993 | 995 | 998 | 1,004 | 1,014 | 1,019 | 1,015 | 1,018 | 1,015 | 1,008 | 1,000 | 996 |
| 60% | 981 | 984 | 987 | 993 | 999 | 1,008 | 1,005 | 1,007 | 1,008 | 1,001 | 990 | 985 |
| 70% | 957 | 961 | 973 | 979 | 988 | 992 | 989 | 989 | 988 | 976 | 968 | 963 |
| 80% | 937 | 937 | 942 | 943 | 947 | 955 | 949 | 963 | 962 | 953 | 946 | 941 |
| 90% | 868 | 865 | 867 | 869 | 873 | 888 | 884 | 897 | 917 | 903 | 888 | 878 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 970 | 972 | 977 | 984 | 992 | 997 | 996 | 1,000 | 1,001 | 992 | 981 | 975 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,027 | 1,028 | 1,031 | 1,007 | 1,019 | 1,026 | 1,032 | 1,048 | 1,057 | 1,050 | 1,039 | 1,032 |
| Above Normal (24%) | 972 | 973 | 977 | 962 | 976 | 986 | 987 | 1,001 | 1,006 | 995 | 982 | 975 |
| Below Normal (10%) | 987 | 988 | 990 | 1,018 | 1,023 | 1,027 | 1,020 | 1,020 | 1,021 | 1,011 | 1,000 | 993 |
| Dry (16%) | 966 | 971 | 979 | 998 | 1,001 | 1,005 | 1,001 | 999 | 995 | 985 | 975 | 971 |
| Critical (27%) | 916 | 916 | 923 | 964 | 966 | 967 | 961 | 953 | 946 | 936 | 926 | 921 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

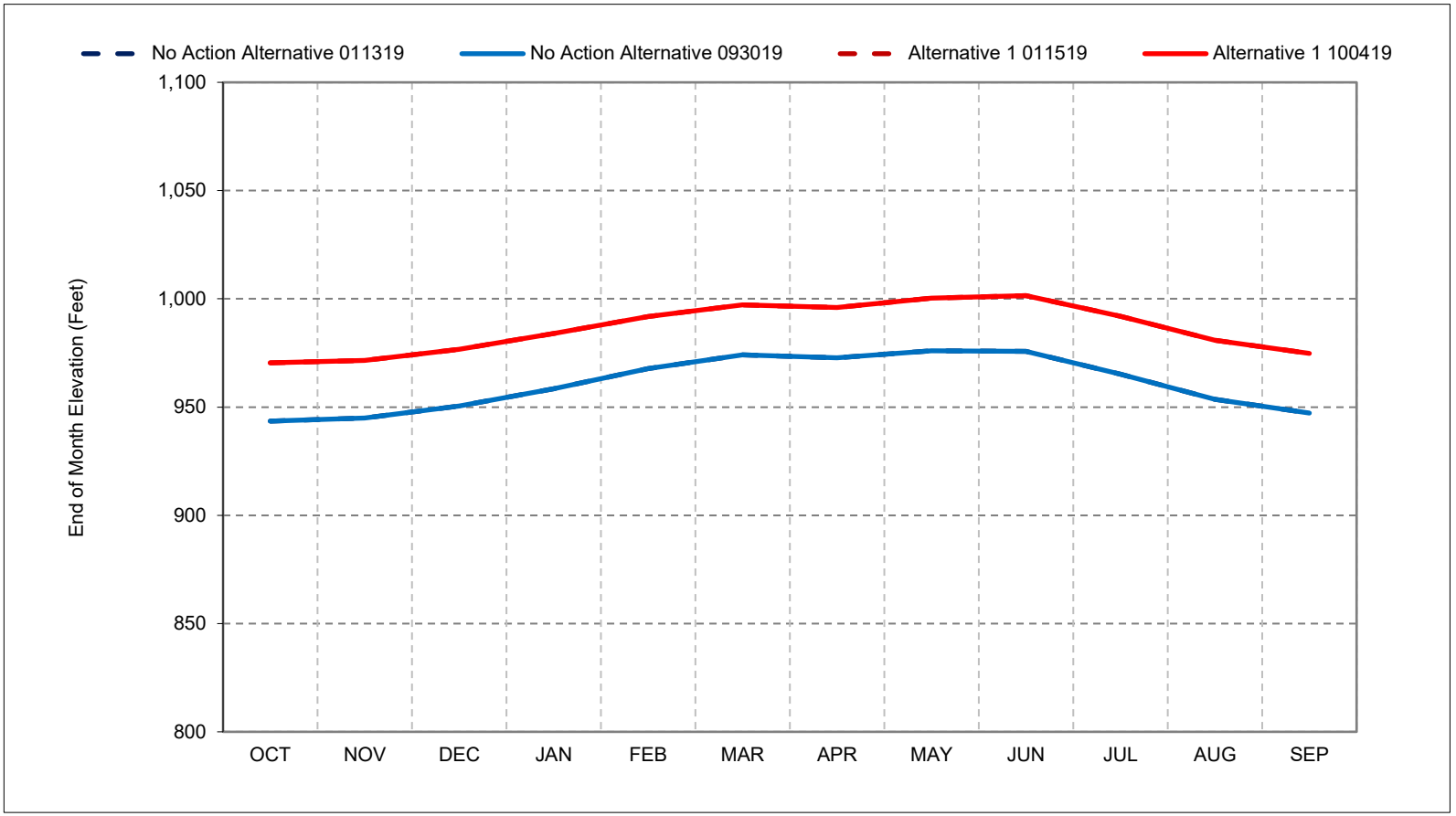
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-1. New Melones Reservoir, Long-Term Average Elevation

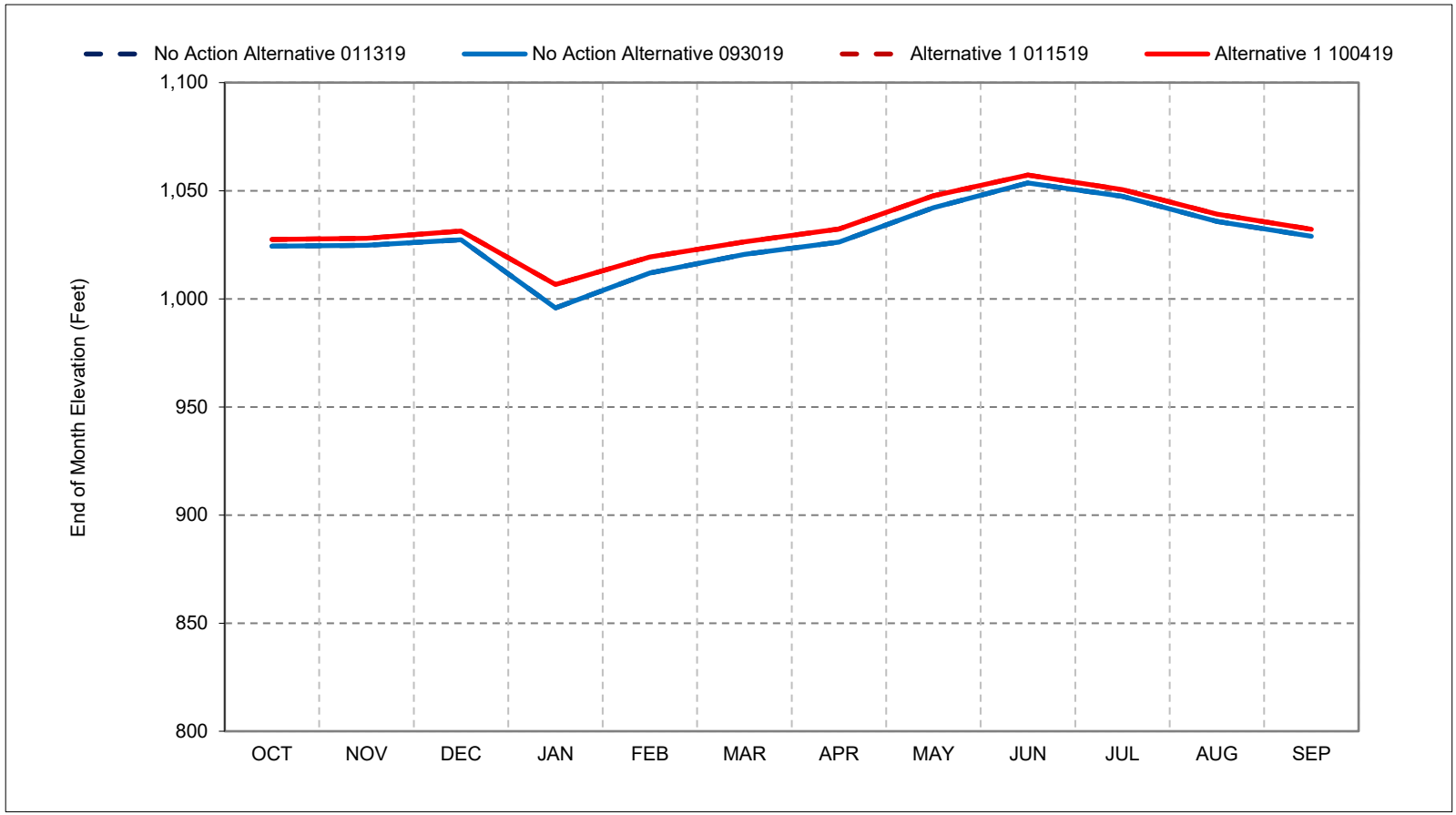



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-2. New Melones Reservoir, Wet Year Average Elevation

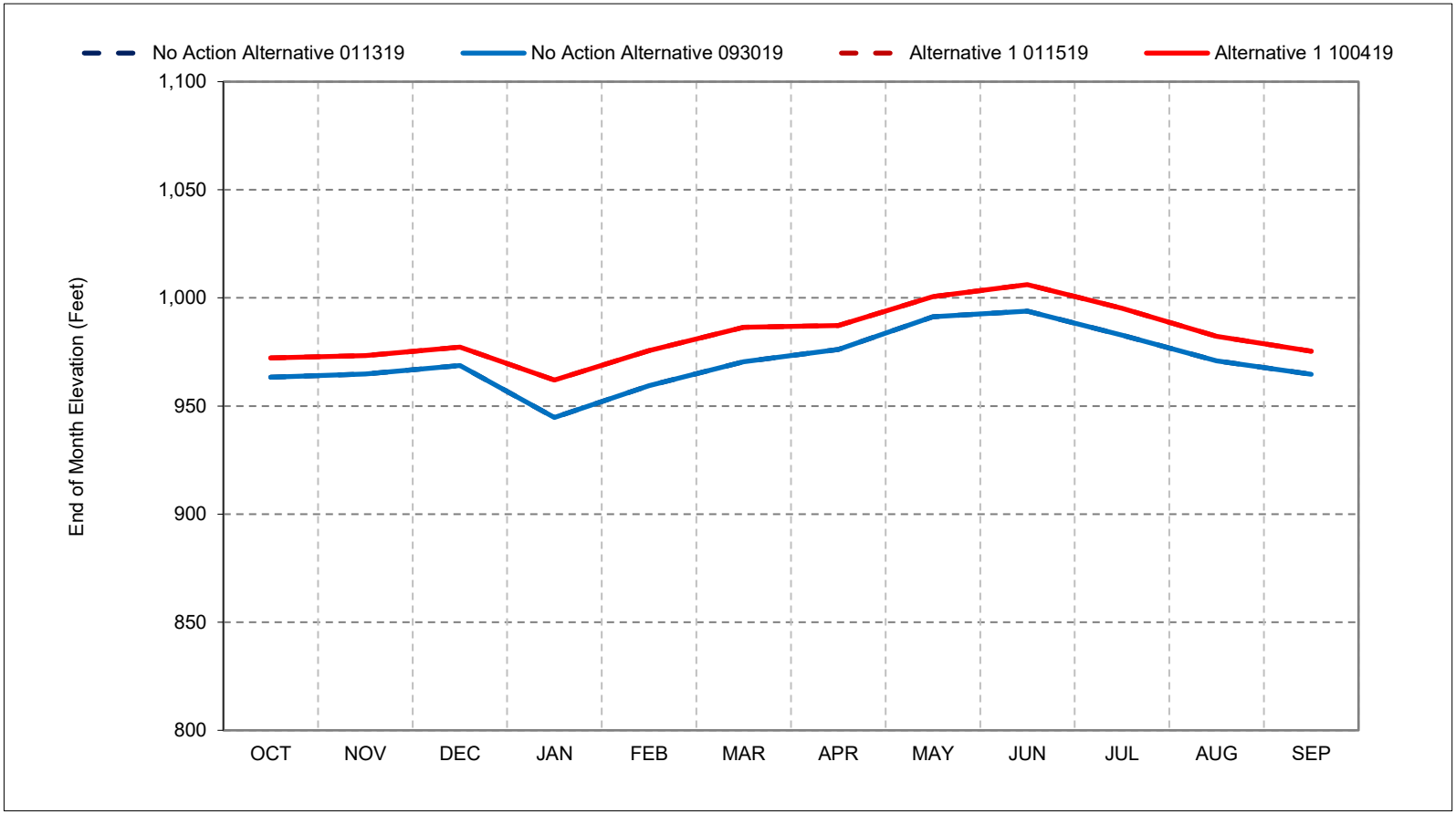



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-3. New Melones Reservoir, Above Normal Year Average Elevation

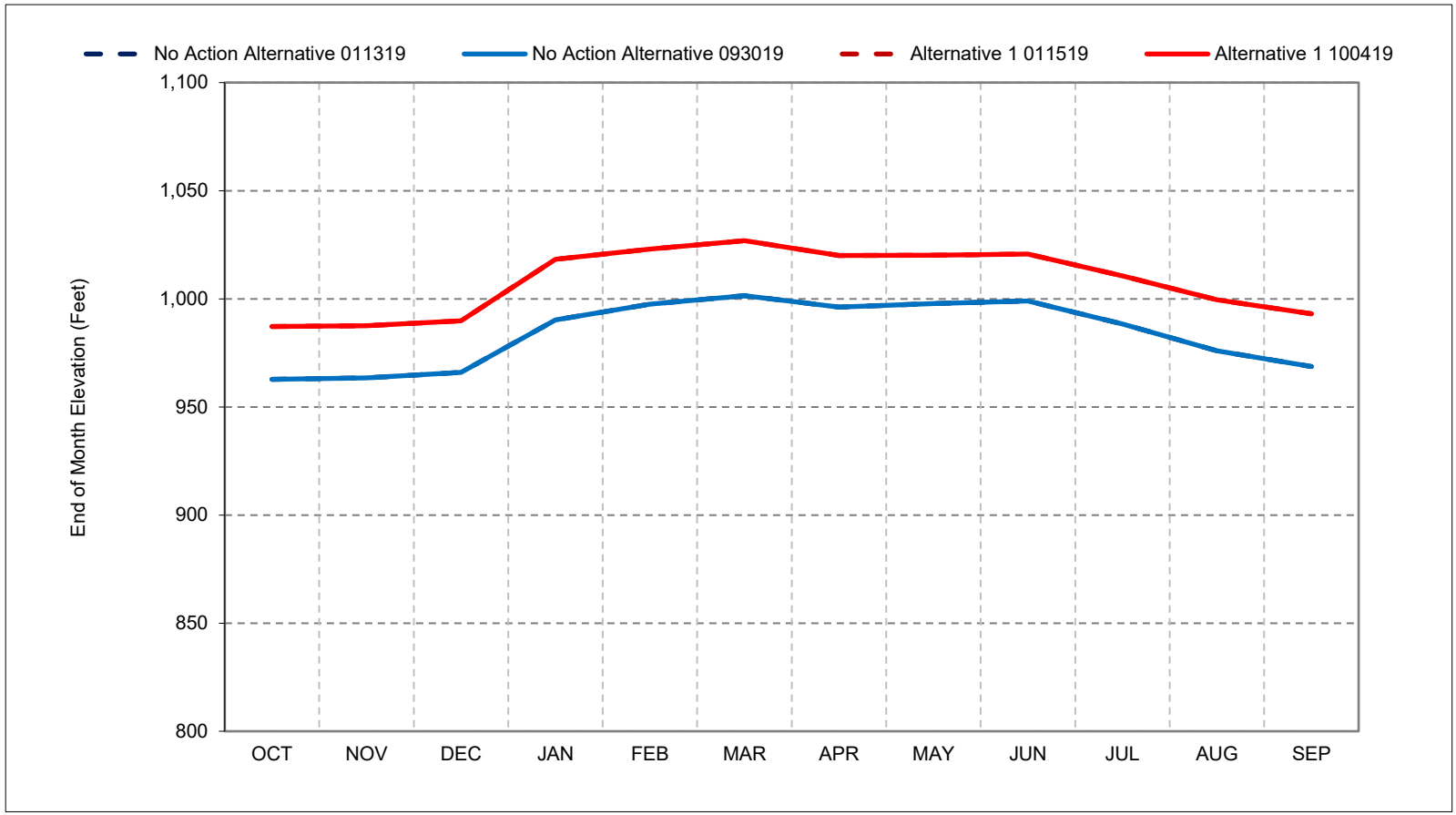



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-4. New Melones Reservoir, Below Normal Year Average Elevation

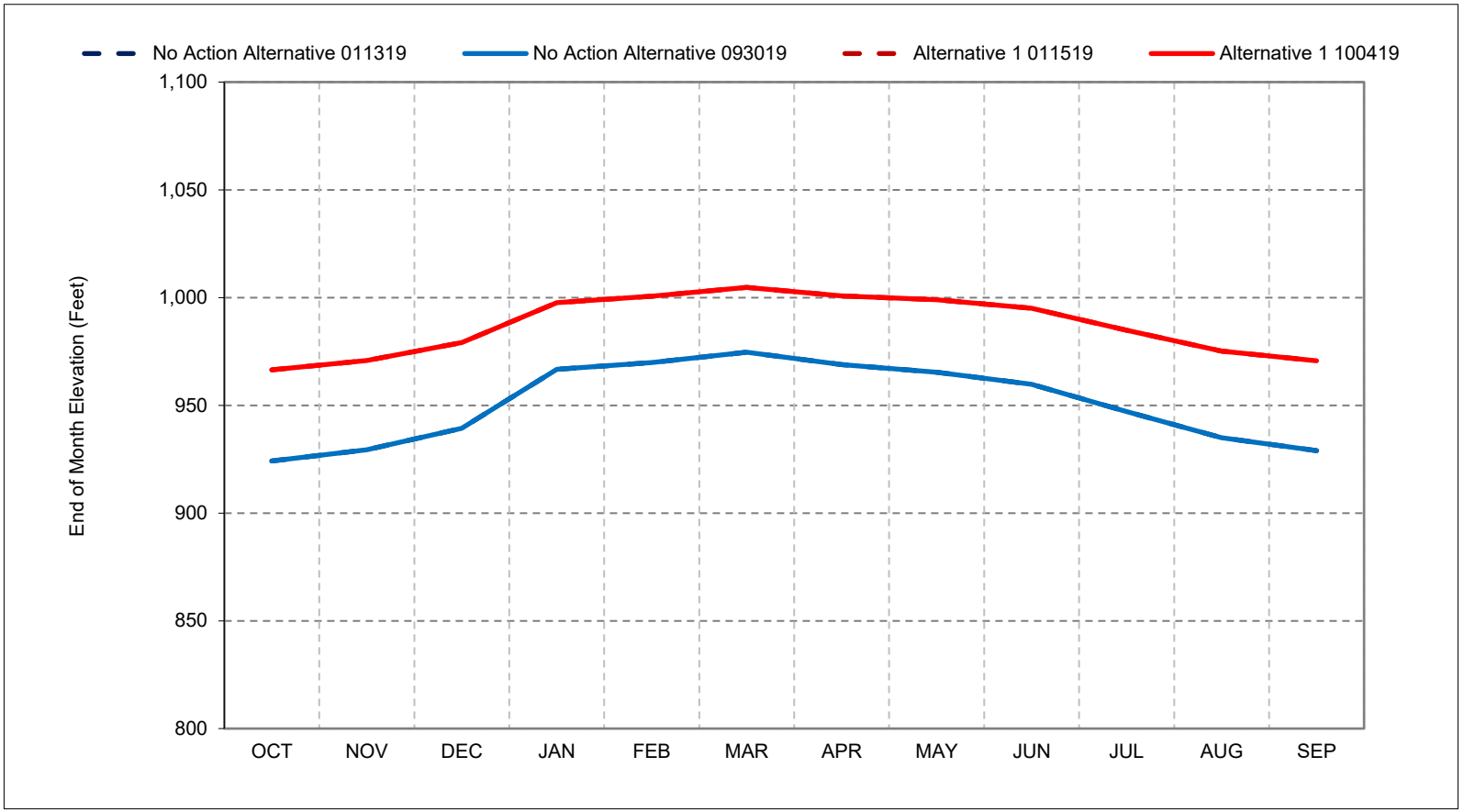



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-5. New Melones Reservoir, Dry Year Average Elevation

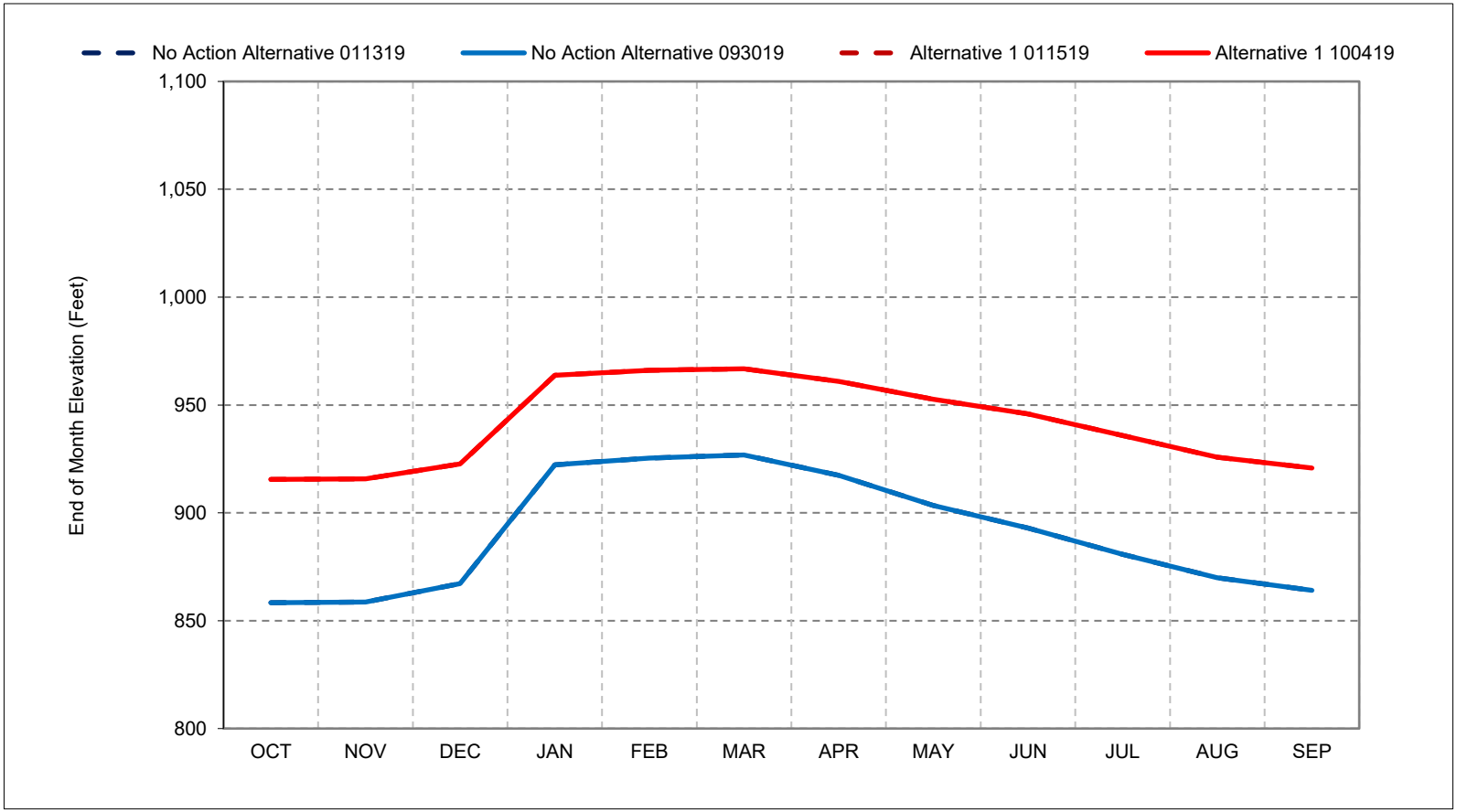



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7a-6. New Melones Reservoir, Critical Year Average Elevation

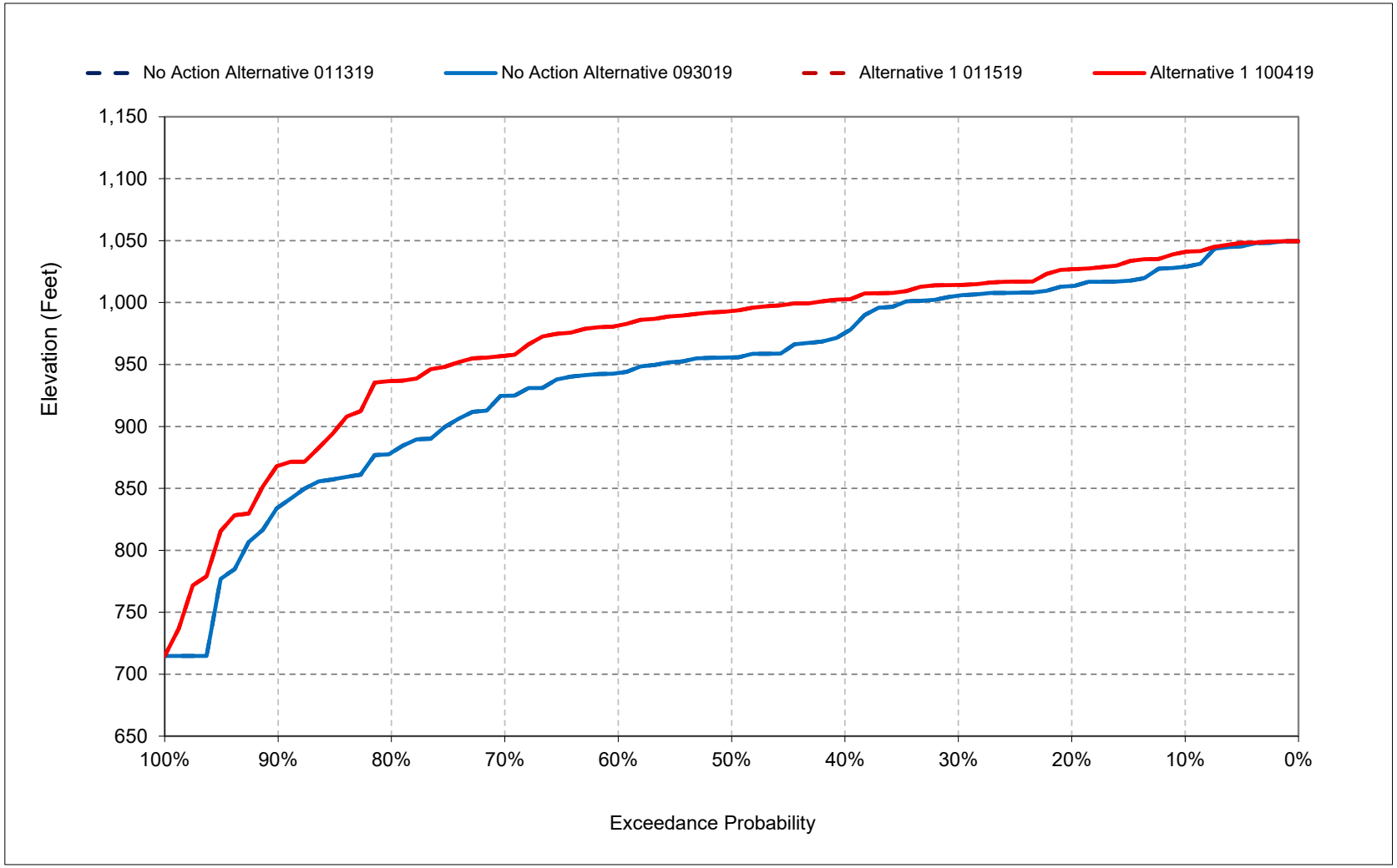



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

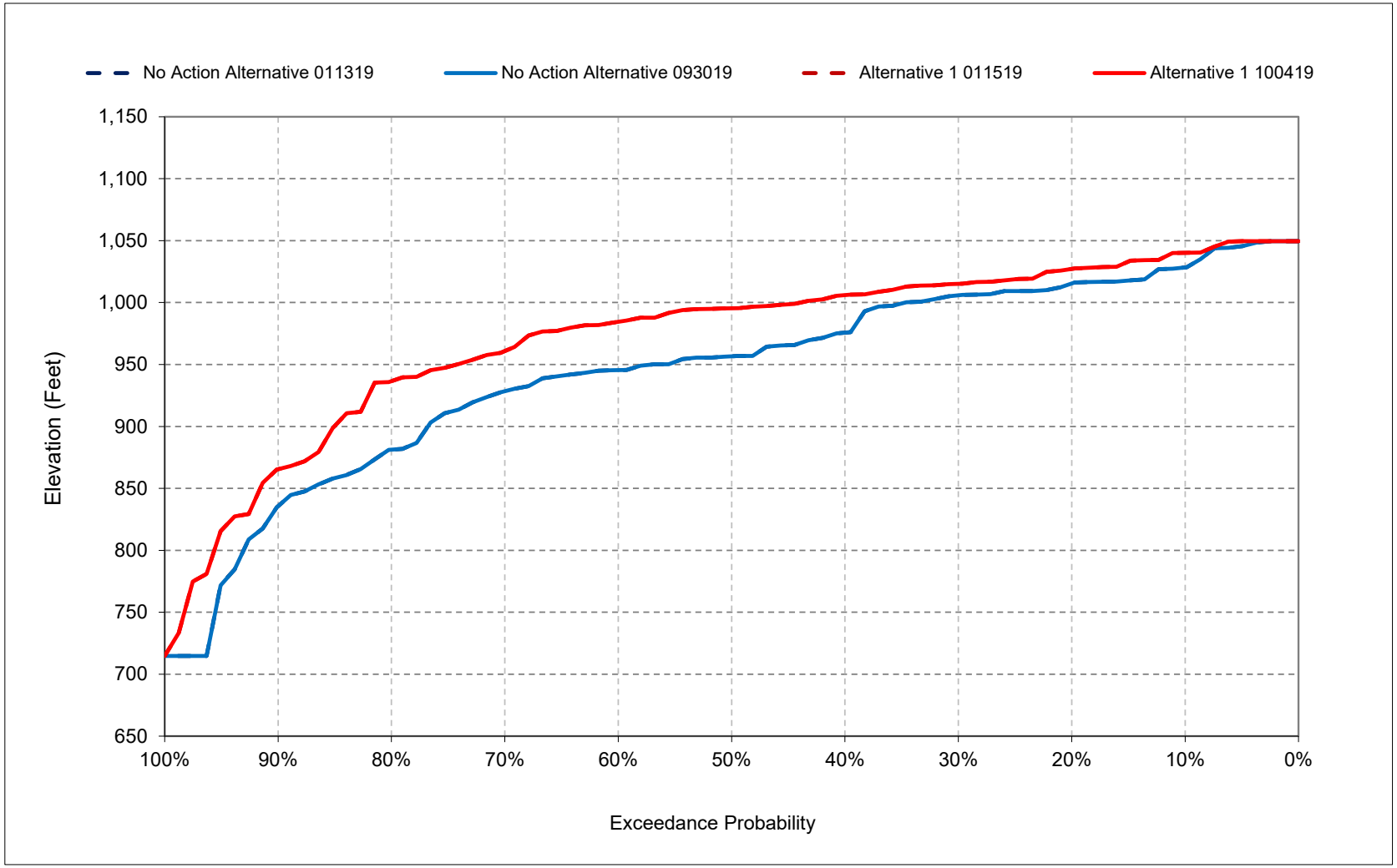
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-7. New Melones Reservoir, Reservoir Pool Elevation, October**



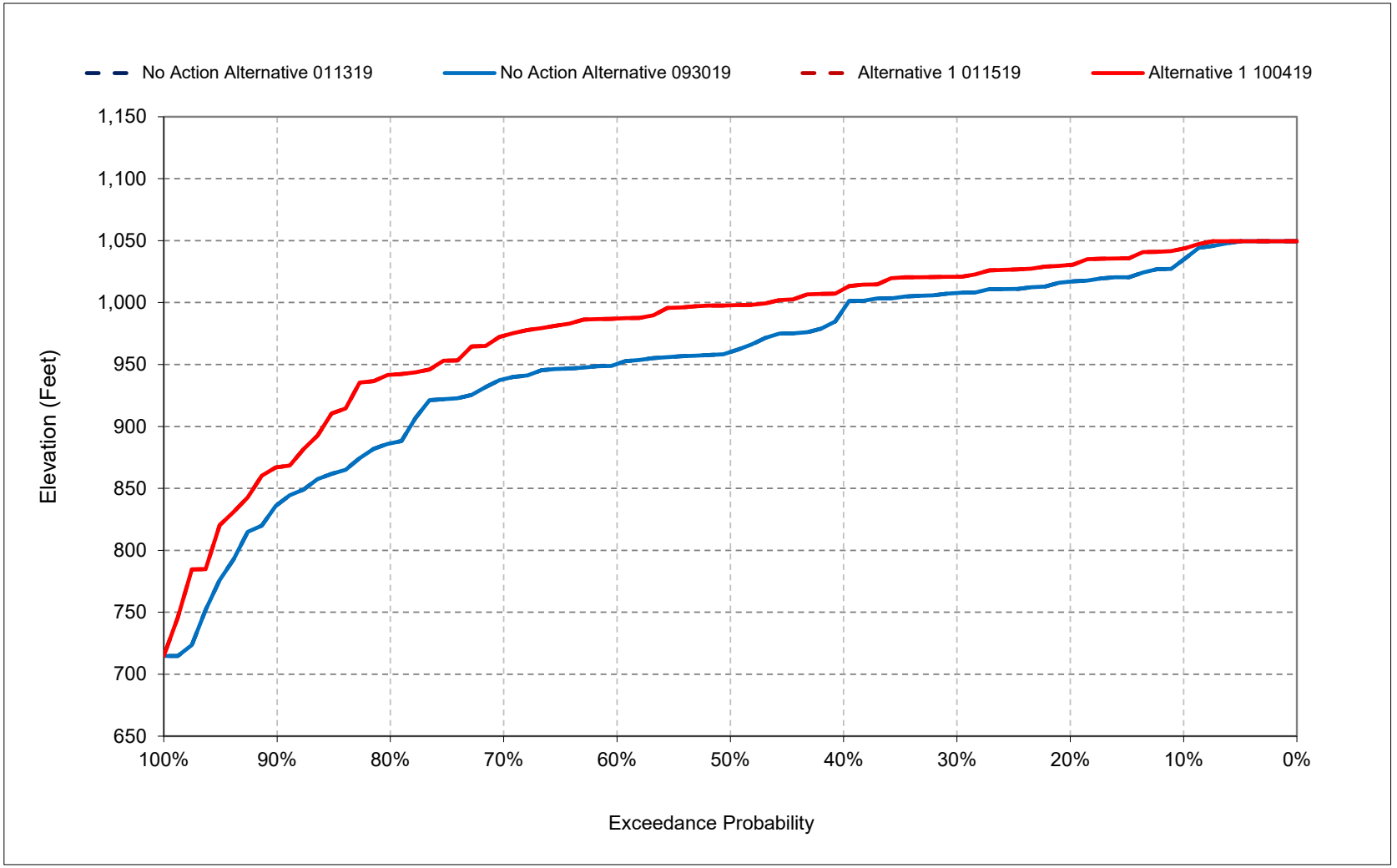

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-8. New Melones Reservoir, Reservoir Pool Elevation, November**



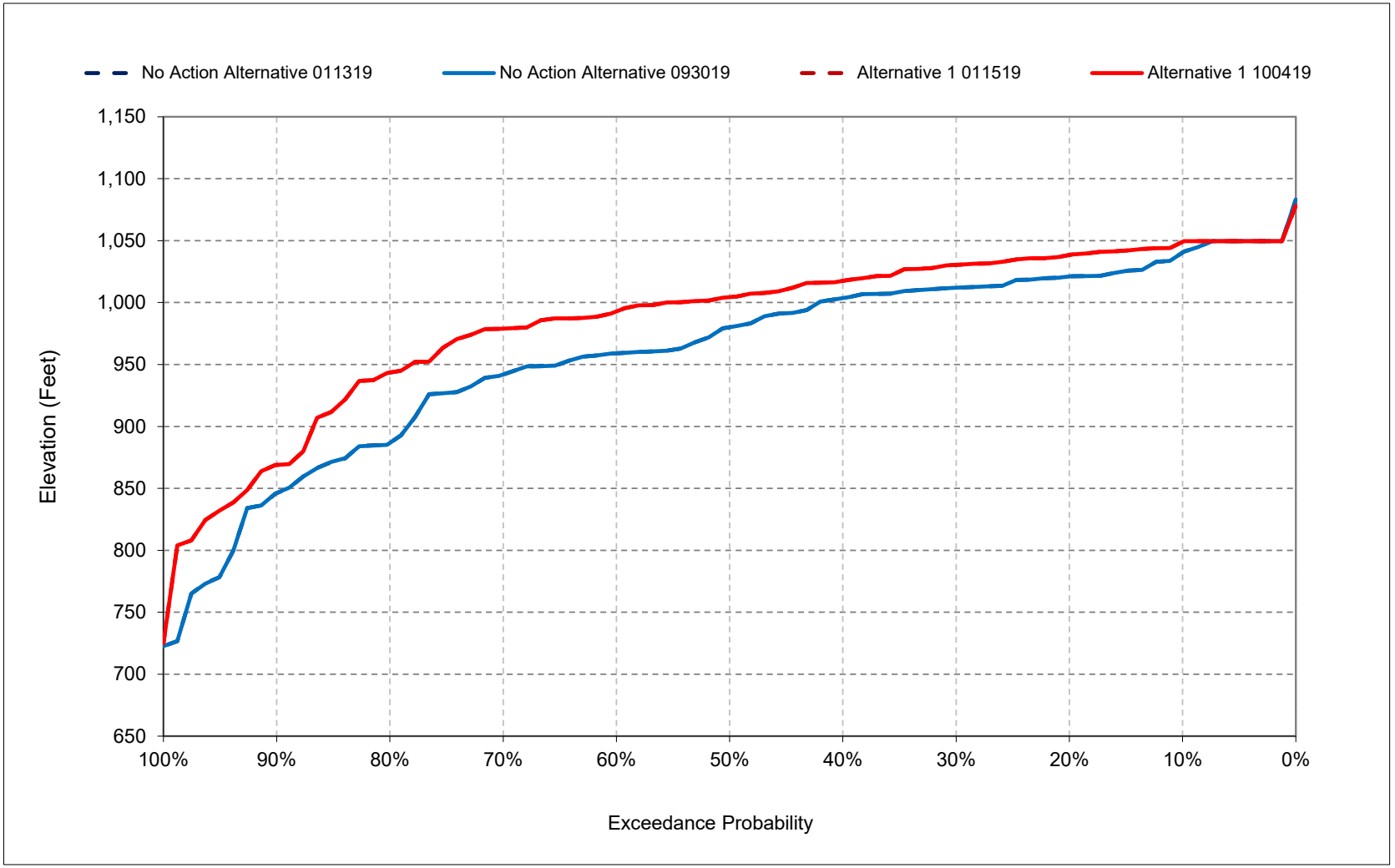

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-9. New Melones Reservoir, Reservoir Pool Elevation, December**



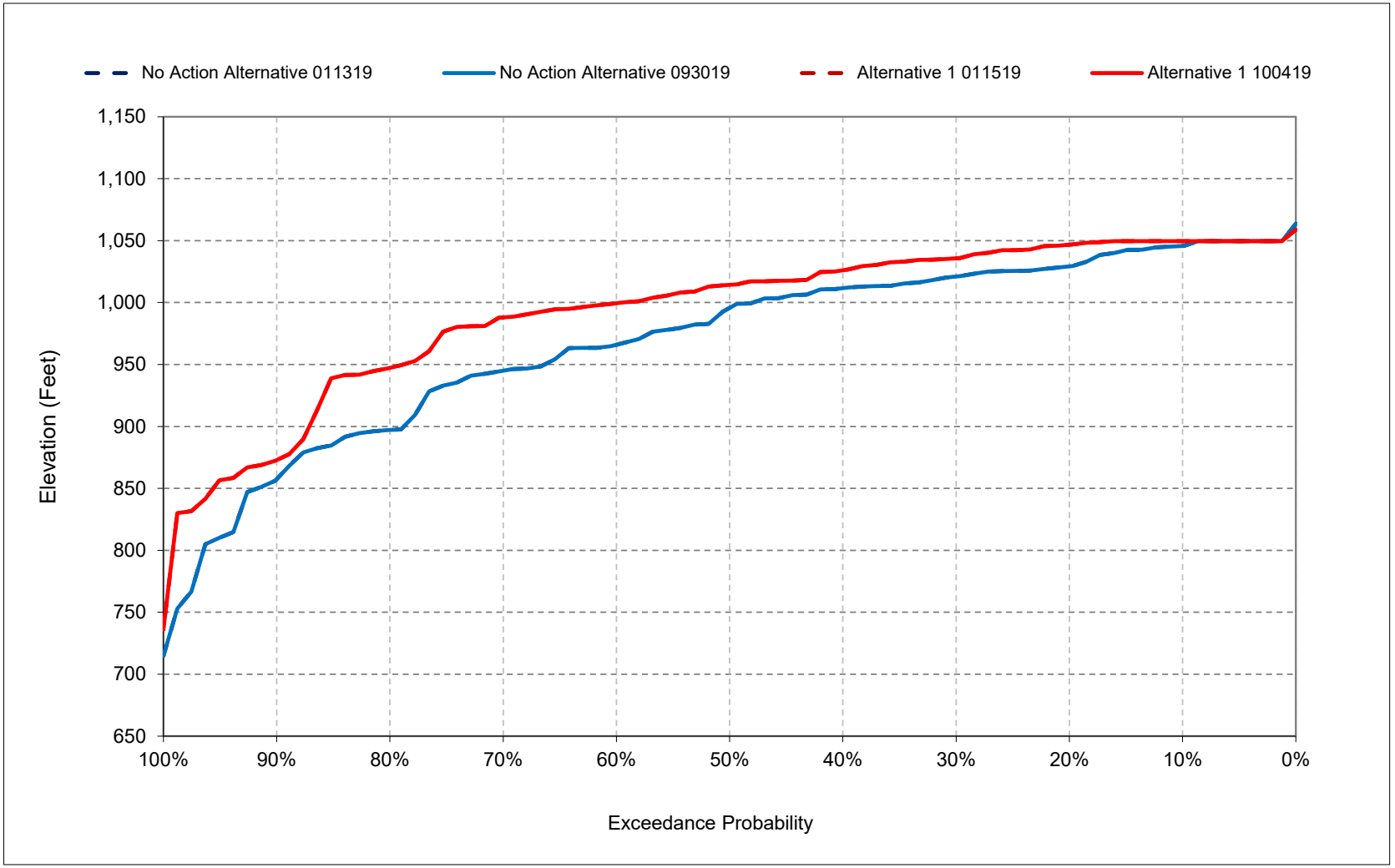

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-10. New Melones Reservoir, Reservoir Pool Elevation, January**



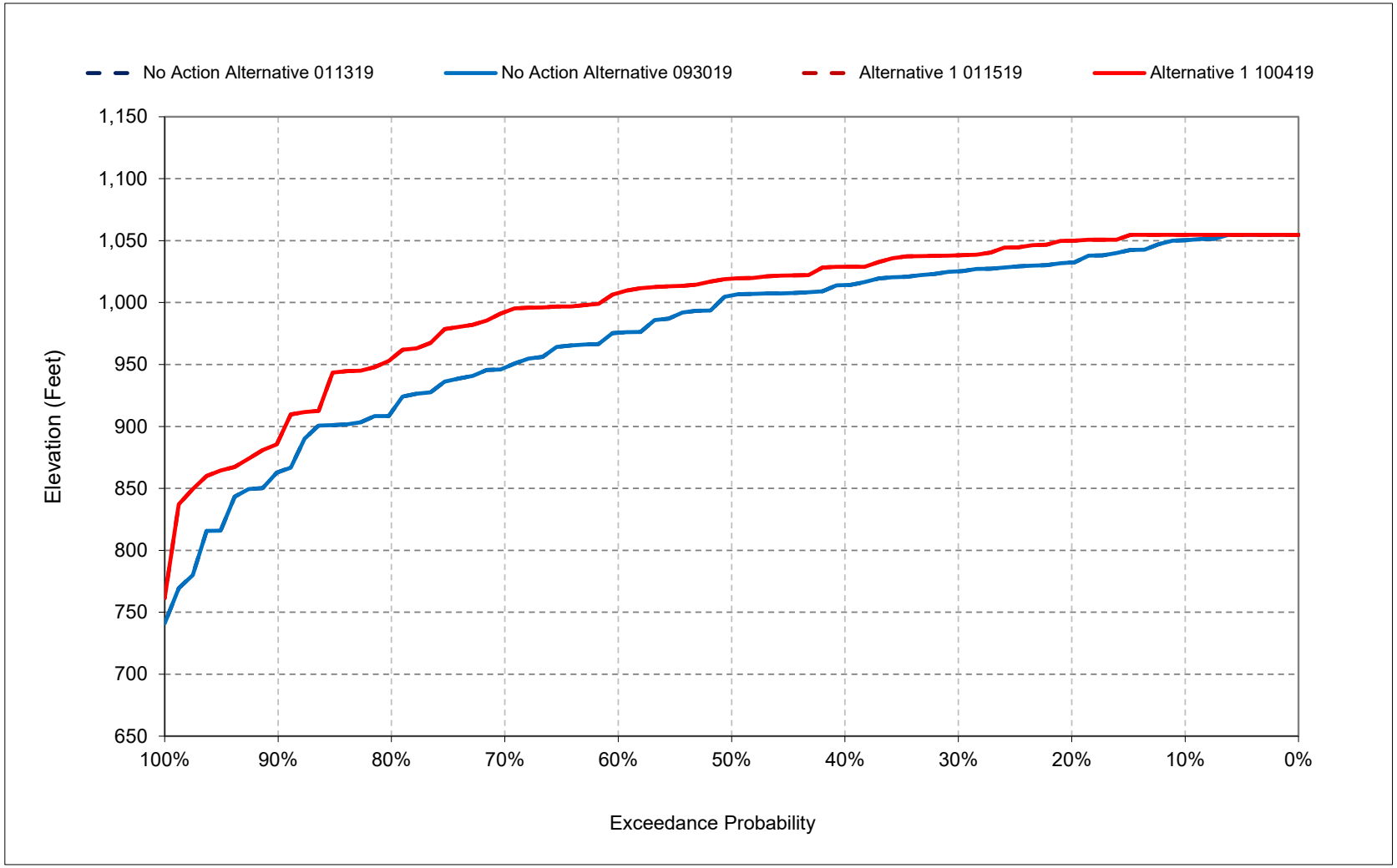

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-11. New Melones Reservoir, Reservoir Pool Elevation, February**



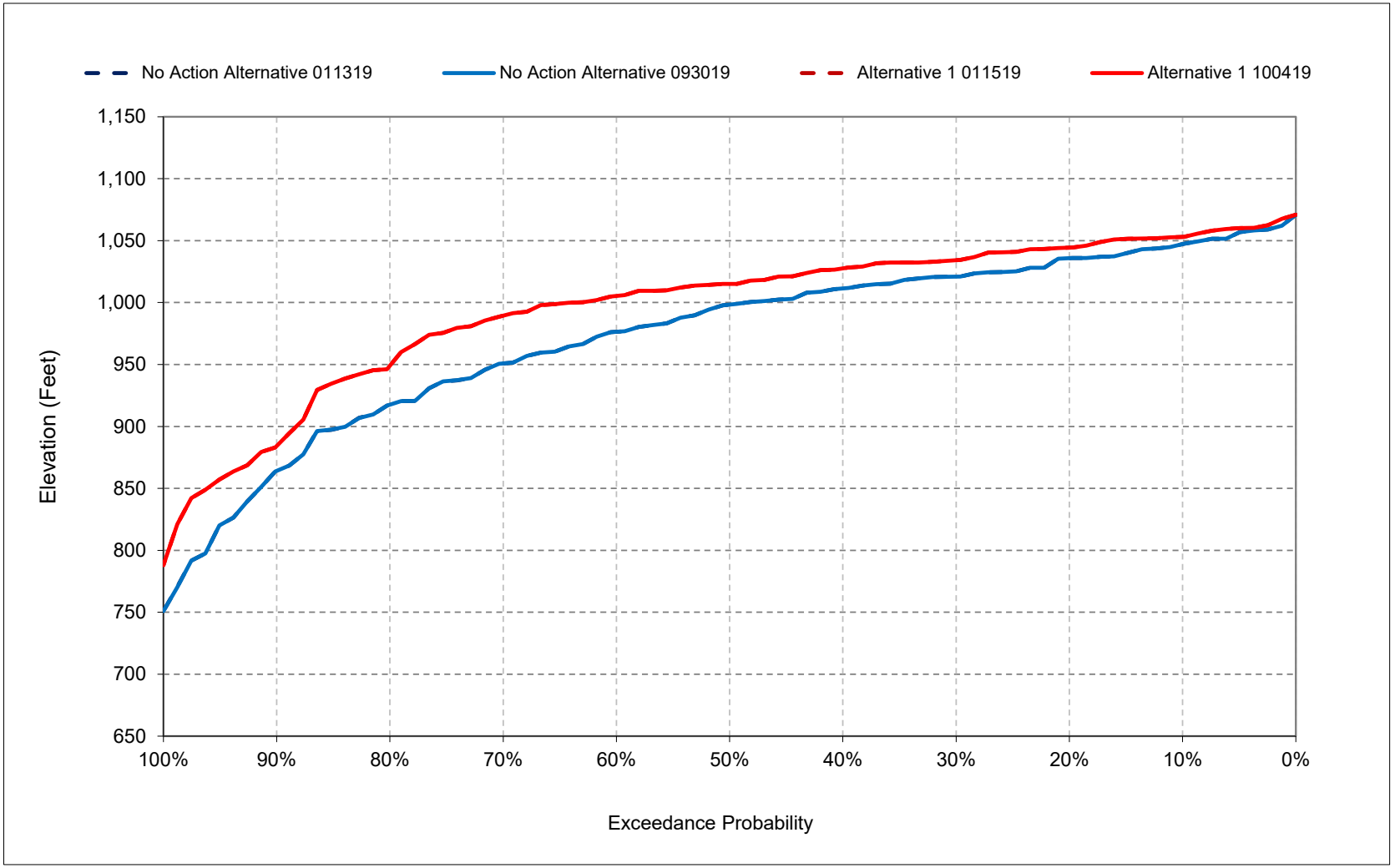

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-12. New Melones Reservoir, Reservoir Pool Elevation, March**



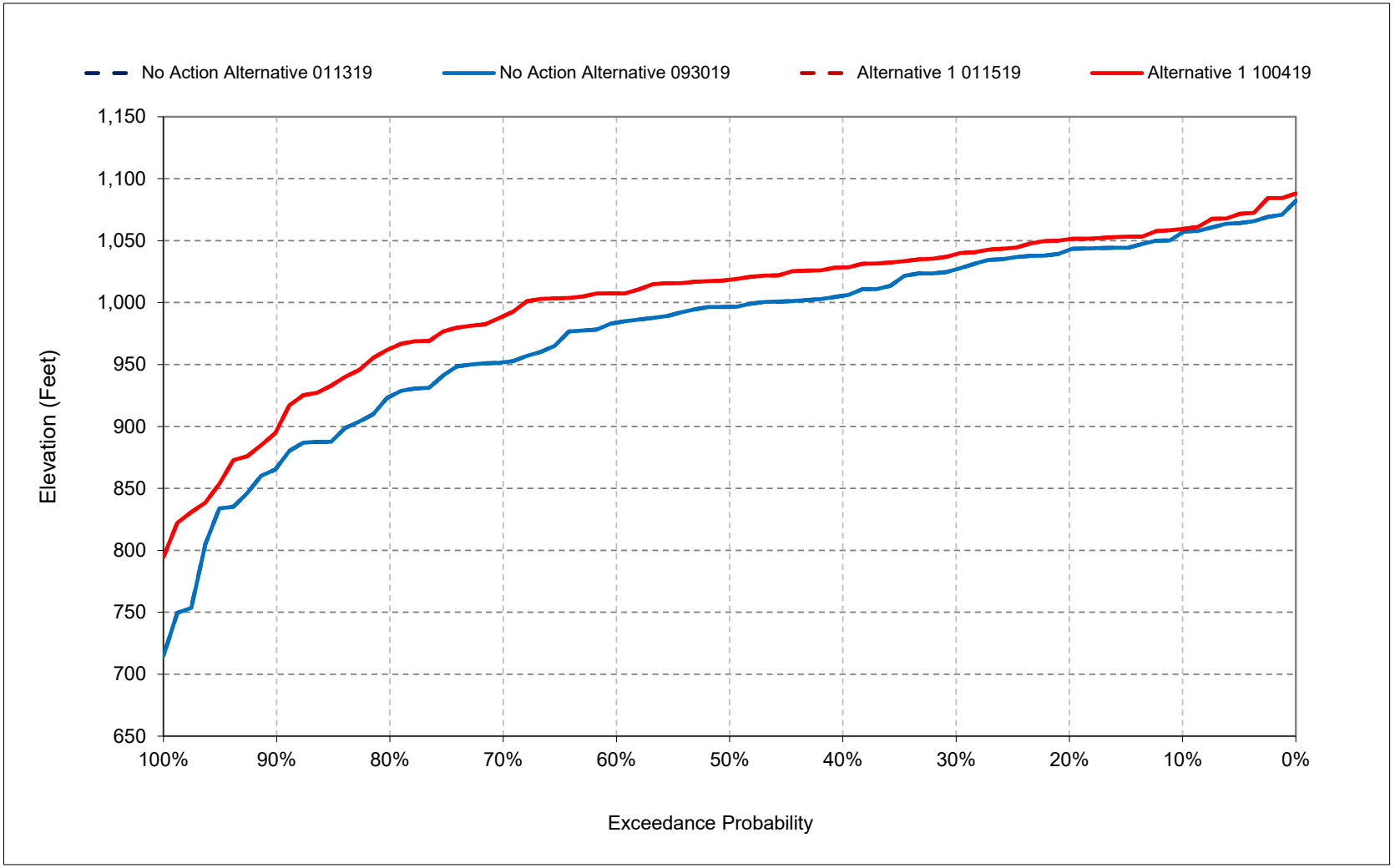

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-13. New Melones Reservoir, Reservoir Pool Elevation, April**



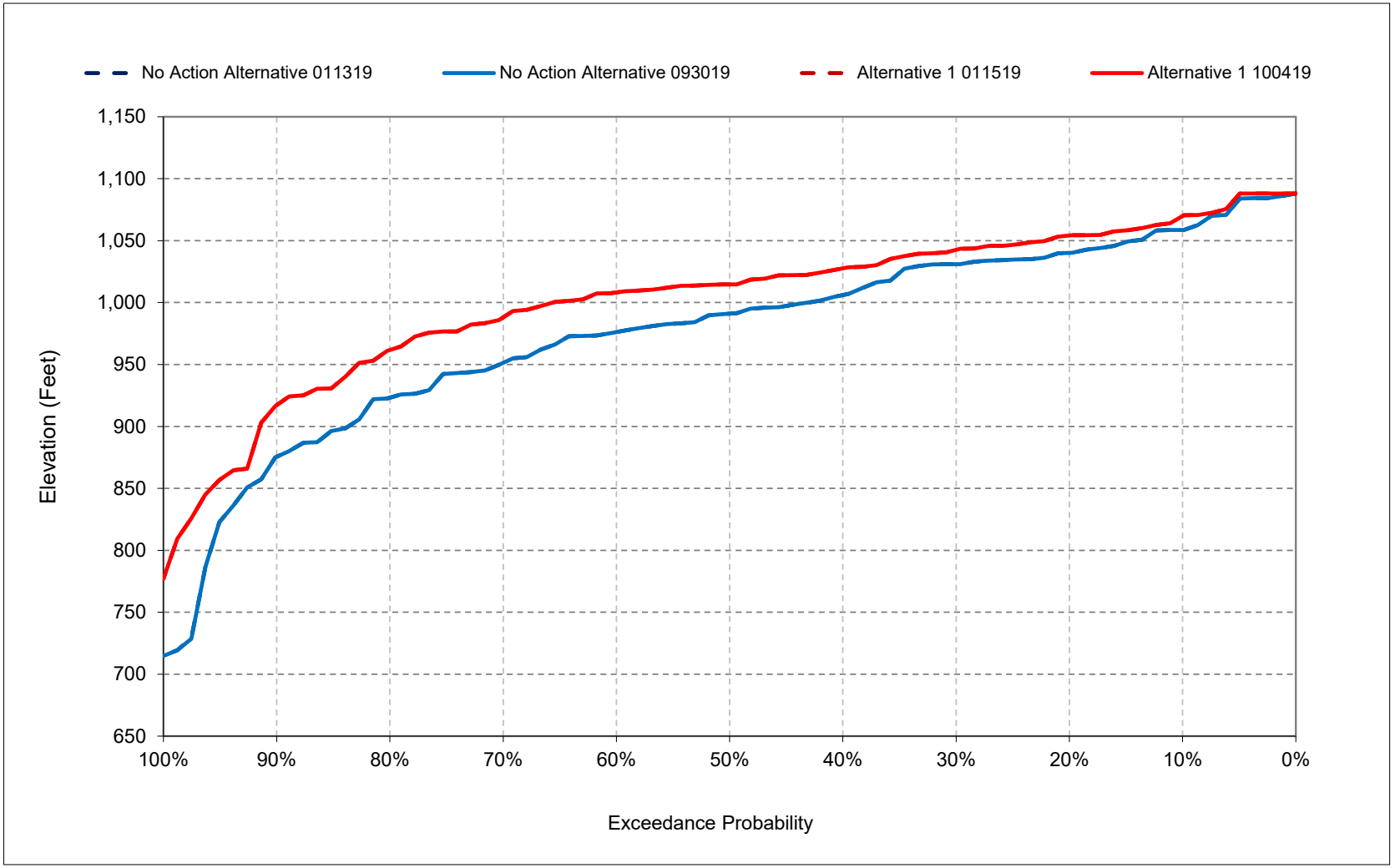

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-14. New Melones Reservoir, Reservoir Pool Elevation, May**



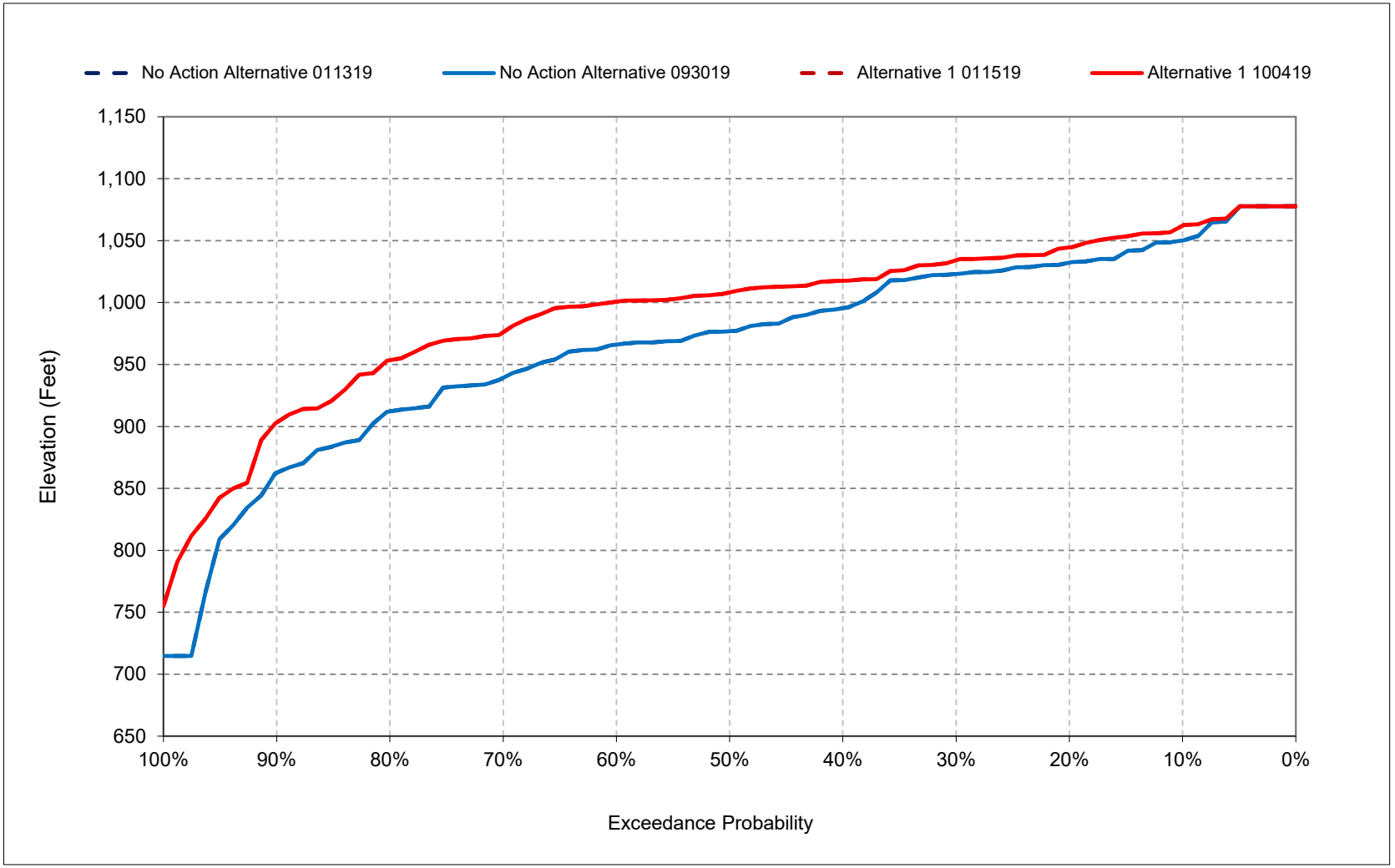

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-15. New Melones Reservoir, Reservoir Pool Elevation, June**



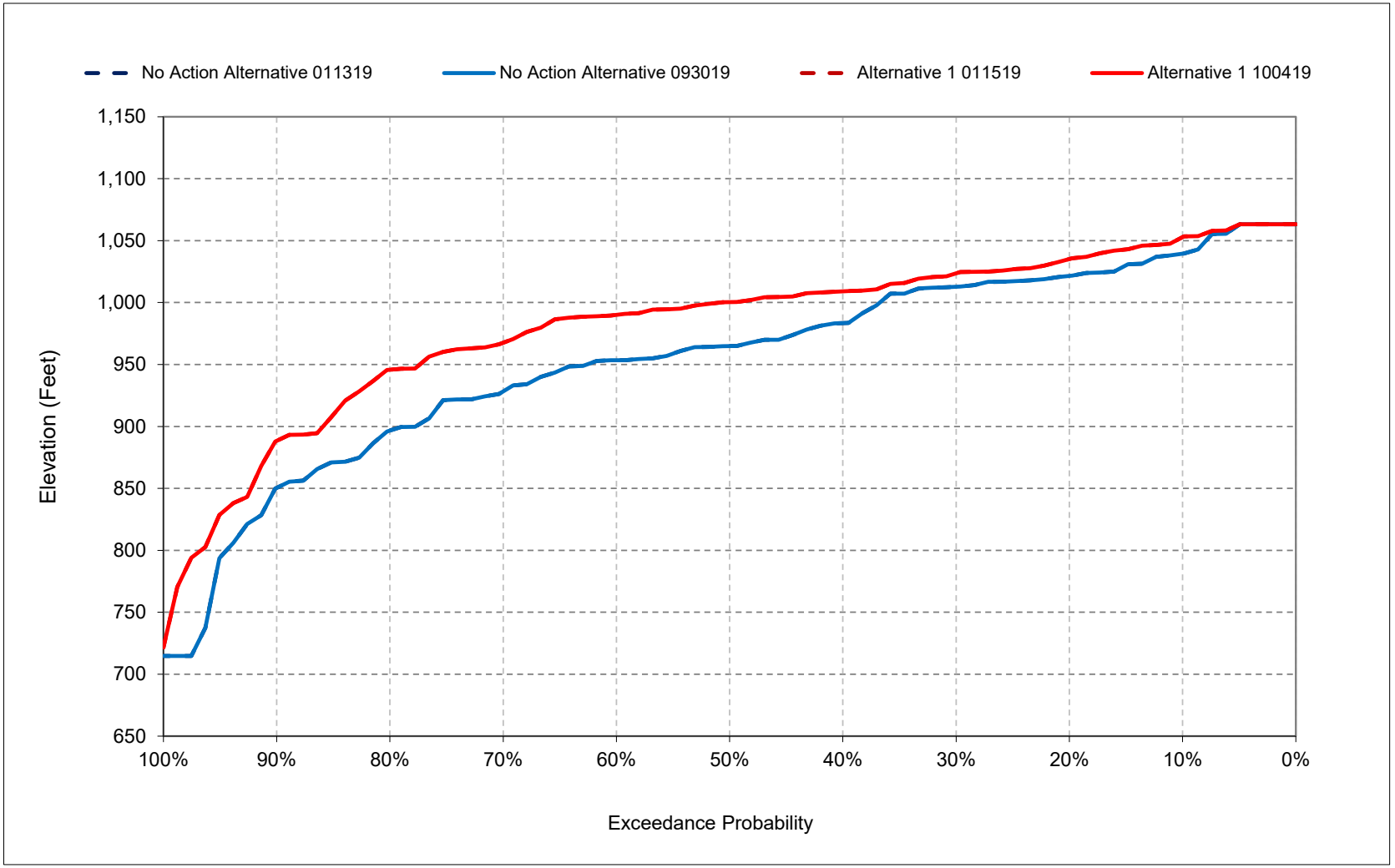

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-16. New Melones Reservoir, Reservoir Pool Elevation, July**



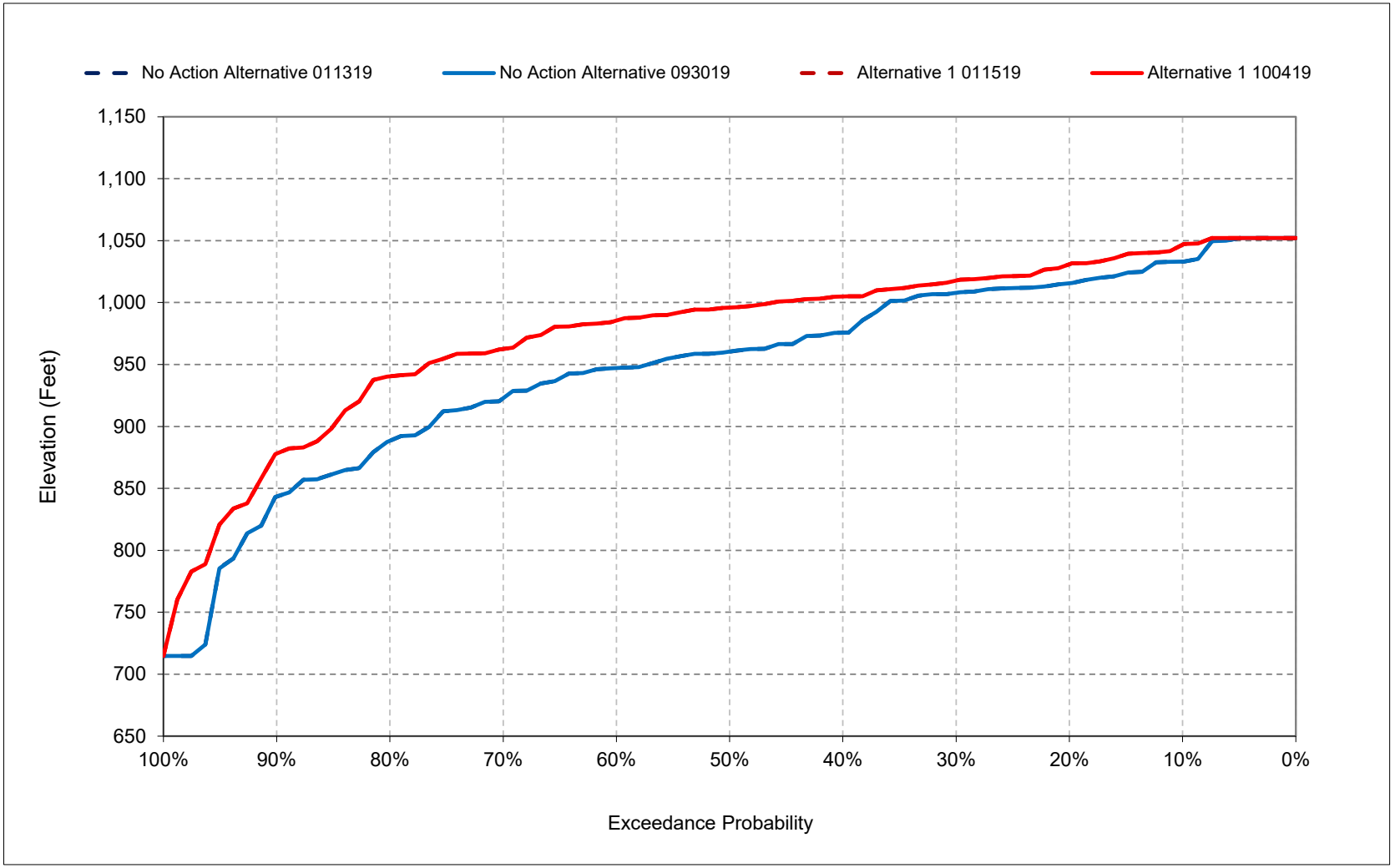

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-17. New Melones Reservoir, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7a-18. New Melones Reservoir, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-1. Millerton Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-2. Millerton Lake Storage, End of Month Storage

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-3. Millerton Lake Storage, End of Month Storage

### No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### No Action Alternative 093019

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-4. Millerton Lake Storage, End of Month Storage

### Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 100419

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 258 | 292 | 374 | 439 | 439 | 479 | 488 | 524 | 524 | 495 | 311 | 258 |
| 20% | 224 | 267 | 318 | 412 | 439 | 479 | 447 | 523 | 521 | 433 | 260 | 213 |
| 30% | 211 | 250 | 293 | 351 | 439 | 472 | 421 | 479 | 503 | 361 | 210 | 194 |
| 40% | 197 | 223 | 270 | 333 | 419 | 436 | 396 | 455 | 477 | 323 | 188 | 183 |
| 50% | 189 | 210 | 252 | 303 | 383 | 396 | 373 | 430 | 418 | 283 | 178 | 179 |
| 60% | 178 | 194 | 232 | 288 | 339 | 368 | 344 | 403 | 394 | 257 | 169 | 175 |
| 70% | 172 | 176 | 213 | 258 | 315 | 326 | 308 | 382 | 364 | 228 | 162 | 172 |
| 80% | 162 | 168 | 197 | 232 | 266 | 274 | 268 | 332 | 313 | 195 | 158 | 168 |
| 90% | 155 | 154 | 172 | 187 | 204 | 205 | 225 | 245 | 246 | 163 | 136 | 159 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 199 | 220 | 261 | 310 | 353 | 372 | 359 | 415 | 411 | 307 | 207 | 195 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 256 | 279 | 311 | 382 | 426 | 448 | 360 | 428 | 509 | 464 | 312 | 256 |
| Above Normal (24%) | 202 | 241 | 291 | 340 | 417 | 447 | 404 | 491 | 496 | 355 | 210 | 184 |
| Below Normal (10%) | 192 | 209 | 244 | 297 | 354 | 360 | 348 | 401 | 393 | 283 | 185 | 180 |
| Dry (16%) | 177 | 202 | 246 | 302 | 327 | 343 | 386 | 426 | 372 | 231 | 162 | 181 |
| Critical (27%) | 161 | 162 | 202 | 231 | 247 | 260 | 306 | 334 | 278 | 182 | 148 | 168 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Storage (TAF) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

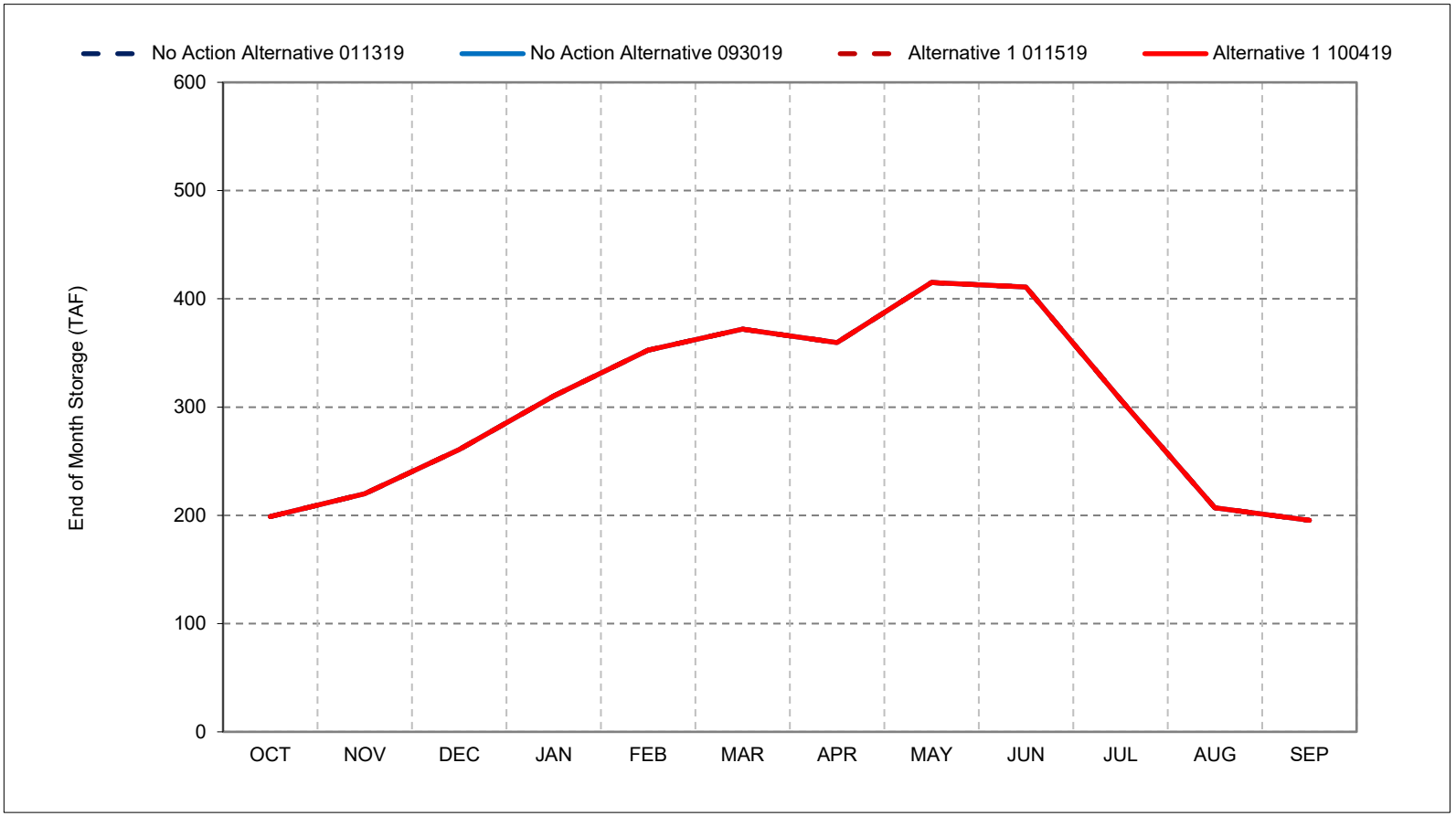
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-1. Millerton Lake Storage, Long-Term Average Storage

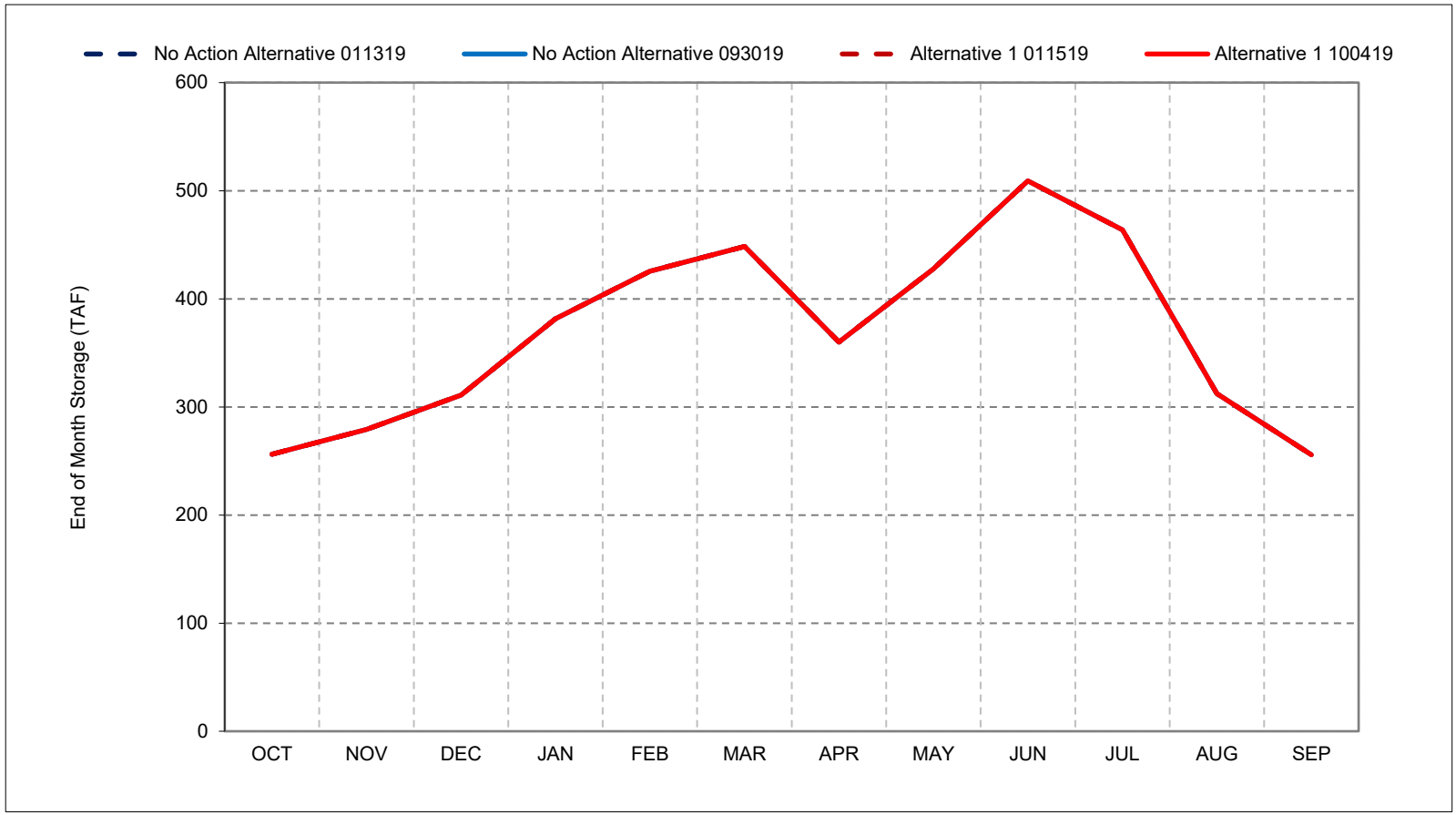



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-2. Millerton Lake Storage, Wet Year Average Storage

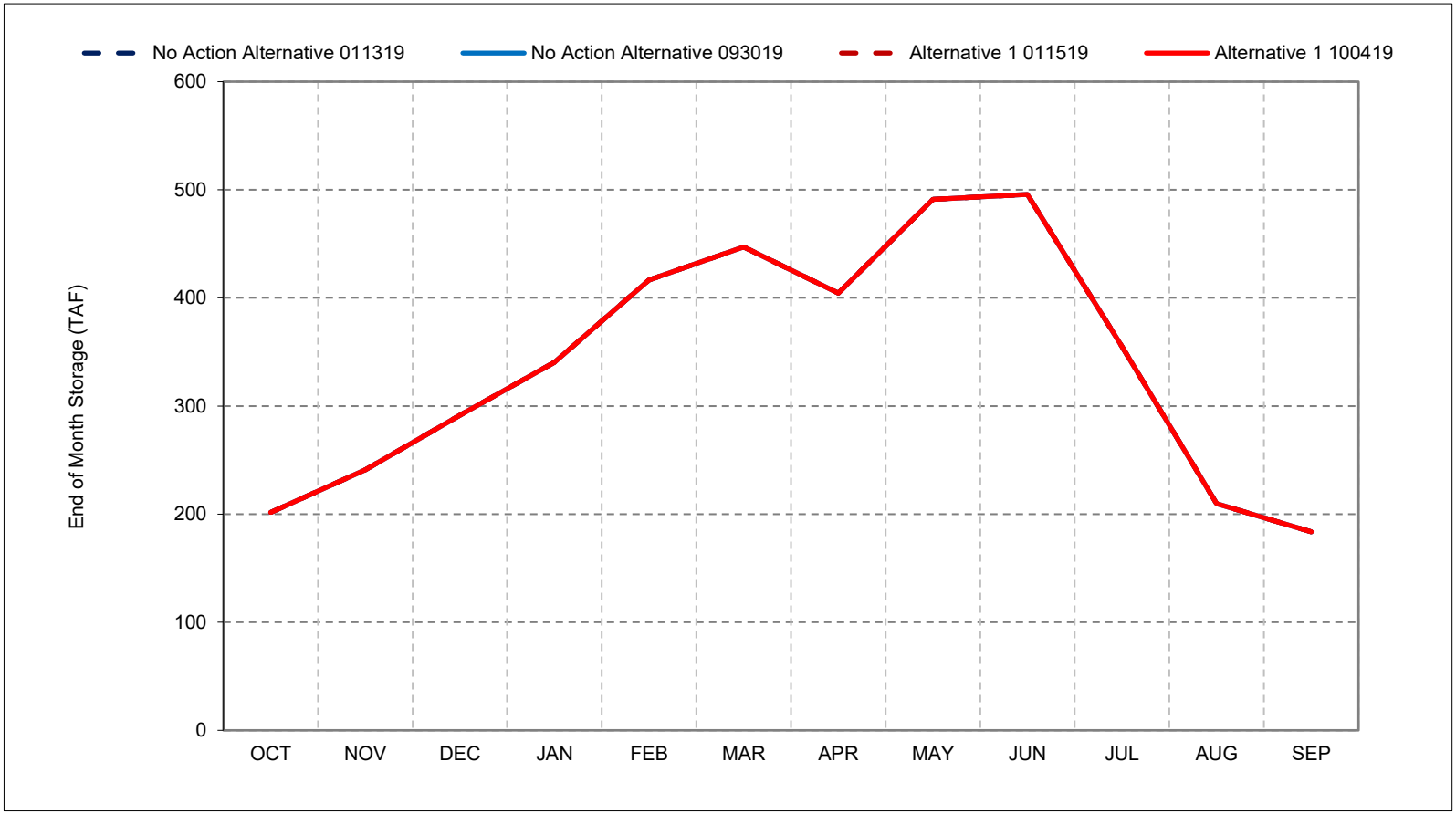



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-3. Millerton Lake Storage, Above Normal Year Average Storage

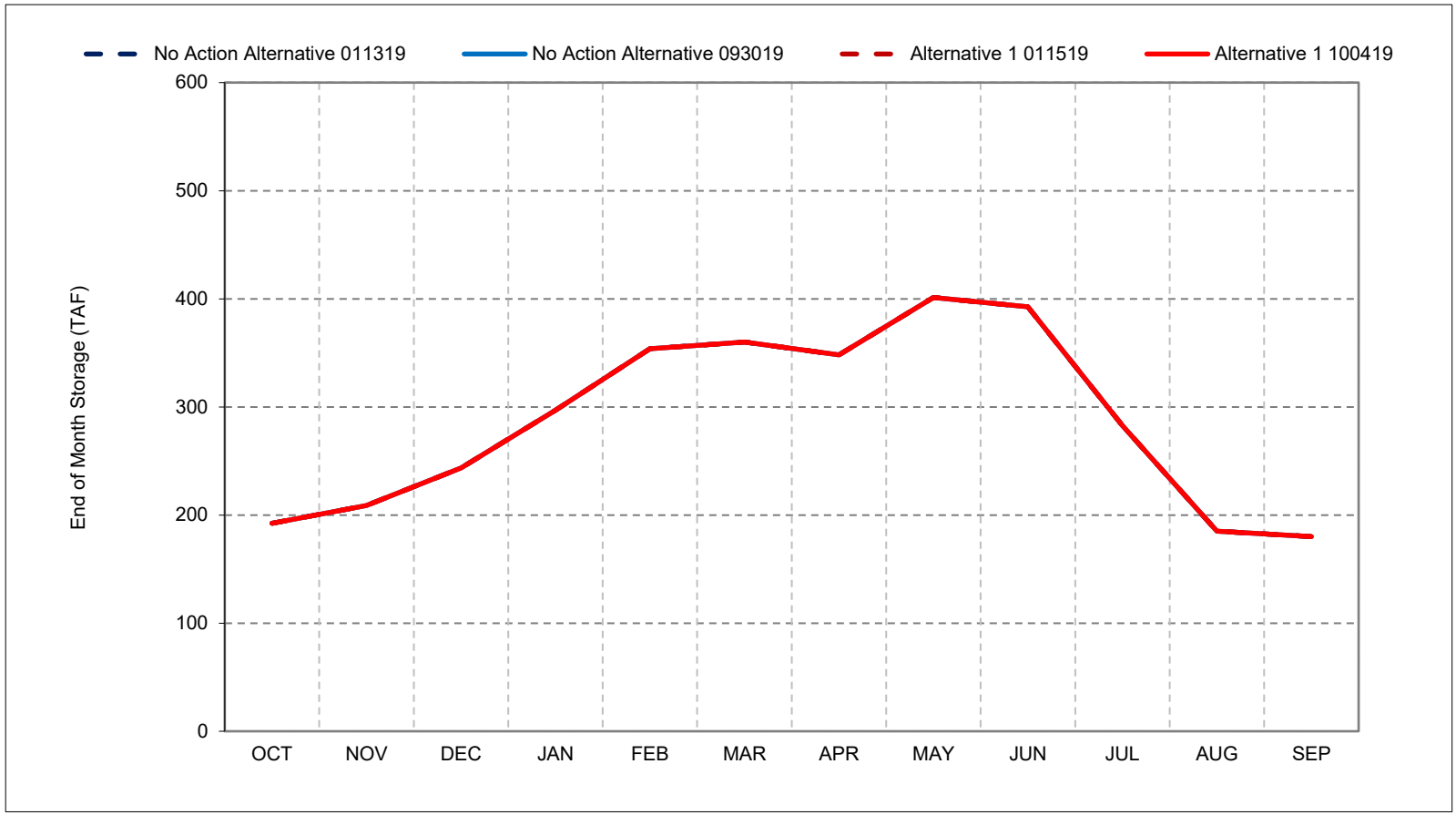



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-4. Millerton Lake Storage, Below Normal Year Average Storage

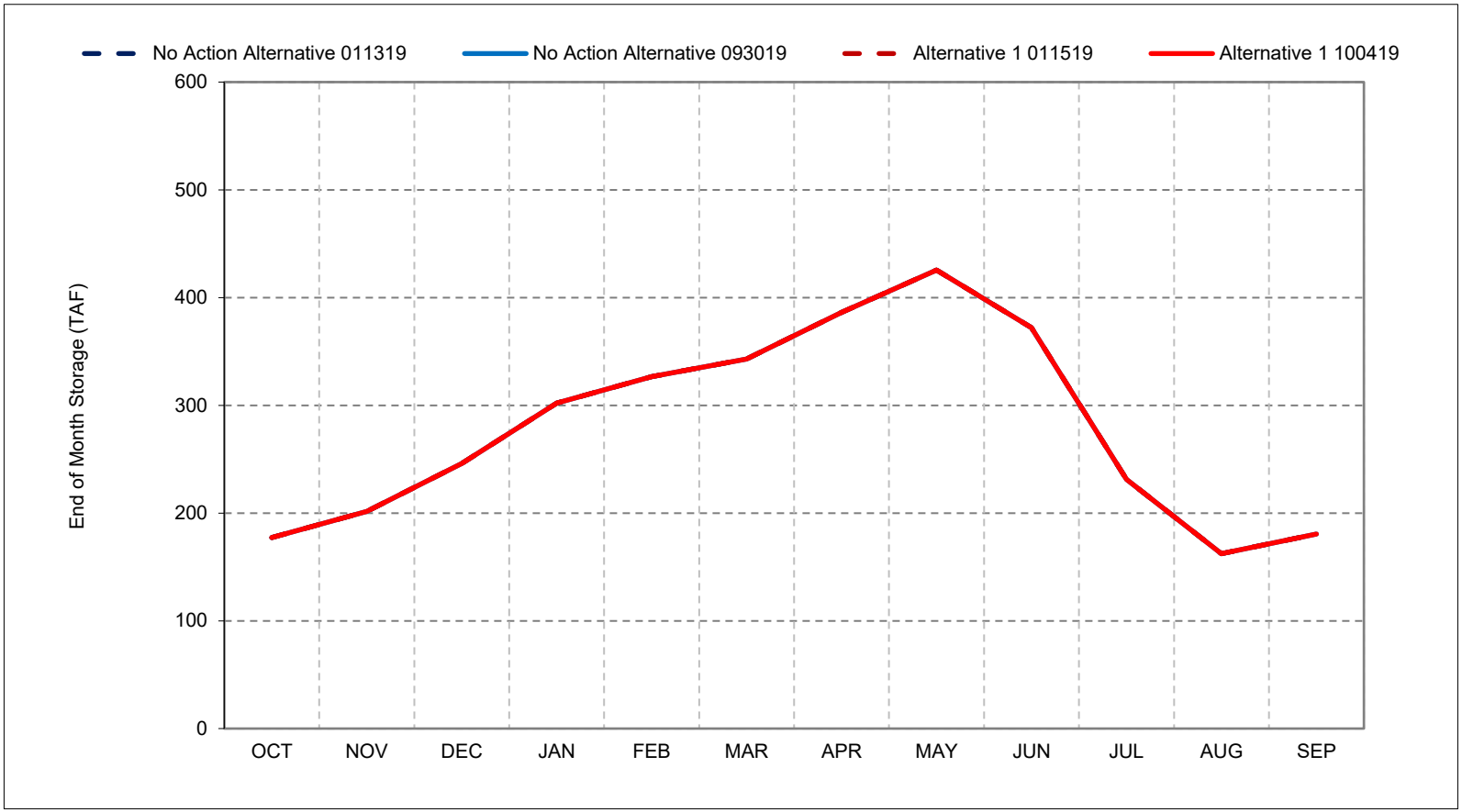



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-5. Millerton Lake Storage, Dry Year Average Storage

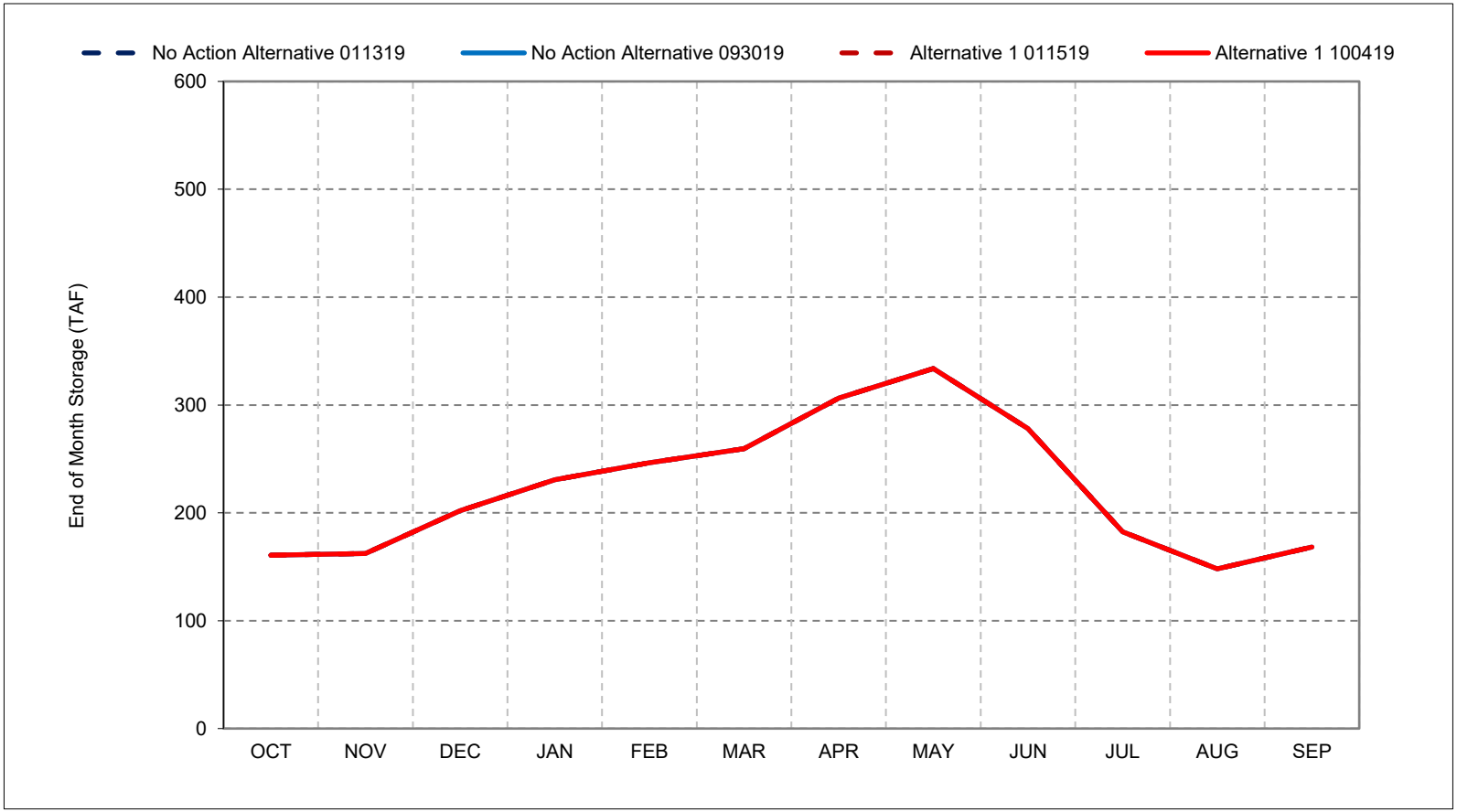



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-6. Millerton Lake Storage, Critical Year Average Storage

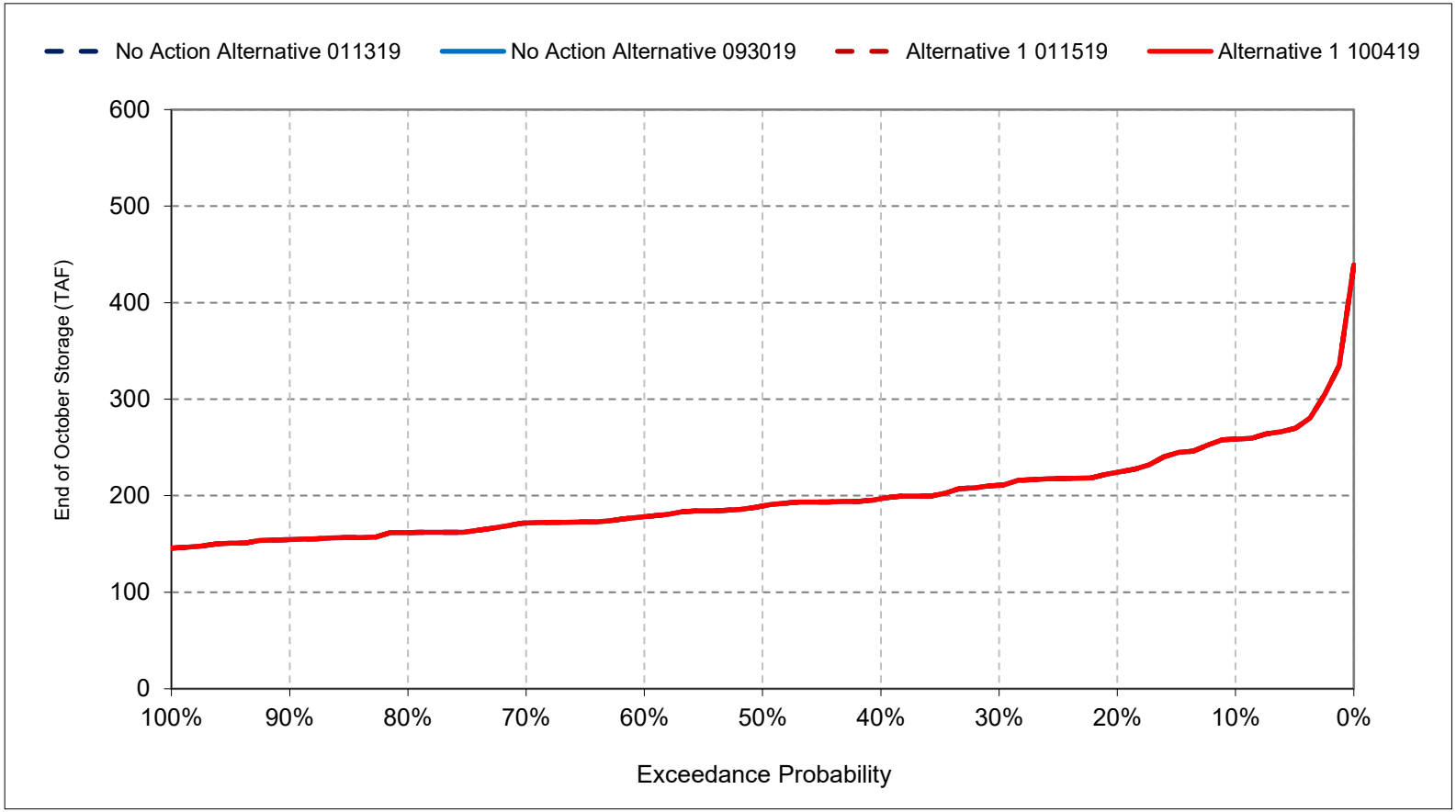



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

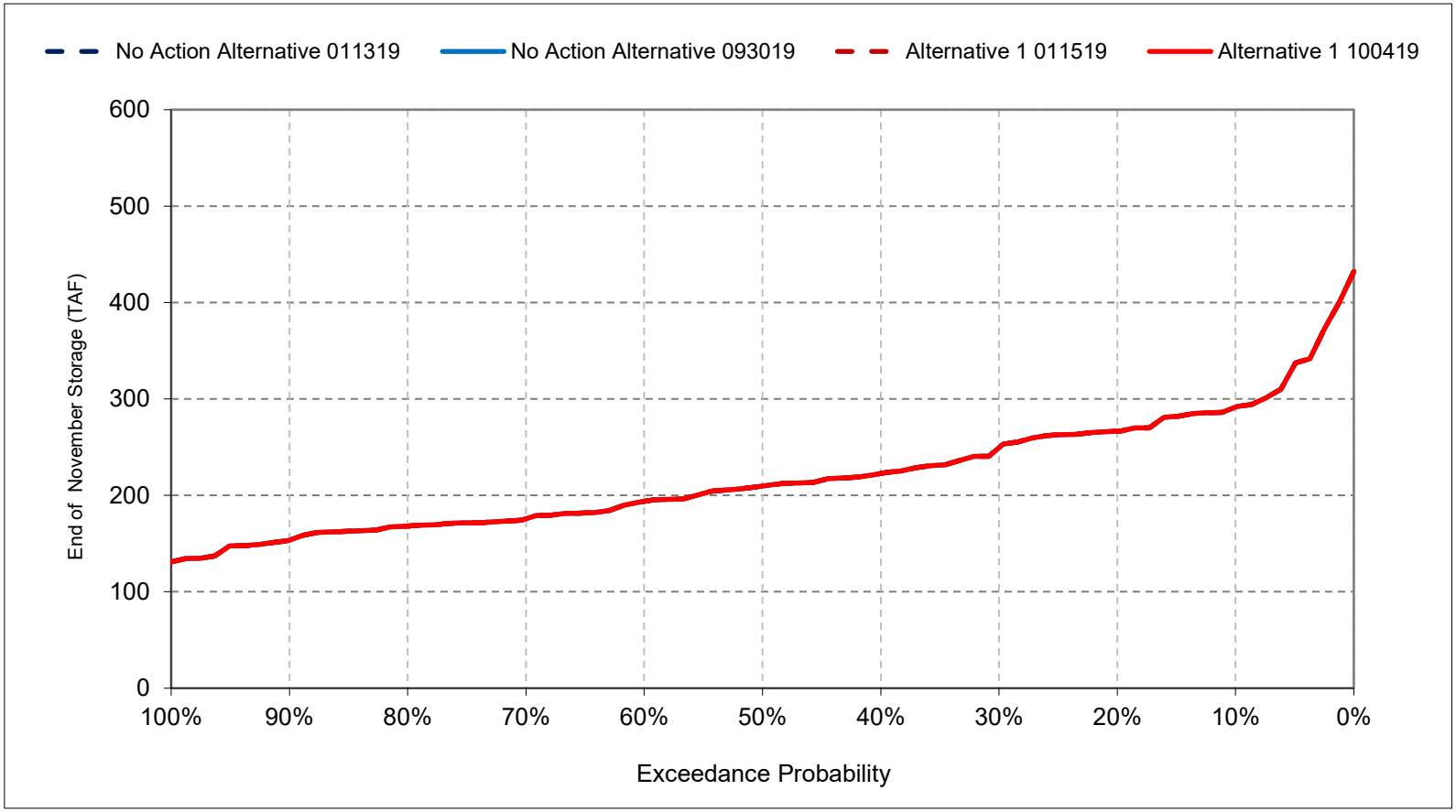
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-7. Millerton Storage, End of October Storage



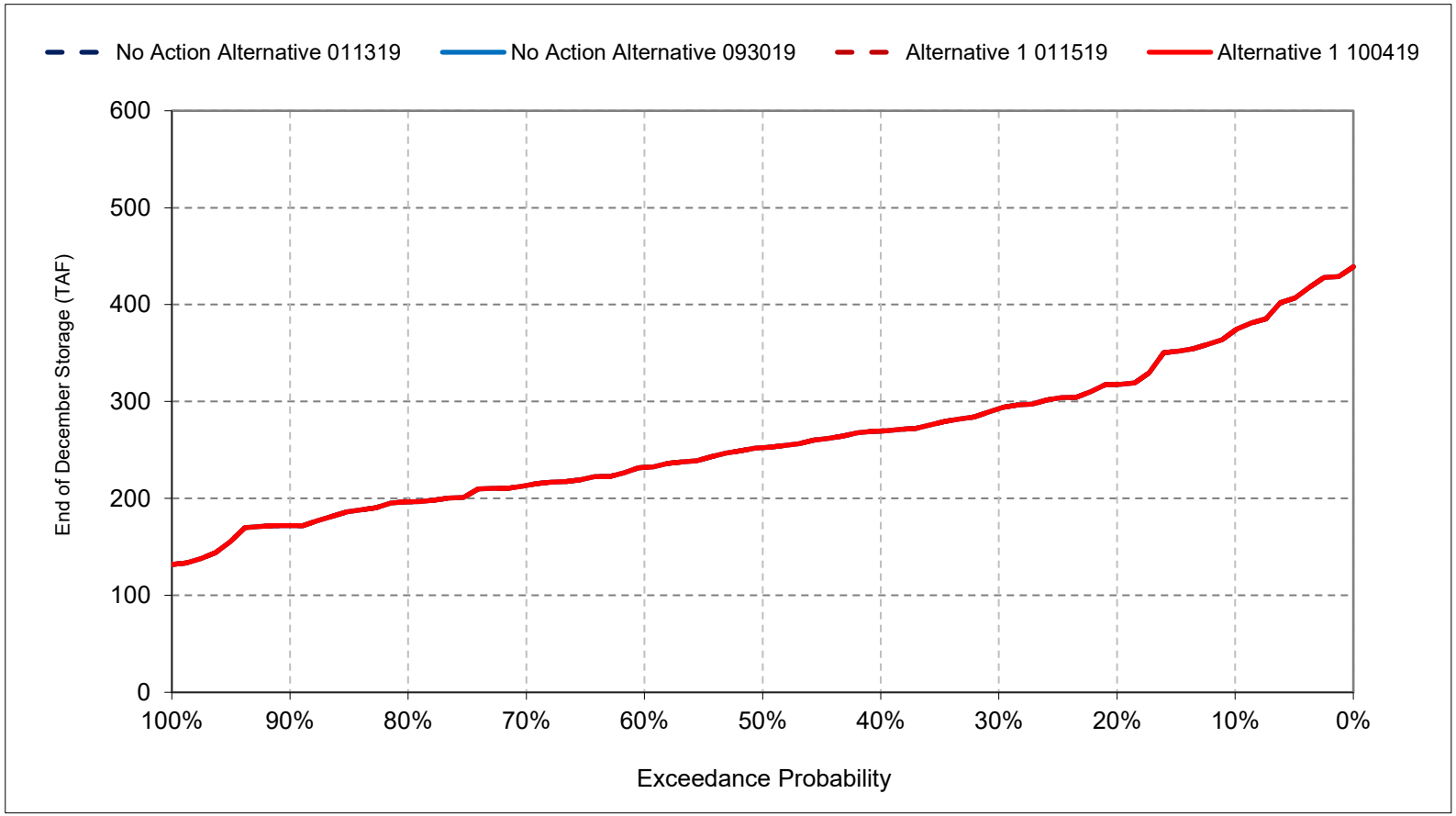

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-8. Millerton Storage, End of November Storage



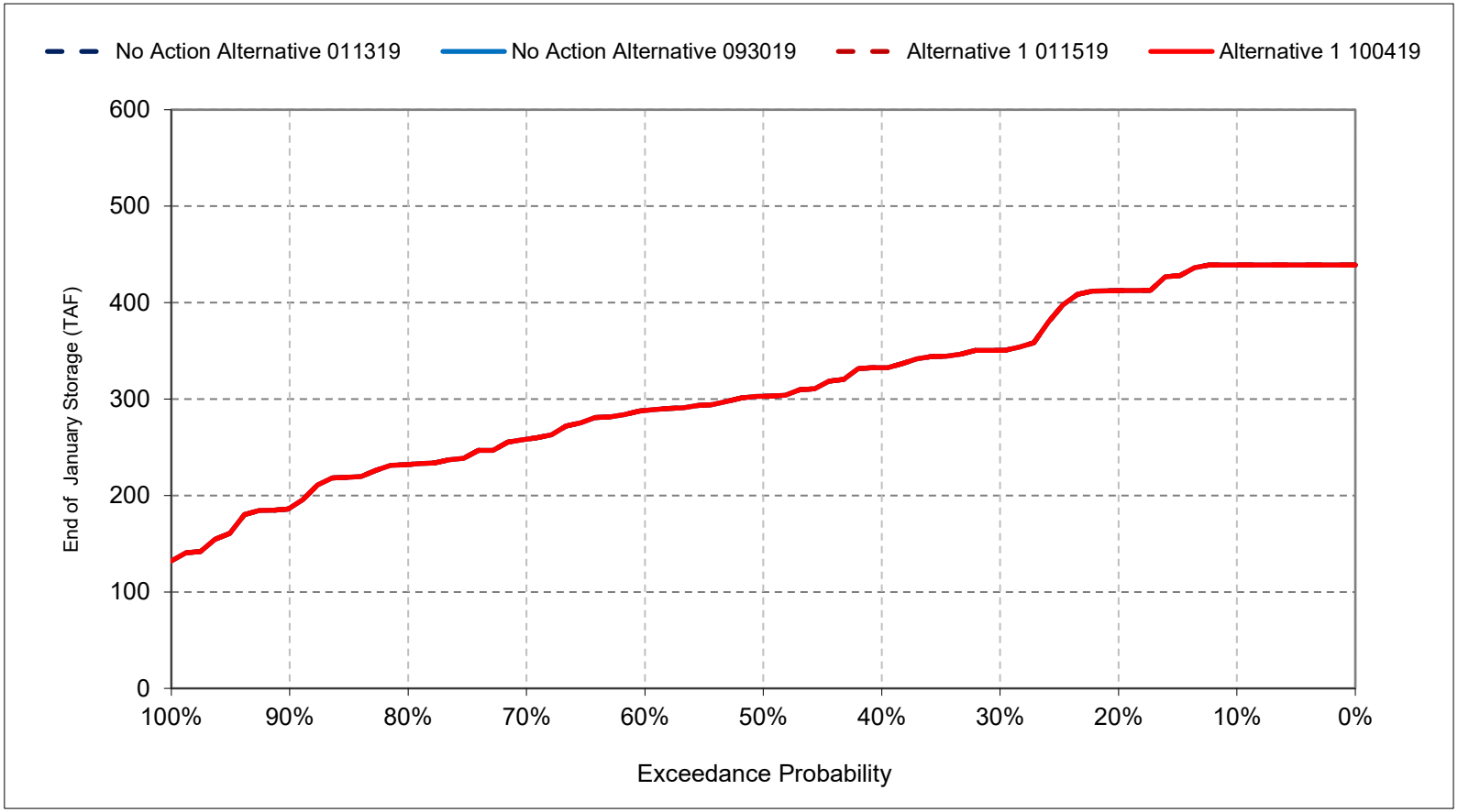

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-9. Millerton Storage, End of December Storage



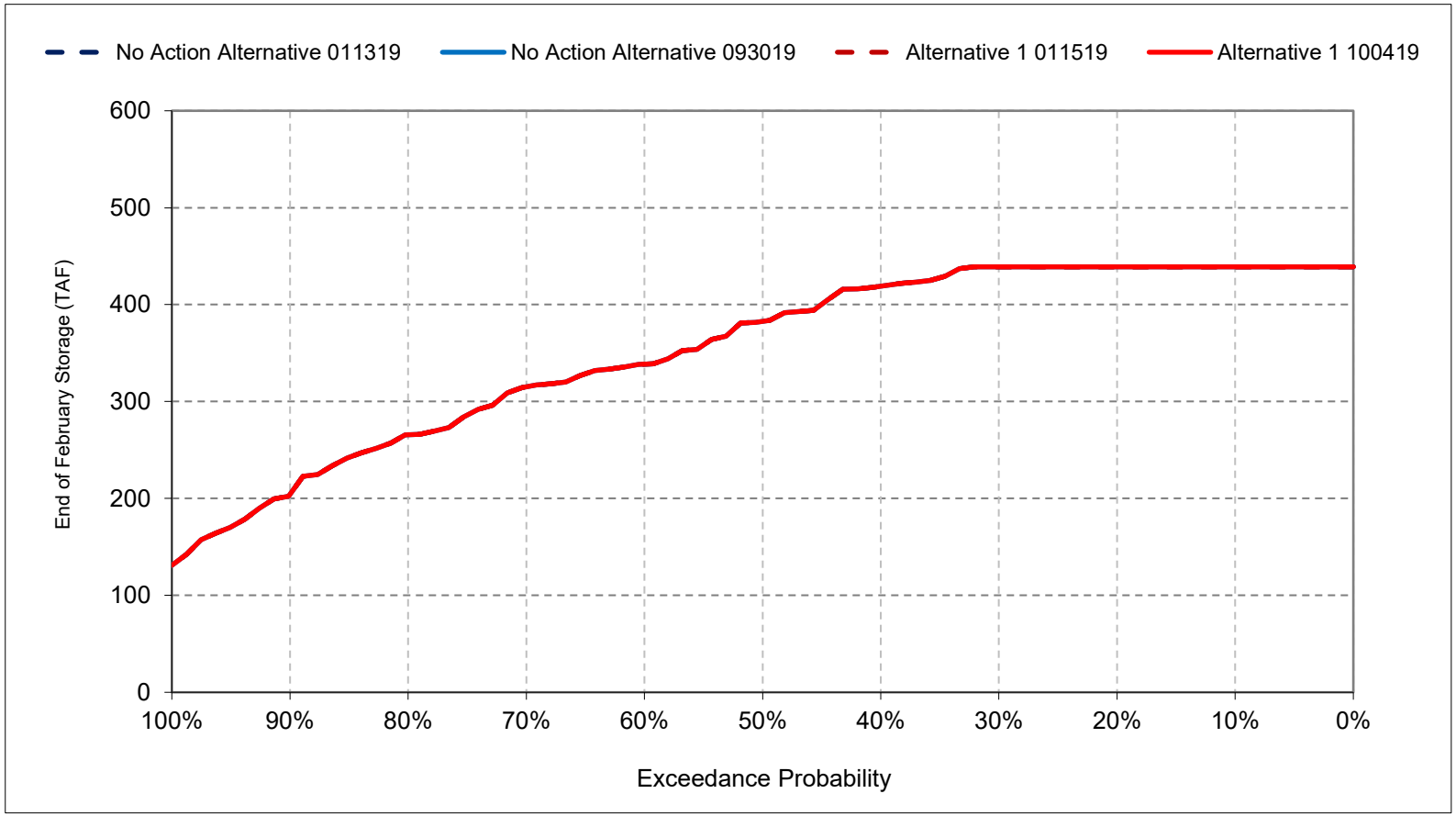

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-10. Millerton Storage, End of January Storage



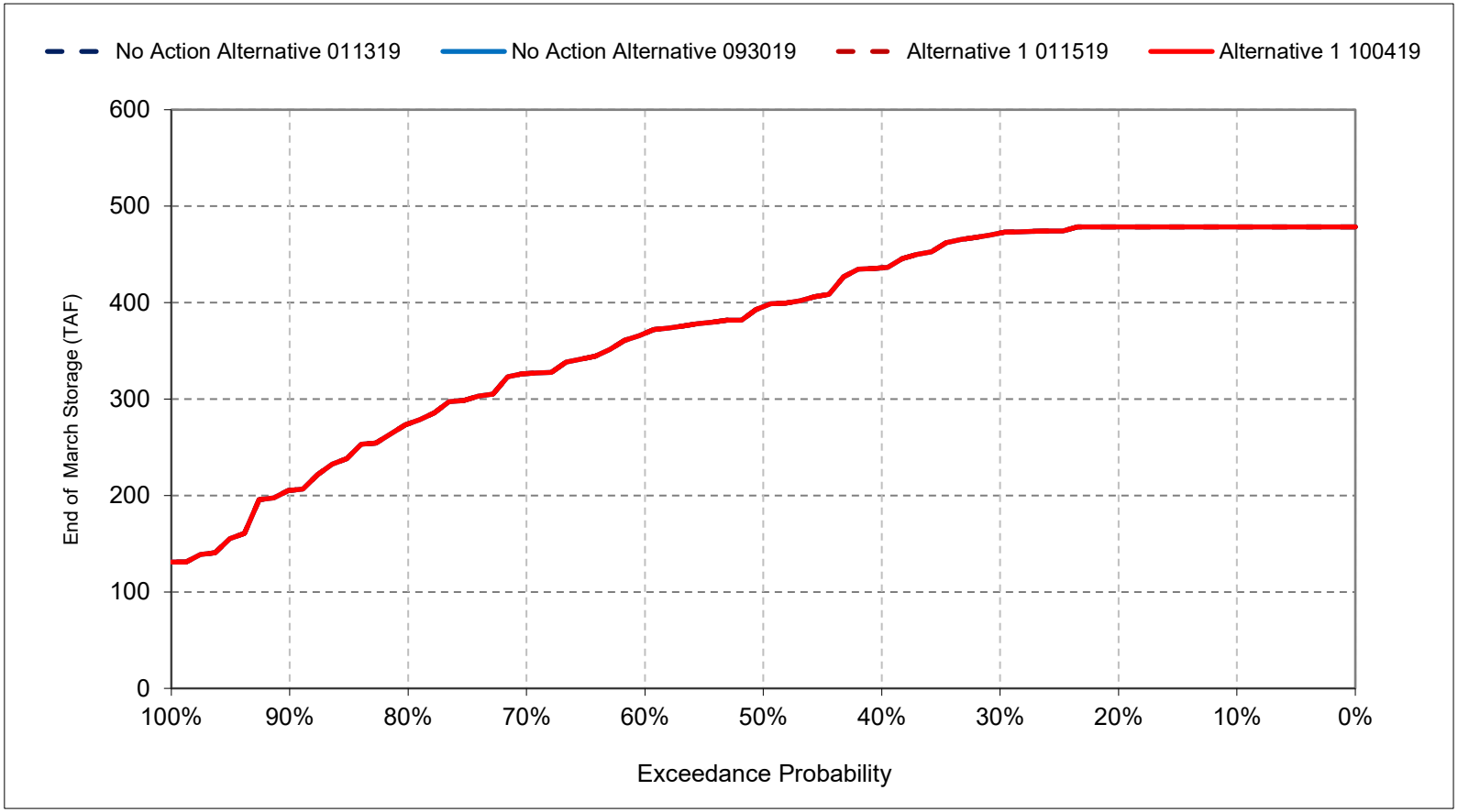

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-11. Millerton Storage, End of February Storage



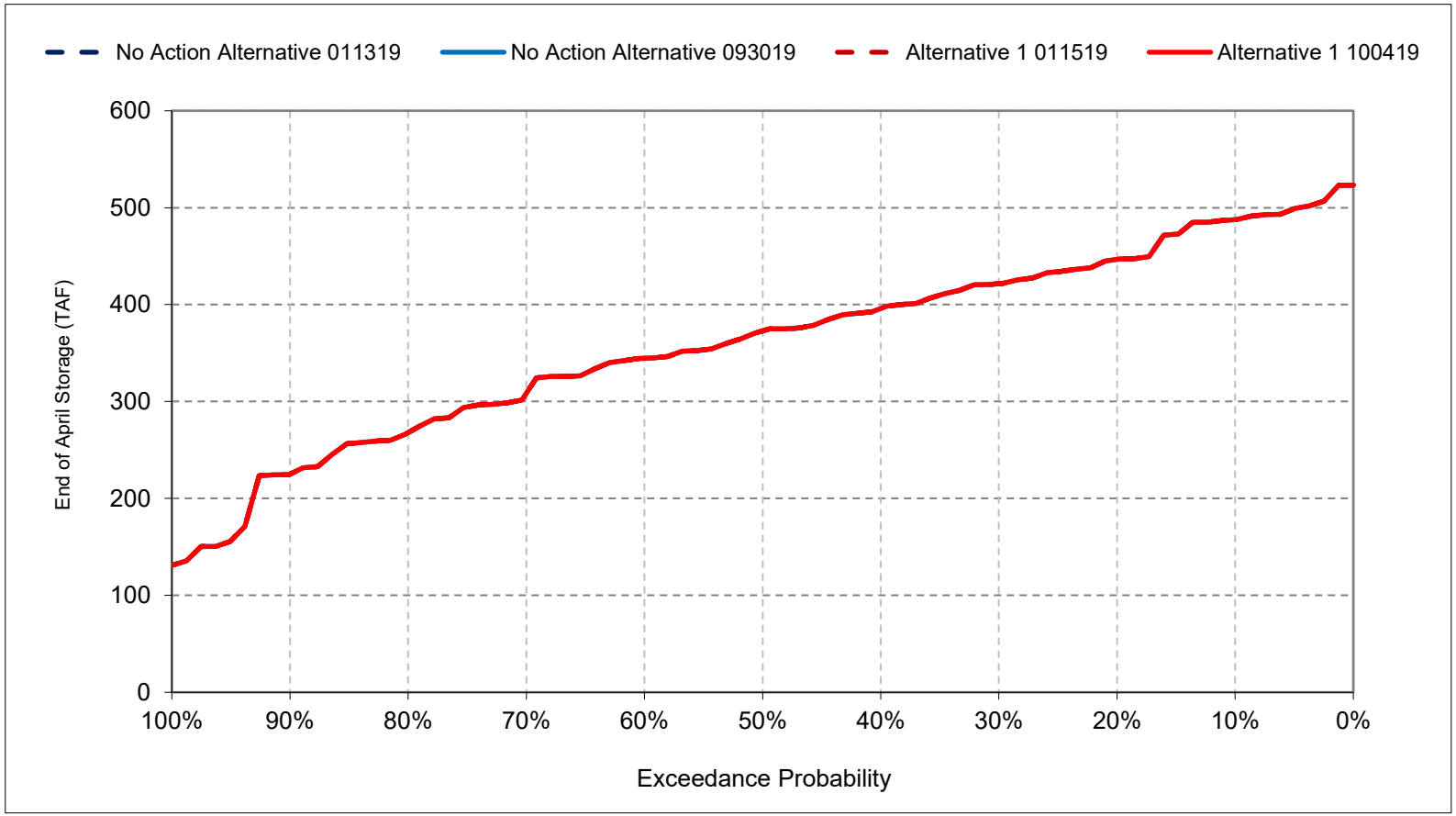

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-12. Millerton Storage, End of March Storage



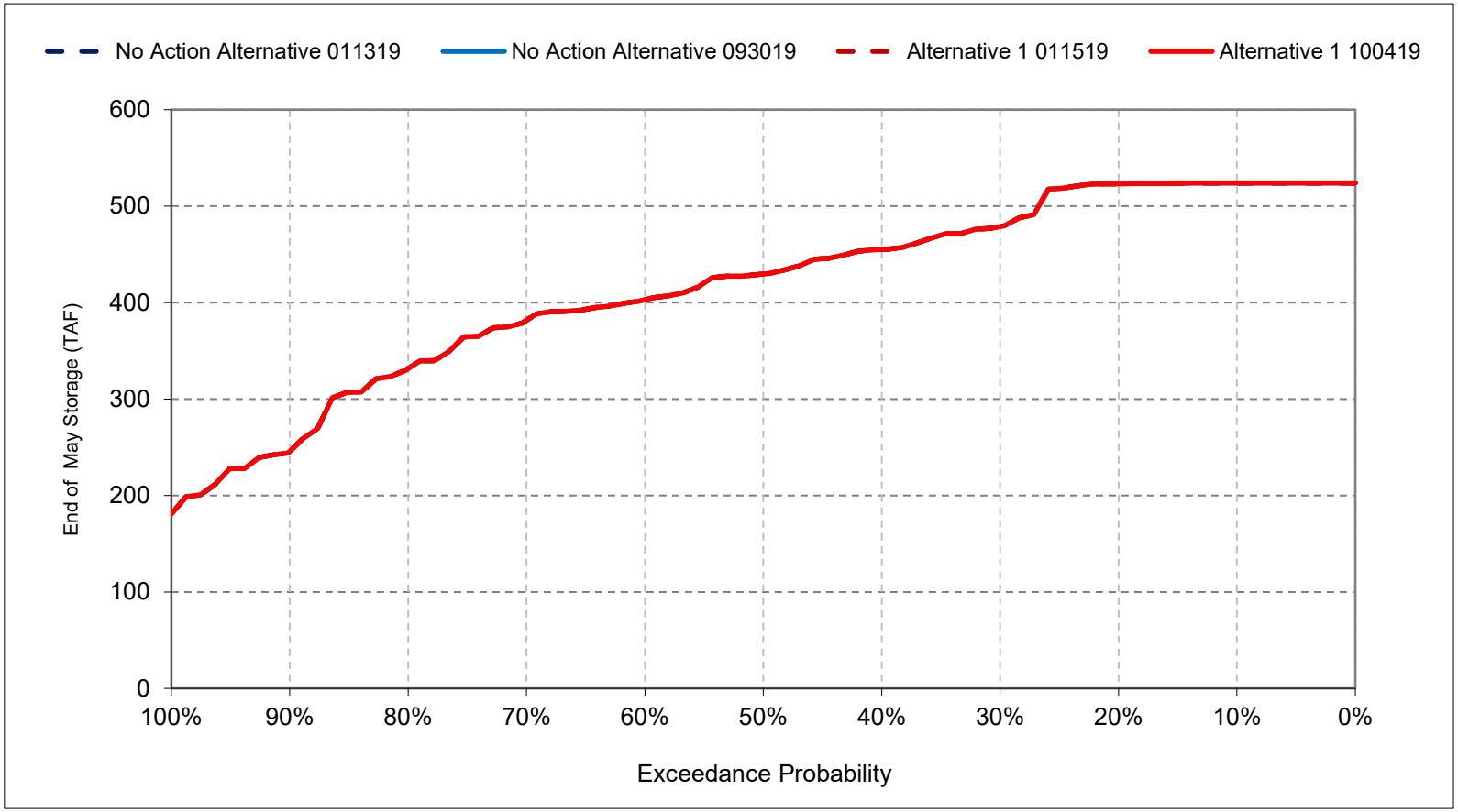

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-13. Millerton Storage, End of April Storage



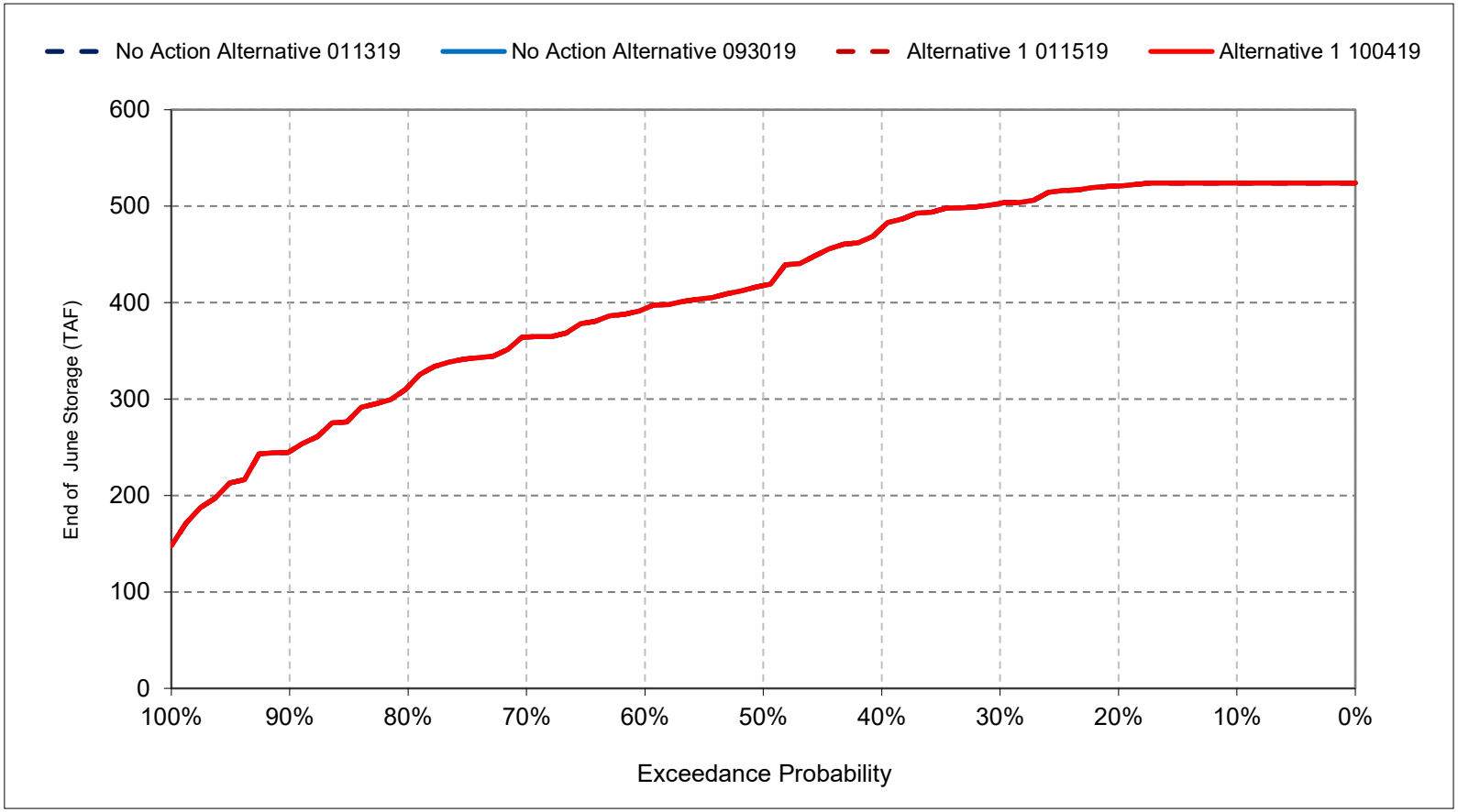

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-14. Millerton Storage, End of May Storage



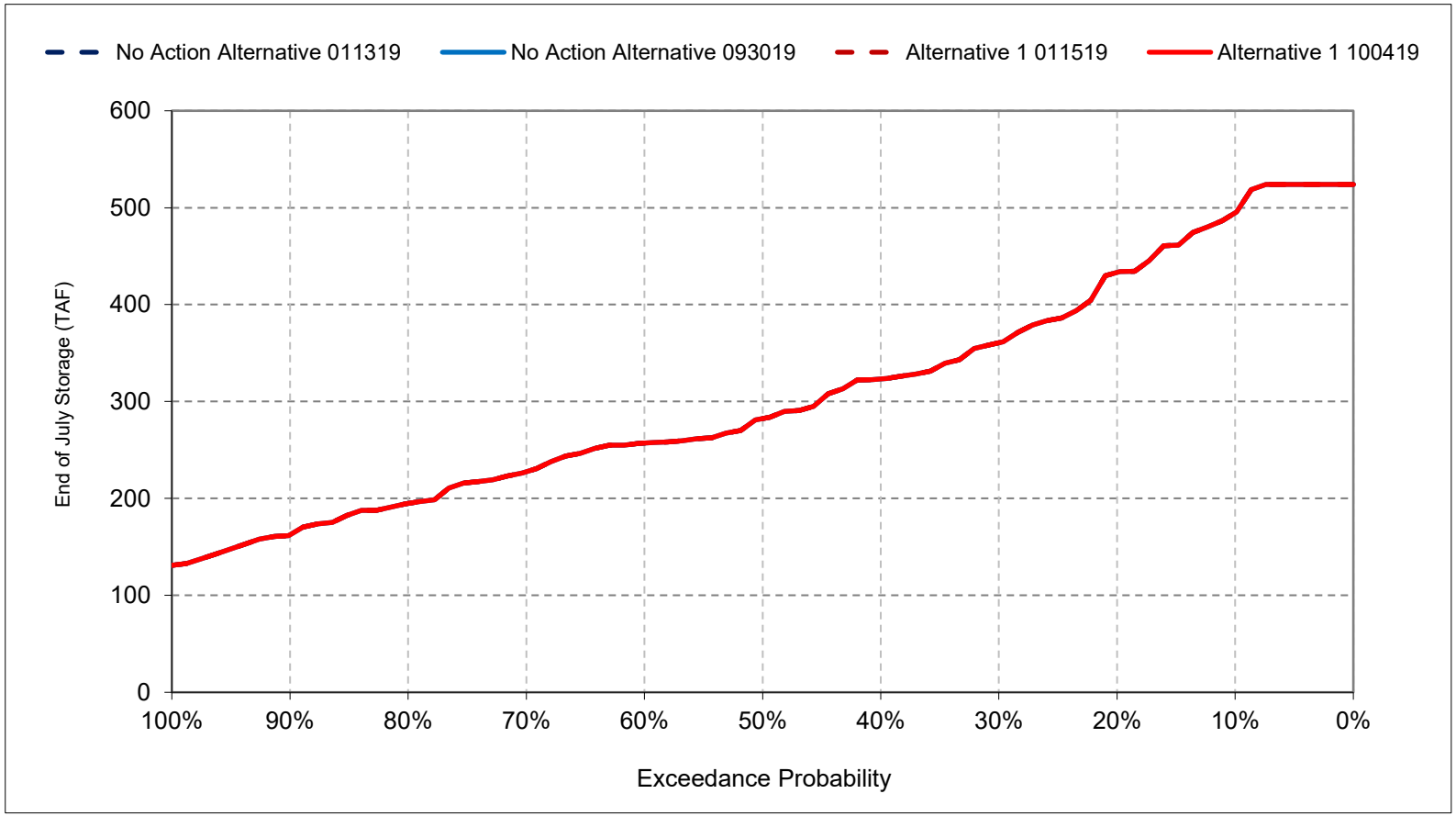

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-15. Millerton Storage, End of June Storage



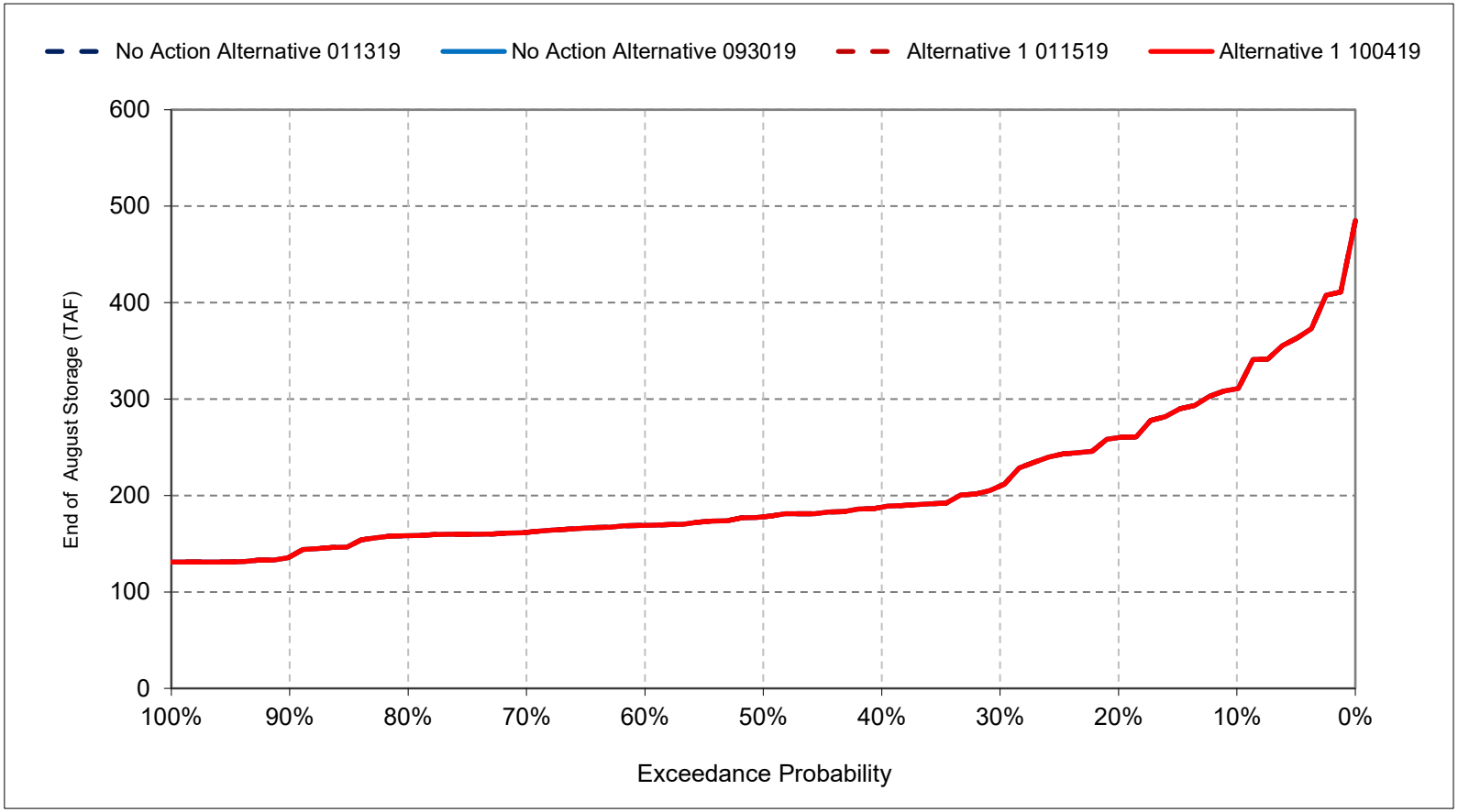

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-16. Millerton Storage, End of July Storage



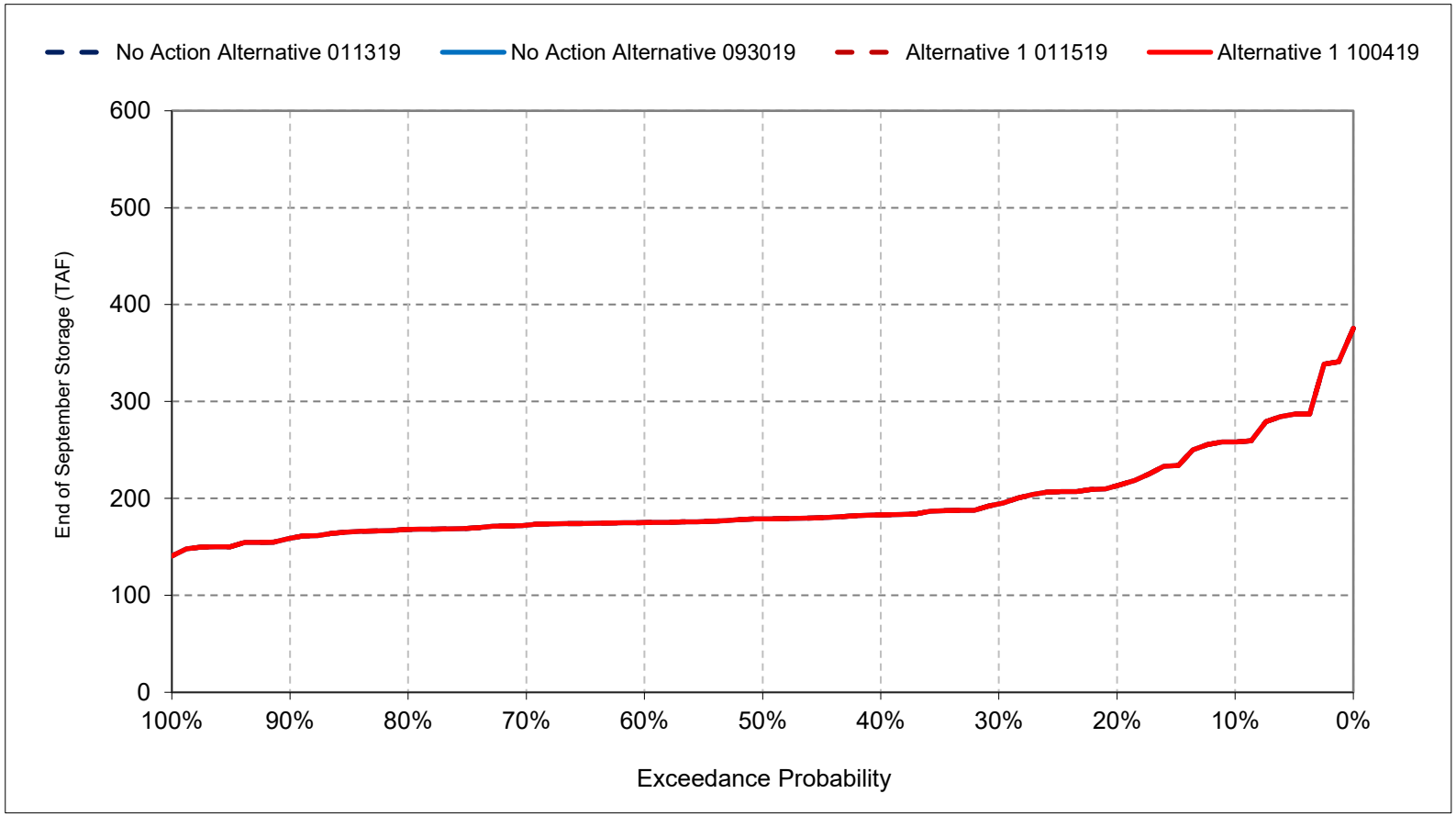

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-17. Millerton Storage, End of August Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-18. Millerton Storage, End of September Storage




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8a-1. Millerton Lake Elevation, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 011519 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8a-2. Millerton Lake Elevation, End of Month Elevation

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 100419 minus No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8a-3. Millerton Lake Elevation, End of Month Elevation

### No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### No Action Alternative 093019

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | **0** | **0** | 0 | **0** | 0 | **0** | 0 | 0 | **0** | **0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | **0** | **0** | 0 | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 |
| Dry (16%) | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Critical (27%) | 0 | **0** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8a-4. Millerton Lake Elevation, End of Month Elevation

### Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 100419

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 515 | 524 | 546 | 561 | 561 | 568 | 570 | 577 | 577 | 571 | 530 | 515 |
| 20% | 503 | 517 | 532 | 555 | 561 | 568 | 562 | 577 | 576 | 559 | 515 | 499 |
| 30% | 498 | 512 | 525 | 540 | 561 | 567 | 557 | 568 | 573 | 543 | 498 | 493 |
| 40% | 493 | 502 | 518 | 536 | 556 | 560 | 551 | 564 | 568 | 533 | 490 | 488 |
| 50% | 491 | 498 | 513 | 528 | 549 | 551 | 546 | 559 | 556 | 522 | 486 | 486 |
| 60% | 486 | 492 | 506 | 523 | 537 | 545 | 539 | 553 | 551 | 514 | 482 | 484 |
| 70% | 483 | 485 | 499 | 514 | 531 | 534 | 529 | 548 | 544 | 504 | 479 | 483 |
| 80% | 479 | 481 | 493 | 506 | 517 | 519 | 517 | 536 | 531 | 493 | 477 | 481 |
| 90% | 475 | 475 | 483 | 490 | 496 | 496 | 503 | 510 | 510 | 479 | 467 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 493 | 500 | 513 | 527 | 538 | 542 | 540 | 553 | 552 | 524 | 494 | 491 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 512 | 520 | 529 | 547 | 558 | 562 | 539 | 556 | 574 | 565 | 528 | 512 |
| Above Normal (24%) | 495 | 508 | 523 | 536 | 555 | 562 | 552 | 570 | 572 | 541 | 497 | 487 |
| Below Normal (10%) | 492 | 497 | 509 | 524 | 540 | 542 | 539 | 552 | 550 | 521 | 488 | 487 |
| Dry (16%) | 485 | 493 | 508 | 526 | 533 | 535 | 546 | 556 | 545 | 505 | 479 | 487 |
| Critical (27%) | 478 | 479 | 493 | 503 | 508 | 511 | 526 | 533 | 518 | 486 | 472 | 482 |

### Alternative 1 100419 minus Alternative 1 011519

| | End of Month Elevation (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | **0** | **0** | **0** | **0** | 0 | **0** | **0** | **0** | **0** | **0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | **0** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 |
| Dry (16%) | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | **0** | **0** |
| Critical (27%) | **0** | **0** | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | **0** | **0** |

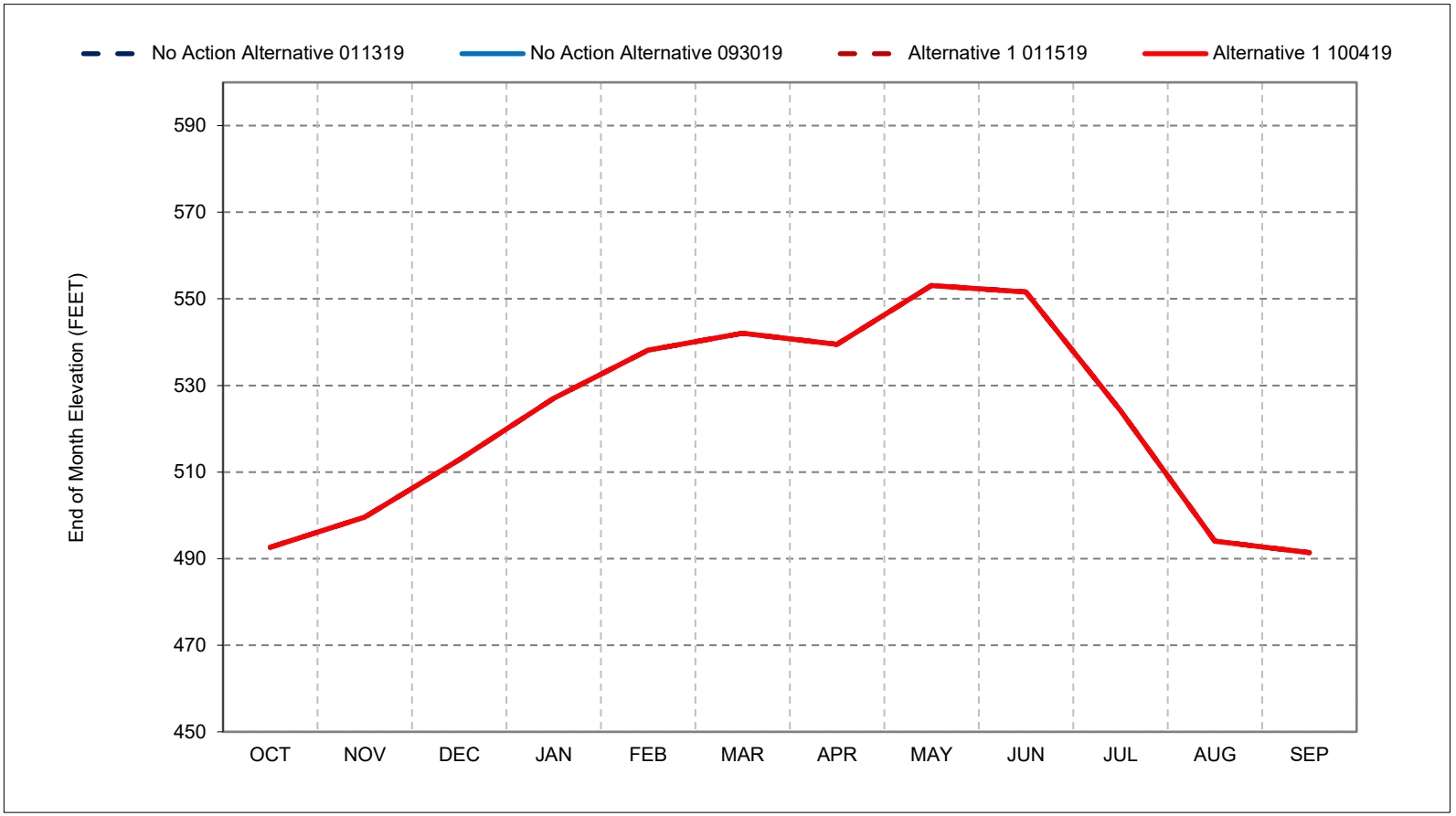
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-1. Millerton Lake Elevation, Long-Term Average Elevation

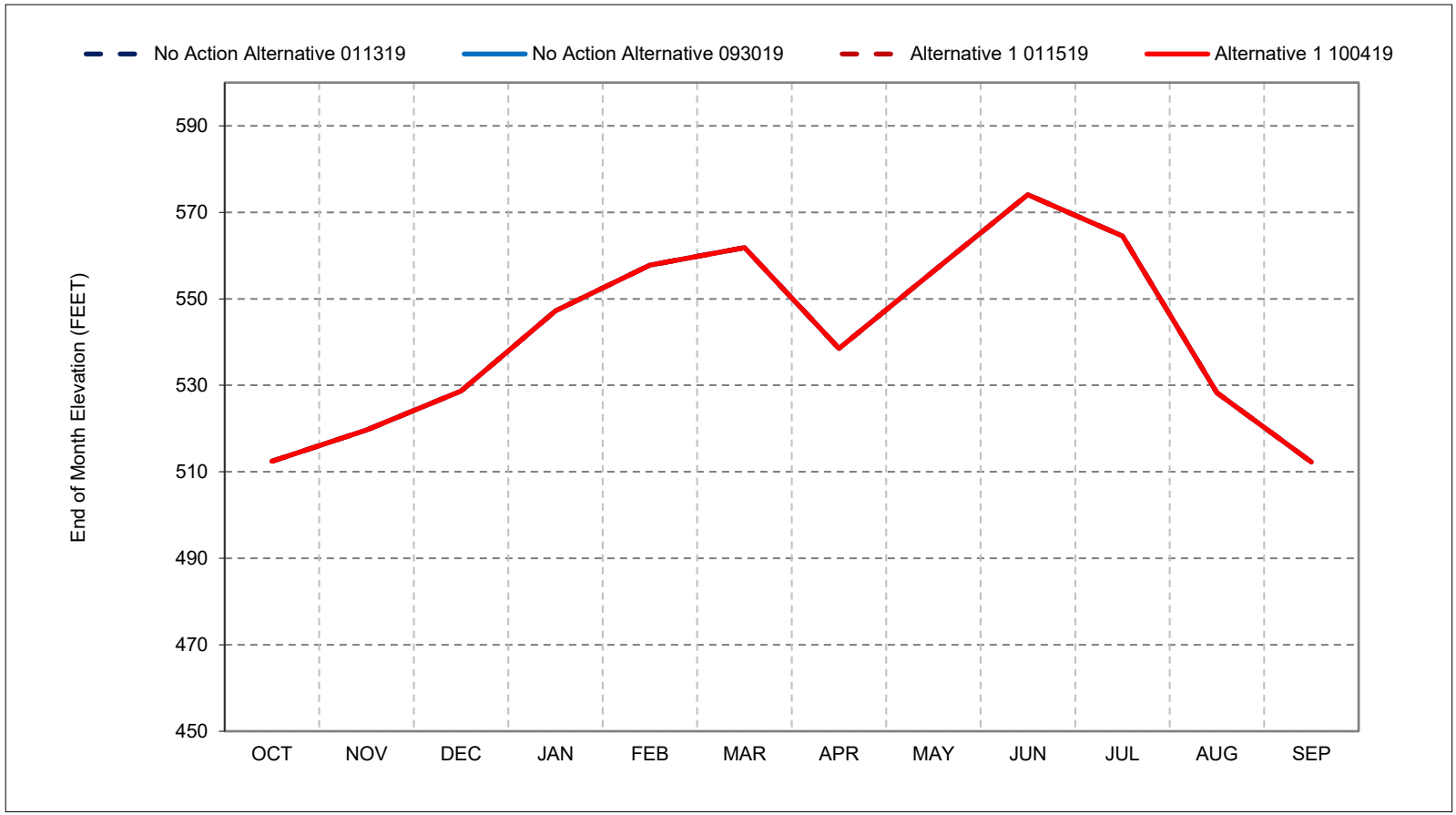



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-2. Millerton Lake Elevation, Wet Year Average Elevation

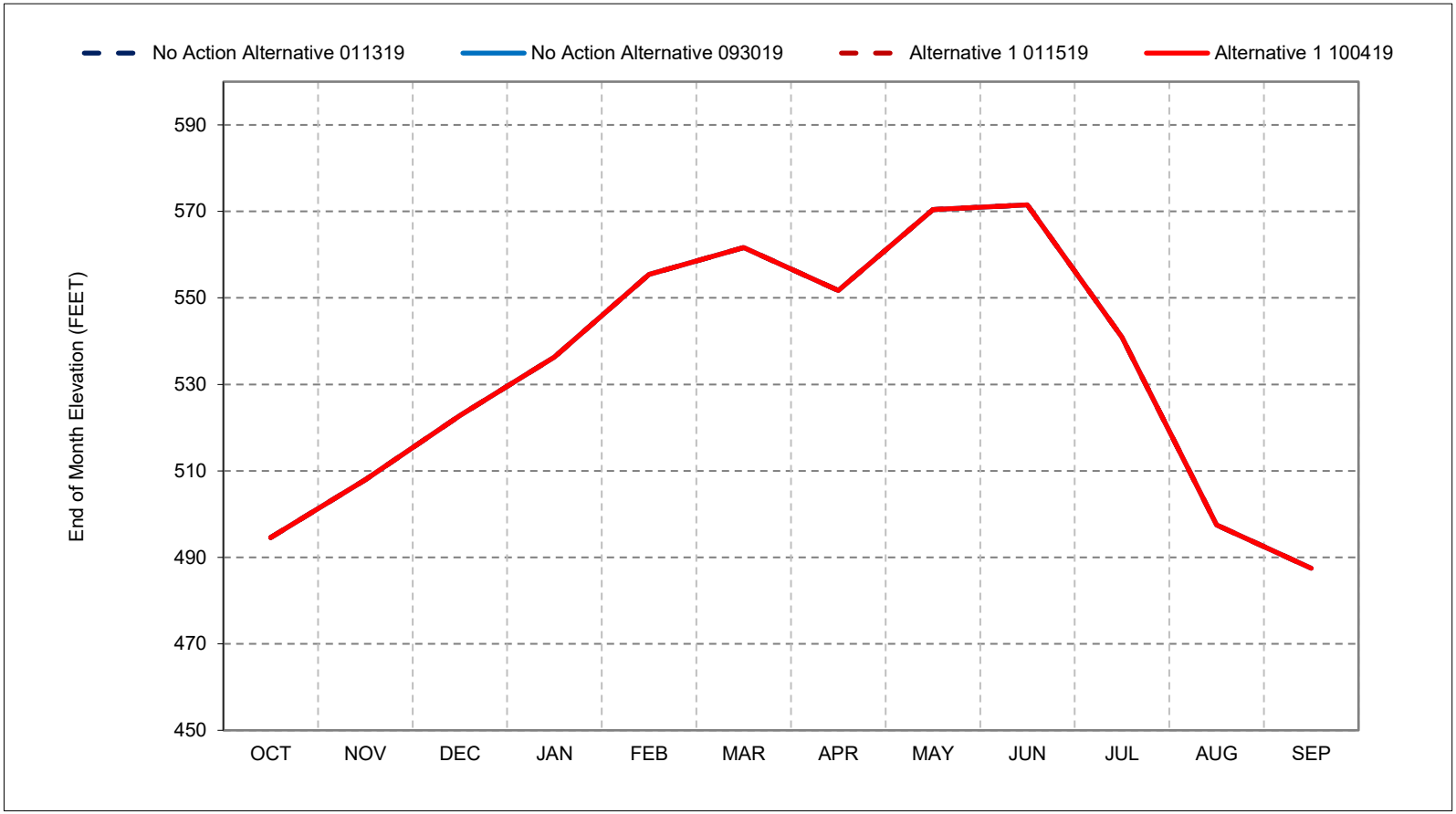



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-3. Millerton Lake Elevation, Above Normal Year Average Elevation

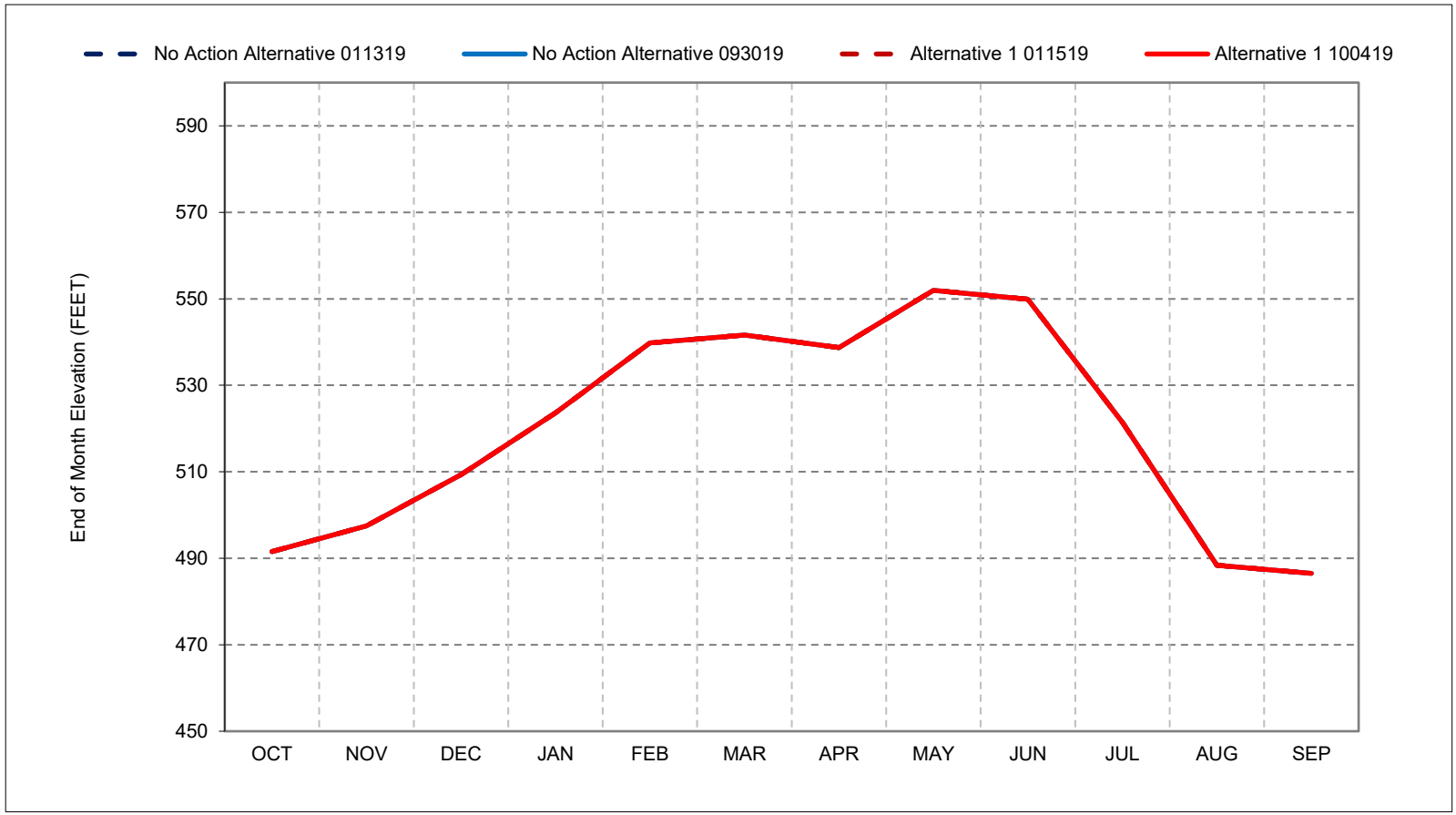



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-4. Millerton Lake Elevation, Below Normal Year Average Elevation

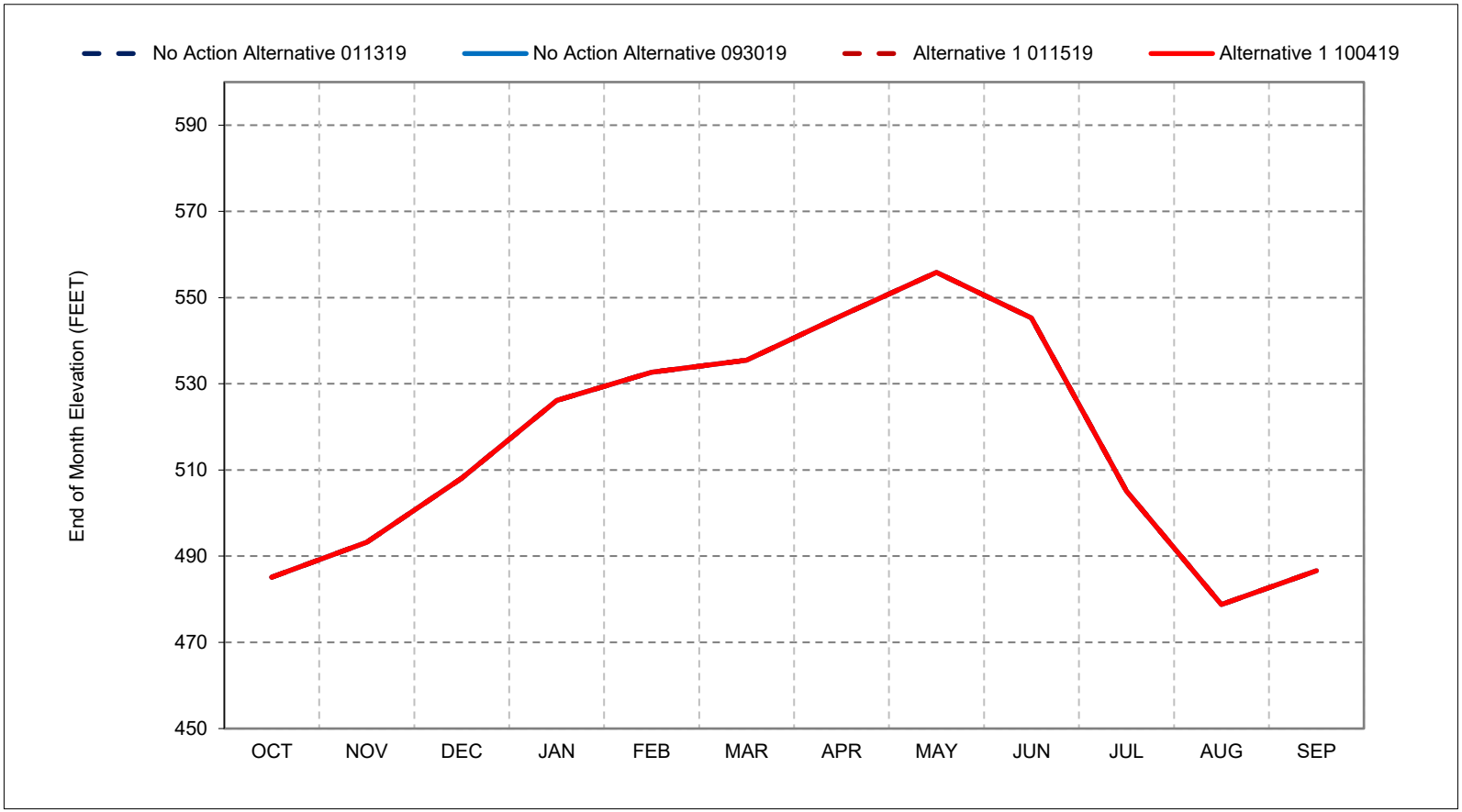



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-5. Millerton Lake Elevation, Dry Year Average Elevation

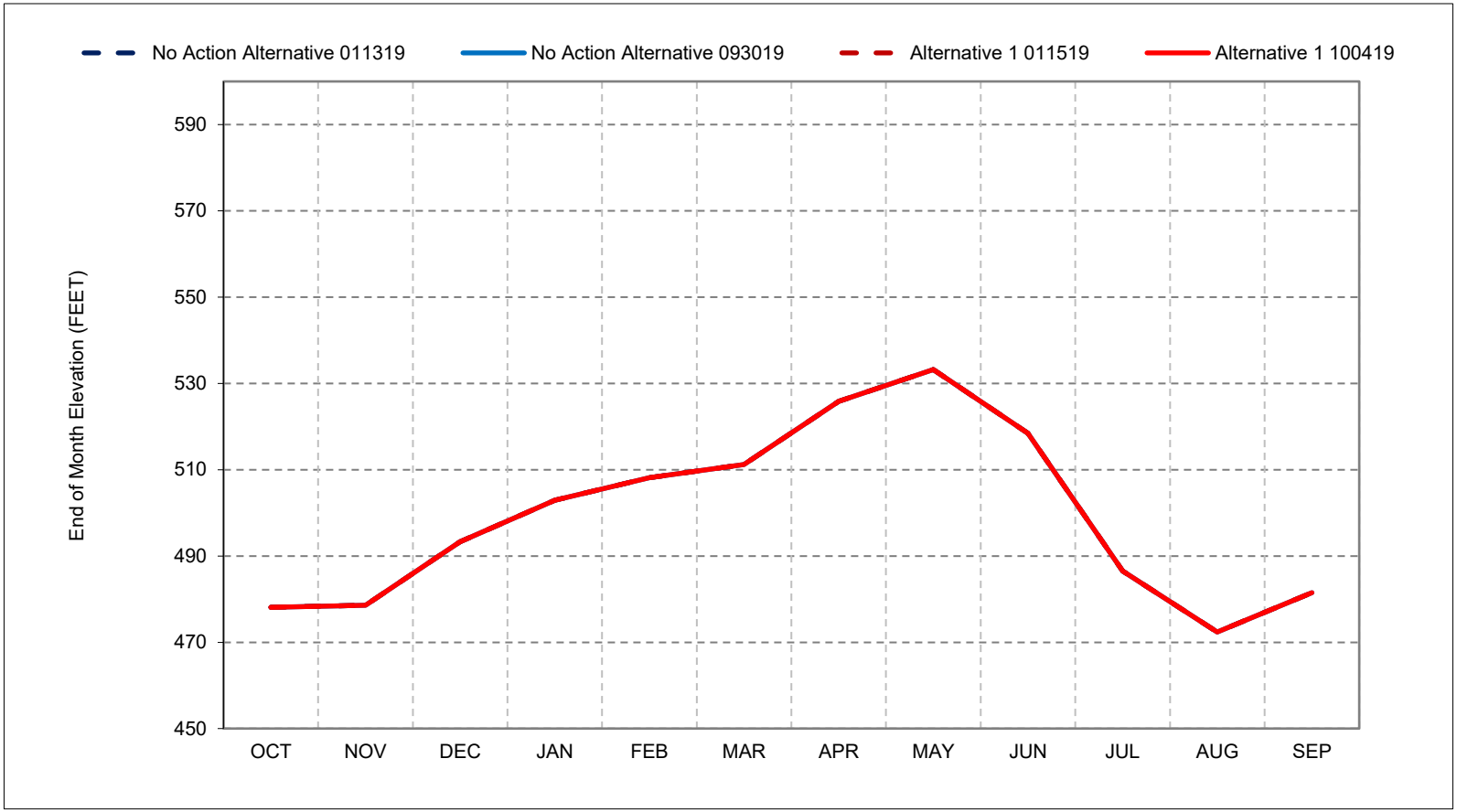



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8a-6. Millerton Lake Elevation, Critical Year Average Elevation

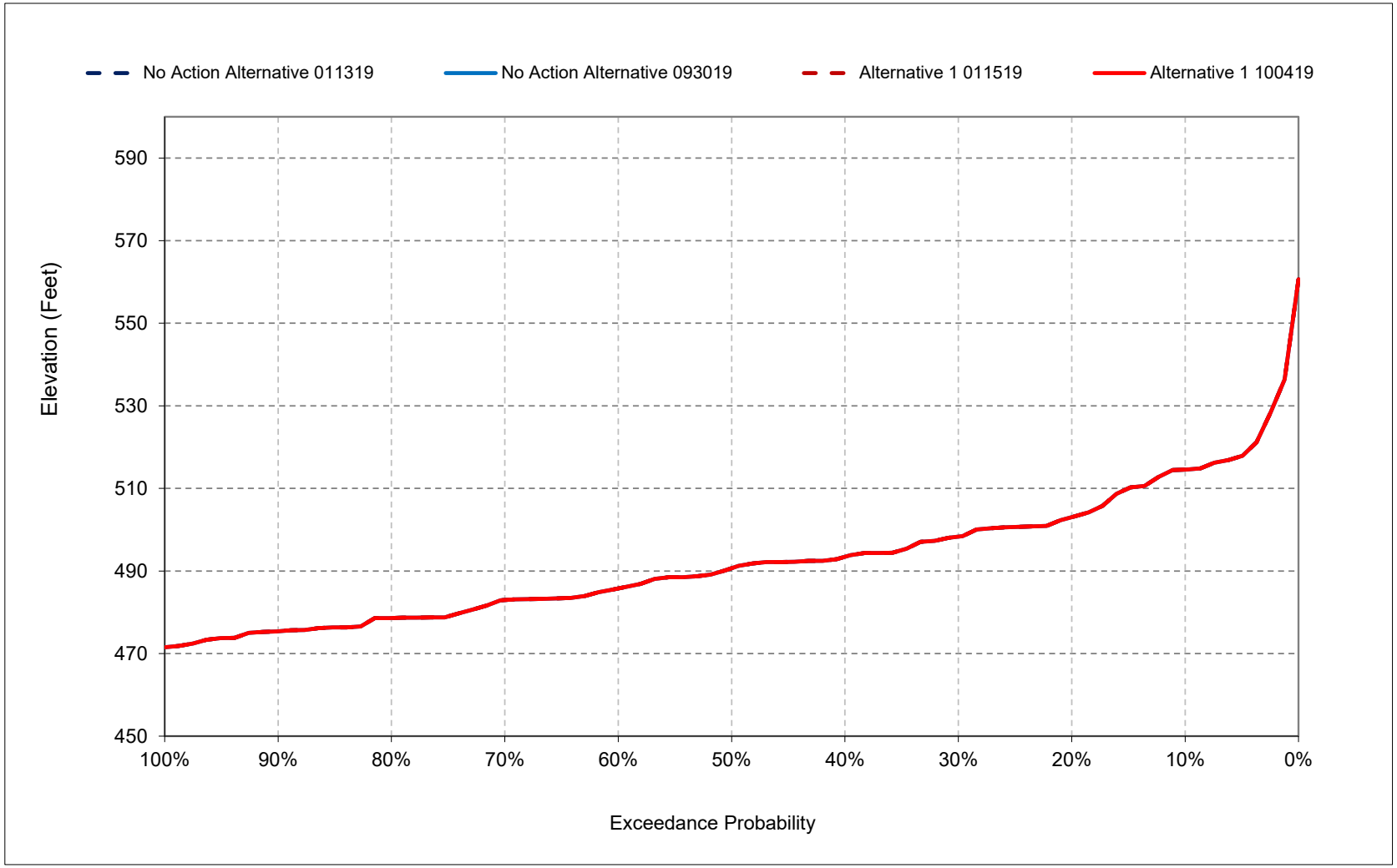



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

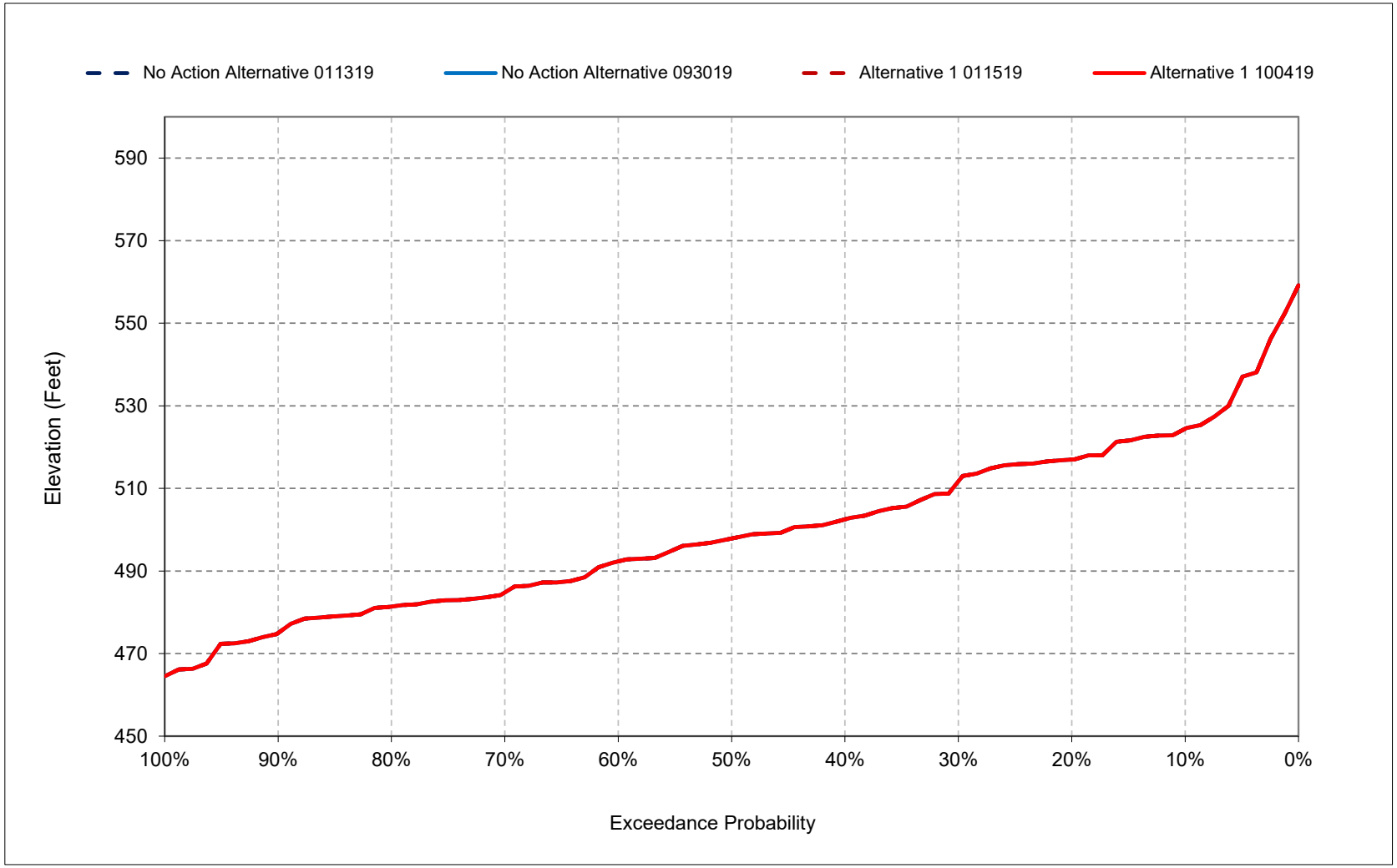
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-7. Millerton Lake, Reservoir Pool Elevation, October**



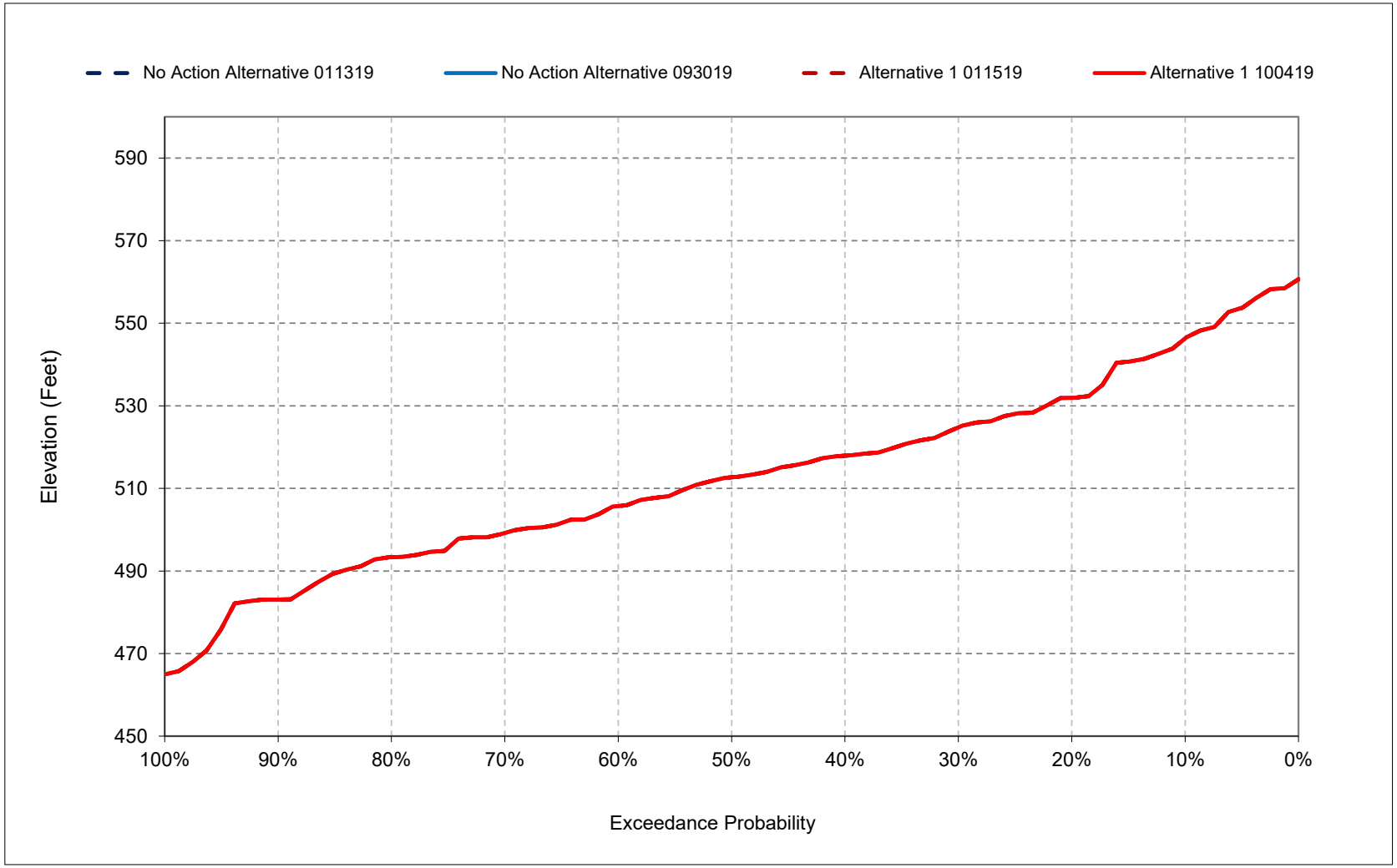

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-8. Millerton Lake, Reservoir Pool Elevation, November**



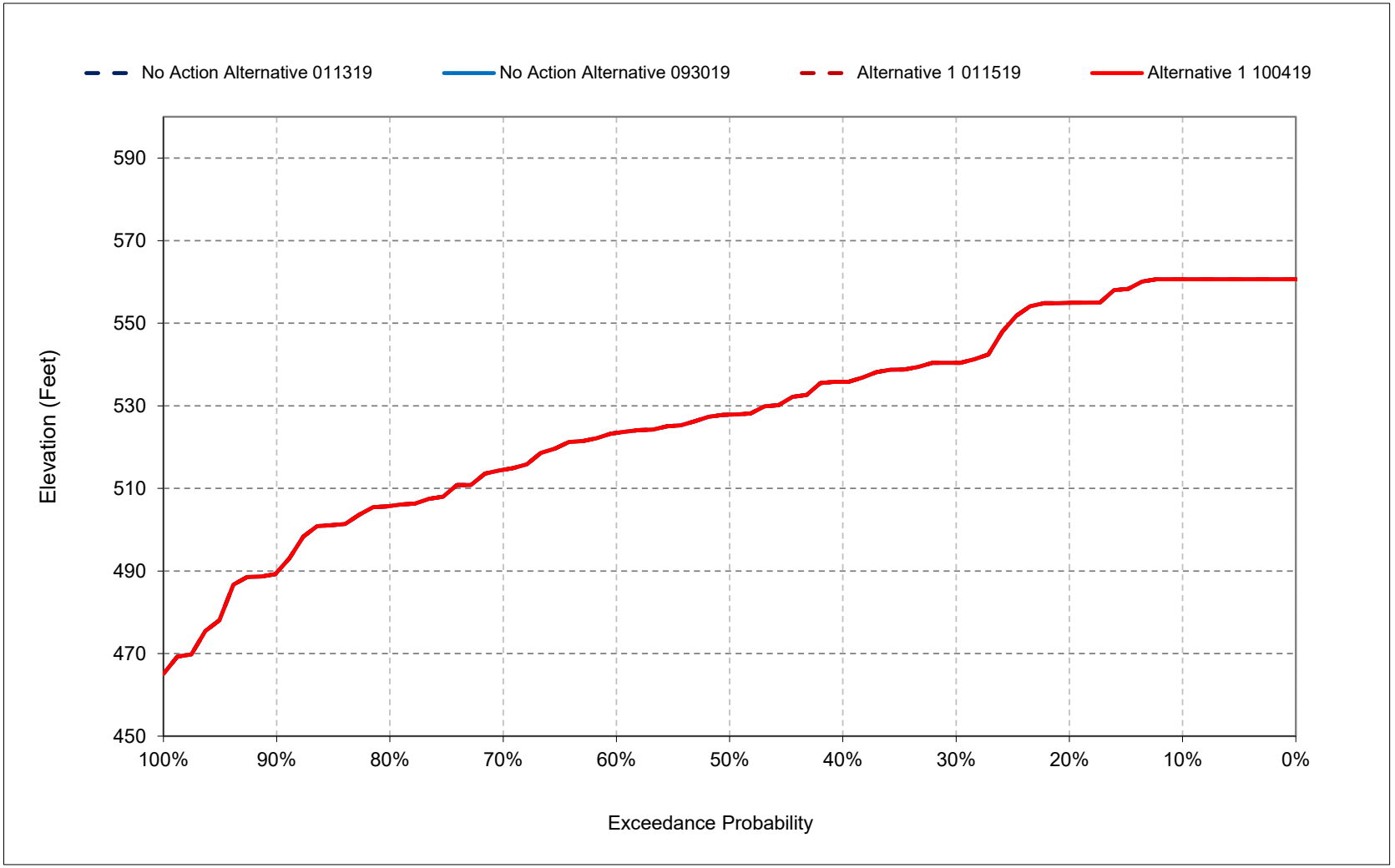

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-9. Millerton Lake, Reservoir Pool Elevation, December**



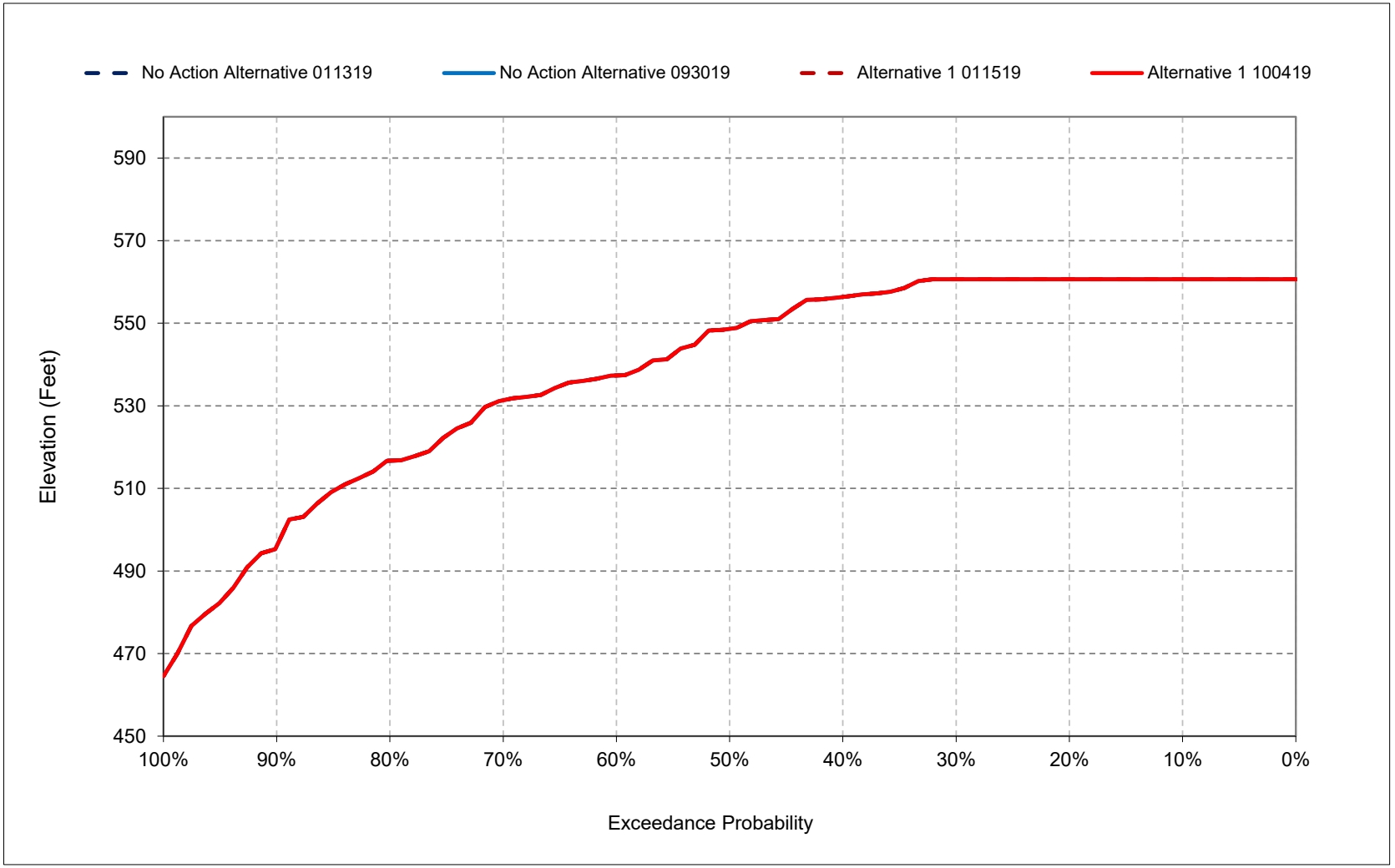

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-10. Millerton Lake, Reservoir Pool Elevation, January**



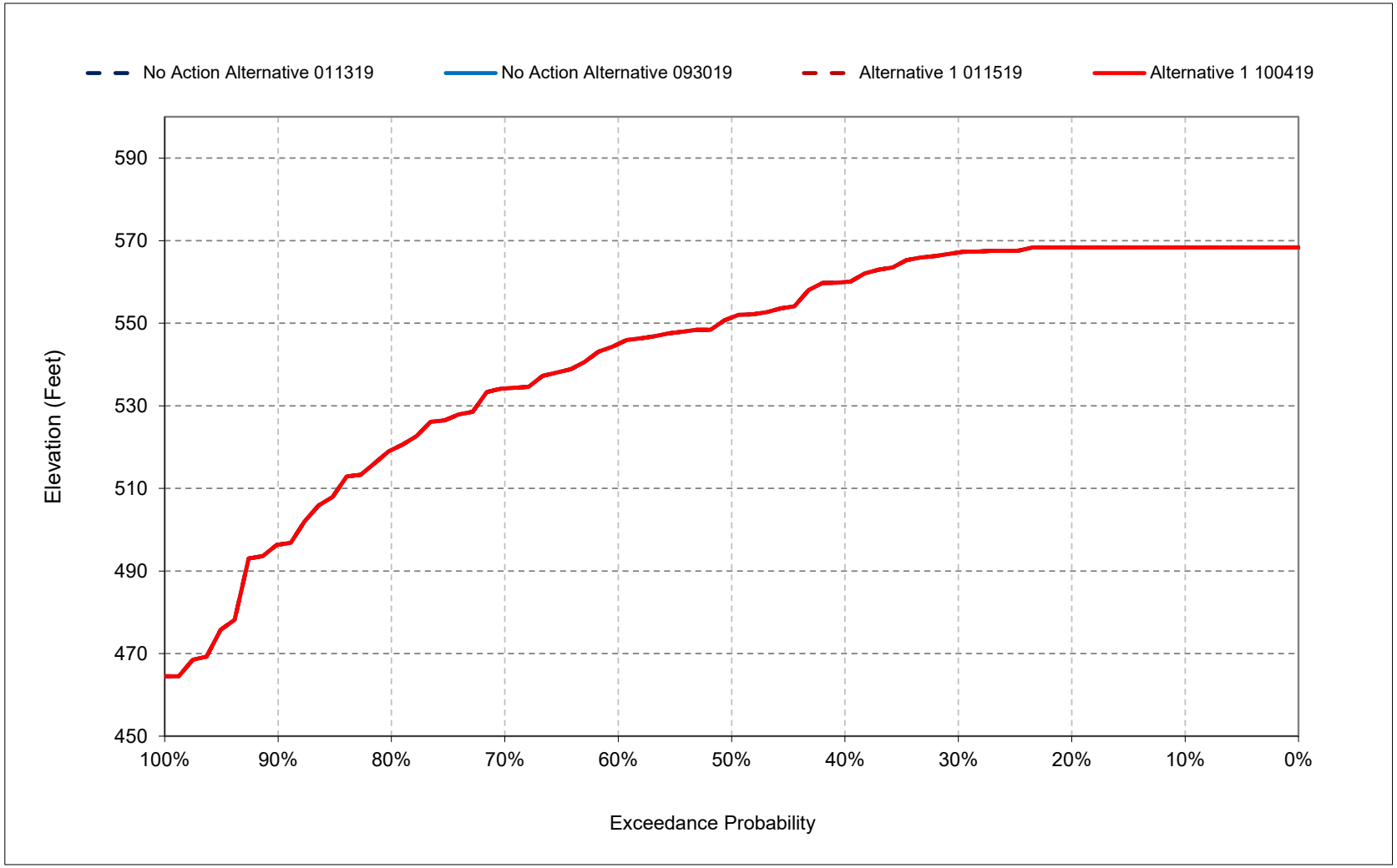

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-11. Millerton Lake, Reservoir Pool Elevation, February**



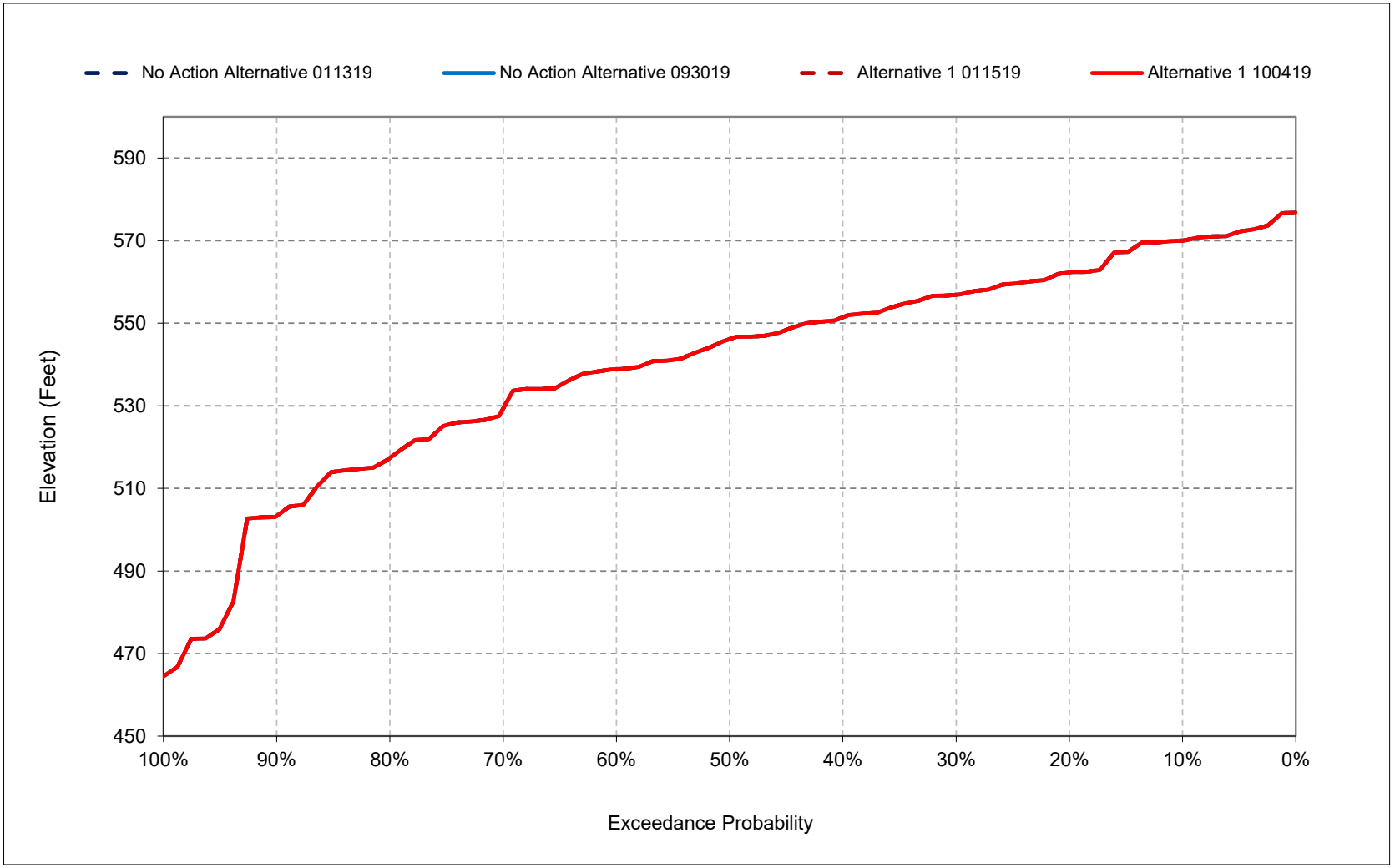

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-12. Millerton Lake, Reservoir Pool Elevation, March**



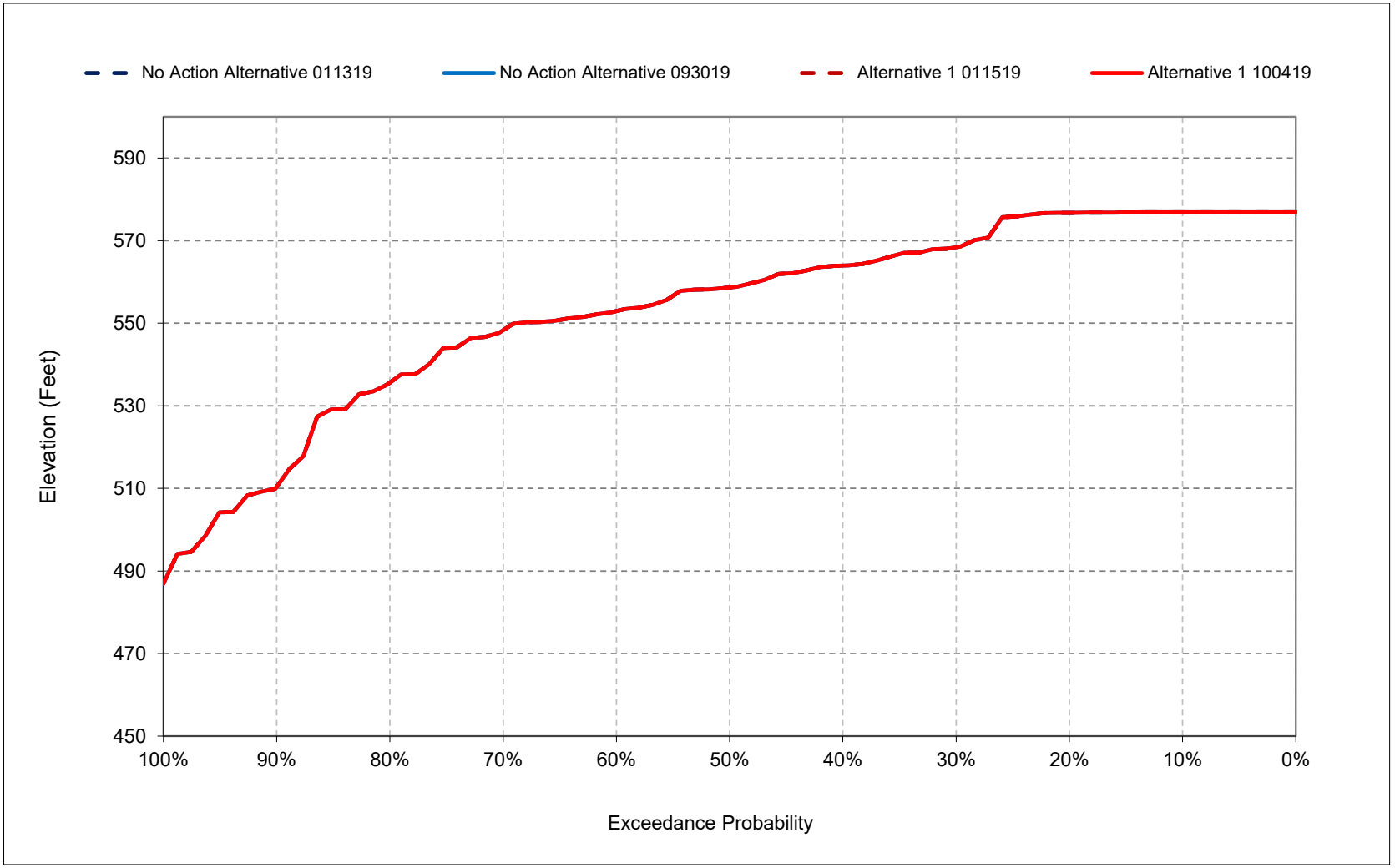

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-13. Millerton Lake, Reservoir Pool Elevation, April**



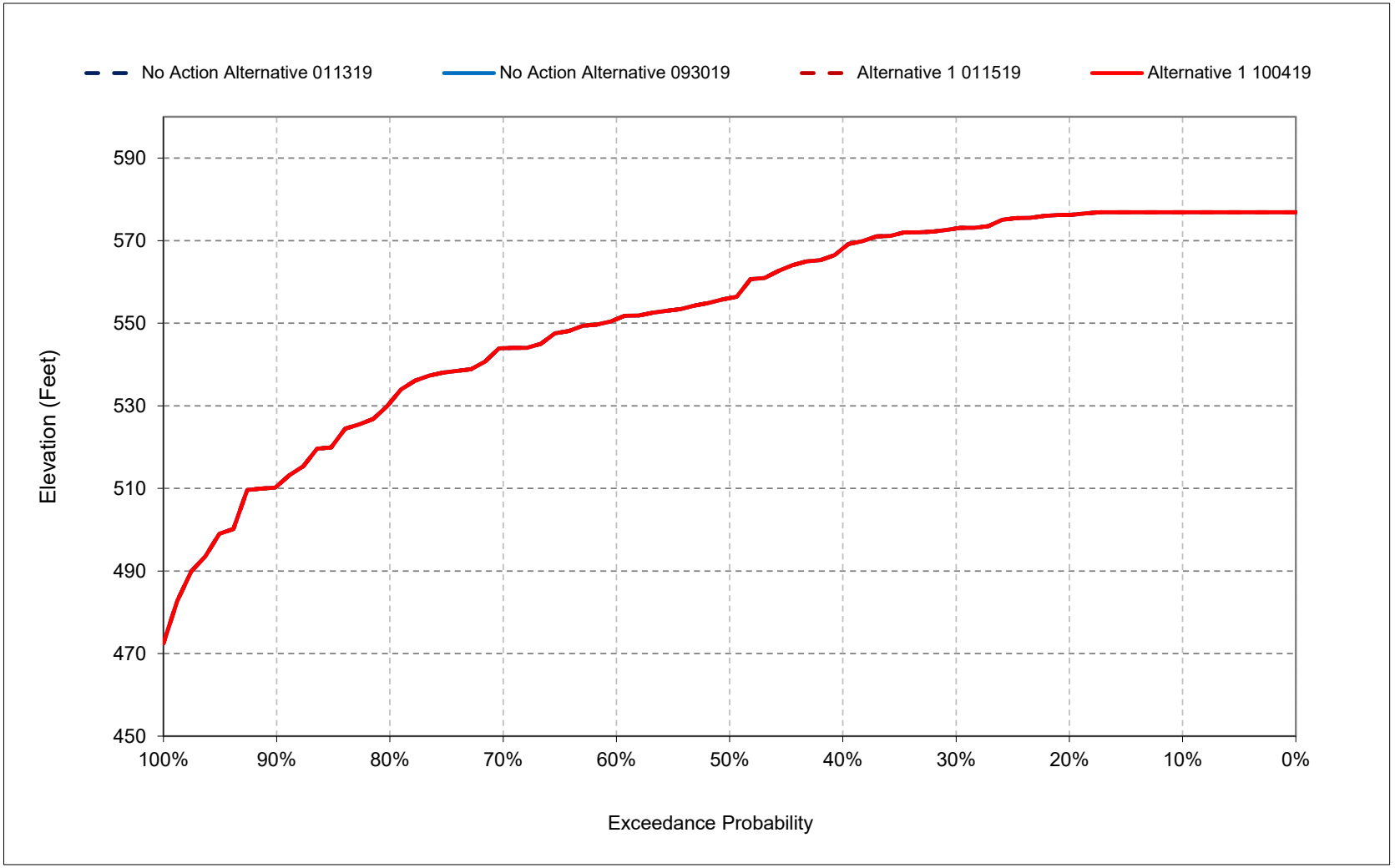

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-14. Millerton Lake, Reservoir Pool Elevation, May**



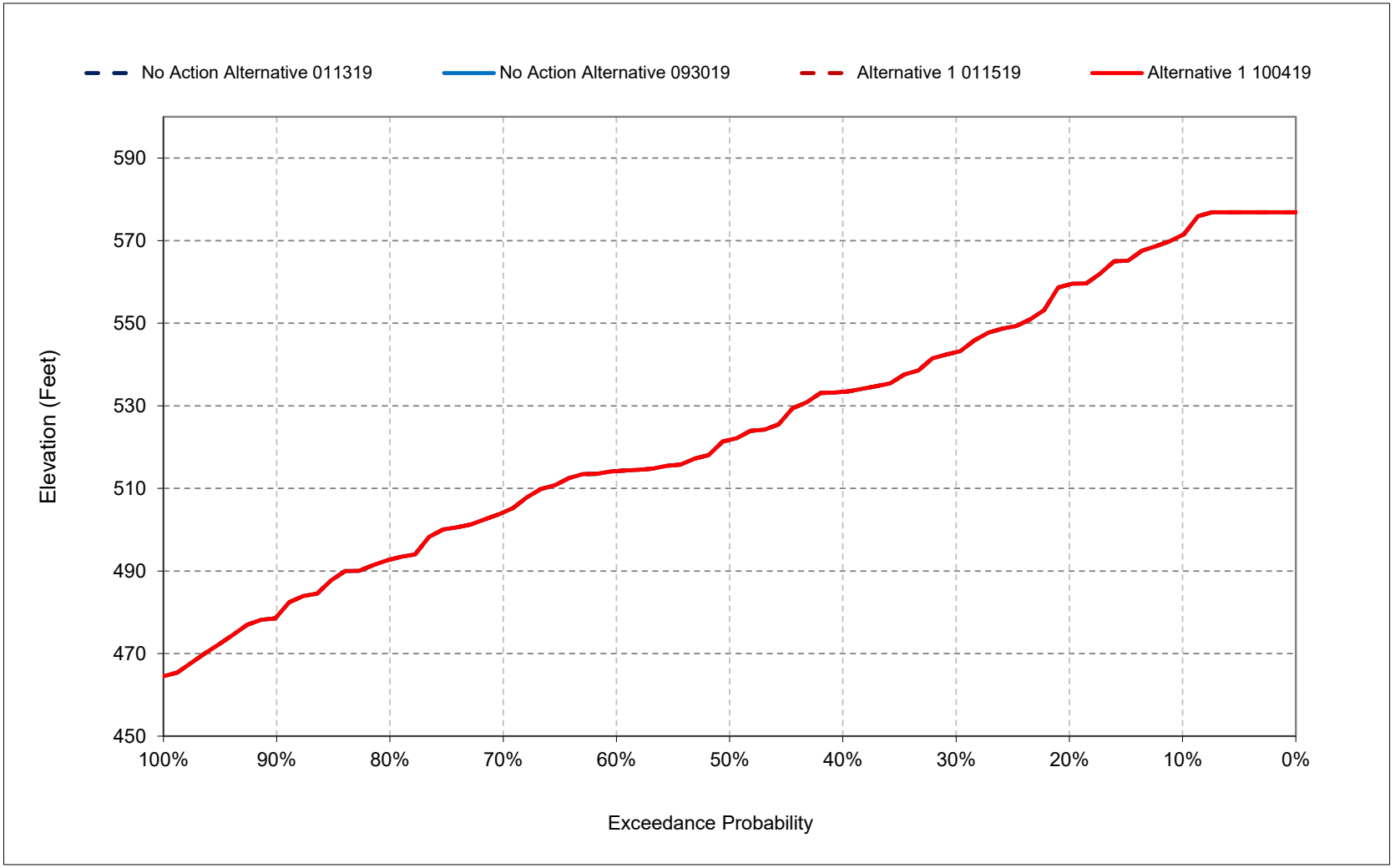

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-15. Millerton Lake, Reservoir Pool Elevation, June**



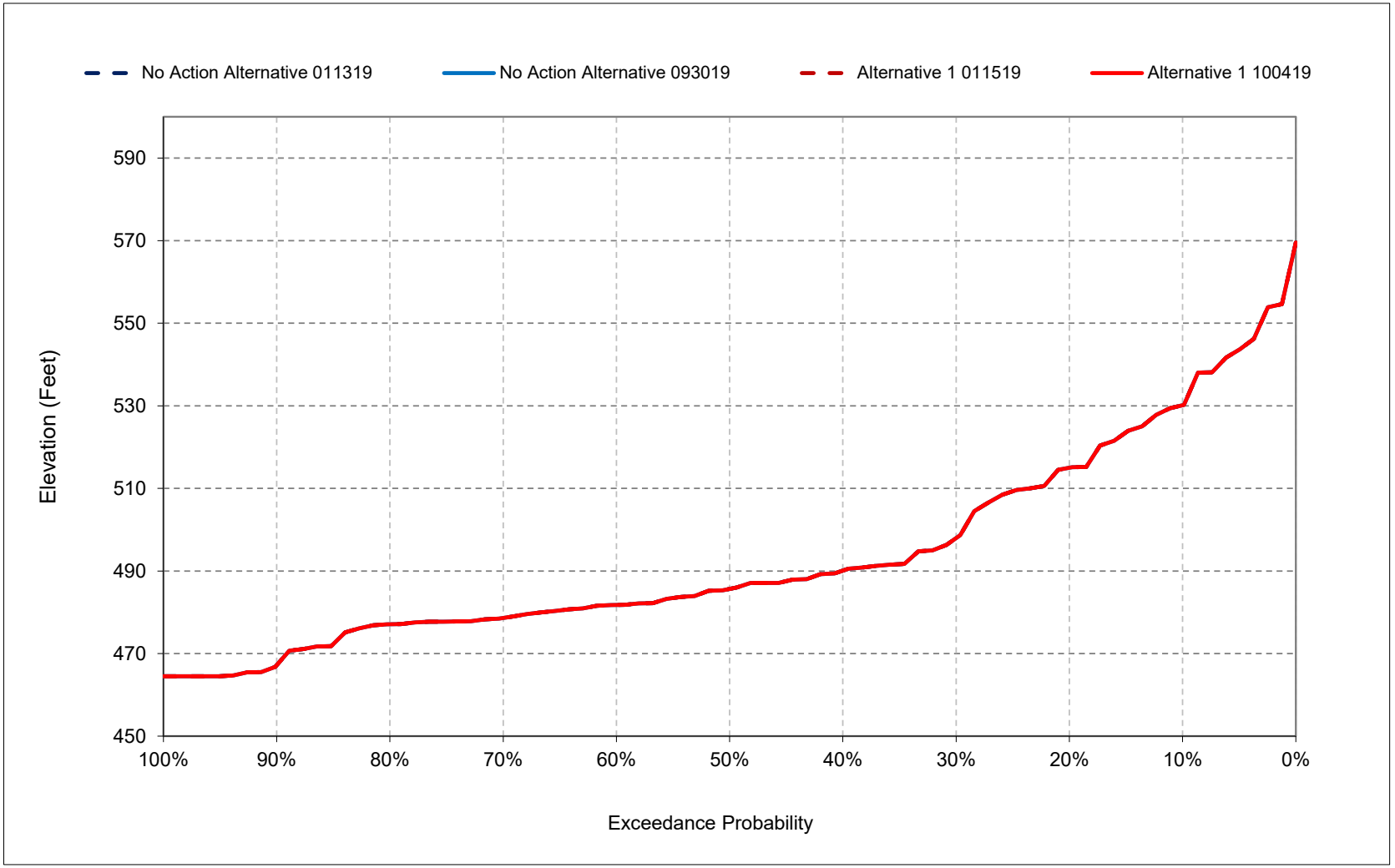

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-16. Millerton Lake, Reservoir Pool Elevation, July**



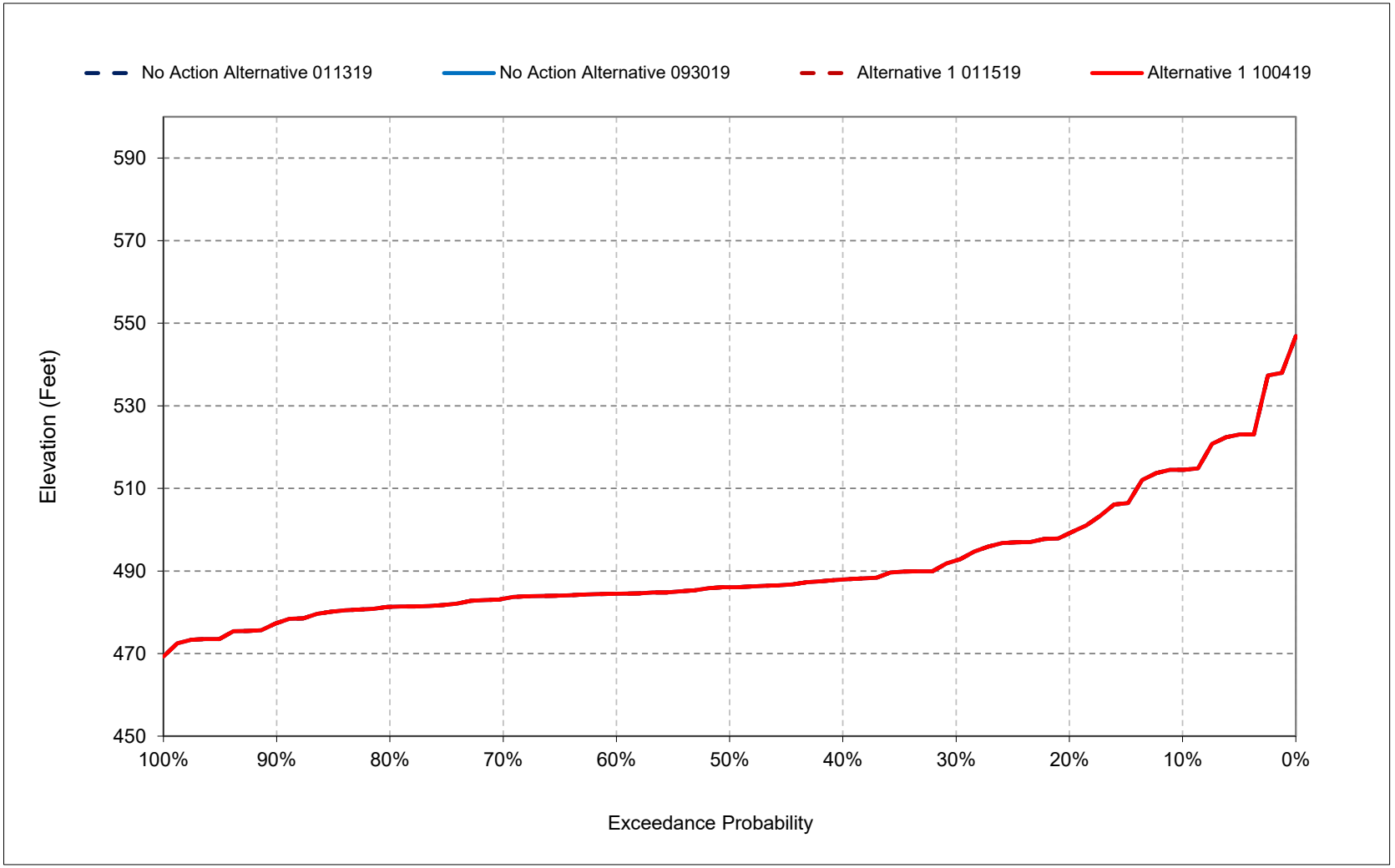

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-17. Millerton Lake, Reservoir Pool Elevation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8a-18. Millerton Lake, Reservoir Pool Elevation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.2 Flow Results (CalSim II)

The following results of the CalSim II model are included for river flow conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Trinity River Flow below Lewiston | C100 | 12-1 to 12-4 | 12-1 to 12-18 |
| Clear Creek below Whiskeytown Dam Flow | C3 | 14-1 to 14-4 | 14-1 to 14-18 |
| Sacramento River Flow downstream of Keswick Reservoir | C5 | 15-1 to 15-4 | 15-1 to 15-18 |
| Sacramento Flow River at Bend Bridge | C109 | 16-1 to 16-4 | 16-1 to 16-18 |
| Sacramento River below Red Bluff Diversion Dam Flow | C112 | 17-1 to 17-4 | 17-1 to 17-18 |
| Sacramento River Flow at Hamilton City | C114 | 18-1 to 18-4 | 18-1 to 18-18 |
| Sacramento River at Wilkins Slough Flow | C129 | 19-1 to 19-4 | 19-1 to 19-18 |
| Feather River Flow downstream of Thermalito | C203 | 21-1 to 21-4 | 21-1 to 21-18 |
| Feather River at Sacramento River Confluence Flow | C223 | 22-1 to 22-4 | 22-1 to 22-18 |
| Fremont Weir Spills | D160 | 24-1 to 24-4 | 24-1 to 24-18 |
| Yolo Bypass Flow | C157 | 25-1 to 25-4 | 25-1 to 25-18 |
| American River below Nimbus Dam Flow | C9 | 27-1 to 27-4 | 27-1 to 27-18 |
| American River at H Street | C303 | 28-1 to 28-4 | 28-1 to 28-18 |
| Sacramento River Flow at Freeport | C169 | 29-1 to 29-4 | 29-1 to 29-18 |
| Sacramento River Flow at Rio Vista (Alternative 3 revised DXC equation) | C405 | 32-1 to 32-4 | 32-1 to 32-18 |
| San Joaquin River Flow at Gravelly Ford | C603 | 33-1 to 33-4 | 33-1 to 33-18 |
| San Joaquin River Flow below Sack Dam | C608 | 34-1 to 34-4 | 34-1 to 34-18 |
| San Joaquin River Flow below confluence with Merced | C620 | 35-1 to 35-4 | 35-1 to 35-18 |
| Stanislaus River Flow below Goodwin | C520 | 37-1 to 37-4 | 37-1 to 37-18 |
| Stanislaus River Flow at | C528 | 38-1 to 38-4 | 38-1 to 38-18 |

| | | | |
|---|---|---|---|
| Mouth | | | |
| San Joaquin River at Vernalis | C639 | 39-1 to 39-4 | 39-1 to 39-18 |
| San Joaquin River at Vernalis (60-20-20) | C639 | 39b-1 to 39b-4 | 39b-1 to 39b-18 |
| Old and Middle River Flow | C408 | 40-1 to 40-4 | 40-1 to 40-18 |
| Delta Outflow | C406 | 41-1 to 41-4 | 41-1 to 41-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 12-1. Trinity River Flow below Lewiston, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 521 | 1,219 | 861 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 356 | 639 | 700 | 691 | 667 | 588 | 3,753 | 2,210 | 890 | 793 | 793 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,192 | 1,562 | 1,279 | 1,377 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 678 | 652 | 300 | 528 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 300 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 275 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 870 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 1,372 | 2,099 | 889 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 364 | 352 | 675 | 719 | 743 | 685 | 588 | 3,753 | 2,210 | 890 | 793 | 786 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,297 | 1,622 | 1,291 | 1,434 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 625 | 652 | 300 | 833 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 303 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 314 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 311 | 300 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 818 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 851 | 880 | 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -5 | -5 | 37 | 19 | 52 | 18 | 0 | 0 | 0 | 0 | 0 | -8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 105 | 60 | 12 | 57 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -53 | 0 | 0 | 305 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | -31 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -52 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-2. Trinity River Flow below Lewiston, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 532 | 1,219 | 501 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 356 | 639 | 698 | 678 | 658 | 588 | 3,753 | 2,210 | 890 | 793 | 783 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,192 | 1,555 | 1,250 | 1,348 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 678 | 652 | 300 | 545 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 582 | 300 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 275 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 798 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 1,372 | 2,099 | 1,544 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 346 | 672 | 728 | 739 | 694 | 588 | 3,753 | 2,210 | 890 | 793 | 783 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,297 | 1,650 | 1,293 | 1,462 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 593 | 652 | 300 | 803 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 303 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 300 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 798 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 839 | 880 | 1,043 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | **-10** | 33 | 30 | 61 | 36 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 105 | 95 | 42 | 114 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | **-86** | 0 | 0 | 258 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 47 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-3. Trinity River Flow below Lewiston, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 521 | 1,219 | 861 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 356 | 639 | 700 | 691 | 667 | 588 | 3,753 | 2,210 | 890 | 793 | 793 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,192 | 1,562 | 1,279 | 1,377 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 678 | 652 | 300 | 528 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 300 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 275 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 870 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 532 | 1,219 | 501 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 356 | 639 | 698 | 678 | 658 | 588 | 3,753 | 2,210 | 890 | 793 | 783 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,192 | 1,555 | 1,250 | 1,348 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 678 | 652 | 300 | 545 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 582 | 300 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 275 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 798 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 12 | 0 | -361 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | -2 | -13 | -9 | 0 | 0 | 0 | 0 | 0 | -11 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | -7 | -29 | -29 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | -47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -73 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-4. Trinity River Flow below Lewiston, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 1,372 | 2,099 | 889 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 364 | 352 | 675 | 719 | 743 | 685 | 588 | 3,753 | 2,210 | 890 | 793 | 786 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,297 | 1,622 | 1,291 | 1,434 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 625 | 652 | 300 | 833 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 303 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 314 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 311 | 300 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 818 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 373 | 300 | 300 | 1,372 | 2,099 | 1,544 | 600 | 4,709 | 4,626 | 1,102 | 870 | 870 |
| 20% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,709 | 2,526 | 1,102 | 870 | 870 |
| 30% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 40% | 373 | 300 | 300 | 300 | 300 | 300 | 540 | 4,570 | 2,526 | 1,102 | 870 | 870 |
| 50% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 60% | 373 | 300 | 300 | 300 | 300 | 300 | 493 | 4,189 | 2,120 | 1,102 | 870 | 870 |
| 70% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 80% | 373 | 300 | 300 | 300 | 300 | 300 | 460 | 2,924 | 783 | 450 | 870 | 870 |
| 90% | 373 | 300 | 300 | 300 | 300 | 300 | 427 | 1,498 | 783 | 450 | 450 | 450 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 368 | 346 | 672 | 728 | 739 | 694 | 588 | 3,753 | 2,210 | 890 | 793 | 783 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 373 | 300 | 1,297 | 1,650 | 1,293 | 1,462 | 735 | 4,556 | 3,413 | 1,136 | 676 | 676 |
| Above Normal (16%) | 373 | 593 | 652 | 300 | 803 | 462 | 457 | 4,597 | 2,948 | 1,102 | 773 | 773 |
| Below Normal (13%) | 373 | 300 | 300 | 300 | 630 | 303 | 517 | 3,585 | 1,755 | 924 | 870 | 870 |
| Dry (24%) | 373 | 300 | 300 | 300 | 300 | 300 | 528 | 3,250 | 1,271 | 678 | 870 | 870 |
| Critical (15%) | 342 | 300 | 300 | 300 | 300 | 300 | 575 | 2,092 | 783 | 450 | 870 | 798 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | **0** | 0 | 655 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 5 | **-5** | **-3** | 9 | **-4** | 9 | 0 | 0 | 0 | 0 | 0 | **-3** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 29 | 2 | 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | **-32** | 0 | 0 | **-29** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | **-14** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **-20** |

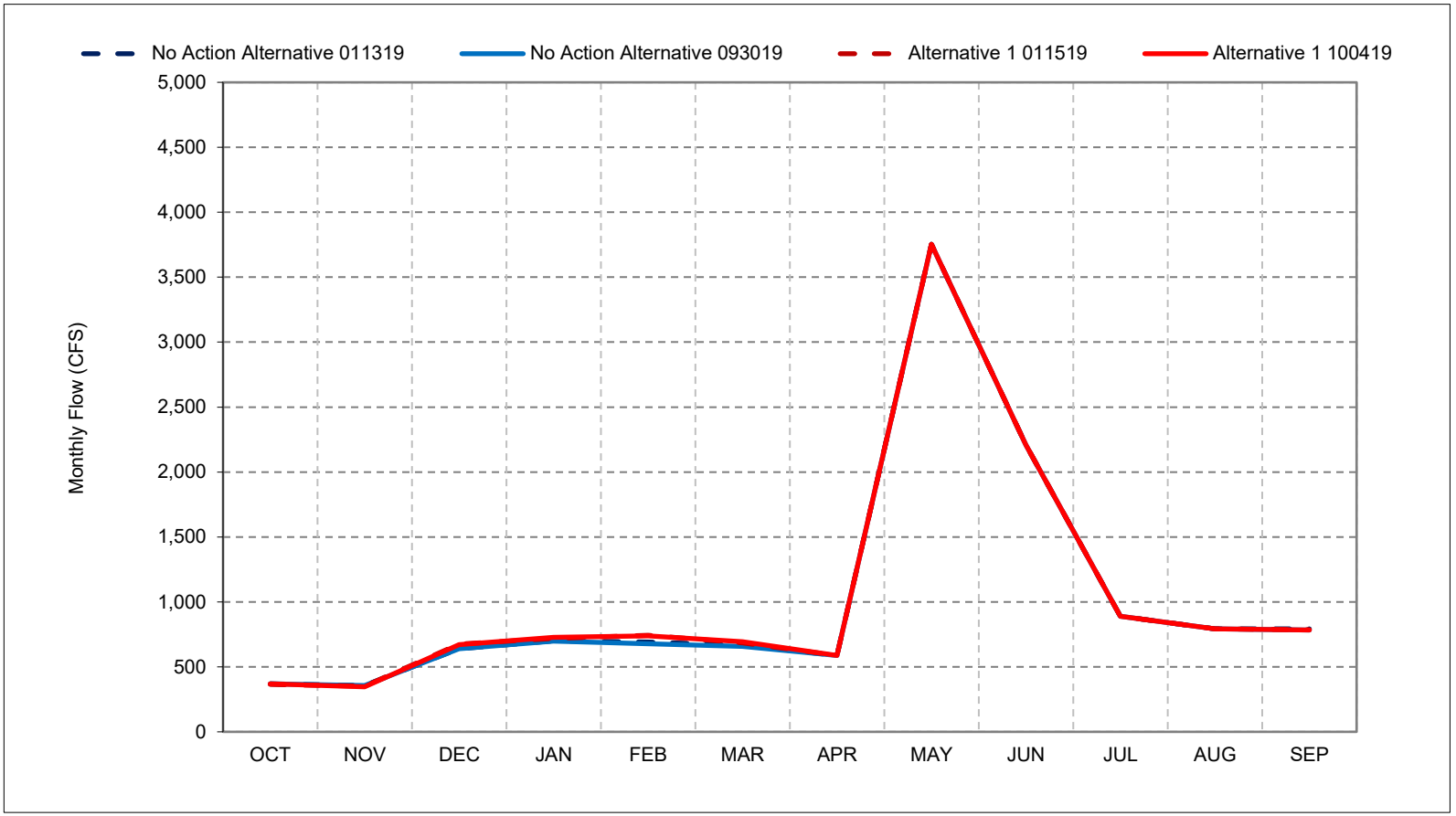
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-1. Trinity River Flow below Lewiston, Long-Term Average Flow

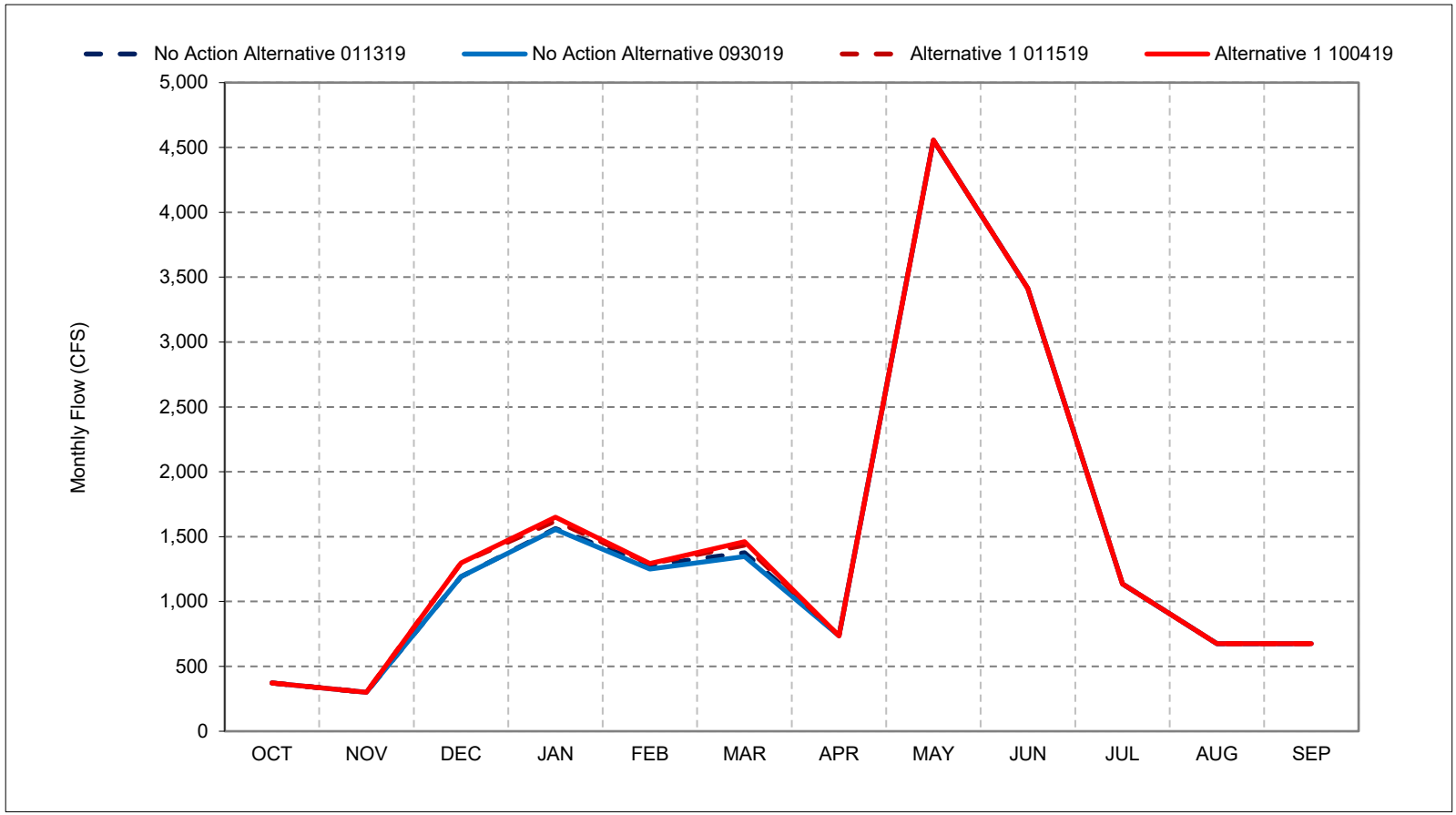



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-2. Trinity River Flow below Lewiston, Wet Year Average Flow

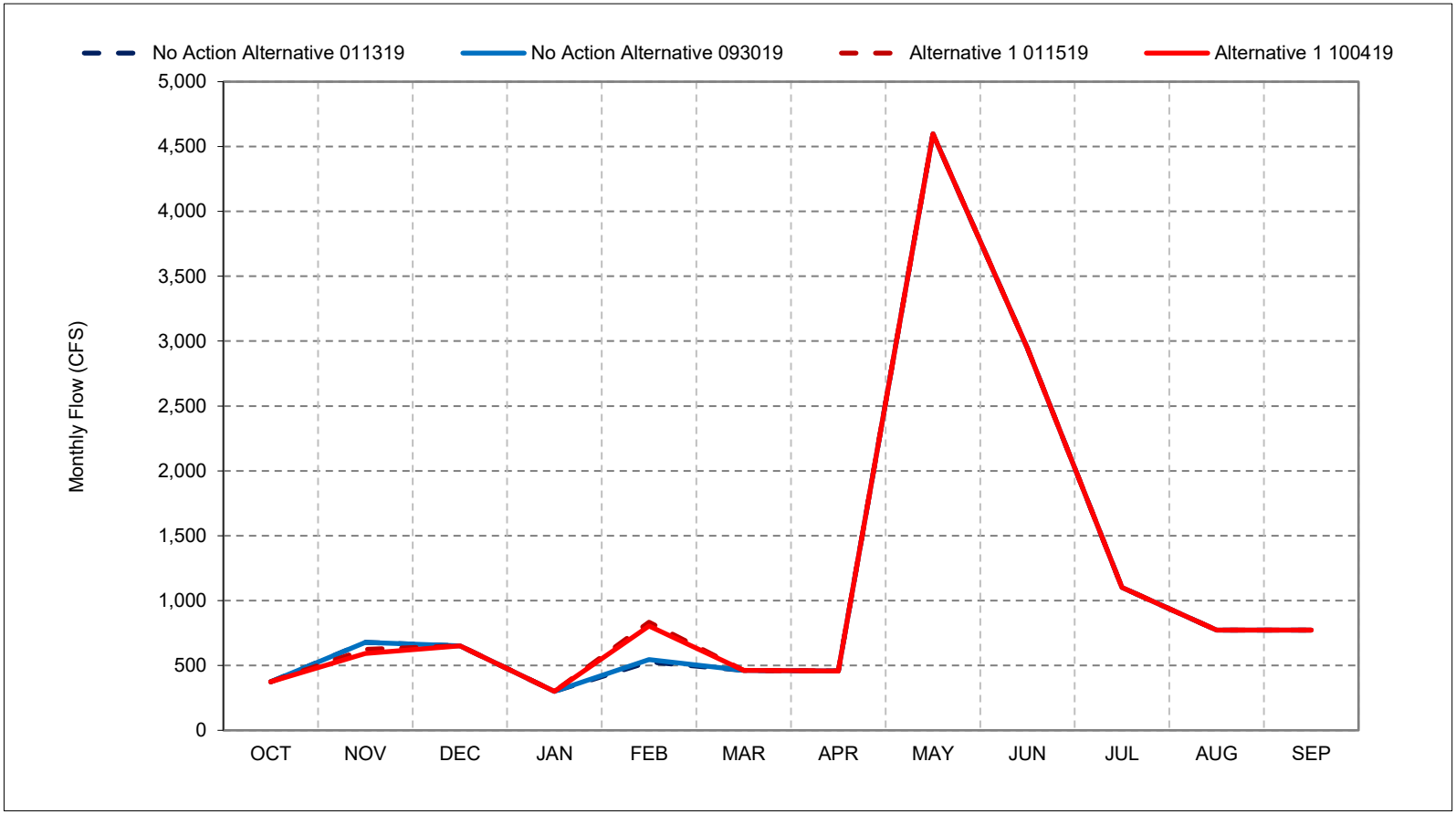



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-3. Trinity River Flow below Lewiston, Above Normal Year Average Flow

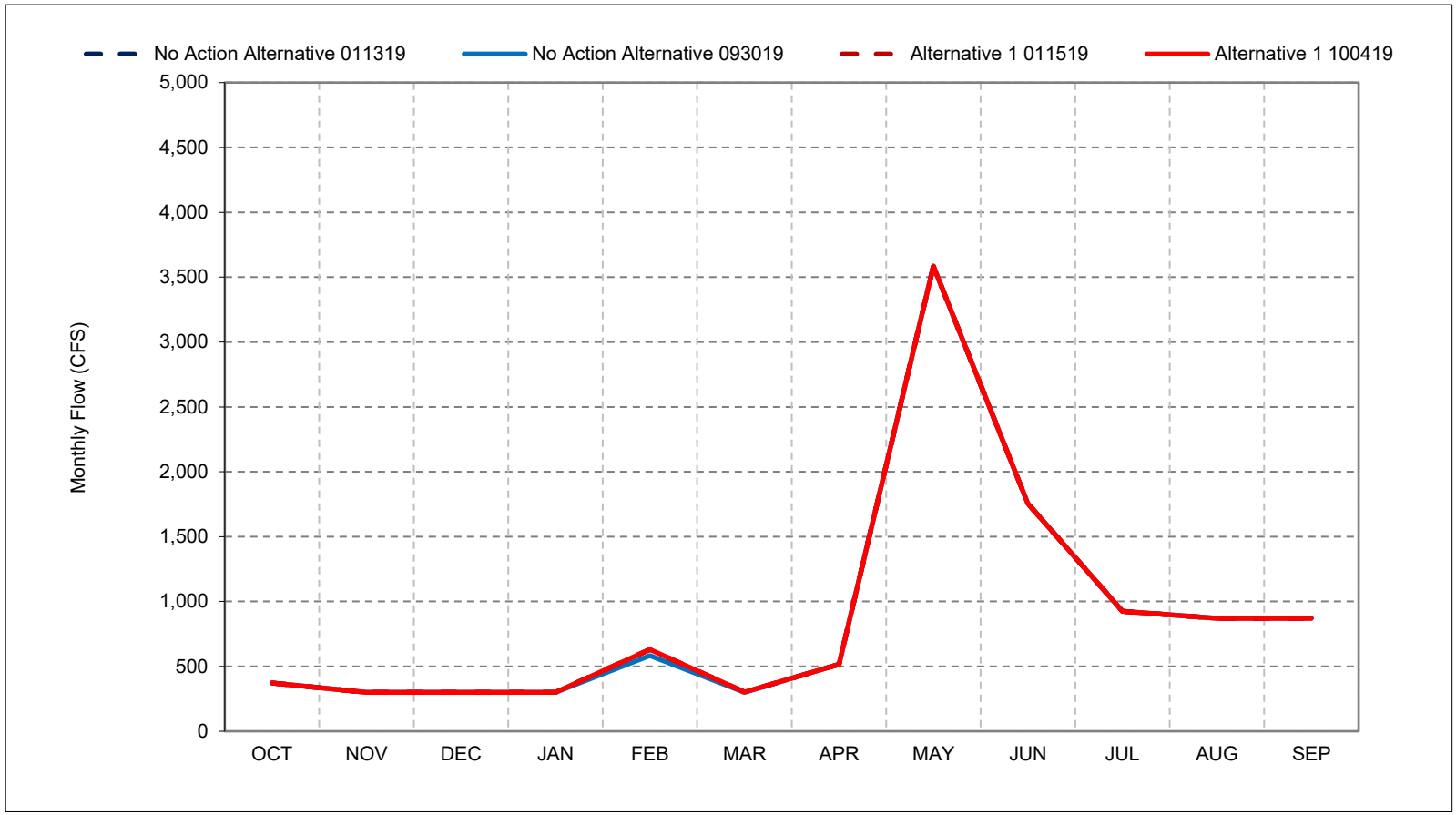



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-4. Trinity River Flow below Lewiston, Below Normal Year Average Flow

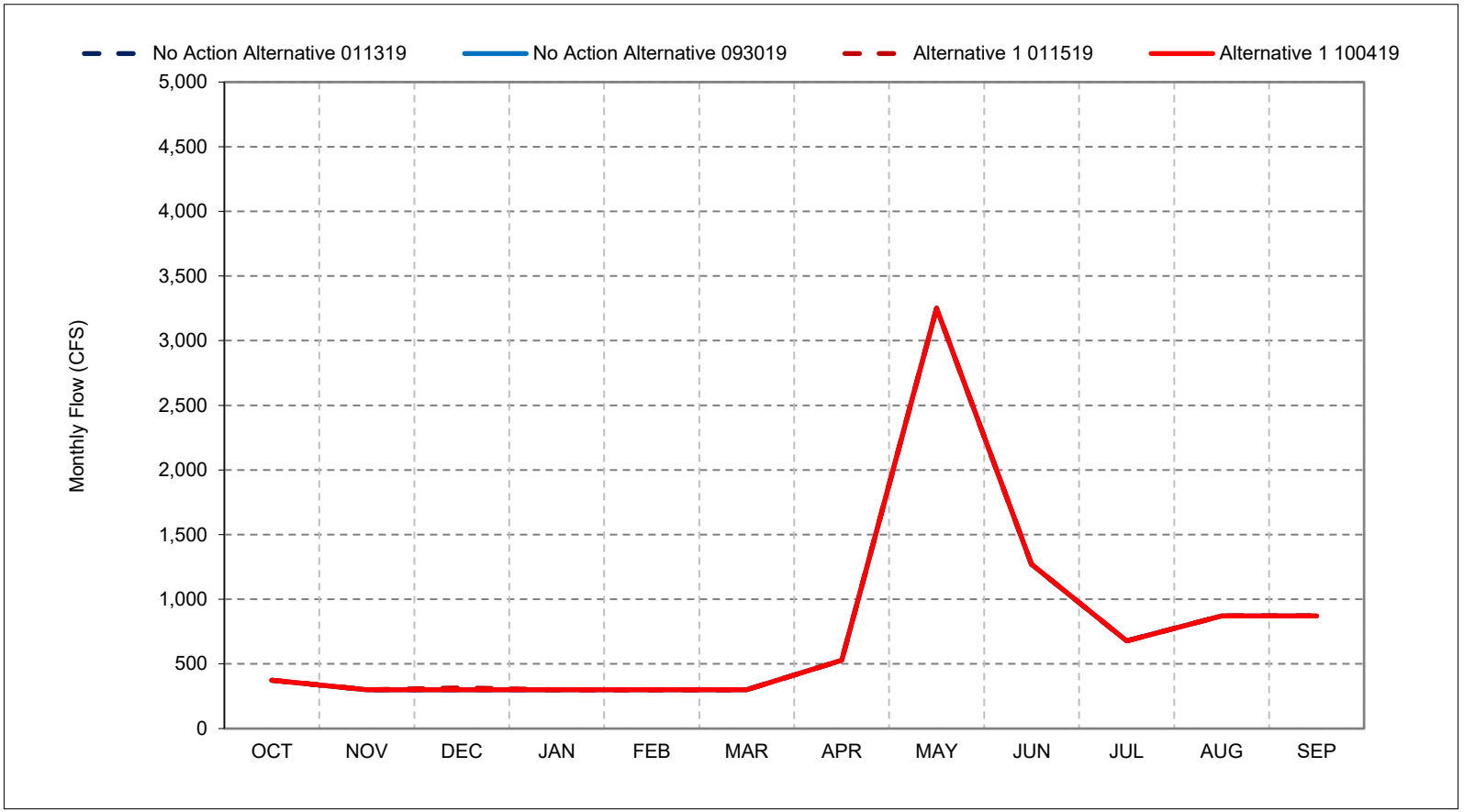



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-5. Trinity River Flow below Lewiston, Dry Year Average Flow

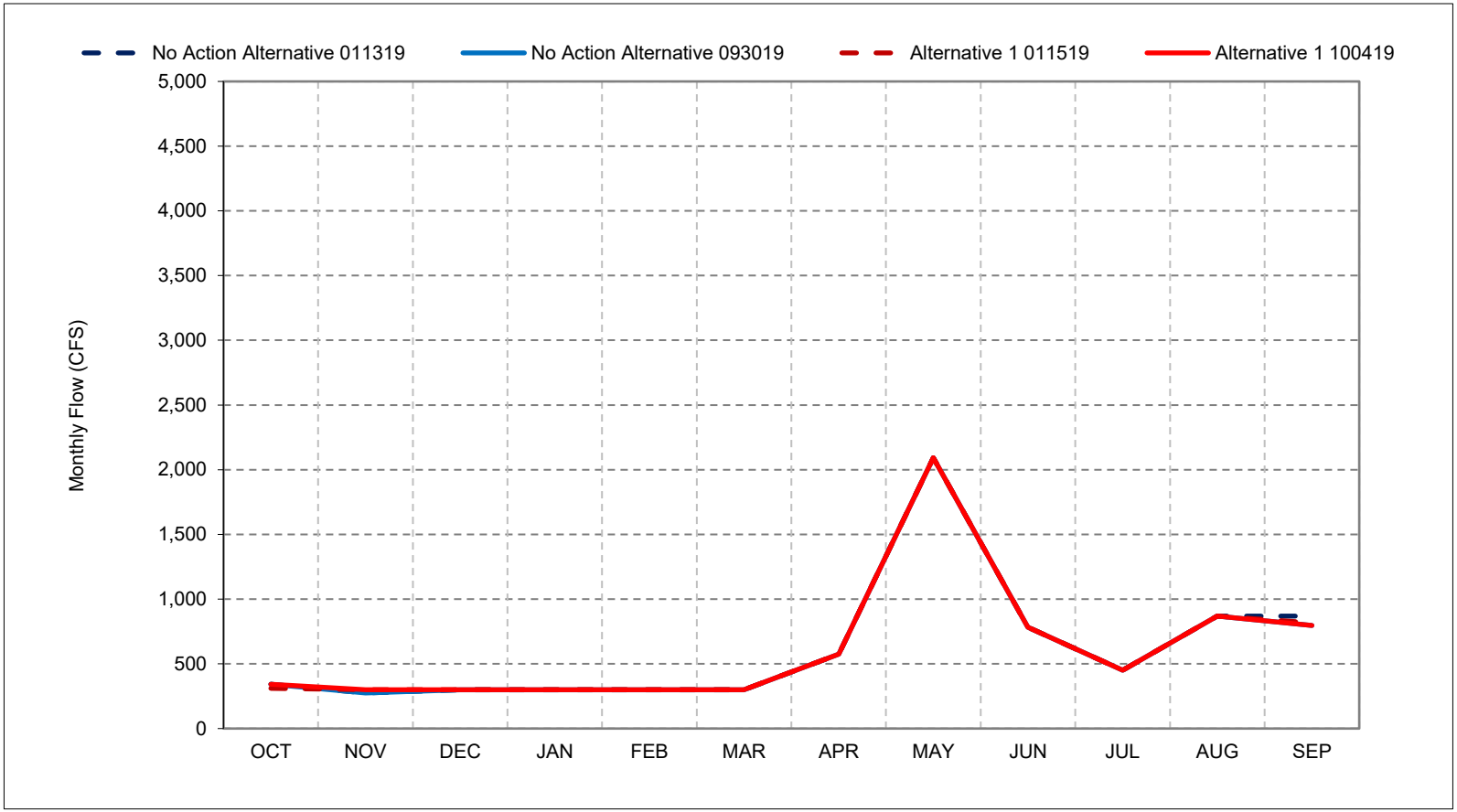



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-6. Trinity River Flow below Lewiston, Critical Year Average Flow

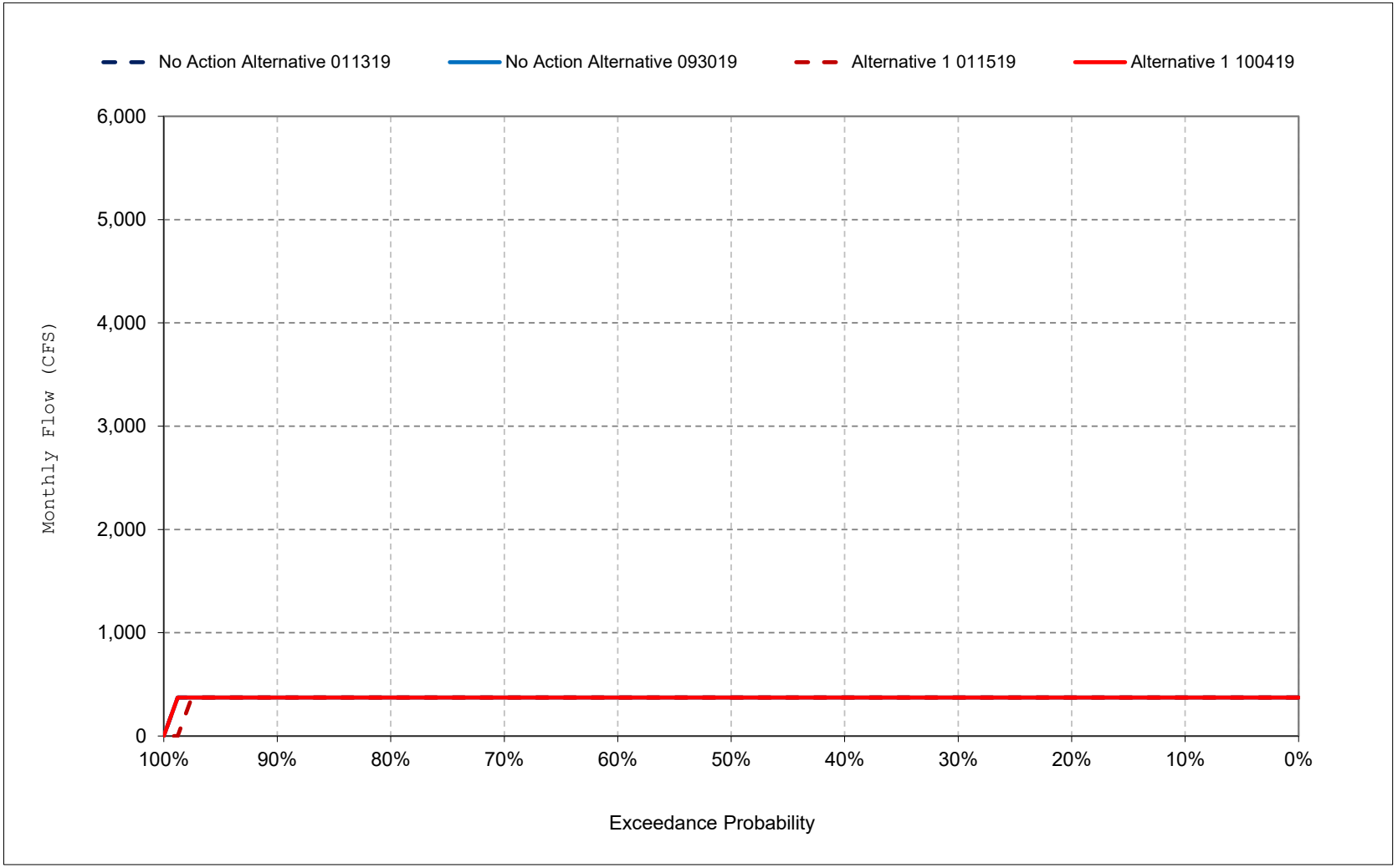



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

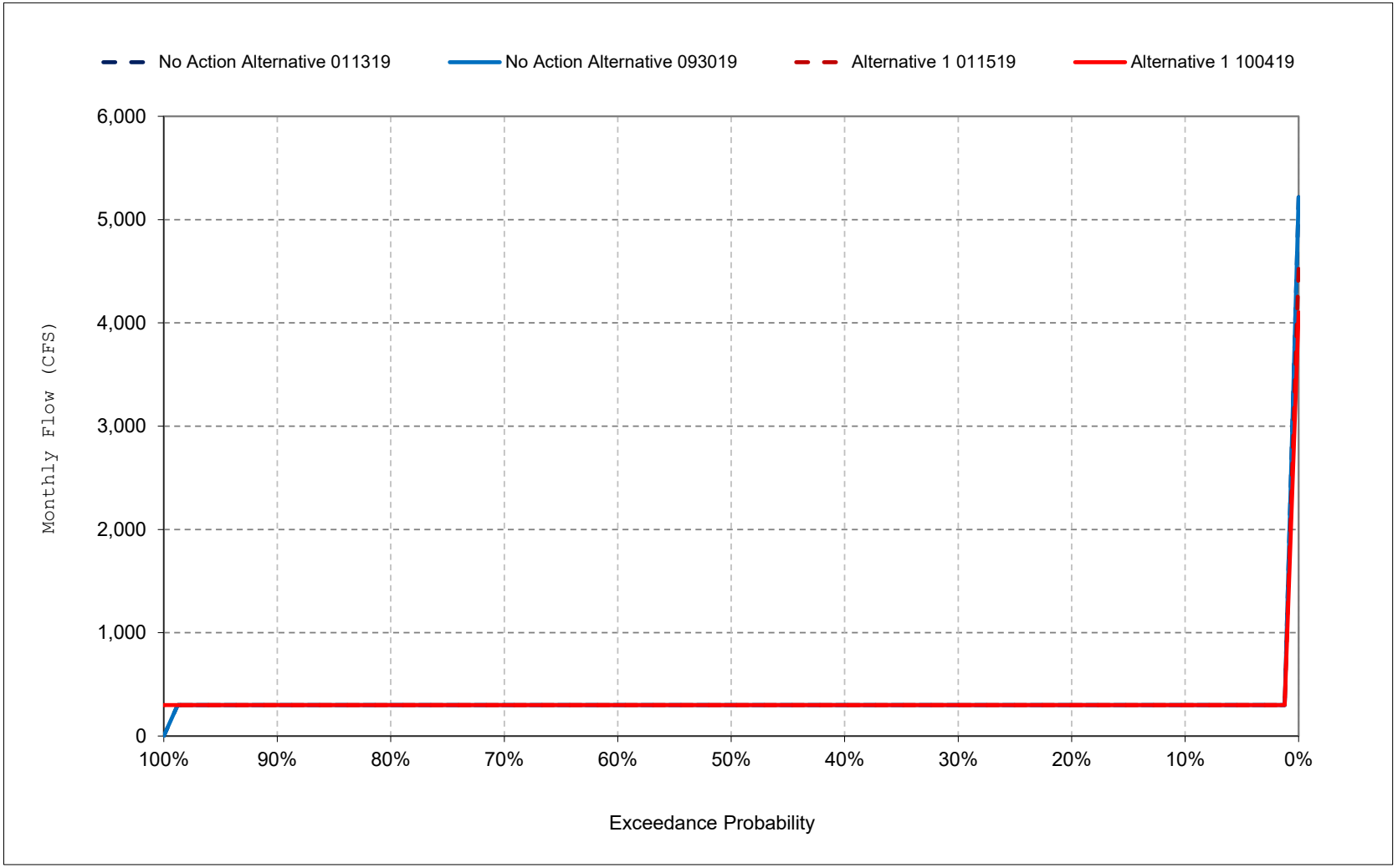
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-7. Trinity River Flow below Lewiston, October**



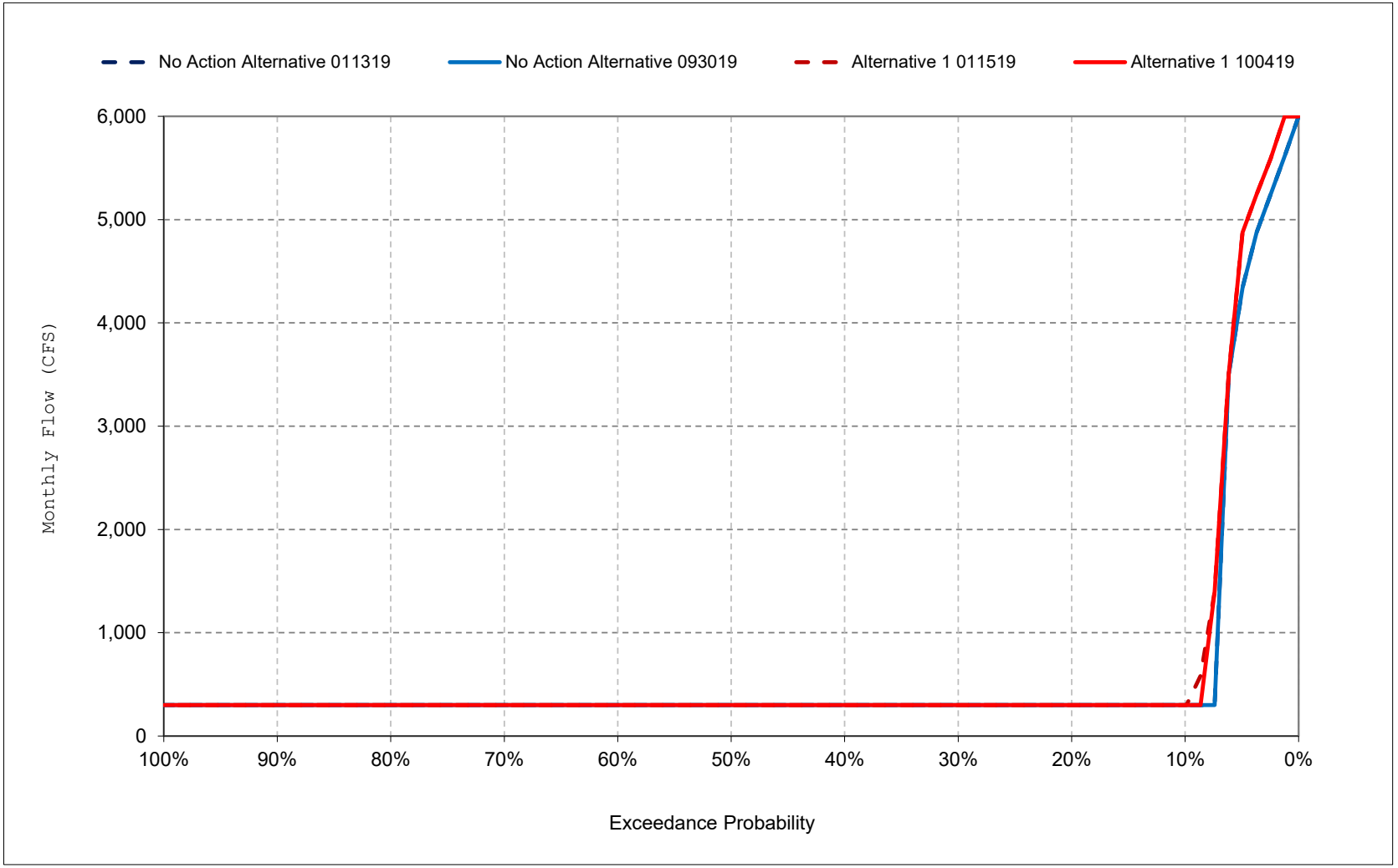

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-8. Trinity River Flow below Lewiston, November**



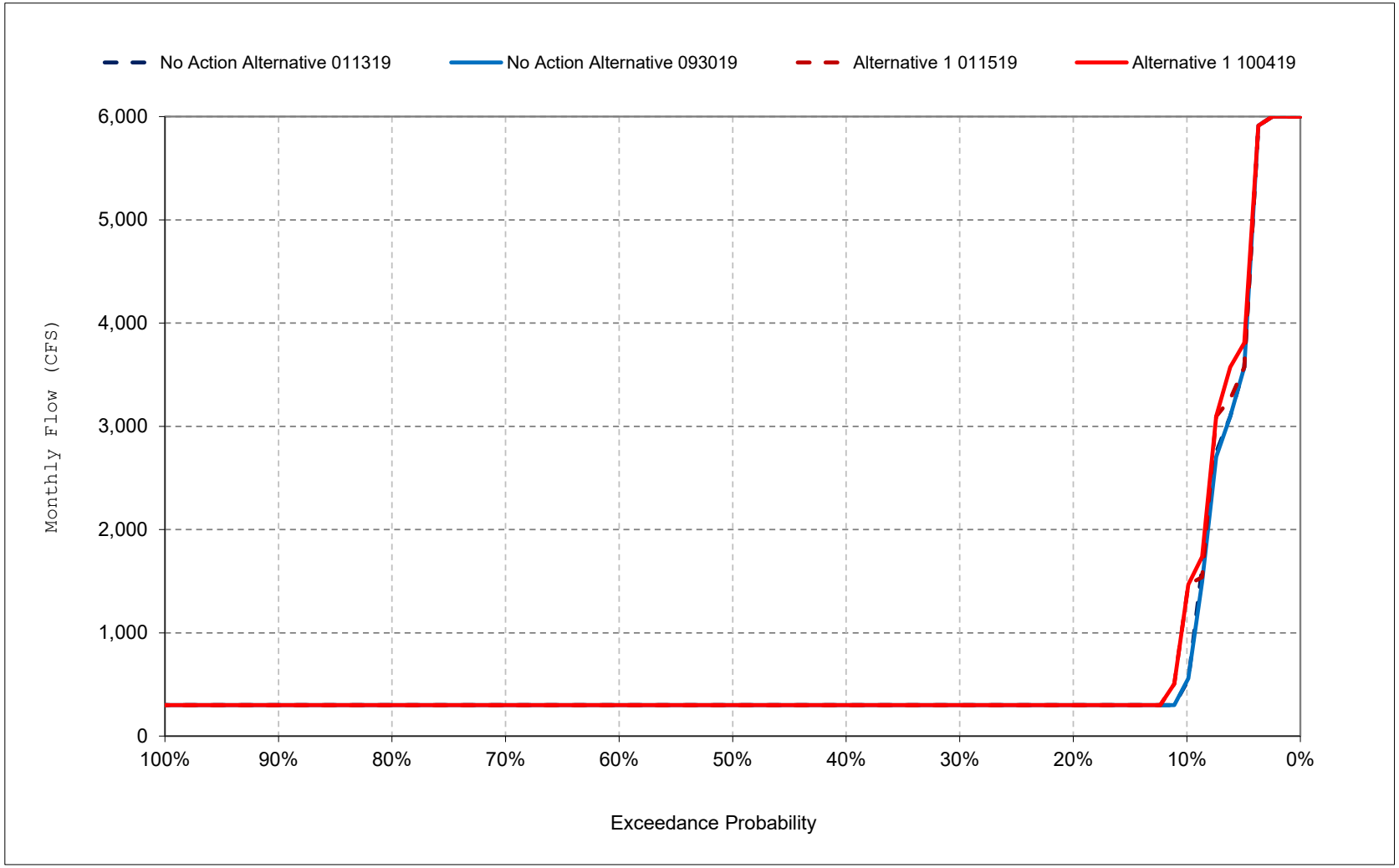

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-9. Trinity River Flow below Lewiston, December**



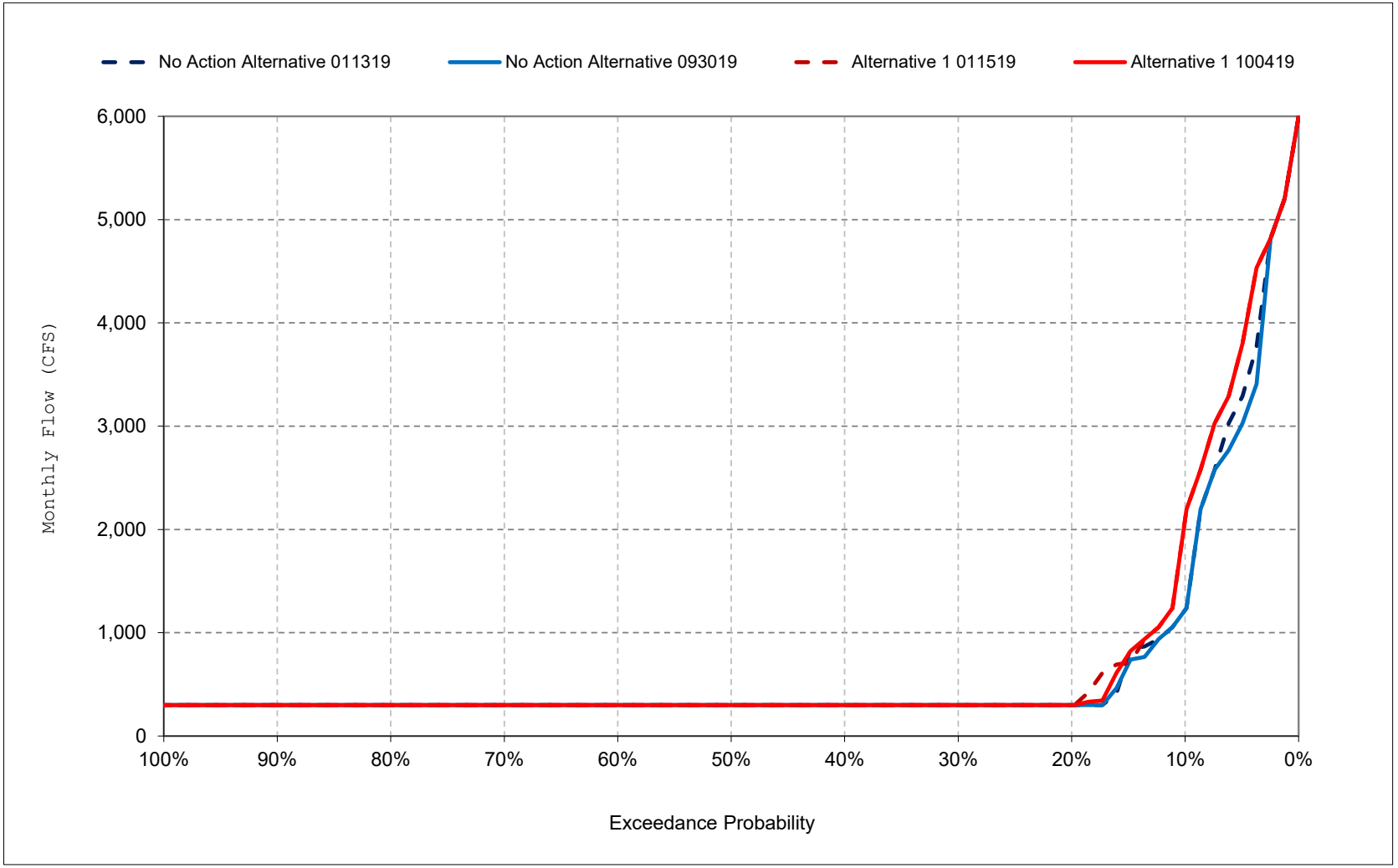

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-10. Trinity River Flow below Lewiston, January**



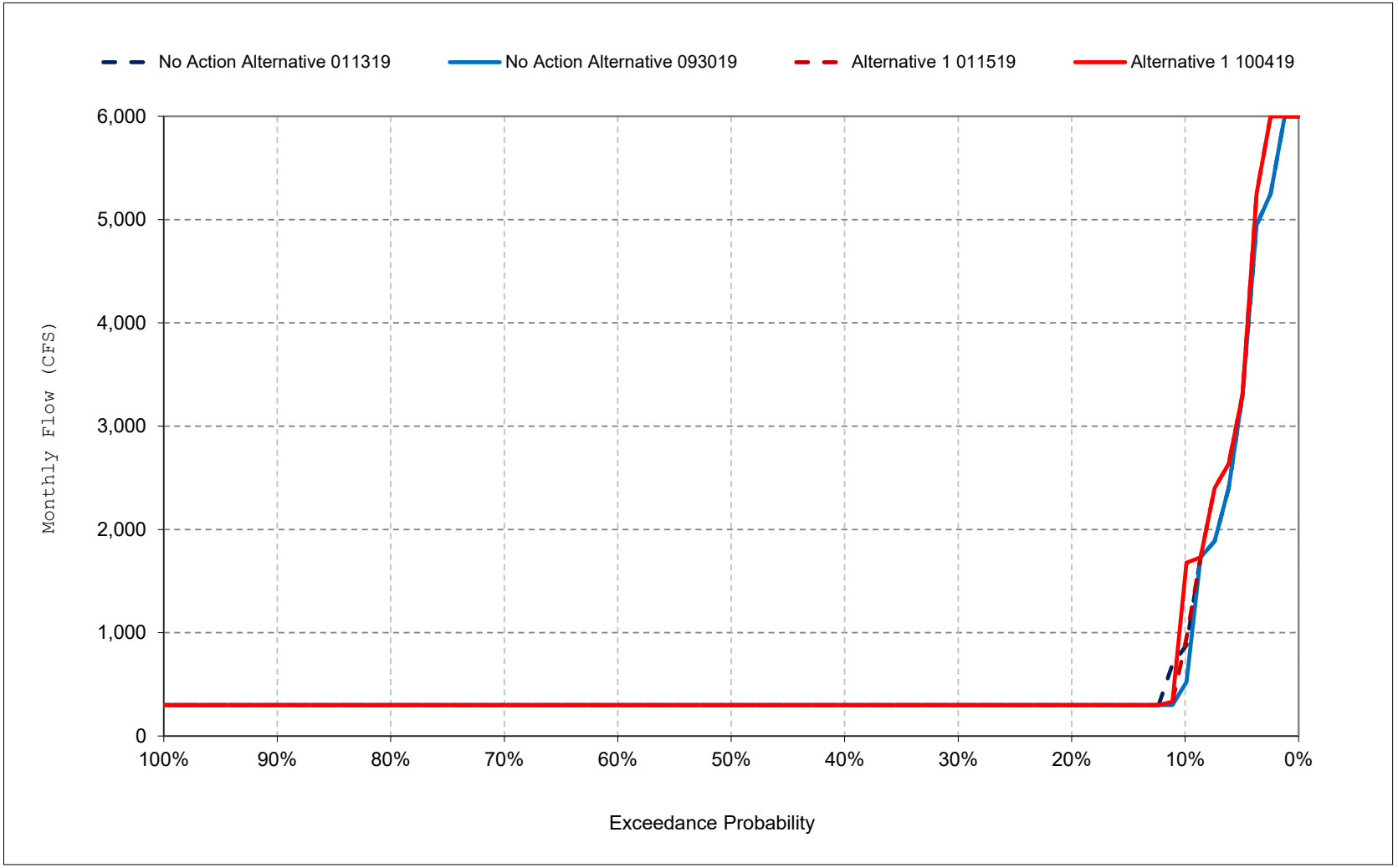

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-11. Trinity River Flow below Lewiston, February**



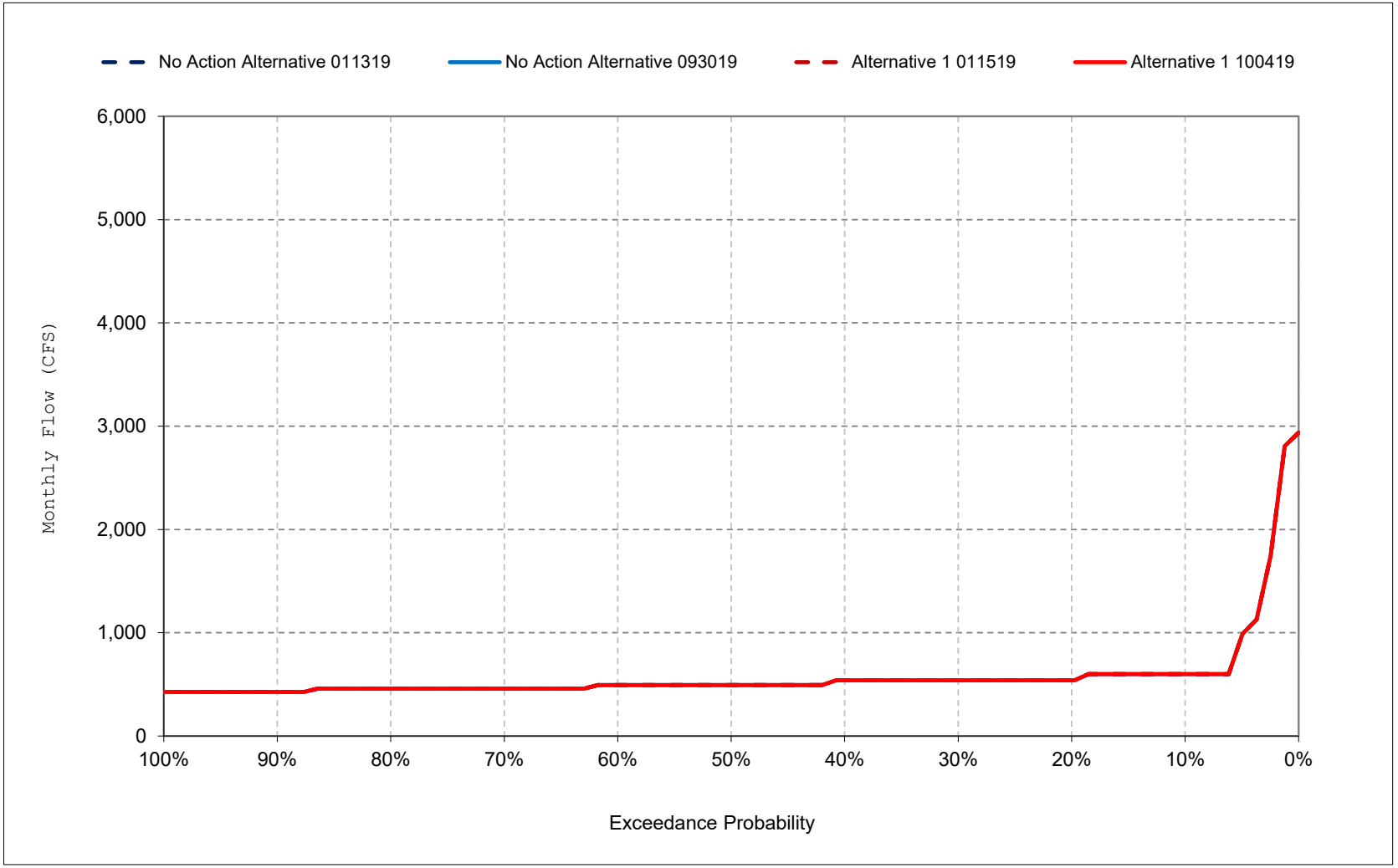

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-12. Trinity River Flow below Lewiston, March**



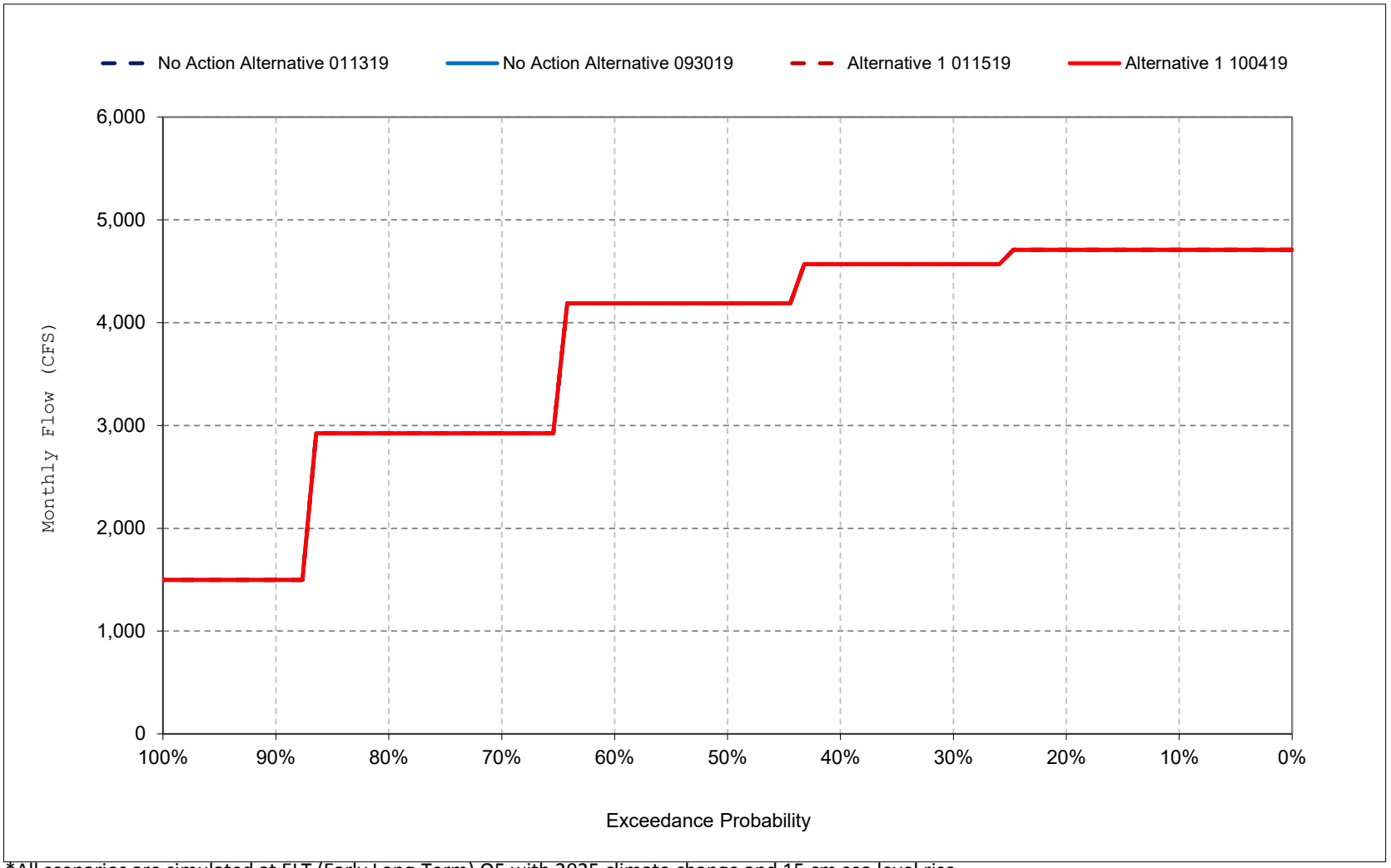

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-13. Trinity River Flow below Lewiston, April**



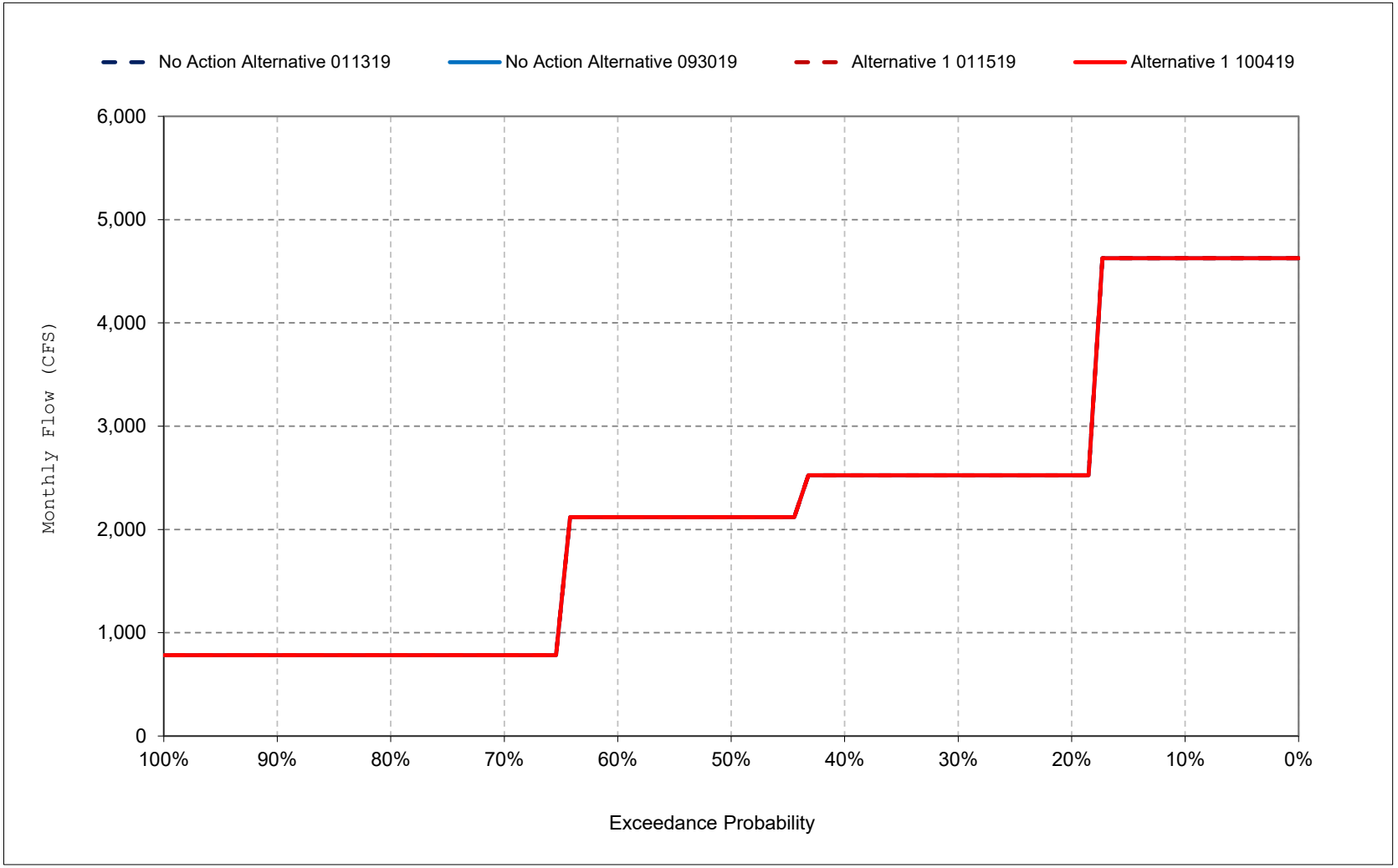

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-14. Trinity River Flow below Lewiston, May**



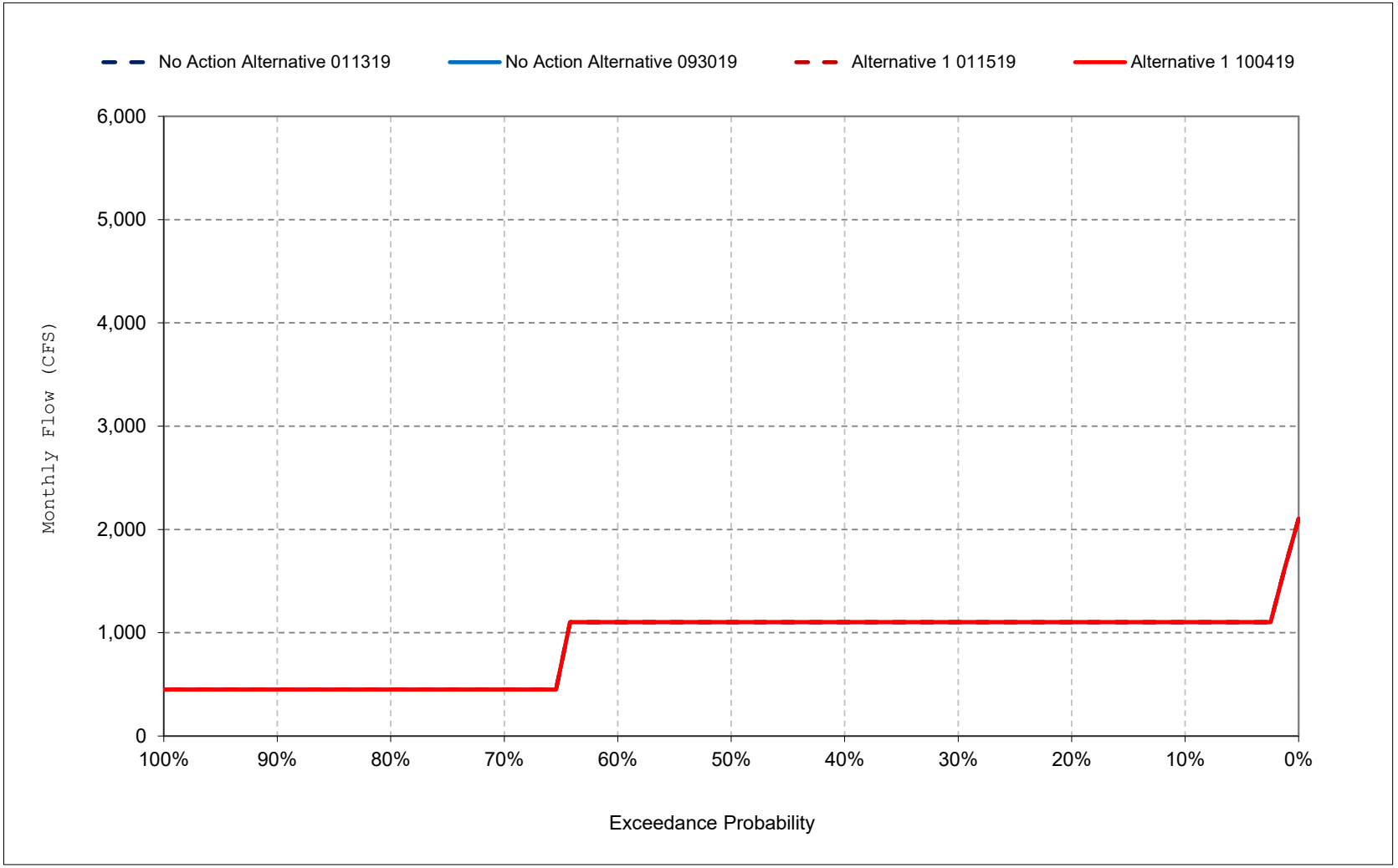

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-15. Trinity River Flow below Lewiston, June**



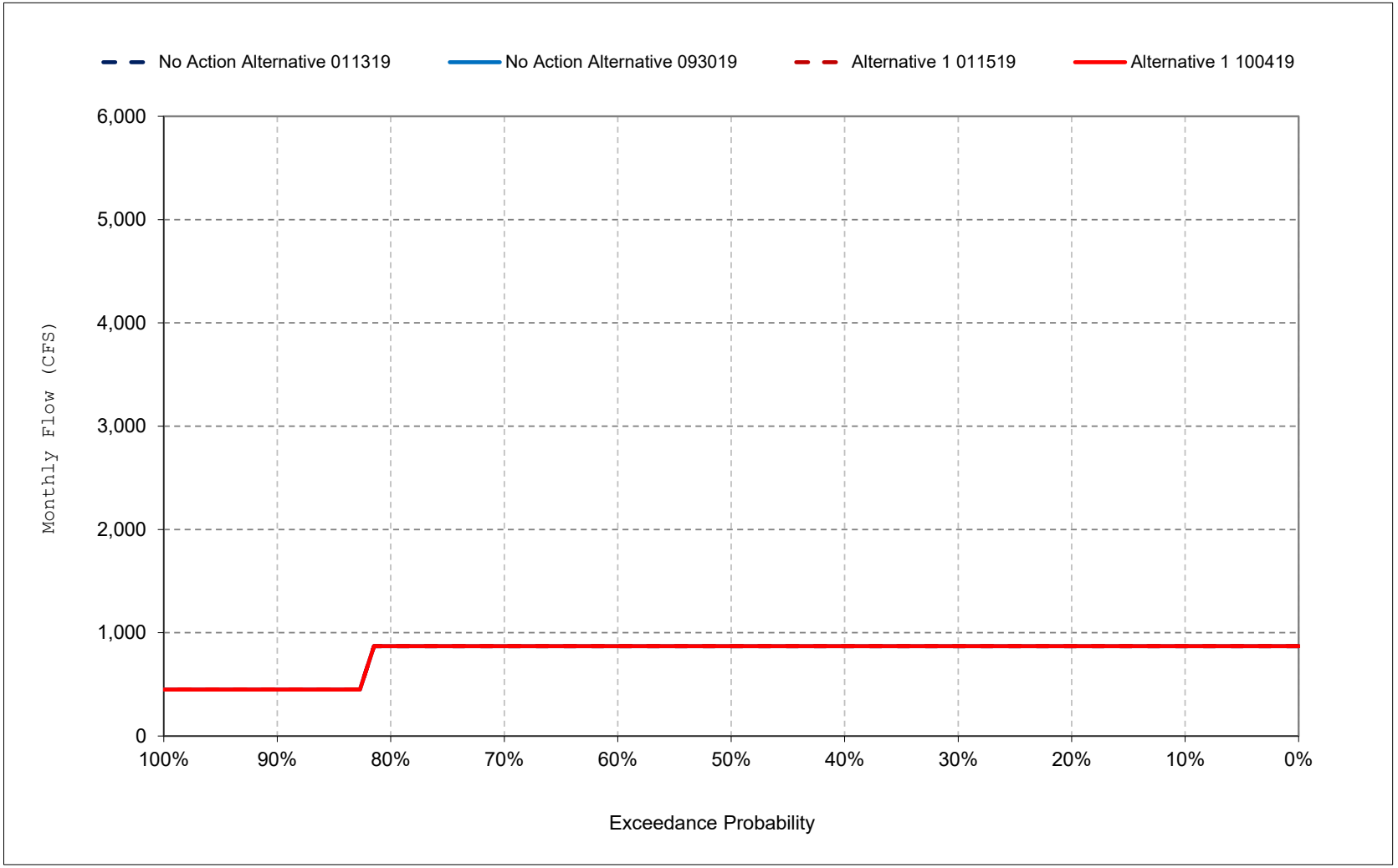

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-16. Trinity River Flow below Lewiston, July**



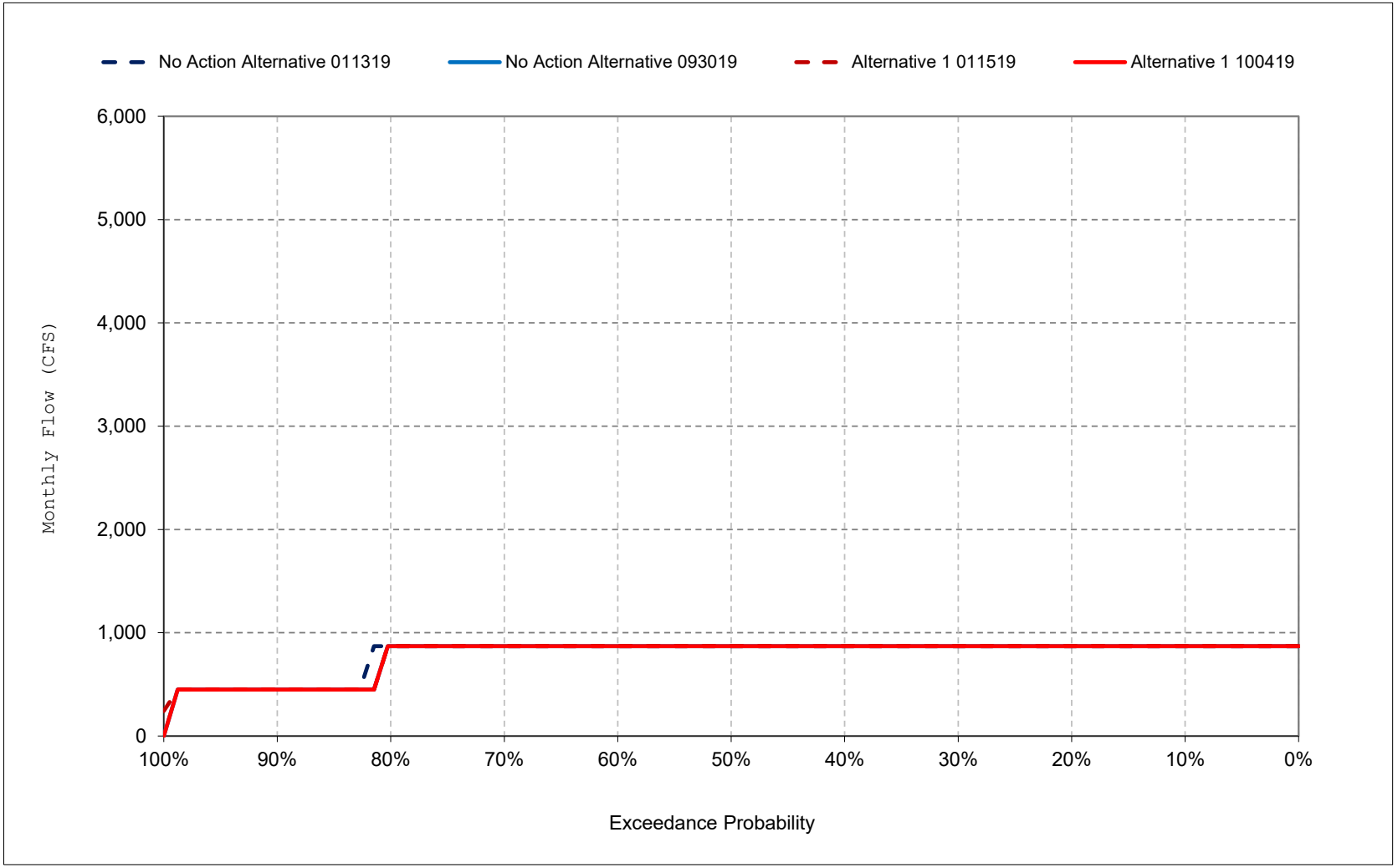

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-17. Trinity River Flow below Lewiston, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-18. Trinity River Flow below Lewiston, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-1. Clear Creek below Whiskeytown Dam Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 185 | 186 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 85 | 85 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 121 | 128 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 85 | 85 | 133 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 187 | 188 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 85 | 86 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 133 | 141 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 85 | 94 | 133 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-2. Clear Creek below Whiskeytown Dam Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 187 | 188 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 86 | 85 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 133 | 141 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 90 | 85 | 133 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 20% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 30% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 40% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 50% | 200 | 200 | 200 | 200 | 374 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 60% | 200 | 200 | 200 | 200 | 374 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 90% | 150 | 150 | 150 | 155 | 200 | 200 | 200 | 237 | 318 | 150 | 150 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 194 | 194 | 194 | 229 | 319 | 195 | 197 | 273 | 318 | 150 | 150 | 150 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 421 | 192 | 200 | 277 | 318 | 150 | 150 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 378 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Below Normal (13%) | 200 | 200 | 200 | 200 | 378 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Dry (24%) | 200 | 200 | 200 | 195 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Critical (15%) | 158 | 158 | 158 | 179 | 179 | 179 | 179 | 244 | 318 | 150 | 150 | 150 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 20% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 30% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 40% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 50% | 0 | 0 | 0 | 0 | 174 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 60% | 0 | 0 | 0 | 0 | 174 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 168 | 65 | 65 | 0 |
| 90% | 0 | 0 | 0 | 5 | 50 | 50 | 50 | 0 | 168 | 65 | 65 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7 | 6 | 4 | 4 | 112 | 1 | 5 | 7 | 137 | 64 | 65 | 2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 172 | -14 | 0 | 0 | 118 | 65 | 65 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 182 | 4 | 4 | 0 | 118 | 65 | 65 | 0 |
| Below Normal (13%) | 5 | 5 | 5 | 5 | 182 | 5 | 5 | 4 | 127 | 65 | 65 | 0 |
| Dry (24%) | 13 | 13 | 13 | 5 | 10 | 10 | 10 | 10 | 136 | 65 | 65 | 0 |
| Critical (15%) | 25 | 18 | 4 | 13 | 13 | 13 | 13 | 30 | 207 | 60 | 65 | 17 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-3. Clear Creek below Whiskeytown Dam Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 185 | 186 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 85 | 85 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 121 | 128 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 85 | 85 | 133 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 187 | 188 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 86 | 85 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 133 | 141 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 90 | 85 | 133 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-4. Clear Creek below Whiskeytown Dam Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 20% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 30% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 40% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 50% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 60% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 200 | 85 | 85 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 150 | 85 | 85 | 150 |
| 90% | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 237 | 150 | 85 | 85 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 187 | 188 | 190 | 225 | 207 | 194 | 191 | 265 | 181 | 85 | 86 | 148 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 249 | 207 | 200 | 277 | 200 | 85 | 85 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 196 | 196 | 196 | 277 | 200 | 85 | 85 | 150 |
| Below Normal (13%) | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 274 | 191 | 85 | 85 | 150 |
| Dry (24%) | 188 | 188 | 188 | 190 | 190 | 190 | 190 | 267 | 183 | 85 | 85 | 150 |
| Critical (15%) | 133 | 141 | 154 | 167 | 167 | 167 | 167 | 214 | 111 | 85 | 94 | 133 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 20% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 30% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 40% | 200 | 200 | 200 | 200 | 380 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 50% | 200 | 200 | 200 | 200 | 374 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 60% | 200 | 200 | 200 | 200 | 374 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 70% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 80% | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| 90% | 150 | 150 | 150 | 155 | 200 | 200 | 200 | 237 | 318 | 150 | 150 | 150 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 194 | 194 | 194 | 229 | 319 | 195 | 197 | 273 | 318 | 150 | 150 | 150 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 200 | 200 | 200 | 309 | 421 | 192 | 200 | 277 | 318 | 150 | 150 | 150 |
| Above Normal (16%) | 200 | 200 | 200 | 192 | 378 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Below Normal (13%) | 200 | 200 | 200 | 200 | 378 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Dry (24%) | 200 | 200 | 200 | 195 | 200 | 200 | 200 | 277 | 318 | 150 | 150 | 150 |
| Critical (15%) | 158 | 158 | 158 | 179 | 179 | 179 | 179 | 244 | 318 | 150 | 150 | 150 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 20% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 30% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 40% | 0 | 0 | 0 | 0 | 180 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 50% | 0 | 0 | 0 | 0 | 174 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 60% | 0 | 0 | 0 | 0 | 174 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | 65 | 65 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 168 | 65 | 65 | 0 |
| 90% | 0 | 0 | 0 | 5 | 50 | 50 | 50 | 0 | 168 | 65 | 65 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7 | 6 | 4 | 4 | 112 | 1 | 5 | 7 | 137 | 65 | 64 | 2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 172 | -14 | 0 | 0 | 118 | 65 | 65 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 182 | 4 | 4 | 0 | 118 | 65 | 65 | 0 |
| Below Normal (13%) | 5 | 5 | 5 | 5 | 182 | 5 | 5 | 4 | 127 | 65 | 65 | 0 |
| Dry (24%) | 13 | 13 | 13 | 5 | 10 | 10 | 10 | 10 | 136 | 65 | 65 | 0 |
| Critical (15%) | 25 | 18 | 4 | 13 | 13 | 13 | 13 | 30 | 207 | 65 | 56 | 17 |

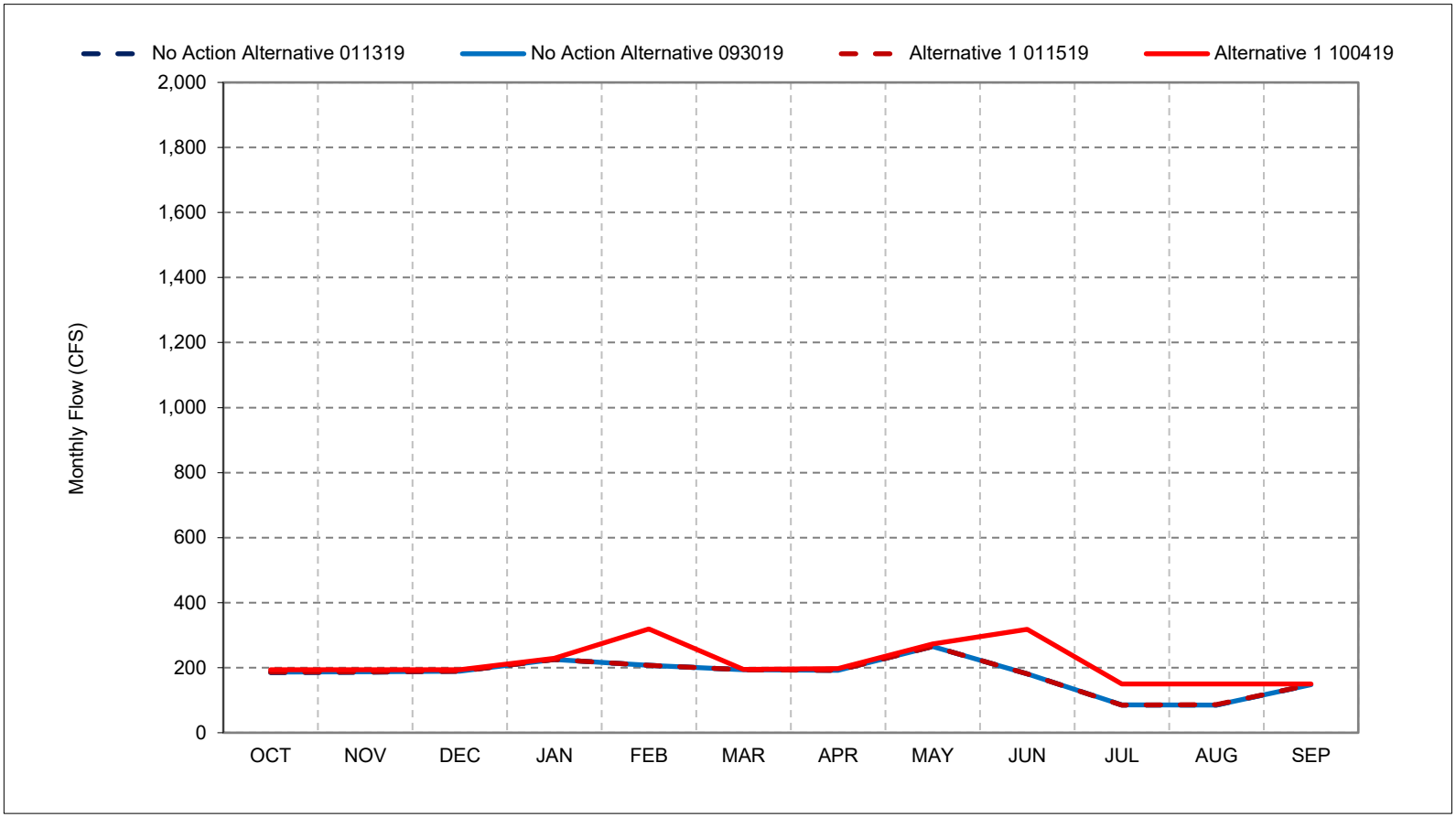
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-1. Clear Creek below Whiskeytown Dam Flow, Long-Term Average Flow

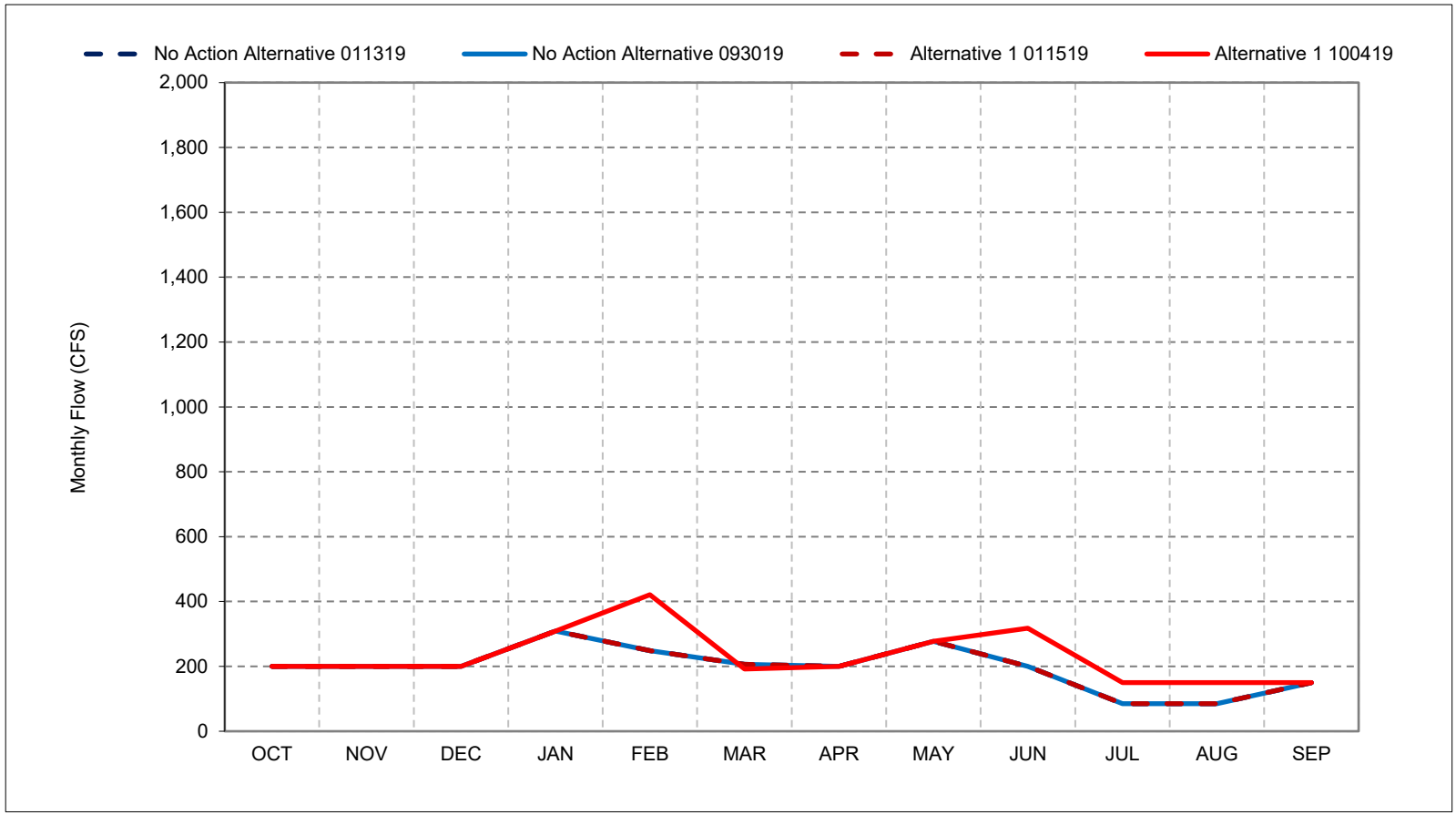



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-2. Clear Creek below Whiskeytown Dam Flow, Wet Year Average Flow

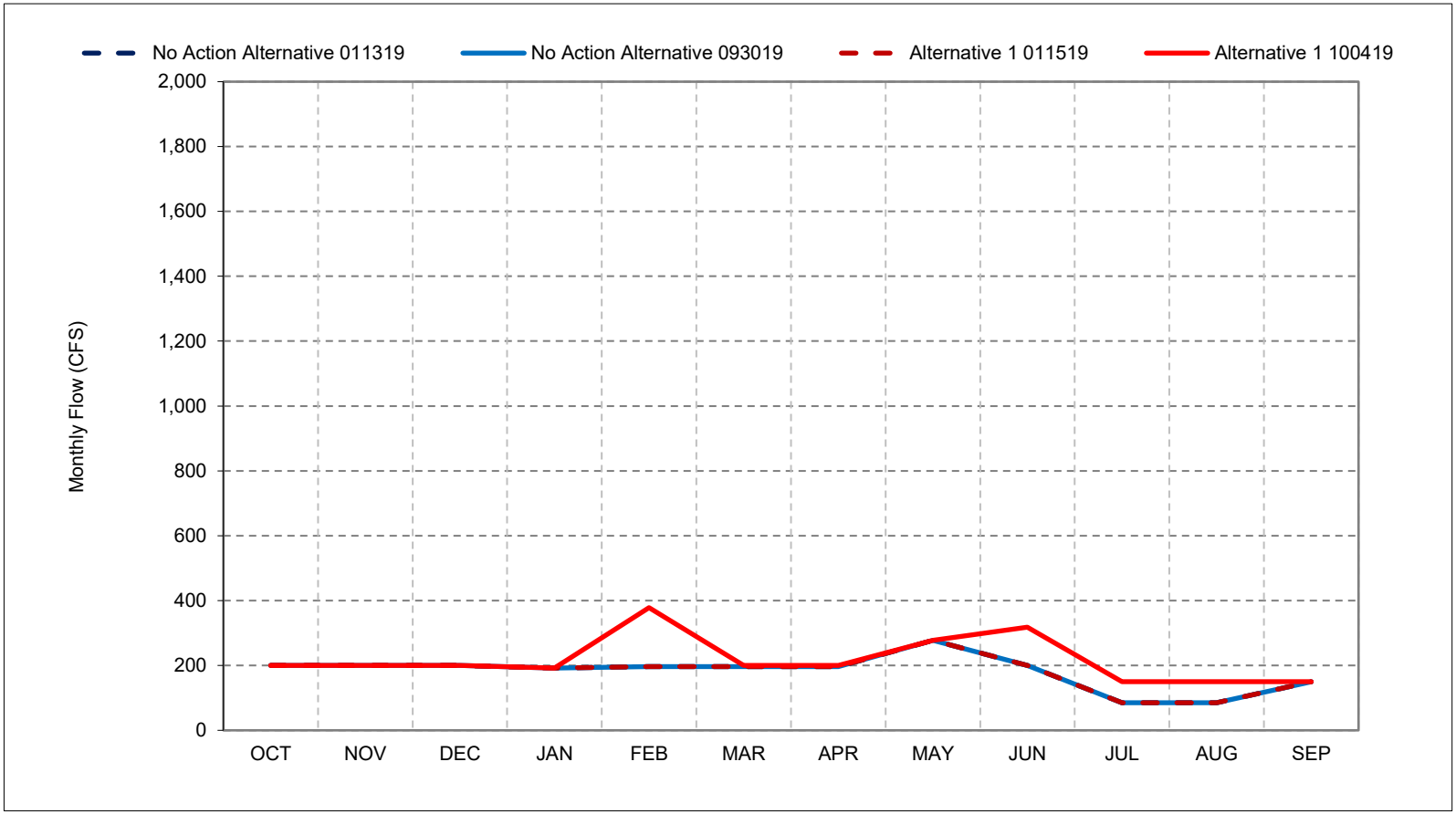



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-3. Clear Creek below Whiskeytown Dam Flow, Above Normal Year Average Flow

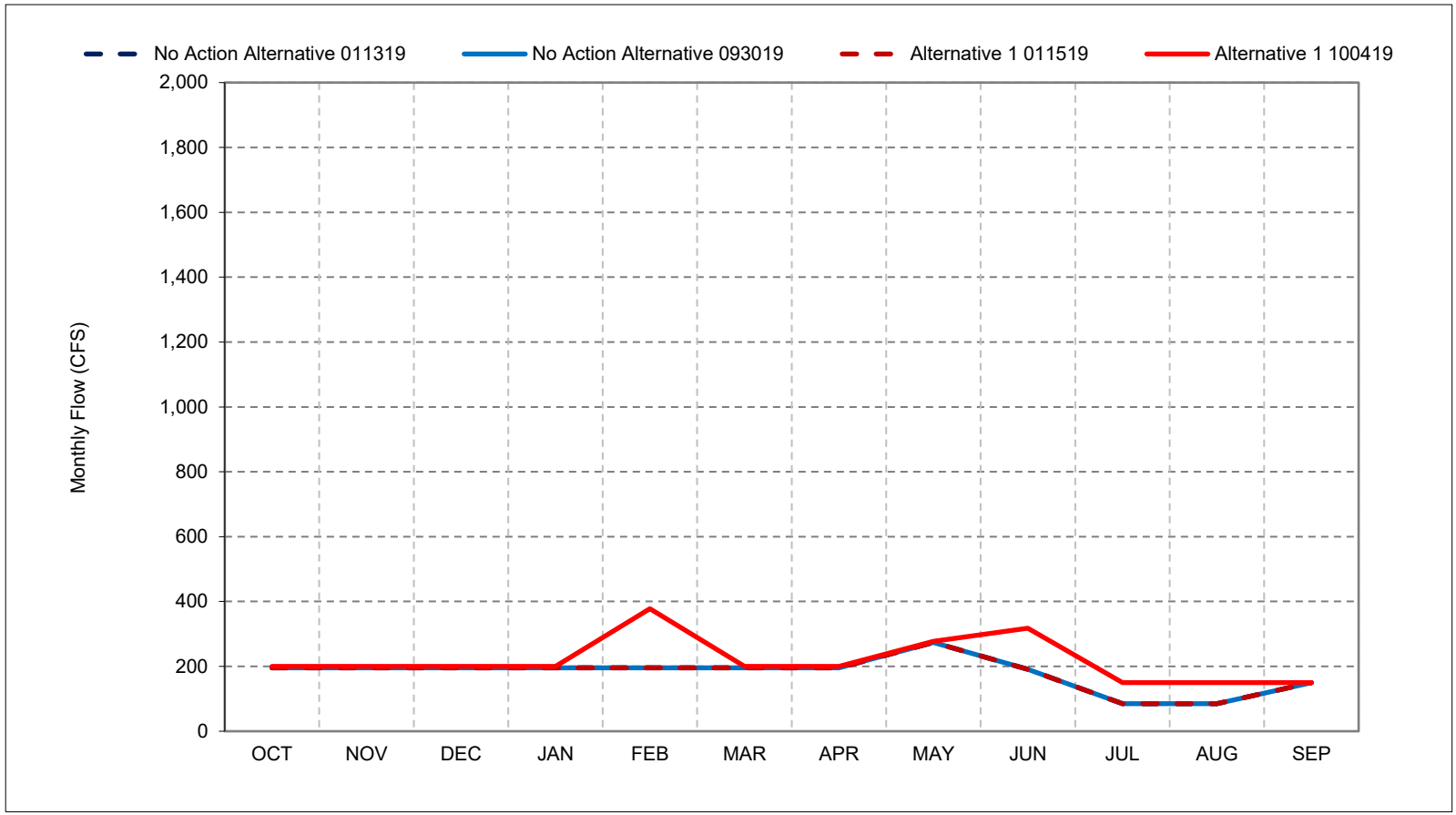



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-4. Clear Creek below Whiskeytown Dam Flow, Below Normal Year Average Flow

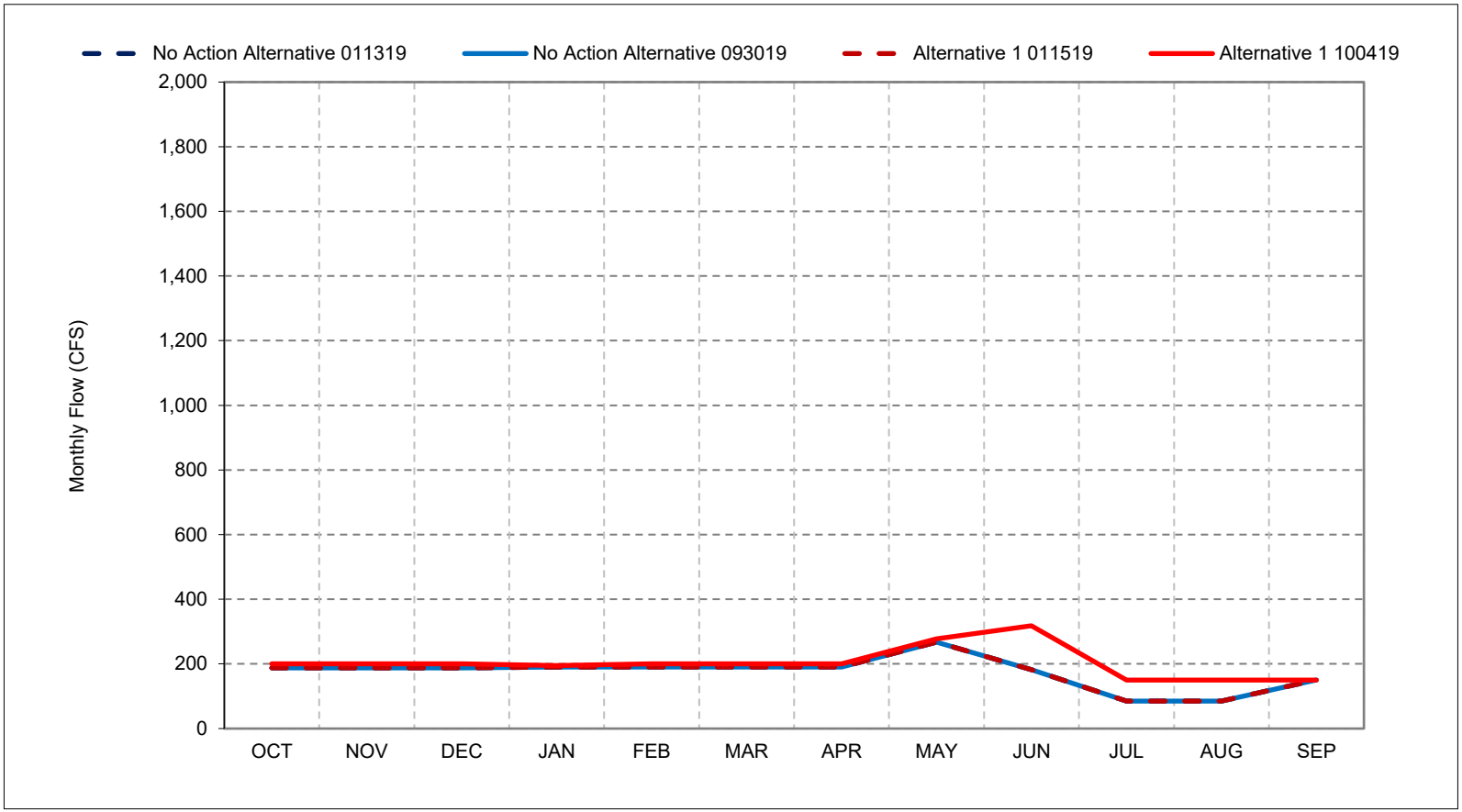



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-5. Clear Creek below Whiskeytown Dam Flow, Dry Year Average Flow

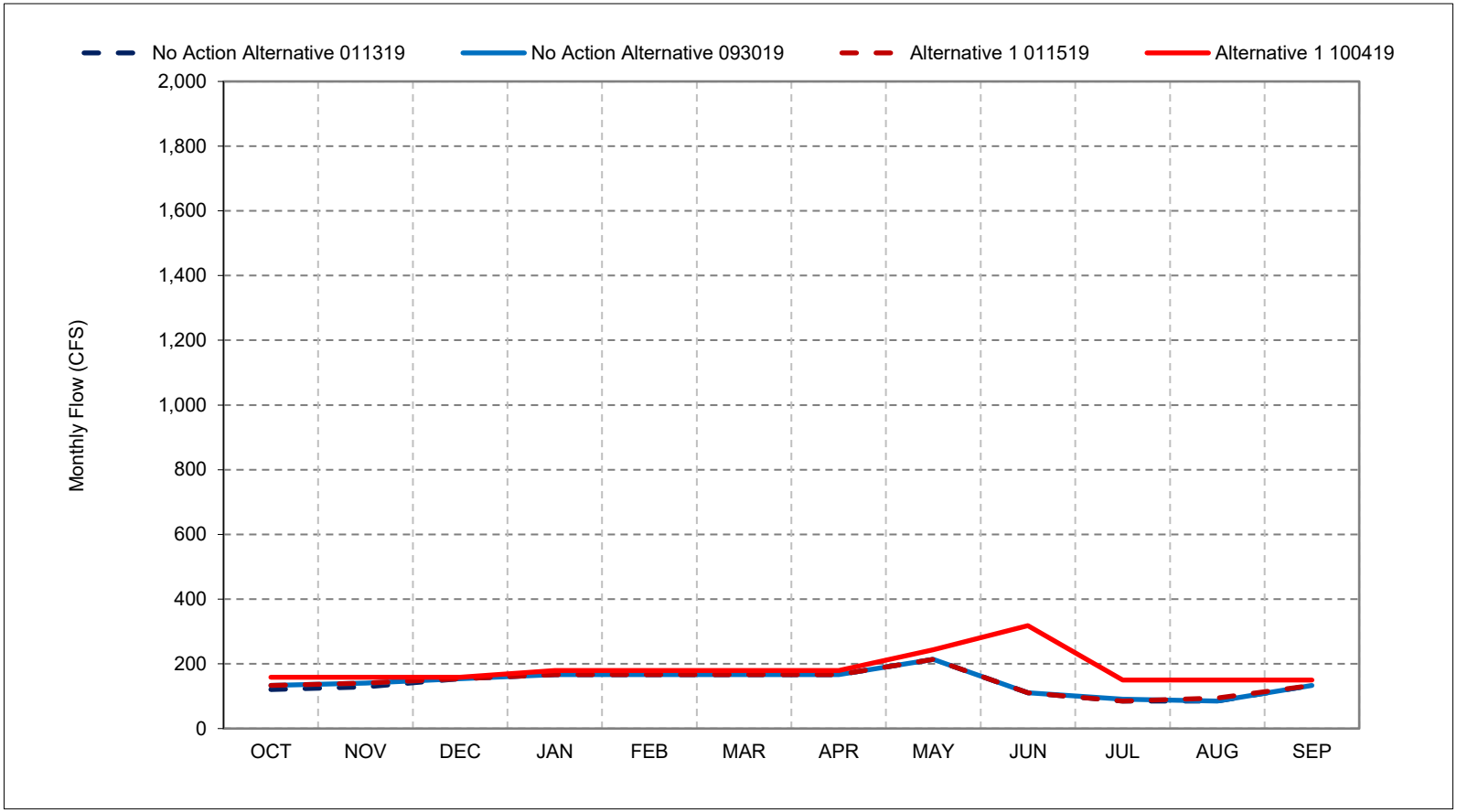



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-6. Clear Creek below Whiskeytown Dam Flow, Critical Year Average Flow

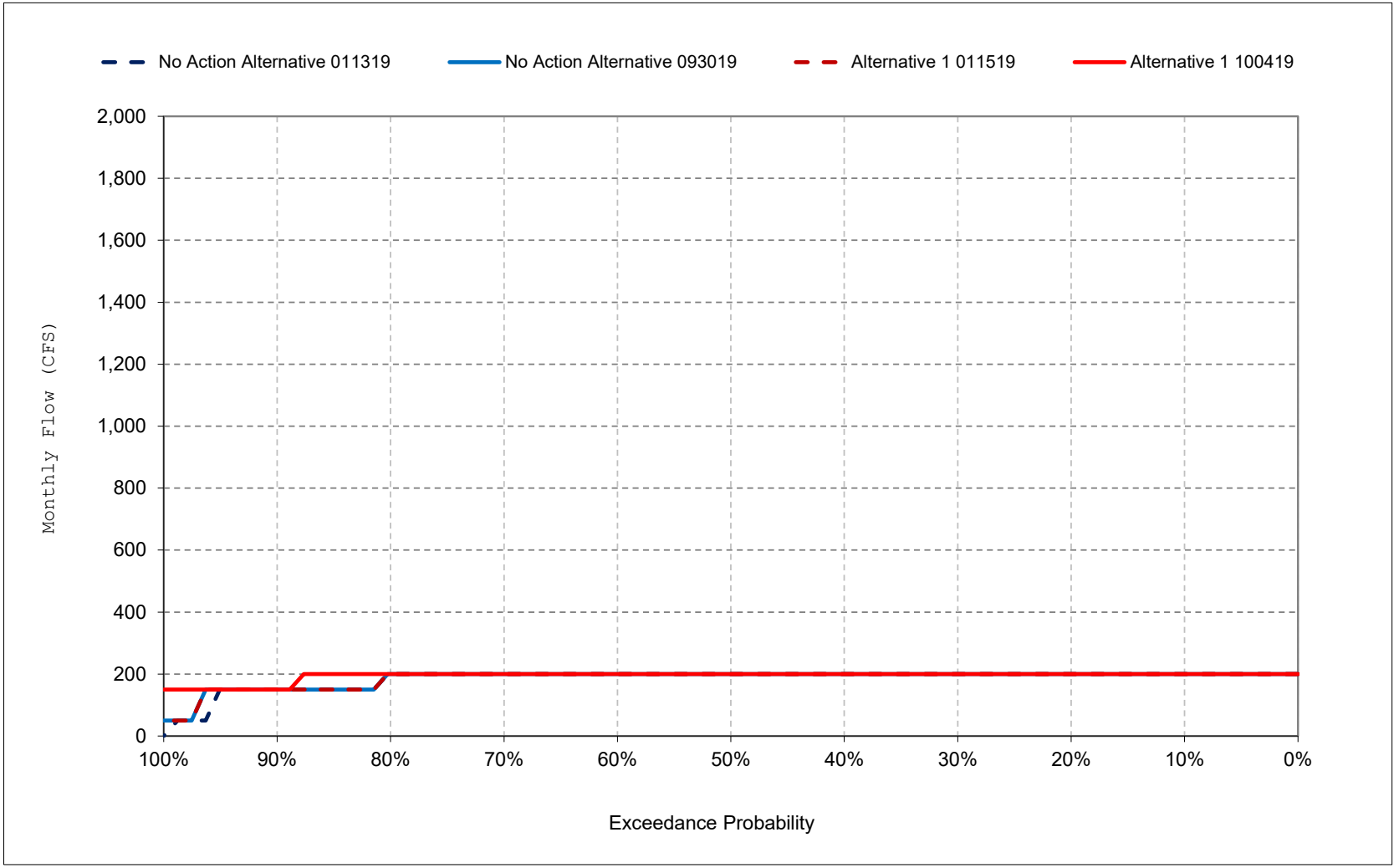



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

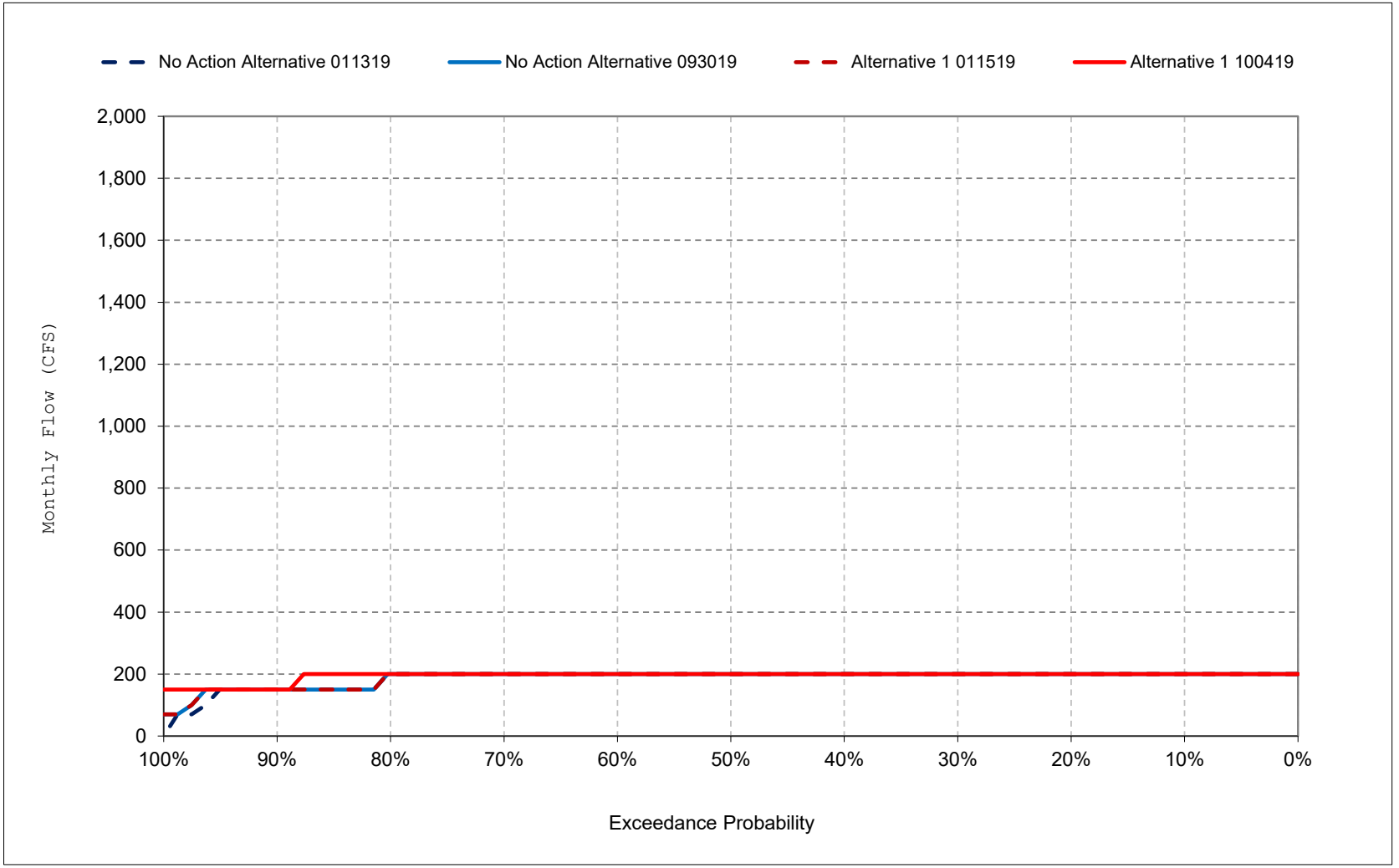
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-7. Clear Creek below Whiskeytown Dam Flow, October**



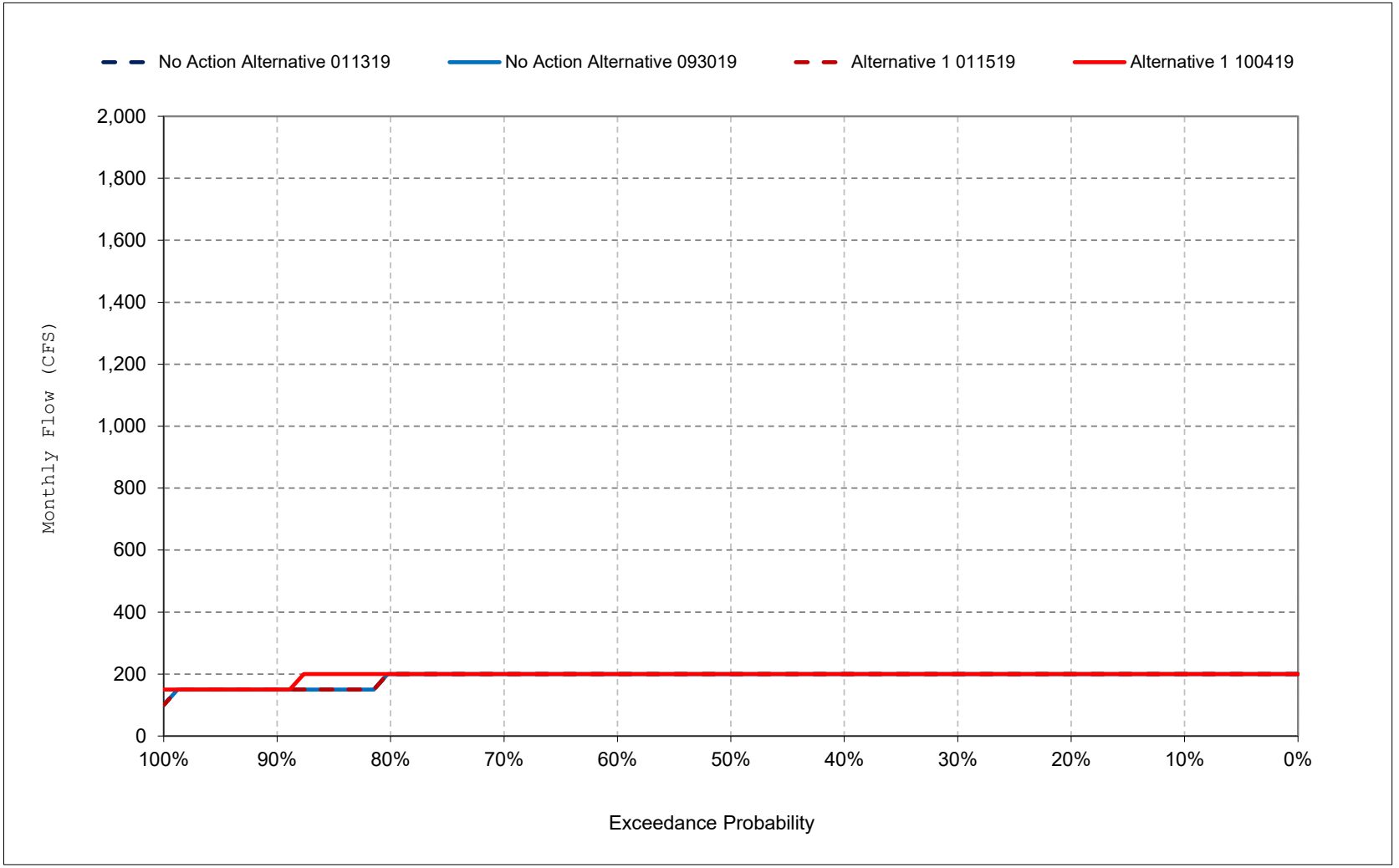

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-8. Clear Creek below Whiskeytown Dam Flow, November**



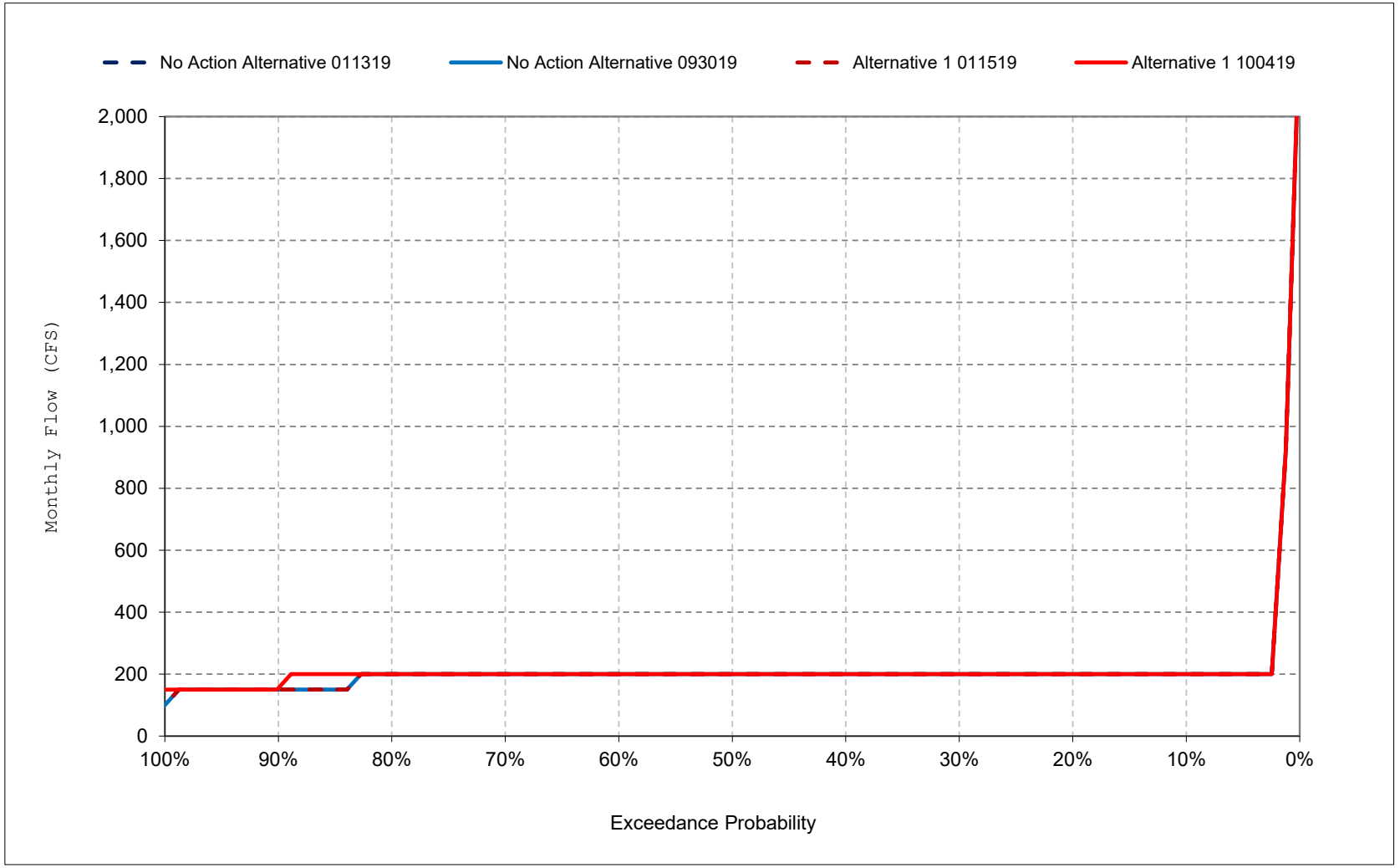

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-9. Clear Creek below Whiskeytown Dam Flow, December**



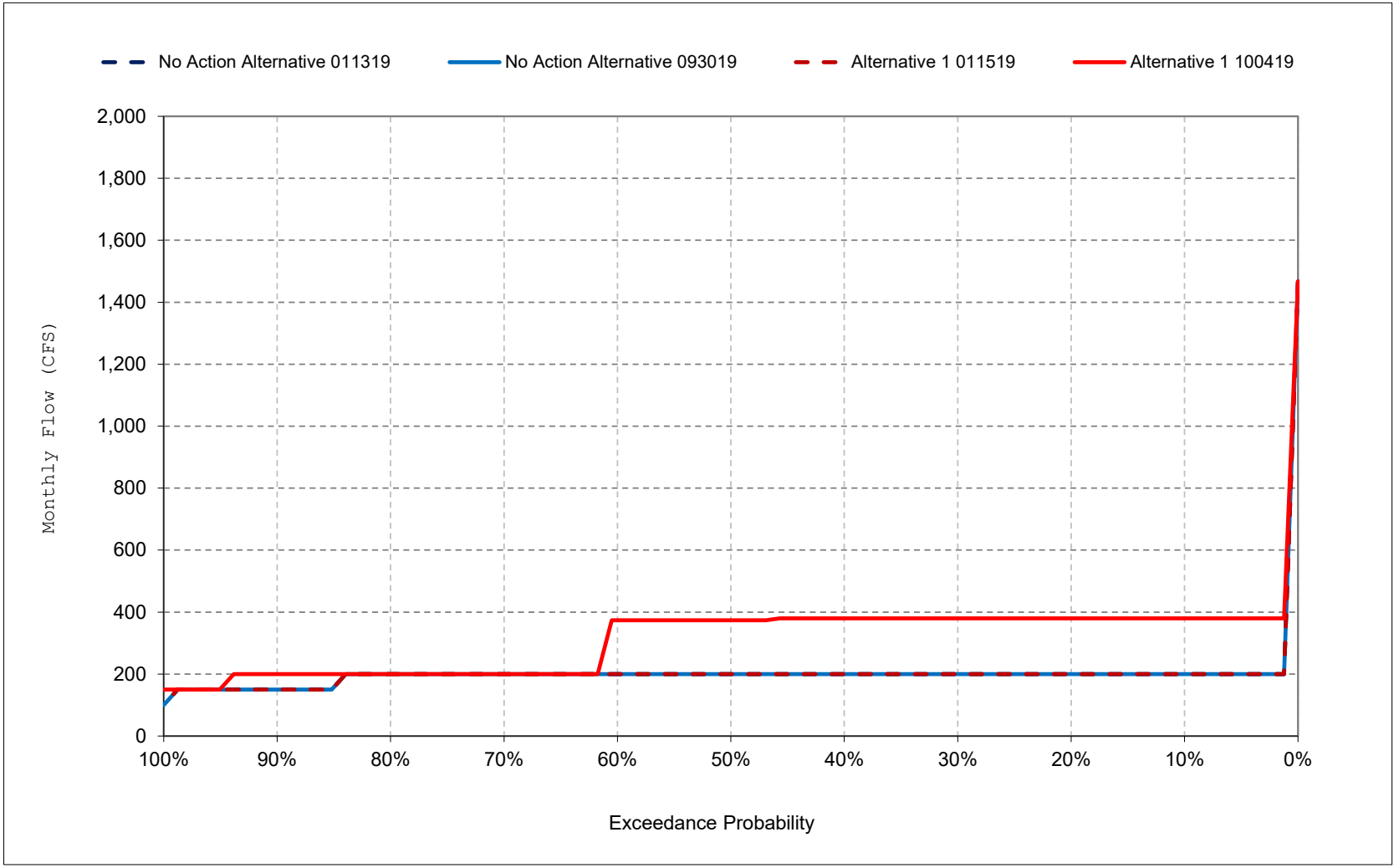

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-10. Clear Creek below Whiskeytown Dam Flow, January**



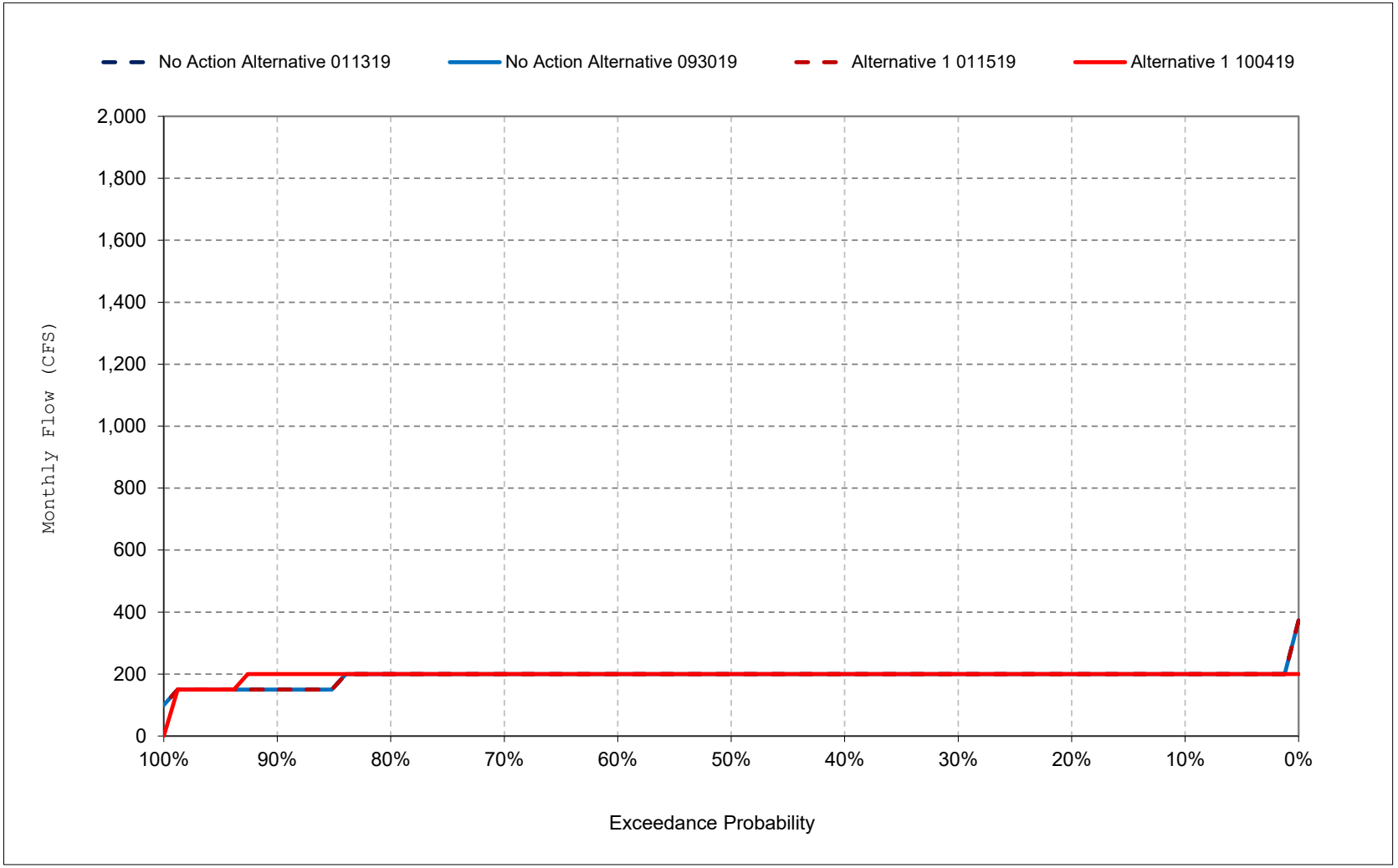

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-11. Clear Creek below Whiskeytown Dam Flow, February**



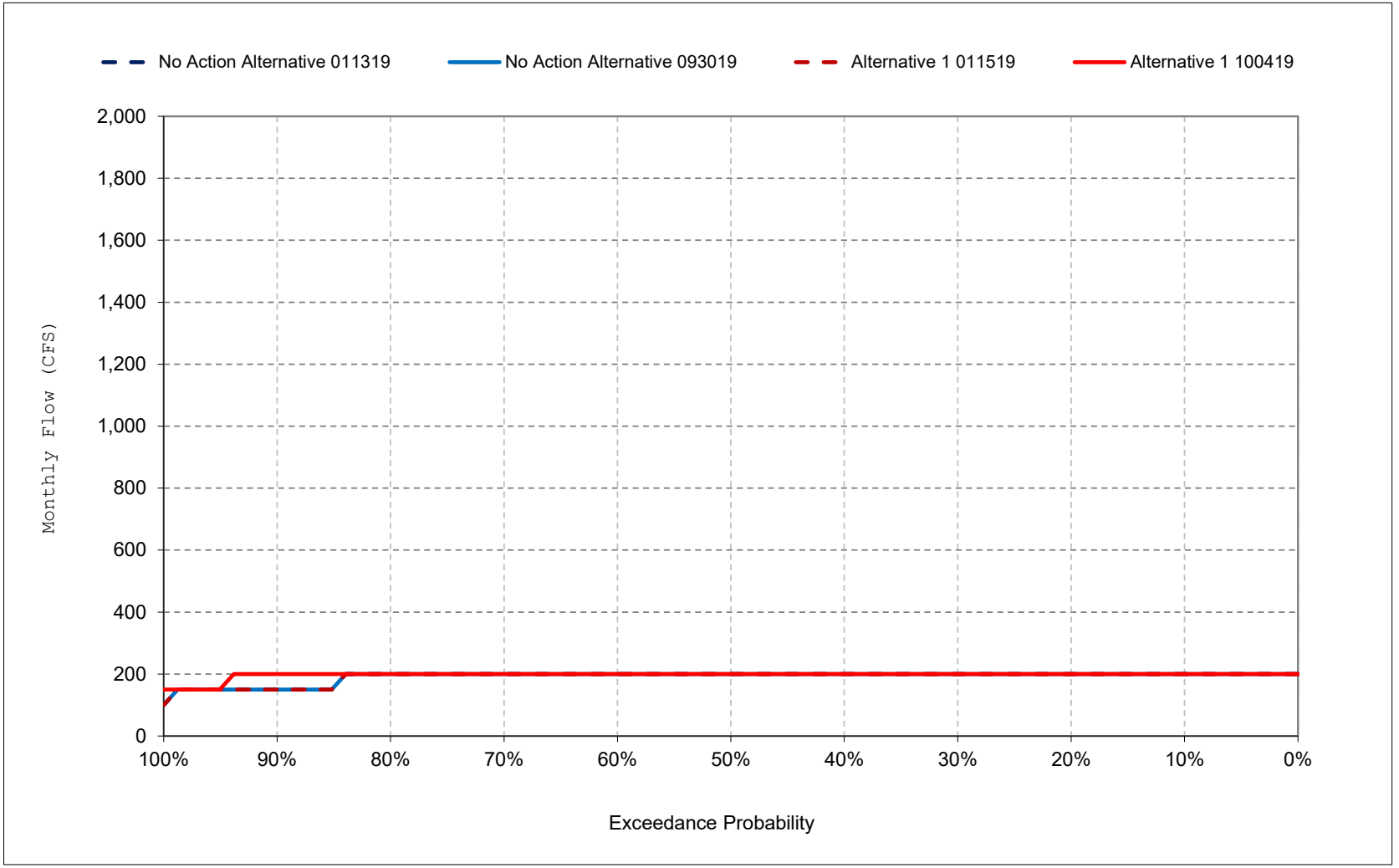

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-12. Clear Creek below Whiskeytown Dam Flow, March**



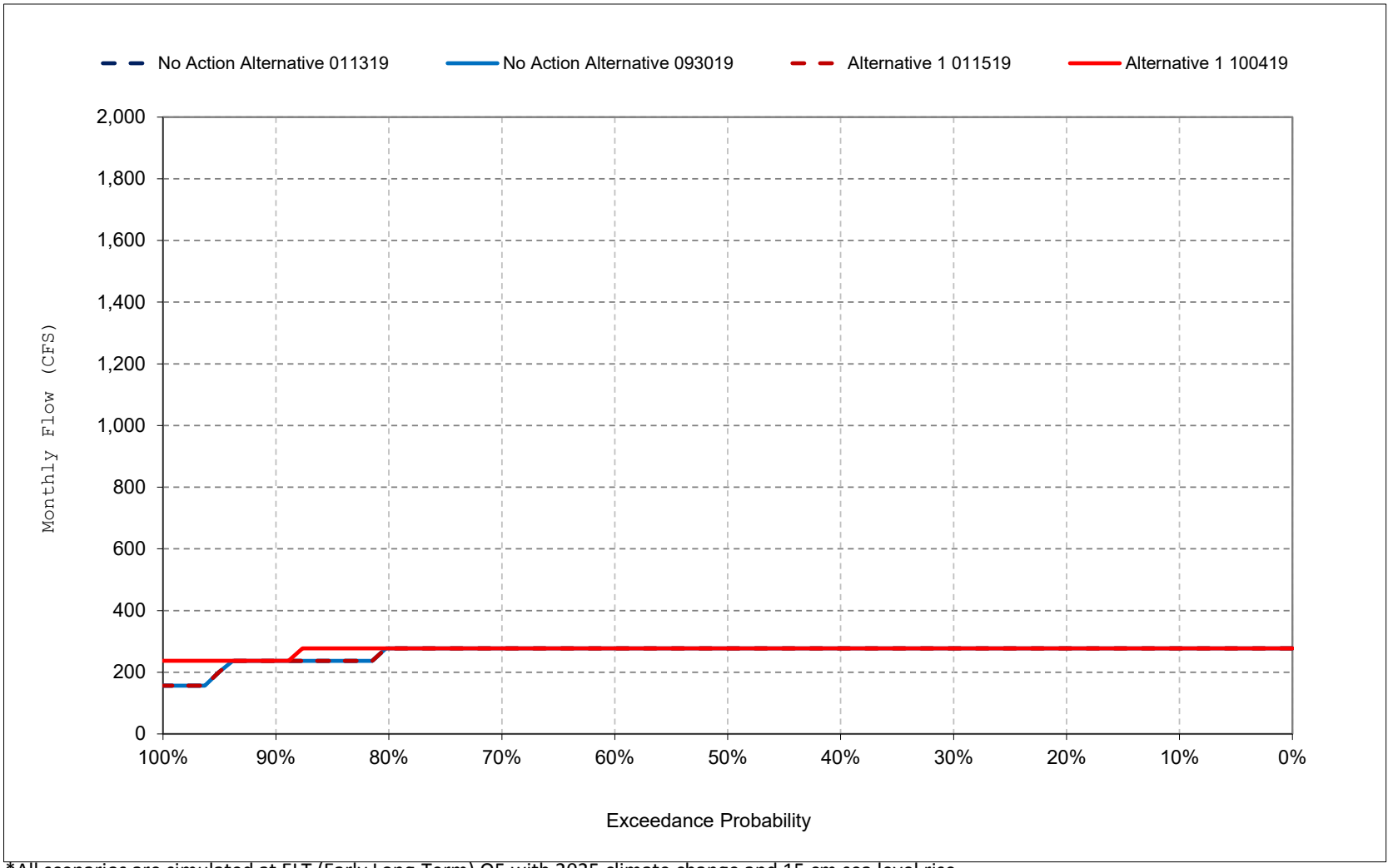

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-13. Clear Creek below Whiskeytown Dam Flow, April**



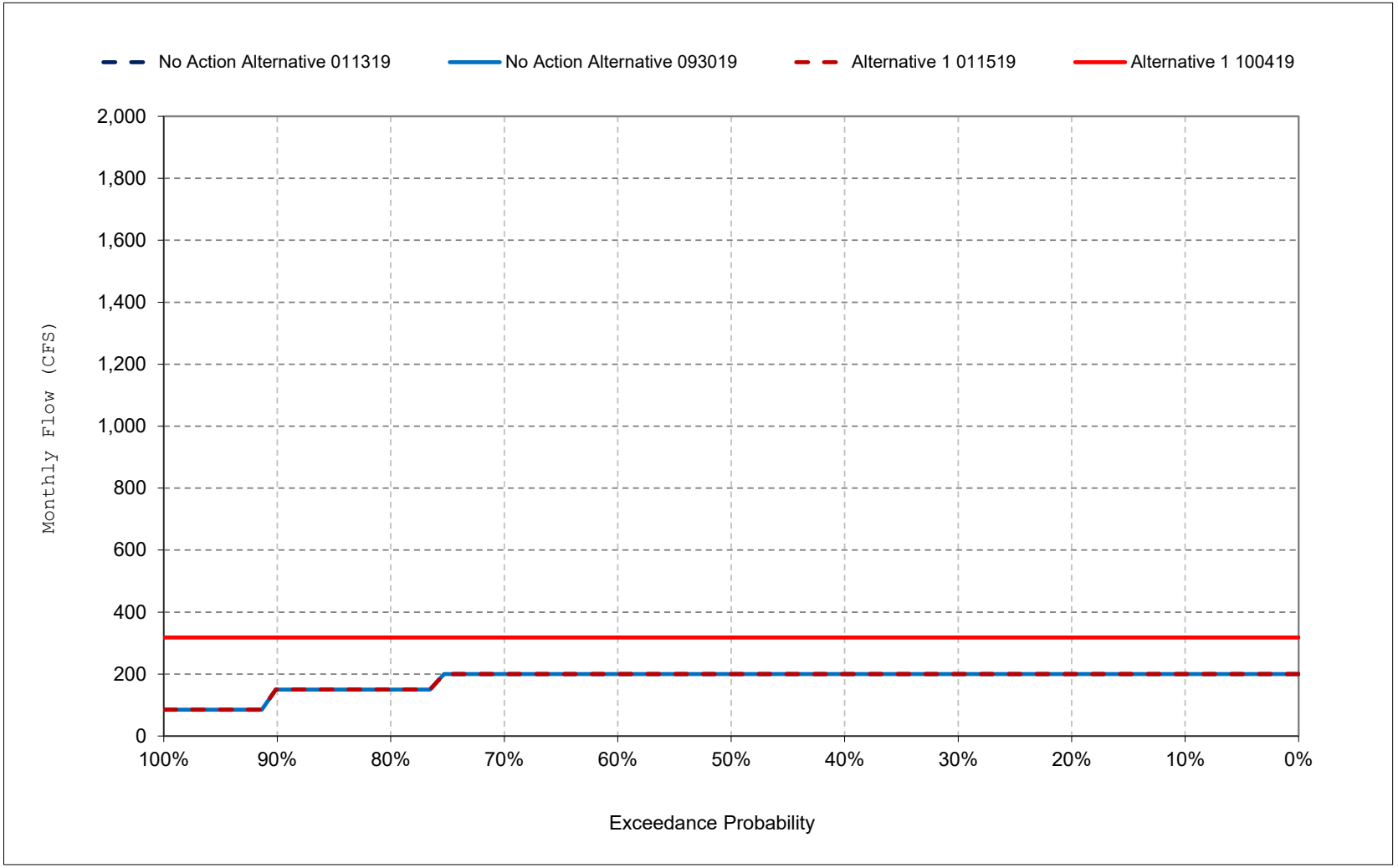

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-14. Clear Creek below Whiskeytown Dam Flow, May**



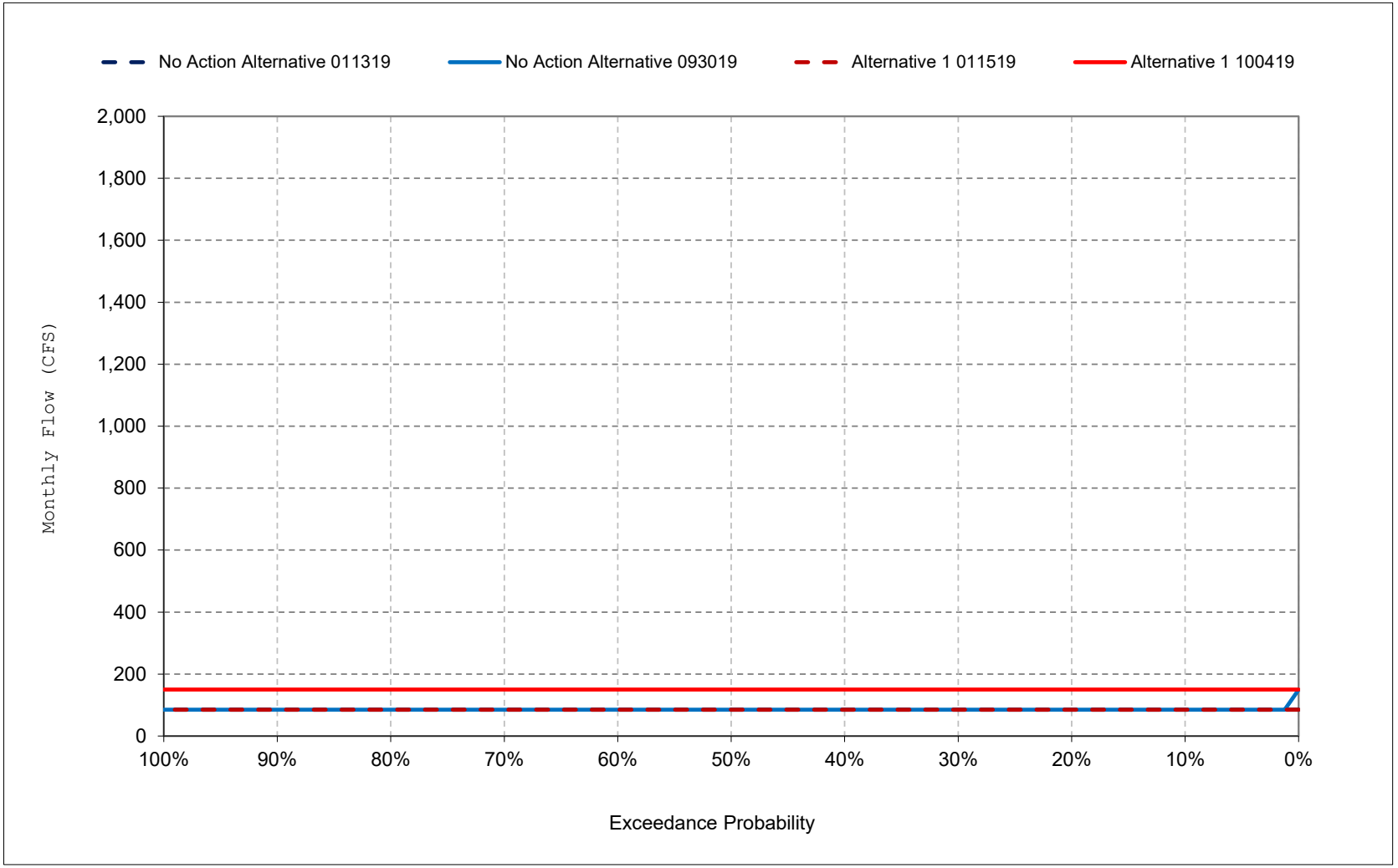

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-15. Clear Creek below Whiskeytown Dam Flow, June**



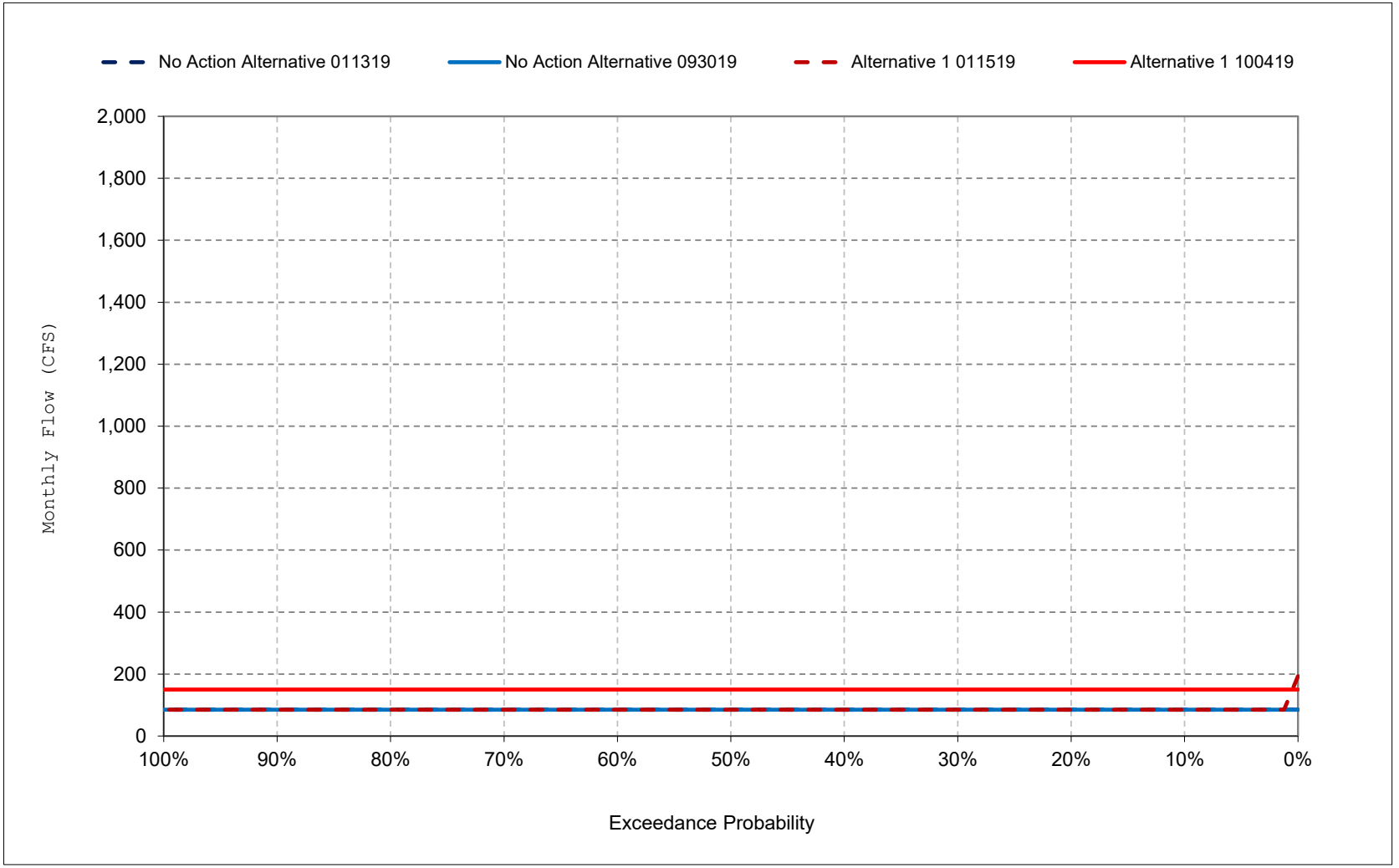

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-16. Clear Creek below Whiskeytown Dam Flow, July**



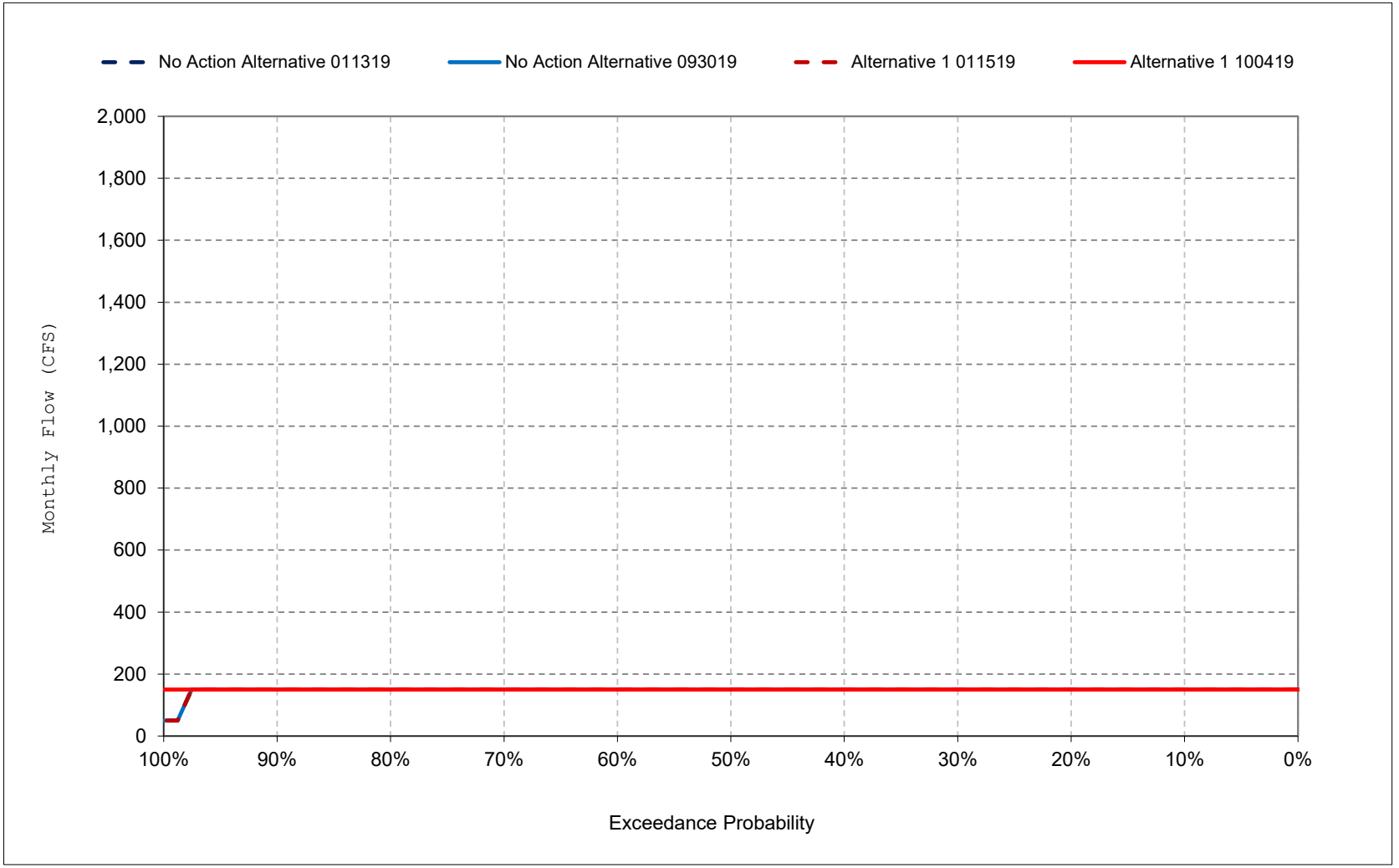

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-17. Clear Creek below Whiskeytown Dam Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-18. Clear Creek below Whiskeytown Dam Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-1. Sacramento River Flow downstream of Keswick Reservoir, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,932 | 11,500 | 16,771 | 21,434 | 30,624 | 18,502 | 10,385 | 10,220 | 13,073 | 16,000 | 11,867 | 15,678 |
| 20% | 8,180 | 10,441 | 9,449 | 12,382 | 23,596 | 12,316 | 6,617 | 9,427 | 11,319 | 16,000 | 10,889 | 13,382 |
| 30% | 7,340 | 8,747 | 5,320 | 7,732 | 11,665 | 8,447 | 4,504 | 8,708 | 10,520 | 15,558 | 10,368 | 11,580 |
| 40% | 6,852 | 7,482 | 4,377 | 3,589 | 4,945 | 4,329 | 3,747 | 8,150 | 9,841 | 14,530 | 9,720 | 9,405 |
| 50% | 6,214 | 6,238 | 3,500 | 3,250 | 3,250 | 3,250 | 3,250 | 7,655 | 9,049 | 13,411 | 9,511 | 6,403 |
| 60% | 5,763 | 5,623 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 7,112 | 8,763 | 12,505 | 9,166 | 5,594 |
| 70% | 5,219 | 4,289 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,616 | 8,324 | 11,858 | 8,779 | 5,315 |
| 80% | 4,880 | 3,369 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,925 | 8,091 | 10,966 | 8,159 | 4,812 |
| 90% | 4,496 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,270 | 7,653 | 9,821 | 7,754 | 4,235 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,497 | 7,173 | 6,976 | 8,716 | 11,068 | 8,473 | 5,522 | 7,778 | 9,787 | 13,314 | 9,650 | 8,687 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,908 | 9,796 | 7,444 | 17,876 | 19,288 | 16,127 | 8,458 | 8,662 | 8,940 | 13,440 | 10,474 | 14,063 |
| Above Normal (16%) | 7,054 | 10,124 | 6,406 | 7,629 | 16,401 | 8,534 | 5,221 | 7,925 | 10,359 | 15,316 | 10,494 | 9,972 |
| Below Normal (13%) | 5,842 | 4,960 | 7,558 | 3,285 | 7,149 | 3,925 | 3,803 | 7,867 | 10,930 | 14,421 | 10,624 | 5,493 |
| Dry (24%) | 5,660 | 5,111 | 8,652 | 3,697 | 3,564 | 3,961 | 3,719 | 7,014 | 10,368 | 12,658 | 8,608 | 4,995 |
| Critical (15%) | 4,829 | 3,755 | 3,251 | 3,392 | 3,580 | 3,509 | 4,065 | 6,895 | 8,984 | 10,947 | 7,793 | 4,729 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,870 | 7,994 | 19,652 | 24,806 | 30,772 | 19,100 | 10,691 | 10,854 | 14,173 | 16,000 | 11,780 | 9,351 |
| 20% | 8,392 | 6,605 | 12,187 | 15,008 | 21,412 | 12,718 | 6,804 | 10,217 | 12,693 | 16,000 | 10,939 | 7,780 |
| 30% | 7,829 | 6,090 | 6,884 | 9,696 | 12,674 | 9,001 | 5,386 | 9,641 | 11,861 | 15,431 | 10,462 | 6,248 |
| 40% | 6,819 | 5,169 | 4,788 | 5,609 | 6,290 | 6,453 | 3,747 | 8,774 | 10,612 | 14,184 | 9,996 | 5,808 |
| 50% | 6,101 | 4,941 | 4,000 | 3,250 | 4,000 | 3,250 | 3,250 | 8,305 | 10,014 | 13,290 | 9,646 | 5,449 |
| 60% | 5,821 | 4,312 | 3,549 | 3,250 | 3,250 | 3,250 | 3,250 | 7,638 | 9,252 | 12,406 | 9,241 | 5,163 |
| 70% | 5,220 | 4,017 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,975 | 8,426 | 11,636 | 8,878 | 4,960 |
| 80% | 4,855 | 3,409 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,448 | 8,139 | 10,936 | 8,298 | 4,636 |
| 90% | 4,310 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,760 | 7,653 | 9,809 | 7,889 | 4,258 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,461 | 5,627 | 7,922 | 9,498 | 11,428 | 8,880 | 5,618 | 8,309 | 10,429 | 13,220 | 9,769 | 6,186 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,715 | 6,274 | 9,509 | 18,983 | 19,458 | 16,213 | 8,572 | 8,912 | 9,047 | 13,352 | 10,647 | 8,317 |
| Above Normal (16%) | 7,055 | 7,059 | 7,624 | 8,995 | 17,580 | 9,220 | 5,247 | 8,410 | 10,738 | 15,382 | 10,503 | 5,266 |
| Below Normal (13%) | 5,767 | 4,961 | 7,578 | 4,681 | 8,163 | 4,794 | 4,242 | 8,845 | 12,257 | 14,609 | 10,807 | 6,008 |
| Dry (24%) | 5,811 | 5,213 | 9,023 | 3,823 | 3,565 | 4,344 | 3,741 | 7,870 | 11,441 | 12,525 | 8,801 | 4,931 |
| Critical (15%) | 4,823 | 3,977 | 3,288 | 3,368 | 3,460 | 3,933 | 4,012 | 7,131 | 9,729 | 10,481 | 7,737 | 4,820 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -62 | -3,506 | 2,881 | 3,372 | 149 | 598 | 307 | 634 | 1,100 | 0 | -87 | -6,327 |
| 20% | 211 | -3,836 | 2,738 | 2,626 | -2,183 | 402 | 187 | 790 | 1,374 | 0 | 50 | -5,603 |
| 30% | 489 | -2,657 | 1,564 | 1,963 | 1,009 | 554 | 882 | 933 | 1,340 | -128 | 94 | -5,332 |
| 40% | -33 | -2,313 | 411 | 2,020 | 1,345 | 2,124 | 0 | 625 | 771 | -347 | 276 | -3,597 |
| 50% | -112 | -1,297 | 500 | 0 | 750 | 0 | 0 | 649 | 966 | -122 | 135 | -953 |
| 60% | 58 | -1,311 | 299 | 0 | 0 | 0 | 0 | 526 | 489 | -99 | 75 | -430 |
| 70% | 1 | -272 | 0 | 0 | 0 | 0 | 0 | 359 | 102 | -222 | 99 | -355 |
| 80% | -25 | 40 | 0 | 0 | 0 | 0 | 0 | 523 | 48 | -30 | 139 | -176 |
| 90% | -186 | 0 | 0 | 0 | 0 | 0 | 0 | 489 | 1 | -12 | 135 | 22 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -35 | -1,545 | 946 | 782 | 360 | 408 | 97 | 530 | 643 | -93 | 120 | -2,501 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -193 | -3,522 | 2,065 | 1,108 | 170 | 85 | 114 | 249 | 106 | -89 | 173 | -5,746 |
| Above Normal (16%) | 1 | -3,065 | 1,218 | 1,366 | 1,179 | 686 | 26 | 484 | 379 | 66 | 9 | -4,706 |
| Below Normal (13%) | -75 | 1 | 19 | 1,396 | 1,014 | 869 | 439 | 977 | 1,327 | 188 | 183 | 515 |
| Dry (24%) | 151 | 102 | 370 | 125 | 1 | 383 | 22 | 856 | 1,073 | -133 | 193 | -64 |
| Critical (15%) | -6 | 222 | 38 | -24 | -120 | 424 | -54 | 236 | 746 | -466 | -56 | 92 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-2. Sacramento River Flow downstream of Keswick Reservoir, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 9,260 | 11,896 | 16,906 | 20,957 | 30,533 | 18,502 | 10,385 | 10,438 | 13,182 | 16,000 | 11,926 | 15,678 |
| 20% | 8,276 | 10,437 | 9,072 | 12,166 | 23,093 | 12,316 | 6,774 | 9,491 | 11,541 | 16,000 | 10,965 | 13,351 |
| 30% | 7,485 | 8,843 | 5,112 | 7,729 | 11,072 | 7,916 | 4,490 | 8,775 | 10,869 | 15,672 | 10,429 | 11,603 |
| 40% | 7,015 | 7,668 | 4,486 | 3,592 | 4,136 | 4,156 | 3,719 | 8,240 | 9,904 | 14,278 | 9,701 | 9,546 |
| 50% | 6,280 | 6,332 | 3,582 | 3,250 | 3,250 | 3,250 | 3,250 | 7,634 | 9,309 | 13,308 | 9,503 | 6,414 |
| 60% | 5,921 | 5,790 | 3,367 | 3,250 | 3,250 | 3,250 | 3,250 | 7,150 | 8,897 | 12,322 | 9,171 | 5,547 |
| 70% | 5,363 | 4,486 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,656 | 8,401 | 11,515 | 8,718 | 5,248 |
| 80% | 4,904 | 3,602 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,014 | 8,126 | 10,802 | 8,221 | 4,865 |
| 90% | 4,296 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,117 | 7,591 | 9,809 | 7,609 | 4,341 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,603 | 7,231 | 6,955 | 8,689 | 11,017 | 8,450 | 5,525 | 7,799 | 9,888 | 13,202 | 9,640 | 8,687 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 8,021 | 9,866 | 7,441 | 17,792 | 19,245 | 16,127 | 8,455 | 8,663 | 8,971 | 13,464 | 10,501 | 14,061 |
| Above Normal (16%) | 7,394 | 10,104 | 6,298 | 7,444 | 16,207 | 8,331 | 5,221 | 7,926 | 10,435 | 15,324 | 10,549 | 9,996 |
| Below Normal (13%) | 5,839 | 5,014 | 7,557 | 3,328 | 6,912 | 3,925 | 3,731 | 7,865 | 10,908 | 14,379 | 10,758 | 5,610 |
| Dry (24%) | 5,781 | 5,160 | 8,619 | 3,705 | 3,511 | 4,006 | 3,740 | 7,034 | 10,446 | 12,434 | 8,521 | 4,960 |
| Critical (15%) | 4,742 | 3,891 | 3,287 | 3,535 | 3,842 | 3,499 | 4,122 | 7,006 | 9,418 | 10,535 | 7,632 | 4,657 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 8,559 | 9,060 | 19,004 | 22,149 | 30,593 | 19,078 | 10,156 | 10,499 | 13,807 | 16,000 | 11,616 | 9,092 |
| 20% | 7,903 | 7,286 | 11,909 | 14,917 | 21,627 | 12,718 | 6,798 | 9,753 | 12,418 | 15,817 | 10,678 | 8,132 |
| 30% | 7,361 | 6,708 | 6,656 | 9,342 | 12,886 | 9,001 | 5,746 | 9,253 | 11,759 | 14,484 | 10,231 | 7,408 |
| 40% | 6,903 | 5,939 | 4,989 | 6,199 | 6,743 | 5,632 | 4,510 | 8,616 | 10,594 | 13,351 | 9,830 | 6,168 |
| 50% | 6,334 | 5,579 | 4,428 | 3,619 | 3,970 | 4,470 | 3,691 | 8,267 | 9,902 | 12,438 | 9,620 | 5,693 |
| 60% | 5,793 | 5,223 | 3,871 | 3,250 | 3,250 | 3,250 | 3,250 | 7,735 | 9,069 | 11,778 | 9,083 | 5,167 |
| 70% | 5,411 | 4,825 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 7,003 | 8,534 | 11,393 | 8,722 | 4,970 |
| 80% | 5,024 | 4,304 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,161 | 8,116 | 10,146 | 8,071 | 4,490 |
| 90% | 4,332 | 3,498 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,422 | 7,665 | 9,601 | 7,598 | 4,224 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,412 | 6,261 | 7,807 | 9,378 | 11,457 | 8,860 | 5,702 | 8,122 | 10,305 | 12,822 | 9,551 | 6,332 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 7,691 | 6,914 | 9,421 | 18,493 | 19,566 | 16,396 | 8,634 | 8,587 | 9,103 | 13,506 | 10,625 | 8,278 |
| Above Normal (16%) | 6,891 | 8,278 | 7,133 | 8,569 | 17,409 | 9,405 | 5,402 | 8,276 | 10,918 | 15,142 | 10,559 | 7,311 |
| Below Normal (13%) | 5,846 | 5,387 | 7,730 | 4,503 | 8,026 | 4,794 | 4,165 | 8,629 | 12,250 | 13,871 | 10,015 | 5,250 |
| Dry (24%) | 5,793 | 5,707 | 8,808 | 3,908 | 3,633 | 4,053 | 3,869 | 7,739 | 10,949 | 11,581 | 8,538 | 4,809 |
| Critical (15%) | 4,673 | 4,385 | 3,445 | 4,093 | 3,628 | 3,677 | 4,136 | 7,125 | 9,385 | 9,934 | 7,396 | 4,583 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -701 | -2,836 | 2,098 | 1,192 | 60 | 576 | -229 | 60 | 625 | 0 | -310 | -6,587 |
| 20% | -373 | -3,151 | 2,837 | 2,751 | -1,466 | 402 | 24 | 262 | 876 | -183 | -287 | -5,219 |
| 30% | -124 | -2,134 | 1,544 | 1,613 | 1,814 | 1,085 | 1,256 | 478 | 890 | -1,188 | -198 | -4,195 |
| 40% | -111 | -1,729 | 503 | 2,607 | 2,607 | 1,476 | 792 | 376 | 690 | -928 | 130 | -3,378 |
| 50% | 54 | -753 | 846 | 369 | 720 | 1,220 | 441 | 633 | 593 | -870 | 117 | -721 |
| 60% | -127 | -567 | 505 | 0 | 0 | 0 | 0 | 584 | 172 | -543 | -88 | -380 |
| 70% | 48 | 339 | 0 | 0 | 0 | 0 | 0 | 347 | 133 | -121 | 3 | -278 |
| 80% | 120 | 703 | 0 | 0 | 0 | 0 | 0 | 147 | -10 | -656 | -150 | -375 |
| 90% | 36 | 248 | 0 | 0 | 0 | 0 | 0 | 306 | 75 | -209 | -11 | -117 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -191 | -970 | 853 | 689 | 440 | 410 | 177 | 323 | 417 | -380 | -89 | -2,355 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -330 | -2,952 | 1,980 | 701 | 321 | 268 | 178 | -76 | 132 | 42 | 124 | -5,783 |
| Above Normal (16%) | -503 | -1,826 | 835 | 1,125 | 1,202 | 1,074 | 181 | 350 | 484 | -182 | 10 | -2,685 |
| Below Normal (13%) | 7 | 374 | 173 | 1,175 | 1,115 | 869 | 434 | 764 | 1,343 | -508 | -743 | -359 |
| Dry (24%) | 12 | 547 | 190 | 202 | 122 | 47 | 130 | 705 | 503 | -852 | 17 | -151 |
| Critical (15%) | -69 | 494 | 158 | 559 | -215 | 178 | 13 | 119 | -33 | -602 | -236 | -74 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-3. Sacramento River Flow downstream of Keswick Reservoir, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,932 | 11,500 | 16,771 | 21,434 | 30,624 | 18,502 | 10,385 | 10,220 | 13,073 | 16,000 | 11,867 | 15,678 |
| 20% | 8,180 | 10,441 | 9,449 | 12,382 | 23,596 | 12,316 | 6,617 | 9,427 | 11,319 | 16,000 | 10,889 | 13,382 |
| 30% | 7,340 | 8,747 | 5,320 | 7,732 | 11,665 | 8,447 | 4,504 | 8,708 | 10,520 | 15,558 | 10,368 | 11,580 |
| 40% | 6,852 | 7,482 | 4,377 | 3,589 | 4,945 | 4,329 | 3,747 | 8,150 | 9,841 | 14,530 | 9,720 | 9,405 |
| 50% | 6,214 | 6,238 | 3,500 | 3,250 | 3,250 | 3,250 | 3,250 | 7,655 | 9,049 | 13,411 | 9,511 | 6,403 |
| 60% | 5,763 | 5,623 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 7,112 | 8,763 | 12,505 | 9,166 | 5,594 |
| 70% | 5,219 | 4,289 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,616 | 8,324 | 11,858 | 8,779 | 5,315 |
| 80% | 4,880 | 3,369 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,925 | 8,091 | 10,966 | 8,159 | 4,812 |
| 90% | 4,496 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,270 | 7,653 | 9,821 | 7,754 | 4,235 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,497 | 7,173 | 6,976 | 8,716 | 11,068 | 8,473 | 5,522 | 7,778 | 9,787 | 13,314 | 9,650 | 8,687 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,908 | 9,796 | 7,444 | 17,876 | 19,288 | 16,127 | 8,458 | 8,662 | 8,940 | 13,440 | 10,474 | 14,063 |
| Above Normal (16%) | 7,054 | 10,124 | 6,406 | 7,629 | 16,401 | 8,534 | 5,221 | 7,925 | 10,359 | 15,316 | 10,494 | 9,972 |
| Below Normal (13%) | 5,842 | 4,960 | 7,558 | 3,285 | 7,149 | 3,925 | 3,803 | 7,867 | 10,930 | 14,421 | 10,624 | 5,493 |
| Dry (24%) | 5,660 | 5,111 | 8,652 | 3,697 | 3,564 | 3,961 | 3,719 | 7,014 | 10,368 | 12,658 | 8,608 | 4,995 |
| Critical (15%) | 4,829 | 3,755 | 3,251 | 3,392 | 3,580 | 3,509 | 4,065 | 6,895 | 8,984 | 10,947 | 7,793 | 4,729 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,260 | 11,896 | 16,906 | 20,957 | 30,533 | 18,502 | 10,385 | 10,438 | 13,182 | 16,000 | 11,926 | 15,678 |
| 20% | 8,276 | 10,437 | 9,072 | 12,166 | 23,093 | 12,316 | 6,774 | 9,491 | 11,541 | 16,000 | 10,965 | 13,351 |
| 30% | 7,485 | 8,843 | 5,112 | 7,729 | 11,072 | 7,916 | 4,490 | 8,775 | 10,869 | 15,672 | 10,429 | 11,603 |
| 40% | 7,015 | 7,668 | 4,486 | 3,592 | 4,136 | 4,156 | 3,719 | 8,240 | 9,904 | 14,278 | 9,701 | 9,546 |
| 50% | 6,280 | 6,332 | 3,582 | 3,250 | 3,250 | 3,250 | 3,250 | 7,634 | 9,309 | 13,308 | 9,503 | 6,414 |
| 60% | 5,921 | 5,790 | 3,367 | 3,250 | 3,250 | 3,250 | 3,250 | 7,150 | 8,897 | 12,322 | 9,171 | 5,547 |
| 70% | 5,363 | 4,486 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,656 | 8,401 | 11,515 | 8,718 | 5,248 |
| 80% | 4,904 | 3,602 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,014 | 8,126 | 10,802 | 8,221 | 4,865 |
| 90% | 4,296 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,117 | 7,591 | 9,809 | 7,609 | 4,341 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,603 | 7,231 | 6,955 | 8,689 | 11,017 | 8,450 | 5,525 | 7,799 | 9,888 | 13,202 | 9,640 | 8,687 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,021 | 9,866 | 7,441 | 17,792 | 19,245 | 16,127 | 8,455 | 8,663 | 8,971 | 13,464 | 10,501 | 14,061 |
| Above Normal (16%) | 7,394 | 10,104 | 6,298 | 7,444 | 16,207 | 8,331 | 5,221 | 7,926 | 10,435 | 15,324 | 10,549 | 9,996 |
| Below Normal (13%) | 5,839 | 5,014 | 7,557 | 3,328 | 6,912 | 3,925 | 3,731 | 7,865 | 10,908 | 14,379 | 10,758 | 5,610 |
| Dry (24%) | 5,781 | 5,160 | 8,619 | 3,705 | 3,511 | 4,006 | 3,740 | 7,034 | 10,446 | 12,434 | 8,521 | 4,960 |
| Critical (15%) | 4,742 | 3,891 | 3,287 | 3,535 | 3,842 | 3,499 | 4,122 | 7,006 | 9,418 | 10,535 | 7,632 | 4,657 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 328 | 396 | 135 | **-478** | **-91** | 0 | 0 | 218 | 109 | 0 | 59 | 0 |
| 20% | 96 | **-5** | **-377** | **-216** | **-503** | 0 | 157 | 64 | 223 | 0 | 76 | **-31** |
| 30% | 145 | 96 | **-208** | **-3** | **-593** | **-531** | **-14** | 67 | 349 | 114 | 62 | 23 |
| 40% | 163 | 186 | 109 | 3 | **-809** | **-173** | **-28** | 90 | 64 | **-252** | **-19** | 141 |
| 50% | 66 | 94 | 82 | 0 | 0 | 0 | 0 | **-21** | 260 | **-104** | **-8** | 11 |
| 60% | 158 | 167 | 117 | 0 | 0 | 0 | 0 | 39 | 134 | **-184** | 5 | **-47** |
| 70% | 144 | 197 | 0 | 0 | 0 | 0 | 0 | 40 | 77 | **-343** | **-60** | **-67** |
| 80% | 25 | 232 | 0 | 0 | 0 | 0 | 0 | 89 | 35 | **-163** | 62 | 53 |
| 90% | **-200** | 0 | 0 | 0 | 0 | 0 | 0 | **-154** | **-62** | **-12** | **-145** | 106 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 106 | 58 | **-21** | **-27** | **-51** | **-22** | 3 | 21 | 101 | **-112** | **-9** | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 113 | 70 | **-3** | **-84** | **-43** | 0 | **-2** | 0 | 31 | 24 | 27 | **-1** |
| Above Normal (16%) | 340 | **-20** | **-109** | **-185** | **-194** | **-203** | 0 | 1 | 76 | 7 | 56 | 24 |
| Below Normal (13%) | **-3** | 53 | **-1** | 44 | **-238** | 0 | **-71** | **-2** | **-22** | **-42** | 134 | 117 |
| Dry (24%) | 121 | 49 | **-34** | 8 | **-53** | 45 | 20 | 20 | 78 | **-225** | **-86** | **-34** |
| Critical (15%) | **-87** | 136 | 36 | 143 | 263 | **-10** | 57 | 111 | 434 | **-412** | **-161** | **-72** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-4. Sacramento River Flow downstream of Keswick Reservoir, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,870 | 7,994 | 19,652 | 24,806 | 30,772 | 19,100 | 10,691 | 10,854 | 14,173 | 16,000 | 11,780 | 9,351 |
| 20% | 8,392 | 6,605 | 12,187 | 15,008 | 21,412 | 12,718 | 6,804 | 10,217 | 12,693 | 16,000 | 10,939 | 7,780 |
| 30% | 7,829 | 6,090 | 6,884 | 9,696 | 12,674 | 9,001 | 5,386 | 9,641 | 11,861 | 15,431 | 10,462 | 6,248 |
| 40% | 6,819 | 5,169 | 4,788 | 5,609 | 6,290 | 6,453 | 3,747 | 8,774 | 10,612 | 14,184 | 9,996 | 5,808 |
| 50% | 6,101 | 4,941 | 4,000 | 3,250 | 4,000 | 3,250 | 3,250 | 8,305 | 10,014 | 13,290 | 9,646 | 5,449 |
| 60% | 5,821 | 4,312 | 3,549 | 3,250 | 3,250 | 3,250 | 3,250 | 7,638 | 9,252 | 12,406 | 9,241 | 5,163 |
| 70% | 5,220 | 4,017 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,975 | 8,426 | 11,636 | 8,878 | 4,960 |
| 80% | 4,855 | 3,409 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,448 | 8,139 | 10,936 | 8,298 | 4,636 |
| 90% | 4,310 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,760 | 7,653 | 9,809 | 7,889 | 4,258 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,461 | 5,627 | 7,922 | 9,498 | 11,428 | 8,880 | 5,618 | 8,309 | 10,429 | 13,220 | 9,769 | 6,186 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,715 | 6,274 | 9,509 | 18,983 | 19,458 | 16,213 | 8,572 | 8,912 | 9,047 | 13,352 | 10,647 | 8,317 |
| Above Normal (16%) | 7,055 | 7,059 | 7,624 | 8,995 | 17,580 | 9,220 | 5,247 | 8,410 | 10,738 | 15,382 | 10,503 | 5,266 |
| Below Normal (13%) | 5,767 | 4,961 | 7,578 | 4,681 | 8,163 | 4,794 | 4,242 | 8,845 | 12,257 | 14,609 | 10,807 | 6,008 |
| Dry (24%) | 5,811 | 5,213 | 9,023 | 3,823 | 3,565 | 4,344 | 3,741 | 7,870 | 11,441 | 12,525 | 8,801 | 4,931 |
| Critical (15%) | 4,823 | 3,977 | 3,288 | 3,368 | 3,460 | 3,933 | 4,012 | 7,131 | 9,729 | 10,481 | 7,737 | 4,820 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,559 | 9,060 | 19,004 | 22,149 | 30,593 | 19,078 | 10,156 | 10,499 | 13,807 | 16,000 | 11,616 | 9,092 |
| 20% | 7,903 | 7,286 | 11,909 | 14,917 | 21,627 | 12,718 | 6,798 | 9,753 | 12,418 | 15,817 | 10,678 | 8,132 |
| 30% | 7,361 | 6,708 | 6,656 | 9,342 | 12,886 | 9,001 | 5,746 | 9,253 | 11,759 | 14,484 | 10,231 | 7,408 |
| 40% | 6,903 | 5,939 | 4,989 | 6,199 | 6,743 | 5,632 | 4,510 | 8,616 | 10,594 | 13,351 | 9,830 | 6,168 |
| 50% | 6,334 | 5,579 | 4,428 | 3,619 | 3,970 | 4,470 | 3,691 | 8,267 | 9,902 | 12,438 | 9,620 | 5,693 |
| 60% | 5,793 | 5,223 | 3,871 | 3,250 | 3,250 | 3,250 | 3,250 | 7,735 | 9,069 | 11,778 | 9,083 | 5,167 |
| 70% | 5,411 | 4,825 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 7,003 | 8,534 | 11,393 | 8,722 | 4,970 |
| 80% | 5,024 | 4,304 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 6,161 | 8,116 | 10,146 | 8,071 | 4,490 |
| 90% | 4,332 | 3,498 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 5,422 | 7,665 | 9,601 | 7,598 | 4,224 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,412 | 6,261 | 7,807 | 9,378 | 11,457 | 8,860 | 5,702 | 8,122 | 10,305 | 12,822 | 9,551 | 6,332 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,691 | 6,914 | 9,421 | 18,493 | 19,566 | 16,396 | 8,634 | 8,587 | 9,103 | 13,506 | 10,625 | 8,278 |
| Above Normal (16%) | 6,891 | 8,278 | 7,133 | 8,569 | 17,409 | 9,405 | 5,402 | 8,276 | 10,918 | 15,142 | 10,559 | 7,311 |
| Below Normal (13%) | 5,846 | 5,387 | 7,730 | 4,503 | 8,026 | 4,794 | 4,165 | 8,629 | 12,250 | 13,871 | 10,015 | 5,250 |
| Dry (24%) | 5,793 | 5,707 | 8,808 | 3,908 | 3,633 | 4,053 | 3,869 | 7,739 | 10,949 | 11,581 | 8,538 | 4,809 |
| Critical (15%) | 4,673 | 4,385 | 3,445 | 4,093 | 3,628 | 3,677 | 4,136 | 7,125 | 9,385 | 9,934 | 7,396 | 4,583 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -311 | 1,066 | -648 | -2,657 | -180 | -22 | -536 | -356 | -367 | 0 | -164 | -259 |
| 20% | -489 | 681 | -278 | -91 | 214 | 0 | -6 | -464 | -275 | -183 | -260 | 352 |
| 30% | -468 | 619 | -228 | -353 | 212 | 0 | 360 | -388 | -101 | -947 | -230 | 1,160 |
| 40% | 84 | 770 | 202 | 590 | 453 | -821 | 763 | -159 | -17 | -833 | -166 | 359 |
| 50% | 233 | 638 | 428 | 369 | -30 | 1,220 | 441 | -37 | -112 | -852 | -26 | 244 |
| 60% | -28 | 911 | 323 | 0 | 0 | 0 | 0 | 97 | -183 | -628 | -158 | 4 |
| 70% | 191 | 808 | 0 | 0 | 0 | 0 | 0 | 28 | 108 | -243 | -156 | 10 |
| 80% | 169 | 895 | 0 | 0 | 0 | 0 | 0 | -287 | -23 | -790 | -227 | -146 |
| 90% | 22 | 248 | 0 | 0 | 0 | 0 | 0 | -337 | 12 | -208 | -292 | -33 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -49 | 634 | -115 | -120 | 30 | -21 | 83 | -186 | -125 | -398 | -218 | 146 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -24 | 640 | -88 | -490 | 108 | 183 | 62 | -325 | 56 | 154 | -22 | -38 |
| Above Normal (16%) | -163 | 1,219 | -491 | -426 | -171 | 185 | 155 | -133 | 181 | -241 | 57 | 2,045 |
| Below Normal (13%) | 79 | 426 | 152 | -178 | -137 | 0 | -76 | -216 | -7 | -738 | -792 | -758 |
| Dry (24%) | -18 | 494 | -215 | 85 | 68 | -291 | 128 | -132 | -492 | -944 | -262 | -121 |
| Critical (15%) | -150 | 408 | 157 | 726 | 168 | -255 | 124 | -6 | -345 | -547 | -341 | -237 |

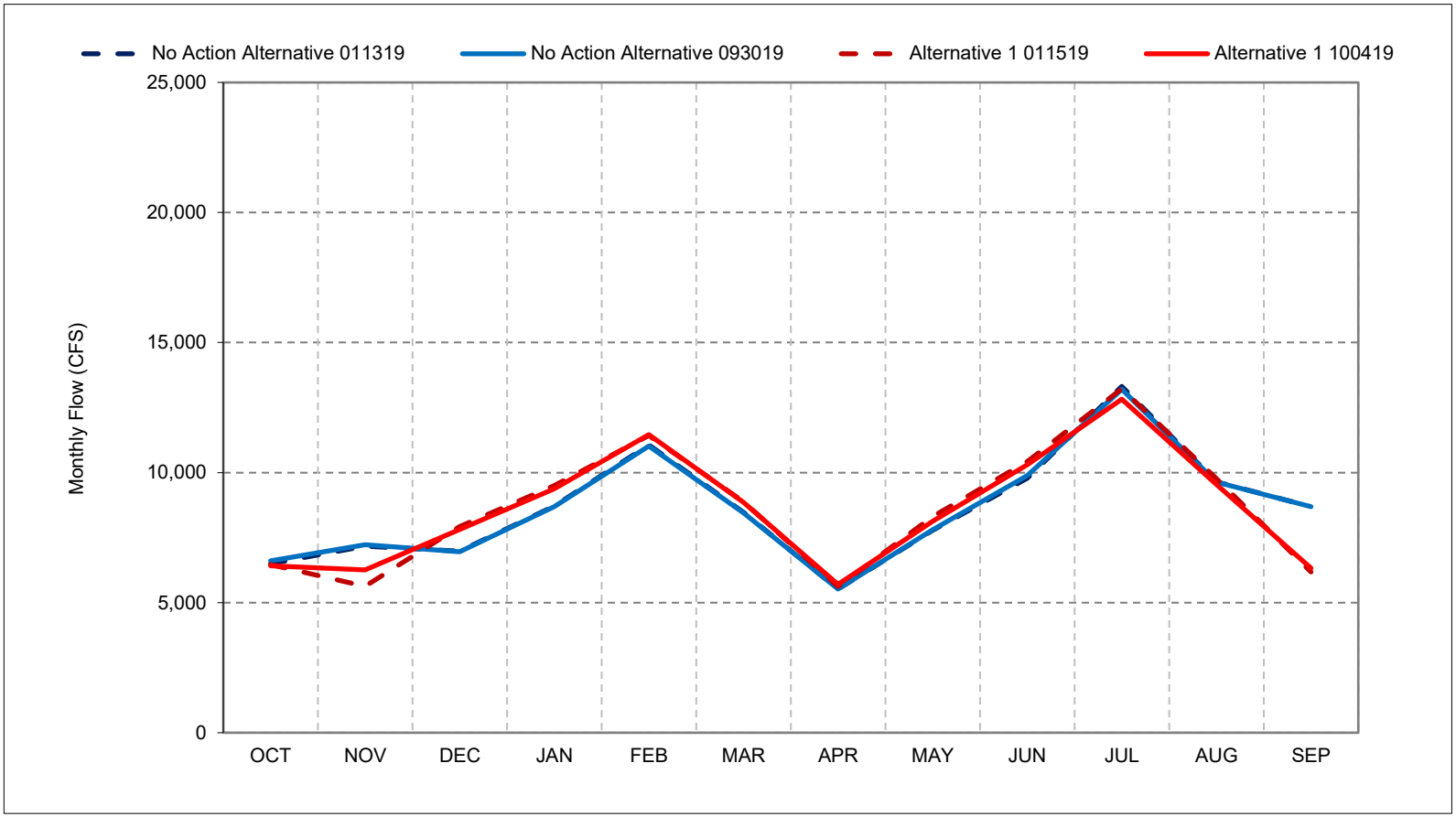
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-1. Sacramento River Flow downstream of Keswick Reservoir, Long-Term Average Flow

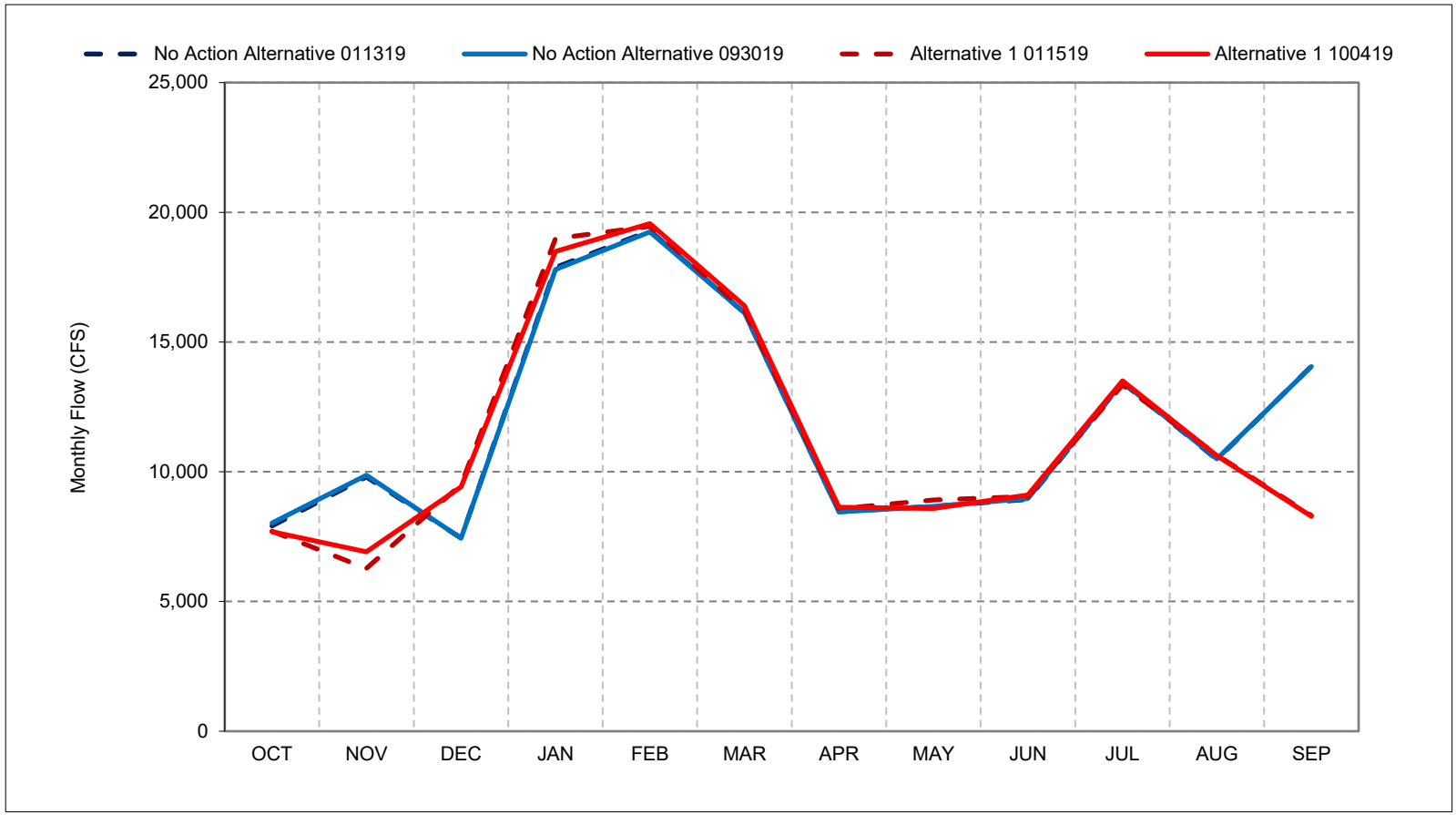



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-2. Sacramento River Flow downstream of Keswick Reservoir, Wet Year Average Flow

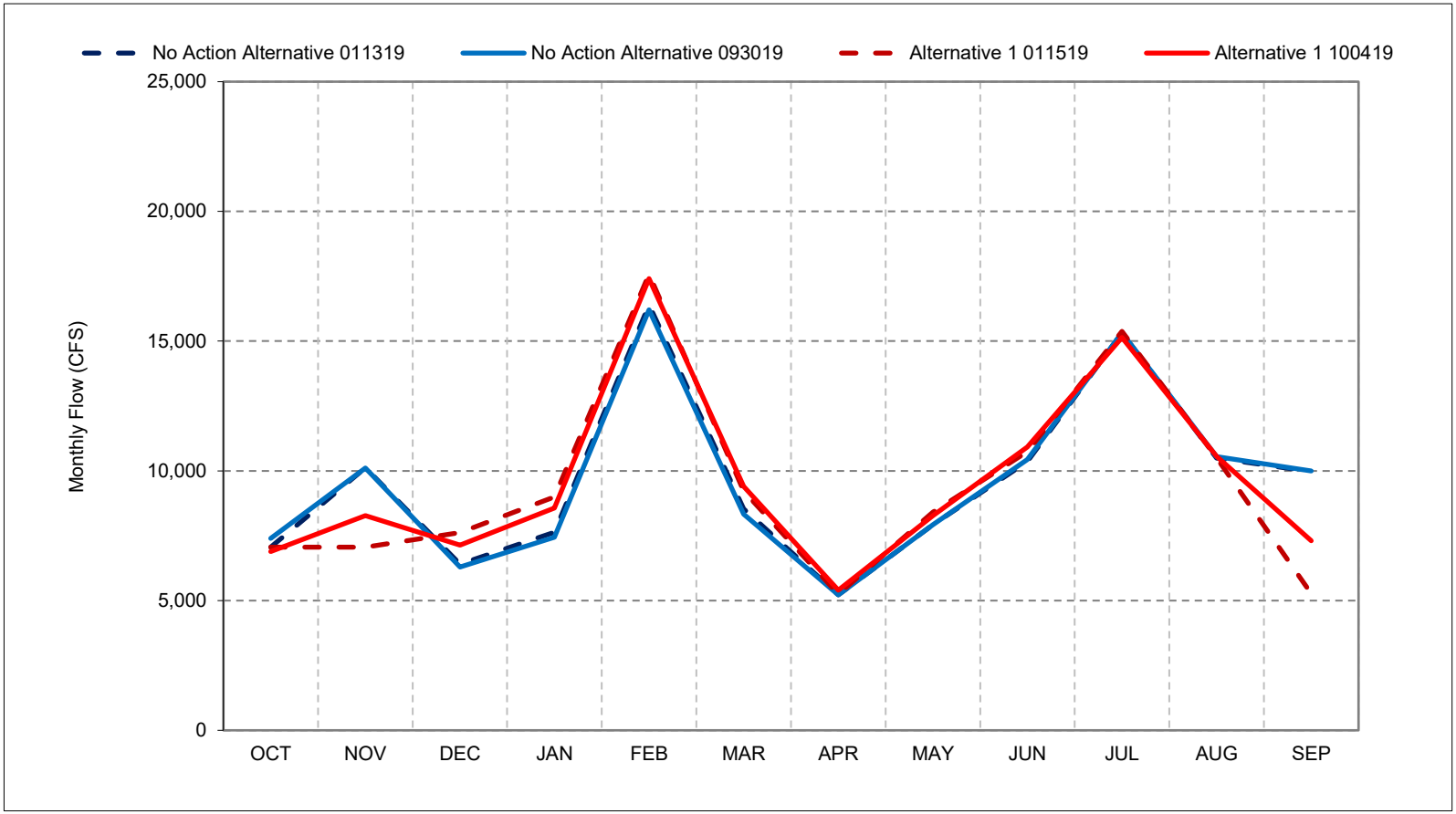



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-3. Sacramento River Flow downstream of Keswick Reservoir, Above Normal Year Averag

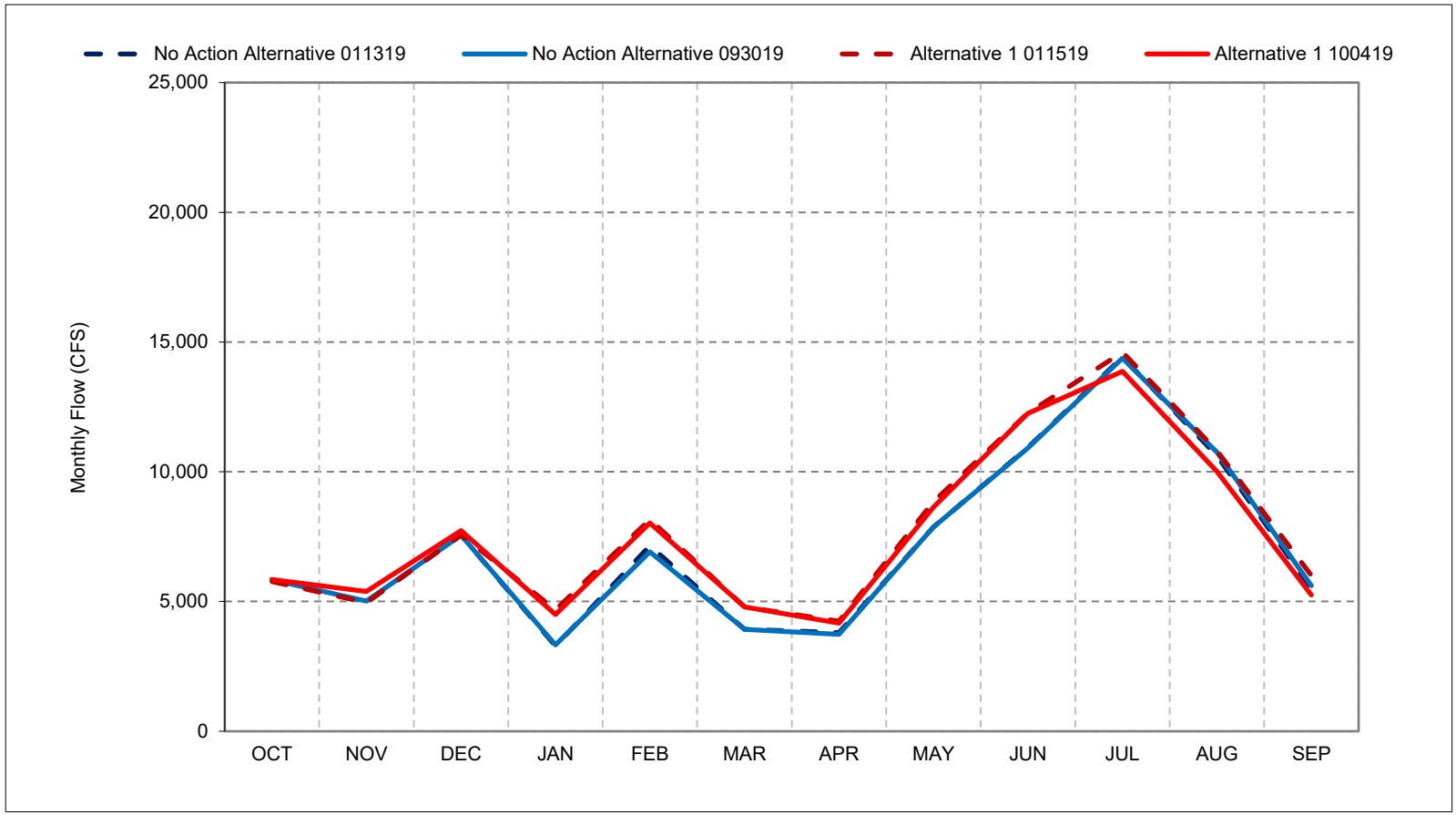



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-4. Sacramento River Flow downstream of Keswick Reservoir, Below Normal Year Averag

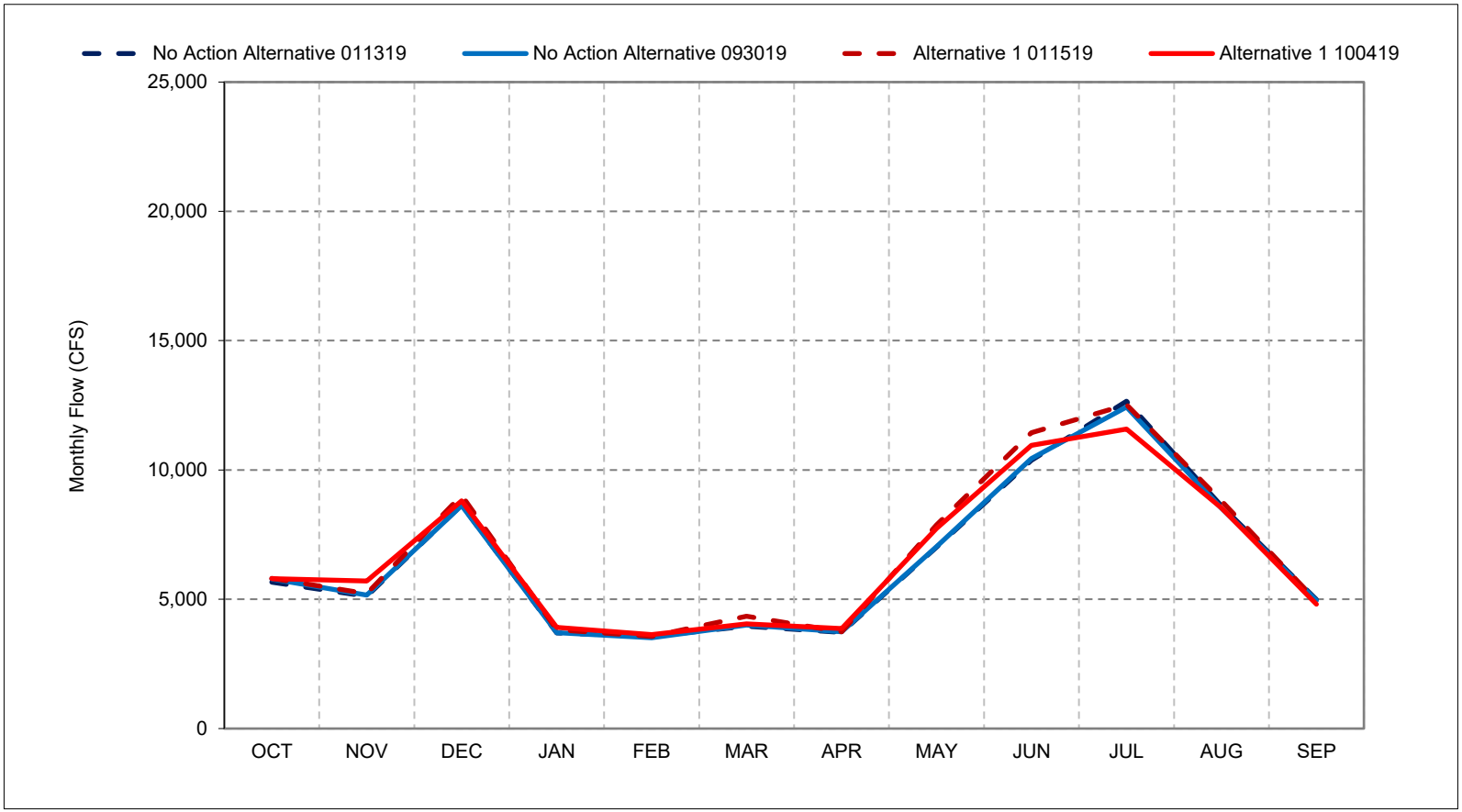



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-5. Sacramento River Flow downstream of Keswick Reservoir, Dry Year Average Flow

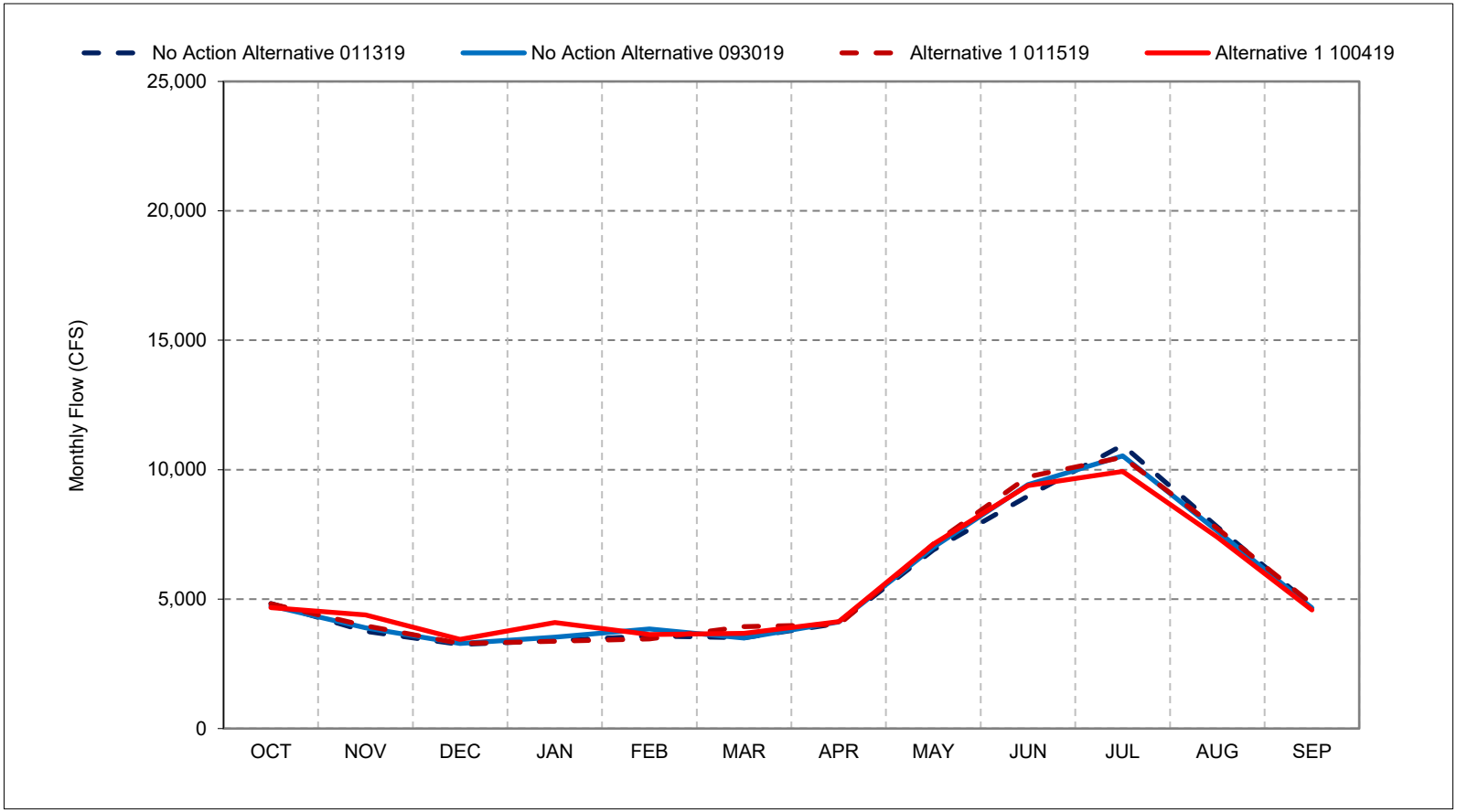



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-6. Sacramento River Flow downstream of Keswick Reservoir, Critical Year Average Flow

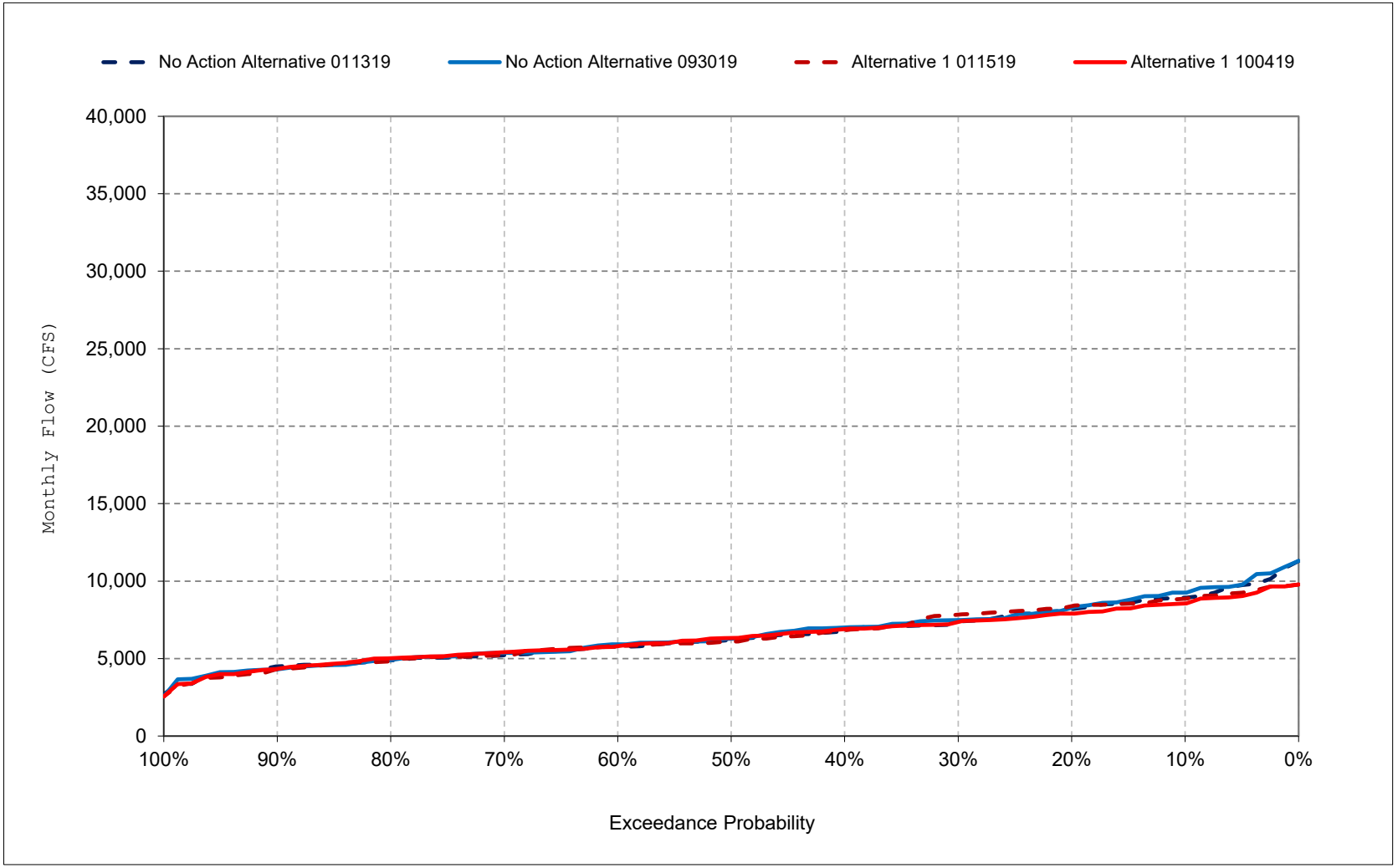



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

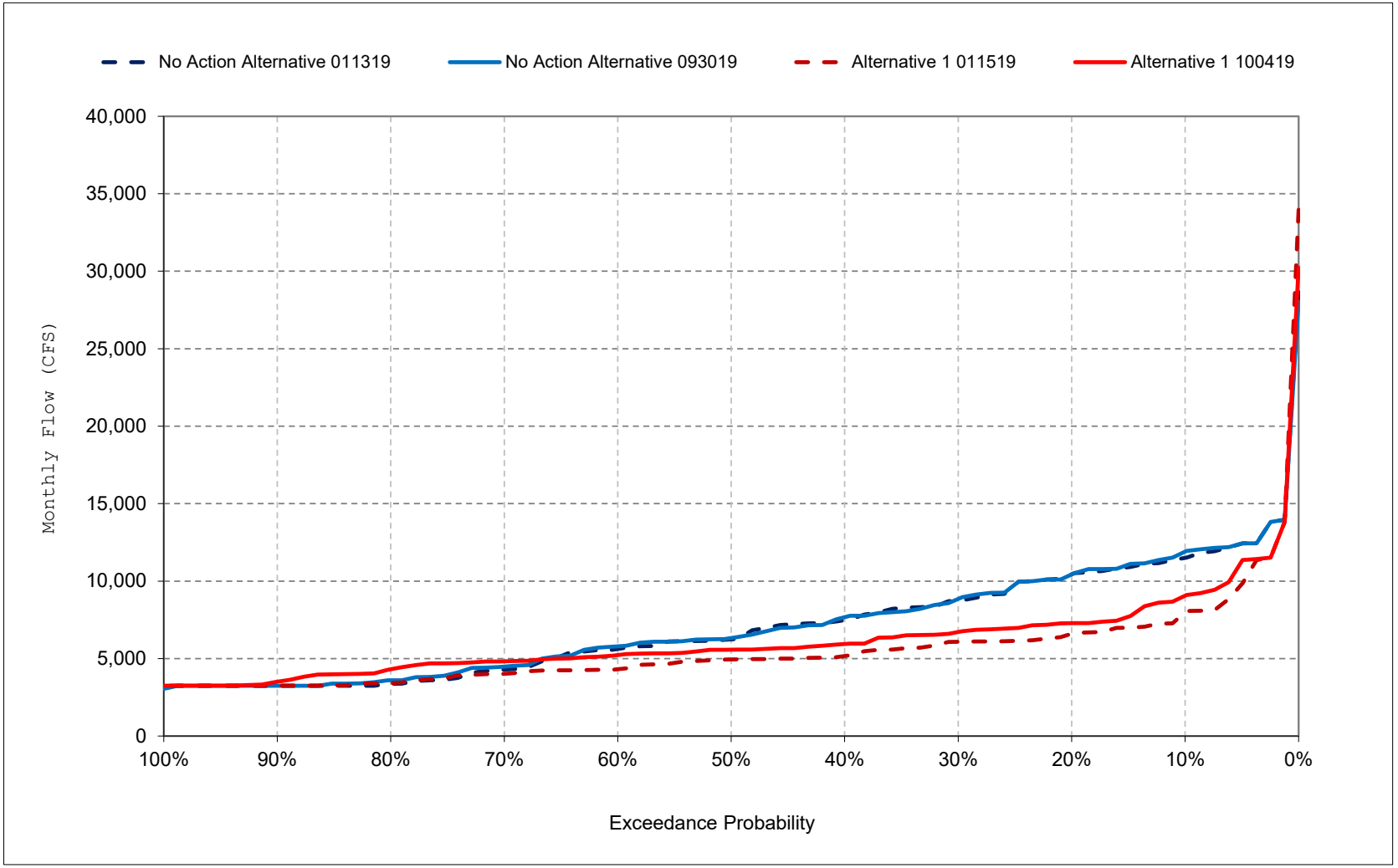
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-7. Sacramento River Flow downstream of Keswick Reservoir, October**



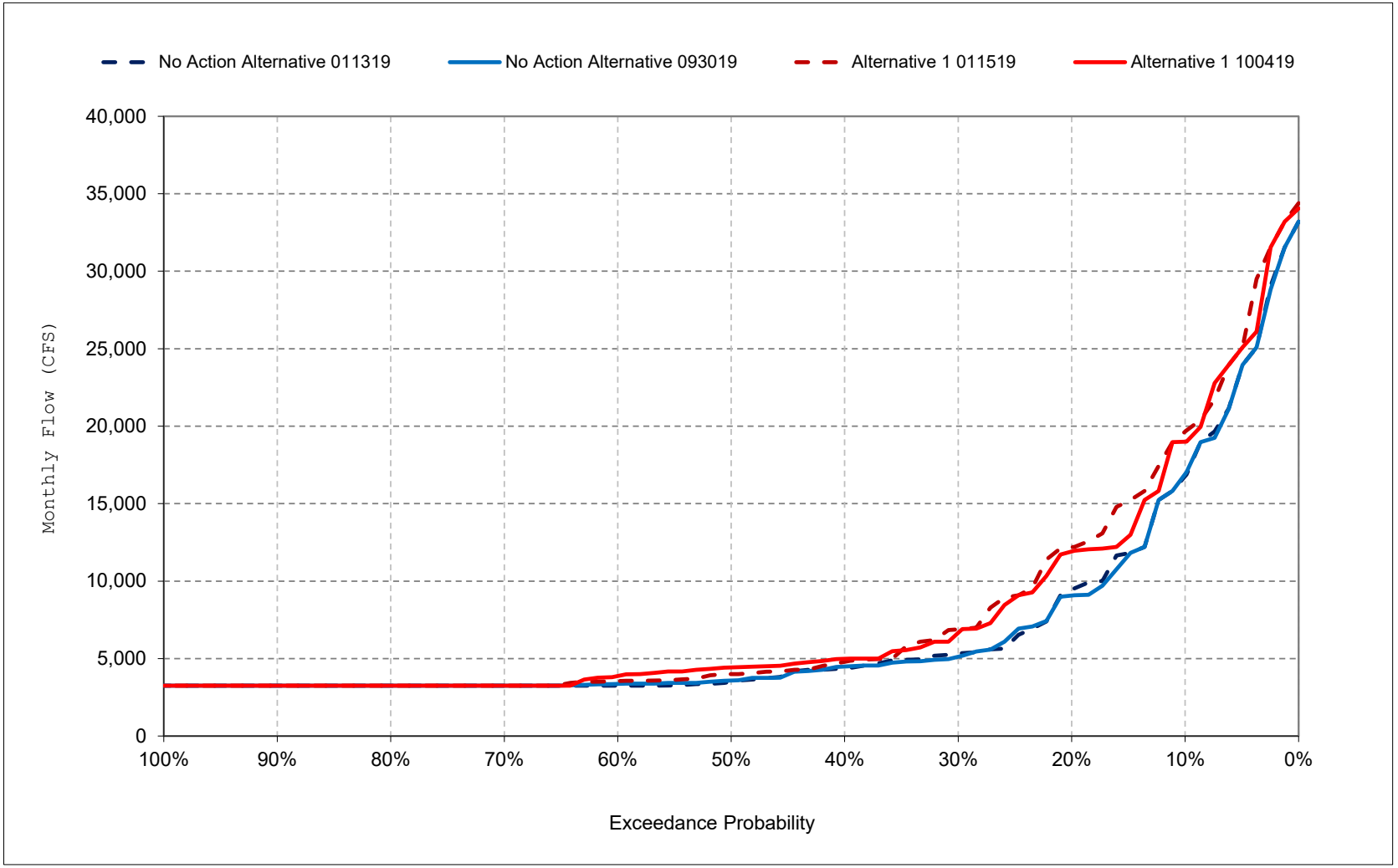

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-8. Sacramento River Flow downstream of Keswick Reservoir, November**



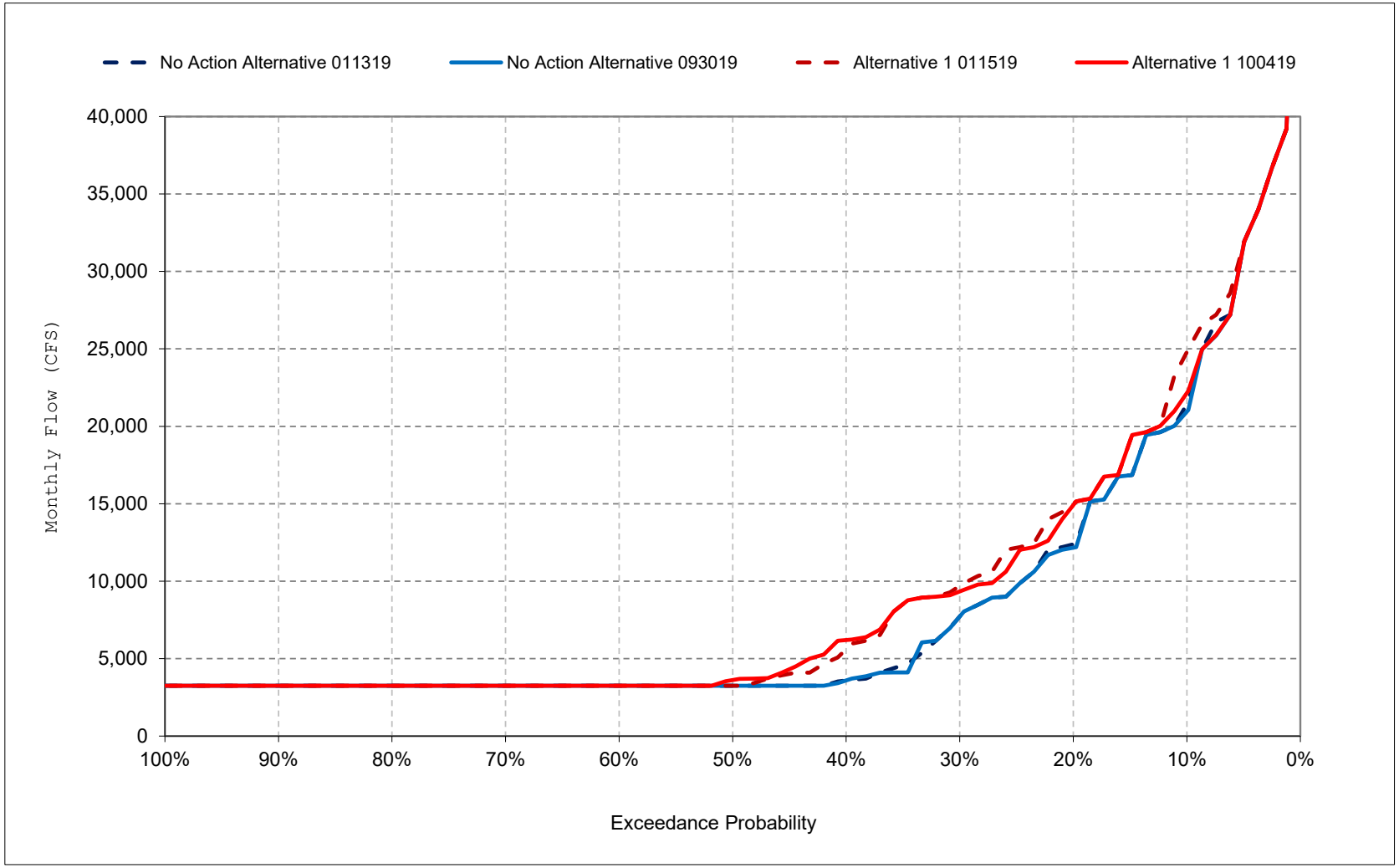

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-9. Sacramento River Flow downstream of Keswick Reservoir, December**



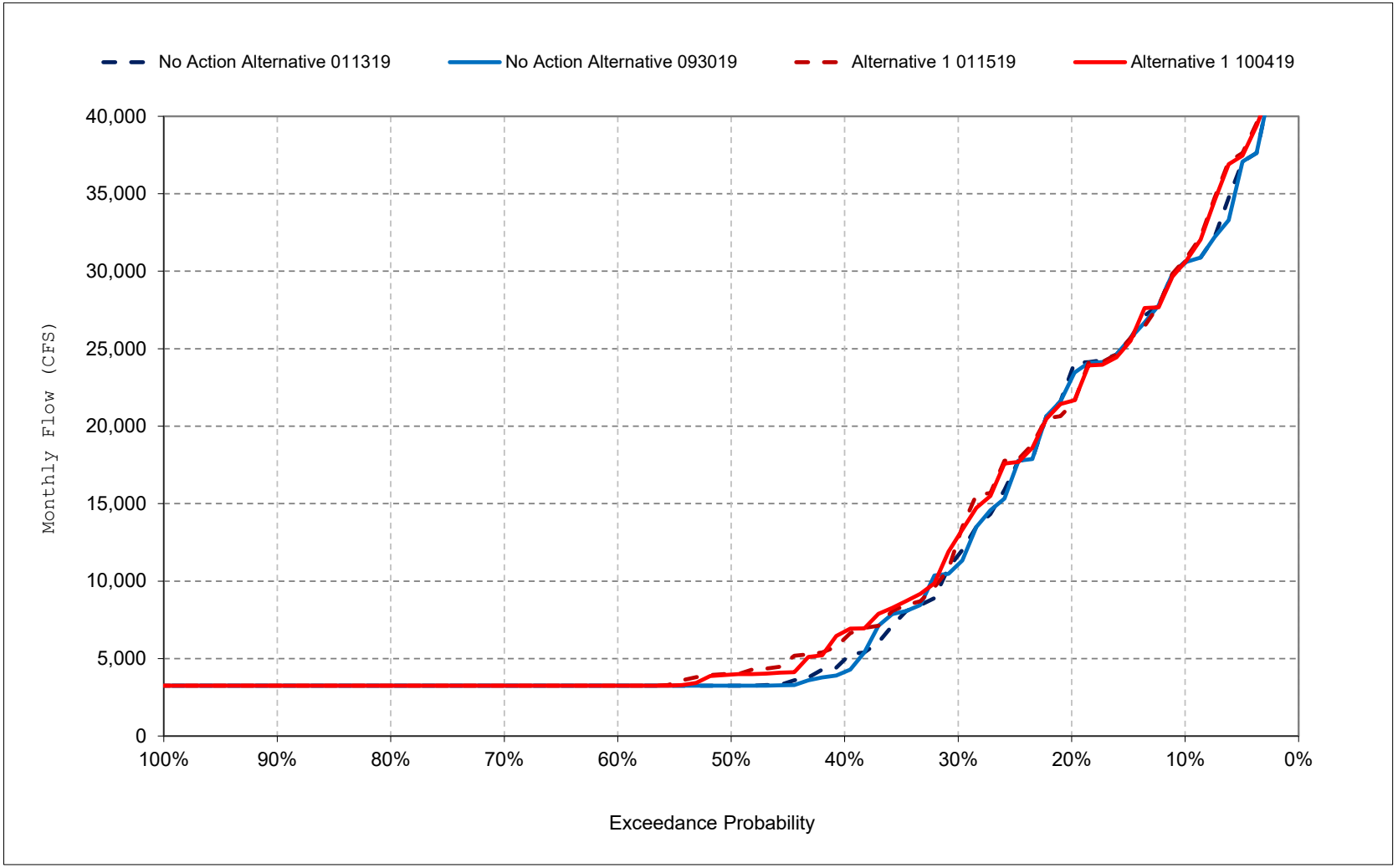

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-10. Sacramento River Flow downstream of Keswick Reservoir, January**



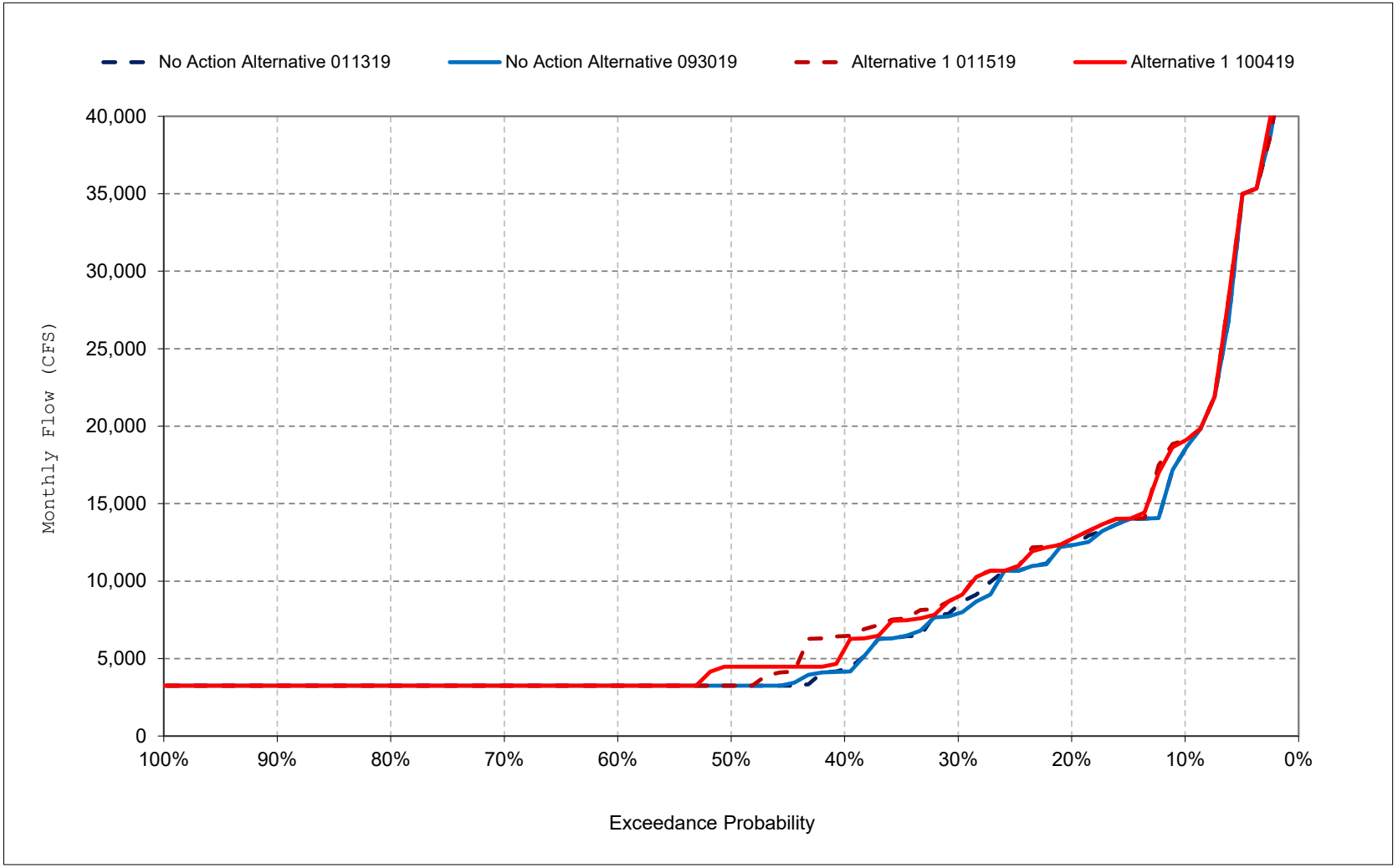

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-11. Sacramento River Flow downstream of Keswick Reservoir, February**



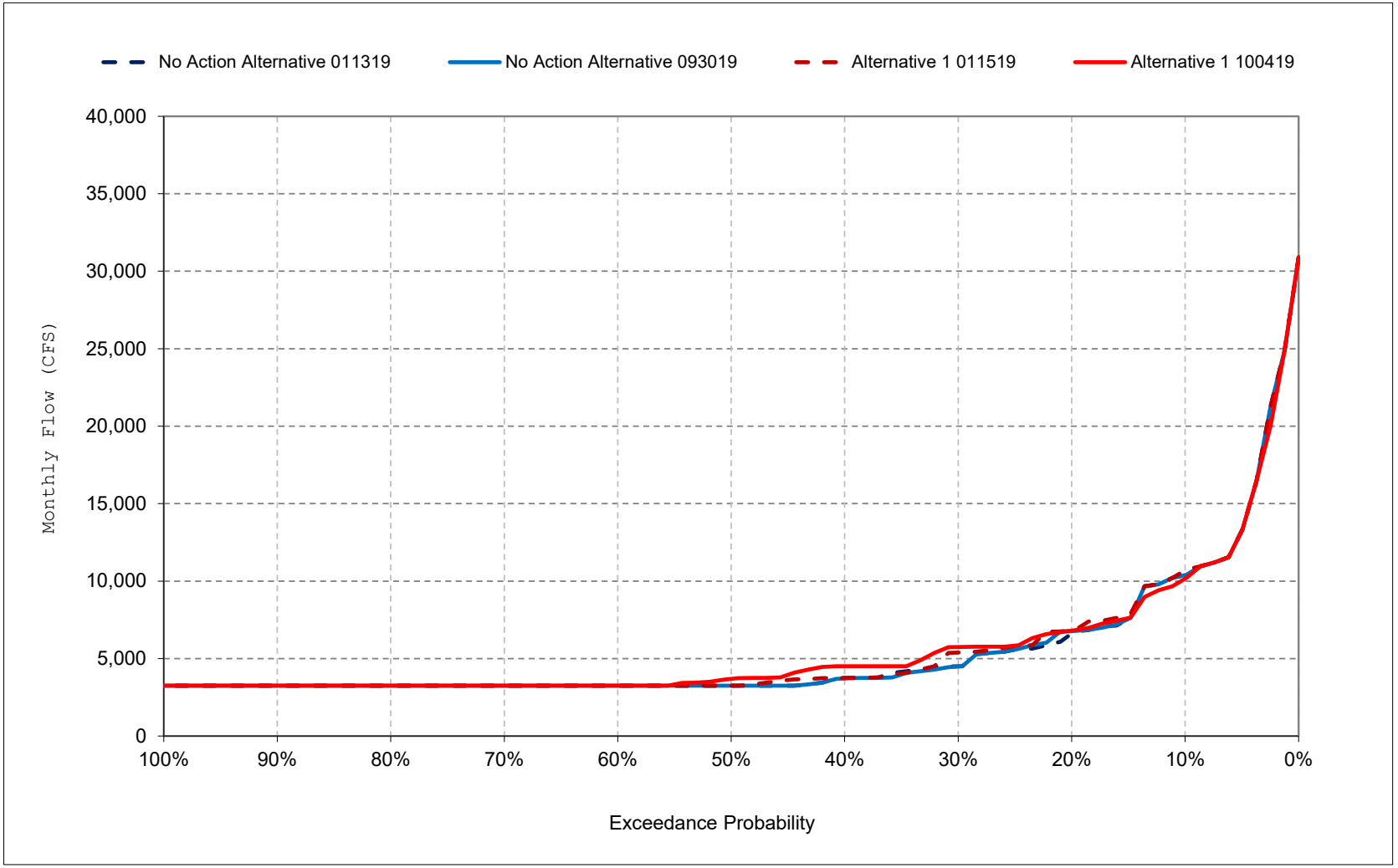

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-12. Sacramento River Flow downstream of Keswick Reservoir, March**



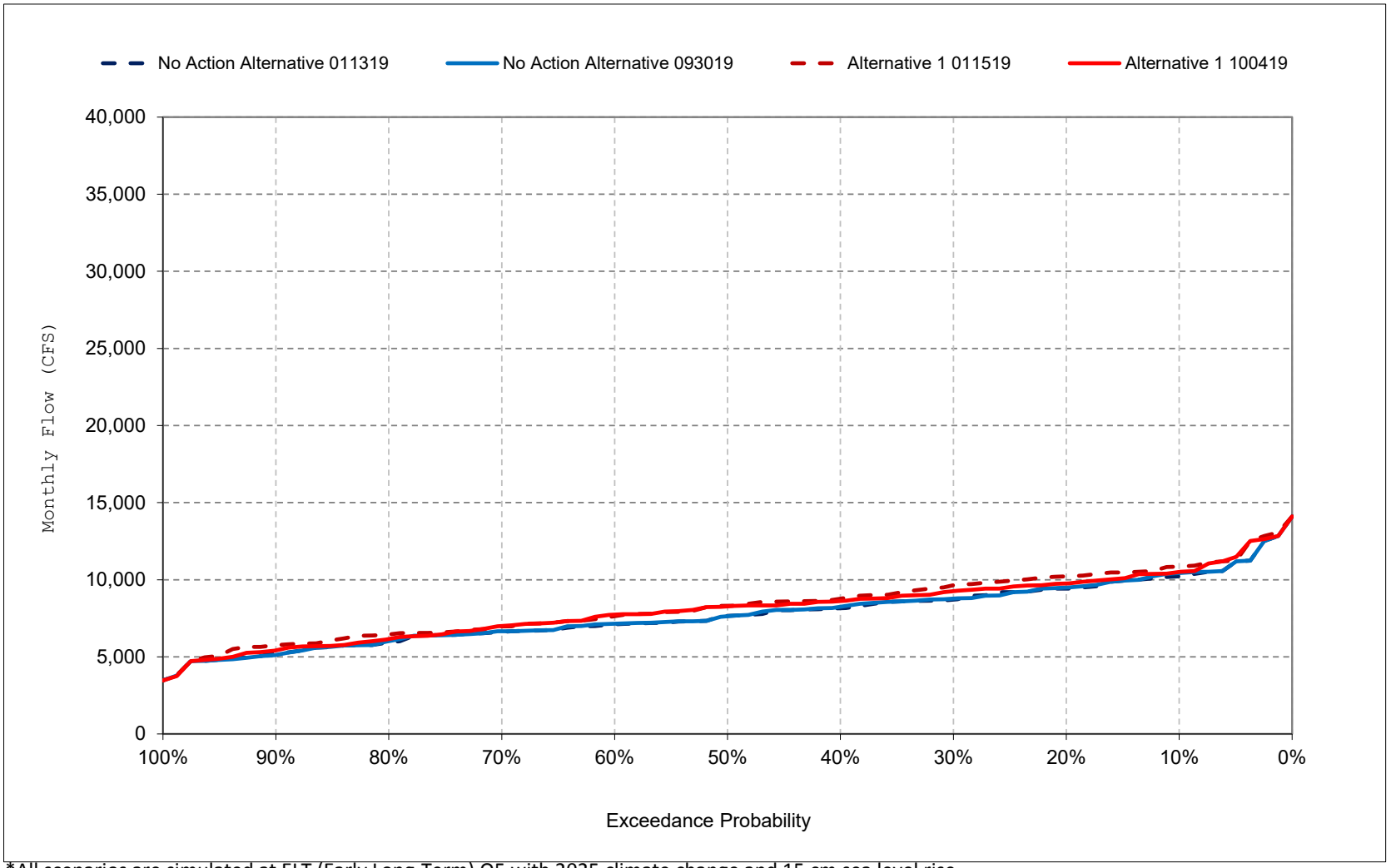

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-13. Sacramento River Flow downstream of Keswick Reservoir, April**



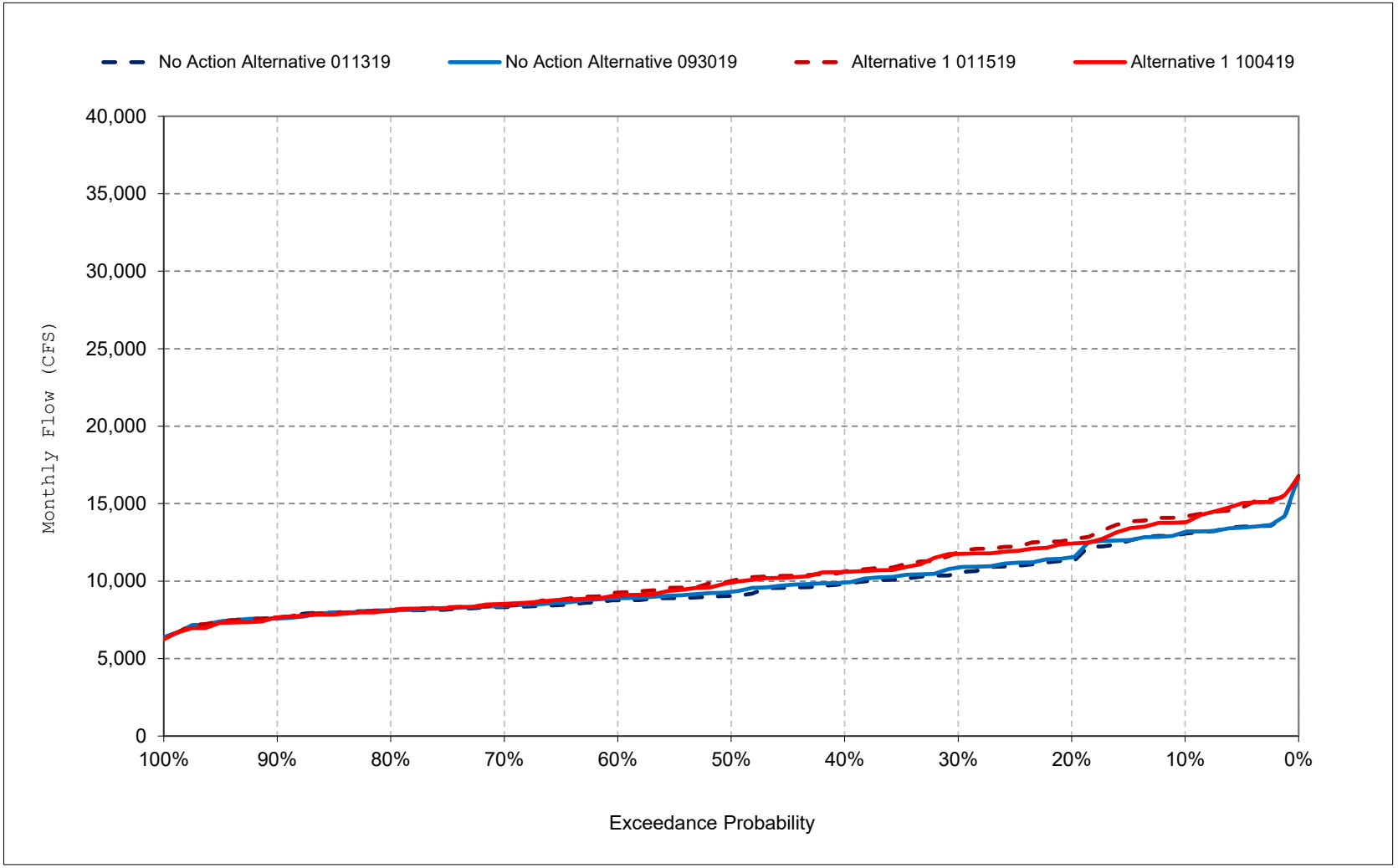

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-14. Sacramento River Flow downstream of Keswick Reservoir, May**



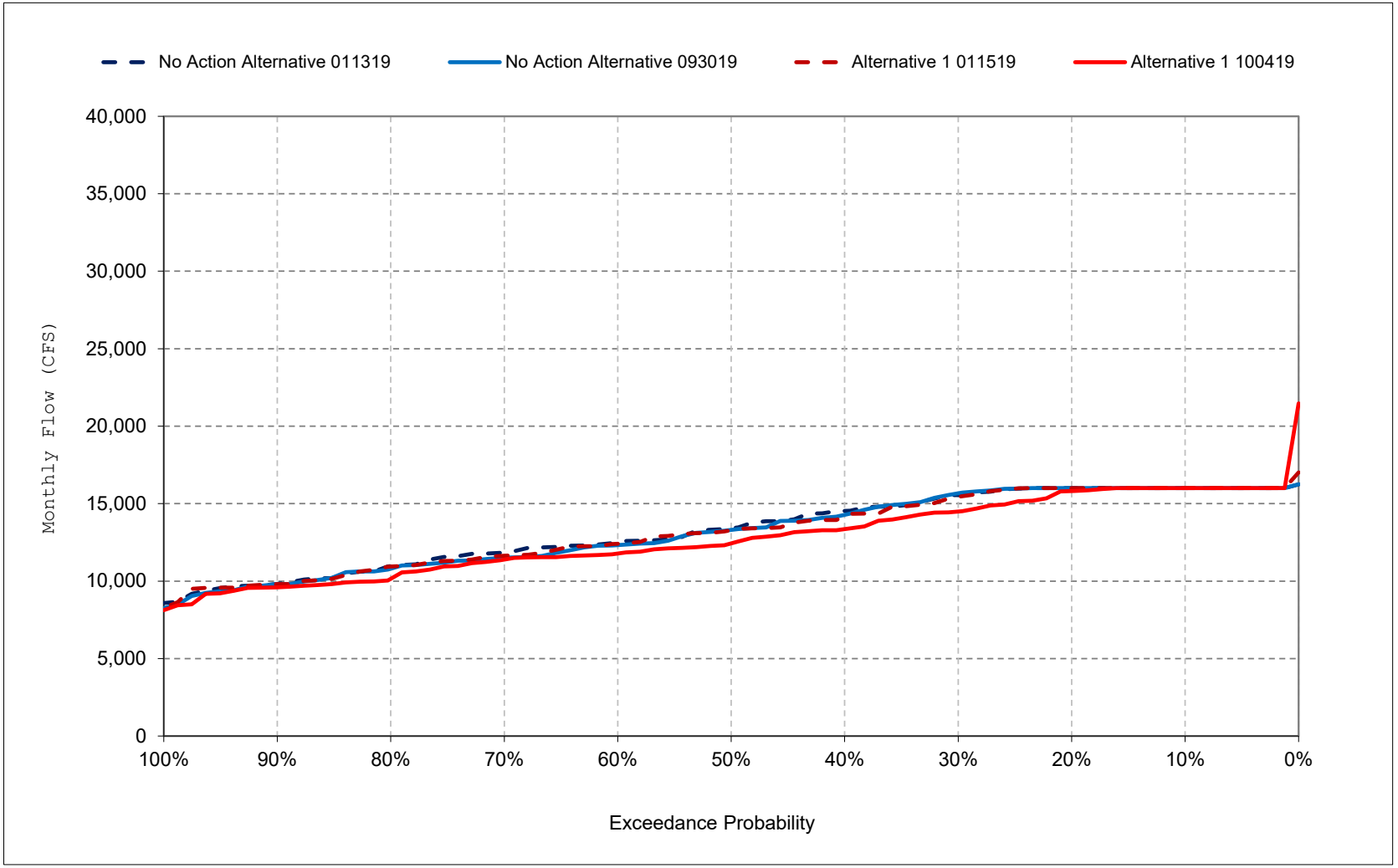

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-15. Sacramento River Flow downstream of Keswick Reservoir, June**



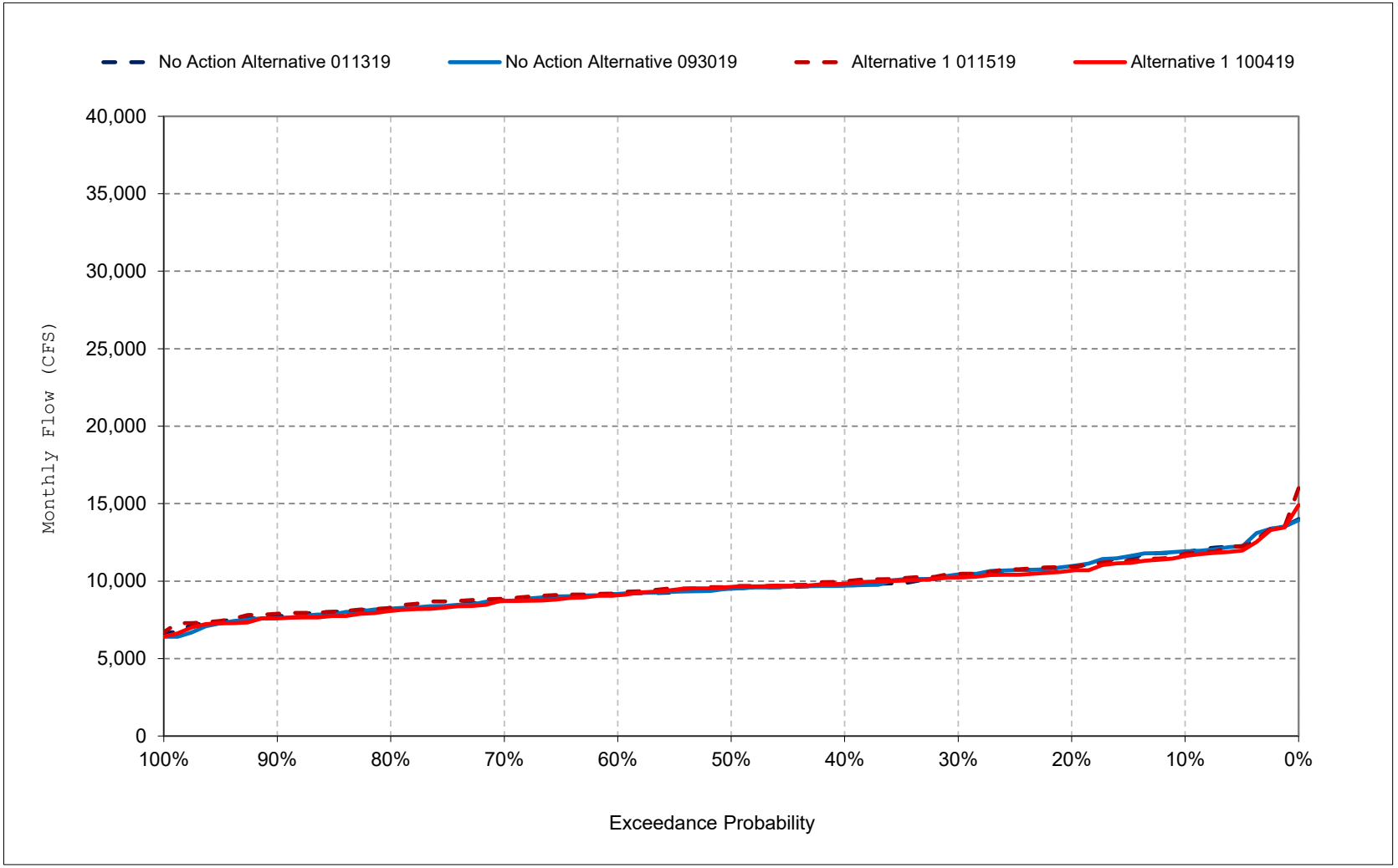

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-16. Sacramento River Flow downstream of Keswick Reservoir, July**



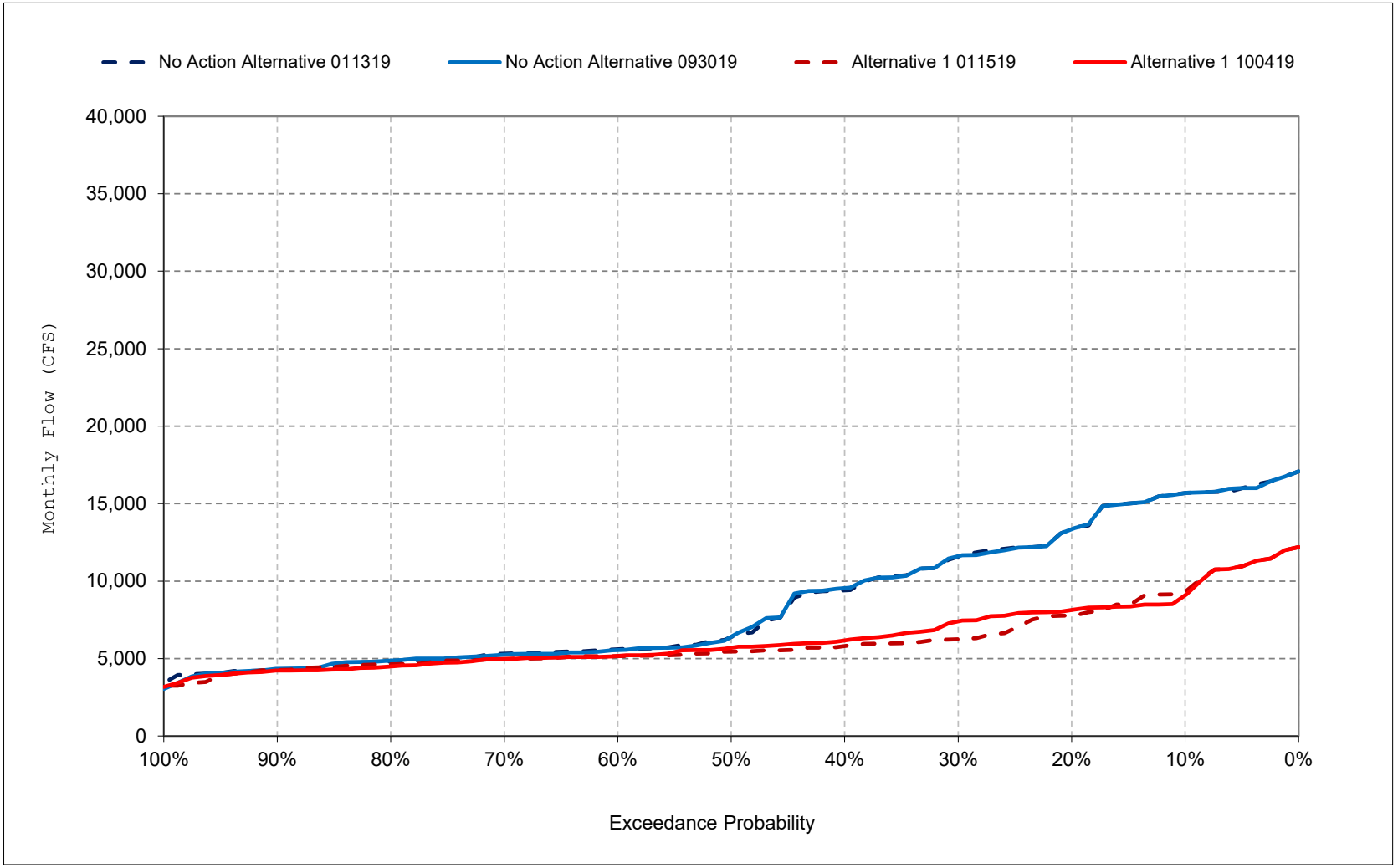

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-17. Sacramento River Flow downstream of Keswick Reservoir, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-18. Sacramento River Flow downstream of Keswick Reservoir, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-1. Sacramento Flow River at Bend Bridge, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,188 | 13,896 | 26,553 | 35,636 | 46,119 | 29,263 | 16,420 | 13,681 | 13,578 | 16,305 | 12,139 | 16,061 |
| 20% | 9,084 | 12,030 | 16,593 | 23,614 | 32,961 | 19,328 | 12,773 | 11,723 | 12,305 | 15,990 | 11,272 | 13,861 |
| 30% | 8,301 | 11,271 | 10,517 | 15,779 | 21,336 | 14,475 | 8,661 | 10,432 | 11,019 | 15,716 | 10,416 | 12,104 |
| 40% | 7,817 | 10,144 | 7,828 | 11,444 | 12,724 | 10,331 | 7,211 | 9,493 | 10,708 | 14,723 | 10,001 | 10,145 |
| 50% | 7,018 | 8,610 | 6,738 | 8,651 | 10,318 | 8,537 | 6,295 | 8,912 | 10,212 | 13,608 | 9,649 | 6,937 |
| 60% | 6,439 | 7,277 | 6,313 | 7,028 | 8,261 | 7,612 | 5,896 | 8,574 | 9,732 | 12,748 | 9,360 | 5,909 |
| 70% | 6,077 | 6,348 | 5,668 | 6,316 | 7,352 | 6,585 | 5,504 | 8,101 | 9,478 | 11,944 | 8,876 | 5,720 |
| 80% | 5,759 | 5,848 | 5,284 | 5,793 | 5,852 | 5,733 | 5,240 | 7,755 | 9,148 | 11,171 | 8,433 | 5,247 |
| 90% | 5,254 | 4,952 | 4,799 | 4,918 | 5,147 | 5,423 | 4,899 | 7,060 | 8,676 | 10,393 | 7,990 | 4,632 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,419 | 9,386 | 11,785 | 15,532 | 18,802 | 14,426 | 9,158 | 9,806 | 10,715 | 13,540 | 9,828 | 9,128 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,864 | 12,201 | 12,212 | 29,328 | 30,808 | 24,888 | 13,988 | 11,641 | 10,455 | 13,909 | 10,733 | 14,543 |
| Above Normal (16%) | 8,036 | 12,488 | 11,050 | 16,297 | 25,999 | 15,923 | 9,620 | 10,248 | 11,192 | 15,414 | 10,652 | 10,421 |
| Below Normal (13%) | 6,917 | 6,667 | 11,741 | 7,401 | 12,565 | 7,255 | 6,371 | 9,297 | 11,634 | 14,499 | 10,741 | 5,970 |
| Dry (24%) | 6,623 | 7,712 | 15,032 | 7,159 | 9,374 | 8,913 | 6,431 | 8,473 | 10,962 | 12,750 | 8,777 | 5,420 |
| Critical (15%) | 5,408 | 5,206 | 6,284 | 6,219 | 6,426 | 5,899 | 5,290 | 8,040 | 9,507 | 11,146 | 7,891 | 5,067 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,113 | 11,120 | 30,249 | 39,974 | 47,109 | 29,749 | 16,420 | 14,020 | 14,747 | 16,248 | 11,749 | 9,801 |
| 20% | 9,130 | 7,882 | 22,749 | 25,057 | 31,480 | 19,330 | 12,774 | 12,184 | 13,542 | 15,985 | 11,023 | 8,559 |
| 30% | 8,604 | 7,183 | 11,316 | 17,121 | 22,239 | 16,744 | 8,715 | 11,082 | 12,527 | 15,638 | 10,550 | 6,433 |
| 40% | 7,503 | 6,970 | 8,963 | 13,541 | 13,520 | 10,775 | 7,451 | 10,519 | 11,173 | 14,449 | 10,149 | 6,151 |
| 50% | 6,934 | 6,571 | 6,899 | 8,966 | 10,596 | 8,854 | 6,372 | 9,928 | 10,843 | 13,501 | 9,763 | 5,804 |
| 60% | 6,519 | 6,156 | 6,262 | 7,272 | 8,428 | 7,903 | 5,949 | 9,027 | 10,308 | 12,504 | 9,487 | 5,621 |
| 70% | 6,300 | 5,823 | 5,643 | 6,528 | 7,385 | 6,899 | 5,586 | 8,559 | 9,731 | 11,782 | 9,095 | 5,418 |
| 80% | 5,903 | 5,565 | 5,288 | 5,792 | 6,138 | 5,753 | 5,075 | 7,966 | 9,322 | 11,255 | 8,510 | 5,003 |
| 90% | 5,103 | 5,254 | 4,895 | 4,893 | 5,269 | 5,421 | 4,893 | 7,500 | 8,789 | 10,253 | 7,995 | 4,691 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,404 | 7,839 | 12,742 | 16,304 | 19,156 | 14,832 | 9,249 | 10,332 | 11,347 | 13,435 | 9,944 | 6,624 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,706 | 8,671 | 14,298 | 30,417 | 30,972 | 24,975 | 14,102 | 11,890 | 10,558 | 13,818 | 10,905 | 8,795 |
| Above Normal (16%) | 8,074 | 9,414 | 12,288 | 17,657 | 27,168 | 16,604 | 9,643 | 10,735 | 11,564 | 15,475 | 10,658 | 5,712 |
| Below Normal (13%) | 6,837 | 6,670 | 11,764 | 8,790 | 13,567 | 8,117 | 6,796 | 10,255 | 12,936 | 14,658 | 10,906 | 6,477 |
| Dry (24%) | 6,774 | 7,815 | 15,404 | 7,277 | 9,371 | 9,294 | 6,445 | 9,320 | 12,016 | 12,599 | 8,962 | 5,348 |
| Critical (15%) | 5,426 | 5,441 | 6,321 | 6,195 | 6,307 | 6,324 | 5,230 | 8,274 | 10,247 | 10,670 | 7,843 | 5,171 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -76 | -2,775 | 3,696 | 4,339 | 990 | 486 | 1 | 339 | 1,169 | -58 | -390 | -6,260 |
| 20% | 46 | -4,148 | 6,156 | 1,442 | -1,481 | 2 | 1 | 461 | 1,238 | -5 | -249 | -5,302 |
| 30% | 302 | -4,088 | 799 | 1,342 | 903 | 2,270 | 54 | 649 | 1,509 | -78 | 134 | -5,671 |
| 40% | -313 | -3,174 | 1,135 | 2,097 | 796 | 444 | 240 | 1,026 | 465 | -274 | 148 | -3,994 |
| 50% | -84 | -2,040 | 160 | 314 | 278 | 318 | 78 | 1,016 | 631 | -107 | 114 | -1,133 |
| 60% | 80 | -1,121 | -50 | 244 | 167 | 291 | 53 | 452 | 576 | -244 | 127 | -288 |
| 70% | 223 | -526 | -25 | 212 | 33 | 314 | 82 | 458 | 253 | -162 | 219 | -302 |
| 80% | 144 | -284 | 3 | -1 | 285 | 20 | -165 | 211 | 174 | 84 | 77 | -244 |
| 90% | -151 | 303 | 96 | -25 | 121 | -3 | -6 | 440 | 112 | -140 | 5 | 58 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -15 | -1,547 | 957 | 772 | 354 | 406 | 91 | 525 | 632 | -105 | 116 | -2,504 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -157 | -3,530 | 2,085 | 1,089 | 164 | 86 | 114 | 249 | 103 | -92 | 172 | -5,748 |
| Above Normal (16%) | 39 | -3,074 | 1,238 | 1,360 | 1,169 | 681 | 23 | 487 | 372 | 60 | 6 | -4,708 |
| Below Normal (13%) | -80 | 3 | 23 | 1,389 | 1,003 | 862 | 424 | 957 | 1,302 | 159 | 165 | 506 |
| Dry (24%) | 151 | 103 | 372 | 118 | -3 | 381 | 14 | 847 | 1,054 | -151 | 185 | -72 |
| Critical (15%) | 18 | 235 | 37 | -25 | -120 | 425 | -60 | 234 | 740 | -476 | -48 | 104 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-2. Sacramento Flow River at Bend Bridge, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,198 | 13,953 | 26,688 | 35,638 | 46,109 | 29,262 | 16,420 | 13,490 | 13,551 | 16,306 | 12,112 | 16,020 |
| 20% | 9,498 | 12,211 | 15,873 | 23,609 | 32,798 | 19,328 | 12,773 | 11,737 | 12,471 | 15,987 | 11,287 | 13,911 |
| 30% | 8,462 | 11,288 | 10,517 | 15,778 | 21,195 | 14,704 | 8,502 | 10,439 | 11,286 | 15,695 | 10,484 | 11,975 |
| 40% | 7,922 | 10,189 | 7,881 | 11,219 | 12,726 | 10,332 | 7,391 | 9,564 | 10,723 | 14,509 | 10,023 | 10,170 |
| 50% | 7,346 | 8,607 | 6,865 | 8,652 | 10,395 | 8,537 | 6,357 | 8,987 | 10,334 | 13,470 | 9,675 | 7,057 |
| 60% | 6,574 | 7,355 | 6,269 | 7,028 | 8,309 | 7,612 | 5,807 | 8,557 | 9,943 | 12,467 | 9,377 | 5,866 |
| 70% | 6,171 | 6,547 | 5,741 | 6,470 | 7,352 | 6,586 | 5,469 | 8,058 | 9,685 | 11,691 | 8,850 | 5,669 |
| 80% | 5,818 | 5,927 | 5,387 | 5,793 | 5,852 | 5,734 | 5,242 | 7,767 | 9,277 | 11,074 | 8,363 | 5,328 |
| 90% | 5,155 | 5,163 | 5,015 | 4,941 | 5,103 | 5,308 | 4,898 | 6,907 | 8,721 | 10,298 | 7,835 | 4,725 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,529 | 9,445 | 11,764 | 15,505 | 18,752 | 14,404 | 9,161 | 9,828 | 10,812 | 13,424 | 9,822 | 9,127 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,976 | 12,271 | 12,210 | 29,245 | 30,766 | 24,888 | 13,986 | 11,642 | 10,481 | 13,927 | 10,755 | 14,538 |
| Above Normal (16%) | 8,375 | 12,465 | 10,942 | 16,112 | 25,805 | 15,721 | 9,621 | 10,248 | 11,260 | 15,411 | 10,700 | 10,438 |
| Below Normal (13%) | 6,912 | 6,720 | 11,740 | 7,446 | 12,327 | 7,257 | 6,300 | 9,296 | 11,605 | 14,450 | 10,870 | 6,082 |
| Dry (24%) | 6,744 | 7,760 | 14,998 | 7,168 | 9,322 | 8,960 | 6,452 | 8,495 | 11,039 | 12,524 | 8,692 | 5,386 |
| Critical (15%) | 5,350 | 5,355 | 6,319 | 6,361 | 6,689 | 5,888 | 5,349 | 8,151 | 9,941 | 10,738 | 7,775 | 5,011 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,822 | 11,114 | 29,772 | 38,805 | 47,109 | 29,725 | 16,203 | 13,852 | 14,735 | 16,223 | 11,697 | 9,621 |
| 20% | 8,844 | 9,366 | 20,581 | 25,056 | 31,587 | 19,309 | 12,814 | 11,831 | 13,413 | 15,892 | 10,954 | 8,383 |
| 30% | 8,199 | 8,144 | 11,327 | 16,650 | 22,645 | 16,537 | 8,681 | 10,762 | 12,213 | 14,740 | 10,458 | 7,818 |
| 40% | 7,530 | 7,749 | 8,955 | 13,252 | 13,213 | 10,674 | 7,506 | 10,304 | 11,164 | 13,857 | 10,129 | 6,732 |
| 50% | 7,140 | 7,302 | 6,954 | 9,040 | 10,625 | 8,857 | 6,863 | 9,838 | 10,913 | 12,682 | 9,856 | 6,111 |
| 60% | 6,666 | 7,034 | 6,590 | 7,342 | 8,427 | 7,849 | 6,093 | 8,960 | 10,578 | 11,864 | 9,516 | 5,662 |
| 70% | 6,245 | 6,661 | 5,964 | 6,634 | 7,539 | 7,188 | 5,676 | 8,501 | 9,822 | 11,451 | 8,800 | 5,369 |
| 80% | 5,891 | 6,116 | 5,590 | 5,851 | 6,070 | 5,804 | 5,266 | 7,850 | 9,461 | 10,680 | 8,207 | 4,908 |
| 90% | 5,463 | 5,606 | 5,215 | 4,941 | 5,367 | 5,276 | 4,930 | 7,252 | 8,755 | 9,846 | 7,838 | 4,639 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,358 | 8,479 | 12,625 | 16,190 | 19,299 | 14,812 | 9,341 | 10,154 | 11,359 | 13,101 | 9,796 | 6,773 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,683 | 9,312 | 14,204 | 29,931 | 31,255 | 25,141 | 14,164 | 11,566 | 10,733 | 14,034 | 10,945 | 8,756 |
| Above Normal (16%) | 7,894 | 10,639 | 11,788 | 17,231 | 27,182 | 16,793 | 9,801 | 10,601 | 11,863 | 15,295 | 10,779 | 7,755 |
| Below Normal (13%) | 6,924 | 7,098 | 11,914 | 8,618 | 13,613 | 8,122 | 6,728 | 10,046 | 13,051 | 13,976 | 10,176 | 5,718 |
| Dry (24%) | 6,768 | 8,320 | 15,197 | 7,368 | 9,450 | 9,015 | 6,589 | 9,203 | 11,664 | 11,726 | 8,771 | 5,229 |
| Critical (15%) | 5,289 | 5,866 | 6,478 | 6,933 | 6,482 | 6,083 | 5,371 | 8,298 | 10,111 | 10,190 | 7,603 | 4,952 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -376 | -2,839 | 3,084 | 3,167 | 1,001 | 462 | -217 | 362 | 1,184 | -83 | -415 | -6,399 |
| 20% | -654 | -2,845 | 4,708 | 1,447 | -1,211 | -18 | 41 | 94 | 942 | -95 | -333 | -5,528 |
| 30% | -263 | -3,145 | 810 | 873 | 1,451 | 1,833 | 179 | 323 | 927 | -955 | -26 | -4,157 |
| 40% | -392 | -2,440 | 1,073 | 2,034 | 487 | 342 | 115 | 740 | 441 | -652 | 105 | -3,437 |
| 50% | -206 | -1,305 | 89 | 388 | 230 | 321 | 507 | 851 | 579 | -788 | 180 | -946 |
| 60% | 92 | -321 | 321 | 313 | 117 | 238 | 285 | 403 | 635 | -603 | 139 | -204 |
| 70% | 75 | 114 | 223 | 164 | 187 | 603 | 207 | 443 | 136 | -240 | -50 | -300 |
| 80% | 72 | 189 | 203 | 58 | 218 | 69 | 24 | 83 | 184 | -394 | -156 | -420 |
| 90% | 308 | 444 | 200 | 0 | 264 | -32 | 32 | 344 | 34 | -453 | 3 | -86 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -171 | -966 | 862 | 685 | 547 | 408 | 179 | 327 | 547 | -323 | -26 | -2,355 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -293 | -2,959 | 1,994 | 686 | 489 | 253 | 178 | -76 | 252 | 107 | 190 | -5,783 |
| Above Normal (16%) | -481 | -1,826 | 846 | 1,119 | 1,377 | 1,072 | 181 | 353 | 603 | -116 | 79 | -2,683 |
| Below Normal (13%) | 12 | 377 | 175 | 1,172 | 1,287 | 865 | 428 | 750 | 1,446 | -474 | -695 | -364 |
| Dry (24%) | 24 | 560 | 199 | 200 | 129 | 55 | 137 | 708 | 625 | -798 | 80 | -157 |
| Critical (15%) | -61 | 511 | 159 | 571 | -206 | 194 | 23 | 147 | 170 | -548 | -172 | -59 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-3. Sacramento Flow River at Bend Bridge, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,188 | 13,896 | 26,553 | 35,636 | 46,119 | 29,263 | 16,420 | 13,681 | 13,578 | 16,305 | 12,139 | 16,061 |
| 20% | 9,084 | 12,030 | 16,593 | 23,614 | 32,961 | 19,328 | 12,773 | 11,723 | 12,305 | 15,990 | 11,272 | 13,861 |
| 30% | 8,301 | 11,271 | 10,517 | 15,779 | 21,336 | 14,475 | 8,661 | 10,432 | 11,019 | 15,716 | 10,416 | 12,104 |
| 40% | 7,817 | 10,144 | 7,828 | 11,444 | 12,724 | 10,331 | 7,211 | 9,493 | 10,708 | 14,723 | 10,001 | 10,145 |
| 50% | 7,018 | 8,610 | 6,738 | 8,651 | 10,318 | 8,537 | 6,295 | 8,912 | 10,212 | 13,608 | 9,649 | 6,937 |
| 60% | 6,439 | 7,277 | 6,313 | 7,028 | 8,261 | 7,612 | 5,896 | 8,574 | 9,732 | 12,748 | 9,360 | 5,909 |
| 70% | 6,077 | 6,348 | 5,668 | 6,316 | 7,352 | 6,585 | 5,504 | 8,101 | 9,478 | 11,944 | 8,876 | 5,720 |
| 80% | 5,759 | 5,848 | 5,284 | 5,793 | 5,852 | 5,733 | 5,240 | 7,755 | 9,148 | 11,171 | 8,433 | 5,247 |
| 90% | 5,254 | 4,952 | 4,799 | 4,918 | 5,147 | 5,423 | 4,899 | 7,060 | 8,676 | 10,393 | 7,990 | 4,632 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,419 | 9,386 | 11,785 | 15,532 | 18,802 | 14,426 | 9,158 | 9,806 | 10,715 | 13,540 | 9,828 | 9,128 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,864 | 12,201 | 12,212 | 29,328 | 30,808 | 24,888 | 13,988 | 11,641 | 10,455 | 13,909 | 10,733 | 14,543 |
| Above Normal (16%) | 8,036 | 12,488 | 11,050 | 16,297 | 25,999 | 15,923 | 9,620 | 10,248 | 11,192 | 15,414 | 10,652 | 10,421 |
| Below Normal (13%) | 6,917 | 6,667 | 11,741 | 7,401 | 12,565 | 7,255 | 6,371 | 9,297 | 11,634 | 14,499 | 10,741 | 5,970 |
| Dry (24%) | 6,623 | 7,712 | 15,032 | 7,159 | 9,374 | 8,913 | 6,431 | 8,473 | 10,962 | 12,750 | 8,777 | 5,420 |
| Critical (15%) | 5,408 | 5,206 | 6,284 | 6,219 | 6,426 | 5,899 | 5,290 | 8,040 | 9,507 | 11,146 | 7,891 | 5,067 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,198 | 13,953 | 26,688 | 35,638 | 46,109 | 29,262 | 16,420 | 13,490 | 13,551 | 16,306 | 12,112 | 16,020 |
| 20% | 9,498 | 12,211 | 15,873 | 23,609 | 32,798 | 19,328 | 12,773 | 11,737 | 12,471 | 15,987 | 11,287 | 13,911 |
| 30% | 8,462 | 11,288 | 10,517 | 15,778 | 21,195 | 14,704 | 8,502 | 10,439 | 11,286 | 15,695 | 10,484 | 11,975 |
| 40% | 7,922 | 10,189 | 7,881 | 11,219 | 12,726 | 10,332 | 7,391 | 9,564 | 10,723 | 14,509 | 10,023 | 10,170 |
| 50% | 7,346 | 8,607 | 6,865 | 8,652 | 10,395 | 8,537 | 6,357 | 8,987 | 10,334 | 13,470 | 9,675 | 7,057 |
| 60% | 6,574 | 7,355 | 6,269 | 7,028 | 8,309 | 7,612 | 5,807 | 8,557 | 9,943 | 12,467 | 9,377 | 5,866 |
| 70% | 6,171 | 6,547 | 5,741 | 6,470 | 7,352 | 6,586 | 5,469 | 8,058 | 9,685 | 11,691 | 8,850 | 5,669 |
| 80% | 5,818 | 5,927 | 5,387 | 5,793 | 5,852 | 5,734 | 5,242 | 7,767 | 9,277 | 11,074 | 8,363 | 5,328 |
| 90% | 5,155 | 5,163 | 5,015 | 4,941 | 5,103 | 5,308 | 4,898 | 6,907 | 8,721 | 10,298 | 7,835 | 4,725 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,529 | 9,445 | 11,764 | 15,505 | 18,752 | 14,404 | 9,161 | 9,828 | 10,812 | 13,424 | 9,822 | 9,127 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,976 | 12,271 | 12,210 | 29,245 | 30,766 | 24,888 | 13,986 | 11,642 | 10,481 | 13,927 | 10,755 | 14,538 |
| Above Normal (16%) | 8,375 | 12,465 | 10,942 | 16,112 | 25,805 | 15,721 | 9,621 | 10,248 | 11,260 | 15,411 | 10,700 | 10,438 |
| Below Normal (13%) | 6,912 | 6,720 | 11,740 | 7,446 | 12,327 | 7,257 | 6,300 | 9,296 | 11,605 | 14,450 | 10,870 | 6,082 |
| Dry (24%) | 6,744 | 7,760 | 14,998 | 7,168 | 9,322 | 8,960 | 6,452 | 8,495 | 11,039 | 12,524 | 8,692 | 5,386 |
| Critical (15%) | 5,350 | 5,355 | 6,319 | 6,361 | 6,689 | 5,888 | 5,349 | 8,151 | 9,941 | 10,738 | 7,775 | 5,011 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9 | 57 | 134 | 2 | -10 | -1 | 0 | -191 | -27 | 1 | -27 | -41 |
| 20% | 415 | 181 | -720 | -5 | -163 | 0 | 0 | 14 | 167 | -3 | 16 | 49 |
| 30% | 161 | 17 | 0 | -1 | -142 | 229 | -159 | 7 | 267 | -21 | 68 | -129 |
| 40% | 105 | 45 | 53 | -226 | 1 | 0 | 180 | 71 | 15 | -215 | 23 | 25 |
| 50% | 328 | -3 | 127 | 0 | 77 | 0 | 62 | 76 | 122 | -138 | 26 | 120 |
| 60% | 135 | 79 | -44 | 0 | 48 | 0 | -89 | -17 | 211 | -281 | 17 | -43 |
| 70% | 94 | 199 | 73 | 154 | 0 | 0 | -35 | -43 | 207 | -253 | -26 | -51 |
| 80% | 59 | 79 | 103 | 0 | 0 | 1 | 2 | 12 | 129 | -97 | -70 | 81 |
| 90% | -99 | 211 | 216 | 23 | -44 | -115 | -1 | -152 | 45 | -94 | -155 | 93 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 110 | 59 | -21 | -27 | -50 | -22 | 3 | 22 | 98 | -116 | -6 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 112 | 70 | -3 | -83 | -42 | 0 | -2 | 0 | 26 | 18 | 22 | -5 |
| Above Normal (16%) | 339 | -23 | -107 | -185 | -193 | -202 | 1 | 0 | 68 | -3 | 48 | 17 |
| Below Normal (13%) | -5 | 53 | -2 | 44 | -238 | 2 | -71 | -1 | -29 | -49 | 129 | 112 |
| Dry (24%) | 121 | 48 | -34 | 9 | -52 | 46 | 21 | 22 | 77 | -226 | -86 | -34 |
| Critical (15%) | -57 | 149 | 35 | 142 | 262 | -11 | 59 | 111 | 434 | -408 | -116 | -56 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-4. Sacramento Flow River at Bend Bridge, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,113 | 11,120 | 30,249 | 39,974 | 47,109 | 29,749 | 16,420 | 14,020 | 14,747 | 16,248 | 11,749 | 9,801 |
| 20% | 9,130 | 7,882 | 22,749 | 25,057 | 31,480 | 19,330 | 12,774 | 12,184 | 13,542 | 15,985 | 11,023 | 8,559 |
| 30% | 8,604 | 7,183 | 11,316 | 17,121 | 22,239 | 16,744 | 8,715 | 11,082 | 12,527 | 15,638 | 10,550 | 6,433 |
| 40% | 7,503 | 6,970 | 8,963 | 13,541 | 13,520 | 10,775 | 7,451 | 10,519 | 11,173 | 14,449 | 10,149 | 6,151 |
| 50% | 6,934 | 6,571 | 6,899 | 8,966 | 10,596 | 8,854 | 6,372 | 9,928 | 10,843 | 13,501 | 9,763 | 5,804 |
| 60% | 6,519 | 6,156 | 6,262 | 7,272 | 8,428 | 7,903 | 5,949 | 9,027 | 10,308 | 12,504 | 9,487 | 5,621 |
| 70% | 6,300 | 5,823 | 5,643 | 6,528 | 7,385 | 6,899 | 5,586 | 8,559 | 9,731 | 11,782 | 9,095 | 5,418 |
| 80% | 5,903 | 5,565 | 5,288 | 5,792 | 6,138 | 5,753 | 5,075 | 7,966 | 9,322 | 11,255 | 8,510 | 5,003 |
| 90% | 5,103 | 5,254 | 4,895 | 4,893 | 5,269 | 5,421 | 4,893 | 7,500 | 8,789 | 10,253 | 7,995 | 4,691 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,404 | 7,839 | 12,742 | 16,304 | 19,156 | 14,832 | 9,249 | 10,332 | 11,347 | 13,435 | 9,944 | 6,624 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,706 | 8,671 | 14,298 | 30,417 | 30,972 | 24,975 | 14,102 | 11,890 | 10,558 | 13,818 | 10,905 | 8,795 |
| Above Normal (16%) | 8,074 | 9,414 | 12,288 | 17,657 | 27,168 | 16,604 | 9,643 | 10,735 | 11,564 | 15,475 | 10,658 | 5,712 |
| Below Normal (13%) | 6,837 | 6,670 | 11,764 | 8,790 | 13,567 | 8,117 | 6,796 | 10,255 | 12,936 | 14,658 | 10,906 | 6,477 |
| Dry (24%) | 6,774 | 7,815 | 15,404 | 7,277 | 9,371 | 9,294 | 6,445 | 9,320 | 12,016 | 12,599 | 8,962 | 5,348 |
| Critical (15%) | 5,426 | 5,441 | 6,321 | 6,195 | 6,307 | 6,324 | 5,230 | 8,274 | 10,247 | 10,670 | 7,843 | 5,171 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,822 | 11,114 | 29,772 | 38,805 | 47,109 | 29,725 | 16,203 | 13,852 | 14,735 | 16,223 | 11,697 | 9,621 |
| 20% | 8,844 | 9,366 | 20,581 | 25,056 | 31,587 | 19,309 | 12,814 | 11,831 | 13,413 | 15,892 | 10,954 | 8,383 |
| 30% | 8,199 | 8,144 | 11,327 | 16,650 | 22,645 | 16,537 | 8,681 | 10,762 | 12,213 | 14,740 | 10,458 | 7,818 |
| 40% | 7,530 | 7,749 | 8,955 | 13,252 | 13,213 | 10,674 | 7,506 | 10,304 | 11,164 | 13,857 | 10,129 | 6,732 |
| 50% | 7,140 | 7,302 | 6,954 | 9,040 | 10,625 | 8,857 | 6,863 | 9,838 | 10,913 | 12,682 | 9,856 | 6,111 |
| 60% | 6,666 | 7,034 | 6,590 | 7,342 | 8,427 | 7,849 | 6,093 | 8,960 | 10,578 | 11,864 | 9,516 | 5,662 |
| 70% | 6,245 | 6,661 | 5,964 | 6,634 | 7,539 | 7,188 | 5,676 | 8,501 | 9,822 | 11,451 | 8,800 | 5,369 |
| 80% | 5,891 | 6,116 | 5,590 | 5,851 | 6,070 | 5,804 | 5,266 | 7,850 | 9,461 | 10,680 | 8,207 | 4,908 |
| 90% | 5,463 | 5,606 | 5,215 | 4,941 | 5,367 | 5,276 | 4,930 | 7,252 | 8,755 | 9,846 | 7,838 | 4,639 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,358 | 8,479 | 12,625 | 16,190 | 19,299 | 14,812 | 9,341 | 10,154 | 11,359 | 13,101 | 9,796 | 6,773 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,683 | 9,312 | 14,204 | 29,931 | 31,255 | 25,141 | 14,164 | 11,566 | 10,733 | 14,034 | 10,945 | 8,756 |
| Above Normal (16%) | 7,894 | 10,639 | 11,788 | 17,231 | 27,182 | 16,793 | 9,801 | 10,601 | 11,863 | 15,295 | 10,779 | 7,755 |
| Below Normal (13%) | 6,924 | 7,098 | 11,914 | 8,618 | 13,613 | 8,122 | 6,728 | 10,046 | 13,051 | 13,976 | 10,176 | 5,718 |
| Dry (24%) | 6,768 | 8,320 | 15,197 | 7,368 | 9,450 | 9,015 | 6,589 | 9,203 | 11,664 | 11,726 | 8,771 | 5,229 |
| Critical (15%) | 5,289 | 5,866 | 6,478 | 6,933 | 6,482 | 6,083 | 5,371 | 8,298 | 10,111 | 10,190 | 7,603 | 4,952 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -291 | -6 | -477 | -1,169 | 0 | -24 | -218 | -168 | -12 | -25 | -52 | -180 |
| 20% | -286 | 1,484 | -2,168 | -1 | 107 | -21 | 39 | -353 | -129 | -93 | -69 | -176 |
| 30% | -404 | 961 | 11 | -470 | 406 | -207 | -34 | -319 | -314 | -898 | -91 | 1,385 |
| 40% | 27 | 779 | -9 | -289 | -307 | -102 | 54 | -215 | -9 | -592 | -20 | 581 |
| 50% | 206 | 732 | 56 | 74 | 29 | 3 | 491 | -90 | 71 | -818 | 93 | 307 |
| 60% | 147 | 878 | 327 | 69 | -1 | -54 | 144 | -67 | 269 | -640 | 29 | 41 |
| 70% | -54 | 838 | 321 | 106 | 154 | 289 | 90 | -58 | 91 | -331 | -295 | -49 |
| 80% | -13 | 551 | 302 | 59 | -68 | 51 | 191 | -116 | 139 | -575 | -304 | -95 |
| 90% | 360 | 352 | 319 | 48 | 99 | -144 | 38 | -248 | -33 | -407 | -157 | -51 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -46 | 640 | -116 | -114 | 143 | -20 | 92 | -177 | 13 | -335 | -147 | 149 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -24 | 641 | -94 | -485 | 283 | 167 | 62 | -324 | 175 | 216 | 41 | -39 |
| Above Normal (16%) | -180 | 1,225 | -500 | -426 | 14 | 189 | 159 | -134 | 299 | -179 | 121 | 2,042 |
| Below Normal (13%) | 88 | 427 | 150 | -172 | 46 | 5 | -68 | -208 | 115 | -682 | -730 | -758 |
| Dry (24%) | -6 | 506 | -207 | 91 | 80 | -279 | 144 | -117 | -352 | -873 | -190 | -119 |
| Critical (15%) | -137 | 425 | 156 | 738 | 176 | -241 | 141 | 24 | -136 | -480 | -240 | -219 |

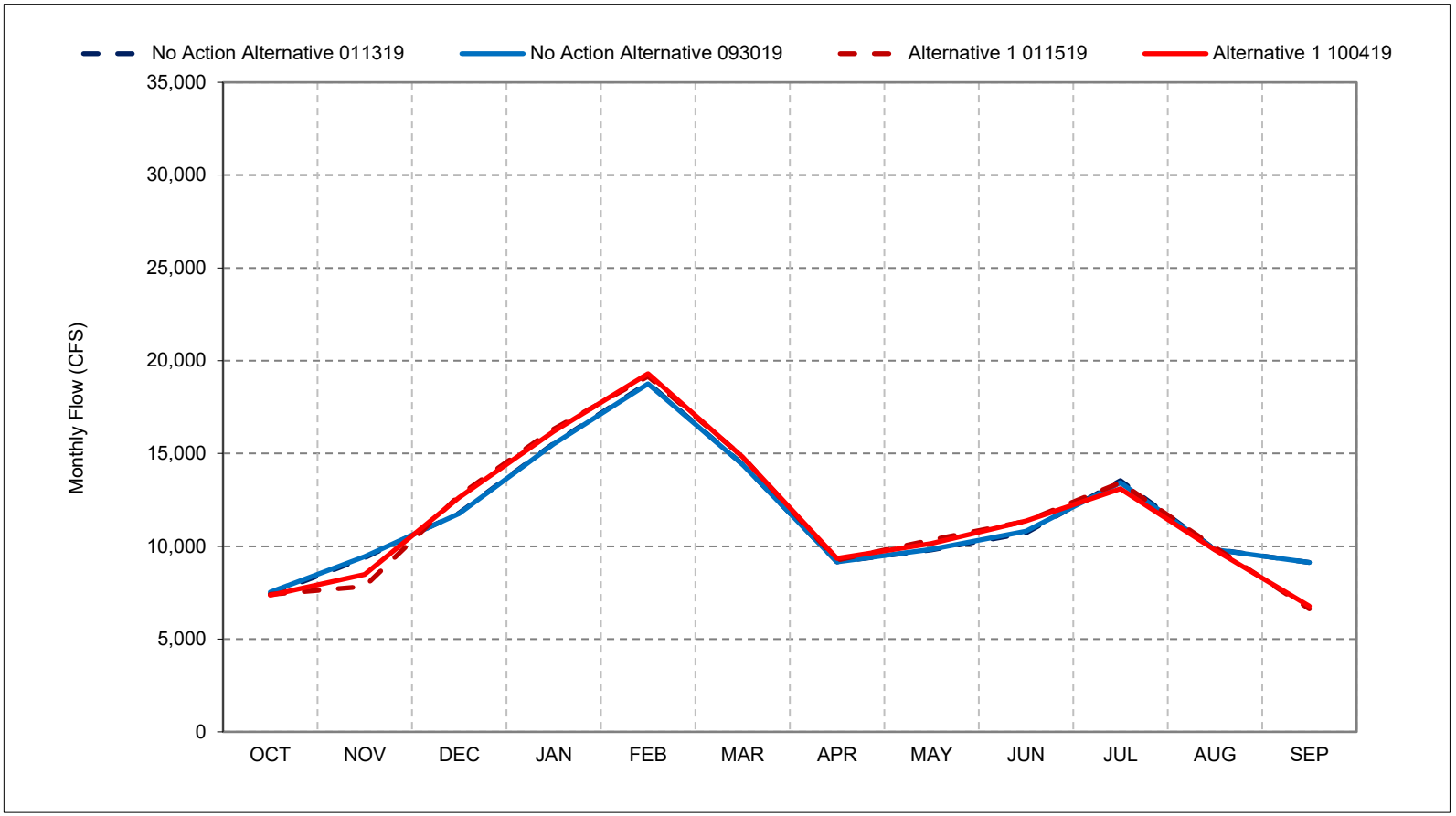
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-1. Sacramento Flow River at Bend Bridge, Long-Term Average Flow

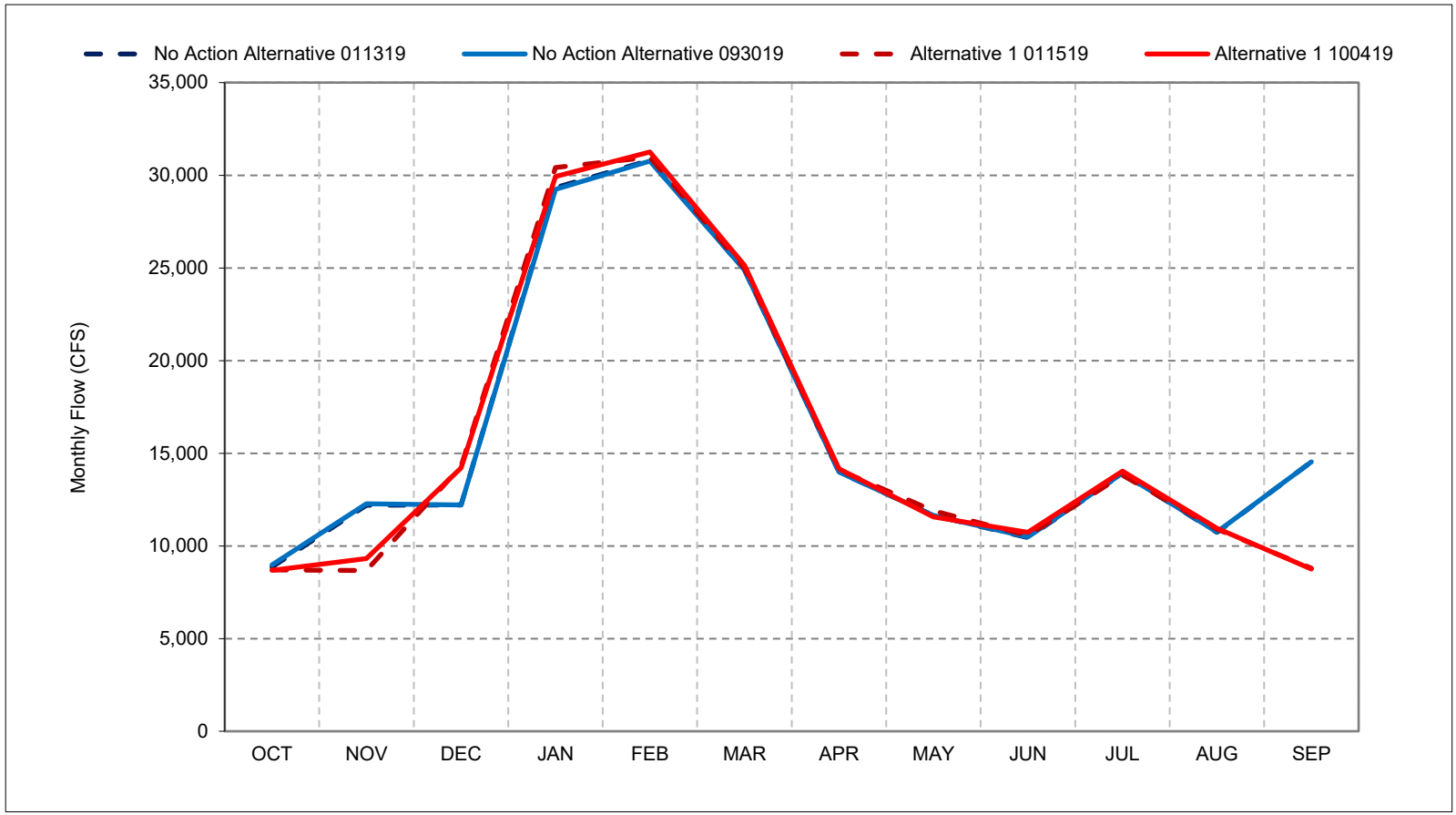



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-2. Sacramento Flow River at Bend Bridge, Wet Year Average Flow

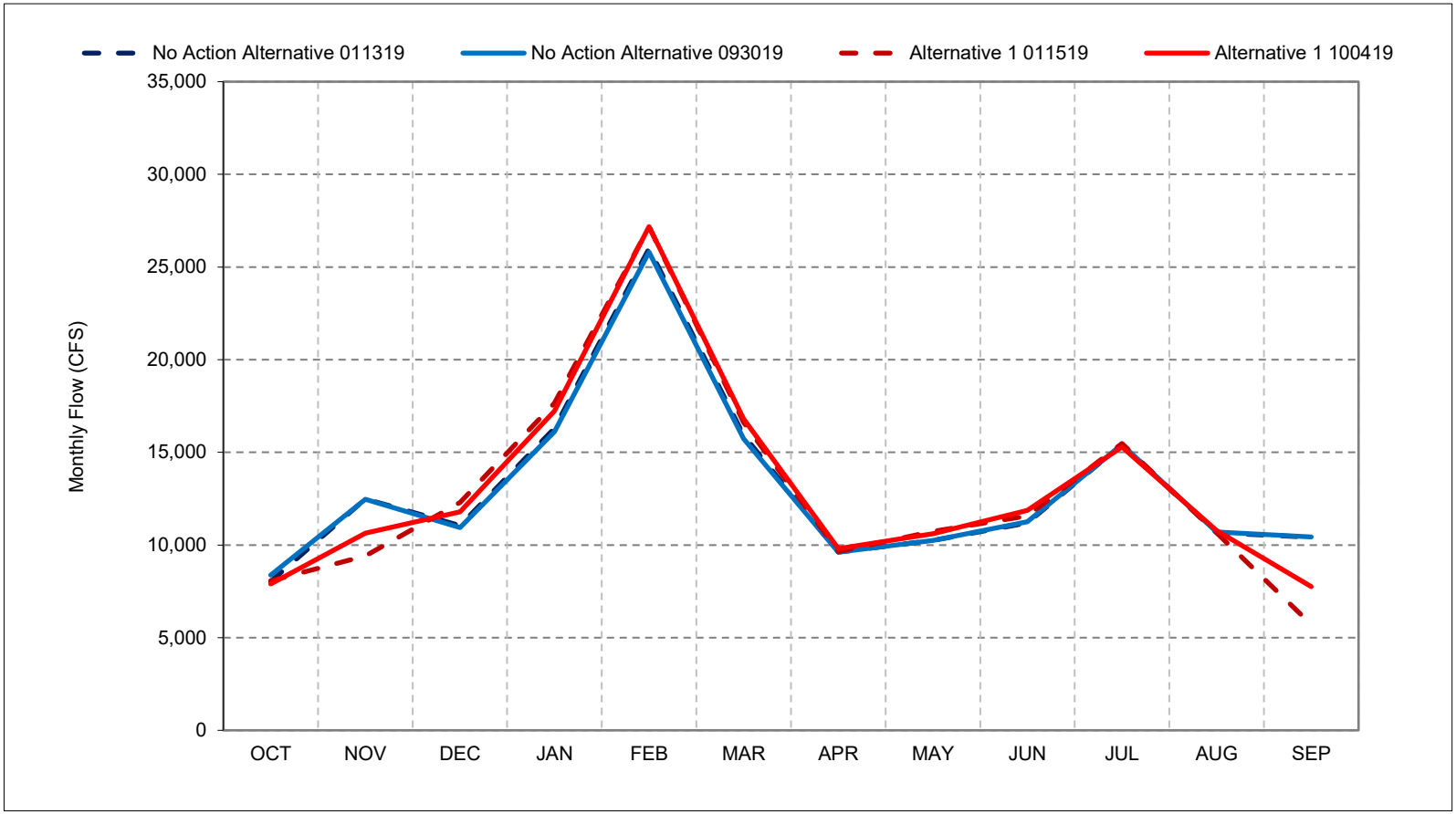



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-3. Sacramento Flow River at Bend Bridge, Above Normal Year Average Flow

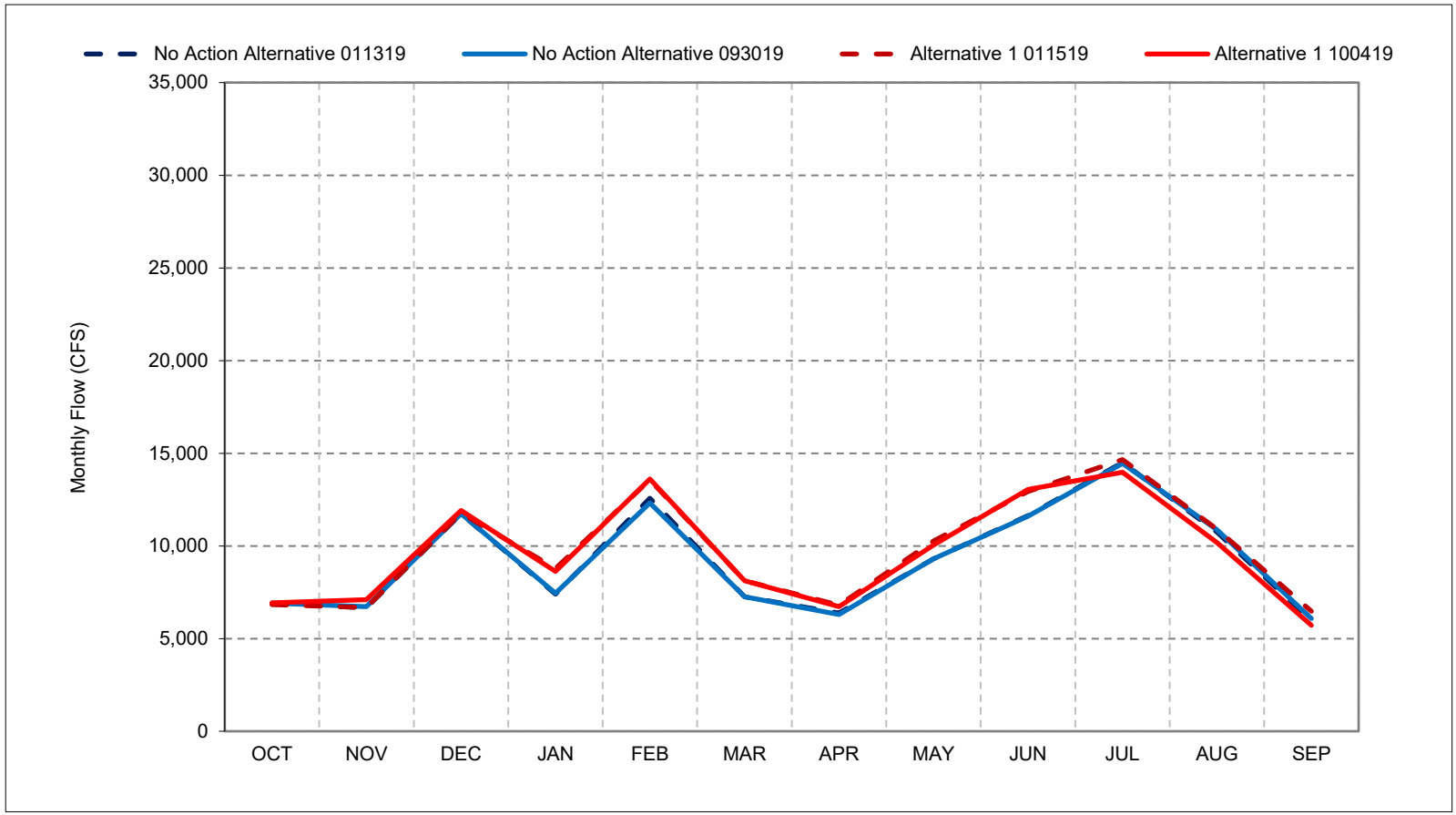



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-4. Sacramento Flow River at Bend Bridge, Below Normal Year Average Flow

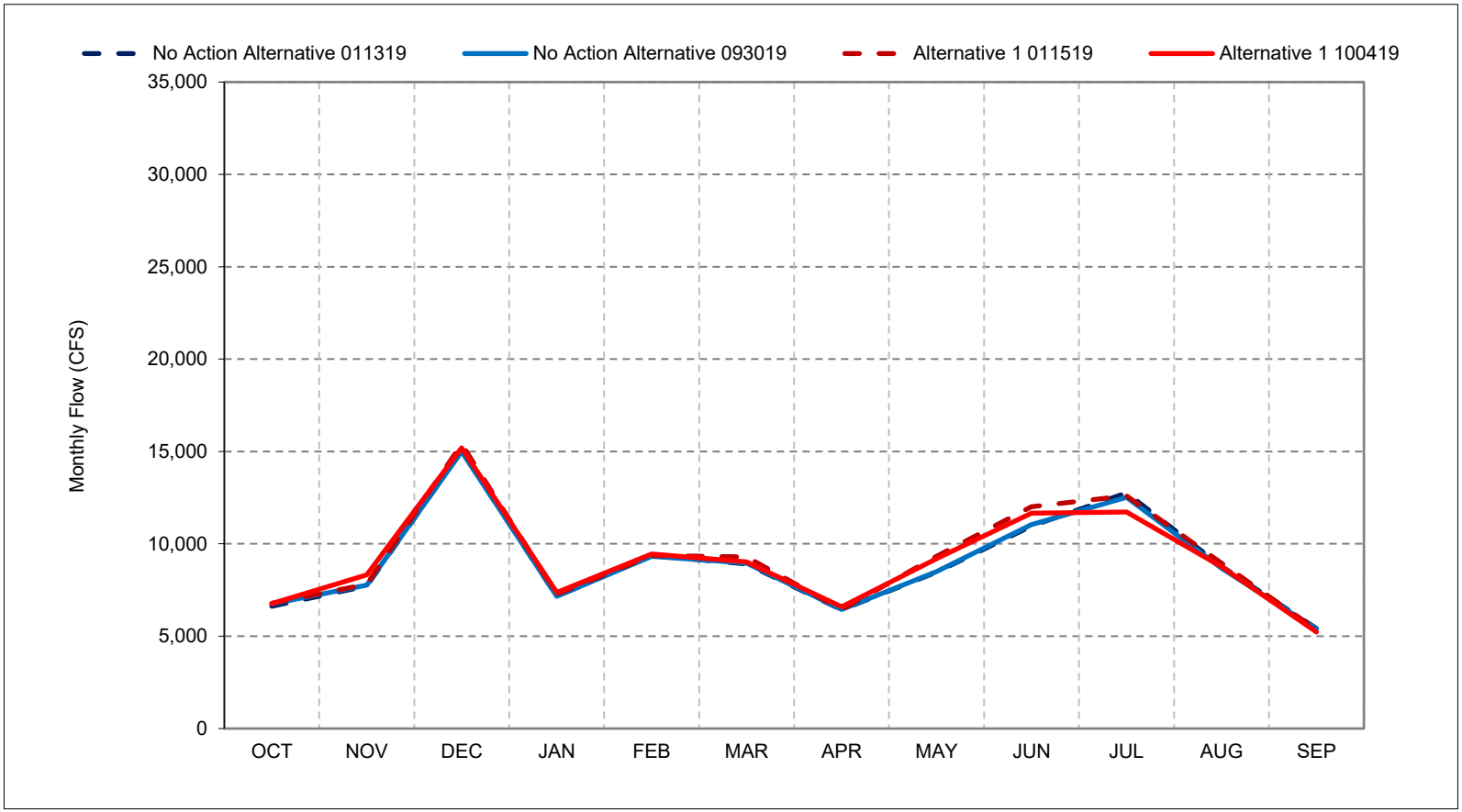



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-5. Sacramento Flow River at Bend Bridge, Dry Year Average Flow

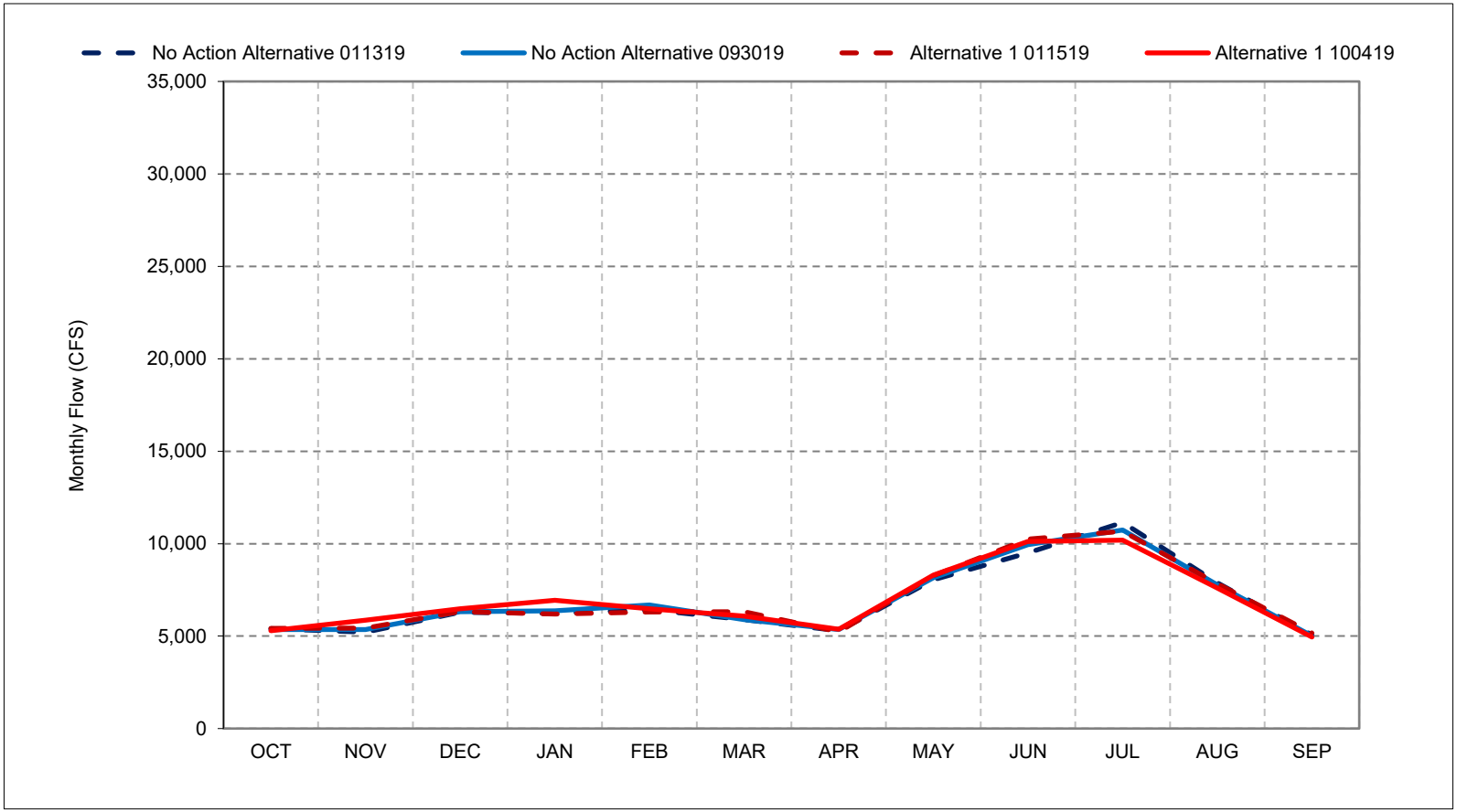



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-6. Sacramento Flow River at Bend Bridge, Critical Year Average Flow

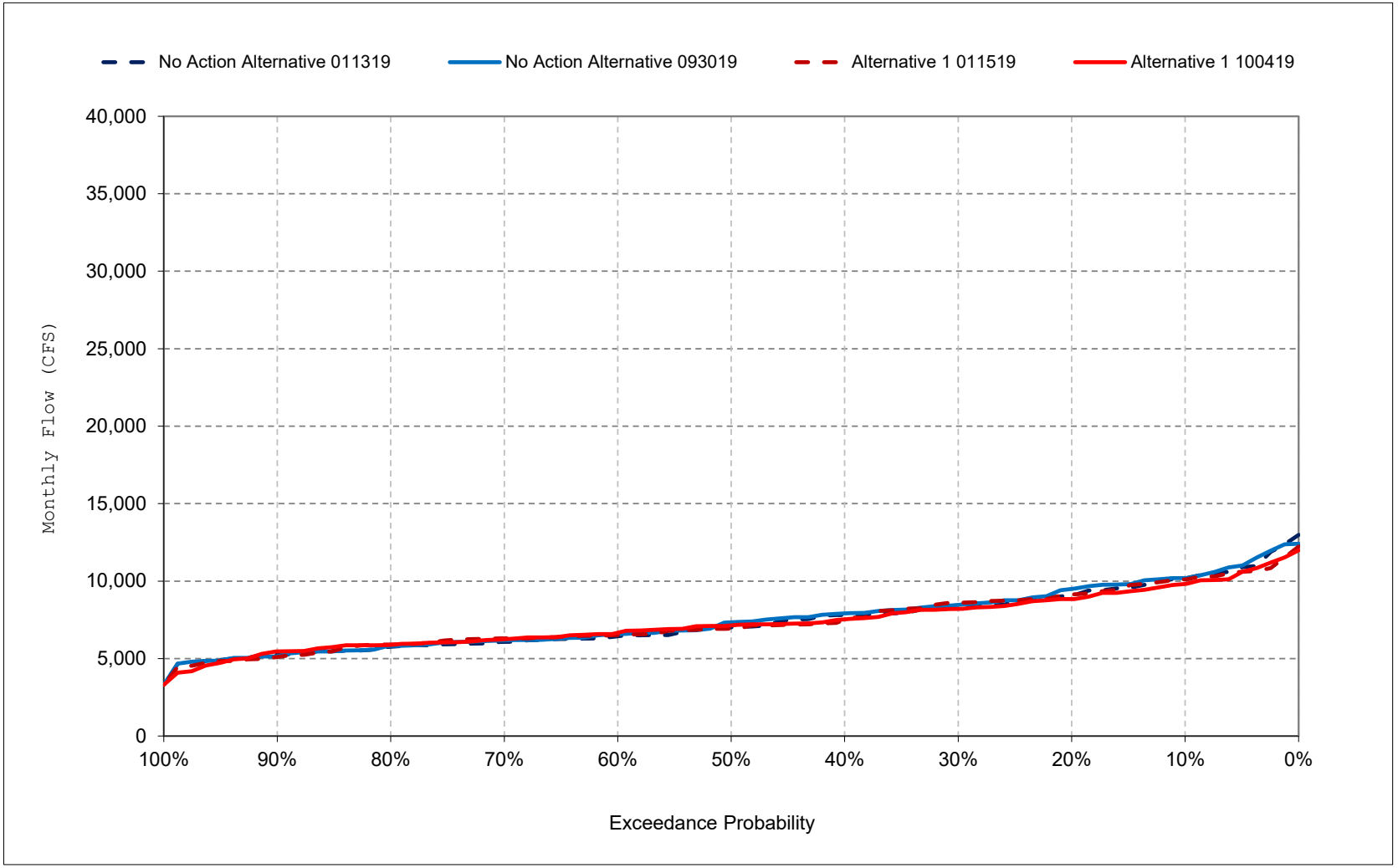



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

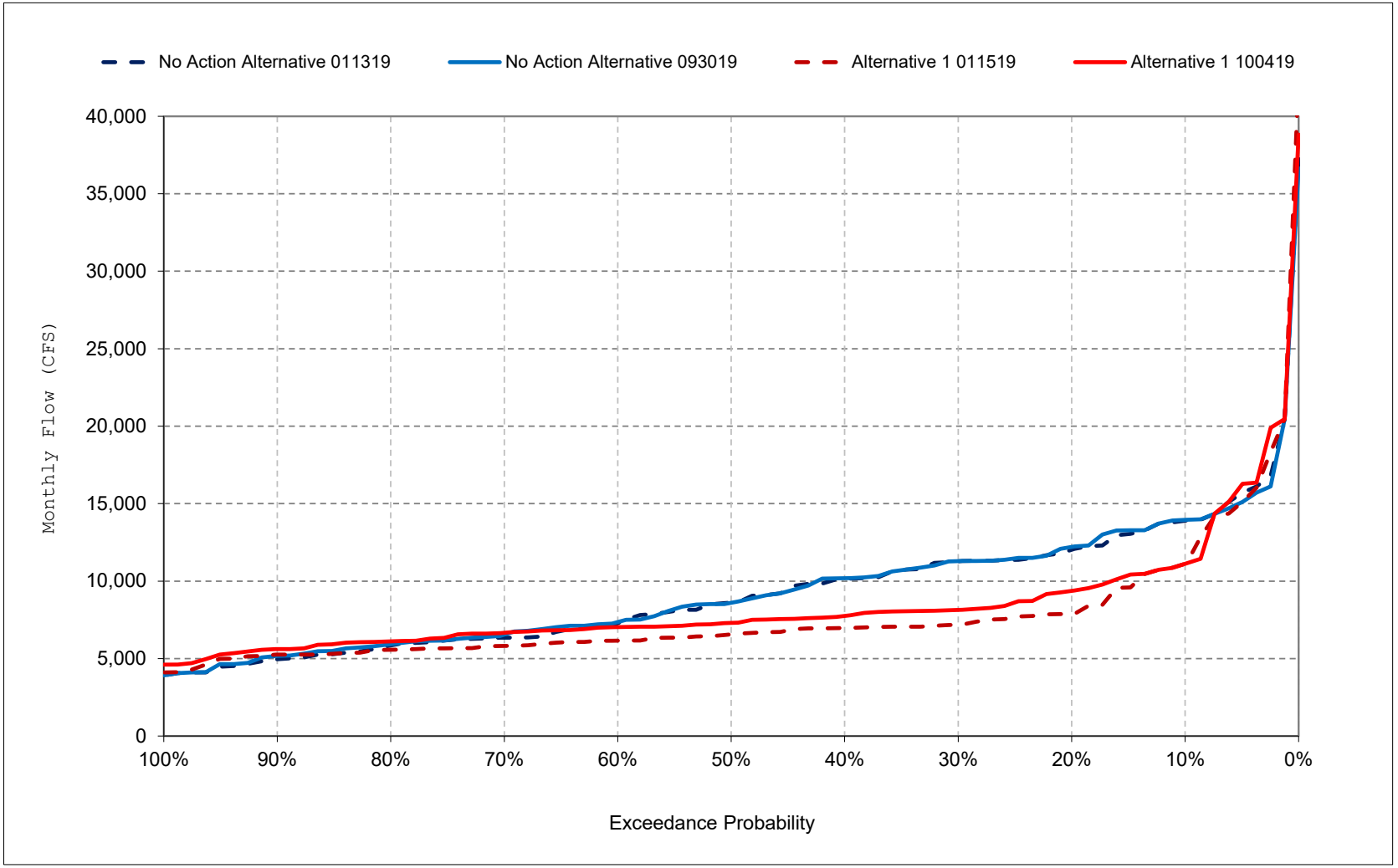
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-7. Sacramento Flow River at Bend Bridge, October**



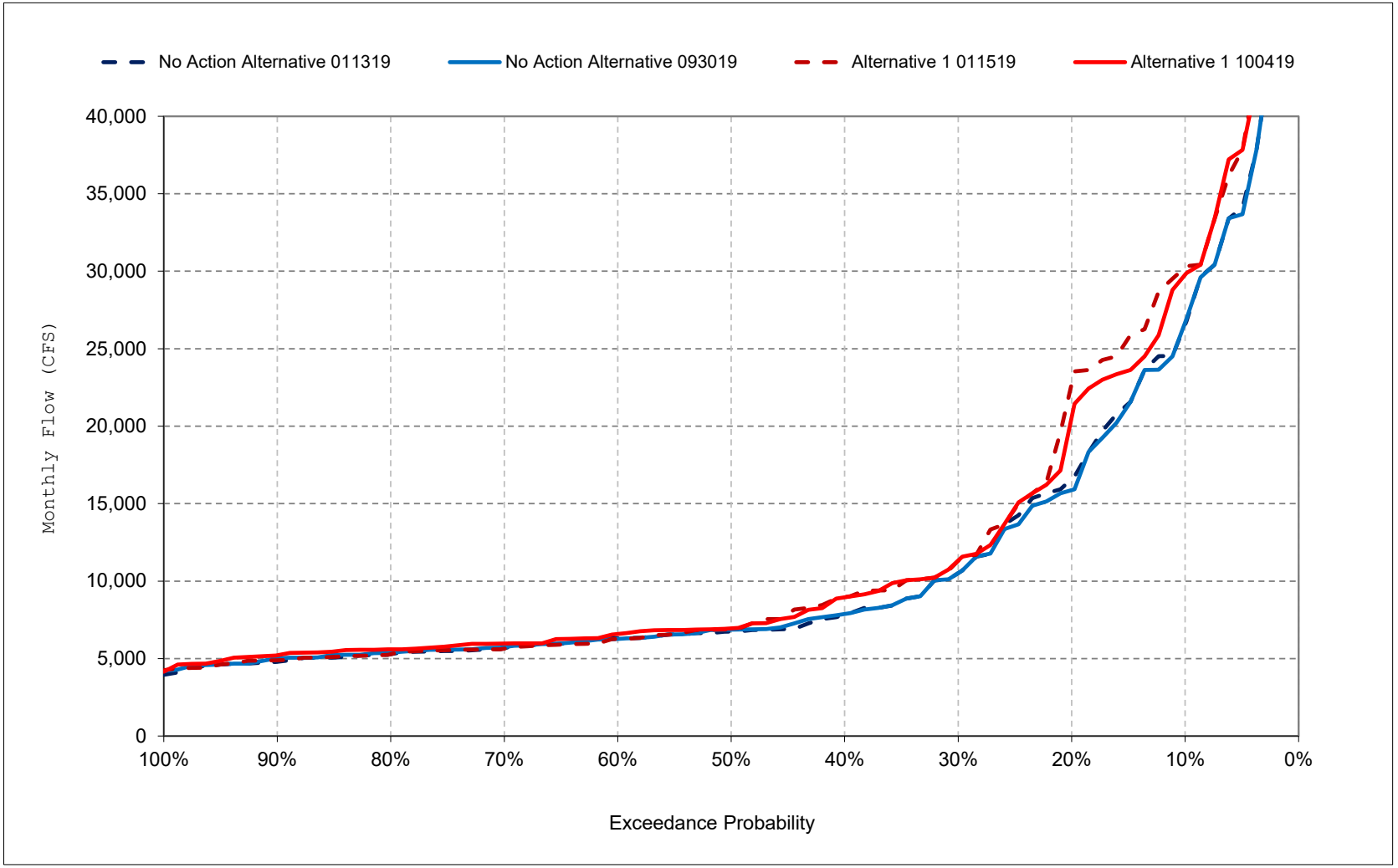

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-8. Sacramento Flow River at Bend Bridge, November**



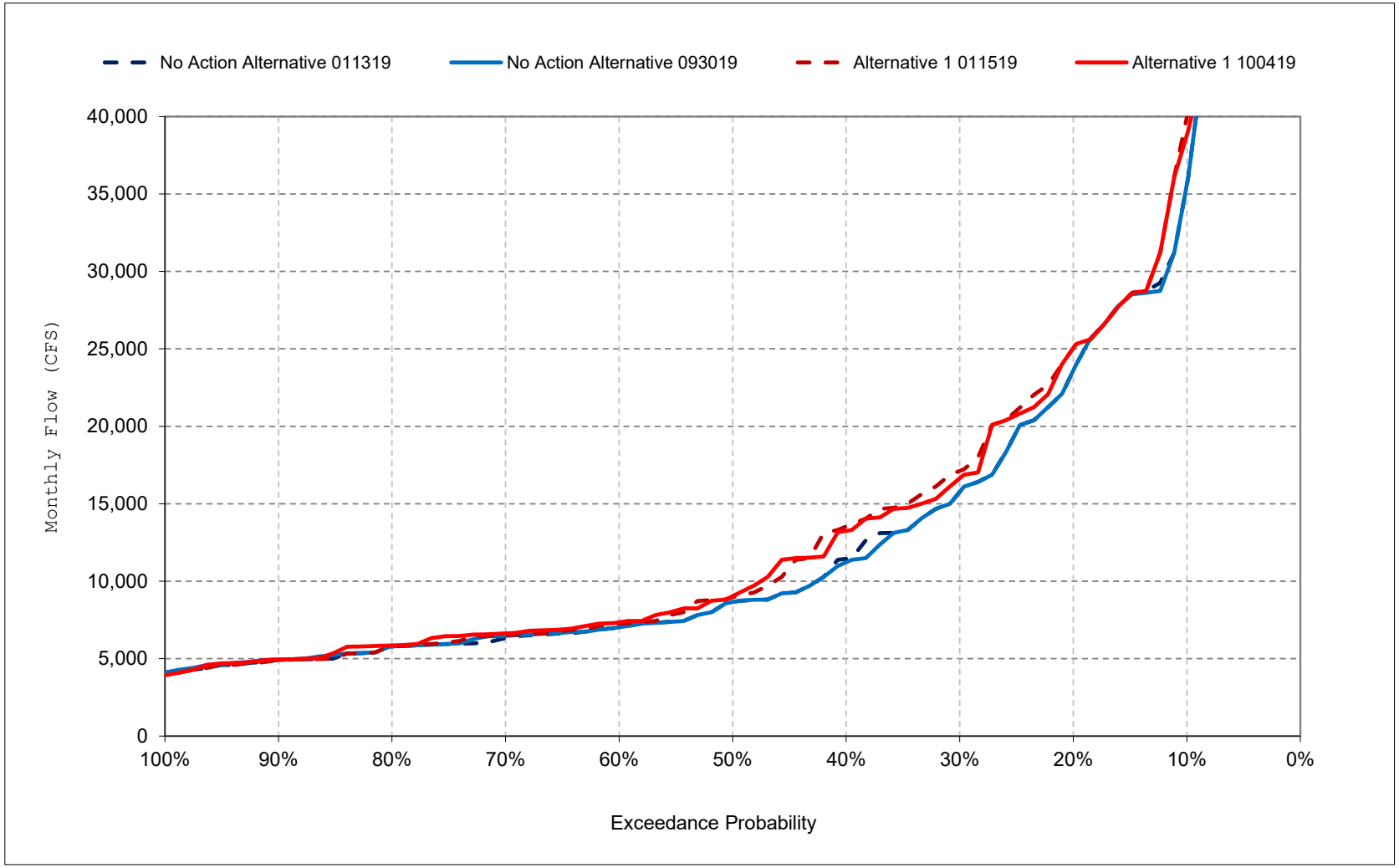

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-9. Sacramento Flow River at Bend Bridge, December**



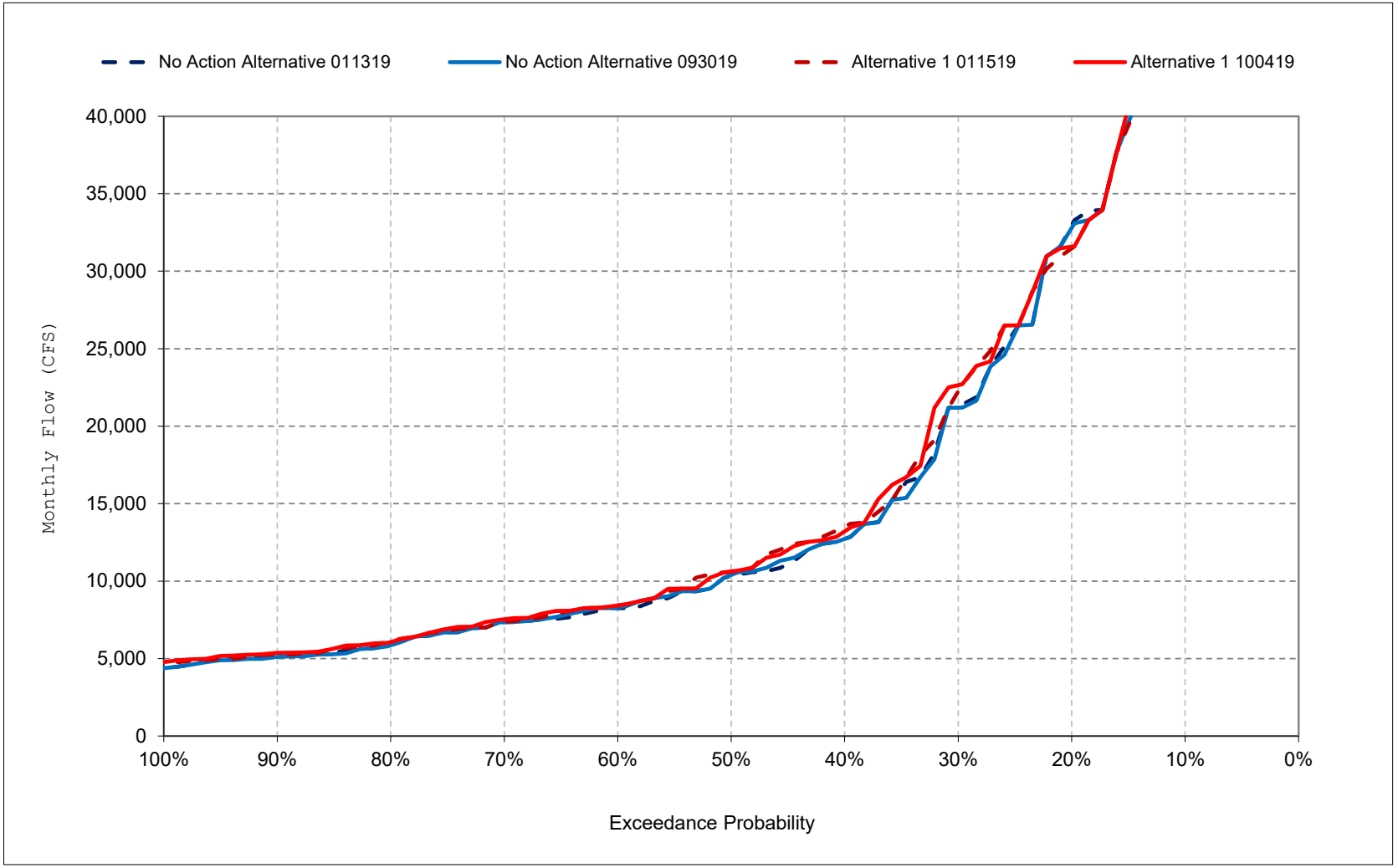

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-10. Sacramento Flow River at Bend Bridge, January**



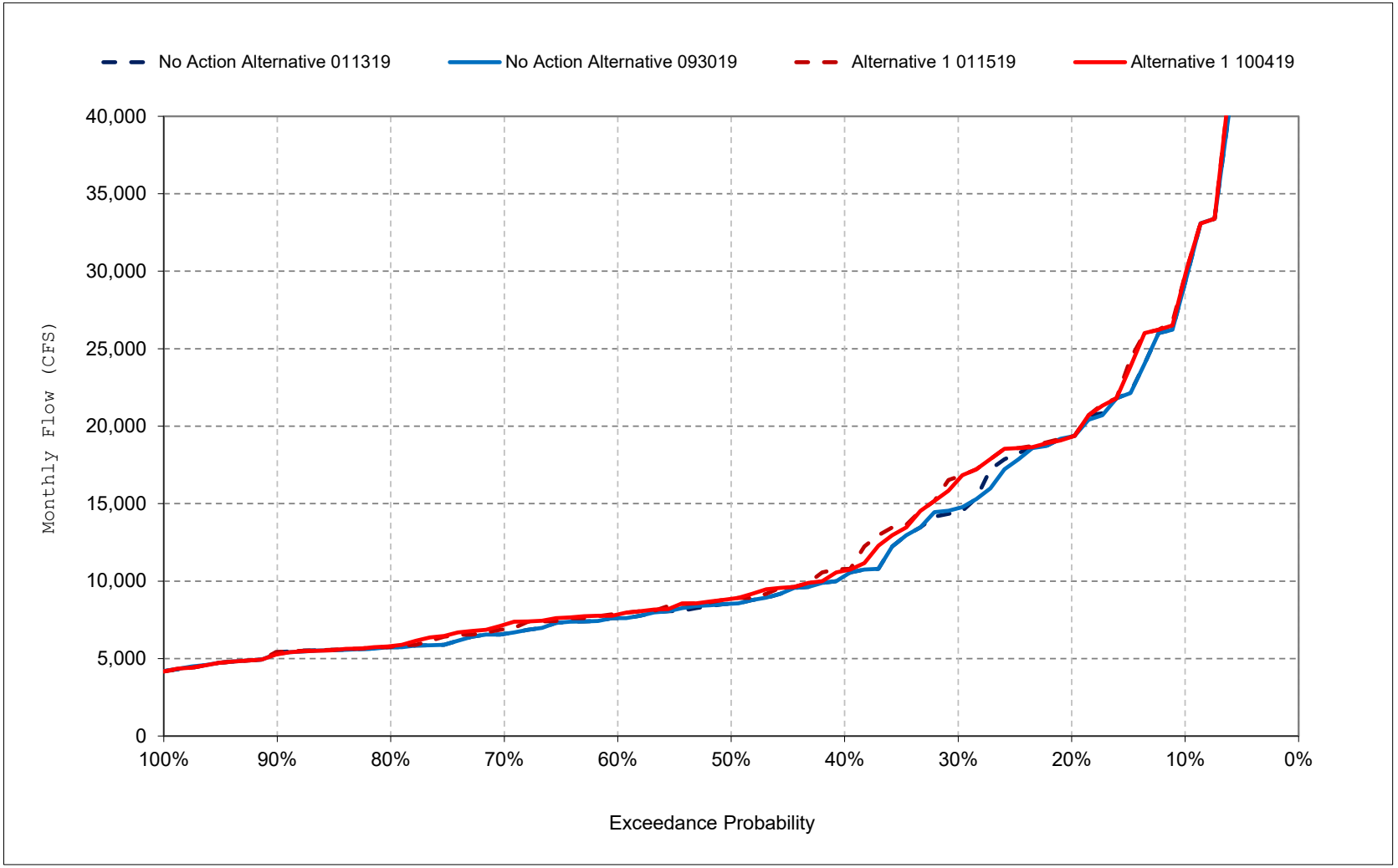

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-11. Sacramento Flow River at Bend Bridge, February**



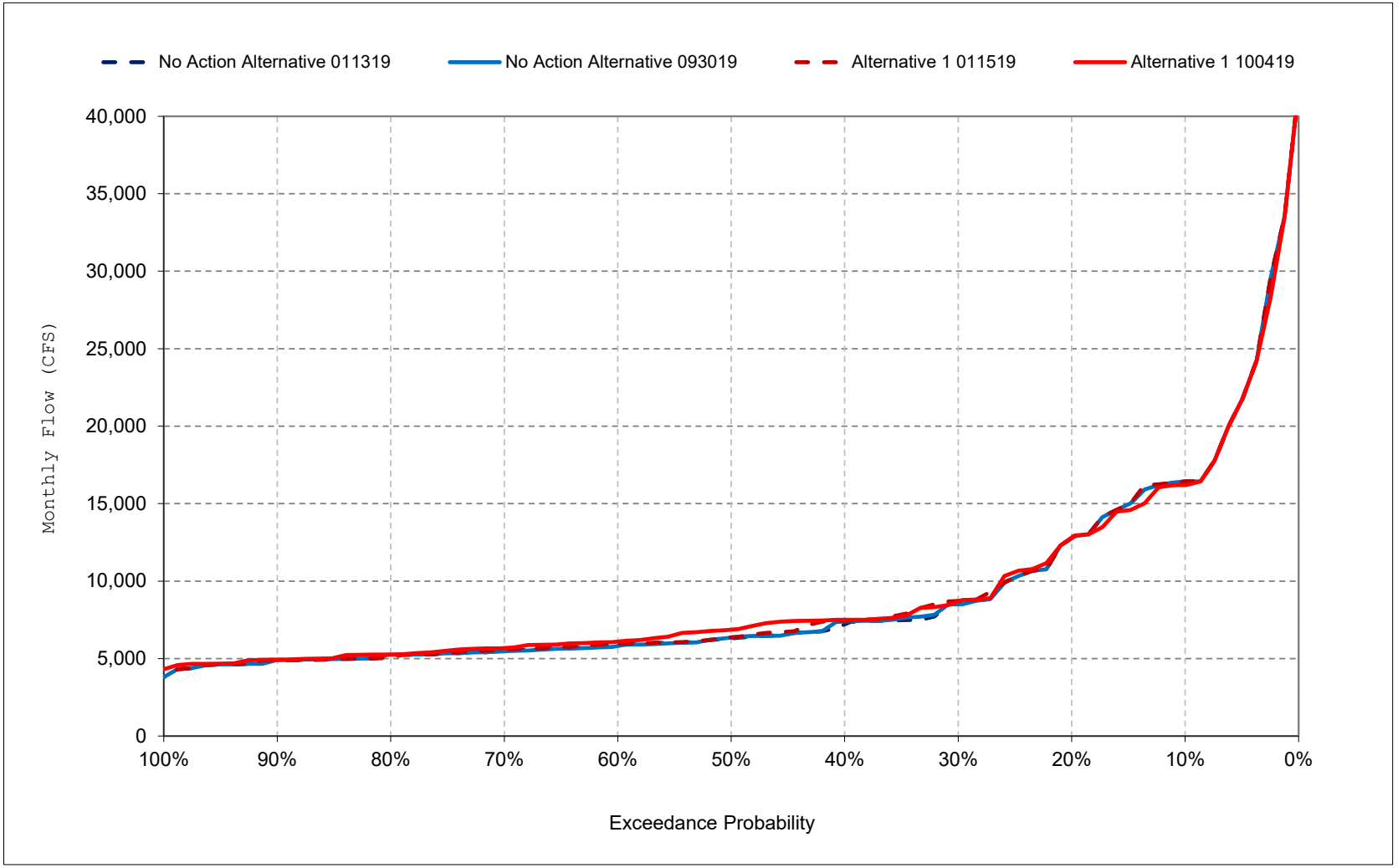

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-12. Sacramento Flow River at Bend Bridge, March**



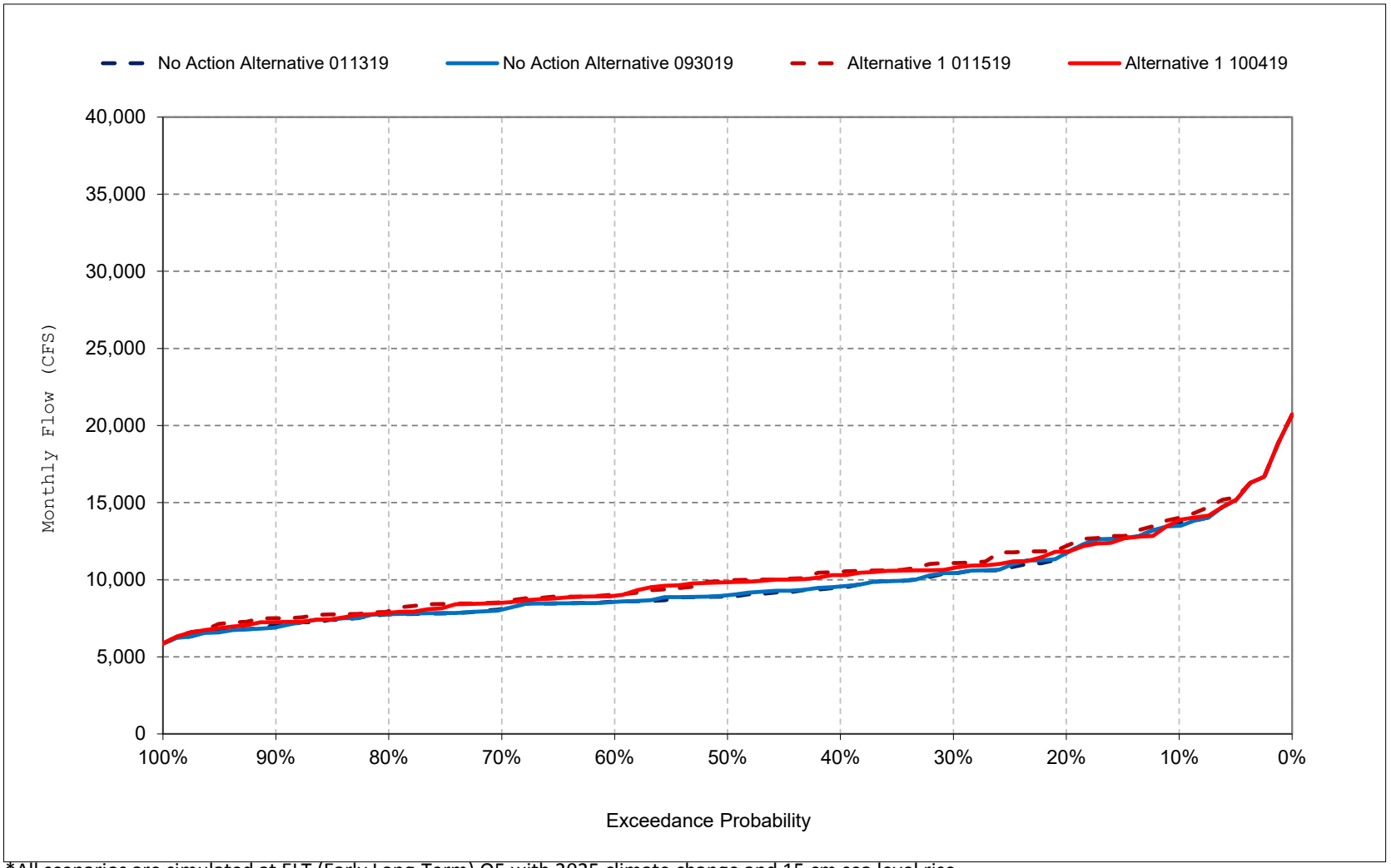

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-13. Sacramento Flow River at Bend Bridge, April**



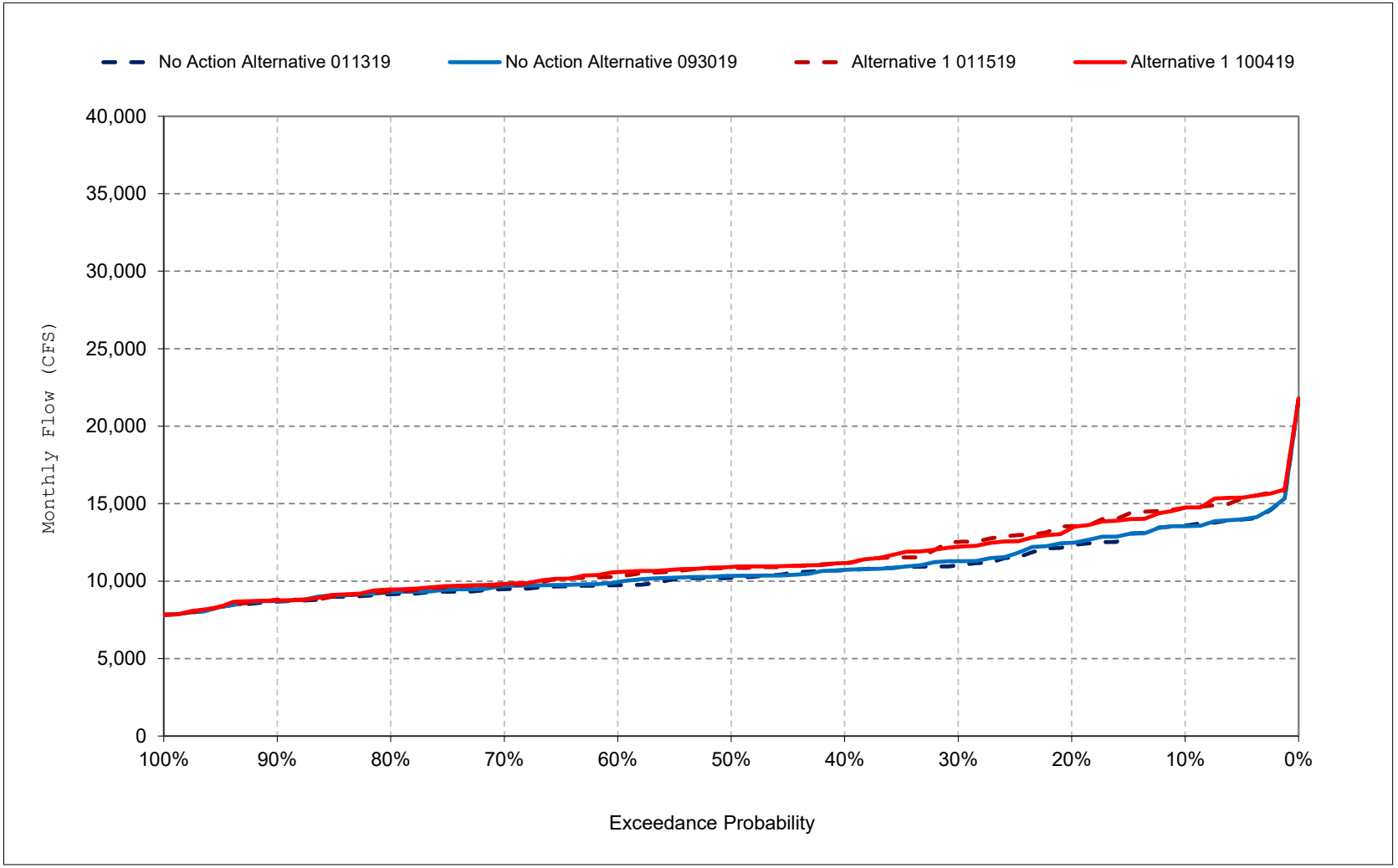

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-14. Sacramento Flow River at Bend Bridge, May**



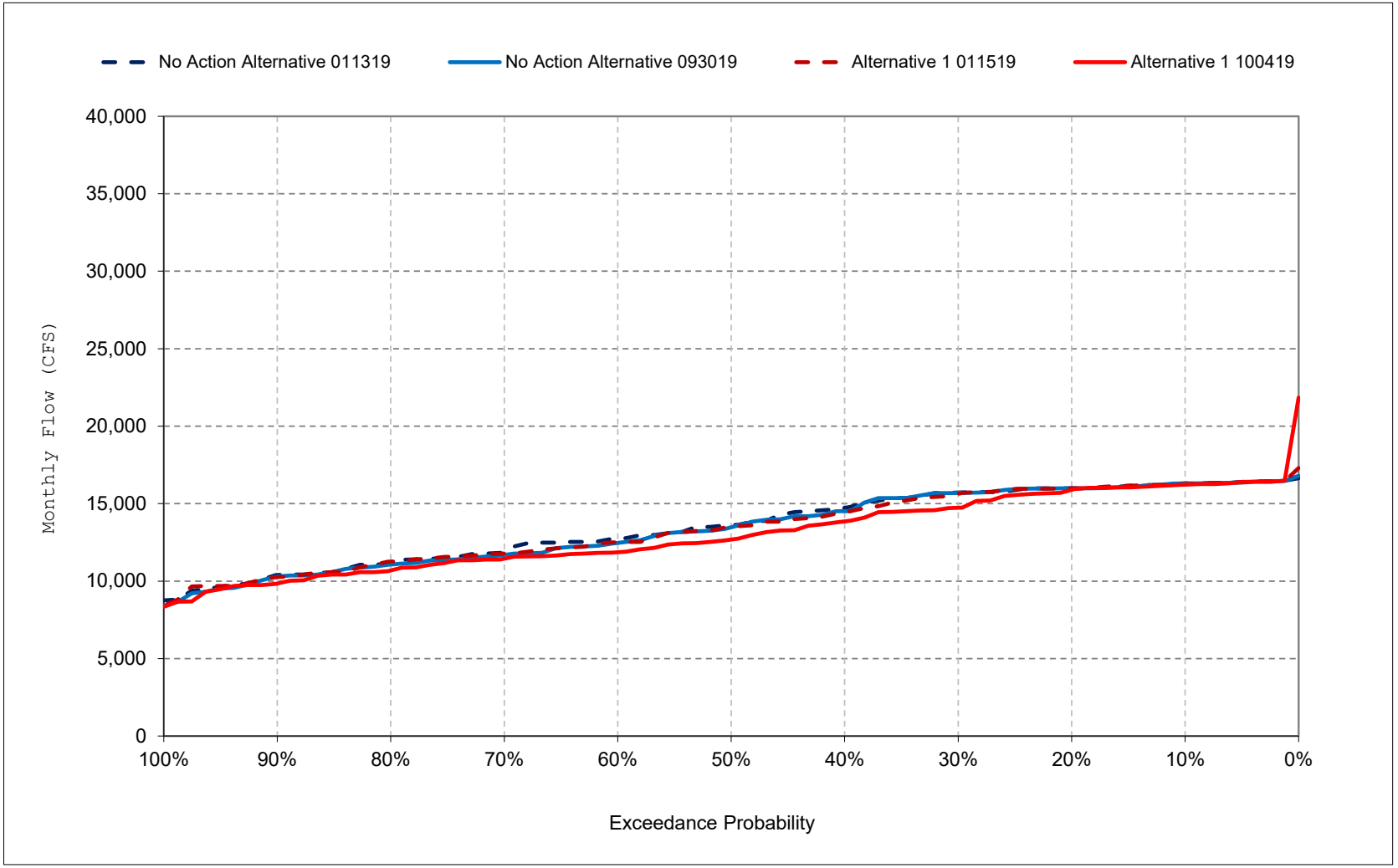

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-15. Sacramento Flow River at Bend Bridge, June**



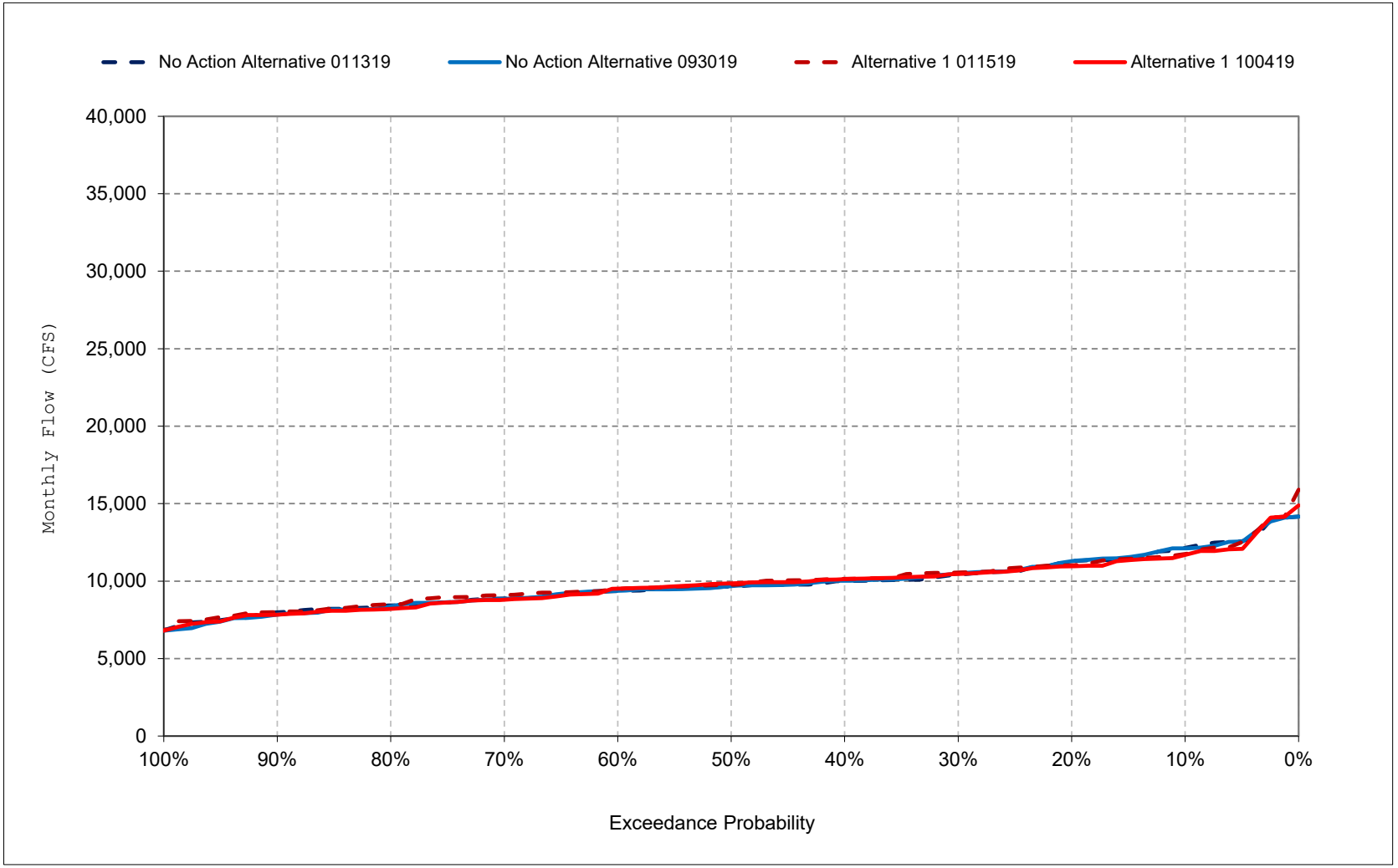

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-16. Sacramento Flow River at Bend Bridge, July**



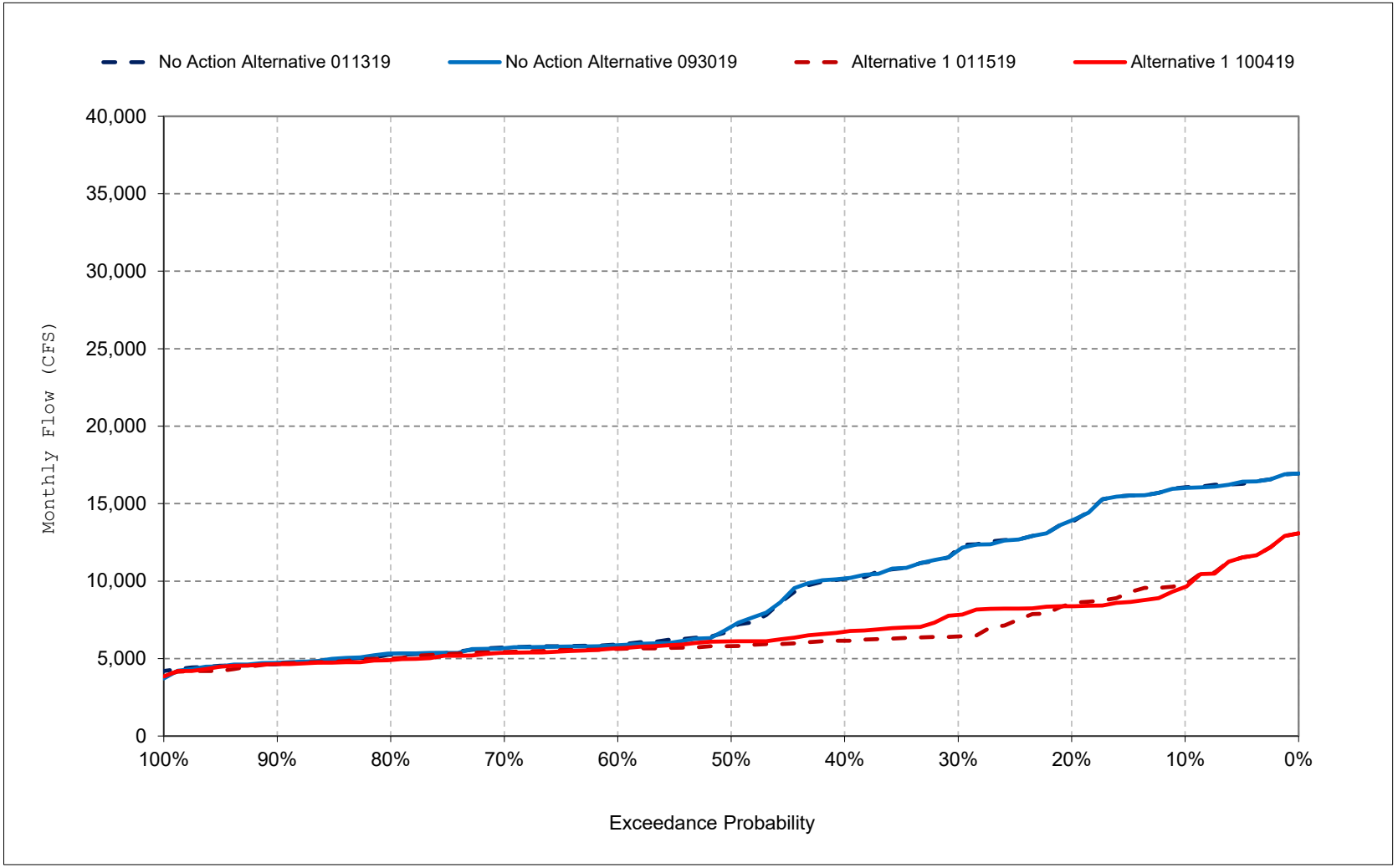

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-17. Sacramento Flow River at Bend Bridge, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-18. Sacramento Flow River at Bend Bridge, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-1. Sacramento River below Red Bluff Diversion Dam Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,011 | 13,916 | 26,964 | 36,349 | 46,951 | 29,624 | 16,603 | 13,148 | 13,015 | 15,428 | 11,307 | 15,876 |
| 20% | 8,935 | 12,026 | 17,059 | 24,191 | 33,406 | 19,585 | 13,008 | 11,101 | 11,689 | 14,953 | 10,296 | 13,688 |
| 30% | 8,162 | 11,326 | 10,713 | 16,195 | 21,743 | 14,565 | 8,528 | 9,878 | 10,416 | 14,727 | 9,580 | 11,816 |
| 40% | 7,682 | 10,236 | 8,070 | 11,649 | 13,058 | 10,522 | 7,061 | 9,105 | 9,881 | 13,944 | 9,184 | 10,012 |
| 50% | 6,903 | 8,639 | 6,795 | 8,852 | 10,563 | 8,716 | 5,988 | 8,579 | 9,465 | 12,881 | 8,934 | 6,775 |
| 60% | 6,301 | 7,375 | 6,327 | 7,152 | 8,447 | 7,747 | 5,541 | 8,064 | 9,136 | 12,165 | 8,564 | 5,835 |
| 70% | 5,951 | 6,380 | 5,760 | 6,395 | 7,537 | 6,651 | 5,292 | 7,736 | 8,721 | 11,138 | 8,375 | 5,549 |
| 80% | 5,687 | 5,854 | 5,334 | 5,869 | 5,964 | 5,772 | 5,044 | 7,317 | 8,297 | 10,215 | 7,926 | 5,122 |
| 90% | 5,150 | 4,954 | 4,820 | 4,974 | 5,202 | 5,471 | 4,657 | 6,623 | 7,926 | 9,607 | 7,749 | 4,515 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,315 | 9,438 | 11,980 | 15,892 | 19,147 | 14,608 | 9,063 | 9,371 | 9,994 | 12,702 | 9,166 | 8,972 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,728 | 12,255 | 12,422 | 29,982 | 31,345 | 25,200 | 14,018 | 11,059 | 9,426 | 12,709 | 9,781 | 14,320 |
| Above Normal (16%) | 7,927 | 12,554 | 11,235 | 16,772 | 26,458 | 16,158 | 9,459 | 9,611 | 10,203 | 14,275 | 9,759 | 10,210 |
| Below Normal (13%) | 6,820 | 6,705 | 11,915 | 7,608 | 12,849 | 7,303 | 6,118 | 8,845 | 10,980 | 13,721 | 10,131 | 5,837 |
| Dry (24%) | 6,538 | 7,784 | 15,279 | 7,303 | 9,573 | 9,042 | 6,326 | 8,214 | 10,498 | 12,221 | 8,358 | 5,349 |
| Critical (15%) | 5,338 | 5,218 | 6,394 | 6,318 | 6,527 | 5,955 | 5,159 | 7,866 | 9,252 | 10,848 | 7,654 | 4,954 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,094 | 11,251 | 30,654 | 41,231 | 47,844 | 30,095 | 16,604 | 13,637 | 14,019 | 15,143 | 11,091 | 9,587 |
| 20% | 9,087 | 7,890 | 23,214 | 25,628 | 32,156 | 19,588 | 13,006 | 11,604 | 12,690 | 14,882 | 10,172 | 8,323 |
| 30% | 8,562 | 7,216 | 11,557 | 17,517 | 22,646 | 16,748 | 8,515 | 10,466 | 11,652 | 14,422 | 9,599 | 6,220 |
| 40% | 7,394 | 7,006 | 9,146 | 13,981 | 13,804 | 10,972 | 7,283 | 9,875 | 10,578 | 13,285 | 9,274 | 6,038 |
| 50% | 6,893 | 6,621 | 7,024 | 9,111 | 10,808 | 9,079 | 6,050 | 9,339 | 9,897 | 12,614 | 8,943 | 5,660 |
| 60% | 6,486 | 6,185 | 6,320 | 7,475 | 8,585 | 7,922 | 5,627 | 8,679 | 9,437 | 11,439 | 8,719 | 5,415 |
| 70% | 6,245 | 5,822 | 5,730 | 6,631 | 7,552 | 6,947 | 5,271 | 8,051 | 9,027 | 11,078 | 8,427 | 5,277 |
| 80% | 5,889 | 5,580 | 5,343 | 5,880 | 6,216 | 5,854 | 4,966 | 7,626 | 8,430 | 10,276 | 8,036 | 4,951 |
| 90% | 5,048 | 5,263 | 4,928 | 4,948 | 5,381 | 5,465 | 4,589 | 7,123 | 7,905 | 9,373 | 7,722 | 4,491 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,340 | 7,880 | 12,937 | 16,664 | 19,500 | 15,011 | 9,122 | 9,847 | 10,550 | 12,510 | 9,209 | 6,451 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,619 | 8,715 | 14,507 | 31,071 | 31,509 | 25,285 | 14,115 | 11,289 | 9,497 | 12,581 | 9,925 | 8,559 |
| Above Normal (16%) | 8,009 | 9,467 | 12,472 | 18,132 | 27,628 | 16,837 | 9,455 | 10,081 | 10,510 | 14,262 | 9,707 | 5,479 |
| Below Normal (13%) | 6,768 | 6,695 | 11,938 | 8,997 | 13,851 | 8,149 | 6,478 | 9,630 | 12,102 | 13,667 | 10,128 | 6,311 |
| Dry (24%) | 6,735 | 7,875 | 15,651 | 7,421 | 9,569 | 9,421 | 6,297 | 9,004 | 11,447 | 11,951 | 8,448 | 5,253 |
| Critical (15%) | 5,374 | 5,449 | 6,431 | 6,293 | 6,407 | 6,376 | 5,075 | 8,072 | 9,956 | 10,328 | 7,542 | 5,058 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 83 | **-2,665** | 3,690 | 4,883 | 893 | 471 | 1 | 489 | 1,004 | **-284** | **-216** | **-6,288** |
| 20% | 152 | **-4,136** | 6,155 | 1,438 | **-1,249** | 2 | **-2** | 503 | 1,001 | **-71** | **-124** | **-5,364** |
| 30% | 399 | **-4,110** | 845 | 1,322 | 903 | 2,182 | **-13** | 588 | 1,236 | **-305** | 19 | **-5,596** |
| 40% | **-288** | **-3,230** | 1,076 | 2,332 | 746 | 450 | 223 | 770 | 697 | **-659** | 90 | **-3,974** |
| 50% | **-10** | **-2,018** | 229 | 260 | 246 | 363 | 61 | 760 | 433 | **-267** | 9 | **-1,115** |
| 60% | 184 | **-1,189** | **-7** | 323 | 138 | 175 | 85 | 615 | 301 | **-726** | 155 | **-420** |
| 70% | 294 | **-559** | **-31** | 236 | 15 | 296 | **-20** | 315 | 306 | **-60** | 52 | **-272** |
| 80% | 202 | **-273** | 9 | 10 | 252 | 82 | **-78** | 309 | 133 | 61 | 110 | **-170** |
| 90% | **-102** | 309 | 108 | **-25** | 179 | **-6** | **-68** | 500 | **-21** | **-235** | **-27** | **-25** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 25 | **-1,557** | 957 | 772 | 353 | 402 | 59 | 476 | 556 | **-192** | 43 | **-2,521** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-109** | **-3,540** | 2,085 | 1,089 | 164 | 85 | 97 | 231 | 71 | **-128** | 144 | **-5,761** |
| Above Normal (16%) | 82 | **-3,087** | 1,238 | 1,360 | 1,169 | 679 | **-3** | 470 | 306 | **-12** | **-52** | **-4,731** |
| Below Normal (13%) | **-52** | **-10** | 23 | 1,389 | 1,002 | 846 | 360 | 785 | 1,122 | **-54** | **-3** | 474 |
| Dry (24%) | 197 | 91 | 372 | 118 | **-4** | 379 | **-29** | 790 | 949 | **-270** | 90 | **-95** |
| Critical (15%) | 35 | 231 | 37 | **-25** | **-120** | 422 | **-84** | 205 | 704 | **-520** | **-112** | 103 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-2. Sacramento River below Red Bluff Diversion Dam Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,017 | 13,965 | 27,074 | 36,351 | 46,941 | 29,623 | 16,602 | 13,122 | 12,968 | 15,249 | 11,408 | 15,799 |
| 20% | 9,366 | 12,194 | 16,314 | 24,185 | 33,404 | 19,585 | 13,008 | 11,124 | 11,883 | 14,883 | 10,277 | 13,682 |
| 30% | 8,274 | 11,312 | 10,713 | 16,194 | 21,593 | 14,900 | 8,412 | 9,878 | 10,487 | 14,524 | 9,534 | 11,817 |
| 40% | 7,806 | 10,331 | 8,071 | 11,498 | 13,059 | 10,522 | 7,223 | 9,155 | 10,029 | 13,717 | 9,230 | 10,011 |
| 50% | 7,237 | 8,636 | 6,976 | 8,852 | 10,588 | 8,716 | 6,016 | 8,700 | 9,542 | 12,545 | 8,865 | 6,859 |
| 60% | 6,456 | 7,426 | 6,322 | 7,152 | 8,534 | 7,750 | 5,487 | 8,064 | 9,227 | 11,841 | 8,515 | 5,768 |
| 70% | 6,065 | 6,557 | 5,808 | 6,579 | 7,537 | 6,651 | 5,298 | 7,736 | 8,671 | 10,986 | 8,382 | 5,575 |
| 80% | 5,695 | 6,000 | 5,456 | 5,870 | 5,964 | 5,771 | 5,044 | 7,403 | 8,309 | 10,201 | 7,853 | 5,164 |
| 90% | 5,103 | 5,159 | 5,047 | 5,027 | 5,168 | 5,331 | 4,659 | 6,602 | 7,928 | 9,360 | 7,624 | 4,651 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,421 | 9,496 | 11,959 | 15,865 | 19,096 | 14,587 | 9,072 | 9,397 | 10,056 | 12,545 | 9,124 | 8,960 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,835 | 12,325 | 12,419 | 29,900 | 31,303 | 25,200 | 14,016 | 11,059 | 9,412 | 12,682 | 9,768 | 14,299 |
| Above Normal (16%) | 8,260 | 12,531 | 11,127 | 16,587 | 26,265 | 15,956 | 9,460 | 9,610 | 10,181 | 14,173 | 9,728 | 10,196 |
| Below Normal (13%) | 6,810 | 6,758 | 11,913 | 7,653 | 12,611 | 7,306 | 6,075 | 8,849 | 10,892 | 13,601 | 10,206 | 5,927 |
| Dry (24%) | 6,658 | 7,832 | 15,244 | 7,311 | 9,520 | 9,089 | 6,353 | 8,254 | 10,571 | 11,991 | 8,268 | 5,310 |
| Critical (15%) | 5,281 | 5,366 | 6,428 | 6,460 | 6,789 | 5,945 | 5,221 | 7,973 | 9,690 | 10,444 | 7,511 | 4,915 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,705 | 11,122 | 30,177 | 39,517 | 47,844 | 30,071 | 16,604 | 13,460 | 13,687 | 14,948 | 10,764 | 9,379 |
| 20% | 8,737 | 9,388 | 21,061 | 25,647 | 32,306 | 19,531 | 13,047 | 11,429 | 12,459 | 14,663 | 9,972 | 8,148 |
| 30% | 8,049 | 8,178 | 11,623 | 17,083 | 23,110 | 16,487 | 8,494 | 10,372 | 11,532 | 13,784 | 9,534 | 7,595 |
| 40% | 7,331 | 7,808 | 9,138 | 13,869 | 13,475 | 10,870 | 7,305 | 9,772 | 10,465 | 13,008 | 9,171 | 6,511 |
| 50% | 7,013 | 7,323 | 7,033 | 9,371 | 10,838 | 9,112 | 6,890 | 9,342 | 10,037 | 12,017 | 8,933 | 5,875 |
| 60% | 6,537 | 7,070 | 6,707 | 7,538 | 8,583 | 7,911 | 5,898 | 8,673 | 9,652 | 11,152 | 8,595 | 5,520 |
| 70% | 6,144 | 6,666 | 6,019 | 6,772 | 7,660 | 7,290 | 5,474 | 8,069 | 9,000 | 10,591 | 8,270 | 5,270 |
| 80% | 5,789 | 6,141 | 5,653 | 5,961 | 6,165 | 5,871 | 5,128 | 7,450 | 8,553 | 9,927 | 7,797 | 4,737 |
| 90% | 5,386 | 5,614 | 5,259 | 5,026 | 5,413 | 5,234 | 4,724 | 6,957 | 7,959 | 9,296 | 7,587 | 4,517 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,246 | 8,530 | 12,821 | 16,550 | 19,644 | 14,991 | 9,231 | 9,693 | 10,550 | 12,161 | 9,051 | 6,592 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,541 | 9,366 | 14,414 | 30,586 | 31,792 | 25,452 | 14,203 | 10,979 | 9,658 | 12,782 | 9,954 | 8,515 |
| Above Normal (16%) | 7,779 | 10,704 | 11,973 | 17,705 | 27,642 | 17,026 | 9,625 | 9,966 | 10,773 | 14,044 | 9,798 | 7,512 |
| Below Normal (13%) | 6,807 | 7,134 | 12,088 | 8,824 | 13,897 | 8,154 | 6,438 | 9,452 | 12,154 | 12,911 | 9,342 | 5,533 |
| Dry (24%) | 6,677 | 8,392 | 15,444 | 7,512 | 9,649 | 9,143 | 6,457 | 8,932 | 11,121 | 11,107 | 8,280 | 5,127 |
| Critical (15%) | 5,216 | 5,875 | 6,587 | 7,031 | 6,583 | 6,136 | 5,216 | 8,097 | 9,818 | 9,846 | 7,299 | 4,838 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -312 | -2,843 | 3,102 | 3,166 | 903 | 447 | 1 | 338 | 719 | -300 | -644 | -6,420 |
| 20% | -629 | -2,807 | 4,747 | 1,462 | -1,098 | -55 | 39 | 306 | 575 | -220 | -305 | -5,535 |
| 30% | -225 | -3,134 | 910 | 889 | 1,517 | 1,586 | 82 | 494 | 1,045 | -741 | 0 | -4,222 |
| 40% | -475 | -2,523 | 1,067 | 2,370 | 416 | 348 | 82 | 617 | 436 | -709 | -59 | -3,500 |
| 50% | -224 | -1,313 | 57 | 518 | 249 | 395 | 873 | 643 | 495 | -528 | 68 | -984 |
| 60% | 81 | -356 | 385 | 387 | 49 | 161 | 411 | 609 | 426 | -689 | 80 | -248 |
| 70% | 79 | 109 | 211 | 193 | 123 | 639 | 176 | 333 | 328 | -395 | -112 | -305 |
| 80% | 94 | 141 | 197 | 91 | 201 | 100 | 83 | 48 | 244 | -274 | -55 | -427 |
| 90% | 284 | 455 | 212 | 0 | 245 | -97 | 66 | 355 | 32 | -64 | -36 | -134 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -175 | -966 | 862 | 685 | 547 | 404 | 159 | 296 | 494 | -384 | -74 | -2,368 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -294 | -2,959 | 1,994 | 686 | 489 | 252 | 187 | -79 | 246 | 101 | 186 | -5,784 |
| Above Normal (16%) | -481 | -1,827 | 846 | 1,119 | 1,377 | 1,070 | 165 | 356 | 592 | -129 | 69 | -2,684 |
| Below Normal (13%) | -3 | 377 | 175 | 1,172 | 1,287 | 848 | 363 | 603 | 1,262 | -690 | -864 | -394 |
| Dry (24%) | 19 | 560 | 199 | 200 | 129 | 54 | 104 | 678 | 550 | -884 | 12 | -184 |
| Critical (15%) | -65 | 510 | 159 | 571 | -206 | 190 | -5 | 124 | 129 | -598 | -212 | -76 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-3. Sacramento River below Red Bluff Diversion Dam Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,011 | 13,916 | 26,964 | 36,349 | 46,951 | 29,624 | 16,603 | 13,148 | 13,015 | 15,428 | 11,307 | 15,876 |
| 20% | 8,935 | 12,026 | 17,059 | 24,191 | 33,406 | 19,585 | 13,008 | 11,101 | 11,689 | 14,953 | 10,296 | 13,688 |
| 30% | 8,162 | 11,326 | 10,713 | 16,195 | 21,743 | 14,565 | 8,528 | 9,878 | 10,416 | 14,727 | 9,580 | 11,816 |
| 40% | 7,682 | 10,236 | 8,070 | 11,649 | 13,058 | 10,522 | 7,061 | 9,105 | 9,881 | 13,944 | 9,184 | 10,012 |
| 50% | 6,903 | 8,639 | 6,795 | 8,852 | 10,563 | 8,716 | 5,988 | 8,579 | 9,465 | 12,881 | 8,934 | 6,775 |
| 60% | 6,301 | 7,375 | 6,327 | 7,152 | 8,447 | 7,747 | 5,541 | 8,064 | 9,136 | 12,165 | 8,564 | 5,835 |
| 70% | 5,951 | 6,380 | 5,760 | 6,395 | 7,537 | 6,651 | 5,292 | 7,736 | 8,721 | 11,138 | 8,375 | 5,549 |
| 80% | 5,687 | 5,854 | 5,334 | 5,869 | 5,964 | 5,772 | 5,044 | 7,317 | 8,297 | 10,215 | 7,926 | 5,122 |
| 90% | 5,150 | 4,954 | 4,820 | 4,974 | 5,202 | 5,471 | 4,657 | 6,623 | 7,926 | 9,607 | 7,749 | 4,515 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,315 | 9,438 | 11,980 | 15,892 | 19,147 | 14,608 | 9,063 | 9,371 | 9,994 | 12,702 | 9,166 | 8,972 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,728 | 12,255 | 12,422 | 29,982 | 31,345 | 25,200 | 14,018 | 11,059 | 9,426 | 12,709 | 9,781 | 14,320 |
| Above Normal (16%) | 7,927 | 12,554 | 11,235 | 16,772 | 26,458 | 16,158 | 9,459 | 9,611 | 10,203 | 14,275 | 9,759 | 10,210 |
| Below Normal (13%) | 6,820 | 6,705 | 11,915 | 7,608 | 12,849 | 7,303 | 6,118 | 8,845 | 10,980 | 13,721 | 10,131 | 5,837 |
| Dry (24%) | 6,538 | 7,784 | 15,279 | 7,303 | 9,573 | 9,042 | 6,326 | 8,214 | 10,498 | 12,221 | 8,358 | 5,349 |
| Critical (15%) | 5,338 | 5,218 | 6,394 | 6,318 | 6,527 | 5,955 | 5,159 | 7,866 | 9,252 | 10,848 | 7,654 | 4,954 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,017 | 13,965 | 27,074 | 36,351 | 46,941 | 29,623 | 16,602 | 13,122 | 12,968 | 15,249 | 11,408 | 15,799 |
| 20% | 9,366 | 12,194 | 16,314 | 24,185 | 33,404 | 19,585 | 13,008 | 11,124 | 11,883 | 14,883 | 10,277 | 13,682 |
| 30% | 8,274 | 11,312 | 10,713 | 16,194 | 21,593 | 14,900 | 8,412 | 9,878 | 10,487 | 14,524 | 9,534 | 11,817 |
| 40% | 7,806 | 10,331 | 8,071 | 11,498 | 13,059 | 10,522 | 7,223 | 9,155 | 10,029 | 13,717 | 9,230 | 10,011 |
| 50% | 7,237 | 8,636 | 6,976 | 8,852 | 10,588 | 8,716 | 6,016 | 8,700 | 9,542 | 12,545 | 8,865 | 6,859 |
| 60% | 6,456 | 7,426 | 6,322 | 7,152 | 8,534 | 7,750 | 5,487 | 8,064 | 9,227 | 11,841 | 8,515 | 5,768 |
| 70% | 6,065 | 6,557 | 5,808 | 6,579 | 7,537 | 6,651 | 5,298 | 7,736 | 8,671 | 10,986 | 8,382 | 5,575 |
| 80% | 5,695 | 6,000 | 5,456 | 5,870 | 5,964 | 5,771 | 5,044 | 7,403 | 8,309 | 10,201 | 7,853 | 5,164 |
| 90% | 5,103 | 5,159 | 5,047 | 5,027 | 5,168 | 5,331 | 4,659 | 6,602 | 7,928 | 9,360 | 7,624 | 4,651 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,421 | 9,496 | 11,959 | 15,865 | 19,096 | 14,587 | 9,072 | 9,397 | 10,056 | 12,545 | 9,124 | 8,960 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,835 | 12,325 | 12,419 | 29,900 | 31,303 | 25,200 | 14,016 | 11,059 | 9,412 | 12,682 | 9,768 | 14,299 |
| Above Normal (16%) | 8,260 | 12,531 | 11,127 | 16,587 | 26,265 | 15,956 | 9,460 | 9,610 | 10,181 | 14,173 | 9,728 | 10,196 |
| Below Normal (13%) | 6,810 | 6,758 | 11,913 | 7,653 | 12,611 | 7,306 | 6,075 | 8,849 | 10,892 | 13,601 | 10,206 | 5,927 |
| Dry (24%) | 6,658 | 7,832 | 15,244 | 7,311 | 9,520 | 9,089 | 6,353 | 8,254 | 10,571 | 11,991 | 8,268 | 5,310 |
| Critical (15%) | 5,281 | 5,366 | 6,428 | 6,460 | 6,789 | 5,945 | 5,221 | 7,973 | 9,690 | 10,444 | 7,511 | 4,915 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7 | 49 | 111 | 2 | -10 | -1 | 0 | -26 | -47 | -179 | 101 | -76 |
| 20% | 431 | 168 | -745 | -5 | -2 | 0 | 0 | 22 | 195 | -70 | -19 | -5 |
| 30% | 112 | -15 | 0 | -1 | -150 | 335 | -116 | -1 | 71 | -202 | -47 | 2 |
| 40% | 124 | 95 | 0 | -151 | 1 | 0 | 162 | 50 | 148 | -227 | 47 | -1 |
| 50% | 334 | -3 | 181 | 0 | 26 | 0 | 28 | 121 | 78 | -336 | -69 | 84 |
| 60% | 155 | 52 | -5 | 0 | 87 | 3 | -54 | 1 | 91 | -325 | -48 | -67 |
| 70% | 114 | 177 | 48 | 184 | 0 | 0 | 6 | 0 | -50 | -152 | 7 | 26 |
| 80% | 8 | 146 | 122 | 1 | 0 | -1 | 0 | 85 | 12 | -14 | -73 | 42 |
| 90% | -47 | 205 | 226 | 53 | -34 | -140 | 2 | -21 | 1 | -247 | -126 | 135 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 106 | 59 | -21 | -27 | -50 | -22 | 9 | 26 | 62 | -156 | -42 | -12 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 108 | 70 | -3 | -83 | -42 | 0 | -2 | 0 | -14 | -28 | -13 | -21 |
| Above Normal (16%) | 333 | -23 | -107 | -185 | -193 | -202 | 1 | 0 | -22 | -102 | -31 | -13 |
| Below Normal (13%) | -11 | 53 | -2 | 44 | -238 | 2 | -43 | 4 | -89 | -120 | 74 | 90 |
| Dry (24%) | 120 | 48 | -34 | 9 | -53 | 47 | 26 | 40 | 73 | -230 | -90 | -38 |
| Critical (15%) | -57 | 147 | 35 | 142 | 262 | -9 | 61 | 107 | 438 | -404 | -143 | -40 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-4. Sacramento River below Red Bluff Diversion Dam Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,094 | 11,251 | 30,654 | 41,231 | 47,844 | 30,095 | 16,604 | 13,637 | 14,019 | 15,143 | 11,091 | 9,587 |
| 20% | 9,087 | 7,890 | 23,214 | 25,628 | 32,156 | 19,588 | 13,006 | 11,604 | 12,690 | 14,882 | 10,172 | 8,323 |
| 30% | 8,562 | 7,216 | 11,557 | 17,517 | 22,646 | 16,748 | 8,515 | 10,466 | 11,652 | 14,422 | 9,599 | 6,220 |
| 40% | 7,394 | 7,006 | 9,146 | 13,981 | 13,804 | 10,972 | 7,283 | 9,875 | 10,578 | 13,285 | 9,274 | 6,038 |
| 50% | 6,893 | 6,621 | 7,024 | 9,111 | 10,808 | 9,079 | 6,050 | 9,339 | 9,897 | 12,614 | 8,943 | 5,660 |
| 60% | 6,486 | 6,185 | 6,320 | 7,475 | 8,585 | 7,922 | 5,627 | 8,679 | 9,437 | 11,439 | 8,719 | 5,415 |
| 70% | 6,245 | 5,822 | 5,730 | 6,631 | 7,552 | 6,947 | 5,271 | 8,051 | 9,027 | 11,078 | 8,427 | 5,277 |
| 80% | 5,889 | 5,580 | 5,343 | 5,880 | 6,216 | 5,854 | 4,966 | 7,626 | 8,430 | 10,276 | 8,036 | 4,951 |
| 90% | 5,048 | 5,263 | 4,928 | 4,948 | 5,381 | 5,465 | 4,589 | 7,123 | 7,905 | 9,373 | 7,722 | 4,491 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,340 | 7,880 | 12,937 | 16,664 | 19,500 | 15,011 | 9,122 | 9,847 | 10,550 | 12,510 | 9,209 | 6,451 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,619 | 8,715 | 14,507 | 31,071 | 31,509 | 25,285 | 14,115 | 11,289 | 9,497 | 12,581 | 9,925 | 8,559 |
| Above Normal (16%) | 8,009 | 9,467 | 12,472 | 18,132 | 27,628 | 16,837 | 9,455 | 10,081 | 10,510 | 14,262 | 9,707 | 5,479 |
| Below Normal (13%) | 6,768 | 6,695 | 11,938 | 8,997 | 13,851 | 8,149 | 6,478 | 9,630 | 12,102 | 13,667 | 10,128 | 6,311 |
| Dry (24%) | 6,735 | 7,875 | 15,651 | 7,421 | 9,569 | 9,421 | 6,297 | 9,004 | 11,447 | 11,951 | 8,448 | 5,253 |
| Critical (15%) | 5,374 | 5,449 | 6,431 | 6,293 | 6,407 | 6,376 | 5,075 | 8,072 | 9,956 | 10,328 | 7,542 | 5,058 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,705 | 11,122 | 30,177 | 39,517 | 47,844 | 30,071 | 16,604 | 13,460 | 13,687 | 14,948 | 10,764 | 9,379 |
| 20% | 8,737 | 9,388 | 21,061 | 25,647 | 32,306 | 19,531 | 13,047 | 11,429 | 12,459 | 14,663 | 9,972 | 8,148 |
| 30% | 8,049 | 8,178 | 11,623 | 17,083 | 23,110 | 16,487 | 8,494 | 10,372 | 11,532 | 13,784 | 9,534 | 7,595 |
| 40% | 7,331 | 7,808 | 9,138 | 13,869 | 13,475 | 10,870 | 7,305 | 9,772 | 10,465 | 13,008 | 9,171 | 6,511 |
| 50% | 7,013 | 7,323 | 7,033 | 9,371 | 10,838 | 9,112 | 6,890 | 9,342 | 10,037 | 12,017 | 8,933 | 5,875 |
| 60% | 6,537 | 7,070 | 6,707 | 7,538 | 8,583 | 7,911 | 5,898 | 8,673 | 9,652 | 11,152 | 8,595 | 5,520 |
| 70% | 6,144 | 6,666 | 6,019 | 6,772 | 7,660 | 7,290 | 5,474 | 8,069 | 9,000 | 10,591 | 8,270 | 5,270 |
| 80% | 5,789 | 6,141 | 5,653 | 5,961 | 6,165 | 5,871 | 5,128 | 7,450 | 8,553 | 9,927 | 7,797 | 4,737 |
| 90% | 5,386 | 5,614 | 5,259 | 5,026 | 5,413 | 5,234 | 4,724 | 6,957 | 7,959 | 9,296 | 7,587 | 4,517 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,246 | 8,530 | 12,821 | 16,550 | 19,644 | 14,991 | 9,231 | 9,693 | 10,550 | 12,161 | 9,051 | 6,592 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,541 | 9,366 | 14,414 | 30,586 | 31,792 | 25,452 | 14,203 | 10,979 | 9,658 | 12,782 | 9,954 | 8,515 |
| Above Normal (16%) | 7,779 | 10,704 | 11,973 | 17,705 | 27,642 | 17,026 | 9,625 | 9,966 | 10,773 | 14,044 | 9,798 | 7,512 |
| Below Normal (13%) | 6,807 | 7,134 | 12,088 | 8,824 | 13,897 | 8,154 | 6,438 | 9,452 | 12,154 | 12,911 | 9,342 | 5,533 |
| Dry (24%) | 6,677 | 8,392 | 15,444 | 7,512 | 9,649 | 9,143 | 6,457 | 8,932 | 11,121 | 11,107 | 8,280 | 5,127 |
| Critical (15%) | 5,216 | 5,875 | 6,587 | 7,031 | 6,583 | 6,136 | 5,216 | 8,097 | 9,818 | 9,846 | 7,299 | 4,838 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -389 | -129 | -477 | -1,714 | 0 | -24 | 0 | -177 | -332 | -195 | -328 | -208 |
| 20% | -350 | 1,498 | -2,153 | 19 | 149 | -57 | 41 | -175 | -231 | -219 | -200 | -176 |
| 30% | -513 | 962 | 66 | -434 | 464 | -261 | -21 | -95 | -119 | -638 | -65 | 1,375 |
| 40% | -63 | 802 | -9 | -112 | -329 | -102 | 22 | -103 | -113 | -278 | -103 | 473 |
| 50% | 120 | 702 | 9 | 259 | 29 | 32 | 840 | 3 | 140 | -597 | -10 | 215 |
| 60% | 51 | 885 | 387 | 64 | -2 | -11 | 271 | -5 | 215 | -287 | -124 | 106 |
| 70% | -102 | 844 | 289 | 141 | 108 | 343 | 203 | 18 | -27 | -487 | -157 | -7 |
| 80% | -100 | 560 | 310 | 81 | -51 | 17 | 161 | -176 | 123 | -349 | -239 | -214 |
| 90% | 339 | 351 | 331 | 78 | 32 | -231 | 135 | -166 | 54 | -77 | -135 | 26 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -93 | 650 | -116 | -114 | 143 | -20 | 109 | -154 | 0 | -349 | -158 | 141 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -78 | 650 | -94 | -485 | 283 | 167 | 88 | -310 | 161 | 201 | 29 | -44 |
| Above Normal (16%) | -230 | 1,237 | -500 | -426 | 14 | 188 | 169 | -114 | 263 | -219 | 90 | 2,033 |
| Below Normal (13%) | 39 | 440 | 150 | -172 | 46 | 4 | -40 | -178 | 51 | -756 | -786 | -778 |
| Dry (24%) | -59 | 517 | -207 | 91 | 80 | -278 | 160 | -72 | -326 | -844 | -167 | -127 |
| Critical (15%) | -158 | 426 | 156 | 738 | 176 | -241 | 141 | 25 | -138 | -483 | -242 | -219 |

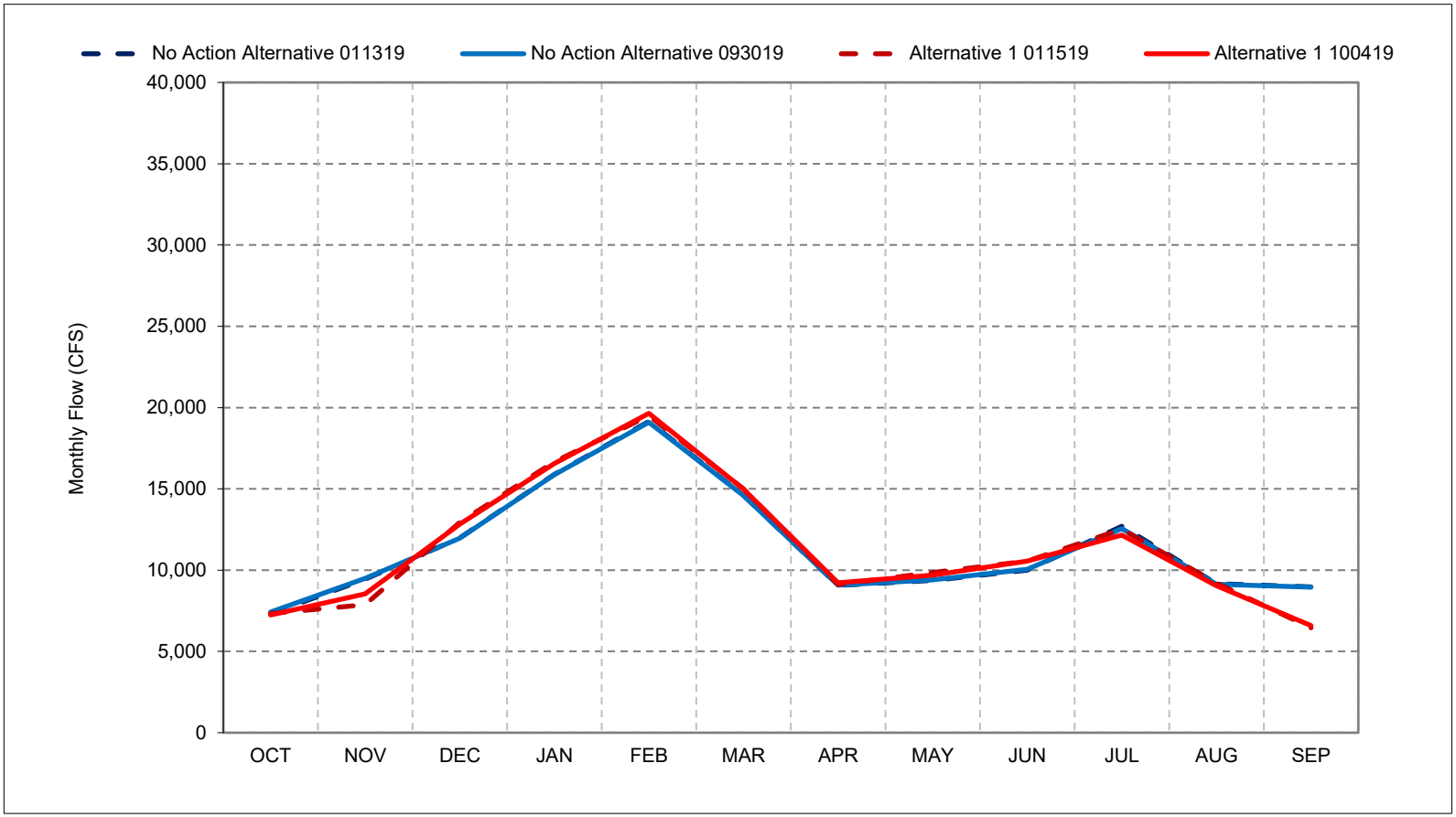
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-1. Sacramento River below Red Bluff Diversion Dam Flow, Long-Term Average Flow

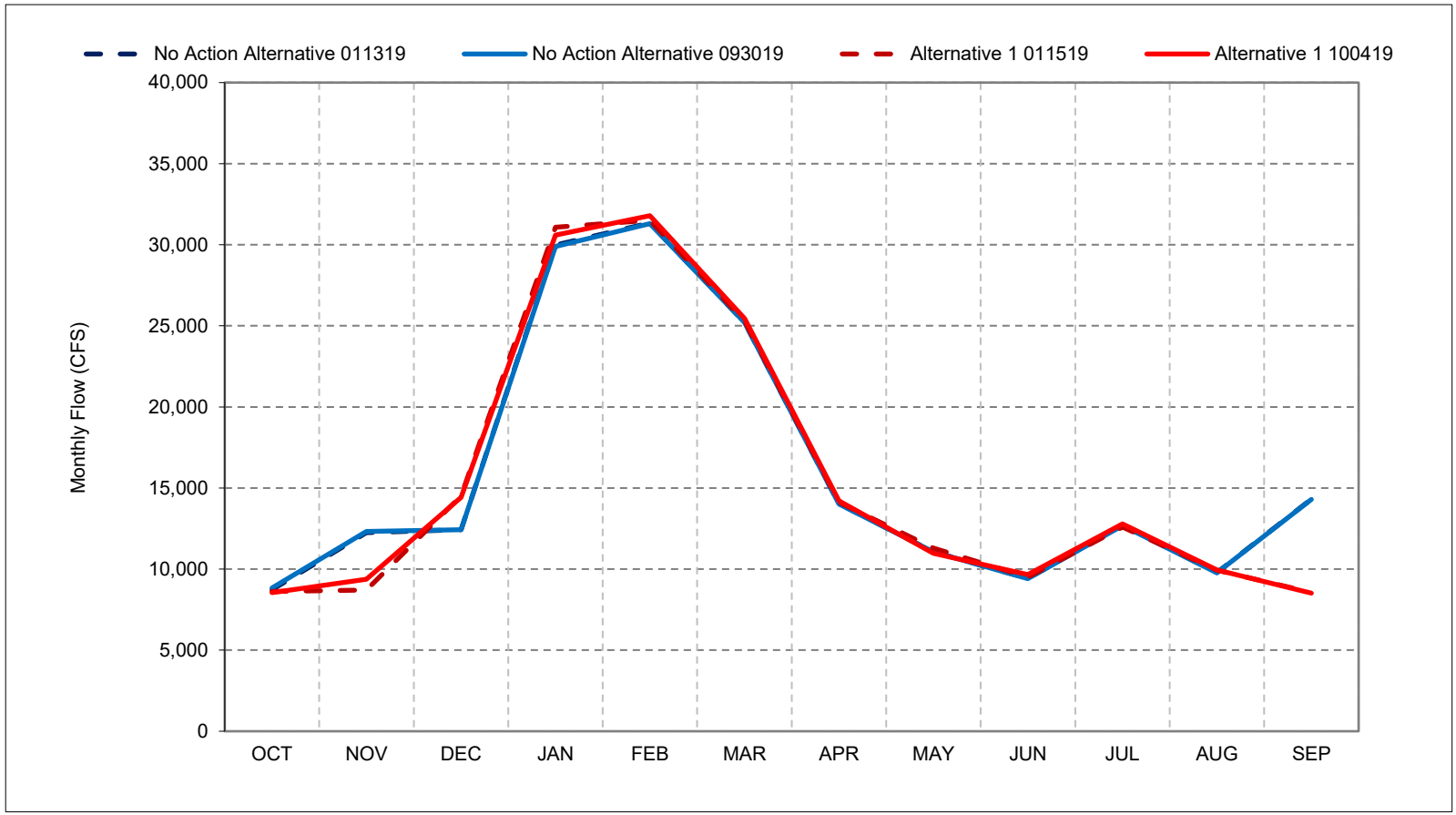



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-2. Sacramento River below Red Bluff Diversion Dam Flow, Wet Year Average Flow

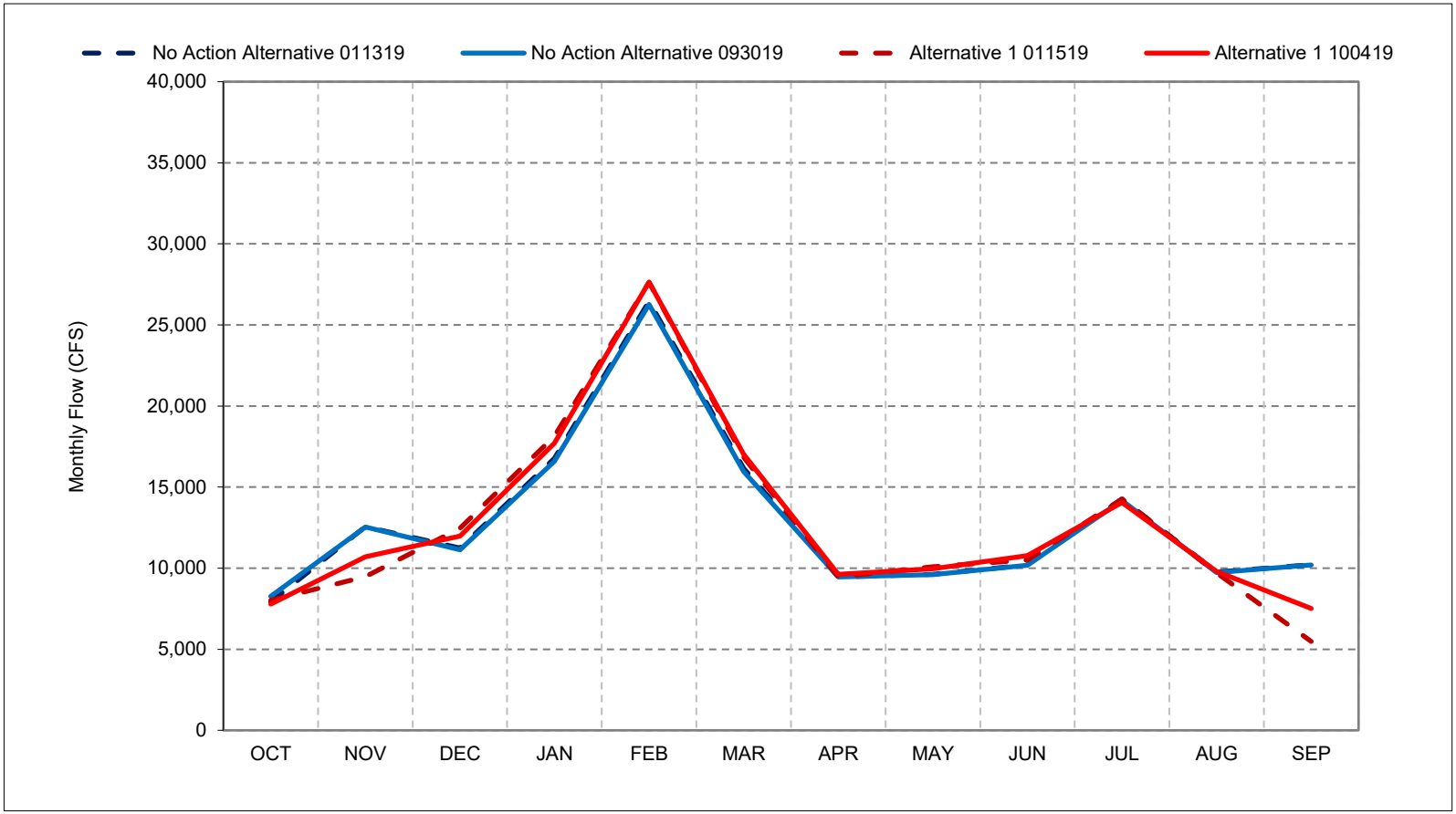



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-3. Sacramento River below Red Bluff Diversion Dam Flow, Above Normal Year Average F

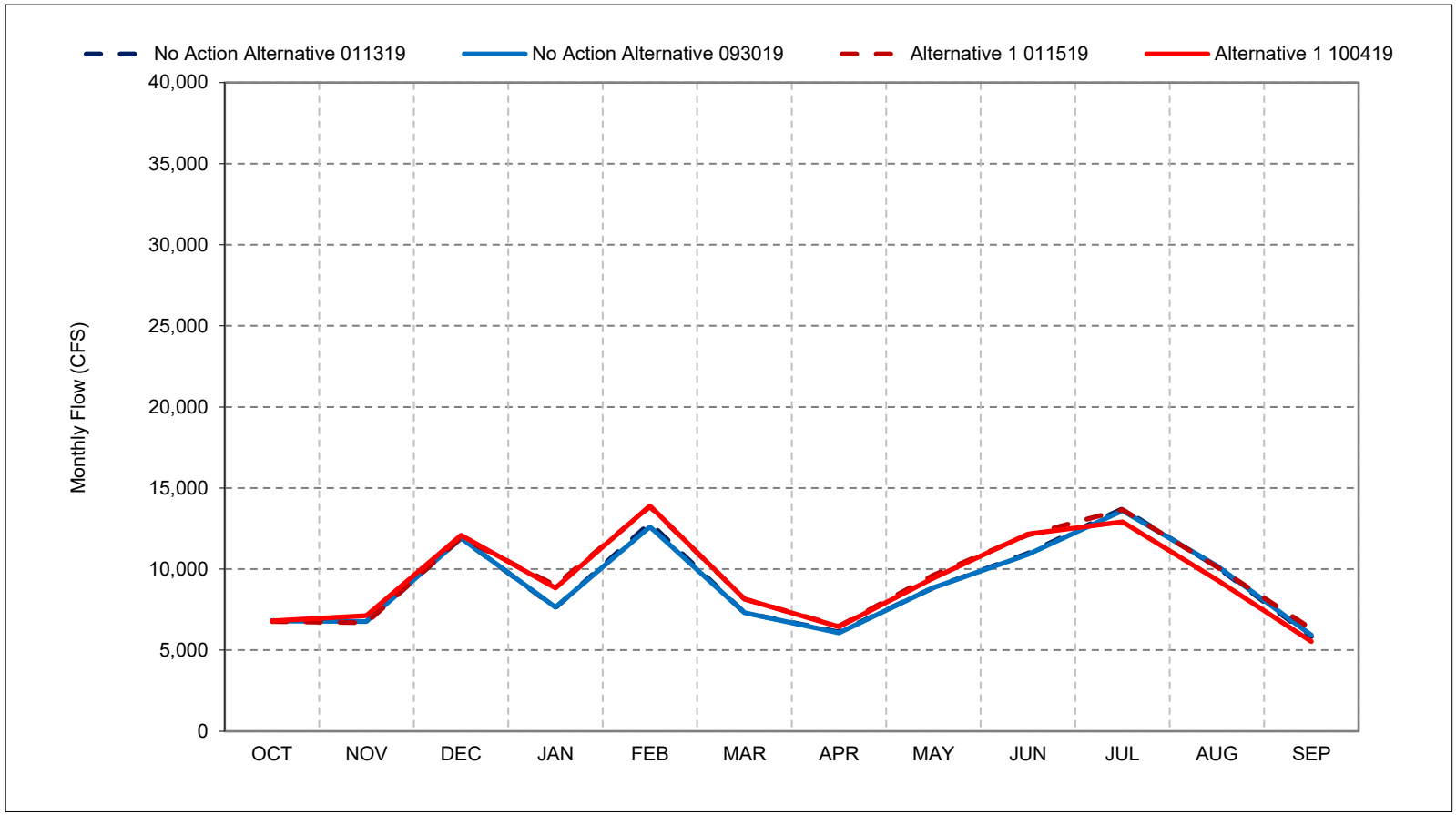



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-4. Sacramento River below Red Bluff Diversion Dam Flow, Below Normal Year Average F

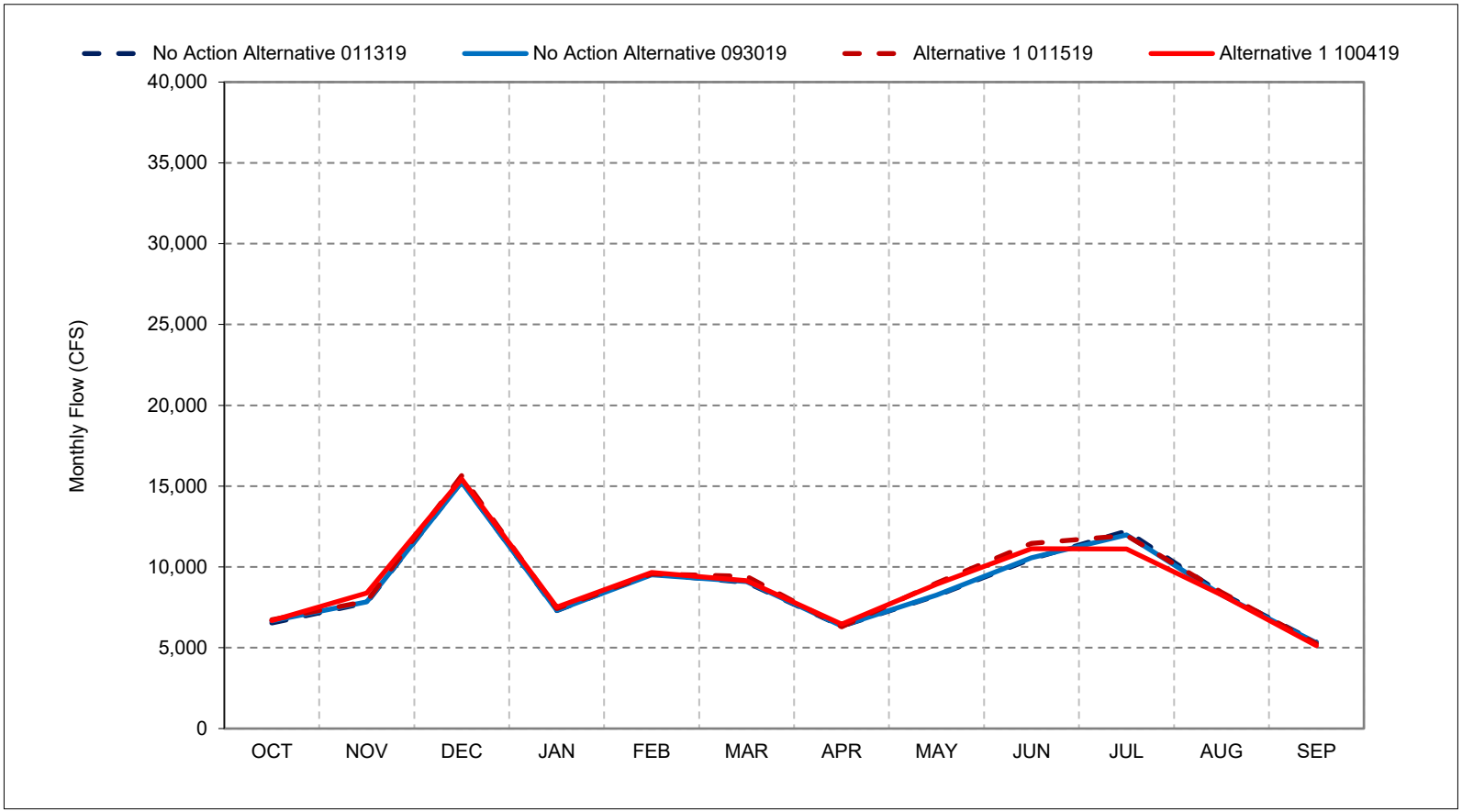



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-5. Sacramento River below Red Bluff Diversion Dam Flow, Dry Year Average Flow

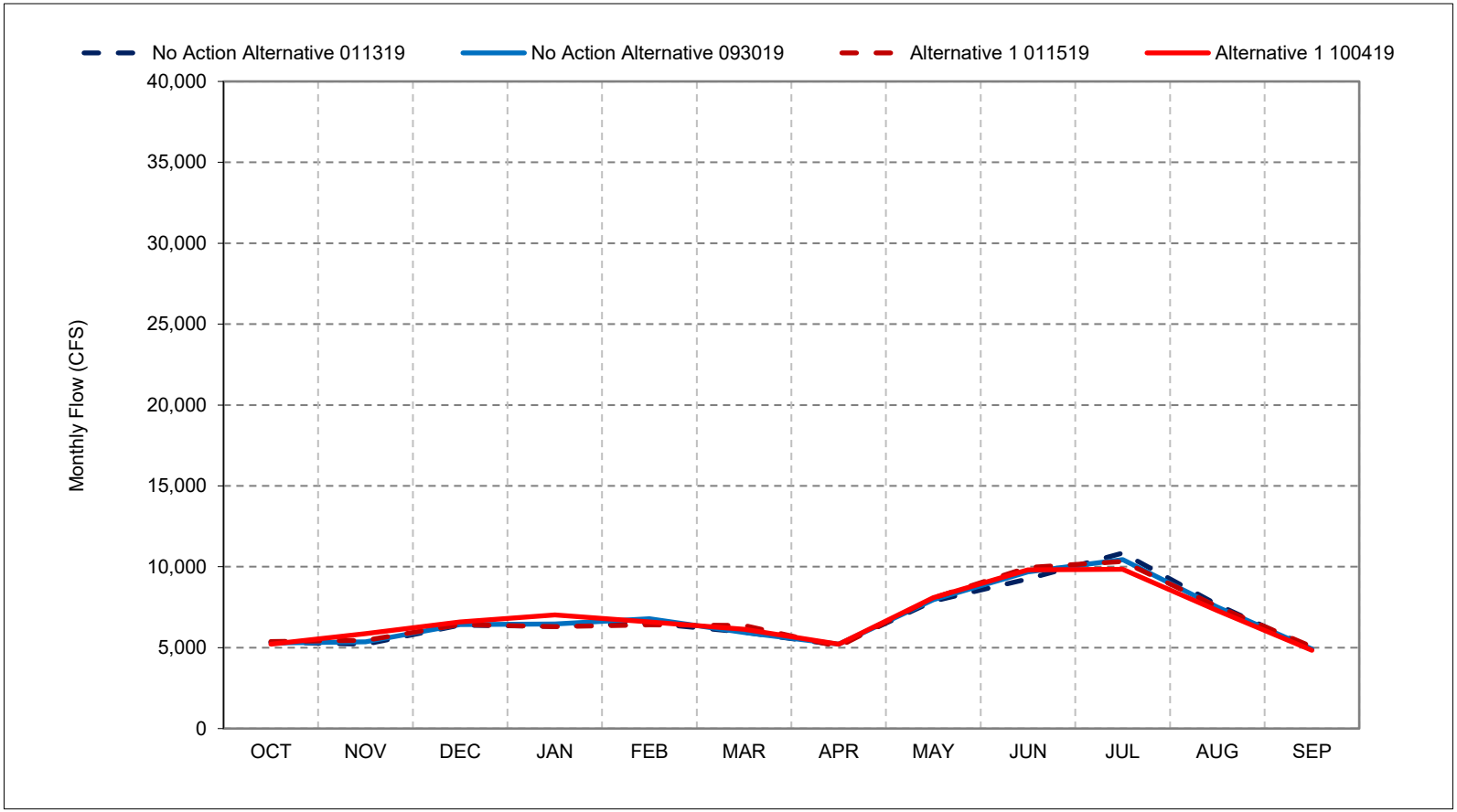



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-6. Sacramento River below Red Bluff Diversion Dam Flow, Critical Year Average Flow

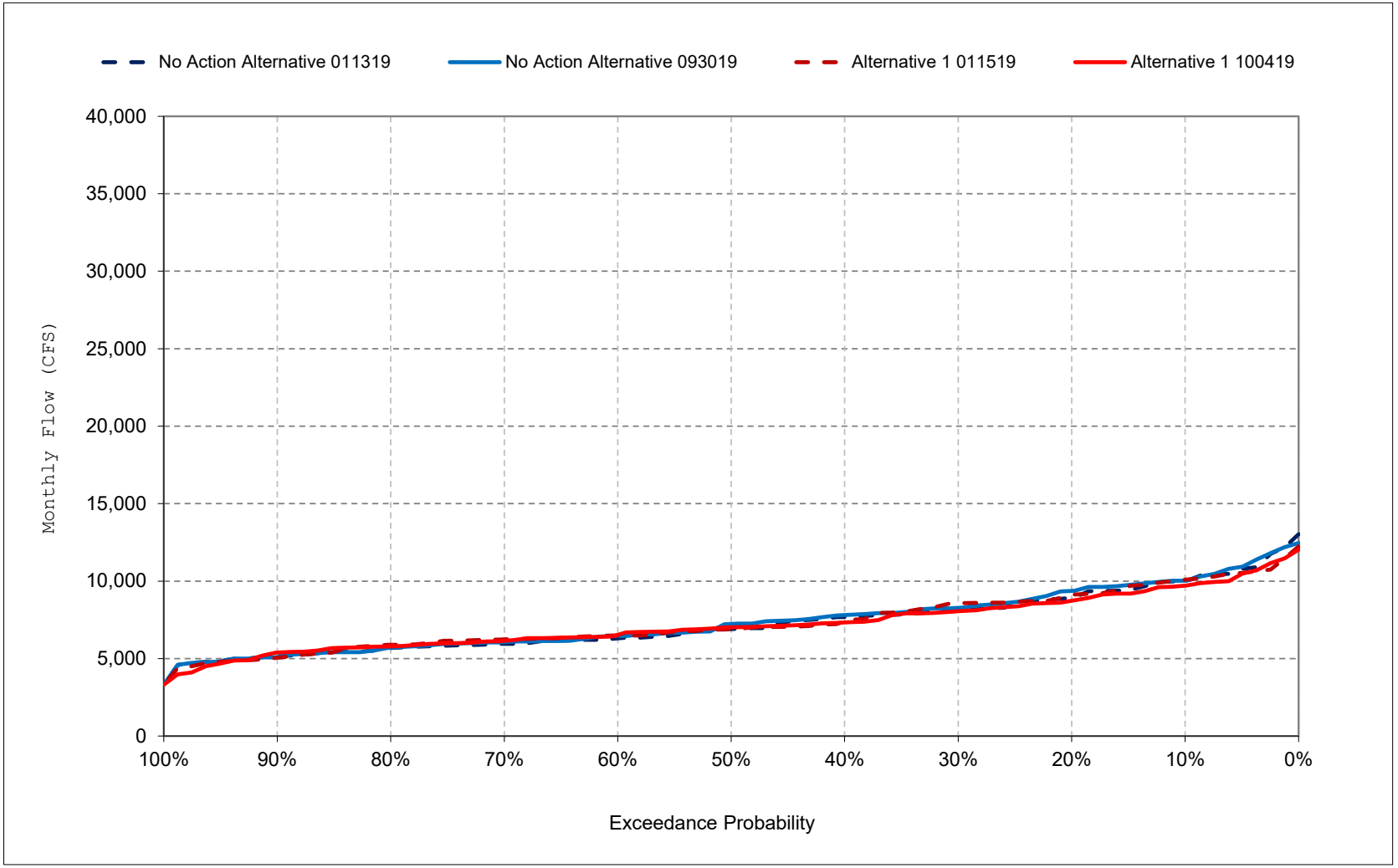



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

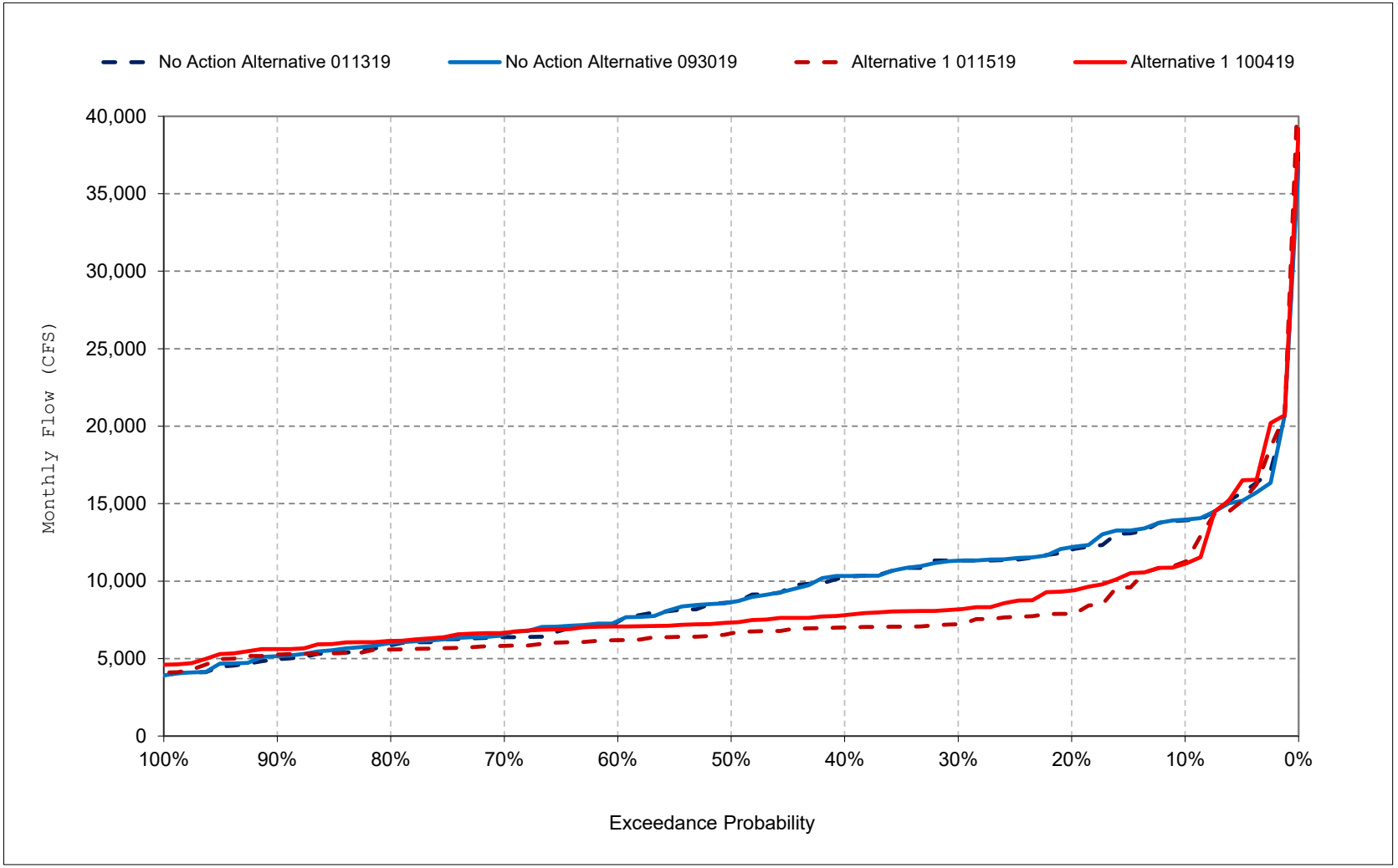
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-7. Sacramento River below Red Bluff Diversion Dam Flow, October**



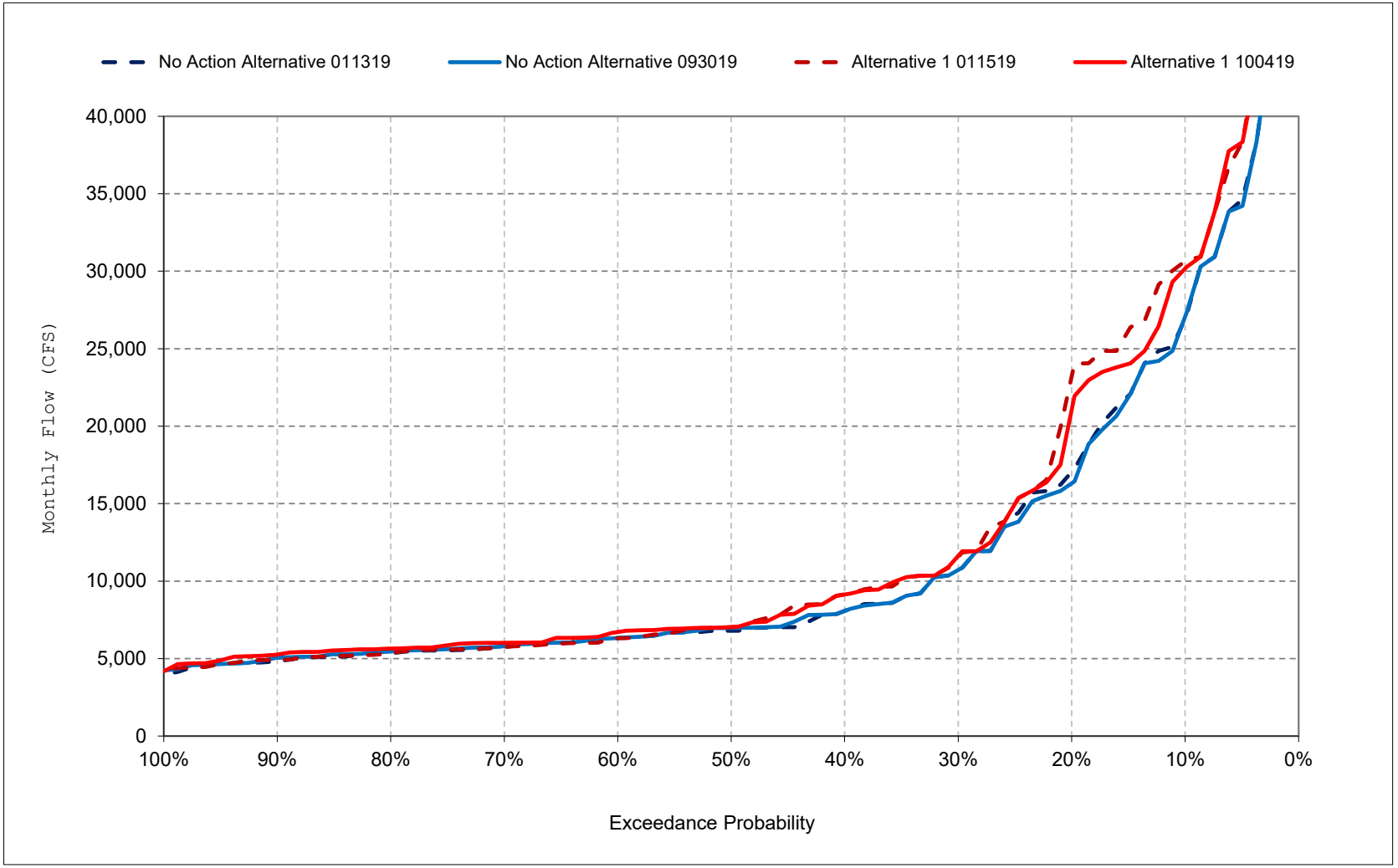

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-8. Sacramento River below Red Bluff Diversion Dam Flow, November**



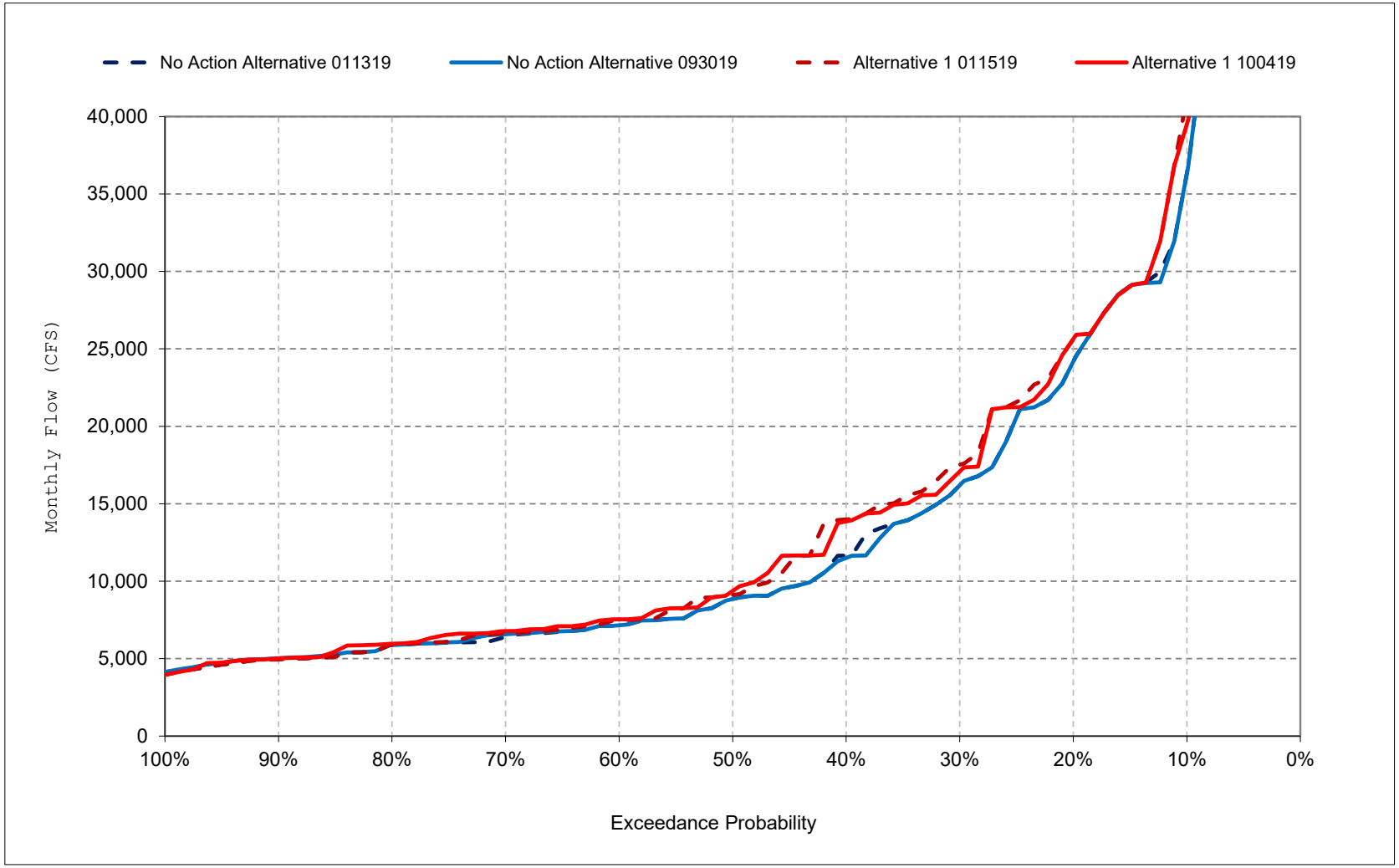

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-9. Sacramento River below Red Bluff Diversion Dam Flow, December**



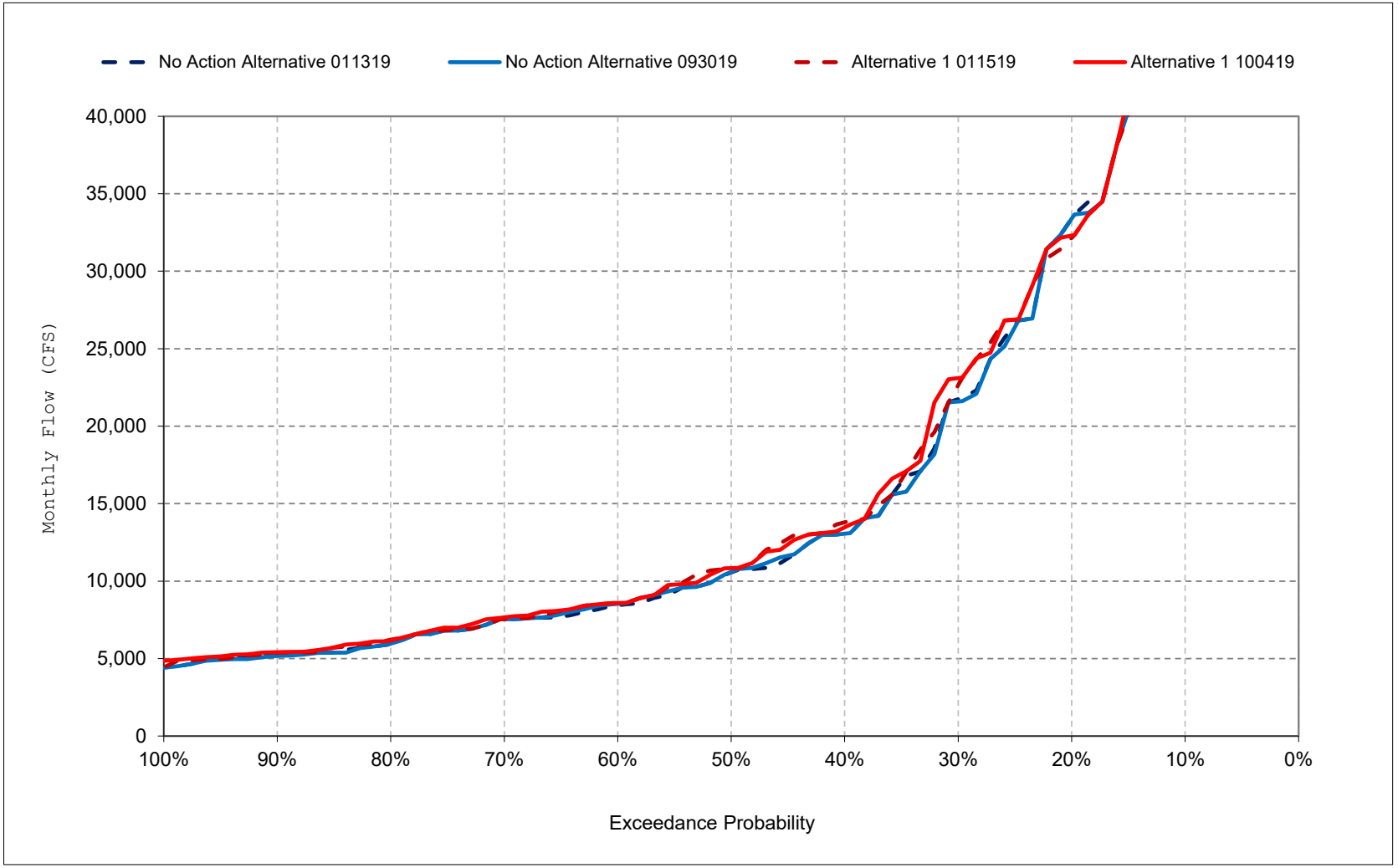

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-10. Sacramento River below Red Bluff Diversion Dam Flow, January**



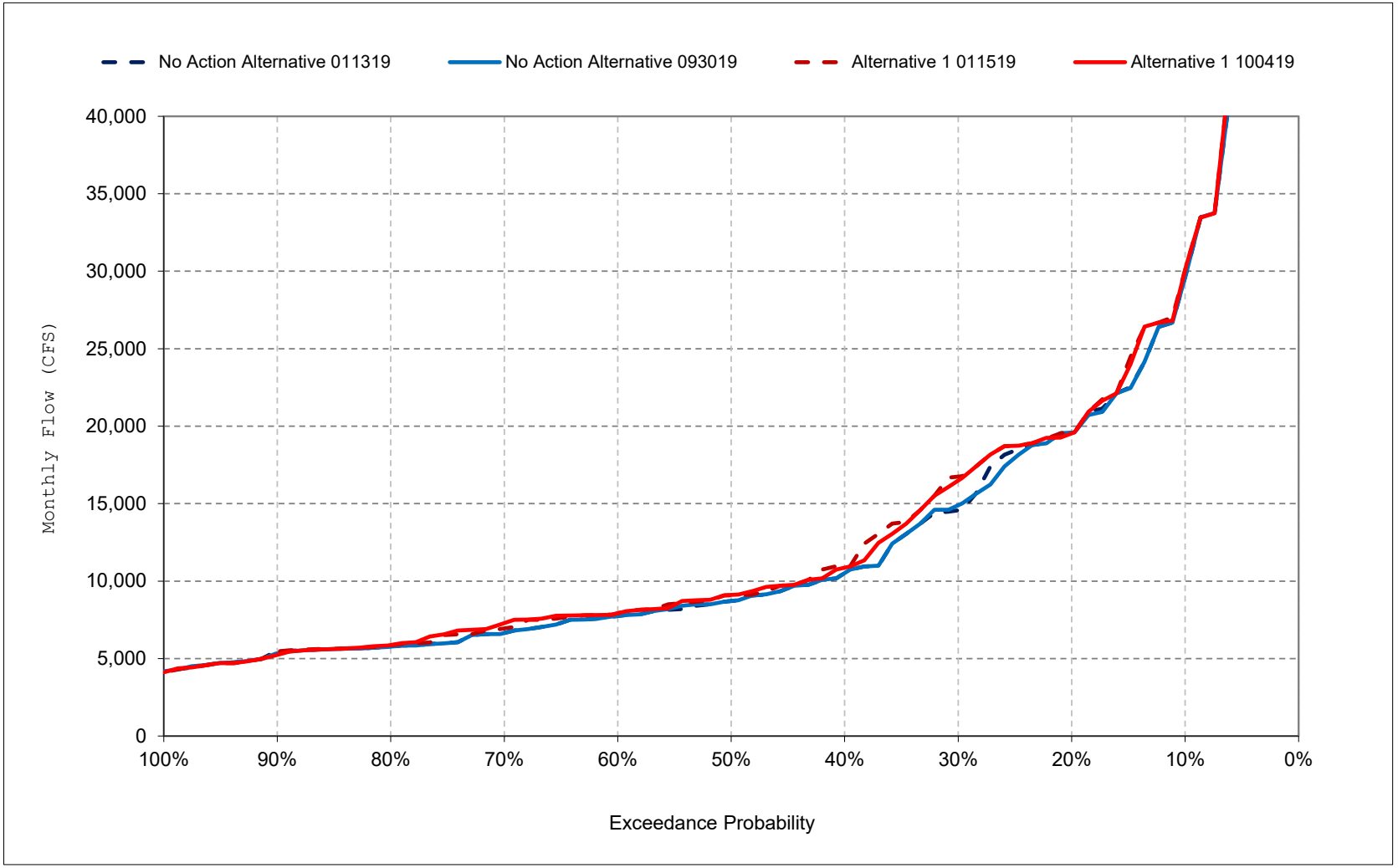

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-11. Sacramento River below Red Bluff Diversion Dam Flow, February**



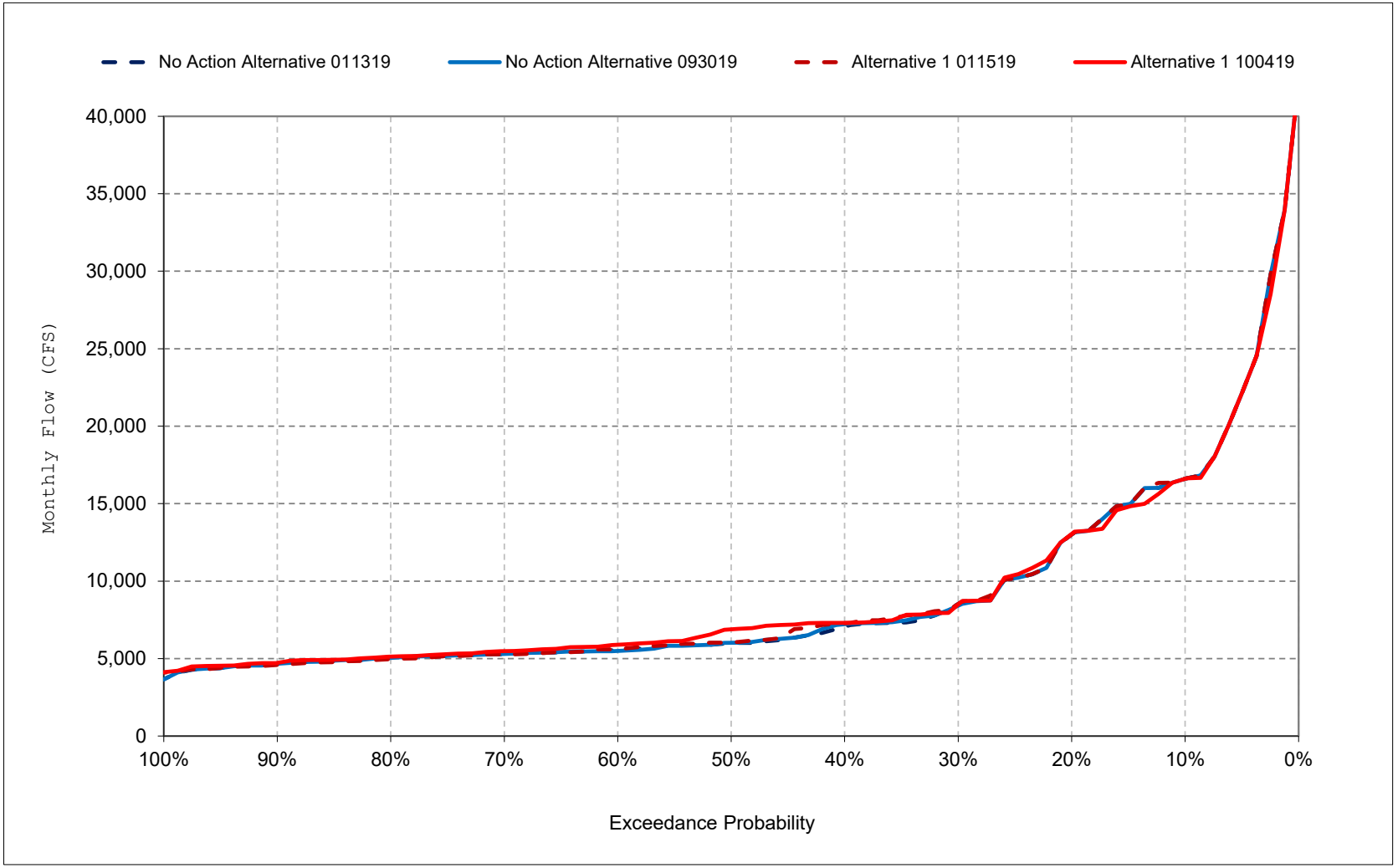

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-12. Sacramento River below Red Bluff Diversion Dam Flow, March**



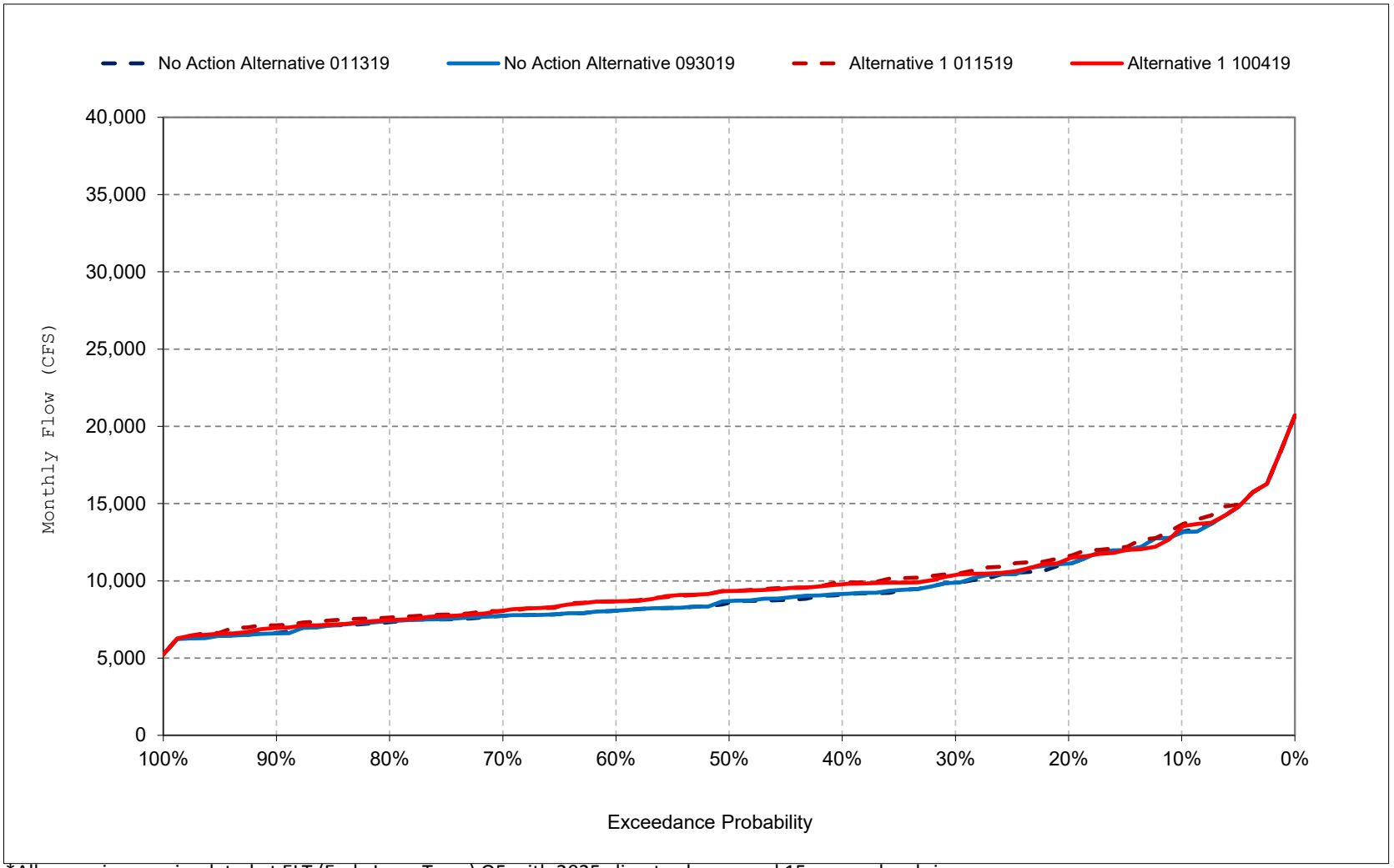

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-13. Sacramento River below Red Bluff Diversion Dam Flow, April**



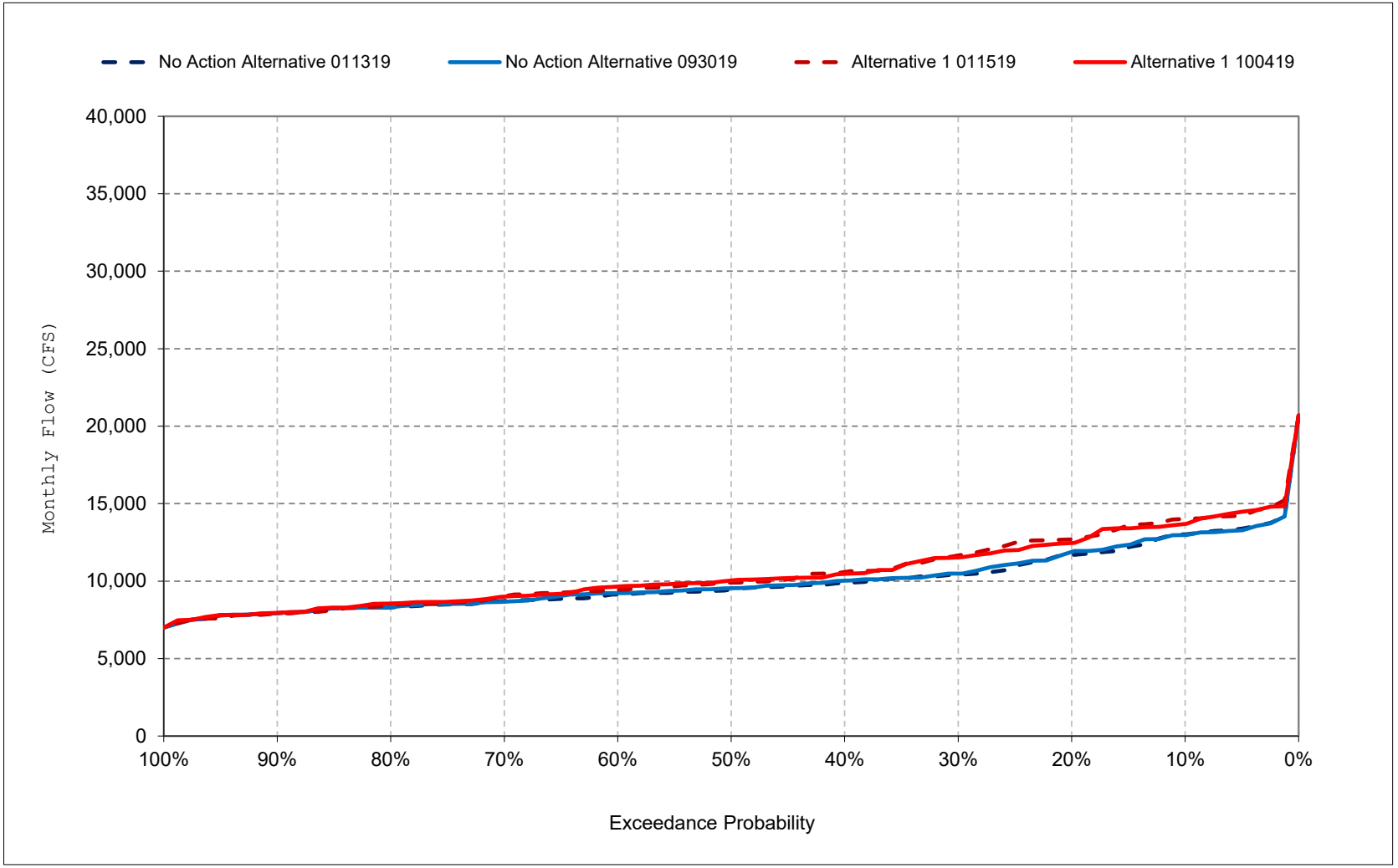

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-14. Sacramento River below Red Bluff Diversion Dam Flow, May**



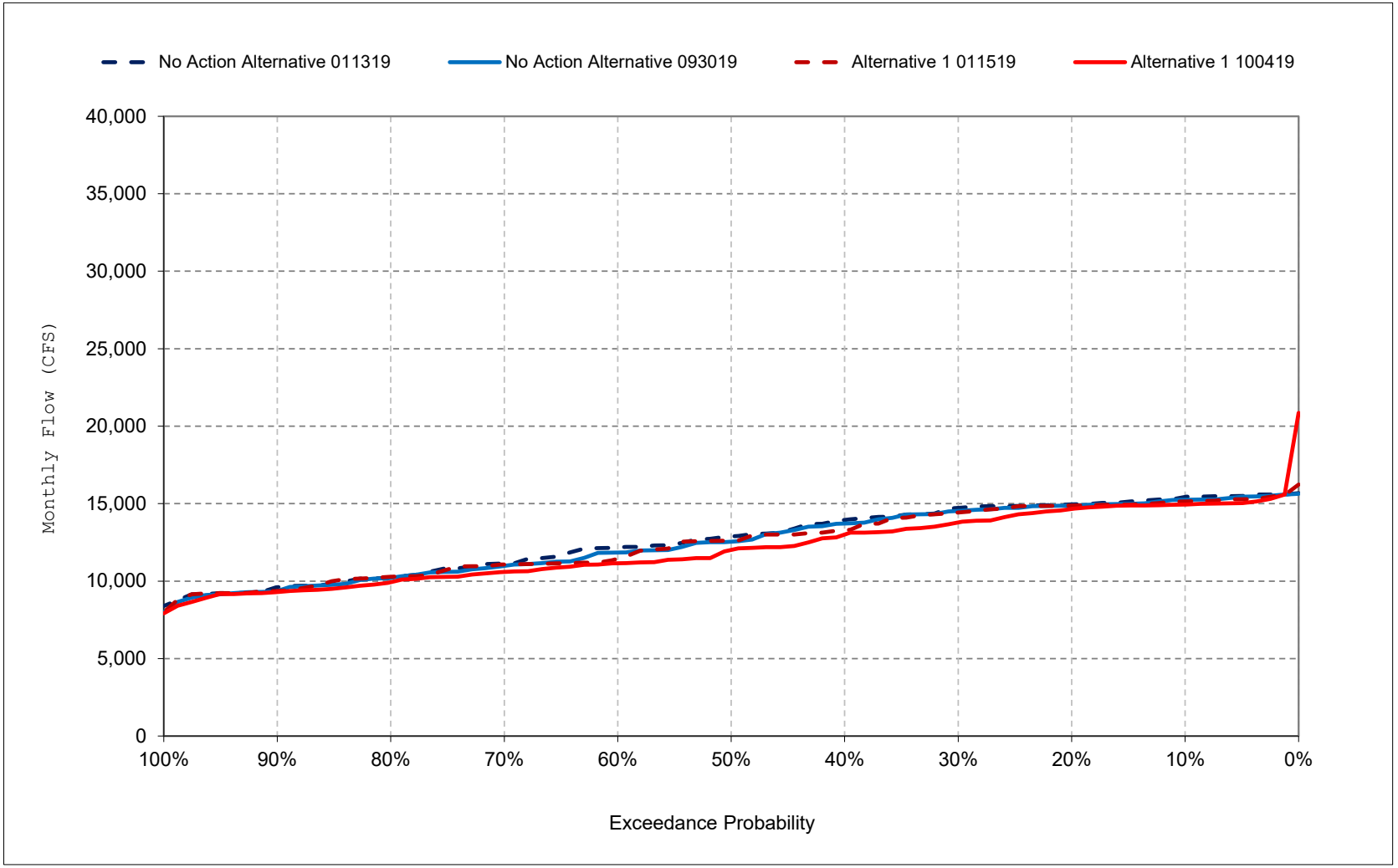

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-15. Sacramento River below Red Bluff Diversion Dam Flow, June**



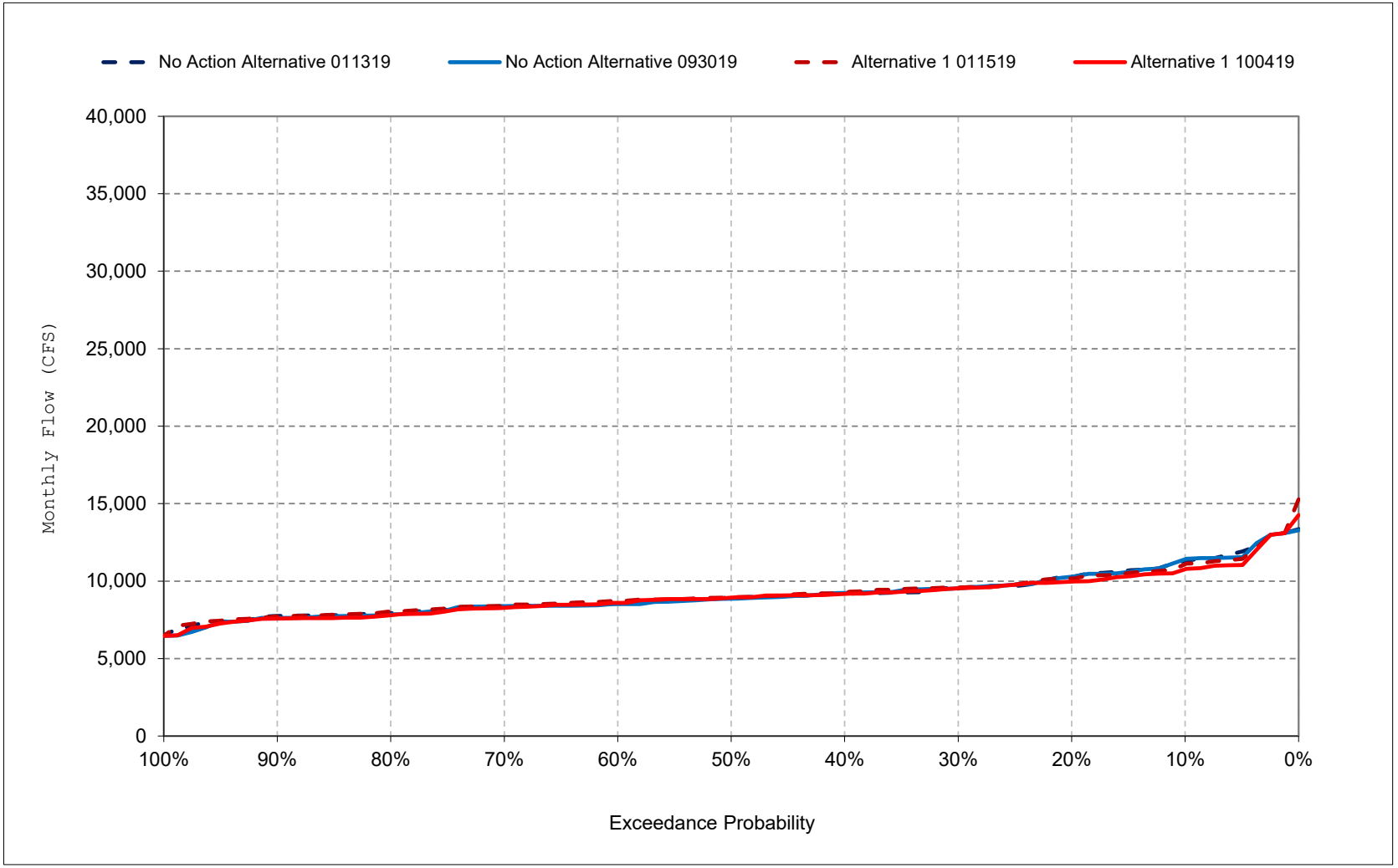

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-16. Sacramento River below Red Bluff Diversion Dam Flow, July**



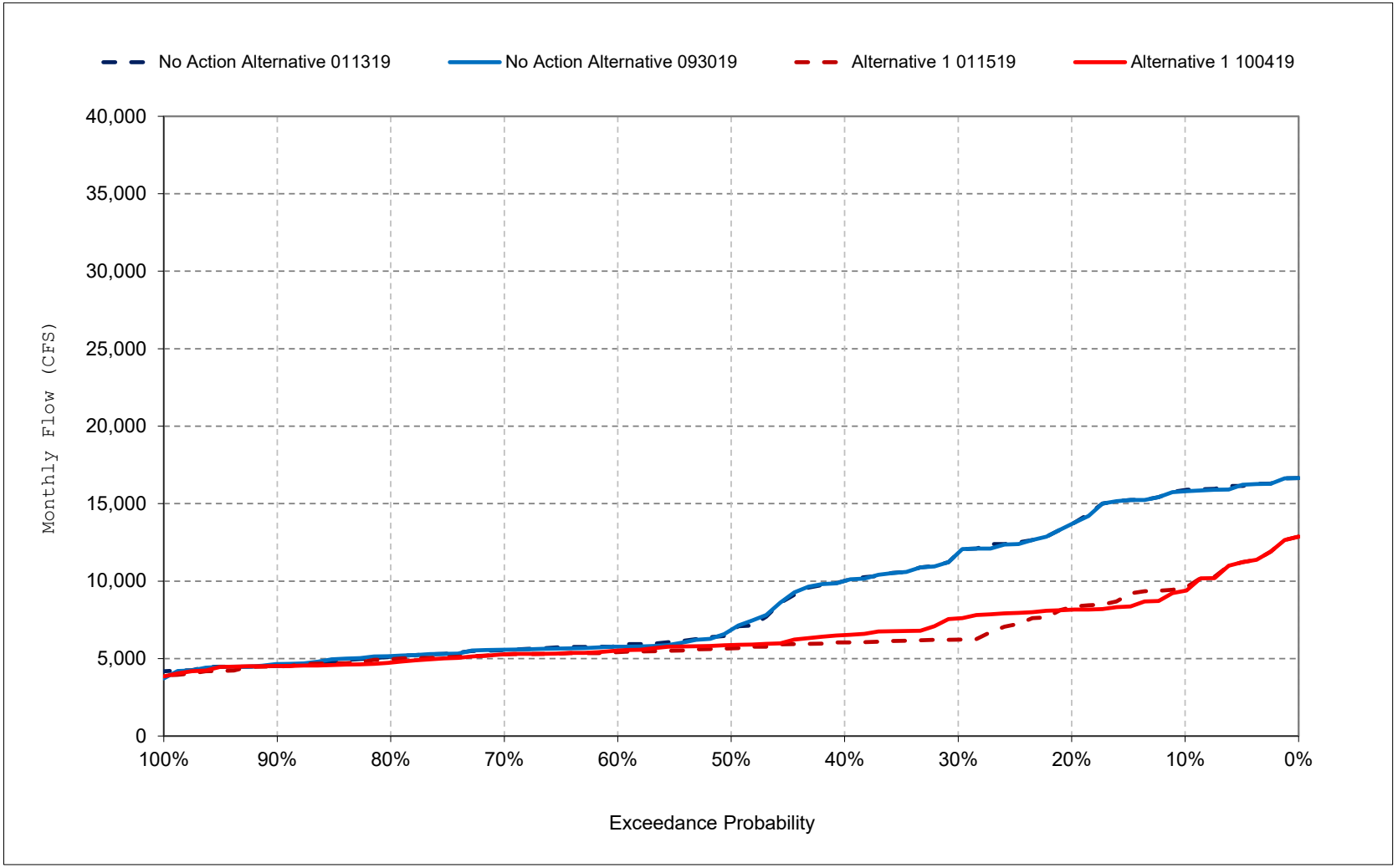

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-17. Sacramento River below Red Bluff Diversion Dam Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-18. Sacramento River below Red Bluff Diversion Dam Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-1. Sacramento River Flow at Hamilton City, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,524 | 14,328 | 30,407 | 40,893 | 51,938 | 33,411 | 19,893 | 13,731 | 10,553 | 12,940 | 9,381 | 15,452 |
| 20% | 8,682 | 11,931 | 19,454 | 26,965 | 36,955 | 22,491 | 15,438 | 11,335 | 9,481 | 12,532 | 8,111 | 13,186 |
| 30% | 7,536 | 11,343 | 11,974 | 18,703 | 23,981 | 17,461 | 9,650 | 8,602 | 8,701 | 12,287 | 7,628 | 11,325 |
| 40% | 7,051 | 10,435 | 9,406 | 13,004 | 15,886 | 12,296 | 7,812 | 7,444 | 8,000 | 11,626 | 7,238 | 9,593 |
| 50% | 6,301 | 8,990 | 7,689 | 10,368 | 11,817 | 10,482 | 7,008 | 7,030 | 7,384 | 10,556 | 6,973 | 6,281 |
| 60% | 5,760 | 7,642 | 6,671 | 8,240 | 9,996 | 9,142 | 6,402 | 6,770 | 7,112 | 9,869 | 6,612 | 5,266 |
| 70% | 5,424 | 6,547 | 6,236 | 7,004 | 8,562 | 7,906 | 5,978 | 6,456 | 6,847 | 8,706 | 6,440 | 4,991 |
| 80% | 5,136 | 5,686 | 5,536 | 6,324 | 7,193 | 6,759 | 5,544 | 5,943 | 6,634 | 7,928 | 6,126 | 4,585 |
| 90% | 4,647 | 4,764 | 4,972 | 5,418 | 5,746 | 6,105 | 5,031 | 5,628 | 6,183 | 7,205 | 5,838 | 4,026 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,818 | 9,677 | 13,293 | 17,980 | 21,539 | 16,715 | 10,435 | 8,497 | 8,101 | 10,326 | 7,230 | 8,472 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,219 | 12,548 | 13,755 | 33,783 | 35,092 | 28,342 | 16,376 | 11,144 | 8,207 | 10,450 | 7,770 | 13,867 |
| Above Normal (16%) | 7,425 | 12,867 | 12,385 | 19,430 | 29,641 | 18,802 | 11,052 | 8,831 | 8,368 | 11,840 | 7,780 | 9,701 |
| Below Normal (13%) | 6,440 | 6,788 | 13,003 | 8,908 | 14,535 | 8,530 | 7,083 | 7,429 | 8,757 | 11,240 | 8,168 | 5,345 |
| Dry (24%) | 5,989 | 8,176 | 17,167 | 8,112 | 11,042 | 10,647 | 7,244 | 6,779 | 8,089 | 9,728 | 6,468 | 4,801 |
| Critical (15%) | 4,854 | 5,153 | 7,089 | 6,934 | 7,312 | 6,875 | 5,290 | 6,238 | 7,000 | 8,573 | 5,874 | 4,436 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,690 | 11,929 | 34,073 | 46,659 | 52,522 | 33,860 | 19,894 | 13,755 | 11,595 | 12,682 | 9,029 | 9,118 |
| 20% | 8,499 | 8,618 | 25,165 | 28,515 | 35,438 | 23,142 | 15,429 | 11,547 | 10,555 | 12,461 | 8,137 | 7,829 |
| 30% | 7,885 | 7,515 | 12,874 | 19,733 | 24,884 | 19,894 | 9,896 | 9,317 | 9,549 | 12,049 | 7,602 | 5,743 |
| 40% | 6,737 | 7,046 | 10,296 | 16,609 | 16,119 | 13,184 | 8,087 | 8,445 | 8,713 | 11,151 | 7,287 | 5,440 |
| 50% | 6,401 | 6,706 | 7,868 | 10,952 | 12,567 | 11,204 | 7,121 | 7,821 | 8,223 | 10,318 | 7,003 | 5,142 |
| 60% | 5,913 | 6,108 | 6,631 | 8,493 | 10,223 | 9,304 | 6,454 | 7,144 | 7,493 | 9,063 | 6,748 | 4,913 |
| 70% | 5,679 | 5,686 | 5,988 | 7,306 | 8,668 | 8,150 | 5,957 | 6,780 | 7,101 | 8,650 | 6,510 | 4,741 |
| 80% | 5,358 | 5,490 | 5,535 | 6,320 | 7,095 | 6,996 | 5,512 | 6,487 | 6,850 | 7,906 | 6,142 | 4,414 |
| 90% | 4,547 | 5,093 | 5,052 | 5,420 | 5,941 | 6,507 | 4,953 | 5,937 | 6,184 | 7,163 | 5,928 | 3,958 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,856 | 8,130 | 14,251 | 18,753 | 21,892 | 17,117 | 10,495 | 8,963 | 8,653 | 10,133 | 7,276 | 5,954 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,125 | 9,018 | 15,840 | 34,872 | 35,256 | 28,427 | 16,473 | 11,370 | 8,272 | 10,330 | 7,912 | 8,102 |
| Above Normal (16%) | 7,520 | 9,793 | 13,627 | 20,790 | 30,810 | 19,481 | 11,048 | 9,298 | 8,669 | 11,836 | 7,728 | 4,970 |
| Below Normal (13%) | 6,396 | 6,790 | 13,026 | 10,296 | 15,537 | 9,376 | 7,443 | 8,199 | 9,872 | 11,151 | 8,164 | 5,819 |
| Dry (24%) | 6,207 | 8,278 | 17,539 | 8,230 | 11,039 | 11,025 | 7,215 | 7,555 | 9,039 | 9,458 | 6,558 | 4,705 |
| Critical (15%) | 4,889 | 5,388 | 7,126 | 6,909 | 7,192 | 7,297 | 5,207 | 6,434 | 7,699 | 8,053 | 5,789 | 4,568 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 166 | -2,399 | 3,666 | 5,766 | 584 | 449 | 1 | 24 | 1,043 | -258 | -352 | -6,335 |
| 20% | -182 | -3,313 | 5,711 | 1,549 | -1,517 | 651 | -9 | 212 | 1,073 | -71 | 26 | -5,356 |
| 30% | 349 | -3,829 | 900 | 1,030 | 903 | 2,433 | 246 | 715 | 848 | -238 | -27 | -5,582 |
| 40% | -315 | -3,389 | 890 | 3,605 | 233 | 888 | 275 | 1,001 | 713 | -475 | 49 | -4,153 |
| 50% | 100 | -2,284 | 180 | 585 | 751 | 722 | 113 | 791 | 838 | -239 | 30 | -1,140 |
| 60% | 152 | -1,534 | -41 | 253 | 227 | 162 | 52 | 373 | 381 | -806 | 136 | -353 |
| 70% | 255 | -861 | -249 | 302 | 106 | 243 | -21 | 323 | 254 | -56 | 70 | -250 |
| 80% | 222 | -195 | -1 | -4 | -98 | 237 | -32 | 544 | 216 | -22 | 15 | -171 |
| 90% | -99 | 329 | 80 | 2 | 196 | 401 | -78 | 310 | 1 | -41 | 90 | -68 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 38 | -1,547 | 957 | 772 | 353 | 402 | 59 | 467 | 552 | -192 | 46 | -2,518 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -94 | -3,530 | 2,085 | 1,089 | 164 | 85 | 97 | 226 | 65 | -120 | 142 | -5,764 |
| Above Normal (16%) | 95 | -3,074 | 1,243 | 1,360 | 1,169 | 679 | -3 | 467 | 301 | -4 | -52 | -4,731 |
| Below Normal (13%) | -44 | 2 | 23 | 1,389 | 1,002 | 846 | 360 | 770 | 1,115 | -89 | -4 | 474 |
| Dry (24%) | 219 | 102 | 372 | 118 | -4 | 379 | -29 | 776 | 950 | -270 | 90 | -95 |
| Critical (15%) | 35 | 235 | 37 | -25 | -120 | 422 | -83 | 196 | 699 | -520 | -86 | 132 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-2. Sacramento River Flow at Hamilton City, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,533 | 14,514 | 30,454 | 40,895 | 51,928 | 33,410 | 19,892 | 13,667 | 10,490 | 12,795 | 9,381 | 15,318 |
| 20% | 9,137 | 11,964 | 18,666 | 26,959 | 36,320 | 22,469 | 15,439 | 11,335 | 9,589 | 12,458 | 8,069 | 13,180 |
| 30% | 7,718 | 11,342 | 11,974 | 18,701 | 24,155 | 17,461 | 9,651 | 8,554 | 8,702 | 12,074 | 7,628 | 11,244 |
| 40% | 7,314 | 10,538 | 9,354 | 13,004 | 15,887 | 12,300 | 7,794 | 7,444 | 7,998 | 11,276 | 7,252 | 9,491 |
| 50% | 6,628 | 8,952 | 7,755 | 10,368 | 11,802 | 10,484 | 7,129 | 7,104 | 7,653 | 10,195 | 6,873 | 6,441 |
| 60% | 5,920 | 7,700 | 6,702 | 8,239 | 10,219 | 9,310 | 6,399 | 6,770 | 7,186 | 9,473 | 6,596 | 5,180 |
| 70% | 5,494 | 6,660 | 6,170 | 7,032 | 8,669 | 7,907 | 5,977 | 6,462 | 6,911 | 8,610 | 6,421 | 4,978 |
| 80% | 5,116 | 5,957 | 5,568 | 6,358 | 7,193 | 6,759 | 5,606 | 5,942 | 6,765 | 7,906 | 6,000 | 4,689 |
| 90% | 4,762 | 5,062 | 5,147 | 5,443 | 5,738 | 6,104 | 5,027 | 5,633 | 6,250 | 7,083 | 5,788 | 4,140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,929 | 9,736 | 13,273 | 17,954 | 21,489 | 16,693 | 10,444 | 8,521 | 8,163 | 10,170 | 7,193 | 8,464 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,327 | 12,618 | 13,752 | 33,701 | 35,050 | 28,342 | 16,373 | 11,144 | 8,195 | 10,422 | 7,757 | 13,845 |
| Above Normal (16%) | 7,758 | 12,844 | 12,277 | 19,245 | 29,447 | 18,600 | 11,053 | 8,831 | 8,346 | 11,738 | 7,749 | 9,687 |
| Below Normal (13%) | 6,429 | 6,841 | 13,002 | 8,952 | 14,297 | 8,532 | 7,040 | 7,434 | 8,670 | 11,120 | 8,241 | 5,434 |
| Dry (24%) | 6,108 | 8,224 | 17,136 | 8,121 | 10,990 | 10,694 | 7,270 | 6,820 | 8,162 | 9,498 | 6,373 | 4,762 |
| Critical (15%) | 4,826 | 5,302 | 7,123 | 7,075 | 7,574 | 6,866 | 5,351 | 6,333 | 7,432 | 8,176 | 5,776 | 4,426 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,529 | 11,628 | 33,595 | 43,813 | 52,523 | 33,844 | 19,846 | 13,031 | 11,494 | 12,531 | 8,698 | 8,927 |
| 20% | 8,476 | 9,418 | 23,477 | 28,534 | 35,439 | 22,900 | 15,436 | 10,920 | 10,232 | 12,294 | 8,040 | 7,612 |
| 30% | 7,663 | 8,347 | 12,940 | 19,297 | 25,966 | 19,460 | 9,477 | 9,170 | 9,279 | 11,405 | 7,558 | 7,114 |
| 40% | 6,954 | 7,491 | 10,171 | 16,596 | 15,909 | 12,669 | 8,858 | 8,206 | 8,794 | 10,602 | 7,177 | 5,993 |
| 50% | 6,659 | 7,194 | 7,868 | 11,157 | 12,260 | 11,290 | 7,407 | 7,819 | 8,149 | 9,583 | 6,992 | 5,316 |
| 60% | 6,292 | 6,888 | 6,989 | 8,503 | 10,224 | 9,380 | 6,862 | 7,131 | 7,629 | 8,745 | 6,709 | 5,023 |
| 70% | 5,798 | 6,408 | 6,473 | 7,474 | 8,654 | 8,422 | 6,198 | 6,636 | 7,127 | 8,219 | 6,317 | 4,760 |
| 80% | 5,502 | 5,698 | 5,761 | 6,555 | 7,352 | 7,003 | 5,708 | 6,372 | 6,843 | 7,602 | 5,914 | 4,338 |
| 90% | 4,949 | 5,408 | 5,481 | 5,440 | 5,986 | 6,364 | 5,235 | 5,752 | 6,246 | 7,005 | 5,777 | 3,954 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,976 | 8,534 | 14,134 | 18,638 | 22,036 | 17,097 | 10,603 | 8,811 | 8,655 | 9,787 | 7,109 | 6,097 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,269 | 9,415 | 15,746 | 34,387 | 35,539 | 28,595 | 16,560 | 11,062 | 8,436 | 10,523 | 7,915 | 8,058 |
| Above Normal (16%) | 7,511 | 10,776 | 13,123 | 20,364 | 30,824 | 19,670 | 11,218 | 9,187 | 8,938 | 11,609 | 7,787 | 7,004 |
| Below Normal (13%) | 6,655 | 6,981 | 13,176 | 10,124 | 15,584 | 9,380 | 7,403 | 8,025 | 9,927 | 10,422 | 7,388 | 5,049 |
| Dry (24%) | 6,361 | 8,540 | 17,332 | 8,321 | 11,118 | 10,747 | 7,374 | 7,483 | 8,713 | 8,618 | 6,400 | 4,583 |
| Critical (15%) | 4,914 | 5,609 | 7,282 | 7,647 | 7,368 | 7,056 | 5,346 | 6,459 | 7,561 | 7,586 | 5,557 | 4,350 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -4 | -2,886 | 3,141 | 2,918 | 595 | 434 | -47 | -636 | 1,003 | -265 | -682 | -6,391 |
| 20% | -661 | -2,546 | 4,811 | 1,575 | -881 | 431 | -3 | -415 | 644 | -163 | -28 | -5,568 |
| 30% | -54 | -2,994 | 966 | 597 | 1,811 | 1,999 | -174 | 616 | 578 | -669 | -70 | -4,130 |
| 40% | -360 | -3,047 | 817 | 3,592 | 22 | 370 | 1,064 | 762 | 796 | -673 | -75 | -3,498 |
| 50% | 31 | -1,758 | 113 | 789 | 458 | 805 | 278 | 715 | 496 | -612 | 119 | -1,125 |
| 60% | 372 | -812 | 286 | 264 | 5 | 71 | 463 | 360 | 443 | -728 | 113 | -158 |
| 70% | 304 | -251 | 303 | 442 | -15 | 515 | 221 | 174 | 216 | -391 | -104 | -218 |
| 80% | 387 | -260 | 194 | 197 | 160 | 245 | 102 | 429 | 78 | -303 | -86 | -351 |
| 90% | 187 | 347 | 334 | -3 | 248 | 260 | 208 | 119 | -3 | -79 | -11 | -186 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 47 | -1,202 | 861 | 685 | 547 | 404 | 159 | 290 | 492 | -383 | -84 | -2,367 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -58 | -3,203 | 1,994 | 686 | 489 | 253 | 187 | -83 | 241 | 101 | 158 | -5,787 |
| Above Normal (16%) | -247 | -2,068 | 846 | 1,119 | 1,377 | 1,070 | 165 | 356 | 592 | -129 | 38 | -2,684 |
| Below Normal (13%) | 225 | 141 | 175 | 1,172 | 1,287 | 848 | 363 | 592 | 1,257 | -699 | -853 | -385 |
| Dry (24%) | 253 | 317 | 196 | 200 | 129 | 54 | 104 | 664 | 551 | -880 | 26 | -179 |
| Critical (15%) | 88 | 307 | 159 | 571 | -206 | 190 | -5 | 126 | 129 | -590 | -219 | -76 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-3. Sacramento River Flow at Hamilton City, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,524 | 14,328 | 30,407 | 40,893 | 51,938 | 33,411 | 19,893 | 13,731 | 10,553 | 12,940 | 9,381 | 15,452 |
| 20% | 8,682 | 11,931 | 19,454 | 26,965 | 36,955 | 22,491 | 15,438 | 11,335 | 9,481 | 12,532 | 8,111 | 13,186 |
| 30% | 7,536 | 11,343 | 11,974 | 18,703 | 23,981 | 17,461 | 9,650 | 8,602 | 8,701 | 12,287 | 7,628 | 11,325 |
| 40% | 7,051 | 10,435 | 9,406 | 13,004 | 15,886 | 12,296 | 7,812 | 7,444 | 8,000 | 11,626 | 7,238 | 9,593 |
| 50% | 6,301 | 8,990 | 7,689 | 10,368 | 11,817 | 10,482 | 7,008 | 7,030 | 7,384 | 10,556 | 6,973 | 6,281 |
| 60% | 5,760 | 7,642 | 6,671 | 8,240 | 9,996 | 9,142 | 6,402 | 6,770 | 7,112 | 9,869 | 6,612 | 5,266 |
| 70% | 5,424 | 6,547 | 6,236 | 7,004 | 8,562 | 7,906 | 5,978 | 6,456 | 6,847 | 8,706 | 6,440 | 4,991 |
| 80% | 5,136 | 5,686 | 5,536 | 6,324 | 7,193 | 6,759 | 5,544 | 5,943 | 6,634 | 7,928 | 6,126 | 4,585 |
| 90% | 4,647 | 4,764 | 4,972 | 5,418 | 5,746 | 6,105 | 5,031 | 5,628 | 6,183 | 7,205 | 5,838 | 4,026 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,818 | 9,677 | 13,293 | 17,980 | 21,539 | 16,715 | 10,435 | 8,497 | 8,101 | 10,326 | 7,230 | 8,472 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,219 | 12,548 | 13,755 | 33,783 | 35,092 | 28,342 | 16,376 | 11,144 | 8,207 | 10,450 | 7,770 | 13,867 |
| Above Normal (16%) | 7,425 | 12,867 | 12,385 | 19,430 | 29,641 | 18,802 | 11,052 | 8,831 | 8,368 | 11,840 | 7,780 | 9,701 |
| Below Normal (13%) | 6,440 | 6,788 | 13,003 | 8,908 | 14,535 | 8,530 | 7,083 | 7,429 | 8,757 | 11,240 | 8,168 | 5,345 |
| Dry (24%) | 5,989 | 8,176 | 17,167 | 8,112 | 11,042 | 10,647 | 7,244 | 6,779 | 8,089 | 9,728 | 6,468 | 4,801 |
| Critical (15%) | 4,854 | 5,153 | 7,089 | 6,934 | 7,312 | 6,875 | 5,290 | 6,238 | 7,000 | 8,573 | 5,874 | 4,436 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,533 | 14,514 | 30,454 | 40,895 | 51,928 | 33,410 | 19,892 | 13,667 | 10,490 | 12,795 | 9,381 | 15,318 |
| 20% | 9,137 | 11,964 | 18,666 | 26,959 | 36,320 | 22,469 | 15,439 | 11,335 | 9,589 | 12,458 | 8,069 | 13,180 |
| 30% | 7,718 | 11,342 | 11,974 | 18,701 | 24,155 | 17,461 | 9,651 | 8,554 | 8,702 | 12,074 | 7,628 | 11,244 |
| 40% | 7,314 | 10,538 | 9,354 | 13,004 | 15,887 | 12,300 | 7,794 | 7,444 | 7,998 | 11,276 | 7,252 | 9,491 |
| 50% | 6,628 | 8,952 | 7,755 | 10,368 | 11,802 | 10,484 | 7,129 | 7,104 | 7,653 | 10,195 | 6,873 | 6,441 |
| 60% | 5,920 | 7,700 | 6,702 | 8,239 | 10,219 | 9,310 | 6,399 | 6,770 | 7,186 | 9,473 | 6,596 | 5,180 |
| 70% | 5,494 | 6,660 | 6,170 | 7,032 | 8,669 | 7,907 | 5,977 | 6,462 | 6,911 | 8,610 | 6,421 | 4,978 |
| 80% | 5,116 | 5,957 | 5,568 | 6,358 | 7,193 | 6,759 | 5,606 | 5,942 | 6,765 | 7,906 | 6,000 | 4,689 |
| 90% | 4,762 | 5,062 | 5,147 | 5,443 | 5,738 | 6,104 | 5,027 | 5,633 | 6,250 | 7,083 | 5,788 | 4,140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,929 | 9,736 | 13,273 | 17,954 | 21,489 | 16,693 | 10,444 | 8,521 | 8,163 | 10,170 | 7,193 | 8,464 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,327 | 12,618 | 13,752 | 33,701 | 35,050 | 28,342 | 16,373 | 11,144 | 8,195 | 10,422 | 7,757 | 13,845 |
| Above Normal (16%) | 7,758 | 12,844 | 12,277 | 19,245 | 29,447 | 18,600 | 11,053 | 8,831 | 8,346 | 11,738 | 7,749 | 9,687 |
| Below Normal (13%) | 6,429 | 6,841 | 13,002 | 8,952 | 14,297 | 8,532 | 7,040 | 7,434 | 8,670 | 11,120 | 8,241 | 5,434 |
| Dry (24%) | 6,108 | 8,224 | 17,136 | 8,121 | 10,990 | 10,694 | 7,270 | 6,820 | 8,162 | 9,498 | 6,373 | 4,762 |
| Critical (15%) | 4,826 | 5,302 | 7,123 | 7,075 | 7,574 | 6,866 | 5,351 | 6,333 | 7,432 | 8,176 | 5,776 | 4,426 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9 | 185 | 47 | 2 | -10 | -1 | 0 | -63 | -62 | -144 | -1 | -134 |
| 20% | 455 | 33 | -788 | -7 | -635 | -22 | 1 | 0 | 108 | -74 | -42 | -5 |
| 30% | 182 | -2 | 0 | -2 | 174 | 0 | 1 | -48 | 1 | -213 | 0 | -81 |
| 40% | 263 | 103 | -52 | 0 | 1 | 4 | -18 | 0 | -2 | -350 | 14 | -103 |
| 50% | 327 | -38 | 66 | 0 | -15 | 2 | 121 | 74 | 269 | -361 | -100 | 160 |
| 60% | 160 | 58 | 31 | -1 | 222 | 168 | -3 | 0 | 74 | -395 | -17 | -86 |
| 70% | 70 | 113 | -66 | 28 | 107 | 0 | -2 | 5 | 63 | -97 | -18 | -13 |
| 80% | -20 | 272 | 32 | 34 | 0 | 0 | 61 | 0 | 132 | -22 | -127 | 104 |
| 90% | 115 | 298 | 176 | 25 | -8 | -2 | -3 | 6 | 67 | -121 | -50 | 114 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 111 | 59 | -21 | -27 | -50 | -22 | 9 | 24 | 62 | -155 | -37 | -8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 108 | 70 | -3 | -83 | -42 | 0 | -2 | 0 | -11 | -28 | -13 | -21 |
| Above Normal (16%) | 333 | -23 | -107 | -185 | -193 | -202 | 1 | 0 | -22 | -102 | -31 | -13 |
| Below Normal (13%) | -11 | 53 | -2 | 44 | -238 | 2 | -43 | 4 | -87 | -120 | 73 | 90 |
| Dry (24%) | 120 | 48 | -31 | 9 | -53 | 47 | 26 | 40 | 73 | -230 | -95 | -38 |
| Critical (15%) | -28 | 149 | 35 | 142 | 262 | -9 | 61 | 95 | 433 | -396 | -98 | -10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-4. Sacramento River Flow at Hamilton City, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,690 | 11,929 | 34,073 | 46,659 | 52,522 | 33,860 | 19,894 | 13,755 | 11,595 | 12,682 | 9,029 | 9,118 |
| 20% | 8,499 | 8,618 | 25,165 | 28,515 | 35,438 | 23,142 | 15,429 | 11,547 | 10,555 | 12,461 | 8,137 | 7,829 |
| 30% | 7,885 | 7,515 | 12,874 | 19,733 | 24,884 | 19,894 | 9,896 | 9,317 | 9,549 | 12,049 | 7,602 | 5,743 |
| 40% | 6,737 | 7,046 | 10,296 | 16,609 | 16,119 | 13,184 | 8,087 | 8,445 | 8,713 | 11,151 | 7,287 | 5,440 |
| 50% | 6,401 | 6,706 | 7,868 | 10,952 | 12,567 | 11,204 | 7,121 | 7,821 | 8,223 | 10,318 | 7,003 | 5,142 |
| 60% | 5,913 | 6,108 | 6,631 | 8,493 | 10,223 | 9,304 | 6,454 | 7,144 | 7,493 | 9,063 | 6,748 | 4,913 |
| 70% | 5,679 | 5,686 | 5,988 | 7,306 | 8,668 | 8,150 | 5,957 | 6,780 | 7,101 | 8,650 | 6,510 | 4,741 |
| 80% | 5,358 | 5,490 | 5,535 | 6,320 | 7,095 | 6,996 | 5,512 | 6,487 | 6,850 | 7,906 | 6,142 | 4,414 |
| 90% | 4,547 | 5,093 | 5,052 | 5,420 | 5,941 | 6,507 | 4,953 | 5,937 | 6,184 | 7,163 | 5,928 | 3,958 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,856 | 8,130 | 14,251 | 18,753 | 21,892 | 17,117 | 10,495 | 8,963 | 8,653 | 10,133 | 7,276 | 5,954 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,125 | 9,018 | 15,840 | 34,872 | 35,256 | 28,427 | 16,473 | 11,370 | 8,272 | 10,330 | 7,912 | 8,102 |
| Above Normal (16%) | 7,520 | 9,793 | 13,627 | 20,790 | 30,810 | 19,481 | 11,048 | 9,298 | 8,669 | 11,836 | 7,728 | 4,970 |
| Below Normal (13%) | 6,396 | 6,790 | 13,026 | 10,296 | 15,537 | 9,376 | 7,443 | 8,199 | 9,872 | 11,151 | 8,164 | 5,819 |
| Dry (24%) | 6,207 | 8,278 | 17,539 | 8,230 | 11,039 | 11,025 | 7,215 | 7,555 | 9,039 | 9,458 | 6,558 | 4,705 |
| Critical (15%) | 4,889 | 5,388 | 7,126 | 6,909 | 7,192 | 7,297 | 5,207 | 6,434 | 7,699 | 8,053 | 5,789 | 4,568 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,529 | 11,628 | 33,595 | 43,813 | 52,523 | 33,844 | 19,846 | 13,031 | 11,494 | 12,531 | 8,698 | 8,927 |
| 20% | 8,476 | 9,418 | 23,477 | 28,534 | 35,439 | 22,900 | 15,436 | 10,920 | 10,232 | 12,294 | 8,040 | 7,612 |
| 30% | 7,663 | 8,347 | 12,940 | 19,297 | 25,966 | 19,460 | 9,477 | 9,170 | 9,279 | 11,405 | 7,558 | 7,114 |
| 40% | 6,954 | 7,491 | 10,171 | 16,596 | 15,909 | 12,669 | 8,858 | 8,206 | 8,794 | 10,602 | 7,177 | 5,993 |
| 50% | 6,659 | 7,194 | 7,868 | 11,157 | 12,260 | 11,290 | 7,407 | 7,819 | 8,149 | 9,583 | 6,992 | 5,316 |
| 60% | 6,292 | 6,888 | 6,989 | 8,503 | 10,224 | 9,380 | 6,862 | 7,131 | 7,629 | 8,745 | 6,709 | 5,023 |
| 70% | 5,798 | 6,408 | 6,473 | 7,474 | 8,654 | 8,422 | 6,198 | 6,636 | 7,127 | 8,219 | 6,317 | 4,760 |
| 80% | 5,502 | 5,698 | 5,761 | 6,555 | 7,352 | 7,003 | 5,708 | 6,372 | 6,843 | 7,602 | 5,914 | 4,338 |
| 90% | 4,949 | 5,408 | 5,481 | 5,440 | 5,986 | 6,364 | 5,235 | 5,752 | 6,246 | 7,005 | 5,777 | 3,954 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,976 | 8,534 | 14,134 | 18,638 | 22,036 | 17,097 | 10,603 | 8,811 | 8,655 | 9,787 | 7,109 | 6,097 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,269 | 9,415 | 15,746 | 34,387 | 35,539 | 28,595 | 16,560 | 11,062 | 8,436 | 10,523 | 7,915 | 8,058 |
| Above Normal (16%) | 7,511 | 10,776 | 13,123 | 20,364 | 30,824 | 19,670 | 11,218 | 9,187 | 8,938 | 11,609 | 7,787 | 7,004 |
| Below Normal (13%) | 6,655 | 6,981 | 13,176 | 10,124 | 15,584 | 9,380 | 7,403 | 8,025 | 9,927 | 10,422 | 7,388 | 5,049 |
| Dry (24%) | 6,361 | 8,540 | 17,332 | 8,321 | 11,118 | 10,747 | 7,374 | 7,483 | 8,713 | 8,618 | 6,400 | 4,583 |
| Critical (15%) | 4,914 | 5,609 | 7,282 | 7,647 | 7,368 | 7,056 | 5,346 | 6,459 | 7,561 | 7,586 | 5,557 | 4,350 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -161 | -301 | -477 | -2,846 | 0 | -16 | -48 | -724 | -102 | -151 | -331 | -190 |
| 20% | -23 | 799 | -1,688 | 19 | 1 | -242 | 6 | -627 | -322 | -167 | -97 | -217 |
| 30% | -222 | 833 | 66 | -436 | 1,083 | -434 | -419 | -147 | -269 | -644 | -43 | 1,370 |
| 40% | 217 | 445 | -125 | -13 | -210 | -514 | 771 | -239 | 81 | -548 | -111 | 553 |
| 50% | 258 | 488 | -1 | 205 | -307 | 86 | 286 | -1 | -74 | -734 | -11 | 174 |
| 60% | 379 | 780 | 358 | 10 | 1 | 77 | 408 | -13 | 136 | -318 | -39 | 109 |
| 70% | 119 | 722 | 486 | 168 | -14 | 272 | 240 | -144 | 26 | -431 | -193 | 20 |
| 80% | 145 | 208 | 226 | 234 | 257 | 7 | 196 | -116 | -7 | -304 | -228 | -75 |
| 90% | 402 | 315 | 430 | 20 | 45 | -143 | 282 | -185 | 63 | -159 | -151 | -4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 120 | 404 | -117 | -114 | 143 | -19 | 109 | -153 | 3 | -346 | -166 | 143 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 144 | 397 | -94 | -485 | 283 | 168 | 88 | -309 | 164 | 193 | 3 | -45 |
| Above Normal (16%) | -9 | 983 | -505 | -426 | 14 | 188 | 169 | -111 | 269 | -227 | 59 | 2,033 |
| Below Normal (13%) | 258 | 191 | 150 | -172 | 46 | 4 | -40 | -174 | 55 | -730 | -775 | -769 |
| Dry (24%) | 154 | 262 | -207 | 91 | 80 | -278 | 160 | -72 | -326 | -840 | -158 | -122 |
| Critical (15%) | 25 | 221 | 156 | 738 | 176 | -241 | 140 | 25 | -138 | -467 | -232 | -218 |

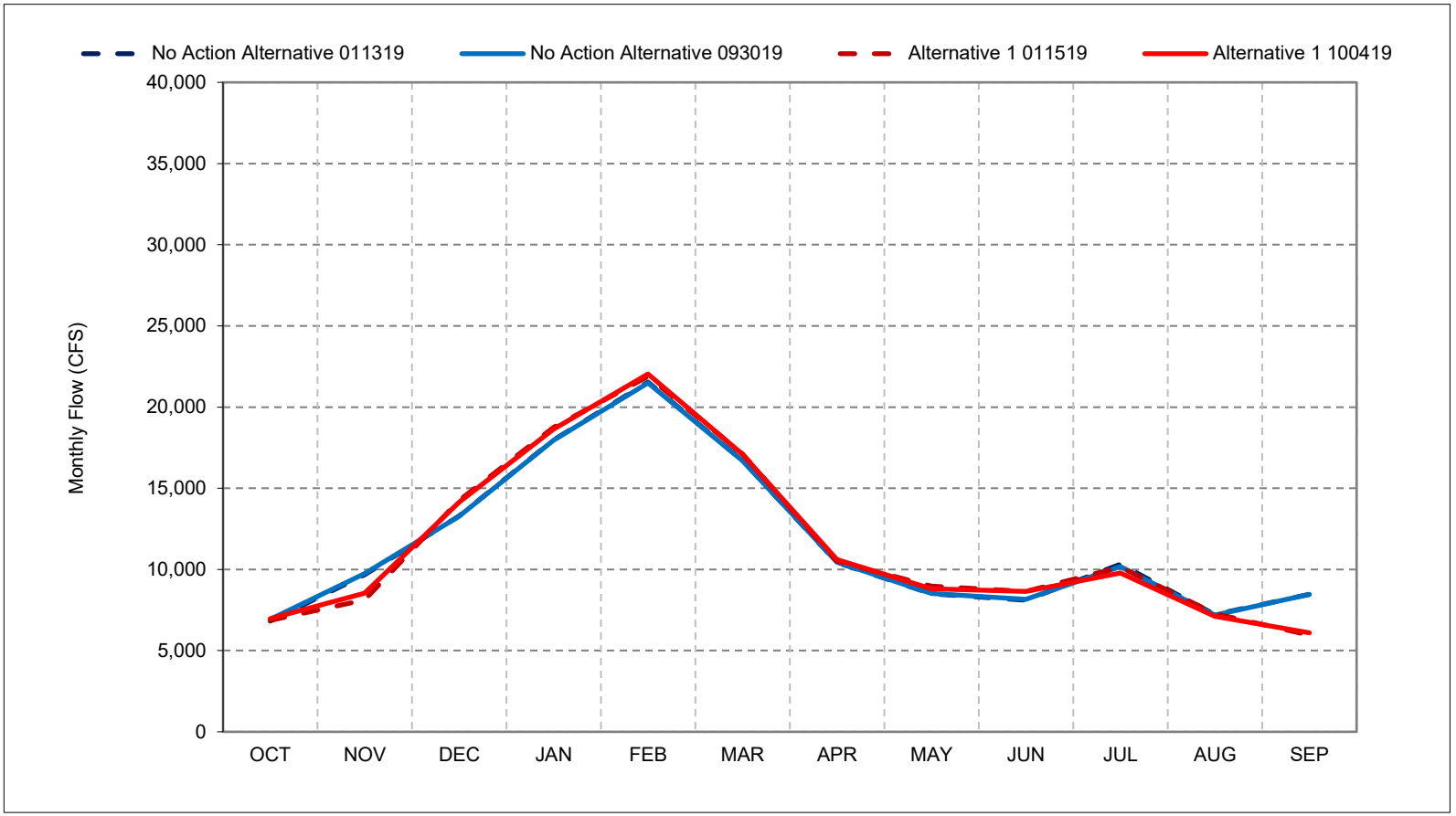
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-1. Sacramento River Flow at Hamilton City, Long-Term Average Flow

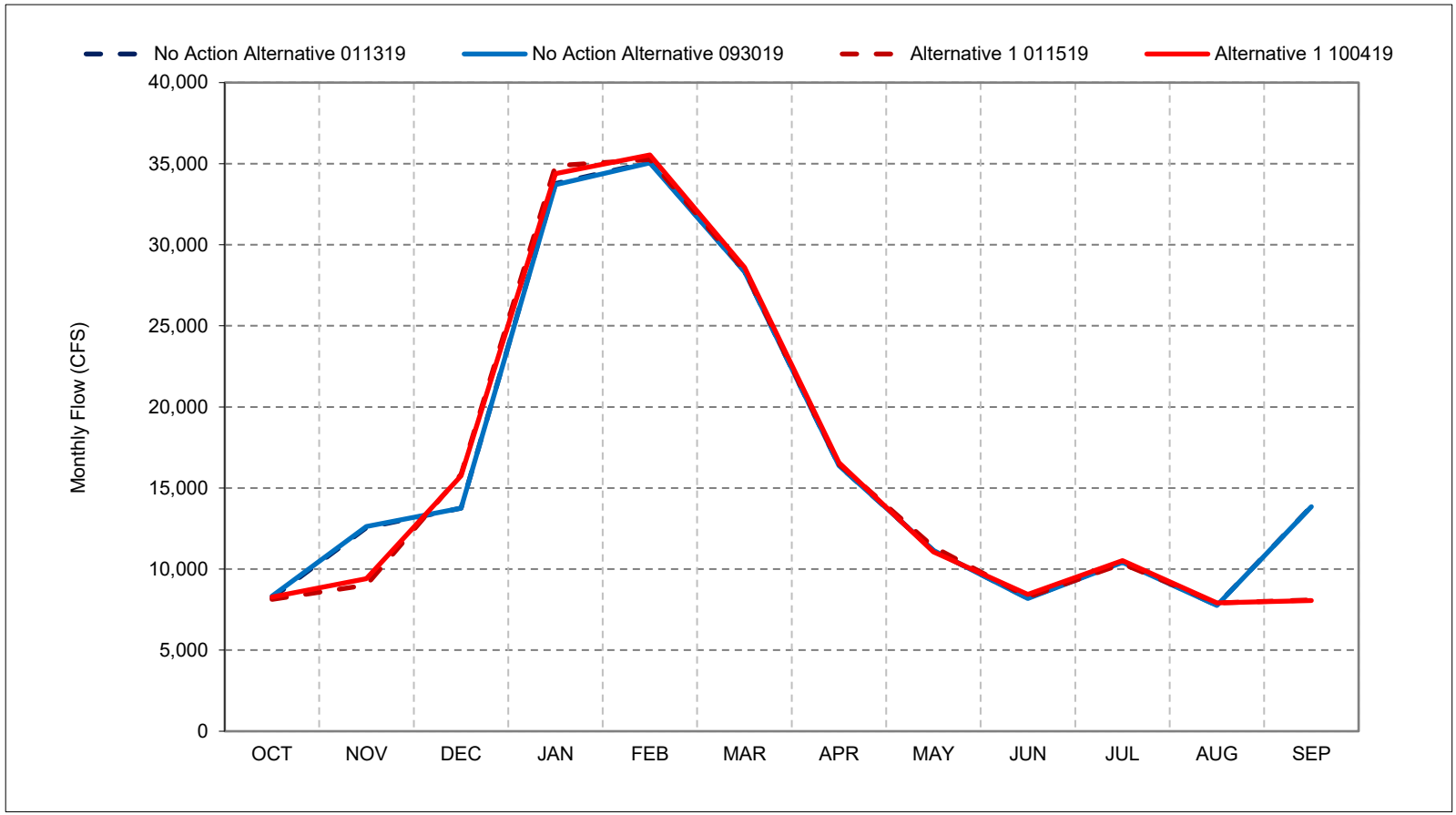



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-2. Sacramento River Flow at Hamilton City, Wet Year Average Flow

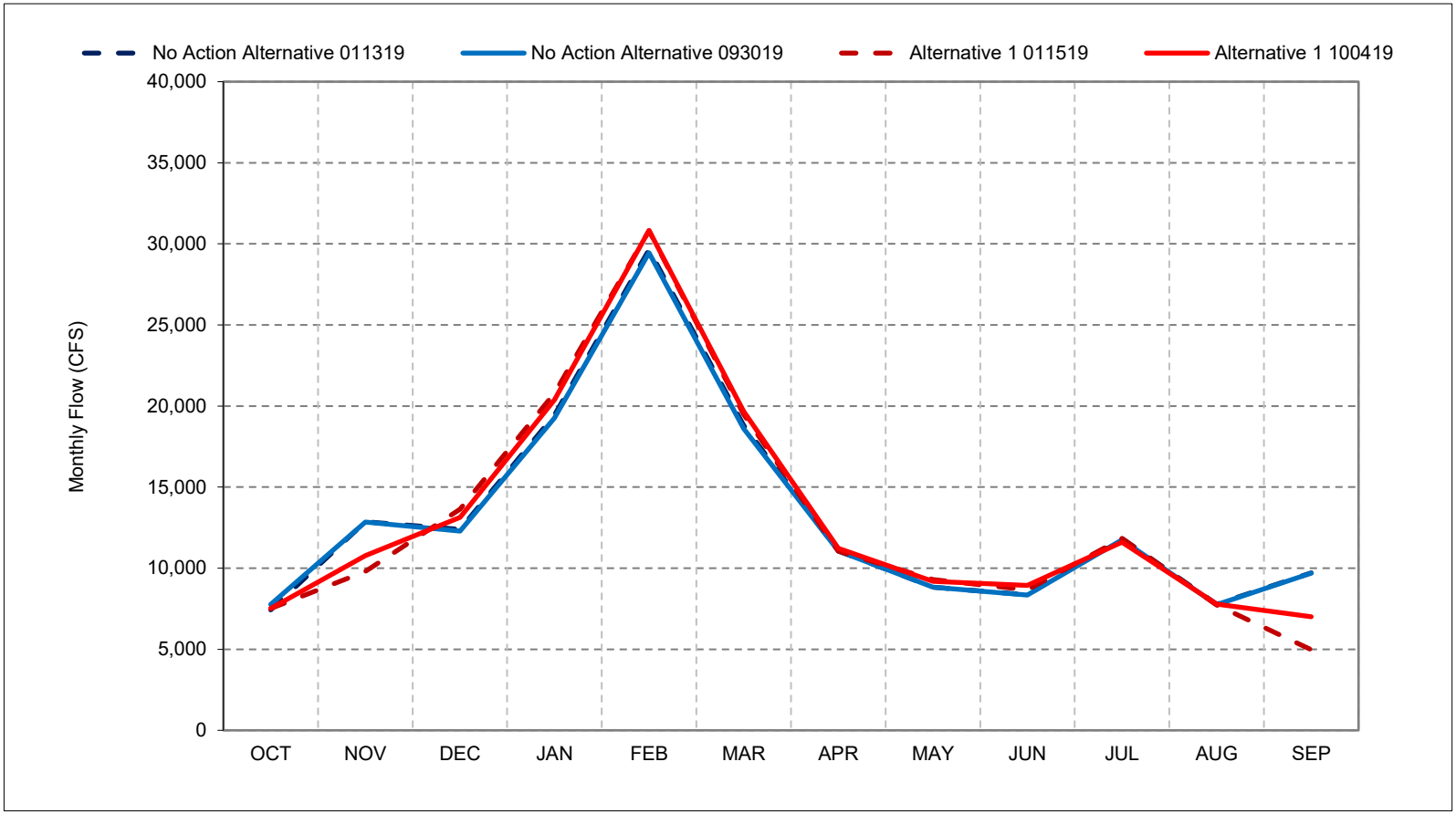



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-3. Sacramento River Flow at Hamilton City, Above Normal Year Average Flow

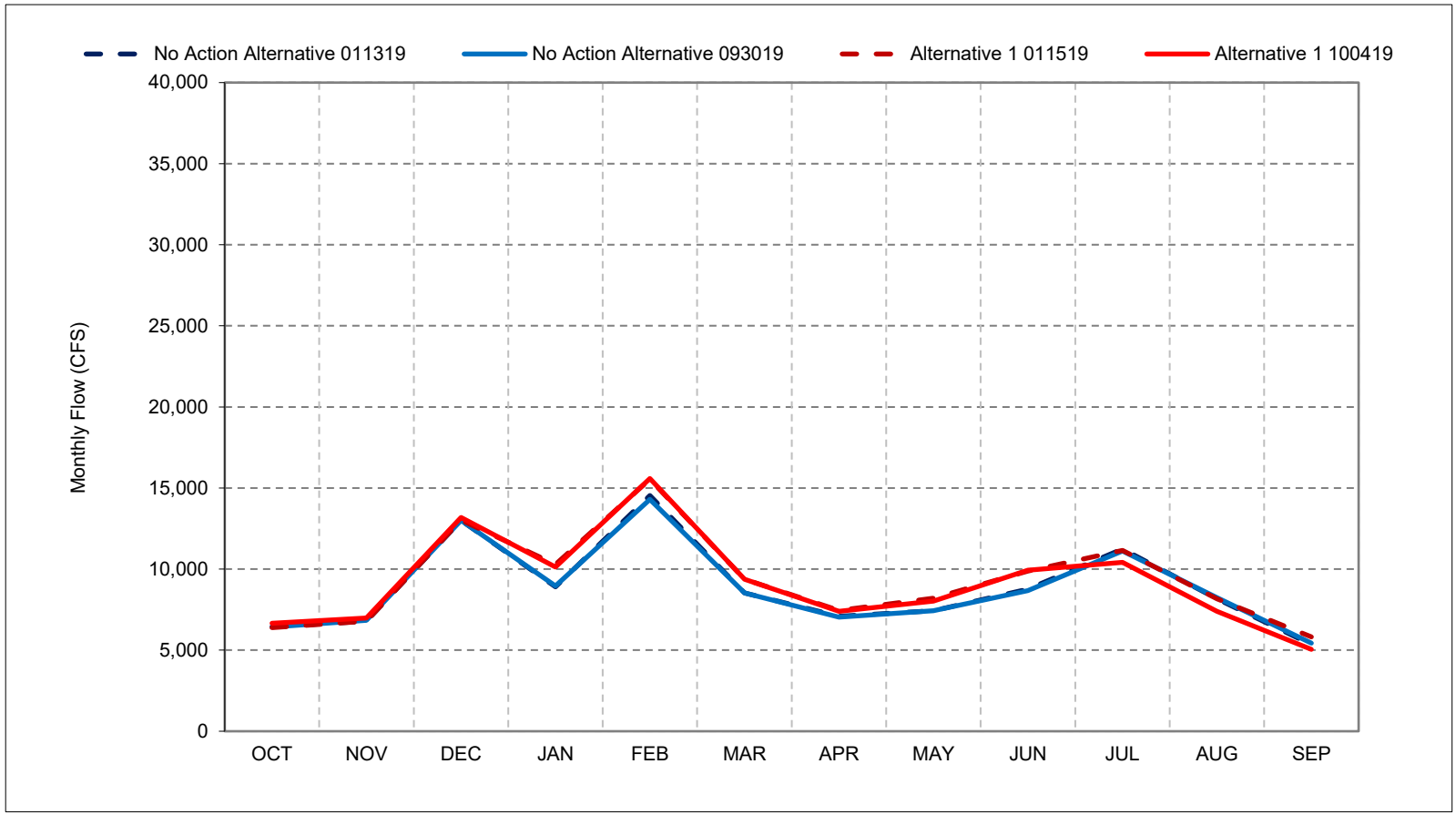



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-4. Sacramento River Flow at Hamilton City, Below Normal Year Average Flow

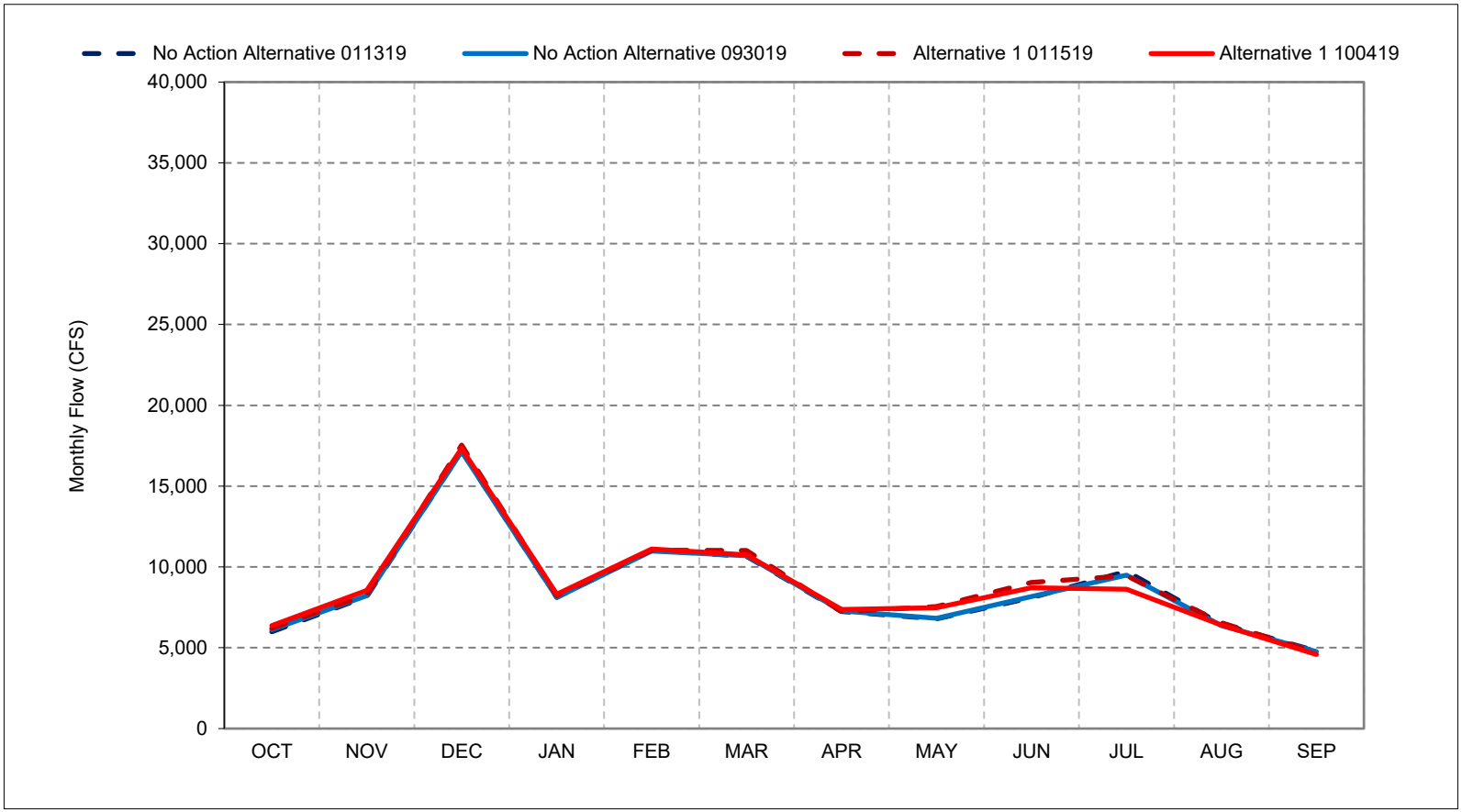



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-5. Sacramento River Flow at Hamilton City, Dry Year Average Flow

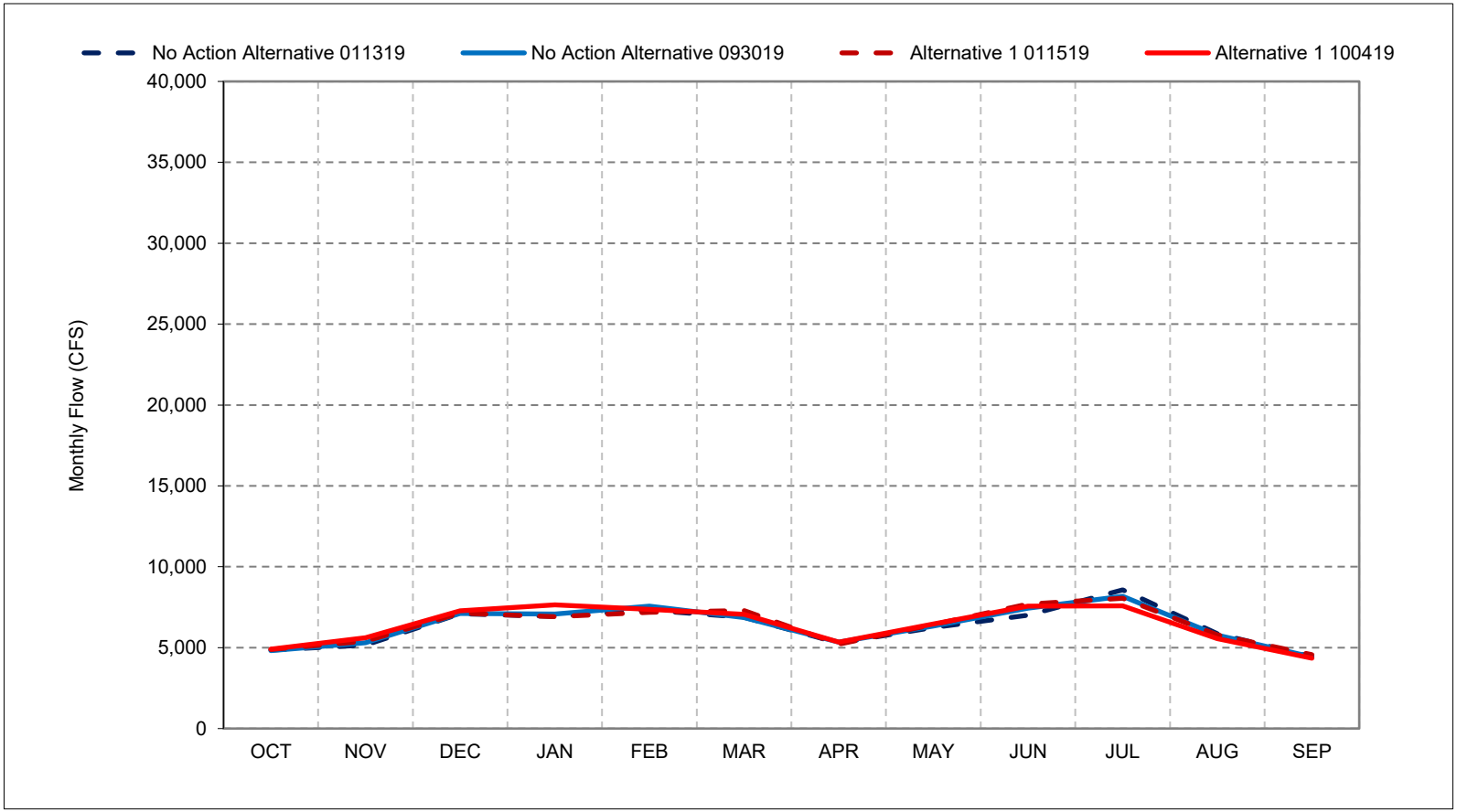



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-6. Sacramento River Flow at Hamilton City, Critical Year Average Flow

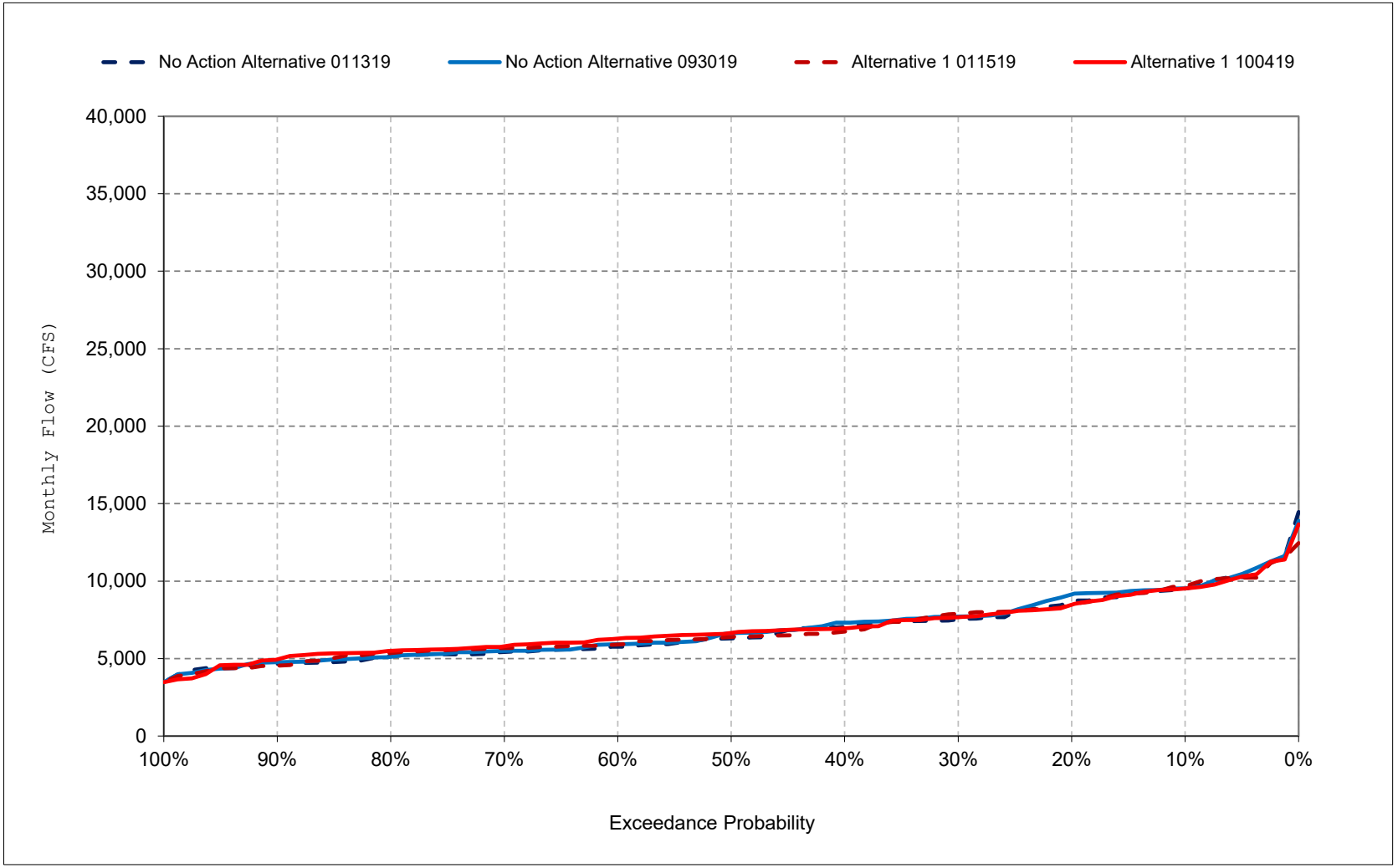



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

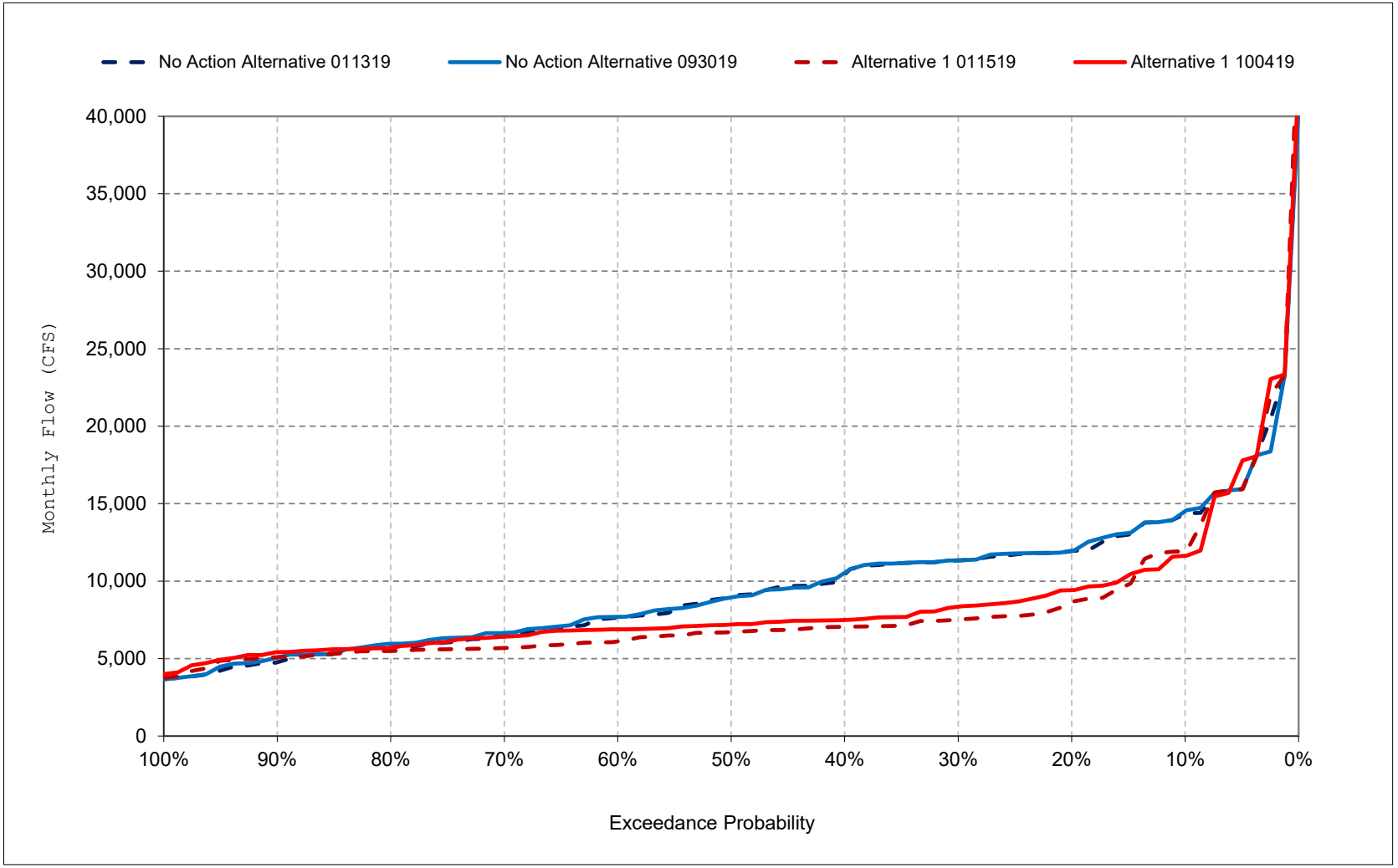
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-7. Sacramento River Flow at Hamilton City, October**



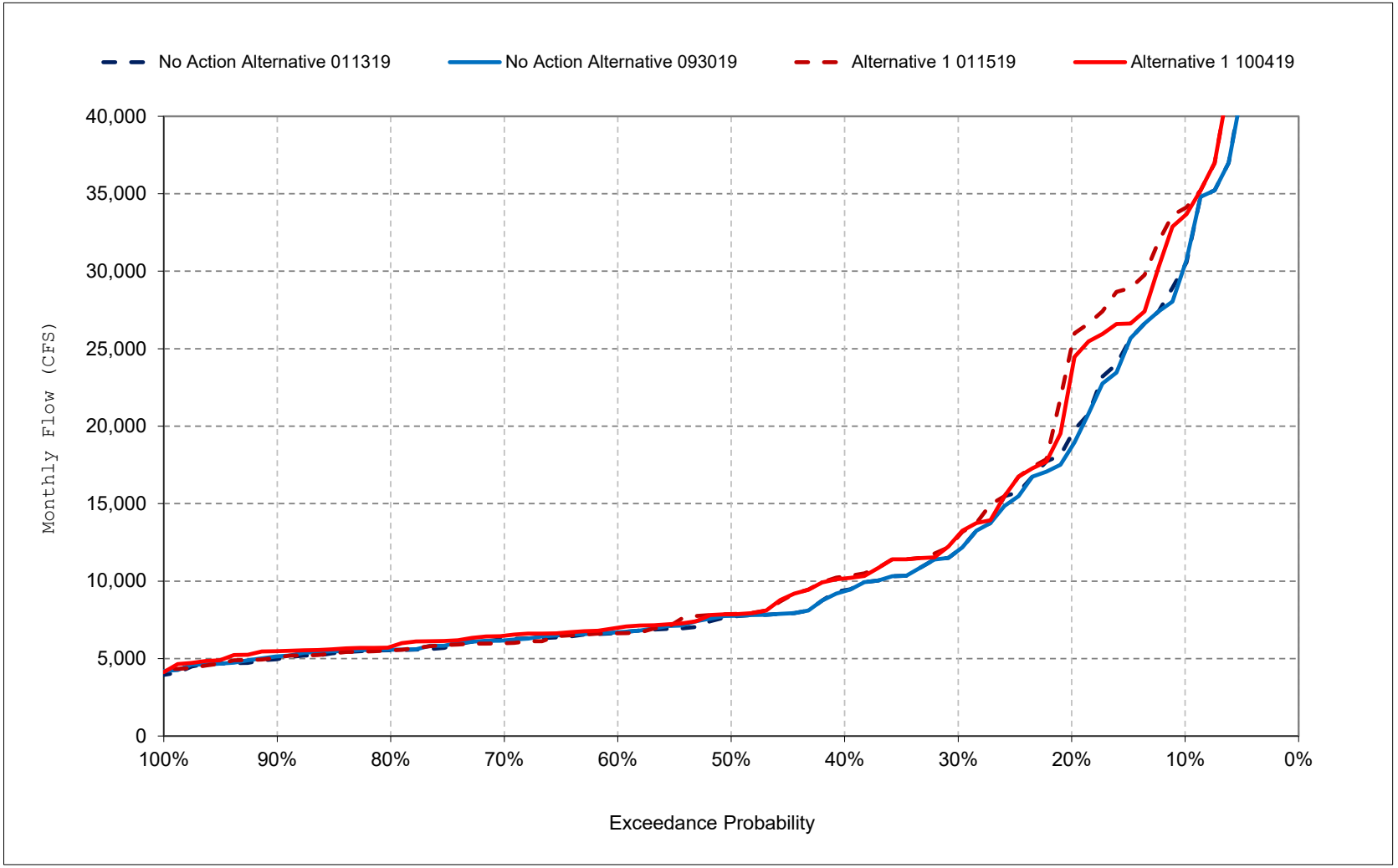

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-8. Sacramento River Flow at Hamilton City, November**



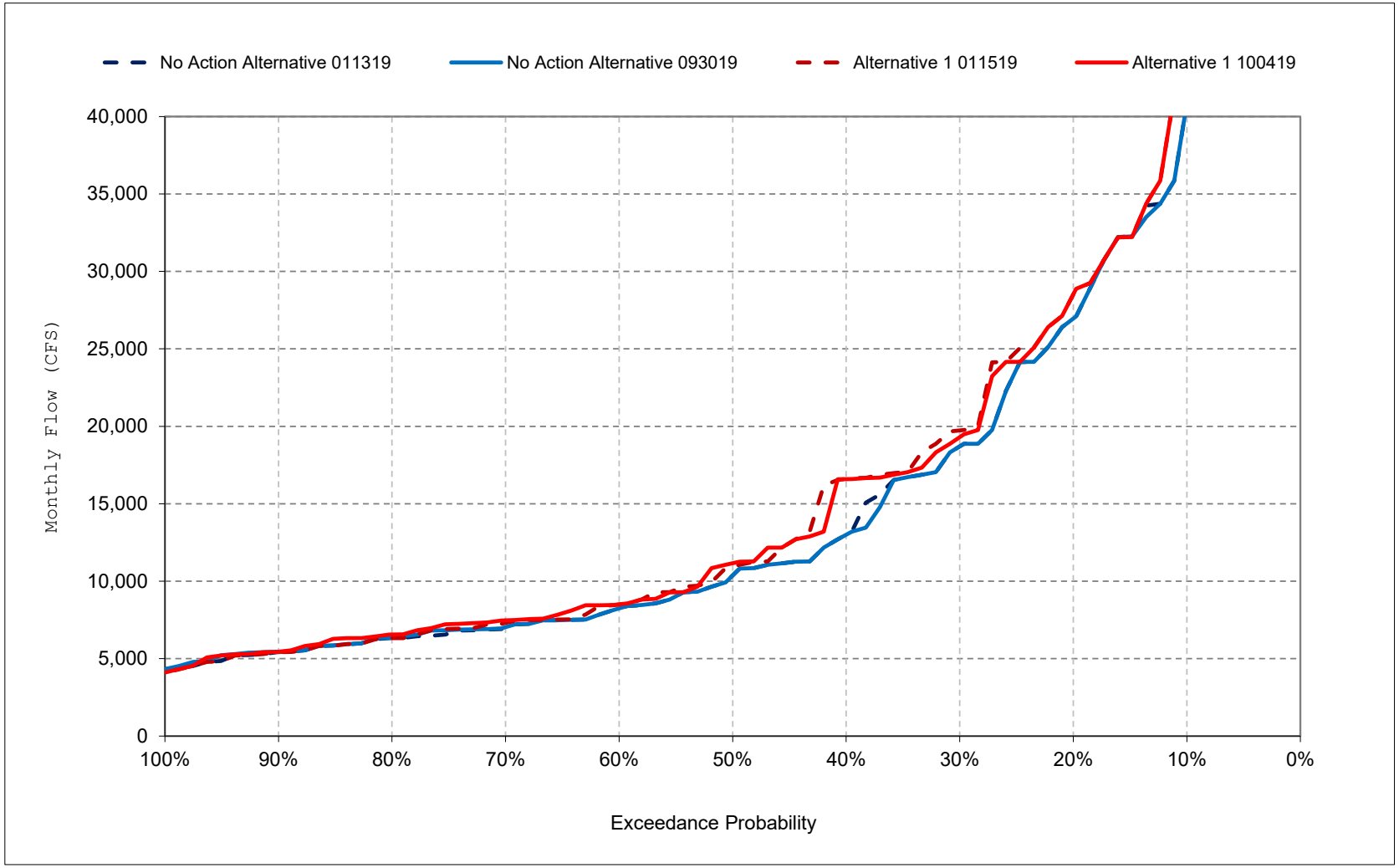

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-9. Sacramento River Flow at Hamilton City, December**



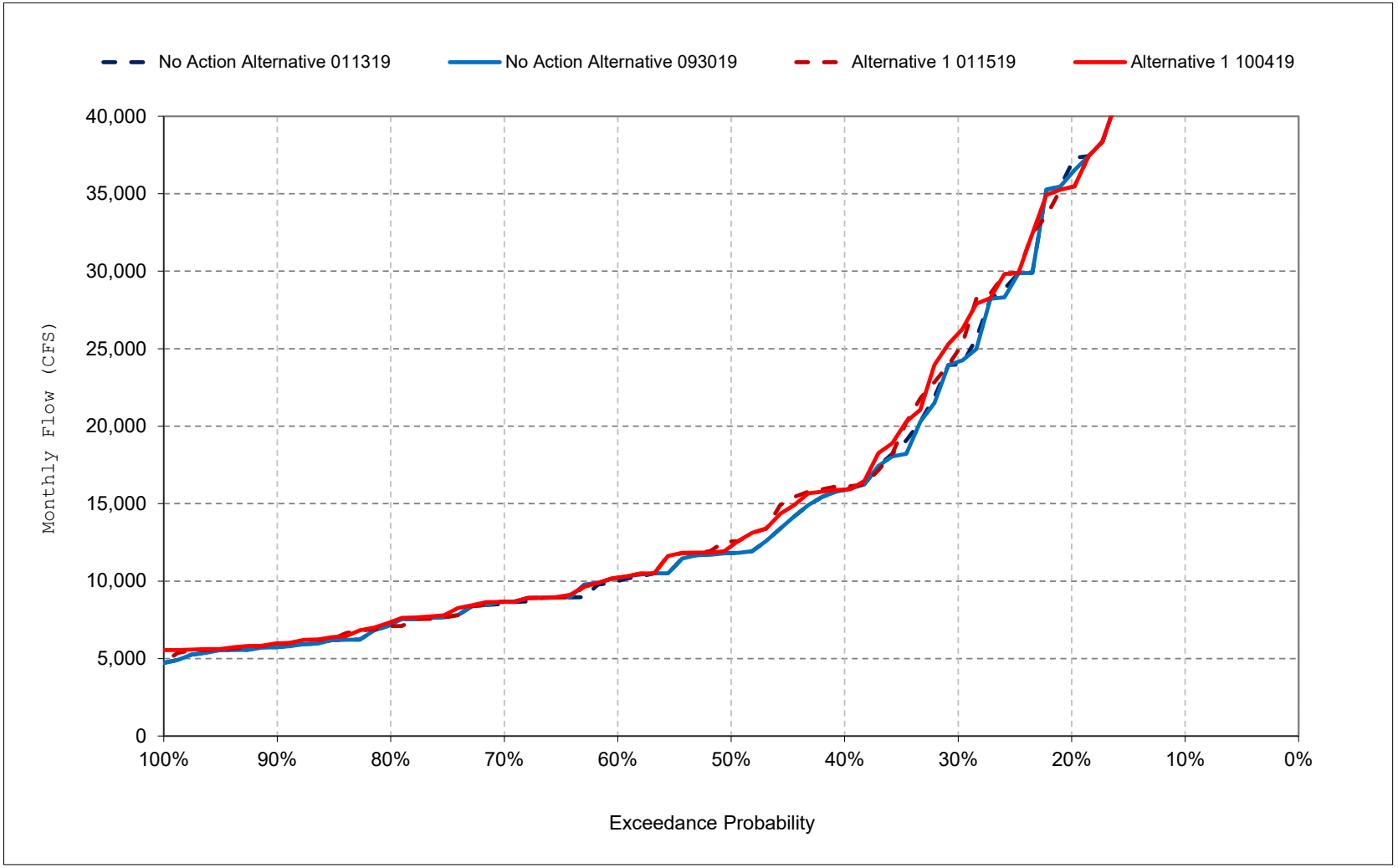

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-10. Sacramento River Flow at Hamilton City, January**



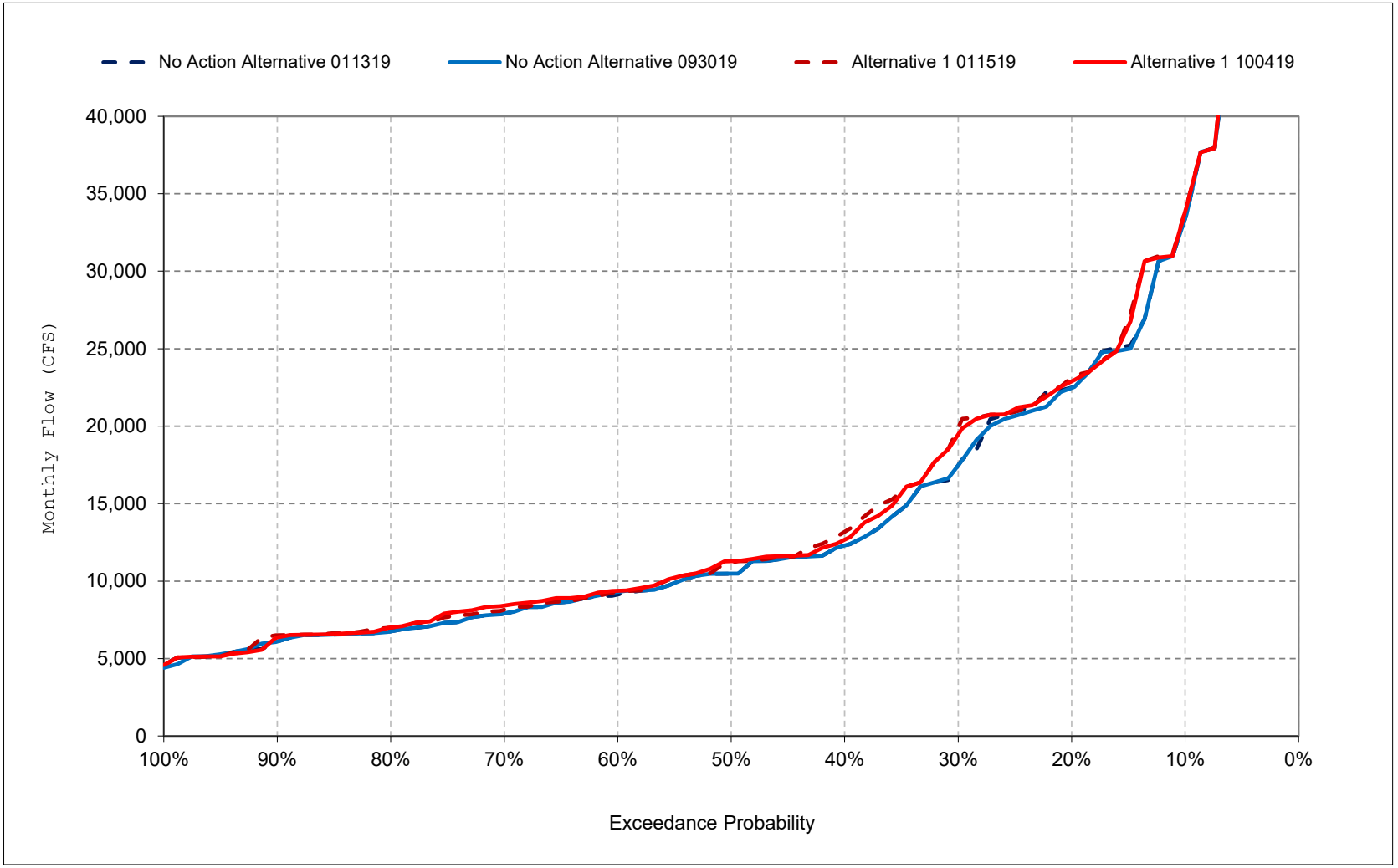

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-11. Sacramento River Flow at Hamilton City, February**



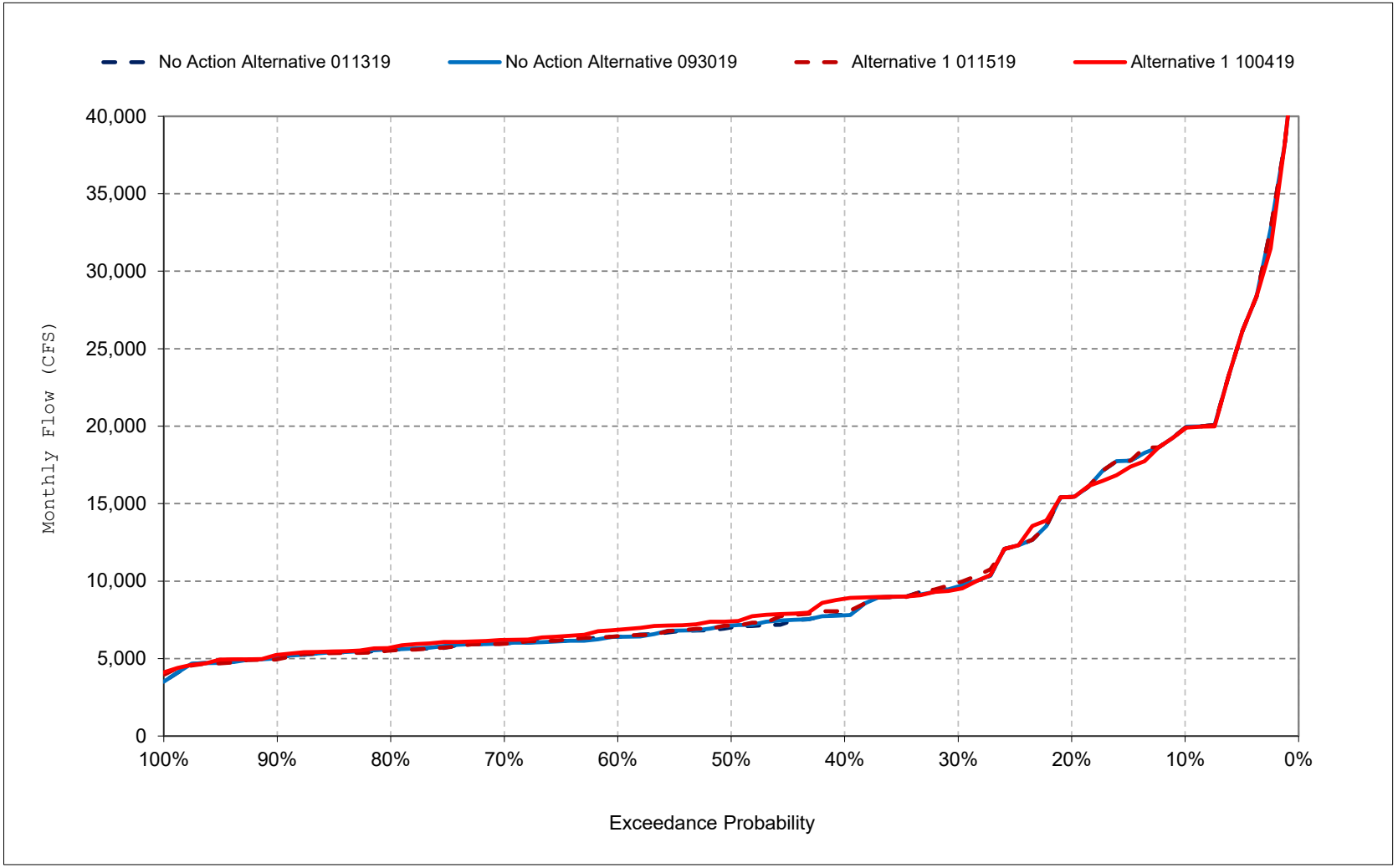

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-12. Sacramento River Flow at Hamilton City, March**



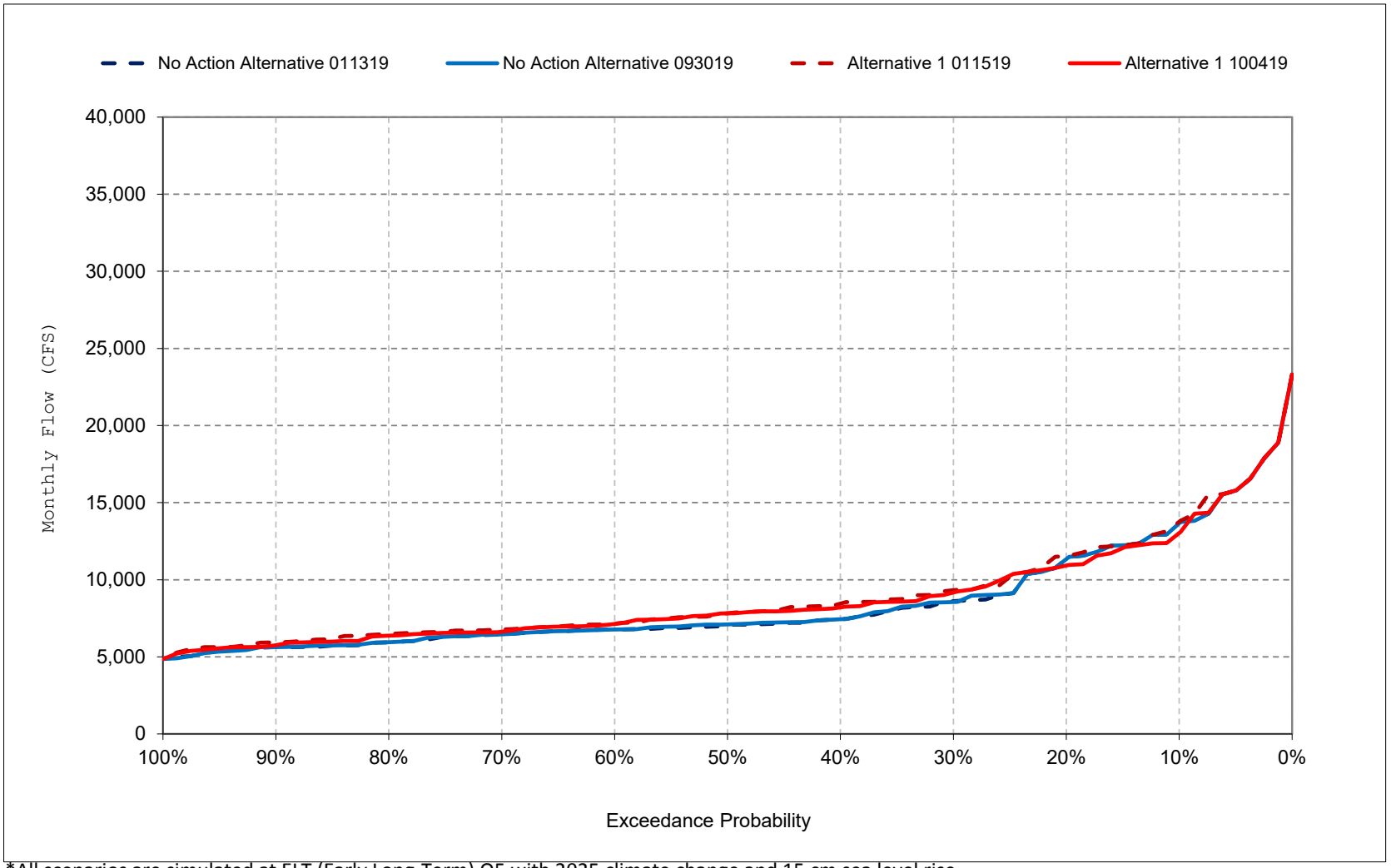

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-13. Sacramento River Flow at Hamilton City, April**



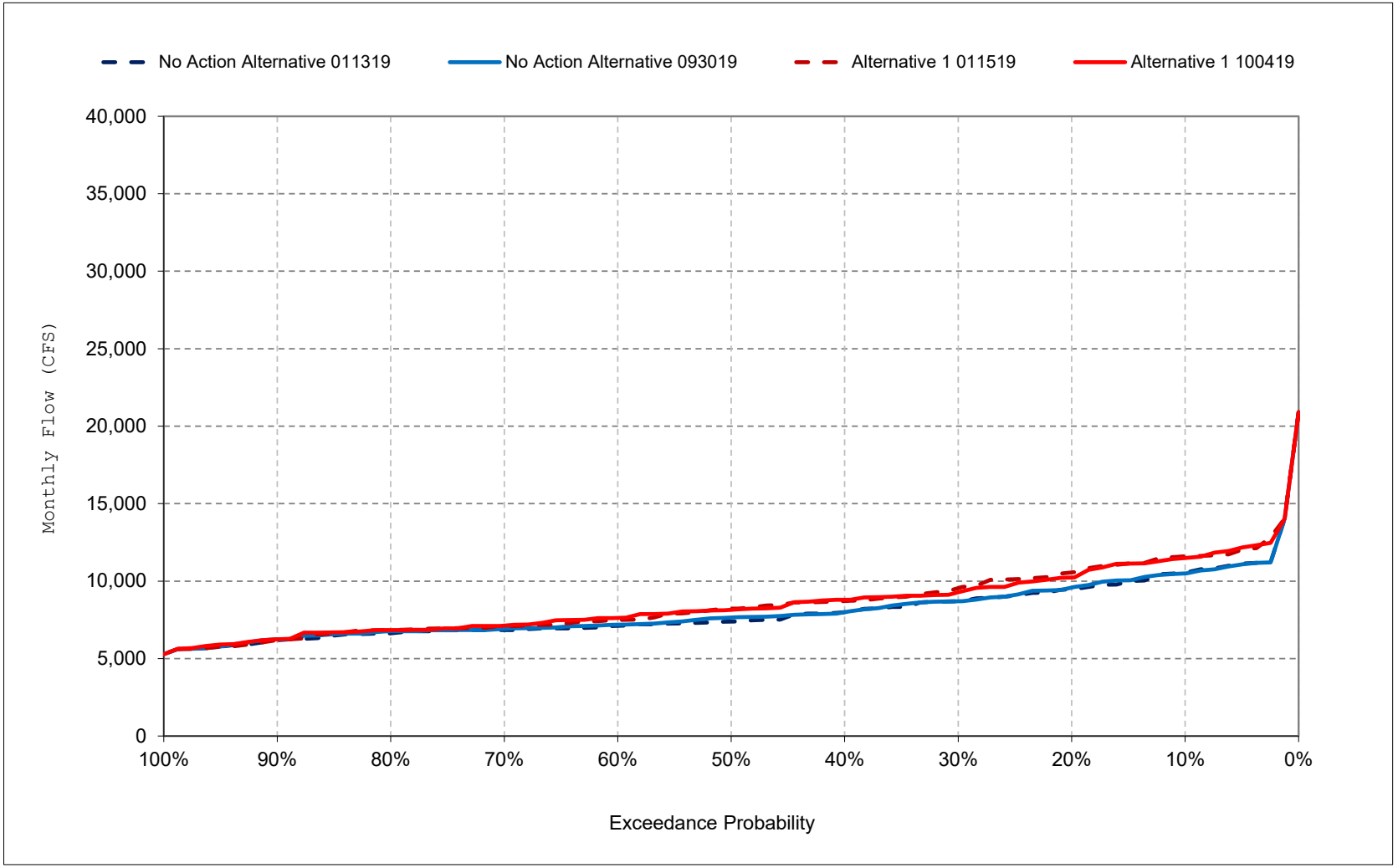

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-14. Sacramento River Flow at Hamilton City, May**



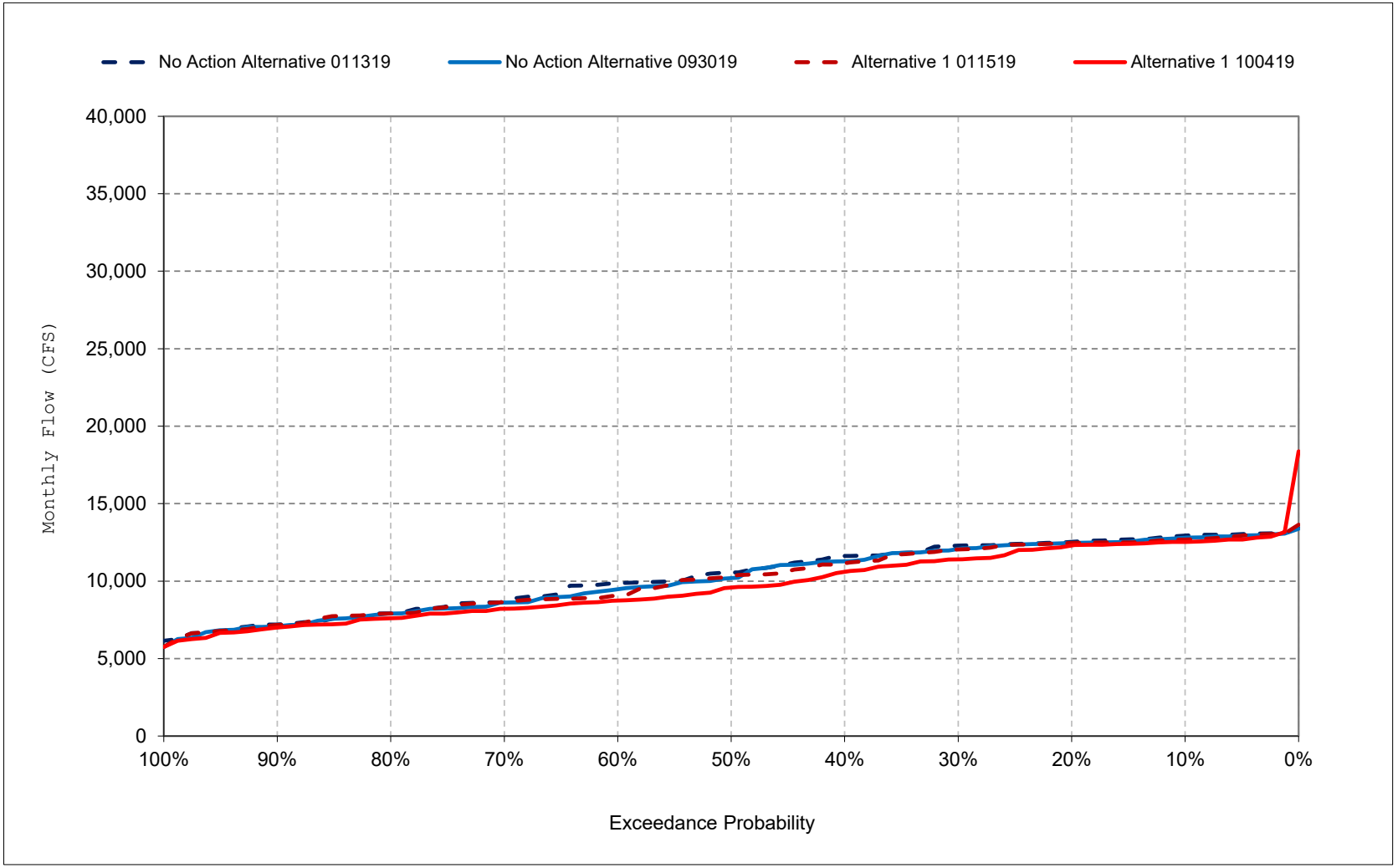

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-15. Sacramento River Flow at Hamilton City, June**



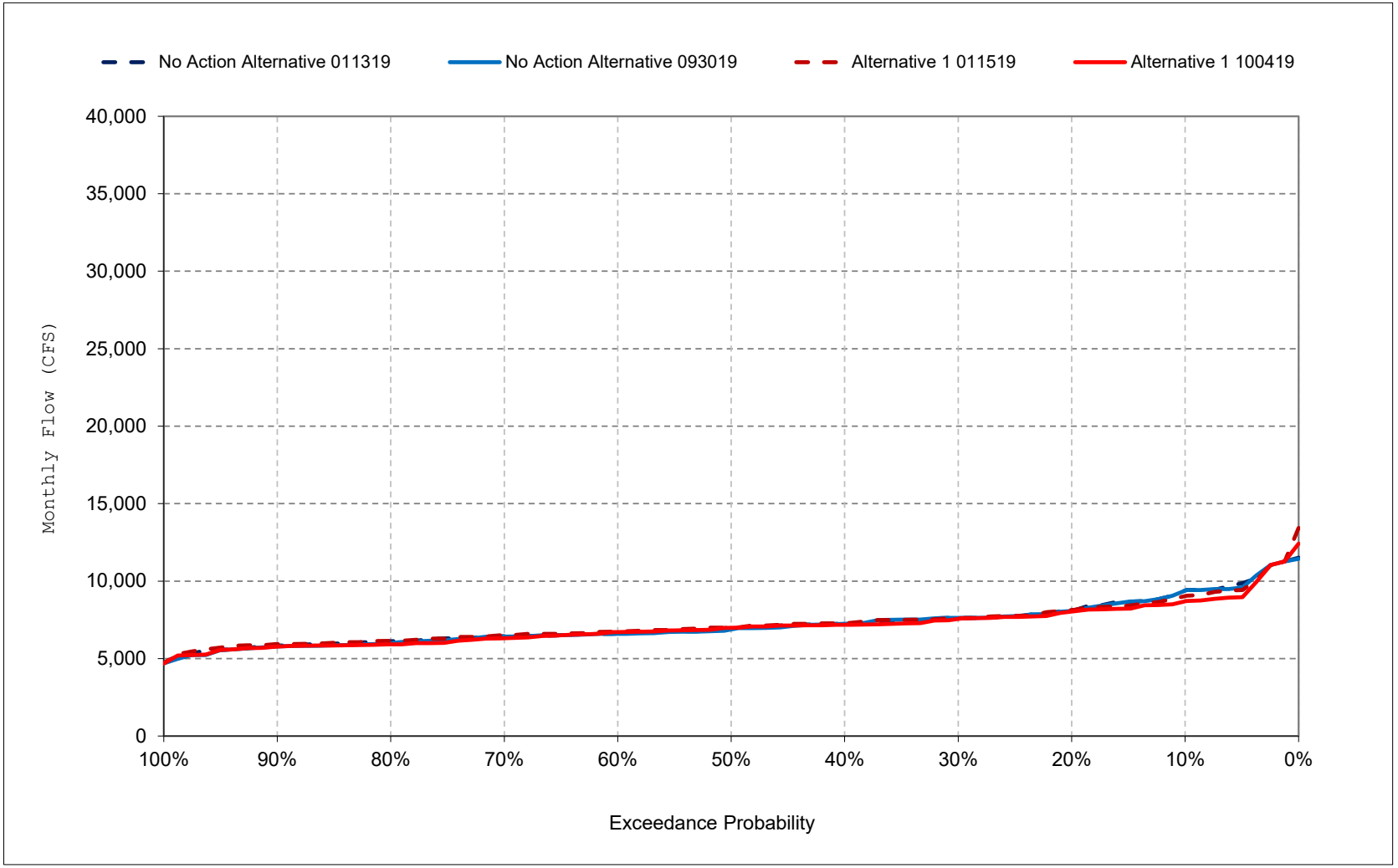

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-16. Sacramento River Flow at Hamilton City, July**



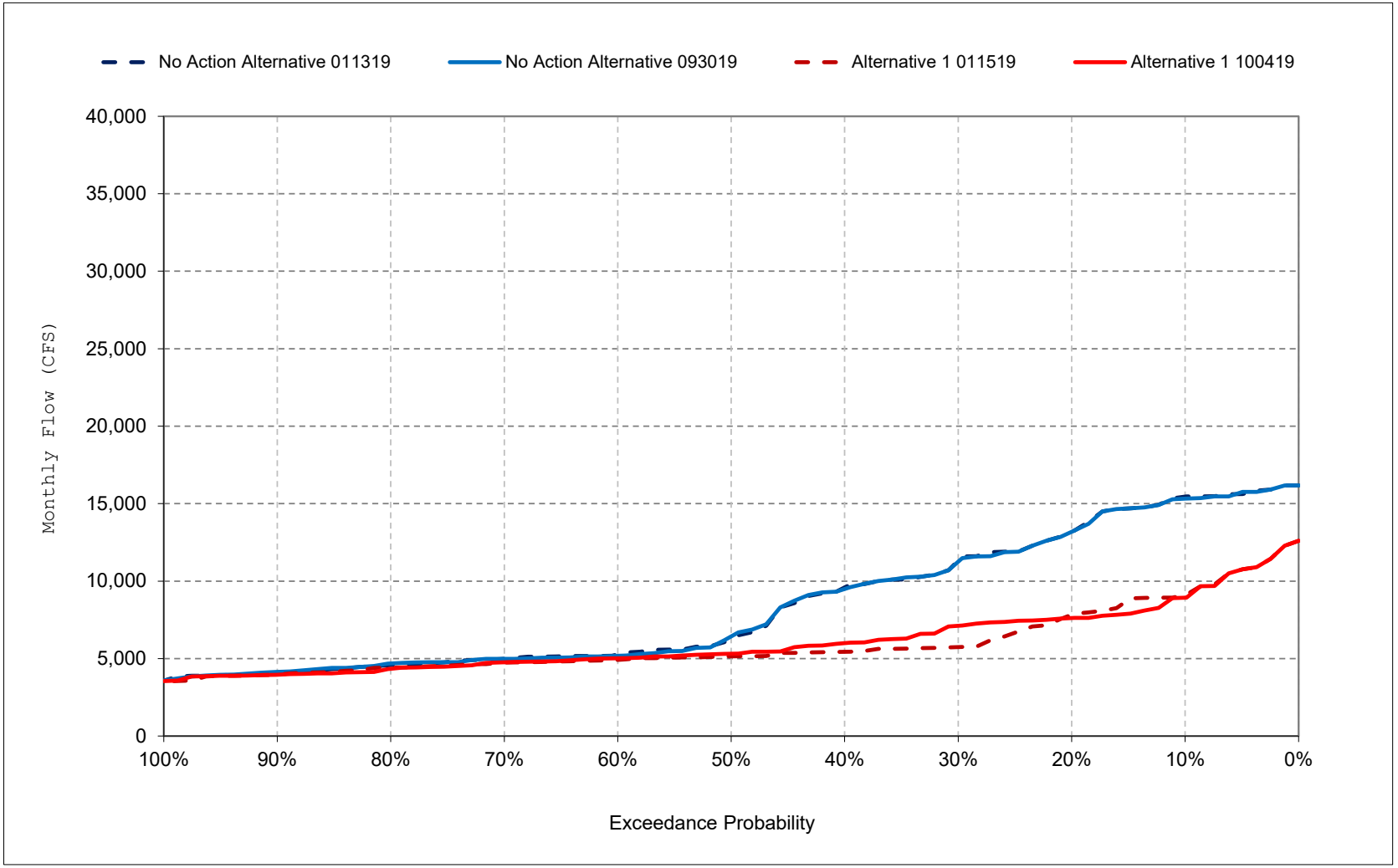

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-17. Sacramento River Flow at Hamilton City, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-18. Sacramento River Flow at Hamilton City, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 19-1. Sacramento River at Wilkins Slough Flow, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,085 | 13,566 | 21,070 | 22,006 | 22,665 | 21,630 | 19,305 | 12,626 | 7,804 | 9,695 | 6,594 | 15,000 |
| 20% | 7,608 | 12,869 | 19,597 | 21,247 | 21,557 | 20,323 | 17,774 | 9,258 | 7,069 | 9,423 | 5,495 | 13,681 |
| 30% | 6,693 | 10,941 | 13,753 | 19,601 | 20,870 | 19,029 | 11,344 | 6,213 | 6,008 | 9,174 | 5,161 | 11,042 |
| 40% | 6,148 | 10,268 | 11,687 | 15,569 | 19,624 | 15,809 | 9,173 | 5,248 | 5,478 | 8,710 | 4,673 | 9,367 |
| 50% | 5,810 | 9,256 | 8,468 | 10,929 | 15,927 | 13,550 | 7,720 | 4,655 | 5,002 | 7,804 | 4,545 | 6,275 |
| 60% | 5,268 | 7,240 | 7,263 | 9,489 | 12,622 | 10,302 | 6,911 | 4,442 | 4,834 | 6,628 | 4,520 | 5,260 |
| 70% | 4,638 | 5,992 | 6,017 | 7,886 | 10,266 | 8,916 | 6,329 | 3,999 | 4,707 | 5,820 | 4,244 | 4,623 |
| 80% | 4,497 | 5,159 | 5,612 | 6,942 | 7,686 | 7,980 | 5,718 | 3,711 | 4,165 | 4,710 | 3,951 | 4,372 |
| 90% | 3,994 | 4,289 | 4,854 | 6,012 | 6,308 | 6,211 | 5,161 | 3,476 | 3,495 | 4,331 | 3,442 | 3,965 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,124 | 9,152 | 11,234 | 13,460 | 15,249 | 13,881 | 10,343 | 6,529 | 5,684 | 7,294 | 4,903 | 8,377 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,511 | 12,176 | 11,622 | 18,870 | 19,567 | 17,810 | 14,598 | 9,612 | 6,426 | 7,574 | 5,293 | 13,916 |
| Above Normal (16%) | 6,711 | 11,184 | 11,185 | 16,976 | 18,484 | 17,432 | 12,412 | 7,174 | 6,171 | 8,650 | 5,448 | 9,654 |
| Below Normal (13%) | 6,046 | 6,466 | 11,361 | 10,381 | 13,627 | 9,842 | 7,454 | 5,489 | 5,958 | 7,948 | 5,637 | 5,132 |
| Dry (24%) | 5,215 | 8,027 | 12,724 | 9,098 | 12,422 | 12,174 | 8,077 | 4,381 | 5,159 | 6,678 | 4,291 | 4,665 |
| Critical (15%) | 4,072 | 4,733 | 7,847 | 8,021 | 8,590 | 8,066 | 5,306 | 3,683 | 4,176 | 5,648 | 3,817 | 4,154 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,181 | 12,897 | 21,341 | 22,437 | 22,719 | 21,616 | 19,295 | 12,630 | 8,569 | 9,712 | 6,557 | 9,602 |
| 20% | 7,810 | 8,695 | 20,686 | 21,191 | 21,536 | 20,380 | 17,770 | 9,257 | 7,906 | 9,336 | 5,602 | 7,566 |
| 30% | 7,320 | 7,179 | 15,241 | 19,739 | 20,918 | 19,077 | 11,867 | 7,391 | 7,191 | 8,865 | 5,242 | 5,748 |
| 40% | 6,201 | 6,433 | 12,099 | 18,093 | 19,504 | 16,467 | 9,178 | 6,110 | 6,270 | 8,048 | 4,842 | 5,327 |
| 50% | 5,774 | 6,062 | 8,866 | 11,884 | 16,481 | 14,327 | 7,705 | 5,353 | 5,687 | 7,280 | 4,586 | 4,892 |
| 60% | 5,420 | 5,867 | 7,486 | 9,715 | 13,216 | 10,957 | 7,099 | 4,891 | 5,055 | 6,236 | 4,531 | 4,678 |
| 70% | 5,033 | 5,244 | 5,950 | 8,244 | 10,560 | 8,896 | 6,563 | 4,633 | 4,775 | 5,607 | 4,502 | 4,521 |
| 80% | 4,813 | 4,780 | 5,542 | 6,857 | 7,728 | 8,001 | 5,660 | 4,317 | 4,630 | 4,739 | 4,055 | 4,277 |
| 90% | 4,279 | 4,525 | 5,156 | 6,008 | 6,386 | 7,406 | 5,086 | 3,558 | 3,683 | 4,410 | 3,601 | 4,012 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,369 | 7,485 | 11,587 | 13,801 | 15,397 | 14,114 | 10,393 | 6,998 | 6,215 | 7,087 | 4,973 | 5,861 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,748 | 8,561 | 12,436 | 19,016 | 19,589 | 17,809 | 14,692 | 9,833 | 6,480 | 7,456 | 5,443 | 8,143 |
| Above Normal (16%) | 7,140 | 7,623 | 11,560 | 18,020 | 19,043 | 17,543 | 12,411 | 7,649 | 6,450 | 8,644 | 5,406 | 4,930 |
| Below Normal (13%) | 6,084 | 6,474 | 11,387 | 11,282 | 14,081 | 10,582 | 7,801 | 6,255 | 7,050 | 7,831 | 5,668 | 5,622 |
| Dry (24%) | 5,573 | 8,060 | 12,840 | 9,160 | 12,462 | 12,395 | 8,037 | 5,163 | 6,067 | 6,378 | 4,418 | 4,573 |
| Critical (15%) | 4,130 | 4,972 | 7,869 | 7,978 | 8,466 | 8,492 | 5,196 | 3,891 | 4,864 | 5,097 | 3,774 | 4,286 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 96 | **-669** | 271 | 431 | 54 | **-14** | **-10** | 3 | 765 | 16 | **-37** | **-5,398** |
| 20% | 202 | **-4,174** | 1,090 | **-56** | **-21** | 58 | **-5** | **-1** | 837 | **-87** | 107 | **-6,115** |
| 30% | 628 | **-3,763** | 1,489 | 137 | 48 | 48 | 523 | 1,178 | 1,183 | **-309** | 81 | **-5,294** |
| 40% | 54 | **-3,835** | 412 | 2,524 | **-120** | 658 | 5 | 862 | 792 | **-662** | 169 | **-4,040** |
| 50% | **-36** | **-3,194** | 398 | 954 | 554 | 777 | **-15** | 698 | 685 | **-525** | 41 | **-1,383** |
| 60% | 151 | **-1,373** | 223 | 226 | 594 | 655 | 188 | 449 | 221 | **-392** | 12 | **-582** |
| 70% | 395 | **-748** | **-67** | 358 | 294 | **-21** | 234 | 634 | 67 | **-214** | 257 | **-102** |
| 80% | 316 | **-379** | **-70** | **-85** | 42 | 22 | **-58** | 605 | 465 | 30 | 104 | **-95** |
| 90% | 285 | 236 | 302 | **-3** | 78 | 1,195 | **-75** | 82 | 188 | 79 | 159 | 47 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 244 | **-1,667** | 352 | 341 | 148 | 233 | 51 | 469 | 530 | **-208** | 70 | **-2,517** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 237 | **-3,615** | 814 | 146 | 22 | **0** | 94 | 221 | 54 | **-118** | 151 | **-5,773** |
| Above Normal (16%) | 429 | **-3,561** | 375 | 1,044 | 559 | 111 | **-1** | 475 | 279 | **-6** | **-42** | **-4,723** |
| Below Normal (13%) | 38 | 8 | 26 | 901 | 453 | 739 | 348 | 765 | 1,092 | **-117** | 31 | 491 |
| Dry (24%) | 359 | 33 | 116 | 62 | 40 | 221 | **-40** | 782 | 908 | **-300** | 127 | **-92** |
| Critical (15%) | 58 | 239 | 22 | **-43** | **-124** | 427 | **-110** | 207 | 689 | **-551** | **-43** | 132 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-2. Sacramento River at Wilkins Slough Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,085 | 13,680 | 21,054 | 22,004 | 22,663 | 21,629 | 19,305 | 12,626 | 7,647 | 9,651 | 6,604 | 15,000 |
| 20% | 8,058 | 12,740 | 19,478 | 21,246 | 21,557 | 20,322 | 17,770 | 9,257 | 6,993 | 9,342 | 5,490 | 13,578 |
| 30% | 6,899 | 11,329 | 13,790 | 19,595 | 20,842 | 18,849 | 11,344 | 6,196 | 6,309 | 8,911 | 5,164 | 10,896 |
| 40% | 6,477 | 10,258 | 11,682 | 15,309 | 19,622 | 15,823 | 9,141 | 5,251 | 5,529 | 8,538 | 4,706 | 9,358 |
| 50% | 5,903 | 9,074 | 8,485 | 10,934 | 15,932 | 13,561 | 7,733 | 4,691 | 5,083 | 7,329 | 4,546 | 6,362 |
| 60% | 5,455 | 7,395 | 7,185 | 9,497 | 12,629 | 10,304 | 6,915 | 4,505 | 4,836 | 6,392 | 4,519 | 5,258 |
| 70% | 4,796 | 6,283 | 6,108 | 7,878 | 10,574 | 9,133 | 6,401 | 4,101 | 4,735 | 5,502 | 4,158 | 4,675 |
| 80% | 4,470 | 5,372 | 5,670 | 7,058 | 7,685 | 7,985 | 5,750 | 3,677 | 4,620 | 4,959 | 3,863 | 4,349 |
| 90% | 4,002 | 4,466 | 4,991 | 6,212 | 6,408 | 6,215 | 5,156 | 3,510 | 3,649 | 4,191 | 3,442 | 4,001 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,232 | 9,230 | 11,257 | 13,457 | 15,264 | 13,880 | 10,353 | 6,553 | 5,746 | 7,136 | 4,875 | 8,370 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,619 | 12,240 | 11,638 | 18,867 | 19,561 | 17,809 | 14,595 | 9,612 | 6,414 | 7,547 | 5,281 | 13,895 |
| Above Normal (16%) | 7,040 | 11,188 | 11,140 | 16,786 | 18,478 | 17,386 | 12,415 | 7,171 | 6,148 | 8,548 | 5,420 | 9,640 |
| Below Normal (13%) | 6,031 | 6,518 | 11,368 | 10,427 | 13,493 | 9,849 | 7,410 | 5,495 | 5,868 | 7,832 | 5,714 | 5,213 |
| Dry (24%) | 5,332 | 8,146 | 12,802 | 9,108 | 12,411 | 12,203 | 8,103 | 4,421 | 5,230 | 6,445 | 4,208 | 4,627 |
| Critical (15%) | 4,040 | 4,883 | 7,879 | 8,156 | 8,851 | 8,055 | 5,375 | 3,779 | 4,606 | 5,233 | 3,749 | 4,158 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,455 | 11,933 | 21,332 | 22,273 | 22,721 | 21,625 | 19,299 | 12,491 | 8,675 | 9,650 | 6,079 | 9,511 |
| 20% | 7,777 | 9,189 | 20,239 | 21,202 | 21,568 | 20,370 | 17,637 | 9,259 | 7,883 | 9,024 | 5,478 | 7,511 |
| 30% | 7,276 | 7,832 | 15,000 | 19,711 | 20,994 | 19,091 | 11,363 | 7,084 | 7,040 | 8,353 | 5,171 | 6,796 |
| 40% | 6,676 | 6,972 | 12,001 | 18,137 | 19,623 | 16,138 | 9,314 | 6,198 | 6,075 | 7,310 | 4,774 | 6,141 |
| 50% | 6,397 | 6,500 | 8,853 | 12,511 | 16,156 | 13,918 | 8,006 | 5,072 | 5,724 | 6,457 | 4,542 | 5,334 |
| 60% | 6,001 | 6,077 | 7,551 | 9,589 | 13,234 | 11,705 | 7,344 | 4,741 | 5,248 | 5,666 | 4,514 | 4,861 |
| 70% | 5,479 | 5,650 | 6,604 | 8,398 | 10,693 | 9,321 | 6,768 | 4,459 | 4,930 | 5,128 | 4,268 | 4,526 |
| 80% | 5,048 | 5,061 | 5,791 | 7,144 | 7,977 | 8,073 | 6,259 | 4,182 | 4,706 | 4,632 | 3,760 | 4,194 |
| 90% | 4,527 | 4,629 | 5,375 | 6,333 | 6,452 | 7,117 | 5,132 | 3,599 | 3,683 | 4,052 | 3,485 | 3,551 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,612 | 7,660 | 11,671 | 13,838 | 15,439 | 14,108 | 10,528 | 6,843 | 6,231 | 6,743 | 4,828 | 6,008 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,029 | 8,661 | 12,579 | 18,885 | 19,632 | 17,961 | 14,828 | 9,524 | 6,665 | 7,641 | 5,448 | 8,105 |
| Above Normal (16%) | 7,168 | 8,696 | 11,647 | 17,686 | 19,000 | 17,790 | 12,595 | 7,531 | 6,736 | 8,408 | 5,485 | 6,963 |
| Below Normal (13%) | 6,504 | 6,379 | 11,390 | 11,283 | 14,123 | 10,588 | 7,767 | 6,087 | 7,115 | 7,099 | 4,927 | 4,881 |
| Dry (24%) | 5,844 | 8,008 | 12,849 | 9,252 | 12,486 | 12,146 | 8,212 | 5,086 | 5,751 | 5,557 | 4,296 | 4,439 |
| Critical (15%) | 4,319 | 4,963 | 8,022 | 8,720 | 8,624 | 8,267 | 5,365 | 3,914 | 4,733 | 4,642 | 3,567 | 4,075 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 369 | **-1,747** | 278 | 269 | 59 | **-4** | **-6** | **-134** | 1,028 | **-1** | **-525** | **-5,489** |
| 20% | **-281** | **-3,551** | 761 | **-45** | 11 | 48 | **-133** | 2 | 889 | **-318** | **-12** | **-6,068** |
| 30% | 377 | **-3,496** | 1,210 | 116 | 152 | 242 | 20 | 888 | 731 | **-557** | 7 | **-4,100** |
| 40% | 199 | **-3,286** | 319 | 2,828 | 0 | 316 | 174 | 947 | 545 | **-1,228** | 68 | **-3,218** |
| 50% | 494 | **-2,574** | 368 | 1,577 | 224 | 357 | 273 | 382 | 642 | **-872** | **-4** | **-1,028** |
| 60% | 546 | **-1,319** | 366 | 92 | 605 | 1,401 | 430 | 237 | 412 | **-727** | **-5** | **-397** |
| 70% | 683 | **-633** | 496 | 520 | 119 | 188 | 368 | 358 | 195 | **-374** | 109 | **-150** |
| 80% | 577 | **-311** | 121 | 86 | 292 | 88 | 509 | 505 | 86 | **-328** | **-103** | **-155** |
| 90% | 525 | 162 | 384 | 121 | 44 | 901 | **-24** | 89 | 34 | **-139** | 43 | **-450** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 380 | **-1,571** | 414 | 381 | 175 | 228 | 175 | 290 | 485 | **-394** | **-47** | **-2,363** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 410 | **-3,579** | 940 | 18 | 71 | 152 | 232 | **-88** | 251 | 94 | 167 | **-5,790** |
| Above Normal (16%) | 128 | **-2,493** | 507 | 901 | 523 | 404 | 180 | 360 | 588 | **-140** | 65 | **-2,676** |
| Below Normal (13%) | 473 | **-139** | 21 | 856 | 630 | 739 | 357 | 592 | 1,246 | **-733** | **-787** | **-332** |
| Dry (24%) | 512 | **-138** | 47 | 144 | 75 | **-57** | 110 | 665 | 521 | **-888** | 88 | **-188** |
| Critical (15%) | 279 | 80 | 143 | 564 | **-228** | 211 | **-10** | 135 | 127 | **-590** | **-182** | **-83** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-3. Sacramento River at Wilkins Slough Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,085 | 13,566 | 21,070 | 22,006 | 22,665 | 21,630 | 19,305 | 12,626 | 7,804 | 9,695 | 6,594 | 15,000 |
| 20% | 7,608 | 12,869 | 19,597 | 21,247 | 21,557 | 20,323 | 17,774 | 9,258 | 7,069 | 9,423 | 5,495 | 13,681 |
| 30% | 6,693 | 10,941 | 13,753 | 19,601 | 20,870 | 19,029 | 11,344 | 6,213 | 6,008 | 9,174 | 5,161 | 11,042 |
| 40% | 6,148 | 10,268 | 11,687 | 15,569 | 19,624 | 15,809 | 9,173 | 5,248 | 5,478 | 8,710 | 4,673 | 9,367 |
| 50% | 5,810 | 9,256 | 8,468 | 10,929 | 15,927 | 13,550 | 7,720 | 4,655 | 5,002 | 7,804 | 4,545 | 6,275 |
| 60% | 5,268 | 7,240 | 7,263 | 9,489 | 12,622 | 10,302 | 6,911 | 4,442 | 4,834 | 6,628 | 4,520 | 5,260 |
| 70% | 4,638 | 5,992 | 6,017 | 7,886 | 10,266 | 8,916 | 6,329 | 3,999 | 4,707 | 5,820 | 4,244 | 4,623 |
| 80% | 4,497 | 5,159 | 5,612 | 6,942 | 7,686 | 7,980 | 5,718 | 3,711 | 4,165 | 4,710 | 3,951 | 4,372 |
| 90% | 3,994 | 4,289 | 4,854 | 6,012 | 6,308 | 6,211 | 5,161 | 3,476 | 3,495 | 4,331 | 3,442 | 3,965 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,124 | 9,152 | 11,234 | 13,460 | 15,249 | 13,881 | 10,343 | 6,529 | 5,684 | 7,294 | 4,903 | 8,377 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,511 | 12,176 | 11,622 | 18,870 | 19,567 | 17,810 | 14,598 | 9,612 | 6,426 | 7,574 | 5,293 | 13,916 |
| Above Normal (16%) | 6,711 | 11,184 | 11,185 | 16,976 | 18,484 | 17,432 | 12,412 | 7,174 | 6,171 | 8,650 | 5,448 | 9,654 |
| Below Normal (13%) | 6,046 | 6,466 | 11,361 | 10,381 | 13,627 | 9,842 | 7,454 | 5,489 | 5,958 | 7,948 | 5,637 | 5,132 |
| Dry (24%) | 5,215 | 8,027 | 12,724 | 9,098 | 12,422 | 12,174 | 8,077 | 4,381 | 5,159 | 6,678 | 4,291 | 4,665 |
| Critical (15%) | 4,072 | 4,733 | 7,847 | 8,021 | 8,590 | 8,066 | 5,306 | 3,683 | 4,176 | 5,648 | 3,817 | 4,154 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,085 | 13,680 | 21,054 | 22,004 | 22,663 | 21,629 | 19,305 | 12,626 | 7,647 | 9,651 | 6,604 | 15,000 |
| 20% | 8,058 | 12,740 | 19,478 | 21,246 | 21,557 | 20,322 | 17,770 | 9,257 | 6,993 | 9,342 | 5,490 | 13,578 |
| 30% | 6,899 | 11,329 | 13,790 | 19,595 | 20,842 | 18,849 | 11,344 | 6,196 | 6,309 | 8,911 | 5,164 | 10,896 |
| 40% | 6,477 | 10,258 | 11,682 | 15,309 | 19,622 | 15,823 | 9,141 | 5,251 | 5,529 | 8,538 | 4,706 | 9,358 |
| 50% | 5,903 | 9,074 | 8,485 | 10,934 | 15,932 | 13,561 | 7,733 | 4,691 | 5,083 | 7,329 | 4,546 | 6,362 |
| 60% | 5,455 | 7,395 | 7,185 | 9,497 | 12,629 | 10,304 | 6,915 | 4,505 | 4,836 | 6,392 | 4,519 | 5,258 |
| 70% | 4,796 | 6,283 | 6,108 | 7,878 | 10,574 | 9,133 | 6,401 | 4,101 | 4,735 | 5,502 | 4,158 | 4,675 |
| 80% | 4,470 | 5,372 | 5,670 | 7,058 | 7,685 | 7,985 | 5,750 | 3,677 | 4,620 | 4,959 | 3,863 | 4,349 |
| 90% | 4,002 | 4,466 | 4,991 | 6,212 | 6,408 | 6,215 | 5,156 | 3,510 | 3,649 | 4,191 | 3,442 | 4,001 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,232 | 9,230 | 11,257 | 13,457 | 15,264 | 13,880 | 10,353 | 6,553 | 5,746 | 7,136 | 4,875 | 8,370 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 7,619 | 12,240 | 11,638 | 18,867 | 19,561 | 17,809 | 14,595 | 9,612 | 6,414 | 7,547 | 5,281 | 13,895 |
| Above Normal (16%) | 7,040 | 11,188 | 11,140 | 16,786 | 18,478 | 17,386 | 12,415 | 7,171 | 6,148 | 8,548 | 5,420 | 9,640 |
| Below Normal (13%) | 6,031 | 6,518 | 11,368 | 10,427 | 13,493 | 9,849 | 7,410 | 5,495 | 5,868 | 7,832 | 5,714 | 5,213 |
| Dry (24%) | 5,332 | 8,146 | 12,802 | 9,108 | 12,411 | 12,203 | 8,103 | 4,421 | 5,230 | 6,445 | 4,208 | 4,627 |
| Critical (15%) | 4,040 | 4,883 | 7,879 | 8,156 | 8,851 | 8,055 | 5,375 | 3,779 | 4,606 | 5,233 | 3,749 | 4,158 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 114 | -16 | -2 | -2 | -1 | -1 | -1 | -157 | -44 | 11 | 0 |
| 20% | 449 | -128 | -119 | -1 | 0 | 0 | -4 | -1 | -76 | -82 | -5 | -103 |
| 30% | 206 | 387 | 37 | -6 | -28 | -179 | -1 | -17 | 301 | -263 | 2 | -147 |
| 40% | 329 | -10 | -5 | -260 | -2 | 14 | -32 | 3 | 51 | -172 | 33 | -8 |
| 50% | 93 | -182 | 17 | 4 | 5 | 11 | 13 | 36 | 81 | -475 | 1 | 87 |
| 60% | 186 | 155 | -78 | 8 | 7 | 1 | 3 | 63 | 2 | -235 | -1 | -2 |
| 70% | 158 | 291 | 91 | -8 | 308 | 217 | 72 | 102 | 28 | -319 | -86 | 53 |
| 80% | -27 | 213 | 58 | 116 | -1 | 5 | 32 | -35 | 455 | 250 | -88 | -23 |
| 90% | 8 | 178 | 137 | 200 | 100 | 4 | -5 | 34 | 154 | -140 | 0 | 35 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 108 | 79 | 23 | -2 | 15 | -1 | 10 | 24 | 61 | -158 | -28 | -7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 108 | 64 | 16 | -2 | -5 | 0 | -3 | 0 | -12 | -27 | -12 | -21 |
| Above Normal (16%) | 329 | 4 | -44 | -190 | -6 | -46 | 3 | -3 | -23 | -102 | -28 | -14 |
| Below Normal (13%) | -15 | 52 | 7 | 46 | -135 | 7 | -44 | 6 | -89 | -116 | 77 | 82 |
| Dry (24%) | 118 | 119 | 79 | 10 | -11 | 28 | 26 | 39 | 72 | -233 | -82 | -37 |
| Critical (15%) | -33 | 150 | 32 | 136 | 261 | -11 | 69 | 96 | 431 | -415 | -68 | 4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-4. Sacramento River at Wilkins Slough Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 9,181 | 12,897 | 21,341 | 22,437 | 22,719 | 21,616 | 19,295 | 12,630 | 8,569 | 9,712 | 6,557 | 9,602 |
| 20% | 7,810 | 8,695 | 20,686 | 21,191 | 21,536 | 20,380 | 17,770 | 9,257 | 7,906 | 9,336 | 5,602 | 7,566 |
| 30% | 7,320 | 7,179 | 15,241 | 19,739 | 20,918 | 19,077 | 11,867 | 7,391 | 7,191 | 8,865 | 5,242 | 5,748 |
| 40% | 6,201 | 6,433 | 12,099 | 18,093 | 19,504 | 16,467 | 9,178 | 6,110 | 6,270 | 8,048 | 4,842 | 5,327 |
| 50% | 5,774 | 6,062 | 8,866 | 11,884 | 16,481 | 14,327 | 7,705 | 5,353 | 5,687 | 7,280 | 4,586 | 4,892 |
| 60% | 5,420 | 5,867 | 7,486 | 9,715 | 13,216 | 10,957 | 7,099 | 4,891 | 5,055 | 6,236 | 4,531 | 4,678 |
| 70% | 5,033 | 5,244 | 5,950 | 8,244 | 10,560 | 8,896 | 6,563 | 4,633 | 4,775 | 5,607 | 4,502 | 4,521 |
| 80% | 4,813 | 4,780 | 5,542 | 6,857 | 7,728 | 8,001 | 5,660 | 4,317 | 4,630 | 4,739 | 4,055 | 4,277 |
| 90% | 4,279 | 4,525 | 5,156 | 6,008 | 6,386 | 7,406 | 5,086 | 3,558 | 3,683 | 4,410 | 3,601 | 4,012 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,369 | 7,485 | 11,587 | 13,801 | 15,397 | 14,114 | 10,393 | 6,998 | 6,215 | 7,087 | 4,973 | 5,861 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 7,748 | 8,561 | 12,436 | 19,016 | 19,589 | 17,809 | 14,692 | 9,833 | 6,480 | 7,456 | 5,443 | 8,143 |
| Above Normal (16%) | 7,140 | 7,623 | 11,560 | 18,020 | 19,043 | 17,543 | 12,411 | 7,649 | 6,450 | 8,644 | 5,406 | 4,930 |
| Below Normal (13%) | 6,084 | 6,474 | 11,387 | 11,282 | 14,081 | 10,582 | 7,801 | 6,255 | 7,050 | 7,831 | 5,668 | 5,622 |
| Dry (24%) | 5,573 | 8,060 | 12,840 | 9,160 | 12,462 | 12,395 | 8,037 | 5,163 | 6,067 | 6,378 | 4,418 | 4,573 |
| Critical (15%) | 4,130 | 4,972 | 7,869 | 7,978 | 8,466 | 8,492 | 5,196 | 3,891 | 4,864 | 5,097 | 3,774 | 4,286 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 9,455 | 11,933 | 21,332 | 22,273 | 22,721 | 21,625 | 19,299 | 12,491 | 8,675 | 9,650 | 6,079 | 9,511 |
| 20% | 7,777 | 9,189 | 20,239 | 21,202 | 21,568 | 20,370 | 17,637 | 9,259 | 7,883 | 9,024 | 5,478 | 7,511 |
| 30% | 7,276 | 7,832 | 15,000 | 19,711 | 20,994 | 19,091 | 11,363 | 7,084 | 7,040 | 8,353 | 5,171 | 6,796 |
| 40% | 6,676 | 6,972 | 12,001 | 18,137 | 19,623 | 16,138 | 9,314 | 6,198 | 6,075 | 7,310 | 4,774 | 6,141 |
| 50% | 6,397 | 6,500 | 8,853 | 12,511 | 16,156 | 13,918 | 8,006 | 5,072 | 5,724 | 6,457 | 4,542 | 5,334 |
| 60% | 6,001 | 6,077 | 7,551 | 9,589 | 13,234 | 11,705 | 7,344 | 4,741 | 5,248 | 5,666 | 4,514 | 4,861 |
| 70% | 5,479 | 5,650 | 6,604 | 8,398 | 10,693 | 9,321 | 6,768 | 4,459 | 4,930 | 5,128 | 4,268 | 4,526 |
| 80% | 5,048 | 5,061 | 5,791 | 7,144 | 7,977 | 8,073 | 6,259 | 4,182 | 4,706 | 4,632 | 3,760 | 4,194 |
| 90% | 4,527 | 4,629 | 5,375 | 6,333 | 6,452 | 7,117 | 5,132 | 3,599 | 3,683 | 4,052 | 3,485 | 3,551 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,612 | 7,660 | 11,671 | 13,838 | 15,439 | 14,108 | 10,528 | 6,843 | 6,231 | 6,743 | 4,828 | 6,008 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 8,029 | 8,661 | 12,579 | 18,885 | 19,632 | 17,961 | 14,828 | 9,524 | 6,665 | 7,641 | 5,448 | 8,105 |
| Above Normal (16%) | 7,168 | 8,696 | 11,647 | 17,686 | 19,000 | 17,790 | 12,595 | 7,531 | 6,736 | 8,408 | 5,485 | 6,963 |
| Below Normal (13%) | 6,504 | 6,379 | 11,390 | 11,283 | 14,123 | 10,588 | 7,767 | 6,087 | 7,115 | 7,099 | 4,927 | 4,881 |
| Dry (24%) | 5,844 | 8,008 | 12,849 | 9,252 | 12,486 | 12,146 | 8,212 | 5,086 | 5,751 | 5,557 | 4,296 | 4,439 |
| Critical (15%) | 4,319 | 4,963 | 8,022 | 8,720 | 8,624 | 8,267 | 5,365 | 3,914 | 4,733 | 4,642 | 3,567 | 4,075 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 273 | -964 | -9 | -164 | 2 | 10 | 4 | -138 | 107 | -62 | -478 | -91 |
| 20% | -33 | 494 | -448 | 11 | 32 | -10 | -132 | 2 | -24 | -312 | -125 | -56 |
| 30% | -44 | 654 | -242 | -27 | 76 | 15 | -504 | -306 | -151 | -511 | -72 | 1,048 |
| 40% | 475 | 539 | -98 | 44 | 118 | -328 | 136 | 88 | -196 | -737 | -68 | 814 |
| 50% | 623 | 439 | -13 | 627 | -325 | -409 | 301 | -281 | 38 | -823 | -44 | 442 |
| 60% | 581 | 209 | 65 | -125 | 18 | 748 | 245 | -150 | 193 | -570 | -17 | 183 |
| 70% | 446 | 406 | 654 | 154 | 134 | 425 | 206 | -174 | 155 | -479 | -234 | 4 |
| 80% | 234 | 281 | 248 | 287 | 249 | 72 | 600 | -135 | 76 | -108 | -295 | -83 |
| 90% | 248 | 104 | 219 | 324 | 66 | -290 | 46 | 40 | 0 | -358 | -116 | -461 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 243 | 175 | 84 | 37 | 42 | -6 | 135 | -155 | 16 | -344 | -145 | 147 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 280 | 99 | 143 | -130 | 44 | 152 | 135 | -309 | 185 | 185 | 4 | -38 |
| Above Normal (16%) | 28 | 1,073 | 88 | -333 | -42 | 247 | 184 | -118 | 286 | -237 | 79 | 2,033 |
| Below Normal (13%) | 420 | -95 | 2 | 1 | 42 | 7 | -34 | -168 | 64 | -732 | -741 | -742 |
| Dry (24%) | 271 | -52 | 10 | 92 | 24 | -250 | 175 | -77 | -316 | -822 | -122 | -134 |
| Critical (15%) | 189 | -9 | 153 | 742 | 157 | -226 | 169 | 23 | -131 | -455 | -207 | -211 |

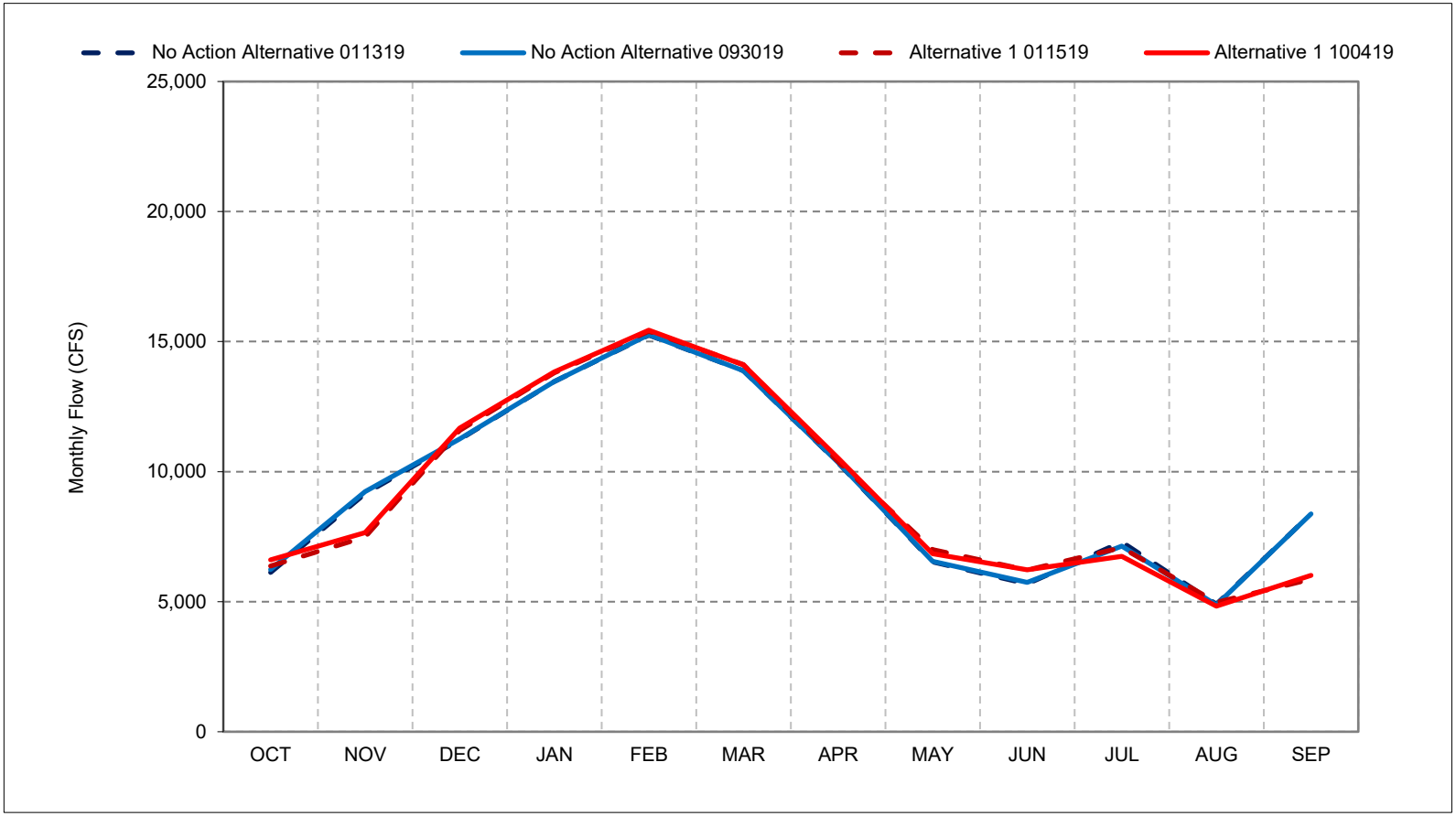
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-1. Sacramento River at Wilkins Slough Flow, Long-Term Average Flow

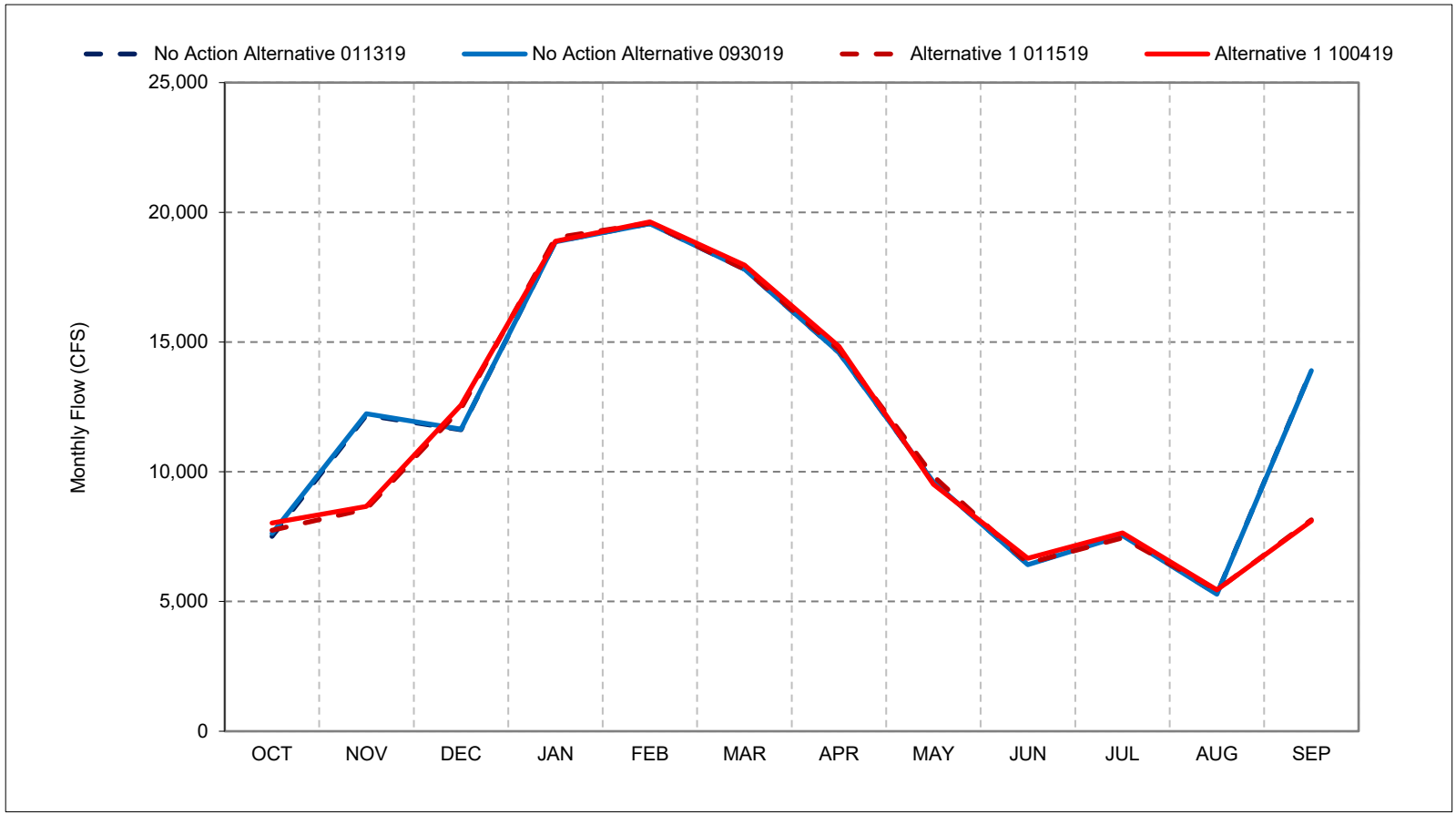



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-2. Sacramento River at Wilkins Slough Flow, Wet Year Average Flow

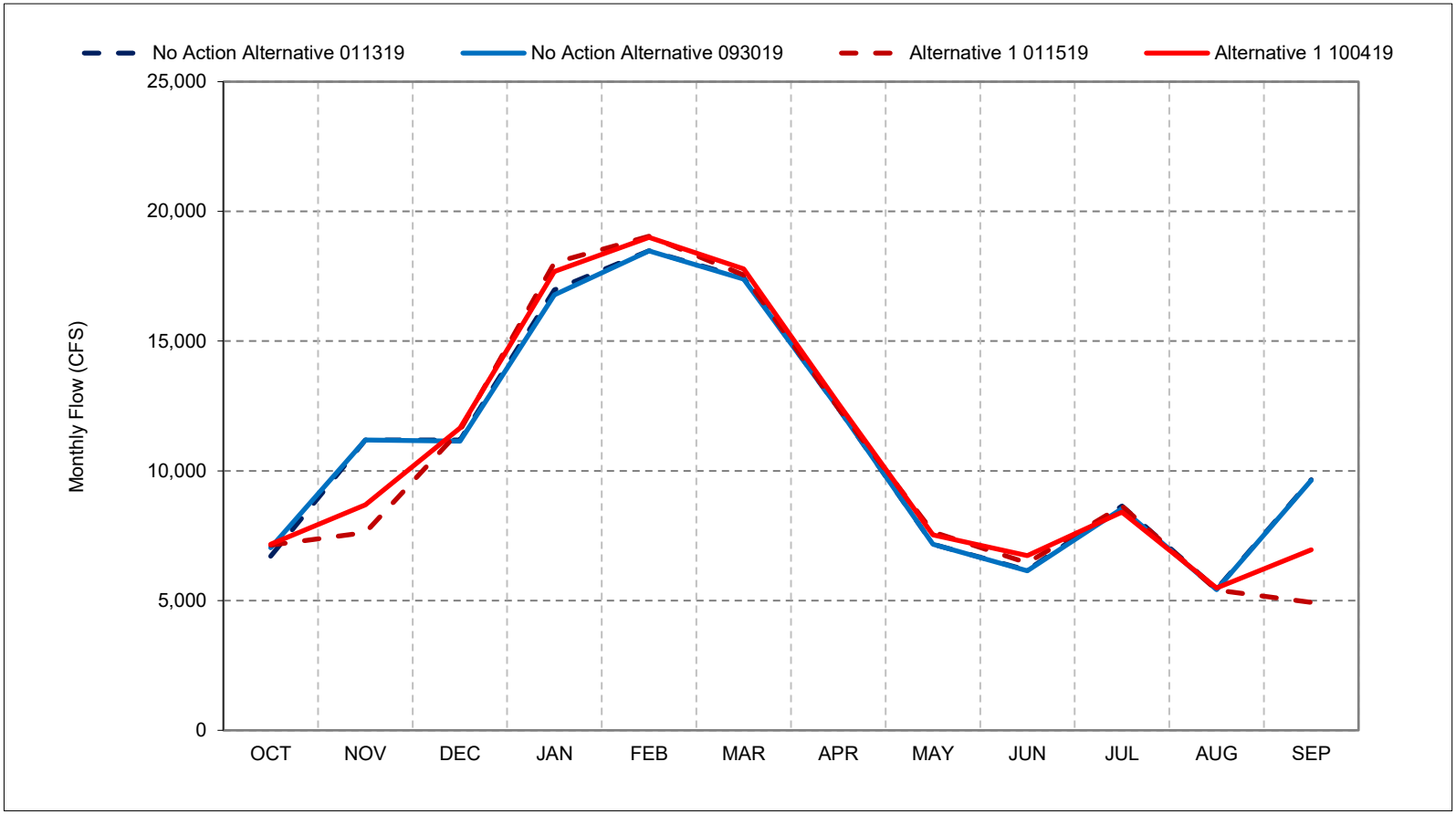



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-3. Sacramento River at Wilkins Slough Flow, Above Normal Year Average Flow

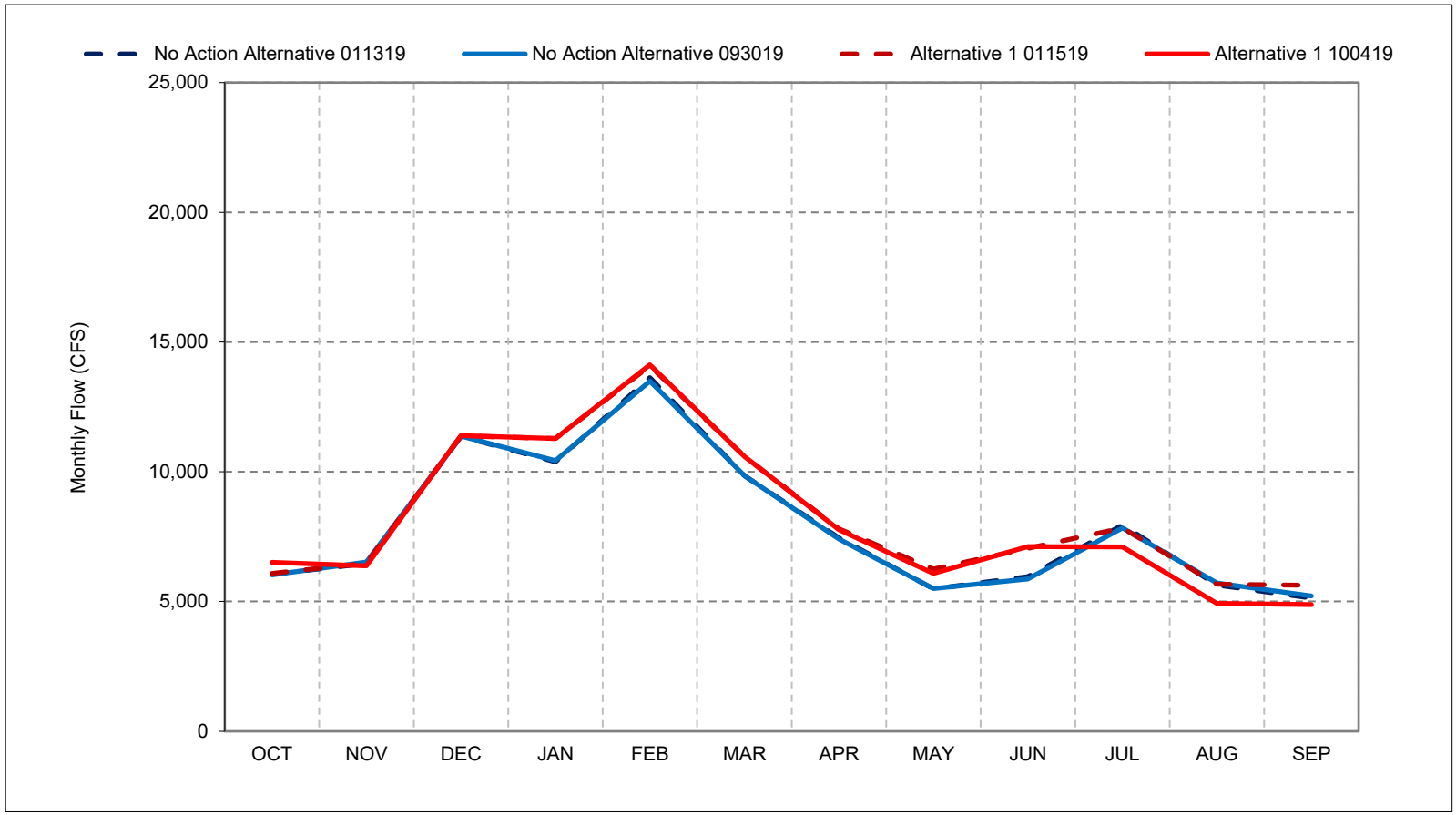



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-4. Sacramento River at Wilkins Slough Flow, Below Normal Year Average Flow

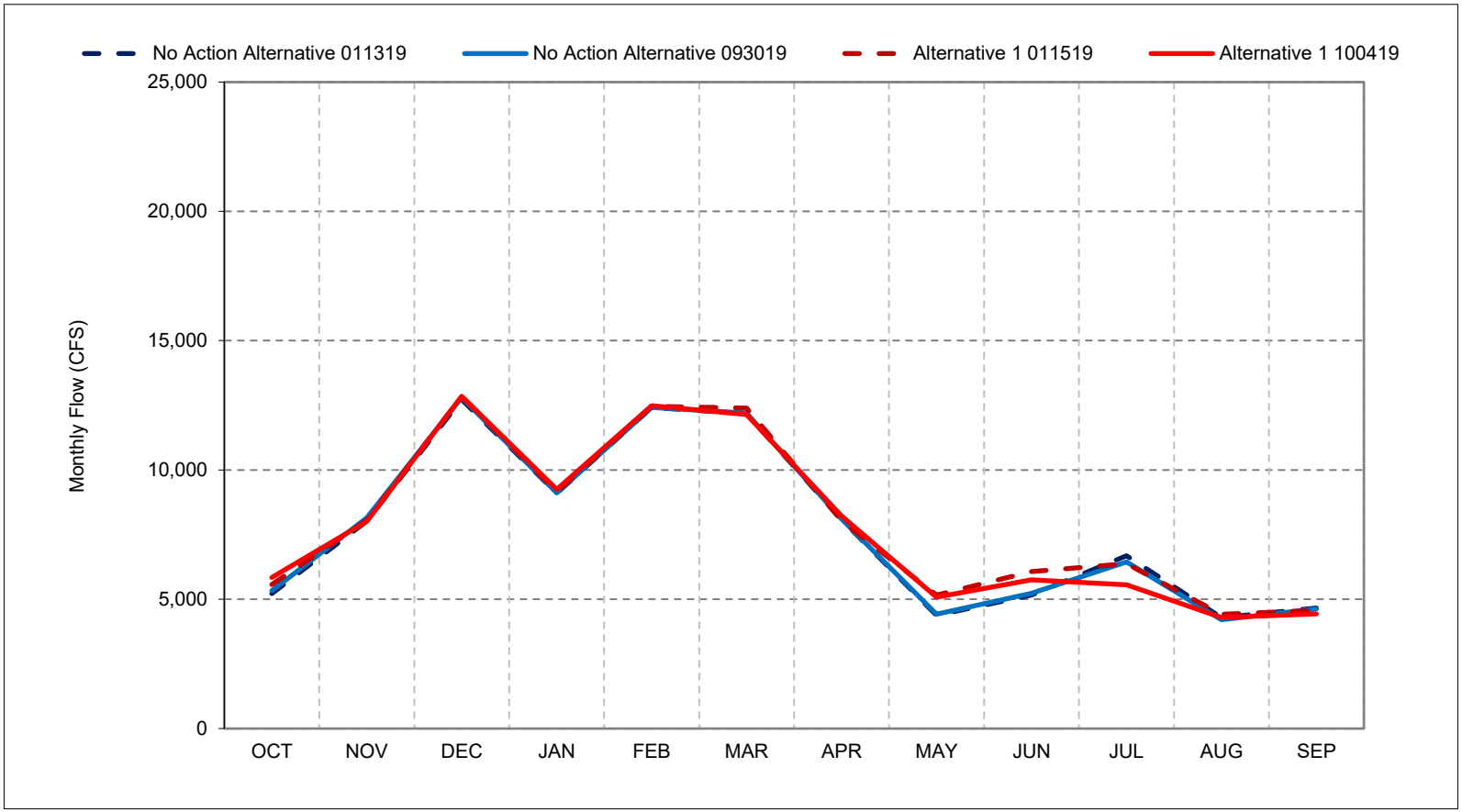



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-5. Sacramento River at Wilkins Slough Flow, Dry Year Average Flow

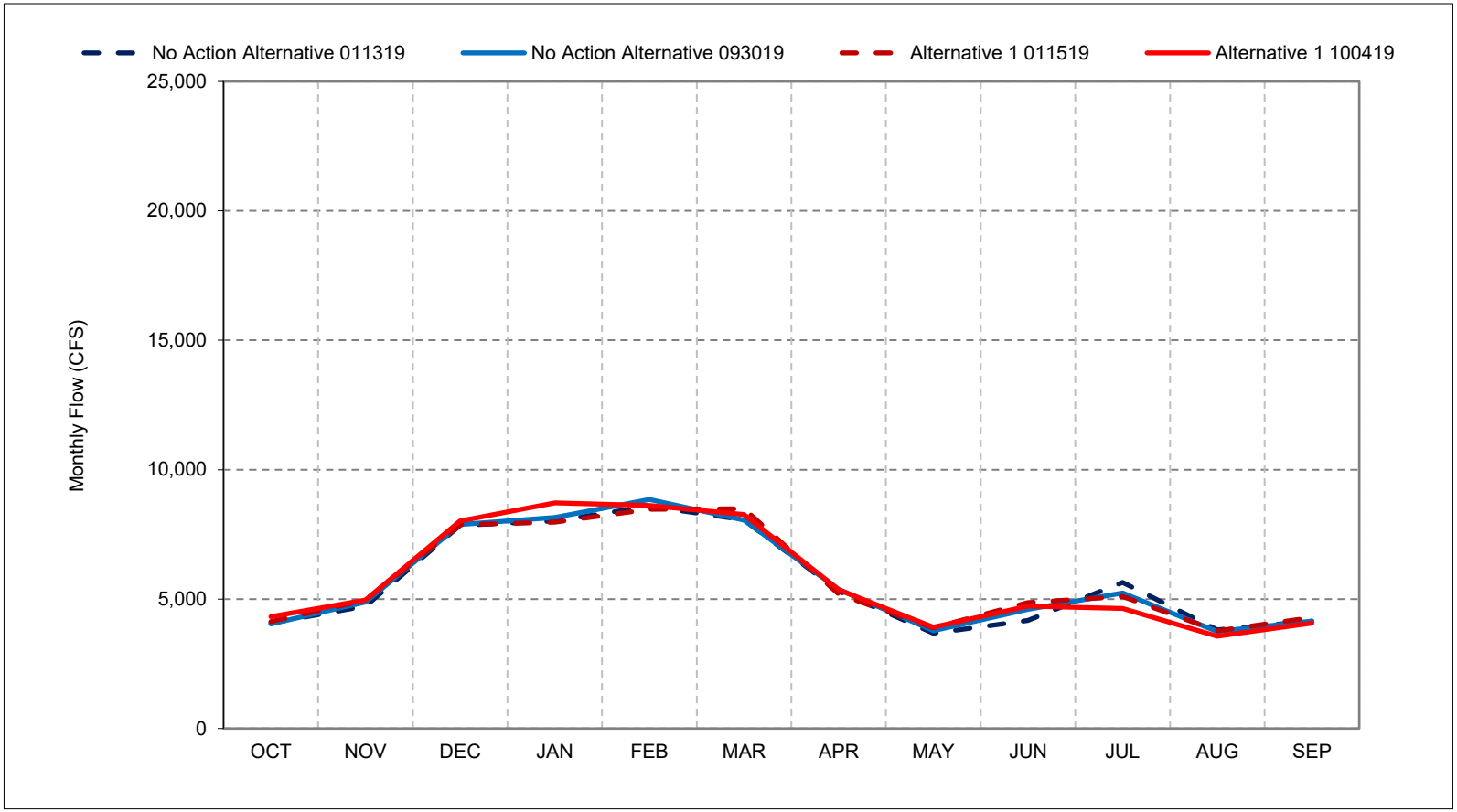



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-6. Sacramento River at Wilkins Slough Flow, Critical Year Average Flow

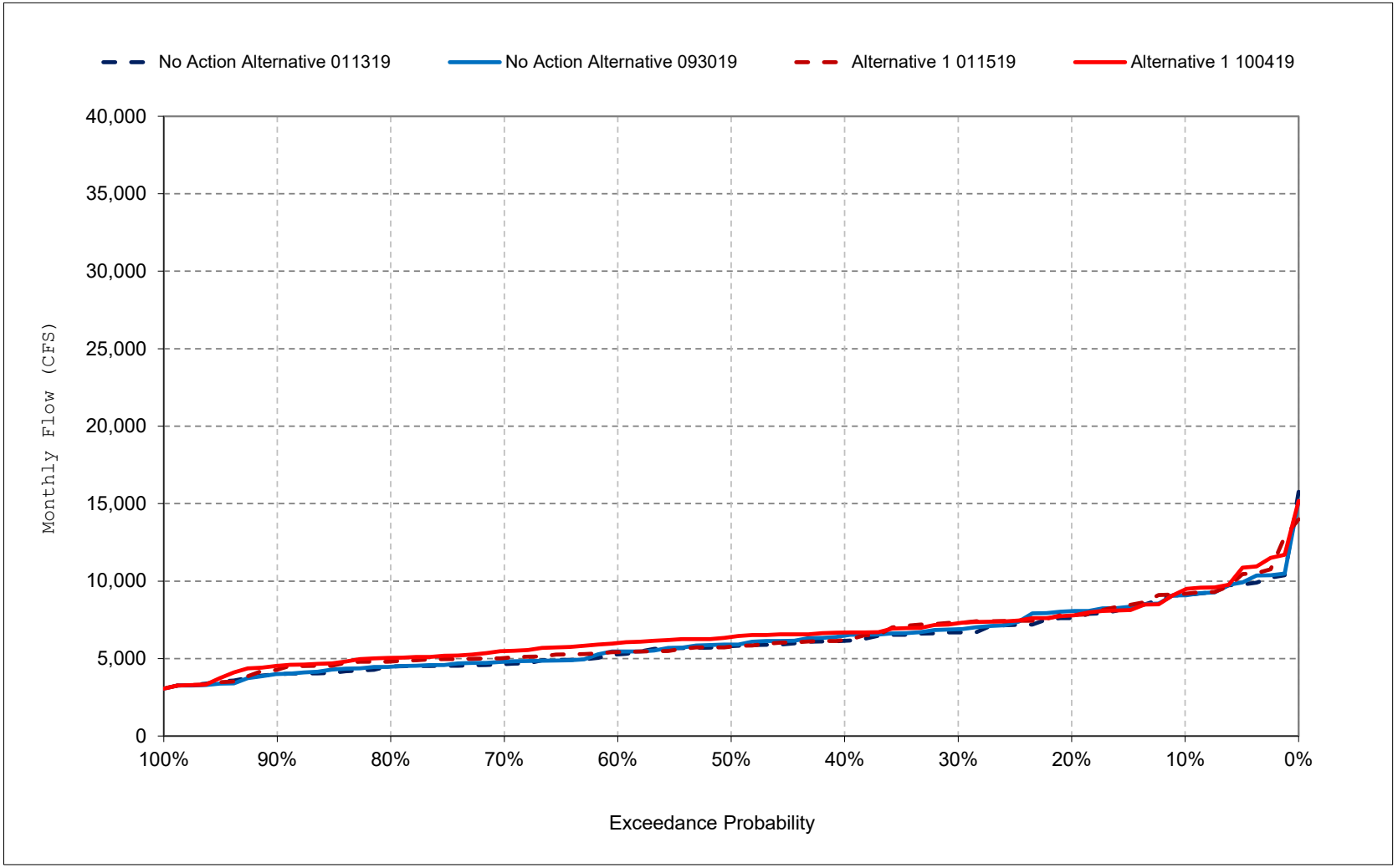



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

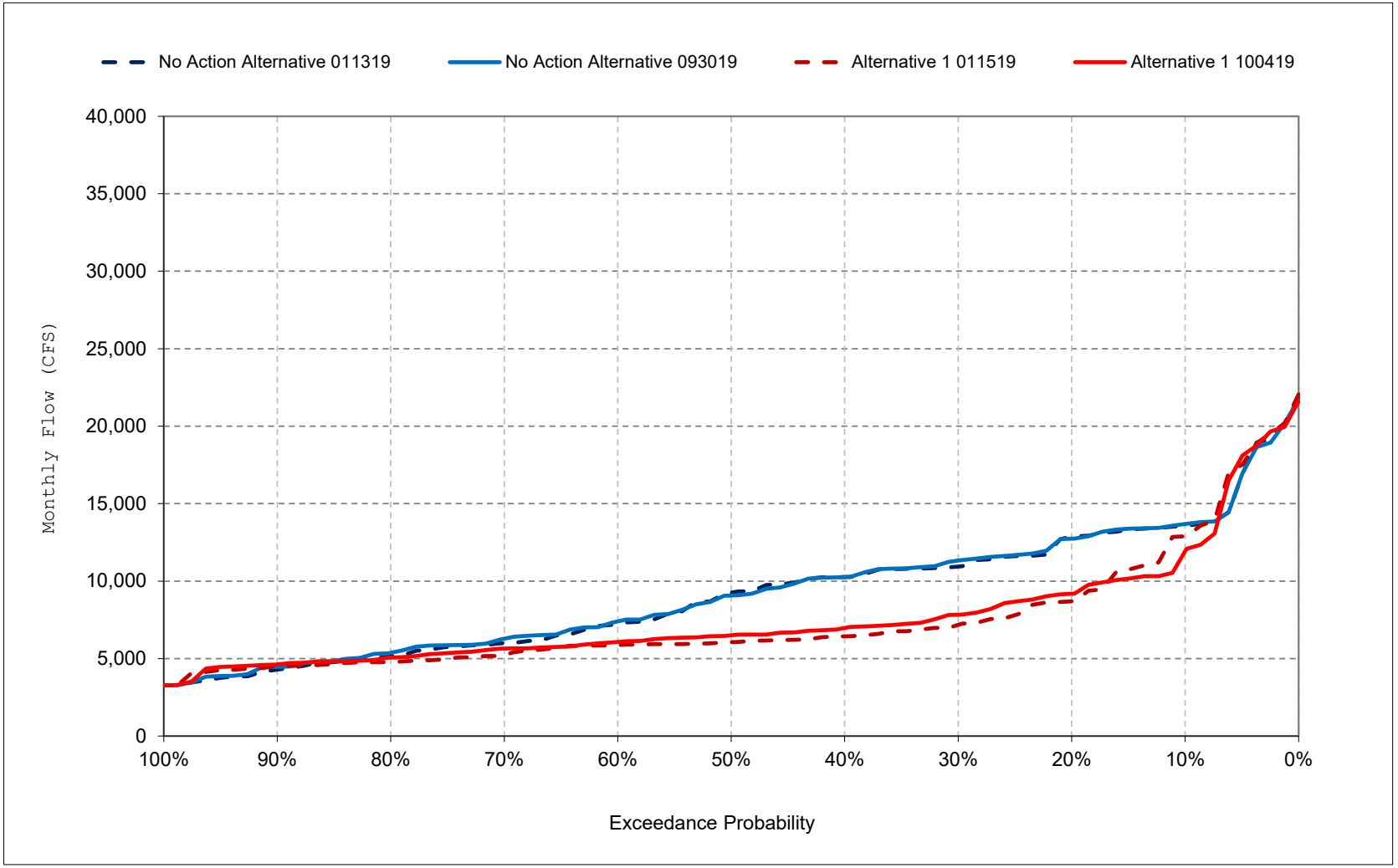
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-7. Sacramento River at Wilkins Slough Flow, October**



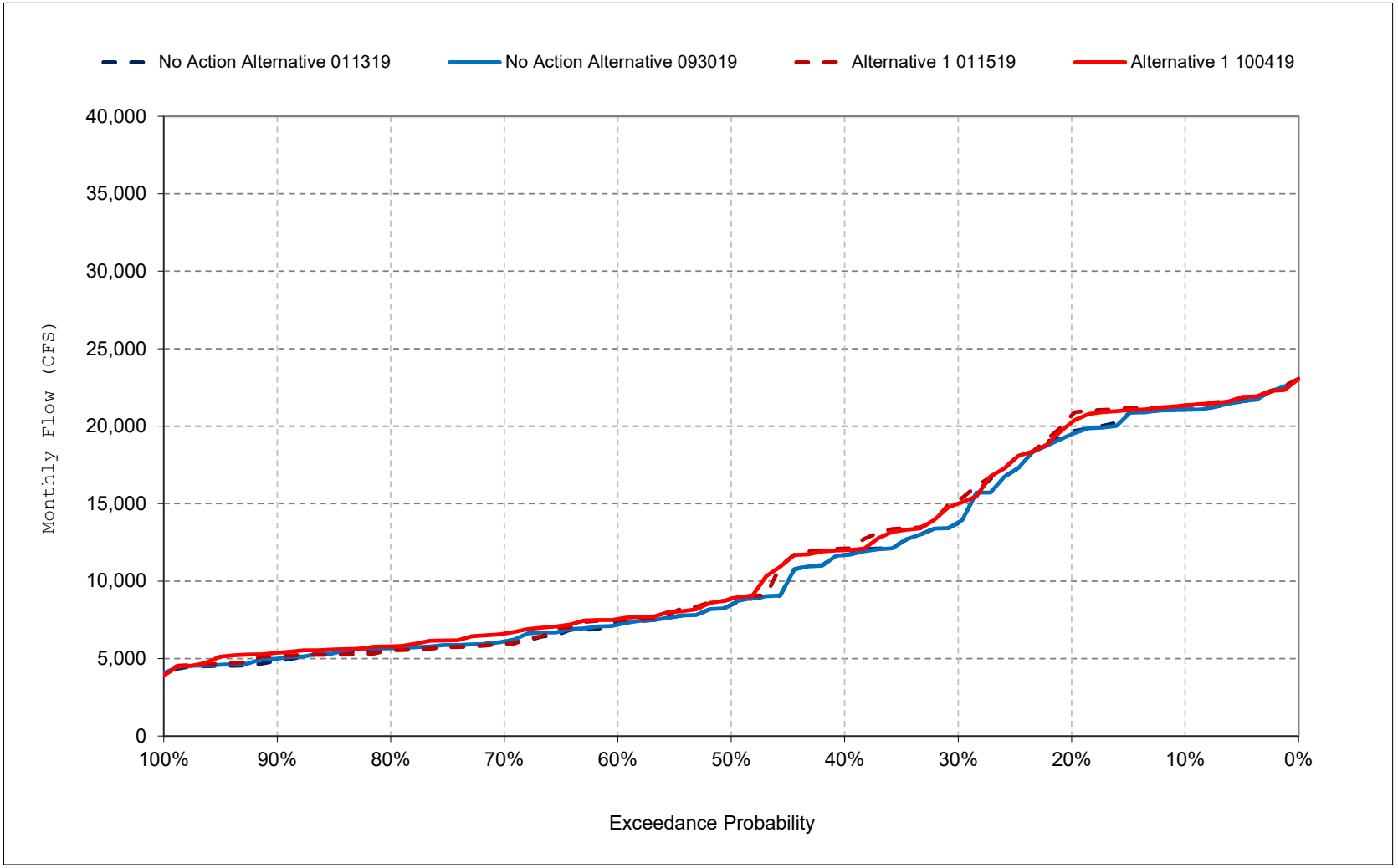

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-8. Sacramento River at Wilkins Slough Flow, November**



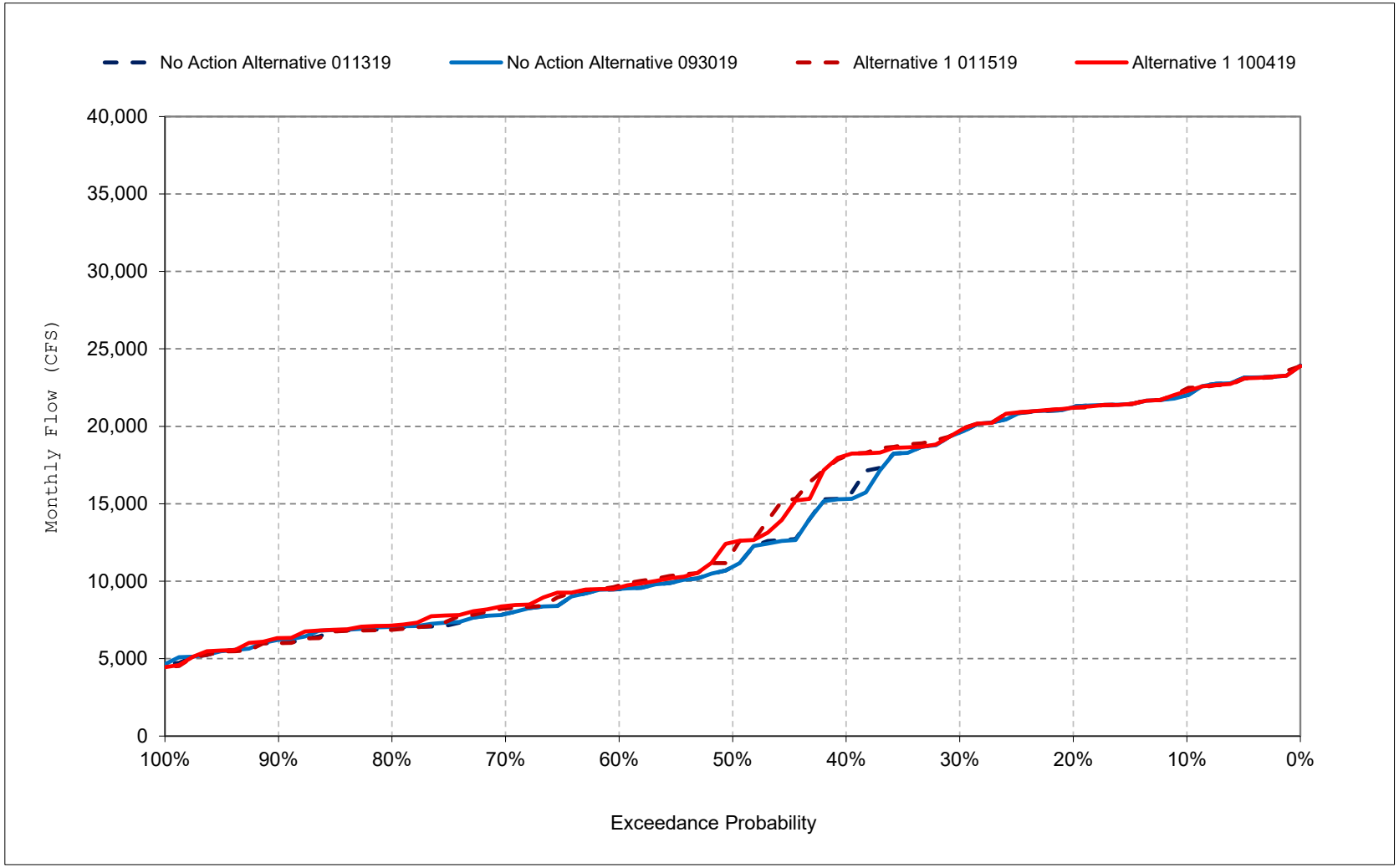

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-9. Sacramento River at Wilkins Slough Flow, December**



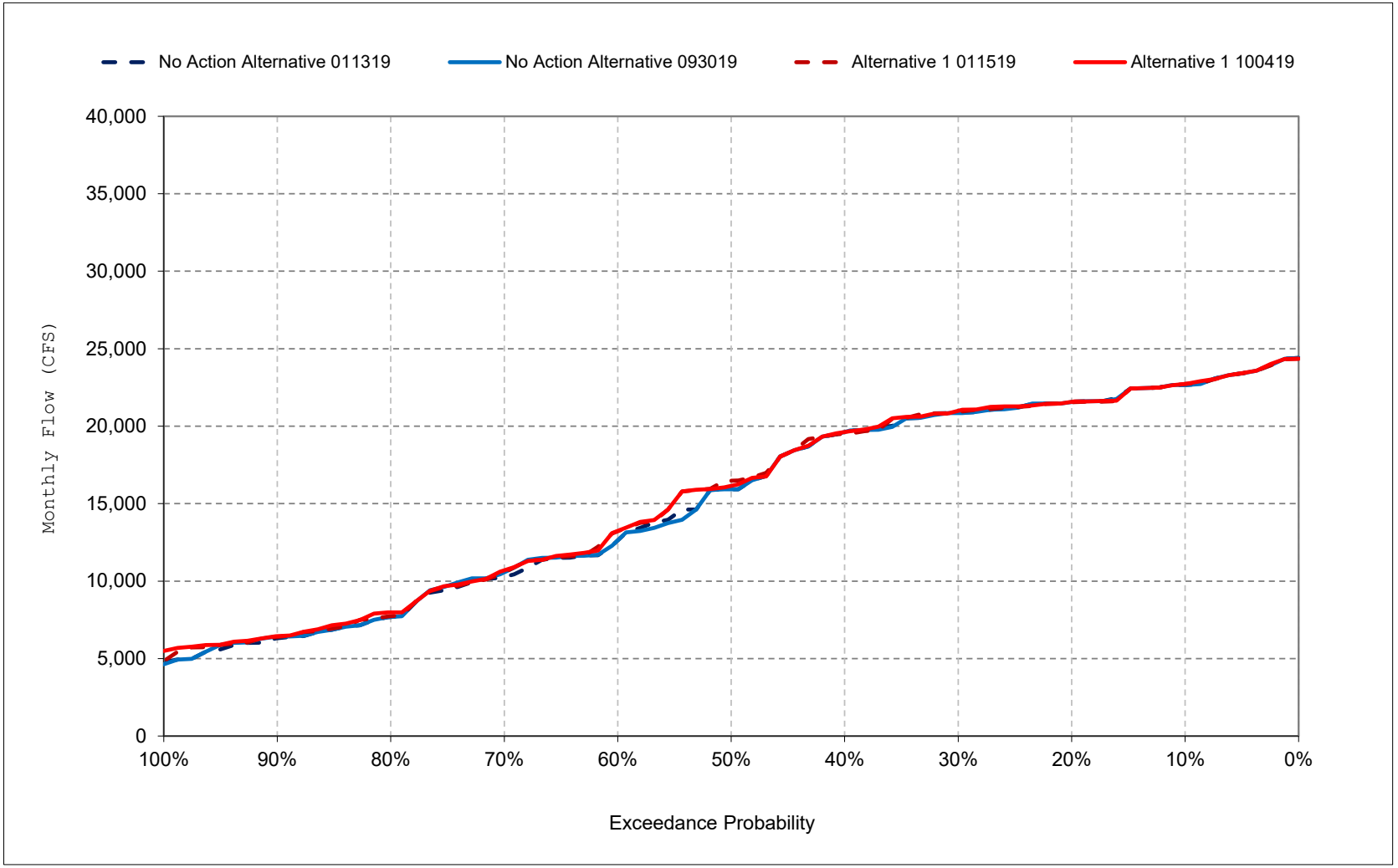

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-10. Sacramento River at Wilkins Slough Flow, January**



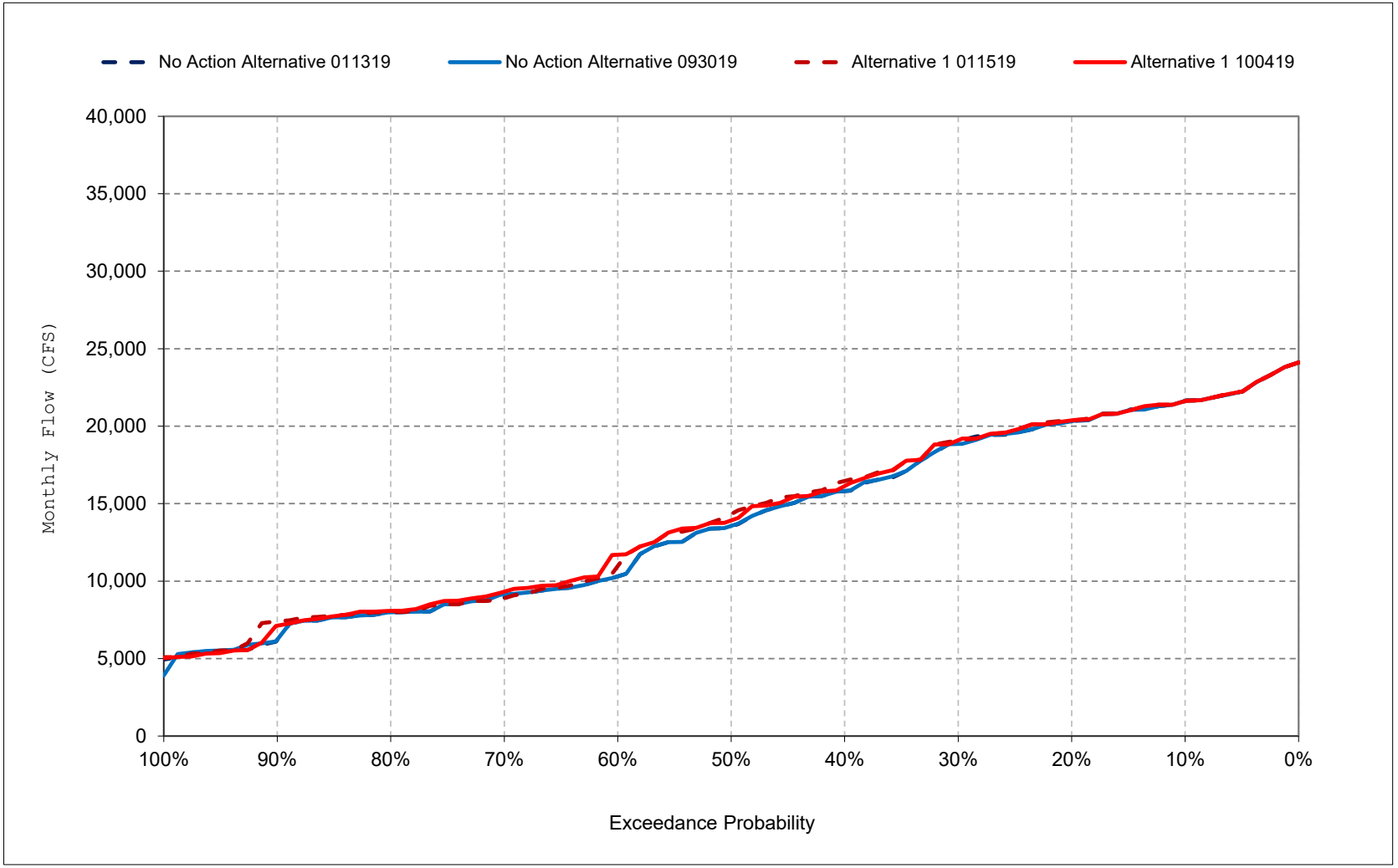

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-11. Sacramento River at Wilkins Slough Flow, February**



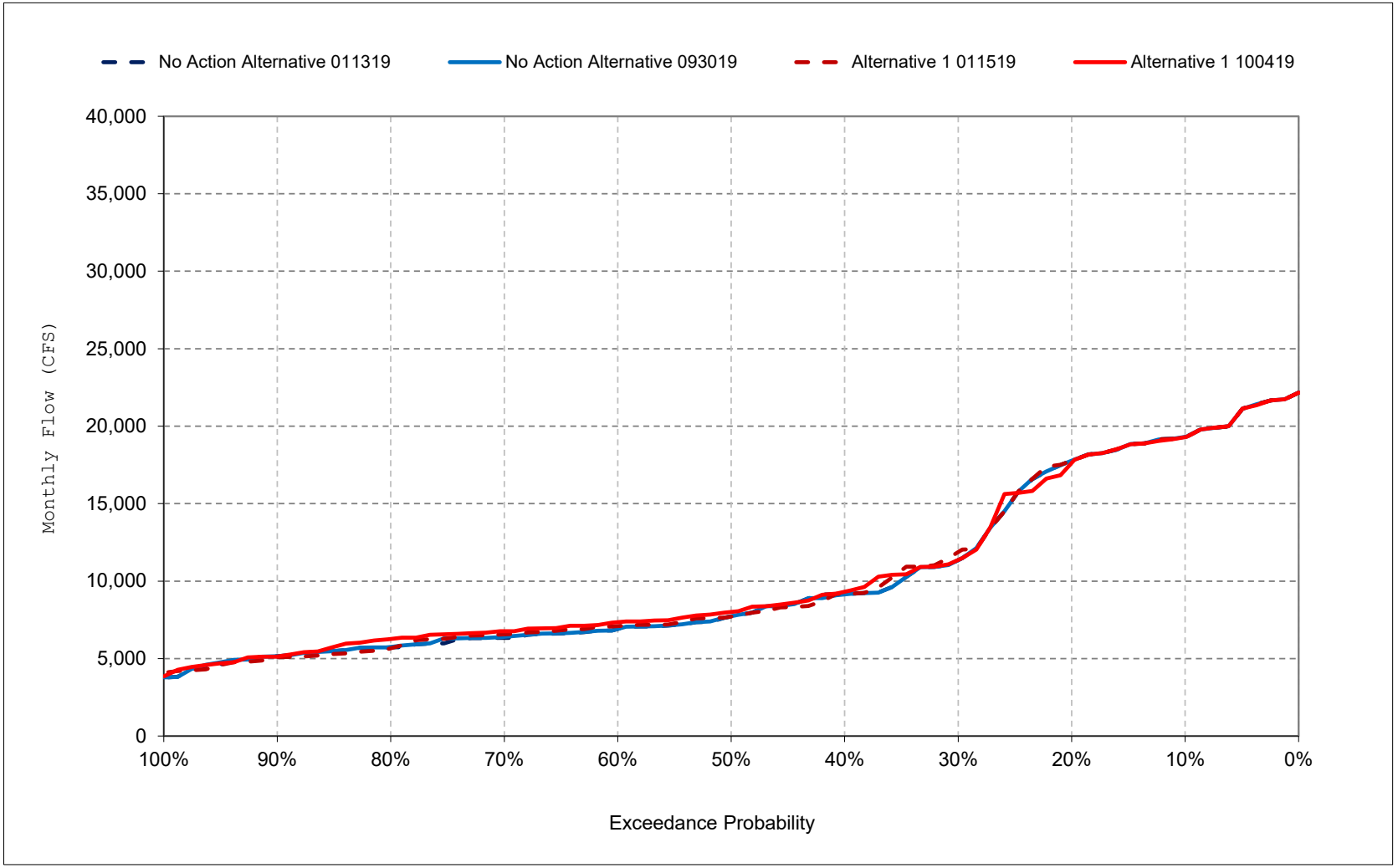

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-12. Sacramento River at Wilkins Slough Flow, March**



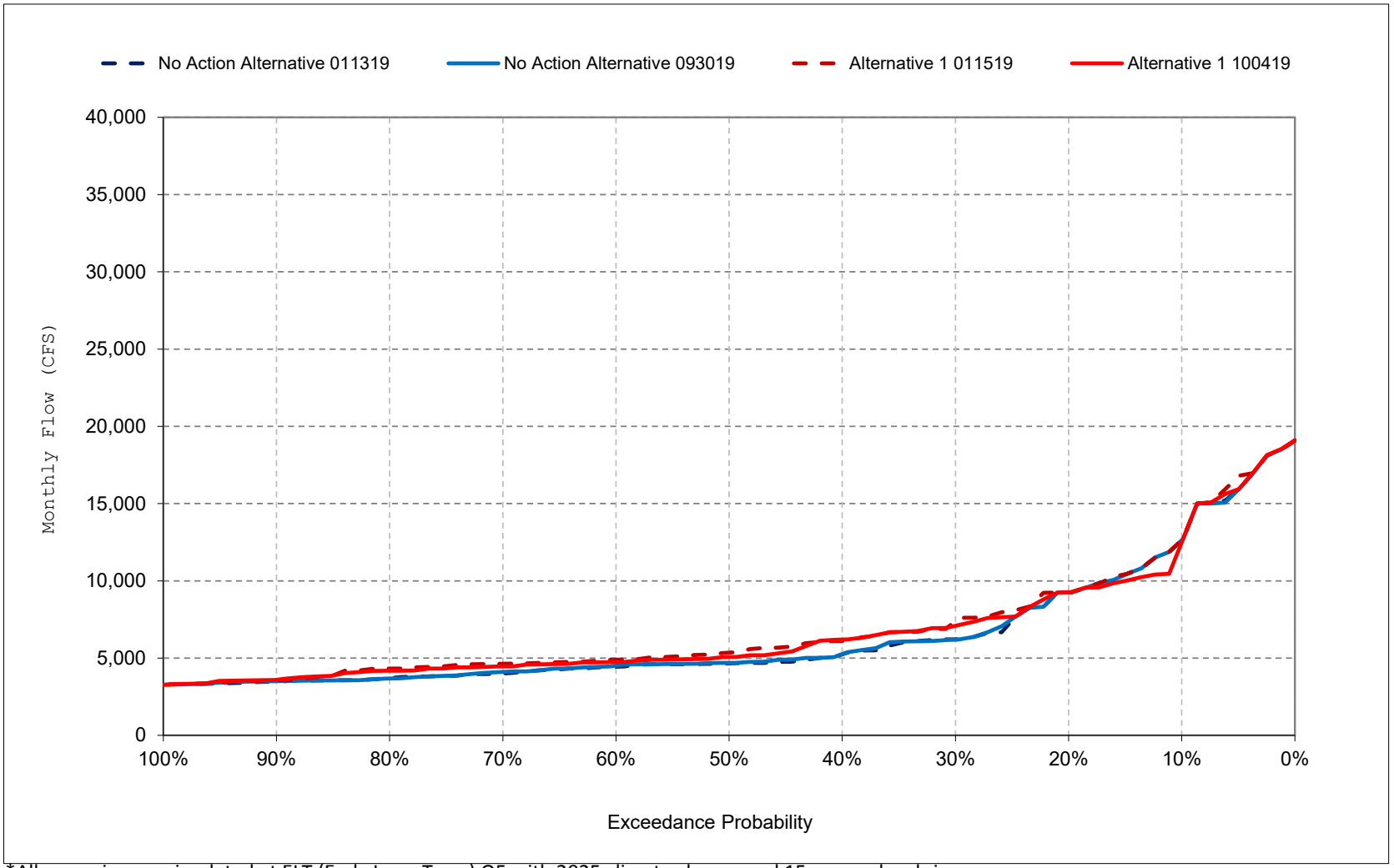

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-13. Sacramento River at Wilkins Slough Flow, April**



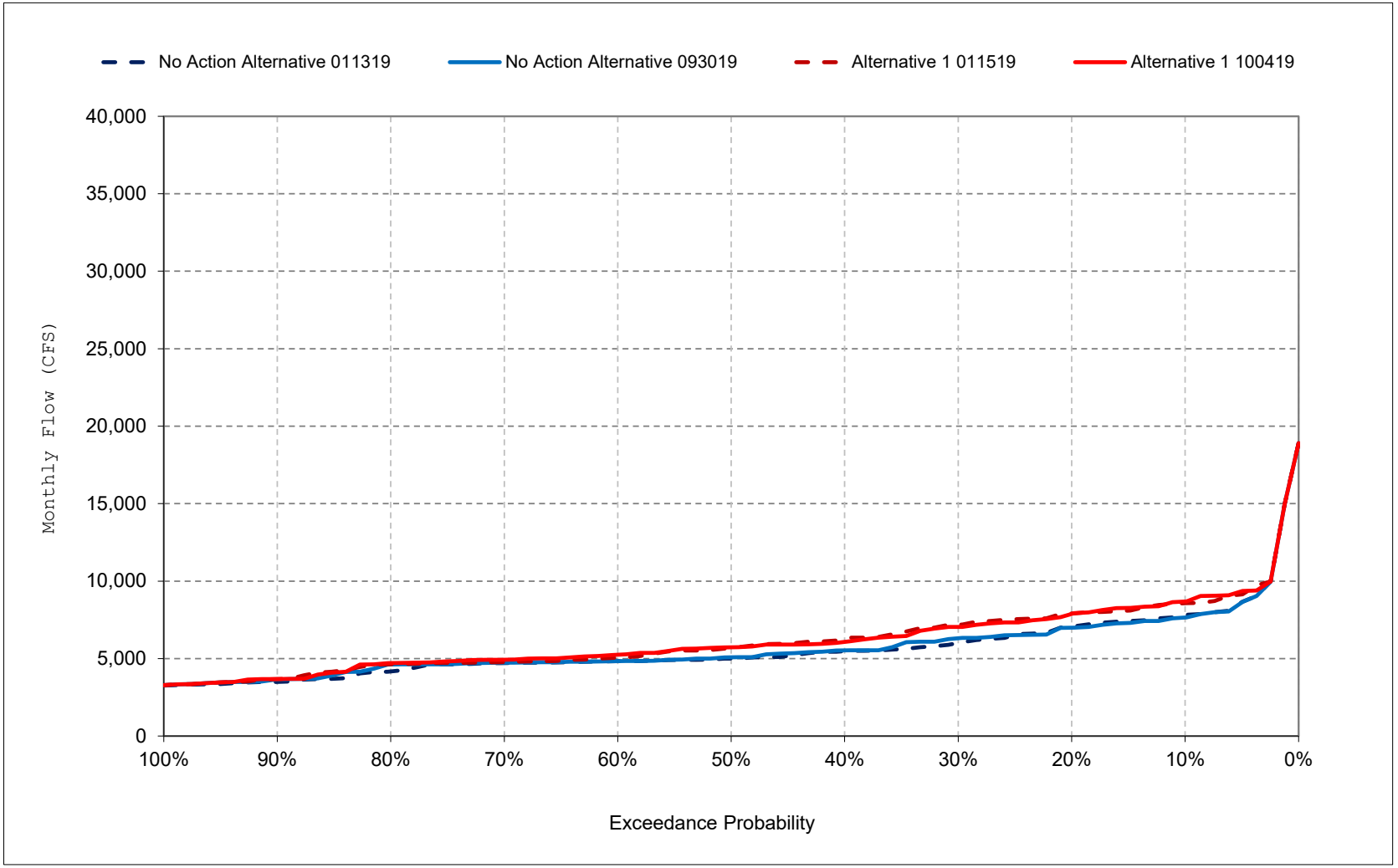

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-14. Sacramento River at Wilkins Slough Flow, May**



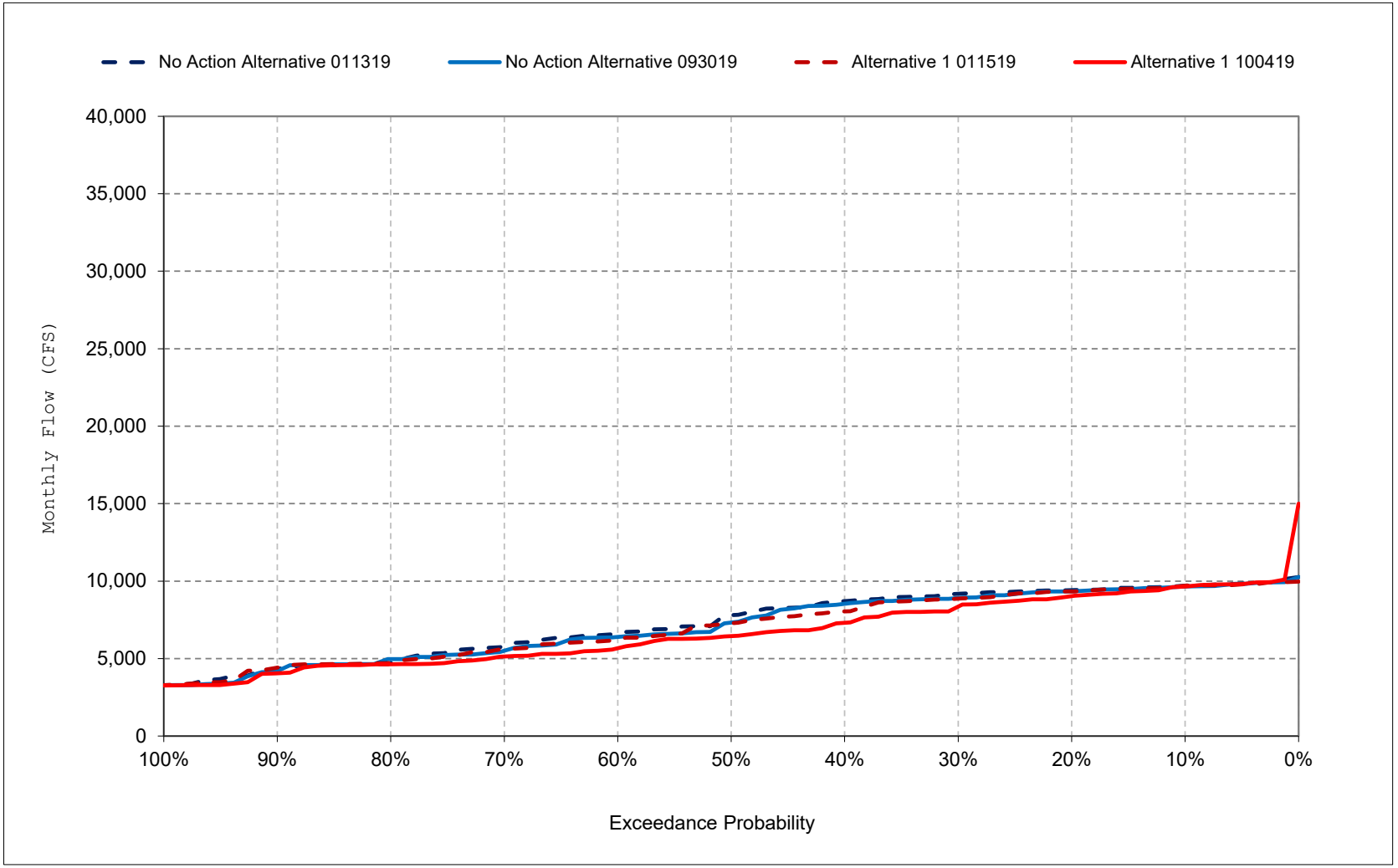

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-15. Sacramento River at Wilkins Slough Flow, June**



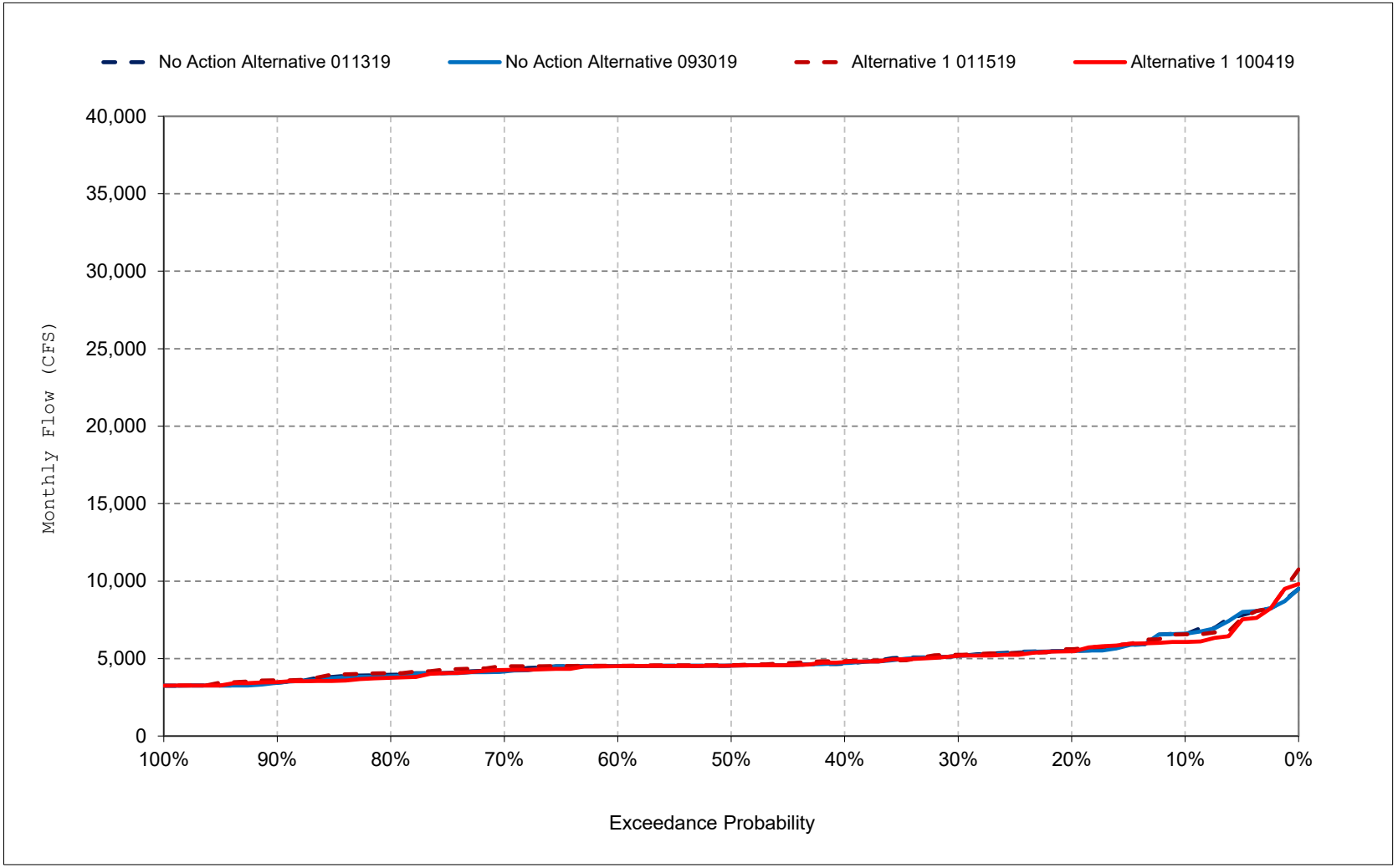

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-16. Sacramento River at Wilkins Slough Flow, July**



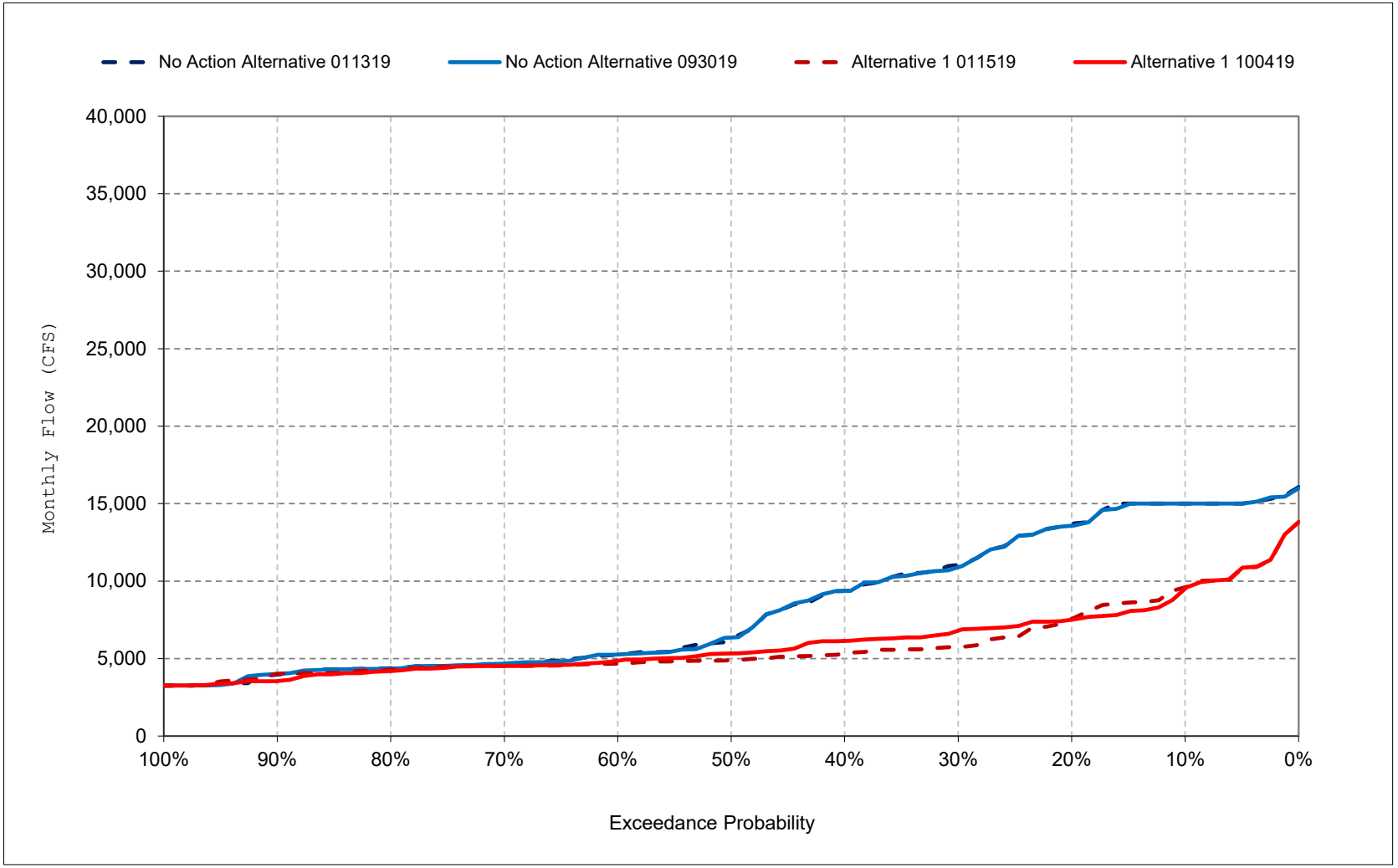

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-17. Sacramento River at Wilkins Slough Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-18. Sacramento River at Wilkins Slough Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-1. Feather River Flow downstream of Thermalito, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 5,018 | 13,760 | 17,606 | 14,415 | 8,407 | 8,325 | 5,575 | 9,607 | 7,960 | 9,472 |
| 20% | 4,000 | 2,500 | 3,321 | 2,011 | 11,135 | 8,902 | 3,686 | 5,400 | 4,238 | 9,053 | 7,531 | 8,992 |
| 30% | 4,000 | 2,426 | 2,087 | 1,700 | 4,284 | 6,734 | 2,554 | 3,081 | 3,871 | 8,782 | 7,277 | 7,869 |
| 40% | 3,034 | 1,826 | 1,700 | 1,700 | 1,700 | 4,737 | 1,605 | 2,427 | 3,235 | 8,422 | 6,212 | 7,419 |
| 50% | 1,762 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,153 | 1,996 | 2,947 | 8,000 | 4,705 | 3,893 |
| 60% | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,420 | 2,667 | 7,392 | 2,848 | 1,736 |
| 70% | 1,700 | 1,200 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,000 | 2,450 | 4,752 | 2,261 | 1,203 |
| 80% | 1,200 | 1,200 | 1,200 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,189 | 3,844 | 1,900 | 1,007 |
| 90% | 900 | 900 | 900 | 900 | 900 | 800 | 758 | 1,000 | 1,716 | 3,226 | 1,410 | 1,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,473 | 1,970 | 2,802 | 4,459 | 5,438 | 6,099 | 3,050 | 3,479 | 3,340 | 6,888 | 4,625 | 4,841 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,811 | 3,024 | 4,380 | 10,636 | 12,626 | 13,568 | 6,591 | 6,937 | 3,748 | 7,115 | 5,721 | 8,774 |
| Above Normal (16%) | 3,362 | 2,151 | 2,430 | 2,389 | 4,133 | 6,286 | 2,129 | 2,013 | 2,140 | 8,734 | 7,622 | 7,550 |
| Below Normal (13%) | 1,589 | 1,564 | 1,575 | 1,595 | 1,589 | 1,907 | 1,279 | 1,880 | 2,604 | 8,687 | 5,874 | 2,506 |
| Dry (24%) | 1,388 | 1,310 | 2,388 | 1,360 | 1,505 | 1,299 | 1,139 | 1,816 | 4,103 | 6,399 | 1,899 | 1,305 |
| Critical (15%) | 1,234 | 965 | 1,600 | 1,108 | 1,360 | 1,554 | 1,184 | 1,814 | 3,162 | 3,566 | 2,402 | 1,420 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 5,380 | 13,768 | 18,491 | 14,399 | 8,408 | 8,271 | 6,433 | 9,812 | 7,864 | 5,604 |
| 20% | 3,963 | 2,469 | 3,501 | 2,739 | 11,947 | 10,484 | 3,603 | 5,387 | 5,100 | 9,307 | 7,588 | 4,860 |
| 30% | 3,350 | 1,700 | 2,492 | 1,700 | 6,891 | 7,392 | 2,577 | 3,566 | 4,645 | 9,002 | 7,153 | 3,787 |
| 40% | 2,035 | 1,700 | 1,700 | 1,700 | 1,807 | 5,124 | 1,633 | 3,176 | 4,239 | 8,702 | 6,560 | 2,195 |
| 50% | 1,748 | 1,700 | 1,700 | 1,700 | 1,700 | 2,483 | 1,187 | 2,489 | 3,886 | 8,075 | 4,652 | 1,349 |
| 60% | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,917 | 3,420 | 7,255 | 2,835 | 1,198 |
| 70% | 1,700 | 1,200 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,143 | 2,980 | 4,356 | 2,253 | 1,059 |
| 80% | 1,200 | 1,200 | 1,200 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,559 | 3,673 | 1,888 | 1,000 |
| 90% | 900 | 900 | 900 | 900 | 900 | 800 | 758 | 1,000 | 2,145 | 3,212 | 1,578 | 1,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,275 | 1,888 | 3,169 | 4,765 | 5,948 | 6,399 | 3,063 | 3,745 | 3,974 | 6,925 | 4,671 | 2,569 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,116 | 2,832 | 5,556 | 11,597 | 13,163 | 13,954 | 6,587 | 7,086 | 4,039 | 7,190 | 5,539 | 2,614 |
| Above Normal (16%) | 3,404 | 2,024 | 2,406 | 2,389 | 4,833 | 7,250 | 2,205 | 2,265 | 2,649 | 9,083 | 7,563 | 5,401 |
| Below Normal (13%) | 1,593 | 1,564 | 1,564 | 1,607 | 3,317 | 2,064 | 1,278 | 2,387 | 3,520 | 9,244 | 6,623 | 2,470 |
| Dry (24%) | 1,402 | 1,310 | 2,397 | 1,360 | 1,505 | 1,309 | 1,126 | 2,179 | 5,129 | 5,966 | 2,004 | 1,444 |
| Critical (15%) | 1,307 | 959 | 1,583 | 1,108 | 1,341 | 1,563 | 1,221 | 1,959 | 3,759 | 3,483 | 2,317 | 1,367 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 362 | 9 | 885 | -17 | 1 | -53 | 858 | 205 | -96 | -3,868 |
| 20% | -37 | -31 | 180 | 728 | 812 | 1,582 | -83 | -13 | 862 | 255 | 57 | -4,133 |
| 30% | -650 | -726 | 405 | 0 | 2,606 | 657 | 24 | 484 | 775 | 220 | -123 | -4,082 |
| 40% | -999 | -126 | 0 | 0 | 107 | 387 | 28 | 750 | 1,004 | 281 | 347 | -5,224 |
| 50% | -13 | 0 | 0 | 0 | 0 | 783 | 34 | 493 | 940 | 74 | -54 | -2,544 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 497 | 753 | -137 | -13 | -538 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 143 | 531 | -396 | -8 | -145 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 370 | -171 | -12 | -7 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 429 | -13 | 168 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -199 | -82 | 367 | 306 | 510 | 300 | 13 | 265 | 634 | 36 | 47 | -2,272 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -694 | -192 | 1,176 | 961 | 537 | 386 | -4 | 150 | 291 | 75 | -182 | -6,159 |
| Above Normal (16%) | 43 | -127 | -24 | -1 | 701 | 965 | 76 | 253 | 510 | 349 | -59 | -2,149 |
| Below Normal (13%) | 4 | 0 | -10 | 12 | 1,729 | 157 | -1 | 507 | 916 | 558 | 749 | -36 |
| Dry (24%) | 14 | 0 | 8 | 0 | 0 | 10 | -12 | 363 | 1,027 | -433 | 105 | 139 |
| Critical (15%) | 74 | -7 | -17 | 0 | -20 | 9 | 37 | 145 | 597 | -83 | -86 | -53 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-2. Feather River Flow downstream of Thermalito, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 4,986 | 13,760 | 17,818 | 14,306 | 8,408 | 8,297 | 5,564 | 9,650 | 7,982 | 9,482 |
| 20% | 4,000 | 2,500 | 3,301 | 2,024 | 10,725 | 8,929 | 3,597 | 5,400 | 4,241 | 9,170 | 7,501 | 9,012 |
| 30% | 4,000 | 2,427 | 2,098 | 1,700 | 4,284 | 6,733 | 2,615 | 3,185 | 3,956 | 8,696 | 7,084 | 7,888 |
| 40% | 3,026 | 1,880 | 1,855 | 1,700 | 1,700 | 4,675 | 1,648 | 2,574 | 3,413 | 8,285 | 6,101 | 7,341 |
| 50% | 1,927 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,152 | 2,089 | 3,148 | 8,001 | 4,740 | 3,789 |
| 60% | 1,858 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,420 | 2,820 | 7,189 | 2,848 | 1,749 |
| 70% | 1,700 | 1,385 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,000 | 2,594 | 4,462 | 2,284 | 1,204 |
| 80% | 1,375 | 1,200 | 1,307 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,234 | 3,529 | 1,828 | 1,008 |
| 90% | 1,125 | 1,124 | 917 | 900 | 900 | 800 | 758 | 1,000 | 1,717 | 2,921 | 1,435 | 1,000 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,552 | 2,020 | 2,829 | 4,460 | 5,436 | 6,072 | 3,040 | 3,527 | 3,427 | 6,794 | 4,604 | 4,815 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,793 | 2,993 | 4,430 | 10,639 | 12,543 | 13,565 | 6,589 | 6,935 | 3,757 | 7,169 | 5,750 | 8,775 |
| Above Normal (16%) | 3,341 | 2,144 | 2,438 | 2,389 | 4,111 | 6,137 | 2,040 | 2,013 | 2,156 | 8,856 | 7,636 | 7,462 |
| Below Normal (13%) | 1,737 | 1,651 | 1,622 | 1,595 | 1,589 | 1,885 | 1,279 | 1,986 | 2,685 | 8,689 | 5,627 | 2,419 |
| Dry (24%) | 1,539 | 1,400 | 2,408 | 1,360 | 1,514 | 1,299 | 1,136 | 1,843 | 4,187 | 5,983 | 1,886 | 1,330 |
| Critical (15%) | 1,442 | 1,146 | 1,591 | 1,108 | 1,538 | 1,560 | 1,225 | 2,000 | 3,503 | 3,359 | 2,424 | 1,375 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,614 | 2,500 | 5,661 | 13,863 | 20,147 | 14,824 | 8,408 | 8,262 | 6,452 | 9,821 | 8,202 | 3,339 |
| 20% | 3,162 | 2,500 | 3,972 | 5,104 | 11,464 | 11,020 | 3,656 | 5,390 | 5,207 | 9,274 | 7,904 | 2,317 |
| 30% | 2,730 | 2,500 | 2,740 | 1,700 | 6,134 | 7,638 | 2,578 | 3,647 | 4,519 | 8,938 | 7,664 | 1,798 |
| 40% | 2,132 | 1,866 | 1,763 | 1,700 | 2,678 | 5,038 | 1,713 | 3,263 | 4,250 | 8,521 | 7,069 | 1,550 |
| 50% | 1,962 | 1,700 | 1,700 | 1,700 | 1,700 | 2,486 | 1,184 | 2,476 | 3,916 | 8,097 | 5,103 | 1,285 |
| 60% | 1,846 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,796 | 3,593 | 7,459 | 3,227 | 1,093 |
| 70% | 1,700 | 1,423 | 1,700 | 1,216 | 1,700 | 1,700 | 1,000 | 1,263 | 3,247 | 4,728 | 2,231 | 1,003 |
| 80% | 1,354 | 1,205 | 1,307 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,877 | 3,826 | 1,882 | 1,000 |
| 90% | 1,125 | 1,123 | 916 | 900 | 900 | 800 | 758 | 1,000 | 2,223 | 3,289 | 1,504 | 1,000 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,209 | 2,019 | 3,293 | 4,898 | 5,900 | 6,528 | 3,070 | 3,758 | 4,041 | 6,964 | 4,995 | 1,750 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 2,938 | 2,902 | 5,356 | 11,938 | 13,386 | 14,130 | 6,587 | 6,982 | 4,022 | 7,012 | 6,659 | 1,624 |
| Above Normal (16%) | 2,760 | 2,311 | 3,210 | 2,388 | 4,869 | 7,728 | 2,226 | 2,315 | 2,727 | 8,643 | 7,594 | 2,295 |
| Below Normal (13%) | 1,753 | 1,638 | 1,622 | 1,595 | 2,339 | 2,064 | 1,279 | 2,382 | 3,773 | 9,022 | 6,550 | 2,441 |
| Dry (24%) | 1,565 | 1,415 | 2,596 | 1,401 | 1,513 | 1,310 | 1,145 | 2,351 | 5,245 | 6,772 | 1,858 | 1,407 |
| Critical (15%) | 1,525 | 1,149 | 1,603 | 1,218 | 1,376 | 1,545 | 1,212 | 1,940 | 3,742 | 3,475 | 2,377 | 1,372 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -386 | 0 | 675 | 104 | 2,329 | 518 | 0 | -34 | 888 | 171 | 220 | -6,143 |
| 20% | -838 | 0 | 671 | 3,080 | 739 | 2,092 | 60 | -10 | 966 | 104 | 403 | -6,695 |
| 30% | -1,270 | 73 | 642 | 0 | 1,849 | 906 | -37 | 462 | 564 | 243 | 580 | -6,090 |
| 40% | -894 | -14 | -92 | 0 | 978 | 363 | 65 | 689 | 837 | 236 | 968 | -5,791 |
| 50% | 36 | 0 | 0 | 0 | 0 | 786 | 32 | 387 | 769 | 96 | 363 | -2,504 |
| 60% | -13 | 0 | 0 | 0 | 0 | 0 | 0 | 377 | 773 | 270 | 378 | -656 |
| 70% | 0 | 38 | 0 | 16 | 0 | 0 | 0 | 263 | 653 | 266 | -53 | -201 |
| 80% | -21 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 643 | 297 | 54 | -8 |
| 90% | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 507 | 368 | 69 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -342 | 0 | 464 | 438 | 464 | 456 | 29 | 231 | 613 | 170 | 391 | -3,065 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -855 | -91 | 926 | 1,299 | 843 | 565 | -2 | 46 | 265 | -157 | 909 | -7,151 |
| Above Normal (16%) | -580 | 167 | 772 | -1 | 757 | 1,591 | 185 | 302 | 570 | -213 | -43 | -5,167 |
| Below Normal (13%) | 16 | -13 | 0 | 0 | 750 | 179 | 0 | 396 | 1,088 | 333 | 923 | 22 |
| Dry (24%) | 26 | 15 | 188 | 41 | 0 | 10 | 10 | 508 | 1,058 | 789 | -29 | 77 |
| Critical (15%) | 83 | 3 | 13 | 110 | -162 | -15 | -13 | -59 | 239 | 116 | -47 | -3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-3. Feather River Flow downstream of Thermalito, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 5,018 | 13,760 | 17,606 | 14,415 | 8,407 | 8,325 | 5,575 | 9,607 | 7,960 | 9,472 |
| 20% | 4,000 | 2,500 | 3,321 | 2,011 | 11,135 | 8,902 | 3,686 | 5,400 | 4,238 | 9,053 | 7,531 | 8,992 |
| 30% | 4,000 | 2,426 | 2,087 | 1,700 | 4,284 | 6,734 | 2,554 | 3,081 | 3,871 | 8,782 | 7,277 | 7,869 |
| 40% | 3,034 | 1,826 | 1,700 | 1,700 | 1,700 | 4,737 | 1,605 | 2,427 | 3,235 | 8,422 | 6,212 | 7,419 |
| 50% | 1,762 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,153 | 1,996 | 2,947 | 8,000 | 4,705 | 3,893 |
| 60% | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,420 | 2,667 | 7,392 | 2,848 | 1,736 |
| 70% | 1,700 | 1,200 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,000 | 2,450 | 4,752 | 2,261 | 1,203 |
| 80% | 1,200 | 1,200 | 1,200 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,189 | 3,844 | 1,900 | 1,007 |
| 90% | 900 | 900 | 900 | 900 | 900 | 800 | 758 | 1,000 | 1,716 | 3,226 | 1,410 | 1,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,473 | 1,970 | 2,802 | 4,459 | 5,438 | 6,099 | 3,050 | 3,479 | 3,340 | 6,888 | 4,625 | 4,841 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,811 | 3,024 | 4,380 | 10,636 | 12,626 | 13,568 | 6,591 | 6,937 | 3,748 | 7,115 | 5,721 | 8,774 |
| Above Normal (16%) | 3,362 | 2,151 | 2,430 | 2,389 | 4,133 | 6,286 | 2,129 | 2,013 | 2,140 | 8,734 | 7,622 | 7,550 |
| Below Normal (13%) | 1,589 | 1,564 | 1,575 | 1,595 | 1,589 | 1,907 | 1,279 | 1,880 | 2,604 | 8,687 | 5,874 | 2,506 |
| Dry (24%) | 1,388 | 1,310 | 2,388 | 1,360 | 1,505 | 1,299 | 1,139 | 1,816 | 4,103 | 6,399 | 1,899 | 1,305 |
| Critical (15%) | 1,234 | 965 | 1,600 | 1,108 | 1,360 | 1,554 | 1,184 | 1,814 | 3,162 | 3,566 | 2,402 | 1,420 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 4,986 | 13,760 | 17,818 | 14,306 | 8,408 | 8,297 | 5,564 | 9,650 | 7,982 | 9,482 |
| 20% | 4,000 | 2,500 | 3,301 | 2,024 | 10,725 | 8,929 | 3,597 | 5,400 | 4,241 | 9,170 | 7,501 | 9,012 |
| 30% | 4,000 | 2,427 | 2,098 | 1,700 | 4,284 | 6,733 | 2,615 | 3,185 | 3,956 | 8,696 | 7,084 | 7,888 |
| 40% | 3,026 | 1,880 | 1,855 | 1,700 | 1,700 | 4,675 | 1,648 | 2,574 | 3,413 | 8,285 | 6,101 | 7,341 |
| 50% | 1,927 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,152 | 2,089 | 3,148 | 8,001 | 4,740 | 3,789 |
| 60% | 1,858 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,420 | 2,820 | 7,189 | 2,848 | 1,749 |
| 70% | 1,700 | 1,385 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,000 | 2,594 | 4,462 | 2,284 | 1,204 |
| 80% | 1,375 | 1,200 | 1,307 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,234 | 3,529 | 1,828 | 1,008 |
| 90% | 1,125 | 1,124 | 917 | 900 | 900 | 800 | 758 | 1,000 | 1,717 | 2,921 | 1,435 | 1,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,552 | 2,020 | 2,829 | 4,460 | 5,436 | 6,072 | 3,040 | 3,527 | 3,427 | 6,794 | 4,604 | 4,815 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,793 | 2,993 | 4,430 | 10,639 | 12,543 | 13,565 | 6,589 | 6,935 | 3,757 | 7,169 | 5,750 | 8,775 |
| Above Normal (16%) | 3,341 | 2,144 | 2,438 | 2,389 | 4,111 | 6,137 | 2,040 | 2,013 | 2,156 | 8,856 | 7,636 | 7,462 |
| Below Normal (13%) | 1,737 | 1,651 | 1,622 | 1,595 | 1,589 | 1,885 | 1,279 | 1,986 | 2,685 | 8,689 | 5,627 | 2,419 |
| Dry (24%) | 1,539 | 1,400 | 2,408 | 1,360 | 1,514 | 1,299 | 1,136 | 1,843 | 4,187 | 5,983 | 1,886 | 1,330 |
| Critical (15%) | 1,442 | 1,146 | 1,591 | 1,108 | 1,538 | 1,560 | 1,225 | 2,000 | 3,503 | 3,359 | 2,424 | 1,375 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | **-31** | 0 | 212 | **-110** | 1 | **-28** | **-10** | 43 | 22 | 10 |
| 20% | 0 | 0 | **-20** | 14 | **-410** | 27 | **-90** | **0** | 3 | 117 | **-30** | 19 |
| 30% | 0 | 1 | 11 | 0 | **0** | **-2** | 61 | 104 | 85 | **-86** | **-193** | 19 |
| 40% | **-8** | 54 | 155 | 0 | 0 | **-62** | 43 | 147 | 178 | **-137** | **-112** | **-78** |
| 50% | 165 | 0 | 0 | 0 | 0 | 0 | **-1** | 93 | 201 | 0 | 35 | **-105** |
| 60% | 158 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 153 | **-203** | 0 | 12 |
| 70% | 0 | 185 | 0 | 0 | 0 | 0 | 0 | 0 | 144 | **-290** | 23 | 1 |
| 80% | 175 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 45 | **-315** | **-72** | 1 |
| 90% | 225 | 224 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | **-304** | 25 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 78 | 49 | 27 | 1 | **-2** | **-27** | **-9** | 48 | 87 | **-95** | **-21** | **-26** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-17** | **-31** | 50 | 3 | **-83** | **-3** | **-1** | **-1** | 8 | 55 | 30 | 1 |
| Above Normal (16%) | **-21** | **-7** | 8 | 0 | **-21** | **-149** | **-89** | **0** | 17 | 122 | 15 | **-88** |
| Below Normal (13%) | 148 | 88 | 48 | 0 | 0 | **-22** | **0** | 105 | 81 | 3 | **-247** | **-86** |
| Dry (24%) | 151 | 90 | 20 | 0 | 8 | 0 | **-3** | 28 | 85 | **-415** | **-12** | 25 |
| Critical (15%) | 208 | 180 | **-10** | 0 | 178 | 6 | 41 | 185 | 341 | **-207** | 21 | **-45** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-4. Feather River Flow downstream of Thermalito, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,000 | 2,500 | 5,380 | 13,768 | 18,491 | 14,399 | 8,408 | 8,271 | 6,433 | 9,812 | 7,864 | 5,604 |
| 20% | 3,963 | 2,469 | 3,501 | 2,739 | 11,947 | 10,484 | 3,603 | 5,387 | 5,100 | 9,307 | 7,588 | 4,860 |
| 30% | 3,350 | 1,700 | 2,492 | 1,700 | 6,891 | 7,392 | 2,577 | 3,566 | 4,645 | 9,002 | 7,153 | 3,787 |
| 40% | 2,035 | 1,700 | 1,700 | 1,700 | 1,807 | 5,124 | 1,633 | 3,176 | 4,239 | 8,702 | 6,560 | 2,195 |
| 50% | 1,748 | 1,700 | 1,700 | 1,700 | 1,700 | 2,483 | 1,187 | 2,489 | 3,886 | 8,075 | 4,652 | 1,349 |
| 60% | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,917 | 3,420 | 7,255 | 2,835 | 1,198 |
| 70% | 1,700 | 1,200 | 1,700 | 1,200 | 1,700 | 1,700 | 1,000 | 1,143 | 2,980 | 4,356 | 2,253 | 1,059 |
| 80% | 1,200 | 1,200 | 1,200 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,559 | 3,673 | 1,888 | 1,000 |
| 90% | 900 | 900 | 900 | 900 | 900 | 800 | 758 | 1,000 | 2,145 | 3,212 | 1,578 | 1,000 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,275 | 1,888 | 3,169 | 4,765 | 5,948 | 6,399 | 3,063 | 3,745 | 3,974 | 6,925 | 4,671 | 2,569 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,116 | 2,832 | 5,556 | 11,597 | 13,163 | 13,954 | 6,587 | 7,086 | 4,039 | 7,190 | 5,539 | 2,614 |
| Above Normal (16%) | 3,404 | 2,024 | 2,406 | 2,389 | 4,833 | 7,250 | 2,205 | 2,265 | 2,649 | 9,083 | 7,563 | 5,401 |
| Below Normal (13%) | 1,593 | 1,564 | 1,564 | 1,607 | 3,317 | 2,064 | 1,278 | 2,387 | 3,520 | 9,244 | 6,623 | 2,470 |
| Dry (24%) | 1,402 | 1,310 | 2,397 | 1,360 | 1,505 | 1,309 | 1,126 | 2,179 | 5,129 | 5,966 | 2,004 | 1,444 |
| Critical (15%) | 1,307 | 959 | 1,583 | 1,108 | 1,341 | 1,563 | 1,221 | 1,959 | 3,759 | 3,483 | 2,317 | 1,367 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,614 | 2,500 | 5,661 | 13,863 | 20,147 | 14,824 | 8,408 | 8,262 | 6,452 | 9,821 | 8,202 | 3,339 |
| 20% | 3,162 | 2,500 | 3,972 | 5,104 | 11,464 | 11,020 | 3,656 | 5,390 | 5,207 | 9,274 | 7,904 | 2,317 |
| 30% | 2,730 | 2,500 | 2,740 | 1,700 | 6,134 | 7,638 | 2,578 | 3,647 | 4,519 | 8,938 | 7,664 | 1,798 |
| 40% | 2,132 | 1,866 | 1,763 | 1,700 | 2,678 | 5,038 | 1,713 | 3,263 | 4,250 | 8,521 | 7,069 | 1,550 |
| 50% | 1,962 | 1,700 | 1,700 | 1,700 | 1,700 | 2,486 | 1,184 | 2,476 | 3,916 | 8,097 | 5,103 | 1,285 |
| 60% | 1,846 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,000 | 1,796 | 3,593 | 7,459 | 3,227 | 1,093 |
| 70% | 1,700 | 1,423 | 1,700 | 1,216 | 1,700 | 1,700 | 1,000 | 1,263 | 3,247 | 4,728 | 2,231 | 1,003 |
| 80% | 1,354 | 1,205 | 1,307 | 960 | 1,200 | 1,000 | 1,000 | 1,000 | 2,877 | 3,826 | 1,882 | 1,000 |
| 90% | 1,125 | 1,123 | 916 | 900 | 900 | 800 | 758 | 1,000 | 2,223 | 3,289 | 1,504 | 1,000 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,209 | 2,019 | 3,293 | 4,898 | 5,900 | 6,528 | 3,070 | 3,758 | 4,041 | 6,964 | 4,995 | 1,750 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 2,938 | 2,902 | 5,356 | 11,938 | 13,386 | 14,130 | 6,587 | 6,982 | 4,022 | 7,012 | 6,659 | 1,624 |
| Above Normal (16%) | 2,760 | 2,311 | 3,210 | 2,388 | 4,869 | 7,728 | 2,226 | 2,315 | 2,727 | 8,643 | 7,594 | 2,295 |
| Below Normal (13%) | 1,753 | 1,638 | 1,622 | 1,595 | 2,339 | 2,064 | 1,279 | 2,382 | 3,773 | 9,022 | 6,550 | 2,441 |
| Dry (24%) | 1,565 | 1,415 | 2,596 | 1,401 | 1,513 | 1,310 | 1,145 | 2,351 | 5,245 | 6,772 | 1,858 | 1,407 |
| Critical (15%) | 1,525 | 1,149 | 1,603 | 1,218 | 1,376 | 1,545 | 1,212 | 1,940 | 3,742 | 3,475 | 2,377 | 1,372 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -386 | 0 | 282 | 95 | 1,656 | 425 | 0 | -9 | 19 | 9 | 338 | -2,265 |
| 20% | -801 | 31 | 471 | 2,365 | -483 | 536 | 53 | 3 | 107 | -34 | 316 | -2,543 |
| 30% | -620 | 800 | 248 | 0 | -757 | 247 | 0 | 81 | -126 | -63 | 510 | -1,989 |
| 40% | 97 | 166 | 63 | 0 | 870 | -86 | 80 | 86 | 11 | -181 | 509 | -645 |
| 50% | 214 | 0 | 0 | 0 | 0 | 3 | -3 | -13 | 30 | 22 | 451 | -64 |
| 60% | 146 | 0 | 0 | 0 | 0 | 0 | 0 | -120 | 172 | 204 | 392 | -105 |
| 70% | 0 | 223 | 0 | 16 | 0 | 0 | 0 | 121 | 267 | 372 | -22 | -55 |
| 80% | 154 | 5 | 107 | 0 | 0 | 0 | 0 | 0 | 317 | 153 | -6 | 0 |
| 90% | 225 | 223 | 16 | 0 | 0 | 0 | 0 | 0 | 78 | 77 | -74 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -66 | 131 | 124 | 133 | -48 | 129 | 7 | 13 | 67 | 39 | 323 | -818 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -179 | 70 | -200 | 341 | 223 | 176 | 0 | -105 | -18 | -177 | 1,120 | -990 |
| Above Normal (16%) | -644 | 287 | 804 | 0 | 35 | 477 | 21 | 50 | 78 | -440 | 31 | -3,106 |
| Below Normal (13%) | 160 | 75 | 58 | -12 | -979 | 0 | 1 | -5 | 253 | -222 | -73 | -29 |
| Dry (24%) | 163 | 105 | 200 | 41 | 8 | 1 | 19 | 172 | 116 | 806 | -146 | -37 |
| Critical (15%) | 218 | 190 | 20 | 110 | 35 | -18 | -9 | -19 | -17 | -8 | 60 | 5 |

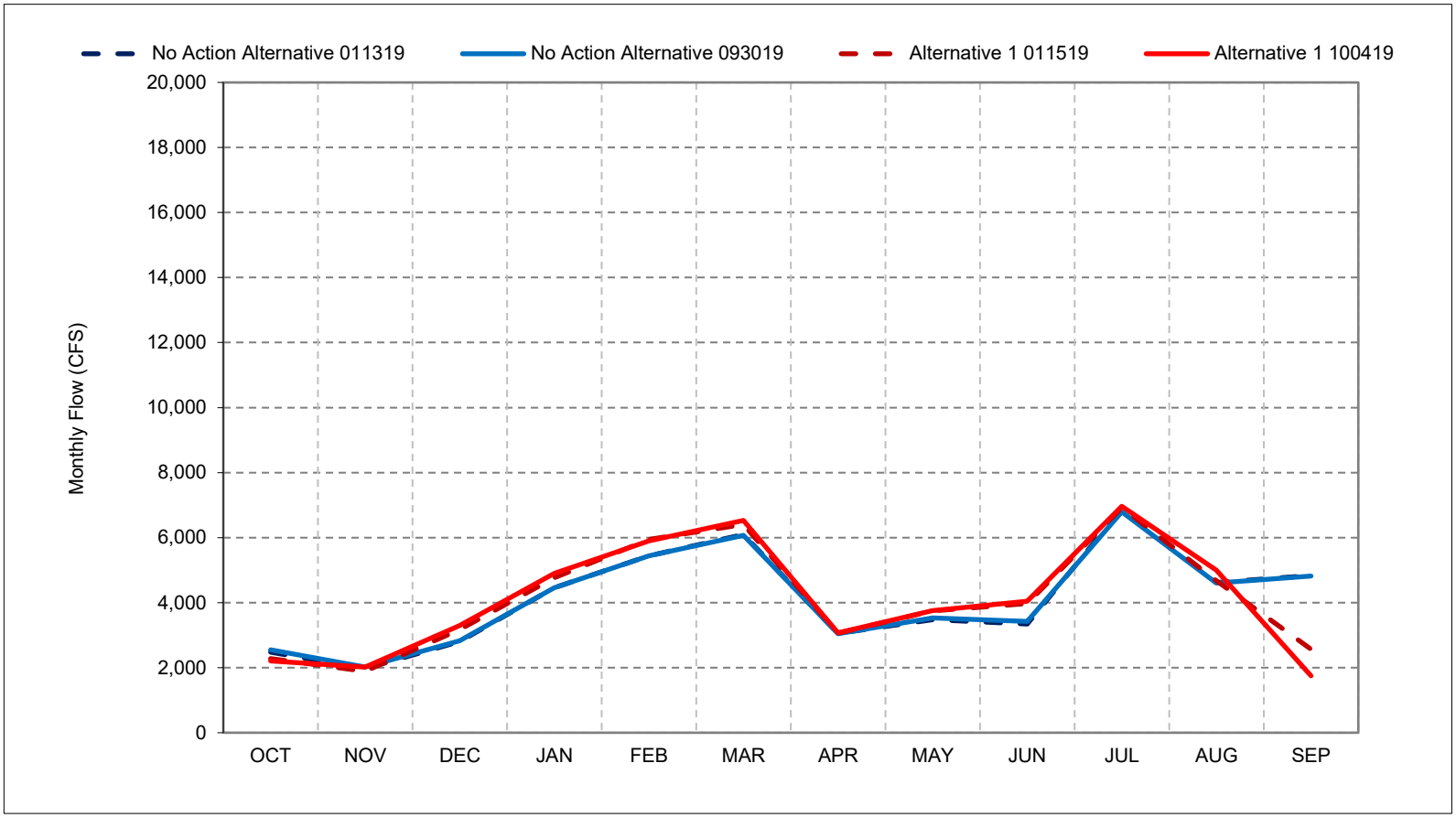
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-1. Feather River Flow downstream of Thermalito, Long-Term Average Flow

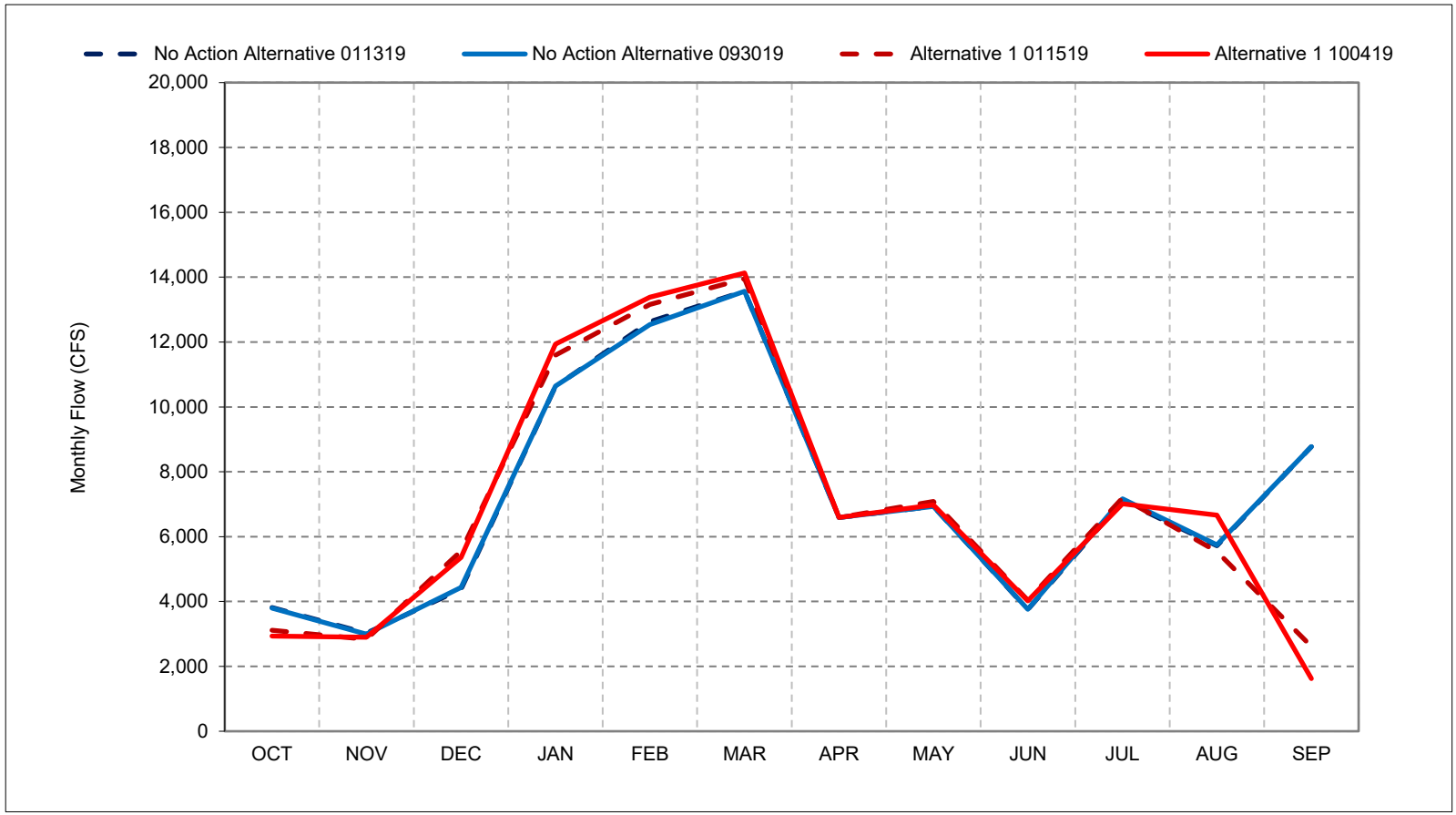



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-2. Feather River Flow downstream of Thermalito, Wet Year Average Flow

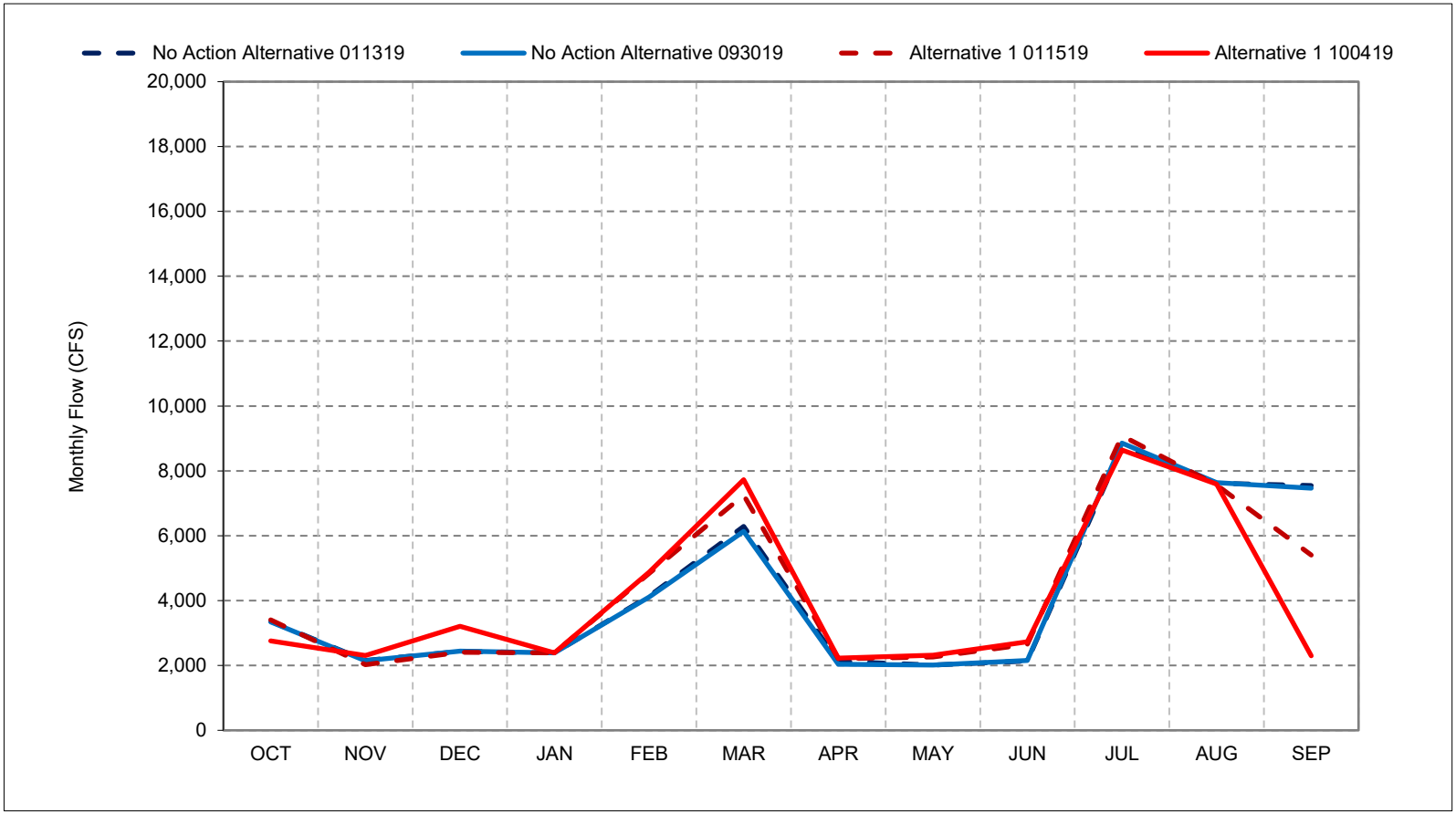



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-3. Feather River Flow downstream of Thermalito, Above Normal Year Average Flow

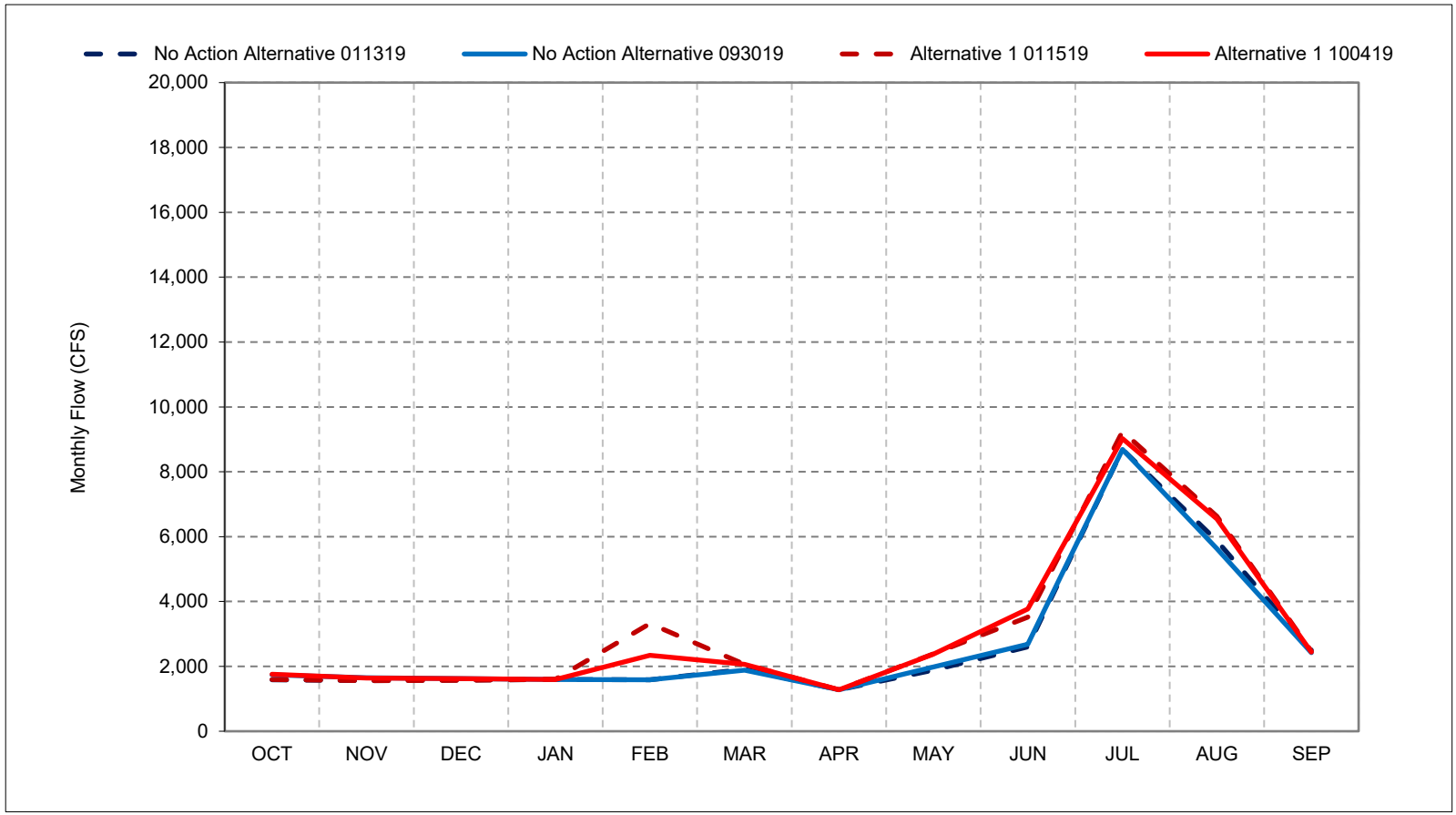



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-4. Feather River Flow downstream of Thermalito, Below Normal Year Average Flow

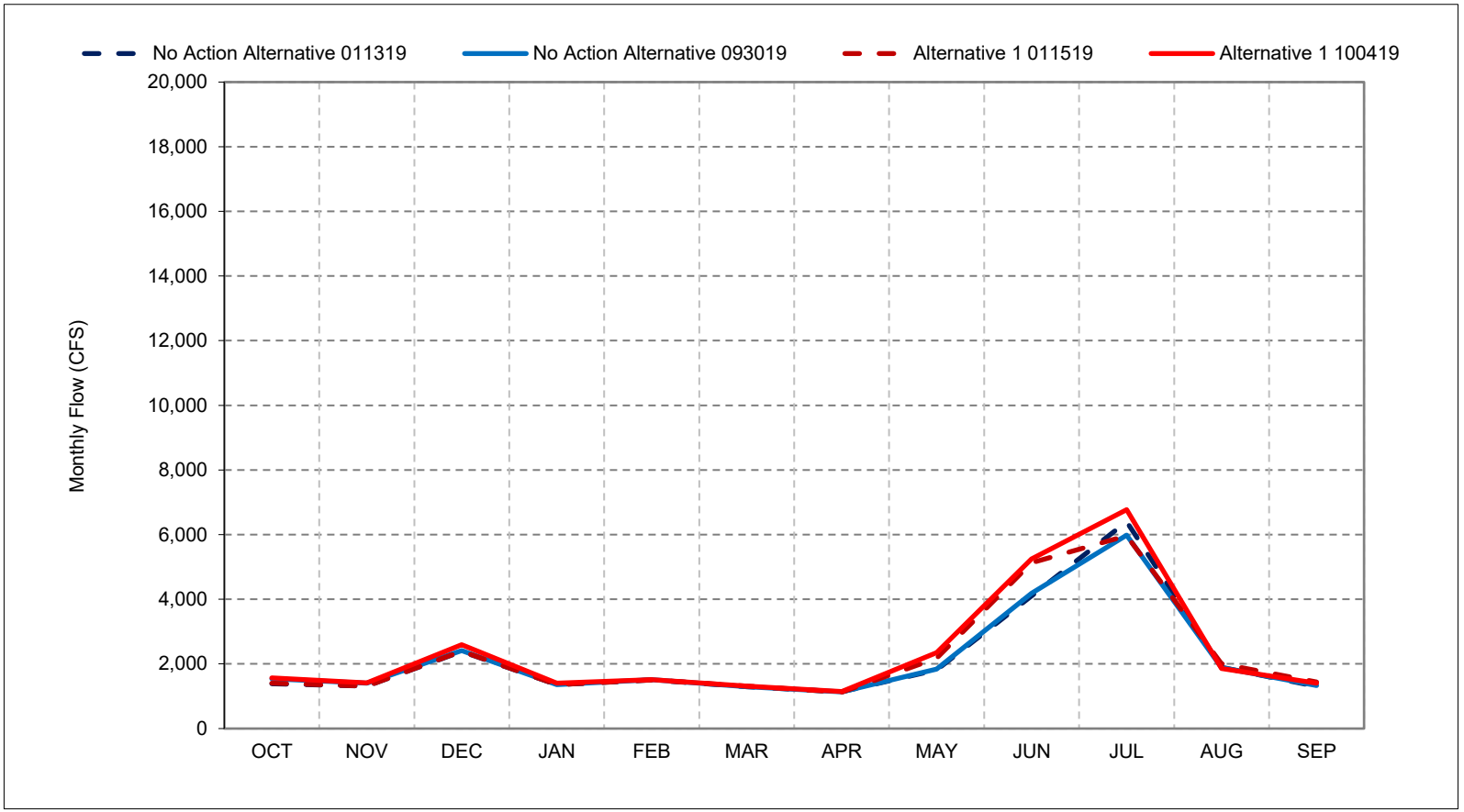



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-5. Feather River Flow downstream of Thermalito, Dry Year Average Flow

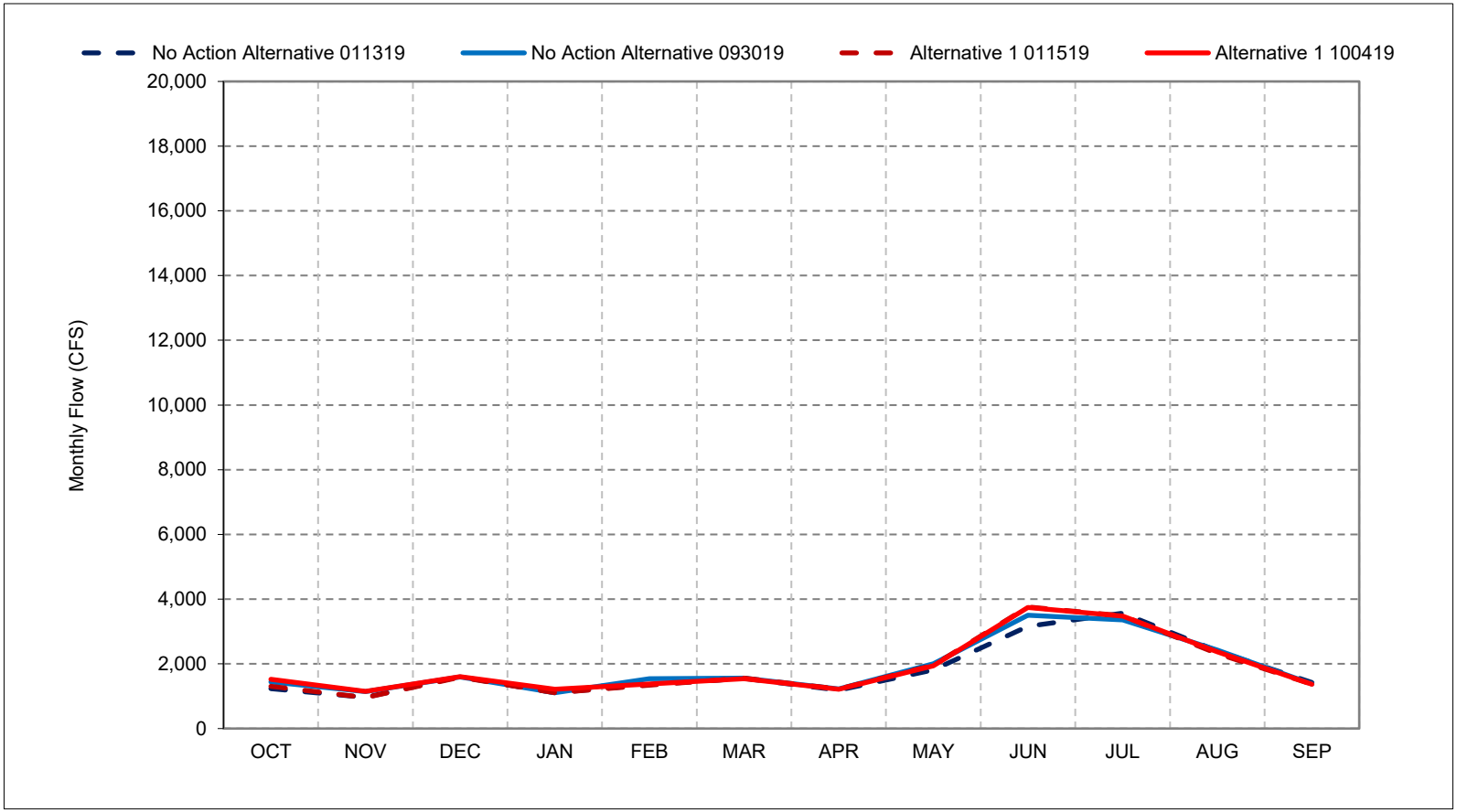



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-6. Feather River Flow downstream of Thermalito, Critical Year Average Flow

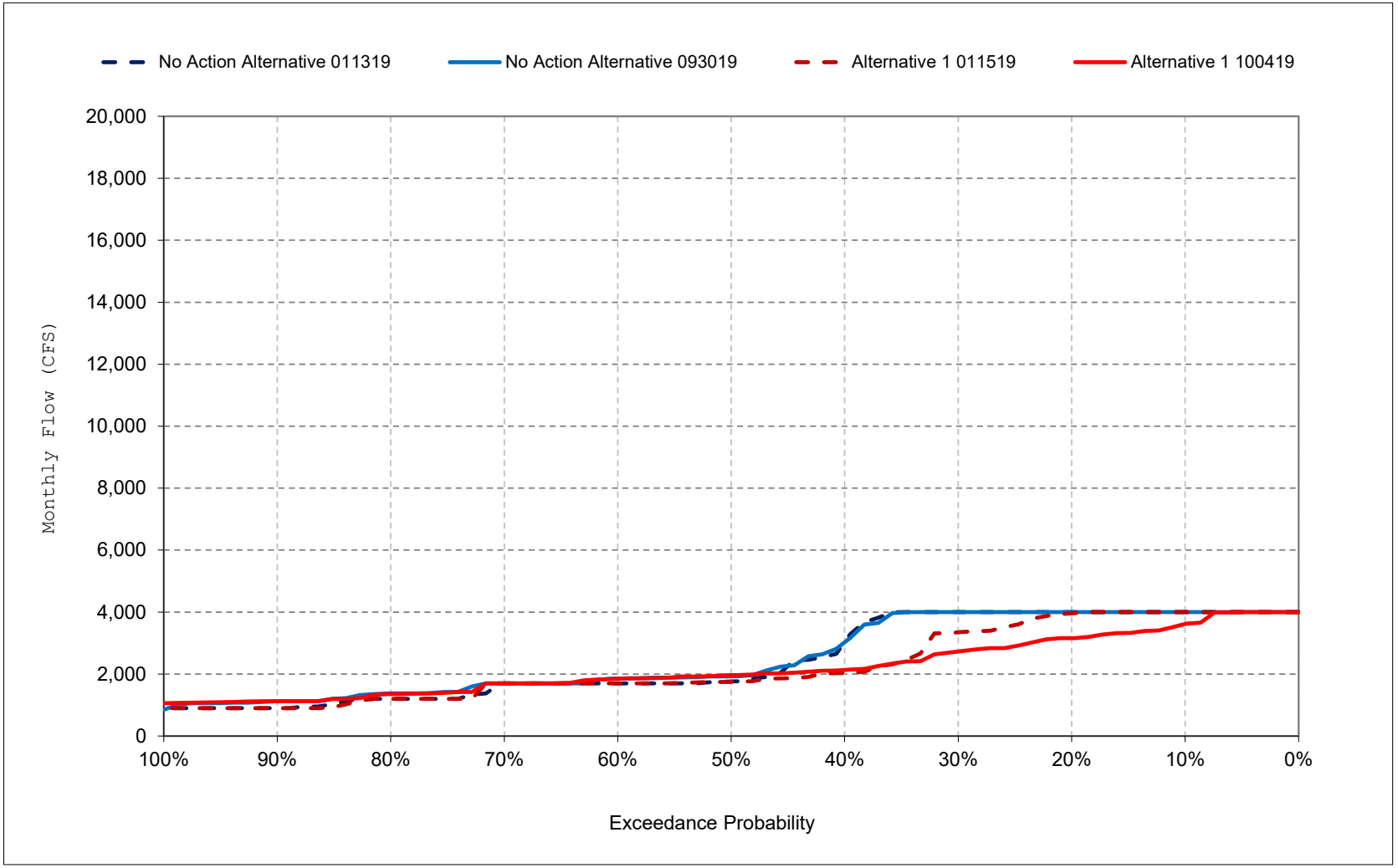



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

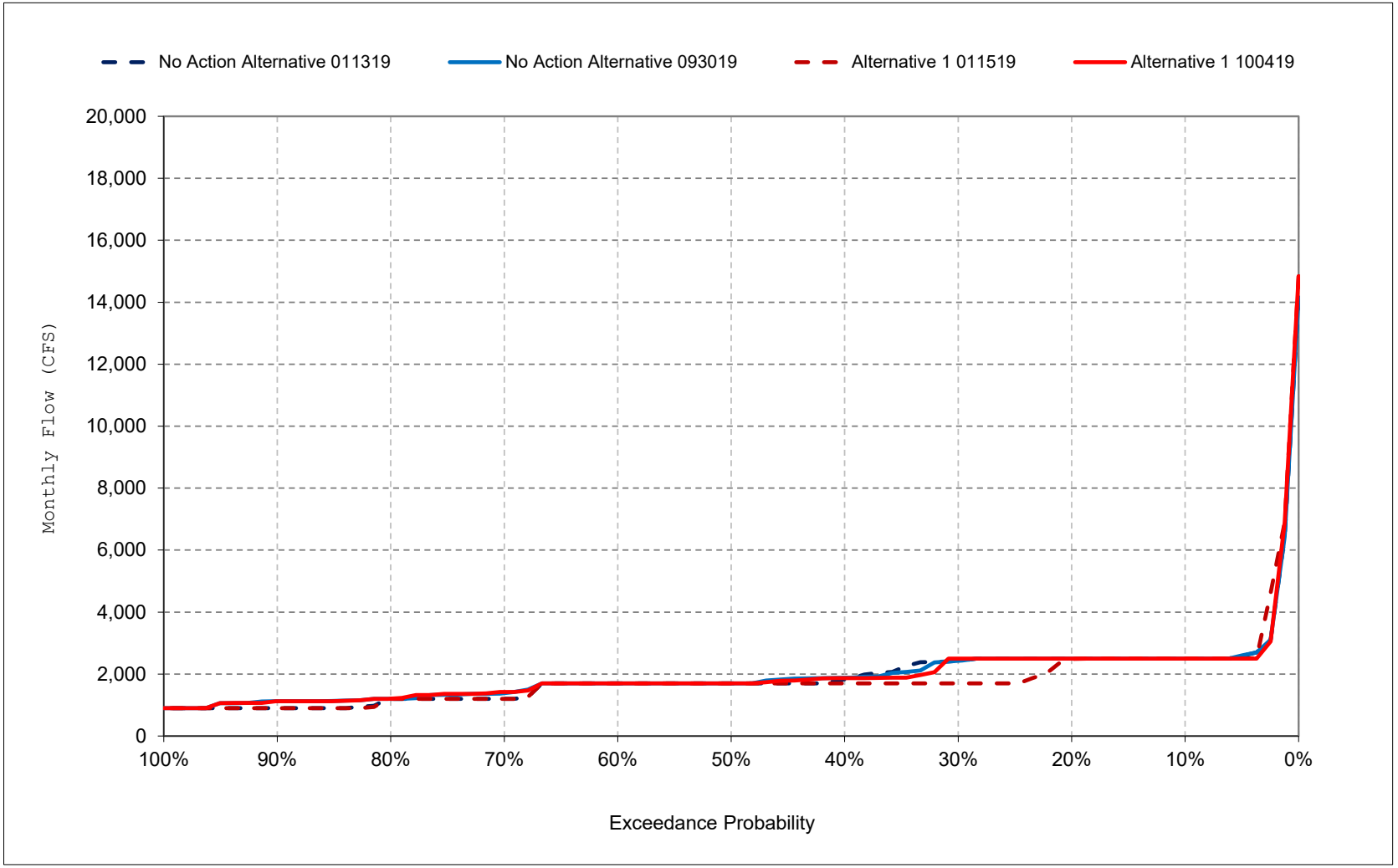
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-7. Feather River Flow downstream of Thermalito, October**



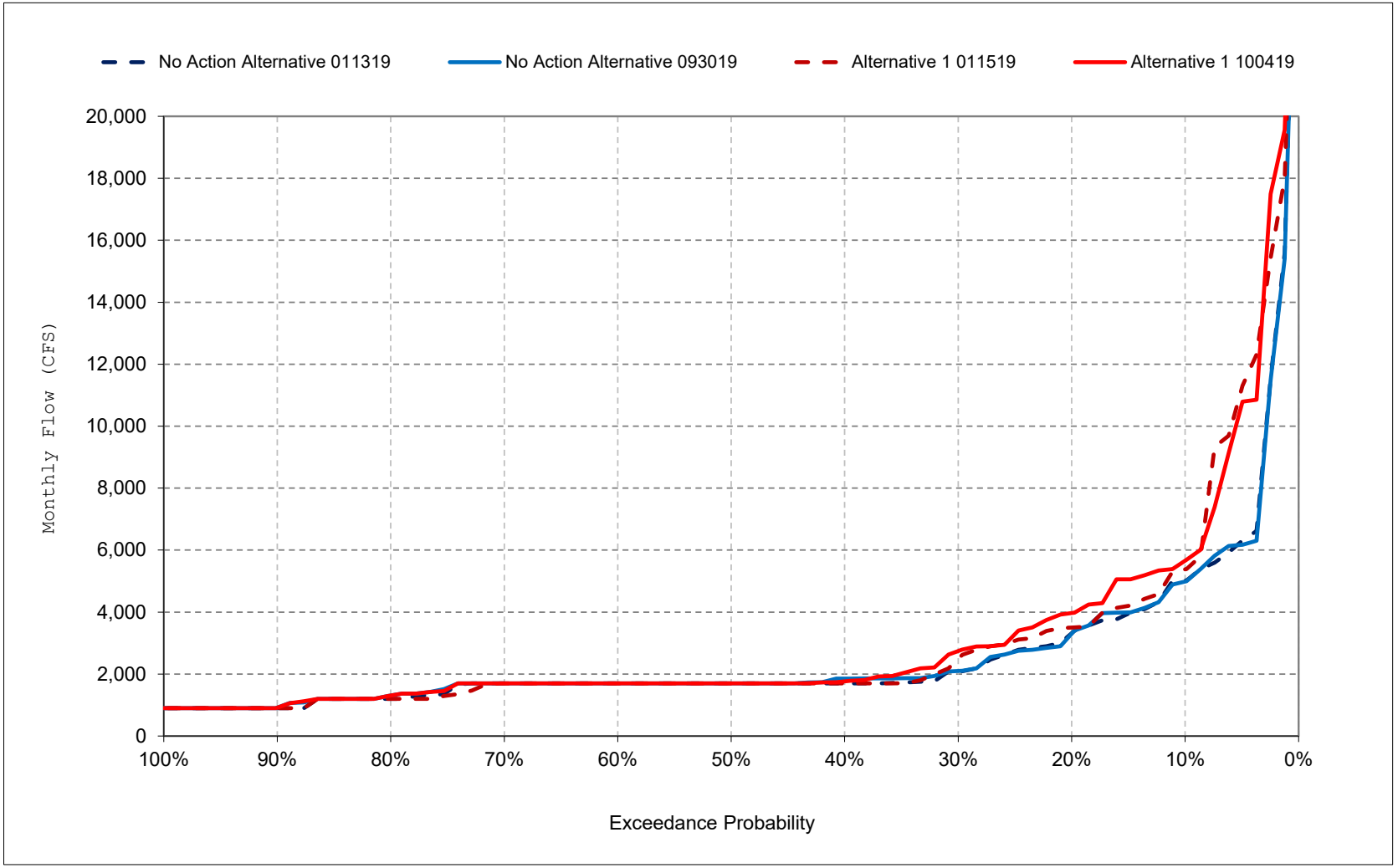

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-8. Feather River Flow downstream of Thermalito, November**



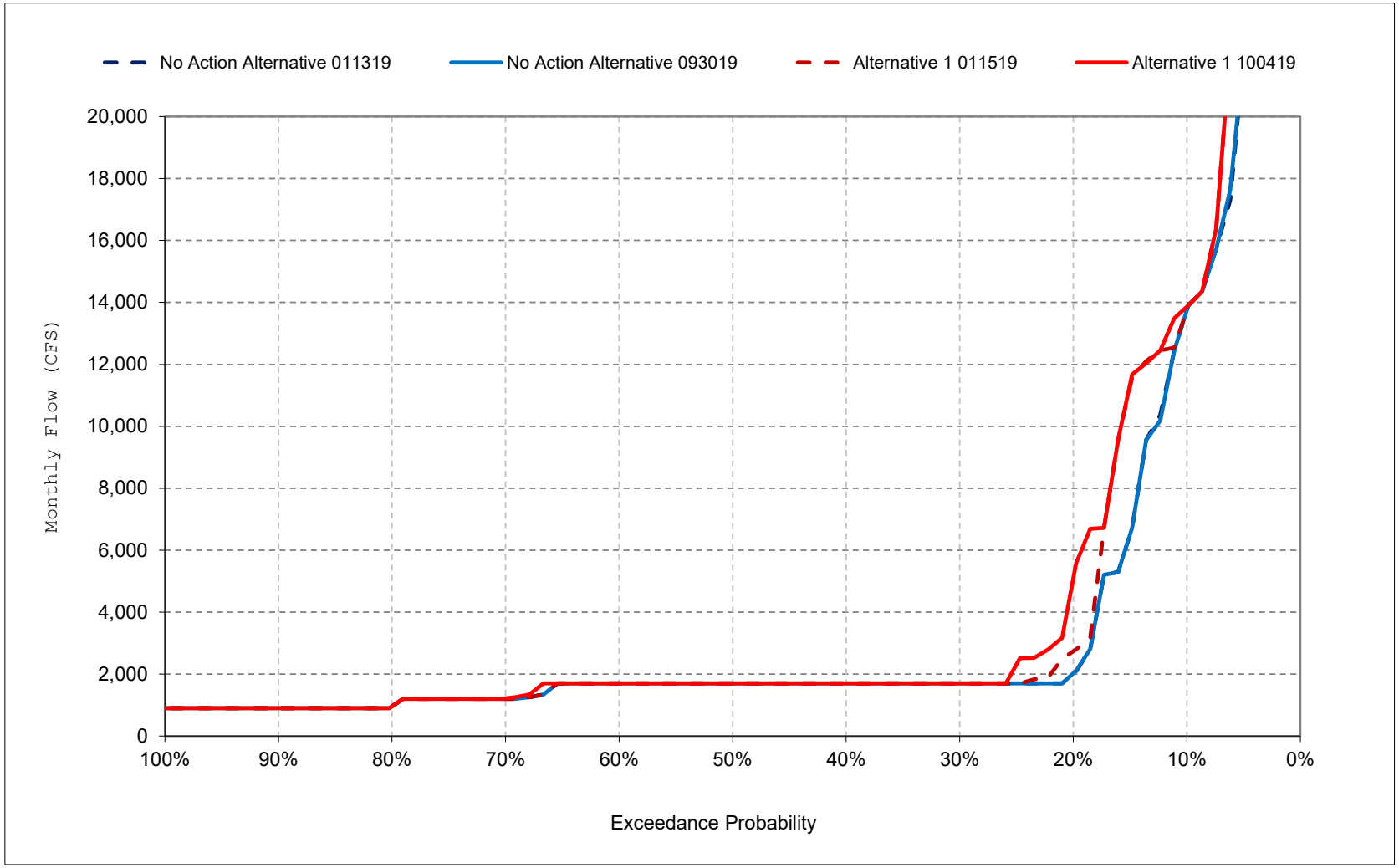

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-9. Feather River Flow downstream of Thermalito, December**



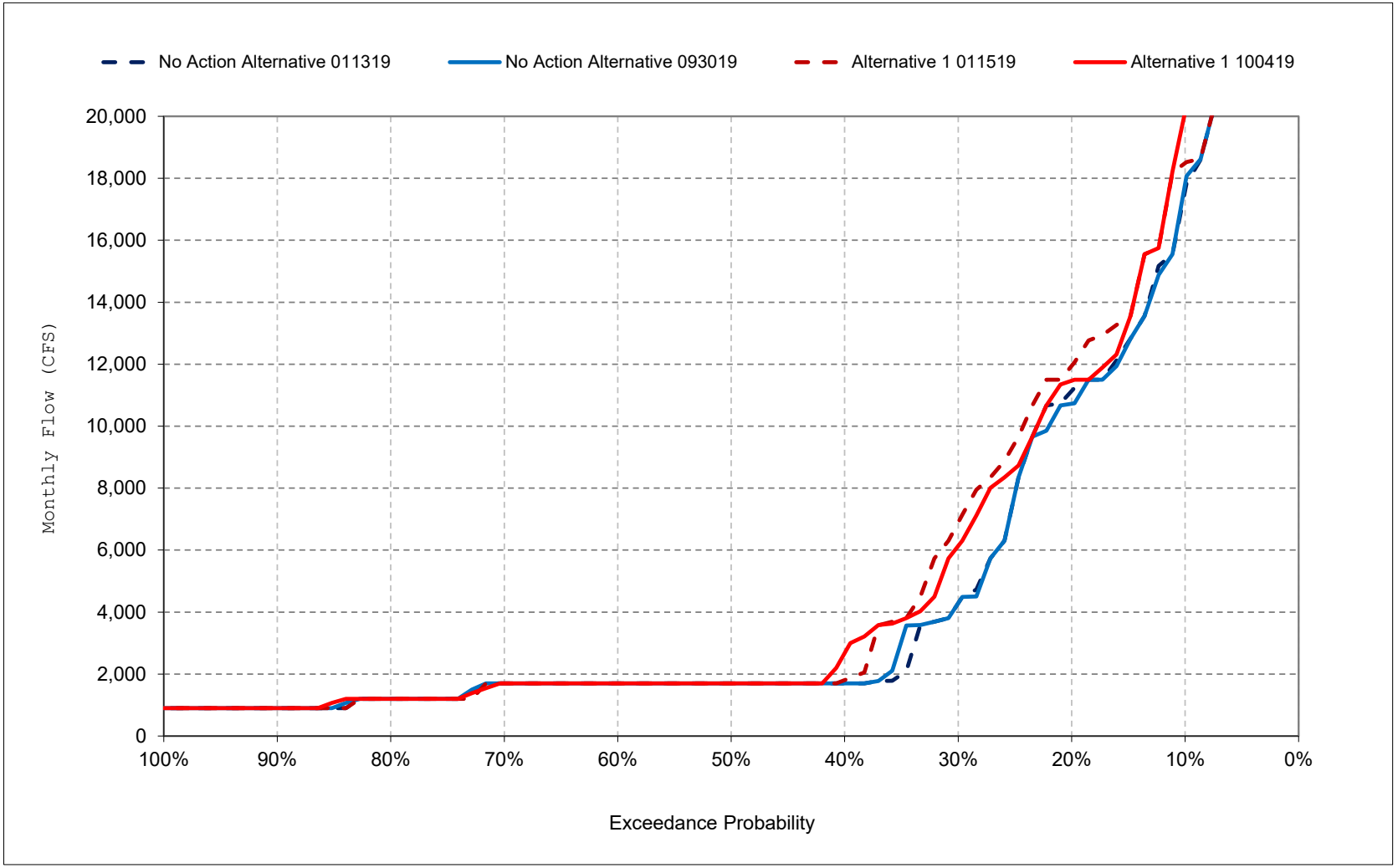

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-10. Feather River Flow downstream of Thermalito, January**



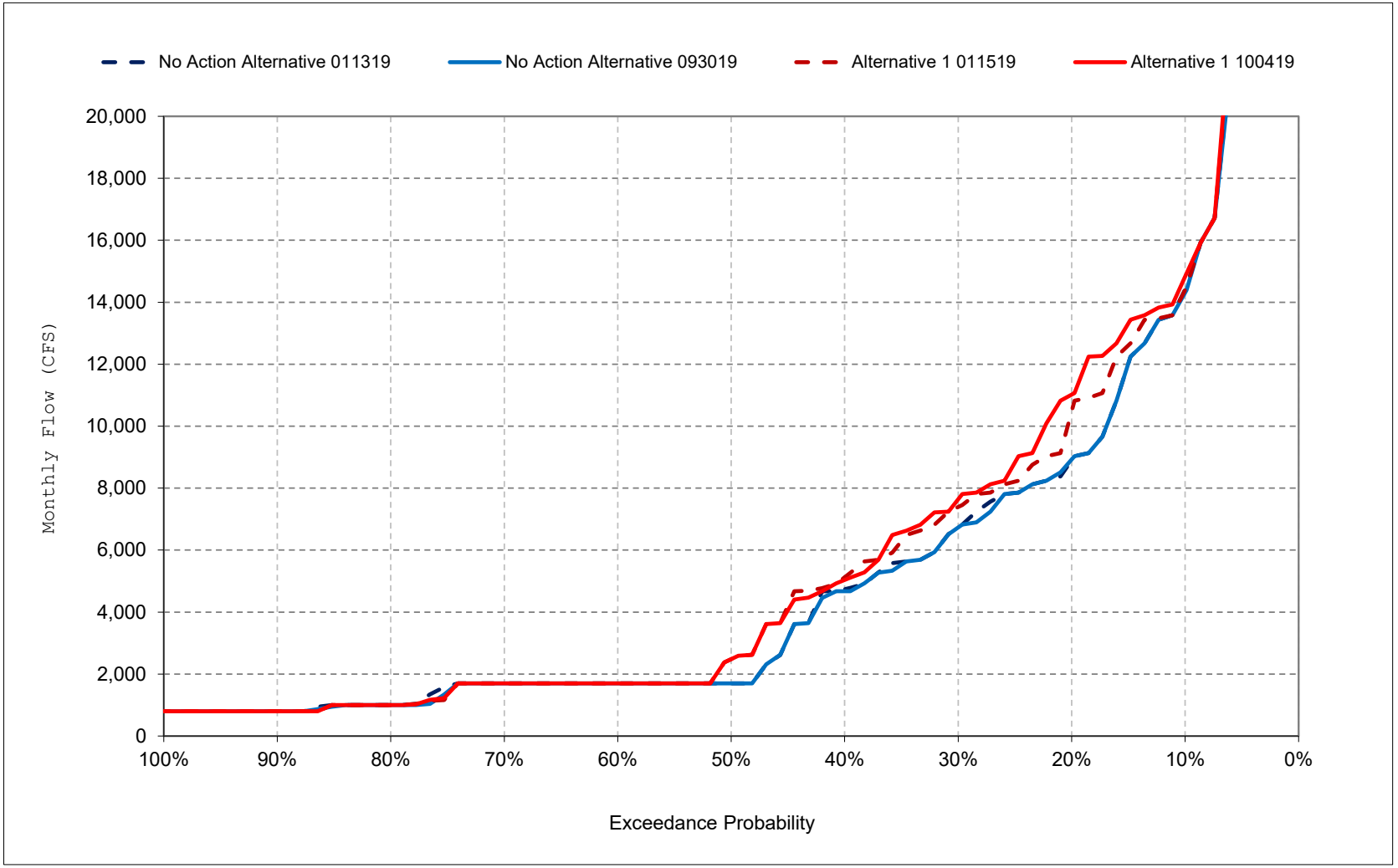

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-11. Feather River Flow downstream of Thermalito, February**



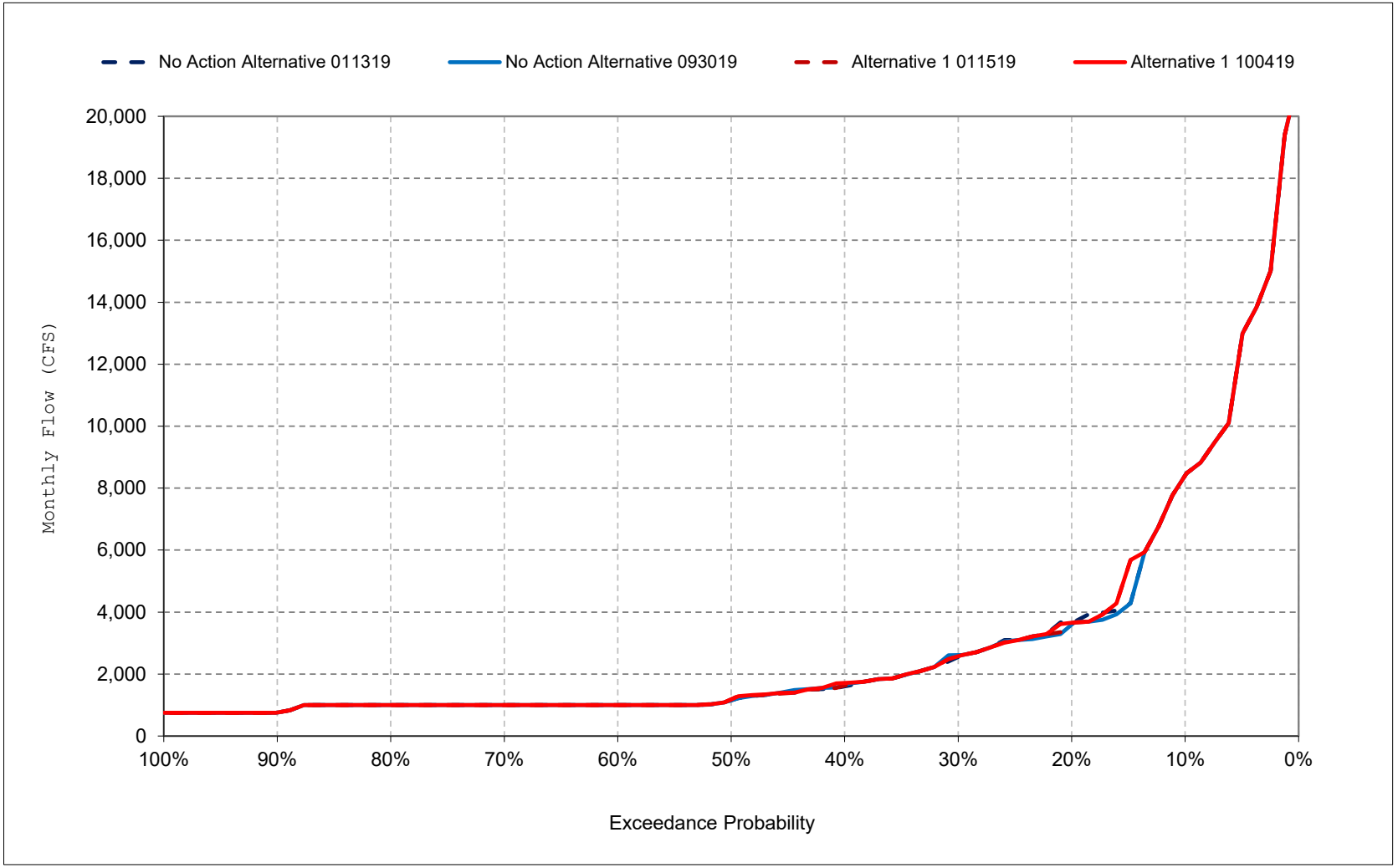

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-12. Feather River Flow downstream of Thermalito, March**



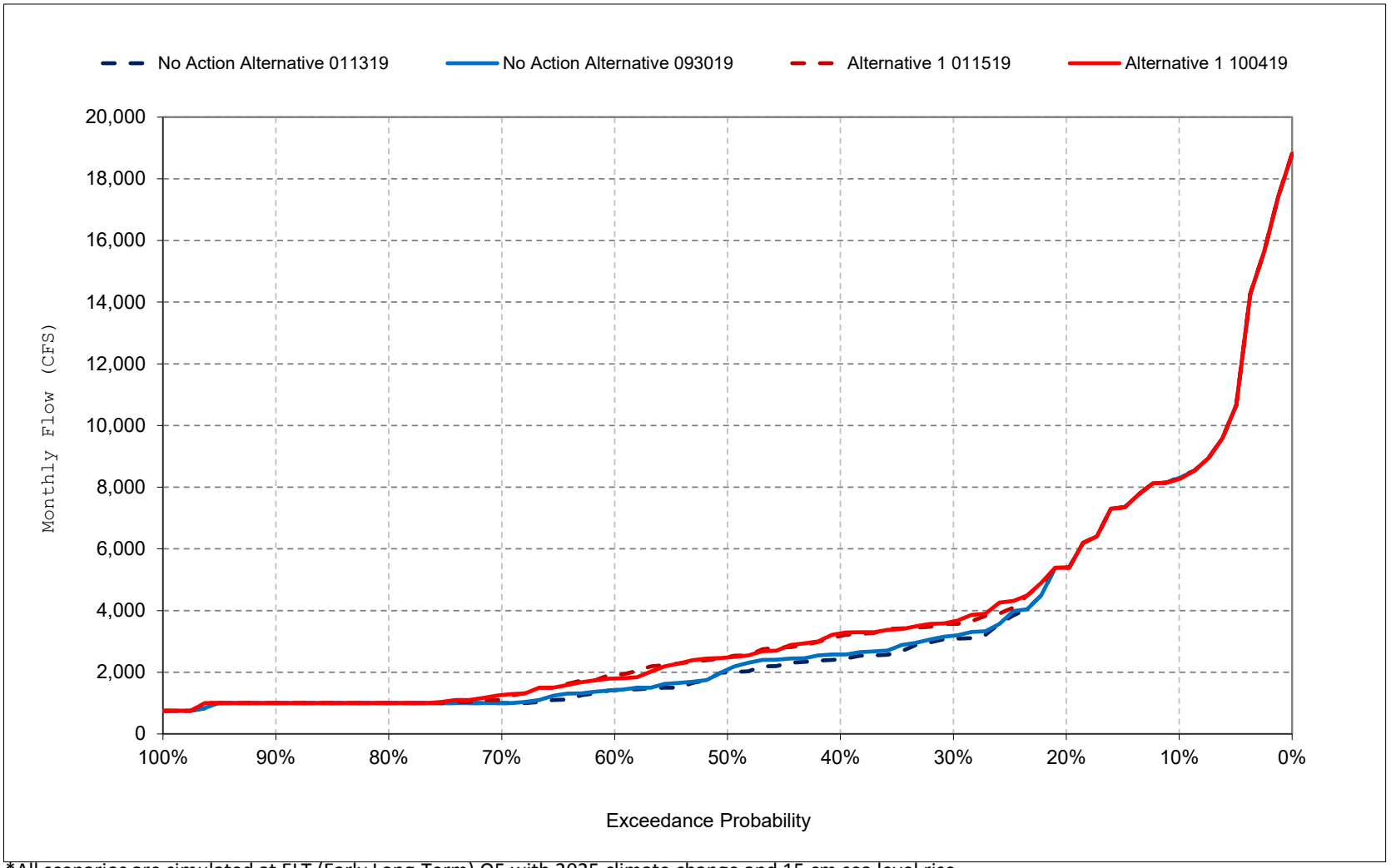

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-13. Feather River Flow downstream of Thermalito, April**



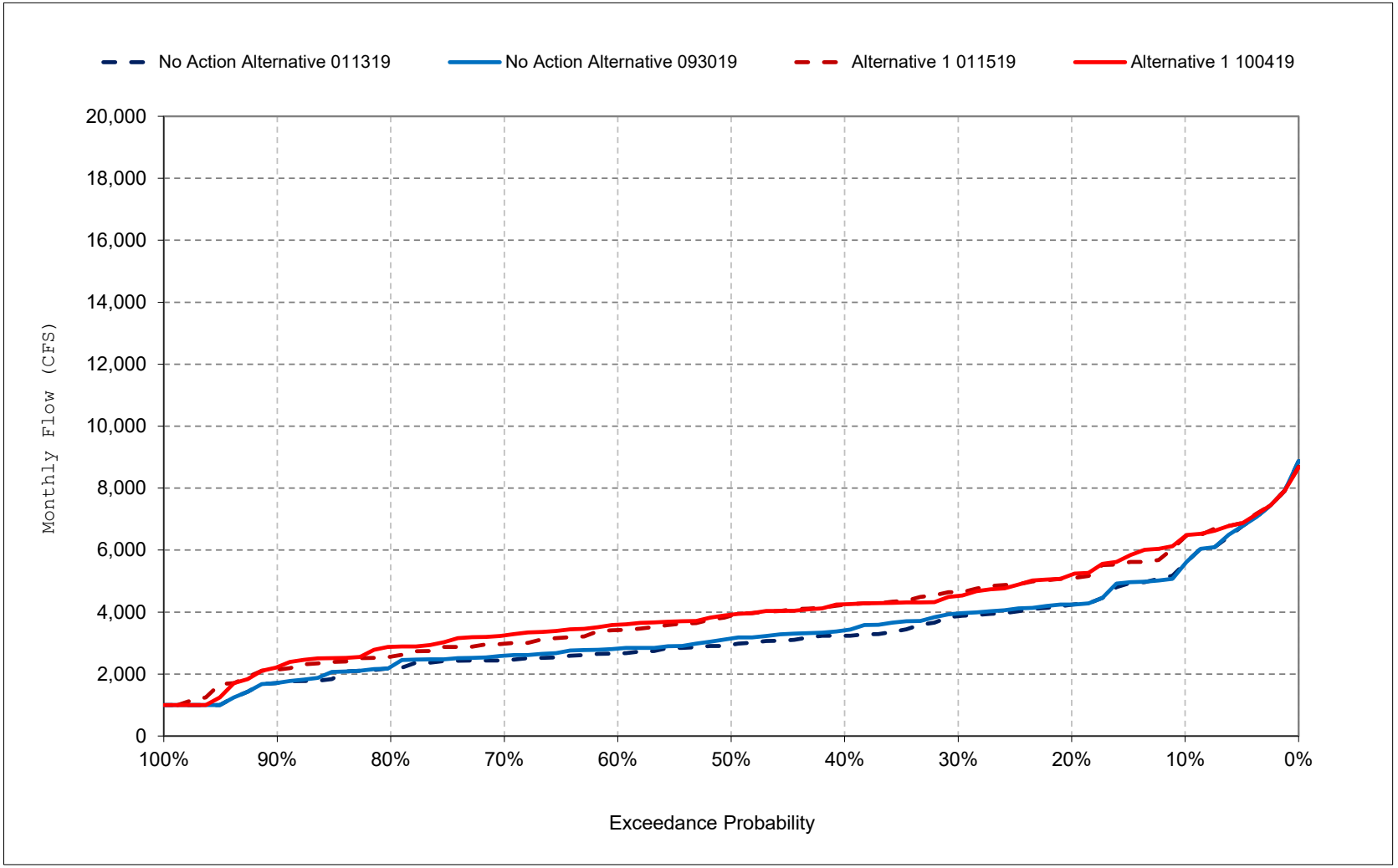

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-14. Feather River Flow downstream of Thermalito, May**



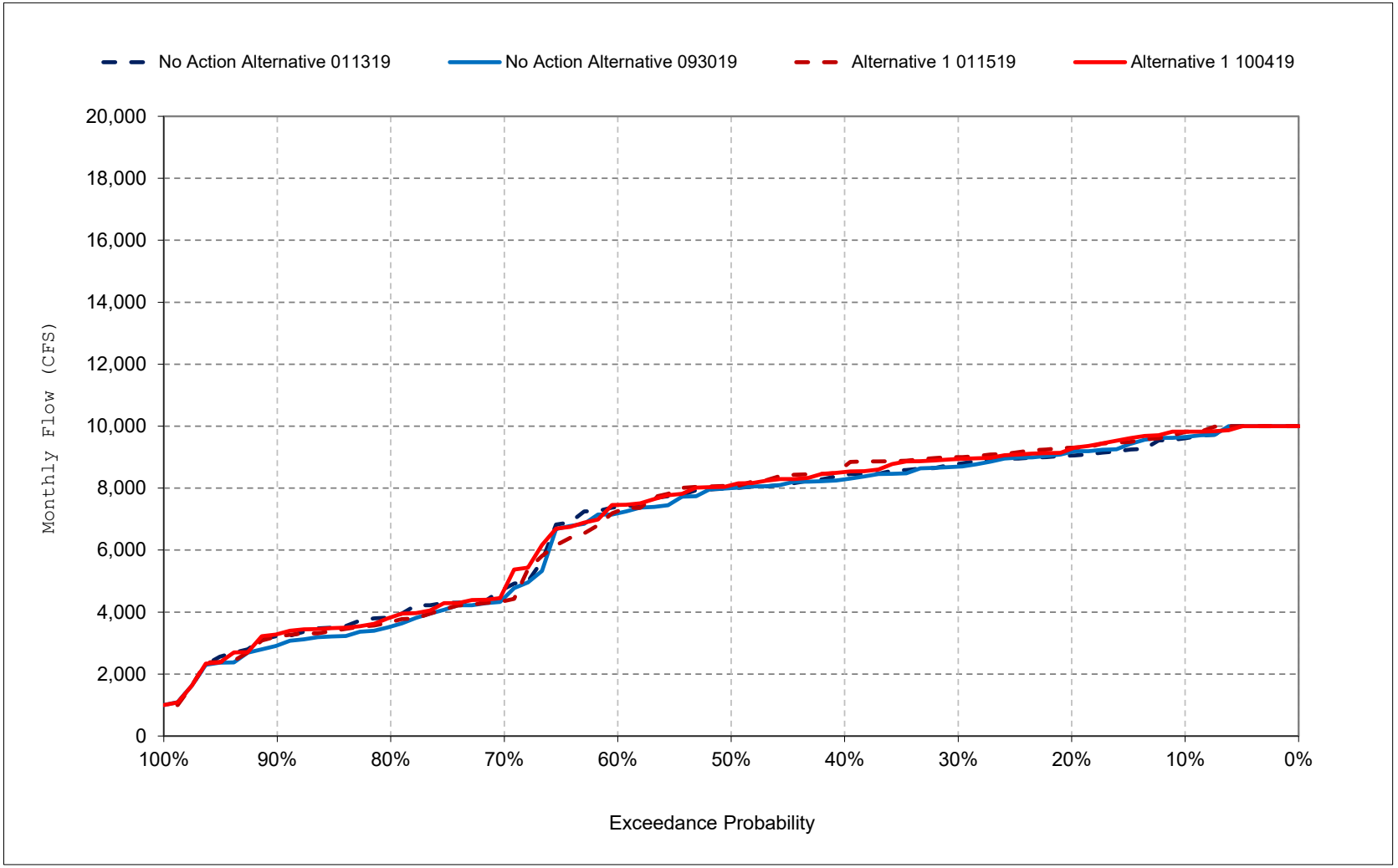

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-15. Feather River Flow downstream of Thermalito, June**



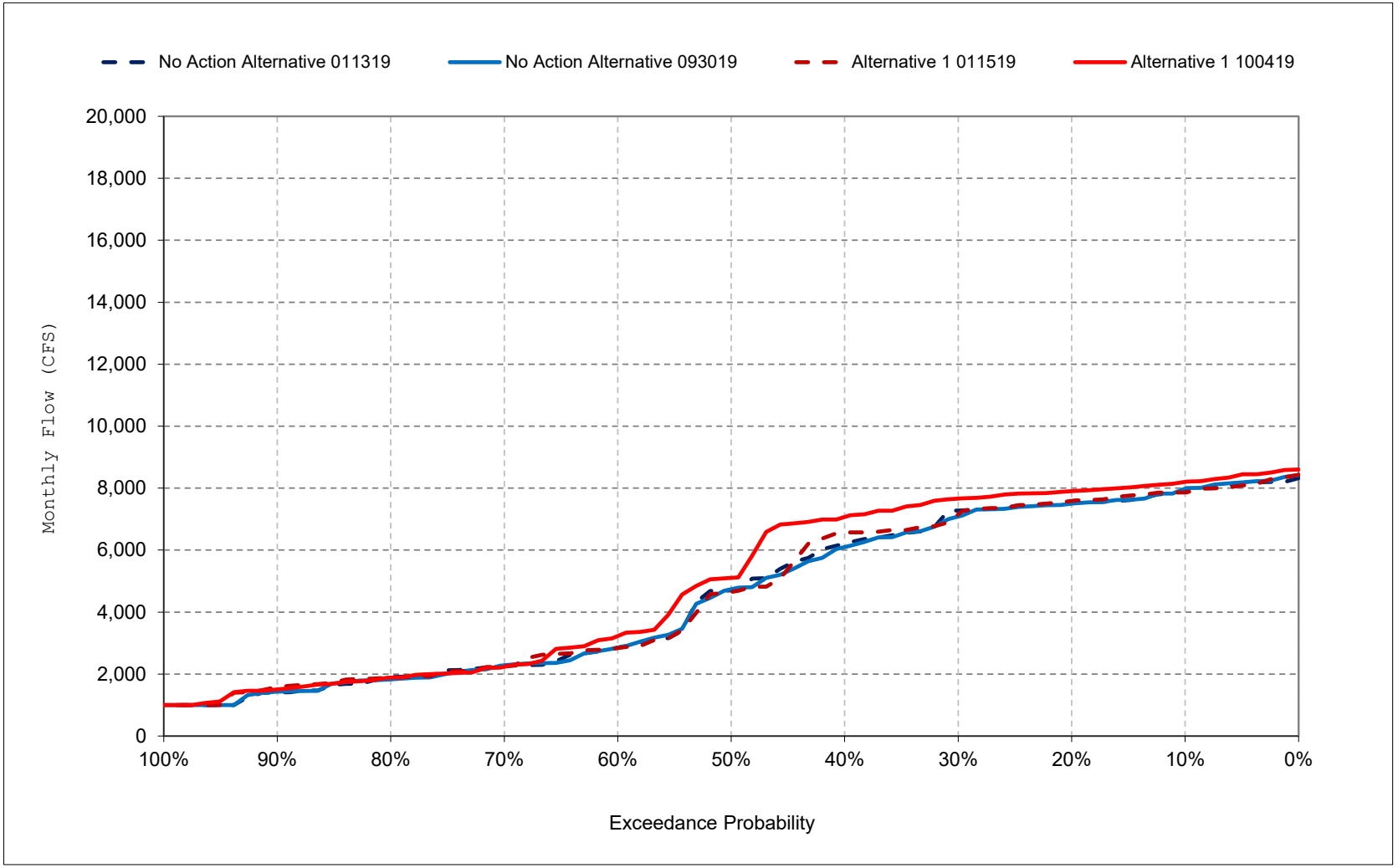

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-16. Feather River Flow downstream of Thermalito, July**



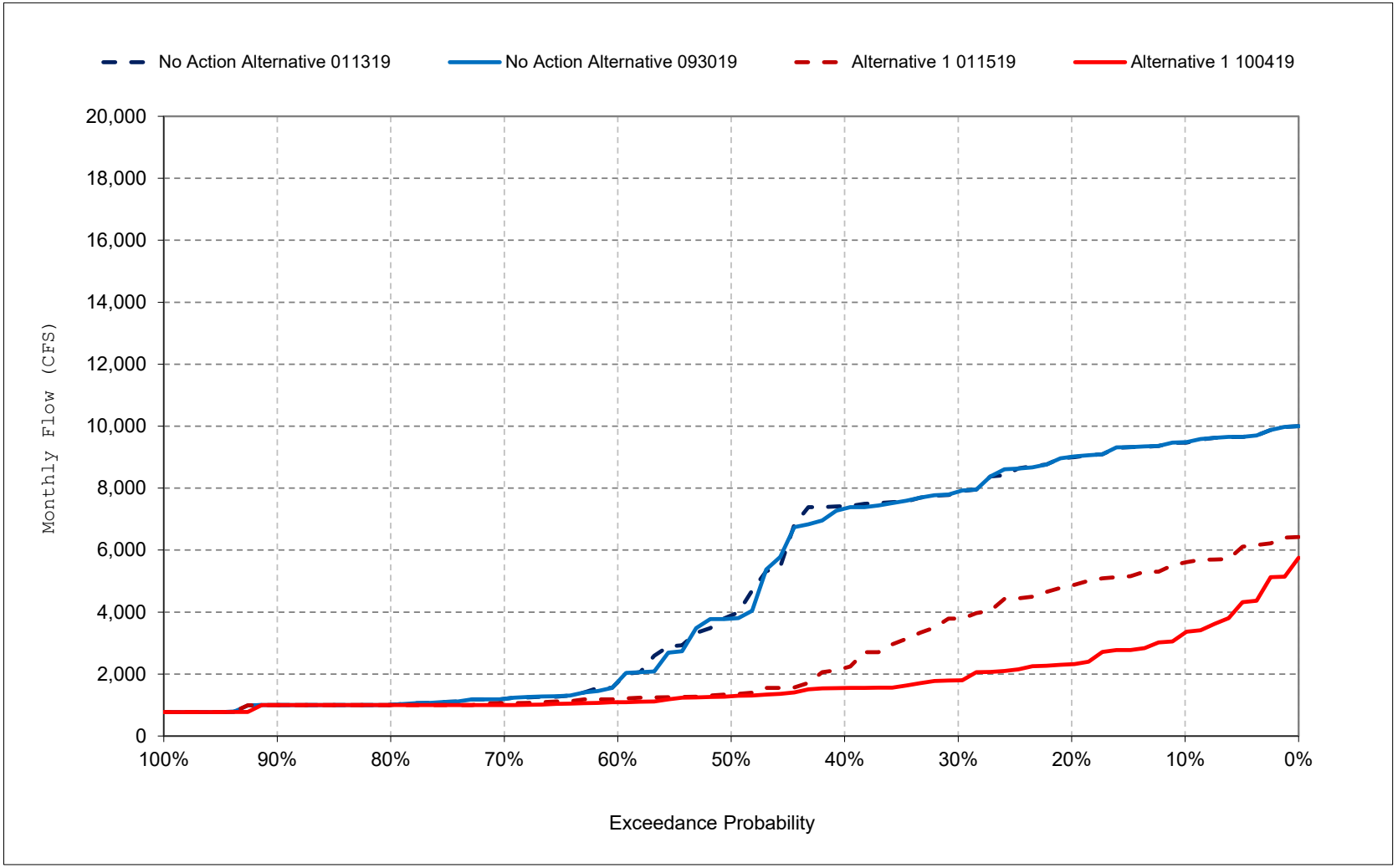

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-17. Feather River Flow downstream of Thermalito, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-18. Feather River Flow downstream of Thermalito, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-1. Feather River at Sacramento River Confluence Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,771 | 4,662 | 10,758 | 23,582 | 33,696 | 31,622 | 20,964 | 15,603 | 9,008 | 9,734 | 8,603 | 11,413 |
| 20% | 4,500 | 3,132 | 6,608 | 16,878 | 24,867 | 21,198 | 11,924 | 10,225 | 6,123 | 9,430 | 8,347 | 11,004 |
| 30% | 3,945 | 2,893 | 4,943 | 10,861 | 16,465 | 13,726 | 8,375 | 6,606 | 5,106 | 8,874 | 8,015 | 9,872 |
| 40% | 3,450 | 2,648 | 3,867 | 8,535 | 11,070 | 11,442 | 6,524 | 4,917 | 4,506 | 8,659 | 7,235 | 9,069 |
| 50% | 2,514 | 2,404 | 3,265 | 5,369 | 6,814 | 8,320 | 5,725 | 4,423 | 3,908 | 8,075 | 6,139 | 6,110 |
| 60% | 2,076 | 2,184 | 2,676 | 4,544 | 5,322 | 5,671 | 4,106 | 3,879 | 3,489 | 7,286 | 3,146 | 3,109 |
| 70% | 1,758 | 1,793 | 1,937 | 3,715 | 4,240 | 4,169 | 3,607 | 3,551 | 3,316 | 5,113 | 2,534 | 2,832 |
| 80% | 1,602 | 1,445 | 1,700 | 2,922 | 2,615 | 3,230 | 3,033 | 2,937 | 2,944 | 3,792 | 2,342 | 2,609 |
| 90% | 1,397 | 1,212 | 1,206 | 2,274 | 1,736 | 2,301 | 2,800 | 2,800 | 2,442 | 2,767 | 2,153 | 2,530 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,974 | 2,923 | 5,614 | 11,560 | 13,513 | 13,355 | 8,710 | 7,260 | 5,251 | 6,975 | 5,380 | 6,541 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4,197 | 3,846 | 8,266 | 23,743 | 27,715 | 25,043 | 16,023 | 13,872 | 8,211 | 7,810 | 6,891 | 10,812 |
| Above Normal (16%) | 3,893 | 3,150 | 4,191 | 11,529 | 13,491 | 18,430 | 9,251 | 5,612 | 3,678 | 8,640 | 8,429 | 9,395 |
| Below Normal (13%) | 2,966 | 2,514 | 4,204 | 4,187 | 6,827 | 5,807 | 4,598 | 4,369 | 3,545 | 8,705 | 6,515 | 4,337 |
| Dry (24%) | 1,746 | 2,840 | 6,157 | 4,376 | 4,912 | 5,511 | 4,583 | 4,059 | 4,554 | 6,192 | 2,566 | 3,068 |
| Critical (15%) | 1,385 | 1,187 | 1,800 | 3,929 | 3,226 | 2,529 | 2,926 | 2,702 | 3,269 | 3,081 | 2,453 | 2,005 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,702 | 4,660 | 13,489 | 23,633 | 33,863 | 31,638 | 20,966 | 15,602 | 9,547 | 9,827 | 8,648 | 7,353 |
| 20% | 4,233 | 2,929 | 6,229 | 18,543 | 24,930 | 21,189 | 12,534 | 10,221 | 7,059 | 9,521 | 8,316 | 6,918 |
| 30% | 3,557 | 2,729 | 5,012 | 11,249 | 17,550 | 15,218 | 8,280 | 6,636 | 5,641 | 9,300 | 7,997 | 6,088 |
| 40% | 2,718 | 2,346 | 3,903 | 8,535 | 12,313 | 12,863 | 6,523 | 5,400 | 5,126 | 8,759 | 7,272 | 3,842 |
| 50% | 2,264 | 2,209 | 3,313 | 5,400 | 7,072 | 8,371 | 5,723 | 4,821 | 4,813 | 8,224 | 5,692 | 3,101 |
| 60% | 1,900 | 1,951 | 2,476 | 4,565 | 5,242 | 5,673 | 4,109 | 4,422 | 4,563 | 7,288 | 3,272 | 2,830 |
| 70% | 1,700 | 1,716 | 1,910 | 3,795 | 4,241 | 4,164 | 3,609 | 3,978 | 4,112 | 5,573 | 2,629 | 2,684 |
| 80% | 1,611 | 1,447 | 1,696 | 2,920 | 2,614 | 3,228 | 2,917 | 3,583 | 3,679 | 3,375 | 2,295 | 2,585 |
| 90% | 1,279 | 1,214 | 1,207 | 2,286 | 1,734 | 2,298 | 2,800 | 2,800 | 2,955 | 2,804 | 2,019 | 2,360 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,788 | 2,839 | 5,981 | 11,885 | 14,045 | 13,671 | 8,724 | 7,528 | 5,888 | 7,006 | 5,397 | 4,249 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,531 | 3,652 | 9,438 | 24,717 | 28,267 | 25,442 | 16,022 | 14,026 | 8,510 | 7,879 | 6,677 | 4,656 |
| Above Normal (16%) | 3,949 | 3,013 | 4,168 | 11,549 | 14,203 | 19,400 | 9,324 | 5,868 | 4,189 | 8,989 | 8,371 | 7,248 |
| Below Normal (13%) | 2,975 | 2,517 | 4,198 | 4,225 | 8,587 | 5,992 | 4,599 | 4,879 | 4,461 | 9,270 | 7,276 | 4,308 |
| Dry (24%) | 1,760 | 2,841 | 6,166 | 4,385 | 4,942 | 5,532 | 4,571 | 4,424 | 5,580 | 5,742 | 2,585 | 3,116 |
| Critical (15%) | 1,460 | 1,180 | 1,784 | 3,966 | 3,233 | 2,565 | 2,963 | 2,850 | 3,868 | 2,996 | 2,368 | 1,952 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -69 | -2 | 2,731 | 51 | 167 | 15 | 3 | 0 | 539 | 94 | 45 | -4,060 |
| 20% | -266 | -203 | -379 | 1,664 | 62 | -9 | 610 | -4 | 936 | 91 | -31 | -4,086 |
| 30% | -389 | -164 | 69 | 388 | 1,085 | 1,492 | -95 | 30 | 535 | 426 | -18 | -3,784 |
| 40% | -732 | -301 | 35 | -1 | 1,242 | 1,421 | -1 | 483 | 620 | 100 | 37 | -5,227 |
| 50% | -249 | -195 | 48 | 31 | 258 | 51 | -2 | 398 | 905 | 149 | -447 | -3,009 |
| 60% | -176 | -233 | -201 | 20 | -80 | 3 | 4 | 543 | 1,074 | 3 | 126 | -279 |
| 70% | -58 | -77 | -27 | 81 | 0 | -5 | 1 | 427 | 796 | 460 | 95 | -148 |
| 80% | 9 | 1 | -4 | -2 | -1 | -2 | -116 | 646 | 735 | -418 | -46 | -24 |
| 90% | -119 | 2 | 0 | 12 | -2 | -2 | 0 | 0 | 512 | 37 | -134 | -170 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -187 | -84 | 367 | 325 | 532 | 316 | 14 | 268 | 636 | 31 | 17 | -2,292 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -666 | -194 | 1,172 | 974 | 552 | 399 | -1 | 154 | 299 | 68 | -215 | -6,156 |
| Above Normal (16%) | 56 | -137 | -23 | 20 | 712 | 970 | 74 | 256 | 511 | 348 | -58 | -2,147 |
| Below Normal (13%) | 8 | 4 | -7 | 38 | 1,760 | 185 | 0 | 510 | 916 | 565 | 761 | -30 |
| Dry (24%) | 14 | 1 | 9 | 9 | 29 | 21 | -12 | 365 | 1,025 | -450 | 19 | 48 |
| Critical (15%) | 75 | -8 | -16 | 37 | 6 | 37 | 37 | 147 | 599 | -85 | -84 | -53 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-2. Feather River at Sacramento River Confluence Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,841 | 4,662 | 10,528 | 23,578 | 33,695 | 31,621 | 20,963 | 15,602 | 9,008 | 9,734 | 8,637 | 11,410 |
| 20% | 4,467 | 3,131 | 6,550 | 16,882 | 24,493 | 21,216 | 11,923 | 10,226 | 6,218 | 9,416 | 8,382 | 11,009 |
| 30% | 3,945 | 2,929 | 5,010 | 10,855 | 16,466 | 13,587 | 8,210 | 6,585 | 5,121 | 8,943 | 8,018 | 9,899 |
| 40% | 3,420 | 2,571 | 3,865 | 8,535 | 11,070 | 11,523 | 6,523 | 4,917 | 4,579 | 8,673 | 7,243 | 8,954 |
| 50% | 2,579 | 2,404 | 3,243 | 5,369 | 6,813 | 8,214 | 5,721 | 4,421 | 3,943 | 8,083 | 5,551 | 6,158 |
| 60% | 2,232 | 2,222 | 2,808 | 4,544 | 5,321 | 5,661 | 4,104 | 4,048 | 3,678 | 7,177 | 3,158 | 3,107 |
| 70% | 1,977 | 1,875 | 2,017 | 3,714 | 4,239 | 4,149 | 3,602 | 3,650 | 3,388 | 5,082 | 2,544 | 2,832 |
| 80% | 1,730 | 1,587 | 1,717 | 2,904 | 2,682 | 3,230 | 3,027 | 3,061 | 3,133 | 3,183 | 2,418 | 2,609 |
| 90% | 1,571 | 1,365 | 1,206 | 2,272 | 1,863 | 2,301 | 2,800 | 2,800 | 2,672 | 2,666 | 2,128 | 2,531 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,055 | 2,968 | 5,637 | 11,560 | 13,509 | 13,327 | 8,700 | 7,307 | 5,337 | 6,882 | 5,361 | 6,517 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 4,179 | 3,815 | 8,315 | 23,745 | 27,631 | 25,039 | 16,022 | 13,871 | 8,218 | 7,862 | 6,919 | 10,813 |
| Above Normal (16%) | 3,873 | 3,141 | 4,196 | 11,530 | 13,471 | 18,282 | 9,162 | 5,610 | 3,693 | 8,761 | 8,442 | 9,306 |
| Below Normal (13%) | 3,114 | 2,600 | 4,245 | 4,186 | 6,827 | 5,784 | 4,598 | 4,474 | 3,624 | 8,723 | 6,289 | 4,261 |
| Dry (24%) | 1,896 | 2,928 | 6,172 | 4,373 | 4,915 | 5,508 | 4,578 | 4,086 | 4,637 | 5,775 | 2,556 | 3,092 |
| Critical (15%) | 1,612 | 1,349 | 1,783 | 3,927 | 3,398 | 2,530 | 2,965 | 2,887 | 3,615 | 2,883 | 2,475 | 1,968 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,295 | 4,667 | 13,075 | 23,855 | 34,046 | 32,487 | 20,965 | 15,604 | 9,459 | 9,866 | 9,050 | 5,757 |
| 20% | 3,747 | 3,055 | 6,412 | 19,753 | 25,546 | 21,204 | 12,528 | 10,222 | 7,056 | 9,545 | 8,684 | 4,464 |
| 30% | 3,094 | 2,885 | 5,074 | 11,475 | 17,165 | 16,317 | 8,375 | 6,916 | 5,836 | 9,165 | 8,341 | 3,756 |
| 40% | 2,669 | 2,573 | 3,972 | 8,551 | 11,635 | 12,859 | 6,523 | 5,379 | 5,168 | 8,719 | 8,080 | 3,160 |
| 50% | 2,410 | 2,405 | 3,353 | 5,372 | 7,517 | 8,334 | 5,724 | 4,917 | 4,899 | 8,161 | 6,598 | 2,987 |
| 60% | 2,072 | 2,199 | 2,861 | 4,564 | 5,369 | 5,708 | 4,110 | 4,416 | 4,637 | 7,475 | 3,304 | 2,778 |
| 70% | 1,883 | 1,851 | 1,955 | 3,851 | 4,263 | 4,284 | 3,609 | 3,914 | 4,275 | 5,472 | 2,588 | 2,591 |
| 80% | 1,720 | 1,606 | 1,723 | 2,940 | 2,655 | 3,227 | 3,083 | 3,634 | 3,706 | 3,809 | 2,276 | 2,561 |
| 90% | 1,595 | 1,323 | 1,207 | 2,435 | 1,985 | 2,298 | 2,800 | 2,823 | 3,090 | 2,859 | 1,976 | 2,355 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,725 | 2,966 | 6,101 | 12,048 | 14,038 | 13,835 | 8,730 | 7,541 | 5,948 | 7,021 | 5,656 | 3,417 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,357 | 3,724 | 9,237 | 25,106 | 28,552 | 25,667 | 16,022 | 13,923 | 8,473 | 7,644 | 7,635 | 3,657 |
| Above Normal (16%) | 3,317 | 3,300 | 4,967 | 11,545 | 14,234 | 19,875 | 9,341 | 5,916 | 4,265 | 8,513 | 8,330 | 4,142 |
| Below Normal (13%) | 3,135 | 2,591 | 4,249 | 4,252 | 7,705 | 6,037 | 4,599 | 4,873 | 4,714 | 9,035 | 7,184 | 4,254 |
| Dry (24%) | 1,924 | 2,946 | 6,362 | 4,461 | 4,982 | 5,577 | 4,590 | 4,596 | 5,695 | 6,559 | 2,472 | 3,068 |
| Critical (15%) | 1,677 | 1,340 | 1,796 | 4,088 | 3,278 | 2,570 | 2,954 | 2,830 | 3,851 | 2,977 | 2,379 | 1,927 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -546 | 5 | 2,547 | 277 | 350 | 867 | 2 | 1 | 451 | 132 | 413 | -5,653 |
| 20% | -720 | -76 | -138 | 2,871 | 1,054 | -12 | 605 | -4 | 838 | 128 | 302 | -6,546 |
| 30% | -851 | -44 | 64 | 620 | 699 | 2,730 | 165 | 331 | 715 | 222 | 323 | -6,143 |
| 40% | -751 | 2 | 106 | 16 | 566 | 1,337 | -1 | 463 | 589 | 47 | 837 | -5,794 |
| 50% | -169 | 1 | 110 | 3 | 704 | 121 | 2 | 496 | 956 | 78 | 1,047 | -3,171 |
| 60% | -160 | -23 | 52 | 20 | 48 | 47 | 6 | 368 | 959 | 299 | 146 | -329 |
| 70% | -94 | -24 | -62 | 137 | 24 | 135 | 7 | 263 | 887 | 389 | 44 | -241 |
| 80% | -11 | 19 | 6 | 36 | -27 | -3 | 56 | 573 | 573 | 625 | -142 | -48 |
| 90% | 24 | -42 | 0 | 162 | 122 | -2 | 0 | 23 | 418 | 193 | -152 | -176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -330 | -2 | 464 | 488 | 530 | 508 | 30 | 234 | 610 | 139 | 295 | -3,100 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -822 | -90 | 922 | 1,361 | 922 | 628 | -1 | 51 | 255 | -218 | 716 | -7,156 |
| Above Normal (16%) | -555 | 159 | 772 | 15 | 763 | 1,593 | 179 | 305 | 572 | -248 | -113 | -5,164 |
| Below Normal (13%) | 21 | -10 | 4 | 66 | 878 | 253 | 1 | 399 | 1,090 | 312 | 896 | -6 |
| Dry (24%) | 28 | 18 | 190 | 88 | 66 | 69 | 12 | 510 | 1,057 | 785 | -84 | -24 |
| Critical (15%) | 65 | -8 | 13 | 161 | -120 | 39 | -10 | -58 | 236 | 94 | -96 | -40 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-3. Feather River at Sacramento River Confluence Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,771 | 4,662 | 10,758 | 23,582 | 33,696 | 31,622 | 20,964 | 15,603 | 9,008 | 9,734 | 8,603 | 11,413 |
| 20% | 4,500 | 3,132 | 6,608 | 16,878 | 24,867 | 21,198 | 11,924 | 10,225 | 6,123 | 9,430 | 8,347 | 11,004 |
| 30% | 3,945 | 2,893 | 4,943 | 10,861 | 16,465 | 13,726 | 8,375 | 6,606 | 5,106 | 8,874 | 8,015 | 9,872 |
| 40% | 3,450 | 2,648 | 3,867 | 8,535 | 11,070 | 11,442 | 6,524 | 4,917 | 4,506 | 8,659 | 7,235 | 9,069 |
| 50% | 2,514 | 2,404 | 3,265 | 5,369 | 6,814 | 8,320 | 5,725 | 4,423 | 3,908 | 8,075 | 6,139 | 6,110 |
| 60% | 2,076 | 2,184 | 2,676 | 4,544 | 5,322 | 5,671 | 4,106 | 3,879 | 3,489 | 7,286 | 3,146 | 3,109 |
| 70% | 1,758 | 1,793 | 1,937 | 3,715 | 4,240 | 4,169 | 3,607 | 3,551 | 3,316 | 5,113 | 2,534 | 2,832 |
| 80% | 1,602 | 1,445 | 1,700 | 2,922 | 2,615 | 3,230 | 3,033 | 2,937 | 2,944 | 3,792 | 2,342 | 2,609 |
| 90% | 1,397 | 1,212 | 1,206 | 2,274 | 1,736 | 2,301 | 2,800 | 2,800 | 2,442 | 2,767 | 2,153 | 2,530 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,974 | 2,923 | 5,614 | 11,560 | 13,513 | 13,355 | 8,710 | 7,260 | 5,251 | 6,975 | 5,380 | 6,541 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4,197 | 3,846 | 8,266 | 23,743 | 27,715 | 25,043 | 16,023 | 13,872 | 8,211 | 7,810 | 6,891 | 10,812 |
| Above Normal (16%) | 3,893 | 3,150 | 4,191 | 11,529 | 13,491 | 18,430 | 9,251 | 5,612 | 3,678 | 8,640 | 8,429 | 9,395 |
| Below Normal (13%) | 2,966 | 2,514 | 4,204 | 4,187 | 6,827 | 5,807 | 4,598 | 4,369 | 3,545 | 8,705 | 6,515 | 4,337 |
| Dry (24%) | 1,746 | 2,840 | 6,157 | 4,376 | 4,912 | 5,511 | 4,583 | 4,059 | 4,554 | 6,192 | 2,566 | 3,068 |
| Critical (15%) | 1,385 | 1,187 | 1,800 | 3,929 | 3,226 | 2,529 | 2,926 | 2,702 | 3,269 | 3,081 | 2,453 | 2,005 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,841 | 4,662 | 10,528 | 23,578 | 33,695 | 31,621 | 20,963 | 15,602 | 9,008 | 9,734 | 8,637 | 11,410 |
| 20% | 4,467 | 3,131 | 6,550 | 16,882 | 24,493 | 21,216 | 11,923 | 10,226 | 6,218 | 9,416 | 8,382 | 11,009 |
| 30% | 3,945 | 2,929 | 5,010 | 10,855 | 16,466 | 13,587 | 8,210 | 6,585 | 5,121 | 8,943 | 8,018 | 9,899 |
| 40% | 3,420 | 2,571 | 3,865 | 8,535 | 11,070 | 11,523 | 6,523 | 4,917 | 4,579 | 8,673 | 7,243 | 8,954 |
| 50% | 2,579 | 2,404 | 3,243 | 5,369 | 6,813 | 8,214 | 5,721 | 4,421 | 3,943 | 8,083 | 5,551 | 6,158 |
| 60% | 2,232 | 2,222 | 2,808 | 4,544 | 5,321 | 5,661 | 4,104 | 4,048 | 3,678 | 7,177 | 3,158 | 3,107 |
| 70% | 1,977 | 1,875 | 2,017 | 3,714 | 4,239 | 4,149 | 3,602 | 3,650 | 3,388 | 5,082 | 2,544 | 2,832 |
| 80% | 1,730 | 1,587 | 1,717 | 2,904 | 2,682 | 3,230 | 3,027 | 3,061 | 3,133 | 3,183 | 2,418 | 2,609 |
| 90% | 1,571 | 1,365 | 1,206 | 2,272 | 1,863 | 2,301 | 2,800 | 2,800 | 2,672 | 2,666 | 2,128 | 2,531 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,055 | 2,968 | 5,637 | 11,560 | 13,509 | 13,327 | 8,700 | 7,307 | 5,337 | 6,882 | 5,361 | 6,517 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4,179 | 3,815 | 8,315 | 23,745 | 27,631 | 25,039 | 16,022 | 13,871 | 8,218 | 7,862 | 6,919 | 10,813 |
| Above Normal (16%) | 3,873 | 3,141 | 4,196 | 11,530 | 13,471 | 18,282 | 9,162 | 5,610 | 3,693 | 8,761 | 8,442 | 9,306 |
| Below Normal (13%) | 3,114 | 2,600 | 4,245 | 4,186 | 6,827 | 5,784 | 4,598 | 4,474 | 3,624 | 8,723 | 6,289 | 4,261 |
| Dry (24%) | 1,896 | 2,928 | 6,172 | 4,373 | 4,915 | 5,508 | 4,578 | 4,086 | 4,637 | 5,775 | 2,556 | 3,092 |
| Critical (15%) | 1,612 | 1,349 | 1,783 | 3,927 | 3,398 | 2,530 | 2,965 | 2,887 | 3,615 | 2,883 | 2,475 | 1,968 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 70 | 0 | -231 | -4 | 0 | -2 | 0 | 0 | 0 | 0 | 34 | -4 |
| 20% | -33 | 0 | -59 | 3 | -375 | 19 | -1 | 1 | 95 | -14 | 35 | 6 |
| 30% | 0 | 36 | 67 | -6 | 1 | -138 | -164 | -21 | 15 | 69 | 4 | 27 |
| 40% | -29 | -76 | -2 | -1 | -1 | 81 | -1 | 0 | 73 | 14 | 8 | -115 |
| 50% | 65 | 0 | -22 | 0 | -1 | -107 | -3 | -2 | 35 | 8 | -588 | 48 |
| 60% | 156 | 37 | 132 | 0 | 0 | -9 | -2 | 168 | 189 | -109 | 12 | -2 |
| 70% | 219 | 82 | 79 | -1 | -1 | -20 | -5 | 99 | 71 | -30 | 10 | 0 |
| 80% | 128 | 142 | 17 | -18 | 67 | 0 | -6 | 124 | 189 | -609 | 76 | 0 |
| 90% | 173 | 153 | 0 | -1 | 127 | 0 | 0 | 0 | 230 | -101 | -25 | 1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 81 | 45 | 23 | 0 | -4 | -28 | -10 | 47 | 86 | -92 | -19 | -24 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -18 | -32 | 50 | 2 | -84 | -4 | -1 | -1 | 7 | 52 | 28 | 1 |
| Above Normal (16%) | -21 | -9 | 5 | 1 | -20 | -148 | -89 | -1 | 15 | 121 | 13 | -90 |
| Below Normal (13%) | 148 | 87 | 41 | -1 | 0 | -23 | 0 | 105 | 79 | 19 | -227 | -76 |
| Dry (24%) | 150 | 88 | 15 | -3 | 3 | -3 | -5 | 26 | 83 | -417 | -10 | 24 |
| Critical (15%) | 227 | 161 | -17 | -2 | 171 | 2 | 39 | 185 | 345 | -198 | 22 | -37 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-4. Feather River at Sacramento River Confluence Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,702 | 4,660 | 13,489 | 23,633 | 33,863 | 31,638 | 20,966 | 15,602 | 9,547 | 9,827 | 8,648 | 7,353 |
| 20% | 4,233 | 2,929 | 6,229 | 18,543 | 24,930 | 21,189 | 12,534 | 10,221 | 7,059 | 9,521 | 8,316 | 6,918 |
| 30% | 3,557 | 2,729 | 5,012 | 11,249 | 17,550 | 15,218 | 8,280 | 6,636 | 5,641 | 9,300 | 7,997 | 6,088 |
| 40% | 2,718 | 2,346 | 3,903 | 8,535 | 12,313 | 12,863 | 6,523 | 5,400 | 5,126 | 8,759 | 7,272 | 3,842 |
| 50% | 2,264 | 2,209 | 3,313 | 5,400 | 7,072 | 8,371 | 5,723 | 4,821 | 4,813 | 8,224 | 5,692 | 3,101 |
| 60% | 1,900 | 1,951 | 2,476 | 4,565 | 5,242 | 5,673 | 4,109 | 4,422 | 4,563 | 7,288 | 3,272 | 2,830 |
| 70% | 1,700 | 1,716 | 1,910 | 3,795 | 4,241 | 4,164 | 3,609 | 3,978 | 4,112 | 5,573 | 2,629 | 2,684 |
| 80% | 1,611 | 1,447 | 1,696 | 2,920 | 2,614 | 3,228 | 2,917 | 3,583 | 3,679 | 3,375 | 2,295 | 2,585 |
| 90% | 1,279 | 1,214 | 1,207 | 2,286 | 1,734 | 2,298 | 2,800 | 2,800 | 2,955 | 2,804 | 2,019 | 2,360 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,788 | 2,839 | 5,981 | 11,885 | 14,045 | 13,671 | 8,724 | 7,528 | 5,888 | 7,006 | 5,397 | 4,249 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,531 | 3,652 | 9,438 | 24,717 | 28,267 | 25,442 | 16,022 | 14,026 | 8,510 | 7,879 | 6,677 | 4,656 |
| Above Normal (16%) | 3,949 | 3,013 | 4,168 | 11,549 | 14,203 | 19,400 | 9,324 | 5,868 | 4,189 | 8,989 | 8,371 | 7,248 |
| Below Normal (13%) | 2,975 | 2,517 | 4,198 | 4,225 | 8,587 | 5,992 | 4,599 | 4,879 | 4,461 | 9,270 | 7,276 | 4,308 |
| Dry (24%) | 1,760 | 2,841 | 6,166 | 4,385 | 4,942 | 5,532 | 4,571 | 4,424 | 5,580 | 5,742 | 2,585 | 3,116 |
| Critical (15%) | 1,460 | 1,180 | 1,784 | 3,966 | 3,233 | 2,565 | 2,963 | 2,850 | 3,868 | 2,996 | 2,368 | 1,952 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,295 | 4,667 | 13,075 | 23,855 | 34,046 | 32,487 | 20,965 | 15,604 | 9,459 | 9,866 | 9,050 | 5,757 |
| 20% | 3,747 | 3,055 | 6,412 | 19,753 | 25,546 | 21,204 | 12,528 | 10,222 | 7,056 | 9,545 | 8,684 | 4,464 |
| 30% | 3,094 | 2,885 | 5,074 | 11,475 | 17,165 | 16,317 | 8,375 | 6,916 | 5,836 | 9,165 | 8,341 | 3,756 |
| 40% | 2,669 | 2,573 | 3,972 | 8,551 | 11,635 | 12,859 | 6,523 | 5,379 | 5,168 | 8,719 | 8,080 | 3,160 |
| 50% | 2,410 | 2,405 | 3,353 | 5,372 | 7,517 | 8,334 | 5,724 | 4,917 | 4,899 | 8,161 | 6,598 | 2,987 |
| 60% | 2,072 | 2,199 | 2,861 | 4,564 | 5,369 | 5,708 | 4,110 | 4,416 | 4,637 | 7,475 | 3,304 | 2,778 |
| 70% | 1,883 | 1,851 | 1,955 | 3,851 | 4,263 | 4,284 | 3,609 | 3,914 | 4,275 | 5,472 | 2,588 | 2,591 |
| 80% | 1,720 | 1,606 | 1,723 | 2,940 | 2,655 | 3,227 | 3,083 | 3,634 | 3,706 | 3,809 | 2,276 | 2,561 |
| 90% | 1,595 | 1,323 | 1,207 | 2,435 | 1,985 | 2,298 | 2,800 | 2,823 | 3,090 | 2,859 | 1,976 | 2,355 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,725 | 2,966 | 6,101 | 12,048 | 14,038 | 13,835 | 8,730 | 7,541 | 5,948 | 7,021 | 5,656 | 3,417 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,357 | 3,724 | 9,237 | 25,106 | 28,552 | 25,667 | 16,022 | 13,923 | 8,473 | 7,644 | 7,635 | 3,657 |
| Above Normal (16%) | 3,317 | 3,300 | 4,967 | 11,545 | 14,234 | 19,875 | 9,341 | 5,916 | 4,265 | 8,513 | 8,330 | 4,142 |
| Below Normal (13%) | 3,135 | 2,591 | 4,249 | 4,252 | 7,705 | 6,037 | 4,599 | 4,873 | 4,714 | 9,035 | 7,184 | 4,254 |
| Dry (24%) | 1,924 | 2,946 | 6,362 | 4,461 | 4,982 | 5,577 | 4,590 | 4,596 | 5,695 | 6,559 | 2,472 | 3,068 |
| Critical (15%) | 1,677 | 1,340 | 1,796 | 4,088 | 3,278 | 2,570 | 2,954 | 2,830 | 3,851 | 2,977 | 2,379 | 1,927 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -407 | 7 | -414 | 222 | 183 | 850 | -1 | 1 | -88 | 39 | 402 | -1,597 |
| 20% | -487 | 126 | 183 | 1,210 | 617 | 15 | -6 | 2 | -3 | 24 | 368 | -2,454 |
| 30% | -462 | 156 | 62 | 226 | -385 | 1,099 | 95 | 280 | 194 | -135 | 345 | -2,332 |
| 40% | -49 | 227 | 69 | 16 | -677 | -4 | 0 | -21 | 42 | -40 | 808 | -682 |
| 50% | 146 | 196 | 40 | -29 | 446 | -37 | 1 | 96 | 86 | -63 | 906 | -114 |
| 60% | 172 | 248 | 385 | 0 | 127 | 35 | 0 | -6 | 73 | 187 | 32 | -52 |
| 70% | 183 | 135 | 44 | 55 | 22 | 120 | 1 | -65 | 162 | -101 | -41 | -93 |
| 80% | 108 | 159 | 27 | 20 | 41 | -1 | 166 | 51 | 28 | 434 | -20 | -25 |
| 90% | 316 | 109 | 0 | 149 | 250 | 0 | 0 | 23 | 136 | 55 | -43 | -5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -62 | 127 | 120 | 163 | -7 | 164 | 6 | 13 | 60 | 16 | 259 | -832 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -174 | 72 | -200 | 389 | 285 | 225 | 0 | -104 | -37 | -234 | 958 | -999 |
| Above Normal (16%) | -632 | 287 | 799 | -4 | 31 | 475 | 17 | 48 | 76 | -475 | -41 | -3,107 |
| Below Normal (13%) | 160 | 73 | 51 | 28 | -883 | 45 | 0 | -6 | 253 | -234 | -92 | -53 |
| Dry (24%) | 164 | 105 | 196 | 76 | 40 | 45 | 19 | 172 | 115 | 817 | -113 | -48 |
| Critical (15%) | 217 | 161 | 12 | 122 | 45 | 4 | -8 | -20 | -17 | -18 | 10 | -25 |

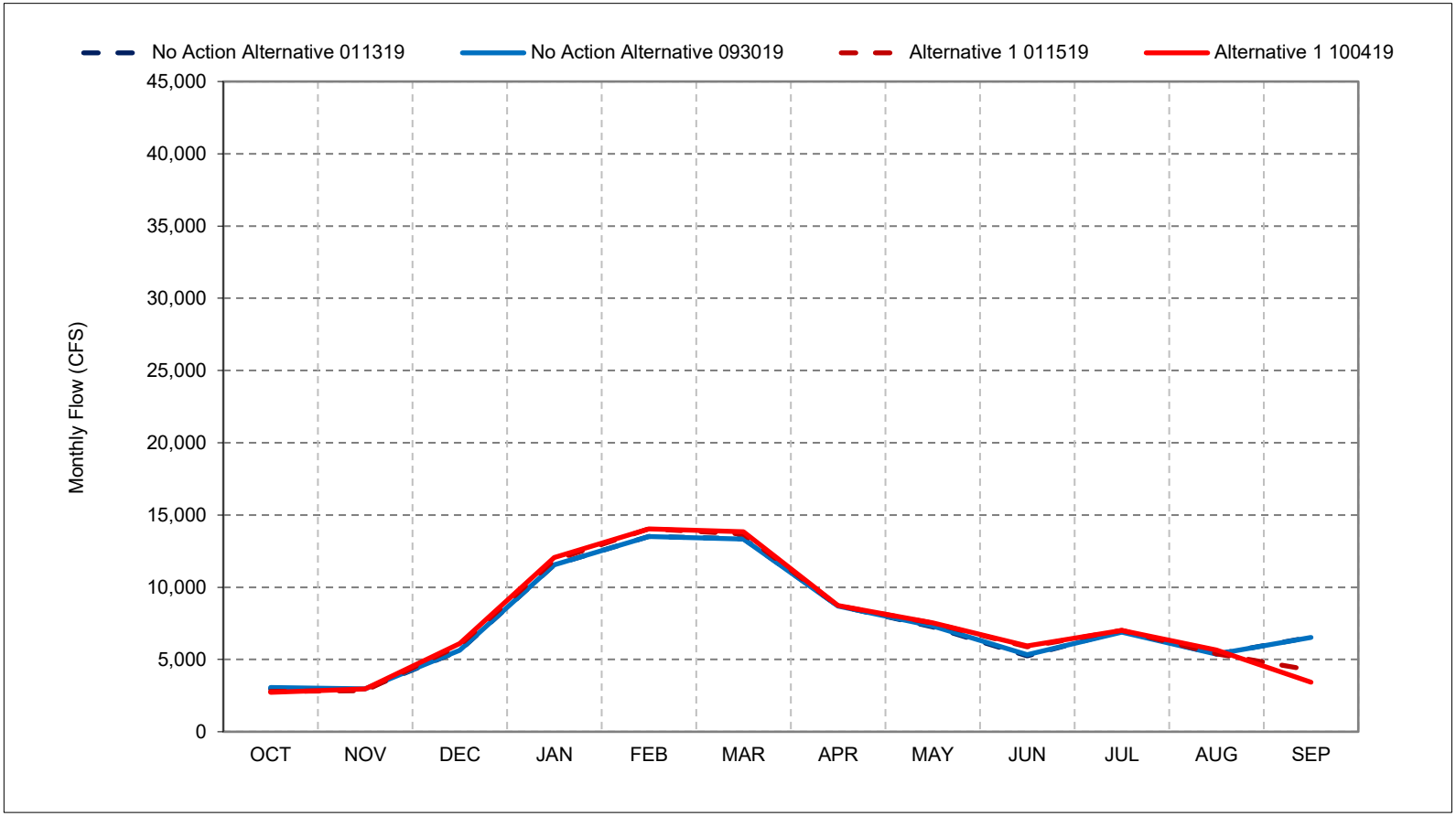
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-1. Feather River at Sacramento River Confluence Flow, Long-Term Average Flow

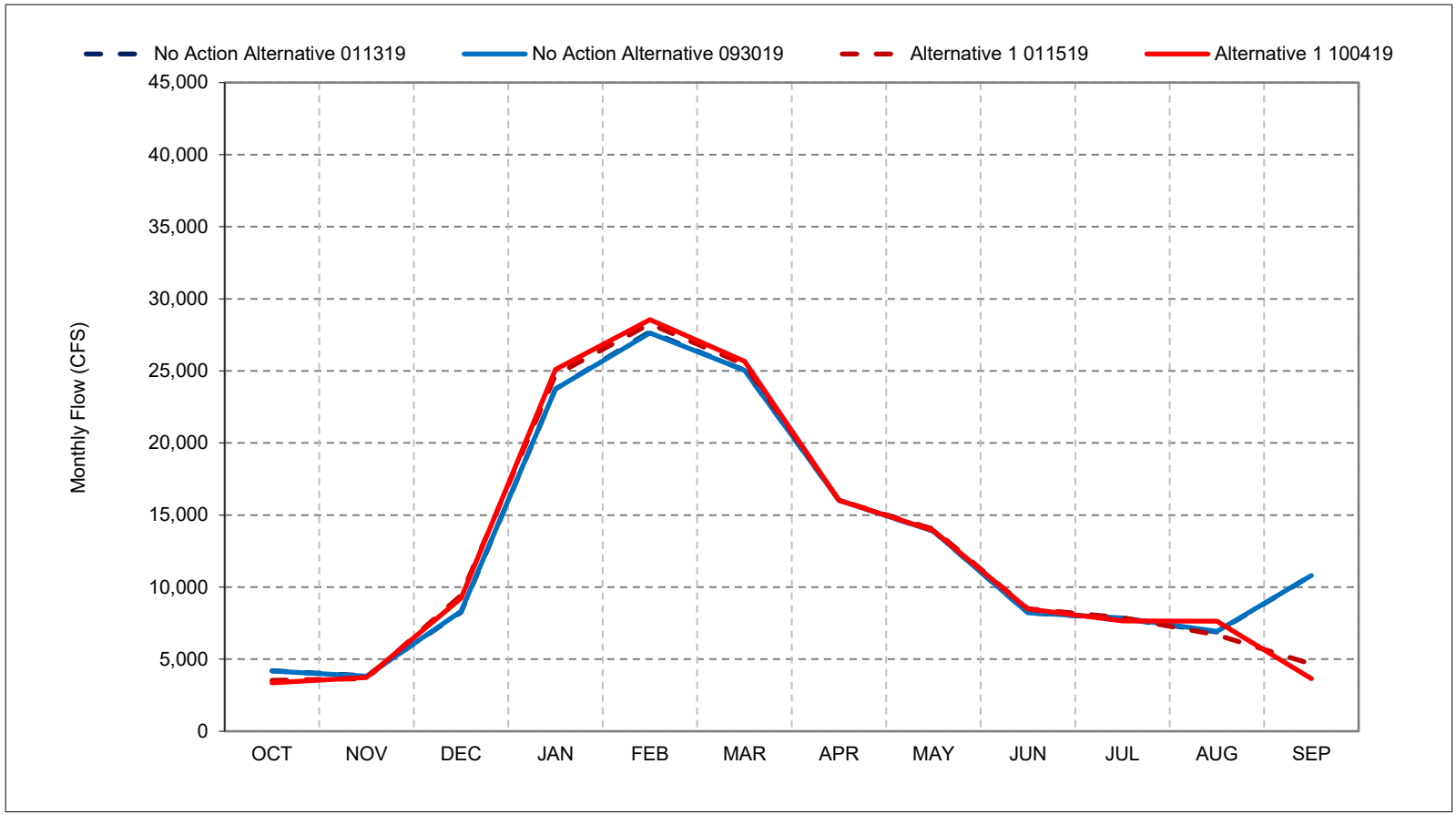



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-2. Feather River at Sacramento River Confluence Flow, Wet Year Average Flow

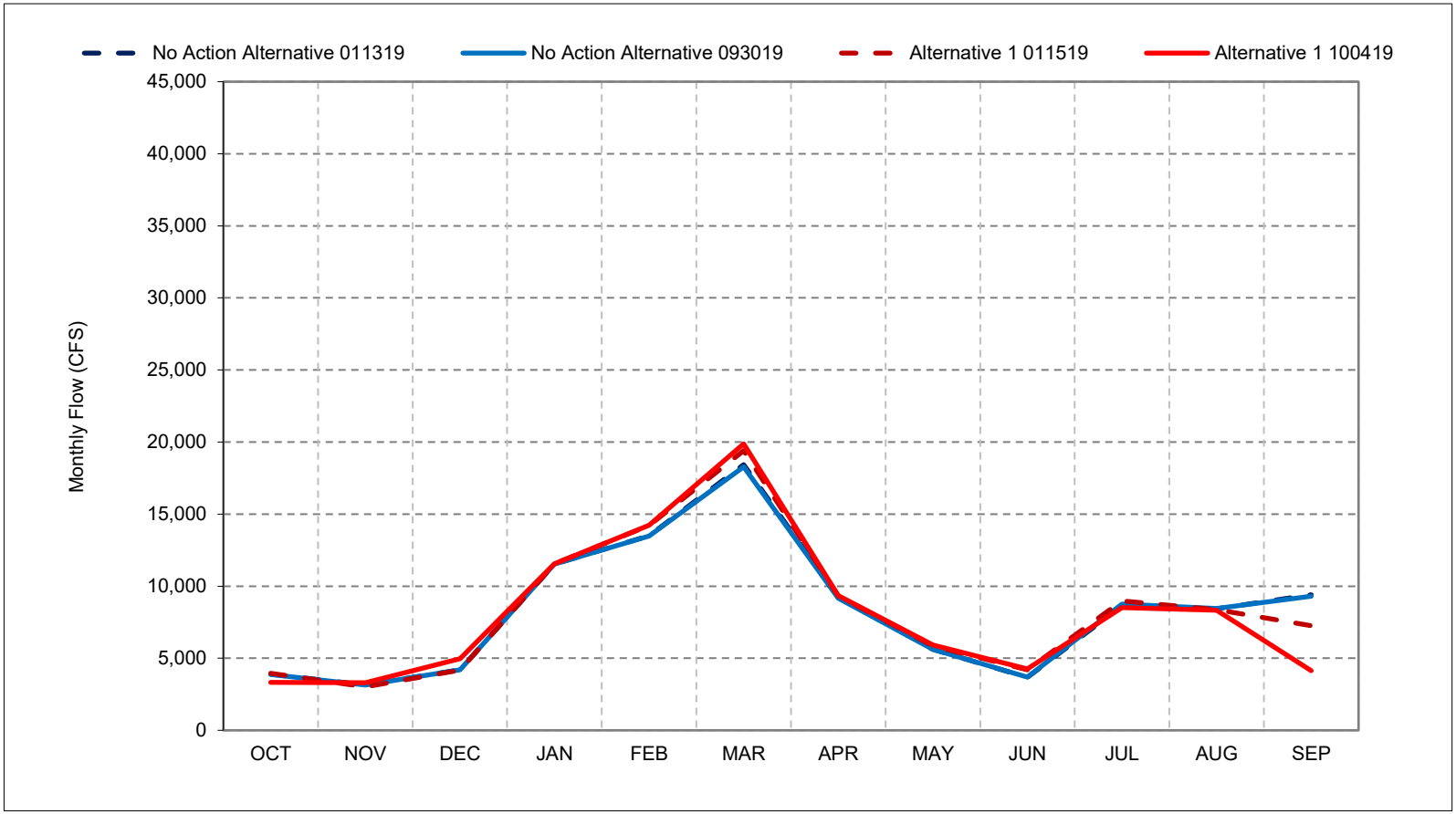



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-3. Feather River at Sacramento River Confluence Flow, Above Normal Year Average Flov

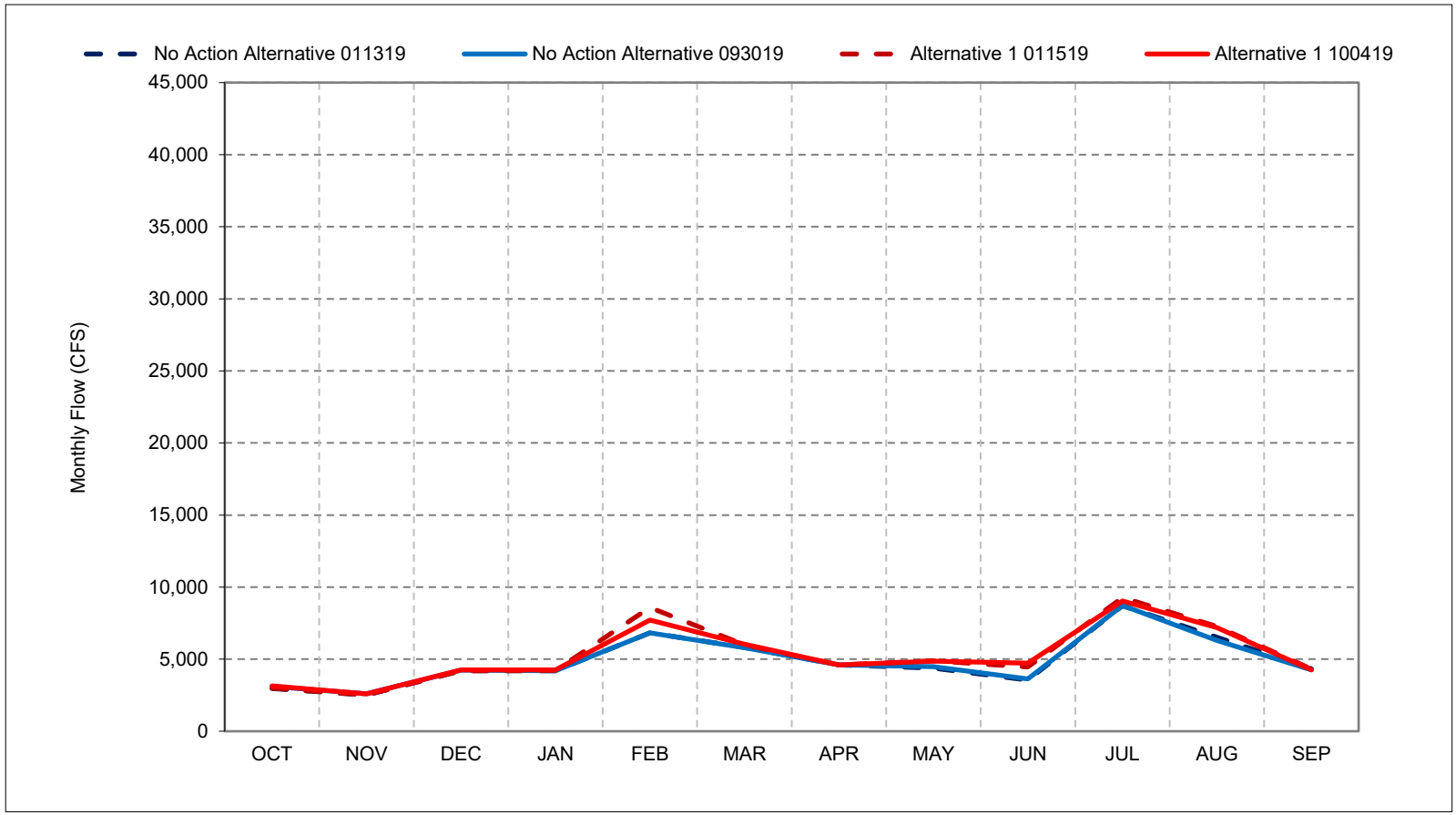



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-4. Feather River at Sacramento River Confluence Flow, Below Normal Year Average Flow

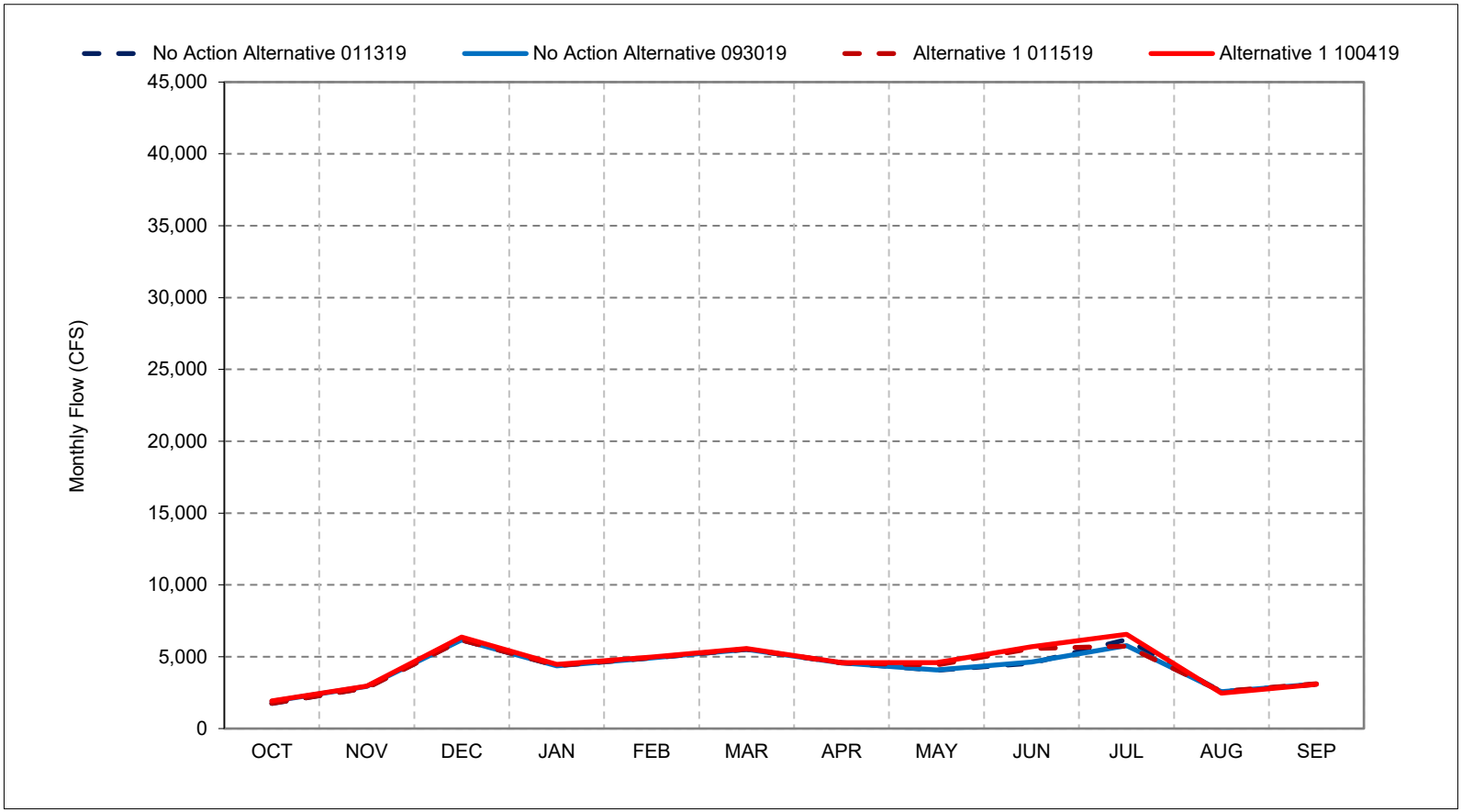



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-5. Feather River at Sacramento River Confluence Flow, Dry Year Average Flow

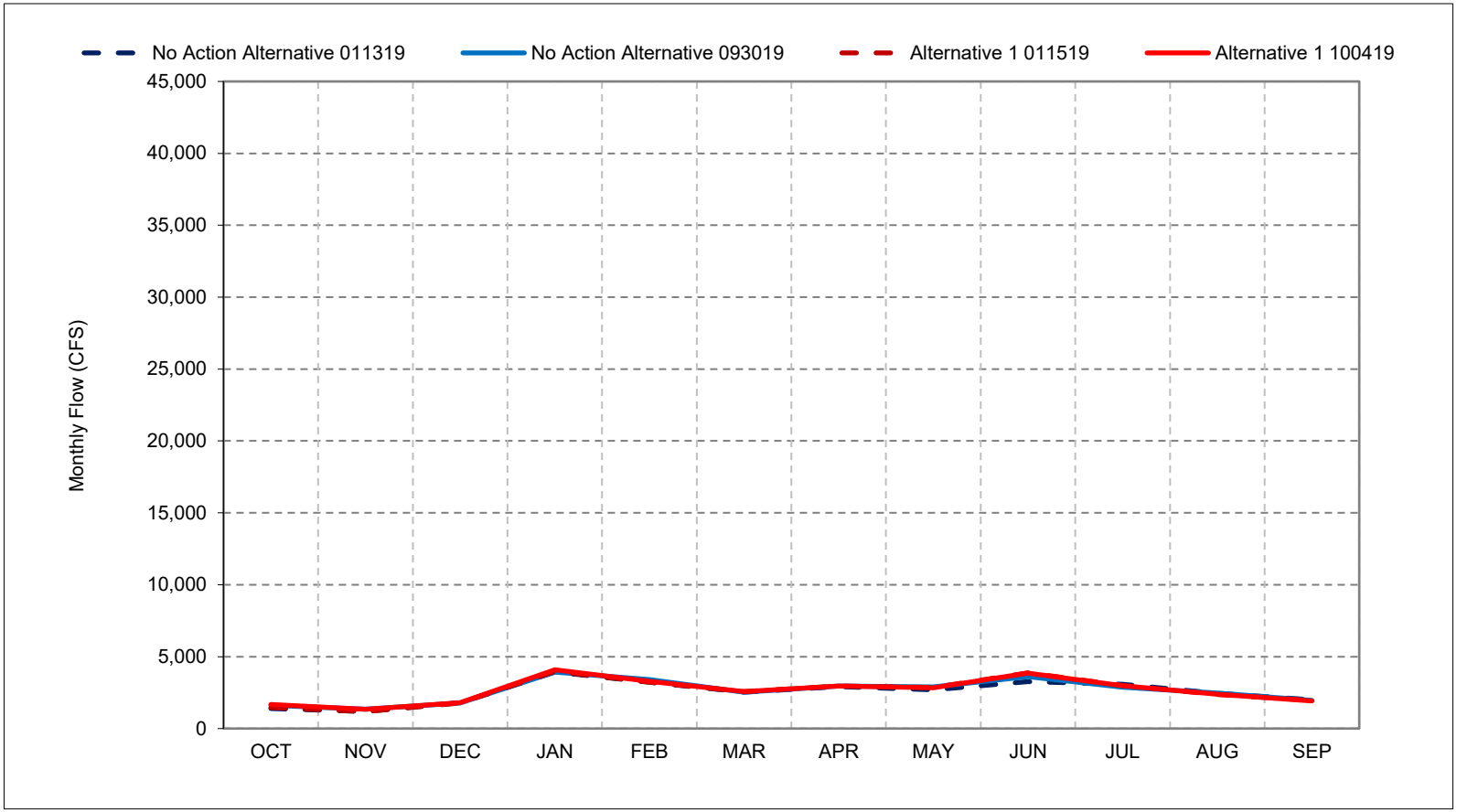



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-6. Feather River at Sacramento River Confluence Flow, Critical Year Average Flow

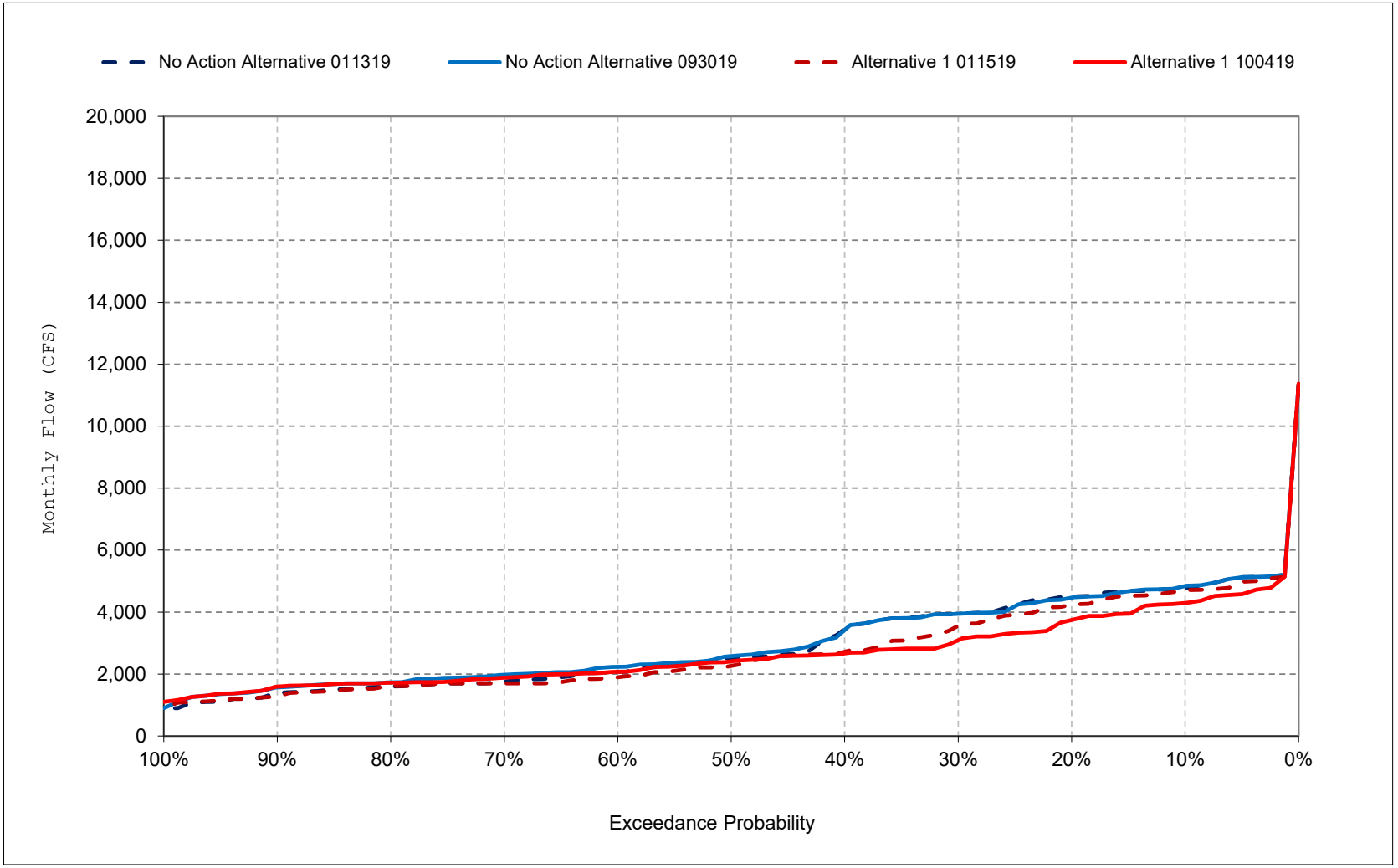



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

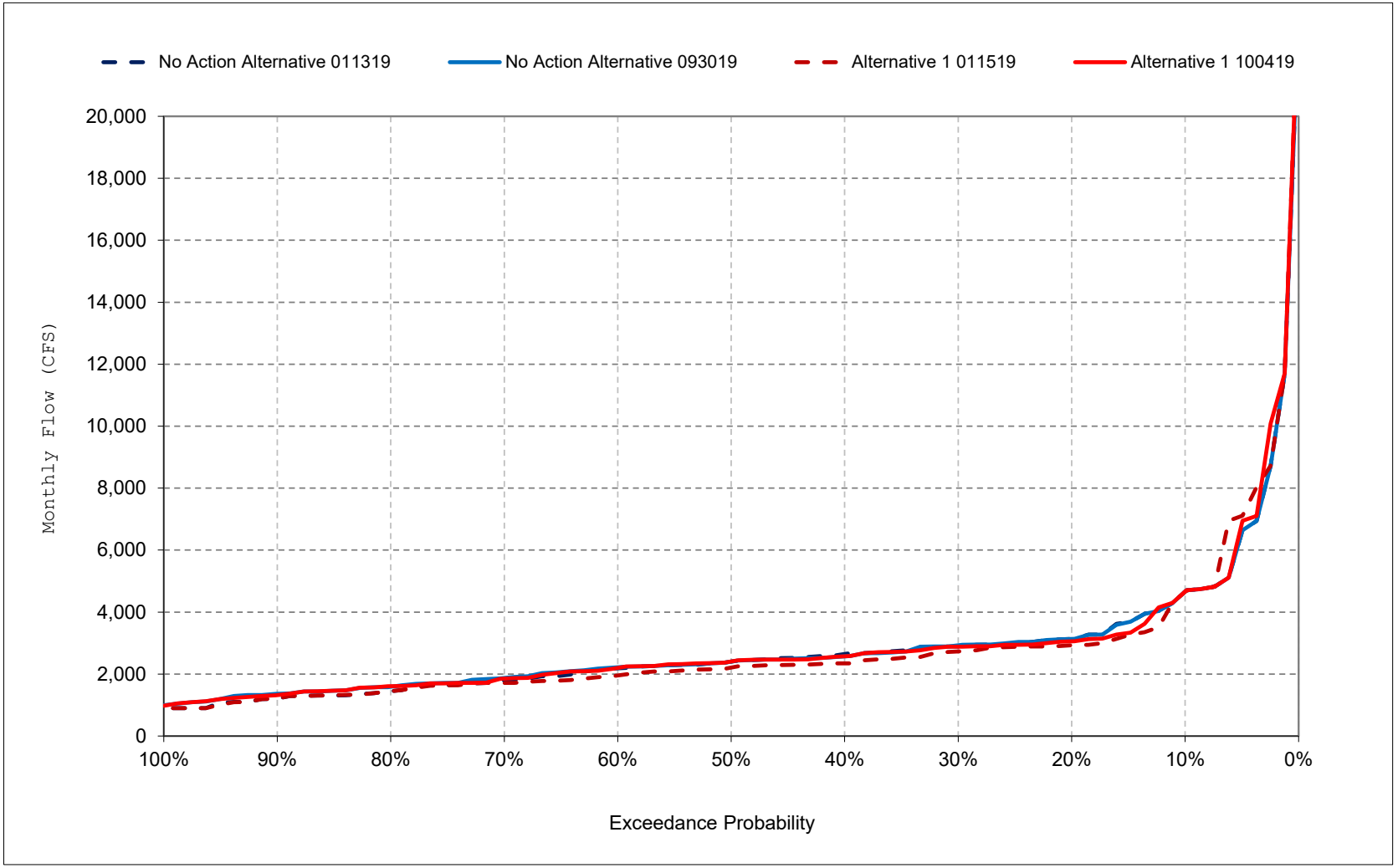
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-7. Feather River at Sacramento River Confluence Flow, October**



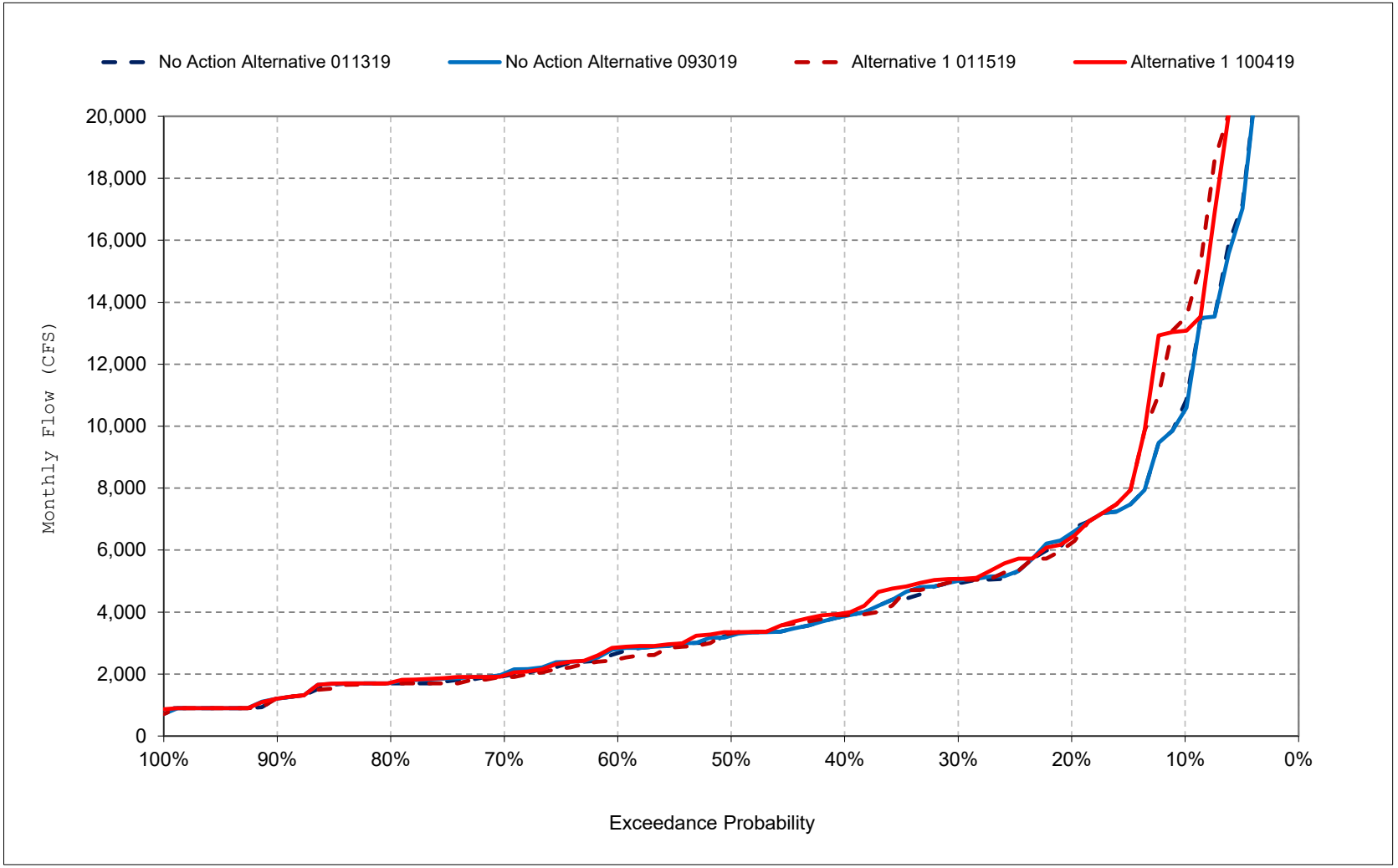

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-8. Feather River at Sacramento River Confluence Flow, November**



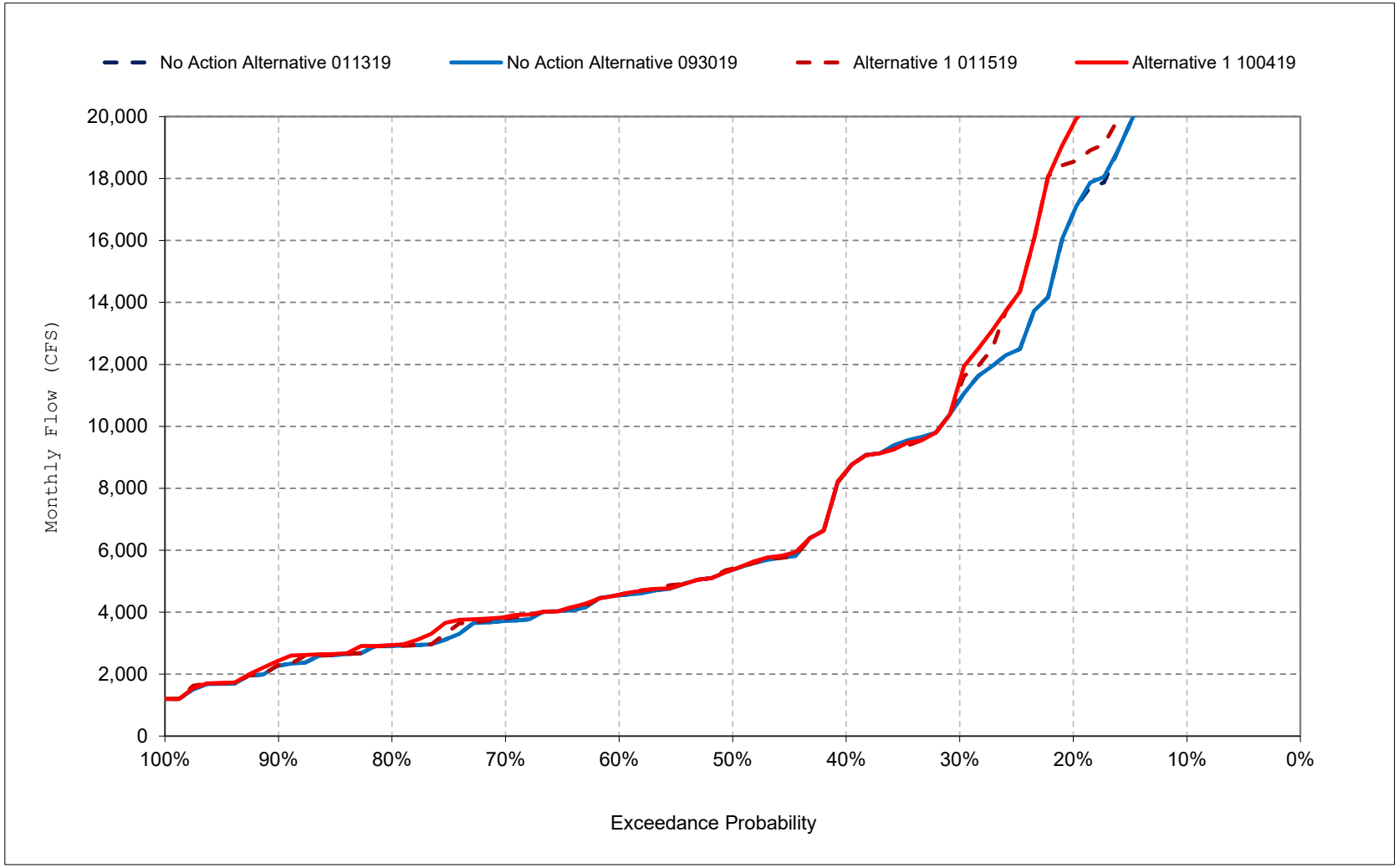

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-9. Feather River at Sacramento River Confluence Flow, December**



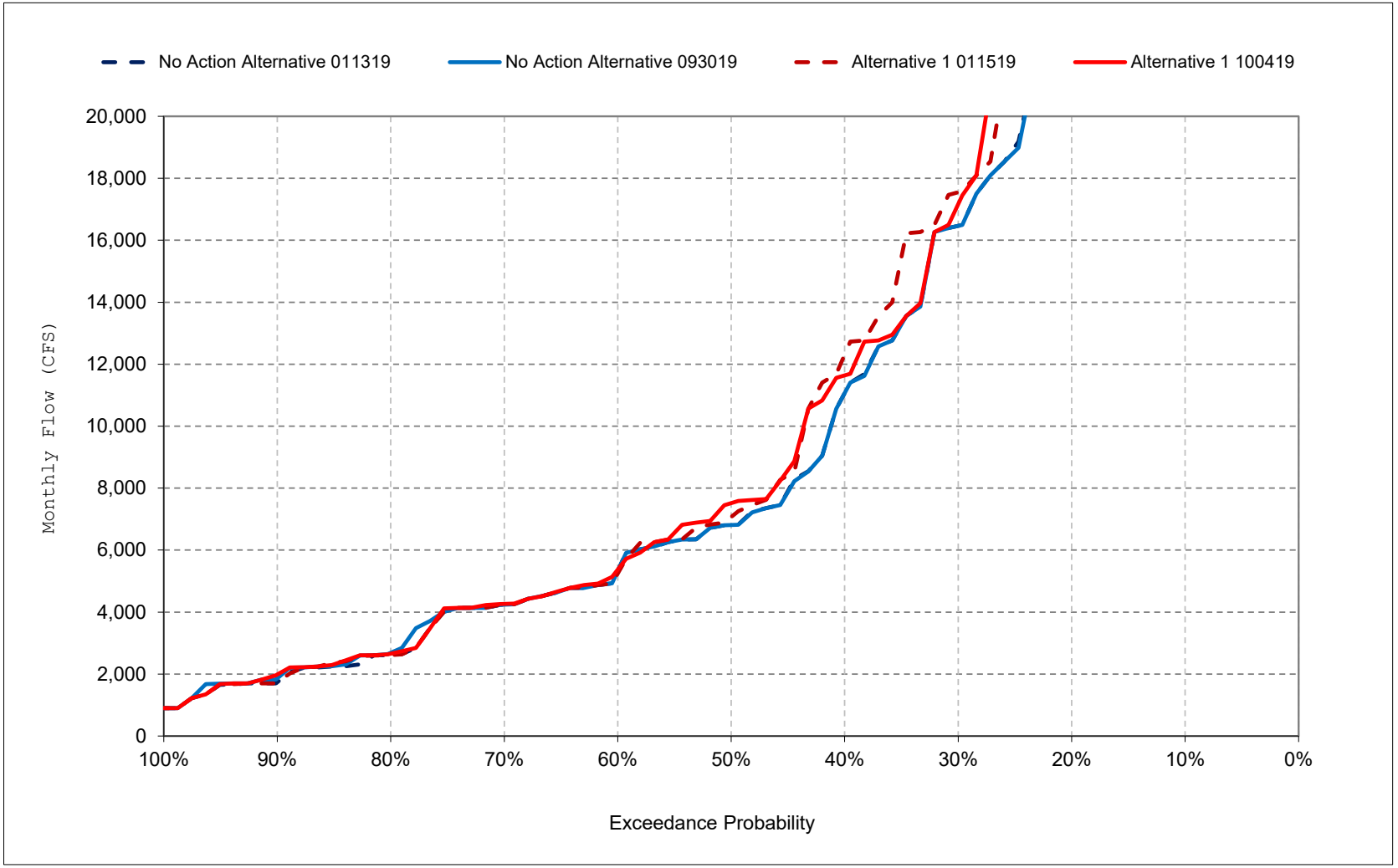

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-10. Feather River at Sacramento River Confluence Flow, January**



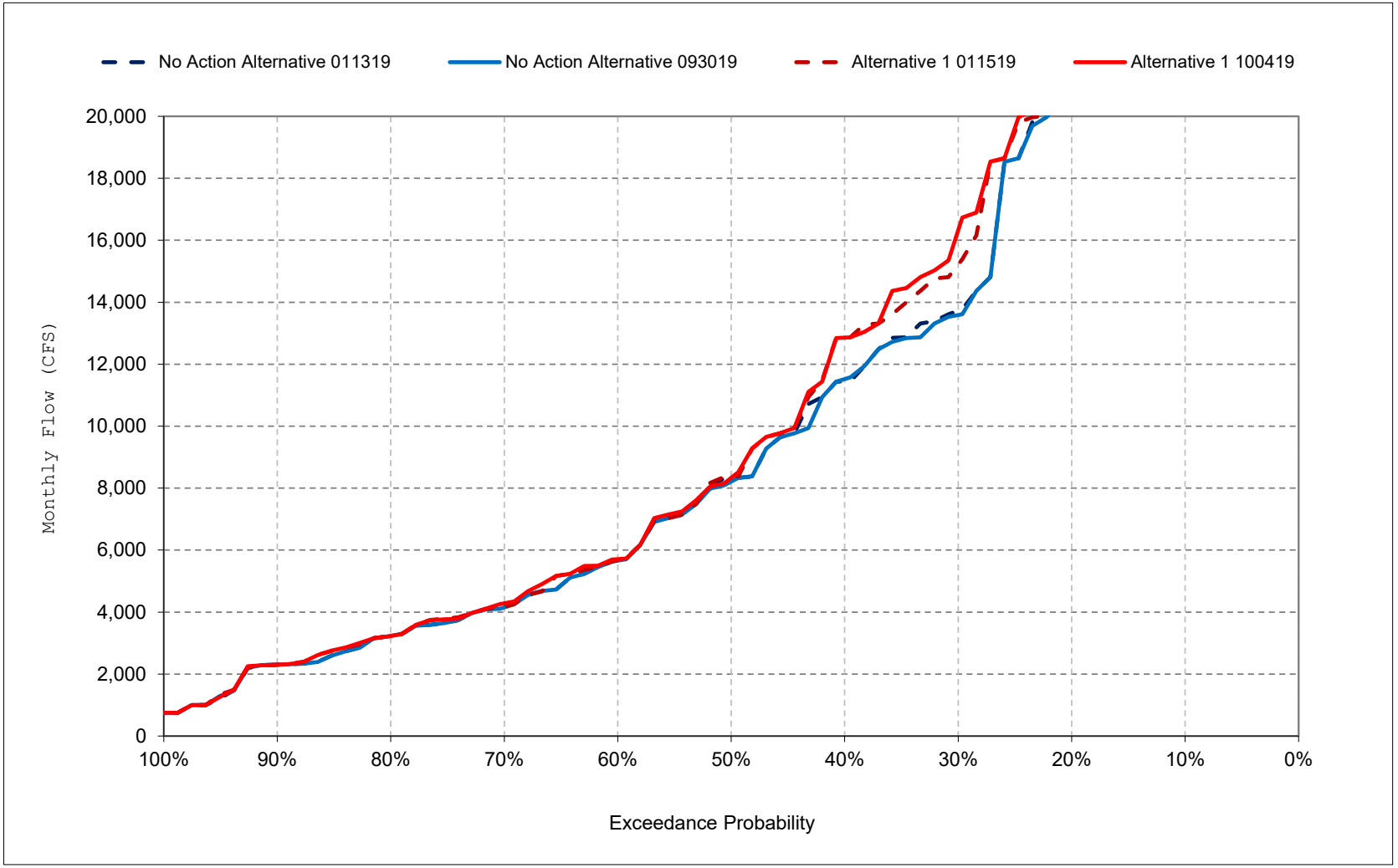

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-11. Feather River at Sacramento River Confluence Flow, February**



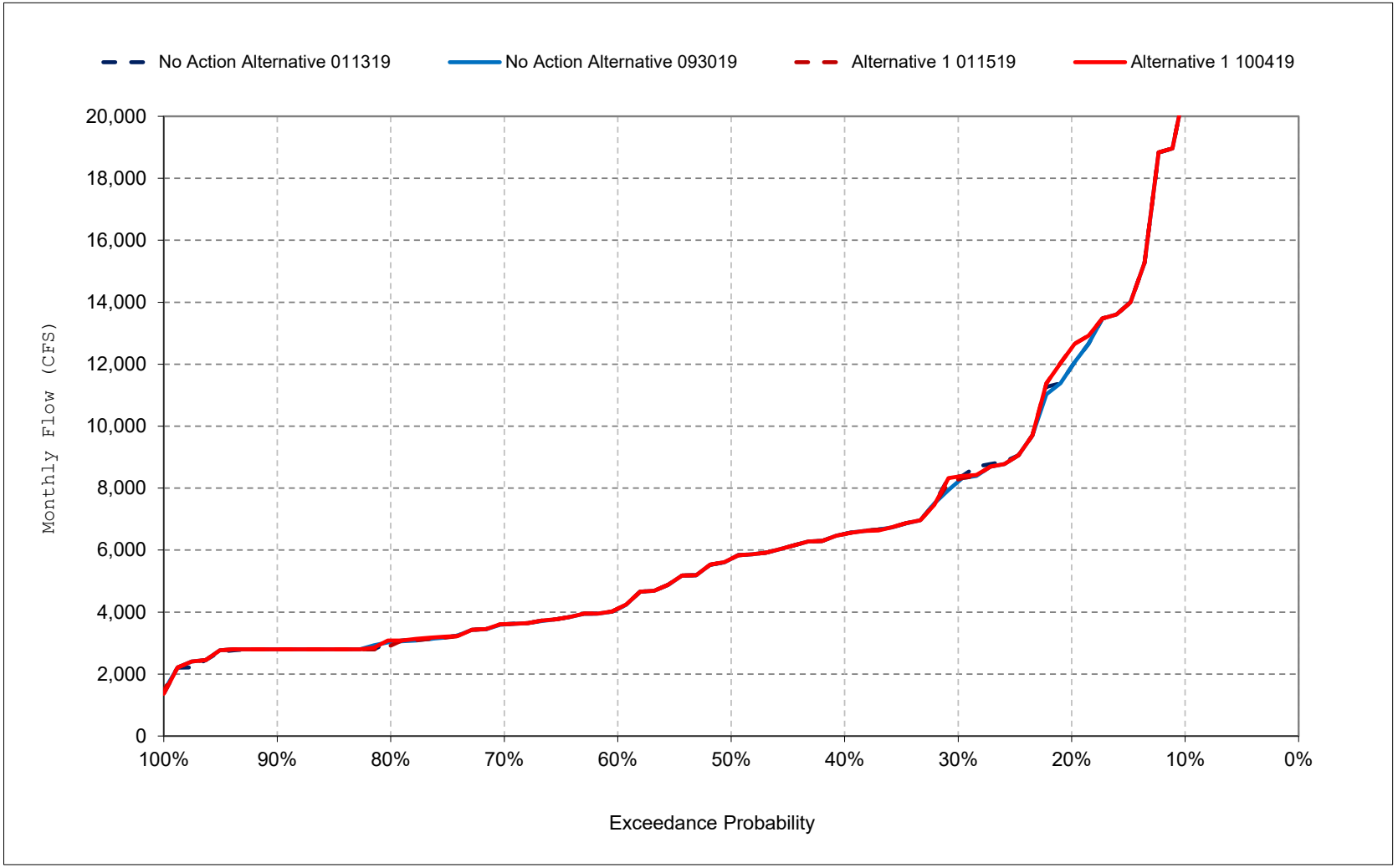

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-12. Feather River at Sacramento River Confluence Flow, March**



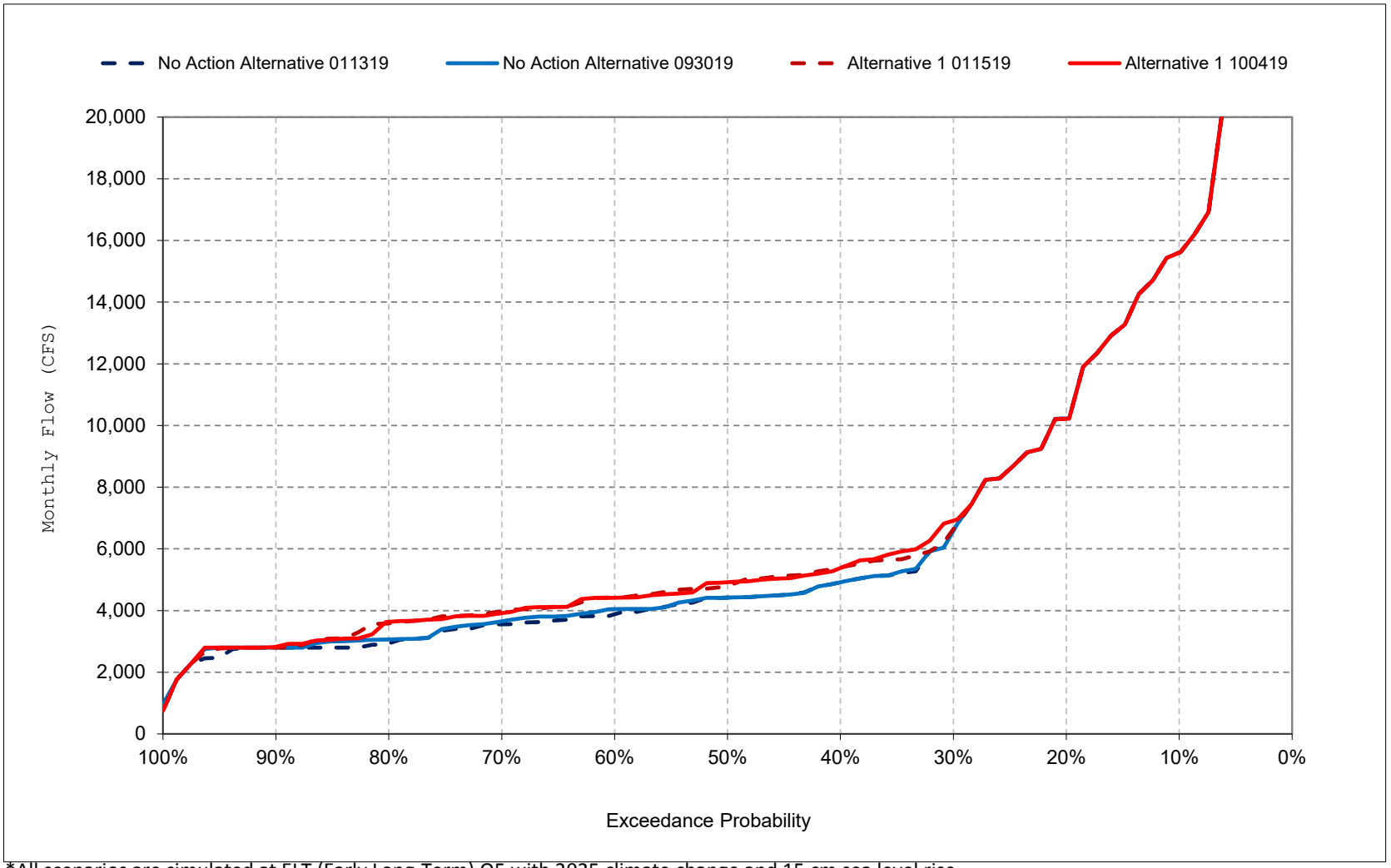

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-13. Feather River at Sacramento River Confluence Flow, April**



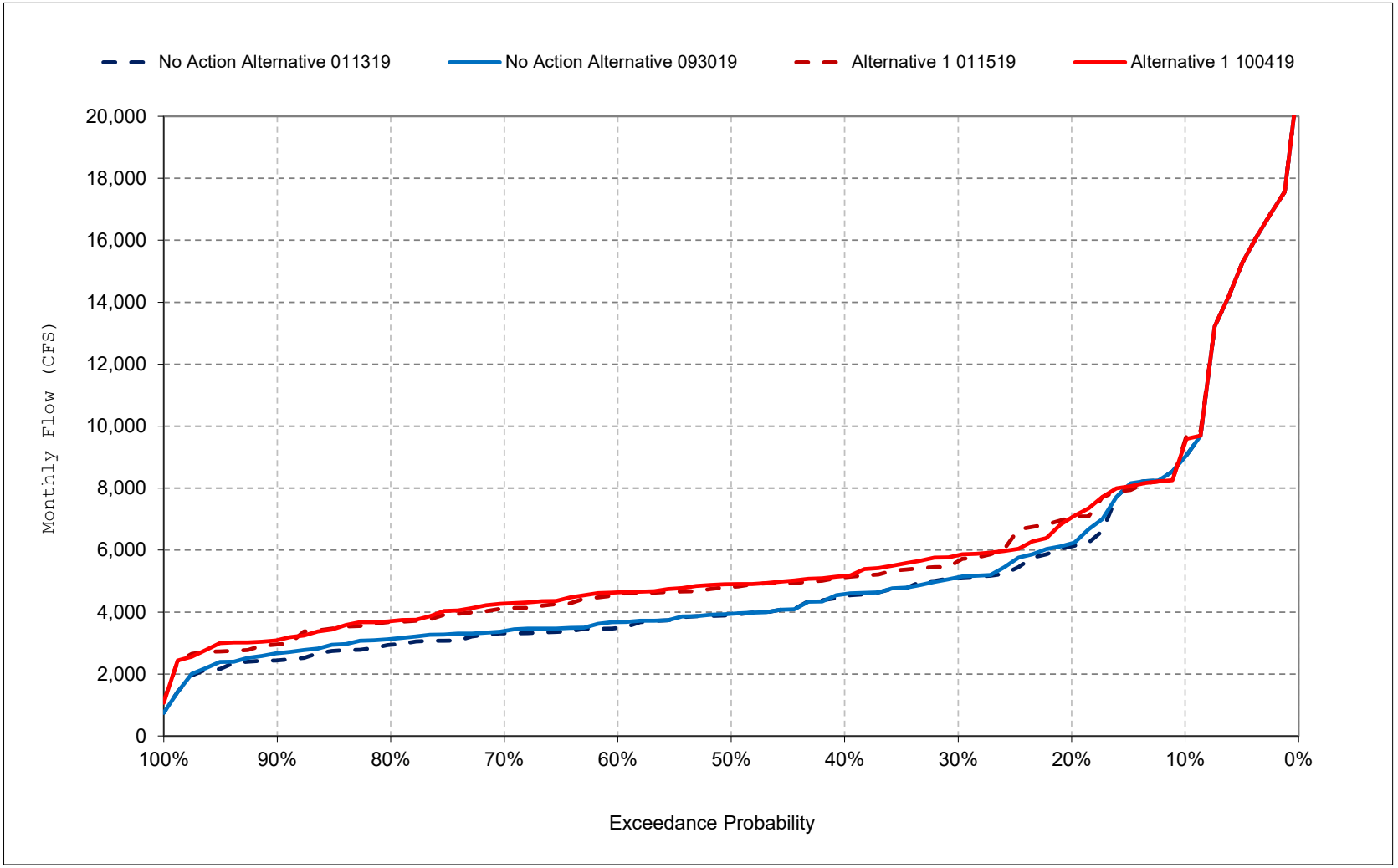

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-14. Feather River at Sacramento River Confluence Flow, May**



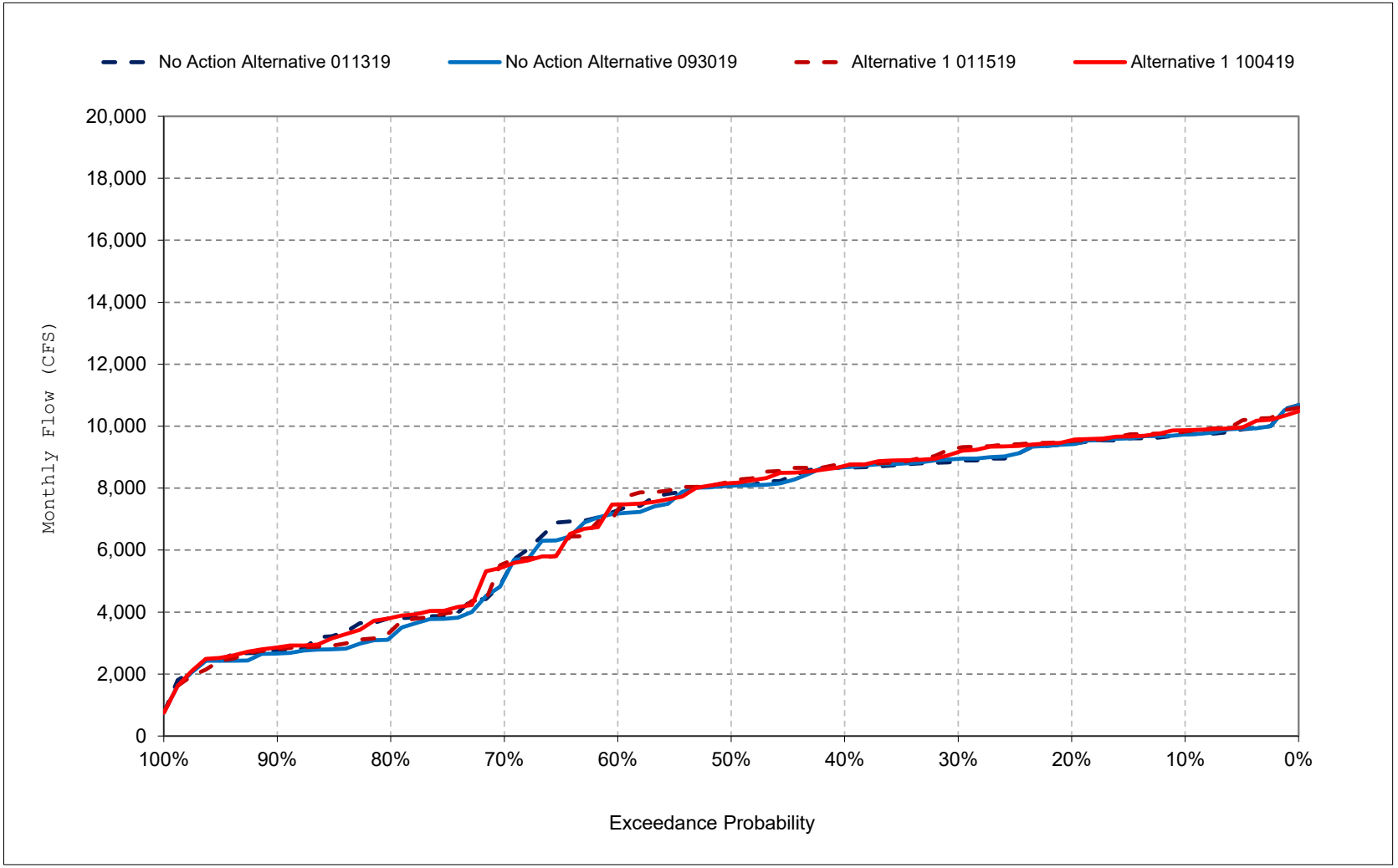

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-15. Feather River at Sacramento River Confluence Flow, June**



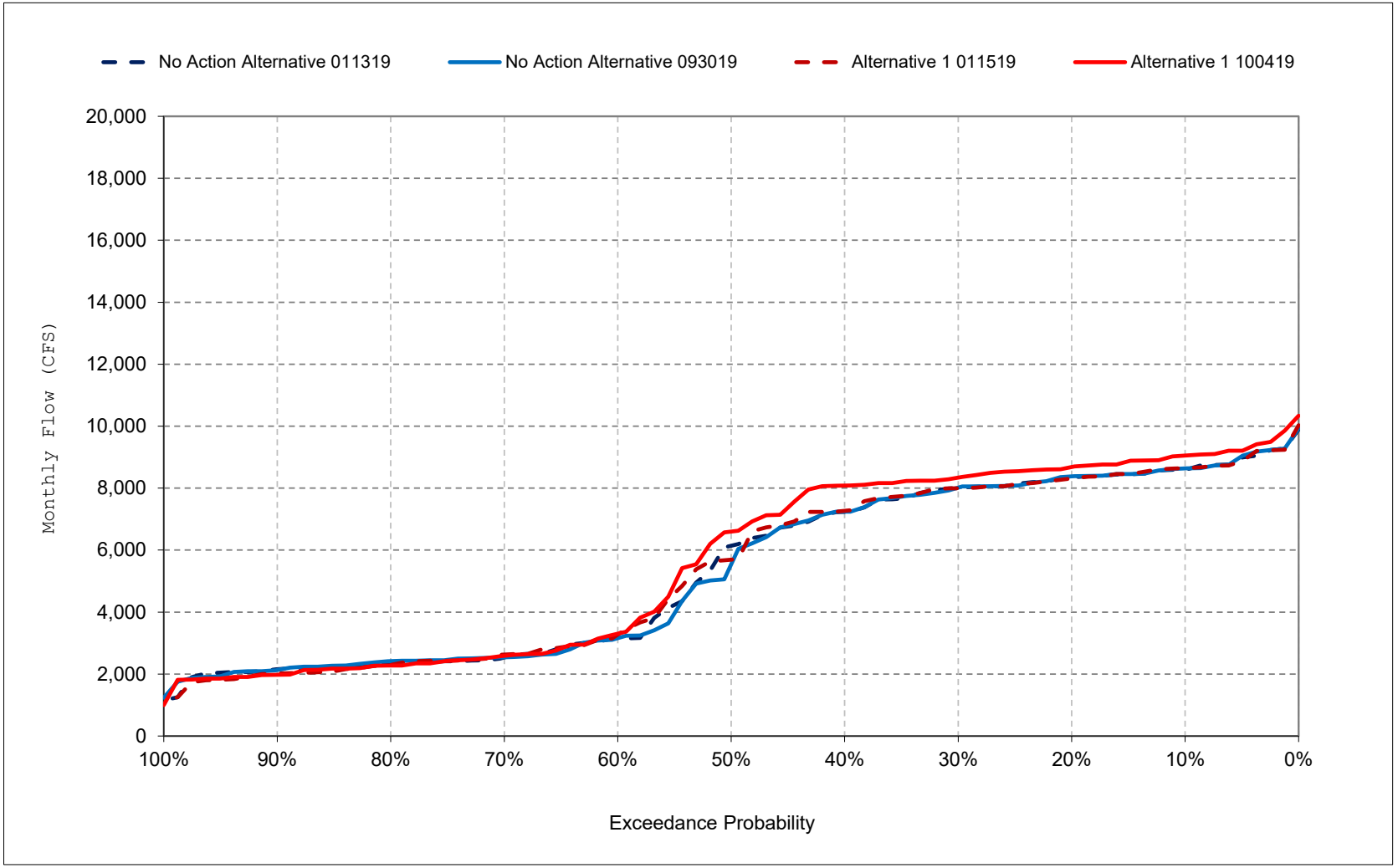

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-16. Feather River at Sacramento River Confluence Flow, July**



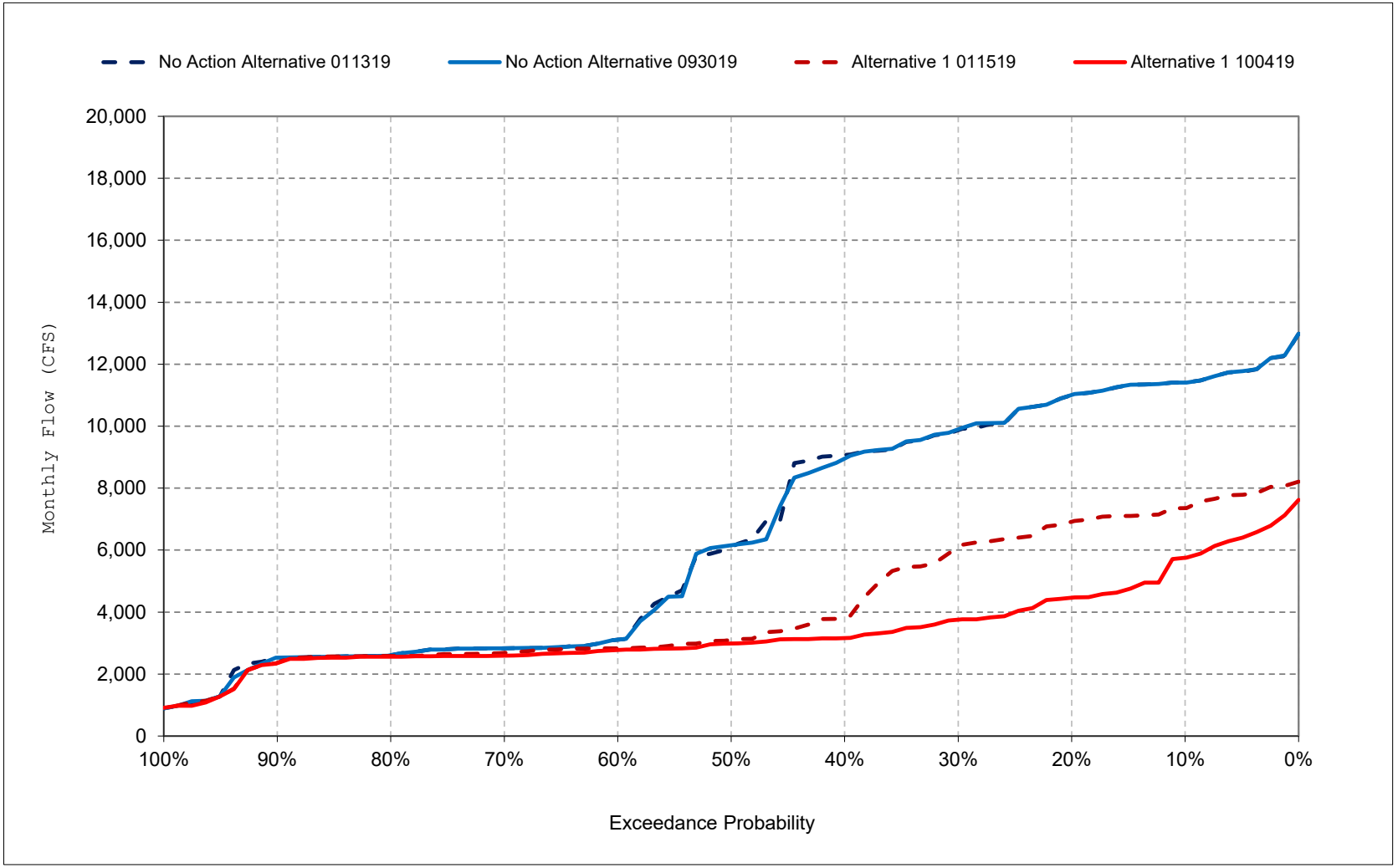

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-17. Feather River at Sacramento River Confluence Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-18. Feather River at Sacramento River Confluence Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 24-1. Fremont Weir Spills, Monthly Spills

## No Action Alternative 011319

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 301 | 7,187 | 24,201 | 44,517 | 14,376 | 1,904 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 75 | 2,202 | 9,905 | 14,249 | 4,769 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 53 | 505 | 4,192 | 6,128 | 2,111 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 23 | 138 | 907 | 3,893 | 1,029 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 5 | 91 | 485 | 2,331 | 296 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 20 | 202 | 910 | 144 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 8 | 37 | 336 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 15 | 93 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 40 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 375 | 3,007 | 8,766 | 12,004 | 6,631 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 478 | 4,305 | 24,513 | 28,643 | 17,559 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 807 | 1,037 | 5,129 | 13,268 | 5,785 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 136 | 23 | 2,233 | 354 | 3,020 | 241 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 377 | 4,792 | 455 | 1,510 | 443 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 66 | 150 | 308 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

## Alternative 1 011519

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 448 | 9,441 | 29,156 | 45,271 | 15,313 | 1,896 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 40 | 3,176 | 9,909 | 13,394 | 4,463 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 9 | 602 | 4,204 | 8,702 | 2,600 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 161 | 1,258 | 4,388 | 1,030 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 91 | 664 | 2,140 | 347 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 224 | 1,034 | 164 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 6 | 51 | 321 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 19 | 101 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 428 | 3,531 | 9,140 | 12,483 | 6,809 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 496 | 5,689 | 25,558 | 29,184 | 17,864 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 1,063 | 1,402 | 5,263 | 14,451 | 6,185 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 132 | 22 | 2,219 | 504 | 3,987 | 308 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 405 | 4,912 | 461 | 1,479 | 480 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 64 | 154 | 297 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 147 | 2,255 | 4,955 | 754 | 938 | -8 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -35 | 974 | 5 | -854 | -306 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | -44 | 97 | 12 | 2,574 | 489 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -23 | 23 | 351 | 494 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | -5 | 0 | 179 | -192 | 51 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 1 | 22 | 124 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | -2 | 14 | -14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | -10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 53 | 524 | 374 | 480 | 178 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 18 | 1,384 | 1,044 | 541 | 305 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 256 | 365 | 134 | 1,183 | 400 | -1 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -3 | -1 | -14 | 150 | 967 | 67 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 28 | 121 | 6 | -31 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | -1 | 4 | -11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 24-2. Fremont Weir Spills, Monthly Spills

### No Action Alternative 093019

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 303 | 7,185 | 24,208 | 44,207 | 14,379 | 1,902 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 75 | 2,176 | 9,897 | 14,185 | 4,429 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 51 | 454 | 4,190 | 5,961 | 2,120 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 22 | 139 | 907 | 3,793 | 934 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 10 | 89 | 485 | 2,219 | 296 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 202 | 889 | 139 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 10 | 37 | 333 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 17 | 103 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 34 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 16 | 361 | 2,985 | 8,740 | 11,929 | 6,607 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 479 | 4,298 | 24,449 | 28,532 | 17,554 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 776 | 1,010 | 5,088 | 13,111 | 5,640 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 120 | 21 | 2,229 | 355 | 2,932 | 239 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 339 | 4,730 | 456 | 1,496 | 447 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 66 | 150 | 313 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

### Alternative 1 100419

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 379 | 9,979 | 27,926 | 45,922 | 15,957 | 1,904 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 30 | 2,449 | 9,911 | 13,660 | 4,857 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 15 | 612 | 4,205 | 7,579 | 2,583 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 160 | 1,144 | 4,424 | 977 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 88 | 661 | 2,331 | 351 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 236 | 986 | 172 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 12 | 66 | 327 | 83 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 2 | 21 | 91 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 6 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 16 | 397 | 3,473 | 9,117 | 12,562 | 6,883 | 1,203 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 466 | 5,519 | 25,509 | 29,558 | 17,953 | 3,675 | 162 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 908 | 1,287 | 5,222 | 14,491 | 6,474 | 180 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 120 | 21 | 2,255 | 474 | 3,606 | 311 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 419 | 4,950 | 460 | 1,501 | 477 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 1 | 66 | 174 | 294 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 77 | 2,793 | 3,719 | 1,715 | 1,578 | 3 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -45 | 272 | 14 | -524 | 428 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | -36 | 157 | 15 | 1,617 | 464 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -22 | 21 | 237 | 632 | 44 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | -10 | -1 | 175 | 112 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 33 | 97 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 3 | 30 | -6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 1 | 5 | -12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 2 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 36 | 488 | 378 | 633 | 276 | -10 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -13 | 1,221 | 1,060 | 1,026 | 399 | -31 | 1 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 132 | 277 | 134 | 1,380 | 834 | -4 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 26 | 119 | 674 | 71 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 80 | 219 | 4 | 5 | 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | -1 | 0 | 24 | -20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 24-3. Fremont Weir Spills, Monthly Spills

### No Action Alternative 011319

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 301 | 7,187 | 24,201 | 44,517 | 14,376 | 1,904 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 75 | 2,202 | 9,905 | 14,249 | 4,769 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 53 | 505 | 4,192 | 6,128 | 2,111 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 23 | 138 | 907 | 3,893 | 1,029 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 5 | 91 | 485 | 2,331 | 296 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 20 | 202 | 910 | 144 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 8 | 37 | 336 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 15 | 93 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 40 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 375 | 3,007 | 8,766 | 12,004 | 6,631 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 478 | 4,305 | 24,513 | 28,643 | 17,559 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 807 | 1,037 | 5,129 | 13,268 | 5,785 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 136 | 23 | 2,233 | 354 | 3,020 | 241 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 377 | 4,792 | 455 | 1,510 | 443 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 66 | 150 | 308 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

### No Action Alternative 093019

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 303 | 7,185 | 24,208 | 44,207 | 14,379 | 1,902 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 75 | 2,176 | 9,897 | 14,185 | 4,429 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 51 | 454 | 4,190 | 5,961 | 2,120 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 22 | 139 | 907 | 3,793 | 934 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 10 | 89 | 485 | 2,219 | 296 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 202 | 889 | 139 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 10 | 37 | 333 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 17 | 103 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 34 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 16 | 361 | 2,985 | 8,740 | 11,929 | 6,607 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 479 | 4,298 | 24,449 | 28,532 | 17,554 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 776 | 1,010 | 5,088 | 13,111 | 5,640 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 120 | 21 | 2,229 | 355 | 2,932 | 239 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 339 | 4,730 | 456 | 1,496 | 447 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 66 | 150 | 313 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 2 | -1 | 6 | -310 | 3 | -2 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | -26 | -8 | -64 | -340 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | -2 | -51 | -2 | -167 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -1 | 1 | 0 | -101 | -96 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 5 | -2 | 1 | -112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | -21 | -6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 2 | 0 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | -6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -14 | -22 | -27 | -74 | -23 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | -7 | -64 | -111 | -4 | -1 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -31 | -28 | -41 | -157 | -145 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -16 | -2 | -4 | 1 | -88 | -2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | -38 | -62 | 1 | -14 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 24-4. Fremont Weir Spills, Monthly Spills

### Alternative 1 011519

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 448 | 9,441 | 29,156 | 45,271 | 15,313 | 1,896 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 40 | 3,176 | 9,909 | 13,394 | 4,463 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 9 | 602 | 4,204 | 8,702 | 2,600 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 161 | 1,258 | 4,388 | 1,030 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 91 | 664 | 2,140 | 347 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 224 | 1,034 | 164 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 6 | 51 | 321 | 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 19 | 101 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 4 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 428 | 3,531 | 9,140 | 12,483 | 6,809 | 1,213 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 496 | 5,689 | 25,558 | 29,184 | 17,864 | 3,706 | 161 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 1,063 | 1,402 | 5,263 | 14,451 | 6,185 | 184 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 132 | 22 | 2,219 | 504 | 3,987 | 308 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 405 | 4,912 | 461 | 1,479 | 480 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 2 | 64 | 154 | 297 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |

### Alternative 1 100419

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 379 | 9,979 | 27,926 | 45,922 | 15,957 | 1,904 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 30 | 2,449 | 9,911 | 13,660 | 4,857 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 15 | 612 | 4,205 | 7,579 | 2,583 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 160 | 1,144 | 4,424 | 977 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 88 | 661 | 2,331 | 351 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 21 | 236 | 986 | 172 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 12 | 66 | 327 | 83 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 2 | 21 | 91 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 6 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 16 | 397 | 3,473 | 9,117 | 12,562 | 6,883 | 1,203 | 51 | 7 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 466 | 5,519 | 25,509 | 29,558 | 17,953 | 3,675 | 162 | 22 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 908 | 1,287 | 5,222 | 14,491 | 6,474 | 180 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 120 | 21 | 2,255 | 474 | 3,606 | 311 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 419 | 4,950 | 460 | 1,501 | 477 | 38 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 1 | 66 | 174 | 294 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Spills (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -69 | 537 | -1,230 | 651 | 643 | 8 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -10 | -727 | 2 | 266 | 394 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 6 | 9 | 1 | -1,123 | -16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | -1 | -114 | 37 | -52 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | -2 | -3 | 191 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 11 | -48 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 6 | 16 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 2 | 3 | -10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -31 | -58 | -23 | 79 | 74 | -10 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -31 | -170 | -48 | 374 | 90 | -31 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -154 | -116 | -41 | 40 | 289 | -4 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -12 | -1 | 36 | -30 | -381 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 15 | 37 | -1 | 22 | -3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | -1 | 2 | 20 | -3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

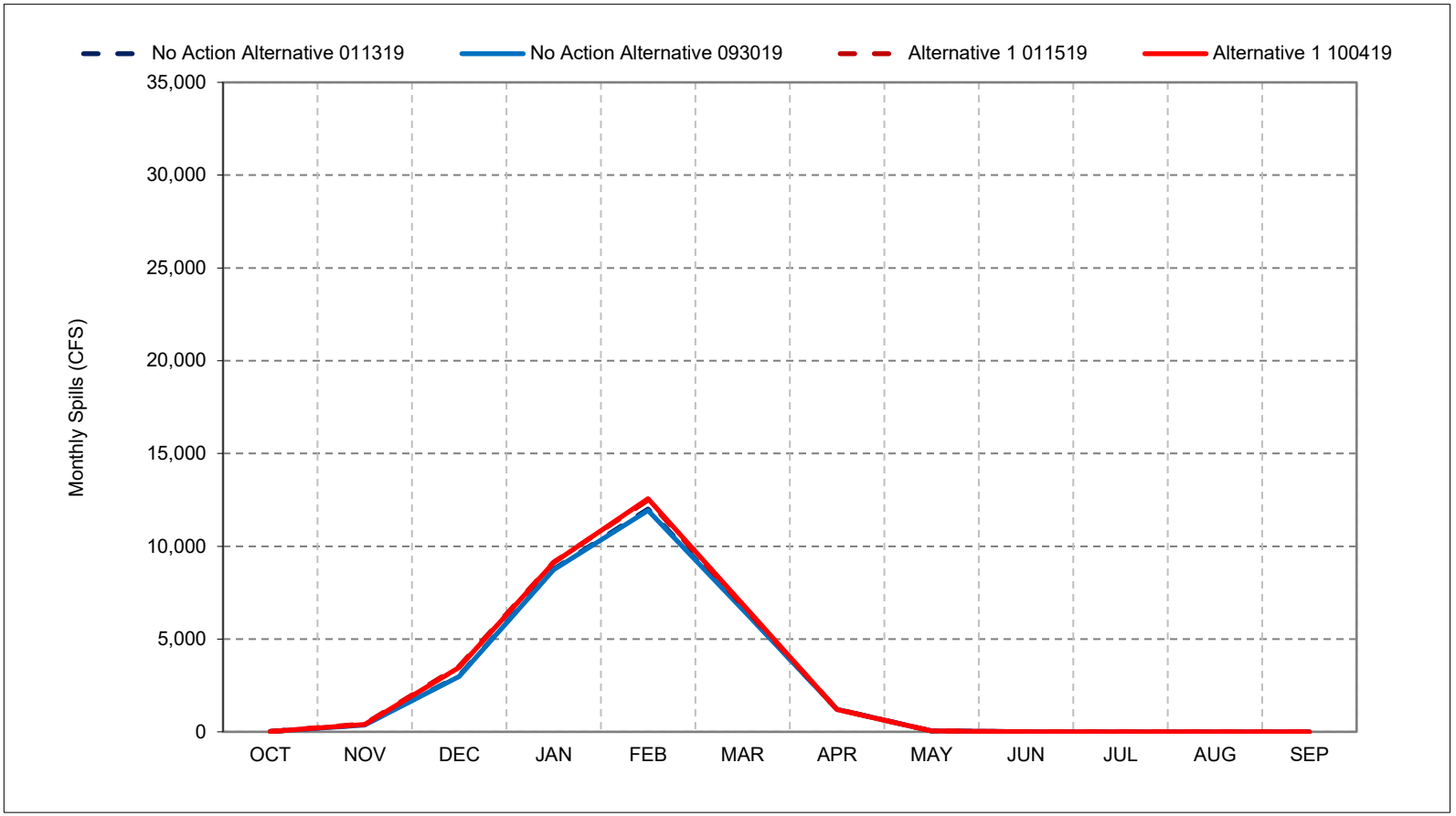
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-1. Fremont Weir Spills, Long-Term Average Spills

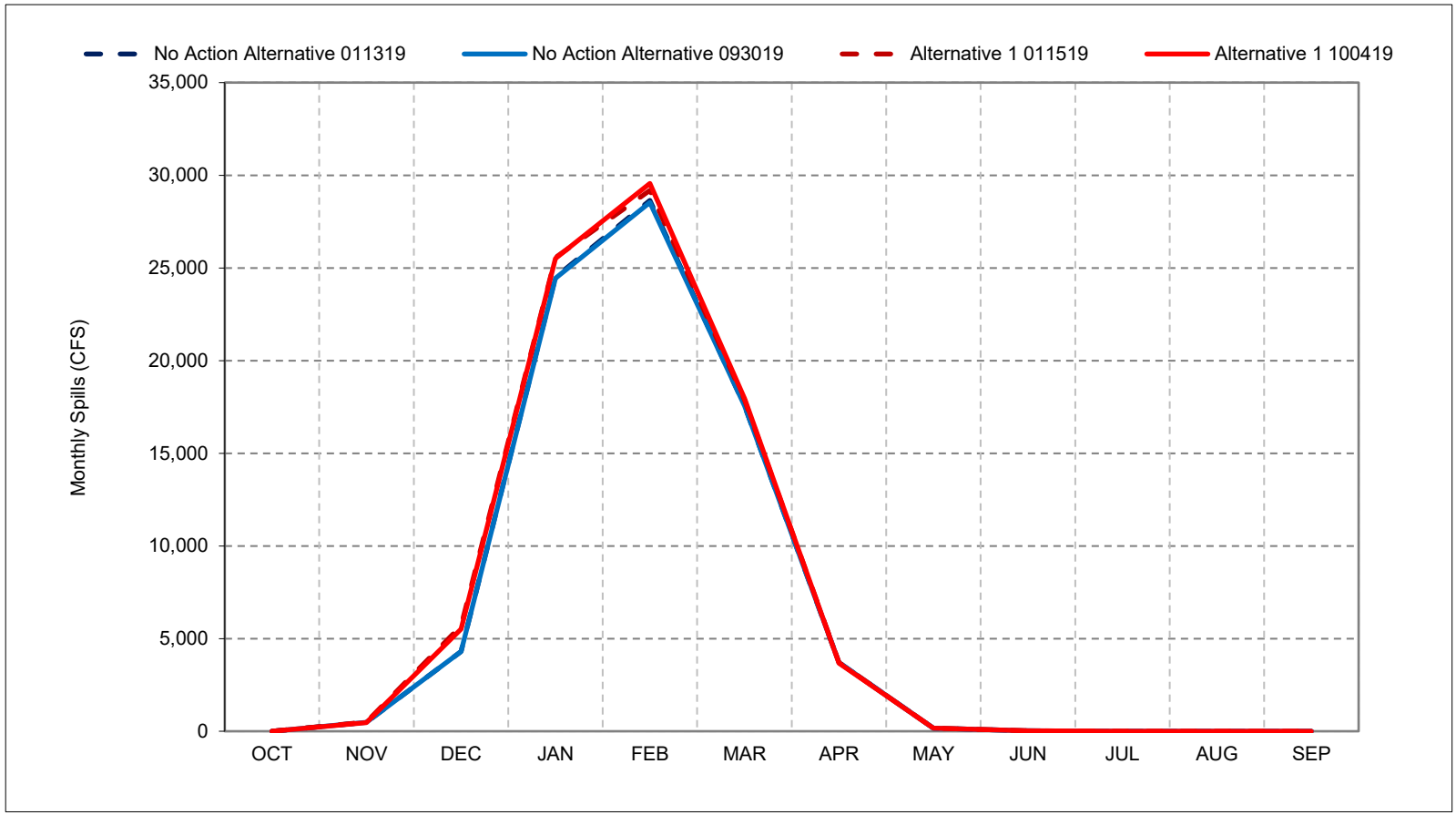



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-2. Fremont Weir Spills, Wet Year Average Spills

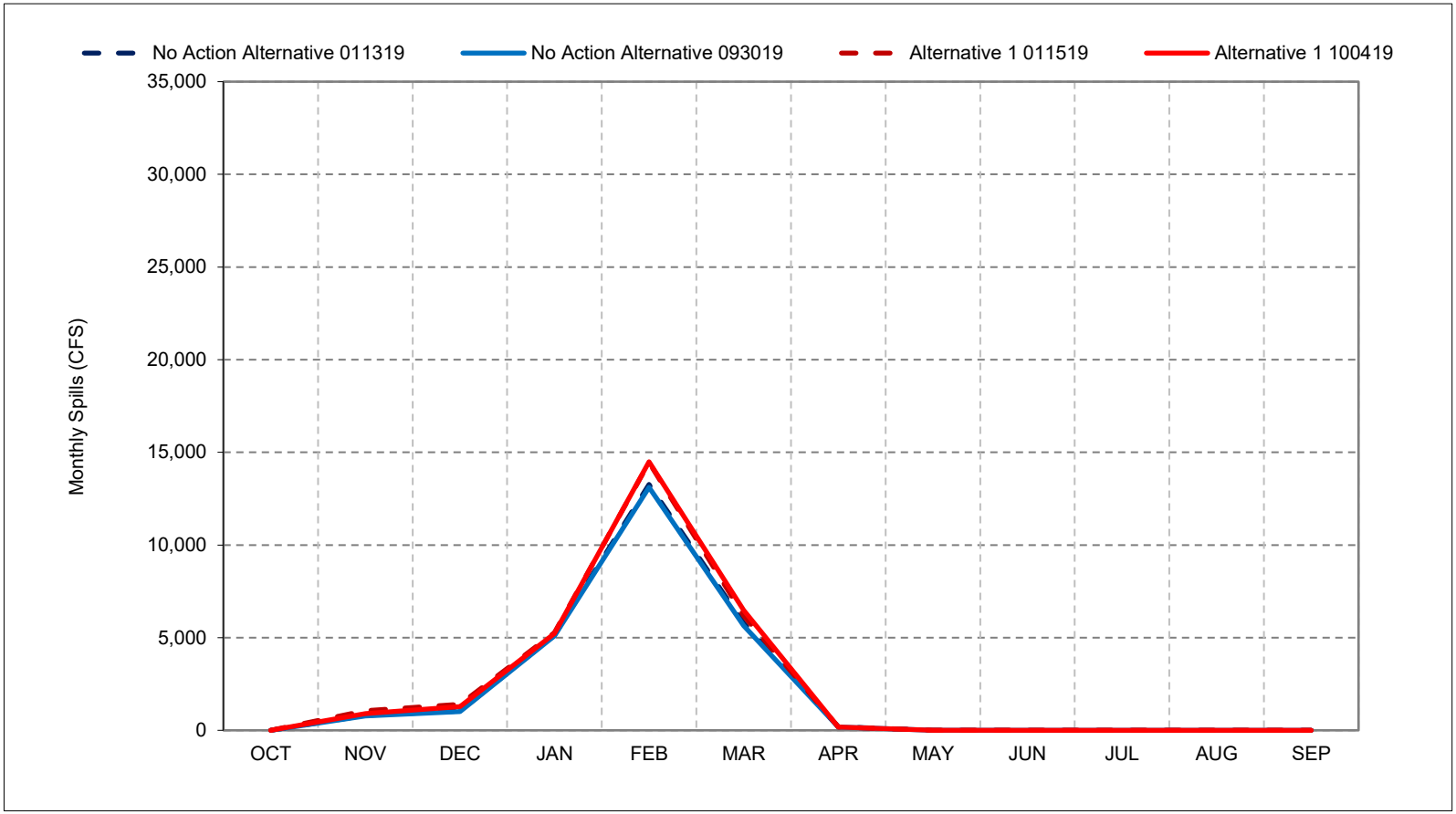



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-3. Fremont Weir Spills, Above Normal Year Average Spills

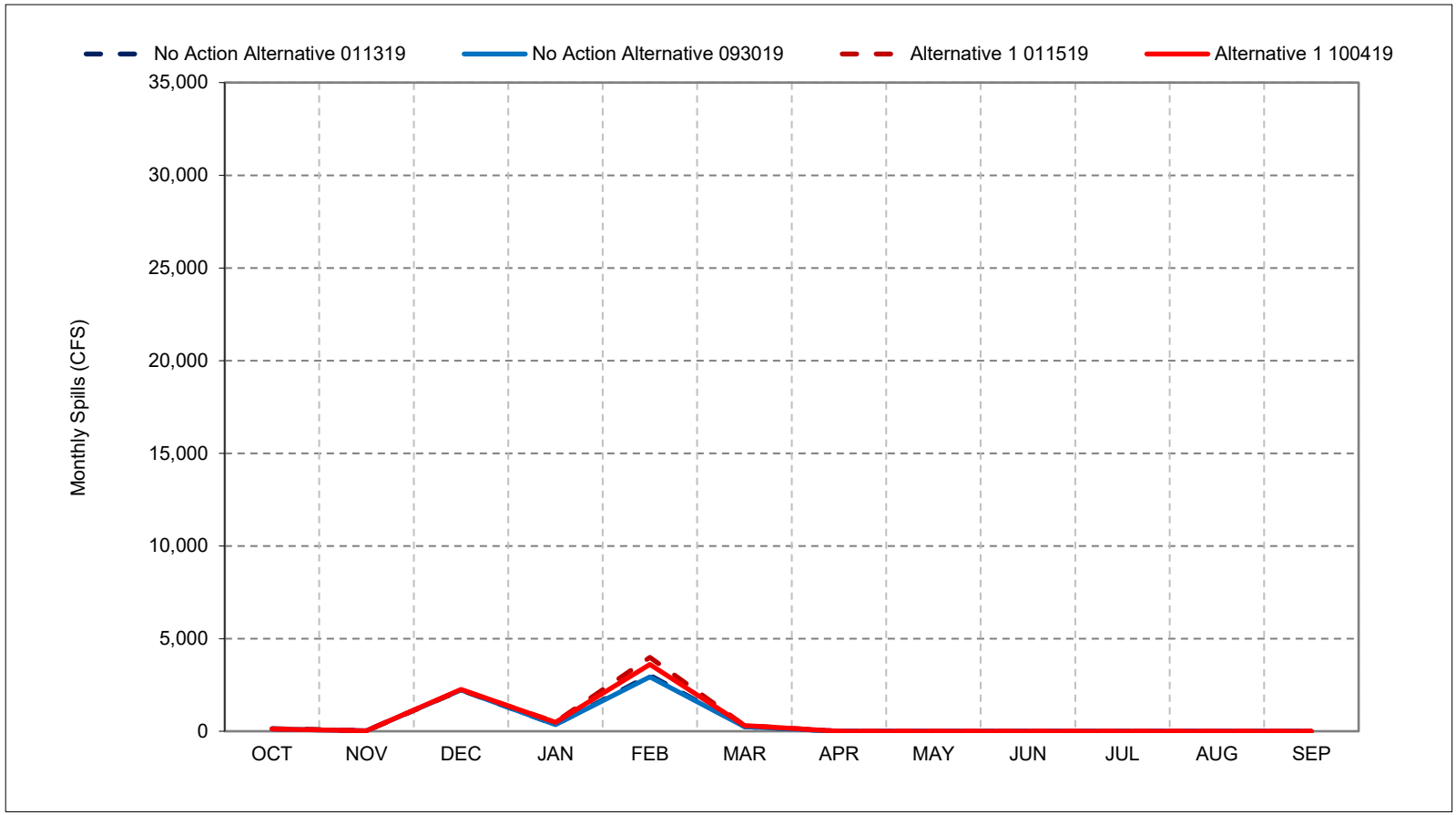



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-4. Fremont Weir Spills, Below Normal Year Average Spills

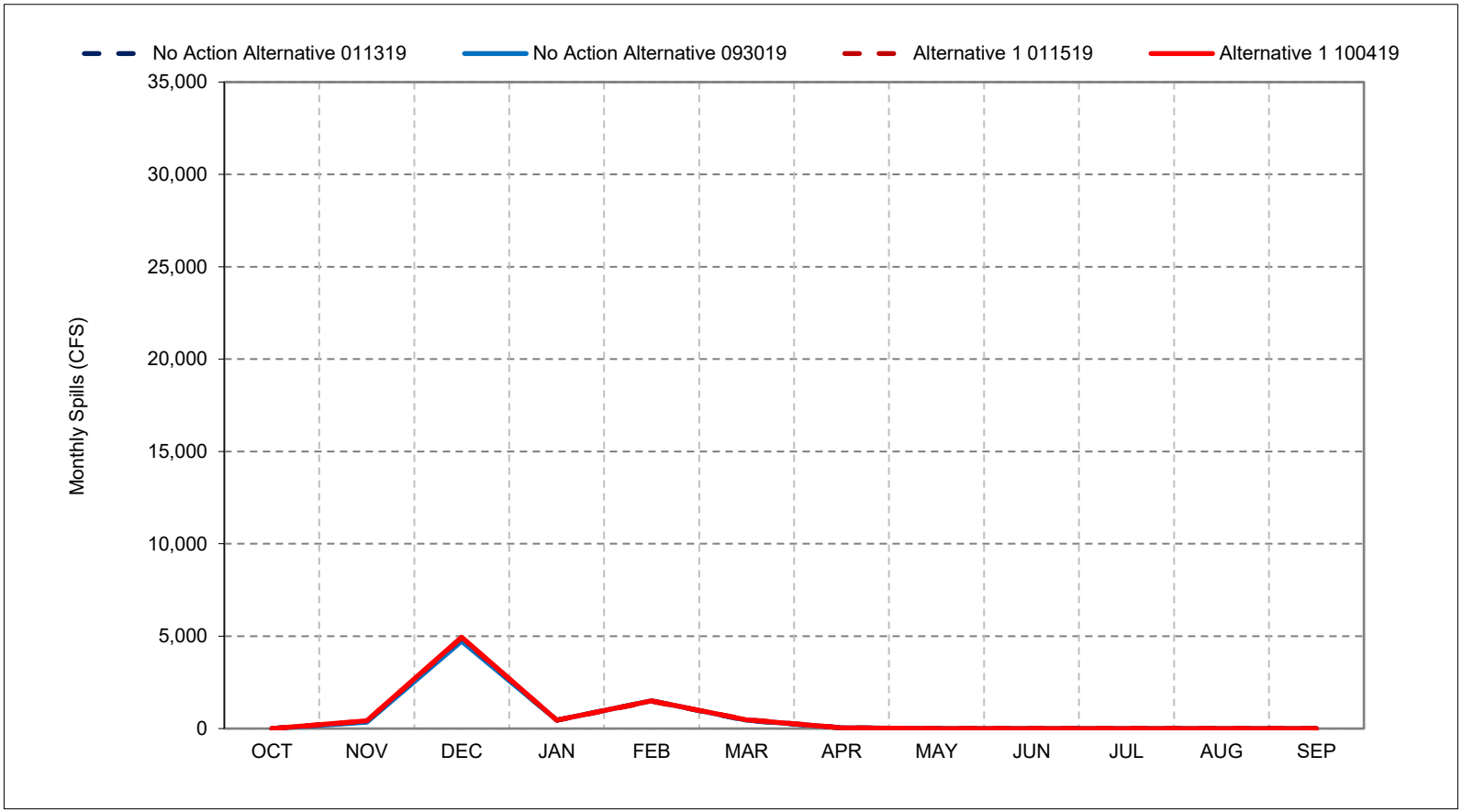



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-5. Fremont Weir Spills, Dry Year Average Spills

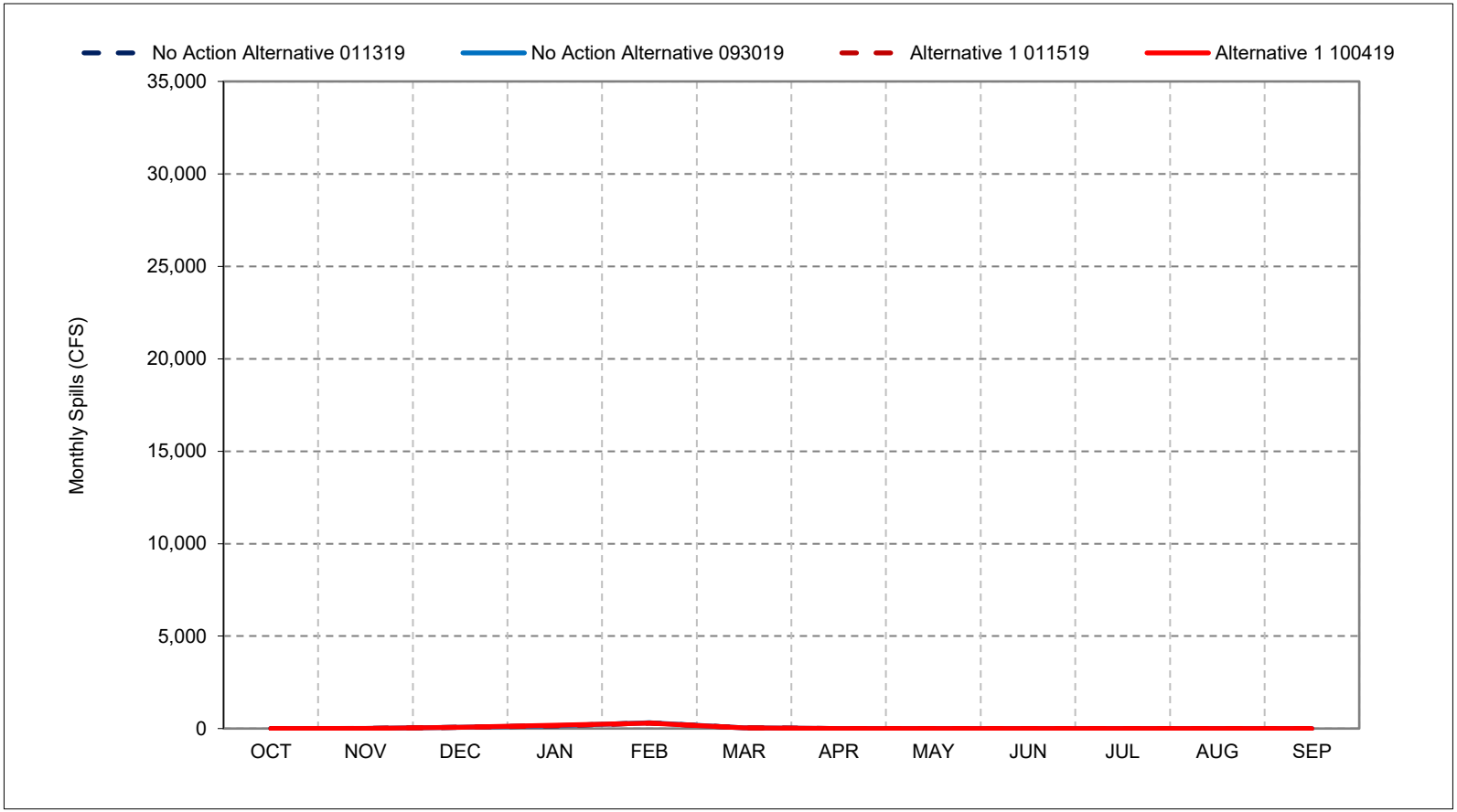



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 24-6. Fremont Weir Spills, Critical Year Average Spills

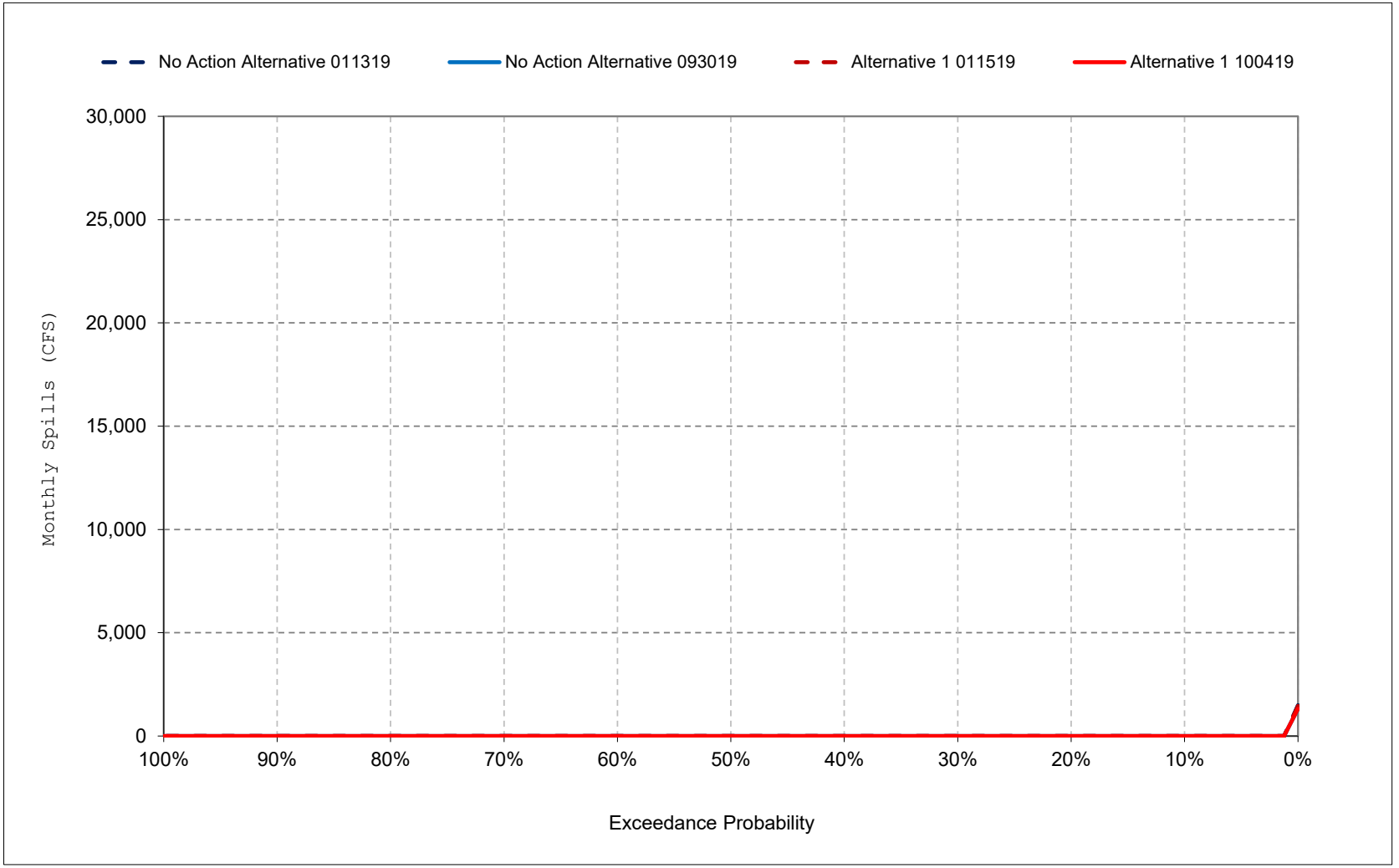



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

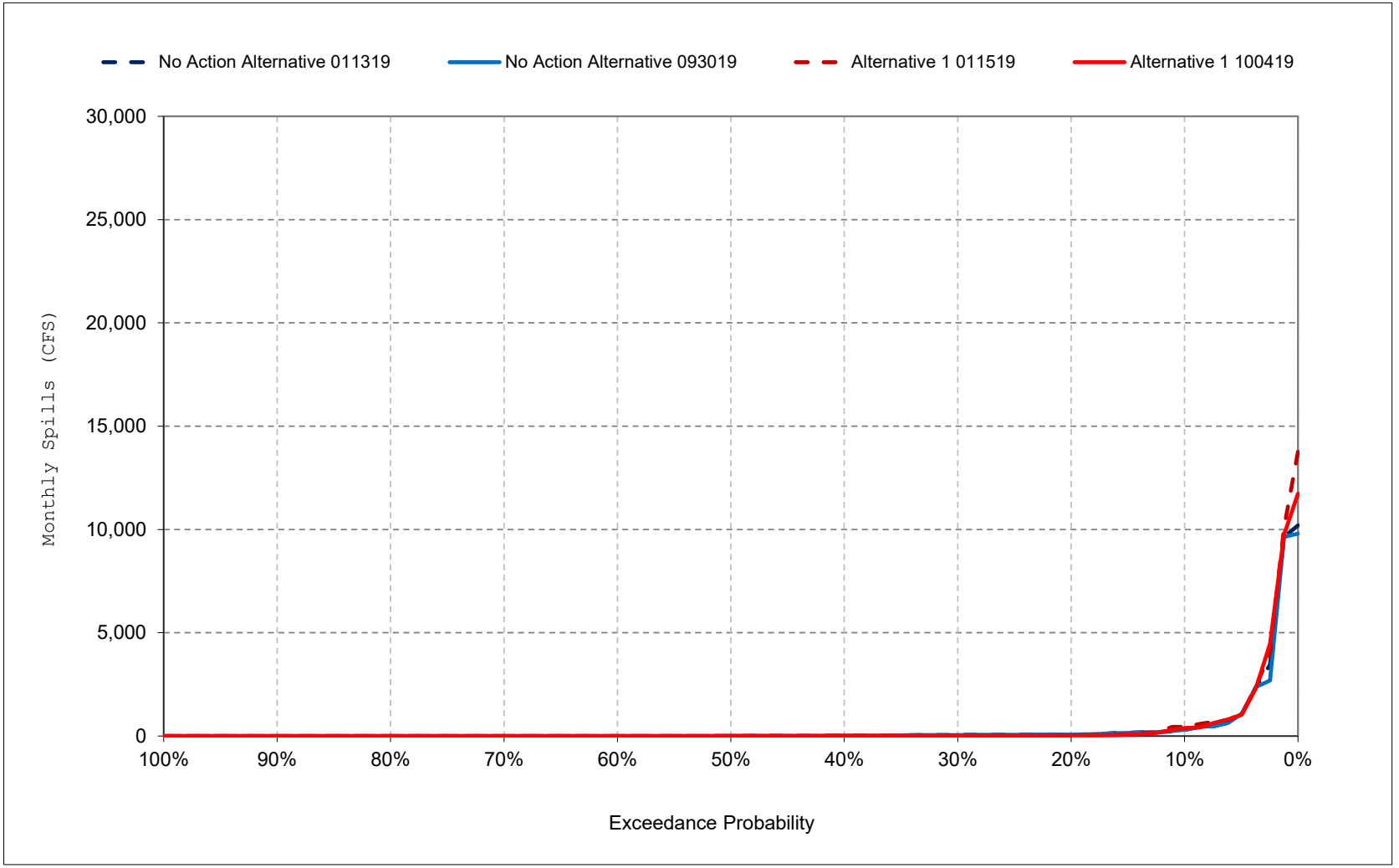
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-7. Fremont Weir Spills, October**



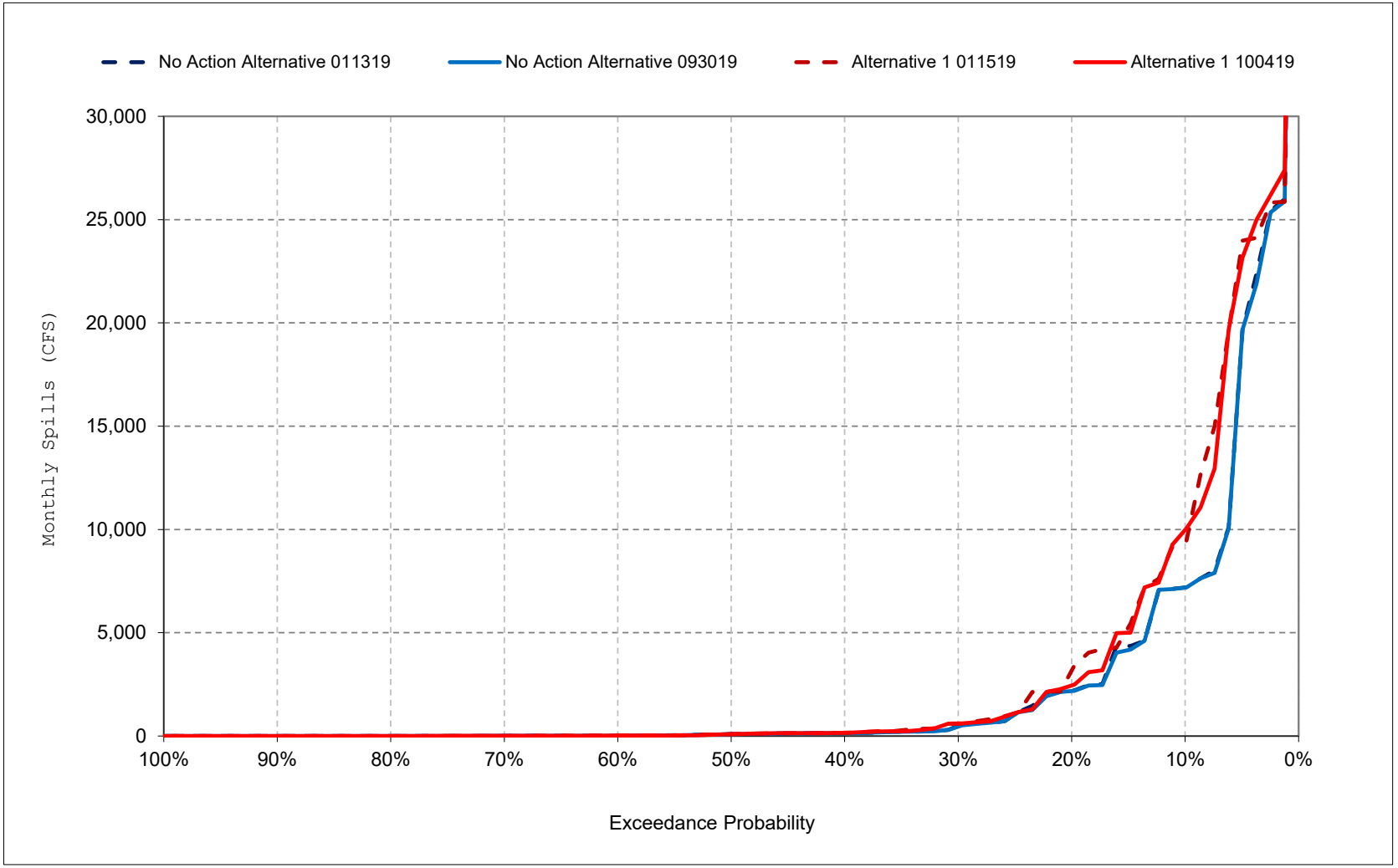

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-8. Fremont Weir Spills, November**



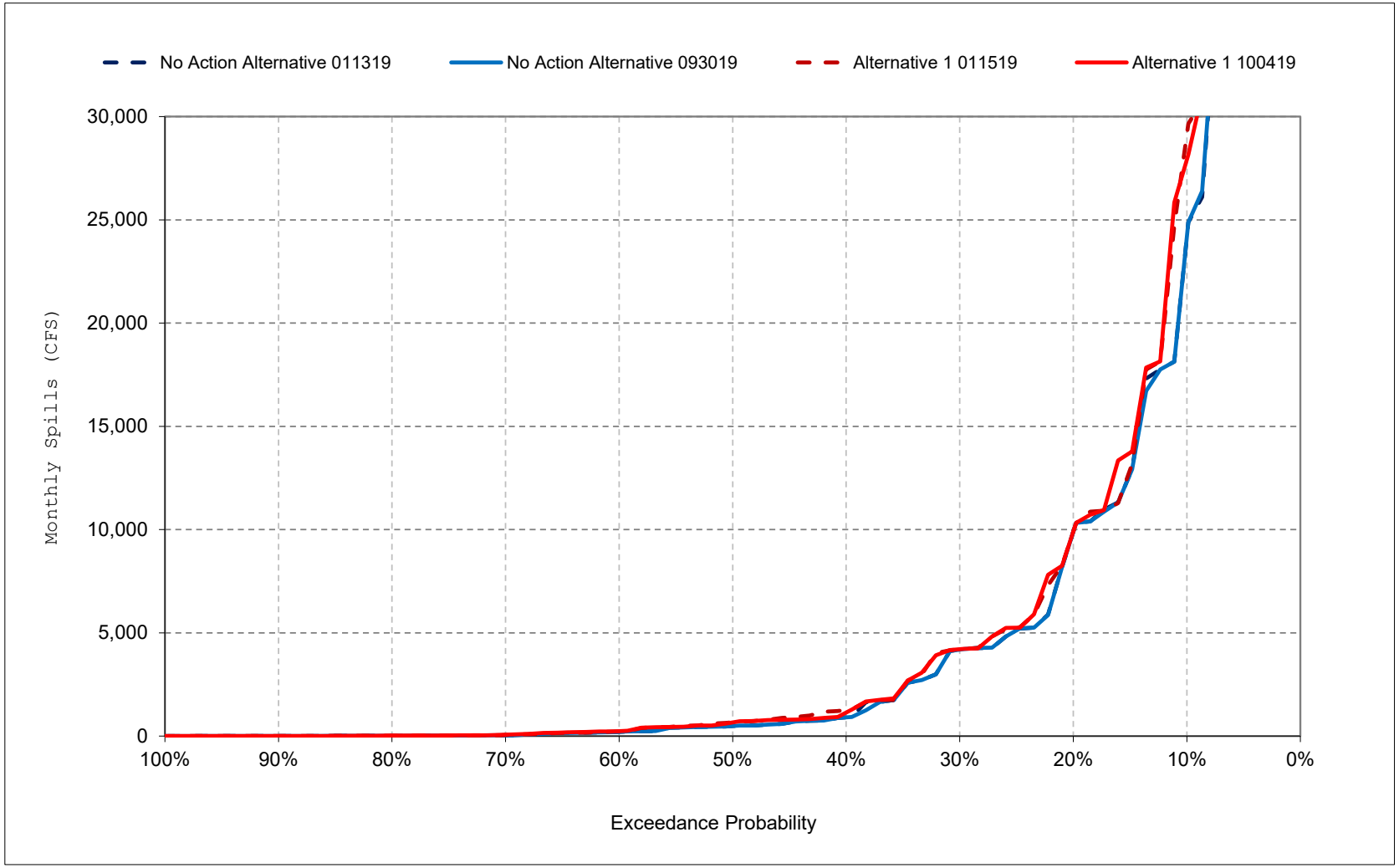

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-9. Fremont Weir Spills, December**



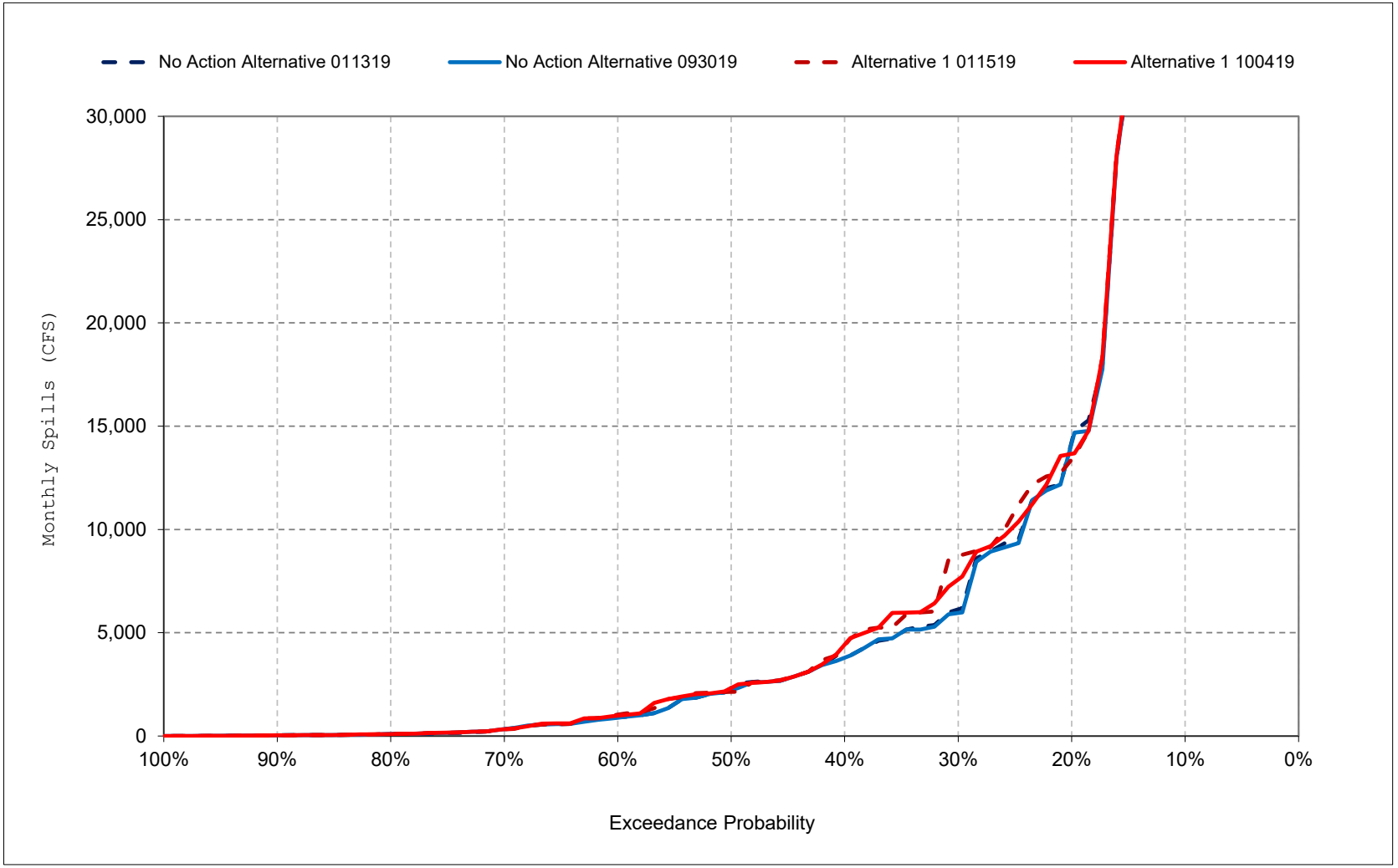

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-10. Fremont Weir Spills, January**



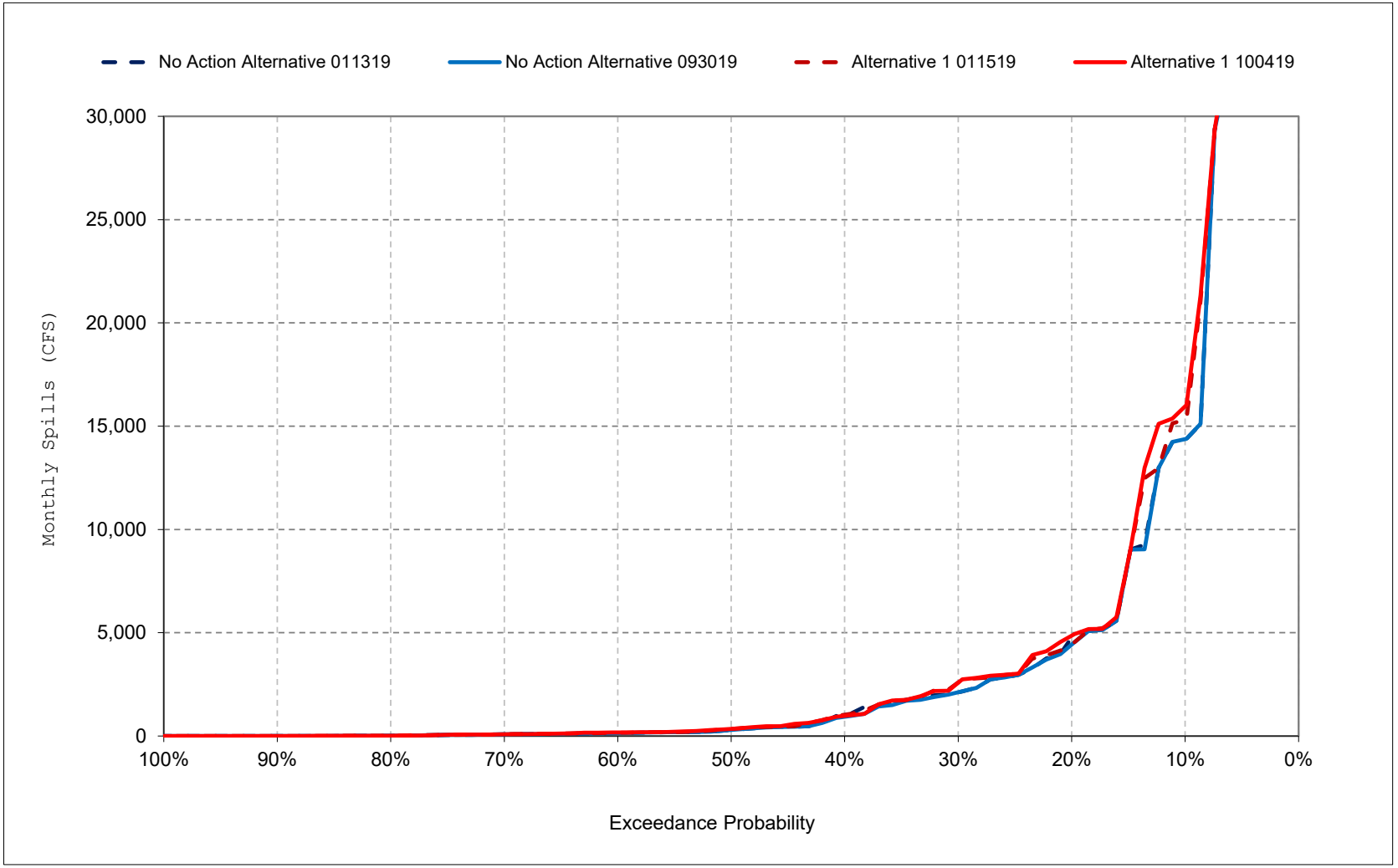

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-11. Fremont Weir Spills, February**



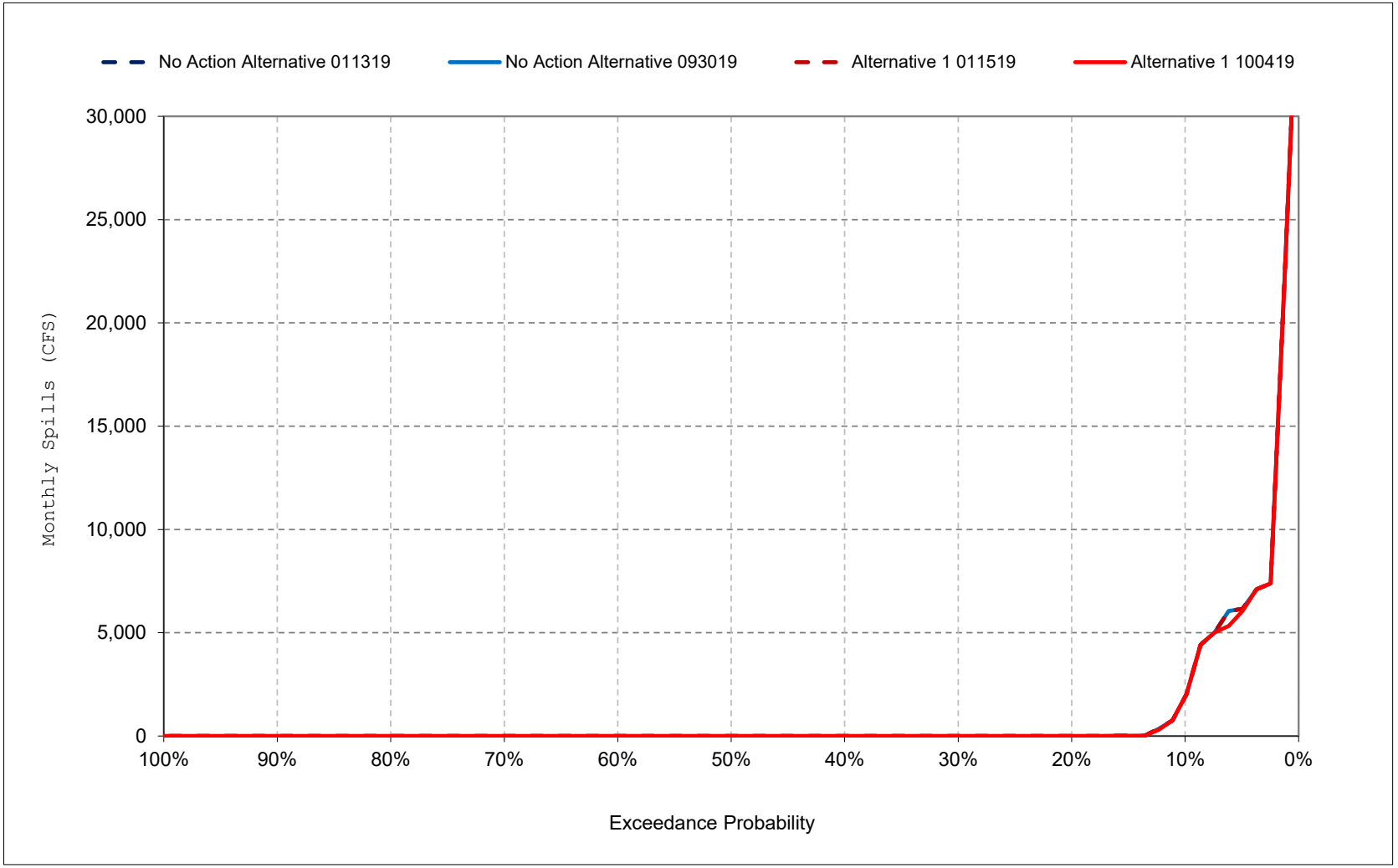

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-12. Fremont Weir Spills, March**



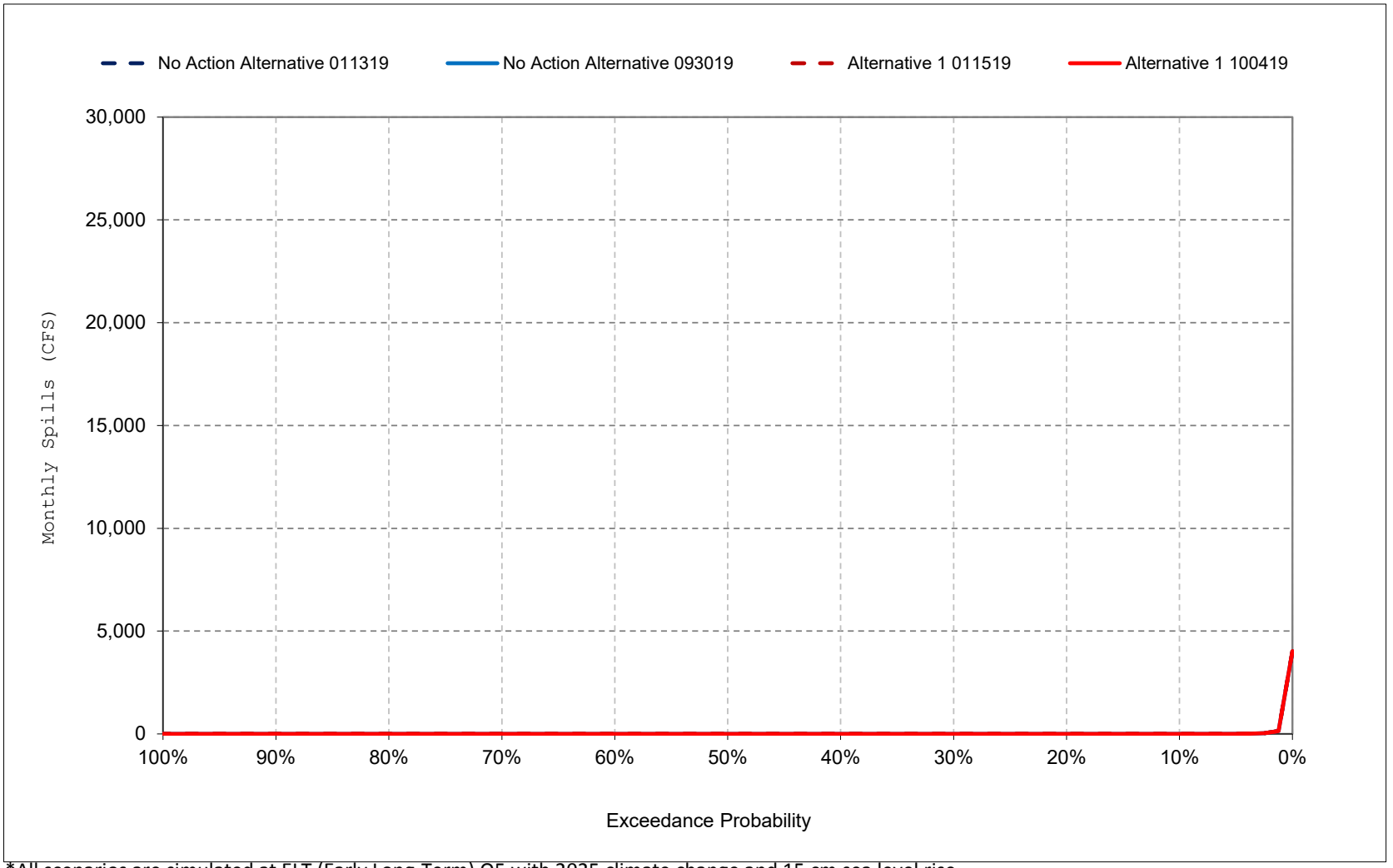

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-13. Fremont Weir Spills, April**



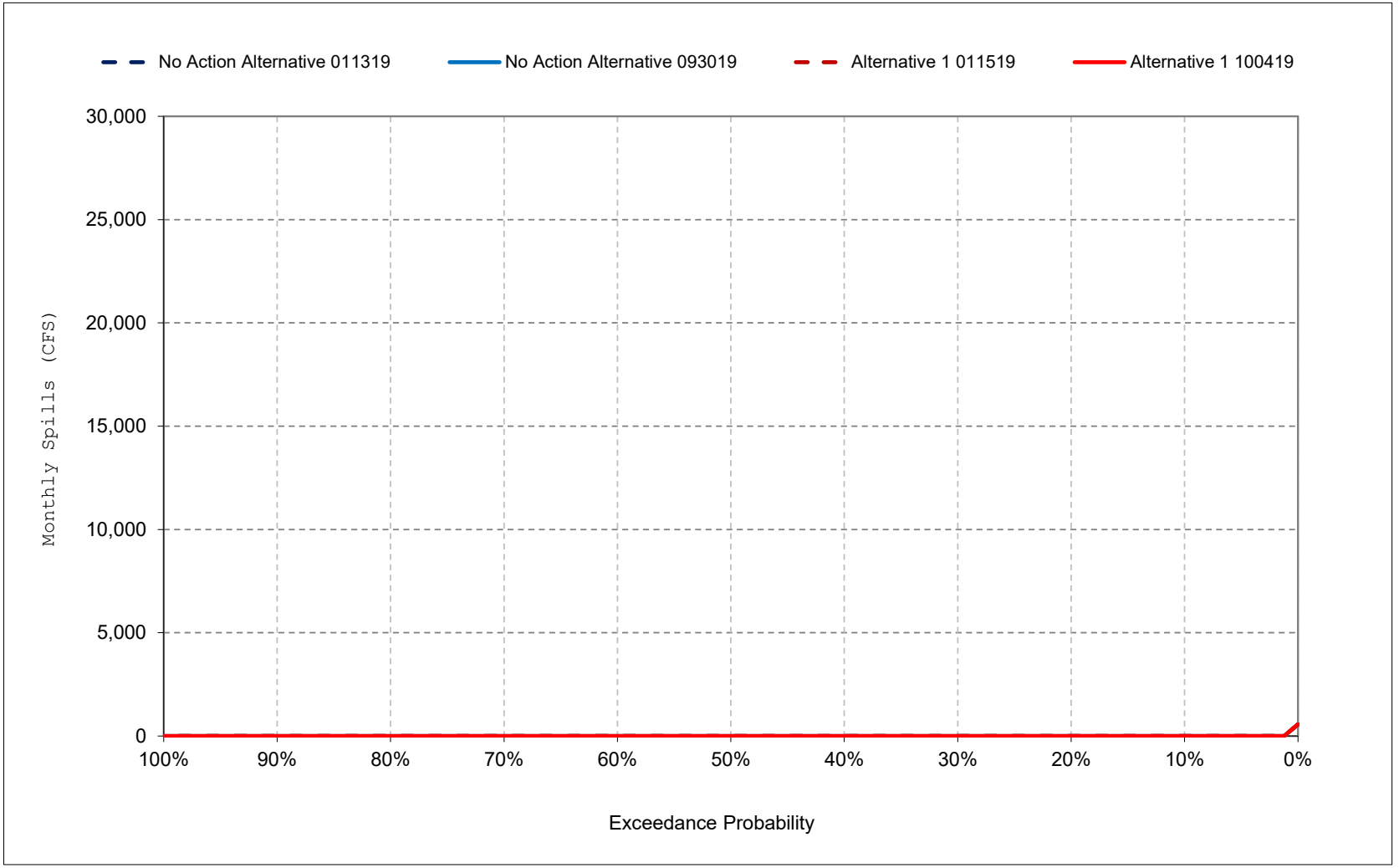

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-14. Fremont Weir Spills, May**



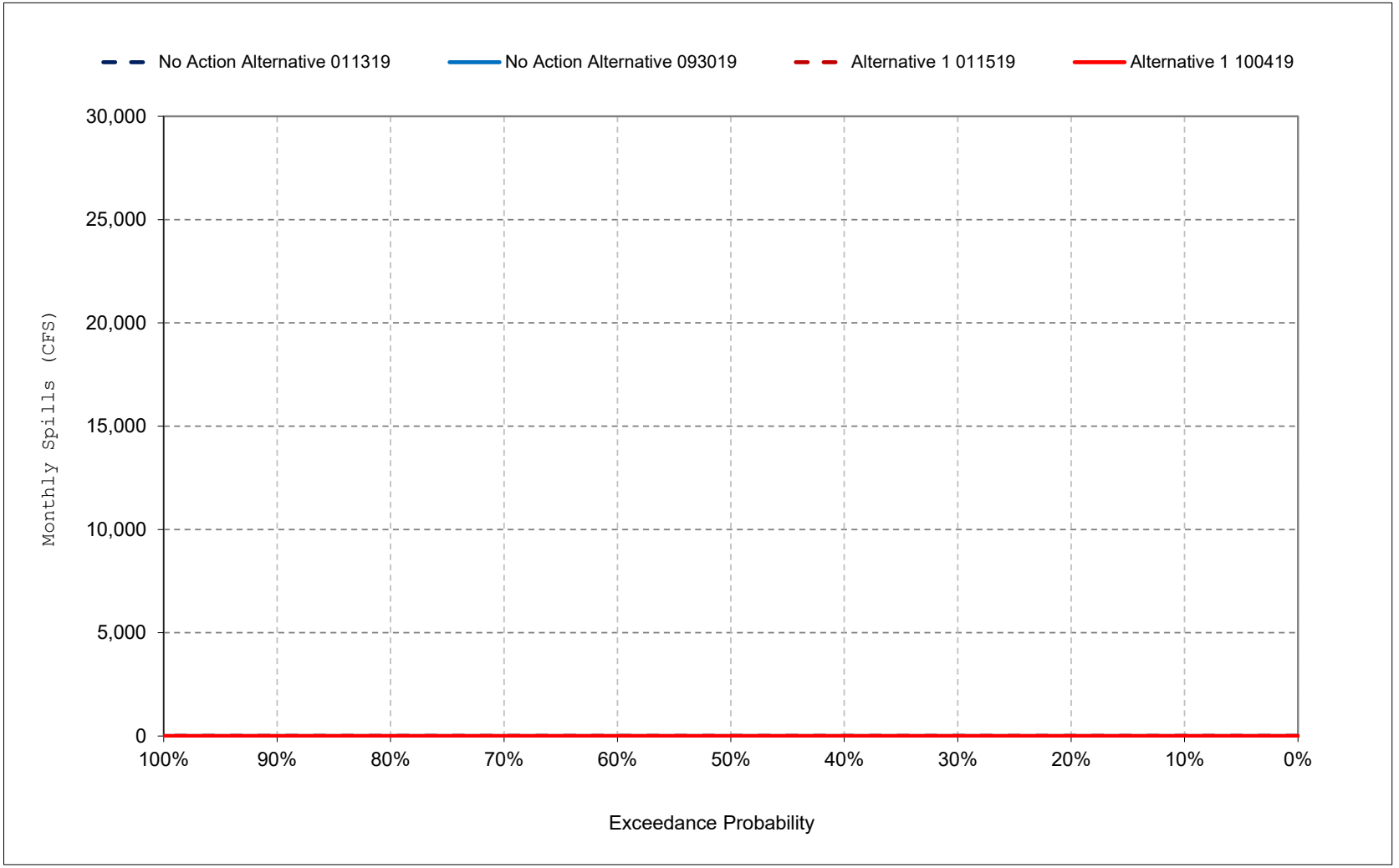

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-15. Fremont Weir Spills, June**



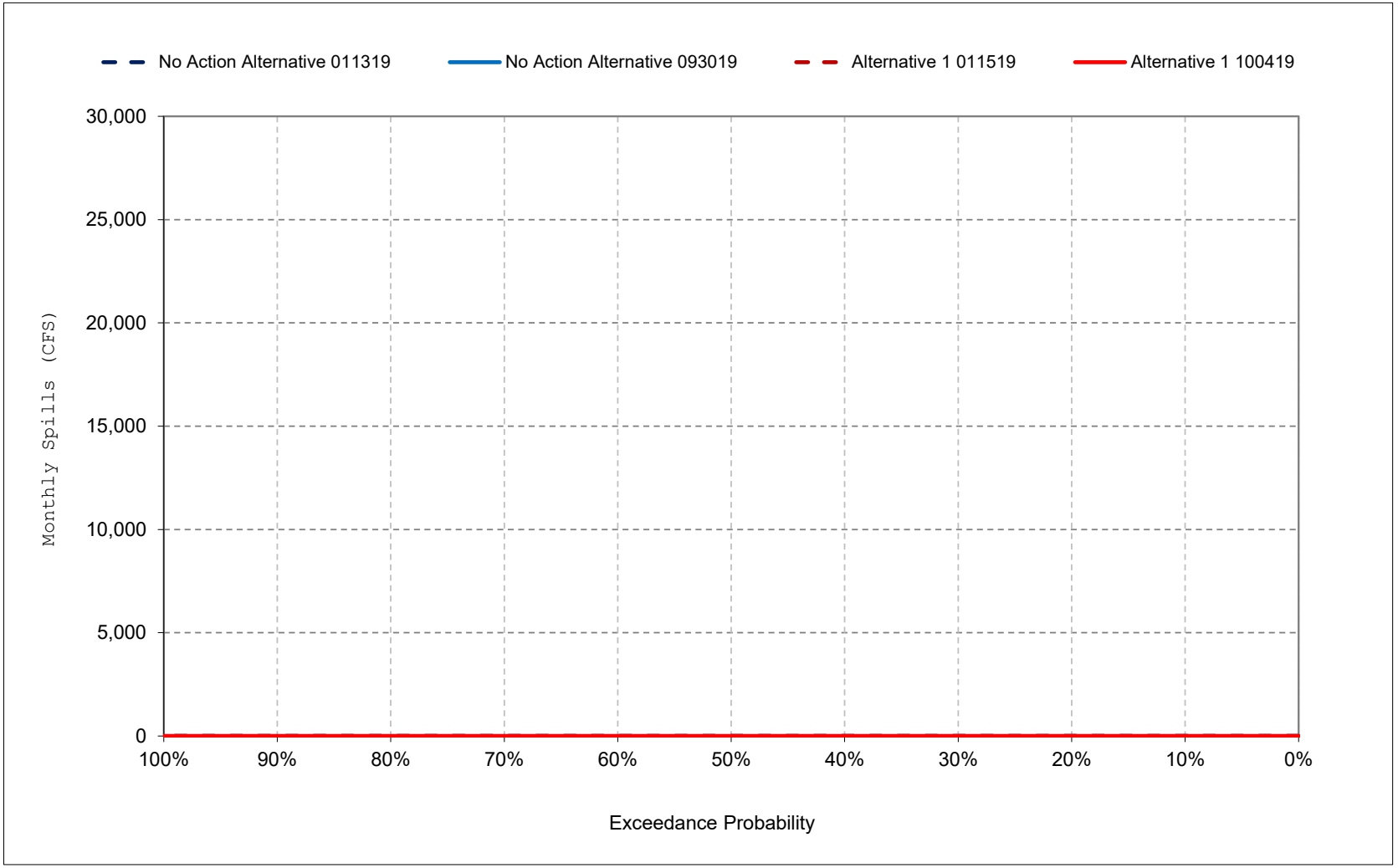

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-16. Fremont Weir Spills, July**



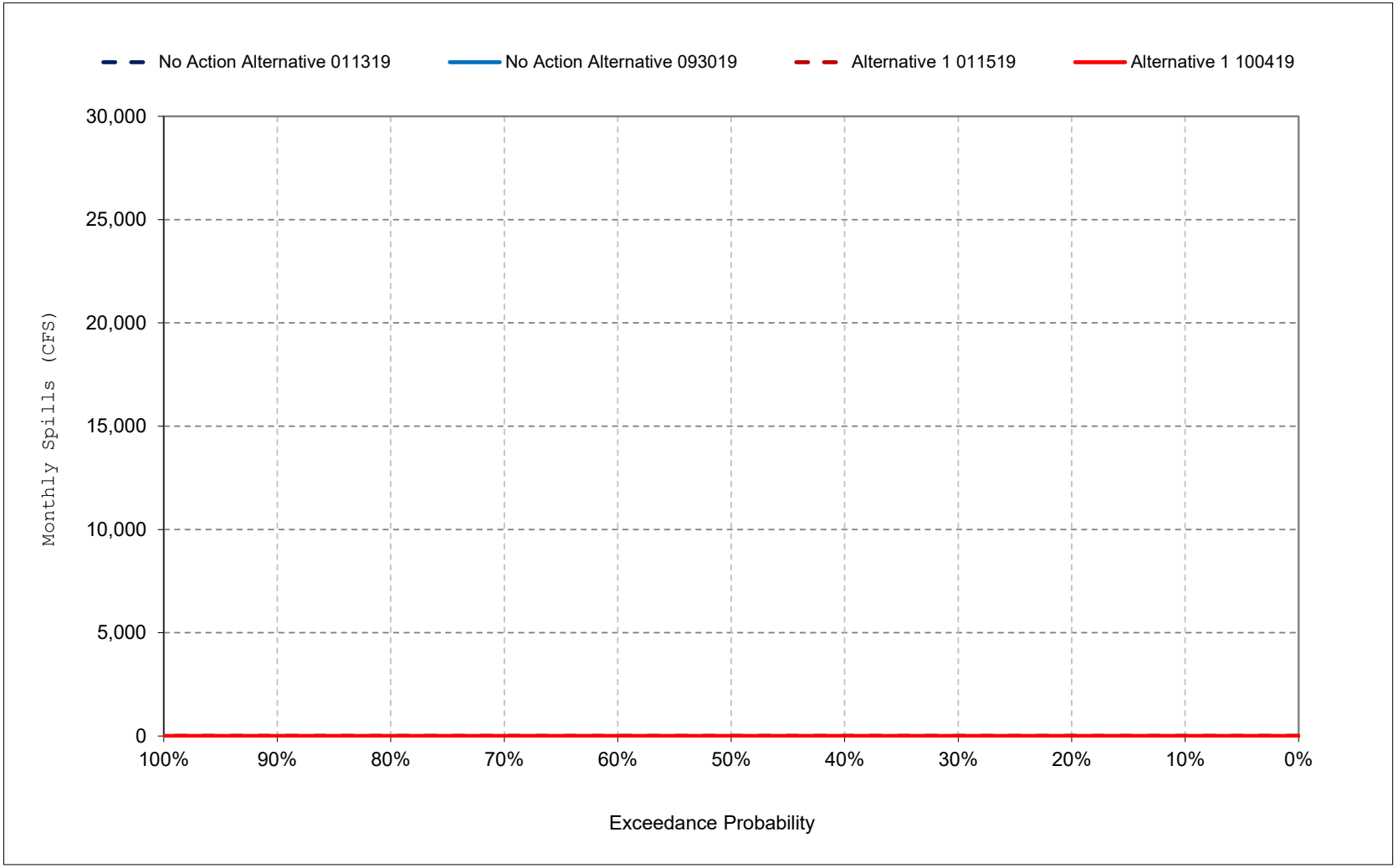

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-17. Fremont Weir Spills, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 24-18. Fremont Weir Spills, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 25-1. Yolo Bypass Flow, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 809 | 11,129 | 34,648 | 52,391 | 18,726 | 7,044 | 243 | 68 | 48 | 183 | 247 |
| 20% | 61 | 183 | 4,918 | 14,959 | 20,814 | 8,859 | 3,162 | 78 | 68 | 48 | 55 | 125 |
| 30% | 58 | 82 | 1,543 | 7,015 | 11,267 | 4,861 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 58 | 462 | 3,161 | 6,859 | 2,901 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 33 | 293 | 901 | 4,170 | 1,135 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 40 | 18 | 138 | 490 | 1,552 | 437 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 29 | 9 | 51 | 273 | 580 | 187 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 16 | 5 | 18 | 76 | 184 | 90 | 78 | 59 | 64 | 48 | 55 | 56 |
| 90% | 4 | 0 | 1 | 37 | 68 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 124 | 552 | 4,394 | 11,835 | 15,819 | 9,271 | 2,651 | 210 | 88 | 48 | 101 | 115 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 746 | 5,586 | 31,695 | 36,486 | 23,473 | 6,899 | 453 | 135 | 48 | 147 | 209 |
| Above Normal (16%) | 38 | 927 | 1,909 | 8,363 | 17,697 | 8,800 | 1,823 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 556 | 117 | 3,567 | 927 | 4,807 | 657 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 40 | 610 | 7,304 | 1,097 | 2,875 | 1,223 | 522 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 42 | 29 | 410 | 465 | 671 | 320 | 105 | 67 | 65 | 48 | 55 | 61 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 857 | 13,922 | 37,216 | 52,602 | 24,480 | 7,044 | 243 | 68 | 48 | 160 | 127 |
| 20% | 61 | 159 | 5,783 | 15,734 | 21,983 | 8,877 | 3,162 | 78 | 68 | 48 | 55 | 59 |
| 30% | 58 | 62 | 1,649 | 7,148 | 11,557 | 5,312 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 36 | 463 | 3,255 | 9,181 | 2,933 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 10 | 283 | 1,469 | 4,067 | 1,251 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 8 | 163 | 523 | 2,182 | 469 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 29 | 5 | 51 | 284 | 576 | 240 | 88 | 63 | 66 | 48 | 55 | 57 |
| 80% | 15 | 2 | 20 | 93 | 213 | 104 | 78 | 59 | 64 | 48 | 55 | 55 |
| 90% | 4 | 0 | 0 | 19 | 67 | 45 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 88 | 608 | 4,980 | 12,251 | 16,336 | 9,480 | 2,650 | 211 | 88 | 48 | 101 | 71 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 794 | 7,054 | 32,787 | 37,029 | 23,784 | 6,900 | 453 | 135 | 48 | 147 | 73 |
| Above Normal (16%) | 38 | 1,165 | 2,294 | 8,573 | 18,973 | 9,220 | 1,822 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 298 | 116 | 3,551 | 1,181 | 5,973 | 806 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 37 | 621 | 7,558 | 1,108 | 2,822 | 1,321 | 520 | 75 | 67 | 48 | 57 | 70 |
| Critical (15%) | 42 | 29 | 410 | 461 | 664 | 321 | 105 | 67 | 65 | 48 | 55 | 58 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 48 | 2,792 | 2,568 | 210 | 5,754 | 0 | 0 | 0 | 0 | -23 | -120 |
| 20% | 0 | -24 | 866 | 775 | 1,169 | 18 | 0 | 0 | 0 | 0 | 0 | -66 |
| 30% | 0 | -20 | 106 | 134 | 290 | 451 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -22 | 1 | 95 | 2,323 | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | -22 | -10 | 568 | -103 | 115 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | -1 | -9 | 26 | 32 | 629 | 32 | 0 | 0 | 0 | 0 | 0 | -1 |
| 70% | 0 | -4 | 1 | 11 | -5 | 52 | 0 | 0 | 0 | 0 | 0 | -1 |
| 80% | -1 | -3 | 2 | 17 | 29 | 14 | 0 | 0 | 0 | 0 | 0 | -1 |
| 90% | 0 | 0 | -1 | -18 | -1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -35 | 56 | 586 | 416 | 517 | 209 | 0 | 0 | 0 | 0 | -1 | -44 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 48 | 1,467 | 1,092 | 543 | 311 | 0 | 0 | 0 | 0 | 0 | -137 |
| Above Normal (16%) | 0 | 238 | 385 | 209 | 1,275 | 420 | -1 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -258 | -1 | -16 | 254 | 1,166 | 149 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | -3 | 11 | 254 | 11 | -53 | 98 | -2 | 0 | 0 | 0 | -4 | 0 |
| Critical (15%) | 0 | 0 | 0 | -4 | -7 | 2 | 0 | 0 | 0 | 0 | 0 | -4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 25-2. Yolo Bypass Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 807 | 11,074 | 34,905 | 52,512 | 18,729 | 7,044 | 243 | 68 | 48 | 183 | 247 |
| 20% | 61 | 180 | 4,879 | 14,950 | 20,714 | 8,858 | 3,162 | 78 | 68 | 48 | 55 | 125 |
| 30% | 58 | 82 | 1,495 | 7,020 | 11,107 | 4,888 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 59 | 462 | 3,091 | 6,866 | 2,861 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 33 | 271 | 900 | 4,160 | 1,136 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 14 | 138 | 490 | 1,520 | 437 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 27 | 10 | 52 | 273 | 581 | 187 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 14 | 5 | 20 | 68 | 210 | 90 | 78 | 59 | 64 | 48 | 55 | 56 |
| 90% | 4 | 0 | 0 | 35 | 69 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 121 | 537 | 4,367 | 11,804 | 15,744 | 9,246 | 2,650 | 210 | 88 | 48 | 101 | 115 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 746 | 5,579 | 31,618 | 36,367 | 23,469 | 6,899 | 453 | 135 | 48 | 147 | 209 |
| Above Normal (16%) | 38 | 895 | 1,881 | 8,321 | 17,536 | 8,646 | 1,822 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 538 | 115 | 3,563 | 928 | 4,721 | 656 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 36 | 571 | 7,239 | 1,094 | 2,868 | 1,228 | 522 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 48 | 27 | 385 | 467 | 684 | 320 | 105 | 67 | 65 | 48 | 55 | 61 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 803 | 13,705 | 38,091 | 52,656 | 24,848 | 7,045 | 243 | 68 | 48 | 183 | 127 |
| 20% | 61 | 159 | 5,197 | 15,725 | 21,991 | 8,913 | 3,162 | 78 | 68 | 48 | 55 | 59 |
| 30% | 57 | 51 | 1,584 | 7,125 | 11,501 | 5,386 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 28 | 462 | 3,249 | 9,166 | 3,026 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 11 | 272 | 1,144 | 4,188 | 1,261 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 8 | 146 | 525 | 2,188 | 465 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 27 | 5 | 56 | 282 | 587 | 214 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 14 | 1 | 19 | 95 | 210 | 90 | 78 | 59 | 64 | 48 | 55 | 55 |
| 90% | 4 | 0 | 0 | 35 | 69 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 120 | 588 | 4,907 | 12,219 | 16,420 | 9,543 | 2,664 | 211 | 88 | 50 | 101 | 72 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 776 | 6,876 | 32,731 | 37,427 | 23,879 | 6,946 | 454 | 135 | 55 | 147 | 73 |
| Above Normal (16%) | 38 | 1,027 | 2,165 | 8,489 | 19,015 | 9,520 | 1,818 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 538 | 115 | 3,588 | 1,154 | 5,578 | 809 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 36 | 655 | 7,568 | 1,103 | 2,844 | 1,260 | 521 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 42 | 26 | 384 | 488 | 660 | 322 | 105 | 67 | 65 | 48 | 55 | 61 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -4 | 2,631 | 3,186 | 144 | 6,119 | 1 | 0 | 0 | 0 | 0 | -120 |
| 20% | 0 | -21 | 318 | 774 | 1,277 | 55 | 0 | 0 | 0 | 0 | 0 | -66 |
| 30% | -1 | -31 | 89 | 104 | 393 | 498 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -30 | 0 | 158 | 2,300 | 165 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | -22 | 1 | 244 | 27 | 126 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | -5 | 8 | 34 | 668 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | -4 | 4 | 9 | 6 | 27 | 0 | 0 | 0 | 0 | 0 | -1 |
| 80% | 0 | -4 | -1 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 90% | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | 51 | 540 | 415 | 676 | 297 | 14 | 0 | 0 | 2 | 0 | -43 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 30 | 1,297 | 1,113 | 1,059 | 410 | 47 | 1 | 0 | 8 | 0 | -137 |
| Above Normal (16%) | 0 | 132 | 285 | 168 | 1,479 | 874 | -4 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -1 | 0 | 24 | 226 | 857 | 153 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 84 | 330 | 8 | -24 | 32 | -1 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | -7 | -1 | -1 | 22 | -24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 25-3. Yolo Bypass Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 809 | 11,129 | 34,648 | 52,391 | 18,726 | 7,044 | 243 | 68 | 48 | 183 | 247 |
| 20% | 61 | 183 | 4,918 | 14,959 | 20,814 | 8,859 | 3,162 | 78 | 68 | 48 | 55 | 125 |
| 30% | 58 | 82 | 1,543 | 7,015 | 11,267 | 4,861 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 58 | 462 | 3,161 | 6,859 | 2,901 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 33 | 293 | 901 | 4,170 | 1,135 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 40 | 18 | 138 | 490 | 1,552 | 437 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 29 | 9 | 51 | 273 | 580 | 187 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 16 | 5 | 18 | 76 | 184 | 90 | 78 | 59 | 64 | 48 | 55 | 56 |
| 90% | 4 | 0 | 1 | 37 | 68 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 124 | 552 | 4,394 | 11,835 | 15,819 | 9,271 | 2,651 | 210 | 88 | 48 | 101 | 115 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 746 | 5,586 | 31,695 | 36,486 | 23,473 | 6,899 | 453 | 135 | 48 | 147 | 209 |
| Above Normal (16%) | 38 | 927 | 1,909 | 8,363 | 17,697 | 8,800 | 1,823 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 556 | 117 | 3,567 | 927 | 4,807 | 657 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 40 | 610 | 7,304 | 1,097 | 2,875 | 1,223 | 522 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 42 | 29 | 410 | 465 | 671 | 320 | 105 | 67 | 65 | 48 | 55 | 61 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 807 | 11,074 | 34,905 | 52,512 | 18,729 | 7,044 | 243 | 68 | 48 | 183 | 247 |
| 20% | 61 | 180 | 4,879 | 14,950 | 20,714 | 8,858 | 3,162 | 78 | 68 | 48 | 55 | 125 |
| 30% | 58 | 82 | 1,495 | 7,020 | 11,107 | 4,888 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 59 | 462 | 3,091 | 6,866 | 2,861 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 33 | 271 | 900 | 4,160 | 1,136 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 14 | 138 | 490 | 1,520 | 437 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 27 | 10 | 52 | 273 | 581 | 187 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 14 | 5 | 20 | 68 | 210 | 90 | 78 | 59 | 64 | 48 | 55 | 56 |
| 90% | 4 | 0 | 0 | 35 | 69 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 121 | 537 | 4,367 | 11,804 | 15,744 | 9,246 | 2,650 | 210 | 88 | 48 | 101 | 115 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 746 | 5,579 | 31,618 | 36,367 | 23,469 | 6,899 | 453 | 135 | 48 | 147 | 209 |
| Above Normal (16%) | 38 | 895 | 1,881 | 8,321 | 17,536 | 8,646 | 1,822 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 538 | 115 | 3,563 | 928 | 4,721 | 656 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 36 | 571 | 7,239 | 1,094 | 2,868 | 1,228 | 522 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 48 | 27 | 385 | 467 | 684 | 320 | 105 | 67 | 65 | 48 | 55 | 61 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -2 | -55 | 257 | 121 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | -3 | -38 | -9 | -100 | -1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | -48 | 6 | -159 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | -70 | 7 | -41 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | -22 | -1 | -10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | -1 | -4 | 0 | 0 | -32 | -1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | -2 | 1 | 1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | -2 | 0 | 2 | -8 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | -15 | -27 | -31 | -75 | -25 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | -7 | -77 | -118 | -4 | -1 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -32 | -28 | -42 | -161 | -154 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -18 | -2 | -4 | 1 | -87 | -2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | -4 | -40 | -65 | -2 | -7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 7 | -2 | -25 | 2 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 25-4. Yolo Bypass Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 857 | 13,922 | 37,216 | 52,602 | 24,480 | 7,044 | 243 | 68 | 48 | 160 | 127 |
| 20% | 61 | 159 | 5,783 | 15,734 | 21,983 | 8,877 | 3,162 | 78 | 68 | 48 | 55 | 59 |
| 30% | 58 | 62 | 1,649 | 7,148 | 11,557 | 5,312 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 36 | 463 | 3,255 | 9,181 | 2,933 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 10 | 283 | 1,469 | 4,067 | 1,251 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 8 | 163 | 523 | 2,182 | 469 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 29 | 5 | 51 | 284 | 576 | 240 | 88 | 63 | 66 | 48 | 55 | 57 |
| 80% | 15 | 2 | 20 | 93 | 213 | 104 | 78 | 59 | 64 | 48 | 55 | 55 |
| 90% | 4 | 0 | 0 | 19 | 67 | 45 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 88 | 608 | 4,980 | 12,251 | 16,336 | 9,480 | 2,650 | 211 | 88 | 48 | 101 | 71 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 794 | 7,054 | 32,787 | 37,029 | 23,784 | 6,900 | 453 | 135 | 48 | 147 | 73 |
| Above Normal (16%) | 38 | 1,165 | 2,294 | 8,573 | 18,973 | 9,220 | 1,822 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 298 | 116 | 3,551 | 1,181 | 5,973 | 806 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 37 | 621 | 7,558 | 1,108 | 2,822 | 1,321 | 520 | 75 | 67 | 48 | 57 | 70 |
| Critical (15%) | 42 | 29 | 410 | 461 | 664 | 321 | 105 | 67 | 65 | 48 | 55 | 58 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63 | 803 | 13,705 | 38,091 | 52,656 | 24,848 | 7,045 | 243 | 68 | 48 | 183 | 127 |
| 20% | 61 | 159 | 5,197 | 15,725 | 21,991 | 8,913 | 3,162 | 78 | 68 | 48 | 55 | 59 |
| 30% | 57 | 51 | 1,584 | 7,125 | 11,501 | 5,386 | 1,068 | 73 | 68 | 48 | 55 | 59 |
| 40% | 53 | 28 | 462 | 3,249 | 9,166 | 3,026 | 229 | 70 | 68 | 48 | 55 | 59 |
| 50% | 45 | 11 | 272 | 1,144 | 4,188 | 1,261 | 135 | 68 | 67 | 48 | 55 | 59 |
| 60% | 39 | 8 | 146 | 525 | 2,188 | 465 | 111 | 65 | 67 | 48 | 55 | 59 |
| 70% | 27 | 5 | 56 | 282 | 587 | 214 | 88 | 63 | 66 | 48 | 55 | 58 |
| 80% | 14 | 1 | 19 | 95 | 210 | 90 | 78 | 59 | 64 | 48 | 55 | 55 |
| 90% | 4 | 0 | 0 | 35 | 69 | 37 | 56 | 53 | 62 | 48 | 54 | 52 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 120 | 588 | 4,907 | 12,219 | 16,420 | 9,543 | 2,664 | 211 | 88 | 50 | 101 | 72 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 86 | 776 | 6,876 | 32,731 | 37,427 | 23,879 | 6,946 | 454 | 135 | 55 | 147 | 73 |
| Above Normal (16%) | 38 | 1,027 | 2,165 | 8,489 | 19,015 | 9,520 | 1,818 | 185 | 66 | 48 | 92 | 65 |
| Below Normal (13%) | 538 | 115 | 3,588 | 1,154 | 5,578 | 809 | 234 | 69 | 66 | 48 | 130 | 92 |
| Dry (24%) | 36 | 655 | 7,568 | 1,103 | 2,844 | 1,260 | 521 | 75 | 67 | 48 | 61 | 70 |
| Critical (15%) | 42 | 26 | 384 | 488 | 660 | 322 | 105 | 67 | 65 | 48 | 55 | 61 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -54 | -216 | 875 | 54 | 368 | 1 | 0 | 0 | 0 | 23 | 0 |
| 20% | 0 | 0 | -586 | -9 | 8 | 36 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | -1 | -11 | -65 | -24 | -56 | 74 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | -8 | -1 | -7 | -16 | 92 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | -11 | -325 | 121 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | -18 | 2 | 7 | -3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | -2 | 0 | 4 | -2 | 11 | -26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | -1 | -1 | 0 | 2 | -3 | -13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 16 | 1 | -8 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 32 | -20 | -73 | -32 | 84 | 63 | 14 | 0 | 0 | 2 | 1 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -18 | -177 | -56 | 398 | 94 | 47 | 0 | 0 | 8 | 0 | 0 |
| Above Normal (16%) | 0 | -138 | -129 | -83 | 43 | 300 | -4 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 240 | -1 | 36 | -27 | -396 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | -1 | 33 | 10 | -5 | 22 | -61 | 1 | 0 | 0 | 0 | 4 | 0 |
| Critical (15%) | 0 | -3 | -26 | 27 | -4 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |

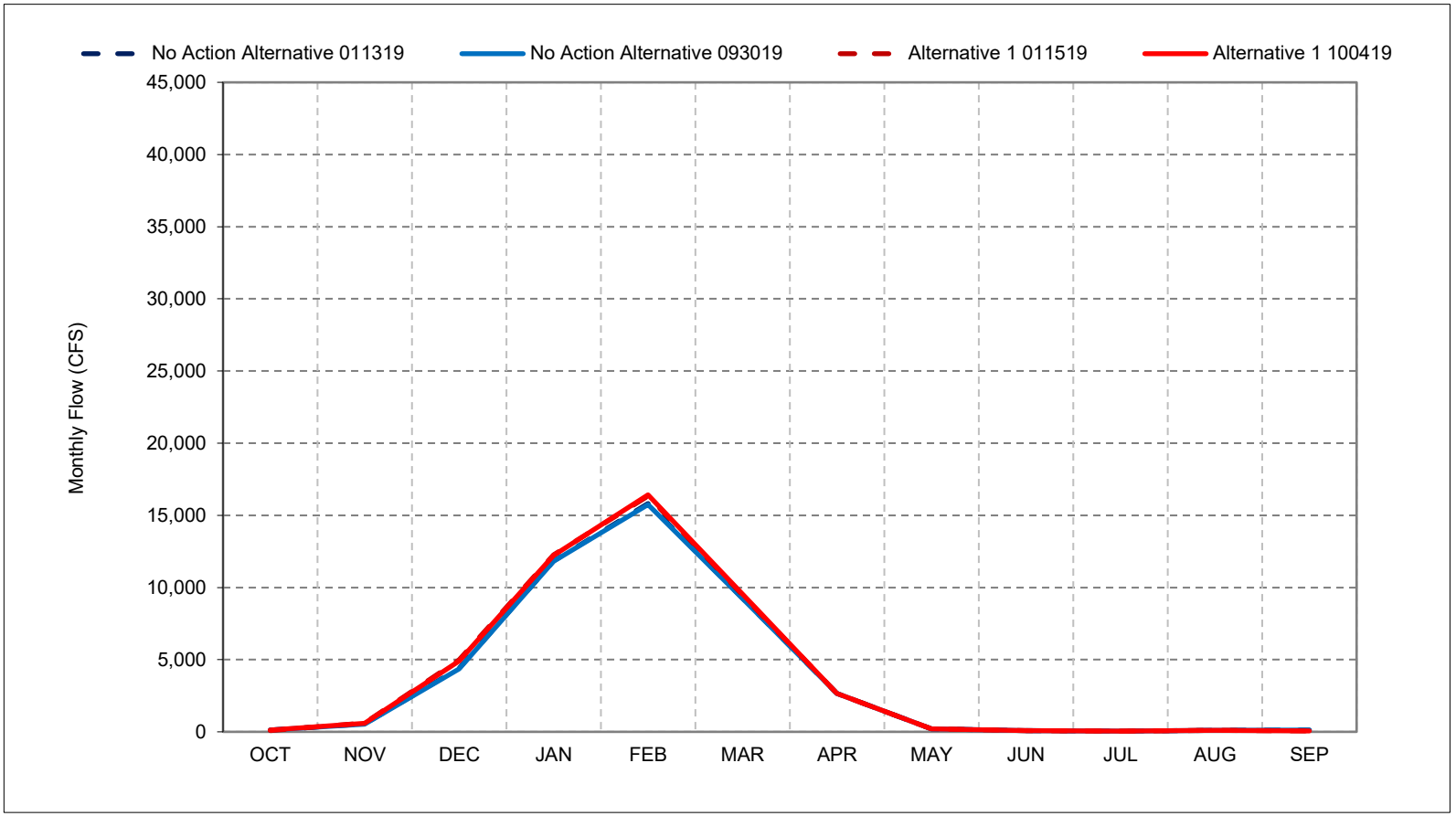
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-1. Yolo Bypass Flow, Long-Term Average Flow

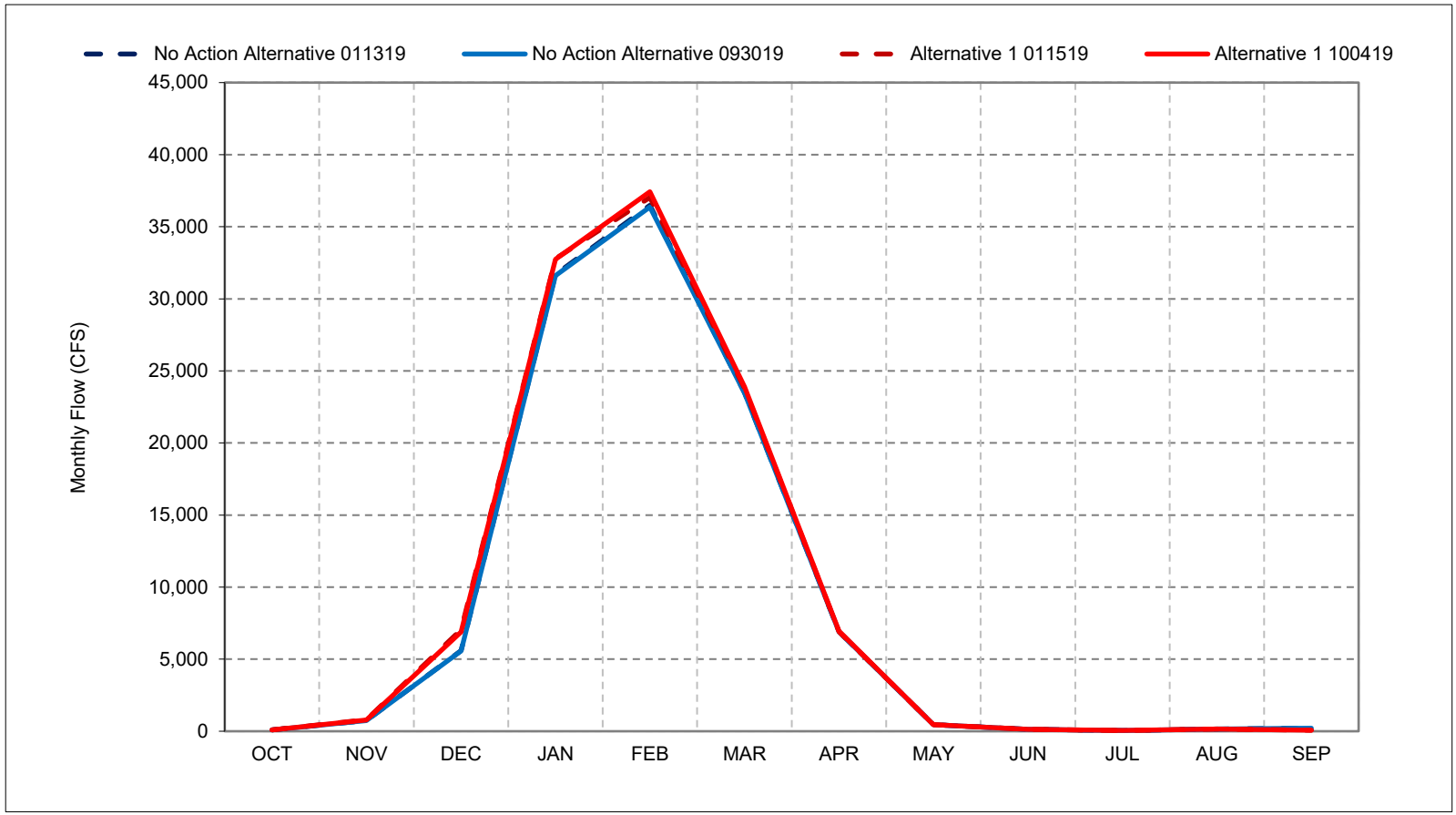



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-2. Yolo Bypass Flow, Wet Year Average Flow

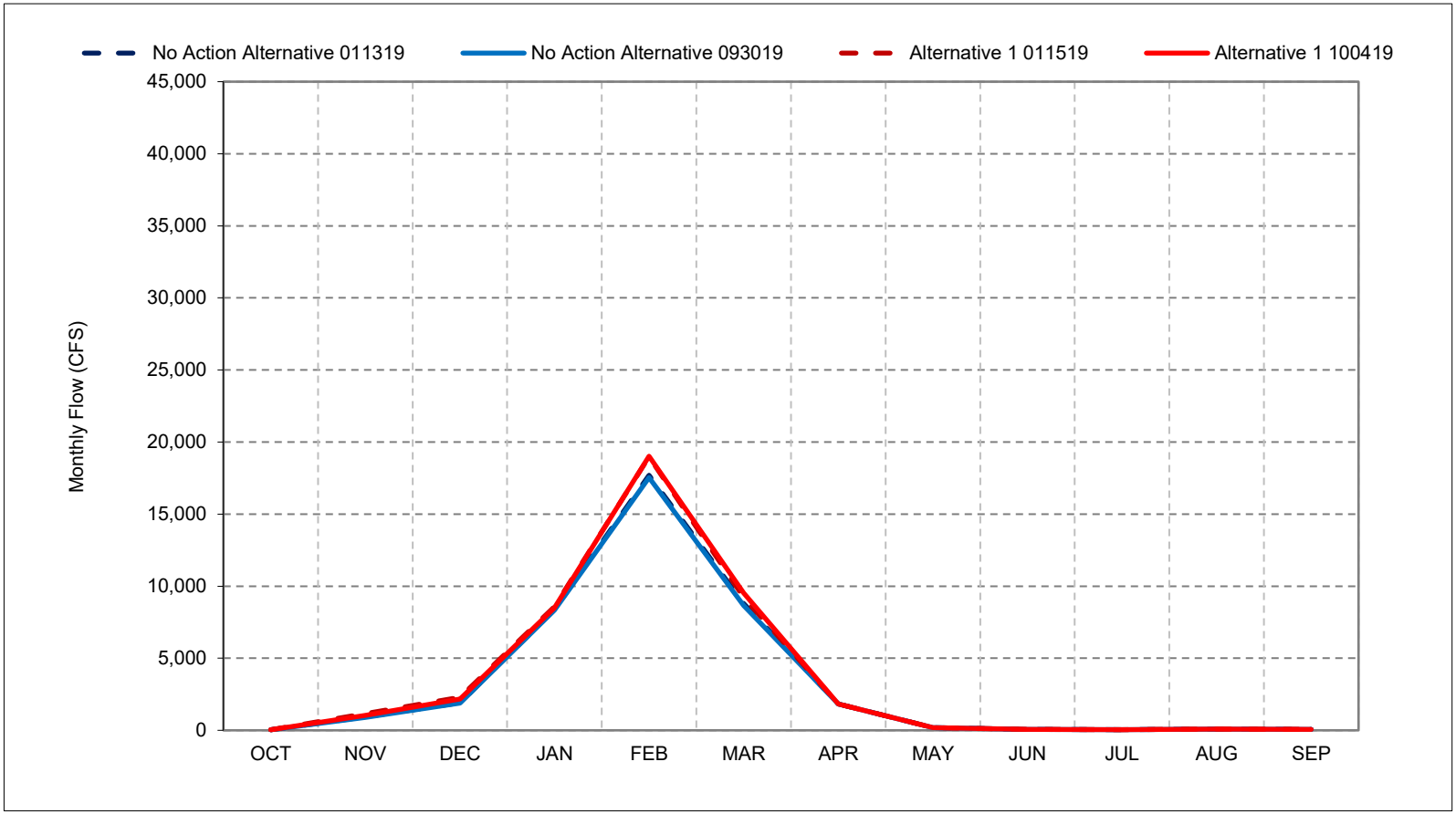



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-3. Yolo Bypass Flow, Above Normal Year Average Flow

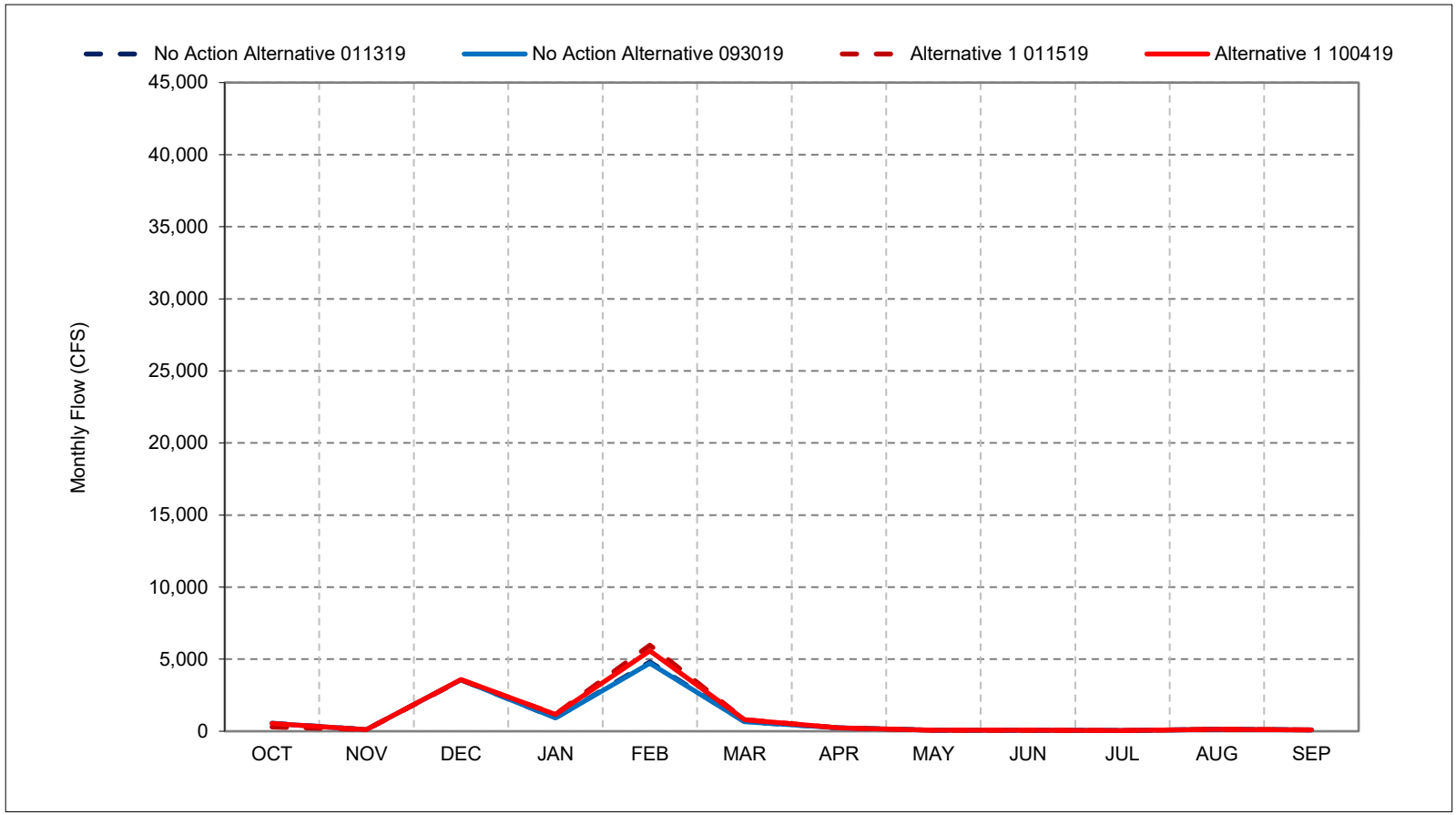



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-4. Yolo Bypass Flow, Below Normal Year Average Flow

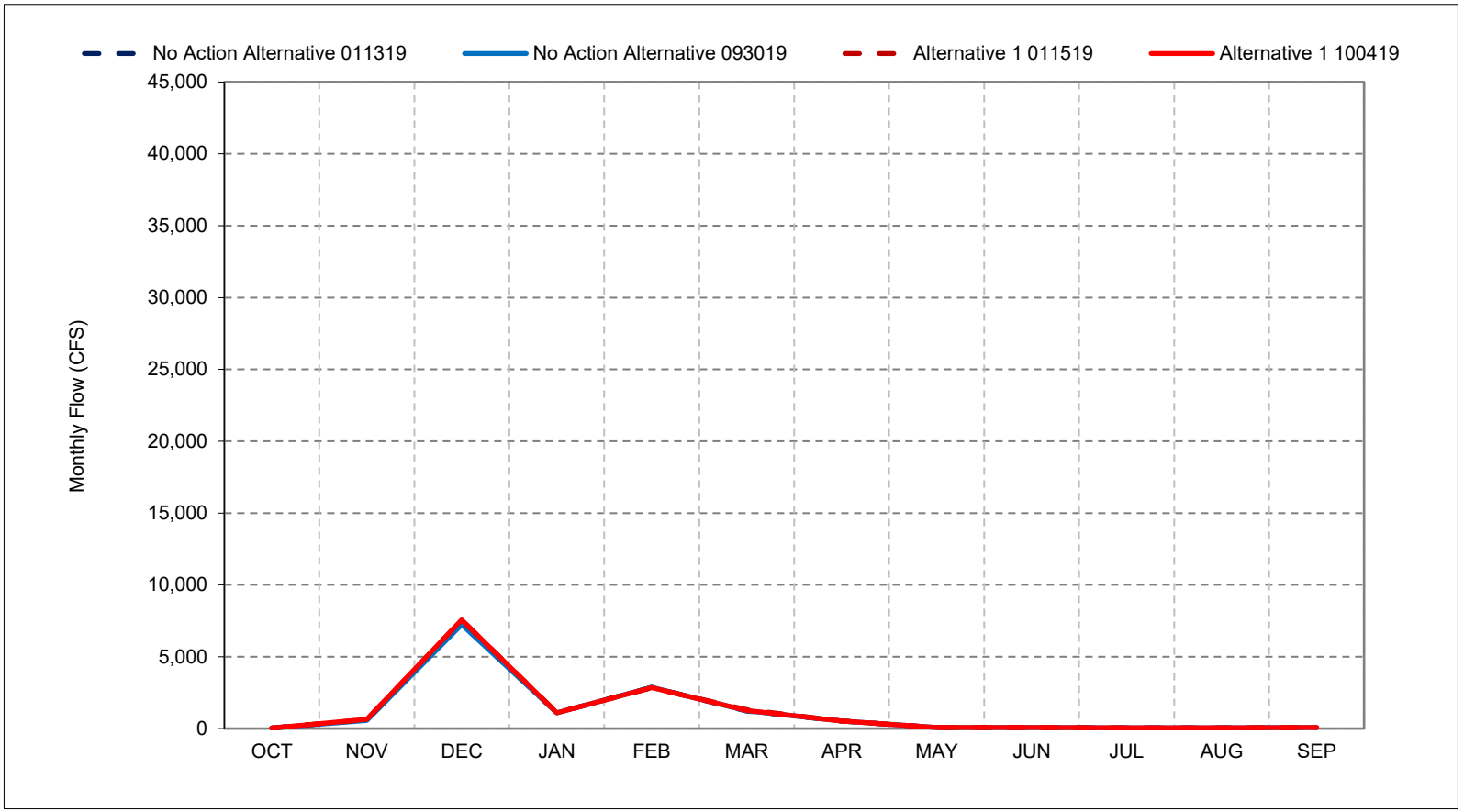



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-5. Yolo Bypass Flow, Dry Year Average Flow

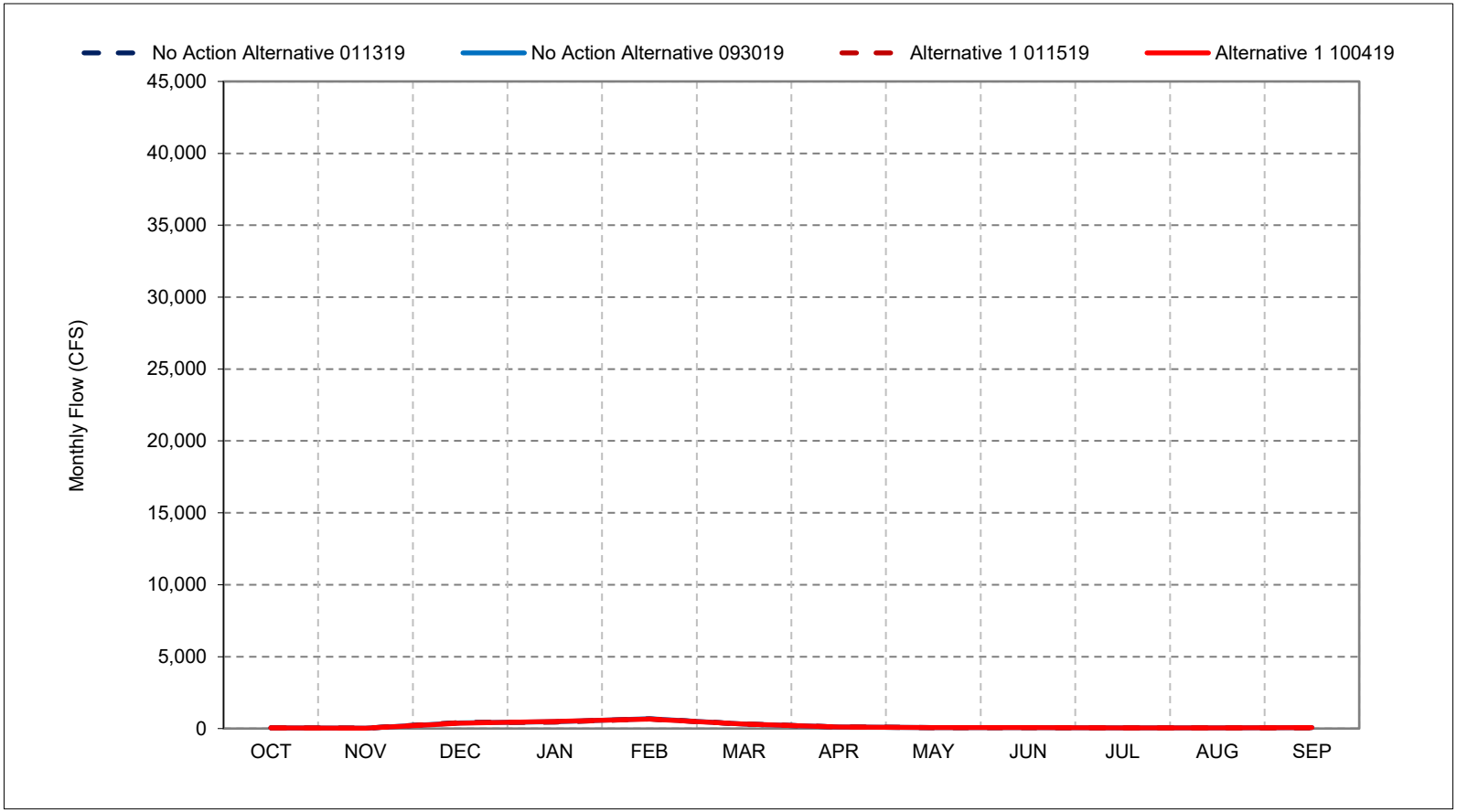



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 25-6. Yolo Bypass Flow, Critical Year Average Flow

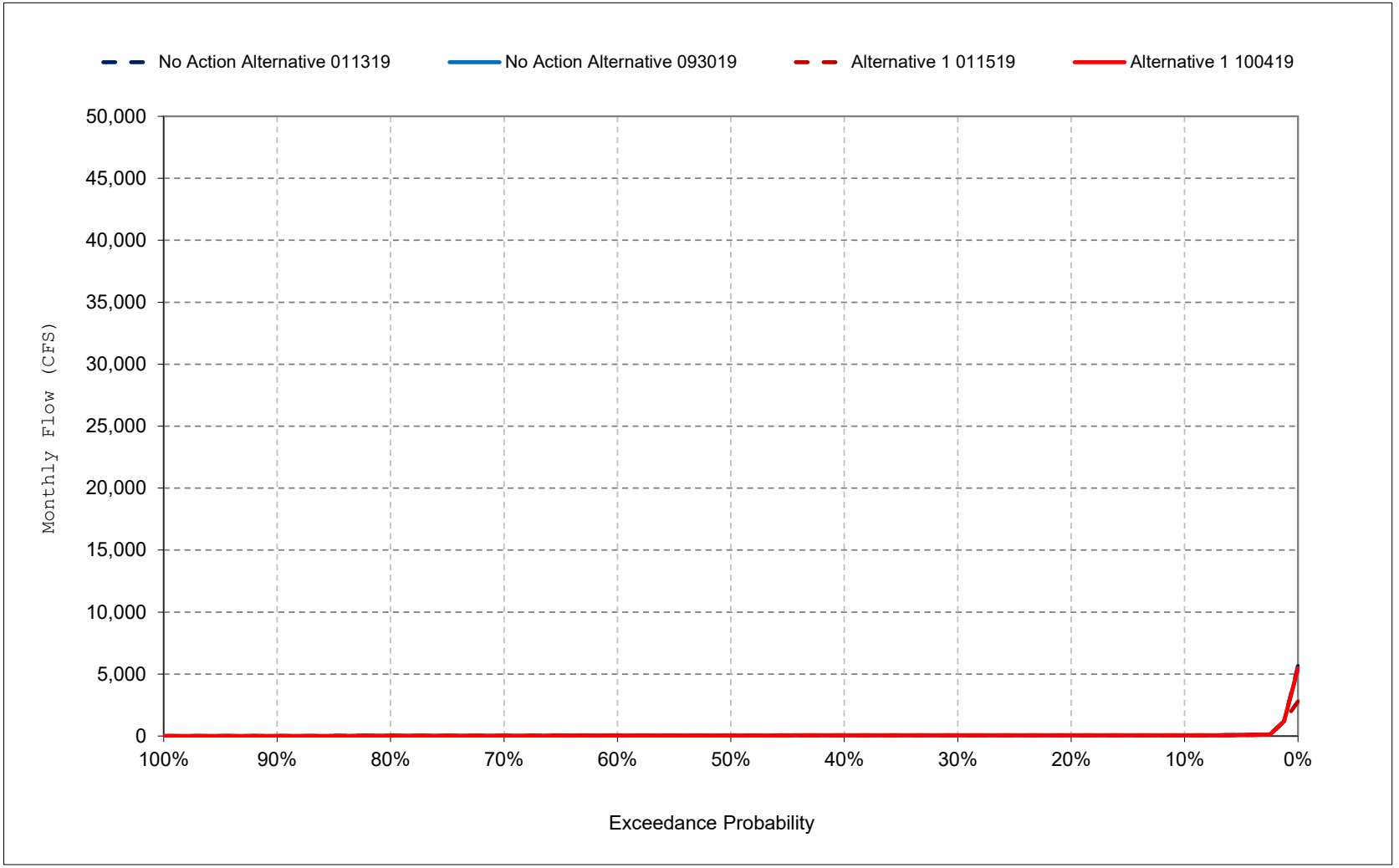



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

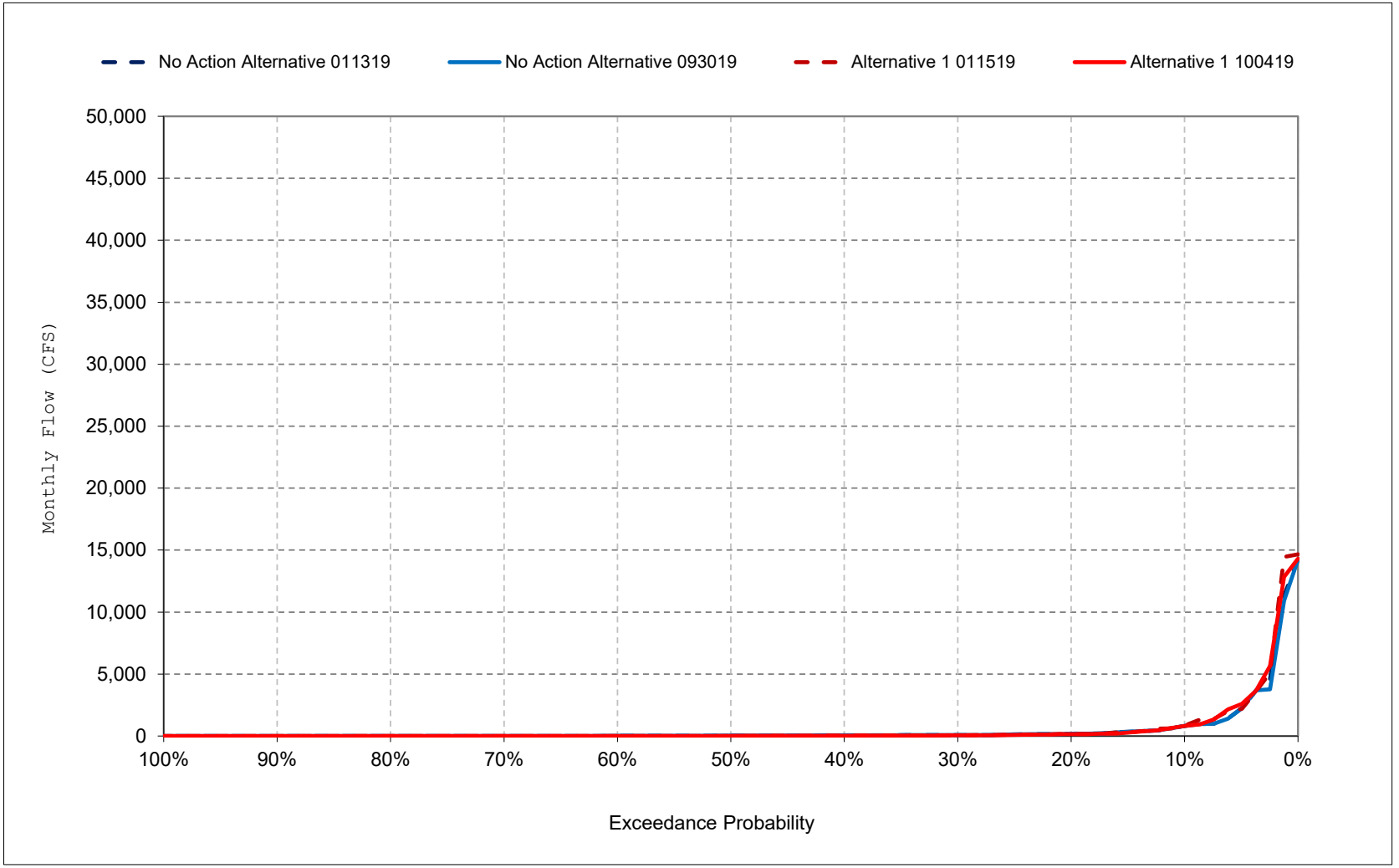
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-7. Yolo Bypass Flow, October**



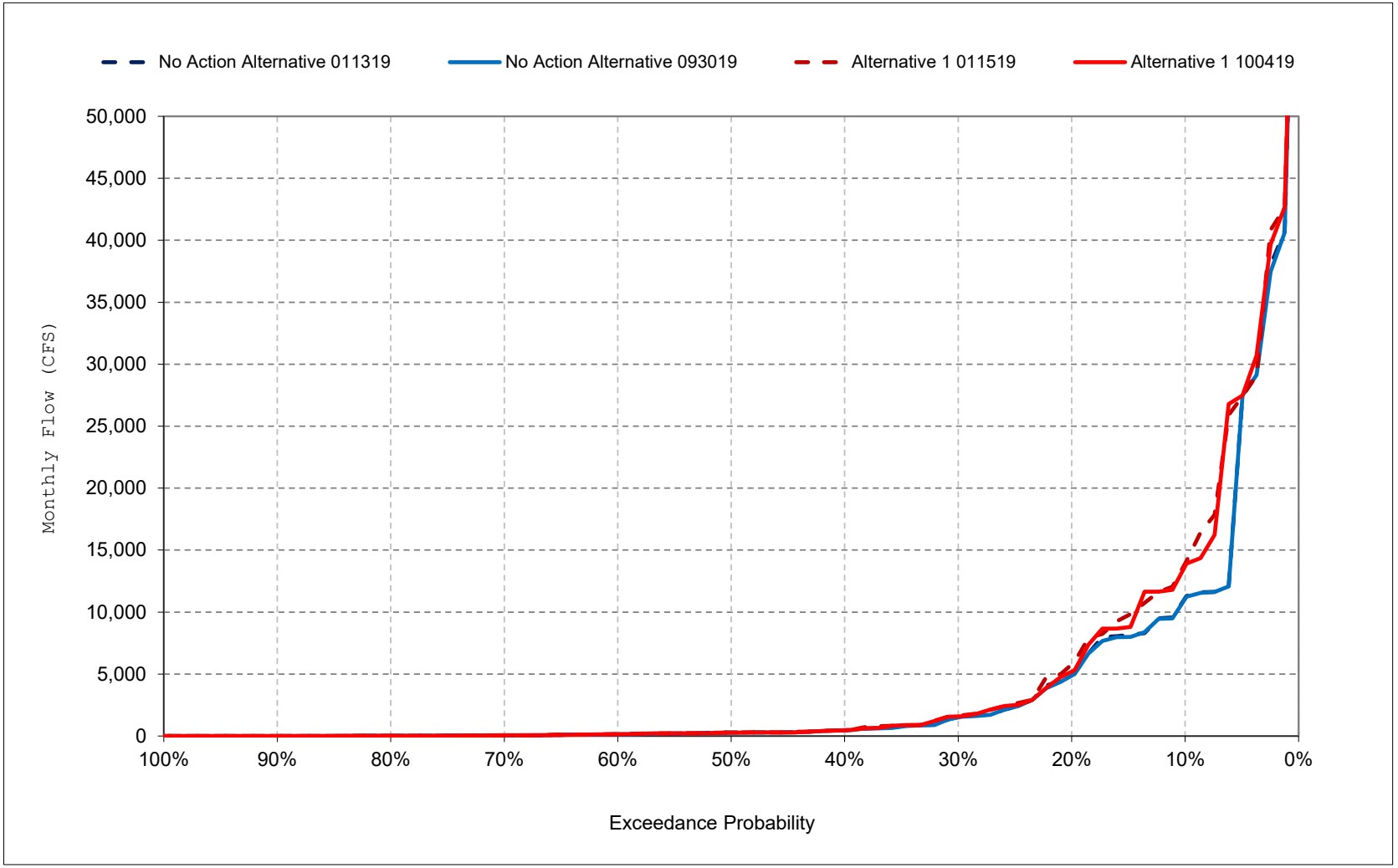

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-8. Yolo Bypass Flow, November**



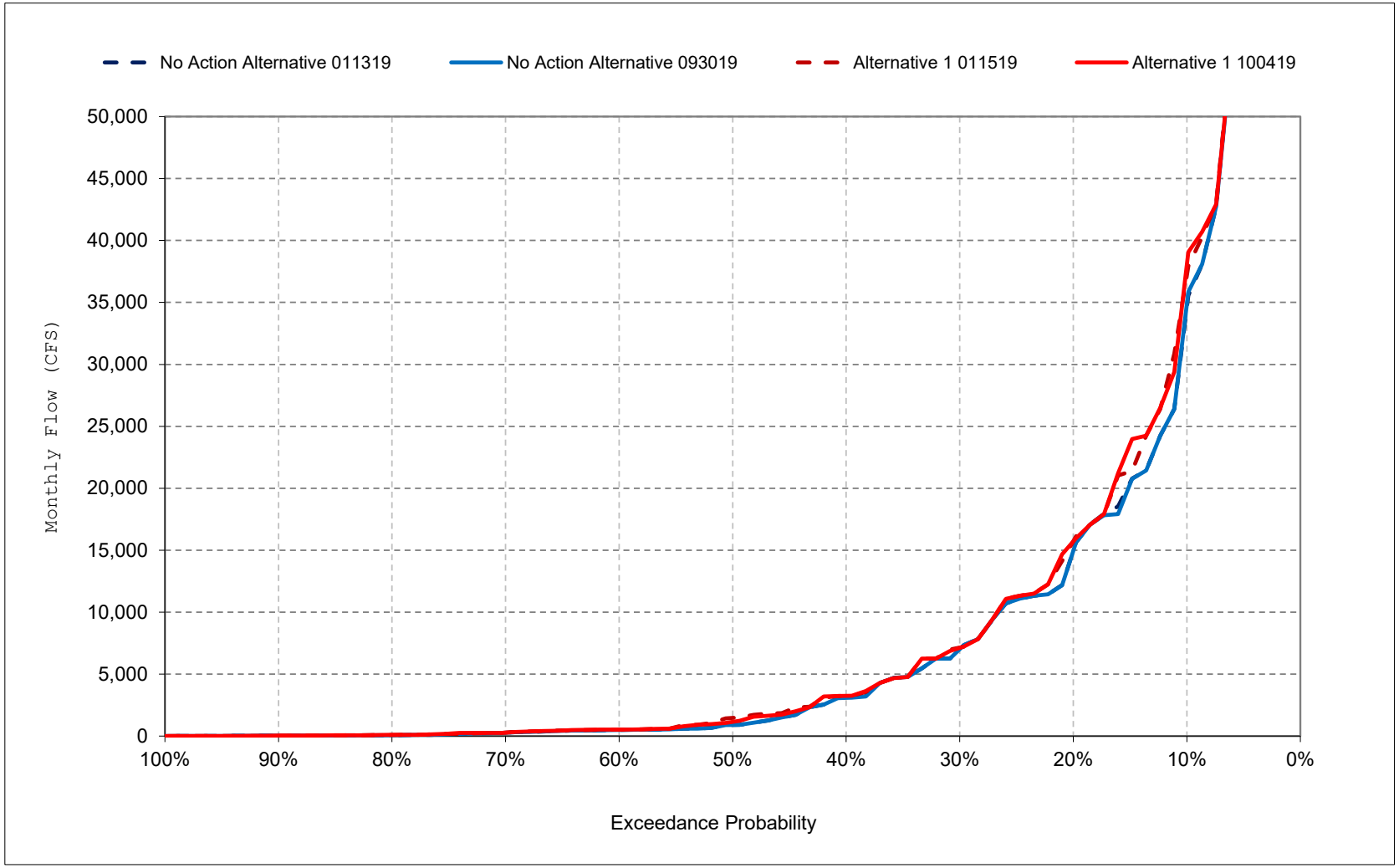

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-9. Yolo Bypass Flow, December**



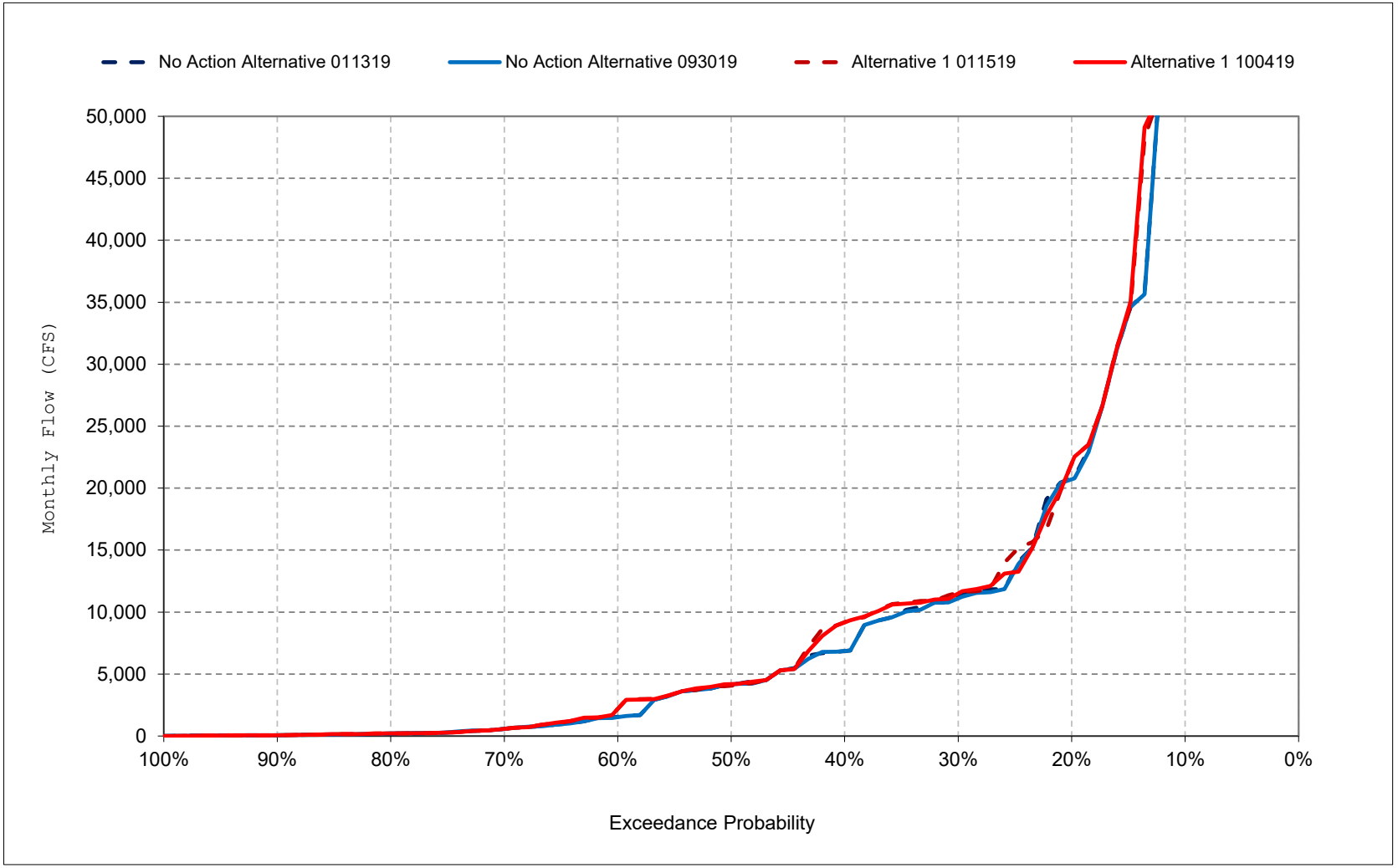

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-10. Yolo Bypass Flow, January**



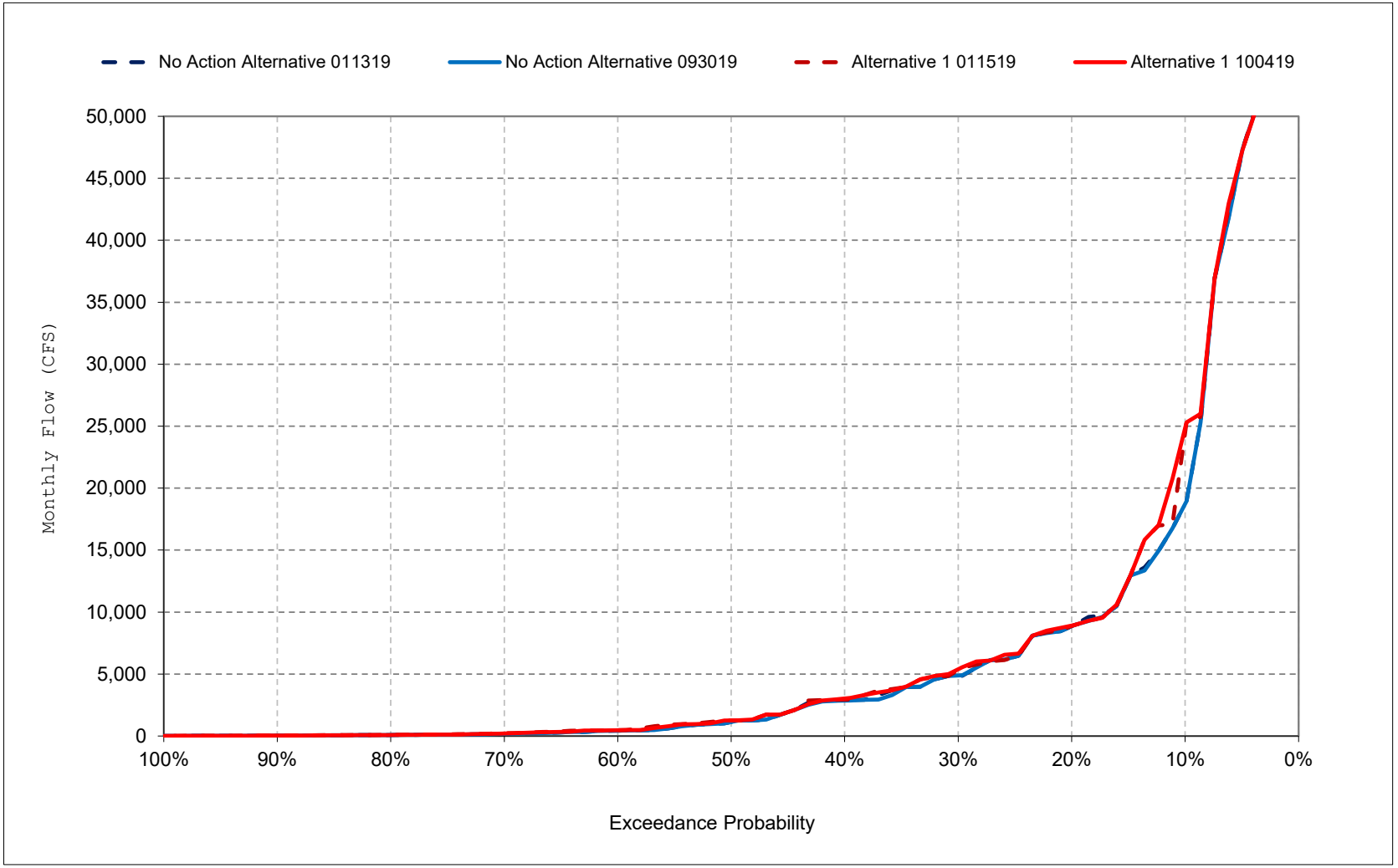

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-11. Yolo Bypass Flow, February**



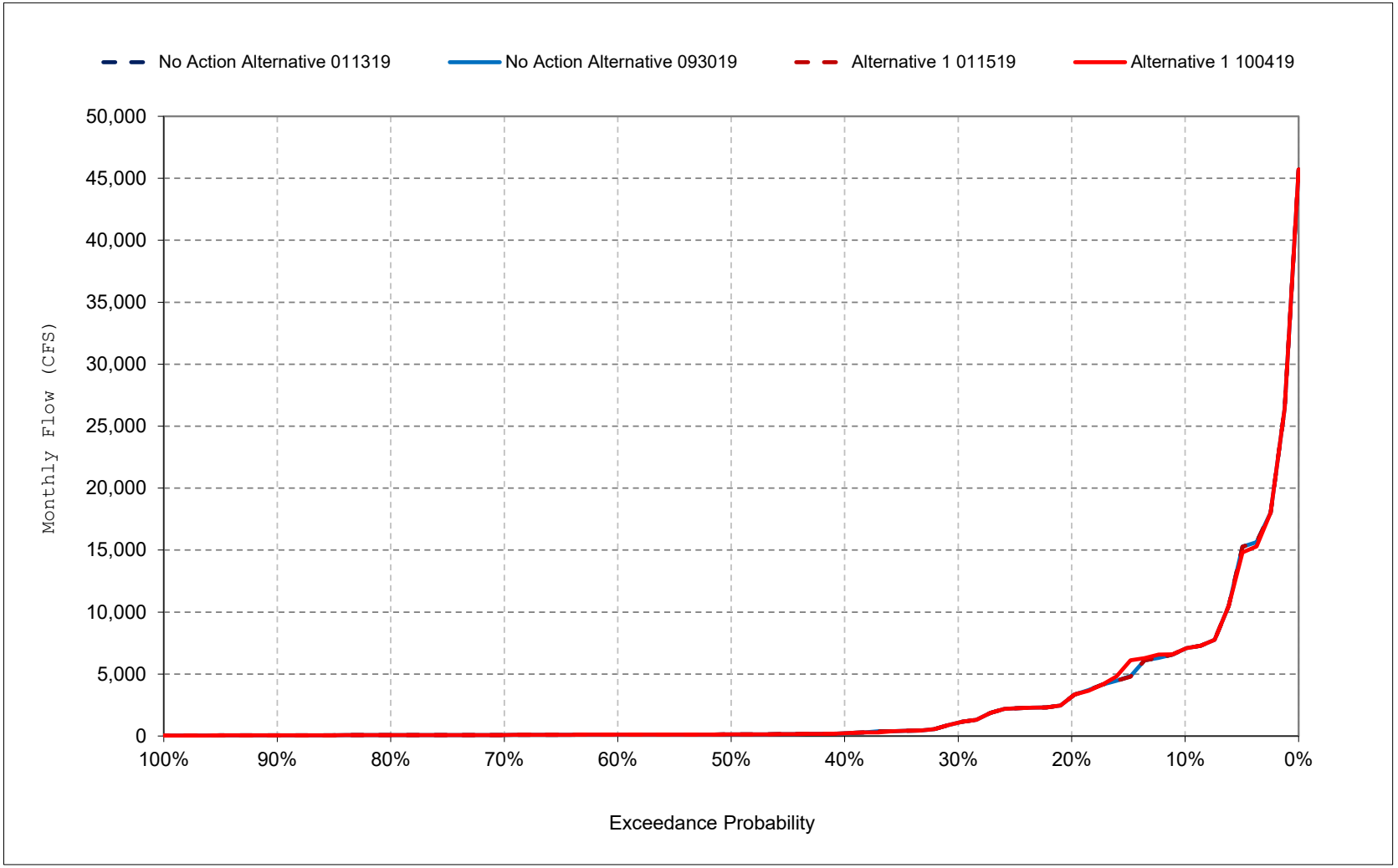

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-12. Yolo Bypass Flow, March**



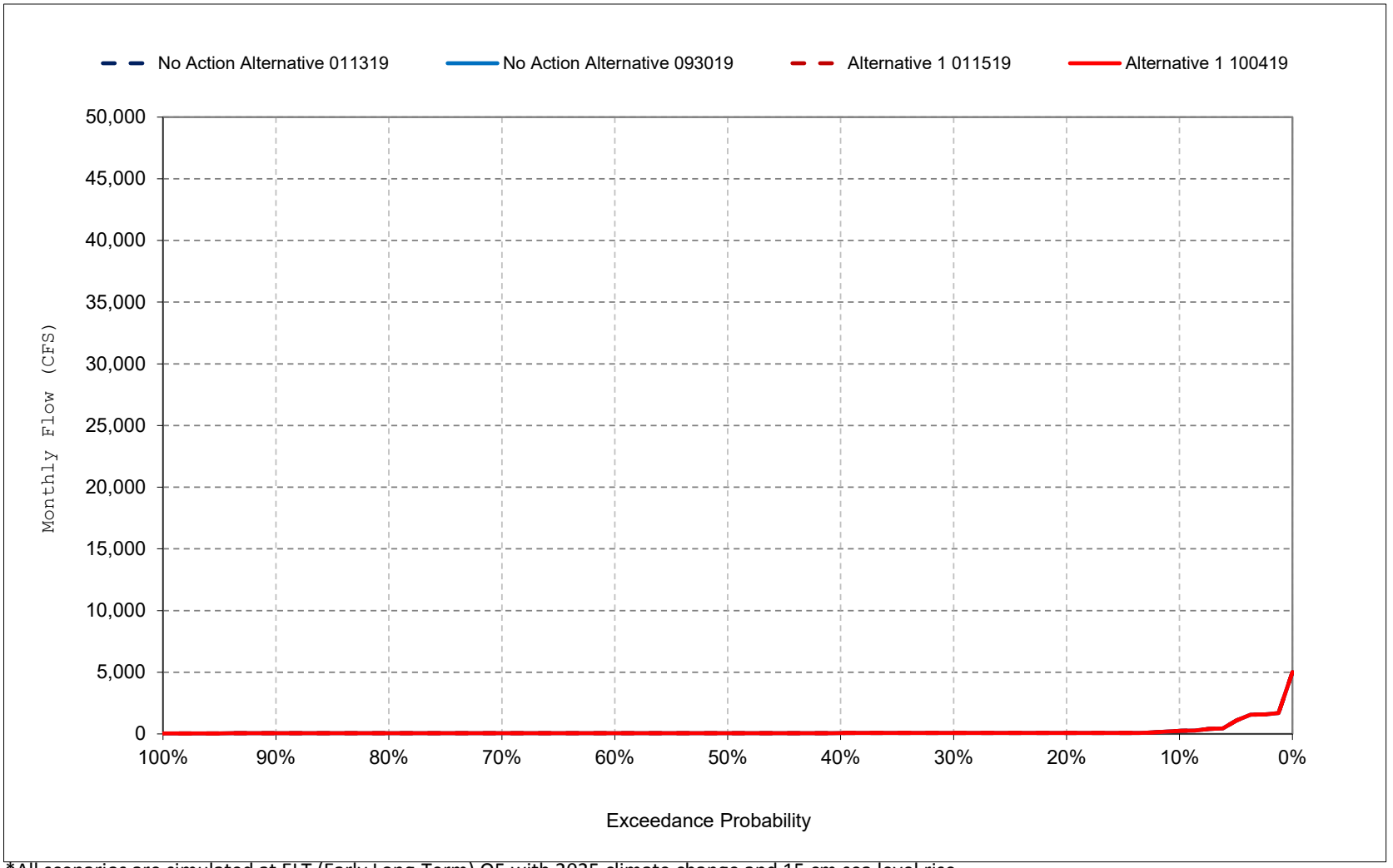

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-13. Yolo Bypass Flow, April**



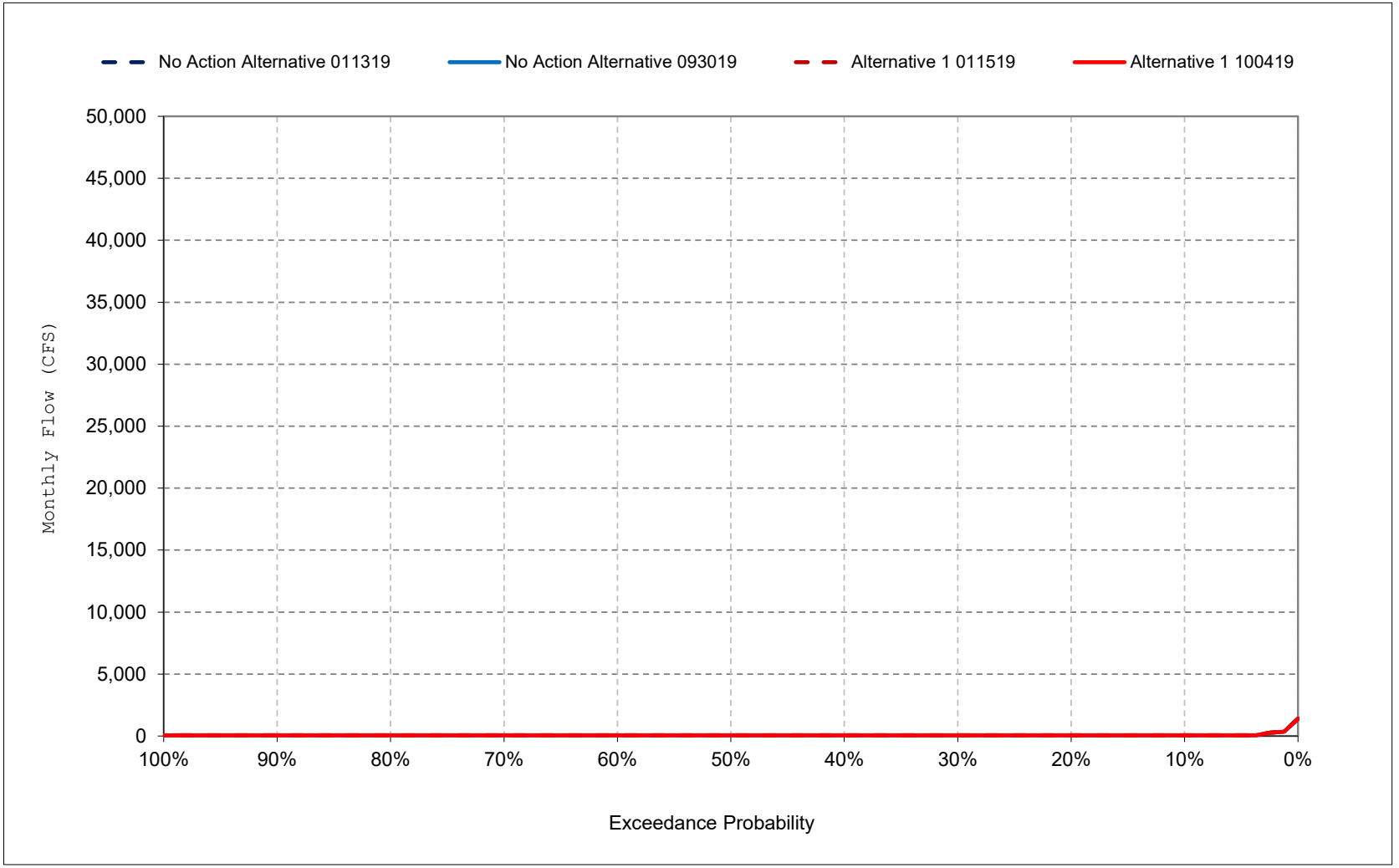

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-14. Yolo Bypass Flow, May**



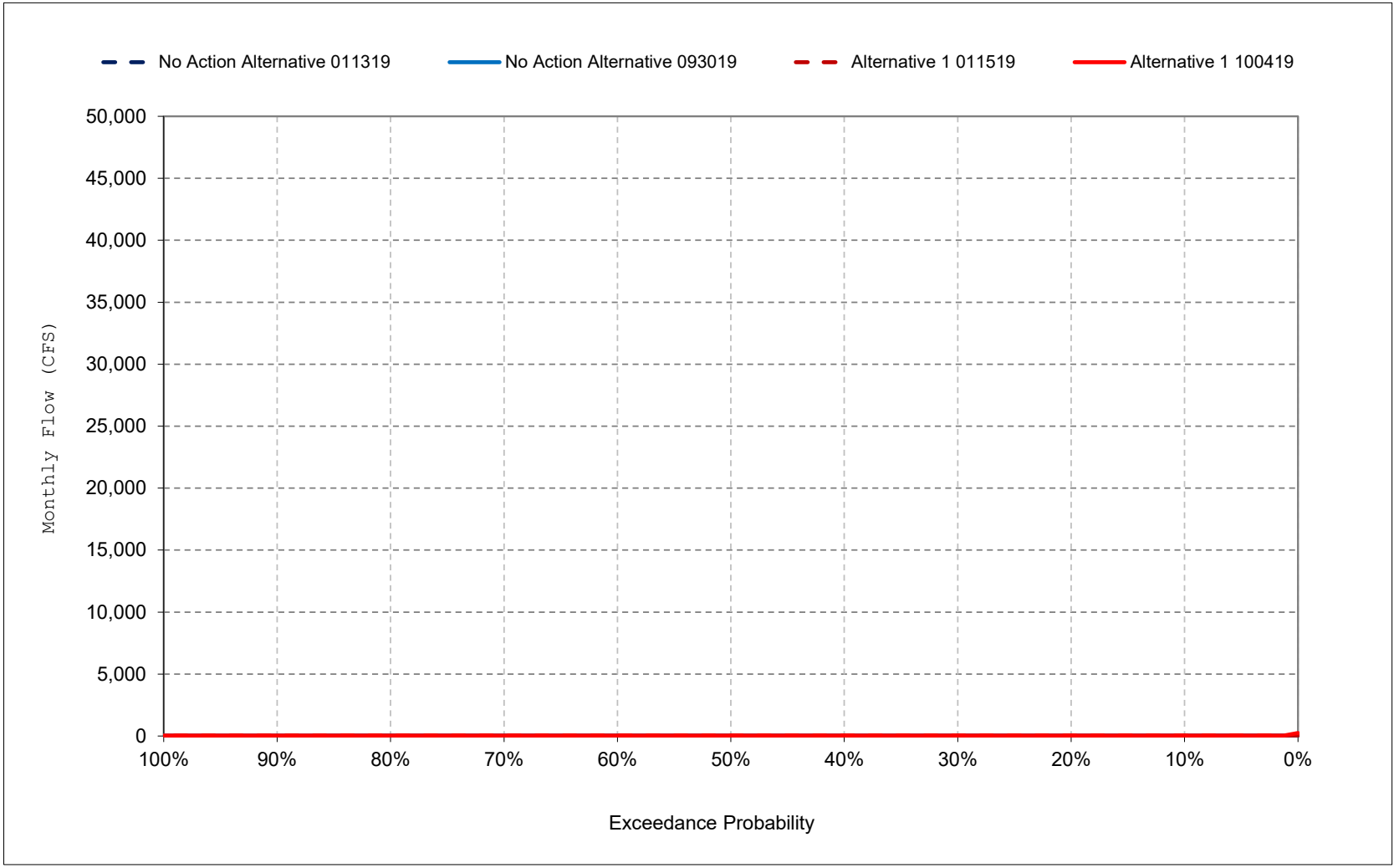

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-15. Yolo Bypass Flow, June**



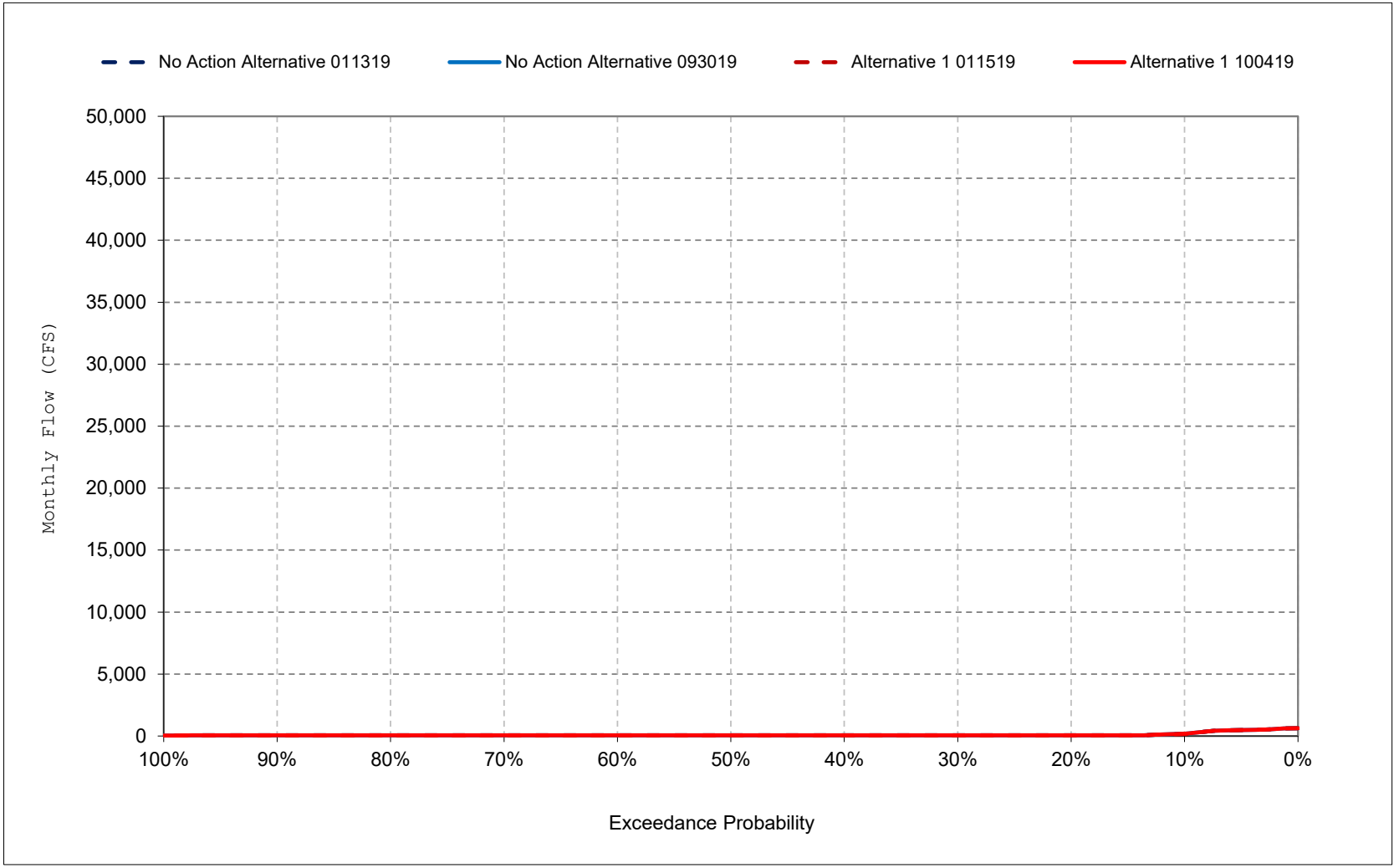

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-16. Yolo Bypass Flow, July**



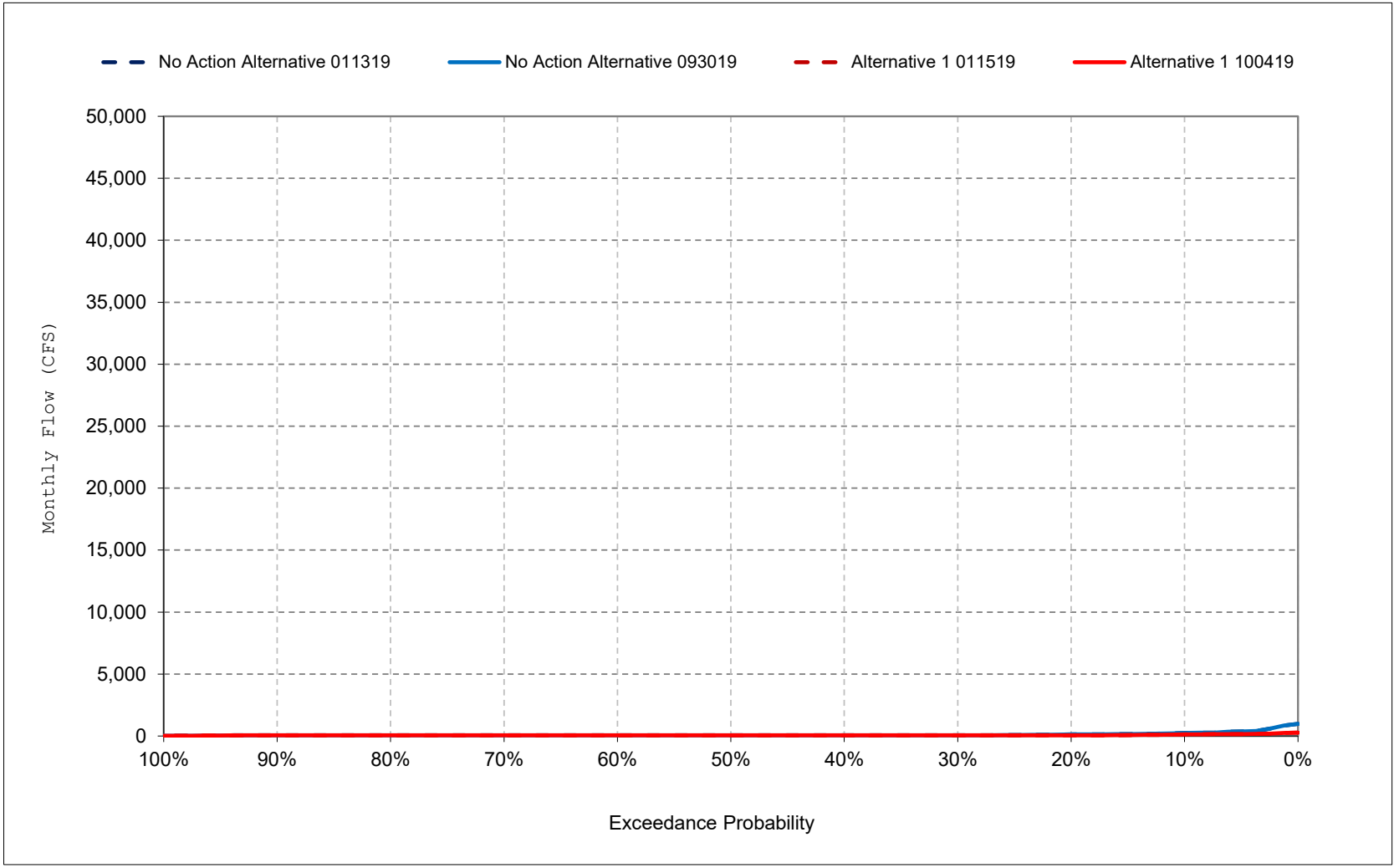

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-17. Yolo Bypass Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 25-18. Yolo Bypass Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 27-1. American River below Nimbus Dam Flow, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,741 | 3,756 | 8,397 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,560 | 5,480 | 2,916 | 3,219 |
| 20% | 1,997 | 3,254 | 3,830 | 7,660 | 10,885 | 6,795 | 5,026 | 4,409 | 3,679 | 4,822 | 2,438 | 2,808 |
| 30% | 1,639 | 2,599 | 2,285 | 5,538 | 7,067 | 5,020 | 4,431 | 3,523 | 3,146 | 3,854 | 1,953 | 2,438 |
| 40% | 1,500 | 2,149 | 2,000 | 3,503 | 5,724 | 4,151 | 3,391 | 2,648 | 2,662 | 3,358 | 1,750 | 2,077 |
| 50% | 1,500 | 1,925 | 2,000 | 1,750 | 2,905 | 2,971 | 2,486 | 1,899 | 2,219 | 2,836 | 1,750 | 1,670 |
| 60% | 1,500 | 1,683 | 2,000 | 1,700 | 1,771 | 2,249 | 2,044 | 1,750 | 1,857 | 2,512 | 1,750 | 1,533 |
| 70% | 1,500 | 1,559 | 1,730 | 1,700 | 1,445 | 1,750 | 1,747 | 1,632 | 1,750 | 1,989 | 1,634 | 1,515 |
| 80% | 1,051 | 1,128 | 1,211 | 1,468 | 1,268 | 833 | 876 | 1,067 | 1,162 | 1,750 | 1,151 | 808 |
| 90% | 800 | 800 | 800 | 950 | 945 | 800 | 800 | 800 | 800 | 886 | 800 | 800 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,679 | 2,500 | 3,676 | 5,045 | 5,836 | 4,233 | 3,338 | 3,035 | 2,687 | 3,018 | 1,812 | 1,926 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,330 | 3,667 | 4,420 | 10,469 | 10,458 | 7,190 | 5,483 | 5,489 | 4,154 | 3,449 | 2,372 | 2,955 |
| Above Normal (16%) | 1,634 | 2,171 | 2,828 | 5,591 | 7,610 | 5,914 | 3,524 | 2,486 | 2,489 | 4,679 | 1,830 | 1,966 |
| Below Normal (13%) | 1,572 | 1,996 | 2,991 | 2,228 | 4,824 | 2,152 | 2,387 | 1,967 | 2,065 | 3,803 | 1,585 | 1,389 |
| Dry (24%) | 1,344 | 2,391 | 5,298 | 1,549 | 2,173 | 2,442 | 2,162 | 1,870 | 2,018 | 2,226 | 1,630 | 1,315 |
| Critical (15%) | 971 | 969 | 905 | 1,108 | 934 | 896 | 1,320 | 1,231 | 1,406 | 887 | 1,089 | 1,163 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,825 | 4,392 | 10,055 | 12,142 | 14,637 | 10,410 | 6,685 | 7,387 | 4,560 | 4,602 | 2,973 | 1,916 |
| 20% | 1,534 | 3,485 | 4,672 | 7,854 | 10,946 | 6,796 | 5,026 | 4,409 | 3,679 | 3,915 | 2,460 | 1,750 |
| 30% | 1,500 | 2,236 | 2,606 | 5,650 | 7,486 | 5,020 | 4,397 | 3,523 | 3,255 | 3,493 | 2,006 | 1,750 |
| 40% | 1,500 | 2,000 | 2,195 | 3,503 | 5,724 | 4,144 | 3,282 | 2,602 | 2,873 | 2,941 | 1,817 | 1,750 |
| 50% | 1,500 | 2,000 | 2,000 | 2,152 | 3,557 | 3,000 | 2,494 | 1,863 | 2,519 | 2,720 | 1,750 | 1,750 |
| 60% | 1,500 | 1,923 | 2,000 | 1,613 | 2,696 | 2,234 | 2,096 | 1,565 | 2,094 | 2,379 | 1,750 | 1,750 |
| 70% | 1,159 | 1,159 | 1,813 | 1,400 | 1,750 | 1,750 | 1,469 | 1,495 | 1,673 | 1,890 | 1,671 | 1,669 |
| 80% | 749 | 730 | 802 | 1,400 | 1,400 | 1,442 | 1,017 | 1,144 | 1,212 | 1,750 | 1,511 | 1,545 |
| 90% | 595 | 588 | 626 | 714 | 1,388 | 953 | 953 | 953 | 784 | 968 | 877 | 880 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,376 | 2,485 | 3,905 | 5,106 | 6,081 | 4,367 | 3,340 | 3,024 | 2,771 | 2,771 | 1,867 | 1,628 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,789 | 3,979 | 5,132 | 10,620 | 10,566 | 7,189 | 5,453 | 5,456 | 4,288 | 3,131 | 2,388 | 1,839 |
| Above Normal (16%) | 1,535 | 2,125 | 2,921 | 5,730 | 7,949 | 6,117 | 3,478 | 2,463 | 2,657 | 4,232 | 1,872 | 1,763 |
| Below Normal (13%) | 1,348 | 1,693 | 2,886 | 2,284 | 5,585 | 2,322 | 2,434 | 2,070 | 2,211 | 3,537 | 1,903 | 1,604 |
| Dry (24%) | 1,078 | 2,233 | 5,424 | 1,540 | 2,172 | 2,600 | 2,118 | 1,817 | 2,044 | 1,950 | 1,677 | 1,537 |
| Critical (15%) | 832 | 787 | 715 | 1,013 | 1,307 | 1,173 | 1,480 | 1,249 | 1,334 | 1,073 | 1,017 | 1,196 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -916 | 636 | 1,658 | 0 | 0 | 675 | 0 | 0 | 0 | -878 | 57 | -1,303 |
| 20% | -463 | 231 | 842 | 195 | 61 | 1 | 0 | 0 | 0 | -907 | 22 | -1,058 |
| 30% | -139 | -363 | 321 | 111 | 419 | 0 | -34 | 0 | 109 | -361 | 53 | -688 |
| 40% | 0 | -149 | 195 | 0 | 0 | -7 | -109 | -46 | 212 | -418 | 67 | -327 |
| 50% | 0 | 75 | 0 | 402 | 651 | 28 | 8 | -35 | 300 | -116 | 0 | 80 |
| 60% | 0 | 239 | 0 | -87 | 924 | -15 | 52 | -185 | 237 | -133 | 0 | 217 |
| 70% | -341 | -400 | 83 | -300 | 305 | 0 | -278 | -137 | -77 | -99 | 37 | 154 |
| 80% | -302 | -399 | -409 | -68 | 132 | 609 | 141 | 76 | 50 | 0 | 361 | 737 |
| 90% | -205 | -212 | -174 | -236 | 442 | 153 | 153 | 153 | -16 | 82 | 77 | 80 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -303 | -14 | 229 | 62 | 244 | 134 | 2 | -10 | 85 | -247 | 55 | -298 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -541 | 311 | 712 | 152 | 108 | -1 | -30 | -33 | 134 | -318 | 16 | -1,117 |
| Above Normal (16%) | -99 | -46 | 93 | 139 | 338 | 204 | -46 | -23 | 168 | -447 | 43 | -204 |
| Below Normal (13%) | -224 | -303 | -105 | 56 | 762 | 169 | 47 | 103 | 146 | -266 | 318 | 215 |
| Dry (24%) | -266 | -158 | 126 | -9 | -1 | 158 | -44 | -53 | 26 | -276 | 47 | 222 |
| Critical (15%) | -140 | -182 | -190 | -95 | 373 | 276 | 160 | 18 | -73 | 186 | -72 | 33 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 27-2. American River below Nimbus Dam Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,892 | 3,756 | 8,397 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,577 | 5,500 | 2,905 | 3,291 |
| 20% | 2,206 | 3,252 | 3,810 | 7,661 | 10,862 | 6,799 | 5,026 | 4,409 | 3,718 | 4,869 | 2,356 | 2,855 |
| 30% | 1,758 | 2,699 | 2,257 | 5,529 | 7,077 | 5,020 | 4,432 | 3,523 | 3,161 | 3,964 | 1,993 | 2,354 |
| 40% | 1,500 | 2,248 | 2,000 | 3,516 | 5,728 | 4,151 | 3,390 | 2,648 | 2,675 | 3,359 | 1,750 | 1,953 |
| 50% | 1,500 | 1,901 | 2,000 | 1,750 | 2,906 | 2,972 | 2,486 | 2,002 | 2,220 | 2,819 | 1,750 | 1,688 |
| 60% | 1,500 | 1,683 | 1,970 | 1,700 | 1,771 | 1,996 | 2,045 | 1,750 | 1,804 | 2,461 | 1,750 | 1,533 |
| 70% | 1,500 | 1,525 | 1,731 | 1,670 | 1,445 | 1,750 | 1,747 | 1,664 | 1,750 | 1,996 | 1,609 | 1,518 |
| 80% | 1,036 | 1,103 | 1,172 | 1,469 | 1,264 | 843 | 891 | 1,071 | 1,087 | 1,750 | 1,000 | 808 |
| 90% | 800 | 800 | 812 | 858 | 895 | 800 | 800 | 800 | 800 | 810 | 800 | 800 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,714 | 2,507 | 3,656 | 5,038 | 5,820 | 4,222 | 3,343 | 3,046 | 2,681 | 3,029 | 1,789 | 1,930 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,347 | 3,656 | 4,380 | 10,456 | 10,454 | 7,190 | 5,483 | 5,489 | 4,153 | 3,490 | 2,371 | 2,971 |
| Above Normal (16%) | 1,654 | 2,194 | 2,818 | 5,589 | 7,611 | 5,910 | 3,524 | 2,486 | 2,496 | 4,680 | 1,845 | 1,977 |
| Below Normal (13%) | 1,574 | 1,957 | 2,933 | 2,220 | 4,840 | 2,152 | 2,392 | 1,971 | 2,101 | 3,871 | 1,550 | 1,397 |
| Dry (24%) | 1,426 | 2,412 | 5,300 | 1,538 | 2,147 | 2,395 | 2,162 | 1,874 | 2,063 | 2,142 | 1,592 | 1,292 |
| Critical (15%) | 1,014 | 1,017 | 916 | 1,116 | 859 | 905 | 1,353 | 1,294 | 1,254 | 950 | 1,015 | 1,173 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,939 | 4,469 | 10,055 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,560 | 4,707 | 3,058 | 2,200 |
| 20% | 1,635 | 3,454 | 4,450 | 7,854 | 10,946 | 6,796 | 5,026 | 4,409 | 3,695 | 3,498 | 2,622 | 1,841 |
| 30% | 1,500 | 2,309 | 2,922 | 5,529 | 7,486 | 5,020 | 4,397 | 3,523 | 3,608 | 3,232 | 2,312 | 1,750 |
| 40% | 1,500 | 2,000 | 2,091 | 3,728 | 5,725 | 4,151 | 3,277 | 2,637 | 2,911 | 2,773 | 2,000 | 1,750 |
| 50% | 1,500 | 2,000 | 2,000 | 1,972 | 3,654 | 3,022 | 2,508 | 1,916 | 2,656 | 2,444 | 1,829 | 1,750 |
| 60% | 1,500 | 1,937 | 2,000 | 1,491 | 2,696 | 2,237 | 2,252 | 1,542 | 2,113 | 2,007 | 1,750 | 1,750 |
| 70% | 1,308 | 1,159 | 1,830 | 1,400 | 1,750 | 1,750 | 1,426 | 1,428 | 1,786 | 1,789 | 1,669 | 1,669 |
| 80% | 749 | 749 | 1,124 | 1,400 | 1,400 | 1,421 | 1,002 | 1,205 | 1,237 | 1,544 | 1,511 | 1,545 |
| 90% | 607 | 599 | 633 | 666 | 1,389 | 953 | 953 | 953 | 877 | 990 | 820 | 906 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,387 | 2,464 | 3,938 | 5,062 | 6,093 | 4,356 | 3,337 | 3,031 | 2,837 | 2,588 | 1,948 | 1,681 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,718 | 3,867 | 5,114 | 10,522 | 10,608 | 7,190 | 5,453 | 5,456 | 4,357 | 3,070 | 2,489 | 1,948 |
| Above Normal (16%) | 1,543 | 2,223 | 2,893 | 5,774 | 7,966 | 6,116 | 3,479 | 2,465 | 2,779 | 3,874 | 2,163 | 1,835 |
| Below Normal (13%) | 1,317 | 1,741 | 3,072 | 2,205 | 5,579 | 2,322 | 2,407 | 2,061 | 2,281 | 2,999 | 1,913 | 1,663 |
| Dry (24%) | 1,186 | 2,186 | 5,404 | 1,499 | 2,163 | 2,555 | 2,168 | 1,869 | 2,119 | 1,805 | 1,663 | 1,526 |
| Critical (15%) | 901 | 811 | 873 | 1,017 | 1,300 | 1,173 | 1,399 | 1,215 | 1,309 | 1,076 | 1,049 | 1,210 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -954 | 713 | 1,658 | 0 | 0 | 0 | 0 | 0 | -17 | -793 | 152 | -1,091 |
| 20% | -571 | 202 | 641 | 193 | 84 | -3 | 0 | 0 | -24 | -1,371 | 267 | -1,013 |
| 30% | -258 | -390 | 665 | 0 | 409 | 0 | -35 | 0 | 447 | -731 | 319 | -604 |
| 40% | 0 | -248 | 91 | 212 | -3 | 0 | -114 | -11 | 236 | -586 | 250 | -203 |
| 50% | 0 | 99 | 0 | 222 | 748 | 51 | 22 | -86 | 435 | -376 | 79 | 62 |
| 60% | 0 | 254 | 30 | -209 | 924 | 241 | 207 | -208 | 309 | -454 | 0 | 217 |
| 70% | -192 | -366 | 99 | -270 | 305 | 0 | -321 | -235 | 36 | -208 | 60 | 151 |
| 80% | -288 | -354 | -48 | -69 | 136 | 578 | 111 | 134 | 150 | -206 | 511 | 737 |
| 90% | -193 | -201 | -180 | -192 | 494 | 153 | 153 | 153 | 77 | 180 | 20 | 106 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -327 | -43 | 282 | 24 | 273 | 134 | -6 | -15 | 156 | -442 | 159 | -249 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -628 | 211 | 734 | 66 | 154 | 0 | -30 | -33 | 204 | -420 | 119 | -1,023 |
| Above Normal (16%) | -111 | 29 | 75 | 185 | 355 | 206 | -45 | -21 | 284 | -806 | 319 | -143 |
| Below Normal (13%) | -257 | -216 | 139 | -14 | 739 | 170 | 15 | 91 | 180 | -872 | 362 | 266 |
| Dry (24%) | -240 | -226 | 104 | -39 | 16 | 160 | 6 | -5 | 56 | -337 | 71 | 234 |
| Critical (15%) | -113 | -206 | -43 | -99 | 441 | 268 | 46 | -79 | 56 | 126 | 34 | 38 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 27-3. American River below Nimbus Dam Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,741 | 3,756 | 8,397 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,560 | 5,480 | 2,916 | 3,219 |
| 20% | 1,997 | 3,254 | 3,830 | 7,660 | 10,885 | 6,795 | 5,026 | 4,409 | 3,679 | 4,822 | 2,438 | 2,808 |
| 30% | 1,639 | 2,599 | 2,285 | 5,538 | 7,067 | 5,020 | 4,431 | 3,523 | 3,146 | 3,854 | 1,953 | 2,438 |
| 40% | 1,500 | 2,149 | 2,000 | 3,503 | 5,724 | 4,151 | 3,391 | 2,648 | 2,662 | 3,358 | 1,750 | 2,077 |
| 50% | 1,500 | 1,925 | 2,000 | 1,750 | 2,905 | 2,971 | 2,486 | 1,899 | 2,219 | 2,836 | 1,750 | 1,670 |
| 60% | 1,500 | 1,683 | 2,000 | 1,700 | 1,771 | 2,249 | 2,044 | 1,750 | 1,857 | 2,512 | 1,750 | 1,533 |
| 70% | 1,500 | 1,559 | 1,730 | 1,700 | 1,445 | 1,750 | 1,747 | 1,632 | 1,750 | 1,989 | 1,634 | 1,515 |
| 80% | 1,051 | 1,128 | 1,211 | 1,468 | 1,268 | 833 | 876 | 1,067 | 1,162 | 1,750 | 1,151 | 808 |
| 90% | 800 | 800 | 800 | 950 | 945 | 800 | 800 | 800 | 800 | 886 | 800 | 800 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,679 | 2,500 | 3,676 | 5,045 | 5,836 | 4,233 | 3,338 | 3,035 | 2,687 | 3,018 | 1,812 | 1,926 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,330 | 3,667 | 4,420 | 10,469 | 10,458 | 7,190 | 5,483 | 5,489 | 4,154 | 3,449 | 2,372 | 2,955 |
| Above Normal (16%) | 1,634 | 2,171 | 2,828 | 5,591 | 7,610 | 5,914 | 3,524 | 2,486 | 2,489 | 4,679 | 1,830 | 1,966 |
| Below Normal (13%) | 1,572 | 1,996 | 2,991 | 2,228 | 4,824 | 2,152 | 2,387 | 1,967 | 2,065 | 3,803 | 1,585 | 1,389 |
| Dry (24%) | 1,344 | 2,391 | 5,298 | 1,549 | 2,173 | 2,442 | 2,162 | 1,870 | 2,018 | 2,226 | 1,630 | 1,315 |
| Critical (15%) | 971 | 969 | 905 | 1,108 | 934 | 896 | 1,320 | 1,231 | 1,406 | 887 | 1,089 | 1,163 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,892 | 3,756 | 8,397 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,577 | 5,500 | 2,905 | 3,291 |
| 20% | 2,206 | 3,252 | 3,810 | 7,661 | 10,862 | 6,799 | 5,026 | 4,409 | 3,718 | 4,869 | 2,356 | 2,855 |
| 30% | 1,758 | 2,699 | 2,257 | 5,529 | 7,077 | 5,020 | 4,432 | 3,523 | 3,161 | 3,964 | 1,993 | 2,354 |
| 40% | 1,500 | 2,248 | 2,000 | 3,516 | 5,728 | 4,151 | 3,390 | 2,648 | 2,675 | 3,359 | 1,750 | 1,953 |
| 50% | 1,500 | 1,901 | 2,000 | 1,750 | 2,906 | 2,972 | 2,486 | 2,002 | 2,220 | 2,819 | 1,750 | 1,688 |
| 60% | 1,500 | 1,683 | 1,970 | 1,700 | 1,771 | 1,996 | 2,045 | 1,750 | 1,804 | 2,461 | 1,750 | 1,533 |
| 70% | 1,500 | 1,525 | 1,731 | 1,670 | 1,445 | 1,750 | 1,747 | 1,664 | 1,750 | 1,996 | 1,609 | 1,518 |
| 80% | 1,036 | 1,103 | 1,172 | 1,469 | 1,264 | 843 | 891 | 1,071 | 1,087 | 1,750 | 1,000 | 808 |
| 90% | 800 | 800 | 812 | 858 | 895 | 800 | 800 | 800 | 800 | 810 | 800 | 800 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,714 | 2,507 | 3,656 | 5,038 | 5,820 | 4,222 | 3,343 | 3,046 | 2,681 | 3,029 | 1,789 | 1,930 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,347 | 3,656 | 4,380 | 10,456 | 10,454 | 7,190 | 5,483 | 5,489 | 4,153 | 3,490 | 2,371 | 2,971 |
| Above Normal (16%) | 1,654 | 2,194 | 2,818 | 5,589 | 7,611 | 5,910 | 3,524 | 2,486 | 2,496 | 4,680 | 1,845 | 1,977 |
| Below Normal (13%) | 1,574 | 1,957 | 2,933 | 2,220 | 4,840 | 2,152 | 2,392 | 1,971 | 2,101 | 3,871 | 1,550 | 1,397 |
| Dry (24%) | 1,426 | 2,412 | 5,300 | 1,538 | 2,147 | 2,395 | 2,162 | 1,874 | 2,063 | 2,142 | 1,592 | 1,292 |
| Critical (15%) | 1,014 | 1,017 | 916 | 1,116 | 859 | 905 | 1,353 | 1,294 | 1,254 | 950 | 1,015 | 1,173 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 151 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 17 | 20 | **-10** | 72 |
| 20% | 209 | **-2** | **-20** | 2 | **-23** | 4 | 0 | 0 | 39 | 47 | **-82** | 47 |
| 30% | 119 | 100 | **-28** | **-9** | 10 | 0 | 1 | **0** | 15 | 110 | 40 | **-84** |
| 40% | 0 | 99 | 0 | 13 | 4 | 0 | **0** | 0 | 13 | 1 | 0 | **-125** |
| 50% | 0 | **-24** | 0 | 0 | 1 | 0 | 0 | 103 | 1 | **-17** | 0 | 18 |
| 60% | 0 | 0 | **-30** | 0 | 0 | **-253** | 2 | 0 | **-53** | **-51** | 0 | 0 |
| 70% | 0 | **-34** | 2 | **-30** | 0 | 0 | 0 | 31 | 0 | 8 | **-25** | 3 |
| 80% | **-14** | **-26** | **-39** | 1 | **-3** | 9 | 15 | 4 | **-75** | 0 | **-150** | 0 |
| 90% | 0 | 0 | 12 | **-91** | **-51** | 0 | 0 | 0 | 0 | **-75** | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 35 | 7 | **-20** | **-7** | **-16** | **-11** | 6 | 11 | **-6** | 11 | **-23** | 4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 16 | **-11** | **-40** | **-12** | **-4** | 0 | 0 | 0 | **-1** | 41 | **-1** | 16 |
| Above Normal (16%) | 20 | 23 | **-10** | **-2** | 1 | **-4** | **0** | 0 | 6 | 1 | 15 | 11 |
| Below Normal (13%) | 2 | **-39** | **-57** | **-8** | 16 | 0 | 5 | 4 | 36 | 68 | **-35** | 8 |
| Dry (24%) | 82 | 21 | 2 | **-11** | **-25** | **-47** | 0 | 4 | 45 | **-84** | **-37** | **-23** |
| Critical (15%) | 43 | 48 | 11 | 8 | **-75** | 9 | 34 | 64 | **-153** | 63 | **-74** | 10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 27-4. American River below Nimbus Dam Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,825 | 4,392 | 10,055 | 12,142 | 14,637 | 10,410 | 6,685 | 7,387 | 4,560 | 4,602 | 2,973 | 1,916 |
| 20% | 1,534 | 3,485 | 4,672 | 7,854 | 10,946 | 6,796 | 5,026 | 4,409 | 3,679 | 3,915 | 2,460 | 1,750 |
| 30% | 1,500 | 2,236 | 2,606 | 5,650 | 7,486 | 5,020 | 4,397 | 3,523 | 3,255 | 3,493 | 2,006 | 1,750 |
| 40% | 1,500 | 2,000 | 2,195 | 3,503 | 5,724 | 4,144 | 3,282 | 2,602 | 2,873 | 2,941 | 1,817 | 1,750 |
| 50% | 1,500 | 2,000 | 2,000 | 2,152 | 3,557 | 3,000 | 2,494 | 1,863 | 2,519 | 2,720 | 1,750 | 1,750 |
| 60% | 1,500 | 1,923 | 2,000 | 1,613 | 2,696 | 2,234 | 2,096 | 1,565 | 2,094 | 2,379 | 1,750 | 1,750 |
| 70% | 1,159 | 1,159 | 1,813 | 1,400 | 1,750 | 1,750 | 1,469 | 1,495 | 1,673 | 1,890 | 1,671 | 1,669 |
| 80% | 749 | 730 | 802 | 1,400 | 1,400 | 1,442 | 1,017 | 1,144 | 1,212 | 1,750 | 1,511 | 1,545 |
| 90% | 595 | 588 | 626 | 714 | 1,388 | 953 | 953 | 953 | 784 | 968 | 877 | 880 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,376 | 2,485 | 3,905 | 5,106 | 6,081 | 4,367 | 3,340 | 3,024 | 2,771 | 2,771 | 1,867 | 1,628 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,789 | 3,979 | 5,132 | 10,620 | 10,566 | 7,189 | 5,453 | 5,456 | 4,288 | 3,131 | 2,388 | 1,839 |
| Above Normal (16%) | 1,535 | 2,125 | 2,921 | 5,730 | 7,949 | 6,117 | 3,478 | 2,463 | 2,657 | 4,232 | 1,872 | 1,763 |
| Below Normal (13%) | 1,348 | 1,693 | 2,886 | 2,284 | 5,585 | 2,322 | 2,434 | 2,070 | 2,211 | 3,537 | 1,903 | 1,604 |
| Dry (24%) | 1,078 | 2,233 | 5,424 | 1,540 | 2,172 | 2,600 | 2,118 | 1,817 | 2,044 | 1,950 | 1,677 | 1,537 |
| Critical (15%) | 832 | 787 | 715 | 1,013 | 1,307 | 1,173 | 1,480 | 1,249 | 1,334 | 1,073 | 1,017 | 1,196 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,939 | 4,469 | 10,055 | 12,142 | 14,637 | 9,735 | 6,685 | 7,387 | 4,560 | 4,707 | 3,058 | 2,200 |
| 20% | 1,635 | 3,454 | 4,450 | 7,854 | 10,946 | 6,796 | 5,026 | 4,409 | 3,695 | 3,498 | 2,622 | 1,841 |
| 30% | 1,500 | 2,309 | 2,922 | 5,529 | 7,486 | 5,020 | 4,397 | 3,523 | 3,608 | 3,232 | 2,312 | 1,750 |
| 40% | 1,500 | 2,000 | 2,091 | 3,728 | 5,725 | 4,151 | 3,277 | 2,637 | 2,911 | 2,773 | 2,000 | 1,750 |
| 50% | 1,500 | 2,000 | 2,000 | 1,972 | 3,654 | 3,022 | 2,508 | 1,916 | 2,656 | 2,444 | 1,829 | 1,750 |
| 60% | 1,500 | 1,937 | 2,000 | 1,491 | 2,696 | 2,237 | 2,252 | 1,542 | 2,113 | 2,007 | 1,750 | 1,750 |
| 70% | 1,308 | 1,159 | 1,830 | 1,400 | 1,750 | 1,750 | 1,426 | 1,428 | 1,786 | 1,789 | 1,669 | 1,669 |
| 80% | 749 | 749 | 1,124 | 1,400 | 1,400 | 1,421 | 1,002 | 1,205 | 1,237 | 1,544 | 1,511 | 1,545 |
| 90% | 607 | 599 | 633 | 666 | 1,389 | 953 | 953 | 953 | 877 | 990 | 820 | 906 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,387 | 2,464 | 3,938 | 5,062 | 6,093 | 4,356 | 3,337 | 3,031 | 2,837 | 2,588 | 1,948 | 1,681 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,718 | 3,867 | 5,114 | 10,522 | 10,608 | 7,190 | 5,453 | 5,456 | 4,357 | 3,070 | 2,489 | 1,948 |
| Above Normal (16%) | 1,543 | 2,223 | 2,893 | 5,774 | 7,966 | 6,116 | 3,479 | 2,465 | 2,779 | 3,874 | 2,163 | 1,835 |
| Below Normal (13%) | 1,317 | 1,741 | 3,072 | 2,205 | 5,579 | 2,322 | 2,407 | 2,061 | 2,281 | 2,999 | 1,913 | 1,663 |
| Dry (24%) | 1,186 | 2,186 | 5,404 | 1,499 | 2,163 | 2,555 | 2,168 | 1,869 | 2,119 | 1,805 | 1,663 | 1,526 |
| Critical (15%) | 901 | 811 | 873 | 1,017 | 1,300 | 1,173 | 1,399 | 1,215 | 1,309 | 1,076 | 1,049 | 1,210 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 114 | 77 | 0 | 0 | 0 | **-675** | 0 | 0 | 0 | 105 | 85 | 284 |
| 20% | 101 | **-31** | **-222** | 0 | 0 | 1 | 0 | 0 | 15 | **-416** | 162 | 91 |
| 30% | 0 | 73 | 316 | **-121** | 0 | 0 | 0 | 0 | 353 | **-260** | 305 | 0 |
| 40% | 0 | 0 | **-104** | 225 | 1 | 7 | **-5** | 35 | 37 | **-167** | 184 | 0 |
| 50% | 0 | 0 | 0 | **-180** | 98 | 23 | 15 | 53 | 137 | **-277** | 79 | 0 |
| 60% | 0 | 14 | 0 | **-122** | 0 | 3 | 156 | **-23** | 19 | **-373** | 0 | 0 |
| 70% | 149 | 0 | 17 | 0 | 0 | 0 | **-43** | **-67** | 113 | **-101** | **-2** | 0 |
| 80% | 0 | 19 | 322 | 0 | 0 | **-21** | **-15** | 62 | 25 | **-206** | 0 | 0 |
| 90% | 11 | 11 | 7 | **-48** | 1 | 0 | 0 | 0 | 93 | 23 | **-57** | 26 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11 | **-21** | 33 | **-44** | 12 | **-11** | **-3** | 7 | 65 | **-183** | 81 | 53 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-71** | **-112** | **-18** | **-98** | 42 | 1 | **0** | 0 | 69 | **-61** | 102 | 110 |
| Above Normal (16%) | 8 | 97 | **-28** | 44 | 17 | **-2** | 0 | 2 | 122 | **-358** | 291 | 72 |
| Below Normal (13%) | **-32** | 48 | 187 | **-79** | **-6** | 1 | **-27** | **-9** | 70 | **-538** | 9 | 59 |
| Dry (24%) | 108 | **-47** | **-21** | **-41** | **-9** | **-45** | 50 | 52 | 75 | **-145** | **-13** | **-11** |
| Critical (15%) | 69 | 24 | 158 | 4 | **-7** | 0 | **-80** | **-34** | **-24** | 3 | 32 | 14 |

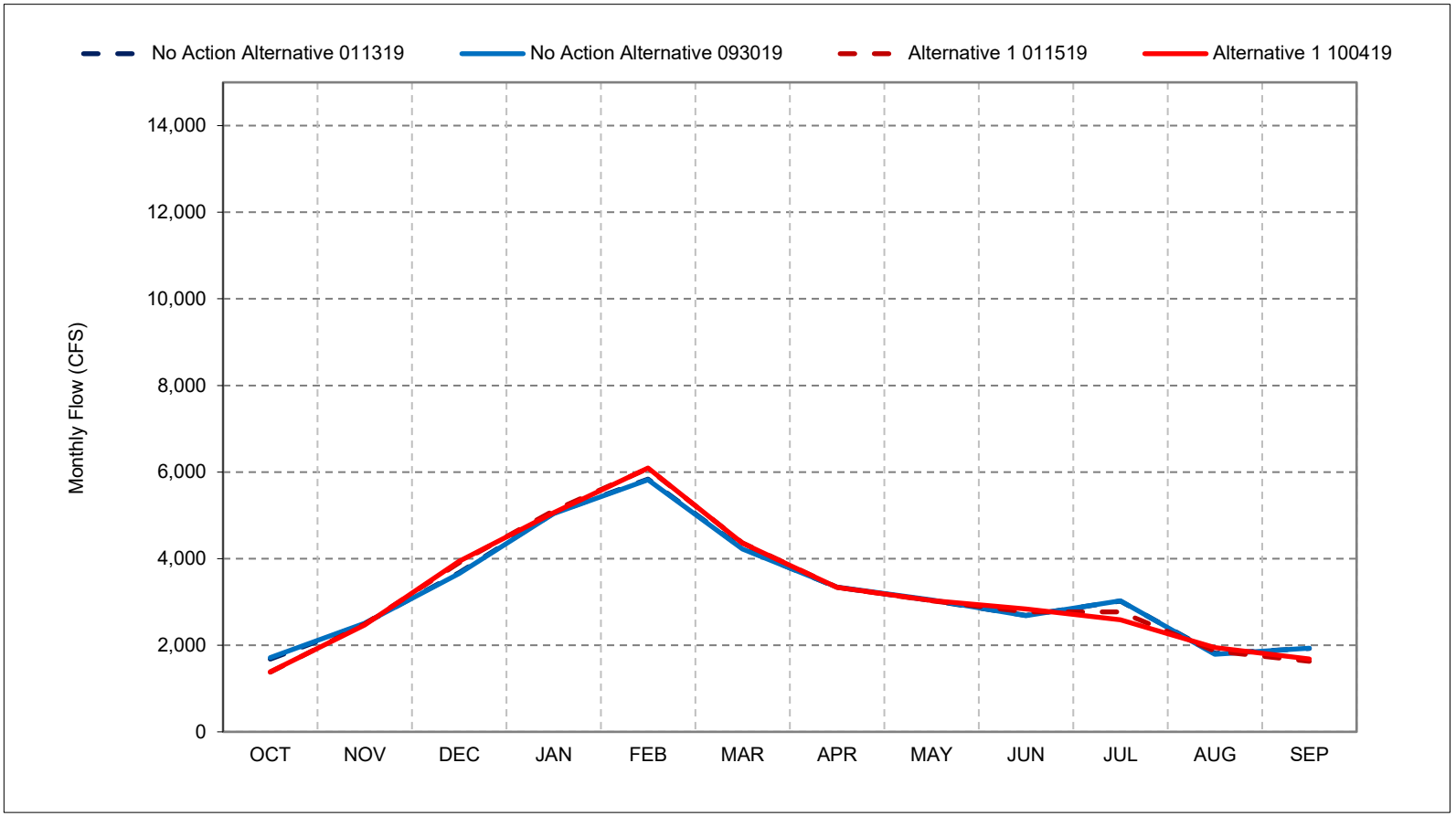
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-1. American River below Nimbus Dam Flow, Long-Term Average Flow

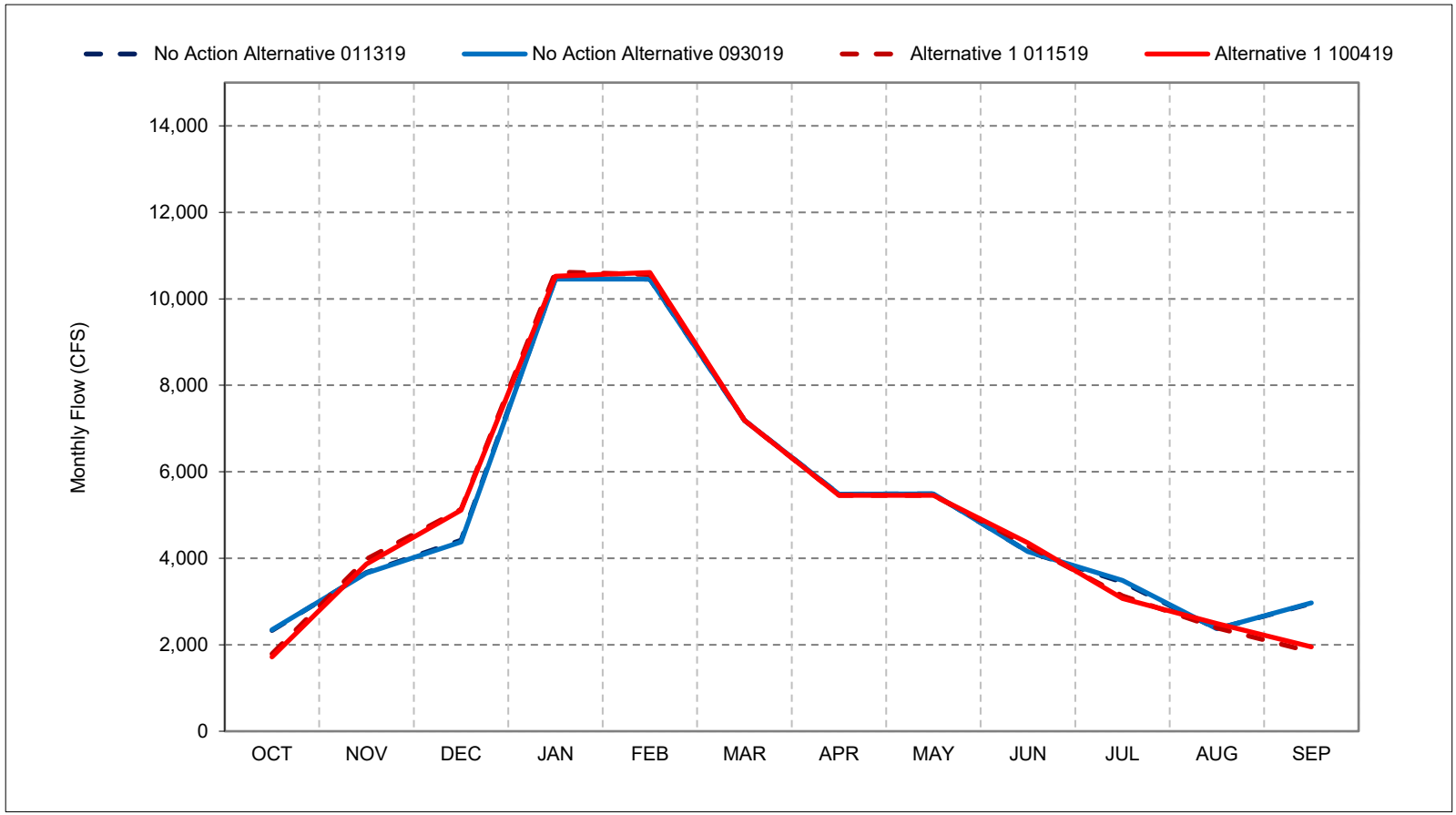



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-2. American River below Nimbus Dam Flow, Wet Year Average Flow

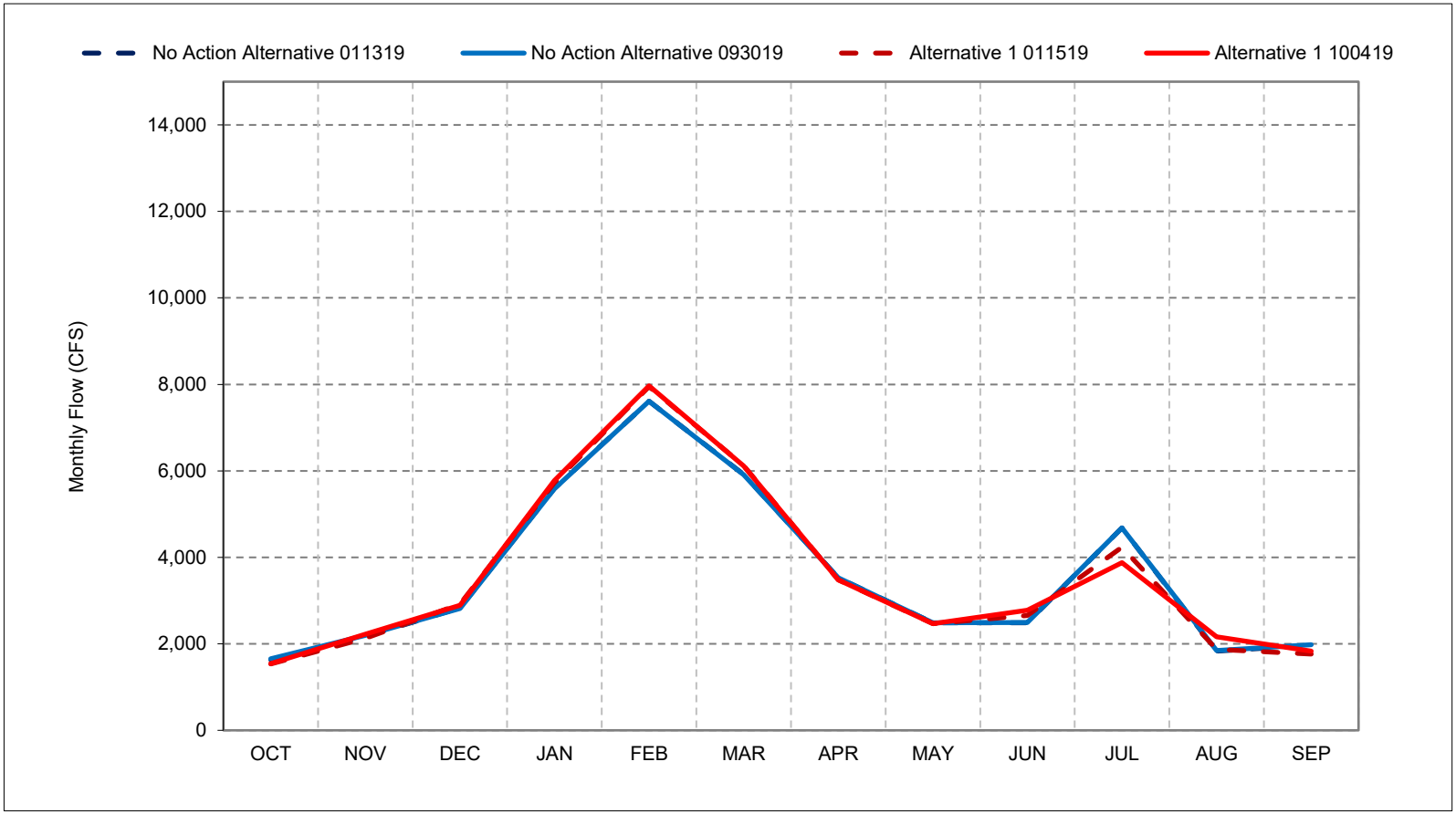



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-3. American River below Nimbus Dam Flow, Above Normal Year Average Flow

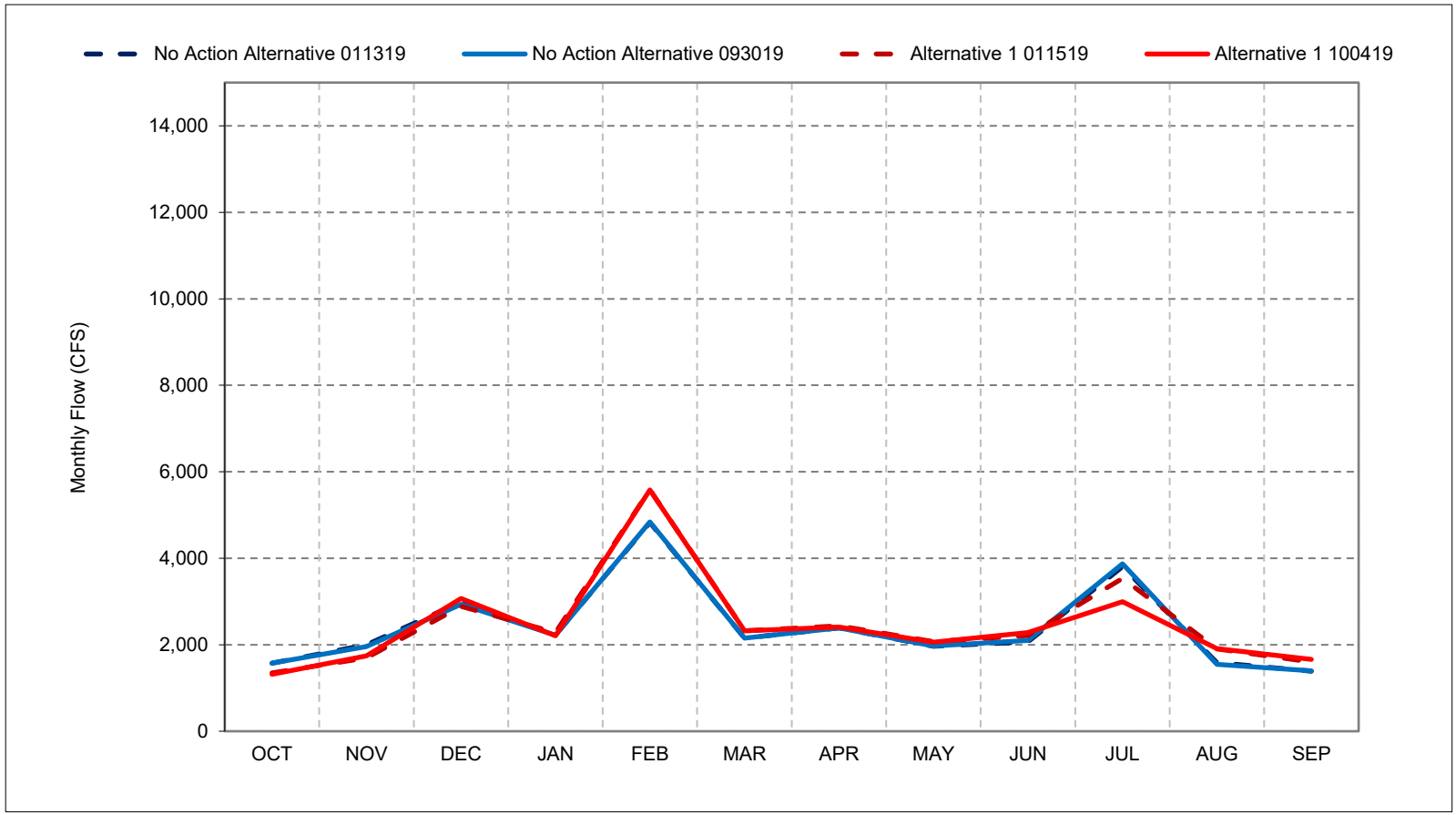



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-4. American River below Nimbus Dam Flow, Below Normal Year Average Flow

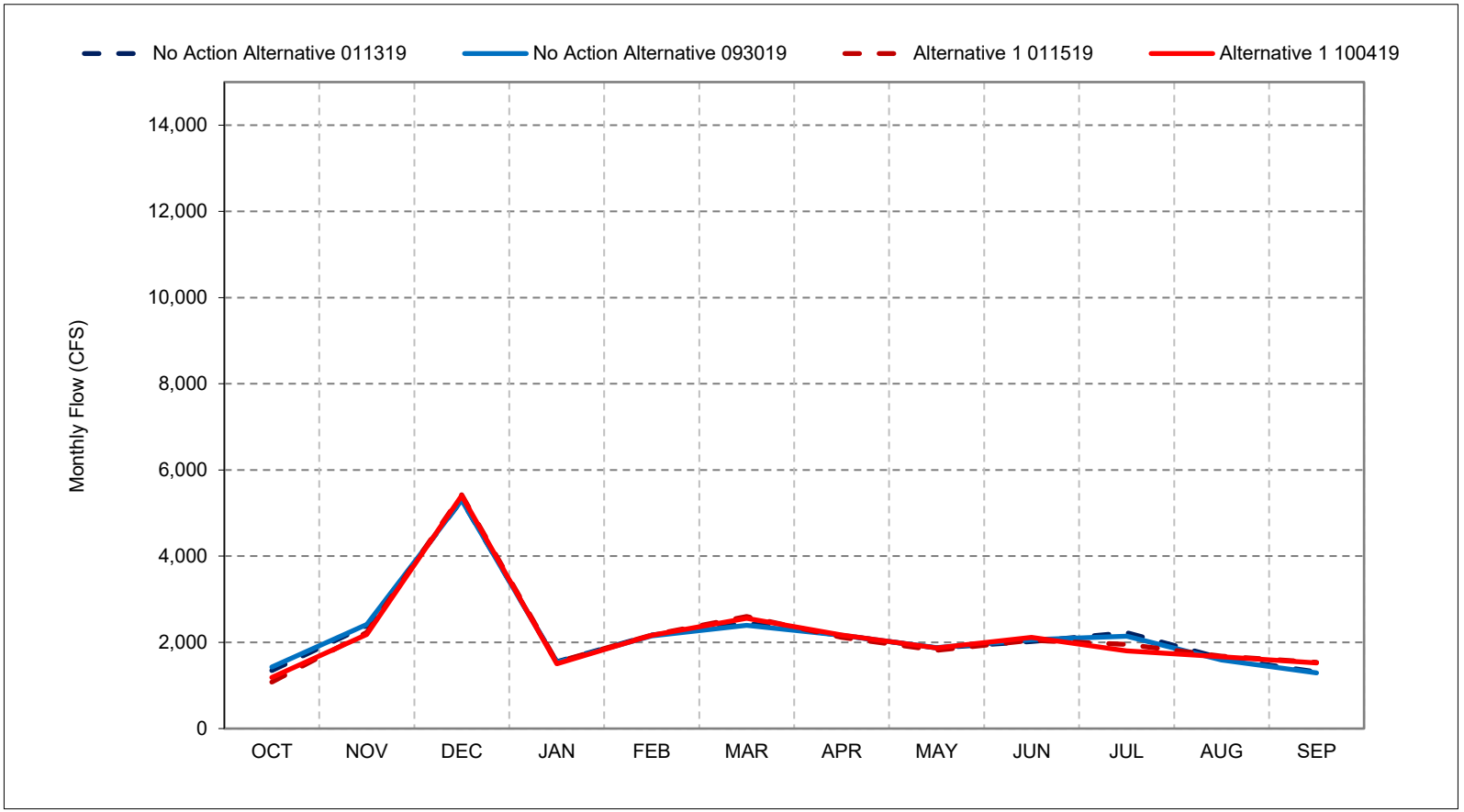



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-5. American River below Nimbus Dam Flow, Dry Year Average Flow

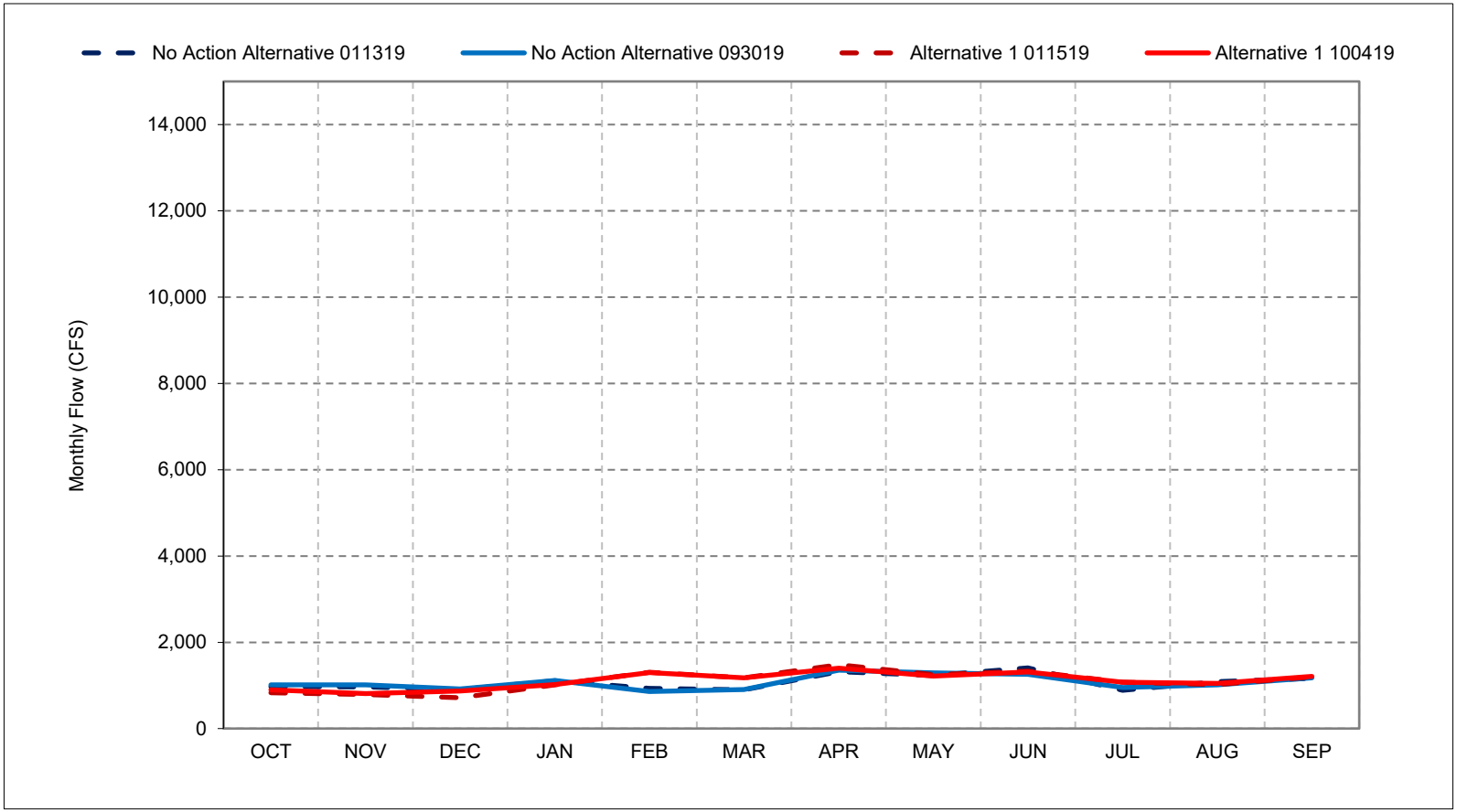



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 27-6. American River below Nimbus Dam Flow, Critical Year Average Flow

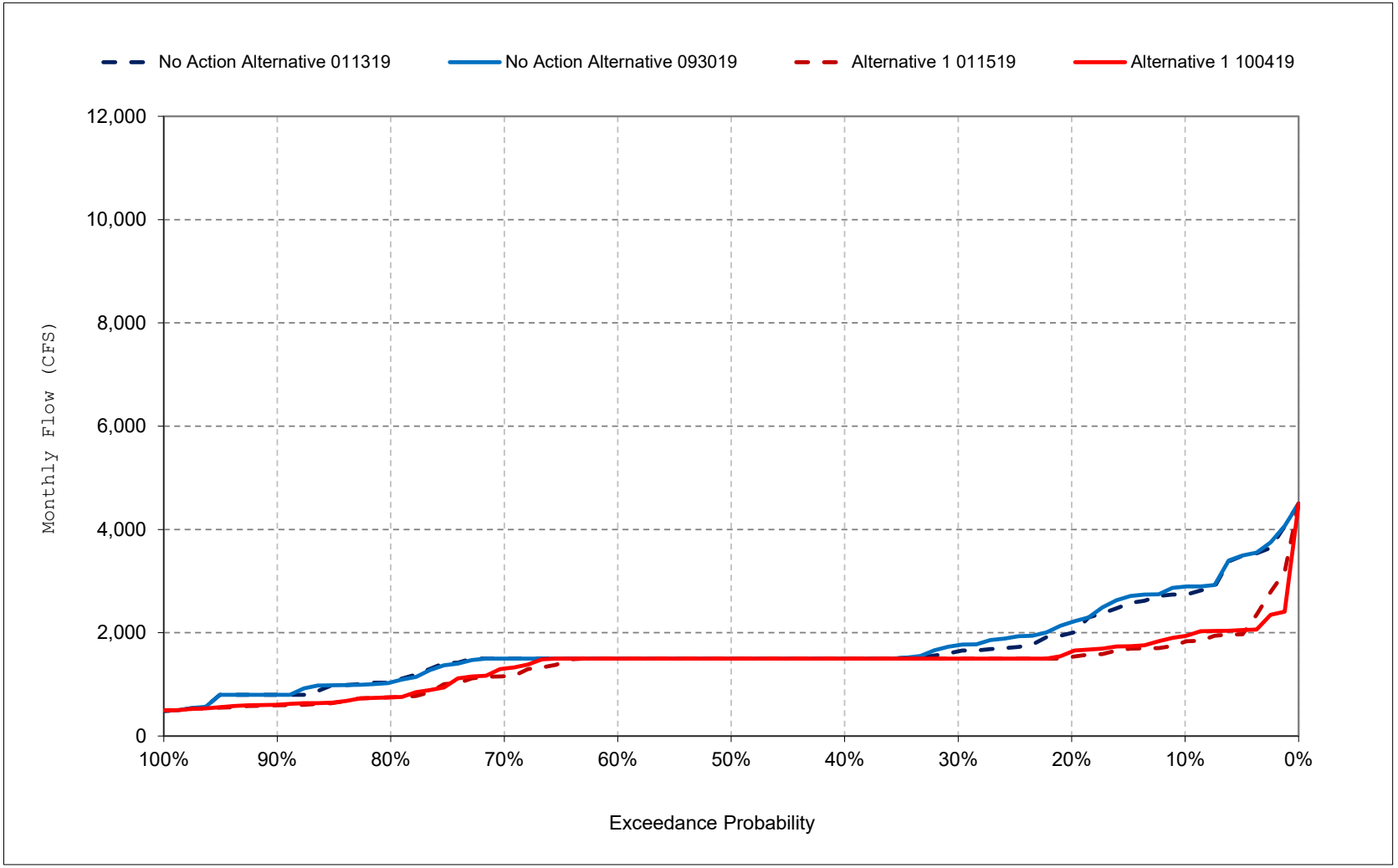



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

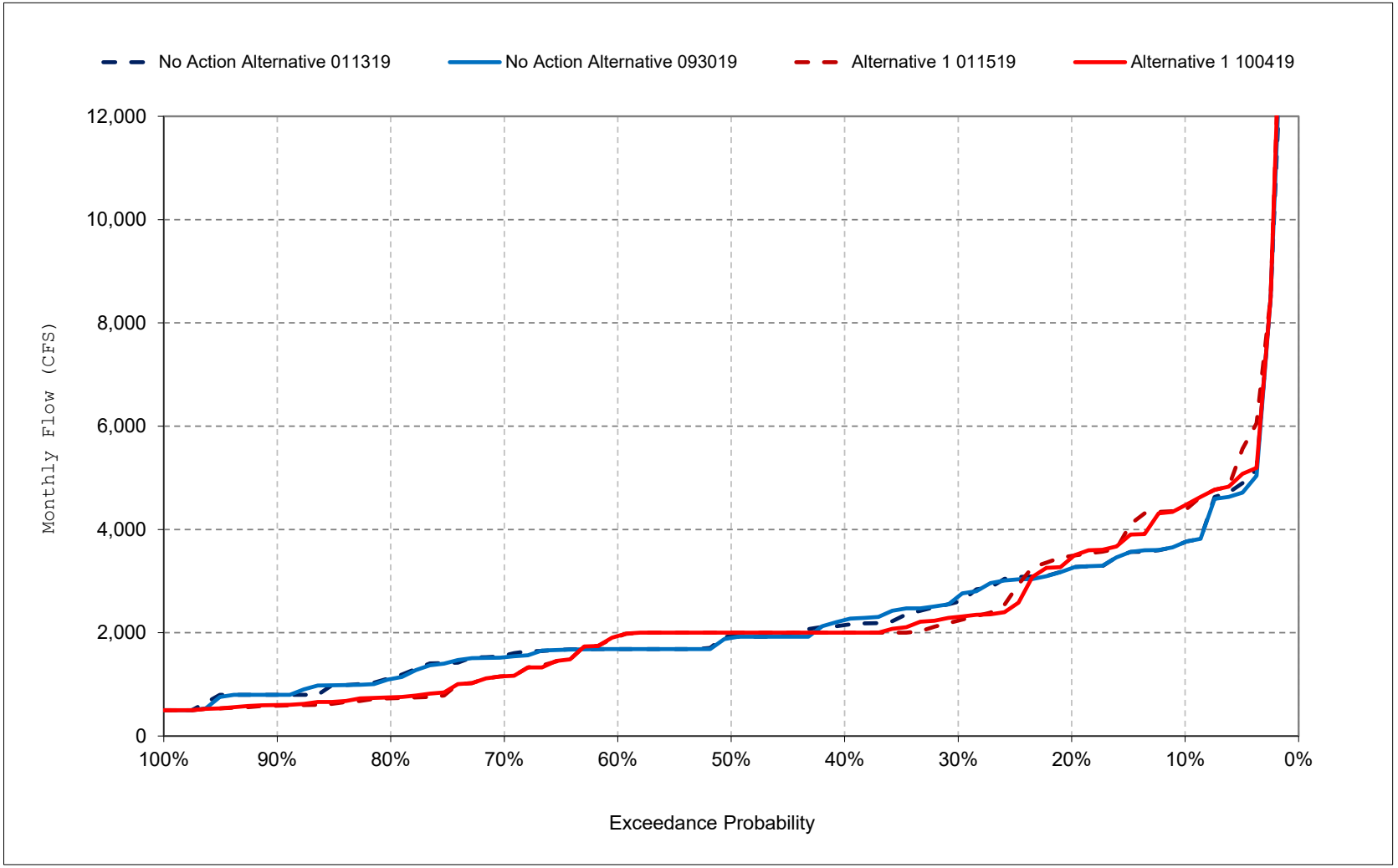
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-7. American River below Nimbus Dam Flow, October**



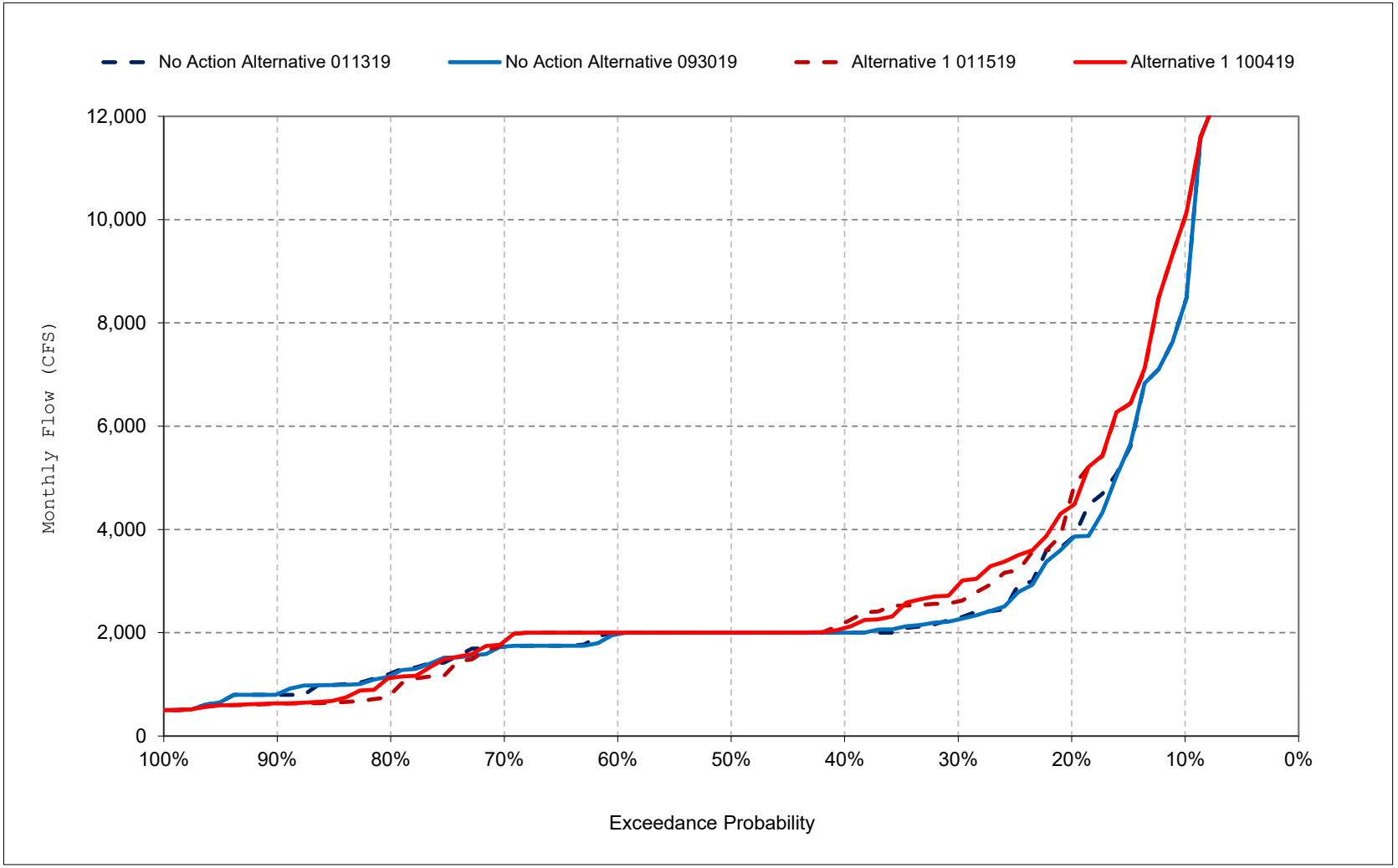

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-8. American River below Nimbus Dam Flow, November**



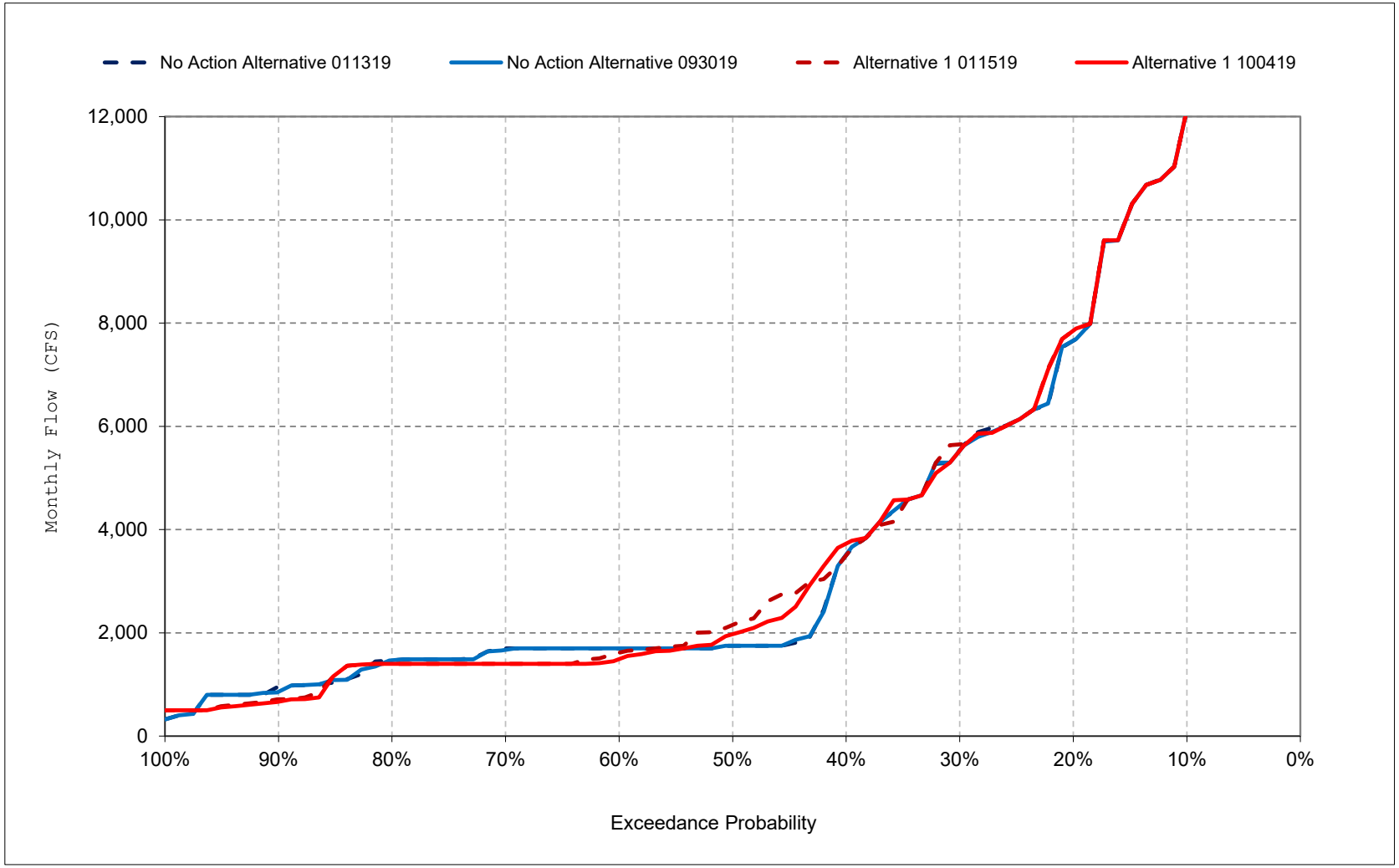

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-9. American River below Nimbus Dam Flow, December**



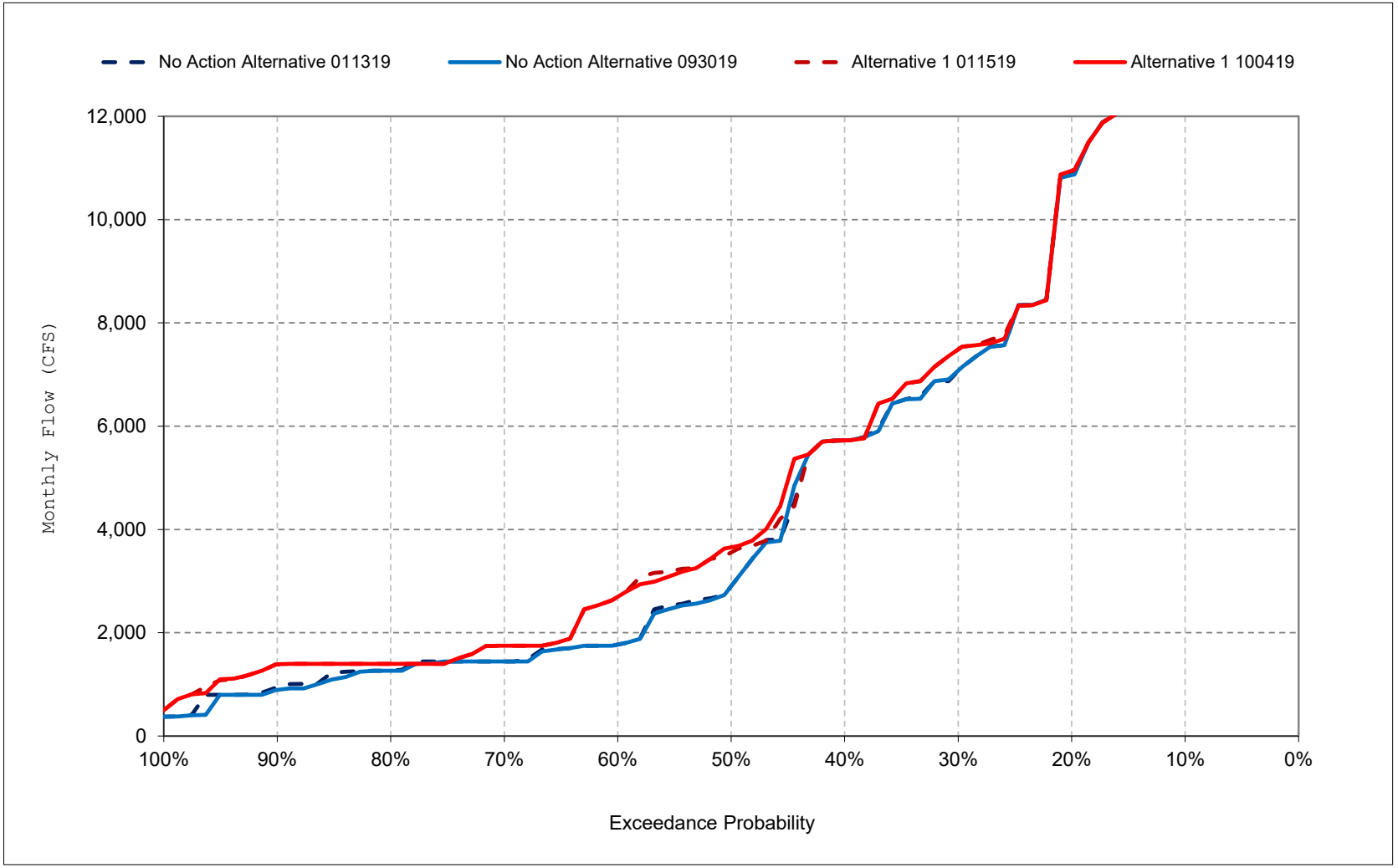

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-10. American River below Nimbus Dam Flow, January**



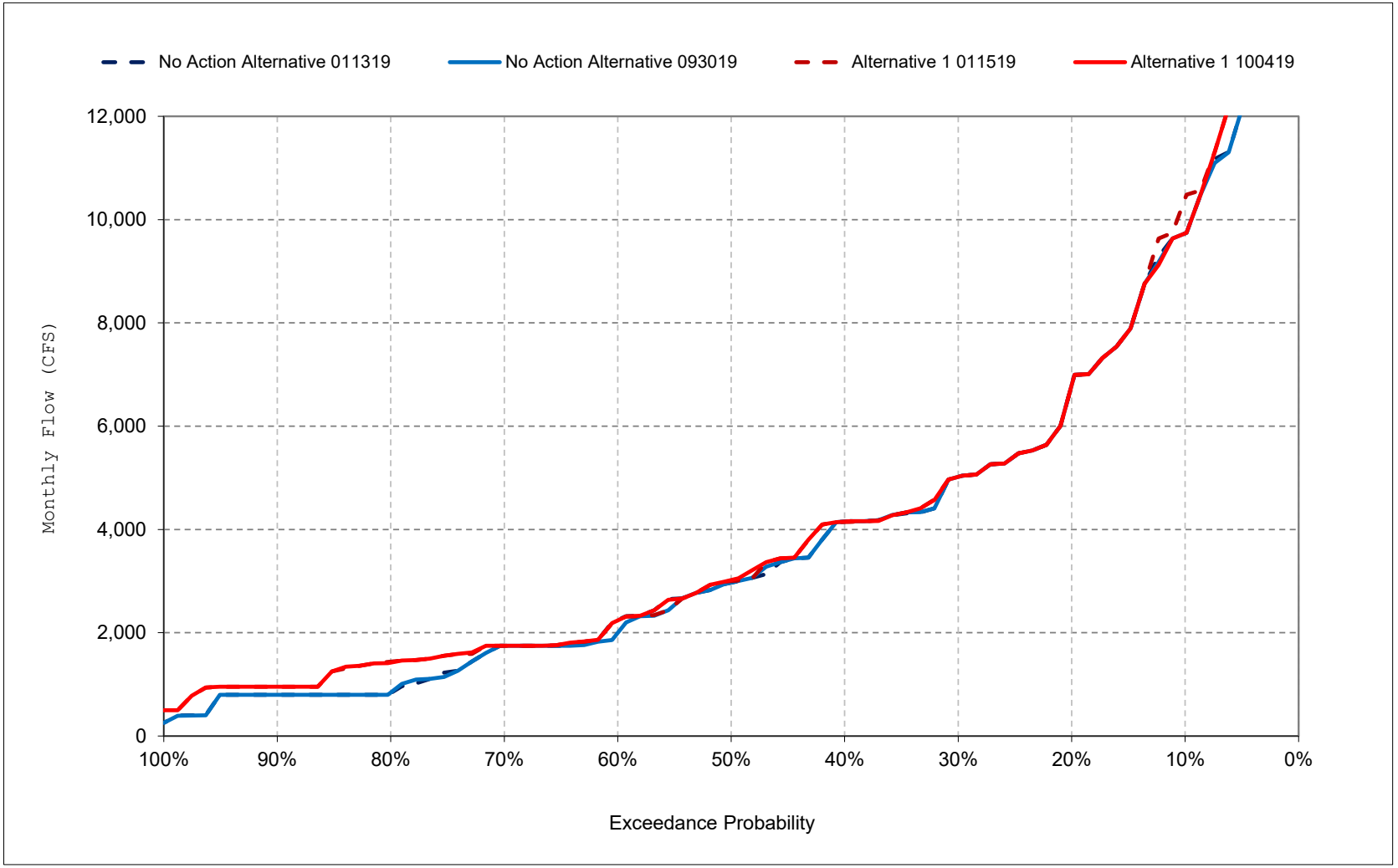

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-11. American River below Nimbus Dam Flow, February**



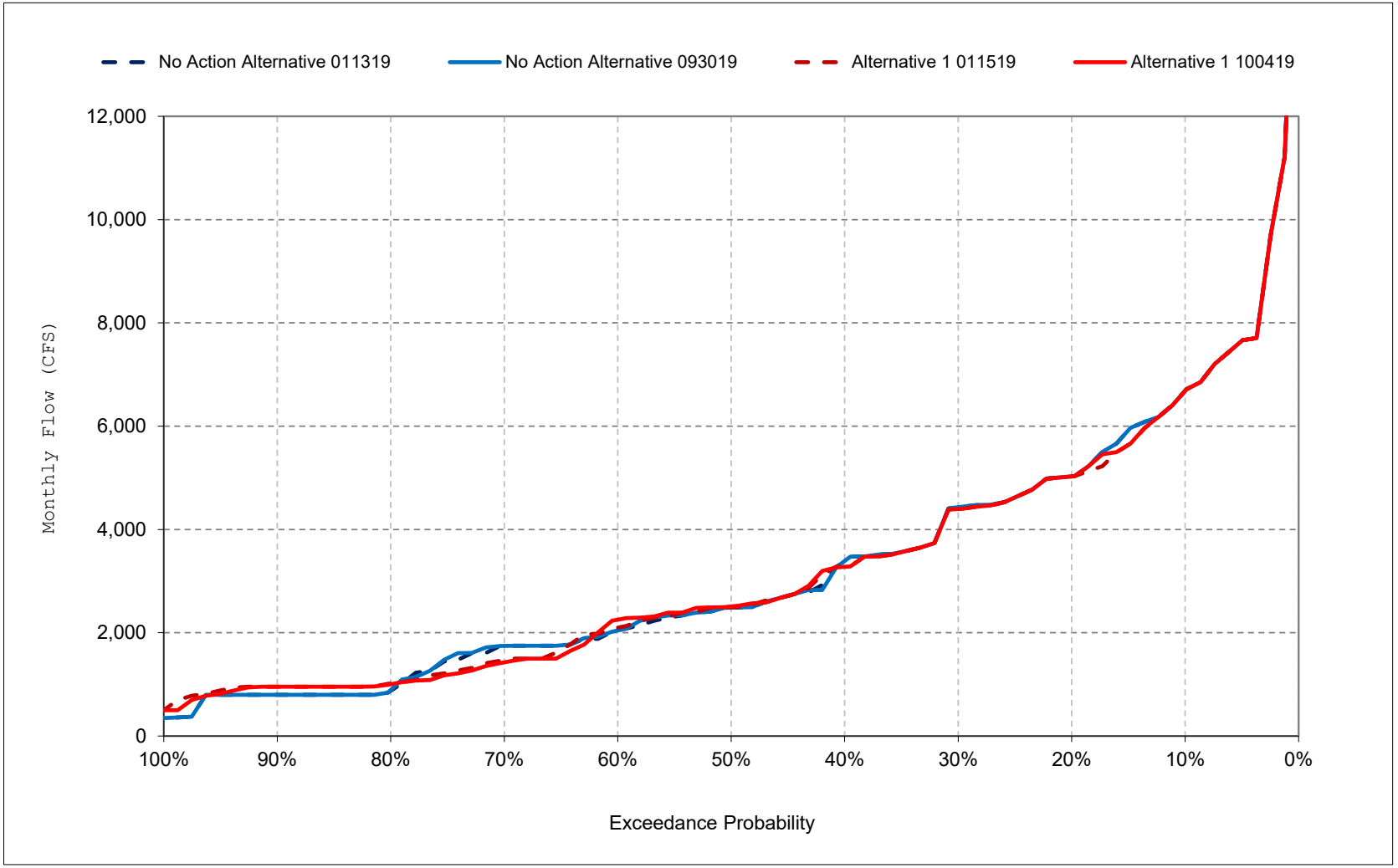

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-12. American River below Nimbus Dam Flow, March**



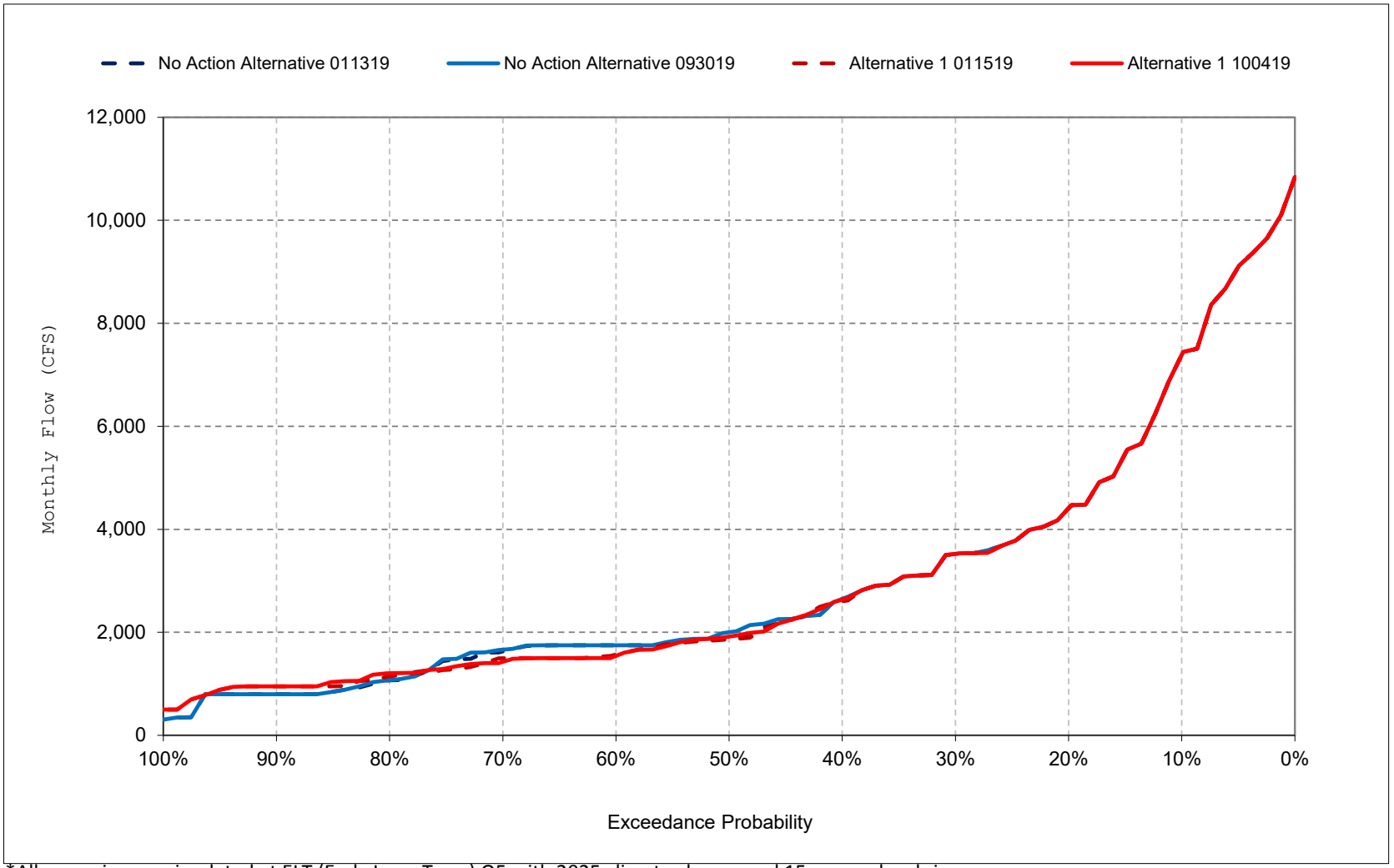

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-13. American River below Nimbus Dam Flow, April**



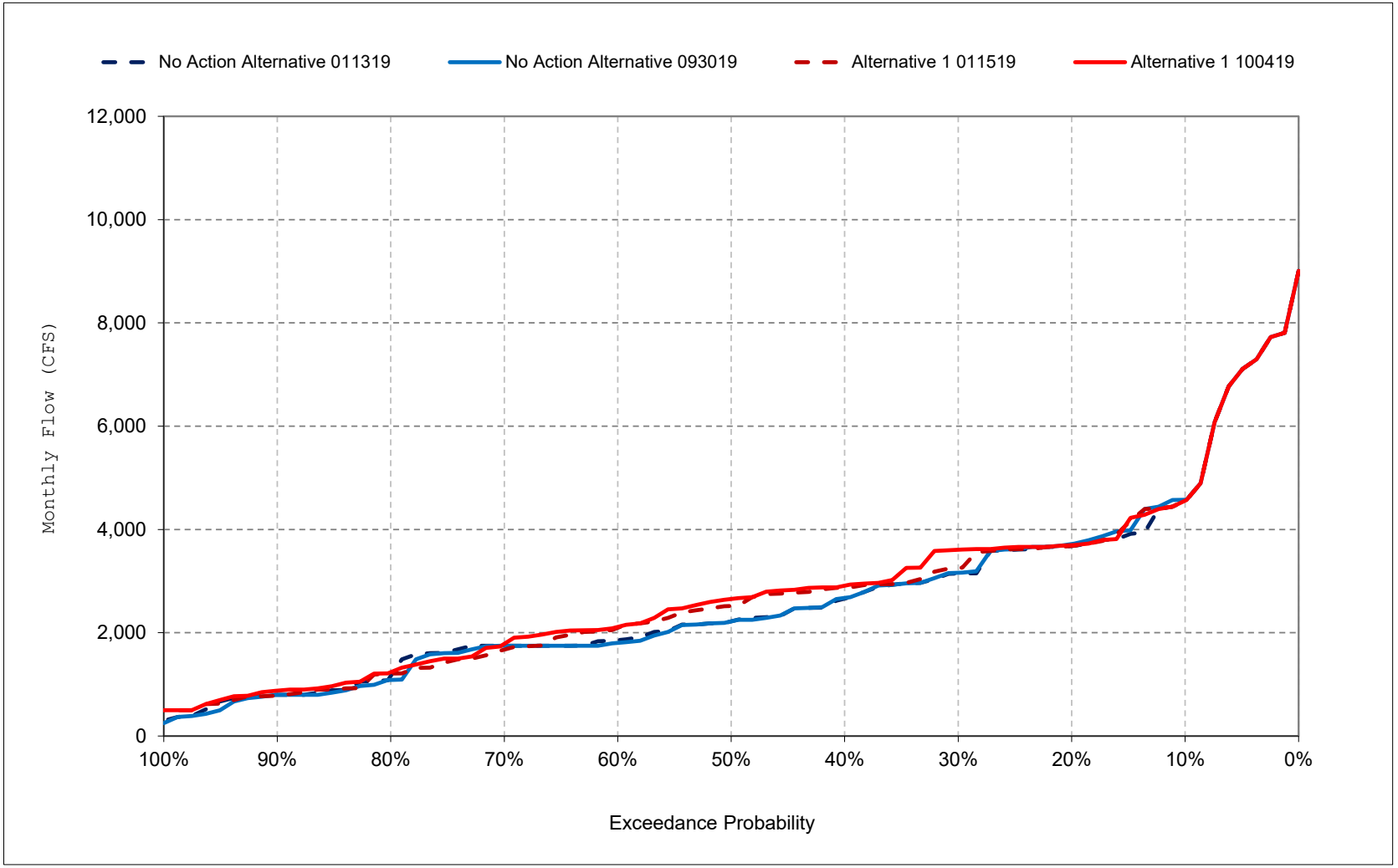

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-14. American River below Nimbus Dam Flow, May**



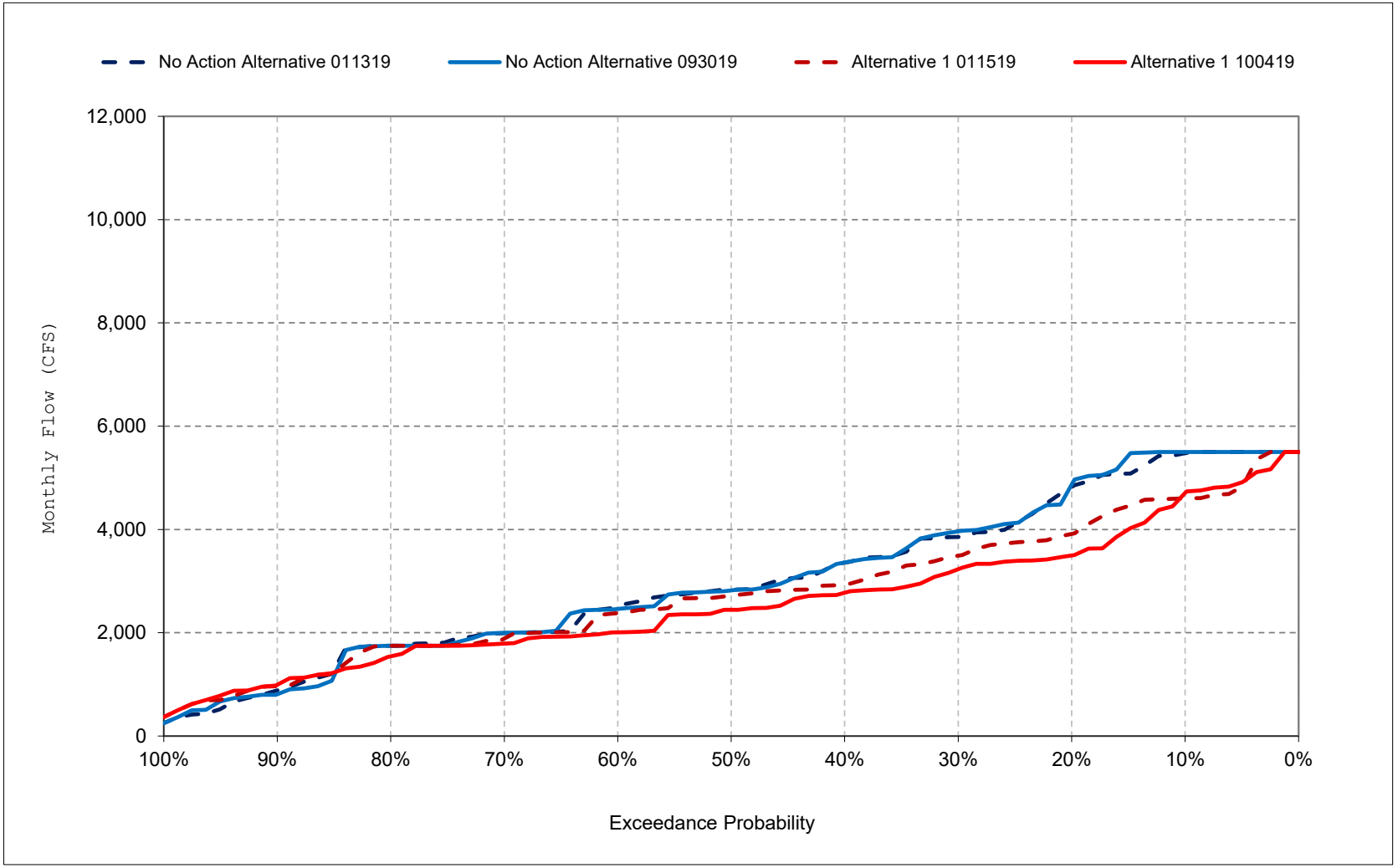

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-15. American River below Nimbus Dam Flow, June**



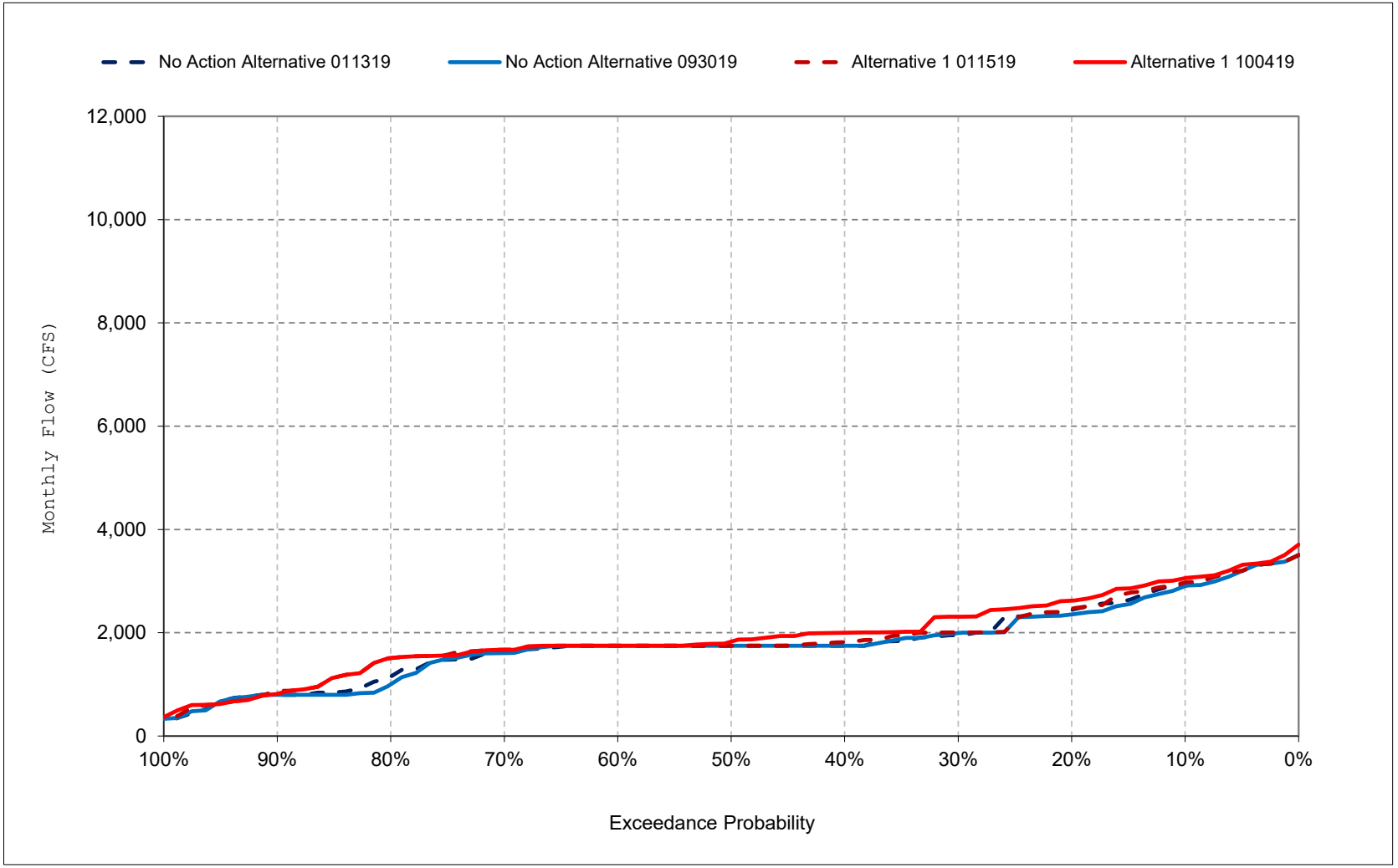

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-16. American River below Nimbus Dam Flow, July**



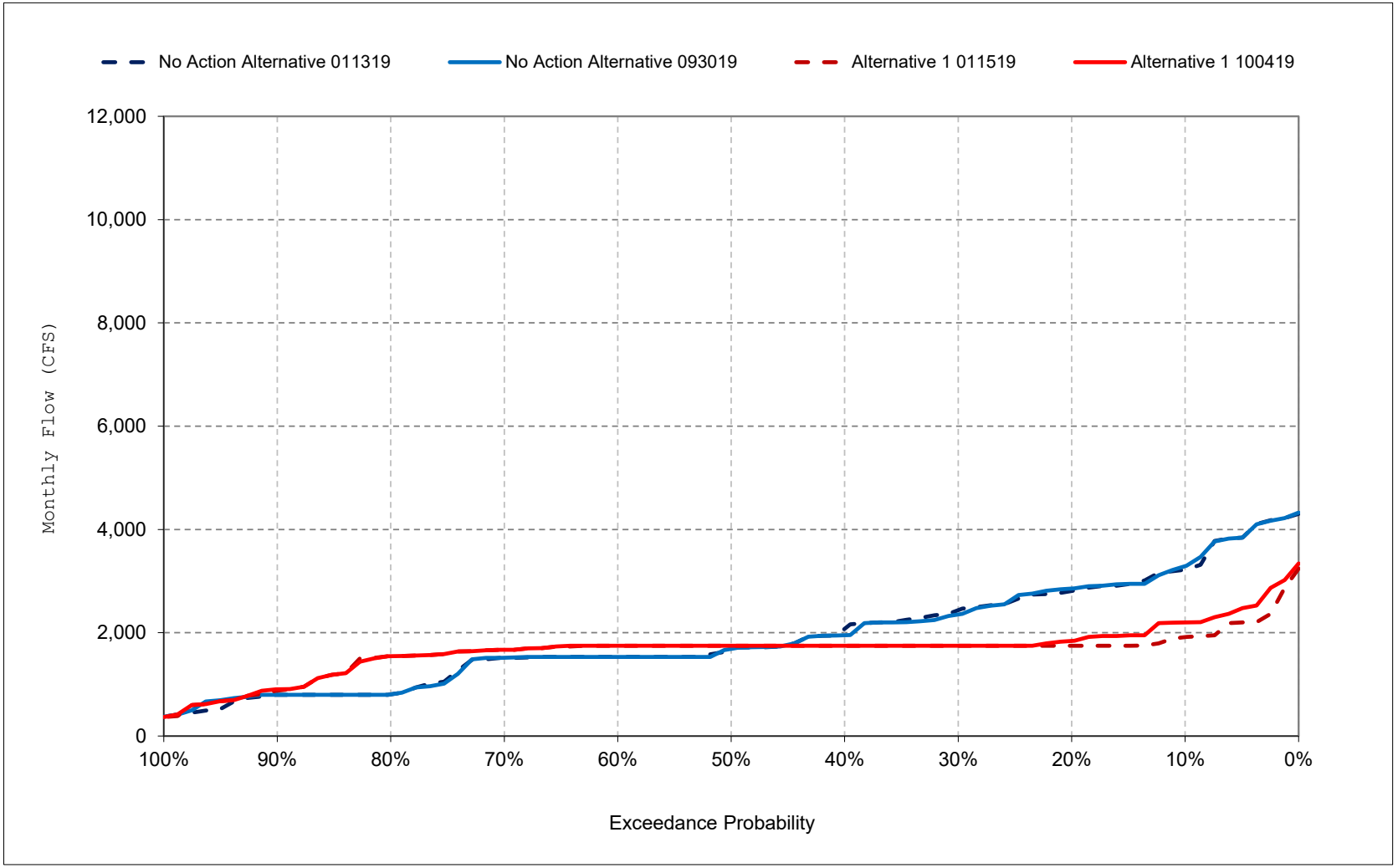

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-17. American River below Nimbus Dam Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 27-18. American River below Nimbus Dam Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 28-1. American River at H Street, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,436 | 3,529 | 8,214 | 11,989 | 14,510 | 9,475 | 6,247 | 6,818 | 3,852 | 4,842 | 2,337 | 2,753 |
| 20% | 1,854 | 3,050 | 3,613 | 7,335 | 10,688 | 6,579 | 4,612 | 3,824 | 3,062 | 4,225 | 1,875 | 2,381 |
| 30% | 1,474 | 2,341 | 2,077 | 5,318 | 6,812 | 4,827 | 3,948 | 3,000 | 2,892 | 3,243 | 1,693 | 2,026 |
| 40% | 1,364 | 1,996 | 1,887 | 3,415 | 5,506 | 3,858 | 3,000 | 2,437 | 2,413 | 2,707 | 1,503 | 1,750 |
| 50% | 1,343 | 1,763 | 1,859 | 1,598 | 2,664 | 2,821 | 2,275 | 1,697 | 1,970 | 2,173 | 1,486 | 1,463 |
| 60% | 1,330 | 1,547 | 1,825 | 1,560 | 1,612 | 2,057 | 1,843 | 1,547 | 1,615 | 1,813 | 1,476 | 1,332 |
| 70% | 1,316 | 1,476 | 1,579 | 1,514 | 1,323 | 1,573 | 1,527 | 1,439 | 1,502 | 1,748 | 1,393 | 1,316 |
| 80% | 919 | 973 | 1,082 | 1,308 | 1,150 | 715 | 717 | 870 | 938 | 1,484 | 925 | 648 |
| 90% | 650 | 687 | 707 | 822 | 783 | 622 | 619 | 612 | 565 | 630 | 551 | 599 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,499 | 2,341 | 3,538 | 4,886 | 5,643 | 4,033 | 3,057 | 2,732 | 2,328 | 2,531 | 1,474 | 1,637 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,098 | 3,470 | 4,257 | 10,282 | 10,189 | 6,940 | 5,145 | 5,068 | 3,669 | 2,891 | 1,951 | 2,548 |
| Above Normal (16%) | 1,464 | 2,015 | 2,699 | 5,444 | 7,426 | 5,688 | 3,174 | 2,204 | 2,156 | 4,051 | 1,515 | 1,677 |
| Below Normal (13%) | 1,410 | 1,845 | 2,841 | 2,064 | 4,659 | 1,952 | 2,136 | 1,686 | 1,719 | 3,224 | 1,265 | 1,158 |
| Dry (24%) | 1,194 | 2,257 | 5,157 | 1,415 | 2,023 | 2,292 | 1,935 | 1,633 | 1,735 | 1,811 | 1,320 | 1,106 |
| Critical (15%) | 829 | 842 | 828 | 964 | 799 | 749 | 1,118 | 1,028 | 1,159 | 665 | 846 | 943 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,660 | 4,262 | 9,951 | 11,969 | 14,510 | 10,212 | 6,247 | 6,818 | 3,855 | 3,964 | 2,386 | 1,700 |
| 20% | 1,414 | 3,281 | 4,509 | 7,617 | 10,744 | 6,579 | 4,613 | 3,831 | 3,062 | 3,270 | 1,883 | 1,554 |
| 30% | 1,358 | 2,000 | 2,435 | 5,445 | 7,106 | 4,824 | 3,947 | 3,000 | 2,996 | 2,863 | 1,750 | 1,547 |
| 40% | 1,343 | 1,875 | 1,982 | 3,412 | 5,494 | 3,888 | 3,000 | 2,395 | 2,619 | 2,321 | 1,550 | 1,547 |
| 50% | 1,329 | 1,853 | 1,869 | 1,986 | 3,391 | 2,841 | 2,309 | 1,645 | 2,255 | 2,084 | 1,497 | 1,541 |
| 60% | 1,324 | 1,778 | 1,846 | 1,443 | 2,437 | 2,035 | 1,897 | 1,376 | 1,851 | 1,750 | 1,484 | 1,538 |
| 70% | 990 | 1,064 | 1,681 | 1,255 | 1,584 | 1,583 | 1,268 | 1,270 | 1,437 | 1,638 | 1,425 | 1,469 |
| 80% | 612 | 620 | 655 | 1,238 | 1,273 | 1,333 | 840 | 965 | 971 | 1,478 | 1,254 | 1,345 |
| 90% | 445 | 459 | 500 | 579 | 1,221 | 802 | 769 | 756 | 548 | 735 | 625 | 693 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,218 | 2,335 | 3,761 | 4,943 | 5,883 | 4,163 | 3,060 | 2,721 | 2,408 | 2,285 | 1,535 | 1,413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,620 | 3,789 | 4,952 | 10,425 | 10,296 | 6,938 | 5,115 | 5,036 | 3,777 | 2,572 | 1,982 | 1,600 |
| Above Normal (16%) | 1,378 | 1,990 | 2,793 | 5,578 | 7,752 | 5,885 | 3,147 | 2,181 | 2,323 | 3,603 | 1,561 | 1,562 |
| Below Normal (13%) | 1,190 | 1,552 | 2,740 | 2,113 | 5,408 | 2,115 | 2,181 | 1,789 | 1,896 | 2,918 | 1,556 | 1,409 |
| Dry (24%) | 925 | 2,106 | 5,278 | 1,402 | 2,021 | 2,450 | 1,889 | 1,581 | 1,762 | 1,575 | 1,385 | 1,328 |
| Critical (15%) | 689 | 654 | 641 | 870 | 1,168 | 1,020 | 1,272 | 1,043 | 1,079 | 842 | 770 | 994 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -776 | 732 | 1,737 | -20 | 0 | 737 | 0 | 0 | 3 | -878 | 49 | -1,053 |
| 20% | -440 | 231 | 896 | 282 | 56 | 0 | 1 | 7 | 0 | -955 | 8 | -826 |
| 30% | -116 | -341 | 358 | 127 | 294 | -3 | -1 | 0 | 104 | -380 | 57 | -479 |
| 40% | -22 | -121 | 95 | -3 | -12 | 30 | 0 | -42 | 206 | -386 | 47 | -203 |
| 50% | -14 | 90 | 10 | 388 | 727 | 20 | 34 | -53 | 284 | -89 | 11 | 78 |
| 60% | -5 | 231 | 21 | -117 | 826 | -22 | 54 | -171 | 236 | -63 | 8 | 206 |
| 70% | -326 | -412 | 103 | -260 | 262 | 10 | -259 | -169 | -65 | -110 | 32 | 153 |
| 80% | -307 | -353 | -427 | -69 | 123 | 617 | 123 | 96 | 33 | -5 | 329 | 697 |
| 90% | -205 | -227 | -207 | -243 | 438 | 180 | 150 | 144 | -17 | 105 | 74 | 94 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -281 | -6 | 224 | 56 | 240 | 131 | 4 | -11 | 80 | -245 | 61 | -224 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -478 | 320 | 695 | 143 | 107 | -2 | -30 | -33 | 108 | -319 | 31 | -948 |
| Above Normal (16%) | -86 | -25 | 94 | 134 | 326 | 197 | -28 | -23 | 168 | -449 | 46 | -115 |
| Below Normal (13%) | -220 | -293 | -102 | 49 | 749 | 163 | 45 | 102 | 177 | -307 | 291 | 251 |
| Dry (24%) | -268 | -151 | 121 | -13 | -1 | 158 | -46 | -53 | 27 | -236 | 64 | 221 |
| Critical (15%) | -140 | -188 | -187 | -93 | 369 | 271 | 154 | 15 | -80 | 177 | -77 | 51 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-2. American River at H Street, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,585 | 3,530 | 8,214 | 11,989 | 14,510 | 9,476 | 6,247 | 6,818 | 3,949 | 4,871 | 2,323 | 2,845 |
| 20% | 1,954 | 3,051 | 3,590 | 7,341 | 10,626 | 6,579 | 4,612 | 3,824 | 3,096 | 4,286 | 1,800 | 2,427 |
| 30% | 1,568 | 2,441 | 2,041 | 5,320 | 6,812 | 4,829 | 3,949 | 3,000 | 2,908 | 3,323 | 1,735 | 1,945 |
| 40% | 1,364 | 2,027 | 1,914 | 3,416 | 5,507 | 3,858 | 3,000 | 2,437 | 2,426 | 2,707 | 1,503 | 1,750 |
| 50% | 1,339 | 1,733 | 1,859 | 1,598 | 2,649 | 2,822 | 2,275 | 1,806 | 1,973 | 2,179 | 1,486 | 1,485 |
| 60% | 1,326 | 1,539 | 1,816 | 1,555 | 1,612 | 1,807 | 1,845 | 1,554 | 1,562 | 1,757 | 1,476 | 1,330 |
| 70% | 1,313 | 1,407 | 1,566 | 1,514 | 1,318 | 1,571 | 1,527 | 1,476 | 1,492 | 1,750 | 1,360 | 1,323 |
| 80% | 879 | 1,007 | 1,043 | 1,308 | 1,137 | 725 | 738 | 874 | 848 | 1,485 | 767 | 648 |
| 90% | 657 | 703 | 764 | 732 | 759 | 622 | 619 | 612 | 563 | 583 | 537 | 601 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,531 | 2,344 | 3,517 | 4,880 | 5,627 | 4,021 | 3,062 | 2,742 | 2,323 | 2,536 | 1,456 | 1,644 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,114 | 3,458 | 4,217 | 10,270 | 10,185 | 6,940 | 5,145 | 5,068 | 3,668 | 2,932 | 1,950 | 2,564 |
| Above Normal (16%) | 1,477 | 2,032 | 2,689 | 5,442 | 7,426 | 5,684 | 3,174 | 2,204 | 2,162 | 4,052 | 1,530 | 1,688 |
| Below Normal (13%) | 1,412 | 1,806 | 2,784 | 2,055 | 4,675 | 1,952 | 2,141 | 1,690 | 1,755 | 3,253 | 1,262 | 1,188 |
| Dry (24%) | 1,268 | 2,273 | 5,154 | 1,404 | 1,997 | 2,242 | 1,936 | 1,638 | 1,780 | 1,725 | 1,285 | 1,083 |
| Critical (15%) | 872 | 881 | 838 | 971 | 724 | 759 | 1,151 | 1,091 | 1,010 | 730 | 771 | 953 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,766 | 4,186 | 9,959 | 11,969 | 14,510 | 9,476 | 6,247 | 6,818 | 3,852 | 4,075 | 2,514 | 1,750 |
| 20% | 1,472 | 3,242 | 4,297 | 7,618 | 10,744 | 6,579 | 4,613 | 3,829 | 3,077 | 2,868 | 2,066 | 1,634 |
| 30% | 1,361 | 2,063 | 2,715 | 5,267 | 7,106 | 4,825 | 3,947 | 3,000 | 3,000 | 2,628 | 1,750 | 1,553 |
| 40% | 1,343 | 1,901 | 1,973 | 3,675 | 5,489 | 3,884 | 3,000 | 2,429 | 2,663 | 2,116 | 1,750 | 1,547 |
| 50% | 1,329 | 1,858 | 1,869 | 1,827 | 3,492 | 2,863 | 2,338 | 1,718 | 2,411 | 1,752 | 1,572 | 1,541 |
| 60% | 1,324 | 1,799 | 1,842 | 1,356 | 2,438 | 2,040 | 2,034 | 1,354 | 1,870 | 1,743 | 1,495 | 1,537 |
| 70% | 1,144 | 1,064 | 1,684 | 1,255 | 1,588 | 1,583 | 1,231 | 1,232 | 1,547 | 1,532 | 1,427 | 1,469 |
| 80% | 612 | 659 | 1,001 | 1,239 | 1,273 | 1,333 | 804 | 1,012 | 999 | 1,301 | 1,258 | 1,345 |
| 90% | 461 | 465 | 544 | 564 | 1,221 | 802 | 760 | 758 | 638 | 753 | 583 | 713 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,230 | 2,311 | 3,796 | 4,899 | 5,895 | 4,152 | 3,057 | 2,728 | 2,459 | 2,125 | 1,595 | 1,452 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,553 | 3,681 | 4,941 | 10,331 | 10,338 | 6,938 | 5,115 | 5,036 | 3,846 | 2,524 | 2,036 | 1,681 |
| Above Normal (16%) | 1,386 | 2,076 | 2,764 | 5,622 | 7,769 | 5,883 | 3,147 | 2,183 | 2,418 | 3,244 | 1,807 | 1,613 |
| Below Normal (13%) | 1,165 | 1,590 | 2,926 | 2,034 | 5,402 | 2,116 | 2,154 | 1,780 | 1,933 | 2,485 | 1,570 | 1,448 |
| Dry (24%) | 1,033 | 2,058 | 5,258 | 1,360 | 2,013 | 2,402 | 1,940 | 1,632 | 1,816 | 1,448 | 1,373 | 1,317 |
| Critical (15%) | 748 | 678 | 792 | 874 | 1,161 | 1,020 | 1,192 | 1,010 | 1,055 | 845 | 801 | 1,008 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -819 | 657 | 1,745 | -20 | 0 | 0 | 0 | 0 | -97 | -795 | 190 | -1,095 |
| 20% | -482 | 191 | 707 | 277 | 118 | 0 | 1 | 4 | -19 | -1,419 | 266 | -793 |
| 30% | -208 | -378 | 674 | -53 | 294 | -4 | -2 | 0 | 92 | -696 | 15 | -392 |
| 40% | -22 | -126 | 60 | 259 | -18 | 26 | 0 | -8 | 237 | -591 | 247 | -203 |
| 50% | -10 | 125 | 10 | 230 | 842 | 42 | 62 | -88 | 438 | -427 | 86 | 56 |
| 60% | -1 | 260 | 26 | -199 | 826 | 234 | 189 | -200 | 308 | -13 | 19 | 207 |
| 70% | -170 | -343 | 118 | -260 | 271 | 12 | -295 | -244 | 55 | -218 | 66 | 146 |
| 80% | -267 | -347 | -42 | -69 | 135 | 608 | 66 | 138 | 151 | -184 | 491 | 697 |
| 90% | -196 | -238 | -220 | -168 | 462 | 180 | 140 | 146 | 75 | 169 | 46 | 112 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -301 | -33 | 279 | 20 | 268 | 130 | -5 | -15 | 136 | -411 | 139 | -192 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -562 | 223 | 724 | 60 | 153 | -2 | -30 | -33 | 178 | -409 | 87 | -882 |
| Above Normal (16%) | -91 | 44 | 75 | 180 | 342 | 199 | -27 | -21 | 256 | -808 | 278 | -75 |
| Below Normal (13%) | -247 | -216 | 141 | -21 | 728 | 163 | 13 | 91 | 178 | -768 | 308 | 260 |
| Dry (24%) | -236 | -215 | 103 | -44 | 16 | 160 | 4 | -6 | 36 | -277 | 87 | 233 |
| Critical (15%) | -124 | -203 | -45 | -97 | 437 | 261 | 40 | -81 | 45 | 115 | 30 | 55 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-3. American River at H Street, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,436 | 3,529 | 8,214 | 11,989 | 14,510 | 9,475 | 6,247 | 6,818 | 3,852 | 4,842 | 2,337 | 2,753 |
| 20% | 1,854 | 3,050 | 3,613 | 7,335 | 10,688 | 6,579 | 4,612 | 3,824 | 3,062 | 4,225 | 1,875 | 2,381 |
| 30% | 1,474 | 2,341 | 2,077 | 5,318 | 6,812 | 4,827 | 3,948 | 3,000 | 2,892 | 3,243 | 1,693 | 2,026 |
| 40% | 1,364 | 1,996 | 1,887 | 3,415 | 5,506 | 3,858 | 3,000 | 2,437 | 2,413 | 2,707 | 1,503 | 1,750 |
| 50% | 1,343 | 1,763 | 1,859 | 1,598 | 2,664 | 2,821 | 2,275 | 1,697 | 1,970 | 2,173 | 1,486 | 1,463 |
| 60% | 1,330 | 1,547 | 1,825 | 1,560 | 1,612 | 2,057 | 1,843 | 1,547 | 1,615 | 1,813 | 1,476 | 1,332 |
| 70% | 1,316 | 1,476 | 1,579 | 1,514 | 1,323 | 1,573 | 1,527 | 1,439 | 1,502 | 1,748 | 1,393 | 1,316 |
| 80% | 919 | 973 | 1,082 | 1,308 | 1,150 | 715 | 717 | 870 | 938 | 1,484 | 925 | 648 |
| 90% | 650 | 687 | 707 | 822 | 783 | 622 | 619 | 612 | 565 | 630 | 551 | 599 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,499 | 2,341 | 3,538 | 4,886 | 5,643 | 4,033 | 3,057 | 2,732 | 2,328 | 2,531 | 1,474 | 1,637 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,098 | 3,470 | 4,257 | 10,282 | 10,189 | 6,940 | 5,145 | 5,068 | 3,669 | 2,891 | 1,951 | 2,548 |
| Above Normal (16%) | 1,464 | 2,015 | 2,699 | 5,444 | 7,426 | 5,688 | 3,174 | 2,204 | 2,156 | 4,051 | 1,515 | 1,677 |
| Below Normal (13%) | 1,410 | 1,845 | 2,841 | 2,064 | 4,659 | 1,952 | 2,136 | 1,686 | 1,719 | 3,224 | 1,265 | 1,158 |
| Dry (24%) | 1,194 | 2,257 | 5,157 | 1,415 | 2,023 | 2,292 | 1,935 | 1,633 | 1,735 | 1,811 | 1,320 | 1,106 |
| Critical (15%) | 829 | 842 | 828 | 964 | 799 | 749 | 1,118 | 1,028 | 1,159 | 665 | 846 | 943 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,585 | 3,530 | 8,214 | 11,989 | 14,510 | 9,476 | 6,247 | 6,818 | 3,949 | 4,871 | 2,323 | 2,845 |
| 20% | 1,954 | 3,051 | 3,590 | 7,341 | 10,626 | 6,579 | 4,612 | 3,824 | 3,096 | 4,286 | 1,800 | 2,427 |
| 30% | 1,568 | 2,441 | 2,041 | 5,320 | 6,812 | 4,829 | 3,949 | 3,000 | 2,908 | 3,323 | 1,735 | 1,945 |
| 40% | 1,364 | 2,027 | 1,914 | 3,416 | 5,507 | 3,858 | 3,000 | 2,437 | 2,426 | 2,707 | 1,503 | 1,750 |
| 50% | 1,339 | 1,733 | 1,859 | 1,598 | 2,649 | 2,822 | 2,275 | 1,806 | 1,973 | 2,179 | 1,486 | 1,485 |
| 60% | 1,326 | 1,539 | 1,816 | 1,555 | 1,612 | 1,807 | 1,845 | 1,554 | 1,562 | 1,757 | 1,476 | 1,330 |
| 70% | 1,313 | 1,407 | 1,566 | 1,514 | 1,318 | 1,571 | 1,527 | 1,476 | 1,492 | 1,750 | 1,360 | 1,323 |
| 80% | 879 | 1,007 | 1,043 | 1,308 | 1,137 | 725 | 738 | 874 | 848 | 1,485 | 767 | 648 |
| 90% | 657 | 703 | 764 | 732 | 759 | 622 | 619 | 612 | 563 | 583 | 537 | 601 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,531 | 2,344 | 3,517 | 4,880 | 5,627 | 4,021 | 3,062 | 2,742 | 2,323 | 2,536 | 1,456 | 1,644 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,114 | 3,458 | 4,217 | 10,270 | 10,185 | 6,940 | 5,145 | 5,068 | 3,668 | 2,932 | 1,950 | 2,564 |
| Above Normal (16%) | 1,477 | 2,032 | 2,689 | 5,442 | 7,426 | 5,684 | 3,174 | 2,204 | 2,162 | 4,052 | 1,530 | 1,688 |
| Below Normal (13%) | 1,412 | 1,806 | 2,784 | 2,055 | 4,675 | 1,952 | 2,141 | 1,690 | 1,755 | 3,253 | 1,262 | 1,188 |
| Dry (24%) | 1,268 | 2,273 | 5,154 | 1,404 | 1,997 | 2,242 | 1,936 | 1,638 | 1,780 | 1,725 | 1,285 | 1,083 |
| Critical (15%) | 872 | 881 | 838 | 971 | 724 | 759 | 1,151 | 1,091 | 1,010 | 730 | 771 | 953 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 149 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 97 | 29 | **-14** | 93 |
| 20% | 101 | 1 | **-23** | 6 | **-62** | 0 | **0** | 0 | 34 | 61 | **-75** | 46 |
| 30% | 94 | 100 | **-36** | 2 | **0** | 2 | 1 | 0 | 16 | 80 | 42 | **-81** |
| 40% | **0** | 31 | 27 | 1 | 1 | 0 | 0 | 0 | 13 | 0 | **0** | 0 |
| 50% | **-4** | **-30** | 0 | **0** | **-14** | 0 | 0 | 109 | 3 | 7 | **0** | 22 |
| 60% | **-4** | **-8** | **-9** | **-5** | **0** | **-250** | 2 | 7 | **-53** | **-57** | 0 | **-1** |
| 70% | **-3** | **-69** | **-13** | **0** | **-5** | **-2** | 0 | 37 | **-10** | 2 | **-33** | 7 |
| 80% | **-40** | 34 | **-39** | 0 | **-12** | 9 | 21 | 4 | **-90** | 2 | **-157** | 0 |
| 90% | 7 | 16 | 57 | **-90** | **-24** | 0 | **0** | 0 | **-1** | **-47** | **-14** | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 32 | 4 | **-21** | **-7** | **-16** | **-11** | 6 | 11 | **-5** | 6 | **-18** | 7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 16 | **-11** | **-40** | **-12** | **-4** | 0 | 0 | **0** | **-1** | 41 | **-2** | 16 |
| Above Normal (16%) | 13 | 17 | **-10** | **-2** | 1 | **-4** | **0** | 0 | 6 | 1 | 15 | 11 |
| Below Normal (13%) | 1 | **-39** | **-57** | **-9** | 16 | **0** | 5 | 4 | 36 | 29 | **-3** | 30 |
| Dry (24%) | 75 | 17 | **-2** | **-11** | **-25** | **-50** | 1 | 4 | 45 | **-86** | **-35** | **-23** |
| Critical (15%) | 43 | 39 | 10 | 7 | **-75** | 10 | 34 | 63 | **-149** | 65 | **-75** | 10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-4. American River at H Street, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,660 | 4,262 | 9,951 | 11,969 | 14,510 | 10,212 | 6,247 | 6,818 | 3,855 | 3,964 | 2,386 | 1,700 |
| 20% | 1,414 | 3,281 | 4,509 | 7,617 | 10,744 | 6,579 | 4,613 | 3,831 | 3,062 | 3,270 | 1,883 | 1,554 |
| 30% | 1,358 | 2,000 | 2,435 | 5,445 | 7,106 | 4,824 | 3,947 | 3,000 | 2,996 | 2,863 | 1,750 | 1,547 |
| 40% | 1,343 | 1,875 | 1,982 | 3,412 | 5,494 | 3,888 | 3,000 | 2,395 | 2,619 | 2,321 | 1,550 | 1,547 |
| 50% | 1,329 | 1,853 | 1,869 | 1,986 | 3,391 | 2,841 | 2,309 | 1,645 | 2,255 | 2,084 | 1,497 | 1,541 |
| 60% | 1,324 | 1,778 | 1,846 | 1,443 | 2,437 | 2,035 | 1,897 | 1,376 | 1,851 | 1,750 | 1,484 | 1,538 |
| 70% | 990 | 1,064 | 1,681 | 1,255 | 1,584 | 1,583 | 1,268 | 1,270 | 1,437 | 1,638 | 1,425 | 1,469 |
| 80% | 612 | 620 | 655 | 1,238 | 1,273 | 1,333 | 840 | 965 | 971 | 1,478 | 1,254 | 1,345 |
| 90% | 445 | 459 | 500 | 579 | 1,221 | 802 | 769 | 756 | 548 | 735 | 625 | 693 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,218 | 2,335 | 3,761 | 4,943 | 5,883 | 4,163 | 3,060 | 2,721 | 2,408 | 2,285 | 1,535 | 1,413 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,620 | 3,789 | 4,952 | 10,425 | 10,296 | 6,938 | 5,115 | 5,036 | 3,777 | 2,572 | 1,982 | 1,600 |
| Above Normal (16%) | 1,378 | 1,990 | 2,793 | 5,578 | 7,752 | 5,885 | 3,147 | 2,181 | 2,323 | 3,603 | 1,561 | 1,562 |
| Below Normal (13%) | 1,190 | 1,552 | 2,740 | 2,113 | 5,408 | 2,115 | 2,181 | 1,789 | 1,896 | 2,918 | 1,556 | 1,409 |
| Dry (24%) | 925 | 2,106 | 5,278 | 1,402 | 2,021 | 2,450 | 1,889 | 1,581 | 1,762 | 1,575 | 1,385 | 1,328 |
| Critical (15%) | 689 | 654 | 641 | 870 | 1,168 | 1,020 | 1,272 | 1,043 | 1,079 | 842 | 770 | 994 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,766 | 4,186 | 9,959 | 11,969 | 14,510 | 9,476 | 6,247 | 6,818 | 3,852 | 4,075 | 2,514 | 1,750 |
| 20% | 1,472 | 3,242 | 4,297 | 7,618 | 10,744 | 6,579 | 4,613 | 3,829 | 3,077 | 2,868 | 2,066 | 1,634 |
| 30% | 1,361 | 2,063 | 2,715 | 5,267 | 7,106 | 4,825 | 3,947 | 3,000 | 3,000 | 2,628 | 1,750 | 1,553 |
| 40% | 1,343 | 1,901 | 1,973 | 3,675 | 5,489 | 3,884 | 3,000 | 2,429 | 2,663 | 2,116 | 1,750 | 1,547 |
| 50% | 1,329 | 1,858 | 1,869 | 1,827 | 3,492 | 2,863 | 2,338 | 1,718 | 2,411 | 1,752 | 1,572 | 1,541 |
| 60% | 1,324 | 1,799 | 1,842 | 1,356 | 2,438 | 2,040 | 2,034 | 1,354 | 1,870 | 1,743 | 1,495 | 1,537 |
| 70% | 1,144 | 1,064 | 1,684 | 1,255 | 1,588 | 1,583 | 1,231 | 1,232 | 1,547 | 1,532 | 1,427 | 1,469 |
| 80% | 612 | 659 | 1,001 | 1,239 | 1,273 | 1,333 | 804 | 1,012 | 999 | 1,301 | 1,258 | 1,345 |
| 90% | 461 | 465 | 544 | 564 | 1,221 | 802 | 760 | 758 | 638 | 753 | 583 | 713 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,230 | 2,311 | 3,796 | 4,899 | 5,895 | 4,152 | 3,057 | 2,728 | 2,459 | 2,125 | 1,595 | 1,452 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,553 | 3,681 | 4,941 | 10,331 | 10,338 | 6,938 | 5,115 | 5,036 | 3,846 | 2,524 | 2,036 | 1,681 |
| Above Normal (16%) | 1,386 | 2,076 | 2,764 | 5,622 | 7,769 | 5,883 | 3,147 | 2,183 | 2,418 | 3,244 | 1,807 | 1,613 |
| Below Normal (13%) | 1,165 | 1,590 | 2,926 | 2,034 | 5,402 | 2,116 | 2,154 | 1,780 | 1,933 | 2,485 | 1,570 | 1,448 |
| Dry (24%) | 1,033 | 2,058 | 5,258 | 1,360 | 2,013 | 2,402 | 1,940 | 1,632 | 1,816 | 1,448 | 1,373 | 1,317 |
| Critical (15%) | 748 | 678 | 792 | 874 | 1,161 | 1,020 | 1,192 | 1,010 | 1,055 | 845 | 801 | 1,008 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 105 | -75 | 8 | 0 | 0 | -736 | 0 | 0 | -3 | 111 | 128 | 50 |
| 20% | 58 | -39 | -212 | 1 | 0 | 0 | 0 | -2 | 16 | -403 | 183 | 80 |
| 30% | 2 | 63 | 280 | -178 | 0 | 1 | 0 | 0 | 4 | -235 | 0 | 5 |
| 40% | 0 | 26 | -8 | 263 | -5 | -4 | 0 | 35 | 44 | -205 | 200 | 0 |
| 50% | 0 | 5 | 0 | -158 | 101 | 22 | 29 | 73 | 157 | -332 | 75 | 0 |
| 60% | 0 | 21 | -4 | -87 | 0 | 5 | 136 | -22 | 19 | -7 | 11 | 0 |
| 70% | 153 | 0 | 3 | 0 | 4 | 0 | -36 | -38 | 110 | -106 | 2 | 0 |
| 80% | 0 | 40 | 346 | 0 | 0 | 0 | -36 | 47 | 29 | -177 | 4 | 0 |
| 90% | 17 | 6 | 44 | -16 | 0 | 0 | -9 | 2 | 90 | 17 | -42 | 20 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11 | -24 | 34 | -43 | 12 | -12 | -3 | 7 | 51 | -161 | 60 | 38 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -67 | -108 | -11 | -94 | 43 | 0 | 0 | 0 | 69 | -48 | 54 | 81 |
| Above Normal (16%) | 8 | 85 | -29 | 44 | 17 | -2 | 0 | 2 | 94 | -359 | 247 | 51 |
| Below Normal (13%) | -25 | 38 | 186 | -79 | -5 | 1 | -27 | -8 | 37 | -433 | 14 | 39 |
| Dry (24%) | 108 | -48 | -20 | -42 | -8 | -48 | 51 | 51 | 54 | -127 | -12 | -11 |
| Critical (15%) | 59 | 24 | 152 | 3 | -7 | 1 | -80 | -33 | -24 | 3 | 32 | 14 |

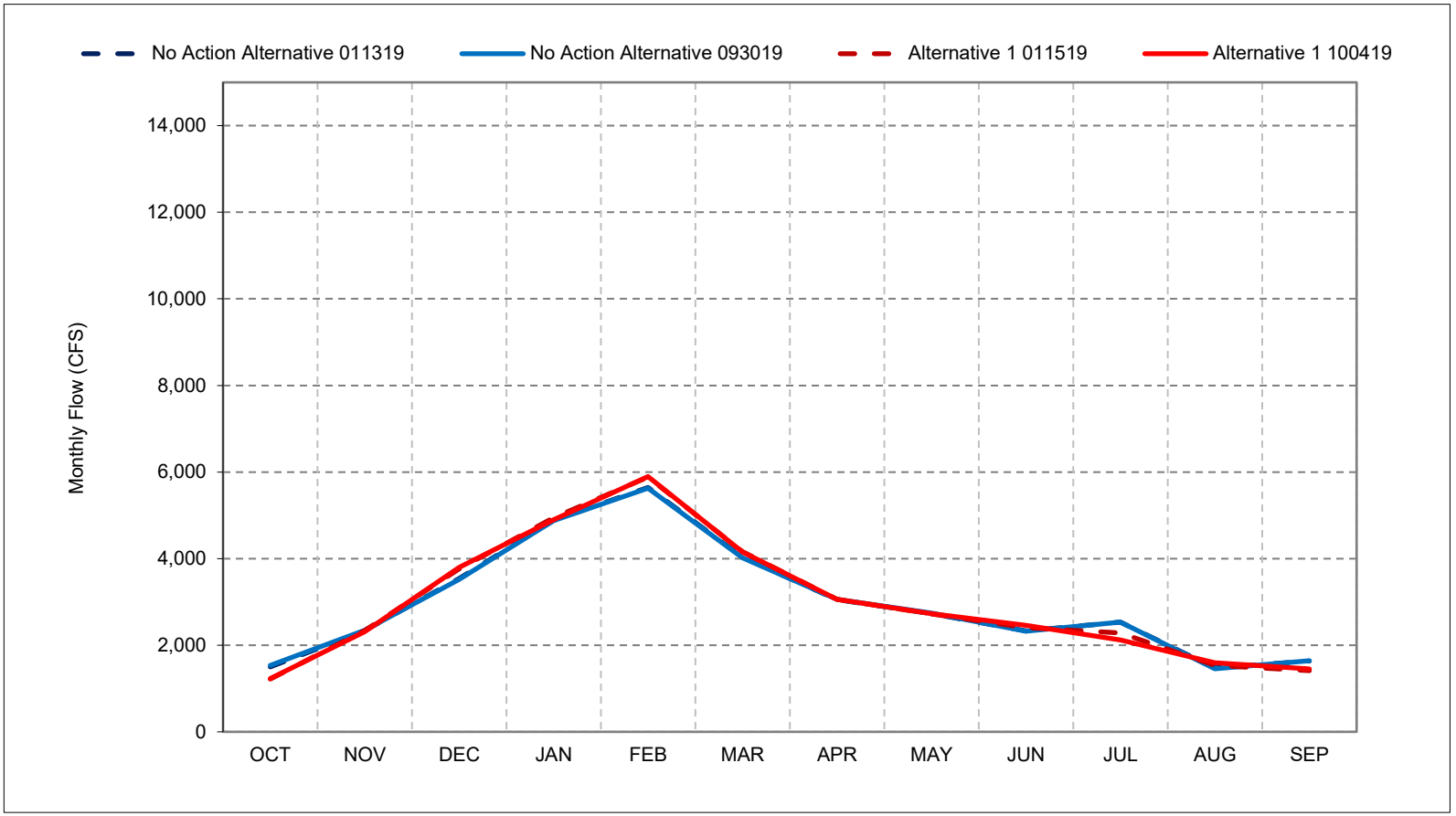
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-1. American River at H Street, Long-Term Average Flow

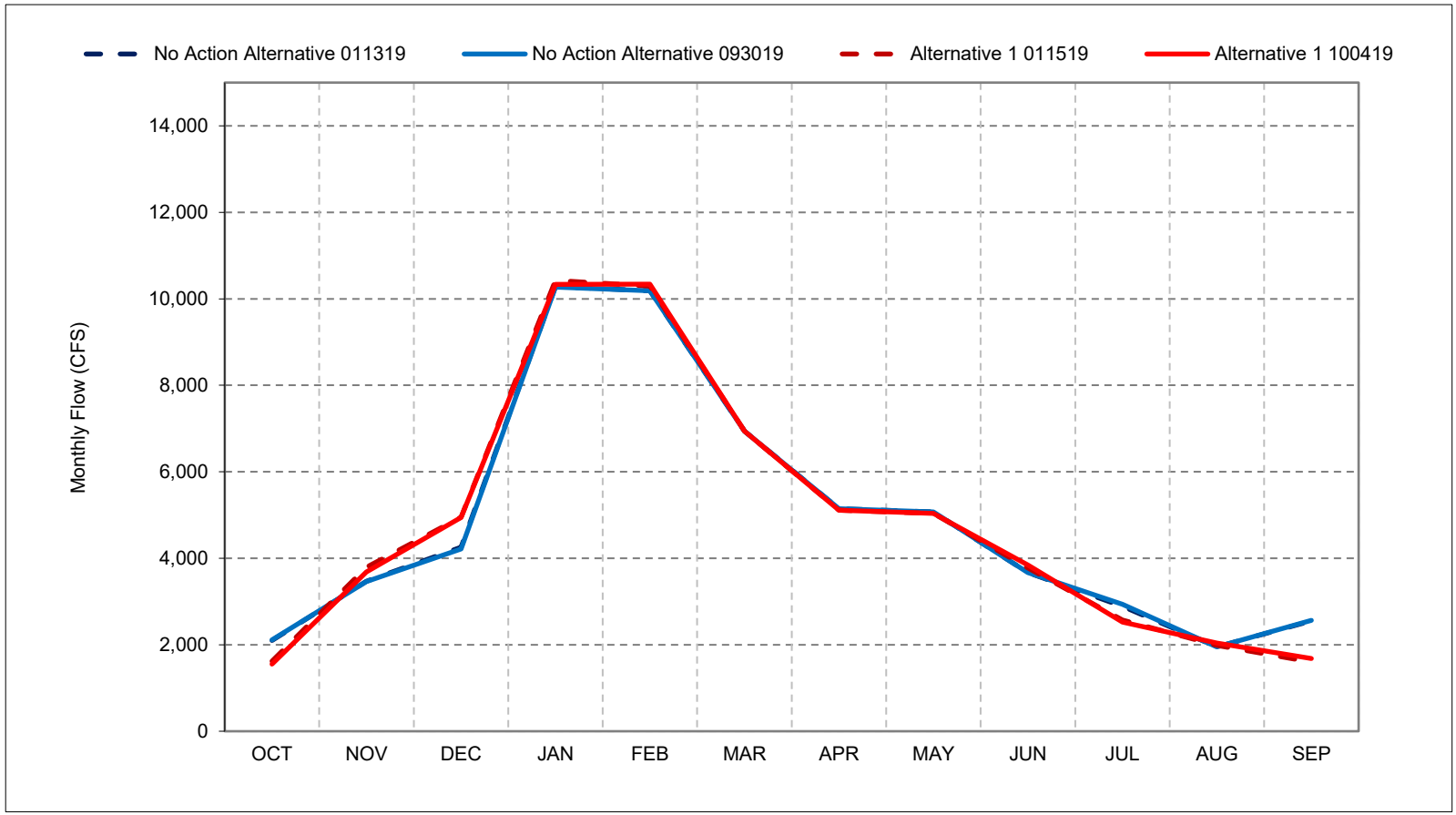



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-2. American River at H Street, Wet Year Average Flow

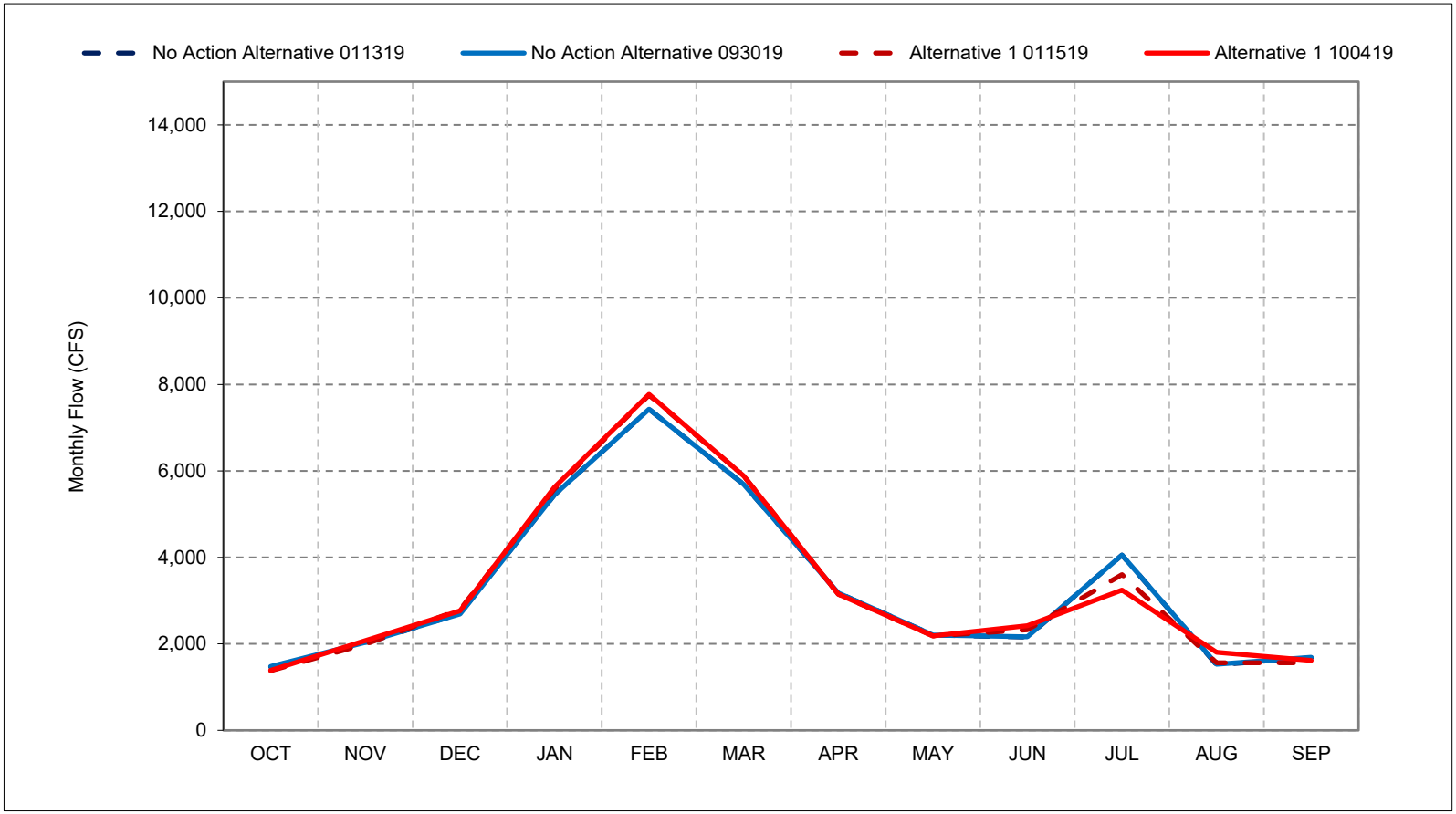



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-3. American River at H Street, Above Normal Year Average Flow

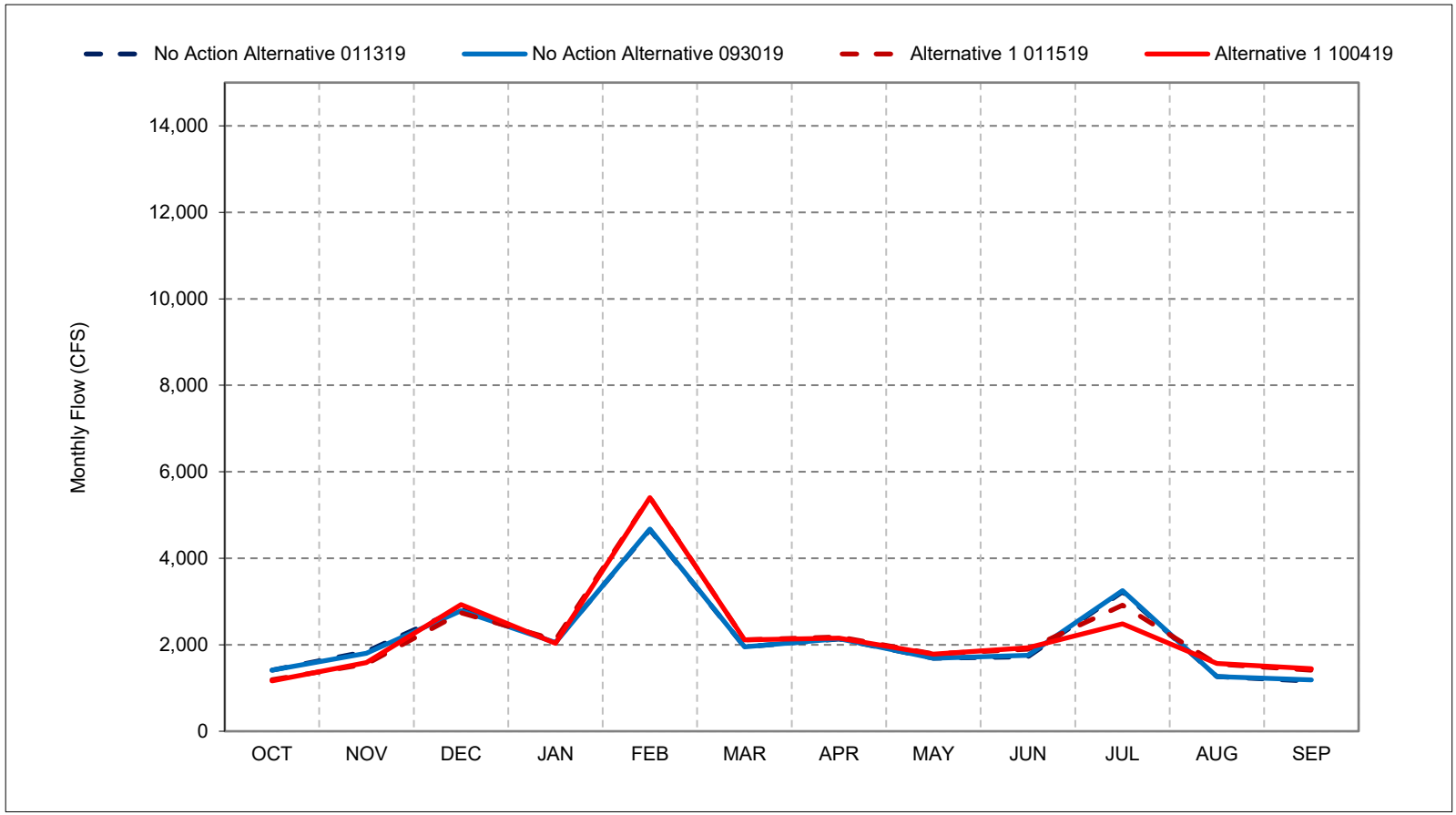



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-4. American River at H Street, Below Normal Year Average Flow

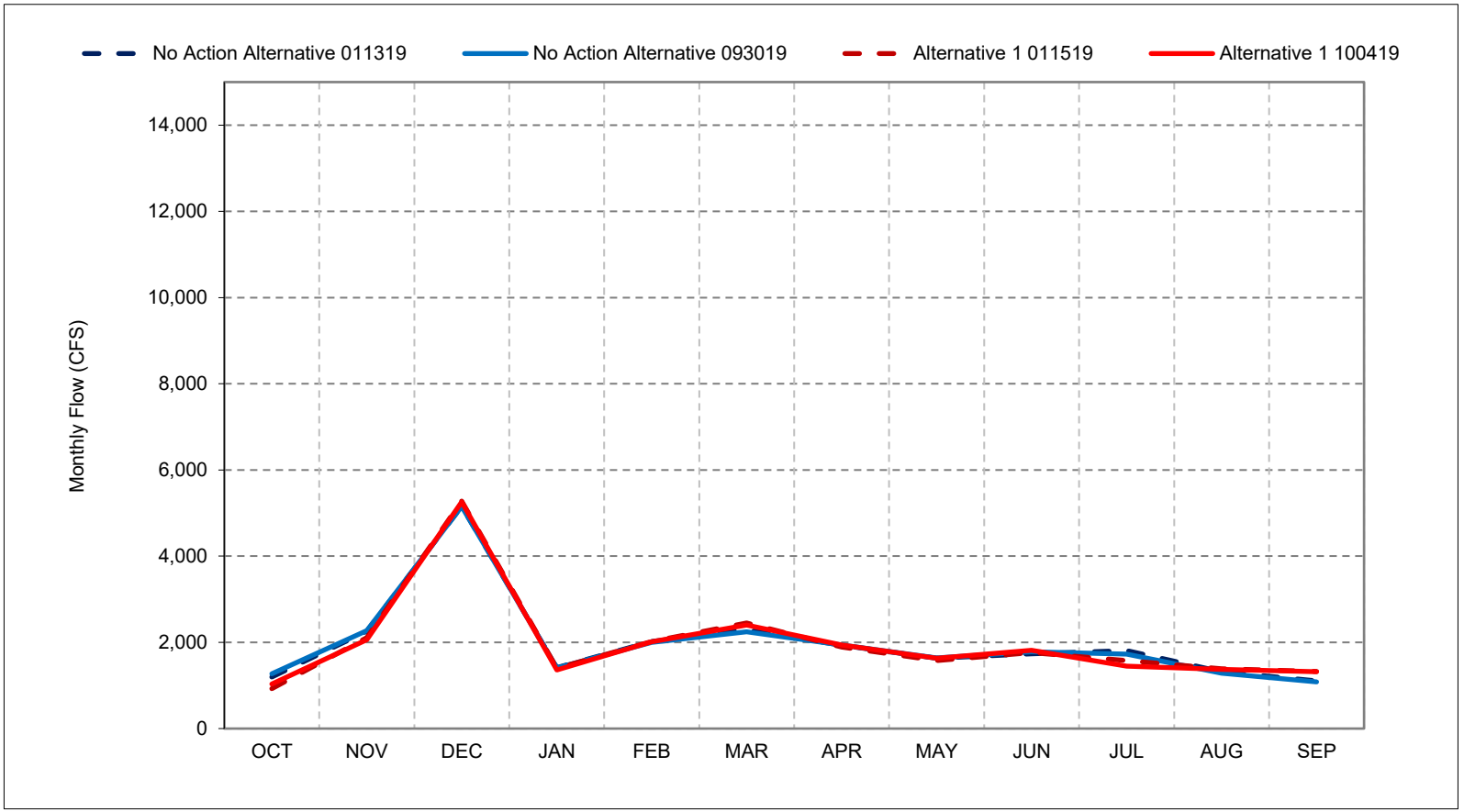



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-5. American River at H Street, Dry Year Average Flow

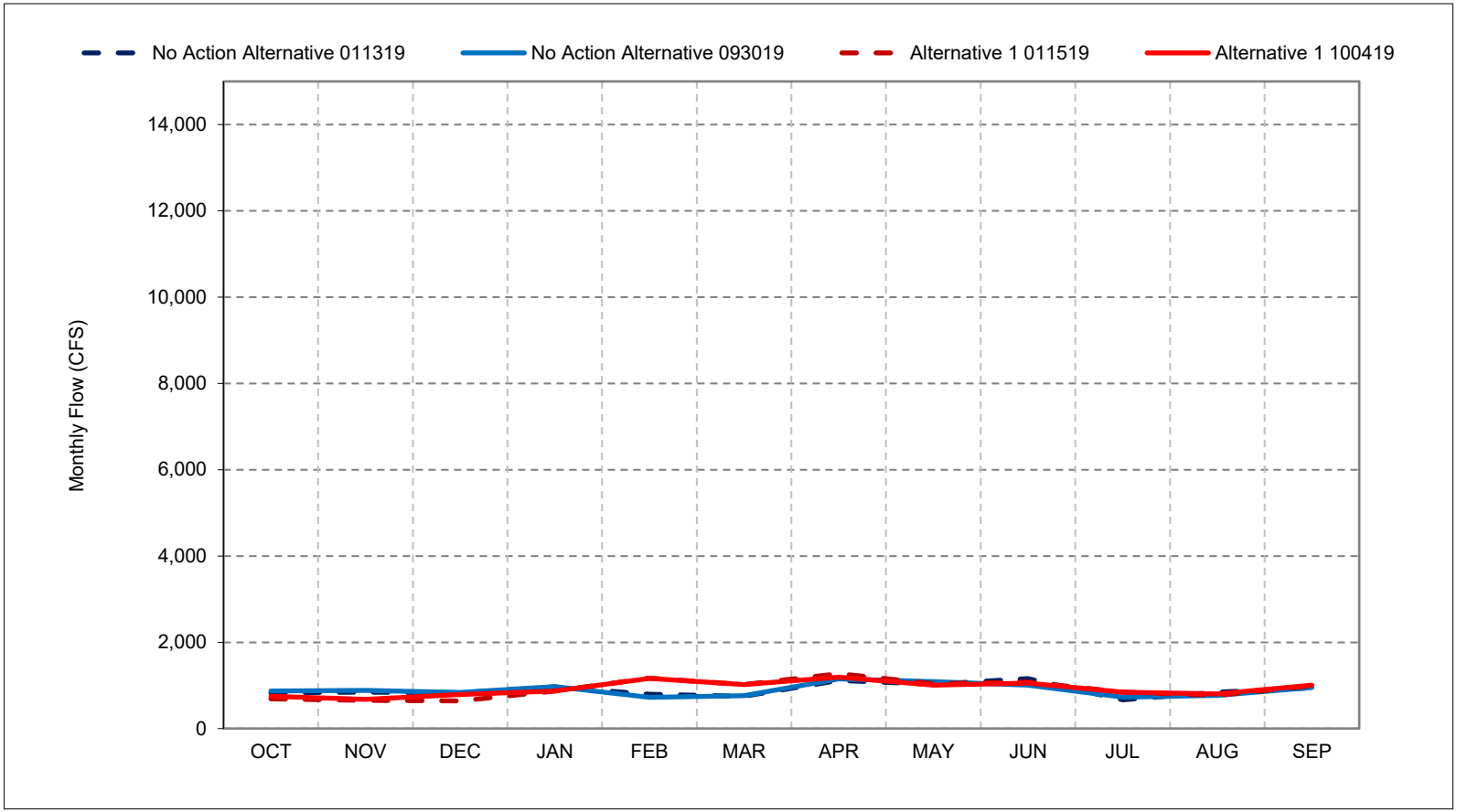



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-6. American River at H Street, Critical Year Average Flow

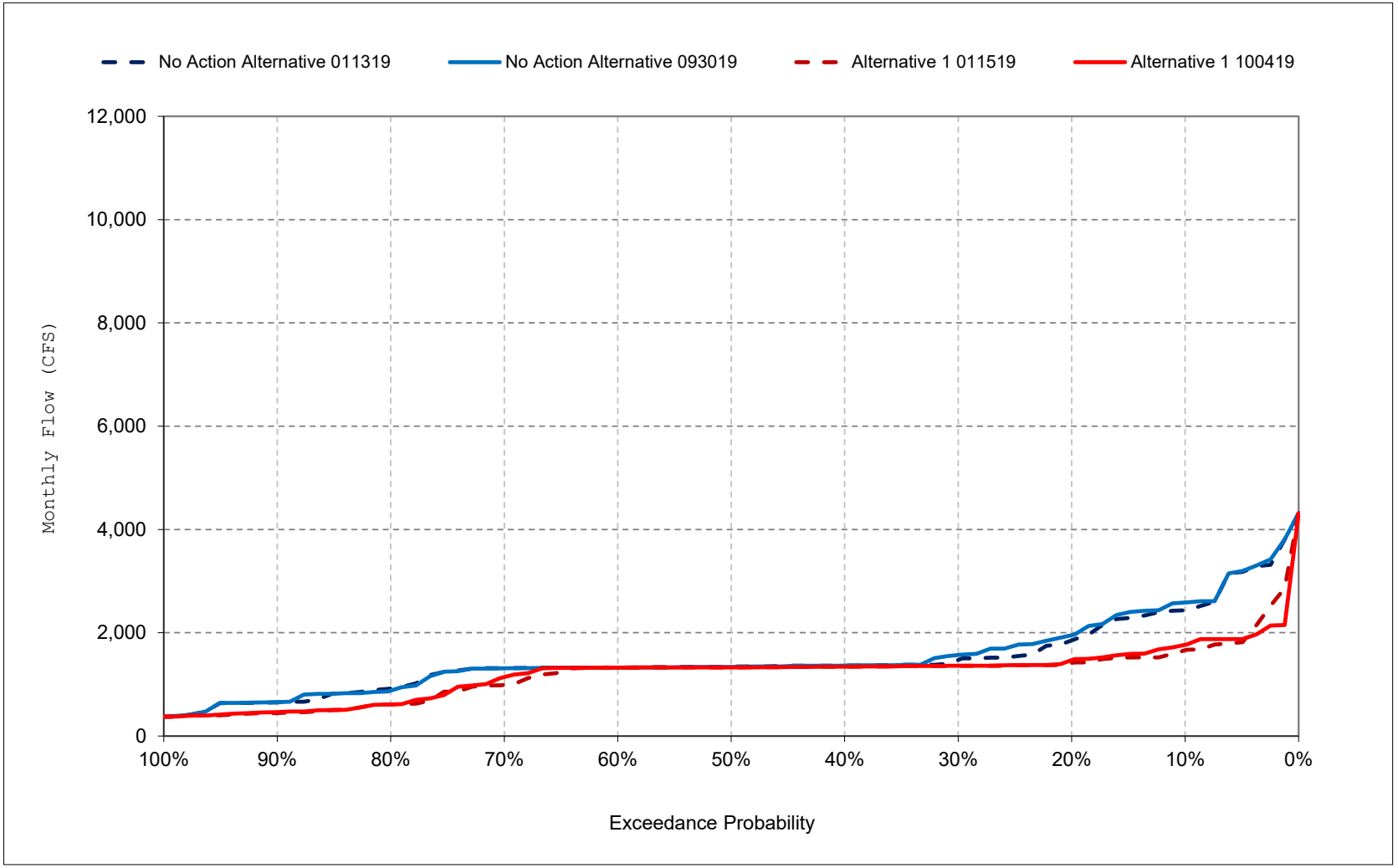



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

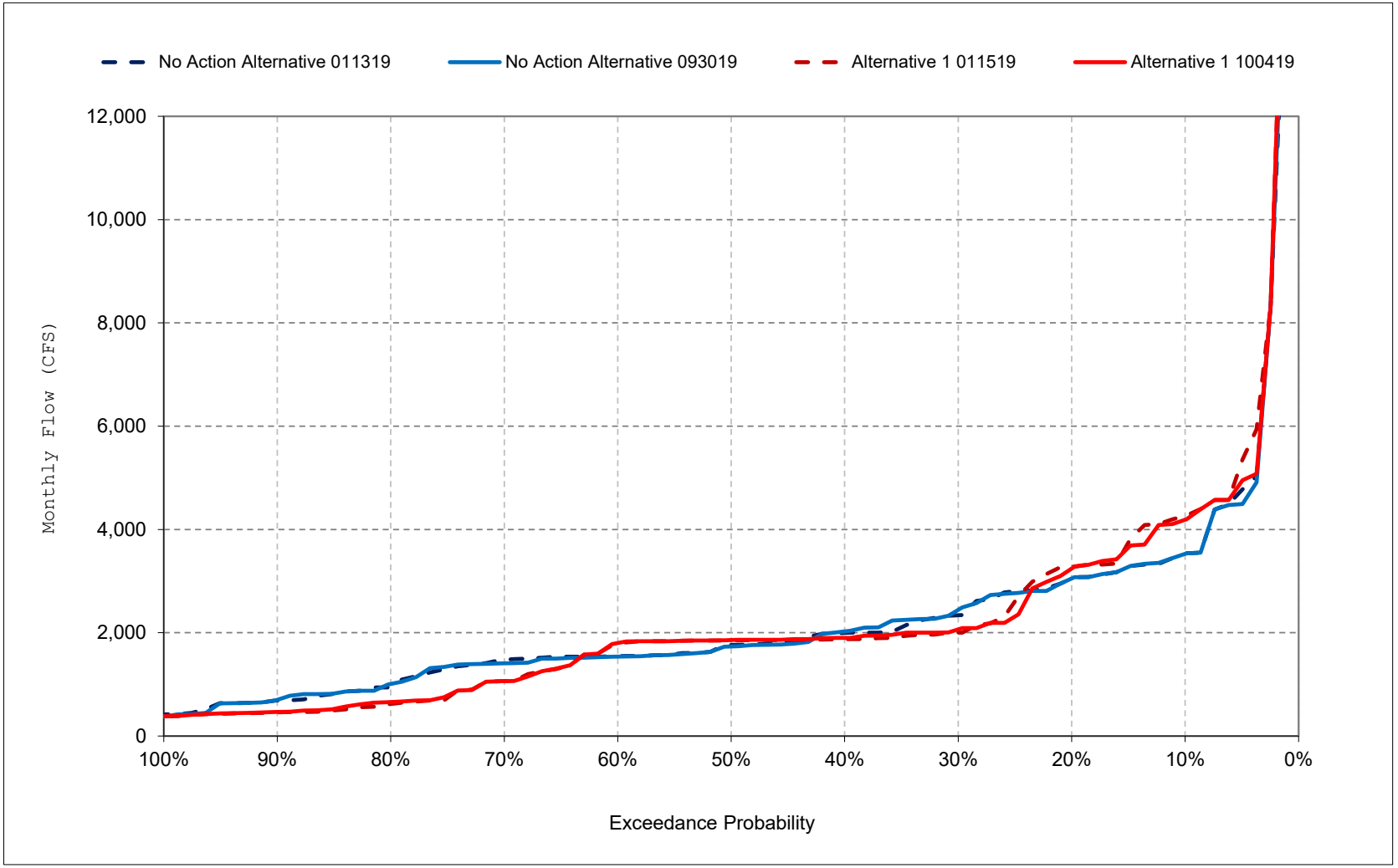
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-7. American River at H Street, October**



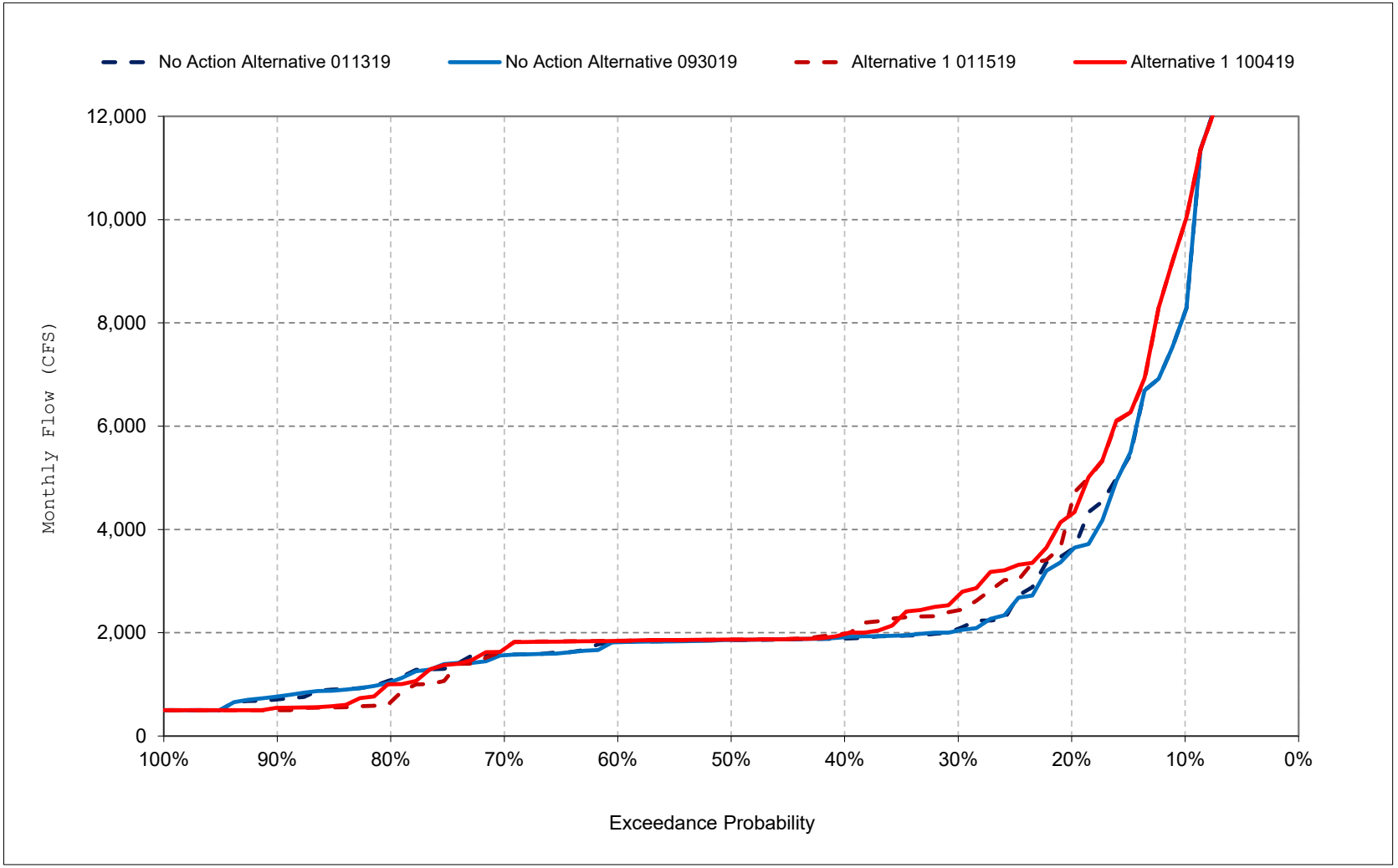

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-8. American River at H Street, November**



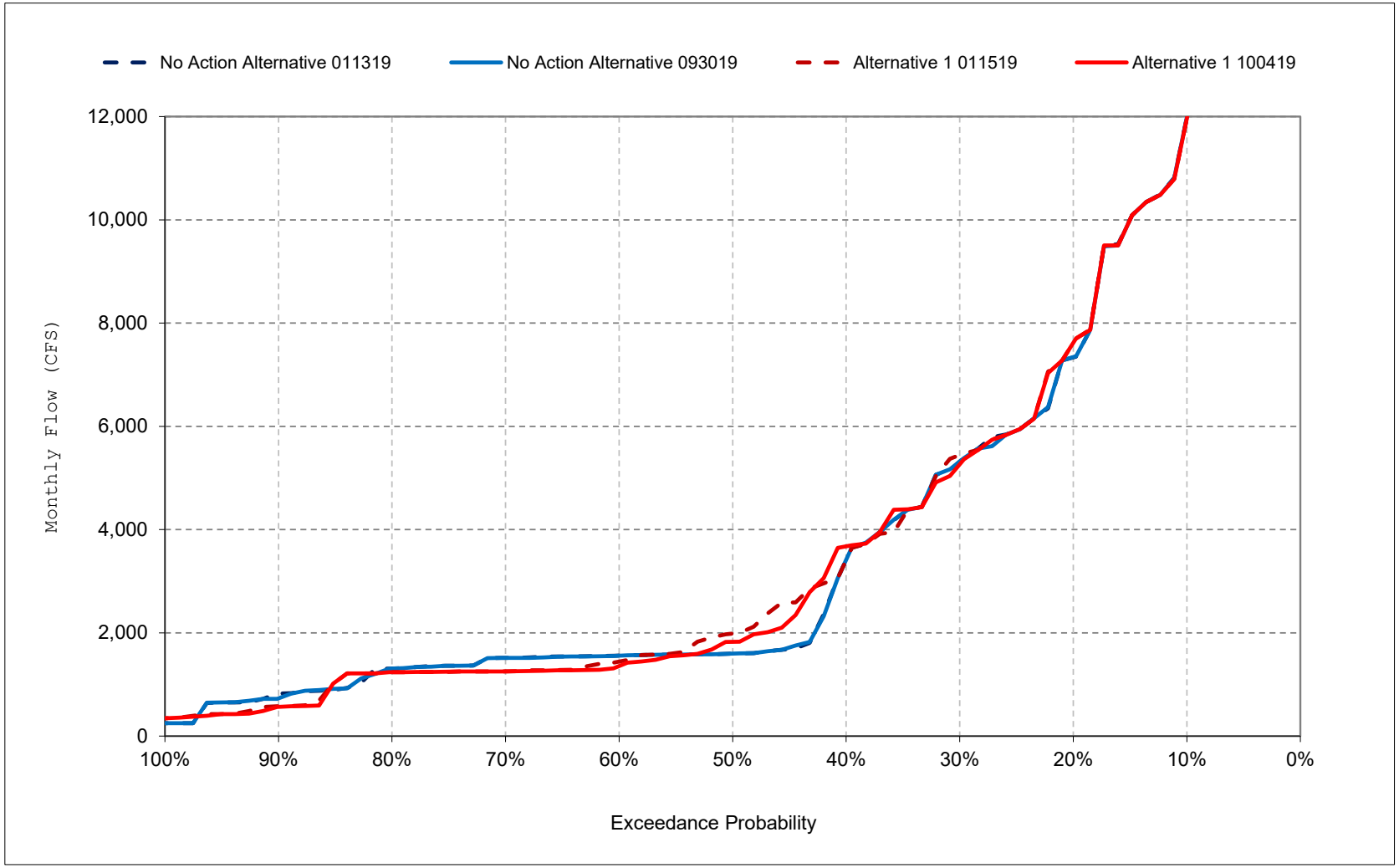

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-9. American River at H Street, December**



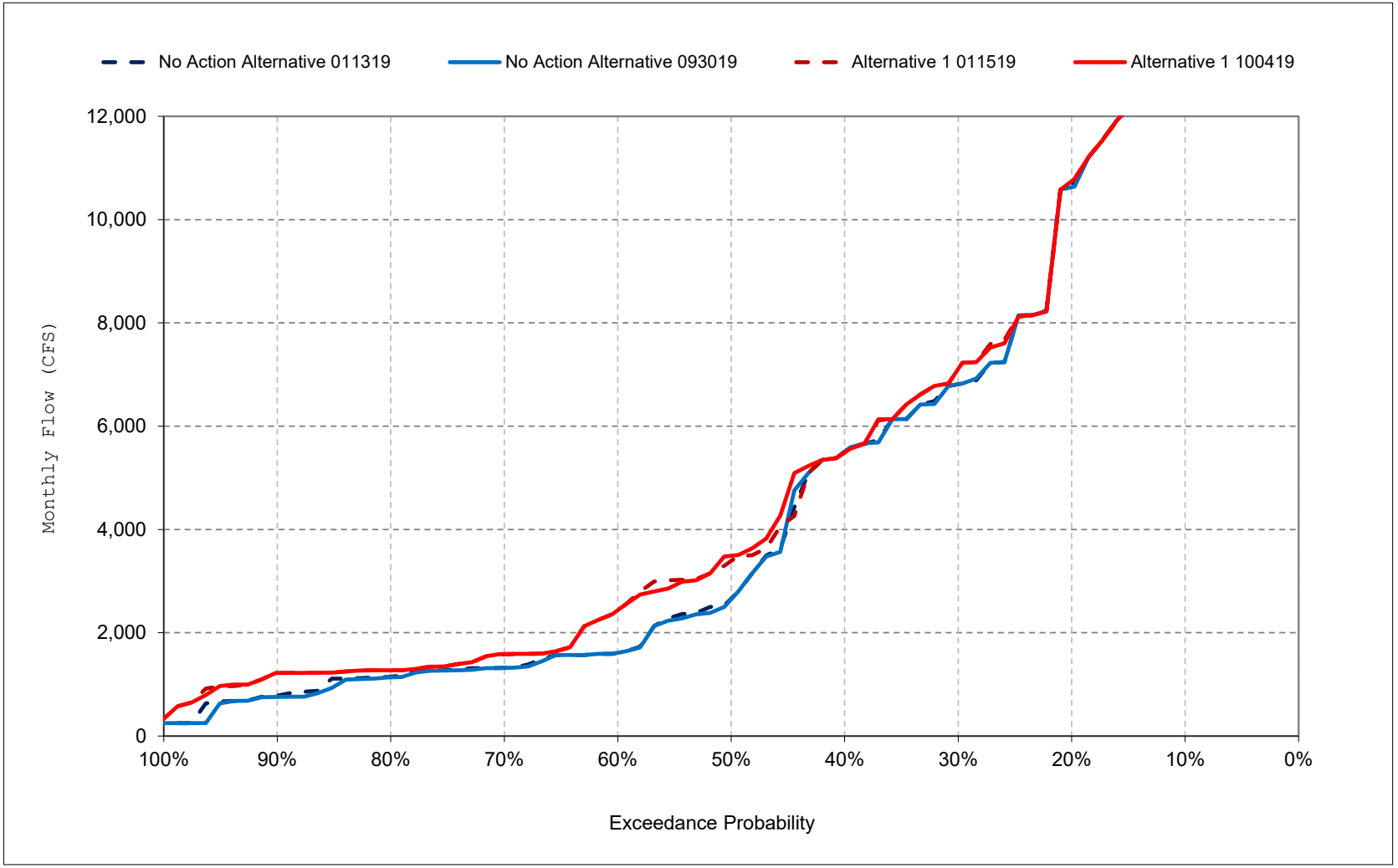

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-10. American River at H Street, January**



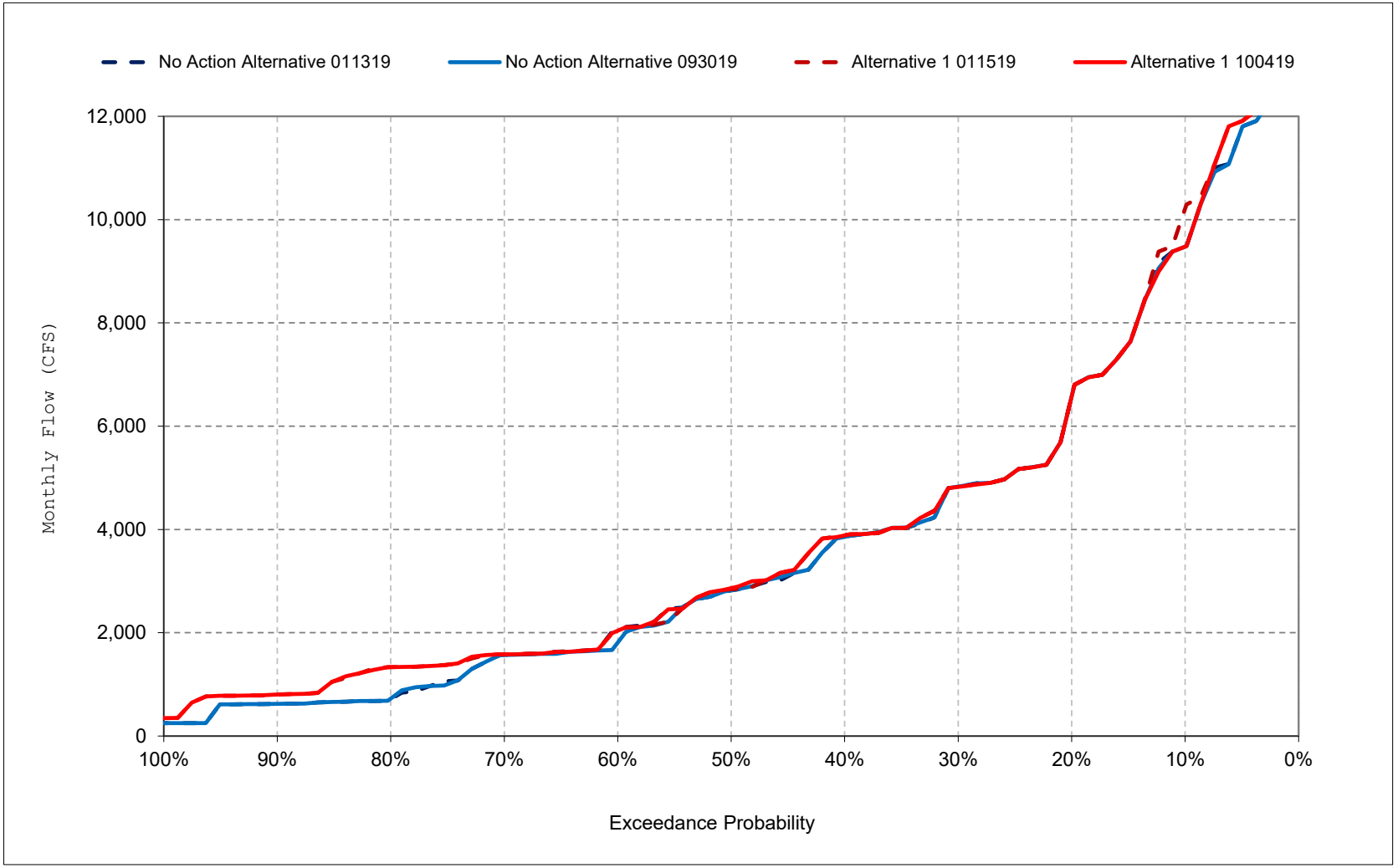

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-11. American River at H Street, February**



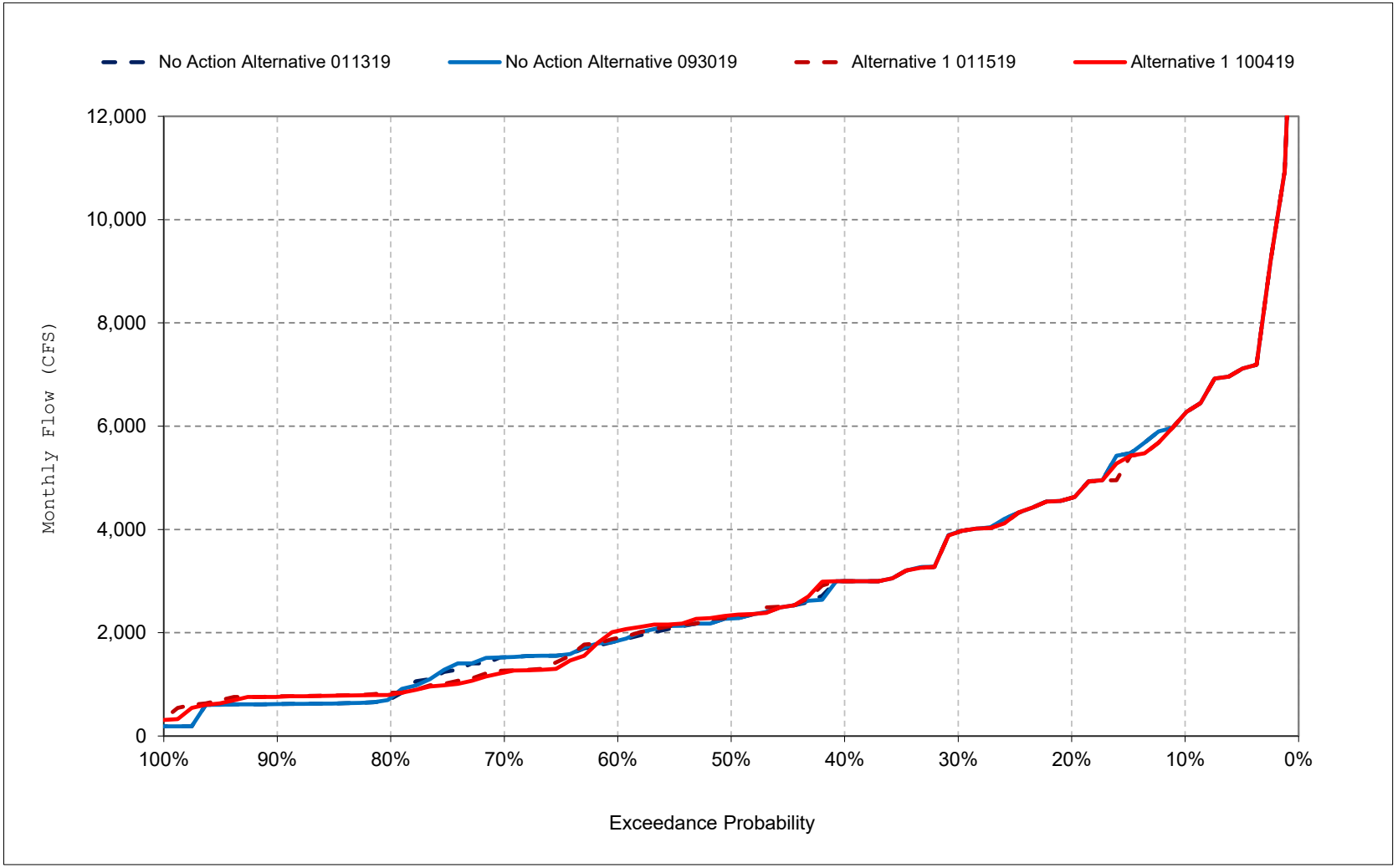

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-12. American River at H Street, March**



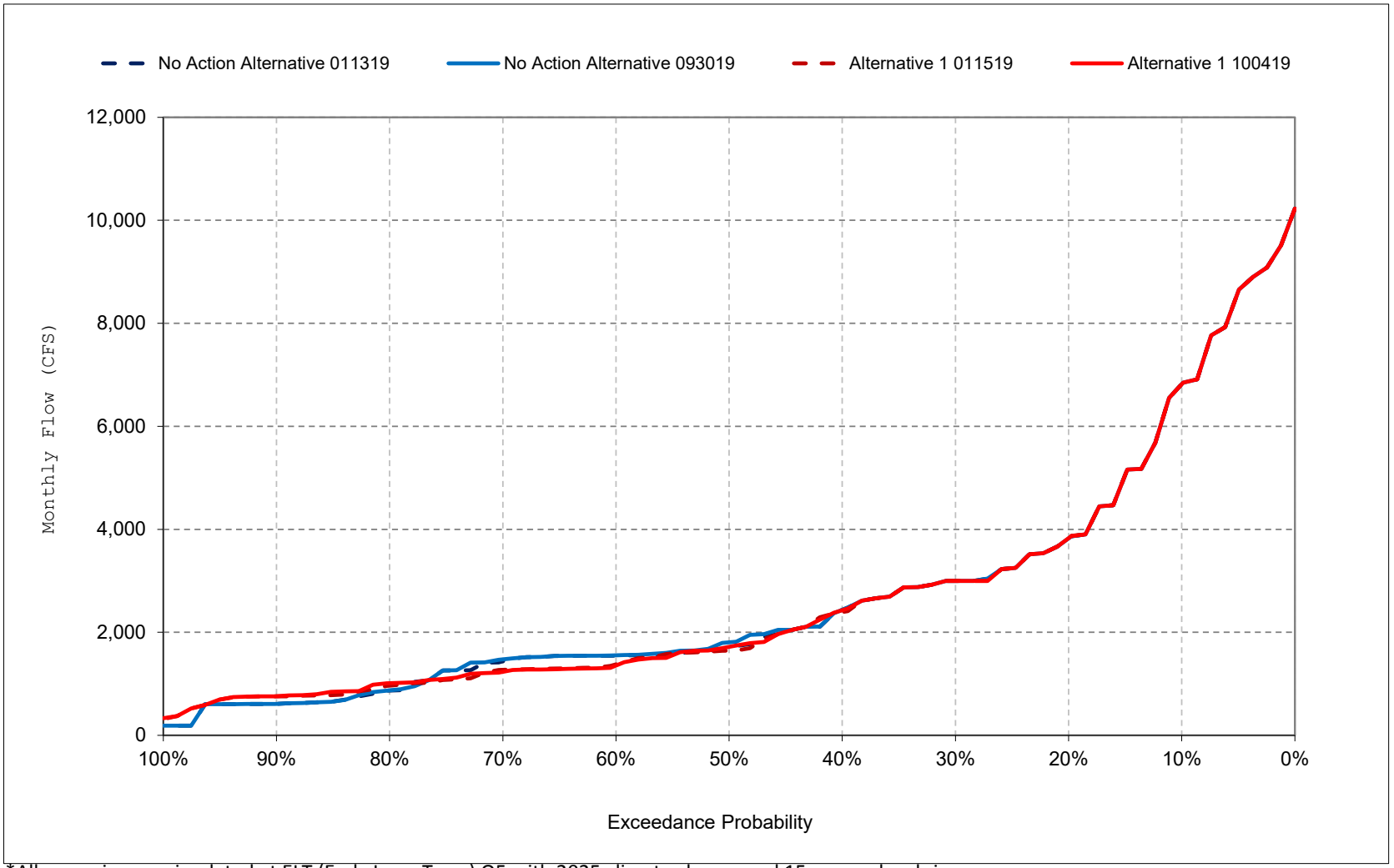

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-13. American River at H Street, April**



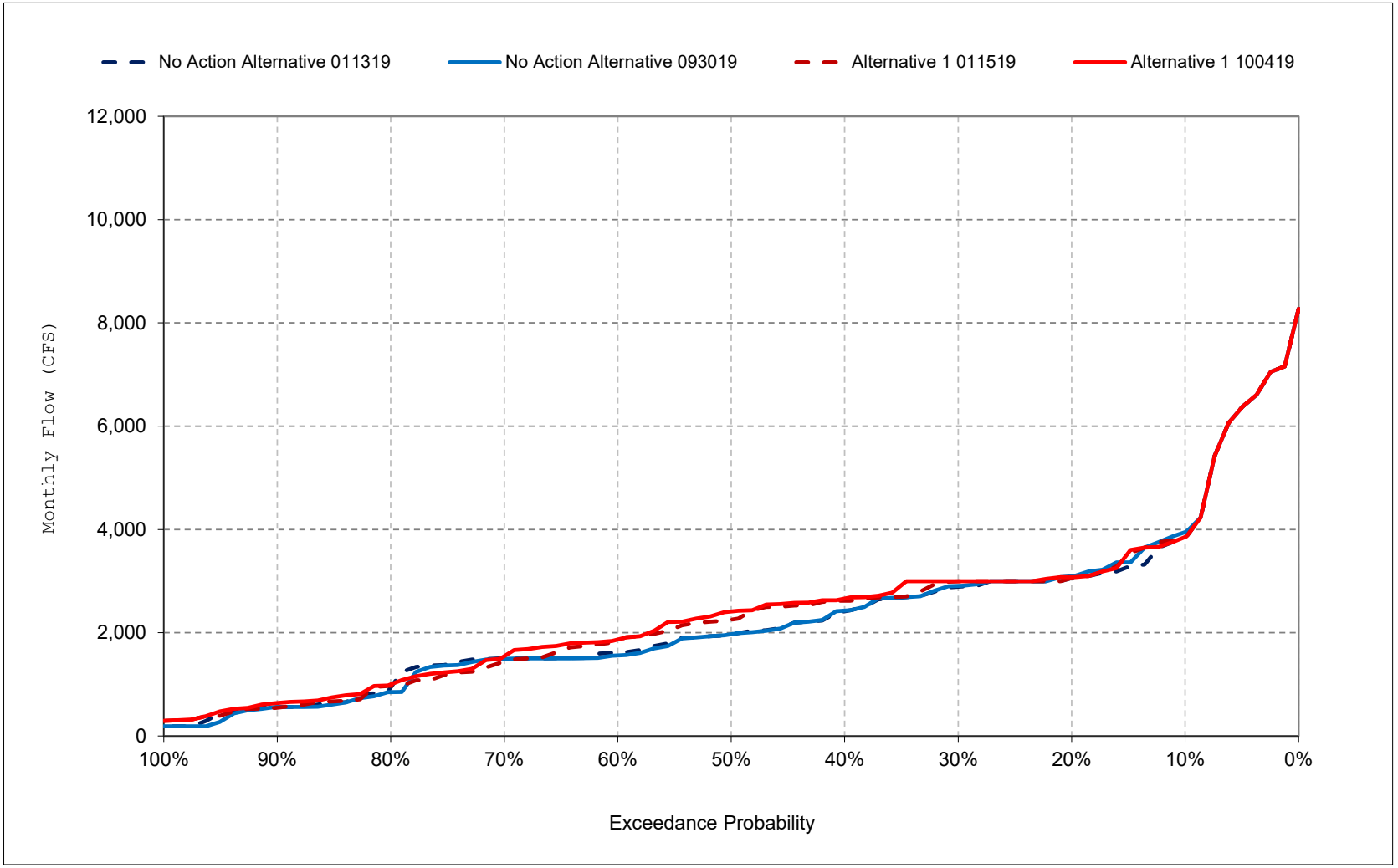

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-14. American River at H Street, May**



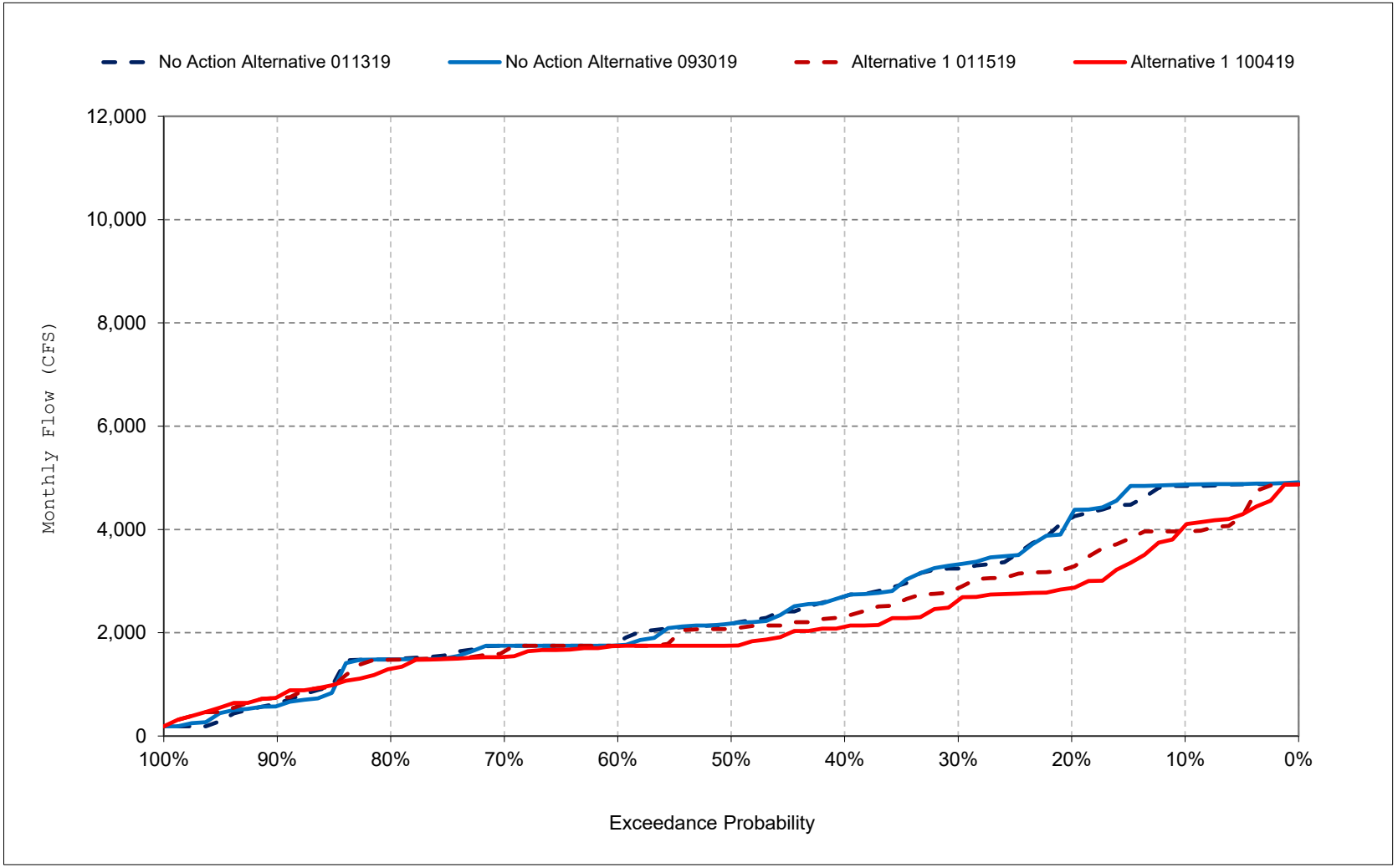

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-15. American River at H Street, June**



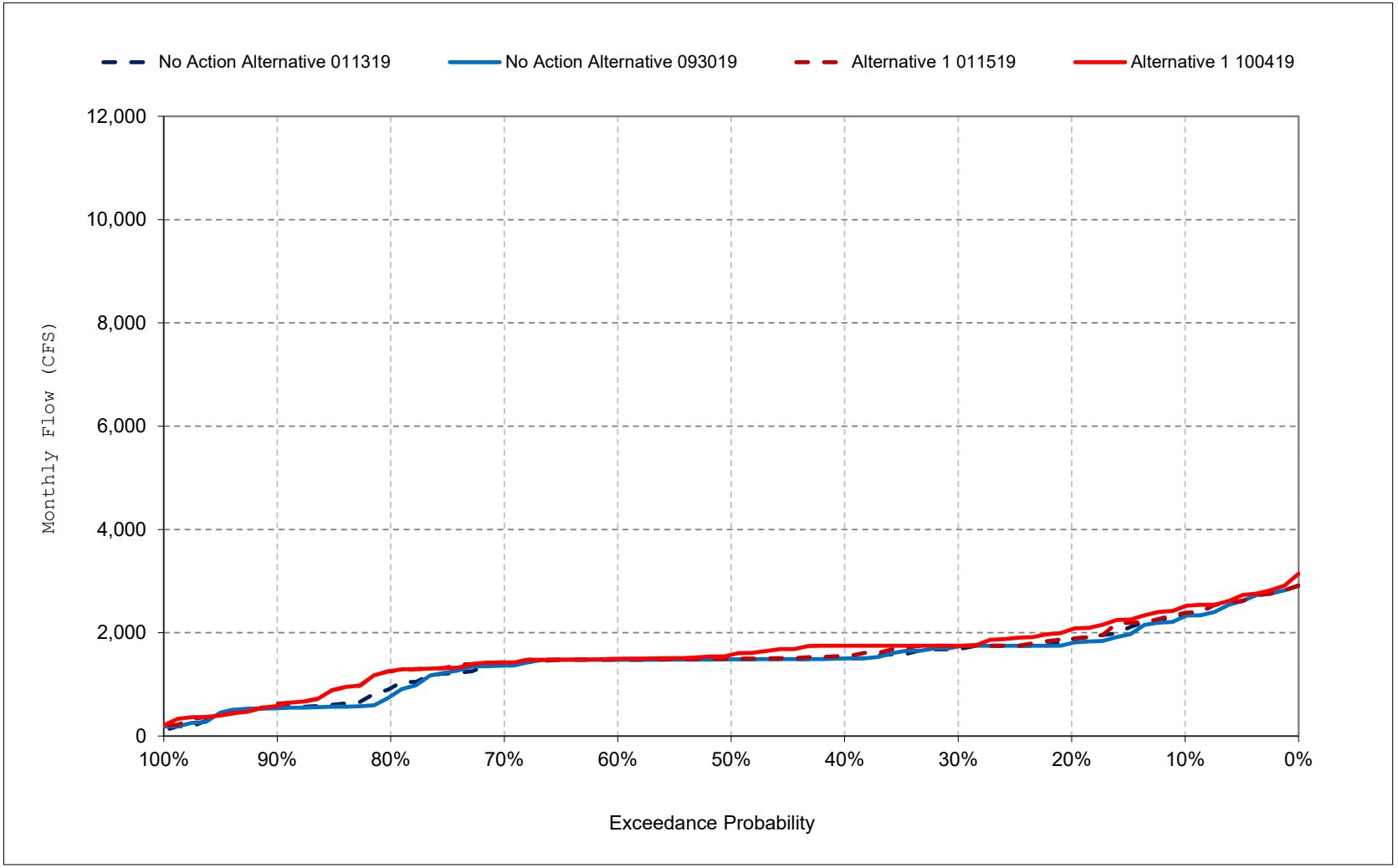

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-16. American River at H Street, July**



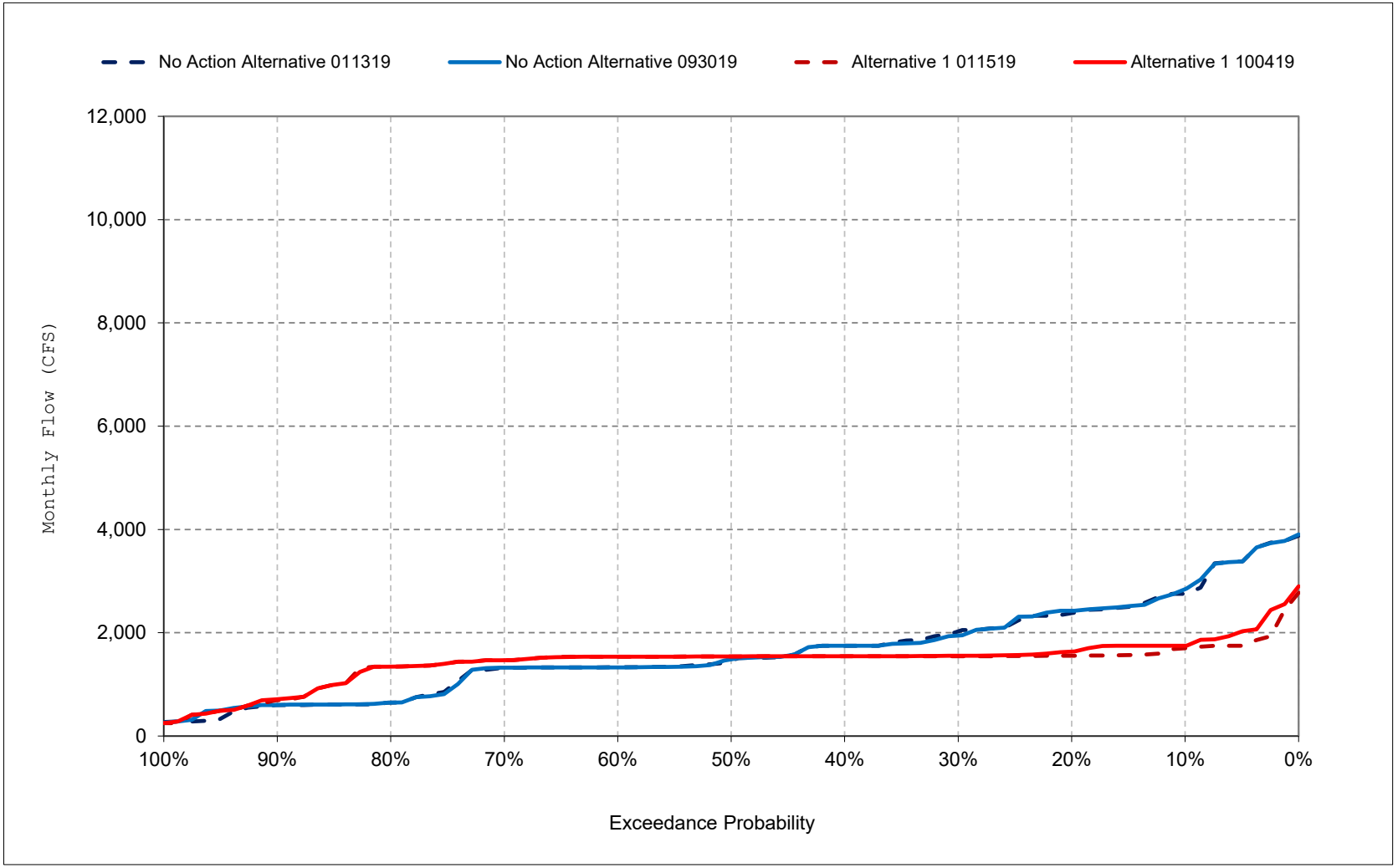

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-17. American River at H Street, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-18. American River at H Street, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-1. Sacramento River Flow at Freeport, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,462 | 21,542 | 50,195 | 65,000 | 69,738 | 64,827 | 52,557 | 38,629 | 20,654 | 24,529 | 16,958 | 29,451 |
| 20% | 14,044 | 19,263 | 33,944 | 53,965 | 62,372 | 53,989 | 38,721 | 28,054 | 16,178 | 24,220 | 16,568 | 28,488 |
| 30% | 13,243 | 18,443 | 21,814 | 38,469 | 50,812 | 41,513 | 25,293 | 16,030 | 14,030 | 22,824 | 16,070 | 22,484 |
| 40% | 12,565 | 17,044 | 18,066 | 26,010 | 43,892 | 31,089 | 22,500 | 13,503 | 13,452 | 19,748 | 15,786 | 21,731 |
| 50% | 10,356 | 15,471 | 15,521 | 20,258 | 33,254 | 25,635 | 17,541 | 12,283 | 13,093 | 18,800 | 15,154 | 13,854 |
| 60% | 9,121 | 13,204 | 14,767 | 18,165 | 25,442 | 20,351 | 14,960 | 11,617 | 12,619 | 17,152 | 13,722 | 10,719 |
| 70% | 8,177 | 10,428 | 13,379 | 14,854 | 20,069 | 18,975 | 12,827 | 10,835 | 11,599 | 15,974 | 9,484 | 9,942 |
| 80% | 8,049 | 9,328 | 10,586 | 13,023 | 16,348 | 15,258 | 11,444 | 10,120 | 10,846 | 14,200 | 8,685 | 9,222 |
| 90% | 6,584 | 7,187 | 9,357 | 11,911 | 14,293 | 11,409 | 10,248 | 8,753 | 10,213 | 11,139 | 8,013 | 7,852 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,186 | 15,887 | 22,809 | 30,928 | 38,059 | 32,551 | 24,579 | 18,164 | 14,924 | 18,430 | 13,274 | 17,499 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14,487 | 20,839 | 25,490 | 50,073 | 56,989 | 49,902 | 39,427 | 30,325 | 20,392 | 20,230 | 16,023 | 28,227 |
| Above Normal (16%) | 12,640 | 18,546 | 21,946 | 39,237 | 47,178 | 43,037 | 27,296 | 17,159 | 13,494 | 22,946 | 16,776 | 21,852 |
| Below Normal (13%) | 11,241 | 12,285 | 21,153 | 18,490 | 31,200 | 18,881 | 15,326 | 13,084 | 12,970 | 21,656 | 14,896 | 11,740 |
| Dry (24%) | 8,663 | 14,783 | 26,842 | 17,323 | 24,217 | 22,503 | 16,820 | 11,656 | 12,947 | 16,257 | 9,702 | 9,771 |
| Critical (15%) | 6,614 | 7,420 | 12,728 | 14,524 | 16,520 | 12,876 | 10,882 | 8,406 | 9,709 | 10,301 | 7,988 | 7,702 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,332 | 24,078 | 52,760 | 65,882 | 70,031 | 64,878 | 52,583 | 38,630 | 20,650 | 24,438 | 16,984 | 15,507 |
| 20% | 13,867 | 14,883 | 36,616 | 56,798 | 62,813 | 54,088 | 38,727 | 28,053 | 16,842 | 23,610 | 16,813 | 14,883 |
| 30% | 12,674 | 13,625 | 23,713 | 41,897 | 52,576 | 42,854 | 25,427 | 17,030 | 15,485 | 22,414 | 16,194 | 14,471 |
| 40% | 11,942 | 12,714 | 18,423 | 27,487 | 46,456 | 31,354 | 22,393 | 14,552 | 15,130 | 19,701 | 15,857 | 14,254 |
| 50% | 10,513 | 11,405 | 15,591 | 22,879 | 33,864 | 26,172 | 17,544 | 13,630 | 14,771 | 18,138 | 15,377 | 13,809 |
| 60% | 9,168 | 10,889 | 15,135 | 18,779 | 25,320 | 21,156 | 14,084 | 12,654 | 14,170 | 17,343 | 14,046 | 11,248 |
| 70% | 8,353 | 10,011 | 13,160 | 14,762 | 21,000 | 19,022 | 12,814 | 12,007 | 13,642 | 14,601 | 9,840 | 9,903 |
| 80% | 8,043 | 8,549 | 10,627 | 12,867 | 17,363 | 15,741 | 11,667 | 11,158 | 12,511 | 12,484 | 8,967 | 9,147 |
| 90% | 6,578 | 7,476 | 9,473 | 12,066 | 14,543 | 11,855 | 10,756 | 9,959 | 11,510 | 10,526 | 7,795 | 7,837 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 10,965 | 14,008 | 23,811 | 31,611 | 38,640 | 33,182 | 24,646 | 18,902 | 16,177 | 18,032 | 13,434 | 12,456 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 13,466 | 17,131 | 28,084 | 51,103 | 57,254 | 50,062 | 39,492 | 30,674 | 20,886 | 19,883 | 15,978 | 15,383 |
| Above Normal (16%) | 13,023 | 14,792 | 22,969 | 40,490 | 48,085 | 44,453 | 27,323 | 17,873 | 14,454 | 22,948 | 16,722 | 14,777 |
| Below Normal (13%) | 11,334 | 11,867 | 21,060 | 19,669 | 33,481 | 19,910 | 15,723 | 14,481 | 15,126 | 21,888 | 16,031 | 12,421 |
| Dry (24%) | 8,787 | 14,566 | 27,075 | 17,377 | 24,294 | 22,951 | 16,725 | 12,769 | 14,905 | 15,224 | 9,912 | 9,951 |
| Critical (15%) | 6,608 | 7,423 | 12,546 | 14,427 | 16,719 | 13,619 | 10,964 | 8,785 | 10,921 | 9,842 | 7,847 | 7,804 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-1,129** | 2,536 | 2,565 | 882 | 293 | 52 | 25 | 0 | **-4** | **-91** | 26 | **-13,944** |
| 20% | **-177** | **-4,380** | 2,672 | 2,833 | 441 | 99 | 6 | **-1** | 664 | **-610** | 245 | **-13,605** |
| 30% | **-569** | **-4,818** | 1,899 | 3,428 | 1,764 | 1,342 | 135 | 1,000 | 1,455 | **-411** | 124 | **-8,013** |
| 40% | **-624** | **-4,330** | 357 | 1,477 | 2,563 | 264 | **-107** | 1,050 | 1,678 | **-47** | 70 | **-7,477** |
| 50% | 156 | **-4,066** | 70 | 2,621 | 610 | 537 | 4 | 1,348 | 1,678 | **-663** | 223 | **-44** |
| 60% | 48 | **-2,315** | 368 | 613 | **-122** | 805 | **-876** | 1,037 | 1,550 | 191 | 324 | 529 |
| 70% | 176 | **-417** | **-219** | **-92** | 931 | 47 | **-13** | 1,172 | 2,043 | **-1,373** | 355 | **-39** |
| 80% | **-6** | **-779** | 41 | **-157** | 1,015 | 482 | 222 | 1,038 | 1,665 | **-1,715** | 282 | **-74** |
| 90% | **-6** | 288 | 116 | 155 | 250 | 447 | 509 | 1,206 | 1,298 | **-613** | **-218** | **-15** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-221** | **-1,879** | 1,002 | 682 | 582 | 631 | 67 | 738 | 1,253 | **-398** | 160 | **-5,044** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-1,021** | **-3,708** | 2,594 | 1,031 | 265 | 161 | 65 | 349 | 494 | **-347** | **-45** | **-12,843** |
| Above Normal (16%) | 383 | **-3,754** | 1,023 | 1,253 | 908 | 1,416 | 26 | 714 | 960 | 2 | **-54** | **-7,075** |
| Below Normal (13%) | 94 | **-418** | **-93** | 1,178 | 2,281 | 1,028 | 397 | 1,397 | 2,157 | 232 | 1,135 | 681 |
| Dry (24%) | 124 | **-217** | 232 | 55 | 78 | 449 | **-94** | 1,113 | 1,958 | **-1,034** | 211 | 181 |
| Critical (15%) | **-7** | 3 | **-182** | **-97** | 198 | 742 | 82 | 379 | 1,211 | **-459** | **-142** | 102 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-2. Sacramento River Flow at Freeport, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,471 | 21,520 | 50,148 | 65,044 | 69,734 | 64,827 | 52,538 | 38,630 | 20,649 | 24,535 | 16,949 | 29,446 |
| 20% | 14,419 | 19,264 | 33,826 | 53,961 | 62,354 | 53,989 | 38,731 | 28,049 | 16,178 | 24,386 | 16,584 | 28,640 |
| 30% | 13,478 | 18,440 | 21,271 | 38,470 | 50,842 | 41,539 | 25,303 | 16,030 | 14,192 | 22,848 | 16,052 | 22,482 |
| 40% | 12,610 | 17,030 | 18,052 | 25,993 | 43,713 | 31,090 | 22,498 | 13,503 | 13,462 | 19,647 | 15,775 | 21,527 |
| 50% | 10,576 | 15,415 | 15,548 | 20,242 | 33,071 | 25,543 | 17,536 | 12,278 | 13,083 | 18,487 | 15,154 | 14,313 |
| 60% | 9,264 | 13,162 | 14,780 | 18,089 | 25,378 | 20,354 | 14,903 | 11,668 | 12,650 | 17,038 | 13,114 | 10,778 |
| 70% | 8,621 | 10,546 | 13,476 | 14,854 | 20,010 | 19,020 | 12,839 | 10,977 | 11,981 | 15,156 | 9,460 | 9,856 |
| 80% | 8,512 | 9,649 | 10,973 | 13,039 | 16,732 | 15,252 | 11,446 | 10,183 | 11,262 | 13,608 | 8,677 | 9,157 |
| 90% | 7,069 | 7,451 | 9,531 | 11,909 | 13,927 | 11,409 | 10,251 | 9,040 | 10,208 | 10,491 | 8,053 | 7,826 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,413 | 16,007 | 22,816 | 30,923 | 38,024 | 32,516 | 24,585 | 18,247 | 15,065 | 18,203 | 13,218 | 17,475 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14,589 | 20,859 | 25,502 | 50,060 | 56,961 | 49,903 | 39,423 | 30,324 | 20,383 | 20,296 | 16,036 | 28,223 |
| Above Normal (16%) | 12,970 | 18,552 | 21,872 | 39,071 | 47,089 | 42,836 | 27,210 | 17,155 | 13,493 | 22,967 | 16,776 | 21,758 |
| Below Normal (13%) | 11,392 | 12,386 | 21,131 | 18,527 | 31,041 | 18,867 | 15,286 | 13,200 | 12,993 | 21,623 | 14,732 | 11,752 |
| Dry (24%) | 9,017 | 14,972 | 26,890 | 17,320 | 24,129 | 22,495 | 16,841 | 11,727 | 13,147 | 15,525 | 9,571 | 9,734 |
| Critical (15%) | 6,859 | 7,780 | 12,775 | 14,666 | 16,730 | 12,880 | 11,024 | 8,761 | 10,341 | 9,834 | 7,949 | 7,694 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,128 | 22,221 | 50,316 | 65,935 | 70,126 | 64,885 | 51,980 | 38,639 | 20,656 | 23,879 | 17,562 | 15,344 |
| 20% | 12,840 | 14,806 | 35,947 | 56,764 | 62,807 | 54,087 | 38,731 | 28,038 | 16,637 | 22,649 | 17,363 | 14,227 |
| 30% | 12,339 | 13,957 | 23,631 | 41,810 | 52,713 | 43,179 | 25,336 | 16,080 | 15,676 | 21,138 | 16,911 | 13,815 |
| 40% | 11,928 | 13,708 | 18,569 | 27,712 | 45,648 | 31,460 | 22,520 | 14,876 | 15,440 | 18,725 | 16,323 | 13,193 |
| 50% | 11,010 | 13,169 | 15,603 | 22,755 | 33,716 | 26,313 | 17,396 | 13,599 | 14,995 | 18,004 | 15,477 | 12,202 |
| 60% | 9,731 | 12,156 | 15,117 | 19,533 | 25,478 | 21,832 | 15,088 | 12,629 | 14,676 | 16,726 | 13,501 | 10,317 |
| 70% | 8,960 | 9,996 | 14,260 | 15,362 | 21,078 | 19,047 | 13,028 | 11,674 | 13,937 | 15,460 | 9,630 | 9,577 |
| 80% | 8,539 | 8,866 | 12,937 | 13,139 | 17,389 | 14,989 | 11,782 | 11,158 | 12,573 | 12,093 | 8,825 | 9,030 |
| 90% | 7,069 | 7,194 | 9,737 | 12,082 | 14,555 | 11,857 | 10,751 | 9,905 | 11,360 | 9,572 | 7,723 | 7,875 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,114 | 14,377 | 23,918 | 31,659 | 38,696 | 33,248 | 24,751 | 18,766 | 16,317 | 17,486 | 13,634 | 11,821 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 13,503 | 17,350 | 27,955 | 50,989 | 57,481 | 50,329 | 39,529 | 30,260 | 21,099 | 19,712 | 17,057 | 14,460 |
| Above Normal (16%) | 12,402 | 16,216 | 23,324 | 40,196 | 48,122 | 44,816 | 27,506 | 17,804 | 14,939 | 21,822 | 17,068 | 13,775 |
| Below Normal (13%) | 11,630 | 11,993 | 21,409 | 19,471 | 33,060 | 19,952 | 15,660 | 14,296 | 15,513 | 20,343 | 15,206 | 11,664 |
| Dry (24%) | 9,317 | 14,688 | 27,055 | 17,515 | 24,358 | 22,746 | 16,970 | 12,914 | 14,778 | 15,080 | 9,655 | 9,752 |
| Critical (15%) | 7,065 | 7,610 | 12,888 | 15,275 | 16,845 | 13,396 | 11,046 | 8,755 | 10,748 | 9,359 | 7,692 | 7,577 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-1,343** | 701 | 169 | 891 | 392 | 58 | **-558** | 9 | 7 | **-656** | 613 | **-14,101** |
| 20% | **-1,579** | **-4,459** | 2,121 | 2,804 | 453 | 98 | **0** | **-11** | 459 | **-1,737** | 779 | **-14,413** |
| 30% | **-1,139** | **-4,483** | 2,361 | 3,340 | 1,871 | 1,640 | 33 | 50 | 1,484 | **-1,710** | 858 | **-8,668** |
| 40% | **-683** | **-3,322** | 517 | 1,720 | 1,935 | 371 | 22 | 1,374 | 1,979 | **-922** | 548 | **-8,334** |
| 50% | 434 | **-2,245** | 56 | 2,513 | 645 | 770 | **-140** | 1,321 | 1,911 | **-483** | 322 | **-2,111** |
| 60% | 466 | **-1,005** | 337 | 1,444 | 100 | 1,478 | 185 | 961 | 2,026 | **-312** | 388 | **-461** |
| 70% | 339 | **-550** | 784 | 508 | 1,068 | 28 | 189 | 697 | 1,955 | 305 | 170 | **-280** |
| 80% | 27 | **-783** | 1,964 | 100 | 657 | **-263** | 336 | 974 | 1,311 | **-1,515** | 148 | **-127** |
| 90% | 0 | **-258** | 206 | 173 | 628 | 448 | 500 | 865 | 1,153 | **-920** | **-329** | 49 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-299** | **-1,630** | 1,102 | 736 | 672 | 731 | 165 | 519 | 1,252 | **-716** | 416 | **-5,654** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-1,086** | **-3,509** | 2,453 | 929 | 520 | 426 | 106 | **-64** | 716 | **-583** | 1,021 | **-13,763** |
| Above Normal (16%) | **-568** | **-2,336** | 1,452 | 1,125 | 1,033 | 1,980 | 296 | 649 | 1,446 | **-1,144** | 292 | **-7,984** |
| Below Normal (13%) | 238 | **-394** | 279 | 944 | 2,018 | 1,085 | 374 | 1,096 | 2,520 | **-1,280** | 474 | **-88** |
| Dry (24%) | 300 | **-284** | 166 | 195 | 229 | 251 | 130 | 1,188 | 1,631 | **-445** | 84 | 18 |
| Critical (15%) | 207 | **-170** | 112 | 609 | 115 | 516 | 22 | **-6** | 407 | **-476** | **-257** | **-118** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-3. Sacramento River Flow at Freeport, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,462 | 21,542 | 50,195 | 65,000 | 69,738 | 64,827 | 52,557 | 38,629 | 20,654 | 24,529 | 16,958 | 29,451 |
| 20% | 14,044 | 19,263 | 33,944 | 53,965 | 62,372 | 53,989 | 38,721 | 28,054 | 16,178 | 24,220 | 16,568 | 28,488 |
| 30% | 13,243 | 18,443 | 21,814 | 38,469 | 50,812 | 41,513 | 25,293 | 16,030 | 14,030 | 22,824 | 16,070 | 22,484 |
| 40% | 12,565 | 17,044 | 18,066 | 26,010 | 43,892 | 31,089 | 22,500 | 13,503 | 13,452 | 19,748 | 15,786 | 21,731 |
| 50% | 10,356 | 15,471 | 15,521 | 20,258 | 33,254 | 25,635 | 17,541 | 12,283 | 13,093 | 18,800 | 15,154 | 13,854 |
| 60% | 9,121 | 13,204 | 14,767 | 18,165 | 25,442 | 20,351 | 14,960 | 11,617 | 12,619 | 17,152 | 13,722 | 10,719 |
| 70% | 8,177 | 10,428 | 13,379 | 14,854 | 20,069 | 18,975 | 12,827 | 10,835 | 11,599 | 15,974 | 9,484 | 9,942 |
| 80% | 8,049 | 9,328 | 10,586 | 13,023 | 16,348 | 15,258 | 11,444 | 10,120 | 10,846 | 14,200 | 8,685 | 9,222 |
| 90% | 6,584 | 7,187 | 9,357 | 11,911 | 14,293 | 11,409 | 10,248 | 8,753 | 10,213 | 11,139 | 8,013 | 7,852 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,186 | 15,887 | 22,809 | 30,928 | 38,059 | 32,551 | 24,579 | 18,164 | 14,924 | 18,430 | 13,274 | 17,499 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14,487 | 20,839 | 25,490 | 50,073 | 56,989 | 49,902 | 39,427 | 30,325 | 20,392 | 20,230 | 16,023 | 28,227 |
| Above Normal (16%) | 12,640 | 18,546 | 21,946 | 39,237 | 47,178 | 43,037 | 27,296 | 17,159 | 13,494 | 22,946 | 16,776 | 21,852 |
| Below Normal (13%) | 11,241 | 12,285 | 21,153 | 18,490 | 31,200 | 18,881 | 15,326 | 13,084 | 12,970 | 21,656 | 14,896 | 11,740 |
| Dry (24%) | 8,663 | 14,783 | 26,842 | 17,323 | 24,217 | 22,503 | 16,820 | 11,656 | 12,947 | 16,257 | 9,702 | 9,771 |
| Critical (15%) | 6,614 | 7,420 | 12,728 | 14,524 | 16,520 | 12,876 | 10,882 | 8,406 | 9,709 | 10,301 | 7,988 | 7,702 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,471 | 21,520 | 50,148 | 65,044 | 69,734 | 64,827 | 52,538 | 38,630 | 20,649 | 24,535 | 16,949 | 29,446 |
| 20% | 14,419 | 19,264 | 33,826 | 53,961 | 62,354 | 53,989 | 38,731 | 28,049 | 16,178 | 24,386 | 16,584 | 28,640 |
| 30% | 13,478 | 18,440 | 21,271 | 38,470 | 50,842 | 41,539 | 25,303 | 16,030 | 14,192 | 22,848 | 16,052 | 22,482 |
| 40% | 12,610 | 17,030 | 18,052 | 25,993 | 43,713 | 31,090 | 22,498 | 13,503 | 13,462 | 19,647 | 15,775 | 21,527 |
| 50% | 10,576 | 15,415 | 15,548 | 20,242 | 33,071 | 25,543 | 17,536 | 12,278 | 13,083 | 18,487 | 15,154 | 14,313 |
| 60% | 9,264 | 13,162 | 14,780 | 18,089 | 25,378 | 20,354 | 14,903 | 11,668 | 12,650 | 17,038 | 13,114 | 10,778 |
| 70% | 8,621 | 10,546 | 13,476 | 14,854 | 20,010 | 19,020 | 12,839 | 10,977 | 11,981 | 15,156 | 9,460 | 9,856 |
| 80% | 8,512 | 9,649 | 10,973 | 13,039 | 16,732 | 15,252 | 11,446 | 10,183 | 11,262 | 13,608 | 8,677 | 9,157 |
| 90% | 7,069 | 7,451 | 9,531 | 11,909 | 13,927 | 11,409 | 10,251 | 9,040 | 10,208 | 10,491 | 8,053 | 7,826 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,413 | 16,007 | 22,816 | 30,923 | 38,024 | 32,516 | 24,585 | 18,247 | 15,065 | 18,203 | 13,218 | 17,475 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14,589 | 20,859 | 25,502 | 50,060 | 56,961 | 49,903 | 39,423 | 30,324 | 20,383 | 20,296 | 16,036 | 28,223 |
| Above Normal (16%) | 12,970 | 18,552 | 21,872 | 39,071 | 47,089 | 42,836 | 27,210 | 17,155 | 13,493 | 22,967 | 16,776 | 21,758 |
| Below Normal (13%) | 11,392 | 12,386 | 21,131 | 18,527 | 31,041 | 18,867 | 15,286 | 13,200 | 12,993 | 21,623 | 14,732 | 11,752 |
| Dry (24%) | 9,017 | 14,972 | 26,890 | 17,320 | 24,129 | 22,495 | 16,841 | 11,727 | 13,147 | 15,525 | 9,571 | 9,734 |
| Critical (15%) | 6,859 | 7,780 | 12,775 | 14,666 | 16,730 | 12,880 | 11,024 | 8,761 | 10,341 | 9,834 | 7,949 | 7,694 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10 | -22 | -47 | 44 | -3 | 0 | -20 | 1 | -5 | 6 | -9 | -5 |
| 20% | 375 | 1 | -118 | -5 | -18 | -1 | 10 | -5 | 0 | 166 | 16 | 152 |
| 30% | 235 | -3 | -543 | 1 | 30 | 27 | 10 | -1 | 162 | 24 | -18 | -2 |
| 40% | 45 | -14 | -13 | -17 | -180 | 0 | -2 | 0 | 10 | -101 | -12 | -204 |
| 50% | 220 | -57 | 26 | -16 | -183 | -92 | -5 | -5 | -10 | -314 | 0 | 459 |
| 60% | 144 | -42 | 14 | -76 | -64 | 2 | -57 | 51 | 30 | -114 | -609 | 59 |
| 70% | 444 | 119 | 97 | 1 | -59 | 44 | 12 | 143 | 383 | -818 | -24 | -85 |
| 80% | 463 | 320 | 387 | 16 | 384 | -6 | 1 | 63 | 417 | -591 | -8 | -65 |
| 90% | 485 | 264 | 174 | -2 | -365 | 1 | 3 | 287 | -5 | -648 | 40 | -26 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 227 | 120 | 8 | -5 | -35 | -35 | 6 | 84 | 141 | -227 | -56 | -24 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 102 | 20 | 12 | -13 | -28 | 1 | -3 | -1 | -9 | 66 | 13 | -3 |
| Above Normal (16%) | 330 | 6 | -74 | -166 | -88 | -201 | -86 | -4 | -1 | 20 | 0 | -94 |
| Below Normal (13%) | 151 | 101 | -22 | 36 | -158 | -14 | -40 | 116 | 23 | -33 | -163 | 12 |
| Dry (24%) | 354 | 190 | 48 | -3 | -88 | -7 | 21 | 70 | 200 | -732 | -131 | -36 |
| Critical (15%) | 245 | 360 | 47 | 142 | 209 | 4 | 142 | 355 | 632 | -467 | -39 | -8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-4. Sacramento River Flow at Freeport, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,332 | 24,078 | 52,760 | 65,882 | 70,031 | 64,878 | 52,583 | 38,630 | 20,650 | 24,438 | 16,984 | 15,507 |
| 20% | 13,867 | 14,883 | 36,616 | 56,798 | 62,813 | 54,088 | 38,727 | 28,053 | 16,842 | 23,610 | 16,813 | 14,883 |
| 30% | 12,674 | 13,625 | 23,713 | 41,897 | 52,576 | 42,854 | 25,427 | 17,030 | 15,485 | 22,414 | 16,194 | 14,471 |
| 40% | 11,942 | 12,714 | 18,423 | 27,487 | 46,456 | 31,354 | 22,393 | 14,552 | 15,130 | 19,701 | 15,857 | 14,254 |
| 50% | 10,513 | 11,405 | 15,591 | 22,879 | 33,864 | 26,172 | 17,544 | 13,630 | 14,771 | 18,138 | 15,377 | 13,809 |
| 60% | 9,168 | 10,889 | 15,135 | 18,779 | 25,320 | 21,156 | 14,084 | 12,654 | 14,170 | 17,343 | 14,046 | 11,248 |
| 70% | 8,353 | 10,011 | 13,160 | 14,762 | 21,000 | 19,022 | 12,814 | 12,007 | 13,642 | 14,601 | 9,840 | 9,903 |
| 80% | 8,043 | 8,549 | 10,627 | 12,867 | 17,363 | 15,741 | 11,667 | 11,158 | 12,511 | 12,484 | 8,967 | 9,147 |
| 90% | 6,578 | 7,476 | 9,473 | 12,066 | 14,543 | 11,855 | 10,756 | 9,959 | 11,510 | 10,526 | 7,795 | 7,837 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 10,965 | 14,008 | 23,811 | 31,611 | 38,640 | 33,182 | 24,646 | 18,902 | 16,177 | 18,032 | 13,434 | 12,456 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 13,466 | 17,131 | 28,084 | 51,103 | 57,254 | 50,062 | 39,492 | 30,674 | 20,886 | 19,883 | 15,978 | 15,383 |
| Above Normal (16%) | 13,023 | 14,792 | 22,969 | 40,490 | 48,085 | 44,453 | 27,323 | 17,873 | 14,454 | 22,948 | 16,722 | 14,777 |
| Below Normal (13%) | 11,334 | 11,867 | 21,060 | 19,669 | 33,481 | 19,910 | 15,723 | 14,481 | 15,126 | 21,888 | 16,031 | 12,421 |
| Dry (24%) | 8,787 | 14,566 | 27,075 | 17,377 | 24,294 | 22,951 | 16,725 | 12,769 | 14,905 | 15,224 | 9,912 | 9,951 |
| Critical (15%) | 6,608 | 7,423 | 12,546 | 14,427 | 16,719 | 13,619 | 10,964 | 8,785 | 10,921 | 9,842 | 7,847 | 7,804 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,128 | 22,221 | 50,316 | 65,935 | 70,126 | 64,885 | 51,980 | 38,639 | 20,656 | 23,879 | 17,562 | 15,344 |
| 20% | 12,840 | 14,806 | 35,947 | 56,764 | 62,807 | 54,087 | 38,731 | 28,038 | 16,637 | 22,649 | 17,363 | 14,227 |
| 30% | 12,339 | 13,957 | 23,631 | 41,810 | 52,713 | 43,179 | 25,336 | 16,080 | 15,676 | 21,138 | 16,911 | 13,815 |
| 40% | 11,928 | 13,708 | 18,569 | 27,712 | 45,648 | 31,460 | 22,520 | 14,876 | 15,440 | 18,725 | 16,323 | 13,193 |
| 50% | 11,010 | 13,169 | 15,603 | 22,755 | 33,716 | 26,313 | 17,396 | 13,599 | 14,995 | 18,004 | 15,477 | 12,202 |
| 60% | 9,731 | 12,156 | 15,117 | 19,533 | 25,478 | 21,832 | 15,088 | 12,629 | 14,676 | 16,726 | 13,501 | 10,317 |
| 70% | 8,960 | 9,996 | 14,260 | 15,362 | 21,078 | 19,047 | 13,028 | 11,674 | 13,937 | 15,460 | 9,630 | 9,577 |
| 80% | 8,539 | 8,866 | 12,937 | 13,139 | 17,389 | 14,989 | 11,782 | 11,158 | 12,573 | 12,093 | 8,825 | 9,030 |
| 90% | 7,069 | 7,194 | 9,737 | 12,082 | 14,555 | 11,857 | 10,751 | 9,905 | 11,360 | 9,572 | 7,723 | 7,875 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,114 | 14,377 | 23,918 | 31,659 | 38,696 | 33,248 | 24,751 | 18,766 | 16,317 | 17,486 | 13,634 | 11,821 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 13,503 | 17,350 | 27,955 | 50,989 | 57,481 | 50,329 | 39,529 | 30,260 | 21,099 | 19,712 | 17,057 | 14,460 |
| Above Normal (16%) | 12,402 | 16,216 | 23,324 | 40,196 | 48,122 | 44,816 | 27,506 | 17,804 | 14,939 | 21,822 | 17,068 | 13,775 |
| Below Normal (13%) | 11,630 | 11,993 | 21,409 | 19,471 | 33,060 | 19,952 | 15,660 | 14,296 | 15,513 | 20,343 | 15,206 | 11,664 |
| Dry (24%) | 9,317 | 14,688 | 27,055 | 17,515 | 24,358 | 22,746 | 16,970 | 12,914 | 14,778 | 15,080 | 9,655 | 9,752 |
| Critical (15%) | 7,065 | 7,610 | 12,888 | 15,275 | 16,845 | 13,396 | 11,046 | 8,755 | 10,748 | 9,359 | 7,692 | 7,577 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -204 | -1,857 | -2,444 | 54 | 95 | 7 | -602 | 9 | 7 | -558 | 578 | -163 |
| 20% | -1,027 | -77 | -669 | -33 | -7 | -1 | 4 | -15 | -205 | -960 | 550 | -656 |
| 30% | -335 | 332 | -81 | -88 | 137 | 325 | -91 | -951 | 190 | -1,276 | 717 | -656 |
| 40% | -14 | 993 | 147 | 225 | -808 | 107 | 127 | 324 | 310 | -976 | 466 | -1,061 |
| 50% | 497 | 1,764 | 12 | -124 | -148 | 141 | -148 | -31 | 224 | -134 | 100 | -1,607 |
| 60% | 562 | 1,267 | -18 | 755 | 159 | 676 | 1,003 | -25 | 506 | -617 | -545 | -932 |
| 70% | 607 | -15 | 1,100 | 600 | 78 | 25 | 214 | -333 | 295 | 859 | -210 | -326 |
| 80% | 496 | 317 | 2,310 | 273 | 25 | -752 | 115 | -1 | 62 | -391 | -142 | -118 |
| 90% | 491 | -282 | 264 | 16 | 12 | 1 | -6 | -54 | -150 | -955 | -72 | 37 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 149 | 369 | 107 | 48 | 55 | 65 | 104 | -136 | 140 | -546 | 201 | -635 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 37 | 219 | -129 | -115 | 227 | 267 | 37 | -414 | 213 | -171 | 1,079 | -923 |
| Above Normal (16%) | -621 | 1,424 | 355 | -293 | 37 | 363 | 183 | -70 | 484 | -1,126 | 346 | -1,003 |
| Below Normal (13%) | 295 | 125 | 349 | -198 | -421 | 42 | -63 | -185 | 386 | -1,545 | -825 | -758 |
| Dry (24%) | 530 | 122 | -19 | 138 | 64 | -205 | 245 | 145 | -127 | -144 | -257 | -199 |
| Critical (15%) | 458 | 187 | 341 | 848 | 126 | -223 | 82 | -30 | -173 | -483 | -155 | -228 |

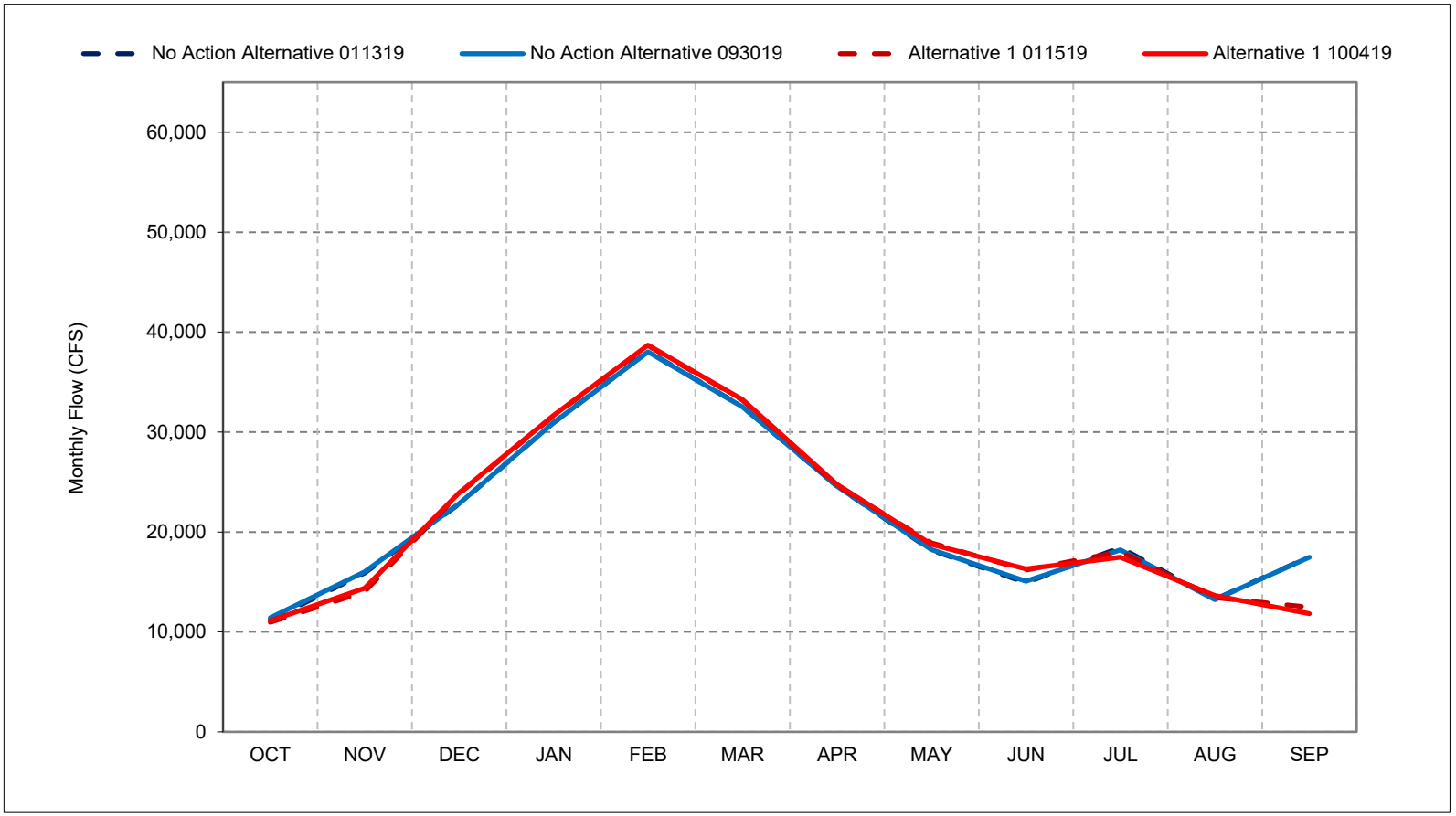
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-1. Sacramento River Flow at Freeport, Long-Term Average Flow

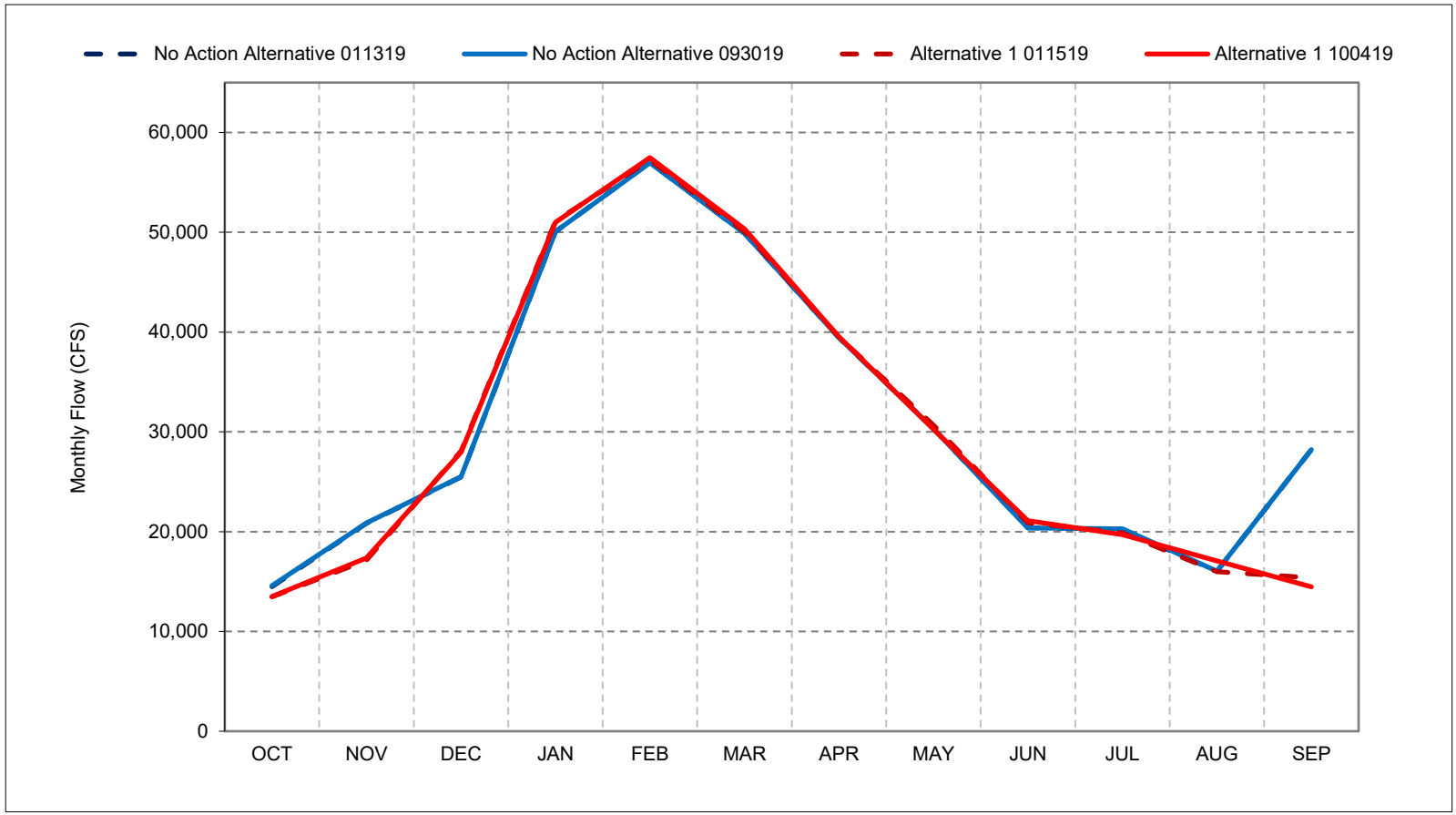



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-2. Sacramento River Flow at Freeport, Wet Year Average Flow

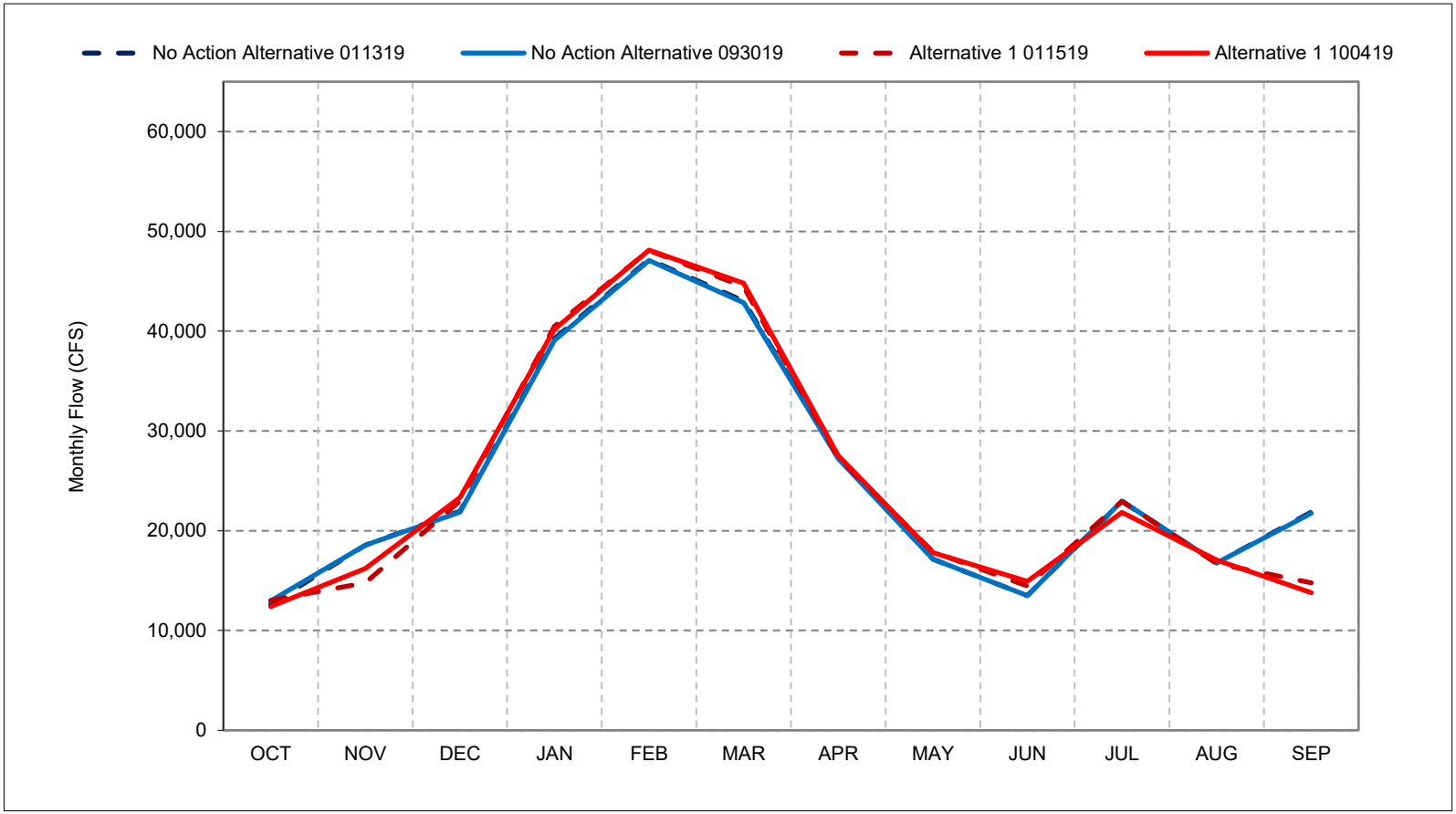



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-3. Sacramento River Flow at Freeport, Above Normal Year Average Flow

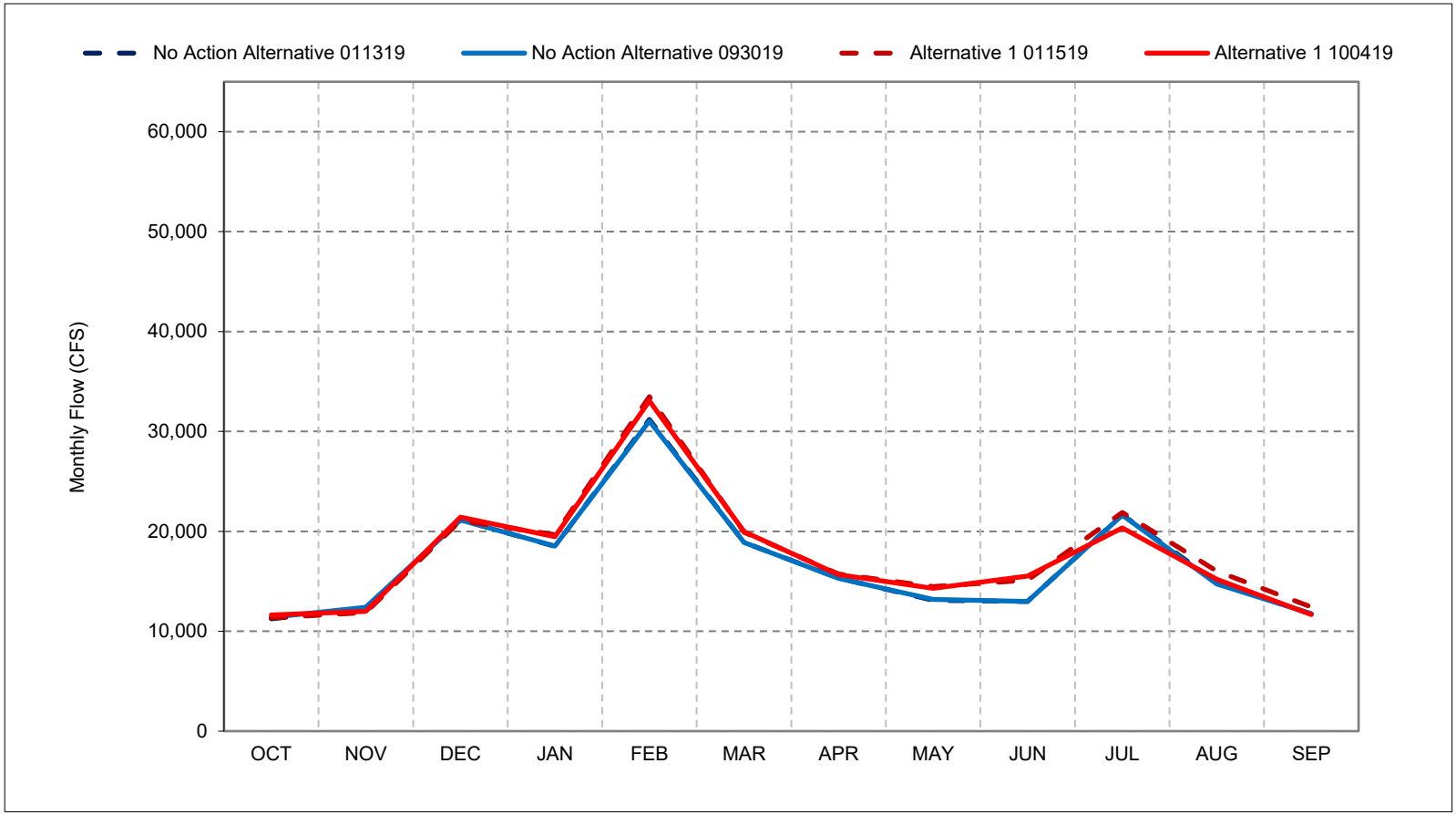



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-4. Sacramento River Flow at Freeport, Below Normal Year Average Flow

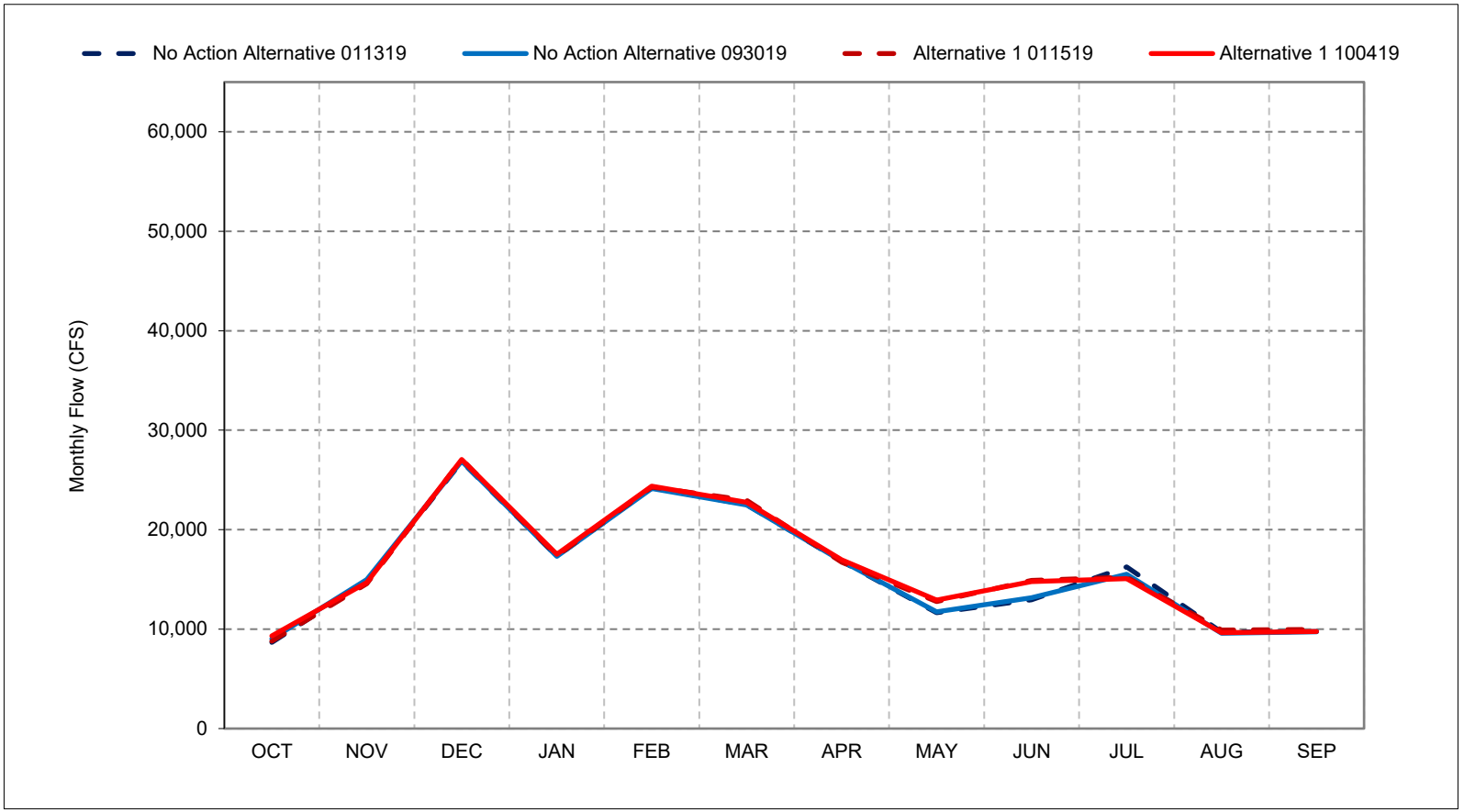



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-5. Sacramento River Flow at Freeport, Dry Year Average Flow

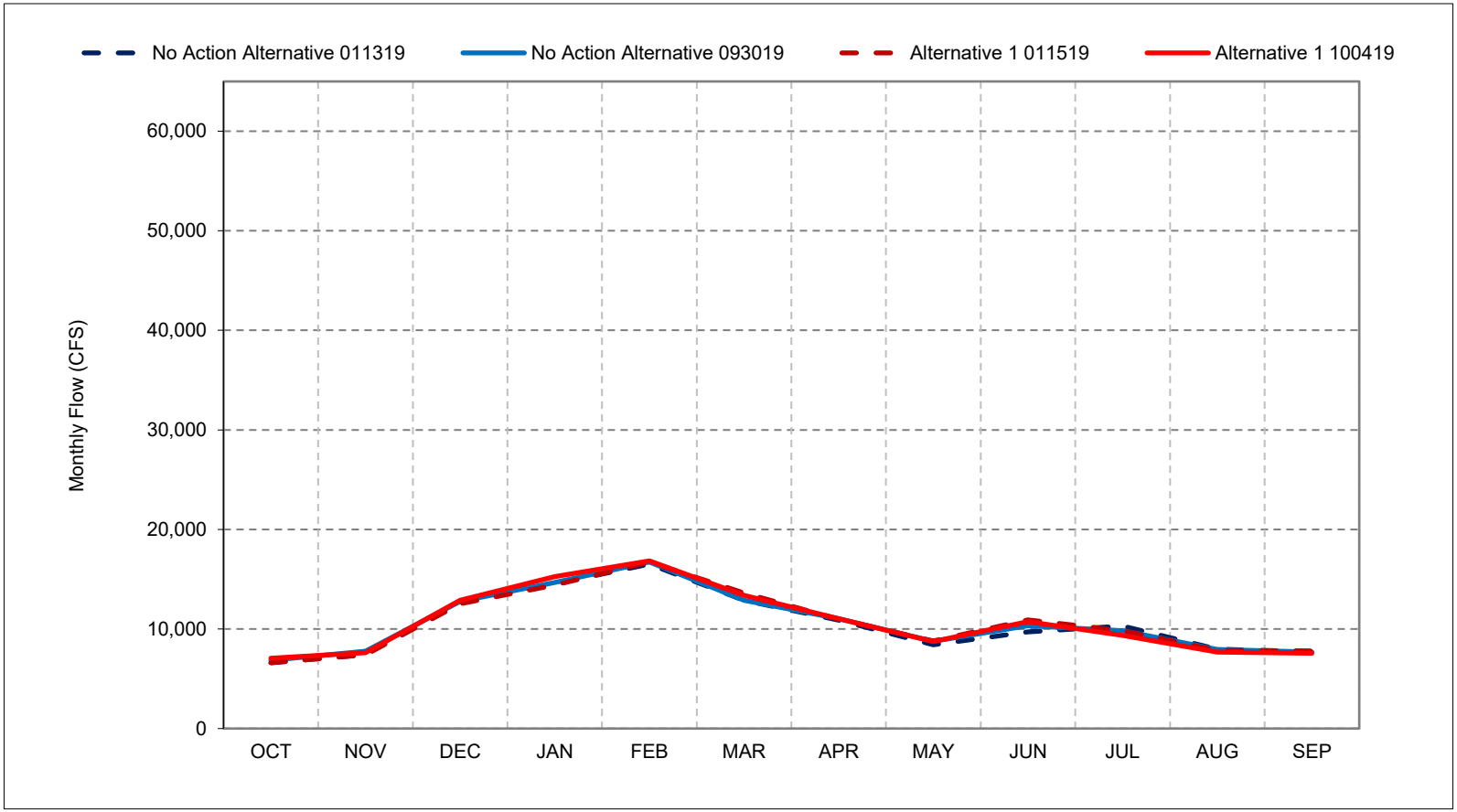



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-6. Sacramento River Flow at Freeport, Critical Year Average Flow

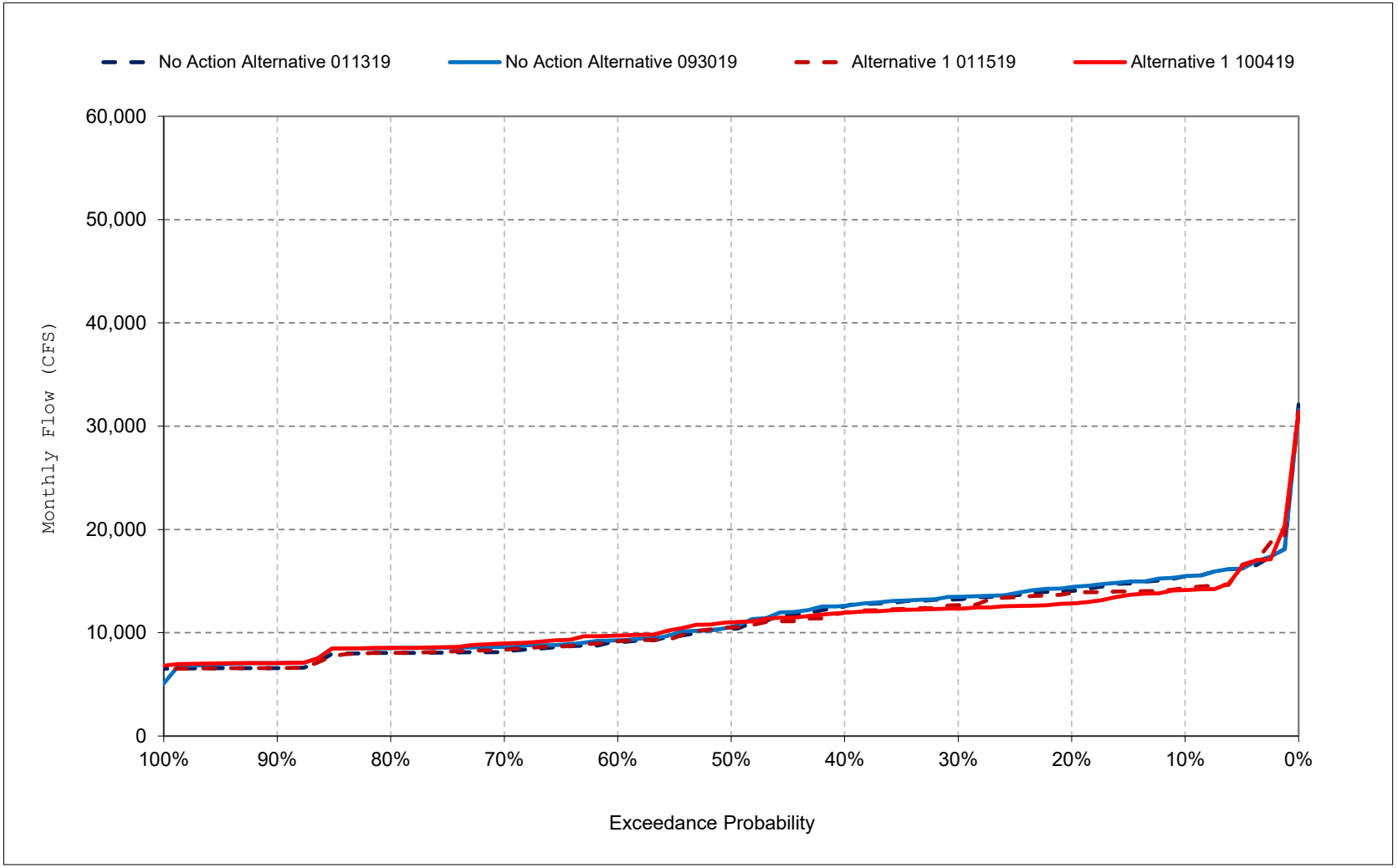



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

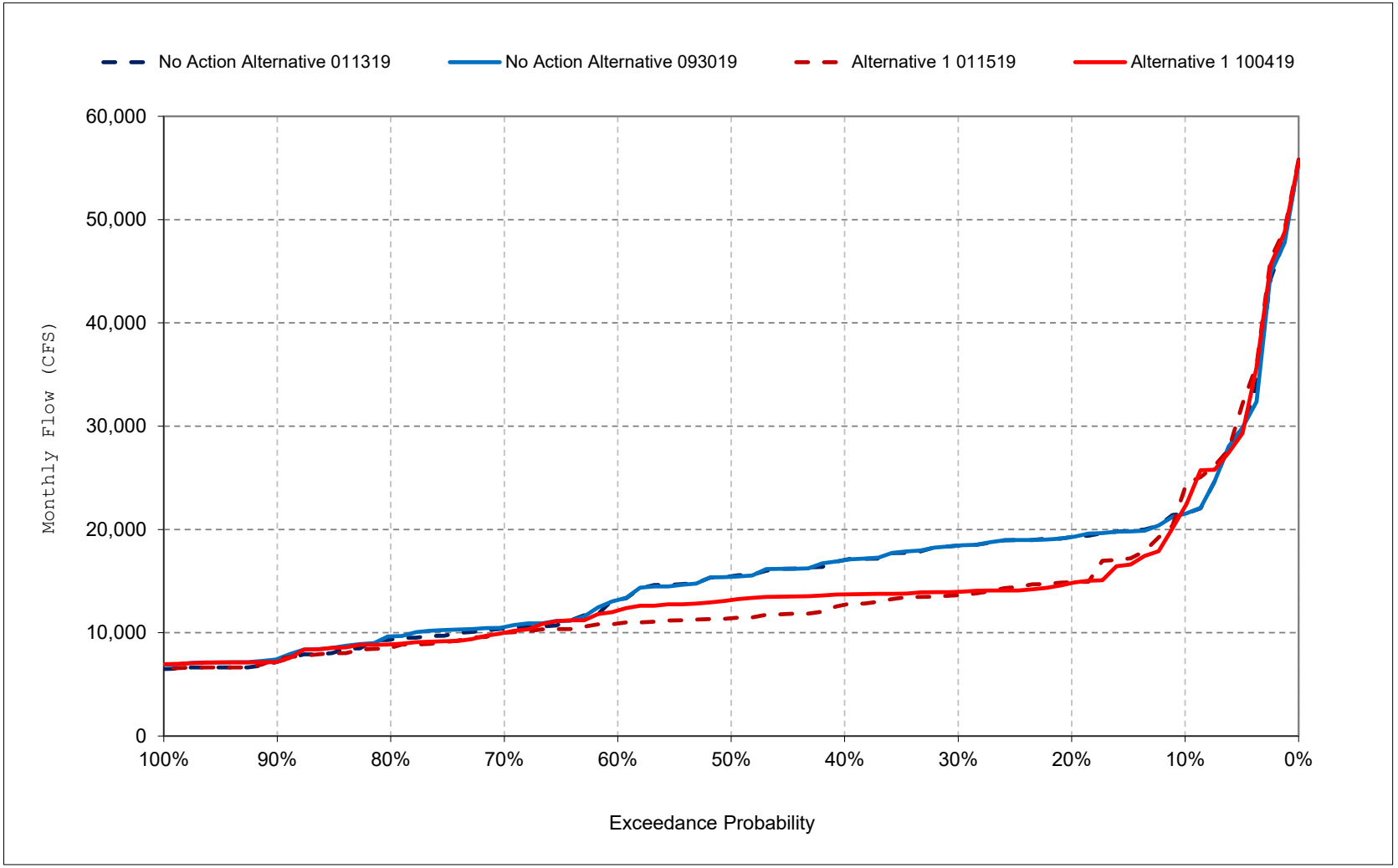
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-7. Sacramento River Flow at Freeport, October**



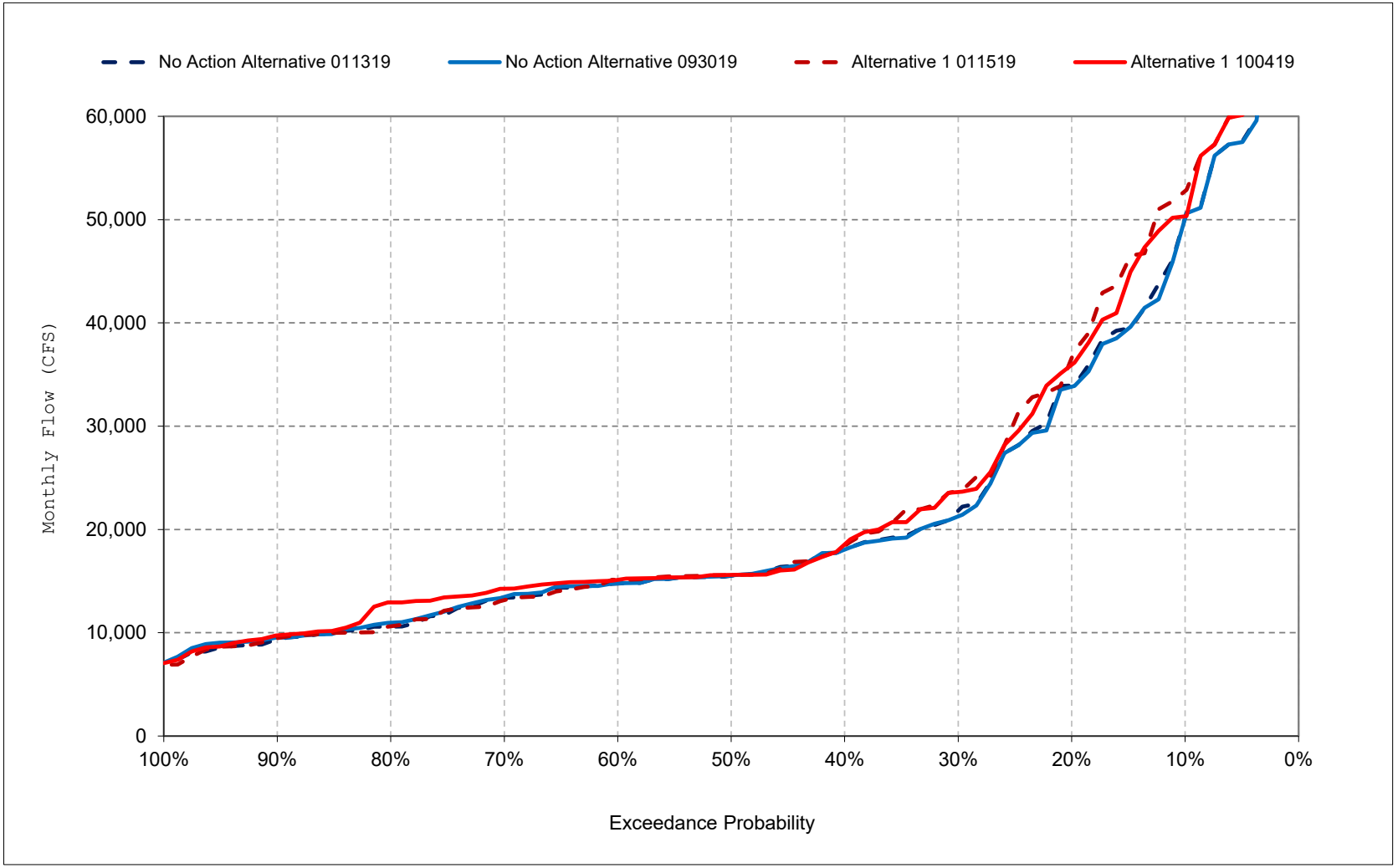

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-8. Sacramento River Flow at Freeport, November**



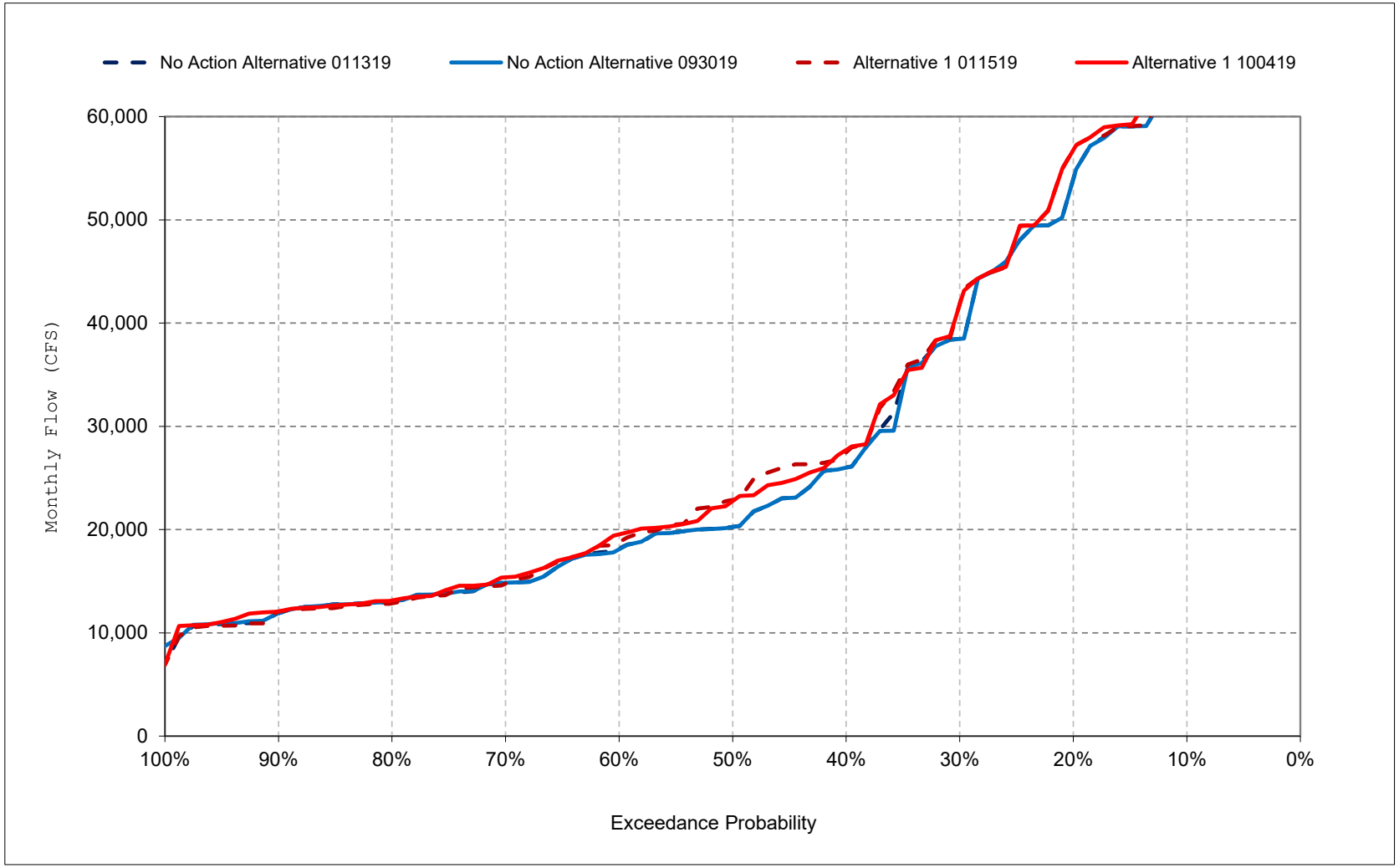

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-9. Sacramento River Flow at Freeport, December**



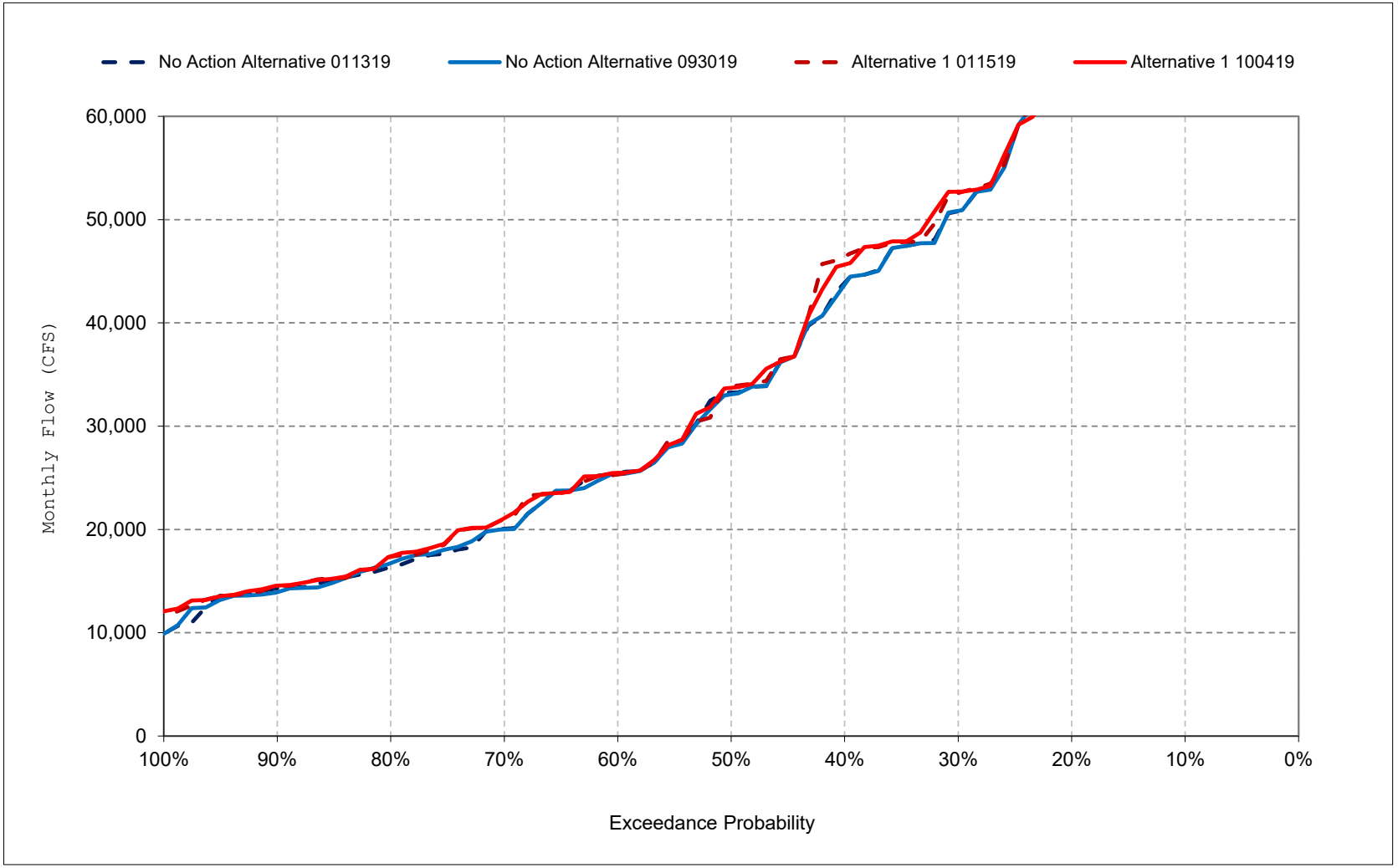

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-10. Sacramento River Flow at Freeport, January**



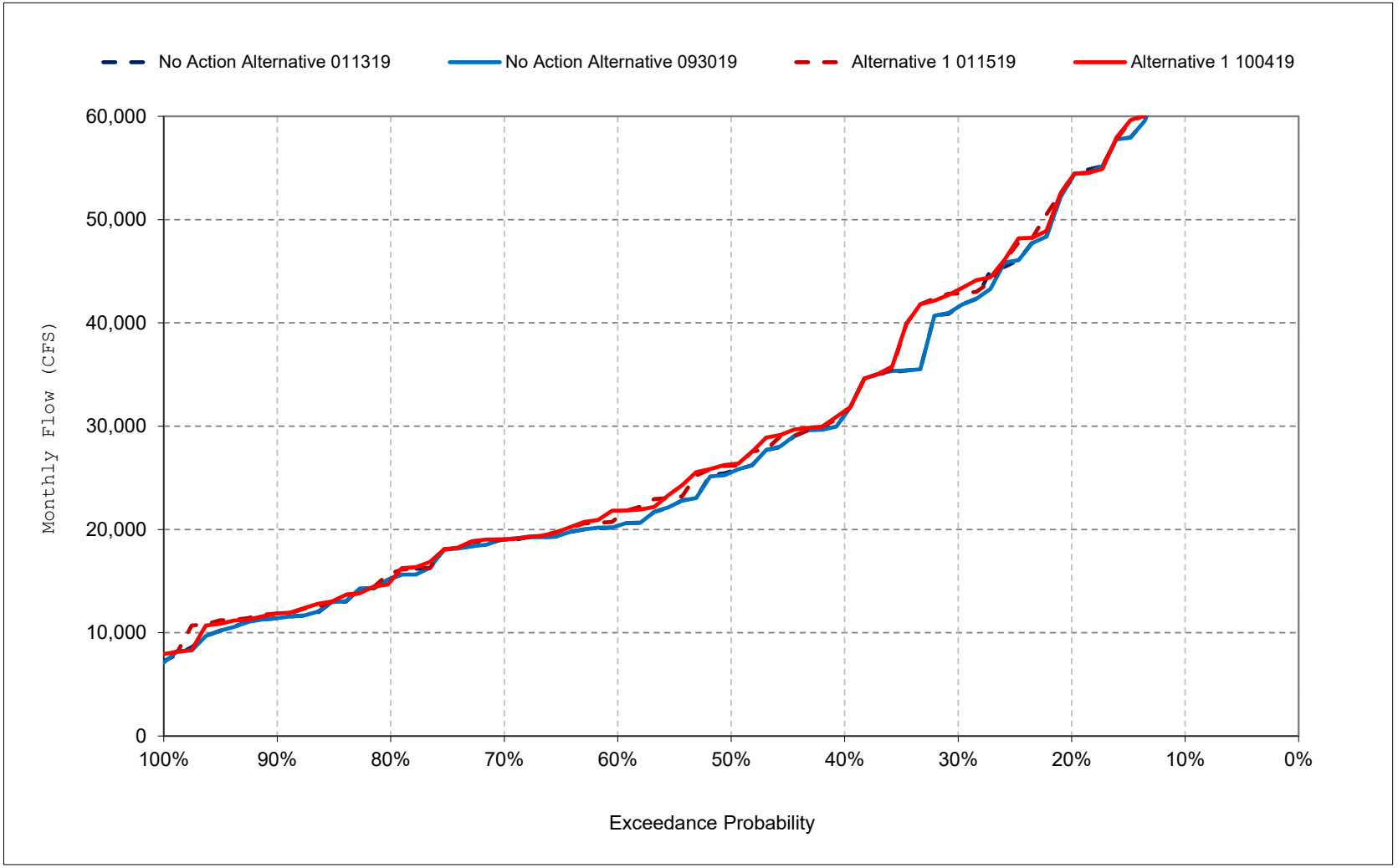

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-11. Sacramento River Flow at Freeport, February**



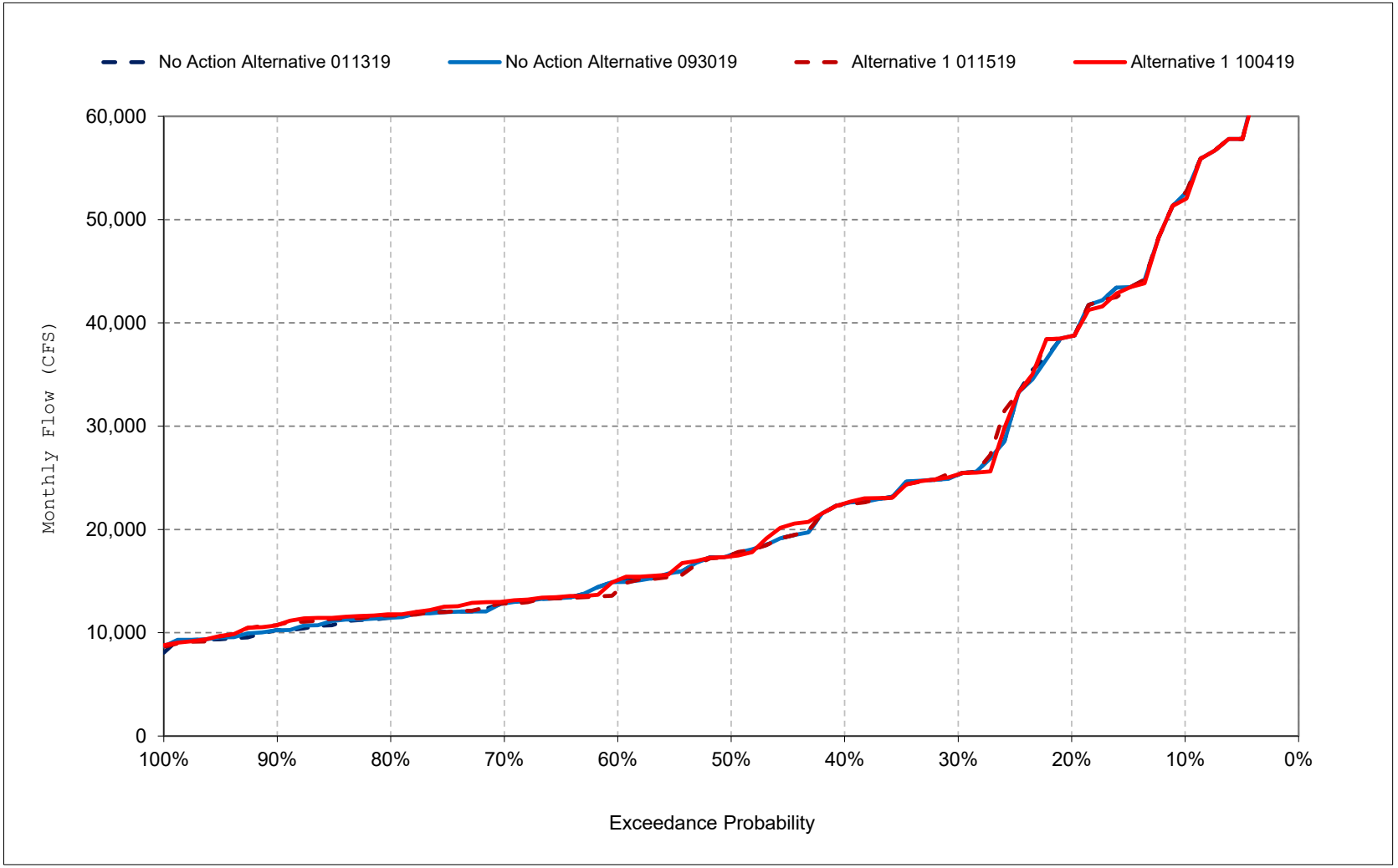

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-12. Sacramento River Flow at Freeport, March**



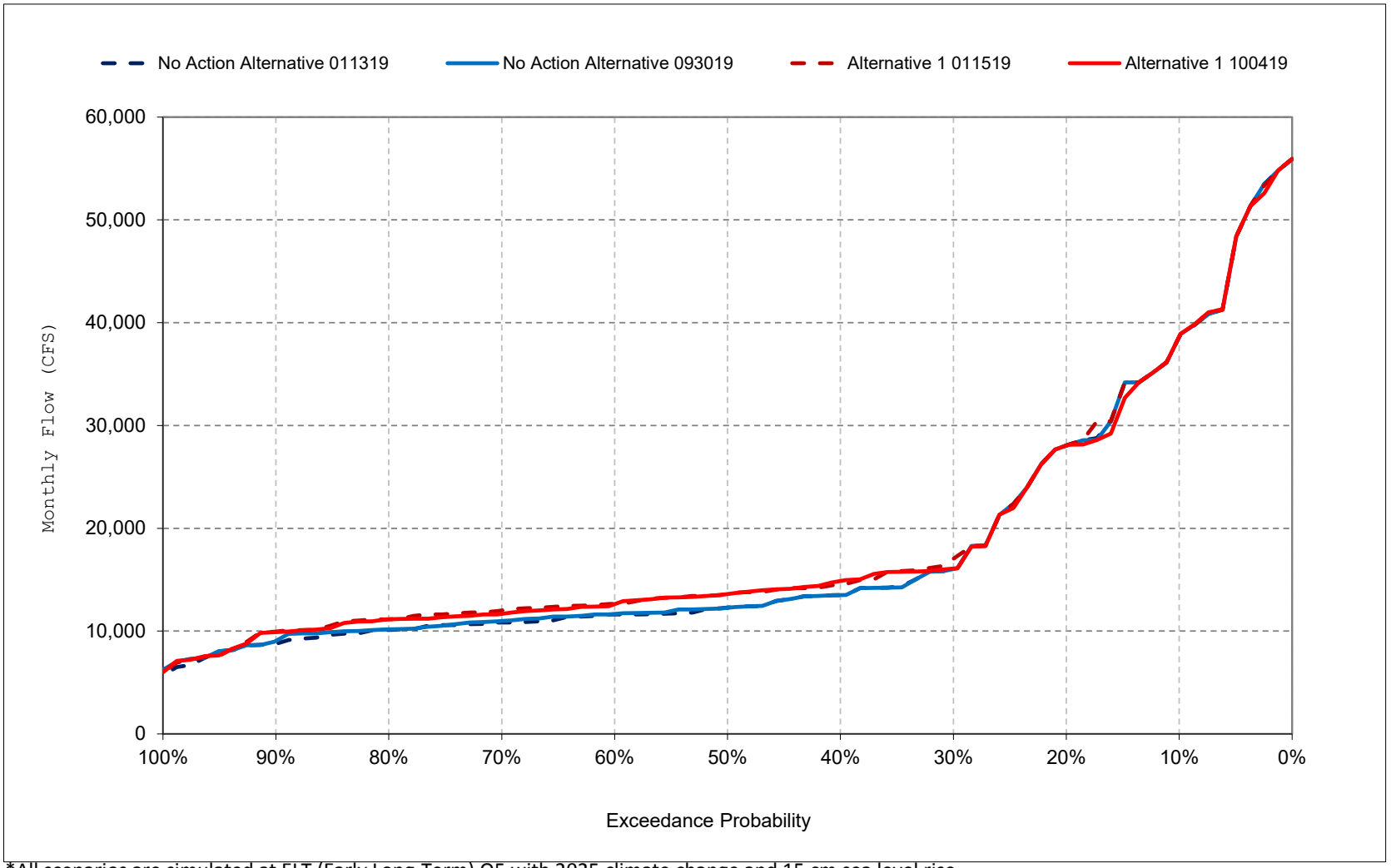

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-13. Sacramento River Flow at Freeport, April**



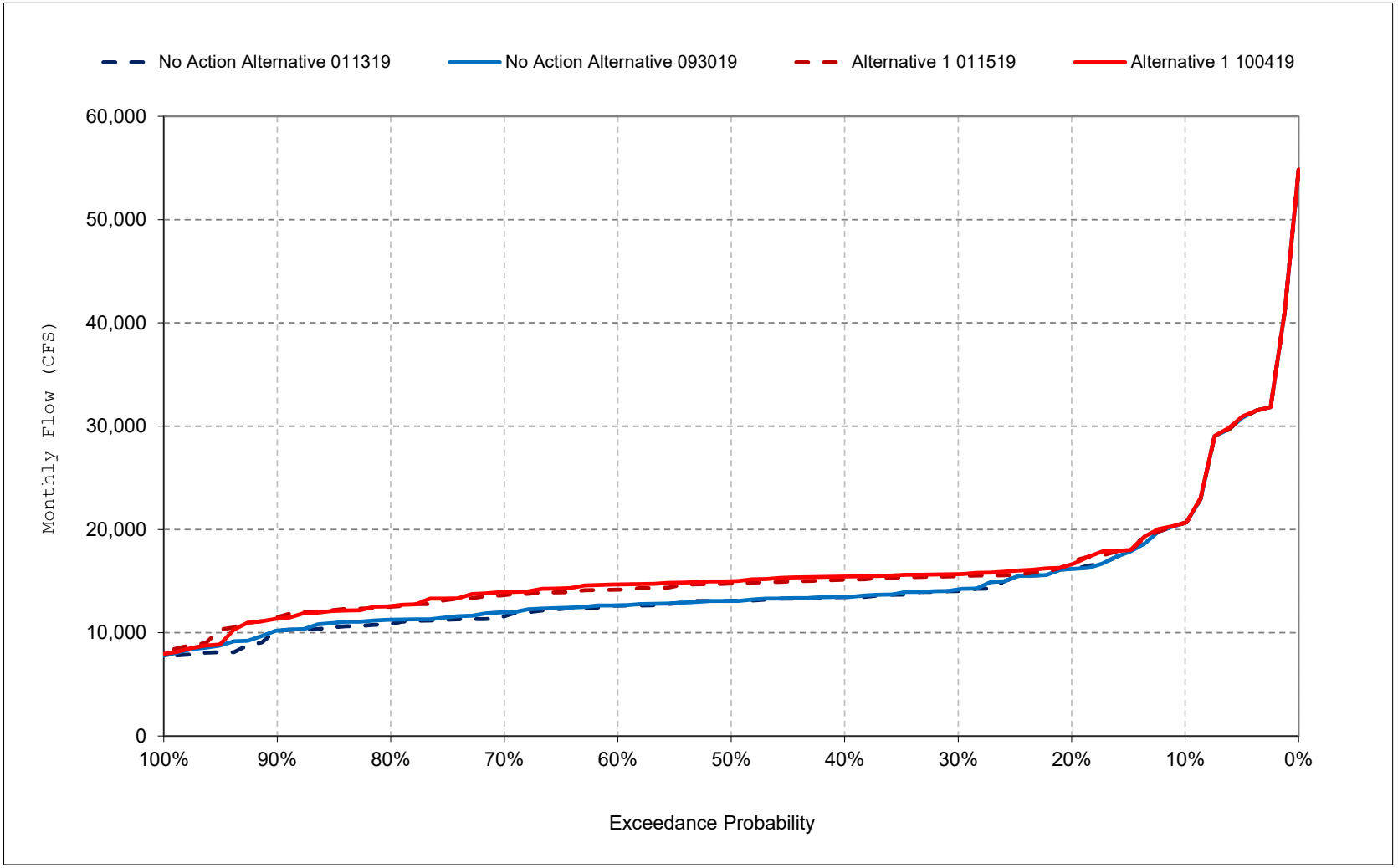

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-14. Sacramento River Flow at Freeport, May**



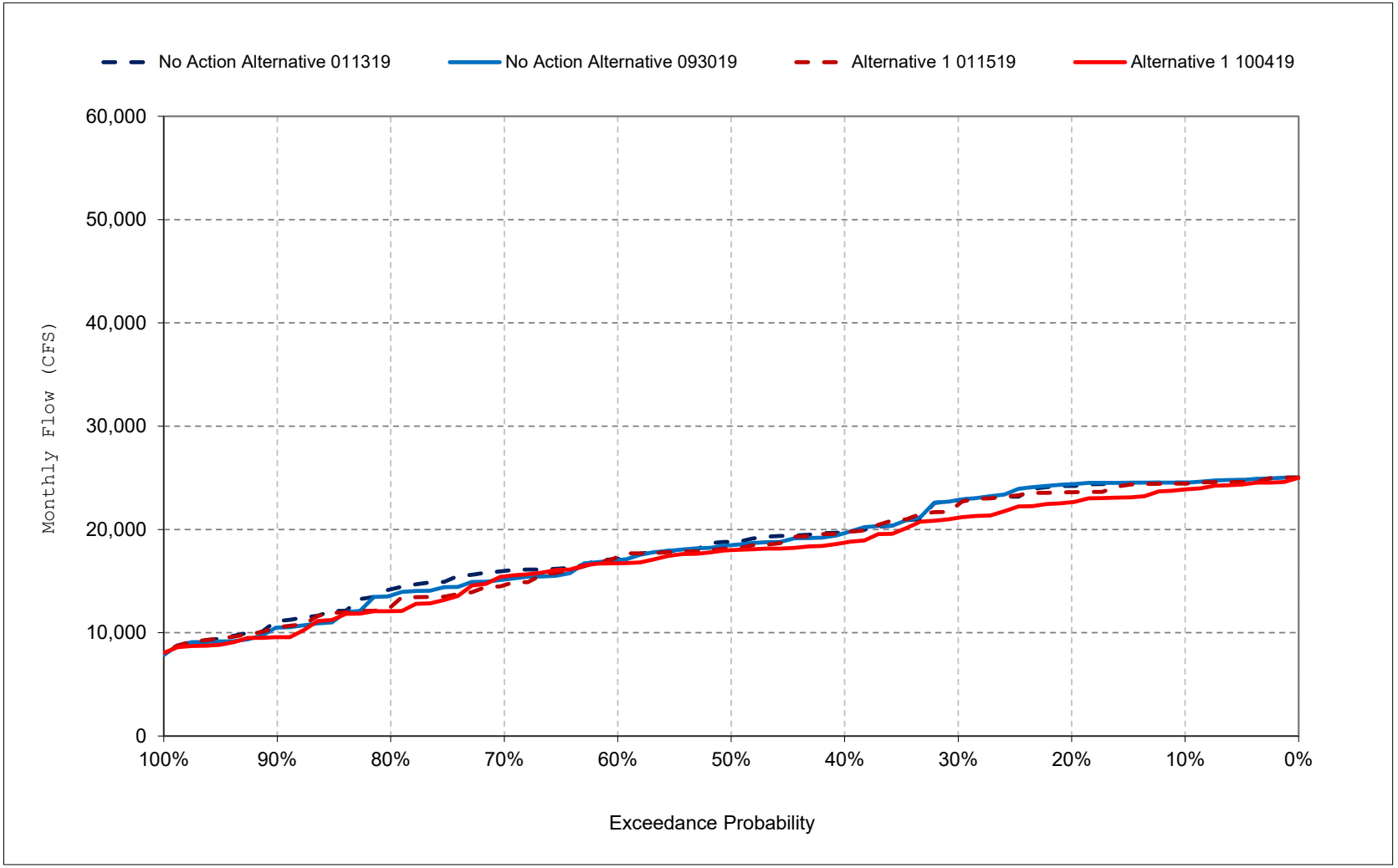

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-15. Sacramento River Flow at Freeport, June**



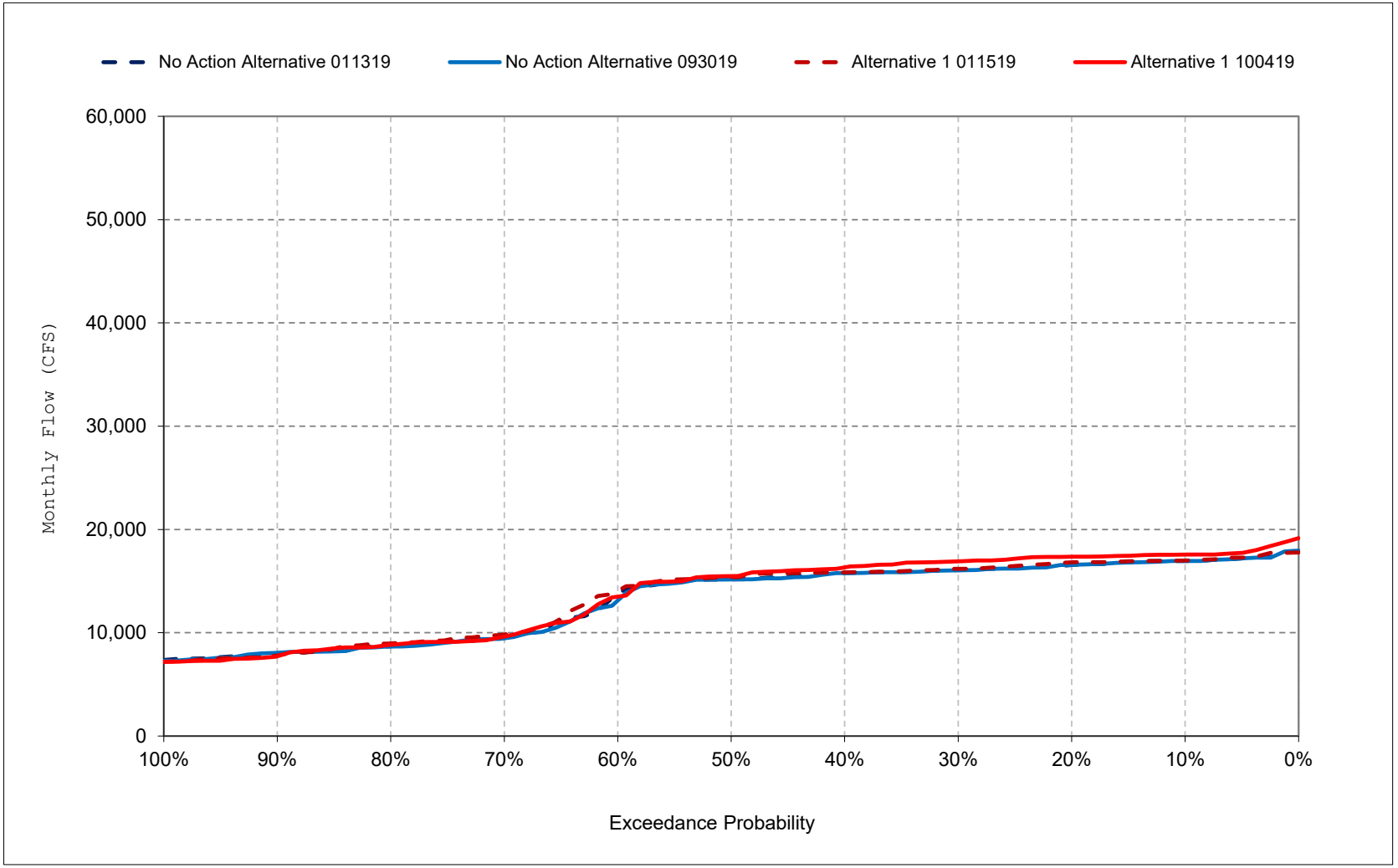

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-16. Sacramento River Flow at Freeport, July**



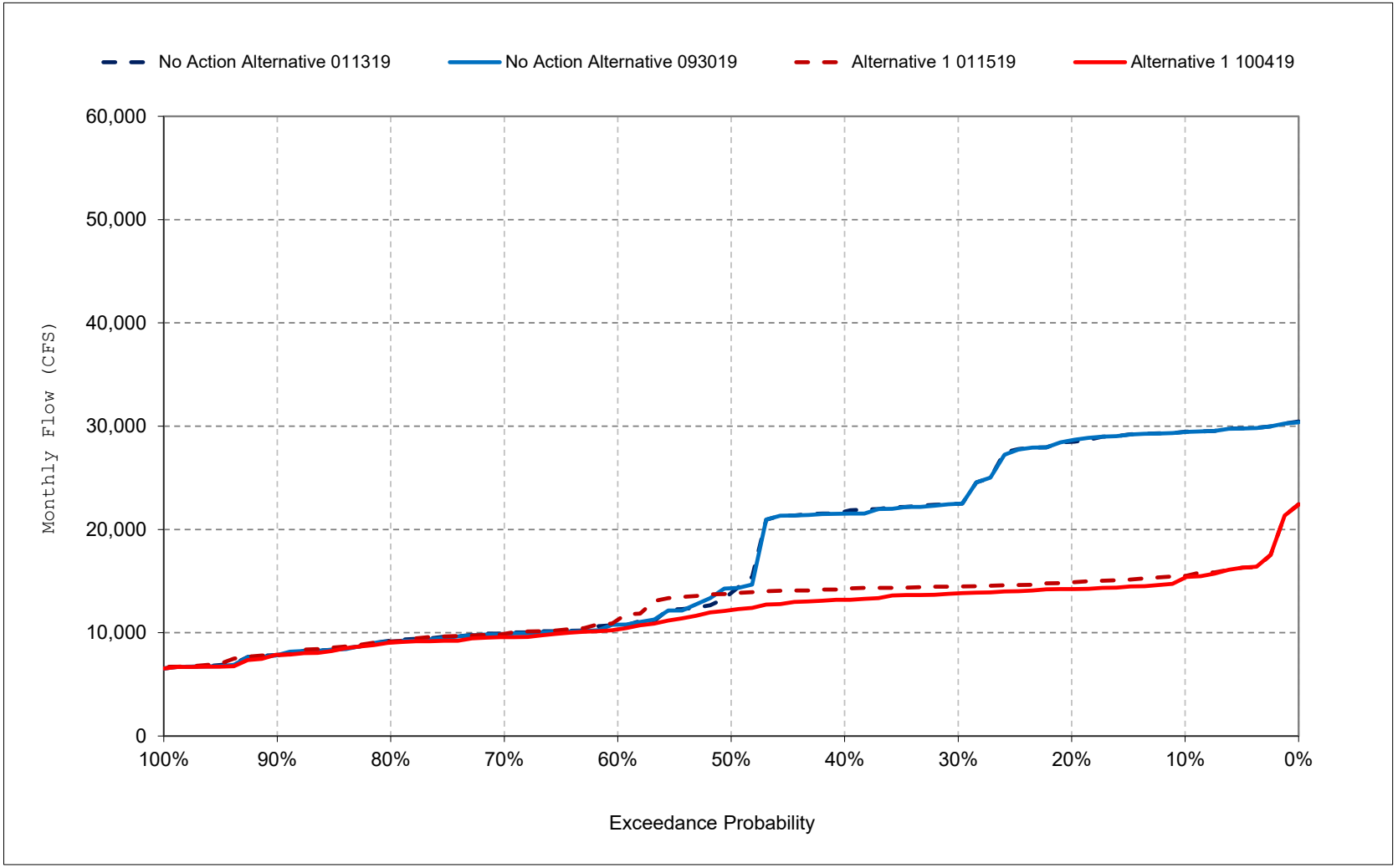

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-17. Sacramento River Flow at Freeport, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-18. Sacramento River Flow at Freeport, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-1. Sacramento River Flow at Rio Vista, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,903 | 18,621 | 59,795 | 90,564 | 115,622 | 71,578 | 54,378 | 32,151 | 12,575 | 14,373 | 9,715 | 24,126 |
| 20% | 9,306 | 15,531 | 33,264 | 59,683 | 75,065 | 54,949 | 36,578 | 22,549 | 9,094 | 14,177 | 9,404 | 23,512 |
| 30% | 8,161 | 14,419 | 18,523 | 43,955 | 55,187 | 40,265 | 21,104 | 12,100 | 7,689 | 13,172 | 9,064 | 13,705 |
| 40% | 7,316 | 12,489 | 14,842 | 26,557 | 44,175 | 28,903 | 18,471 | 9,826 | 7,217 | 11,136 | 8,880 | 13,181 |
| 50% | 5,735 | 11,579 | 11,994 | 18,547 | 31,939 | 22,096 | 13,814 | 8,905 | 7,070 | 10,495 | 8,499 | 7,859 |
| 60% | 4,792 | 8,535 | 10,708 | 15,222 | 22,703 | 16,751 | 11,378 | 8,179 | 6,674 | 9,382 | 7,525 | 5,753 |
| 70% | 4,218 | 6,479 | 9,550 | 12,124 | 16,606 | 15,413 | 9,541 | 7,439 | 5,981 | 8,554 | 4,533 | 5,220 |
| 80% | 4,000 | 5,692 | 7,002 | 10,482 | 13,230 | 12,084 | 8,411 | 6,993 | 5,455 | 7,381 | 4,009 | 4,655 |
| 90% | 3,002 | 4,020 | 5,869 | 9,375 | 11,472 | 8,470 | 7,390 | 5,834 | 5,003 | 5,254 | 3,547 | 3,742 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,803 | 12,324 | 22,567 | 38,108 | 48,140 | 36,365 | 22,467 | 14,144 | 8,825 | 10,214 | 7,177 | 11,805 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9,583 | 17,176 | 25,983 | 75,058 | 85,434 | 65,804 | 39,726 | 24,976 | 13,818 | 11,436 | 9,084 | 22,317 |
| Above Normal (16%) | 7,713 | 15,026 | 19,270 | 42,094 | 58,153 | 44,982 | 23,982 | 13,276 | 7,294 | 13,278 | 9,560 | 13,242 |
| Below Normal (13%) | 7,280 | 8,368 | 20,237 | 16,001 | 31,094 | 15,702 | 11,888 | 9,515 | 6,899 | 12,387 | 8,321 | 6,414 |
| Dry (24%) | 4,590 | 11,315 | 29,228 | 15,265 | 23,021 | 19,563 | 13,598 | 8,341 | 6,885 | 8,752 | 4,700 | 5,065 |
| Critical (15%) | 3,044 | 4,194 | 9,768 | 12,070 | 13,978 | 10,189 | 7,912 | 5,532 | 4,668 | 4,694 | 3,547 | 3,651 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 9,384 | 20,662 | 62,958 | 91,677 | 115,656 | 77,071 | 54,377 | 32,151 | 12,572 | 14,334 | 9,804 | 8,888 |
| 20% | 8,619 | 11,055 | 38,523 | 60,974 | 75,487 | 54,947 | 36,575 | 22,548 | 9,584 | 13,694 | 9,567 | 8,470 |
| 30% | 7,739 | 9,566 | 20,330 | 44,843 | 58,999 | 40,588 | 21,437 | 12,834 | 8,648 | 12,851 | 9,257 | 8,251 |
| 40% | 6,684 | 8,216 | 15,394 | 27,131 | 49,242 | 29,199 | 18,422 | 10,894 | 8,385 | 11,033 | 8,989 | 8,083 |
| 50% | 5,773 | 7,254 | 11,933 | 20,320 | 32,162 | 22,882 | 13,788 | 9,791 | 8,275 | 10,047 | 8,647 | 7,749 |
| 60% | 4,820 | 6,725 | 10,886 | 15,734 | 23,301 | 18,362 | 10,714 | 9,134 | 7,740 | 9,463 | 7,584 | 6,077 |
| 70% | 4,374 | 6,150 | 9,445 | 12,270 | 17,373 | 15,474 | 9,528 | 8,748 | 7,365 | 7,604 | 4,935 | 5,129 |
| 80% | 4,097 | 5,125 | 7,042 | 10,453 | 14,113 | 12,292 | 8,636 | 7,938 | 6,551 | 6,151 | 4,272 | 4,638 |
| 90% | 3,000 | 4,173 | 6,002 | 9,384 | 11,555 | 8,900 | 7,830 | 6,806 | 5,932 | 4,751 | 3,388 | 3,767 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,557 | 10,461 | 24,033 | 39,117 | 49,161 | 37,124 | 22,527 | 14,786 | 9,707 | 9,943 | 7,286 | 6,871 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 8,830 | 13,269 | 29,718 | 77,045 | 86,207 | 66,254 | 39,782 | 25,280 | 14,166 | 11,200 | 9,052 | 8,843 |
| Above Normal (16%) | 7,686 | 11,579 | 20,554 | 43,391 | 60,217 | 46,632 | 24,004 | 13,898 | 7,967 | 13,280 | 9,523 | 8,422 |
| Below Normal (13%) | 7,107 | 8,033 | 20,157 | 17,278 | 34,240 | 16,744 | 12,240 | 10,726 | 8,412 | 12,545 | 9,091 | 6,878 |
| Dry (24%) | 4,674 | 11,178 | 29,684 | 15,323 | 23,035 | 20,050 | 13,515 | 9,307 | 8,260 | 8,048 | 4,846 | 5,186 |
| Critical (15%) | 3,040 | 4,199 | 9,617 | 11,982 | 14,137 | 10,848 | 7,991 | 5,867 | 5,529 | 4,381 | 3,448 | 3,717 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -1,518 | 2,041 | 3,163 | 1,113 | 34 | 5,494 | -1 | 0 | -3 | -39 | 88 | -15,238 |
| 20% | -688 | -4,476 | 5,259 | 1,291 | 422 | -2 | -3 | -1 | 490 | -483 | 164 | -15,042 |
| 30% | -422 | -4,852 | 1,807 | 888 | 3,813 | 323 | 333 | 734 | 959 | -321 | 193 | -5,453 |
| 40% | -632 | -4,273 | 552 | 574 | 5,068 | 296 | -49 | 1,068 | 1,168 | -103 | 109 | -5,098 |
| 50% | 39 | -4,325 | -61 | 1,773 | 223 | 786 | -26 | 886 | 1,205 | -448 | 149 | -110 |
| 60% | 27 | -1,810 | 178 | 512 | 598 | 1,611 | -663 | 954 | 1,066 | 81 | 59 | 324 |
| 70% | 156 | -329 | -106 | 146 | 767 | 61 | -13 | 1,309 | 1,383 | -949 | 402 | -91 |
| 80% | 97 | -566 | 40 | -29 | 883 | 208 | 225 | 945 | 1,097 | -1,230 | 263 | -17 |
| 90% | -2 | 153 | 133 | 9 | 83 | 431 | 441 | 973 | 929 | -503 | -159 | 25 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -246 | -1,863 | 1,466 | 1,008 | 1,021 | 759 | 60 | 642 | 882 | -271 | 109 | -4,935 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -752 | -3,908 | 3,735 | 1,987 | 773 | 450 | 57 | 304 | 348 | -236 | -32 | -13,474 |
| Above Normal (16%) | -27 | -3,447 | 1,285 | 1,297 | 2,064 | 1,650 | 22 | 621 | 673 | 1 | -37 | -4,820 |
| Below Normal (13%) | -172 | -335 | -80 | 1,277 | 3,146 | 1,042 | 352 | 1,211 | 1,514 | 158 | 771 | 464 |
| Dry (24%) | 83 | -137 | 456 | 58 | 14 | 487 | -83 | 967 | 1,376 | -704 | 146 | 121 |
| Critical (15%) | -3 | 5 | -151 | -89 | 159 | 659 | 78 | 336 | 861 | -313 | -99 | 66 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-2. Sacramento River Flow at Rio Vista, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,849 | 18,526 | 59,783 | 90,859 | 115,629 | 71,537 | 54,378 | 32,151 | 12,572 | 14,390 | 9,716 | 24,135 |
| 20% | 9,813 | 15,400 | 32,940 | 59,690 | 74,834 | 54,948 | 36,577 | 22,544 | 9,094 | 14,231 | 9,407 | 23,512 |
| 30% | 8,220 | 14,565 | 17,912 | 43,533 | 54,988 | 39,268 | 21,124 | 12,100 | 7,783 | 13,196 | 9,022 | 13,703 |
| 40% | 7,468 | 12,850 | 14,830 | 26,554 | 43,909 | 28,818 | 18,466 | 9,824 | 7,257 | 11,058 | 8,852 | 13,020 |
| 50% | 5,942 | 11,535 | 12,026 | 18,543 | 31,842 | 22,098 | 13,804 | 8,905 | 7,083 | 10,270 | 8,438 | 8,100 |
| 60% | 4,986 | 8,504 | 10,684 | 15,100 | 22,638 | 16,751 | 11,379 | 8,293 | 6,693 | 9,261 | 7,235 | 5,791 |
| 70% | 4,496 | 6,775 | 9,658 | 12,112 | 16,605 | 15,397 | 9,551 | 7,643 | 6,279 | 8,038 | 4,562 | 5,142 |
| 80% | 4,341 | 6,006 | 7,232 | 10,483 | 13,483 | 12,079 | 8,418 | 7,012 | 5,692 | 6,951 | 3,951 | 4,633 |
| 90% | 3,341 | 4,222 | 6,005 | 9,373 | 11,206 | 8,470 | 7,396 | 6,194 | 4,999 | 4,764 | 3,603 | 3,785 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,007 | 12,429 | 22,548 | 38,074 | 48,035 | 36,312 | 22,473 | 14,218 | 8,927 | 10,059 | 7,139 | 11,789 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9,721 | 17,261 | 25,988 | 74,970 | 85,291 | 65,800 | 39,722 | 24,975 | 13,812 | 11,481 | 9,093 | 22,314 |
| Above Normal (16%) | 8,113 | 15,008 | 19,189 | 41,908 | 57,916 | 44,653 | 23,907 | 13,273 | 7,293 | 13,292 | 9,560 | 13,178 |
| Below Normal (13%) | 7,378 | 8,451 | 20,209 | 16,033 | 30,870 | 15,688 | 11,854 | 9,615 | 6,915 | 12,364 | 8,209 | 6,422 |
| Dry (24%) | 4,828 | 11,438 | 29,212 | 15,260 | 22,941 | 19,561 | 13,616 | 8,402 | 7,027 | 8,253 | 4,609 | 5,038 |
| Critical (15%) | 3,221 | 4,461 | 9,774 | 12,205 | 14,170 | 10,206 | 8,039 | 5,849 | 5,122 | 4,373 | 3,518 | 3,650 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 9,414 | 18,468 | 64,178 | 93,058 | 115,874 | 79,154 | 54,328 | 32,159 | 12,577 | 13,893 | 10,059 | 8,810 |
| 20% | 8,242 | 11,033 | 36,722 | 60,978 | 75,463 | 55,156 | 36,478 | 22,548 | 9,439 | 13,109 | 9,926 | 8,065 |
| 30% | 7,491 | 9,282 | 20,239 | 44,714 | 56,098 | 41,414 | 21,251 | 12,134 | 8,820 | 12,096 | 9,701 | 7,735 |
| 40% | 7,059 | 8,931 | 15,406 | 27,126 | 47,537 | 29,298 | 18,546 | 11,077 | 8,643 | 10,428 | 9,201 | 7,338 |
| 50% | 6,462 | 8,589 | 11,924 | 20,007 | 32,053 | 23,066 | 13,777 | 9,883 | 8,392 | 9,872 | 8,928 | 6,673 |
| 60% | 5,254 | 7,935 | 10,899 | 16,562 | 23,345 | 17,736 | 11,475 | 9,142 | 8,144 | 9,066 | 7,338 | 5,513 |
| 70% | 4,787 | 6,032 | 10,230 | 12,559 | 17,489 | 15,555 | 9,757 | 8,423 | 7,590 | 8,187 | 4,645 | 4,887 |
| 80% | 4,341 | 5,439 | 8,967 | 10,479 | 14,146 | 11,698 | 8,716 | 7,780 | 6,739 | 5,902 | 4,071 | 4,559 |
| 90% | 3,341 | 3,908 | 6,171 | 9,529 | 11,598 | 8,917 | 7,740 | 6,816 | 5,909 | 4,213 | 3,393 | 3,755 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,838 | 10,681 | 24,031 | 39,128 | 49,295 | 37,245 | 22,633 | 14,671 | 9,811 | 9,573 | 7,424 | 6,439 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9,023 | 13,338 | 29,420 | 76,890 | 86,802 | 66,580 | 39,861 | 24,920 | 14,320 | 11,091 | 9,790 | 8,214 |
| Above Normal (16%) | 7,672 | 12,537 | 20,681 | 43,053 | 60,292 | 47,247 | 24,160 | 13,837 | 8,313 | 12,513 | 9,761 | 7,739 |
| Below Normal (13%) | 7,588 | 8,100 | 20,465 | 17,082 | 33,479 | 16,783 | 12,189 | 10,567 | 8,691 | 11,492 | 8,532 | 6,362 |
| Dry (24%) | 5,136 | 11,251 | 29,669 | 15,438 | 23,112 | 19,811 | 13,729 | 9,441 | 8,181 | 7,947 | 4,668 | 5,048 |
| Critical (15%) | 3,348 | 4,328 | 9,858 | 12,749 | 14,253 | 10,662 | 8,065 | 5,844 | 5,409 | 4,052 | 3,342 | 3,573 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -1,435 | -58 | 4,394 | 2,199 | 245 | 7,618 | -49 | 8 | 5 | -497 | 343 | -15,326 |
| 20% | -1,572 | -4,367 | 3,782 | 1,288 | 629 | 208 | -100 | 4 | 345 | -1,122 | 519 | -15,447 |
| 30% | -729 | -5,283 | 2,327 | 1,181 | 1,110 | 2,146 | 127 | 34 | 1,036 | -1,100 | 679 | -5,969 |
| 40% | -409 | -3,919 | 576 | 573 | 3,627 | 480 | 79 | 1,253 | 1,386 | -631 | 349 | -5,682 |
| 50% | 520 | -2,946 | -102 | 1,464 | 211 | 968 | -28 | 978 | 1,309 | -398 | 490 | -1,427 |
| 60% | 267 | -569 | 215 | 1,463 | 706 | 985 | 96 | 849 | 1,451 | -194 | 103 | -278 |
| 70% | 291 | -743 | 572 | 447 | 884 | 158 | 206 | 780 | 1,312 | 149 | 84 | -256 |
| 80% | 0 | -567 | 1,735 | -3 | 663 | -381 | 299 | 769 | 1,047 | -1,048 | 120 | -74 |
| 90% | 0 | -314 | 166 | 156 | 392 | 447 | 344 | 622 | 910 | -551 | -209 | -30 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -169 | -1,748 | 1,483 | 1,054 | 1,260 | 933 | 160 | 453 | 884 | -486 | 285 | -5,350 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -698 | -3,923 | 3,432 | 1,920 | 1,511 | 780 | 139 | -55 | 508 | -390 | 698 | -14,100 |
| Above Normal (16%) | -441 | -2,472 | 1,491 | 1,145 | 2,376 | 2,594 | 253 | 564 | 1,019 | -780 | 201 | -5,439 |
| Below Normal (13%) | 210 | -351 | 257 | 1,049 | 2,610 | 1,095 | 335 | 952 | 1,776 | -872 | 323 | -60 |
| Dry (24%) | 308 | -188 | 457 | 178 | 171 | 249 | 113 | 1,040 | 1,153 | -305 | 59 | 10 |
| Critical (15%) | 127 | -133 | 84 | 545 | 83 | 456 | 26 | -5 | 287 | -321 | -175 | -77 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-3. Sacramento River Flow at Rio Vista, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,903 | 18,621 | 59,795 | 90,564 | 115,622 | 71,578 | 54,378 | 32,151 | 12,575 | 14,373 | 9,715 | 24,126 |
| 20% | 9,306 | 15,531 | 33,264 | 59,683 | 75,065 | 54,949 | 36,578 | 22,549 | 9,094 | 14,177 | 9,404 | 23,512 |
| 30% | 8,161 | 14,419 | 18,523 | 43,955 | 55,187 | 40,265 | 21,104 | 12,100 | 7,689 | 13,172 | 9,064 | 13,705 |
| 40% | 7,316 | 12,489 | 14,842 | 26,557 | 44,175 | 28,903 | 18,471 | 9,826 | 7,217 | 11,136 | 8,880 | 13,181 |
| 50% | 5,735 | 11,579 | 11,994 | 18,547 | 31,939 | 22,096 | 13,814 | 8,905 | 7,070 | 10,495 | 8,499 | 7,859 |
| 60% | 4,792 | 8,535 | 10,708 | 15,222 | 22,703 | 16,751 | 11,378 | 8,179 | 6,674 | 9,382 | 7,525 | 5,753 |
| 70% | 4,218 | 6,479 | 9,550 | 12,124 | 16,606 | 15,413 | 9,541 | 7,439 | 5,981 | 8,554 | 4,533 | 5,220 |
| 80% | 4,000 | 5,692 | 7,002 | 10,482 | 13,230 | 12,084 | 8,411 | 6,993 | 5,455 | 7,381 | 4,009 | 4,655 |
| 90% | 3,002 | 4,020 | 5,869 | 9,375 | 11,472 | 8,470 | 7,390 | 5,834 | 5,003 | 5,254 | 3,547 | 3,742 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,803 | 12,324 | 22,567 | 38,108 | 48,140 | 36,365 | 22,467 | 14,144 | 8,825 | 10,214 | 7,177 | 11,805 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9,583 | 17,176 | 25,983 | 75,058 | 85,434 | 65,804 | 39,726 | 24,976 | 13,818 | 11,436 | 9,084 | 22,317 |
| Above Normal (16%) | 7,713 | 15,026 | 19,270 | 42,094 | 58,153 | 44,982 | 23,982 | 13,276 | 7,294 | 13,278 | 9,560 | 13,242 |
| Below Normal (13%) | 7,280 | 8,368 | 20,237 | 16,001 | 31,094 | 15,702 | 11,888 | 9,515 | 6,899 | 12,387 | 8,321 | 6,414 |
| Dry (24%) | 4,590 | 11,315 | 29,228 | 15,265 | 23,021 | 19,563 | 13,598 | 8,341 | 6,885 | 8,752 | 4,700 | 5,065 |
| Critical (15%) | 3,044 | 4,194 | 9,768 | 12,070 | 13,978 | 10,189 | 7,912 | 5,532 | 4,668 | 4,694 | 3,547 | 3,651 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,849 | 18,526 | 59,783 | 90,859 | 115,629 | 71,537 | 54,378 | 32,151 | 12,572 | 14,390 | 9,716 | 24,135 |
| 20% | 9,813 | 15,400 | 32,940 | 59,690 | 74,834 | 54,948 | 36,577 | 22,544 | 9,094 | 14,231 | 9,407 | 23,512 |
| 30% | 8,220 | 14,565 | 17,912 | 43,533 | 54,988 | 39,268 | 21,124 | 12,100 | 7,783 | 13,196 | 9,022 | 13,703 |
| 40% | 7,468 | 12,850 | 14,830 | 26,554 | 43,909 | 28,818 | 18,466 | 9,824 | 7,257 | 11,058 | 8,852 | 13,020 |
| 50% | 5,942 | 11,535 | 12,026 | 18,543 | 31,842 | 22,098 | 13,804 | 8,905 | 7,083 | 10,270 | 8,438 | 8,100 |
| 60% | 4,986 | 8,504 | 10,684 | 15,100 | 22,638 | 16,751 | 11,379 | 8,293 | 6,693 | 9,261 | 7,235 | 5,791 |
| 70% | 4,496 | 6,775 | 9,658 | 12,112 | 16,605 | 15,397 | 9,551 | 7,643 | 6,279 | 8,038 | 4,562 | 5,142 |
| 80% | 4,341 | 6,006 | 7,232 | 10,483 | 13,483 | 12,079 | 8,418 | 7,012 | 5,692 | 6,951 | 3,951 | 4,633 |
| 90% | 3,341 | 4,222 | 6,005 | 9,373 | 11,206 | 8,470 | 7,396 | 6,194 | 4,999 | 4,764 | 3,603 | 3,785 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,007 | 12,429 | 22,548 | 38,074 | 48,035 | 36,312 | 22,473 | 14,218 | 8,927 | 10,059 | 7,139 | 11,789 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9,721 | 17,261 | 25,988 | 74,970 | 85,291 | 65,800 | 39,722 | 24,975 | 13,812 | 11,481 | 9,093 | 22,314 |
| Above Normal (16%) | 8,113 | 15,008 | 19,189 | 41,908 | 57,916 | 44,653 | 23,907 | 13,273 | 7,293 | 13,292 | 9,560 | 13,178 |
| Below Normal (13%) | 7,378 | 8,451 | 20,209 | 16,033 | 30,870 | 15,688 | 11,854 | 9,615 | 6,915 | 12,364 | 8,209 | 6,422 |
| Dry (24%) | 4,828 | 11,438 | 29,212 | 15,260 | 22,941 | 19,561 | 13,616 | 8,402 | 7,027 | 8,253 | 4,609 | 5,038 |
| Critical (15%) | 3,221 | 4,461 | 9,774 | 12,205 | 14,170 | 10,206 | 8,039 | 5,849 | 5,122 | 4,373 | 3,518 | 3,650 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -53 | -96 | -11 | 295 | 7 | -41 | -1 | 0 | -3 | 17 | 0 | 9 |
| 20% | 507 | -131 | -324 | 6 | -231 | -1 | -1 | -4 | 0 | 54 | 3 | 0 |
| 30% | 59 | 147 | -610 | -421 | -198 | -997 | 19 | 0 | 94 | 24 | -42 | -1 |
| 40% | 152 | 362 | -12 | -3 | -265 | -85 | -5 | -2 | 40 | -78 | -28 | -161 |
| 50% | 208 | -45 | 32 | -5 | -97 | 2 | -9 | 0 | 13 | -225 | -61 | 241 |
| 60% | 194 | -31 | -24 | -122 | -65 | 0 | 1 | 114 | 19 | -121 | -290 | 38 |
| 70% | 279 | 296 | 107 | -12 | -1 | -16 | 10 | 204 | 297 | -515 | 29 | -77 |
| 80% | 341 | 314 | 229 | 1 | 254 | -5 | 7 | 19 | 237 | -430 | -59 | -22 |
| 90% | 339 | 202 | 137 | -1 | -266 | 1 | 6 | 360 | -4 | -490 | 55 | 43 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 204 | 104 | -18 | -35 | -105 | -53 | 5 | 74 | 101 | -155 | -39 | -17 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 138 | 85 | 5 | -88 | -143 | -3 | -3 | -1 | -6 | 45 | 9 | -3 |
| Above Normal (16%) | 400 | -18 | -80 | -186 | -238 | -328 | -75 | -4 | -1 | 14 | 0 | -64 |
| Below Normal (13%) | 98 | 82 | -29 | 32 | -224 | -14 | -34 | 100 | 16 | -23 | -111 | 8 |
| Dry (24%) | 238 | 124 | -16 | -5 | -80 | -2 | 18 | 61 | 143 | -499 | -91 | -27 |
| Critical (15%) | 177 | 267 | 5 | 135 | 192 | 16 | 127 | 317 | 454 | -321 | -29 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-4. Sacramento River Flow at Rio Vista, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,384 | 20,662 | 62,958 | 91,677 | 115,656 | 77,071 | 54,377 | 32,151 | 12,572 | 14,334 | 9,804 | 8,888 |
| 20% | 8,619 | 11,055 | 38,523 | 60,974 | 75,487 | 54,947 | 36,575 | 22,548 | 9,584 | 13,694 | 9,567 | 8,470 |
| 30% | 7,739 | 9,566 | 20,330 | 44,843 | 58,999 | 40,588 | 21,437 | 12,834 | 8,648 | 12,851 | 9,257 | 8,251 |
| 40% | 6,684 | 8,216 | 15,394 | 27,131 | 49,242 | 29,199 | 18,422 | 10,894 | 8,385 | 11,033 | 8,989 | 8,083 |
| 50% | 5,773 | 7,254 | 11,933 | 20,320 | 32,162 | 22,882 | 13,788 | 9,791 | 8,275 | 10,047 | 8,647 | 7,749 |
| 60% | 4,820 | 6,725 | 10,886 | 15,734 | 23,301 | 18,362 | 10,714 | 9,134 | 7,740 | 9,463 | 7,584 | 6,077 |
| 70% | 4,374 | 6,150 | 9,445 | 12,270 | 17,373 | 15,474 | 9,528 | 8,748 | 7,365 | 7,604 | 4,935 | 5,129 |
| 80% | 4,097 | 5,125 | 7,042 | 10,453 | 14,113 | 12,292 | 8,636 | 7,938 | 6,551 | 6,151 | 4,272 | 4,638 |
| 90% | 3,000 | 4,173 | 6,002 | 9,384 | 11,555 | 8,900 | 7,830 | 6,806 | 5,932 | 4,751 | 3,388 | 3,767 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,557 | 10,461 | 24,033 | 39,117 | 49,161 | 37,124 | 22,527 | 14,786 | 9,707 | 9,943 | 7,286 | 6,871 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,830 | 13,269 | 29,718 | 77,045 | 86,207 | 66,254 | 39,782 | 25,280 | 14,166 | 11,200 | 9,052 | 8,843 |
| Above Normal (16%) | 7,686 | 11,579 | 20,554 | 43,391 | 60,217 | 46,632 | 24,004 | 13,898 | 7,967 | 13,280 | 9,523 | 8,422 |
| Below Normal (13%) | 7,107 | 8,033 | 20,157 | 17,278 | 34,240 | 16,744 | 12,240 | 10,726 | 8,412 | 12,545 | 9,091 | 6,878 |
| Dry (24%) | 4,674 | 11,178 | 29,684 | 15,323 | 23,035 | 20,050 | 13,515 | 9,307 | 8,260 | 8,048 | 4,846 | 5,186 |
| Critical (15%) | 3,040 | 4,199 | 9,617 | 11,982 | 14,137 | 10,848 | 7,991 | 5,867 | 5,529 | 4,381 | 3,448 | 3,717 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 9,414 | 18,468 | 64,178 | 93,058 | 115,874 | 79,154 | 54,328 | 32,159 | 12,577 | 13,893 | 10,059 | 8,810 |
| 20% | 8,242 | 11,033 | 36,722 | 60,978 | 75,463 | 55,156 | 36,478 | 22,548 | 9,439 | 13,109 | 9,926 | 8,065 |
| 30% | 7,491 | 9,282 | 20,239 | 44,714 | 56,098 | 41,414 | 21,251 | 12,134 | 8,820 | 12,096 | 9,701 | 7,735 |
| 40% | 7,059 | 8,931 | 15,406 | 27,126 | 47,537 | 29,298 | 18,546 | 11,077 | 8,643 | 10,428 | 9,201 | 7,338 |
| 50% | 6,462 | 8,589 | 11,924 | 20,007 | 32,053 | 23,066 | 13,777 | 9,883 | 8,392 | 9,872 | 8,928 | 6,673 |
| 60% | 5,254 | 7,935 | 10,899 | 16,562 | 23,345 | 17,736 | 11,475 | 9,142 | 8,144 | 9,066 | 7,338 | 5,513 |
| 70% | 4,787 | 6,032 | 10,230 | 12,559 | 17,489 | 15,555 | 9,757 | 8,423 | 7,590 | 8,187 | 4,645 | 4,887 |
| 80% | 4,341 | 5,439 | 8,967 | 10,479 | 14,146 | 11,698 | 8,716 | 7,780 | 6,739 | 5,902 | 4,071 | 4,559 |
| 90% | 3,341 | 3,908 | 6,171 | 9,529 | 11,598 | 8,917 | 7,740 | 6,816 | 5,909 | 4,213 | 3,393 | 3,755 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,838 | 10,681 | 24,031 | 39,128 | 49,295 | 37,245 | 22,633 | 14,671 | 9,811 | 9,573 | 7,424 | 6,439 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,023 | 13,338 | 29,420 | 76,890 | 86,802 | 66,580 | 39,861 | 24,920 | 14,320 | 11,091 | 9,790 | 8,214 |
| Above Normal (16%) | 7,672 | 12,537 | 20,681 | 43,053 | 60,292 | 47,247 | 24,160 | 13,837 | 8,313 | 12,513 | 9,761 | 7,739 |
| Below Normal (13%) | 7,588 | 8,100 | 20,465 | 17,082 | 33,479 | 16,783 | 12,189 | 10,567 | 8,691 | 11,492 | 8,532 | 6,362 |
| Dry (24%) | 5,136 | 11,251 | 29,669 | 15,438 | 23,112 | 19,811 | 13,729 | 9,441 | 8,181 | 7,947 | 4,668 | 5,048 |
| Critical (15%) | 3,348 | 4,328 | 9,858 | 12,749 | 14,253 | 10,662 | 8,065 | 5,844 | 5,409 | 4,052 | 3,342 | 3,573 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 30 | **-2,195** | 1,220 | 1,381 | 218 | 2,083 | **-49** | 8 | 5 | **-441** | 255 | **-78** |
| 20% | **-377** | **-22** | **-1,801** | 3 | **-25** | 209 | **-97** | 1 | **-145** | **-585** | 358 | **-405** |
| 30% | **-248** | **-285** | **-90** | **-129** | **-2,901** | 826 | **-187** | **-700** | 172 | **-755** | 444 | **-517** |
| 40% | 375 | 715 | 12 | **-4** | **-1,705** | 99 | 123 | 183 | 258 | **-606** | 212 | **-744** |
| 50% | 689 | 1,335 | **-8** | **-313** | **-109** | 184 | **-11** | 92 | 117 | **-175** | 281 | **-1,076** |
| 60% | 434 | 1,210 | 12 | 828 | 44 | **-626** | 761 | 8 | 404 | **-397** | **-245** | **-564** |
| 70% | 414 | **-118** | 785 | 289 | 116 | 81 | 229 | **-325** | 226 | 583 | **-290** | **-242** |
| 80% | 244 | 313 | 1,925 | 27 | 33 | **-594** | 80 | **-157** | 187 | **-249** | **-202** | **-79** |
| 90% | 341 | **-265** | 169 | 145 | 43 | 17 | **-90** | 10 | **-23** | **-538** | 5 | **-12** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 281 | 219 | **-2** | 11 | 134 | 121 | 106 | **-116** | 104 | **-370** | 138 | **-432** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 193 | 69 | **-298** | **-155** | 595 | 326 | 79 | **-359** | 153 | **-109** | 738 | **-629** |
| Above Normal (16%) | **-14** | 957 | 126 | **-338** | 75 | 615 | 155 | **-61** | 345 | **-767** | 238 | **-683** |
| Below Normal (13%) | 480 | 66 | 308 | **-196** | **-761** | 39 | **-52** | **-159** | 279 | **-1,053** | **-559** | **-516** |
| Dry (24%) | 462 | 73 | **-15** | 115 | 77 | **-239** | 214 | 134 | **-80** | **-100** | **-178** | **-138** |
| Critical (15%) | 307 | 129 | 241 | 768 | 116 | **-187** | 74 | **-23** | **-119** | **-329** | **-106** | **-144** |

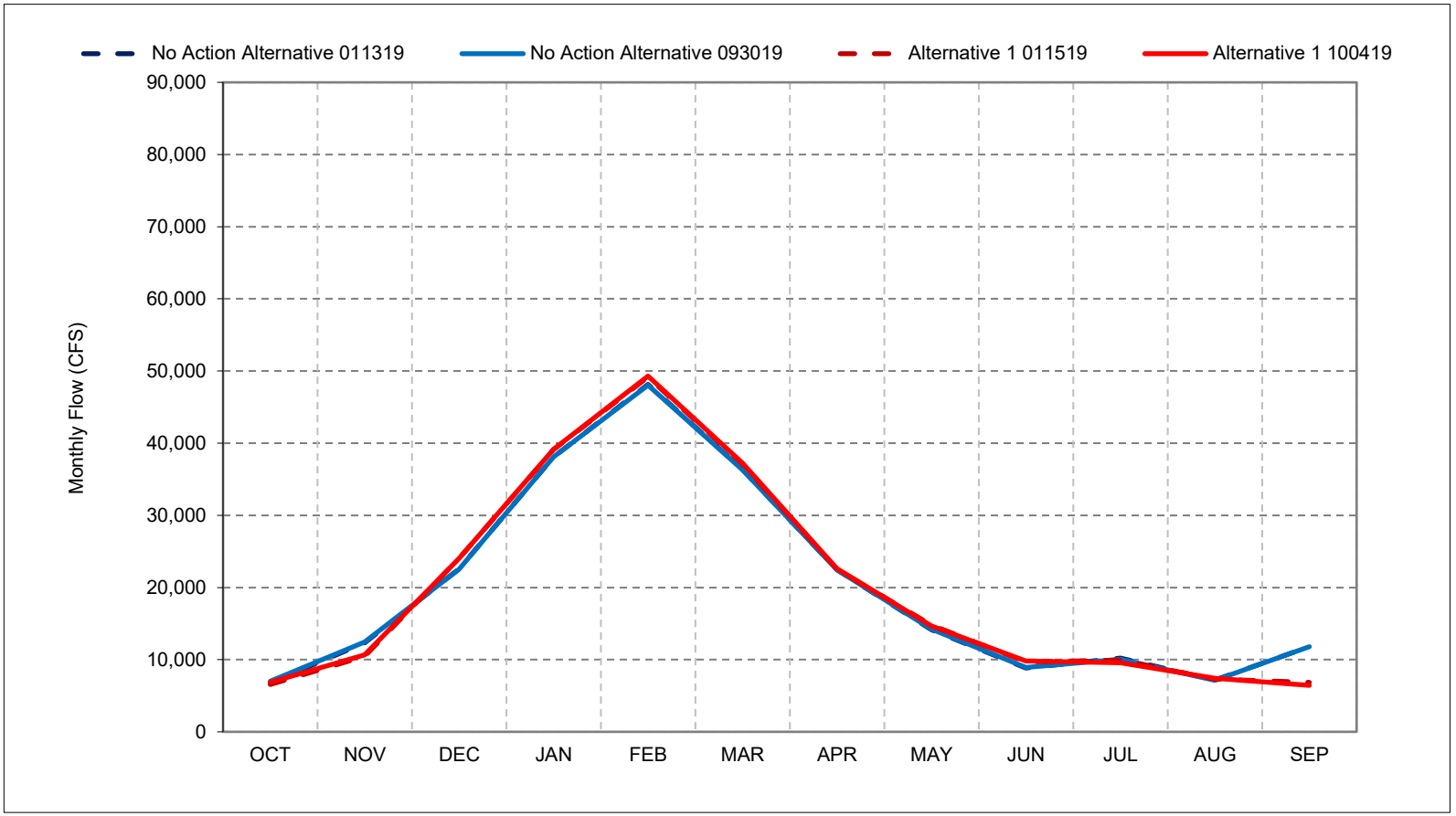
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-1. Sacramento River Flow at Rio Vista, Long-Term Average Flow

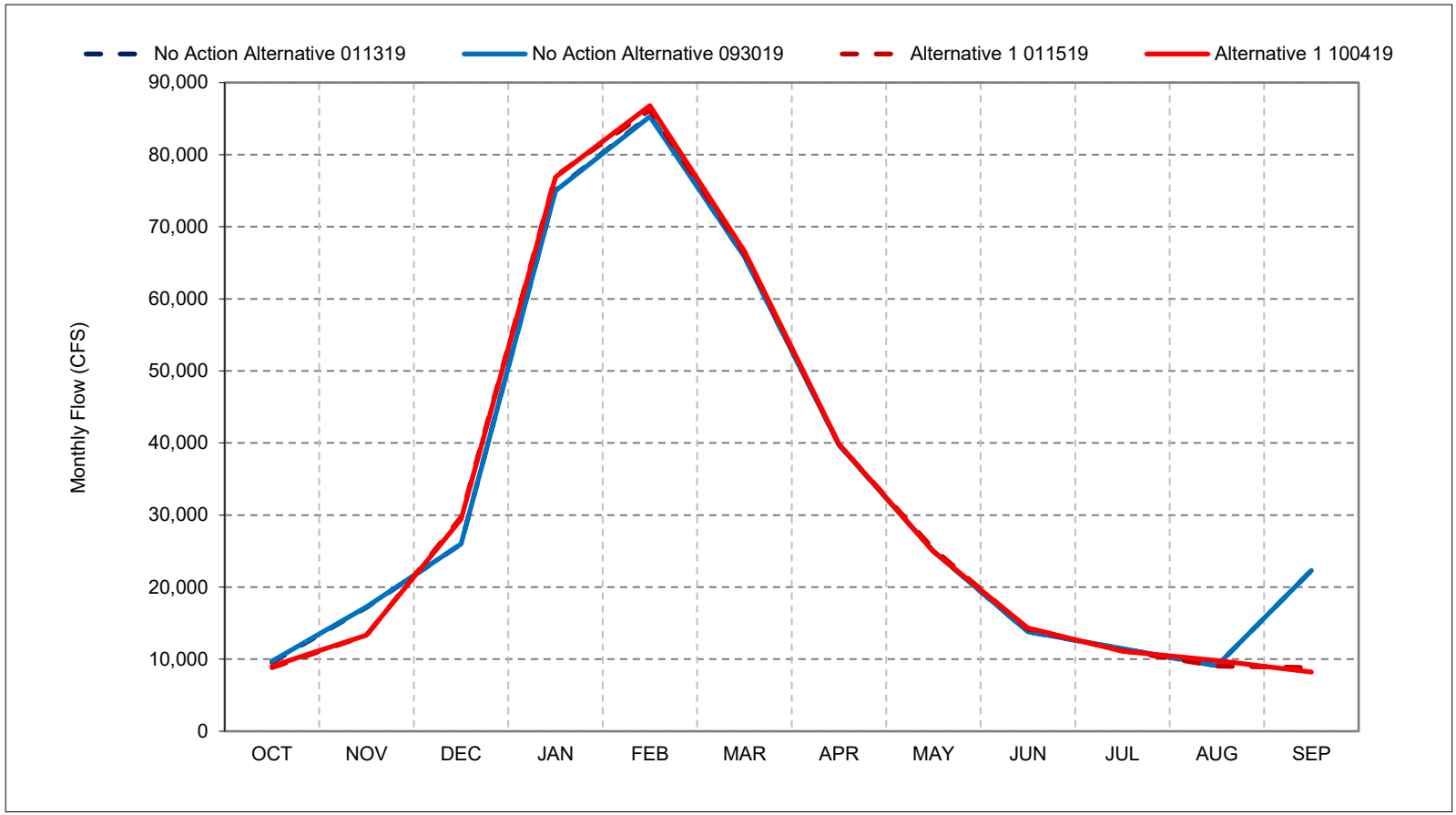



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-2. Sacramento River Flow at Rio Vista, Wet Year Average Flow

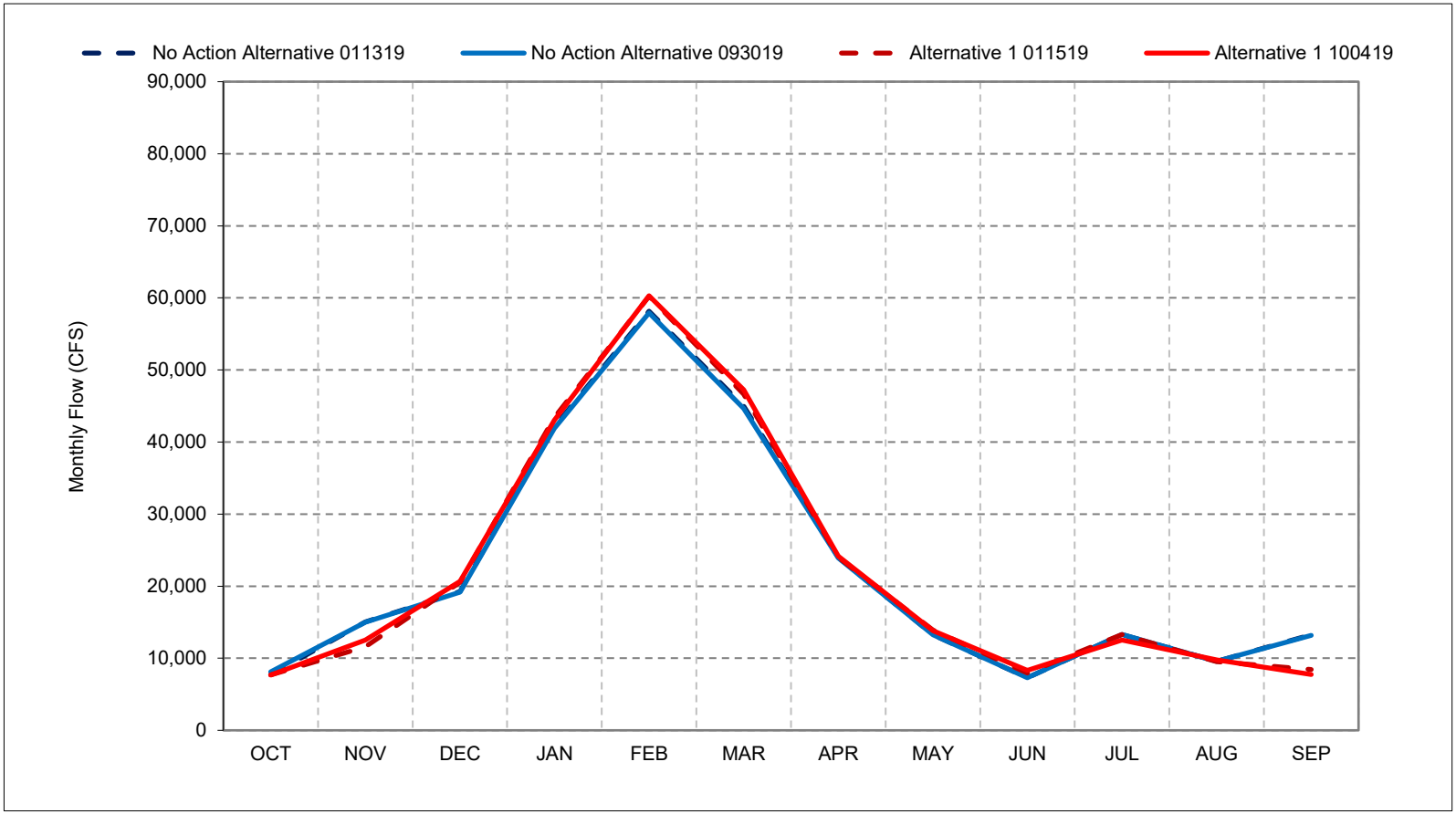



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-3. Sacramento River Flow at Rio Vista, Above Normal Year Average Flow

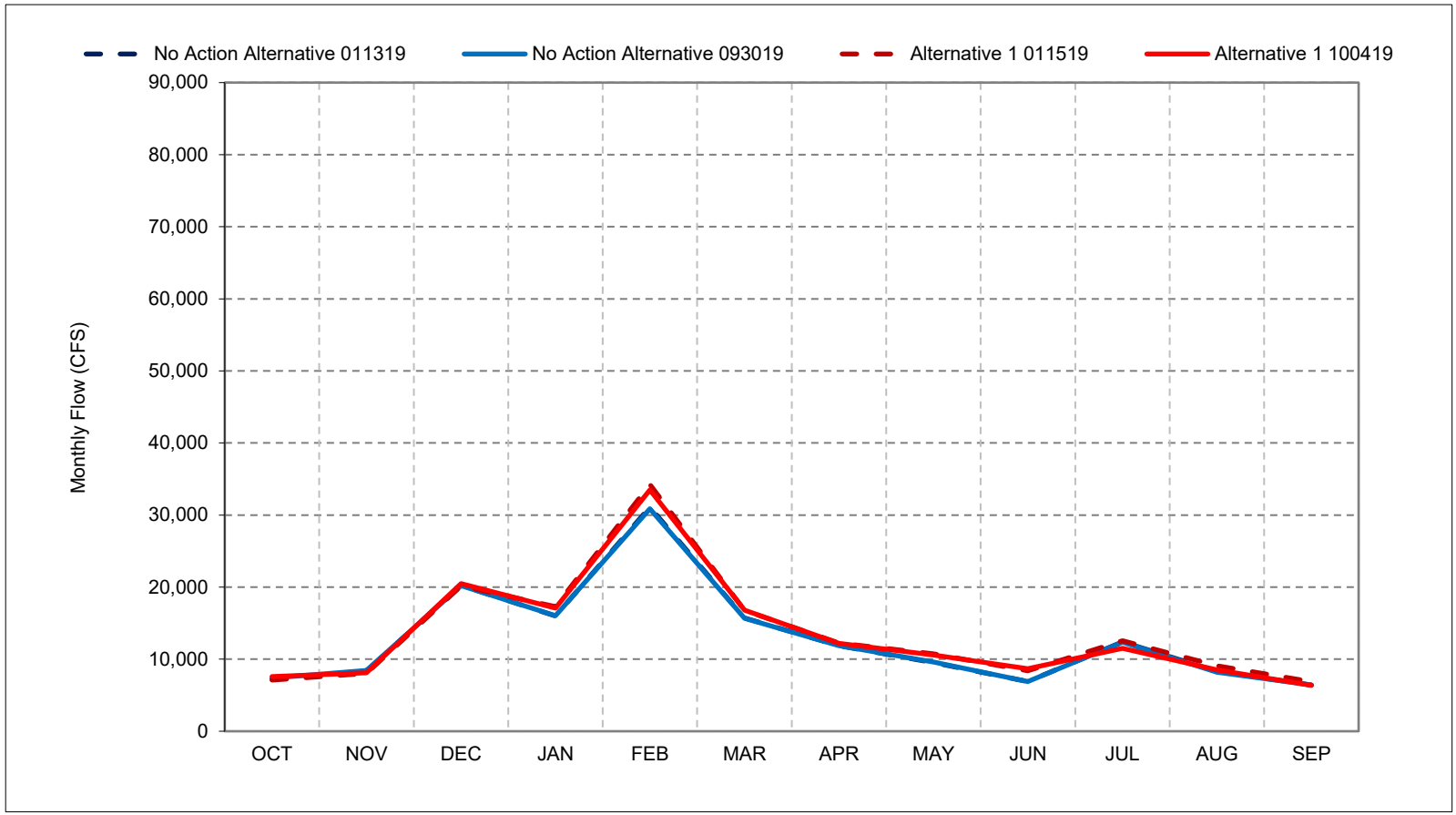



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-4. Sacramento River Flow at Rio Vista, Below Normal Year Average Flow

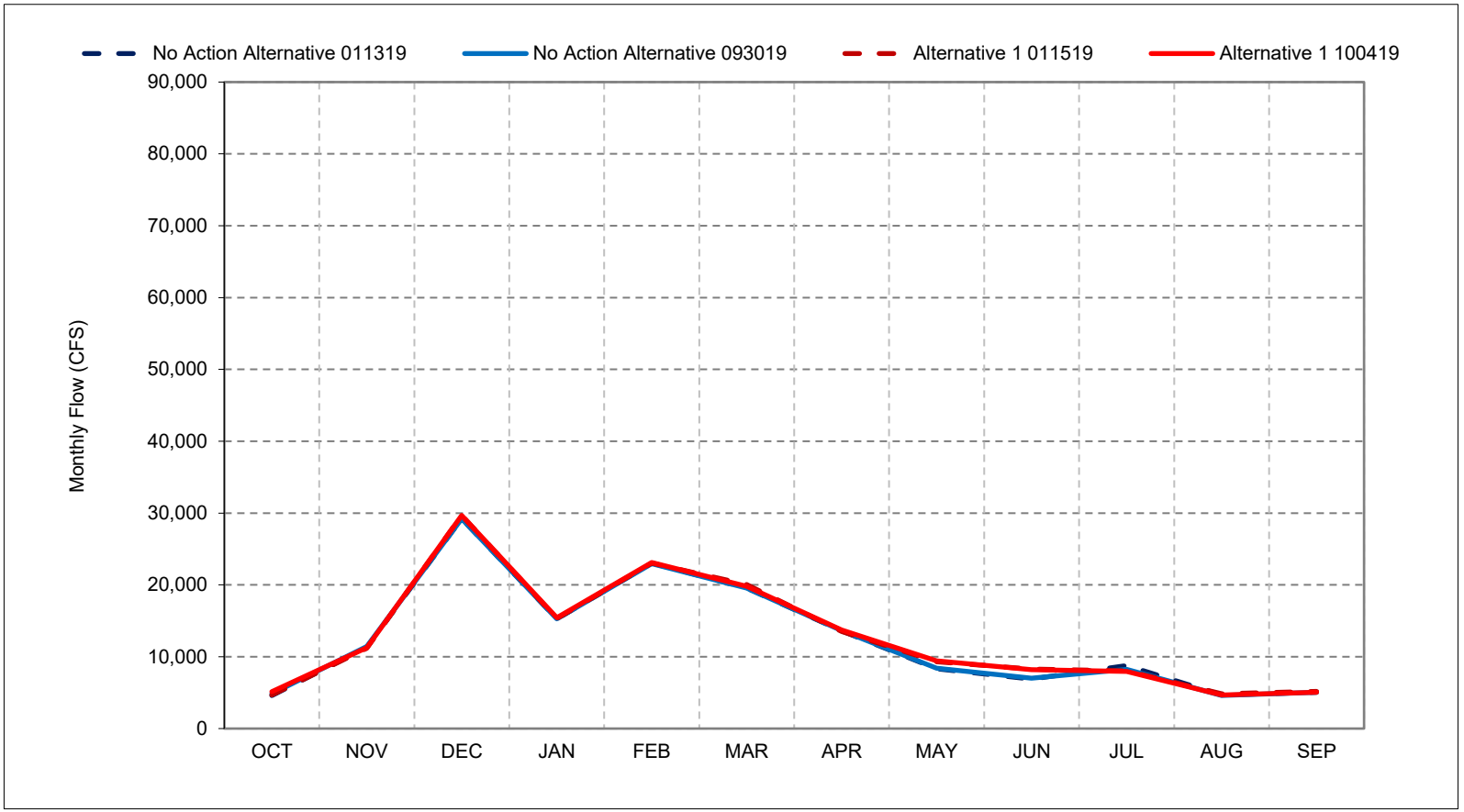



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-5. Sacramento River Flow at Rio Vista, Dry Year Average Flow

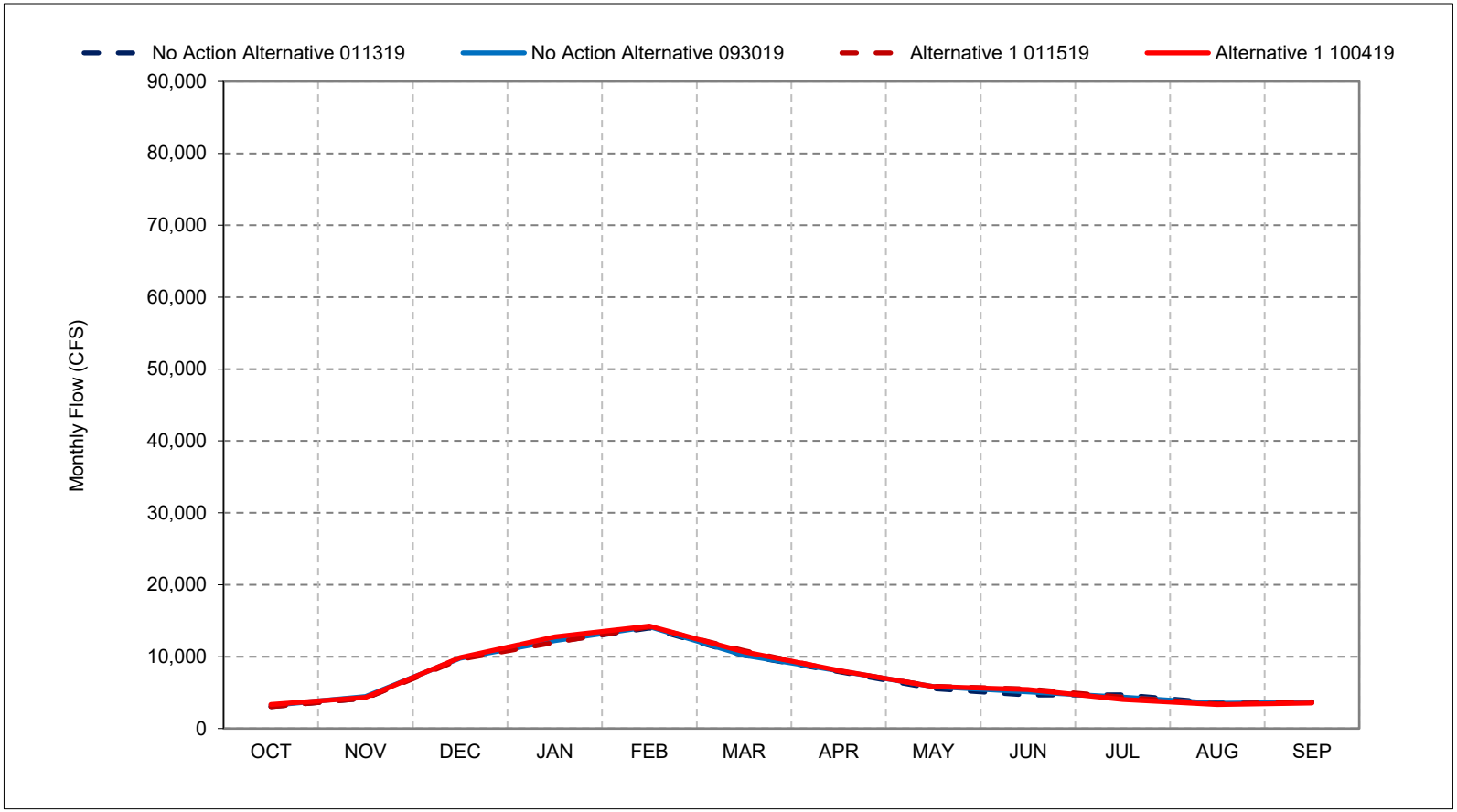



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-6. Sacramento River Flow at Rio Vista, Critical Year Average Flow

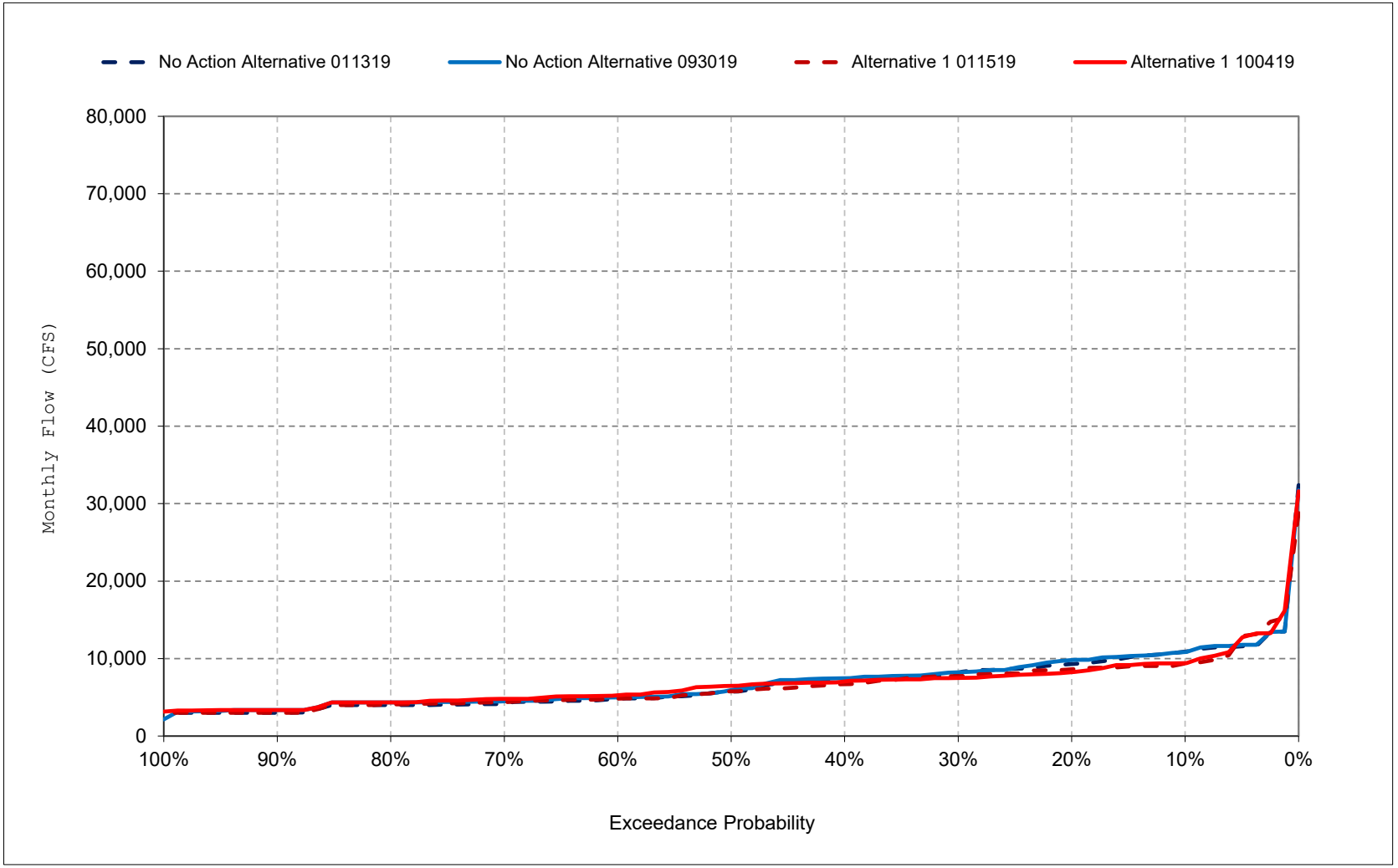



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

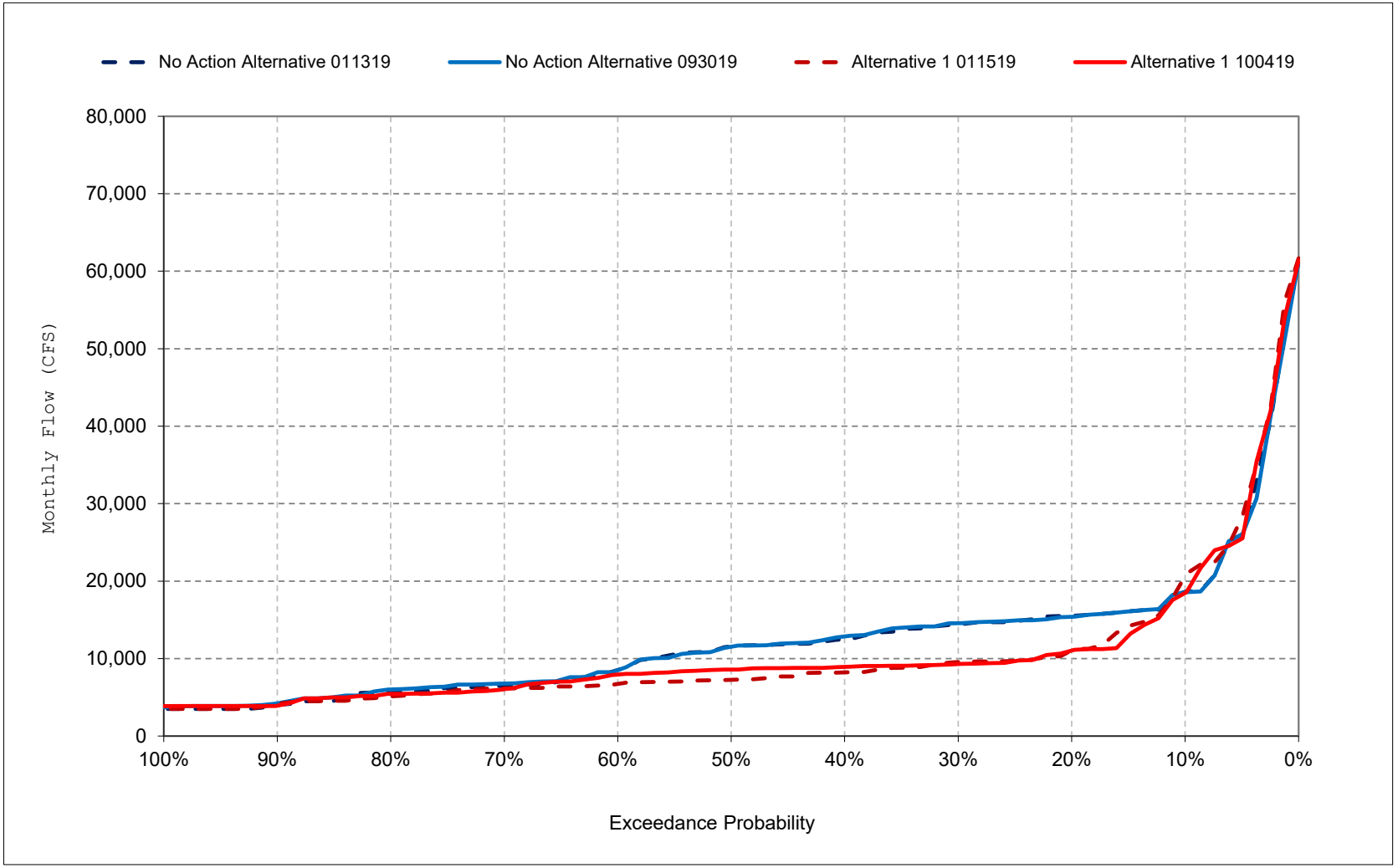
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-7. Sacramento River Flow at Rio Vista, October**



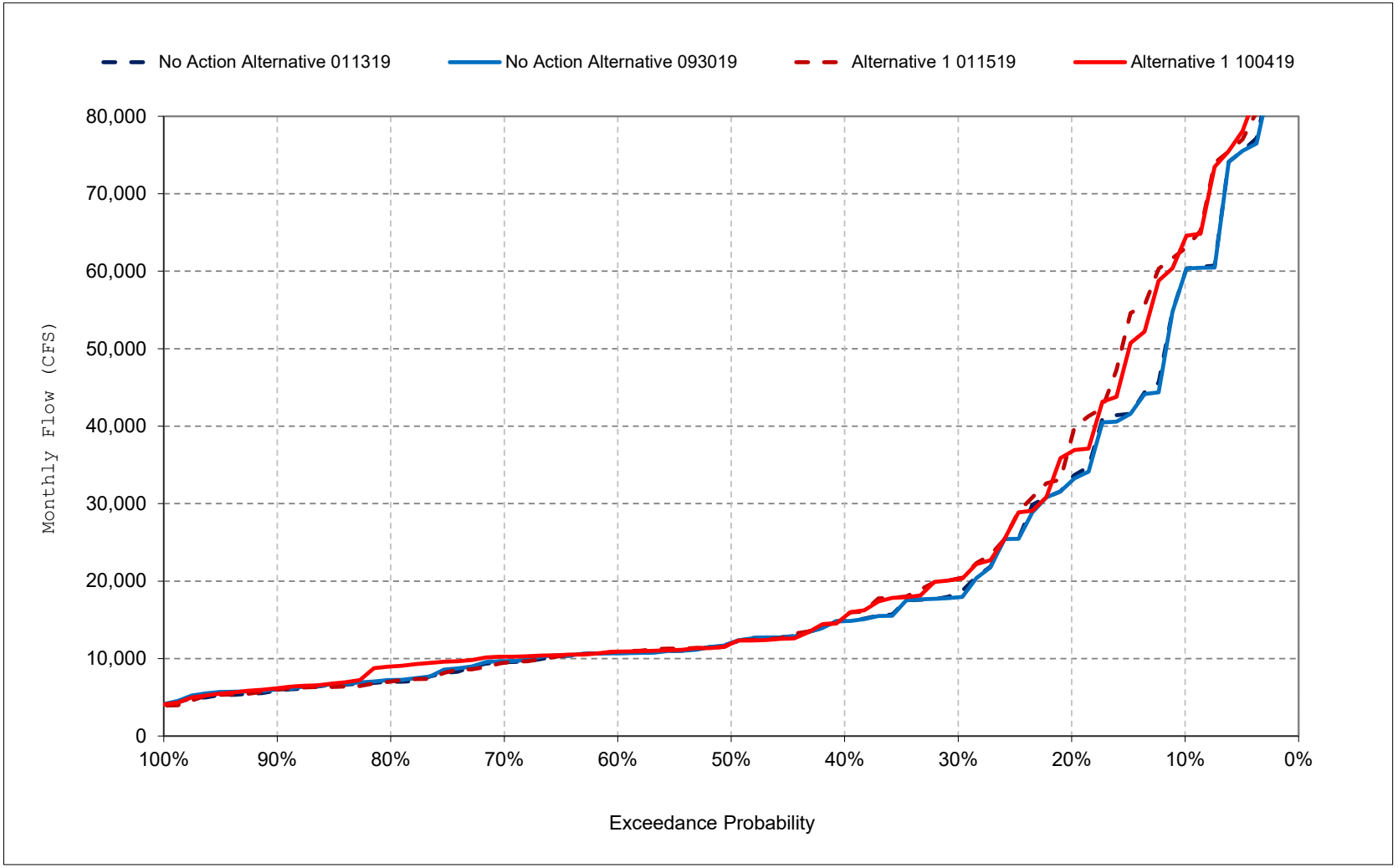

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-8. Sacramento River Flow at Rio Vista, November**



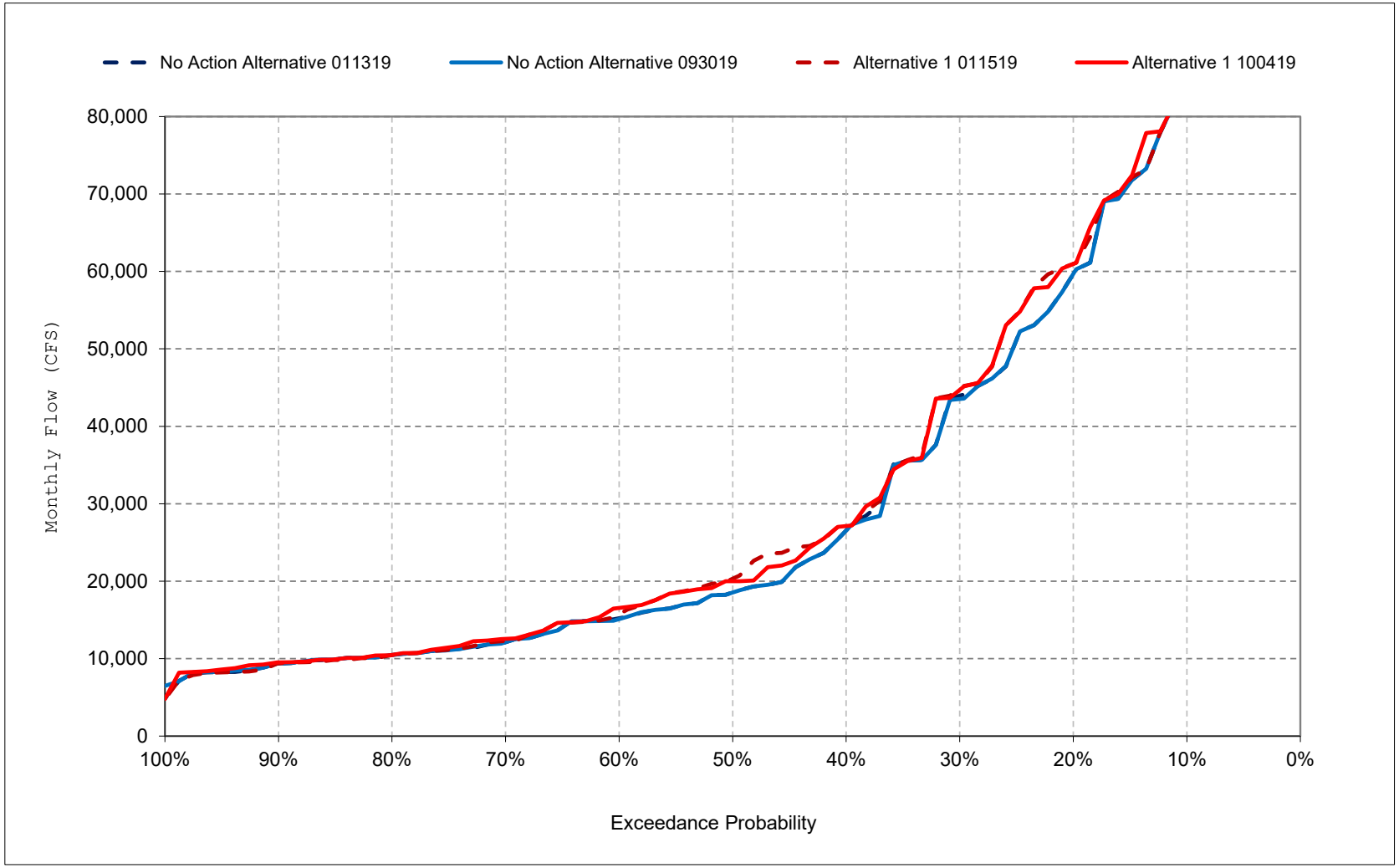

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-9. Sacramento River Flow at Rio Vista, December**



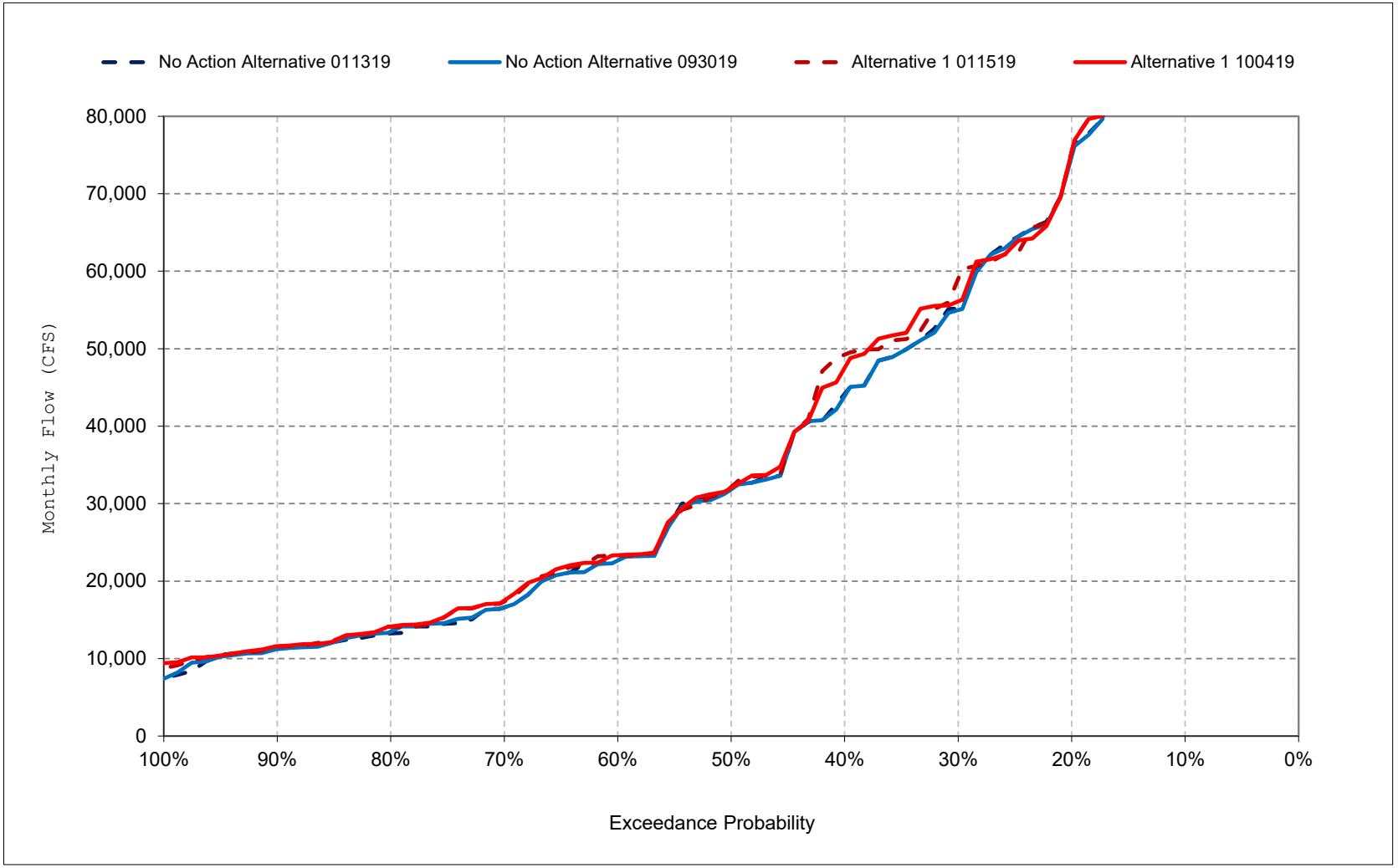

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-10. Sacramento River Flow at Rio Vista, January**



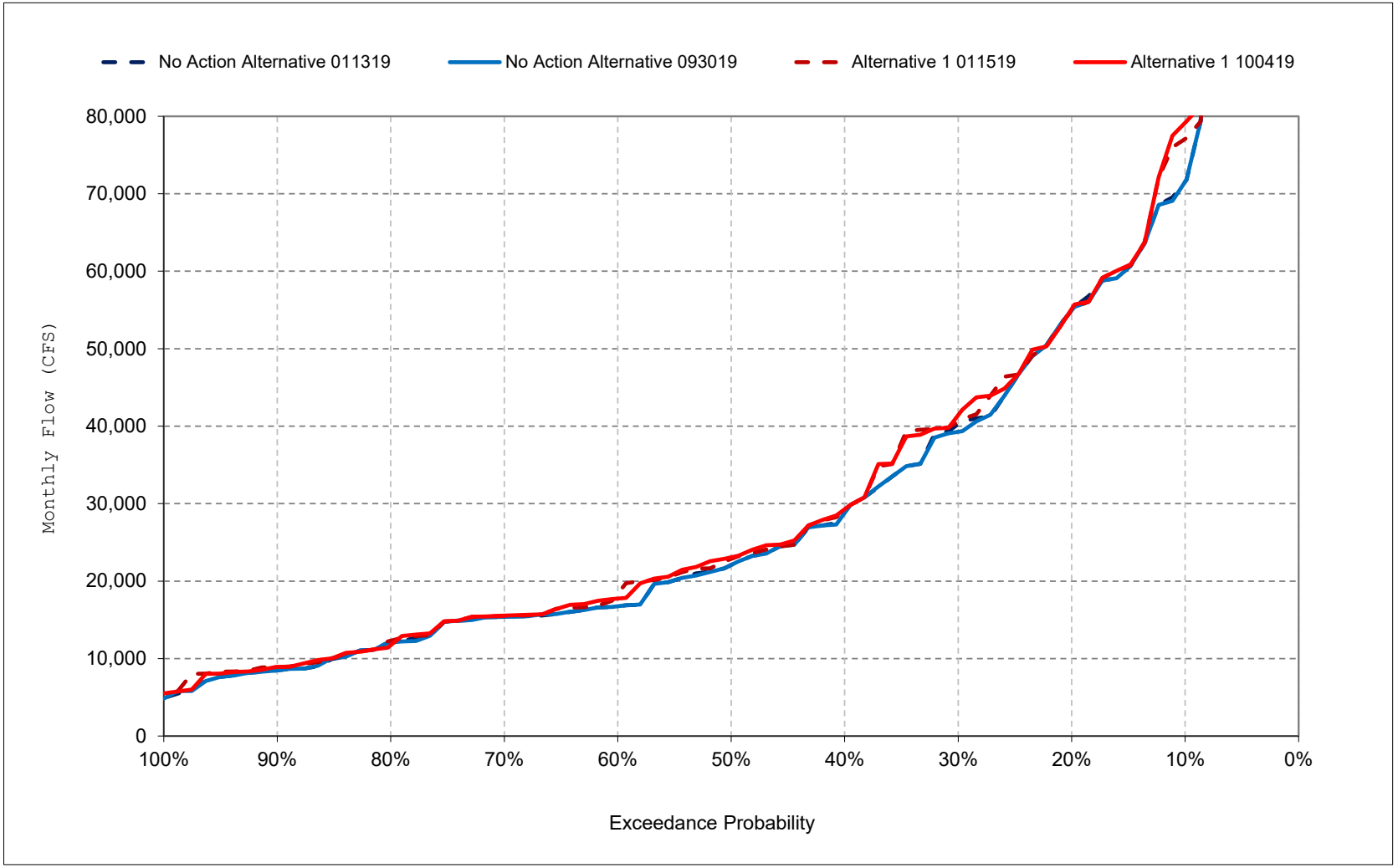

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-11. Sacramento River Flow at Rio Vista, February**



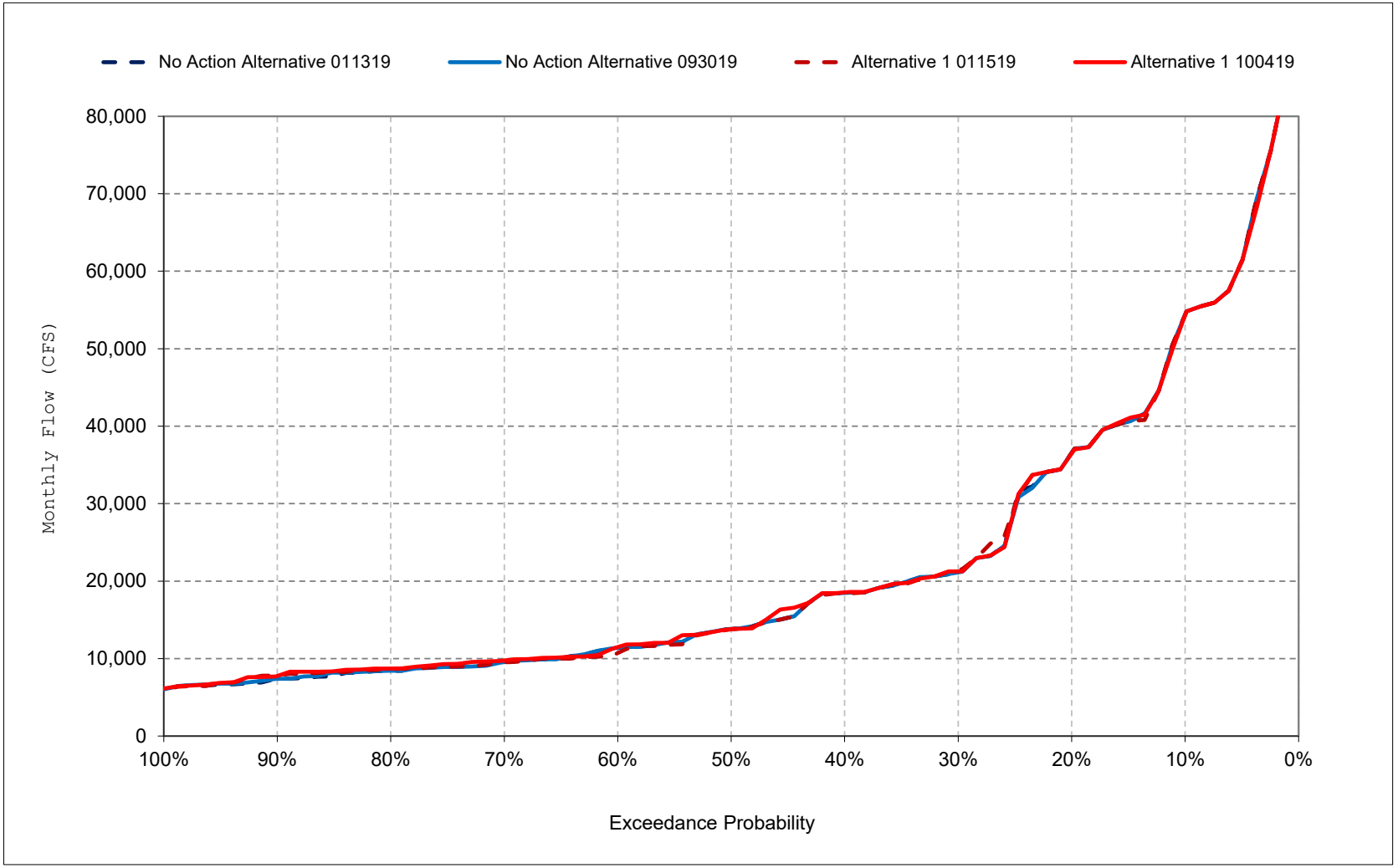

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-12. Sacramento River Flow at Rio Vista, March**



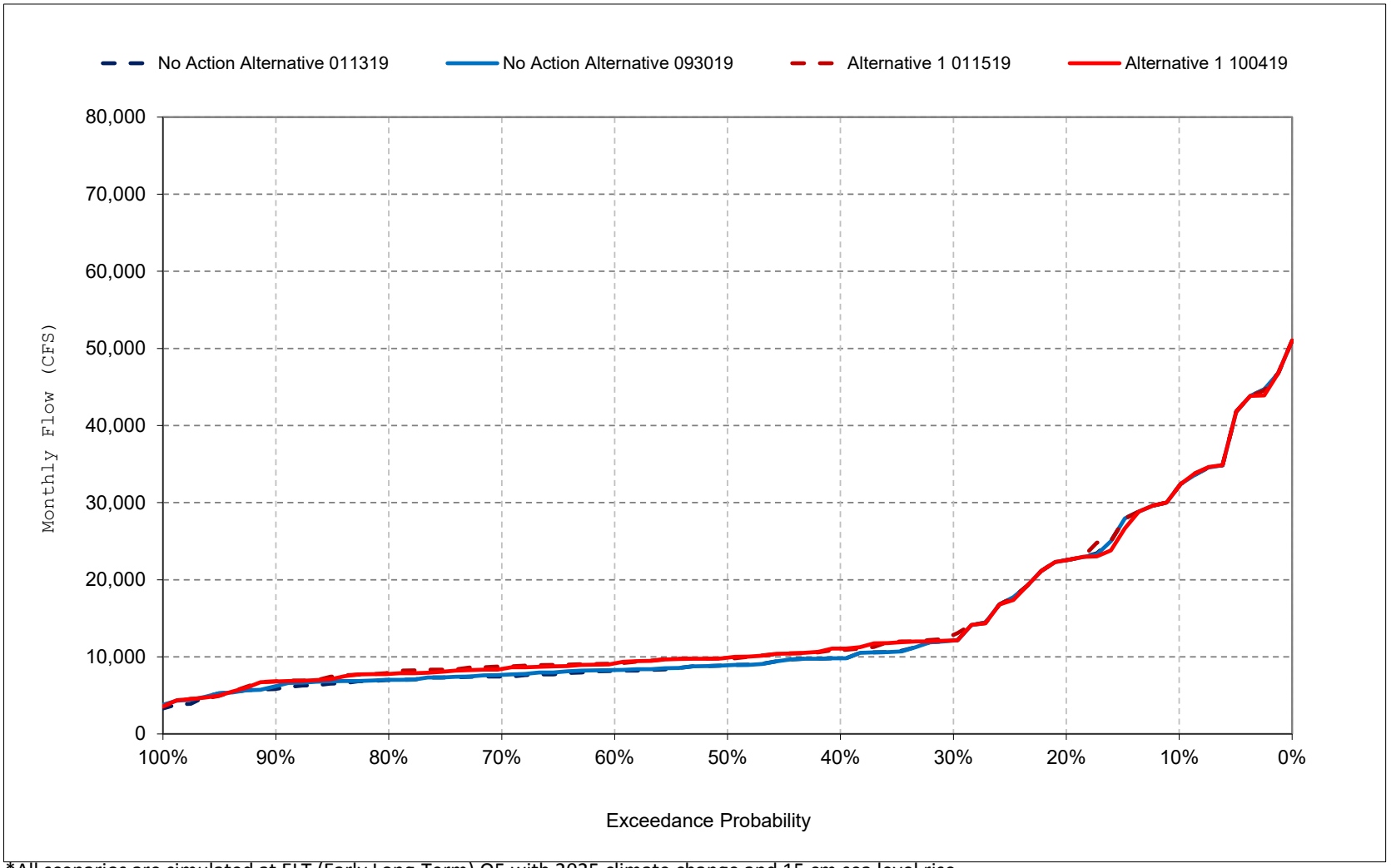

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-13. Sacramento River Flow at Rio Vista, April**



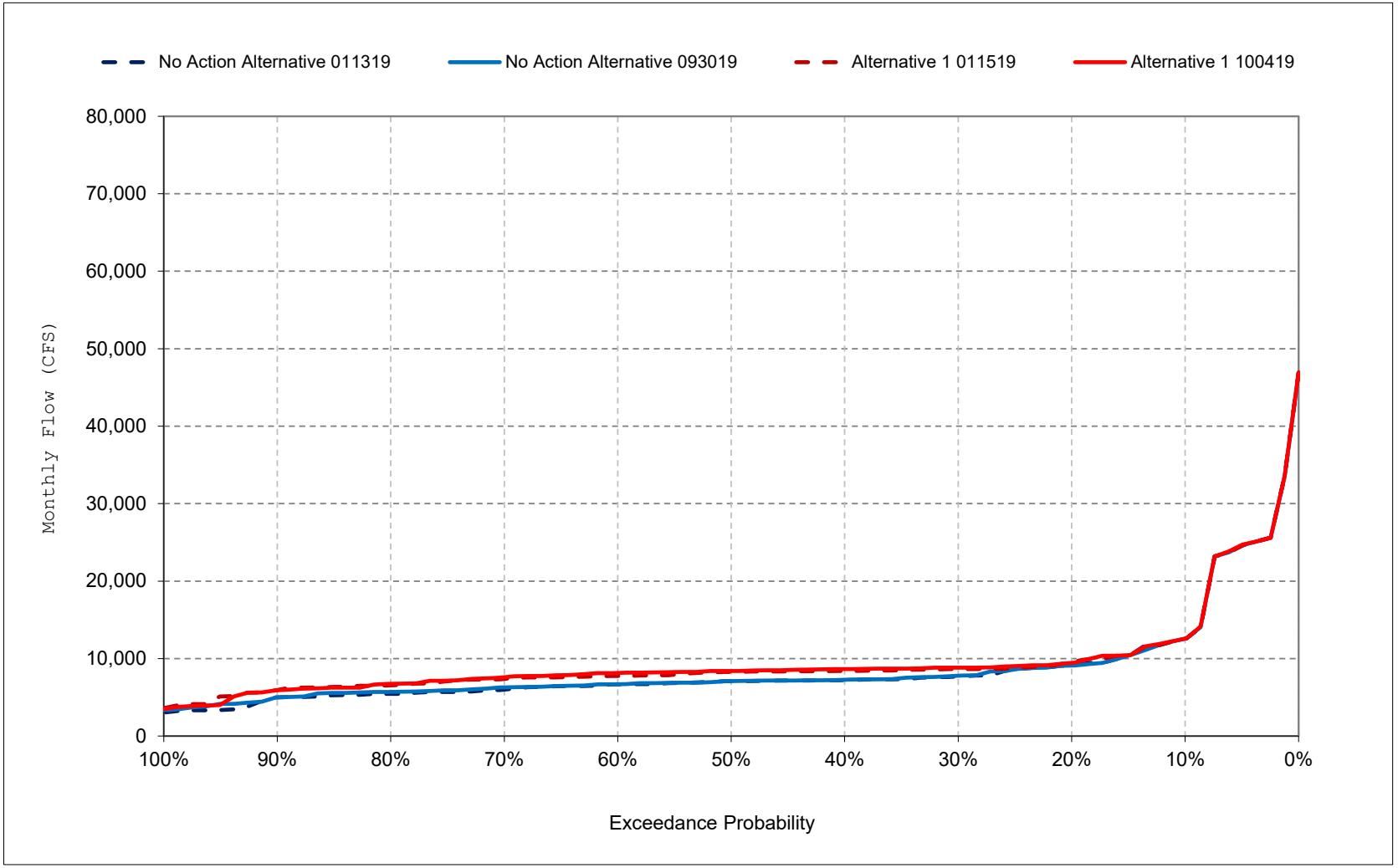

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-14. Sacramento River Flow at Rio Vista, May**



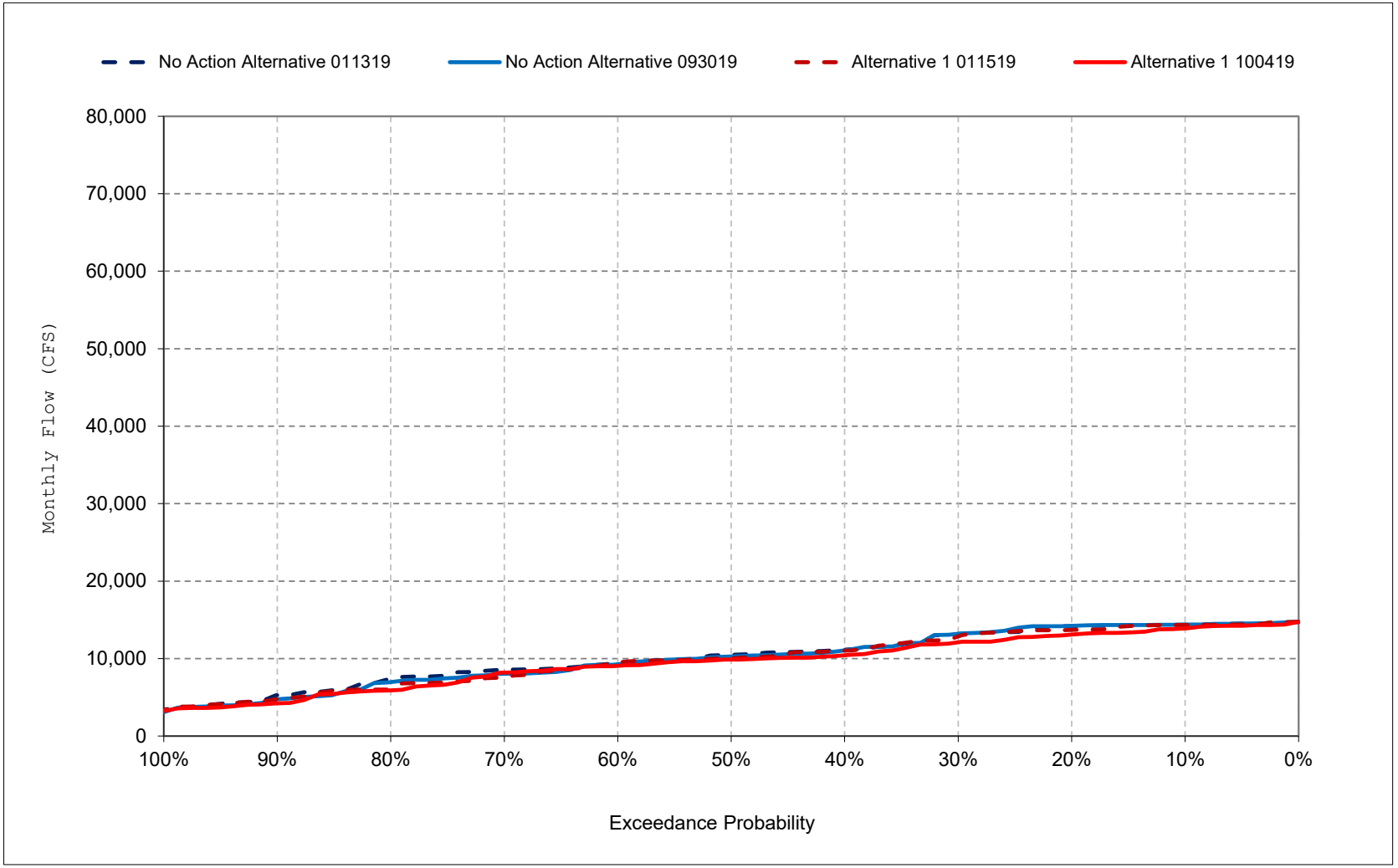

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-15. Sacramento River Flow at Rio Vista, June**



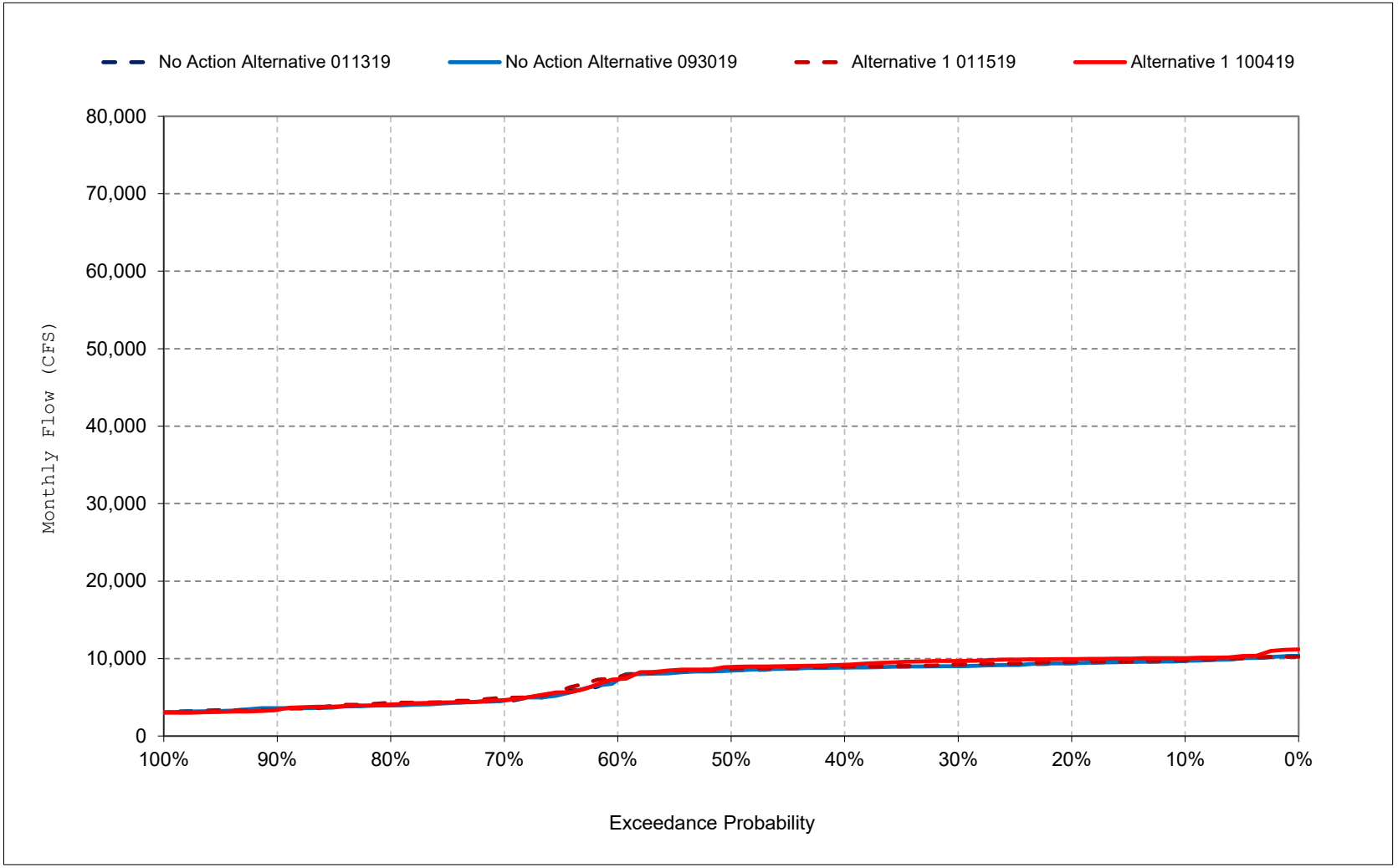

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-16. Sacramento River Flow at Rio Vista, July**



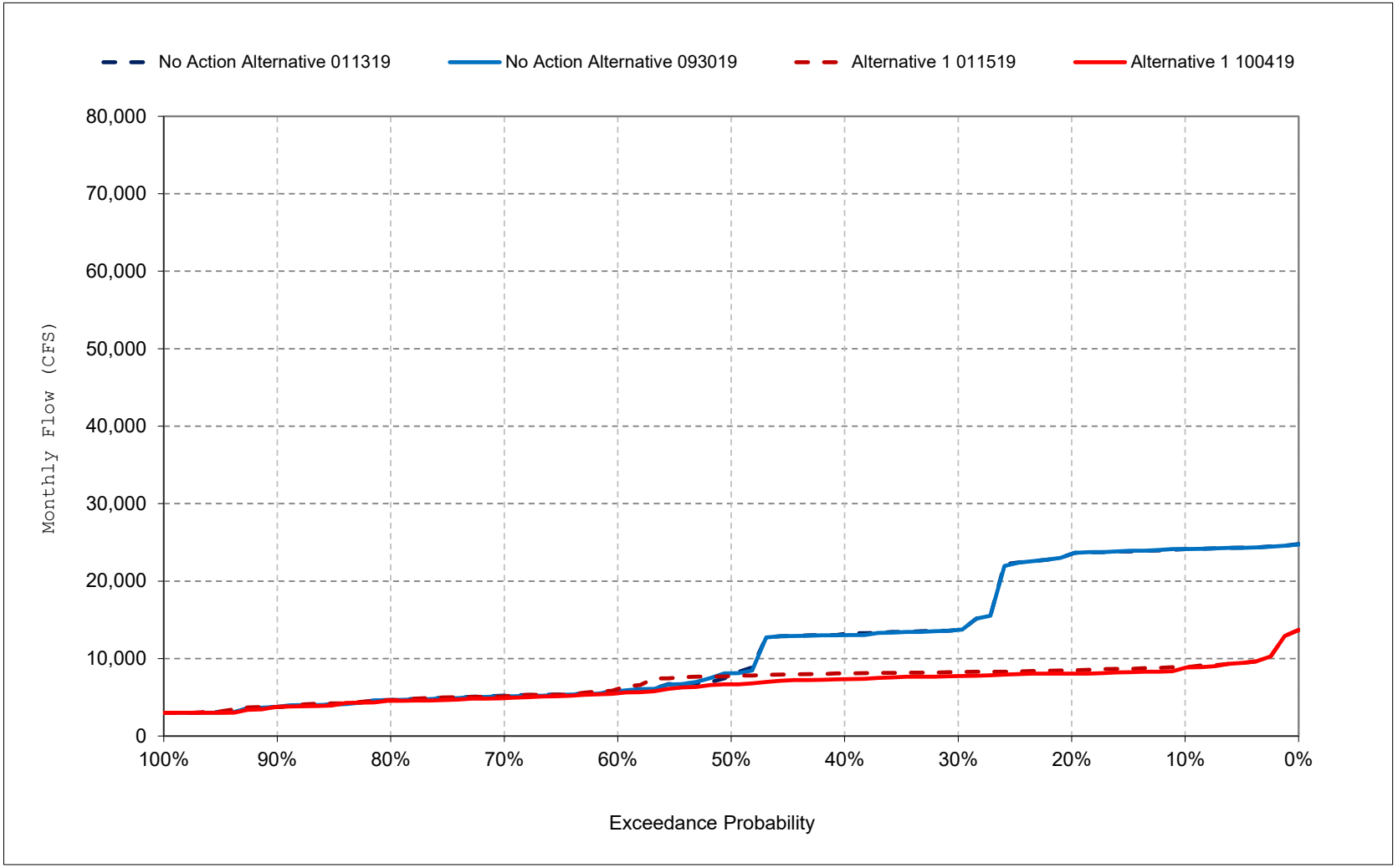

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-17. Sacramento River Flow at Rio Vista, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-18. Sacramento River Flow at Rio Vista, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-1. San Joaquin River Flow at Gravelly Ford, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-2. San Joaquin River Flow at Gravelly Ford, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-3. San Joaquin River Flow at Gravelly Ford, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-4. San Joaquin River Flow at Gravelly Ford, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 191 | 344 | 230 | 728 | 2,696 | 2,726 | 4,098 | 3,406 | 2,892 | 121 | 121 | 140 |
| 20% | 191 | 344 | 230 | 258 | 807 | 1,072 | 3,100 | 1,774 | 1,646 | 121 | 121 | 140 |
| 30% | 191 | 344 | 230 | 251 | 355 | 925 | 3,100 | 497 | 320 | 121 | 121 | 140 |
| 40% | 191 | 344 | 230 | 251 | 253 | 886 | 2,821 | 160 | 160 | 121 | 121 | 140 |
| 50% | 191 | 344 | 230 | 251 | 253 | 886 | 1,858 | 160 | 160 | 121 | 121 | 140 |
| 60% | 191 | 344 | 230 | 251 | 249 | 886 | 1,393 | 160 | 160 | 121 | 121 | 140 |
| 70% | 191 | 344 | 230 | 251 | 249 | 886 | 1,131 | 160 | 160 | 121 | 121 | 140 |
| 80% | 191 | 344 | 230 | 251 | 249 | 886 | 668 | 160 | 160 | 121 | 121 | 140 |
| 90% | 191 | 344 | 230 | 251 | 249 | 886 | 238 | 160 | 160 | 121 | 121 | 140 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 179 | 337 | 371 | 586 | 781 | 1,320 | 2,280 | 1,071 | 912 | 301 | 113 | 134 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 191 | 409 | 610 | 1,602 | 2,227 | 2,567 | 4,661 | 3,580 | 3,182 | 930 | 121 | 140 |
| Above Normal (24%) | 191 | 344 | 234 | 322 | 563 | 1,123 | 2,867 | 688 | 414 | 121 | 121 | 140 |
| Below Normal (10%) | 191 | 344 | 230 | 330 | 250 | 886 | 1,922 | 160 | 160 | 121 | 121 | 140 |
| Dry (16%) | 191 | 344 | 539 | 251 | 250 | 886 | 1,150 | 160 | 160 | 121 | 121 | 140 |
| Critical (27%) | 147 | 261 | 255 | 240 | 239 | 835 | 486 | 122 | 122 | 94 | 94 | 117 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | **0** | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |

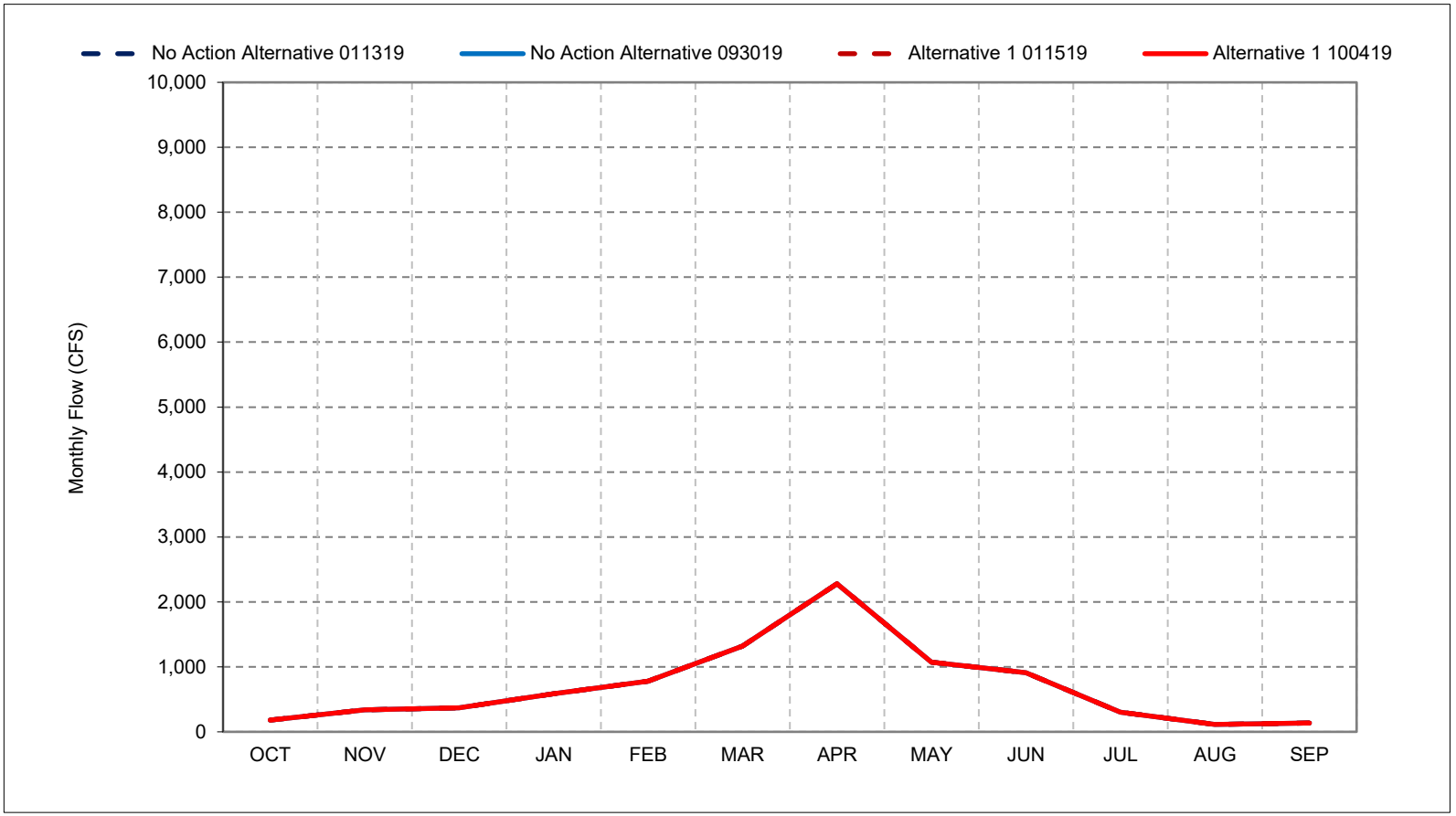
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-1. San Joaquin River Flow at Gravelly Ford, Long-Term Average Flow

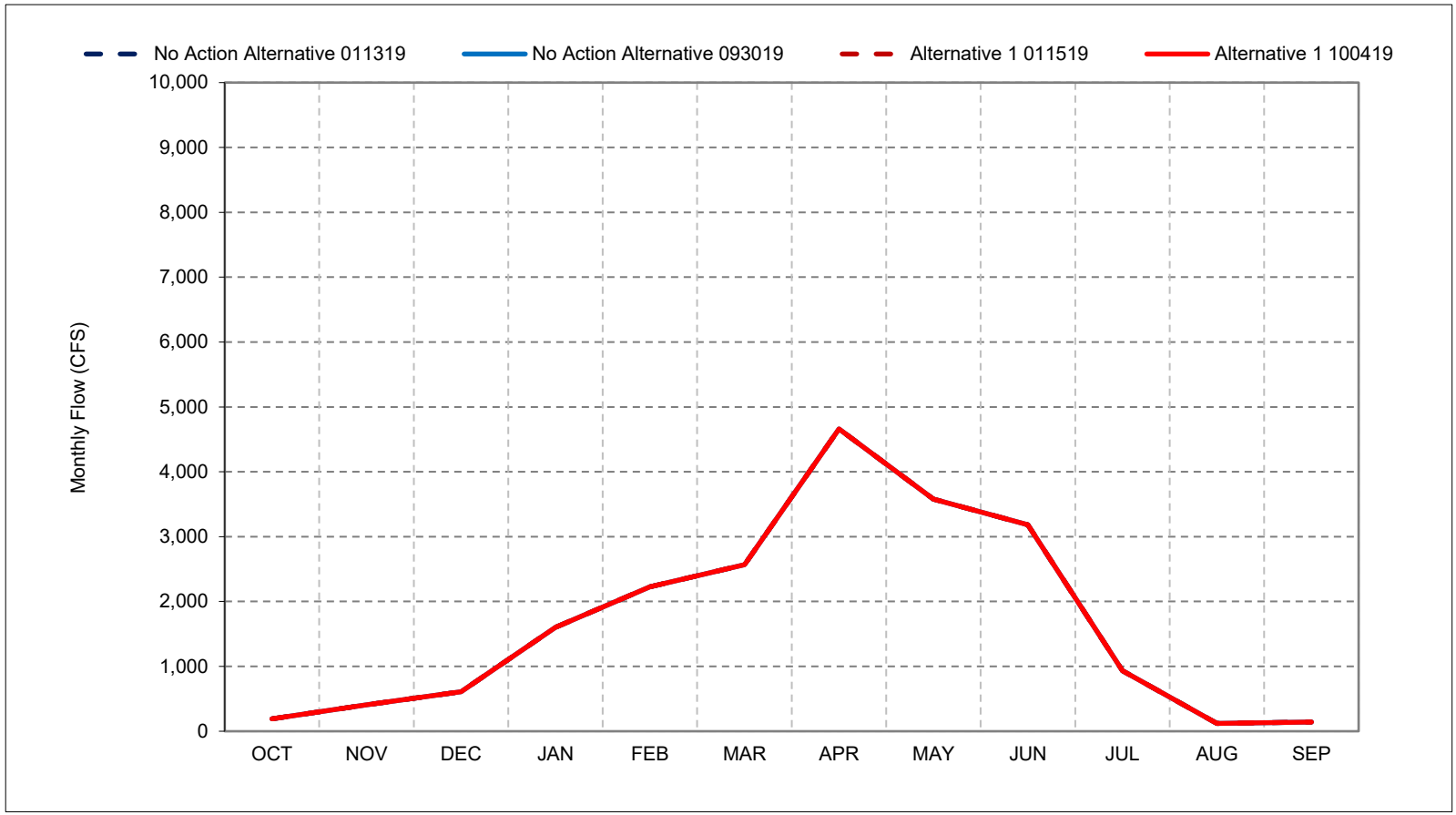



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-2. San Joaquin River Flow at Gravelly Ford, Wet Year Average Flow

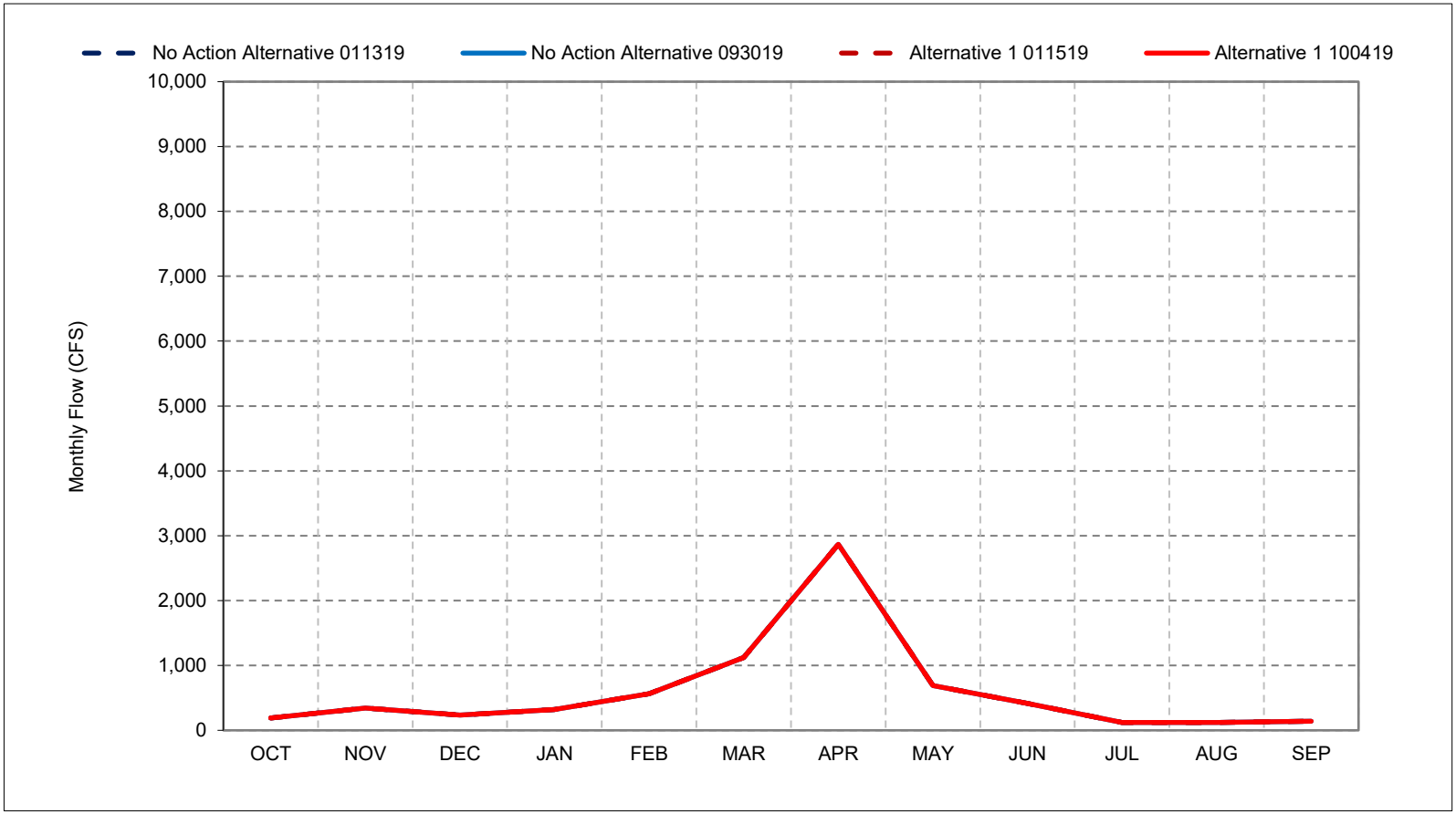



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-3. San Joaquin River Flow at Gravelly Ford, Above Normal Year Average Flow

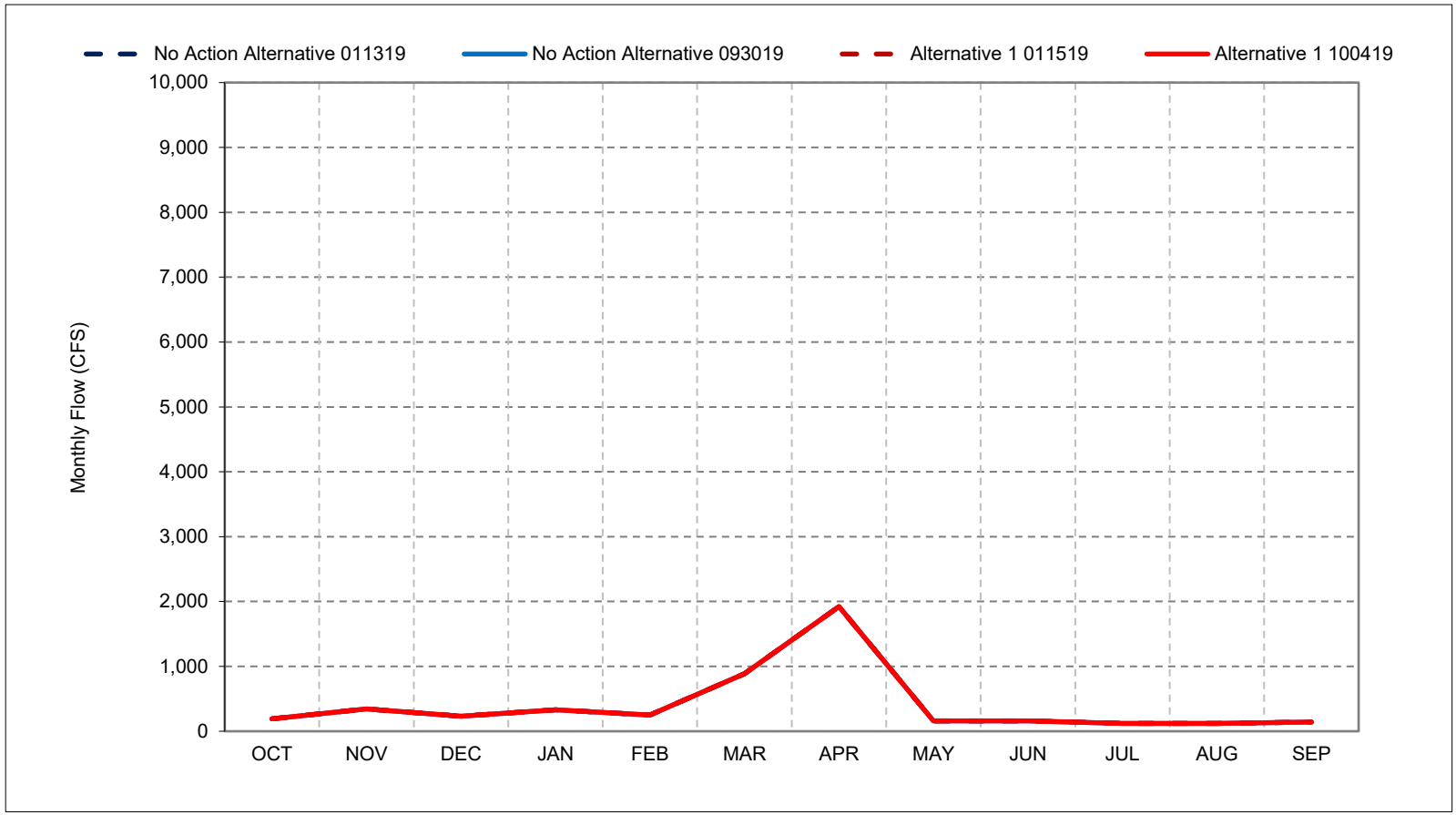



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-4. San Joaquin River Flow at Gravelly Ford, Below Normal Year Average Flow

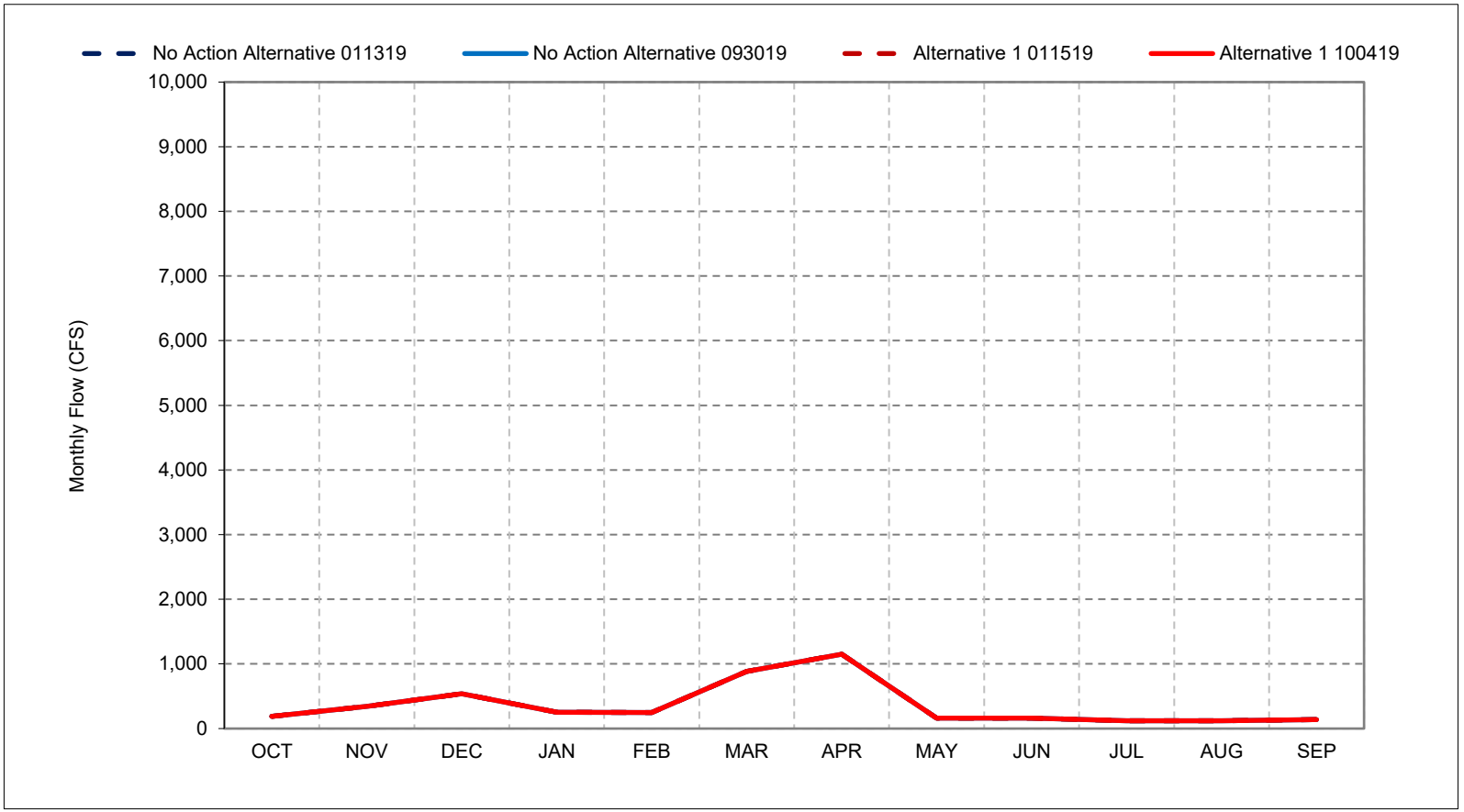



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-5. San Joaquin River Flow at Gravelly Ford, Dry Year Average Flow

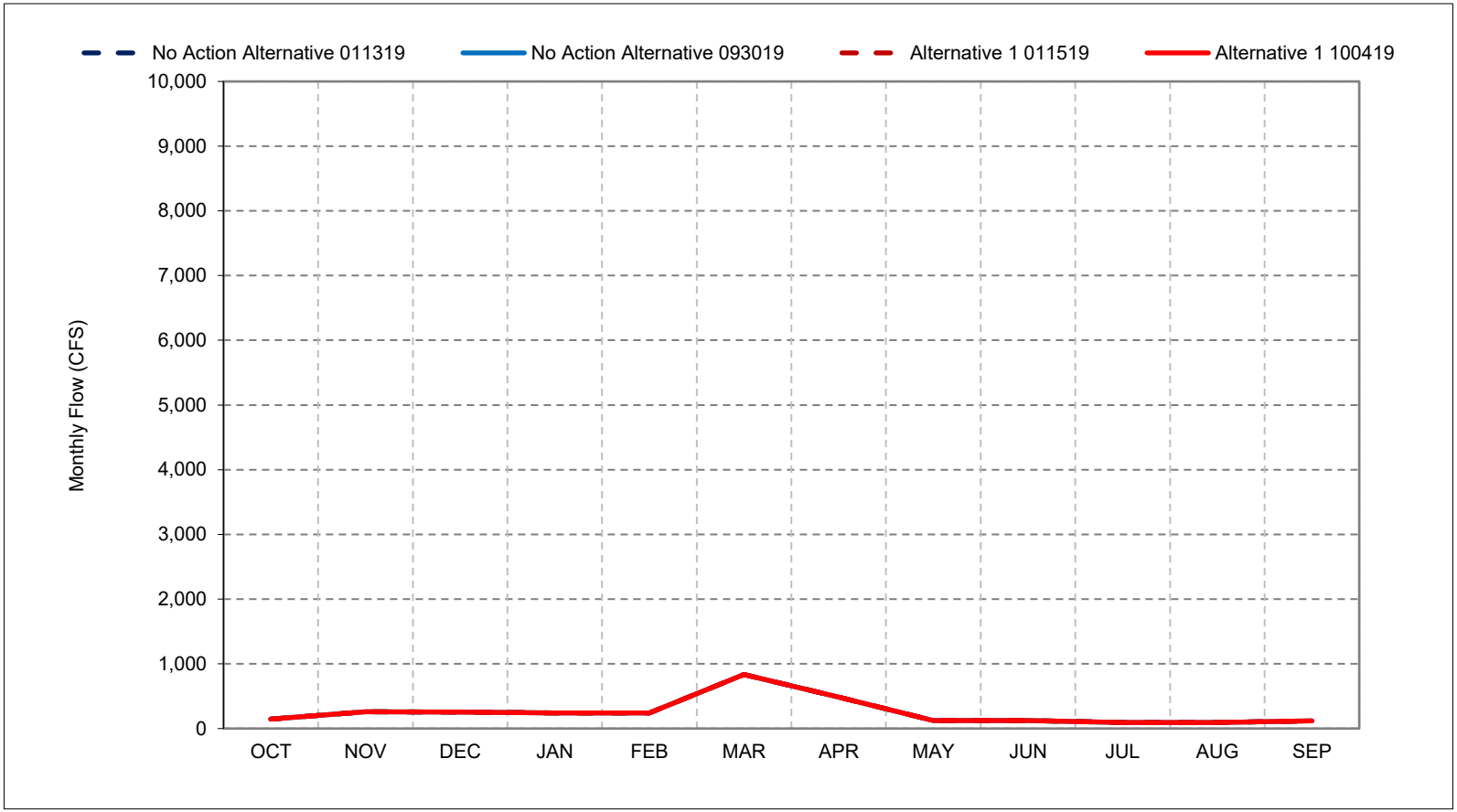



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-6. San Joaquin River Flow at Gravelly Ford, Critical Year Average Flow

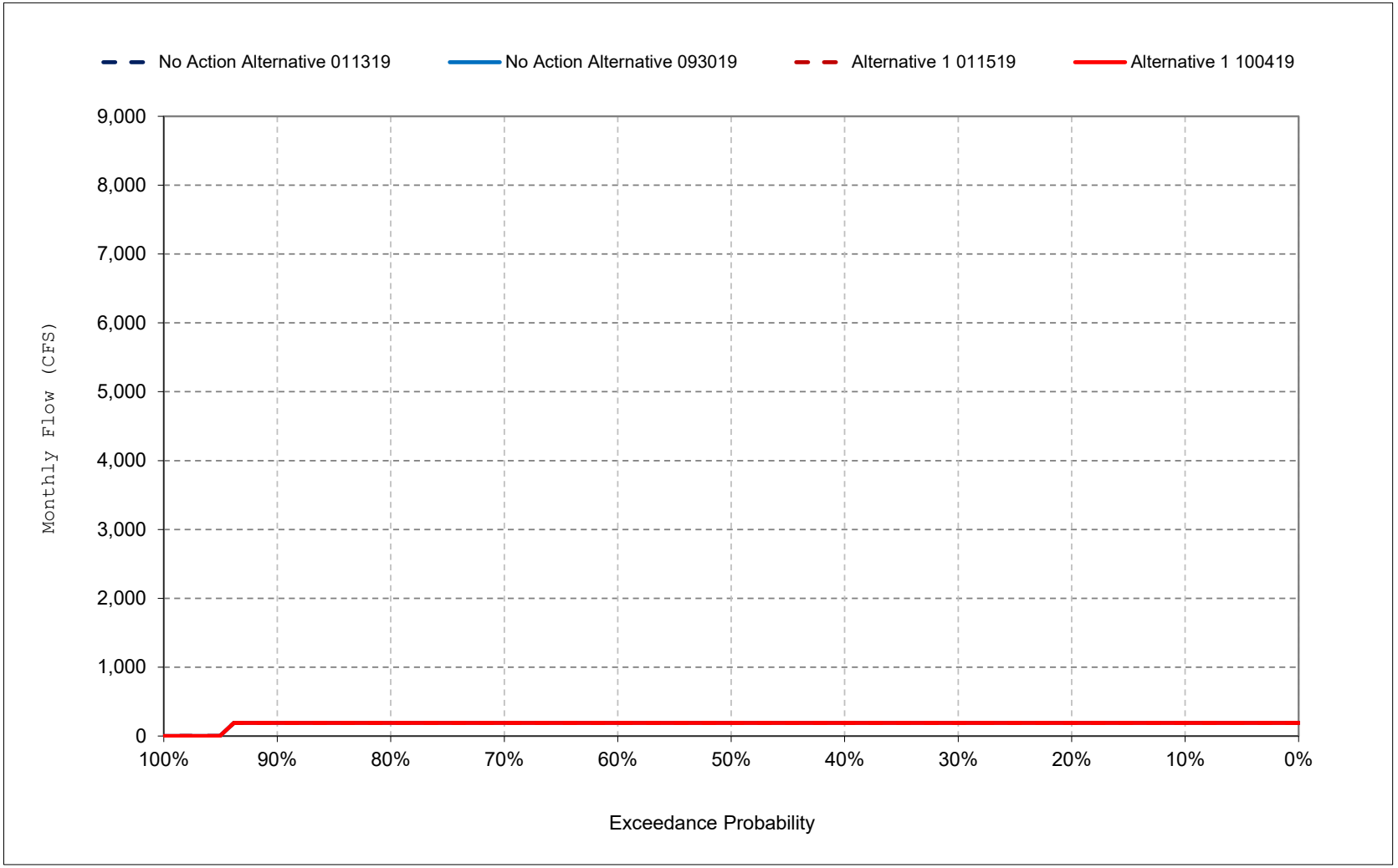



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

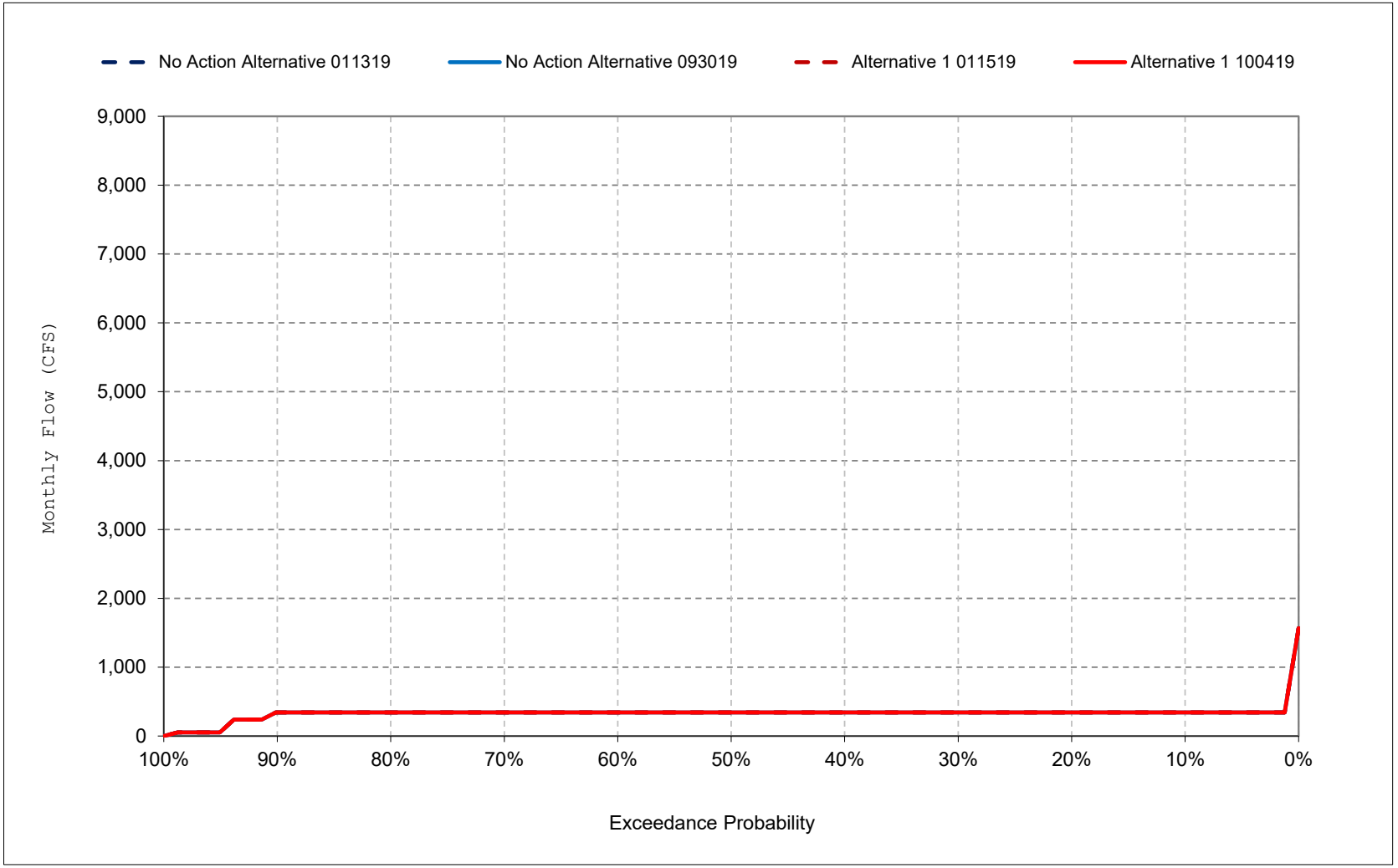
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-7. San Joaquin River Flow at Gravelly Ford, October**



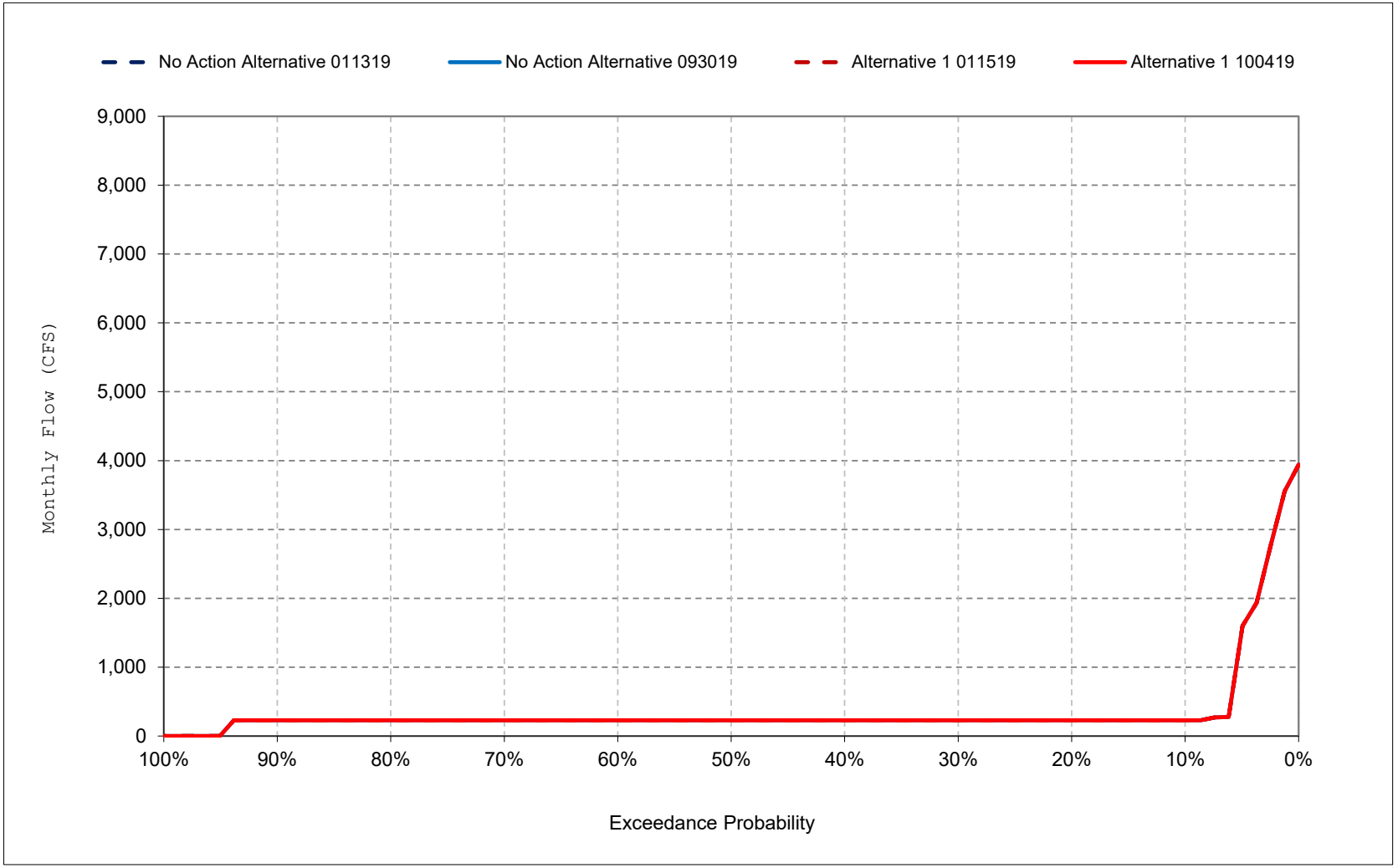

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-8. San Joaquin River Flow at Gravelly Ford, November**



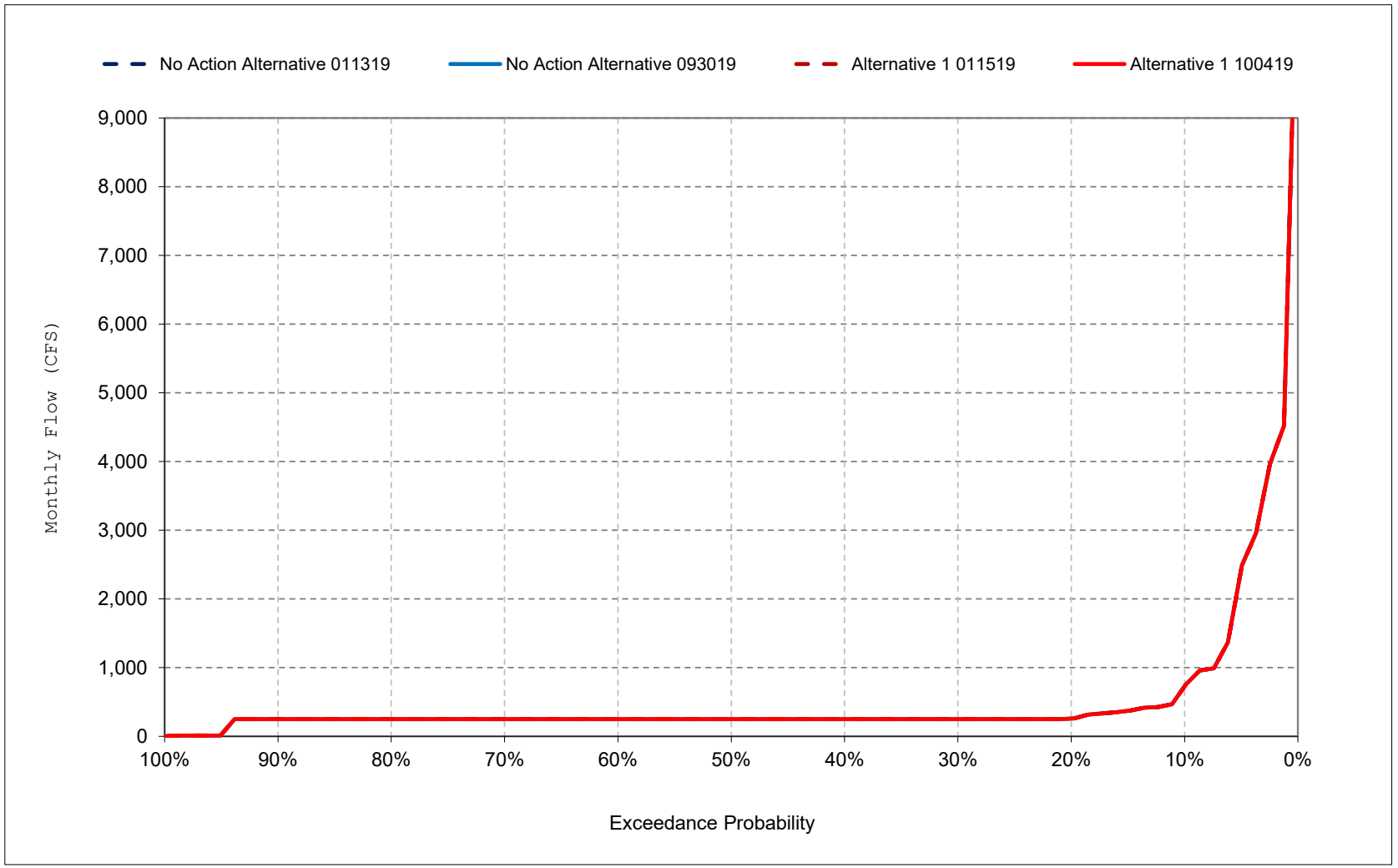

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-9. San Joaquin River Flow at Gravelly Ford, December**



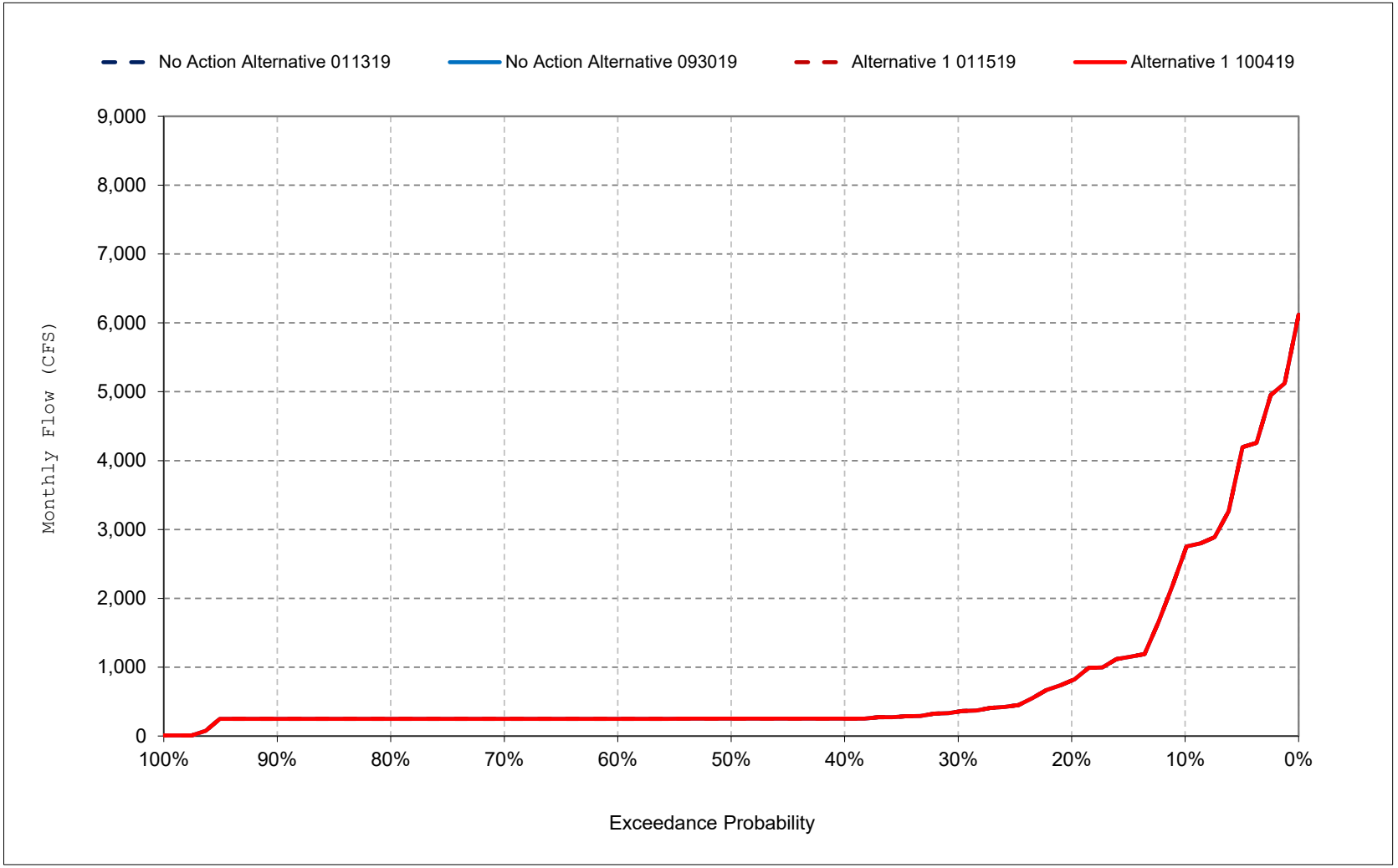

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-10. San Joaquin River Flow at Gravelly Ford, January**



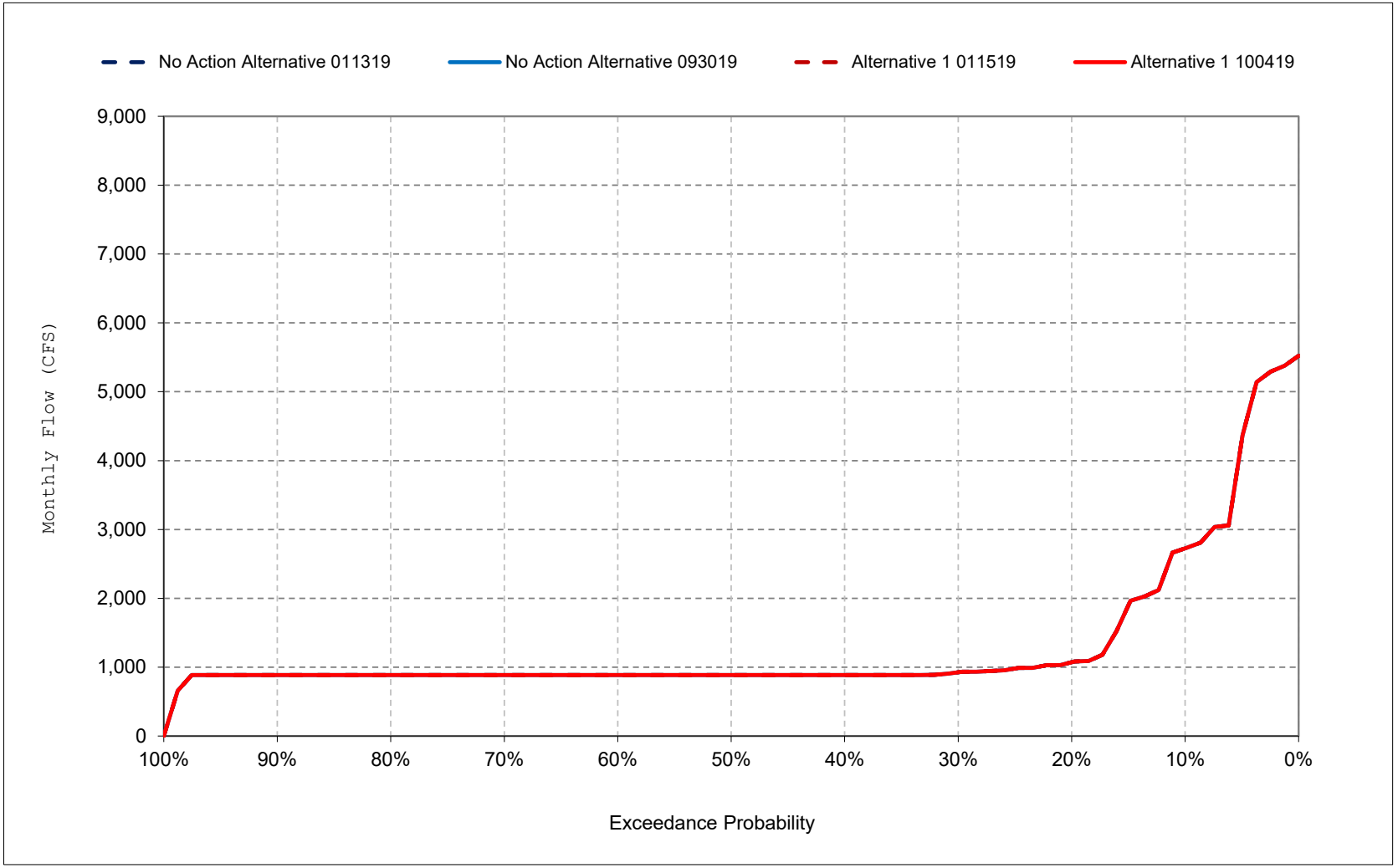

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-11. San Joaquin River Flow at Gravelly Ford, February**



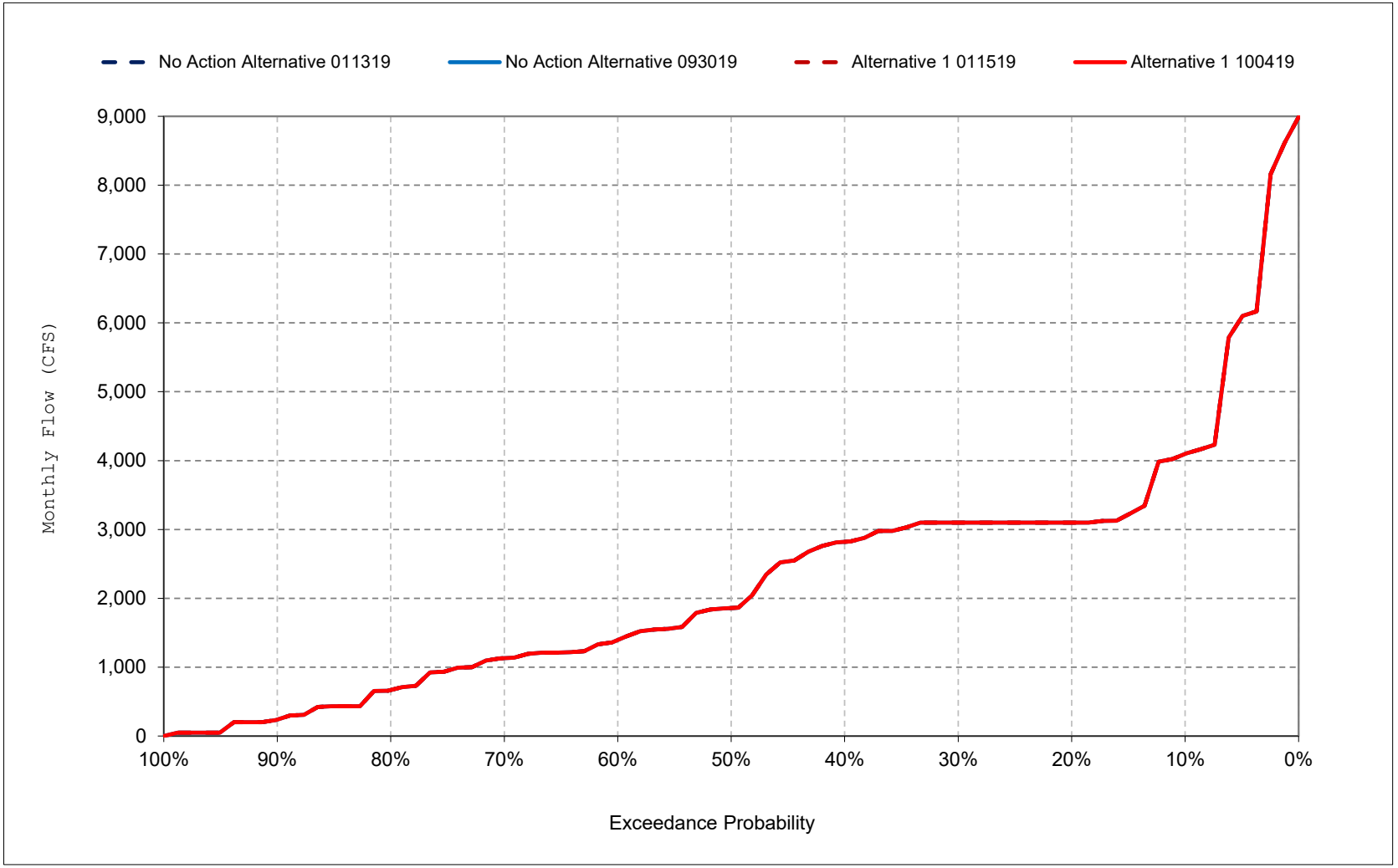

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-12. San Joaquin River Flow at Gravelly Ford, March**



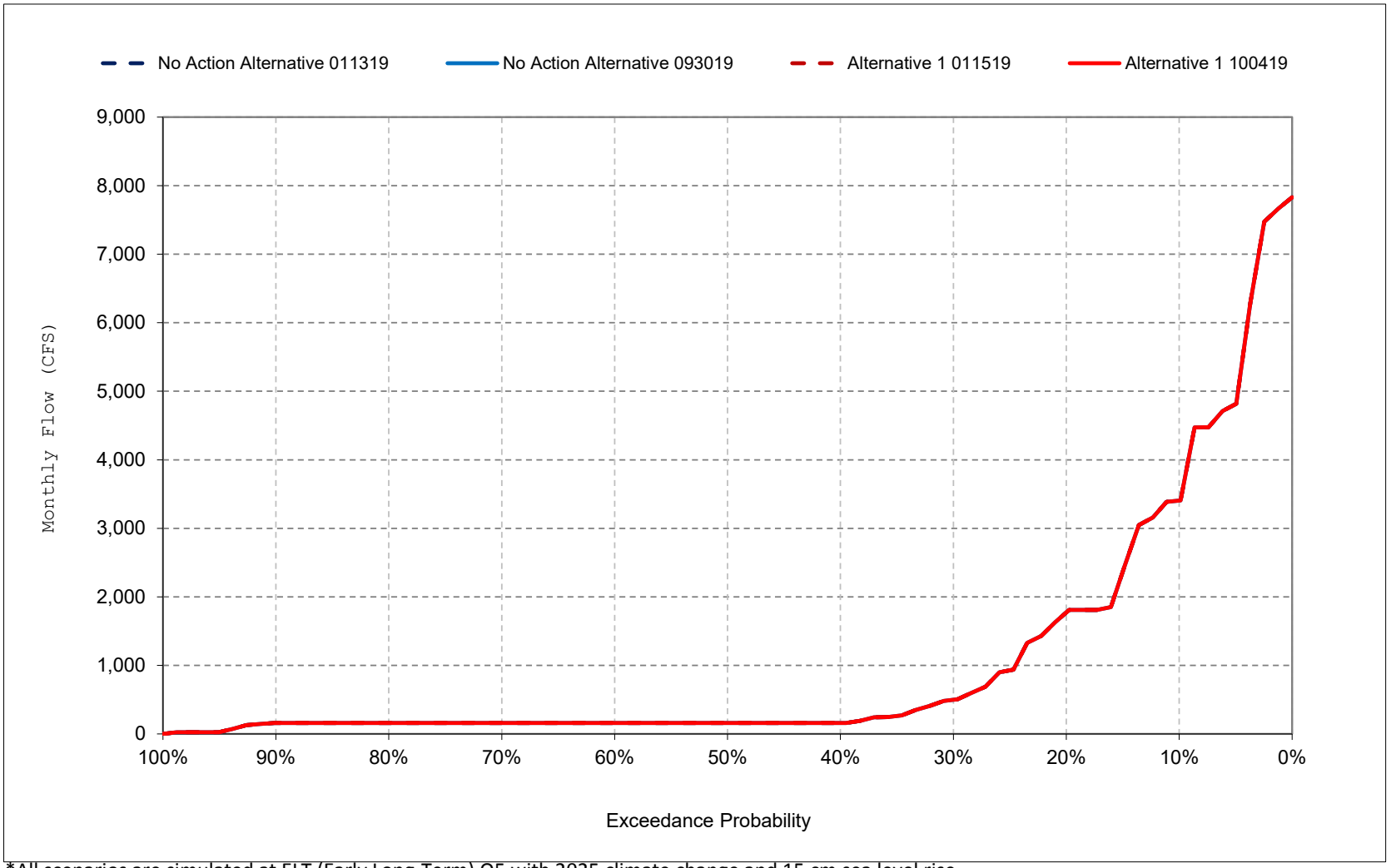

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-13. San Joaquin River Flow at Gravelly Ford, April**



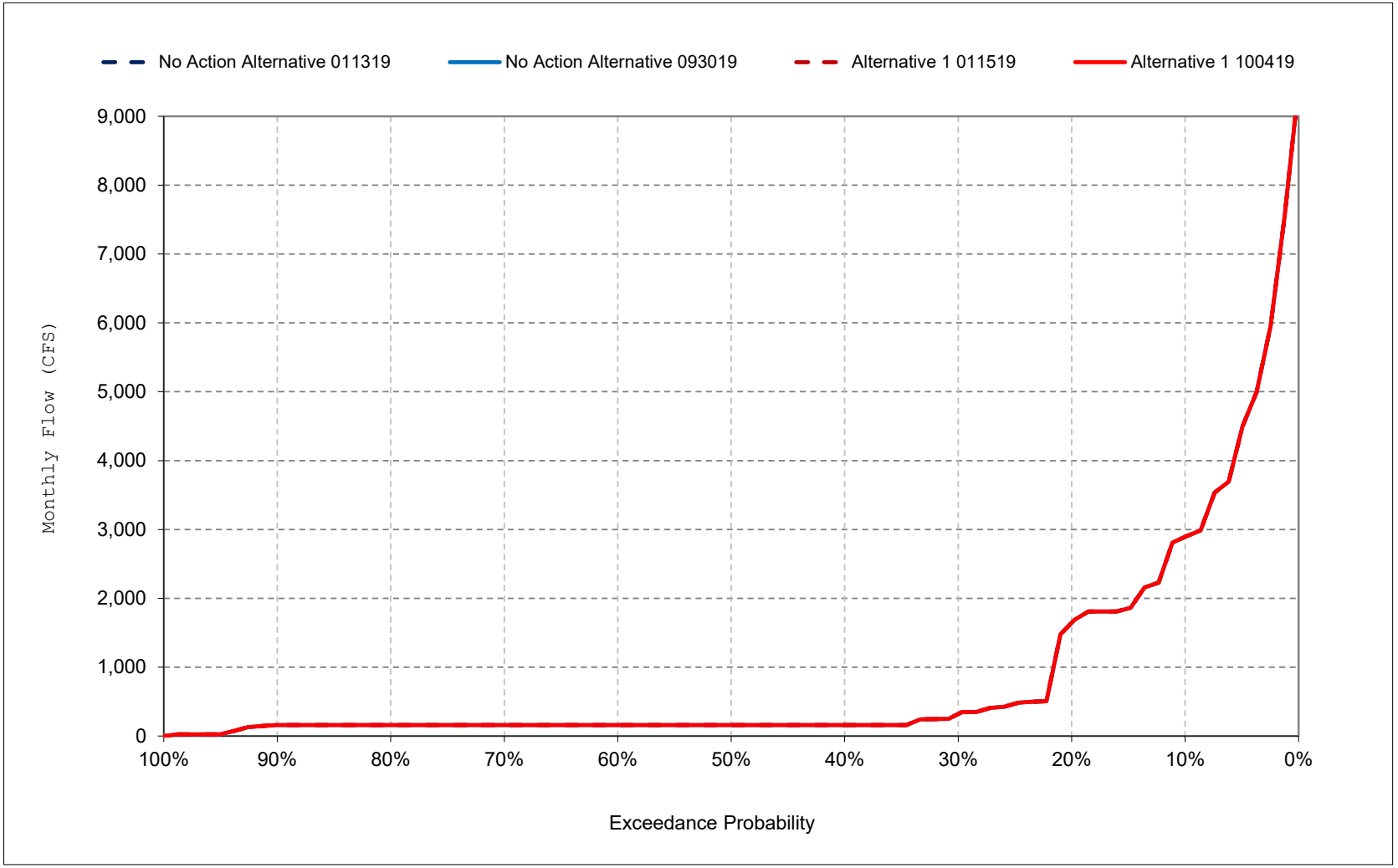

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-14. San Joaquin River Flow at Gravelly Ford, May**



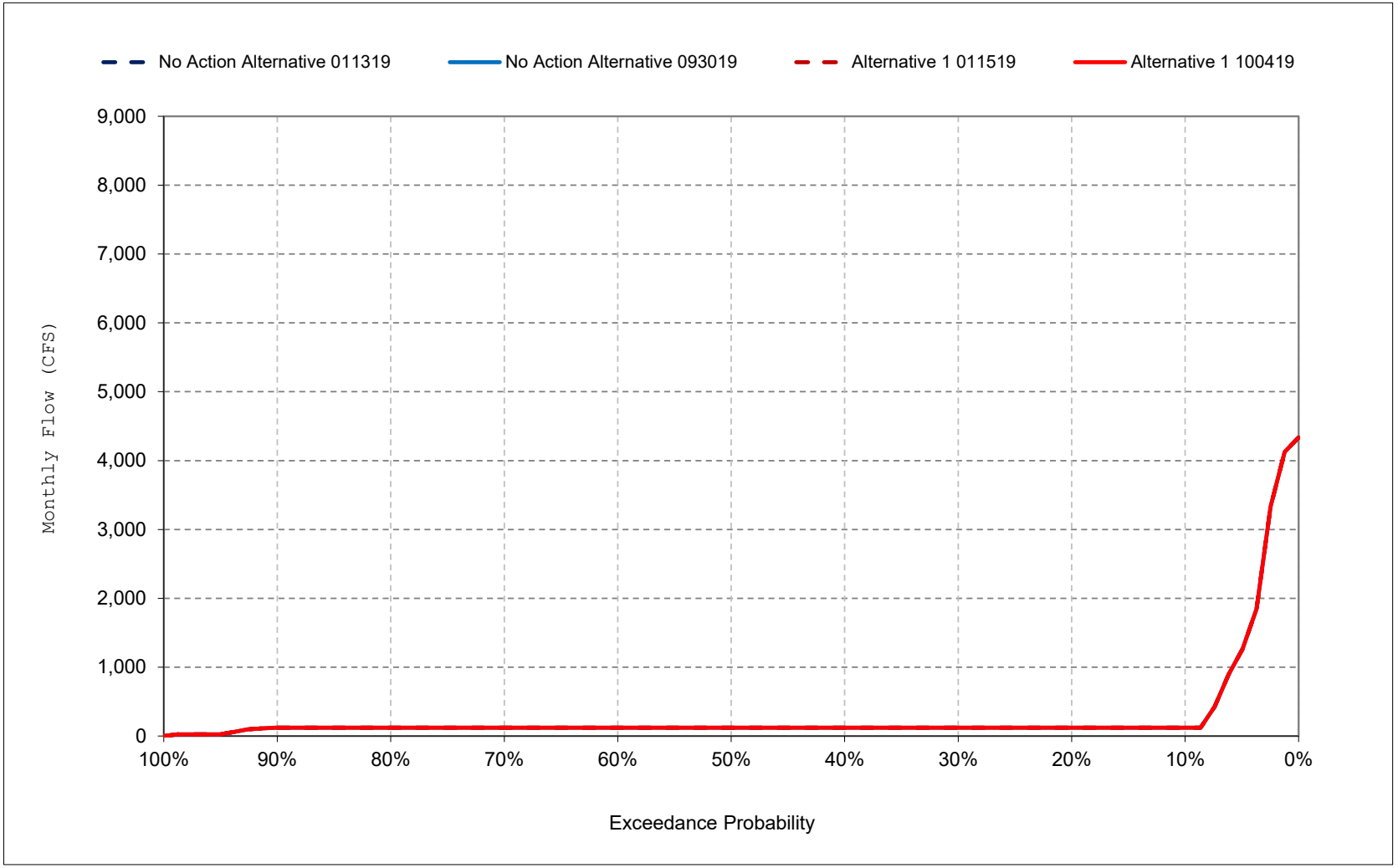

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-15. San Joaquin River Flow at Gravelly Ford, June**



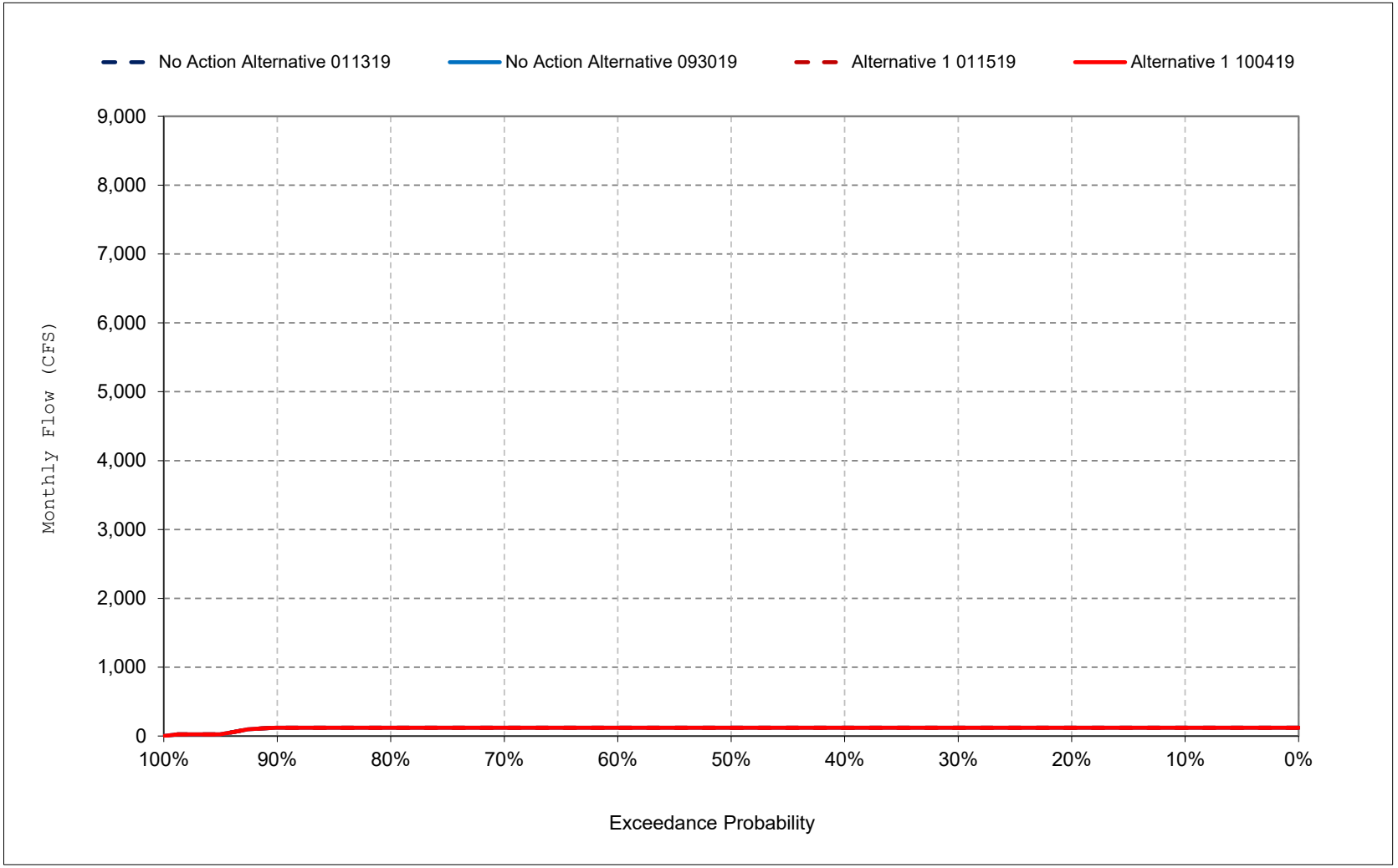

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-16. San Joaquin River Flow at Gravelly Ford, July**



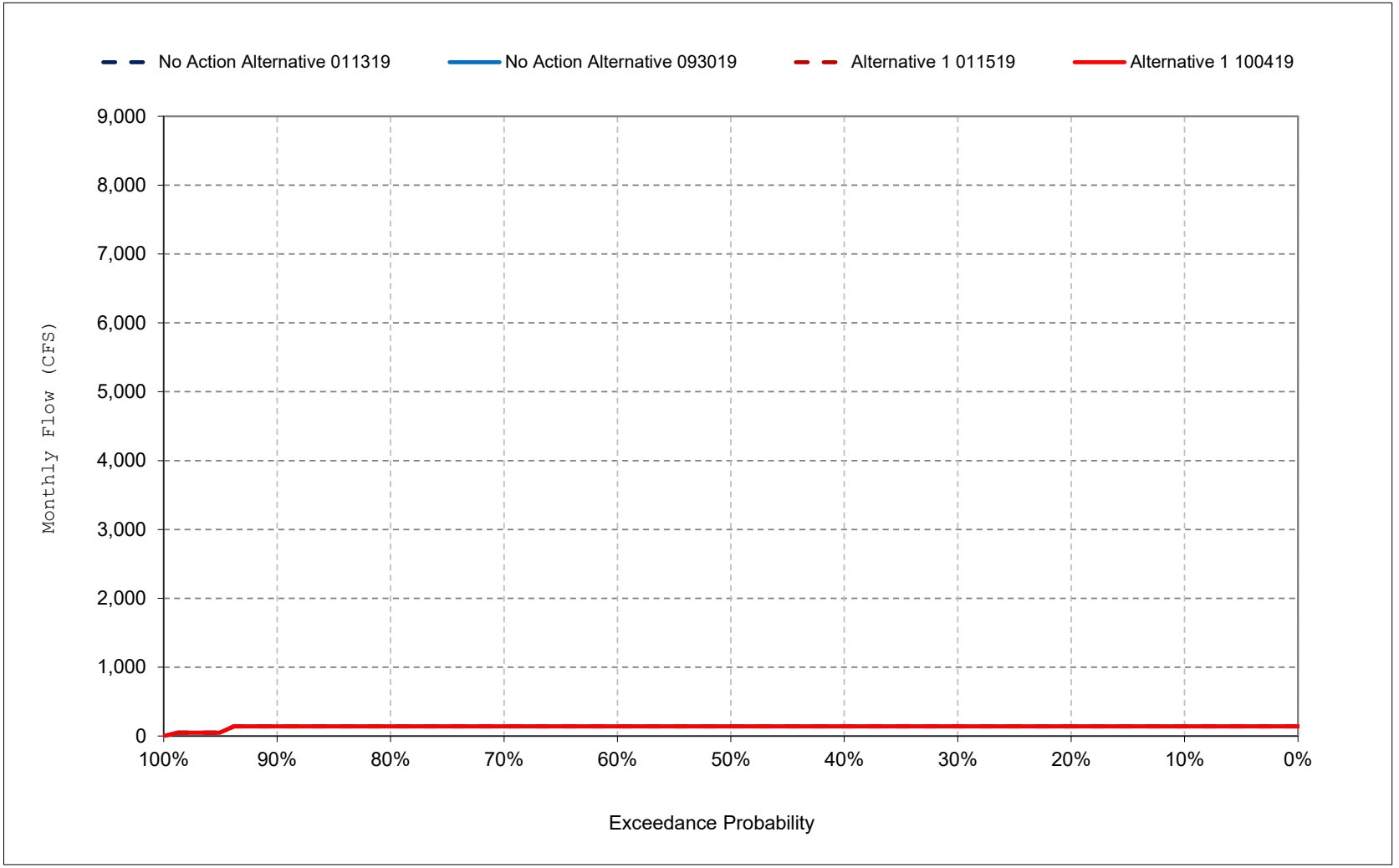

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-17. San Joaquin River Flow at Gravelly Ford, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-18. San Joaquin River Flow at Gravelly Ford, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 34-1. San Joaquin River Flow below Sack Dam, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,034 | 1,172 | 1,492 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 377 | 747 | 2,850 | 1,432 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 456 | 493 | 1,041 | 2,074 | 806 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,262 | 1,519 | 1,987 | 4,330 | 3,074 | 2,204 | 231 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 826 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,033 | 1,160 | 1,488 | 3,802 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 381 | 747 | 2,850 | 1,429 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 455 | 491 | 1,040 | 2,073 | 805 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,260 | 1,511 | 1,982 | 4,327 | 3,072 | 2,203 | 230 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 301 | 292 | 825 | 2,631 | 279 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | -12 | -3 | -1 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 4 | 0 | 0 | -3 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | -2 | -1 | -1 | -1 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | -1 | -7 | -4 | -3 | -2 | -1 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | -1 | -1 | 0 | -1 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-2. San Joaquin River Flow below Sack Dam, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,034 | 1,171 | 1,492 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 378 | 747 | 2,850 | 1,432 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 456 | 493 | 1,041 | 2,074 | 806 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,262 | 1,519 | 1,987 | 4,330 | 3,075 | 2,204 | 231 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 826 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,033 | 1,188 | 1,489 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 377 | 747 | 2,850 | 1,430 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 455 | 493 | 1,041 | 2,073 | 805 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,261 | 1,517 | 1,985 | 4,328 | 3,073 | 2,203 | 230 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 825 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 17 | -3 | 0 | -1 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | -1 | 0 | 0 | -2 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | -1 | -1 | -2 | -2 | -2 | -1 | -1 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-3. San Joaquin River Flow below Sack Dam, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,034 | 1,172 | 1,492 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 377 | 747 | 2,850 | 1,432 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 456 | 493 | 1,041 | 2,074 | 806 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,262 | 1,519 | 1,987 | 4,330 | 3,074 | 2,204 | 231 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 826 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,034 | 1,171 | 1,492 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 378 | 747 | 2,850 | 1,432 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 456 | 493 | 1,041 | 2,074 | 806 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,262 | 1,519 | 1,987 | 4,330 | 3,075 | 2,204 | 231 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 826 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-4. San Joaquin River Flow below Sack Dam, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,033 | 1,160 | 1,488 | 3,802 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 381 | 747 | 2,850 | 1,429 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 455 | 491 | 1,040 | 2,073 | 805 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,260 | 1,511 | 1,982 | 4,327 | 3,072 | 2,203 | 230 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 301 | 292 | 825 | 2,631 | 279 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 86 | 232 | 123 | 1,033 | 1,188 | 1,489 | 3,803 | 3,955 | 1,706 | 20 | 20 | 38 |
| 20% | 86 | 232 | 123 | 143 | 377 | 747 | 2,850 | 1,430 | 457 | 20 | 20 | 38 |
| 30% | 86 | 232 | 123 | 143 | 145 | 747 | 2,850 | 137 | 138 | 20 | 20 | 38 |
| 40% | 86 | 232 | 123 | 143 | 145 | 747 | 2,585 | 57 | 57 | 20 | 20 | 38 |
| 50% | 86 | 232 | 123 | 143 | 142 | 747 | 1,670 | 57 | 57 | 20 | 20 | 38 |
| 60% | 86 | 232 | 123 | 143 | 142 | 747 | 1,228 | 57 | 57 | 20 | 20 | 38 |
| 70% | 86 | 232 | 123 | 143 | 142 | 747 | 980 | 57 | 57 | 20 | 20 | 38 |
| 80% | 86 | 232 | 123 | 143 | 142 | 747 | 539 | 57 | 57 | 20 | 20 | 38 |
| 90% | 86 | 232 | 123 | 143 | 142 | 747 | 131 | 57 | 57 | 20 | 20 | 38 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 86 | 263 | 274 | 455 | 493 | 1,041 | 2,073 | 805 | 584 | 67 | 18 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 110 | 442 | 610 | 1,261 | 1,517 | 1,985 | 4,328 | 3,073 | 2,203 | 230 | 20 | 38 |
| Above Normal (24%) | 86 | 232 | 167 | 302 | 293 | 825 | 2,631 | 280 | 199 | 20 | 20 | 38 |
| Below Normal (10%) | 86 | 232 | 123 | 310 | 107 | 747 | 1,731 | 57 | 57 | 20 | 20 | 38 |
| Dry (16%) | 86 | 232 | 260 | 143 | 142 | 747 | 998 | 57 | 57 | 20 | 20 | 38 |
| Critical (27%) | 67 | 165 | 147 | 137 | 136 | 703 | 380 | 39 | 40 | 13 | 13 | 29 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 28 | 0 | 1 | **0** | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | **-4** | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | **0** | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 1 | 6 | 2 | 1 | 0 | **0** | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |

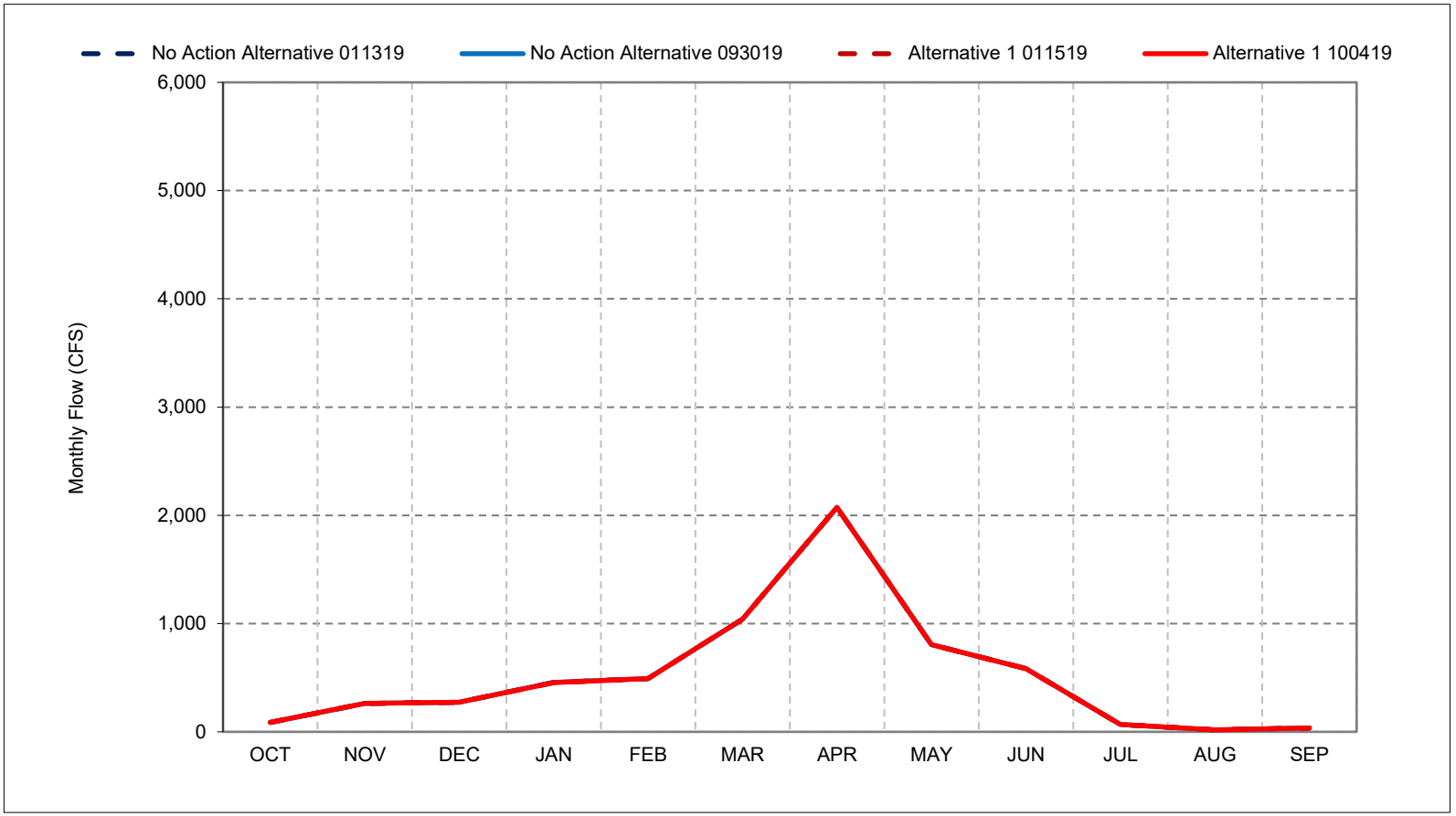
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-1. San Joaquin River Flow below Sack Dam, Long-Term Average Flow

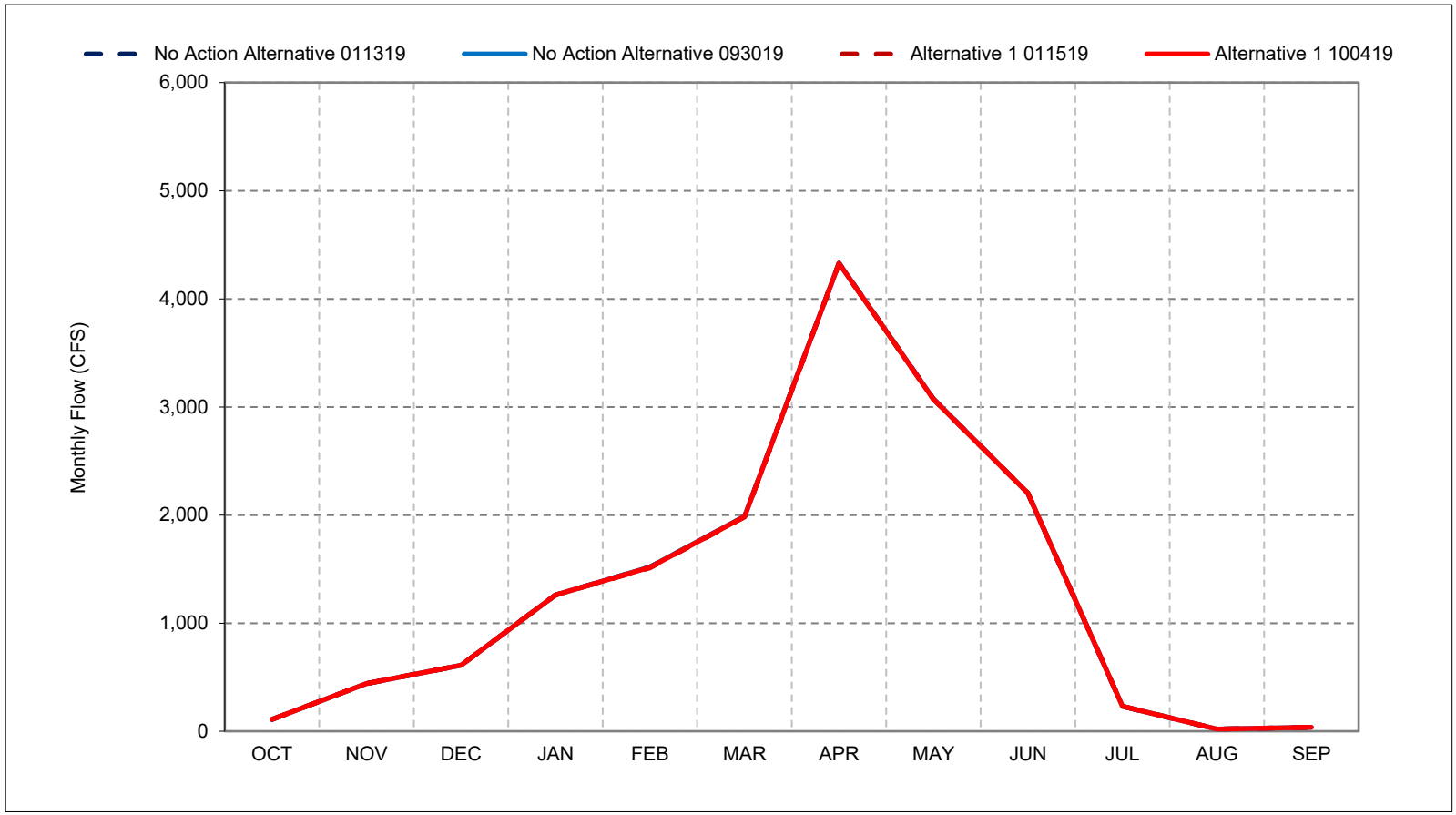



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-2. San Joaquin River Flow below Sack Dam, Wet Year Average Flow

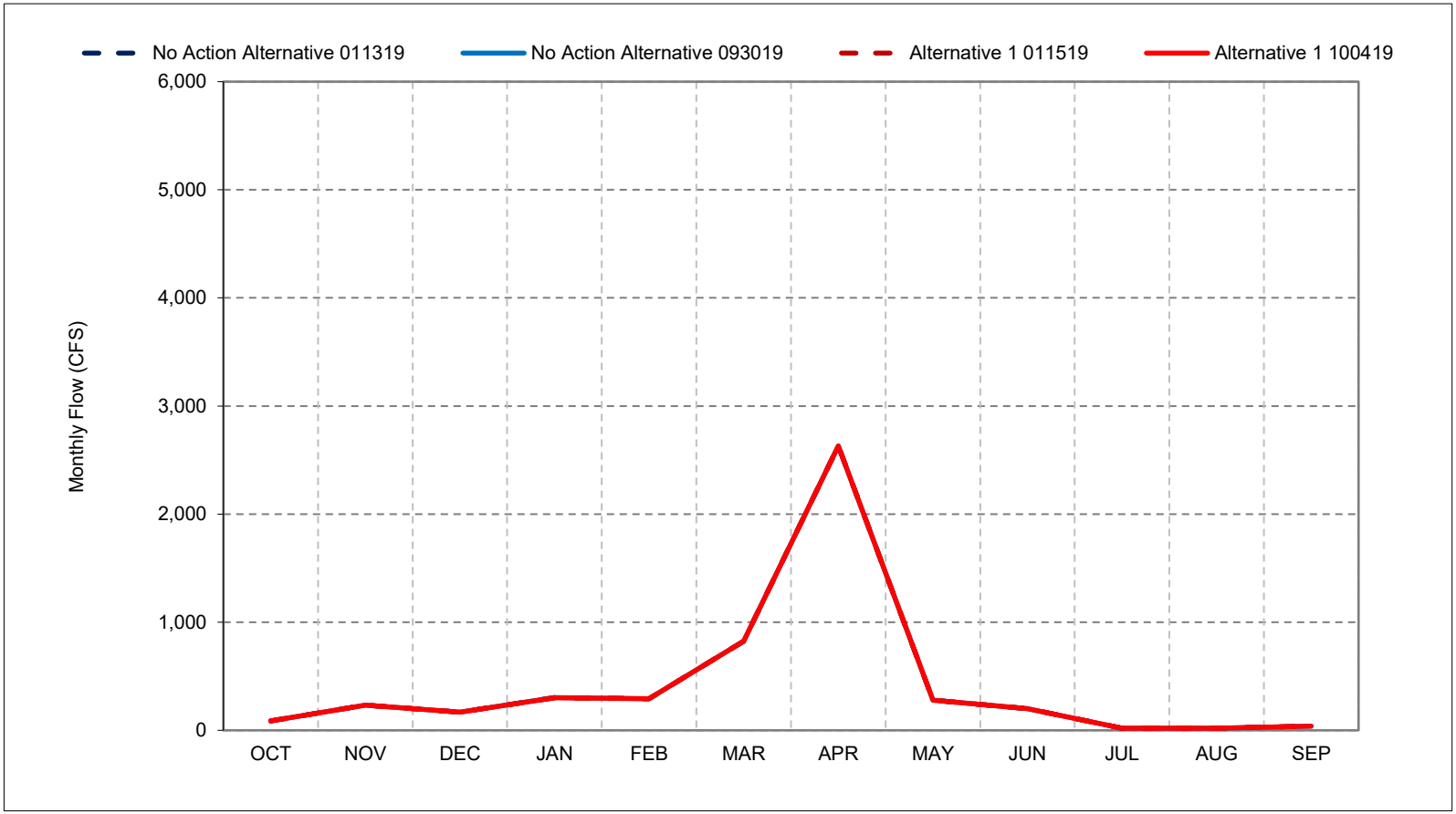



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-3. San Joaquin River Flow below Sack Dam, Above Normal Year Average Flow

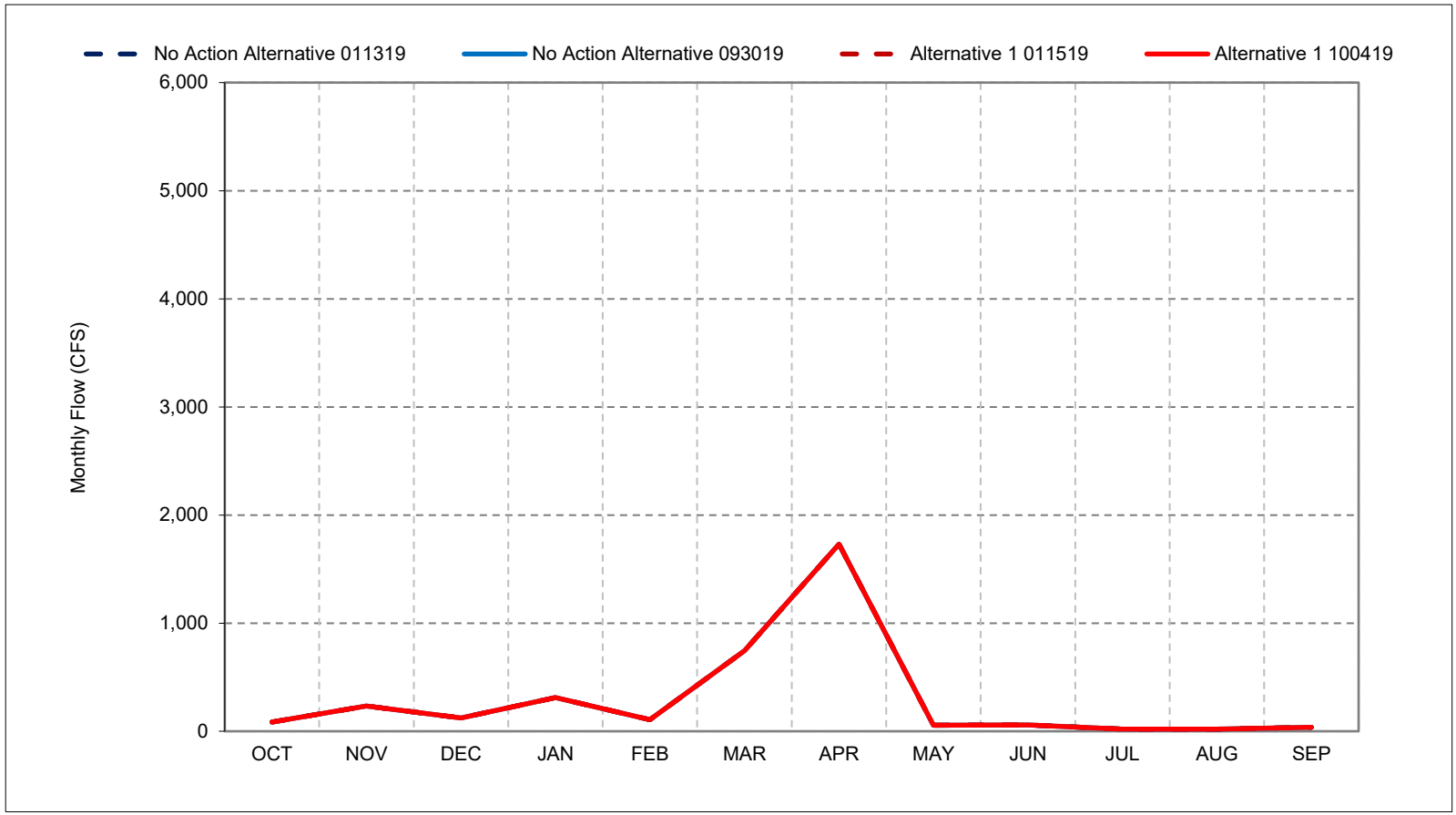



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-4. San Joaquin River Flow below Sack Dam, Below Normal Year Average Flow

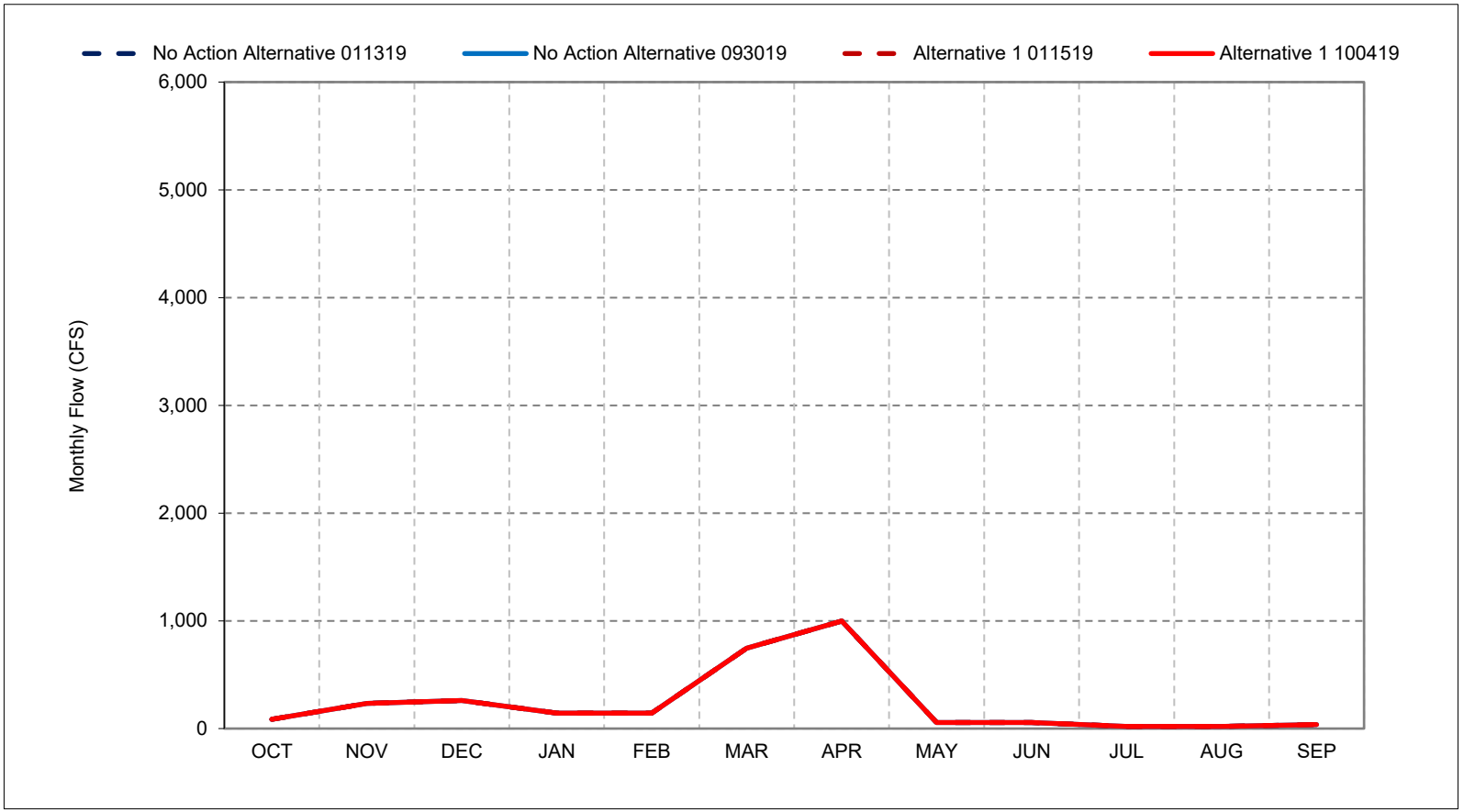



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-5. San Joaquin River Flow below Sack Dam, Dry Year Average Flow

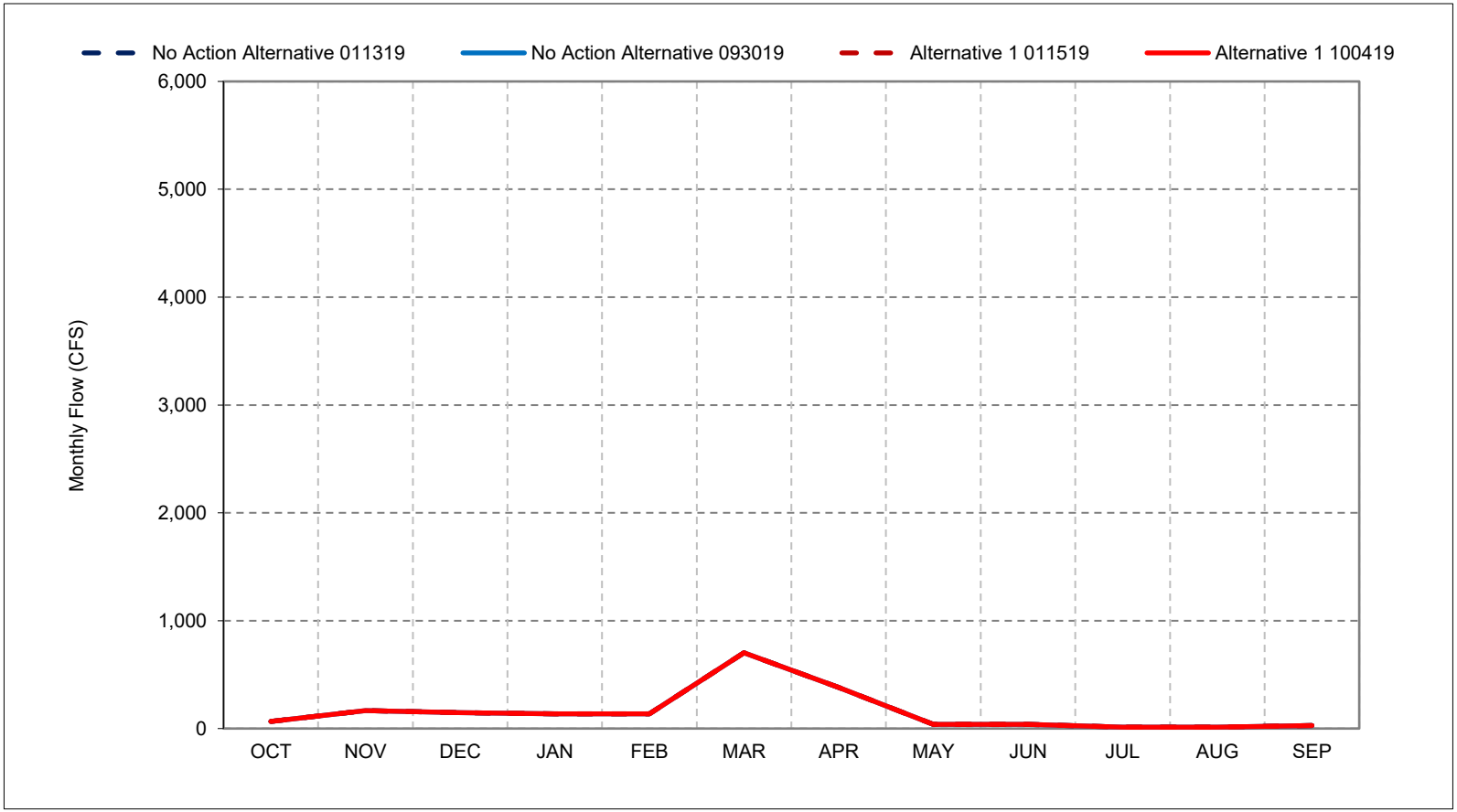



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-6. San Joaquin River Flow below Sack Dam, Critical Year Average Flow

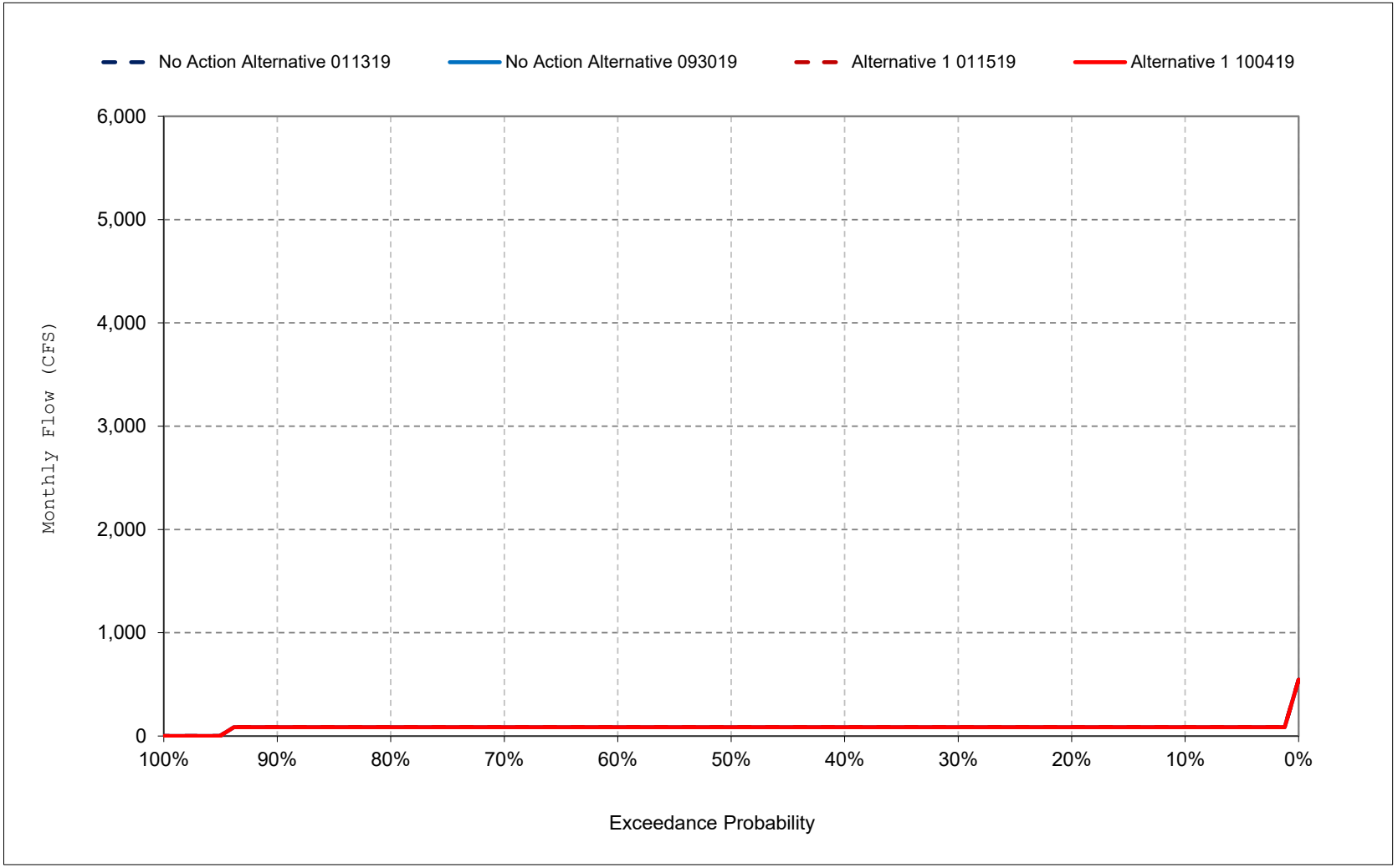



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

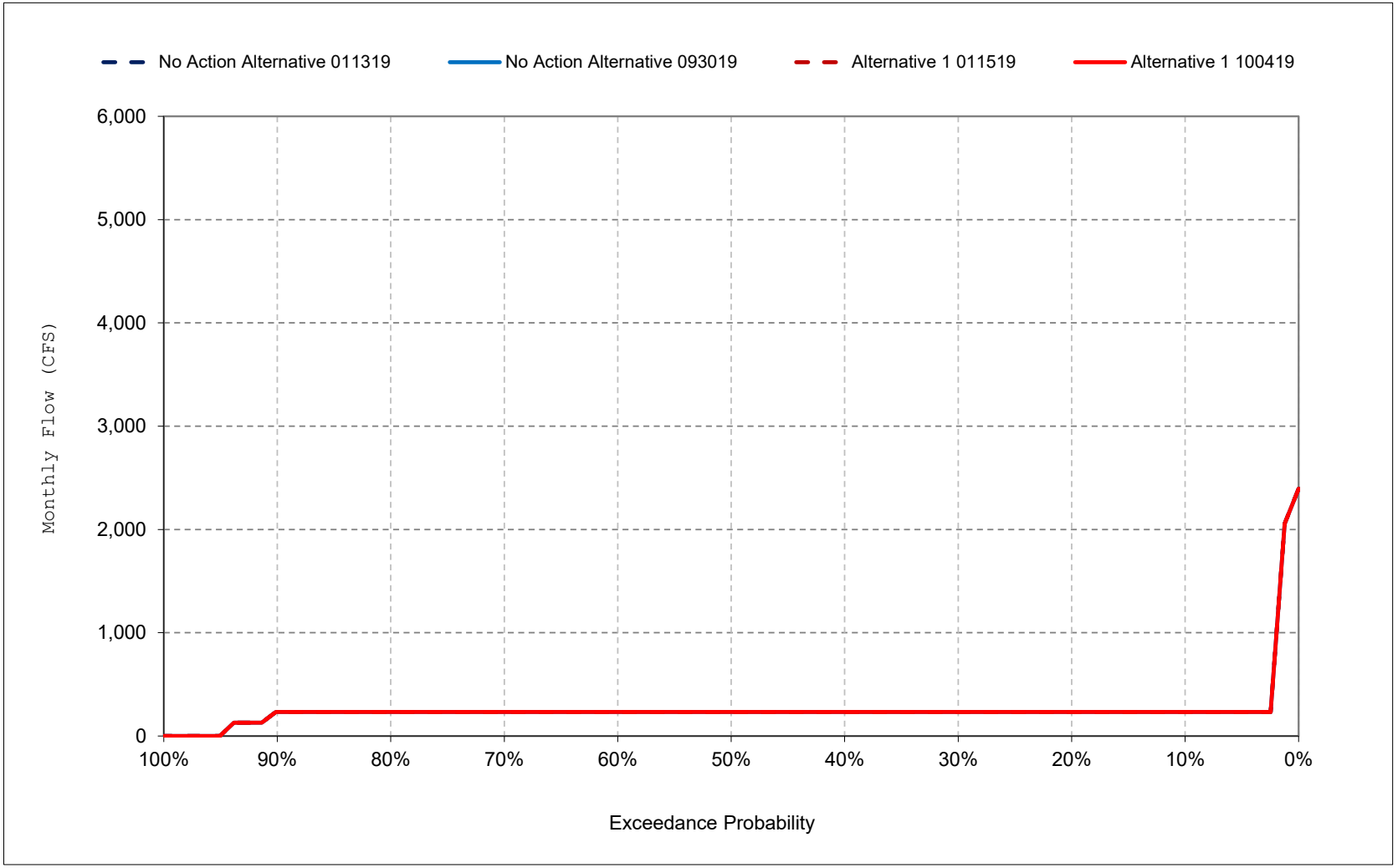
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-7. San Joaquin River Flow below Sack Dam, October**



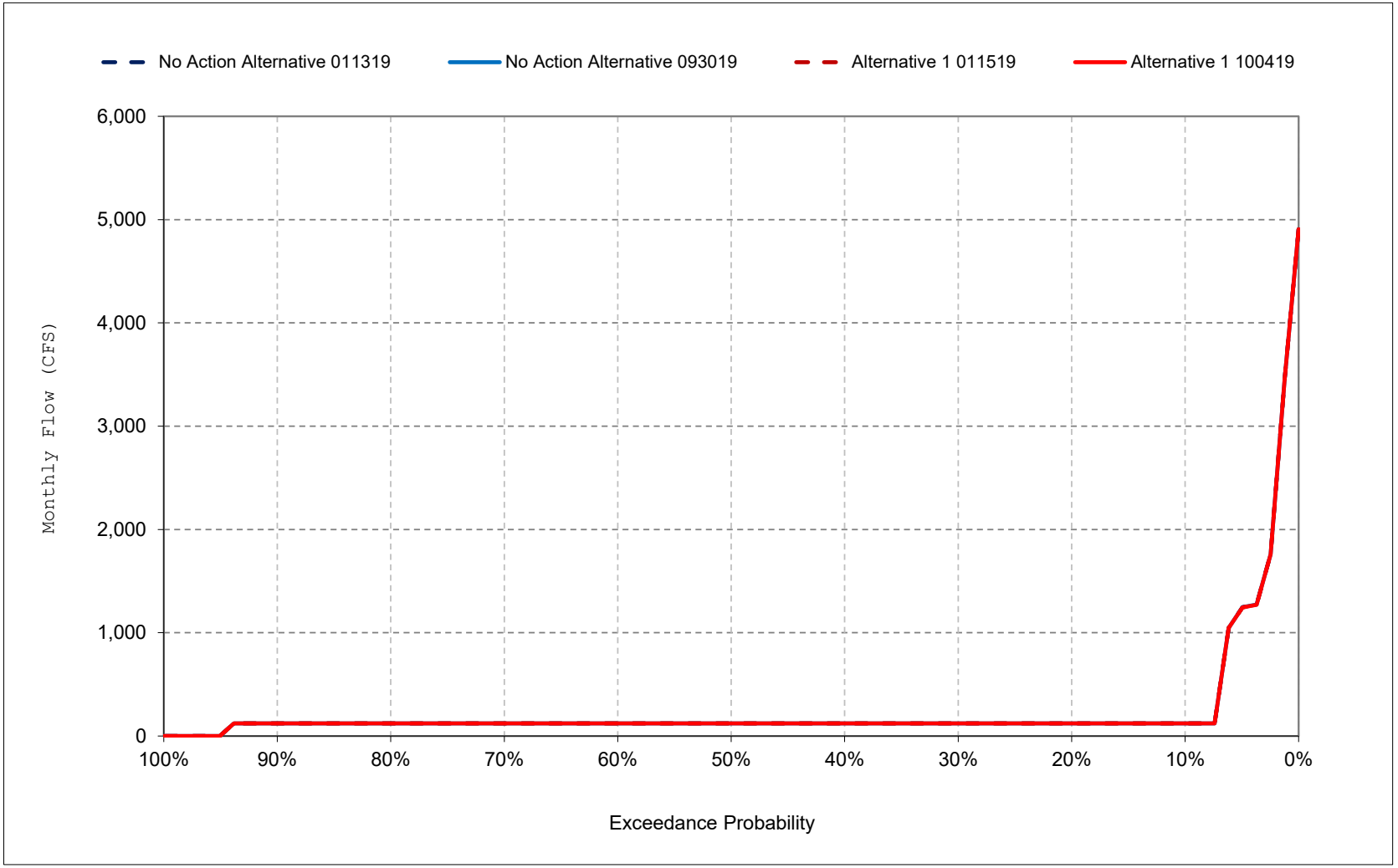

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-8. San Joaquin River Flow below Sack Dam, November**



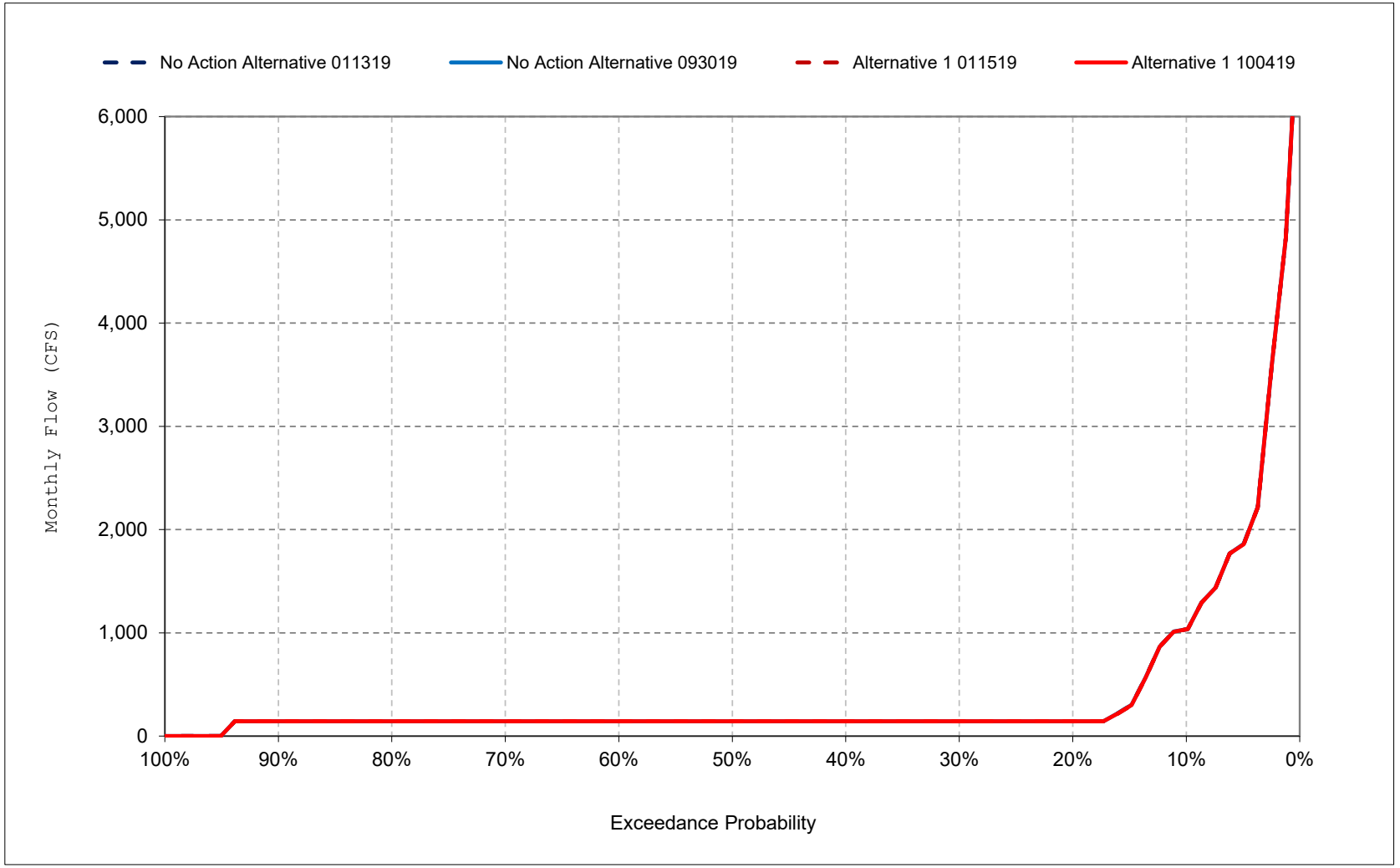

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-9. San Joaquin River Flow below Sack Dam, December**



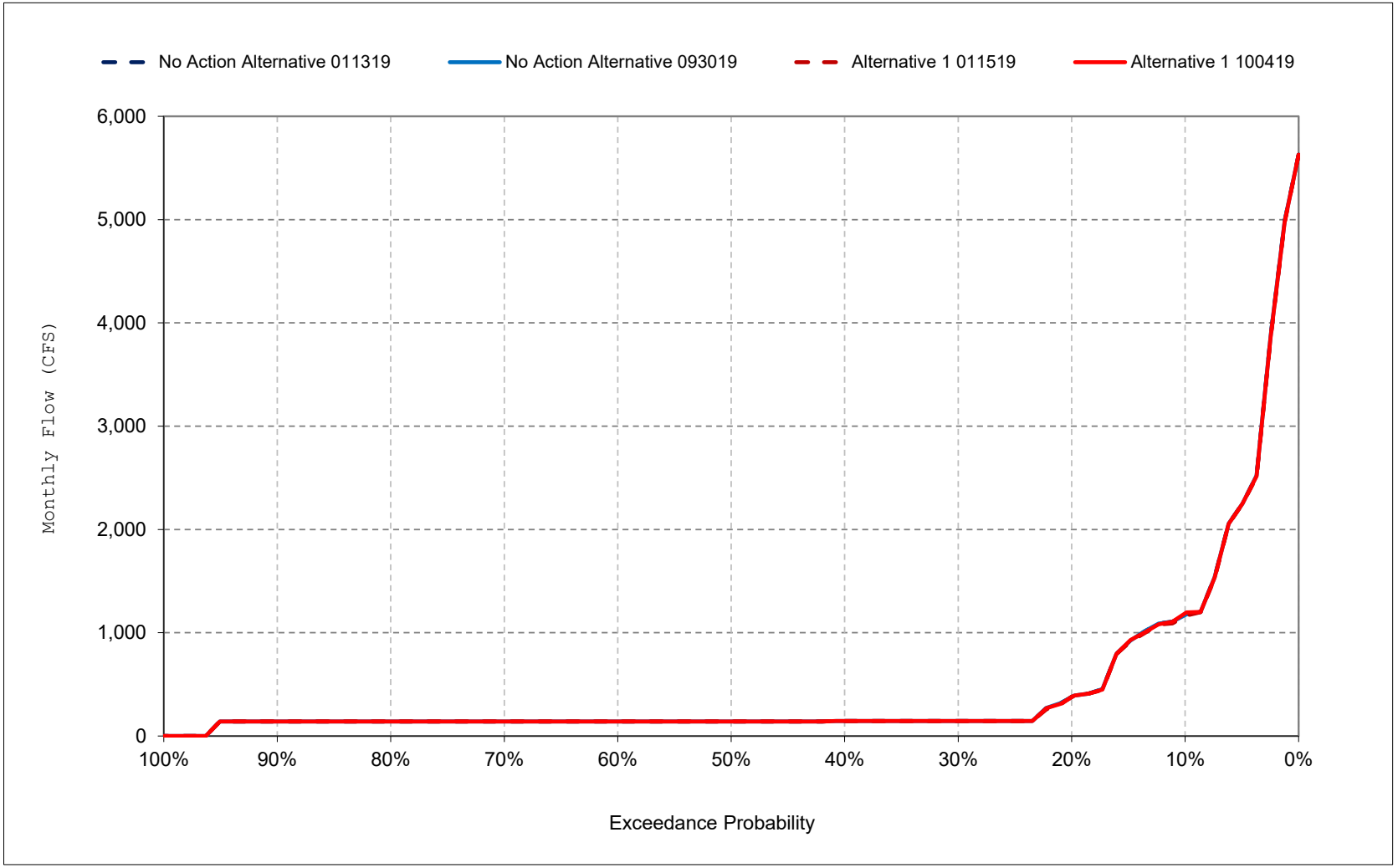

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-10. San Joaquin River Flow below Sack Dam, January**



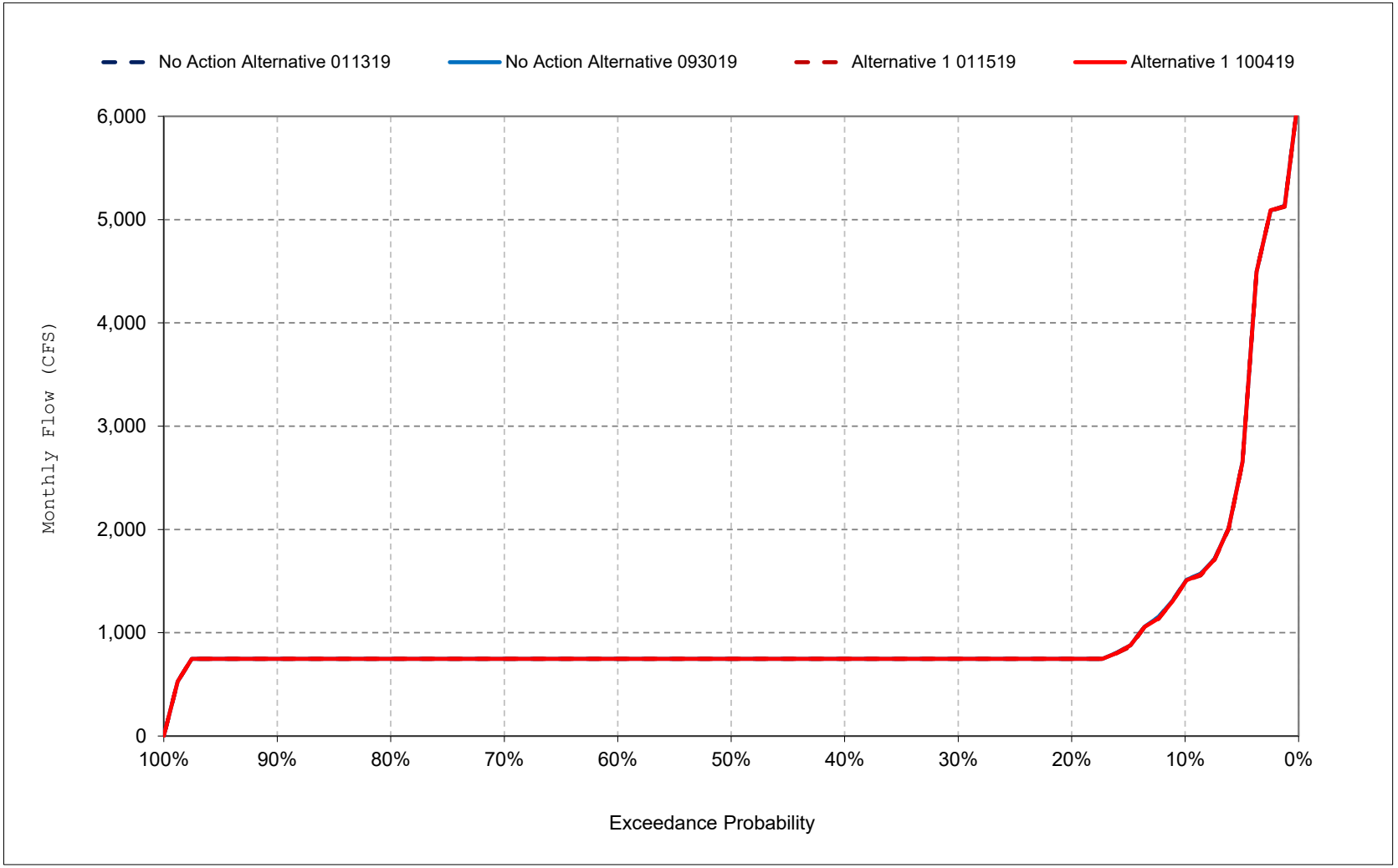

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-11. San Joaquin River Flow below Sack Dam, February**



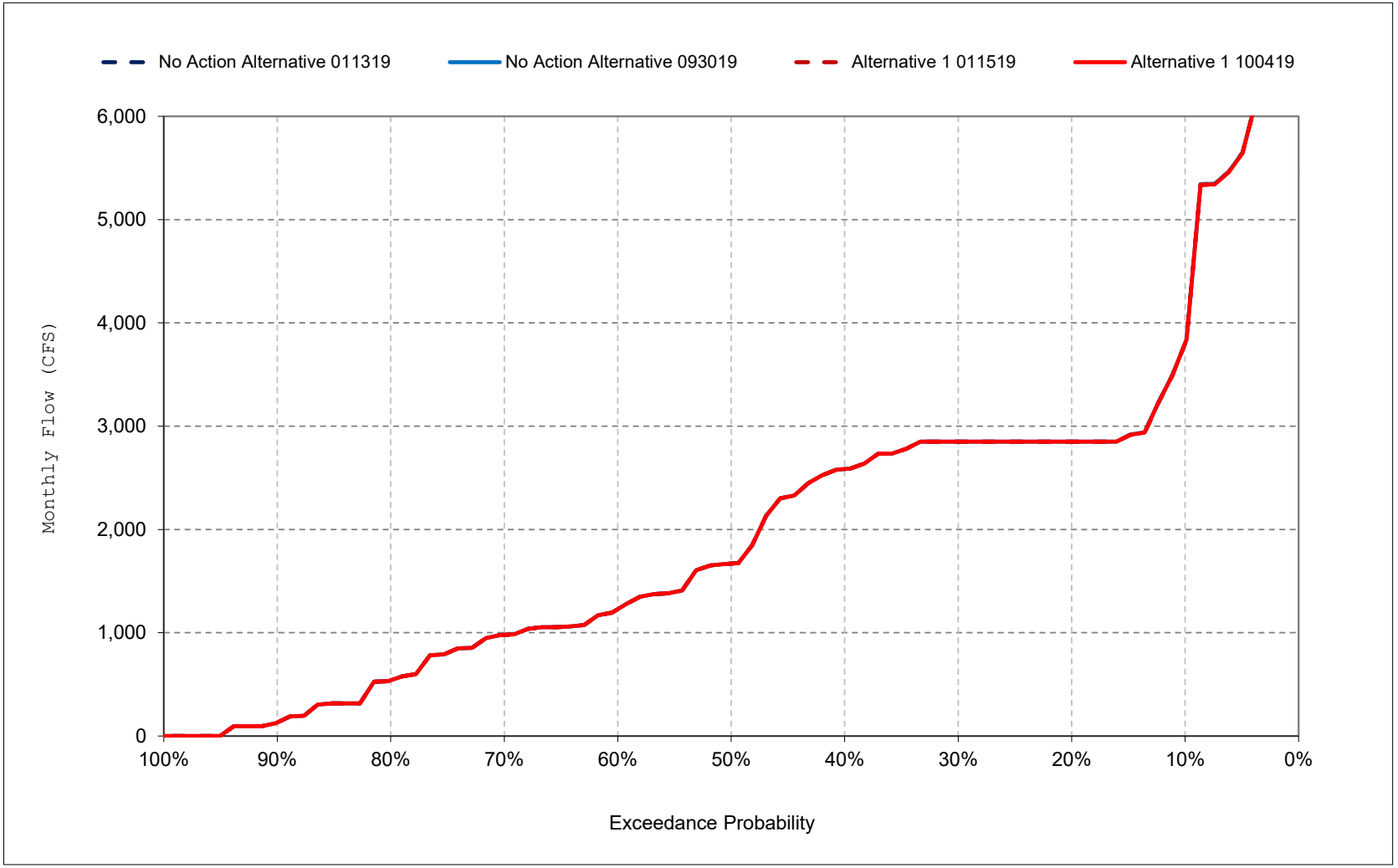

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-12. San Joaquin River Flow below Sack Dam, March**



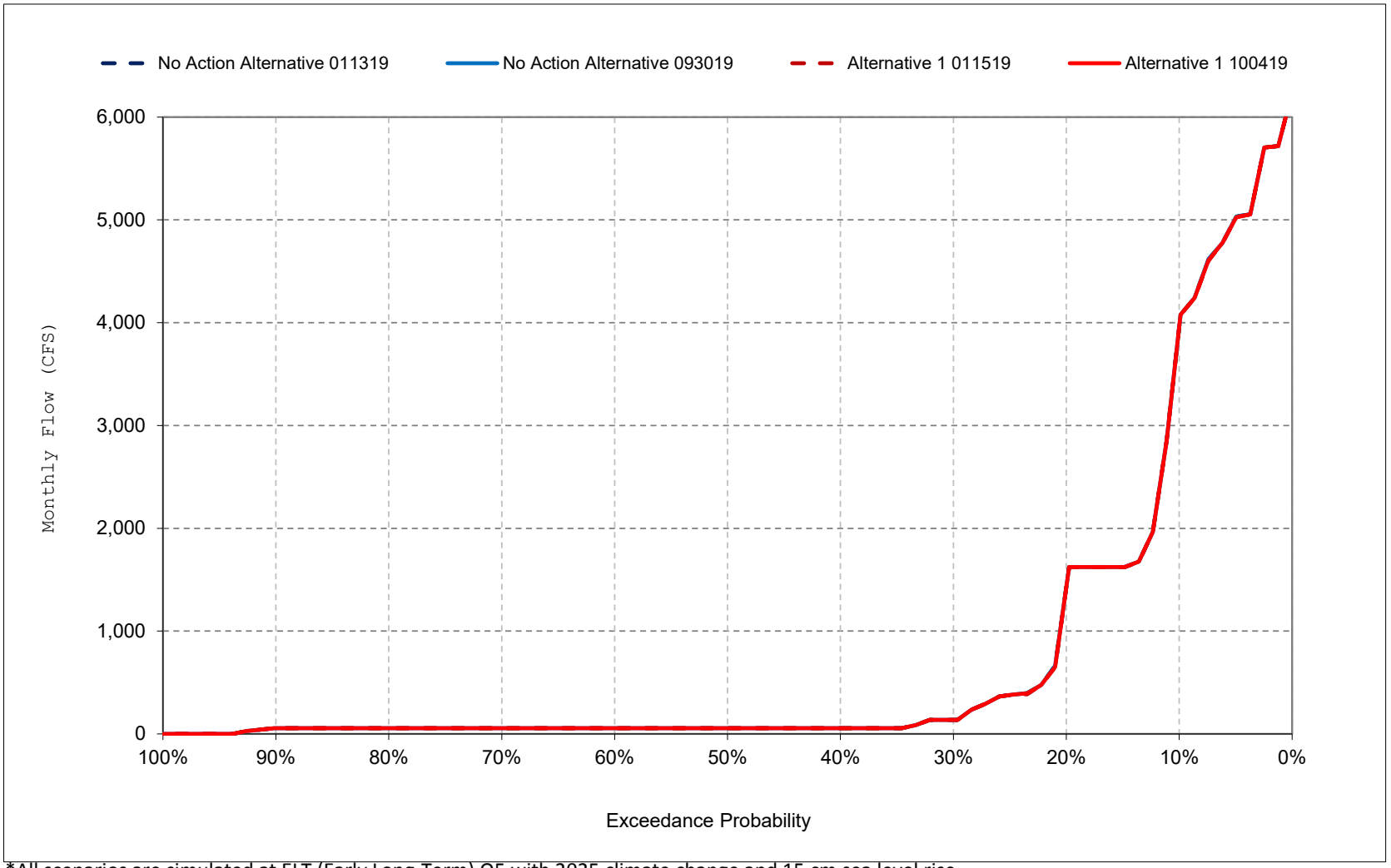

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-13. San Joaquin River Flow below Sack Dam, April**



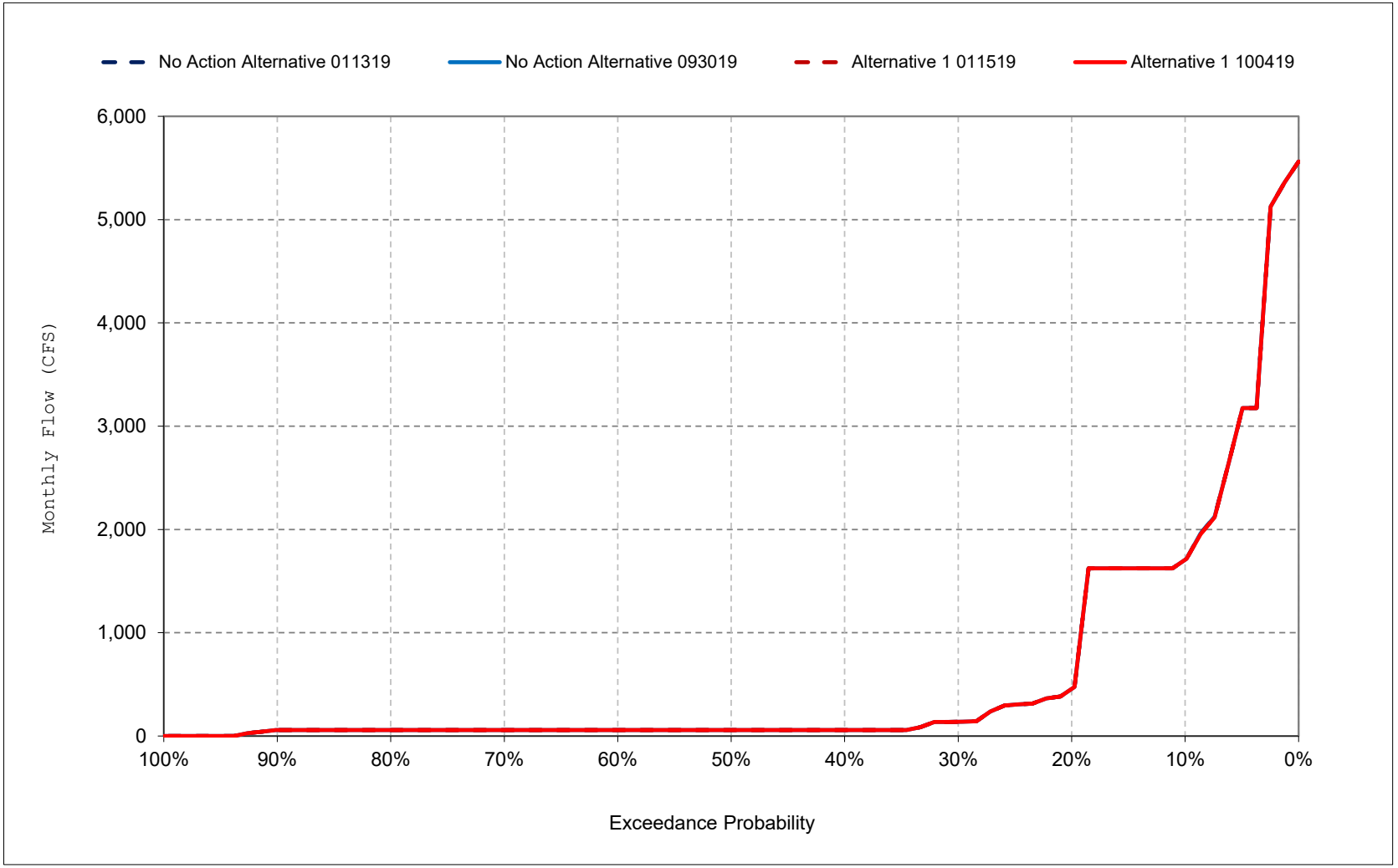

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-14. San Joaquin River Flow below Sack Dam, May**



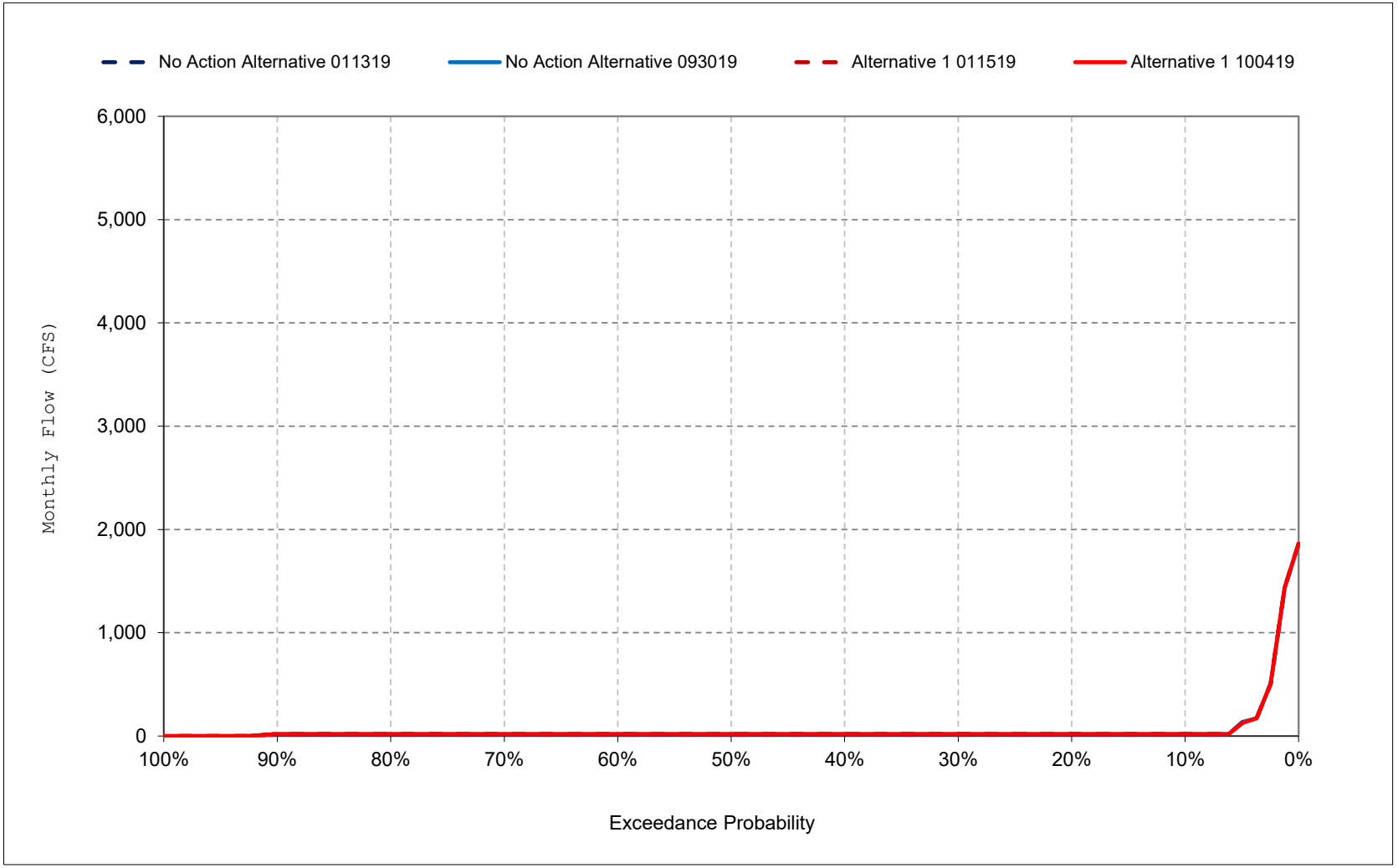

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-15. San Joaquin River Flow below Sack Dam, June**



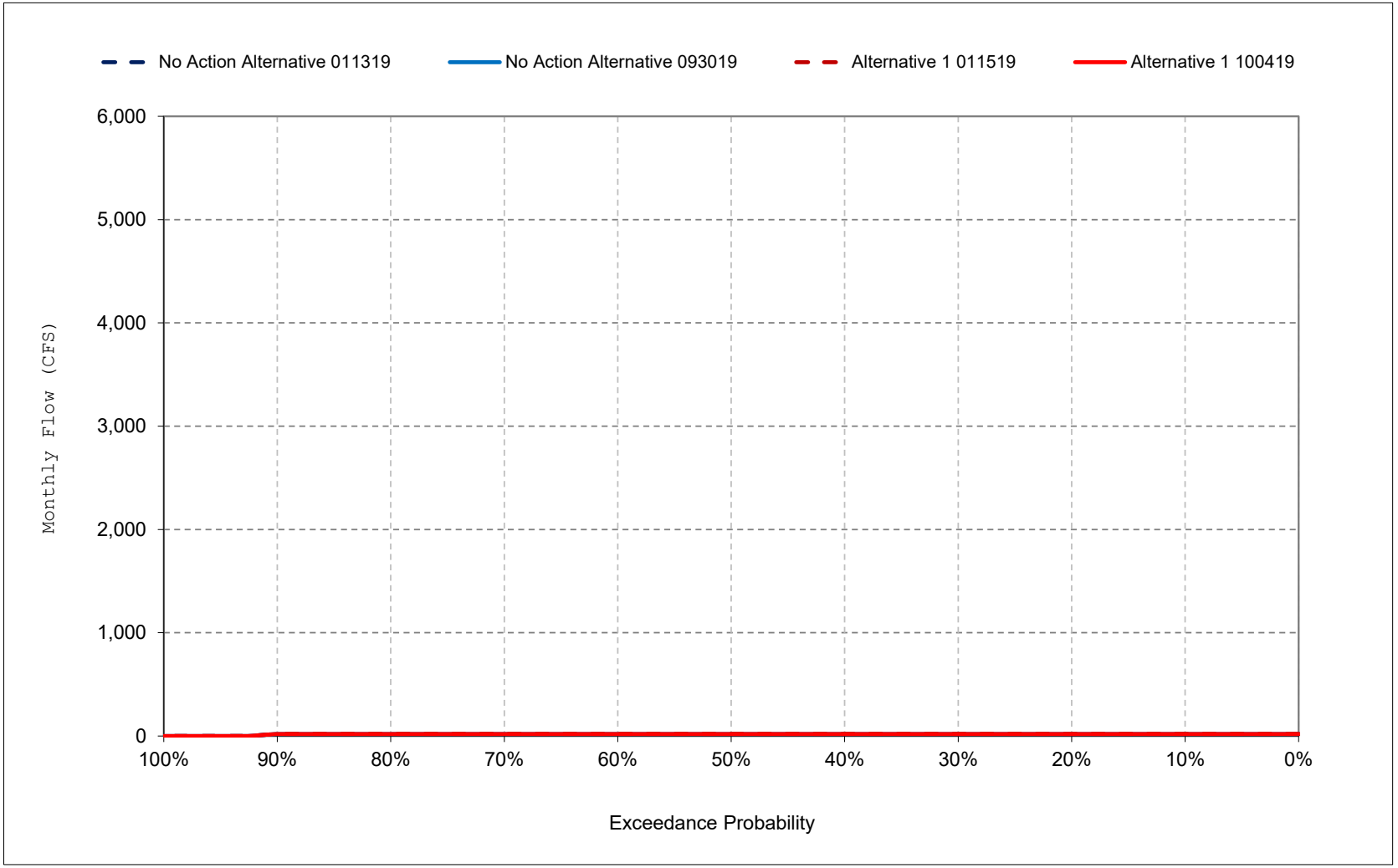

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-16. San Joaquin River Flow below Sack Dam, July**



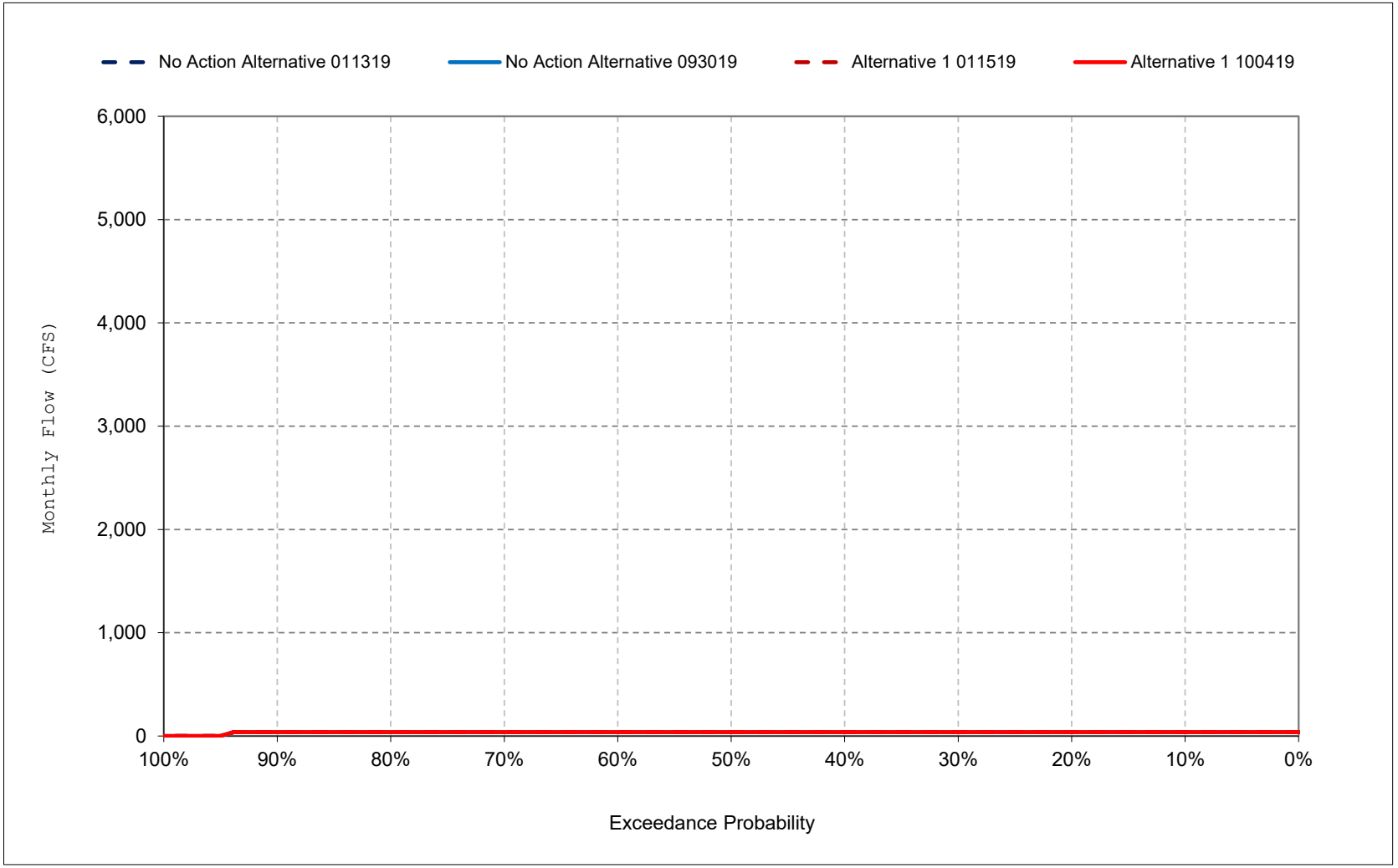

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-17. San Joaquin River Flow below Sack Dam, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-18. San Joaquin River Flow below Sack Dam, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-1. San Joaquin River Flow below confluence with Merced , Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,426 | 9,524 | 6,041 | 7,446 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 825 | 906 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,740 | 1,705 | 670 | 269 | 306 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 786 | 495 | 216 | 208 | 605 |
| 50% | 587 | 1,087 | 935 | 1,002 | 1,583 | 1,813 | 2,337 | 577 | 425 | 161 | 152 | 555 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,761 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 297 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 34 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,463 | 3,542 | 3,231 | 3,315 | 2,314 | 1,701 | 656 | 379 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,113 | 8,349 | 7,546 | 7,760 | 7,496 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,160 | 3,818 | 2,934 | 3,713 | 1,572 | 799 | 329 | 453 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 473 | 177 | 157 | 532 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,424 | 9,511 | 6,040 | 7,443 | 8,097 | 4,050 | 1,659 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,721 | 2,395 | 827 | 907 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,844 | 3,057 | 2,816 | 3,740 | 1,702 | 671 | 271 | 307 | 892 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,318 | 2,088 | 3,330 | 787 | 496 | 217 | 209 | 605 |
| 50% | 588 | 1,087 | 935 | 1,002 | 1,584 | 1,813 | 2,338 | 578 | 426 | 162 | 153 | 555 |
| 60% | 560 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,762 | 460 | 372 | 148 | 135 | 536 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 399 | 297 | 107 | 119 | 522 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 35 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,462 | 3,540 | 3,230 | 3,315 | 2,314 | 1,702 | 657 | 380 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,786 | 6,112 | 8,342 | 7,541 | 7,758 | 7,495 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,159 | 3,816 | 2,933 | 3,713 | 1,572 | 800 | 330 | 454 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,282 | 564 | 475 | 179 | 158 | 533 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,415 | 417 | 308 | 121 | 130 | 523 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | -2 | -14 | -1 | -2 | 0 | 0 | 1 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | 1 | 2 | 1 | 1 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | -2 | -1 | 0 | 0 | 1 | 1 | 1 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | -1 | -7 | -4 | -2 | -1 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-2. San Joaquin River Flow below confluence with Merced , Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,426 | 9,524 | 6,041 | 7,446 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 825 | 906 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,739 | 1,705 | 670 | 269 | 306 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 786 | 495 | 217 | 208 | 605 |
| 50% | 587 | 1,087 | 935 | 1,002 | 1,583 | 1,813 | 2,337 | 577 | 425 | 161 | 151 | 555 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,761 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 297 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 34 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,463 | 3,542 | 3,231 | 3,316 | 2,314 | 1,701 | 656 | 379 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,113 | 8,349 | 7,546 | 7,760 | 7,497 | 5,902 | 2,282 | 936 | 1,095 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,160 | 3,818 | 2,934 | 3,713 | 1,572 | 799 | 329 | 453 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 473 | 177 | 157 | 532 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,425 | 9,515 | 6,040 | 7,441 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 826 | 907 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,740 | 1,705 | 670 | 270 | 307 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 787 | 495 | 216 | 208 | 605 |
| 50% | 588 | 1,087 | 935 | 1,002 | 1,584 | 1,813 | 2,337 | 578 | 425 | 161 | 152 | 554 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,762 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 296 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 35 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 9 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,462 | 3,541 | 3,231 | 3,315 | 2,314 | 1,701 | 656 | 380 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,112 | 8,348 | 7,544 | 7,759 | 7,495 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,159 | 3,817 | 2,934 | 3,713 | 1,572 | 799 | 329 | 454 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 474 | 178 | 158 | 533 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | -1 | -9 | 0 | -5 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | -1 | -1 | -2 | -2 | -2 | -1 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-3. San Joaquin River Flow below confluence with Merced , Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,426 | 9,524 | 6,041 | 7,446 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 825 | 906 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,740 | 1,705 | 670 | 269 | 306 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 786 | 495 | 216 | 208 | 605 |
| 50% | 587 | 1,087 | 935 | 1,002 | 1,583 | 1,813 | 2,337 | 577 | 425 | 161 | 152 | 555 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,761 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 297 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 34 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,463 | 3,542 | 3,231 | 3,315 | 2,314 | 1,701 | 656 | 379 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,113 | 8,349 | 7,546 | 7,760 | 7,496 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,160 | 3,818 | 2,934 | 3,713 | 1,572 | 799 | 329 | 453 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 473 | 177 | 157 | 532 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,426 | 9,524 | 6,041 | 7,446 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 825 | 906 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,739 | 1,705 | 670 | 269 | 306 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 786 | 495 | 217 | 208 | 605 |
| 50% | 587 | 1,087 | 935 | 1,002 | 1,583 | 1,813 | 2,337 | 577 | 425 | 161 | 151 | 555 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,761 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 297 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 34 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,463 | 3,542 | 3,231 | 3,316 | 2,314 | 1,701 | 656 | 379 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,113 | 8,349 | 7,546 | 7,760 | 7,497 | 5,902 | 2,282 | 936 | 1,095 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,160 | 3,818 | 2,934 | 3,713 | 1,572 | 799 | 329 | 453 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 473 | 177 | 157 | 532 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-4. San Joaquin River Flow below confluence with Merced , Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,424 | 9,511 | 6,040 | 7,443 | 8,097 | 4,050 | 1,659 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,721 | 2,395 | 827 | 907 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,844 | 3,057 | 2,816 | 3,740 | 1,702 | 671 | 271 | 307 | 892 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,318 | 2,088 | 3,330 | 787 | 496 | 217 | 209 | 605 |
| 50% | 588 | 1,087 | 935 | 1,002 | 1,584 | 1,813 | 2,338 | 578 | 426 | 162 | 153 | 555 |
| 60% | 560 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,762 | 460 | 372 | 148 | 135 | 536 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 399 | 297 | 107 | 119 | 522 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 35 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 10 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,462 | 3,540 | 3,230 | 3,315 | 2,314 | 1,702 | 657 | 380 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,786 | 6,112 | 8,342 | 7,541 | 7,758 | 7,495 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,159 | 3,816 | 2,933 | 3,713 | 1,572 | 800 | 330 | 454 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,282 | 564 | 475 | 179 | 158 | 533 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,415 | 417 | 308 | 121 | 130 | 523 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 961 | 1,382 | 3,009 | 4,425 | 9,515 | 6,040 | 7,441 | 8,097 | 4,050 | 1,658 | 1,016 | 1,095 |
| 20% | 792 | 1,288 | 1,482 | 2,766 | 4,303 | 3,738 | 4,295 | 2,720 | 2,395 | 826 | 907 | 994 |
| 30% | 691 | 1,174 | 1,020 | 1,845 | 3,057 | 2,816 | 3,740 | 1,705 | 670 | 270 | 307 | 891 |
| 40% | 660 | 1,114 | 970 | 1,219 | 2,315 | 2,088 | 3,330 | 787 | 495 | 216 | 208 | 605 |
| 50% | 588 | 1,087 | 935 | 1,002 | 1,584 | 1,813 | 2,337 | 578 | 425 | 161 | 152 | 554 |
| 60% | 559 | 1,064 | 902 | 926 | 1,421 | 1,608 | 1,762 | 459 | 371 | 148 | 134 | 535 |
| 70% | 504 | 1,034 | 890 | 852 | 1,222 | 1,478 | 1,262 | 398 | 296 | 106 | 118 | 521 |
| 80% | 486 | 1,004 | 870 | 819 | 1,116 | 1,378 | 858 | 321 | 220 | 35 | 74 | 496 |
| 90% | 438 | 895 | 810 | 748 | 1,018 | 1,273 | 326 | 229 | 131 | 0 | 9 | 444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 1,231 | 1,665 | 2,462 | 3,541 | 3,231 | 3,315 | 2,314 | 1,701 | 656 | 380 | 700 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 949 | 1,697 | 2,787 | 6,112 | 8,348 | 7,544 | 7,759 | 7,495 | 5,902 | 2,282 | 936 | 1,096 |
| Above Normal (24%) | 774 | 1,233 | 1,481 | 2,159 | 3,817 | 2,934 | 3,713 | 1,572 | 799 | 329 | 454 | 781 |
| Below Normal (10%) | 568 | 1,090 | 995 | 1,445 | 1,865 | 1,766 | 2,281 | 563 | 474 | 178 | 158 | 533 |
| Dry (16%) | 529 | 1,121 | 1,638 | 1,000 | 1,270 | 1,565 | 1,414 | 416 | 307 | 120 | 129 | 522 |
| Critical (27%) | 463 | 939 | 1,130 | 819 | 1,092 | 1,293 | 615 | 270 | 164 | 40 | 61 | 451 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 1 | 5 | 0 | -2 | 0 | 0 | -1 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | -1 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | -3 | 0 | 0 | 0 | 0 | -1 | -1 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | -1 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 1 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | -1 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

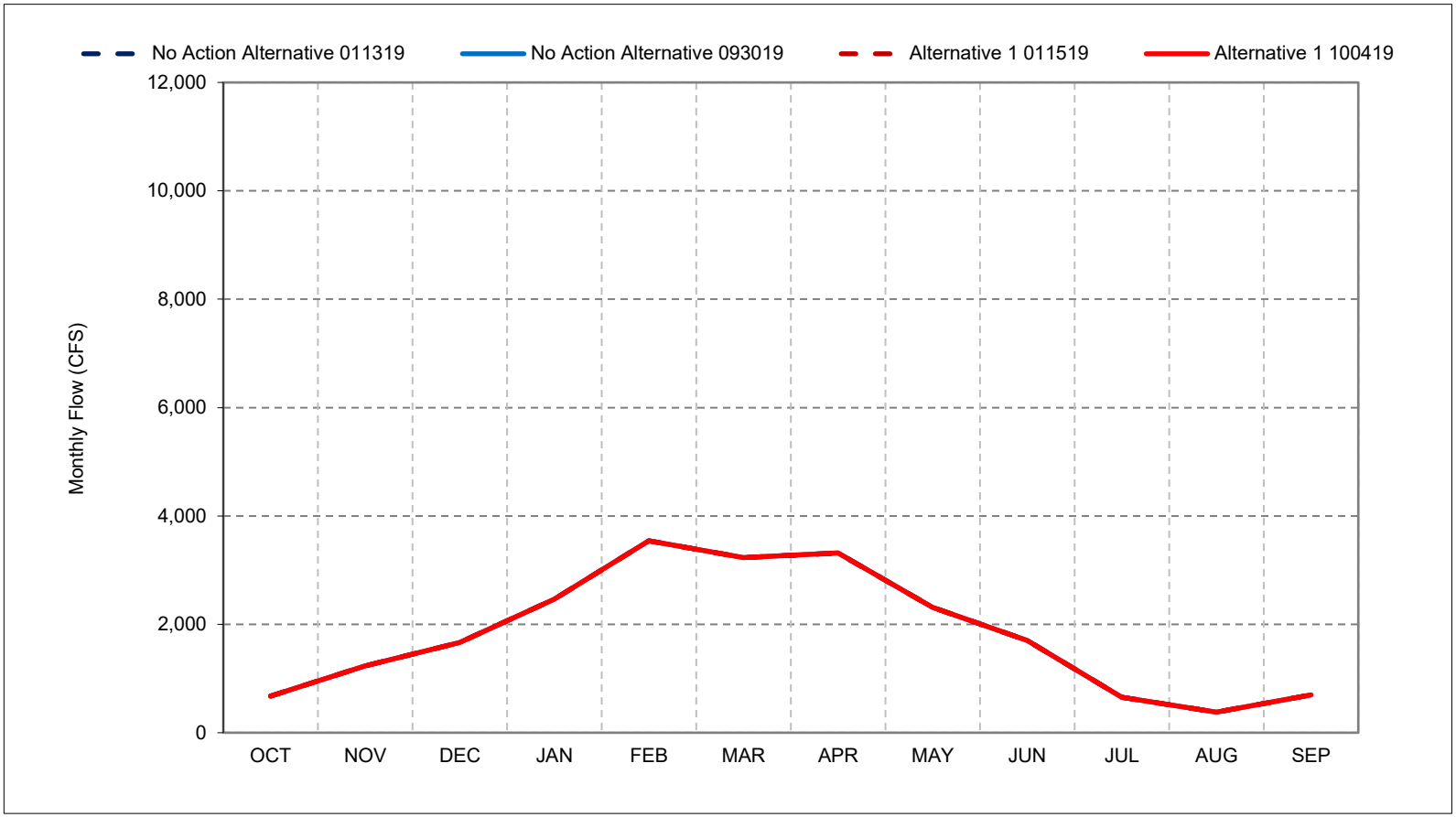
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-1. San Joaquin River Flow below confluence with Merced , Long-Term Average Flow

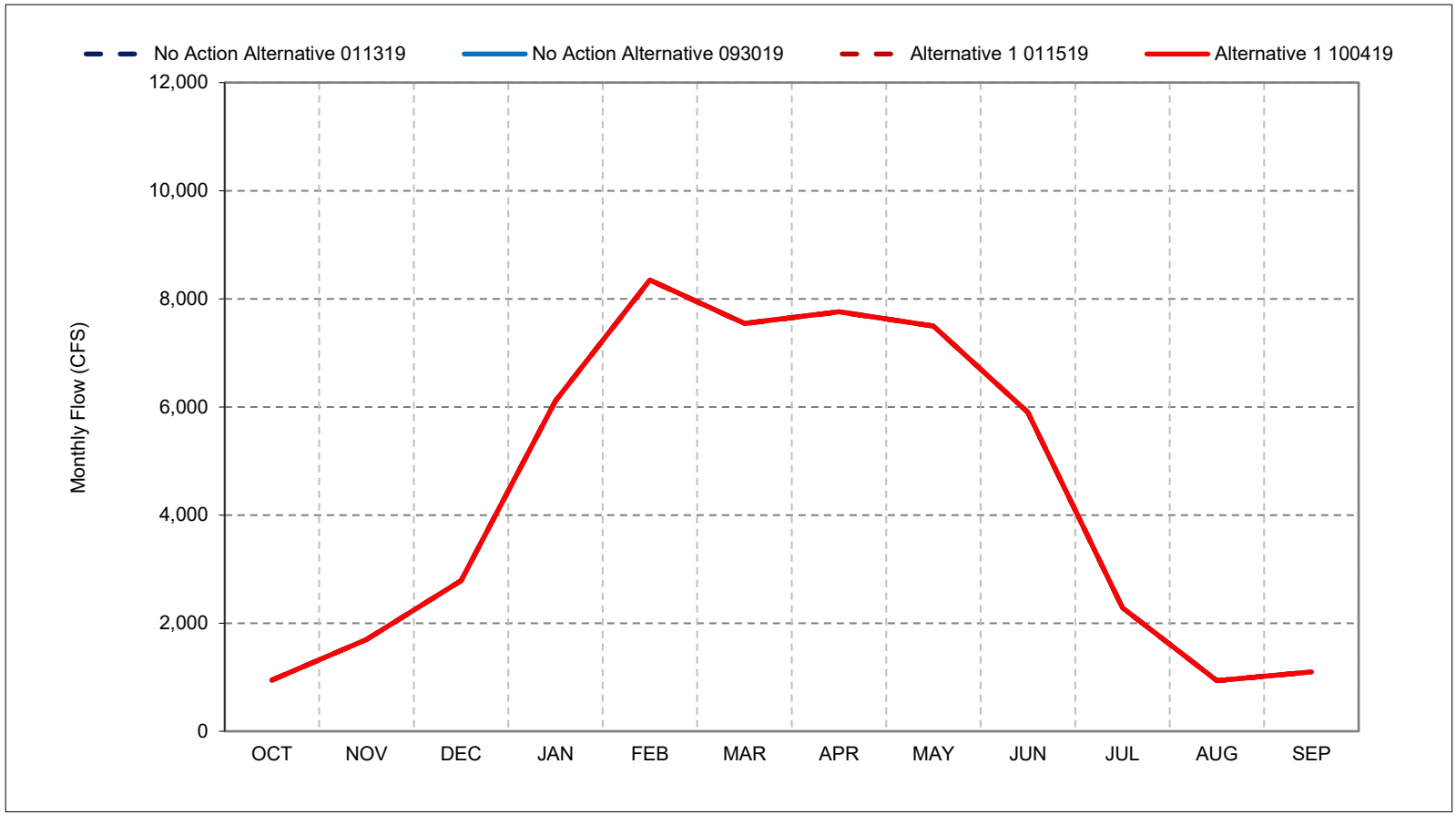



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-2. San Joaquin River Flow below confluence with Merced , Wet Year Average Flow

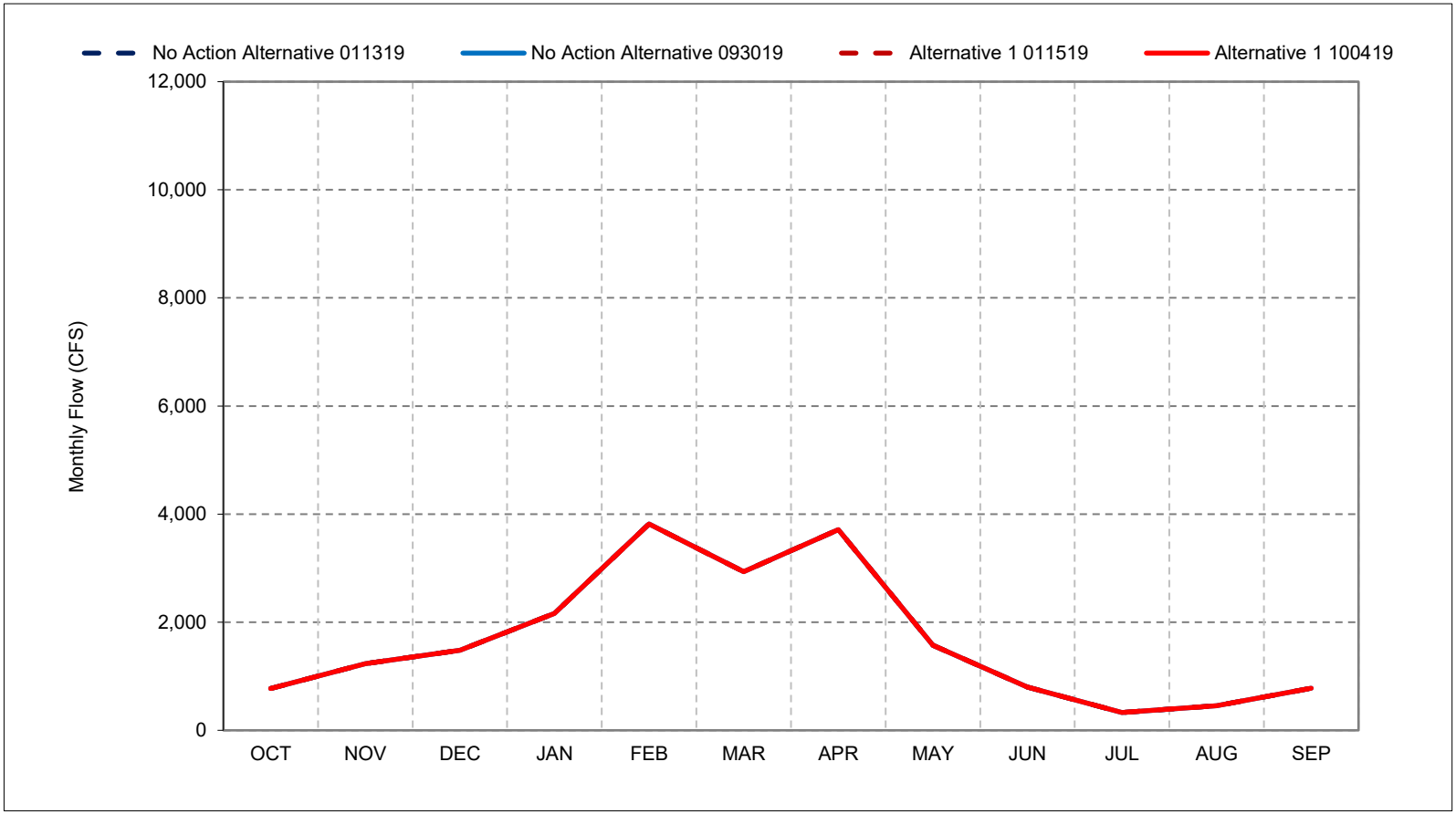



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-3. San Joaquin River Flow below confluence with Merced , Above Normal Year Average

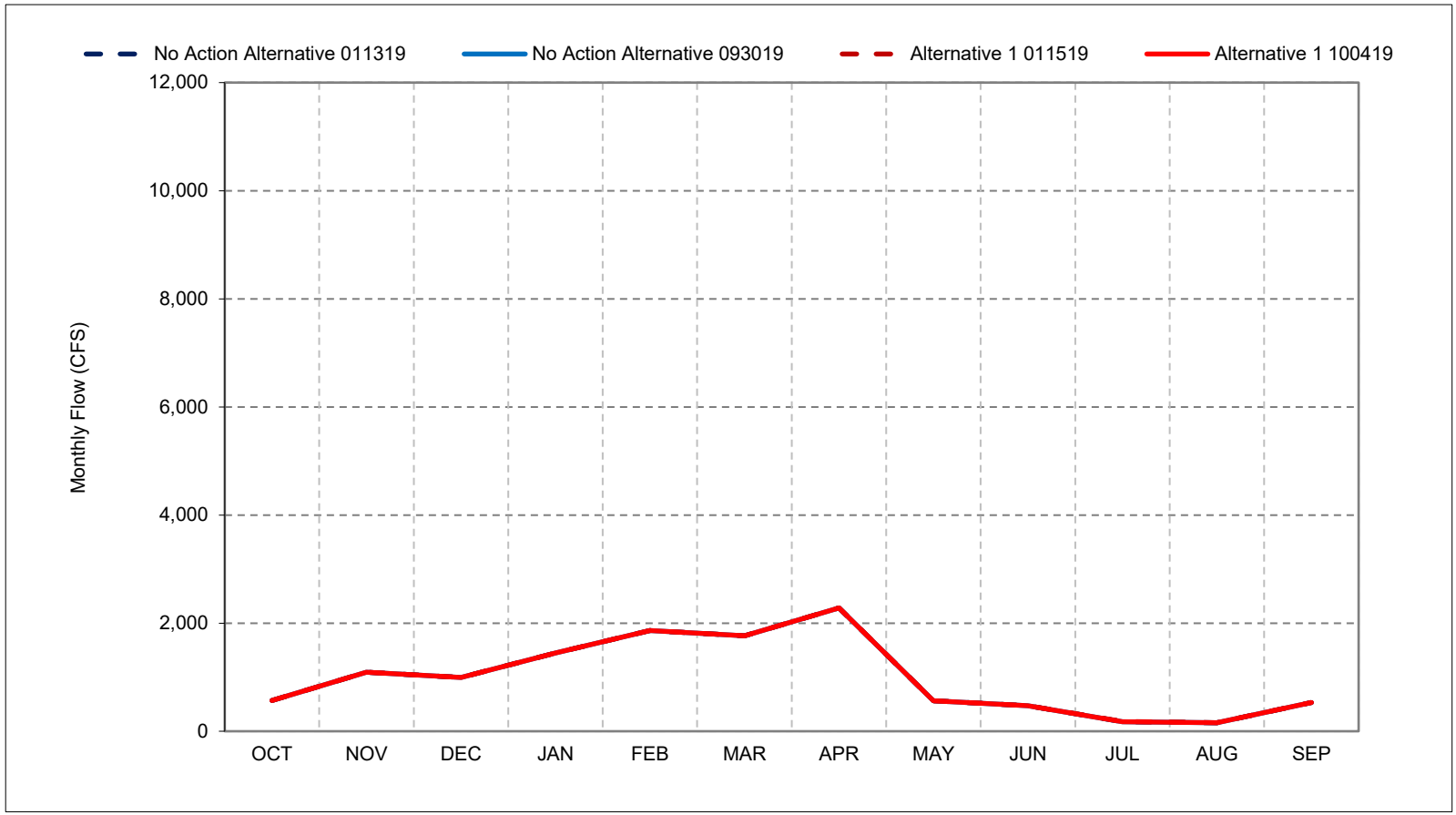



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-4. San Joaquin River Flow below confluence with Merced , Below Normal Year Average I

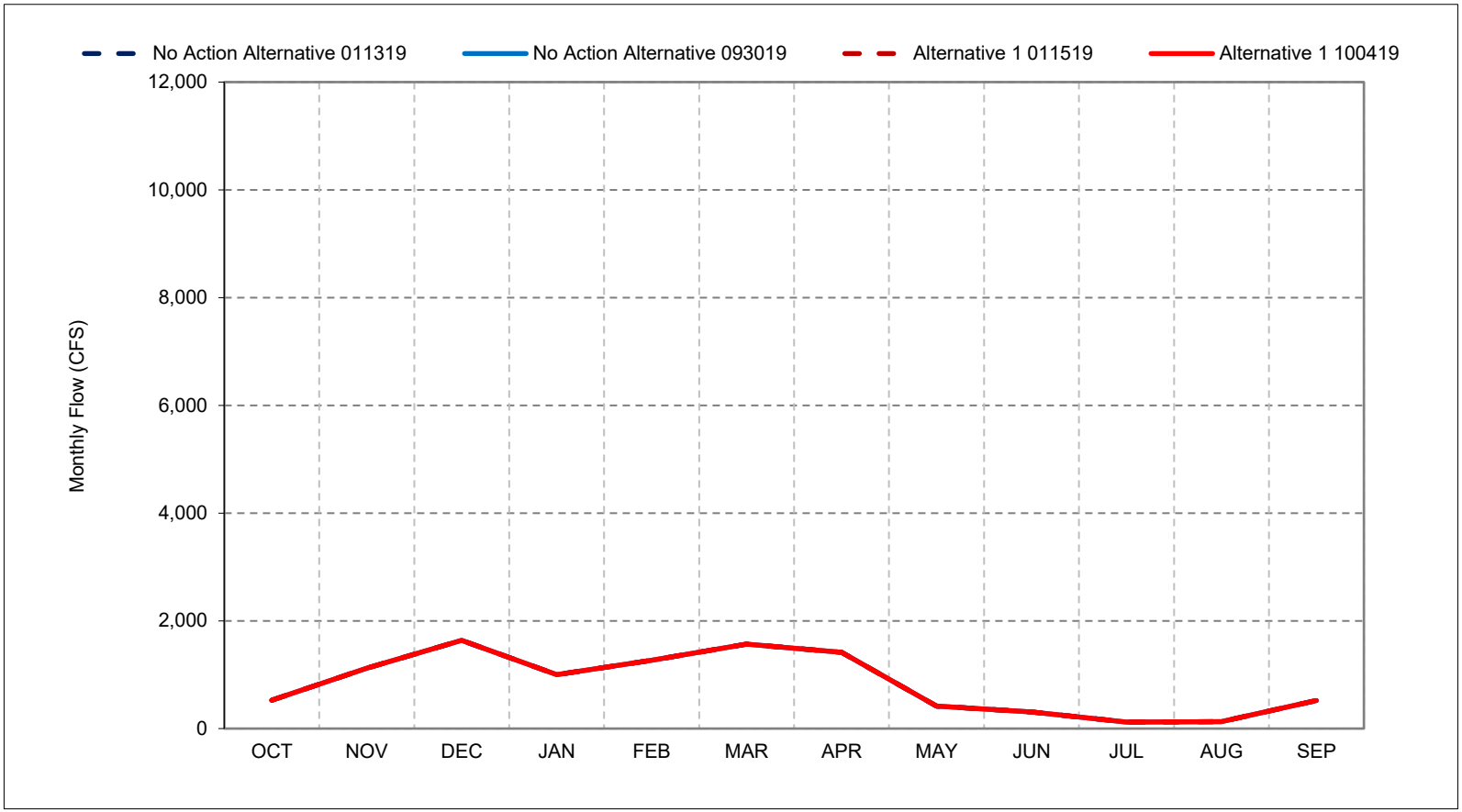



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-5. San Joaquin River Flow below confluence with Merced , Dry Year Average Flow

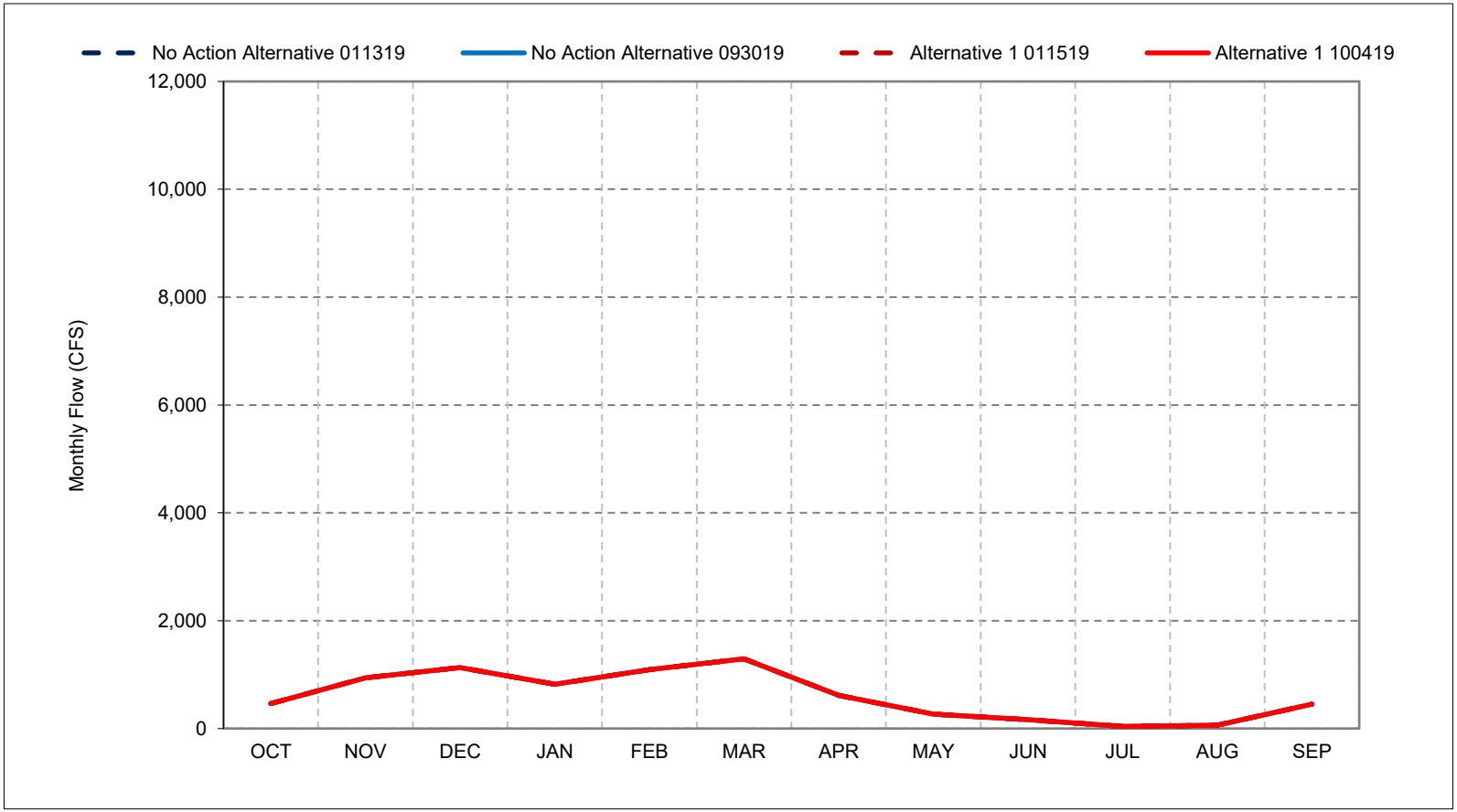



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-6. San Joaquin River Flow below confluence with Merced , Critical Year Average Flow

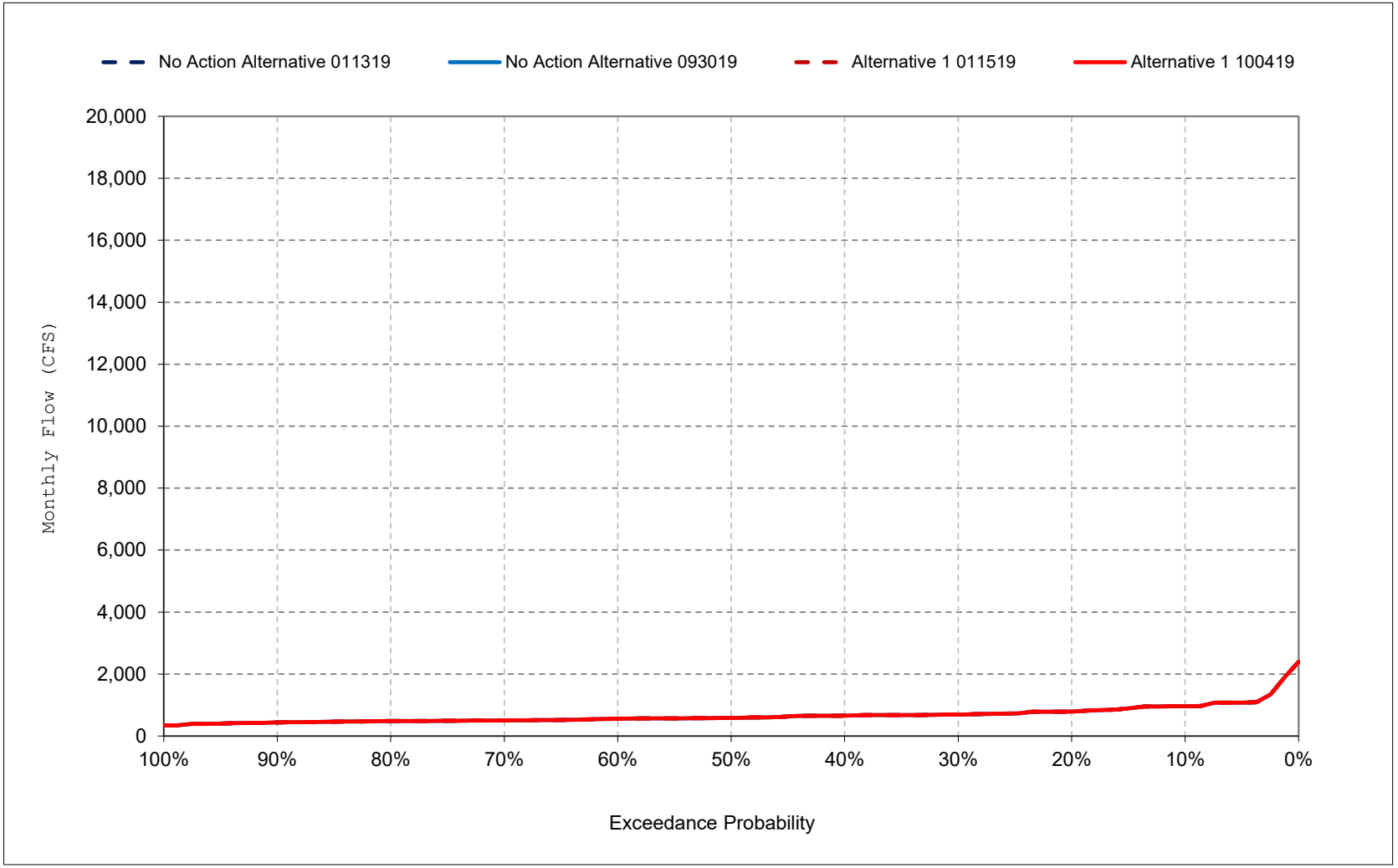



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

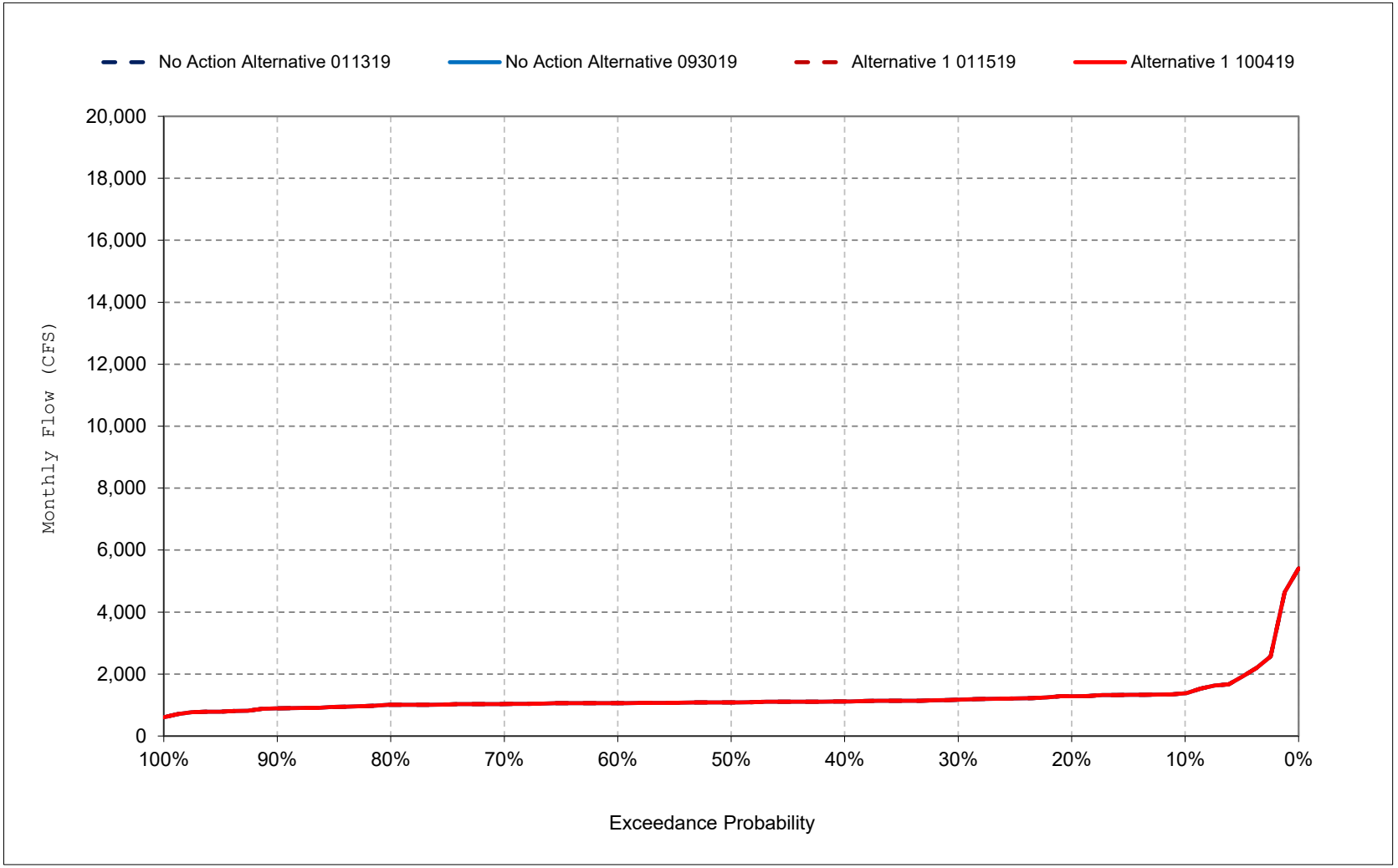
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-7. San Joaquin River Flow below confluence with Merced , October**



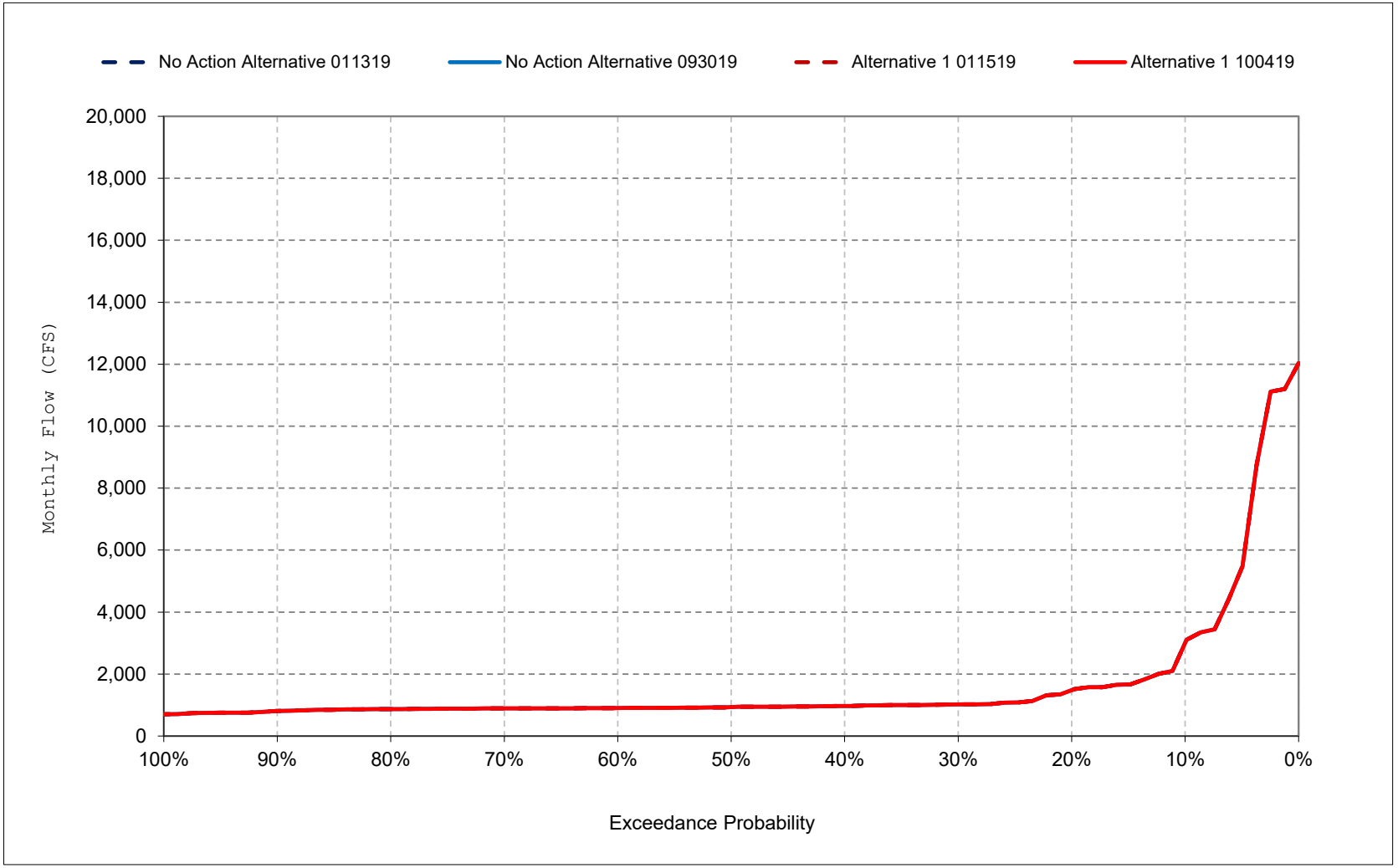

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-8. San Joaquin River Flow below confluence with Merced , November**



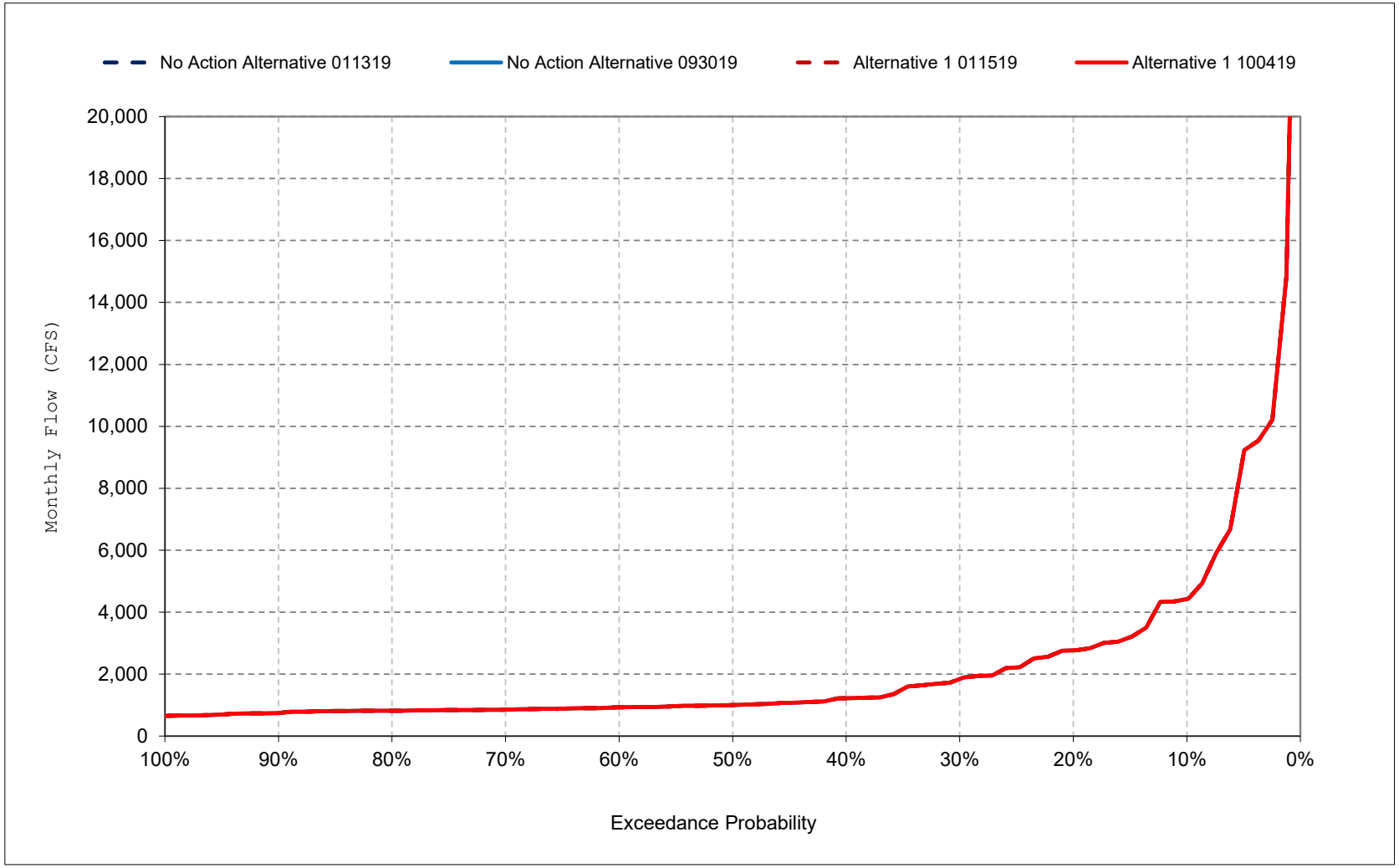

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-9. San Joaquin River Flow below confluence with Merced , December**



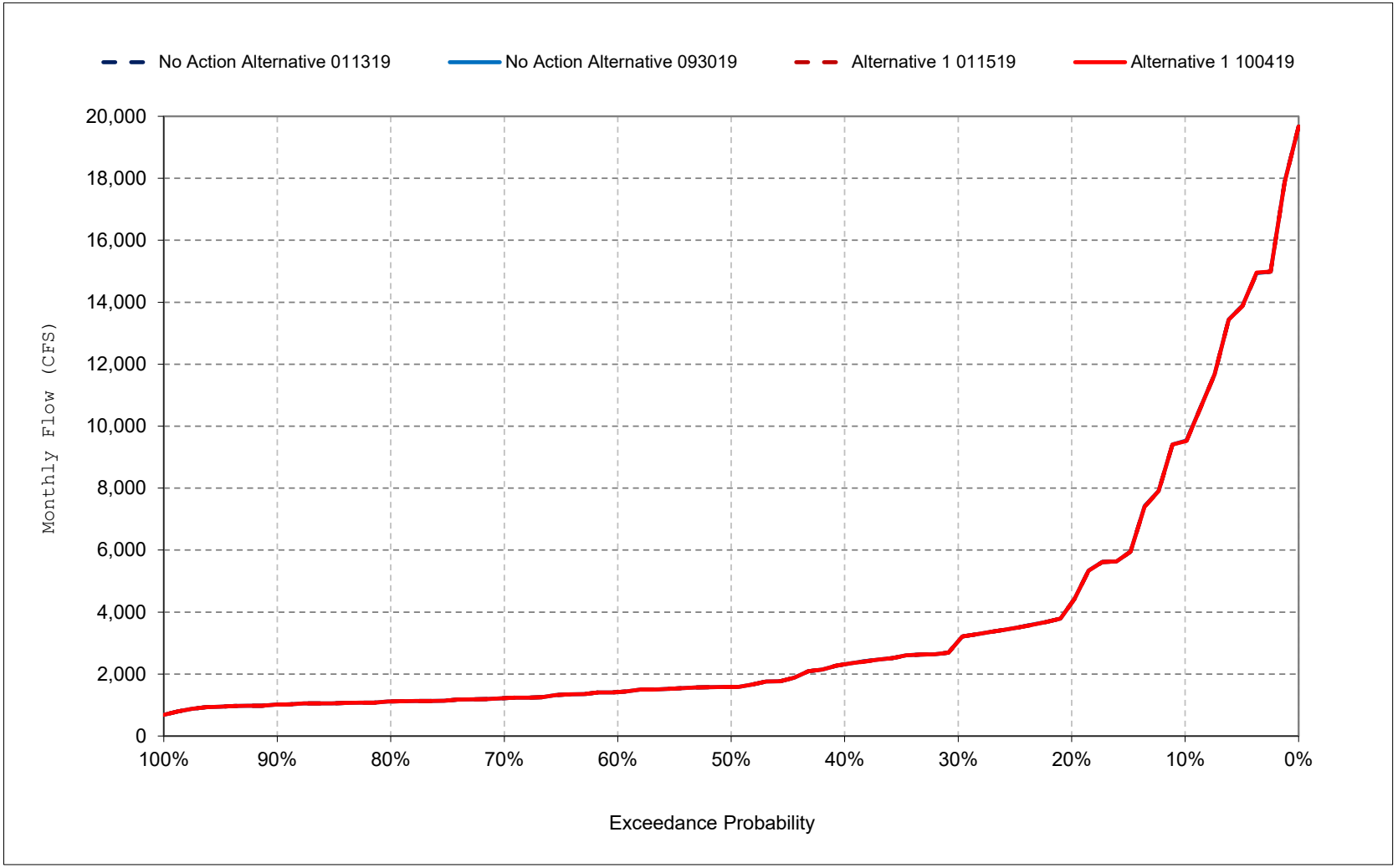

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-10. San Joaquin River Flow below confluence with Merced , January**



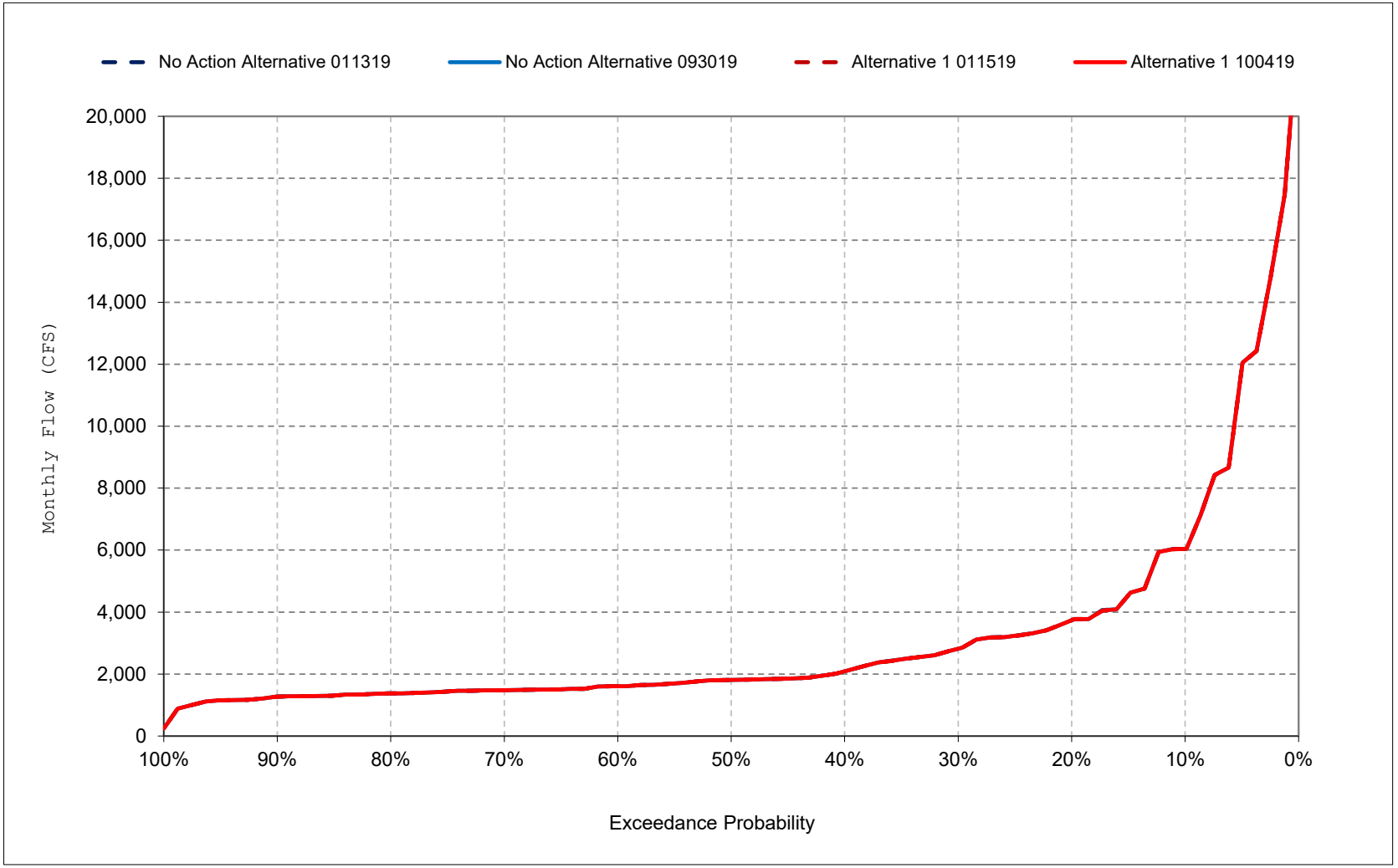

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-11. San Joaquin River Flow below confluence with Merced , February**



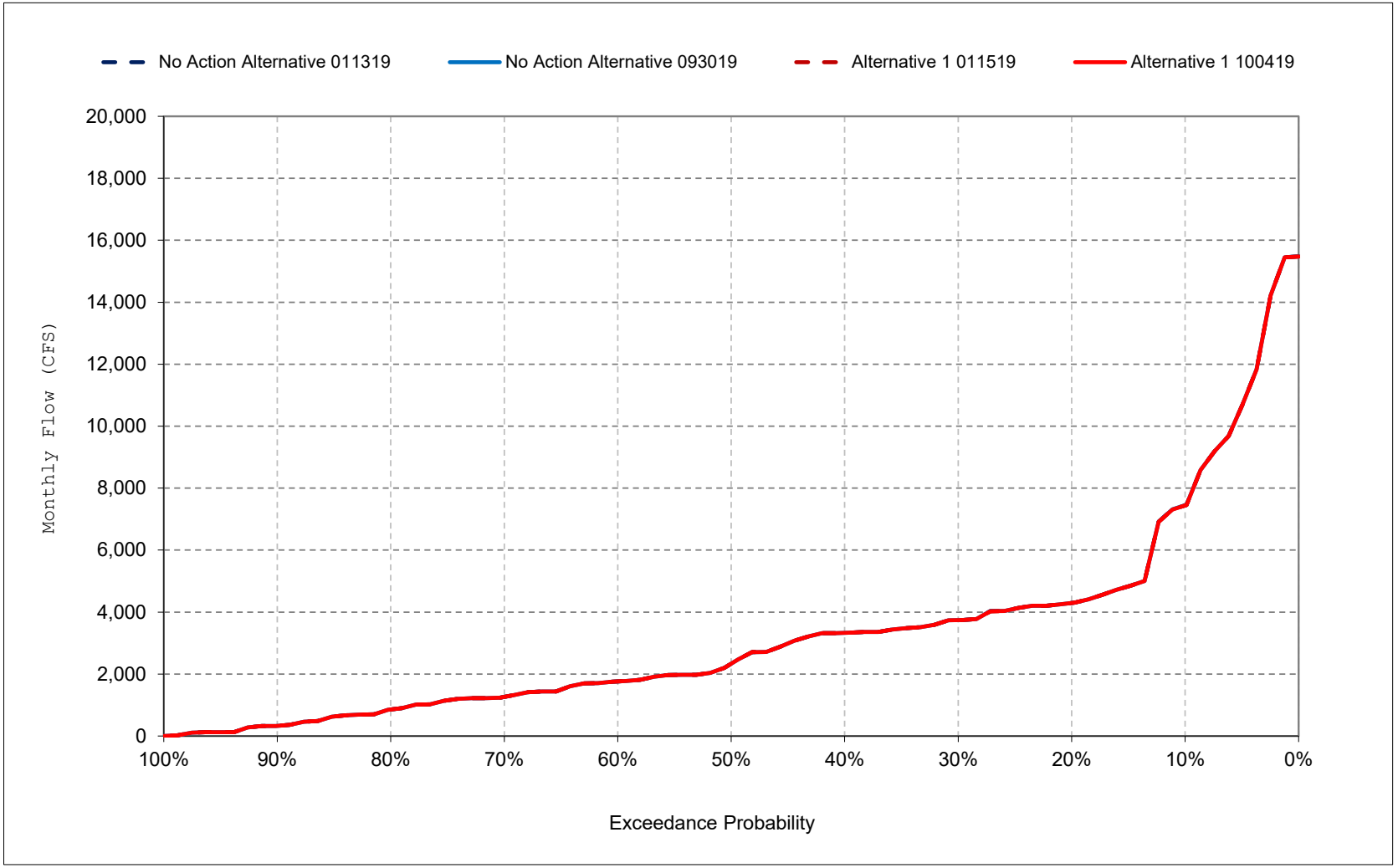

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-12. San Joaquin River Flow below confluence with Merced , March**



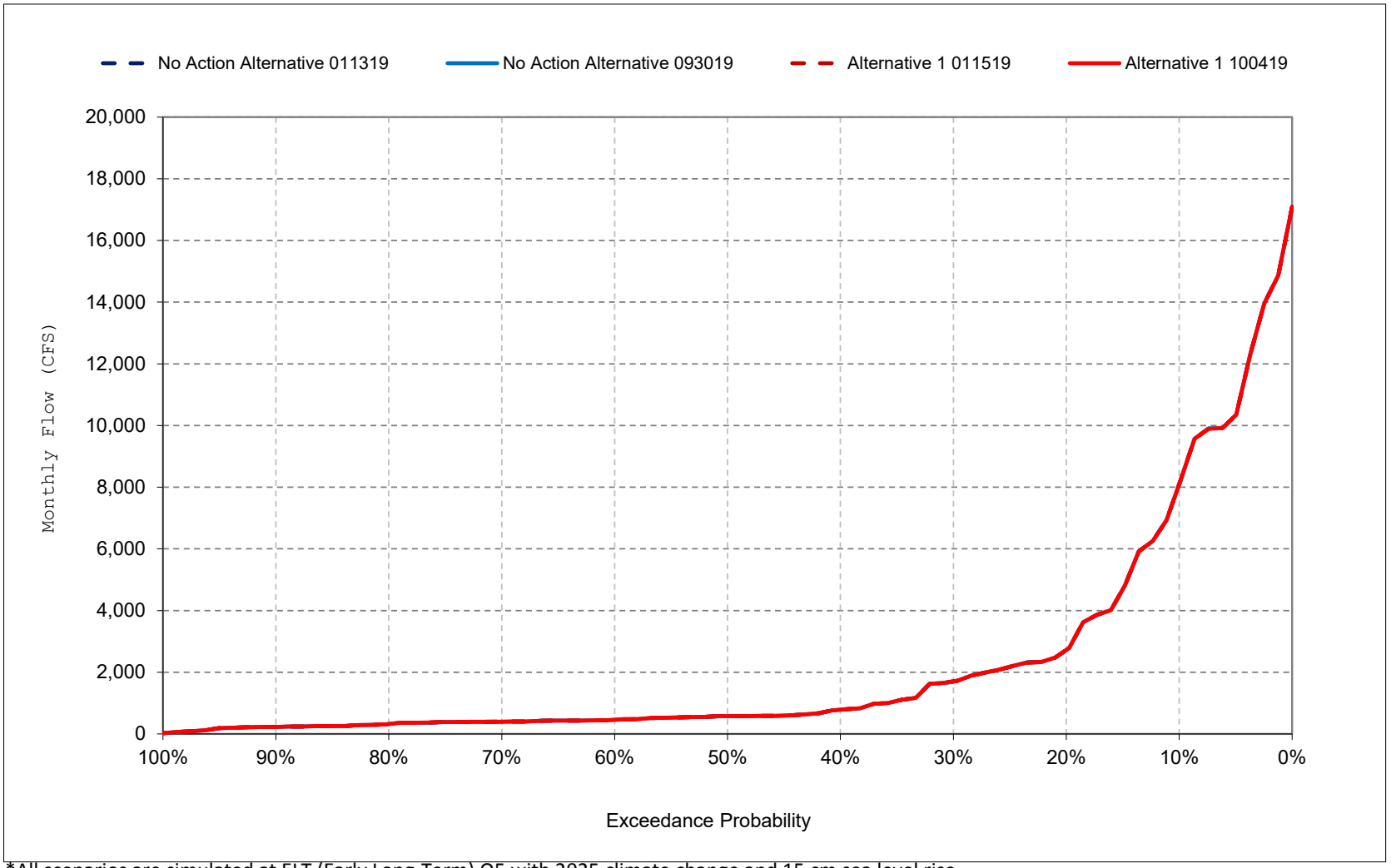

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-13. San Joaquin River Flow below confluence with Merced , April**



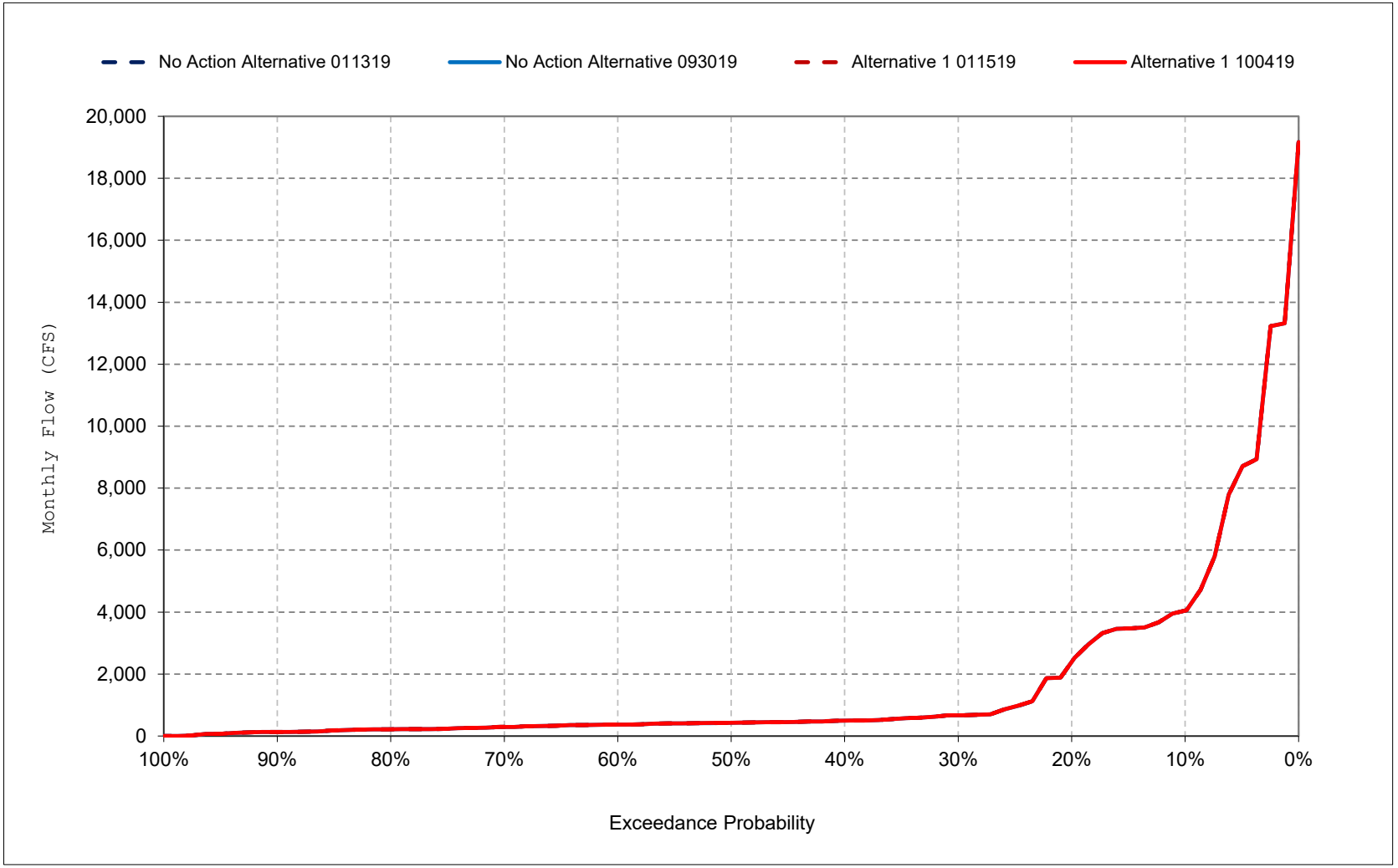

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-14. San Joaquin River Flow below confluence with Merced , May**



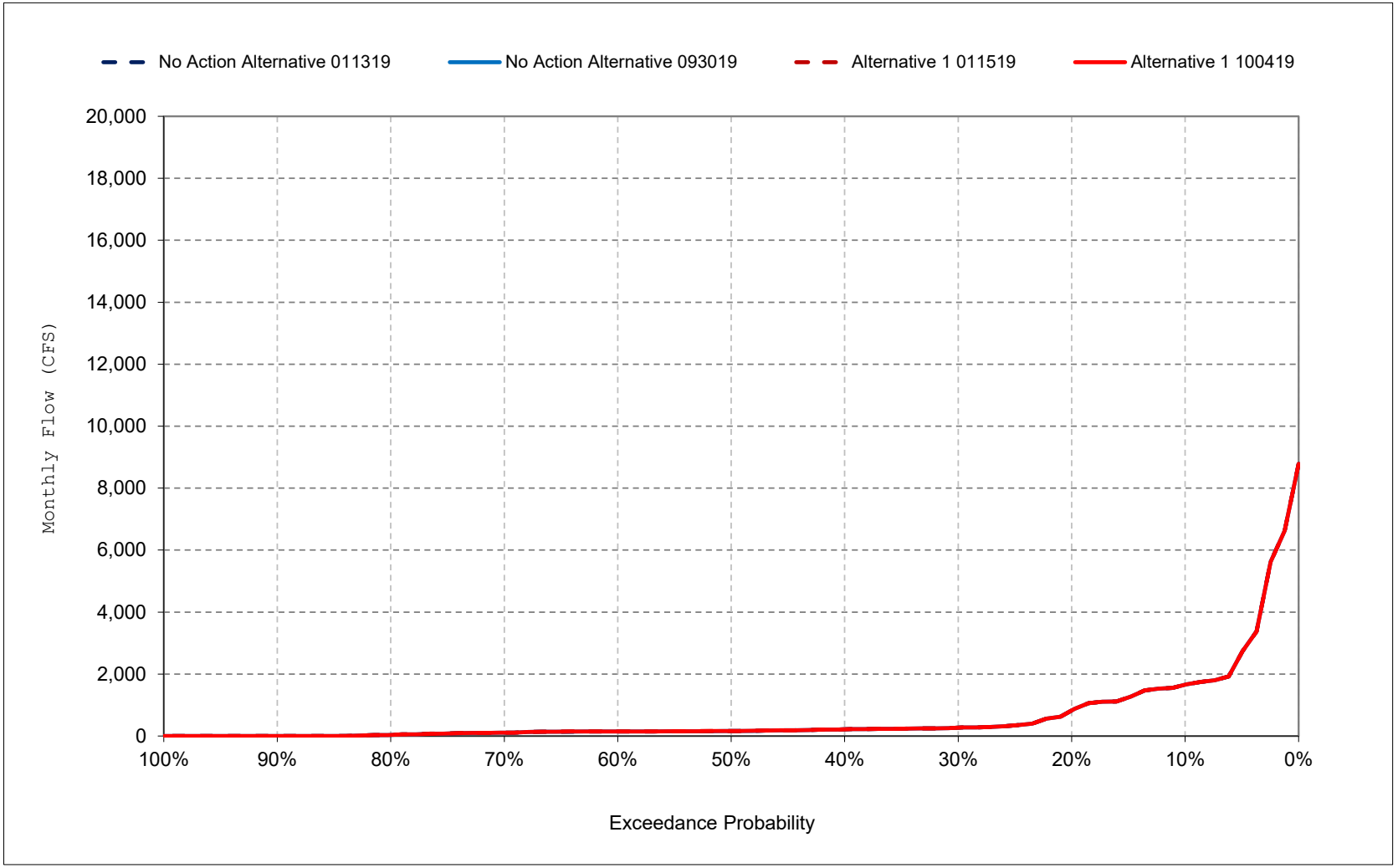

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-15. San Joaquin River Flow below confluence with Merced , June**



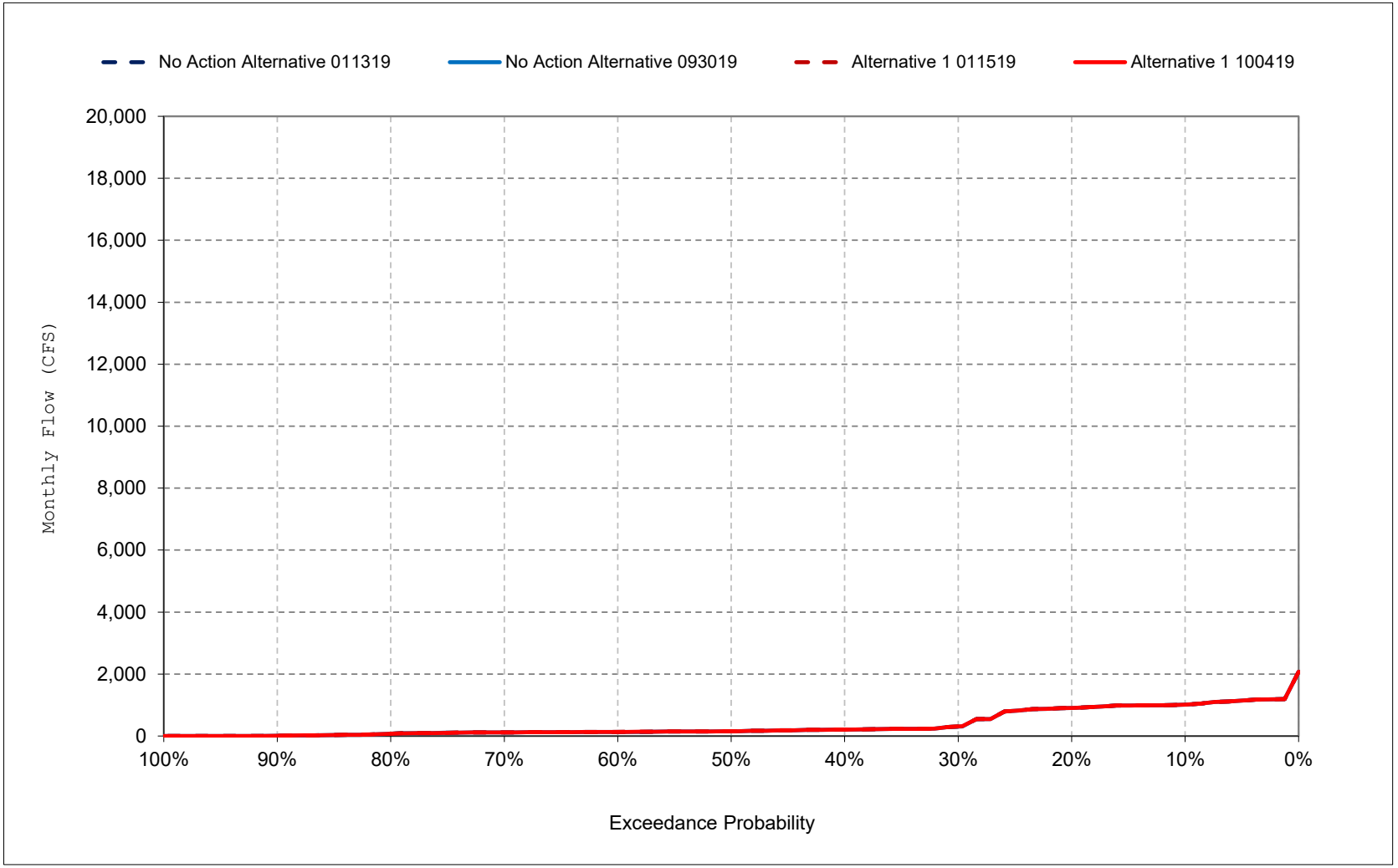

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-16. San Joaquin River Flow below confluence with Merced , July**



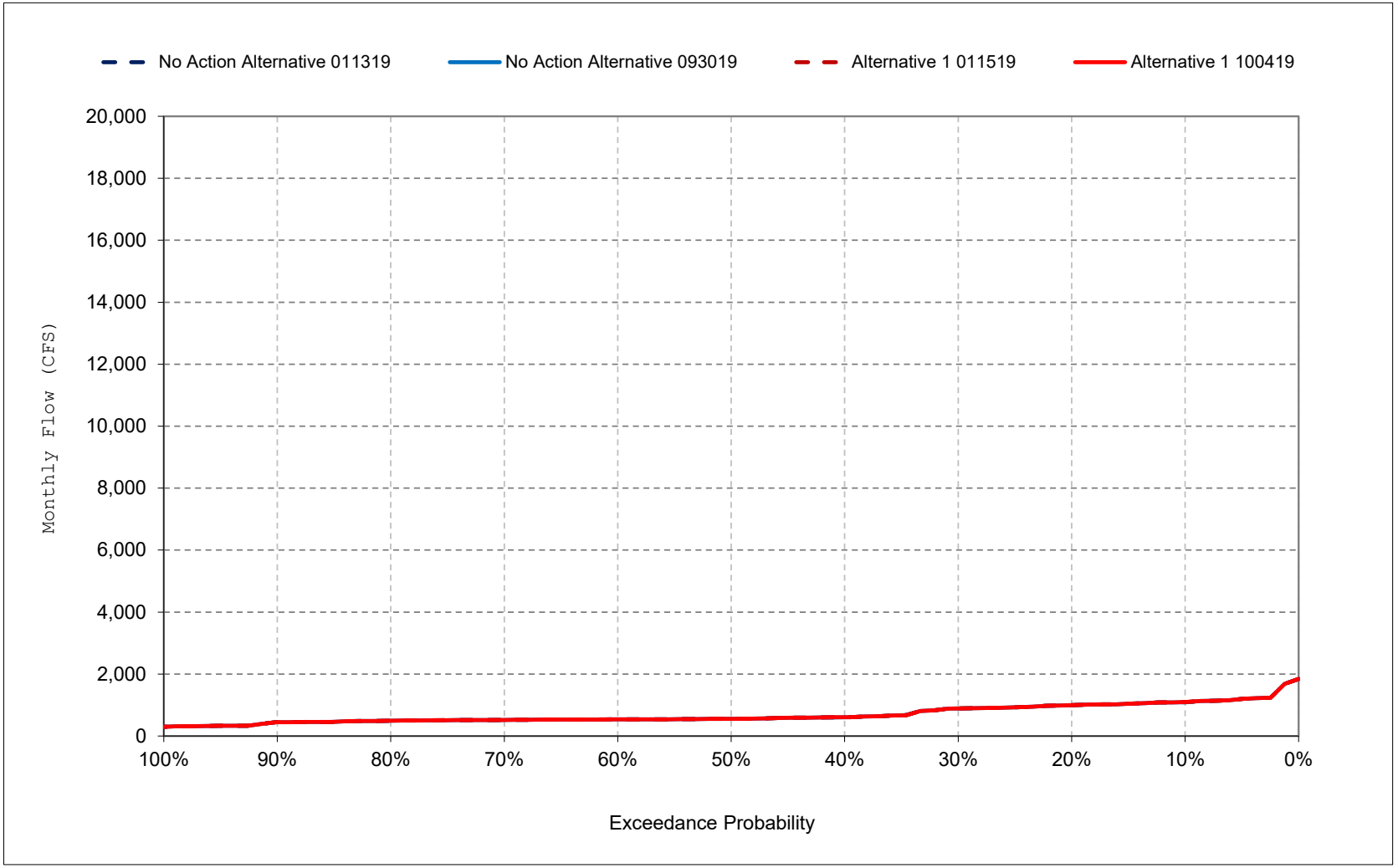

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-17. San Joaquin River Flow below confluence with Merced , August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-18. San Joaquin River Flow below confluence with Merced , September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 37-1. Stanislaus River Flow below Goodwin, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 837 | 290 | 306 | 358 | 897 | 1,648 | 1,633 | 1,929 | 1,100 | 429 | 392 | 390 |
| 20% | 797 | 200 | 218 | 232 | 405 | 1,521 | 1,553 | 1,555 | 1,089 | 318 | 300 | 300 |
| 30% | 774 | 200 | 200 | 232 | 282 | 440 | 1,553 | 1,294 | 940 | 300 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 853 | 300 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 363 | 275 | 283 | 250 |
| 60% | 636 | 200 | 200 | 219 | 229 | 200 | 812 | 918 | 363 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 229 | 200 | 767 | 705 | 294 | 265 | 283 | 249 |
| 80% | 578 | 200 | 200 | 214 | 221 | 200 | 767 | 631 | 262 | 265 | 283 | 249 |
| 90% | 577 | 200 | 200 | 213 | 215 | 200 | 504 | 547 | 255 | 265 | 283 | 249 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 723 | 278 | 367 | 519 | 593 | 754 | 1,159 | 1,124 | 680 | 395 | 362 | 351 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 859 | 532 | 863 | 999 | 1,193 | 2,014 | 1,536 | 1,691 | 1,140 | 716 | 639 | 692 |
| Above Normal (24%) | 728 | 205 | 212 | 664 | 676 | 645 | 1,224 | 1,146 | 959 | 353 | 292 | 267 |
| Below Normal (10%) | 752 | 200 | 202 | 282 | 346 | 365 | 1,454 | 1,201 | 475 | 269 | 285 | 256 |
| Dry (16%) | 677 | 200 | 200 | 234 | 313 | 200 | 1,030 | 930 | 375 | 276 | 277 | 245 |
| Critical (27%) | 614 | 200 | 236 | 227 | 255 | 234 | 742 | 700 | 282 | 272 | 264 | 231 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 797 | 200 | 306 | 552 | 2,259 | 1,528 | 1,572 | 1,555 | 940 | 300 | 300 | 300 |
| 20% | 797 | 200 | 200 | 232 | 294 | 1,521 | 1,553 | 1,555 | 940 | 300 | 300 | 300 |
| 30% | 774 | 200 | 200 | 230 | 236 | 675 | 1,553 | 1,242 | 363 | 265 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 60% | 636 | 200 | 200 | 226 | 229 | 200 | 972 | 819 | 255 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 221 | 200 | 767 | 631 | 255 | 265 | 283 | 249 |
| 80% | 577 | 200 | 200 | 213 | 214 | 200 | 466 | 400 | 200 | 200 | 200 | 200 |
| 90% | 577 | 200 | 200 | 213 | 214 | 200 | 460 | 400 | 200 | 200 | 200 | 200 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 718 | 272 | 341 | 549 | 722 | 762 | 1,147 | 1,036 | 566 | 378 | 338 | 339 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 854 | 508 | 735 | 1,003 | 1,750 | 2,189 | 1,475 | 1,665 | 1,499 | 834 | 625 | 691 |
| Above Normal (24%) | 774 | 202 | 223 | 694 | 695 | 577 | 1,571 | 1,255 | 363 | 265 | 283 | 258 |
| Below Normal (10%) | 774 | 200 | 202 | 546 | 528 | 247 | 1,610 | 1,242 | 363 | 265 | 283 | 250 |
| Dry (16%) | 626 | 200 | 209 | 224 | 228 | 200 | 825 | 655 | 256 | 255 | 270 | 241 |
| Critical (27%) | 578 | 200 | 236 | 220 | 222 | 218 | 501 | 445 | 200 | 200 | 200 | 198 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -41 | -90 | 0 | 194 | 1,362 | -121 | -62 | -375 | -160 | -129 | -92 | -90 |
| 20% | 0 | 0 | -18 | 0 | -111 | 0 | 0 | 0 | -149 | -18 | 0 | 0 |
| 30% | 0 | 0 | 0 | -2 | -46 | 236 | 0 | -52 | -577 | -35 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | 0 | -490 | -35 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | 0 | 0 | -10 | 0 | 0 |
| 60% | 0 | 0 | 0 | 6 | 0 | 0 | 160 | -99 | -108 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | -75 | -38 | 0 | 0 | 0 |
| 80% | -1 | 0 | 0 | -1 | -7 | 0 | -300 | -231 | -62 | -65 | -83 | -49 |
| 90% | 0 | 0 | 0 | 0 | -1 | 0 | -44 | -147 | -55 | -65 | -83 | -49 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -11 | -87 | -114 | -17 | -24 | -13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | -5 | -24 | -128 | 4 | 557 | 175 | -61 | -26 | 359 | 118 | -14 | -1 |
| Above Normal (24%) | 46 | -3 | 11 | 31 | 20 | -68 | 347 | 109 | -596 | -88 | -9 | -9 |
| Below Normal (10%) | 22 | 0 | 0 | 264 | 183 | -118 | 156 | 41 | -111 | -4 | -2 | -6 |
| Dry (16%) | -51 | 0 | 9 | -10 | -86 | 0 | -205 | -274 | -119 | -21 | -6 | -4 |
| Critical (27%) | -36 | 0 | 0 | -7 | -33 | -15 | -241 | -255 | -82 | -72 | -64 | -33 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 37-2. Stanislaus River Flow below Goodwin, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 837 | 290 | 306 | 358 | 897 | 1,648 | 1,633 | 1,929 | 1,100 | 429 | 392 | 390 |
| 20% | 797 | 200 | 218 | 232 | 405 | 1,521 | 1,553 | 1,555 | 1,089 | 318 | 300 | 300 |
| 30% | 774 | 200 | 200 | 232 | 282 | 440 | 1,553 | 1,294 | 940 | 300 | 284 | 250 |
| 40% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 853 | 300 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 363 | 277 | 283 | 250 |
| 60% | 636 | 200 | 200 | 219 | 229 | 200 | 812 | 918 | 363 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 229 | 200 | 767 | 705 | 294 | 265 | 283 | 249 |
| 80% | 578 | 200 | 200 | 214 | 221 | 200 | 767 | 631 | 262 | 265 | 283 | 249 |
| 90% | 577 | 200 | 200 | 213 | 215 | 200 | 504 | 547 | 255 | 265 | 283 | 249 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 723 | 278 | 367 | 519 | 593 | 754 | 1,159 | 1,124 | 679 | 395 | 362 | 351 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 859 | 532 | 863 | 999 | 1,193 | 2,014 | 1,536 | 1,691 | 1,140 | 716 | 639 | 692 |
| Above Normal (24%) | 728 | 205 | 212 | 664 | 676 | 645 | 1,224 | 1,145 | 959 | 353 | 292 | 267 |
| Below Normal (10%) | 752 | 200 | 202 | 282 | 346 | 365 | 1,454 | 1,201 | 475 | 269 | 285 | 256 |
| Dry (16%) | 677 | 200 | 200 | 234 | 313 | 200 | 1,030 | 930 | 375 | 276 | 277 | 245 |
| Critical (27%) | 614 | 200 | 236 | 227 | 255 | 234 | 743 | 700 | 282 | 272 | 264 | 231 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 797 | 200 | 306 | 552 | 2,259 | 1,528 | 1,572 | 1,555 | 940 | 300 | 300 | 300 |
| 20% | 797 | 200 | 200 | 232 | 294 | 1,521 | 1,553 | 1,555 | 940 | 300 | 300 | 300 |
| 30% | 774 | 200 | 200 | 230 | 236 | 675 | 1,553 | 1,242 | 363 | 265 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 60% | 636 | 200 | 200 | 226 | 229 | 200 | 972 | 819 | 255 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 221 | 200 | 767 | 631 | 255 | 265 | 283 | 249 |
| 80% | 577 | 200 | 200 | 213 | 214 | 200 | 466 | 400 | 200 | 200 | 200 | 200 |
| 90% | 577 | 200 | 200 | 213 | 214 | 200 | 460 | 400 | 200 | 200 | 200 | 200 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 718 | 272 | 341 | 549 | 722 | 762 | 1,147 | 1,036 | 566 | 378 | 338 | 339 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 854 | 508 | 735 | 1,003 | 1,750 | 2,189 | 1,475 | 1,665 | 1,499 | 834 | 625 | 691 |
| Above Normal (24%) | 774 | 202 | 223 | 694 | 695 | 577 | 1,571 | 1,255 | 363 | 265 | 283 | 258 |
| Below Normal (10%) | 774 | 200 | 202 | 546 | 528 | 247 | 1,610 | 1,242 | 363 | 265 | 283 | 250 |
| Dry (16%) | 626 | 200 | 209 | 224 | 228 | 200 | 825 | 655 | 256 | 255 | 270 | 241 |
| Critical (27%) | 578 | 200 | 236 | 220 | 222 | 218 | 501 | 445 | 200 | 200 | 200 | 198 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -41 | -90 | 0 | 194 | 1,362 | -121 | -62 | -375 | -160 | -129 | -92 | -90 |
| 20% | 0 | 0 | -18 | 0 | -111 | 0 | 0 | 0 | -149 | -18 | 0 | 0 |
| 30% | 0 | 0 | 0 | -2 | -46 | 236 | 0 | -52 | -577 | -35 | -1 | 0 |
| 40% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | 0 | -490 | -35 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | 0 | 0 | -12 | 0 | 0 |
| 60% | 0 | 0 | 0 | 6 | 0 | 0 | 160 | -99 | -108 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | -7 | 0 | 0 | -75 | -38 | 0 | 0 | 0 |
| 80% | -1 | 0 | 0 | -1 | -7 | 0 | -300 | -231 | -62 | -65 | -83 | -49 |
| 90% | 0 | 0 | 0 | 0 | -1 | 0 | -44 | -147 | -55 | -65 | -83 | -49 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -12 | -87 | -114 | -17 | -24 | -13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | -5 | -24 | -128 | 4 | 557 | 175 | -61 | -26 | 359 | 118 | -14 | -1 |
| Above Normal (24%) | 46 | -3 | 11 | 31 | 20 | -68 | 347 | 109 | -596 | -88 | -9 | -9 |
| Below Normal (10%) | 22 | 0 | 0 | 264 | 183 | -118 | 156 | 41 | -111 | -4 | -2 | -6 |
| Dry (16%) | -51 | 0 | 9 | -10 | -86 | 0 | -205 | -275 | -119 | -21 | -6 | -4 |
| Critical (27%) | -36 | 0 | 0 | -7 | -33 | -15 | -242 | -255 | -82 | -72 | -64 | -33 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 37-3. Stanislaus River Flow below Goodwin, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 837 | 290 | 306 | 358 | 897 | 1,648 | 1,633 | 1,929 | 1,100 | 429 | 392 | 390 |
| 20% | 797 | 200 | 218 | 232 | 405 | 1,521 | 1,553 | 1,555 | 1,089 | 318 | 300 | 300 |
| 30% | 774 | 200 | 200 | 232 | 282 | 440 | 1,553 | 1,294 | 940 | 300 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 853 | 300 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 363 | 275 | 283 | 250 |
| 60% | 636 | 200 | 200 | 219 | 229 | 200 | 812 | 918 | 363 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 229 | 200 | 767 | 705 | 294 | 265 | 283 | 249 |
| 80% | 578 | 200 | 200 | 214 | 221 | 200 | 767 | 631 | 262 | 265 | 283 | 249 |
| 90% | 577 | 200 | 200 | 213 | 215 | 200 | 504 | 547 | 255 | 265 | 283 | 249 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 723 | 278 | 367 | 519 | 593 | 754 | 1,159 | 1,124 | 680 | 395 | 362 | 351 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 859 | 532 | 863 | 999 | 1,193 | 2,014 | 1,536 | 1,691 | 1,140 | 716 | 639 | 692 |
| Above Normal (24%) | 728 | 205 | 212 | 664 | 676 | 645 | 1,224 | 1,146 | 959 | 353 | 292 | 267 |
| Below Normal (10%) | 752 | 200 | 202 | 282 | 346 | 365 | 1,454 | 1,201 | 475 | 269 | 285 | 256 |
| Dry (16%) | 677 | 200 | 200 | 234 | 313 | 200 | 1,030 | 930 | 375 | 276 | 277 | 245 |
| Critical (27%) | 614 | 200 | 236 | 227 | 255 | 234 | 742 | 700 | 282 | 272 | 264 | 231 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 837 | 290 | 306 | 358 | 897 | 1,648 | 1,633 | 1,929 | 1,100 | 429 | 392 | 390 |
| 20% | 797 | 200 | 218 | 232 | 405 | 1,521 | 1,553 | 1,555 | 1,089 | 318 | 300 | 300 |
| 30% | 774 | 200 | 200 | 232 | 282 | 440 | 1,553 | 1,294 | 940 | 300 | 284 | 250 |
| 40% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 853 | 300 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 236 | 200 | 1,400 | 1,242 | 363 | 277 | 283 | 250 |
| 60% | 636 | 200 | 200 | 219 | 229 | 200 | 812 | 918 | 363 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 229 | 200 | 767 | 705 | 294 | 265 | 283 | 249 |
| 80% | 578 | 200 | 200 | 214 | 221 | 200 | 767 | 631 | 262 | 265 | 283 | 249 |
| 90% | 577 | 200 | 200 | 213 | 215 | 200 | 504 | 547 | 255 | 265 | 283 | 249 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 723 | 278 | 367 | 519 | 593 | 754 | 1,159 | 1,124 | 679 | 395 | 362 | 351 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 859 | 532 | 863 | 999 | 1,193 | 2,014 | 1,536 | 1,691 | 1,140 | 716 | 639 | 692 |
| Above Normal (24%) | 728 | 205 | 212 | 664 | 676 | 645 | 1,224 | 1,145 | 959 | 353 | 292 | 267 |
| Below Normal (10%) | 752 | 200 | 202 | 282 | 346 | 365 | 1,454 | 1,201 | 475 | 269 | 285 | 256 |
| Dry (16%) | 677 | 200 | 200 | 234 | 313 | 200 | 1,030 | 930 | 375 | 276 | 277 | 245 |
| Critical (27%) | 614 | 200 | 236 | 227 | 255 | 234 | 743 | 700 | 282 | 272 | 264 | 231 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 37-4. Stanislaus River Flow below Goodwin, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 797 | 200 | 306 | 552 | 2,259 | 1,528 | 1,572 | 1,555 | 940 | 300 | 300 | 300 |
| 20% | 797 | 200 | 200 | 232 | 294 | 1,521 | 1,553 | 1,555 | 940 | 300 | 300 | 300 |
| 30% | 774 | 200 | 200 | 230 | 236 | 675 | 1,553 | 1,242 | 363 | 265 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 60% | 636 | 200 | 200 | 226 | 229 | 200 | 972 | 819 | 255 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 221 | 200 | 767 | 631 | 255 | 265 | 283 | 249 |
| 80% | 577 | 200 | 200 | 213 | 214 | 200 | 466 | 400 | 200 | 200 | 200 | 200 |
| 90% | 577 | 200 | 200 | 213 | 214 | 200 | 460 | 400 | 200 | 200 | 200 | 200 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 718 | 272 | 341 | 549 | 722 | 762 | 1,147 | 1,036 | 566 | 378 | 338 | 339 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 854 | 508 | 735 | 1,003 | 1,750 | 2,189 | 1,475 | 1,665 | 1,499 | 834 | 625 | 691 |
| Above Normal (24%) | 774 | 202 | 223 | 694 | 695 | 577 | 1,571 | 1,255 | 363 | 265 | 283 | 258 |
| Below Normal (10%) | 774 | 200 | 202 | 546 | 528 | 247 | 1,610 | 1,242 | 363 | 265 | 283 | 250 |
| Dry (16%) | 626 | 200 | 209 | 224 | 228 | 200 | 825 | 655 | 256 | 255 | 270 | 241 |
| Critical (27%) | 578 | 200 | 236 | 220 | 222 | 218 | 501 | 445 | 200 | 200 | 200 | 198 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 797 | 200 | 306 | 552 | 2,259 | 1,528 | 1,572 | 1,555 | 940 | 300 | 300 | 300 |
| 20% | 797 | 200 | 200 | 232 | 294 | 1,521 | 1,553 | 1,555 | 940 | 300 | 300 | 300 |
| 30% | 774 | 200 | 200 | 230 | 236 | 675 | 1,553 | 1,242 | 363 | 265 | 283 | 250 |
| 40% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 50% | 774 | 200 | 200 | 226 | 229 | 200 | 1,400 | 1,242 | 363 | 265 | 283 | 250 |
| 60% | 636 | 200 | 200 | 226 | 229 | 200 | 972 | 819 | 255 | 265 | 283 | 249 |
| 70% | 636 | 200 | 200 | 219 | 221 | 200 | 767 | 631 | 255 | 265 | 283 | 249 |
| 80% | 577 | 200 | 200 | 213 | 214 | 200 | 466 | 400 | 200 | 200 | 200 | 200 |
| 90% | 577 | 200 | 200 | 213 | 214 | 200 | 460 | 400 | 200 | 200 | 200 | 200 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 718 | 272 | 341 | 549 | 722 | 762 | 1,147 | 1,036 | 566 | 378 | 338 | 339 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 854 | 508 | 735 | 1,003 | 1,750 | 2,189 | 1,475 | 1,665 | 1,499 | 834 | 625 | 691 |
| Above Normal (24%) | 774 | 202 | 223 | 694 | 695 | 577 | 1,571 | 1,255 | 363 | 265 | 283 | 258 |
| Below Normal (10%) | 774 | 200 | 202 | 546 | 528 | 247 | 1,610 | 1,242 | 363 | 265 | 283 | 250 |
| Dry (16%) | 626 | 200 | 209 | 224 | 228 | 200 | 825 | 655 | 256 | 255 | 270 | 241 |
| Critical (27%) | 578 | 200 | 236 | 220 | 222 | 218 | 501 | 445 | 200 | 200 | 200 | 198 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

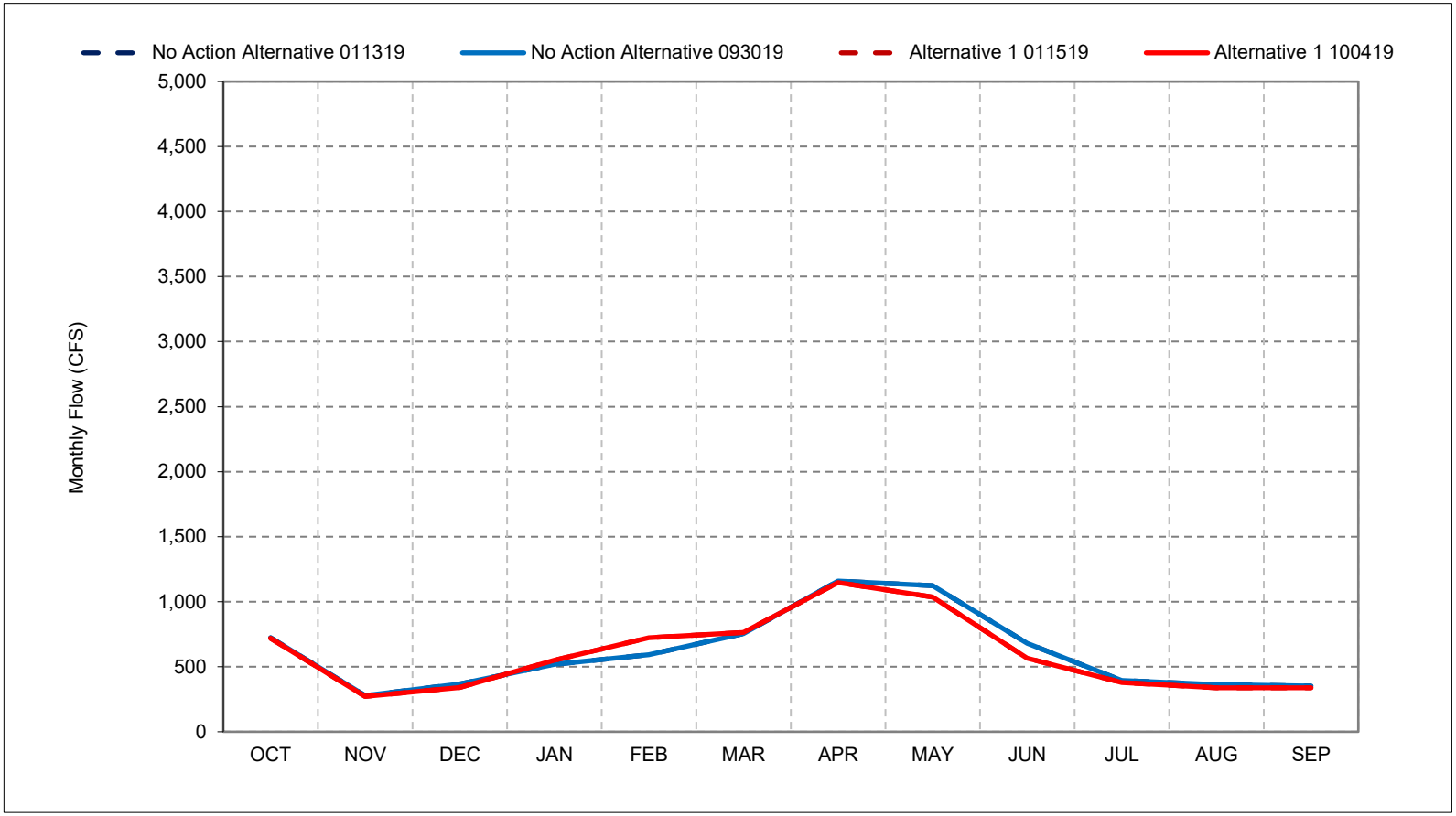
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

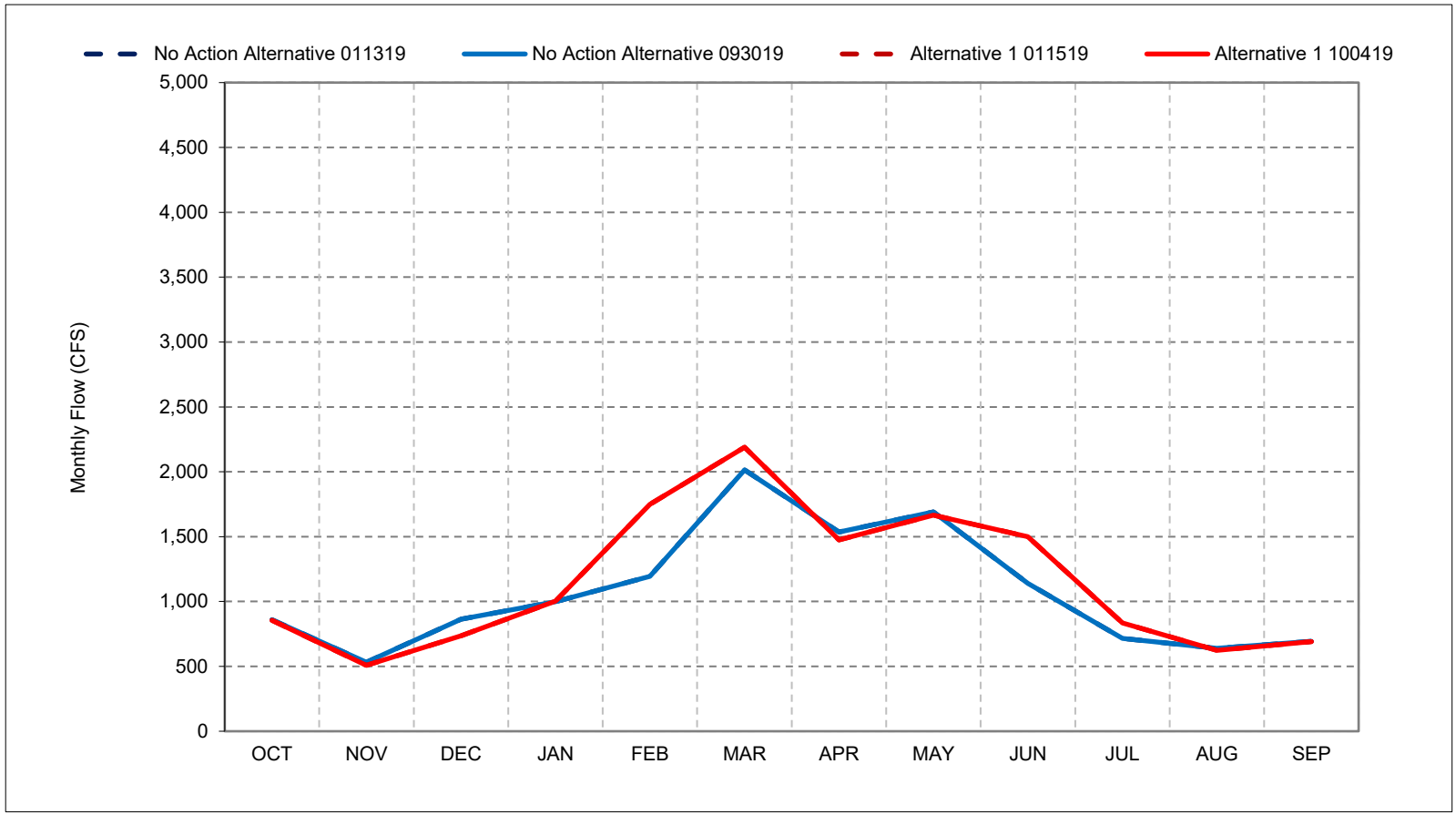
## Figure 37-1. Stanislaus River Flow below Goodwin, Long-Term Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

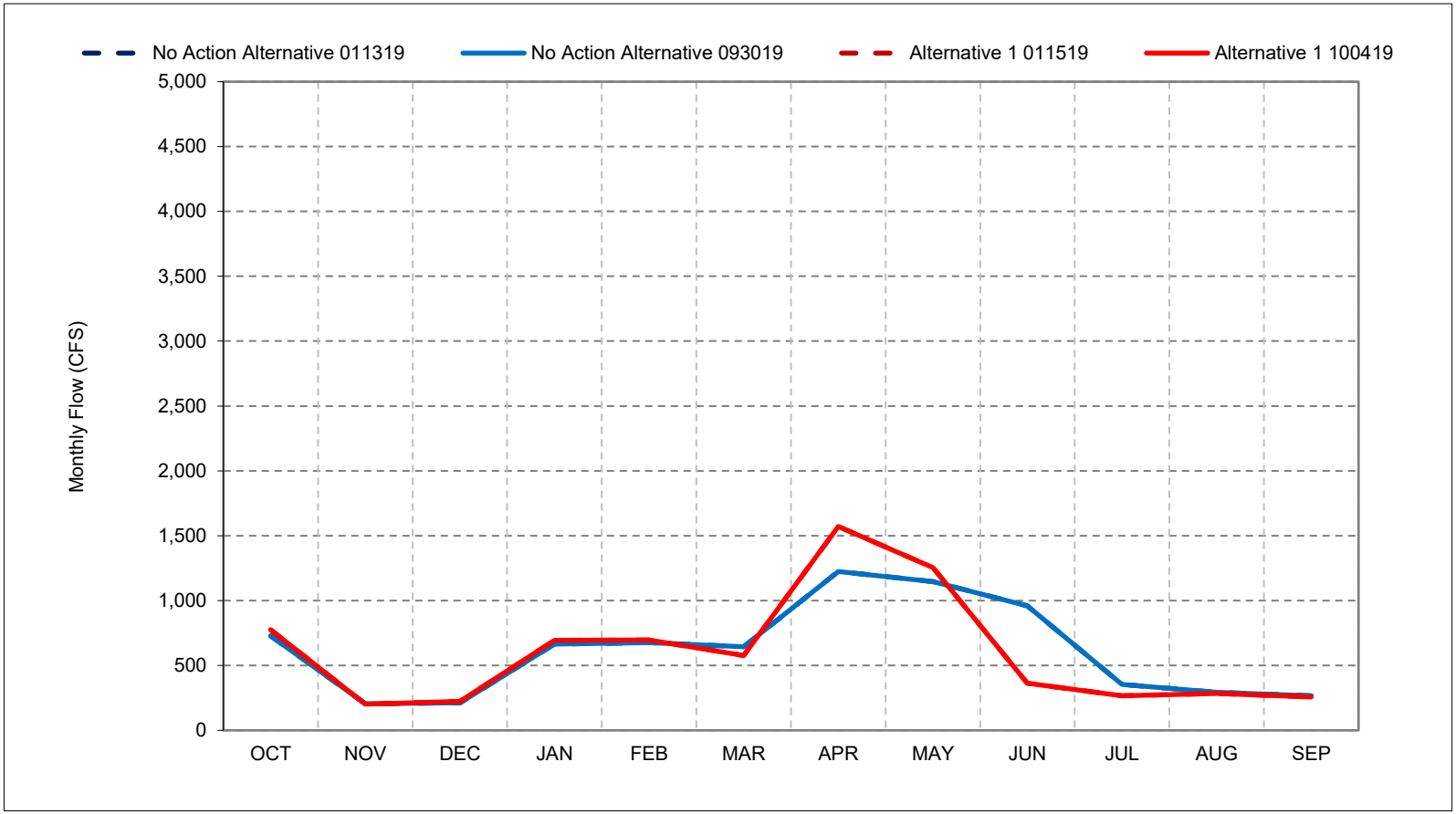
## Figure 37-2. Stanislaus River Flow below Goodwin, Wet Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

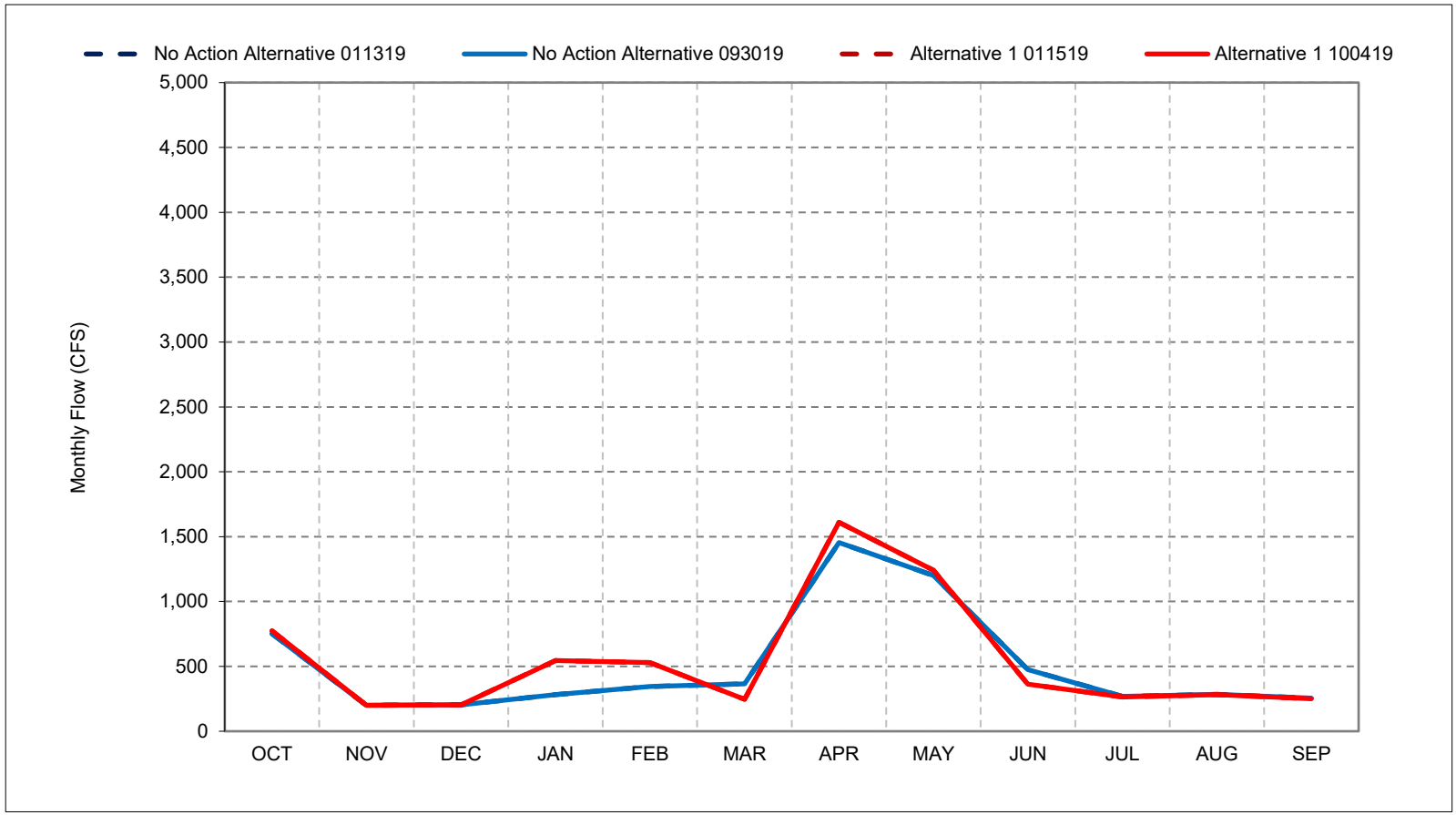
## Figure 37-3. Stanislaus River Flow below Goodwin, Above Normal Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

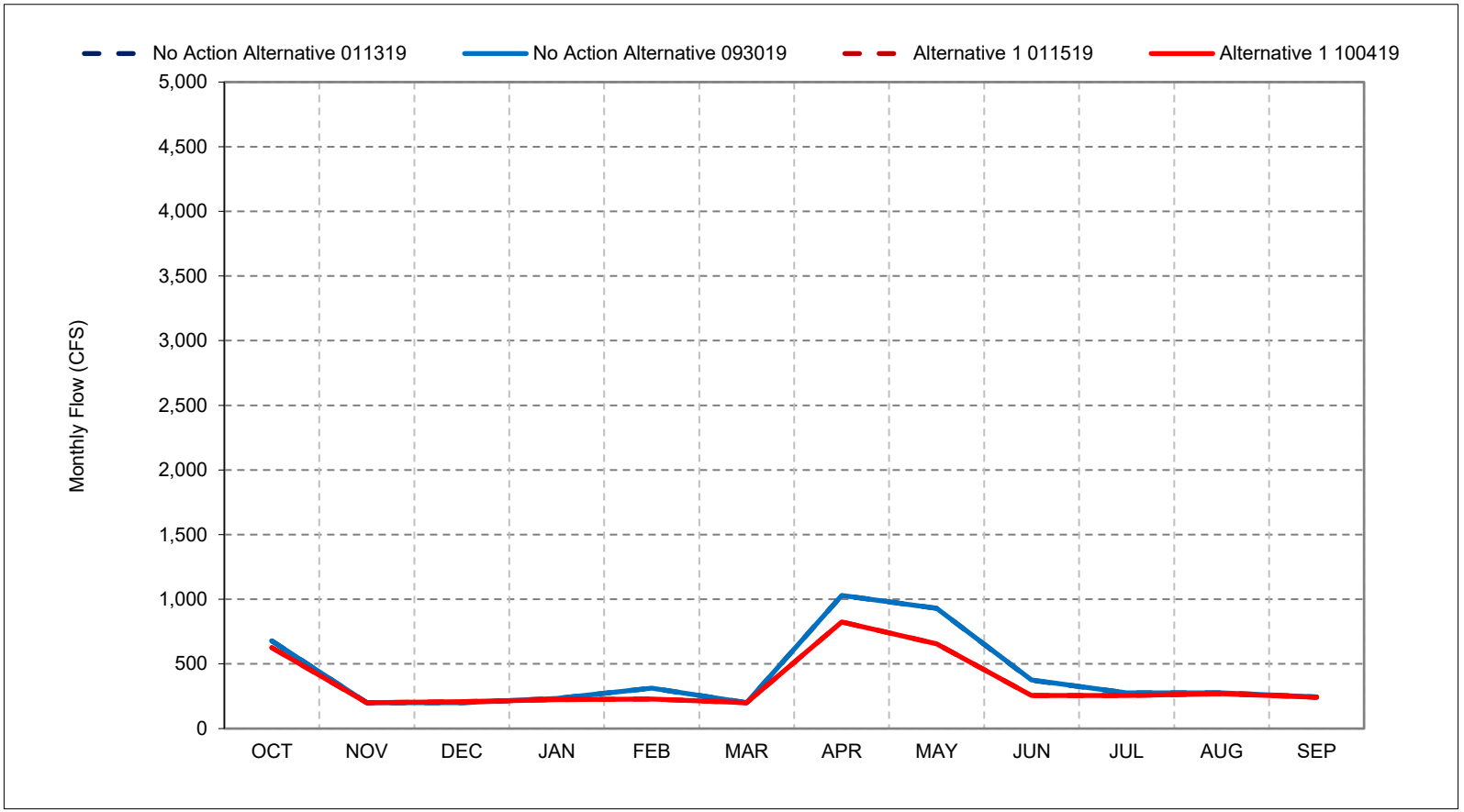
## Figure 37-4. Stanislaus River Flow below Goodwin, Below Normal Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

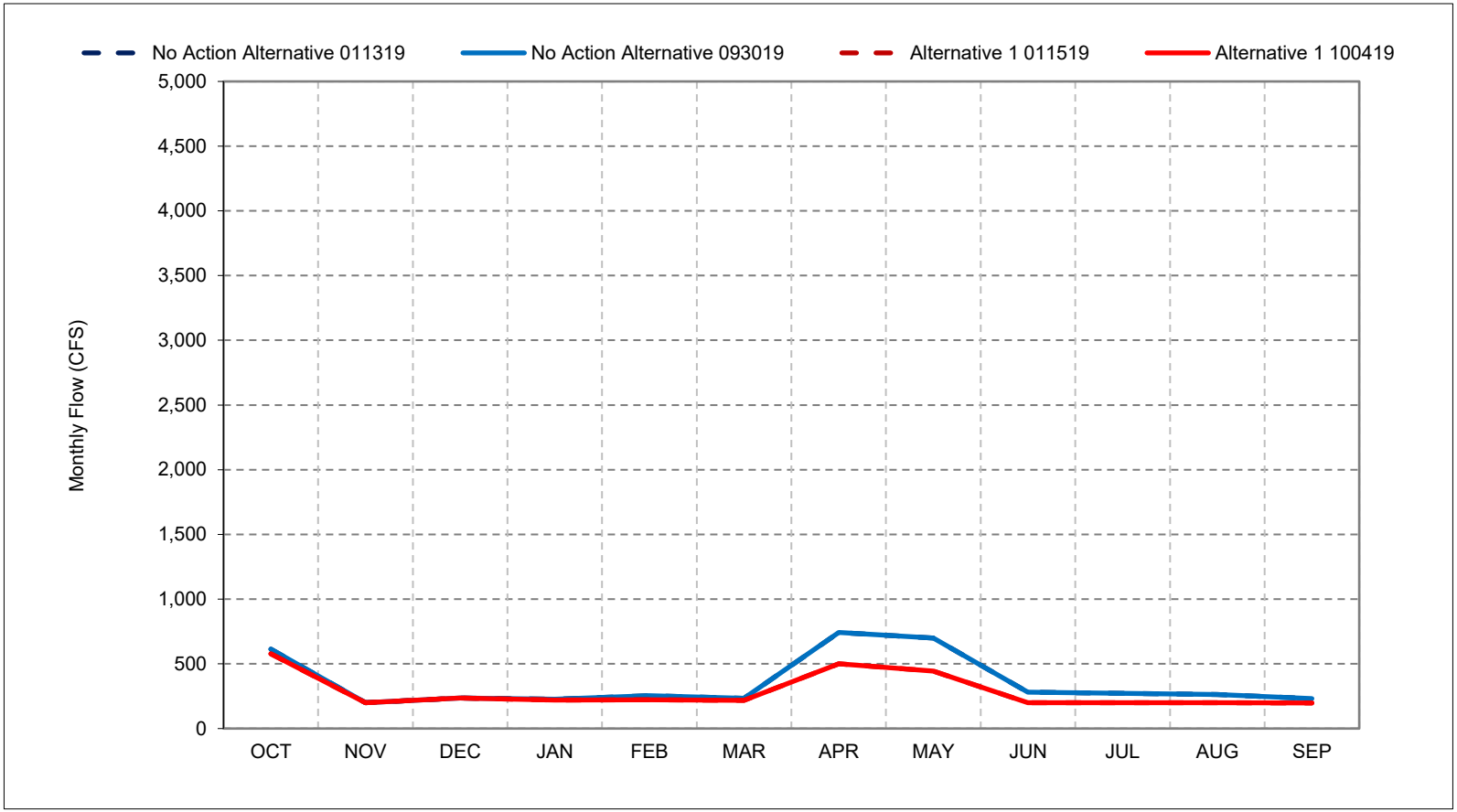
## Figure 37-5. Stanislaus River Flow below Goodwin, Dry Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

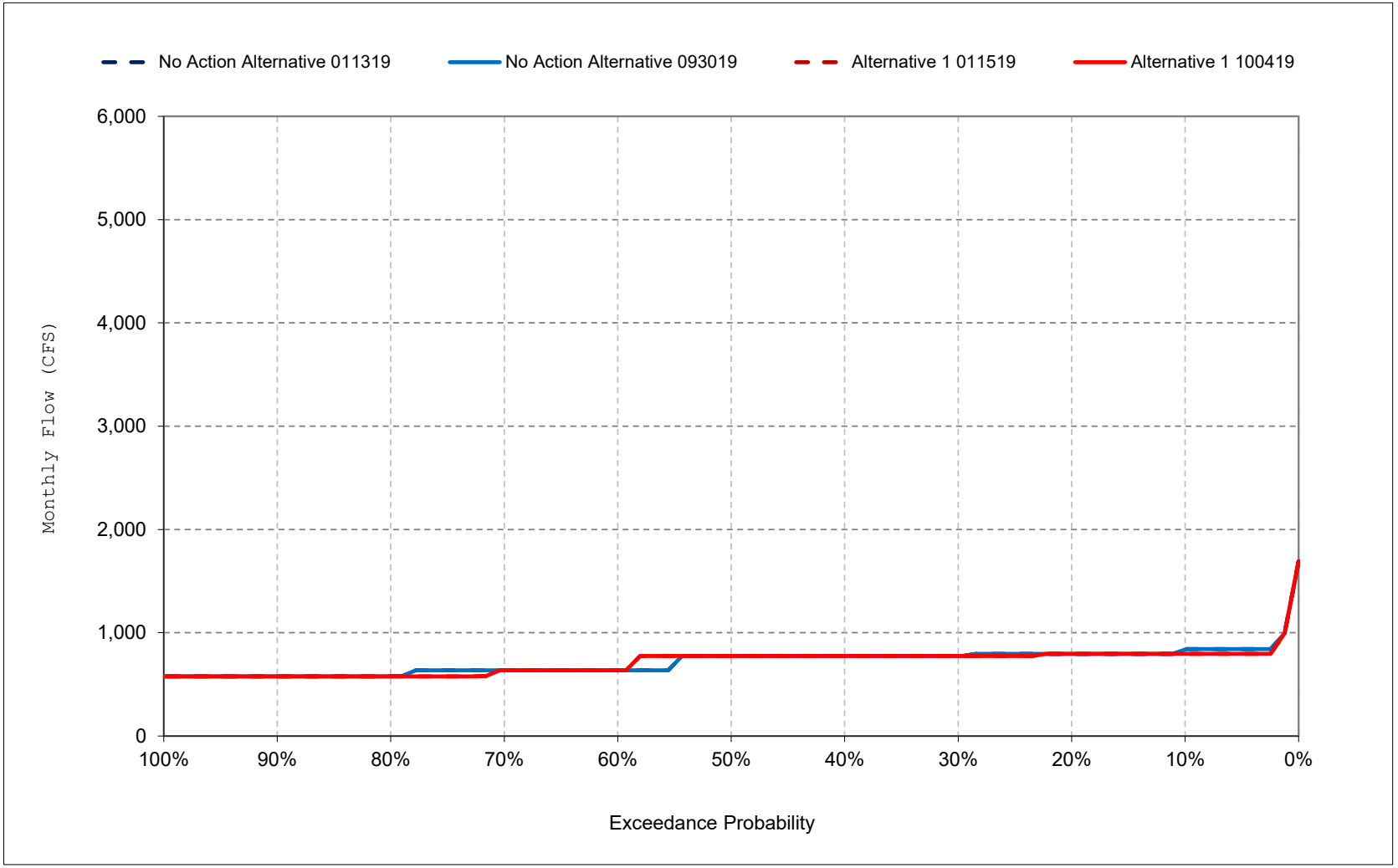
## Figure 37-6. Stanislaus River Flow below Goodwin, Critical Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

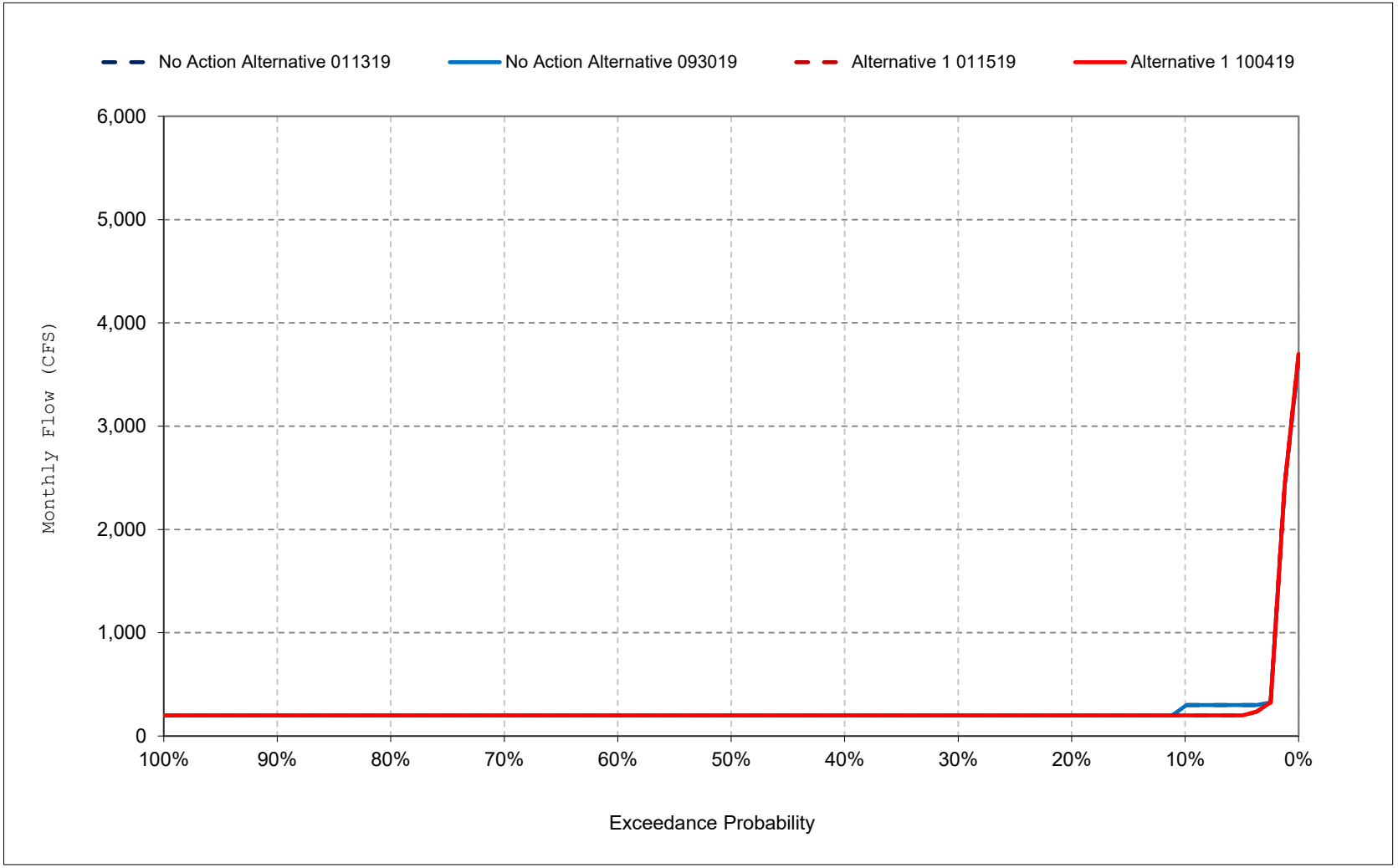
*New Melones forecasts are used as the basis of water operations.

**Figure 37-7. Stanislaus River Flow below Goodwin, October**



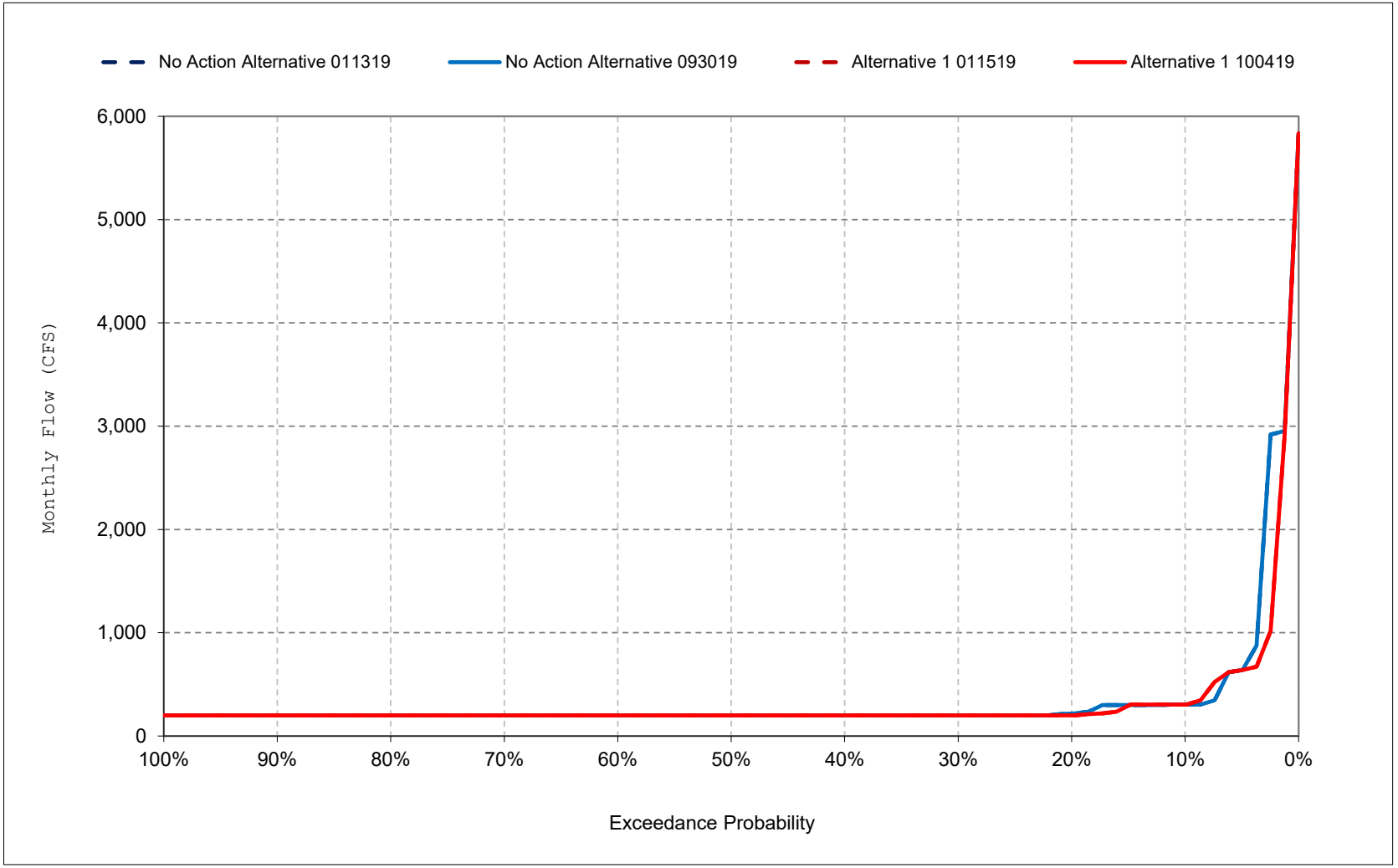

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-8. Stanislaus River Flow below Goodwin, November**



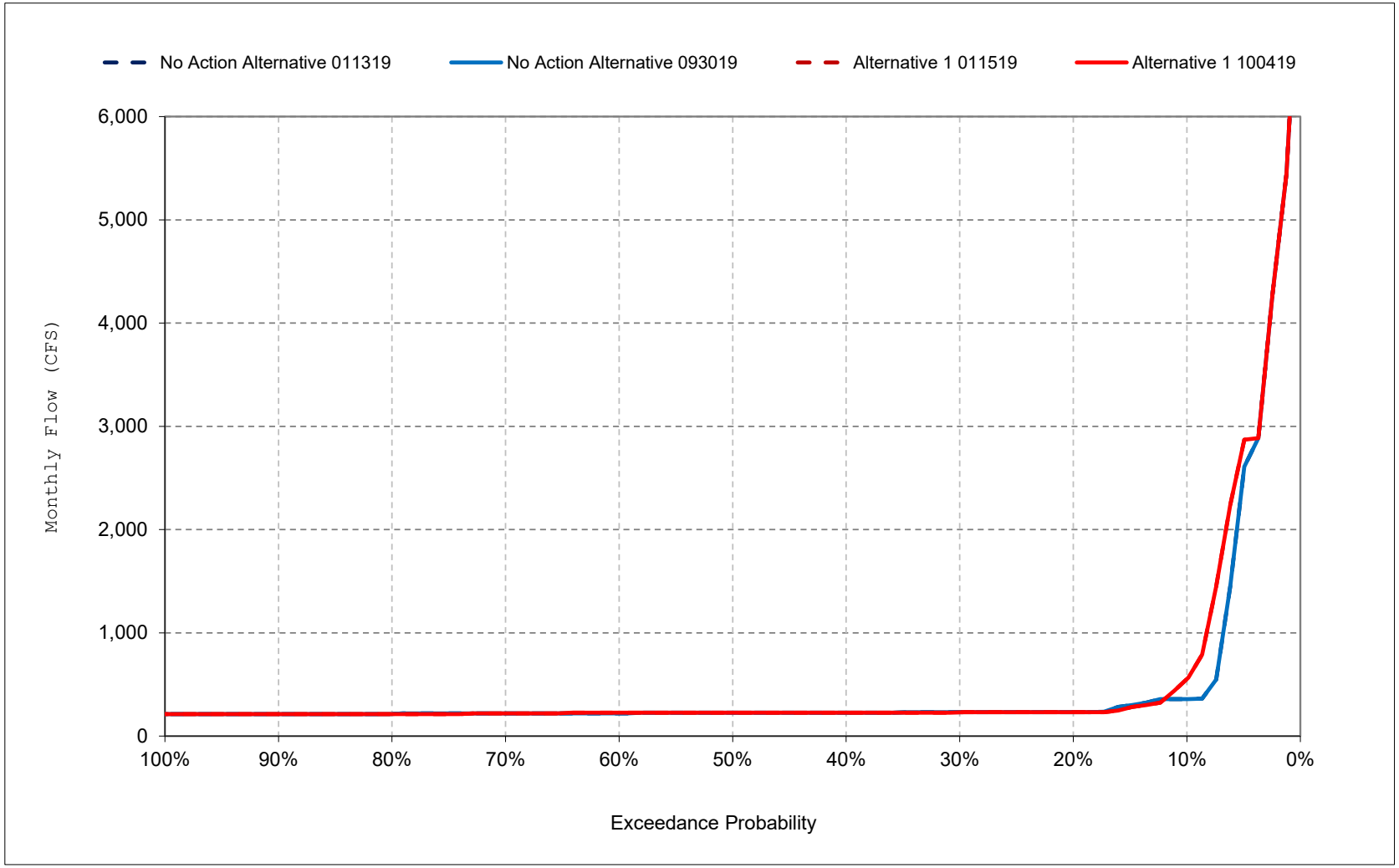

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-9. Stanislaus River Flow below Goodwin, December**



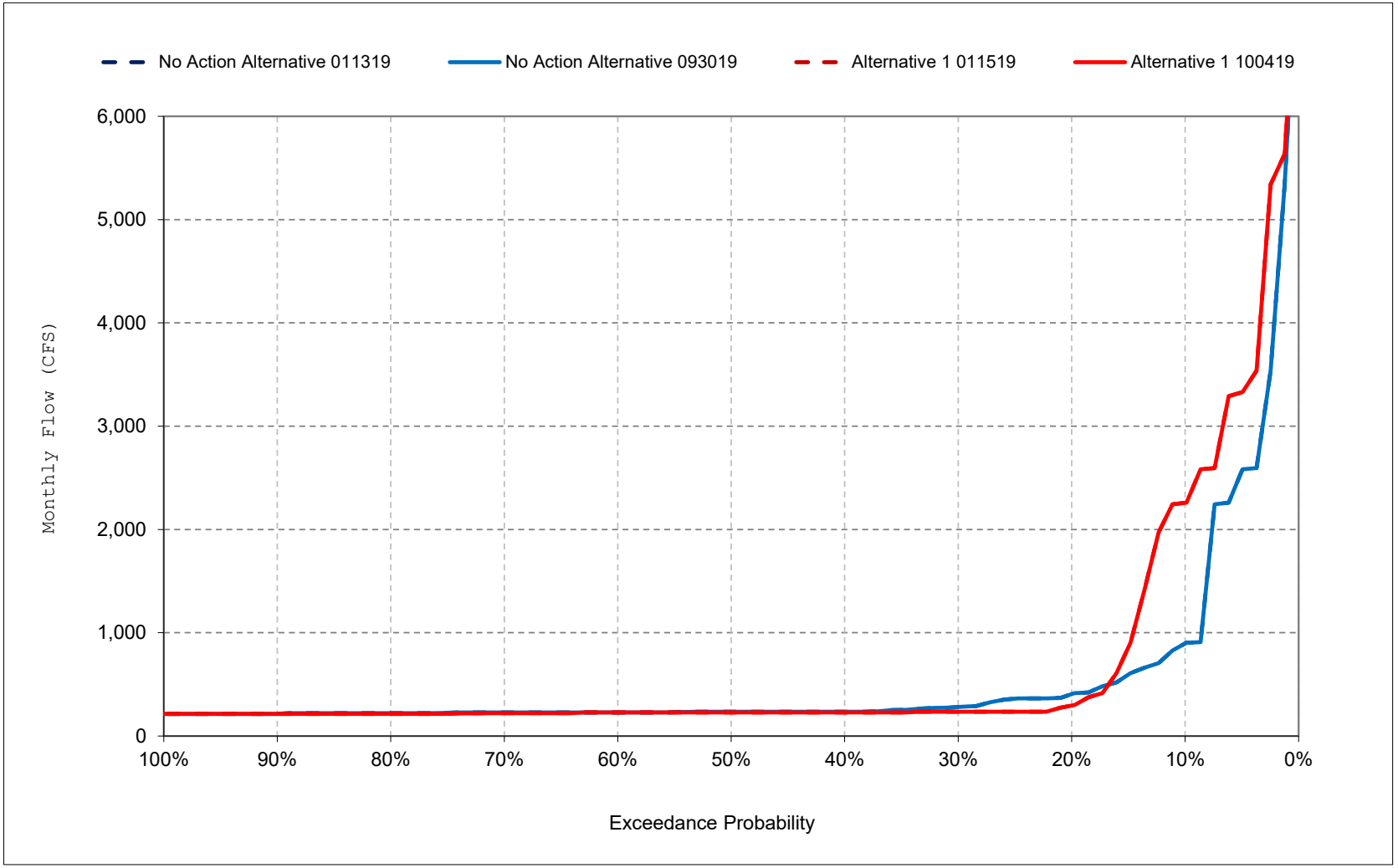

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-10. Stanislaus River Flow below Goodwin, January**



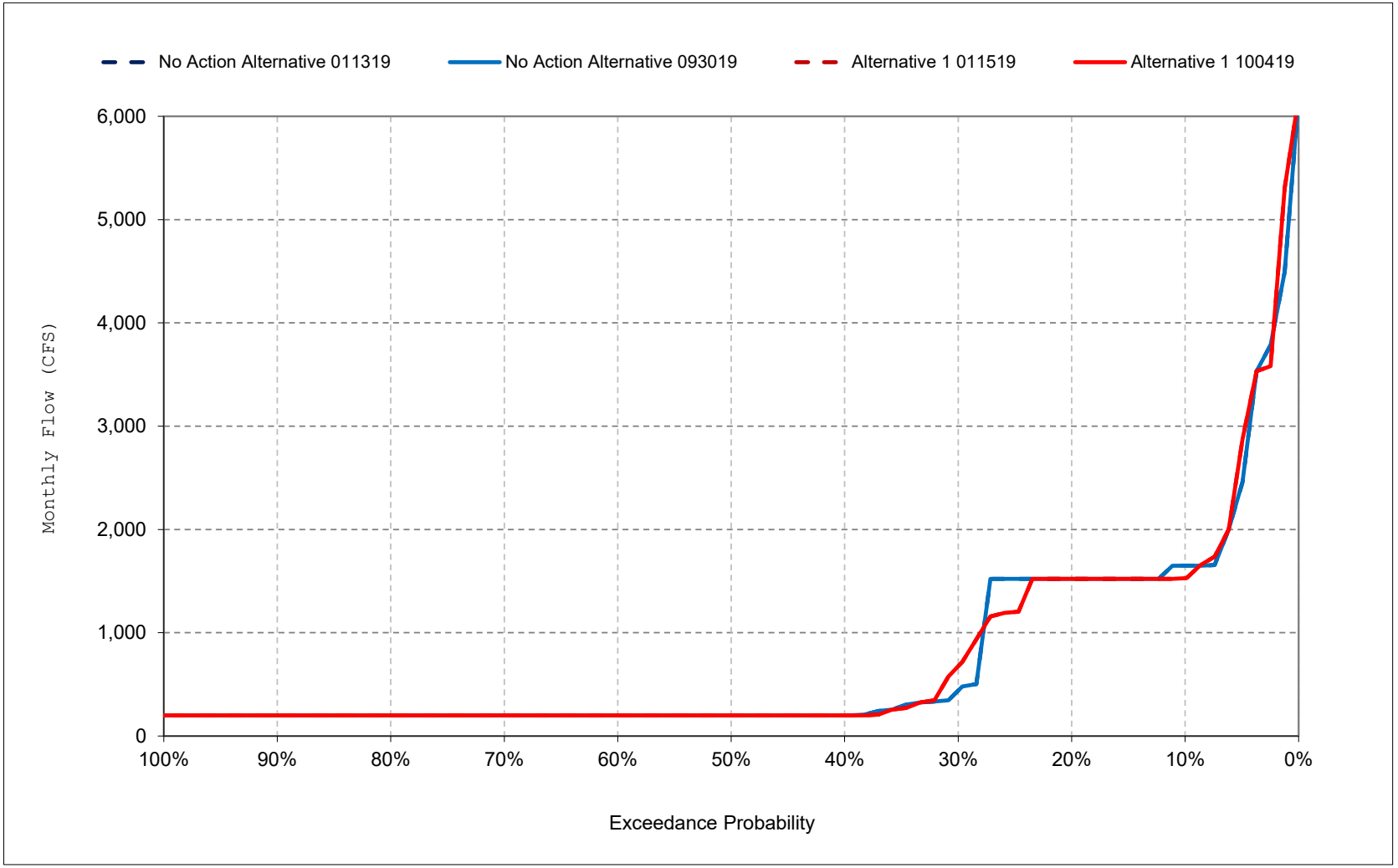

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-11. Stanislaus River Flow below Goodwin, February**



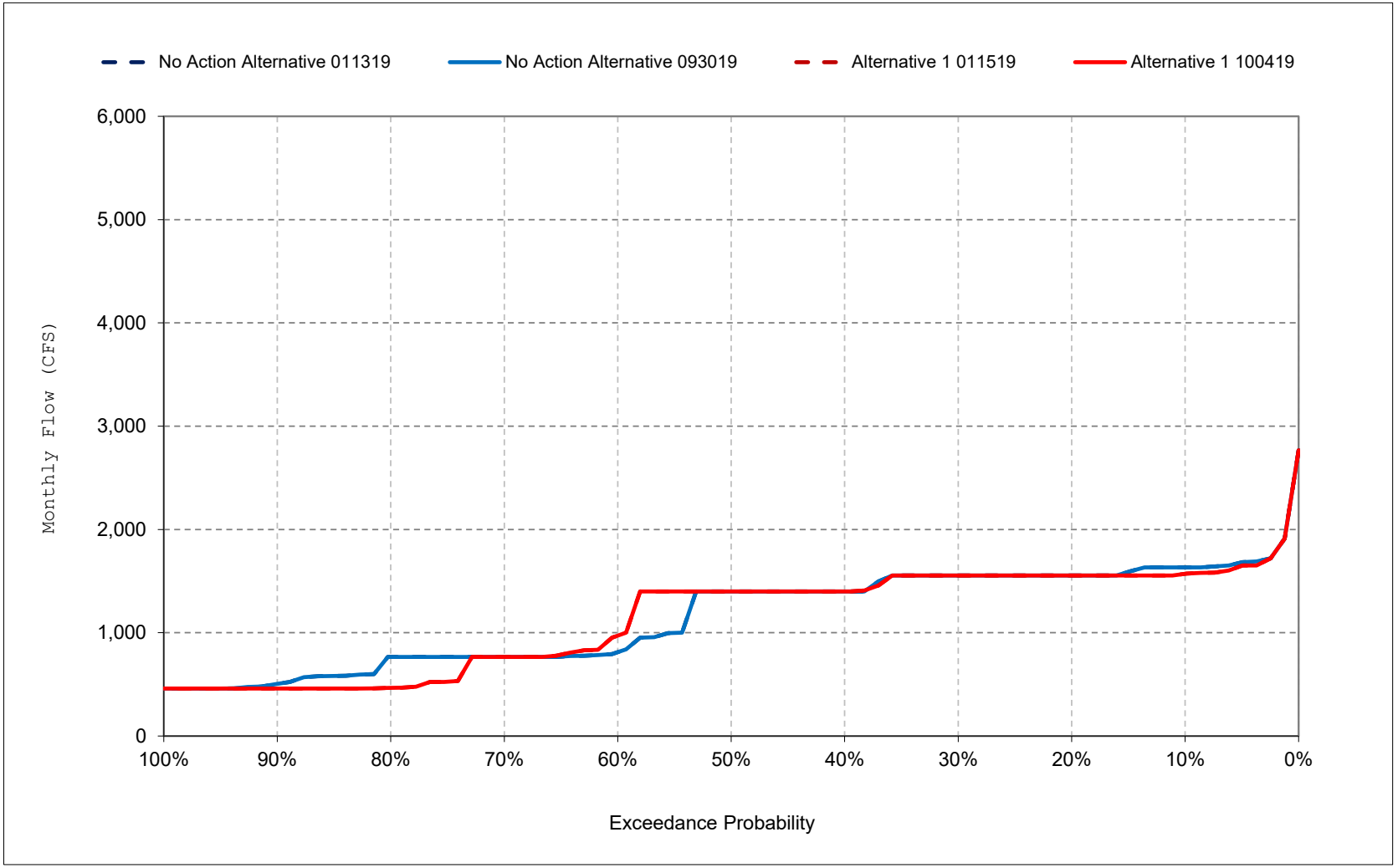

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-12. Stanislaus River Flow below Goodwin, March**



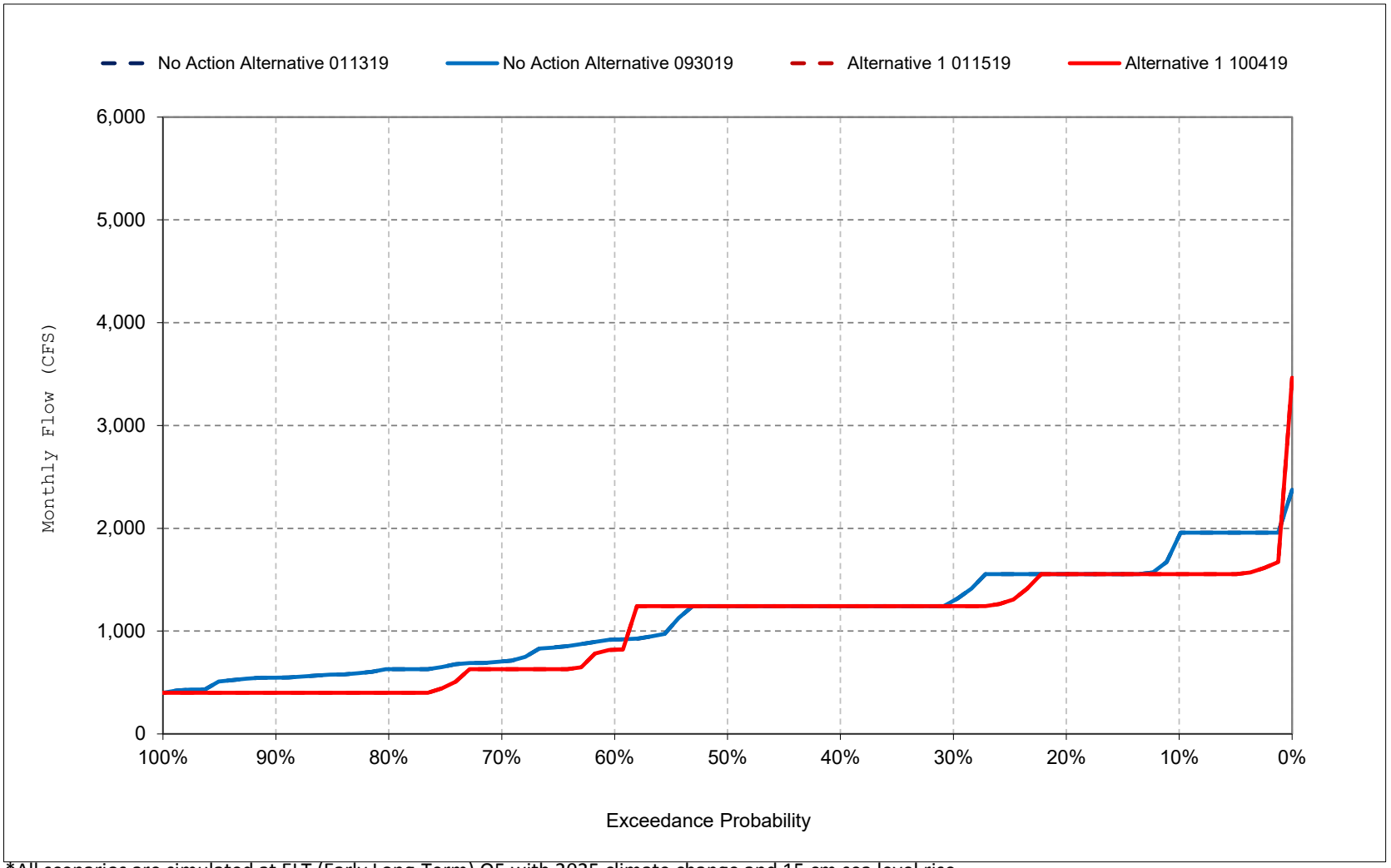

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-13. Stanislaus River Flow below Goodwin, April**



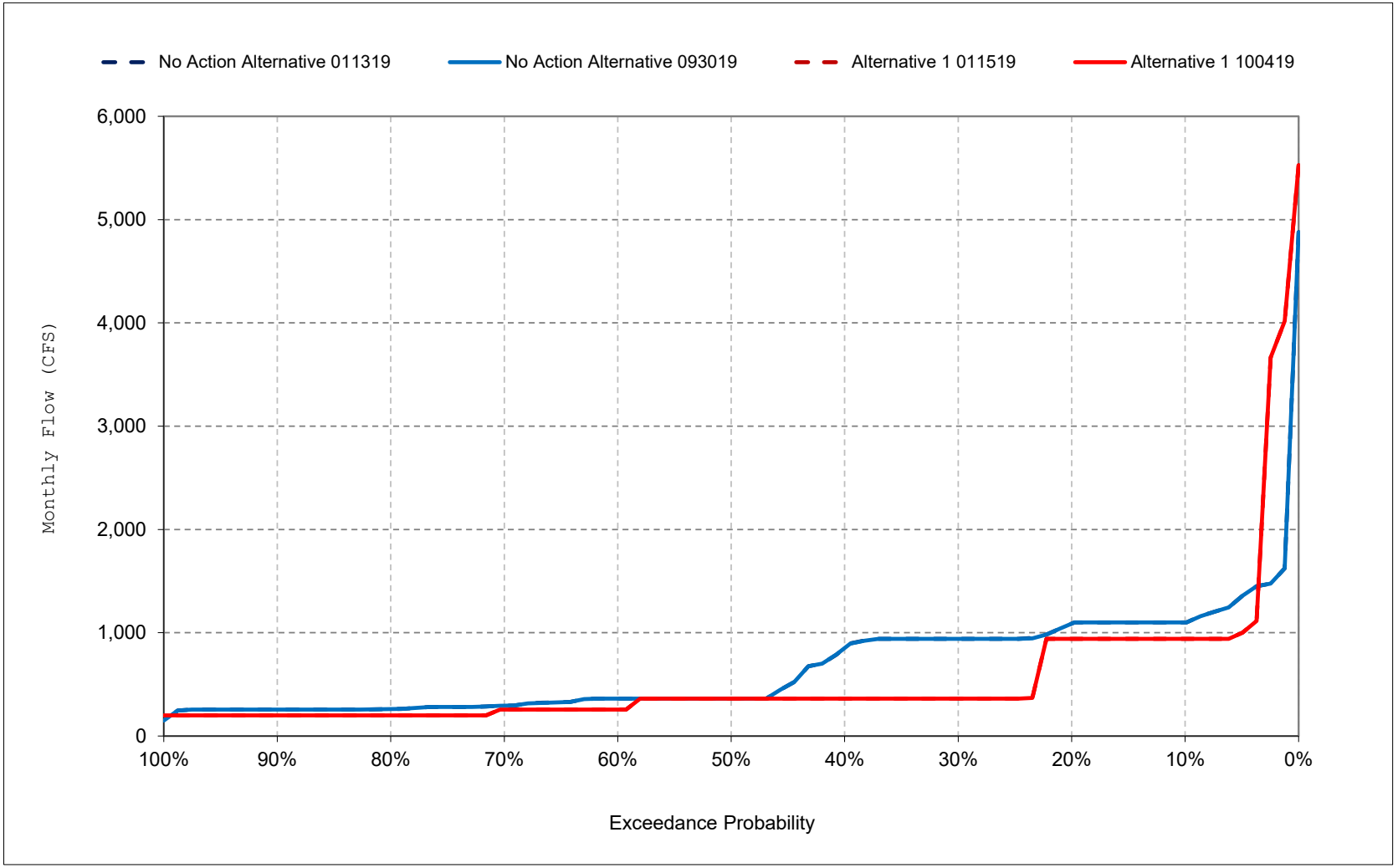

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-14. Stanislaus River Flow below Goodwin, May**



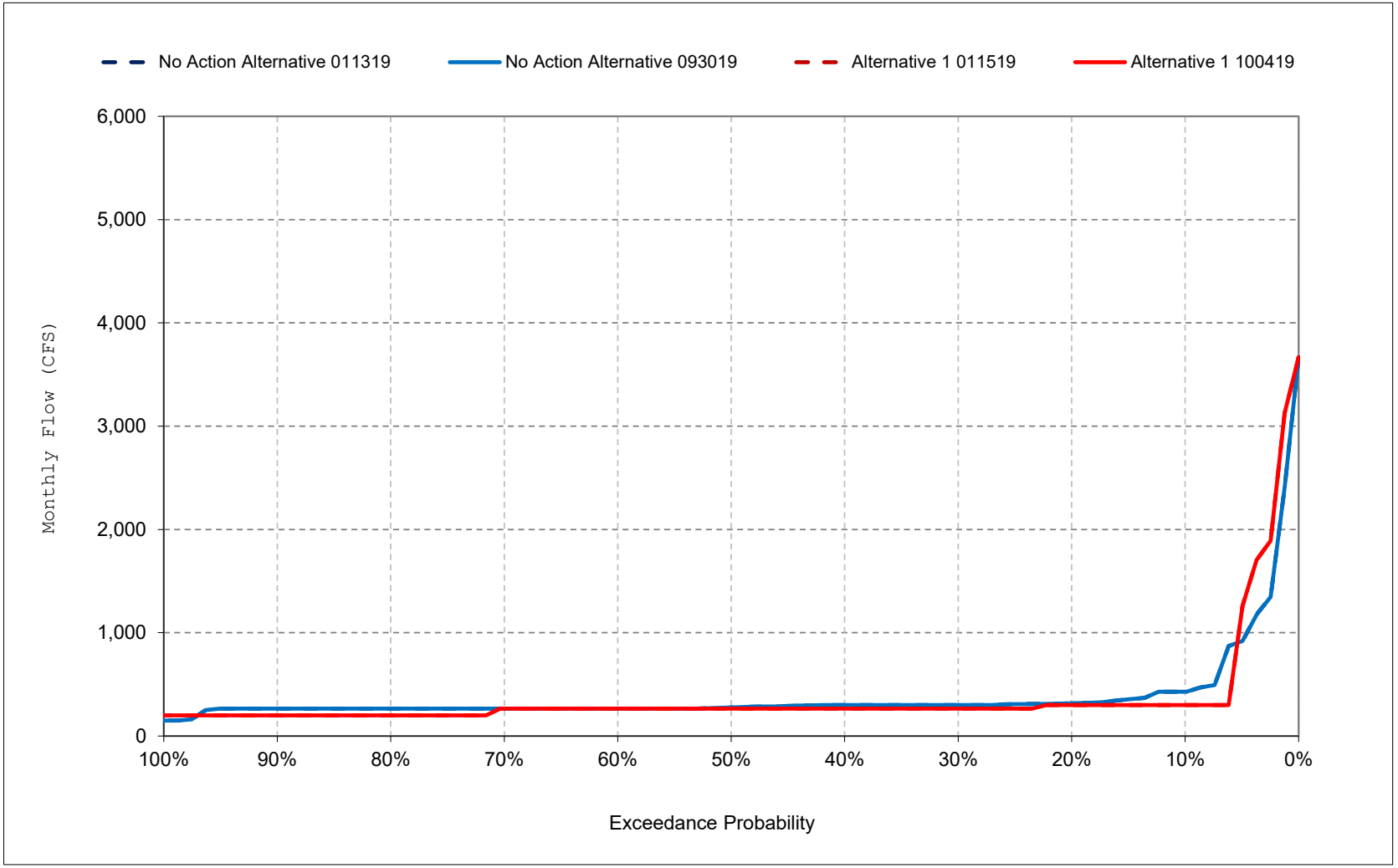

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-15. Stanislaus River Flow below Goodwin, June**



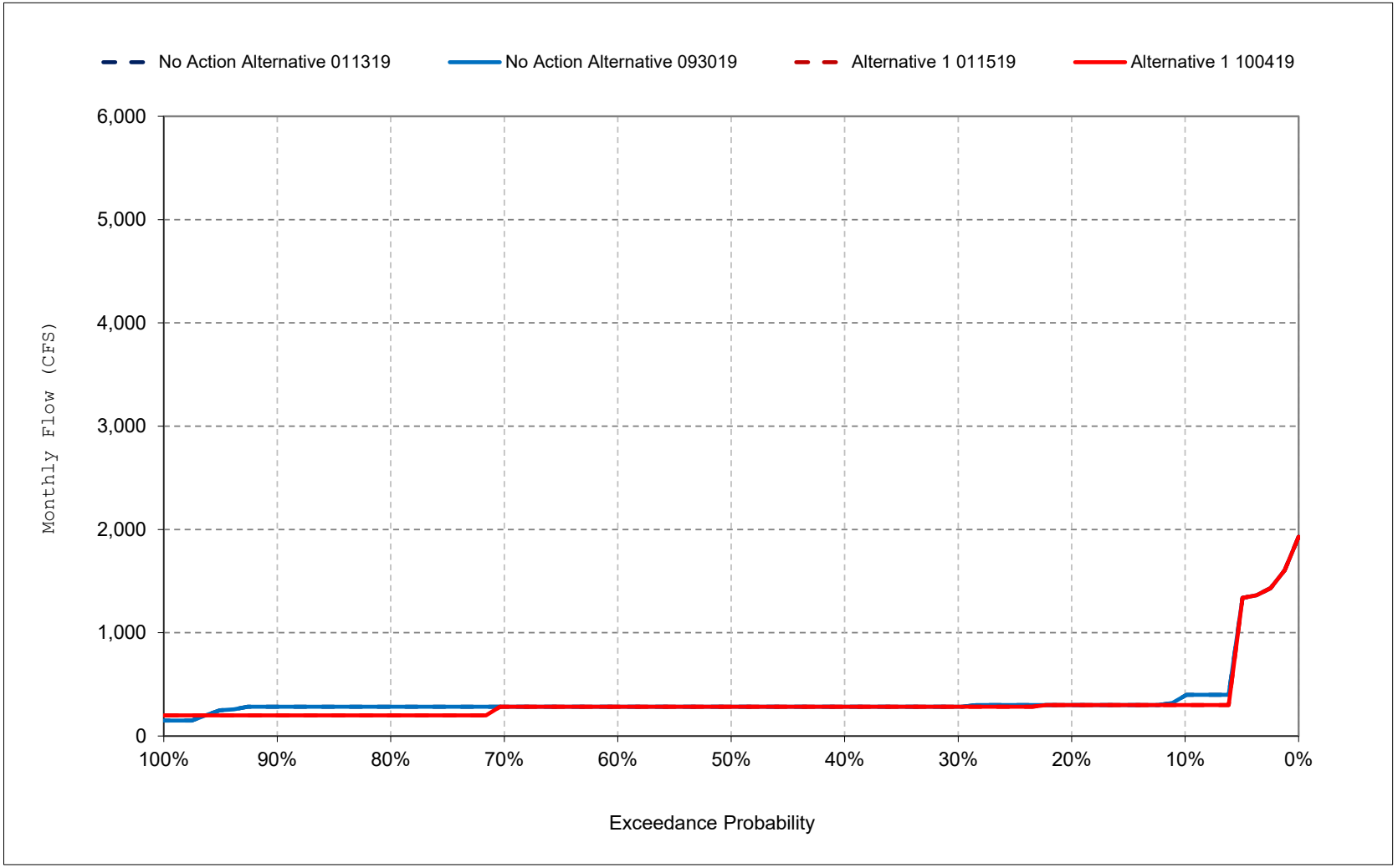

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-16. Stanislaus River Flow below Goodwin, July**



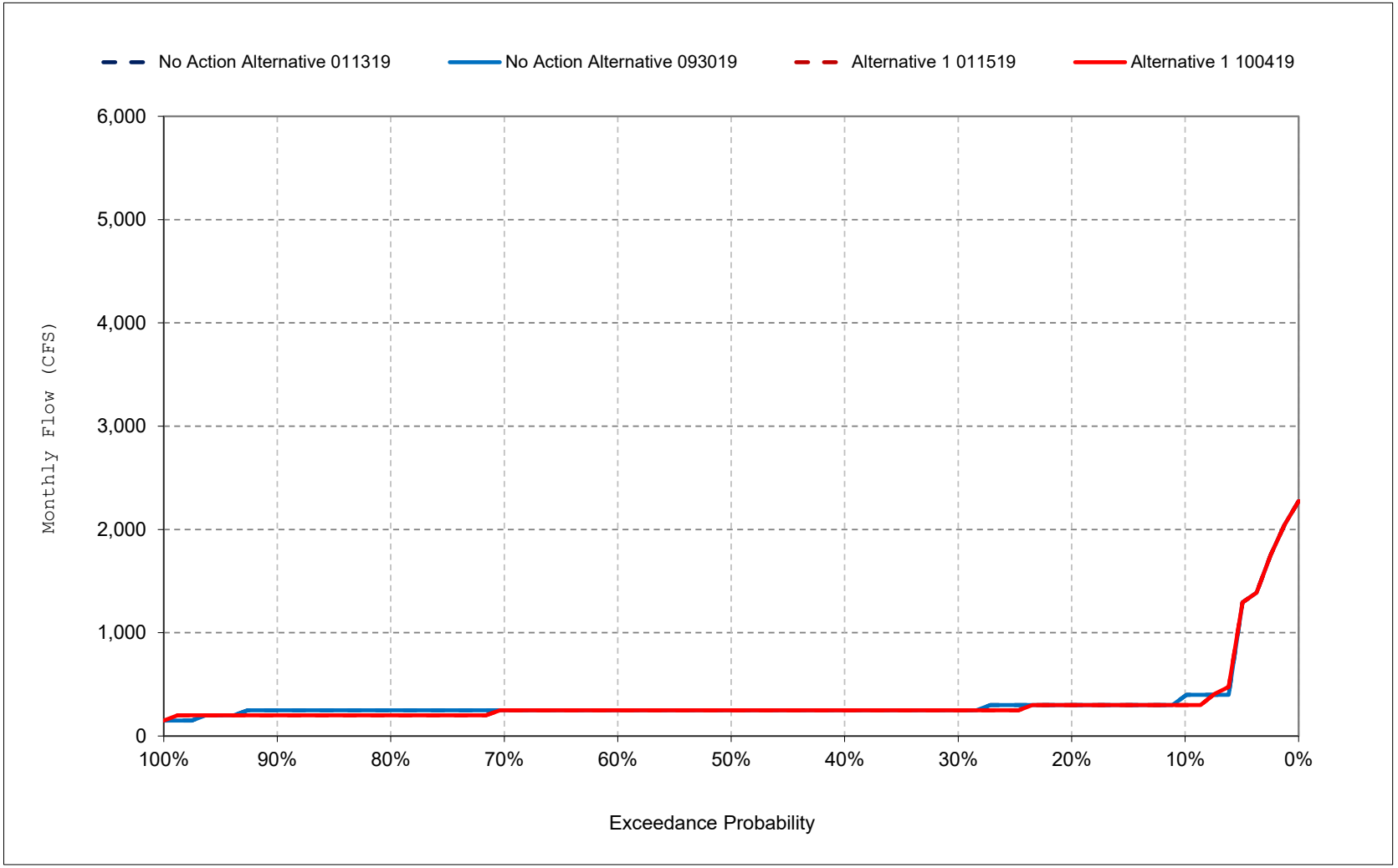

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-17. Stanislaus River Flow below Goodwin, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 37-18. Stanislaus River Flow below Goodwin, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 38-1. Stanislaus River Flow at Mouth, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,122 | 463 | 442 | 576 | 1,083 | 1,969 | 1,886 | 1,989 | 1,535 | 752 | 587 | 646 |
| 20% | 1,029 | 384 | 368 | 427 | 643 | 1,708 | 1,769 | 1,647 | 1,330 | 606 | 488 | 507 |
| 30% | 982 | 348 | 319 | 368 | 469 | 521 | 1,696 | 1,536 | 1,221 | 502 | 462 | 473 |
| 40% | 958 | 337 | 304 | 347 | 399 | 433 | 1,610 | 1,362 | 1,053 | 443 | 445 | 443 |
| 50% | 879 | 319 | 290 | 337 | 368 | 367 | 1,485 | 1,289 | 634 | 415 | 445 | 439 |
| 60% | 826 | 292 | 281 | 326 | 331 | 336 | 936 | 869 | 510 | 384 | 416 | 428 |
| 70% | 772 | 267 | 262 | 312 | 279 | 314 | 806 | 755 | 406 | 374 | 395 | 389 |
| 80% | 755 | 260 | 241 | 295 | 253 | 241 | 693 | 647 | 361 | 343 | 371 | 360 |
| 90% | 676 | 248 | 224 | 273 | 230 | 207 | 579 | 577 | 317 | 311 | 331 | 318 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 903 | 398 | 449 | 630 | 717 | 902 | 1,279 | 1,207 | 883 | 547 | 505 | 533 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,120 | 701 | 994 | 1,115 | 1,404 | 2,256 | 1,779 | 1,828 | 1,456 | 977 | 831 | 946 |
| Above Normal (24%) | 918 | 316 | 288 | 777 | 786 | 801 | 1,410 | 1,244 | 1,254 | 534 | 467 | 480 |
| Below Normal (10%) | 950 | 315 | 291 | 430 | 517 | 539 | 1,556 | 1,378 | 668 | 449 | 440 | 429 |
| Dry (16%) | 832 | 309 | 311 | 349 | 405 | 345 | 1,064 | 1,002 | 531 | 377 | 397 | 399 |
| Critical (27%) | 722 | 294 | 266 | 317 | 319 | 286 | 755 | 696 | 336 | 323 | 347 | 342 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,094 | 401 | 403 | 765 | 2,628 | 1,947 | 1,886 | 1,726 | 1,352 | 633 | 569 | 673 |
| 20% | 1,036 | 376 | 338 | 425 | 541 | 1,638 | 1,817 | 1,610 | 1,061 | 536 | 482 | 493 |
| 30% | 975 | 347 | 314 | 364 | 449 | 1,054 | 1,705 | 1,443 | 800 | 479 | 458 | 462 |
| 40% | 966 | 335 | 304 | 350 | 388 | 415 | 1,553 | 1,335 | 615 | 427 | 445 | 441 |
| 50% | 901 | 318 | 288 | 336 | 340 | 362 | 1,525 | 1,294 | 531 | 398 | 435 | 437 |
| 60% | 821 | 292 | 280 | 325 | 293 | 334 | 976 | 841 | 408 | 376 | 402 | 400 |
| 70% | 766 | 267 | 262 | 308 | 257 | 312 | 767 | 631 | 341 | 309 | 360 | 382 |
| 80% | 751 | 260 | 239 | 294 | 237 | 241 | 545 | 459 | 287 | 282 | 318 | 337 |
| 90% | 659 | 248 | 223 | 273 | 227 | 207 | 460 | 419 | 243 | 231 | 274 | 282 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 898 | 392 | 424 | 661 | 846 | 911 | 1,268 | 1,120 | 769 | 530 | 482 | 520 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,115 | 677 | 866 | 1,120 | 1,961 | 2,431 | 1,718 | 1,802 | 1,816 | 1,095 | 817 | 945 |
| Above Normal (24%) | 964 | 313 | 299 | 808 | 806 | 733 | 1,758 | 1,353 | 658 | 446 | 457 | 471 |
| Below Normal (10%) | 972 | 315 | 291 | 694 | 700 | 421 | 1,712 | 1,419 | 557 | 445 | 438 | 423 |
| Dry (16%) | 780 | 309 | 320 | 339 | 320 | 345 | 859 | 727 | 412 | 355 | 391 | 395 |
| Critical (27%) | 686 | 294 | 266 | 310 | 286 | 271 | 514 | 441 | 254 | 252 | 284 | 309 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -29 | -62 | -40 | 188 | 1,545 | -22 | 0 | -264 | -183 | -119 | -18 | 28 |
| 20% | 7 | -8 | -29 | -2 | -102 | -70 | 48 | -37 | -269 | -70 | -7 | -14 |
| 30% | -7 | -1 | -4 | -4 | -20 | 532 | 8 | -94 | -421 | -23 | -4 | -11 |
| 40% | 7 | -2 | -1 | 2 | -11 | -18 | -56 | -27 | -438 | -16 | 0 | -3 |
| 50% | 23 | -1 | -1 | -1 | -28 | -5 | 41 | 5 | -103 | -17 | -10 | -2 |
| 60% | -5 | 0 | 0 | 0 | -38 | -2 | 40 | -28 | -103 | -7 | -14 | -27 |
| 70% | -6 | 0 | 0 | -4 | -22 | -2 | -39 | -124 | -66 | -65 | -34 | -7 |
| 80% | -4 | 0 | -2 | -1 | -16 | 0 | -149 | -188 | -73 | -61 | -52 | -24 |
| 90% | -17 | 0 | -1 | 0 | -2 | 0 | -118 | -158 | -74 | -80 | -56 | -36 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -11 | -87 | -114 | -17 | -24 | -13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | -5 | -24 | -128 | 4 | 557 | 175 | -61 | -26 | 359 | 118 | -14 | -1 |
| Above Normal (24%) | 46 | -3 | 11 | 31 | 20 | -68 | 347 | 109 | -596 | -88 | -9 | -9 |
| Below Normal (10%) | 22 | 0 | 0 | 264 | 183 | -118 | 156 | 41 | -111 | -4 | -2 | -6 |
| Dry (16%) | -51 | 0 | 9 | -10 | -86 | 0 | -205 | -274 | -119 | -21 | -6 | -4 |
| Critical (27%) | -36 | 0 | 0 | -7 | -33 | -15 | -241 | -255 | -82 | -72 | -64 | -33 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 38-2. Stanislaus River Flow at Mouth, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,122 | 463 | 442 | 576 | 1,083 | 1,969 | 1,886 | 1,989 | 1,535 | 752 | 587 | 646 |
| 20% | 1,029 | 384 | 368 | 427 | 643 | 1,708 | 1,769 | 1,647 | 1,329 | 606 | 488 | 507 |
| 30% | 982 | 348 | 319 | 368 | 469 | 521 | 1,696 | 1,536 | 1,220 | 502 | 462 | 473 |
| 40% | 958 | 337 | 304 | 347 | 399 | 433 | 1,610 | 1,362 | 1,053 | 443 | 445 | 443 |
| 50% | 879 | 319 | 290 | 337 | 368 | 367 | 1,485 | 1,289 | 634 | 415 | 445 | 439 |
| 60% | 826 | 292 | 281 | 326 | 331 | 336 | 936 | 870 | 510 | 384 | 416 | 428 |
| 70% | 772 | 267 | 262 | 312 | 279 | 314 | 806 | 755 | 406 | 374 | 395 | 389 |
| 80% | 755 | 260 | 241 | 295 | 253 | 241 | 693 | 647 | 361 | 343 | 371 | 360 |
| 90% | 676 | 248 | 224 | 273 | 230 | 207 | 579 | 577 | 317 | 311 | 331 | 318 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 903 | 398 | 449 | 630 | 717 | 902 | 1,279 | 1,207 | 883 | 547 | 506 | 533 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,120 | 701 | 994 | 1,115 | 1,404 | 2,256 | 1,779 | 1,828 | 1,456 | 977 | 831 | 946 |
| Above Normal (24%) | 918 | 316 | 288 | 777 | 786 | 801 | 1,410 | 1,244 | 1,254 | 534 | 467 | 480 |
| Below Normal (10%) | 950 | 315 | 291 | 430 | 517 | 539 | 1,556 | 1,378 | 668 | 449 | 440 | 429 |
| Dry (16%) | 832 | 309 | 311 | 349 | 405 | 345 | 1,064 | 1,002 | 531 | 377 | 397 | 399 |
| Critical (27%) | 722 | 294 | 266 | 317 | 319 | 286 | 755 | 696 | 336 | 323 | 347 | 342 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,094 | 401 | 403 | 765 | 2,628 | 1,947 | 1,886 | 1,726 | 1,352 | 633 | 569 | 673 |
| 20% | 1,036 | 376 | 338 | 425 | 541 | 1,638 | 1,817 | 1,610 | 1,061 | 536 | 482 | 493 |
| 30% | 975 | 347 | 314 | 364 | 449 | 1,054 | 1,705 | 1,443 | 800 | 479 | 458 | 462 |
| 40% | 966 | 335 | 304 | 350 | 388 | 415 | 1,553 | 1,335 | 615 | 427 | 445 | 441 |
| 50% | 901 | 318 | 288 | 336 | 340 | 362 | 1,525 | 1,294 | 531 | 398 | 435 | 437 |
| 60% | 821 | 292 | 280 | 325 | 293 | 334 | 976 | 841 | 408 | 376 | 402 | 400 |
| 70% | 766 | 267 | 262 | 308 | 257 | 312 | 767 | 631 | 341 | 309 | 360 | 382 |
| 80% | 751 | 260 | 239 | 294 | 237 | 241 | 545 | 459 | 287 | 282 | 318 | 337 |
| 90% | 659 | 248 | 223 | 273 | 227 | 207 | 460 | 419 | 243 | 231 | 274 | 282 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 898 | 392 | 424 | 661 | 846 | 911 | 1,268 | 1,120 | 769 | 530 | 482 | 520 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,115 | 677 | 866 | 1,120 | 1,961 | 2,431 | 1,718 | 1,802 | 1,816 | 1,095 | 817 | 945 |
| Above Normal (24%) | 964 | 313 | 299 | 808 | 806 | 733 | 1,758 | 1,353 | 658 | 446 | 457 | 471 |
| Below Normal (10%) | 972 | 315 | 291 | 694 | 700 | 421 | 1,712 | 1,419 | 557 | 445 | 438 | 423 |
| Dry (16%) | 780 | 309 | 320 | 339 | 320 | 345 | 859 | 727 | 412 | 355 | 391 | 395 |
| Critical (27%) | 686 | 294 | 266 | 310 | 286 | 271 | 514 | 441 | 254 | 252 | 284 | 309 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -29 | -62 | -40 | 188 | 1,545 | -22 | 0 | -264 | -183 | -119 | -18 | 28 |
| 20% | 7 | -8 | -29 | -2 | -102 | -70 | 48 | -37 | -268 | -70 | -7 | -14 |
| 30% | -7 | -1 | -4 | -4 | -20 | 532 | 8 | -94 | -420 | -23 | -4 | -11 |
| 40% | 7 | -2 | -1 | 2 | -11 | -18 | -56 | -27 | -438 | -16 | 0 | -3 |
| 50% | 23 | -1 | -1 | -1 | -28 | -5 | 41 | 5 | -103 | -17 | -10 | -2 |
| 60% | -5 | 0 | 0 | 0 | -38 | -2 | 40 | -29 | -103 | -7 | -14 | -27 |
| 70% | -6 | 0 | 0 | -4 | -22 | -2 | -39 | -124 | -66 | -66 | -34 | -7 |
| 80% | -4 | 0 | -2 | -1 | -16 | 0 | -149 | -188 | -74 | -61 | -52 | -24 |
| 90% | -17 | 0 | -1 | 0 | -2 | 0 | -119 | -158 | -74 | -80 | -56 | -36 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -12 | -87 | -114 | -17 | -24 | -13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | -5 | -24 | -128 | 4 | 557 | 175 | -61 | -26 | 359 | 118 | -14 | -1 |
| Above Normal (24%) | 46 | -3 | 11 | 31 | 20 | -68 | 347 | 109 | -596 | -88 | -9 | -9 |
| Below Normal (10%) | 22 | 0 | 0 | 264 | 183 | -118 | 156 | 41 | -111 | -4 | -2 | -6 |
| Dry (16%) | -51 | 0 | 9 | -10 | -86 | 0 | -205 | -275 | -119 | -21 | -6 | -4 |
| Critical (27%) | -36 | 0 | 0 | -7 | -33 | -15 | -242 | -255 | -82 | -72 | -64 | -33 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 38-3. Stanislaus River Flow at Mouth, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,122 | 463 | 442 | 576 | 1,083 | 1,969 | 1,886 | 1,989 | 1,535 | 752 | 587 | 646 |
| 20% | 1,029 | 384 | 368 | 427 | 643 | 1,708 | 1,769 | 1,647 | 1,330 | 606 | 488 | 507 |
| 30% | 982 | 348 | 319 | 368 | 469 | 521 | 1,696 | 1,536 | 1,221 | 502 | 462 | 473 |
| 40% | 958 | 337 | 304 | 347 | 399 | 433 | 1,610 | 1,362 | 1,053 | 443 | 445 | 443 |
| 50% | 879 | 319 | 290 | 337 | 368 | 367 | 1,485 | 1,289 | 634 | 415 | 445 | 439 |
| 60% | 826 | 292 | 281 | 326 | 331 | 336 | 936 | 869 | 510 | 384 | 416 | 428 |
| 70% | 772 | 267 | 262 | 312 | 279 | 314 | 806 | 755 | 406 | 374 | 395 | 389 |
| 80% | 755 | 260 | 241 | 295 | 253 | 241 | 693 | 647 | 361 | 343 | 371 | 360 |
| 90% | 676 | 248 | 224 | 273 | 230 | 207 | 579 | 577 | 317 | 311 | 331 | 318 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 903 | 398 | 449 | 630 | 717 | 902 | 1,279 | 1,207 | 883 | 547 | 505 | 533 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,120 | 701 | 994 | 1,115 | 1,404 | 2,256 | 1,779 | 1,828 | 1,456 | 977 | 831 | 946 |
| Above Normal (24%) | 918 | 316 | 288 | 777 | 786 | 801 | 1,410 | 1,244 | 1,254 | 534 | 467 | 480 |
| Below Normal (10%) | 950 | 315 | 291 | 430 | 517 | 539 | 1,556 | 1,378 | 668 | 449 | 440 | 429 |
| Dry (16%) | 832 | 309 | 311 | 349 | 405 | 345 | 1,064 | 1,002 | 531 | 377 | 397 | 399 |
| Critical (27%) | 722 | 294 | 266 | 317 | 319 | 286 | 755 | 696 | 336 | 323 | 347 | 342 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,122 | 463 | 442 | 576 | 1,083 | 1,969 | 1,886 | 1,989 | 1,535 | 752 | 587 | 646 |
| 20% | 1,029 | 384 | 368 | 427 | 643 | 1,708 | 1,769 | 1,647 | 1,329 | 606 | 488 | 507 |
| 30% | 982 | 348 | 319 | 368 | 469 | 521 | 1,696 | 1,536 | 1,220 | 502 | 462 | 473 |
| 40% | 958 | 337 | 304 | 347 | 399 | 433 | 1,610 | 1,362 | 1,053 | 443 | 445 | 443 |
| 50% | 879 | 319 | 290 | 337 | 368 | 367 | 1,485 | 1,289 | 634 | 415 | 445 | 439 |
| 60% | 826 | 292 | 281 | 326 | 331 | 336 | 936 | 870 | 510 | 384 | 416 | 428 |
| 70% | 772 | 267 | 262 | 312 | 279 | 314 | 806 | 755 | 406 | 374 | 395 | 389 |
| 80% | 755 | 260 | 241 | 295 | 253 | 241 | 693 | 647 | 361 | 343 | 371 | 360 |
| 90% | 676 | 248 | 224 | 273 | 230 | 207 | 579 | 577 | 317 | 311 | 331 | 318 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 903 | 398 | 449 | 630 | 717 | 902 | 1,279 | 1,207 | 883 | 547 | 506 | 533 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,120 | 701 | 994 | 1,115 | 1,404 | 2,256 | 1,779 | 1,828 | 1,456 | 977 | 831 | 946 |
| Above Normal (24%) | 918 | 316 | 288 | 777 | 786 | 801 | 1,410 | 1,244 | 1,254 | 534 | 467 | 480 |
| Below Normal (10%) | 950 | 315 | 291 | 430 | 517 | 539 | 1,556 | 1,378 | 668 | 449 | 440 | 429 |
| Dry (16%) | 832 | 309 | 311 | 349 | 405 | 345 | 1,064 | 1,002 | 531 | 377 | 397 | 399 |
| Critical (27%) | 722 | 294 | 266 | 317 | 319 | 286 | 755 | 696 | 336 | 323 | 347 | 342 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

## Table 38-4. Stanislaus River Flow at Mouth, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,094 | 401 | 403 | 765 | 2,628 | 1,947 | 1,886 | 1,726 | 1,352 | 633 | 569 | 673 |
| 20% | 1,036 | 376 | 338 | 425 | 541 | 1,638 | 1,817 | 1,610 | 1,061 | 536 | 482 | 493 |
| 30% | 975 | 347 | 314 | 364 | 449 | 1,054 | 1,705 | 1,443 | 800 | 479 | 458 | 462 |
| 40% | 966 | 335 | 304 | 350 | 388 | 415 | 1,553 | 1,335 | 615 | 427 | 445 | 441 |
| 50% | 901 | 318 | 288 | 336 | 340 | 362 | 1,525 | 1,294 | 531 | 398 | 435 | 437 |
| 60% | 821 | 292 | 280 | 325 | 293 | 334 | 976 | 841 | 408 | 376 | 402 | 400 |
| 70% | 766 | 267 | 262 | 308 | 257 | 312 | 767 | 631 | 341 | 309 | 360 | 382 |
| 80% | 751 | 260 | 239 | 294 | 237 | 241 | 545 | 459 | 287 | 282 | 318 | 337 |
| 90% | 659 | 248 | 223 | 273 | 227 | 207 | 460 | 419 | 243 | 231 | 274 | 282 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 898 | 392 | 424 | 661 | 846 | 911 | 1,268 | 1,120 | 769 | 530 | 482 | 520 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,115 | 677 | 866 | 1,120 | 1,961 | 2,431 | 1,718 | 1,802 | 1,816 | 1,095 | 817 | 945 |
| Above Normal (24%) | 964 | 313 | 299 | 808 | 806 | 733 | 1,758 | 1,353 | 658 | 446 | 457 | 471 |
| Below Normal (10%) | 972 | 315 | 291 | 694 | 700 | 421 | 1,712 | 1,419 | 557 | 445 | 438 | 423 |
| Dry (16%) | 780 | 309 | 320 | 339 | 320 | 345 | 859 | 727 | 412 | 355 | 391 | 395 |
| Critical (27%) | 686 | 294 | 266 | 310 | 286 | 271 | 514 | 441 | 254 | 252 | 284 | 309 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,094 | 401 | 403 | 765 | 2,628 | 1,947 | 1,886 | 1,726 | 1,352 | 633 | 569 | 673 |
| 20% | 1,036 | 376 | 338 | 425 | 541 | 1,638 | 1,817 | 1,610 | 1,061 | 536 | 482 | 493 |
| 30% | 975 | 347 | 314 | 364 | 449 | 1,054 | 1,705 | 1,443 | 800 | 479 | 458 | 462 |
| 40% | 966 | 335 | 304 | 350 | 388 | 415 | 1,553 | 1,335 | 615 | 427 | 445 | 441 |
| 50% | 901 | 318 | 288 | 336 | 340 | 362 | 1,525 | 1,294 | 531 | 398 | 435 | 437 |
| 60% | 821 | 292 | 280 | 325 | 293 | 334 | 976 | 841 | 408 | 376 | 402 | 400 |
| 70% | 766 | 267 | 262 | 308 | 257 | 312 | 767 | 631 | 341 | 309 | 360 | 382 |
| 80% | 751 | 260 | 239 | 294 | 237 | 241 | 545 | 459 | 287 | 282 | 318 | 337 |
| 90% | 659 | 248 | 223 | 273 | 227 | 207 | 460 | 419 | 243 | 231 | 274 | 282 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 898 | 392 | 424 | 661 | 846 | 911 | 1,268 | 1,120 | 769 | 530 | 482 | 520 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 1,115 | 677 | 866 | 1,120 | 1,961 | 2,431 | 1,718 | 1,802 | 1,816 | 1,095 | 817 | 945 |
| Above Normal (24%) | 964 | 313 | 299 | 808 | 806 | 733 | 1,758 | 1,353 | 658 | 446 | 457 | 471 |
| Below Normal (10%) | 972 | 315 | 291 | 694 | 700 | 421 | 1,712 | 1,419 | 557 | 445 | 438 | 423 |
| Dry (16%) | 780 | 309 | 320 | 339 | 320 | 345 | 859 | 727 | 412 | 355 | 391 | 395 |
| Critical (27%) | 686 | 294 | 266 | 310 | 286 | 271 | 514 | 441 | 254 | 252 | 284 | 309 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

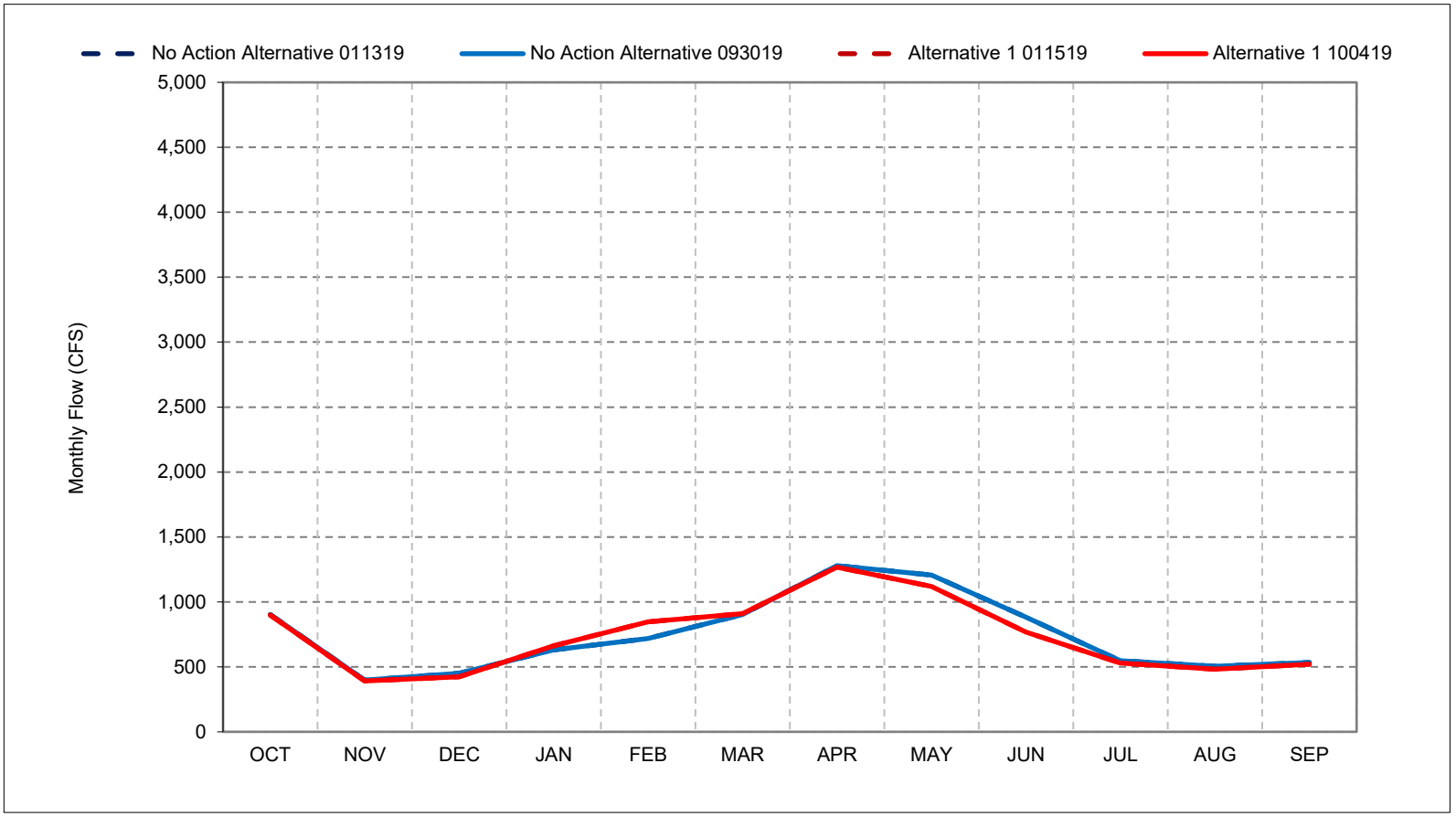
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

f New Melones forecasts are used as the basis of water operations.

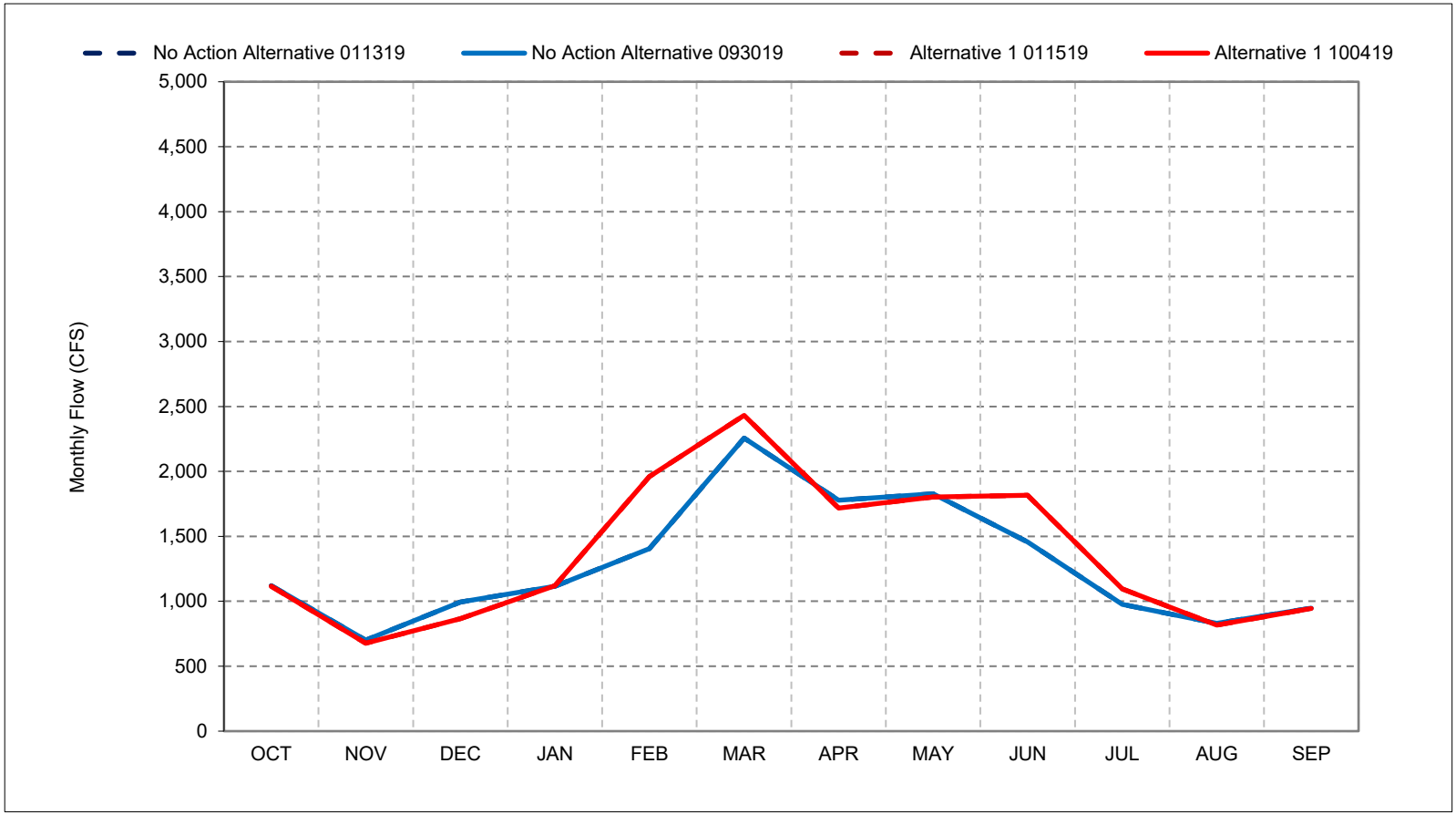
## Figure 38-1. Stanislaus River Flow at Mouth, Long-Term Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

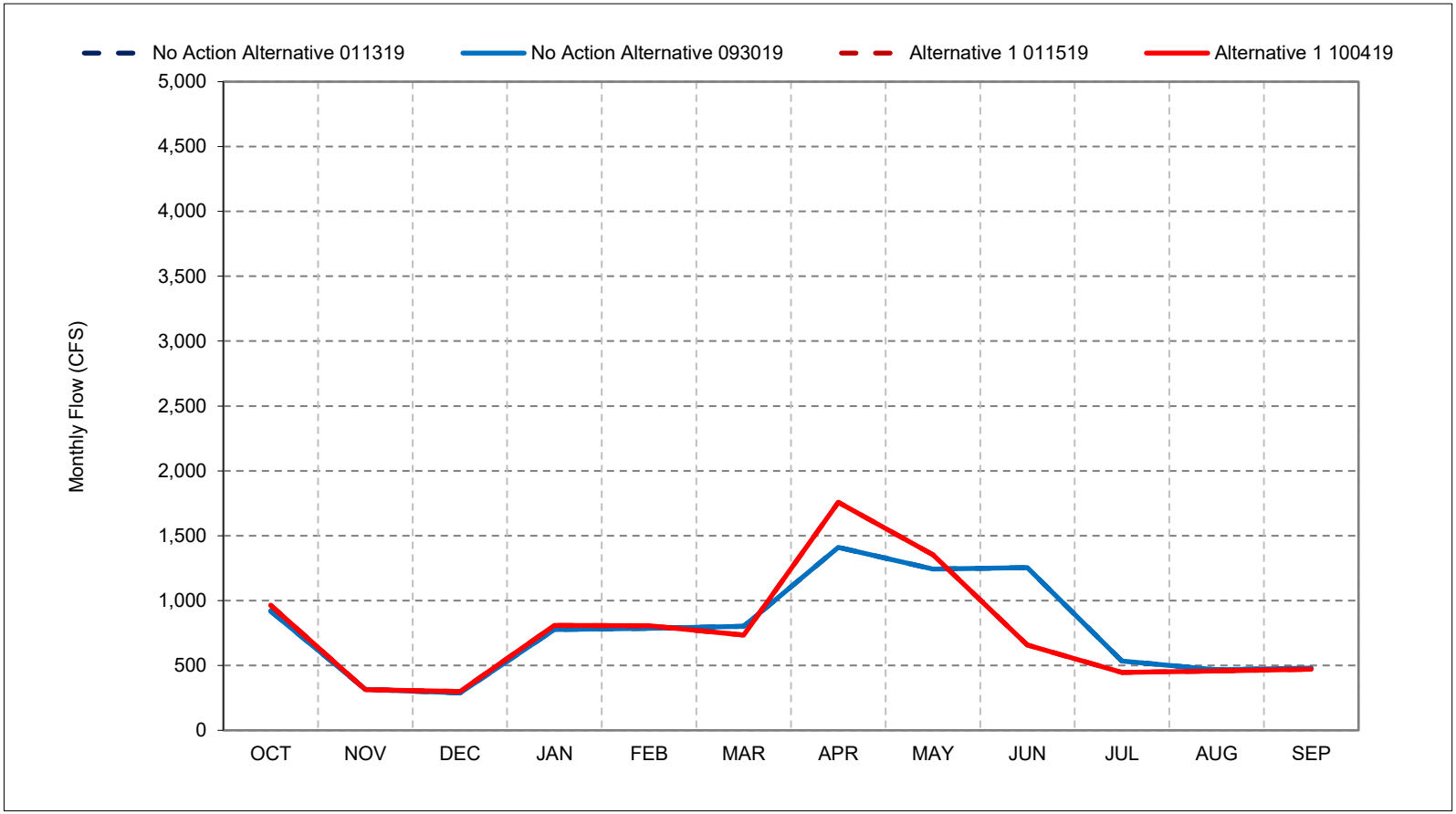
## Figure 38-2. Stanislaus River Flow at Mouth, Wet Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

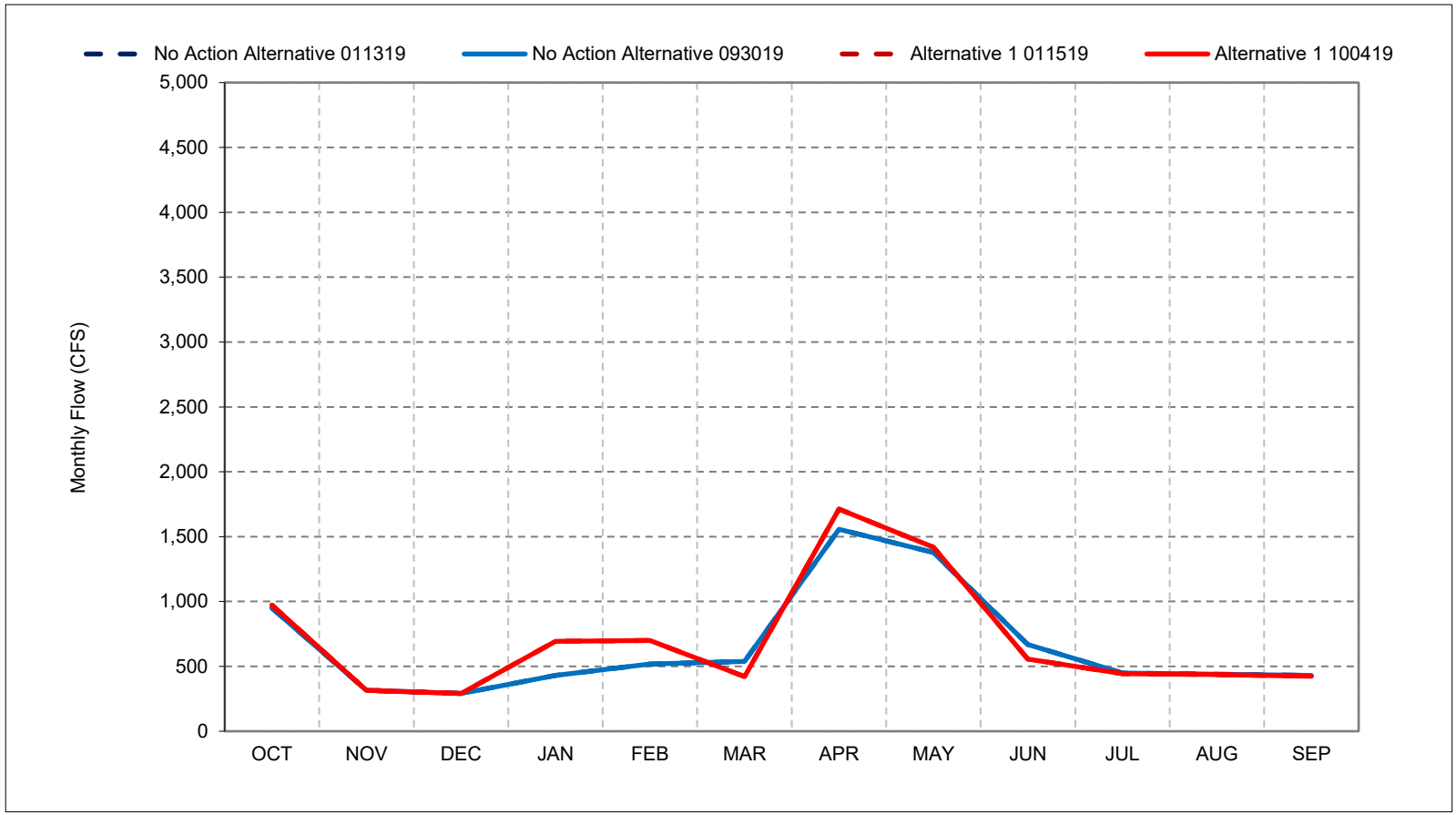
## Figure 38-3. Stanislaus River Flow at Mouth, Above Normal Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

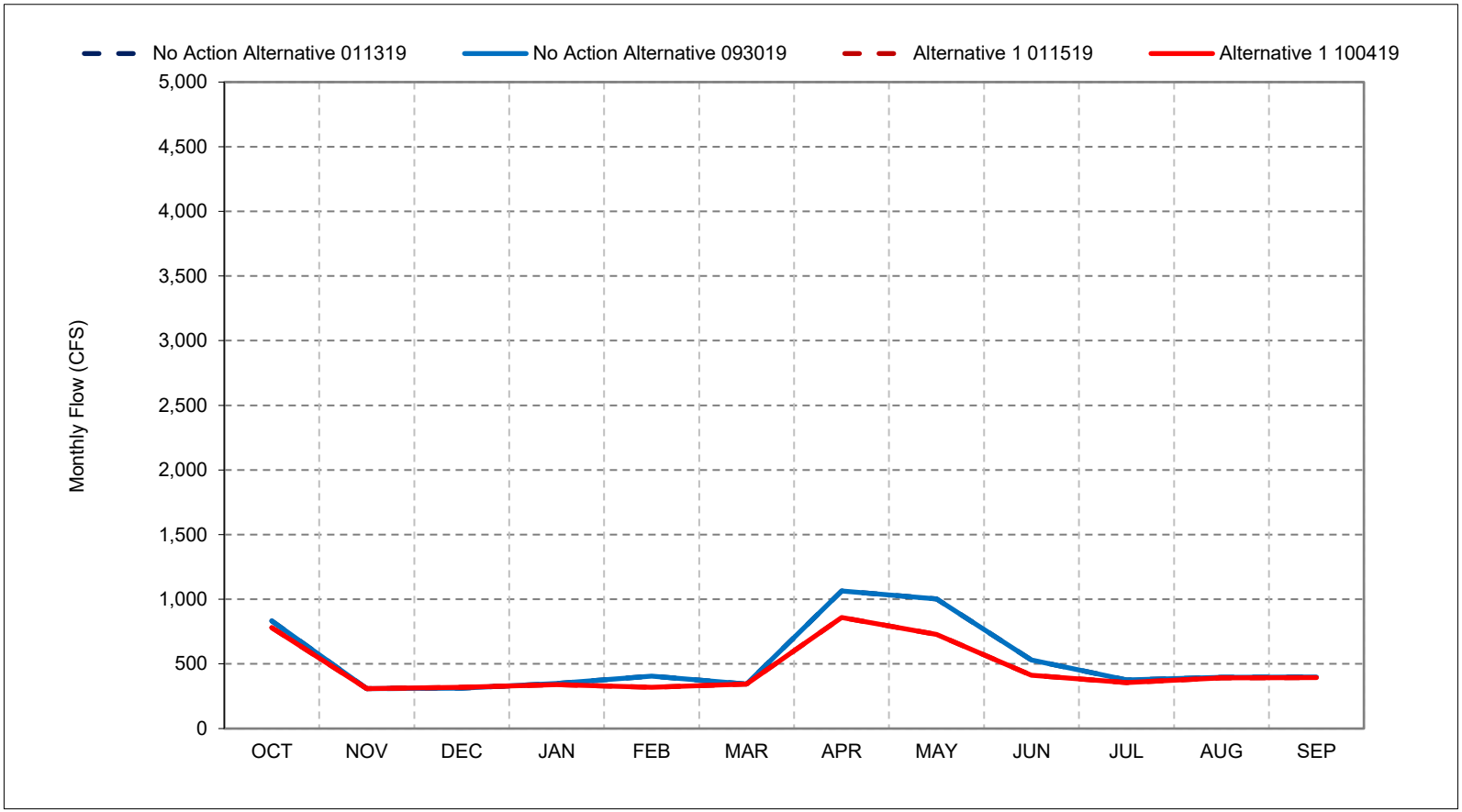
## Figure 38-4. Stanislaus River Flow at Mouth, Below Normal Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

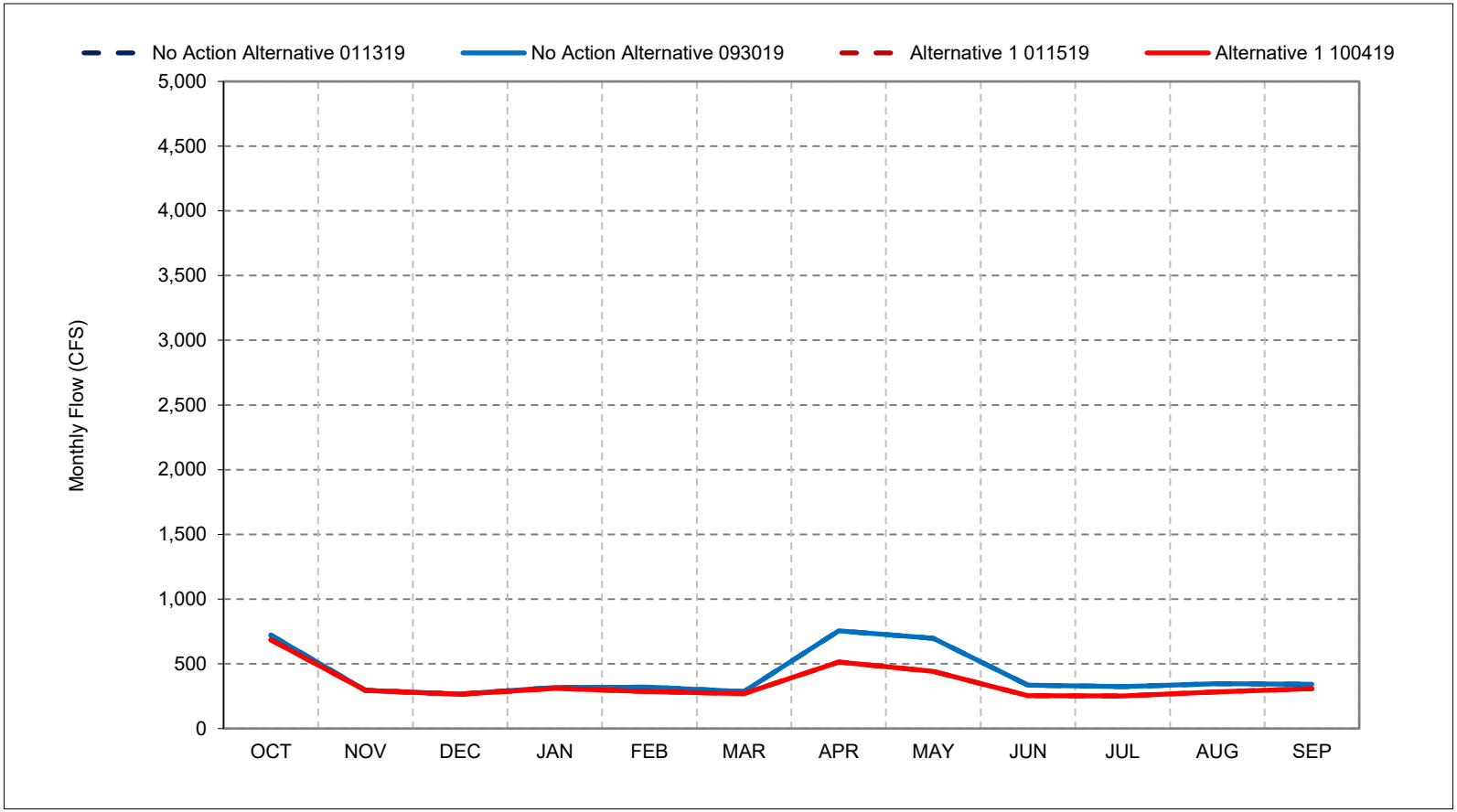
## Figure 38-5. Stanislaus River Flow at Mouth, Dry Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

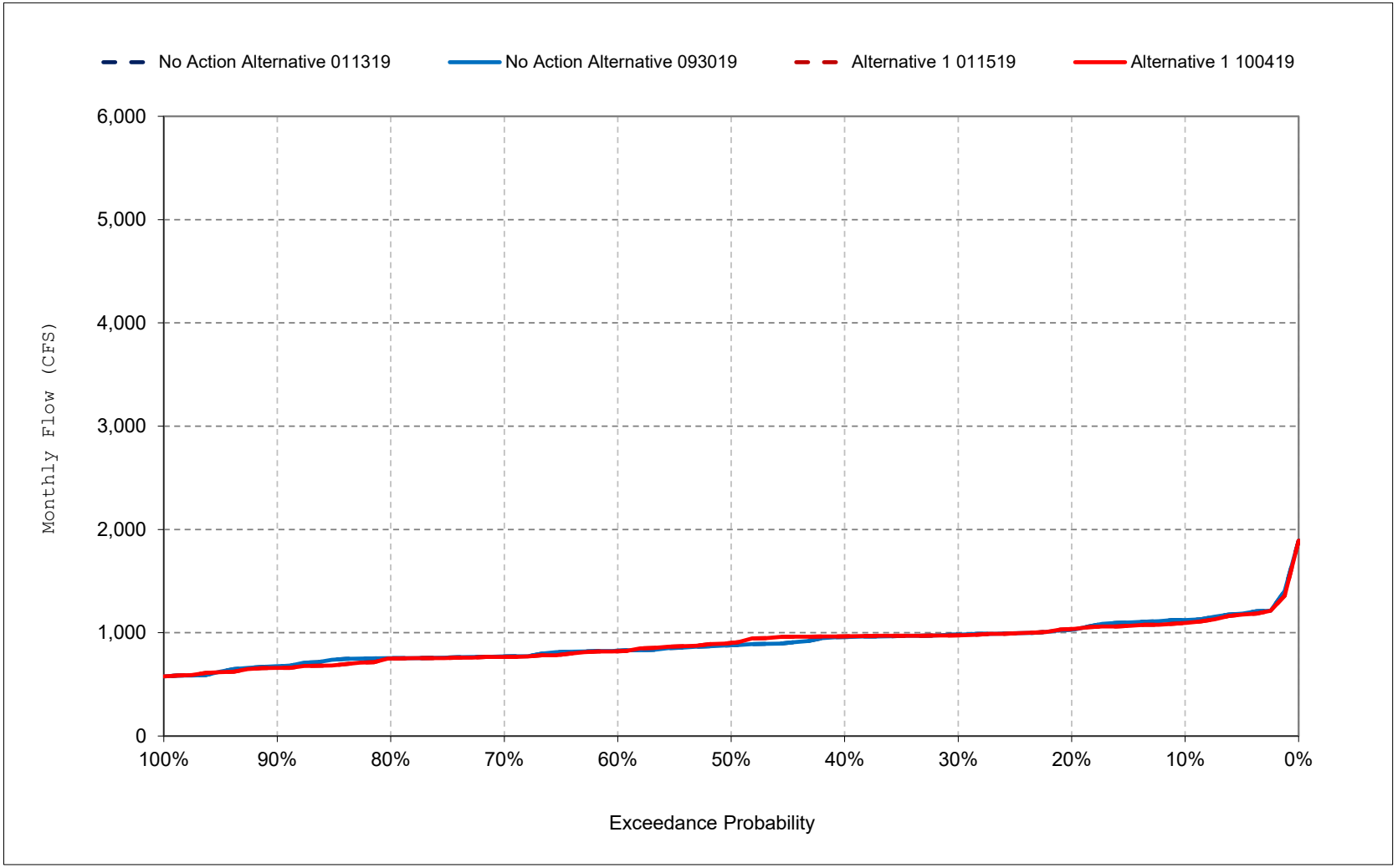
## Figure 38-6. Stanislaus River Flow at Mouth, Critical Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

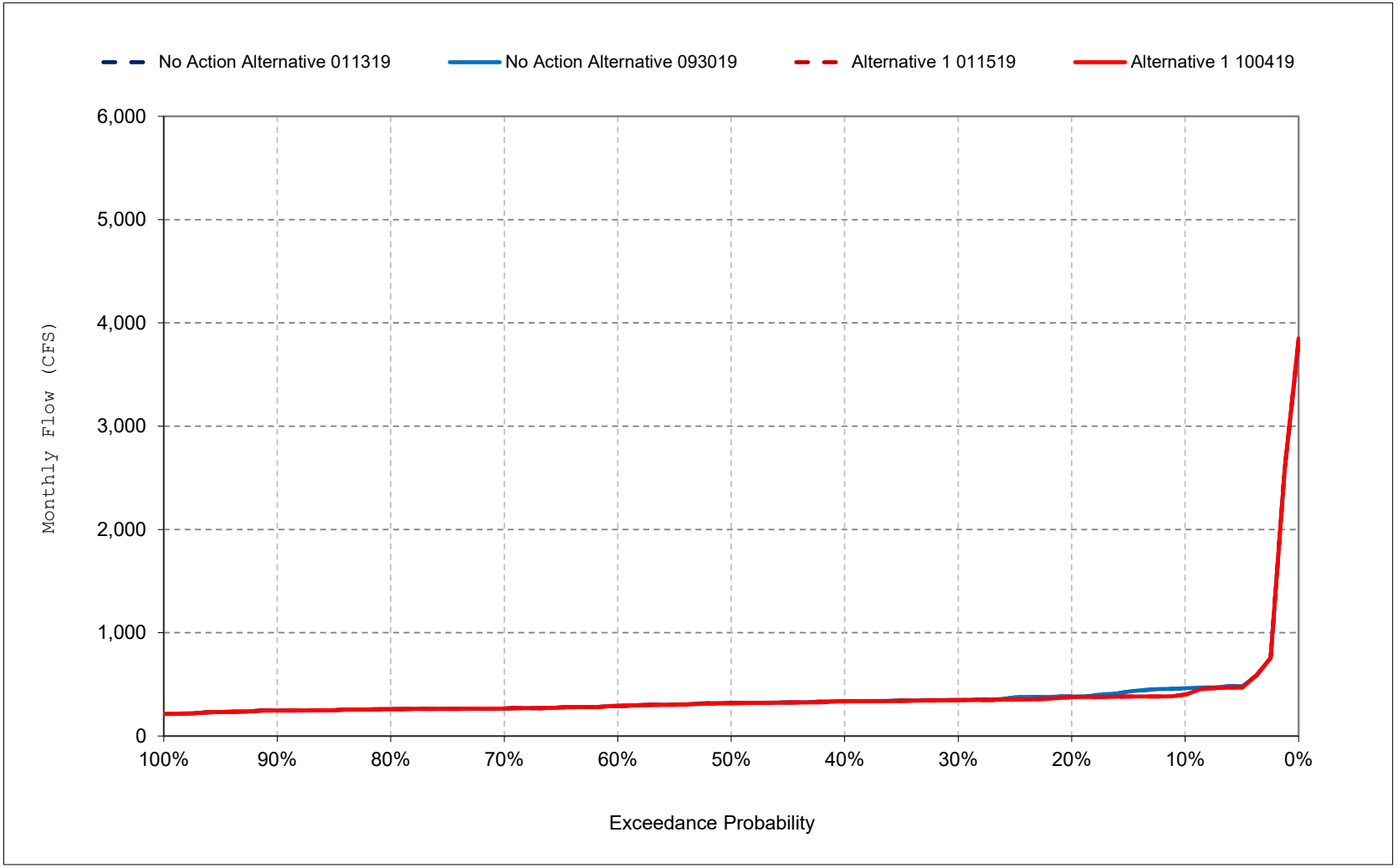
*New Melones forecasts are used as the basis of water operations.

**Figure 38-7. Stanislaus River Flow at Mouth, October**



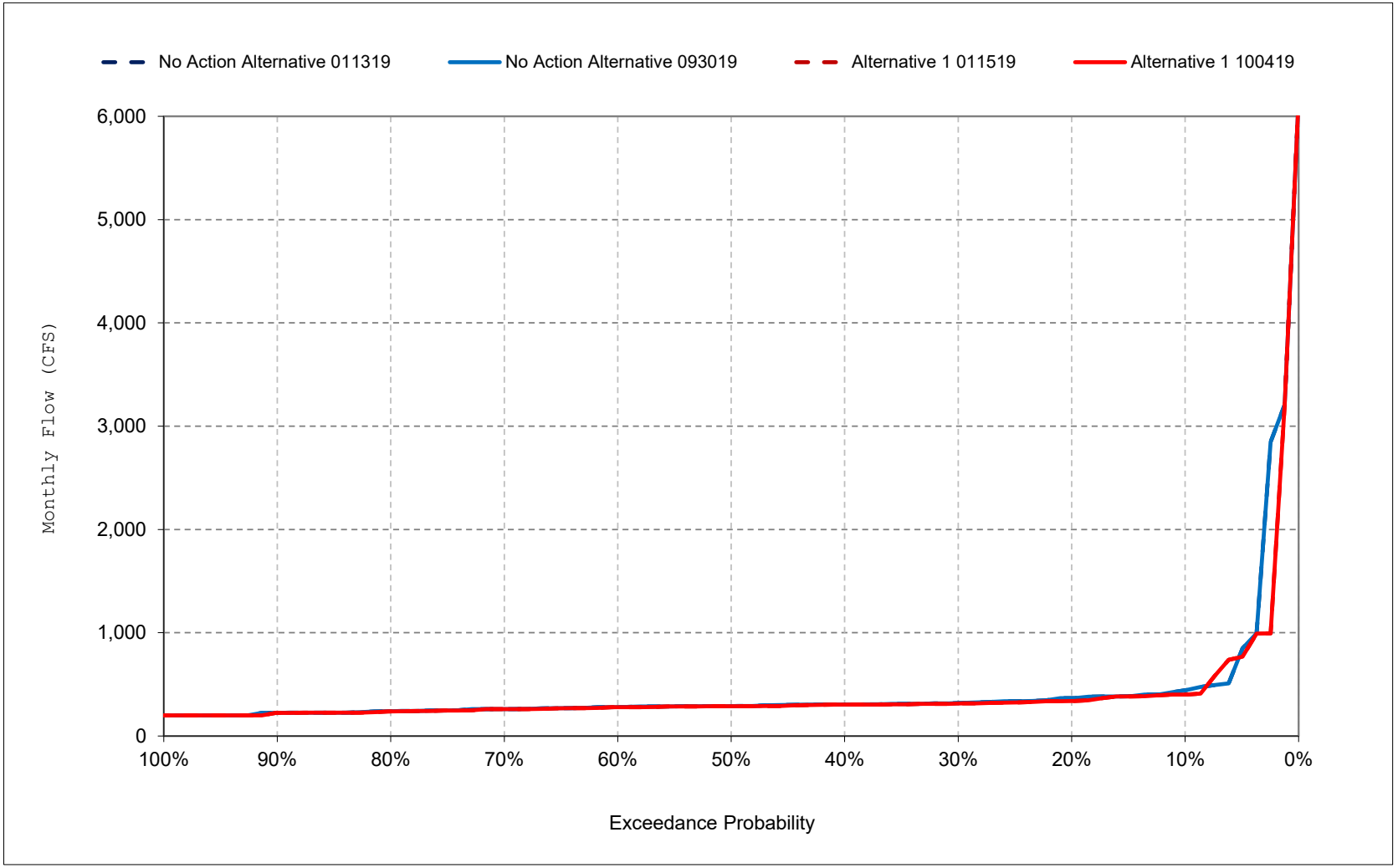

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-8. Stanislaus River Flow at Mouth, November**



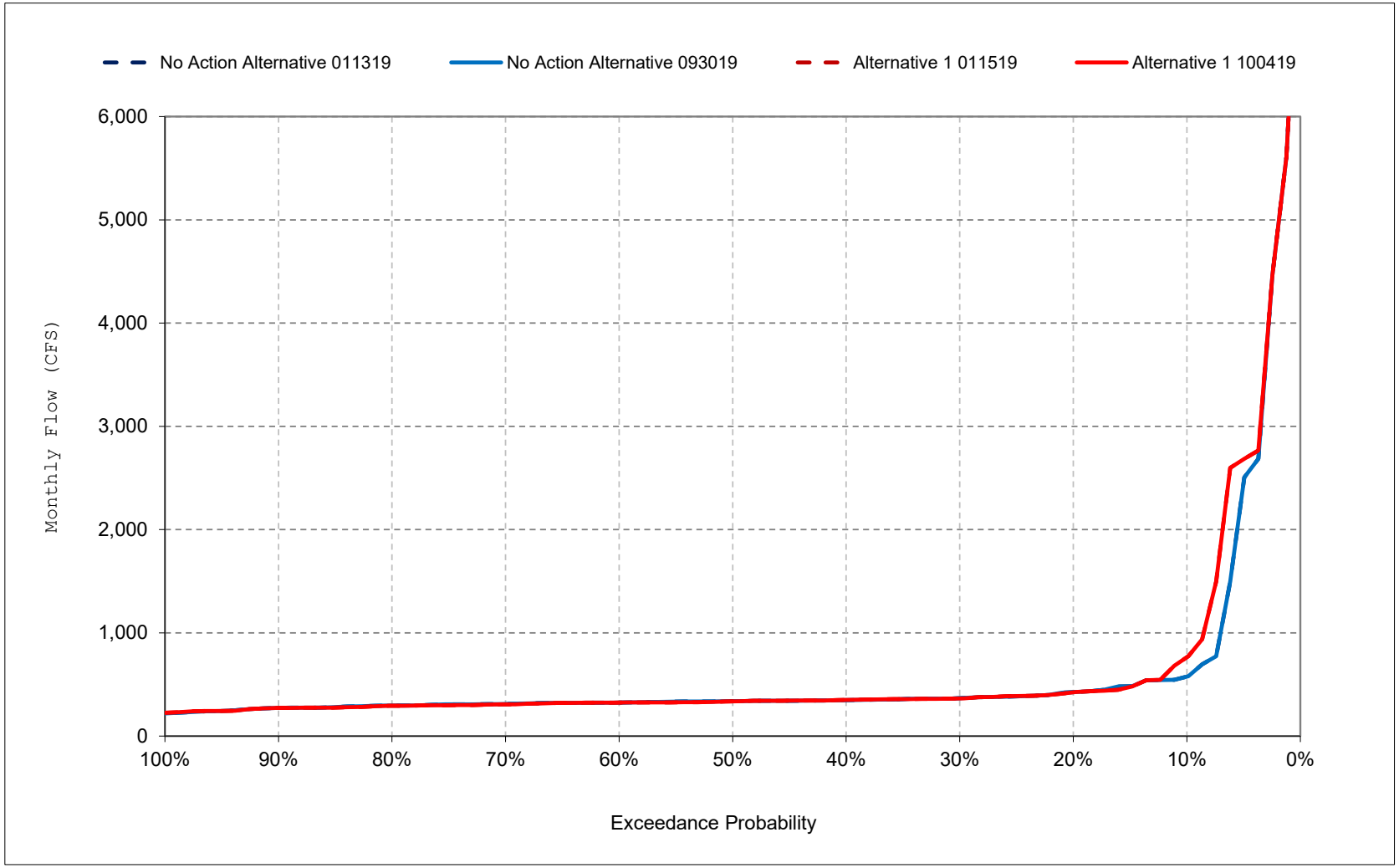

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-9. Stanislaus River Flow at Mouth, December**



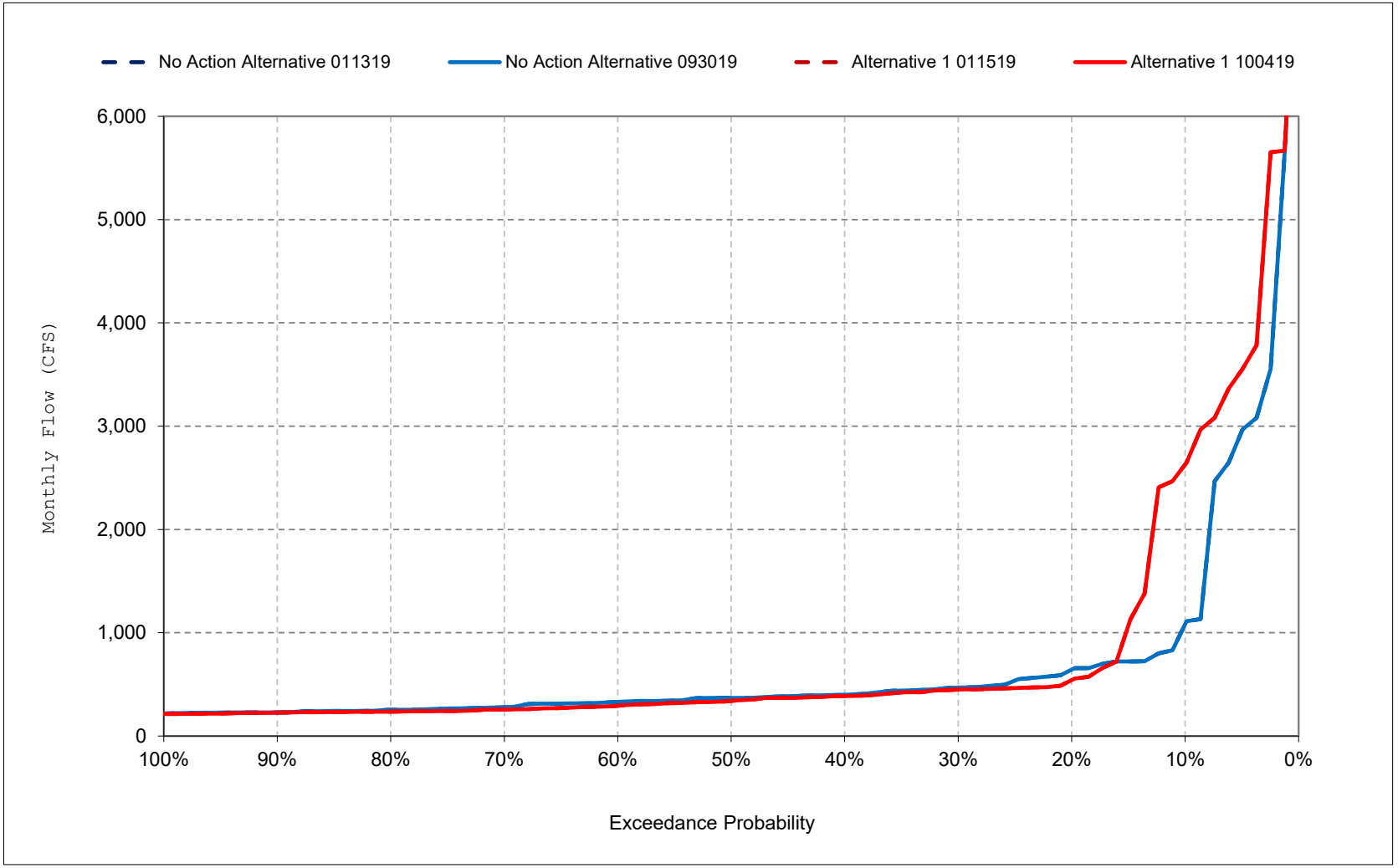

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-10. Stanislaus River Flow at Mouth, January**



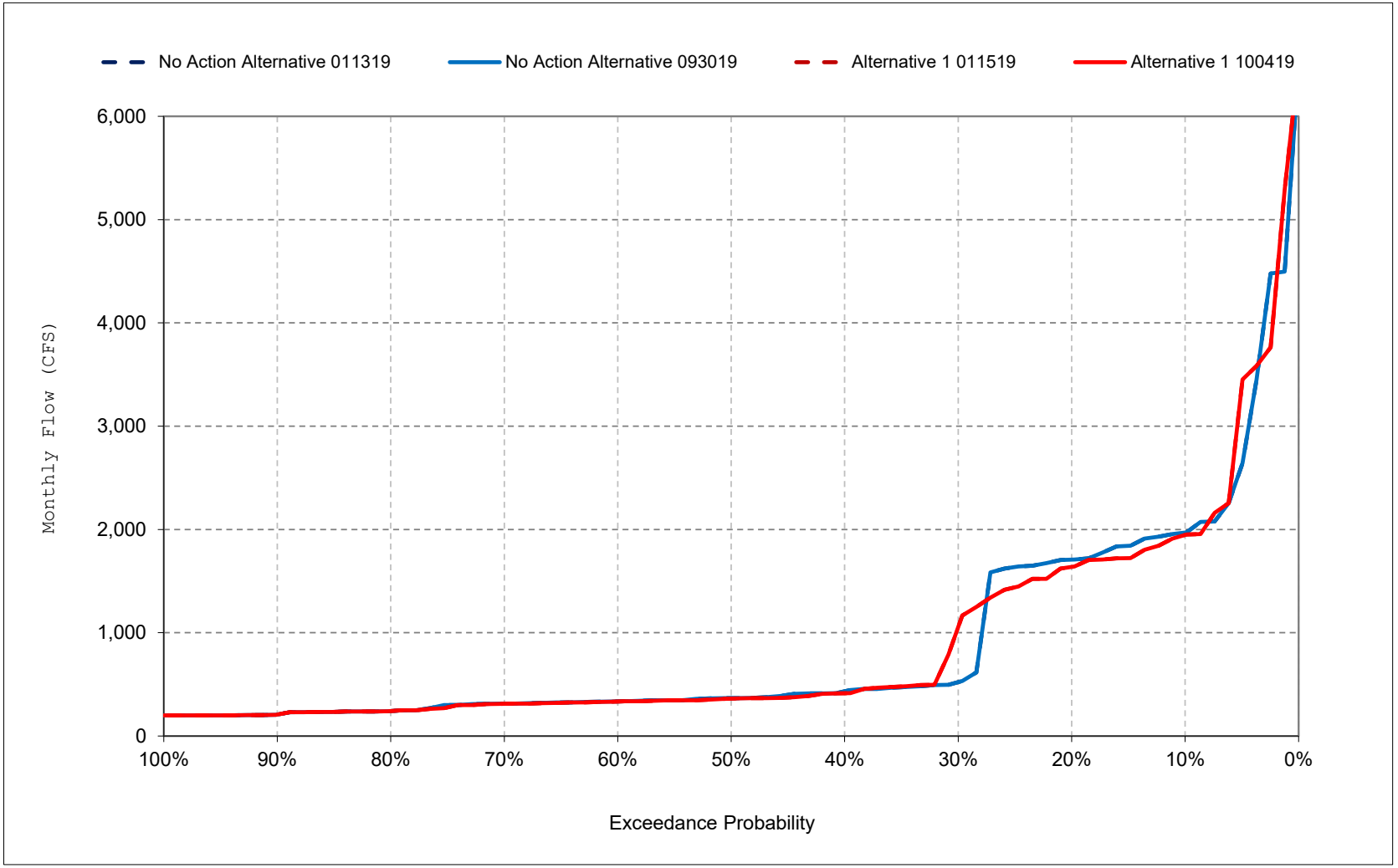

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-11. Stanislaus River Flow at Mouth, February**



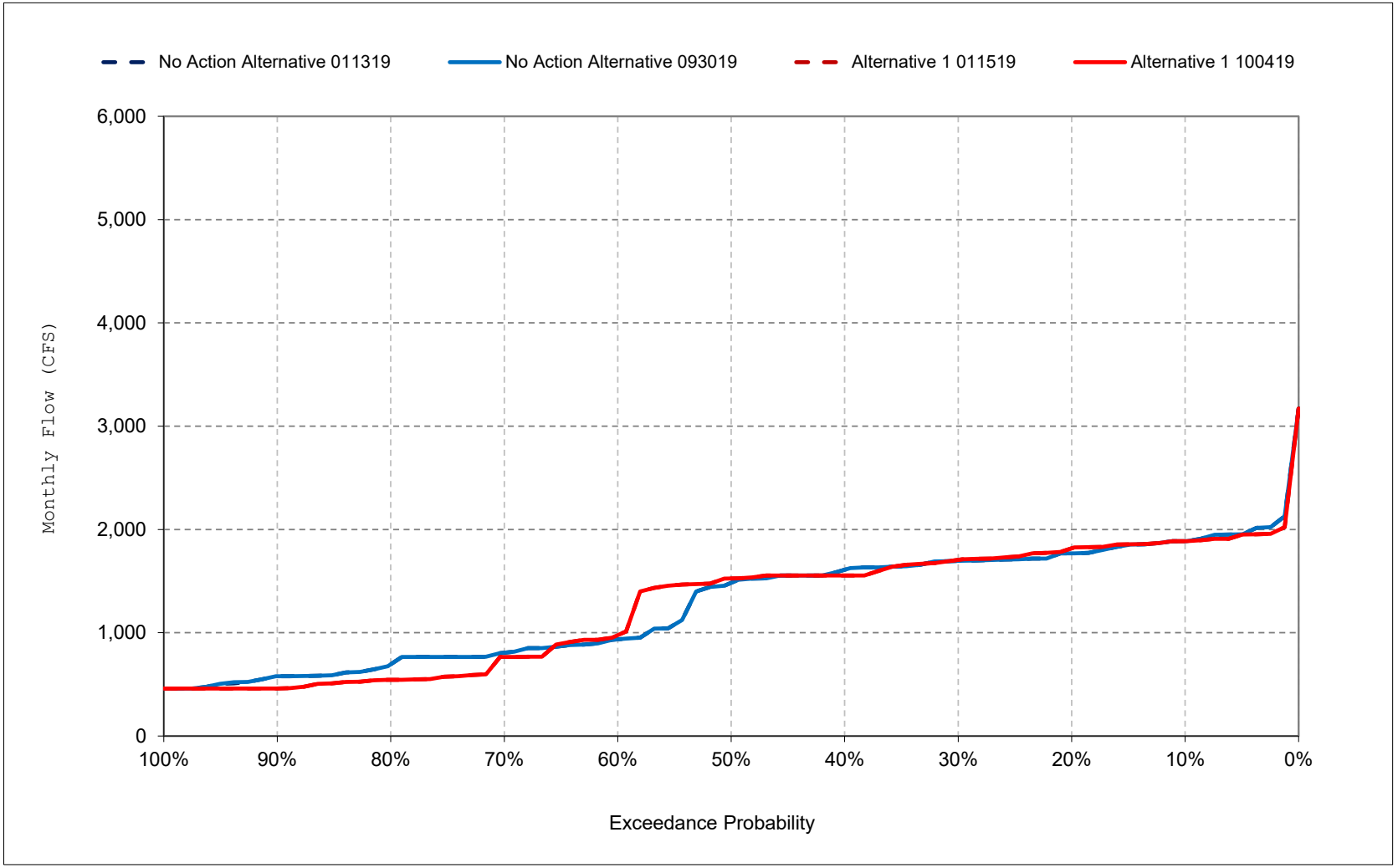

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-12. Stanislaus River Flow at Mouth, March**



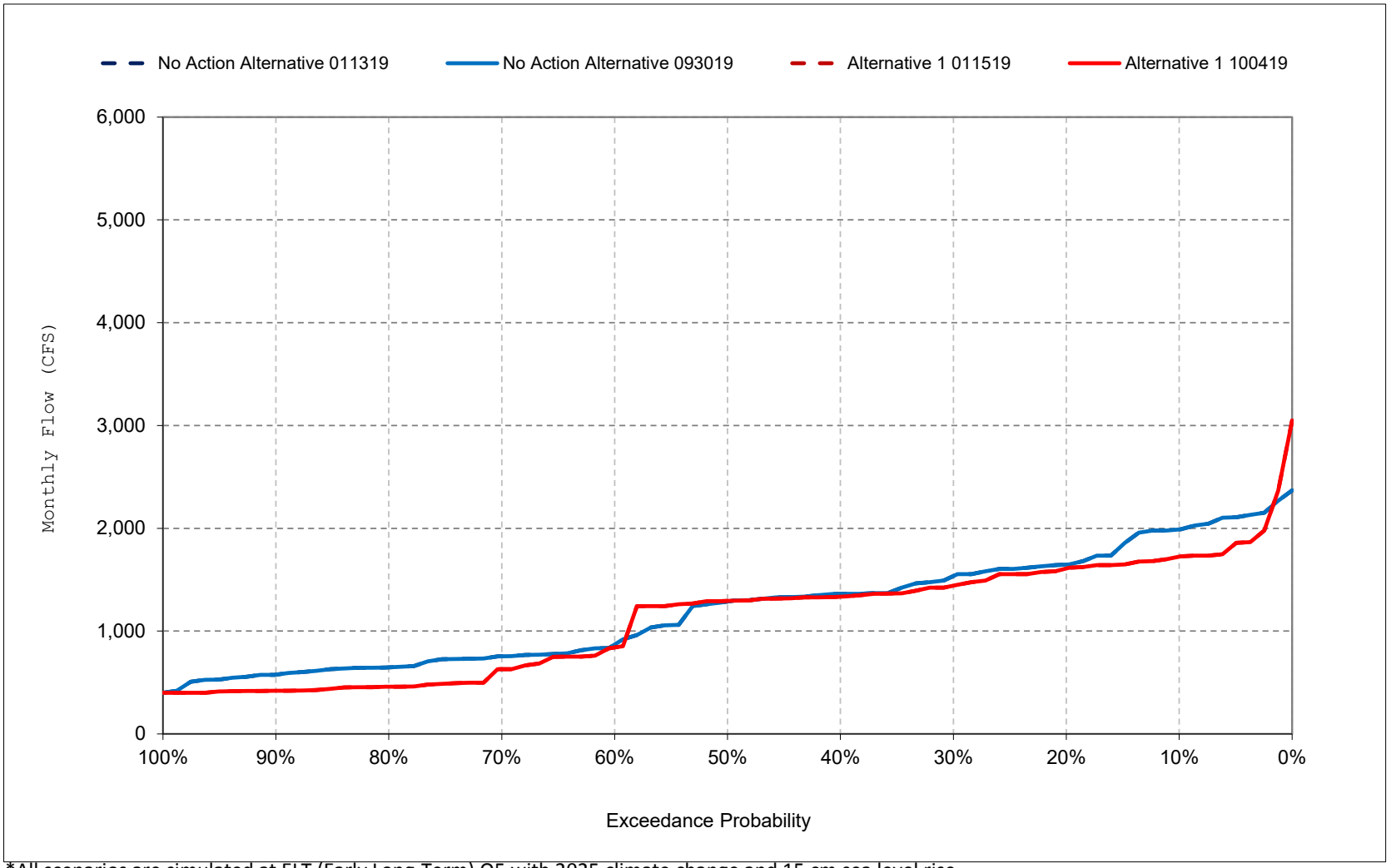

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-13. Stanislaus River Flow at Mouth, April**



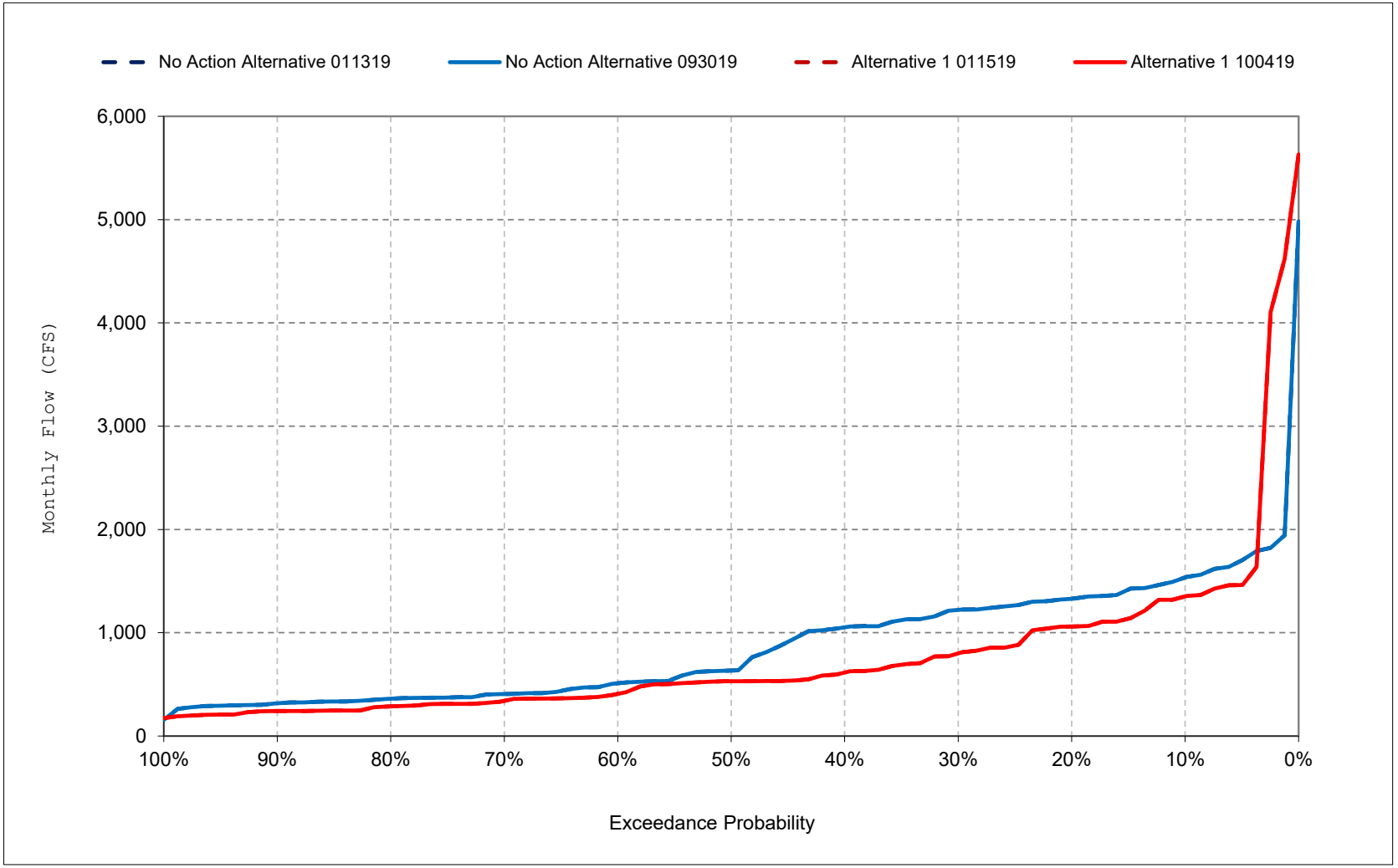

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-14. Stanislaus River Flow at Mouth, May**



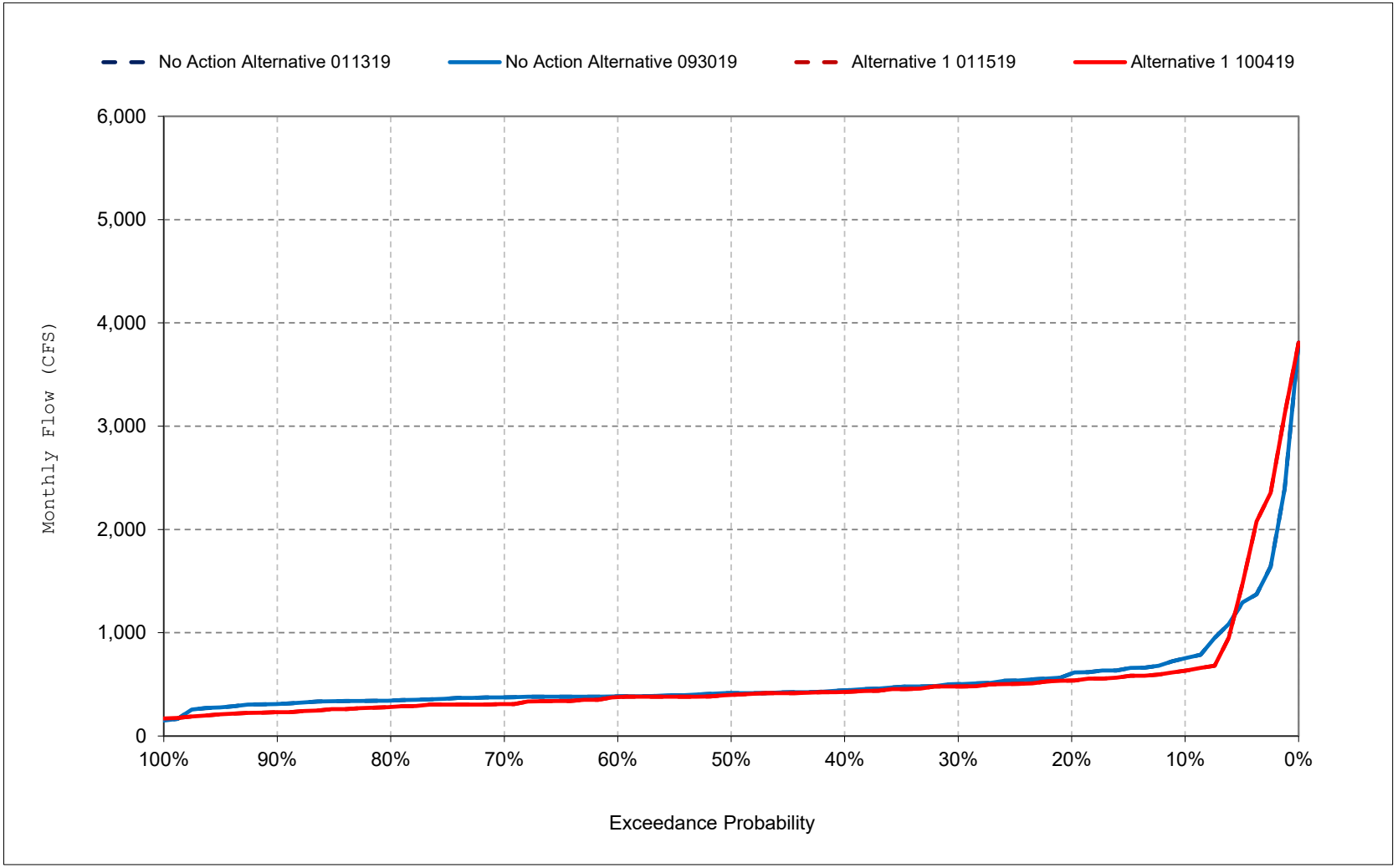

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-15. Stanislaus River Flow at Mouth, June**



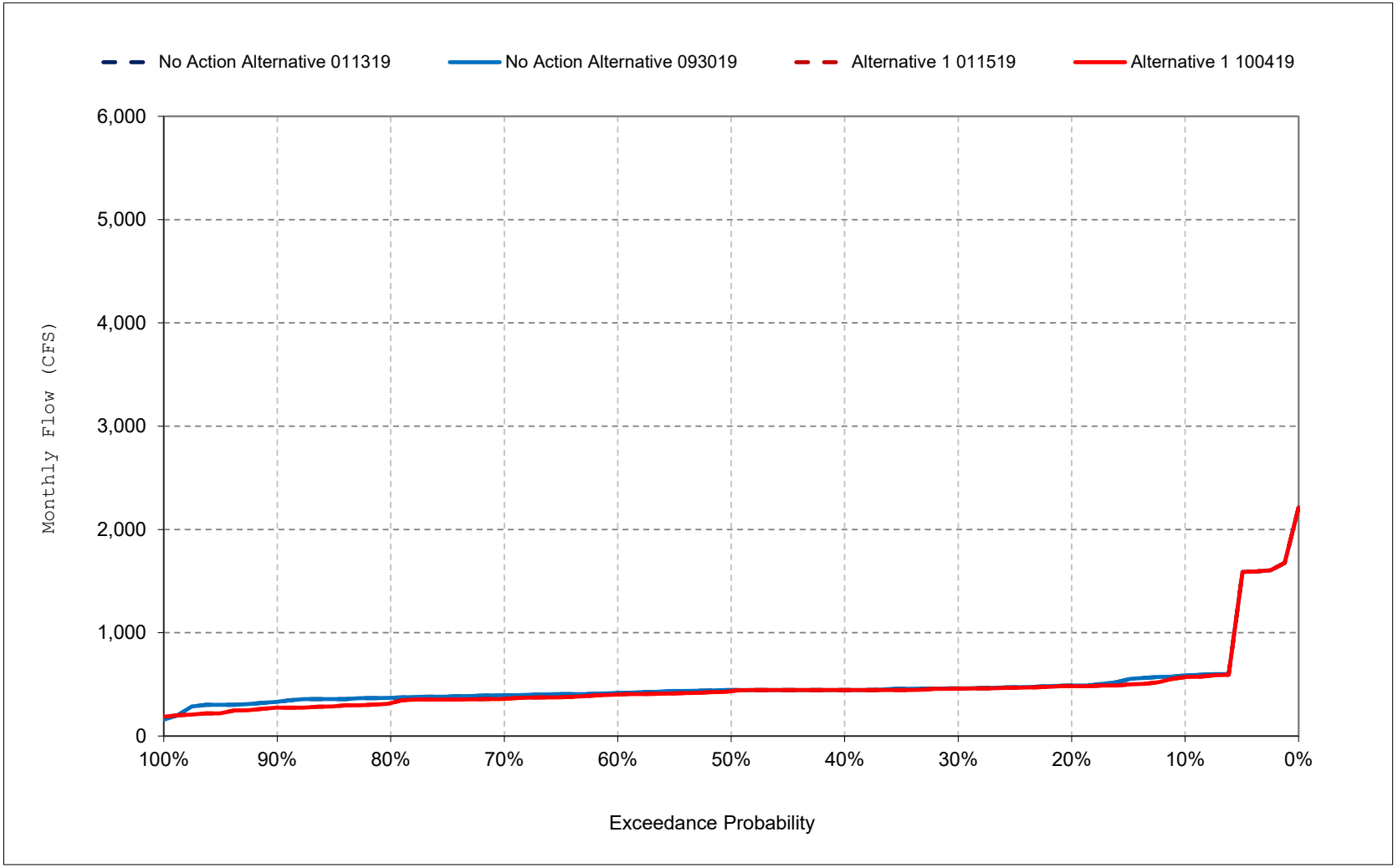

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-16. Stanislaus River Flow at Mouth, July**



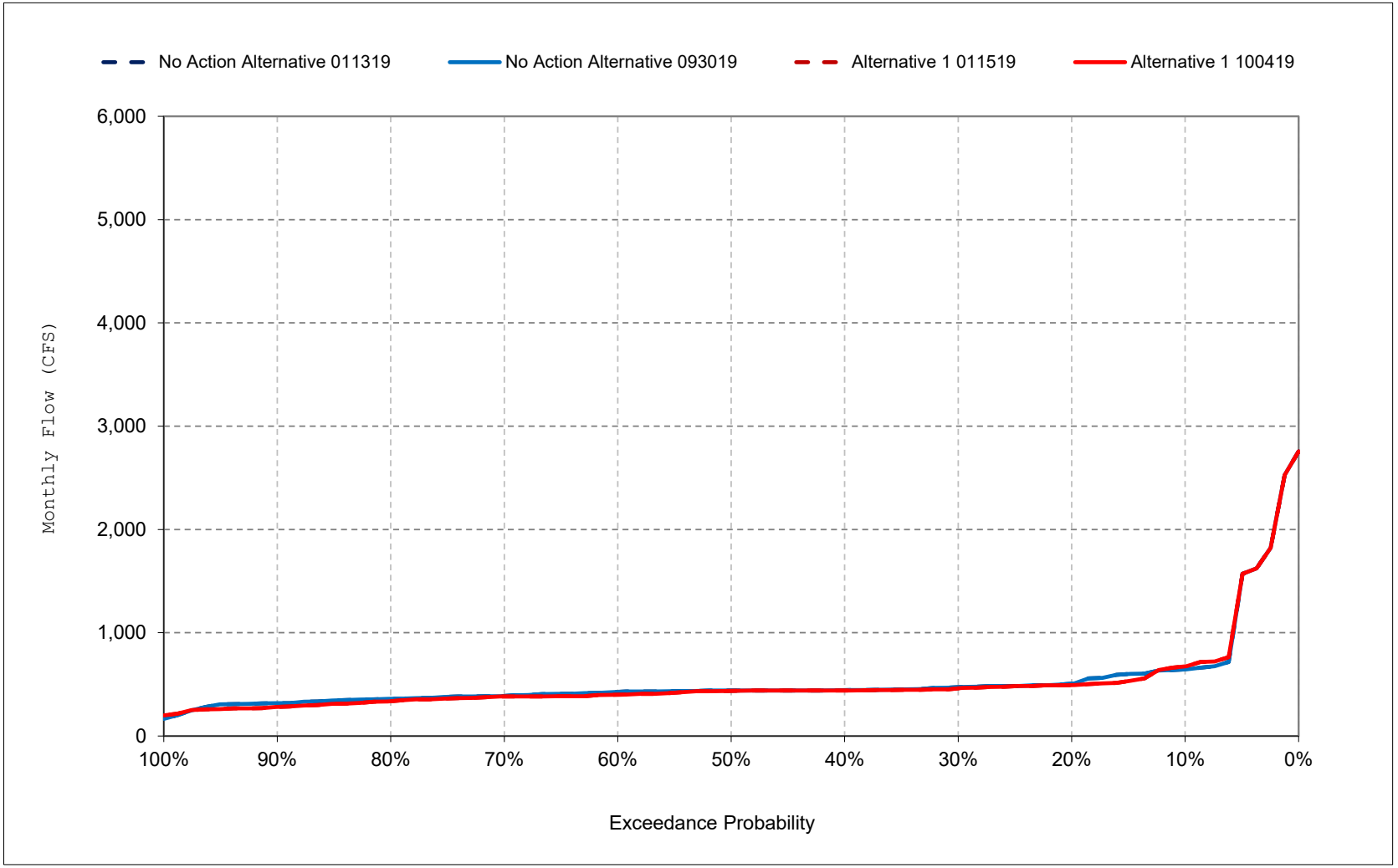

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-17. Stanislaus River Flow at Mouth, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 38-18. Stanislaus River Flow at Mouth, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 39-1. San Joaquin River at Vernalis, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,953 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,178 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,133 | 10,196 | 10,640 | 8,319 | 4,695 | 2,634 | 2,595 | 2,655 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,499 | 8,616 | 5,538 | 3,364 | 1,990 | 1,909 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,244 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,835 | 3,064 | 1,864 | 1,370 | 1,408 | 1,837 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,705 | 1,449 | 1,163 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,099 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,888 | 1,680 | 1,091 | 891 | 1,068 | 1,477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,630 | 1,850 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,440 | 3,630 | 5,116 | 10,106 | 12,569 | 14,033 | 13,210 | 11,444 | 8,798 | 5,275 | 2,791 | 3,062 |
| Above Normal (16%) | 2,750 | 2,461 | 2,591 | 4,383 | 6,149 | 6,703 | 7,697 | 5,516 | 3,484 | 2,020 | 1,768 | 2,215 |
| Below Normal (13%) | 2,558 | 2,191 | 2,461 | 2,701 | 4,599 | 4,249 | 5,598 | 3,700 | 2,030 | 1,494 | 1,579 | 1,998 |
| Dry (24%) | 2,201 | 2,118 | 3,166 | 2,295 | 3,124 | 3,599 | 4,307 | 3,261 | 1,733 | 1,228 | 1,348 | 1,764 |
| Critical (15%) | 1,815 | 1,786 | 1,764 | 1,757 | 2,224 | 2,199 | 2,132 | 1,854 | 1,192 | 941 | 989 | 1,396 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,500 | 2,975 | 4,804 | 12,398 | 17,192 | 15,482 | 15,015 | 15,004 | 9,433 | 5,780 | 2,744 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,122 | 10,324 | 10,641 | 8,327 | 4,781 | 2,503 | 2,602 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,806 | 8,470 | 8,960 | 5,767 | 2,704 | 1,957 | 1,894 | 2,486 |
| 40% | 2,835 | 2,395 | 2,204 | 2,681 | 4,232 | 5,306 | 7,921 | 4,655 | 2,370 | 1,730 | 1,679 | 2,128 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,437 | 4,131 | 2,069 | 1,507 | 1,497 | 1,933 |
| 60% | 2,402 | 2,170 | 2,046 | 2,290 | 2,614 | 3,440 | 4,786 | 2,910 | 1,757 | 1,362 | 1,407 | 1,830 |
| 70% | 2,137 | 2,060 | 1,979 | 2,084 | 2,305 | 2,906 | 3,212 | 2,305 | 1,351 | 1,153 | 1,319 | 1,743 |
| 80% | 1,978 | 1,951 | 1,829 | 1,883 | 2,128 | 2,372 | 2,500 | 1,866 | 1,217 | 994 | 1,136 | 1,575 |
| 90% | 1,807 | 1,763 | 1,669 | 1,699 | 1,891 | 2,205 | 1,765 | 1,473 | 978 | 874 | 1,029 | 1,452 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,669 | 2,607 | 3,368 | 5,109 | 6,792 | 7,290 | 7,513 | 5,982 | 4,102 | 2,619 | 1,831 | 2,214 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,431 | 3,610 | 5,031 | 10,141 | 13,006 | 14,069 | 13,188 | 11,332 | 8,823 | 5,341 | 2,778 | 3,056 |
| Above Normal (16%) | 2,786 | 2,462 | 2,591 | 4,535 | 6,244 | 6,808 | 7,962 | 5,684 | 3,217 | 1,943 | 1,773 | 2,218 |
| Below Normal (13%) | 2,520 | 2,191 | 2,462 | 2,691 | 4,545 | 4,130 | 5,401 | 3,453 | 1,880 | 1,489 | 1,577 | 1,993 |
| Dry (24%) | 2,189 | 2,118 | 3,172 | 2,282 | 3,075 | 3,599 | 4,232 | 3,129 | 1,589 | 1,179 | 1,301 | 1,737 |
| Critical (15%) | 1,827 | 1,786 | 1,764 | 1,757 | 2,177 | 2,171 | 2,132 | 1,785 | 1,053 | 890 | 958 | 1,385 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 22 | 0 | 1,162 | 2,499 | -100 | 245 | 826 | 1 | -111 | -52 | 0 |
| 20% | -14 | 0 | 47 | 26 | -11 | 128 | 1 | 7 | 87 | -131 | 7 | -20 |
| 30% | 16 | -45 | -79 | 3 | 687 | -29 | 344 | 229 | -660 | -33 | -15 | -5 |
| 40% | 39 | 0 | -11 | 52 | 0 | -264 | 357 | 39 | -577 | -11 | 7 | 3 |
| 50% | 26 | 0 | 0 | -30 | -349 | 0 | 419 | 202 | -175 | 14 | 5 | 1 |
| 60% | 1 | 0 | 0 | -3 | -70 | -19 | -48 | -154 | -107 | -9 | -1 | -8 |
| 70% | -111 | 1 | 0 | -30 | 0 | 0 | -566 | -400 | -98 | -10 | 9 | 2 |
| 80% | -17 | 1 | 0 | -1 | -23 | 0 | -292 | -301 | -81 | -105 | -71 | -38 |
| 90% | -42 | 0 | 0 | 0 | -56 | 0 | -123 | -208 | -113 | -17 | -39 | -25 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 127 | 8 | -10 | -84 | -110 | -11 | -20 | -11 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -9 | -20 | -85 | 35 | 437 | 35 | -23 | -112 | 25 | 66 | -13 | -6 |
| Above Normal (16%) | 36 | 0 | 0 | 152 | 94 | 105 | 265 | 168 | -267 | -76 | 5 | 3 |
| Below Normal (13%) | -38 | 0 | 0 | -11 | -53 | -119 | -197 | -247 | -150 | -5 | -1 | -6 |
| Dry (24%) | -13 | 0 | 5 | -13 | -49 | 0 | -74 | -132 | -144 | -49 | -47 | -28 |
| Critical (15%) | 12 | 0 | 0 | 0 | -46 | -28 | 0 | -70 | -139 | -50 | -32 | -11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39-2. San Joaquin River at Vernalis, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,499 | 2,952 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,183 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,135 | 10,196 | 10,640 | 8,319 | 4,694 | 2,635 | 2,595 | 2,656 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,500 | 8,616 | 5,538 | 3,364 | 1,994 | 1,912 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,246 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,834 | 3,064 | 1,864 | 1,370 | 1,408 | 1,838 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,703 | 1,449 | 1,162 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,096 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,899 | 1,680 | 1,091 | 891 | 1,067 | 1,476 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,631 | 1,851 | 2,225 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,440 | 3,630 | 5,116 | 10,106 | 12,569 | 14,034 | 13,210 | 11,444 | 8,798 | 5,276 | 2,791 | 3,062 |
| Above Normal (16%) | 2,750 | 2,461 | 2,591 | 4,383 | 6,149 | 6,704 | 7,697 | 5,516 | 3,483 | 2,020 | 1,768 | 2,215 |
| Below Normal (13%) | 2,558 | 2,191 | 2,461 | 2,701 | 4,599 | 4,249 | 5,598 | 3,700 | 2,031 | 1,495 | 1,579 | 1,999 |
| Dry (24%) | 2,201 | 2,118 | 3,166 | 2,295 | 3,124 | 3,599 | 4,307 | 3,260 | 1,733 | 1,228 | 1,348 | 1,764 |
| Critical (15%) | 1,815 | 1,786 | 1,764 | 1,757 | 2,224 | 2,199 | 2,133 | 1,855 | 1,192 | 941 | 990 | 1,396 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,499 | 2,975 | 4,804 | 12,398 | 17,199 | 15,487 | 15,018 | 15,008 | 9,433 | 5,779 | 2,743 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,128 | 10,324 | 10,639 | 8,322 | 4,776 | 2,502 | 2,599 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,813 | 8,471 | 8,958 | 5,770 | 2,701 | 1,955 | 1,889 | 2,484 |
| 40% | 2,835 | 2,395 | 2,204 | 2,680 | 4,232 | 5,306 | 7,919 | 4,654 | 2,370 | 1,732 | 1,675 | 2,126 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,433 | 4,130 | 2,064 | 1,495 | 1,497 | 1,930 |
| 60% | 2,401 | 2,170 | 2,046 | 2,290 | 2,613 | 3,440 | 4,784 | 2,909 | 1,749 | 1,349 | 1,401 | 1,825 |
| 70% | 2,136 | 2,059 | 1,979 | 2,084 | 2,305 | 2,906 | 3,210 | 2,300 | 1,347 | 1,145 | 1,312 | 1,741 |
| 80% | 1,977 | 1,951 | 1,829 | 1,882 | 2,128 | 2,371 | 2,497 | 1,865 | 1,215 | 993 | 1,135 | 1,574 |
| 90% | 1,807 | 1,763 | 1,669 | 1,698 | 1,891 | 2,205 | 1,763 | 1,472 | 978 | 870 | 1,027 | 1,452 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,668 | 2,607 | 3,368 | 5,109 | 6,793 | 7,290 | 7,511 | 5,980 | 4,099 | 2,616 | 1,828 | 2,213 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,431 | 3,610 | 5,031 | 10,142 | 13,009 | 14,070 | 13,186 | 11,331 | 8,821 | 5,339 | 2,776 | 3,055 |
| Above Normal (16%) | 2,785 | 2,462 | 2,591 | 4,535 | 6,245 | 6,809 | 7,961 | 5,682 | 3,214 | 1,939 | 1,770 | 2,216 |
| Below Normal (13%) | 2,519 | 2,191 | 2,461 | 2,690 | 4,546 | 4,130 | 5,399 | 3,449 | 1,875 | 1,482 | 1,572 | 1,990 |
| Dry (24%) | 2,188 | 2,118 | 3,172 | 2,282 | 3,075 | 3,599 | 4,230 | 3,126 | 1,587 | 1,175 | 1,299 | 1,735 |
| Critical (15%) | 1,827 | 1,786 | 1,764 | 1,757 | 2,177 | 2,171 | 2,131 | 1,784 | 1,052 | 889 | 957 | 1,385 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1 | 22 | 0 | 1,162 | 2,506 | -95 | 247 | 825 | 0 | -111 | -53 | 0 |
| 20% | -14 | 0 | 47 | 26 | -7 | 128 | 0 | 3 | 82 | -133 | 4 | -21 |
| 30% | 15 | -45 | -79 | 2 | 694 | -28 | 342 | 232 | -663 | -39 | -23 | -7 |
| 40% | 39 | 0 | -11 | 52 | 0 | -264 | 355 | 39 | -577 | -9 | 4 | 1 |
| 50% | 26 | 0 | 0 | -30 | -349 | 0 | 414 | 201 | -182 | 2 | 6 | -2 |
| 60% | 0 | 0 | 0 | -3 | -70 | -20 | -50 | -156 | -115 | -21 | -7 | -12 |
| 70% | -111 | 0 | 0 | -31 | 0 | 0 | -567 | -404 | -102 | -17 | 2 | -1 |
| 80% | -18 | 0 | 0 | -1 | -23 | 0 | -295 | -302 | -83 | -102 | -72 | -39 |
| 90% | -42 | 0 | 0 | -1 | -57 | 0 | -135 | -208 | -113 | -21 | -40 | -24 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -11 | -86 | -112 | -15 | -22 | -12 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -9 | -20 | -85 | 35 | 440 | 37 | -24 | -113 | 23 | 63 | -15 | -7 |
| Above Normal (16%) | 35 | 0 | 0 | 152 | 96 | 105 | 264 | 166 | -269 | -80 | 2 | 1 |
| Below Normal (13%) | -39 | 0 | 0 | -11 | -53 | -120 | -200 | -251 | -155 | -13 | -7 | -8 |
| Dry (24%) | -13 | 0 | 5 | -13 | -50 | 0 | -76 | -134 | -146 | -52 | -49 | -29 |
| Critical (15%) | 12 | 0 | 0 | 0 | -47 | -28 | -2 | -71 | -140 | -52 | -33 | -11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39-3. San Joaquin River at Vernalis, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,953 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,178 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,133 | 10,196 | 10,640 | 8,319 | 4,695 | 2,634 | 2,595 | 2,655 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,499 | 8,616 | 5,538 | 3,364 | 1,990 | 1,909 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,244 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,835 | 3,064 | 1,864 | 1,370 | 1,408 | 1,837 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,705 | 1,449 | 1,163 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,099 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,888 | 1,680 | 1,091 | 891 | 1,068 | 1,477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,630 | 1,850 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,440 | 3,630 | 5,116 | 10,106 | 12,569 | 14,033 | 13,210 | 11,444 | 8,798 | 5,275 | 2,791 | 3,062 |
| Above Normal (16%) | 2,750 | 2,461 | 2,591 | 4,383 | 6,149 | 6,703 | 7,697 | 5,516 | 3,484 | 2,020 | 1,768 | 2,215 |
| Below Normal (13%) | 2,558 | 2,191 | 2,461 | 2,701 | 4,599 | 4,249 | 5,598 | 3,700 | 2,030 | 1,494 | 1,579 | 1,998 |
| Dry (24%) | 2,201 | 2,118 | 3,166 | 2,295 | 3,124 | 3,599 | 4,307 | 3,261 | 1,733 | 1,228 | 1,348 | 1,764 |
| Critical (15%) | 1,815 | 1,786 | 1,764 | 1,757 | 2,224 | 2,199 | 2,132 | 1,854 | 1,192 | 941 | 989 | 1,396 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,952 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,183 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,135 | 10,196 | 10,640 | 8,319 | 4,694 | 2,635 | 2,595 | 2,656 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,500 | 8,616 | 5,538 | 3,364 | 1,994 | 1,912 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,246 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,834 | 3,064 | 1,864 | 1,370 | 1,408 | 1,838 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,703 | 1,449 | 1,162 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,096 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,899 | 1,680 | 1,091 | 891 | 1,067 | 1,476 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,631 | 1,851 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,440 | 3,630 | 5,116 | 10,106 | 12,569 | 14,034 | 13,210 | 11,444 | 8,798 | 5,276 | 2,791 | 3,062 |
| Above Normal (16%) | 2,750 | 2,461 | 2,591 | 4,383 | 6,149 | 6,704 | 7,697 | 5,516 | 3,483 | 2,020 | 1,768 | 2,215 |
| Below Normal (13%) | 2,558 | 2,191 | 2,461 | 2,701 | 4,599 | 4,249 | 5,598 | 3,700 | 2,031 | 1,495 | 1,579 | 1,999 |
| Dry (24%) | 2,201 | 2,118 | 3,166 | 2,295 | 3,124 | 3,599 | 4,307 | 3,260 | 1,733 | 1,228 | 1,348 | 1,764 |
| Critical (15%) | 1,815 | 1,786 | 1,764 | 1,757 | 2,224 | 2,199 | 2,133 | 1,855 | 1,192 | 941 | 990 | 1,396 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | -1 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 4 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | -1 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 10 | -1 | 0 | 0 | -1 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39-4. San Joaquin River at Vernalis, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,500 | 2,975 | 4,804 | 12,398 | 17,192 | 15,482 | 15,015 | 15,004 | 9,433 | 5,780 | 2,744 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,122 | 10,324 | 10,641 | 8,327 | 4,781 | 2,503 | 2,602 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,806 | 8,470 | 8,960 | 5,767 | 2,704 | 1,957 | 1,894 | 2,486 |
| 40% | 2,835 | 2,395 | 2,204 | 2,681 | 4,232 | 5,306 | 7,921 | 4,655 | 2,370 | 1,730 | 1,679 | 2,128 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,437 | 4,131 | 2,069 | 1,507 | 1,497 | 1,933 |
| 60% | 2,402 | 2,170 | 2,046 | 2,290 | 2,614 | 3,440 | 4,786 | 2,910 | 1,757 | 1,362 | 1,407 | 1,830 |
| 70% | 2,137 | 2,060 | 1,979 | 2,084 | 2,305 | 2,906 | 3,212 | 2,305 | 1,351 | 1,153 | 1,319 | 1,743 |
| 80% | 1,978 | 1,951 | 1,829 | 1,883 | 2,128 | 2,372 | 2,500 | 1,866 | 1,217 | 994 | 1,136 | 1,575 |
| 90% | 1,807 | 1,763 | 1,669 | 1,699 | 1,891 | 2,205 | 1,765 | 1,473 | 978 | 874 | 1,029 | 1,452 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,669 | 2,607 | 3,368 | 5,109 | 6,792 | 7,290 | 7,513 | 5,982 | 4,102 | 2,619 | 1,831 | 2,214 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,431 | 3,610 | 5,031 | 10,141 | 13,006 | 14,069 | 13,188 | 11,332 | 8,823 | 5,341 | 2,778 | 3,056 |
| Above Normal (16%) | 2,786 | 2,462 | 2,591 | 4,535 | 6,244 | 6,808 | 7,962 | 5,684 | 3,217 | 1,943 | 1,773 | 2,218 |
| Below Normal (13%) | 2,520 | 2,191 | 2,462 | 2,691 | 4,545 | 4,130 | 5,401 | 3,453 | 1,880 | 1,489 | 1,577 | 1,993 |
| Dry (24%) | 2,189 | 2,118 | 3,172 | 2,282 | 3,075 | 3,599 | 4,232 | 3,129 | 1,589 | 1,179 | 1,301 | 1,737 |
| Critical (15%) | 1,827 | 1,786 | 1,764 | 1,757 | 2,177 | 2,171 | 2,132 | 1,785 | 1,053 | 890 | 958 | 1,385 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,499 | 2,975 | 4,804 | 12,398 | 17,199 | 15,487 | 15,018 | 15,008 | 9,433 | 5,779 | 2,743 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,128 | 10,324 | 10,639 | 8,322 | 4,776 | 2,502 | 2,599 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,813 | 8,471 | 8,958 | 5,770 | 2,701 | 1,955 | 1,889 | 2,484 |
| 40% | 2,835 | 2,395 | 2,204 | 2,680 | 4,232 | 5,306 | 7,919 | 4,654 | 2,370 | 1,732 | 1,675 | 2,126 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,433 | 4,130 | 2,064 | 1,495 | 1,497 | 1,930 |
| 60% | 2,401 | 2,170 | 2,046 | 2,290 | 2,613 | 3,440 | 4,784 | 2,909 | 1,749 | 1,349 | 1,401 | 1,825 |
| 70% | 2,136 | 2,059 | 1,979 | 2,084 | 2,305 | 2,906 | 3,210 | 2,300 | 1,347 | 1,145 | 1,312 | 1,741 |
| 80% | 1,977 | 1,951 | 1,829 | 1,882 | 2,128 | 2,371 | 2,497 | 1,865 | 1,215 | 993 | 1,135 | 1,574 |
| 90% | 1,807 | 1,763 | 1,669 | 1,698 | 1,891 | 2,205 | 1,763 | 1,472 | 978 | 870 | 1,027 | 1,452 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,668 | 2,607 | 3,368 | 5,109 | 6,793 | 7,290 | 7,511 | 5,980 | 4,099 | 2,616 | 1,828 | 2,213 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 3,431 | 3,610 | 5,031 | 10,142 | 13,009 | 14,070 | 13,186 | 11,331 | 8,821 | 5,339 | 2,776 | 3,055 |
| Above Normal (16%) | 2,785 | 2,462 | 2,591 | 4,535 | 6,245 | 6,809 | 7,961 | 5,682 | 3,214 | 1,939 | 1,770 | 2,216 |
| Below Normal (13%) | 2,519 | 2,191 | 2,461 | 2,690 | 4,546 | 4,130 | 5,399 | 3,449 | 1,875 | 1,482 | 1,572 | 1,990 |
| Dry (24%) | 2,188 | 2,118 | 3,172 | 2,282 | 3,075 | 3,599 | 4,230 | 3,126 | 1,587 | 1,175 | 1,299 | 1,735 |
| Critical (15%) | 1,827 | 1,786 | 1,764 | 1,757 | 2,177 | 2,171 | 2,131 | 1,784 | 1,052 | 889 | 957 | 1,385 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 8 | 5 | 3 | 4 | 0 | 0 | -1 | 0 |
| 20% | 0 | 0 | 0 | 0 | 6 | 0 | -1 | -5 | -5 | -1 | -4 | 0 |
| 30% | -1 | 0 | 0 | 0 | 7 | 1 | -2 | 3 | -3 | -2 | -5 | -2 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 2 | -4 | -2 |
| 50% | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | -5 | -12 | 0 | -3 |
| 60% | -1 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | -8 | -13 | -6 | -4 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -6 | -4 | -8 | -6 | -2 |
| 80% | 0 | 0 | 0 | 0 | -1 | 0 | -3 | -1 | -2 | -1 | -1 | -1 |
| 90% | 0 | 0 | 0 | -1 | 0 | 0 | -2 | -1 | 0 | -5 | -2 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | 0 | 0 | 0 | 1 | 0 | -1 | -2 | -3 | -3 | -3 | -1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 3 | 2 | -1 | -1 | -2 | -2 | -2 | -1 |
| Above Normal (16%) | -1 | 0 | 0 | 0 | 2 | 0 | -1 | -2 | -3 | -4 | -3 | -1 |
| Below Normal (13%) | -1 | 0 | 0 | 0 | 0 | 0 | -2 | -4 | -5 | -7 | -5 | -2 |
| Dry (24%) | -1 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | -3 | -4 | -3 | -1 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | -1 |

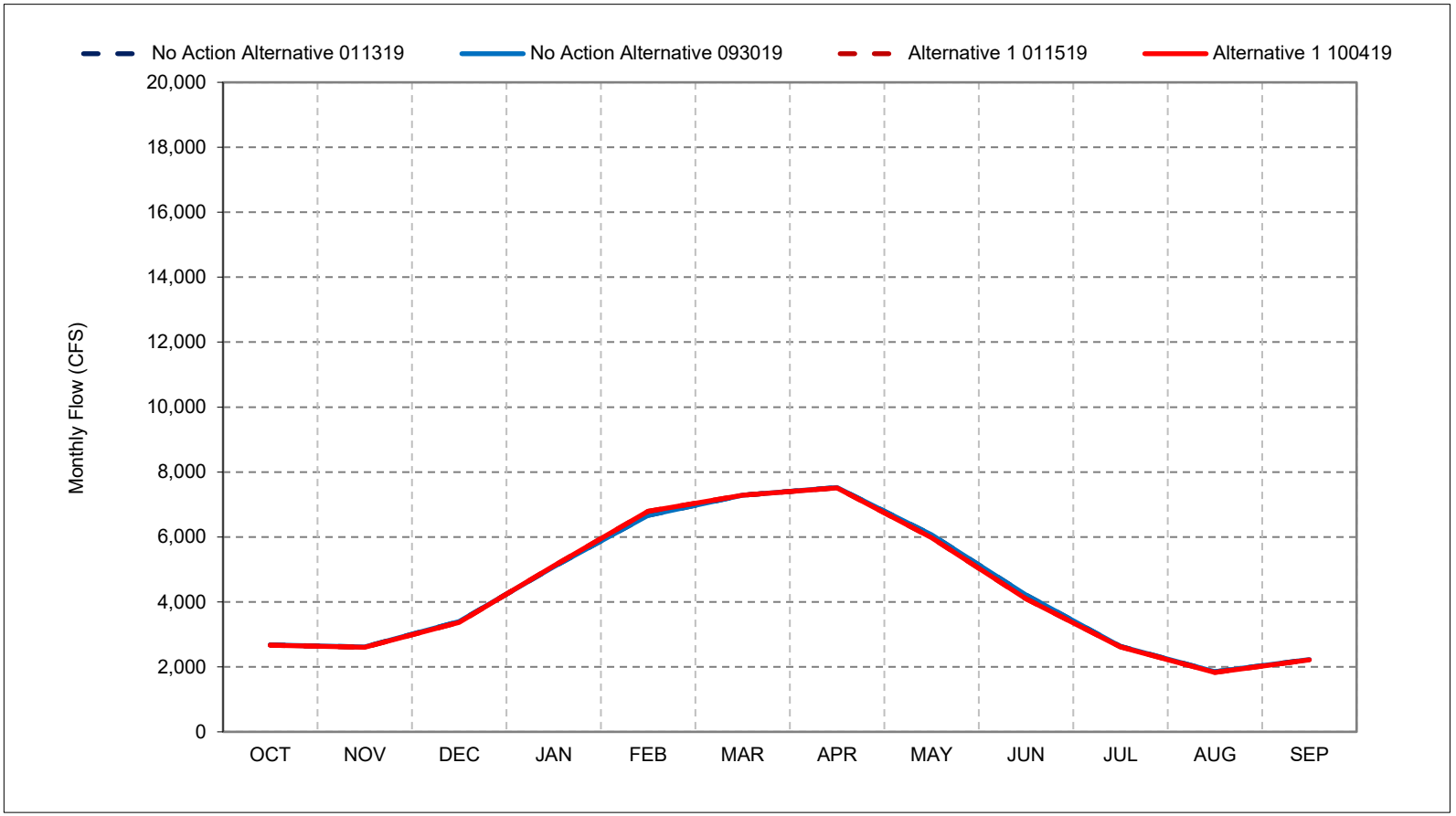
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-1. San Joaquin River at Vernalis, Long-Term Average Flow

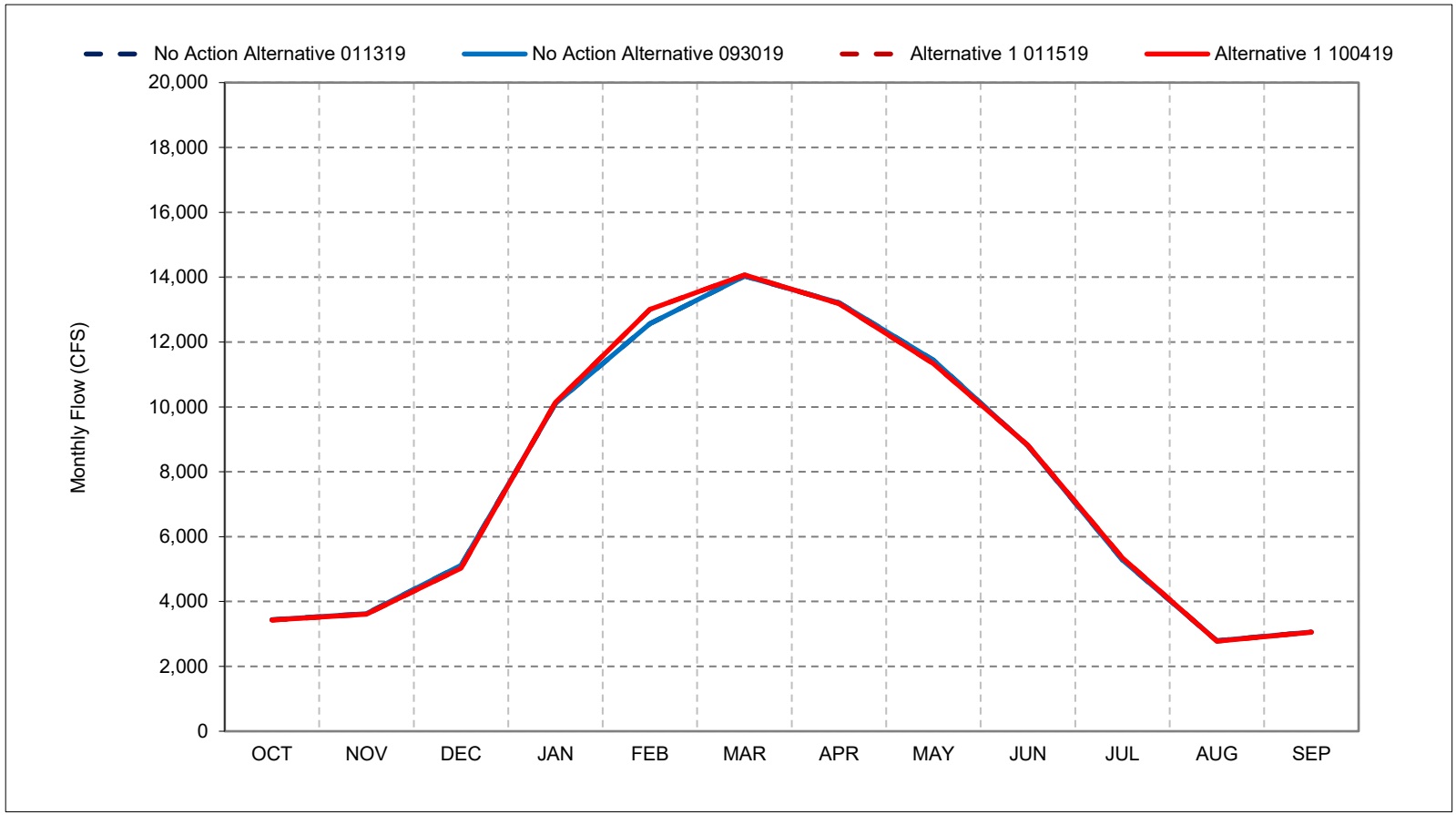



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-2. San Joaquin River at Vernalis, Wet Year Average Flow

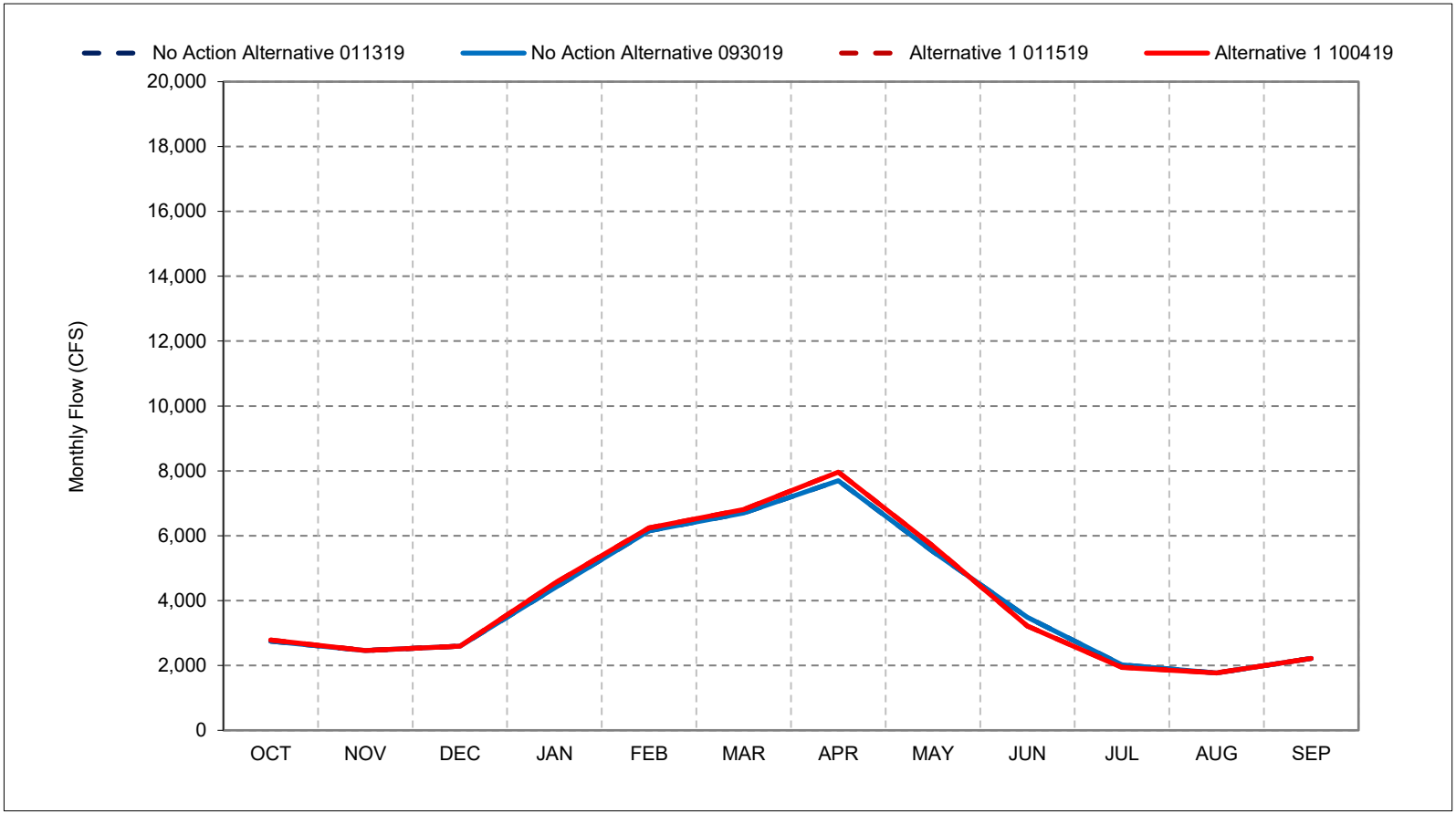



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-3. San Joaquin River at Vernalis, Above Normal Year Average Flow

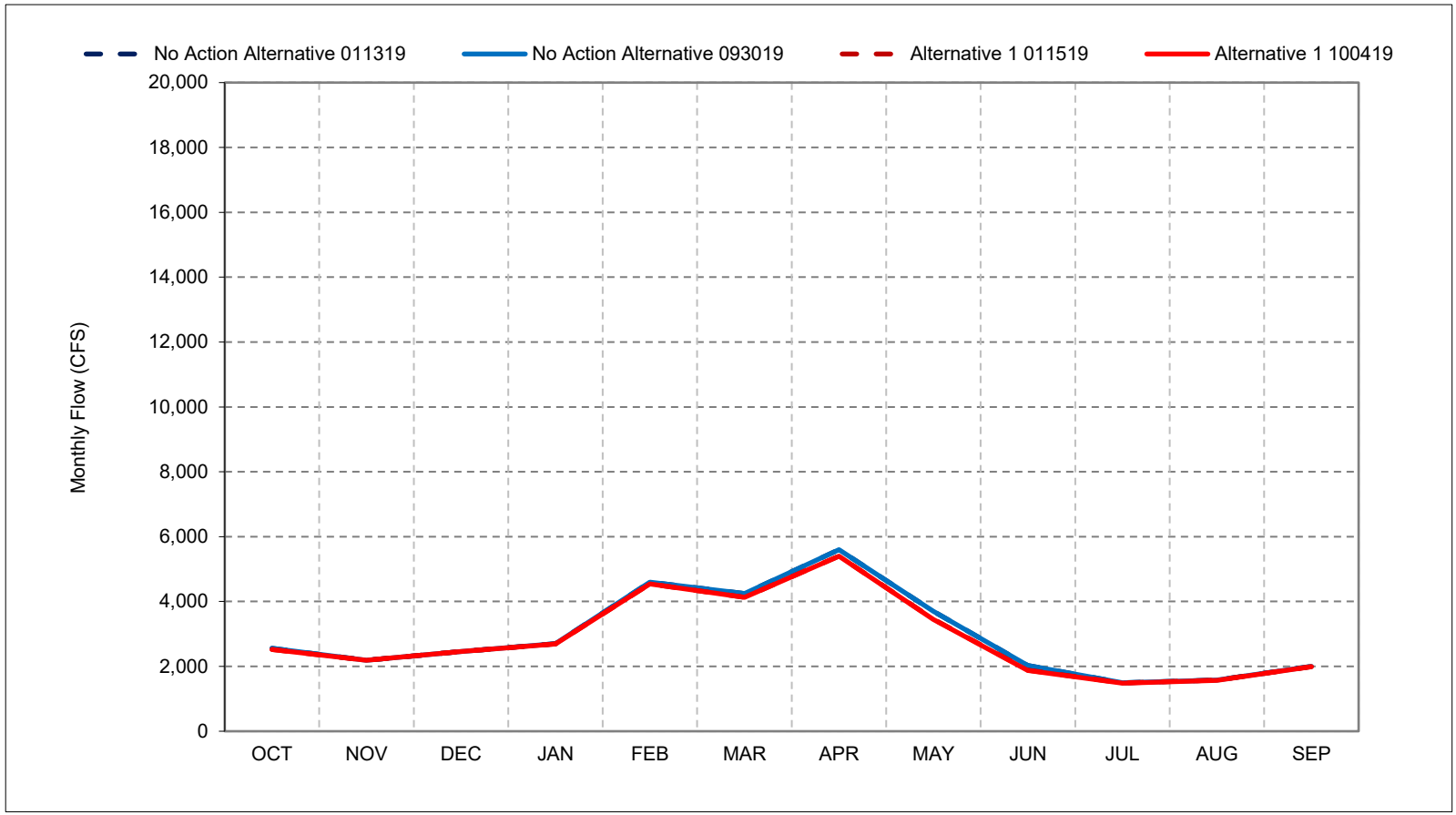



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-4. San Joaquin River at Vernalis, Below Normal Year Average Flow

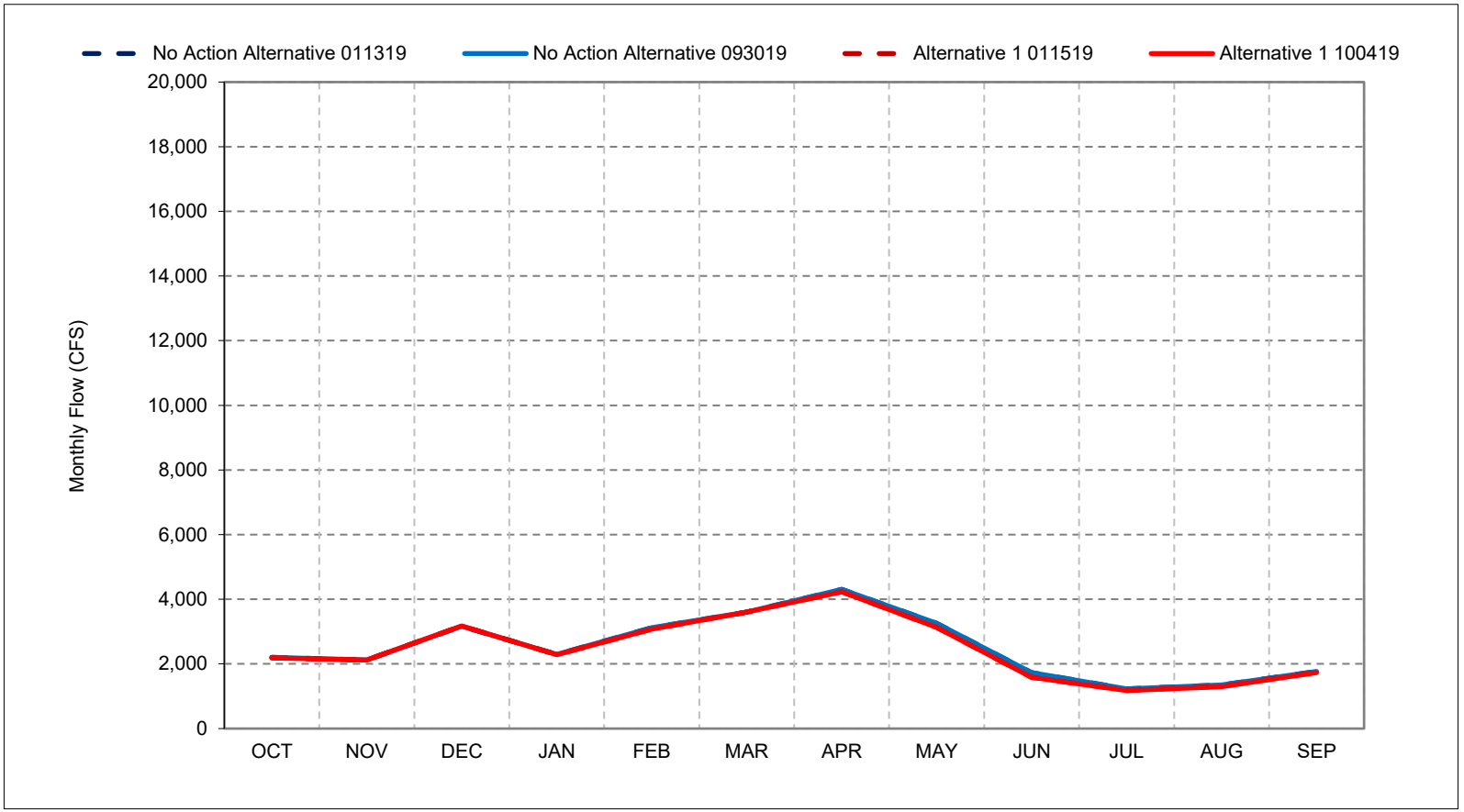



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-5. San Joaquin River at Vernalis, Dry Year Average Flow

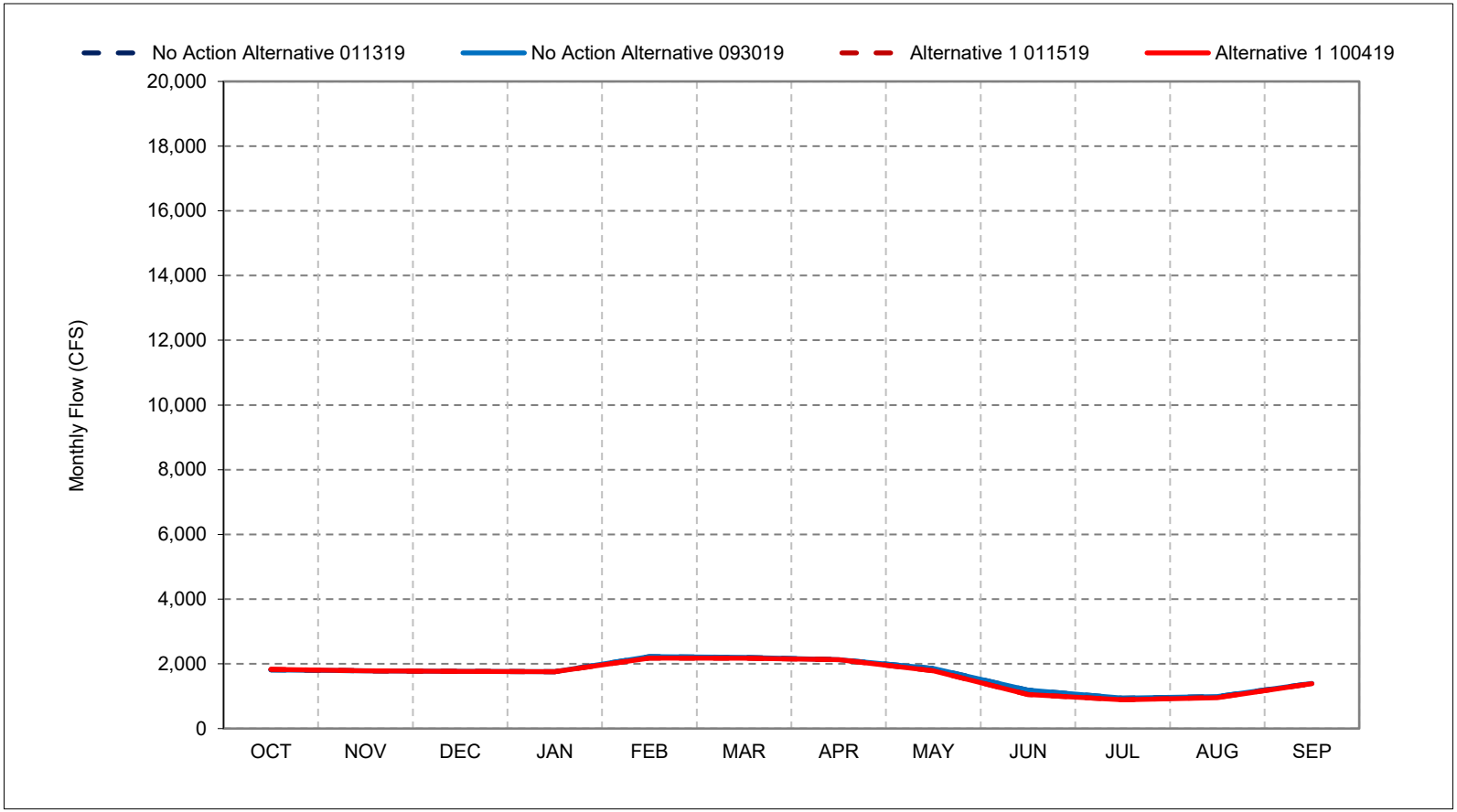



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39-6. San Joaquin River at Vernalis, Critical Year Average Flow

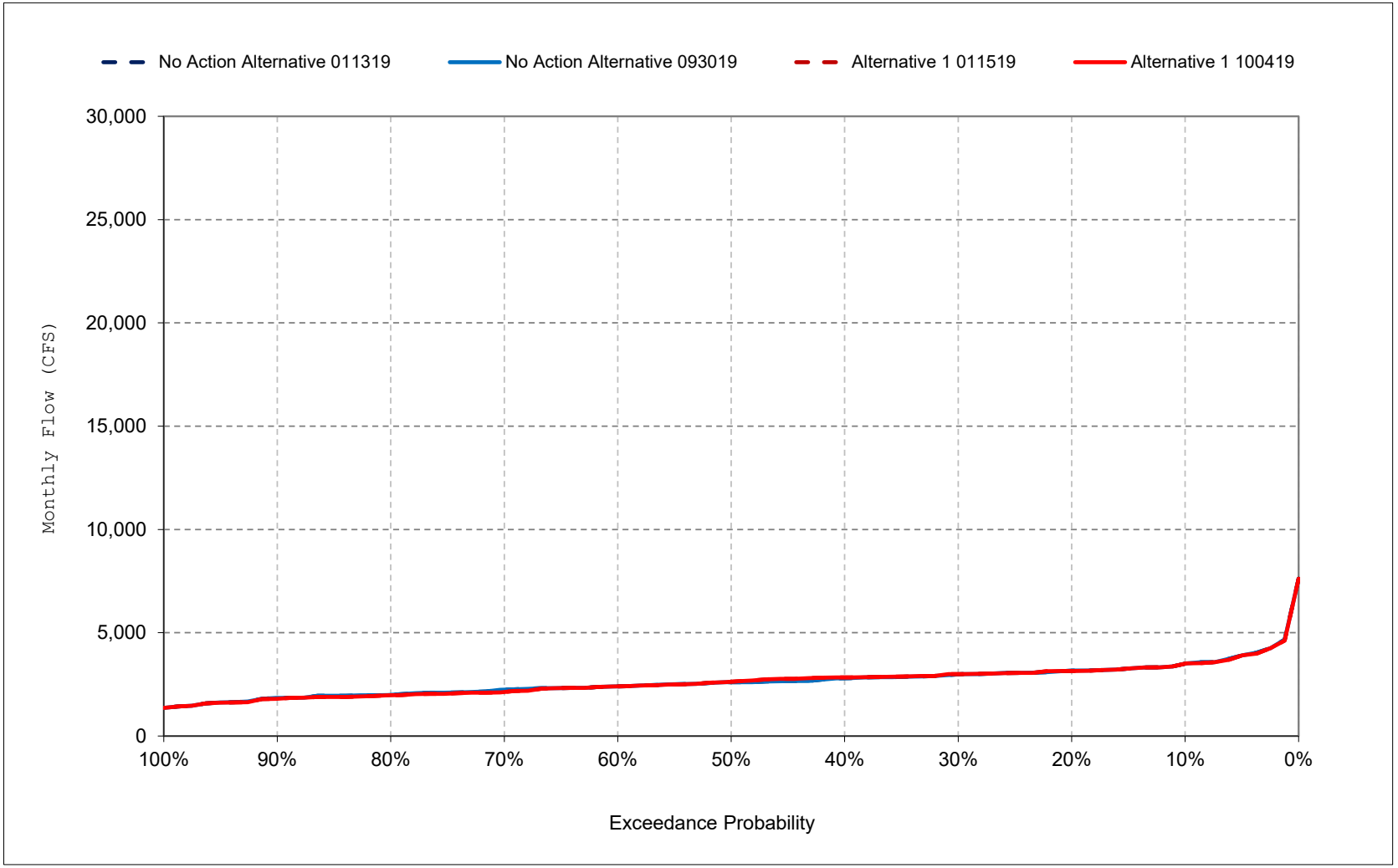



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

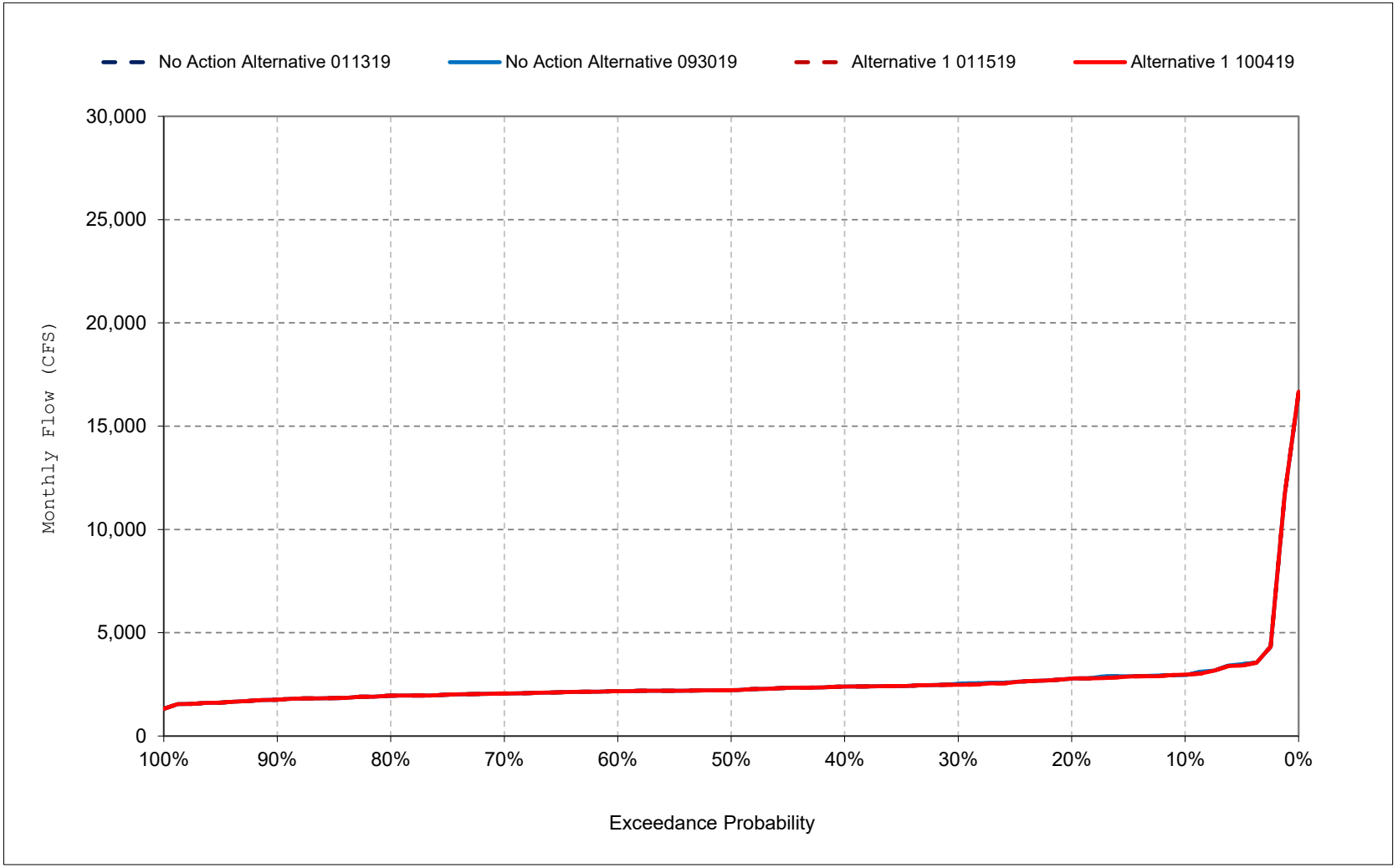
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-7. San Joaquin River at Vernalis, October**



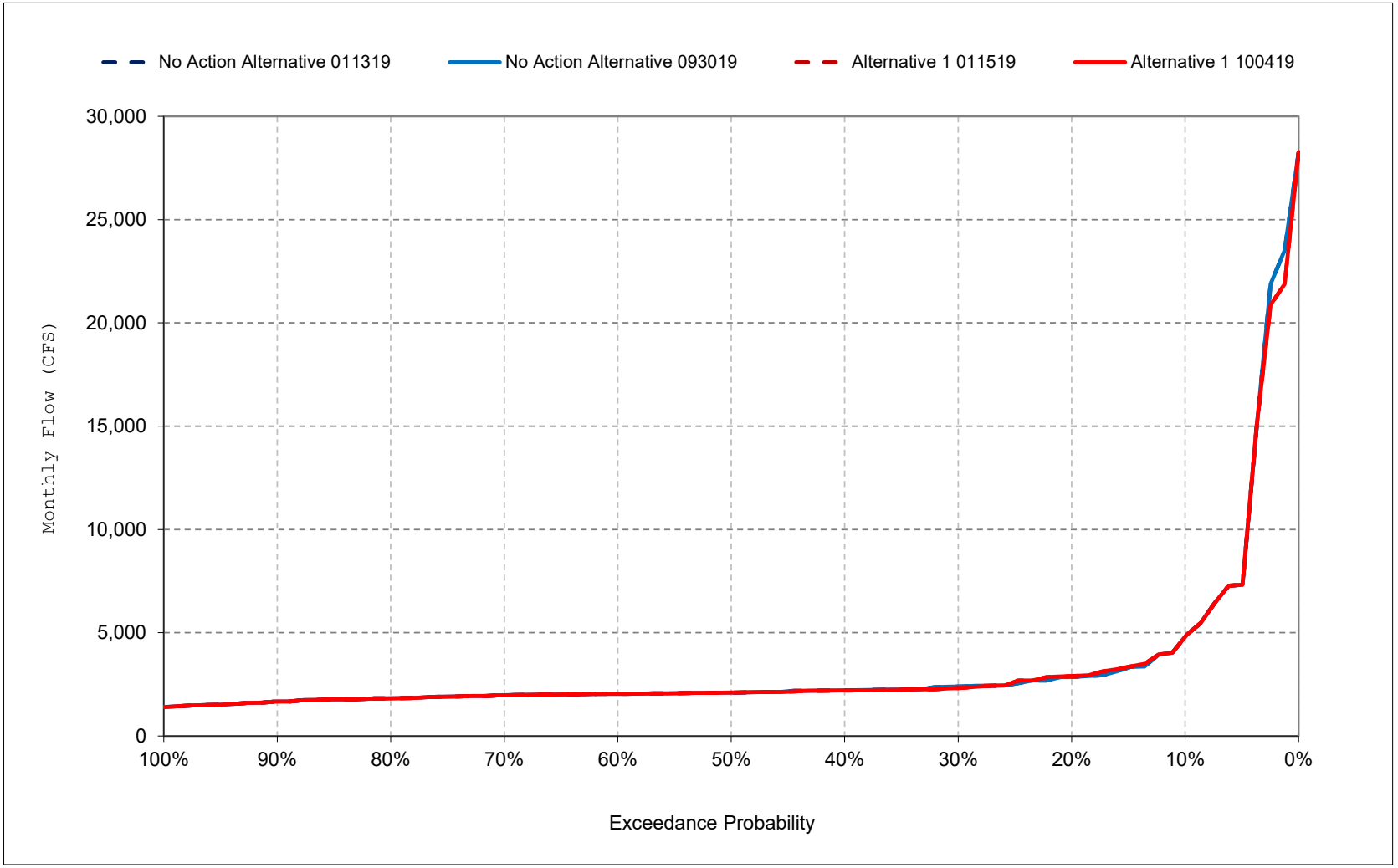

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-8. San Joaquin River at Vernalis, November**



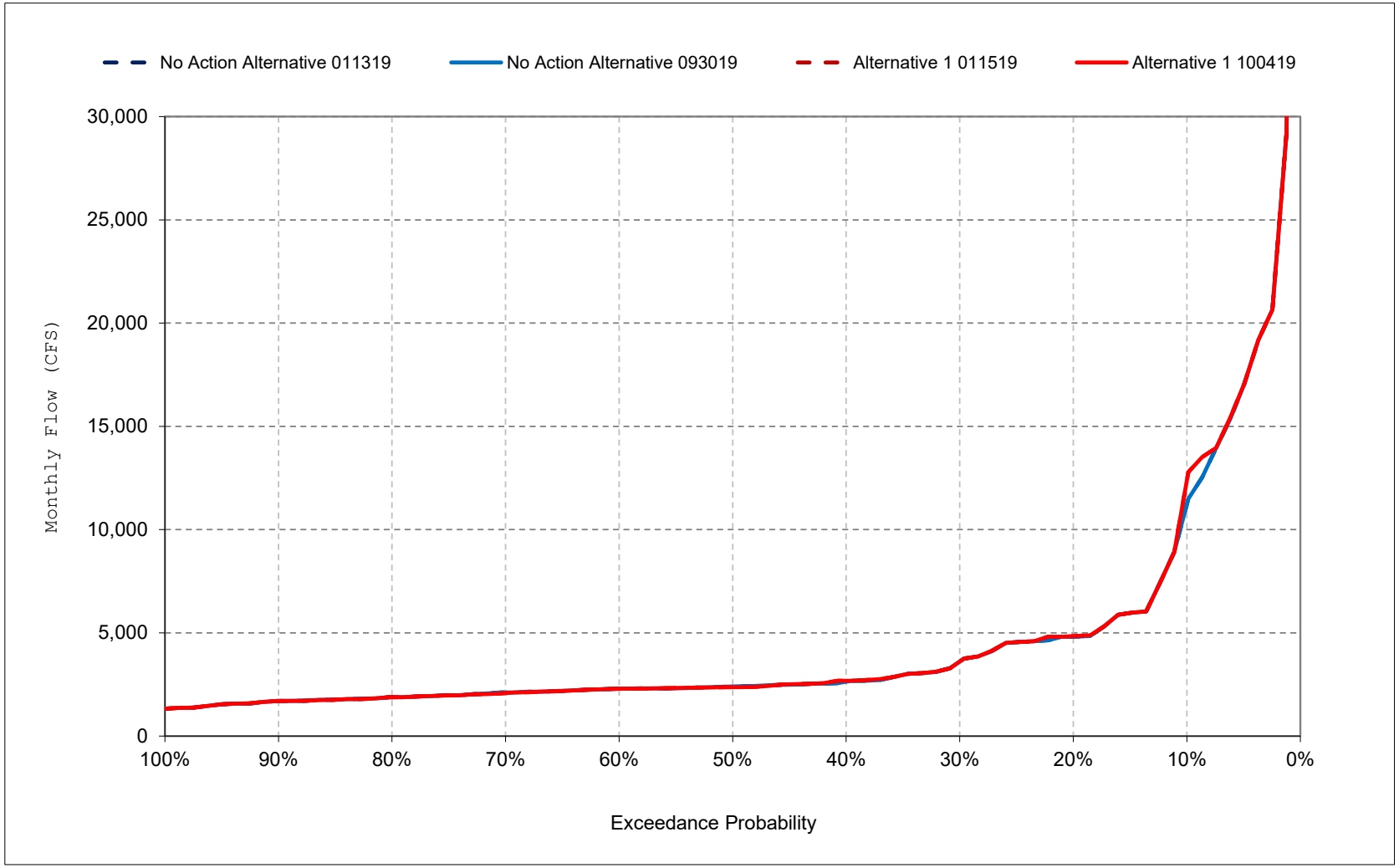

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-9. San Joaquin River at Vernalis, December**



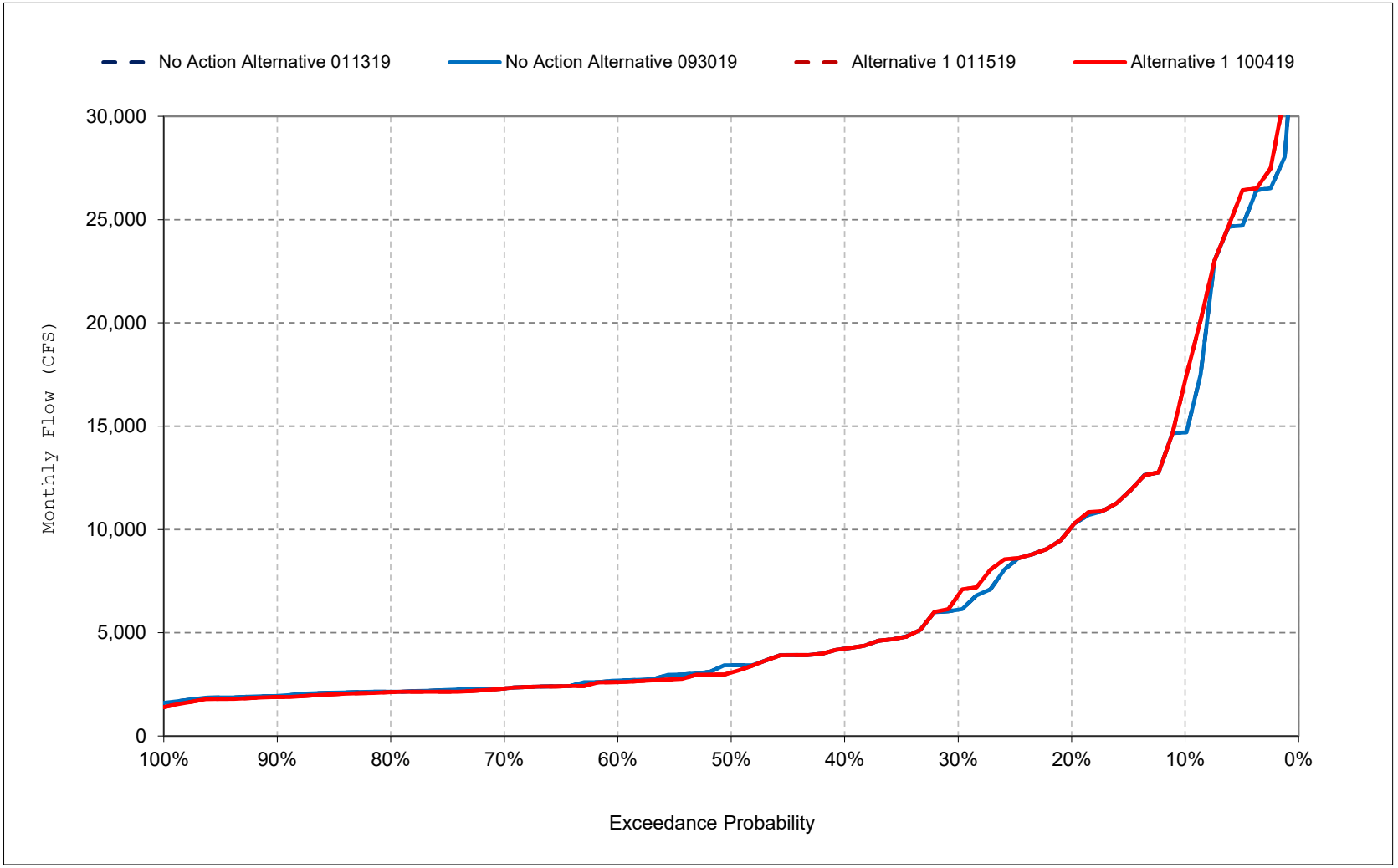

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-10. San Joaquin River at Vernalis, January**



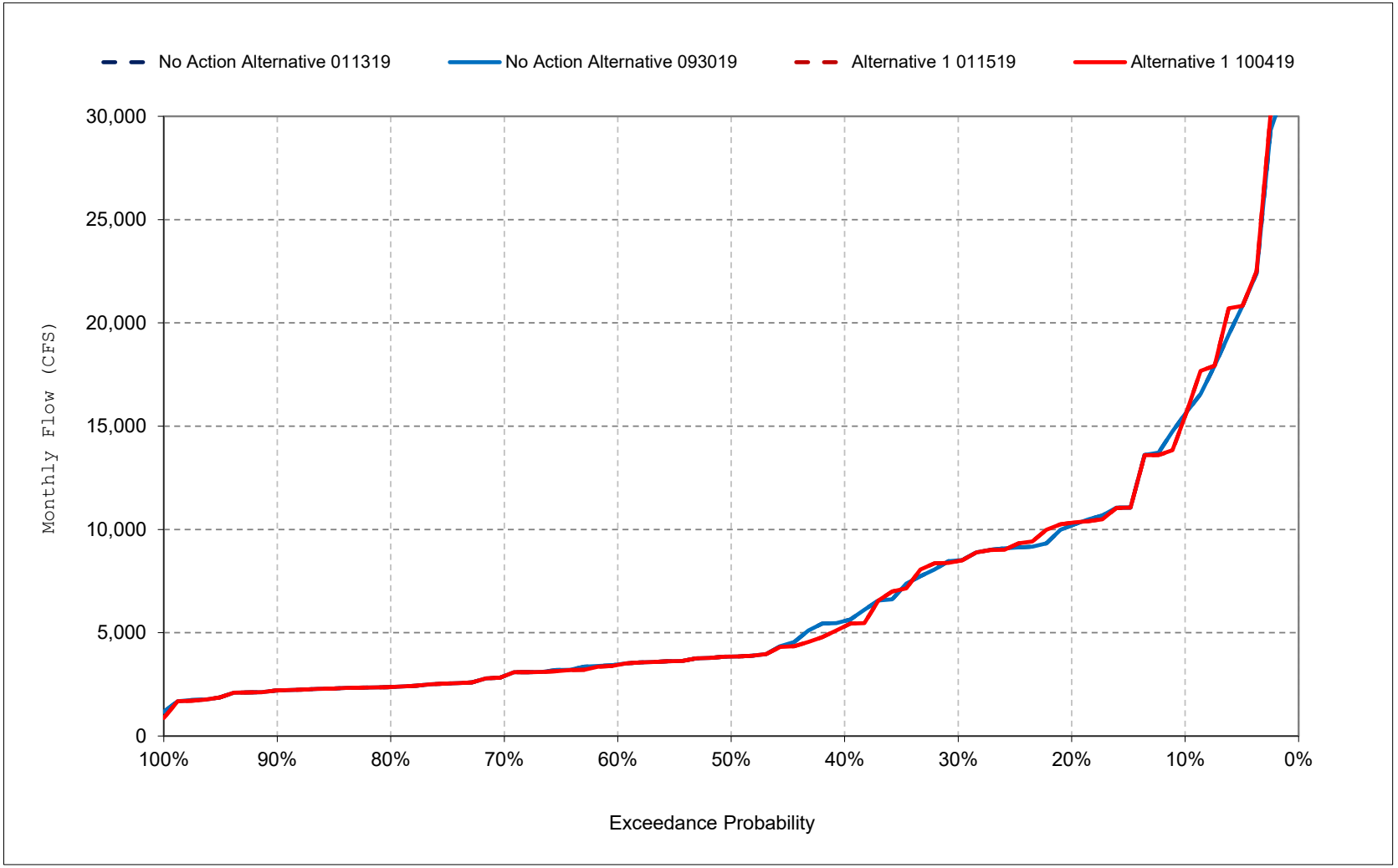

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-11. San Joaquin River at Vernalis, February**



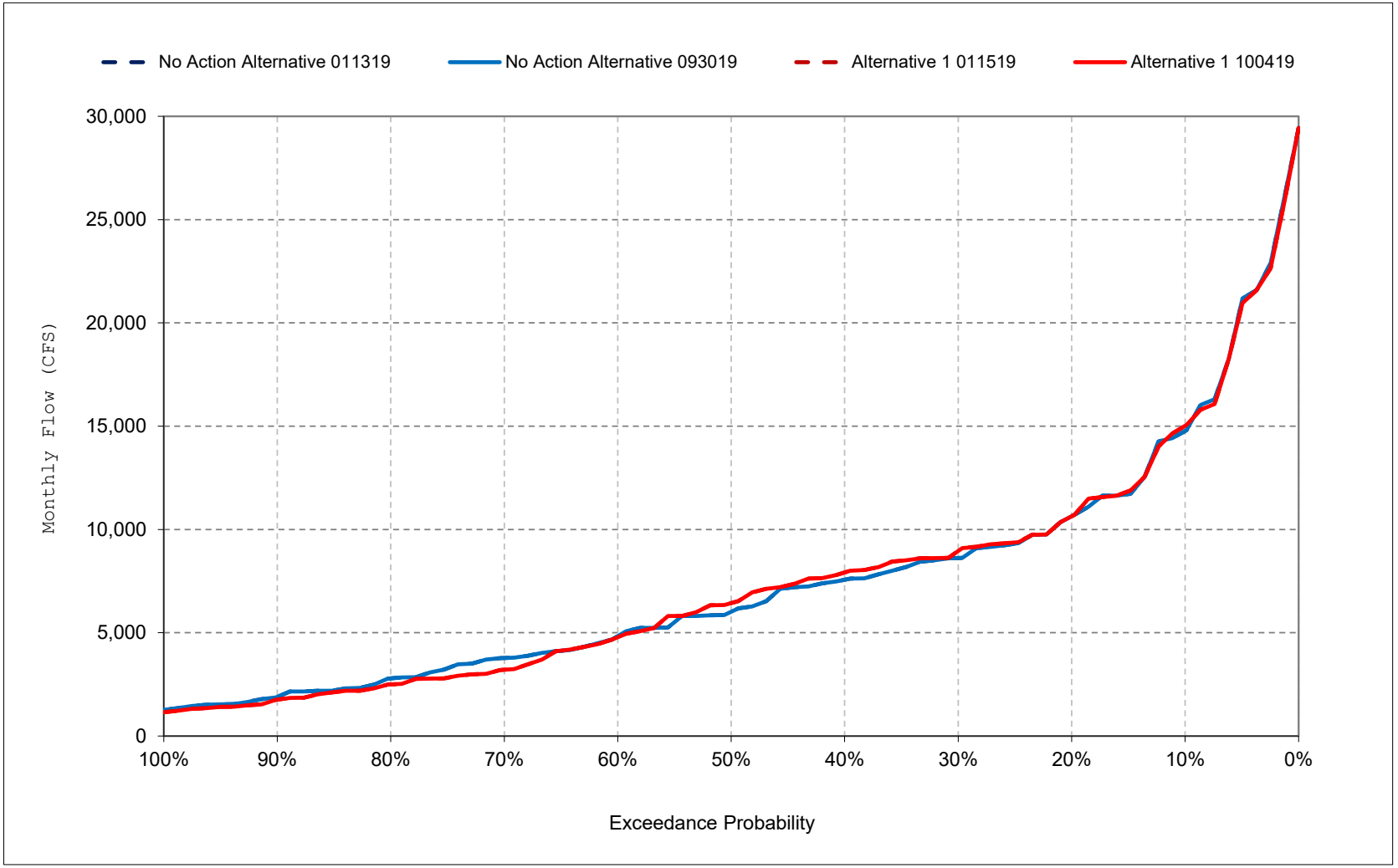

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-12. San Joaquin River at Vernalis, March**



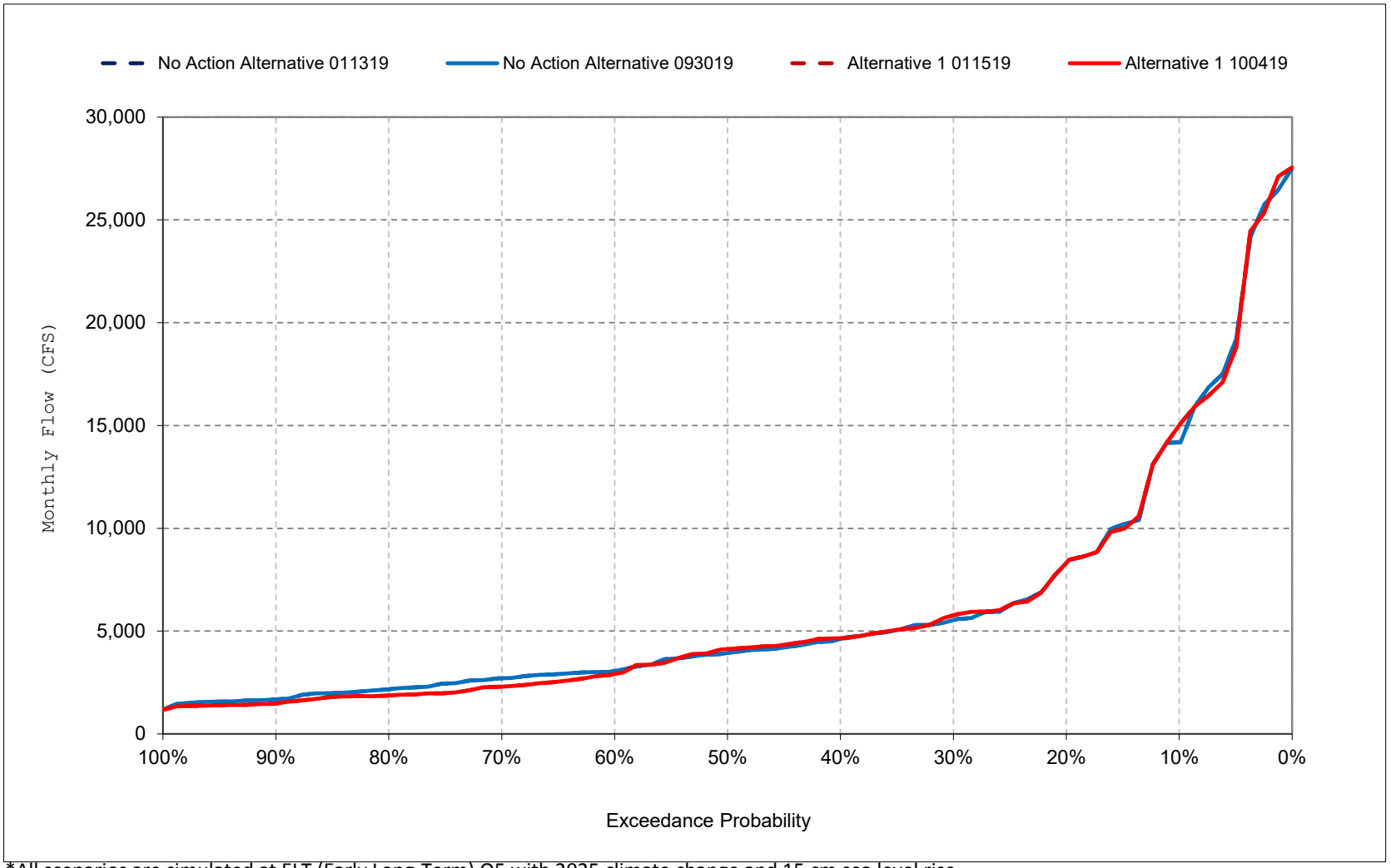

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-13. San Joaquin River at Vernalis, April**



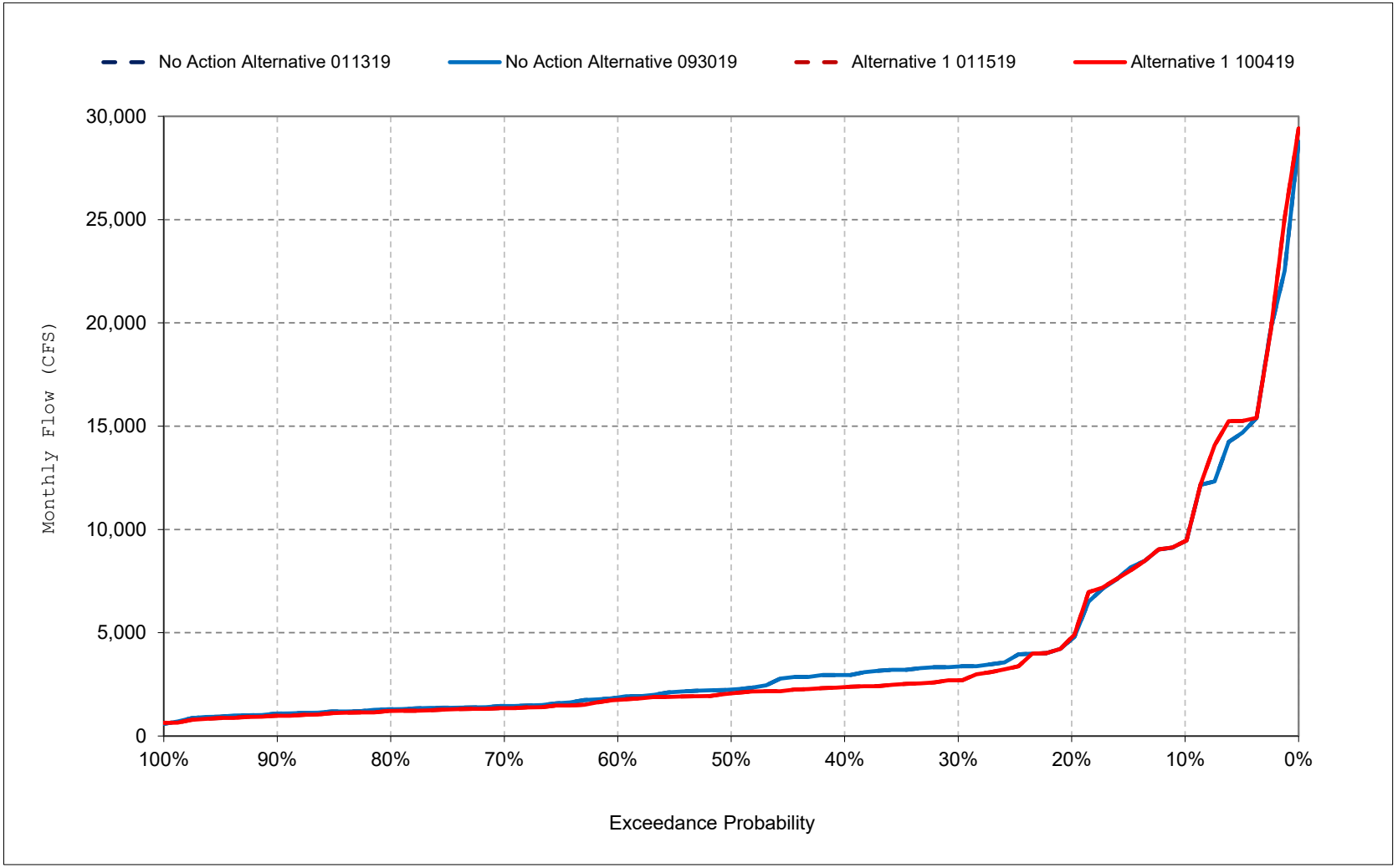

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-14. San Joaquin River at Vernalis, May**



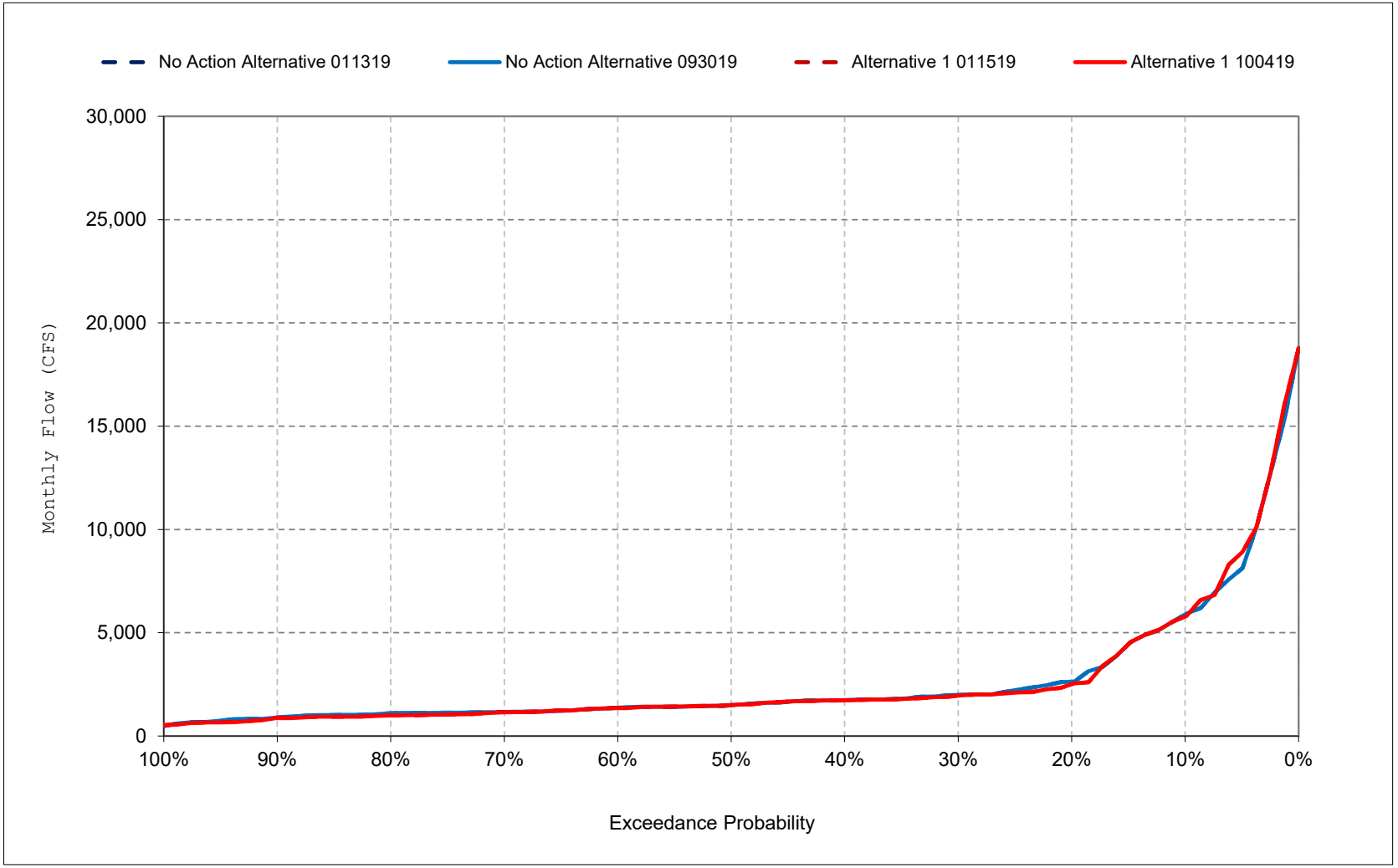

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-15. San Joaquin River at Vernalis, June**



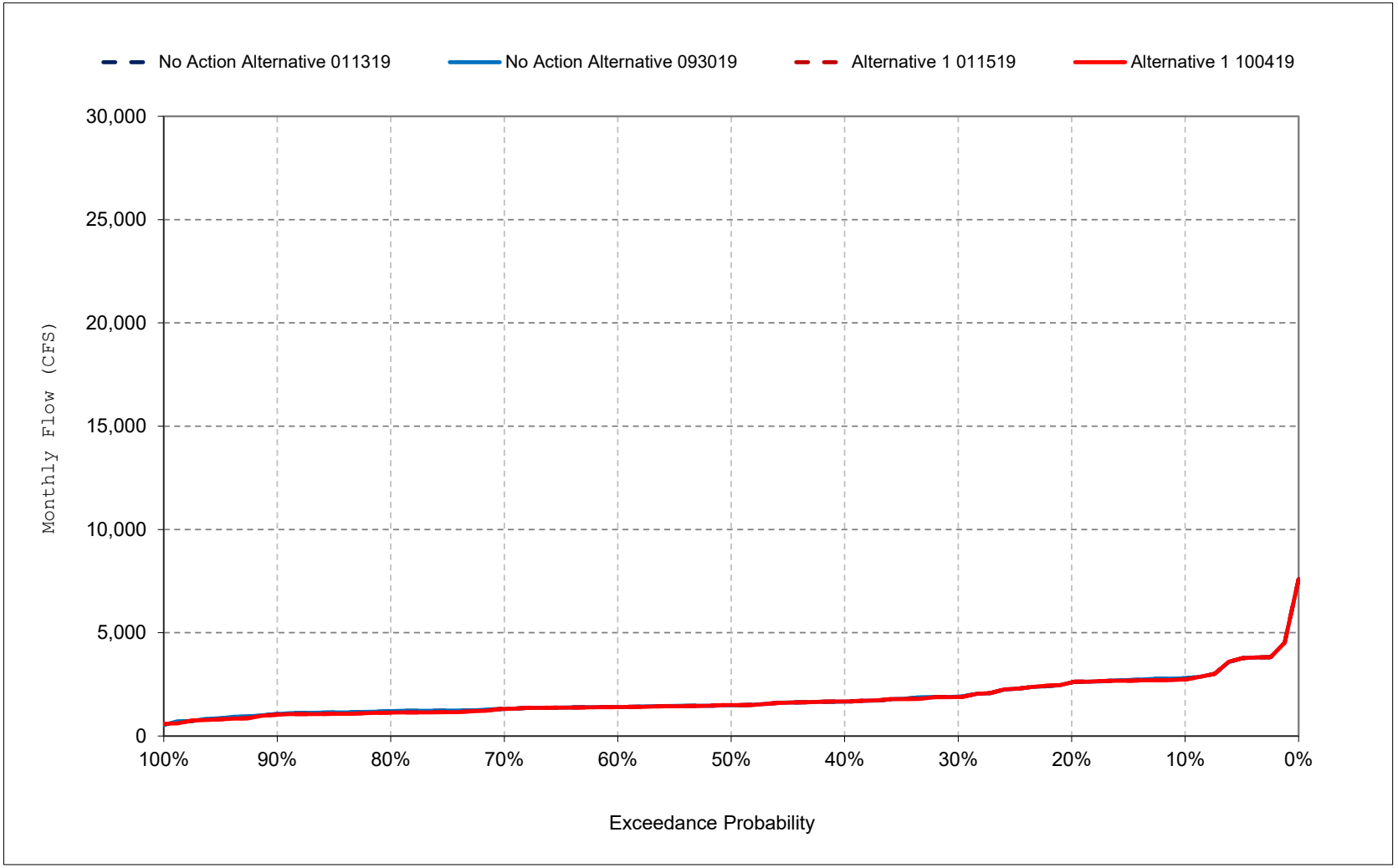

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-16. San Joaquin River at Vernalis, July**



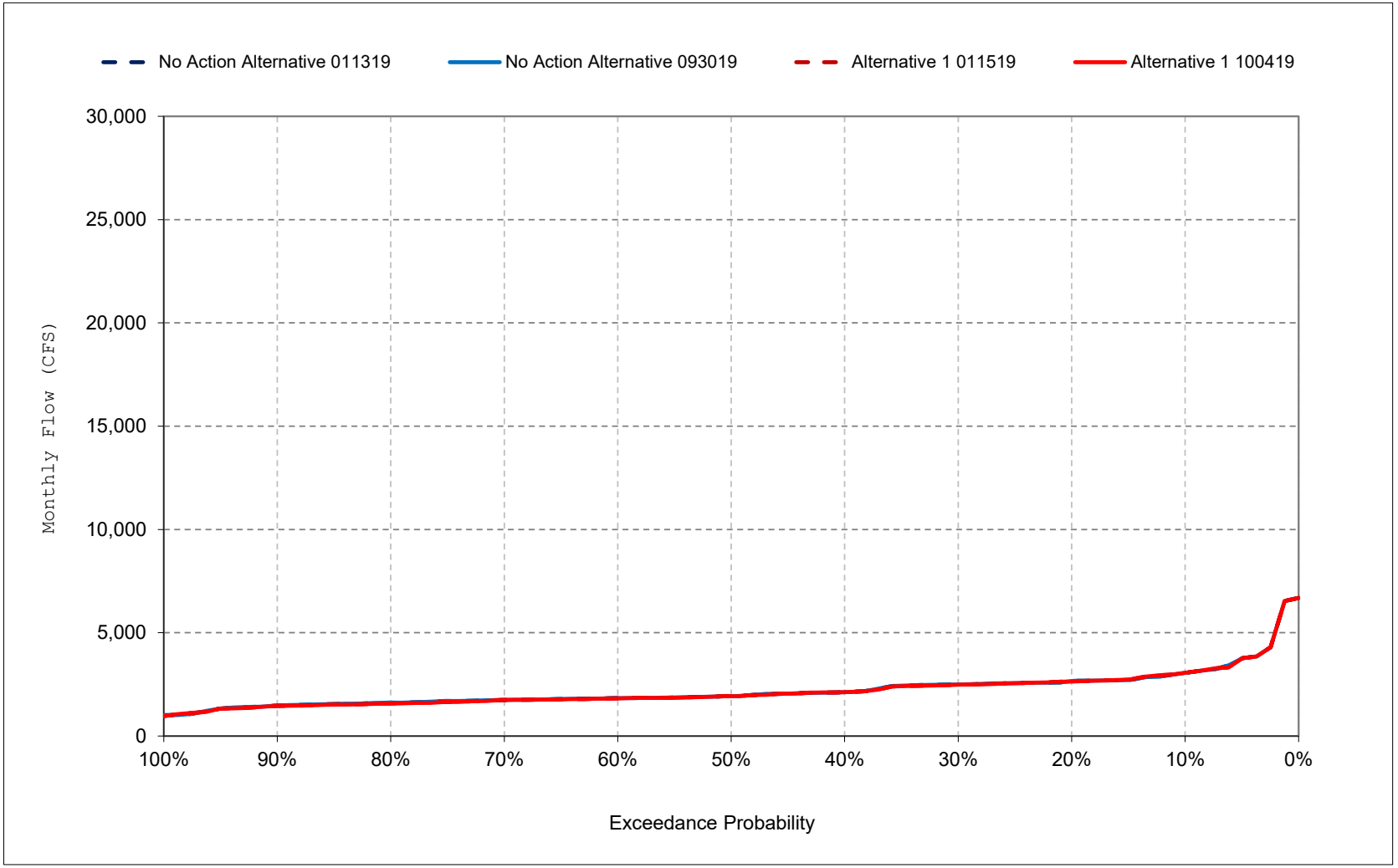

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-17. San Joaquin River at Vernalis, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 39-18. San Joaquin River at Vernalis, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39b-1. San Joaquin River at Vernalis (60-20-20), Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,953 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,178 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,133 | 10,196 | 10,640 | 8,319 | 4,695 | 2,634 | 2,595 | 2,655 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,499 | 8,616 | 5,538 | 3,364 | 1,990 | 1,909 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,244 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,835 | 3,064 | 1,864 | 1,370 | 1,408 | 1,837 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,705 | 1,449 | 1,163 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,099 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,888 | 1,680 | 1,091 | 891 | 1,068 | 1,477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,630 | 1,850 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,611 | 4,025 | 6,134 | 11,463 | 15,794 | 16,880 | 15,399 | 14,703 | 11,398 | 6,693 | 3,136 | 3,417 |
| Above Normal (24%) | 2,947 | 2,582 | 2,953 | 4,898 | 6,903 | 7,536 | 8,537 | 5,295 | 3,282 | 1,996 | 1,979 | 2,347 |
| Below Normal (10%) | 2,518 | 2,133 | 2,067 | 3,520 | 3,651 | 4,149 | 6,338 | 4,142 | 2,077 | 1,466 | 1,448 | 1,838 |
| Dry (16%) | 2,289 | 2,153 | 3,123 | 2,402 | 2,549 | 3,241 | 3,998 | 2,808 | 1,685 | 1,260 | 1,351 | 1,778 |
| Critical (27%) | 1,864 | 1,849 | 2,077 | 1,878 | 2,091 | 2,288 | 2,310 | 1,932 | 1,119 | 932 | 1,064 | 1,489 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,500 | 2,975 | 4,804 | 12,398 | 17,192 | 15,482 | 15,015 | 15,004 | 9,433 | 5,780 | 2,744 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,122 | 10,324 | 10,641 | 8,327 | 4,781 | 2,503 | 2,602 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,806 | 8,470 | 8,960 | 5,767 | 2,704 | 1,957 | 1,894 | 2,486 |
| 40% | 2,835 | 2,395 | 2,204 | 2,681 | 4,232 | 5,306 | 7,921 | 4,655 | 2,370 | 1,730 | 1,679 | 2,128 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,437 | 4,131 | 2,069 | 1,507 | 1,497 | 1,933 |
| 60% | 2,402 | 2,170 | 2,046 | 2,290 | 2,614 | 3,440 | 4,786 | 2,910 | 1,757 | 1,362 | 1,407 | 1,830 |
| 70% | 2,137 | 2,060 | 1,979 | 2,084 | 2,305 | 2,906 | 3,212 | 2,305 | 1,351 | 1,153 | 1,319 | 1,743 |
| 80% | 1,978 | 1,951 | 1,829 | 1,883 | 2,128 | 2,372 | 2,500 | 1,866 | 1,217 | 994 | 1,136 | 1,575 |
| 90% | 1,807 | 1,763 | 1,669 | 1,699 | 1,891 | 2,205 | 1,765 | 1,473 | 978 | 874 | 1,029 | 1,452 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,669 | 2,607 | 3,368 | 5,109 | 6,792 | 7,290 | 7,513 | 5,982 | 4,102 | 2,619 | 1,831 | 2,214 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,607 | 4,001 | 6,006 | 11,466 | 16,343 | 17,052 | 15,339 | 14,678 | 11,759 | 6,815 | 3,125 | 3,417 |
| Above Normal (24%) | 2,994 | 2,579 | 2,964 | 4,928 | 6,922 | 7,468 | 8,887 | 5,409 | 2,691 | 1,915 | 1,976 | 2,340 |
| Below Normal (10%) | 2,542 | 2,133 | 2,067 | 3,784 | 3,834 | 4,032 | 6,497 | 4,189 | 1,974 | 1,473 | 1,454 | 1,836 |
| Dry (16%) | 2,239 | 2,153 | 3,132 | 2,393 | 2,464 | 3,241 | 3,795 | 2,537 | 1,570 | 1,245 | 1,349 | 1,776 |
| Critical (27%) | 1,829 | 1,849 | 2,077 | 1,871 | 2,058 | 2,274 | 2,071 | 1,680 | 1,040 | 864 | 1,003 | 1,457 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 22 | 0 | 1,162 | 2,499 | **-100** | 245 | 826 | 1 | **-111** | **-52** | 0 |
| 20% | **-14** | 0 | 47 | 26 | **-11** | 128 | 1 | 7 | 87 | **-131** | 7 | **-20** |
| 30% | 16 | **-45** | **-79** | 3 | 687 | **-29** | 344 | 229 | **-660** | **-33** | **-15** | **-5** |
| 40% | 39 | 0 | **-11** | 52 | 0 | **-264** | 357 | 39 | **-577** | **-11** | 7 | 3 |
| 50% | 26 | 0 | 0 | **-30** | **-349** | 0 | 419 | 202 | **-175** | 14 | 5 | 1 |
| 60% | 1 | 0 | 0 | **-3** | **-70** | **-19** | **-48** | **-154** | **-107** | **-9** | **-1** | **-8** |
| 70% | **-111** | 1 | 0 | **-30** | 0 | 0 | **-566** | **-400** | **-98** | **-10** | 9 | 2 |
| 80% | **-17** | 1 | 0 | **-1** | **-23** | 0 | **-292** | **-301** | **-81** | **-105** | **-71** | **-38** |
| 90% | **-42** | 0 | 0 | 0 | **-56** | **0** | **-123** | **-208** | **-113** | **-17** | **-39** | **-25** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-4** | **-6** | **-26** | 31 | 127 | 8 | **-10** | **-84** | **-110** | **-11** | **-20** | **-11** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | **-4** | **-24** | **-128** | 3 | 550 | 171 | **-61** | **-25** | 362 | 122 | **-11** | 0 |
| Above Normal (24%) | 47 | **-3** | 11 | 31 | 19 | **-68** | 349 | 114 | **-591** | **-80** | **-4** | **-6** |
| Below Normal (10%) | 23 | 0 | 0 | 264 | 183 | **-117** | 159 | 47 | **-103** | 7 | 6 | **-2** |
| Dry (16%) | **-50** | 0 | 9 | **-9** | **-85** | 1 | **-203** | **-271** | **-114** | **-15** | **-1** | **-2** |
| Critical (27%) | **-36** | 0 | 0 | **-7** | **-33** | **-15** | **-239** | **-253** | **-80** | **-68** | **-61** | **-32** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39b-2. San Joaquin River at Vernalis (60-20-20), Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,952 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,183 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,135 | 10,196 | 10,640 | 8,319 | 4,694 | 2,635 | 2,595 | 2,656 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,500 | 8,616 | 5,538 | 3,364 | 1,994 | 1,912 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,246 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,834 | 3,064 | 1,864 | 1,370 | 1,408 | 1,838 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,703 | 1,449 | 1,162 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,096 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,899 | 1,680 | 1,091 | 891 | 1,067 | 1,476 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,631 | 1,851 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,611 | 4,025 | 6,134 | 11,463 | 15,794 | 16,881 | 15,400 | 14,703 | 11,398 | 6,693 | 3,136 | 3,417 |
| Above Normal (24%) | 2,947 | 2,582 | 2,953 | 4,898 | 6,903 | 7,536 | 8,537 | 5,295 | 3,282 | 1,996 | 1,980 | 2,347 |
| Below Normal (10%) | 2,518 | 2,133 | 2,067 | 3,520 | 3,651 | 4,149 | 6,338 | 4,142 | 2,078 | 1,467 | 1,449 | 1,839 |
| Dry (16%) | 2,289 | 2,153 | 3,123 | 2,402 | 2,549 | 3,241 | 3,998 | 2,808 | 1,685 | 1,260 | 1,351 | 1,778 |
| Critical (27%) | 1,864 | 1,849 | 2,077 | 1,878 | 2,091 | 2,288 | 2,310 | 1,932 | 1,119 | 932 | 1,064 | 1,489 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,975 | 4,804 | 12,398 | 17,199 | 15,487 | 15,018 | 15,008 | 9,433 | 5,779 | 2,743 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,128 | 10,324 | 10,639 | 8,322 | 4,776 | 2,502 | 2,599 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,813 | 8,471 | 8,958 | 5,770 | 2,701 | 1,955 | 1,889 | 2,484 |
| 40% | 2,835 | 2,395 | 2,204 | 2,680 | 4,232 | 5,306 | 7,919 | 4,654 | 2,370 | 1,732 | 1,675 | 2,126 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,433 | 4,130 | 2,064 | 1,495 | 1,497 | 1,930 |
| 60% | 2,401 | 2,170 | 2,046 | 2,290 | 2,613 | 3,440 | 4,784 | 2,909 | 1,749 | 1,349 | 1,401 | 1,825 |
| 70% | 2,136 | 2,059 | 1,979 | 2,084 | 2,305 | 2,906 | 3,210 | 2,300 | 1,347 | 1,145 | 1,312 | 1,741 |
| 80% | 1,977 | 1,951 | 1,829 | 1,882 | 2,128 | 2,371 | 2,497 | 1,865 | 1,215 | 993 | 1,135 | 1,574 |
| 90% | 1,807 | 1,763 | 1,669 | 1,698 | 1,891 | 2,205 | 1,763 | 1,472 | 978 | 870 | 1,027 | 1,452 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,668 | 2,607 | 3,368 | 5,109 | 6,793 | 7,290 | 7,511 | 5,980 | 4,099 | 2,616 | 1,828 | 2,213 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,606 | 4,001 | 6,006 | 11,467 | 16,349 | 17,054 | 15,338 | 14,677 | 11,758 | 6,813 | 3,124 | 3,416 |
| Above Normal (24%) | 2,994 | 2,579 | 2,964 | 4,928 | 6,922 | 7,468 | 8,885 | 5,407 | 2,689 | 1,912 | 1,973 | 2,339 |
| Below Normal (10%) | 2,541 | 2,133 | 2,067 | 3,784 | 3,834 | 4,032 | 6,495 | 4,186 | 1,970 | 1,468 | 1,451 | 1,834 |
| Dry (16%) | 2,238 | 2,153 | 3,131 | 2,392 | 2,464 | 3,241 | 3,792 | 2,533 | 1,565 | 1,238 | 1,344 | 1,774 |
| Critical (27%) | 1,828 | 1,849 | 2,077 | 1,871 | 2,058 | 2,273 | 2,069 | 1,678 | 1,038 | 862 | 1,001 | 1,456 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 22 | 0 | 1,162 | 2,506 | -95 | 247 | 825 | 0 | -111 | -53 | 0 |
| 20% | -14 | 0 | 47 | 26 | -7 | 128 | 0 | 3 | 82 | -133 | 4 | -21 |
| 30% | 15 | -45 | -79 | 2 | 694 | -28 | 342 | 232 | -663 | -39 | -23 | -7 |
| 40% | 39 | 0 | -11 | 52 | 0 | -264 | 355 | 39 | -577 | -9 | 4 | 1 |
| 50% | 26 | 0 | 0 | -30 | -349 | 0 | 414 | 201 | -182 | 2 | 6 | -2 |
| 60% | 0 | 0 | 0 | -3 | -70 | -20 | -50 | -156 | -115 | -21 | -7 | -12 |
| 70% | -111 | 0 | 0 | -31 | 0 | 0 | -567 | -404 | -102 | -17 | 2 | -1 |
| 80% | -18 | 0 | 0 | -1 | -23 | 0 | -295 | -302 | -83 | -102 | -72 | -39 |
| 90% | -42 | 0 | 0 | -1 | -57 | 0 | -135 | -208 | -113 | -21 | -40 | -24 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -6 | -26 | 31 | 129 | 8 | -11 | -86 | -112 | -15 | -22 | -12 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | -4 | -24 | -128 | 4 | 555 | 173 | -61 | -26 | 360 | 120 | -12 | 0 |
| Above Normal (24%) | 46 | -3 | 11 | 31 | 19 | -68 | 348 | 111 | -593 | -85 | -7 | -8 |
| Below Normal (10%) | 23 | 0 | 0 | 264 | 183 | -118 | 157 | 44 | -107 | 1 | 2 | -4 |
| Dry (16%) | -51 | 0 | 9 | -10 | -85 | 0 | -205 | -275 | -120 | -22 | -7 | -4 |
| Critical (27%) | -36 | 0 | 0 | -7 | -33 | -15 | -241 | -254 | -81 | -70 | -63 | -33 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39b-3. San Joaquin River at Vernalis (60-20-20), Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,953 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,178 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,133 | 10,196 | 10,640 | 8,319 | 4,695 | 2,634 | 2,595 | 2,655 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,499 | 8,616 | 5,538 | 3,364 | 1,990 | 1,909 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,244 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,835 | 3,064 | 1,864 | 1,370 | 1,408 | 1,837 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,705 | 1,449 | 1,163 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,099 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,888 | 1,680 | 1,091 | 891 | 1,068 | 1,477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,630 | 1,850 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,611 | 4,025 | 6,134 | 11,463 | 15,794 | 16,880 | 15,399 | 14,703 | 11,398 | 6,693 | 3,136 | 3,417 |
| Above Normal (24%) | 2,947 | 2,582 | 2,953 | 4,898 | 6,903 | 7,536 | 8,537 | 5,295 | 3,282 | 1,996 | 1,979 | 2,347 |
| Below Normal (10%) | 2,518 | 2,133 | 2,067 | 3,520 | 3,651 | 4,149 | 6,338 | 4,142 | 2,077 | 1,466 | 1,448 | 1,838 |
| Dry (16%) | 2,289 | 2,153 | 3,123 | 2,402 | 2,549 | 3,241 | 3,998 | 2,808 | 1,685 | 1,260 | 1,351 | 1,778 |
| Critical (27%) | 1,864 | 1,849 | 2,077 | 1,878 | 2,091 | 2,288 | 2,310 | 1,932 | 1,119 | 932 | 1,064 | 1,489 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,952 | 4,804 | 11,236 | 14,693 | 15,582 | 14,771 | 14,183 | 9,432 | 5,890 | 2,796 | 3,060 |
| 20% | 3,162 | 2,777 | 2,857 | 4,812 | 10,135 | 10,196 | 10,640 | 8,319 | 4,694 | 2,635 | 2,595 | 2,656 |
| 30% | 2,980 | 2,527 | 2,401 | 3,611 | 6,119 | 8,500 | 8,616 | 5,538 | 3,364 | 1,994 | 1,912 | 2,491 |
| 40% | 2,796 | 2,395 | 2,216 | 2,629 | 4,232 | 5,570 | 7,564 | 4,615 | 2,947 | 1,741 | 1,672 | 2,125 |
| 50% | 2,602 | 2,219 | 2,101 | 2,402 | 3,420 | 3,847 | 6,019 | 3,929 | 2,246 | 1,493 | 1,492 | 1,932 |
| 60% | 2,401 | 2,169 | 2,046 | 2,293 | 2,684 | 3,459 | 4,834 | 3,064 | 1,864 | 1,370 | 1,408 | 1,838 |
| 70% | 2,247 | 2,059 | 1,979 | 2,114 | 2,305 | 2,906 | 3,778 | 2,703 | 1,449 | 1,162 | 1,310 | 1,741 |
| 80% | 1,995 | 1,951 | 1,829 | 1,883 | 2,151 | 2,371 | 2,792 | 2,167 | 1,298 | 1,096 | 1,207 | 1,613 |
| 90% | 1,849 | 1,763 | 1,669 | 1,699 | 1,947 | 2,205 | 1,899 | 1,680 | 1,091 | 891 | 1,067 | 1,476 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,672 | 2,613 | 3,393 | 5,079 | 6,664 | 7,282 | 7,522 | 6,066 | 4,211 | 2,631 | 1,851 | 2,225 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,611 | 4,025 | 6,134 | 11,463 | 15,794 | 16,881 | 15,400 | 14,703 | 11,398 | 6,693 | 3,136 | 3,417 |
| Above Normal (24%) | 2,947 | 2,582 | 2,953 | 4,898 | 6,903 | 7,536 | 8,537 | 5,295 | 3,282 | 1,996 | 1,980 | 2,347 |
| Below Normal (10%) | 2,518 | 2,133 | 2,067 | 3,520 | 3,651 | 4,149 | 6,338 | 4,142 | 2,078 | 1,467 | 1,449 | 1,839 |
| Dry (16%) | 2,289 | 2,153 | 3,123 | 2,402 | 2,549 | 3,241 | 3,998 | 2,808 | 1,685 | 1,260 | 1,351 | 1,778 |
| Critical (27%) | 1,864 | 1,849 | 2,077 | 1,878 | 2,091 | 2,288 | 2,310 | 1,932 | 1,119 | 932 | 1,064 | 1,489 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | -1 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 4 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | -1 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 10 | -1 | 0 | 0 | -1 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 39b-4. San Joaquin River at Vernalis (60-20-20), Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,500 | 2,975 | 4,804 | 12,398 | 17,192 | 15,482 | 15,015 | 15,004 | 9,433 | 5,780 | 2,744 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,122 | 10,324 | 10,641 | 8,327 | 4,781 | 2,503 | 2,602 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,806 | 8,470 | 8,960 | 5,767 | 2,704 | 1,957 | 1,894 | 2,486 |
| 40% | 2,835 | 2,395 | 2,204 | 2,681 | 4,232 | 5,306 | 7,921 | 4,655 | 2,370 | 1,730 | 1,679 | 2,128 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,437 | 4,131 | 2,069 | 1,507 | 1,497 | 1,933 |
| 60% | 2,402 | 2,170 | 2,046 | 2,290 | 2,614 | 3,440 | 4,786 | 2,910 | 1,757 | 1,362 | 1,407 | 1,830 |
| 70% | 2,137 | 2,060 | 1,979 | 2,084 | 2,305 | 2,906 | 3,212 | 2,305 | 1,351 | 1,153 | 1,319 | 1,743 |
| 80% | 1,978 | 1,951 | 1,829 | 1,883 | 2,128 | 2,372 | 2,500 | 1,866 | 1,217 | 994 | 1,136 | 1,575 |
| 90% | 1,807 | 1,763 | 1,669 | 1,699 | 1,891 | 2,205 | 1,765 | 1,473 | 978 | 874 | 1,029 | 1,452 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,669 | 2,607 | 3,368 | 5,109 | 6,792 | 7,290 | 7,513 | 5,982 | 4,102 | 2,619 | 1,831 | 2,214 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,607 | 4,001 | 6,006 | 11,466 | 16,343 | 17,052 | 15,339 | 14,678 | 11,759 | 6,815 | 3,125 | 3,417 |
| Above Normal (24%) | 2,994 | 2,579 | 2,964 | 4,928 | 6,922 | 7,468 | 8,887 | 5,409 | 2,691 | 1,915 | 1,976 | 2,340 |
| Below Normal (10%) | 2,542 | 2,133 | 2,067 | 3,784 | 3,834 | 4,032 | 6,497 | 4,189 | 1,974 | 1,473 | 1,454 | 1,836 |
| Dry (16%) | 2,239 | 2,153 | 3,132 | 2,393 | 2,464 | 3,241 | 3,795 | 2,537 | 1,570 | 1,245 | 1,349 | 1,776 |
| Critical (27%) | 1,829 | 1,849 | 2,077 | 1,871 | 2,058 | 2,274 | 2,071 | 1,680 | 1,040 | 864 | 1,003 | 1,457 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,499 | 2,975 | 4,804 | 12,398 | 17,199 | 15,487 | 15,018 | 15,008 | 9,433 | 5,779 | 2,743 | 3,060 |
| 20% | 3,148 | 2,778 | 2,904 | 4,838 | 10,128 | 10,324 | 10,639 | 8,322 | 4,776 | 2,502 | 2,599 | 2,635 |
| 30% | 2,996 | 2,483 | 2,321 | 3,613 | 6,813 | 8,471 | 8,958 | 5,770 | 2,701 | 1,955 | 1,889 | 2,484 |
| 40% | 2,835 | 2,395 | 2,204 | 2,680 | 4,232 | 5,306 | 7,919 | 4,654 | 2,370 | 1,732 | 1,675 | 2,126 |
| 50% | 2,628 | 2,219 | 2,101 | 2,371 | 3,071 | 3,847 | 6,433 | 4,130 | 2,064 | 1,495 | 1,497 | 1,930 |
| 60% | 2,401 | 2,170 | 2,046 | 2,290 | 2,613 | 3,440 | 4,784 | 2,909 | 1,749 | 1,349 | 1,401 | 1,825 |
| 70% | 2,136 | 2,059 | 1,979 | 2,084 | 2,305 | 2,906 | 3,210 | 2,300 | 1,347 | 1,145 | 1,312 | 1,741 |
| 80% | 1,977 | 1,951 | 1,829 | 1,882 | 2,128 | 2,371 | 2,497 | 1,865 | 1,215 | 993 | 1,135 | 1,574 |
| 90% | 1,807 | 1,763 | 1,669 | 1,698 | 1,891 | 2,205 | 1,763 | 1,472 | 978 | 870 | 1,027 | 1,452 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,668 | 2,607 | 3,368 | 5,109 | 6,793 | 7,290 | 7,511 | 5,980 | 4,099 | 2,616 | 1,828 | 2,213 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 3,606 | 4,001 | 6,006 | 11,467 | 16,349 | 17,054 | 15,338 | 14,677 | 11,758 | 6,813 | 3,124 | 3,416 |
| Above Normal (24%) | 2,994 | 2,579 | 2,964 | 4,928 | 6,922 | 7,468 | 8,885 | 5,407 | 2,689 | 1,912 | 1,973 | 2,339 |
| Below Normal (10%) | 2,541 | 2,133 | 2,067 | 3,784 | 3,834 | 4,032 | 6,495 | 4,186 | 1,970 | 1,468 | 1,451 | 1,834 |
| Dry (16%) | 2,238 | 2,153 | 3,131 | 2,392 | 2,464 | 3,241 | 3,792 | 2,533 | 1,565 | 1,238 | 1,344 | 1,774 |
| Critical (27%) | 1,828 | 1,849 | 2,077 | 1,871 | 2,058 | 2,273 | 2,069 | 1,678 | 1,038 | 862 | 1,001 | 1,456 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 8 | 5 | 3 | 4 | 0 | 0 | -1 | 0 |
| 20% | 0 | 0 | 0 | 0 | 6 | 0 | -1 | -5 | -5 | -1 | -4 | 0 |
| 30% | -1 | 0 | 0 | 0 | 7 | 1 | -2 | 3 | -3 | -2 | -5 | -2 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 2 | -4 | -2 |
| 50% | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | -5 | -12 | 0 | -3 |
| 60% | -1 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | -8 | -13 | -6 | -4 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -6 | -4 | -8 | -6 | -2 |
| 80% | 0 | 0 | 0 | 0 | -1 | 0 | -3 | -1 | -2 | -1 | -1 | -1 |
| 90% | 0 | 0 | 0 | -1 | 0 | 0 | -2 | -1 | 0 | -5 | -2 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | 0 | 0 | 0 | 1 | 0 | -1 | -2 | -3 | -3 | -3 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 6 | 2 | 0 | -1 | -1 | -2 | -1 | -1 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | -2 | -3 | -2 | -1 |
| Below Normal (10%) | -1 | 0 | 0 | 0 | 0 | 0 | -2 | -3 | -4 | -5 | -4 | -2 |
| Dry (16%) | -1 | 0 | 0 | 0 | 0 | 0 | -3 | -4 | -5 | -7 | -5 | -2 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -2 | -2 | -2 | -1 |

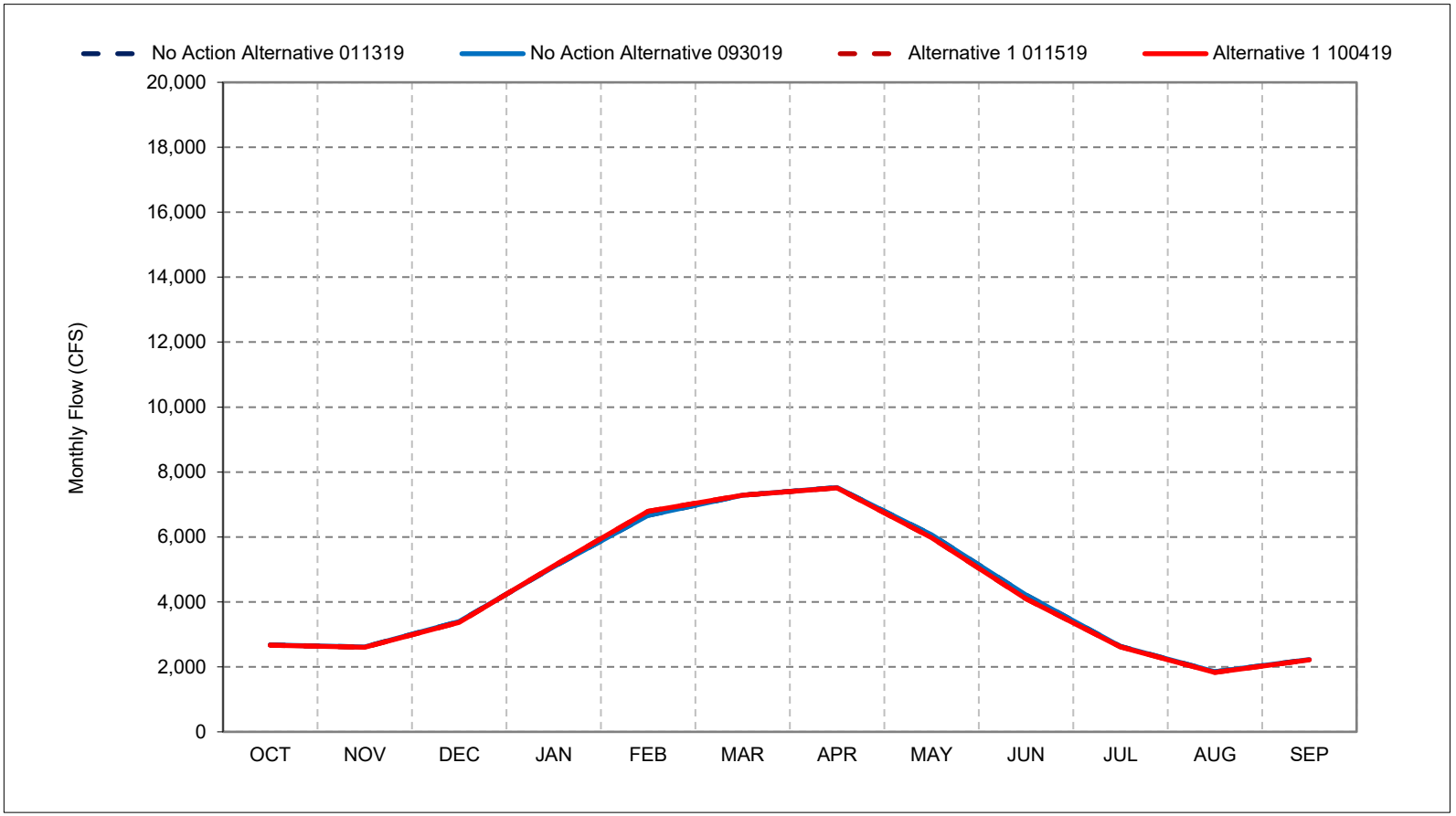
a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-1. San Joaquin River at Vernalis (60-20-20), Long-Term Average Flow

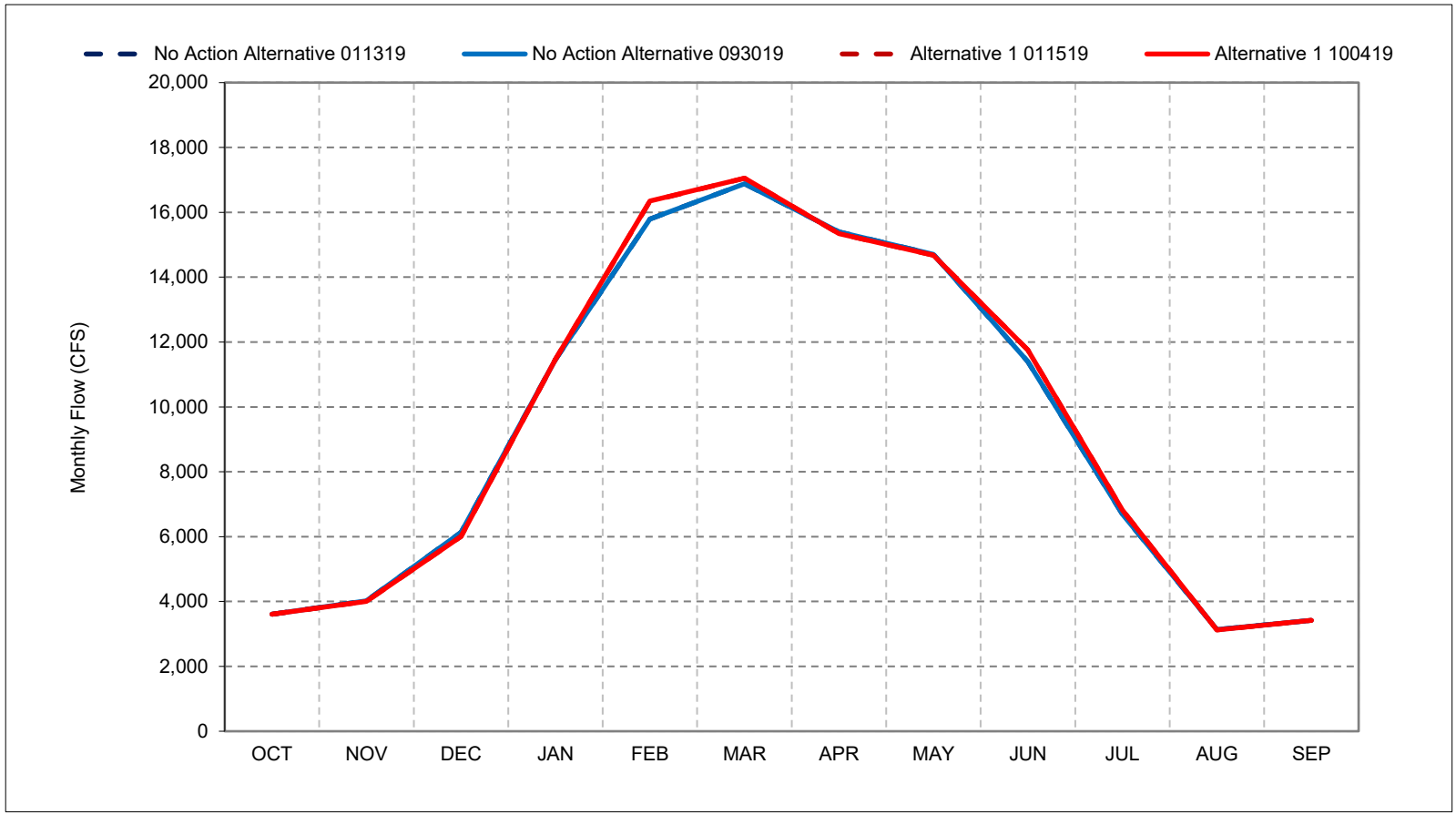



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-2. San Joaquin River at Vernalis (60-20-20), Wet Year Average Flow

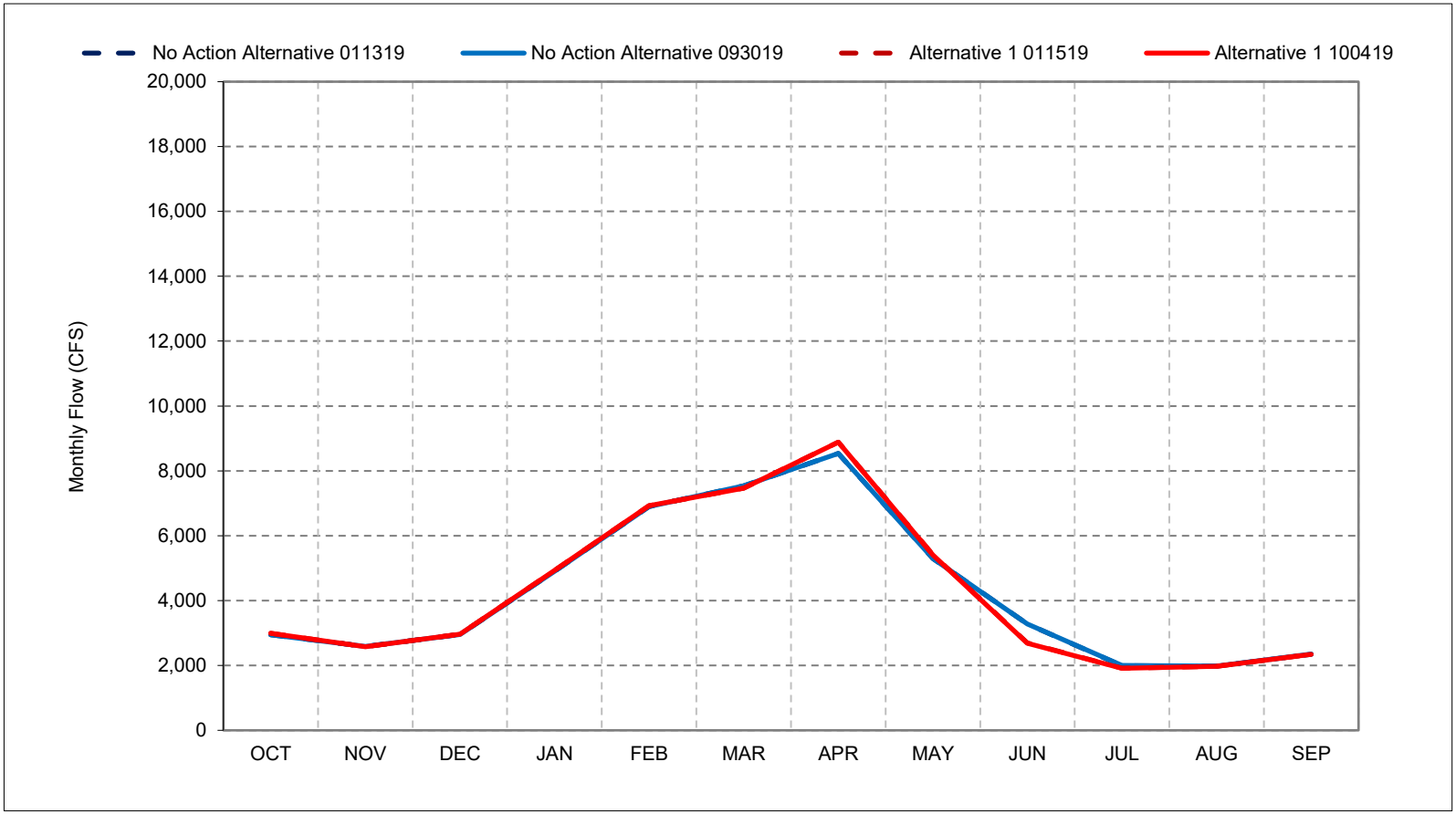



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-3. San Joaquin River at Vernalis (60-20-20), Above Normal Year Average Flow

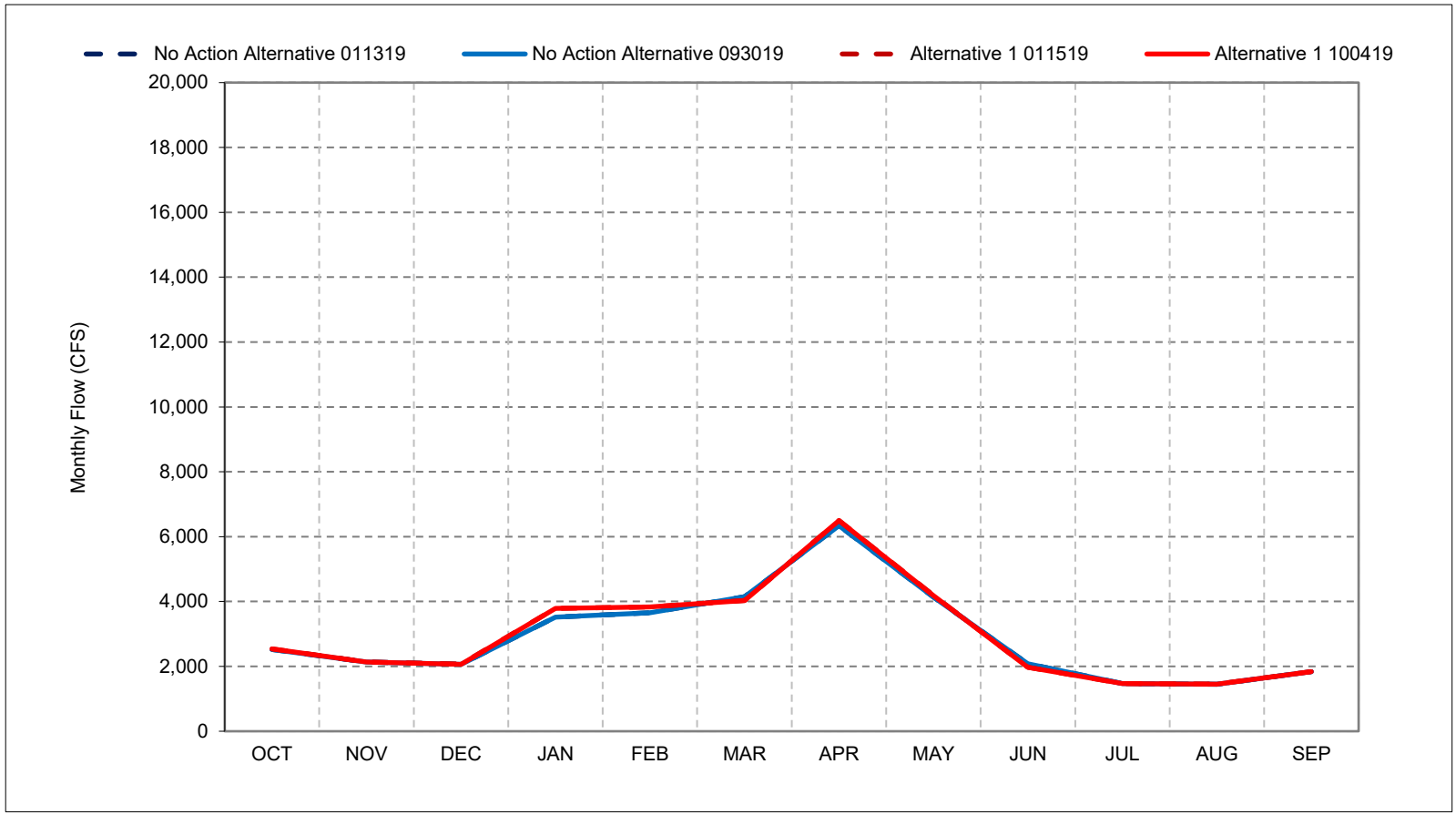



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-4. San Joaquin River at Vernalis (60-20-20), Below Normal Year Average Flow

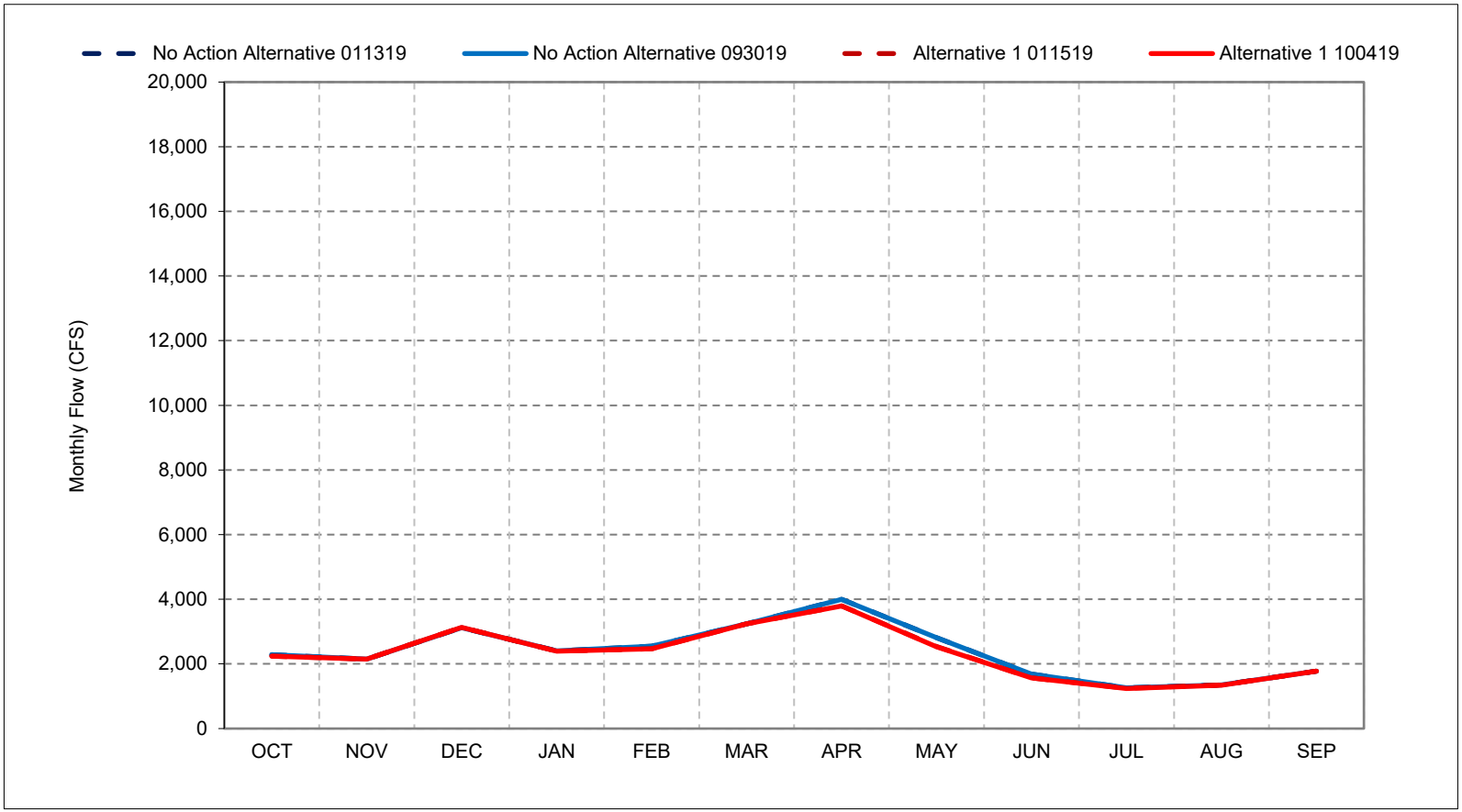



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-5. San Joaquin River at Vernalis (60-20-20), Dry Year Average Flow

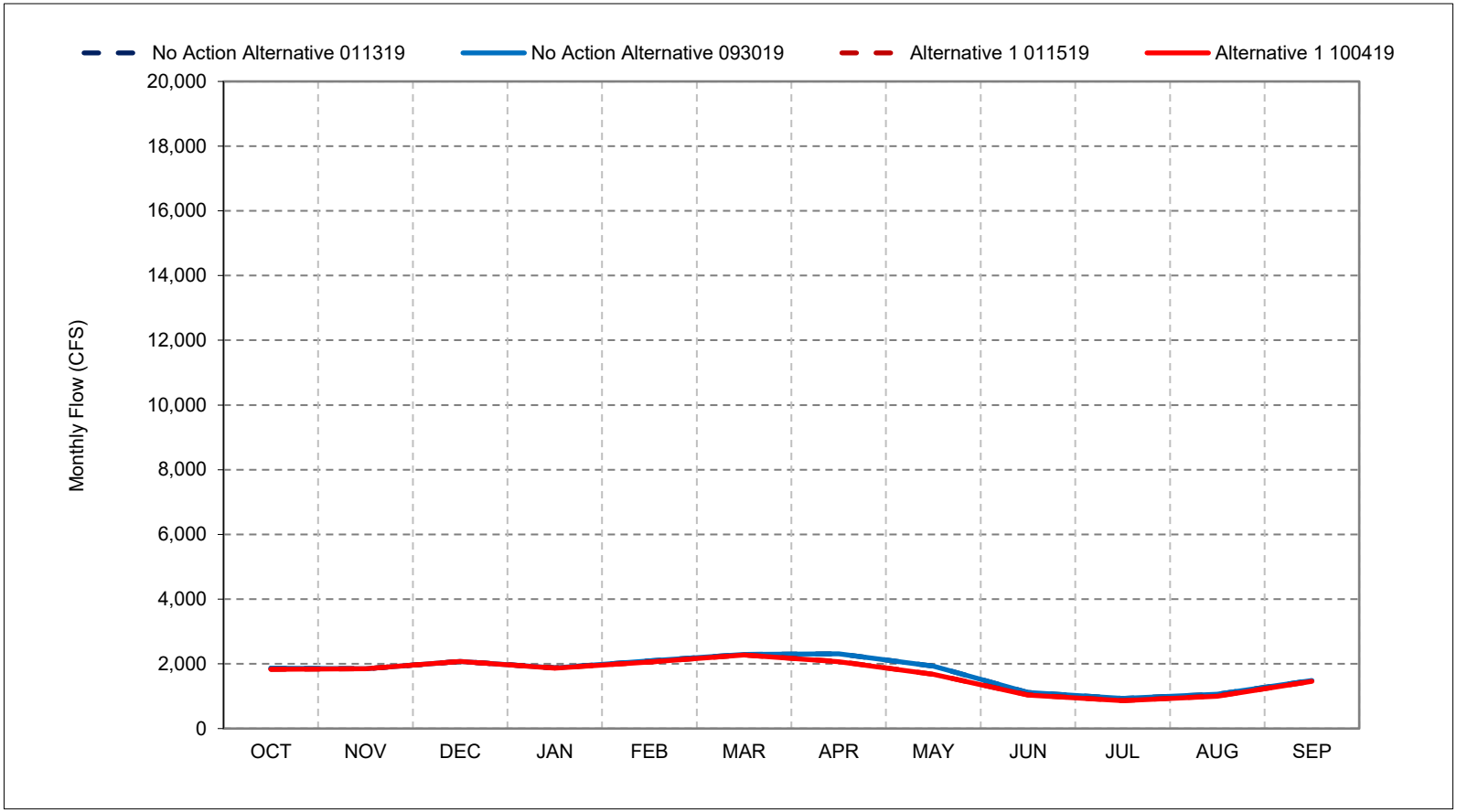



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 39b-6. San Joaquin River at Vernalis (60-20-20), Critical Year Average Flow




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 40-1. Old and Middle River Flow, Monthly Flow (combined flows)

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3,899 | -4,158 | -3,846 | -2,823 | -1,197 | -1,150 | 3,171 | 2,828 | -1,150 | -3,145 | -2,644 | -4,097 |
| 20% | -4,145 | -4,633 | -4,581 | -2,823 | -1,905 | -1,582 | 2,206 | 1,315 | -1,882 | -6,033 | -3,489 | -5,563 |
| 30% | -4,567 | -5,444 | -5,379 | -3,355 | -2,768 | -3,140 | 1,603 | 614 | -3,500 | -6,887 | -4,143 | -6,221 |
| 40% | -4,884 | -5,890 | -5,871 | -4,348 | -3,500 | -3,500 | 1,268 | 242 | -3,500 | -7,781 | -7,881 | -7,025 |
| 50% | -5,162 | -6,288 | -5,871 | -4,710 | -4,145 | -4,017 | 612 | -34 | -3,500 | -8,770 | -9,726 | -8,539 |
| 60% | -5,506 | -6,592 | -5,871 | -4,993 | -5,000 | -4,885 | -223 | -490 | -4,317 | -9,176 | -10,281 | -9,573 |
| 70% | -5,969 | -7,139 | -7,069 | -5,000 | -5,000 | -5,000 | -599 | -766 | -5,000 | -9,674 | -10,684 | -9,932 |
| 80% | -6,627 | -8,064 | -9,343 | -5,000 | -5,000 | -5,000 | -1,024 | -1,055 | -5,000 | -10,180 | -10,772 | -10,027 |
| 90% | -7,018 | -9,851 | -9,681 | -5,000 | -5,000 | -5,000 | -1,389 | -1,422 | -5,000 | -11,025 | -10,967 | -10,211 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,404 | -6,485 | -6,168 | -3,632 | -3,102 | -2,938 | 910 | 309 | -3,542 | -7,887 | -7,667 | -7,776 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -5,759 | -6,524 | -6,777 | -2,059 | -2,135 | -1,800 | 3,139 | 2,058 | -4,304 | -8,723 | -10,544 | -9,575 |
| Above Normal (16%) | -5,990 | -7,820 | -7,734 | -3,716 | -3,859 | -4,141 | 1,193 | 434 | -4,479 | -8,805 | -10,805 | -10,094 |
| Below Normal (13%) | -6,354 | -6,704 | -6,038 | -4,380 | -3,662 | -4,055 | 181 | -305 | -3,407 | -10,088 | -8,919 | -7,920 |
| Dry (24%) | -4,923 | -6,843 | -5,283 | -4,640 | -3,644 | -3,640 | -744 | -936 | -3,260 | -7,836 | -4,189 | -6,133 |
| Critical (15%) | -3,933 | -4,157 | -4,748 | -4,579 | -2,962 | -1,903 | -802 | -980 | -1,472 | -3,145 | -2,680 | -3,975 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3,176 | -3,431 | -3,956 | -2,948 | -2,524 | -982 | -772 | -1,369 | -2,397 | -2,974 | -2,553 | -3,856 |
| 20% | -3,662 | -3,954 | -4,508 | -4,516 | -4,302 | -3,396 | -1,358 | -1,686 | -3,919 | -4,570 | -3,637 | -5,098 |
| 30% | -4,003 | -4,629 | -5,135 | -4,516 | -4,464 | -4,069 | -1,736 | -2,314 | -4,500 | -6,173 | -4,625 | -5,950 |
| 40% | -4,364 | -5,367 | -5,290 | -4,516 | -4,464 | -4,516 | -2,056 | -2,821 | -4,500 | -7,730 | -7,998 | -7,192 |
| 50% | -5,360 | -6,363 | -5,290 | -4,516 | -4,464 | -4,516 | -2,196 | -2,978 | -4,500 | -8,533 | -9,939 | -8,985 |
| 60% | -6,762 | -7,112 | -5,290 | -5,000 | -4,483 | -4,516 | -2,459 | -3,211 | -4,500 | -9,114 | -10,362 | -9,393 |
| 70% | -7,981 | -8,121 | -6,412 | -5,226 | -4,892 | -4,924 | -2,830 | -3,258 | -5,000 | -9,685 | -10,660 | -9,537 |
| 80% | -8,694 | -8,875 | -6,827 | -5,226 | -5,193 | -5,000 | -3,134 | -3,619 | -5,000 | -10,362 | -10,737 | -9,645 |
| 90% | -9,108 | -9,271 | -9,744 | -5,226 | -5,250 | -5,000 | -3,490 | -4,026 | -5,000 | -10,957 | -11,081 | -9,750 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,831 | -6,293 | -5,701 | -3,980 | -3,700 | -3,296 | -1,797 | -2,458 | -4,201 | -7,654 | -7,816 | -7,561 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -7,235 | -7,620 | -6,463 | -2,354 | -1,838 | -1,308 | -915 | -1,849 | -4,079 | -8,689 | -10,466 | -9,337 |
| Above Normal (16%) | -7,485 | -7,177 | -6,284 | -4,445 | -3,955 | -3,885 | -2,671 | -3,116 | -4,451 | -9,267 | -10,749 | -9,707 |
| Below Normal (13%) | -5,598 | -5,968 | -5,472 | -5,032 | -4,663 | -4,610 | -2,422 | -3,107 | -5,000 | -10,315 | -9,935 | -7,991 |
| Dry (24%) | -4,585 | -5,809 | -5,128 | -4,780 | -4,914 | -4,764 | -2,227 | -2,899 | -4,747 | -6,769 | -4,459 | -5,889 |
| Critical (15%) | -3,291 | -3,564 | -4,581 | -4,699 | -4,548 | -3,315 | -1,470 | -1,735 | -2,551 | -2,703 | -2,551 | -3,781 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 723 | 727 | **-110** | **-125** | **-1,327** | 168 | **-3,943** | **-4,197** | **-1,246** | 171 | 91 | 241 |
| 20% | 483 | 678 | 72 | **-1,694** | **-2,397** | **-1,813** | **-3,565** | **-3,001** | **-2,036** | 1,463 | **-148** | 466 |
| 30% | 564 | 815 | 244 | **-1,161** | **-1,696** | **-929** | **-3,338** | **-2,928** | **-1,000** | 713 | **-483** | 271 |
| 40% | 521 | 522 | 581 | **-168** | **-964** | **-1,016** | **-3,325** | **-3,063** | **-1,000** | 50 | **-117** | **-166** |
| 50% | **-198** | **-75** | 581 | 194 | **-319** | **-499** | **-2,808** | **-2,944** | **-1,000** | 236 | **-213** | **-445** |
| 60% | **-1,257** | **-520** | 581 | **-7** | 517 | 369 | **-2,236** | **-2,721** | **-183** | 62 | **-81** | 180 |
| 70% | **-2,012** | **-982** | 657 | **-226** | 108 | 76 | **-2,230** | **-2,492** | 0 | **-12** | 24 | 394 |
| 80% | **-2,067** | **-811** | 2,516 | **-226** | **-193** | 0 | **-2,110** | **-2,564** | 0 | **-182** | 35 | 383 |
| 90% | **-2,090** | 580 | **-63** | **-226** | **-250** | 0 | **-2,102** | **-2,605** | 0 | 68 | **-114** | 461 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **-427** | 192 | 468 | **-348** | **-598** | **-359** | **-2,706** | **-2,767** | **-658** | 232 | **-150** | 215 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **-1,476** | **-1,096** | 314 | **-295** | 297 | 493 | **-4,053** | **-3,907** | 225 | 34 | 78 | 238 |
| Above Normal (16%) | **-1,495** | 643 | 1,450 | **-729** | **-96** | 256 | **-3,865** | **-3,550** | 28 | **-463** | 56 | 387 |
| Below Normal (13%) | 756 | 736 | 566 | **-652** | **-1,001** | **-555** | **-2,603** | **-2,802** | **-1,593** | **-226** | **-1,016** | **-71** |
| Dry (24%) | 338 | 1,034 | 155 | **-139** | **-1,271** | **-1,124** | **-1,482** | **-1,963** | **-1,487** | 1,067 | **-270** | 244 |
| Critical (15%) | 641 | 593 | 167 | **-120** | **-1,587** | **-1,412** | **-668** | **-755** | **-1,079** | 443 | 129 | 195 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 40-2. Old and Middle River Flow, Monthly Flow (combined flows)

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -3,837 | -4,016 | -3,354 | -2,823 | -1,324 | -1,150 | 3,172 | 2,675 | -1,949 | -2,924 | -2,643 | -4,274 |
| 20% | -4,194 | -4,901 | -4,061 | -2,823 | -2,053 | -1,444 | 2,207 | 1,315 | -2,324 | -5,485 | -3,241 | -5,608 |
| 30% | -4,586 | -5,452 | -4,939 | -3,355 | -2,825 | -3,060 | 1,603 | 614 | -3,500 | -6,424 | -4,517 | -6,190 |
| 40% | -4,871 | -5,838 | -5,871 | -4,201 | -3,500 | -3,500 | 1,275 | 205 | -3,500 | -7,575 | -7,573 | -7,014 |
| 50% | -5,159 | -6,241 | -5,871 | -4,710 | -4,106 | -4,068 | 612 | -34 | -3,500 | -8,781 | -9,624 | -8,554 |
| 60% | -5,421 | -6,575 | -5,871 | -5,000 | -5,000 | -4,841 | -223 | -490 | -4,323 | -9,267 | -10,281 | -9,571 |
| 70% | -5,912 | -7,046 | -6,578 | -5,000 | -5,000 | -5,000 | -652 | -800 | -5,000 | -9,661 | -10,684 | -9,913 |
| 80% | -6,391 | -8,001 | -9,125 | -5,000 | -5,000 | -5,000 | -1,125 | -1,141 | -5,000 | -10,042 | -10,771 | -10,029 |
| 90% | -6,954 | -9,846 | -9,680 | -5,000 | -5,000 | -5,000 | -1,387 | -1,422 | -5,000 | -10,943 | -11,007 | -10,128 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,348 | -6,448 | -5,941 | -3,613 | -3,155 | -2,902 | 865 | 272 | -3,699 | -7,771 | -7,632 | -7,771 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -5,855 | -6,543 | -6,758 | -2,059 | -2,155 | -1,796 | 3,081 | 1,959 | -4,304 | -8,752 | -10,560 | -9,575 |
| Above Normal (16%) | -5,837 | -7,712 | -7,688 | -3,716 | -3,869 | -4,115 | 1,194 | 429 | -4,479 | -8,818 | -10,816 | -10,029 |
| Below Normal (13%) | -6,108 | -6,447 | -5,770 | -4,380 | -3,655 | -4,055 | 161 | -305 | -3,561 | -10,030 | -8,793 | -7,925 |
| Dry (24%) | -4,913 | -6,833 | -5,108 | -4,696 | -3,613 | -3,587 | -817 | -938 | -3,450 | -7,418 | -4,111 | -6,131 |
| Critical (15%) | -3,748 | -4,234 | -3,824 | -4,359 | -3,325 | -1,785 | -847 | -1,007 | -2,083 | -3,028 | -2,641 | -4,010 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -2,961 | -3,320 | -3,454 | -3,492 | -2,542 | -1,126 | -941 | -1,414 | -2,141 | -2,804 | -2,559 | -2,414 |
| 20% | -3,292 | -3,859 | -4,175 | -3,645 | -4,464 | -3,258 | -1,807 | -1,935 | -3,927 | -4,146 | -3,313 | -2,820 |
| 30% | -3,630 | -4,712 | -4,981 | -3,821 | -4,464 | -3,258 | -2,041 | -2,694 | -4,922 | -5,875 | -4,408 | -2,992 |
| 40% | -3,825 | -5,844 | -5,290 | -4,516 | -4,464 | -3,258 | -2,262 | -2,888 | -5,000 | -7,482 | -7,676 | -3,442 |
| 50% | -4,030 | -7,808 | -5,290 | -4,516 | -4,464 | -3,258 | -2,474 | -3,029 | -5,000 | -8,083 | -9,369 | -4,125 |
| 60% | -4,231 | -8,812 | -5,290 | -4,593 | -4,483 | -3,258 | -3,075 | -3,301 | -5,000 | -8,596 | -9,573 | -5,059 |
| 70% | -4,829 | -9,049 | -7,391 | -5,188 | -4,897 | -3,258 | -3,500 | -3,500 | -5,000 | -9,172 | -9,902 | -5,655 |
| 80% | -5,166 | -9,174 | -9,426 | -5,226 | -5,000 | -3,258 | -3,500 | -3,500 | -5,000 | -9,558 | -10,352 | -6,157 |
| 90% | -6,143 | -9,328 | -9,668 | -5,226 | -5,250 | -3,500 | -3,500 | -3,500 | -5,000 | -9,960 | -10,814 | -7,415 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4,368 | -6,769 | -5,926 | -3,763 | -3,638 | -2,374 | -2,146 | -2,508 | -4,341 | -7,217 | -7,403 | -4,541 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -4,804 | -8,442 | -6,953 | -2,171 | -1,938 | -805 | -1,440 | -1,928 | -4,405 | -8,363 | -10,148 | -3,712 |
| Above Normal (16%) | -3,547 | -8,669 | -7,825 | -4,284 | -3,640 | -2,711 | -3,051 | -3,251 | -4,862 | -8,171 | -9,883 | -2,778 |
| Below Normal (13%) | -5,437 | -5,932 | -5,231 | -4,747 | -4,663 | -3,311 | -2,745 | -3,125 | -4,951 | -8,984 | -9,155 | -7,360 |
| Dry (24%) | -4,416 | -5,794 | -4,982 | -4,617 | -4,807 | -3,287 | -2,414 | -2,892 | -4,740 | -6,938 | -4,262 | -5,757 |
| Critical (15%) | -3,254 | -3,478 | -3,854 | -4,324 | -4,432 | -3,030 | -1,698 | -1,752 | -2,412 | -2,546 | -2,400 | -3,636 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 876 | 696 | **-100** | **-669** | **-1,218** | 25 | **-4,113** | **-4,089** | **-192** | 119 | 83 | 1,860 |
| 20% | 902 | 1,042 | **-114** | **-823** | **-2,412** | **-1,815** | **-4,014** | **-3,250** | **-1,604** | 1,340 | **-72** | 2,788 |
| 30% | 956 | 740 | **-42** | **-466** | **-1,640** | **-198** | **-3,644** | **-3,308** | **-1,422** | 548 | 109 | 3,198 |
| 40% | 1,047 | **-6** | 581 | **-315** | **-964** | 242 | **-3,537** | **-3,093** | **-1,500** | 93 | **-103** | 3,572 |
| 50% | 1,129 | **-1,566** | 581 | 194 | **-358** | 810 | **-3,086** | **-2,994** | **-1,500** | 699 | 255 | 4,429 |
| 60% | 1,189 | **-2,237** | 581 | 407 | 517 | 1,583 | **-2,852** | **-2,811** | **-677** | 671 | 708 | 4,512 |
| 70% | 1,083 | **-2,003** | **-813** | **-188** | 103 | 1,742 | **-2,848** | **-2,700** | 0 | 490 | 782 | 4,258 |
| 80% | 1,225 | **-1,173** | **-302** | **-226** | 0 | 1,742 | **-2,375** | **-2,359** | 0 | 484 | 420 | 3,873 |
| 90% | 811 | 517 | 12 | **-226** | **-250** | 1,500 | **-2,113** | **-2,078** | 0 | 983 | 193 | 2,713 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 980 | **-321** | 15 | **-151** | **-484** | 528 | **-3,011** | **-2,780** | **-642** | 554 | 229 | 3,230 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,051 | **-1,899** | **-194** | **-112** | 217 | 991 | **-4,521** | **-3,887** | **-101** | 389 | 412 | 5,863 |
| Above Normal (16%) | 2,291 | **-957** | **-137** | **-568** | 229 | 1,404 | **-4,245** | **-3,680** | **-382** | 647 | 933 | 7,251 |
| Below Normal (13%) | 671 | 515 | 539 | **-367** | **-1,008** | 744 | **-2,906** | **-2,820** | **-1,389** | 1,046 | **-362** | 564 |
| Dry (24%) | 497 | 1,039 | 126 | 79 | **-1,194** | 300 | **-1,597** | **-1,954** | **-1,291** | 480 | **-151** | 373 |
| Critical (15%) | 493 | 756 | **-30** | 35 | **-1,107** | **-1,245** | **-851** | **-745** | **-330** | 482 | 241 | 374 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 40-3. Old and Middle River Flow, Monthly Flow (combined flows)

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3,899 | -4,158 | -3,846 | -2,823 | -1,197 | -1,150 | 3,171 | 2,828 | -1,150 | -3,145 | -2,644 | -4,097 |
| 20% | -4,145 | -4,633 | -4,581 | -2,823 | -1,905 | -1,582 | 2,206 | 1,315 | -1,882 | -6,033 | -3,489 | -5,563 |
| 30% | -4,567 | -5,444 | -5,379 | -3,355 | -2,768 | -3,140 | 1,603 | 614 | -3,500 | -6,887 | -4,143 | -6,221 |
| 40% | -4,884 | -5,890 | -5,871 | -4,348 | -3,500 | -3,500 | 1,268 | 242 | -3,500 | -7,781 | -7,881 | -7,025 |
| 50% | -5,162 | -6,288 | -5,871 | -4,710 | -4,145 | -4,017 | 612 | -34 | -3,500 | -8,770 | -9,726 | -8,539 |
| 60% | -5,506 | -6,592 | -5,871 | -4,993 | -5,000 | -4,885 | -223 | -490 | -4,317 | -9,176 | -10,281 | -9,573 |
| 70% | -5,969 | -7,139 | -7,069 | -5,000 | -5,000 | -5,000 | -599 | -766 | -5,000 | -9,674 | -10,684 | -9,932 |
| 80% | -6,627 | -8,064 | -9,343 | -5,000 | -5,000 | -5,000 | -1,024 | -1,055 | -5,000 | -10,180 | -10,772 | -10,027 |
| 90% | -7,018 | -9,851 | -9,681 | -5,000 | -5,000 | -5,000 | -1,389 | -1,422 | -5,000 | -11,025 | -10,967 | -10,211 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,404 | -6,485 | -6,168 | -3,632 | -3,102 | -2,938 | 910 | 309 | -3,542 | -7,887 | -7,667 | -7,776 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -5,759 | -6,524 | -6,777 | -2,059 | -2,135 | -1,800 | 3,139 | 2,058 | -4,304 | -8,723 | -10,544 | -9,575 |
| Above Normal (16%) | -5,990 | -7,820 | -7,734 | -3,716 | -3,859 | -4,141 | 1,193 | 434 | -4,479 | -8,805 | -10,805 | -10,094 |
| Below Normal (13%) | -6,354 | -6,704 | -6,038 | -4,380 | -3,662 | -4,055 | 181 | -305 | -3,407 | -10,088 | -8,919 | -7,920 |
| Dry (24%) | -4,923 | -6,843 | -5,283 | -4,640 | -3,644 | -3,640 | -744 | -936 | -3,260 | -7,836 | -4,189 | -6,133 |
| Critical (15%) | -3,933 | -4,157 | -4,748 | -4,579 | -2,962 | -1,903 | -802 | -980 | -1,472 | -3,145 | -2,680 | -3,975 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3,837 | -4,016 | -3,354 | -2,823 | -1,324 | -1,150 | 3,172 | 2,675 | -1,949 | -2,924 | -2,643 | -4,274 |
| 20% | -4,194 | -4,901 | -4,061 | -2,823 | -2,053 | -1,444 | 2,207 | 1,315 | -2,324 | -5,485 | -3,241 | -5,608 |
| 30% | -4,586 | -5,452 | -4,939 | -3,355 | -2,825 | -3,060 | 1,603 | 614 | -3,500 | -6,424 | -4,517 | -6,190 |
| 40% | -4,871 | -5,838 | -5,871 | -4,201 | -3,500 | -3,500 | 1,275 | 205 | -3,500 | -7,575 | -7,573 | -7,014 |
| 50% | -5,159 | -6,241 | -5,871 | -4,710 | -4,106 | -4,068 | 612 | -34 | -3,500 | -8,781 | -9,624 | -8,554 |
| 60% | -5,421 | -6,575 | -5,871 | -5,000 | -5,000 | -4,841 | -223 | -490 | -4,323 | -9,267 | -10,281 | -9,571 |
| 70% | -5,912 | -7,046 | -6,578 | -5,000 | -5,000 | -5,000 | -652 | -800 | -5,000 | -9,661 | -10,684 | -9,913 |
| 80% | -6,391 | -8,001 | -9,125 | -5,000 | -5,000 | -5,000 | -1,125 | -1,141 | -5,000 | -10,042 | -10,771 | -10,029 |
| 90% | -6,954 | -9,846 | -9,680 | -5,000 | -5,000 | -5,000 | -1,387 | -1,422 | -5,000 | -10,943 | -11,007 | -10,128 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,348 | -6,448 | -5,941 | -3,613 | -3,155 | -2,902 | 865 | 272 | -3,699 | -7,771 | -7,632 | -7,771 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -5,855 | -6,543 | -6,758 | -2,059 | -2,155 | -1,796 | 3,081 | 1,959 | -4,304 | -8,752 | -10,560 | -9,575 |
| Above Normal (16%) | -5,837 | -7,712 | -7,688 | -3,716 | -3,869 | -4,115 | 1,194 | 429 | -4,479 | -8,818 | -10,816 | -10,029 |
| Below Normal (13%) | -6,108 | -6,447 | -5,770 | -4,380 | -3,655 | -4,055 | 161 | -305 | -3,561 | -10,030 | -8,793 | -7,925 |
| Dry (24%) | -4,913 | -6,833 | -5,108 | -4,696 | -3,613 | -3,587 | -817 | -938 | -3,450 | -7,418 | -4,111 | -6,131 |
| Critical (15%) | -3,748 | -4,234 | -3,824 | -4,359 | -3,325 | -1,785 | -847 | -1,007 | -2,083 | -3,028 | -2,641 | -4,010 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 62 | 142 | 492 | 0 | **-126** | 0 | 1 | **-153** | **-799** | 222 | 2 | **-177** |
| 20% | **-49** | **-268** | 520 | 0 | **-148** | 139 | 1 | **0** | **-441** | 547 | 248 | **-45** |
| 30% | **-19** | **-8** | 440 | 0 | **-56** | 80 | **0** | 0 | 0 | 463 | **-375** | 31 |
| 40% | 13 | 51 | 0 | 147 | 0 | 0 | 7 | **-37** | 0 | 206 | 307 | 12 |
| 50% | 3 | 47 | 0 | 0 | 39 | **-52** | **0** | 0 | 0 | **-12** | 102 | **-15** |
| 60% | 85 | 17 | 0 | **-7** | 0 | 44 | **0** | 0 | **-6** | **-90** | **0** | 2 |
| 70% | 57 | 93 | 491 | 0 | 0 | 0 | **-53** | **-34** | 0 | 13 | 0 | 19 |
| 80% | 236 | 63 | 218 | 0 | 0 | 0 | **-101** | **-86** | 0 | 138 | 0 | **-2** |
| 90% | 64 | 5 | 1 | 0 | 0 | 0 | 2 | **0** | 0 | 82 | **-40** | 83 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56 | 36 | 227 | 19 | **-53** | 36 | **-45** | **-36** | **-156** | 116 | 35 | 5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **-96** | **-20** | 19 | 1 | **-20** | 4 | **-57** | **-99** | 0 | **-29** | **-15** | 0 |
| Above Normal (16%) | 152 | 108 | 46 | 0 | **-10** | 26 | 1 | **-6** | **-1** | **-13** | **-10** | 65 |
| Below Normal (13%) | 246 | 257 | 268 | 0 | 7 | 0 | **-20** | **0** | **-154** | 59 | 126 | **-5** |
| Dry (24%) | 10 | 10 | 176 | **-55** | 30 | 53 | **-73** | **-1** | **-190** | 418 | 77 | 3 |
| Critical (15%) | 185 | **-77** | 924 | 220 | **-363** | 119 | **-45** | **-26** | **-610** | 117 | 38 | **-34** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 40-4. Old and Middle River Flow, Monthly Flow (combined flows)

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3,176 | -3,431 | -3,956 | -2,948 | -2,524 | -982 | -772 | -1,369 | -2,397 | -2,974 | -2,553 | -3,856 |
| 20% | -3,662 | -3,954 | -4,508 | -4,516 | -4,302 | -3,396 | -1,358 | -1,686 | -3,919 | -4,570 | -3,637 | -5,098 |
| 30% | -4,003 | -4,629 | -5,135 | -4,516 | -4,464 | -4,069 | -1,736 | -2,314 | -4,500 | -6,173 | -4,625 | -5,950 |
| 40% | -4,364 | -5,367 | -5,290 | -4,516 | -4,464 | -4,516 | -2,056 | -2,821 | -4,500 | -7,730 | -7,998 | -7,192 |
| 50% | -5,360 | -6,363 | -5,290 | -4,516 | -4,464 | -4,516 | -2,196 | -2,978 | -4,500 | -8,533 | -9,939 | -8,985 |
| 60% | -6,762 | -7,112 | -5,290 | -5,000 | -4,483 | -4,516 | -2,459 | -3,211 | -4,500 | -9,114 | -10,362 | -9,393 |
| 70% | -7,981 | -8,121 | -6,412 | -5,226 | -4,892 | -4,924 | -2,830 | -3,258 | -5,000 | -9,685 | -10,660 | -9,537 |
| 80% | -8,694 | -8,875 | -6,827 | -5,226 | -5,193 | -5,000 | -3,134 | -3,619 | -5,000 | -10,362 | -10,737 | -9,645 |
| 90% | -9,108 | -9,271 | -9,744 | -5,226 | -5,250 | -5,000 | -3,490 | -4,026 | -5,000 | -10,957 | -11,081 | -9,750 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5,831 | -6,293 | -5,701 | -3,980 | -3,700 | -3,296 | -1,797 | -2,458 | -4,201 | -7,654 | -7,816 | -7,561 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -7,235 | -7,620 | -6,463 | -2,354 | -1,838 | -1,308 | -915 | -1,849 | -4,079 | -8,689 | -10,466 | -9,337 |
| Above Normal (16%) | -7,485 | -7,177 | -6,284 | -4,445 | -3,955 | -3,885 | -2,671 | -3,116 | -4,451 | -9,267 | -10,749 | -9,707 |
| Below Normal (13%) | -5,598 | -5,968 | -5,472 | -5,032 | -4,663 | -4,610 | -2,422 | -3,107 | -5,000 | -10,315 | -9,935 | -7,991 |
| Dry (24%) | -4,585 | -5,809 | -5,128 | -4,780 | -4,914 | -4,764 | -2,227 | -2,899 | -4,747 | -6,769 | -4,459 | -5,889 |
| Critical (15%) | -3,291 | -3,564 | -4,581 | -4,699 | -4,548 | -3,315 | -1,470 | -1,735 | -2,551 | -2,703 | -2,551 | -3,781 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -2,961 | -3,320 | -3,454 | -3,492 | -2,542 | -1,126 | -941 | -1,414 | -2,141 | -2,804 | -2,559 | -2,414 |
| 20% | -3,292 | -3,859 | -4,175 | -3,645 | -4,464 | -3,258 | -1,807 | -1,935 | -3,927 | -4,146 | -3,313 | -2,820 |
| 30% | -3,630 | -4,712 | -4,981 | -3,821 | -4,464 | -3,258 | -2,041 | -2,694 | -4,922 | -5,875 | -4,408 | -2,992 |
| 40% | -3,825 | -5,844 | -5,290 | -4,516 | -4,464 | -3,258 | -2,262 | -2,888 | -5,000 | -7,482 | -7,676 | -3,442 |
| 50% | -4,030 | -7,808 | -5,290 | -4,516 | -4,464 | -3,258 | -2,474 | -3,029 | -5,000 | -8,083 | -9,369 | -4,125 |
| 60% | -4,231 | -8,812 | -5,290 | -4,593 | -4,483 | -3,258 | -3,075 | -3,301 | -5,000 | -8,596 | -9,573 | -5,059 |
| 70% | -4,829 | -9,049 | -7,391 | -5,188 | -4,897 | -3,258 | -3,500 | -3,500 | -5,000 | -9,172 | -9,902 | -5,655 |
| 80% | -5,166 | -9,174 | -9,426 | -5,226 | -5,000 | -3,258 | -3,500 | -3,500 | -5,000 | -9,558 | -10,352 | -6,157 |
| 90% | -6,143 | -9,328 | -9,668 | -5,226 | -5,250 | -3,500 | -3,500 | -3,500 | -5,000 | -9,960 | -10,814 | -7,415 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -4,368 | -6,769 | -5,926 | -3,763 | -3,638 | -2,374 | -2,146 | -2,508 | -4,341 | -7,217 | -7,403 | -4,541 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -4,804 | -8,442 | -6,953 | -2,171 | -1,938 | -805 | -1,440 | -1,928 | -4,405 | -8,363 | -10,148 | -3,712 |
| Above Normal (16%) | -3,547 | -8,669 | -7,825 | -4,284 | -3,640 | -2,711 | -3,051 | -3,251 | -4,862 | -8,171 | -9,883 | -2,778 |
| Below Normal (13%) | -5,437 | -5,932 | -5,231 | -4,747 | -4,663 | -3,311 | -2,745 | -3,125 | -4,951 | -8,984 | -9,155 | -7,360 |
| Dry (24%) | -4,416 | -5,794 | -4,982 | -4,617 | -4,807 | -3,287 | -2,414 | -2,892 | -4,740 | -6,938 | -4,262 | -5,757 |
| Critical (15%) | -3,254 | -3,478 | -3,854 | -4,324 | -4,432 | -3,030 | -1,698 | -1,752 | -2,412 | -2,546 | -2,400 | -3,636 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 214 | 111 | 502 | **-545** | **-18** | **-144** | **-169** | **-45** | 255 | 170 | **-6** | 1,441 |
| 20% | 370 | 95 | 333 | 871 | **-163** | 137 | **-448** | **-249** | **-8** | 424 | 324 | 2,278 |
| 30% | 373 | **-83** | 153 | 696 | 0 | 811 | **-306** | **-380** | **-422** | 298 | 217 | 2,958 |
| 40% | 539 | **-477** | 0 | 0 | 0 | 1,258 | **-206** | **-67** | **-500** | 248 | 321 | 3,750 |
| 50% | 1,330 | **-1,445** | 0 | 0 | 0 | 1,258 | **-278** | **-50** | **-500** | 451 | 570 | 4,860 |
| 60% | 2,531 | **-1,701** | 0 | 407 | 0 | 1,258 | **-616** | **-90** | **-500** | 518 | 789 | 4,334 |
| 70% | 3,151 | **-928** | **-979** | 38 | **-6** | 1,666 | **-670** | **-242** | 0 | 514 | 759 | 3,882 |
| 80% | 3,528 | **-299** | **-2,600** | 0 | 193 | 1,742 | **-366** | 119 | 0 | 805 | 385 | 3,488 |
| 90% | 2,965 | **-58** | 76 | 0 | 0 | 1,500 | **-10** | 526 | 0 | 997 | 267 | 2,335 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,464 | **-476** | **-225** | 216 | 61 | 922 | **-349** | **-50** | **-140** | 437 | 413 | 3,020 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 2,431 | **-822** | **-490** | 183 | **-100** | 503 | **-526** | **-79** | **-326** | 326 | 319 | 5,625 |
| Above Normal (16%) | 3,938 | **-1,493** | **-1,541** | 161 | 315 | 1,175 | **-380** | **-135** | **-411** | 1,096 | 867 | 6,929 |
| Below Normal (13%) | 161 | 36 | 241 | 285 | **-1** | 1,299 | **-323** | **-19** | 49 | 1,331 | 780 | 631 |
| Dry (24%) | 169 | 15 | 146 | 163 | 107 | 1,477 | **-188** | 7 | 7 | **-169** | 197 | 132 |
| Critical (15%) | 37 | 87 | 727 | 375 | 117 | 285 | **-228** | **-17** | 139 | 157 | 151 | 145 |

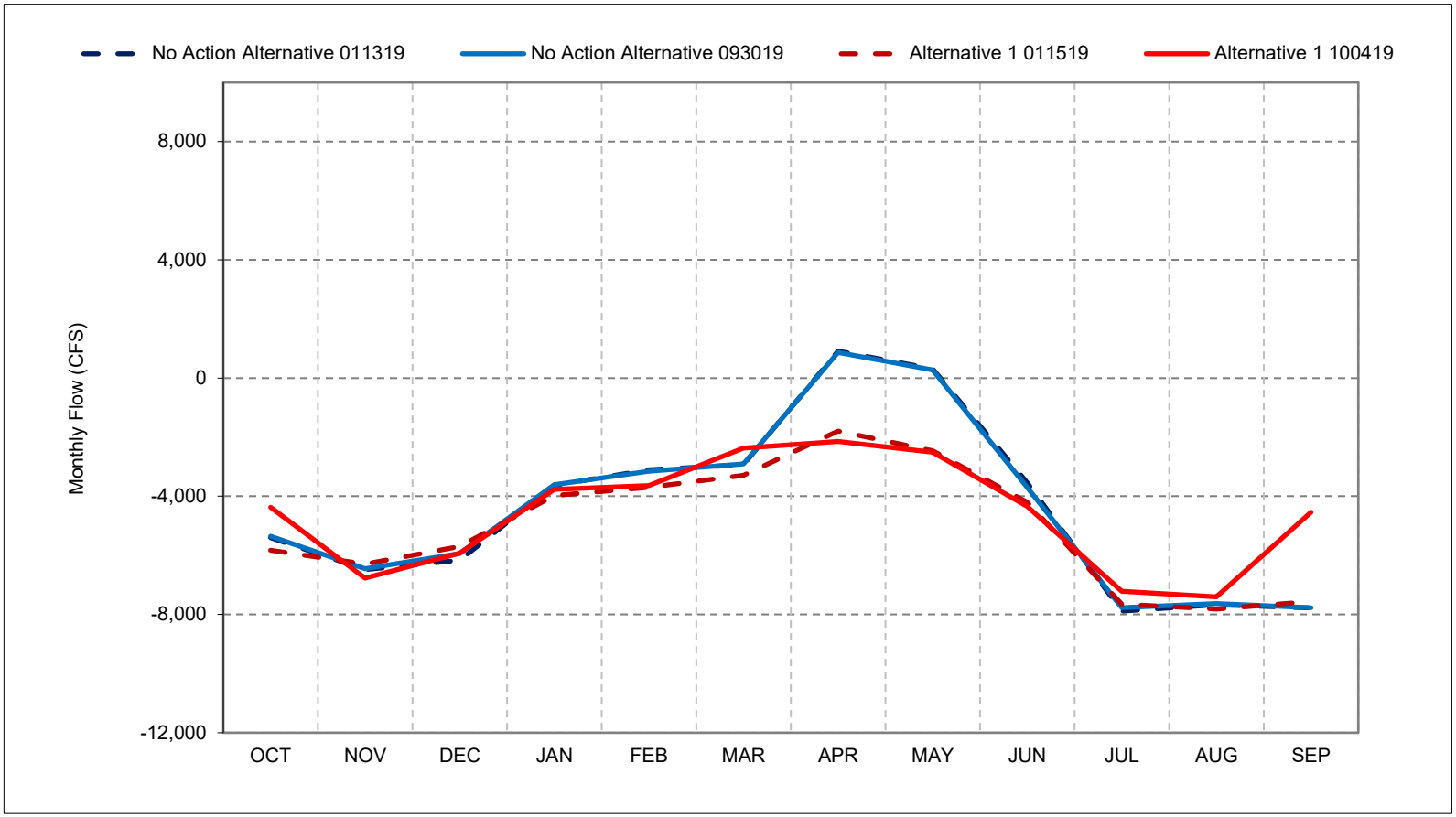
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-1. Old and Middle River Flow, Long-Term Average Flow

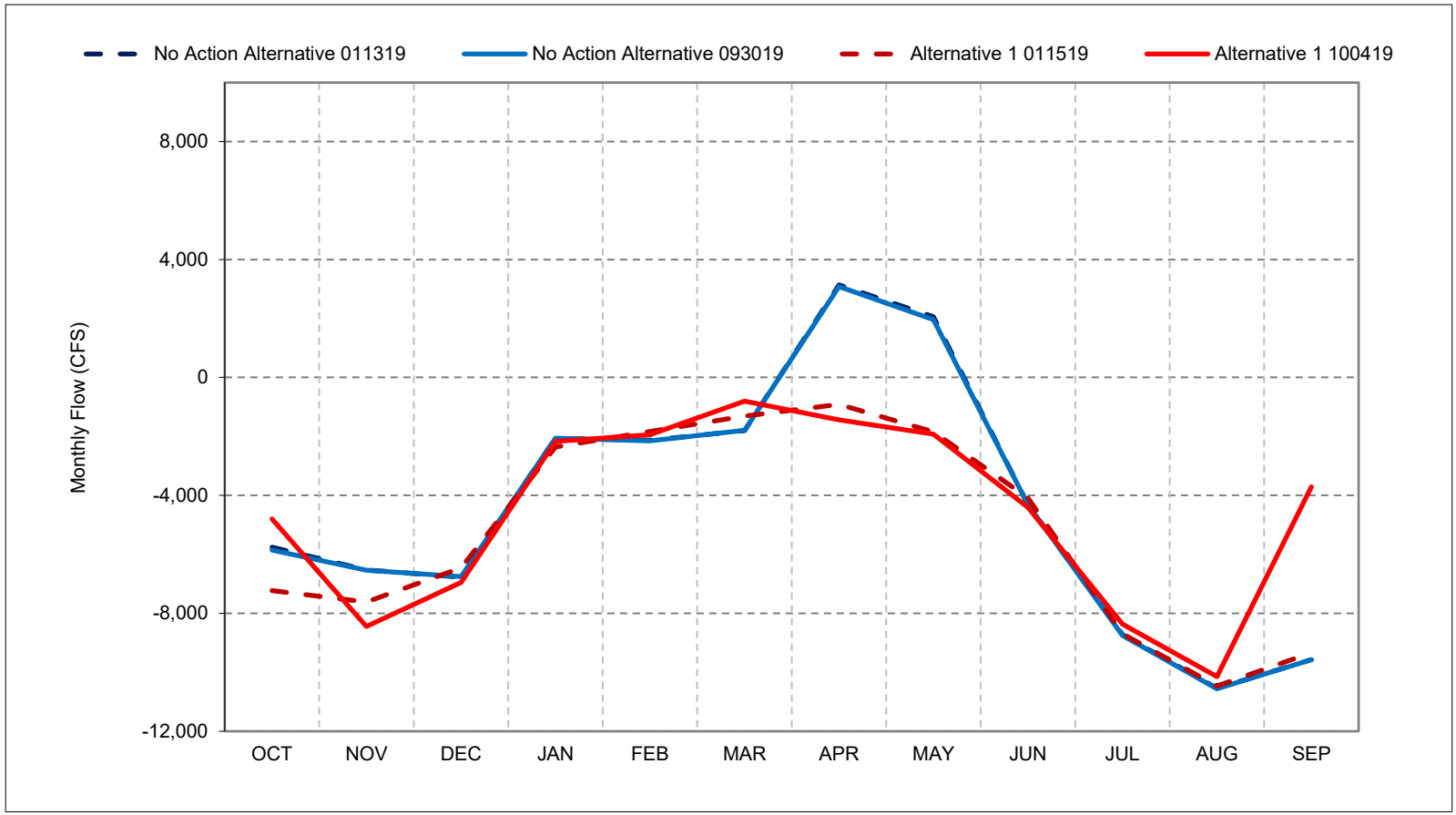



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-2. Old and Middle River Flow, Wet Year Average Flow

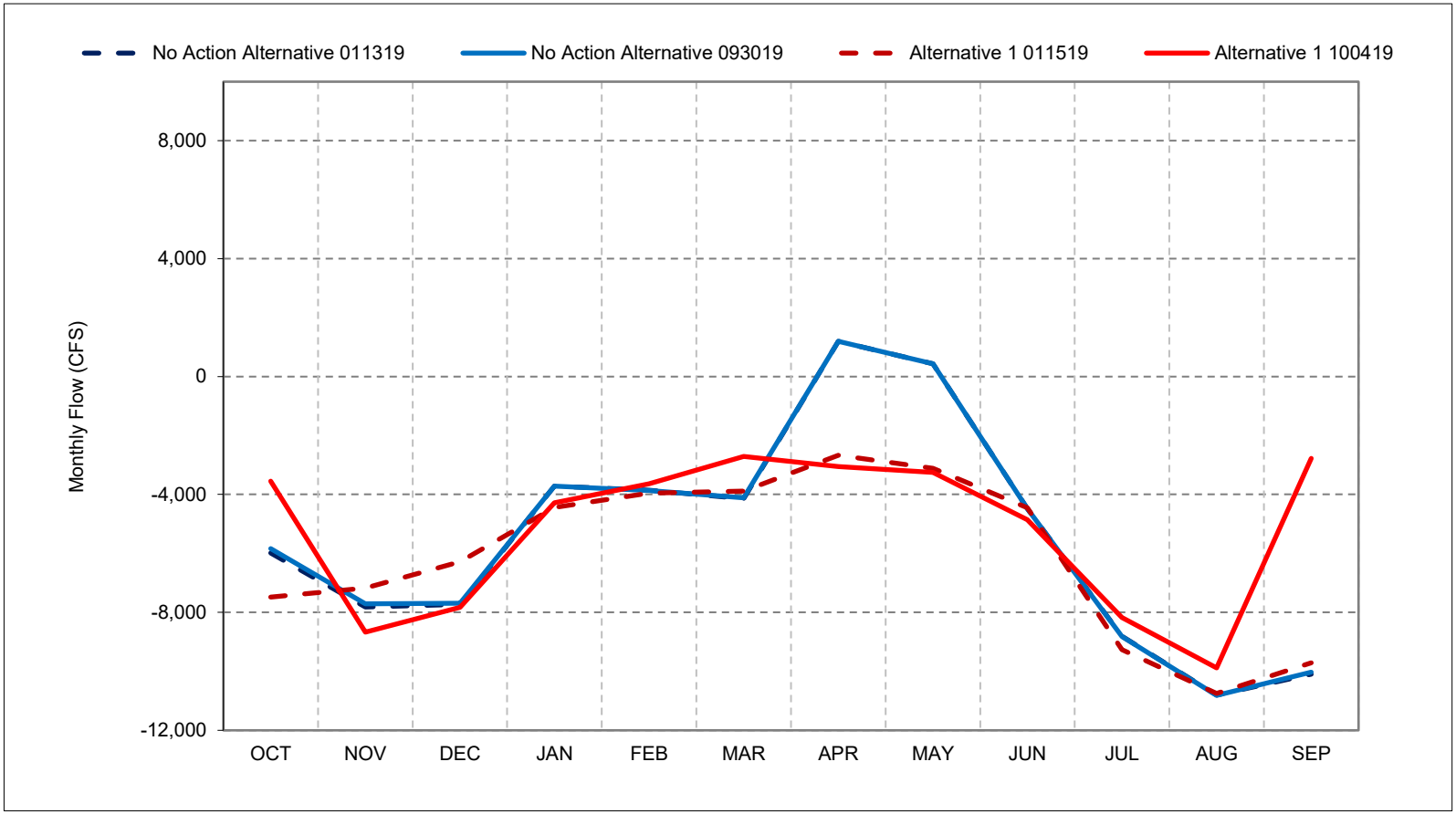



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-3. Old and Middle River Flow, Above Normal Year Average Flow

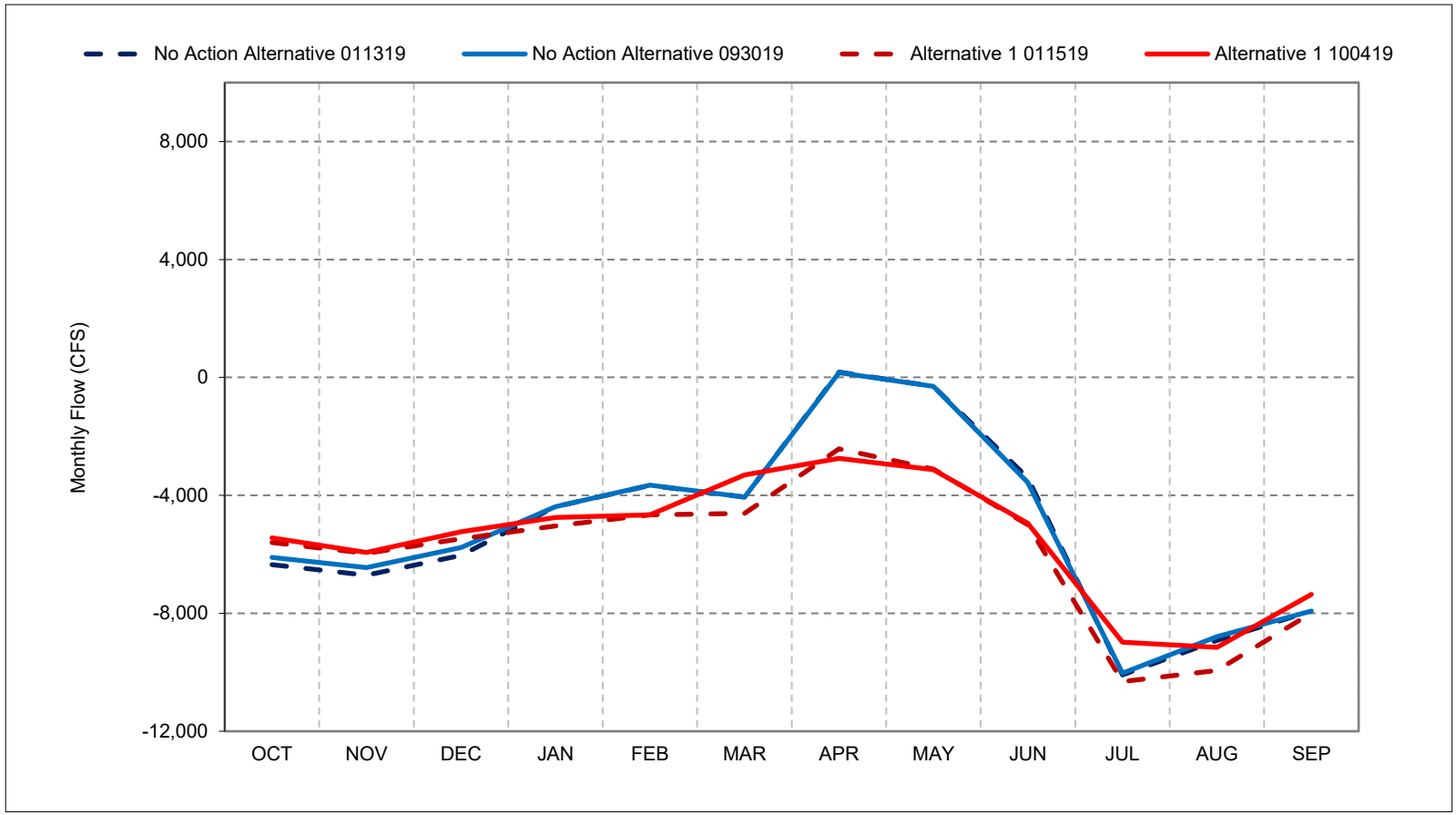



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-4. Old and Middle River Flow, Below Normal Year Average Flow

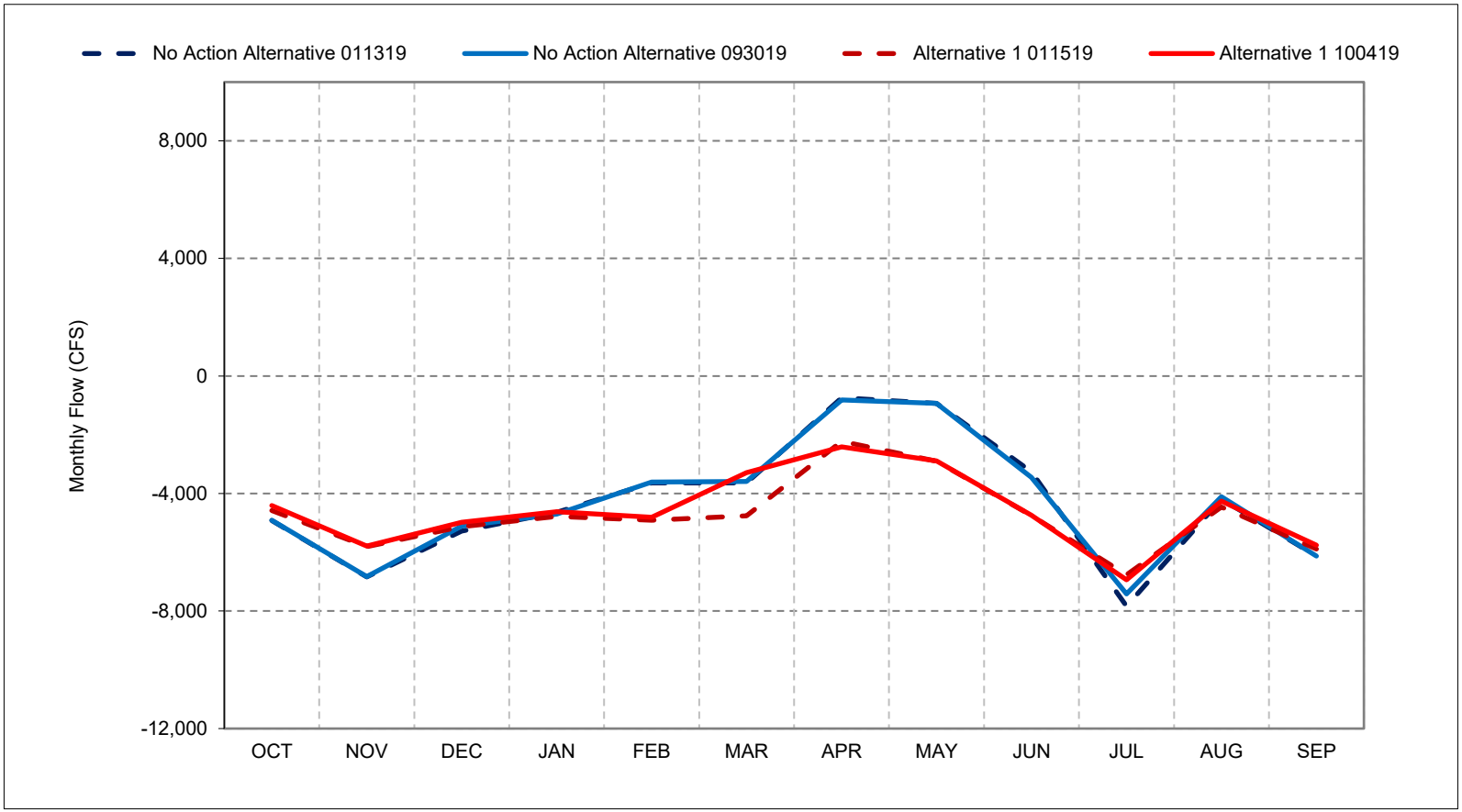



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-5. Old and Middle River Flow, Dry Year Average Flow

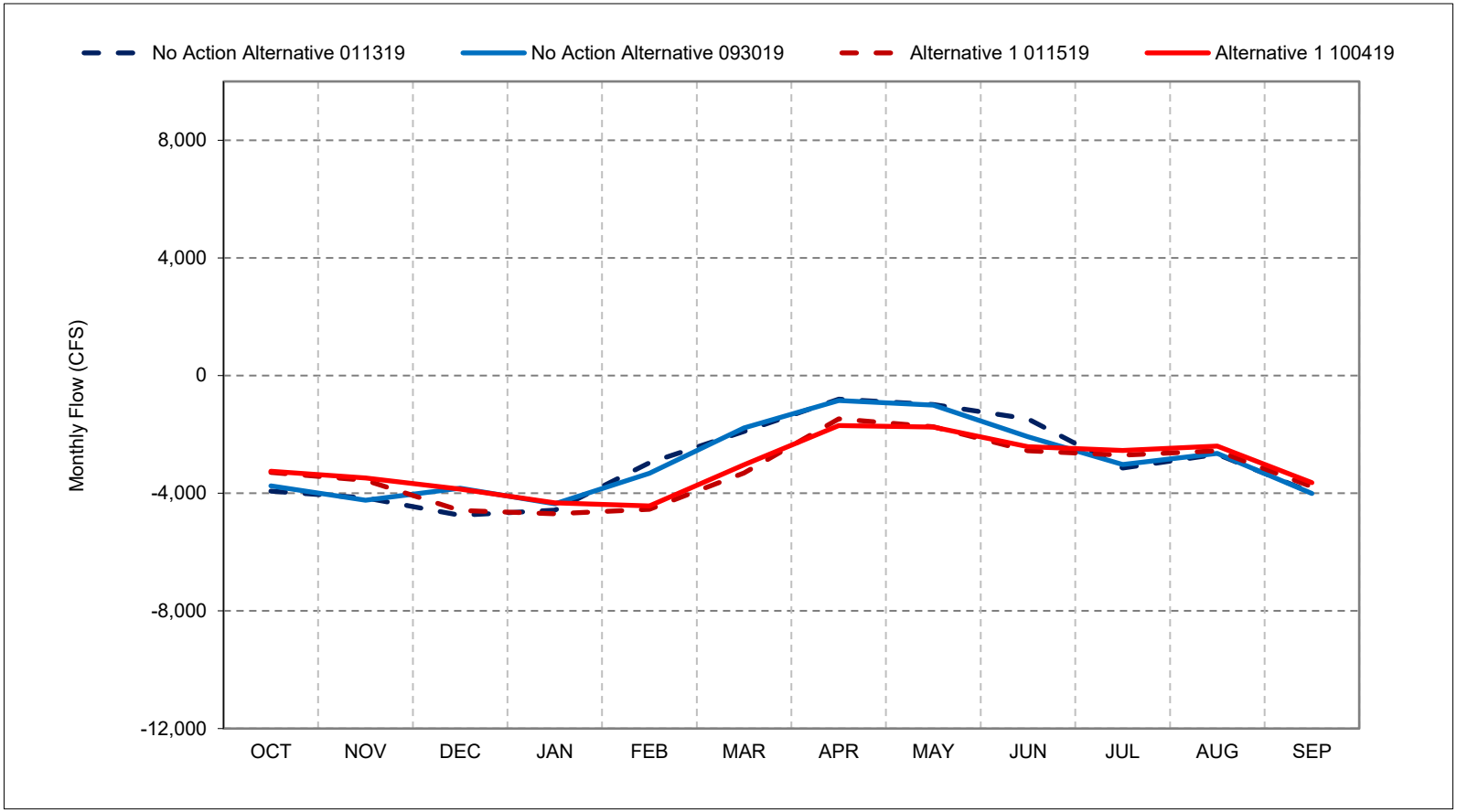



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 40-6. Old and Middle River Flow, Critical Year Average Flow

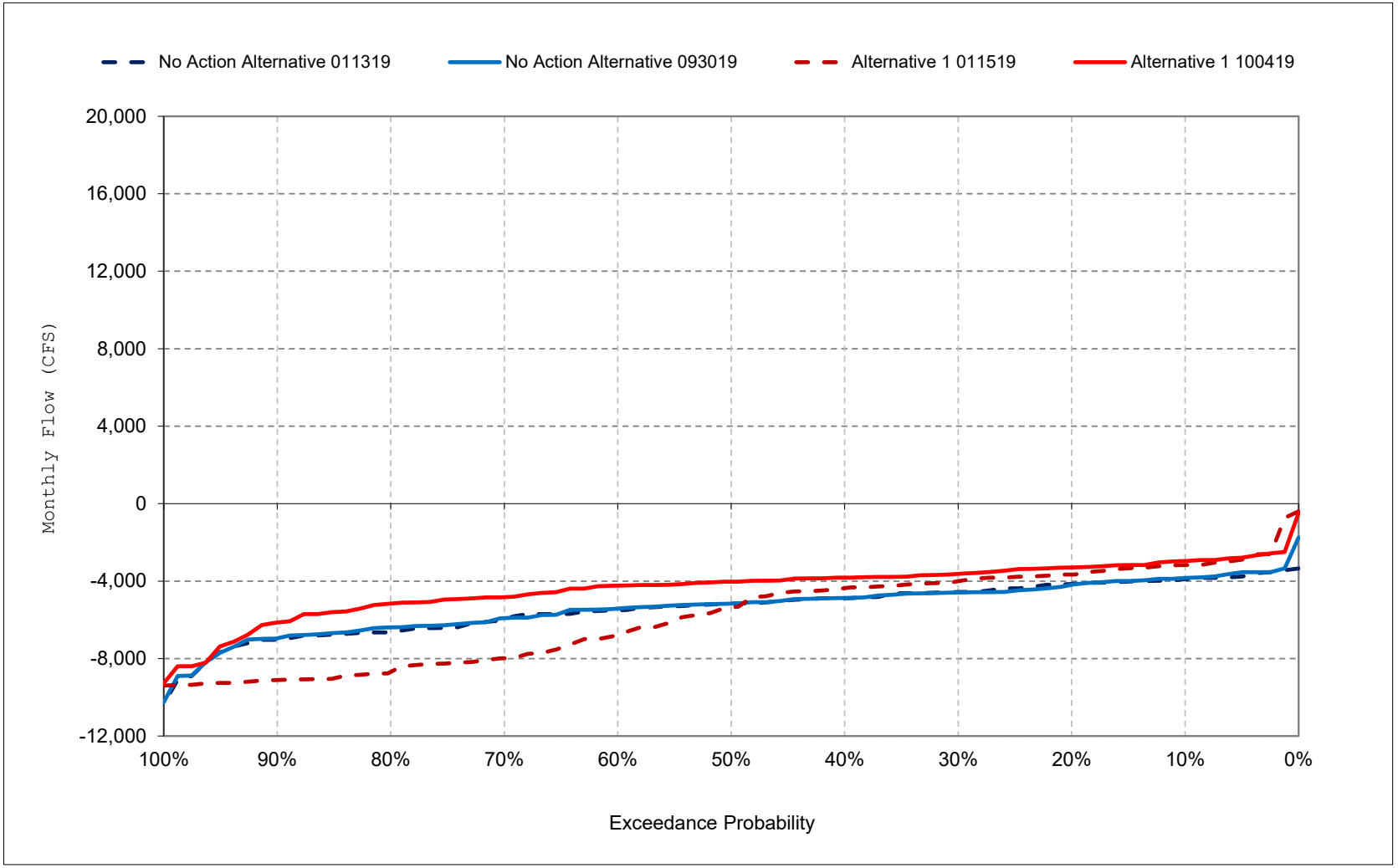



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

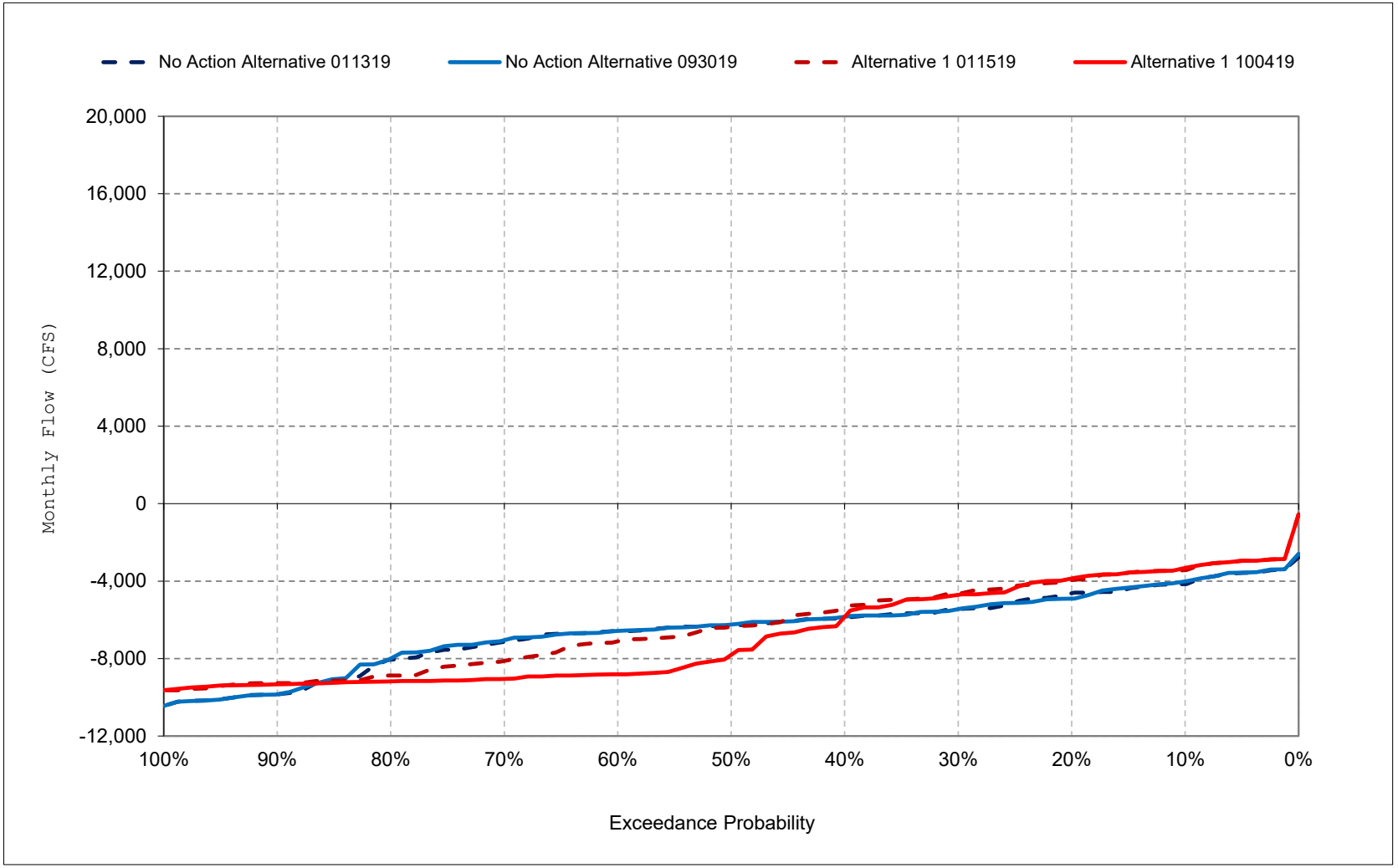
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-7. Old and Middle River Flow, October**



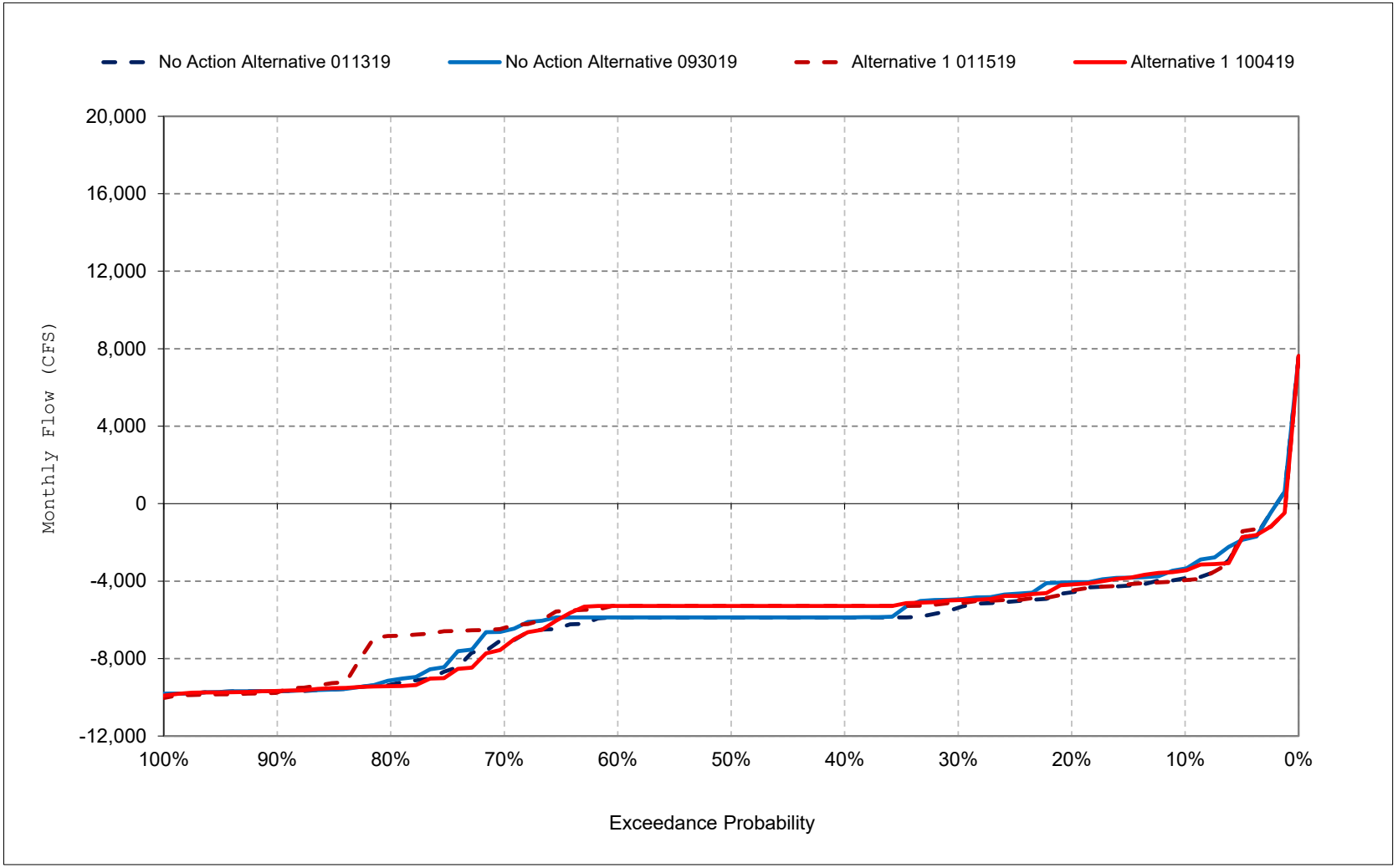

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-8. Old and Middle River Flow, November**



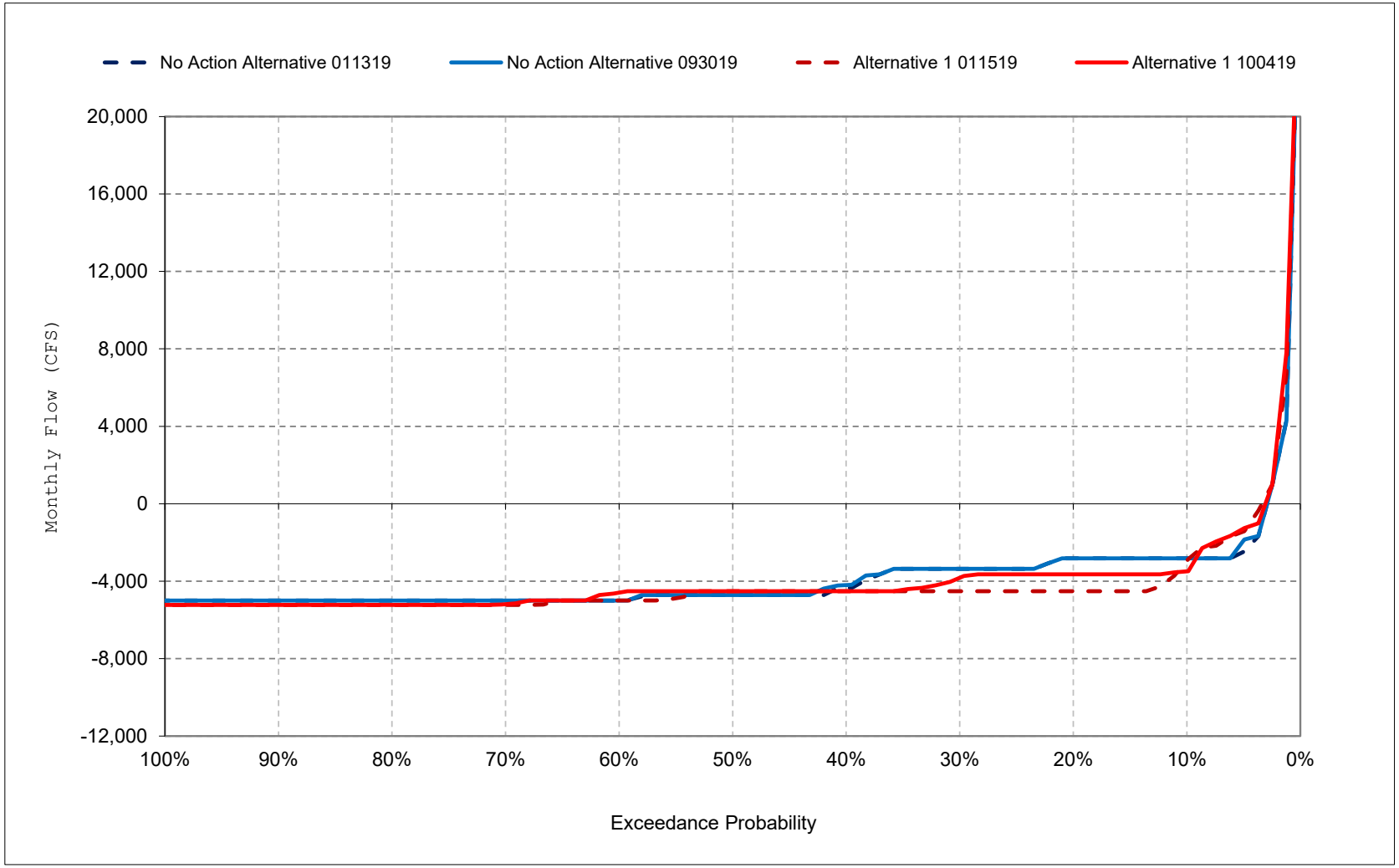

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-9. Old and Middle River Flow, December**



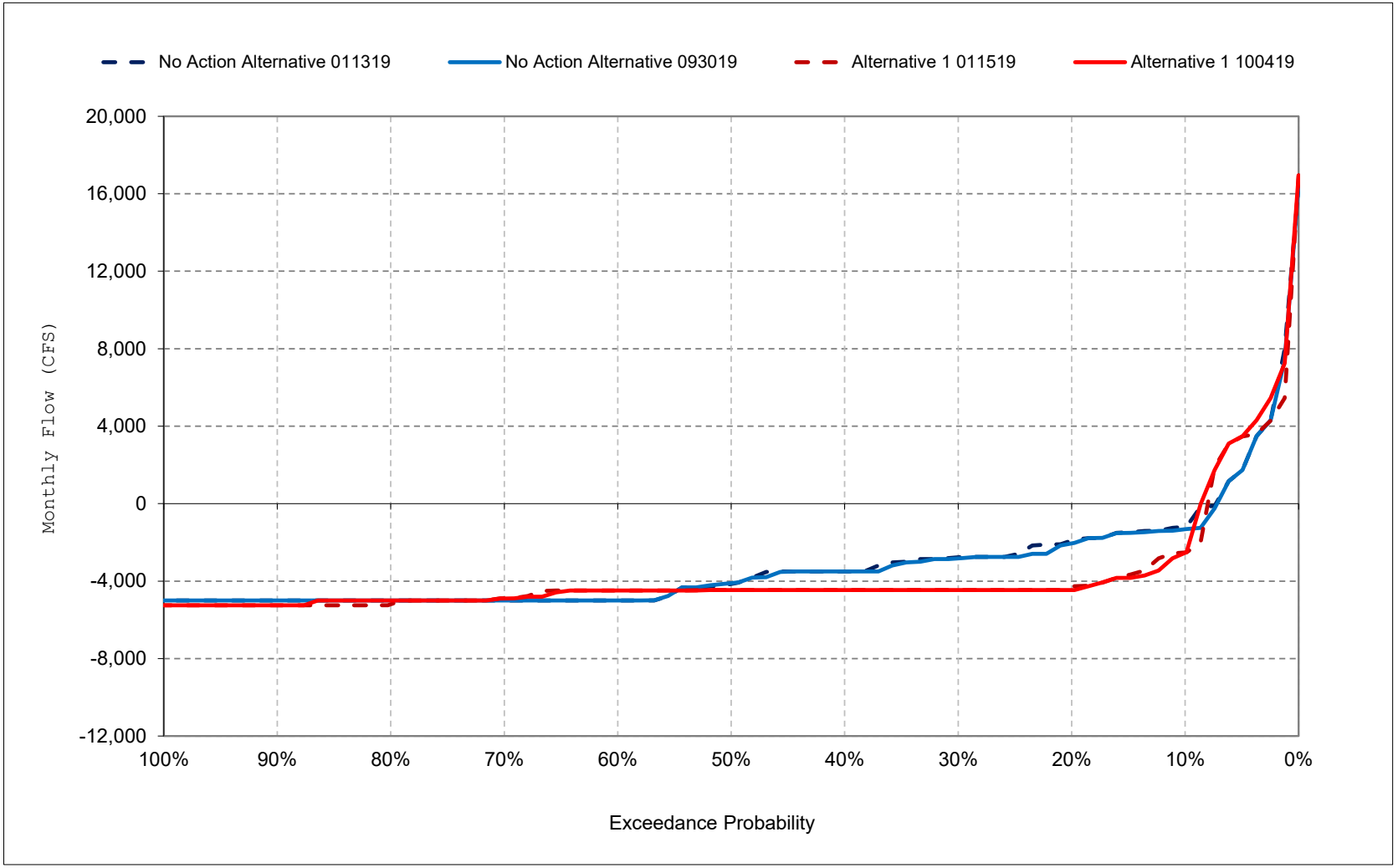

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-10. Old and Middle River Flow, January**



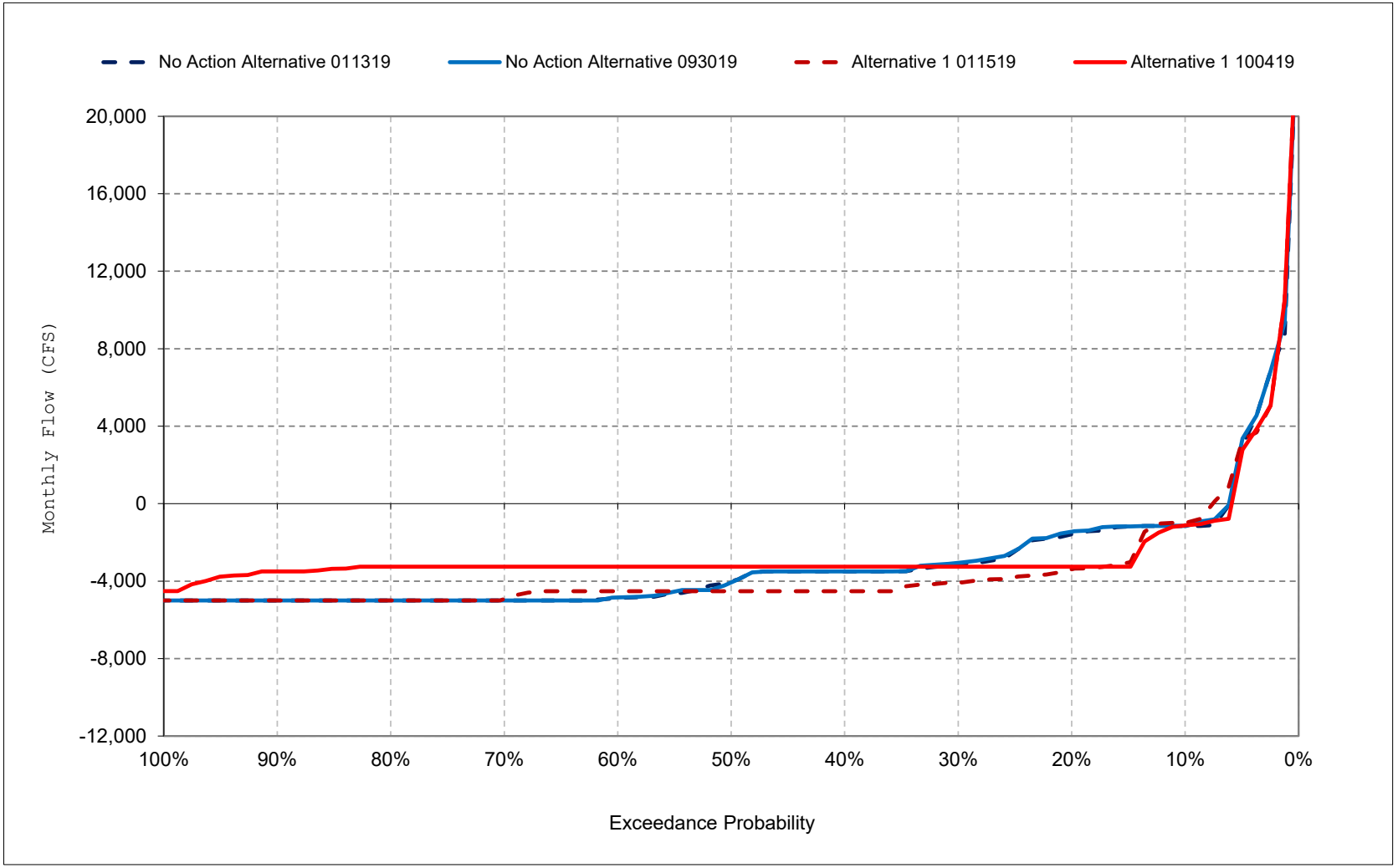

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-11. Old and Middle River Flow, February**



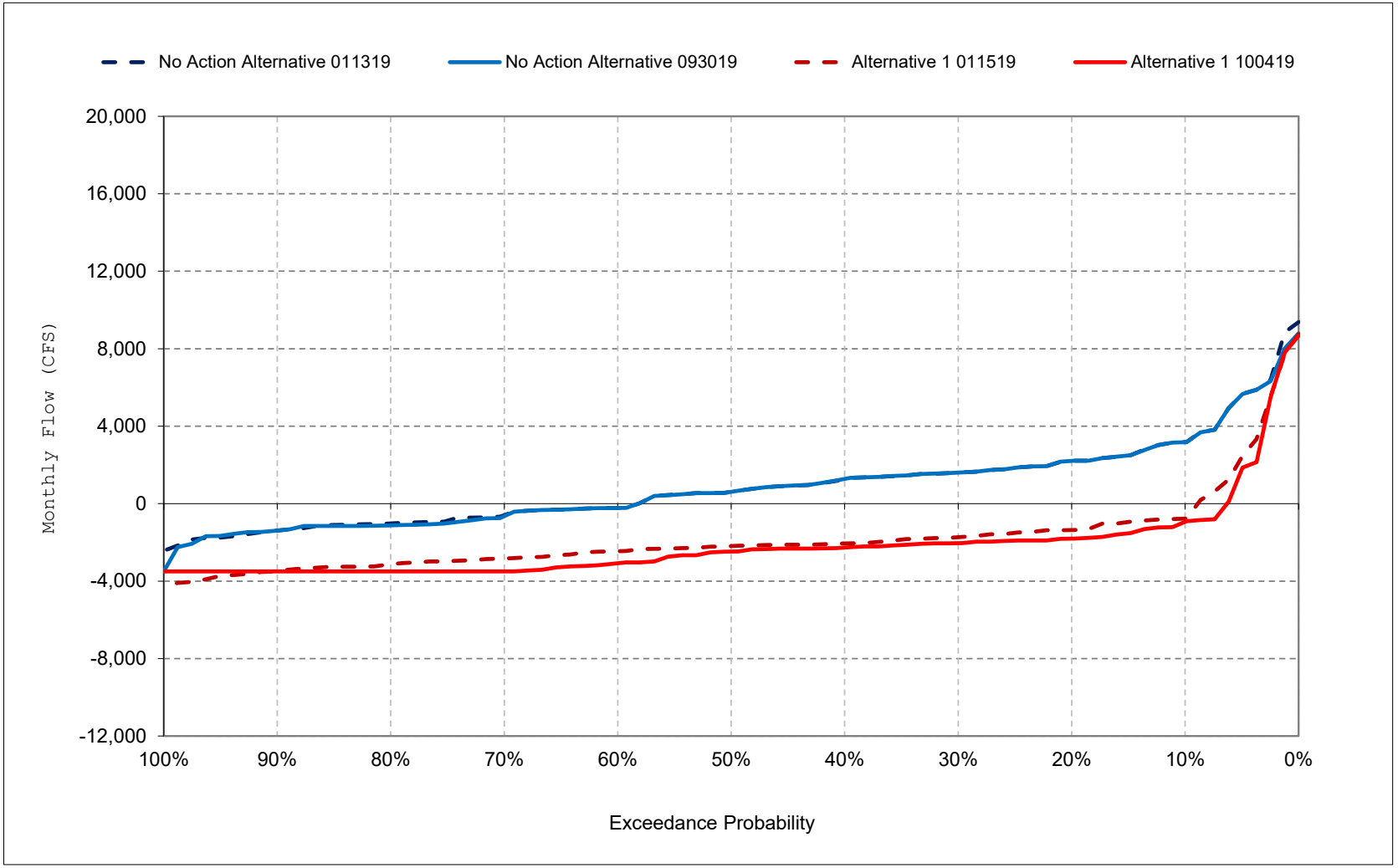

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-12. Old and Middle River Flow, March**



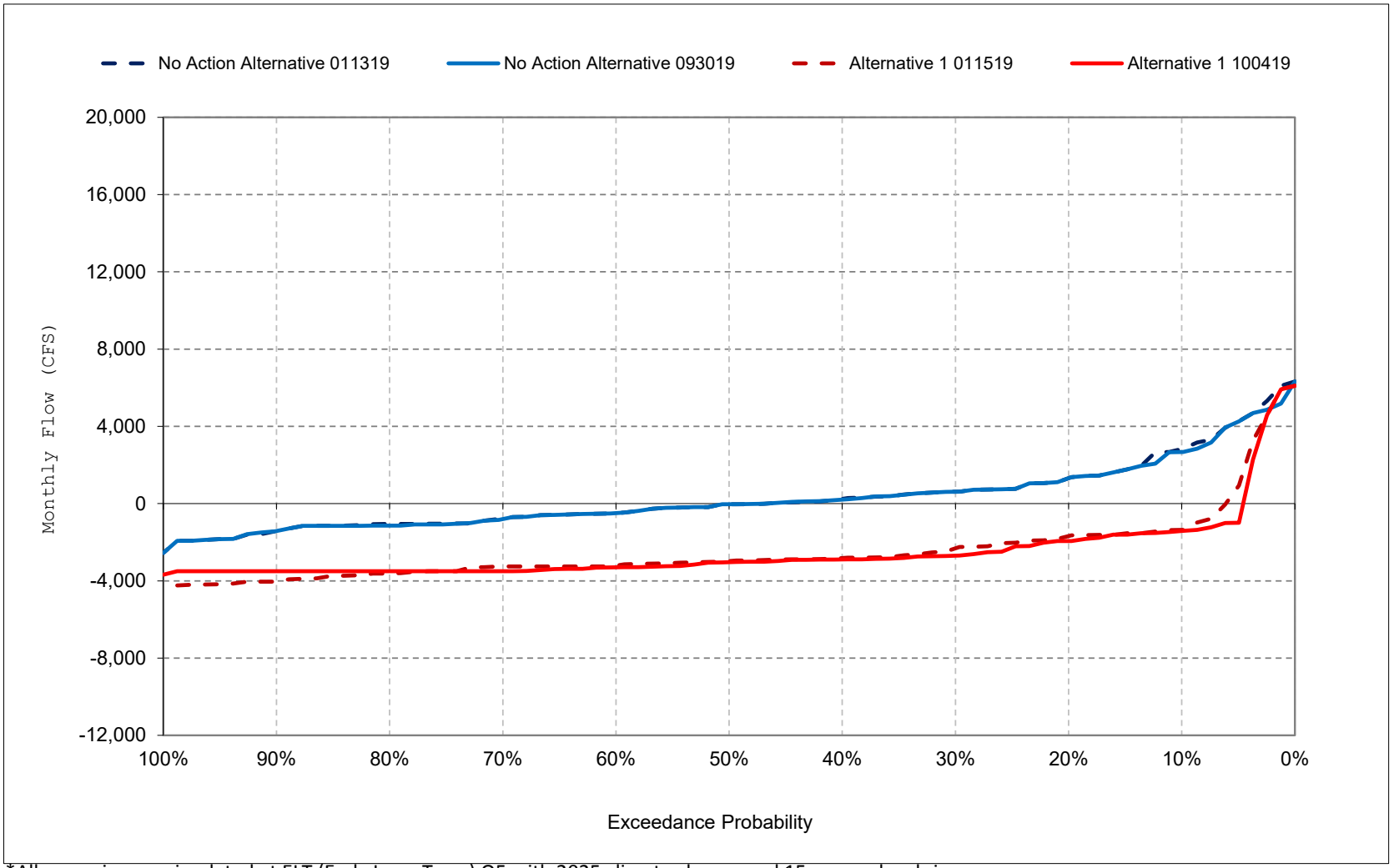

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-13. Old and Middle River Flow, April**



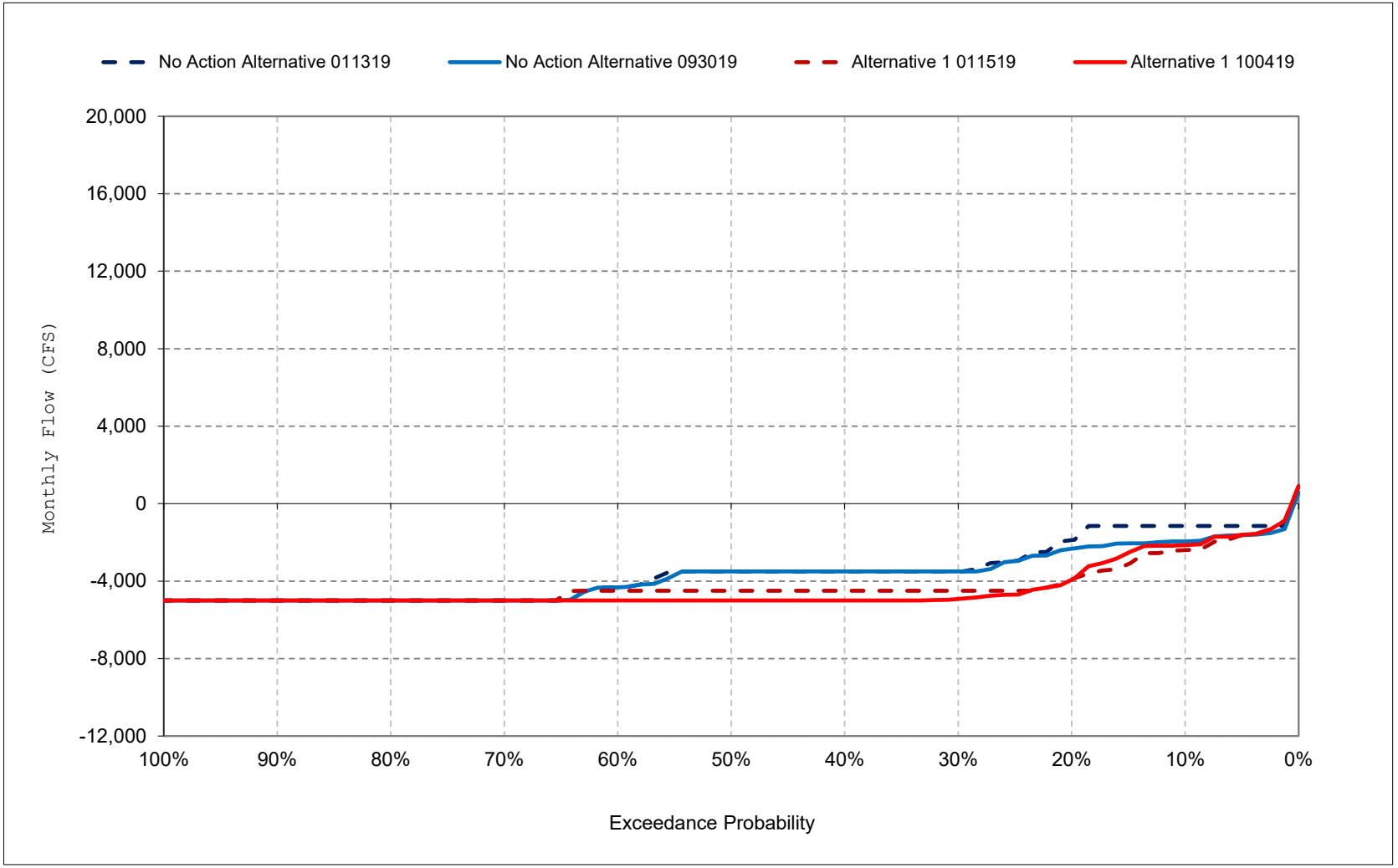

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-14. Old and Middle River Flow, May**



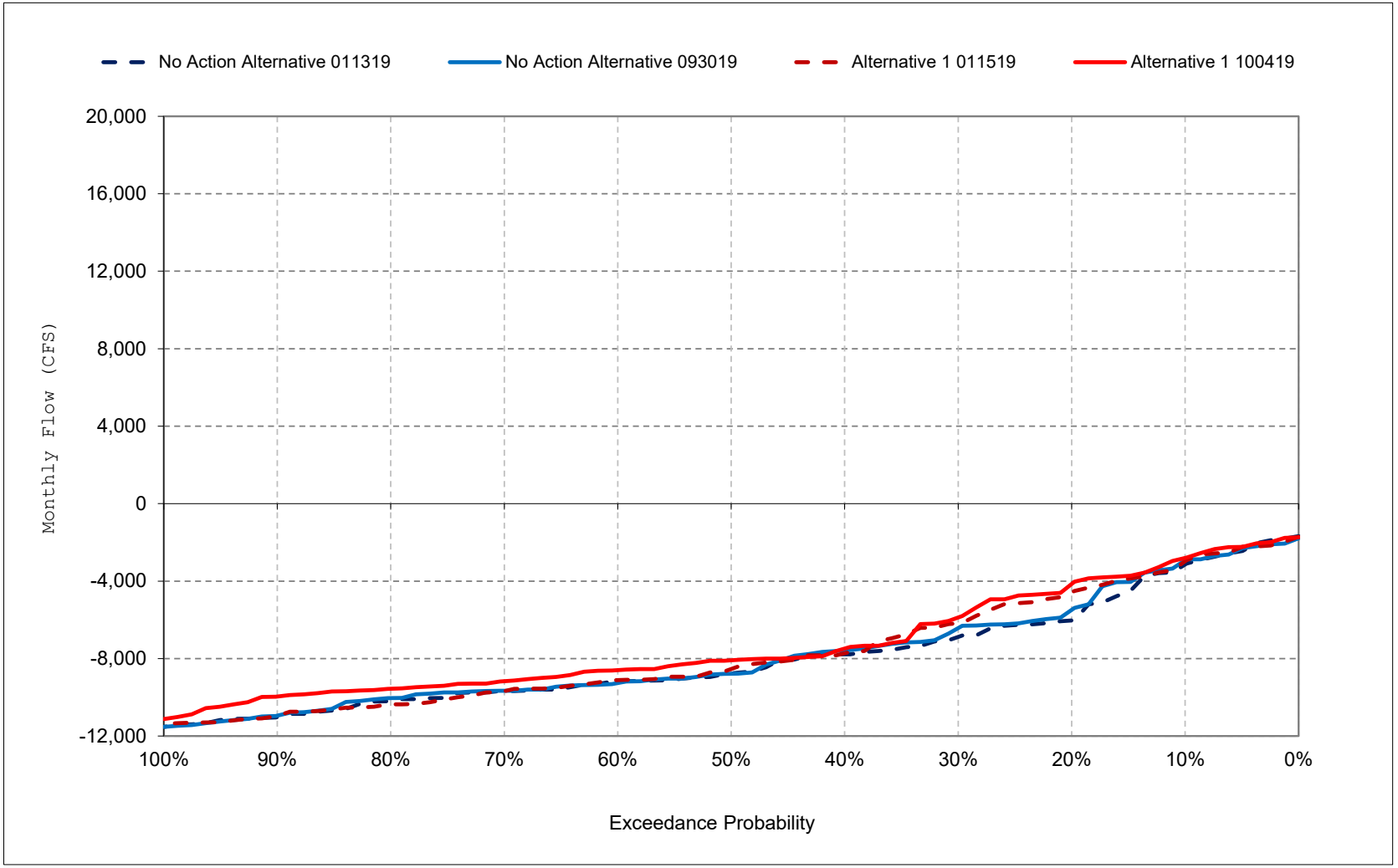

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-15. Old and Middle River Flow, June**



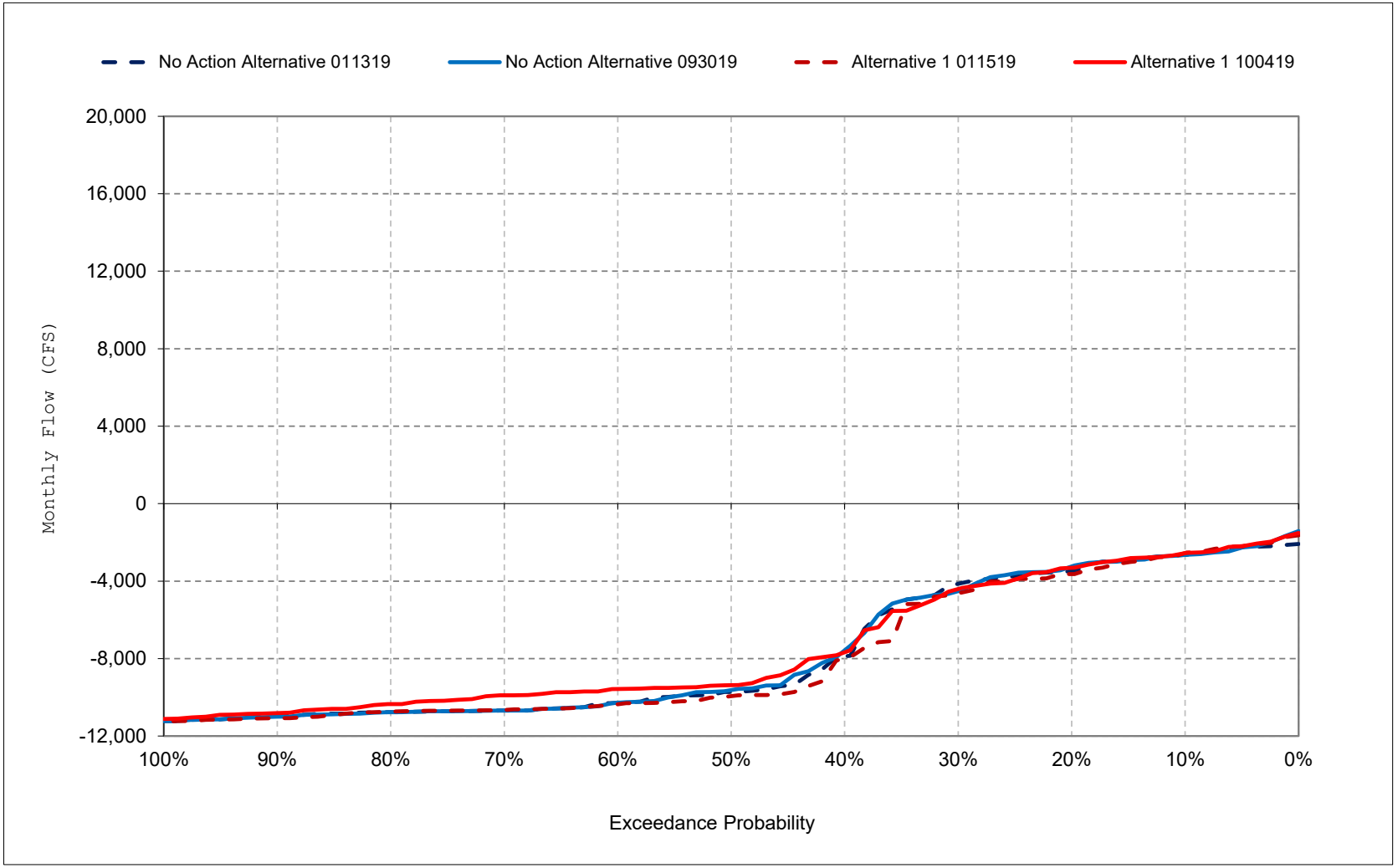

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-16. Old and Middle River Flow, July**



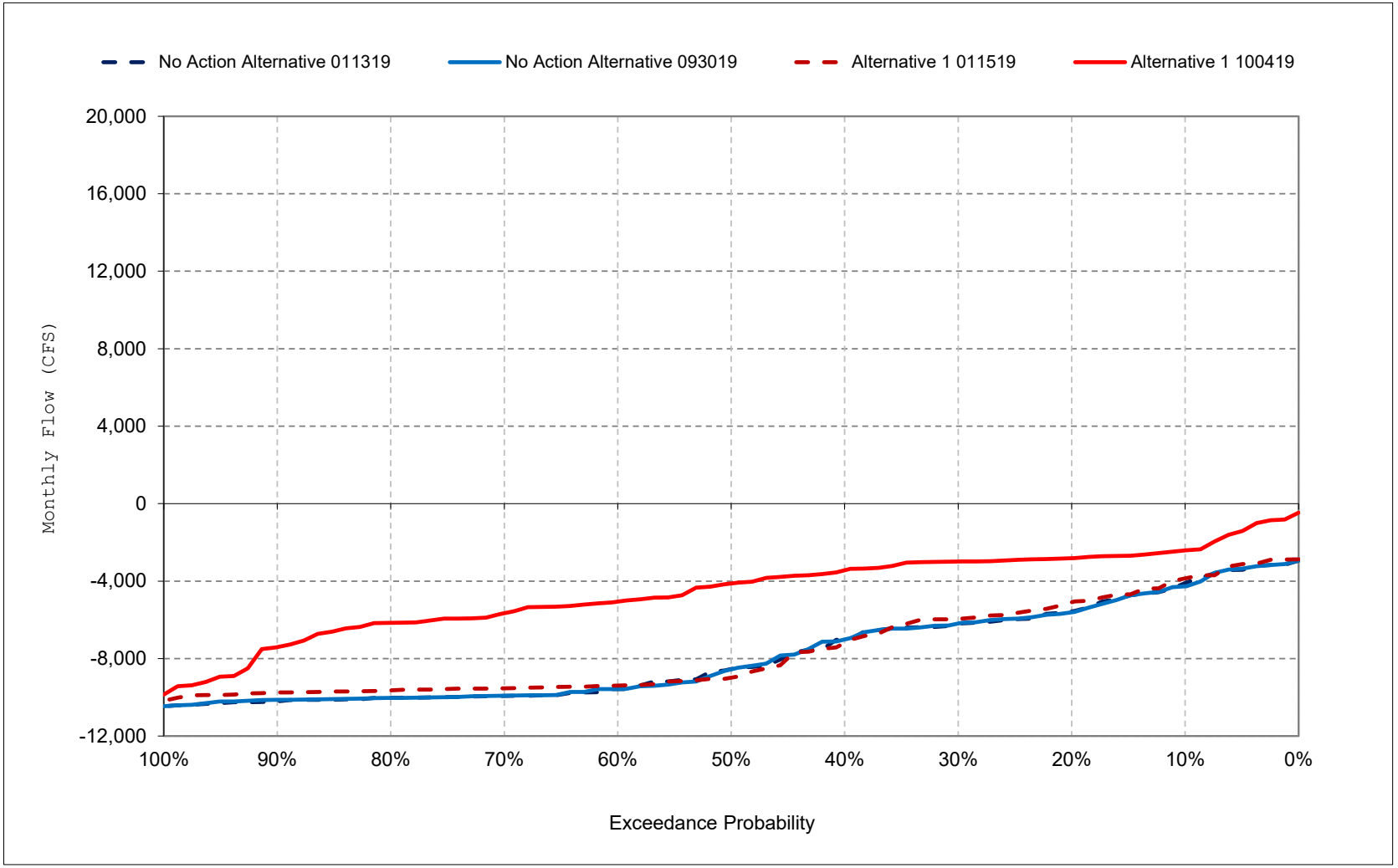

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-17. Old and Middle River Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 40-18. Old and Middle River Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 41-1. Delta Outflow, Monthly Outflow

## No Action Alternative 011319

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,145 | 15,772 | 68,184 | 104,336 | 138,819 | 88,087 | 72,968 | 46,571 | 21,259 | 12,473 | 4,225 | 19,516 |
| 20% | 9,688 | 14,688 | 34,582 | 70,505 | 88,193 | 67,845 | 51,982 | 30,398 | 10,131 | 11,453 | 4,012 | 19,313 |
| 30% | 9,375 | 13,956 | 16,201 | 51,309 | 68,795 | 47,758 | 32,889 | 19,349 | 8,976 | 9,370 | 4,000 | 15,362 |
| 40% | 6,969 | 12,159 | 12,260 | 29,208 | 51,379 | 35,067 | 26,974 | 16,153 | 7,676 | 8,000 | 4,000 | 10,938 |
| 50% | 5,374 | 9,844 | 10,005 | 20,041 | 36,843 | 26,853 | 22,260 | 13,850 | 7,243 | 8,000 | 4,000 | 3,712 |
| 60% | 4,000 | 6,311 | 5,880 | 16,488 | 25,051 | 19,793 | 16,421 | 11,720 | 7,100 | 6,500 | 4,000 | 3,000 |
| 70% | 4,000 | 4,500 | 4,950 | 12,714 | 18,539 | 16,589 | 13,863 | 9,663 | 6,937 | 5,000 | 3,961 | 3,000 |
| 80% | 4,000 | 4,500 | 4,511 | 9,226 | 15,146 | 12,431 | 11,165 | 8,183 | 6,044 | 5,000 | 3,726 | 3,000 |
| 90% | 3,000 | 3,500 | 4,500 | 7,964 | 11,043 | 10,764 | 9,540 | 7,038 | 5,391 | 4,000 | 3,500 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,653 | 11,625 | 23,116 | 44,275 | 56,959 | 43,806 | 32,053 | 20,967 | 10,940 | 8,052 | 4,054 | 9,423 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,943 | 17,965 | 27,333 | 90,345 | 102,661 | 81,638 | 57,700 | 39,294 | 19,071 | 10,682 | 4,469 | 19,040 |
| Above Normal (16%) | 7,332 | 12,903 | 17,298 | 49,558 | 67,693 | 52,646 | 34,414 | 19,816 | 7,961 | 11,126 | 4,035 | 11,118 |
| Below Normal (13%) | 6,260 | 6,705 | 19,835 | 17,008 | 37,036 | 17,592 | 18,032 | 13,213 | 7,486 | 8,099 | 4,082 | 3,307 |
| Dry (24%) | 4,343 | 9,898 | 31,709 | 15,608 | 26,159 | 22,368 | 18,215 | 10,819 | 7,276 | 5,038 | 3,832 | 3,037 |
| Critical (15%) | 3,000 | 3,894 | 8,967 | 11,509 | 15,905 | 12,017 | 9,843 | 6,527 | 5,825 | 4,000 | 3,517 | 3,000 |

## Alternative 1 011519

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,824 | 17,900 | 71,116 | 106,223 | 140,258 | 92,678 | 67,790 | 41,291 | 21,795 | 11,775 | 4,316 | 5,458 |
| 20% | 4,692 | 8,678 | 37,251 | 73,144 | 89,151 | 68,282 | 47,454 | 27,083 | 10,857 | 10,922 | 4,000 | 4,164 |
| 30% | 4,152 | 6,120 | 20,706 | 51,064 | 68,288 | 46,609 | 29,065 | 15,948 | 9,617 | 9,435 | 4,000 | 4,075 |
| 40% | 4,000 | 4,892 | 13,246 | 29,261 | 55,133 | 33,861 | 22,998 | 12,150 | 8,417 | 8,000 | 4,000 | 3,996 |
| 50% | 4,000 | 4,644 | 10,760 | 21,453 | 37,061 | 26,295 | 17,899 | 11,152 | 7,760 | 8,000 | 4,000 | 3,855 |
| 60% | 4,000 | 4,500 | 6,976 | 16,196 | 24,552 | 20,895 | 13,567 | 10,233 | 7,338 | 6,500 | 4,000 | 3,000 |
| 70% | 4,000 | 4,500 | 5,509 | 12,915 | 17,723 | 15,688 | 11,381 | 8,944 | 7,100 | 5,000 | 3,789 | 3,000 |
| 80% | 4,000 | 4,500 | 4,918 | 9,107 | 13,995 | 12,199 | 9,673 | 7,921 | 7,100 | 5,000 | 3,514 | 3,000 |
| 90% | 3,000 | 3,500 | 4,500 | 7,818 | 10,541 | 9,271 | 8,953 | 6,804 | 5,717 | 4,000 | 3,500 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5,079 | 9,103 | 25,249 | 44,985 | 57,425 | 44,256 | 29,104 | 18,600 | 11,420 | 7,904 | 4,010 | 4,123 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,358 | 12,022 | 31,810 | 92,116 | 103,918 | 82,647 | 53,254 | 35,255 | 19,822 | 10,416 | 4,471 | 5,743 |
| Above Normal (16%) | 5,350 | 9,275 | 20,373 | 50,231 | 69,739 | 54,821 | 30,246 | 16,659 | 8,801 | 10,620 | 4,025 | 4,049 |
| Below Normal (13%) | 5,949 | 6,237 | 20,351 | 17,747 | 39,393 | 18,100 | 15,435 | 11,403 | 7,829 | 8,125 | 4,137 | 3,474 |
| Dry (24%) | 4,007 | 9,928 | 32,352 | 15,515 | 24,766 | 21,687 | 16,439 | 9,699 | 7,540 | 5,094 | 3,651 | 3,094 |
| Critical (15%) | 3,000 | 3,845 | 8,967 | 11,268 | 14,309 | 11,218 | 9,181 | 6,051 | 5,809 | 4,000 | 3,477 | 3,000 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -2,320 | 2,128 | 2,932 | 1,887 | 1,439 | 4,592 | -5,178 | -5,280 | 536 | -698 | 91 | -14,058 |
| 20% | -4,996 | -6,009 | 2,669 | 2,638 | 957 | 437 | -4,528 | -3,315 | 727 | -532 | -12 | -15,148 |
| 30% | -5,223 | -7,836 | 4,505 | -245 | -506 | -1,149 | -3,824 | -3,400 | 641 | 66 | 0 | -11,288 |
| 40% | -2,969 | -7,267 | 986 | 53 | 3,753 | -1,206 | -3,976 | -4,003 | 741 | 0 | 0 | -6,941 |
| 50% | -1,374 | -5,199 | 755 | 1,412 | 217 | -558 | -4,361 | -2,698 | 516 | 0 | 0 | 142 |
| 60% | 0 | -1,811 | 1,097 | -293 | -499 | 1,102 | -2,854 | -1,487 | 238 | 0 | 0 | 0 |
| 70% | 0 | 0 | 560 | 201 | -815 | -902 | -2,482 | -719 | 163 | 0 | -173 | 0 |
| 80% | 0 | 0 | 406 | -119 | -1,150 | -232 | -1,492 | -263 | 1,056 | 0 | -211 | 0 |
| 90% | 0 | 0 | 0 | -146 | -502 | -1,493 | -587 | -234 | 326 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1,574 | -2,522 | 2,133 | 709 | 466 | 450 | -2,949 | -2,367 | 479 | -147 | -44 | -5,300 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -3,584 | -5,943 | 4,477 | 1,771 | 1,256 | 1,009 | -4,446 | -4,039 | 751 | -266 | 1 | -13,297 |
| Above Normal (16%) | -1,982 | -3,628 | 3,075 | 673 | 2,046 | 2,175 | -4,167 | -3,157 | 840 | -506 | -10 | -7,069 |
| Below Normal (13%) | -312 | -467 | 516 | 739 | 2,357 | 508 | -2,597 | -1,810 | 343 | 26 | 55 | 167 |
| Dry (24%) | -335 | 30 | 644 | -93 | -1,392 | -680 | -1,777 | -1,120 | 264 | 56 | -181 | 57 |
| Critical (15%) | 0 | -48 | 0 | -241 | -1,596 | -799 | -663 | -476 | -16 | 0 | -40 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 41-2. Delta Outflow, Monthly Outflow

### No Action Alternative 093019

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,133 | 15,760 | 68,054 | 104,330 | 137,953 | 88,095 | 72,949 | 46,569 | 21,258 | 12,505 | 4,445 | 19,516 |
| 20% | 9,656 | 14,688 | 34,125 | 70,458 | 87,865 | 67,691 | 50,835 | 30,360 | 10,131 | 11,572 | 4,113 | 19,313 |
| 30% | 9,375 | 13,956 | 16,450 | 51,332 | 68,295 | 46,265 | 32,891 | 19,349 | 8,975 | 9,455 | 4,000 | 15,354 |
| 40% | 7,469 | 11,757 | 12,532 | 29,119 | 51,291 | 35,091 | 26,989 | 16,139 | 7,676 | 8,000 | 4,000 | 10,938 |
| 50% | 5,732 | 9,953 | 10,088 | 20,018 | 36,848 | 26,813 | 22,263 | 13,853 | 7,243 | 8,000 | 4,000 | 3,770 |
| 60% | 4,500 | 6,045 | 6,366 | 16,371 | 24,990 | 19,799 | 16,534 | 11,668 | 7,100 | 6,500 | 4,000 | 3,000 |
| 70% | 4,500 | 5,000 | 5,268 | 12,483 | 18,562 | 16,619 | 13,760 | 9,783 | 6,775 | 5,000 | 4,000 | 3,000 |
| 80% | 4,500 | 5,000 | 5,000 | 9,229 | 14,864 | 12,429 | 10,854 | 8,556 | 6,044 | 5,000 | 3,892 | 3,000 |
| 90% | 3,500 | 4,000 | 5,000 | 7,945 | 10,851 | 10,761 | 9,673 | 7,295 | 5,391 | 4,000 | 3,535 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,947 | 11,771 | 23,344 | 44,231 | 56,747 | 43,793 | 32,011 | 21,014 | 10,915 | 8,080 | 4,111 | 9,430 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,942 | 17,964 | 27,364 | 90,233 | 102,483 | 81,643 | 57,636 | 39,191 | 19,063 | 10,717 | 4,468 | 19,039 |
| Above Normal (16%) | 7,832 | 12,999 | 17,266 | 49,302 | 67,372 | 52,328 | 34,332 | 19,805 | 7,958 | 11,132 | 4,035 | 11,118 |
| Below Normal (13%) | 6,658 | 7,067 | 20,085 | 17,038 | 36,772 | 17,576 | 17,971 | 13,328 | 7,343 | 8,171 | 4,096 | 3,342 |
| Dry (24%) | 4,706 | 10,054 | 31,865 | 15,520 | 26,067 | 22,423 | 18,157 | 10,887 | 7,272 | 5,064 | 3,942 | 3,049 |
| Critical (15%) | 3,500 | 4,201 | 10,002 | 11,845 | 15,590 | 12,186 | 9,940 | 6,863 | 5,809 | 4,000 | 3,714 | 3,000 |

### Alternative 1 100419

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,938 | 15,144 | 72,539 | 107,663 | 139,836 | 93,758 | 66,017 | 39,592 | 21,377 | 11,856 | 6,174 | 11,121 |
| 20% | 8,625 | 7,074 | 37,911 | 72,594 | 89,133 | 69,130 | 45,588 | 26,980 | 10,857 | 11,083 | 6,174 | 10,740 |
| 30% | 8,469 | 5,116 | 20,645 | 51,097 | 67,870 | 48,025 | 27,606 | 15,581 | 9,395 | 9,256 | 5,275 | 10,485 |
| 40% | 8,313 | 5,000 | 12,598 | 29,248 | 55,354 | 35,423 | 23,827 | 12,303 | 8,691 | 8,500 | 4,840 | 9,980 |
| 50% | 5,667 | 5,000 | 10,644 | 21,650 | 37,404 | 28,110 | 17,364 | 10,930 | 8,190 | 8,000 | 4,305 | 4,035 |
| 60% | 4,500 | 5,000 | 6,783 | 16,963 | 24,358 | 22,798 | 13,798 | 10,424 | 7,590 | 7,000 | 4,000 | 3,000 |
| 70% | 4,500 | 5,000 | 5,315 | 12,557 | 17,910 | 17,477 | 11,354 | 9,047 | 7,100 | 5,000 | 3,973 | 3,000 |
| 80% | 4,500 | 5,000 | 5,000 | 9,766 | 14,158 | 13,025 | 9,798 | 7,730 | 6,957 | 5,000 | 3,850 | 3,000 |
| 90% | 3,500 | 4,000 | 5,000 | 8,236 | 10,942 | 9,267 | 8,824 | 6,655 | 5,700 | 4,000 | 3,553 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,747 | 8,920 | 25,033 | 45,224 | 57,590 | 45,403 | 28,838 | 18,412 | 11,414 | 7,966 | 4,734 | 6,789 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,828 | 11,297 | 30,964 | 92,137 | 104,423 | 83,568 | 52,760 | 34,757 | 19,683 | 10,597 | 5,868 | 10,936 |
| Above Normal (16%) | 8,775 | 8,899 | 18,922 | 49,993 | 70,112 | 56,774 | 30,005 | 16,440 | 8,842 | 10,662 | 5,342 | 10,527 |
| Below Normal (13%) | 6,663 | 6,398 | 20,976 | 17,834 | 38,533 | 19,574 | 15,019 | 11,197 | 8,271 | 8,046 | 4,170 | 3,430 |
| Dry (24%) | 4,719 | 10,098 | 32,492 | 15,829 | 24,938 | 23,047 | 16,475 | 9,859 | 7,428 | 5,129 | 3,795 | 3,090 |
| Critical (15%) | 3,500 | 4,144 | 10,092 | 12,511 | 14,440 | 11,333 | 9,014 | 6,005 | 5,809 | 4,001 | 3,698 | 3,000 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-1,195** | **-616** | 4,485 | 3,333 | 1,883 | 5,663 | **-6,932** | **-6,976** | 119 | **-649** | 1,729 | **-8,394** |
| 20% | **-1,031** | **-7,614** | 3,786 | 2,136 | 1,268 | 1,440 | **-5,247** | **-3,380** | 727 | **-489** | 2,061 | **-8,573** |
| 30% | **-906** | **-8,841** | 4,195 | **-235** | **-424** | 1,760 | **-5,285** | **-3,767** | 420 | **-199** | 1,275 | **-4,869** |
| 40% | 844 | **-6,757** | 66 | 129 | 4,063 | 332 | **-3,161** | **-3,836** | 1,015 | 500 | 840 | **-958** |
| 50% | **-65** | **-4,953** | 556 | 1,632 | 556 | 1,297 | **-4,899** | **-2,923** | 946 | 0 | 305 | 265 |
| 60% | 0 | **-1,045** | 417 | 592 | **-632** | 2,999 | **-2,736** | **-1,244** | 490 | 500 | 0 | 0 |
| 70% | 0 | 0 | 47 | 75 | **-651** | 857 | **-2,406** | **-737** | 325 | 0 | **-27** | 0 |
| 80% | 0 | 0 | 0 | 536 | **-707** | 595 | **-1,056** | **-826** | 914 | 0 | **-42** | 0 |
| 90% | 0 | 0 | 0 | 291 | 91 | **-1,494** | **-849** | **-640** | 309 | 0 | 17 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-200** | **-2,851** | 1,690 | 993 | 842 | 1,610 | **-3,174** | **-2,602** | 499 | **-113** | 623 | **-2,641** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-1,114** | **-6,667** | 3,600 | 1,903 | 1,940 | 1,924 | **-4,876** | **-4,434** | 620 | **-120** | 1,400 | **-8,103** |
| Above Normal (16%) | 943 | **-4,100** | 1,656 | 690 | 2,740 | 4,446 | **-4,327** | **-3,365** | 883 | **-470** | 1,307 | **-591** |
| Below Normal (13%) | 4 | **-669** | 891 | 796 | 1,761 | 1,998 | **-2,952** | **-2,131** | 928 | **-125** | 74 | 88 |
| Dry (24%) | 14 | 44 | 626 | 309 | **-1,129** | 624 | **-1,682** | **-1,028** | 156 | 64 | **-147** | 41 |
| Critical (15%) | 0 | **-57** | 91 | 666 | **-1,150** | **-853** | **-925** | **-858** | 0 | 1 | **-16** | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 41-3. Delta Outflow, Monthly Outflow

### No Action Alternative 011319

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,145 | 15,772 | 68,184 | 104,336 | 138,819 | 88,087 | 72,968 | 46,571 | 21,259 | 12,473 | 4,225 | 19,516 |
| 20% | 9,688 | 14,688 | 34,582 | 70,505 | 88,193 | 67,845 | 51,982 | 30,398 | 10,131 | 11,453 | 4,012 | 19,313 |
| 30% | 9,375 | 13,956 | 16,201 | 51,309 | 68,795 | 47,758 | 32,889 | 19,349 | 8,976 | 9,370 | 4,000 | 15,362 |
| 40% | 6,969 | 12,159 | 12,260 | 29,208 | 51,379 | 35,067 | 26,974 | 16,153 | 7,676 | 8,000 | 4,000 | 10,938 |
| 50% | 5,374 | 9,844 | 10,005 | 20,041 | 36,843 | 26,853 | 22,260 | 13,850 | 7,243 | 8,000 | 4,000 | 3,712 |
| 60% | 4,000 | 6,311 | 5,880 | 16,488 | 25,051 | 19,793 | 16,421 | 11,720 | 7,100 | 6,500 | 4,000 | 3,000 |
| 70% | 4,000 | 4,500 | 4,950 | 12,714 | 18,539 | 16,589 | 13,863 | 9,663 | 6,937 | 5,000 | 3,961 | 3,000 |
| 80% | 4,000 | 4,500 | 4,511 | 9,226 | 15,146 | 12,431 | 11,165 | 8,183 | 6,044 | 5,000 | 3,726 | 3,000 |
| 90% | 3,000 | 3,500 | 4,500 | 7,964 | 11,043 | 10,764 | 9,540 | 7,038 | 5,391 | 4,000 | 3,500 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,653 | 11,625 | 23,116 | 44,275 | 56,959 | 43,806 | 32,053 | 20,967 | 10,940 | 8,052 | 4,054 | 9,423 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,943 | 17,965 | 27,333 | 90,345 | 102,661 | 81,638 | 57,700 | 39,294 | 19,071 | 10,682 | 4,469 | 19,040 |
| Above Normal (16%) | 7,332 | 12,903 | 17,298 | 49,558 | 67,693 | 52,646 | 34,414 | 19,816 | 7,961 | 11,126 | 4,035 | 11,118 |
| Below Normal (13%) | 6,260 | 6,705 | 19,835 | 17,008 | 37,036 | 17,592 | 18,032 | 13,213 | 7,486 | 8,099 | 4,082 | 3,307 |
| Dry (24%) | 4,343 | 9,898 | 31,709 | 15,608 | 26,159 | 22,368 | 18,215 | 10,819 | 7,276 | 5,038 | 3,832 | 3,037 |
| Critical (15%) | 3,000 | 3,894 | 8,967 | 11,509 | 15,905 | 12,017 | 9,843 | 6,527 | 5,825 | 4,000 | 3,517 | 3,000 |

### No Action Alternative 093019

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,133 | 15,760 | 68,054 | 104,330 | 137,953 | 88,095 | 72,949 | 46,569 | 21,258 | 12,505 | 4,445 | 19,516 |
| 20% | 9,656 | 14,688 | 34,125 | 70,458 | 87,865 | 67,691 | 50,835 | 30,360 | 10,131 | 11,572 | 4,113 | 19,313 |
| 30% | 9,375 | 13,956 | 16,450 | 51,332 | 68,295 | 46,265 | 32,891 | 19,349 | 8,975 | 9,455 | 4,000 | 15,354 |
| 40% | 7,469 | 11,757 | 12,532 | 29,119 | 51,291 | 35,091 | 26,989 | 16,139 | 7,676 | 8,000 | 4,000 | 10,938 |
| 50% | 5,732 | 9,953 | 10,088 | 20,018 | 36,848 | 26,813 | 22,263 | 13,853 | 7,243 | 8,000 | 4,000 | 3,770 |
| 60% | 4,500 | 6,045 | 6,366 | 16,371 | 24,990 | 19,799 | 16,534 | 11,668 | 7,100 | 6,500 | 4,000 | 3,000 |
| 70% | 4,500 | 5,000 | 5,268 | 12,483 | 18,562 | 16,619 | 13,760 | 9,783 | 6,775 | 5,000 | 4,000 | 3,000 |
| 80% | 4,500 | 5,000 | 5,000 | 9,229 | 14,864 | 12,429 | 10,854 | 8,556 | 6,044 | 5,000 | 3,892 | 3,000 |
| 90% | 3,500 | 4,000 | 5,000 | 7,945 | 10,851 | 10,761 | 9,673 | 7,295 | 5,391 | 4,000 | 3,535 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,947 | 11,771 | 23,344 | 44,231 | 56,747 | 43,793 | 32,011 | 21,014 | 10,915 | 8,080 | 4,111 | 9,430 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,942 | 17,964 | 27,364 | 90,233 | 102,483 | 81,643 | 57,636 | 39,191 | 19,063 | 10,717 | 4,468 | 19,039 |
| Above Normal (16%) | 7,832 | 12,999 | 17,266 | 49,302 | 67,372 | 52,328 | 34,332 | 19,805 | 7,958 | 11,132 | 4,035 | 11,118 |
| Below Normal (13%) | 6,658 | 7,067 | 20,085 | 17,038 | 36,772 | 17,576 | 17,971 | 13,328 | 7,343 | 8,171 | 4,096 | 3,342 |
| Dry (24%) | 4,706 | 10,054 | 31,865 | 15,520 | 26,067 | 22,423 | 18,157 | 10,887 | 7,272 | 5,064 | 3,942 | 3,049 |
| Critical (15%) | 3,500 | 4,201 | 10,002 | 11,845 | 15,590 | 12,186 | 9,940 | 6,863 | 5,809 | 4,000 | 3,714 | 3,000 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -12 | -12 | -129 | -6 | -866 | 8 | -19 | -3 | -1 | 32 | 220 | 0 |
| 20% | -31 | 0 | -457 | -48 | -329 | -154 | -1,147 | -37 | 0 | 119 | 101 | 0 |
| 30% | 0 | 0 | 249 | 23 | -500 | -1,493 | 1 | 0 | -1 | 86 | 0 | -8 |
| 40% | 500 | -401 | 272 | -89 | -89 | 24 | 14 | -13 | 0 | 0 | 0 | 0 |
| 50% | 358 | 109 | 82 | -23 | 5 | -40 | 3 | 3 | 0 | 0 | 0 | 58 |
| 60% | 500 | -266 | 487 | -118 | -61 | 6 | 113 | -52 | 0 | 0 | 0 | 0 |
| 70% | 500 | 500 | 319 | -232 | 23 | 30 | -104 | 121 | -162 | 0 | 39 | 0 |
| 80% | 500 | 500 | 489 | 3 | -282 | -2 | -311 | 372 | -1 | 0 | 167 | 0 |
| 90% | 500 | 500 | 500 | -19 | -192 | -3 | 133 | 257 | 0 | 0 | 35 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 294 | 146 | 228 | -44 | -212 | -13 | -42 | 47 | -26 | 28 | 57 | 7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 31 | -112 | -179 | 5 | -64 | -103 | -9 | 35 | -2 | -1 |
| Above Normal (16%) | 500 | 96 | -32 | -255 | -321 | -318 | -82 | -11 | -2 | 6 | 0 | 0 |
| Below Normal (13%) | 398 | 362 | 250 | 29 | -264 | -16 | -61 | 115 | -143 | 72 | 14 | 35 |
| Dry (24%) | 363 | 156 | 157 | -88 | -92 | 56 | -58 | 68 | -4 | 26 | 111 | 12 |
| Critical (15%) | 500 | 307 | 1,035 | 335 | -315 | 169 | 96 | 335 | -16 | 0 | 197 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 41-4. Delta Outflow, Monthly Outflow

### Alternative 1 011519

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,824 | 17,900 | 71,116 | 106,223 | 140,258 | 92,678 | 67,790 | 41,291 | 21,795 | 11,775 | 4,316 | 5,458 |
| 20% | 4,692 | 8,678 | 37,251 | 73,144 | 89,151 | 68,282 | 47,454 | 27,083 | 10,857 | 10,922 | 4,000 | 4,164 |
| 30% | 4,152 | 6,120 | 20,706 | 51,064 | 68,288 | 46,609 | 29,065 | 15,948 | 9,617 | 9,435 | 4,000 | 4,075 |
| 40% | 4,000 | 4,892 | 13,246 | 29,261 | 55,133 | 33,861 | 22,998 | 12,150 | 8,417 | 8,000 | 4,000 | 3,996 |
| 50% | 4,000 | 4,644 | 10,760 | 21,453 | 37,061 | 26,295 | 17,899 | 11,152 | 7,760 | 8,000 | 4,000 | 3,855 |
| 60% | 4,000 | 4,500 | 6,976 | 16,196 | 24,552 | 20,895 | 13,567 | 10,233 | 7,338 | 6,500 | 4,000 | 3,000 |
| 70% | 4,000 | 4,500 | 5,509 | 12,915 | 17,723 | 15,688 | 11,381 | 8,944 | 7,100 | 5,000 | 3,789 | 3,000 |
| 80% | 4,000 | 4,500 | 4,918 | 9,107 | 13,995 | 12,199 | 9,673 | 7,921 | 7,100 | 5,000 | 3,514 | 3,000 |
| 90% | 3,000 | 3,500 | 4,500 | 7,818 | 10,541 | 9,271 | 8,953 | 6,804 | 5,717 | 4,000 | 3,500 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5,079 | 9,103 | 25,249 | 44,985 | 57,425 | 44,256 | 29,104 | 18,600 | 11,420 | 7,904 | 4,010 | 4,123 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,358 | 12,022 | 31,810 | 92,116 | 103,918 | 82,647 | 53,254 | 35,255 | 19,822 | 10,416 | 4,471 | 5,743 |
| Above Normal (16%) | 5,350 | 9,275 | 20,373 | 50,231 | 69,739 | 54,821 | 30,246 | 16,659 | 8,801 | 10,620 | 4,025 | 4,049 |
| Below Normal (13%) | 5,949 | 6,237 | 20,351 | 17,747 | 39,393 | 18,100 | 15,435 | 11,403 | 7,829 | 8,125 | 4,137 | 3,474 |
| Dry (24%) | 4,007 | 9,928 | 32,352 | 15,515 | 24,766 | 21,687 | 16,439 | 9,699 | 7,540 | 5,094 | 3,651 | 3,094 |
| Critical (15%) | 3,000 | 3,845 | 8,967 | 11,268 | 14,309 | 11,218 | 9,181 | 6,051 | 5,809 | 4,000 | 3,477 | 3,000 |

### Alternative 1 100419

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,938 | 15,144 | 72,539 | 107,663 | 139,836 | 93,758 | 66,017 | 39,592 | 21,377 | 11,856 | 6,174 | 11,121 |
| 20% | 8,625 | 7,074 | 37,911 | 72,594 | 89,133 | 69,130 | 45,588 | 26,980 | 10,857 | 11,083 | 6,174 | 10,740 |
| 30% | 8,469 | 5,116 | 20,645 | 51,097 | 67,870 | 48,025 | 27,606 | 15,581 | 9,395 | 9,256 | 5,275 | 10,485 |
| 40% | 8,313 | 5,000 | 12,598 | 29,248 | 55,354 | 35,423 | 23,827 | 12,303 | 8,691 | 8,500 | 4,840 | 9,980 |
| 50% | 5,667 | 5,000 | 10,644 | 21,650 | 37,404 | 28,110 | 17,364 | 10,930 | 8,190 | 8,000 | 4,305 | 4,035 |
| 60% | 4,500 | 5,000 | 6,783 | 16,963 | 24,358 | 22,798 | 13,798 | 10,424 | 7,590 | 7,000 | 4,000 | 3,000 |
| 70% | 4,500 | 5,000 | 5,315 | 12,557 | 17,910 | 17,477 | 11,354 | 9,047 | 7,100 | 5,000 | 3,973 | 3,000 |
| 80% | 4,500 | 5,000 | 5,000 | 9,766 | 14,158 | 13,025 | 9,798 | 7,730 | 6,957 | 5,000 | 3,850 | 3,000 |
| 90% | 3,500 | 4,000 | 5,000 | 8,236 | 10,942 | 9,267 | 8,824 | 6,655 | 5,700 | 4,000 | 3,553 | 3,000 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,747 | 8,920 | 25,033 | 45,224 | 57,590 | 45,403 | 28,838 | 18,412 | 11,414 | 7,966 | 4,734 | 6,789 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 8,828 | 11,297 | 30,964 | 92,137 | 104,423 | 83,568 | 52,760 | 34,757 | 19,683 | 10,597 | 5,868 | 10,936 |
| Above Normal (16%) | 8,775 | 8,899 | 18,922 | 49,993 | 70,112 | 56,774 | 30,005 | 16,440 | 8,842 | 10,662 | 5,342 | 10,527 |
| Below Normal (13%) | 6,663 | 6,398 | 20,976 | 17,834 | 38,533 | 19,574 | 15,019 | 11,197 | 8,271 | 8,046 | 4,170 | 3,430 |
| Dry (24%) | 4,719 | 10,098 | 32,492 | 15,829 | 24,938 | 23,047 | 16,475 | 9,859 | 7,428 | 5,129 | 3,795 | 3,090 |
| Critical (15%) | 3,500 | 4,144 | 10,092 | 12,511 | 14,440 | 11,333 | 9,014 | 6,005 | 5,809 | 4,001 | 3,698 | 3,000 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Outflow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,113 | **-2,756** | 1,423 | 1,440 | **-422** | 1,080 | **-1,773** | **-1,699** | **-418** | 81 | 1,858 | 5,663 |
| 20% | 3,933 | **-1,604** | 660 | **-550** | **-17** | 849 | **-1,867** | **-103** | 0 | 162 | 2,174 | 6,576 |
| 30% | 4,317 | **-1,005** | **-61** | 33 | **-418** | 1,416 | **-1,460** | **-367** | **-222** | **-179** | 1,275 | 6,410 |
| 40% | 4,313 | 108 | **-648** | **-12** | 221 | 1,562 | 829 | 154 | 274 | 500 | 840 | 5,984 |
| 50% | 1,667 | 356 | **-116** | 197 | 344 | 1,815 | **-535** | **-222** | 430 | 0 | 305 | 180 |
| 60% | 500 | 500 | **-193** | 767 | **-194** | 1,903 | 231 | 191 | 252 | 500 | 0 | 0 |
| 70% | 500 | 500 | **-194** | **-358** | 187 | 1,789 | **-27** | 103 | 0 | 0 | 184 | 0 |
| 80% | 500 | 500 | 82 | 658 | 162 | 826 | 124 | **-191** | **-143** | 0 | 336 | 0 |
| 90% | 500 | 500 | 500 | 418 | 401 | **-4** | **-129** | **-149** | **-17** | 0 | 53 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,669 | **-183** | **-215** | 239 | 165 | 1,148 | **-266** | **-188** | **-6** | 62 | 724 | 2,667 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,470 | **-725** | **-845** | 21 | 505 | 921 | **-494** | **-498** | **-139** | 180 | 1,397 | 5,193 |
| Above Normal (16%) | 3,425 | **-376** | **-1,451** | **-238** | 373 | 1,953 | **-241** | **-219** | 41 | 42 | 1,317 | 6,478 |
| Below Normal (13%) | 714 | 161 | 625 | 87 | **-860** | 1,474 | **-416** | **-206** | 442 | **-79** | 33 | **-44** |
| Dry (24%) | 712 | 170 | 139 | 314 | 171 | 1,360 | 37 | 160 | **-112** | 35 | 145 | **-4** |
| Critical (15%) | 500 | 299 | 1,125 | 1,243 | 131 | 115 | **-166** | **-46** | 0 | 1 | 221 | 0 |

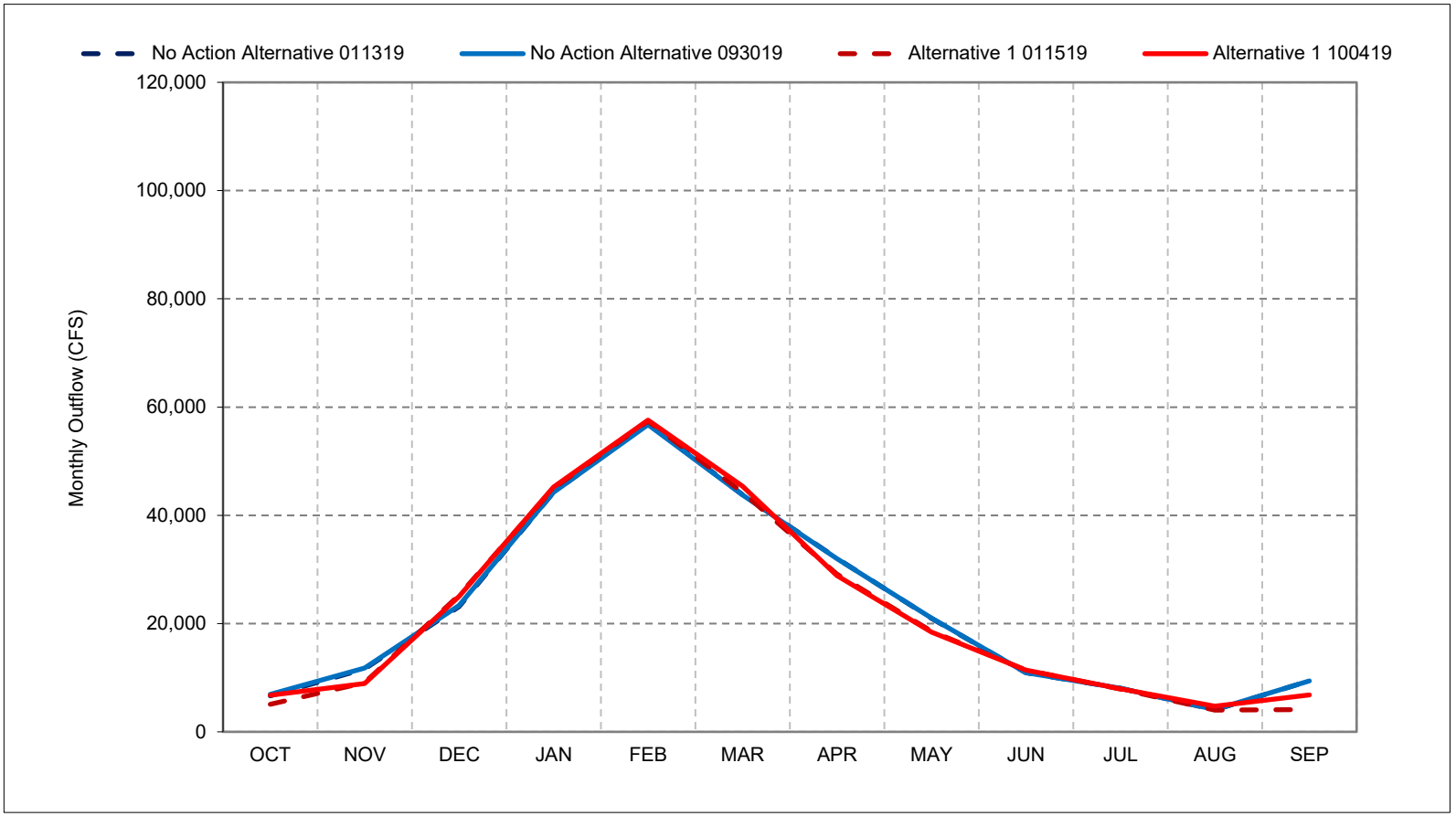
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-1. Delta Outflow, Long-Term Average Outflow

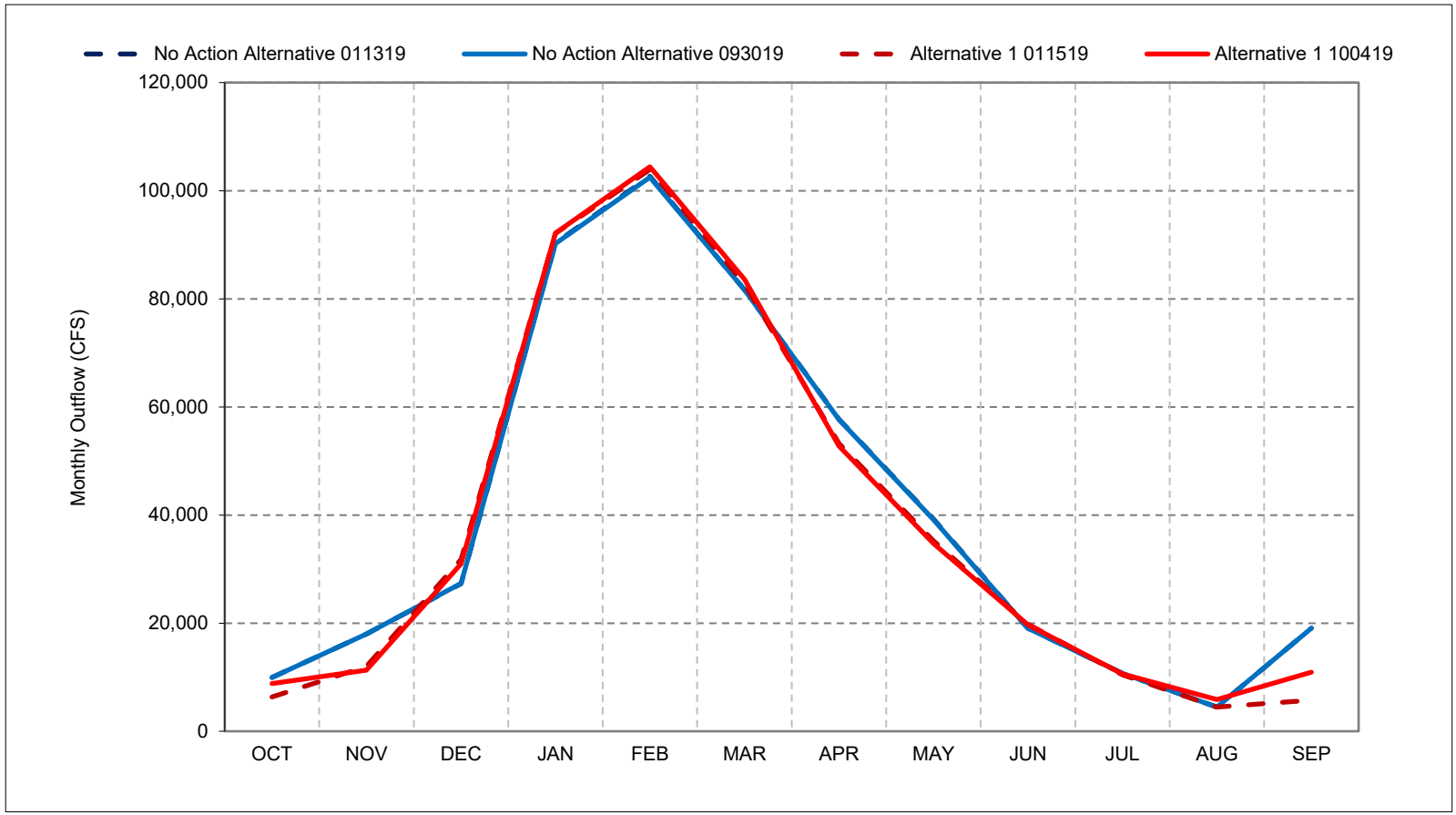



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-2. Delta Outflow, Wet Year Average Outflow

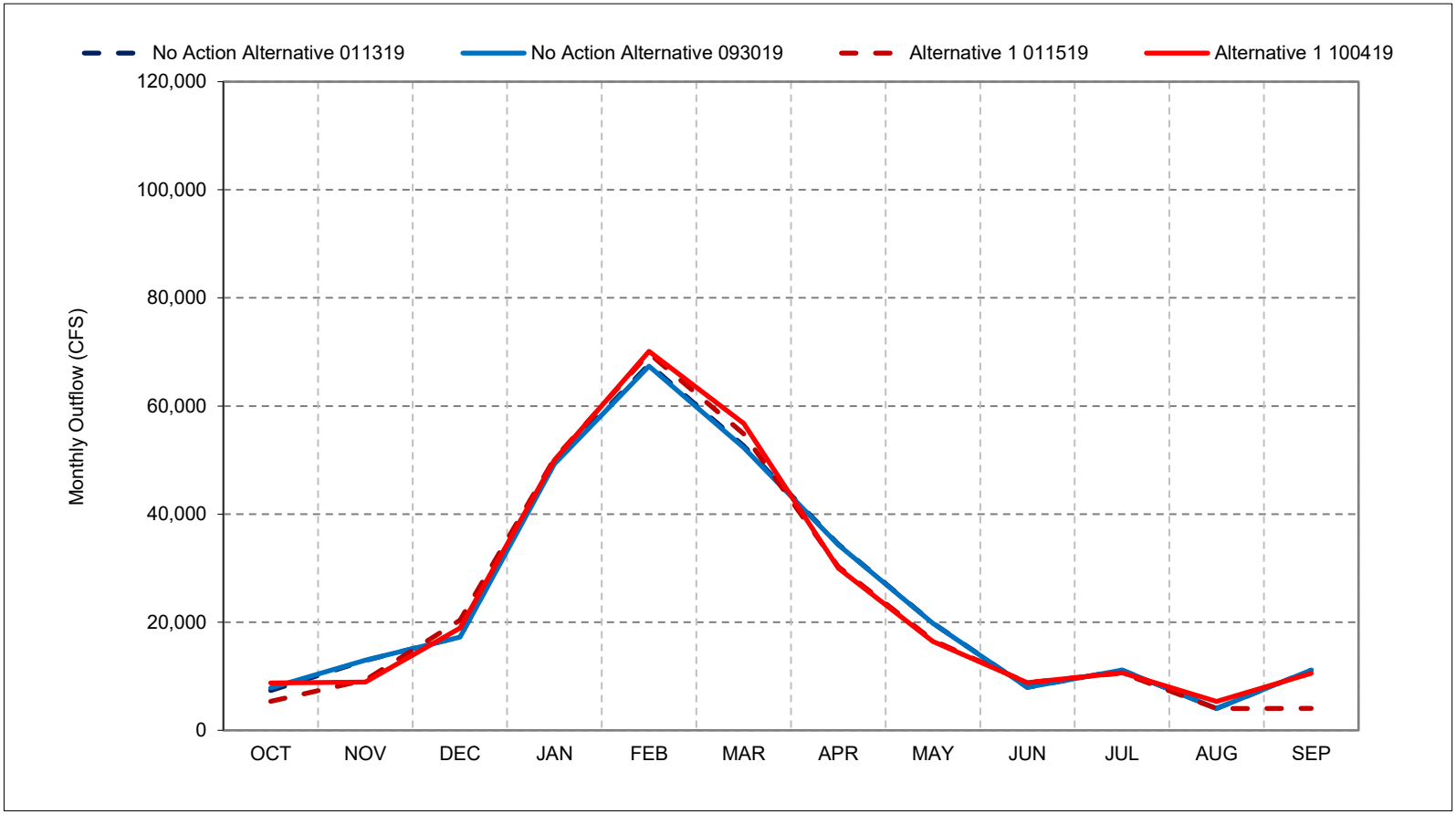



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-3. Delta Outflow, Above Normal Year Average Outflow

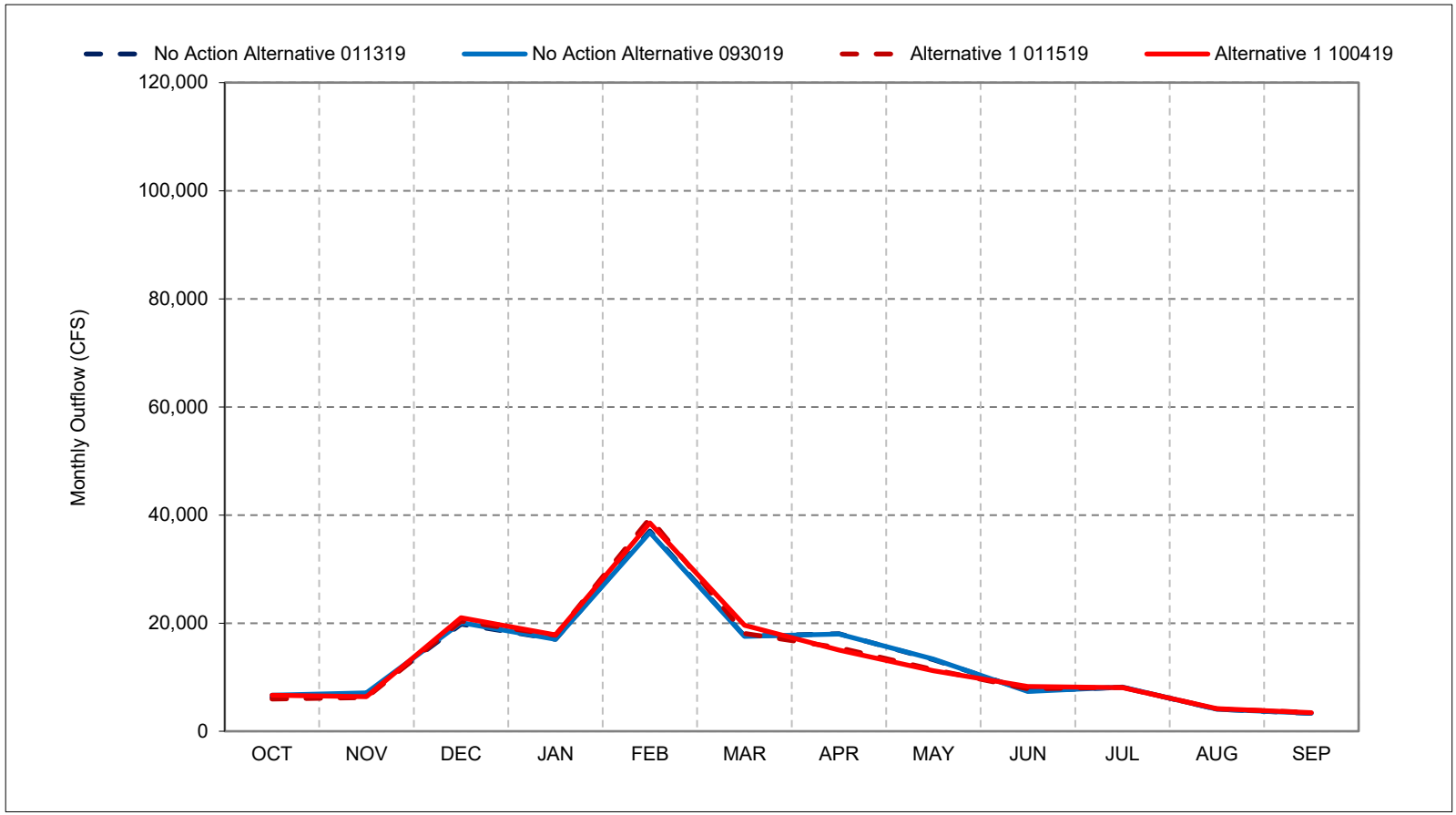



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-4. Delta Outflow, Below Normal Year Average Outflow

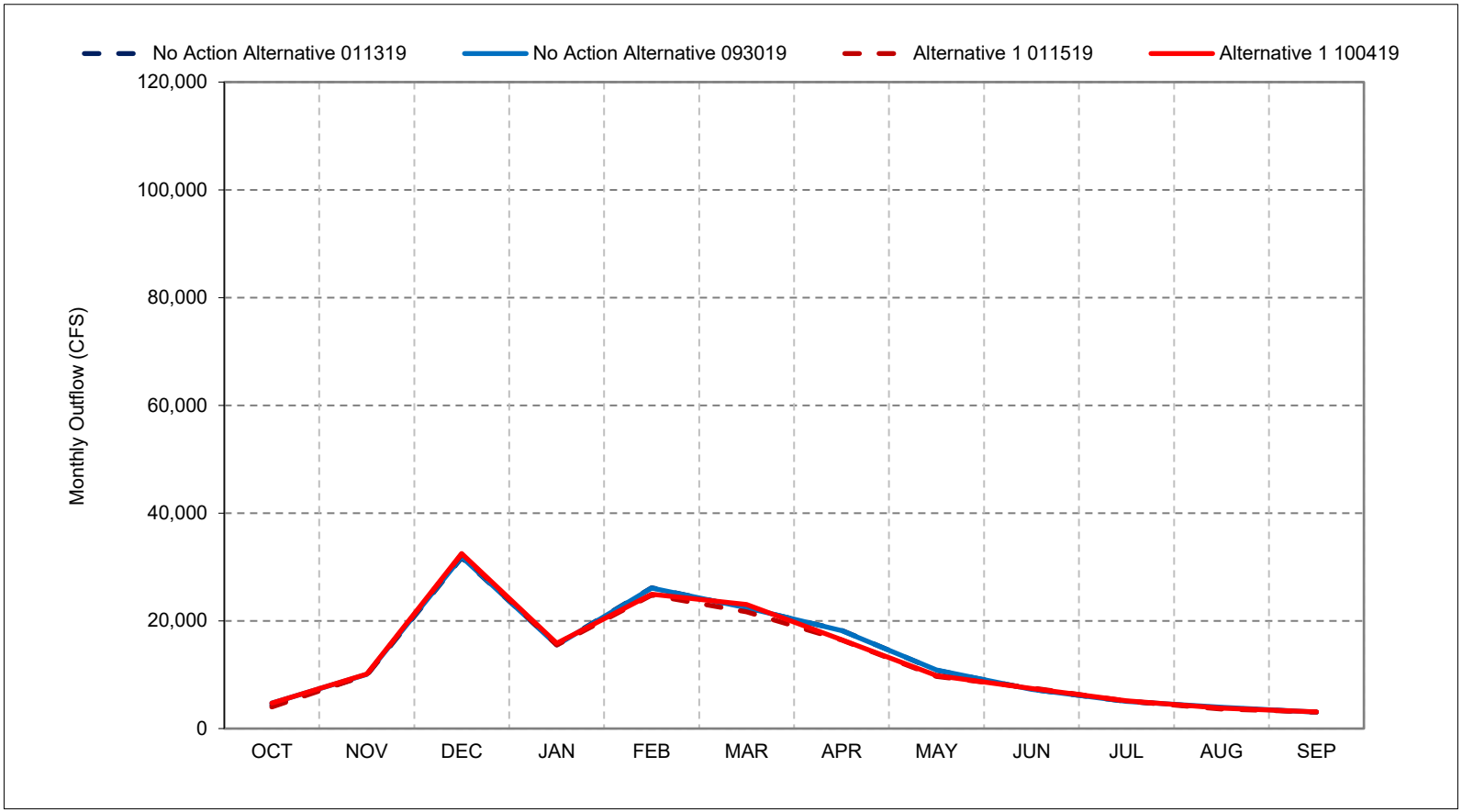



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-5. Delta Outflow, Dry Year Average Outflow

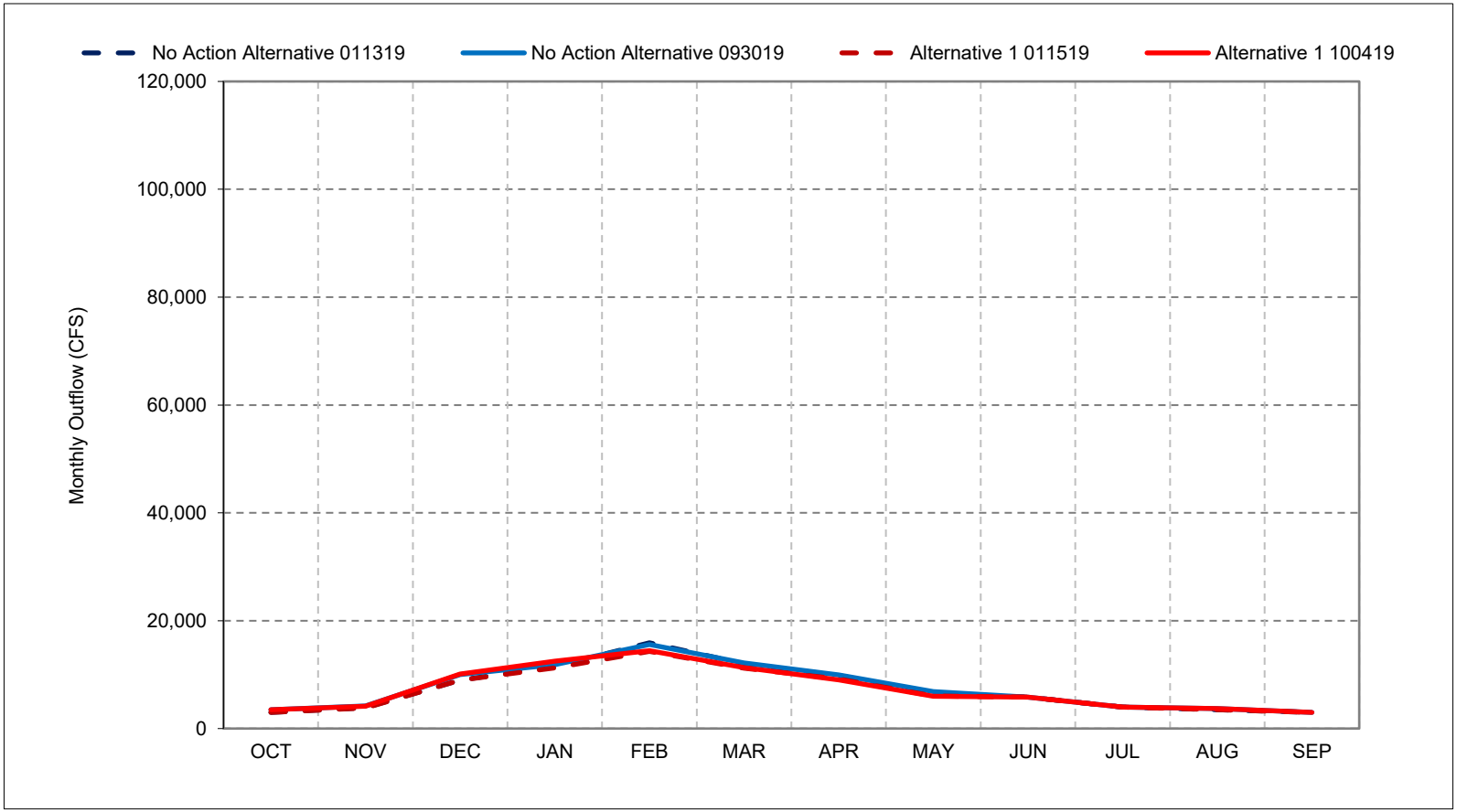



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 41-6. Delta Outflow, Critical Year Average Outflow

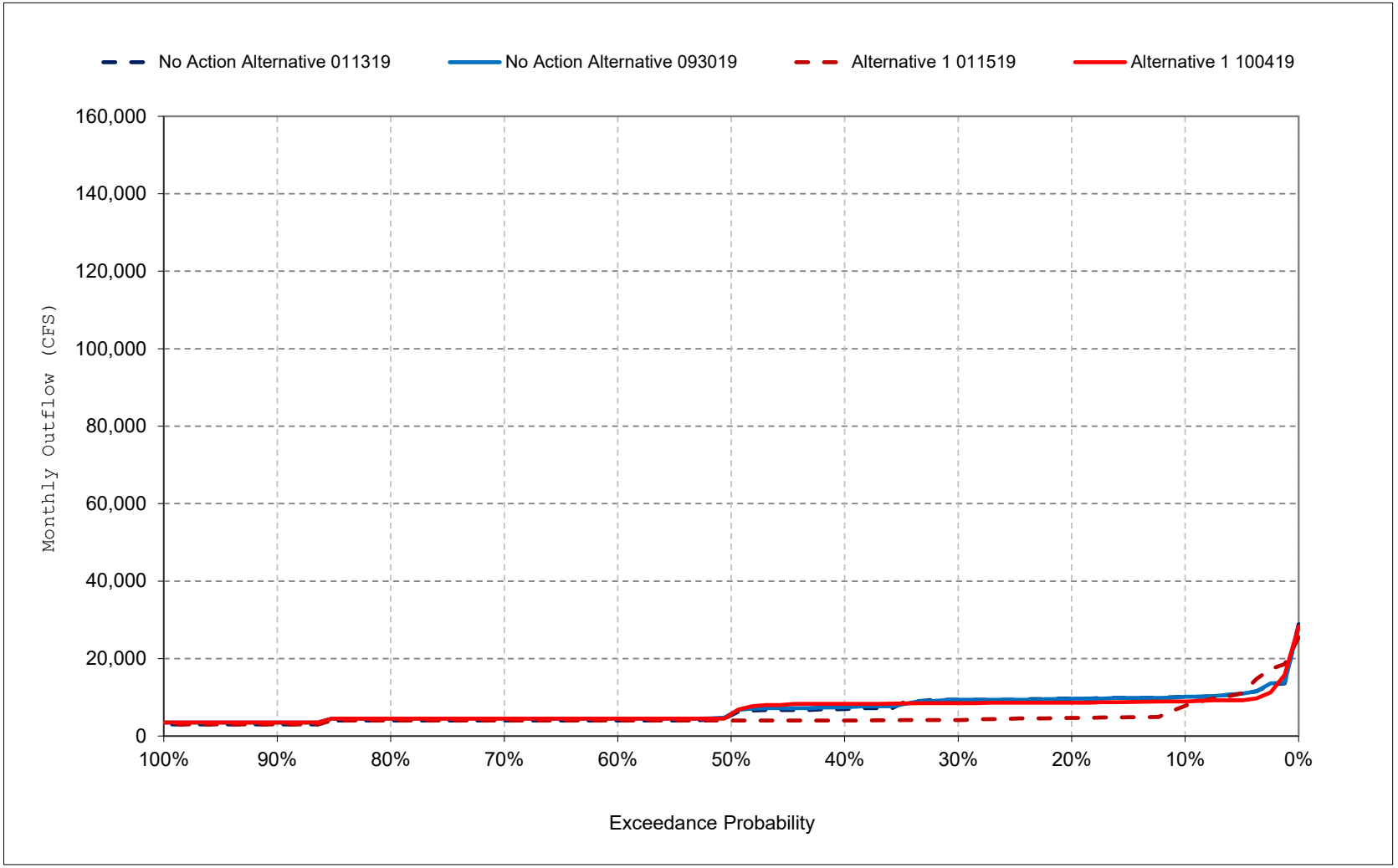



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

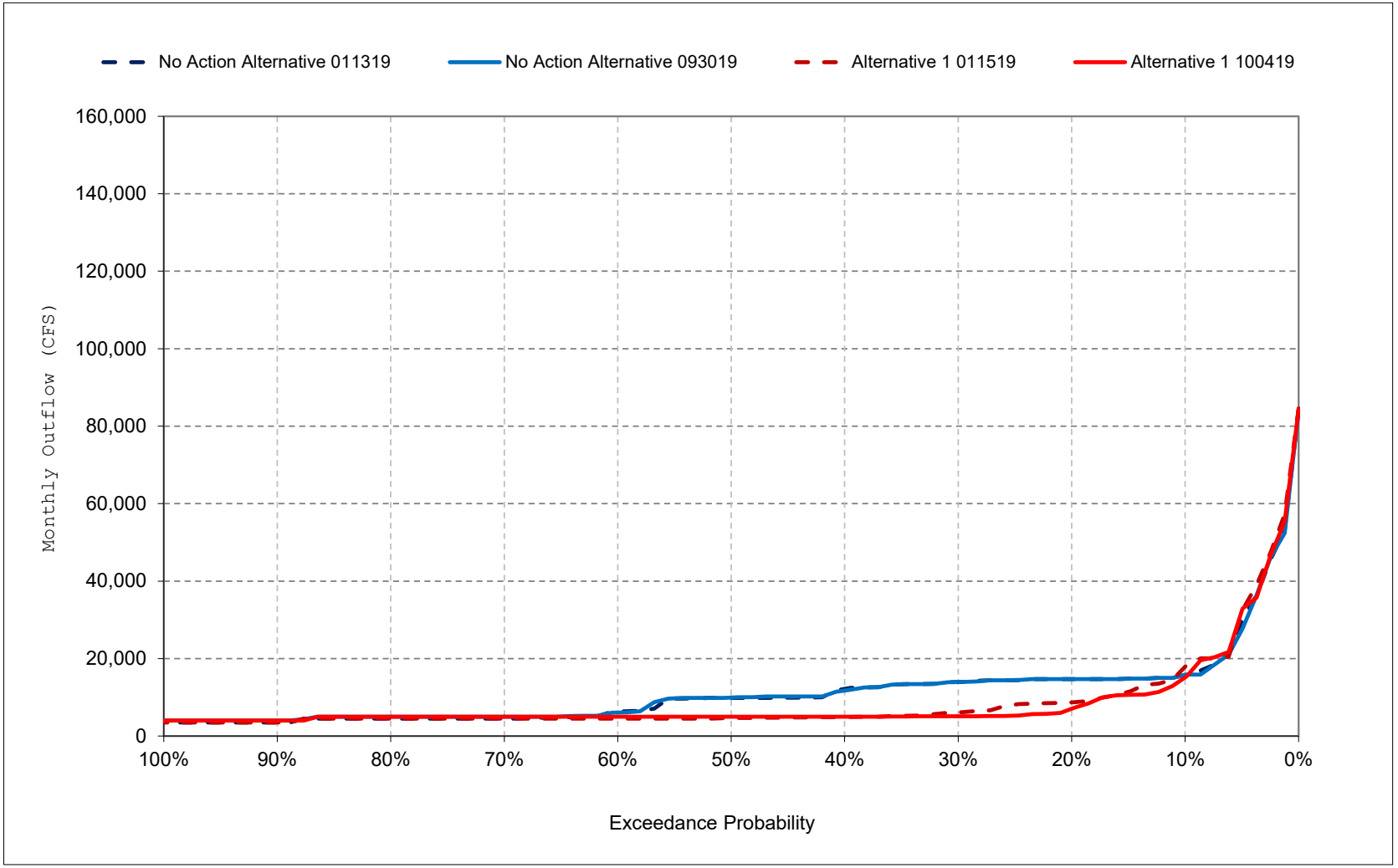
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-7. Delta Outflow, October**



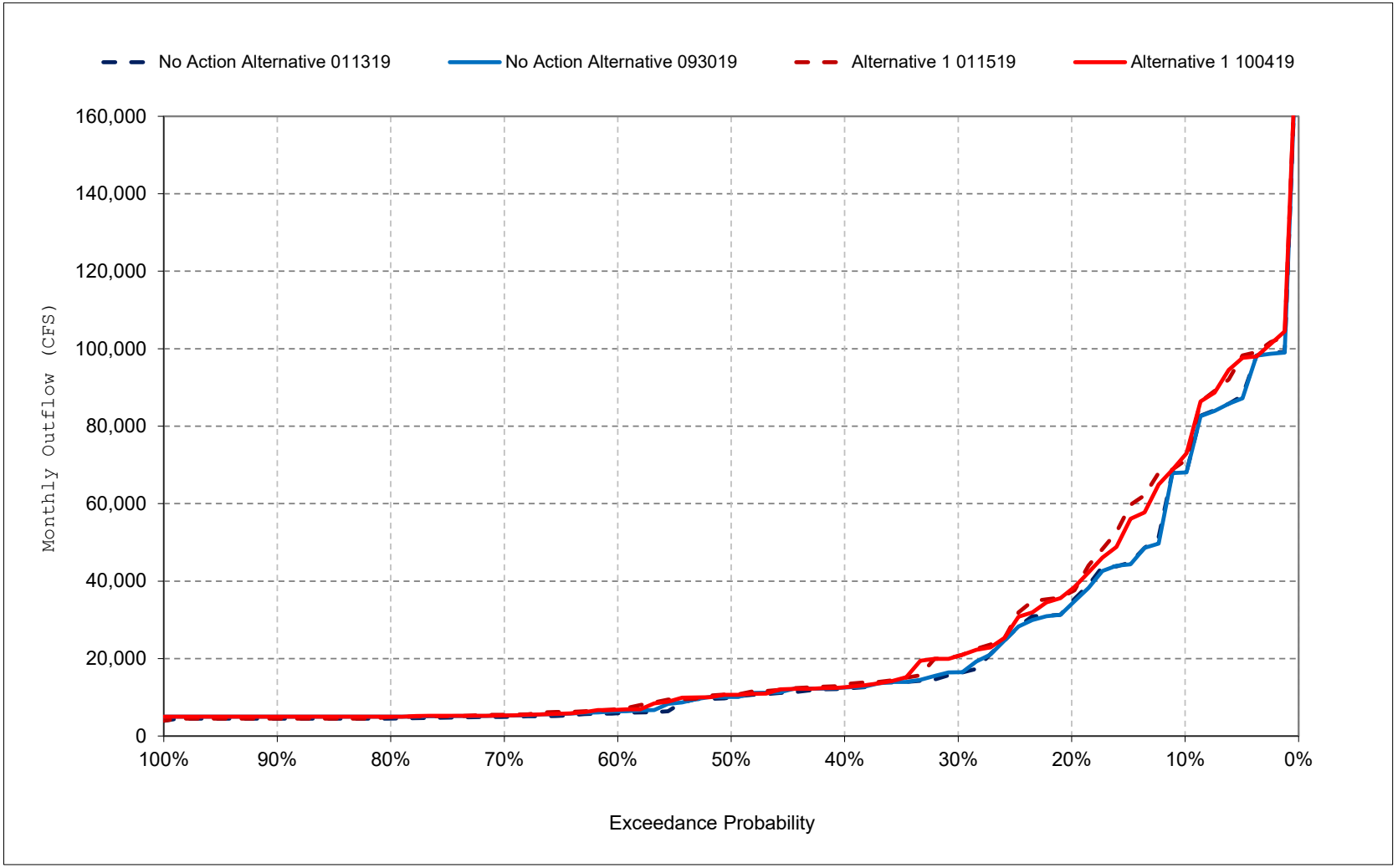

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-8. Delta Outflow, November**



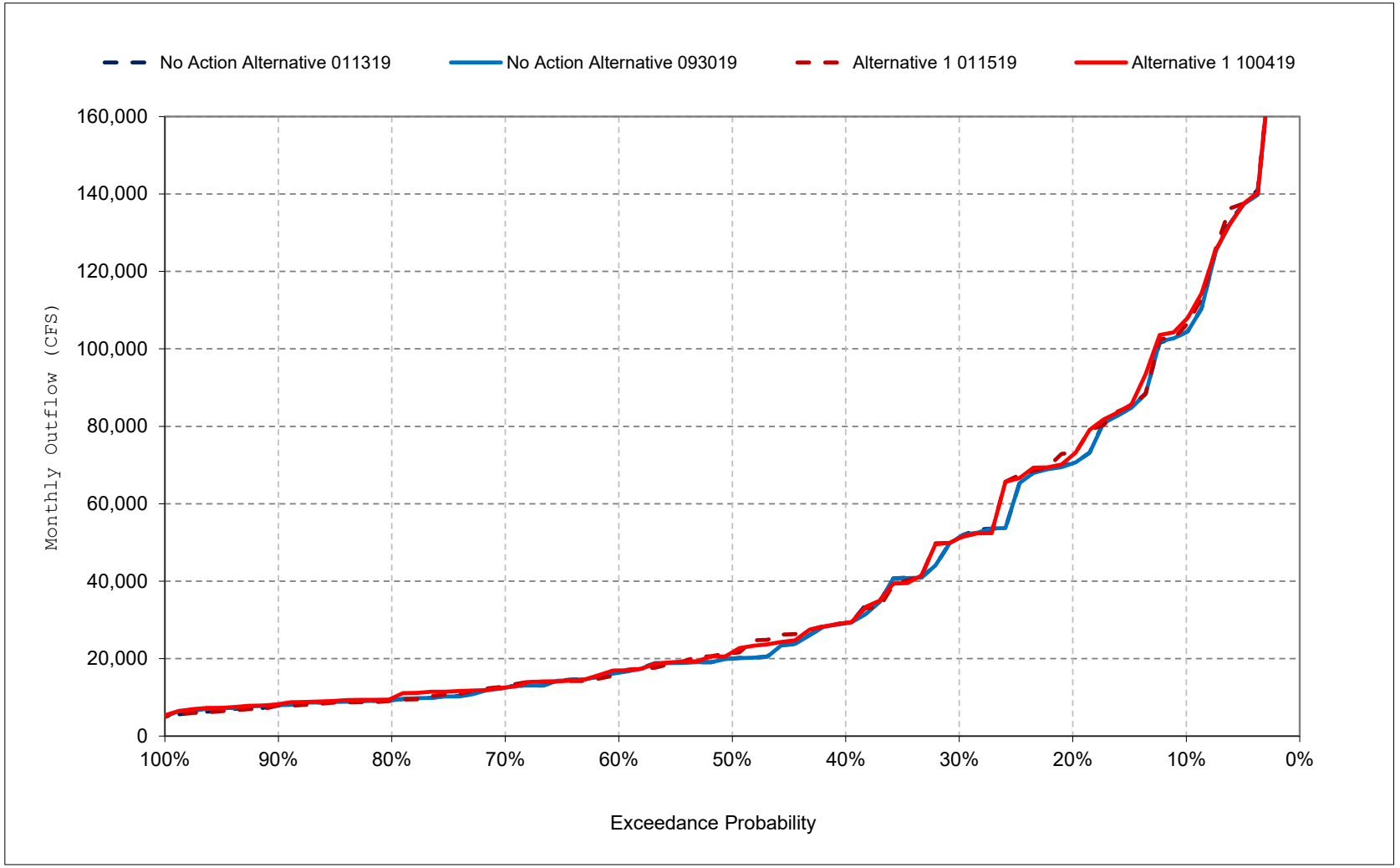

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-9. Delta Outflow, December**



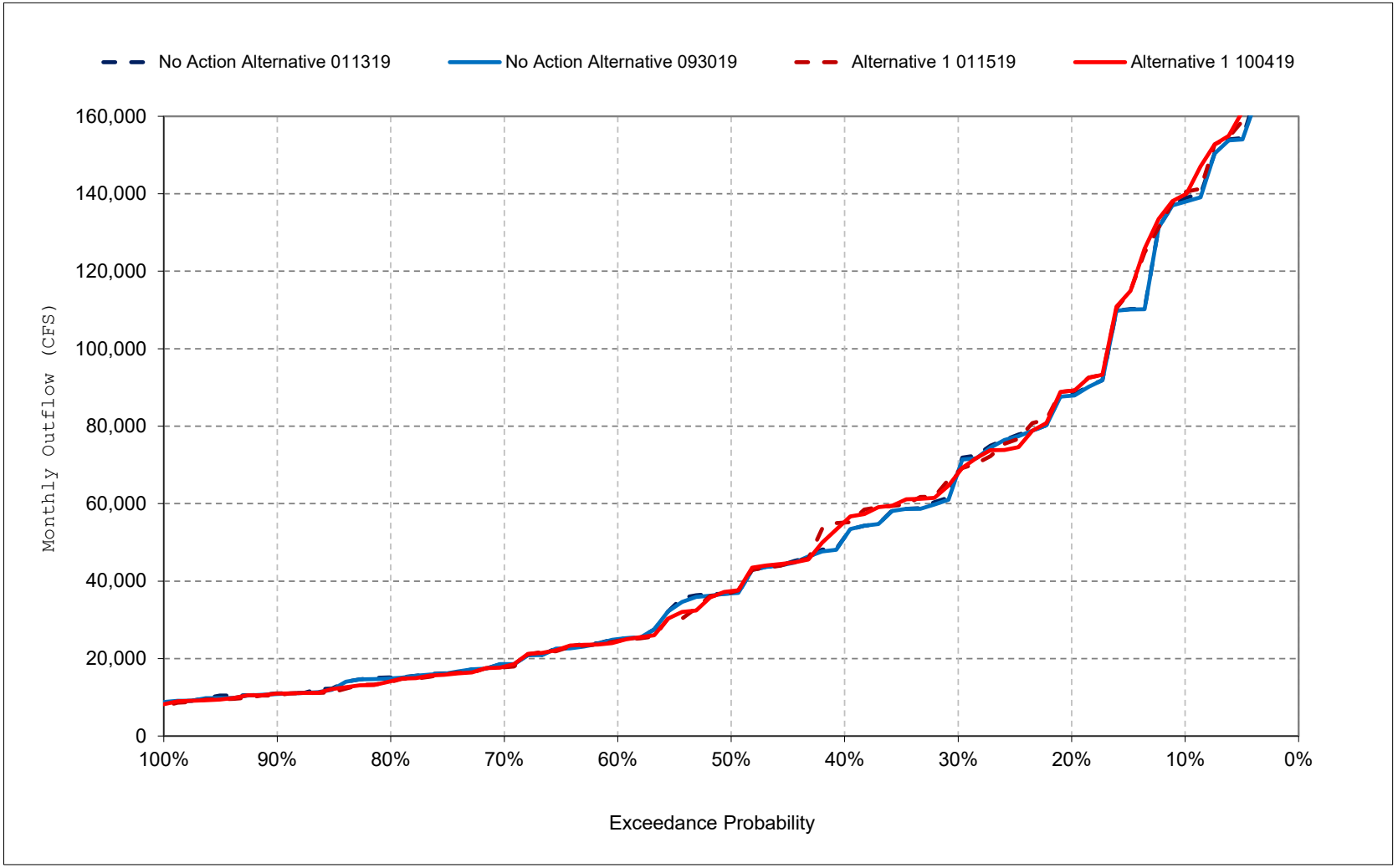

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-10. Delta Outflow, January**



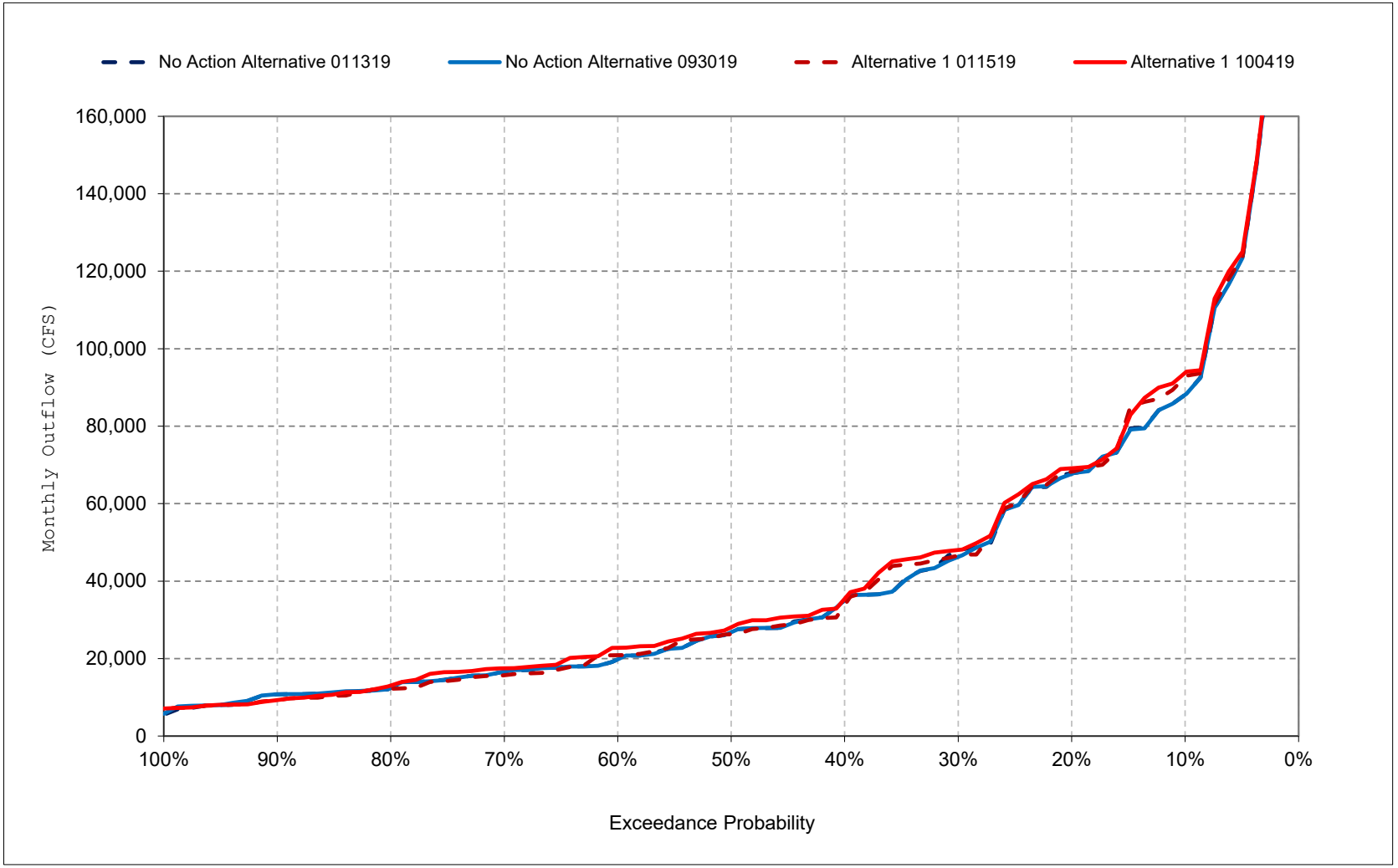

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-11. Delta Outflow, February**



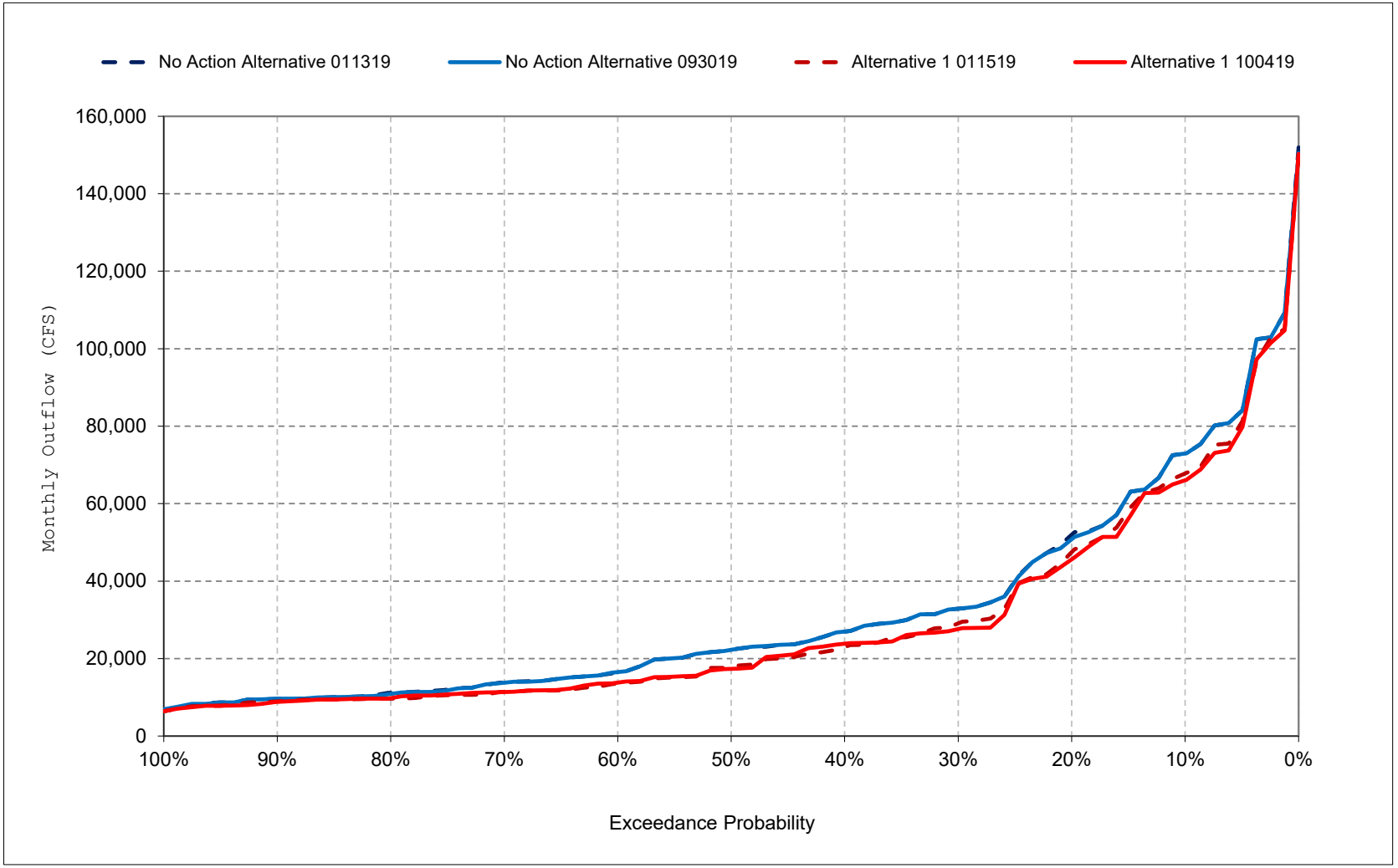

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-12. Delta Outflow, March**



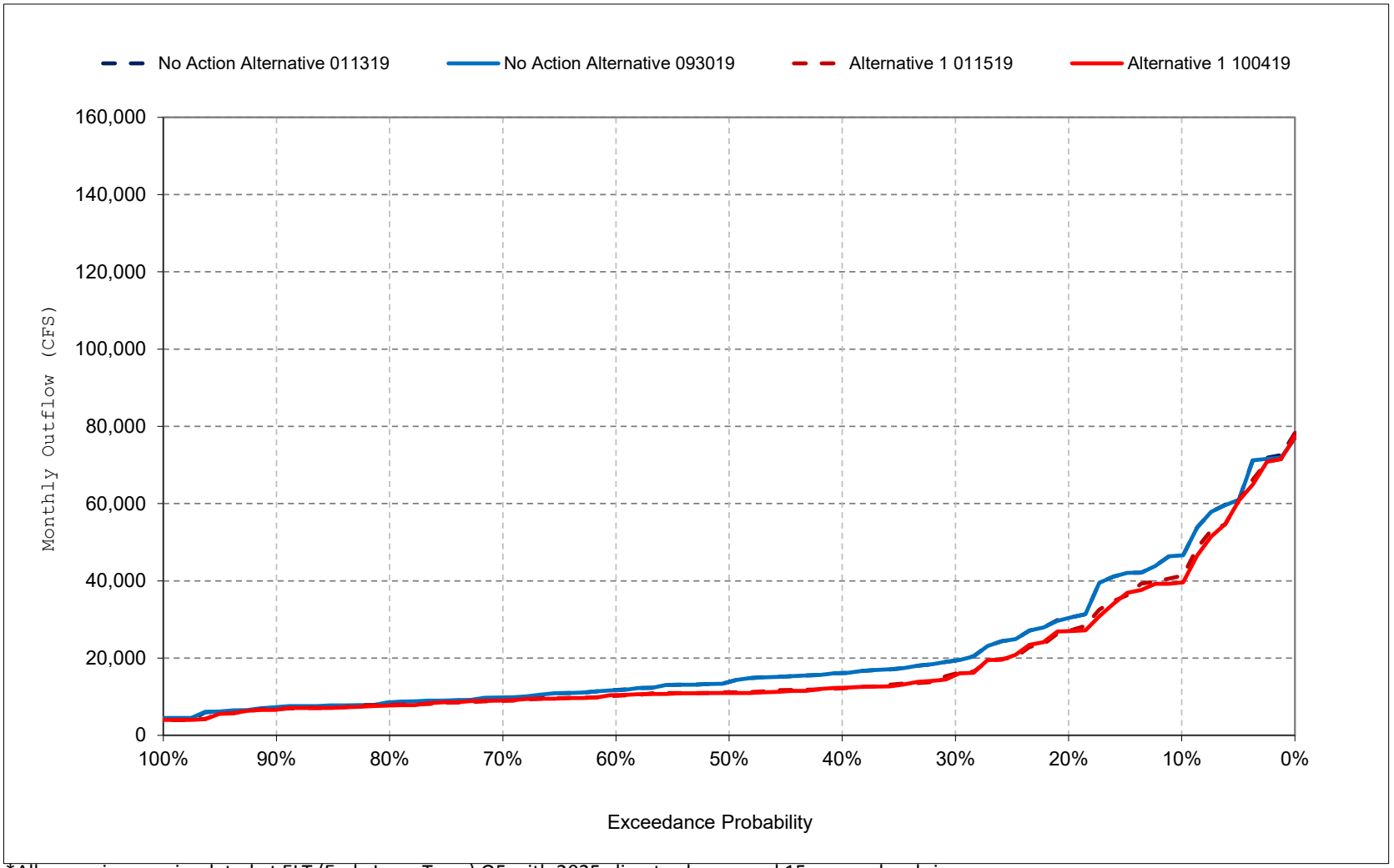

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-13. Delta Outflow, April**



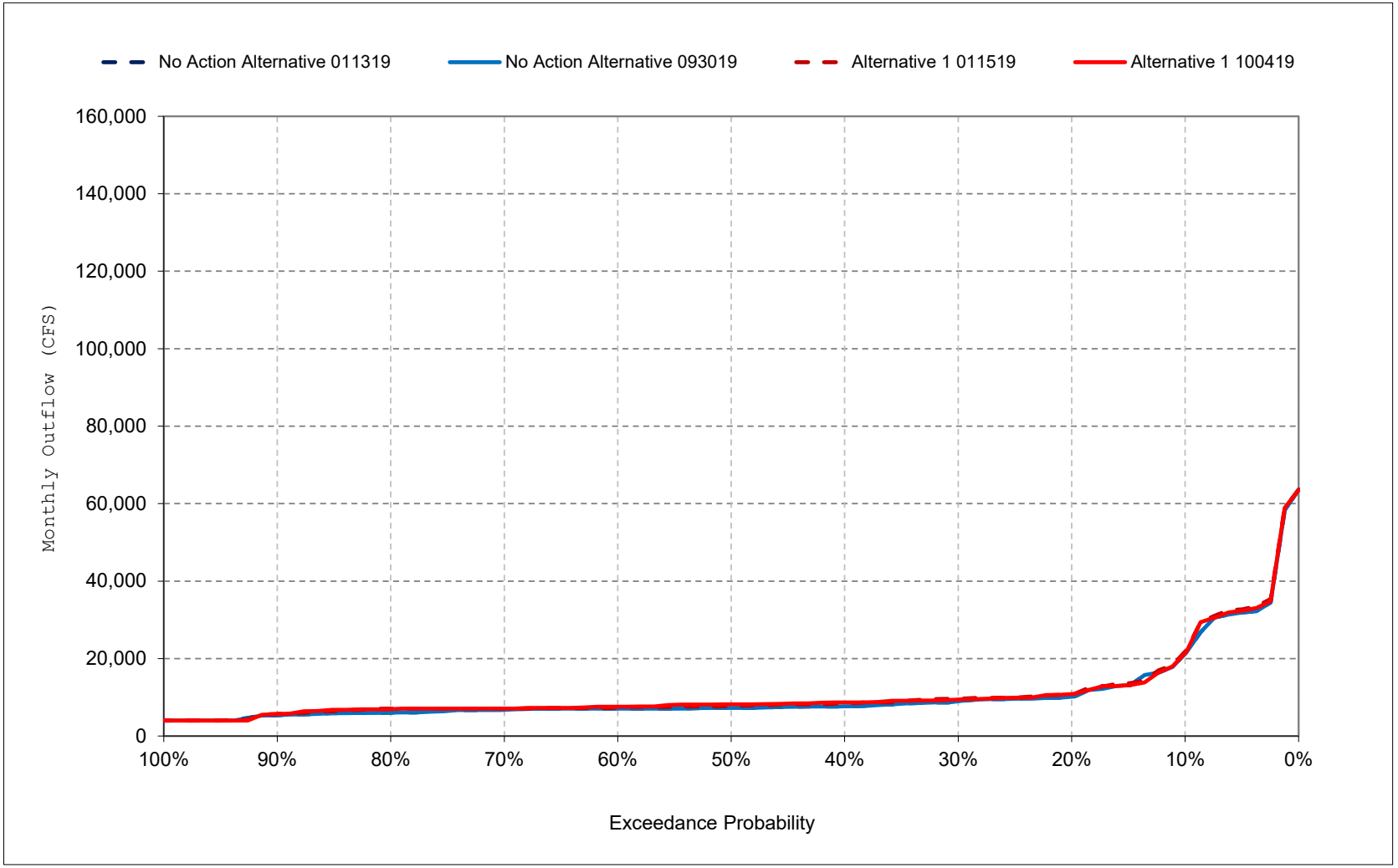

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-14. Delta Outflow, May**



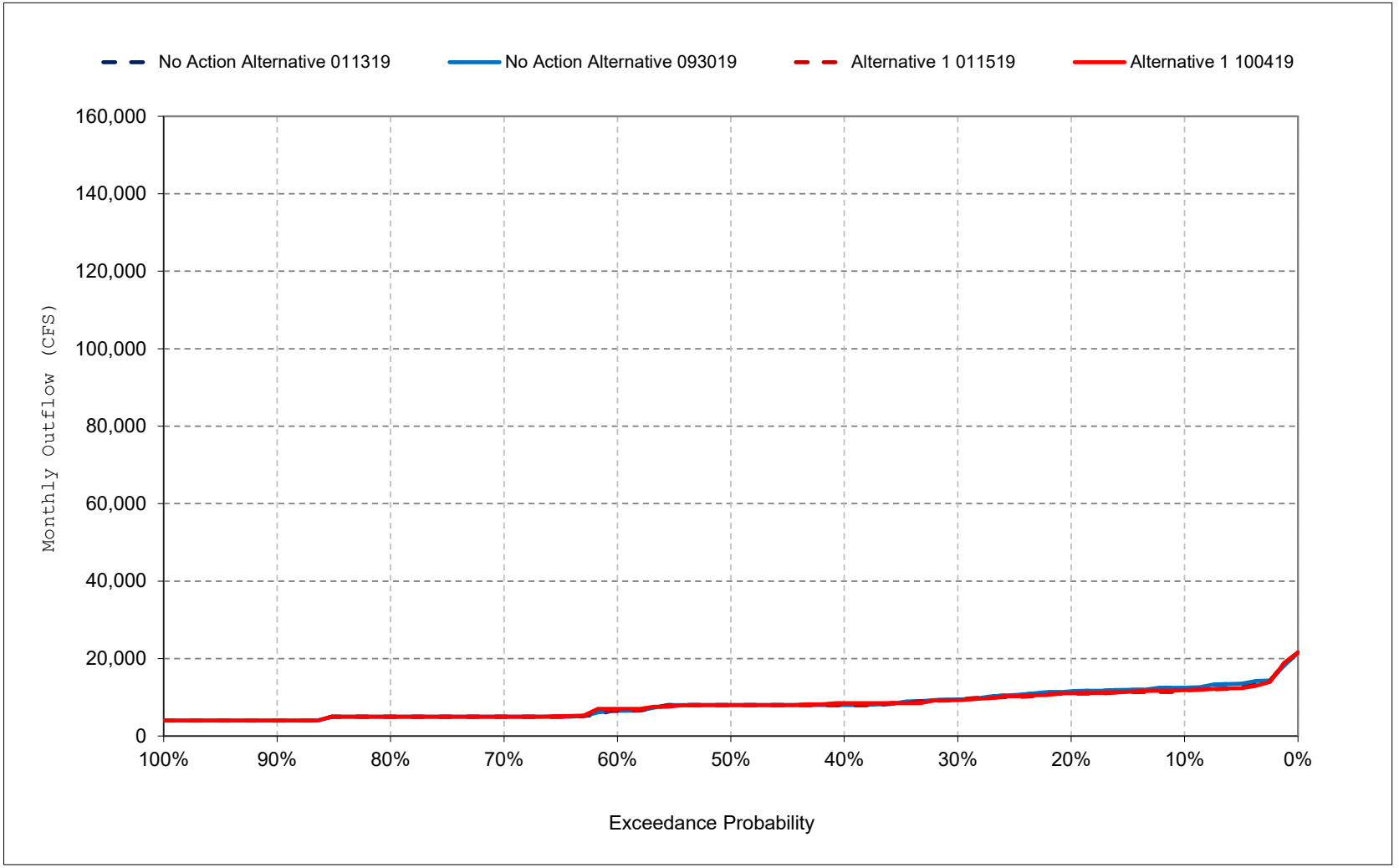

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-15. Delta Outflow, June**



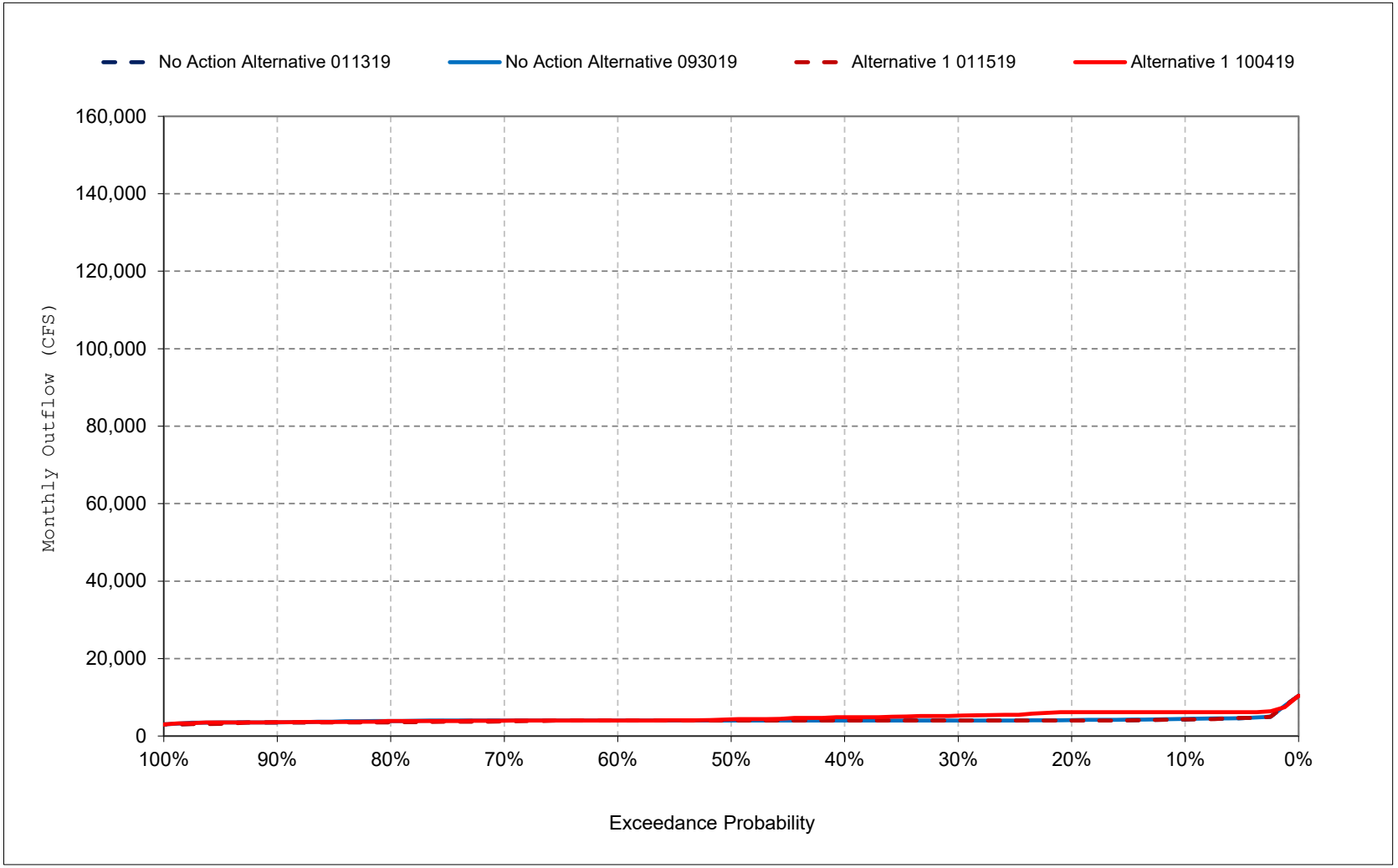

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-16. Delta Outflow, July**



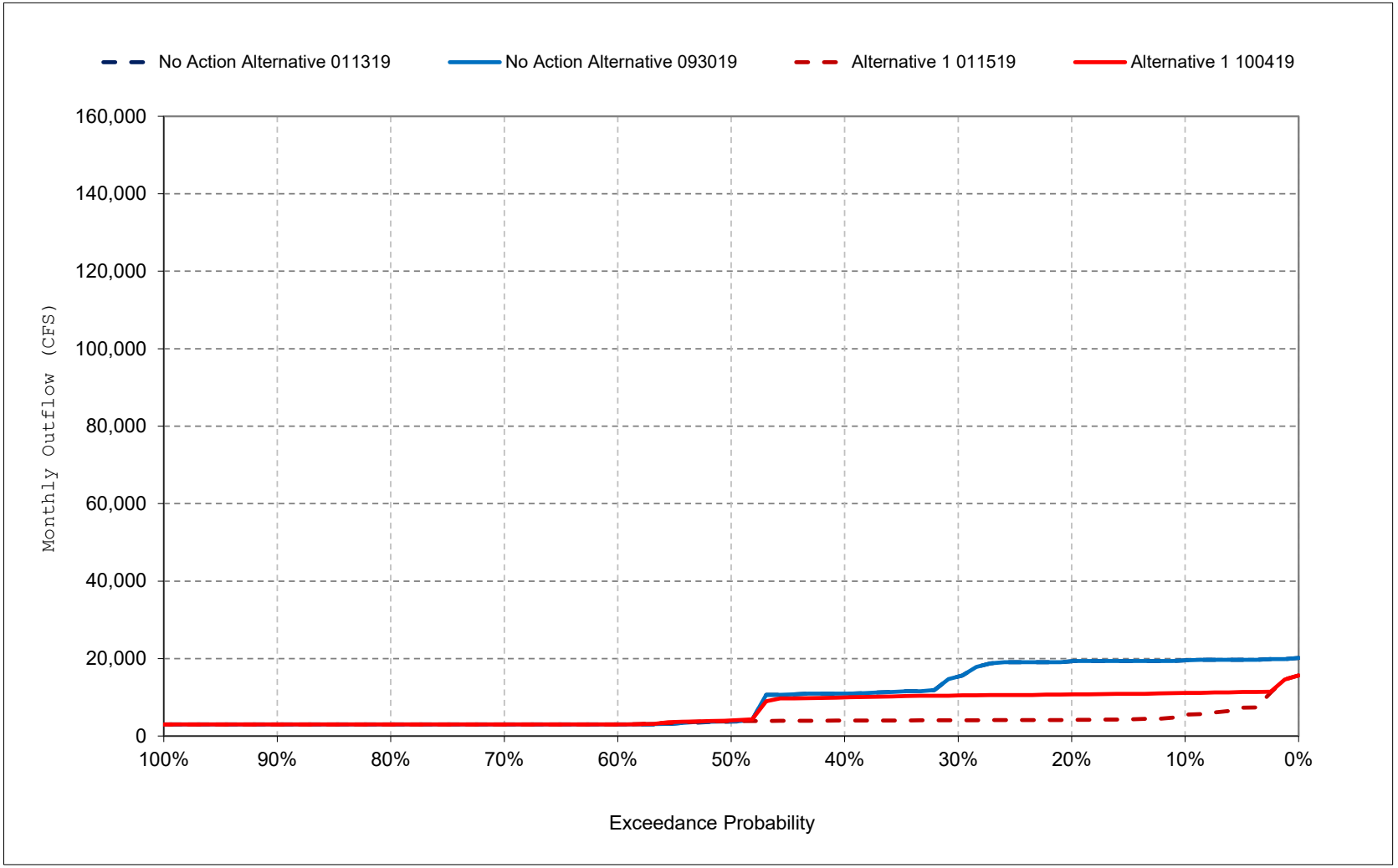

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-17. Delta Outflow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 41-18. Delta Outflow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.3 Diversion Results (CalSim II)

The following results of the CalSim II model are included for diversions at key project locations for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Trinity Import - Clear Creek Tunnel | D100 | 46-1 to 46-4 | 46-1 to 46-18 |
| Red Bluff Diversion - Tehama Colusa Canal | D112 | 47-1 to 47-4 | 47-1 to 47-18 |
| Hamilton City Diversion - Glenn Colusa Canal | D114 | 48-1 to 48-4 | 48-1 to 48-18 |
| Folsom South Canal Diversion | D9 | 49-1 to 49-4 | 49-1 to 49-18 |
| Friant-Kern Canal Diversion | D18A | 50-1 to 50-4 | 50-1 to 50-18 |
| Madera Canal Diversion | D18B | 51-1 to 51-4 | 51-1 to 51-18 |
| DCC Flow (Alternative 3 revised DXC equation) | C401B_DXC | 52-1 to 52-4 | 52-1 to 52-18 |
| Total Delta Exports | TOTAL_EXP | 53-1 to 53-4 | 53-1 to 53-18 |
| Jones PP Exports | D418 | 54-1 to 54-4 | 54-1 to 54-18 |
| CVP Banks PP Exports | D419_CVP | 55-1 to 55-4 | 55-1 to 55-18 |
| SWP Banks PP Exports | D419_SWP | 56-1 to 56-4 | 56-1 to 56-18 |
| DMC - CA Intertie Flow | C700A | 57-1 to 57-4 | 57-1 to 57-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

# Table 46-1. Trinity Import - Clear Creek Tunnel, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,785 | 1,339 | 375 | 1,673 | 200 | 659 | 503 | 250 | 1,250 | 2,988 | 2,434 | 2,724 |
| 20% | 1,372 | 500 | 250 | 639 | 100 | 242 | 401 | 197 | 766 | 2,000 | 2,000 | 2,336 |
| 30% | 1,250 | 468 | 200 | 200 | 100 | 194 | 323 | 93 | 625 | 1,714 | 2,000 | 2,000 |
| 40% | 750 | 450 | 141 | 116 | 50 | 107 | 251 | 0 | 262 | 1,500 | 1,773 | 1,798 |
| 50% | 700 | 209 | 75 | 100 | 19 | 100 | 200 | 0 | 200 | 1,500 | 1,500 | 1,375 |
| 60% | 625 | 75 | 50 | 50 | 0 | 54 | 160 | 0 | 156 | 1,352 | 1,500 | 1,300 |
| 70% | 307 | 50 | 0 | 0 | 0 | 0 | 100 | 0 | 40 | 1,125 | 1,500 | 1,250 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 775 | 1,125 | 750 |
| 90% | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | 950 | 550 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 858 | 478 | 229 | 417 | 88 | 238 | 305 | 161 | 493 | 1,447 | 1,649 | 1,553 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,361 | 866 | 497 | 516 | 118 | 354 | 369 | 205 | 284 | 1,252 | 1,583 | 2,190 |
| Above Normal (16%) | 1,177 | 764 | 291 | 136 | 48 | 331 | 358 | 0 | 206 | 1,266 | 1,955 | 1,876 |
| Below Normal (13%) | 594 | 223 | 66 | 348 | 46 | 239 | 219 | 256 | 816 | 1,734 | 2,010 | 1,611 |
| Dry (24%) | 360 | 146 | 40 | 481 | 106 | 95 | 194 | 182 | 842 | 1,891 | 1,552 | 1,002 |
| Critical (15%) | 491 | 113 | 46 | 465 | 76 | 120 | 374 | 119 | 379 | 1,062 | 1,292 | 693 |

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,838 | 532 | 424 | 2,109 | 130 | 874 | 456 | 250 | 1,374 | 3,300 | 2,500 | 2,202 |
| 20% | 1,412 | 450 | 224 | 578 | 100 | 446 | 406 | 200 | 750 | 2,443 | 2,000 | 2,000 |
| 30% | 823 | 450 | 161 | 118 | 100 | 200 | 355 | 99 | 700 | 2,000 | 2,000 | 1,827 |
| 40% | 700 | 352 | 102 | 100 | 65 | 119 | 282 | 0 | 378 | 1,500 | 1,980 | 1,457 |
| 50% | 700 | 91 | 75 | 100 | 0 | 100 | 208 | 0 | 250 | 1,500 | 1,720 | 1,300 |
| 60% | 407 | 75 | 50 | 50 | 0 | 75 | 149 | 0 | 182 | 1,475 | 1,500 | 1,250 |
| 70% | 200 | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 40 | 1,125 | 1,500 | 1,200 |
| 80% | 151 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,086 | 1,151 | 750 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | 950 | 550 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 778 | 298 | 201 | 437 | 89 | 299 | 283 | 170 | 513 | 1,609 | 1,727 | 1,386 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,352 | 370 | 396 | 522 | 99 | 381 | 292 | 213 | 312 | 1,315 | 1,642 | 1,715 |
| Above Normal (16%) | 790 | 308 | 258 | 280 | 74 | 459 | 355 | 0 | 346 | 1,415 | 1,968 | 1,765 |
| Below Normal (13%) | 721 | 332 | 105 | 443 | 57 | 489 | 251 | 288 | 1,016 | 1,778 | 2,167 | 1,398 |
| Dry (24%) | 374 | 256 | 54 | 390 | 120 | 71 | 207 | 196 | 625 | 2,028 | 1,648 | 1,048 |
| Critical (15%) | 244 | 171 | 52 | 497 | 58 | 150 | 341 | 107 | 485 | 1,602 | 1,381 | 819 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 53 | -807 | 50 | 436 | -70 | 216 | -47 | 0 | 124 | 312 | 66 | -522 |
| 20% | 41 | -50 | -26 | -61 | 0 | 204 | 5 | 3 | -16 | 443 | 0 | -336 |
| 30% | -427 | -17 | -39 | -82 | 0 | 6 | 32 | 5 | 75 | 286 | 0 | -173 |
| 40% | -50 | -98 | -39 | -16 | 15 | 12 | 30 | 0 | 116 | 0 | 207 | -341 |
| 50% | 0 | -118 | 0 | 0 | -19 | 0 | 8 | 0 | 50 | 0 | 220 | -75 |
| 60% | -218 | 0 | 0 | 0 | 0 | 21 | -11 | 0 | 26 | 123 | 0 | -50 |
| 70% | -107 | -50 | 0 | 0 | 0 | 0 | -9 | 0 | 0 | 0 | 0 | -50 |
| 80% | -49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 311 | 26 | 0 |
| 90% | -12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -80 | -180 | -28 | 20 | 1 | 61 | -23 | 9 | 20 | 162 | 78 | -167 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -9 | -497 | -102 | 5 | -19 | 27 | -78 | 9 | 28 | 63 | 59 | -475 |
| Above Normal (16%) | -387 | -456 | -33 | 144 | 26 | 128 | -3 | 0 | 140 | 149 | 14 | -111 |
| Below Normal (13%) | 126 | 110 | 39 | 95 | 10 | 251 | 32 | 32 | 200 | 44 | 157 | -213 |
| Dry (24%) | 14 | 109 | 14 | -91 | 15 | -24 | 13 | 14 | -217 | 136 | 95 | 46 |
| Critical (15%) | -247 | 58 | 6 | 32 | -18 | 30 | -34 | -11 | 106 | 540 | 88 | 125 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 46-2. Trinity Import - Clear Creek Tunnel, Monthly Diversion

## No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,771 | 1,272 | 519 | 1,673 | 200 | 639 | 626 | 250 | 1,250 | 2,989 | 2,500 | 2,572 |
| 20% | 1,250 | 501 | 250 | 510 | 100 | 237 | 408 | 197 | 783 | 2,111 | 2,000 | 2,305 |
| 30% | 1,250 | 500 | 218 | 206 | 100 | 190 | 332 | 93 | 625 | 1,950 | 2,000 | 2,000 |
| 40% | 750 | 450 | 180 | 116 | 70 | 100 | 261 | 0 | 263 | 1,500 | 1,773 | 1,800 |
| 50% | 700 | 151 | 88 | 100 | 33 | 100 | 200 | 0 | 200 | 1,500 | 1,500 | 1,300 |
| 60% | 625 | 75 | 50 | 50 | 0 | 50 | 162 | 0 | 156 | 1,404 | 1,500 | 1,300 |
| 70% | 200 | 50 | 0 | 0 | 0 | 0 | 100 | 0 | 40 | 1,125 | 1,500 | 991 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 622 | 1,125 | 750 |
| 90% | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 950 | 550 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 840 | 487 | 234 | 427 | 91 | 230 | 318 | 161 | 496 | 1,495 | 1,653 | 1,522 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,390 | 882 | 517 | 516 | 101 | 354 | 369 | 205 | 284 | 1,262 | 1,583 | 2,179 |
| Above Normal (16%) | 1,265 | 811 | 250 | 144 | 48 | 327 | 358 | 0 | 206 | 1,249 | 2,025 | 1,774 |
| Below Normal (13%) | 552 | 226 | 68 | 267 | 94 | 179 | 219 | 262 | 842 | 1,807 | 2,012 | 1,619 |
| Dry (24%) | 324 | 144 | 50 | 527 | 107 | 88 | 195 | 181 | 845 | 1,901 | 1,461 | 1,004 |
| Critical (15%) | 316 | 94 | 63 | 525 | 84 | 142 | 457 | 112 | 373 | 1,304 | 1,393 | 597 |

## Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,872 | 610 | 390 | 2,173 | 200 | 701 | 502 | 250 | 1,330 | 3,070 | 2,500 | 2,500 |
| 20% | 1,642 | 450 | 225 | 588 | 114 | 347 | 404 | 206 | 750 | 2,141 | 2,138 | 2,000 |
| 30% | 750 | 450 | 186 | 200 | 100 | 200 | 332 | 100 | 750 | 2,000 | 2,000 | 2,000 |
| 40% | 700 | 124 | 103 | 100 | 75 | 107 | 258 | 0 | 401 | 1,500 | 1,950 | 1,300 |
| 50% | 700 | 75 | 75 | 96 | 0 | 100 | 204 | 0 | 302 | 1,500 | 1,638 | 1,300 |
| 60% | 627 | 50 | 50 | 50 | 0 | 33 | 151 | 0 | 235 | 1,388 | 1,500 | 1,250 |
| 70% | 343 | 0 | 0 | 0 | 0 | 0 | 99 | 0 | 129 | 1,125 | 1,500 | 750 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 955 | 1,150 | 750 |
| 90% | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 | 955 | 282 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 823 | 283 | 193 | 489 | 90 | 280 | 302 | 174 | 552 | 1,539 | 1,721 | 1,340 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,361 | 316 | 362 | 514 | 77 | 372 | 353 | 212 | 351 | 1,280 | 1,660 | 1,728 |
| Above Normal (16%) | 917 | 320 | 290 | 280 | 82 | 373 | 351 | 0 | 405 | 1,398 | 2,061 | 1,812 |
| Below Normal (13%) | 681 | 378 | 77 | 440 | 80 | 477 | 210 | 291 | 879 | 1,995 | 2,031 | 1,277 |
| Dry (24%) | 419 | 164 | 59 | 436 | 126 | 81 | 212 | 201 | 801 | 1,830 | 1,658 | 1,023 |
| Critical (15%) | 361 | 281 | 50 | 793 | 73 | 130 | 371 | 130 | 428 | 1,345 | 1,309 | 575 |

## Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 101 | -662 | -129 | 500 | 0 | 62 | -125 | 0 | 81 | 81 | 0 | -72 |
| 20% | 392 | -51 | -25 | 77 | 14 | 110 | -4 | 9 | -33 | 30 | 138 | -305 |
| 30% | -500 | -50 | -32 | -6 | 0 | 10 | 0 | 7 | 125 | 50 | 0 | 0 |
| 40% | -50 | -326 | -77 | -16 | 5 | 7 | -2 | 0 | 138 | 0 | 177 | -500 |
| 50% | 0 | -76 | -13 | -4 | -33 | 0 | 4 | 0 | 102 | 0 | 138 | 0 |
| 60% | 2 | -25 | 0 | 0 | 0 | -17 | -11 | 0 | 79 | -16 | 0 | -50 |
| 70% | 143 | -50 | 0 | 0 | 0 | 0 | -1 | 0 | 89 | 0 | 0 | -241 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 333 | 25 | 0 |
| 90% | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 | 5 | -268 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -17 | -205 | -41 | 61 | -1 | 50 | -16 | 13 | 55 | 43 | 68 | -182 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -29 | -566 | -155 | -2 | -24 | 18 | -16 | 7 | 66 | 18 | 77 | -451 |
| Above Normal (16%) | -348 | -491 | 40 | 137 | 34 | 46 | -7 | 0 | 199 | 149 | 36 | 37 |
| Below Normal (13%) | 129 | 152 | 9 | 172 | -14 | 298 | -9 | 29 | 37 | 188 | 19 | -342 |
| Dry (24%) | 95 | 21 | 9 | -91 | 20 | -7 | 17 | 20 | -44 | -70 | 198 | 19 |
| Critical (15%) | 46 | 188 | -13 | 268 | -11 | -12 | -86 | 18 | 56 | 41 | -84 | -22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 46-3. Trinity Import - Clear Creek Tunnel, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,785 | 1,339 | 375 | 1,673 | 200 | 659 | 503 | 250 | 1,250 | 2,988 | 2,434 | 2,724 |
| 20% | 1,372 | 500 | 250 | 639 | 100 | 242 | 401 | 197 | 766 | 2,000 | 2,000 | 2,336 |
| 30% | 1,250 | 468 | 200 | 200 | 100 | 194 | 323 | 93 | 625 | 1,714 | 2,000 | 2,000 |
| 40% | 750 | 450 | 141 | 116 | 50 | 107 | 251 | 0 | 262 | 1,500 | 1,773 | 1,798 |
| 50% | 700 | 209 | 75 | 100 | 19 | 100 | 200 | 0 | 200 | 1,500 | 1,500 | 1,375 |
| 60% | 625 | 75 | 50 | 50 | 0 | 54 | 160 | 0 | 156 | 1,352 | 1,500 | 1,300 |
| 70% | 307 | 50 | 0 | 0 | 0 | 0 | 100 | 0 | 40 | 1,125 | 1,500 | 1,250 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 775 | 1,125 | 750 |
| 90% | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | 950 | 550 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 858 | 478 | 229 | 417 | 88 | 238 | 305 | 161 | 493 | 1,447 | 1,649 | 1,553 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,361 | 866 | 497 | 516 | 118 | 354 | 369 | 205 | 284 | 1,252 | 1,583 | 2,190 |
| Above Normal (16%) | 1,177 | 764 | 291 | 136 | 48 | 331 | 358 | 0 | 206 | 1,266 | 1,955 | 1,876 |
| Below Normal (13%) | 594 | 223 | 66 | 348 | 46 | 239 | 219 | 256 | 816 | 1,734 | 2,010 | 1,611 |
| Dry (24%) | 360 | 146 | 40 | 481 | 106 | 95 | 194 | 182 | 842 | 1,891 | 1,552 | 1,002 |
| Critical (15%) | 491 | 113 | 46 | 465 | 76 | 120 | 374 | 119 | 379 | 1,062 | 1,292 | 693 |

## No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,771 | 1,272 | 519 | 1,673 | 200 | 639 | 626 | 250 | 1,250 | 2,989 | 2,500 | 2,572 |
| 20% | 1,250 | 501 | 250 | 510 | 100 | 237 | 408 | 197 | 783 | 2,111 | 2,000 | 2,305 |
| 30% | 1,250 | 500 | 218 | 206 | 100 | 190 | 332 | 93 | 625 | 1,950 | 2,000 | 2,000 |
| 40% | 750 | 450 | 180 | 116 | 70 | 100 | 261 | 0 | 263 | 1,500 | 1,773 | 1,800 |
| 50% | 700 | 151 | 88 | 100 | 33 | 100 | 200 | 0 | 200 | 1,500 | 1,500 | 1,300 |
| 60% | 625 | 75 | 50 | 50 | 0 | 50 | 162 | 0 | 156 | 1,404 | 1,500 | 1,300 |
| 70% | 200 | 50 | 0 | 0 | 0 | 0 | 100 | 0 | 40 | 1,125 | 1,500 | 991 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 622 | 1,125 | 750 |
| 90% | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 950 | 550 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 840 | 487 | 234 | 427 | 91 | 230 | 318 | 161 | 496 | 1,495 | 1,653 | 1,522 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,390 | 882 | 517 | 516 | 101 | 354 | 369 | 205 | 284 | 1,262 | 1,583 | 2,179 |
| Above Normal (16%) | 1,265 | 811 | 250 | 144 | 48 | 327 | 358 | 0 | 206 | 1,249 | 2,025 | 1,774 |
| Below Normal (13%) | 552 | 226 | 68 | 267 | 94 | 179 | 219 | 262 | 842 | 1,807 | 2,012 | 1,619 |
| Dry (24%) | 324 | 144 | 50 | 527 | 107 | 88 | 195 | 181 | 845 | 1,901 | 1,461 | 1,004 |
| Critical (15%) | 316 | 94 | 63 | 525 | 84 | 142 | 457 | 112 | 373 | 1,304 | 1,393 | 597 |

## No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -15 | -67 | 144 | 0 | 0 | -19 | 124 | 0 | 0 | 1 | 67 | -153 |
| 20% | -122 | 1 | 0 | -129 | 0 | -5 | 7 | 0 | 17 | 111 | 0 | -31 |
| 30% | 0 | 33 | 17 | 6 | 0 | -4 | 9 | 0 | 0 | 236 | 0 | 0 |
| 40% | 0 | 0 | 39 | 0 | 20 | -7 | 9 | 0 | 1 | 0 | 0 | 2 |
| 50% | 0 | -58 | 13 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | -75 |
| 60% | 0 | 0 | 0 | 0 | 0 | -4 | 2 | 0 | 0 | 52 | 0 | 0 |
| 70% | -107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -259 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -153 | 0 | 0 |
| 90% | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -17 | 9 | 5 | 10 | 2 | -7 | 12 | 0 | 3 | 48 | 4 | -32 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 29 | 16 | 20 | -1 | -17 | 0 | -1 | 0 | 0 | 11 | 0 | -11 |
| Above Normal (16%) | 87 | 47 | -41 | 8 | 0 | -3 | 0 | 0 | 0 | -17 | 70 | -101 |
| Below Normal (13%) | -42 | 3 | 3 | -81 | 47 | -60 | 0 | 6 | 26 | 74 | 2 | 8 |
| Dry (24%) | -37 | -2 | 10 | 46 | 1 | -8 | 1 | -1 | 4 | 9 | -92 | 2 |
| Critical (15%) | -175 | -19 | 17 | 60 | 8 | 22 | 83 | -7 | -6 | 243 | 100 | -96 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 46-4. Trinity Import - Clear Creek Tunnel, Monthly Diversion

### Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,838 | 532 | 424 | 2,109 | 130 | 874 | 456 | 250 | 1,374 | 3,300 | 2,500 | 2,202 |
| 20% | 1,412 | 450 | 224 | 578 | 100 | 446 | 406 | 200 | 750 | 2,443 | 2,000 | 2,000 |
| 30% | 823 | 450 | 161 | 118 | 100 | 200 | 355 | 99 | 700 | 2,000 | 2,000 | 1,827 |
| 40% | 700 | 352 | 102 | 100 | 65 | 119 | 282 | 0 | 378 | 1,500 | 1,980 | 1,457 |
| 50% | 700 | 91 | 75 | 100 | 0 | 100 | 208 | 0 | 250 | 1,500 | 1,720 | 1,300 |
| 60% | 407 | 75 | 50 | 50 | 0 | 75 | 149 | 0 | 182 | 1,475 | 1,500 | 1,250 |
| 70% | 200 | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 40 | 1,125 | 1,500 | 1,200 |
| 80% | 151 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,086 | 1,151 | 750 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | 950 | 550 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 778 | 298 | 201 | 437 | 89 | 299 | 283 | 170 | 513 | 1,609 | 1,727 | 1,386 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 1,352 | 370 | 396 | 522 | 99 | 381 | 292 | 213 | 312 | 1,315 | 1,642 | 1,715 |
| Above Normal (16%) | 790 | 308 | 258 | 280 | 74 | 459 | 355 | 0 | 346 | 1,415 | 1,968 | 1,765 |
| Below Normal (13%) | 721 | 332 | 105 | 443 | 57 | 489 | 251 | 288 | 1,016 | 1,778 | 2,167 | 1,398 |
| Dry (24%) | 374 | 256 | 54 | 390 | 120 | 71 | 207 | 196 | 625 | 2,028 | 1,648 | 1,048 |
| Critical (15%) | 244 | 171 | 52 | 497 | 58 | 150 | 341 | 107 | 485 | 1,602 | 1,381 | 819 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,872 | 610 | 390 | 2,173 | 200 | 701 | 502 | 250 | 1,330 | 3,070 | 2,500 | 2,500 |
| 20% | 1,642 | 450 | 225 | 588 | 114 | 347 | 404 | 206 | 750 | 2,141 | 2,138 | 2,000 |
| 30% | 750 | 450 | 186 | 200 | 100 | 200 | 332 | 100 | 750 | 2,000 | 2,000 | 2,000 |
| 40% | 700 | 124 | 103 | 100 | 75 | 107 | 258 | 0 | 401 | 1,500 | 1,950 | 1,300 |
| 50% | 700 | 75 | 75 | 96 | 0 | 100 | 204 | 0 | 302 | 1,500 | 1,638 | 1,300 |
| 60% | 627 | 50 | 50 | 50 | 0 | 33 | 151 | 0 | 235 | 1,388 | 1,500 | 1,250 |
| 70% | 343 | 0 | 0 | 0 | 0 | 0 | 99 | 0 | 129 | 1,125 | 1,500 | 750 |
| 80% | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 955 | 1,150 | 750 |
| 90% | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 | 955 | 282 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 823 | 283 | 193 | 489 | 90 | 280 | 302 | 174 | 552 | 1,539 | 1,721 | 1,340 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 1,361 | 316 | 362 | 514 | 77 | 372 | 353 | 212 | 351 | 1,280 | 1,660 | 1,728 |
| Above Normal (16%) | 917 | 320 | 290 | 280 | 82 | 373 | 351 | 0 | 405 | 1,398 | 2,061 | 1,812 |
| Below Normal (13%) | 681 | 378 | 77 | 440 | 80 | 477 | 210 | 291 | 879 | 1,995 | 2,031 | 1,277 |
| Dry (24%) | 419 | 164 | 59 | 436 | 126 | 81 | 212 | 201 | 801 | 1,830 | 1,658 | 1,023 |
| Critical (15%) | 361 | 281 | 50 | 793 | 73 | 130 | 371 | 130 | 428 | 1,345 | 1,309 | 575 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 34 | 78 | -34 | 64 | 70 | -173 | 46 | 0 | -44 | -230 | 0 | 298 |
| 20% | 229 | 0 | 1 | 9 | 14 | -99 | -3 | 6 | 0 | -302 | 138 | 0 |
| 30% | -73 | 0 | 25 | 82 | 0 | 0 | -23 | 1 | 50 | 0 | 0 | 173 |
| 40% | 0 | -228 | 1 | 0 | 10 | -12 | -23 | 0 | 23 | 0 | -30 | -157 |
| 50% | 0 | -16 | 0 | -4 | 0 | 0 | -4 | 0 | 52 | 0 | -82 | 0 |
| 60% | 220 | -25 | 0 | 0 | 0 | -42 | 2 | 0 | 53 | -87 | 0 | 0 |
| 70% | 143 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 89 | 0 | 0 | -450 |
| 80% | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | -131 | -1 | 0 |
| 90% | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 130 | 5 | -268 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 46 | -15 | -8 | 52 | 1 | -19 | 19 | 4 | 38 | -70 | -6 | -46 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 9 | -54 | -33 | -7 | -22 | -10 | 61 | -2 | 38 | -34 | 18 | 13 |
| Above Normal (16%) | 127 | 11 | 32 | 0 | 8 | -86 | -4 | 0 | 59 | -17 | 92 | 47 |
| Below Normal (13%) | -40 | 46 | -27 | -3 | 23 | -13 | -41 | 3 | -137 | 218 | -136 | -121 |
| Dry (24%) | 44 | -91 | 5 | 46 | 6 | 10 | 5 | 4 | 177 | -197 | 11 | -25 |
| Critical (15%) | 118 | 111 | -2 | 296 | 15 | -20 | 30 | 23 | -56 | -256 | -72 | -243 |

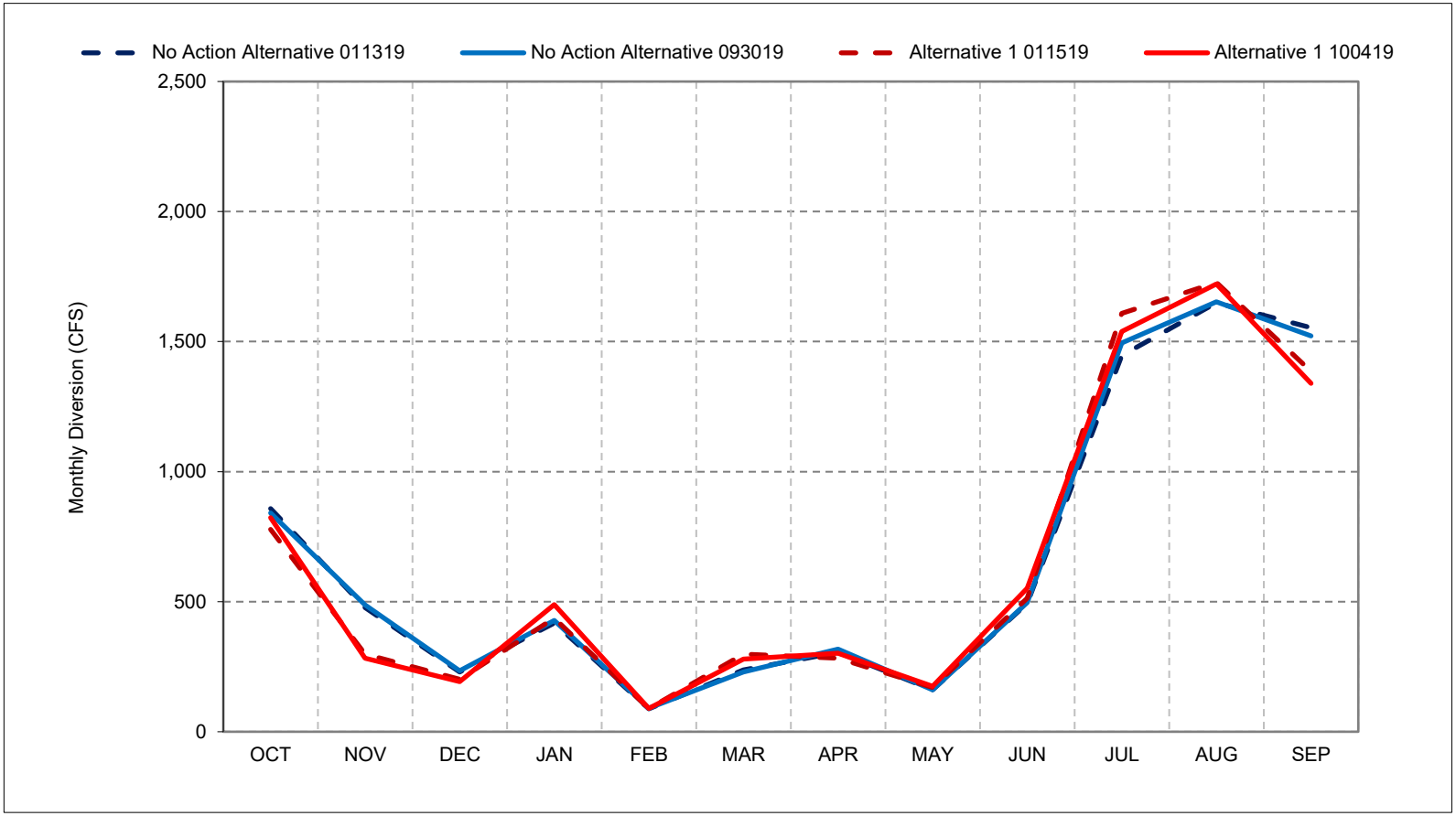
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-1. Trinity Import - Clear Creek Tunnel, Long-Term Average Diversion

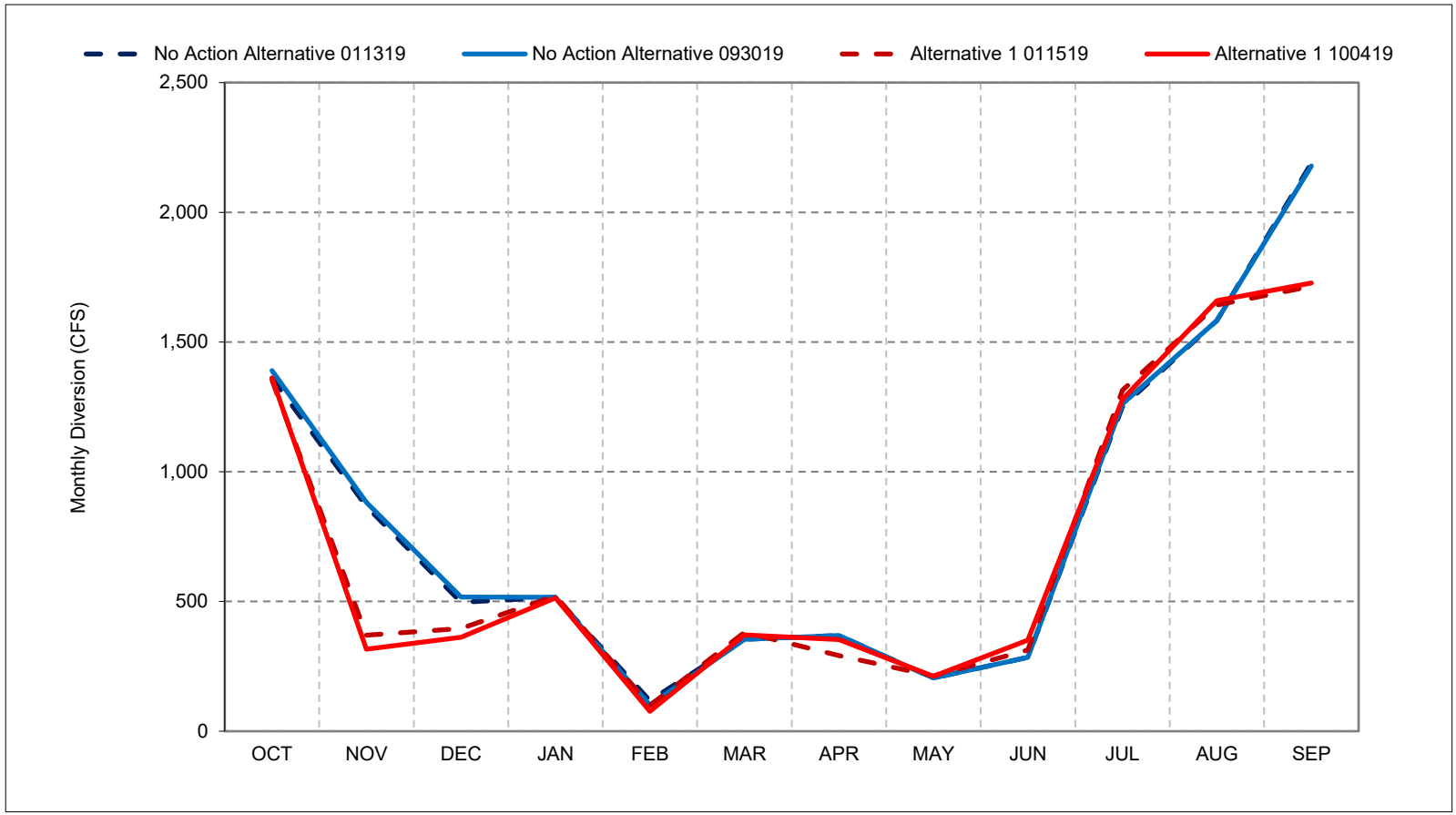



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-2. Trinity Import - Clear Creek Tunnel, Wet Year Average Diversion

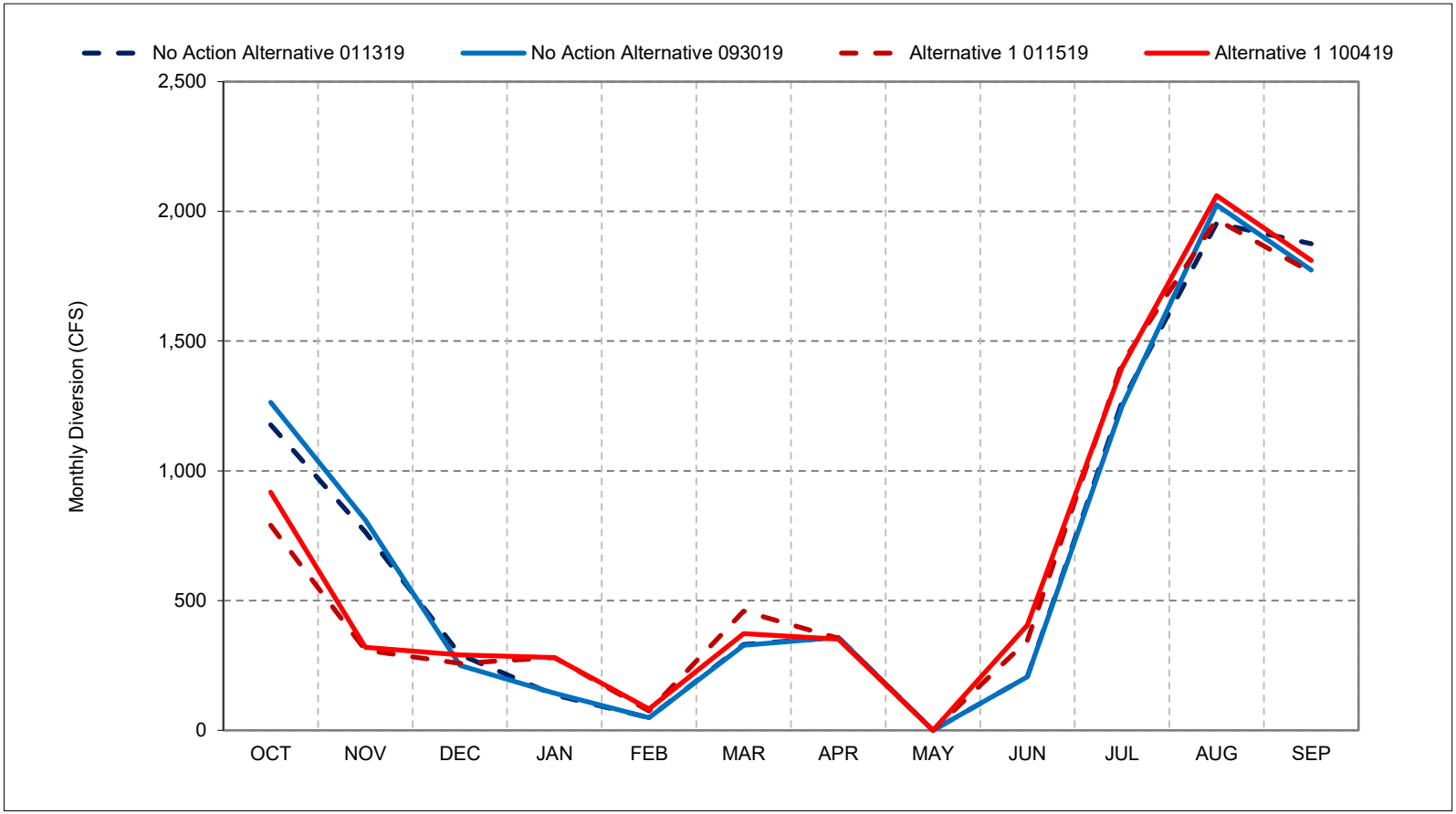



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-3. Trinity Import - Clear Creek Tunnel, Above Normal Year Average Diversion

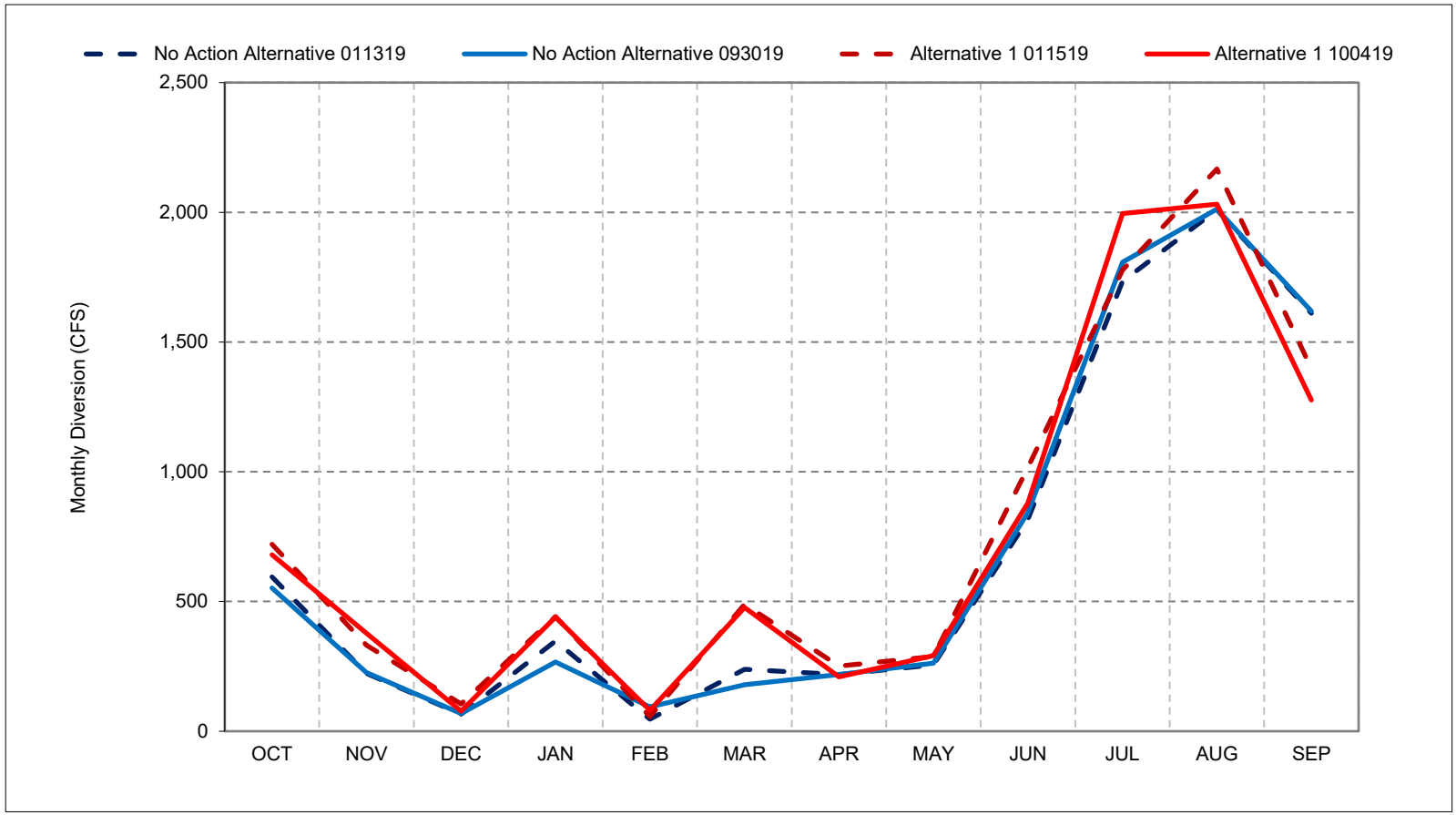



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-4. Trinity Import - Clear Creek Tunnel, Below Normal Year Average Diversion

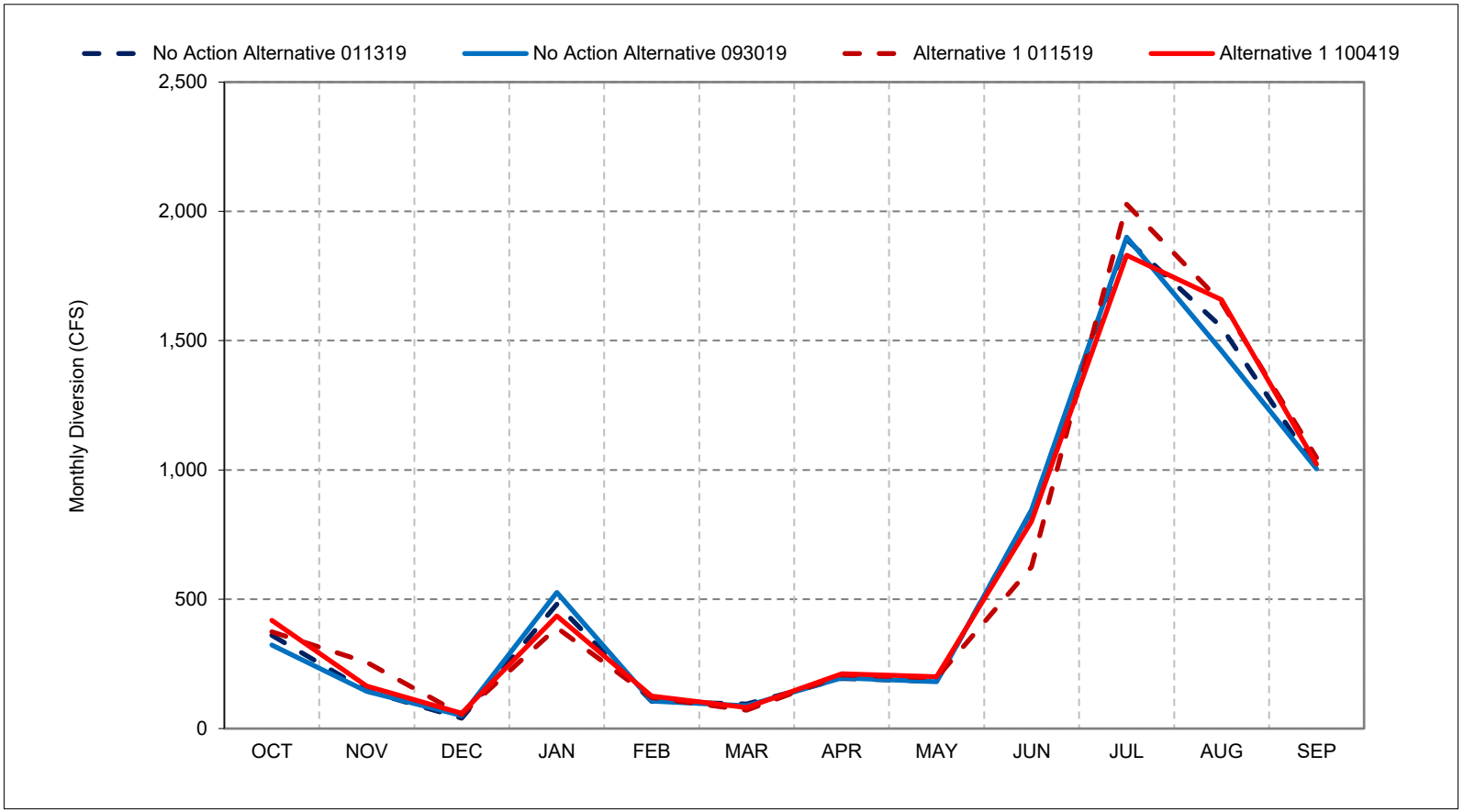



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-5. Trinity Import - Clear Creek Tunnel, Dry Year Average Diversion

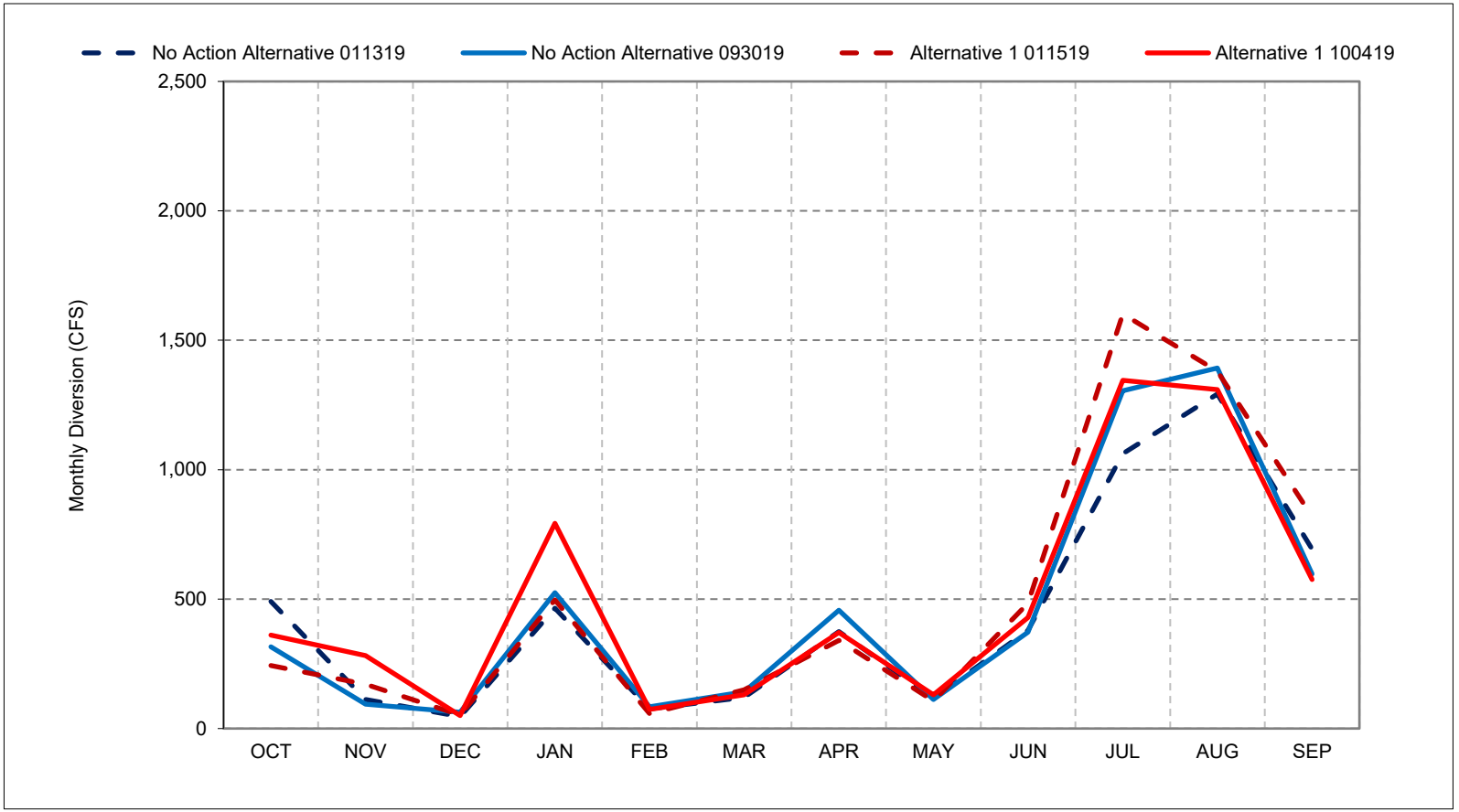



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 46-6. Trinity Import - Clear Creek Tunnel, Critical Year Average Diversion

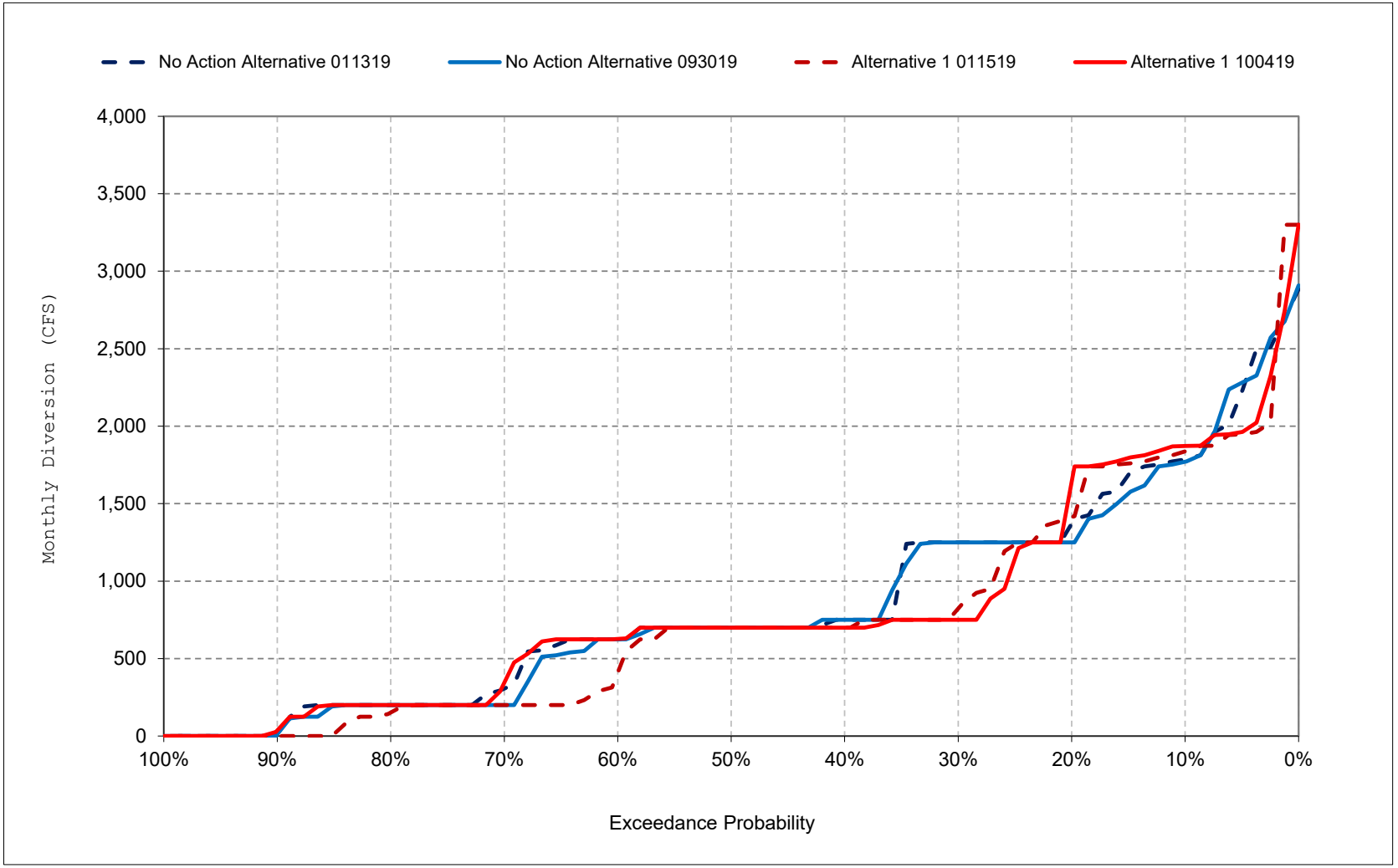



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

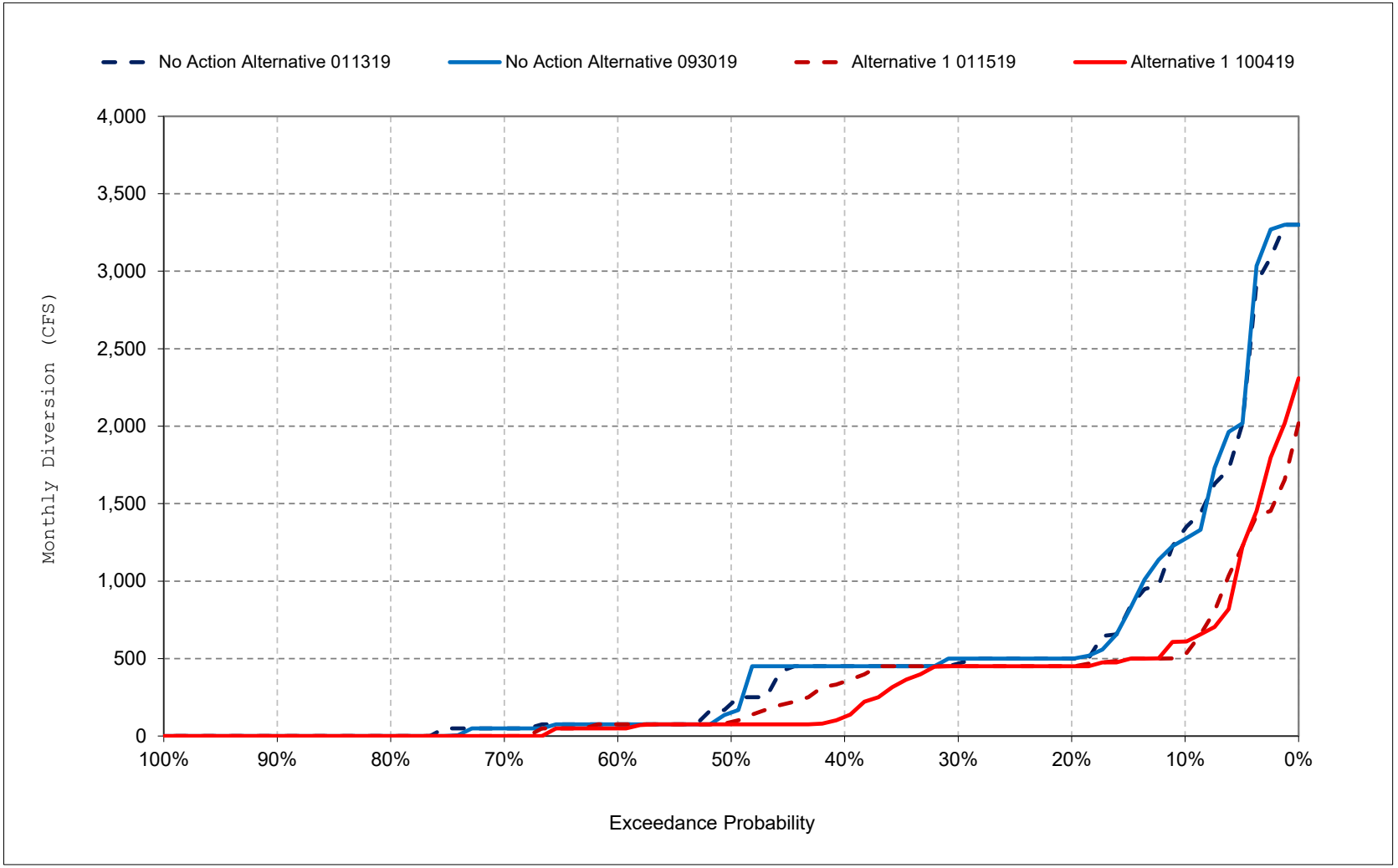
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-7. Trinity Import - Clear Creek Tunnel, October**



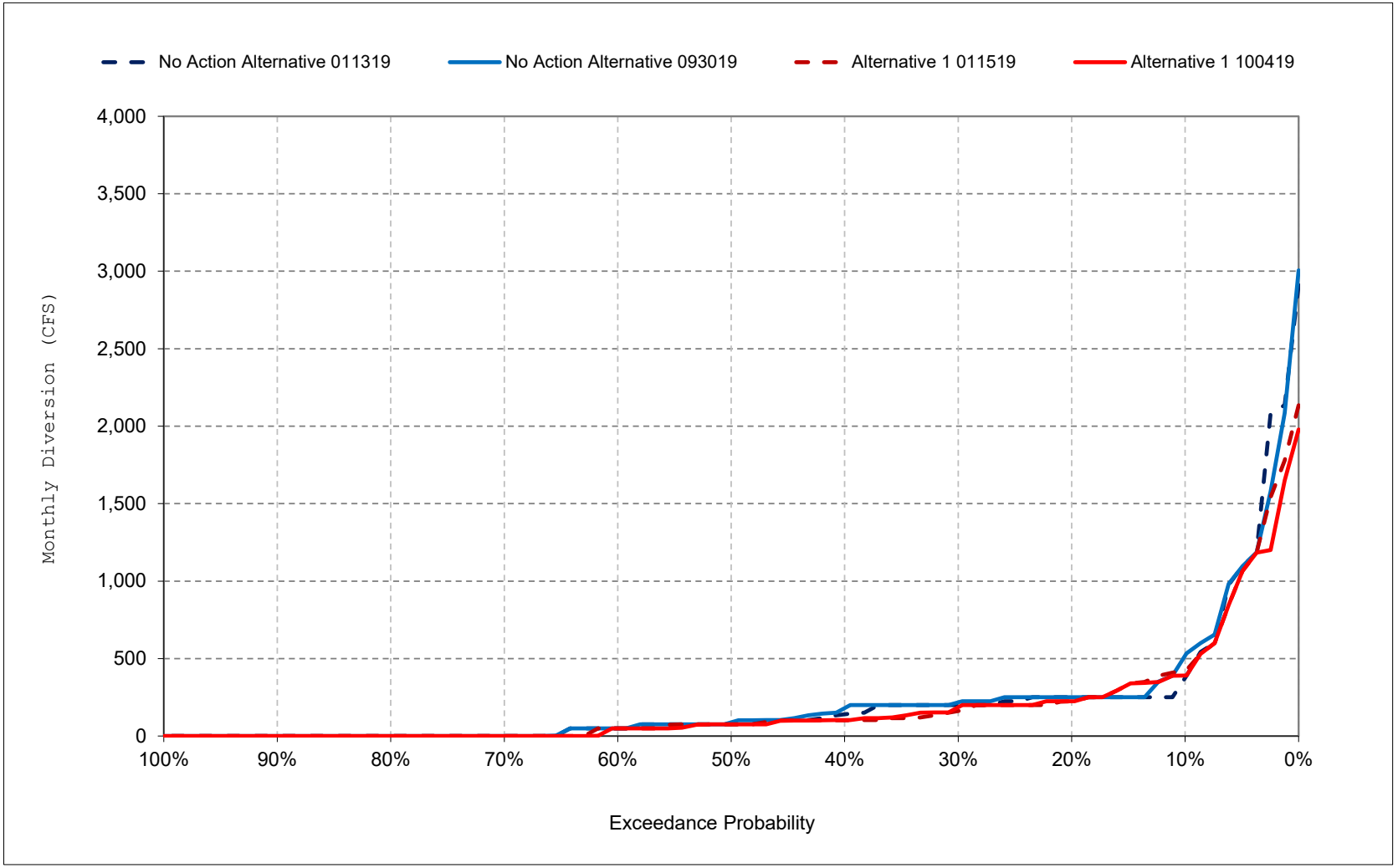

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-8. Trinity Import - Clear Creek Tunnel, November**



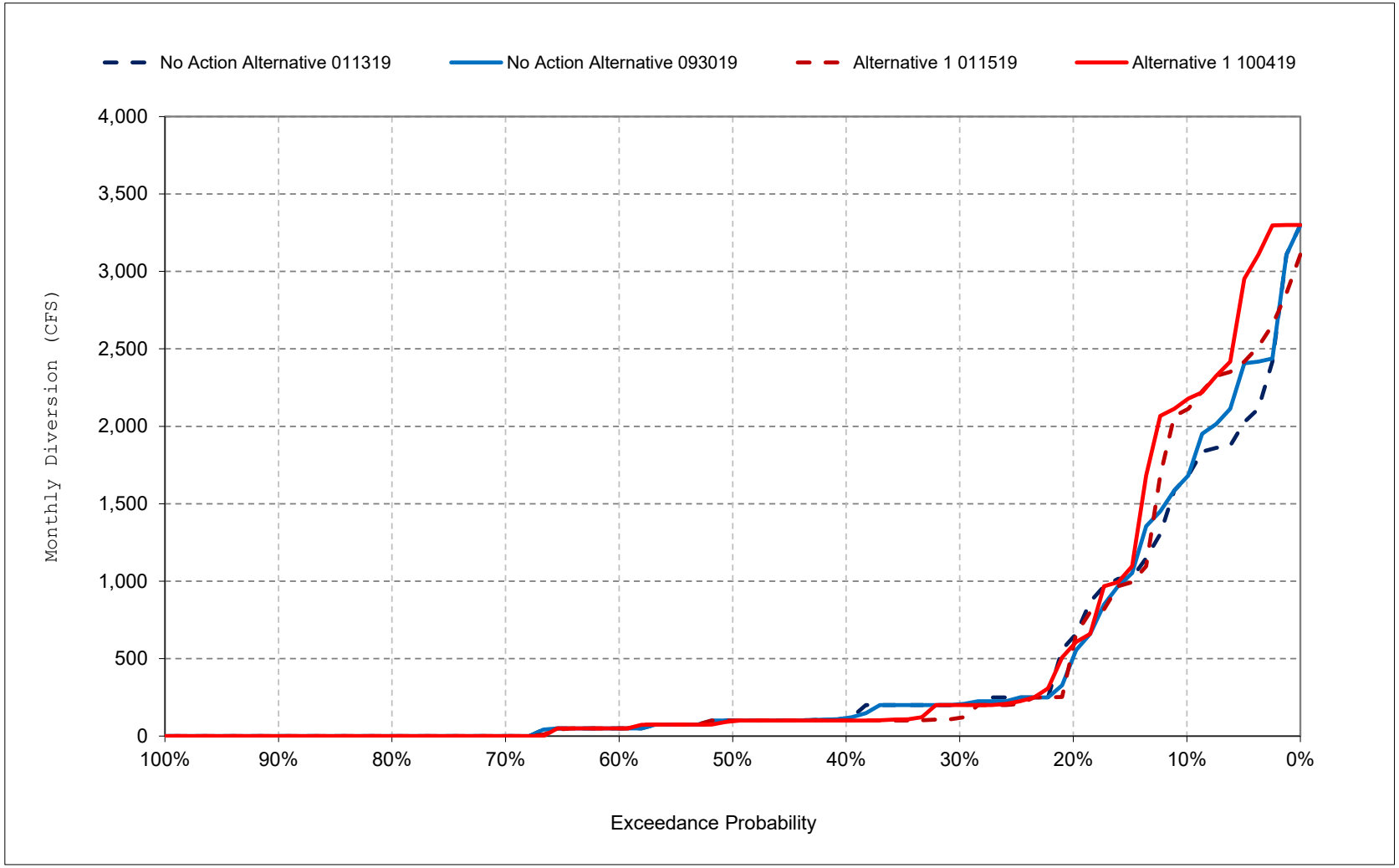

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-9. Trinity Import - Clear Creek Tunnel, December**



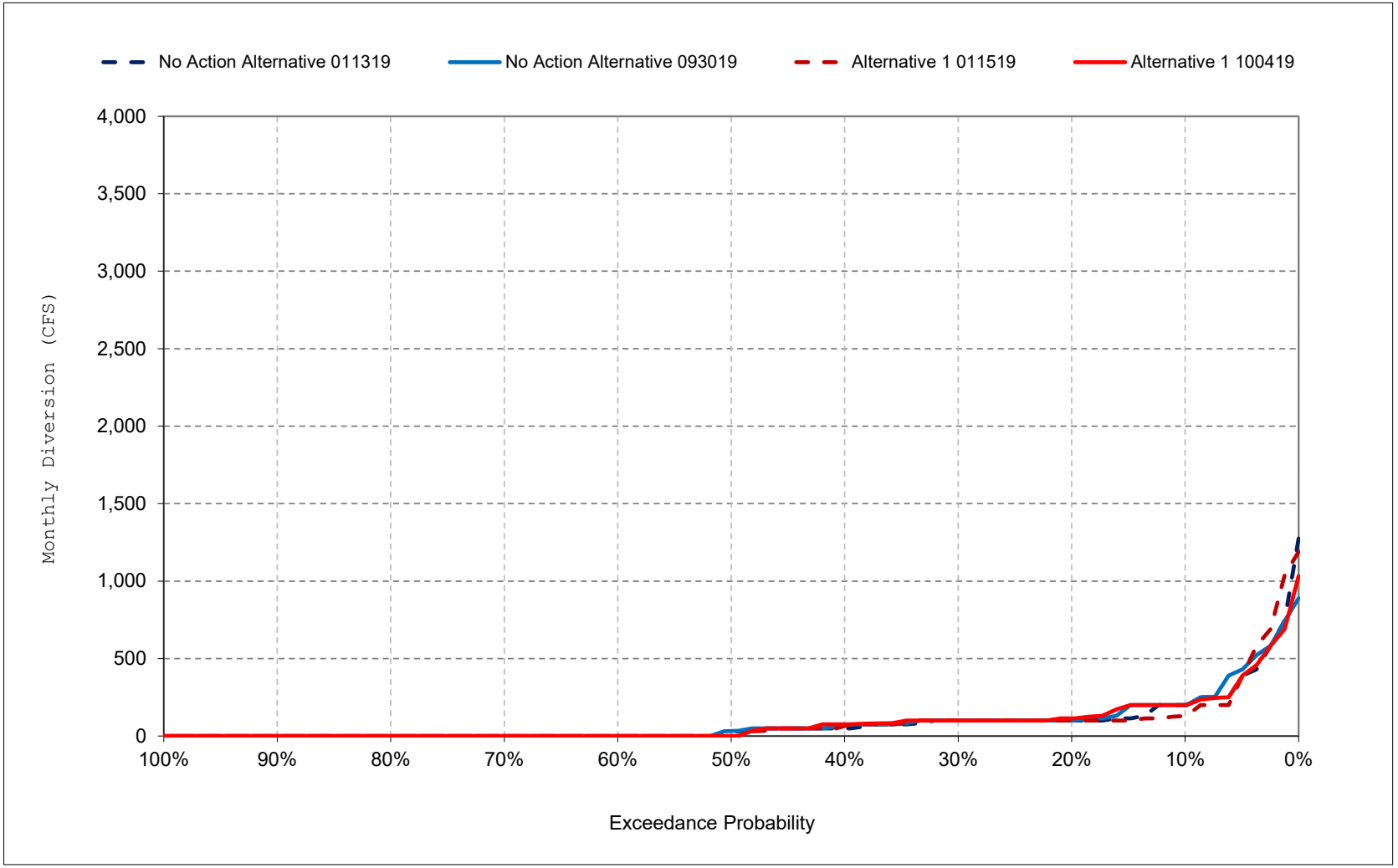

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-10. Trinity Import - Clear Creek Tunnel, January**



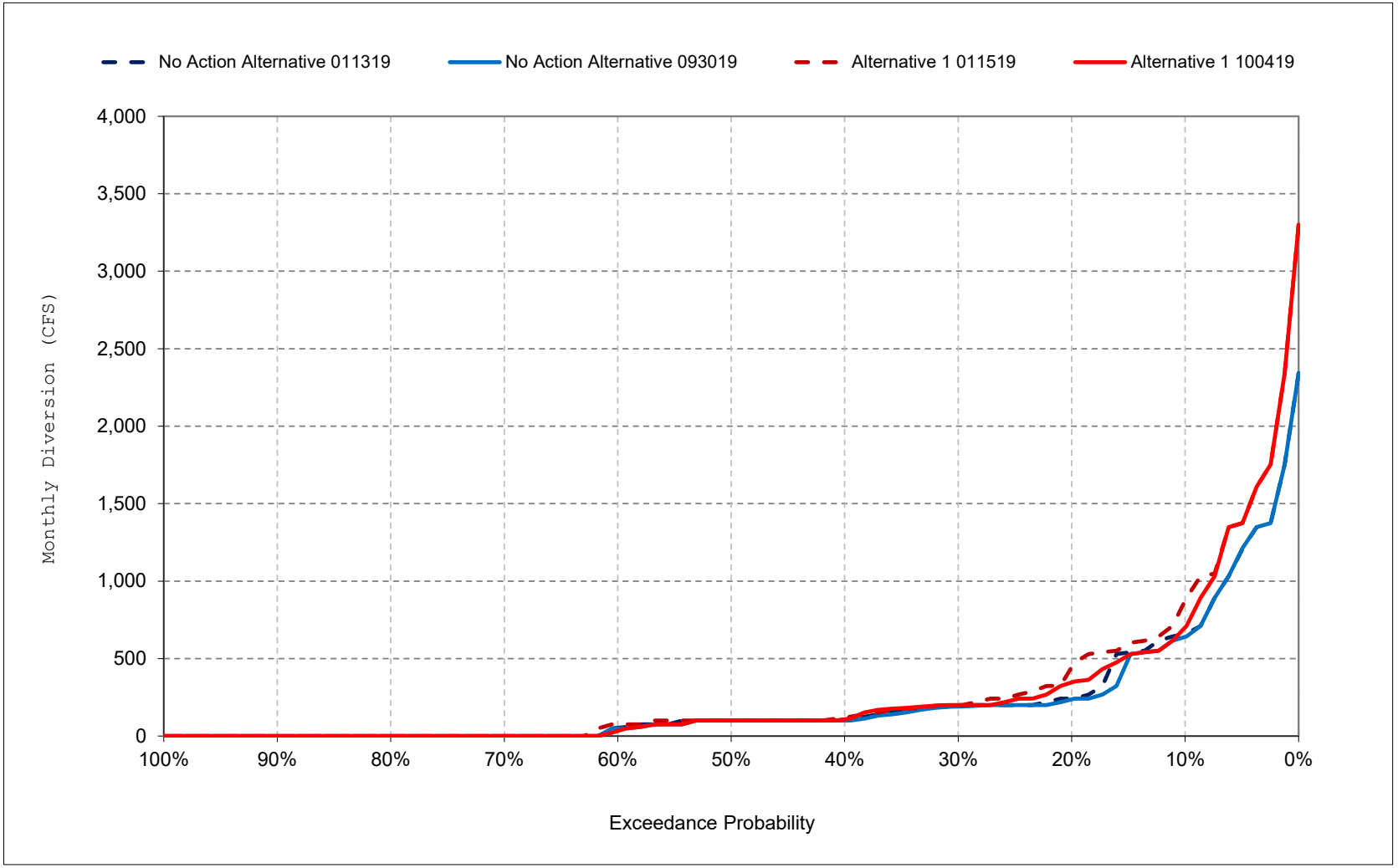

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-11. Trinity Import - Clear Creek Tunnel, February**



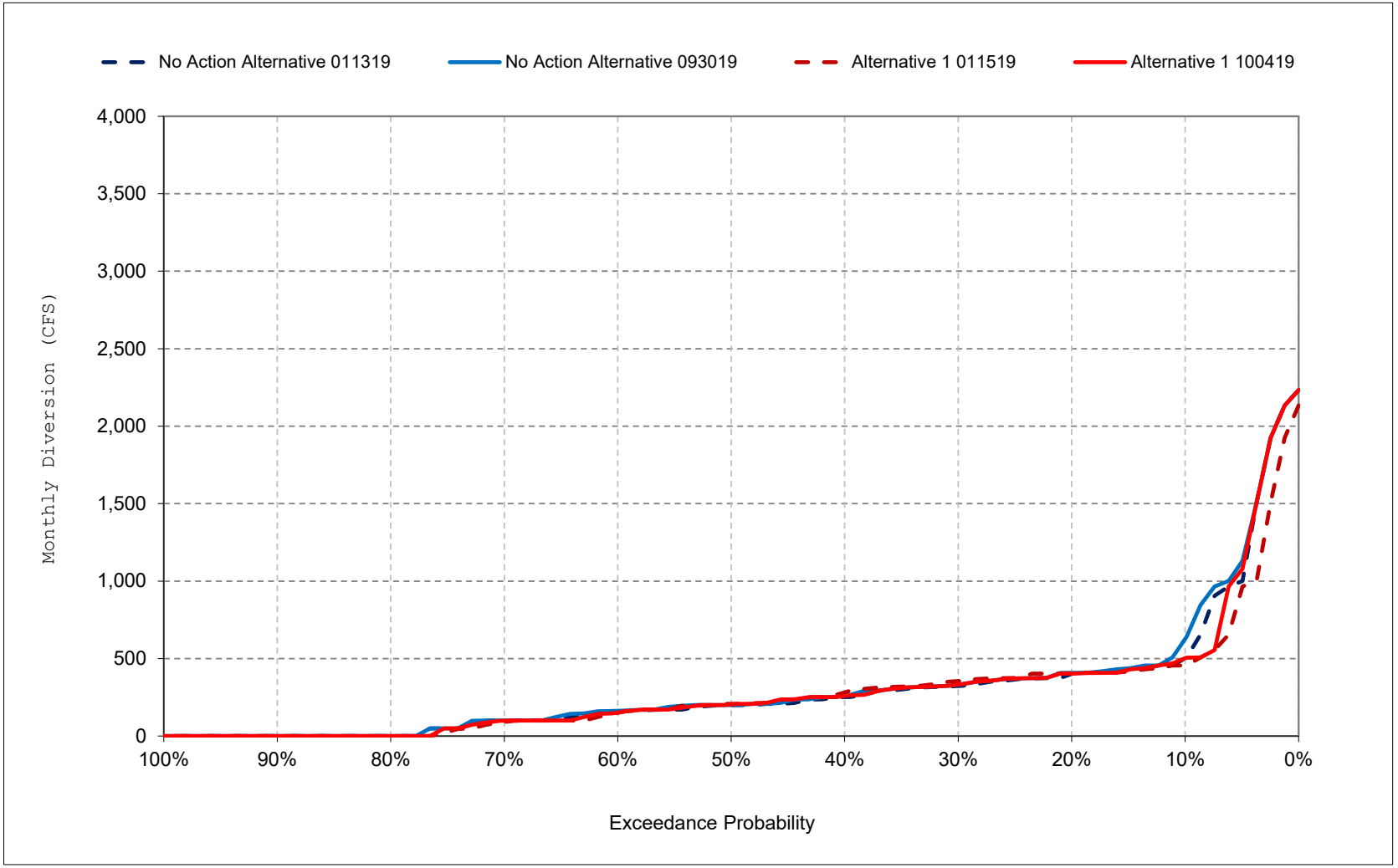

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-12. Trinity Import - Clear Creek Tunnel, March**



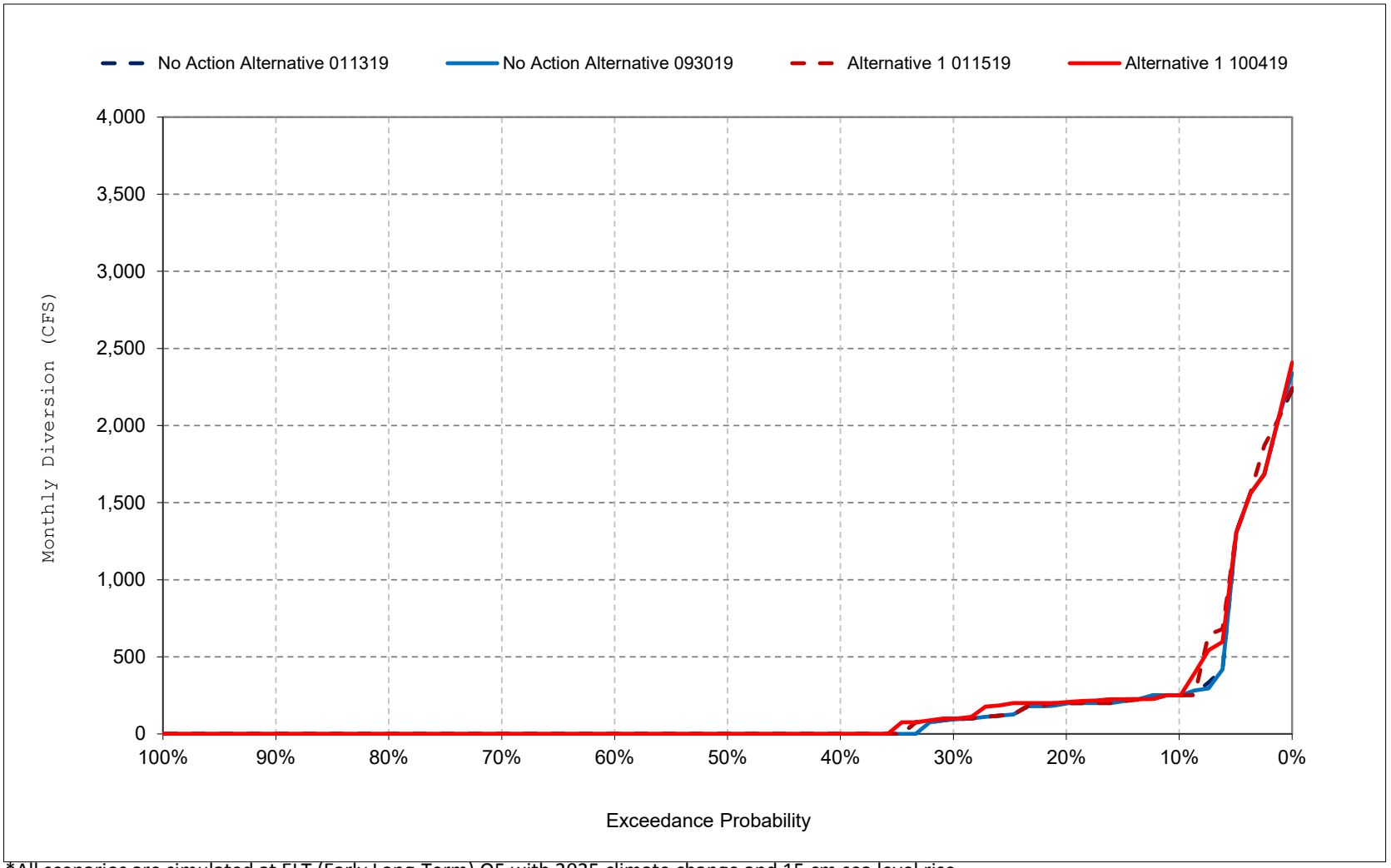

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-13. Trinity Import - Clear Creek Tunnel, April**



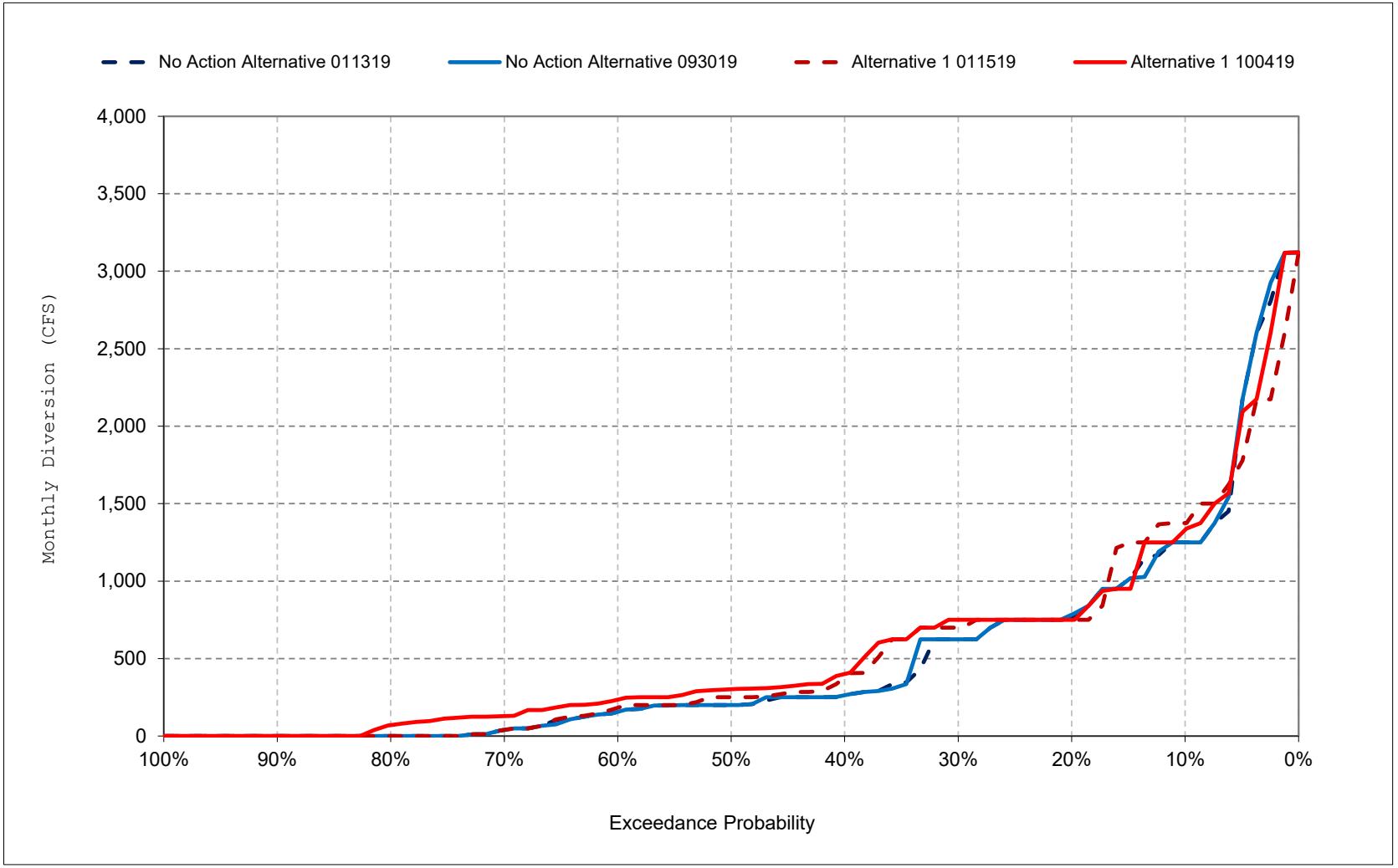

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-14. Trinity Import - Clear Creek Tunnel, May**



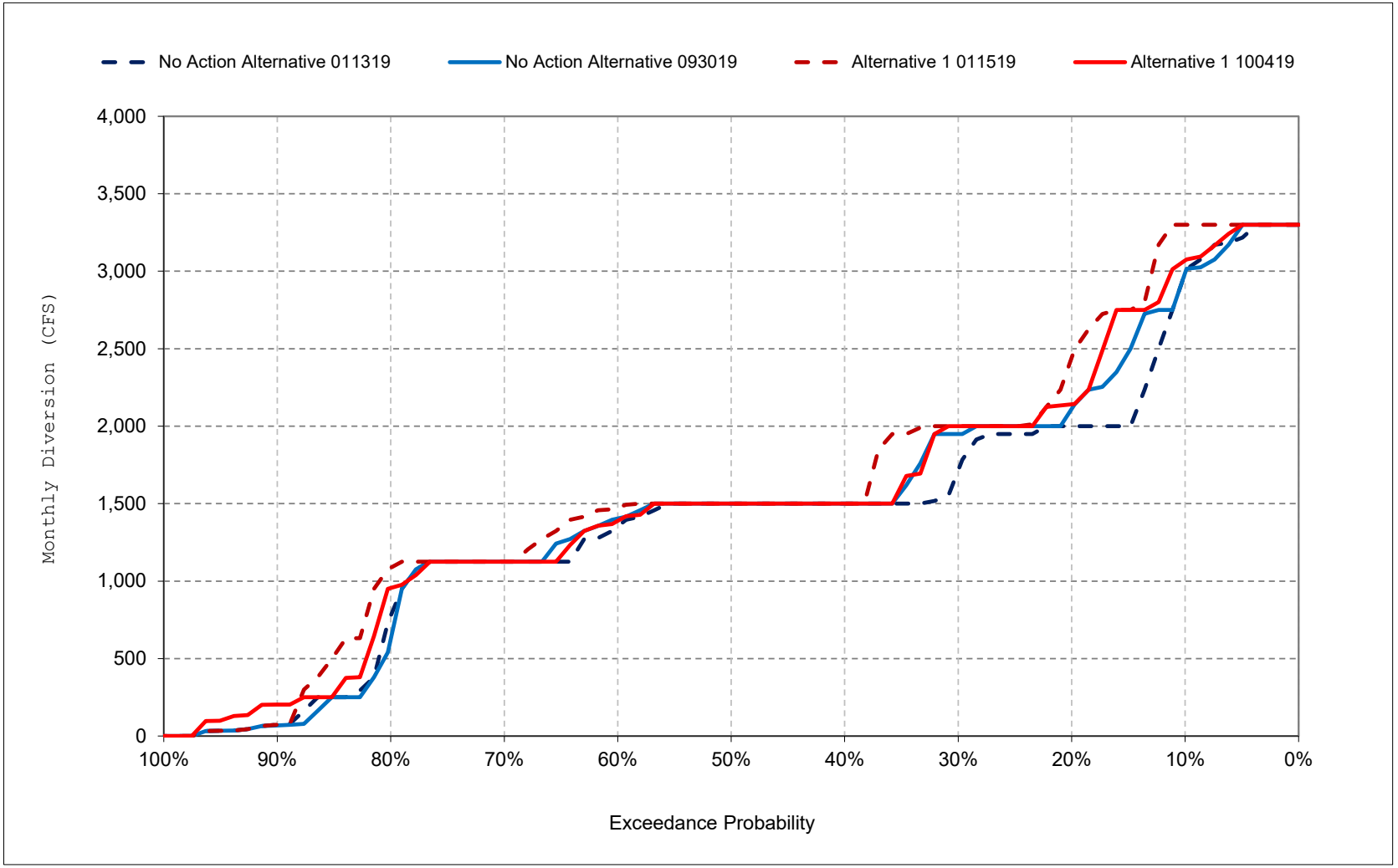

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-15. Trinity Import - Clear Creek Tunnel, June**



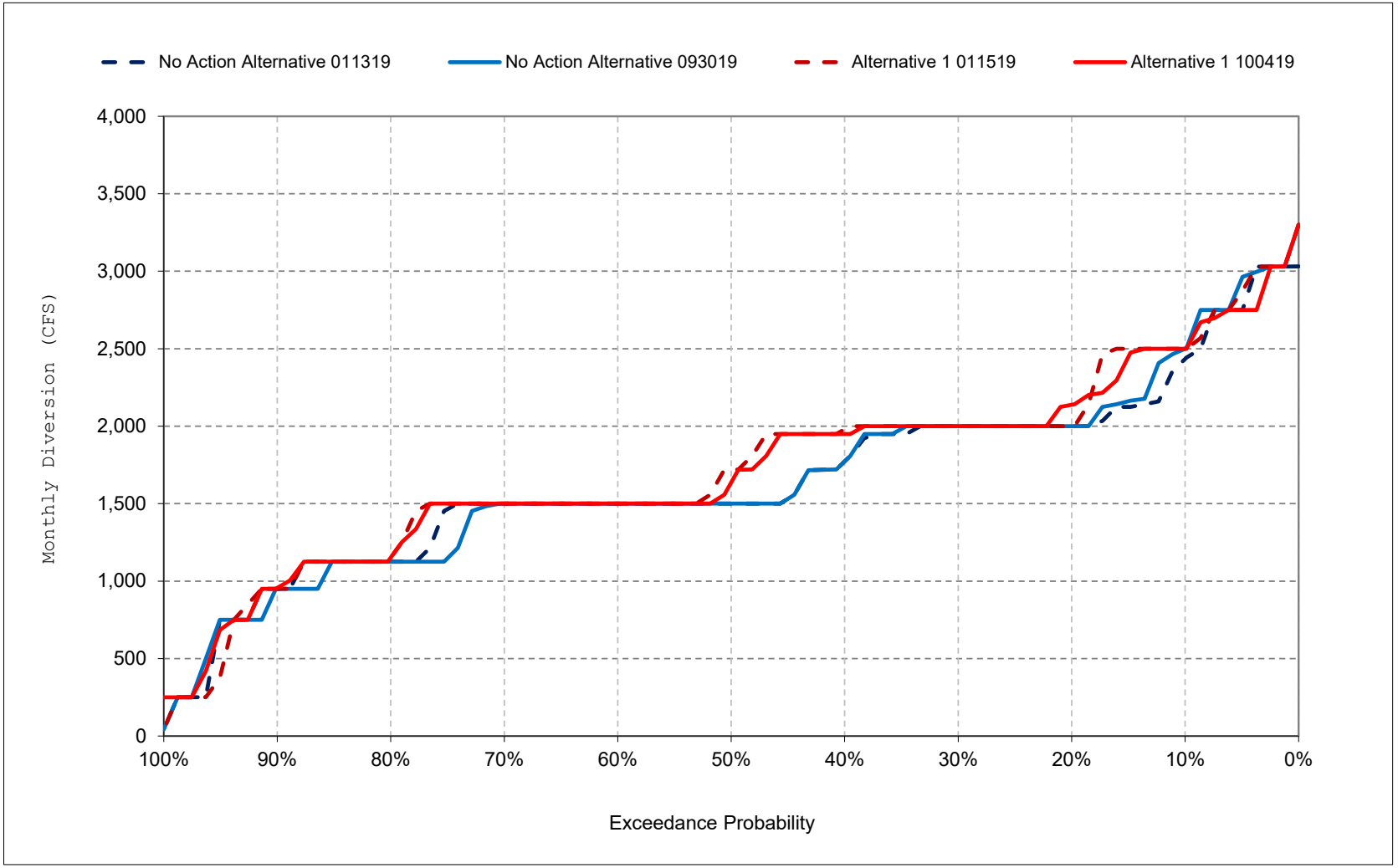

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-16. Trinity Import - Clear Creek Tunnel, July**



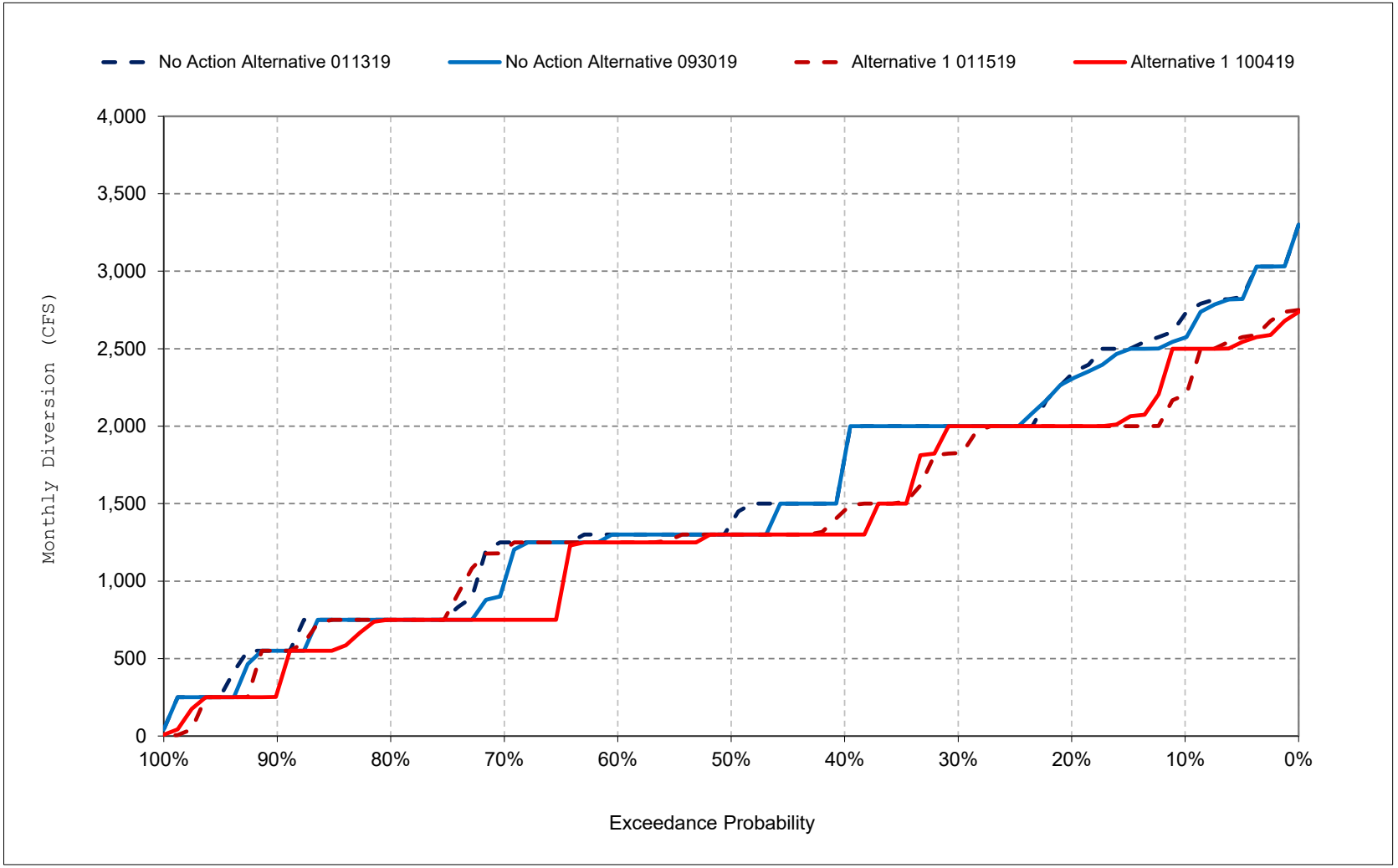

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-17. Trinity Import - Clear Creek Tunnel, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 46-18. Trinity Import - Clear Creek Tunnel, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 47-1. Red Bluff Diversion - Tehama Colusa Canal, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 186 | 19 | 0 | 0 | 0 | 46 | 454 | 778 | 1,189 | 1,375 | 1,092 | 299 |
| 20% | 169 | 17 | 0 | 0 | 0 | 30 | 342 | 722 | 1,096 | 1,282 | 1,024 | 272 |
| 30% | 141 | 15 | 0 | 0 | 0 | 17 | 277 | 639 | 1,004 | 1,155 | 900 | 212 |
| 40% | 117 | 3 | 0 | 0 | 0 | 3 | 224 | 532 | 861 | 958 | 756 | 164 |
| 50% | 105 | 0 | 0 | 0 | 0 | 0 | 202 | 476 | 768 | 879 | 663 | 141 |
| 60% | 83 | 0 | 0 | 0 | 0 | 0 | 163 | 370 | 656 | 725 | 579 | 114 |
| 70% | 76 | 0 | 0 | 0 | 0 | 0 | 95 | 302 | 518 | 605 | 478 | 94 |
| 80% | 66 | 0 | 0 | 0 | 0 | 0 | 41 | 221 | 356 | 423 | 334 | 73 |
| 90% | 56 | 0 | 0 | 0 | 0 | 0 | 22 | 129 | 222 | 245 | 195 | 24 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 115 | 7 | 0 | 0 | 2 | 18 | 215 | 463 | 729 | 839 | 663 | 157 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 146 | 7 | 0 | 0 | 0 | 10 | 179 | 631 | 1,042 | 1,202 | 953 | 225 |
| Above Normal (16%) | 121 | 4 | 0 | 0 | 0 | 8 | 284 | 664 | 996 | 1,140 | 893 | 213 |
| Below Normal (13%) | 114 | 8 | 0 | 0 | 8 | 50 | 321 | 468 | 658 | 778 | 611 | 134 |
| Dry (24%) | 93 | 4 | 0 | 0 | 4 | 13 | 185 | 276 | 467 | 529 | 420 | 73 |
| Critical (15%) | 76 | 14 | 0 | 0 | 1 | 22 | 171 | 185 | 259 | 299 | 238 | 113 |

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 153 | 23 | 0 | 0 | 0 | 55 | 470 | 831 | 1,189 | 1,377 | 1,094 | 299 |
| 20% | 132 | 19 | 0 | 0 | 0 | 35 | 412 | 764 | 1,106 | 1,283 | 1,027 | 272 |
| 30% | 103 | 17 | 0 | 0 | 0 | 21 | 345 | 725 | 1,059 | 1,252 | 991 | 247 |
| 40% | 86 | 17 | 0 | 0 | 0 | 3 | 286 | 643 | 1,012 | 1,138 | 891 | 214 |
| 50% | 66 | 17 | 0 | 0 | 0 | 1 | 204 | 529 | 929 | 1,065 | 825 | 197 |
| 60% | 49 | 17 | 0 | 0 | 0 | 0 | 182 | 456 | 832 | 911 | 717 | 165 |
| 70% | 35 | 17 | 0 | 0 | 0 | 0 | 105 | 330 | 545 | 645 | 526 | 108 |
| 80% | 22 | 17 | 0 | 0 | 0 | 0 | 45 | 248 | 426 | 500 | 419 | 65 |
| 90% | 5 | 17 | 0 | 0 | 0 | 0 | 24 | 133 | 302 | 343 | 278 | 19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 75 | 17 | 0 | 0 | 2 | 21 | 247 | 512 | 804 | 926 | 736 | 175 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 97 | 17 | 0 | 0 | 0 | 12 | 196 | 649 | 1,075 | 1,238 | 980 | 237 |
| Above Normal (16%) | 78 | 17 | 0 | 0 | 0 | 9 | 310 | 680 | 1,061 | 1,213 | 951 | 236 |
| Below Normal (13%) | 85 | 21 | 0 | 0 | 9 | 65 | 385 | 641 | 839 | 992 | 778 | 166 |
| Dry (24%) | 48 | 16 | 0 | 0 | 4 | 15 | 228 | 333 | 573 | 648 | 514 | 96 |
| Critical (15%) | 59 | 18 | 0 | 0 | 1 | 25 | 195 | 214 | 295 | 343 | 302 | 114 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -34 | 4 | 0 | 0 | 0 | 9 | 16 | 53 | 0 | 2 | 3 | 0 |
| 20% | -37 | 2 | 0 | 0 | 0 | 5 | 70 | 43 | 10 | 1 | 4 | 0 |
| 30% | -38 | 2 | 0 | 0 | 0 | 4 | 68 | 86 | 55 | 97 | 91 | 35 |
| 40% | -30 | 14 | 0 | 0 | 0 | 0 | 62 | 112 | 151 | 181 | 135 | 51 |
| 50% | -38 | 17 | 0 | 0 | 0 | 0 | 2 | 53 | 161 | 186 | 163 | 55 |
| 60% | -33 | 17 | 0 | 0 | 0 | 0 | 19 | 86 | 176 | 186 | 138 | 51 |
| 70% | -41 | 17 | 0 | 0 | 0 | 0 | 10 | 28 | 27 | 40 | 49 | 14 |
| 80% | -44 | 17 | 0 | 0 | 0 | 0 | 4 | 27 | 70 | 77 | 85 | -7 |
| 90% | -51 | 17 | 0 | 0 | 0 | 0 | 2 | 3 | 80 | 98 | 83 | -4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -40 | 10 | 0 | 0 | 0 | 4 | 32 | 50 | 76 | 87 | 73 | 18 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -48 | 10 | 0 | 0 | 0 | 1 | 17 | 18 | 32 | 36 | 27 | 13 |
| Above Normal (16%) | -43 | 14 | 0 | 0 | 0 | 1 | 26 | 17 | 66 | 73 | 58 | 22 |
| Below Normal (13%) | -28 | 13 | 0 | 0 | 0 | 16 | 64 | 172 | 180 | 214 | 168 | 32 |
| Dry (24%) | -46 | 11 | 0 | 0 | 0 | 2 | 43 | 57 | 105 | 119 | 95 | 23 |
| Critical (15%) | -17 | 4 | 0 | 0 | 0 | 3 | 24 | 29 | 36 | 44 | 64 | 1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 47-2. Red Bluff Diversion - Tehama Colusa Canal, Monthly Diversion

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 207 | 19 | 0 | 0 | 0 | 46 | 454 | 778 | 1,191 | 1,375 | 1,092 | 299 |
| 20% | 186 | 17 | 0 | 0 | 0 | 30 | 341 | 722 | 1,107 | 1,283 | 1,027 | 274 |
| 30% | 141 | 17 | 0 | 0 | 0 | 16 | 271 | 638 | 1,064 | 1,251 | 967 | 243 |
| 40% | 126 | 3 | 0 | 0 | 0 | 3 | 220 | 529 | 1,015 | 1,153 | 910 | 211 |
| 50% | 104 | 0 | 0 | 0 | 0 | 0 | 188 | 473 | 900 | 1,022 | 779 | 178 |
| 60% | 83 | 0 | 0 | 0 | 0 | 0 | 153 | 350 | 655 | 720 | 575 | 137 |
| 70% | 76 | 0 | 0 | 0 | 0 | 0 | 80 | 297 | 505 | 592 | 474 | 94 |
| 80% | 66 | 0 | 0 | 0 | 0 | 0 | 40 | 219 | 335 | 394 | 324 | 69 |
| 90% | 56 | 0 | 0 | 0 | 0 | 0 | 22 | 110 | 223 | 246 | 221 | 20 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 7 | 0 | 0 | 2 | 17 | 209 | 458 | 764 | 879 | 698 | 169 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 150 | 7 | 0 | 0 | 0 | 10 | 179 | 631 | 1,083 | 1,248 | 988 | 241 |
| Above Normal (16%) | 127 | 4 | 0 | 0 | 0 | 8 | 283 | 664 | 1,085 | 1,240 | 972 | 244 |
| Below Normal (13%) | 119 | 8 | 0 | 0 | 8 | 49 | 293 | 463 | 718 | 849 | 665 | 156 |
| Dry (24%) | 95 | 4 | 0 | 0 | 4 | 12 | 180 | 257 | 471 | 534 | 423 | 77 |
| Critical (15%) | 76 | 15 | 0 | 0 | 1 | 21 | 168 | 190 | 255 | 295 | 264 | 97 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 214 | 20 | 0 | 0 | 0 | 52 | 455 | 786 | 1,191 | 1,378 | 1,095 | 299 |
| 20% | 189 | 17 | 0 | 0 | 0 | 33 | 370 | 752 | 1,131 | 1,338 | 1,057 | 275 |
| 30% | 150 | 17 | 0 | 0 | 0 | 19 | 315 | 674 | 1,094 | 1,277 | 1,010 | 261 |
| 40% | 130 | 5 | 0 | 0 | 0 | 4 | 253 | 593 | 1,061 | 1,233 | 947 | 228 |
| 50% | 105 | 1 | 0 | 0 | 0 | 1 | 201 | 479 | 1,028 | 1,146 | 905 | 209 |
| 60% | 87 | 0 | 0 | 0 | 0 | 0 | 180 | 425 | 812 | 916 | 719 | 162 |
| 70% | 80 | 0 | 0 | 0 | 0 | 0 | 112 | 347 | 527 | 633 | 522 | 111 |
| 80% | 68 | 0 | 0 | 0 | 0 | 0 | 49 | 233 | 398 | 463 | 369 | 85 |
| 90% | 57 | 0 | 0 | 0 | 0 | 0 | 24 | 123 | 291 | 325 | 269 | 19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 122 | 8 | 0 | 0 | 2 | 21 | 230 | 489 | 817 | 940 | 746 | 182 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 151 | 7 | 0 | 0 | 0 | 11 | 170 | 635 | 1,088 | 1,253 | 992 | 242 |
| Above Normal (16%) | 127 | 5 | 0 | 0 | 0 | 10 | 299 | 661 | 1,097 | 1,252 | 982 | 244 |
| Below Normal (13%) | 134 | 8 | 0 | 0 | 8 | 66 | 357 | 610 | 902 | 1,065 | 834 | 186 |
| Dry (24%) | 100 | 4 | 0 | 0 | 4 | 14 | 213 | 287 | 547 | 619 | 491 | 103 |
| Critical (15%) | 80 | 17 | 0 | 0 | 1 | 25 | 196 | 213 | 297 | 345 | 304 | 115 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7 | 1 | 0 | 0 | 0 | 7 | 0 | 9 | 0 | 3 | 3 | 0 |
| 20% | 3 | 0 | 0 | 0 | 0 | 3 | 30 | 29 | 24 | 56 | 29 | 1 |
| 30% | 9 | 0 | 0 | 0 | 0 | 3 | 45 | 36 | 29 | 25 | 44 | 18 |
| 40% | 4 | 2 | 0 | 0 | 0 | 1 | 33 | 64 | 46 | 80 | 37 | 17 |
| 50% | 0 | 1 | 0 | 0 | 0 | 0 | 13 | 7 | 129 | 124 | 127 | 31 |
| 60% | 4 | 0 | 0 | 0 | 0 | 0 | 27 | 76 | 157 | 196 | 144 | 25 |
| 70% | 4 | 0 | 0 | 0 | 0 | 0 | 32 | 50 | 21 | 41 | 48 | 17 |
| 80% | 2 | 0 | 0 | 0 | 0 | 0 | 9 | 14 | 62 | 68 | 45 | 16 |
| 90% | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 14 | 68 | 79 | 48 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 4 | 1 | 0 | 0 | 0 | 4 | 20 | 31 | 53 | 61 | 48 | 13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1 | 0 | 0 | 0 | 0 | 1 | -9 | 4 | 5 | 6 | 4 | 1 |
| Above Normal (16%) | 0 | 1 | 0 | 0 | 0 | 2 | 16 | -3 | 12 | 13 | 10 | 1 |
| Below Normal (13%) | 15 | 1 | 0 | 0 | 0 | 16 | 64 | 147 | 184 | 216 | 169 | 30 |
| Dry (24%) | 6 | 0 | 0 | 0 | 0 | 2 | 33 | 30 | 76 | 86 | 68 | 27 |
| Critical (15%) | 4 | 2 | 0 | 0 | 0 | 4 | 27 | 23 | 41 | 50 | 40 | 17 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 47-3. Red Bluff Diversion - Tehama Colusa Canal, Monthly Diversion

### No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 186 | 19 | 0 | 0 | 0 | 46 | 454 | 778 | 1,189 | 1,375 | 1,092 | 299 |
| 20% | 169 | 17 | 0 | 0 | 0 | 30 | 342 | 722 | 1,096 | 1,282 | 1,024 | 272 |
| 30% | 141 | 15 | 0 | 0 | 0 | 17 | 277 | 639 | 1,004 | 1,155 | 900 | 212 |
| 40% | 117 | 3 | 0 | 0 | 0 | 3 | 224 | 532 | 861 | 958 | 756 | 164 |
| 50% | 105 | 0 | 0 | 0 | 0 | 0 | 202 | 476 | 768 | 879 | 663 | 141 |
| 60% | 83 | 0 | 0 | 0 | 0 | 0 | 163 | 370 | 656 | 725 | 579 | 114 |
| 70% | 76 | 0 | 0 | 0 | 0 | 0 | 95 | 302 | 518 | 605 | 478 | 94 |
| 80% | 66 | 0 | 0 | 0 | 0 | 0 | 41 | 221 | 356 | 423 | 334 | 73 |
| 90% | 56 | 0 | 0 | 0 | 0 | 0 | 22 | 129 | 222 | 245 | 195 | 24 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 115 | 7 | 0 | 0 | 2 | 18 | 215 | 463 | 729 | 839 | 663 | 157 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 146 | 7 | 0 | 0 | 0 | 10 | 179 | 631 | 1,042 | 1,202 | 953 | 225 |
| Above Normal (16%) | 121 | 4 | 0 | 0 | 0 | 8 | 284 | 664 | 996 | 1,140 | 893 | 213 |
| Below Normal (13%) | 114 | 8 | 0 | 0 | 8 | 50 | 321 | 468 | 658 | 778 | 611 | 134 |
| Dry (24%) | 93 | 4 | 0 | 0 | 4 | 13 | 185 | 276 | 467 | 529 | 420 | 73 |
| Critical (15%) | 76 | 14 | 0 | 0 | 1 | 22 | 171 | 185 | 259 | 299 | 238 | 113 |

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 207 | 19 | 0 | 0 | 0 | 46 | 454 | 778 | 1,191 | 1,375 | 1,092 | 299 |
| 20% | 186 | 17 | 0 | 0 | 0 | 30 | 341 | 722 | 1,107 | 1,283 | 1,027 | 274 |
| 30% | 141 | 17 | 0 | 0 | 0 | 16 | 271 | 638 | 1,064 | 1,251 | 967 | 243 |
| 40% | 126 | 3 | 0 | 0 | 0 | 3 | 220 | 529 | 1,015 | 1,153 | 910 | 211 |
| 50% | 104 | 0 | 0 | 0 | 0 | 0 | 188 | 473 | 900 | 1,022 | 779 | 178 |
| 60% | 83 | 0 | 0 | 0 | 0 | 0 | 153 | 350 | 655 | 720 | 575 | 137 |
| 70% | 76 | 0 | 0 | 0 | 0 | 0 | 80 | 297 | 505 | 592 | 474 | 94 |
| 80% | 66 | 0 | 0 | 0 | 0 | 0 | 40 | 219 | 335 | 394 | 324 | 69 |
| 90% | 56 | 0 | 0 | 0 | 0 | 0 | 22 | 110 | 223 | 246 | 221 | 20 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 7 | 0 | 0 | 2 | 17 | 209 | 458 | 764 | 879 | 698 | 169 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 150 | 7 | 0 | 0 | 0 | 10 | 179 | 631 | 1,083 | 1,248 | 988 | 241 |
| Above Normal (16%) | 127 | 4 | 0 | 0 | 0 | 8 | 283 | 664 | 1,085 | 1,240 | 972 | 244 |
| Below Normal (13%) | 119 | 8 | 0 | 0 | 8 | 49 | 293 | 463 | 718 | 849 | 665 | 156 |
| Dry (24%) | 95 | 4 | 0 | 0 | 4 | 12 | 180 | 257 | 471 | 534 | 423 | 77 |
| Critical (15%) | 76 | 15 | 0 | 0 | 1 | 21 | 168 | 190 | 255 | 295 | 264 | 97 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 20% | 17 | 0 | 0 | 0 | 0 | 0 | -1 | 1 | 11 | 1 | 4 | 2 |
| 30% | 0 | 2 | 0 | 0 | 0 | -1 | -7 | -1 | 60 | 96 | 67 | 31 |
| 40% | 9 | 1 | 0 | 0 | 0 | 0 | -3 | -3 | 154 | 196 | 154 | 47 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | -13 | -3 | 131 | 142 | 116 | 36 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | -10 | -20 | -1 | -5 | -4 | 23 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | -15 | -5 | -13 | -13 | -4 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -2 | -21 | -28 | -10 | -4 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -20 | 1 | 0 | 26 | -4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3 | 0 | 0 | 0 | 0 | 0 | -6 | -4 | 36 | 40 | 36 | 12 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 46 | 35 | 16 |
| Above Normal (16%) | 6 | 0 | 0 | 0 | 0 | 0 | -1 | 1 | 90 | 99 | 79 | 31 |
| Below Normal (13%) | 6 | 0 | 0 | 0 | 0 | -1 | -28 | -6 | 60 | 71 | 55 | 22 |
| Dry (24%) | 1 | 0 | 0 | 0 | 0 | 0 | -5 | -18 | 4 | 5 | 4 | 4 |
| Critical (15%) | 0 | 1 | 0 | 0 | 0 | -2 | -3 | 4 | -3 | -4 | 26 | -16 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 47-4. Red Bluff Diversion - Tehama Colusa Canal, Monthly Diversion

### Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 153 | 23 | 0 | 0 | 0 | 55 | 470 | 831 | 1,189 | 1,377 | 1,094 | 299 |
| 20% | 132 | 19 | 0 | 0 | 0 | 35 | 412 | 764 | 1,106 | 1,283 | 1,027 | 272 |
| 30% | 103 | 17 | 0 | 0 | 0 | 21 | 345 | 725 | 1,059 | 1,252 | 991 | 247 |
| 40% | 86 | 17 | 0 | 0 | 0 | 3 | 286 | 643 | 1,012 | 1,138 | 891 | 214 |
| 50% | 66 | 17 | 0 | 0 | 0 | 1 | 204 | 529 | 929 | 1,065 | 825 | 197 |
| 60% | 49 | 17 | 0 | 0 | 0 | 0 | 182 | 456 | 832 | 911 | 717 | 165 |
| 70% | 35 | 17 | 0 | 0 | 0 | 0 | 105 | 330 | 545 | 645 | 526 | 108 |
| 80% | 22 | 17 | 0 | 0 | 0 | 0 | 45 | 248 | 426 | 500 | 419 | 65 |
| 90% | 5 | 17 | 0 | 0 | 0 | 0 | 24 | 133 | 302 | 343 | 278 | 19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 75 | 17 | 0 | 0 | 2 | 21 | 247 | 512 | 804 | 926 | 736 | 175 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 97 | 17 | 0 | 0 | 0 | 12 | 196 | 649 | 1,075 | 1,238 | 980 | 237 |
| Above Normal (16%) | 78 | 17 | 0 | 0 | 0 | 9 | 310 | 680 | 1,061 | 1,213 | 951 | 236 |
| Below Normal (13%) | 85 | 21 | 0 | 0 | 9 | 65 | 385 | 641 | 839 | 992 | 778 | 166 |
| Dry (24%) | 48 | 16 | 0 | 0 | 4 | 15 | 228 | 333 | 573 | 648 | 514 | 96 |
| Critical (15%) | 59 | 18 | 0 | 0 | 1 | 25 | 195 | 214 | 295 | 343 | 302 | 114 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 214 | 20 | 0 | 0 | 0 | 52 | 455 | 786 | 1,191 | 1,378 | 1,095 | 299 |
| 20% | 189 | 17 | 0 | 0 | 0 | 33 | 370 | 752 | 1,131 | 1,338 | 1,057 | 275 |
| 30% | 150 | 17 | 0 | 0 | 0 | 19 | 315 | 674 | 1,094 | 1,277 | 1,010 | 261 |
| 40% | 130 | 5 | 0 | 0 | 0 | 4 | 253 | 593 | 1,061 | 1,233 | 947 | 228 |
| 50% | 105 | 1 | 0 | 0 | 0 | 1 | 201 | 479 | 1,028 | 1,146 | 905 | 209 |
| 60% | 87 | 0 | 0 | 0 | 0 | 0 | 180 | 425 | 812 | 916 | 719 | 162 |
| 70% | 80 | 0 | 0 | 0 | 0 | 0 | 112 | 347 | 527 | 633 | 522 | 111 |
| 80% | 68 | 0 | 0 | 0 | 0 | 0 | 49 | 233 | 398 | 463 | 369 | 85 |
| 90% | 57 | 0 | 0 | 0 | 0 | 0 | 24 | 123 | 291 | 325 | 269 | 19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 122 | 8 | 0 | 0 | 2 | 21 | 230 | 489 | 817 | 940 | 746 | 182 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 151 | 7 | 0 | 0 | 0 | 11 | 170 | 635 | 1,088 | 1,253 | 992 | 242 |
| Above Normal (16%) | 127 | 5 | 0 | 0 | 0 | 10 | 299 | 661 | 1,097 | 1,252 | 982 | 244 |
| Below Normal (13%) | 134 | 8 | 0 | 0 | 8 | 66 | 357 | 610 | 902 | 1,065 | 834 | 186 |
| Dry (24%) | 100 | 4 | 0 | 0 | 4 | 14 | 213 | 287 | 547 | 619 | 491 | 103 |
| Critical (15%) | 80 | 17 | 0 | 0 | 1 | 25 | 196 | 213 | 297 | 345 | 304 | 115 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 61 | -4 | 0 | 0 | 0 | -2 | -16 | -44 | 2 | 1 | 1 | 0 |
| 20% | 57 | -2 | 0 | 0 | 0 | -2 | -42 | -13 | 26 | 56 | 29 | 3 |
| 30% | 47 | 0 | 0 | 0 | 0 | -2 | -29 | -51 | 34 | 25 | 20 | 14 |
| 40% | 43 | -12 | 0 | 0 | 0 | 1 | -32 | -50 | 49 | 95 | 56 | 14 |
| 50% | 38 | -16 | 0 | 0 | 0 | 0 | -2 | -49 | 99 | 81 | 80 | 12 |
| 60% | 38 | -17 | 0 | 0 | 0 | 0 | -2 | -31 | -20 | 5 | 1 | -3 |
| 70% | 45 | -17 | 0 | 0 | 0 | 0 | 7 | 17 | -18 | -13 | -4 | 3 |
| 80% | 46 | -17 | 0 | 0 | 0 | 0 | 4 | -15 | -29 | -37 | -50 | 20 |
| 90% | 52 | -17 | 0 | 0 | 0 | 0 | 0 | -9 | -11 | -18 | -9 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 47 | -10 | 0 | 0 | 0 | 0 | -17 | -23 | 13 | 14 | 11 | 8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 54 | -10 | 0 | 0 | 0 | -1 | -26 | -14 | 14 | 15 | 11 | 5 |
| Above Normal (16%) | 49 | -12 | 0 | 0 | 0 | 0 | -11 | -19 | 35 | 39 | 31 | 9 |
| Below Normal (13%) | 49 | -12 | 0 | 0 | 0 | 0 | -28 | -31 | 64 | 73 | 56 | 20 |
| Dry (24%) | 53 | -11 | 0 | 0 | 0 | -1 | -15 | -46 | -25 | -29 | -23 | 7 |
| Critical (15%) | 21 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | 2 | 3 | 2 | 0 |

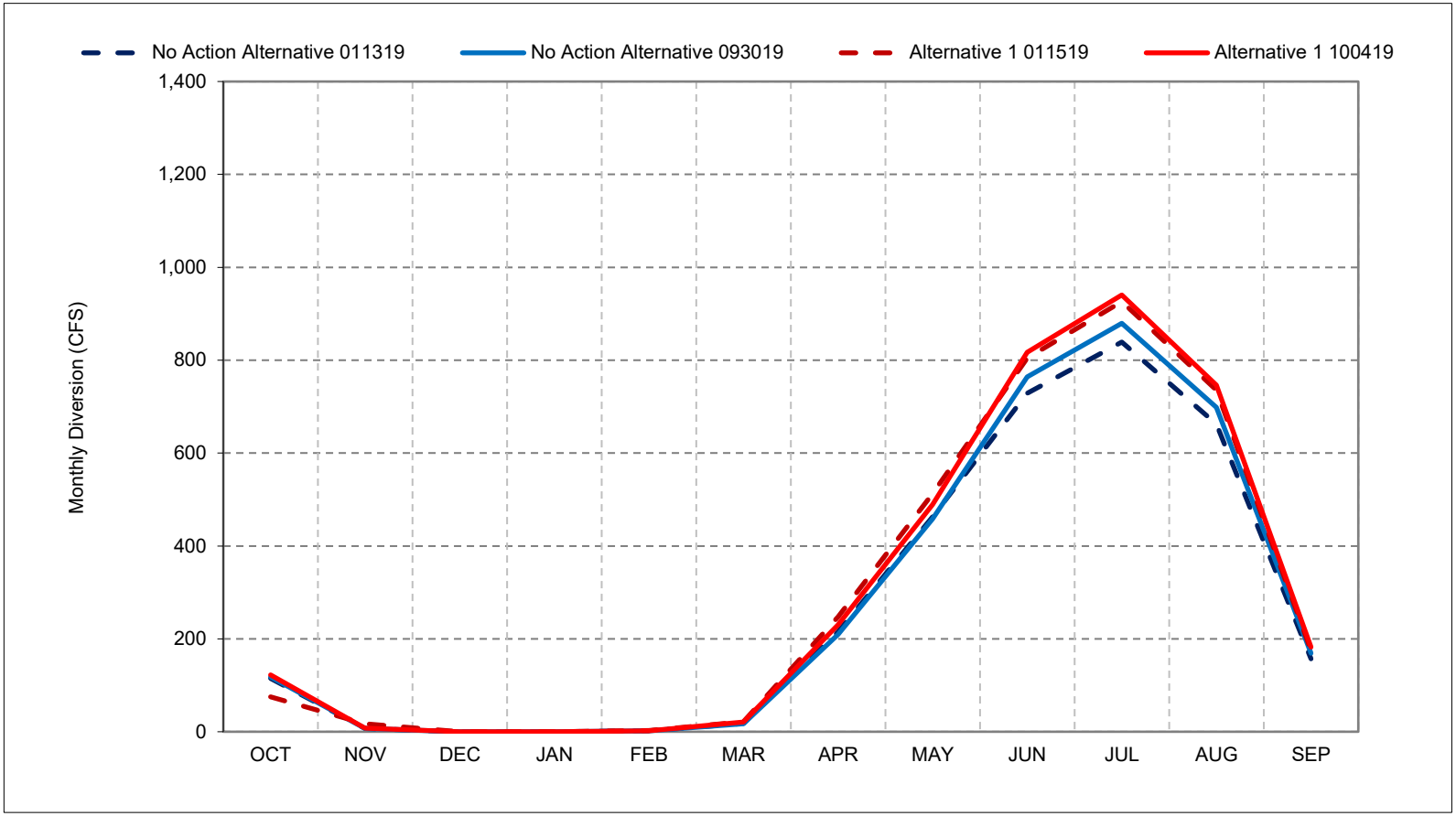
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-1. Red Bluff Diversion - Tehama Colusa Canal, Long-Term Average Diversion

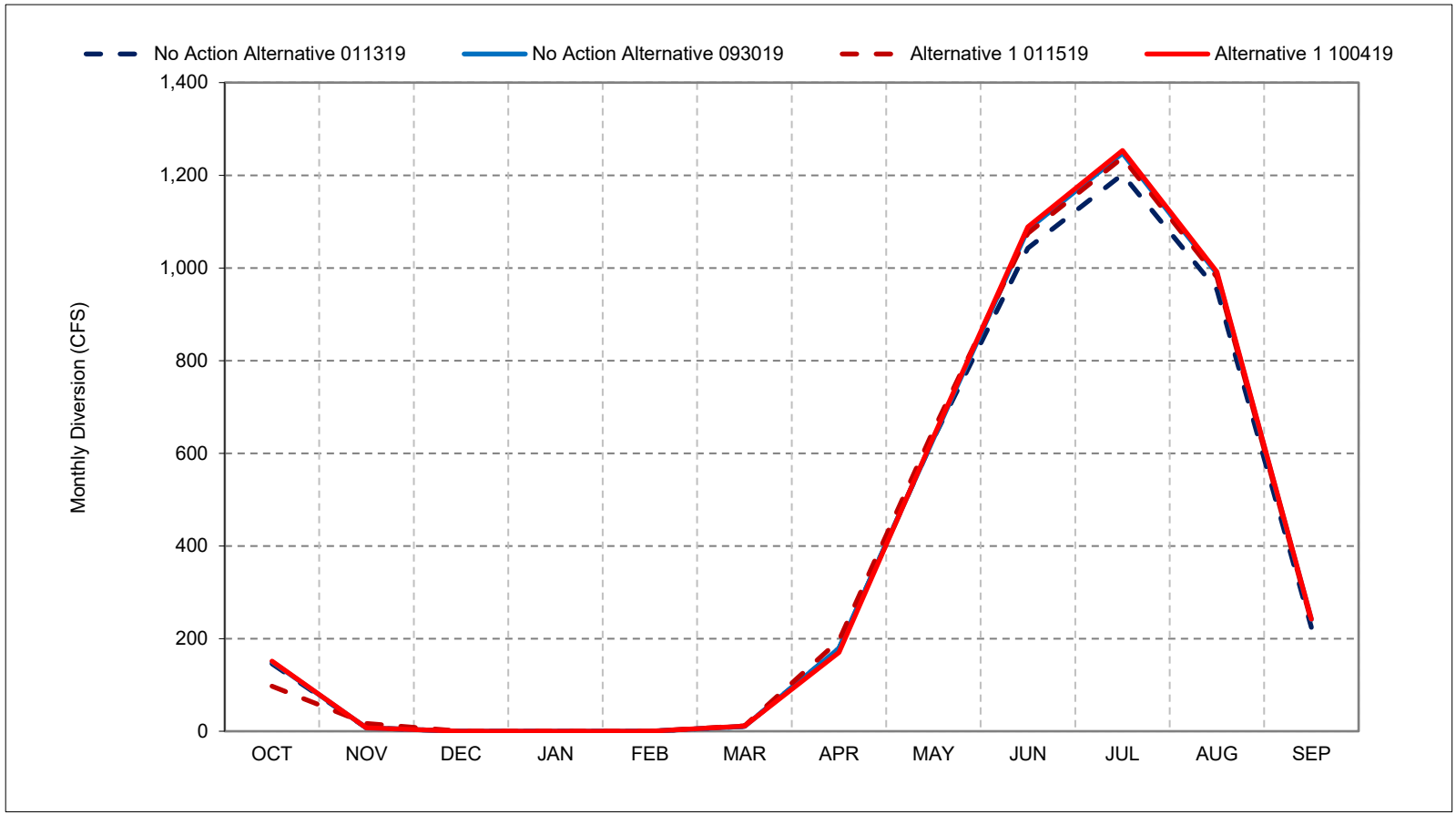



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-2. Red Bluff Diversion - Tehama Colusa Canal, Wet Year Average Diversion

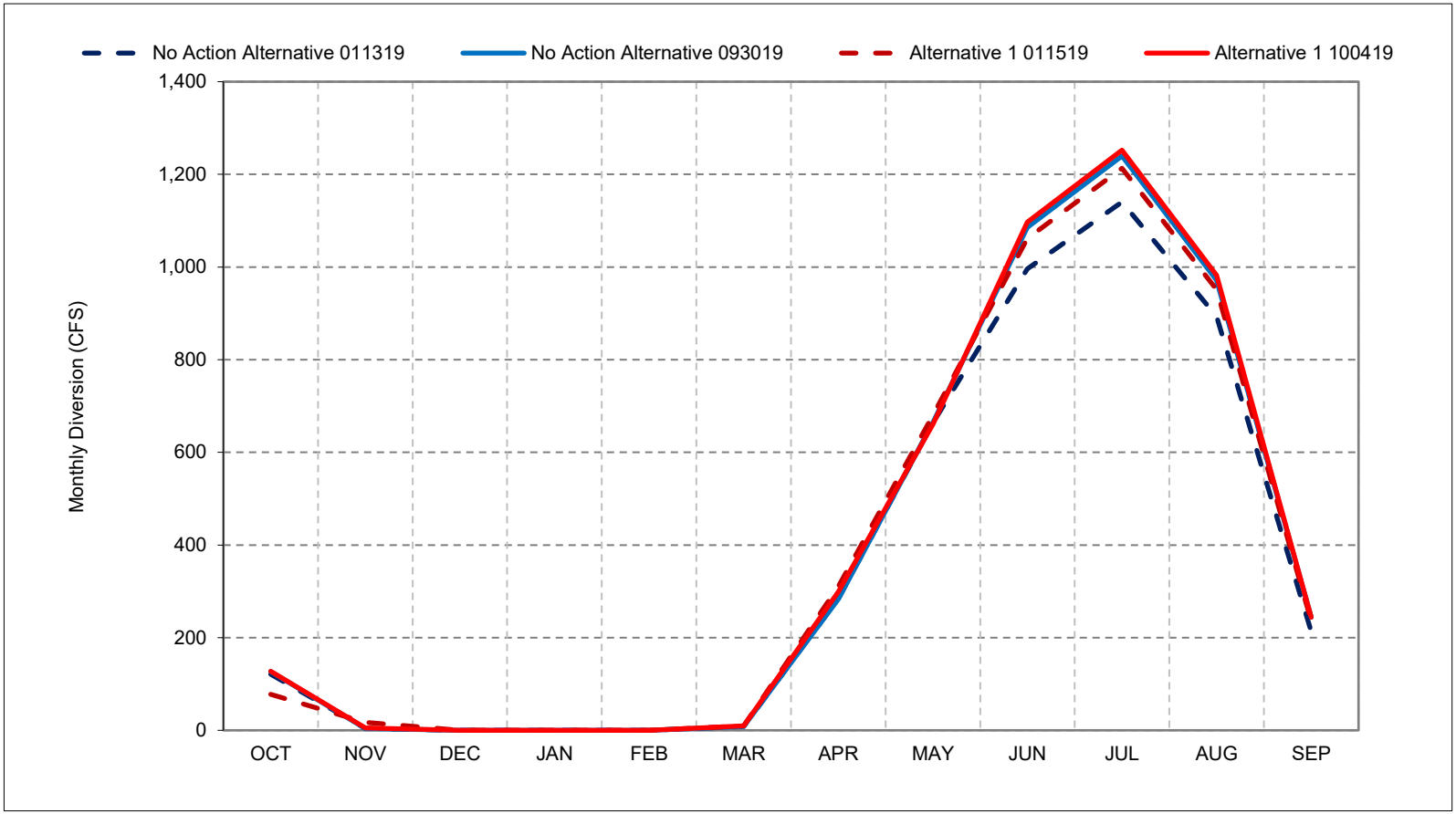



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-3. Red Bluff Diversion - Tehama Colusa Canal, Above Normal Year Average Diversion

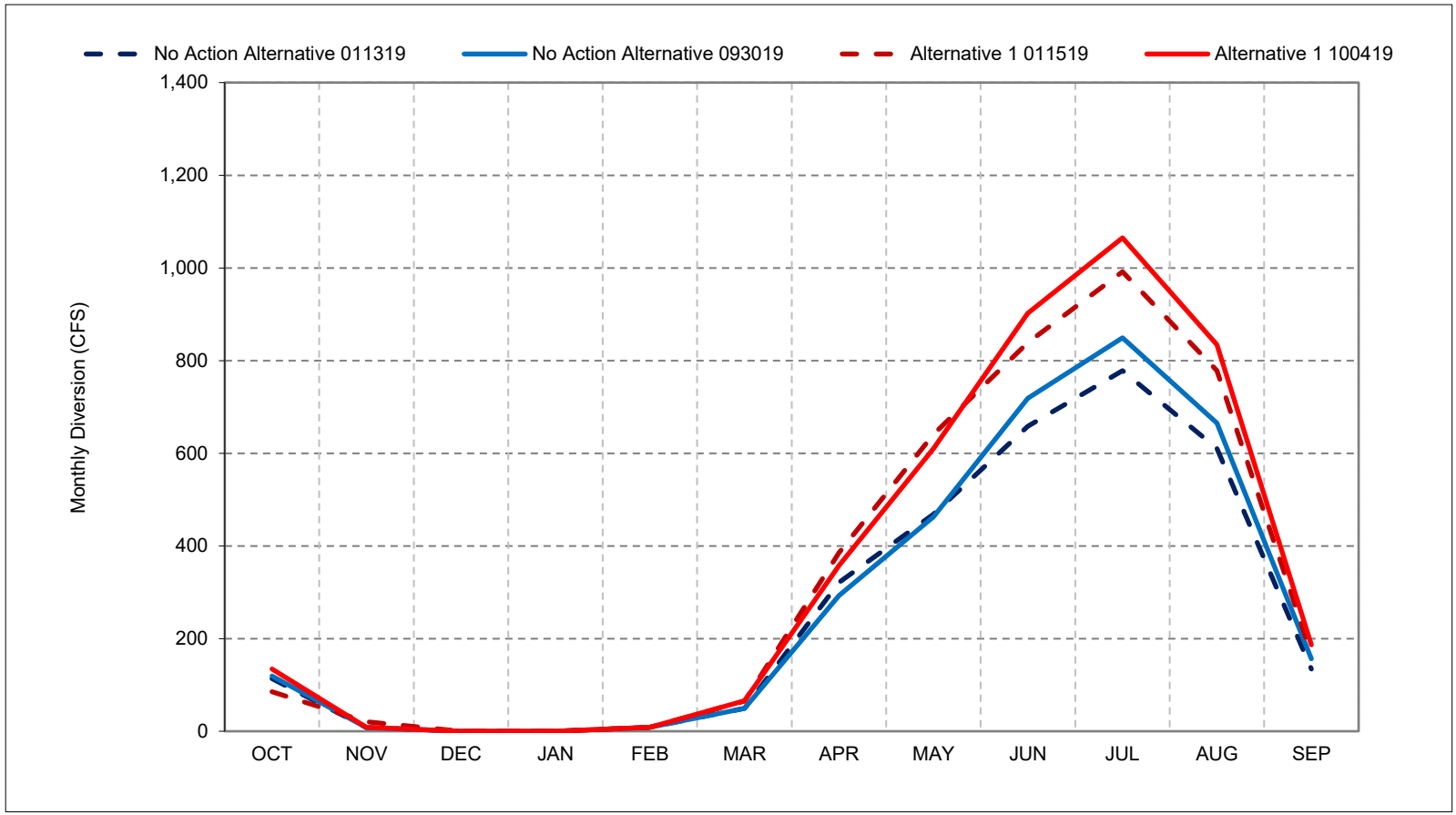



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-4. Red Bluff Diversion - Tehama Colusa Canal, Below Normal Year Average Diversion

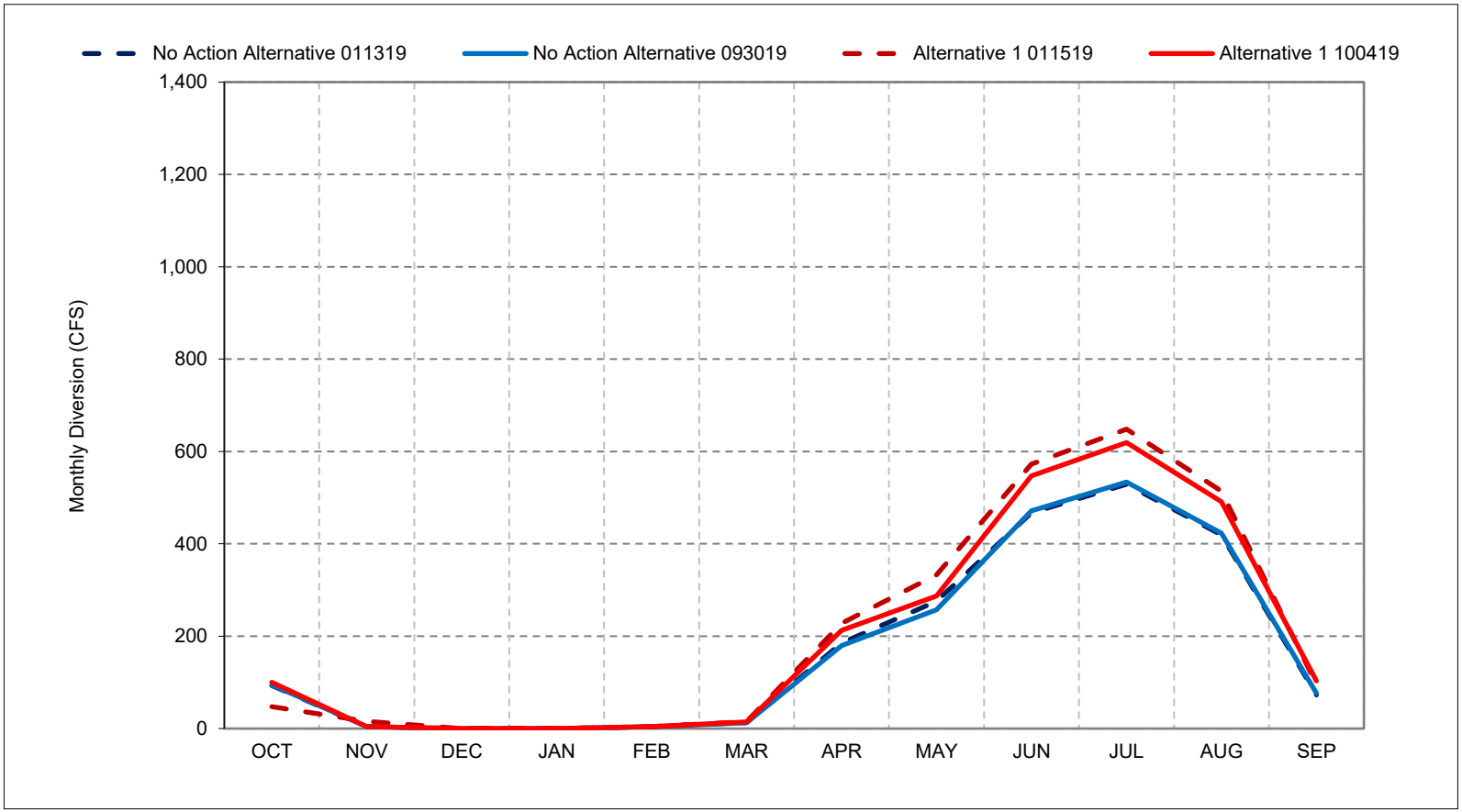



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-5. Red Bluff Diversion - Tehama Colusa Canal, Dry Year Average Diversion

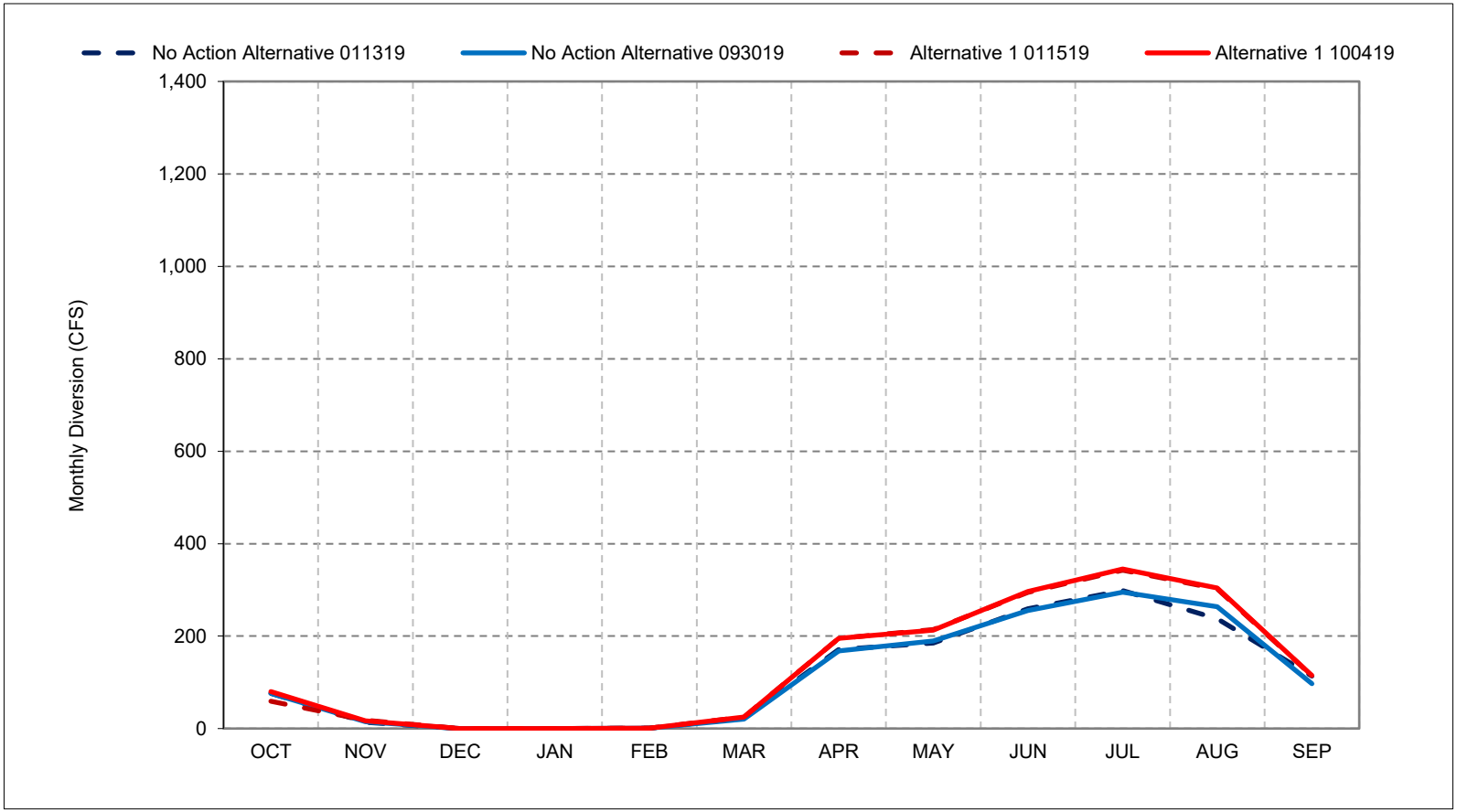



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 47-6. Red Bluff Diversion - Tehama Colusa Canal, Critical Year Average Diversion

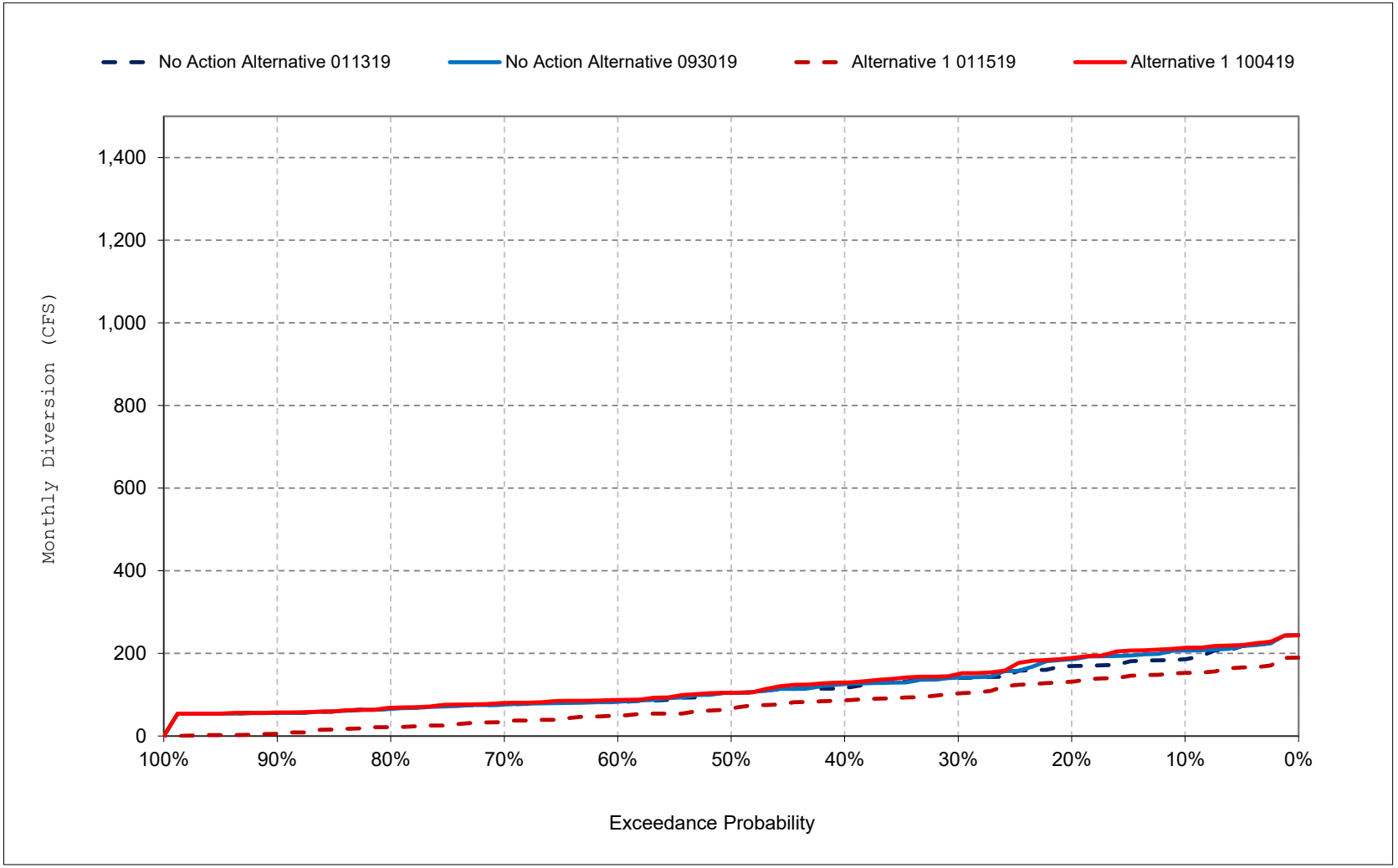



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

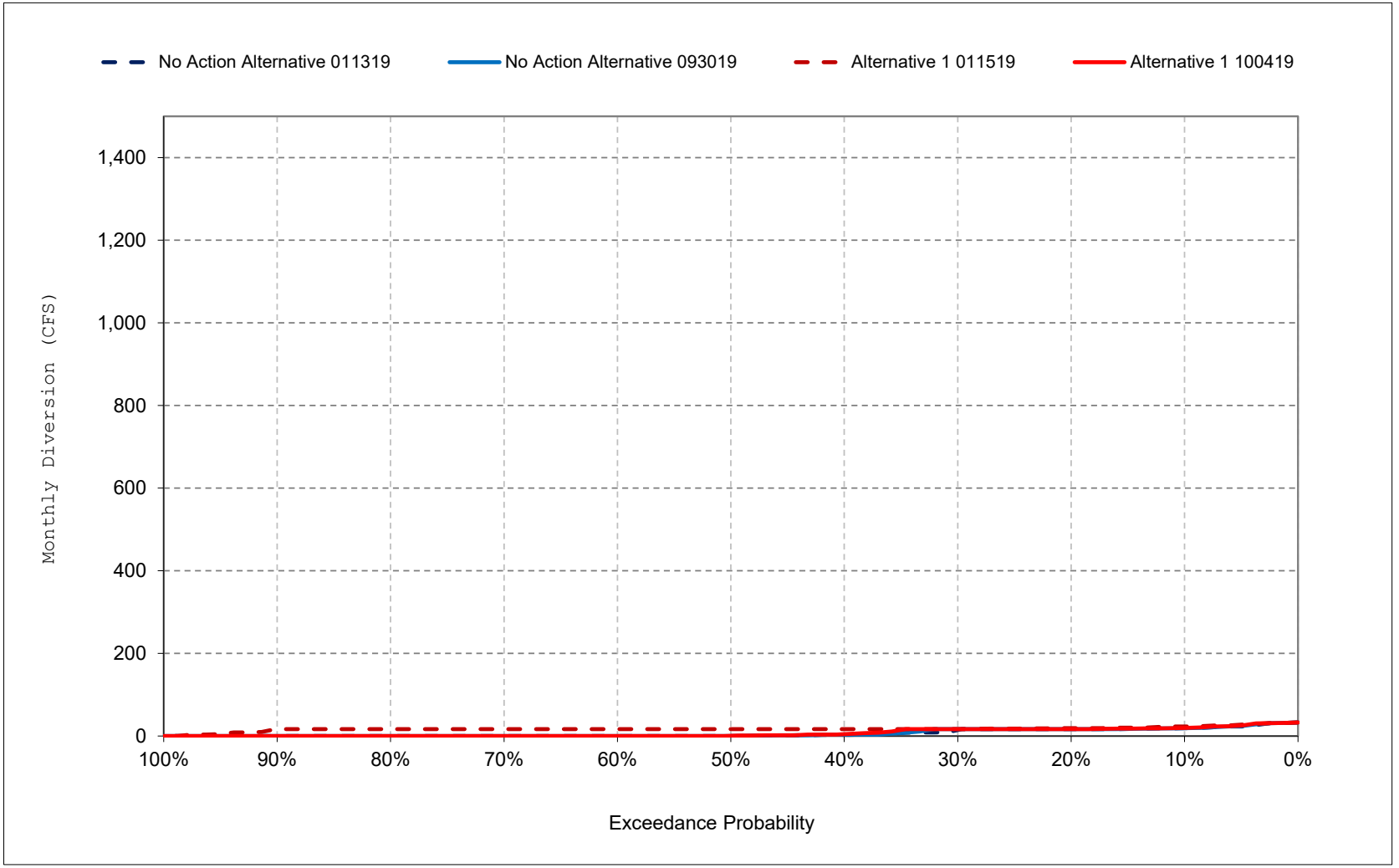
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-7. Red Bluff Diversion - Tehama Colusa Canal, October**



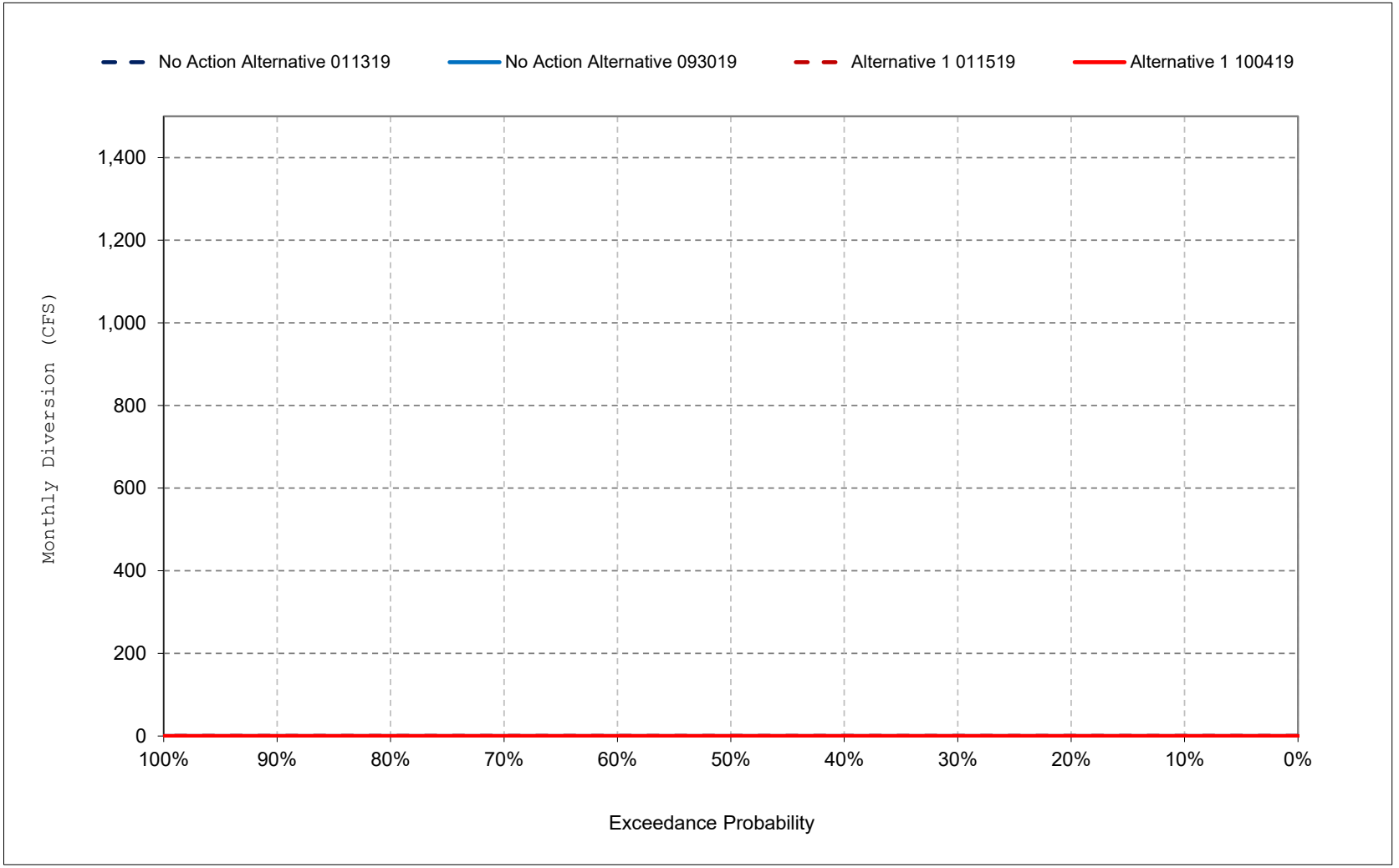

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-8. Red Bluff Diversion - Tehama Colusa Canal, November**



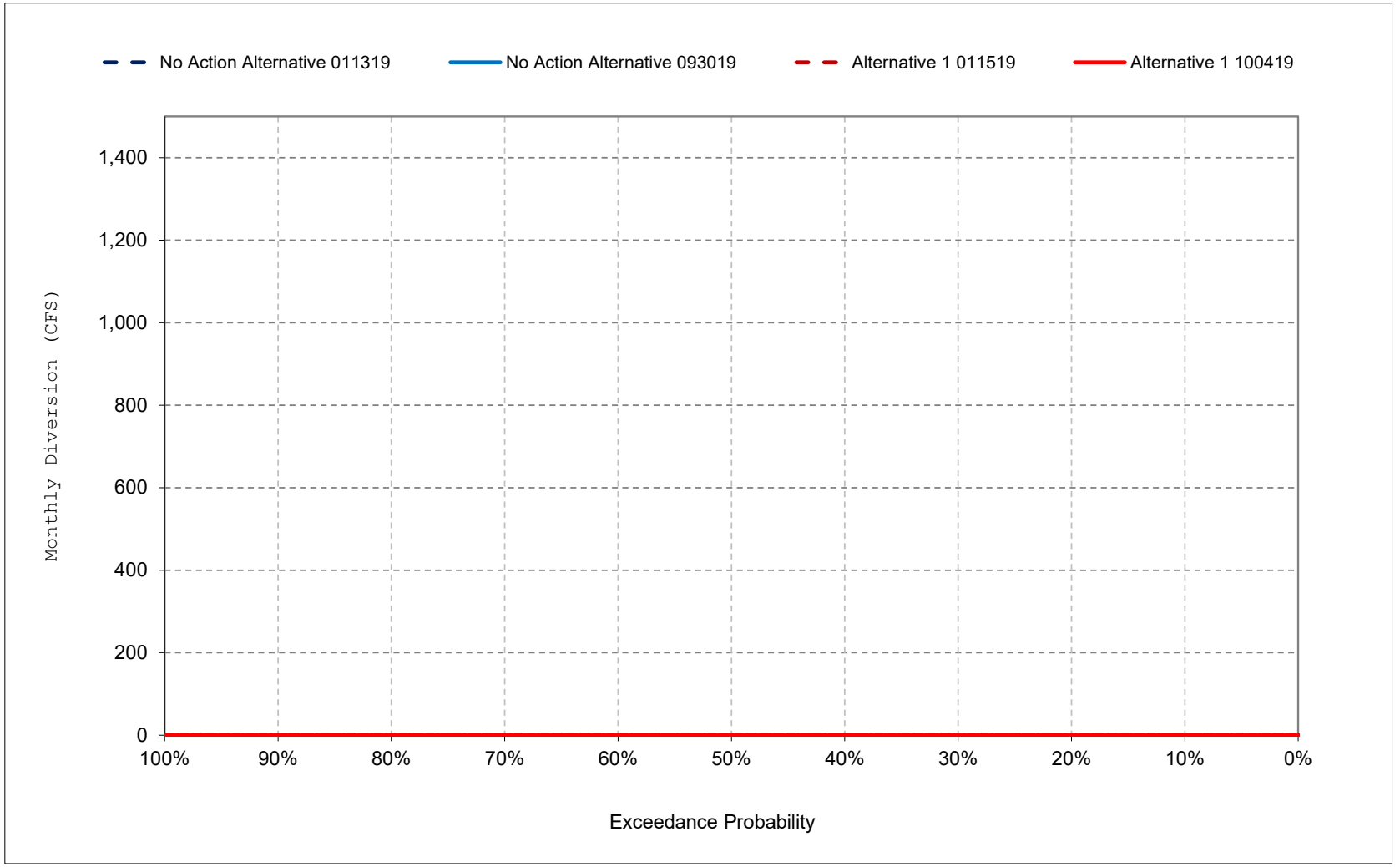

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-9. Red Bluff Diversion - Tehama Colusa Canal, December**



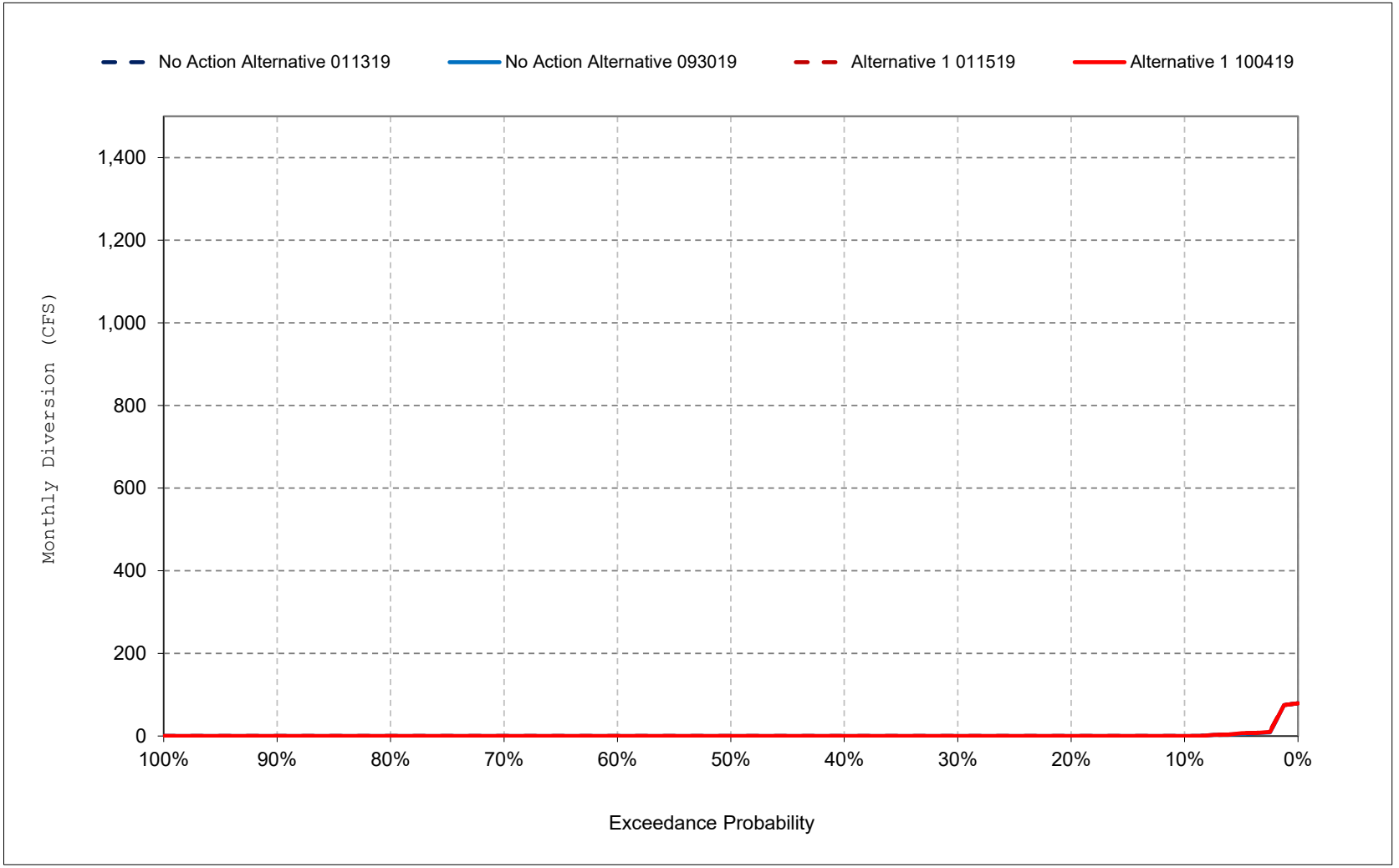

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-10. Red Bluff Diversion - Tehama Colusa Canal, January**



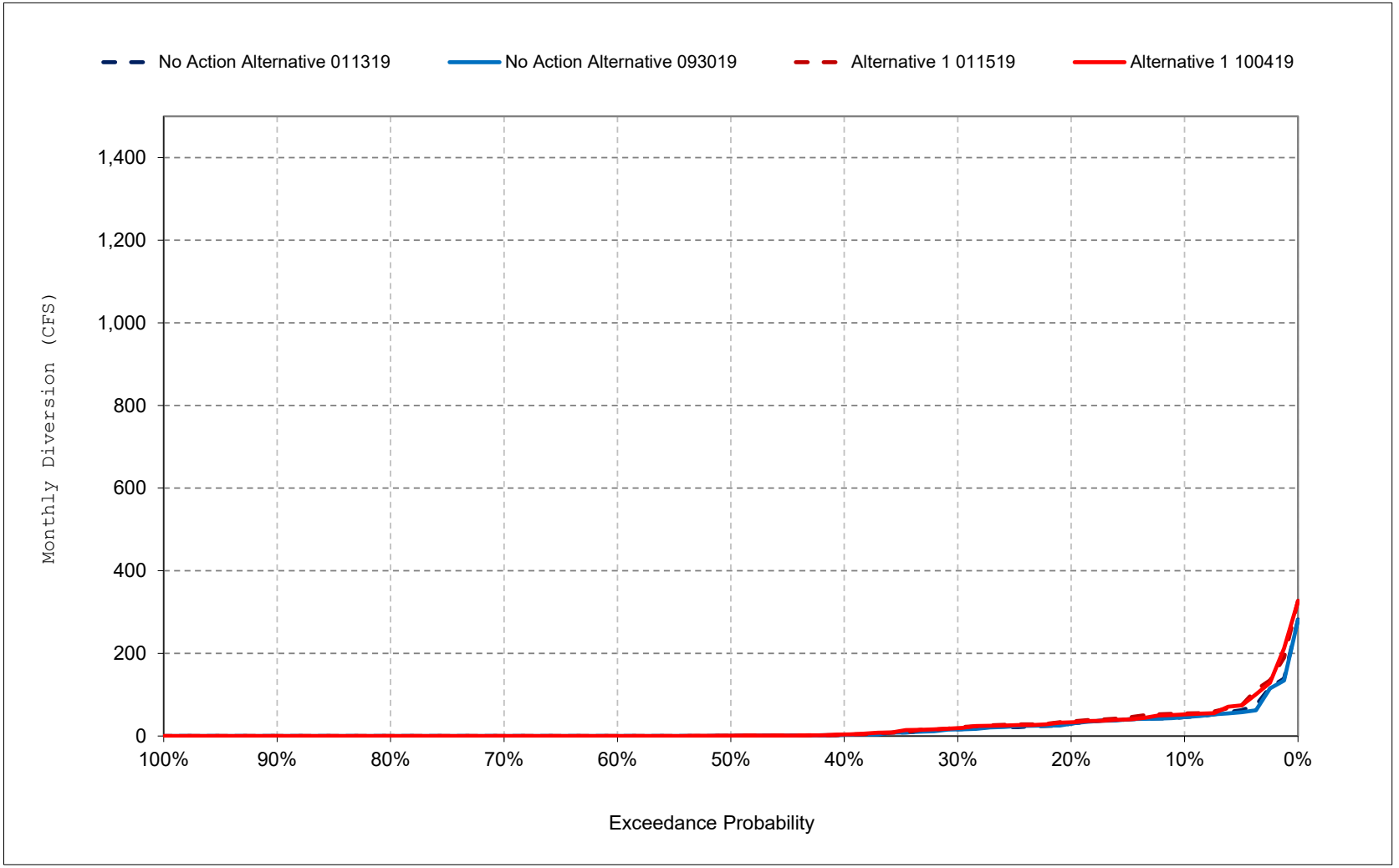

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-11. Red Bluff Diversion - Tehama Colusa Canal, February**



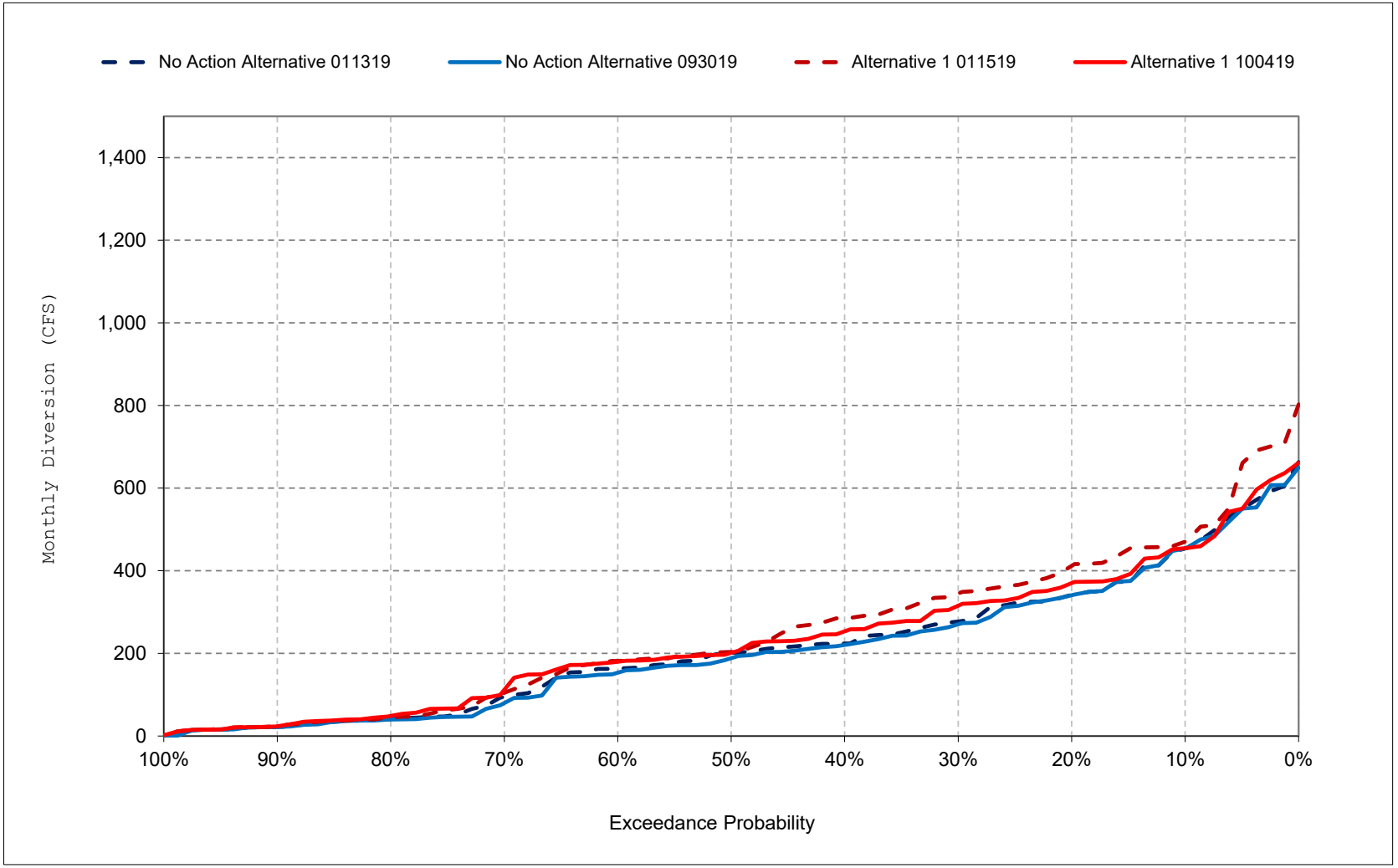

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-12. Red Bluff Diversion - Tehama Colusa Canal, March**



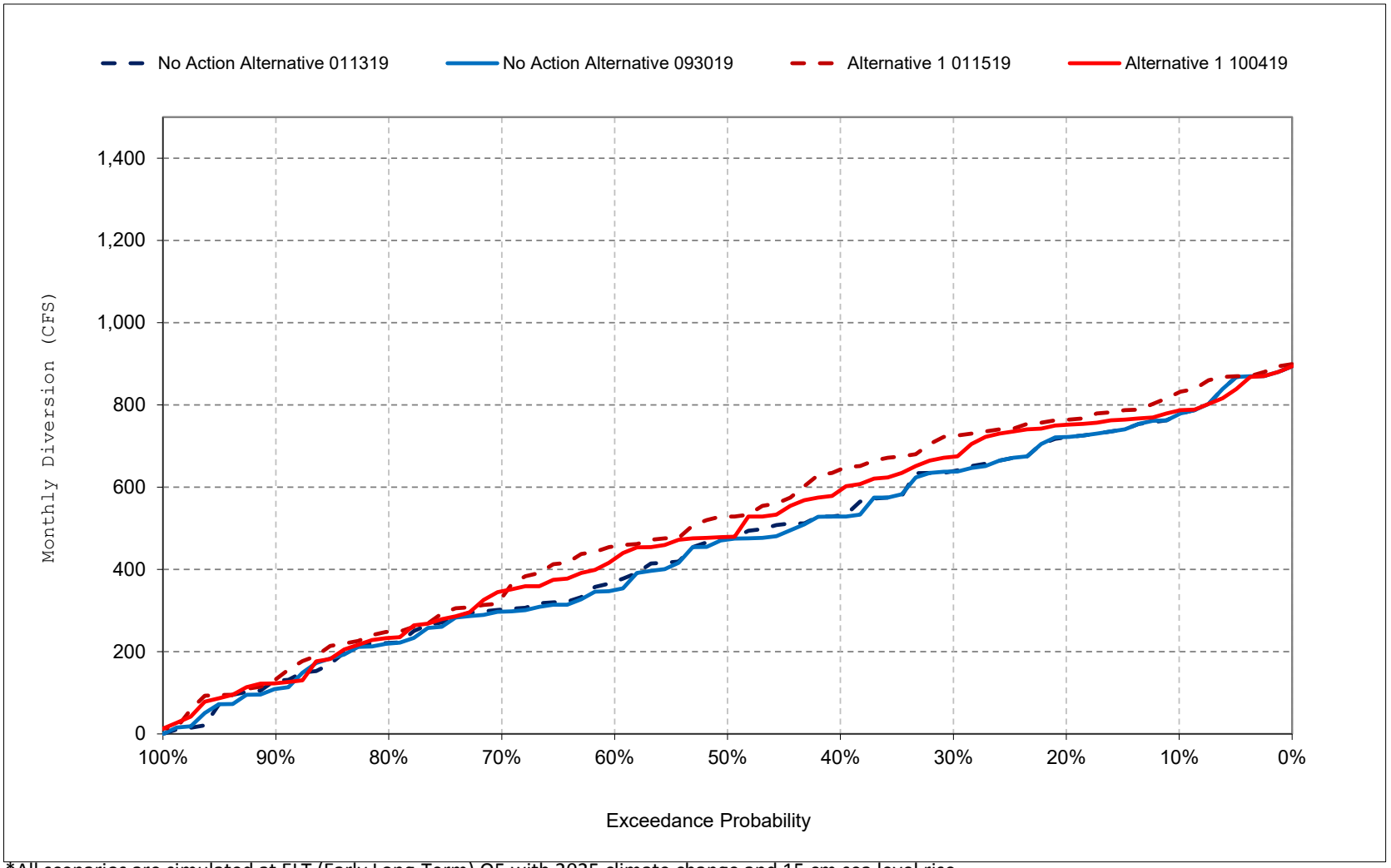

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-13. Red Bluff Diversion - Tehama Colusa Canal, April**



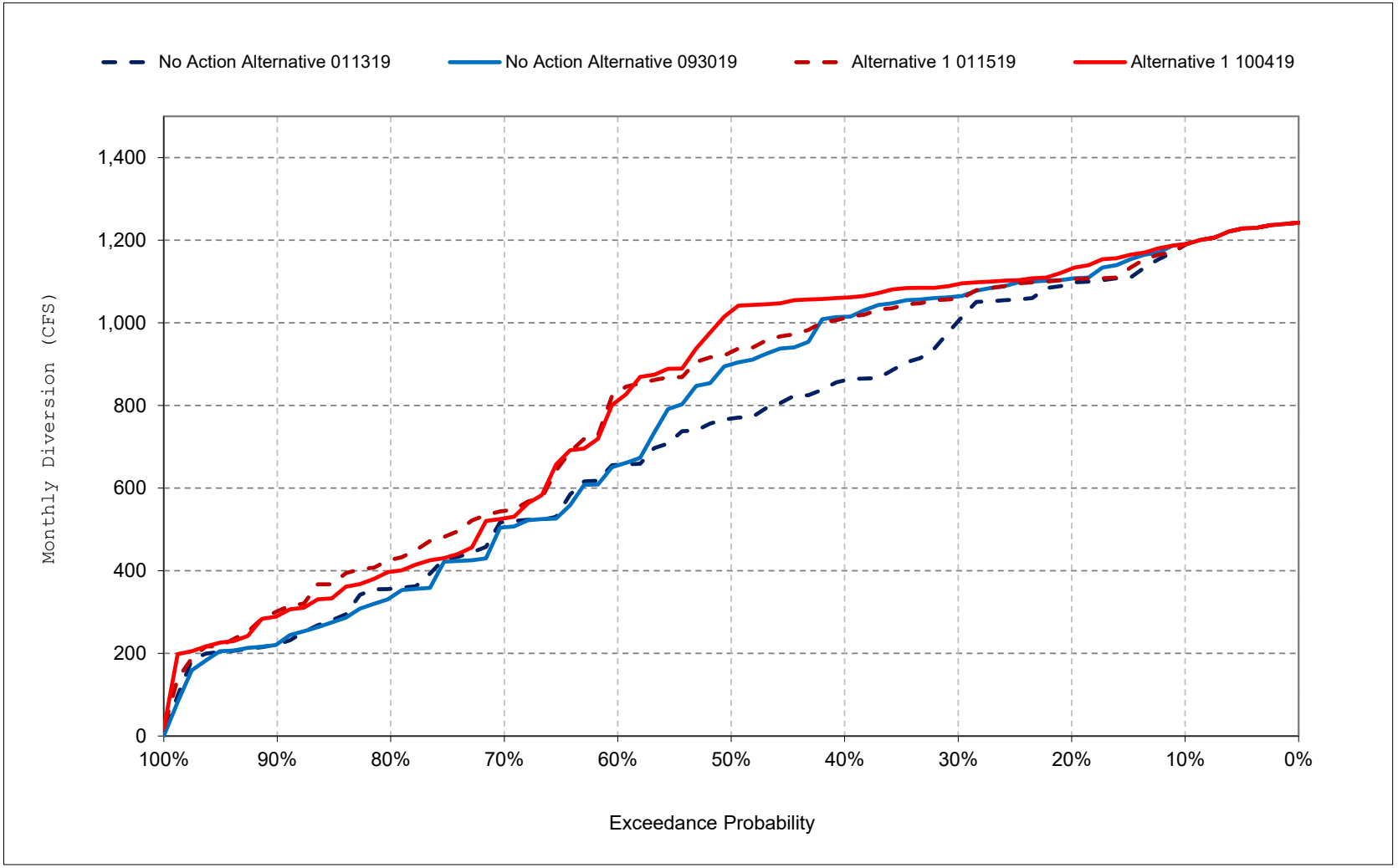

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-14. Red Bluff Diversion - Tehama Colusa Canal, May**



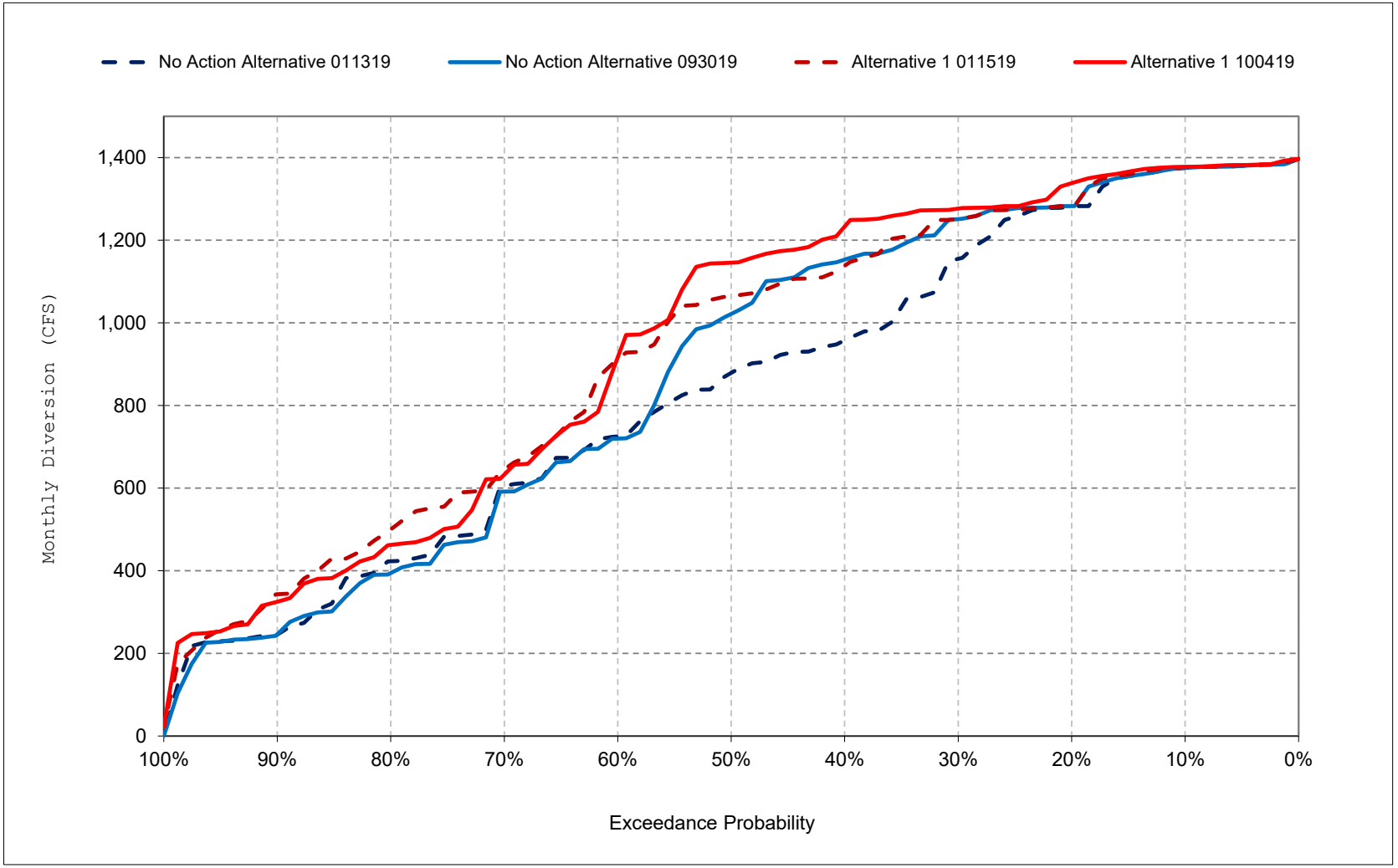

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-15. Red Bluff Diversion - Tehama Colusa Canal, June**



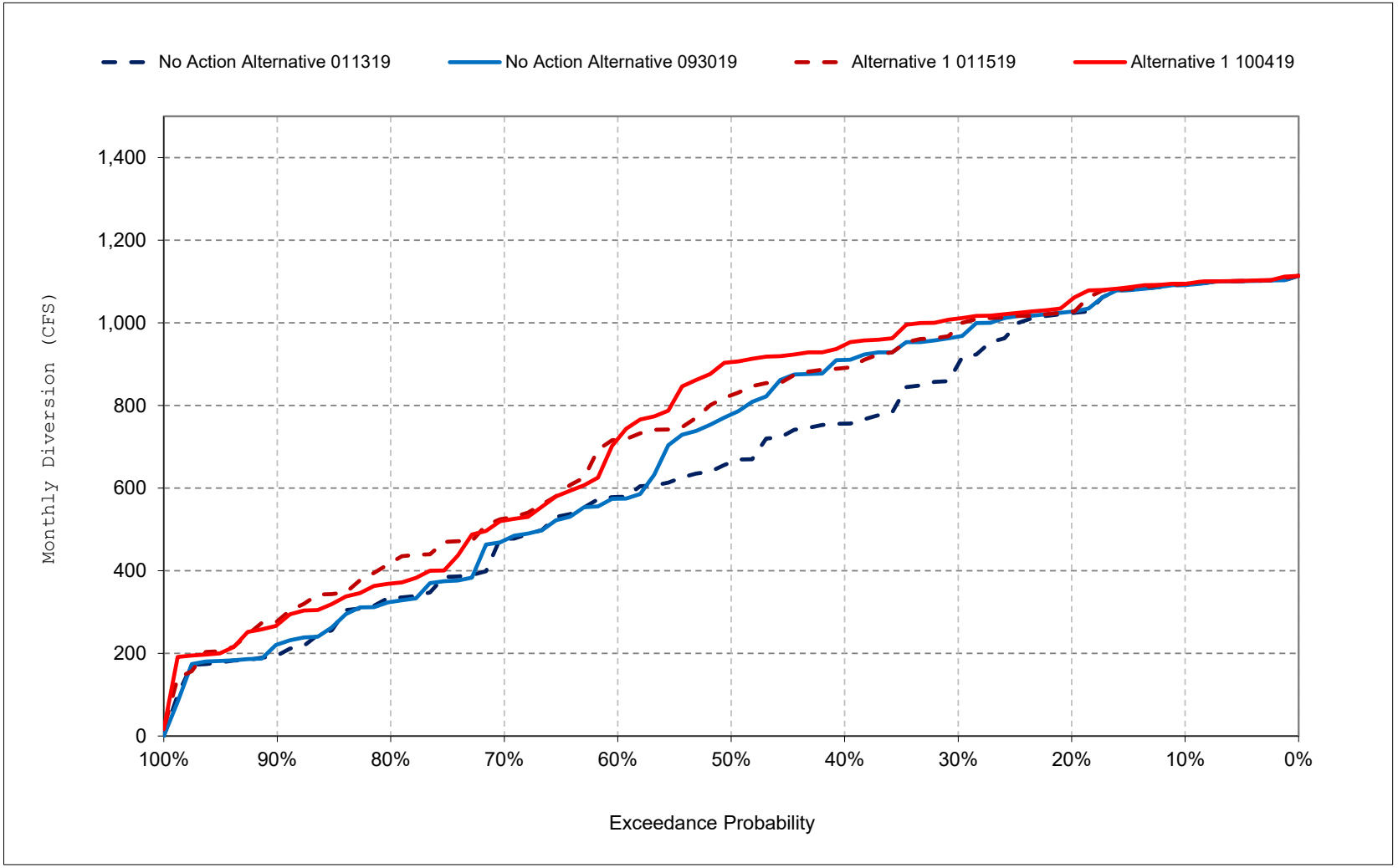

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-16. Red Bluff Diversion - Tehama Colusa Canal, July**



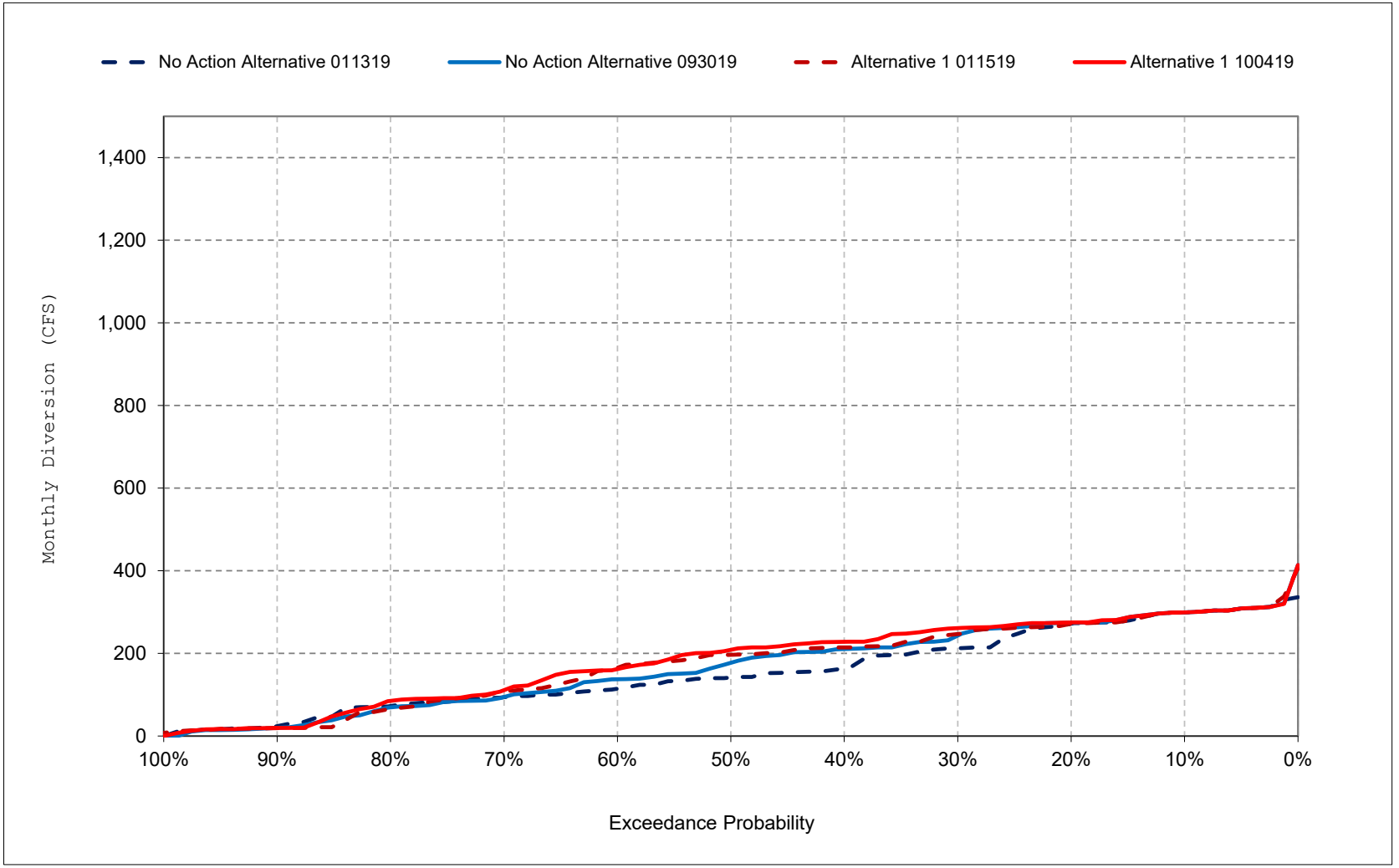

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-17. Red Bluff Diversion - Tehama Colusa Canal, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 47-18. Red Bluff Diversion - Tehama Colusa Canal, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 48-1. Hamilton City Diversion - Glenn Colusa Canal, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 851 | 564 | 292 | 127 | 68 | 84 | 552 | 2,331 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 845 | 546 | 270 | 86 | 68 | 65 | 527 | 2,297 | 2,621 | 2,611 | 2,130 | 633 |
| 30% | 837 | 515 | 240 | 75 | 68 | 50 | 493 | 2,260 | 2,556 | 2,563 | 2,090 | 633 |
| 40% | 823 | 478 | 224 | 75 | 68 | 35 | 467 | 2,245 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 808 | 441 | 202 | 75 | 68 | 21 | 451 | 2,212 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 790 | 420 | 181 | 75 | 68 | 20 | 427 | 2,153 | 2,339 | 2,537 | 1,928 | 612 |
| 70% | 771 | 391 | 161 | 75 | 67 | 20 | 411 | 2,079 | 2,325 | 2,521 | 1,917 | 602 |
| 80% | 745 | 354 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,271 | 2,446 | 1,862 | 569 |
| 90% | 636 | 330 | 158 | 75 | 53 | 20 | 306 | 1,842 | 2,226 | 2,285 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 777 | 448 | 211 | 84 | 67 | 43 | 443 | 2,137 | 2,433 | 2,512 | 1,996 | 596 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 811 | 460 | 227 | 81 | 67 | 32 | 402 | 2,119 | 2,261 | 2,565 | 2,141 | 614 |
| Above Normal (16%) | 796 | 461 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,023 | 616 |
| Below Normal (13%) | 781 | 466 | 212 | 98 | 73 | 63 | 472 | 2,170 | 2,561 | 2,534 | 1,994 | 583 |
| Dry (24%) | 807 | 435 | 218 | 85 | 66 | 43 | 447 | 2,200 | 2,645 | 2,532 | 1,910 | 605 |
| Critical (15%) | 630 | 415 | 166 | 84 | 66 | 65 | 512 | 2,086 | 2,413 | 2,313 | 1,799 | 530 |

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 866 | 556 | 284 | 127 | 68 | 84 | 552 | 2,340 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 846 | 535 | 268 | 86 | 68 | 65 | 527 | 2,305 | 2,621 | 2,607 | 2,131 | 633 |
| 30% | 828 | 509 | 239 | 75 | 68 | 50 | 493 | 2,277 | 2,571 | 2,563 | 2,090 | 633 |
| 40% | 810 | 470 | 224 | 75 | 68 | 35 | 467 | 2,250 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 783 | 437 | 202 | 75 | 68 | 21 | 451 | 2,225 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 763 | 417 | 181 | 75 | 68 | 20 | 427 | 2,173 | 2,347 | 2,525 | 1,928 | 613 |
| 70% | 735 | 380 | 161 | 75 | 67 | 20 | 411 | 2,086 | 2,328 | 2,521 | 1,917 | 603 |
| 80% | 709 | 338 | 158 | 75 | 66 | 20 | 391 | 2,013 | 2,277 | 2,468 | 1,862 | 585 |
| 90% | 649 | 314 | 158 | 75 | 53 | 20 | 306 | 1,853 | 2,226 | 2,318 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 764 | 438 | 210 | 84 | 67 | 43 | 443 | 2,146 | 2,437 | 2,512 | 1,993 | 592 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 797 | 450 | 227 | 81 | 67 | 32 | 402 | 2,123 | 2,267 | 2,558 | 2,143 | 617 |
| Above Normal (16%) | 783 | 448 | 202 | 76 | 65 | 28 | 432 | 2,101 | 2,365 | 2,528 | 2,023 | 616 |
| Below Normal (13%) | 772 | 454 | 212 | 98 | 73 | 63 | 472 | 2,184 | 2,568 | 2,569 | 1,995 | 583 |
| Dry (24%) | 785 | 424 | 218 | 85 | 66 | 43 | 447 | 2,215 | 2,644 | 2,532 | 1,910 | 605 |
| Critical (15%) | 630 | 411 | 166 | 84 | 66 | 65 | 510 | 2,095 | 2,418 | 2,313 | 1,772 | 501 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15 | -8 | -7 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 20% | 2 | -11 | -1 | 0 | 0 | 0 | 0 | 8 | 0 | -4 | 1 | 0 |
| 30% | -10 | -6 | -2 | 0 | 0 | 0 | 0 | 17 | 15 | 0 | 0 | 0 |
| 40% | -13 | -7 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 50% | -24 | -4 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| 60% | -27 | -3 | 0 | 0 | 0 | 0 | 0 | 21 | 7 | -12 | 0 | 1 |
| 70% | -35 | -11 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 0 | 0 | 1 |
| 80% | -36 | -15 | 0 | 0 | 0 | 0 | 0 | 6 | 7 | 21 | 0 | 15 |
| 90% | 14 | -15 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 33 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -13 | -10 | -1 | 0 | 0 | 0 | 0 | 9 | 4 | 1 | -3 | -3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -15 | -10 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | -8 | 2 | 3 |
| Above Normal (16%) | -13 | -13 | -5 | 0 | 0 | 0 | 0 | 3 | 6 | -9 | 0 | 0 |
| Below Normal (13%) | -9 | -12 | 0 | 0 | 0 | 0 | 0 | 15 | 7 | 35 | 1 | 0 |
| Dry (24%) | -22 | -11 | 0 | 0 | 0 | 0 | 0 | 14 | -1 | 0 | 0 | 0 |
| Critical (15%) | 0 | -4 | 0 | 0 | 0 | 0 | -1 | 10 | 5 | 0 | -26 | -29 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 48-2. Hamilton City Diversion - Glenn Colusa Canal, Monthly Diversion

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 851 | 564 | 292 | 127 | 68 | 84 | 552 | 2,331 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 845 | 546 | 268 | 86 | 68 | 65 | 527 | 2,297 | 2,620 | 2,611 | 2,130 | 633 |
| 30% | 837 | 515 | 239 | 75 | 68 | 50 | 493 | 2,260 | 2,556 | 2,563 | 2,090 | 633 |
| 40% | 823 | 478 | 222 | 75 | 68 | 35 | 467 | 2,245 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 808 | 441 | 202 | 75 | 68 | 21 | 451 | 2,216 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 790 | 420 | 181 | 75 | 68 | 20 | 427 | 2,153 | 2,339 | 2,535 | 1,928 | 612 |
| 70% | 771 | 390 | 161 | 75 | 67 | 20 | 411 | 2,079 | 2,312 | 2,521 | 1,919 | 602 |
| 80% | 745 | 354 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,271 | 2,443 | 1,874 | 569 |
| 90% | 636 | 323 | 158 | 75 | 53 | 20 | 306 | 1,858 | 2,226 | 2,285 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 773 | 448 | 210 | 84 | 67 | 43 | 443 | 2,139 | 2,432 | 2,510 | 1,991 | 591 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 811 | 460 | 227 | 81 | 67 | 32 | 402 | 2,119 | 2,258 | 2,565 | 2,141 | 614 |
| Above Normal (16%) | 796 | 461 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,023 | 616 |
| Below Normal (13%) | 781 | 466 | 212 | 98 | 73 | 63 | 472 | 2,170 | 2,559 | 2,534 | 1,995 | 583 |
| Dry (24%) | 807 | 435 | 215 | 85 | 66 | 43 | 447 | 2,200 | 2,645 | 2,532 | 1,916 | 605 |
| Critical (15%) | 600 | 414 | 166 | 84 | 66 | 65 | 512 | 2,098 | 2,418 | 2,305 | 1,755 | 500 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 610 | 801 | 292 | 127 | 68 | 84 | 552 | 2,340 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 605 | 788 | 270 | 86 | 68 | 65 | 527 | 2,313 | 2,621 | 2,615 | 2,135 | 633 |
| 30% | 598 | 758 | 240 | 75 | 68 | 50 | 493 | 2,274 | 2,571 | 2,563 | 2,093 | 633 |
| 40% | 586 | 724 | 224 | 75 | 68 | 35 | 467 | 2,250 | 2,483 | 2,538 | 2,065 | 630 |
| 50% | 572 | 685 | 202 | 75 | 68 | 21 | 451 | 2,225 | 2,416 | 2,538 | 1,982 | 628 |
| 60% | 555 | 658 | 181 | 75 | 68 | 20 | 427 | 2,154 | 2,340 | 2,524 | 1,924 | 613 |
| 70% | 539 | 619 | 161 | 75 | 67 | 20 | 411 | 2,086 | 2,327 | 2,518 | 1,911 | 603 |
| 80% | 516 | 586 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,277 | 2,443 | 1,855 | 554 |
| 90% | 453 | 556 | 158 | 75 | 53 | 20 | 306 | 1,853 | 2,226 | 2,318 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 551 | 684 | 211 | 84 | 67 | 43 | 443 | 2,145 | 2,434 | 2,509 | 2,001 | 590 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 575 | 704 | 227 | 81 | 67 | 31 | 402 | 2,122 | 2,264 | 2,565 | 2,169 | 618 |
| Above Normal (16%) | 562 | 702 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,054 | 616 |
| Below Normal (13%) | 553 | 702 | 212 | 98 | 73 | 63 | 472 | 2,181 | 2,564 | 2,543 | 1,984 | 574 |
| Dry (24%) | 572 | 678 | 218 | 85 | 66 | 43 | 447 | 2,215 | 2,643 | 2,527 | 1,901 | 601 |
| Critical (15%) | 447 | 617 | 166 | 84 | 66 | 65 | 512 | 2,095 | 2,418 | 2,297 | 1,762 | 500 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -241 | 238 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 20% | -239 | 242 | 1 | 0 | 0 | 0 | 0 | 16 | 1 | 4 | 5 | 0 |
| 30% | -239 | 242 | 2 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 3 | 0 |
| 40% | -237 | 247 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 25 | 0 |
| 50% | -236 | 244 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 1 | 0 |
| 60% | -234 | 237 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | -12 | -4 | 1 |
| 70% | -232 | 229 | 0 | 0 | 0 | 0 | 0 | 7 | 15 | -3 | -8 | 1 |
| 80% | -229 | 232 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | -20 | -16 |
| 90% | -183 | 233 | 0 | 0 | 0 | 0 | 0 | -5 | 0 | 33 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -222 | 236 | 1 | 0 | 0 | 0 | 0 | 6 | 2 | -1 | 10 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -236 | 244 | 0 | 0 | 0 | -1 | 0 | 3 | 6 | 0 | 28 | 4 |
| Above Normal (16%) | -234 | 241 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 |
| Below Normal (13%) | -228 | 236 | 0 | 0 | 0 | 0 | 0 | 11 | 5 | 9 | -11 | -9 |
| Dry (24%) | -234 | 244 | 3 | 0 | 0 | 0 | 0 | 14 | -2 | -4 | -14 | -4 |
| Critical (15%) | -153 | 203 | 0 | 0 | 0 | 0 | 0 | -3 | 0 | -7 | 7 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 48-3. Hamilton City Diversion - Glenn Colusa Canal, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 851 | 564 | 292 | 127 | 68 | 84 | 552 | 2,331 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 845 | 546 | 270 | 86 | 68 | 65 | 527 | 2,297 | 2,621 | 2,611 | 2,130 | 633 |
| 30% | 837 | 515 | 240 | 75 | 68 | 50 | 493 | 2,260 | 2,556 | 2,563 | 2,090 | 633 |
| 40% | 823 | 478 | 224 | 75 | 68 | 35 | 467 | 2,245 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 808 | 441 | 202 | 75 | 68 | 21 | 451 | 2,212 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 790 | 420 | 181 | 75 | 68 | 20 | 427 | 2,153 | 2,339 | 2,537 | 1,928 | 612 |
| 70% | 771 | 391 | 161 | 75 | 67 | 20 | 411 | 2,079 | 2,325 | 2,521 | 1,917 | 602 |
| 80% | 745 | 354 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,271 | 2,446 | 1,862 | 569 |
| 90% | 636 | 330 | 158 | 75 | 53 | 20 | 306 | 1,842 | 2,226 | 2,285 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 777 | 448 | 211 | 84 | 67 | 43 | 443 | 2,137 | 2,433 | 2,512 | 1,996 | 596 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 811 | 460 | 227 | 81 | 67 | 32 | 402 | 2,119 | 2,261 | 2,565 | 2,141 | 614 |
| Above Normal (16%) | 796 | 461 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,023 | 616 |
| Below Normal (13%) | 781 | 466 | 212 | 98 | 73 | 63 | 472 | 2,170 | 2,561 | 2,534 | 1,994 | 583 |
| Dry (24%) | 807 | 435 | 218 | 85 | 66 | 43 | 447 | 2,200 | 2,645 | 2,532 | 1,910 | 605 |
| Critical (15%) | 630 | 415 | 166 | 84 | 66 | 65 | 512 | 2,086 | 2,413 | 2,313 | 1,799 | 530 |

## No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 851 | 564 | 292 | 127 | 68 | 84 | 552 | 2,331 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 845 | 546 | 268 | 86 | 68 | 65 | 527 | 2,297 | 2,620 | 2,611 | 2,130 | 633 |
| 30% | 837 | 515 | 239 | 75 | 68 | 50 | 493 | 2,260 | 2,556 | 2,563 | 2,090 | 633 |
| 40% | 823 | 478 | 222 | 75 | 68 | 35 | 467 | 2,245 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 808 | 441 | 202 | 75 | 68 | 21 | 451 | 2,216 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 790 | 420 | 181 | 75 | 68 | 20 | 427 | 2,153 | 2,339 | 2,535 | 1,928 | 612 |
| 70% | 771 | 390 | 161 | 75 | 67 | 20 | 411 | 2,079 | 2,312 | 2,521 | 1,919 | 602 |
| 80% | 745 | 354 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,271 | 2,443 | 1,874 | 569 |
| 90% | 636 | 323 | 158 | 75 | 53 | 20 | 306 | 1,858 | 2,226 | 2,285 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 773 | 448 | 210 | 84 | 67 | 43 | 443 | 2,139 | 2,432 | 2,510 | 1,991 | 591 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 811 | 460 | 227 | 81 | 67 | 32 | 402 | 2,119 | 2,258 | 2,565 | 2,141 | 614 |
| Above Normal (16%) | 796 | 461 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,023 | 616 |
| Below Normal (13%) | 781 | 466 | 212 | 98 | 73 | 63 | 472 | 2,170 | 2,559 | 2,534 | 1,995 | 583 |
| Dry (24%) | 807 | 435 | 215 | 85 | 66 | 43 | 447 | 2,200 | 2,645 | 2,532 | 1,916 | 605 |
| Critical (15%) | 600 | 414 | 166 | 84 | 66 | 65 | 512 | 2,098 | 2,418 | 2,305 | 1,755 | 500 |

## No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 30% | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 0 |
| 70% | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -13 | 0 | 1 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | 12 | 0 |
| 90% | 0 | -6 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | 0 | -1 | 0 | 0 | 0 | 0 | 2 | 0 | -1 | -5 | -4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 1 | 0 |
| Dry (24%) | 0 | 0 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| Critical (15%) | -30 | -1 | 0 | 0 | 0 | 0 | 0 | 12 | 5 | -8 | -44 | -30 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 48-4. Hamilton City Diversion - Glenn Colusa Canal, Monthly Diversion

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 866 | 556 | 284 | 127 | 68 | 84 | 552 | 2,340 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 846 | 535 | 268 | 86 | 68 | 65 | 527 | 2,305 | 2,621 | 2,607 | 2,131 | 633 |
| 30% | 828 | 509 | 239 | 75 | 68 | 50 | 493 | 2,277 | 2,571 | 2,563 | 2,090 | 633 |
| 40% | 810 | 470 | 224 | 75 | 68 | 35 | 467 | 2,250 | 2,483 | 2,538 | 2,040 | 630 |
| 50% | 783 | 437 | 202 | 75 | 68 | 21 | 451 | 2,225 | 2,416 | 2,538 | 1,981 | 628 |
| 60% | 763 | 417 | 181 | 75 | 68 | 20 | 427 | 2,173 | 2,347 | 2,525 | 1,928 | 613 |
| 70% | 735 | 380 | 161 | 75 | 67 | 20 | 411 | 2,086 | 2,328 | 2,521 | 1,917 | 603 |
| 80% | 709 | 338 | 158 | 75 | 66 | 20 | 391 | 2,013 | 2,277 | 2,468 | 1,862 | 585 |
| 90% | 649 | 314 | 158 | 75 | 53 | 20 | 306 | 1,853 | 2,226 | 2,318 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 764 | 438 | 210 | 84 | 67 | 43 | 443 | 2,146 | 2,437 | 2,512 | 1,993 | 592 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 797 | 450 | 227 | 81 | 67 | 32 | 402 | 2,123 | 2,267 | 2,558 | 2,143 | 617 |
| Above Normal (16%) | 783 | 448 | 202 | 76 | 65 | 28 | 432 | 2,101 | 2,365 | 2,528 | 2,023 | 616 |
| Below Normal (13%) | 772 | 454 | 212 | 98 | 73 | 63 | 472 | 2,184 | 2,568 | 2,569 | 1,995 | 583 |
| Dry (24%) | 785 | 424 | 218 | 85 | 66 | 43 | 447 | 2,215 | 2,644 | 2,532 | 1,910 | 605 |
| Critical (15%) | 630 | 411 | 166 | 84 | 66 | 65 | 510 | 2,095 | 2,418 | 2,313 | 1,772 | 501 |

## Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 610 | 801 | 292 | 127 | 68 | 84 | 552 | 2,340 | 2,705 | 2,617 | 2,241 | 633 |
| 20% | 605 | 788 | 270 | 86 | 68 | 65 | 527 | 2,313 | 2,621 | 2,615 | 2,135 | 633 |
| 30% | 598 | 758 | 240 | 75 | 68 | 50 | 493 | 2,274 | 2,571 | 2,563 | 2,093 | 633 |
| 40% | 586 | 724 | 224 | 75 | 68 | 35 | 467 | 2,250 | 2,483 | 2,538 | 2,065 | 630 |
| 50% | 572 | 685 | 202 | 75 | 68 | 21 | 451 | 2,225 | 2,416 | 2,538 | 1,982 | 628 |
| 60% | 555 | 658 | 181 | 75 | 68 | 20 | 427 | 2,154 | 2,340 | 2,524 | 1,924 | 613 |
| 70% | 539 | 619 | 161 | 75 | 67 | 20 | 411 | 2,086 | 2,327 | 2,518 | 1,911 | 603 |
| 80% | 516 | 586 | 158 | 75 | 66 | 20 | 391 | 2,007 | 2,277 | 2,443 | 1,855 | 554 |
| 90% | 453 | 556 | 158 | 75 | 53 | 20 | 306 | 1,853 | 2,226 | 2,318 | 1,795 | 504 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 551 | 684 | 211 | 84 | 67 | 43 | 443 | 2,145 | 2,434 | 2,509 | 2,001 | 590 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 575 | 704 | 227 | 81 | 67 | 31 | 402 | 2,122 | 2,264 | 2,565 | 2,169 | 618 |
| Above Normal (16%) | 562 | 702 | 207 | 76 | 65 | 28 | 432 | 2,098 | 2,359 | 2,537 | 2,054 | 616 |
| Below Normal (13%) | 553 | 702 | 212 | 98 | 73 | 63 | 472 | 2,181 | 2,564 | 2,543 | 1,984 | 574 |
| Dry (24%) | 572 | 678 | 218 | 85 | 66 | 43 | 447 | 2,215 | 2,643 | 2,527 | 1,901 | 601 |
| Critical (15%) | 447 | 617 | 166 | 84 | 66 | 65 | 512 | 2,095 | 2,418 | 2,297 | 1,762 | 500 |

## Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -255 | 245 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | -241 | 253 | 1 | 0 | 0 | 0 | 0 | 8 | 0 | 7 | 5 | 0 |
| 30% | -229 | 248 | 2 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 3 | 0 |
| 40% | -224 | 254 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 |
| 50% | -211 | 248 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 60% | -207 | 241 | 0 | 0 | 0 | 0 | 0 | -19 | -7 | -2 | -4 | 0 |
| 70% | -196 | 239 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -3 | -7 | 0 |
| 80% | -193 | 248 | 0 | 0 | 0 | 0 | 0 | -6 | 0 | -25 | -8 | -31 |
| 90% | -197 | 242 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -213 | 246 | 1 | 0 | 0 | 0 | 0 | -1 | -2 | -3 | 8 | -2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -221 | 254 | 0 | 0 | 0 | -1 | 0 | -2 | -3 | 8 | 26 | 1 |
| Above Normal (16%) | -221 | 254 | 5 | 0 | 0 | 0 | 0 | -3 | -6 | 8 | 31 | 0 |
| Below Normal (13%) | -220 | 248 | 0 | 0 | 0 | 0 | 0 | -4 | -4 | -26 | -11 | -9 |
| Dry (24%) | -212 | 255 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -9 | -4 |
| Critical (15%) | -183 | 206 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | -15 | -11 | -1 |

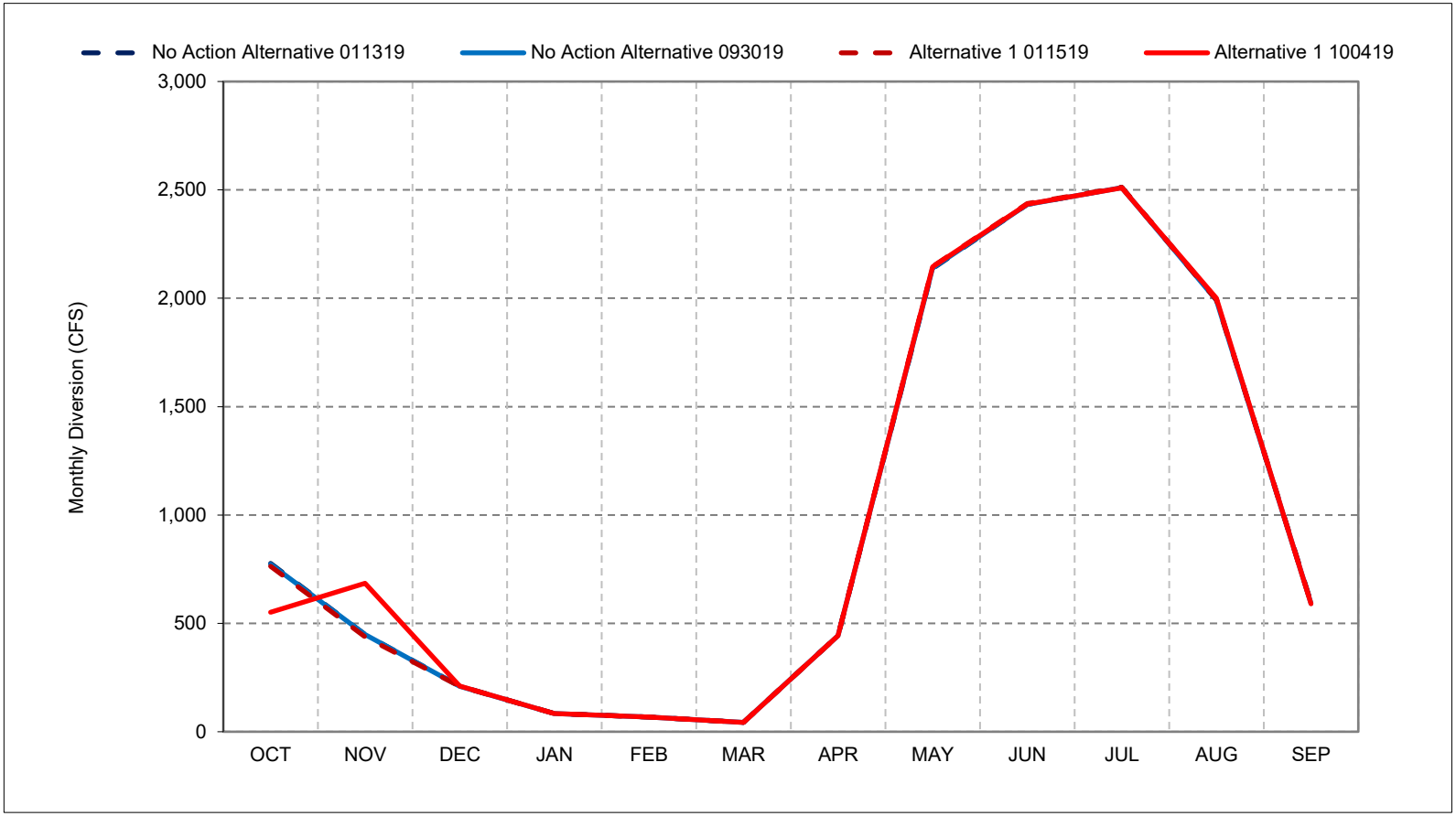
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-1. Hamilton City Diversion - Glenn Colusa Canal, Long-Term Average Diversion

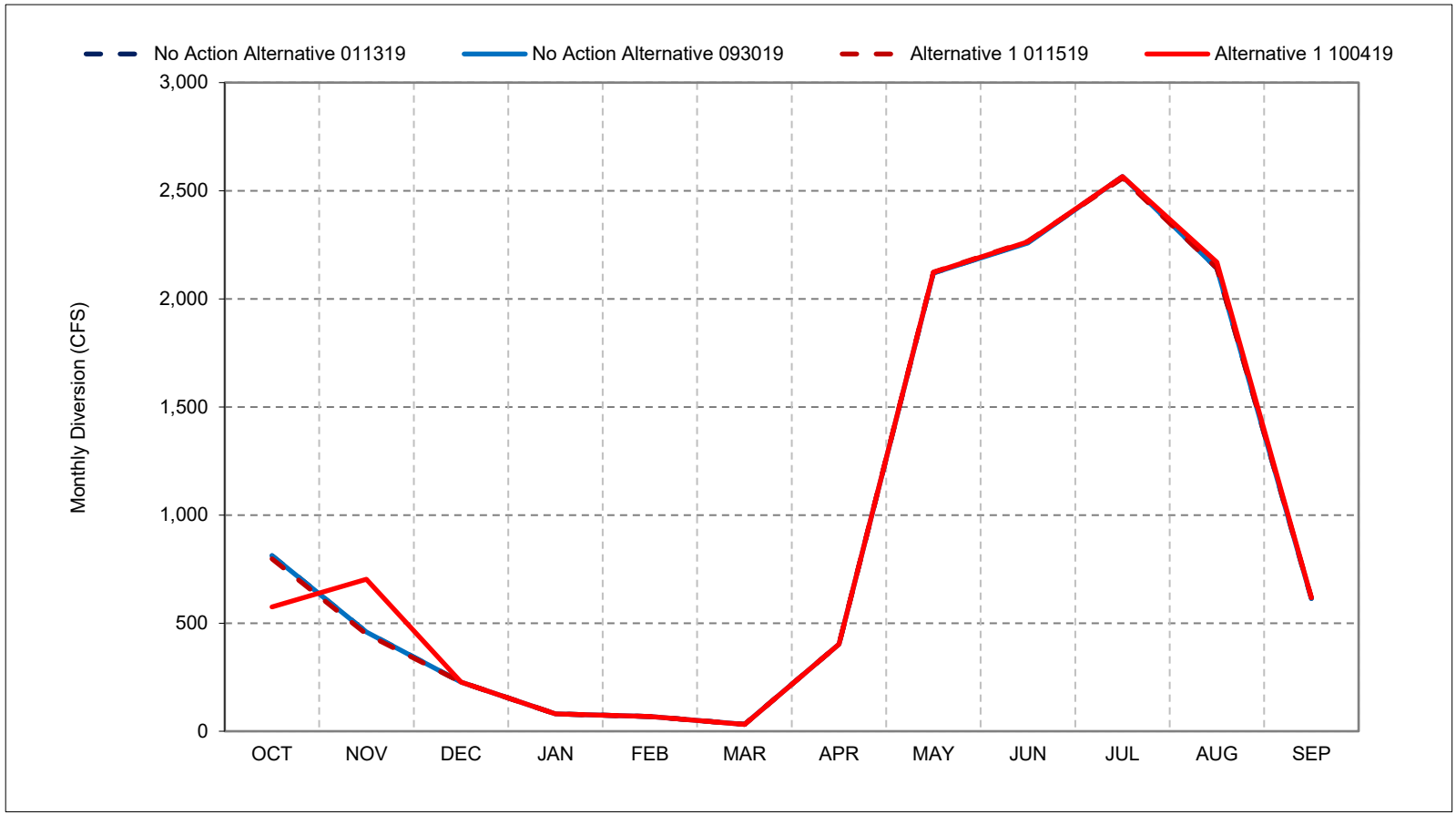



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-2. Hamilton City Diversion - Glenn Colusa Canal, Wet Year Average Diversion

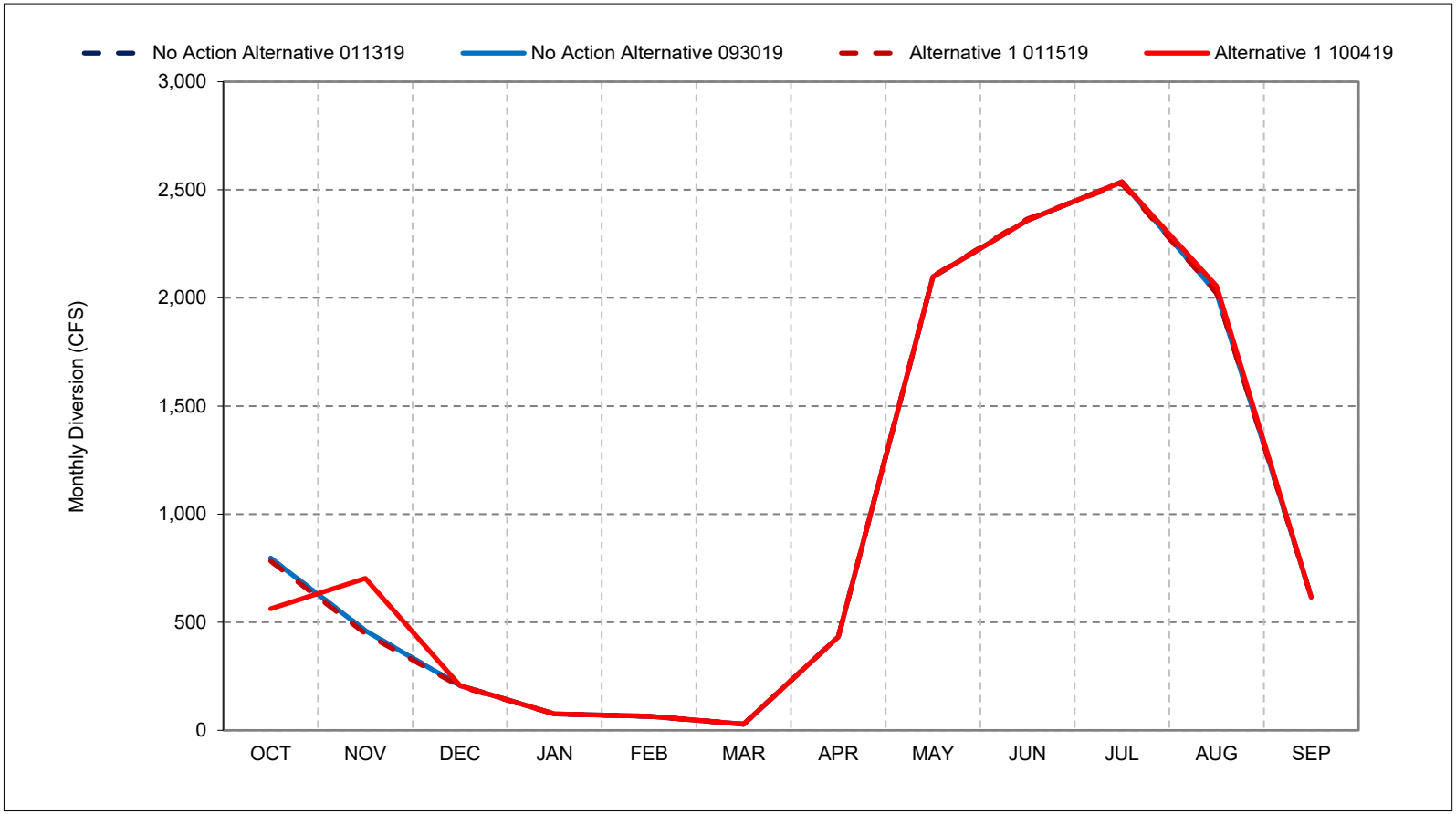



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-3. Hamilton City Diversion - Glenn Colusa Canal, Above Normal Year Average Diversion

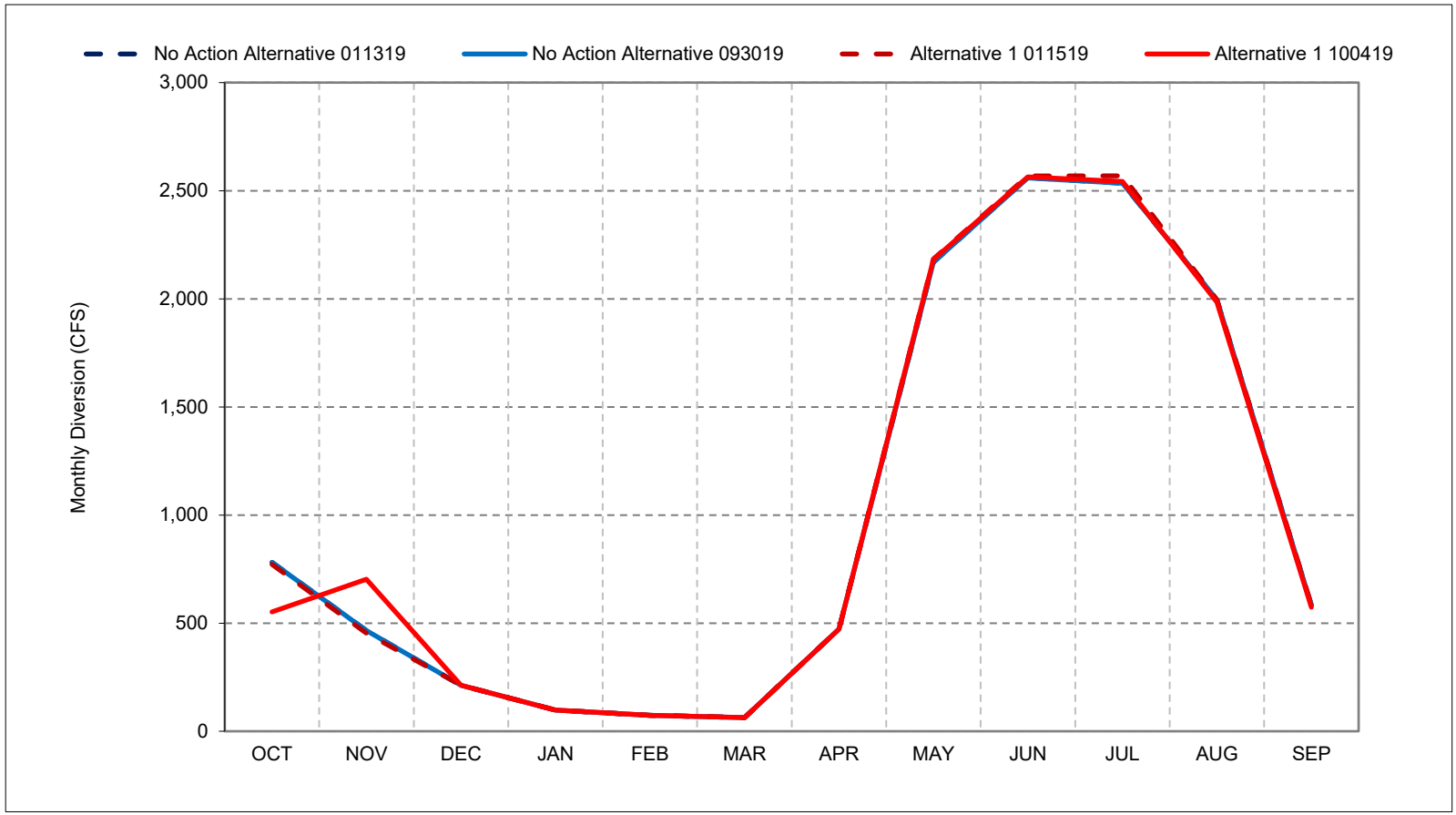



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-4. Hamilton City Diversion - Glenn Colusa Canal, Below Normal Year Average Diversion

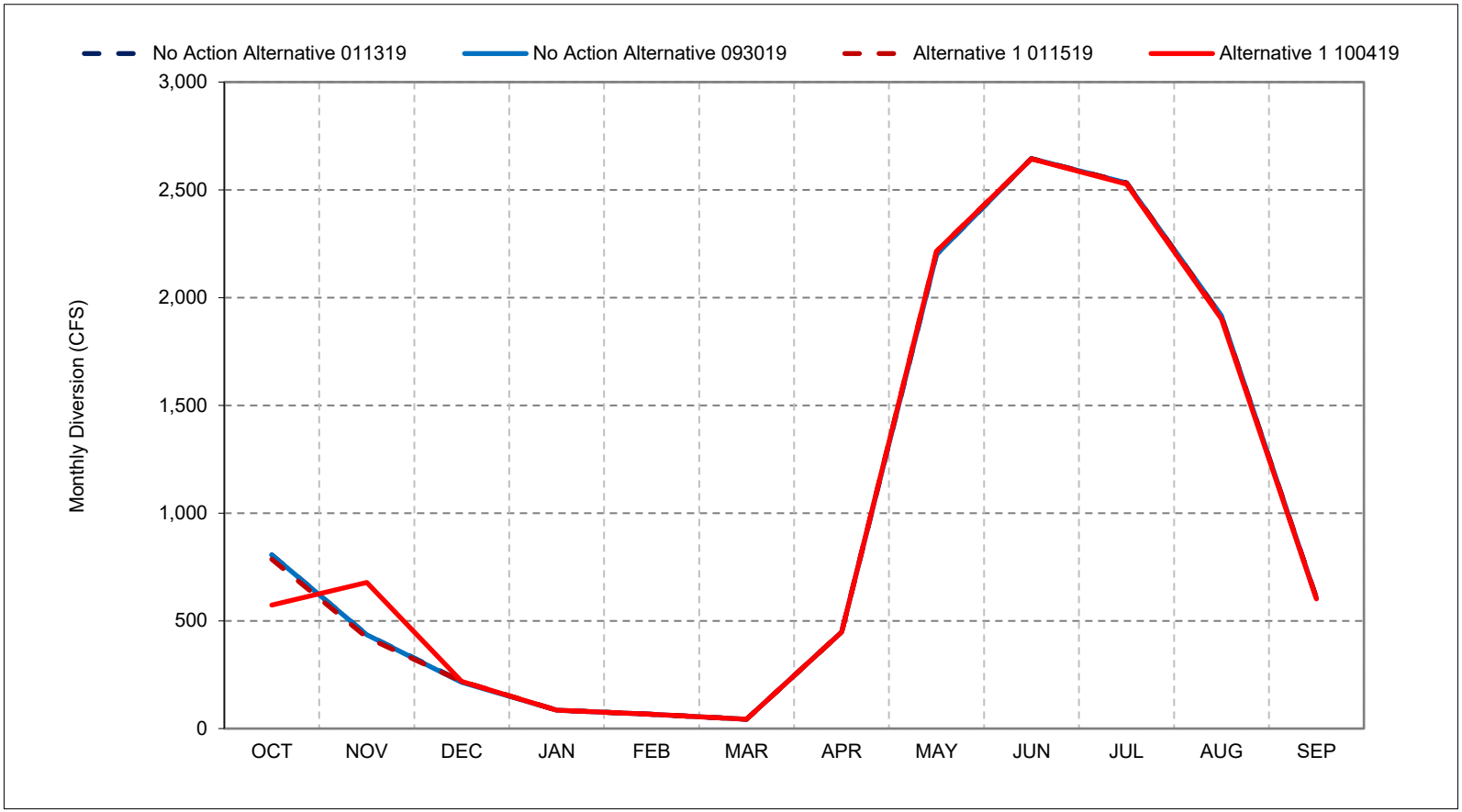



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-5. Hamilton City Diversion - Glenn Colusa Canal, Dry Year Average Diversion

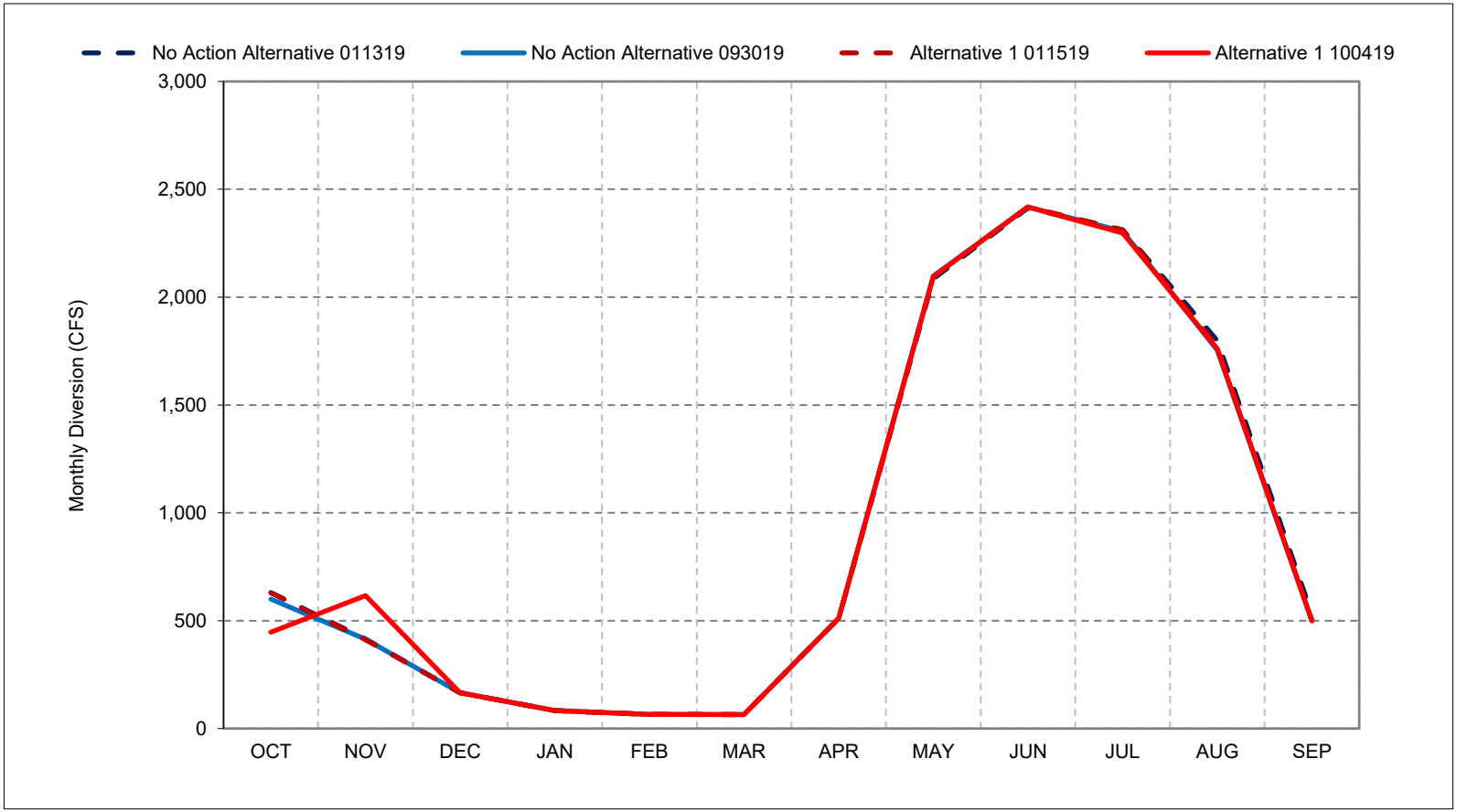



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 48-6. Hamilton City Diversion - Glenn Colusa Canal, Critical Year Average Diversion

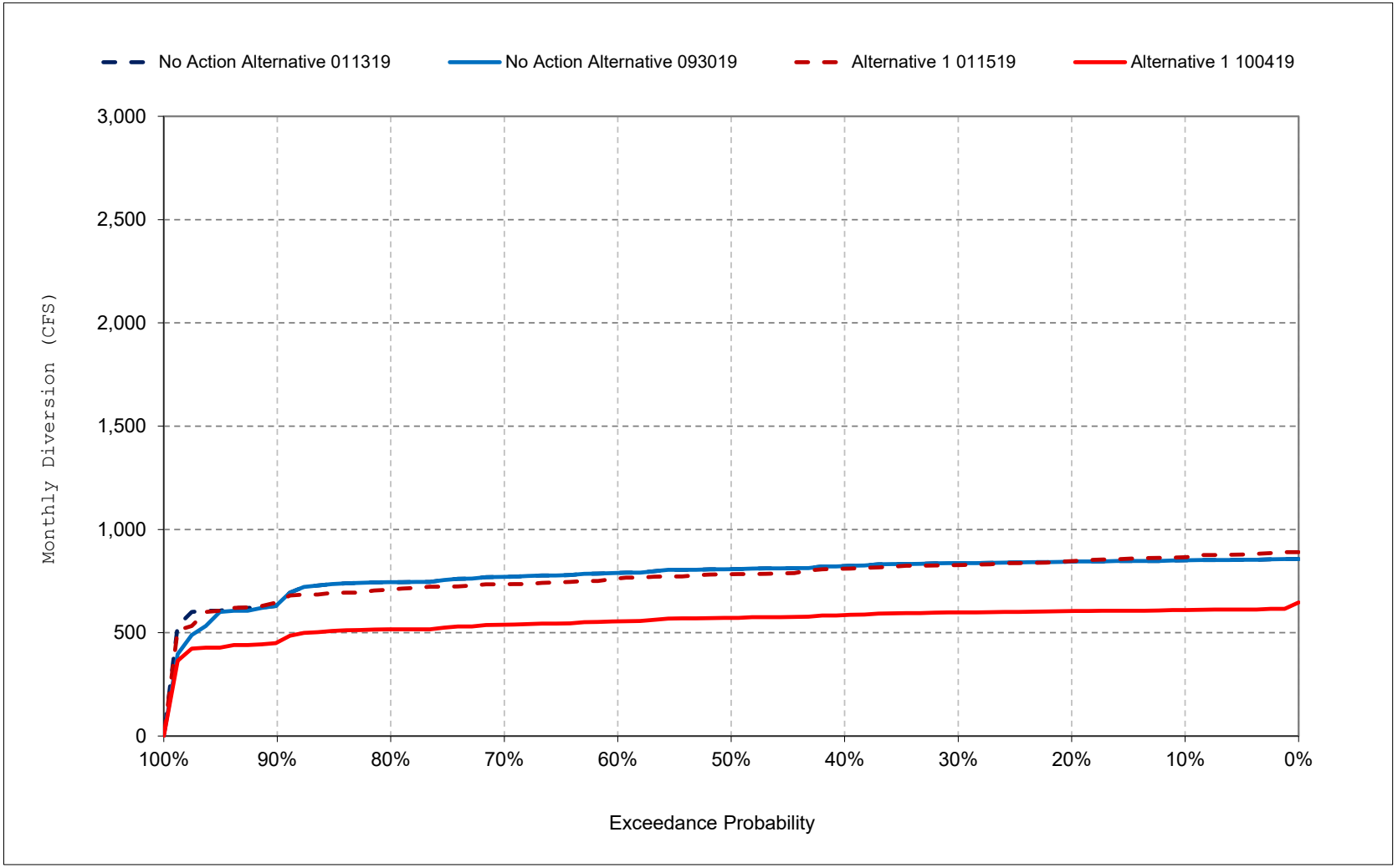



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

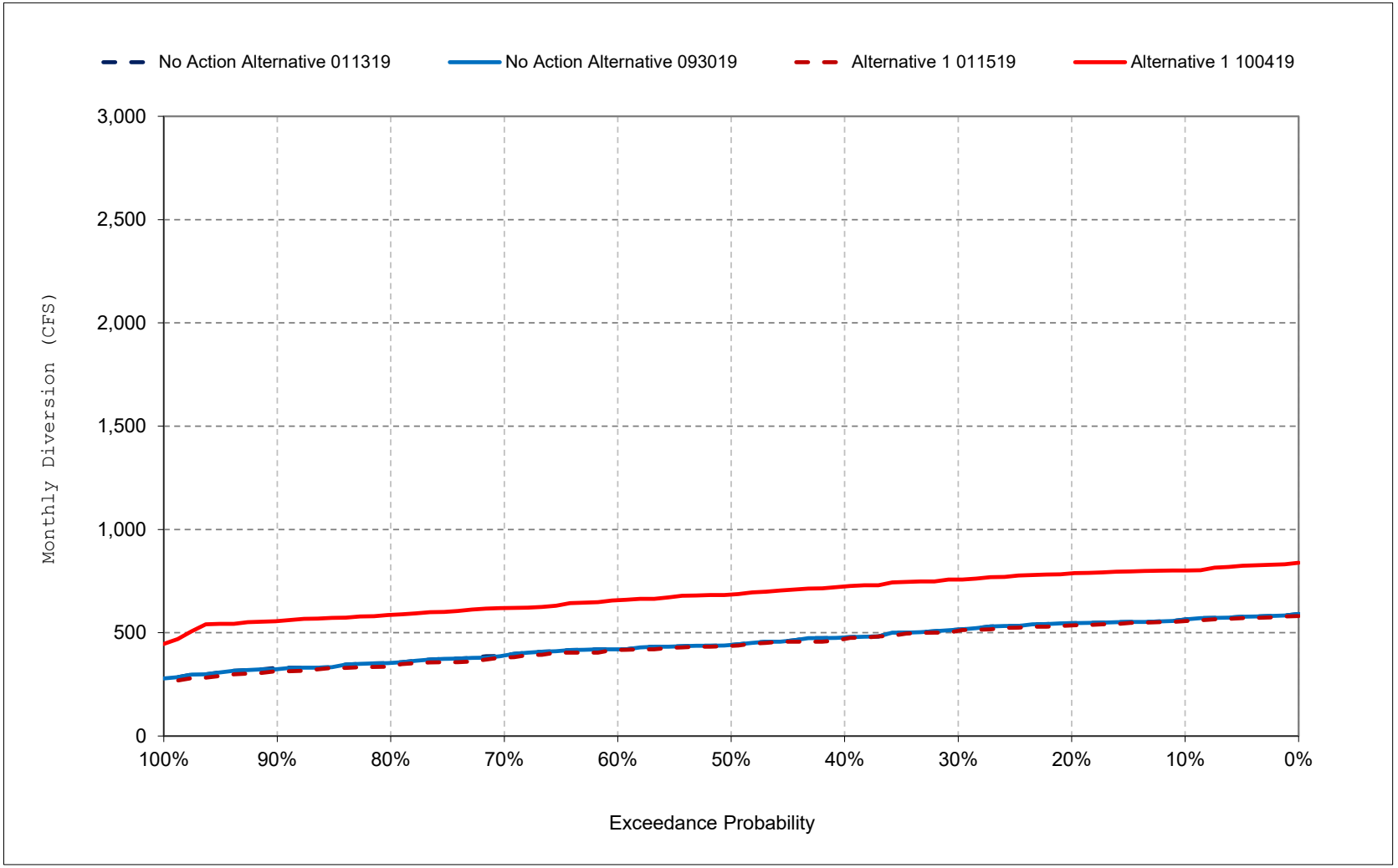
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-7. Hamilton City Diversion - Glenn Colusa Canal, October**



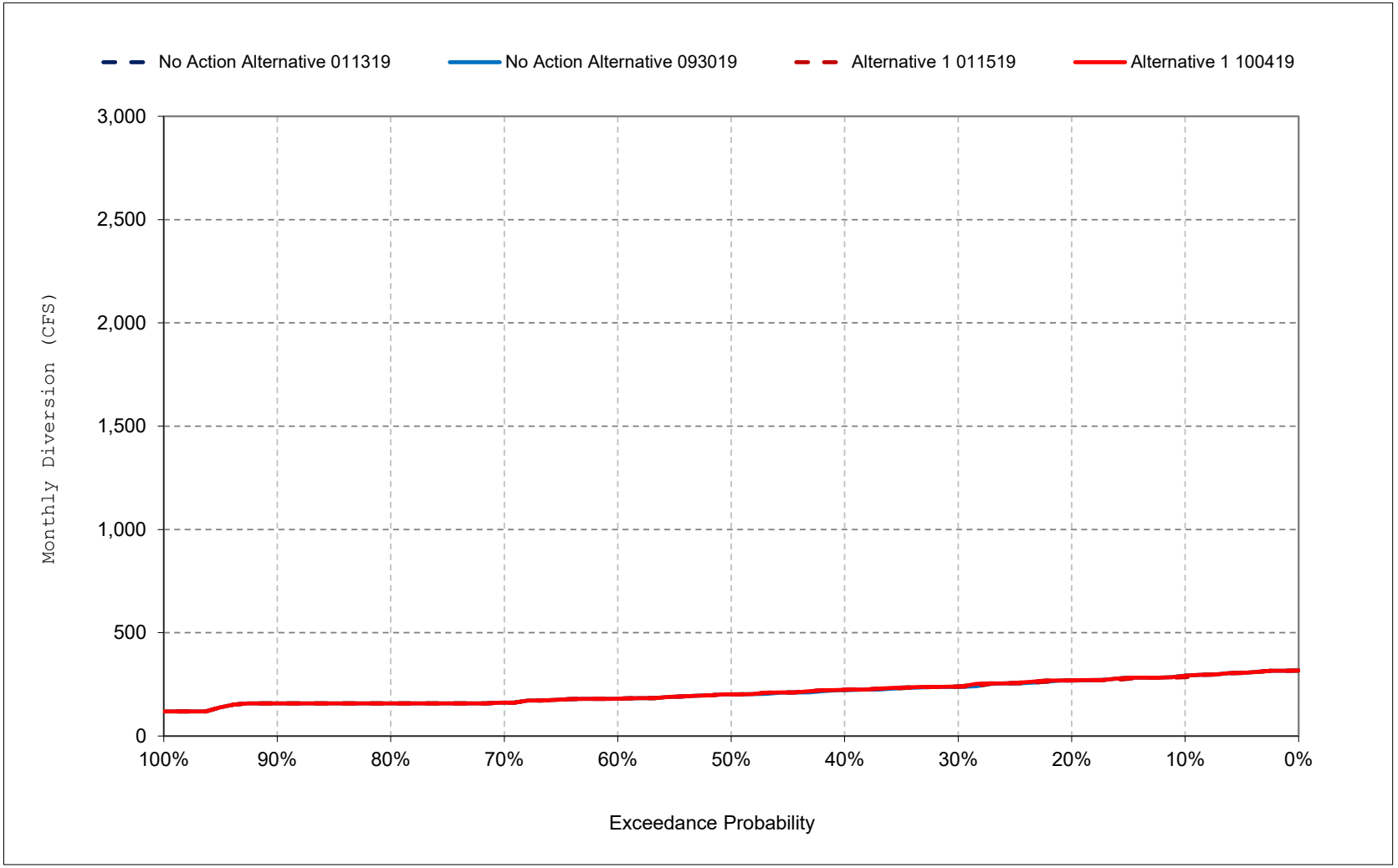

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-8. Hamilton City Diversion - Glenn Colusa Canal, November**



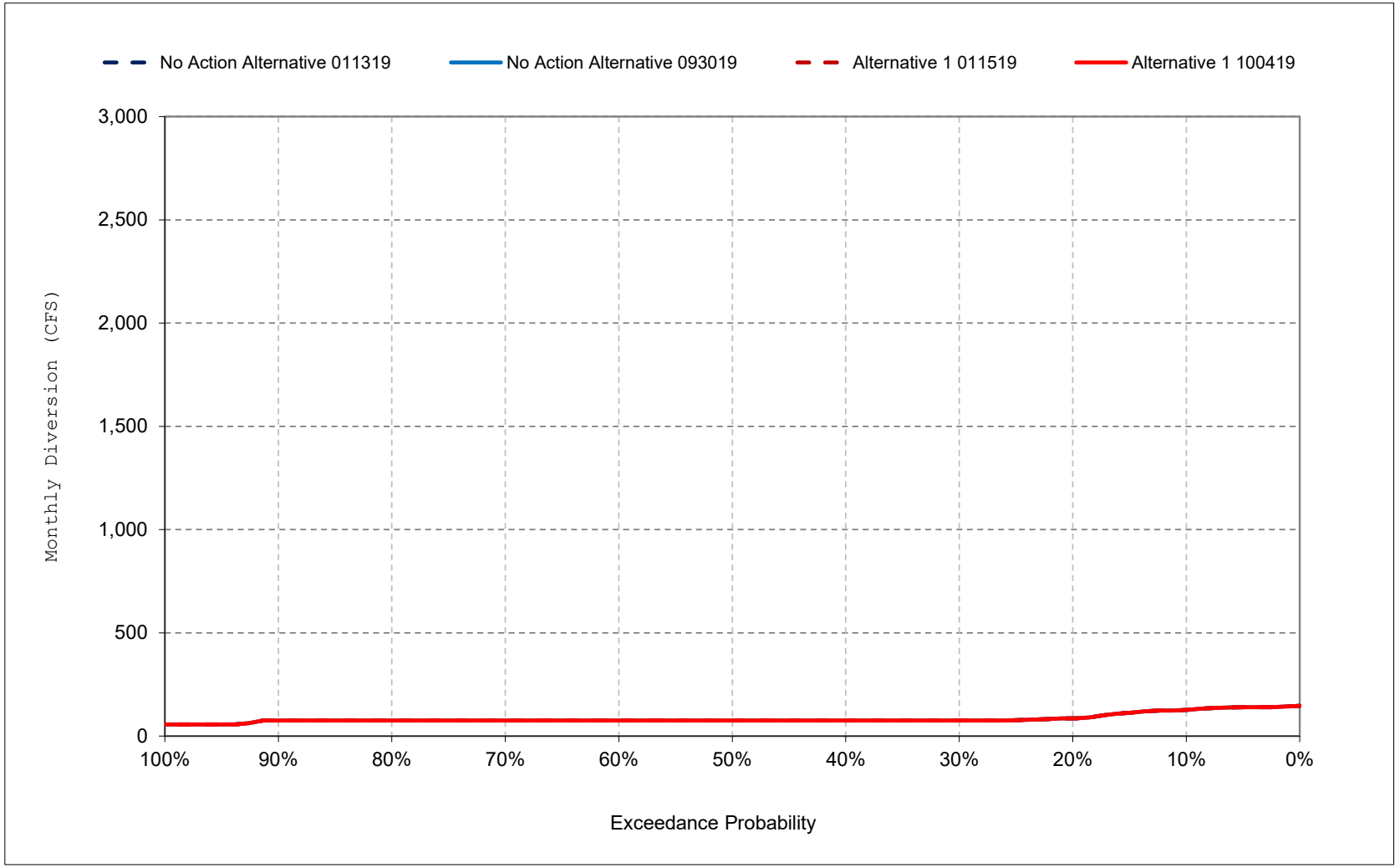

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-9. Hamilton City Diversion - Glenn Colusa Canal, December**



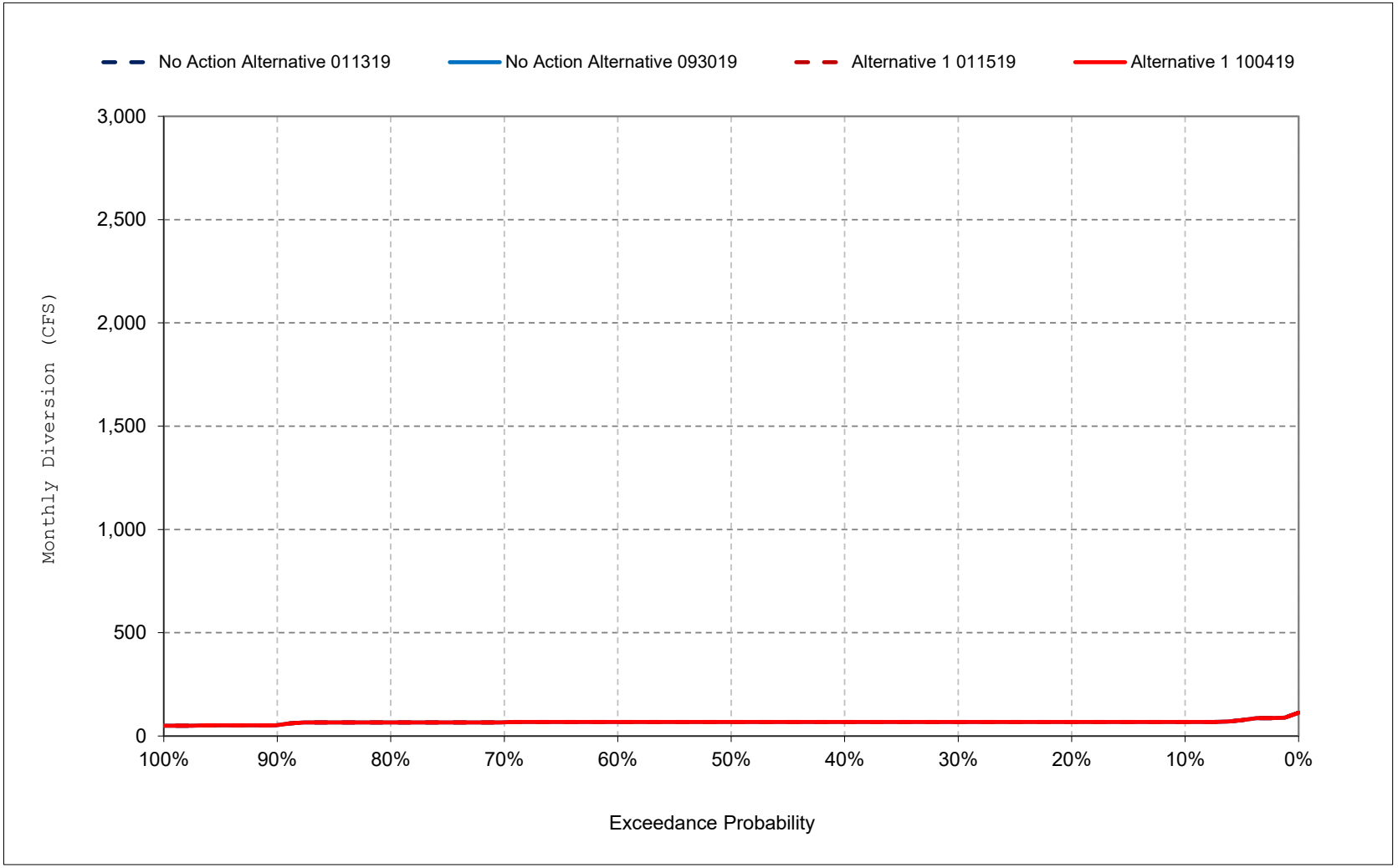

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-10. Hamilton City Diversion - Glenn Colusa Canal, January**



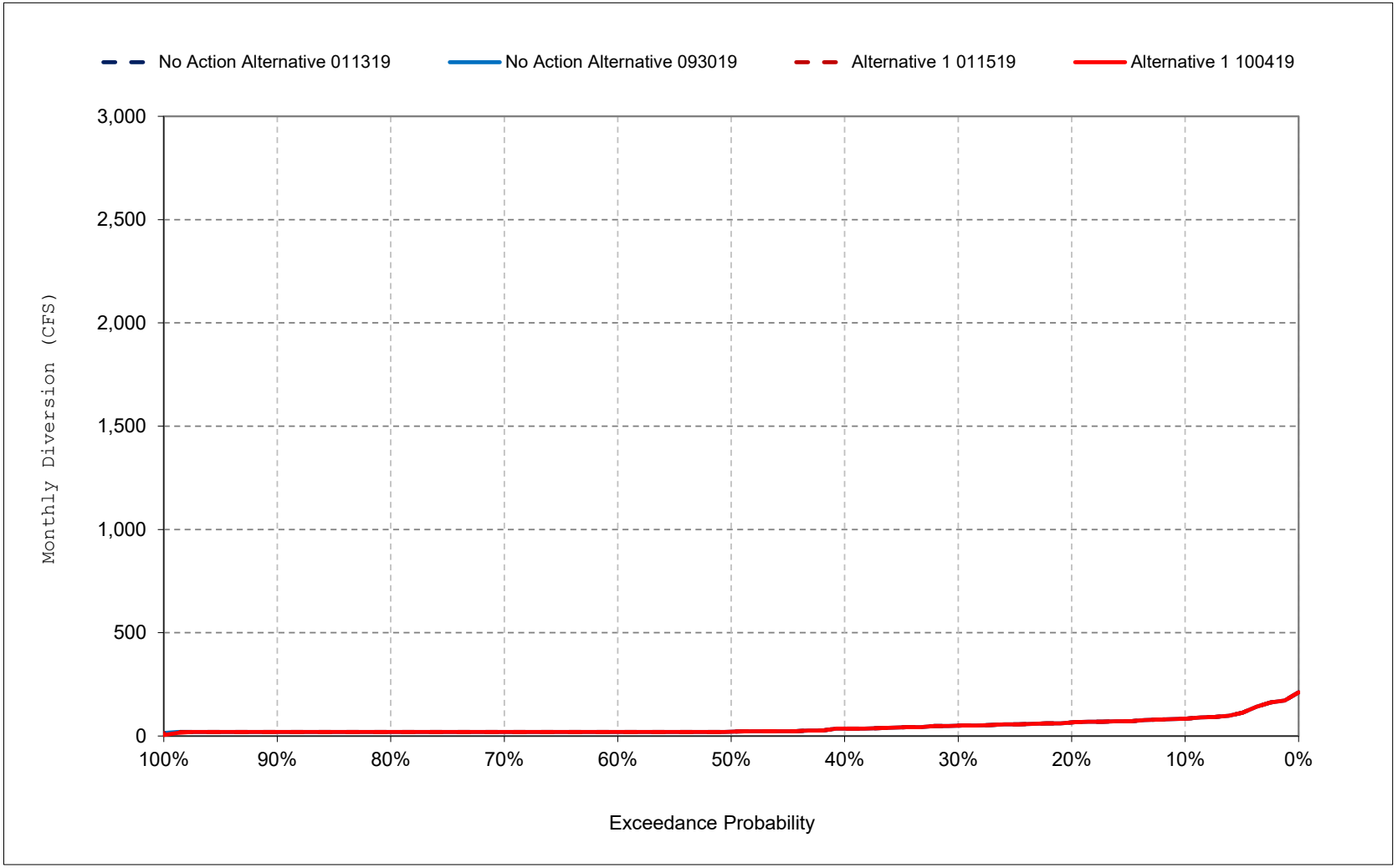

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-11. Hamilton City Diversion - Glenn Colusa Canal, February**



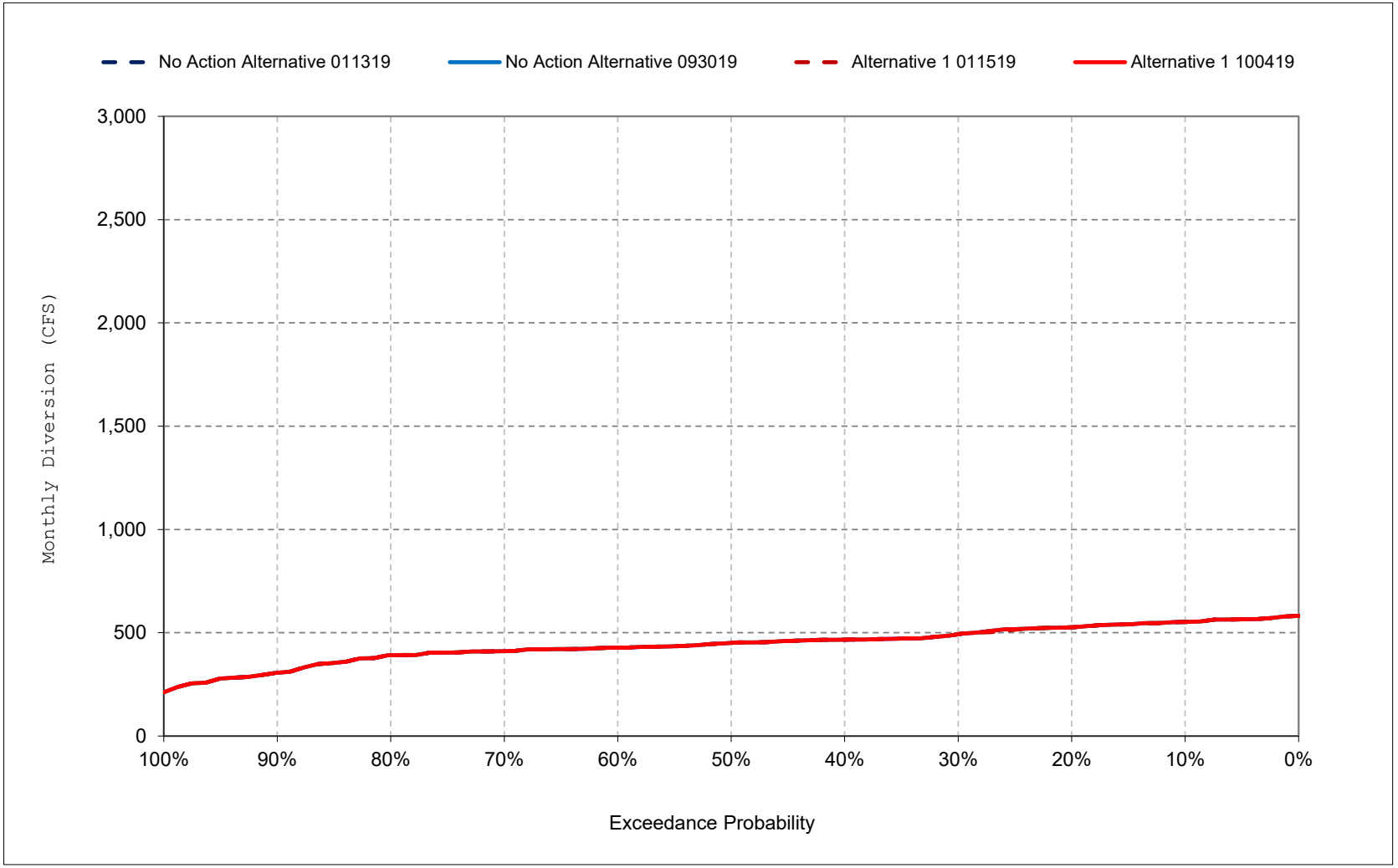

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-12. Hamilton City Diversion - Glenn Colusa Canal, March**



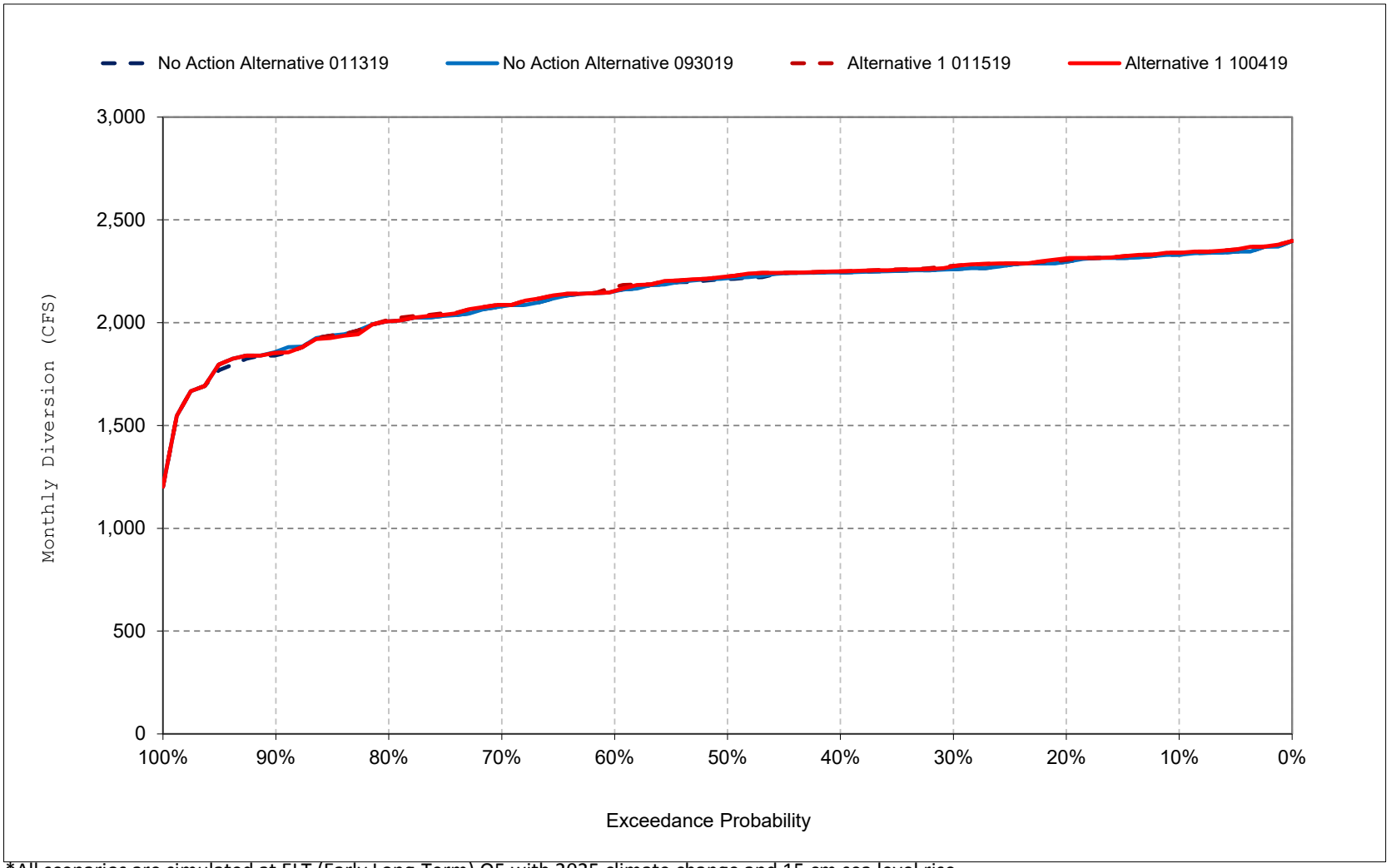

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-13. Hamilton City Diversion - Glenn Colusa Canal, April**



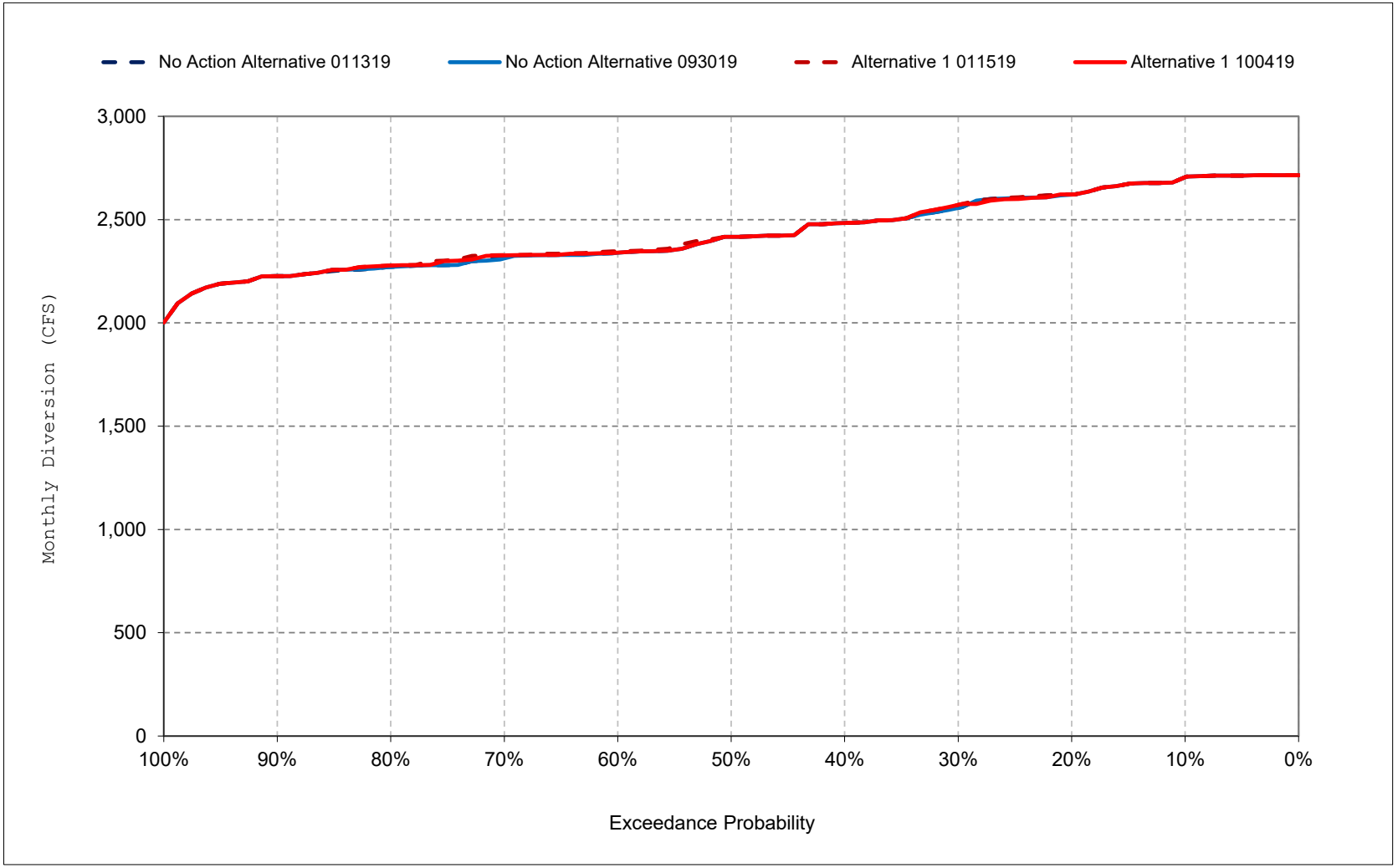

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-14. Hamilton City Diversion - Glenn Colusa Canal, May**



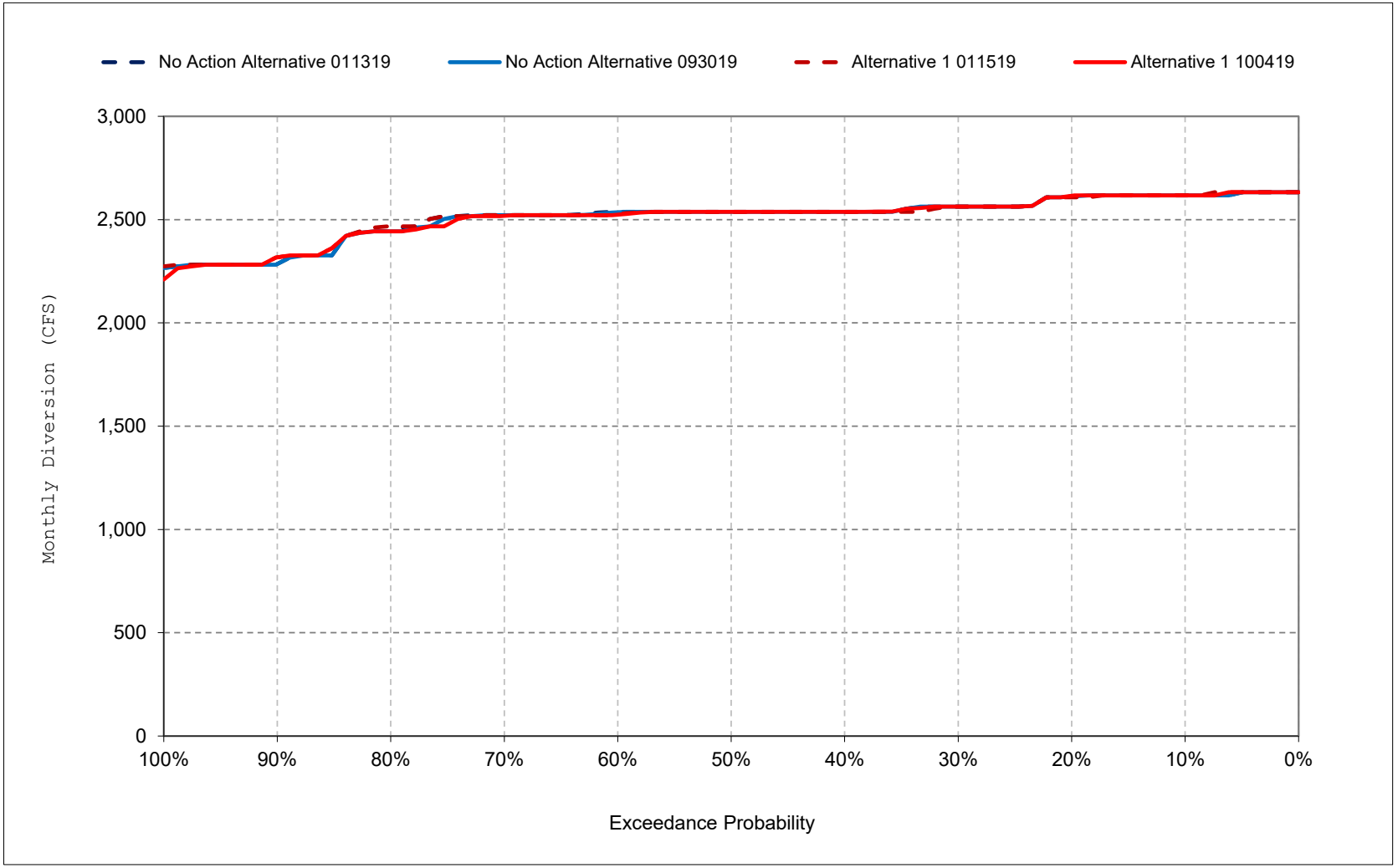

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-15. Hamilton City Diversion - Glenn Colusa Canal, June**



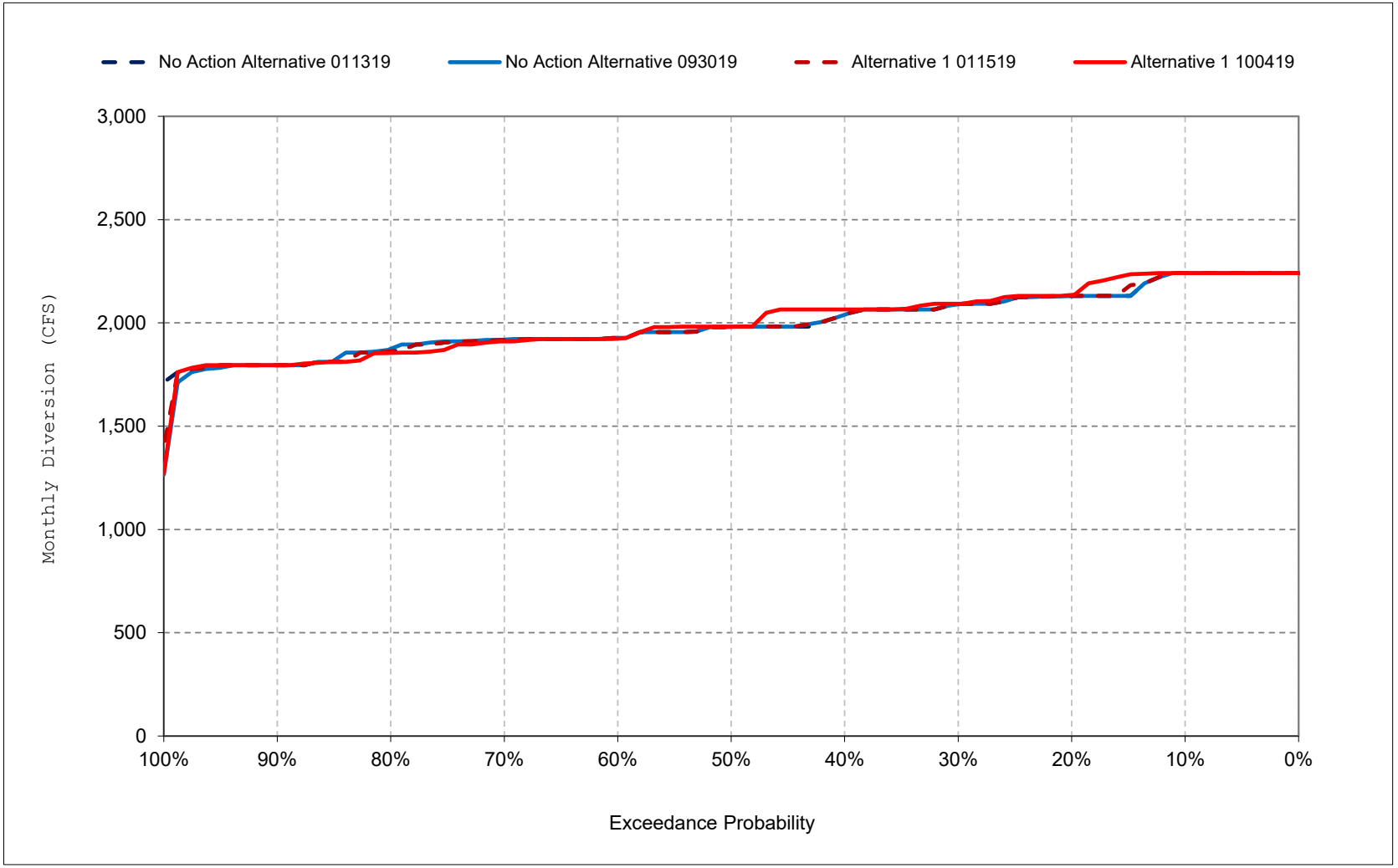

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-16. Hamilton City Diversion - Glenn Colusa Canal, July**



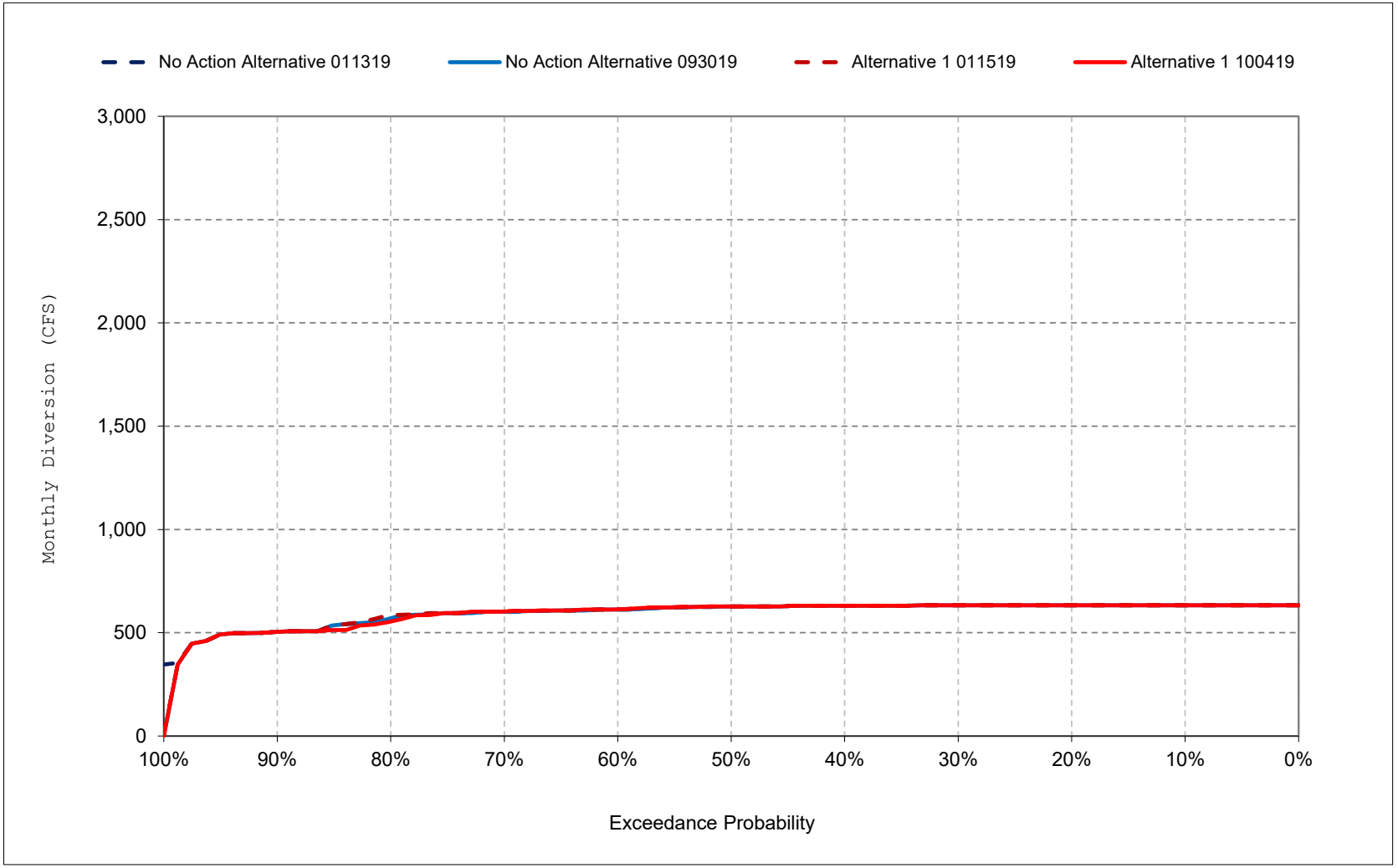

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-17. Hamilton City Diversion - Glenn Colusa Canal, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 48-18. Hamilton City Diversion - Glenn Colusa Canal, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 49-1. Folsom South Canal Diversion, Monthly Diversion

### No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 113 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 30% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 112 | 105 | 97 |
| 40% | 65 | 63 | 51 | 51 | 55 | 58 | 75 | 84 | 99 | 111 | 104 | 96 |
| 50% | 64 | 62 | 49 | 49 | 54 | 55 | 73 | 83 | 97 | 109 | 102 | 93 |
| 60% | 60 | 57 | 46 | 46 | 51 | 53 | 68 | 77 | 89 | 100 | 94 | 86 |
| 70% | 56 | 54 | 43 | 43 | 48 | 52 | 67 | 72 | 85 | 95 | 89 | 82 |
| 80% | 55 | 54 | 43 | 43 | 47 | 52 | 66 | 72 | 84 | 95 | 88 | 81 |
| 90% | 54 | 53 | 42 | 42 | 46 | 50 | 64 | 69 | 82 | 92 | 86 | 79 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 61 | 59 | 47 | 47 | 52 | 56 | 71 | 79 | 93 | 103 | 97 | 89 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 49 | 55 | 61 | 75 | 84 | 100 | 112 | 104 | 96 |
| Above Normal (16%) | 66 | 63 | 50 | 46 | 51 | 59 | 77 | 84 | 99 | 111 | 104 | 96 |
| Below Normal (13%) | 61 | 59 | 47 | 48 | 52 | 54 | 71 | 79 | 92 | 104 | 97 | 89 |
| Dry (24%) | 57 | 55 | 44 | 47 | 52 | 51 | 66 | 74 | 86 | 97 | 91 | 83 |
| Critical (15%) | 55 | 52 | 42 | 43 | 47 | 51 | 65 | 69 | 82 | 88 | 86 | 79 |

### Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 79 | 85 | 100 | 113 | 105 | 97 |
| 30% | 67 | 64 | 51 | 51 | 56 | 61 | 78 | 85 | 100 | 113 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 58 | 74 | 84 | 100 | 112 | 105 | 96 |
| 60% | 64 | 63 | 50 | 50 | 55 | 54 | 71 | 83 | 99 | 111 | 104 | 95 |
| 70% | 57 | 54 | 43 | 43 | 48 | 53 | 67 | 73 | 86 | 96 | 90 | 82 |
| 80% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 85 | 95 | 89 | 81 |
| 90% | 55 | 54 | 43 | 43 | 46 | 51 | 65 | 71 | 83 | 94 | 88 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 60 | 48 | 48 | 53 | 57 | 72 | 80 | 94 | 105 | 99 | 91 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 76 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 48 | 52 | 60 | 77 | 84 | 100 | 112 | 104 | 96 |
| Below Normal (13%) | 65 | 62 | 50 | 48 | 53 | 58 | 75 | 83 | 98 | 110 | 103 | 94 |
| Dry (24%) | 58 | 56 | 45 | 48 | 53 | 52 | 68 | 75 | 88 | 99 | 93 | 85 |
| Critical (15%) | 55 | 53 | 42 | 44 | 48 | 51 | 66 | 70 | 83 | 91 | 87 | 80 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 30% | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 40% | 1 | 0 | 0 | 0 | 2 | 3 | 2 | 0 | 1 | 1 | 1 | 1 |
| 50% | 1 | 1 | 2 | 2 | 1 | 3 | 1 | 0 | 3 | 3 | 3 | 3 |
| 60% | 4 | 6 | 5 | 5 | 4 | 1 | 3 | 5 | 9 | 10 | 10 | 8 |
| 70% | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 80% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 90% | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 2 | 2 | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 4 | 3 | 3 | 0 | 0 | 3 | 4 | 3 | 5 | 6 | 6 | 5 |
| Dry (24%) | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 |
| Critical (15%) | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 49-2. Folsom South Canal Diversion, Monthly Diversion

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 61 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 30% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 112 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 58 | 75 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 54 | 73 | 83 | 99 | 112 | 104 | 96 |
| 60% | 60 | 56 | 45 | 45 | 50 | 53 | 68 | 75 | 89 | 100 | 93 | 86 |
| 70% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 85 | 95 | 89 | 82 |
| 80% | 55 | 54 | 43 | 43 | 47 | 52 | 66 | 72 | 84 | 95 | 88 | 81 |
| 90% | 54 | 53 | 42 | 42 | 46 | 49 | 64 | 70 | 82 | 92 | 86 | 79 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 59 | 47 | 47 | 52 | 56 | 71 | 79 | 93 | 104 | 98 | 90 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 75 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 46 | 50 | 59 | 77 | 84 | 99 | 112 | 104 | 96 |
| Below Normal (13%) | 62 | 60 | 48 | 48 | 52 | 54 | 71 | 79 | 94 | 105 | 98 | 90 |
| Dry (24%) | 57 | 55 | 44 | 48 | 52 | 51 | 66 | 74 | 87 | 97 | 91 | 83 |
| Critical (15%) | 54 | 52 | 42 | 43 | 47 | 50 | 65 | 69 | 82 | 88 | 86 | 79 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 78 | 85 | 100 | 113 | 105 | 97 |
| 30% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 61 | 76 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 57 | 74 | 84 | 100 | 112 | 105 | 96 |
| 60% | 64 | 64 | 51 | 51 | 55 | 53 | 70 | 81 | 99 | 111 | 104 | 95 |
| 70% | 57 | 54 | 43 | 43 | 48 | 52 | 67 | 72 | 85 | 96 | 89 | 82 |
| 80% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 84 | 95 | 89 | 81 |
| 90% | 55 | 54 | 43 | 43 | 46 | 51 | 65 | 71 | 83 | 94 | 88 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 60 | 48 | 48 | 53 | 57 | 72 | 80 | 94 | 106 | 99 | 91 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 75 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 47 | 52 | 60 | 77 | 84 | 99 | 112 | 104 | 96 |
| Below Normal (13%) | 65 | 62 | 50 | 48 | 53 | 57 | 74 | 83 | 98 | 110 | 103 | 94 |
| Dry (24%) | 58 | 56 | 45 | 48 | 53 | 52 | 67 | 75 | 88 | 99 | 92 | 85 |
| Critical (15%) | 55 | 53 | 42 | 44 | 48 | 51 | 66 | 70 | 83 | 92 | 87 | 80 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| 60% | 5 | 7 | 6 | 6 | 4 | 0 | 2 | 6 | 10 | 12 | 11 | 9 |
| 70% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 80% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 90% | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 2 | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 3 | 3 | 2 | 0 | 0 | 3 | 3 | 4 | 4 | 5 | 5 | 4 |
| Dry (24%) | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Critical (15%) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 49-3. Folsom South Canal Diversion, Monthly Diversion

### No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 113 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 30% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 112 | 105 | 97 |
| 40% | 65 | 63 | 51 | 51 | 55 | 58 | 75 | 84 | 99 | 111 | 104 | 96 |
| 50% | 64 | 62 | 49 | 49 | 54 | 55 | 73 | 83 | 97 | 109 | 102 | 93 |
| 60% | 60 | 57 | 46 | 46 | 51 | 53 | 68 | 77 | 89 | 100 | 94 | 86 |
| 70% | 56 | 54 | 43 | 43 | 48 | 52 | 67 | 72 | 85 | 95 | 89 | 82 |
| 80% | 55 | 54 | 43 | 43 | 47 | 52 | 66 | 72 | 84 | 95 | 88 | 81 |
| 90% | 54 | 53 | 42 | 42 | 46 | 50 | 64 | 69 | 82 | 92 | 86 | 79 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 61 | 59 | 47 | 47 | 52 | 56 | 71 | 79 | 93 | 103 | 97 | 89 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 49 | 55 | 61 | 75 | 84 | 100 | 112 | 104 | 96 |
| Above Normal (16%) | 66 | 63 | 50 | 46 | 51 | 59 | 77 | 84 | 99 | 111 | 104 | 96 |
| Below Normal (13%) | 61 | 59 | 47 | 48 | 52 | 54 | 71 | 79 | 92 | 104 | 97 | 89 |
| Dry (24%) | 57 | 55 | 44 | 47 | 52 | 51 | 66 | 74 | 86 | 97 | 91 | 83 |
| Critical (15%) | 55 | 52 | 42 | 43 | 47 | 51 | 65 | 69 | 82 | 88 | 86 | 79 |

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 61 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 30% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 112 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 58 | 75 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 54 | 73 | 83 | 99 | 112 | 104 | 96 |
| 60% | 60 | 56 | 45 | 45 | 50 | 53 | 68 | 75 | 89 | 100 | 93 | 86 |
| 70% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 85 | 95 | 89 | 82 |
| 80% | 55 | 54 | 43 | 43 | 47 | 52 | 66 | 72 | 84 | 95 | 88 | 81 |
| 90% | 54 | 53 | 42 | 42 | 46 | 49 | 64 | 70 | 82 | 92 | 86 | 79 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 59 | 47 | 47 | 52 | 56 | 71 | 79 | 93 | 104 | 98 | 90 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 75 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 46 | 50 | 59 | 77 | 84 | 99 | 112 | 104 | 96 |
| Below Normal (13%) | 62 | 60 | 48 | 48 | 52 | 54 | 71 | 79 | 94 | 105 | 98 | 90 |
| Dry (24%) | 57 | 55 | 44 | 48 | 52 | 51 | 66 | 74 | 87 | 97 | 91 | 83 |
| Critical (15%) | 54 | 52 | 42 | 43 | 47 | 50 | 65 | 69 | 82 | 88 | 86 | 79 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 50% | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 3 | 3 | 3 | 3 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -1 | -1 | -1 | -1 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 1 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 49-4. Folsom South Canal Diversion, Monthly Diversion

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 79 | 85 | 100 | 113 | 105 | 97 |
| 30% | 67 | 64 | 51 | 51 | 56 | 61 | 78 | 85 | 100 | 113 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 61 | 77 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 58 | 74 | 84 | 100 | 112 | 105 | 96 |
| 60% | 64 | 63 | 50 | 50 | 55 | 54 | 71 | 83 | 99 | 111 | 104 | 95 |
| 70% | 57 | 54 | 43 | 43 | 48 | 53 | 67 | 73 | 86 | 96 | 90 | 82 |
| 80% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 85 | 95 | 89 | 81 |
| 90% | 55 | 54 | 43 | 43 | 46 | 51 | 65 | 71 | 83 | 94 | 88 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 60 | 48 | 48 | 53 | 57 | 72 | 80 | 94 | 105 | 99 | 91 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 76 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 48 | 52 | 60 | 77 | 84 | 100 | 112 | 104 | 96 |
| Below Normal (13%) | 65 | 62 | 50 | 48 | 53 | 58 | 75 | 83 | 98 | 110 | 103 | 94 |
| Dry (24%) | 58 | 56 | 45 | 48 | 53 | 52 | 68 | 75 | 88 | 99 | 93 | 85 |
| Critical (15%) | 55 | 53 | 42 | 44 | 48 | 51 | 66 | 70 | 83 | 91 | 87 | 80 |

## Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67 | 64 | 51 | 51 | 56 | 62 | 79 | 85 | 101 | 114 | 106 | 97 |
| 20% | 67 | 64 | 51 | 51 | 56 | 61 | 78 | 85 | 100 | 113 | 105 | 97 |
| 30% | 67 | 64 | 51 | 51 | 56 | 61 | 77 | 85 | 100 | 113 | 105 | 97 |
| 40% | 66 | 64 | 51 | 51 | 56 | 61 | 76 | 84 | 100 | 112 | 105 | 97 |
| 50% | 65 | 64 | 51 | 51 | 55 | 57 | 74 | 84 | 100 | 112 | 105 | 96 |
| 60% | 64 | 64 | 51 | 51 | 55 | 53 | 70 | 81 | 99 | 111 | 104 | 95 |
| 70% | 57 | 54 | 43 | 43 | 48 | 52 | 67 | 72 | 85 | 96 | 89 | 82 |
| 80% | 56 | 54 | 43 | 43 | 48 | 52 | 66 | 72 | 84 | 95 | 89 | 81 |
| 90% | 55 | 54 | 43 | 43 | 46 | 51 | 65 | 71 | 83 | 94 | 88 | 81 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 60 | 48 | 48 | 53 | 57 | 72 | 80 | 94 | 106 | 99 | 91 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 66 | 63 | 51 | 50 | 55 | 61 | 75 | 84 | 100 | 112 | 105 | 96 |
| Above Normal (16%) | 66 | 63 | 51 | 47 | 52 | 60 | 77 | 84 | 99 | 112 | 104 | 96 |
| Below Normal (13%) | 65 | 62 | 50 | 48 | 53 | 57 | 74 | 83 | 98 | 110 | 103 | 94 |
| Dry (24%) | 58 | 56 | 45 | 48 | 53 | 52 | 67 | 75 | 88 | 99 | 92 | 85 |
| Critical (15%) | 55 | 53 | 42 | 44 | 48 | 51 | 66 | 70 | 83 | 92 | 87 | 80 |

## Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 1 | 1 | 1 | 0 | -1 | -1 | -1 | 0 | 1 | 1 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | -1 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

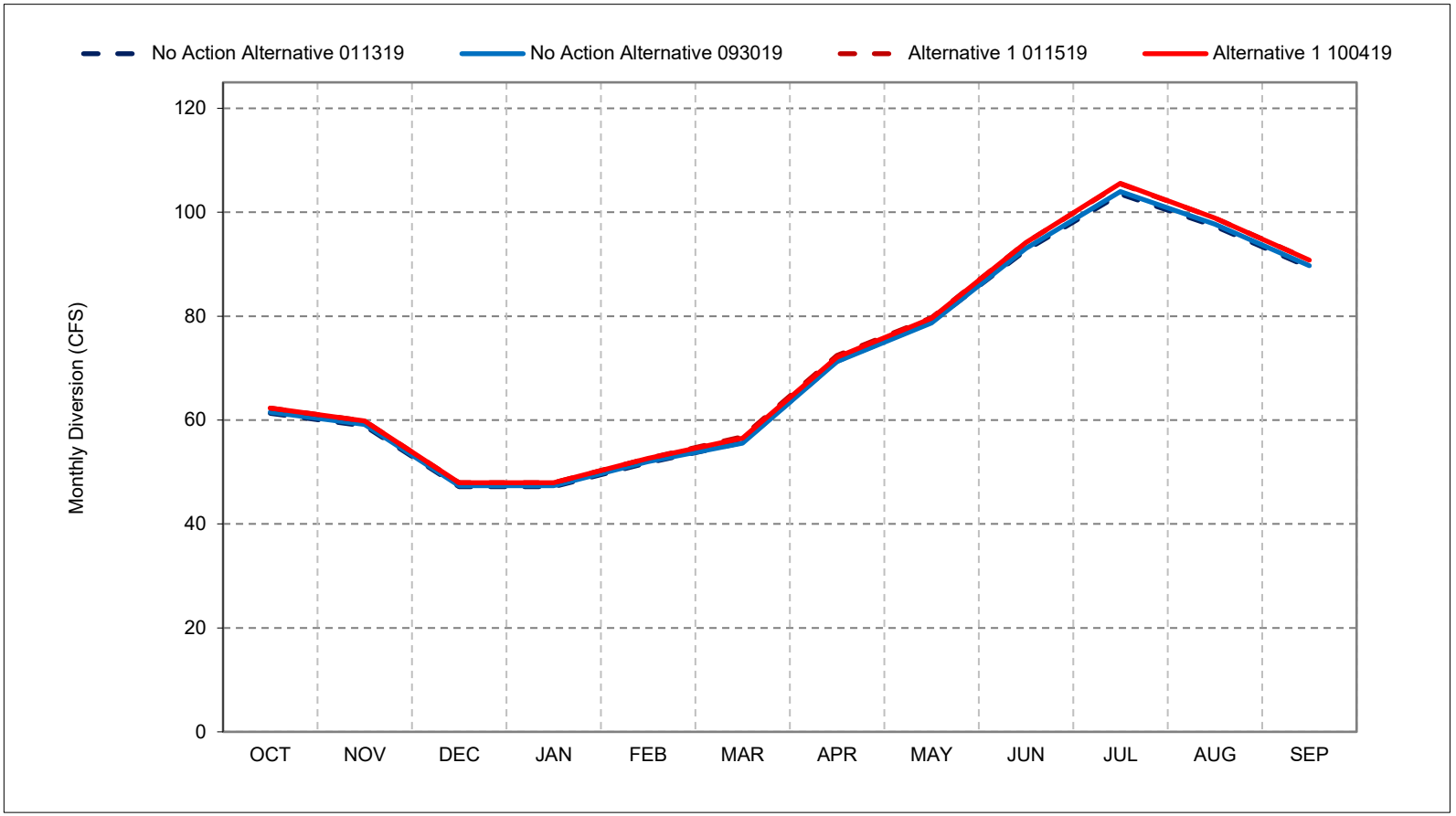
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-1. Folsom South Canal Diversion, Long-Term Average Diversion

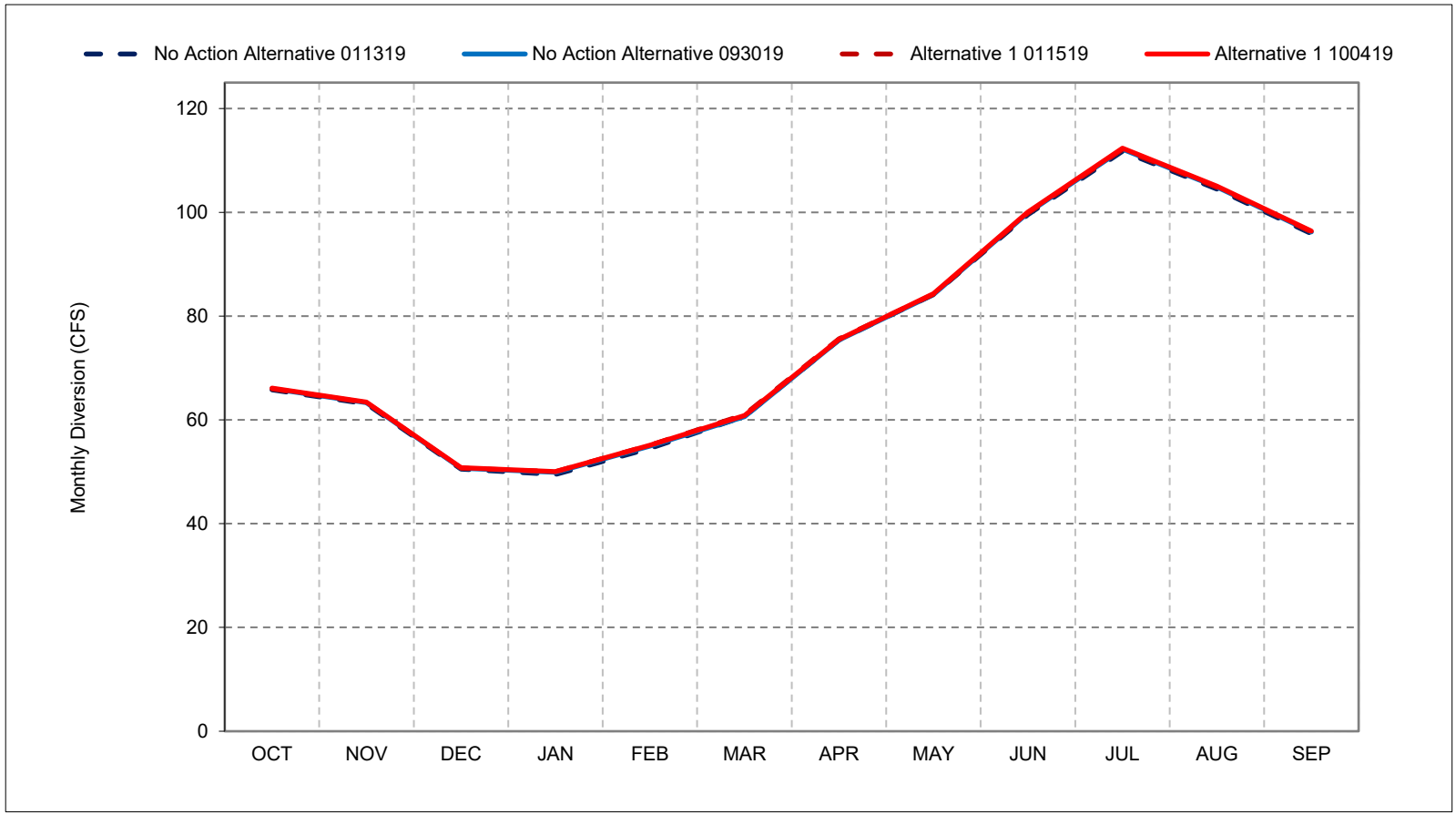



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-2. Folsom South Canal Diversion, Wet Year Average Diversion

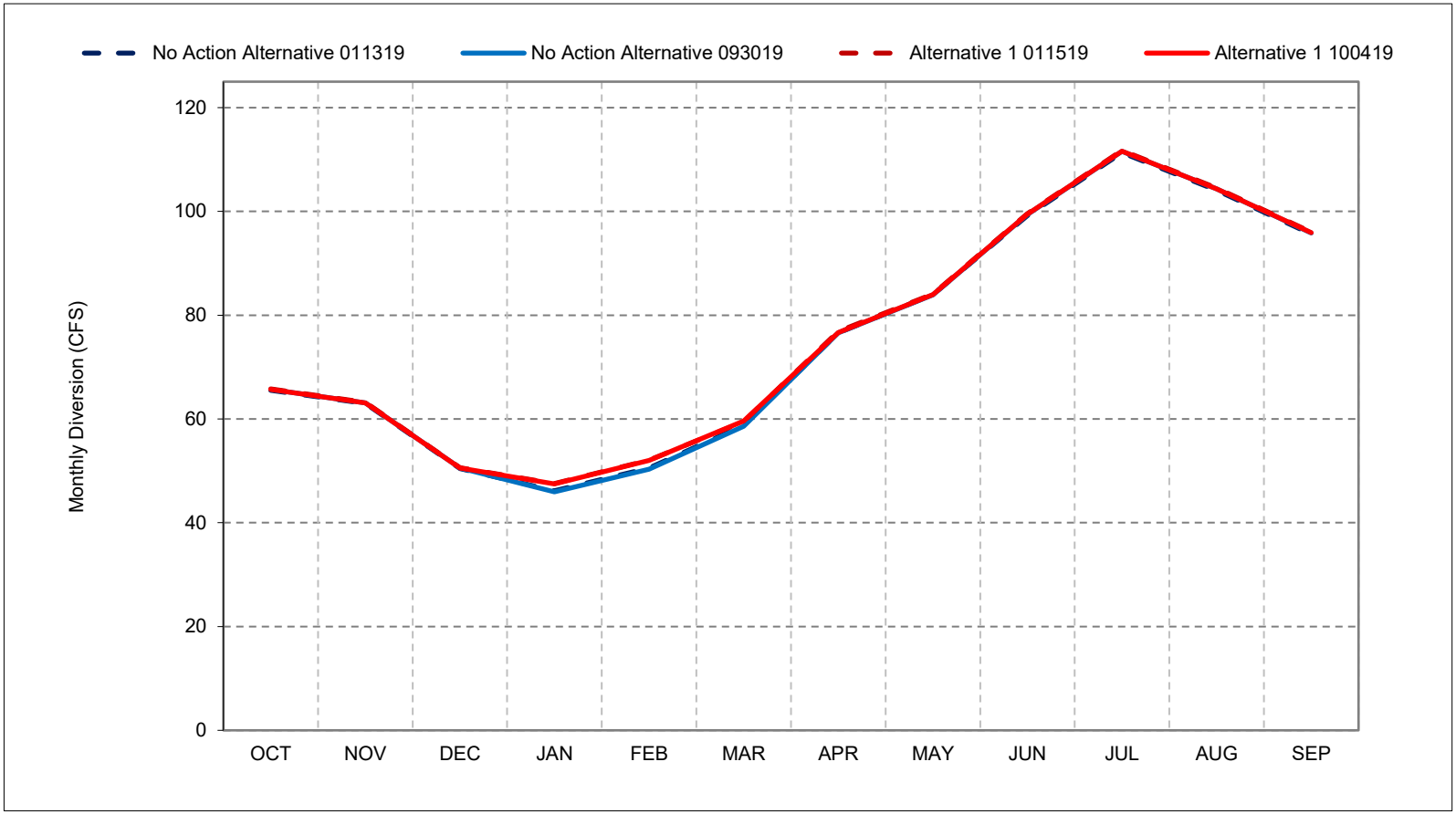



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-3. Folsom South Canal Diversion, Above Normal Year Average Diversion

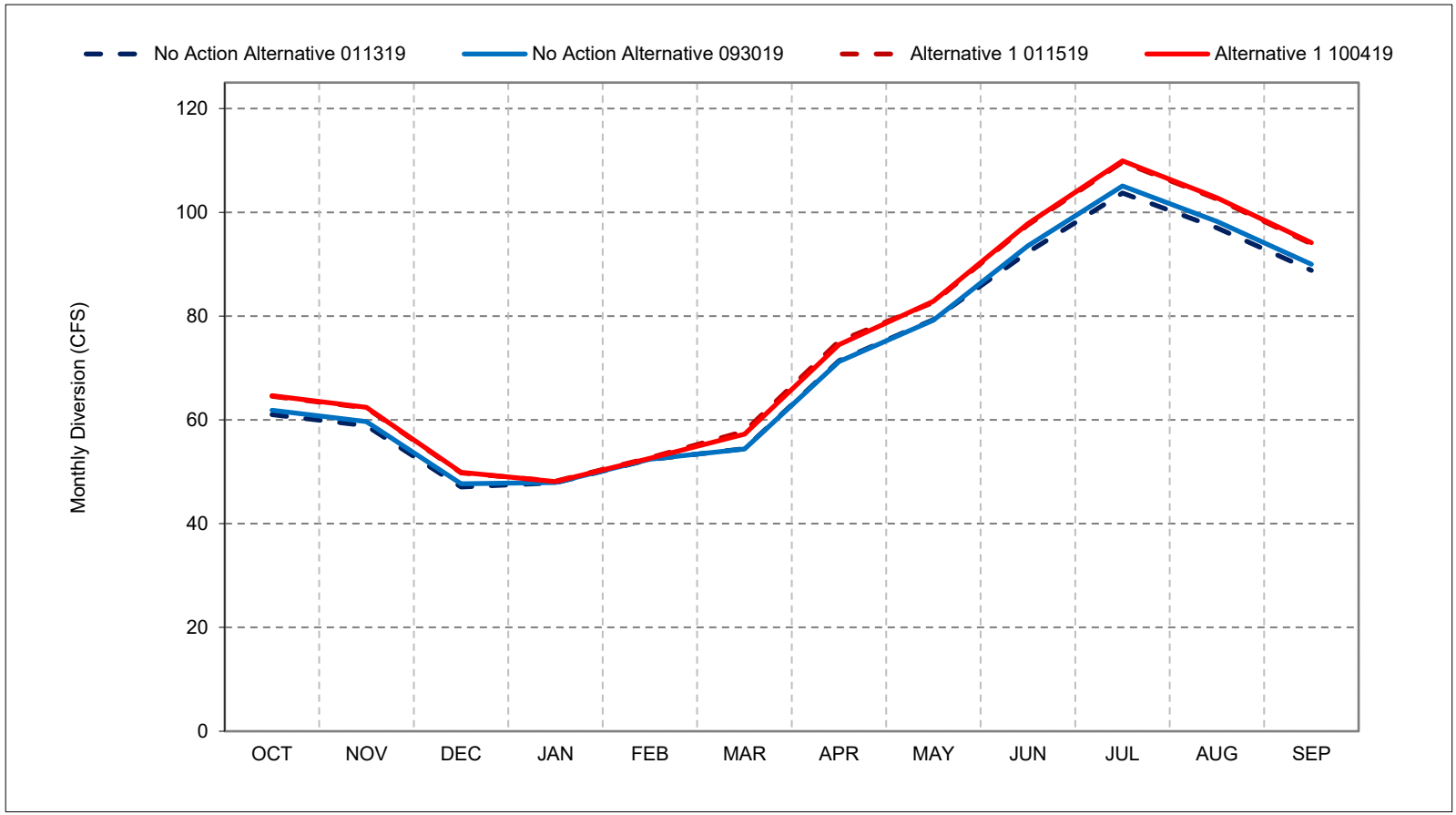



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-4. Folsom South Canal Diversion, Below Normal Year Average Diversion

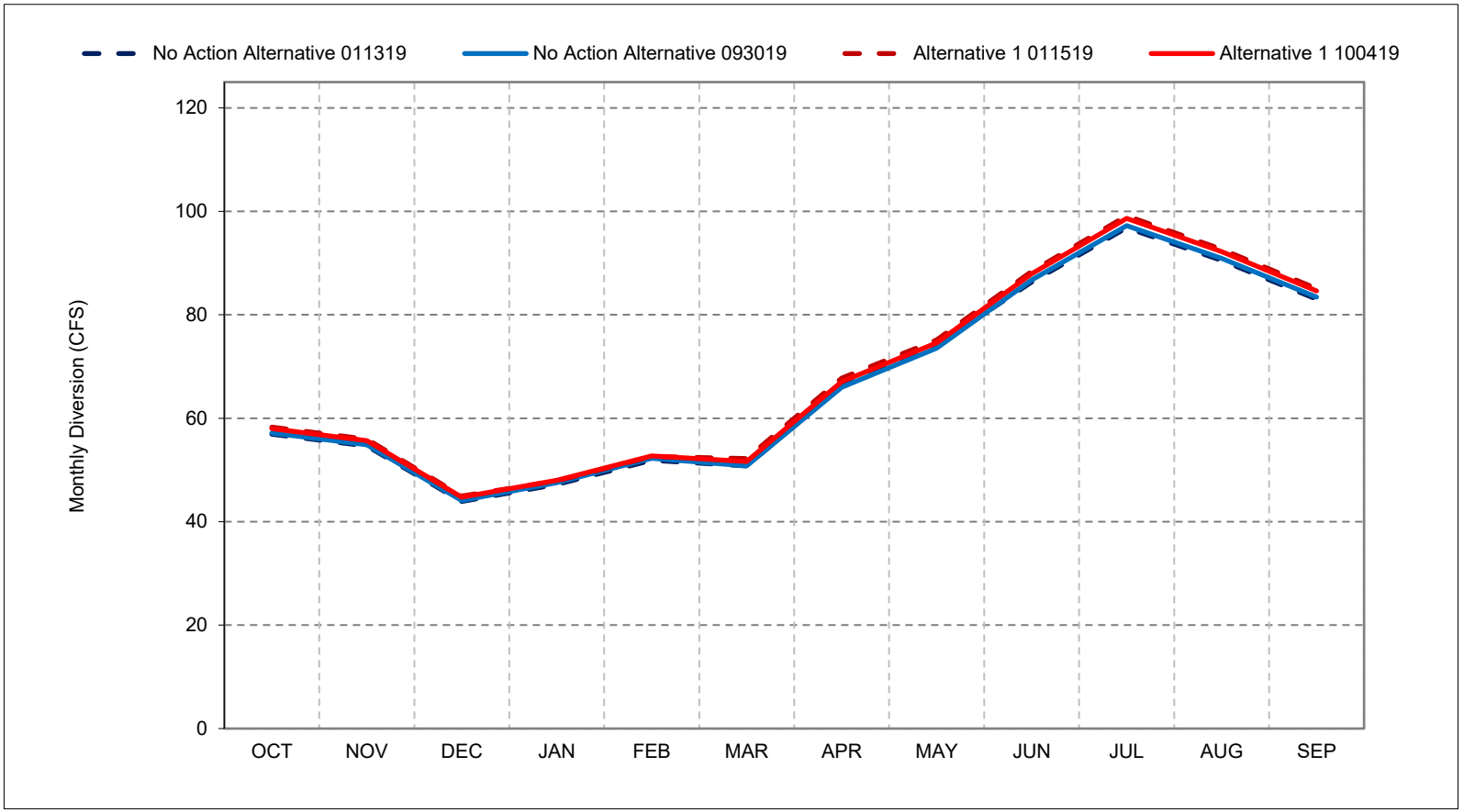



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-5. Folsom South Canal Diversion, Dry Year Average Diversion

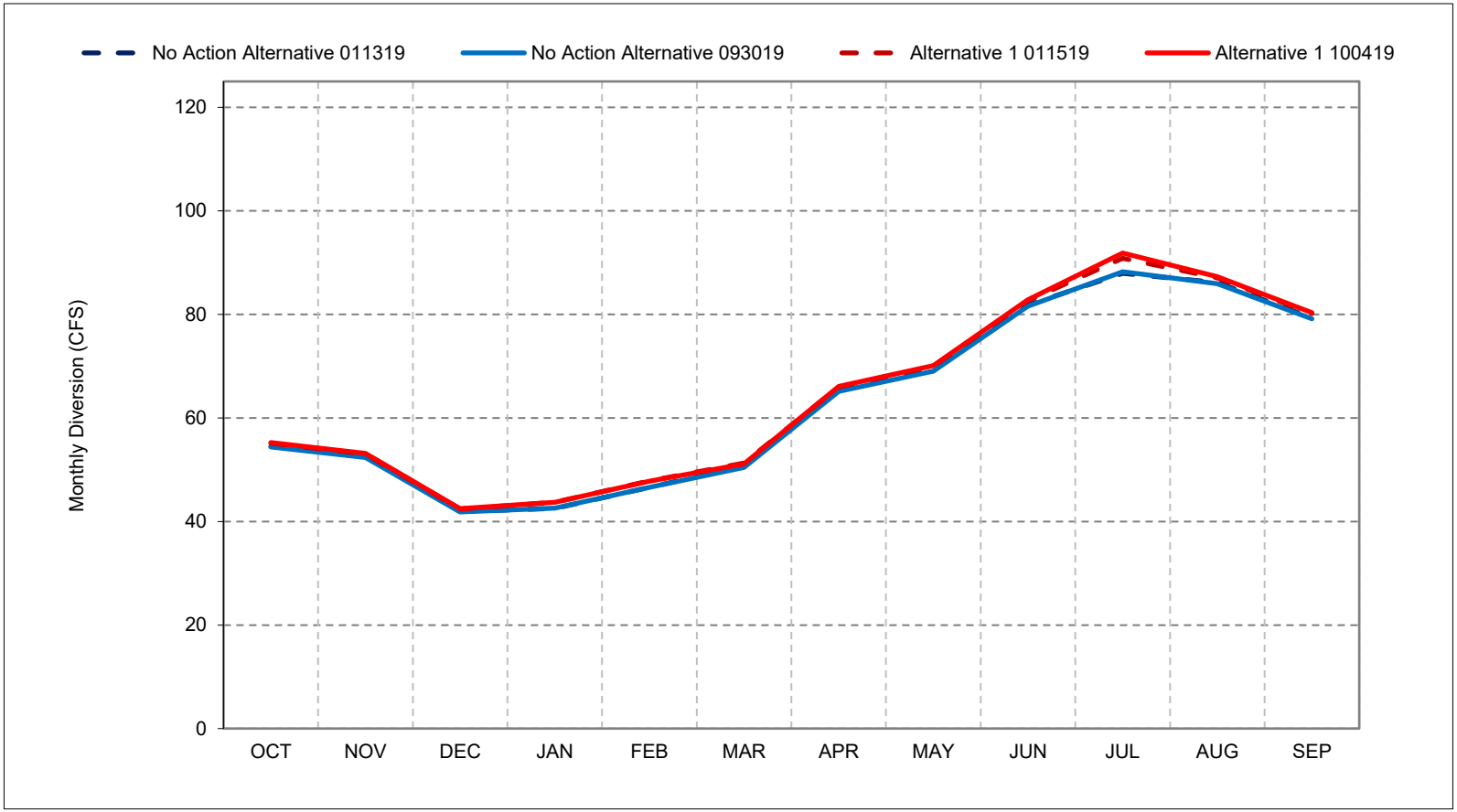



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 49-6. Folsom South Canal Diversion, Critical Year Average Diversion

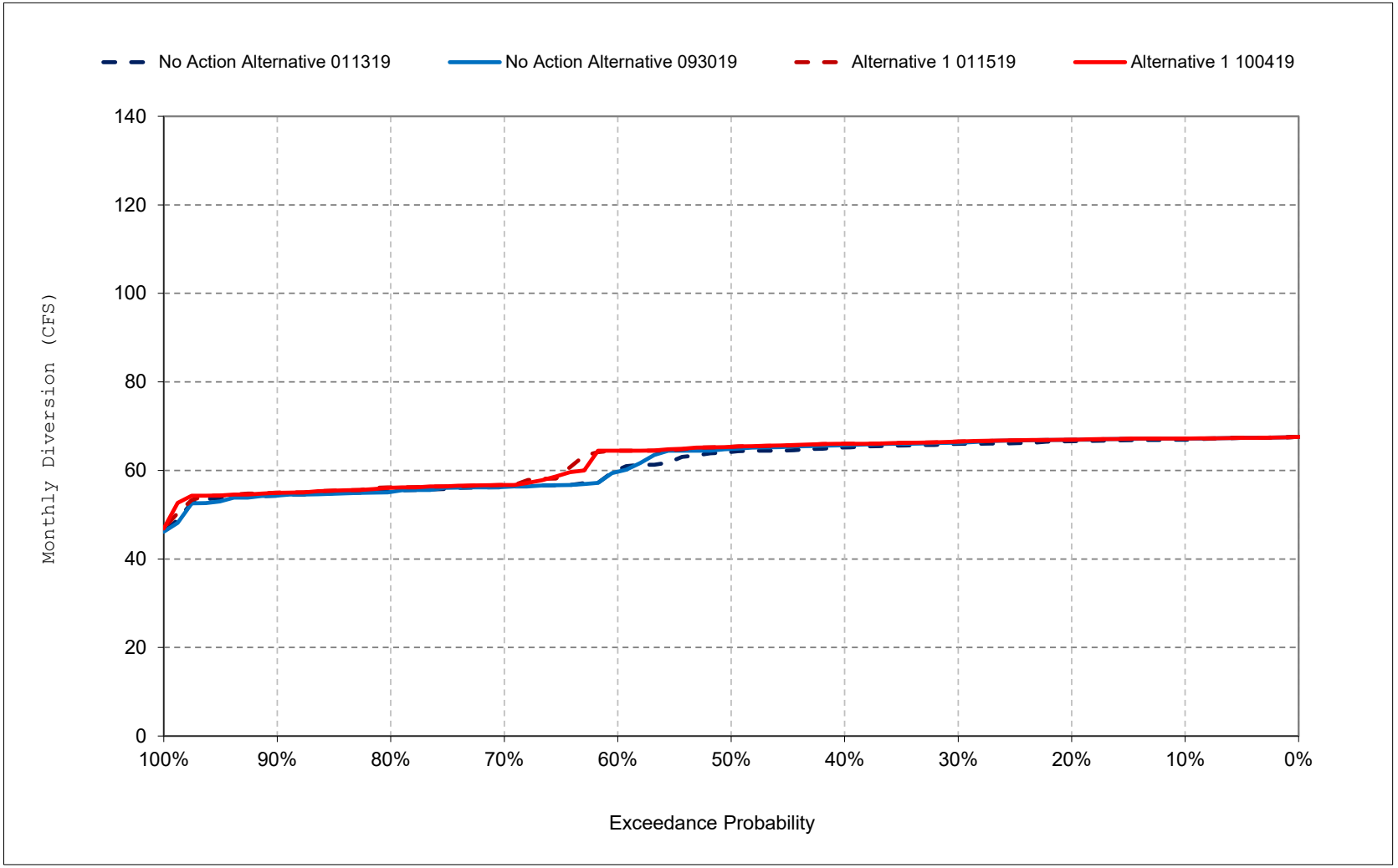



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

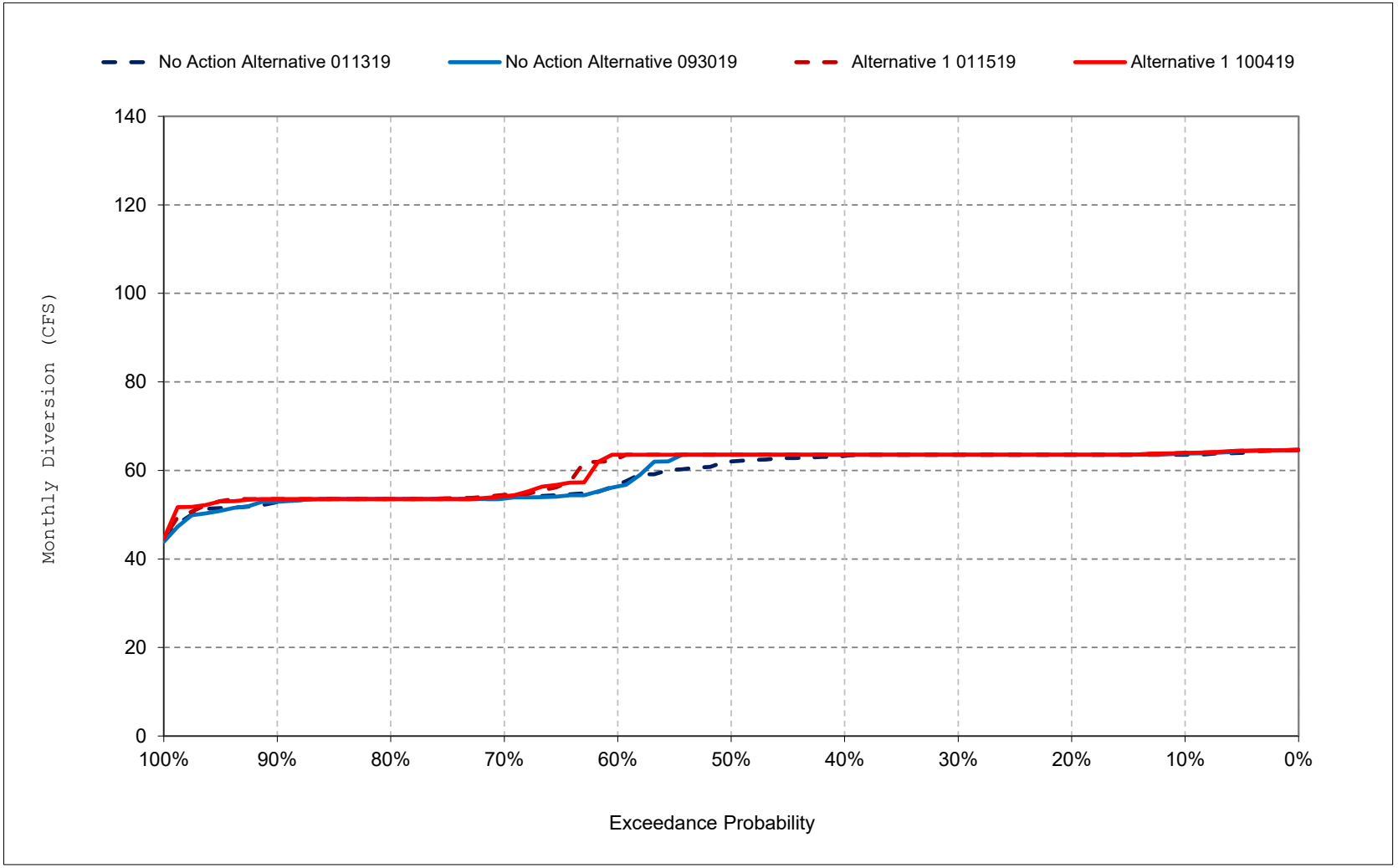
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-7. Folsom South Canal Diversion, October**



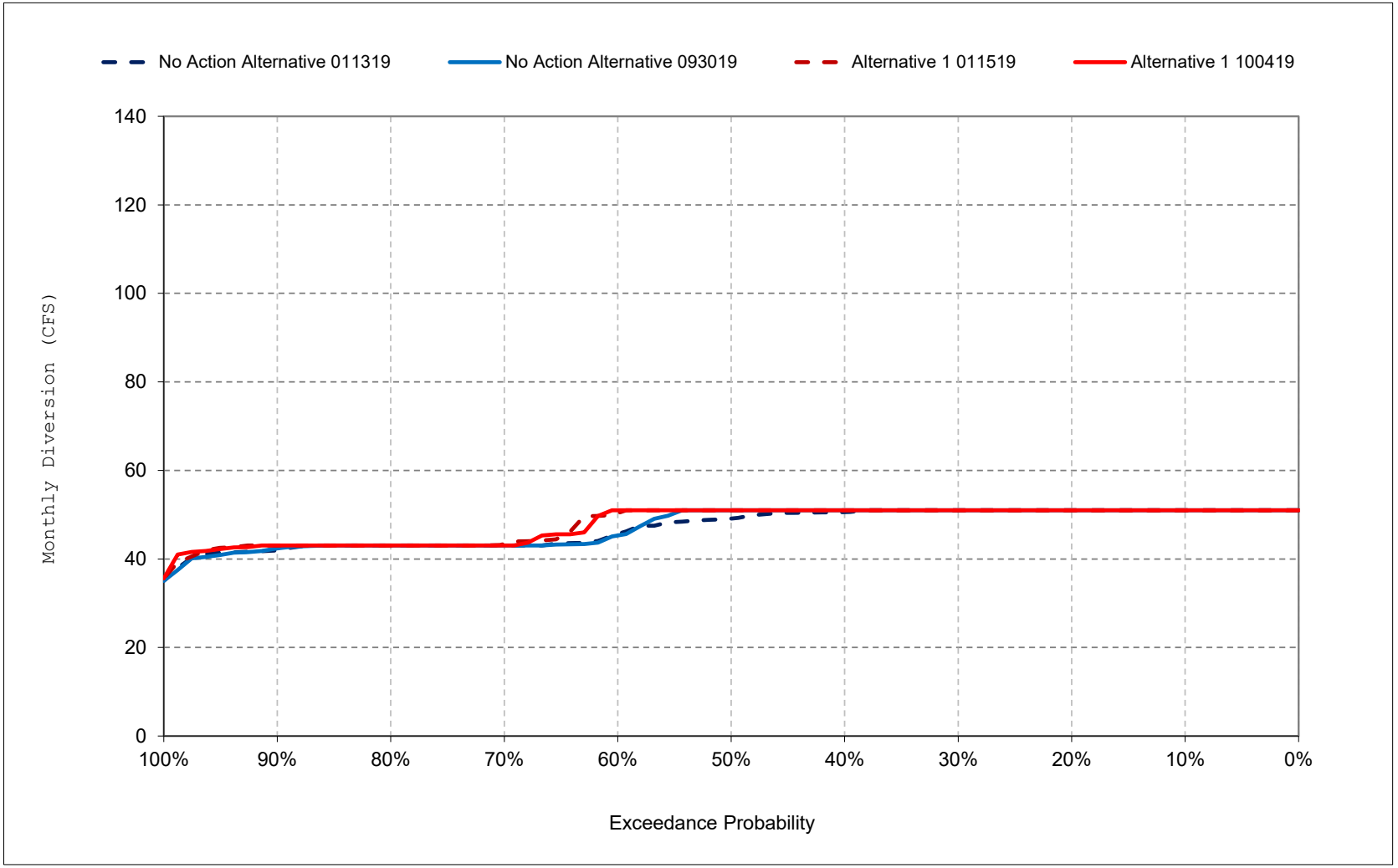

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-8. Folsom South Canal Diversion, November**



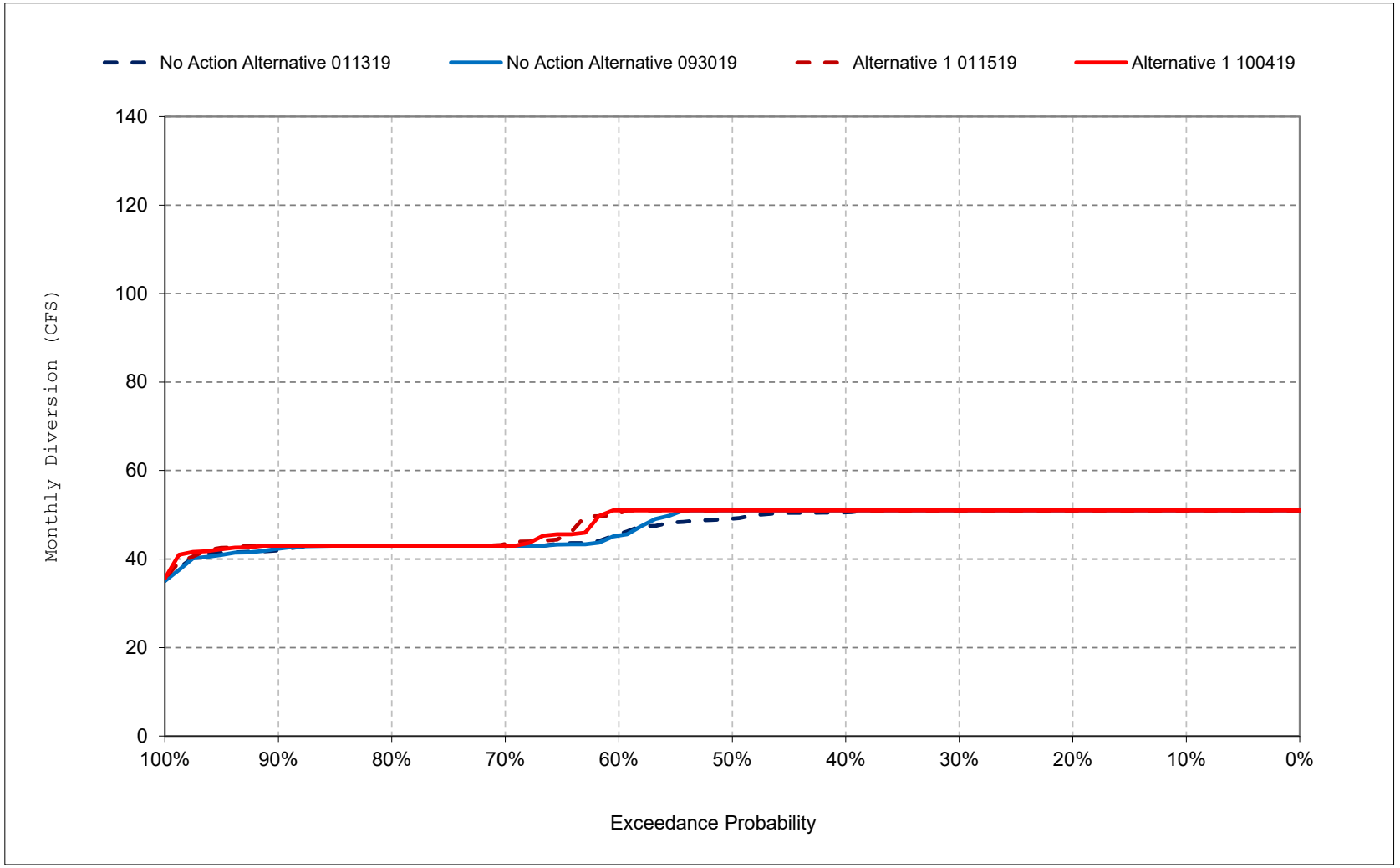

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-9. Folsom South Canal Diversion, December**



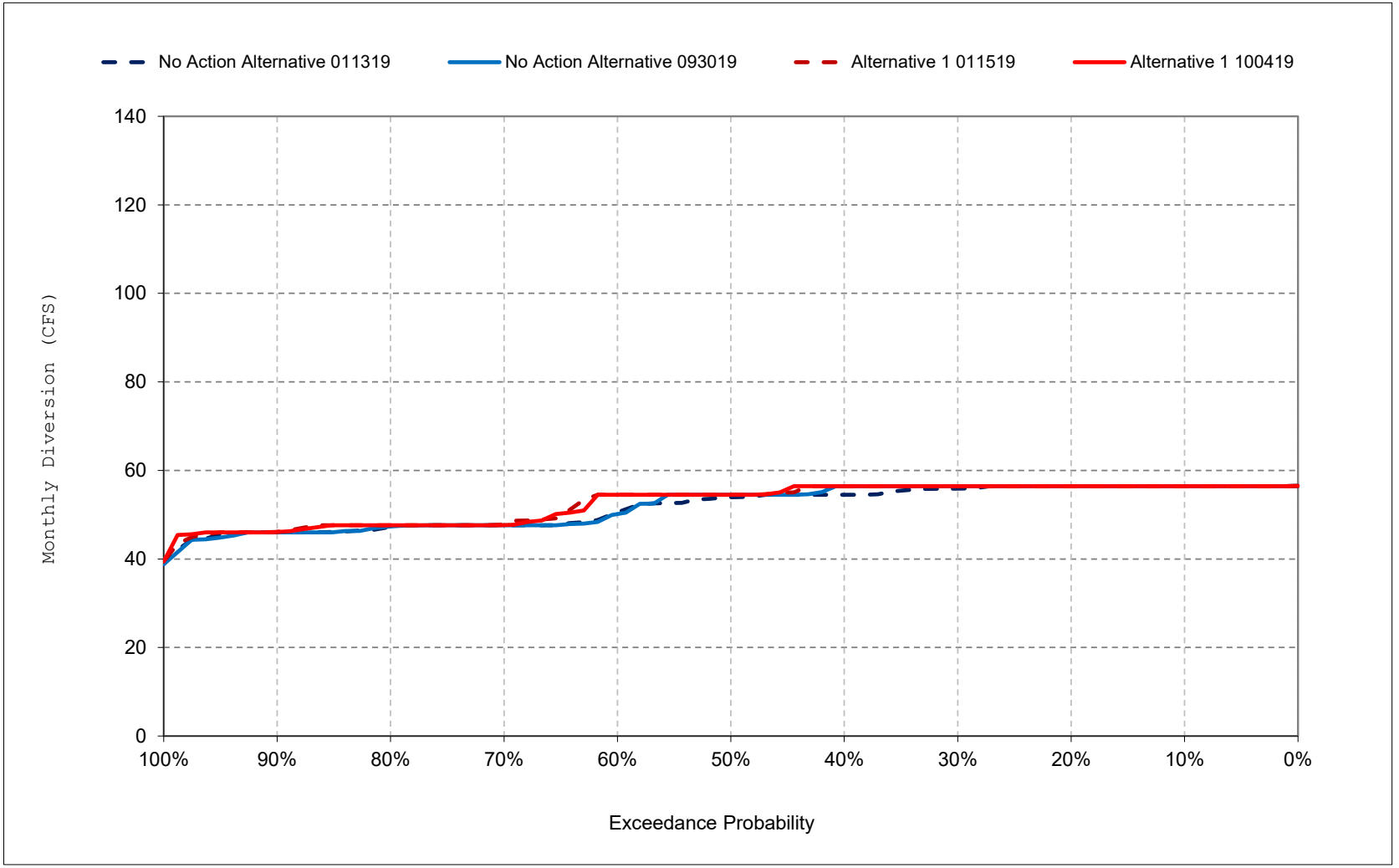

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-10. Folsom South Canal Diversion, January**



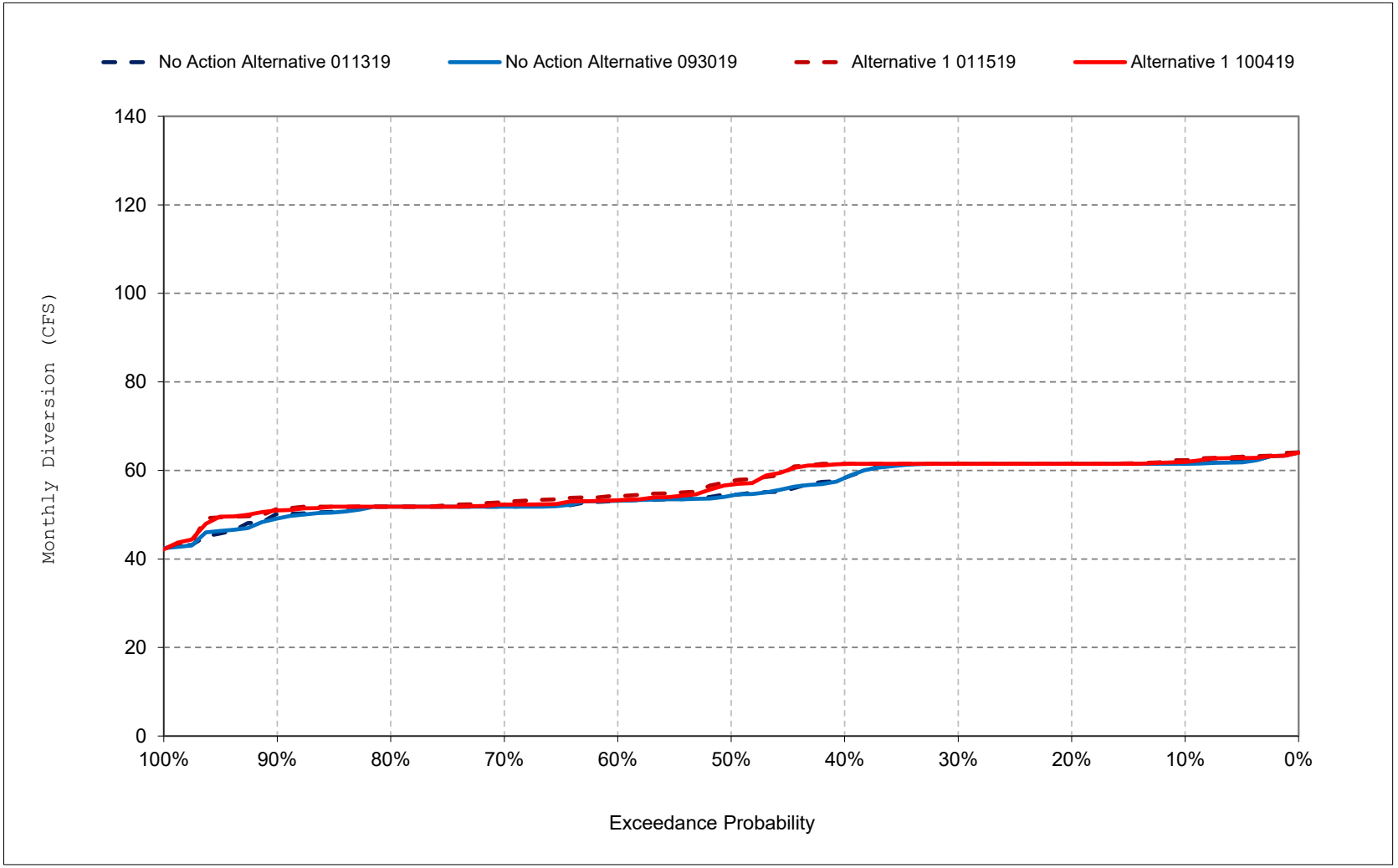

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-11. Folsom South Canal Diversion, February**



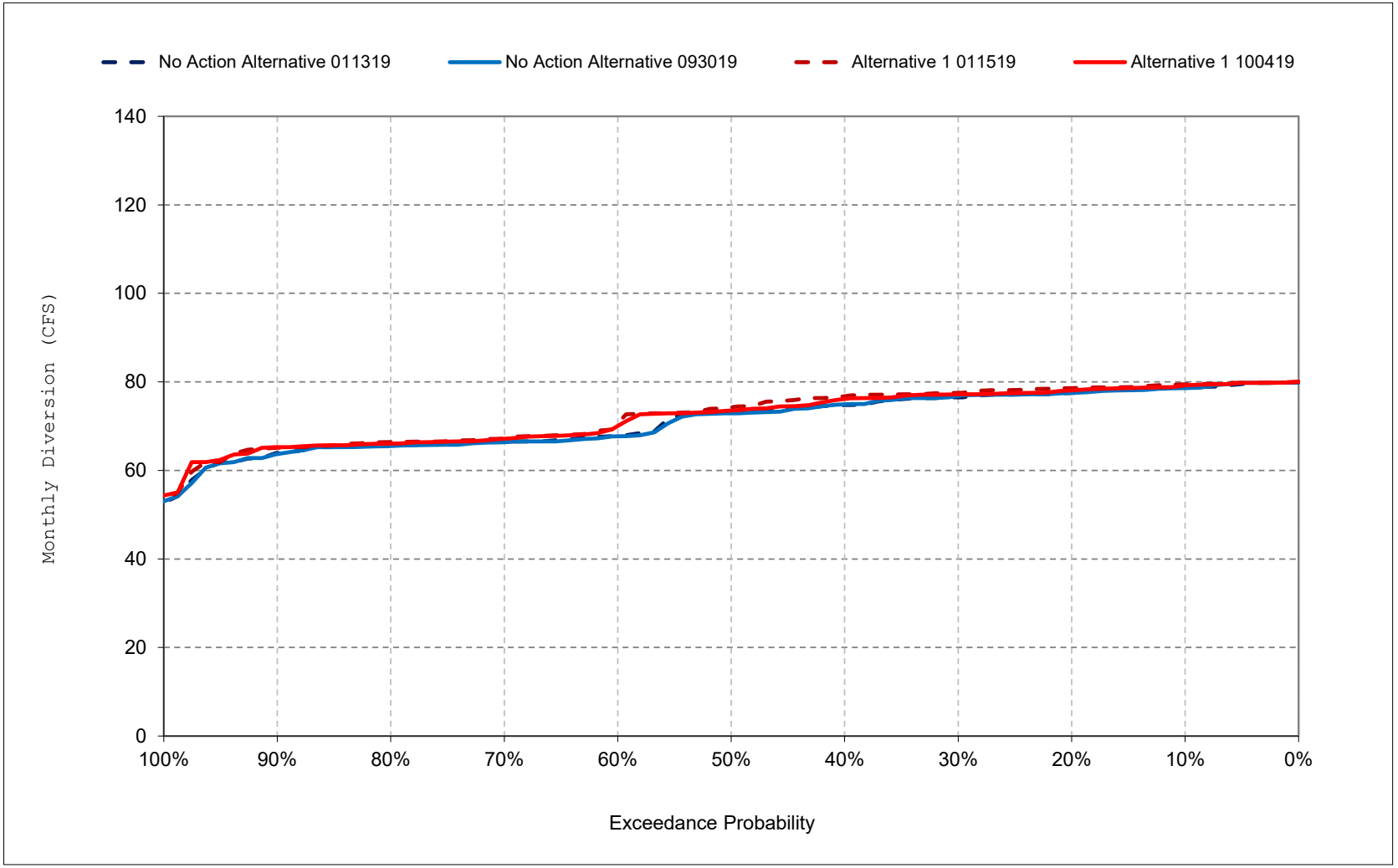

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-12. Folsom South Canal Diversion, March**



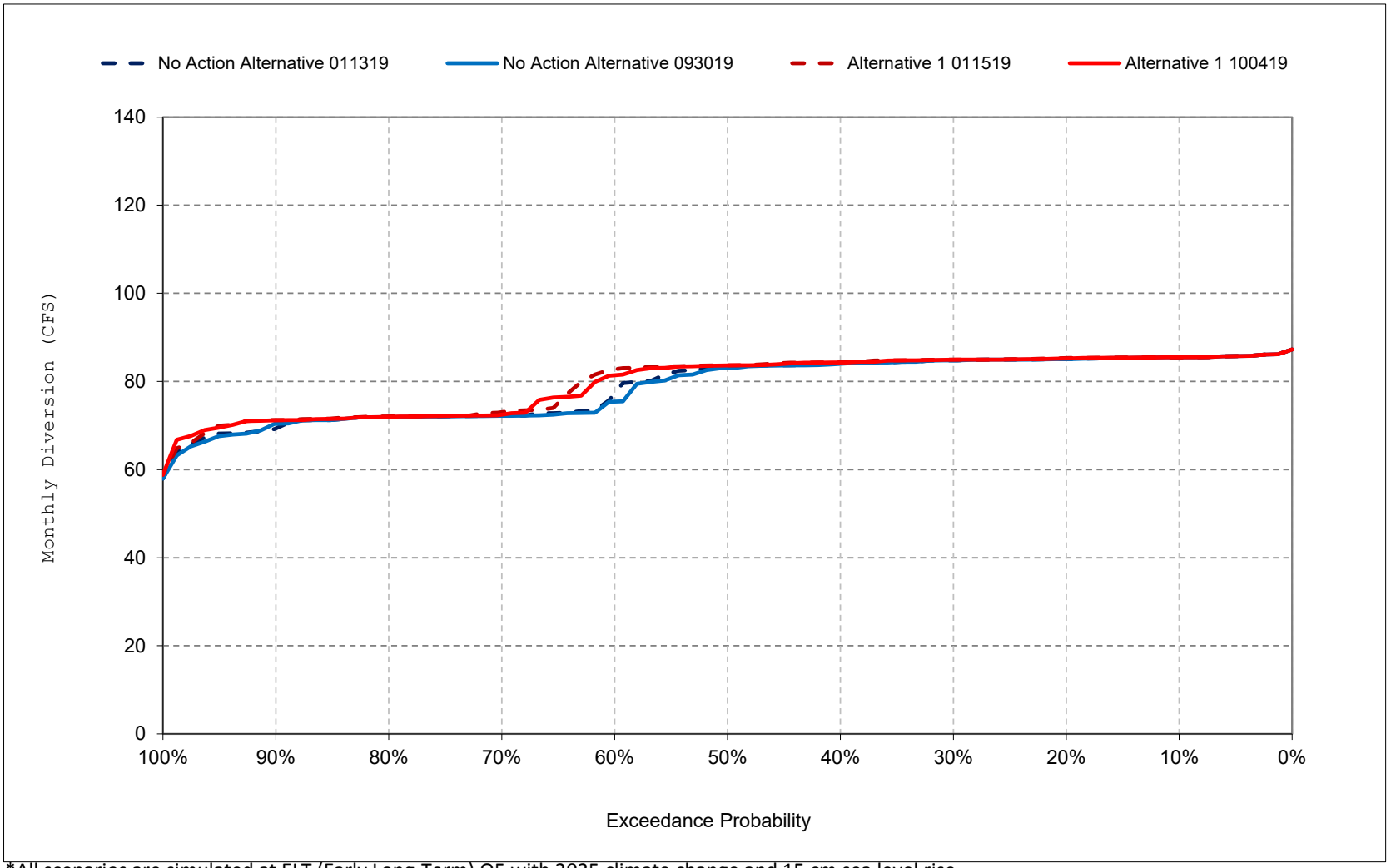

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-13. Folsom South Canal Diversion, April**



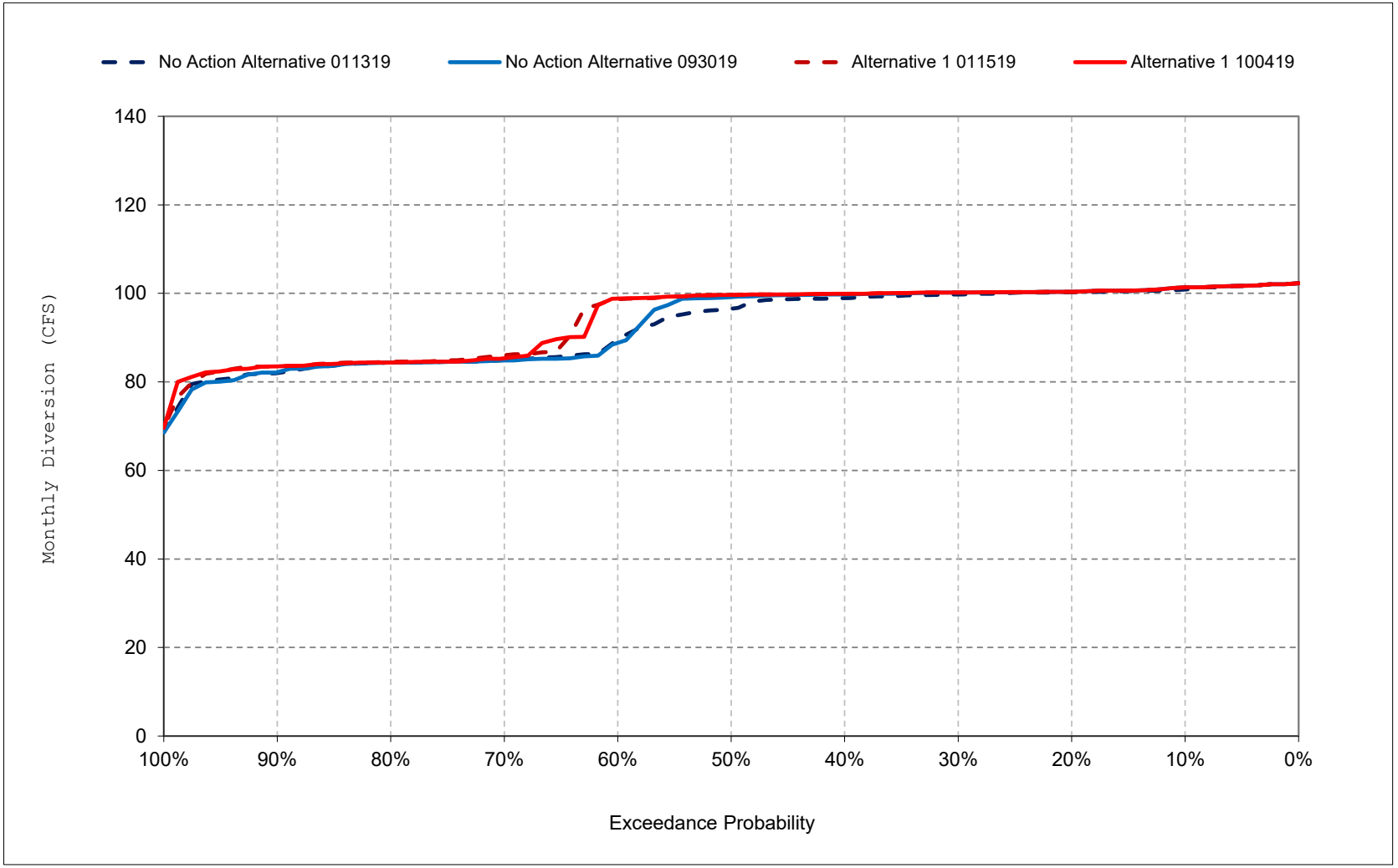

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-14. Folsom South Canal Diversion, May**



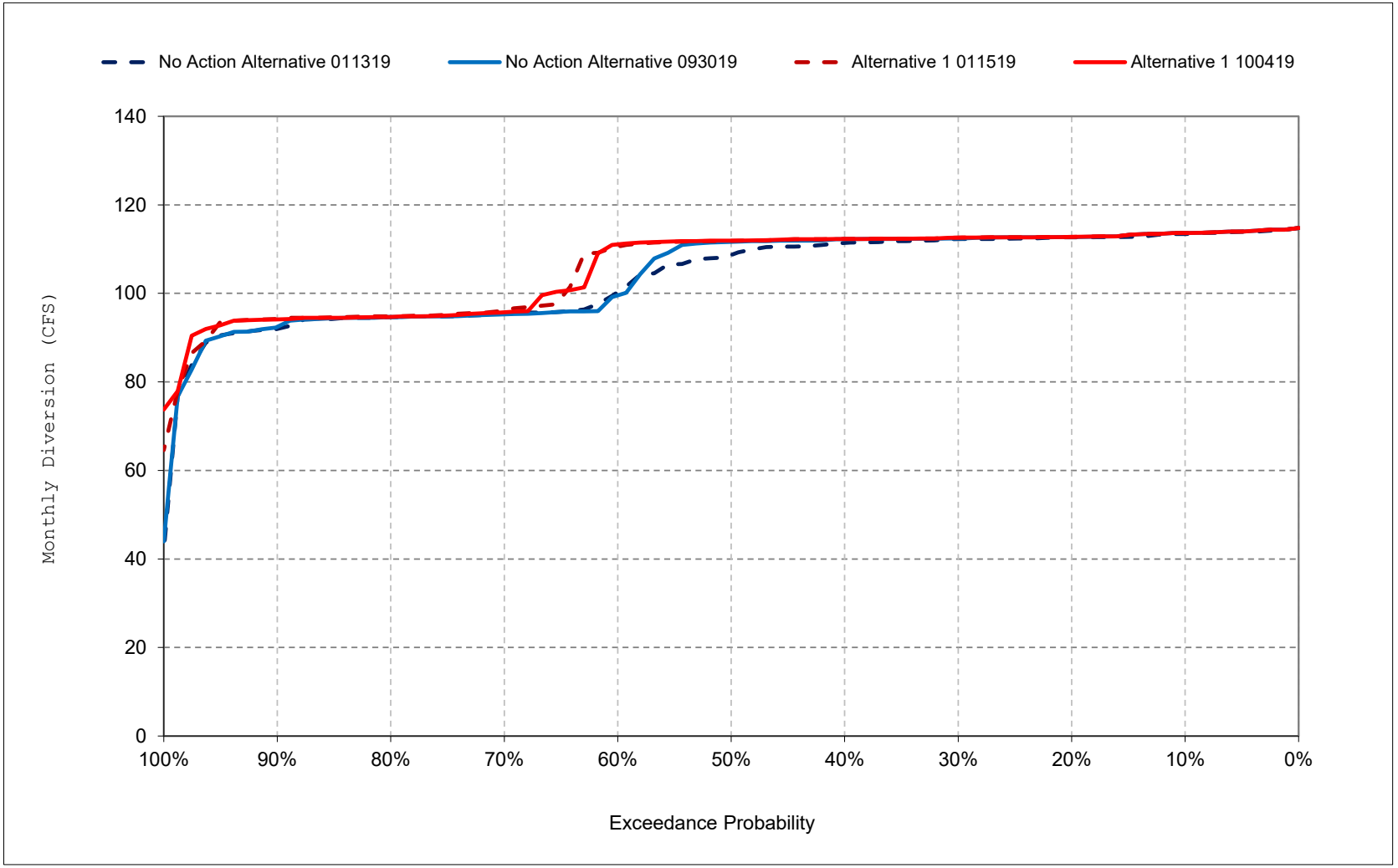

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-15. Folsom South Canal Diversion, June**



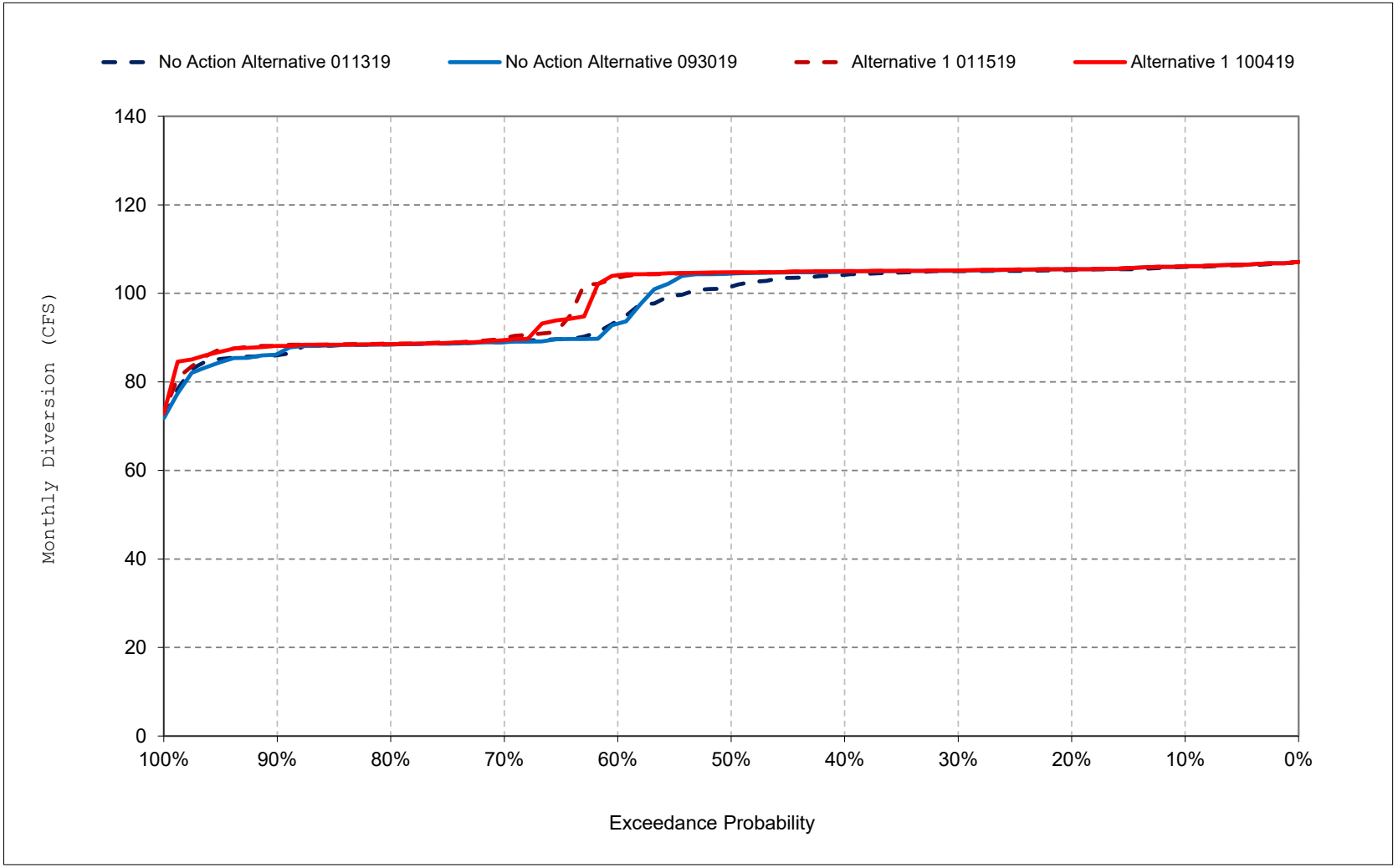

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-16. Folsom South Canal Diversion, July**



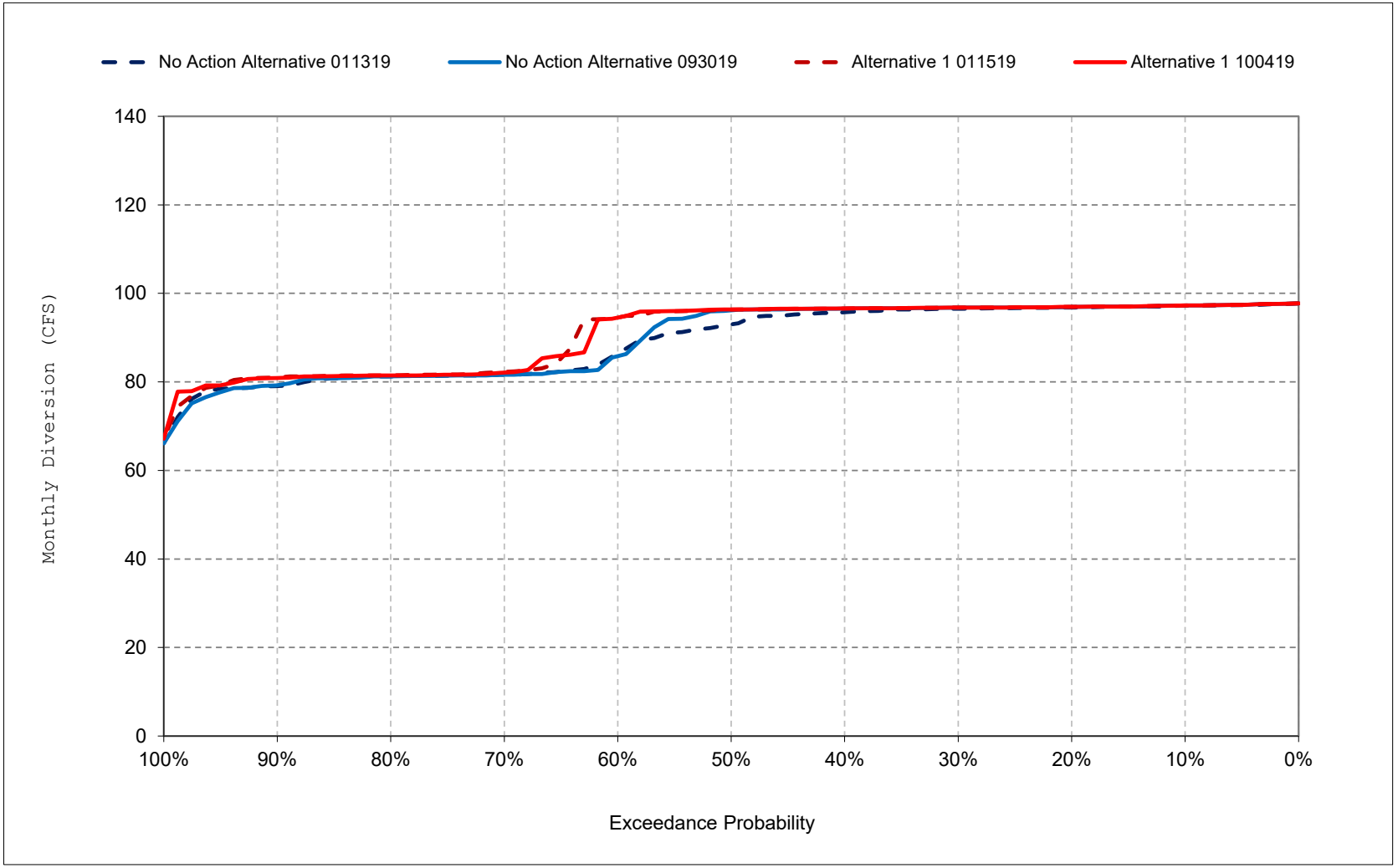

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-17. Folsom South Canal Diversion, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 49-18. Folsom South Canal Diversion, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 50-1. Friant-Kern Canal Diversion, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | 0 | 0 | 0 | **0** | **0** | **0** | **0** | 0 | 0 | **0** | **0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | **0** | **0** | **0** | 0 | **0** | **0** | 0 |
| Critical (15%) | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 50-2. Friant-Kern Canal Diversion, Monthly Diversion

## No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 50-3. Friant-Kern Canal Diversion, Monthly Diversion

### No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | **0** | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 | 0 | 0 | **0** | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 50-4. Friant-Kern Canal Diversion, Monthly Diversion

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 635 | 240 | 204 | 675 | 1,675 | 1,576 | 1,693 | 3,143 | 4,362 | 3,742 | 3,254 | 1,819 |
| 20% | 575 | 203 | 98 | 108 | 1,199 | 865 | 1,593 | 2,278 | 3,958 | 3,162 | 2,772 | 1,555 |
| 30% | 540 | 166 | 88 | 92 | 777 | 777 | 1,518 | 2,047 | 3,021 | 2,878 | 2,523 | 1,419 |
| 40% | 506 | 150 | 82 | 86 | 654 | 634 | 1,363 | 1,748 | 2,590 | 2,705 | 2,373 | 1,329 |
| 50% | 482 | 143 | 72 | 77 | 499 | 553 | 1,048 | 1,452 | 2,164 | 2,300 | 2,056 | 1,104 |
| 60% | 436 | 137 | 65 | 66 | 389 | 532 | 966 | 1,346 | 1,986 | 2,204 | 1,878 | 1,018 |
| 70% | 395 | 132 | 29 | 61 | 355 | 472 | 788 | 1,215 | 1,836 | 2,056 | 1,499 | 911 |
| 80% | 377 | 119 | 16 | 16 | 301 | 392 | 493 | 731 | 1,593 | 1,873 | 1,197 | 698 |
| 90% | 353 | 117 | 16 | 16 | 209 | 291 | 389 | 548 | 1,170 | 1,460 | 890 | 529 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 526 | 184 | 104 | 199 | 718 | 738 | 1,171 | 1,645 | 2,527 | 2,517 | 2,055 | 1,180 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 719 | 250 | 144 | 400 | 1,168 | 1,080 | 1,630 | 2,236 | 3,427 | 3,332 | 2,839 | 1,658 |
| Above Normal (16%) | 471 | 140 | 86 | 235 | 586 | 859 | 1,567 | 2,200 | 2,991 | 2,766 | 2,422 | 1,353 |
| Below Normal (13%) | 489 | 166 | 88 | 91 | 597 | 666 | 1,075 | 1,600 | 2,339 | 2,418 | 1,873 | 1,075 |
| Dry (24%) | 421 | 154 | 120 | 71 | 497 | 507 | 794 | 1,144 | 1,881 | 1,979 | 1,549 | 867 |
| Critical (15%) | 376 | 158 | 23 | 39 | 362 | 320 | 466 | 635 | 1,322 | 1,467 | 967 | 574 |

## Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

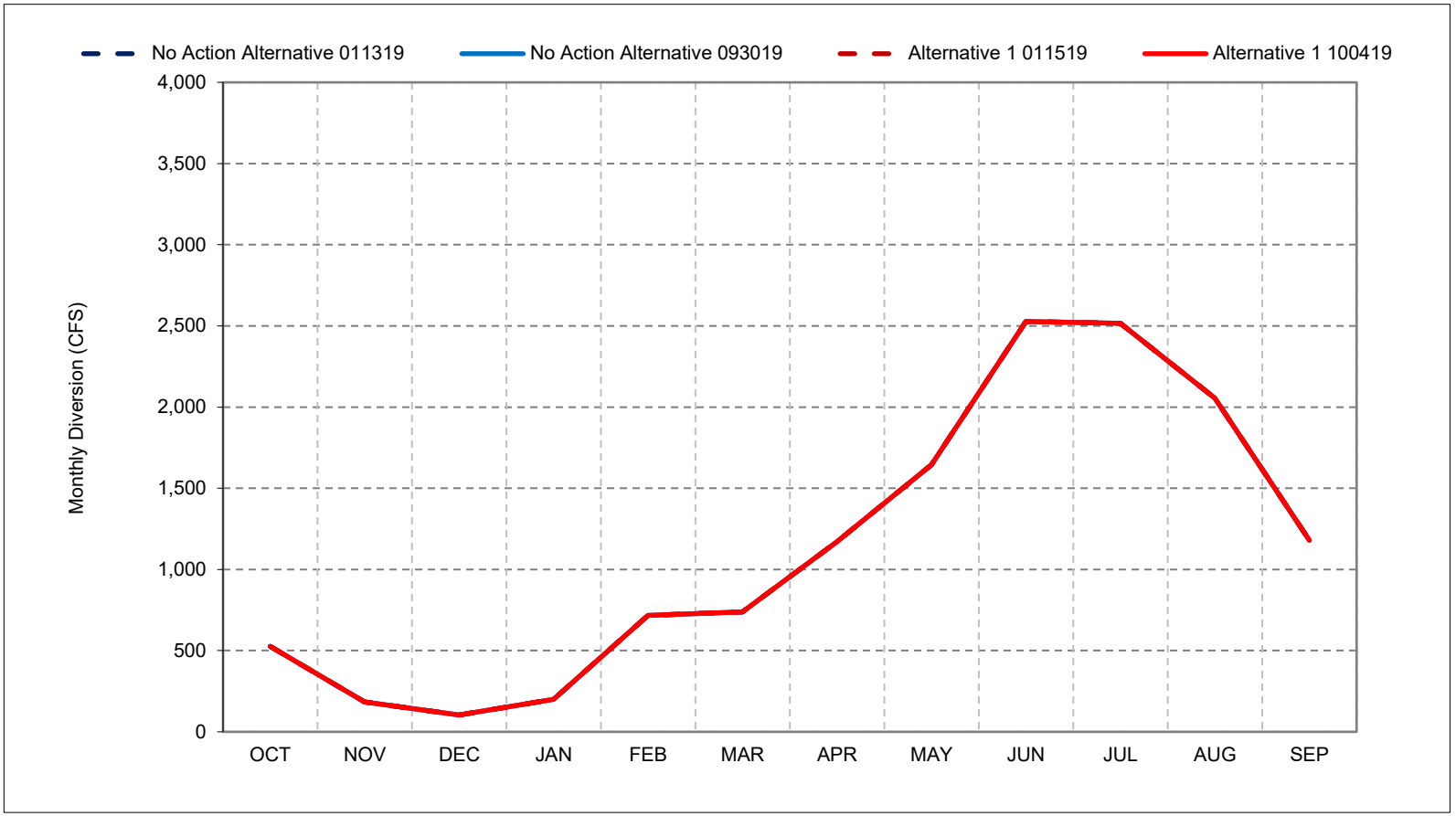
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-1. Friant-Kern Canal Diversion, Long-Term Average Diversion

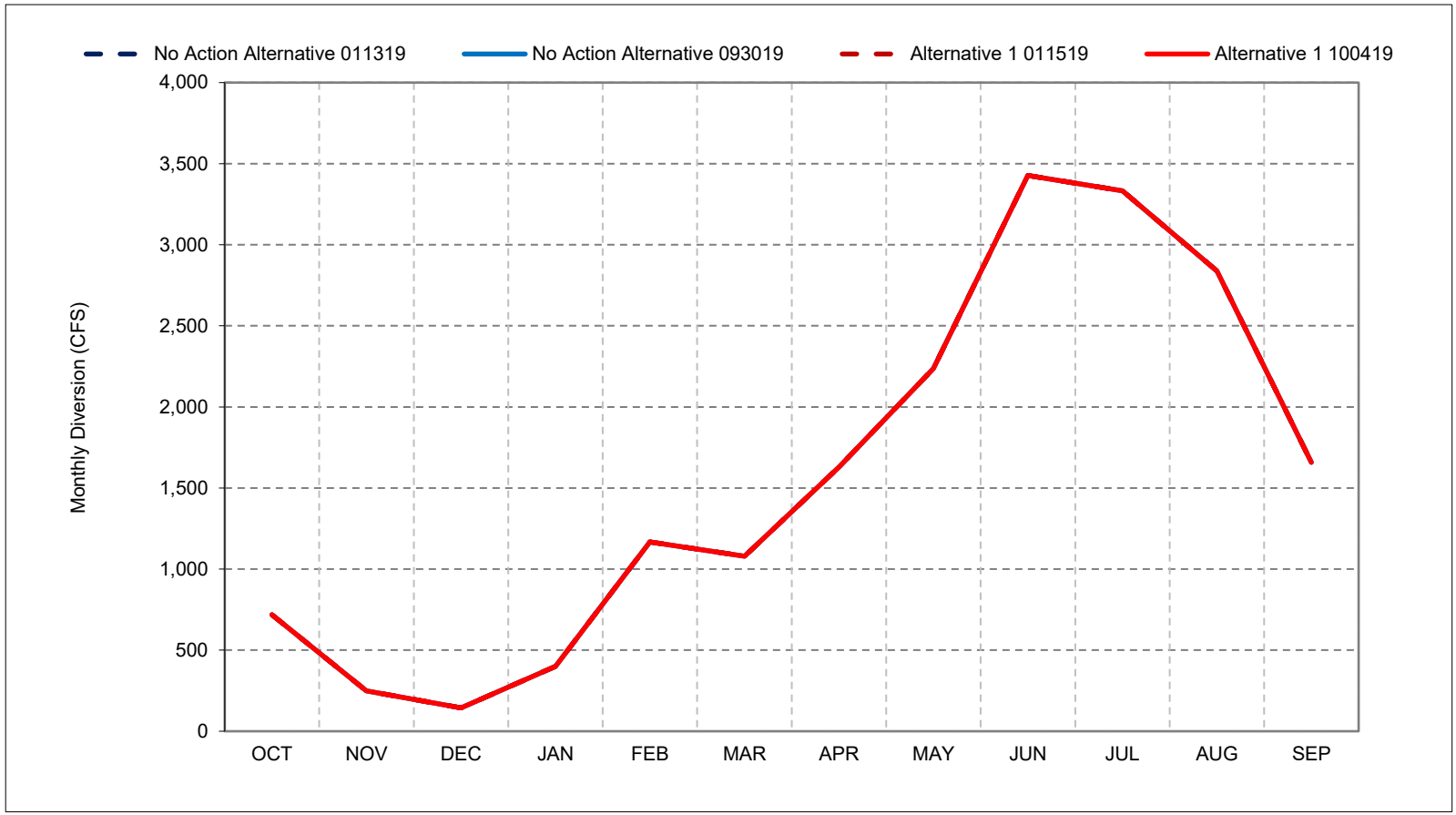



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-2. Friant-Kern Canal Diversion, Wet Year Average Diversion

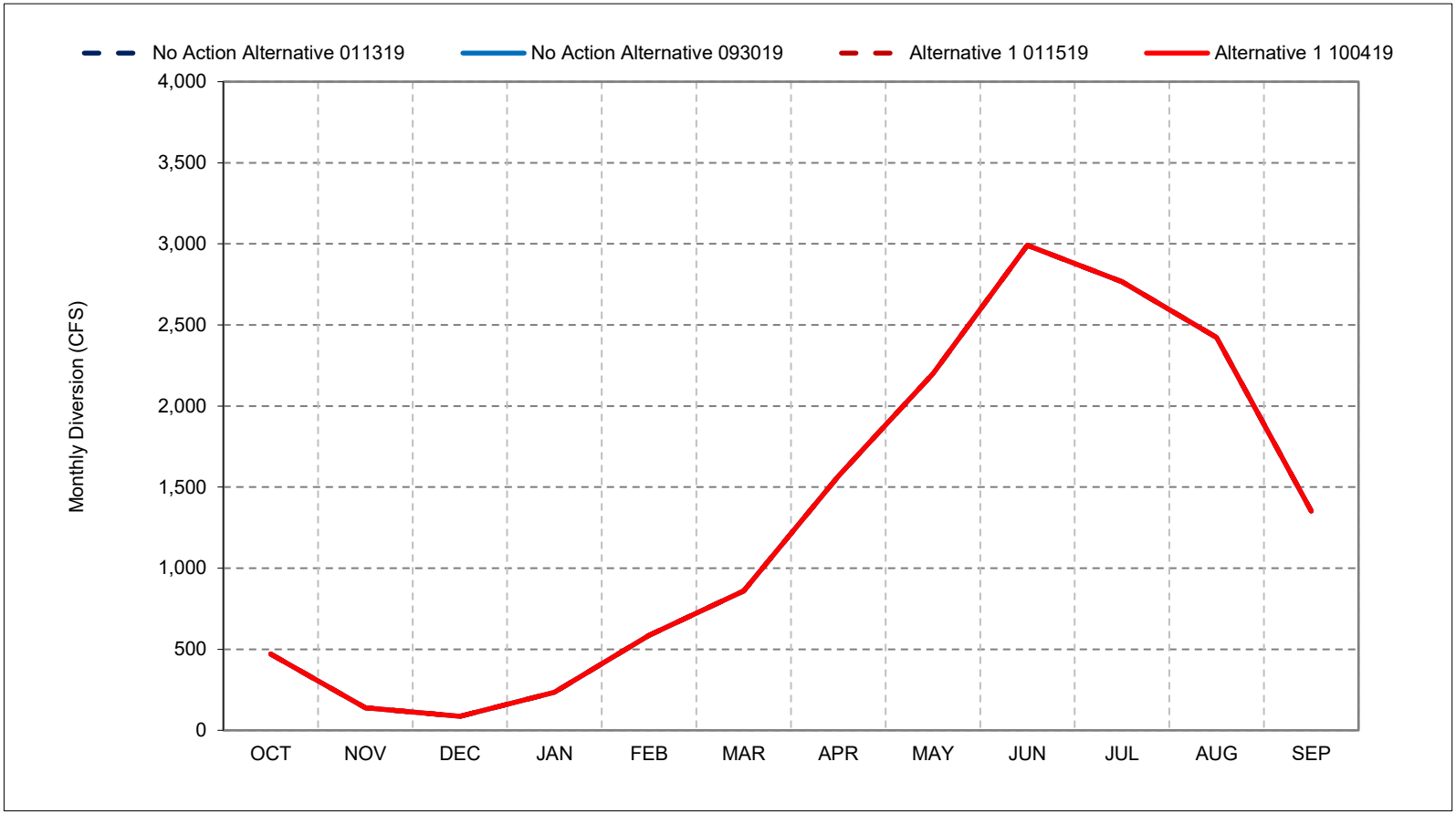



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-3. Friant-Kern Canal Diversion, Above Normal Year Average Diversion

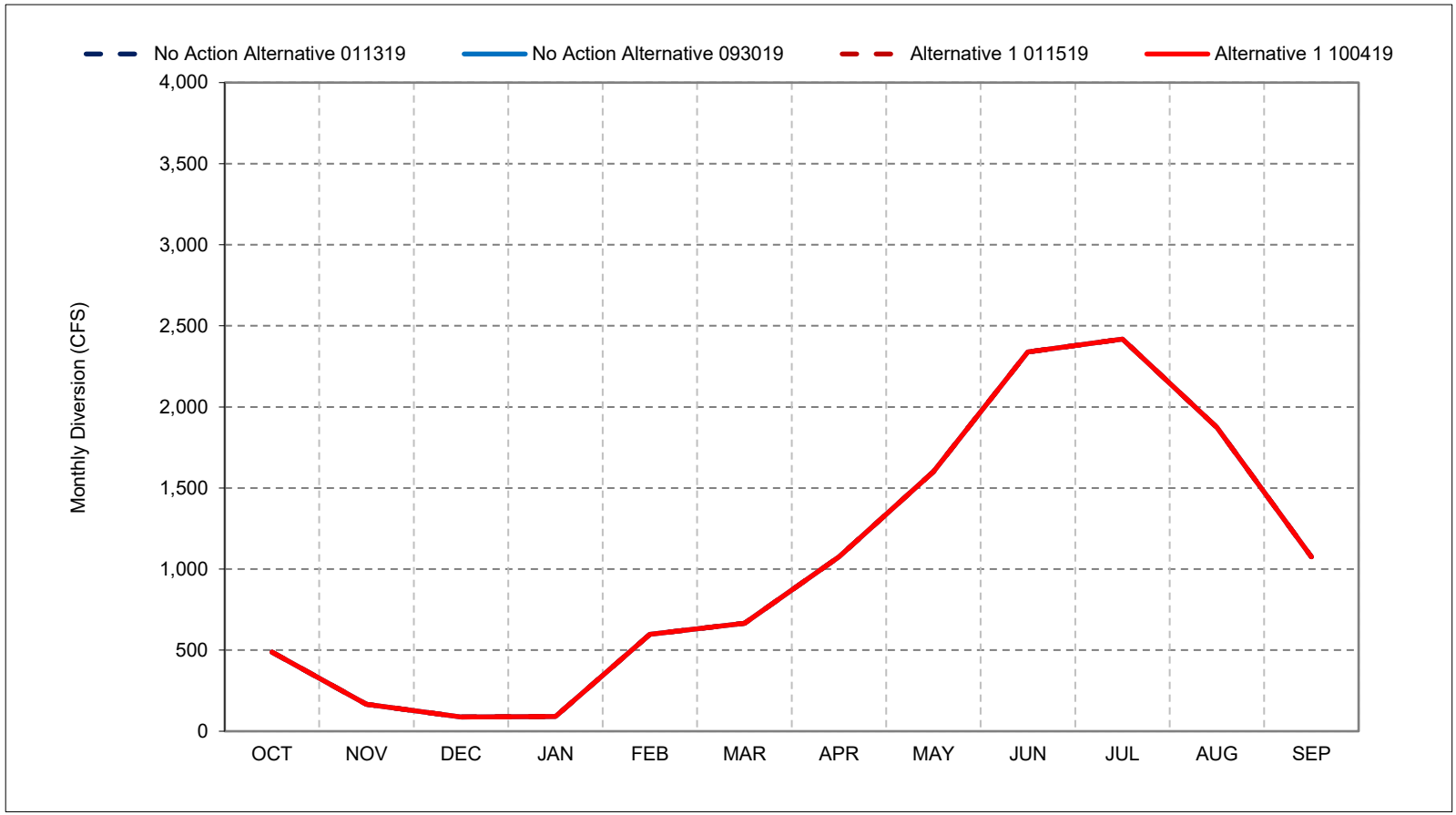



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-4. Friant-Kern Canal Diversion, Below Normal Year Average Diversion

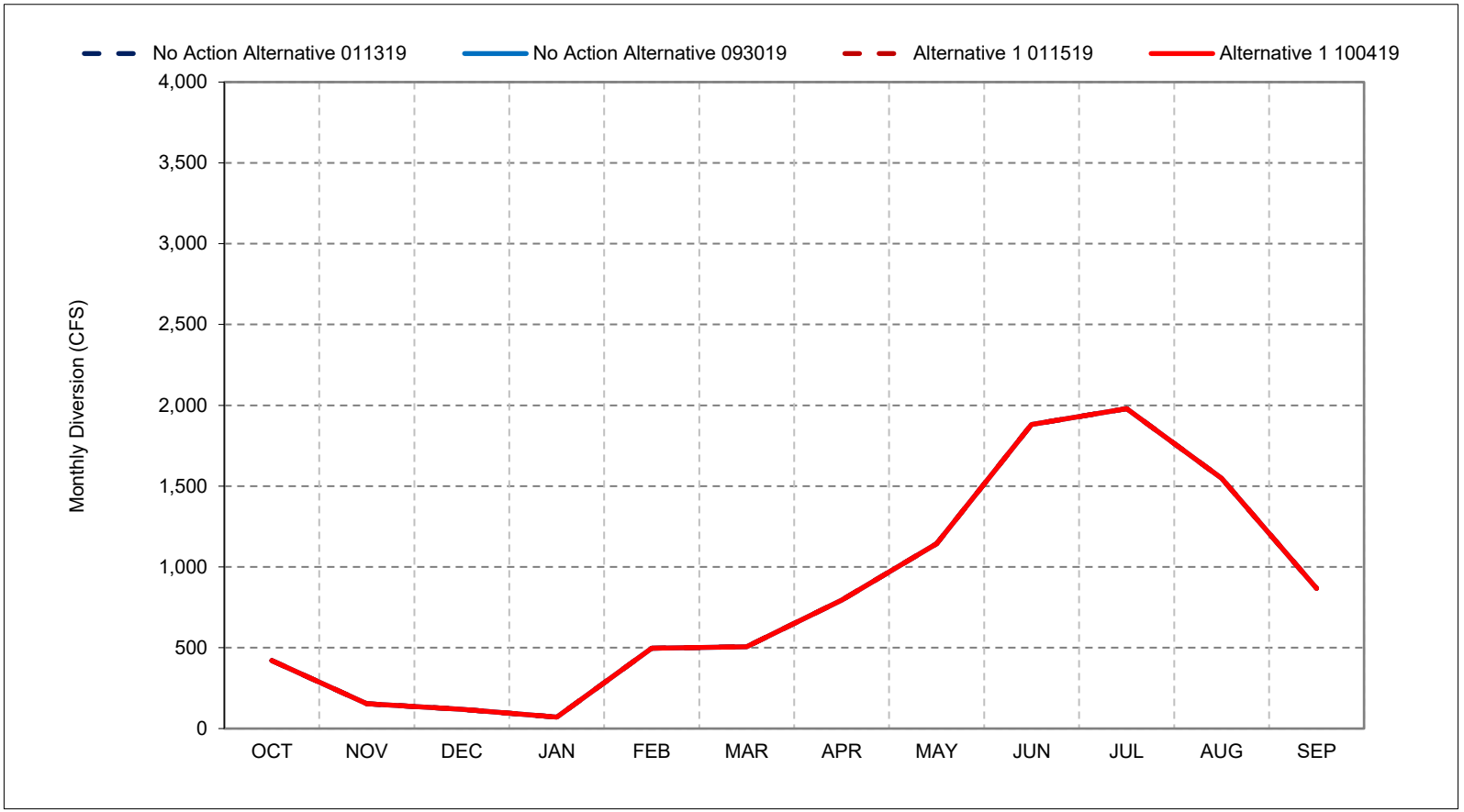



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-5. Friant-Kern Canal Diversion, Dry Year Average Diversion

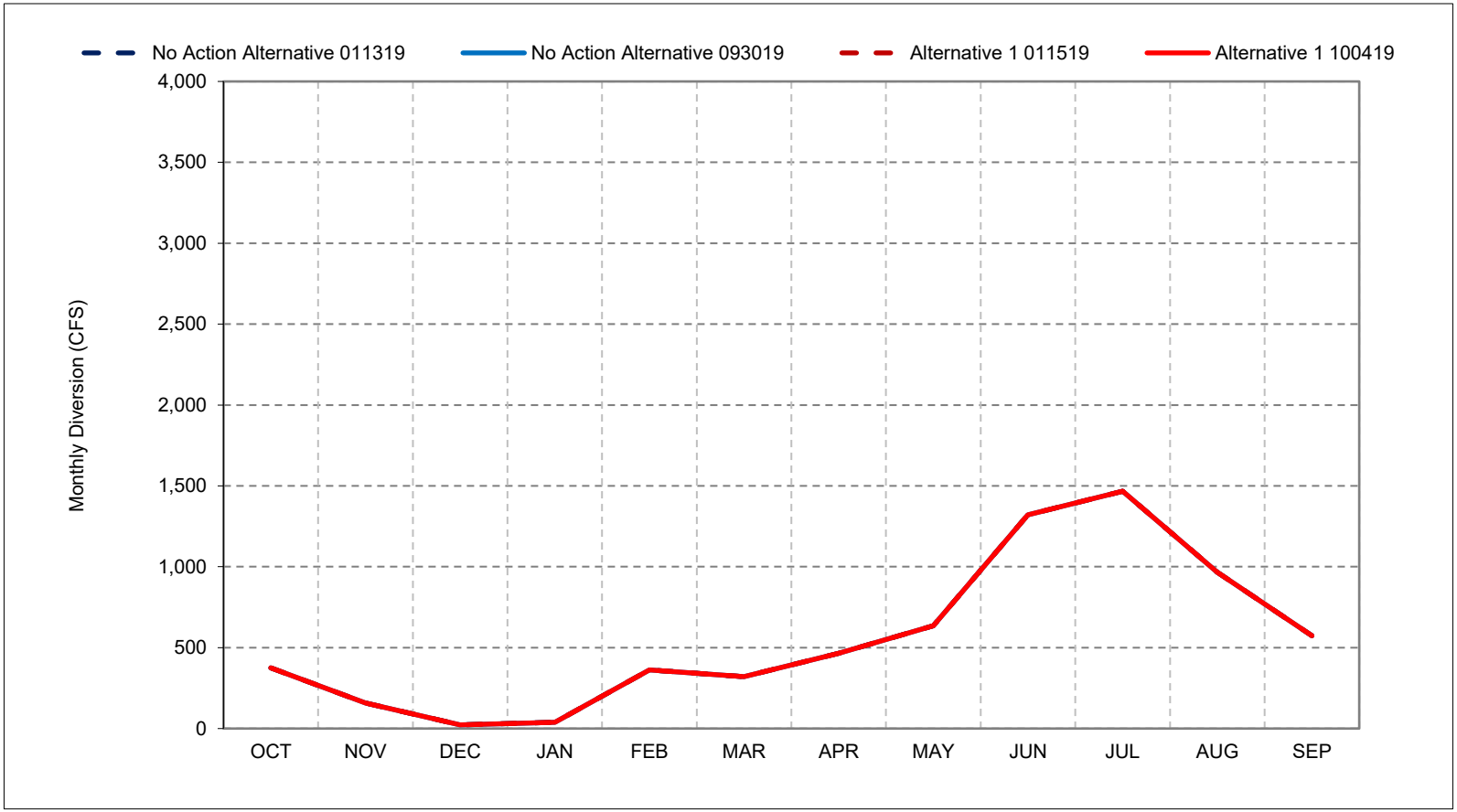



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 50-6. Friant-Kern Canal Diversion, Critical Year Average Diversion

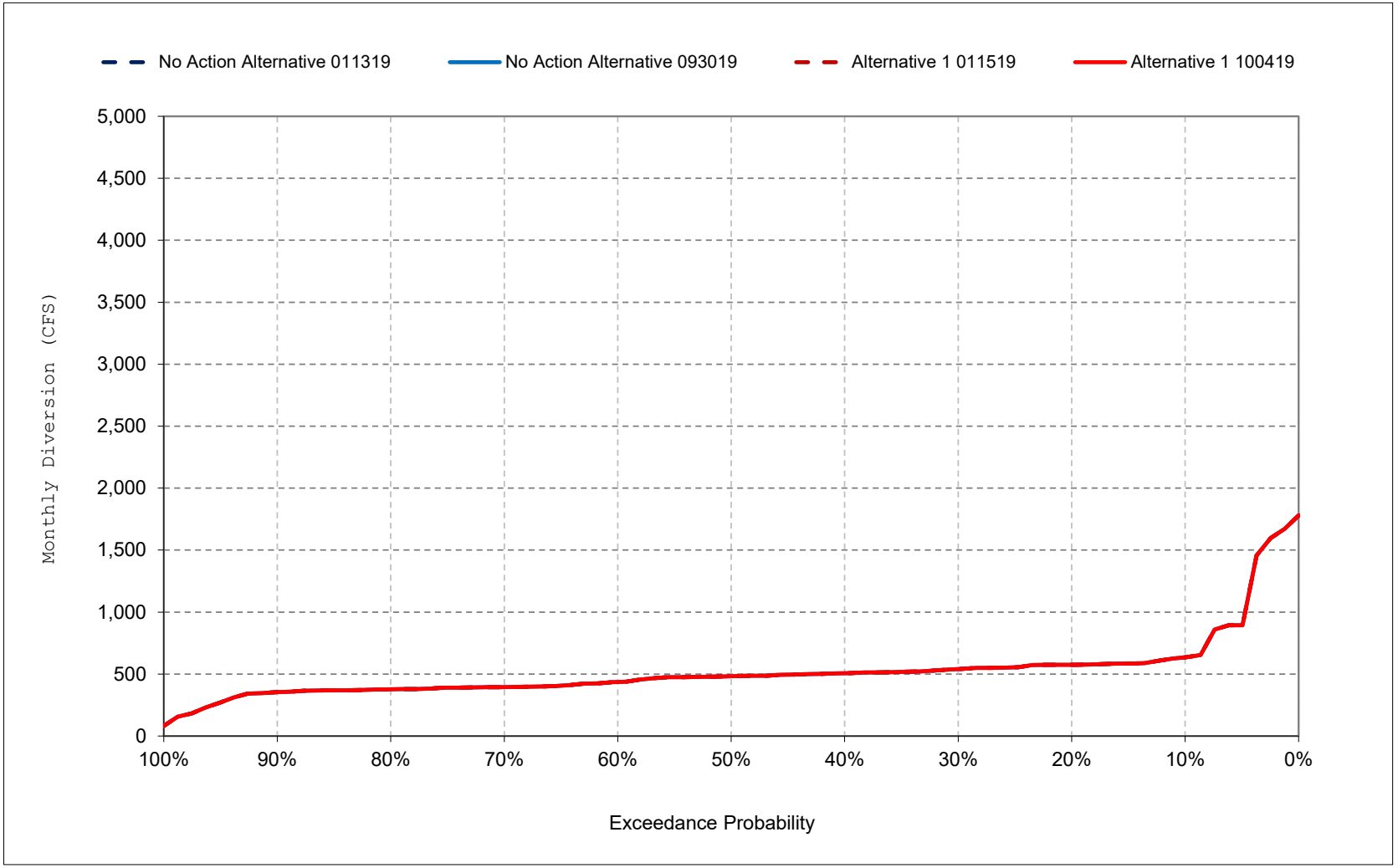



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

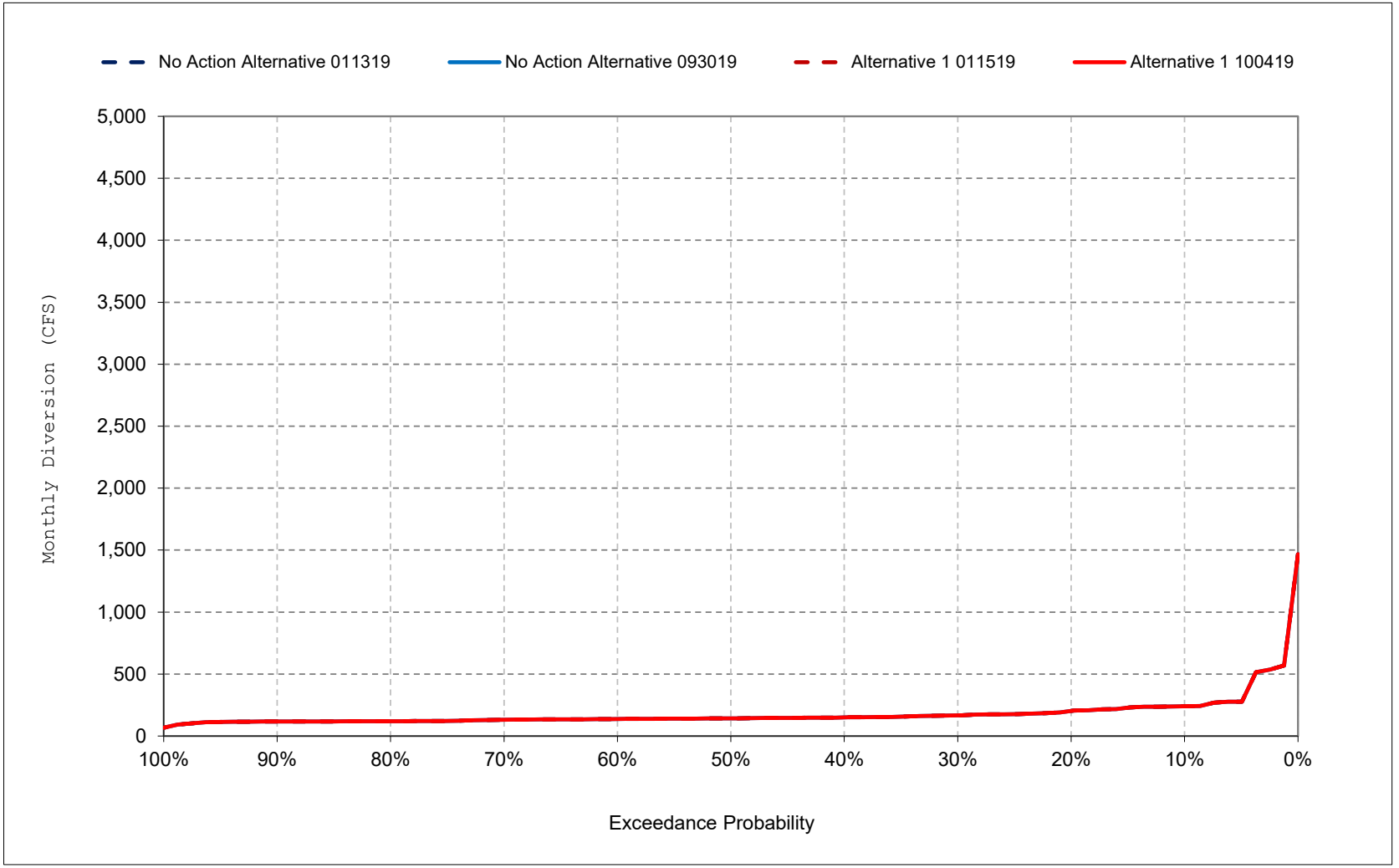
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-7. Friant-Kern Canal Diversion, October**



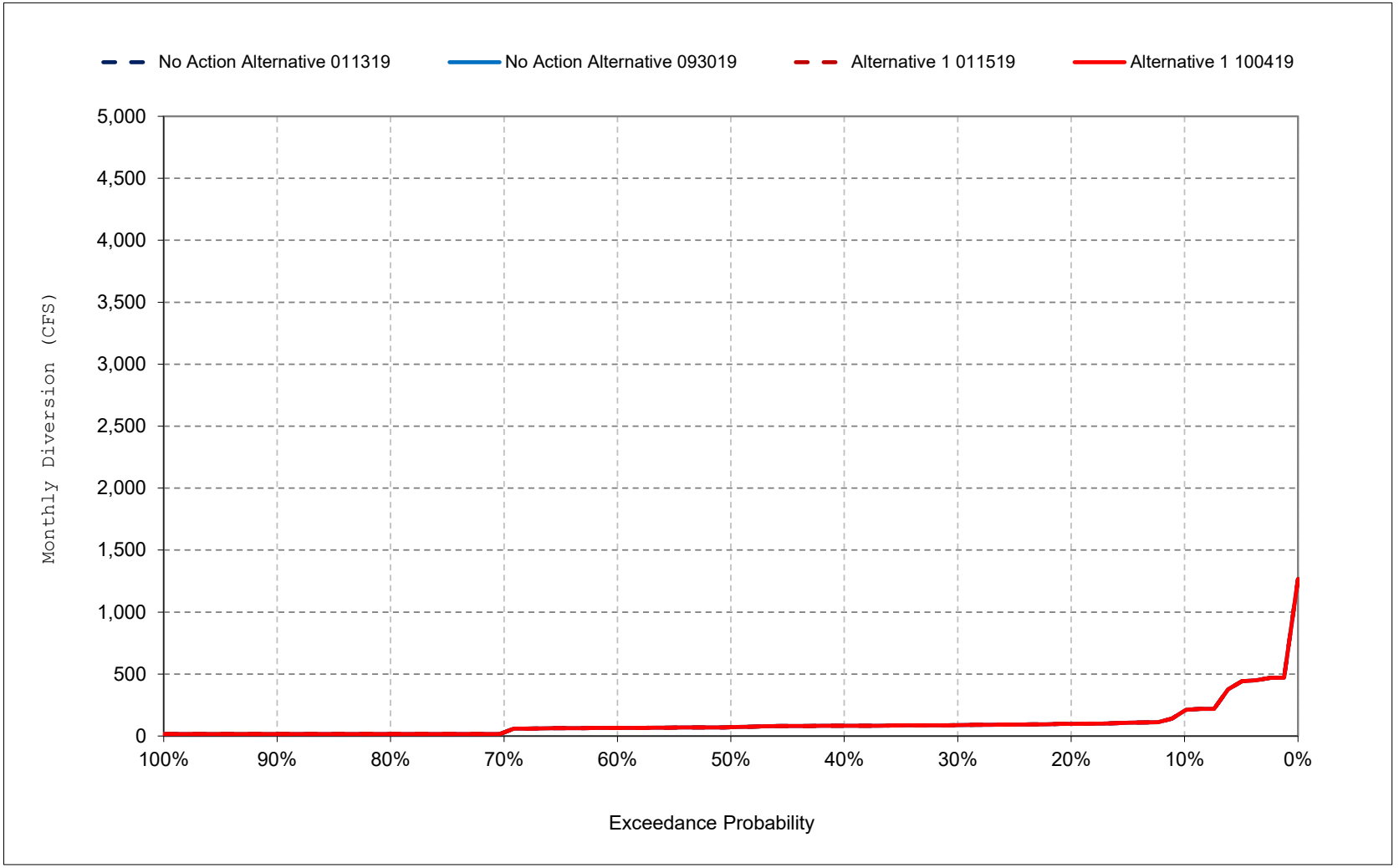

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-8. Friant-Kern Canal Diversion, November**



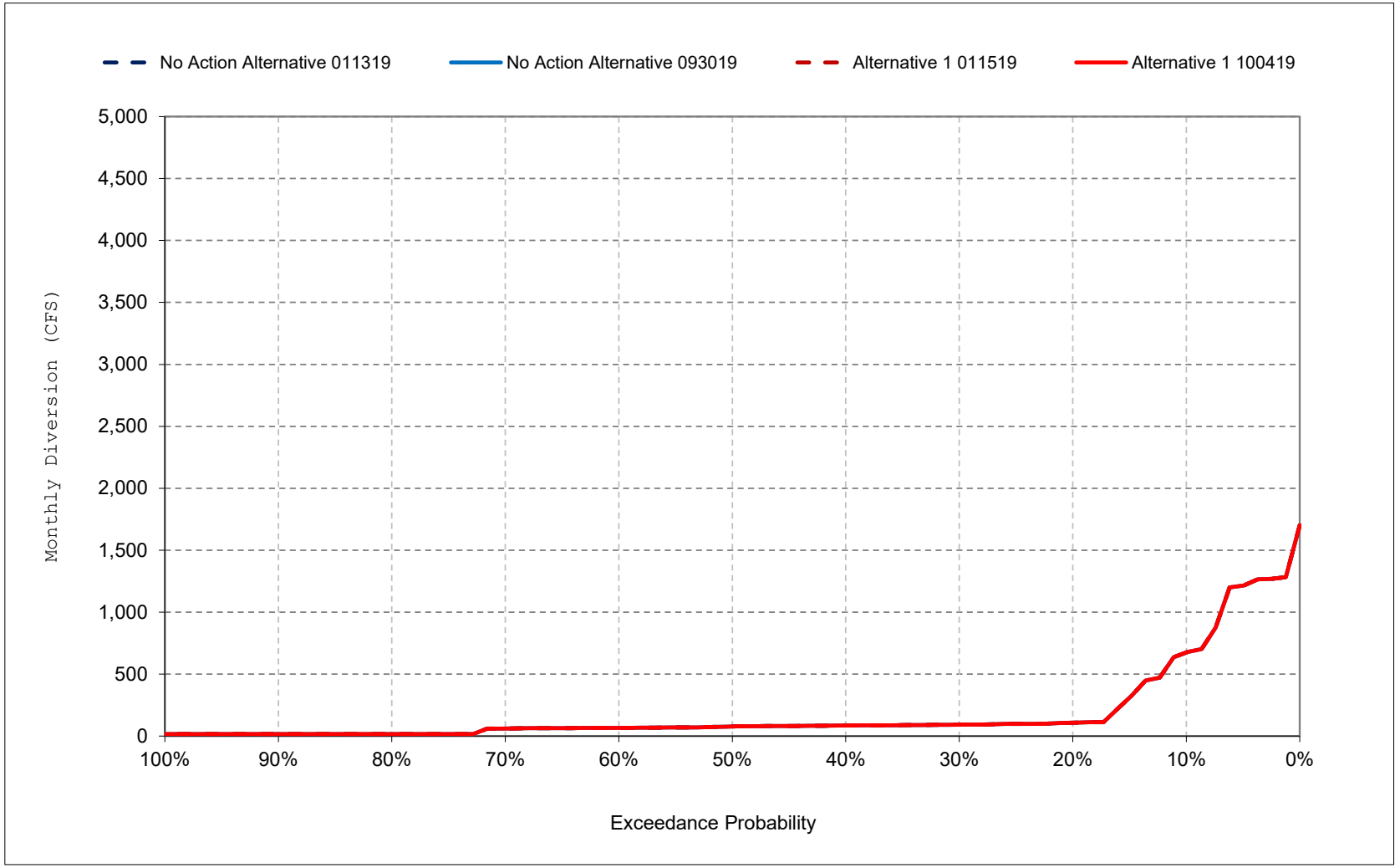

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-9. Friant-Kern Canal Diversion, December**



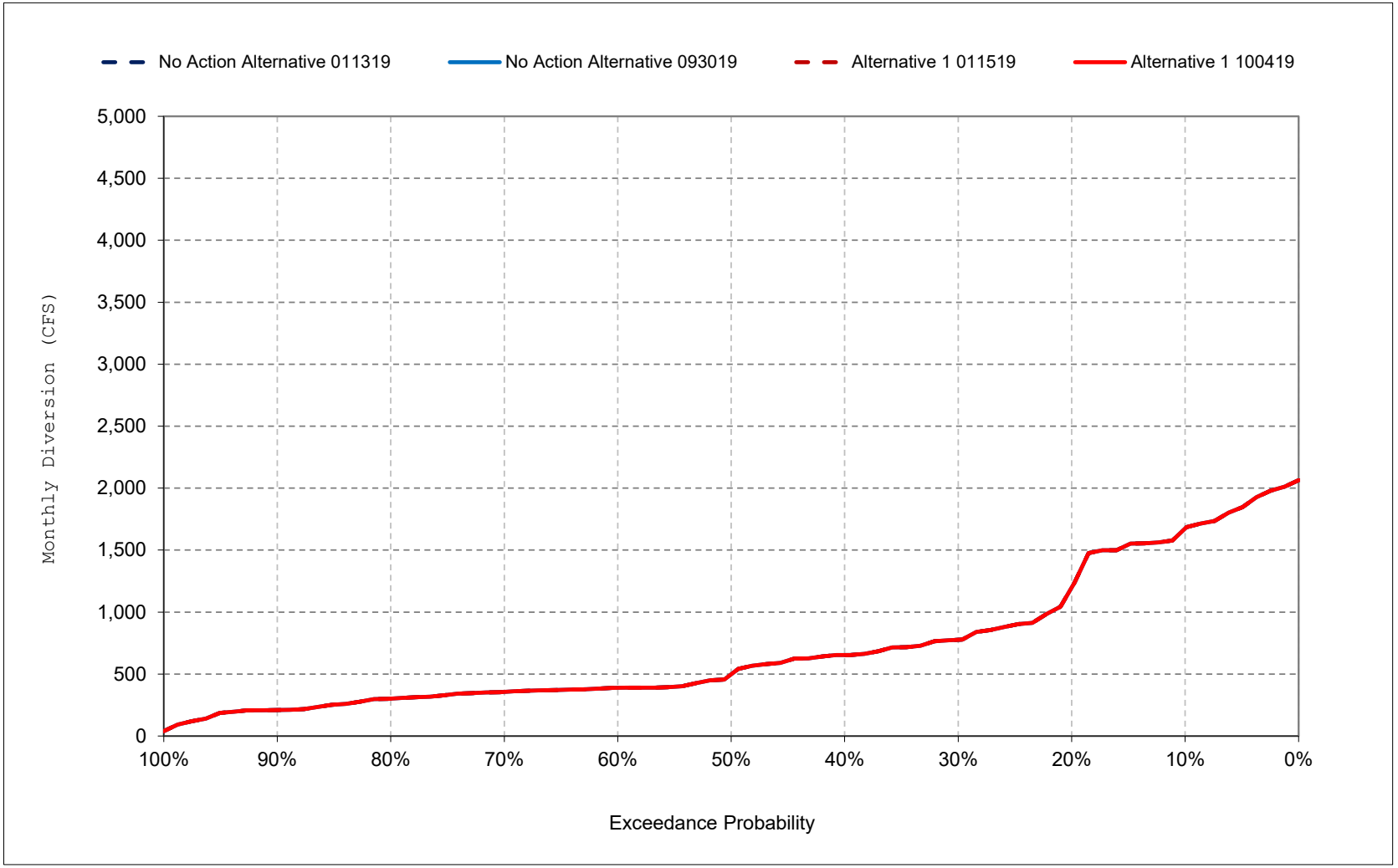

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-10. Friant-Kern Canal Diversion, January**



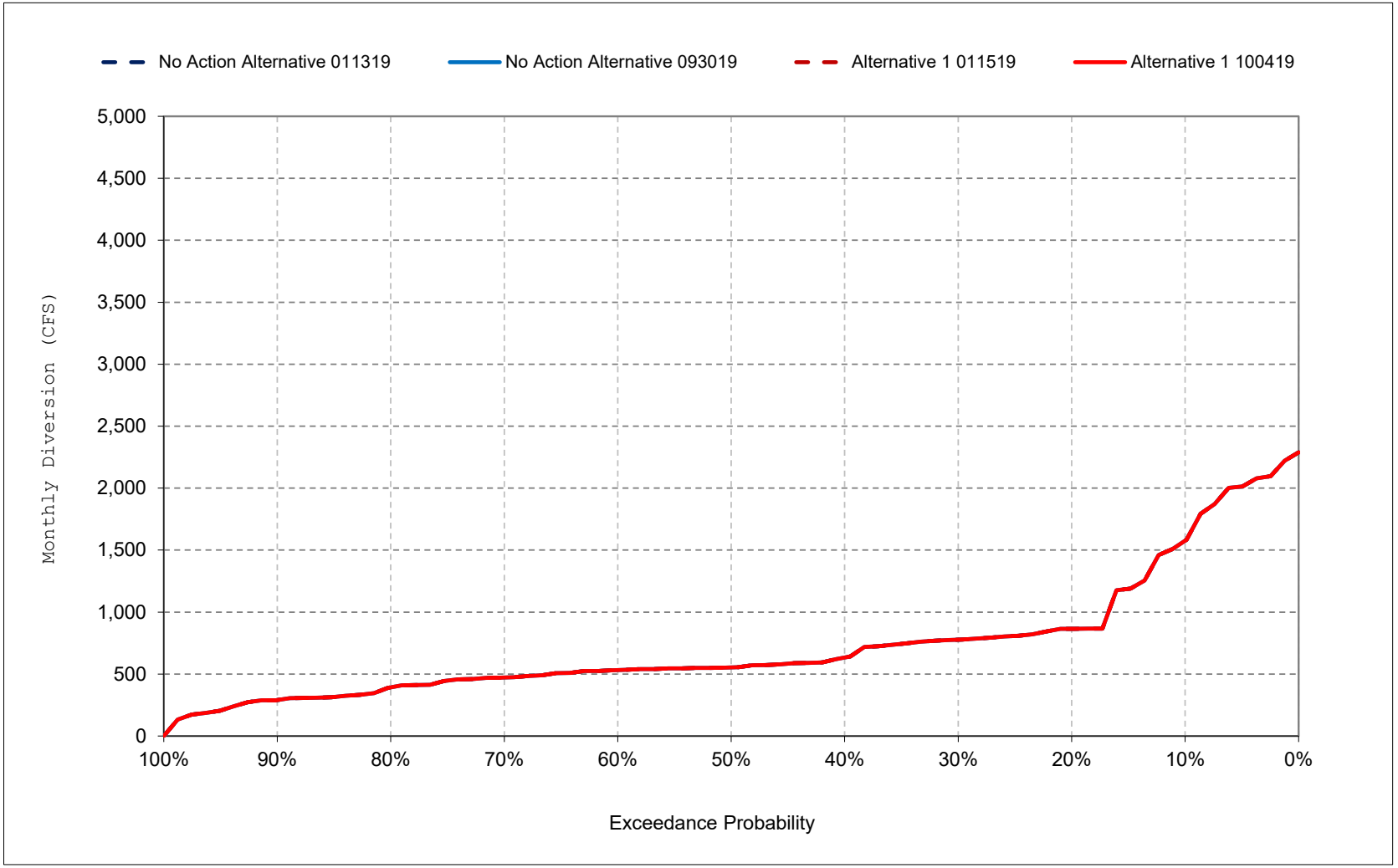

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-11. Friant-Kern Canal Diversion, February**



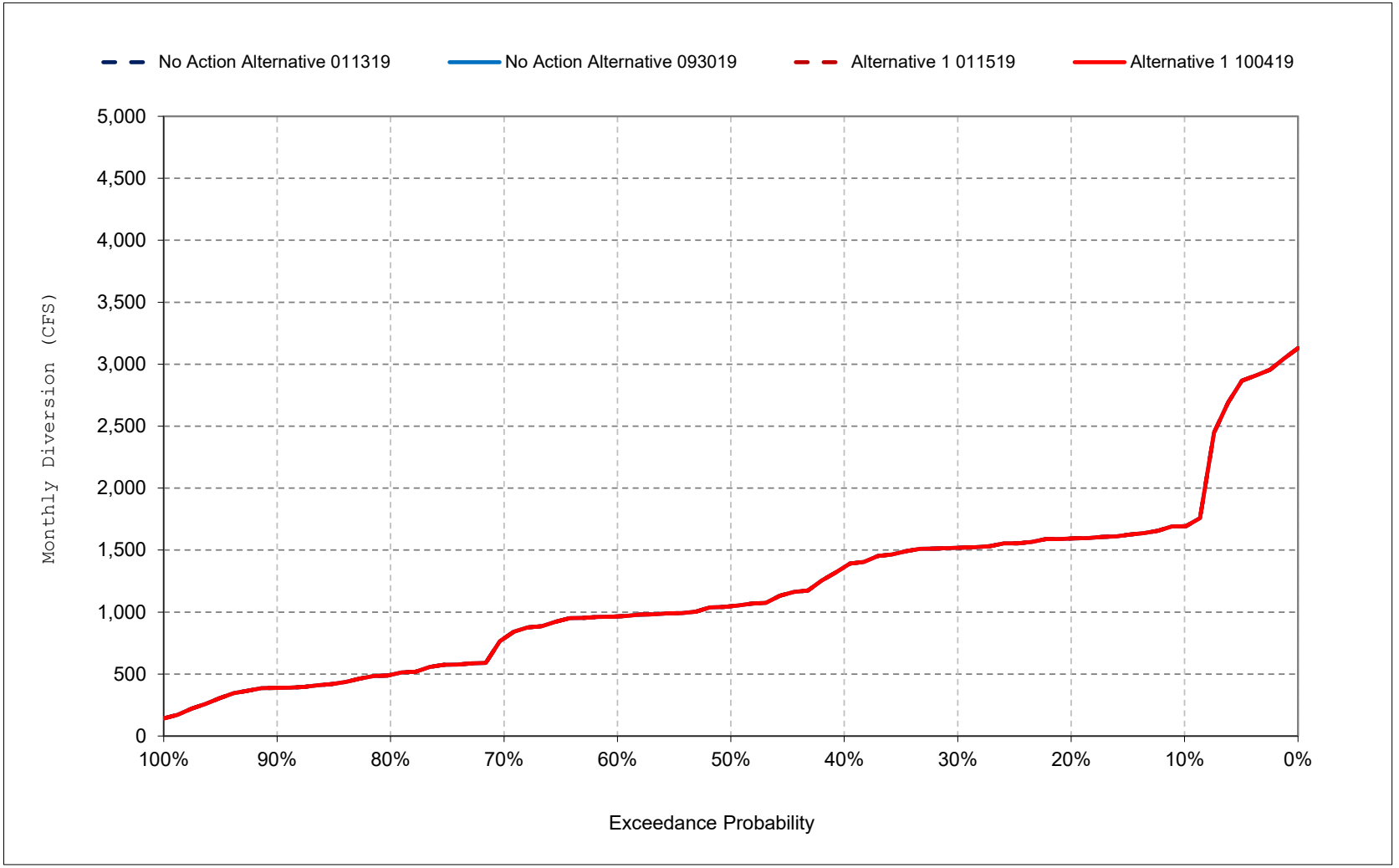

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-12. Friant-Kern Canal Diversion, March**



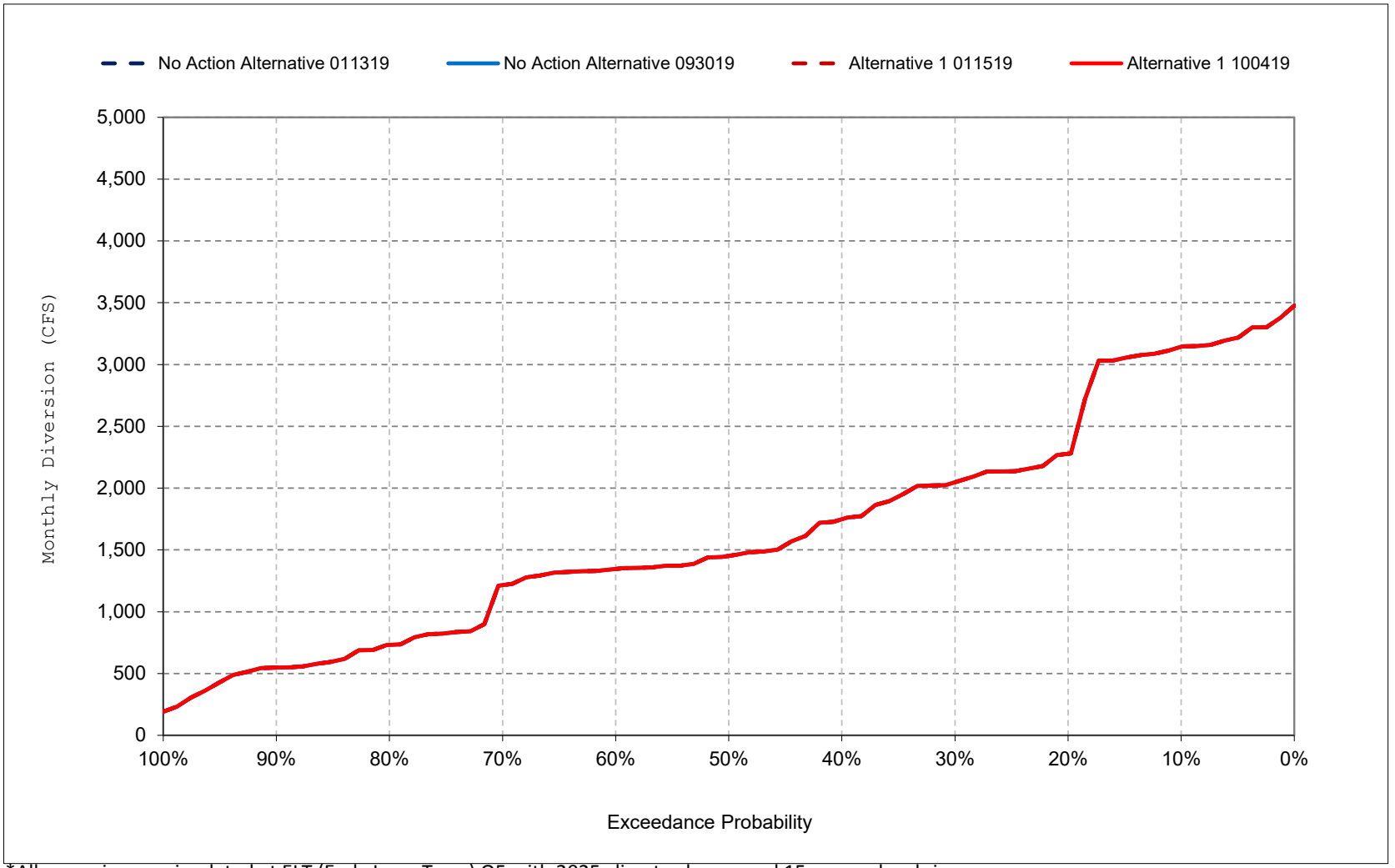

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-13. Friant-Kern Canal Diversion, April**



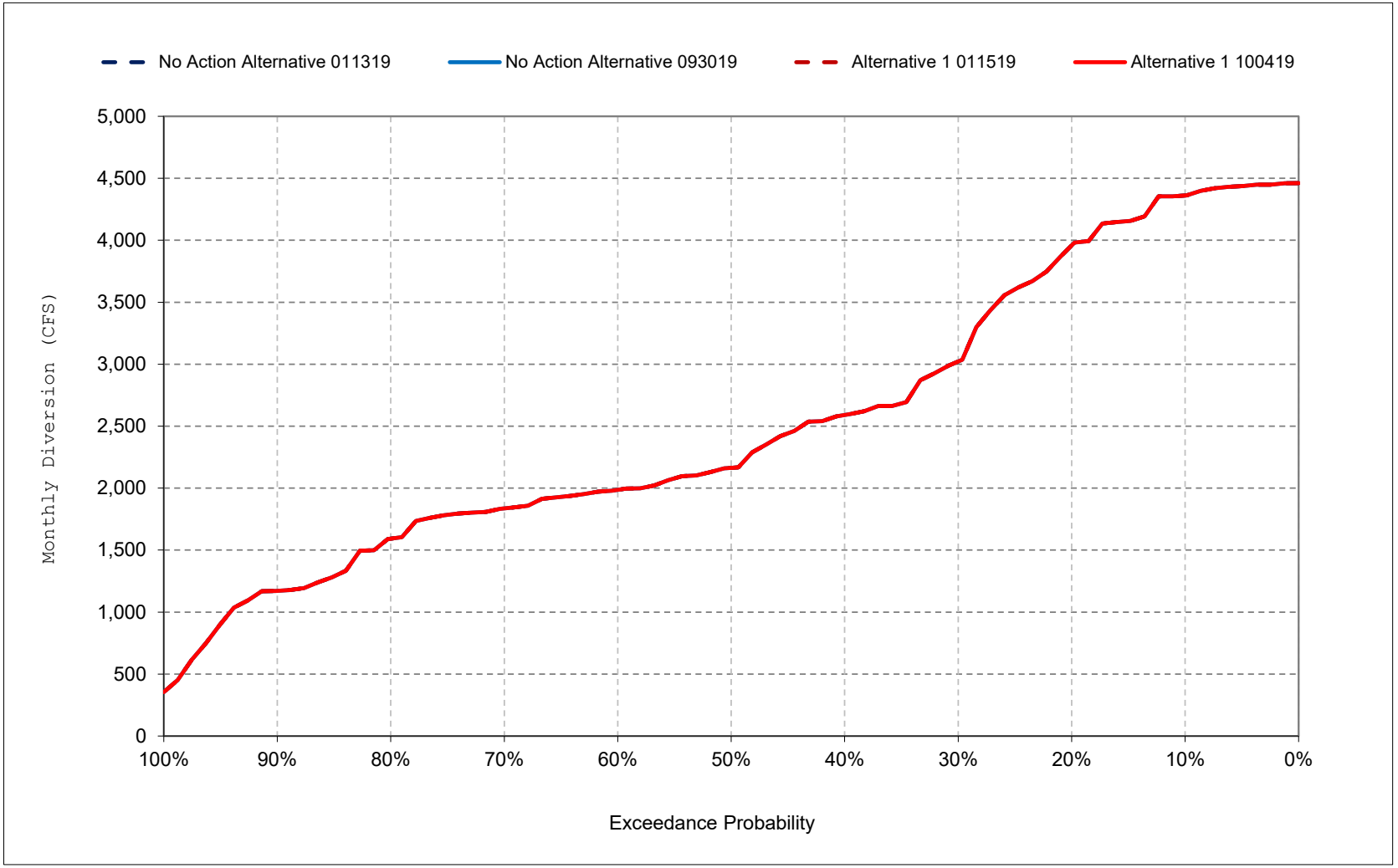

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-14. Friant-Kern Canal Diversion, May**



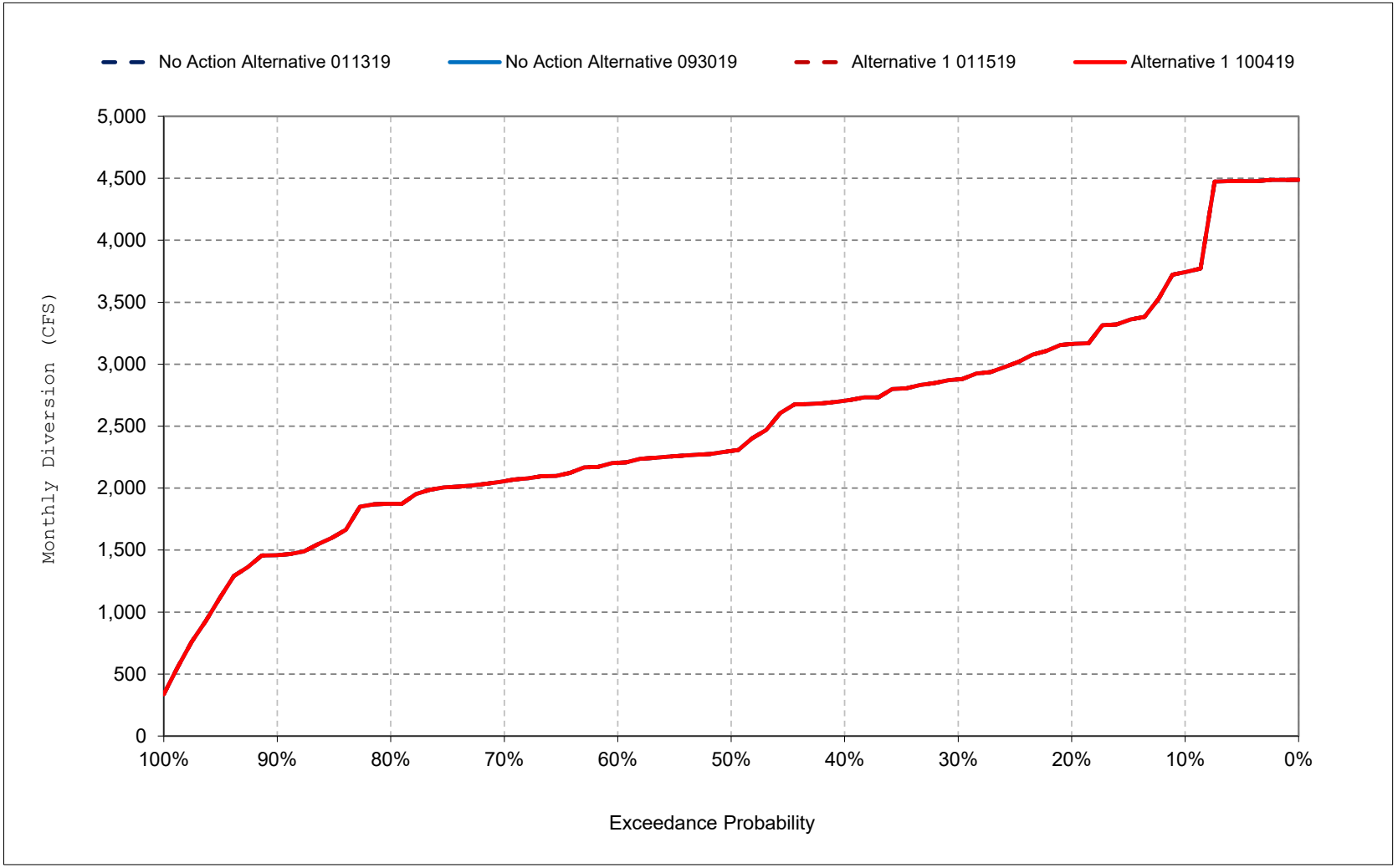

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-15. Friant-Kern Canal Diversion, June**



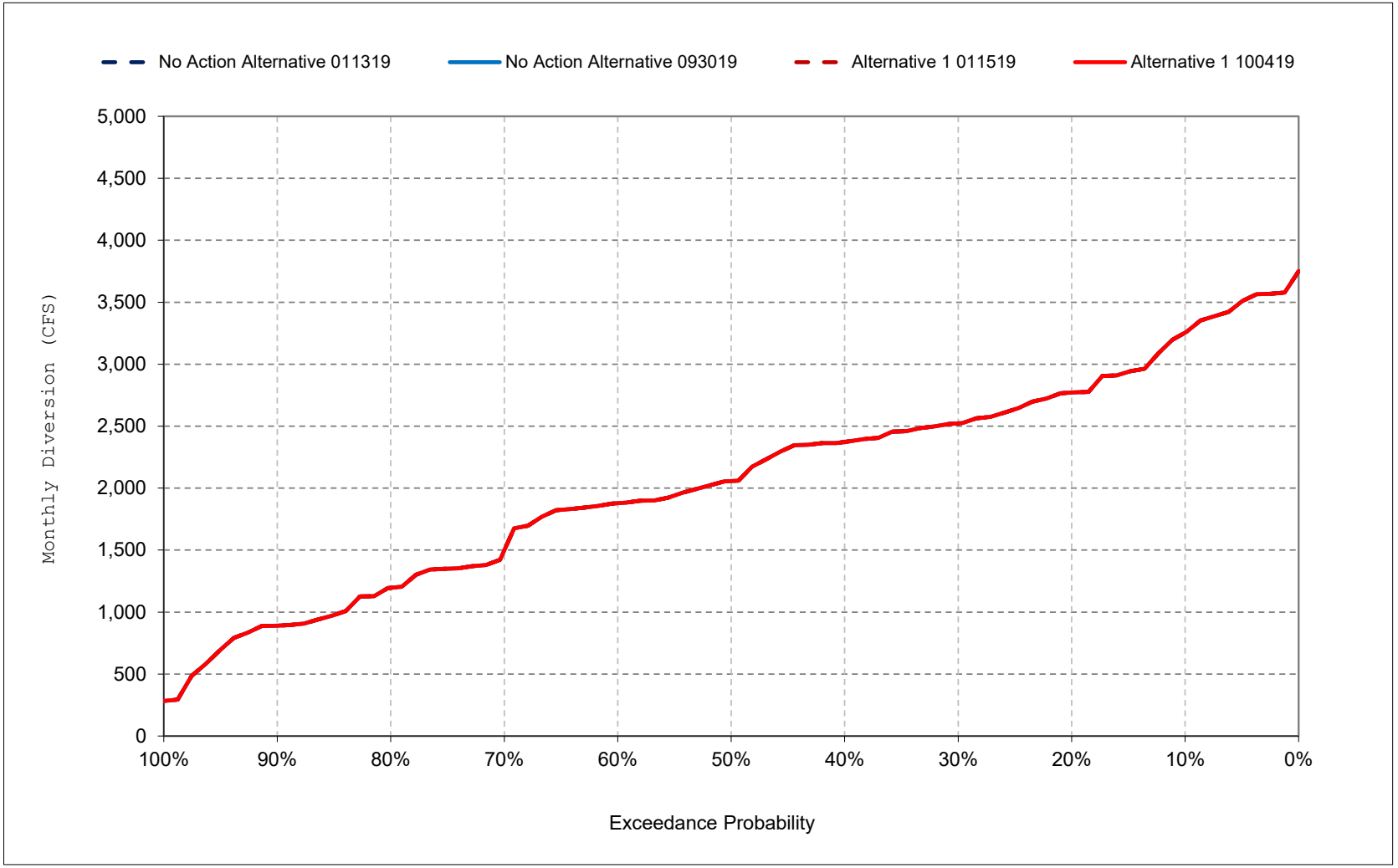

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-16. Friant-Kern Canal Diversion, July**



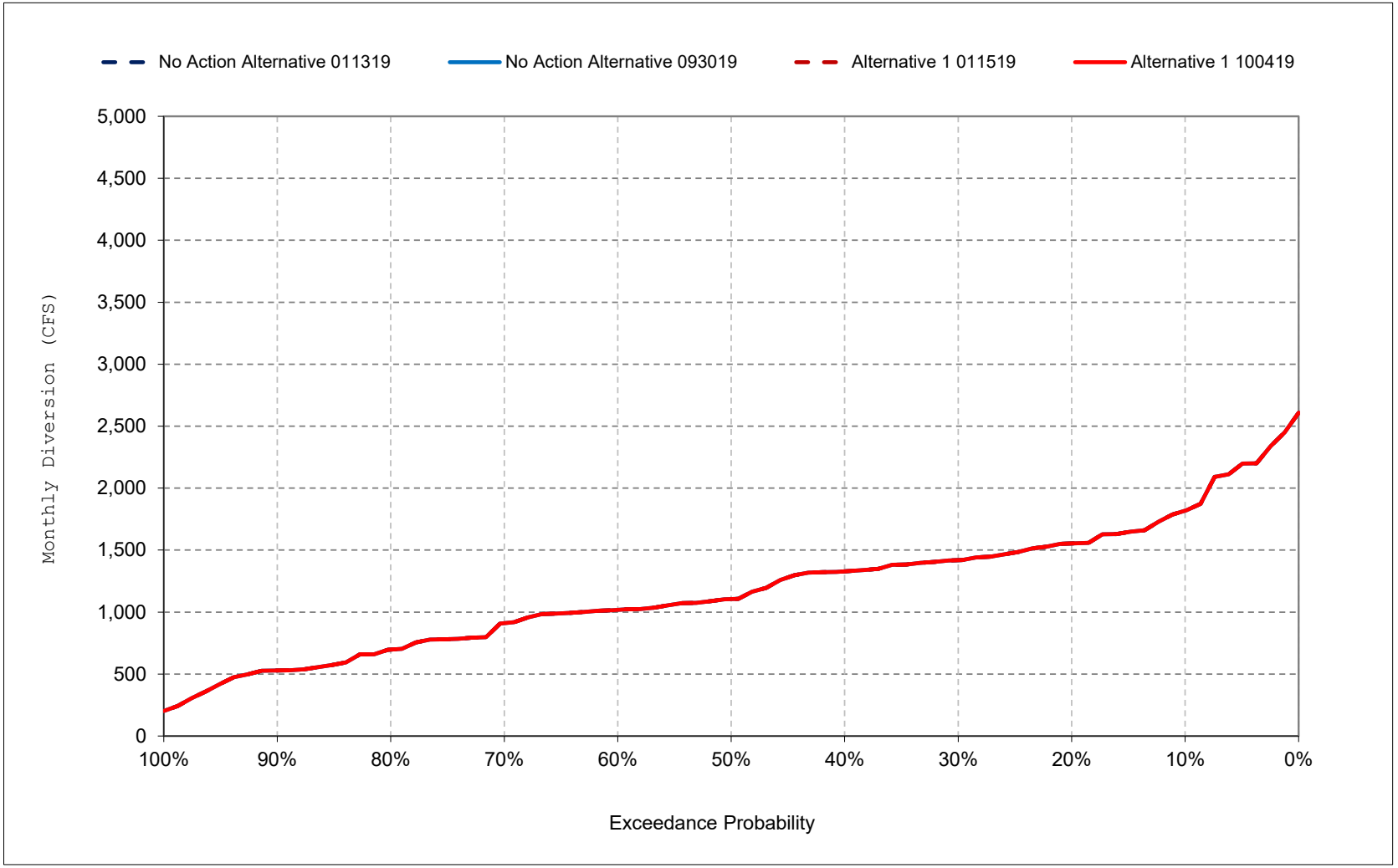

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-17. Friant-Kern Canal Diversion, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 50-18. Friant-Kern Canal Diversion, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 51-1. Madera Canal Diversion, Monthly Diversion

## No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

## Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 51-2. Madera Canal Diversion, Monthly Diversion

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 51-3. Madera Canal Diversion, Monthly Diversion

### No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### No Action Alternative 093019

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 51-4. Madera Canal Diversion, Monthly Diversion

### Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### Alternative 1 100419

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 44 | 9 | 1 | 33 | 100 | 121 | 333 | 996 | 1,250 | 1,250 | 1,106 | 424 |
| 20% | 38 | 1 | 0 | 1 | 48 | 89 | 299 | 823 | 1,161 | 1,233 | 924 | 332 |
| 30% | 0 | 0 | 0 | 0 | 20 | 31 | 46 | 618 | 1,042 | 1,112 | 859 | 260 |
| 40% | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 558 | 953 | 1,009 | 807 | 134 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 740 | 899 | 621 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 677 | 823 | 565 | 91 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 | 604 | 735 | 497 | 86 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 509 | 620 | 410 | 74 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 379 | 463 | 321 | 50 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 18 | 3 | 11 | 25 | 32 | 40 | 103 | 469 | 803 | 886 | 676 | 193 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 46 | 9 | 21 | 68 | 63 | 89 | 202 | 800 | 1,077 | 1,130 | 950 | 333 |
| Above Normal (16%) | 14 | 1 | 0 | 19 | 47 | 38 | 108 | 535 | 937 | 1,030 | 784 | 193 |
| Below Normal (13%) | 7 | 0 | 0 | 0 | 26 | 25 | 90 | 366 | 749 | 869 | 586 | 178 |
| Dry (24%) | 0 | 0 | 19 | 0 | 4 | 4 | 25 | 234 | 627 | 738 | 510 | 79 |
| Critical (15%) | 3 | 0 | 0 | 0 | 2 | 9 | 28 | 167 | 406 | 465 | 325 | 94 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Diversion (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | **0** | **0** | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Above Normal (16%) | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 |

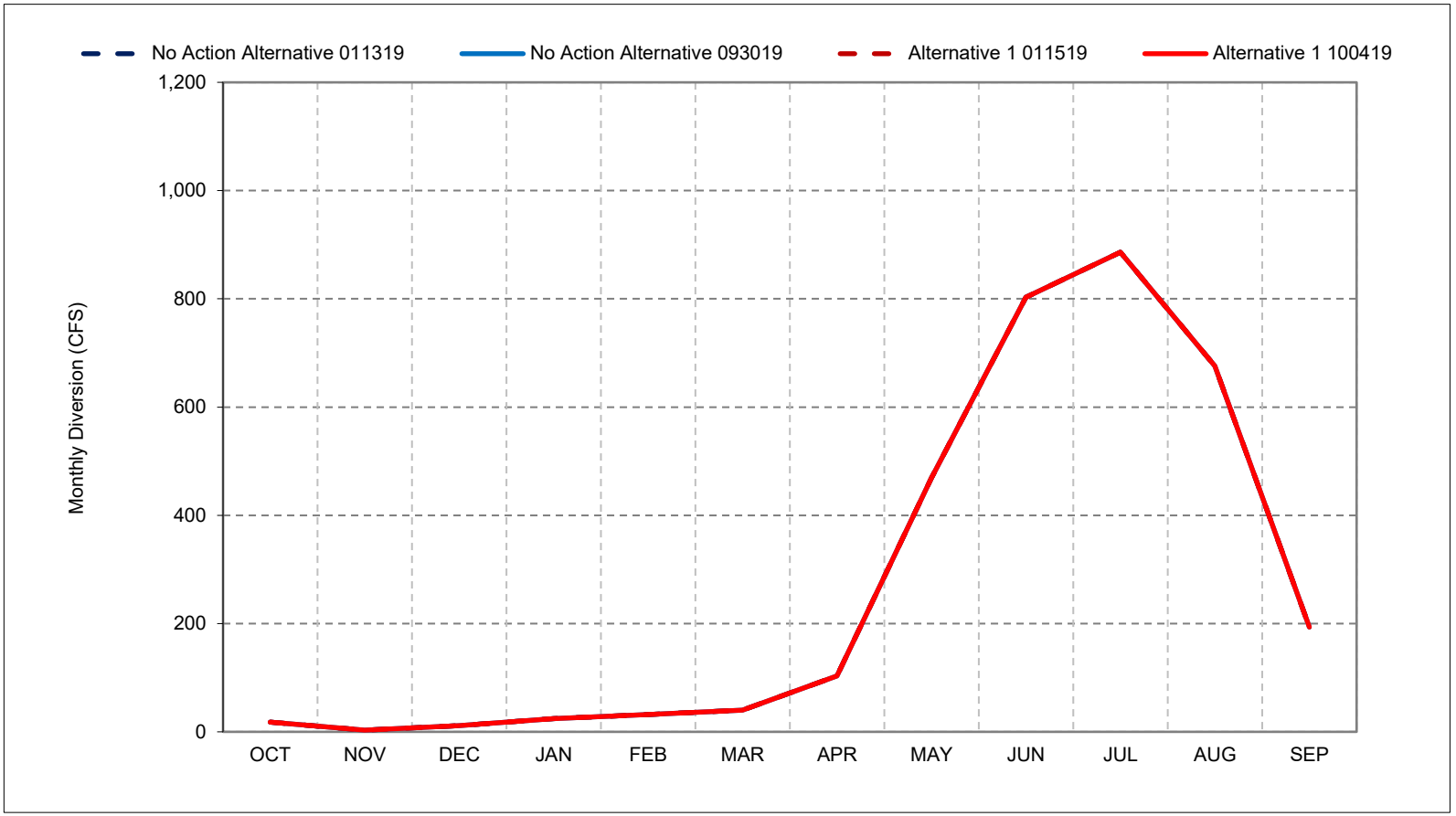
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-1. Madera Canal Diversion, Long-Term Average Diversion

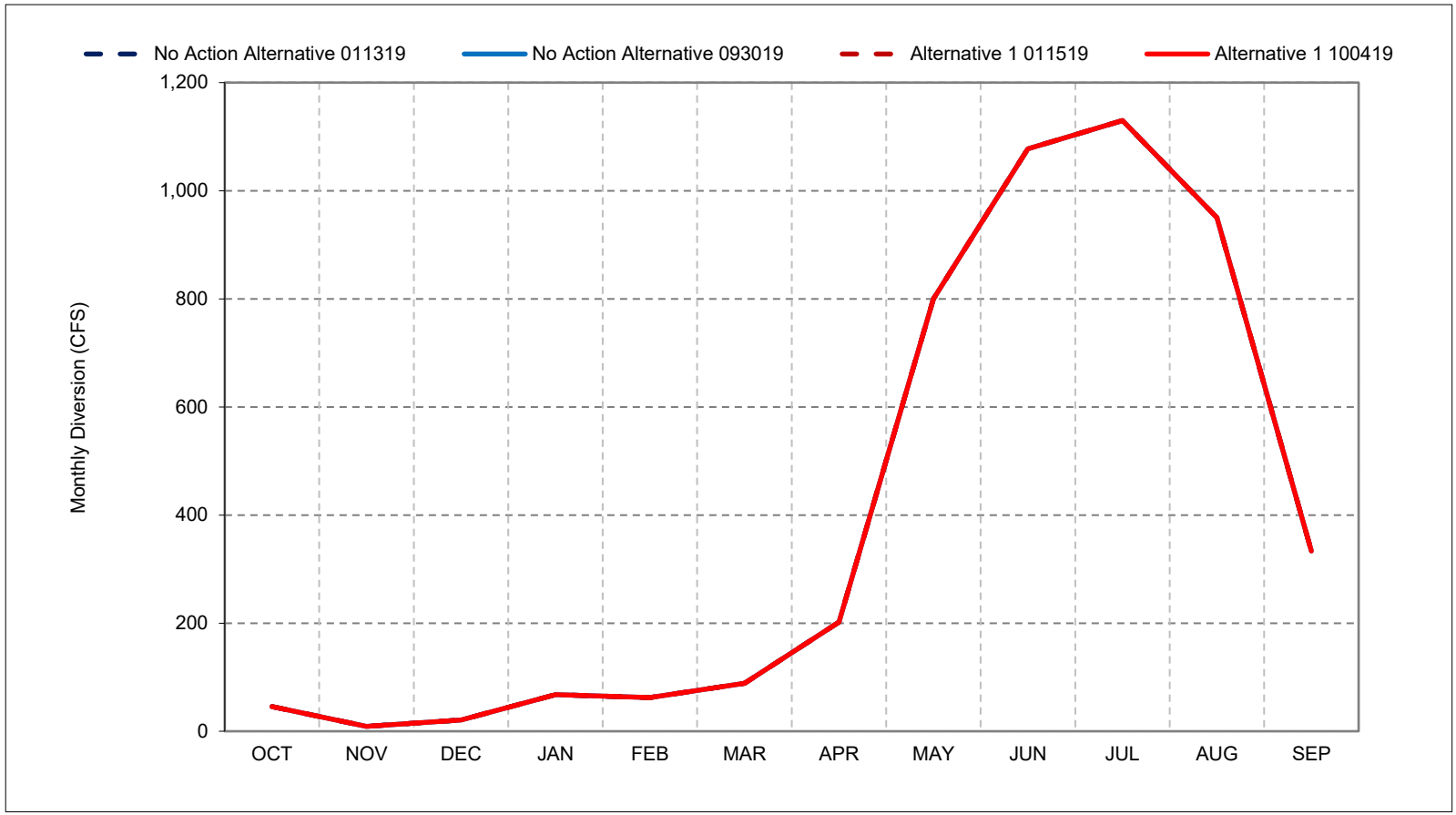



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-2. Madera Canal Diversion, Wet Year Average Diversion

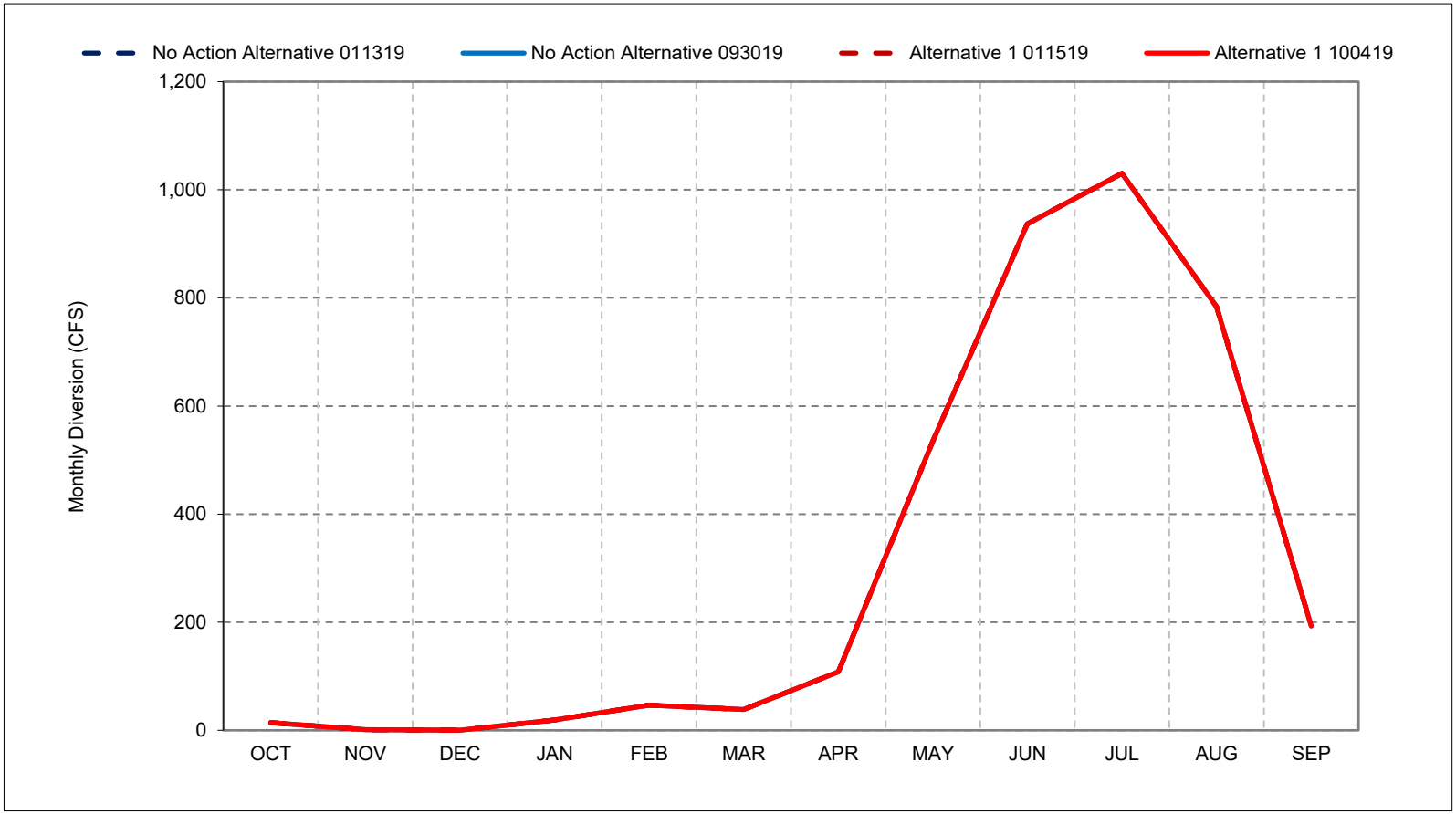



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-3. Madera Canal Diversion, Above Normal Year Average Diversion

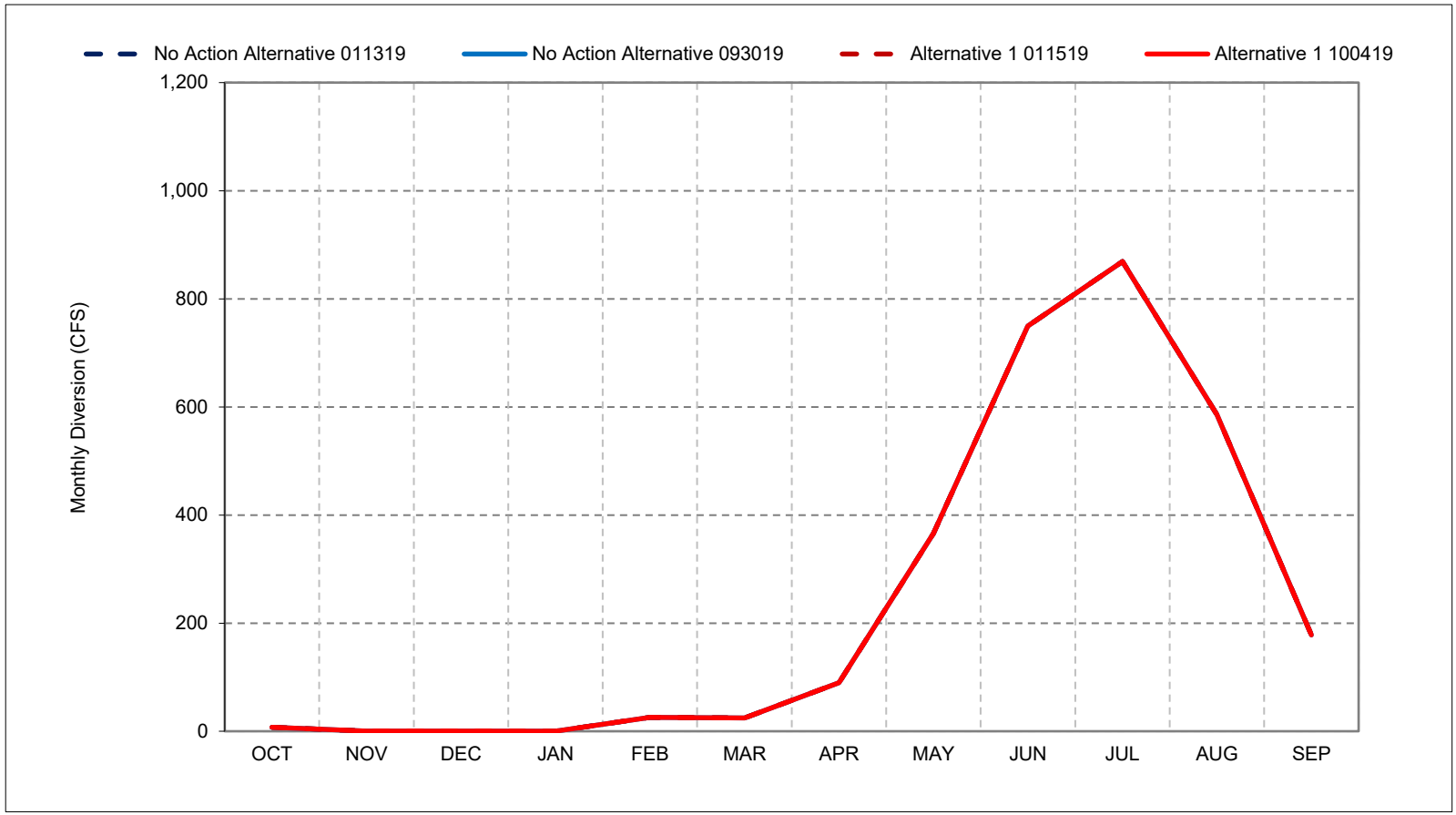



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-4. Madera Canal Diversion, Below Normal Year Average Diversion

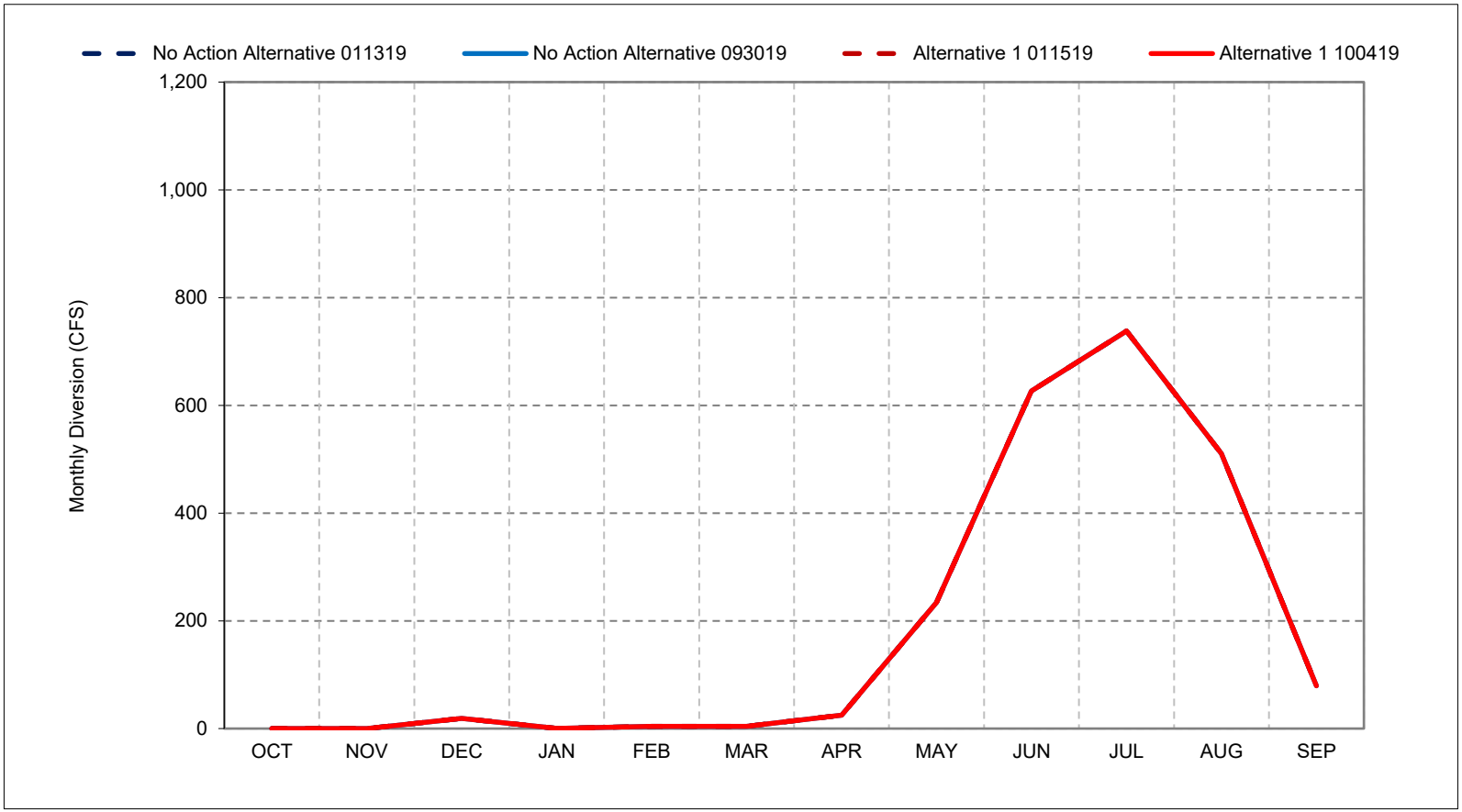



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-5. Madera Canal Diversion, Dry Year Average Diversion

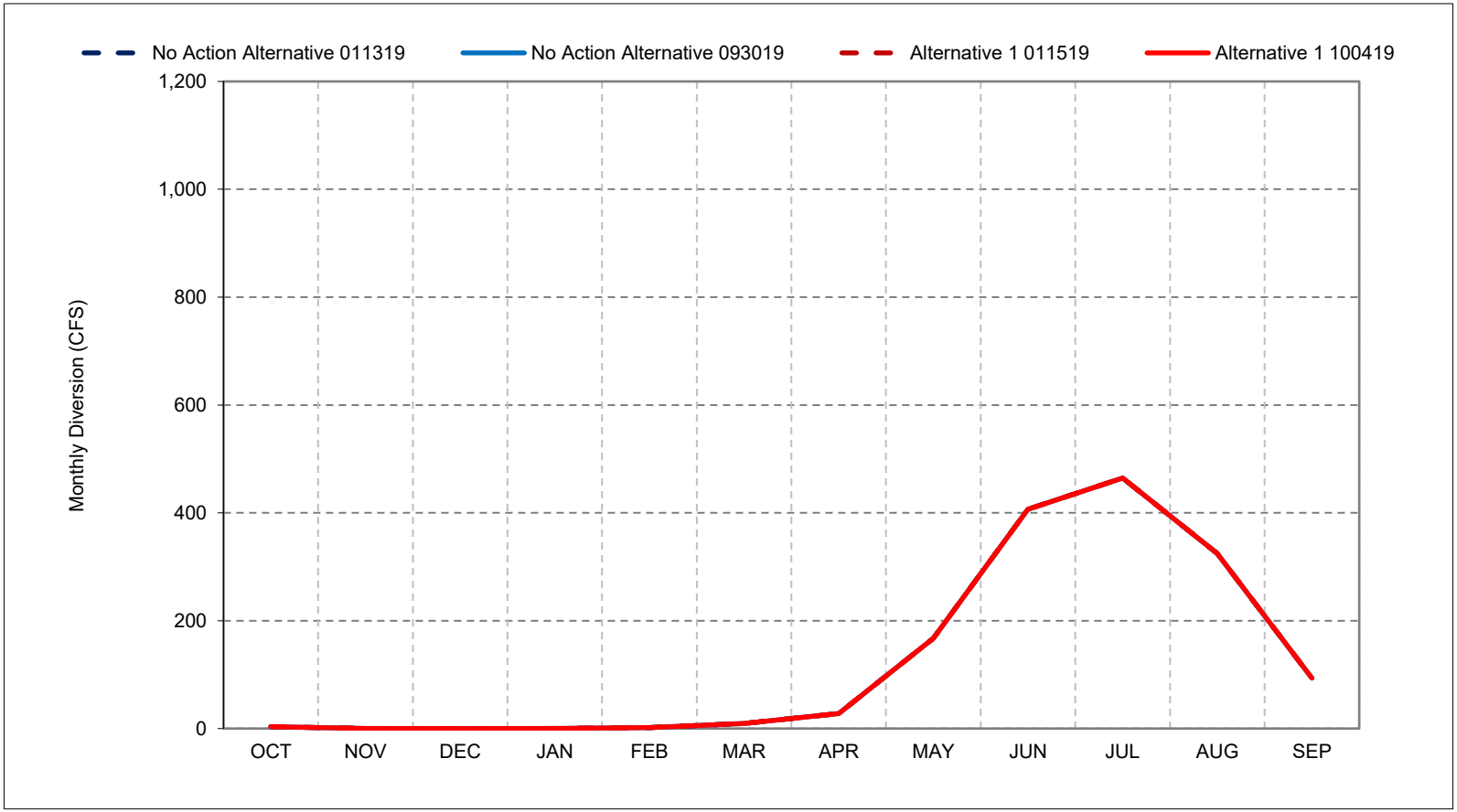



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 51-6. Madera Canal Diversion, Critical Year Average Diversion

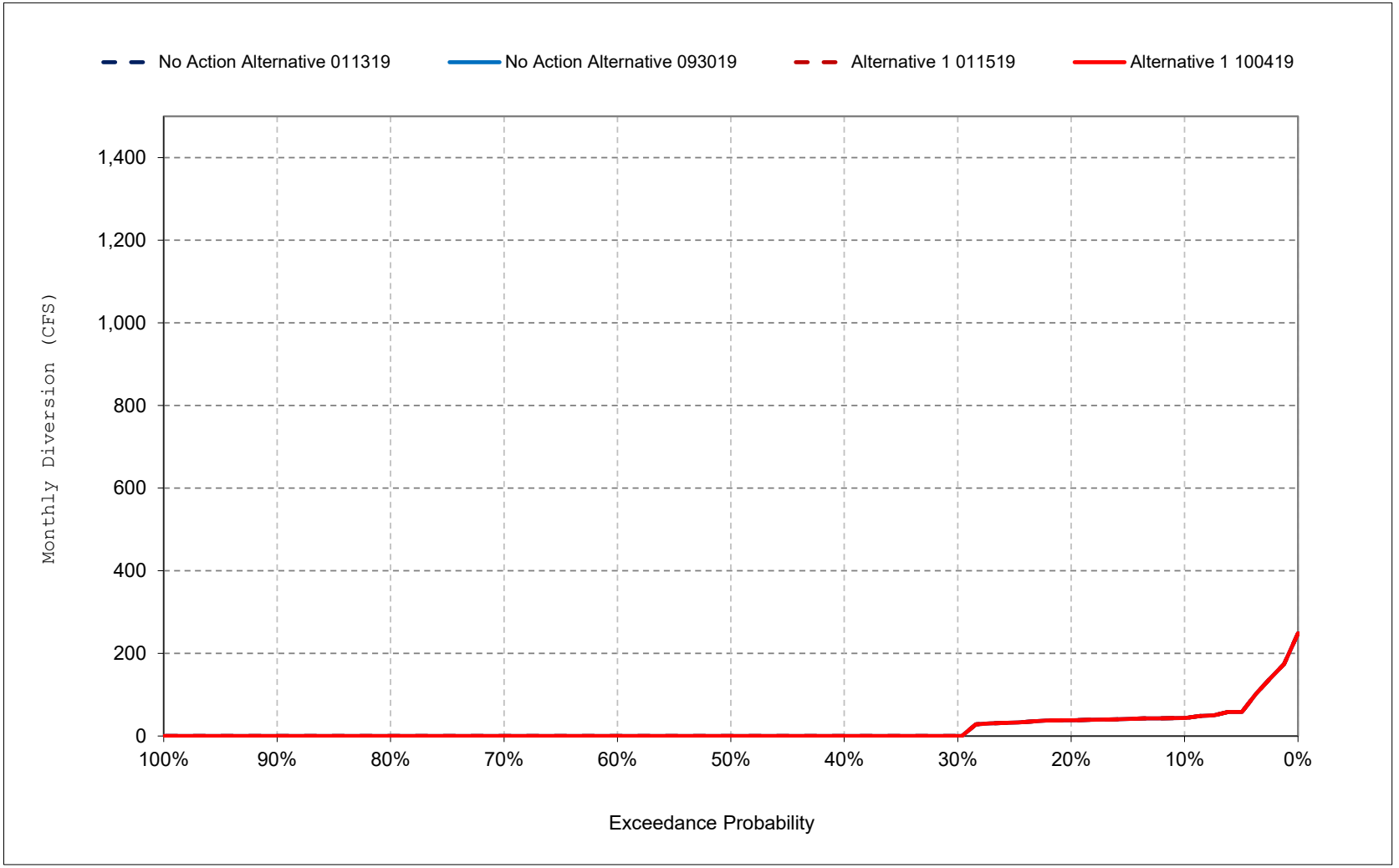



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

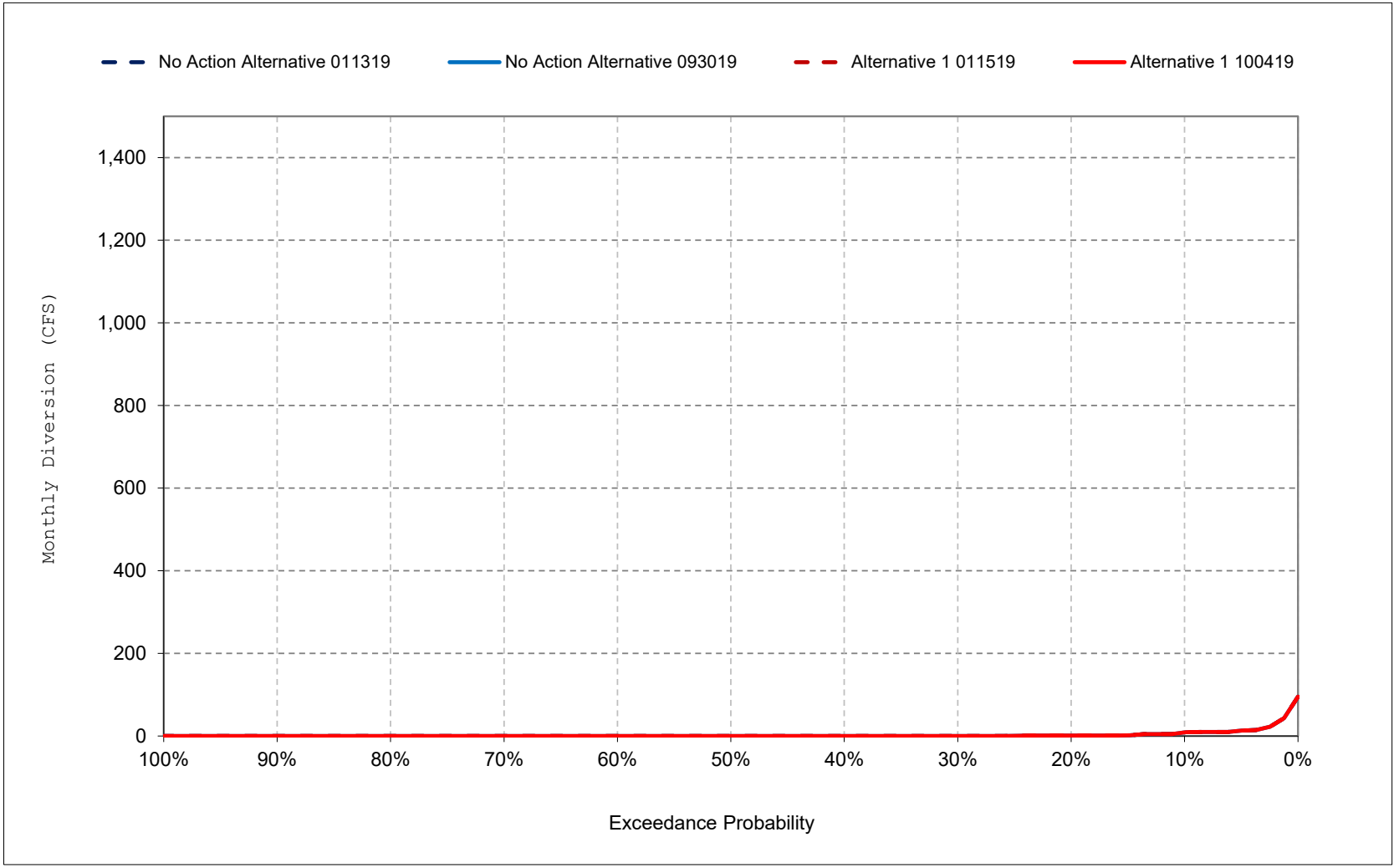
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-7. Madera Canal Diversion, October**



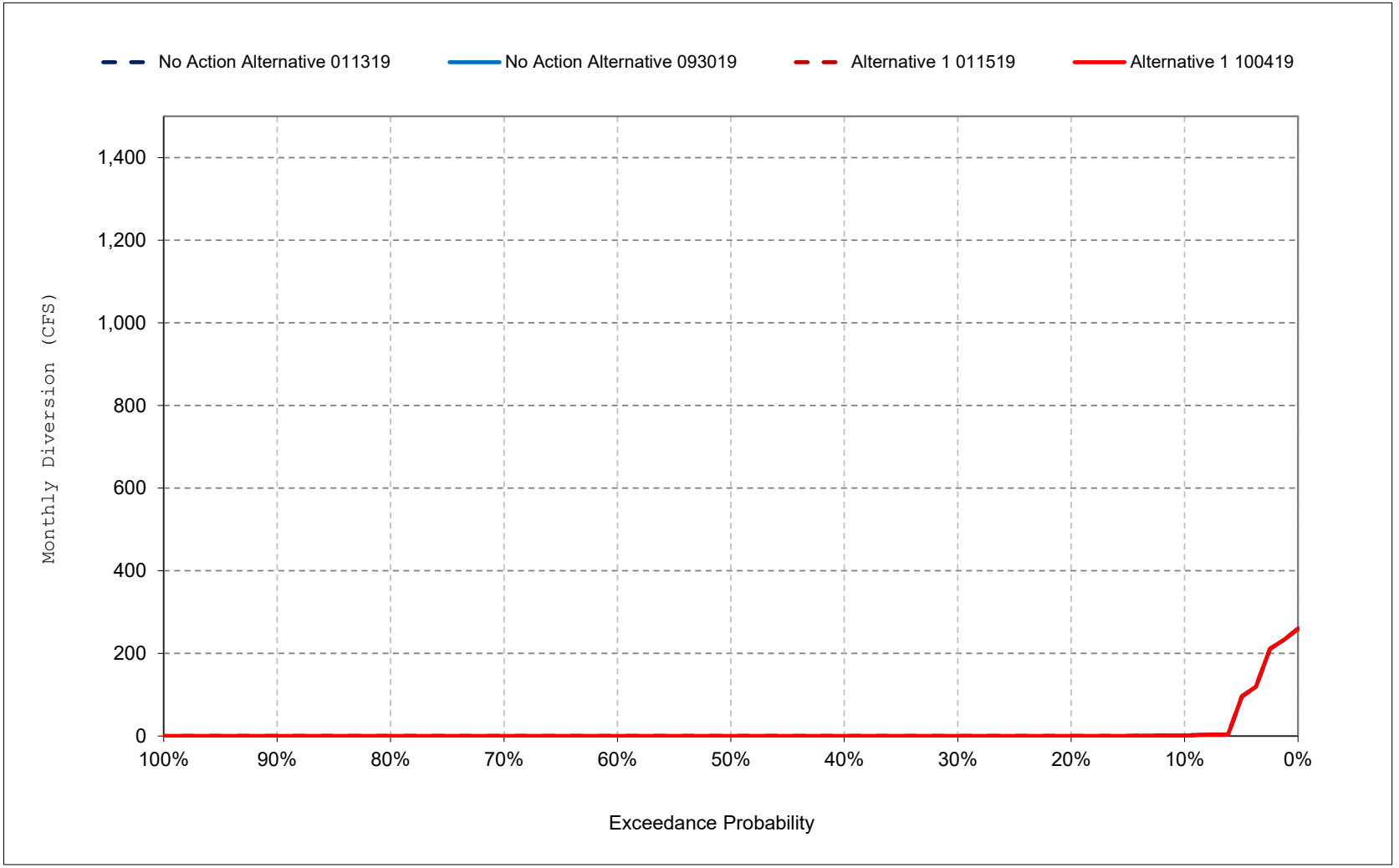

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-8. Madera Canal Diversion, November**



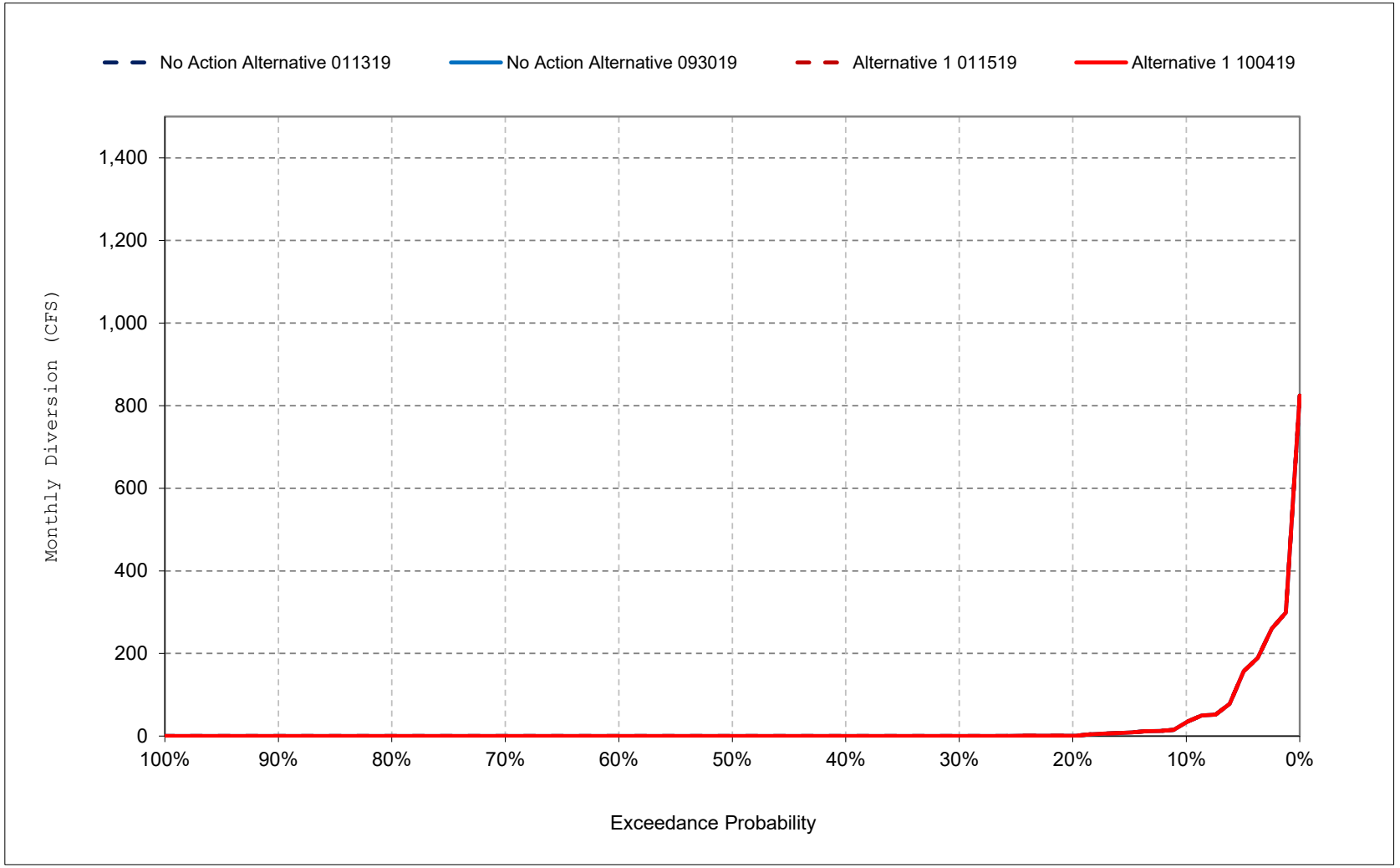

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-9. Madera Canal Diversion, December**



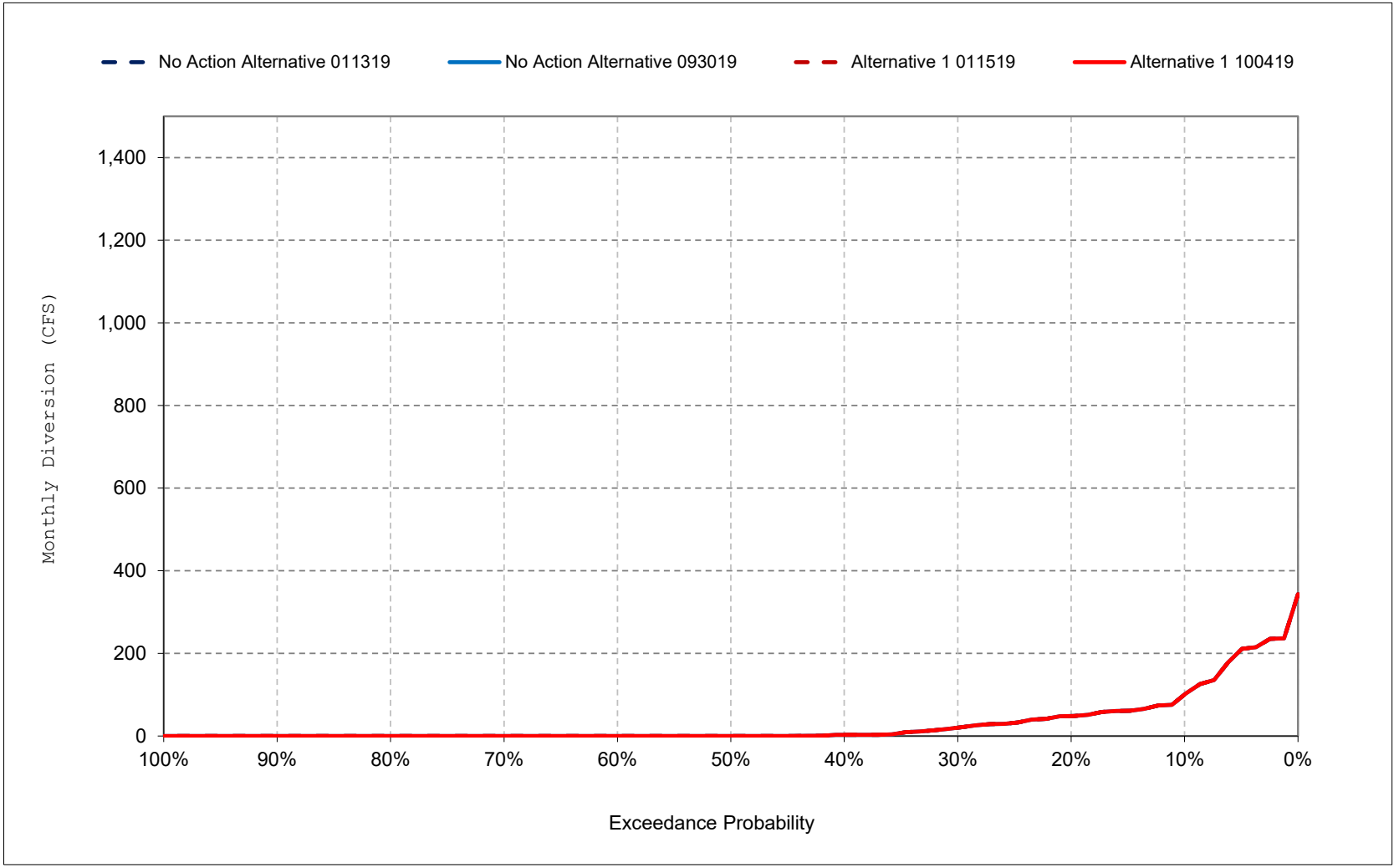

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-10. Madera Canal Diversion, January**



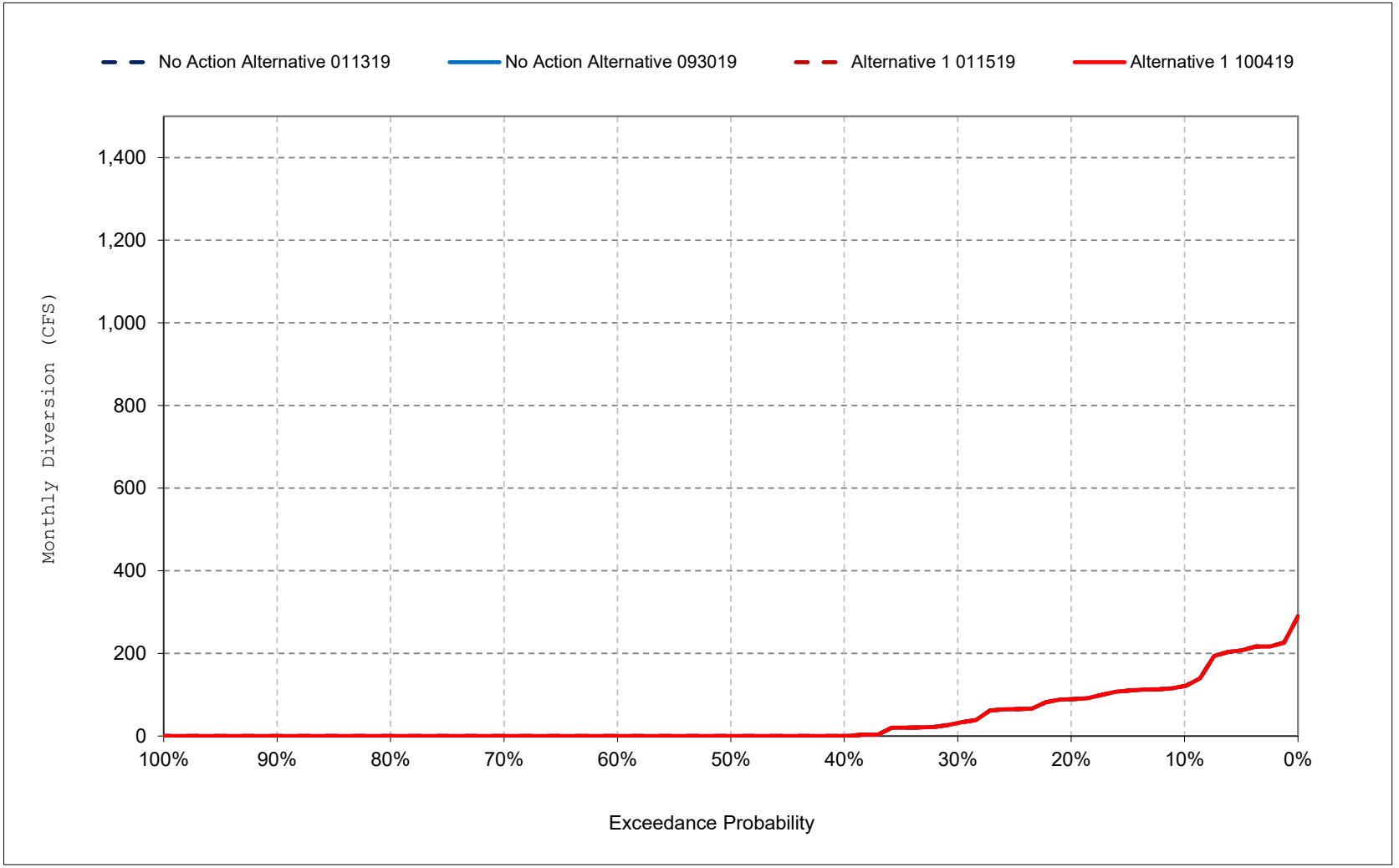

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-11. Madera Canal Diversion, February**



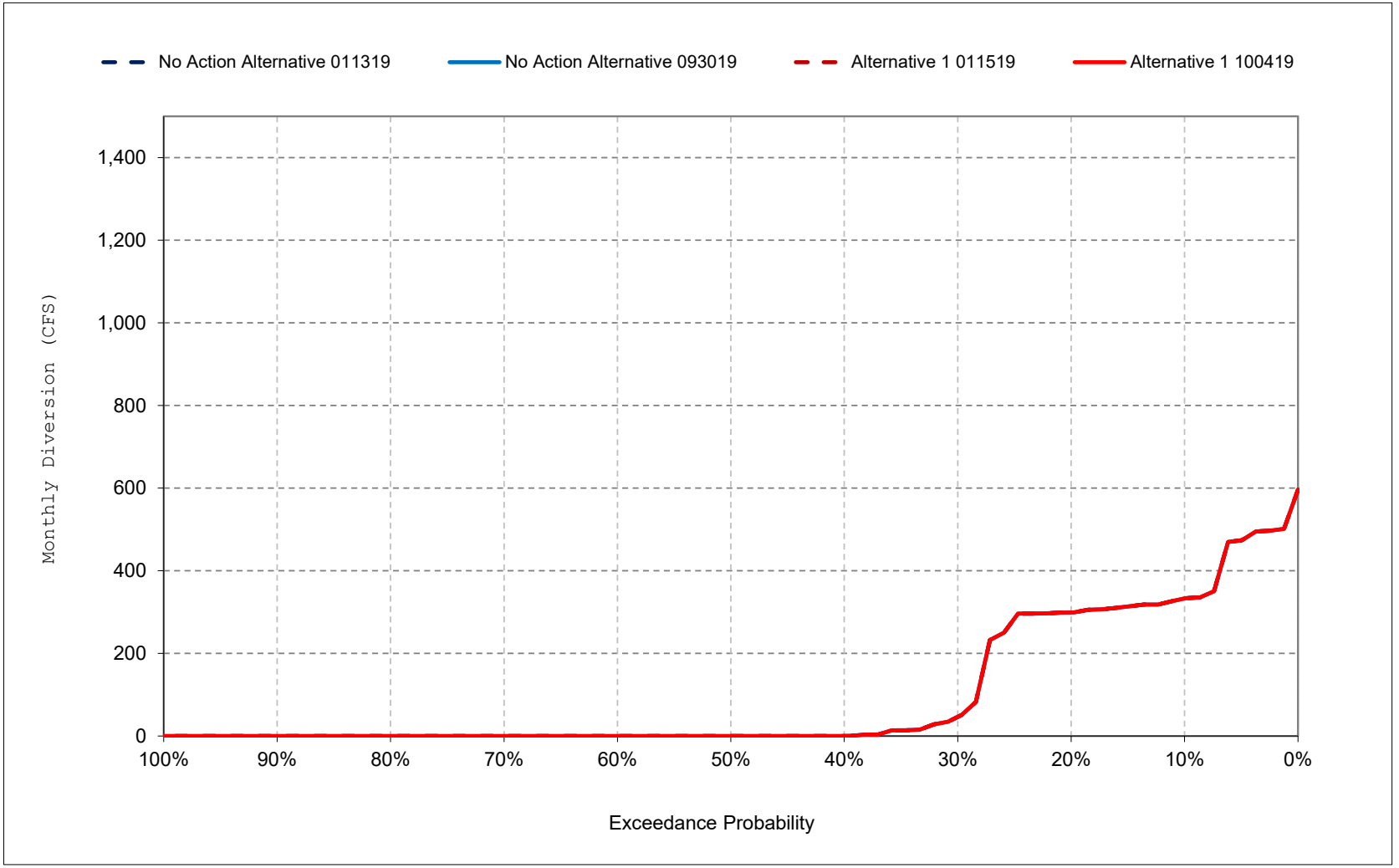

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-12. Madera Canal Diversion, March**



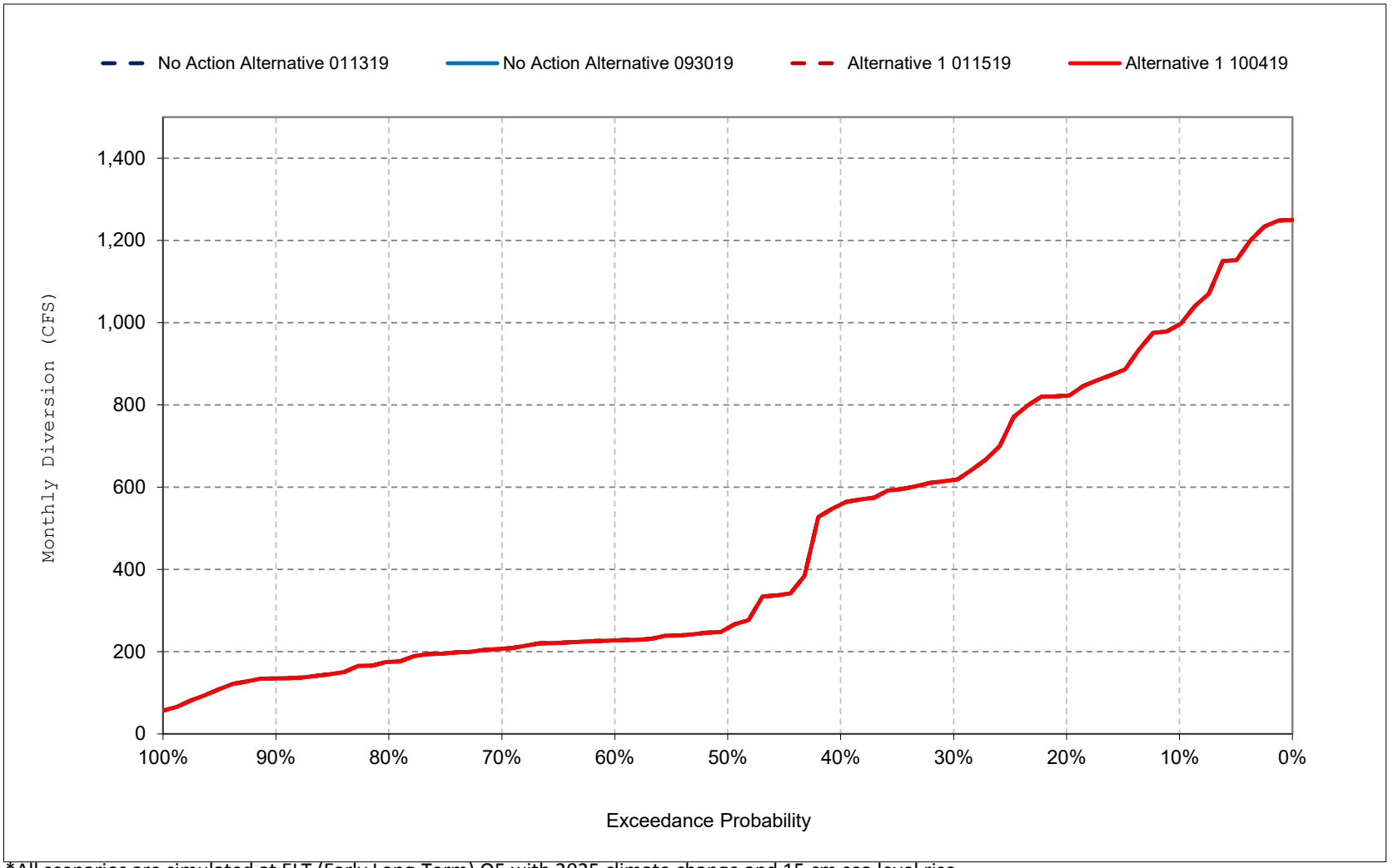

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-13. Madera Canal Diversion, April**



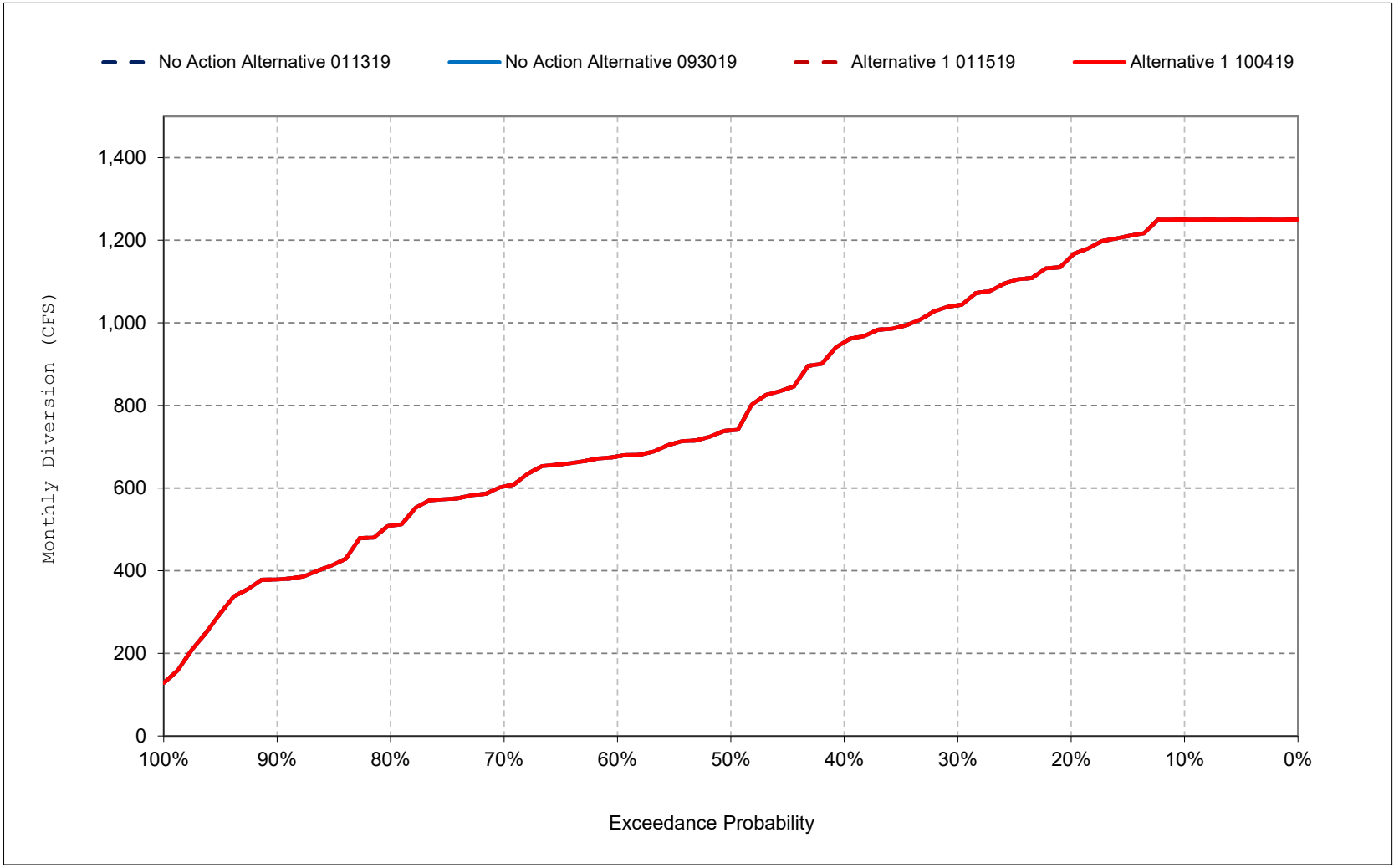

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-14. Madera Canal Diversion, May**



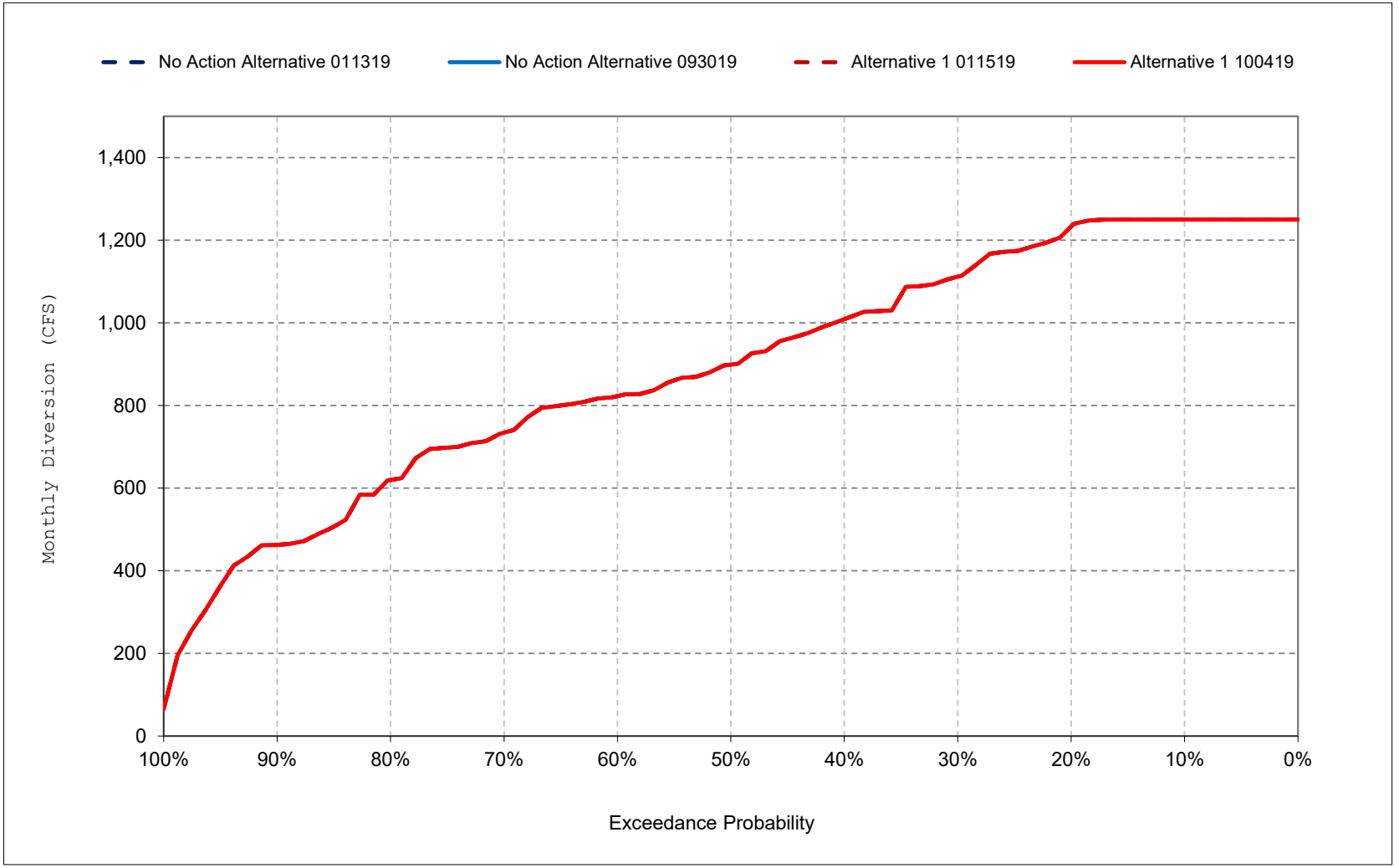

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-15. Madera Canal Diversion, June**



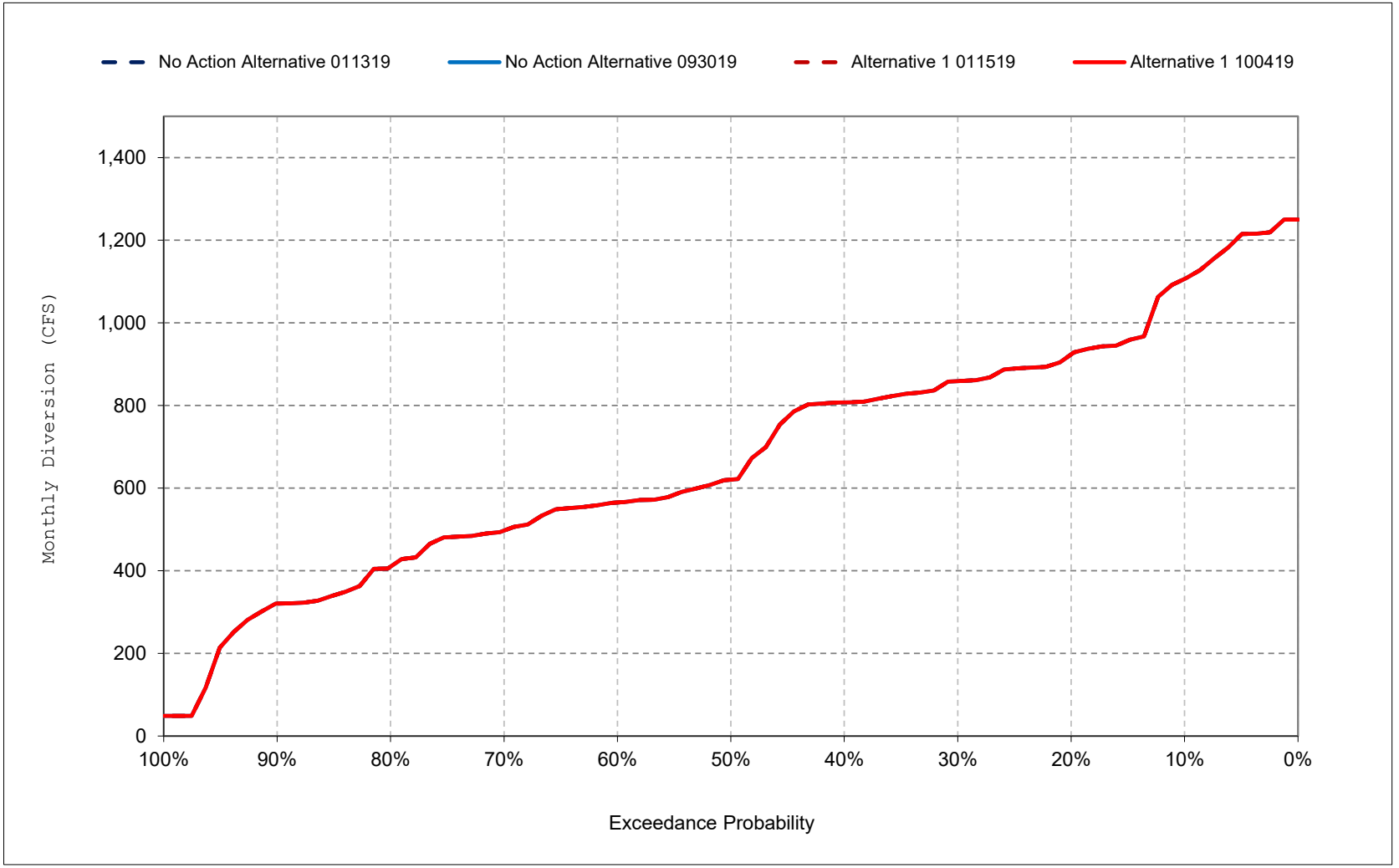

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-16. Madera Canal Diversion, July**



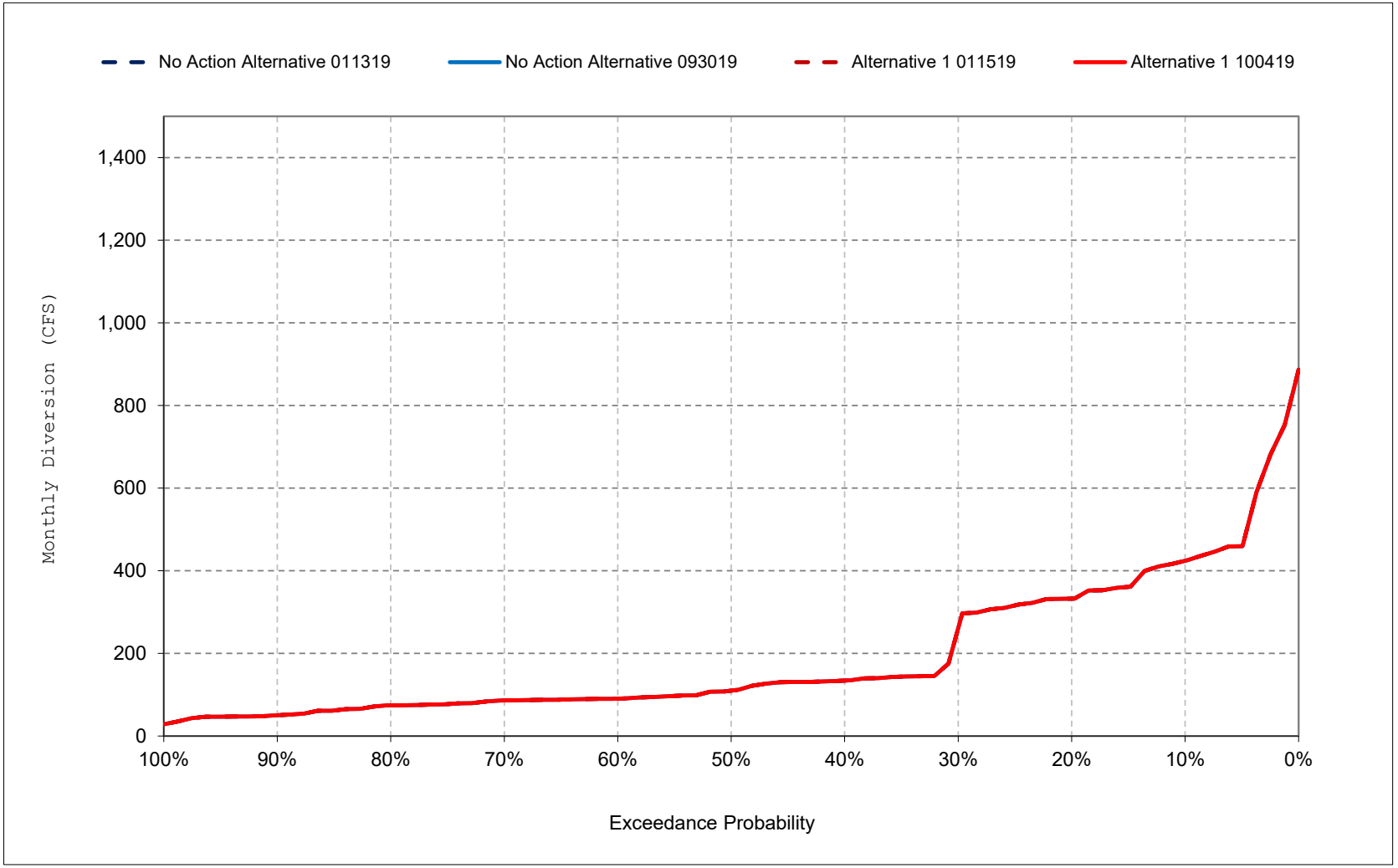

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-17. Madera Canal Diversion, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 51-18. Madera Canal Diversion, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 52-1. DCC Flow, Monthly Flow

## No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,182 | 1,272 | 914 | 0 | 0 | 0 | 0 | 0 | 2,626 | 4,540 | 3,137 | 4,085 |
| 20% | 1,841 | 1,084 | 829 | 0 | 0 | 0 | 0 | 0 | 2,264 | 4,485 | 3,064 | 3,687 |
| 30% | 1,721 | 949 | 778 | 0 | 0 | 0 | 0 | 0 | 2,141 | 4,221 | 2,971 | 2,065 |
| 40% | 1,596 | 813 | 689 | 0 | 0 | 0 | 0 | 0 | 2,085 | 3,646 | 2,917 | 1,864 |
| 50% | 1,492 | 693 | 497 | 0 | 0 | 0 | 0 | 0 | 2,009 | 3,470 | 2,802 | 1,741 |
| 60% | 1,466 | 411 | 0 | 0 | 0 | 0 | 0 | 0 | 1,893 | 3,162 | 2,533 | 1,523 |
| 70% | 1,206 | 198 | 0 | 0 | 0 | 0 | 0 | 0 | 1,757 | 2,940 | 1,739 | 1,235 |
| 80% | 1,196 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,630 | 2,604 | 1,588 | 0 |
| 90% | 801 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,221 | 2,032 | 1,467 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,474 | 613 | 433 | 0 | 0 | 0 | 0 | 0 | 1,889 | 3,399 | 2,448 | 1,795 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,483 | 265 | 506 | 0 | 0 | 0 | 0 | 0 | 1,725 | 3,737 | 2,963 | 669 |
| Above Normal (16%) | 1,713 | 577 | 464 | 0 | 0 | 0 | 0 | 0 | 2,147 | 4,245 | 3,104 | 4,063 |
| Below Normal (13%) | 1,504 | 1,012 | 450 | 0 | 0 | 0 | 0 | 0 | 2,061 | 4,002 | 2,752 | 2,173 |
| Dry (24%) | 1,448 | 733 | 282 | 0 | 0 | 0 | 0 | 0 | 2,057 | 2,992 | 1,780 | 1,803 |
| Critical (15%) | 1,211 | 840 | 475 | 0 | 0 | 0 | 0 | 0 | 1,529 | 1,872 | 1,459 | 1,416 |

## Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,248 | 1,454 | 947 | 0 | 0 | 0 | 0 | 0 | 2,765 | 4,525 | 3,145 | 2,875 |
| 20% | 1,973 | 1,347 | 821 | 0 | 0 | 0 | 0 | 0 | 2,476 | 4,367 | 3,110 | 2,758 |
| 30% | 1,746 | 1,278 | 732 | 0 | 0 | 0 | 0 | 0 | 2,416 | 4,141 | 2,994 | 2,681 |
| 40% | 1,666 | 1,128 | 644 | 0 | 0 | 0 | 0 | 0 | 2,365 | 3,635 | 2,933 | 2,642 |
| 50% | 1,531 | 965 | 458 | 0 | 0 | 0 | 0 | 0 | 2,268 | 3,346 | 2,842 | 2,557 |
| 60% | 1,448 | 831 | 0 | 0 | 0 | 0 | 0 | 0 | 2,192 | 3,196 | 2,591 | 2,081 |
| 70% | 1,216 | 773 | 0 | 0 | 0 | 0 | 0 | 0 | 2,004 | 2,683 | 1,811 | 1,826 |
| 80% | 1,199 | 304 | 0 | 0 | 0 | 0 | 0 | 0 | 1,887 | 2,286 | 1,645 | 1,684 |
| 90% | 610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,341 | 1,910 | 1,422 | 1,444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,494 | 888 | 418 | 0 | 0 | 0 | 0 | 0 | 2,092 | 3,324 | 2,478 | 2,305 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,346 | 977 | 479 | 0 | 0 | 0 | 0 | 0 | 1,805 | 3,672 | 2,954 | 2,853 |
| Above Normal (16%) | 2,071 | 980 | 437 | 0 | 0 | 0 | 0 | 0 | 2,303 | 4,245 | 3,094 | 2,739 |
| Below Normal (13%) | 1,499 | 983 | 447 | 0 | 0 | 0 | 0 | 0 | 2,411 | 4,046 | 2,964 | 2,300 |
| Dry (24%) | 1,478 | 689 | 283 | 0 | 0 | 0 | 0 | 0 | 2,374 | 2,799 | 1,820 | 1,837 |
| Critical (15%) | 1,213 | 841 | 466 | 0 | 0 | 0 | 0 | 0 | 1,725 | 1,786 | 1,433 | 1,435 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 66 | 182 | 33 | 0 | 0 | 0 | 0 | 0 | 139 | -15 | 8 | -1,210 |
| 20% | 132 | 263 | -7 | 0 | 0 | 0 | 0 | 0 | 212 | -118 | 46 | -929 |
| 30% | 25 | 329 | -46 | 0 | 0 | 0 | 0 | 0 | 275 | -80 | 24 | 616 |
| 40% | 70 | 314 | -45 | 0 | 0 | 0 | 0 | 0 | 280 | -12 | 16 | 777 |
| 50% | 39 | 272 | -39 | 0 | 0 | 0 | 0 | 0 | 259 | -124 | 40 | 816 |
| 60% | -18 | 420 | 0 | 0 | 0 | 0 | 0 | 0 | 299 | 35 | 58 | 558 |
| 70% | 10 | 575 | 0 | 0 | 0 | 0 | 0 | 0 | 247 | -257 | 72 | 591 |
| 80% | 2 | 304 | 0 | 0 | 0 | 0 | 0 | 0 | 256 | -318 | 57 | 1,684 |
| 90% | -190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 120 | -122 | -45 | 1,444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 20 | 275 | -14 | 0 | 0 | 0 | 0 | 0 | 203 | -74 | 30 | 511 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -137 | 711 | -27 | 0 | 0 | 0 | 0 | 0 | 80 | -65 | -8 | 2,184 |
| Above Normal (16%) | 357 | 403 | -27 | 0 | 0 | 0 | 0 | 0 | 156 | 0 | -10 | -1,324 |
| Below Normal (13%) | -4 | -29 | -3 | 0 | 0 | 0 | 0 | 0 | 350 | 43 | 212 | 127 |
| Dry (24%) | 29 | -44 | 0 | 0 | 0 | 0 | 0 | 0 | 317 | -193 | 39 | 34 |
| Critical (15%) | 2 | 1 | -9 | 0 | 0 | 0 | 0 | 0 | 196 | -86 | -26 | 19 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 52-2. DCC Flow, Monthly Flow

## No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,116 | 1,256 | 938 | 0 | 0 | 0 | 0 | 0 | 2,597 | 4,540 | 3,136 | 4,078 |
| 20% | 1,869 | 1,094 | 832 | 0 | 0 | 0 | 0 | 0 | 2,273 | 4,513 | 3,067 | 3,662 |
| 30% | 1,707 | 936 | 773 | 0 | 0 | 0 | 0 | 0 | 2,159 | 4,226 | 2,968 | 2,074 |
| 40% | 1,614 | 866 | 698 | 0 | 0 | 0 | 0 | 0 | 2,095 | 3,628 | 2,915 | 1,849 |
| 50% | 1,567 | 621 | 412 | 0 | 0 | 0 | 0 | 0 | 2,019 | 3,410 | 2,801 | 1,714 |
| 60% | 1,390 | 335 | 0 | 0 | 0 | 0 | 0 | 0 | 1,920 | 3,140 | 2,419 | 1,517 |
| 70% | 1,296 | 129 | 0 | 0 | 0 | 0 | 0 | 0 | 1,789 | 2,788 | 1,736 | 1,235 |
| 80% | 1,133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,632 | 2,494 | 1,586 | 0 |
| 90% | 819 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,277 | 1,911 | 1,474 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,466 | 599 | 433 | 0 | 0 | 0 | 0 | 0 | 1,912 | 3,356 | 2,438 | 1,790 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,433 | 198 | 510 | 0 | 0 | 0 | 0 | 0 | 1,724 | 3,749 | 2,965 | 669 |
| Above Normal (16%) | 1,600 | 569 | 465 | 0 | 0 | 0 | 0 | 0 | 2,147 | 4,249 | 3,104 | 4,046 |
| Below Normal (13%) | 1,519 | 1,016 | 449 | 0 | 0 | 0 | 0 | 0 | 2,065 | 3,996 | 2,721 | 2,175 |
| Dry (24%) | 1,516 | 739 | 272 | 0 | 0 | 0 | 0 | 0 | 2,089 | 2,855 | 1,756 | 1,796 |
| Critical (15%) | 1,260 | 887 | 483 | 0 | 0 | 0 | 0 | 0 | 1,631 | 1,785 | 1,452 | 1,414 |

## Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,888 | 1,667 | 1,046 | 0 | 0 | 0 | 0 | 0 | 2,761 | 4,419 | 3,251 | 2,846 |
| 20% | 1,726 | 1,546 | 912 | 0 | 0 | 0 | 0 | 0 | 2,514 | 4,191 | 3,213 | 2,638 |
| 30% | 1,638 | 1,354 | 775 | 0 | 0 | 0 | 0 | 0 | 2,468 | 3,908 | 3,131 | 2,559 |
| 40% | 1,579 | 1,152 | 668 | 0 | 0 | 0 | 0 | 0 | 2,410 | 3,455 | 3,018 | 2,443 |
| 50% | 1,533 | 1,059 | 445 | 0 | 0 | 0 | 0 | 0 | 2,346 | 3,318 | 2,859 | 2,256 |
| 60% | 1,363 | 877 | 0 | 0 | 0 | 0 | 0 | 0 | 2,226 | 3,081 | 2,492 | 1,909 |
| 70% | 1,297 | 859 | 0 | 0 | 0 | 0 | 0 | 0 | 2,022 | 2,845 | 1,767 | 1,767 |
| 80% | 1,133 | 386 | 0 | 0 | 0 | 0 | 0 | 0 | 1,834 | 2,214 | 1,615 | 1,665 |
| 90% | 519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,284 | 1,732 | 1,410 | 1,450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,374 | 977 | 441 | 0 | 0 | 0 | 0 | 0 | 2,115 | 3,222 | 2,516 | 2,187 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,186 | 1,089 | 499 | 0 | 0 | 0 | 0 | 0 | 1,838 | 3,640 | 3,156 | 2,680 |
| Above Normal (16%) | 1,547 | 1,130 | 491 | 0 | 0 | 0 | 0 | 0 | 2,381 | 4,035 | 3,159 | 2,552 |
| Below Normal (13%) | 1,515 | 1,027 | 462 | 0 | 0 | 0 | 0 | 0 | 2,473 | 3,757 | 2,810 | 2,158 |
| Dry (24%) | 1,474 | 767 | 287 | 0 | 0 | 0 | 0 | 0 | 2,354 | 2,772 | 1,772 | 1,800 |
| Critical (15%) | 1,298 | 874 | 498 | 0 | 0 | 0 | 0 | 0 | 1,697 | 1,696 | 1,404 | 1,392 |

## Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -228 | 411 | 108 | 0 | 0 | 0 | 0 | 0 | 164 | -121 | 116 | -1,232 |
| 20% | -144 | 451 | 81 | 0 | 0 | 0 | 0 | 0 | 240 | -321 | 146 | -1,023 |
| 30% | -69 | 418 | 2 | 0 | 0 | 0 | 0 | 0 | 309 | -317 | 163 | 484 |
| 40% | -35 | 286 | -30 | 0 | 0 | 0 | 0 | 0 | 315 | -173 | 102 | 594 |
| 50% | -34 | 438 | 32 | 0 | 0 | 0 | 0 | 0 | 326 | -92 | 57 | 542 |
| 60% | -27 | 543 | 0 | 0 | 0 | 0 | 0 | 0 | 307 | -58 | 73 | 392 |
| 70% | 1 | 730 | 0 | 0 | 0 | 0 | 0 | 0 | 233 | 57 | 31 | 533 |
| 80% | 0 | 386 | 0 | 0 | 0 | 0 | 0 | 0 | 201 | -280 | 28 | 1,665 |
| 90% | -299 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | -179 | -65 | 1,450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -92 | 378 | 8 | 0 | 0 | 0 | 0 | 0 | 202 | -134 | 78 | 396 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -247 | 891 | -11 | 0 | 0 | 0 | 0 | 0 | 115 | -109 | 191 | 2,011 |
| Above Normal (16%) | -54 | 562 | 27 | 0 | 0 | 0 | 0 | 0 | 235 | -214 | 55 | -1,494 |
| Below Normal (13%) | -4 | 11 | 13 | 0 | 0 | 0 | 0 | 0 | 409 | -240 | 89 | -17 |
| Dry (24%) | -42 | 29 | 16 | 0 | 0 | 0 | 0 | 0 | 265 | -83 | 16 | 3 |
| Critical (15%) | 39 | -13 | 14 | 0 | 0 | 0 | 0 | 0 | 66 | -89 | -48 | -22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 52-3. DCC Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,182 | 1,272 | 914 | 0 | 0 | 0 | 0 | 0 | 2,626 | 4,540 | 3,137 | 4,085 |
| 20% | 1,841 | 1,084 | 829 | 0 | 0 | 0 | 0 | 0 | 2,264 | 4,485 | 3,064 | 3,687 |
| 30% | 1,721 | 949 | 778 | 0 | 0 | 0 | 0 | 0 | 2,141 | 4,221 | 2,971 | 2,065 |
| 40% | 1,596 | 813 | 689 | 0 | 0 | 0 | 0 | 0 | 2,085 | 3,646 | 2,917 | 1,864 |
| 50% | 1,492 | 693 | 497 | 0 | 0 | 0 | 0 | 0 | 2,009 | 3,470 | 2,802 | 1,741 |
| 60% | 1,466 | 411 | 0 | 0 | 0 | 0 | 0 | 0 | 1,893 | 3,162 | 2,533 | 1,523 |
| 70% | 1,206 | 198 | 0 | 0 | 0 | 0 | 0 | 0 | 1,757 | 2,940 | 1,739 | 1,235 |
| 80% | 1,196 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,630 | 2,604 | 1,588 | 0 |
| 90% | 801 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,221 | 2,032 | 1,467 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,474 | 613 | 433 | 0 | 0 | 0 | 0 | 0 | 1,889 | 3,399 | 2,448 | 1,795 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,483 | 265 | 506 | 0 | 0 | 0 | 0 | 0 | 1,725 | 3,737 | 2,963 | 669 |
| Above Normal (16%) | 1,713 | 577 | 464 | 0 | 0 | 0 | 0 | 0 | 2,147 | 4,245 | 3,104 | 4,063 |
| Below Normal (13%) | 1,504 | 1,012 | 450 | 0 | 0 | 0 | 0 | 0 | 2,061 | 4,002 | 2,752 | 2,173 |
| Dry (24%) | 1,448 | 733 | 282 | 0 | 0 | 0 | 0 | 0 | 2,057 | 2,992 | 1,780 | 1,803 |
| Critical (15%) | 1,211 | 840 | 475 | 0 | 0 | 0 | 0 | 0 | 1,529 | 1,872 | 1,459 | 1,416 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,116 | 1,256 | 938 | 0 | 0 | 0 | 0 | 0 | 2,597 | 4,540 | 3,136 | 4,078 |
| 20% | 1,869 | 1,094 | 832 | 0 | 0 | 0 | 0 | 0 | 2,273 | 4,513 | 3,067 | 3,662 |
| 30% | 1,707 | 936 | 773 | 0 | 0 | 0 | 0 | 0 | 2,159 | 4,226 | 2,968 | 2,074 |
| 40% | 1,614 | 866 | 698 | 0 | 0 | 0 | 0 | 0 | 2,095 | 3,628 | 2,915 | 1,849 |
| 50% | 1,567 | 621 | 412 | 0 | 0 | 0 | 0 | 0 | 2,019 | 3,410 | 2,801 | 1,714 |
| 60% | 1,390 | 335 | 0 | 0 | 0 | 0 | 0 | 0 | 1,920 | 3,140 | 2,419 | 1,517 |
| 70% | 1,296 | 129 | 0 | 0 | 0 | 0 | 0 | 0 | 1,789 | 2,788 | 1,736 | 1,235 |
| 80% | 1,133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,632 | 2,494 | 1,586 | 0 |
| 90% | 819 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,277 | 1,911 | 1,474 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,466 | 599 | 433 | 0 | 0 | 0 | 0 | 0 | 1,912 | 3,356 | 2,438 | 1,790 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,433 | 198 | 510 | 0 | 0 | 0 | 0 | 0 | 1,724 | 3,749 | 2,965 | 669 |
| Above Normal (16%) | 1,600 | 569 | 465 | 0 | 0 | 0 | 0 | 0 | 2,147 | 4,249 | 3,104 | 4,046 |
| Below Normal (13%) | 1,519 | 1,016 | 449 | 0 | 0 | 0 | 0 | 0 | 2,065 | 3,996 | 2,721 | 2,175 |
| Dry (24%) | 1,516 | 739 | 272 | 0 | 0 | 0 | 0 | 0 | 2,089 | 2,855 | 1,756 | 1,796 |
| Critical (15%) | 1,260 | 887 | 483 | 0 | 0 | 0 | 0 | 0 | 1,631 | 1,785 | 1,452 | 1,414 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -66 | -16 | 24 | 0 | 0 | 0 | 0 | 0 | -29 | 0 | -2 | -7 |
| 20% | 28 | 10 | 3 | 0 | 0 | 0 | 0 | 0 | 10 | 28 | 3 | -25 |
| 30% | -15 | -12 | -5 | 0 | 0 | 0 | 0 | 0 | 18 | 4 | -2 | 10 |
| 40% | 18 | 53 | 9 | 0 | 0 | 0 | 0 | 0 | 11 | -18 | -2 | -16 |
| 50% | 75 | -72 | -85 | 0 | 0 | 0 | 0 | 0 | 10 | -60 | 0 | -27 |
| 60% | -76 | -76 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | -22 | -114 | -6 |
| 70% | 89 | -69 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | -152 | -3 | -1 |
| 80% | -63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | -111 | -2 | 0 |
| 90% | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | -121 | 7 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -8 | -14 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | -43 | -10 | -4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -50 | -67 | 5 | 0 | 0 | 0 | 0 | 0 | -1 | 12 | 2 | 0 |
| Above Normal (16%) | -113 | -9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | -18 |
| Below Normal (13%) | 16 | 4 | -1 | 0 | 0 | 0 | 0 | 0 | 4 | -6 | -31 | 2 |
| Dry (24%) | 68 | 5 | -11 | 0 | 0 | 0 | 0 | 0 | 32 | -137 | -24 | -7 |
| Critical (15%) | 49 | 47 | 9 | 0 | 0 | 0 | 0 | 0 | 102 | -87 | -7 | -1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 52-4. DCC Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,248 | 1,454 | 947 | 0 | 0 | 0 | 0 | 0 | 2,765 | 4,525 | 3,145 | 2,875 |
| 20% | 1,973 | 1,347 | 821 | 0 | 0 | 0 | 0 | 0 | 2,476 | 4,367 | 3,110 | 2,758 |
| 30% | 1,746 | 1,278 | 732 | 0 | 0 | 0 | 0 | 0 | 2,416 | 4,141 | 2,994 | 2,681 |
| 40% | 1,666 | 1,128 | 644 | 0 | 0 | 0 | 0 | 0 | 2,365 | 3,635 | 2,933 | 2,642 |
| 50% | 1,531 | 965 | 458 | 0 | 0 | 0 | 0 | 0 | 2,268 | 3,346 | 2,842 | 2,557 |
| 60% | 1,448 | 831 | 0 | 0 | 0 | 0 | 0 | 0 | 2,192 | 3,196 | 2,591 | 2,081 |
| 70% | 1,216 | 773 | 0 | 0 | 0 | 0 | 0 | 0 | 2,004 | 2,683 | 1,811 | 1,826 |
| 80% | 1,199 | 304 | 0 | 0 | 0 | 0 | 0 | 0 | 1,887 | 2,286 | 1,645 | 1,684 |
| 90% | 610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,341 | 1,910 | 1,422 | 1,444 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,494 | 888 | 418 | 0 | 0 | 0 | 0 | 0 | 2,092 | 3,324 | 2,478 | 2,305 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,346 | 977 | 479 | 0 | 0 | 0 | 0 | 0 | 1,805 | 3,672 | 2,954 | 2,853 |
| Above Normal (16%) | 2,071 | 980 | 437 | 0 | 0 | 0 | 0 | 0 | 2,303 | 4,245 | 3,094 | 2,739 |
| Below Normal (13%) | 1,499 | 983 | 447 | 0 | 0 | 0 | 0 | 0 | 2,411 | 4,046 | 2,964 | 2,300 |
| Dry (24%) | 1,478 | 689 | 283 | 0 | 0 | 0 | 0 | 0 | 2,374 | 2,799 | 1,820 | 1,837 |
| Critical (15%) | 1,213 | 841 | 466 | 0 | 0 | 0 | 0 | 0 | 1,725 | 1,786 | 1,433 | 1,435 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,888 | 1,667 | 1,046 | 0 | 0 | 0 | 0 | 0 | 2,761 | 4,419 | 3,251 | 2,846 |
| 20% | 1,726 | 1,546 | 912 | 0 | 0 | 0 | 0 | 0 | 2,514 | 4,191 | 3,213 | 2,638 |
| 30% | 1,638 | 1,354 | 775 | 0 | 0 | 0 | 0 | 0 | 2,468 | 3,908 | 3,131 | 2,559 |
| 40% | 1,579 | 1,152 | 668 | 0 | 0 | 0 | 0 | 0 | 2,410 | 3,455 | 3,018 | 2,443 |
| 50% | 1,533 | 1,059 | 445 | 0 | 0 | 0 | 0 | 0 | 2,346 | 3,318 | 2,859 | 2,256 |
| 60% | 1,363 | 877 | 0 | 0 | 0 | 0 | 0 | 0 | 2,226 | 3,081 | 2,492 | 1,909 |
| 70% | 1,297 | 859 | 0 | 0 | 0 | 0 | 0 | 0 | 2,022 | 2,845 | 1,767 | 1,767 |
| 80% | 1,133 | 386 | 0 | 0 | 0 | 0 | 0 | 0 | 1,834 | 2,214 | 1,615 | 1,665 |
| 90% | 519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,284 | 1,732 | 1,410 | 1,450 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,374 | 977 | 441 | 0 | 0 | 0 | 0 | 0 | 2,115 | 3,222 | 2,516 | 2,187 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,186 | 1,089 | 499 | 0 | 0 | 0 | 0 | 0 | 1,838 | 3,640 | 3,156 | 2,680 |
| Above Normal (16%) | 1,547 | 1,130 | 491 | 0 | 0 | 0 | 0 | 0 | 2,381 | 4,035 | 3,159 | 2,552 |
| Below Normal (13%) | 1,515 | 1,027 | 462 | 0 | 0 | 0 | 0 | 0 | 2,473 | 3,757 | 2,810 | 2,158 |
| Dry (24%) | 1,474 | 767 | 287 | 0 | 0 | 0 | 0 | 0 | 2,354 | 2,772 | 1,772 | 1,800 |
| Critical (15%) | 1,298 | 874 | 498 | 0 | 0 | 0 | 0 | 0 | 1,697 | 1,696 | 1,404 | 1,392 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -360 | 213 | 99 | 0 | 0 | 0 | 0 | 0 | -4 | -106 | 106 | -29 |
| 20% | -247 | 199 | 91 | 0 | 0 | 0 | 0 | 0 | 38 | -176 | 103 | -120 |
| 30% | -108 | 77 | 43 | 0 | 0 | 0 | 0 | 0 | 52 | -233 | 137 | -122 |
| 40% | -87 | 25 | 24 | 0 | 0 | 0 | 0 | 0 | 45 | -179 | 85 | -199 |
| 50% | 2 | 94 | -13 | 0 | 0 | 0 | 0 | 0 | 78 | -27 | 17 | -301 |
| 60% | -85 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | -115 | -99 | -172 |
| 70% | 81 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 162 | -44 | -59 |
| 80% | -66 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | -53 | -73 | -30 | -19 |
| 90% | -91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -57 | -178 | -13 | 6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -120 | 89 | 23 | 0 | 0 | 0 | 0 | 0 | 22 | -102 | 38 | -119 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -160 | 112 | 20 | 0 | 0 | 0 | 0 | 0 | 33 | -32 | 202 | -173 |
| Above Normal (16%) | -524 | 150 | 55 | 0 | 0 | 0 | 0 | 0 | 79 | -211 | 65 | -188 |
| Below Normal (13%) | 16 | 44 | 15 | 0 | 0 | 0 | 0 | 0 | 63 | -289 | -154 | -142 |
| Dry (24%) | -3 | 79 | 5 | 0 | 0 | 0 | 0 | 0 | -21 | -27 | -48 | -37 |
| Critical (15%) | 86 | 32 | 32 | 0 | 0 | 0 | 0 | 0 | -28 | -90 | -29 | -43 |

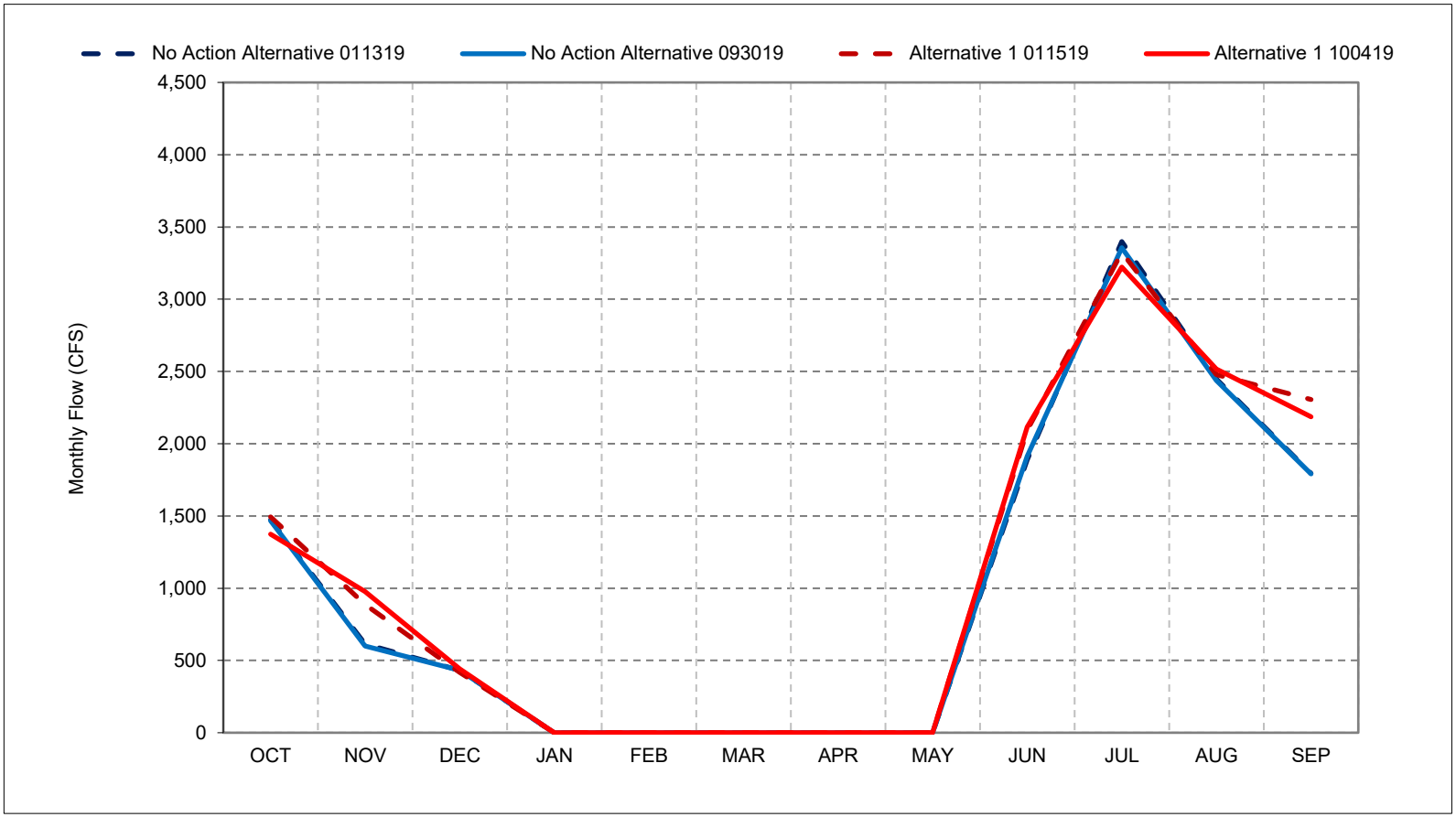
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-1. DCC Flow, Long-Term Average Flow

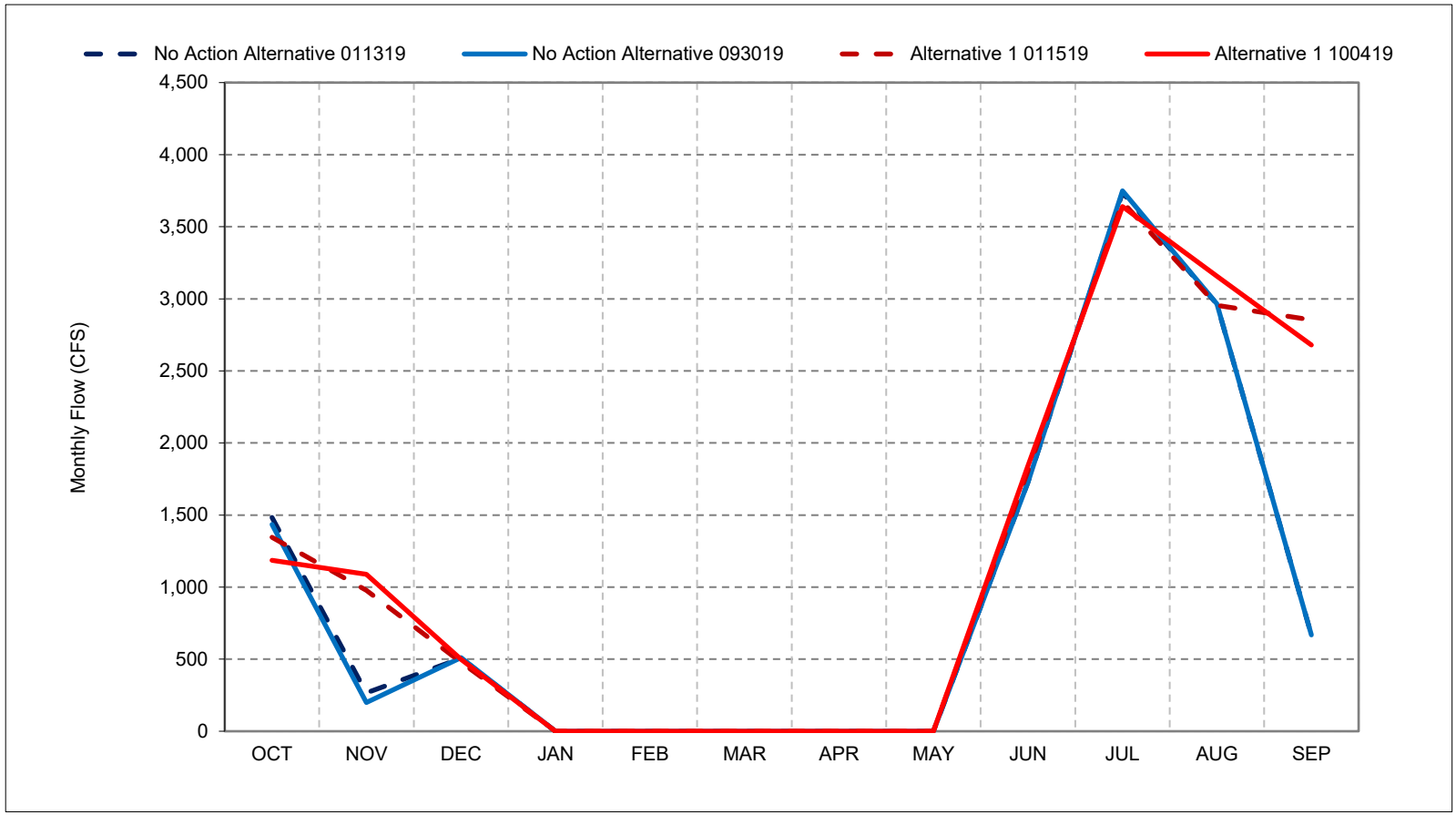



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-2. DCC Flow, Wet Year Average Flow

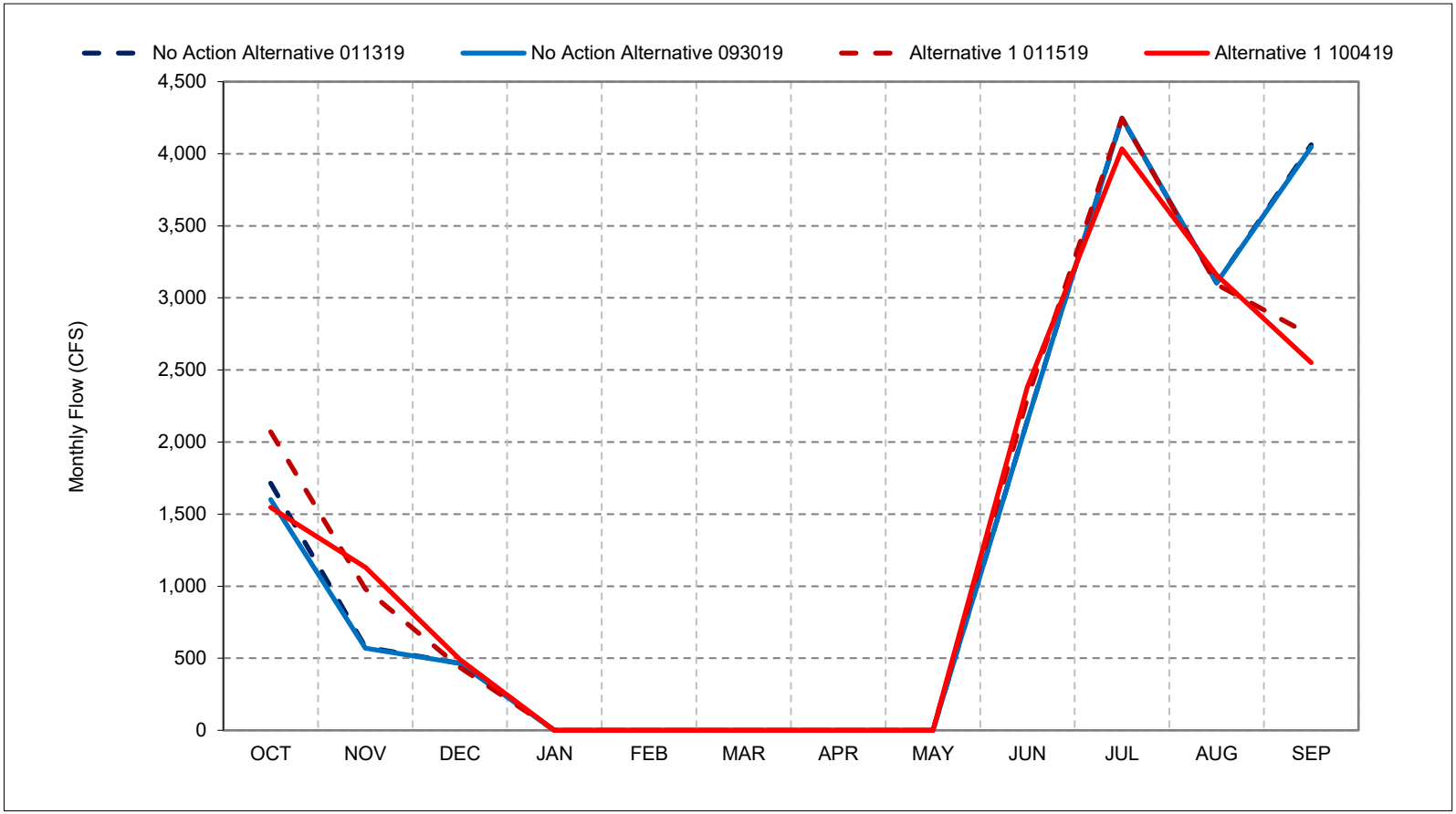



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-3. DCC Flow, Above Normal Year Average Flow

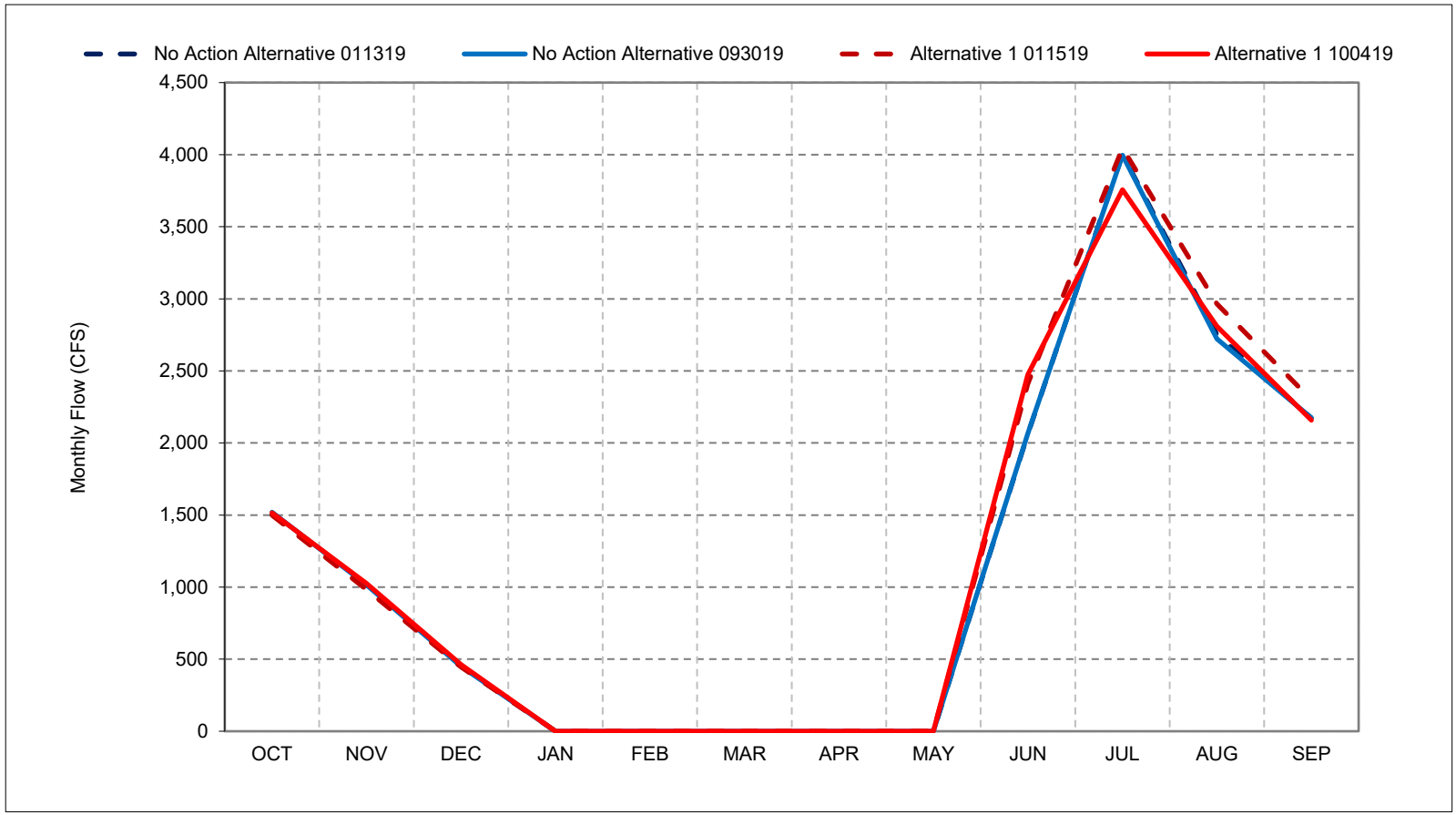



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-4. DCC Flow, Below Normal Year Average Flow

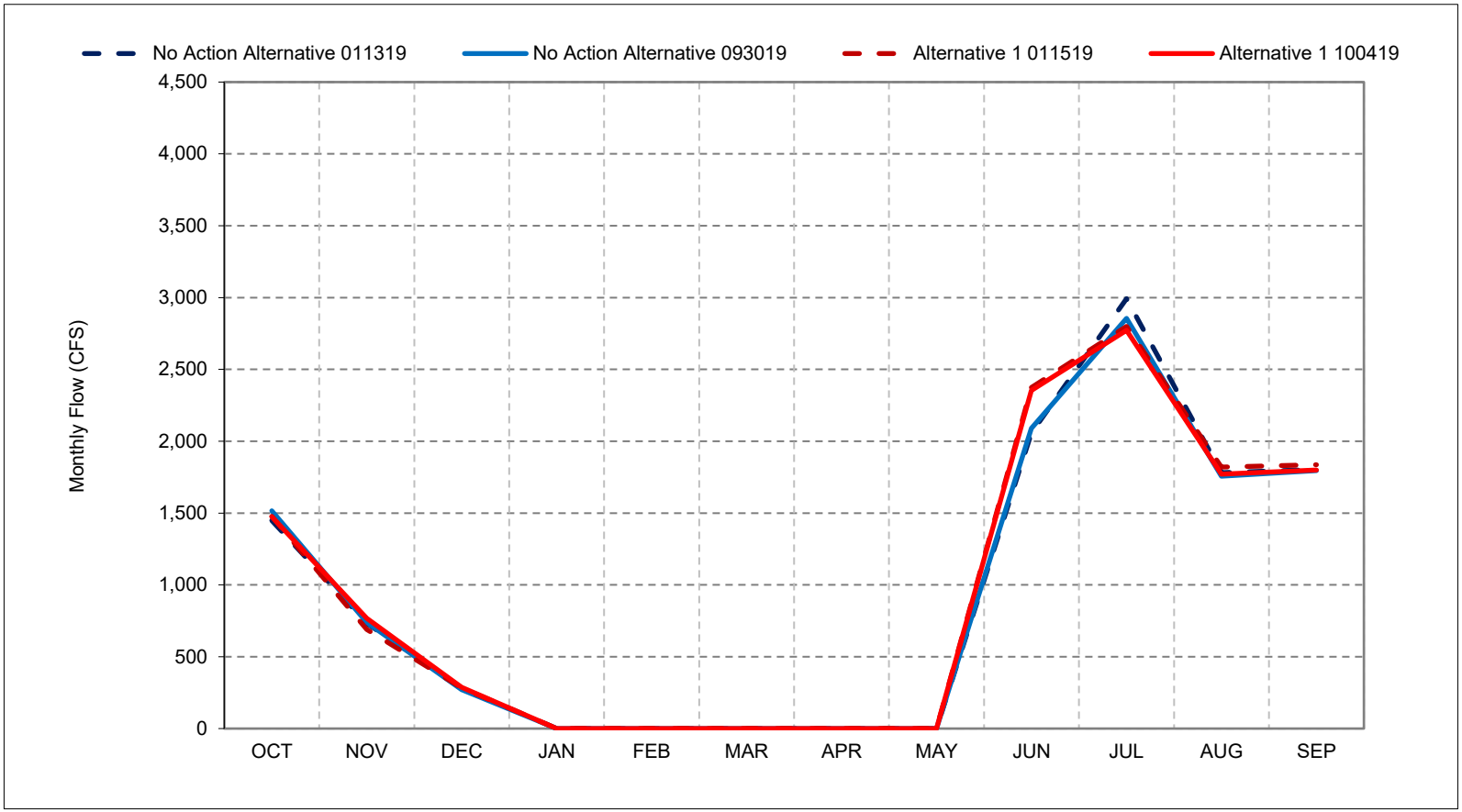



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-5. DCC Flow, Dry Year Average Flow

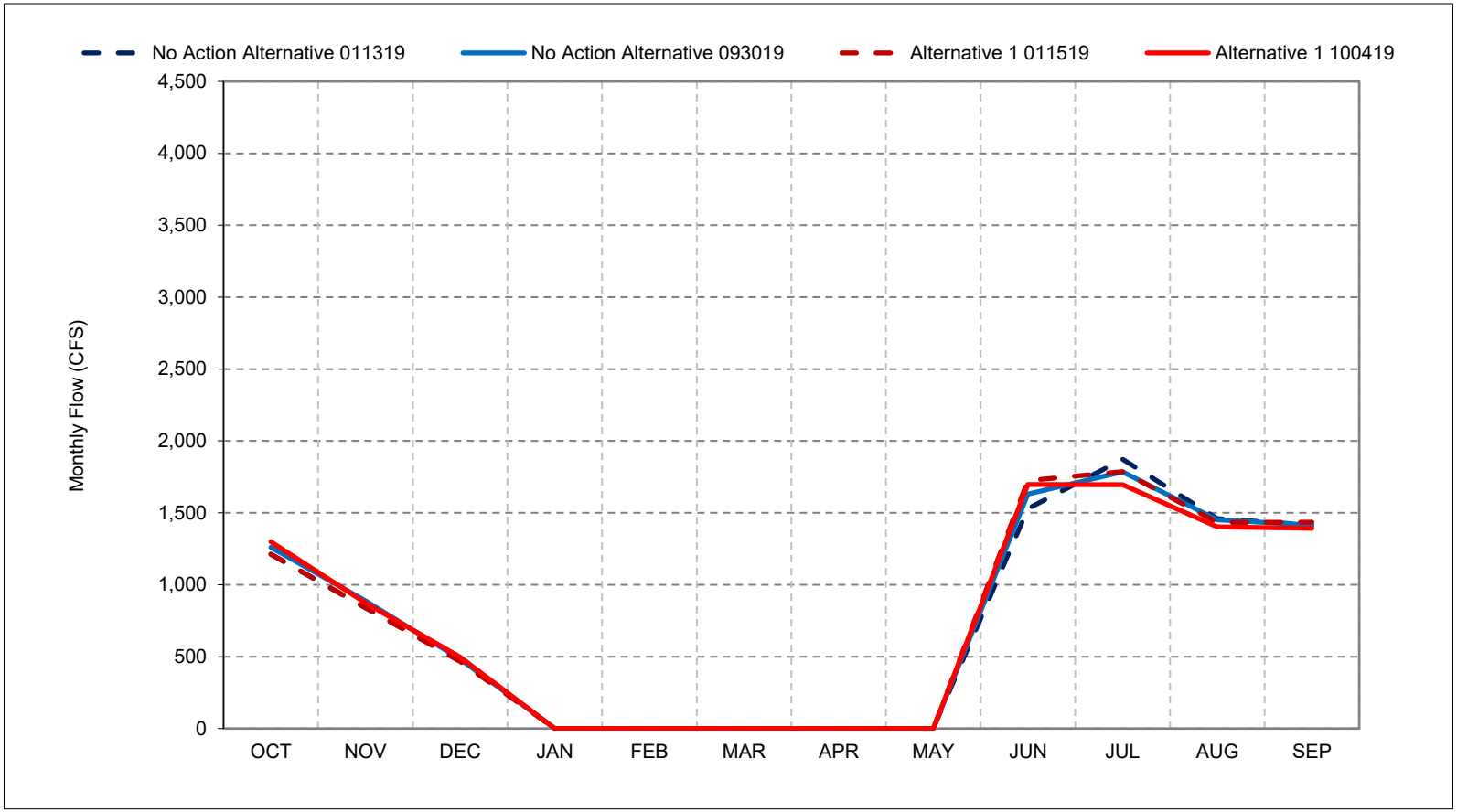



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 52-6. DCC Flow, Critical Year Average Flow

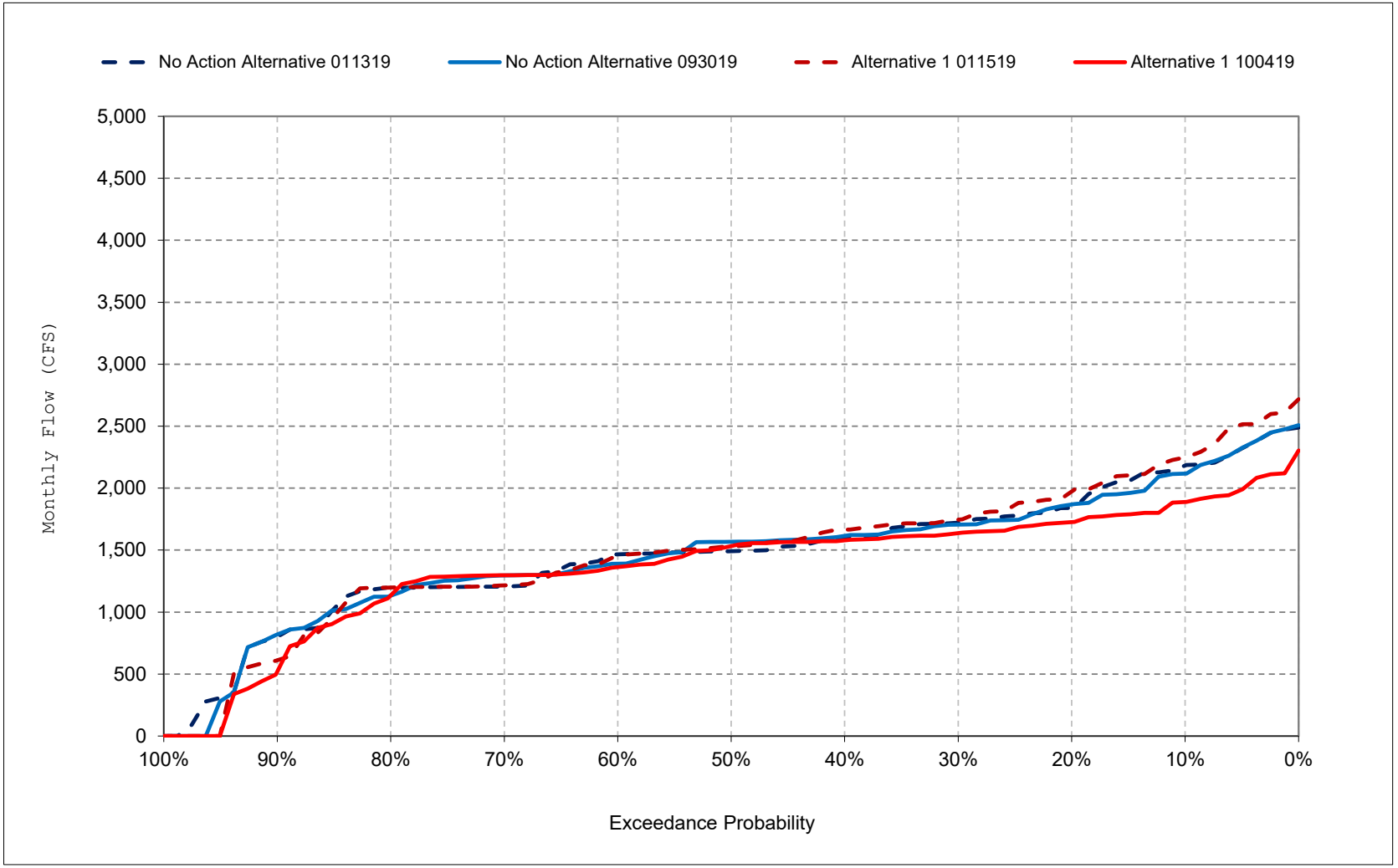



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

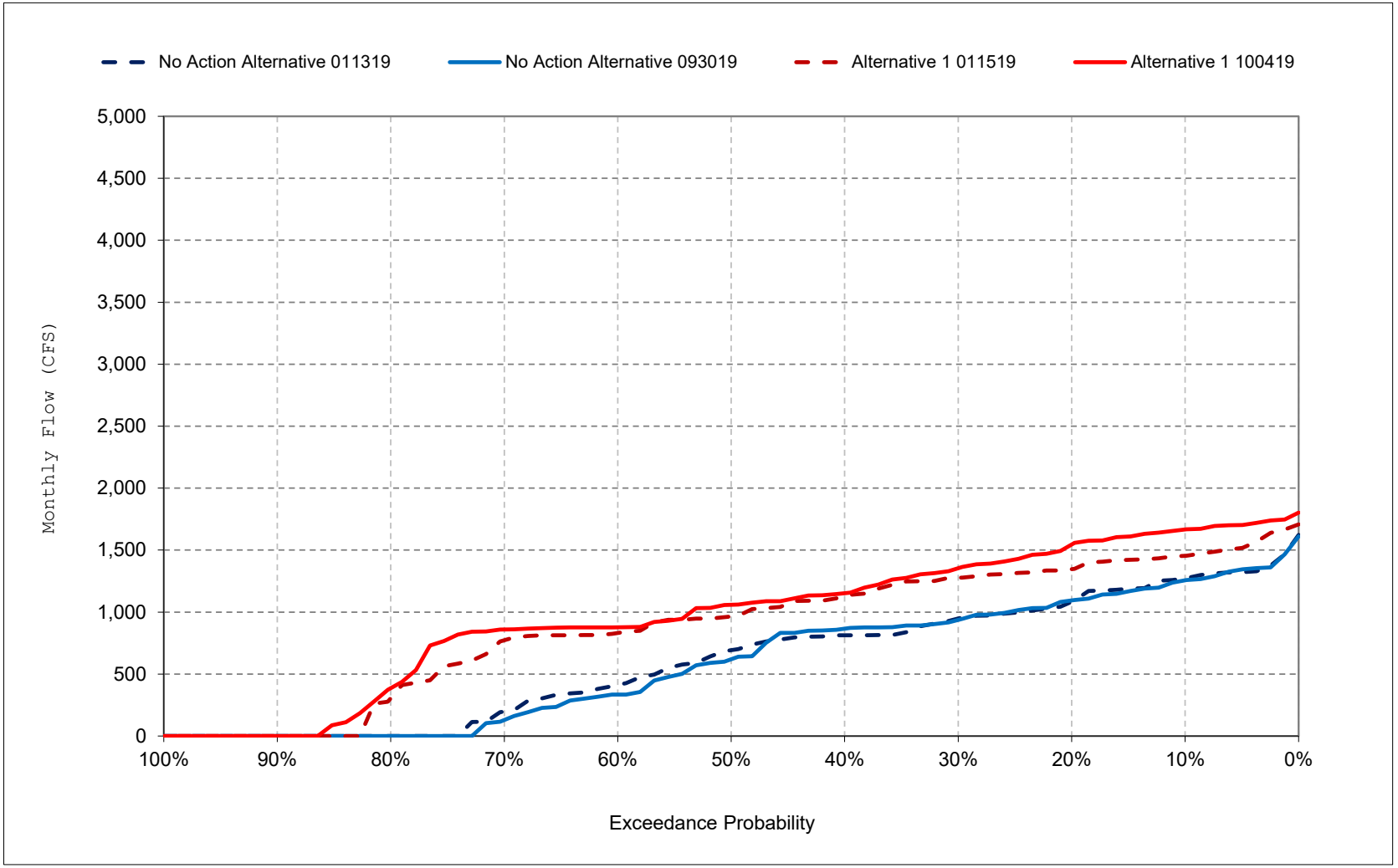
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-7. DCC Flow, October**



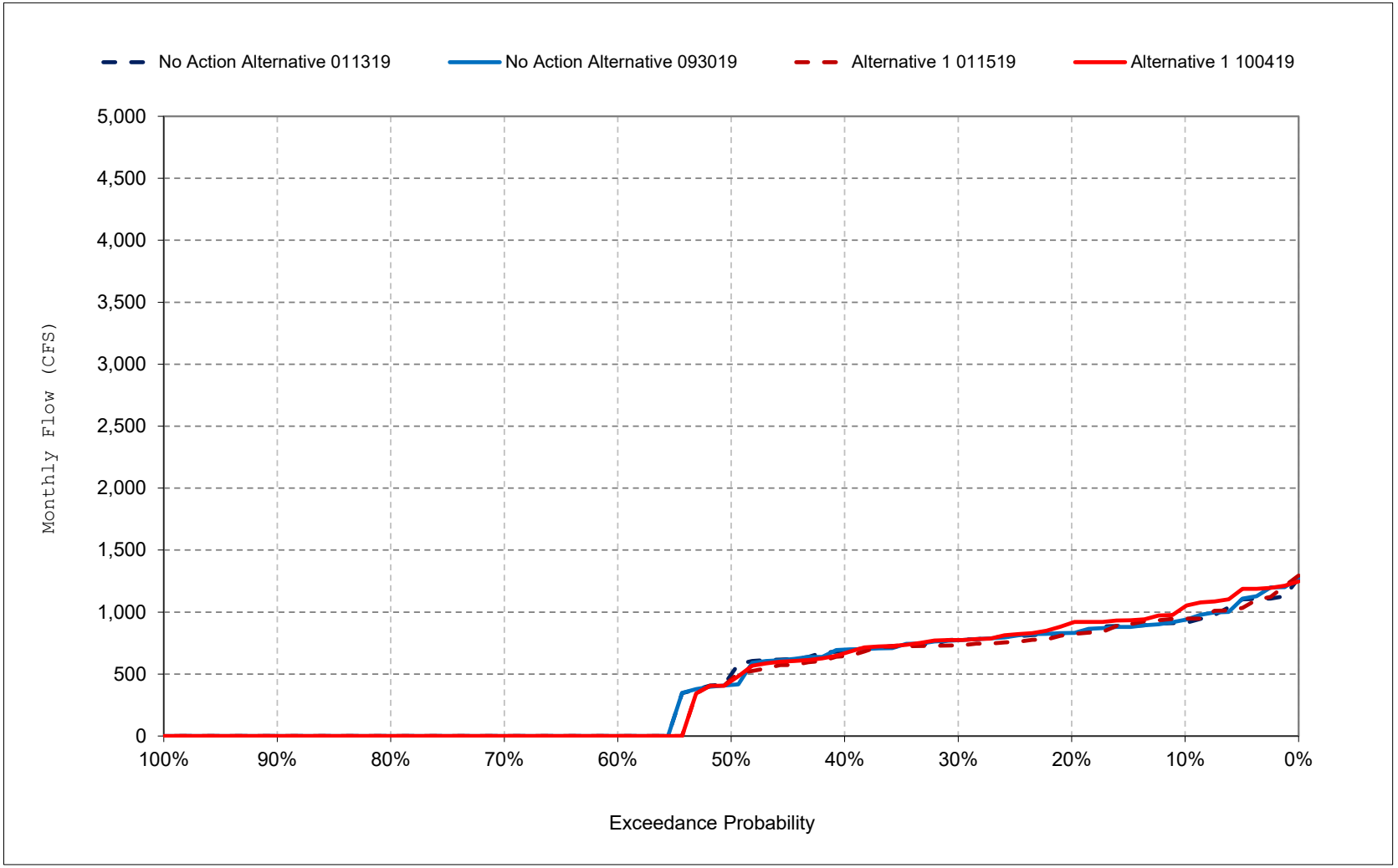

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-8. DCC Flow, November**



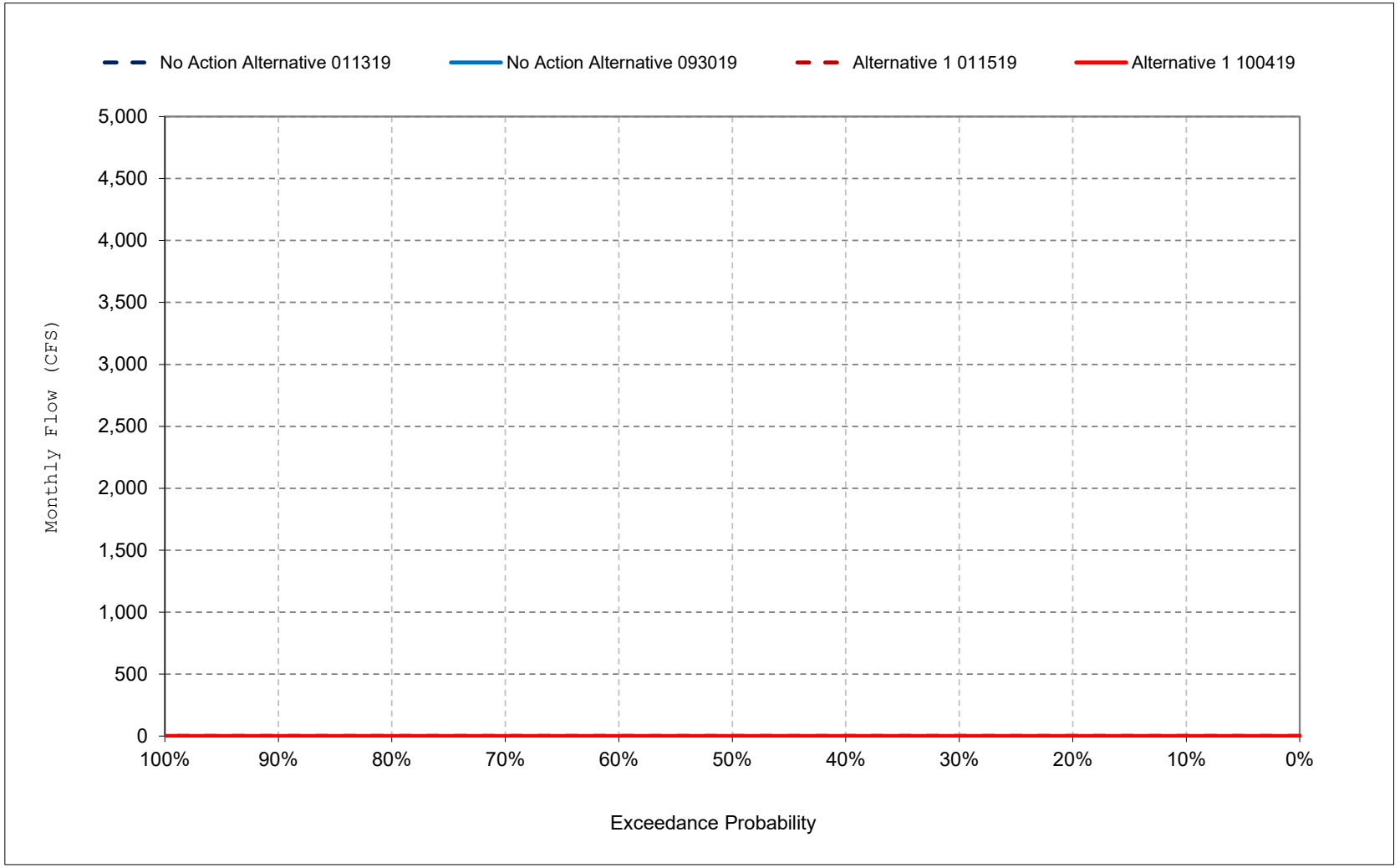

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-9. DCC Flow, December**



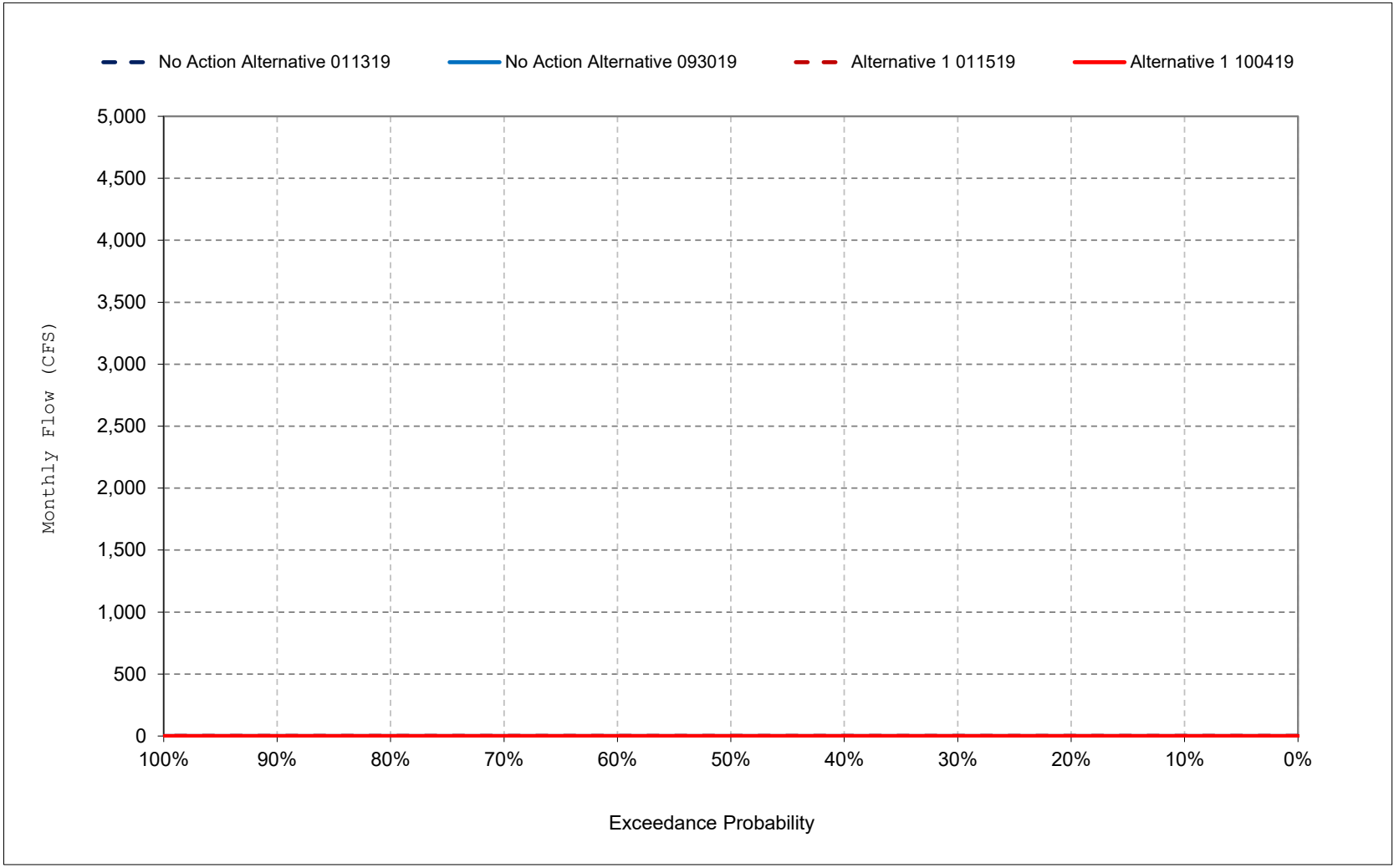

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-10. DCC Flow, January**



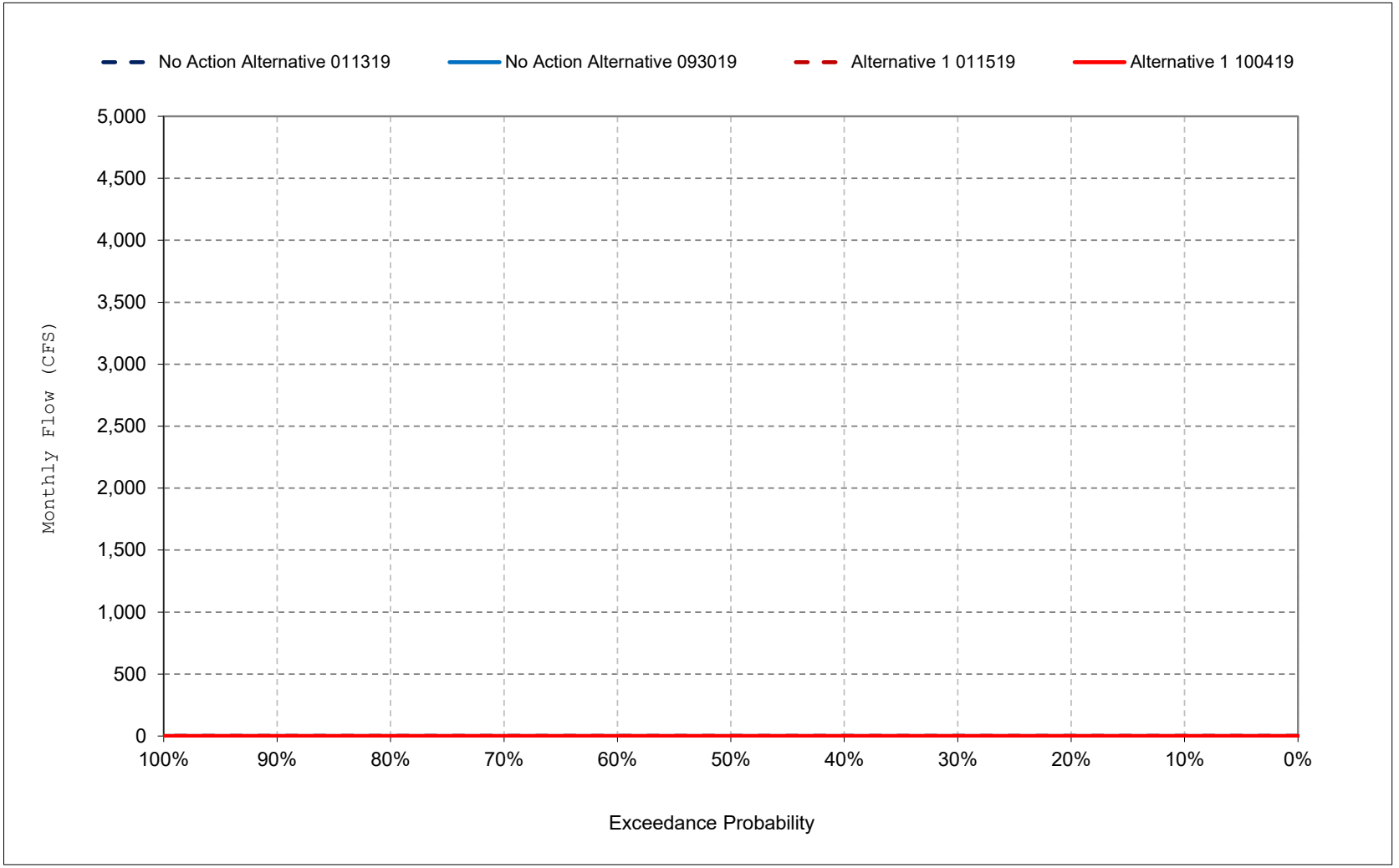

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-11. DCC Flow, February**



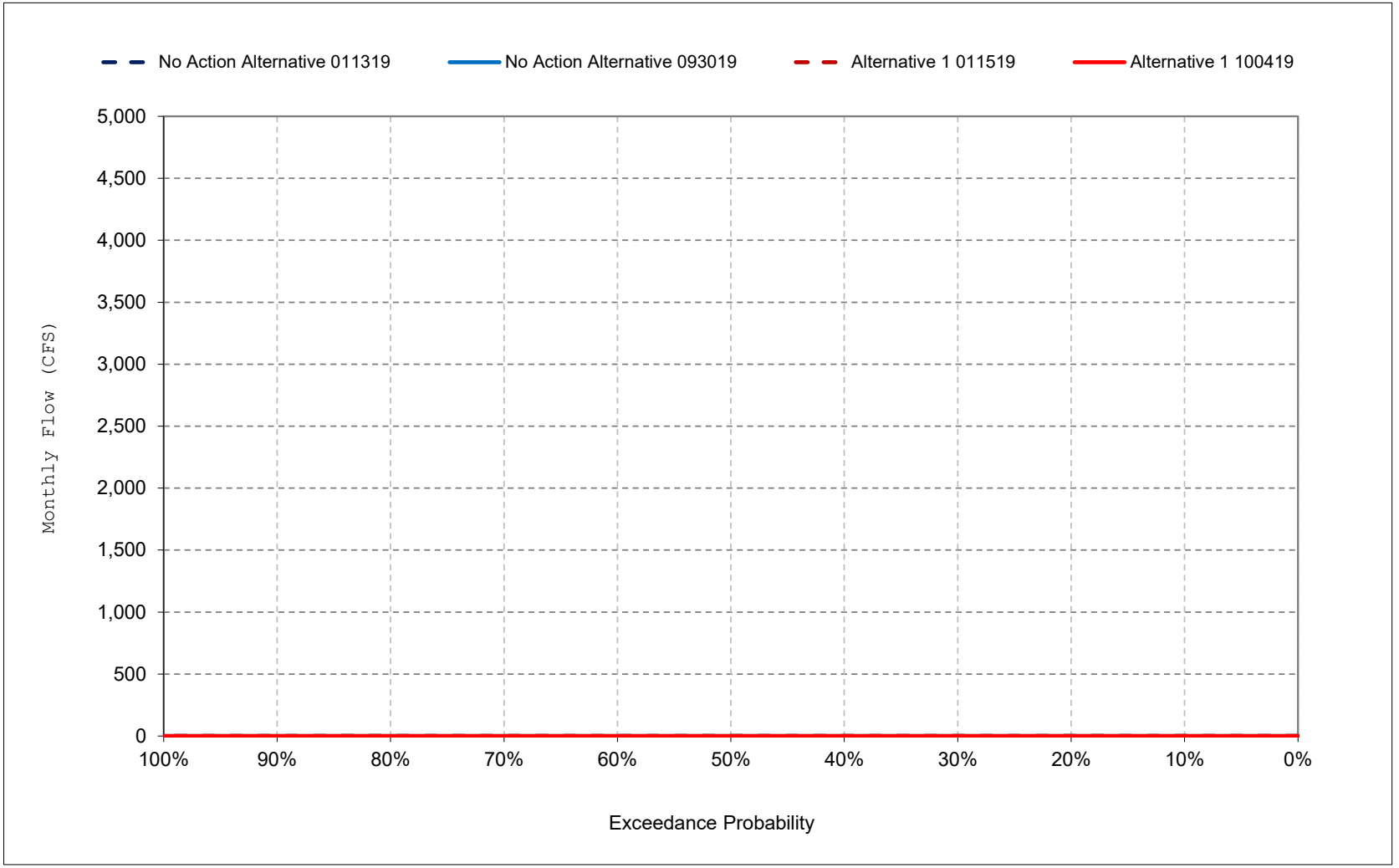

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-12. DCC Flow, March**



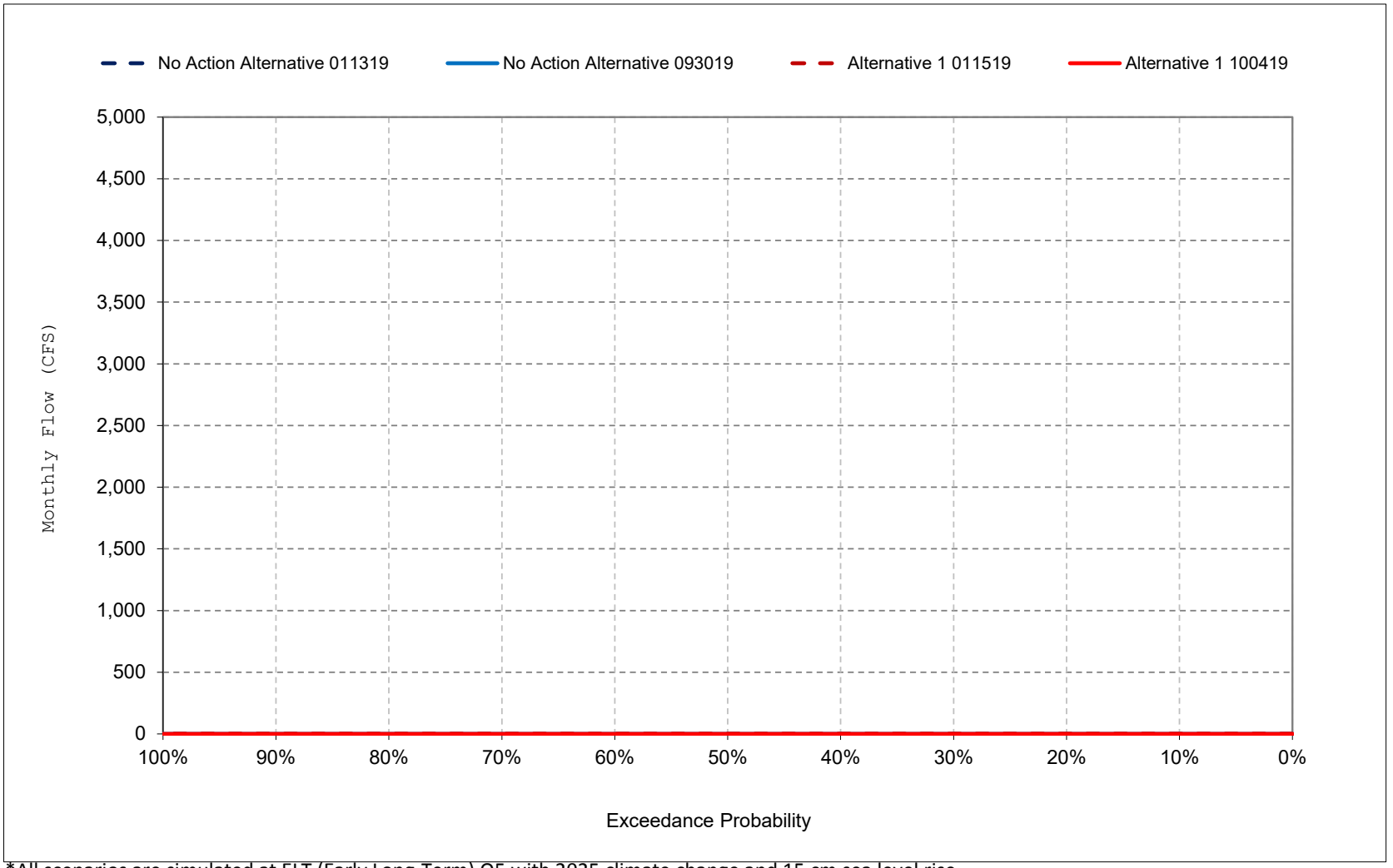

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-13. DCC Flow, April**



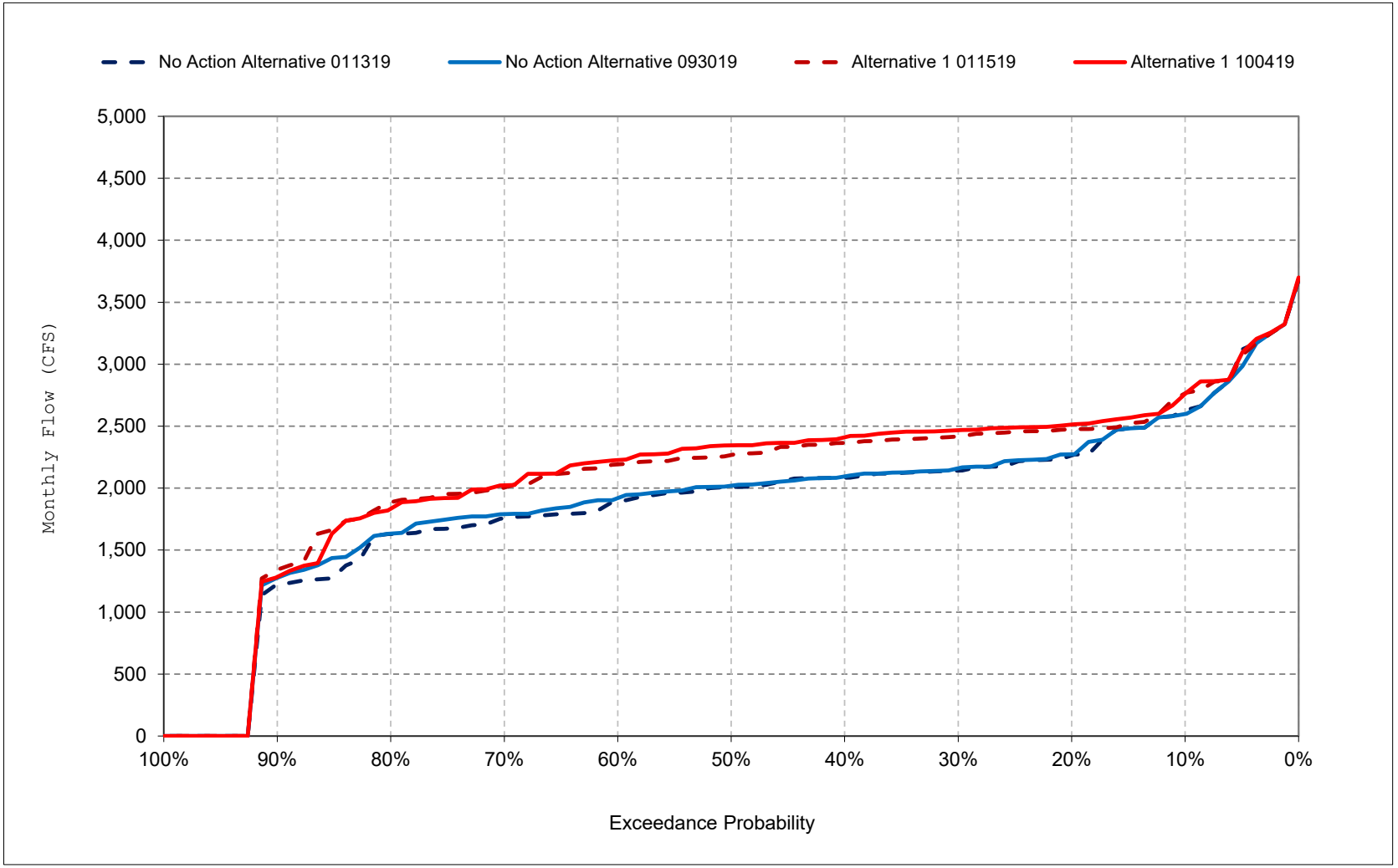

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-14. DCC Flow, May**



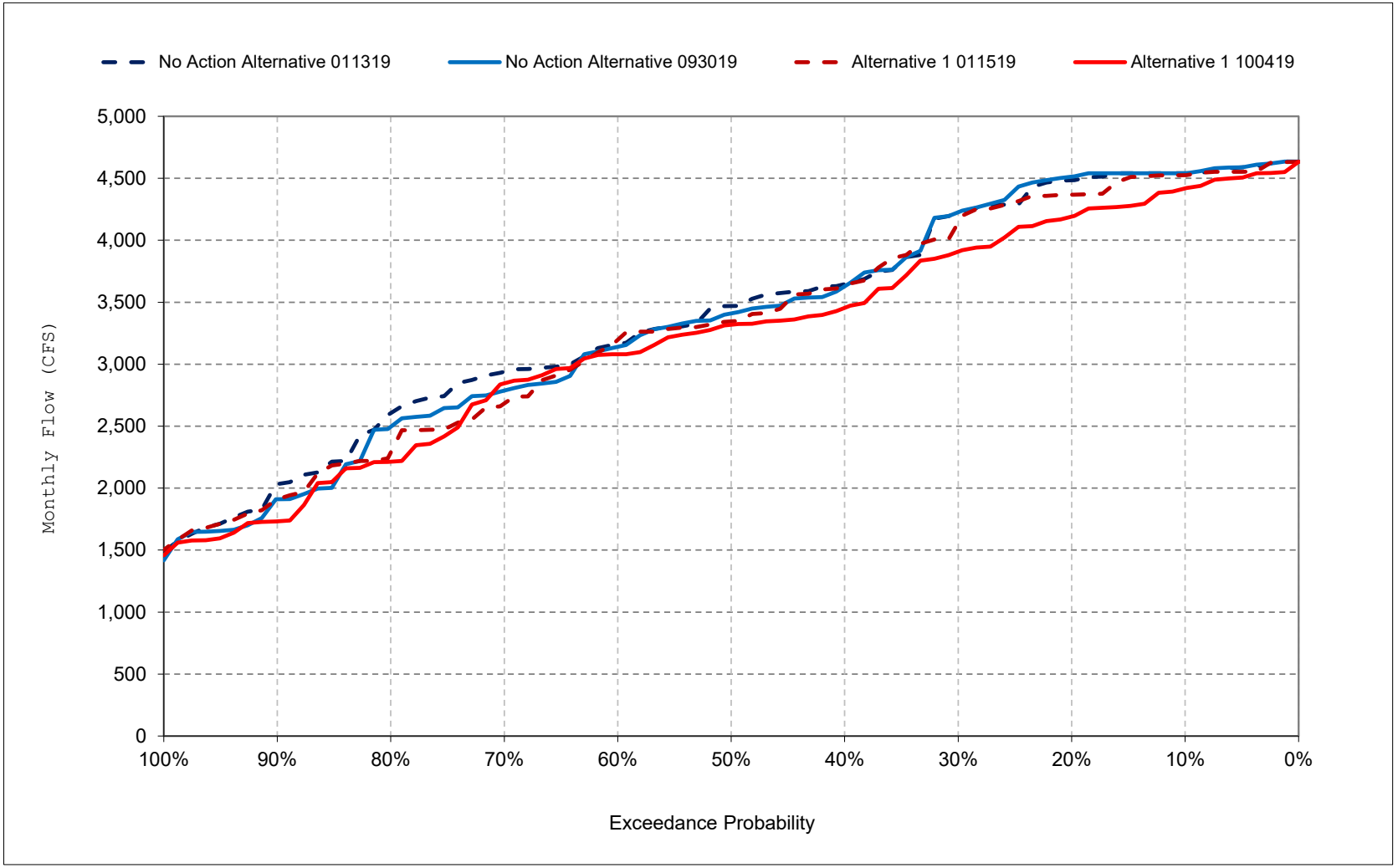

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-15. DCC Flow, June**



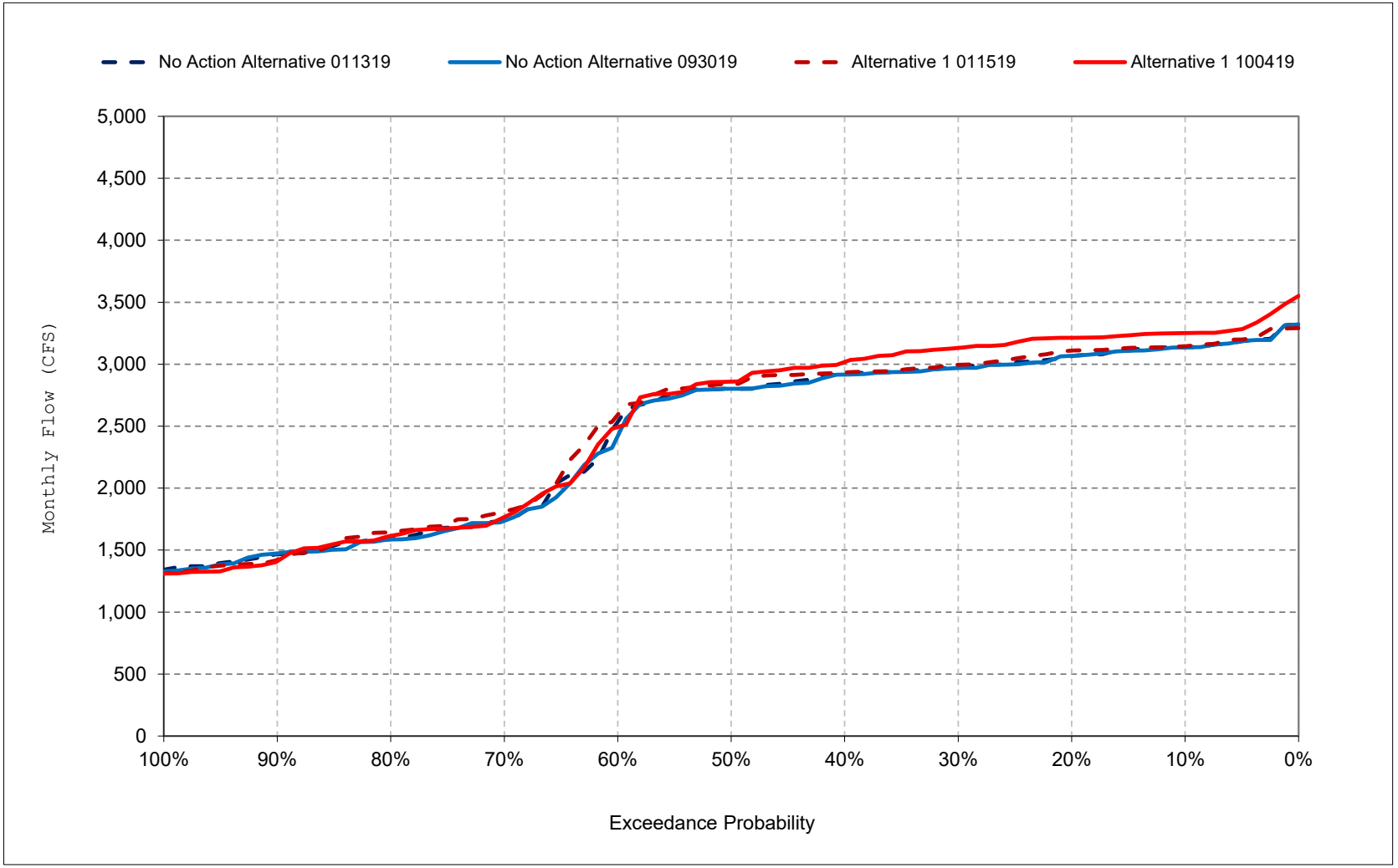

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-16. DCC Flow, July**



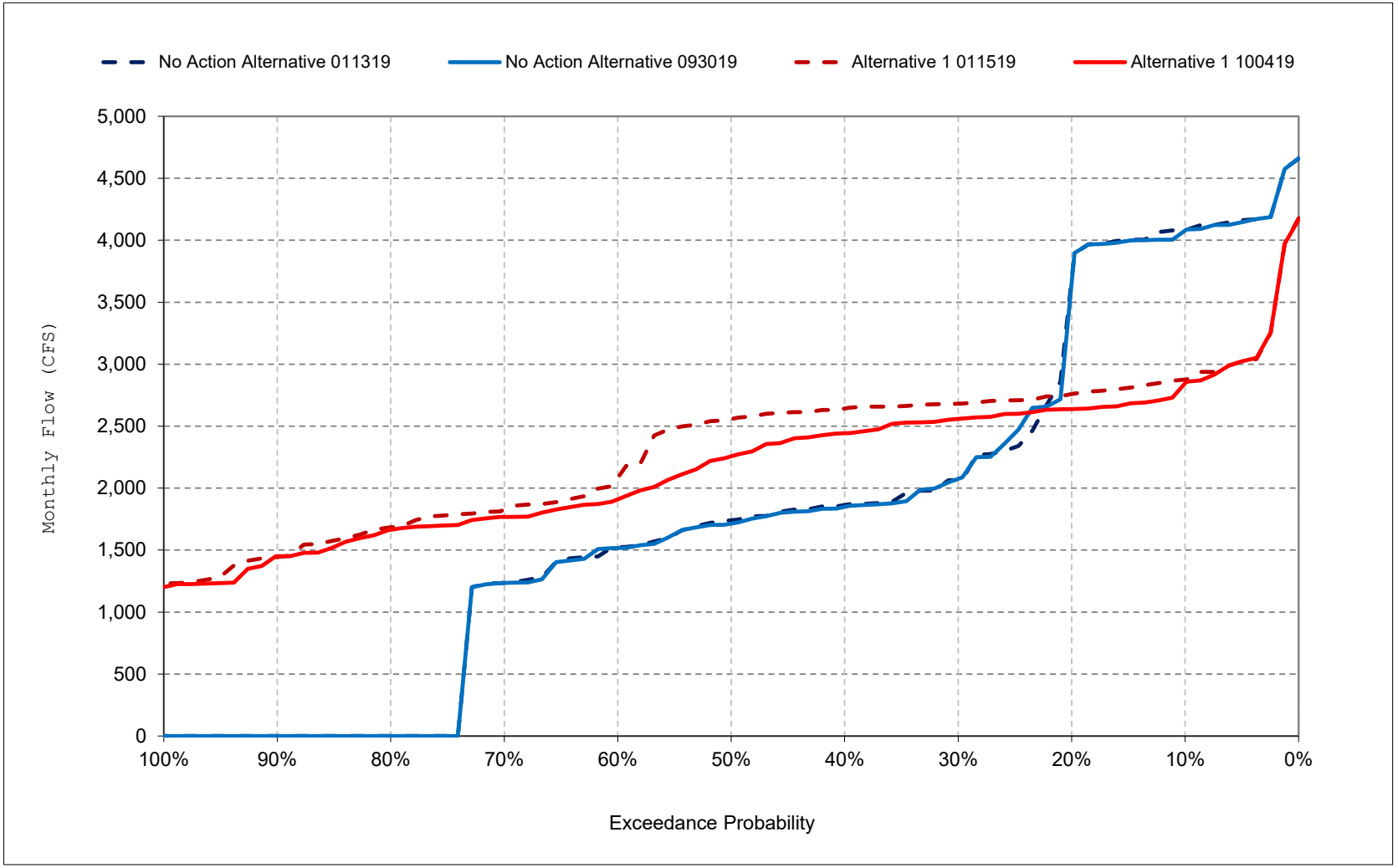

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-17. DCC Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 52-18. DCC Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 53-1. Total Delta Exports, Monthly Delivery

## No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,819 | 11,248 | 11,719 | 9,868 | 12,025 | 10,933 | 4,070 | 3,934 | 8,587 | 11,511 | 11,780 | 11,280 |
| 20% | 7,553 | 9,335 | 11,653 | 7,982 | 9,886 | 10,082 | 3,046 | 2,488 | 6,033 | 11,280 | 11,780 | 11,280 |
| 30% | 6,693 | 8,207 | 10,209 | 6,932 | 8,445 | 8,885 | 2,653 | 2,116 | 5,707 | 10,886 | 11,630 | 11,280 |
| 40% | 6,237 | 7,573 | 8,872 | 6,792 | 7,458 | 7,598 | 2,336 | 1,720 | 5,344 | 10,413 | 11,280 | 11,150 |
| 50% | 5,757 | 7,125 | 8,023 | 6,615 | 6,717 | 6,893 | 2,168 | 1,567 | 4,141 | 9,927 | 10,345 | 10,004 |
| 60% | 5,415 | 6,669 | 7,733 | 6,513 | 6,386 | 6,479 | 2,069 | 1,500 | 3,485 | 8,524 | 8,485 | 7,744 |
| 70% | 5,105 | 6,257 | 7,384 | 6,198 | 5,818 | 5,341 | 1,899 | 1,500 | 3,233 | 7,375 | 4,339 | 6,929 |
| 80% | 4,708 | 5,370 | 6,346 | 5,659 | 4,561 | 4,813 | 1,813 | 1,500 | 2,191 | 5,931 | 3,232 | 6,075 |
| 90% | 4,264 | 4,649 | 5,344 | 4,747 | 3,037 | 2,800 | 1,532 | 1,500 | 713 | 2,661 | 2,247 | 4,439 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,090 | 7,359 | 8,523 | 7,058 | 7,273 | 7,160 | 2,593 | 2,307 | 4,606 | 8,437 | 8,117 | 8,714 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,698 | 7,714 | 10,288 | 8,533 | 9,784 | 9,931 | 3,377 | 3,410 | 7,533 | 10,642 | 11,658 | 10,986 |
| Above Normal (16%) | 6,731 | 8,709 | 9,689 | 6,637 | 7,894 | 8,032 | 2,193 | 1,712 | 5,248 | 9,215 | 11,451 | 11,135 |
| Below Normal (13%) | 7,078 | 7,458 | 7,770 | 6,309 | 6,523 | 6,552 | 2,248 | 1,633 | 3,468 | 10,232 | 9,338 | 8,807 |
| Dry (24%) | 5,458 | 7,609 | 7,380 | 6,431 | 5,712 | 5,790 | 2,633 | 2,068 | 3,170 | 7,661 | 4,131 | 6,779 |
| Critical (15%) | 4,228 | 4,622 | 6,035 | 6,050 | 4,450 | 3,051 | 1,576 | 1,575 | 1,004 | 2,467 | 2,357 | 4,309 |

## Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 11,280 | 11,280 | 11,684 | 9,742 | 11,885 | 10,485 | 8,598 | 8,505 | 8,066 | 11,522 | 11,780 | 11,280 |
| 20% | 11,191 | 11,280 | 10,895 | 8,028 | 9,808 | 9,518 | 7,861 | 7,462 | 5,943 | 11,280 | 11,780 | 11,280 |
| 30% | 9,908 | 10,288 | 8,539 | 7,465 | 8,460 | 8,526 | 7,150 | 6,351 | 5,343 | 11,029 | 11,610 | 11,280 |
| 40% | 8,567 | 9,148 | 8,099 | 7,104 | 7,671 | 7,650 | 6,773 | 5,806 | 5,020 | 10,320 | 11,280 | 11,280 |
| 50% | 7,056 | 8,297 | 7,323 | 7,013 | 7,120 | 7,104 | 6,006 | 5,260 | 4,889 | 9,421 | 10,888 | 11,023 |
| 60% | 5,777 | 7,160 | 7,037 | 6,821 | 6,759 | 6,797 | 5,131 | 4,336 | 4,781 | 8,110 | 9,411 | 8,492 |
| 70% | 5,287 | 6,087 | 6,684 | 6,578 | 6,547 | 6,486 | 3,606 | 3,711 | 4,634 | 6,592 | 4,459 | 6,793 |
| 80% | 4,735 | 5,139 | 6,299 | 6,339 | 6,264 | 6,038 | 3,118 | 3,234 | 4,494 | 4,469 | 3,383 | 5,901 |
| 90% | 4,091 | 4,627 | 5,225 | 6,128 | 5,988 | 4,997 | 2,486 | 2,377 | 2,154 | 1,996 | 2,279 | 4,334 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,487 | 8,086 | 7,975 | 7,451 | 8,015 | 7,564 | 5,564 | 5,284 | 5,266 | 8,165 | 8,265 | 8,929 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,386 | 10,055 | 9,813 | 8,846 | 9,753 | 9,429 | 7,853 | 7,654 | 7,301 | 10,618 | 11,579 | 11,290 |
| Above Normal (16%) | 9,376 | 8,967 | 8,110 | 7,536 | 8,043 | 7,807 | 6,627 | 5,678 | 5,096 | 9,615 | 11,393 | 11,279 |
| Below Normal (13%) | 7,177 | 7,510 | 7,155 | 7,046 | 7,594 | 7,099 | 4,985 | 4,498 | 5,124 | 10,458 | 10,437 | 9,326 |
| Dry (24%) | 5,903 | 7,327 | 7,223 | 6,579 | 7,082 | 7,024 | 4,182 | 4,136 | 4,714 | 6,500 | 4,382 | 6,847 |
| Critical (15%) | 4,251 | 4,655 | 5,852 | 6,160 | 6,159 | 4,587 | 2,289 | 2,356 | 2,093 | 1,955 | 2,179 | 4,373 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,461 | 32 | **-35** | **-126** | **-140** | **-449** | 4,529 | 4,571 | **-521** | 11 | 0 | 0 |
| 20% | 3,638 | 1,945 | **-758** | 46 | **-78** | **-565** | 4,815 | 4,974 | **-90** | 0 | 0 | 0 |
| 30% | 3,215 | 2,081 | **-1,670** | 533 | 15 | **-359** | 4,497 | 4,235 | **-364** | 144 | **-20** | 0 |
| 40% | 2,330 | 1,575 | **-773** | 312 | 213 | 53 | 4,438 | 4,086 | **-324** | **-93** | 0 | 130 |
| 50% | 1,299 | 1,172 | **-700** | 398 | 402 | 211 | 3,838 | 3,693 | 747 | **-506** | 543 | 1,019 |
| 60% | 361 | 491 | **-696** | 308 | 373 | 318 | 3,062 | 2,836 | 1,296 | **-415** | 926 | 747 |
| 70% | 182 | **-170** | **-700** | 380 | 729 | 1,145 | 1,707 | 2,211 | 1,401 | **-783** | 120 | **-136** |
| 80% | 27 | **-231** | **-47** | 680 | 1,703 | 1,225 | 1,304 | 1,734 | 2,304 | **-1,462** | 151 | **-173** |
| 90% | **-174** | **-21** | **-118** | 1,381 | 2,951 | 2,198 | 954 | 877 | 1,441 | **-665** | 32 | **-105** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,397 | 726 | **-548** | 393 | 742 | 404 | 2,971 | 2,977 | 660 | **-272** | 149 | 215 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,688 | 2,341 | **-474** | 312 | **-31** | **-502** | 4,476 | 4,244 | **-232** | **-24** | **-79** | 304 |
| Above Normal (16%) | 2,645 | 258 | **-1,579** | 899 | 149 | **-225** | 4,433 | 3,966 | **-152** | 400 | **-58** | 144 |
| Below Normal (13%) | 99 | 52 | **-615** | 737 | 1,071 | 548 | 2,737 | 2,865 | 1,656 | 226 | 1,099 | 518 |
| Dry (24%) | 445 | **-281** | **-157** | 148 | 1,371 | 1,234 | 1,549 | 2,069 | 1,544 | **-1,161** | 252 | 69 |
| Critical (15%) | 24 | 34 | **-183** | 110 | 1,709 | 1,535 | 713 | 781 | 1,089 | **-512** | **-178** | 64 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 53-2. Total Delta Exports, Monthly Delivery

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,752 | 11,250 | 11,710 | 9,868 | 12,026 | 10,933 | 4,070 | 3,934 | 8,587 | 11,513 | 11,780 | 11,280 |
| 20% | 7,260 | 9,216 | 11,647 | 7,990 | 9,937 | 10,077 | 2,958 | 2,488 | 6,033 | 11,280 | 11,780 | 11,280 |
| 30% | 6,643 | 7,925 | 9,991 | 6,909 | 8,446 | 8,966 | 2,654 | 2,116 | 5,707 | 10,903 | 11,630 | 11,280 |
| 40% | 6,220 | 7,618 | 8,511 | 6,794 | 7,372 | 7,598 | 2,336 | 1,720 | 5,344 | 10,168 | 11,280 | 11,122 |
| 50% | 5,670 | 7,030 | 7,877 | 6,615 | 6,717 | 6,893 | 2,168 | 1,576 | 4,420 | 9,704 | 10,255 | 10,058 |
| 60% | 5,434 | 6,676 | 7,536 | 6,519 | 6,376 | 6,262 | 2,099 | 1,500 | 3,562 | 8,359 | 8,007 | 7,819 |
| 70% | 5,109 | 6,308 | 6,845 | 6,178 | 5,829 | 5,210 | 1,936 | 1,500 | 3,257 | 7,013 | 4,543 | 6,918 |
| 80% | 4,744 | 5,507 | 5,826 | 5,476 | 4,643 | 4,679 | 1,849 | 1,500 | 2,125 | 5,518 | 3,007 | 6,099 |
| 90% | 4,120 | 4,593 | 4,759 | 4,670 | 3,249 | 2,611 | 1,531 | 1,500 | 1,600 | 2,500 | 2,313 | 4,592 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,029 | 7,306 | 8,257 | 7,024 | 7,328 | 7,121 | 2,641 | 2,345 | 4,777 | 8,320 | 8,071 | 8,705 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,791 | 7,739 | 10,275 | 8,526 | 9,806 | 9,928 | 3,433 | 3,518 | 7,533 | 10,677 | 11,674 | 10,990 |
| Above Normal (16%) | 6,581 | 8,594 | 9,635 | 6,630 | 7,892 | 8,004 | 2,193 | 1,713 | 5,248 | 9,227 | 11,463 | 11,063 |
| Below Normal (13%) | 6,828 | 7,171 | 7,468 | 6,310 | 6,516 | 6,552 | 2,271 | 1,633 | 3,635 | 10,177 | 9,202 | 8,814 |
| Dry (24%) | 5,464 | 7,598 | 7,177 | 6,483 | 5,679 | 5,732 | 2,713 | 2,069 | 3,375 | 7,223 | 4,037 | 6,773 |
| Critical (15%) | 3,990 | 4,607 | 4,912 | 5,756 | 4,843 | 2,921 | 1,626 | 1,604 | 1,682 | 2,357 | 2,276 | 4,318 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,953 | 11,280 | 11,700 | 9,655 | 11,557 | 9,968 | 9,430 | 9,366 | 8,587 | 11,280 | 11,554 | 10,038 |
| 20% | 7,097 | 11,280 | 11,596 | 7,793 | 9,454 | 8,537 | 8,392 | 7,475 | 6,209 | 10,635 | 11,280 | 7,413 |
| 30% | 6,262 | 11,280 | 10,365 | 7,260 | 8,461 | 7,718 | 7,809 | 6,108 | 5,422 | 9,896 | 11,100 | 6,783 |
| 40% | 5,899 | 10,801 | 8,693 | 7,086 | 7,671 | 6,038 | 7,298 | 5,641 | 5,271 | 9,586 | 10,338 | 6,080 |
| 50% | 5,498 | 9,939 | 7,457 | 6,874 | 7,048 | 5,696 | 6,267 | 5,301 | 5,088 | 8,761 | 9,908 | 4,930 |
| 60% | 5,229 | 8,047 | 7,075 | 6,726 | 6,648 | 5,406 | 5,115 | 4,247 | 4,935 | 7,955 | 8,311 | 4,318 |
| 70% | 5,050 | 6,274 | 6,665 | 6,448 | 6,536 | 5,133 | 3,500 | 3,719 | 4,809 | 6,488 | 4,363 | 3,878 |
| 80% | 4,501 | 5,241 | 5,886 | 5,884 | 6,257 | 4,909 | 3,168 | 3,125 | 4,520 | 4,172 | 2,981 | 3,575 |
| 90% | 4,099 | 4,629 | 4,732 | 5,317 | 5,994 | 4,687 | 2,606 | 2,319 | 1,869 | 1,914 | 2,166 | 3,208 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5,943 | 8,588 | 8,214 | 7,214 | 7,952 | 6,552 | 5,948 | 5,346 | 5,416 | 7,705 | 7,831 | 5,612 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,869 | 10,943 | 10,374 | 8,672 | 9,868 | 8,876 | 8,434 | 7,766 | 7,653 | 10,282 | 11,277 | 5,110 |
| Above Normal (16%) | 5,115 | 10,559 | 9,827 | 7,339 | 7,724 | 6,519 | 7,047 | 5,837 | 5,540 | 8,471 | 10,463 | 3,634 |
| Below Normal (13%) | 7,016 | 7,471 | 6,884 | 6,722 | 7,596 | 5,673 | 5,325 | 4,551 | 5,069 | 9,025 | 9,590 | 8,637 |
| Dry (24%) | 5,732 | 7,308 | 7,043 | 6,398 | 6,960 | 5,403 | 4,407 | 4,113 | 4,705 | 6,656 | 4,173 | 6,724 |
| Critical (15%) | 4,198 | 4,506 | 4,957 | 5,728 | 6,029 | 4,273 | 2,510 | 2,358 | 1,938 | 1,833 | 1,999 | 4,215 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 201 | 30 | **-11** | **-213** | **-470** | **-965** | 5,361 | 5,431 | 0 | **-233** | **-226** | **-1,242** |
| 20% | **-163** | 2,064 | **-51** | **-197** | **-483** | **-1,540** | 5,434 | 4,988 | 176 | **-645** | **-500** | **-3,867** |
| 30% | **-381** | 3,355 | 374 | 351 | 15 | **-1,247** | 5,154 | 3,992 | **-285** | **-1,007** | **-530** | **-4,497** |
| 40% | **-321** | 3,183 | 182 | 292 | 299 | **-1,559** | 4,963 | 3,921 | **-73** | **-581** | **-942** | **-5,042** |
| 50% | **-171** | 2,909 | **-420** | 260 | 330 | **-1,198** | 4,099 | 3,726 | 668 | **-943** | **-347** | **-5,128** |
| 60% | **-205** | 1,371 | **-460** | 207 | 272 | **-856** | 3,016 | 2,747 | 1,372 | **-404** | 304 | **-3,501** |
| 70% | **-59** | **-33** | **-181** | 271 | 707 | **-77** | 1,564 | 2,219 | 1,551 | **-524** | **-180** | **-3,040** |
| 80% | **-244** | **-265** | 60 | 407 | 1,614 | 230 | 1,318 | 1,625 | 2,395 | **-1,346** | **-26** | **-2,524** |
| 90% | **-21** | 36 | **-27** | 647 | 2,745 | 2,076 | 1,074 | 819 | 270 | **-586** | **-147** | **-1,384** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-86** | 1,282 | **-43** | 189 | 624 | **-569** | 3,308 | 3,001 | 639 | **-615** | **-240** | **-3,093** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 78 | 3,203 | 99 | 146 | 62 | **-1,052** | 5,001 | 4,248 | 120 | **-394** | **-398** | **-5,880** |
| Above Normal (16%) | **-1,465** | 1,965 | 192 | 708 | **-168** | **-1,486** | 4,854 | 4,125 | 292 | **-756** | **-999** | **-7,429** |
| Below Normal (13%) | 188 | 301 | **-584** | 411 | 1,079 | **-878** | 3,054 | 2,918 | 1,433 | **-1,153** | 388 | **-177** |
| Dry (24%) | 268 | **-290** | **-134** | **-85** | 1,282 | **-329** | 1,694 | 2,044 | 1,331 | **-567** | 135 | **-50** |
| Critical (15%) | 208 | **-101** | 45 | **-27** | 1,187 | 1,353 | 884 | 754 | 256 | **-524** | **-277** | **-103** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 53-3. Total Delta Exports, Monthly Delivery

### No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,819 | 11,248 | 11,719 | 9,868 | 12,025 | 10,933 | 4,070 | 3,934 | 8,587 | 11,511 | 11,780 | 11,280 |
| 20% | 7,553 | 9,335 | 11,653 | 7,982 | 9,886 | 10,082 | 3,046 | 2,488 | 6,033 | 11,280 | 11,780 | 11,280 |
| 30% | 6,693 | 8,207 | 10,209 | 6,932 | 8,445 | 8,885 | 2,653 | 2,116 | 5,707 | 10,886 | 11,630 | 11,280 |
| 40% | 6,237 | 7,573 | 8,872 | 6,792 | 7,458 | 7,598 | 2,336 | 1,720 | 5,344 | 10,413 | 11,280 | 11,150 |
| 50% | 5,757 | 7,125 | 8,023 | 6,615 | 6,717 | 6,893 | 2,168 | 1,567 | 4,141 | 9,927 | 10,345 | 10,004 |
| 60% | 5,415 | 6,669 | 7,733 | 6,513 | 6,386 | 6,479 | 2,069 | 1,500 | 3,485 | 8,524 | 8,485 | 7,744 |
| 70% | 5,105 | 6,257 | 7,384 | 6,198 | 5,818 | 5,341 | 1,899 | 1,500 | 3,233 | 7,375 | 4,339 | 6,929 |
| 80% | 4,708 | 5,370 | 6,346 | 5,659 | 4,561 | 4,813 | 1,813 | 1,500 | 2,191 | 5,931 | 3,232 | 6,075 |
| 90% | 4,264 | 4,649 | 5,344 | 4,747 | 3,037 | 2,800 | 1,532 | 1,500 | 713 | 2,661 | 2,247 | 4,439 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,090 | 7,359 | 8,523 | 7,058 | 7,273 | 7,160 | 2,593 | 2,307 | 4,606 | 8,437 | 8,117 | 8,714 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,698 | 7,714 | 10,288 | 8,533 | 9,784 | 9,931 | 3,377 | 3,410 | 7,533 | 10,642 | 11,658 | 10,986 |
| Above Normal (16%) | 6,731 | 8,709 | 9,689 | 6,637 | 7,894 | 8,032 | 2,193 | 1,712 | 5,248 | 9,215 | 11,451 | 11,135 |
| Below Normal (13%) | 7,078 | 7,458 | 7,770 | 6,309 | 6,523 | 6,552 | 2,248 | 1,633 | 3,468 | 10,232 | 9,338 | 8,807 |
| Dry (24%) | 5,458 | 7,609 | 7,380 | 6,431 | 5,712 | 5,790 | 2,633 | 2,068 | 3,170 | 7,661 | 4,131 | 6,779 |
| Critical (15%) | 4,228 | 4,622 | 6,035 | 6,050 | 4,450 | 3,051 | 1,576 | 1,575 | 1,004 | 2,467 | 2,357 | 4,309 |

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,752 | 11,250 | 11,710 | 9,868 | 12,026 | 10,933 | 4,070 | 3,934 | 8,587 | 11,513 | 11,780 | 11,280 |
| 20% | 7,260 | 9,216 | 11,647 | 7,990 | 9,937 | 10,077 | 2,958 | 2,488 | 6,033 | 11,280 | 11,780 | 11,280 |
| 30% | 6,643 | 7,925 | 9,991 | 6,909 | 8,446 | 8,966 | 2,654 | 2,116 | 5,707 | 10,903 | 11,630 | 11,280 |
| 40% | 6,220 | 7,618 | 8,511 | 6,794 | 7,372 | 7,598 | 2,336 | 1,720 | 5,344 | 10,168 | 11,280 | 11,122 |
| 50% | 5,670 | 7,030 | 7,877 | 6,615 | 6,717 | 6,893 | 2,168 | 1,576 | 4,420 | 9,704 | 10,255 | 10,058 |
| 60% | 5,434 | 6,676 | 7,536 | 6,519 | 6,376 | 6,262 | 2,099 | 1,500 | 3,562 | 8,359 | 8,007 | 7,819 |
| 70% | 5,109 | 6,308 | 6,845 | 6,178 | 5,829 | 5,210 | 1,936 | 1,500 | 3,257 | 7,013 | 4,543 | 6,918 |
| 80% | 4,744 | 5,507 | 5,826 | 5,476 | 4,643 | 4,679 | 1,849 | 1,500 | 2,125 | 5,518 | 3,007 | 6,099 |
| 90% | 4,120 | 4,593 | 4,759 | 4,670 | 3,249 | 2,611 | 1,531 | 1,500 | 1,600 | 2,500 | 2,313 | 4,592 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,029 | 7,306 | 8,257 | 7,024 | 7,328 | 7,121 | 2,641 | 2,345 | 4,777 | 8,320 | 8,071 | 8,705 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,791 | 7,739 | 10,275 | 8,526 | 9,806 | 9,928 | 3,433 | 3,518 | 7,533 | 10,677 | 11,674 | 10,990 |
| Above Normal (16%) | 6,581 | 8,594 | 9,635 | 6,630 | 7,892 | 8,004 | 2,193 | 1,713 | 5,248 | 9,227 | 11,463 | 11,063 |
| Below Normal (13%) | 6,828 | 7,171 | 7,468 | 6,310 | 6,516 | 6,552 | 2,271 | 1,633 | 3,635 | 10,177 | 9,202 | 8,814 |
| Dry (24%) | 5,464 | 7,598 | 7,177 | 6,483 | 5,679 | 5,732 | 2,713 | 2,069 | 3,375 | 7,223 | 4,037 | 6,773 |
| Critical (15%) | 3,990 | 4,607 | 4,912 | 5,756 | 4,843 | 2,921 | 1,626 | 1,604 | 1,682 | 2,357 | 2,276 | 4,318 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -67 | 2 | -9 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 20% | -292 | -119 | -6 | 8 | 50 | -5 | -88 | 0 | 0 | 0 | 0 | 0 |
| 30% | -50 | -282 | -218 | -23 | 1 | 80 | 1 | 0 | 0 | 18 | 0 | 0 |
| 40% | -17 | 45 | -360 | 2 | -86 | 0 | 0 | 0 | 0 | -245 | 0 | -29 |
| 50% | -87 | -95 | -146 | 0 | 0 | 0 | 0 | 8 | 278 | -223 | -90 | 53 |
| 60% | 19 | 7 | -197 | 6 | -9 | -217 | 30 | 0 | 78 | -166 | -478 | 75 |
| 70% | 4 | 50 | -539 | -20 | 11 | -131 | 38 | 0 | 24 | -362 | 204 | -11 |
| 80% | 36 | 136 | -520 | -183 | 82 | -135 | 36 | 0 | -66 | -413 | -226 | 24 |
| 90% | -145 | -56 | -585 | -77 | 212 | -189 | -1 | 0 | 887 | -161 | 66 | 153 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -61 | -53 | -267 | -34 | 55 | -39 | 48 | 39 | 172 | -117 | -46 | -9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 93 | 26 | -12 | -8 | 22 | -4 | 56 | 108 | 0 | 35 | 17 | 4 |
| Above Normal (16%) | -150 | -115 | -54 | -7 | -2 | -28 | 0 | 0 | 1 | 12 | 11 | -72 |
| Below Normal (13%) | -249 | -287 | -302 | 1 | -7 | 0 | 23 | 0 | 167 | -55 | -136 | 7 |
| Dry (24%) | 5 | -10 | -203 | 53 | -33 | -58 | 80 | 1 | 205 | -437 | -93 | -5 |
| Critical (15%) | -238 | -15 | -1,123 | -295 | 393 | -130 | 50 | 29 | 678 | -110 | -80 | 9 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 53-4. Total Delta Exports, Monthly Delivery

### Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 11,280 | 11,280 | 11,684 | 9,742 | 11,885 | 10,485 | 8,598 | 8,505 | 8,066 | 11,522 | 11,780 | 11,280 |
| 20% | 11,191 | 11,280 | 10,895 | 8,028 | 9,808 | 9,518 | 7,861 | 7,462 | 5,943 | 11,280 | 11,780 | 11,280 |
| 30% | 9,908 | 10,288 | 8,539 | 7,465 | 8,460 | 8,526 | 7,150 | 6,351 | 5,343 | 11,029 | 11,610 | 11,280 |
| 40% | 8,567 | 9,148 | 8,099 | 7,104 | 7,671 | 7,650 | 6,773 | 5,806 | 5,020 | 10,320 | 11,280 | 11,280 |
| 50% | 7,056 | 8,297 | 7,323 | 7,013 | 7,120 | 7,104 | 6,006 | 5,260 | 4,889 | 9,421 | 10,888 | 11,023 |
| 60% | 5,777 | 7,160 | 7,037 | 6,821 | 6,759 | 6,797 | 5,131 | 4,336 | 4,781 | 8,110 | 9,411 | 8,492 |
| 70% | 5,287 | 6,087 | 6,684 | 6,578 | 6,547 | 6,486 | 3,606 | 3,711 | 4,634 | 6,592 | 4,459 | 6,793 |
| 80% | 4,735 | 5,139 | 6,299 | 6,339 | 6,264 | 6,038 | 3,118 | 3,234 | 4,494 | 4,469 | 3,383 | 5,901 |
| 90% | 4,091 | 4,627 | 5,225 | 6,128 | 5,988 | 4,997 | 2,486 | 2,377 | 2,154 | 1,996 | 2,279 | 4,334 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 7,487 | 8,086 | 7,975 | 7,451 | 8,015 | 7,564 | 5,564 | 5,284 | 5,266 | 8,165 | 8,265 | 8,929 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 9,386 | 10,055 | 9,813 | 8,846 | 9,753 | 9,429 | 7,853 | 7,654 | 7,301 | 10,618 | 11,579 | 11,290 |
| Above Normal (16%) | 9,376 | 8,967 | 8,110 | 7,536 | 8,043 | 7,807 | 6,627 | 5,678 | 5,096 | 9,615 | 11,393 | 11,279 |
| Below Normal (13%) | 7,177 | 7,510 | 7,155 | 7,046 | 7,594 | 7,099 | 4,985 | 4,498 | 5,124 | 10,458 | 10,437 | 9,326 |
| Dry (24%) | 5,903 | 7,327 | 7,223 | 6,579 | 7,082 | 7,024 | 4,182 | 4,136 | 4,714 | 6,500 | 4,382 | 6,847 |
| Critical (15%) | 4,251 | 4,655 | 5,852 | 6,160 | 6,159 | 4,587 | 2,289 | 2,356 | 2,093 | 1,955 | 2,179 | 4,373 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,953 | 11,280 | 11,700 | 9,655 | 11,557 | 9,968 | 9,430 | 9,366 | 8,587 | 11,280 | 11,554 | 10,038 |
| 20% | 7,097 | 11,280 | 11,596 | 7,793 | 9,454 | 8,537 | 8,392 | 7,475 | 6,209 | 10,635 | 11,280 | 7,413 |
| 30% | 6,262 | 11,280 | 10,365 | 7,260 | 8,461 | 7,718 | 7,809 | 6,108 | 5,422 | 9,896 | 11,100 | 6,783 |
| 40% | 5,899 | 10,801 | 8,693 | 7,086 | 7,671 | 6,038 | 7,298 | 5,641 | 5,271 | 9,586 | 10,338 | 6,080 |
| 50% | 5,498 | 9,939 | 7,457 | 6,874 | 7,048 | 5,696 | 6,267 | 5,301 | 5,088 | 8,761 | 9,908 | 4,930 |
| 60% | 5,229 | 8,047 | 7,075 | 6,726 | 6,648 | 5,406 | 5,115 | 4,247 | 4,935 | 7,955 | 8,311 | 4,318 |
| 70% | 5,050 | 6,274 | 6,665 | 6,448 | 6,536 | 5,133 | 3,500 | 3,719 | 4,809 | 6,488 | 4,363 | 3,878 |
| 80% | 4,501 | 5,241 | 5,886 | 5,884 | 6,257 | 4,909 | 3,168 | 3,125 | 4,520 | 4,172 | 2,981 | 3,575 |
| 90% | 4,099 | 4,629 | 4,732 | 5,317 | 5,994 | 4,687 | 2,606 | 2,319 | 1,869 | 1,914 | 2,166 | 3,208 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5,943 | 8,588 | 8,214 | 7,214 | 7,952 | 6,552 | 5,948 | 5,346 | 5,416 | 7,705 | 7,831 | 5,612 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6,869 | 10,943 | 10,374 | 8,672 | 9,868 | 8,876 | 8,434 | 7,766 | 7,653 | 10,282 | 11,277 | 5,110 |
| Above Normal (16%) | 5,115 | 10,559 | 9,827 | 7,339 | 7,724 | 6,519 | 7,047 | 5,837 | 5,540 | 8,471 | 10,463 | 3,634 |
| Below Normal (13%) | 7,016 | 7,471 | 6,884 | 6,722 | 7,596 | 5,673 | 5,325 | 4,551 | 5,069 | 9,025 | 9,590 | 8,637 |
| Dry (24%) | 5,732 | 7,308 | 7,043 | 6,398 | 6,960 | 5,403 | 4,407 | 4,113 | 4,705 | 6,656 | 4,173 | 6,724 |
| Critical (15%) | 4,198 | 4,506 | 4,957 | 5,728 | 6,029 | 4,273 | 2,510 | 2,358 | 1,938 | 1,833 | 1,999 | 4,215 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -3,327 | 0 | 16 | -87 | -329 | -516 | 832 | 860 | 521 | -242 | -226 | -1,242 |
| 20% | -4,093 | 0 | 701 | -235 | -355 | -980 | 531 | 14 | 266 | -645 | -500 | -3,867 |
| 30% | -3,647 | 992 | 1,826 | -205 | 1 | -808 | 659 | -243 | 79 | -1,134 | -510 | -4,497 |
| 40% | -2,668 | 1,653 | 594 | -18 | 0 | -1,612 | 525 | -165 | 251 | -734 | -942 | -5,200 |
| 50% | -1,558 | 1,641 | 134 | -138 | -72 | -1,409 | 261 | 42 | 199 | -660 | -980 | -6,093 |
| 60% | -547 | 887 | 38 | -94 | -111 | -1,391 | -16 | -89 | 154 | -155 | -1,100 | -4,174 |
| 70% | -237 | 188 | -20 | -130 | -11 | -1,353 | -105 | 7 | 175 | -104 | -96 | -2,915 |
| 80% | -235 | 102 | -413 | -456 | -7 | -1,129 | 50 | -109 | 25 | -297 | -403 | -2,326 |
| 90% | 8 | 1 | -494 | -810 | 6 | -311 | 119 | -58 | -285 | -82 | -113 | -1,126 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1,544 | 502 | 239 | -237 | -63 | -1,012 | 384 | 62 | 150 | -460 | -434 | -3,317 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -2,516 | 888 | 560 | -174 | 114 | -554 | 582 | 112 | 352 | -336 | -302 | -6,180 |
| Above Normal (16%) | -4,260 | 1,592 | 1,717 | -197 | -319 | -1,289 | 420 | 159 | 444 | -1,144 | -930 | -7,645 |
| Below Normal (13%) | -160 | -38 | -271 | -324 | 2 | -1,426 | 340 | 53 | -55 | -1,434 | -846 | -688 |
| Dry (24%) | -171 | -19 | -180 | -181 | -122 | -1,621 | 225 | -23 | -9 | 157 | -210 | -124 |
| Critical (15%) | -53 | -149 | -895 | -432 | -129 | -313 | 221 | 2 | -155 | -122 | -180 | -158 |

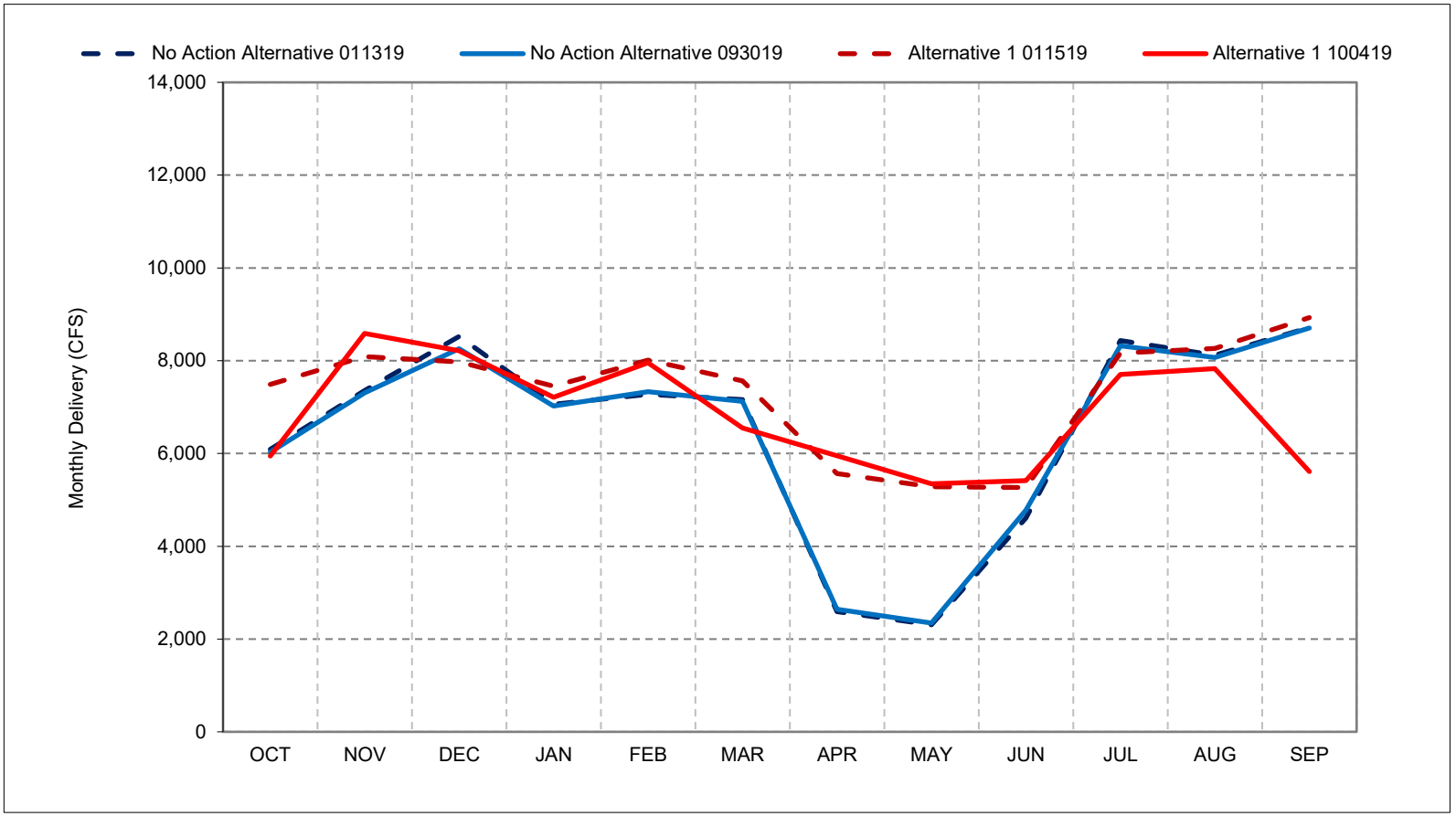
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-1. Total Delta Exports, Long-Term Average Delivery

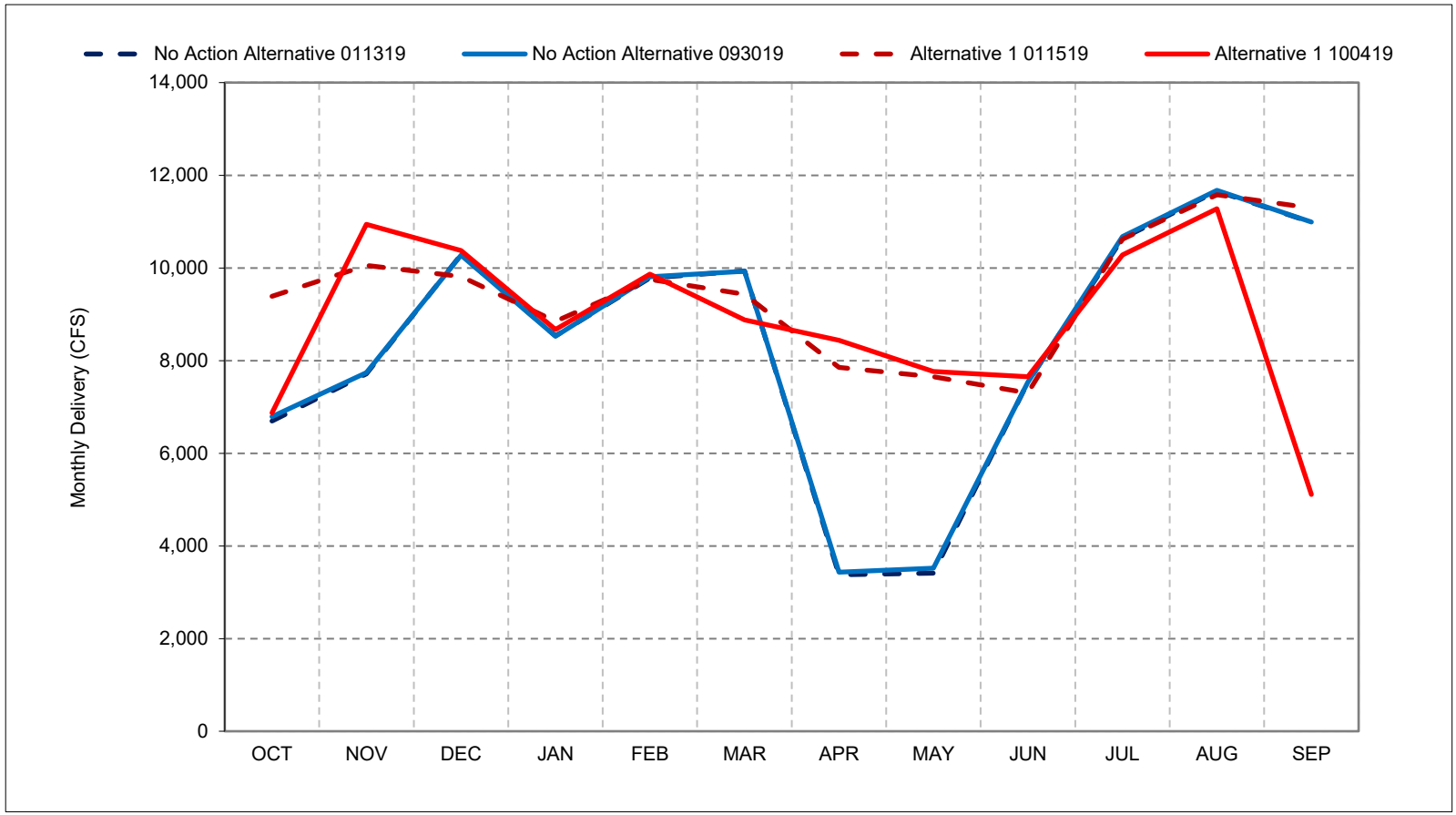



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-2. Total Delta Exports, Wet Year Average Delivery

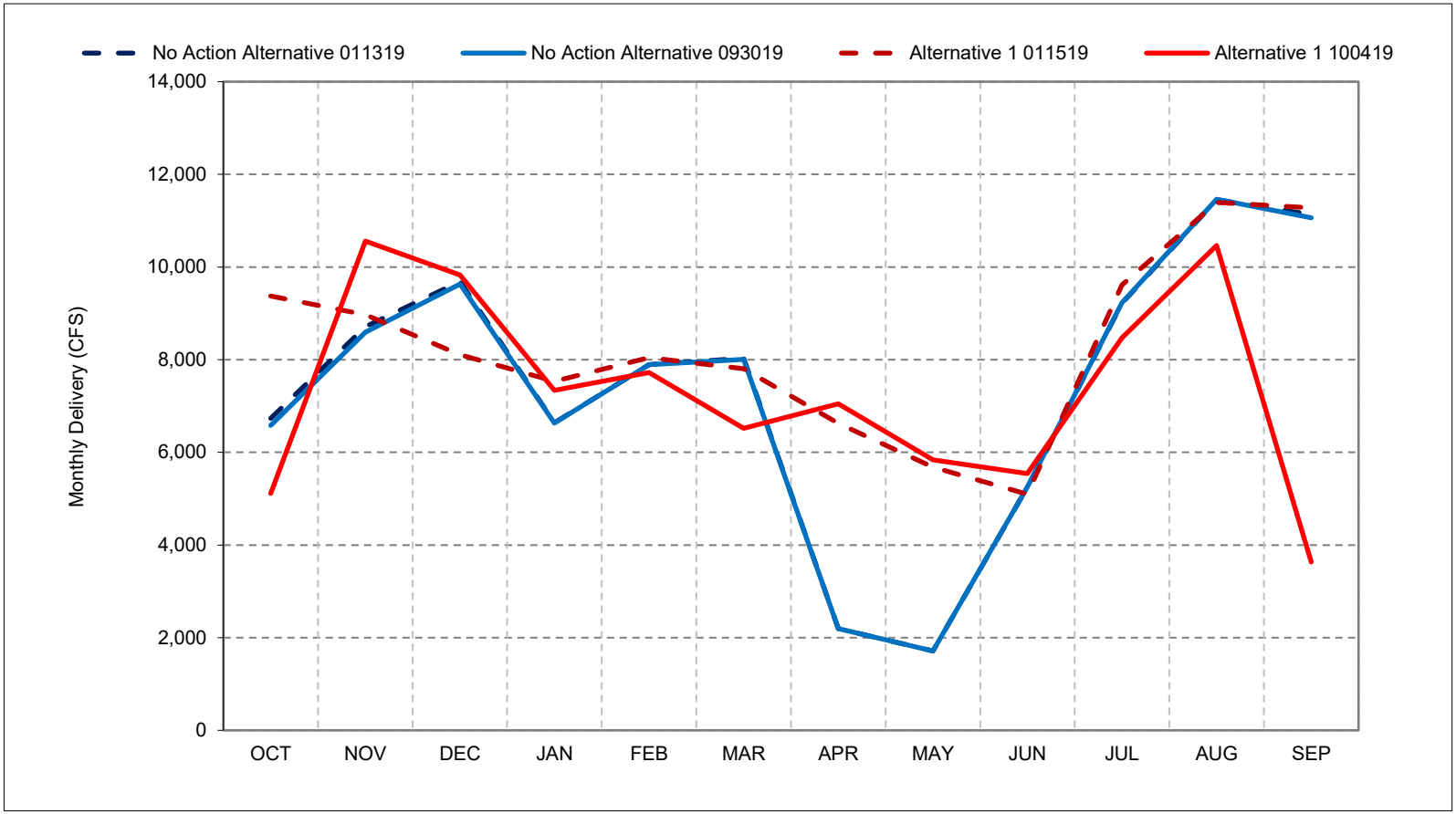



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-3. Total Delta Exports, Above Normal Year Average Delivery

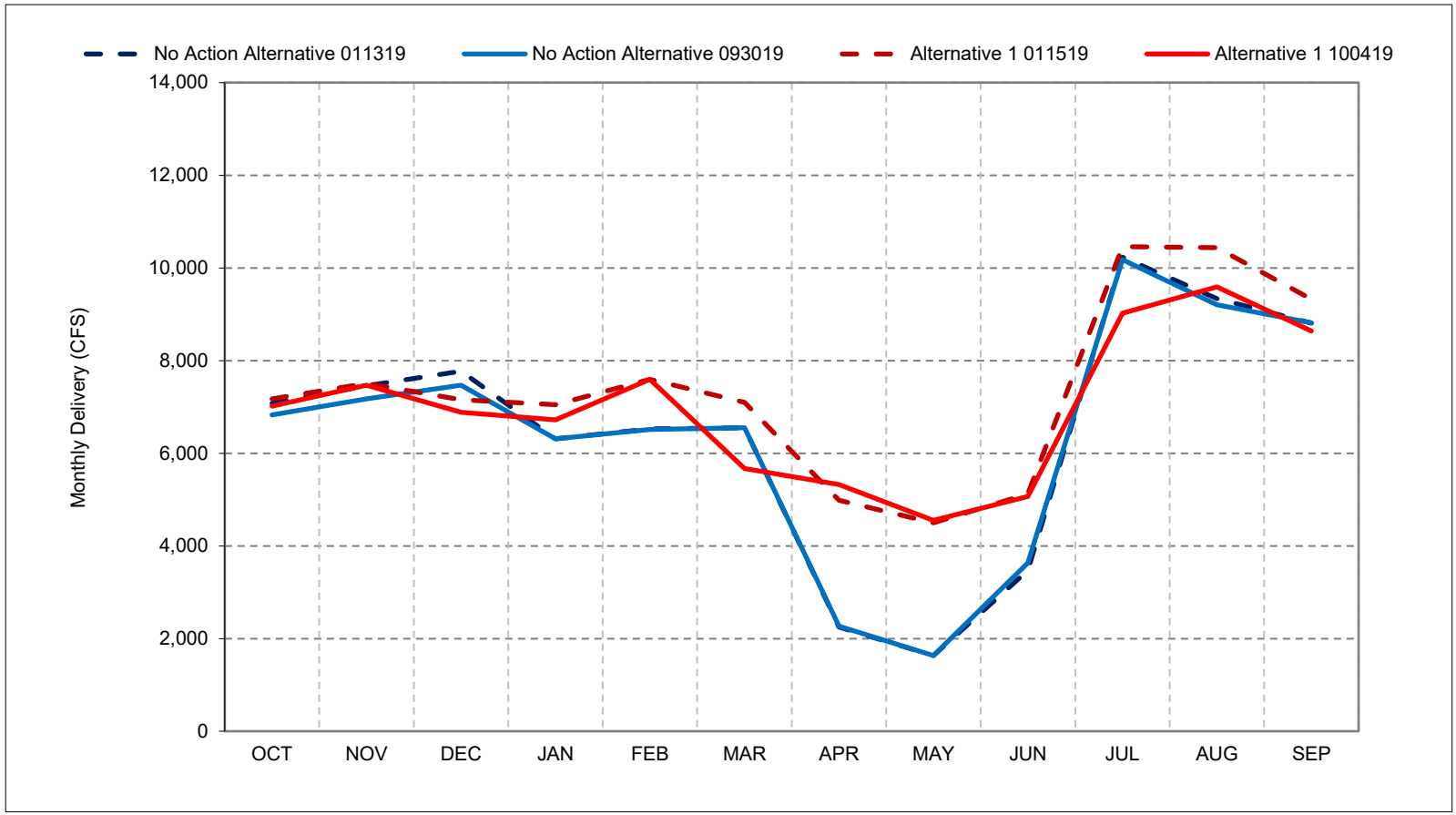



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-4. Total Delta Exports, Below Normal Year Average Delivery

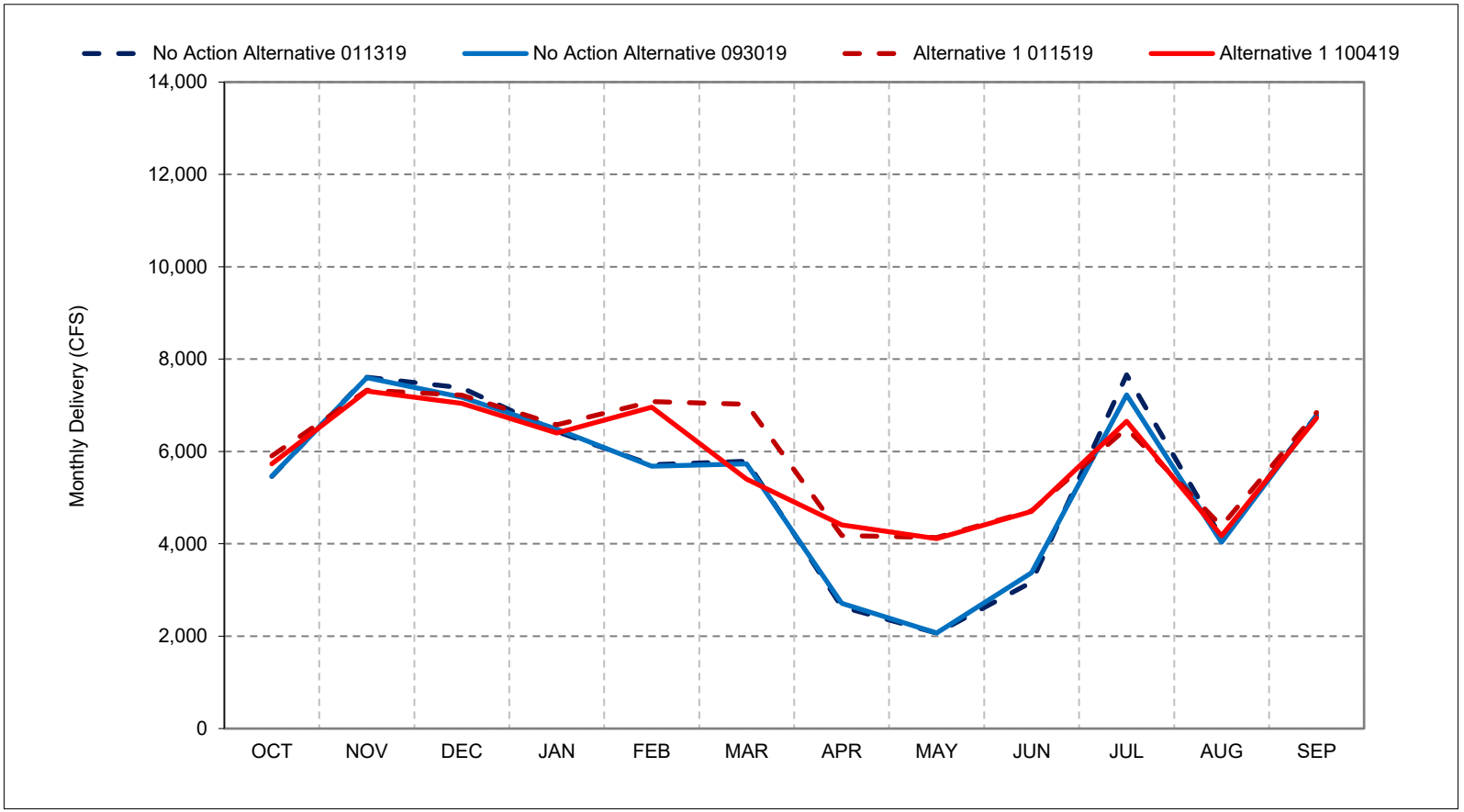



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-5. Total Delta Exports, Dry Year Average Delivery

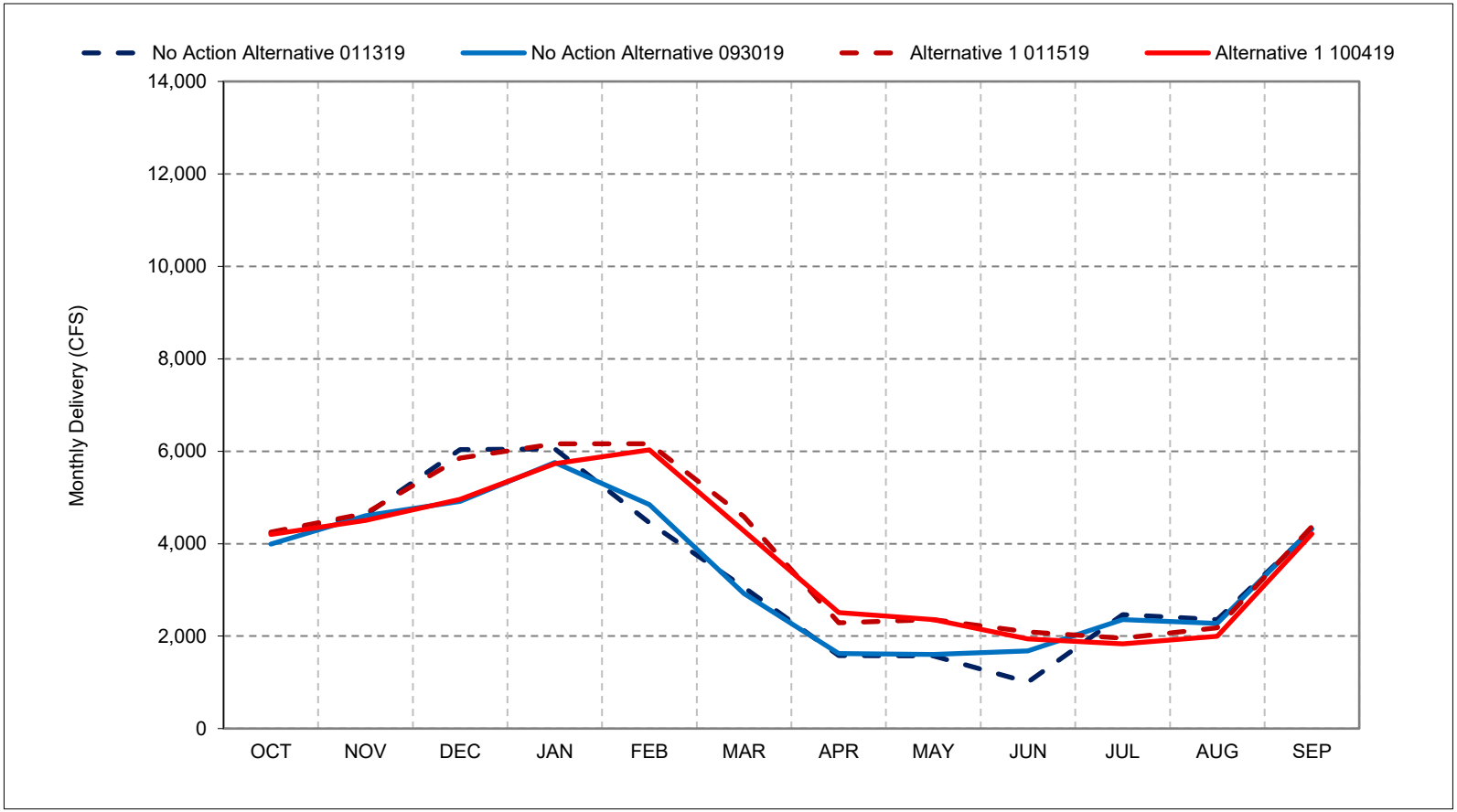



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 53-6. Total Delta Exports, Critical Year Average Delivery

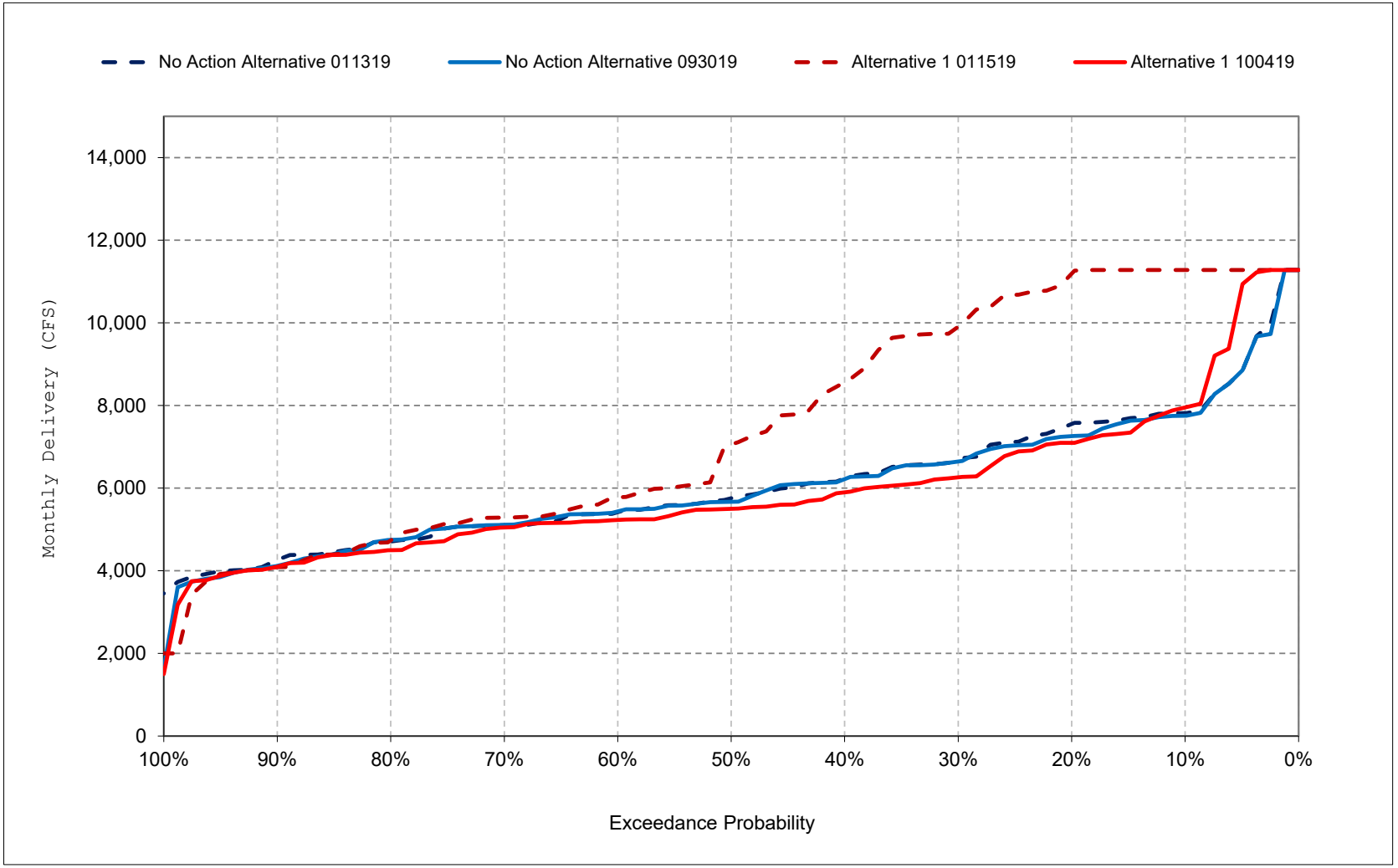



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

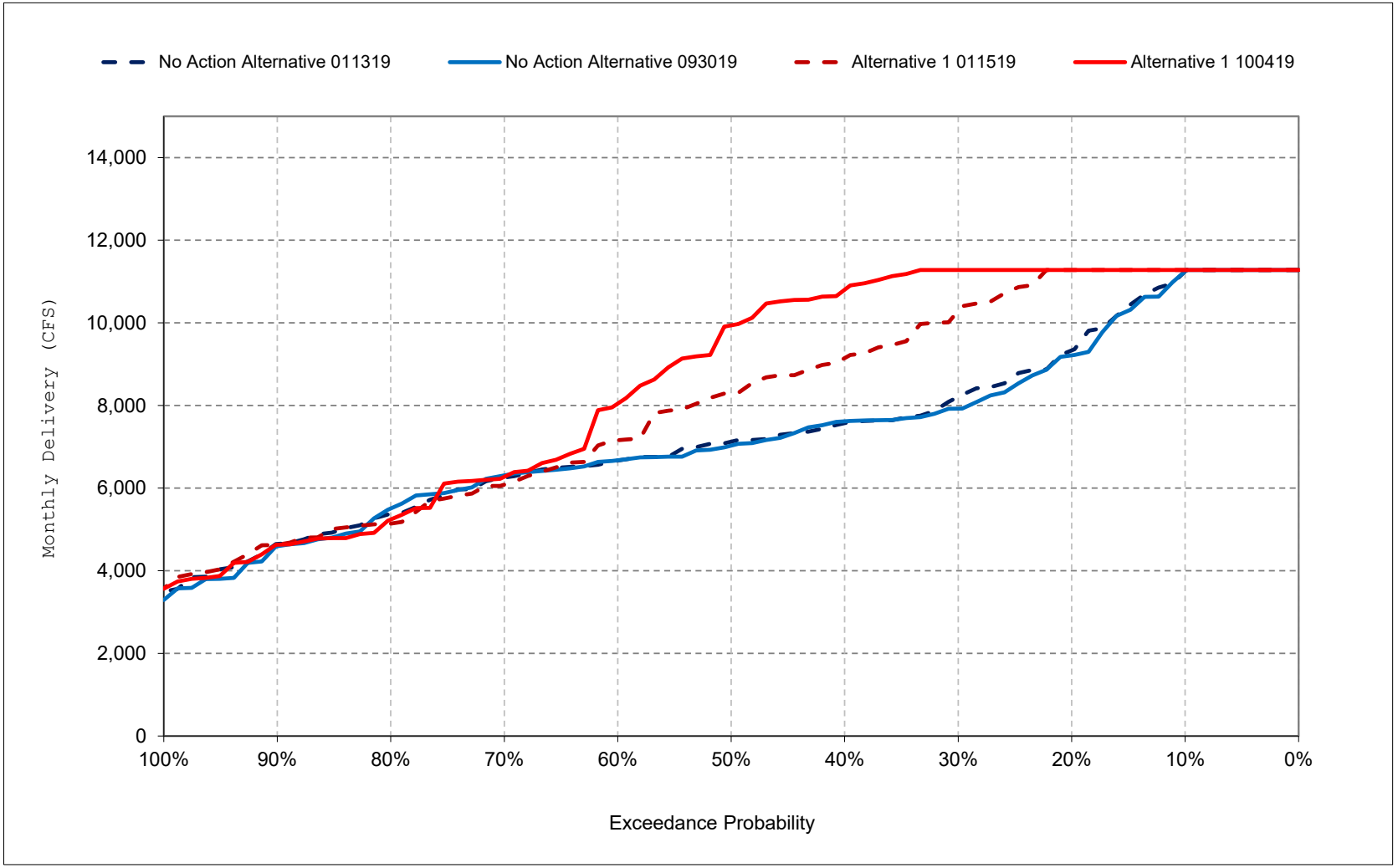
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-7. Total Delta Exports, October**



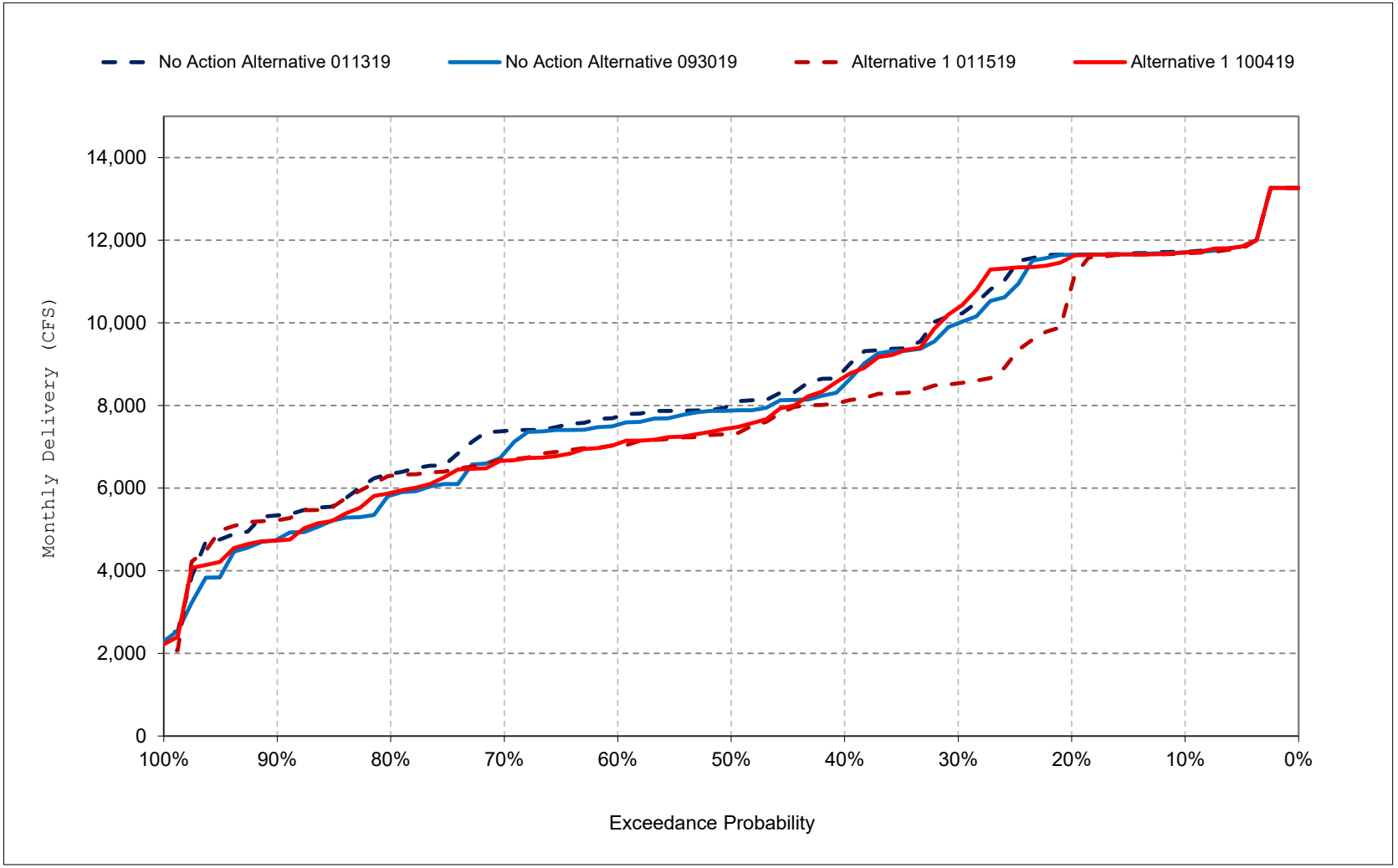

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-8. Total Delta Exports, November**



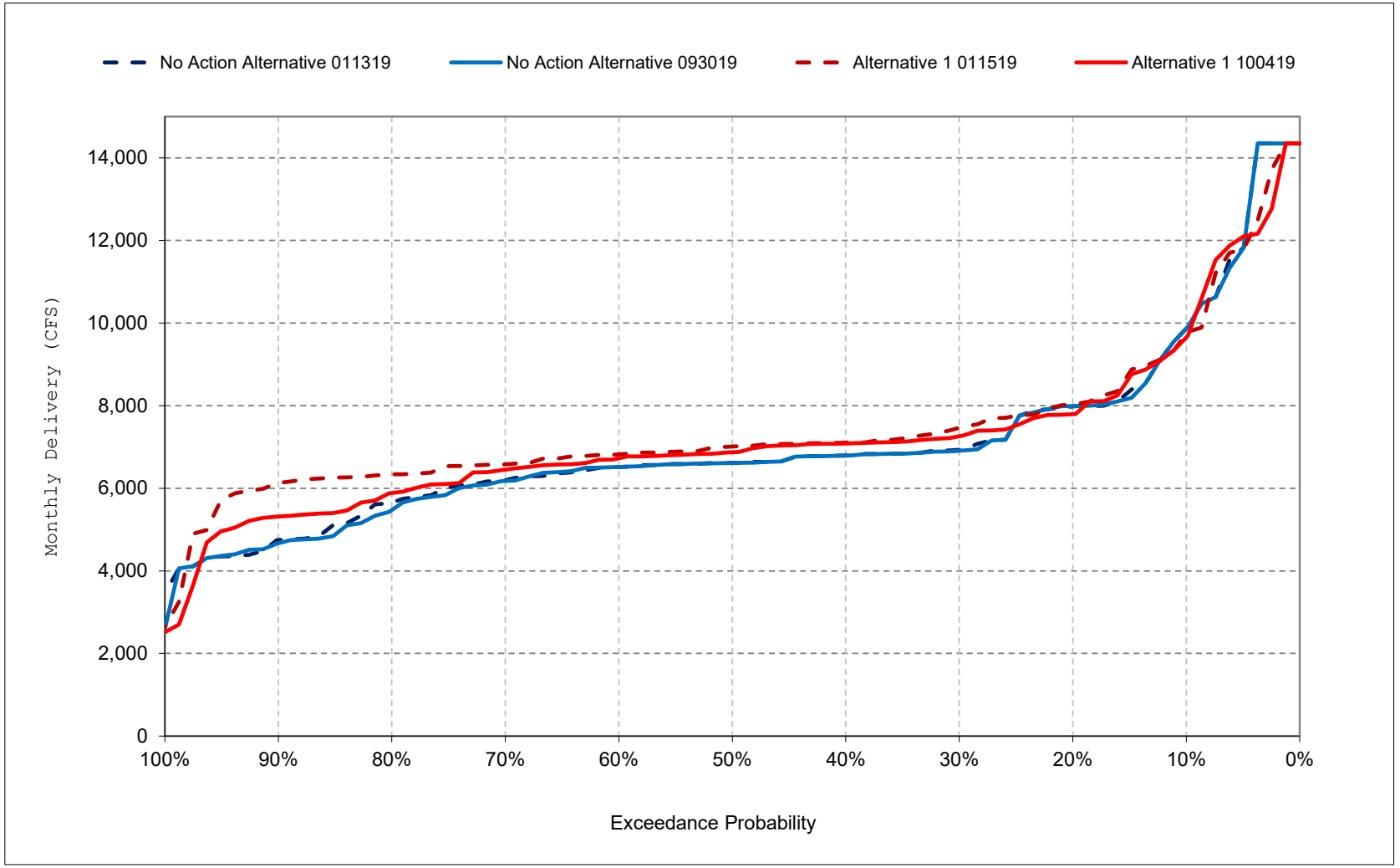

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-9. Total Delta Exports, December**



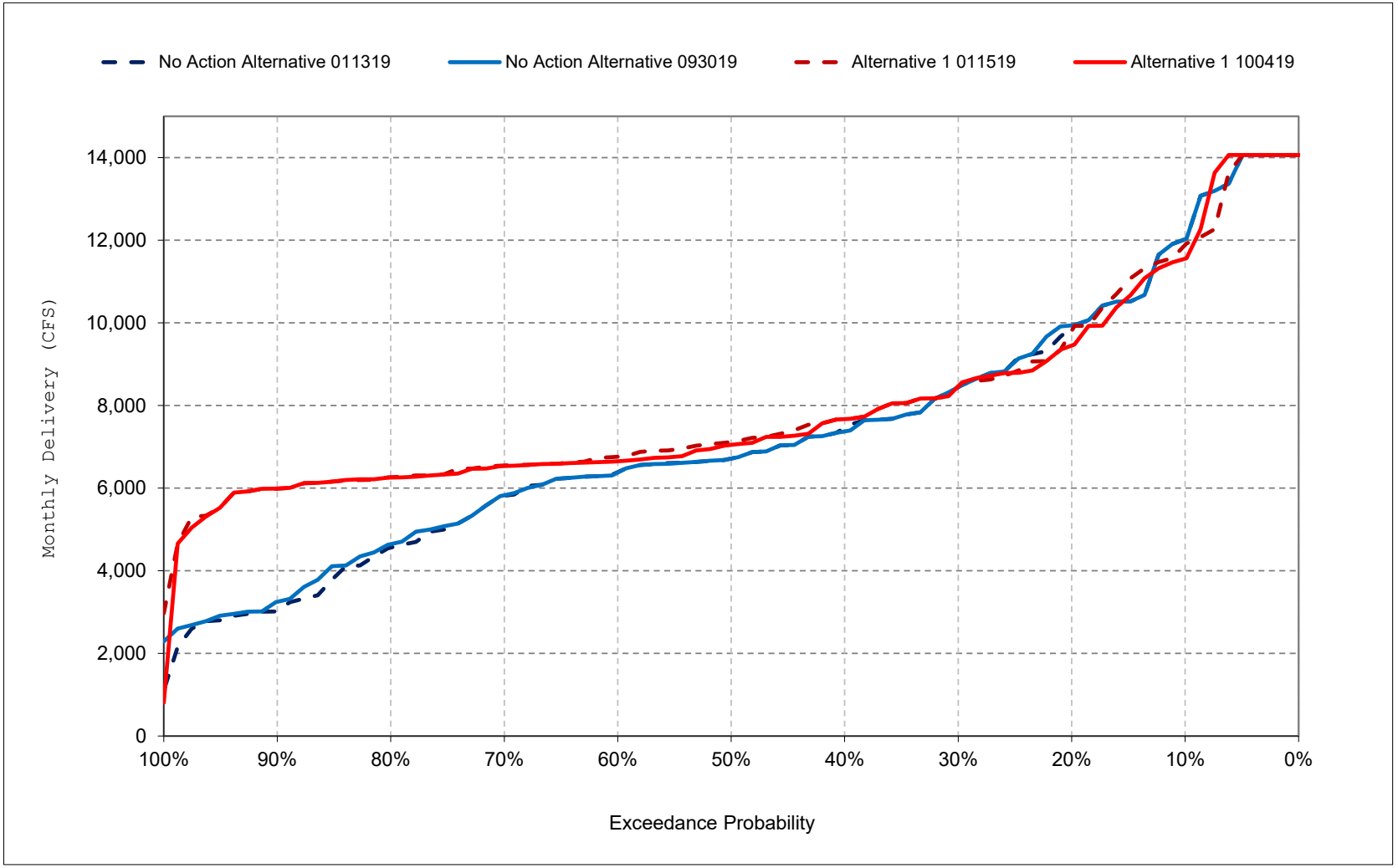

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-10. Total Delta Exports, January**



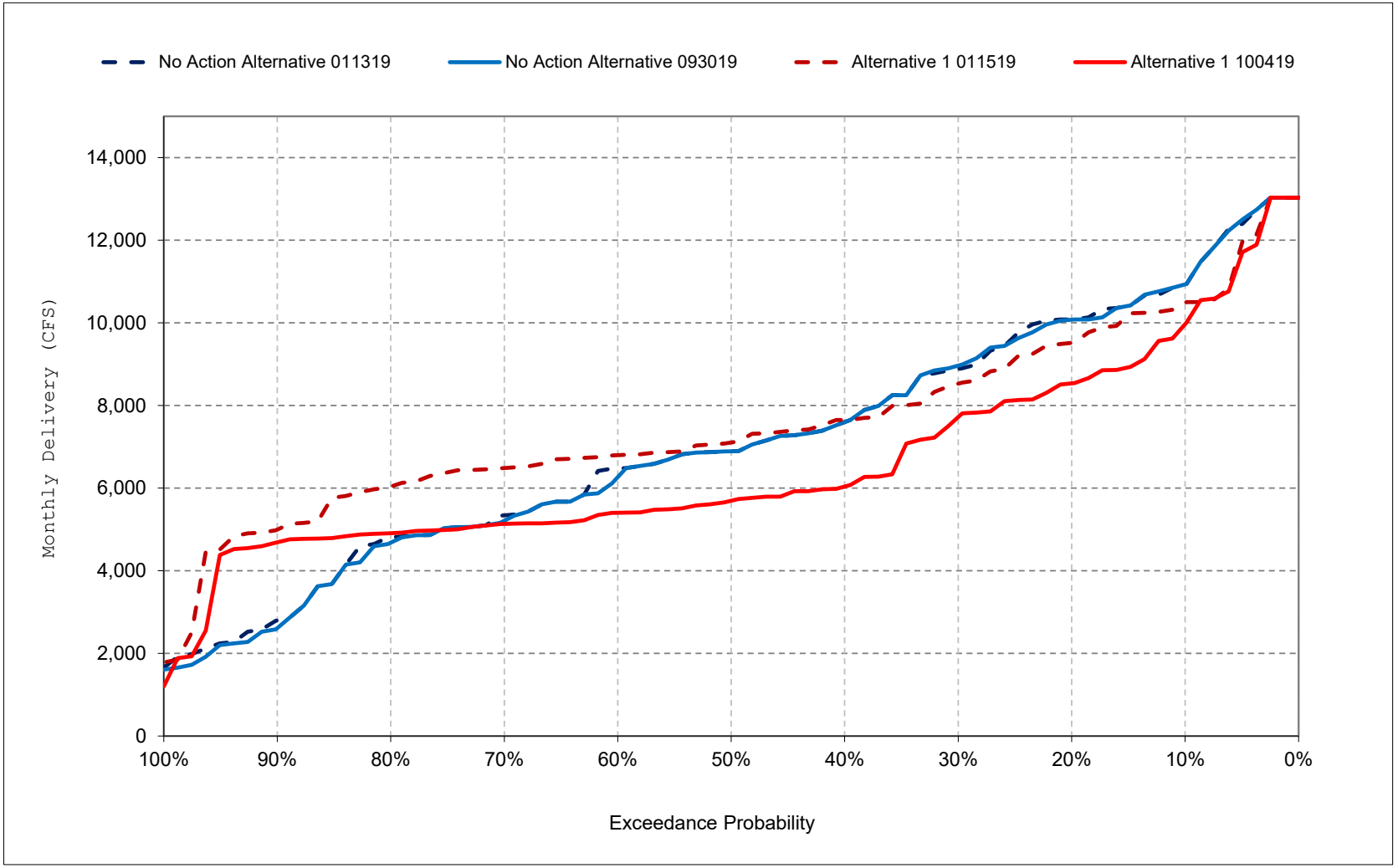

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-11. Total Delta Exports, February**



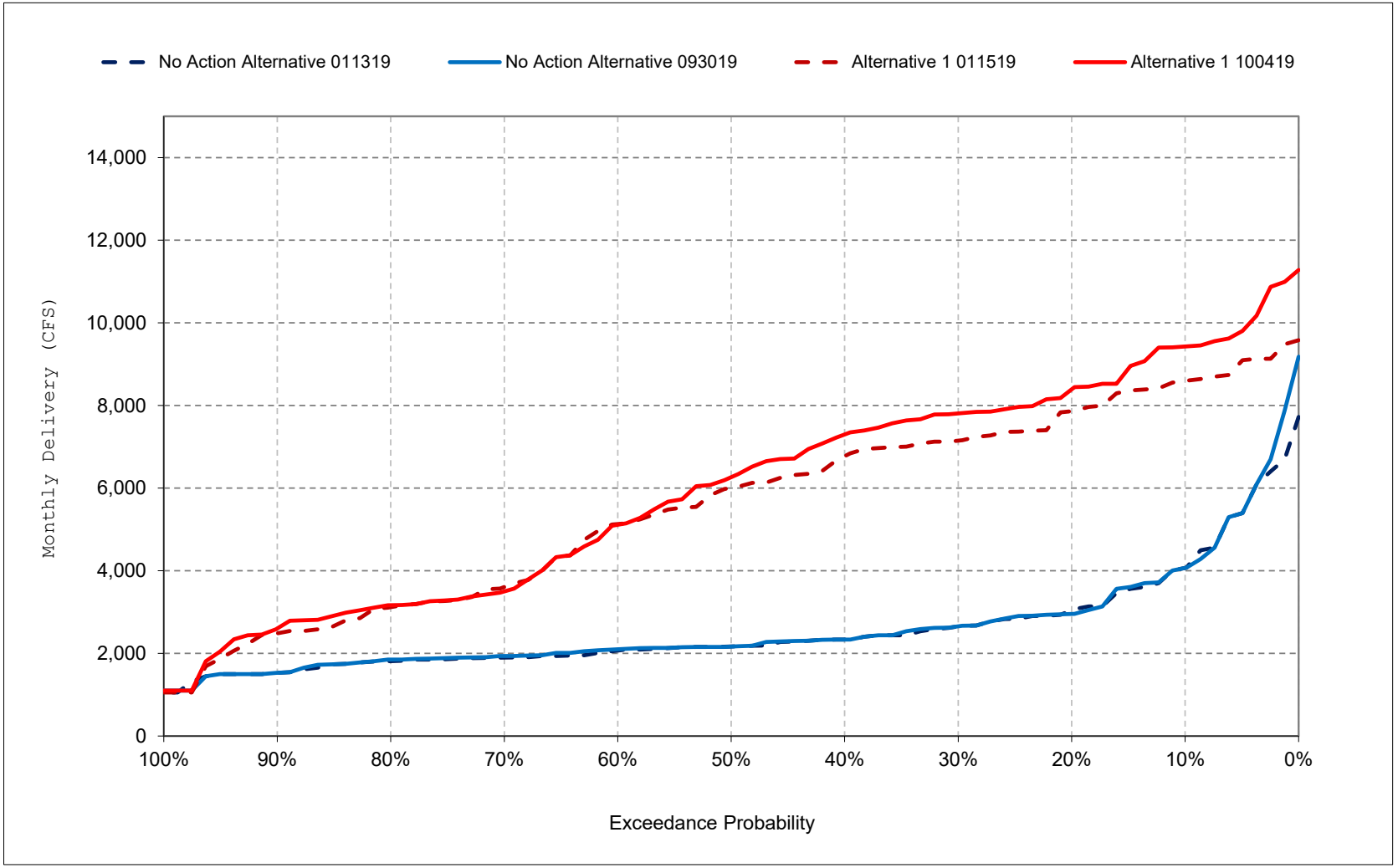

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-12. Total Delta Exports, March**



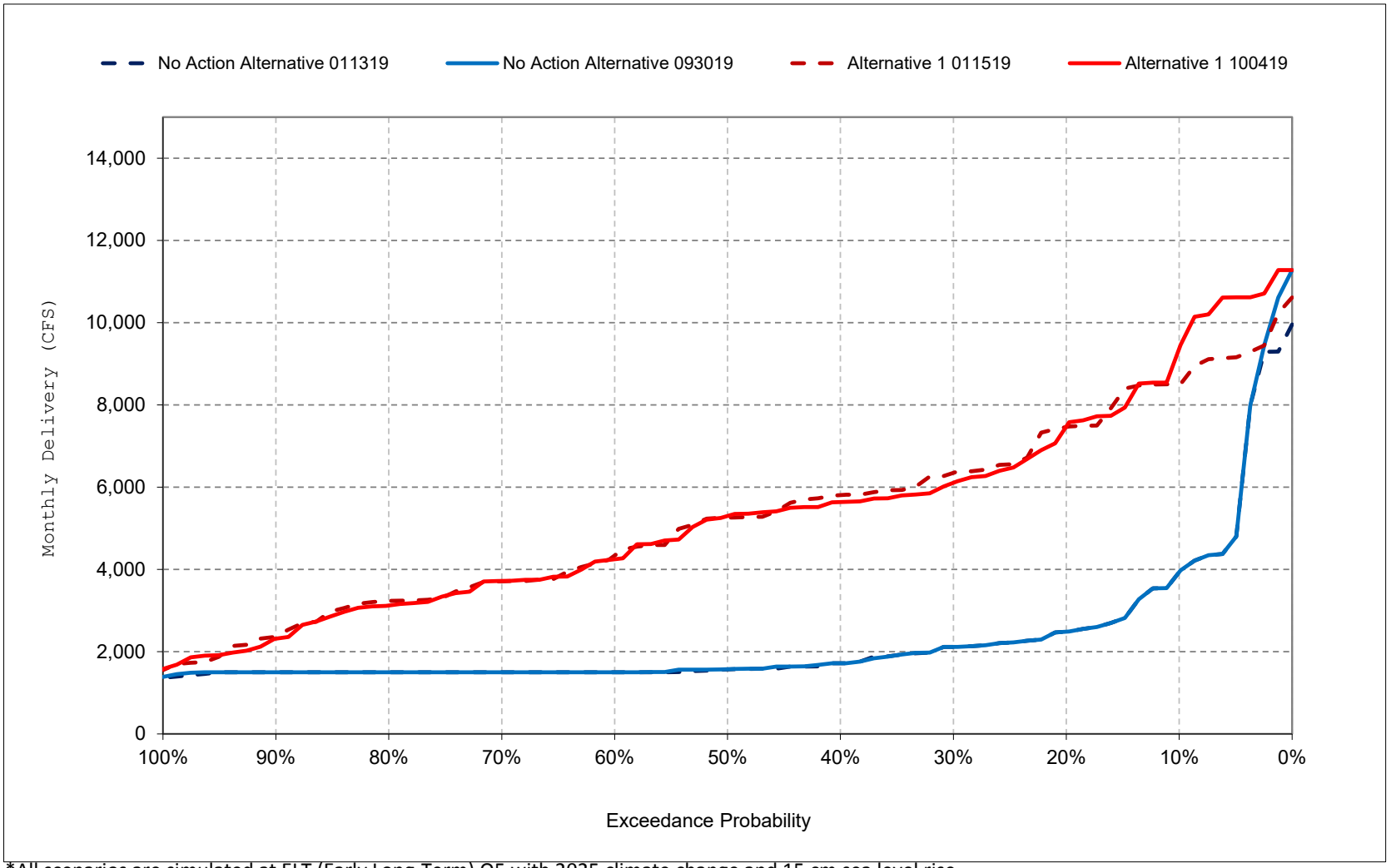

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-13. Total Delta Exports, April**



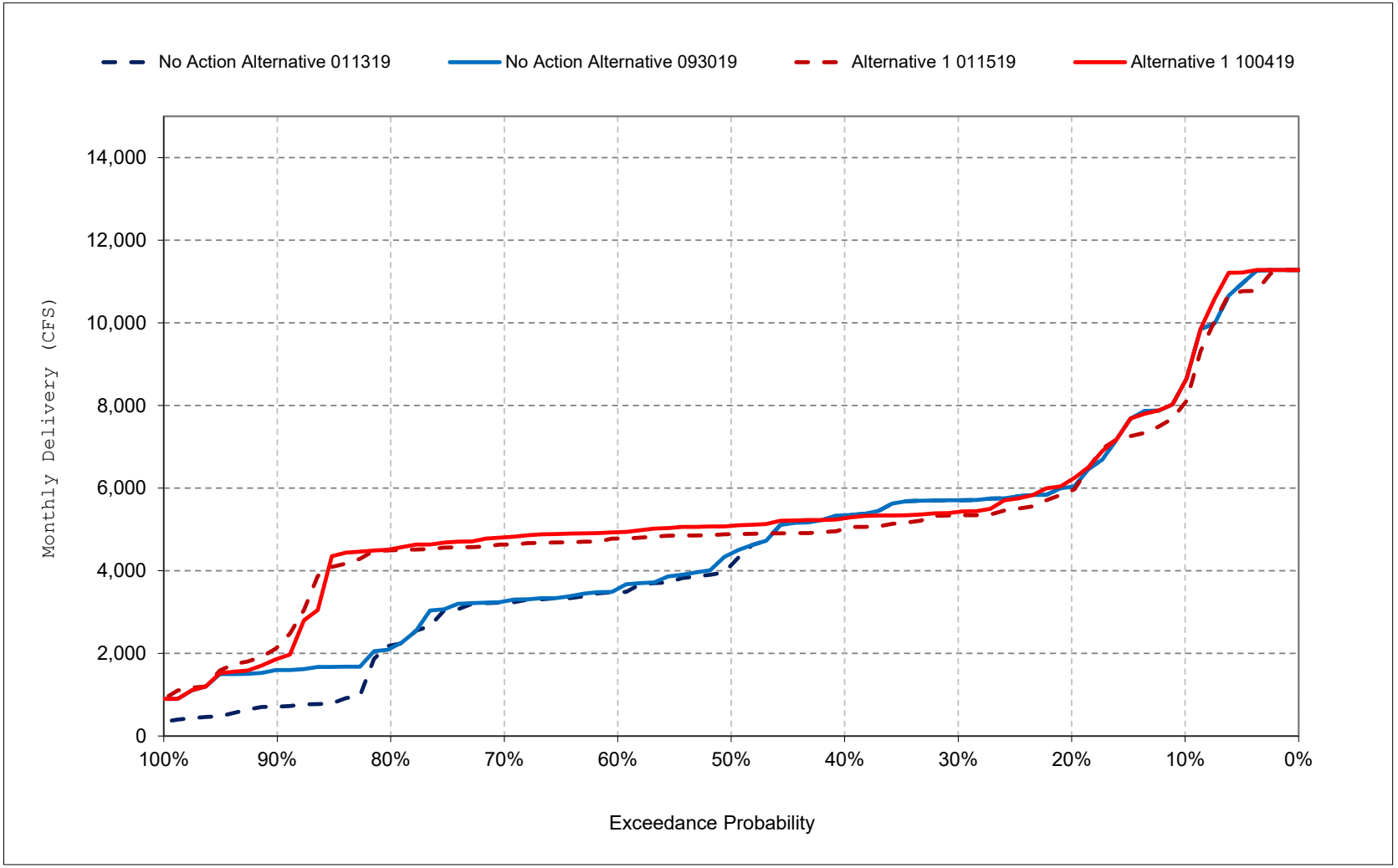

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-14. Total Delta Exports, May**



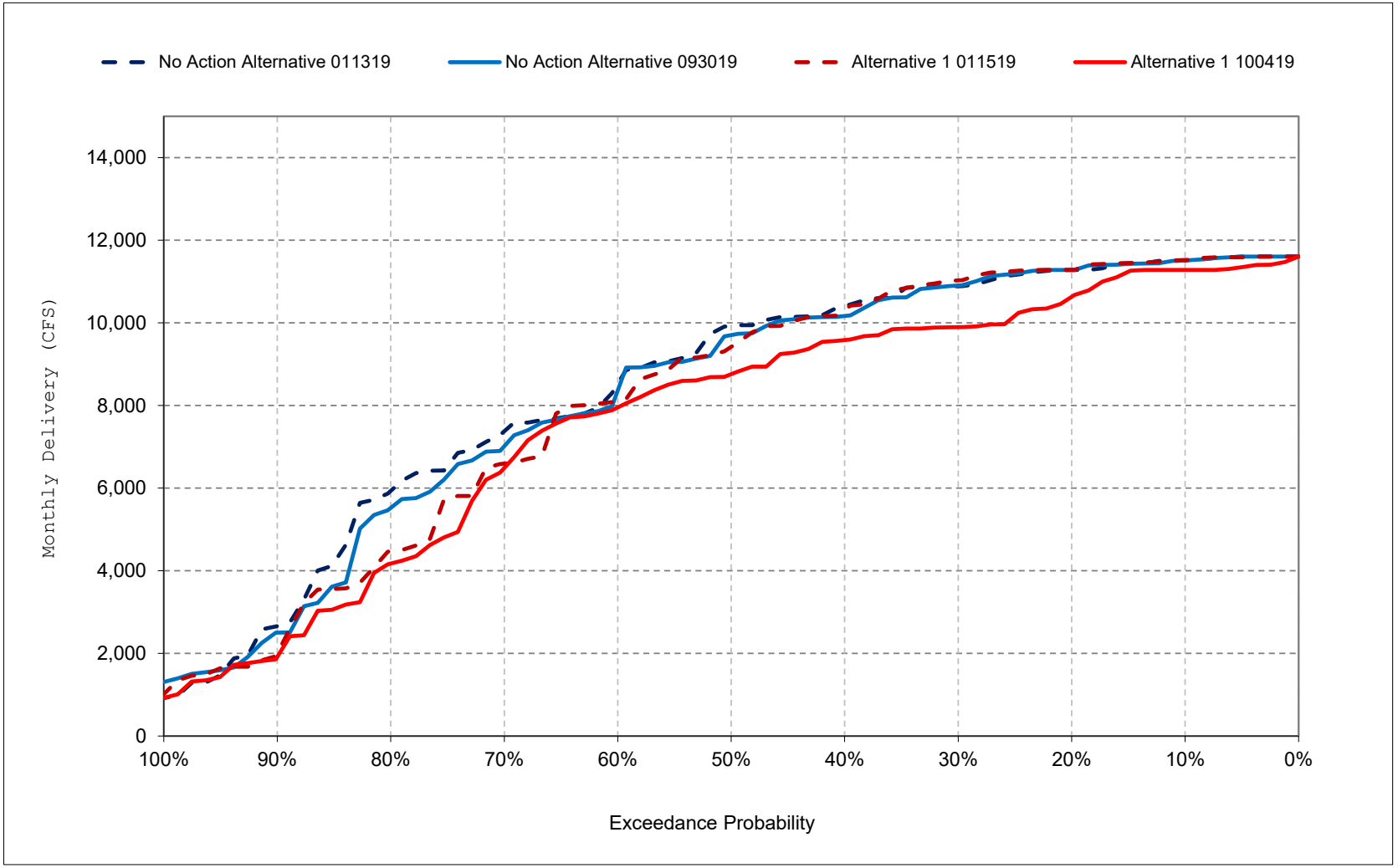

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-15. Total Delta Exports, June**



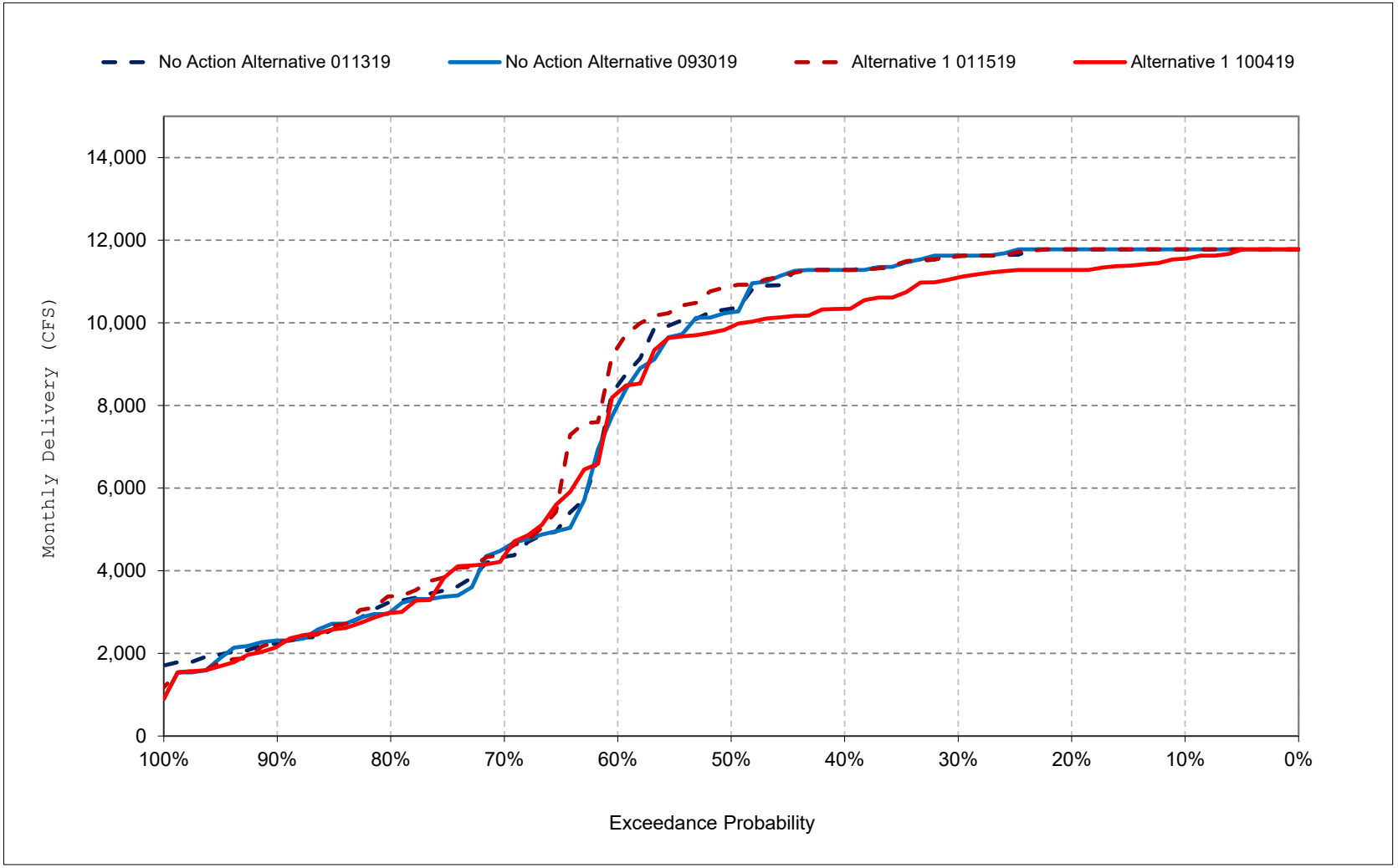

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-16. Total Delta Exports, July**



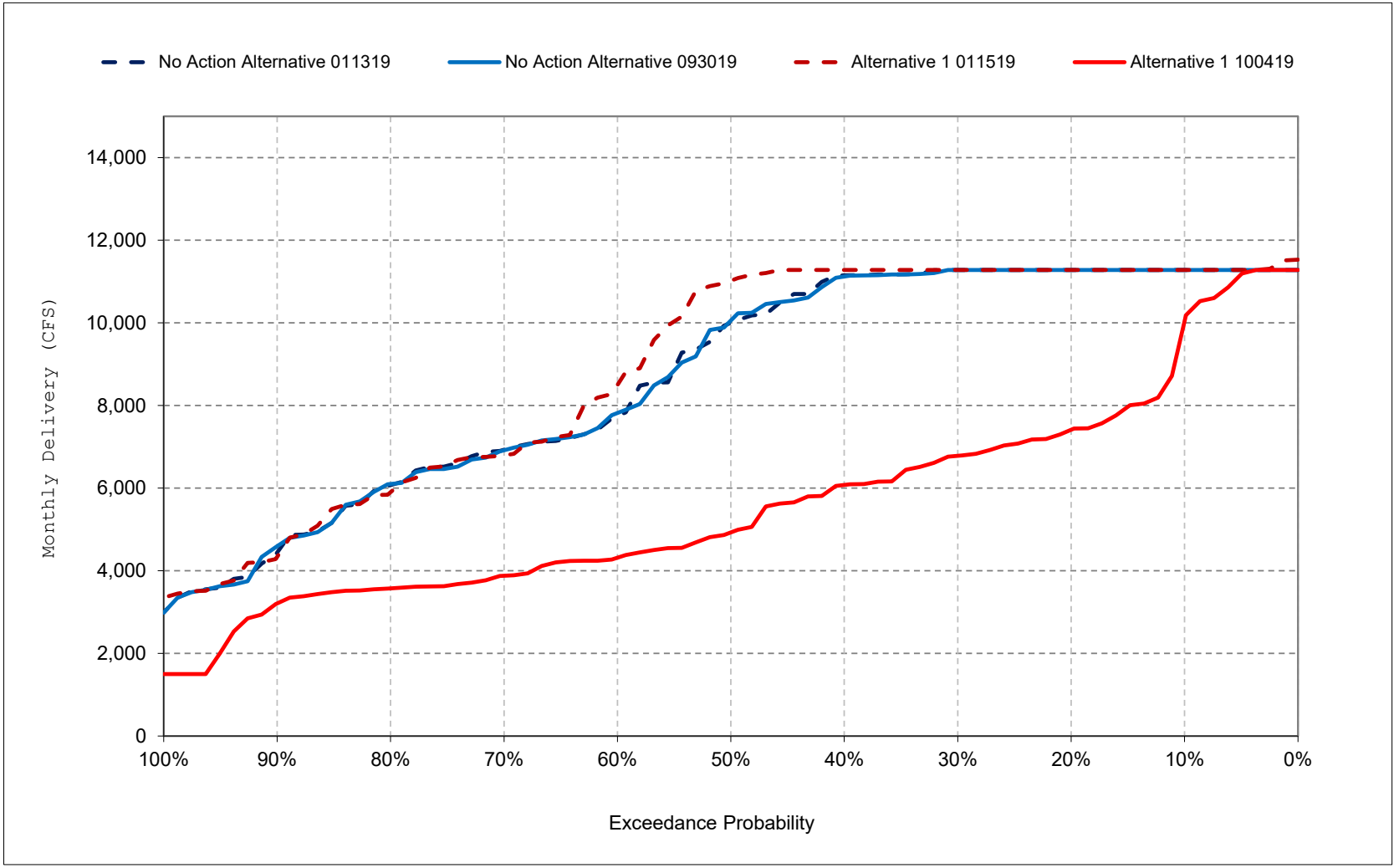

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-17. Total Delta Exports, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 53-18. Total Delta Exports, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 54-1. Jones PP Exports, Monthly Delivery

## No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 2,442 | 2,360 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,084 | 4,600 | 4,600 | 4,600 | 4,600 | 4,426 | 1,831 | 1,493 | 3,977 | 4,600 | 4,600 | 4,600 |
| 30% | 3,597 | 4,427 | 4,600 | 4,139 | 4,600 | 4,179 | 1,566 | 1,283 | 3,704 | 4,534 | 4,600 | 4,600 |
| 40% | 3,433 | 4,105 | 4,600 | 4,070 | 4,353 | 3,962 | 1,394 | 1,149 | 3,318 | 4,152 | 4,496 | 4,600 |
| 50% | 3,342 | 3,510 | 4,445 | 3,961 | 3,981 | 3,420 | 1,307 | 1,048 | 2,557 | 3,776 | 4,139 | 4,483 |
| 60% | 3,177 | 3,156 | 4,189 | 3,875 | 3,742 | 3,085 | 1,241 | 975 | 2,217 | 3,183 | 3,553 | 4,153 |
| 70% | 2,898 | 2,692 | 3,689 | 3,614 | 3,024 | 2,641 | 1,129 | 900 | 2,086 | 2,690 | 2,977 | 3,724 |
| 80% | 2,730 | 2,184 | 2,882 | 3,107 | 2,519 | 2,262 | 1,023 | 900 | 1,371 | 1,729 | 2,427 | 3,311 |
| 90% | 2,145 | 1,675 | 2,064 | 2,618 | 1,807 | 1,574 | 900 | 900 | 572 | 903 | 1,760 | 2,974 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,289 | 3,369 | 3,818 | 3,763 | 3,596 | 3,316 | 1,451 | 1,353 | 2,675 | 3,278 | 3,606 | 3,997 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,609 | 3,732 | 4,331 | 4,027 | 4,190 | 3,696 | 1,822 | 1,834 | 4,028 | 4,162 | 4,556 | 4,434 |
| Above Normal (16%) | 3,283 | 3,772 | 4,490 | 3,654 | 4,018 | 3,927 | 1,316 | 1,039 | 3,460 | 2,940 | 4,448 | 4,482 |
| Below Normal (13%) | 3,458 | 3,320 | 3,500 | 3,748 | 3,611 | 3,618 | 1,246 | 1,001 | 2,209 | 3,799 | 3,551 | 4,071 |
| Dry (24%) | 3,077 | 3,249 | 3,571 | 3,779 | 3,211 | 3,250 | 1,479 | 1,263 | 1,770 | 3,017 | 2,865 | 3,780 |
| Critical (15%) | 2,799 | 2,393 | 2,678 | 3,299 | 2,482 | 1,663 | 935 | 1,124 | 830 | 1,685 | 1,922 | 2,822 |

## Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,433 | 4,455 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,499 | 3,991 | 3,932 | 3,686 | 4,554 | 4,600 | 4,600 |
| 30% | 4,594 | 4,600 | 4,477 | 4,325 | 4,599 | 4,147 | 3,498 | 3,665 | 3,272 | 4,232 | 4,600 | 4,600 |
| 40% | 3,819 | 4,359 | 4,268 | 4,245 | 4,313 | 4,064 | 3,215 | 3,435 | 3,140 | 3,744 | 4,600 | 4,600 |
| 50% | 3,392 | 3,839 | 4,033 | 4,118 | 4,160 | 3,915 | 2,813 | 3,084 | 3,027 | 3,176 | 4,169 | 4,600 |
| 60% | 3,228 | 3,187 | 3,515 | 3,956 | 3,960 | 3,793 | 2,526 | 2,586 | 2,912 | 2,721 | 3,782 | 4,504 |
| 70% | 3,101 | 2,664 | 3,081 | 3,792 | 3,792 | 3,217 | 1,956 | 2,325 | 2,634 | 1,952 | 3,149 | 4,125 |
| 80% | 2,832 | 2,257 | 2,568 | 3,539 | 3,619 | 2,610 | 1,425 | 1,962 | 2,004 | 1,131 | 2,431 | 3,405 |
| 90% | 2,234 | 1,611 | 1,806 | 2,811 | 2,815 | 1,978 | 1,001 | 1,613 | 1,322 | 807 | 1,778 | 2,961 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,526 | 3,435 | 3,550 | 3,876 | 3,938 | 3,555 | 2,738 | 2,981 | 2,916 | 2,948 | 3,648 | 4,139 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,909 | 4,335 | 4,106 | 4,033 | 3,893 | 3,607 | 3,686 | 3,950 | 3,759 | 3,952 | 4,572 | 4,600 |
| Above Normal (16%) | 3,909 | 3,642 | 3,596 | 3,966 | 4,051 | 3,894 | 3,660 | 3,416 | 3,087 | 2,841 | 4,390 | 4,579 |
| Below Normal (13%) | 3,440 | 2,963 | 3,321 | 4,058 | 4,094 | 3,706 | 2,422 | 2,673 | 3,183 | 3,617 | 3,806 | 4,328 |
| Dry (24%) | 3,301 | 3,016 | 3,555 | 3,818 | 4,094 | 3,757 | 2,067 | 2,457 | 2,475 | 2,445 | 3,005 | 3,876 |
| Critical (15%) | 2,734 | 2,389 | 2,498 | 3,364 | 3,512 | 2,596 | 1,096 | 1,569 | 1,393 | 1,112 | 1,769 | 2,927 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 1,991 | 2,094 | 0 | 0 | 0 | 0 |
| 20% | 516 | 0 | 0 | 0 | 0 | 72 | 2,160 | 2,439 | -291 | -46 | 0 | 0 |
| 30% | 998 | 173 | -123 | 186 | -1 | -32 | 1,932 | 2,382 | -432 | -301 | 0 | 0 |
| 40% | 386 | 254 | -332 | 176 | -40 | 102 | 1,820 | 2,286 | -178 | -408 | 104 | 0 |
| 50% | 50 | 329 | -412 | 157 | 179 | 495 | 1,506 | 2,035 | 470 | -600 | 30 | 117 |
| 60% | 51 | 30 | -674 | 81 | 218 | 708 | 1,285 | 1,611 | 695 | -462 | 229 | 351 |
| 70% | 203 | -28 | -607 | 178 | 767 | 576 | 827 | 1,425 | 548 | -738 | 172 | 401 |
| 80% | 102 | 74 | -314 | 432 | 1,099 | 347 | 402 | 1,062 | 633 | -597 | 4 | 94 |
| 90% | 89 | -64 | -258 | 193 | 1,008 | 405 | 101 | 713 | 750 | -96 | 18 | -14 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 237 | 66 | -267 | 112 | 342 | 239 | 1,287 | 1,628 | 241 | -330 | 42 | 141 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 300 | 603 | -225 | 6 | -297 | -88 | 1,864 | 2,116 | -269 | -210 | 16 | 166 |
| Above Normal (16%) | 626 | -129 | -894 | 312 | 33 | -33 | 2,343 | 2,377 | -373 | -99 | -58 | 97 |
| Below Normal (13%) | -19 | -357 | -180 | 310 | 483 | 88 | 1,176 | 1,672 | 974 | -182 | 255 | 257 |
| Dry (24%) | 224 | -233 | -16 | 39 | 883 | 508 | 588 | 1,194 | 705 | -571 | 141 | 96 |
| Critical (15%) | -65 | -3 | -179 | 65 | 1,029 | 933 | 161 | 445 | 563 | -573 | -153 | 105 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 54-2. Jones PP Exports, Monthly Delivery

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 2,442 | 2,361 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,265 | 4,600 | 4,600 | 4,600 | 4,600 | 4,470 | 1,831 | 1,493 | 3,976 | 4,600 | 4,600 | 4,600 |
| 30% | 3,553 | 4,405 | 4,600 | 4,134 | 4,600 | 4,212 | 1,572 | 1,291 | 3,709 | 4,524 | 4,600 | 4,600 |
| 40% | 3,409 | 3,953 | 4,600 | 4,077 | 4,299 | 4,002 | 1,401 | 1,176 | 3,336 | 4,171 | 4,591 | 4,600 |
| 50% | 3,309 | 3,522 | 4,442 | 3,965 | 3,974 | 3,421 | 1,301 | 1,047 | 2,557 | 3,826 | 4,138 | 4,490 |
| 60% | 3,005 | 3,039 | 3,917 | 3,859 | 3,742 | 3,095 | 1,241 | 962 | 2,206 | 3,150 | 3,727 | 4,230 |
| 70% | 2,898 | 2,562 | 3,398 | 3,556 | 3,193 | 2,666 | 1,129 | 900 | 2,087 | 2,187 | 2,931 | 3,770 |
| 80% | 2,641 | 2,134 | 2,716 | 3,070 | 2,620 | 2,220 | 973 | 900 | 1,427 | 1,796 | 2,381 | 3,281 |
| 90% | 2,225 | 1,770 | 1,466 | 2,694 | 1,807 | 1,551 | 805 | 900 | 900 | 1,191 | 1,726 | 2,922 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,272 | 3,348 | 3,690 | 3,787 | 3,617 | 3,319 | 1,469 | 1,357 | 2,760 | 3,262 | 3,604 | 4,018 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,725 | 3,770 | 4,333 | 4,012 | 4,186 | 3,716 | 1,822 | 1,834 | 4,028 | 4,153 | 4,573 | 4,432 |
| Above Normal (16%) | 3,293 | 3,714 | 4,468 | 3,656 | 3,917 | 3,958 | 1,316 | 1,039 | 3,462 | 2,855 | 4,459 | 4,509 |
| Below Normal (13%) | 3,236 | 3,088 | 3,327 | 3,748 | 3,604 | 3,655 | 1,239 | 1,001 | 2,290 | 3,814 | 3,560 | 4,193 |
| Dry (24%) | 3,120 | 3,285 | 3,424 | 3,890 | 3,198 | 3,234 | 1,559 | 1,269 | 1,892 | 3,018 | 2,871 | 3,762 |
| Critical (15%) | 2,556 | 2,377 | 2,228 | 3,304 | 2,767 | 1,600 | 932 | 1,138 | 1,127 | 1,674 | 1,844 | 2,855 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,436 | 4,081 | 4,600 | 4,583 | 4,600 | 4,600 |
| 20% | 3,752 | 4,600 | 4,600 | 4,586 | 4,600 | 4,581 | 3,913 | 3,881 | 3,904 | 3,964 | 4,600 | 4,557 |
| 30% | 3,475 | 4,600 | 4,600 | 4,277 | 4,600 | 3,579 | 3,481 | 3,377 | 3,474 | 3,098 | 4,250 | 4,160 |
| 40% | 3,257 | 4,600 | 4,396 | 4,216 | 4,279 | 3,301 | 3,253 | 3,217 | 3,205 | 2,893 | 3,823 | 3,620 |
| 50% | 3,092 | 4,091 | 4,234 | 4,062 | 4,045 | 3,171 | 2,753 | 2,857 | 3,104 | 2,409 | 3,314 | 3,185 |
| 60% | 2,980 | 3,327 | 4,015 | 3,938 | 3,943 | 3,009 | 2,354 | 2,568 | 2,885 | 2,003 | 3,029 | 3,018 |
| 70% | 2,802 | 2,888 | 3,349 | 3,659 | 3,759 | 2,860 | 2,062 | 2,177 | 2,423 | 1,658 | 2,622 | 2,721 |
| 80% | 2,491 | 2,499 | 2,780 | 3,206 | 3,597 | 2,580 | 1,487 | 1,887 | 2,006 | 1,181 | 2,294 | 2,170 |
| 90% | 2,051 | 2,186 | 1,604 | 2,378 | 2,805 | 1,914 | 800 | 1,627 | 1,166 | 800 | 1,744 | 1,705 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,138 | 3,620 | 3,683 | 3,781 | 3,908 | 3,219 | 2,744 | 2,861 | 2,957 | 2,541 | 3,304 | 3,237 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,656 | 4,496 | 4,355 | 3,971 | 3,915 | 3,630 | 3,632 | 3,741 | 4,021 | 3,903 | 4,315 | 3,298 |
| Above Normal (16%) | 2,550 | 4,349 | 4,394 | 3,980 | 3,976 | 3,399 | 3,649 | 3,341 | 3,455 | 2,145 | 3,657 | 2,087 |
| Below Normal (13%) | 3,274 | 3,000 | 3,200 | 3,700 | 4,057 | 3,215 | 2,266 | 2,647 | 3,005 | 2,400 | 3,187 | 3,943 |
| Dry (24%) | 3,135 | 3,084 | 3,454 | 3,764 | 4,022 | 3,046 | 2,218 | 2,278 | 2,252 | 1,996 | 2,825 | 3,781 |
| Critical (15%) | 2,535 | 2,390 | 2,280 | 3,256 | 3,490 | 2,424 | 1,158 | 1,604 | 1,241 | 1,060 | 1,637 | 2,796 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 1,995 | 1,721 | 0 | -17 | 0 | 0 |
| 20% | -513 | 0 | 0 | -14 | 0 | 111 | 2,082 | 2,388 | -72 | -636 | 0 | -43 |
| 30% | -78 | 195 | 0 | 143 | 0 | -634 | 1,909 | 2,086 | -235 | -1,426 | -350 | -440 |
| 40% | -152 | 647 | -204 | 139 | -20 | -701 | 1,852 | 2,041 | -131 | -1,278 | -768 | -980 |
| 50% | -217 | 569 | -208 | 97 | 70 | -250 | 1,453 | 1,810 | 548 | -1,417 | -824 | -1,306 |
| 60% | -25 | 288 | 98 | 80 | 201 | -86 | 1,112 | 1,607 | 679 | -1,147 | -698 | -1,212 |
| 70% | -95 | 326 | -50 | 103 | 566 | 195 | 934 | 1,277 | 337 | -529 | -309 | -1,049 |
| 80% | -150 | 366 | 64 | 136 | 978 | 360 | 513 | 987 | 579 | -615 | -87 | -1,110 |
| 90% | -174 | 415 | 139 | -317 | 997 | 363 | -5 | 727 | 266 | -391 | 18 | -1,217 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -134 | 272 | -7 | -6 | 291 | -100 | 1,275 | 1,505 | 197 | -721 | -300 | -781 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -69 | 726 | 22 | -41 | -271 | -86 | 1,810 | 1,907 | -7 | -250 | -258 | -1,134 |
| Above Normal (16%) | -743 | 636 | -74 | 325 | 59 | -559 | 2,333 | 2,302 | -6 | -710 | -802 | -2,422 |
| Below Normal (13%) | 37 | -88 | -128 | -48 | 454 | -441 | 1,027 | 1,646 | 715 | -1,414 | -373 | -250 |
| Dry (24%) | 15 | -201 | 31 | -126 | 824 | -188 | 658 | 1,009 | 360 | -1,023 | -46 | 19 |
| Critical (15%) | -21 | 12 | 52 | -48 | 722 | 824 | 226 | 466 | 113 | -614 | -207 | -59 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 54-3. Jones PP Exports, Monthly Delivery

### No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 2,442 | 2,360 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,084 | 4,600 | 4,600 | 4,600 | 4,600 | 4,426 | 1,831 | 1,493 | 3,977 | 4,600 | 4,600 | 4,600 |
| 30% | 3,597 | 4,427 | 4,600 | 4,139 | 4,600 | 4,179 | 1,566 | 1,283 | 3,704 | 4,534 | 4,600 | 4,600 |
| 40% | 3,433 | 4,105 | 4,600 | 4,070 | 4,353 | 3,962 | 1,394 | 1,149 | 3,318 | 4,152 | 4,496 | 4,600 |
| 50% | 3,342 | 3,510 | 4,445 | 3,961 | 3,981 | 3,420 | 1,307 | 1,048 | 2,557 | 3,776 | 4,139 | 4,483 |
| 60% | 3,177 | 3,156 | 4,189 | 3,875 | 3,742 | 3,085 | 1,241 | 975 | 2,217 | 3,183 | 3,553 | 4,153 |
| 70% | 2,898 | 2,692 | 3,689 | 3,614 | 3,024 | 2,641 | 1,129 | 900 | 2,086 | 2,690 | 2,977 | 3,724 |
| 80% | 2,730 | 2,184 | 2,882 | 3,107 | 2,519 | 2,262 | 1,023 | 900 | 1,371 | 1,729 | 2,427 | 3,311 |
| 90% | 2,145 | 1,675 | 2,064 | 2,618 | 1,807 | 1,574 | 900 | 900 | 572 | 903 | 1,760 | 2,974 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,289 | 3,369 | 3,818 | 3,763 | 3,596 | 3,316 | 1,451 | 1,353 | 2,675 | 3,278 | 3,606 | 3,997 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,609 | 3,732 | 4,331 | 4,027 | 4,190 | 3,696 | 1,822 | 1,834 | 4,028 | 4,162 | 4,556 | 4,434 |
| Above Normal (16%) | 3,283 | 3,772 | 4,490 | 3,654 | 4,018 | 3,927 | 1,316 | 1,039 | 3,460 | 2,940 | 4,448 | 4,482 |
| Below Normal (13%) | 3,458 | 3,320 | 3,500 | 3,748 | 3,611 | 3,618 | 1,246 | 1,001 | 2,209 | 3,799 | 3,551 | 4,071 |
| Dry (24%) | 3,077 | 3,249 | 3,571 | 3,779 | 3,211 | 3,250 | 1,479 | 1,263 | 1,770 | 3,017 | 2,865 | 3,780 |
| Critical (15%) | 2,799 | 2,393 | 2,678 | 3,299 | 2,482 | 1,663 | 935 | 1,124 | 830 | 1,685 | 1,922 | 2,822 |

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 2,442 | 2,361 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,265 | 4,600 | 4,600 | 4,600 | 4,600 | 4,470 | 1,831 | 1,493 | 3,976 | 4,600 | 4,600 | 4,600 |
| 30% | 3,553 | 4,405 | 4,600 | 4,134 | 4,600 | 4,212 | 1,572 | 1,291 | 3,709 | 4,524 | 4,600 | 4,600 |
| 40% | 3,409 | 3,953 | 4,600 | 4,077 | 4,299 | 4,002 | 1,401 | 1,176 | 3,336 | 4,171 | 4,591 | 4,600 |
| 50% | 3,309 | 3,522 | 4,442 | 3,965 | 3,974 | 3,421 | 1,301 | 1,047 | 2,557 | 3,826 | 4,138 | 4,490 |
| 60% | 3,005 | 3,039 | 3,917 | 3,859 | 3,742 | 3,095 | 1,241 | 962 | 2,206 | 3,150 | 3,727 | 4,230 |
| 70% | 2,898 | 2,562 | 3,398 | 3,556 | 3,193 | 2,666 | 1,129 | 900 | 2,087 | 2,187 | 2,931 | 3,770 |
| 80% | 2,641 | 2,134 | 2,716 | 3,070 | 2,620 | 2,220 | 973 | 900 | 1,427 | 1,796 | 2,381 | 3,281 |
| 90% | 2,225 | 1,770 | 1,466 | 2,694 | 1,807 | 1,551 | 805 | 900 | 900 | 1,191 | 1,726 | 2,922 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,272 | 3,348 | 3,690 | 3,787 | 3,617 | 3,319 | 1,469 | 1,357 | 2,760 | 3,262 | 3,604 | 4,018 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,725 | 3,770 | 4,333 | 4,012 | 4,186 | 3,716 | 1,822 | 1,834 | 4,028 | 4,153 | 4,573 | 4,432 |
| Above Normal (16%) | 3,293 | 3,714 | 4,468 | 3,656 | 3,917 | 3,958 | 1,316 | 1,039 | 3,462 | 2,855 | 4,459 | 4,509 |
| Below Normal (13%) | 3,236 | 3,088 | 3,327 | 3,748 | 3,604 | 3,655 | 1,239 | 1,001 | 2,290 | 3,814 | 3,560 | 4,193 |
| Dry (24%) | 3,120 | 3,285 | 3,424 | 3,890 | 3,198 | 3,234 | 1,559 | 1,269 | 1,892 | 3,018 | 2,871 | 3,762 |
| Critical (15%) | 2,556 | 2,377 | 2,228 | 3,304 | 2,767 | 1,600 | 932 | 1,138 | 1,127 | 1,674 | 1,844 | 2,855 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 181 | 0 | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | -44 | -21 | 0 | -5 | 0 | 34 | 6 | 8 | 5 | -9 | 0 | 0 |
| 40% | -24 | -152 | 0 | 7 | -54 | 40 | 7 | 27 | 19 | 19 | 95 | 0 |
| 50% | -33 | 12 | -3 | 4 | -6 | 1 | -7 | -1 | 0 | 51 | -1 | 7 |
| 60% | -172 | -117 | -272 | -16 | 0 | 9 | 0 | -13 | -11 | -32 | 174 | 77 |
| 70% | -1 | -130 | -290 | -58 | 169 | 25 | 0 | 0 | 1 | -503 | -46 | 47 |
| 80% | -89 | -50 | -166 | -37 | 100 | -43 | -49 | 0 | 56 | 67 | -46 | -30 |
| 90% | 80 | 95 | -598 | 77 | 0 | -22 | -95 | 0 | 328 | 287 | -34 | -53 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -17 | -22 | -128 | 23 | 21 | 3 | 18 | 3 | 85 | -15 | -2 | 21 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 116 | 39 | 2 | -16 | -3 | 20 | 0 | 0 | 0 | -9 | 17 | -1 |
| Above Normal (16%) | 10 | -58 | -22 | 2 | -101 | 31 | 0 | 0 | 1 | -85 | 11 | 26 |
| Below Normal (13%) | -222 | -232 | -173 | 1 | -7 | 37 | -7 | 0 | 82 | 15 | 9 | 122 |
| Dry (24%) | 43 | 36 | -148 | 111 | -13 | -16 | 81 | 6 | 123 | 2 | 6 | -17 |
| Critical (15%) | -243 | -15 | -450 | 5 | 285 | -63 | -3 | 14 | 297 | -11 | -78 | 33 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 54-4. Jones PP Exports, Monthly Delivery

### Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,433 | 4,455 | 4,600 | 4,600 | 4,600 | 4,600 |
| 20% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,499 | 3,991 | 3,932 | 3,686 | 4,554 | 4,600 | 4,600 |
| 30% | 4,594 | 4,600 | 4,477 | 4,325 | 4,599 | 4,147 | 3,498 | 3,665 | 3,272 | 4,232 | 4,600 | 4,600 |
| 40% | 3,819 | 4,359 | 4,268 | 4,245 | 4,313 | 4,064 | 3,215 | 3,435 | 3,140 | 3,744 | 4,600 | 4,600 |
| 50% | 3,392 | 3,839 | 4,033 | 4,118 | 4,160 | 3,915 | 2,813 | 3,084 | 3,027 | 3,176 | 4,169 | 4,600 |
| 60% | 3,228 | 3,187 | 3,515 | 3,956 | 3,960 | 3,793 | 2,526 | 2,586 | 2,912 | 2,721 | 3,782 | 4,504 |
| 70% | 3,101 | 2,664 | 3,081 | 3,792 | 3,792 | 3,217 | 1,956 | 2,325 | 2,634 | 1,952 | 3,149 | 4,125 |
| 80% | 2,832 | 2,257 | 2,568 | 3,539 | 3,619 | 2,610 | 1,425 | 1,962 | 2,004 | 1,131 | 2,431 | 3,405 |
| 90% | 2,234 | 1,611 | 1,806 | 2,811 | 2,815 | 1,978 | 1,001 | 1,613 | 1,322 | 807 | 1,778 | 2,961 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,526 | 3,435 | 3,550 | 3,876 | 3,938 | 3,555 | 2,738 | 2,981 | 2,916 | 2,948 | 3,648 | 4,139 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,909 | 4,335 | 4,106 | 4,033 | 3,893 | 3,607 | 3,686 | 3,950 | 3,759 | 3,952 | 4,572 | 4,600 |
| Above Normal (16%) | 3,909 | 3,642 | 3,596 | 3,966 | 4,051 | 3,894 | 3,660 | 3,416 | 3,087 | 2,841 | 4,390 | 4,579 |
| Below Normal (13%) | 3,440 | 2,963 | 3,321 | 4,058 | 4,094 | 3,706 | 2,422 | 2,673 | 3,183 | 3,617 | 3,806 | 4,328 |
| Dry (24%) | 3,301 | 3,016 | 3,555 | 3,818 | 4,094 | 3,757 | 2,067 | 2,457 | 2,475 | 2,445 | 3,005 | 3,876 |
| Critical (15%) | 2,734 | 2,389 | 2,498 | 3,364 | 3,512 | 2,596 | 1,096 | 1,569 | 1,393 | 1,112 | 1,769 | 2,927 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 | 4,436 | 4,081 | 4,600 | 4,583 | 4,600 | 4,600 |
| 20% | 3,752 | 4,600 | 4,600 | 4,586 | 4,600 | 4,581 | 3,913 | 3,881 | 3,904 | 3,964 | 4,600 | 4,557 |
| 30% | 3,475 | 4,600 | 4,600 | 4,277 | 4,600 | 3,579 | 3,481 | 3,377 | 3,474 | 3,098 | 4,250 | 4,160 |
| 40% | 3,257 | 4,600 | 4,396 | 4,216 | 4,279 | 3,301 | 3,253 | 3,217 | 3,205 | 2,893 | 3,823 | 3,620 |
| 50% | 3,092 | 4,091 | 4,234 | 4,062 | 4,045 | 3,171 | 2,753 | 2,857 | 3,104 | 2,409 | 3,314 | 3,185 |
| 60% | 2,980 | 3,327 | 4,015 | 3,938 | 3,943 | 3,009 | 2,354 | 2,568 | 2,885 | 2,003 | 3,029 | 3,018 |
| 70% | 2,802 | 2,888 | 3,349 | 3,659 | 3,759 | 2,860 | 2,062 | 2,177 | 2,423 | 1,658 | 2,622 | 2,721 |
| 80% | 2,491 | 2,499 | 2,780 | 3,206 | 3,597 | 2,580 | 1,487 | 1,887 | 2,006 | 1,181 | 2,294 | 2,170 |
| 90% | 2,051 | 2,186 | 1,604 | 2,378 | 2,805 | 1,914 | 800 | 1,627 | 1,166 | 800 | 1,744 | 1,705 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,138 | 3,620 | 3,683 | 3,781 | 3,908 | 3,219 | 2,744 | 2,861 | 2,957 | 2,541 | 3,304 | 3,237 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,656 | 4,496 | 4,355 | 3,971 | 3,915 | 3,630 | 3,632 | 3,741 | 4,021 | 3,903 | 4,315 | 3,298 |
| Above Normal (16%) | 2,550 | 4,349 | 4,394 | 3,980 | 3,976 | 3,399 | 3,649 | 3,341 | 3,455 | 2,145 | 3,657 | 2,087 |
| Below Normal (13%) | 3,274 | 3,000 | 3,200 | 3,700 | 4,057 | 3,215 | 2,266 | 2,647 | 3,005 | 2,400 | 3,187 | 3,943 |
| Dry (24%) | 3,135 | 3,084 | 3,454 | 3,764 | 4,022 | 3,046 | 2,218 | 2,278 | 2,252 | 1,996 | 2,825 | 3,781 |
| Critical (15%) | 2,535 | 2,390 | 2,280 | 3,256 | 3,490 | 2,424 | 1,158 | 1,604 | 1,241 | 1,060 | 1,637 | 2,796 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 3 | -374 | 0 | -17 | 0 | 0 |
| 20% | -848 | 0 | 0 | -14 | 0 | 82 | -78 | -51 | 218 | -590 | 0 | -43 |
| 30% | -1,119 | 0 | 123 | -48 | 1 | -568 | -17 | -288 | 202 | -1,134 | -350 | -440 |
| 40% | -562 | 241 | 128 | -30 | -34 | -763 | 39 | -218 | 66 | -851 | -777 | -980 |
| 50% | -300 | 252 | 201 | -57 | -115 | -744 | -60 | -227 | 77 | -767 | -855 | -1,415 |
| 60% | -248 | 140 | 499 | -18 | -17 | -784 | -173 | -18 | -27 | -718 | -753 | -1,485 |
| 70% | -299 | 224 | 267 | -133 | -32 | -357 | 107 | -148 | -210 | -294 | -527 | -1,404 |
| 80% | -341 | 242 | 212 | -333 | -21 | -30 | 62 | -76 | 2 | 49 | -136 | -1,235 |
| 90% | -183 | 575 | -201 | -433 | -10 | -64 | -201 | 13 | -155 | -7 | -34 | -1,256 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -388 | 185 | 132 | -95 | -31 | -336 | 6 | -120 | 41 | -407 | -344 | -902 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -253 | 161 | 248 | -63 | 22 | 23 | -54 | -208 | 262 | -49 | -257 | -1,302 |
| Above Normal (16%) | -1,359 | 707 | 797 | 14 | -75 | -495 | -10 | -74 | 368 | -696 | -732 | -2,493 |
| Below Normal (13%) | -166 | 37 | -121 | -357 | -37 | -491 | -156 | -26 | -178 | -1,218 | -620 | -385 |
| Dry (24%) | -166 | 68 | -101 | -55 | -72 | -711 | 151 | -180 | -222 | -450 | -180 | -95 |
| Critical (15%) | -198 | 0 | -219 | -109 | -22 | -172 | 61 | 35 | -153 | -52 | -133 | -131 |

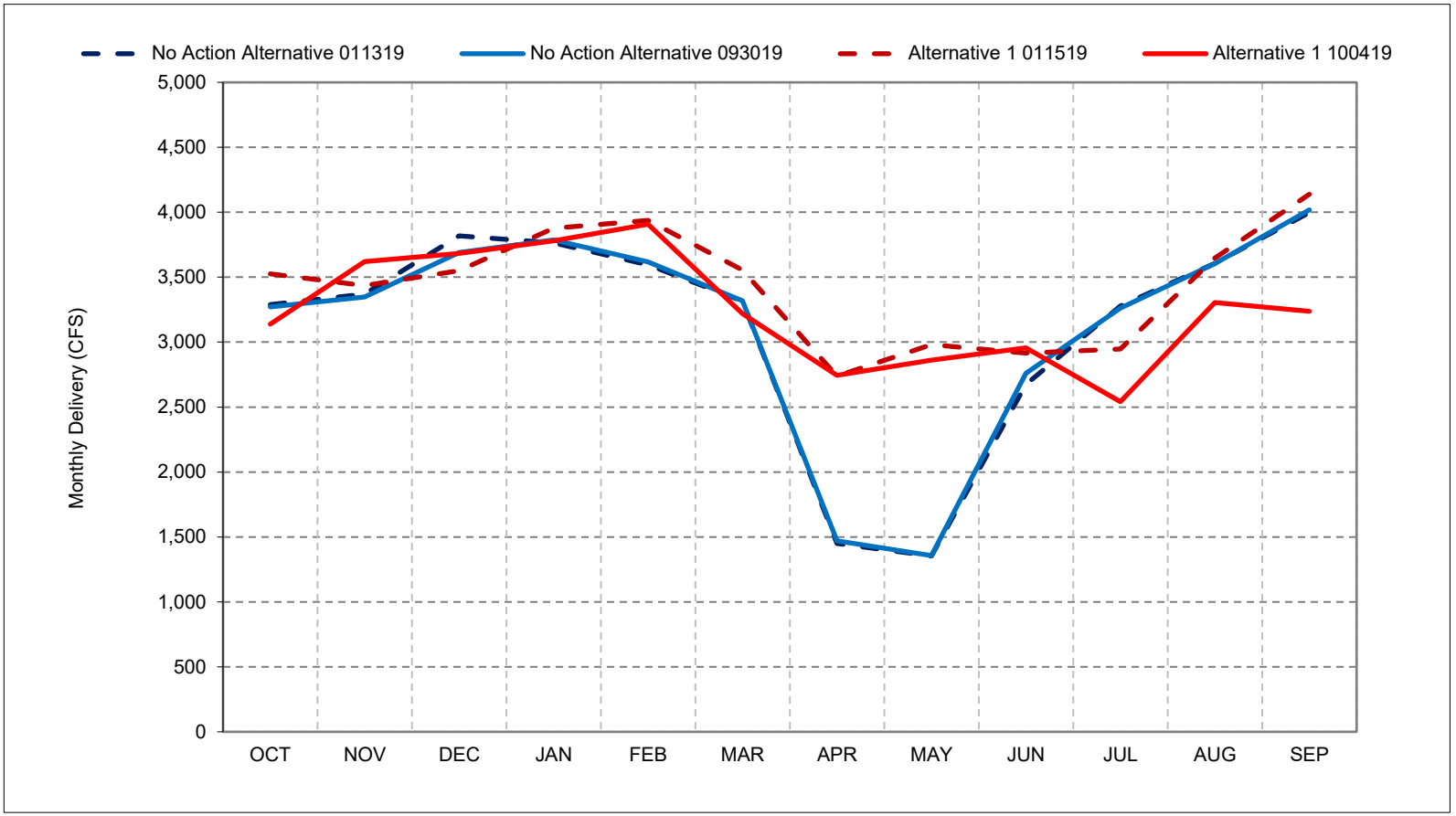
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-1. Jones PP Exports, Long-Term Average Delivery

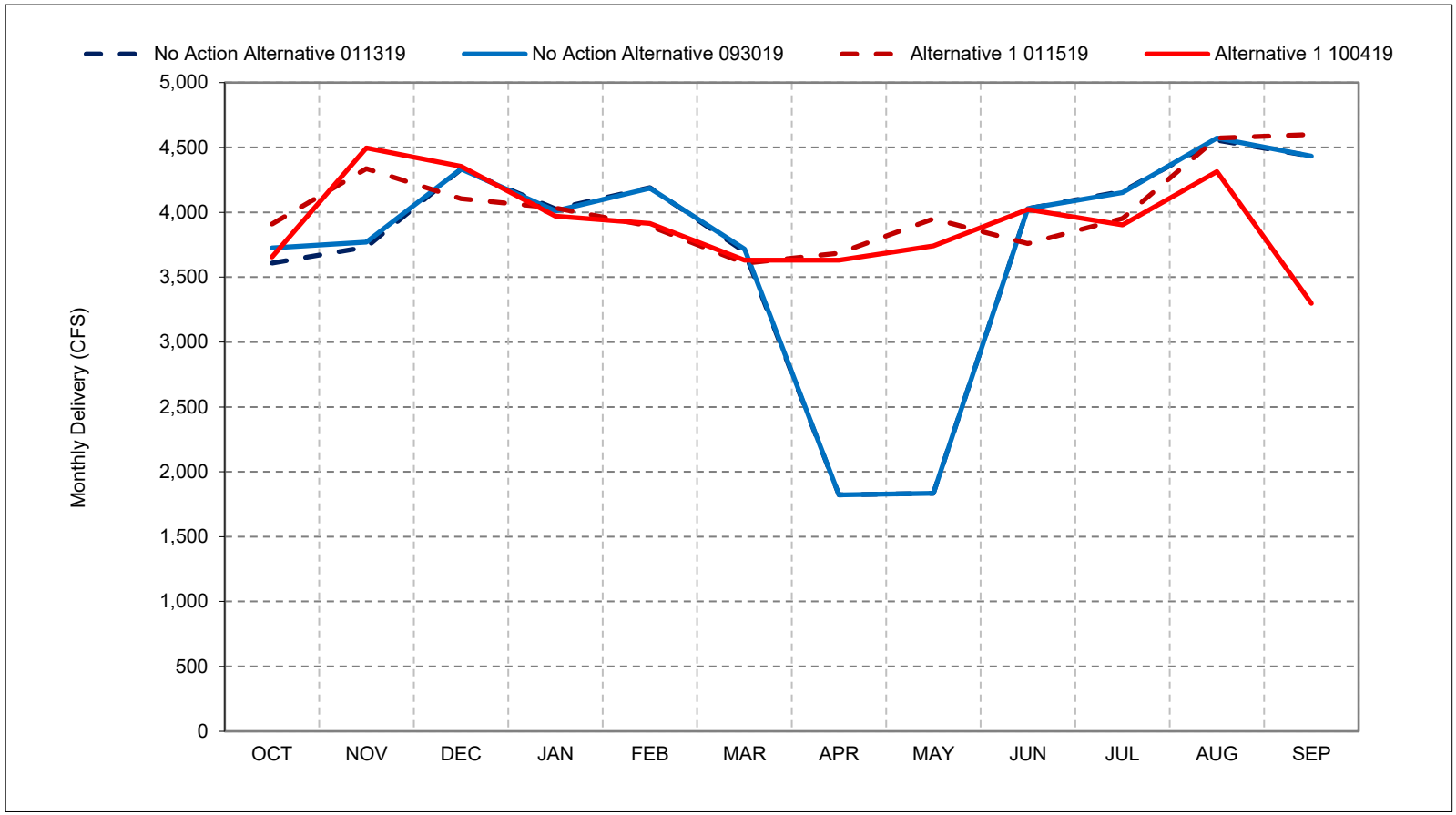



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-2. Jones PP Exports, Wet Year Average Delivery

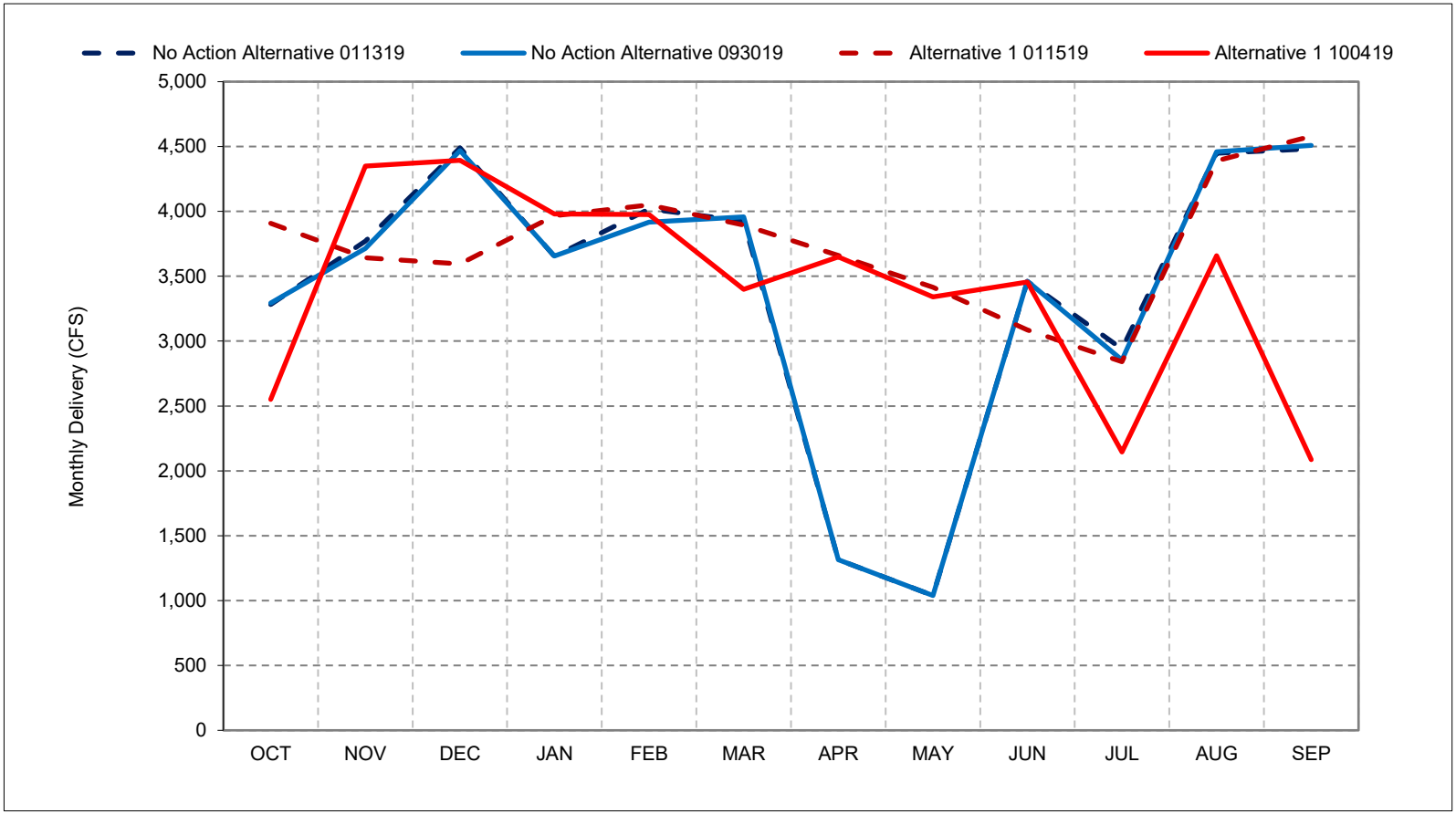



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-3. Jones PP Exports, Above Normal Year Average Delivery

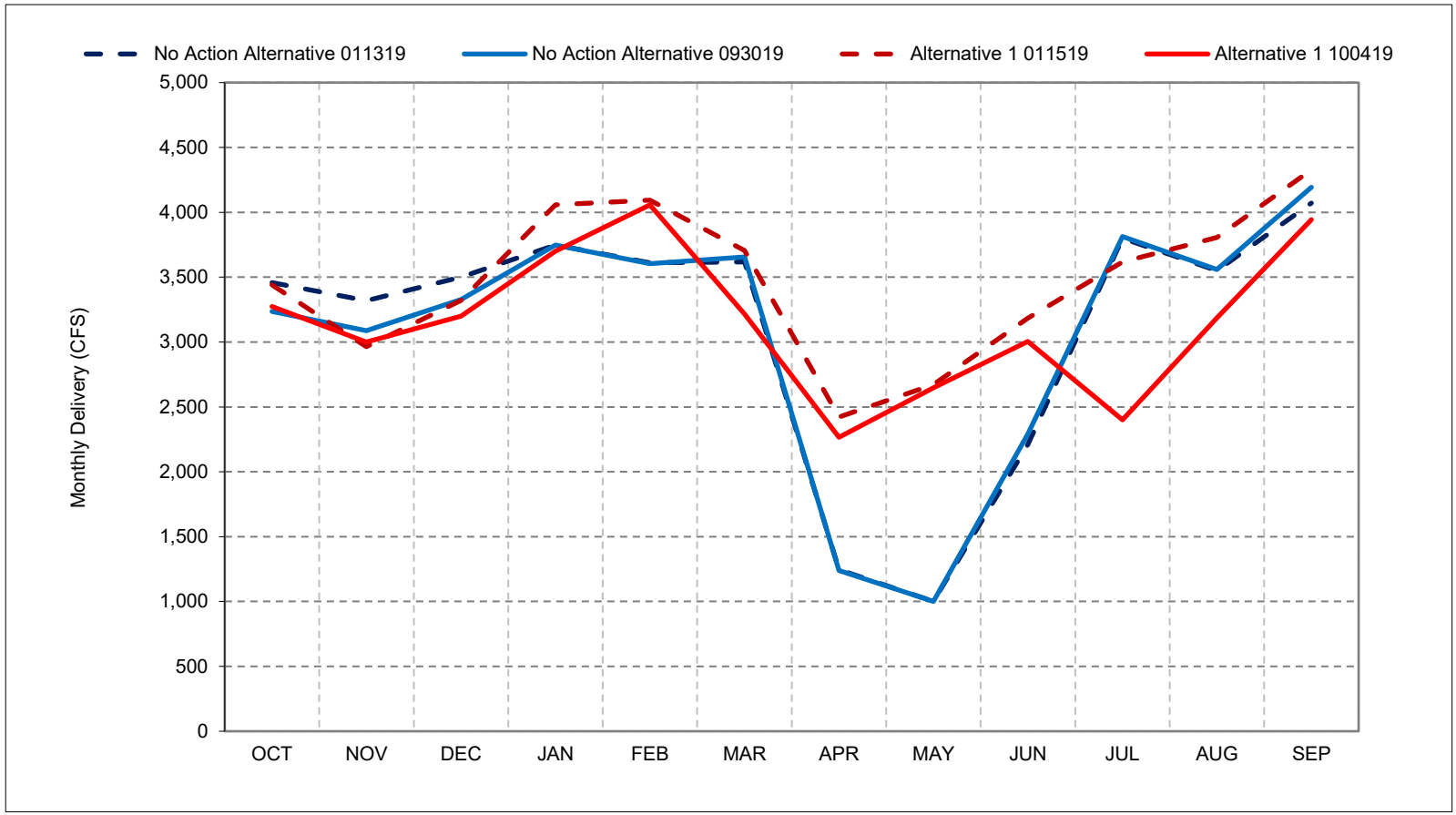



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-4. Jones PP Exports, Below Normal Year Average Delivery

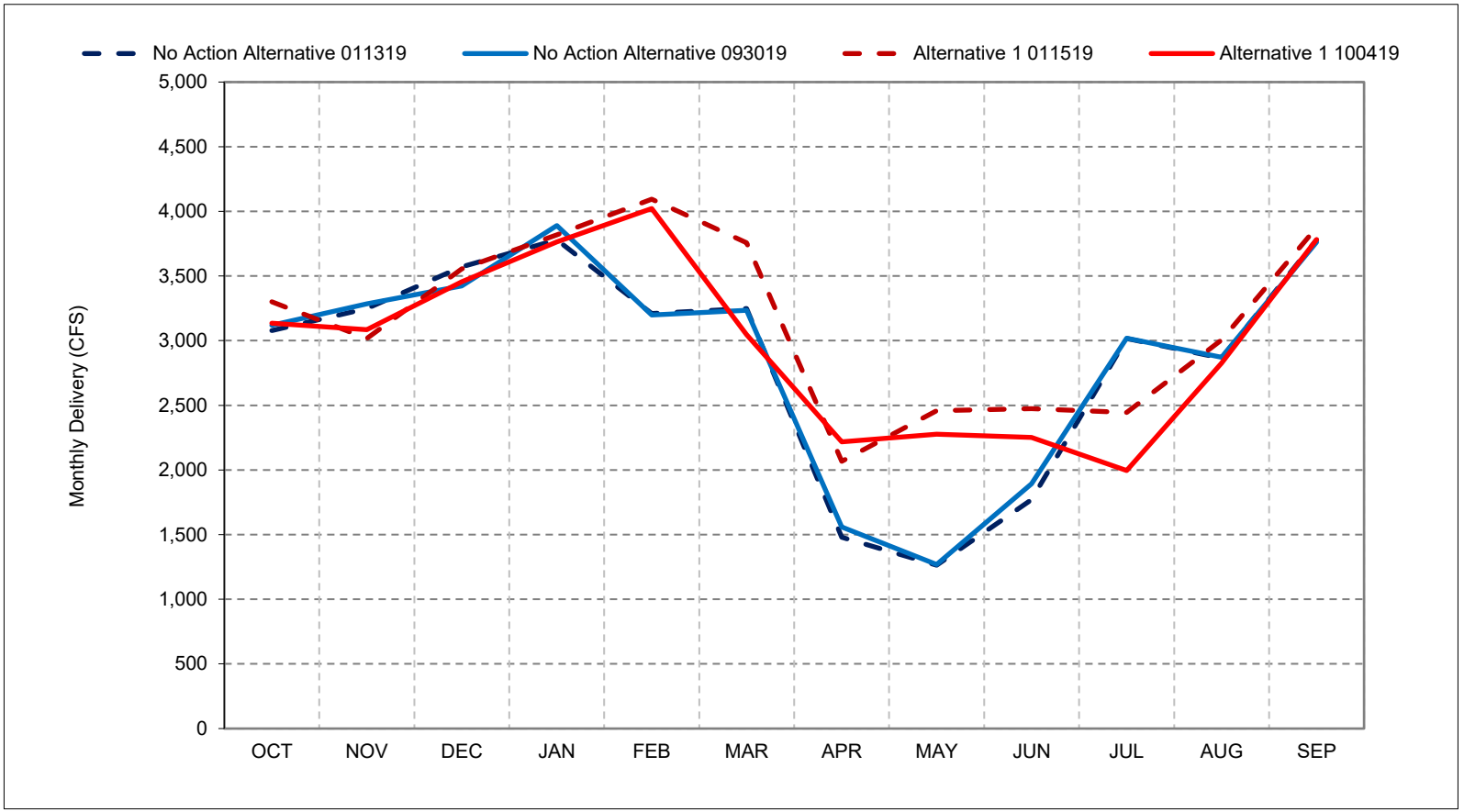



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-5. Jones PP Exports, Dry Year Average Delivery

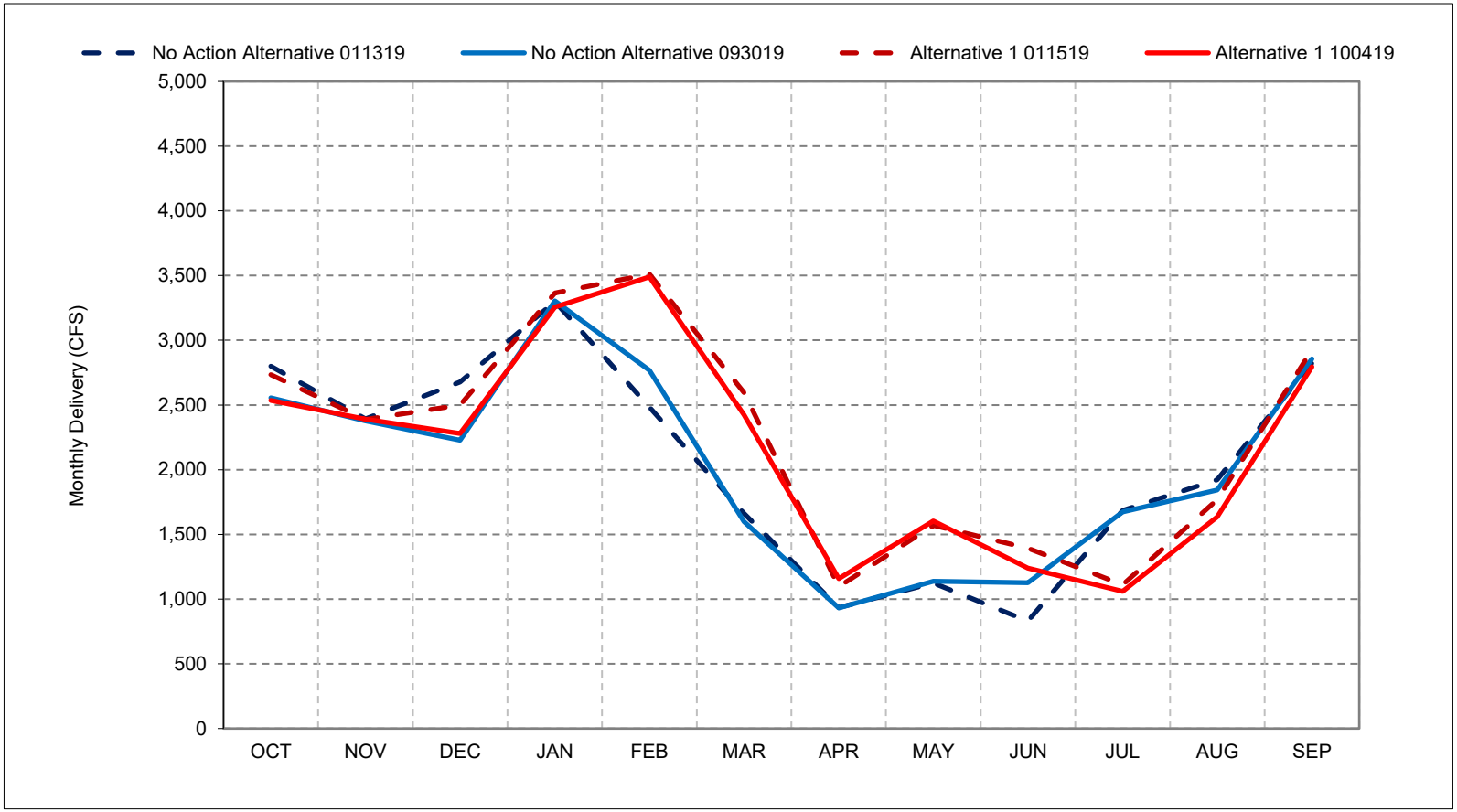



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 54-6. Jones PP Exports, Critical Year Average Delivery

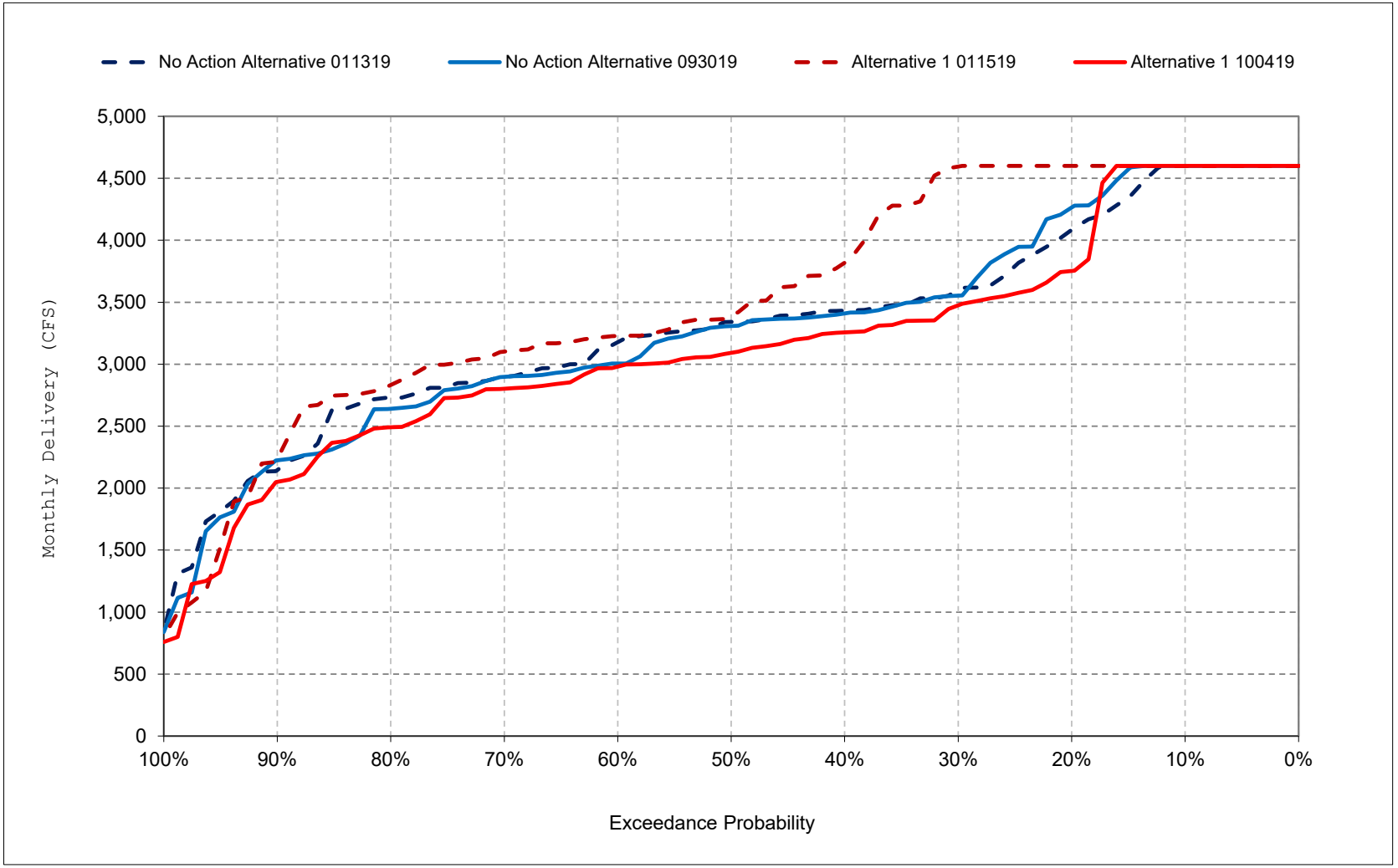



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

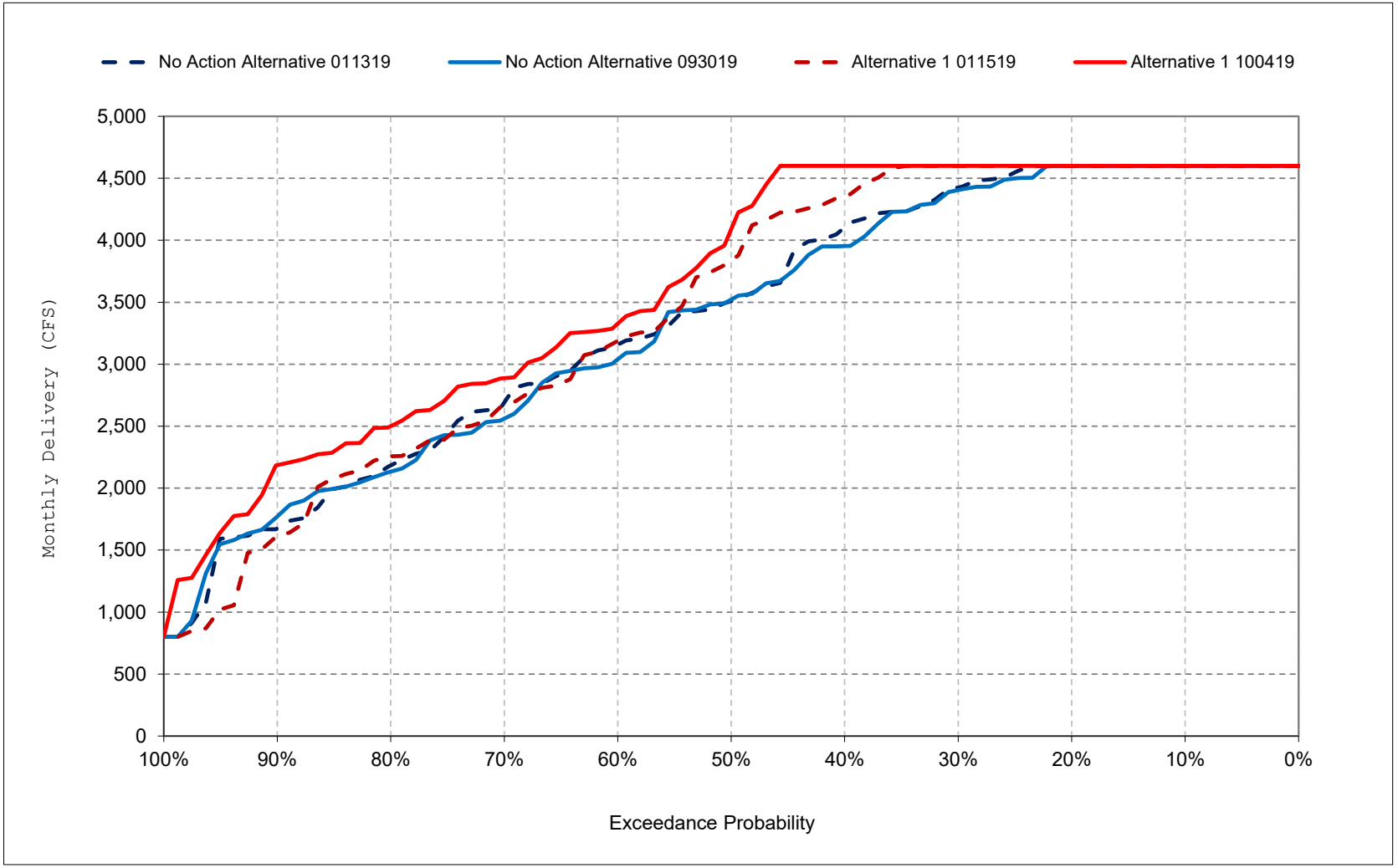
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-7. Jones PP Exports, October**



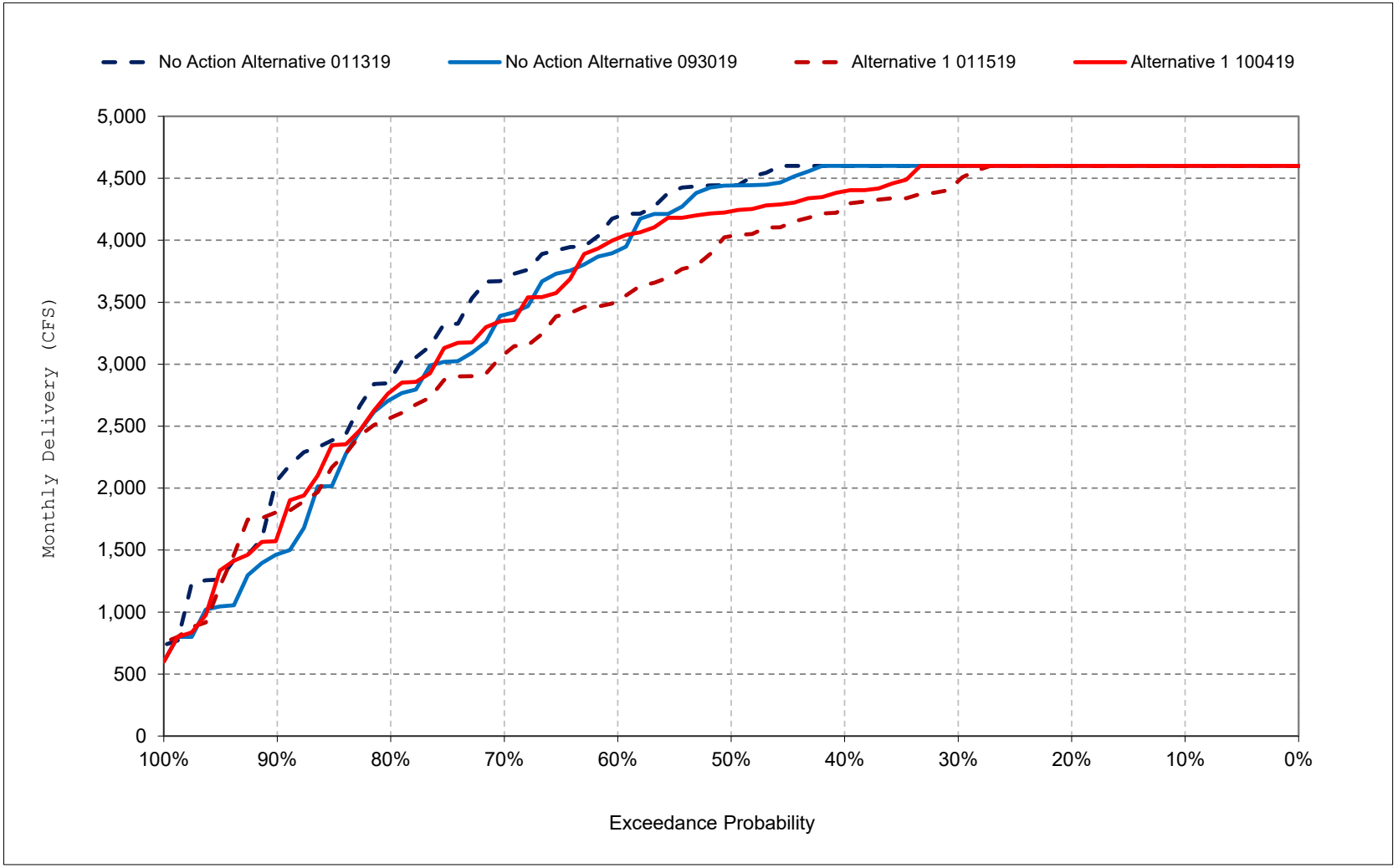

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-8. Jones PP Exports, November**



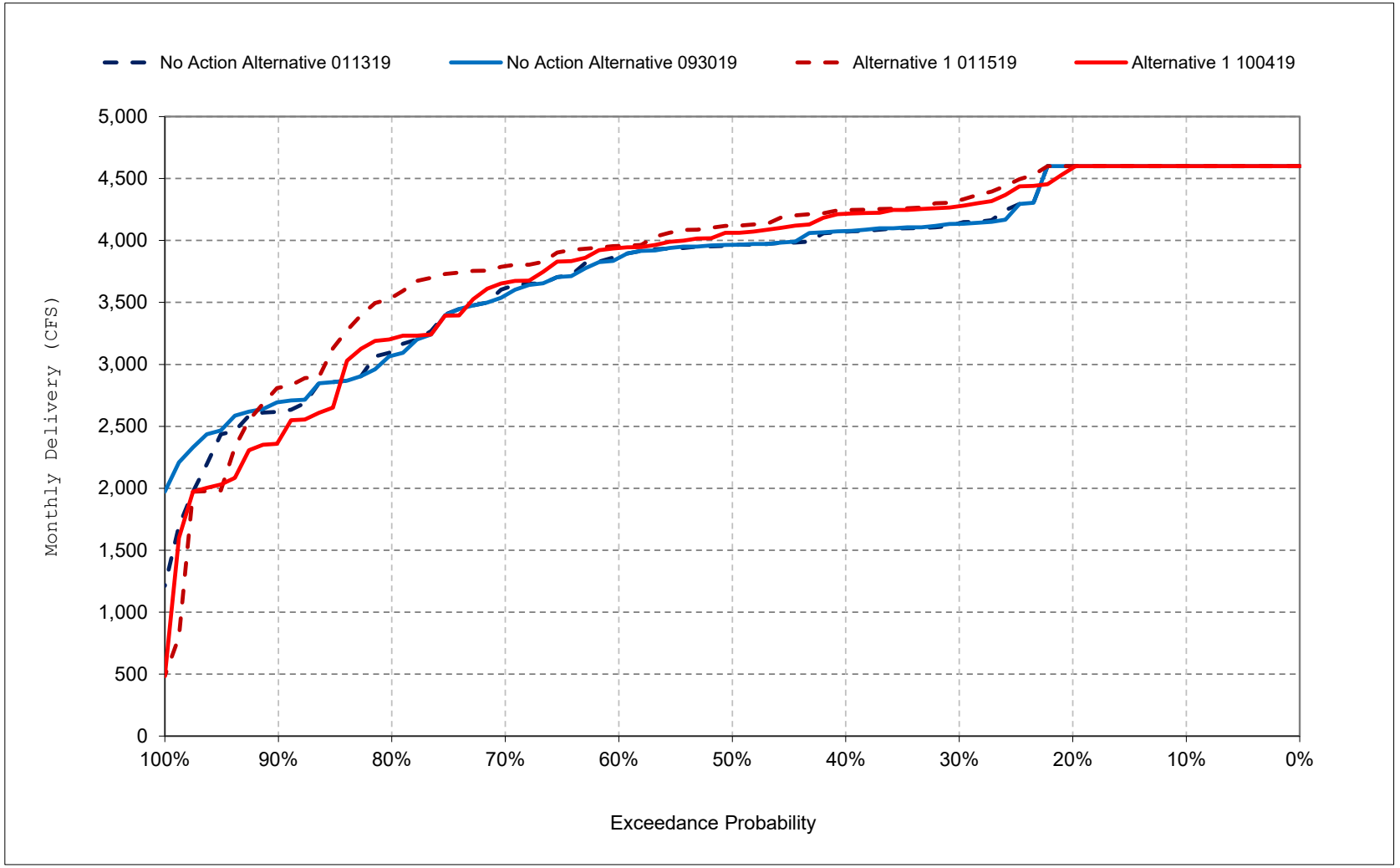

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-9. Jones PP Exports, December**



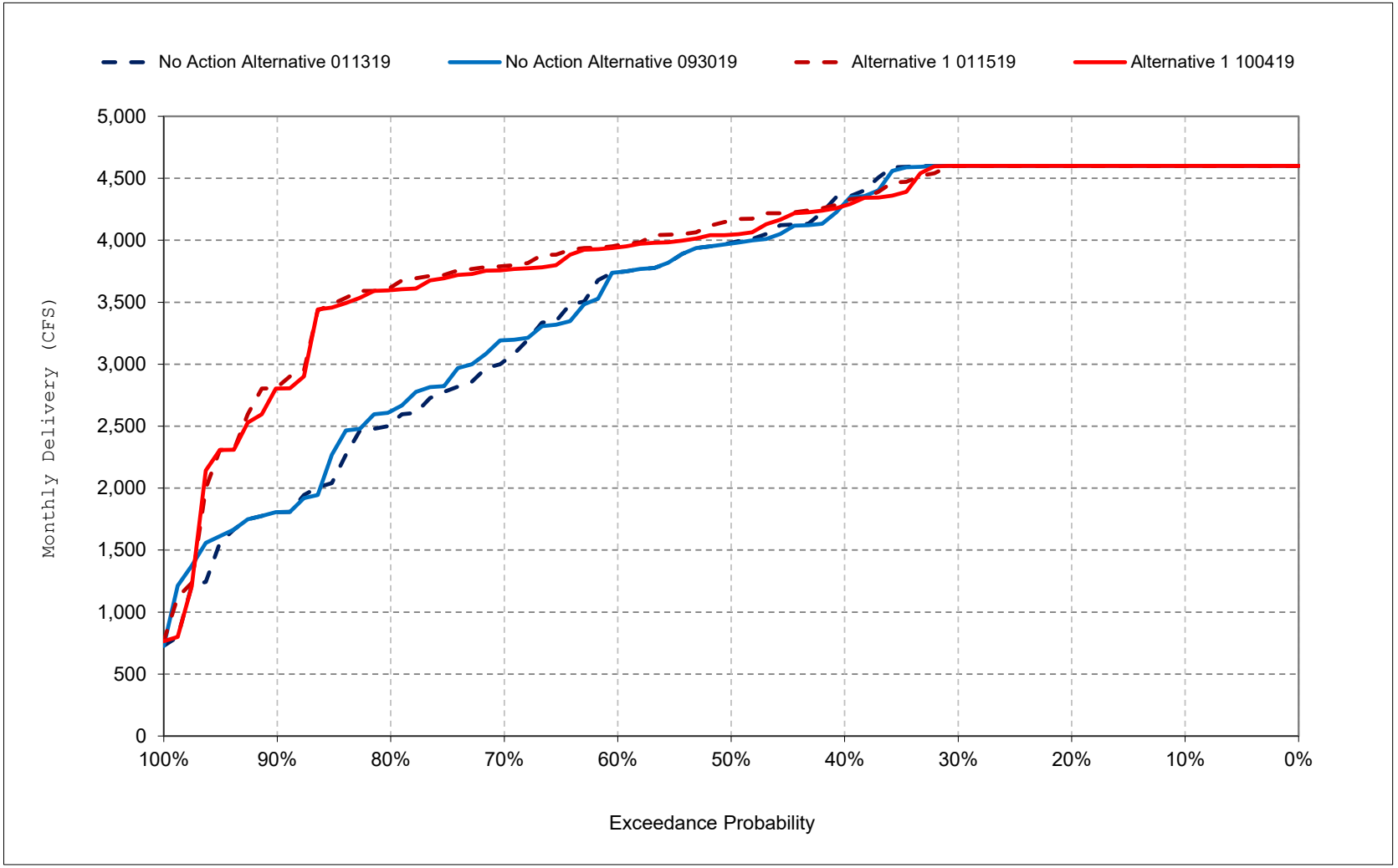

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-10. Jones PP Exports, January**



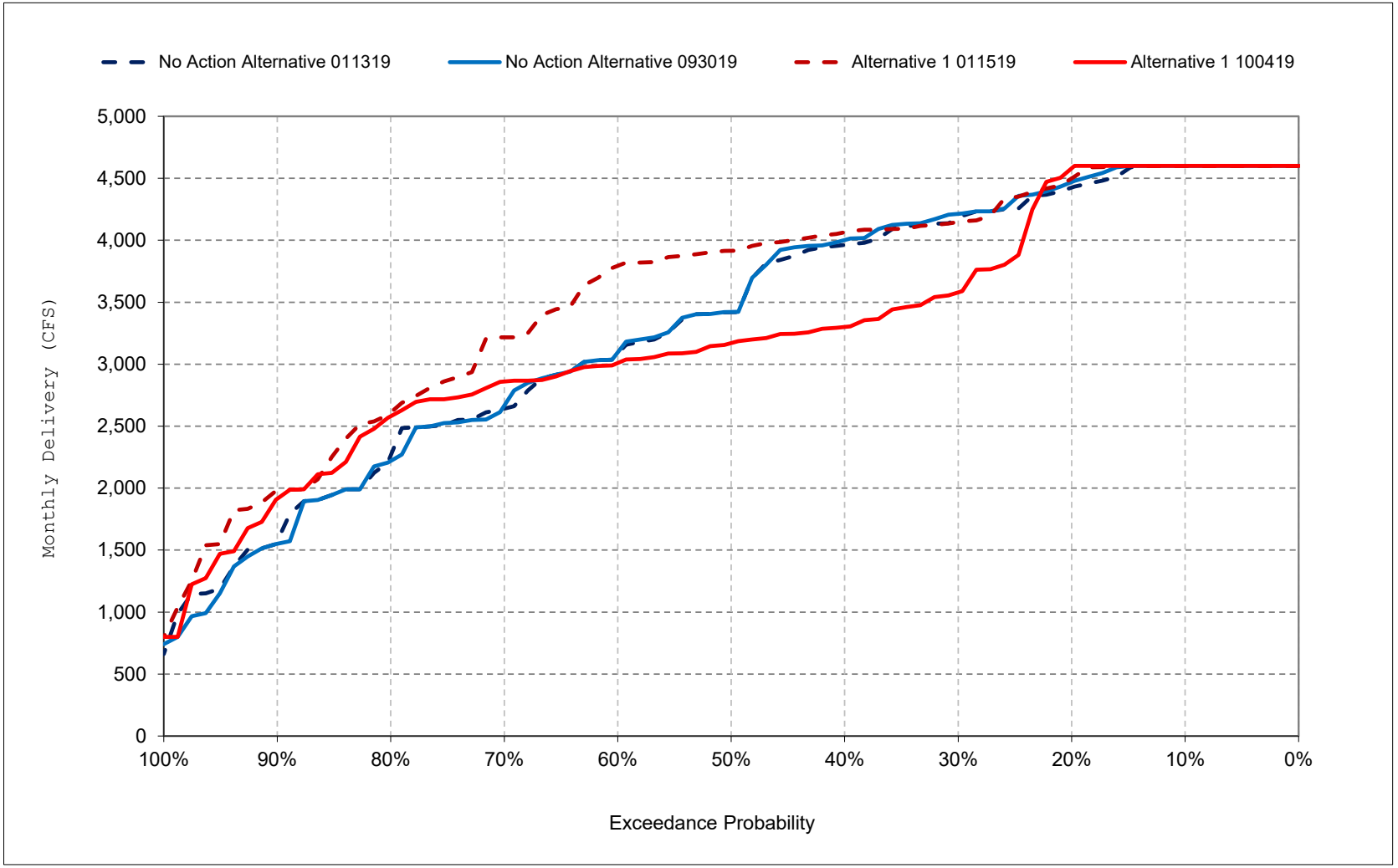

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-11. Jones PP Exports, February**



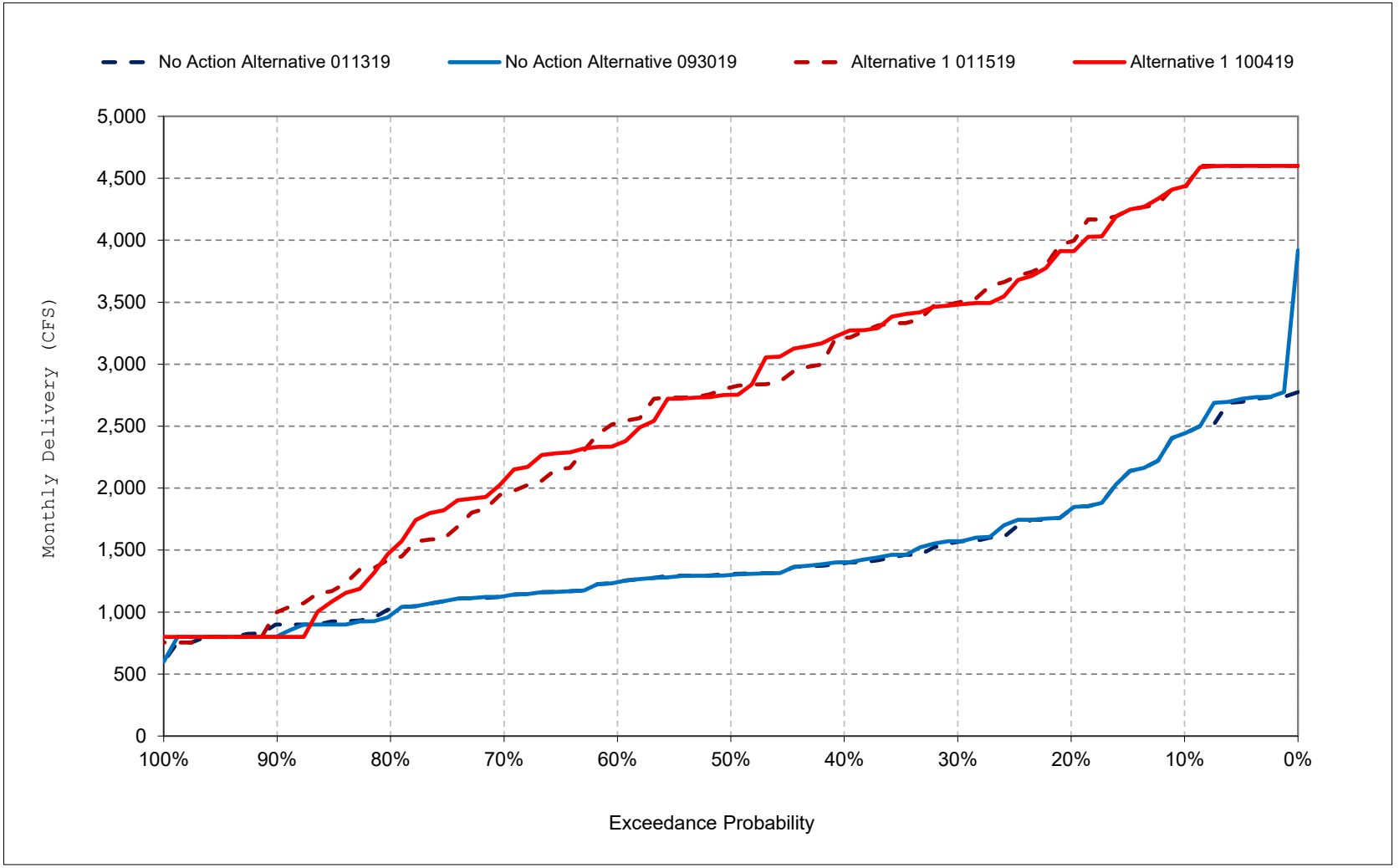

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-12. Jones PP Exports, March**



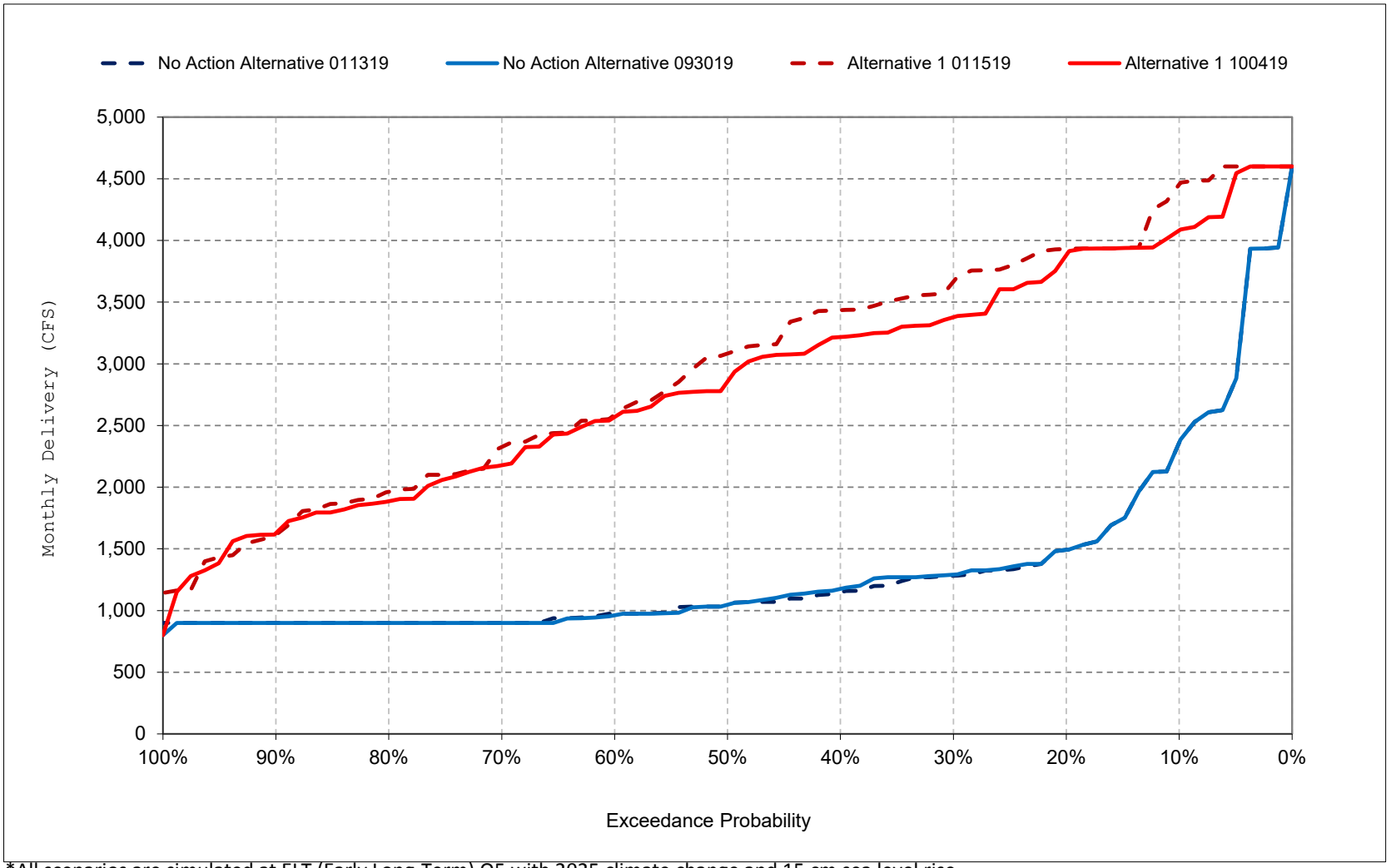

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-13. Jones PP Exports, April**



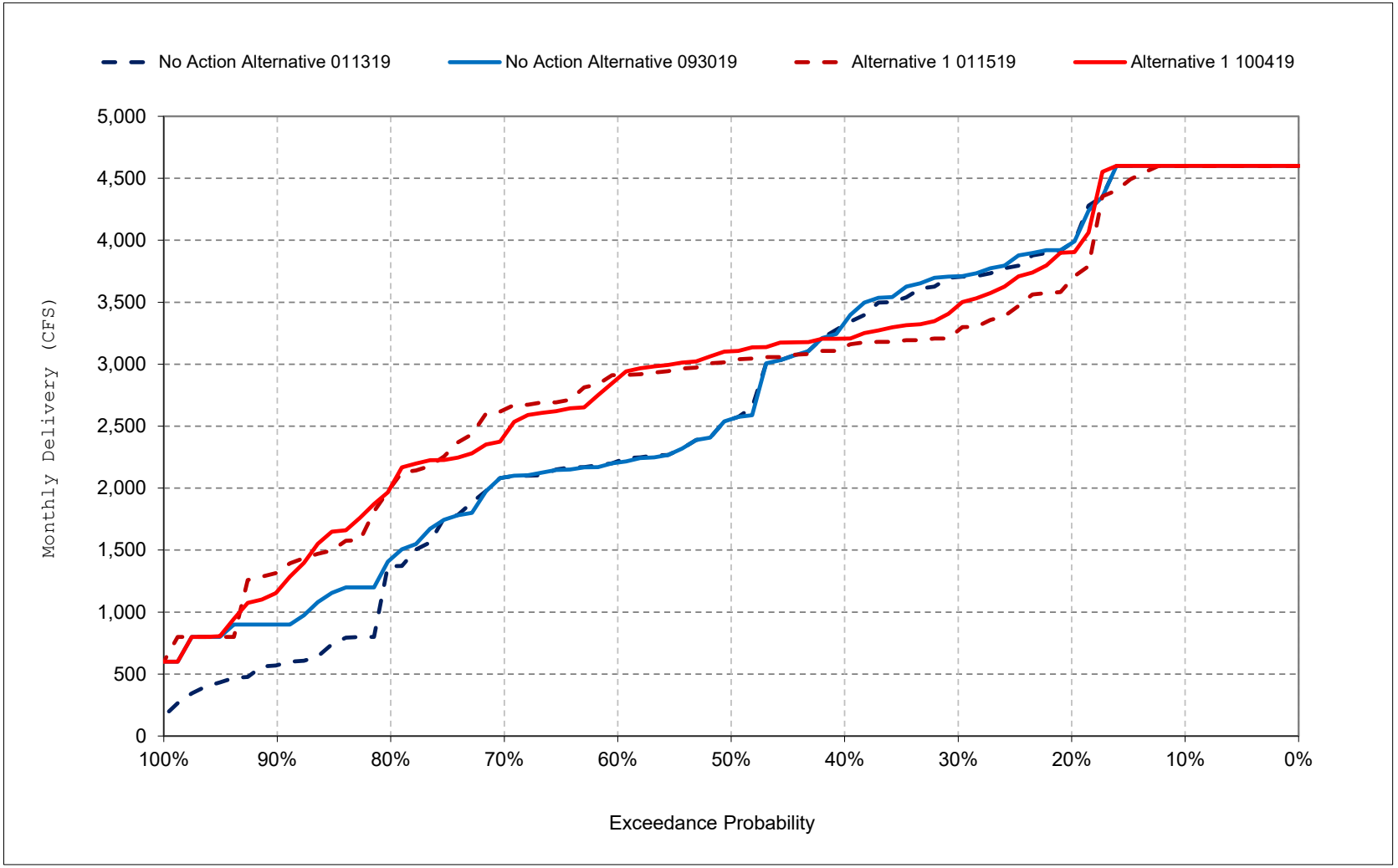

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-14. Jones PP Exports, May**



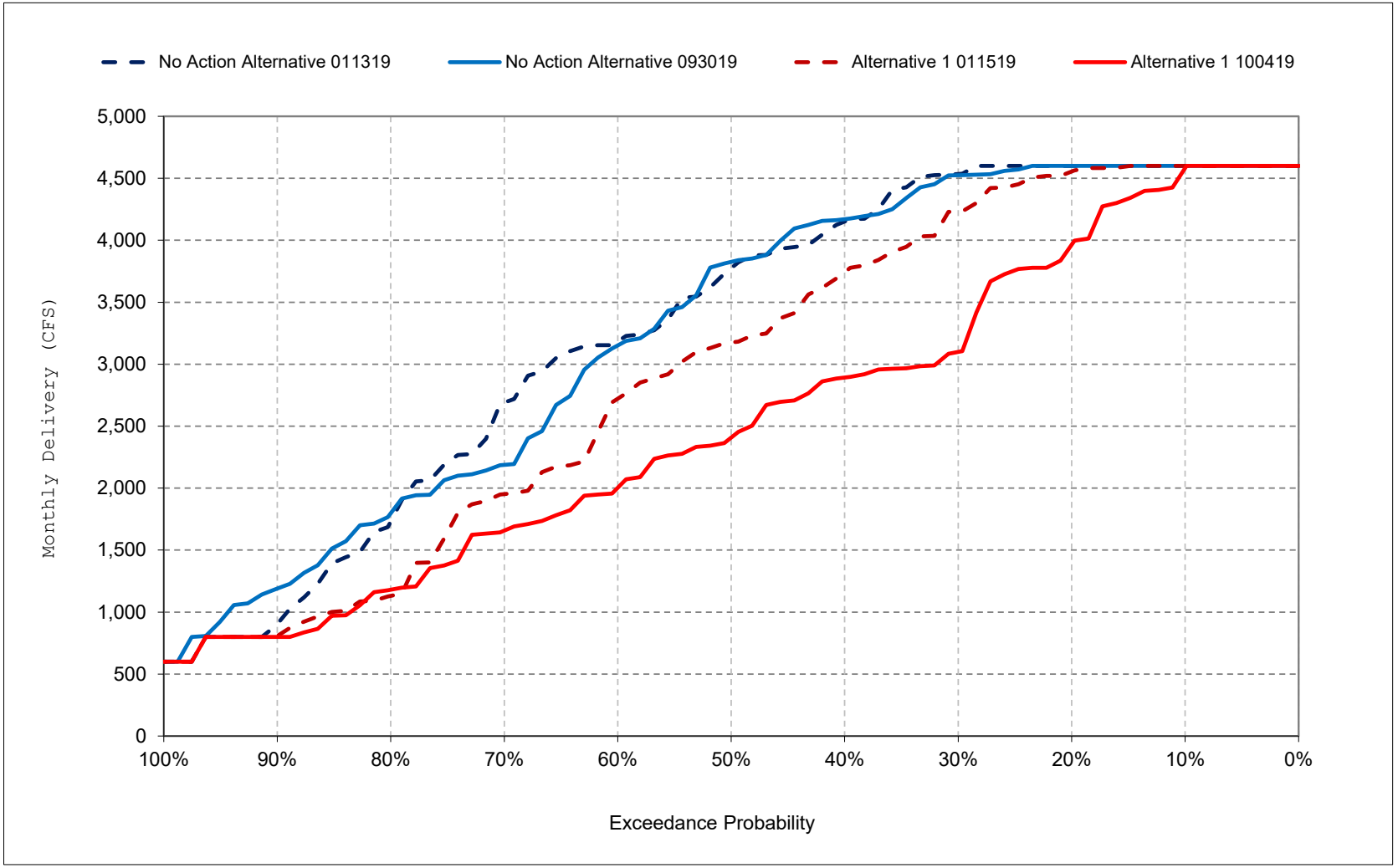

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-15. Jones PP Exports, June**



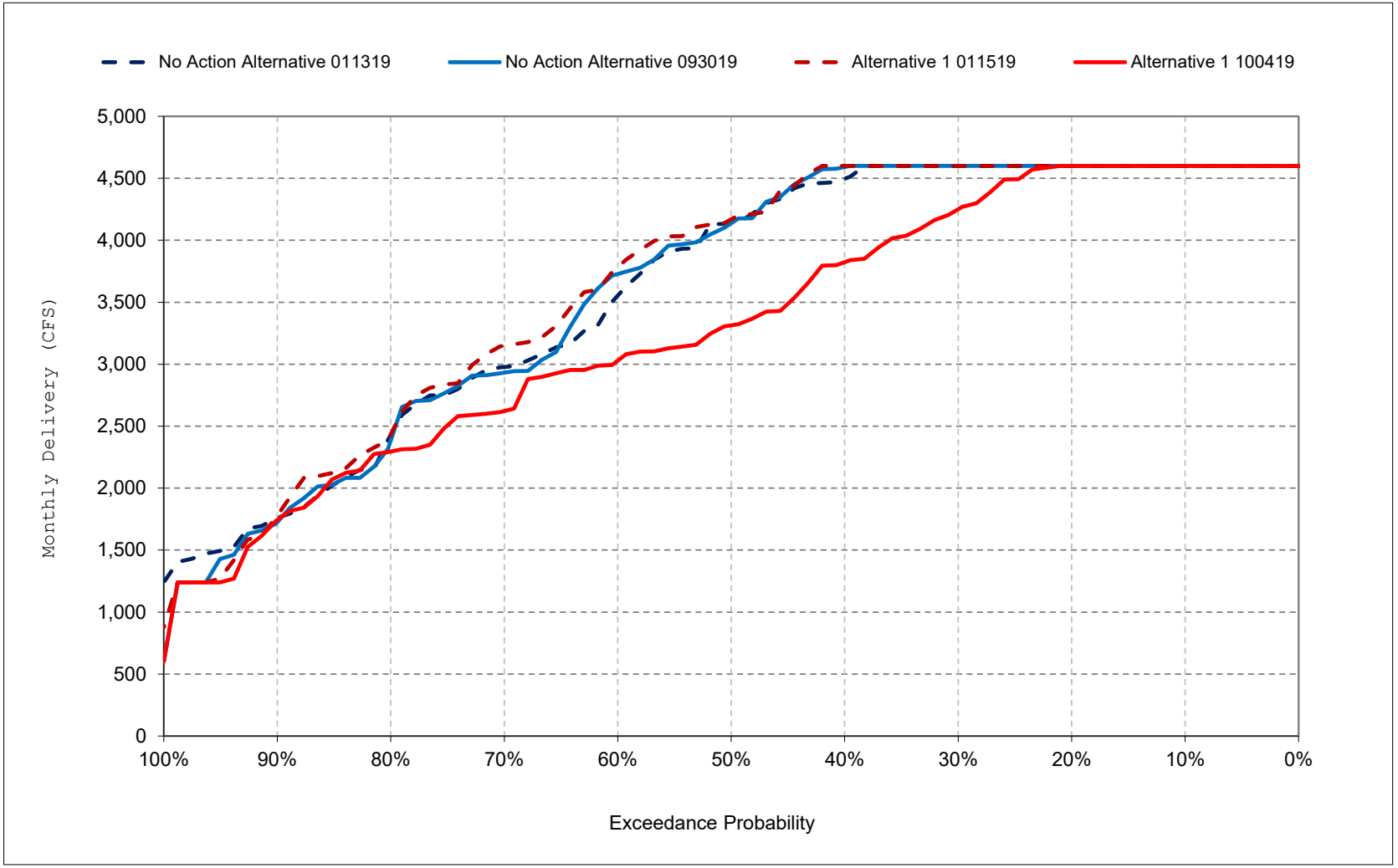

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-16. Jones PP Exports, July**



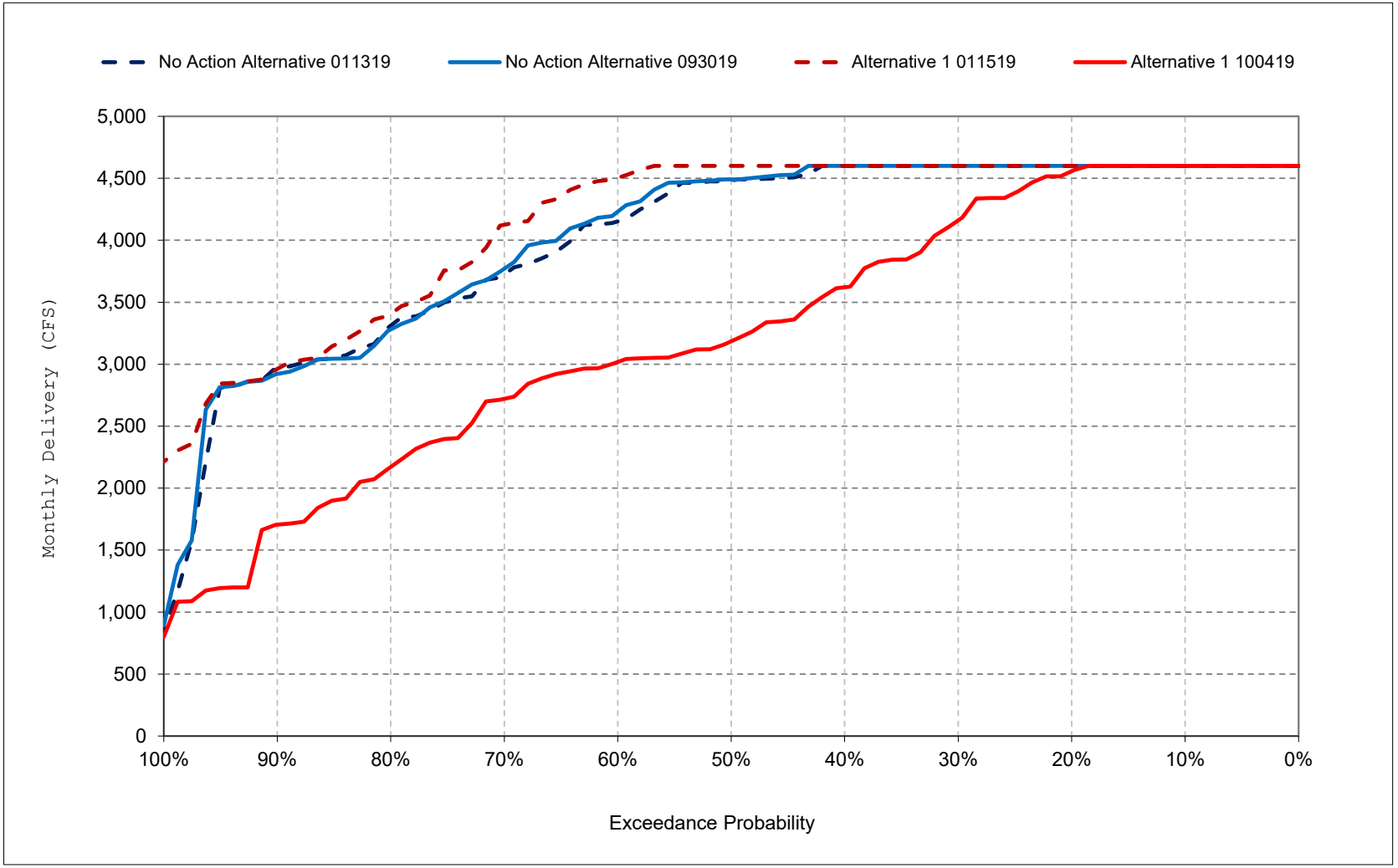

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-17. Jones PP Exports, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 54-18. Jones PP Exports, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 55-1. CVP Banks PP Exports, Monthly Delivery

## No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,867 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 861 | 339 | 0 |
| 20% | 0 | 1,678 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 495 | 0 | 0 |
| 30% | 0 | 1,235 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 0 | 0 |
| 40% | 0 | 512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 23 | 652 | 16 | 12 | 31 | 19 | 0 | 0 | 19 | 249 | 104 | 42 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 1,421 | 40 | 38 | 96 | 2 | 0 | 0 | 60 | 50 | 0 | 0 |
| Above Normal (16%) | 0 | 1,255 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 173 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 449 | 317 |
| Dry (24%) | 0 | 10 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 757 | 178 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 246 | 0 | 0 |

## Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,415 | 404 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 903 | 633 | 548 |
| 20% | 368 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 590 | 0 | 0 |
| 30% | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 193 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 296 | 128 | 28 | 15 | 65 | 28 | 0 | 0 | 19 | 250 | 179 | 204 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 316 | 300 | 88 | 49 | 168 | 45 | 0 | 0 | 60 | 53 | 144 | 340 |
| Above Normal (16%) | 1,020 | 207 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Below Normal (13%) | 256 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 578 | 682 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 713 | 229 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 405 | 0 | 0 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,415 | -1,463 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 294 | 548 |
| 20% | 368 | -1,678 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 95 | 0 | 0 |
| 30% | 29 | -1,235 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 115 | 0 | 0 |
| 40% | 0 | -512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 273 | -524 | 12 | 3 | 35 | 9 | 0 | 0 | 0 | 1 | 75 | 161 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 316 | -1,121 | 48 | 11 | 72 | 43 | 0 | 0 | 0 | 3 | 144 | 340 |
| Above Normal (16%) | 1,020 | -1,048 | -22 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Below Normal (13%) | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -92 | 128 | 366 |
| Dry (24%) | 0 | -10 | 0 | 0 | 0 | -20 | 0 | 0 | 0 | -45 | 51 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 159 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 55-2. CVP Banks PP Exports, Monthly Delivery

## No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,885 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 743 | 512 | 0 |
| 20% | 0 | 1,716 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 444 | 0 | 0 |
| 30% | 0 | 1,243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 154 | 0 | 0 |
| 40% | 0 | 541 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 22 | 655 | 15 | 13 | 38 | 13 | 0 | 0 | 19 | 237 | 107 | 43 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 1,426 | 39 | 40 | 119 | 4 | 0 | 0 | 60 | 50 | 0 | 0 |
| Above Normal (16%) | 0 | 1,268 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 549 | 324 |
| Dry (24%) | 0 | 7 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 737 | 138 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 258 | 0 | 0 |

## Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,805 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 836 | 789 | 0 |
| 20% | 0 | 747 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 479 | 491 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 21 | 405 | 105 | 10 | 9 | 46 | 0 | 0 | 19 | 211 | 217 | 57 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 768 | 277 | 31 | 26 | 146 | 0 | 0 | 60 | 52 | 177 | 0 |
| Above Normal (16%) | 0 | 1,016 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 188 | 0 |
| Below Normal (13%) | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 442 | 422 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 484 | 294 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 344 | 0 | 0 |

## Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 277 | 0 |
| 20% | 0 | -969 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 491 | 0 |
| 30% | 0 | -1,243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -52 | 0 | 0 |
| 40% | 0 | -541 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -250 | 90 | -3 | -29 | 33 | 0 | 0 | 0 | -26 | 109 | 13 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -658 | 238 | -9 | -93 | 142 | 0 | 0 | 0 | 1 | 177 | 0 |
| Above Normal (16%) | 0 | -252 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 188 | 0 |
| Below Normal (13%) | -6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | -107 | 99 |
| Dry (24%) | 0 | -7 | 0 | 0 | 0 | -49 | 0 | 0 | 0 | -253 | 156 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 87 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 55-3. CVP Banks PP Exports, Monthly Delivery

## No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,867 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 861 | 339 | 0 |
| 20% | 0 | 1,678 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 495 | 0 | 0 |
| 30% | 0 | 1,235 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 0 | 0 |
| 40% | 0 | 512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 23 | 652 | 16 | 12 | 31 | 19 | 0 | 0 | 19 | 249 | 104 | 42 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 1,421 | 40 | 38 | 96 | 2 | 0 | 0 | 60 | 50 | 0 | 0 |
| Above Normal (16%) | 0 | 1,255 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 173 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 449 | 317 |
| Dry (24%) | 0 | 10 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 757 | 178 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 246 | 0 | 0 |

## No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,885 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 743 | 512 | 0 |
| 20% | 0 | 1,716 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 444 | 0 | 0 |
| 30% | 0 | 1,243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 154 | 0 | 0 |
| 40% | 0 | 541 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 22 | 655 | 15 | 13 | 38 | 13 | 0 | 0 | 19 | 237 | 107 | 43 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 1,426 | 39 | 40 | 119 | 4 | 0 | 0 | 60 | 50 | 0 | 0 |
| Above Normal (16%) | 0 | 1,268 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 549 | 324 |
| Dry (24%) | 0 | 7 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 737 | 138 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 258 | 0 | 0 |

## No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -118 | 173 | 0 |
| 20% | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -51 | 0 | 0 |
| 30% | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 76 | 0 | 0 |
| 40% | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2 | 3 | -1 | 0 | 7 | -6 | 0 | 0 | 0 | -12 | 4 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 5 | -1 | 2 | 23 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 13 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -65 | 100 | 7 |
| Dry (24%) | 0 | -3 | 0 | 0 | 0 | -27 | 0 | 0 | 0 | -20 | -40 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 55-4. CVP Banks PP Exports, Monthly Delivery

### Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,415 | 404 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 903 | 633 | 548 |
| 20% | 368 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 590 | 0 | 0 |
| 30% | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 193 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 296 | 128 | 28 | 15 | 65 | 28 | 0 | 0 | 19 | 250 | 179 | 204 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 316 | 300 | 88 | 49 | 168 | 45 | 0 | 0 | 60 | 53 | 144 | 340 |
| Above Normal (16%) | 1,020 | 207 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Below Normal (13%) | 256 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 578 | 682 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 713 | 229 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 405 | 0 | 0 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1,805 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 836 | 789 | 0 |
| 20% | 0 | 747 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 479 | 491 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 21 | 405 | 105 | 10 | 9 | 46 | 0 | 0 | 19 | 211 | 217 | 57 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 768 | 277 | 31 | 26 | 146 | 0 | 0 | 60 | 52 | 177 | 0 |
| Above Normal (16%) | 0 | 1,016 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 188 | 0 |
| Below Normal (13%) | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 442 | 422 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 484 | 294 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 344 | 0 | 0 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -1,415 | 1,401 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -67 | 156 | -548 |
| 20% | -368 | 747 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -111 | 491 | 0 |
| 30% | -29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -91 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -275 | 277 | 77 | -6 | -56 | 19 | 0 | 0 | 0 | -39 | 38 | -147 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -316 | 468 | 189 | -18 | -141 | 101 | 0 | 0 | 0 | -1 | 33 | -340 |
| Above Normal (16%) | -1,020 | 810 | 108 | 0 | -75 | 0 | 0 | 0 | 0 | 94 | 188 | -28 |
| Below Normal (13%) | -101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | -136 | -260 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | -56 | 0 | 0 | 0 | -228 | 64 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | -60 | 0 | 0 |

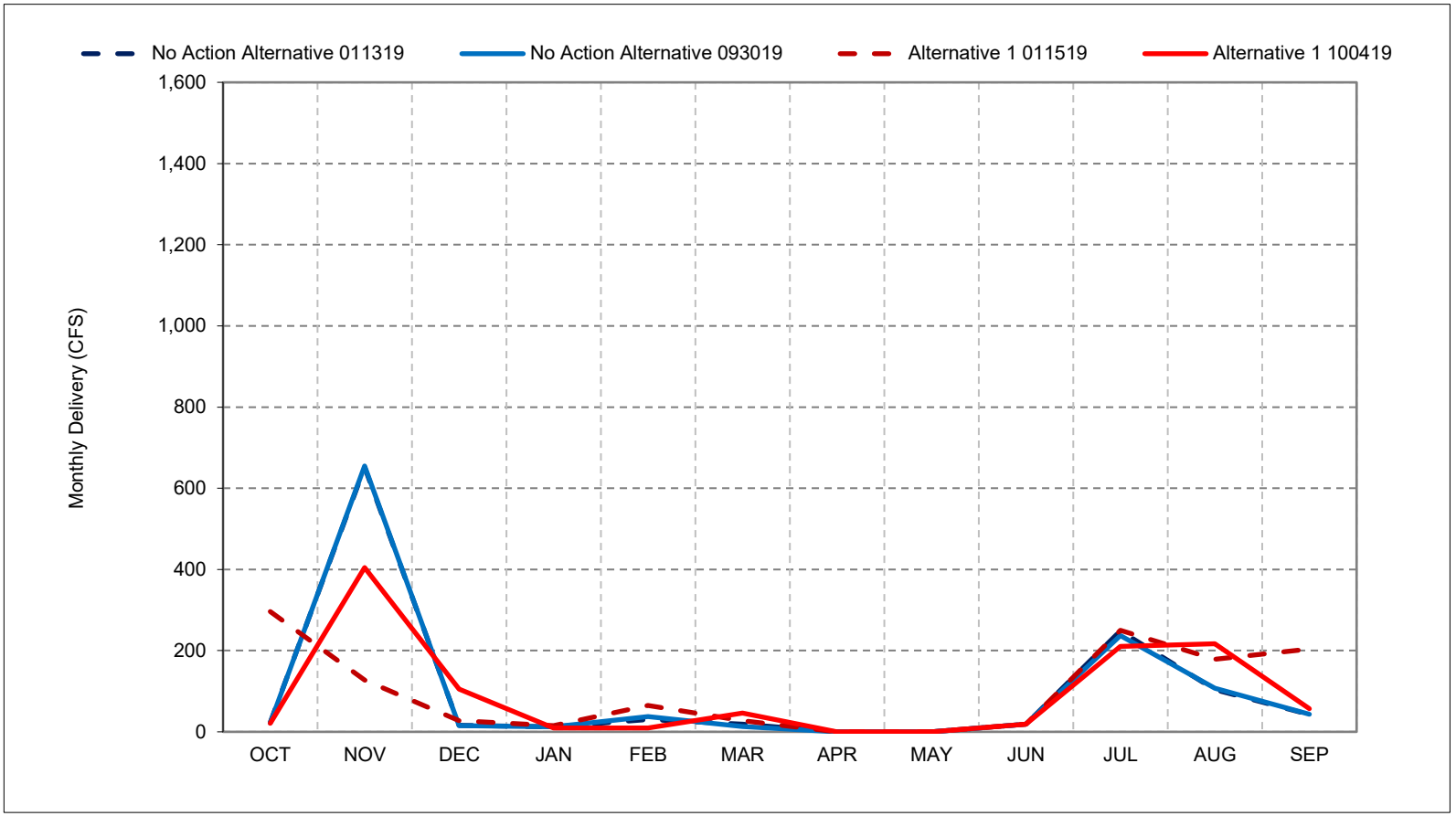
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-1. CVP Banks PP Exports, Long-Term Average Delivery

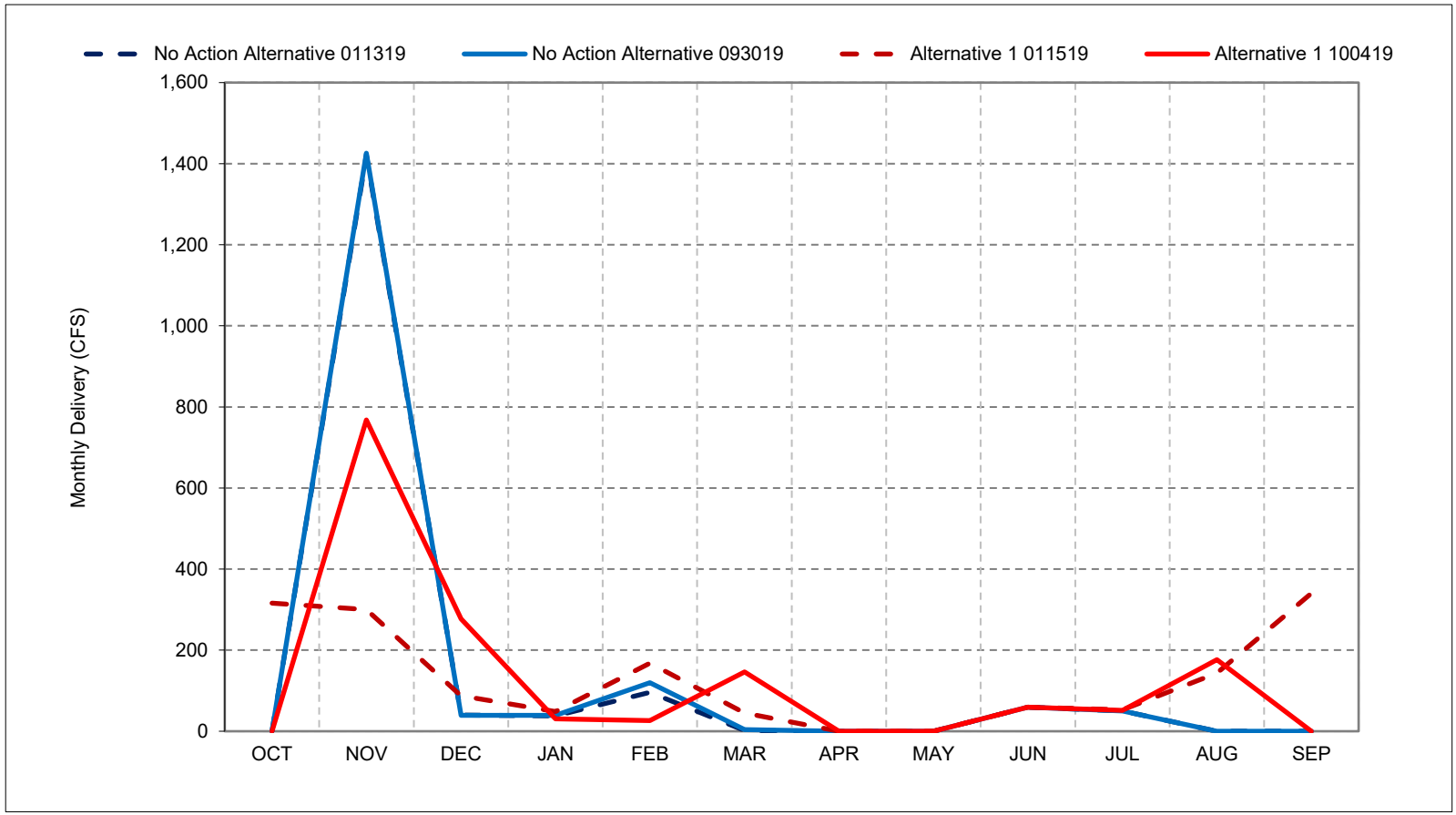



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-2. CVP Banks PP Exports, Wet Year Average Delivery

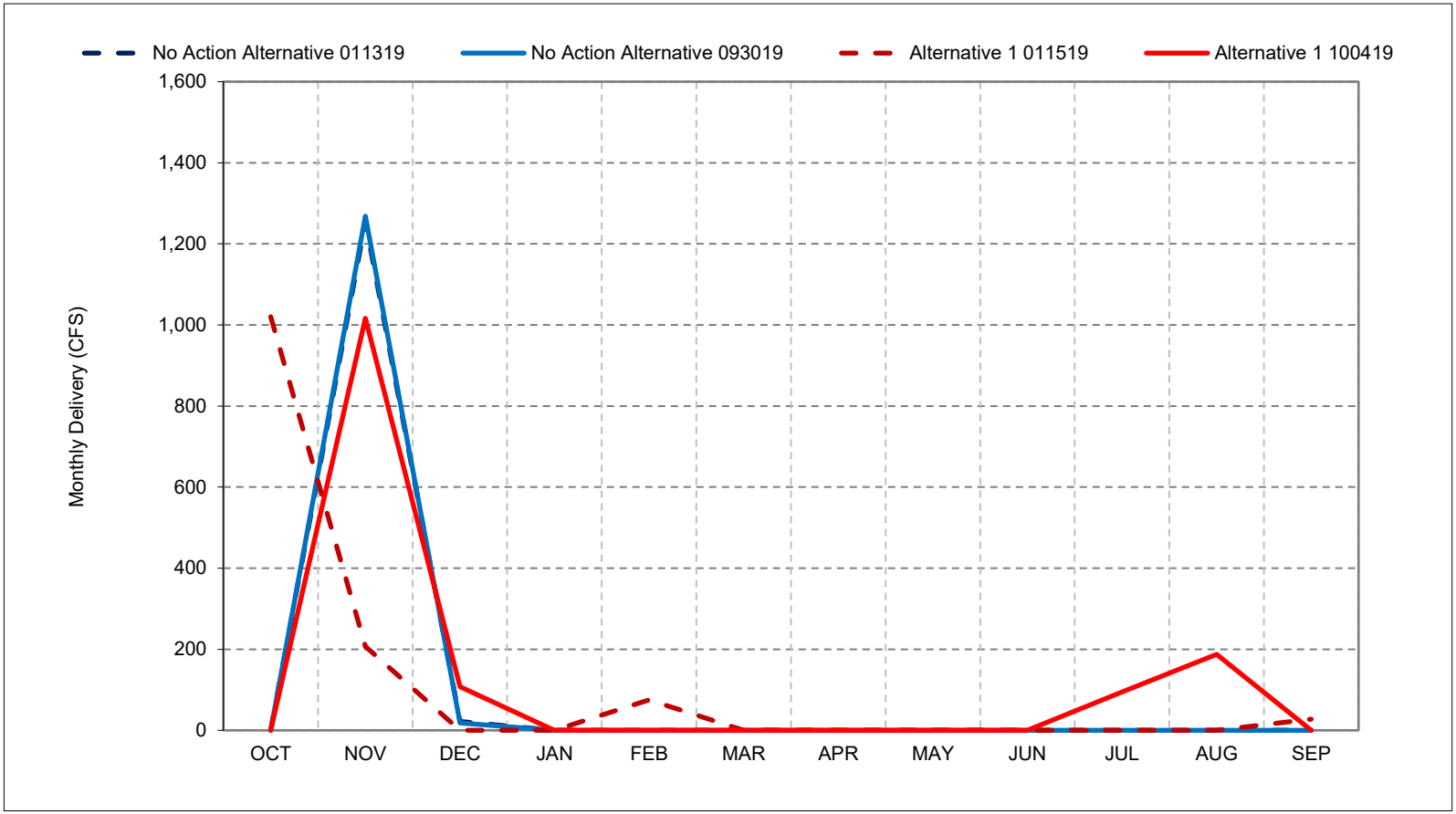



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-3. CVP Banks PP Exports, Above Normal Year Average Delivery

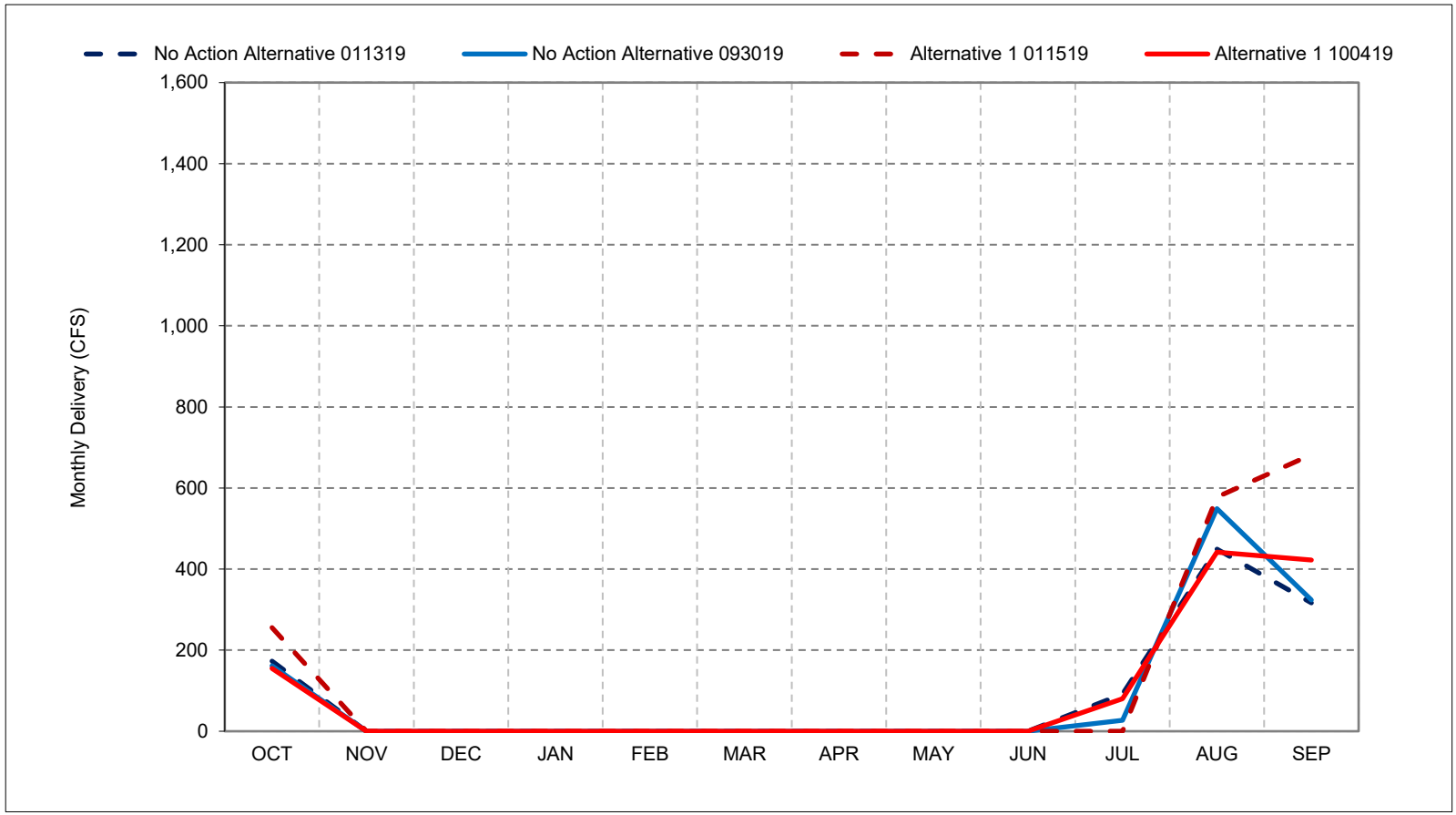



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-4. CVP Banks PP Exports, Below Normal Year Average Delivery

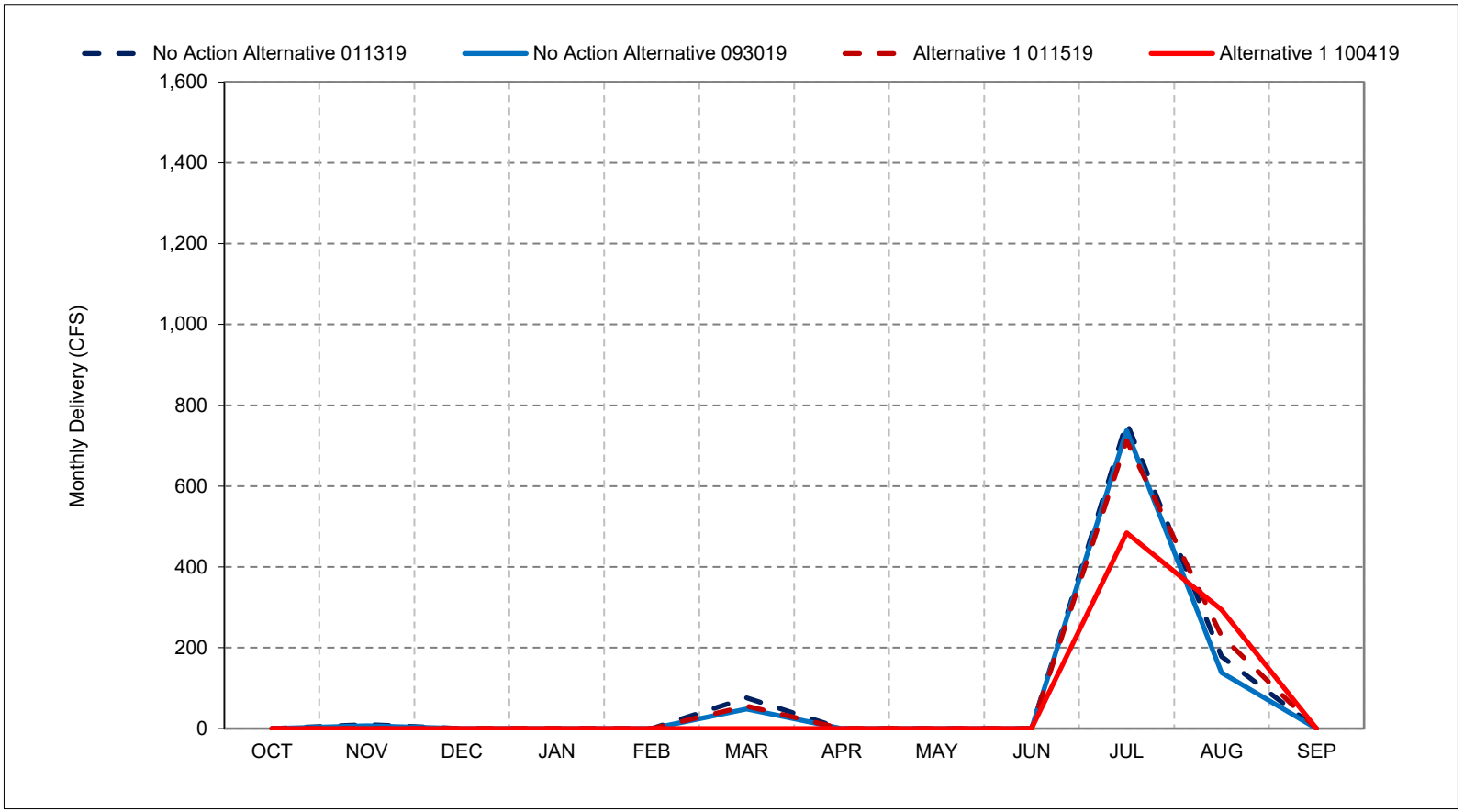



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-5. CVP Banks PP Exports, Dry Year Average Delivery

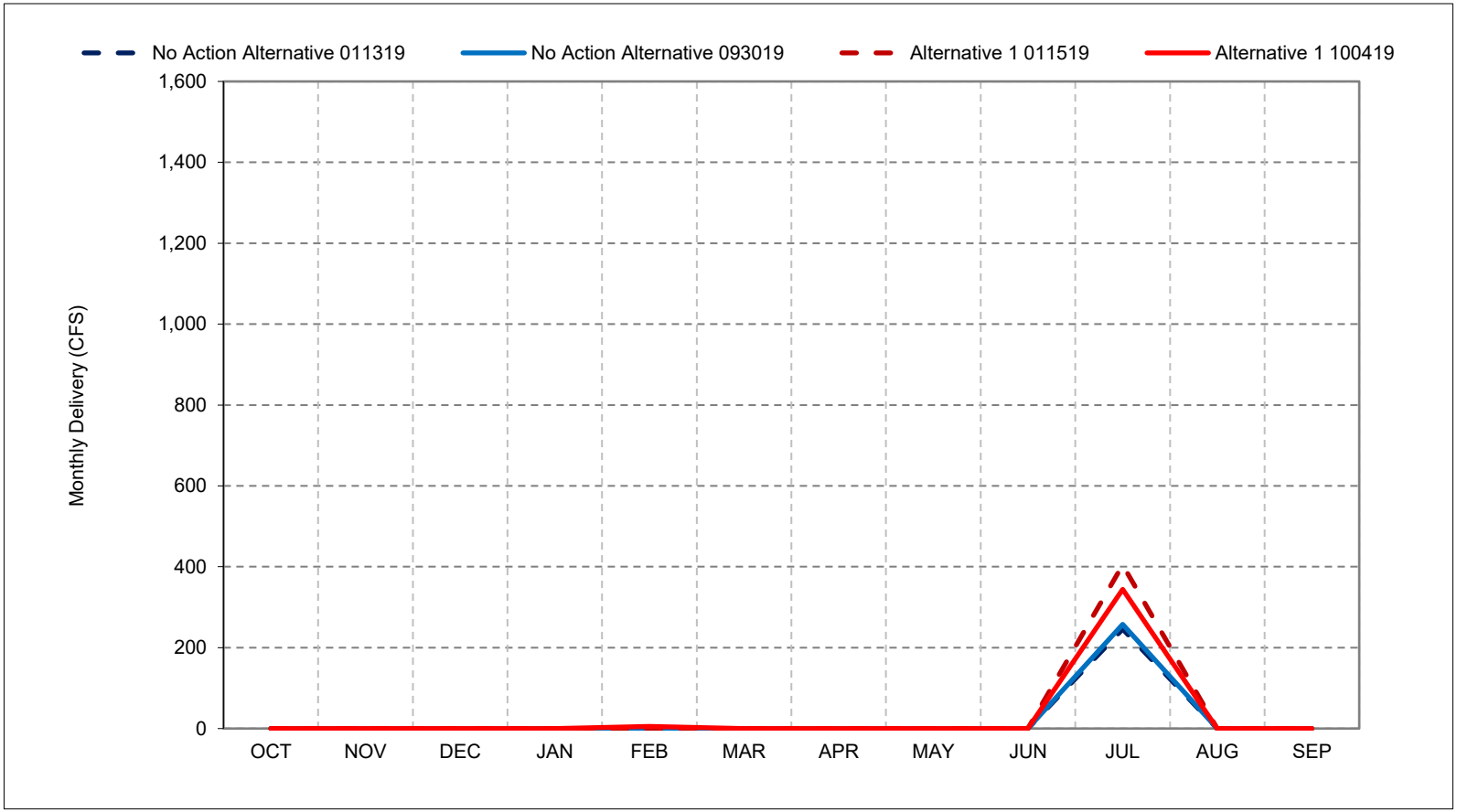



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 55-6. CVP Banks PP Exports, Critical Year Average Delivery

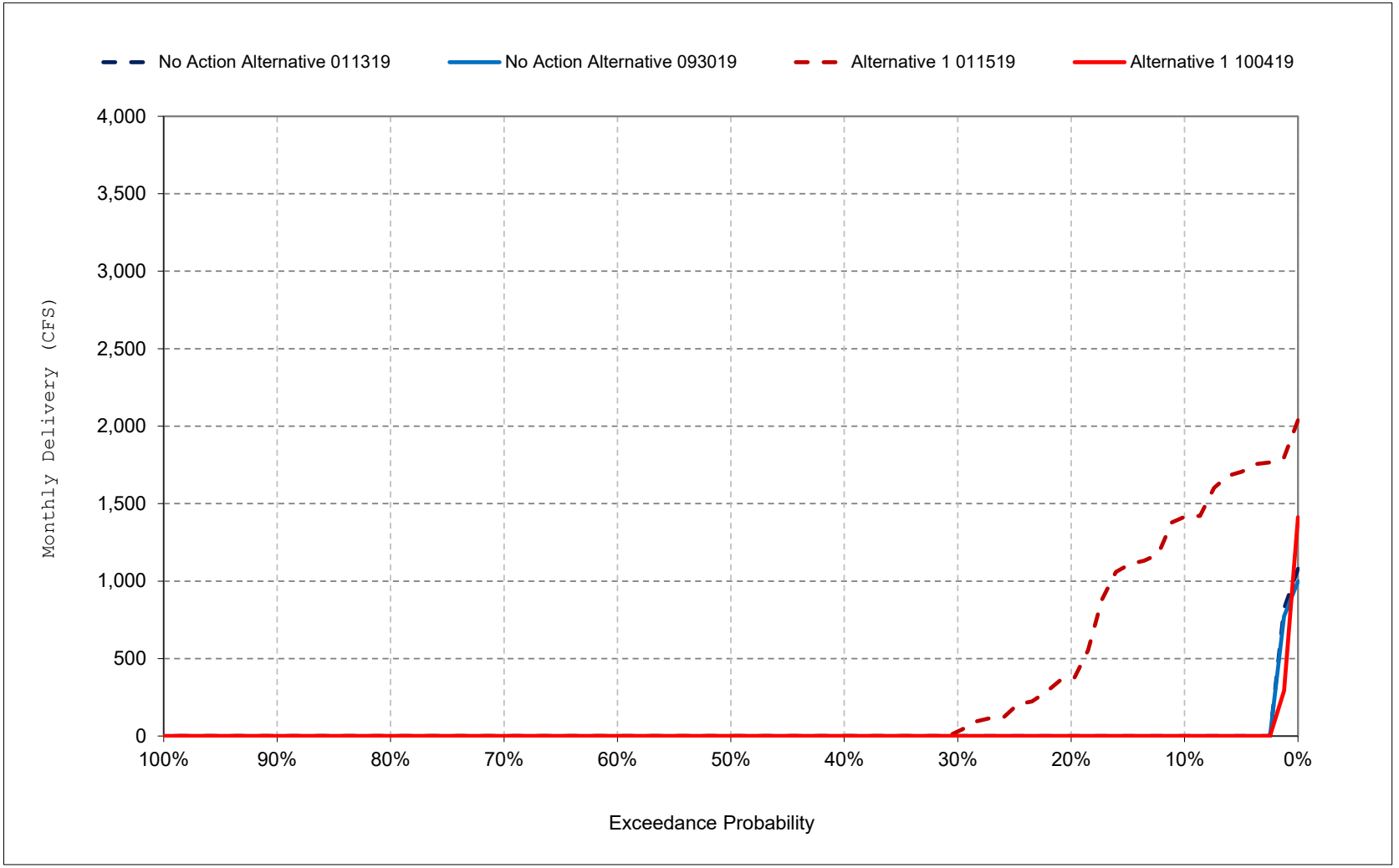



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

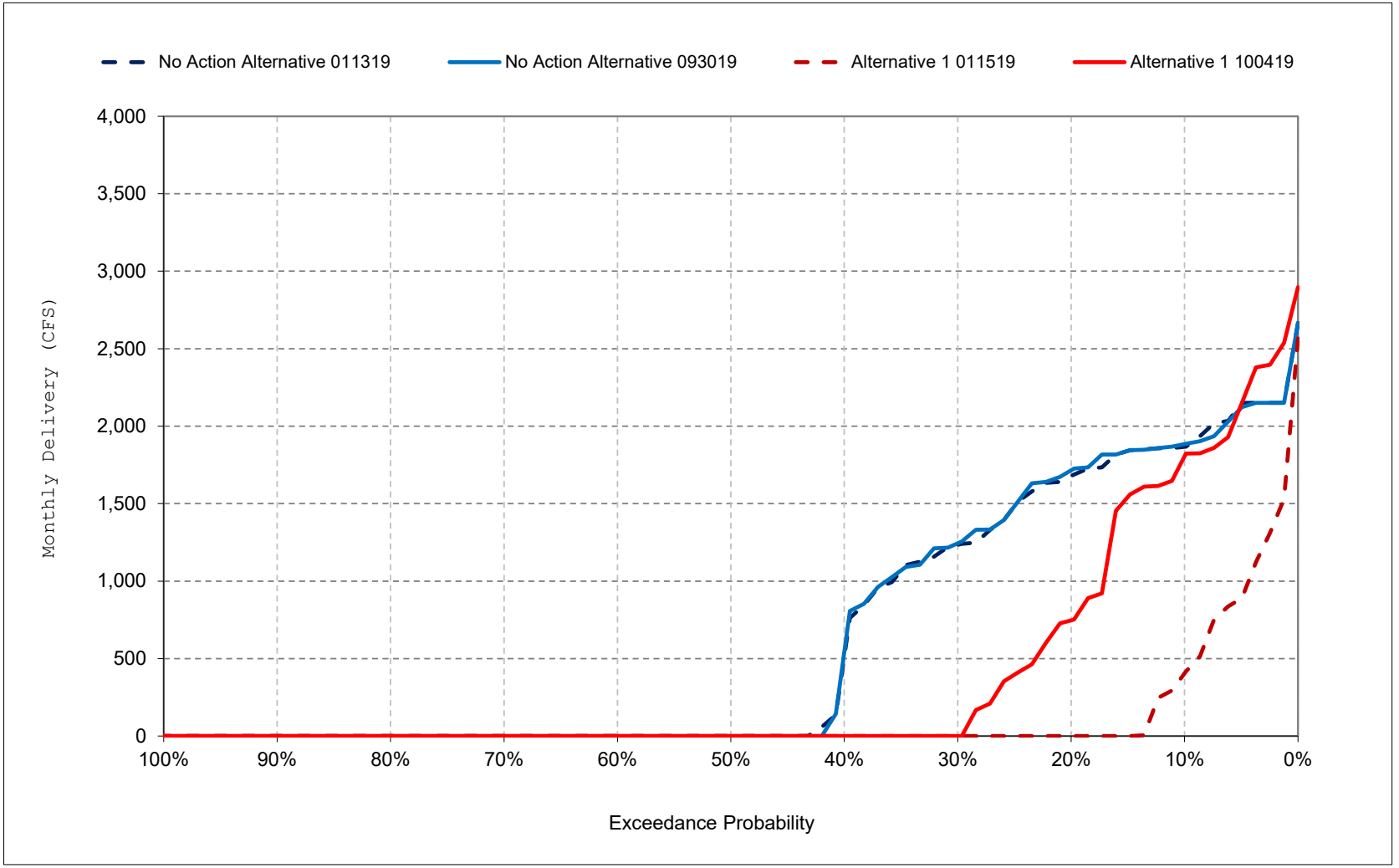
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-7. CVP Banks PP Exports, October**



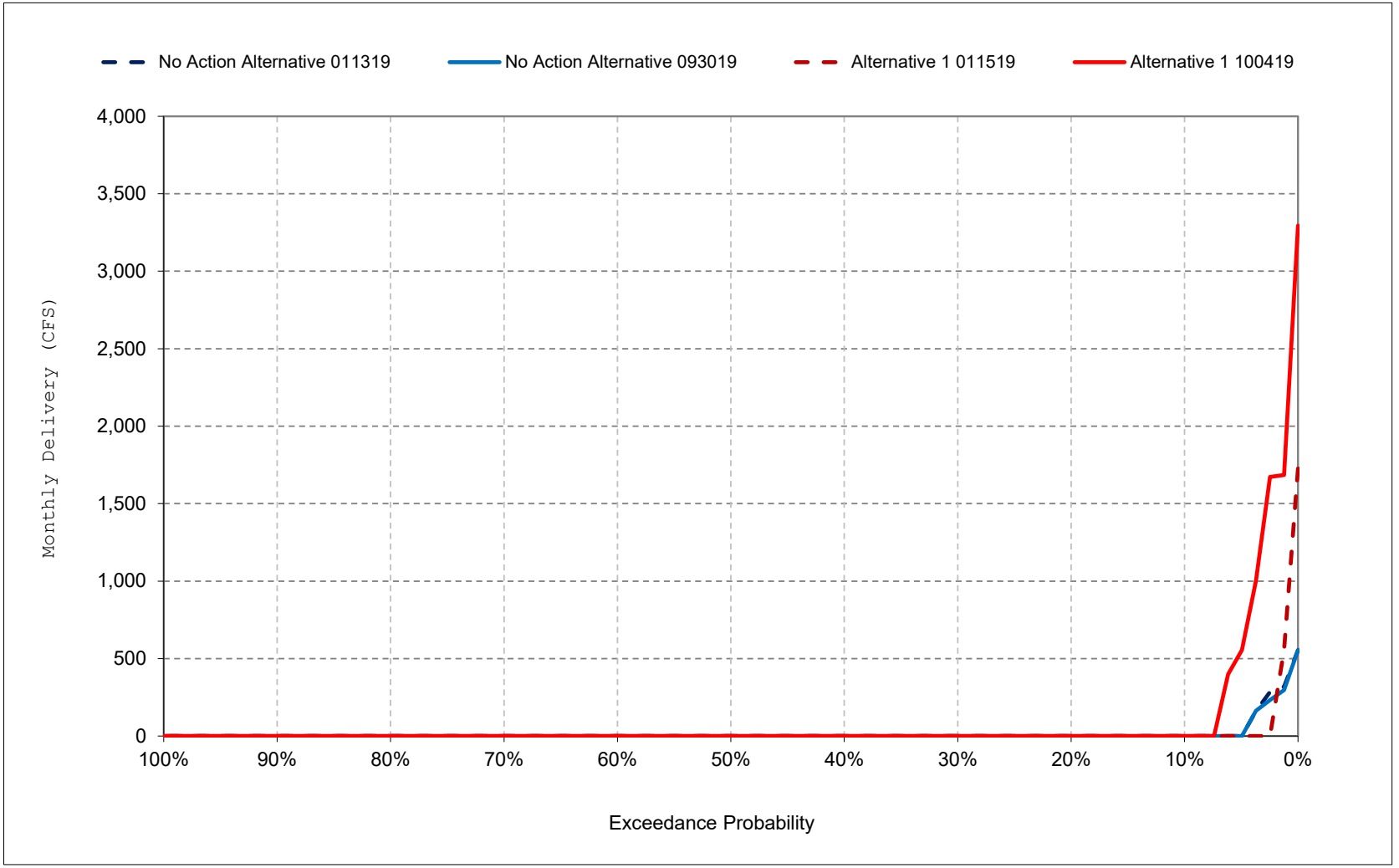

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-8. CVP Banks PP Exports, November**



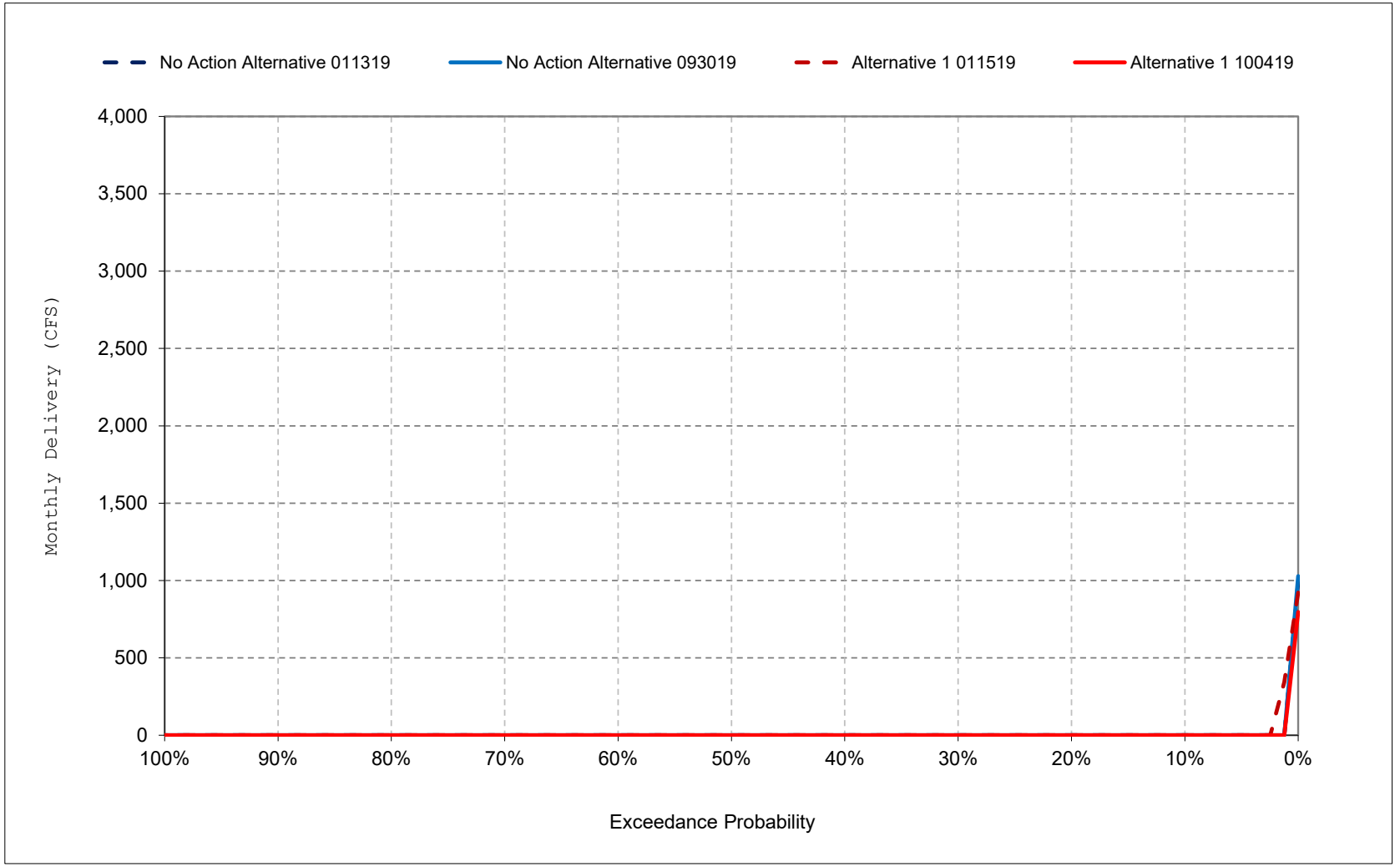

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-9. CVP Banks PP Exports, December**



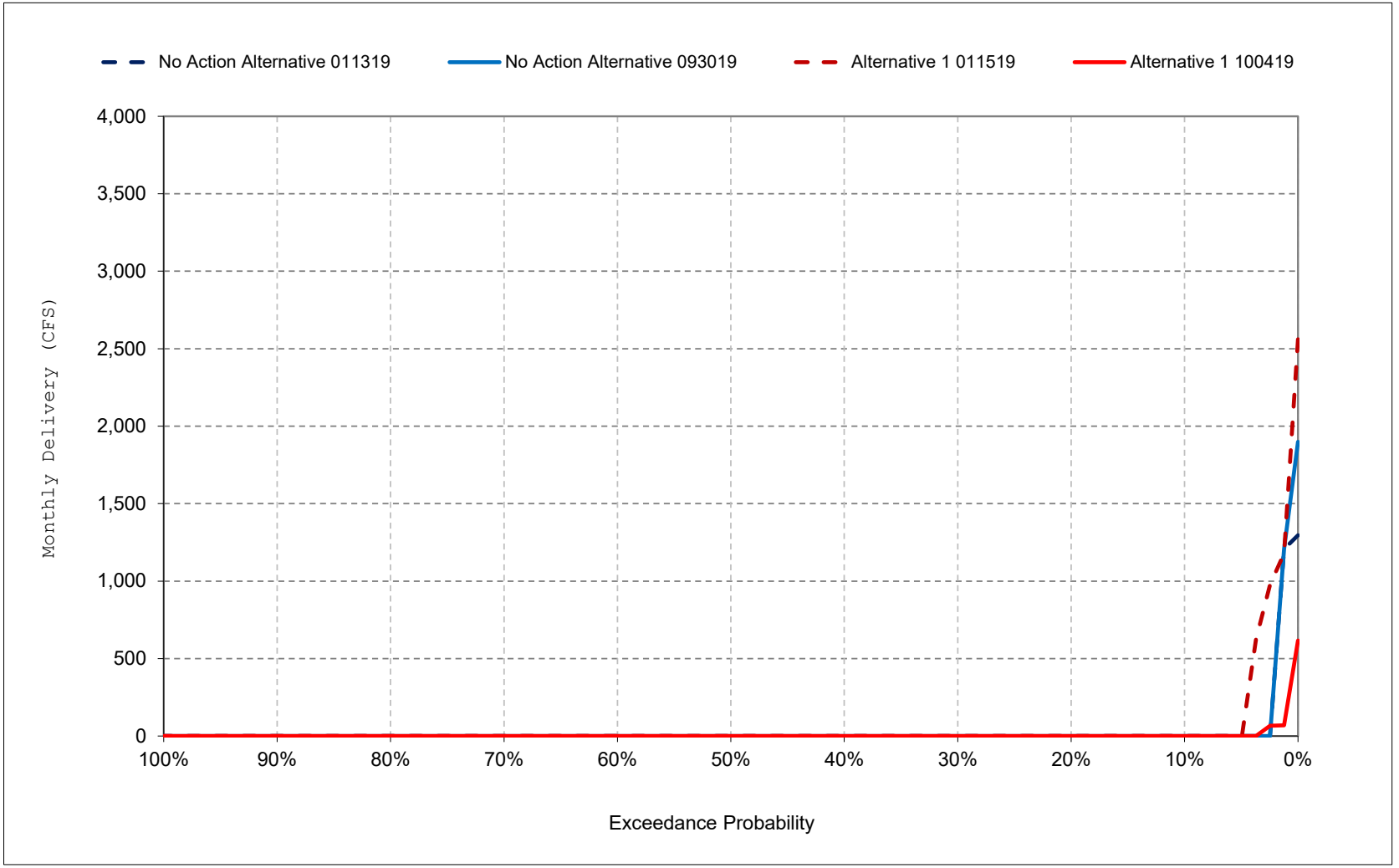

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-10. CVP Banks PP Exports, January**



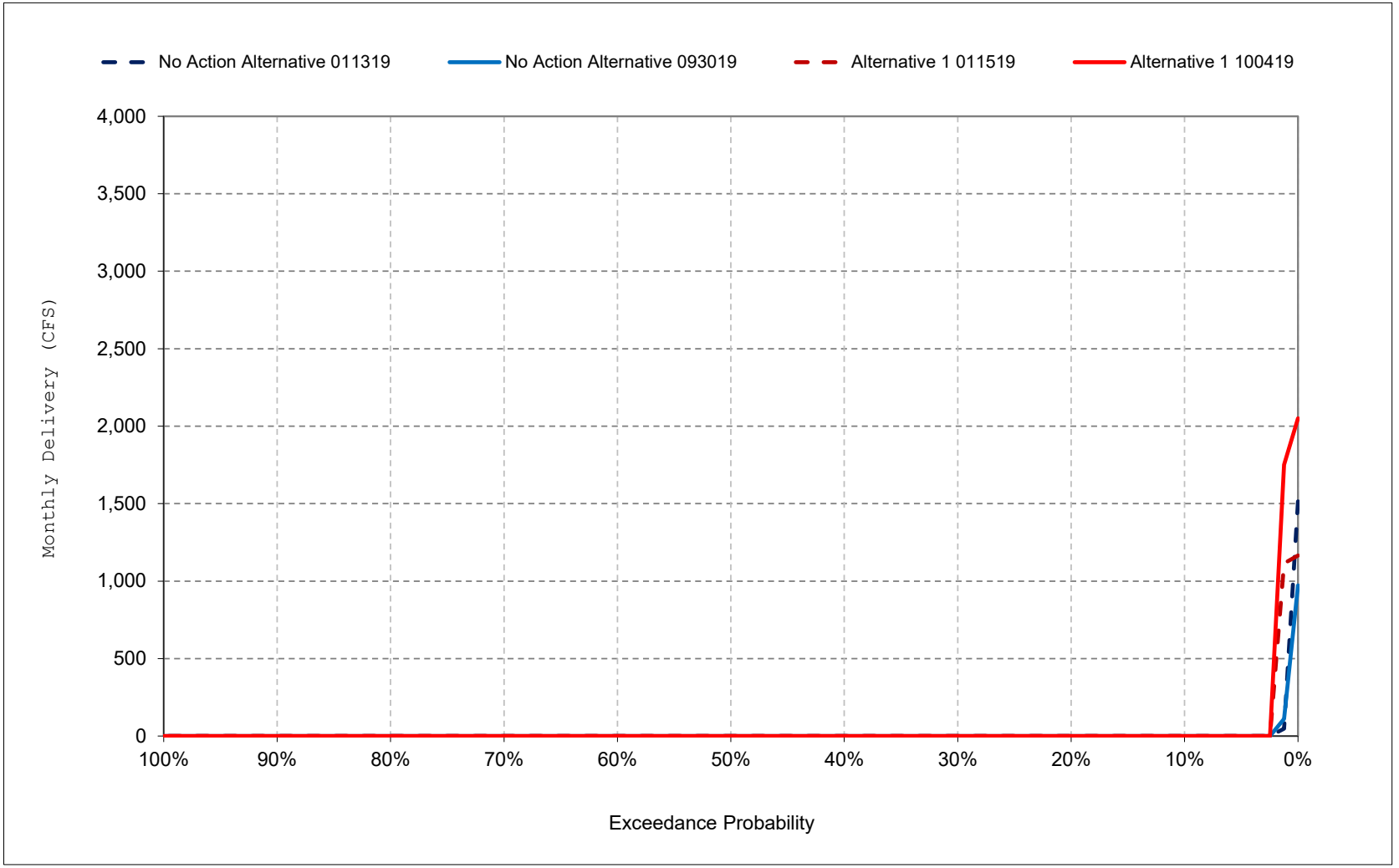

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-11. CVP Banks PP Exports, February**



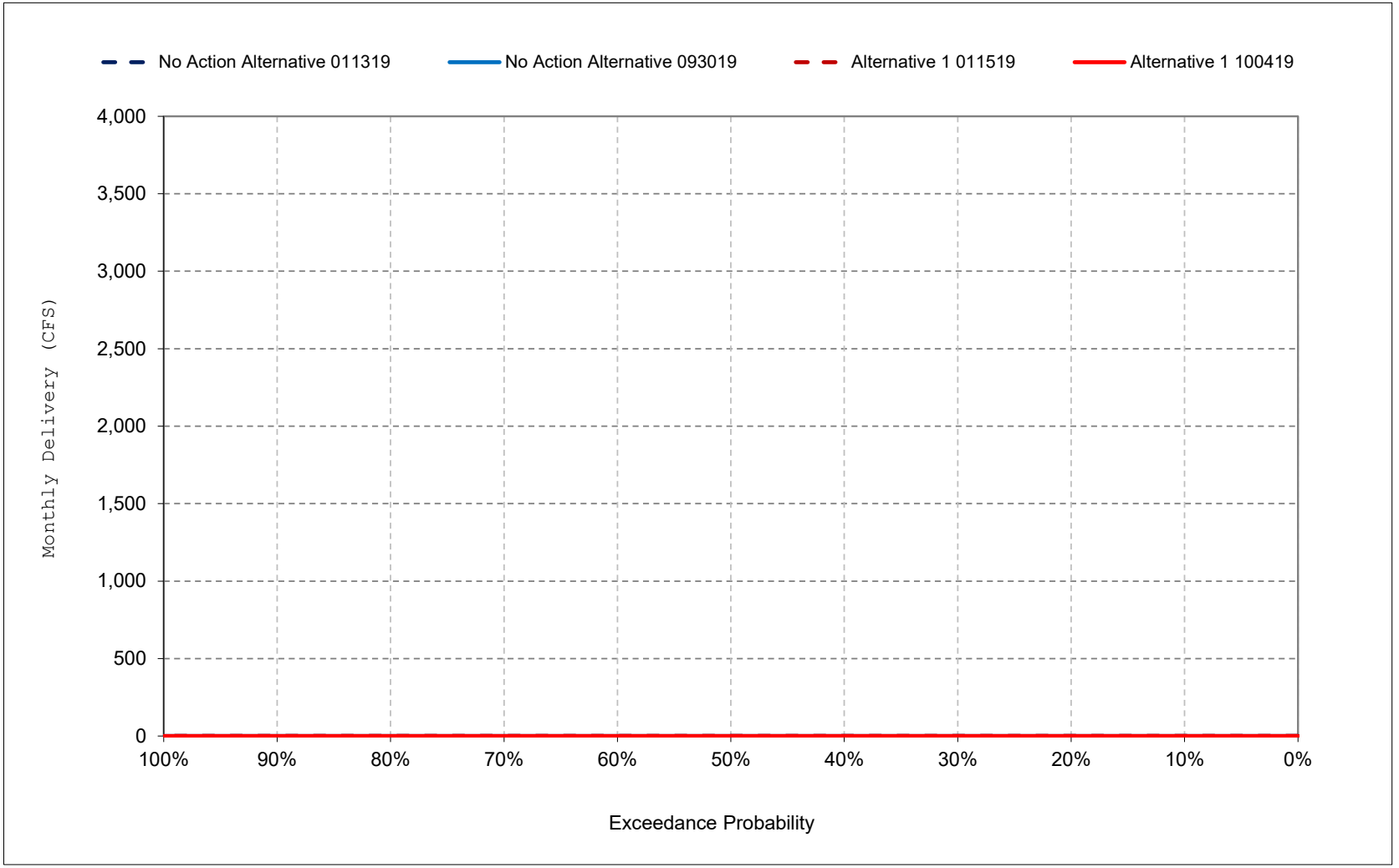

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-12. CVP Banks PP Exports, March**



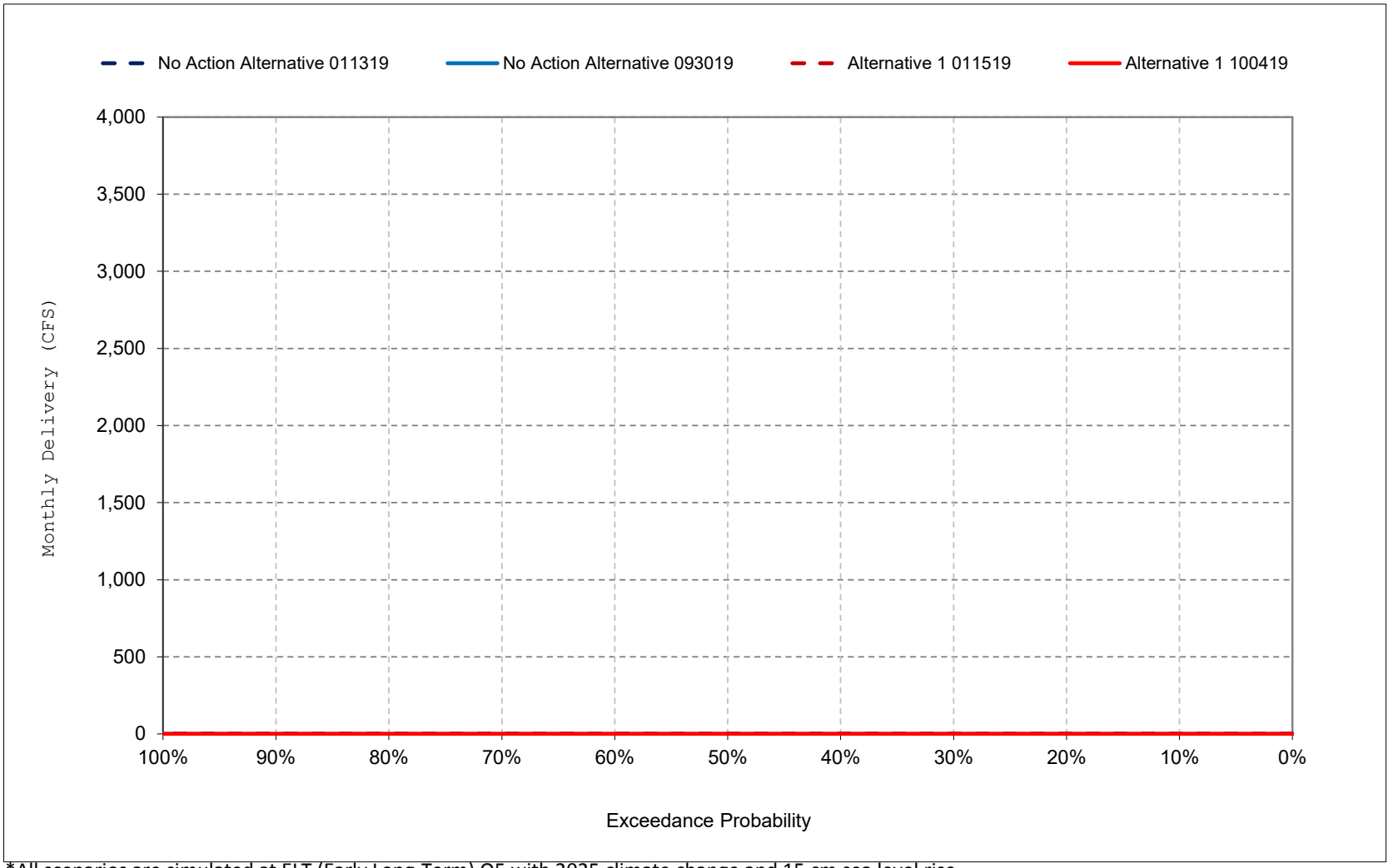

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-13. CVP Banks PP Exports, April**



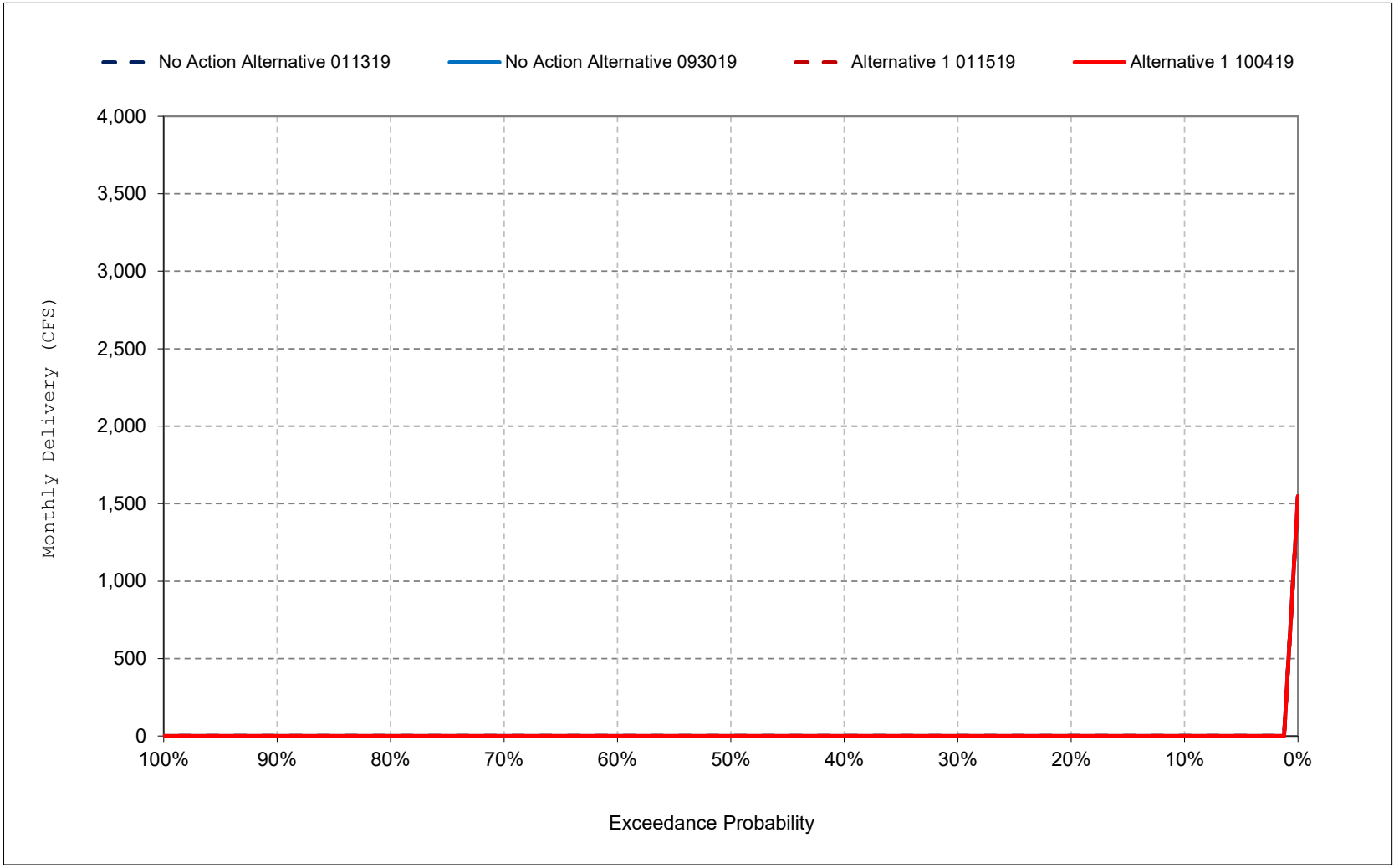

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-14. CVP Banks PP Exports, May**



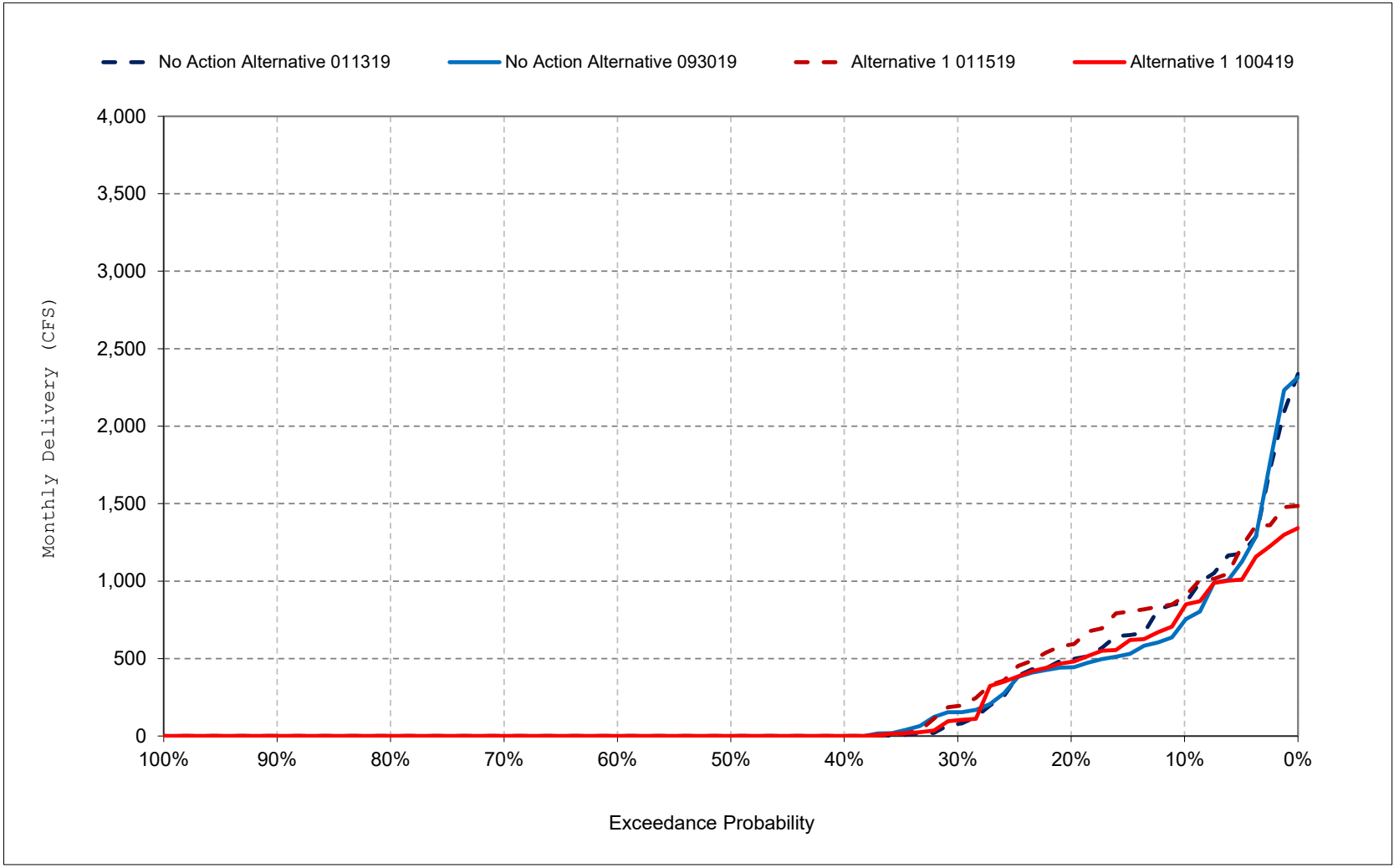

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-15. CVP Banks PP Exports, June**



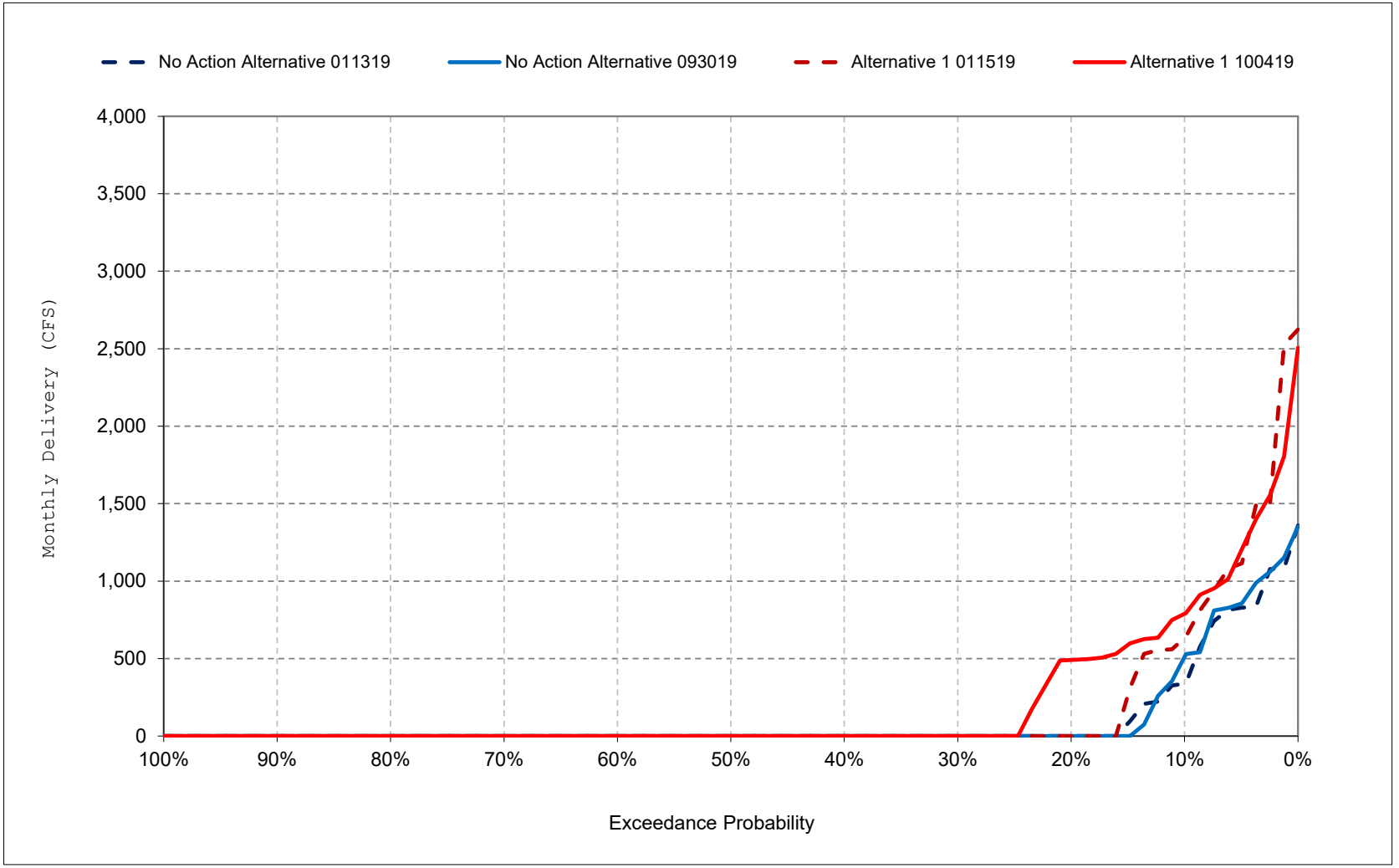

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-16. CVP Banks PP Exports, July**



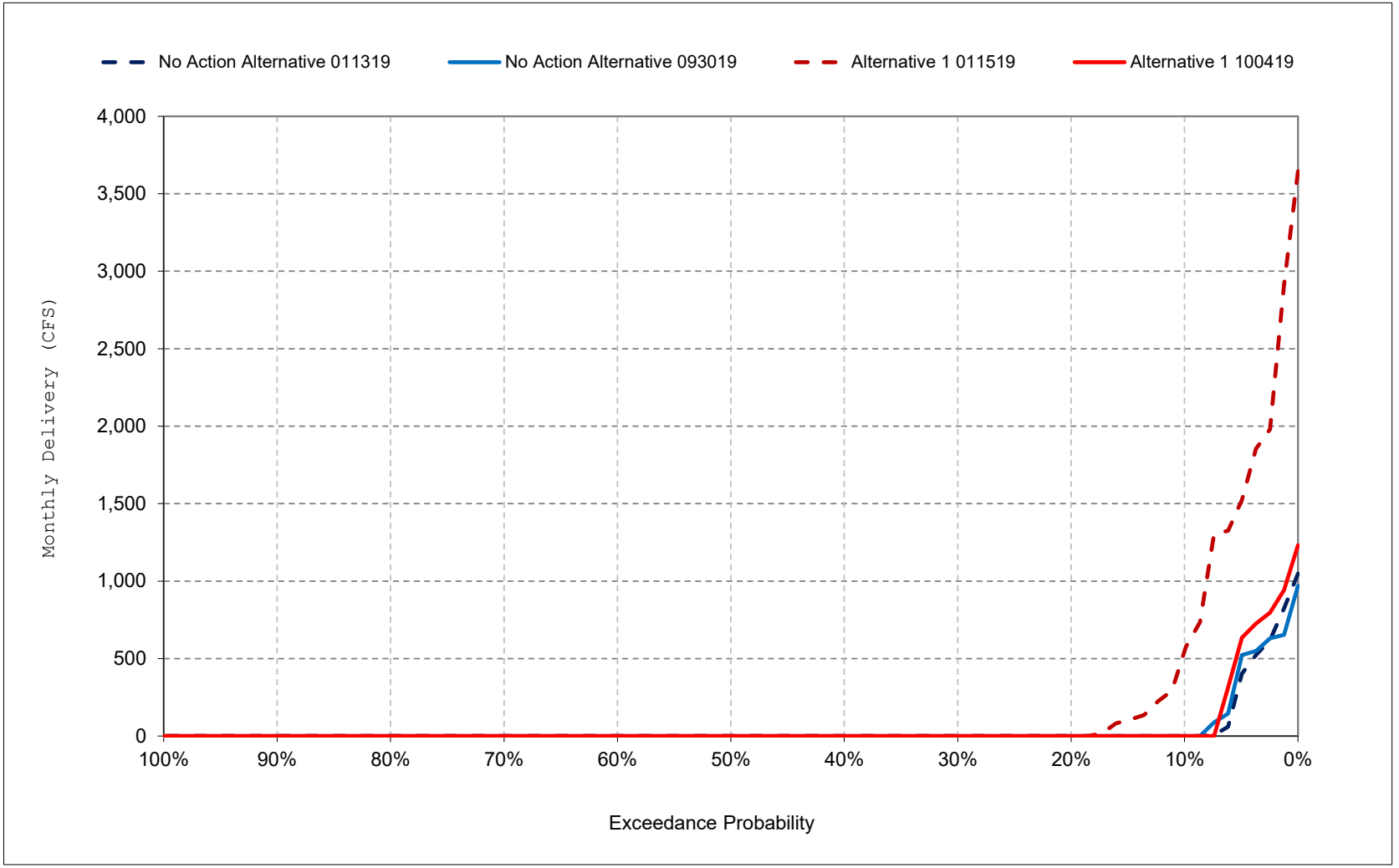

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-17. CVP Banks PP Exports, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 55-18. CVP Banks PP Exports, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 56-1. SWP Banks PP Exports, Monthly Delivery

## No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,251 | 6,680 | 7,119 | 5,838 | 8,359 | 7,950 | 1,788 | 1,574 | 4,948 | 6,680 | 6,680 | 6,680 |
| 20% | 3,339 | 5,505 | 7,058 | 3,400 | 5,746 | 6,286 | 1,282 | 979 | 2,584 | 6,680 | 6,680 | 6,680 |
| 30% | 3,094 | 4,470 | 6,264 | 2,952 | 3,845 | 5,473 | 1,070 | 846 | 2,040 | 6,680 | 6,680 | 6,680 |
| 40% | 2,981 | 3,491 | 4,875 | 2,736 | 3,116 | 3,638 | 975 | 658 | 1,867 | 6,663 | 6,680 | 6,680 |
| 50% | 2,692 | 2,809 | 4,108 | 2,658 | 2,858 | 2,921 | 893 | 600 | 1,540 | 6,230 | 6,649 | 5,542 |
| 60% | 2,568 | 2,220 | 3,622 | 2,630 | 2,605 | 2,652 | 853 | 600 | 1,212 | 5,426 | 2,650 | 3,251 |
| 70% | 2,262 | 1,808 | 3,279 | 2,492 | 2,206 | 2,137 | 767 | 600 | 1,132 | 4,218 | 324 | 2,639 |
| 80% | 1,916 | 1,247 | 3,029 | 2,251 | 1,824 | 1,709 | 715 | 600 | 300 | 1,114 | 300 | 2,415 |
| 90% | 1,166 | 741 | 2,572 | 1,899 | 1,214 | 1,273 | 600 | 525 | 164 | 300 | 300 | 1,743 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,777 | 3,265 | 4,687 | 3,283 | 3,645 | 3,825 | 1,142 | 953 | 1,902 | 4,693 | 4,041 | 4,596 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,089 | 2,484 | 5,912 | 4,468 | 5,498 | 6,234 | 1,555 | 1,576 | 3,437 | 6,243 | 6,678 | 6,552 |
| Above Normal (16%) | 3,448 | 3,376 | 5,166 | 2,983 | 3,876 | 4,105 | 877 | 673 | 1,777 | 6,142 | 6,679 | 6,652 |
| Below Normal (13%) | 3,440 | 4,138 | 4,269 | 2,561 | 2,905 | 2,933 | 1,002 | 632 | 1,259 | 6,064 | 4,840 | 4,329 |
| Dry (24%) | 2,381 | 4,350 | 3,809 | 2,652 | 2,501 | 2,465 | 1,155 | 804 | 1,388 | 3,561 | 703 | 2,798 |
| Critical (15%) | 1,429 | 2,229 | 3,357 | 2,751 | 1,968 | 1,388 | 641 | 451 | 159 | 396 | 300 | 1,373 |

## Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 6,584 | 6,680 | 7,100 | 6,278 | 6,961 | 7,421 | 4,391 | 4,555 | 4,483 | 6,680 | 6,680 | 6,680 |
| 20% | 5,423 | 6,680 | 7,047 | 4,158 | 6,164 | 5,777 | 4,030 | 3,475 | 3,147 | 6,680 | 6,680 | 6,680 |
| 30% | 4,757 | 5,784 | 5,191 | 3,138 | 4,364 | 5,232 | 3,884 | 2,739 | 2,587 | 6,680 | 6,680 | 6,680 |
| 40% | 4,266 | 5,336 | 4,278 | 2,922 | 3,402 | 4,259 | 3,392 | 2,291 | 2,176 | 6,680 | 6,680 | 6,680 |
| 50% | 3,128 | 4,740 | 3,663 | 2,834 | 2,970 | 3,113 | 2,916 | 2,099 | 1,885 | 6,668 | 6,660 | 4,984 |
| 60% | 2,788 | 4,122 | 3,348 | 2,754 | 2,772 | 2,746 | 2,249 | 1,665 | 1,730 | 6,053 | 3,359 | 3,212 |
| 70% | 2,387 | 3,551 | 2,979 | 2,673 | 2,625 | 2,650 | 1,931 | 1,354 | 1,673 | 3,934 | 381 | 2,613 |
| 80% | 2,043 | 2,794 | 2,824 | 2,536 | 2,484 | 2,523 | 1,503 | 1,166 | 1,587 | 307 | 300 | 2,446 |
| 90% | 1,198 | 1,927 | 2,684 | 2,401 | 2,361 | 1,738 | 993 | 923 | 300 | 300 | 300 | 1,627 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,633 | 4,518 | 4,396 | 3,560 | 4,012 | 3,982 | 2,826 | 2,303 | 2,318 | 4,724 | 4,107 | 4,506 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 5,146 | 5,404 | 5,618 | 4,764 | 5,693 | 5,777 | 4,167 | 3,704 | 3,472 | 6,383 | 6,443 | 6,323 |
| Above Normal (16%) | 4,283 | 5,118 | 4,513 | 3,570 | 3,917 | 3,913 | 2,967 | 2,263 | 2,009 | 6,514 | 6,679 | 6,652 |
| Below Normal (13%) | 3,471 | 4,546 | 3,834 | 2,988 | 3,499 | 3,393 | 2,563 | 1,825 | 1,941 | 6,570 | 5,657 | 4,107 |
| Dry (24%) | 2,602 | 4,311 | 3,668 | 2,760 | 2,988 | 3,212 | 2,115 | 1,679 | 2,218 | 3,041 | 828 | 2,882 |
| Critical (15%) | 1,518 | 2,266 | 3,353 | 2,796 | 2,647 | 1,991 | 1,192 | 786 | 665 | 300 | 300 | 1,314 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,333 | 0 | **-18** | 440 | **-1,398** | **-529** | 2,603 | 2,981 | **-465** | 0 | 0 | 0 |
| 20% | 2,085 | 1,175 | **-11** | 758 | 418 | **-509** | 2,749 | 2,496 | 563 | 0 | 0 | 0 |
| 30% | 1,662 | 1,314 | **-1,073** | 186 | 519 | **-241** | 2,815 | 1,893 | 547 | 0 | 0 | 0 |
| 40% | 1,285 | 1,845 | **-597** | 186 | 285 | 621 | 2,417 | 1,633 | 309 | 17 | 0 | 0 |
| 50% | 436 | 1,931 | **-446** | 176 | 112 | 193 | 2,023 | 1,499 | 345 | 437 | 11 | **-558** |
| 60% | 220 | 1,902 | **-274** | 125 | 167 | 94 | 1,396 | 1,065 | 518 | 627 | 709 | **-39** |
| 70% | 126 | 1,743 | **-300** | 181 | 419 | 512 | 1,164 | 754 | 541 | **-285** | 57 | **-25** |
| 80% | 127 | 1,547 | **-204** | 285 | 660 | 814 | 788 | 566 | 1,287 | **-807** | 0 | 31 |
| 90% | 32 | 1,186 | 112 | 502 | 1,147 | 465 | 393 | 398 | 136 | 0 | 0 | **-116** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 856 | 1,253 | **-290** | 277 | 366 | 157 | 1,684 | 1,349 | 416 | 30 | 66 | **-91** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 2,057 | 2,919 | **-294** | 296 | 195 | **-457** | 2,612 | 2,128 | 35 | 140 | **-234** | **-229** |
| Above Normal (16%) | 836 | 1,742 | **-653** | 586 | 41 | **-192** | 2,090 | 1,589 | 232 | 372 | **0** | **0** |
| Below Normal (13%) | 31 | 408 | **-435** | 427 | 594 | 460 | 1,561 | 1,193 | 681 | 505 | 818 | **-221** |
| Dry (24%) | 221 | **-38** | **-141** | 109 | 487 | 747 | 960 | 875 | 830 | **-520** | 125 | 83 |
| Critical (15%) | 89 | 37 | **-4** | 44 | 679 | 603 | 552 | 336 | 507 | **-96** | 0 | **-59** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 56-2. SWP Banks PP Exports, Monthly Delivery

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,199 | 6,680 | 7,112 | 5,812 | 8,363 | 7,459 | 1,812 | 1,574 | 4,948 | 6,680 | 6,680 | 6,680 |
| 20% | 3,284 | 5,514 | 7,058 | 3,400 | 5,869 | 6,297 | 1,408 | 995 | 2,583 | 6,680 | 6,680 | 6,680 |
| 30% | 3,054 | 4,446 | 5,870 | 2,838 | 3,846 | 5,461 | 1,136 | 851 | 2,062 | 6,680 | 6,680 | 6,680 |
| 40% | 2,940 | 3,409 | 4,618 | 2,735 | 3,116 | 3,608 | 969 | 654 | 1,903 | 6,662 | 6,680 | 6,680 |
| 50% | 2,647 | 2,779 | 3,875 | 2,658 | 2,775 | 2,921 | 891 | 600 | 1,532 | 6,134 | 6,654 | 5,725 |
| 60% | 2,543 | 2,199 | 3,539 | 2,629 | 2,605 | 2,652 | 847 | 600 | 1,226 | 5,396 | 2,200 | 3,241 |
| 70% | 2,240 | 1,771 | 3,269 | 2,446 | 2,202 | 2,137 | 764 | 600 | 1,140 | 4,005 | 310 | 2,638 |
| 80% | 1,847 | 1,279 | 2,962 | 2,270 | 1,792 | 1,675 | 715 | 600 | 600 | 326 | 300 | 2,396 |
| 90% | 1,152 | 701 | 2,337 | 1,899 | 1,215 | 1,056 | 600 | 525 | 300 | 300 | 300 | 1,620 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,734 | 3,230 | 4,548 | 3,225 | 3,673 | 3,789 | 1,171 | 989 | 1,984 | 4,607 | 3,994 | 4,565 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,067 | 2,466 | 5,898 | 4,474 | 5,500 | 6,207 | 1,611 | 1,684 | 3,437 | 6,287 | 6,678 | 6,558 |
| Above Normal (16%) | 3,288 | 3,306 | 5,138 | 2,975 | 3,975 | 4,046 | 877 | 673 | 1,777 | 6,239 | 6,679 | 6,554 |
| Below Normal (13%) | 3,424 | 4,083 | 4,140 | 2,562 | 2,906 | 2,896 | 1,032 | 632 | 1,345 | 6,059 | 4,595 | 4,203 |
| Dry (24%) | 2,344 | 4,306 | 3,754 | 2,593 | 2,481 | 2,449 | 1,153 | 800 | 1,466 | 3,147 | 644 | 2,813 |
| Critical (15%) | 1,434 | 2,230 | 2,684 | 2,452 | 2,075 | 1,321 | 694 | 466 | 510 | 300 | 300 | 1,343 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,512 | 6,680 | 7,123 | 6,280 | 8,970 | 5,985 | 6,339 | 6,148 | 4,393 | 6,680 | 6,680 | 4,839 |
| 20% | 3,437 | 6,680 | 7,054 | 4,153 | 5,851 | 4,529 | 4,802 | 3,431 | 3,064 | 6,680 | 6,680 | 2,845 |
| 30% | 3,176 | 6,254 | 5,441 | 3,096 | 4,098 | 3,928 | 4,300 | 2,727 | 2,633 | 6,680 | 6,680 | 2,578 |
| 40% | 2,808 | 5,101 | 4,459 | 2,898 | 3,320 | 3,125 | 3,378 | 2,230 | 2,234 | 6,674 | 6,680 | 2,389 |
| 50% | 2,682 | 4,854 | 3,899 | 2,831 | 2,917 | 2,381 | 2,904 | 2,114 | 2,118 | 6,441 | 6,088 | 2,020 |
| 60% | 2,472 | 3,795 | 3,306 | 2,728 | 2,703 | 2,175 | 2,510 | 1,672 | 2,002 | 5,514 | 2,589 | 1,622 |
| 70% | 2,188 | 3,432 | 2,929 | 2,625 | 2,627 | 2,044 | 2,020 | 1,422 | 1,845 | 4,337 | 436 | 1,304 |
| 80% | 1,904 | 2,786 | 2,720 | 2,386 | 2,489 | 1,912 | 1,522 | 1,185 | 1,710 | 701 | 300 | 800 |
| 90% | 1,186 | 1,868 | 2,593 | 2,127 | 2,316 | 1,725 | 973 | 868 | 300 | 300 | 300 | 421 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,783 | 4,537 | 4,423 | 3,423 | 4,035 | 3,287 | 3,204 | 2,485 | 2,430 | 4,750 | 4,025 | 2,263 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,213 | 5,658 | 5,735 | 4,671 | 5,926 | 5,099 | 4,802 | 4,024 | 3,572 | 6,184 | 6,487 | 1,812 |
| Above Normal (16%) | 2,565 | 5,065 | 5,319 | 3,359 | 3,748 | 3,119 | 3,398 | 2,496 | 2,075 | 6,100 | 6,371 | 1,547 |
| Below Normal (13%) | 3,581 | 4,471 | 3,684 | 3,021 | 3,538 | 2,459 | 3,059 | 1,904 | 2,057 | 6,255 | 5,539 | 4,126 |
| Dry (24%) | 2,597 | 4,224 | 3,589 | 2,634 | 2,938 | 2,357 | 2,190 | 1,836 | 2,441 | 3,849 | 702 | 2,859 |
| Critical (15%) | 1,663 | 2,116 | 2,678 | 2,473 | 2,534 | 1,850 | 1,352 | 754 | 666 | 304 | 300 | 1,312 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 313 | 0 | 11 | 468 | 607 | **-1,474** | 4,527 | 4,575 | **-555** | 0 | 0 | **-1,841** |
| 20% | 153 | 1,166 | **-3** | 753 | **-18** | **-1,768** | 3,394 | 2,436 | 481 | 0 | 0 | **-3,835** |
| 30% | 122 | 1,808 | **-428** | 259 | 252 | **-1,533** | 3,165 | 1,876 | 571 | 0 | 0 | **-4,102** |
| 40% | **-132** | 1,692 | **-160** | 163 | 204 | **-483** | 2,409 | 1,576 | 332 | 12 | 0 | **-4,291** |
| 50% | 36 | 2,075 | 23 | 173 | 142 | **-539** | 2,012 | 1,514 | 585 | 307 | **-566** | **-3,705** |
| 60% | **-71** | 1,597 | **-233** | 99 | 98 | **-478** | 1,663 | 1,072 | 775 | 118 | 389 | **-1,619** |
| 70% | **-52** | 1,661 | **-340** | 179 | 426 | **-93** | 1,256 | 822 | 705 | 332 | 127 | **-1,334** |
| 80% | 57 | 1,507 | **-243** | 116 | 697 | 237 | 807 | 585 | 1,110 | 375 | 0 | **-1,596** |
| 90% | 34 | 1,167 | 256 | 228 | 1,101 | 670 | 373 | 343 | 0 | 0 | 0 | **-1,198** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 48 | 1,306 | **-125** | 198 | 363 | **-502** | 2,032 | 1,496 | 446 | 144 | 32 | **-2,302** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 147 | 3,192 | **-163** | 196 | 426 | **-1,108** | 3,191 | 2,341 | 135 | **-103** | **-191** | **-4,746** |
| Above Normal (16%) | **-722** | 1,759 | 181 | 384 | **-227** | **-927** | 2,520 | 1,823 | 299 | **-139** | **-307** | **-5,007** |
| Below Normal (13%) | 157 | 388 | **-456** | 459 | 633 | **-438** | 2,027 | 1,272 | 712 | 196 | 944 | **-77** |
| Dry (24%) | 253 | **-82** | **-165** | 41 | 458 | **-92** | 1,036 | 1,035 | 976 | 702 | 59 | 46 |
| Critical (15%) | 229 | **-113** | **-6** | 21 | 459 | 529 | 658 | 288 | 156 | 4 | 0 | **-31** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 56-3. SWP Banks PP Exports, Monthly Delivery

### No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,251 | 6,680 | 7,119 | 5,838 | 8,359 | 7,950 | 1,788 | 1,574 | 4,948 | 6,680 | 6,680 | 6,680 |
| 20% | 3,339 | 5,505 | 7,058 | 3,400 | 5,746 | 6,286 | 1,282 | 979 | 2,584 | 6,680 | 6,680 | 6,680 |
| 30% | 3,094 | 4,470 | 6,264 | 2,952 | 3,845 | 5,473 | 1,070 | 846 | 2,040 | 6,680 | 6,680 | 6,680 |
| 40% | 2,981 | 3,491 | 4,875 | 2,736 | 3,116 | 3,638 | 975 | 658 | 1,867 | 6,663 | 6,680 | 6,680 |
| 50% | 2,692 | 2,809 | 4,108 | 2,658 | 2,858 | 2,921 | 893 | 600 | 1,540 | 6,230 | 6,649 | 5,542 |
| 60% | 2,568 | 2,220 | 3,622 | 2,630 | 2,605 | 2,652 | 853 | 600 | 1,212 | 5,426 | 2,650 | 3,251 |
| 70% | 2,262 | 1,808 | 3,279 | 2,492 | 2,206 | 2,137 | 767 | 600 | 1,132 | 4,218 | 324 | 2,639 |
| 80% | 1,916 | 1,247 | 3,029 | 2,251 | 1,824 | 1,709 | 715 | 600 | 300 | 1,114 | 300 | 2,415 |
| 90% | 1,166 | 741 | 2,572 | 1,899 | 1,214 | 1,273 | 600 | 525 | 164 | 300 | 300 | 1,743 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,777 | 3,265 | 4,687 | 3,283 | 3,645 | 3,825 | 1,142 | 953 | 1,902 | 4,693 | 4,041 | 4,596 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,089 | 2,484 | 5,912 | 4,468 | 5,498 | 6,234 | 1,555 | 1,576 | 3,437 | 6,243 | 6,678 | 6,552 |
| Above Normal (16%) | 3,448 | 3,376 | 5,166 | 2,983 | 3,876 | 4,105 | 877 | 673 | 1,777 | 6,142 | 6,679 | 6,652 |
| Below Normal (13%) | 3,440 | 4,138 | 4,269 | 2,561 | 2,905 | 2,933 | 1,002 | 632 | 1,259 | 6,064 | 4,840 | 4,329 |
| Dry (24%) | 2,381 | 4,350 | 3,809 | 2,652 | 2,501 | 2,465 | 1,155 | 804 | 1,388 | 3,561 | 703 | 2,798 |
| Critical (15%) | 1,429 | 2,229 | 3,357 | 2,751 | 1,968 | 1,388 | 641 | 451 | 159 | 396 | 300 | 1,373 |

### No Action Alternative 093019

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,199 | 6,680 | 7,112 | 5,812 | 8,363 | 7,459 | 1,812 | 1,574 | 4,948 | 6,680 | 6,680 | 6,680 |
| 20% | 3,284 | 5,514 | 7,058 | 3,400 | 5,869 | 6,297 | 1,408 | 995 | 2,583 | 6,680 | 6,680 | 6,680 |
| 30% | 3,054 | 4,446 | 5,870 | 2,838 | 3,846 | 5,461 | 1,136 | 851 | 2,062 | 6,680 | 6,680 | 6,680 |
| 40% | 2,940 | 3,409 | 4,618 | 2,735 | 3,116 | 3,608 | 969 | 654 | 1,903 | 6,662 | 6,680 | 6,680 |
| 50% | 2,647 | 2,779 | 3,875 | 2,658 | 2,775 | 2,921 | 891 | 600 | 1,532 | 6,134 | 6,654 | 5,725 |
| 60% | 2,543 | 2,199 | 3,539 | 2,629 | 2,605 | 2,652 | 847 | 600 | 1,226 | 5,396 | 2,200 | 3,241 |
| 70% | 2,240 | 1,771 | 3,269 | 2,446 | 2,202 | 2,137 | 764 | 600 | 1,140 | 4,005 | 310 | 2,638 |
| 80% | 1,847 | 1,279 | 2,962 | 2,270 | 1,792 | 1,675 | 715 | 600 | 600 | 326 | 300 | 2,396 |
| 90% | 1,152 | 701 | 2,337 | 1,899 | 1,215 | 1,056 | 600 | 525 | 300 | 300 | 300 | 1,620 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,734 | 3,230 | 4,548 | 3,225 | 3,673 | 3,789 | 1,171 | 989 | 1,984 | 4,607 | 3,994 | 4,565 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,067 | 2,466 | 5,898 | 4,474 | 5,500 | 6,207 | 1,611 | 1,684 | 3,437 | 6,287 | 6,678 | 6,558 |
| Above Normal (16%) | 3,288 | 3,306 | 5,138 | 2,975 | 3,975 | 4,046 | 877 | 673 | 1,777 | 6,239 | 6,679 | 6,554 |
| Below Normal (13%) | 3,424 | 4,083 | 4,140 | 2,562 | 2,906 | 2,896 | 1,032 | 632 | 1,345 | 6,059 | 4,595 | 4,203 |
| Dry (24%) | 2,344 | 4,306 | 3,754 | 2,593 | 2,481 | 2,449 | 1,153 | 800 | 1,466 | 3,147 | 644 | 2,813 |
| Critical (15%) | 1,434 | 2,230 | 2,684 | 2,452 | 2,075 | 1,321 | 694 | 466 | 510 | 300 | 300 | 1,343 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -52 | 0 | -7 | -25 | 4 | -491 | 23 | 0 | 0 | 0 | 0 | 0 |
| 20% | -54 | 9 | 0 | 0 | 123 | 11 | 126 | 16 | 0 | 0 | 0 | 0 |
| 30% | -40 | -24 | -395 | -114 | 1 | -12 | 66 | 5 | 22 | 0 | 0 | 0 |
| 40% | -41 | -82 | -257 | -1 | 0 | -30 | -6 | -4 | 36 | -1 | 0 | 0 |
| 50% | -45 | -30 | -233 | 0 | -83 | 0 | -2 | 0 | -8 | -97 | 5 | 183 |
| 60% | -25 | -21 | -83 | -1 | 0 | 0 | -6 | 0 | 14 | -30 | -450 | -10 |
| 70% | -22 | -37 | -10 | -46 | -4 | 0 | -3 | 0 | 8 | -213 | -15 | -1 |
| 80% | -69 | 31 | -66 | 19 | -32 | -33 | 0 | 0 | 300 | -788 | 0 | -19 |
| 90% | -14 | -40 | -235 | 0 | 1 | -217 | 0 | 0 | 136 | 0 | 0 | -124 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -43 | -35 | -138 | -57 | 27 | -36 | 29 | 35 | 82 | -87 | -47 | -31 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -22 | -18 | -13 | 7 | 2 | -26 | 56 | 108 | 0 | 44 | 0 | 5 |
| Above Normal (16%) | -160 | -70 | -28 | -9 | 99 | -59 | 0 | 0 | -1 | 97 | 0 | -98 |
| Below Normal (13%) | -16 | -55 | -129 | 1 | 1 | -37 | 30 | 0 | 85 | -5 | -245 | -126 |
| Dry (24%) | -37 | -44 | -55 | -59 | -20 | -15 | -1 | -4 | 77 | -414 | -59 | 15 |
| Critical (15%) | 5 | 1 | -673 | -300 | 108 | -67 | 53 | 15 | 351 | -96 | 0 | -30 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 56-4. SWP Banks PP Exports, Monthly Delivery

### Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 6,584 | 6,680 | 7,100 | 6,278 | 6,961 | 7,421 | 4,391 | 4,555 | 4,483 | 6,680 | 6,680 | 6,680 |
| 20% | 5,423 | 6,680 | 7,047 | 4,158 | 6,164 | 5,777 | 4,030 | 3,475 | 3,147 | 6,680 | 6,680 | 6,680 |
| 30% | 4,757 | 5,784 | 5,191 | 3,138 | 4,364 | 5,232 | 3,884 | 2,739 | 2,587 | 6,680 | 6,680 | 6,680 |
| 40% | 4,266 | 5,336 | 4,278 | 2,922 | 3,402 | 4,259 | 3,392 | 2,291 | 2,176 | 6,680 | 6,680 | 6,680 |
| 50% | 3,128 | 4,740 | 3,663 | 2,834 | 2,970 | 3,113 | 2,916 | 2,099 | 1,885 | 6,668 | 6,660 | 4,984 |
| 60% | 2,788 | 4,122 | 3,348 | 2,754 | 2,772 | 2,746 | 2,249 | 1,665 | 1,730 | 6,053 | 3,359 | 3,212 |
| 70% | 2,387 | 3,551 | 2,979 | 2,673 | 2,625 | 2,650 | 1,931 | 1,354 | 1,673 | 3,934 | 381 | 2,613 |
| 80% | 2,043 | 2,794 | 2,824 | 2,536 | 2,484 | 2,523 | 1,503 | 1,166 | 1,587 | 307 | 300 | 2,446 |
| 90% | 1,198 | 1,927 | 2,684 | 2,401 | 2,361 | 1,738 | 993 | 923 | 300 | 300 | 300 | 1,627 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3,633 | 4,518 | 4,396 | 3,560 | 4,012 | 3,982 | 2,826 | 2,303 | 2,318 | 4,724 | 4,107 | 4,506 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 5,146 | 5,404 | 5,618 | 4,764 | 5,693 | 5,777 | 4,167 | 3,704 | 3,472 | 6,383 | 6,443 | 6,323 |
| Above Normal (16%) | 4,283 | 5,118 | 4,513 | 3,570 | 3,917 | 3,913 | 2,967 | 2,263 | 2,009 | 6,514 | 6,679 | 6,652 |
| Below Normal (13%) | 3,471 | 4,546 | 3,834 | 2,988 | 3,499 | 3,393 | 2,563 | 1,825 | 1,941 | 6,570 | 5,657 | 4,107 |
| Dry (24%) | 2,602 | 4,311 | 3,668 | 2,760 | 2,988 | 3,212 | 2,115 | 1,679 | 2,218 | 3,041 | 828 | 2,882 |
| Critical (15%) | 1,518 | 2,266 | 3,353 | 2,796 | 2,647 | 1,991 | 1,192 | 786 | 665 | 300 | 300 | 1,314 |

### Alternative 1 100419

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4,512 | 6,680 | 7,123 | 6,280 | 8,970 | 5,985 | 6,339 | 6,148 | 4,393 | 6,680 | 6,680 | 4,839 |
| 20% | 3,437 | 6,680 | 7,054 | 4,153 | 5,851 | 4,529 | 4,802 | 3,431 | 3,064 | 6,680 | 6,680 | 2,845 |
| 30% | 3,176 | 6,254 | 5,441 | 3,096 | 4,098 | 3,928 | 4,300 | 2,727 | 2,633 | 6,680 | 6,680 | 2,578 |
| 40% | 2,808 | 5,101 | 4,459 | 2,898 | 3,320 | 3,125 | 3,378 | 2,230 | 2,234 | 6,674 | 6,680 | 2,389 |
| 50% | 2,682 | 4,854 | 3,899 | 2,831 | 2,917 | 2,381 | 2,904 | 2,114 | 2,118 | 6,441 | 6,088 | 2,020 |
| 60% | 2,472 | 3,795 | 3,306 | 2,728 | 2,703 | 2,175 | 2,510 | 1,672 | 2,002 | 5,514 | 2,589 | 1,622 |
| 70% | 2,188 | 3,432 | 2,929 | 2,625 | 2,627 | 2,044 | 2,020 | 1,422 | 1,845 | 4,337 | 436 | 1,304 |
| 80% | 1,904 | 2,786 | 2,720 | 2,386 | 2,489 | 1,912 | 1,522 | 1,185 | 1,710 | 701 | 300 | 800 |
| 90% | 1,186 | 1,868 | 2,593 | 2,127 | 2,316 | 1,725 | 973 | 868 | 300 | 300 | 300 | 421 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,783 | 4,537 | 4,423 | 3,423 | 4,035 | 3,287 | 3,204 | 2,485 | 2,430 | 4,750 | 4,025 | 2,263 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3,213 | 5,658 | 5,735 | 4,671 | 5,926 | 5,099 | 4,802 | 4,024 | 3,572 | 6,184 | 6,487 | 1,812 |
| Above Normal (16%) | 2,565 | 5,065 | 5,319 | 3,359 | 3,748 | 3,119 | 3,398 | 2,496 | 2,075 | 6,100 | 6,371 | 1,547 |
| Below Normal (13%) | 3,581 | 4,471 | 3,684 | 3,021 | 3,538 | 2,459 | 3,059 | 1,904 | 2,057 | 6,255 | 5,539 | 4,126 |
| Dry (24%) | 2,597 | 4,224 | 3,589 | 2,634 | 2,938 | 2,357 | 2,190 | 1,836 | 2,441 | 3,849 | 702 | 2,859 |
| Critical (15%) | 1,663 | 2,116 | 2,678 | 2,473 | 2,534 | 1,850 | 1,352 | 754 | 666 | 304 | 300 | 1,312 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Delivery (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-2,072** | 0 | 23 | 2 | 2,009 | **-1,436** | 1,948 | 1,593 | **-91** | 0 | 0 | **-1,841** |
| 20% | **-1,986** | 0 | 7 | **-5** | **-313** | **-1,248** | 772 | **-44** | **-82** | 0 | 0 | **-3,835** |
| 30% | **-1,581** | 470 | 250 | **-42** | **-266** | **-1,304** | 416 | **-12** | 46 | 0 | 0 | **-4,102** |
| 40% | **-1,458** | **-235** | 180 | **-24** | **-81** | **-1,134** | **-14** | **-61** | 58 | **-6** | 0 | **-4,291** |
| 50% | **-445** | 114 | 236 | **-3** | **-53** | **-732** | **-12** | 15 | 232 | **-227** | **-572** | **-2,963** |
| 60% | **-315** | **-326** | **-42** | **-26** | **-69** | **-571** | 260 | 7 | 271 | **-539** | **-770** | **-1,590** |
| 70% | **-200** | **-119** | **-50** | **-48** | 2 | **-605** | 90 | 68 | 172 | 404 | 55 | **-1,309** |
| 80% | **-138** | **-8** | **-105** | **-150** | 5 | **-610** | 19 | 19 | 122 | 394 | 0 | **-1,645** |
| 90% | **-12** | **-59** | **-91** | **-274** | **-45** | **-13** | **-20** | **-55** | 0 | 0 | 0 | **-1,206** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-850** | 19 | 27 | **-136** | 24 | **-695** | 378 | 183 | 112 | 27 | **-82** | **-2,243** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-1,932** | 254 | 118 | **-93** | 234 | **-678** | 635 | 320 | 100 | **-200** | 43 | **-4,511** |
| Above Normal (16%) | **-1,718** | **-54** | 806 | **-211** | **-169** | **-794** | 431 | 234 | 66 | **-414** | **-307** | **-5,105** |
| Below Normal (13%) | 110 | **-75** | **-150** | 33 | 39 | **-935** | 496 | 79 | 116 | **-314** | **-118** | 19 |
| Dry (24%) | **-5** | **-87** | **-79** | **-126** | **-50** | **-854** | 75 | 156 | 223 | 808 | **-126** | **-22** |
| Critical (15%) | 145 | **-150** | **-676** | **-323** | **-113** | **-141** | 160 | **-33** | 0 | 4 | 0 | **-2** |

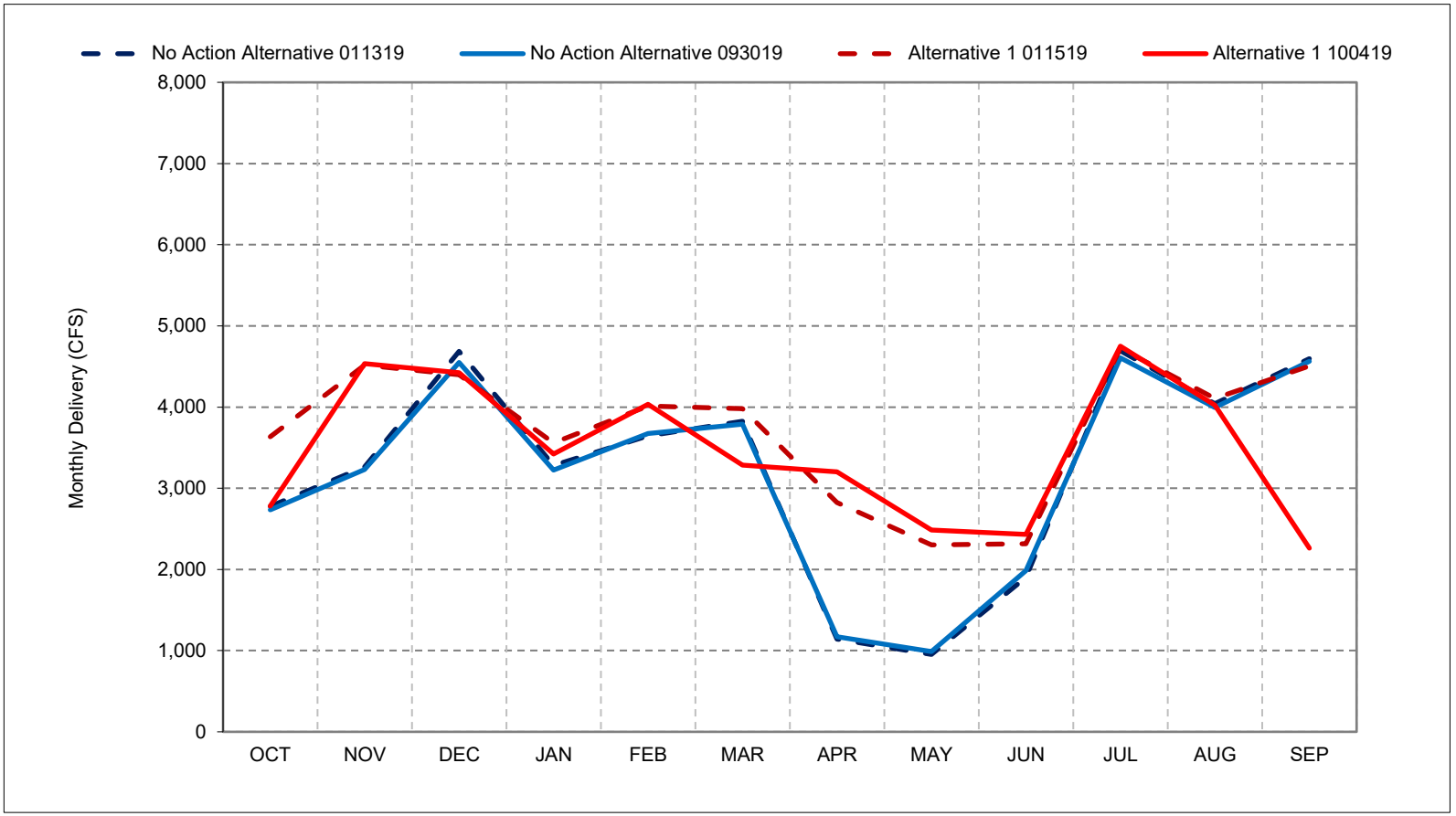
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-1. SWP Banks PP Exports, Long-Term Average Delivery

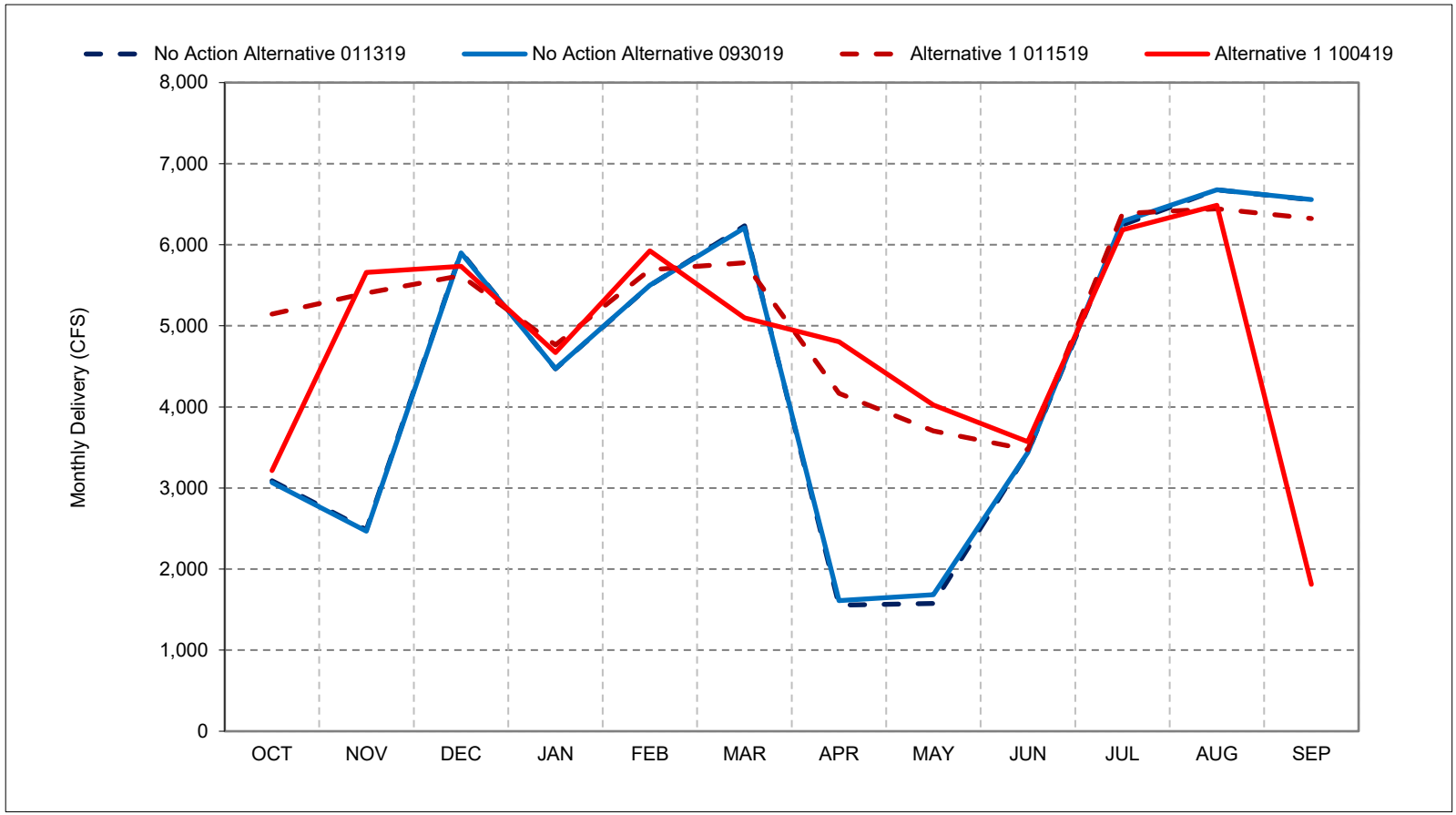



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-2. SWP Banks PP Exports, Wet Year Average Delivery

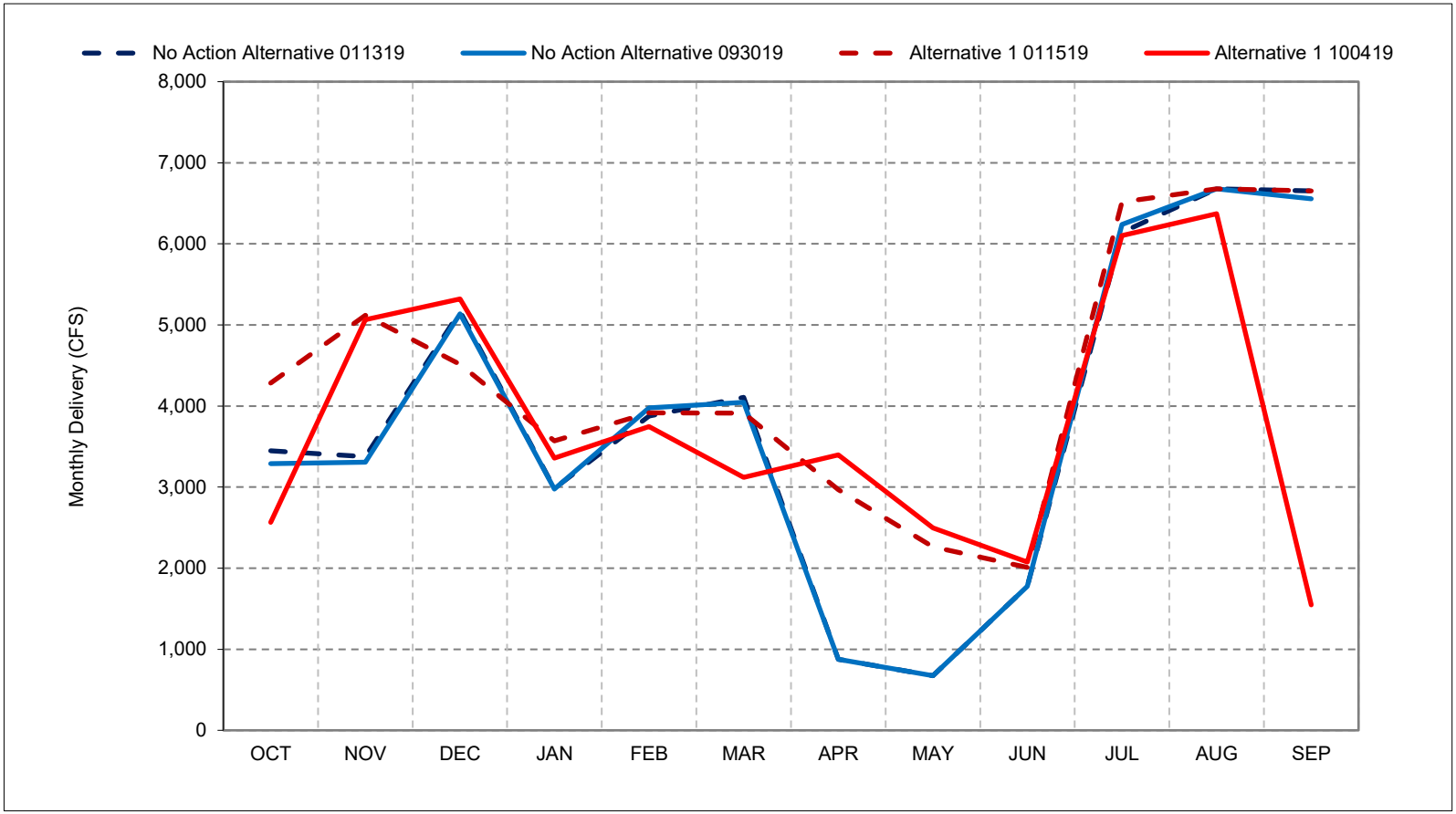



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-3. SWP Banks PP Exports, Above Normal Year Average Delivery

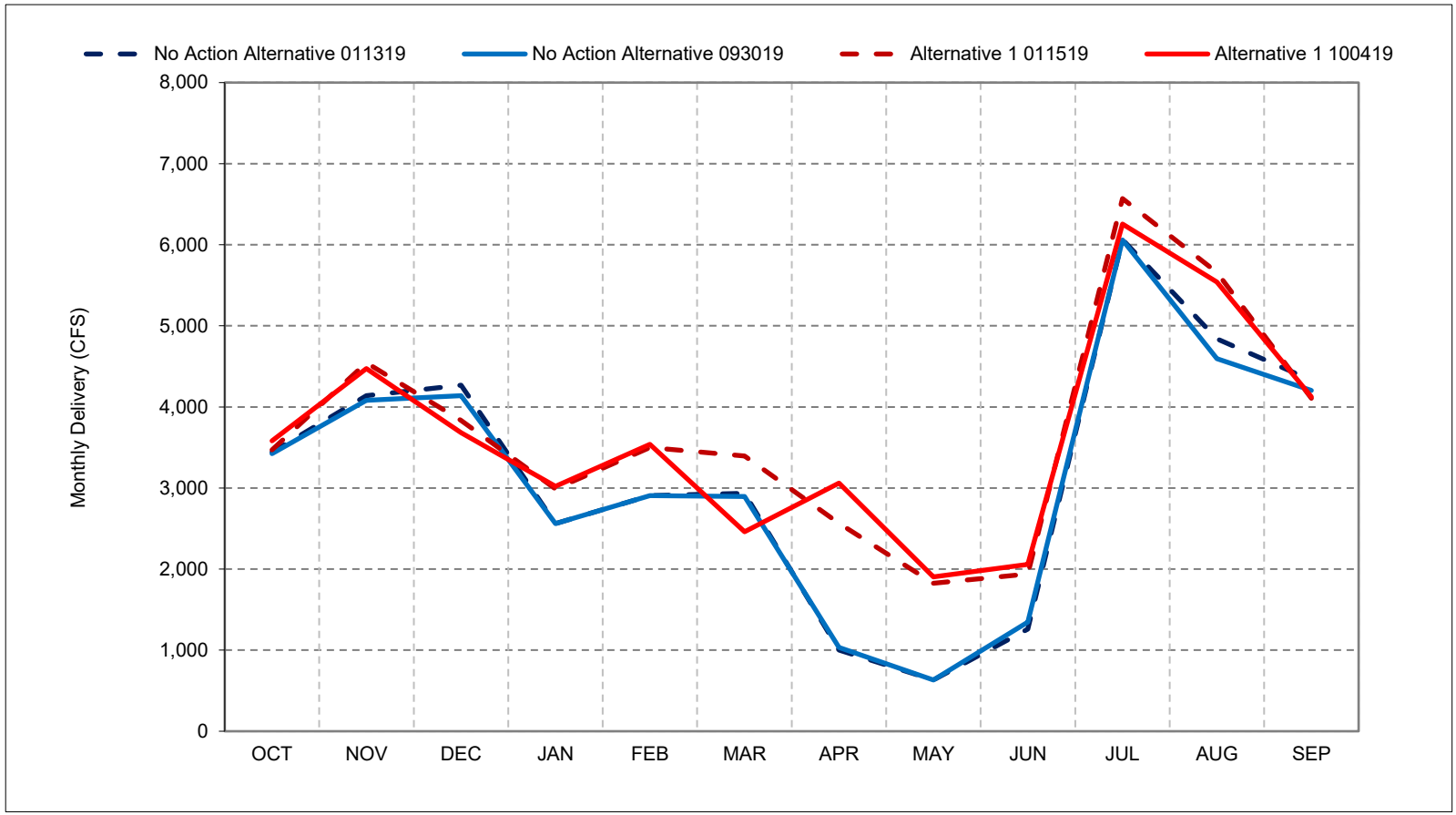



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-4. SWP Banks PP Exports, Below Normal Year Average Delivery

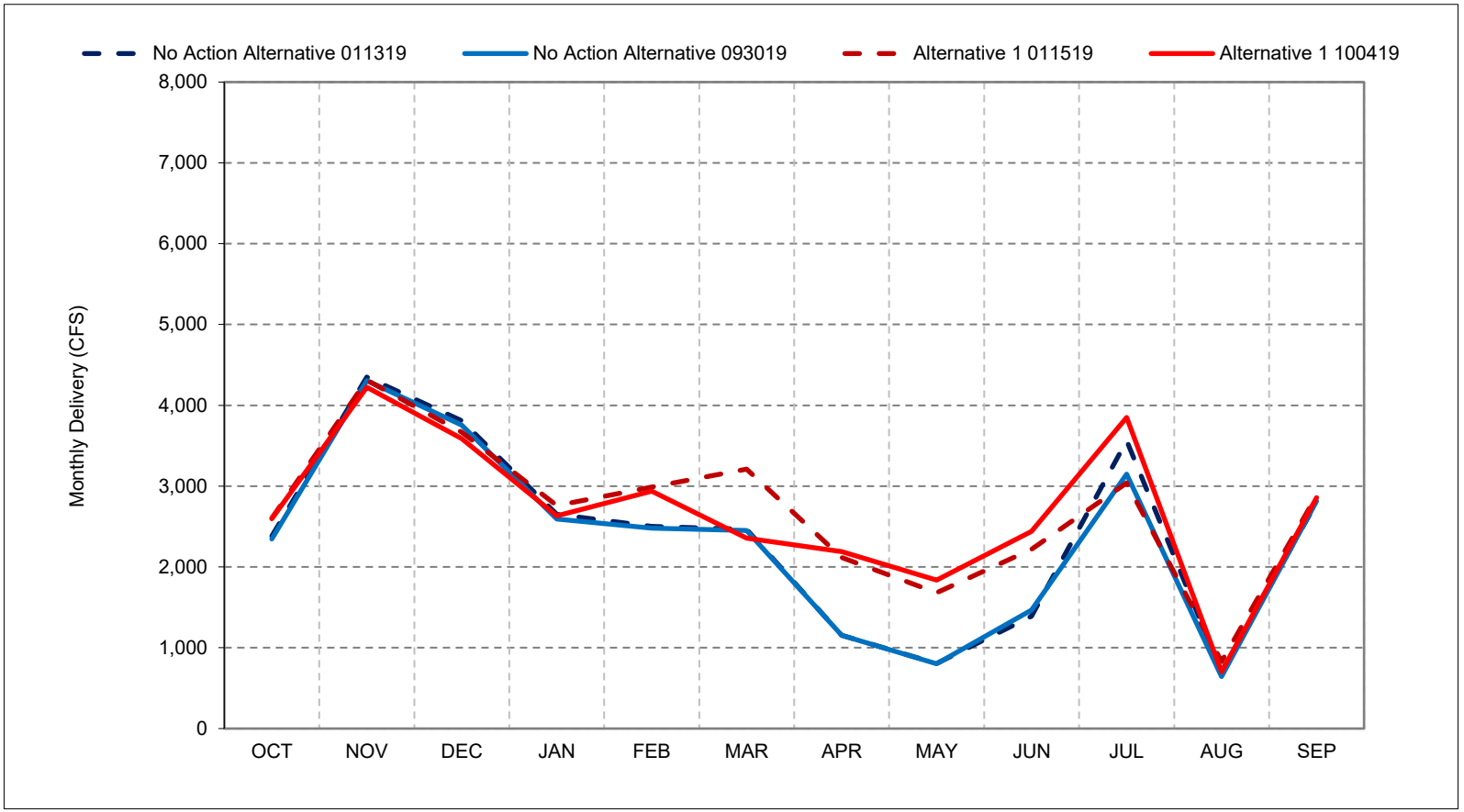



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-5. SWP Banks PP Exports, Dry Year Average Delivery

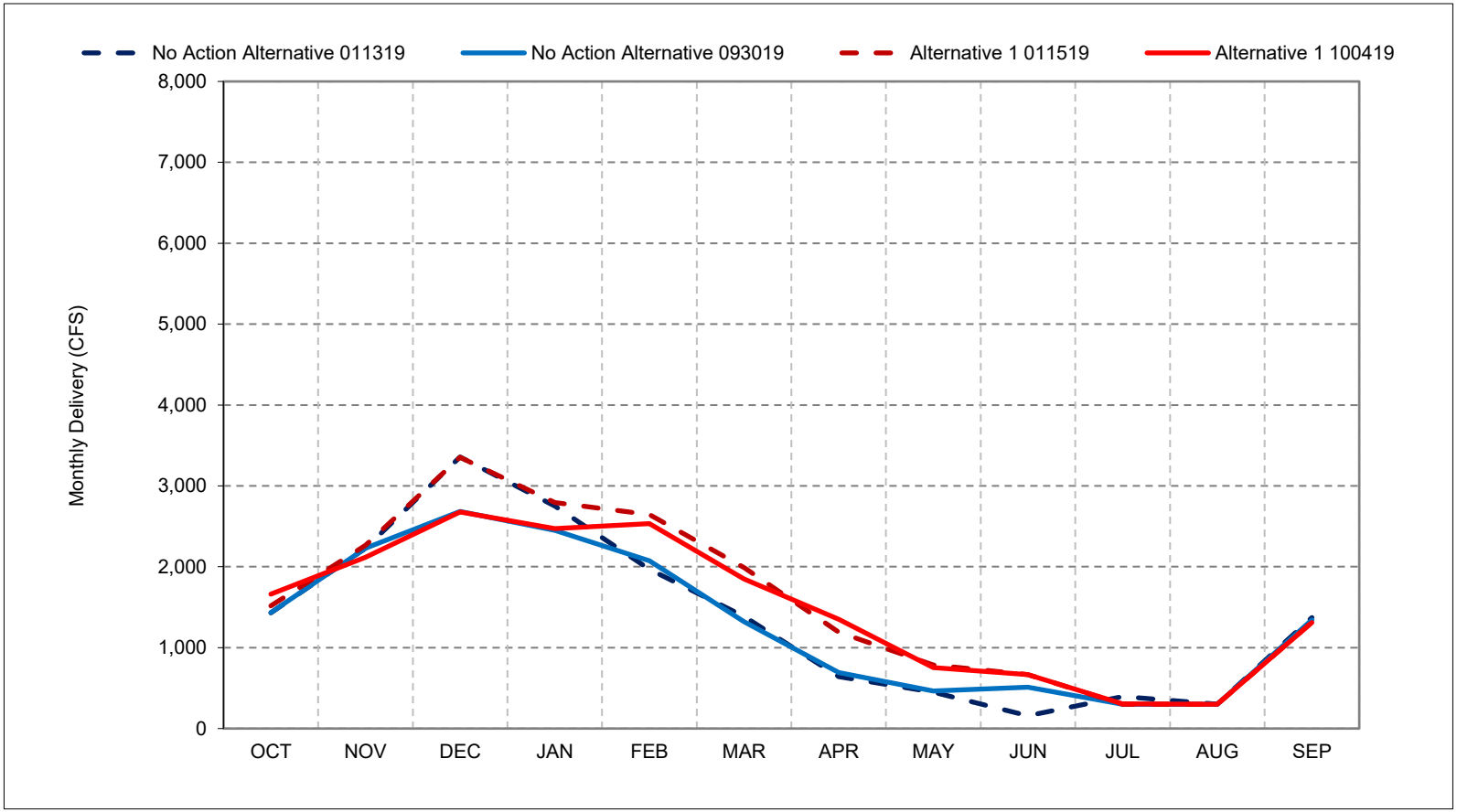



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 56-6. SWP Banks PP Exports, Critical Year Average Delivery




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

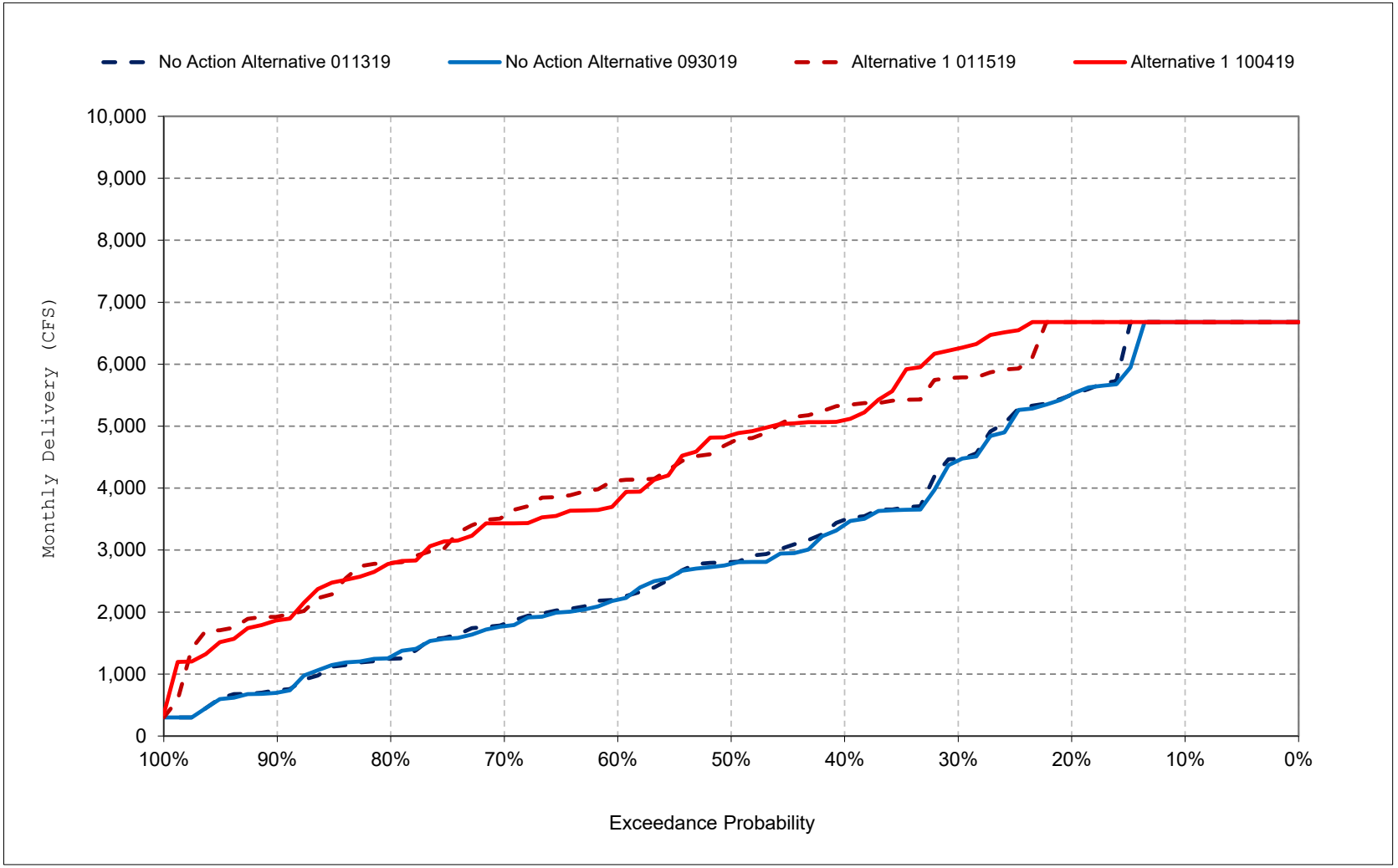
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-7. SWP Banks PP Exports, October**



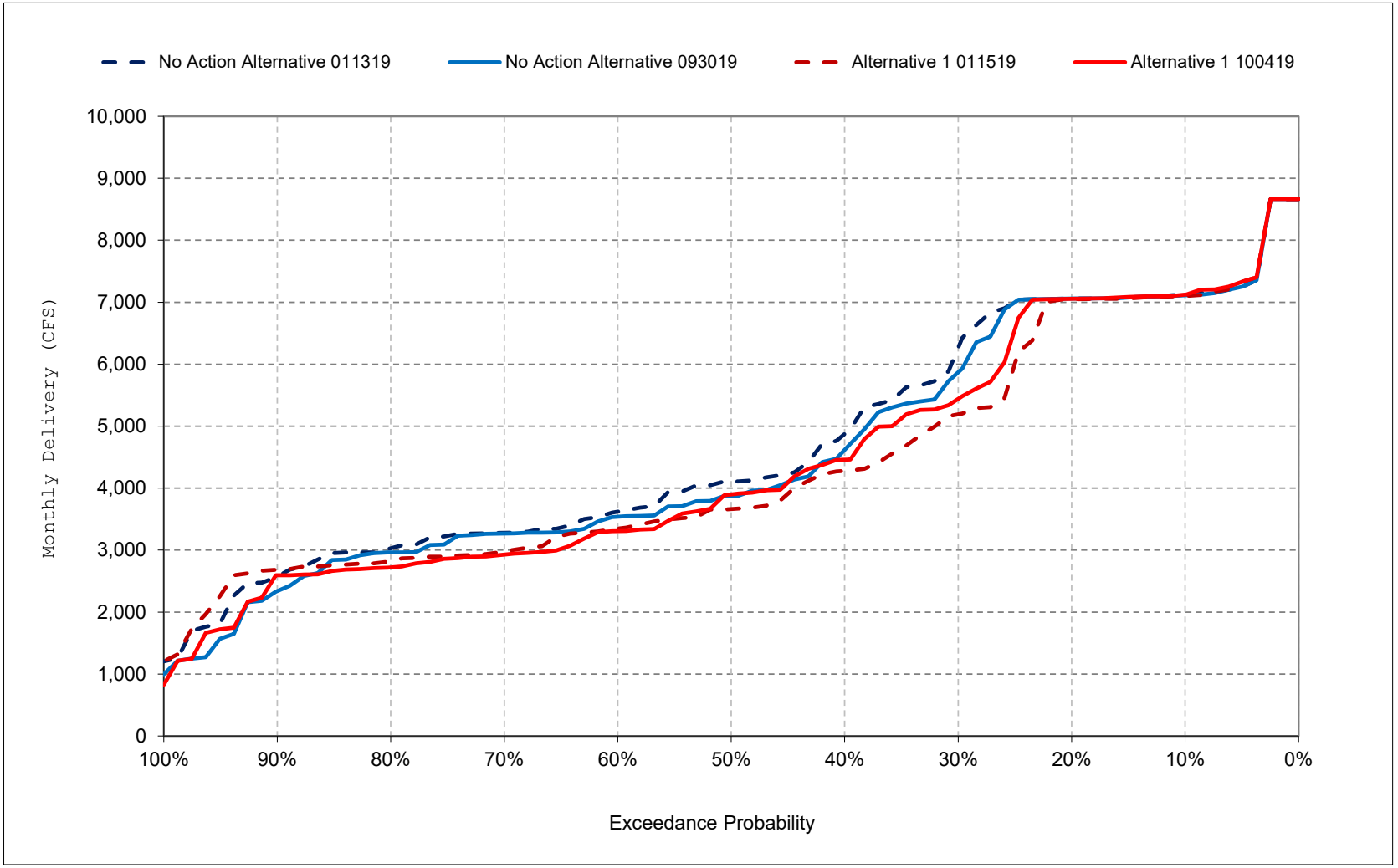

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-8. SWP Banks PP Exports, November**



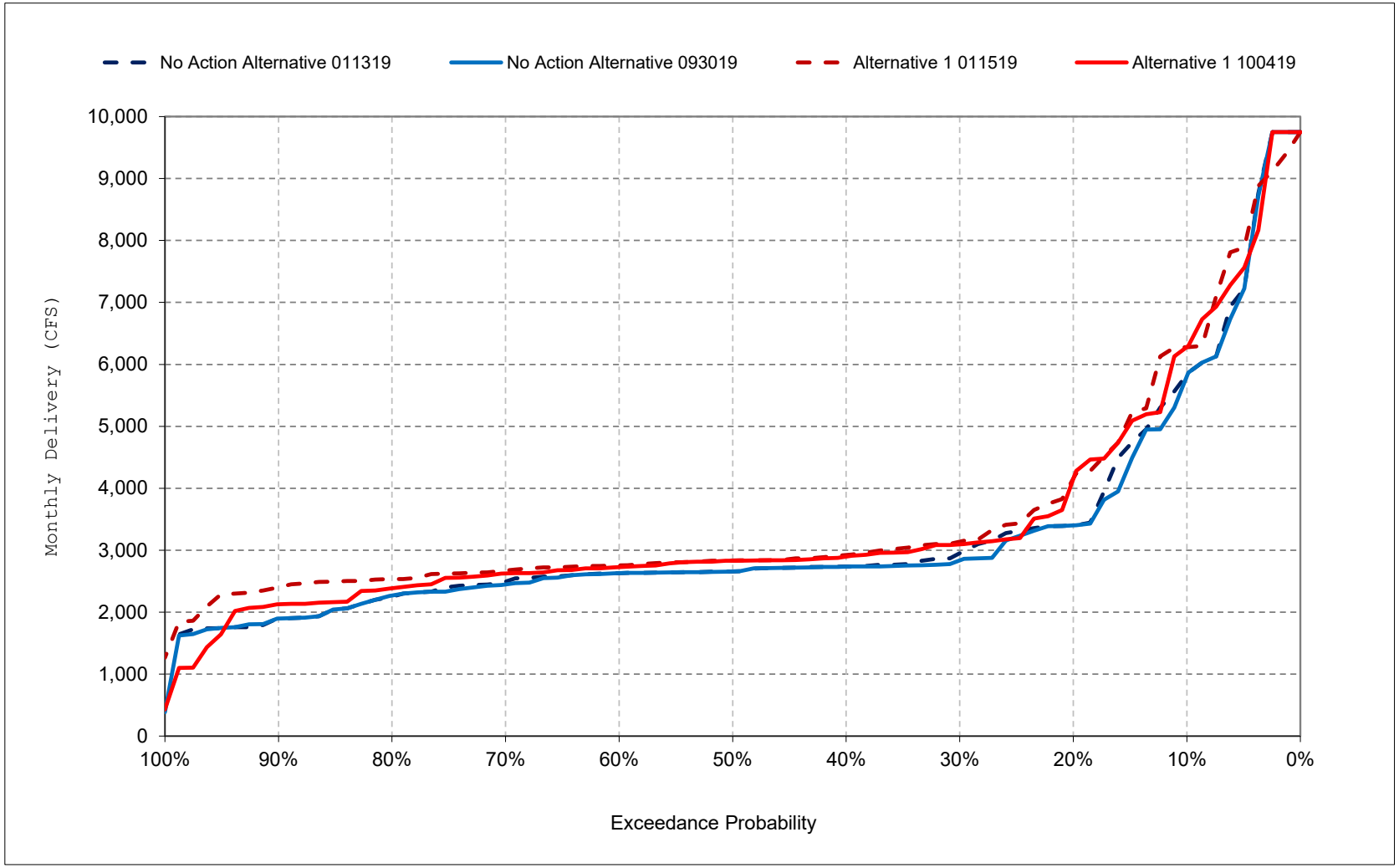

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-9. SWP Banks PP Exports, December**



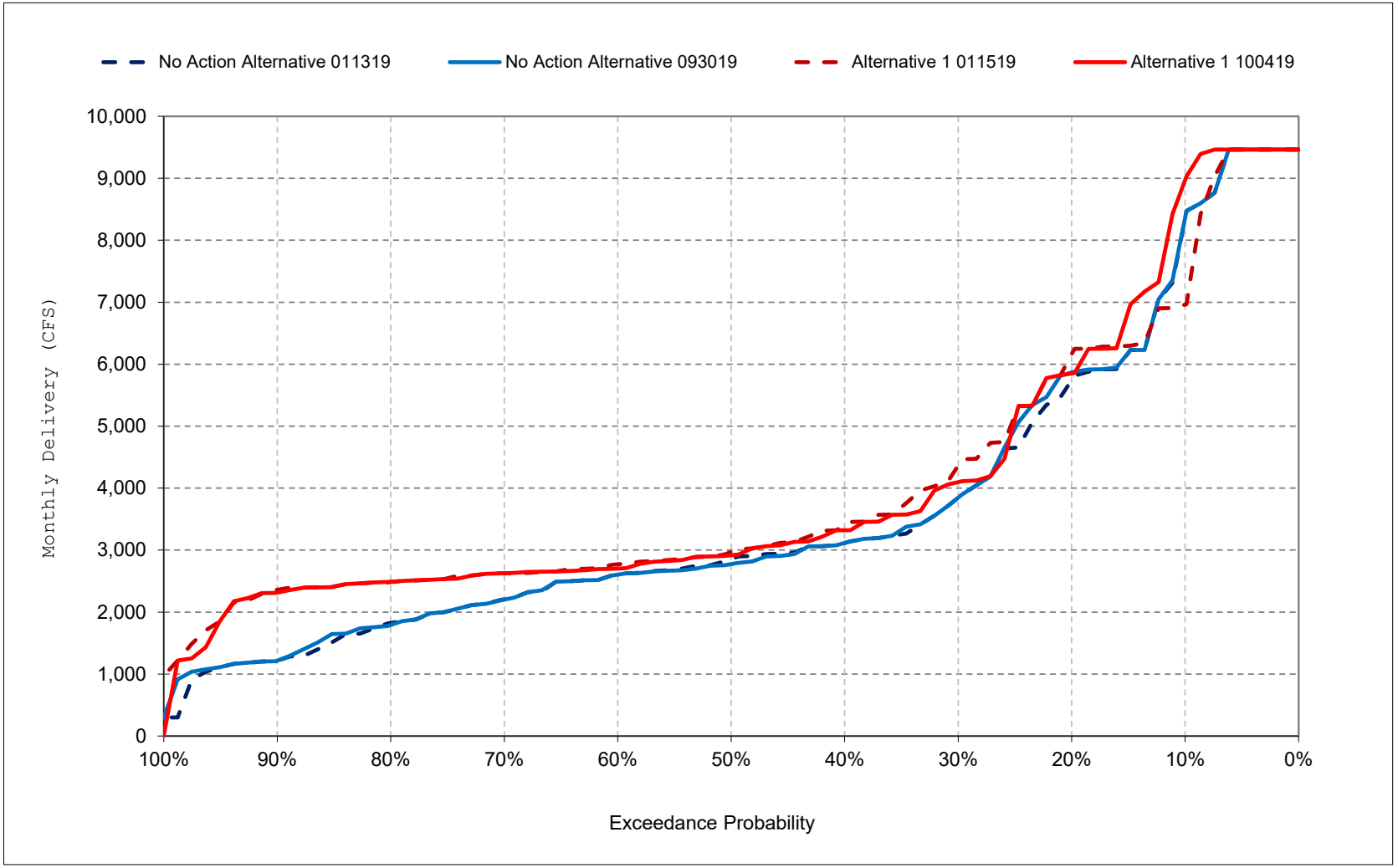

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-10. SWP Banks PP Exports, January**



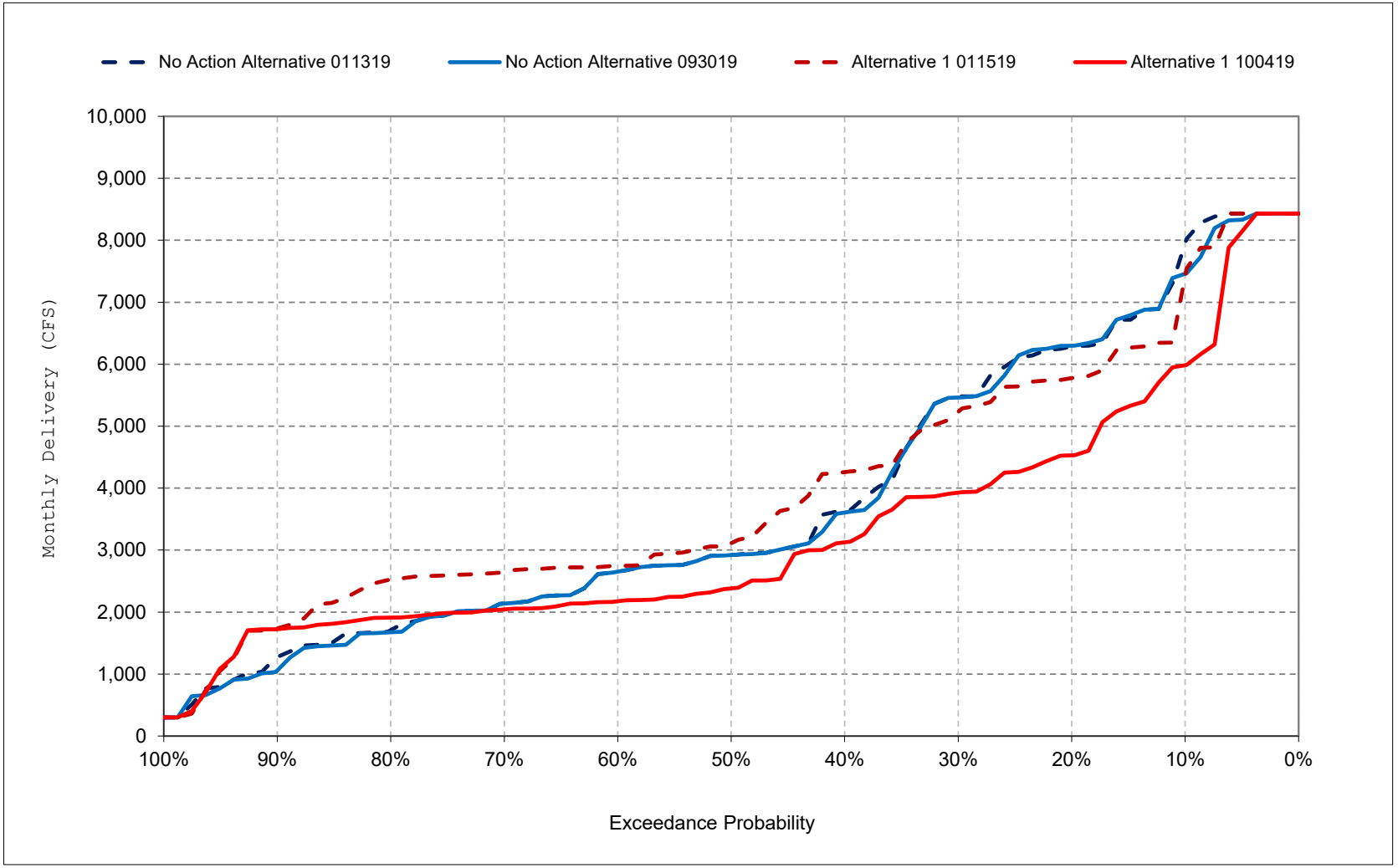

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-11. SWP Banks PP Exports, February**



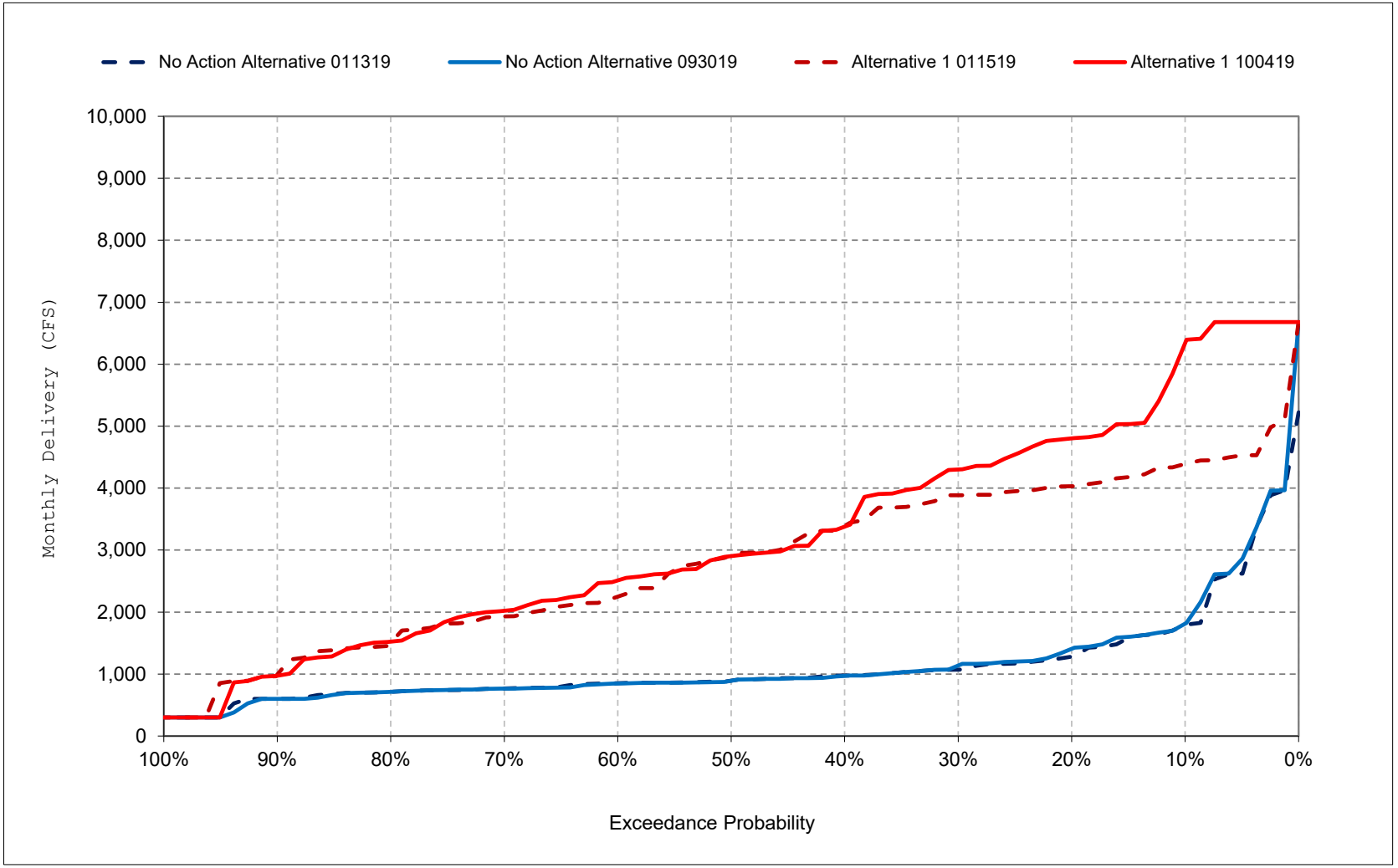

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-12. SWP Banks PP Exports, March**



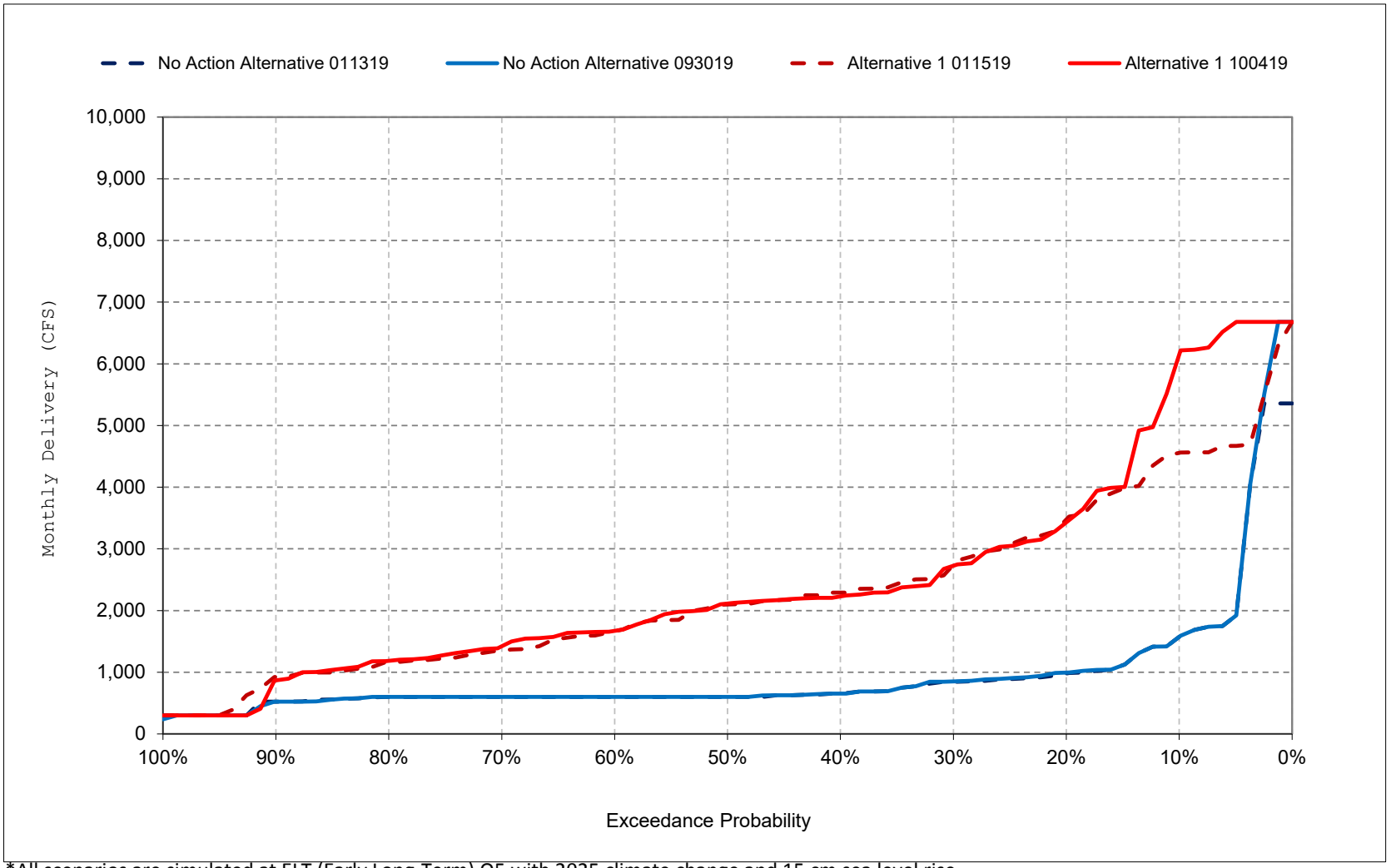

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-13. SWP Banks PP Exports, April**



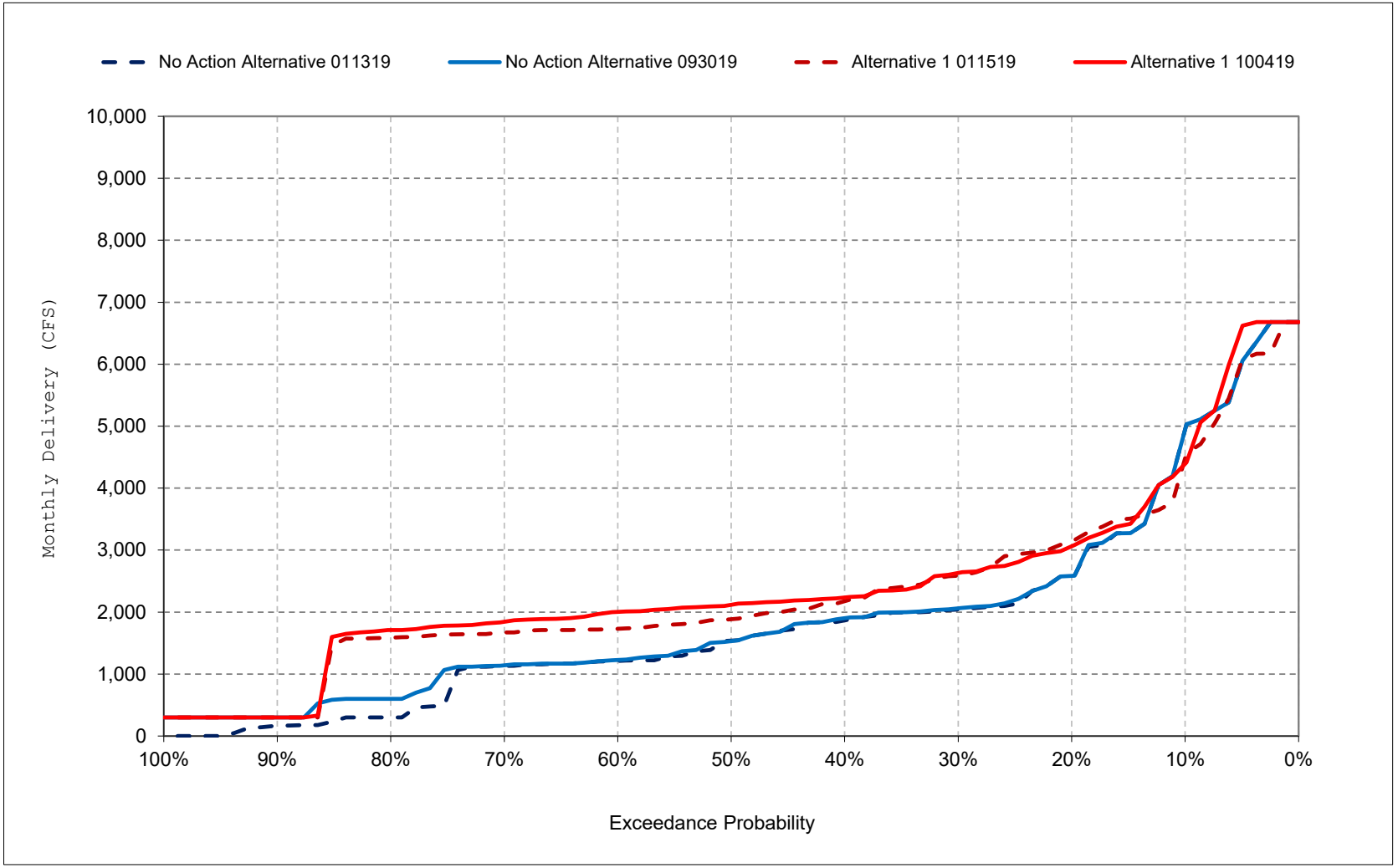

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-14. SWP Banks PP Exports, May**



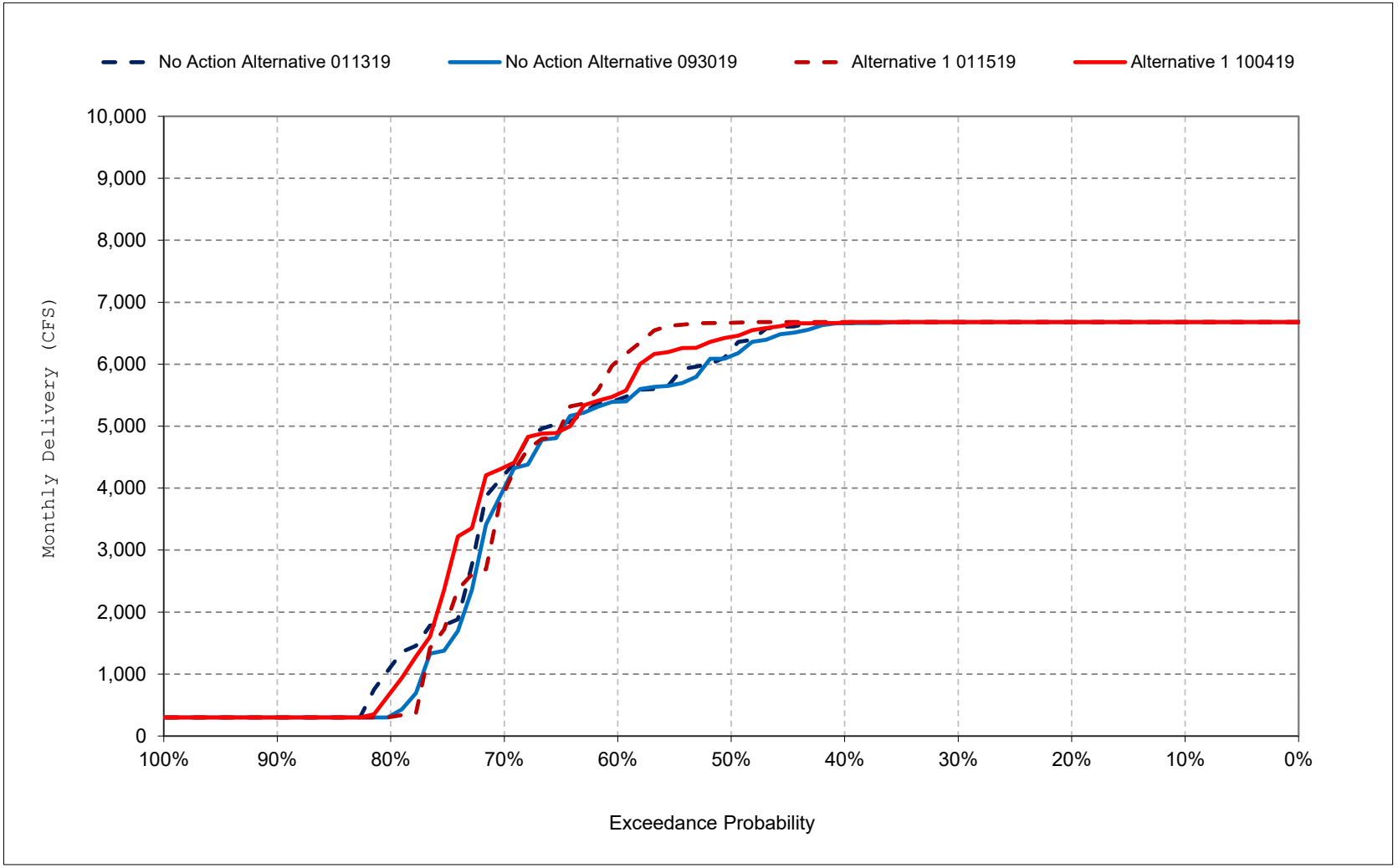

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-15. SWP Banks PP Exports, June**



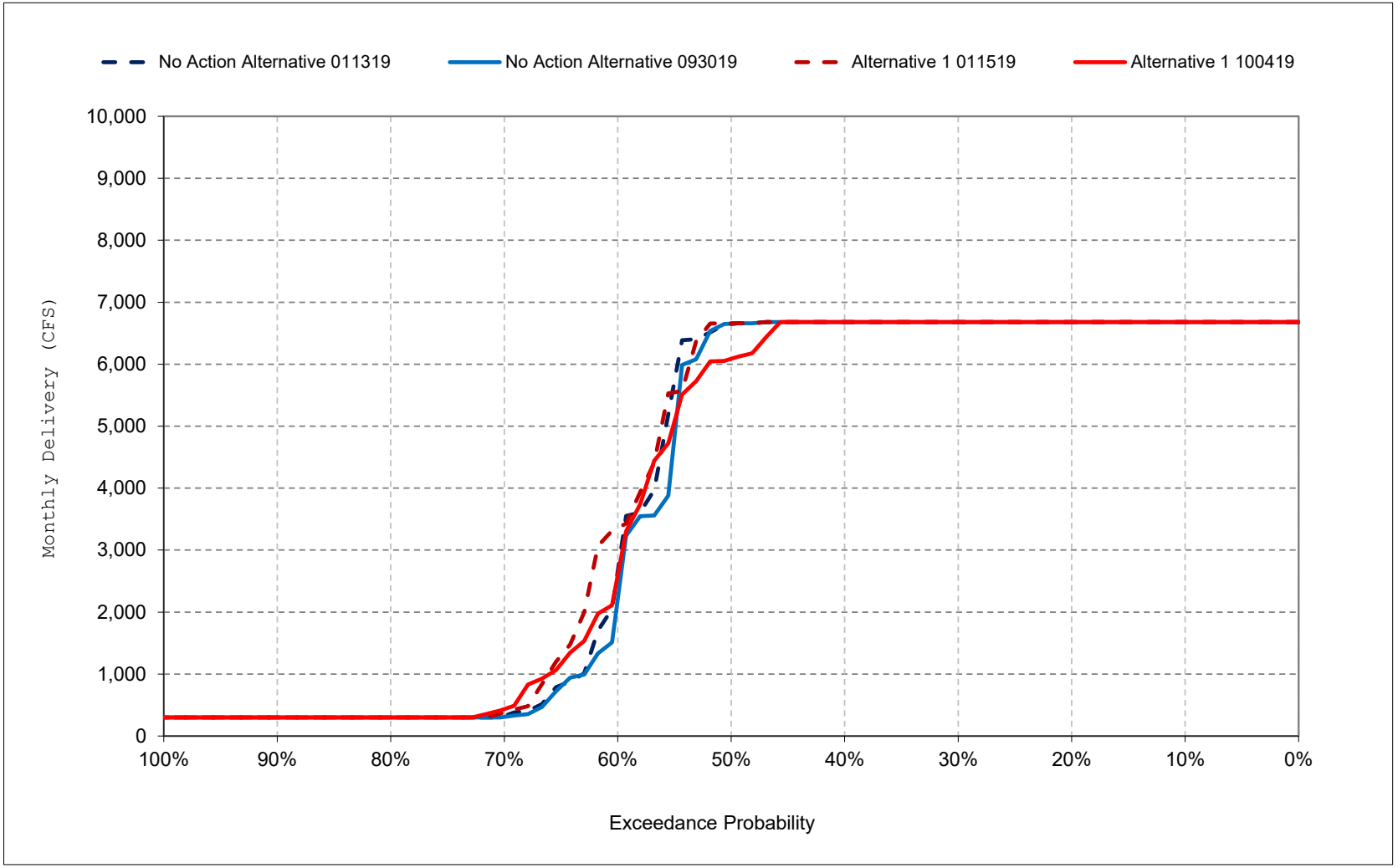

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-16. SWP Banks PP Exports, July**



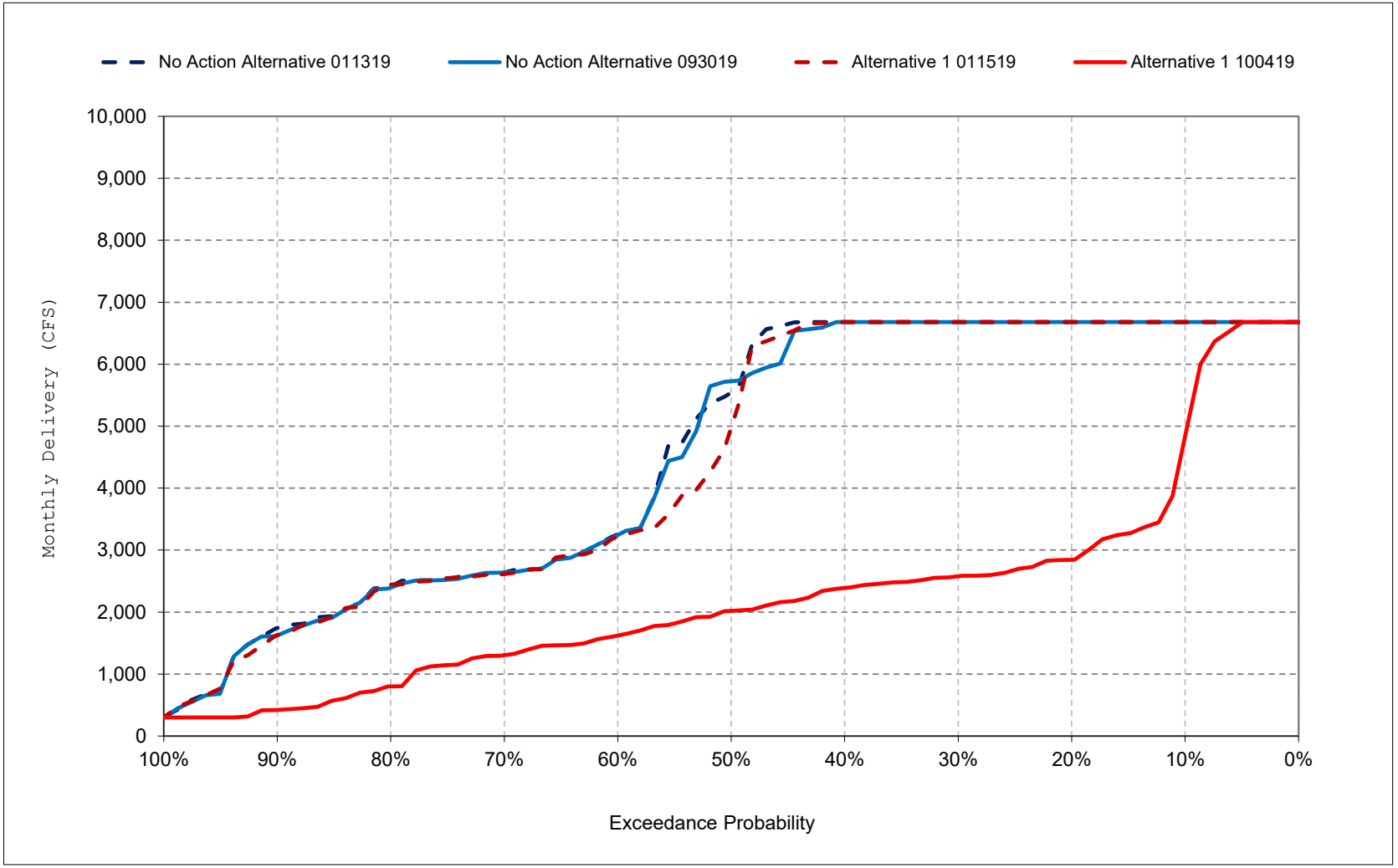

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-17. SWP Banks PP Exports, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 56-18. SWP Banks PP Exports, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 57-1. DMC - CA Intertie Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 213 | 354 | 383 | 375 | 369 | 328 | 0 | 0 | 36 | 63 | 83 | 160 |
| 20% | 0 | 345 | 380 | 369 | 361 | 161 | 0 | 0 | 0 | 20 | 64 | 138 |
| 30% | 0 | 182 | 377 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 29 | 130 |
| 40% | 0 | 0 | 374 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 9 | 110 |
| 50% | 0 | 0 | 229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 36 | 105 | 199 | 89 | 140 | 67 | 0 | 1 | 8 | 14 | 26 | 71 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 78 | 157 | 280 | 190 | 242 | 106 | 0 | 3 | 23 | 11 | 48 | 98 |
| Above Normal (16%) | 19 | 129 | 305 | 87 | 220 | 100 | 0 | 0 | 5 | 3 | 60 | 97 |
| Below Normal (13%) | 64 | 58 | 130 | 68 | 99 | 76 | 0 | 0 | 0 | 24 | 1 | 75 |
| Dry (24%) | 0 | 112 | 145 | 24 | 44 | 31 | 0 | 0 | 0 | 25 | 6 | 41 |
| Critical (15%) | 0 | 0 | 65 | 0 | 32 | 0 | 0 | 0 | 0 | 7 | 0 | 32 |

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 228 | 349 | 377 | 372 | 362 | 314 | 0 | 0 | 36 | 0 | 68 | 174 |
| 20% | 213 | 336 | 374 | 369 | 350 | 243 | 0 | 0 | 0 | 0 | 40 | 131 |
| 30% | 213 | 336 | 251 | 102 | 347 | 0 | 0 | 0 | 0 | 0 | 29 | 117 |
| 40% | 0 | 111 | 47 | 19 | 74 | 0 | 0 | 0 | 0 | 0 | 29 | 110 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 75 | 135 | 126 | 106 | 131 | 72 | 13 | 5 | 5 | 1 | 21 | 82 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 141 | 278 | 219 | 222 | 189 | 116 | 24 | 13 | 14 | 1 | 32 | 116 |
| Above Normal (16%) | 126 | 118 | 120 | 96 | 199 | 113 | 25 | 6 | 3 | 0 | 42 | 121 |
| Below Normal (13%) | 54 | 66 | 41 | 77 | 144 | 46 | 0 | 0 | 0 | 4 | 12 | 83 |
| Dry (24%) | 13 | 80 | 90 | 39 | 70 | 47 | 8 | 0 | 0 | 2 | 11 | 45 |
| Critical (15%) | 0 | 0 | 65 | 3 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15 | -5 | -6 | -3 | -6 | -14 | 0 | 0 | 0 | -63 | -15 | 14 |
| 20% | 213 | -9 | -6 | 0 | -11 | 82 | 0 | 0 | 0 | -20 | -23 | -8 |
| 30% | 213 | 155 | -126 | 102 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | -13 |
| 40% | 0 | 111 | -327 | 19 | -41 | 0 | 0 | 0 | 0 | 0 | 20 | 0 |
| 50% | 0 | 0 | -229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 39 | 30 | -74 | 17 | -10 | 5 | 13 | 4 | -3 | -13 | -5 | 11 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 64 | 120 | -61 | 32 | -54 | 10 | 24 | 10 | -9 | -10 | -15 | 18 |
| Above Normal (16%) | 107 | -12 | -185 | 8 | -21 | 13 | 25 | 6 | -2 | -3 | -18 | 24 |
| Below Normal (13%) | -10 | 8 | -89 | 8 | 45 | -30 | 0 | 0 | 0 | -20 | 10 | 7 |
| Dry (24%) | 13 | -32 | -54 | 14 | 26 | 15 | 8 | 0 | 0 | -23 | 5 | 3 |
| Critical (15%) | 0 | 0 | 0 | 3 | -11 | 0 | 0 | 0 | 0 | -7 | 0 | -1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 57-2. DMC - CA Intertie Flow, Monthly Flow

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 233 | 354 | 382 | 375 | 369 | 333 | 0 | 0 | 36 | 48 | 83 | 162 |
| 20% | 0 | 339 | 379 | 369 | 360 | 219 | 0 | 0 | 0 | 2 | 65 | 138 |
| 30% | 0 | 157 | 376 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 48 | 128 |
| 40% | 0 | 0 | 374 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 29 | 110 |
| 50% | 0 | 0 | 219 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 41 | 101 | 188 | 89 | 137 | 73 | 0 | 1 | 8 | 11 | 28 | 74 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 106 | 153 | 280 | 190 | 241 | 110 | 0 | 3 | 23 | 10 | 48 | 95 |
| Above Normal (16%) | 19 | 126 | 296 | 88 | 199 | 126 | 0 | 0 | 5 | 3 | 59 | 119 |
| Below Normal (13%) | 31 | 58 | 130 | 68 | 99 | 76 | 0 | 0 | 0 | 28 | 15 | 93 |
| Dry (24%) | 1 | 103 | 145 | 23 | 44 | 32 | 0 | 0 | 0 | 17 | 6 | 35 |
| Critical (15%) | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 213 | 359 | 379 | 374 | 368 | 323 | 37 | 0 | 36 | 0 | 50 | 123 |
| 20% | 0 | 347 | 376 | 356 | 353 | 279 | 0 | 0 | 0 | 0 | 29 | 105 |
| 30% | 0 | 342 | 374 | 61 | 347 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 336 | 172 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 43 | 164 | 150 | 96 | 129 | 72 | 15 | 4 | 7 | 0 | 12 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 88 | 316 | 246 | 170 | 190 | 153 | 25 | 12 | 20 | 0 | 22 | 43 |
| Above Normal (16%) | 22 | 234 | 269 | 113 | 177 | 79 | 39 | 0 | 5 | 0 | 11 | 0 |
| Below Normal (13%) | 59 | 67 | 41 | 74 | 145 | 31 | 0 | 0 | 0 | 0 | 5 | 44 |
| Dry (24%) | 14 | 74 | 99 | 38 | 49 | 18 | 2 | 0 | 0 | 0 | 12 | 50 |
| Critical (15%) | 0 | 0 | 0 | 34 | 63 | 20 | 0 | 0 | 0 | 0 | 0 | 31 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -20 | 6 | -3 | -1 | 0 | -11 | 37 | 0 | 0 | -48 | -33 | -38 |
| 20% | 0 | 7 | -2 | -12 | -7 | 60 | 0 | 0 | 0 | -2 | -37 | -33 |
| 30% | 0 | 184 | -2 | 61 | -4 | 0 | 0 | 0 | 0 | 0 | -48 | -128 |
| 40% | 0 | 336 | -201 | 0 | -29 | 0 | 0 | 0 | 0 | 0 | -29 | -110 |
| 50% | 0 | 0 | -207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -31 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | 63 | -38 | 7 | -7 | 0 | 15 | 3 | -1 | -11 | -16 | -38 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -18 | 163 | -34 | -20 | -51 | 43 | 25 | 9 | -3 | -9 | -26 | -51 |
| Above Normal (16%) | 3 | 108 | -27 | 26 | -22 | -47 | 39 | 0 | 0 | -3 | -48 | -119 |
| Below Normal (13%) | 28 | 9 | -89 | 6 | 46 | -45 | 0 | 0 | 0 | -28 | -9 | -49 |
| Dry (24%) | 13 | -29 | -46 | 15 | 5 | -14 | 2 | 0 | 0 | -17 | 6 | 15 |
| Critical (15%) | 0 | 0 | 0 | 34 | 31 | 20 | 0 | 0 | 0 | 0 | 0 | -1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 57-3. DMC - CA Intertie Flow, Monthly Flow

### No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 213 | 354 | 383 | 375 | 369 | 328 | 0 | 0 | 36 | 63 | 83 | 160 |
| 20% | 0 | 345 | 380 | 369 | 361 | 161 | 0 | 0 | 0 | 20 | 64 | 138 |
| 30% | 0 | 182 | 377 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 29 | 130 |
| 40% | 0 | 0 | 374 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 9 | 110 |
| 50% | 0 | 0 | 229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 36 | 105 | 199 | 89 | 140 | 67 | 0 | 1 | 8 | 14 | 26 | 71 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 78 | 157 | 280 | 190 | 242 | 106 | 0 | 3 | 23 | 11 | 48 | 98 |
| Above Normal (16%) | 19 | 129 | 305 | 87 | 220 | 100 | 0 | 0 | 5 | 3 | 60 | 97 |
| Below Normal (13%) | 64 | 58 | 130 | 68 | 99 | 76 | 0 | 0 | 0 | 24 | 1 | 75 |
| Dry (24%) | 0 | 112 | 145 | 24 | 44 | 31 | 0 | 0 | 0 | 25 | 6 | 41 |
| Critical (15%) | 0 | 0 | 65 | 0 | 32 | 0 | 0 | 0 | 0 | 7 | 0 | 32 |

### No Action Alternative 093019

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 233 | 354 | 382 | 375 | 369 | 333 | 0 | 0 | 36 | 48 | 83 | 162 |
| 20% | 0 | 339 | 379 | 369 | 360 | 219 | 0 | 0 | 0 | 2 | 65 | 138 |
| 30% | 0 | 157 | 376 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 48 | 128 |
| 40% | 0 | 0 | 374 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 29 | 110 |
| 50% | 0 | 0 | 219 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 41 | 101 | 188 | 89 | 137 | 73 | 0 | 1 | 8 | 11 | 28 | 74 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 106 | 153 | 280 | 190 | 241 | 110 | 0 | 3 | 23 | 10 | 48 | 95 |
| Above Normal (16%) | 19 | 126 | 296 | 88 | 199 | 126 | 0 | 0 | 5 | 3 | 59 | 119 |
| Below Normal (13%) | 31 | 58 | 130 | 68 | 99 | 76 | 0 | 0 | 0 | 28 | 15 | 93 |
| Dry (24%) | 1 | 103 | 145 | 23 | 44 | 32 | 0 | 0 | 0 | 17 | 6 | 35 |
| Critical (15%) | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 20 | **0** | **-1** | **0** | **0** | 5 | 0 | 0 | 0 | **-16** | **0** | 2 |
| 20% | 0 | **-5** | **-1** | 0 | **0** | 58 | 0 | 0 | 0 | **-19** | 2 | **0** |
| 30% | 0 | **-24** | **-1** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 19 | **-2** |
| 40% | 0 | 0 | 0 | 0 | **-51** | 0 | 0 | 0 | 0 | 0 | 20 | 1 |
| 50% | 0 | 0 | **-10** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 5 | **-4** | **-11** | **0** | **-4** | 5 | 0 | 0 | **0** | **-3** | 2 | 3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 28 | **-4** | 0 | **0** | **-2** | 3 | 0 | 0 | 0 | **-1** | 1 | **-4** |
| Above Normal (16%) | 0 | **-3** | **-9** | 0 | **-21** | 26 | 0 | 0 | **0** | **0** | **-2** | 22 |
| Below Normal (13%) | **-33** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 0 | 4 | 13 | 17 |
| Dry (24%) | 1 | **-9** | 0 | **-1** | **0** | 0 | 0 | 0 | 0 | **-8** | 0 | **-6** |
| Critical (15%) | 0 | 0 | **-65** | 0 | 0 | 0 | 0 | 0 | 0 | **-7** | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 57-4. DMC - CA Intertie Flow, Monthly Flow

### Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 228 | 349 | 377 | 372 | 362 | 314 | 0 | 0 | 36 | 0 | 68 | 174 |
| 20% | 213 | 336 | 374 | 369 | 350 | 243 | 0 | 0 | 0 | 0 | 40 | 131 |
| 30% | 213 | 336 | 251 | 102 | 347 | 0 | 0 | 0 | 0 | 0 | 29 | 117 |
| 40% | 0 | 111 | 47 | 19 | 74 | 0 | 0 | 0 | 0 | 0 | 29 | 110 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 75 | 135 | 126 | 106 | 131 | 72 | 13 | 5 | 5 | 1 | 21 | 82 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 141 | 278 | 219 | 222 | 189 | 116 | 24 | 13 | 14 | 1 | 32 | 116 |
| Above Normal (16%) | 126 | 118 | 120 | 96 | 199 | 113 | 25 | 6 | 3 | 0 | 42 | 121 |
| Below Normal (13%) | 54 | 66 | 41 | 77 | 144 | 46 | 0 | 0 | 0 | 4 | 12 | 83 |
| Dry (24%) | 13 | 80 | 90 | 39 | 70 | 47 | 8 | 0 | 0 | 2 | 11 | 45 |
| Critical (15%) | 0 | 0 | 65 | 3 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |

### Alternative 1 100419

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 213 | 359 | 379 | 374 | 368 | 323 | 37 | 0 | 36 | 0 | 50 | 123 |
| 20% | 0 | 347 | 376 | 356 | 353 | 279 | 0 | 0 | 0 | 0 | 29 | 105 |
| 30% | 0 | 342 | 374 | 61 | 347 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 336 | 172 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 43 | 164 | 150 | 96 | 129 | 72 | 15 | 4 | 7 | 0 | 12 | 36 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 88 | 316 | 246 | 170 | 190 | 153 | 25 | 12 | 20 | 0 | 22 | 43 |
| Above Normal (16%) | 22 | 234 | 269 | 113 | 177 | 79 | 39 | 0 | 5 | 0 | 11 | 0 |
| Below Normal (13%) | 59 | 67 | 41 | 74 | 145 | 31 | 0 | 0 | 0 | 0 | 5 | 44 |
| Dry (24%) | 14 | 74 | 99 | 38 | 49 | 18 | 2 | 0 | 0 | 0 | 12 | 50 |
| Critical (15%) | 0 | 0 | 0 | 34 | 63 | 20 | 0 | 0 | 0 | 0 | 0 | 31 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Flow (CFS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -15 | 10 | 2 | 2 | 6 | 8 | 37 | 0 | 0 | 0 | -18 | -51 |
| 20% | -213 | 11 | 3 | -12 | 3 | 36 | 0 | 0 | 0 | 0 | -12 | -26 |
| 30% | -213 | 6 | 123 | -41 | 0 | 0 | 0 | 0 | 0 | 0 | -29 | -117 |
| 40% | 0 | 225 | 125 | -19 | -38 | 0 | 0 | 0 | 0 | 0 | -29 | -110 |
| 50% | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -110 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -57 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -33 | 29 | 25 | -9 | -2 | 0 | 1 | -1 | 2 | -1 | -9 | -46 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -53 | 38 | 27 | -52 | 1 | 37 | 1 | -1 | 6 | 0 | -10 | -73 |
| Above Normal (16%) | -104 | 116 | 149 | 17 | -22 | -34 | 14 | -6 | 2 | 0 | -31 | -121 |
| Below Normal (13%) | 5 | 0 | 0 | -2 | 1 | -15 | 0 | 0 | 0 | -4 | -7 | -39 |
| Dry (24%) | 1 | -6 | 8 | 0 | -21 | -29 | -6 | 0 | 0 | -2 | 1 | 5 |
| Critical (15%) | 0 | 0 | -65 | 31 | 42 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |

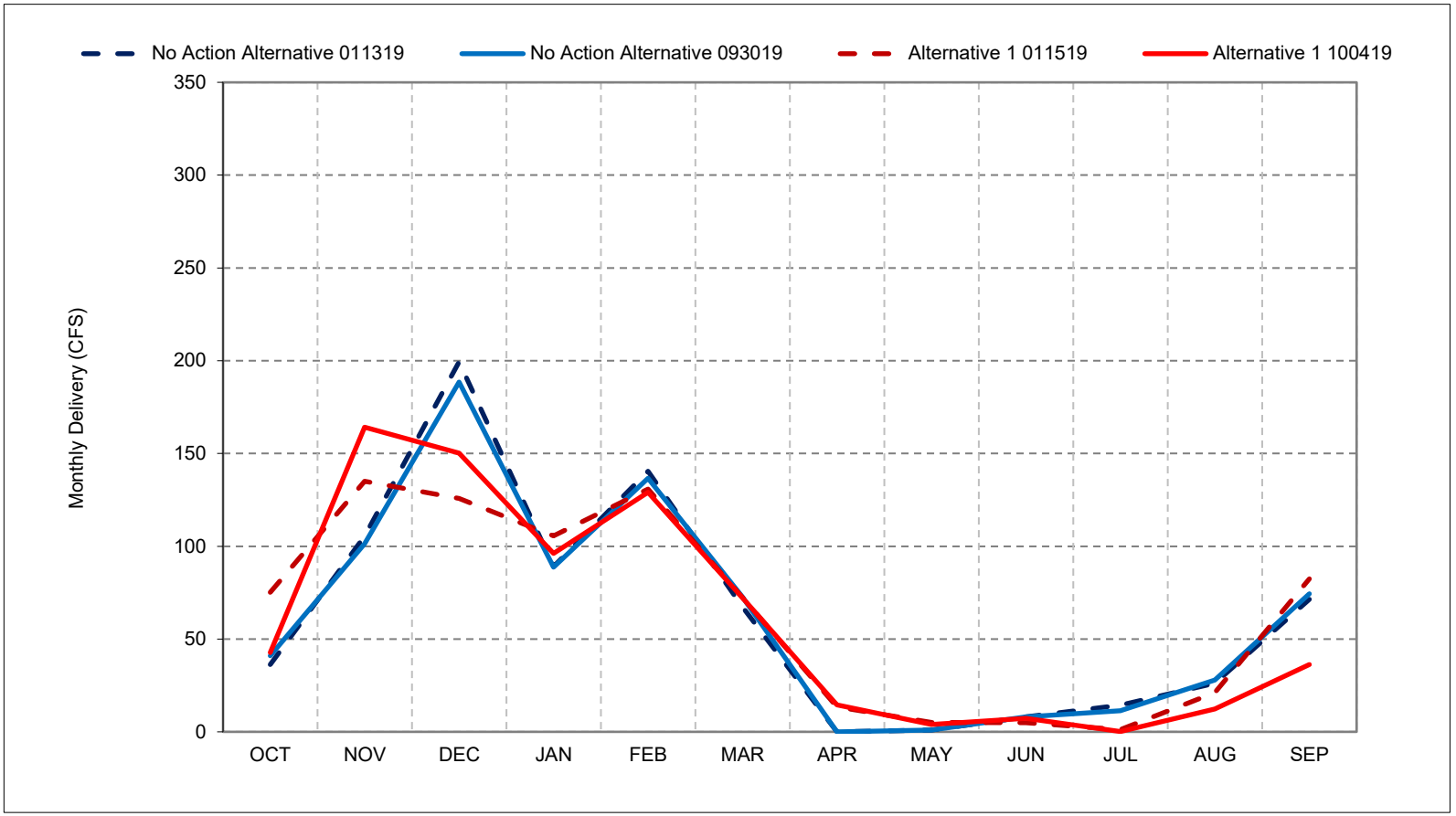
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-1. DMC - CA Intertie Flow, Long-Term Average Delivery

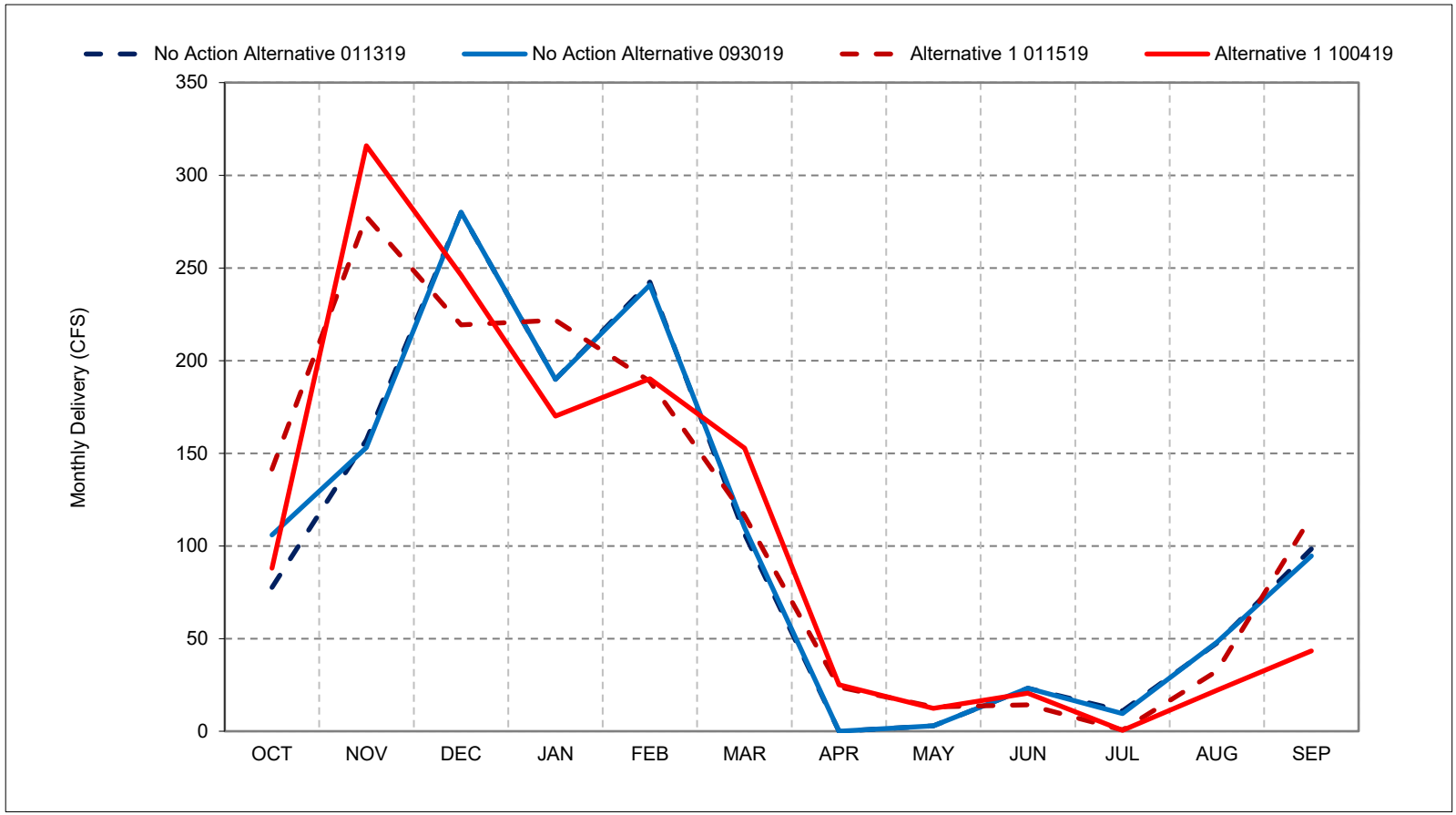



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-2. DMC - CA Intertie Flow, Wet Year Average Delivery

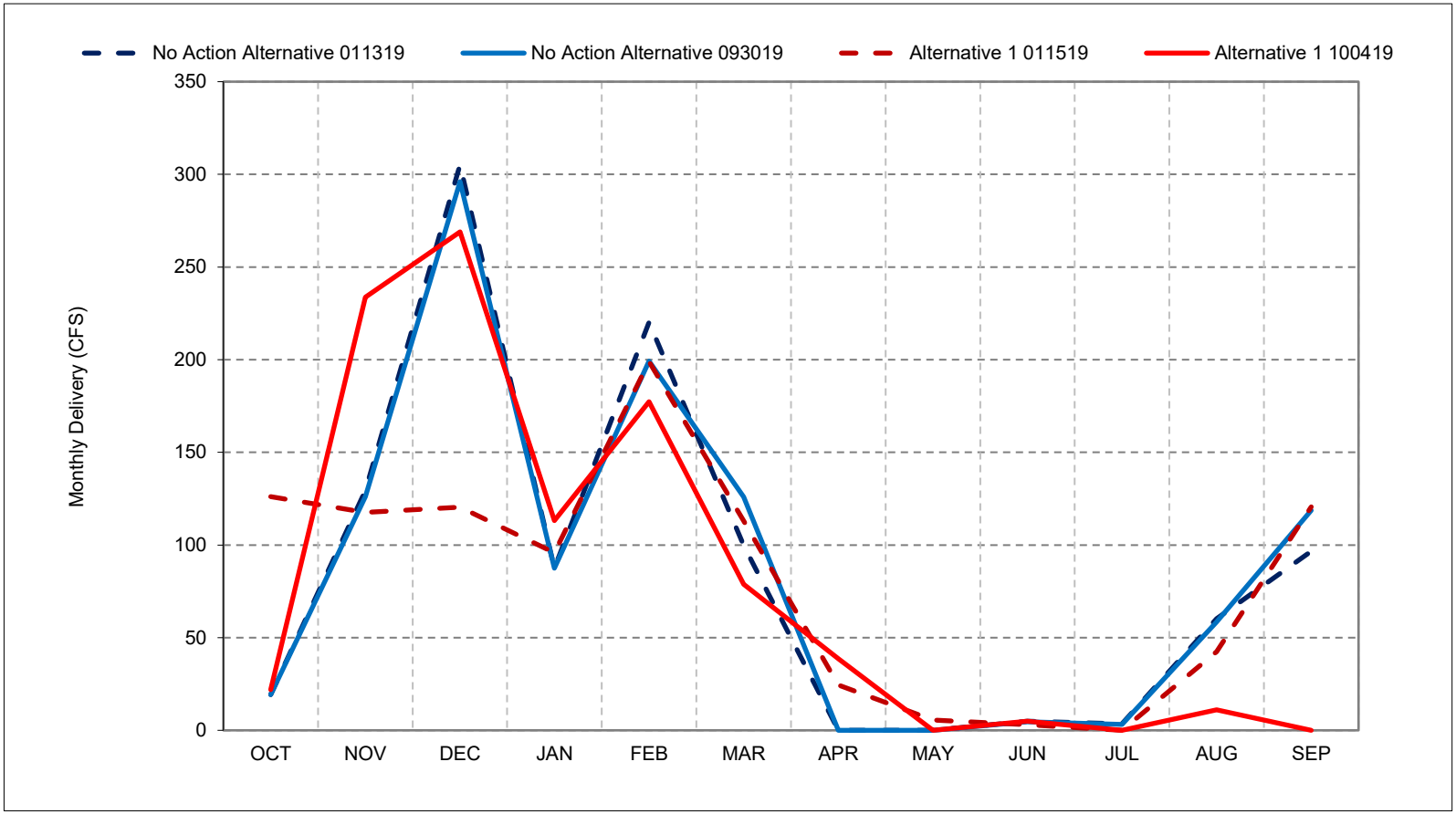



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-3. DMC - CA Intertie Flow, Above Normal Year Average Delivery

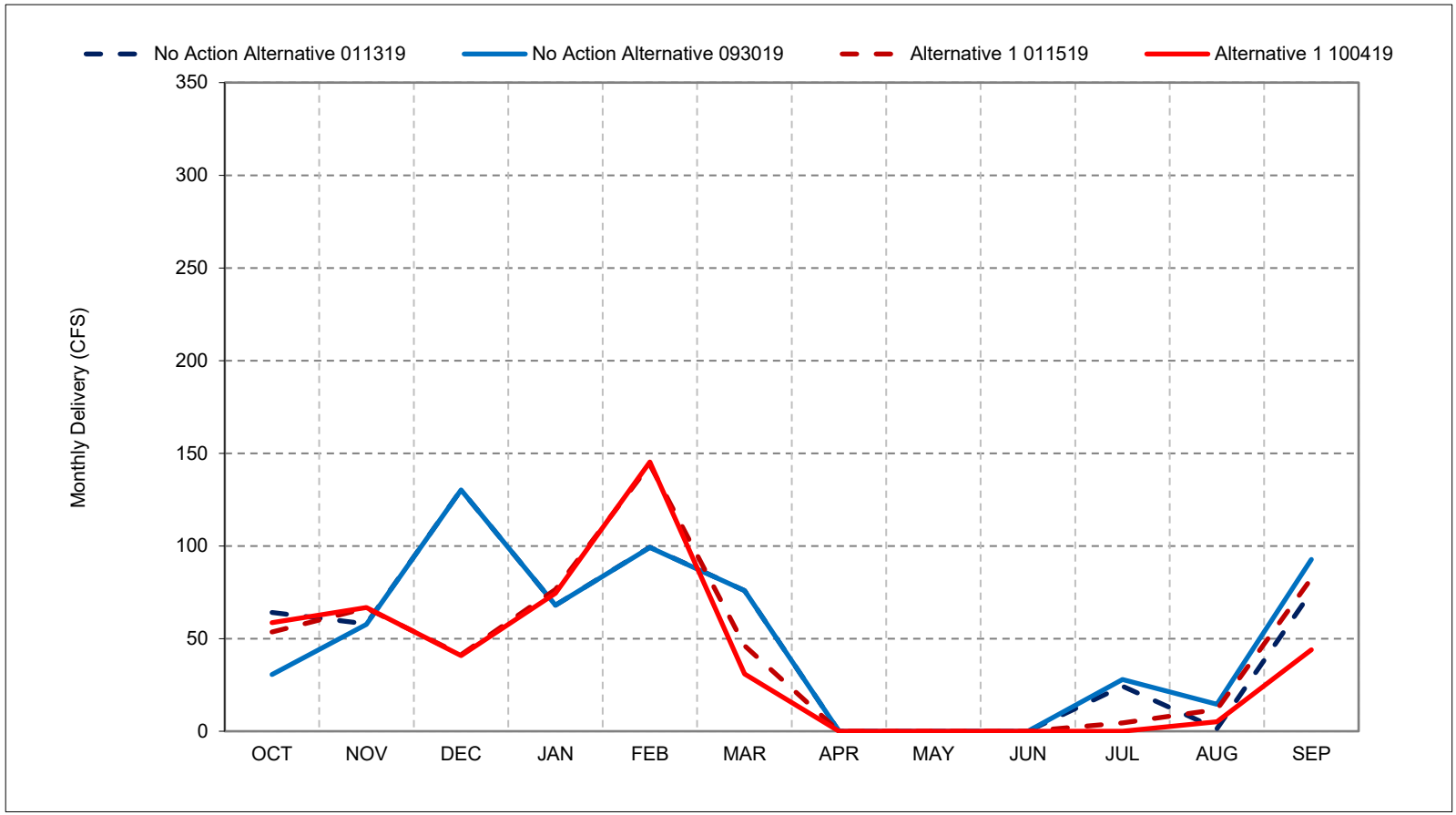



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-4. DMC - CA Intertie Flow, Below Normal Year Average Delivery

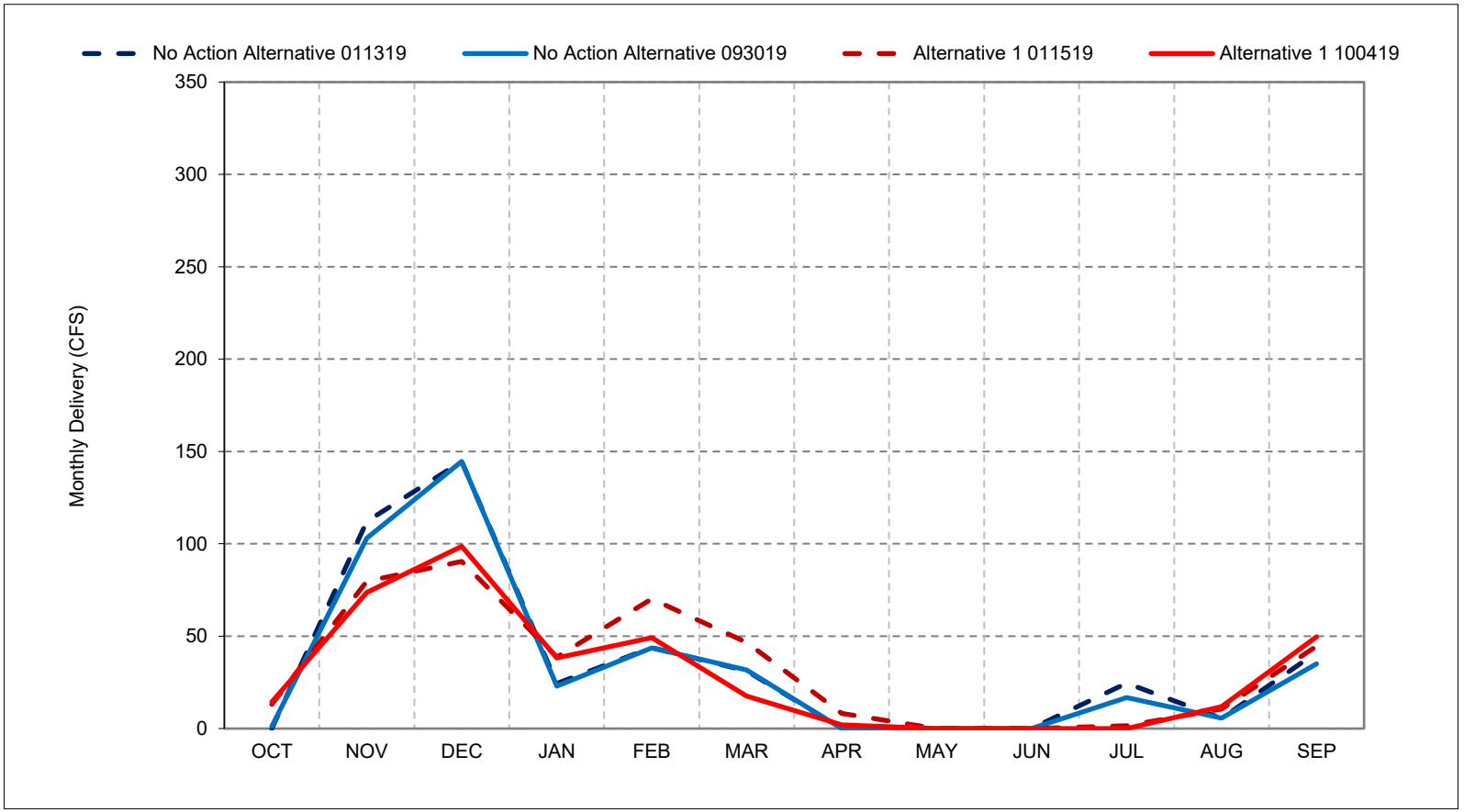



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-5. DMC - CA Intertie Flow, Dry Year Average Delivery

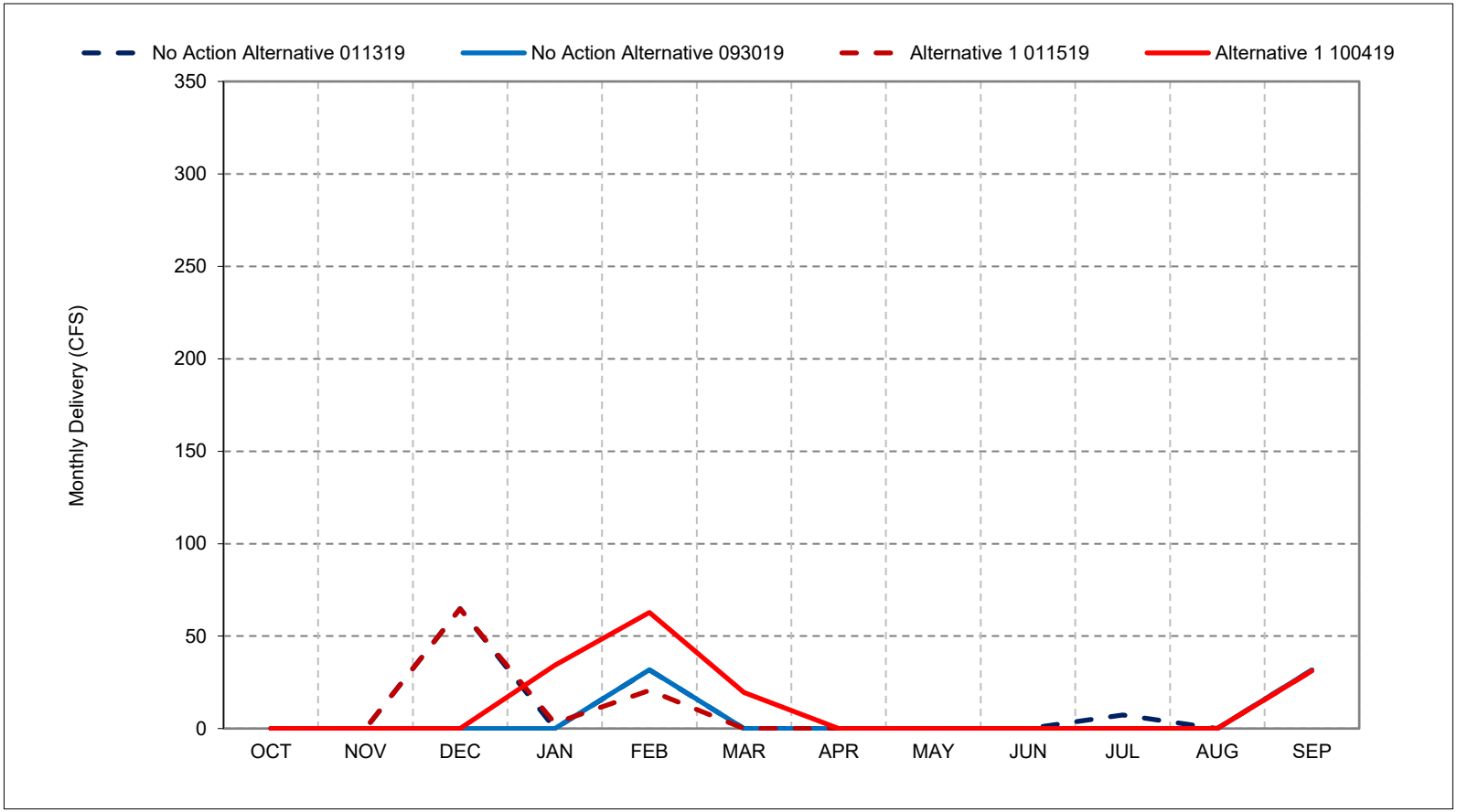



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 57-6. DMC - CA Intertie Flow, Critical Year Average Delivery

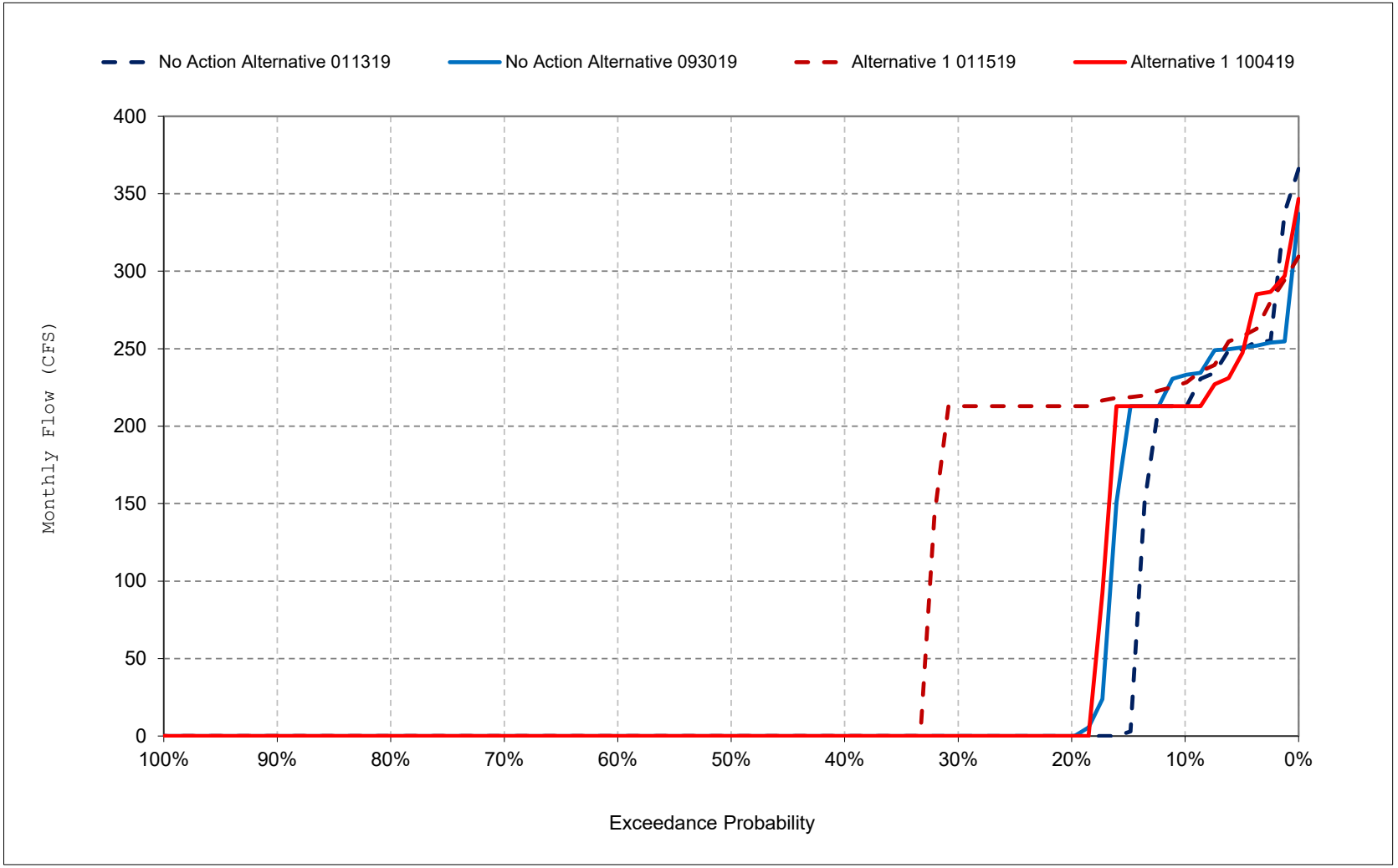



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

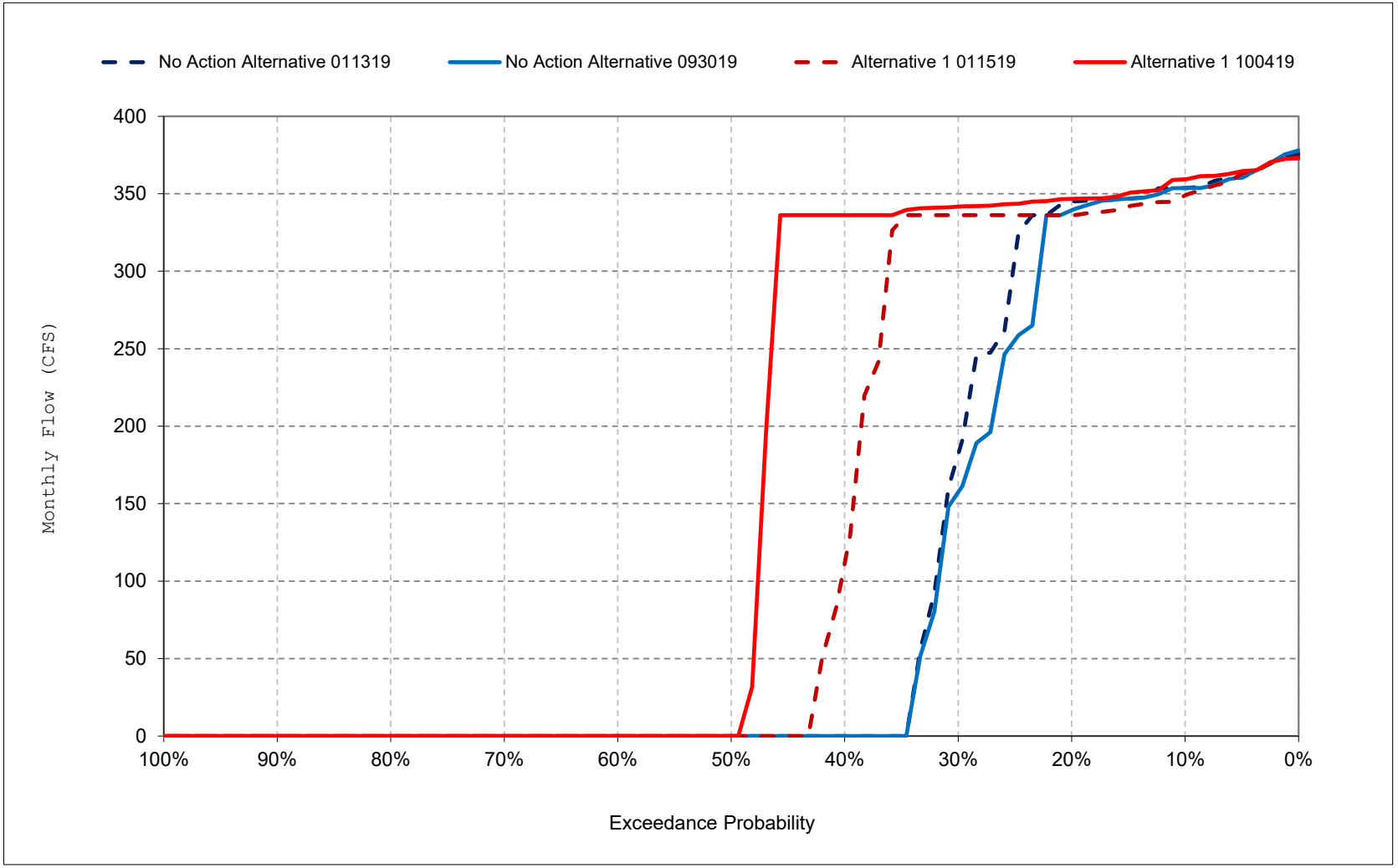
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-7. DMC - CA Intertie Flow, October**



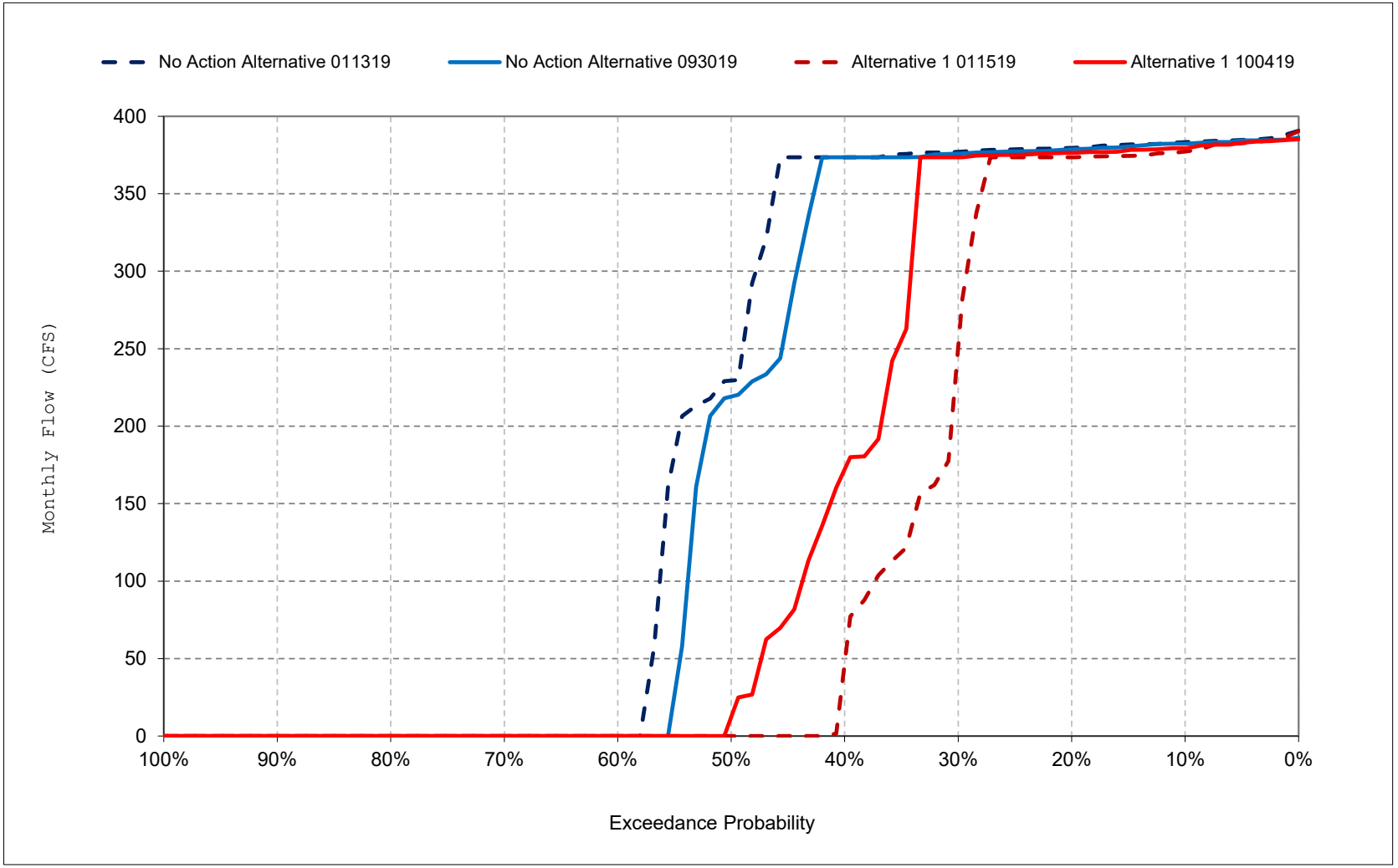

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-8. DMC - CA Intertie Flow, November**



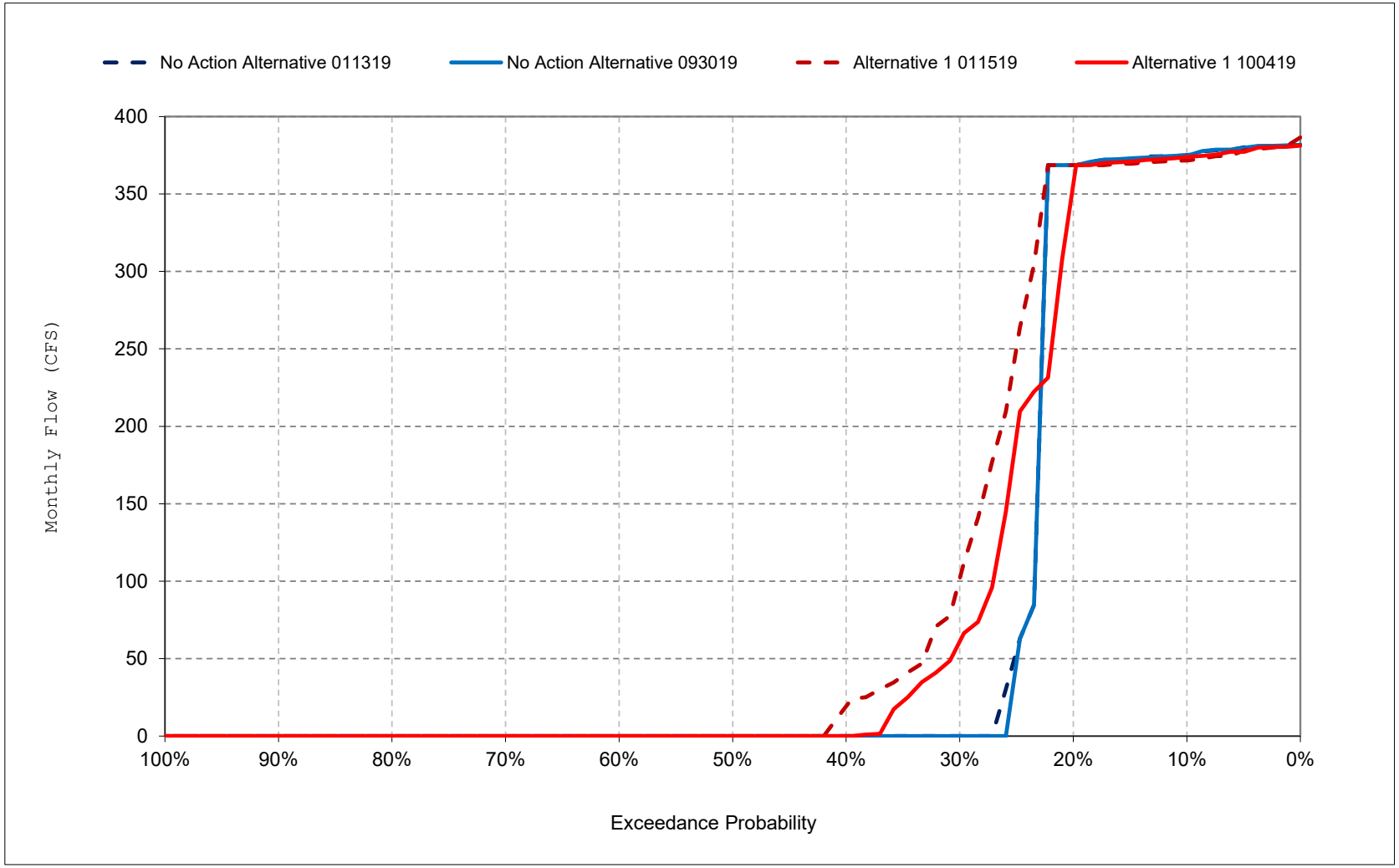

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-9. DMC - CA Intertie Flow, December**



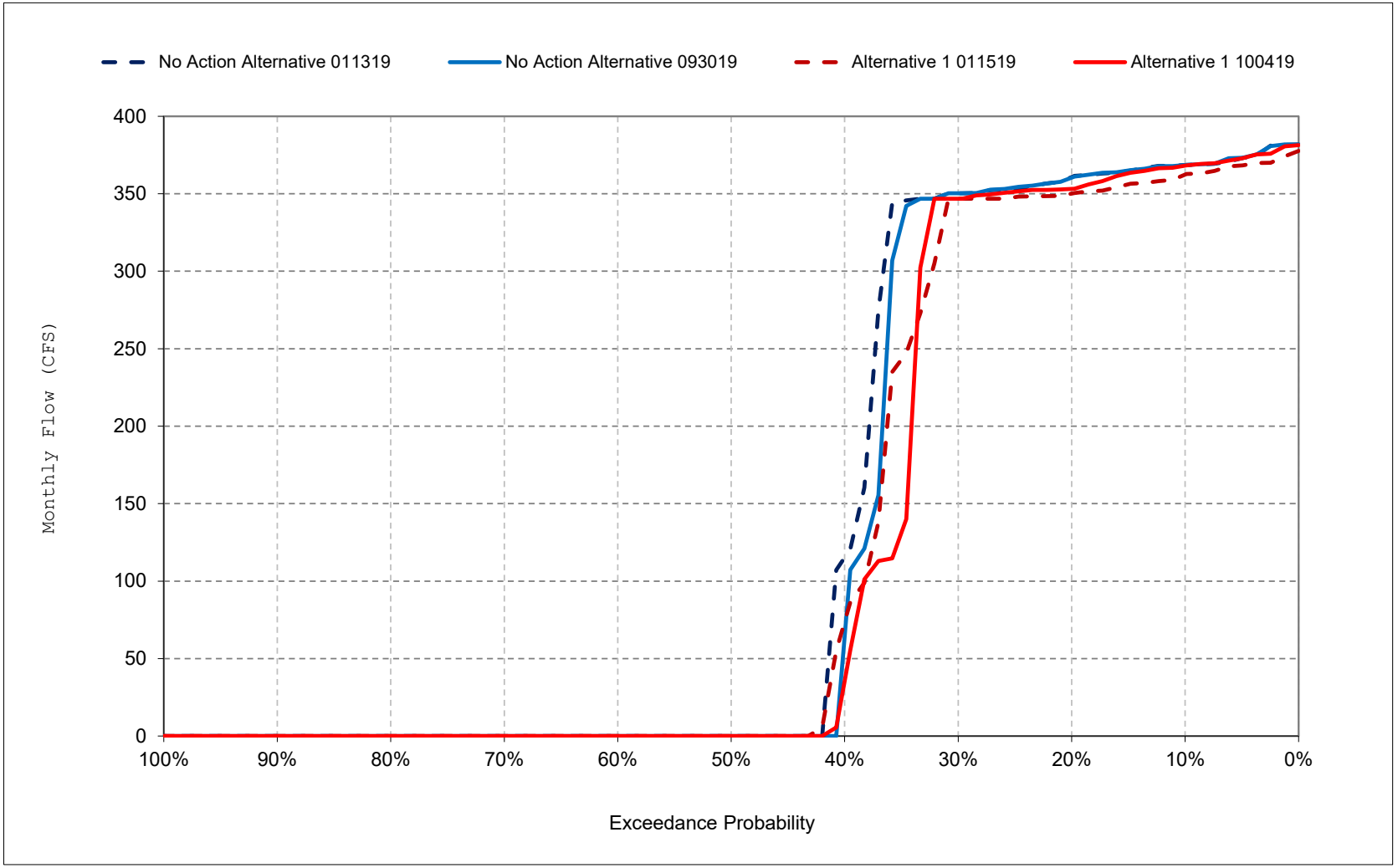

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-10. DMC - CA Intertie Flow, January**



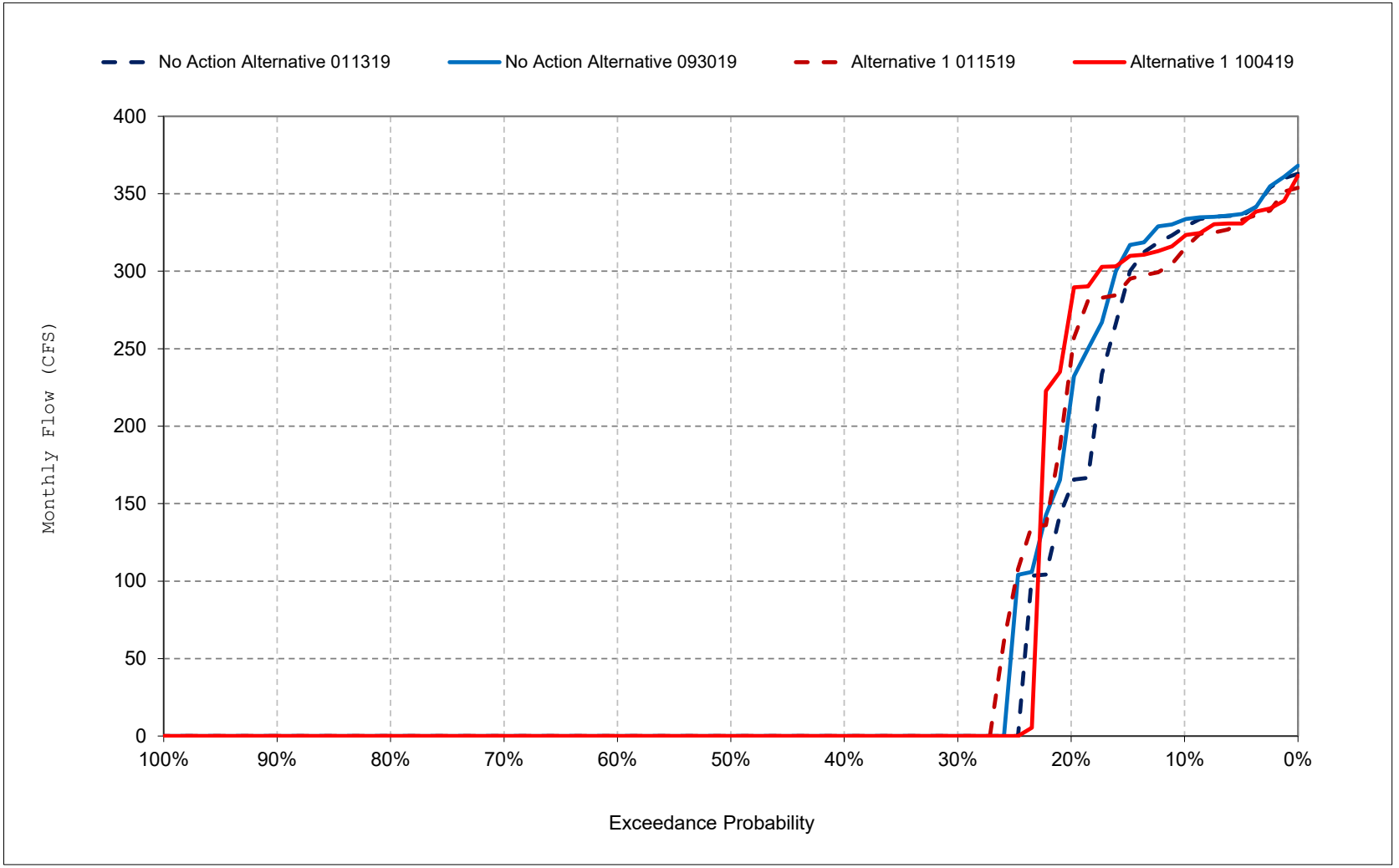

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-11. DMC - CA Intertie Flow, February**



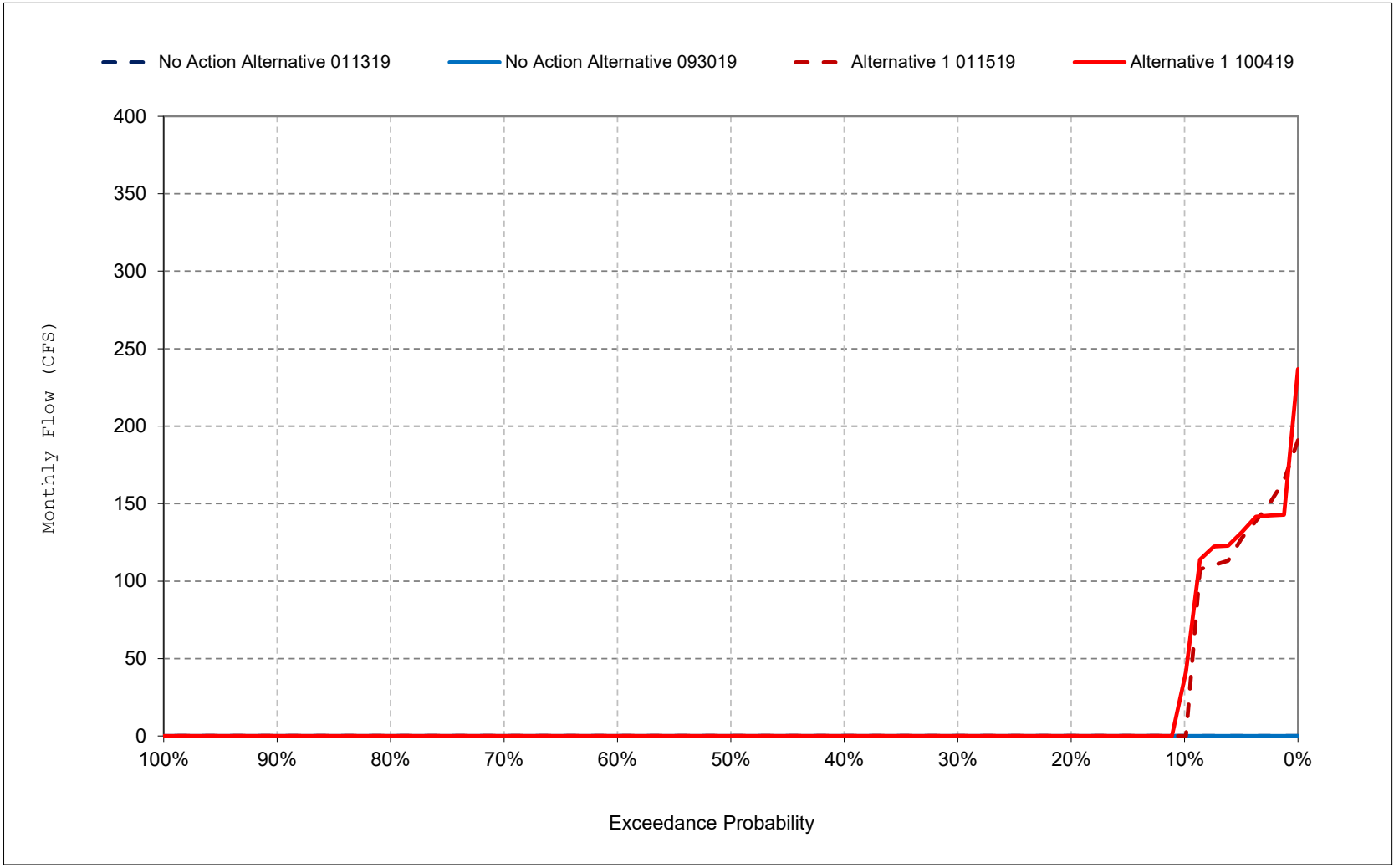

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-12. DMC - CA Intertie Flow, March**



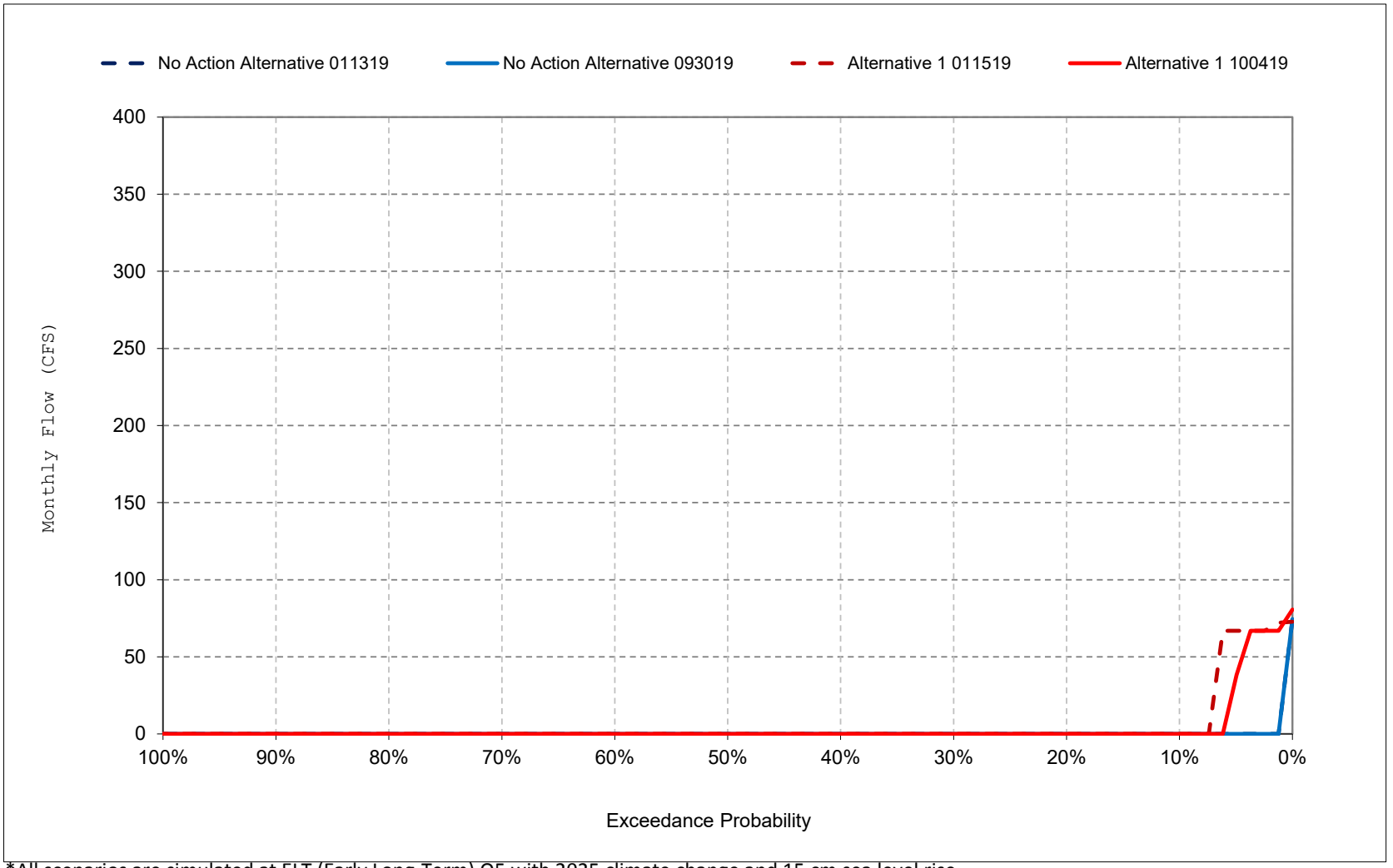

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-13. DMC - CA Intertie Flow, April**



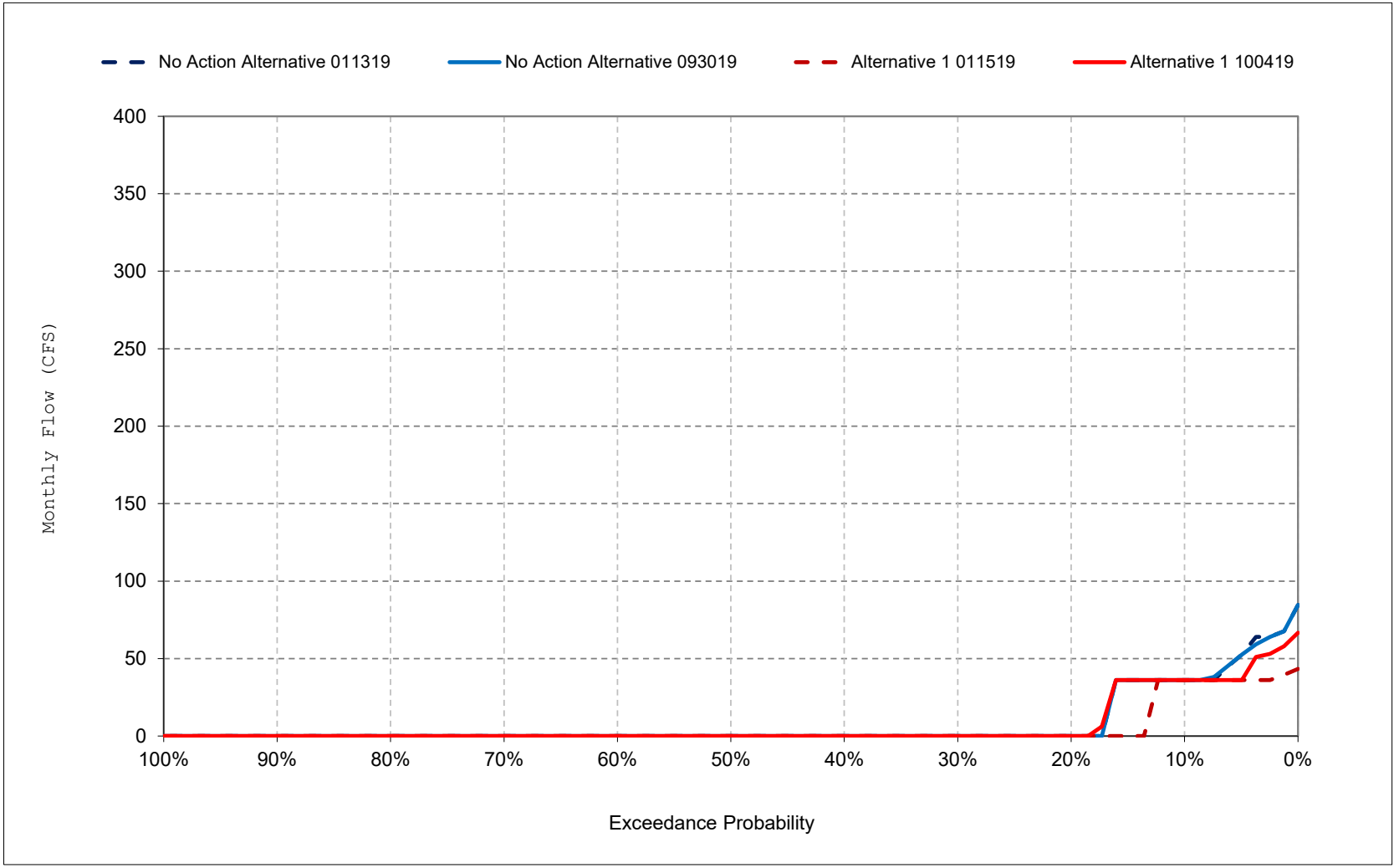

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-14. DMC - CA Intertie Flow, May**



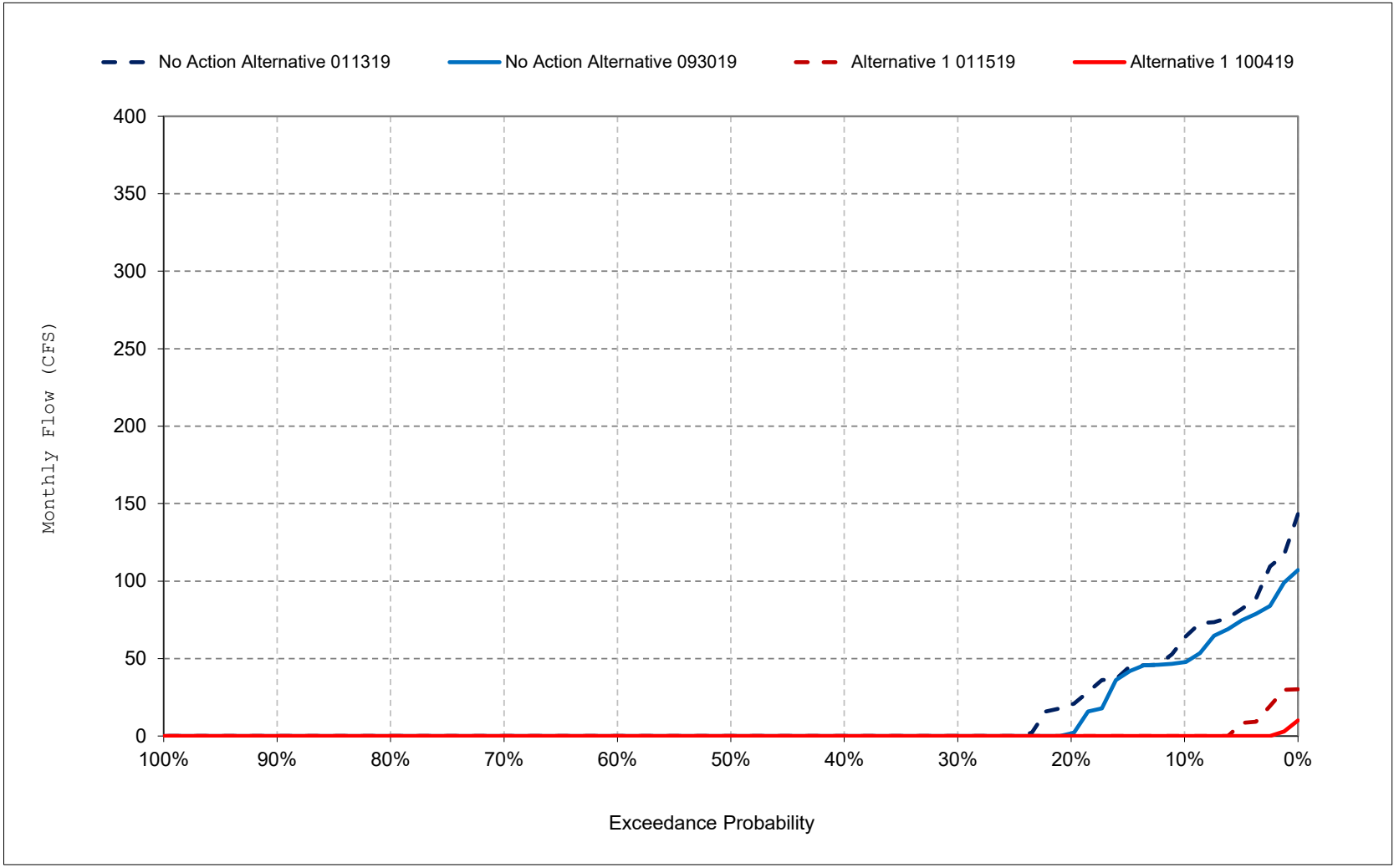

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-15. DMC - CA Intertie Flow, June**



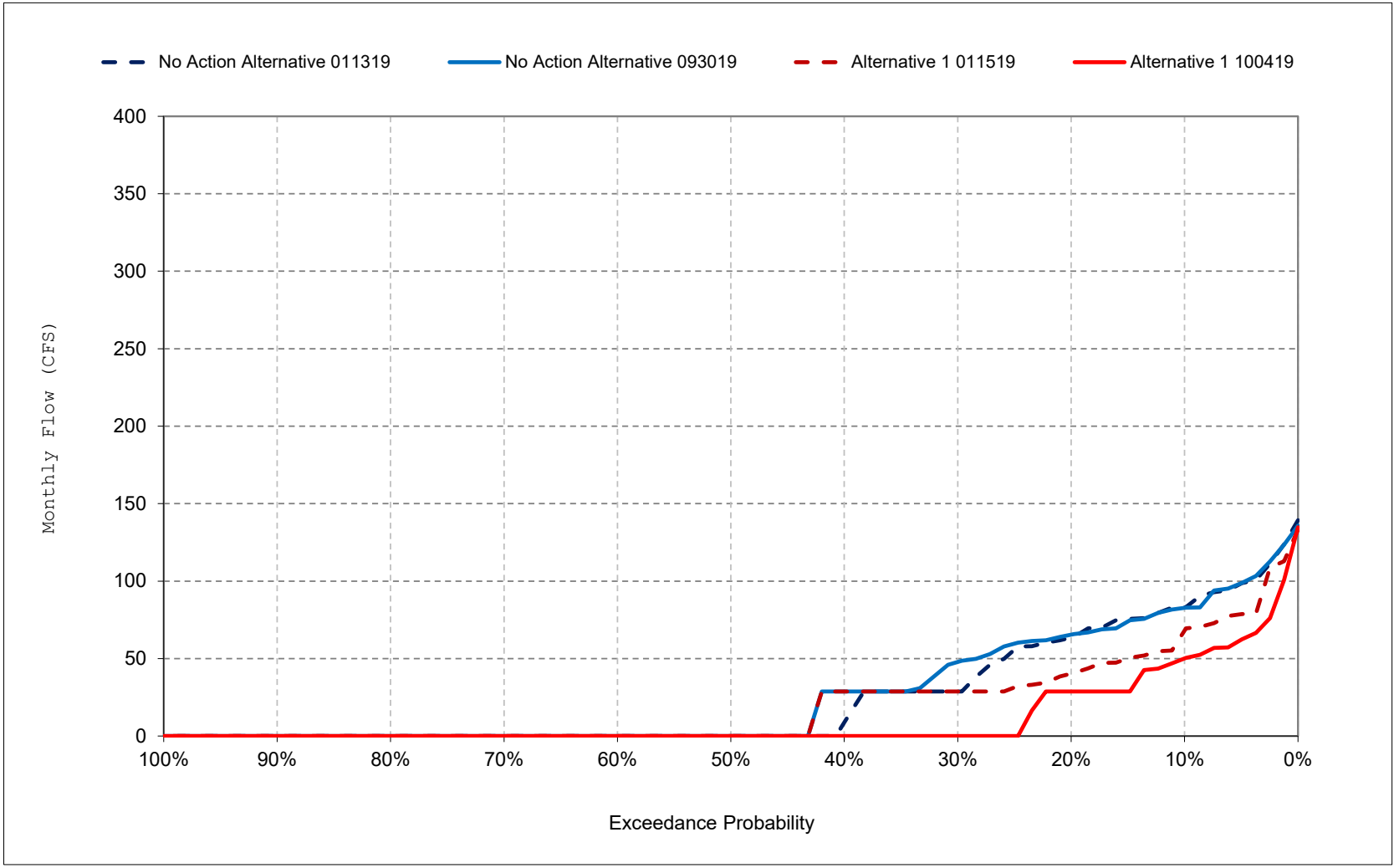

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-16. DMC - CA Intertie Flow, July**



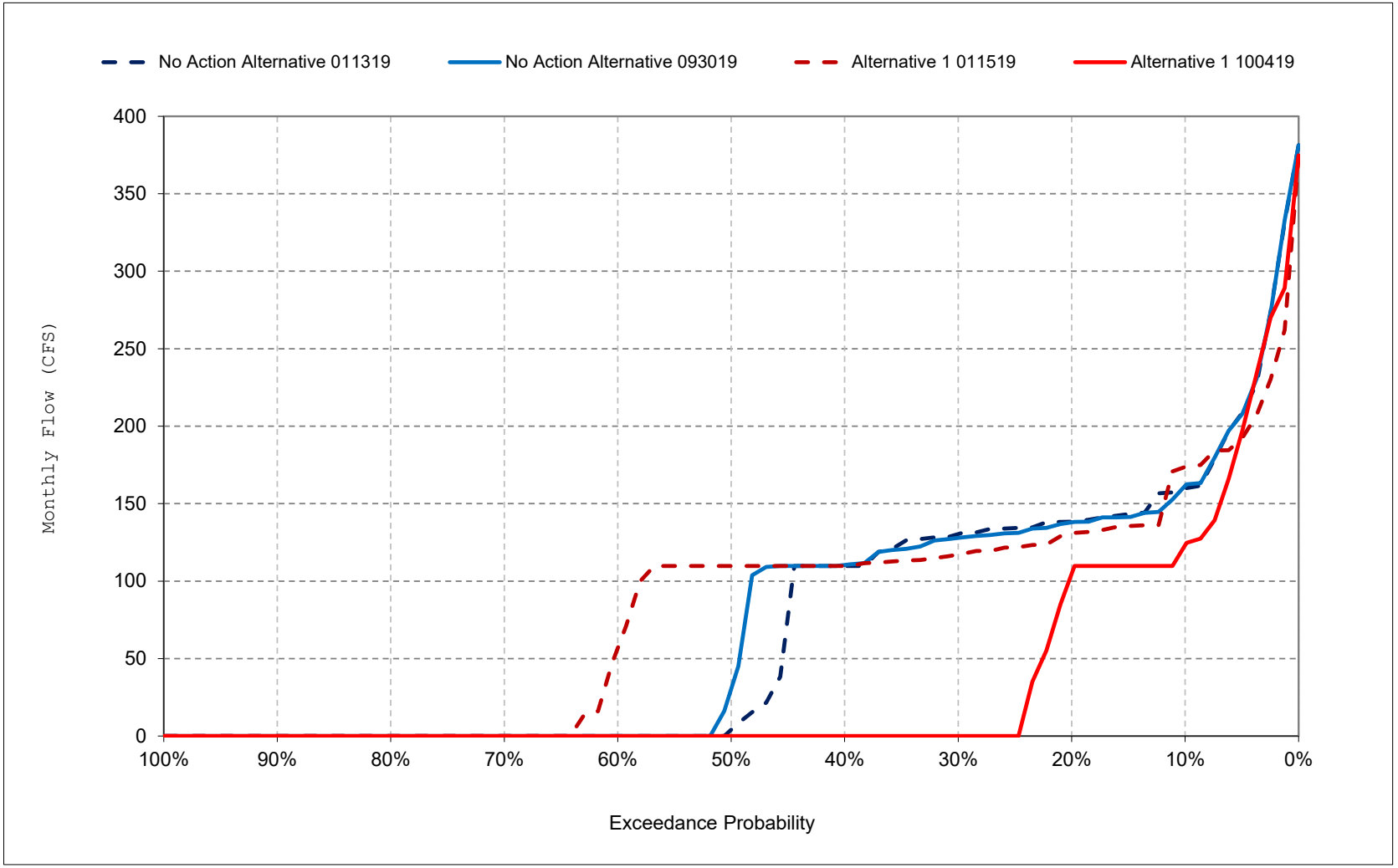

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-17. DMC - CA Intertie Flow, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 57-18. DMC - CA Intertie Flow, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.4 Temperature Results (HEC5Q)

The following results of the HEC5Q model are included for river temperature conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Trinity River below Lewiston Dam | BLW LEWISTON | 1-1 to 1-4 | 1-1 to 1-18 |
| Clear Creek below Whiskeytown | WHISKEYTOWN | 2-1 to 2-4 | 2-1 to 2-18 |
| Clear Creek at Igo | IGO | 3-1 to 3-4 | 3-1 to 3-18 |
| Clear Creek at Mouth | ABV SACRAMENTO | 4-1 to 4-4 | 4-1 to 4-18 |
| Sacramento River below Keswick | BLW KESWICK | 5-1 to 5-4 | 5-1 to 5-18 |
| Sacramento River at Clear Creek | BLW CLEAR CREEK | 6-1 to 6-4 | 6-1 to 6-18 |
| Sacramento River at Balls Ferry | BALLS FERRY | 7-1 to 7-4 | 7-1 to 7-18 |
| Sacramento River at Jellys Ferry | JELLYS FERRY | 8-1 to 8-4 | 8-1 to 8-18 |
| Sacramento River at Bend Bridge | BEND BRIDGE | 9-1 to 9-4 | 9-1 to 9-18 |
| Sacramento River at Red Bluff | RED BLUFF DAM | 10-1 to 10-4 | 10-1 to 10-18 |
| Sacramento River below Red Bluff | BELOW_RBDD_TEHAMA | 11-1 to 11-4 | 11-1 to 11-18 |
| Sacramento River below Hamilton City | HAMILTON CITY | 12-1 to 12-4 | 12-1 to 12-18 |
| Sacramento River at Delevan | MOULTIN WEIR | 13-1 to 13-4 | 13-1 to 13-18 |
| Sacramento River at Knights Landing | KNIGHTS LDG | 14-1 to 14-4 | 14-1 to 14-18 |
| American River below Nimbus Dam | BLW NIMBUS(HAZEL AVE) | 15-1 to 15-4 | 15-1 to 15-18 |
| American River at Watt Avenue | WATT AVE | 16-1 to 16-4 | 16-1 to 16-18 |
| American River at the Mouth | ABV CONFLUENCE | 17-1 to 17-4 | 17-1 to 17-18 |
| Stanislaus River below New Melones Reservoir | BLW NEW MELONES | 20-1 to 10-4 | 20-1 to 20-18 |
| Stanislaus River below Tulloch Reservoir | BLW TULLOCH | 21-1 to 21-4 | 21-1 to 21-18 |

| | | | |
|---|---|---|---|
| Stanislaus River below Goodwin Dam | BLW GOODWIN | 22-1 to 22-4 | 22-1 to 22-18 |
| Stanislaus River at Orange Blossom Bridge | BLW ORBL BR | 23-1 to 23-4 | 23-1 to 23-18 |
| Stanislaus River at Mouth | ABV CONFLUENCE | 24-1 to 24-4 | 24-1 to 24-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 1-1. Trinity River below Lewiston Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.9 | 52.9 | 51.5 | 49.7 | 50.4 | 52.4 | 52.7 | 51.0 | 55.5 | 54.5 | 54.6 | 54.6 |
| 20% | 54.4 | 51.9 | 50.5 | 49.2 | 49.6 | 51.9 | 52.2 | 49.4 | 52.3 | 53.1 | 53.2 | 53.8 |
| 30% | 53.2 | 51.4 | 50.0 | 48.4 | 48.5 | 50.9 | 52.0 | 47.8 | 51.6 | 52.1 | 52.4 | 52.6 |
| 40% | 52.5 | 50.9 | 49.5 | 47.9 | 47.8 | 49.9 | 51.5 | 47.0 | 50.9 | 51.7 | 51.9 | 51.9 |
| 50% | 51.8 | 50.6 | 49.0 | 47.6 | 47.3 | 49.5 | 51.3 | 46.2 | 50.0 | 51.5 | 51.3 | 51.3 |
| 60% | 51.0 | 50.4 | 48.3 | 47.1 | 46.7 | 48.9 | 50.8 | 45.8 | 49.1 | 51.1 | 51.0 | 50.5 |
| 70% | 50.4 | 49.5 | 47.7 | 46.3 | 46.3 | 48.3 | 50.0 | 45.3 | 48.5 | 50.9 | 50.6 | 50.1 |
| 80% | 49.8 | 49.2 | 46.4 | 45.1 | 45.3 | 47.6 | 48.8 | 45.0 | 47.1 | 50.3 | 50.3 | 49.6 |
| 90% | 49.2 | 48.7 | 45.6 | 44.0 | 44.6 | 46.3 | 47.8 | 44.5 | 45.6 | 49.7 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.0 | 50.5 | 48.7 | 47.3 | 47.4 | 49.4 | 50.7 | 47.0 | 50.1 | 51.9 | 51.8 | 51.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.8 | 49.0 | 46.0 | 46.1 | 47.5 | 49.1 | 45.8 | 47.7 | 50.9 | 50.8 | 49.8 |
| Above Normal (16%) | 50.5 | 50.1 | 49.0 | 46.6 | 46.7 | 49.0 | 50.3 | 45.2 | 47.7 | 50.6 | 50.2 | 50.0 |
| Below Normal (13%) | 52.7 | 50.6 | 48.3 | 48.1 | 47.3 | 49.7 | 51.6 | 47.0 | 50.5 | 51.6 | 51.6 | 51.9 |
| Dry (24%) | 53.6 | 51.1 | 47.9 | 48.1 | 48.6 | 50.8 | 51.7 | 47.9 | 51.6 | 51.9 | 52.4 | 52.8 |
| Critical (15%) | 54.5 | 51.4 | 49.9 | 49.0 | 49.3 | 51.5 | 51.8 | 50.4 | 55.4 | 55.5 | 54.8 | 55.7 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.1 | 52.8 | 51.0 | 49.6 | 50.4 | 52.3 | 52.4 | 50.8 | 55.3 | 53.9 | 54.7 | 54.7 |
| 20% | 54.4 | 52.0 | 50.4 | 48.8 | 49.3 | 51.8 | 52.2 | 49.3 | 52.8 | 52.7 | 52.7 | 53.2 |
| 30% | 53.4 | 51.4 | 49.7 | 48.1 | 48.5 | 51.0 | 51.9 | 47.8 | 51.6 | 52.0 | 52.0 | 52.4 |
| 40% | 52.2 | 50.9 | 49.0 | 47.7 | 48.0 | 49.9 | 51.5 | 47.1 | 50.7 | 51.7 | 51.5 | 52.1 |
| 50% | 51.7 | 50.7 | 48.4 | 47.4 | 47.2 | 49.4 | 51.2 | 46.2 | 50.1 | 51.4 | 51.2 | 51.4 |
| 60% | 51.1 | 50.4 | 47.9 | 47.0 | 46.7 | 48.8 | 50.8 | 45.9 | 49.1 | 51.1 | 51.0 | 51.0 |
| 70% | 50.4 | 49.4 | 47.2 | 46.3 | 46.1 | 48.3 | 50.2 | 45.4 | 48.7 | 50.6 | 50.7 | 50.4 |
| 80% | 49.6 | 49.1 | 46.3 | 45.0 | 45.3 | 47.6 | 48.9 | 45.0 | 47.1 | 50.2 | 50.2 | 49.8 |
| 90% | 49.0 | 48.0 | 45.5 | 44.1 | 44.5 | 46.3 | 47.8 | 44.6 | 45.6 | 49.6 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 51.6 | 50.5 | 48.5 | 47.2 | 47.3 | 49.4 | 50.6 | 47.1 | 50.2 | 51.6 | 51.8 | 51.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 49.9 | 49.6 | 48.0 | 46.0 | 45.9 | 47.7 | 49.3 | 45.9 | 47.7 | 50.9 | 50.8 | 50.3 |
| Above Normal (16%) | 50.8 | 49.3 | 47.9 | 46.2 | 46.3 | 48.4 | 50.3 | 45.2 | 47.9 | 50.5 | 50.2 | 50.2 |
| Below Normal (13%) | 52.4 | 50.4 | 48.7 | 47.2 | 47.3 | 49.7 | 51.7 | 47.0 | 50.3 | 51.6 | 51.5 | 51.9 |
| Dry (24%) | 53.5 | 51.1 | 48.3 | 48.0 | 48.6 | 50.6 | 51.4 | 47.9 | 51.9 | 51.7 | 52.2 | 52.5 |
| Critical (15%) | 52.1 | 52.8 | 50.1 | 49.3 | 49.6 | 51.8 | 51.6 | 50.2 | 55.0 | 54.1 | 55.3 | 55.7 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.8 | -0.1 | -0.5 | -0.2 | **0.0** | -0.1 | -0.3 | -0.2 | -0.2 | -0.6 | **0.1** | **0.1** |
| 20% | **0.0** | **0.0** | -0.1 | -0.4 | -0.3 | -0.1 | 0.0 | -0.1 | **0.4** | -0.4 | -0.5 | -0.6 |
| 30% | **0.2** | **0.0** | -0.3 | -0.3 | 0.0 | **0.1** | -0.1 | -0.1 | 0.0 | -0.1 | -0.4 | -0.2 |
| 40% | -0.3 | 0.0 | -0.5 | -0.2 | **0.1** | **0.0** | 0.0 | **0.0** | -0.2 | 0.0 | -0.4 | **0.2** |
| 50% | 0.0 | **0.0** | -0.6 | -0.1 | -0.1 | -0.1 | -0.1 | **0.0** | **0.1** | 0.0 | -0.1 | **0.2** |
| 60% | **0.1** | **0.1** | -0.4 | -0.1 | 0.0 | -0.1 | 0.0 | **0.1** | **0.1** | 0.0 | 0.0 | **0.4** |
| 70% | **0.0** | -0.1 | -0.5 | **0.0** | -0.1 | **0.0** | **0.2** | **0.0** | **0.2** | -0.3 | **0.0** | **0.3** |
| 80% | -0.3 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | **0.1** | **0.0** | **0.0** | -0.1 | -0.1 | **0.3** |
| 90% | -0.2 | -0.7 | -0.2 | **0.1** | -0.1 | 0.0 | **0.1** | **0.0** | **0.0** | -0.1 | -0.1 | **0.1** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.4 | **0.0** | -0.3 | -0.2 | -0.1 | 0.0 | 0.0 | **0.0** | **0.0** | -0.3 | 0.0 | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | -0.2 | -1.0 | 0.0 | -0.2 | **0.2** | **0.2** | **0.0** | **0.0** | -0.1 | 0.0 | **0.4** |
| Above Normal (16%) | **0.3** | -0.7 | -1.1 | -0.5 | -0.5 | -0.6 | 0.0 | **0.0** | **0.2** | -0.1 | **0.1** | **0.2** |
| Below Normal (13%) | -0.3 | -0.2 | **0.4** | -0.9 | 0.0 | 0.0 | **0.1** | 0.0 | -0.1 | **0.0** | -0.2 | **0.0** |
| Dry (24%) | -0.1 | **0.0** | **0.4** | -0.1 | **0.0** | -0.2 | -0.3 | **0.0** | **0.3** | -0.2 | -0.2 | -0.3 |
| Critical (15%) | -2.4 | **1.4** | **0.3** | **0.3** | **0.3** | **0.3** | -0.2 | -0.1 | -0.3 | -1.3 | **0.4** | **0.0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-2. Trinity River below Lewiston Dam, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.5 | 52.8 | 51.4 | 49.7 | 50.7 | 52.5 | 52.7 | 51.0 | 55.6 | 54.5 | 54.7 | 54.6 |
| 20% | 54.2 | 51.8 | 50.6 | 49.1 | 49.6 | 52.0 | 52.2 | 49.4 | 52.3 | 52.8 | 53.4 | 53.6 |
| 30% | 53.4 | 51.3 | 50.1 | 48.5 | 48.5 | 51.0 | 52.0 | 47.7 | 51.6 | 52.1 | 52.5 | 52.5 |
| 40% | 52.8 | 50.8 | 49.5 | 48.0 | 47.9 | 50.2 | 51.5 | 47.0 | 50.8 | 51.7 | 52.0 | 51.9 |
| 50% | 51.8 | 50.6 | 49.2 | 47.6 | 47.3 | 49.6 | 51.2 | 46.2 | 50.0 | 51.5 | 51.4 | 51.3 |
| 60% | 51.1 | 50.1 | 48.3 | 47.1 | 46.8 | 49.0 | 50.7 | 45.8 | 49.1 | 51.2 | 51.0 | 50.5 |
| 70% | 50.4 | 49.4 | 47.6 | 46.3 | 46.3 | 48.3 | 50.0 | 45.3 | 48.5 | 51.0 | 50.6 | 50.1 |
| 80% | 49.6 | 49.1 | 46.5 | 45.1 | 45.4 | 47.7 | 48.8 | 45.0 | 47.1 | 50.3 | 50.3 | 49.5 |
| 90% | 49.2 | 48.7 | 45.6 | 44.2 | 44.5 | 46.3 | 47.8 | 44.5 | 45.6 | 49.6 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.0 | 50.4 | 48.8 | 47.4 | 47.5 | 49.5 | 50.6 | 47.0 | 50.1 | 51.8 | 51.9 | 51.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.9 | 49.0 | 46.0 | 46.1 | 47.7 | 49.1 | 45.8 | 47.7 | 50.9 | 50.8 | 49.8 |
| Above Normal (16%) | 50.4 | 49.5 | 48.9 | 46.8 | 46.7 | 49.0 | 50.3 | 45.2 | 47.7 | 50.6 | 50.1 | 50.1 |
| Below Normal (13%) | 52.9 | 50.6 | 48.3 | 48.2 | 47.5 | 49.8 | 51.6 | 47.0 | 50.4 | 51.5 | 51.6 | 51.9 |
| Dry (24%) | 53.8 | 51.1 | 48.1 | 48.2 | 48.6 | 50.7 | 51.7 | 47.9 | 51.5 | 51.9 | 52.5 | 52.8 |
| Critical (15%) | 54.0 | 51.2 | 49.9 | 48.8 | 49.3 | 51.8 | 51.6 | 50.3 | 55.4 | 55.4 | 55.6 | 54.4 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.1 | 53.3 | 51.8 | 49.6 | 50.5 | 52.3 | 52.7 | 51.0 | 55.4 | 54.5 | 54.6 | 54.8 |
| 20% | 54.3 | 52.1 | 50.7 | 48.9 | 49.8 | 51.8 | 52.2 | 49.3 | 52.6 | 53.3 | 53.2 | 53.4 |
| 30% | 53.4 | 51.4 | 49.8 | 48.2 | 49.0 | 50.9 | 51.9 | 48.3 | 51.6 | 52.4 | 52.0 | 52.6 |
| 40% | 52.3 | 50.9 | 48.9 | 47.8 | 48.0 | 49.8 | 51.6 | 47.1 | 51.0 | 51.9 | 51.6 | 52.1 |
| 50% | 51.8 | 50.7 | 48.2 | 47.4 | 47.1 | 49.5 | 51.3 | 46.2 | 50.4 | 51.6 | 51.4 | 51.4 |
| 60% | 51.2 | 50.0 | 47.9 | 46.9 | 46.6 | 49.0 | 50.8 | 45.9 | 49.4 | 51.2 | 51.0 | 51.0 |
| 70% | 50.6 | 49.4 | 47.3 | 46.2 | 46.1 | 48.4 | 50.2 | 45.3 | 48.6 | 50.8 | 50.6 | 50.4 |
| 80% | 49.8 | 49.0 | 46.2 | 45.0 | 45.3 | 47.5 | 48.8 | 45.0 | 47.8 | 50.3 | 50.2 | 49.9 |
| 90% | 49.3 | 48.2 | 45.2 | 44.1 | 44.5 | 46.3 | 47.8 | 44.6 | 45.7 | 49.6 | 49.6 | 49.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 51.9 | 50.6 | 48.5 | 47.2 | 47.5 | 49.4 | 50.6 | 47.1 | 50.3 | 51.9 | 51.8 | 51.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.6 | 47.6 | 45.9 | 45.9 | 47.7 | 49.1 | 45.9 | 47.9 | 51.2 | 50.7 | 50.4 |
| Above Normal (16%) | 50.8 | 49.4 | 48.6 | 46.1 | 46.5 | 48.8 | 50.2 | 45.2 | 48.0 | 50.5 | 50.2 | 50.1 |
| Below Normal (13%) | 52.7 | 50.5 | 48.5 | 47.1 | 47.4 | 49.6 | 51.5 | 47.0 | 50.6 | 51.5 | 51.6 | 52.1 |
| Dry (24%) | 53.5 | 51.2 | 48.4 | 48.2 | 48.7 | 50.6 | 51.7 | 48.1 | 51.9 | 52.0 | 52.2 | 52.6 |
| Critical (15%) | 54.0 | 53.1 | 50.3 | 49.5 | 49.9 | 51.6 | 51.7 | 50.5 | 55.1 | 54.9 | 55.5 | 53.9 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.4 | **0.4** | **0.5** | -0.2 | -0.2 | -0.1 | 0.0 | 0.0 | -0.2 | **0.1** | -0.1 | **0.2** |
| 20% | **0.0** | **0.4** | **0.1** | -0.2 | **0.2** | -0.1 | **0.0** | -0.1 | **0.3** | **0.5** | -0.3 | -0.2 |
| 30% | **0.0** | **0.0** | -0.3 | -0.3 | **0.5** | -0.1 | -0.1 | **0.5** | **0.0** | **0.3** | -0.5 | **0.1** |
| 40% | -0.4 | **0.1** | -0.6 | -0.2 | **0.1** | -0.4 | **0.1** | **0.1** | **0.2** | **0.2** | -0.4 | **0.3** |
| 50% | **0.0** | **0.1** | -1.1 | -0.2 | -0.2 | -0.2 | **0.1** | **0.0** | **0.4** | **0.1** | **0.0** | **0.1** |
| 60% | **0.1** | -0.1 | -0.4 | -0.2 | -0.2 | 0.0 | **0.2** | **0.1** | **0.3** | **0.0** | **0.0** | **0.4** |
| 70% | **0.3** | 0.0 | -0.3 | -0.1 | -0.2 | **0.1** | **0.1** | **0.1** | **0.1** | -0.2 | **0.0** | **0.3** |
| 80% | **0.2** | 0.0 | -0.3 | -0.1 | -0.1 | -0.2 | 0.0 | **0.0** | **0.7** | **0.0** | -0.1 | **0.4** |
| 90% | **0.1** | -0.5 | -0.5 | -0.1 | 0.0 | -0.1 | 0.0 | **0.1** | **0.1** | 0.0 | 0.0 | **0.2** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | **0.2** | -0.3 | -0.2 | 0.0 | -0.1 | **0.0** | **0.1** | **0.2** | **0.0** | -0.1 | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | -0.3 | -1.4 | -0.1 | -0.2 | 0.0 | **0.0** | **0.0** | **0.2** | **0.3** | -0.1 | **0.6** |
| Above Normal (16%) | **0.3** | 0.0 | -0.3 | -0.7 | -0.2 | -0.2 | 0.0 | **0.0** | **0.3** | -0.2 | **0.0** | **0.0** |
| Below Normal (13%) | -0.2 | -0.1 | **0.2** | -1.0 | -0.1 | -0.2 | 0.0 | 0.0 | **0.2** | -0.1 | -0.1 | **0.2** |
| Dry (24%) | -0.3 | **0.1** | **0.3** | **0.0** | **0.0** | -0.1 | **0.0** | **0.2** | **0.3** | **0.1** | -0.3 | -0.2 |
| Critical (15%) | 0.0 | **1.8** | **0.4** | **0.7** | **0.6** | -0.2 | **0.1** | **0.2** | -0.3 | -0.4 | -0.1 | -0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-3. Trinity River below Lewiston Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.9 | 52.9 | 51.5 | 49.7 | 50.4 | 52.4 | 52.7 | 51.0 | 55.5 | 54.5 | 54.6 | 54.6 |
| 20% | 54.4 | 51.9 | 50.5 | 49.2 | 49.6 | 51.9 | 52.2 | 49.4 | 52.3 | 53.1 | 53.2 | 53.8 |
| 30% | 53.2 | 51.4 | 50.0 | 48.4 | 48.5 | 50.9 | 52.0 | 47.8 | 51.6 | 52.1 | 52.4 | 52.6 |
| 40% | 52.5 | 50.9 | 49.5 | 47.9 | 47.8 | 49.9 | 51.5 | 47.0 | 50.9 | 51.7 | 51.9 | 51.9 |
| 50% | 51.8 | 50.6 | 49.0 | 47.6 | 47.3 | 49.5 | 51.3 | 46.2 | 50.0 | 51.5 | 51.3 | 51.3 |
| 60% | 51.0 | 50.4 | 48.3 | 47.1 | 46.7 | 48.9 | 50.8 | 45.8 | 49.1 | 51.1 | 51.0 | 50.5 |
| 70% | 50.4 | 49.5 | 47.7 | 46.3 | 46.3 | 48.3 | 50.0 | 45.3 | 48.5 | 50.9 | 50.6 | 50.1 |
| 80% | 49.8 | 49.2 | 46.4 | 45.1 | 45.3 | 47.6 | 48.8 | 45.0 | 47.1 | 50.3 | 50.3 | 49.6 |
| 90% | 49.2 | 48.7 | 45.6 | 44.0 | 44.6 | 46.3 | 47.8 | 44.5 | 45.6 | 49.7 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.0 | 50.5 | 48.7 | 47.3 | 47.4 | 49.4 | 50.7 | 47.0 | 50.1 | 51.9 | 51.8 | 51.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.8 | 49.0 | 46.0 | 46.1 | 47.5 | 49.1 | 45.8 | 47.7 | 50.9 | 50.8 | 49.8 |
| Above Normal (16%) | 50.5 | 50.1 | 49.0 | 46.6 | 46.7 | 49.0 | 50.3 | 45.2 | 47.7 | 50.6 | 50.2 | 50.0 |
| Below Normal (13%) | 52.7 | 50.6 | 48.3 | 48.1 | 47.3 | 49.7 | 51.6 | 47.0 | 50.5 | 51.6 | 51.6 | 51.9 |
| Dry (24%) | 53.6 | 51.1 | 47.9 | 48.1 | 48.6 | 50.8 | 51.7 | 47.9 | 51.6 | 51.9 | 52.4 | 52.8 |
| Critical (15%) | 54.5 | 51.4 | 49.9 | 49.0 | 49.3 | 51.5 | 51.8 | 50.4 | 55.4 | 55.5 | 54.8 | 55.7 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.5 | 52.8 | 51.4 | 49.7 | 50.7 | 52.5 | 52.7 | 51.0 | 55.6 | 54.5 | 54.7 | 54.6 |
| 20% | 54.2 | 51.8 | 50.6 | 49.1 | 49.6 | 52.0 | 52.2 | 49.4 | 52.3 | 52.8 | 53.4 | 53.6 |
| 30% | 53.4 | 51.3 | 50.1 | 48.5 | 48.5 | 51.0 | 52.0 | 47.7 | 51.6 | 52.1 | 52.5 | 52.5 |
| 40% | 52.8 | 50.8 | 49.5 | 48.0 | 47.9 | 50.2 | 51.5 | 47.0 | 50.8 | 51.7 | 52.0 | 51.9 |
| 50% | 51.8 | 50.6 | 49.2 | 47.6 | 47.3 | 49.6 | 51.2 | 46.2 | 50.0 | 51.5 | 51.4 | 51.3 |
| 60% | 51.1 | 50.1 | 48.3 | 47.1 | 46.8 | 49.0 | 50.7 | 45.8 | 49.1 | 51.2 | 51.0 | 50.5 |
| 70% | 50.4 | 49.4 | 47.6 | 46.3 | 46.3 | 48.3 | 50.0 | 45.3 | 48.5 | 51.0 | 50.6 | 50.1 |
| 80% | 49.6 | 49.1 | 46.5 | 45.1 | 45.4 | 47.7 | 48.8 | 45.0 | 47.1 | 50.3 | 50.3 | 49.5 |
| 90% | 49.2 | 48.7 | 45.6 | 44.2 | 44.5 | 46.3 | 47.8 | 44.5 | 45.6 | 49.6 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.0 | 50.4 | 48.8 | 47.4 | 47.5 | 49.5 | 50.6 | 47.0 | 50.1 | 51.8 | 51.9 | 51.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.9 | 49.0 | 46.0 | 46.1 | 47.7 | 49.1 | 45.8 | 47.7 | 50.9 | 50.8 | 49.8 |
| Above Normal (16%) | 50.4 | 49.5 | 48.9 | 46.8 | 46.7 | 49.0 | 50.3 | 45.2 | 47.7 | 50.6 | 50.1 | 50.1 |
| Below Normal (13%) | 52.9 | 50.6 | 48.3 | 48.2 | 47.5 | 49.8 | 51.6 | 47.0 | 50.4 | 51.5 | 51.6 | 51.9 |
| Dry (24%) | 53.8 | 51.1 | 48.1 | 48.2 | 48.6 | 50.7 | 51.7 | 47.9 | 51.5 | 51.9 | 52.5 | 52.8 |
| Critical (15%) | 54.0 | 51.2 | 49.9 | 48.8 | 49.3 | 51.8 | 51.6 | 50.3 | 55.4 | 55.4 | 55.6 | 54.4 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.4 | -0.1 | -0.1 | **0.0** | **0.3** | **0.1** | 0.0 | 0.0 | **0.1** | 0.0 | **0.0** | 0.0 |
| 20% | -0.1 | -0.2 | **0.1** | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | -0.3 | **0.2** | -0.2 |
| 30% | **0.1** | -0.1 | **0.2** | **0.1** | 0.0 | **0.1** | **0.0** | -0.1 | 0.0 | **0.0** | **0.1** | 0.0 |
| 40% | **0.3** | -0.1 | **0.1** | **0.1** | **0.0** | **0.3** | -0.1 | **0.0** | -0.1 | 0.0 | **0.1** | -0.1 |
| 50% | **0.1** | -0.1 | **0.2** | **0.0** | **0.1** | **0.1** | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 |
| 60% | **0.1** | -0.3 | 0.0 | 0.0 | **0.1** | **0.1** | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 |
| 70% | 0.0 | -0.1 | -0.1 | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | **0.1** | 0.0 | 0.0 |
| 80% | -0.2 | -0.2 | **0.2** | **0.0** | **0.1** | **0.1** | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 |
| 90% | 0.0 | 0.0 | **0.0** | **0.2** | 0.0 | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | -0.1 | **0.0** | **0.0** | **0.1** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | -0.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.1** | 0.0 | **0.0** | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | -0.1 | -0.6 | -0.1 | **0.1** | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.1** |
| Below Normal (13%) | **0.2** | **0.0** | **0.0** | **0.1** | **0.2** | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | **0.0** |
| Dry (24%) | **0.2** | **0.0** | **0.2** | **0.1** | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | **0.1** | **0.0** |
| Critical (15%) | -0.5 | -0.2 | **0.0** | -0.2 | **0.1** | **0.2** | -0.2 | 0.0 | **0.0** | -0.1 | **0.8** | -1.3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-4. Trinity River below Lewiston Dam, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.1 | 52.8 | 51.0 | 49.6 | 50.4 | 52.3 | 52.4 | 50.8 | 55.3 | 53.9 | 54.7 | 54.7 |
| 20% | 54.4 | 52.0 | 50.4 | 48.8 | 49.3 | 51.8 | 52.2 | 49.3 | 52.8 | 52.7 | 52.7 | 53.2 |
| 30% | 53.4 | 51.4 | 49.7 | 48.1 | 48.5 | 51.0 | 51.9 | 47.8 | 51.6 | 52.0 | 52.0 | 52.4 |
| 40% | 52.2 | 50.9 | 49.0 | 47.7 | 48.0 | 49.9 | 51.5 | 47.1 | 50.7 | 51.7 | 51.5 | 52.1 |
| 50% | 51.7 | 50.7 | 48.4 | 47.4 | 47.2 | 49.4 | 51.2 | 46.2 | 50.1 | 51.4 | 51.2 | 51.4 |
| 60% | 51.1 | 50.4 | 47.9 | 47.0 | 46.7 | 48.8 | 50.8 | 45.9 | 49.1 | 51.1 | 51.0 | 51.0 |
| 70% | 50.4 | 49.4 | 47.2 | 46.3 | 46.1 | 48.3 | 50.2 | 45.4 | 48.7 | 50.6 | 50.7 | 50.4 |
| 80% | 49.6 | 49.1 | 46.3 | 45.0 | 45.3 | 47.6 | 48.9 | 45.0 | 47.1 | 50.2 | 50.2 | 49.8 |
| 90% | 49.0 | 48.0 | 45.5 | 44.1 | 44.5 | 46.3 | 47.8 | 44.6 | 45.6 | 49.6 | 49.6 | 49.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 51.6 | 50.5 | 48.5 | 47.2 | 47.3 | 49.4 | 50.6 | 47.1 | 50.2 | 51.6 | 51.8 | 51.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 49.9 | 49.6 | 48.0 | 46.0 | 45.9 | 47.7 | 49.3 | 45.9 | 47.7 | 50.9 | 50.8 | 50.3 |
| Above Normal (16%) | 50.8 | 49.3 | 47.9 | 46.2 | 46.3 | 48.4 | 50.3 | 45.2 | 47.9 | 50.5 | 50.2 | 50.2 |
| Below Normal (13%) | 52.4 | 50.4 | 48.7 | 47.2 | 47.3 | 49.7 | 51.7 | 47.0 | 50.3 | 51.6 | 51.5 | 51.9 |
| Dry (24%) | 53.5 | 51.1 | 48.3 | 48.0 | 48.6 | 50.6 | 51.4 | 47.9 | 51.9 | 51.7 | 52.2 | 52.5 |
| Critical (15%) | 52.1 | 52.8 | 50.1 | 49.3 | 49.6 | 51.8 | 51.6 | 50.2 | 55.0 | 54.1 | 55.3 | 55.7 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.1 | 53.3 | 51.8 | 49.6 | 50.5 | 52.3 | 52.7 | 51.0 | 55.4 | 54.5 | 54.6 | 54.8 |
| 20% | 54.3 | 52.1 | 50.7 | 48.9 | 49.8 | 51.8 | 52.2 | 49.3 | 52.6 | 53.3 | 53.2 | 53.4 |
| 30% | 53.4 | 51.4 | 49.8 | 48.2 | 49.0 | 50.9 | 51.9 | 48.3 | 51.6 | 52.4 | 52.0 | 52.6 |
| 40% | 52.3 | 50.9 | 48.9 | 47.8 | 48.0 | 49.8 | 51.6 | 47.1 | 51.0 | 51.9 | 51.6 | 52.1 |
| 50% | 51.8 | 50.7 | 48.2 | 47.4 | 47.1 | 49.5 | 51.3 | 46.2 | 50.4 | 51.6 | 51.4 | 51.4 |
| 60% | 51.2 | 50.0 | 47.9 | 46.9 | 46.6 | 49.0 | 50.8 | 45.9 | 49.4 | 51.2 | 51.0 | 51.0 |
| 70% | 50.6 | 49.4 | 47.3 | 46.2 | 46.1 | 48.4 | 50.2 | 45.3 | 48.6 | 50.8 | 50.6 | 50.4 |
| 80% | 49.8 | 49.0 | 46.2 | 45.0 | 45.3 | 47.5 | 48.8 | 45.0 | 47.8 | 50.3 | 50.2 | 49.9 |
| 90% | 49.3 | 48.2 | 45.2 | 44.1 | 44.5 | 46.3 | 47.8 | 44.6 | 45.7 | 49.6 | 49.6 | 49.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 51.9 | 50.6 | 48.5 | 47.2 | 47.5 | 49.4 | 50.6 | 47.1 | 50.3 | 51.9 | 51.8 | 51.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.0 | 49.6 | 47.6 | 45.9 | 45.9 | 47.7 | 49.1 | 45.9 | 47.9 | 51.2 | 50.7 | 50.4 |
| Above Normal (16%) | 50.8 | 49.4 | 48.6 | 46.1 | 46.5 | 48.8 | 50.2 | 45.2 | 48.0 | 50.5 | 50.2 | 50.1 |
| Below Normal (13%) | 52.7 | 50.5 | 48.5 | 47.1 | 47.4 | 49.6 | 51.5 | 47.0 | 50.6 | 51.5 | 51.6 | 52.1 |
| Dry (24%) | 53.5 | 51.2 | 48.4 | 48.2 | 48.7 | 50.6 | 51.7 | 48.1 | 51.9 | 52.0 | 52.2 | 52.6 |
| Critical (15%) | 54.0 | 53.1 | 50.3 | 49.5 | 49.9 | 51.6 | 51.7 | 50.5 | 55.1 | 54.9 | 55.5 | 53.9 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.0** | **0.5** | **0.8** | **0.0** | **0.1** | **0.1** | **0.3** | **0.2** | **0.1** | **0.7** | -0.2 | **0.1** |
| 20% | -0.1 | **0.1** | **0.3** | **0.1** | **0.5** | **0.0** | **0.0** | 0.0 | -0.1 | **0.6** | **0.4** | **0.2** |
| 30% | **0.0** | 0.0 | **0.2** | **0.0** | **0.5** | -0.1 | 0.0 | **0.5** | **0.0** | **0.4** | **0.1** | **0.2** |
| 40% | **0.1** | 0.0 | -0.1 | **0.1** | **0.0** | -0.1 | **0.1** | **0.0** | **0.3** | **0.2** | **0.1** | **0.1** |
| 50% | **0.1** | 0.0 | -0.3 | 0.0 | -0.1 | **0.1** | **0.1** | **0.0** | **0.3** | **0.2** | **0.2** | 0.0 |
| 60% | **0.1** | -0.5 | **0.0** | -0.1 | -0.1 | **0.2** | **0.1** | 0.0 | **0.3** | **0.1** | **0.0** | 0.0 |
| 70% | **0.2** | 0.0 | **0.1** | 0.0 | 0.0 | **0.1** | 0.0 | 0.0 | -0.1 | **0.2** | 0.0 | 0.0 |
| 80% | **0.3** | -0.1 | -0.1 | 0.0 | **0.0** | -0.1 | -0.1 | **0.0** | **0.7** | **0.1** | **0.0** | **0.0** |
| 90% | **0.3** | **0.2** | -0.3 | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 | **0.1** | **0.0** | **0.0** | **0.1** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.3** | **0.1** | **0.0** | **0.0** | **0.1** | **0.0** | **0.0** | **0.1** | **0.1** | **0.3** | **0.0** | -0.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.1** | 0.0 | -0.4 | 0.0 | **0.1** | 0.0 | -0.2 | 0.0 | **0.2** | **0.4** | -0.1 | **0.2** |
| Above Normal (16%) | 0.0 | **0.1** | **0.7** | 0.0 | **0.2** | **0.3** | -0.1 | 0.0 | **0.1** | **0.0** | -0.1 | 0.0 |
| Below Normal (13%) | **0.3** | **0.1** | -0.2 | -0.1 | **0.2** | -0.1 | -0.2 | 0.0 | **0.3** | -0.2 | **0.1** | **0.2** |
| Dry (24%) | 0.0 | **0.1** | **0.1** | **0.2** | **0.1** | **0.0** | **0.3** | **0.2** | **0.0** | **0.3** | **0.0** | **0.1** |
| Critical (15%) | **1.9** | **0.3** | **0.2** | **0.2** | **0.3** | -0.2 | **0.1** | **0.3** | **0.1** | **0.8** | **0.2** | -1.8 |

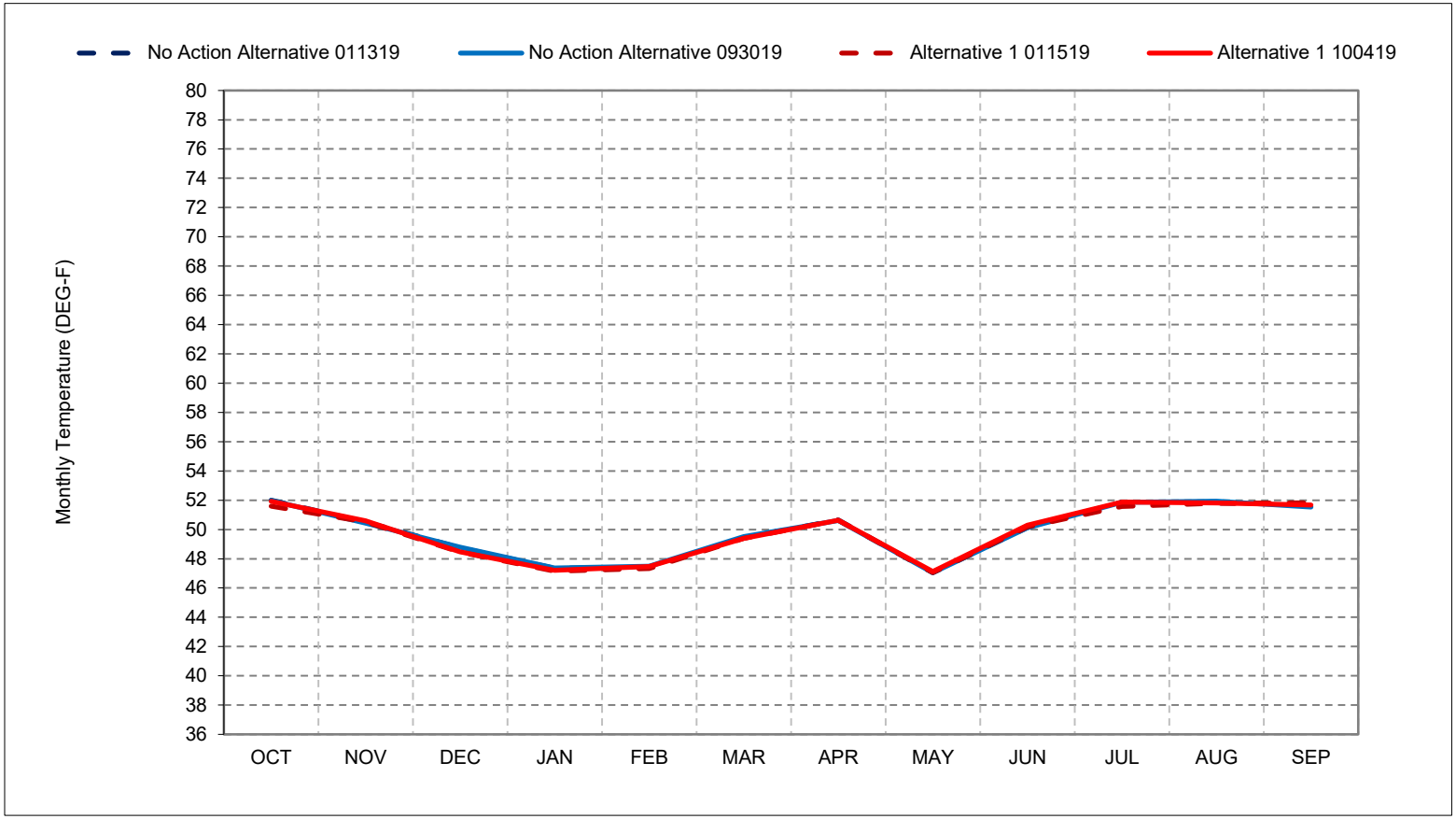
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-1. Trinity River below Lewiston Dam, Long-Term Average Temperature

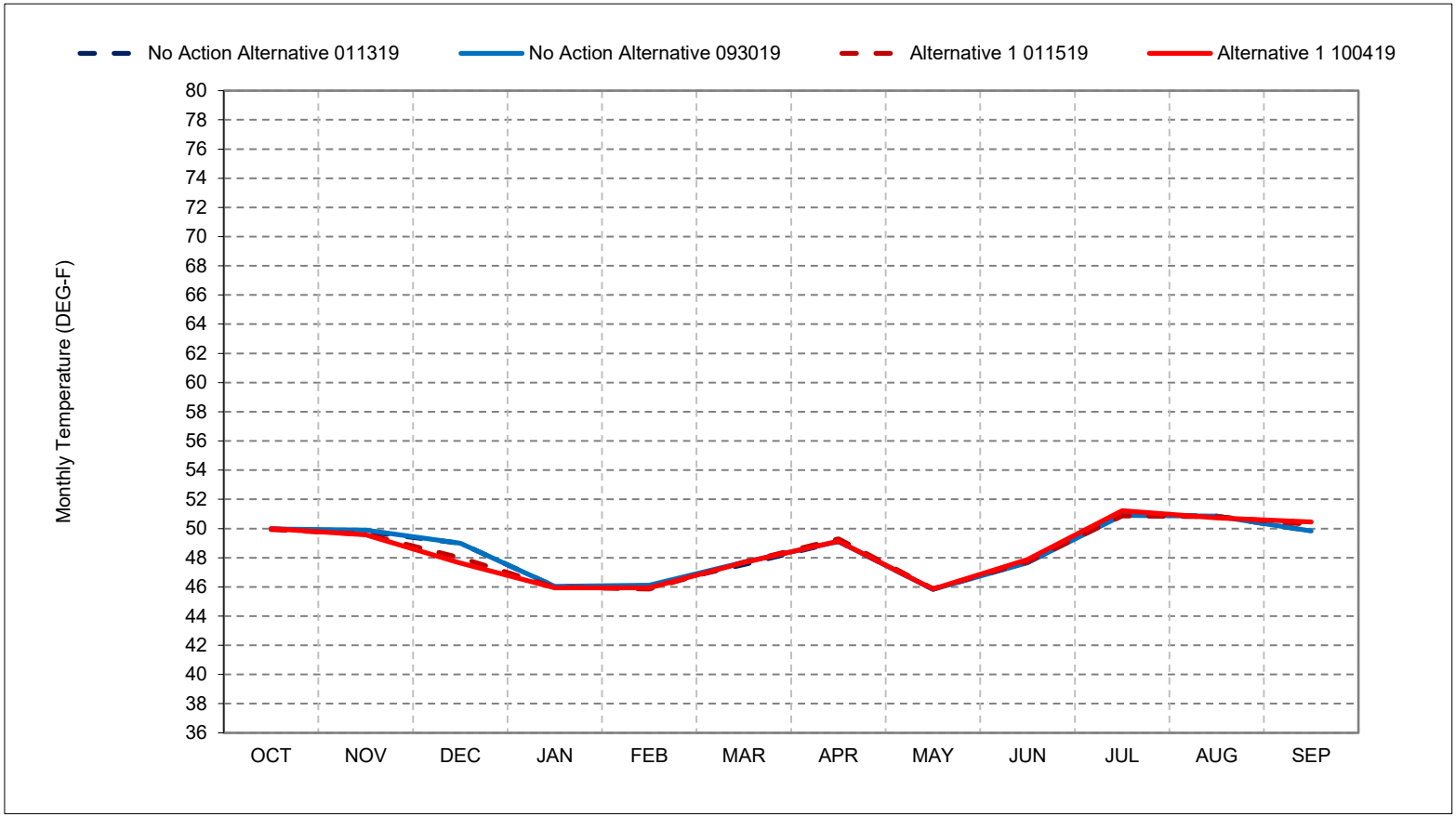



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-2. Trinity River below Lewiston Dam, Wet Year Average Temperature

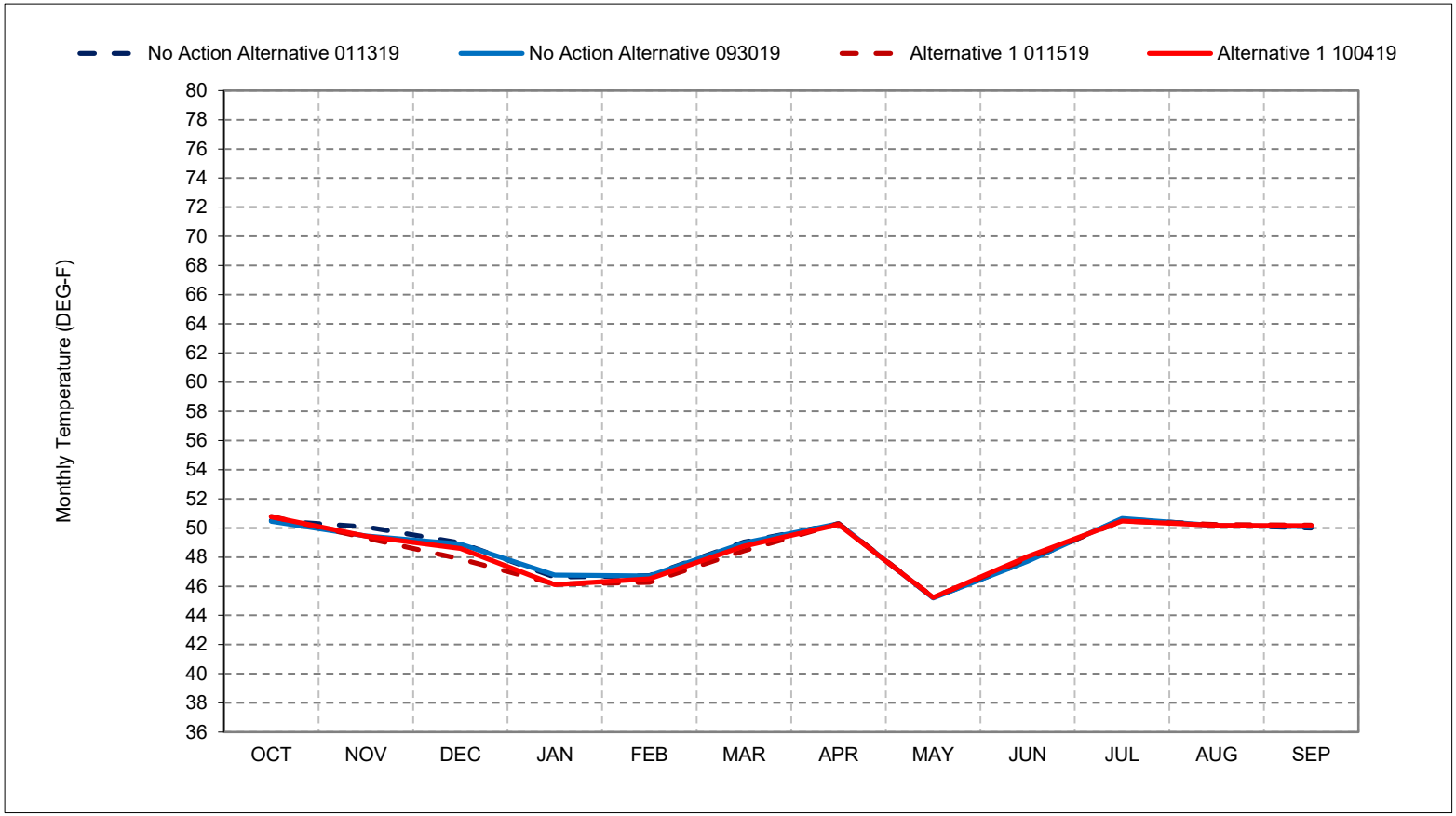



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-3. Trinity River below Lewiston Dam, Above Normal Year Average Temperature

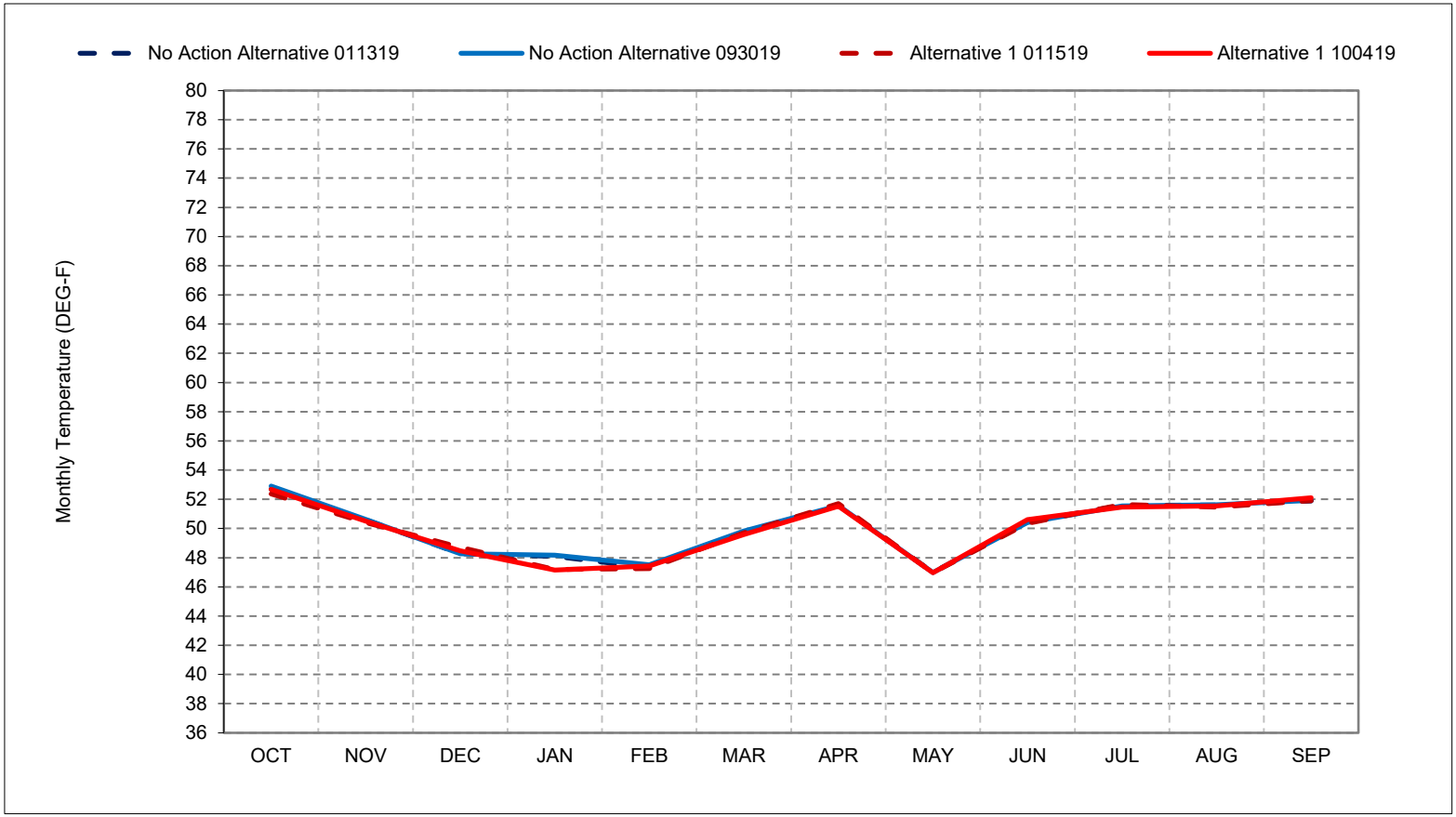



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-4. Trinity River below Lewiston Dam, Below Normal Year Average Temperature

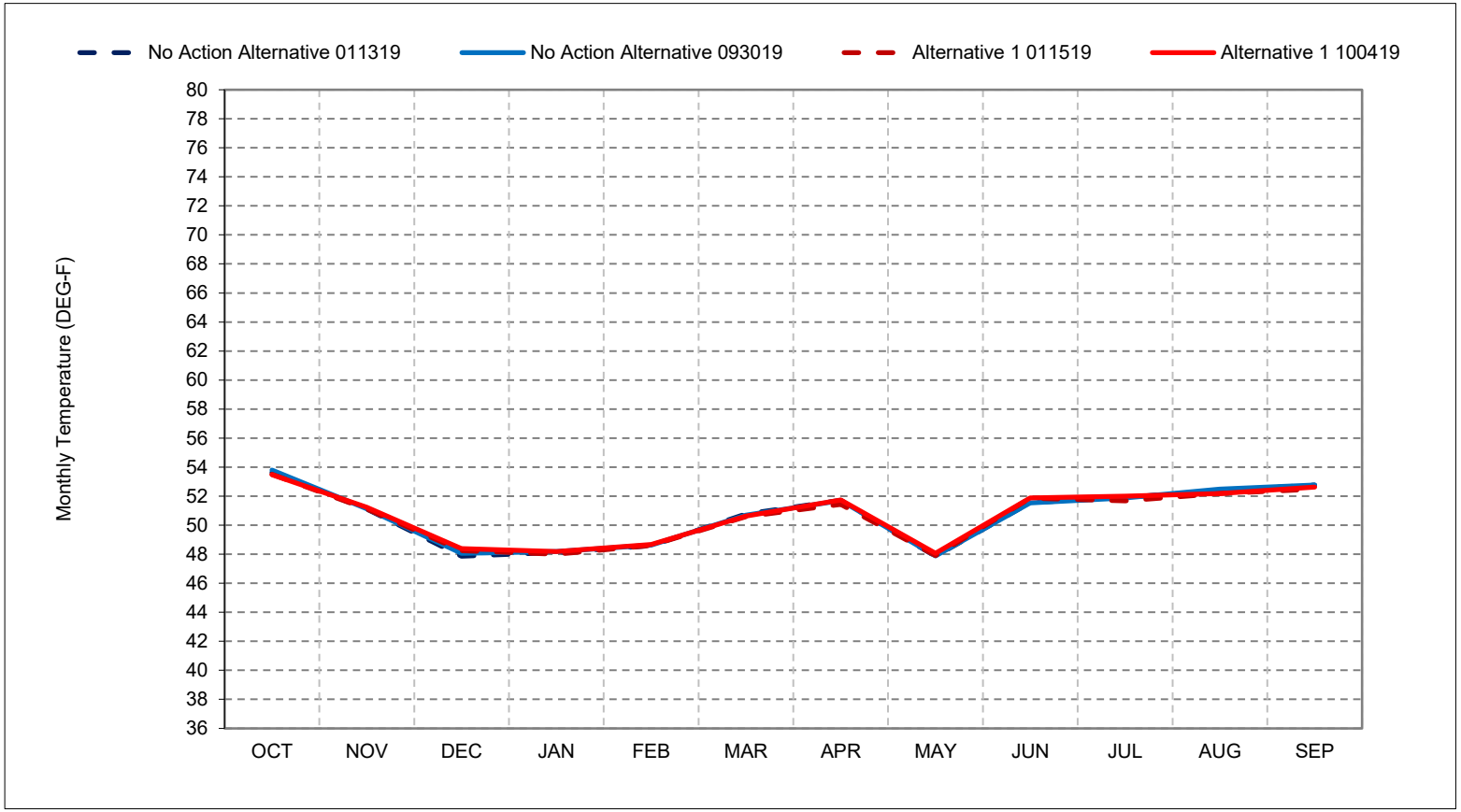



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-5. Trinity River below Lewiston Dam, Dry Year Average Temperature

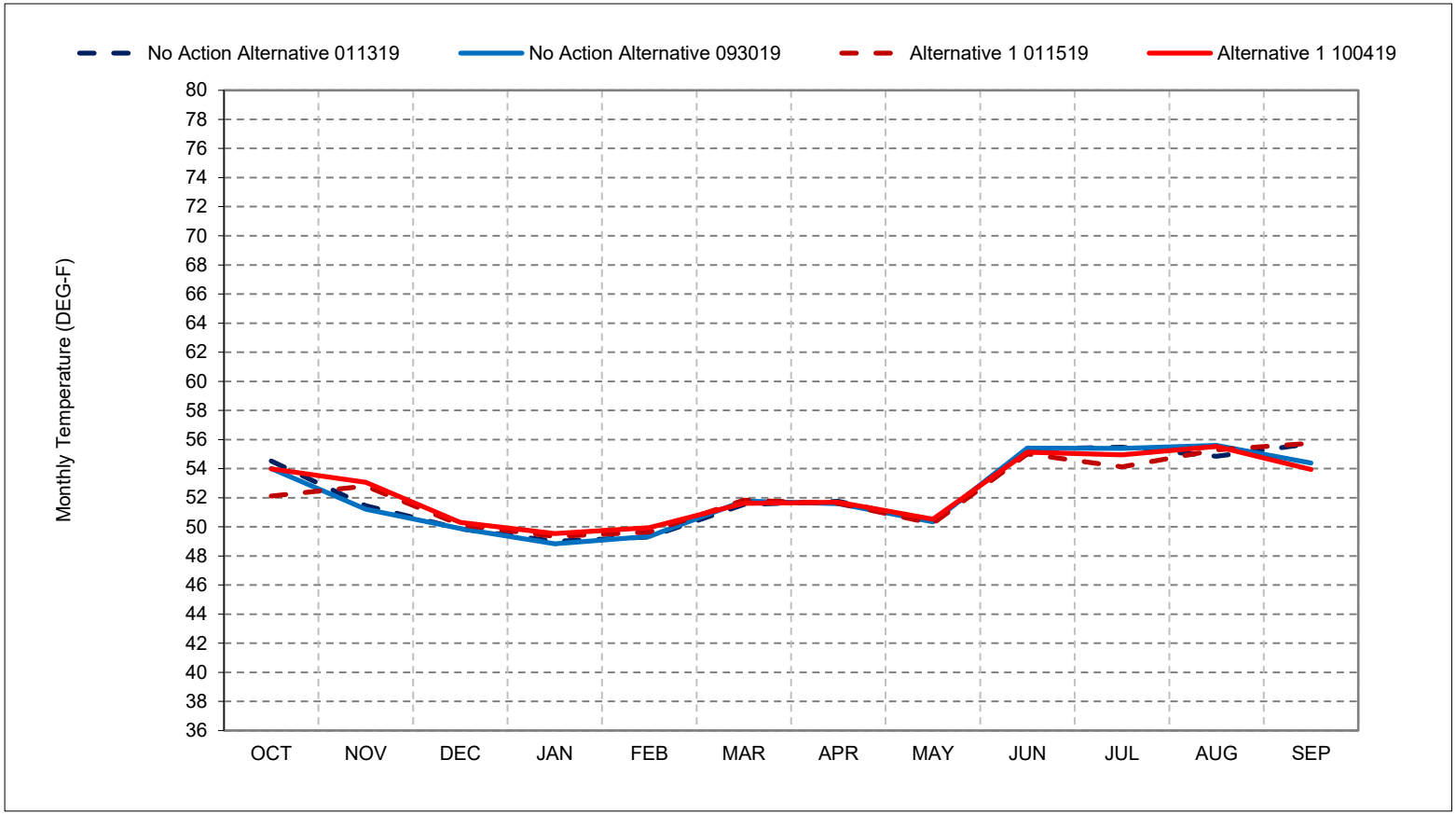



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-6. Trinity River below Lewiston Dam, Critical Year Average Temperature

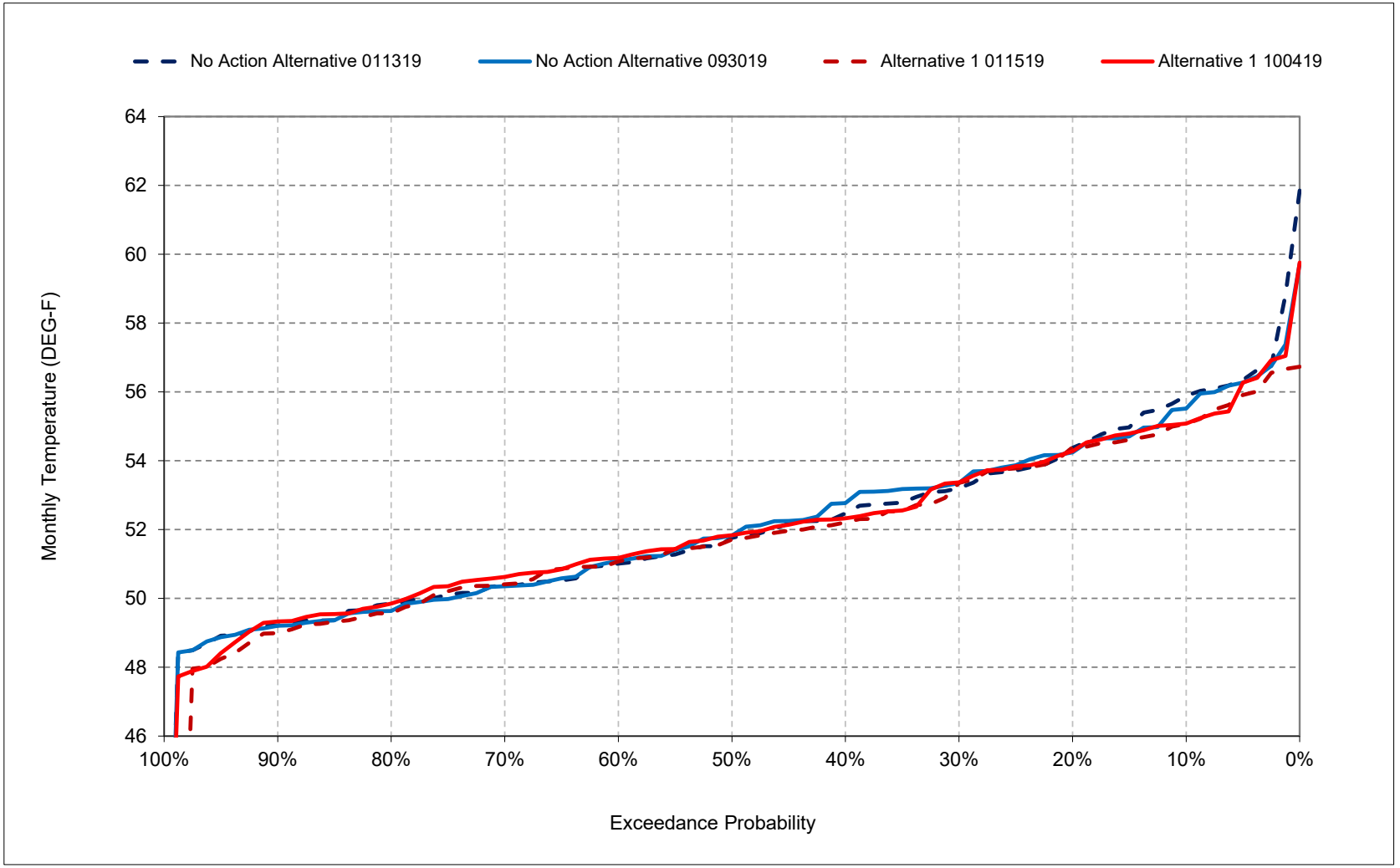



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

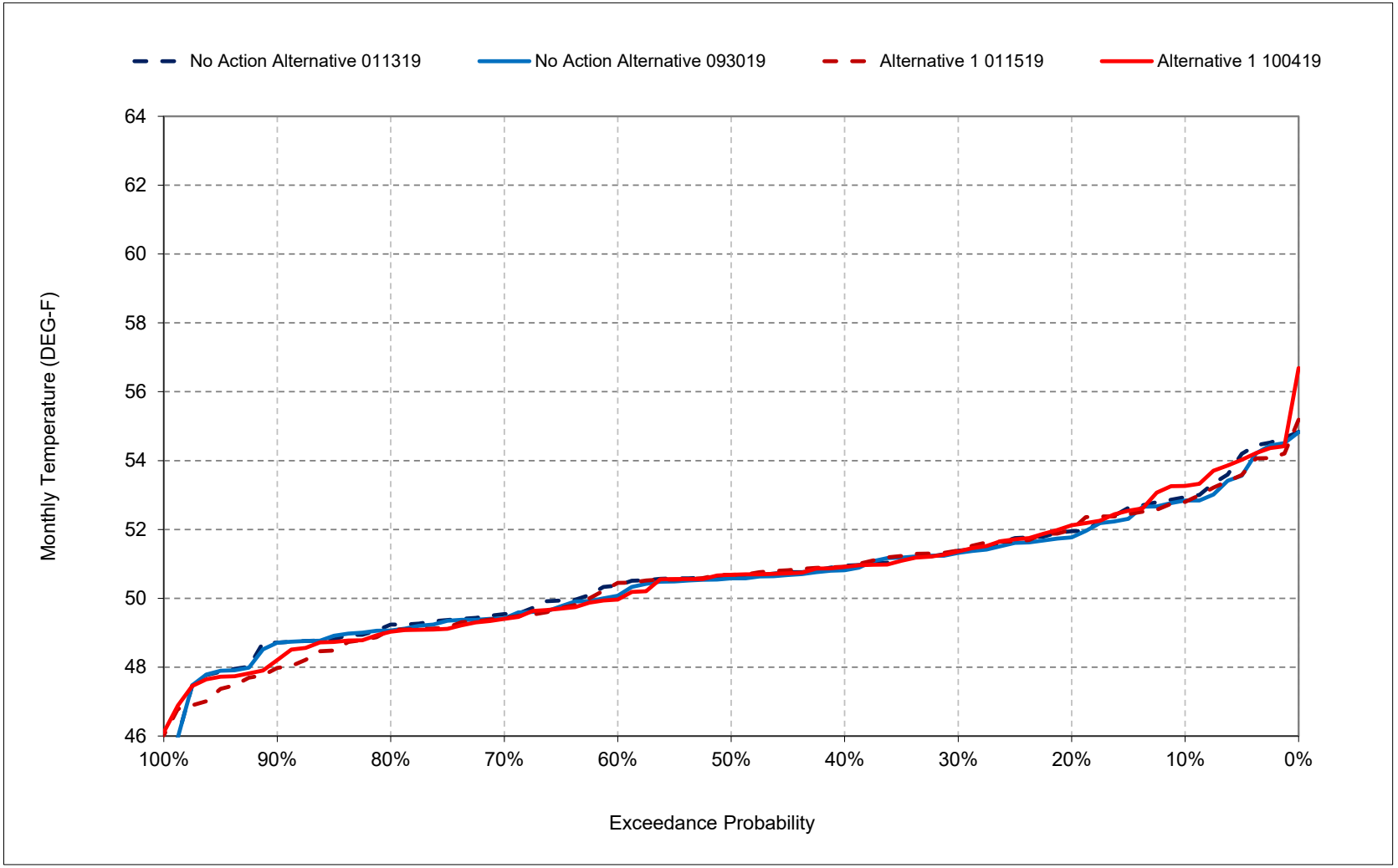
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-7. Trinity River below Lewiston Dam, October**



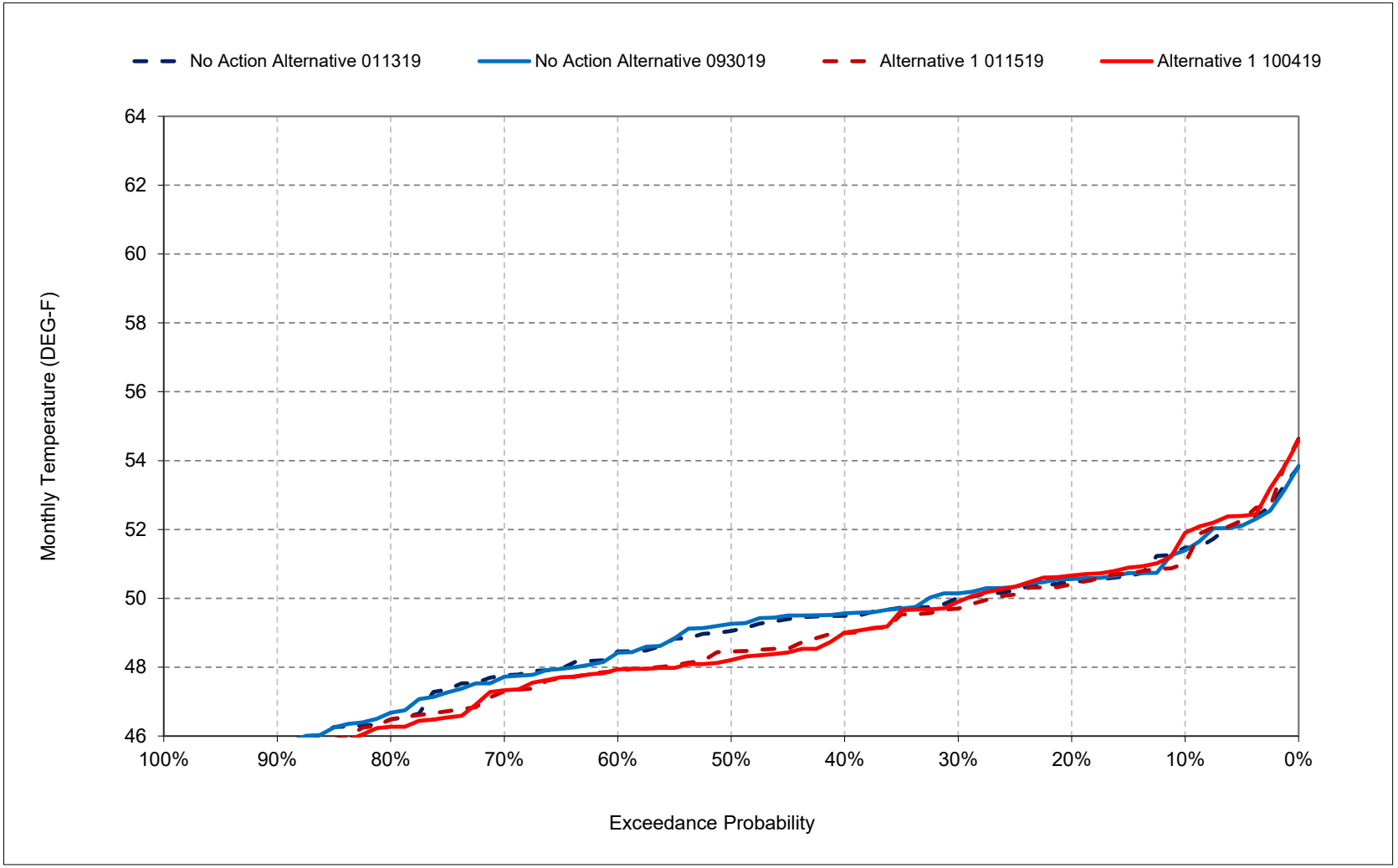

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-8. Trinity River below Lewiston Dam, November**



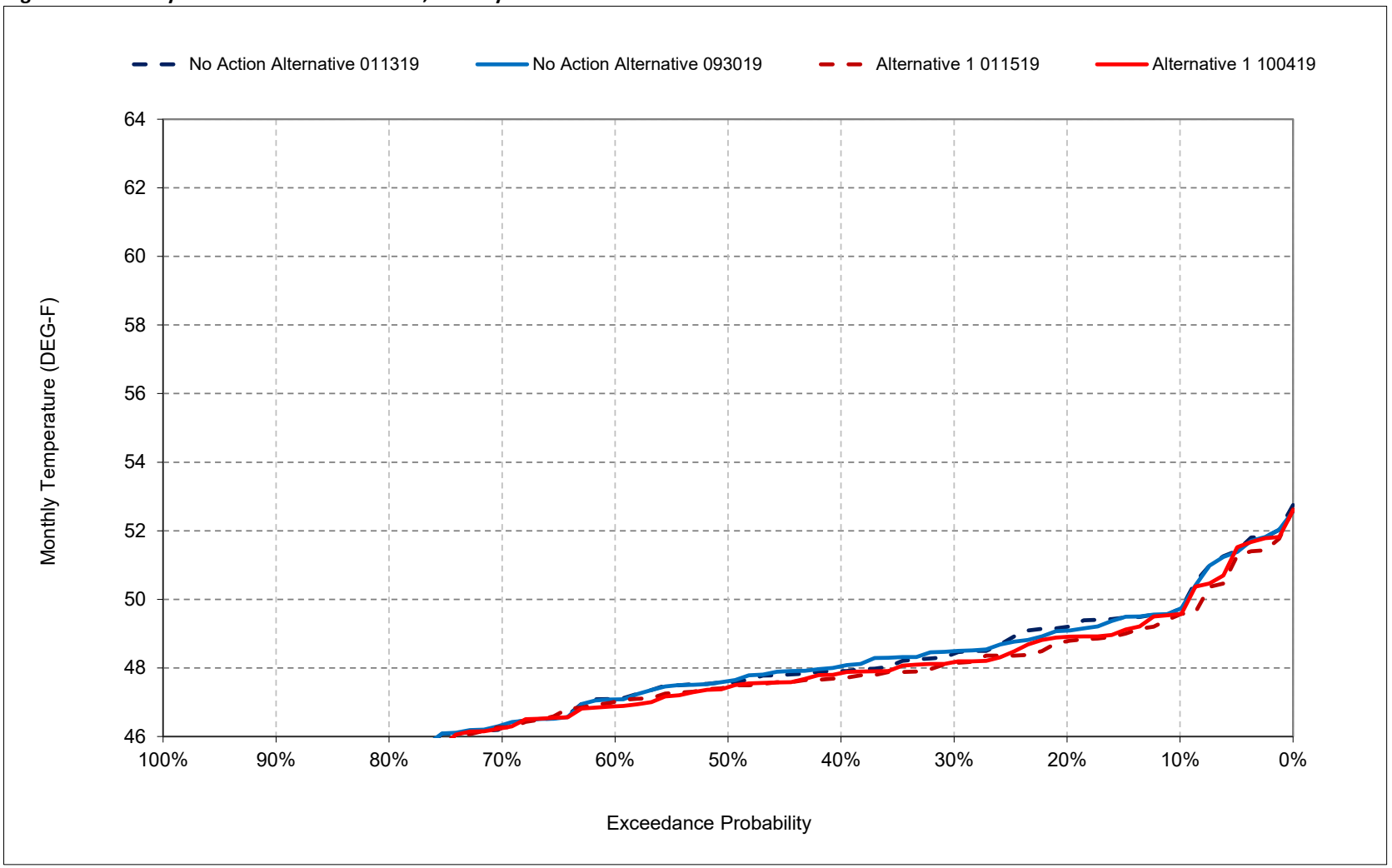

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-9. Trinity River below Lewiston Dam, December**



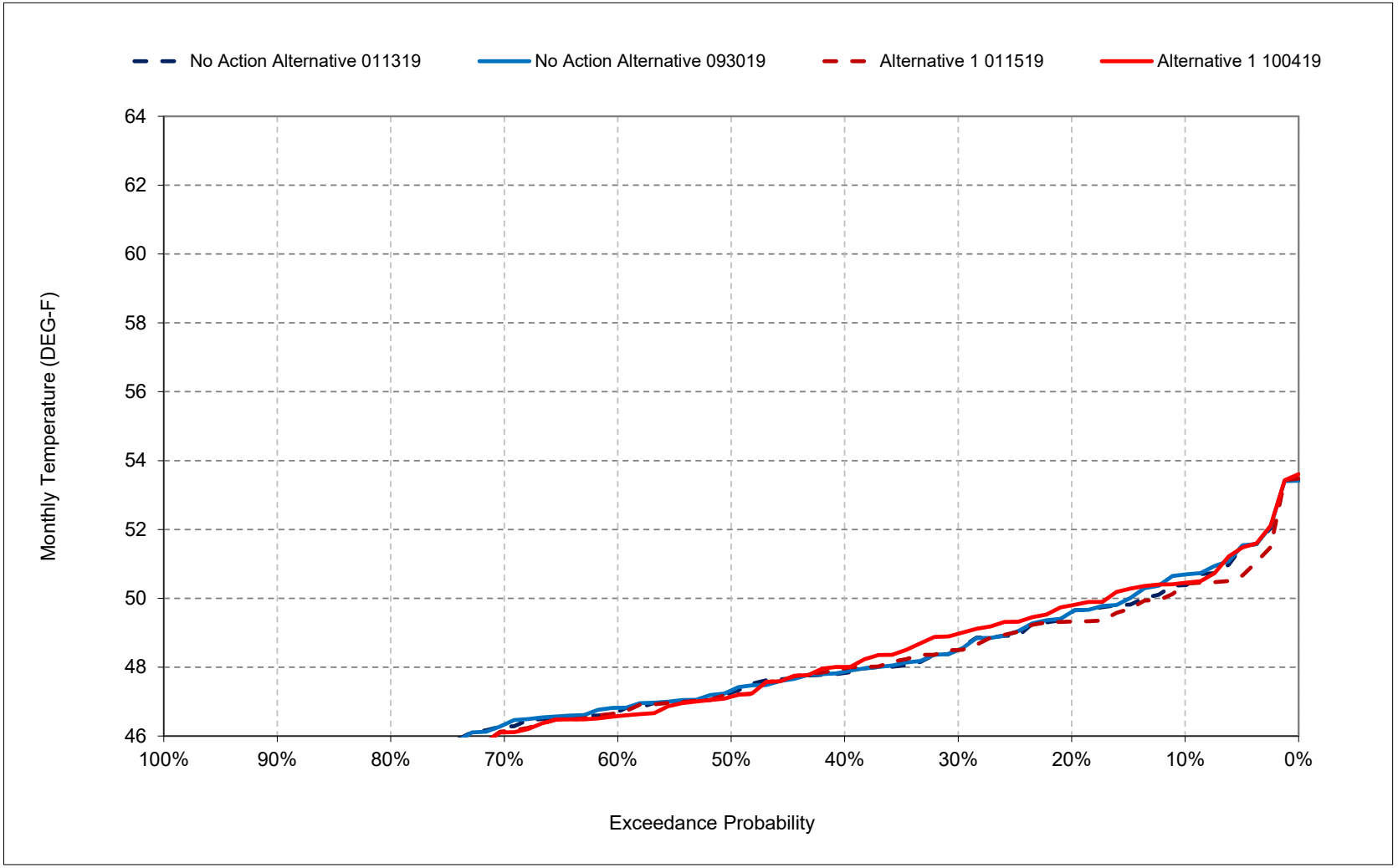

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-10. Trinity River below Lewiston Dam, January**



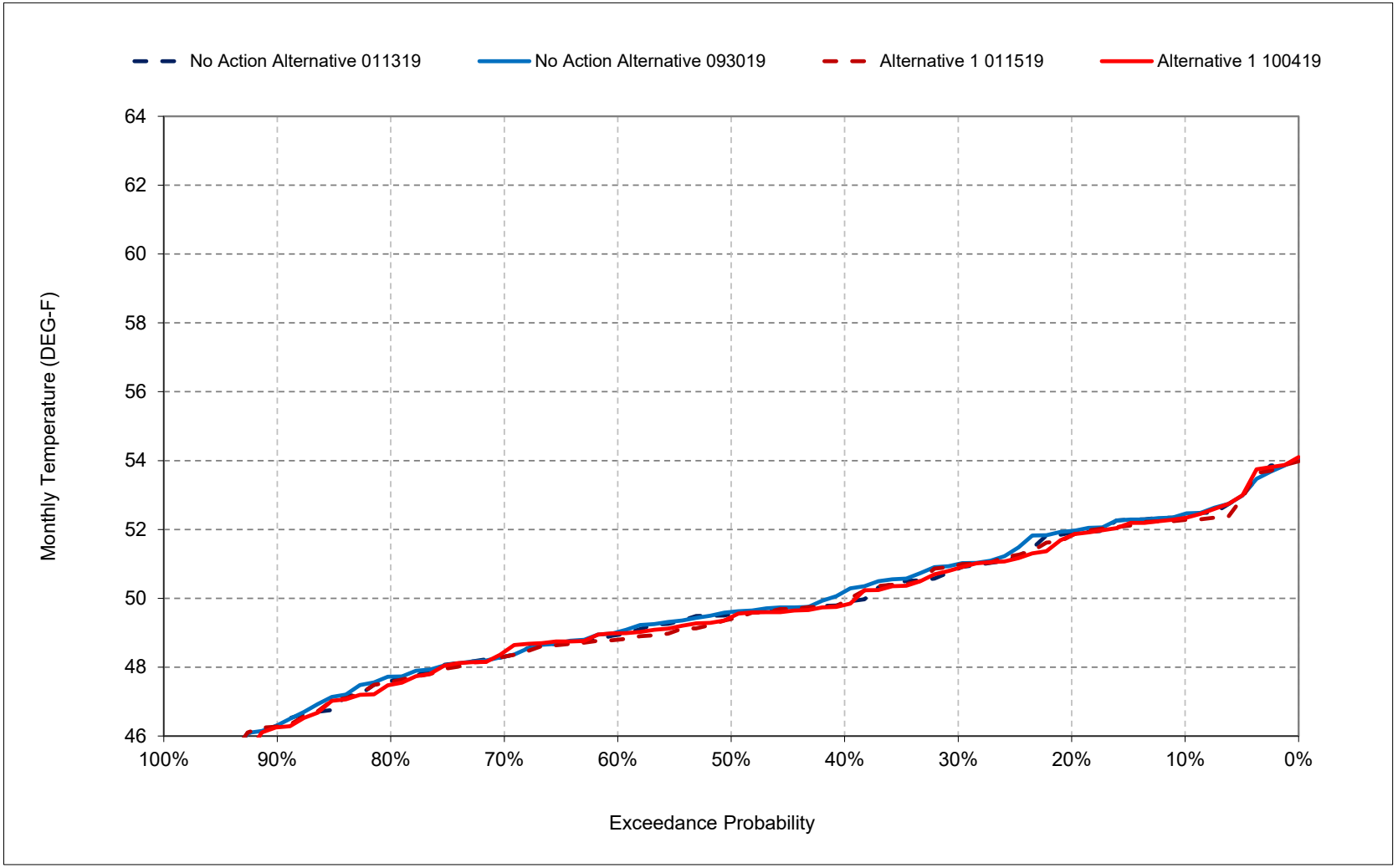

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-11. Trinity River below Lewiston Dam, February**



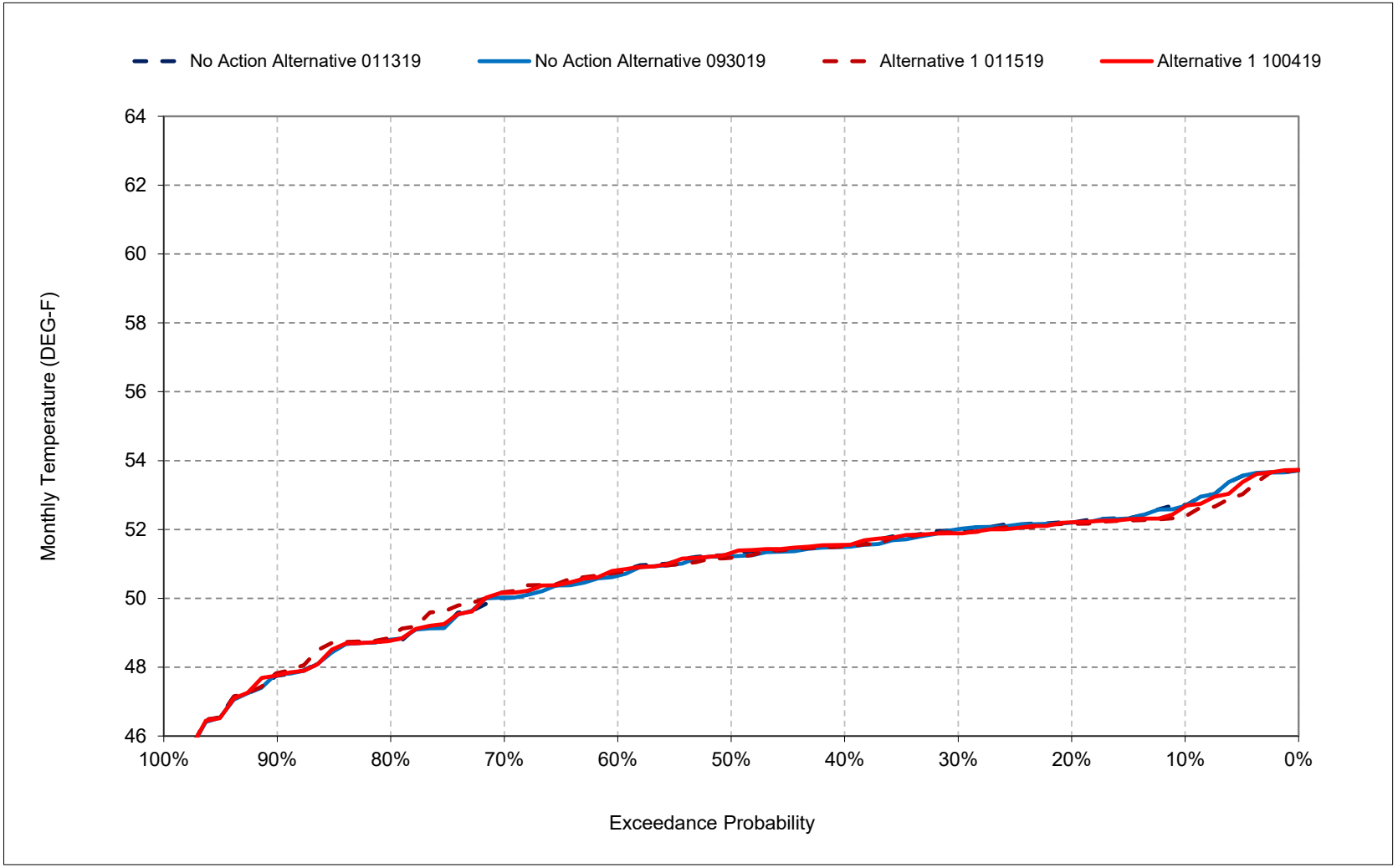

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-12. Trinity River below Lewiston Dam, March**



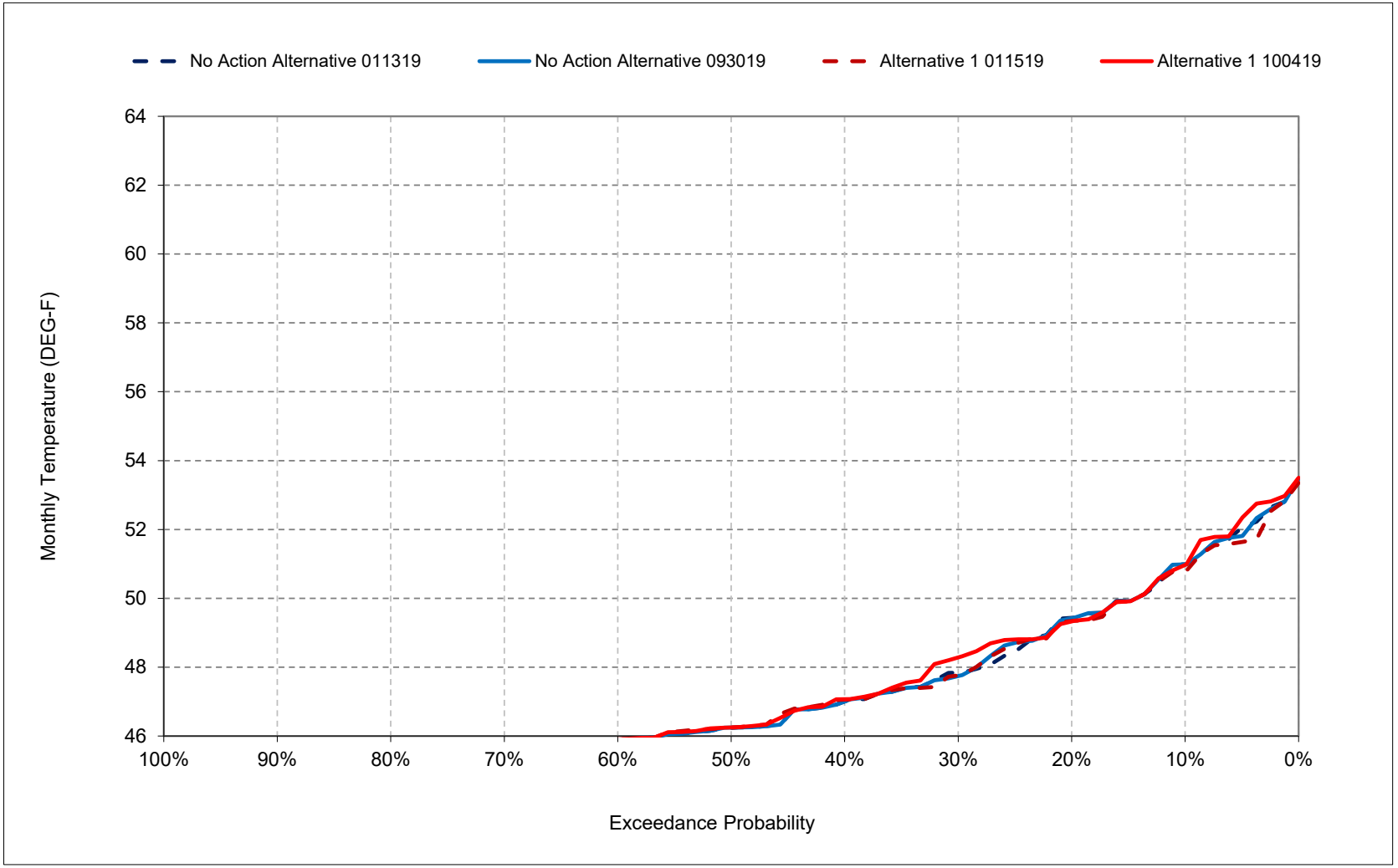

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-13. Trinity River below Lewiston Dam, April**



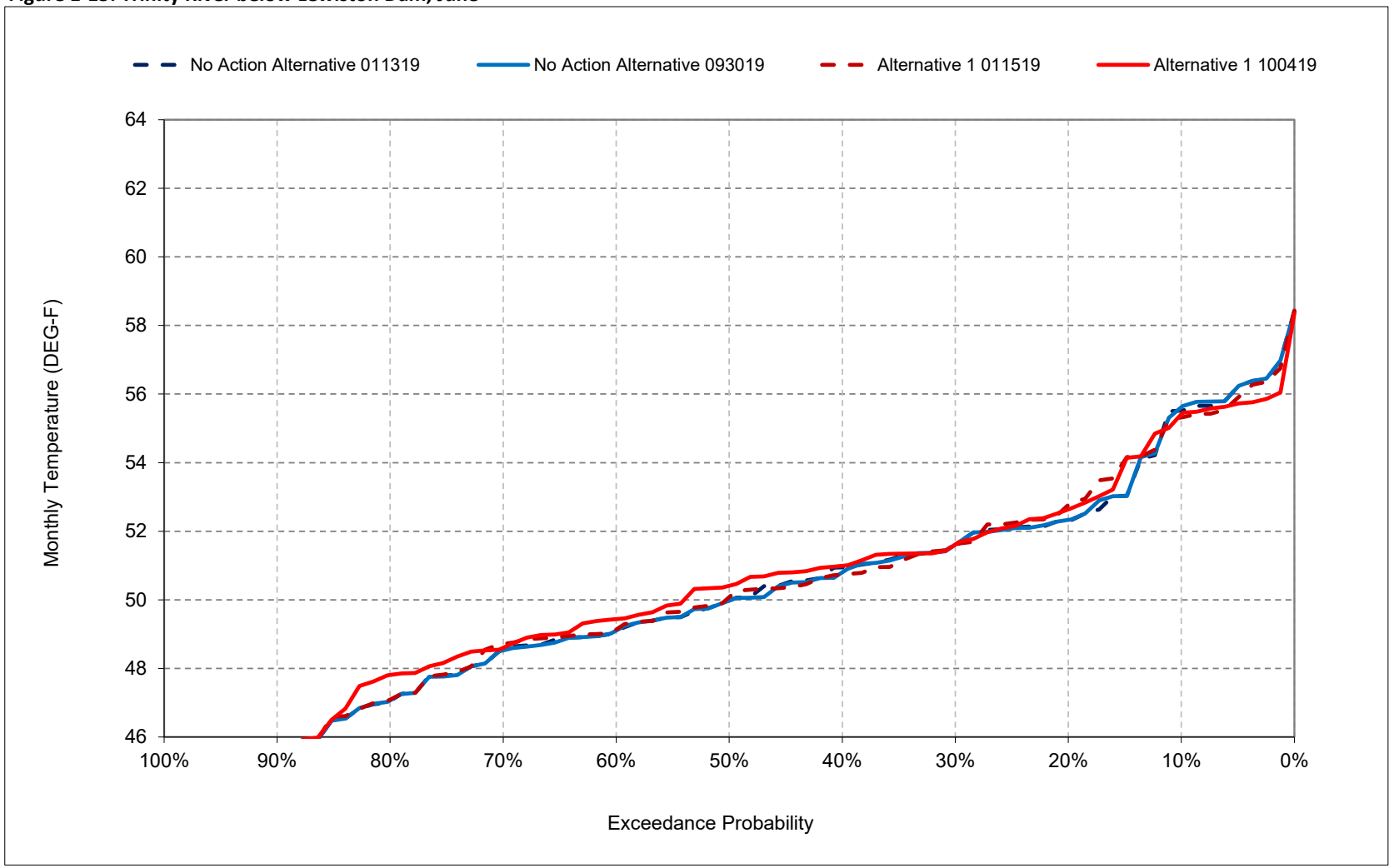

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-14. Trinity River below Lewiston Dam, May**



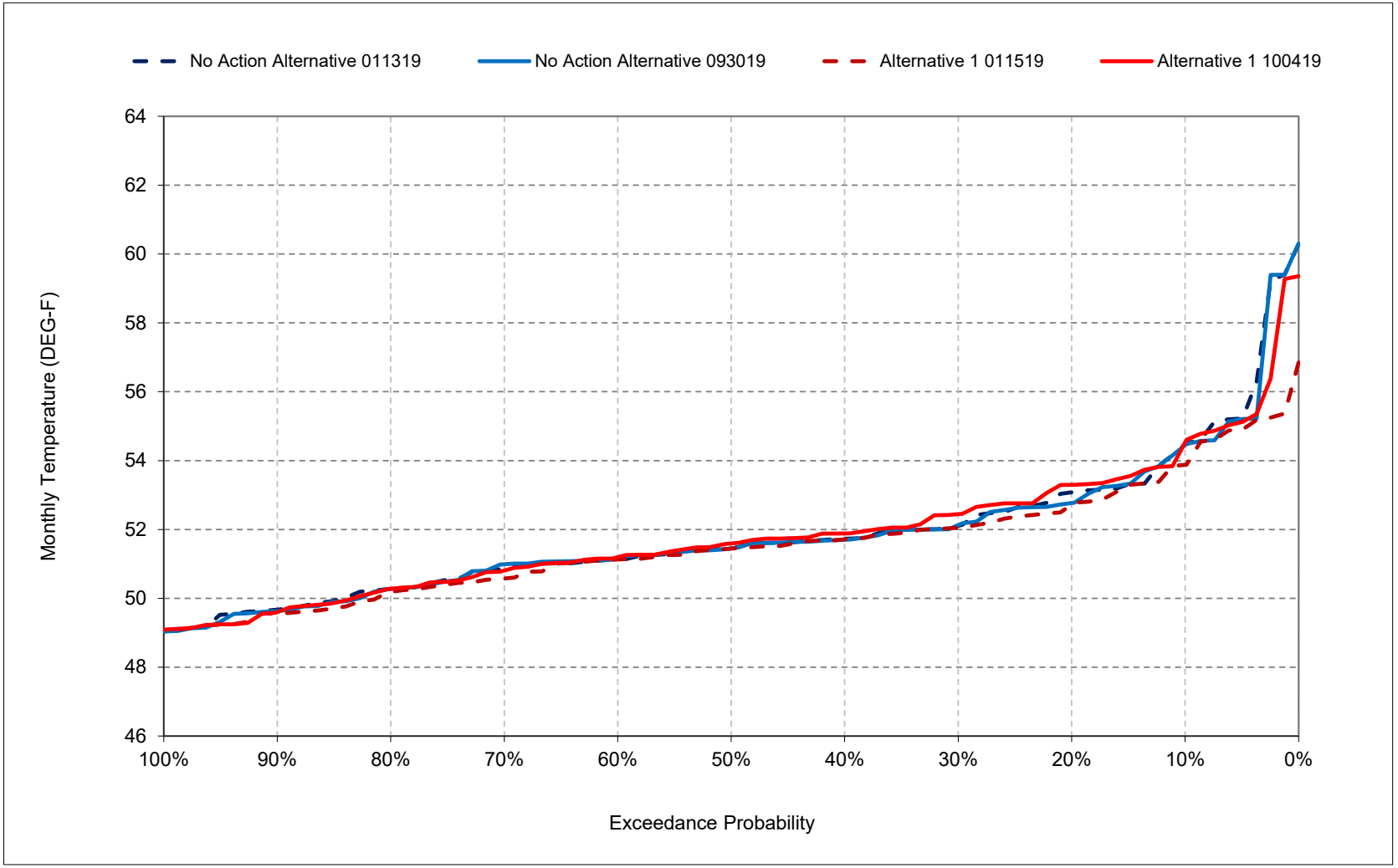

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-15. Trinity River below Lewiston Dam, June**



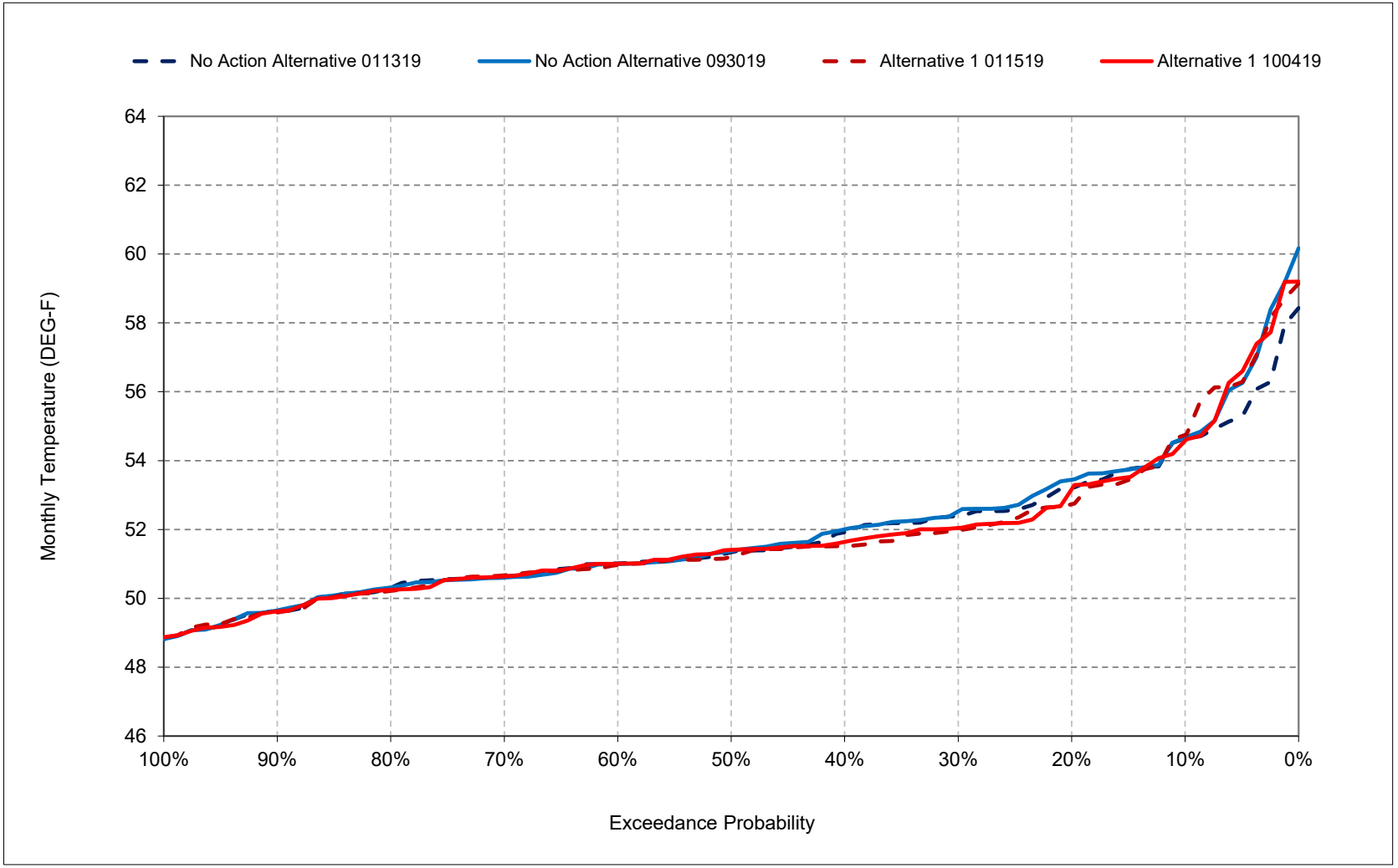

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-16. Trinity River below Lewiston Dam, July**



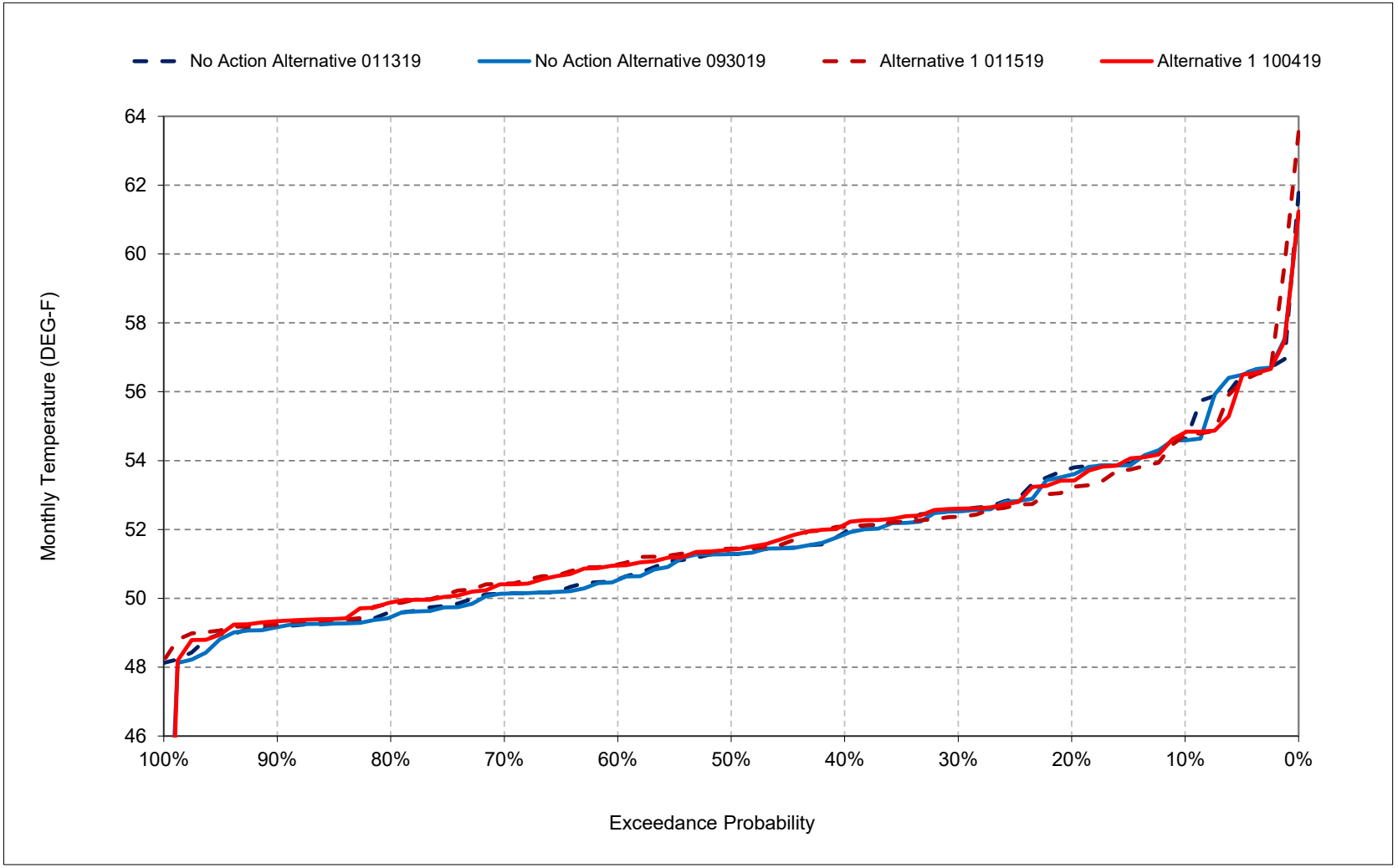

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-17. Trinity River below Lewiston Dam, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-18. Trinity River below Lewiston Dam, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-1. Clear Creek below Whiskeytown, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 54.8 | 52.2 | 48.7 | 46.0 | 45.8 | 46.7 | 48.0 | 49.2 | 50.9 | 52.9 | 53.7 | 54.6 |
| 20% | 53.9 | 51.8 | 48.0 | 45.3 | 45.1 | 46.1 | 47.5 | 48.7 | 50.4 | 52.2 | 53.2 | 53.6 |
| 30% | 53.4 | 51.0 | 47.1 | 45.0 | 44.8 | 45.6 | 47.2 | 48.5 | 50.0 | 51.7 | 52.8 | 53.2 |
| 40% | 52.8 | 50.7 | 46.7 | 44.8 | 44.5 | 45.3 | 46.9 | 48.1 | 49.7 | 51.4 | 52.3 | 52.4 |
| 50% | 52.4 | 50.4 | 46.4 | 44.3 | 44.3 | 45.2 | 46.6 | 47.9 | 49.4 | 51.1 | 52.1 | 52.1 |
| 60% | 51.7 | 50.2 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 49.2 | 50.9 | 51.8 | 51.6 |
| 70% | 51.1 | 50.0 | 46.0 | 43.9 | 43.9 | 44.9 | 46.1 | 47.4 | 49.0 | 50.7 | 51.6 | 51.2 |
| 80% | 50.6 | 49.6 | 45.8 | 43.6 | 43.6 | 44.6 | 45.9 | 46.9 | 48.4 | 50.3 | 51.1 | 50.9 |
| 90% | 50.3 | 49.2 | 45.5 | 43.4 | 43.3 | 44.1 | 45.4 | 46.3 | 47.8 | 49.8 | 50.8 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.8 | 49.4 | 51.2 | 52.1 | 52.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.8 | 49.8 | 46.5 | 44.3 | 44.1 | 44.8 | 46.3 | 47.7 | 49.3 | 51.1 | 51.7 | 51.2 |
| Above Normal (16%) | 51.2 | 49.8 | 46.2 | 44.4 | 44.2 | 44.9 | 46.3 | 47.6 | 49.1 | 51.0 | 51.6 | 51.2 |
| Below Normal (13%) | 52.5 | 50.9 | 46.8 | 44.1 | 44.2 | 45.2 | 46.6 | 47.5 | 49.1 | 51.1 | 52.0 | 52.1 |
| Dry (24%) | 53.4 | 51.0 | 47.2 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.4 | 51.4 | 52.7 | 53.1 |
| Critical (15%) | 55.7 | 52.1 | 47.4 | 45.6 | 45.5 | 46.4 | 47.7 | 48.8 | 50.4 | 51.6 | 52.8 | 54.5 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 54.5 | 52.2 | 48.7 | 46.0 | 45.8 | 46.6 | 47.9 | 49.2 | 50.9 | 52.9 | 53.5 | 54.3 |
| 20% | 53.6 | 51.6 | 48.0 | 45.3 | 45.2 | 46.1 | 47.6 | 48.8 | 50.4 | 52.2 | 53.2 | 53.4 |
| 30% | 53.2 | 51.0 | 47.0 | 45.0 | 44.8 | 45.6 | 47.2 | 48.5 | 49.9 | 51.7 | 52.6 | 52.9 |
| 40% | 52.8 | 50.7 | 46.7 | 44.7 | 44.5 | 45.3 | 46.9 | 48.1 | 49.6 | 51.4 | 52.4 | 52.5 |
| 50% | 52.4 | 50.5 | 46.3 | 44.3 | 44.3 | 45.2 | 46.6 | 47.8 | 49.5 | 51.2 | 52.2 | 52.1 |
| 60% | 52.0 | 50.2 | 46.1 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 49.2 | 51.0 | 52.0 | 51.7 |
| 70% | 51.2 | 49.9 | 46.0 | 43.9 | 43.9 | 44.9 | 46.2 | 47.4 | 48.9 | 50.8 | 51.7 | 51.4 |
| 80% | 50.6 | 49.5 | 45.8 | 43.7 | 43.6 | 44.6 | 45.9 | 47.0 | 48.5 | 50.5 | 51.3 | 51.0 |
| 90% | 50.1 | 49.2 | 45.3 | 43.4 | 43.3 | 44.2 | 45.4 | 46.4 | 47.8 | 49.8 | 50.9 | 50.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.4 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.8 | 49.5 | 51.3 | 52.2 | 52.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.9 | 49.9 | 46.4 | 44.3 | 44.1 | 44.8 | 46.3 | 47.6 | 49.3 | 51.1 | 51.7 | 51.4 |
| Above Normal (16%) | 51.3 | 50.0 | 46.3 | 44.4 | 44.2 | 45.0 | 46.4 | 47.7 | 49.2 | 51.1 | 51.7 | 51.3 |
| Below Normal (13%) | 52.6 | 50.8 | 46.8 | 44.0 | 44.1 | 45.2 | 46.6 | 47.5 | 49.2 | 51.4 | 52.1 | 52.2 |
| Dry (24%) | 53.1 | 50.9 | 47.1 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.4 | 51.4 | 52.7 | 52.9 |
| Critical (15%) | 55.5 | 52.1 | 47.4 | 45.6 | 45.5 | 46.4 | 47.8 | 48.8 | 50.5 | 51.8 | 53.3 | 55.2 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.4 | -0.1 | **0.0** | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | -0.3 |
| 20% | -0.3 | -0.1 | **0.0** | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.0** | -0.1 |
| 30% | -0.2 | **0.0** | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | -0.2 | -0.2 |
| 40% | 0.0 | **0.0** | 0.0 | -0.1 | **0.0** | 0.0 | **0.0** | **0.0** | -0.1 | **0.0** | **0.1** | **0.1** |
| 50% | 0.0 | **0.1** | -0.1 | 0.0 | -0.1 | 0.0 | **0.0** | -0.1 | **0.0** | **0.0** | **0.1** | **0.0** |
| 60% | **0.3** | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** | **0.1** | **0.2** | **0.1** |
| 70% | **0.2** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | **0.1** | **0.1** | **0.2** |
| 80% | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.1** | **0.1** | **0.2** | **0.2** | **0.1** |
| 90% | -0.2 | 0.0 | -0.2 | **0.0** | **0.1** | **0.0** | **0.0** | **0.1** | 0.0 | **0.1** | **0.1** | **0.3** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.2** |
| Above Normal (16%) | **0.2** | **0.2** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| Below Normal (13%) | **0.0** | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.2** | **0.0** | **0.0** |
| Dry (24%) | -0.3 | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.2 |
| Critical (15%) | -0.2 | -0.1 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | **0.2** | **0.5** | **0.7** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-2. Clear Creek below Whiskeytown, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 54.9 | 52.2 | 48.6 | 46.0 | 45.8 | 46.7 | 48.0 | 49.2 | 51.0 | 52.9 | 53.7 | 54.6 |
| 20% | 53.9 | 51.7 | 48.0 | 45.4 | 45.1 | 46.1 | 47.6 | 48.8 | 50.4 | 52.2 | 53.3 | 53.6 |
| 30% | 53.4 | 50.9 | 47.0 | 45.0 | 44.8 | 45.7 | 47.1 | 48.5 | 50.0 | 51.7 | 52.8 | 53.1 |
| 40% | 52.9 | 50.7 | 46.7 | 44.7 | 44.5 | 45.4 | 46.8 | 48.1 | 49.7 | 51.4 | 52.3 | 52.6 |
| 50% | 52.3 | 50.4 | 46.4 | 44.3 | 44.3 | 45.2 | 46.5 | 47.7 | 49.4 | 51.2 | 52.1 | 52.1 |
| 60% | 51.8 | 50.2 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.5 | 49.2 | 50.9 | 51.8 | 51.6 |
| 70% | 51.0 | 50.0 | 46.0 | 43.9 | 43.9 | 44.9 | 46.2 | 47.3 | 49.0 | 50.6 | 51.6 | 51.2 |
| 80% | 50.6 | 49.6 | 45.8 | 43.7 | 43.6 | 44.7 | 45.9 | 47.0 | 48.5 | 50.3 | 51.2 | 50.8 |
| 90% | 50.3 | 49.3 | 45.5 | 43.4 | 43.3 | 44.1 | 45.4 | 46.3 | 47.8 | 49.8 | 50.8 | 50.4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.9 | 49.4 | 51.2 | 52.2 | 52.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 50.8 | 49.8 | 46.5 | 44.3 | 44.1 | 44.8 | 46.3 | 47.7 | 49.3 | 51.1 | 51.7 | 51.2 |
| Above Normal (16%) | 51.2 | 49.7 | 46.2 | 44.4 | 44.2 | 44.9 | 46.3 | 47.6 | 49.1 | 51.0 | 51.5 | 51.2 |
| Below Normal (13%) | 52.6 | 50.9 | 46.8 | 44.1 | 44.2 | 45.3 | 46.6 | 47.5 | 49.0 | 51.1 | 52.0 | 52.1 |
| Dry (24%) | 53.4 | 51.0 | 47.2 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.5 | 51.4 | 52.8 | 53.1 |
| Critical (15%) | 55.5 | 52.1 | 47.5 | 45.6 | 45.5 | 46.4 | 47.8 | 48.9 | 50.5 | 51.8 | 53.2 | 55.0 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 54.8 | 52.3 | 49.0 | 46.2 | 46.0 | 46.7 | 48.1 | 49.1 | 50.5 | 52.5 | 53.3 | 54.7 |
| 20% | 53.7 | 51.7 | 48.1 | 45.3 | 45.2 | 46.4 | 47.7 | 48.9 | 49.8 | 51.9 | 53.0 | 53.5 |
| 30% | 53.3 | 51.1 | 47.0 | 45.0 | 44.8 | 45.8 | 47.2 | 48.4 | 49.4 | 51.5 | 52.4 | 53.1 |
| 40% | 52.9 | 50.8 | 46.7 | 44.7 | 44.5 | 45.5 | 47.0 | 48.1 | 49.3 | 51.2 | 52.2 | 52.6 |
| 50% | 52.4 | 50.4 | 46.4 | 44.4 | 44.2 | 45.3 | 46.6 | 47.8 | 49.0 | 50.8 | 51.9 | 52.4 |
| 60% | 52.0 | 50.3 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 48.8 | 50.5 | 51.7 | 51.8 |
| 70% | 51.2 | 50.0 | 45.9 | 44.0 | 43.9 | 45.0 | 46.2 | 47.4 | 48.6 | 50.3 | 51.4 | 51.5 |
| 80% | 50.7 | 49.6 | 45.8 | 43.7 | 43.6 | 44.6 | 45.9 | 47.1 | 48.0 | 50.2 | 51.0 | 51.0 |
| 90% | 50.1 | 49.3 | 45.4 | 43.4 | 43.3 | 44.2 | 45.4 | 46.2 | 47.4 | 49.8 | 50.7 | 50.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.7 | 46.9 | 44.6 | 44.5 | 45.4 | 46.7 | 47.9 | 49.0 | 51.0 | 52.1 | 52.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 50.9 | 49.9 | 46.4 | 44.3 | 44.1 | 44.9 | 46.3 | 47.7 | 48.9 | 50.7 | 51.5 | 51.5 |
| Above Normal (16%) | 51.3 | 49.9 | 46.3 | 44.4 | 44.1 | 45.0 | 46.3 | 47.6 | 48.8 | 50.7 | 51.4 | 51.3 |
| Below Normal (13%) | 52.6 | 50.9 | 46.9 | 44.1 | 44.3 | 45.5 | 46.7 | 47.5 | 48.6 | 50.8 | 51.8 | 52.3 |
| Dry (24%) | 53.2 | 51.0 | 47.3 | 44.9 | 44.7 | 45.7 | 47.0 | 47.9 | 49.1 | 51.2 | 52.6 | 53.1 |
| Critical (15%) | 55.6 | 52.2 | 47.6 | 45.7 | 45.6 | 46.5 | 47.9 | 48.9 | 49.7 | 51.6 | 53.4 | 55.4 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.1 | **0.1** | **0.3** | **0.1** | **0.2** | **0.0** | **0.1** | -0.1 | -0.4 | -0.4 | -0.3 | **0.0** |
| 20% | -0.2 | 0.0 | **0.2** | 0.0 | **0.1** | **0.3** | **0.2** | **0.1** | -0.6 | -0.4 | -0.3 | -0.1 |
| 30% | -0.1 | **0.1** | **0.0** | 0.0 | **0.0** | **0.1** | **0.0** | -0.1 | -0.5 | -0.2 | -0.4 | 0.0 |
| 40% | **0.0** | **0.0** | -0.1 | 0.0 | **0.0** | **0.1** | **0.1** | 0.0 | -0.4 | -0.2 | -0.1 | **0.1** |
| 50% | **0.1** | **0.1** | 0.0 | **0.0** | -0.1 | **0.1** | **0.1** | **0.1** | -0.4 | -0.4 | -0.1 | **0.3** |
| 60% | **0.2** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | -0.3 | -0.4 | -0.1 | **0.1** |
| 70% | **0.2** | **0.0** | -0.1 | **0.0** | 0.0 | **0.0** | **0.0** | **0.1** | -0.4 | -0.3 | -0.1 | **0.3** |
| 80% | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | -0.4 | -0.1 | -0.2 | **0.2** |
| 90% | -0.2 | **0.1** | -0.1 | 0.0 | 0.0 | **0.1** | **0.1** | -0.1 | -0.4 | 0.0 | -0.1 | **0.3** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | **0.1** | **0.0** | **0.0** | **0.1** | **0.0** | **0.0** | -0.4 | -0.3 | -0.2 | **0.2** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.1** | **0.0** | 0.0 | -0.4 | -0.4 | -0.3 | **0.3** |
| Above Normal (16%) | **0.1** | **0.2** | **0.1** | 0.0 | -0.1 | **0.1** | **0.1** | **0.0** | -0.3 | -0.2 | -0.2 | **0.1** |
| Below Normal (13%) | **0.1** | **0.1** | **0.1** | 0.0 | **0.1** | **0.2** | **0.1** | **0.0** | -0.4 | -0.2 | -0.2 | **0.2** |
| Dry (24%) | -0.2 | 0.0 | **0.1** | **0.1** | **0.0** | **0.0** | **0.0** | **0.0** | -0.3 | -0.2 | -0.2 | -0.1 |
| Critical (15%) | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.0** | -0.9 | -0.2 | **0.2** | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-3. Clear Creek below Whiskeytown, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 54.8 | 52.2 | 48.7 | 46.0 | 45.8 | 46.7 | 48.0 | 49.2 | 50.9 | 52.9 | 53.7 | 54.6 |
| 20% | 53.9 | 51.8 | 48.0 | 45.3 | 45.1 | 46.1 | 47.5 | 48.7 | 50.4 | 52.2 | 53.2 | 53.6 |
| 30% | 53.4 | 51.0 | 47.1 | 45.0 | 44.8 | 45.6 | 47.2 | 48.5 | 50.0 | 51.7 | 52.8 | 53.2 |
| 40% | 52.8 | 50.7 | 46.7 | 44.8 | 44.5 | 45.3 | 46.9 | 48.1 | 49.7 | 51.4 | 52.3 | 52.4 |
| 50% | 52.4 | 50.4 | 46.4 | 44.3 | 44.3 | 45.2 | 46.6 | 47.9 | 49.4 | 51.1 | 52.1 | 52.1 |
| 60% | 51.7 | 50.2 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 49.2 | 50.9 | 51.8 | 51.6 |
| 70% | 51.1 | 50.0 | 46.0 | 43.9 | 43.9 | 44.9 | 46.1 | 47.4 | 49.0 | 50.7 | 51.6 | 51.2 |
| 80% | 50.6 | 49.6 | 45.8 | 43.6 | 43.6 | 44.6 | 45.9 | 46.9 | 48.4 | 50.3 | 51.1 | 50.9 |
| 90% | 50.3 | 49.2 | 45.5 | 43.4 | 43.3 | 44.1 | 45.4 | 46.3 | 47.8 | 49.8 | 50.8 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.8 | 49.4 | 51.2 | 52.1 | 52.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.8 | 49.8 | 46.5 | 44.3 | 44.1 | 44.8 | 46.3 | 47.7 | 49.3 | 51.1 | 51.7 | 51.2 |
| Above Normal (16%) | 51.2 | 49.8 | 46.2 | 44.4 | 44.2 | 44.9 | 46.3 | 47.6 | 49.1 | 51.0 | 51.6 | 51.2 |
| Below Normal (13%) | 52.5 | 50.9 | 46.8 | 44.1 | 44.2 | 45.2 | 46.6 | 47.5 | 49.1 | 51.1 | 52.0 | 52.1 |
| Dry (24%) | 53.4 | 51.0 | 47.2 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.4 | 51.4 | 52.7 | 53.1 |
| Critical (15%) | 55.7 | 52.1 | 47.4 | 45.6 | 45.5 | 46.4 | 47.7 | 48.8 | 50.4 | 51.6 | 52.8 | 54.5 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 54.9 | 52.2 | 48.6 | 46.0 | 45.8 | 46.7 | 48.0 | 49.2 | 51.0 | 52.9 | 53.7 | 54.6 |
| 20% | 53.9 | 51.7 | 48.0 | 45.4 | 45.1 | 46.1 | 47.6 | 48.8 | 50.4 | 52.2 | 53.3 | 53.6 |
| 30% | 53.4 | 50.9 | 47.0 | 45.0 | 44.8 | 45.7 | 47.1 | 48.5 | 50.0 | 51.7 | 52.8 | 53.1 |
| 40% | 52.9 | 50.7 | 46.7 | 44.7 | 44.5 | 45.4 | 46.8 | 48.1 | 49.7 | 51.4 | 52.3 | 52.6 |
| 50% | 52.3 | 50.4 | 46.4 | 44.3 | 44.3 | 45.2 | 46.5 | 47.7 | 49.4 | 51.2 | 52.1 | 52.1 |
| 60% | 51.8 | 50.2 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.5 | 49.2 | 50.9 | 51.8 | 51.6 |
| 70% | 51.0 | 50.0 | 46.0 | 43.9 | 43.9 | 44.9 | 46.2 | 47.3 | 49.0 | 50.6 | 51.6 | 51.2 |
| 80% | 50.6 | 49.6 | 45.8 | 43.7 | 43.6 | 44.7 | 45.9 | 47.0 | 48.5 | 50.3 | 51.2 | 50.8 |
| 90% | 50.3 | 49.3 | 45.5 | 43.4 | 43.3 | 44.1 | 45.4 | 46.3 | 47.8 | 49.8 | 50.8 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.9 | 49.4 | 51.2 | 52.2 | 52.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 50.8 | 49.8 | 46.5 | 44.3 | 44.1 | 44.8 | 46.3 | 47.7 | 49.3 | 51.1 | 51.7 | 51.2 |
| Above Normal (16%) | 51.2 | 49.7 | 46.2 | 44.4 | 44.2 | 44.9 | 46.3 | 47.6 | 49.1 | 51.0 | 51.5 | 51.2 |
| Below Normal (13%) | 52.6 | 50.9 | 46.8 | 44.1 | 44.2 | 45.3 | 46.6 | 47.5 | 49.0 | 51.1 | 52.0 | 52.1 |
| Dry (24%) | 53.4 | 51.0 | 47.2 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.5 | 51.4 | 52.8 | 53.1 |
| Critical (15%) | 55.5 | 52.1 | 47.5 | 45.6 | 45.5 | 46.4 | 47.8 | 48.9 | 50.5 | 51.8 | 53.2 | 55.0 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** |
| 20% | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | **0.1** | **0.0** |
| 30% | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | **0.1** | 0.0 |
| 40% | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.1** | -0.1 | **0.0** | **0.0** | **0.0** | **0.0** | **0.1** |
| 50% | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | **0.1** | 0.0 | **0.0** |
| 60% | **0.1** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** |
| 70% | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.1** | 0.0 |
| 90% | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** |
| Below Normal (13%) | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | **0.0** |
| Dry (24%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | **0.1** |
| Critical (15%) | -0.2 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | **0.2** | **0.4** | **0.5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-4. Clear Creek below Whiskeytown, Monthly Temperature

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 54.5 | 52.2 | 48.7 | 46.0 | 45.8 | 46.6 | 47.9 | 49.2 | 50.9 | 52.9 | 53.5 | 54.3 |
| 20% | 53.6 | 51.6 | 48.0 | 45.3 | 45.2 | 46.1 | 47.6 | 48.8 | 50.4 | 52.2 | 53.2 | 53.4 |
| 30% | 53.2 | 51.0 | 47.0 | 45.0 | 44.8 | 45.6 | 47.2 | 48.5 | 49.9 | 51.7 | 52.6 | 52.9 |
| 40% | 52.8 | 50.7 | 46.7 | 44.7 | 44.5 | 45.3 | 46.9 | 48.1 | 49.6 | 51.4 | 52.4 | 52.5 |
| 50% | 52.4 | 50.5 | 46.3 | 44.3 | 44.3 | 45.2 | 46.6 | 47.8 | 49.5 | 51.2 | 52.2 | 52.1 |
| 60% | 52.0 | 50.2 | 46.1 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 49.2 | 51.0 | 52.0 | 51.7 |
| 70% | 51.2 | 49.9 | 46.0 | 43.9 | 43.9 | 44.9 | 46.2 | 47.4 | 48.9 | 50.8 | 51.7 | 51.4 |
| 80% | 50.6 | 49.5 | 45.8 | 43.7 | 43.6 | 44.6 | 45.9 | 47.0 | 48.5 | 50.5 | 51.3 | 51.0 |
| 90% | 50.1 | 49.2 | 45.3 | 43.4 | 43.3 | 44.2 | 45.4 | 46.4 | 47.8 | 49.8 | 50.9 | 50.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.4 | 50.6 | 46.8 | 44.6 | 44.5 | 45.3 | 46.7 | 47.8 | 49.5 | 51.3 | 52.2 | 52.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 50.9 | 49.9 | 46.4 | 44.3 | 44.1 | 44.8 | 46.3 | 47.6 | 49.3 | 51.1 | 51.7 | 51.4 |
| Above Normal (16%) | 51.3 | 50.0 | 46.3 | 44.4 | 44.2 | 45.0 | 46.4 | 47.7 | 49.2 | 51.1 | 51.7 | 51.3 |
| Below Normal (13%) | 52.6 | 50.8 | 46.8 | 44.0 | 44.1 | 45.2 | 46.6 | 47.5 | 49.2 | 51.4 | 52.1 | 52.2 |
| Dry (24%) | 53.1 | 50.9 | 47.1 | 44.8 | 44.7 | 45.6 | 46.9 | 47.9 | 49.4 | 51.4 | 52.7 | 52.9 |
| Critical (15%) | 55.5 | 52.1 | 47.4 | 45.6 | 45.5 | 46.4 | 47.8 | 48.8 | 50.5 | 51.8 | 53.3 | 55.2 |

### Alternative 1 100419

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 54.8 | 52.3 | 49.0 | 46.2 | 46.0 | 46.7 | 48.1 | 49.1 | 50.5 | 52.5 | 53.3 | 54.7 |
| 20% | 53.7 | 51.7 | 48.1 | 45.3 | 45.2 | 46.4 | 47.7 | 48.9 | 49.8 | 51.9 | 53.0 | 53.5 |
| 30% | 53.3 | 51.1 | 47.0 | 45.0 | 44.8 | 45.8 | 47.2 | 48.4 | 49.4 | 51.5 | 52.4 | 53.1 |
| 40% | 52.9 | 50.8 | 46.7 | 44.7 | 44.5 | 45.5 | 47.0 | 48.1 | 49.3 | 51.2 | 52.2 | 52.6 |
| 50% | 52.4 | 50.4 | 46.4 | 44.4 | 44.2 | 45.3 | 46.6 | 47.8 | 49.0 | 50.8 | 51.9 | 52.4 |
| 60% | 52.0 | 50.3 | 46.2 | 44.2 | 44.1 | 45.1 | 46.4 | 47.6 | 48.8 | 50.5 | 51.7 | 51.8 |
| 70% | 51.2 | 50.0 | 45.9 | 44.0 | 43.9 | 45.0 | 46.2 | 47.4 | 48.6 | 50.3 | 51.4 | 51.5 |
| 80% | 50.7 | 49.6 | 45.8 | 43.7 | 43.6 | 44.6 | 45.9 | 47.1 | 48.0 | 50.2 | 51.0 | 51.0 |
| 90% | 50.1 | 49.3 | 45.4 | 43.4 | 43.3 | 44.2 | 45.4 | 46.2 | 47.4 | 49.8 | 50.7 | 50.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 50.7 | 46.9 | 44.6 | 44.5 | 45.4 | 46.7 | 47.9 | 49.0 | 51.0 | 52.1 | 52.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 50.9 | 49.9 | 46.4 | 44.3 | 44.1 | 44.9 | 46.3 | 47.7 | 48.9 | 50.7 | 51.5 | 51.5 |
| Above Normal (16%) | 51.3 | 49.9 | 46.3 | 44.4 | 44.1 | 45.0 | 46.3 | 47.6 | 48.8 | 50.7 | 51.4 | 51.3 |
| Below Normal (13%) | 52.6 | 50.9 | 46.9 | 44.1 | 44.3 | 45.5 | 46.7 | 47.5 | 48.6 | 50.8 | 51.8 | 52.3 |
| Dry (24%) | 53.2 | 51.0 | 47.3 | 44.9 | 44.7 | 45.7 | 47.0 | 47.9 | 49.1 | 51.2 | 52.6 | 53.1 |
| Critical (15%) | 55.6 | 52.2 | 47.6 | 45.7 | 45.6 | 46.5 | 47.9 | 48.9 | 49.7 | 51.6 | 53.4 | 55.4 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.3** | **0.2** | **0.3** | **0.1** | **0.2** | **0.1** | **0.2** | 0.0 | -0.4 | -0.4 | -0.2 | **0.3** |
| 20% | **0.1** | **0.0** | **0.1** | **0.0** | 0.0 | **0.2** | **0.1** | **0.1** | -0.6 | -0.4 | -0.2 | **0.0** |
| 30% | **0.0** | **0.1** | **0.0** | **0.0** | **0.0** | **0.1** | 0.0 | -0.1 | -0.5 | -0.2 | -0.2 | **0.2** |
| 40% | **0.1** | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | **0.0** | 0.0 | -0.4 | -0.2 | -0.2 | **0.1** |
| 50% | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.1** | **0.0** | 0.0 | -0.4 | -0.3 | -0.3 | **0.3** |
| 60% | **0.0** | **0.1** | **0.0** | 0.0 | **0.0** | **0.1** | 0.0 | **0.0** | -0.4 | -0.5 | -0.3 | **0.1** |
| 70% | 0.0 | **0.0** | 0.0 | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | -0.3 | -0.5 | -0.2 | **0.0** |
| 80% | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | -0.5 | -0.3 | -0.3 | **0.0** |
| 90% | 0.0 | **0.1** | **0.1** | **0.0** | 0.0 | **0.1** | **0.0** | -0.2 | -0.4 | 0.0 | -0.2 | **0.1** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.1** | **0.1** | **0.1** | **0.0** | **0.0** | **0.1** | **0.0** | **0.0** | -0.5 | -0.3 | -0.2 | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | **0.0** | **0.0** | -0.4 | -0.4 | -0.3 | **0.1** |
| Above Normal (16%) | 0.0 | 0.0 | **0.1** | 0.0 | -0.1 | **0.1** | -0.1 | -0.1 | -0.4 | -0.4 | -0.4 | **0.0** |
| Below Normal (13%) | **0.1** | **0.1** | **0.1** | **0.0** | **0.2** | **0.3** | **0.1** | 0.0 | -0.5 | -0.5 | -0.3 | **0.2** |
| Dry (24%) | **0.1** | **0.1** | **0.2** | **0.1** | **0.0** | **0.0** | **0.0** | **0.0** | -0.3 | -0.1 | 0.0 | **0.2** |
| Critical (15%) | **0.0** | **0.1** | **0.2** | **0.2** | **0.1** | **0.1** | **0.1** | **0.1** | -0.8 | -0.2 | **0.1** | **0.2** |

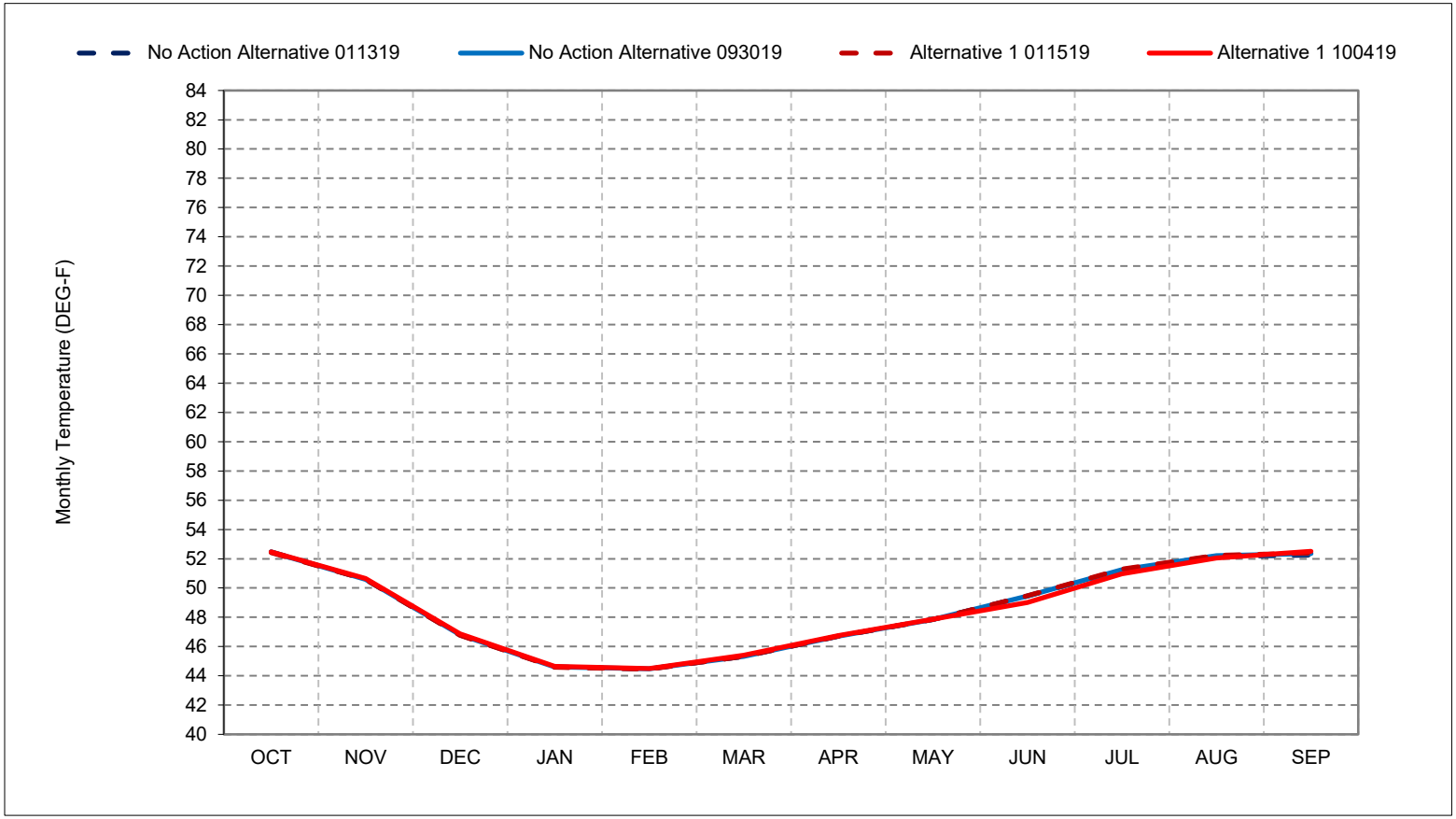
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-1. Clear Creek below Whiskeytown, Long-Term Average Temperature

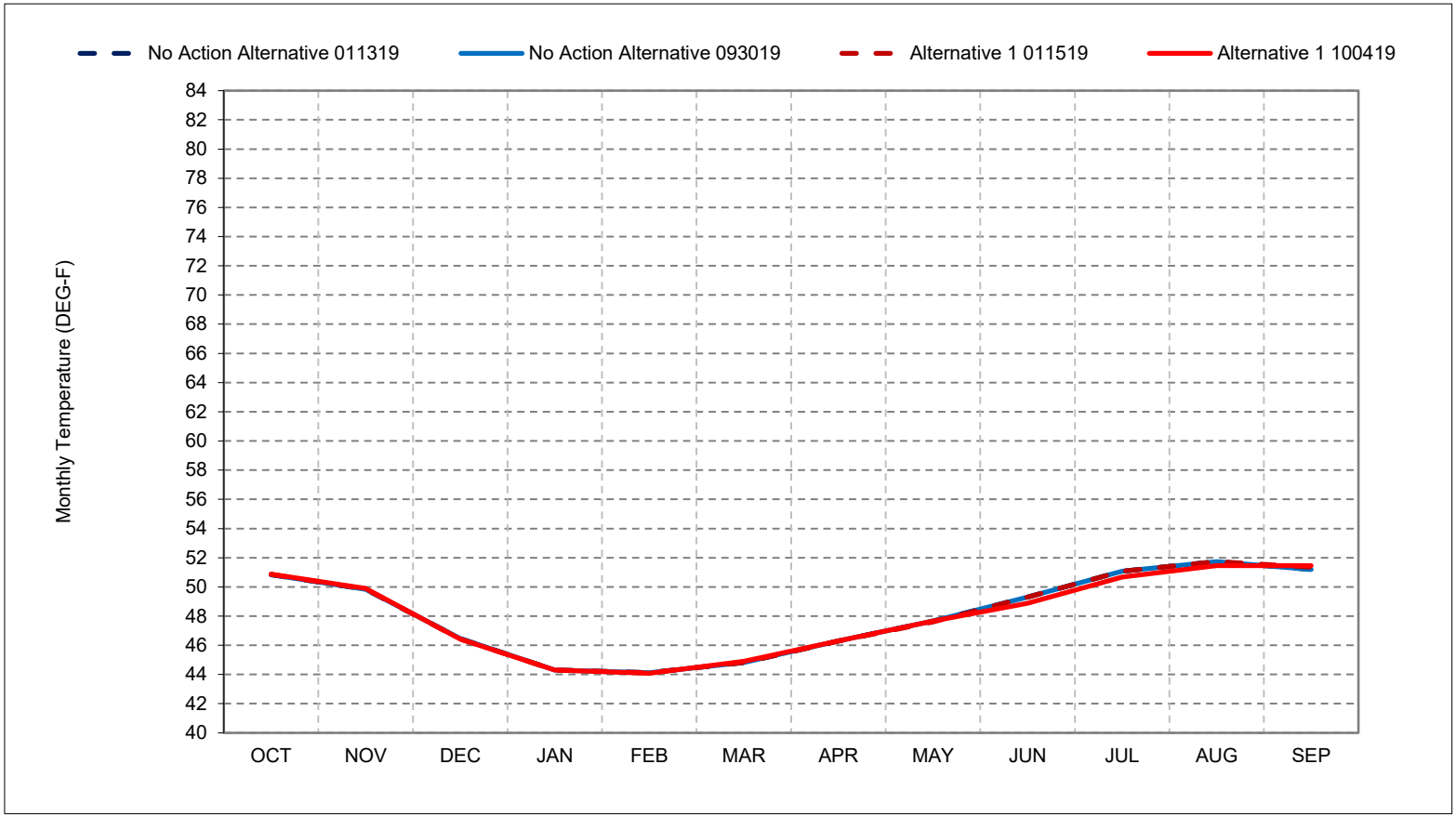



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-2. Clear Creek below Whiskeytown, Wet Year Average Temperature

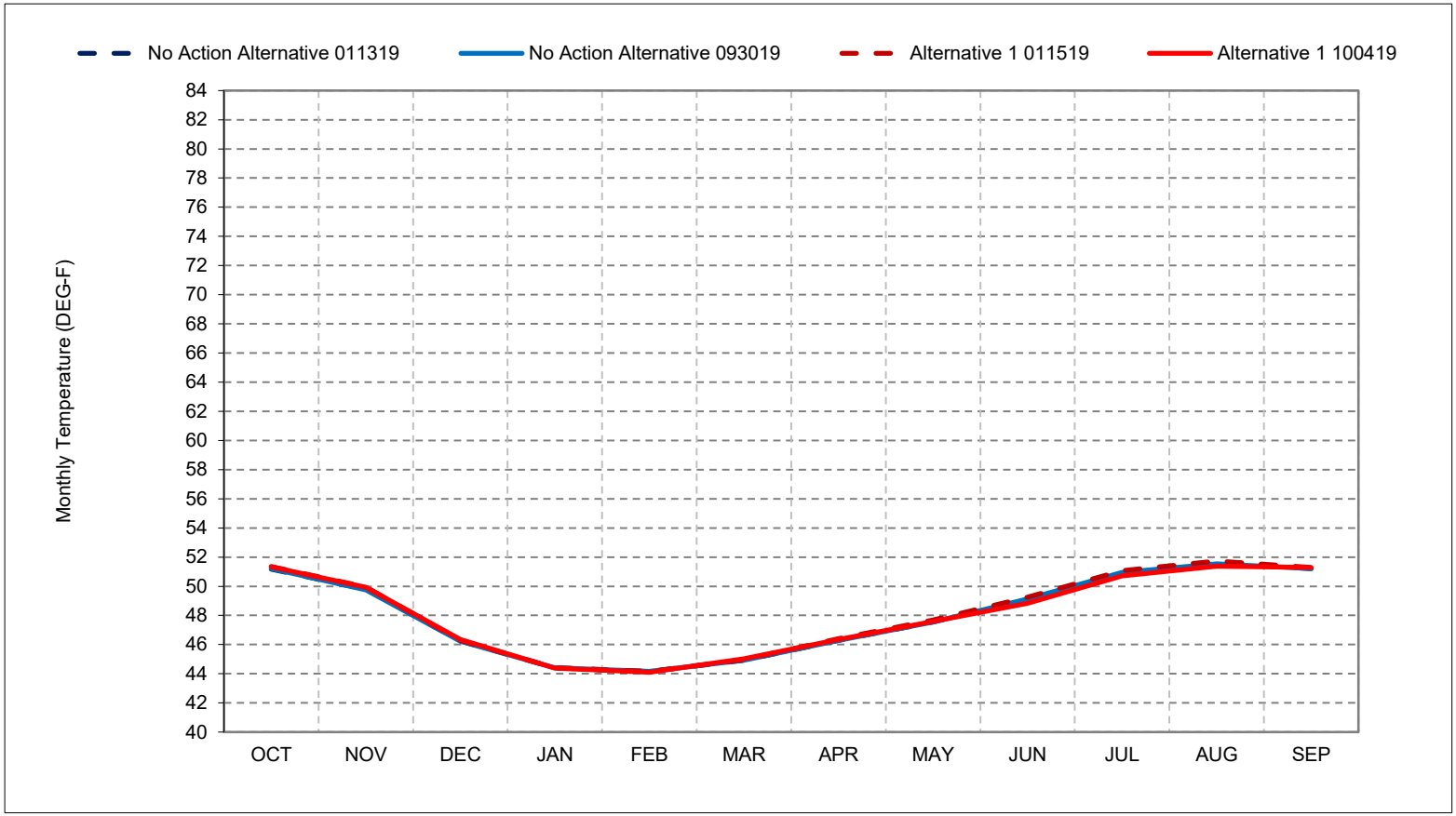



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-3. Clear Creek below Whiskeytown, Above Normal Year Average Temperature

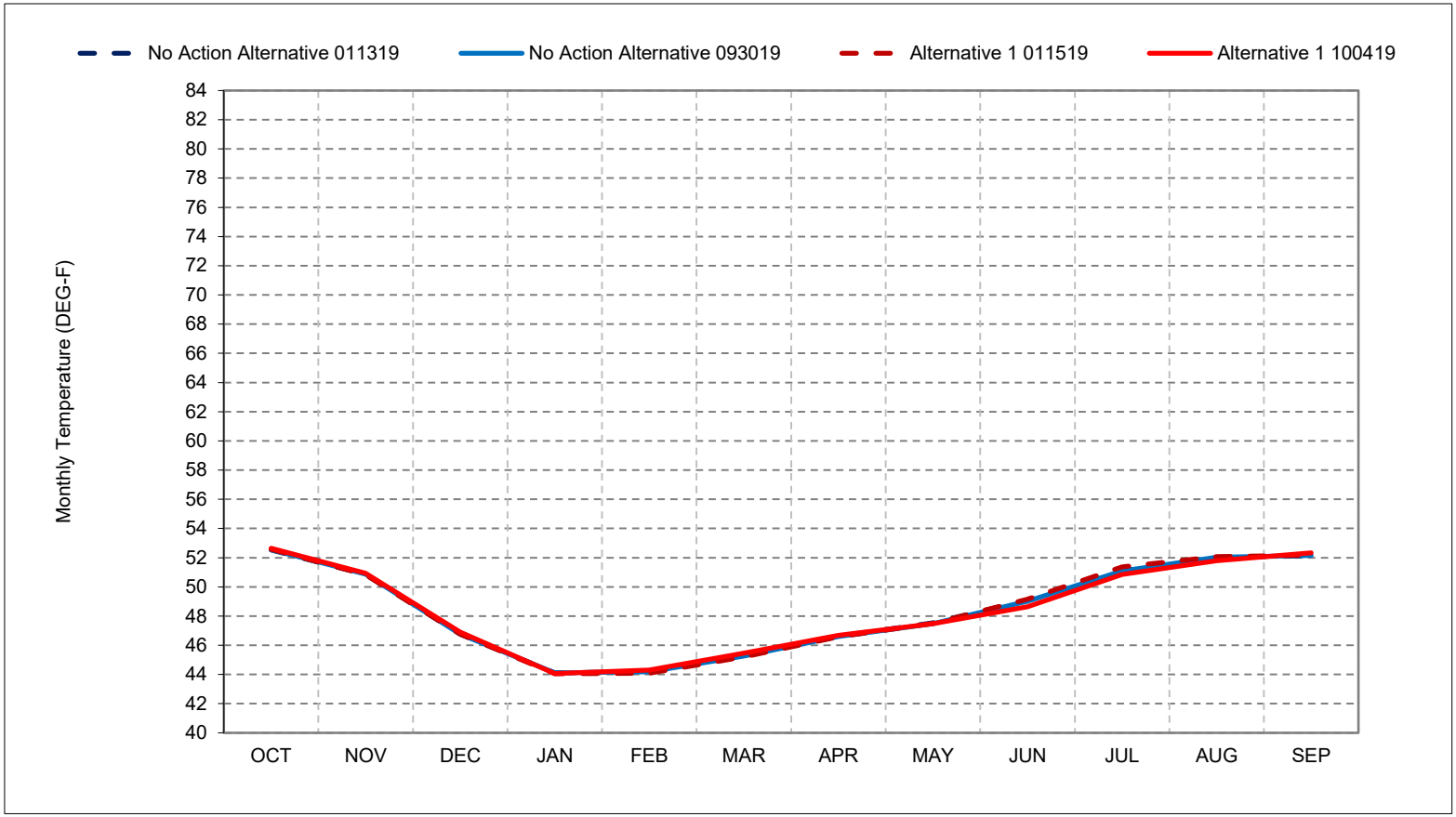



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-4. Clear Creek below Whiskeytown, Below Normal Year Average Temperature

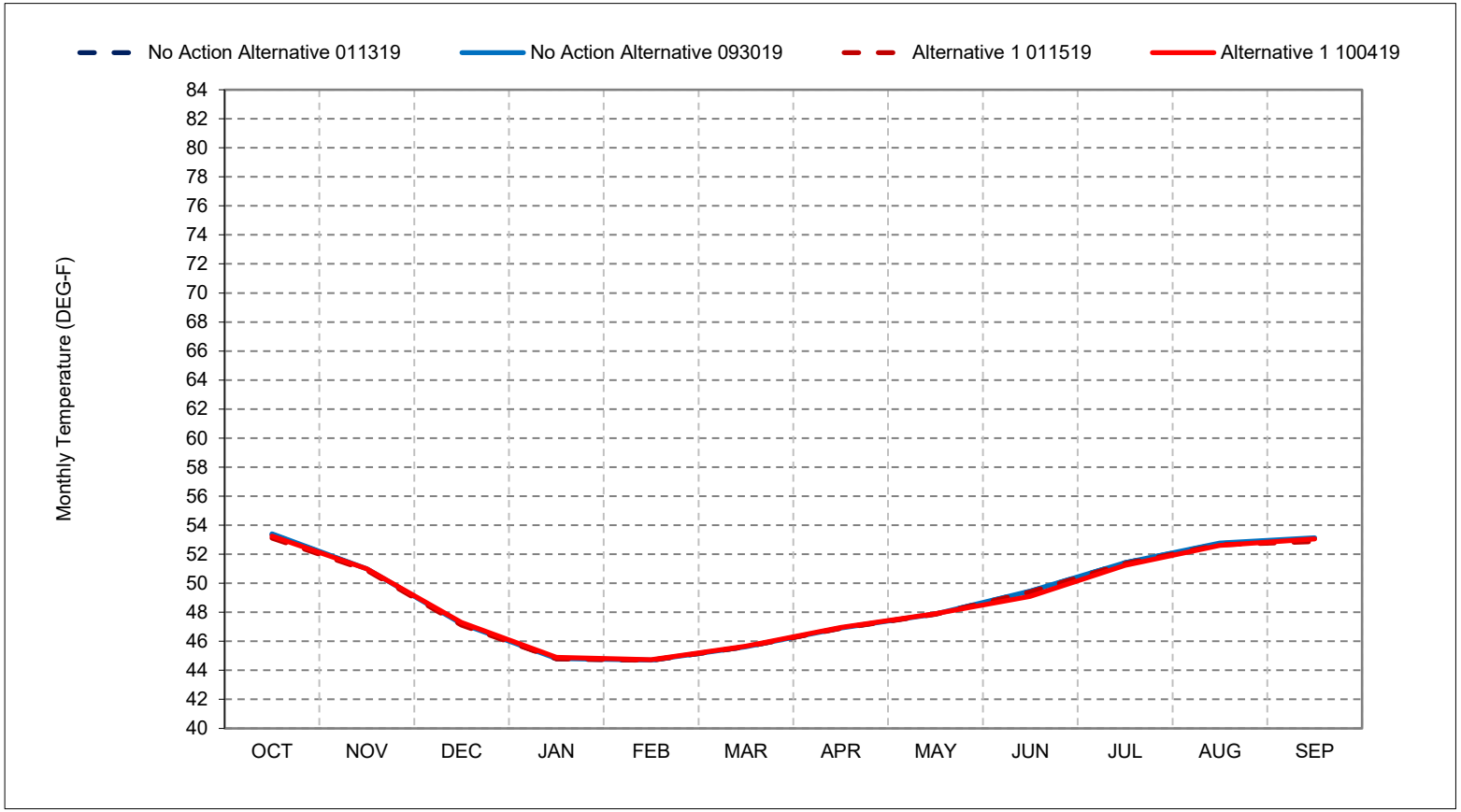



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-5. Clear Creek below Whiskeytown, Dry Year Average Temperature

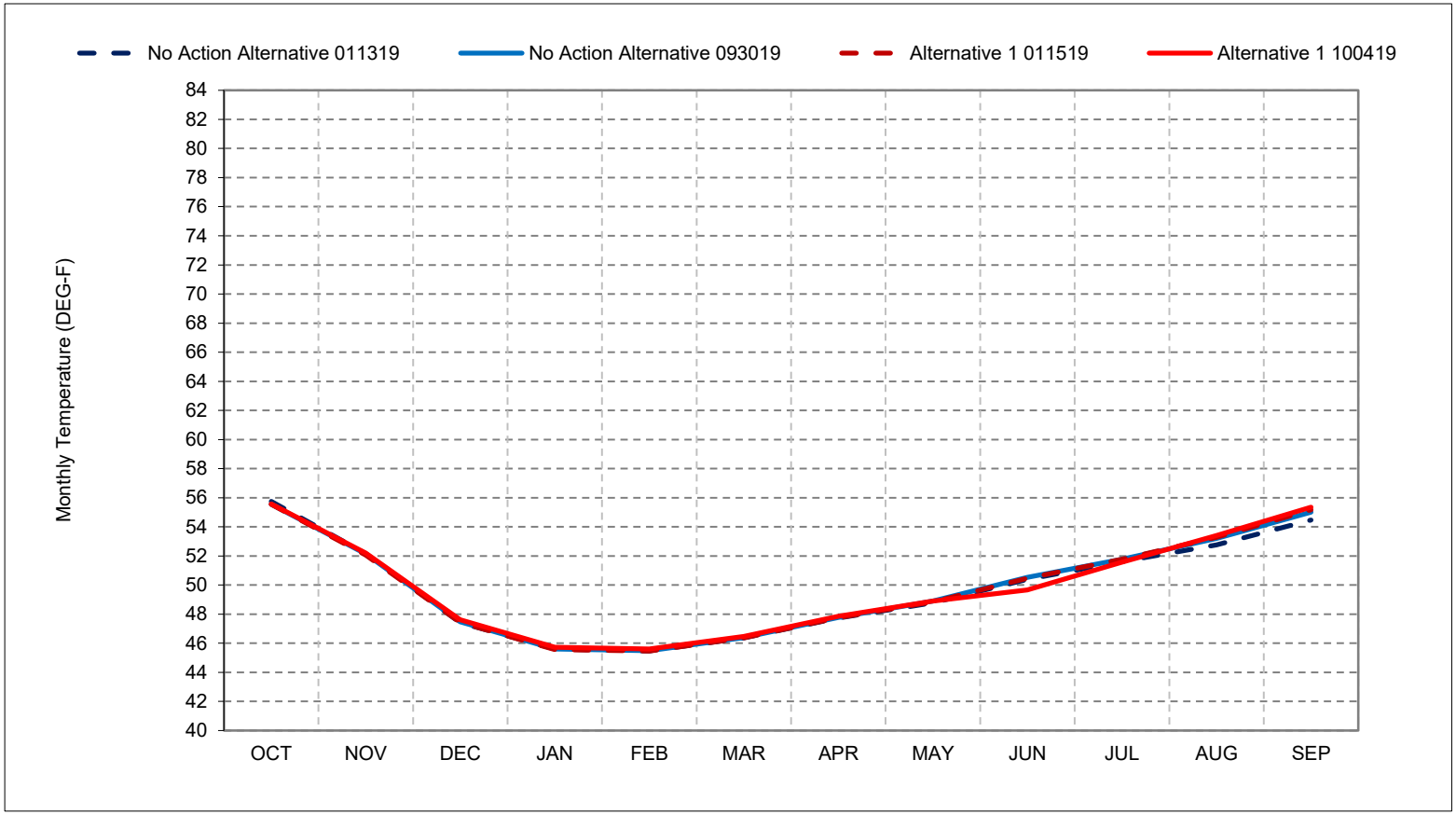



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-6. Clear Creek below Whiskeytown, Critical Year Average Temperature

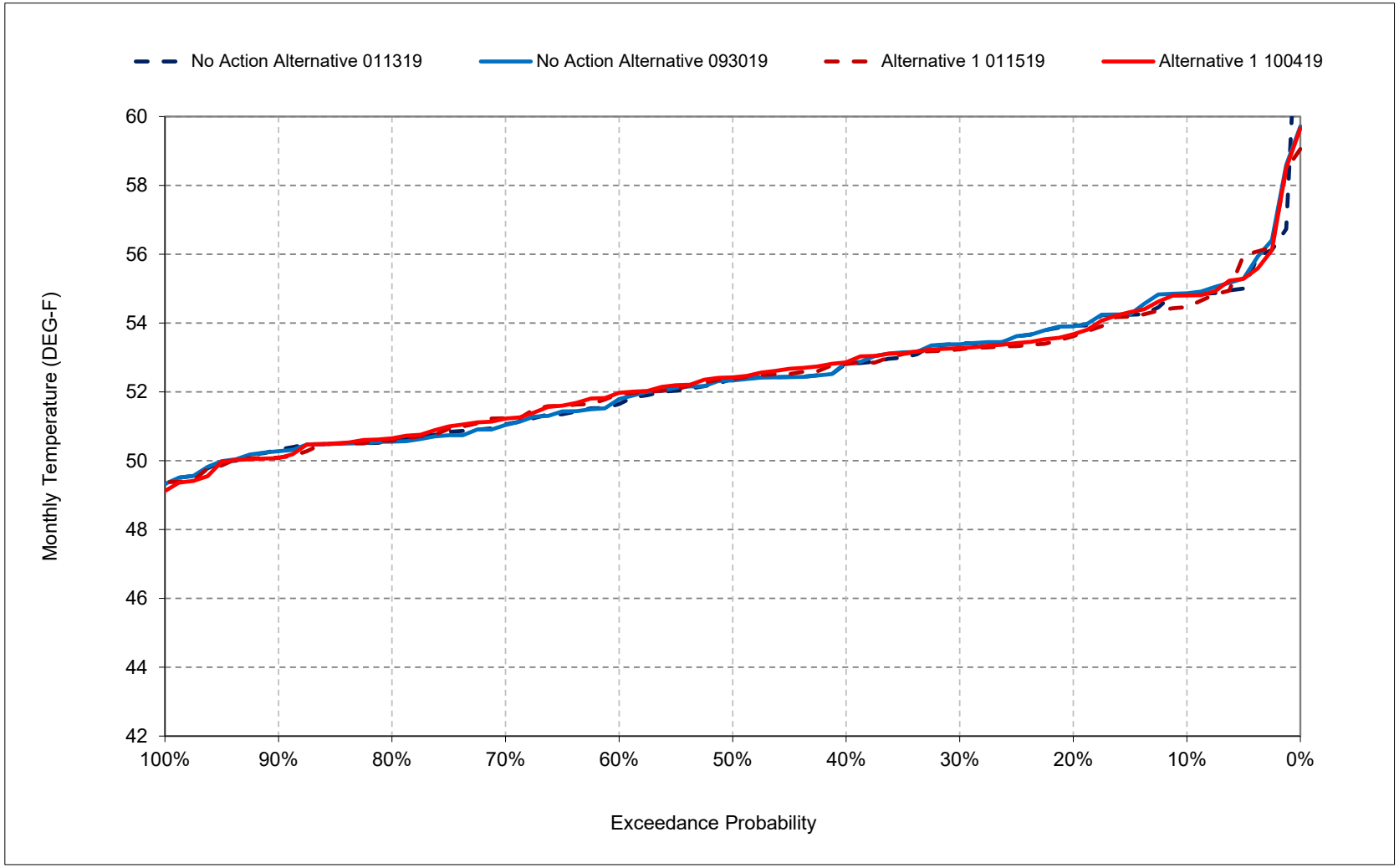



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

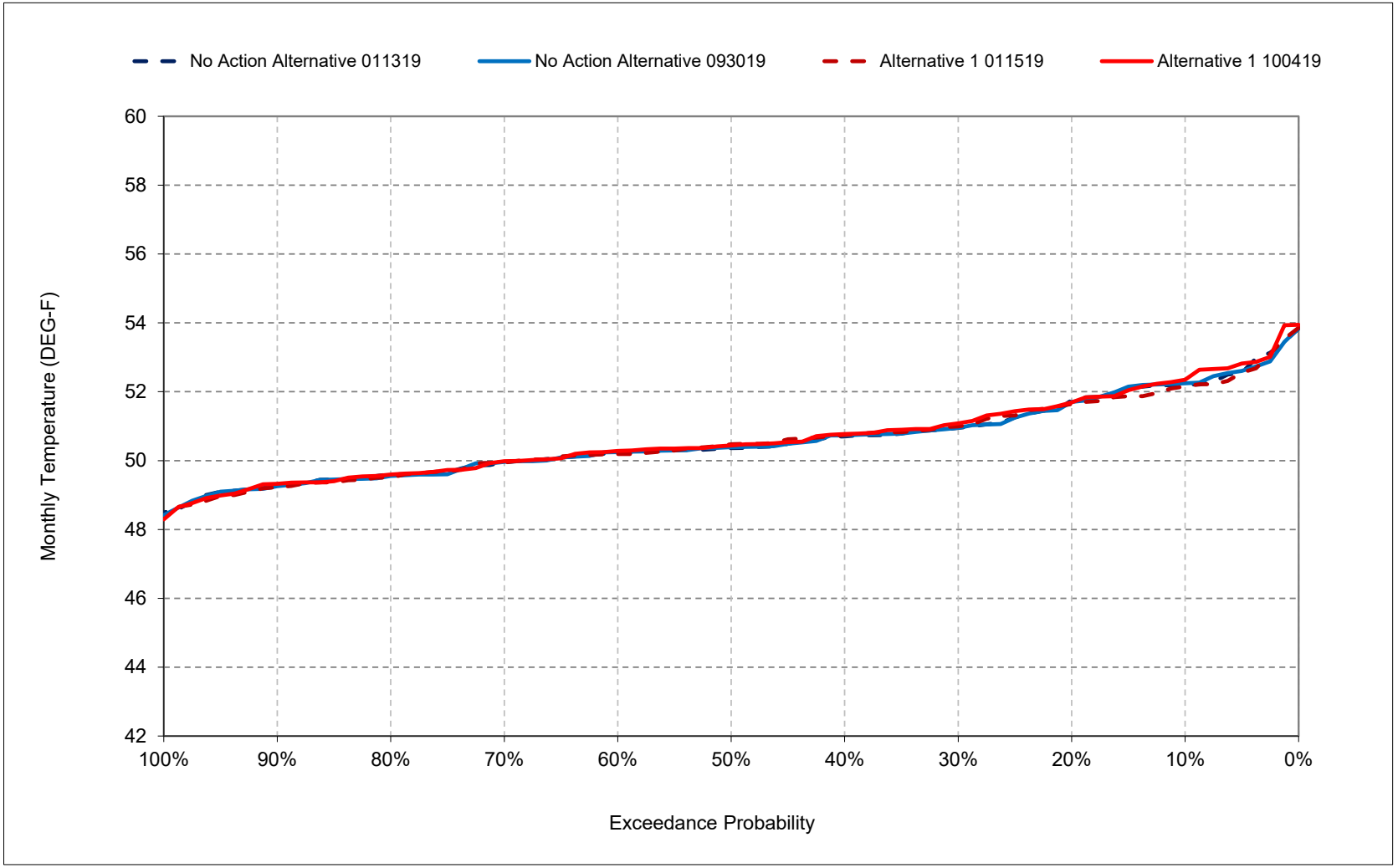
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-7. Clear Creek below Whiskeytown, October**



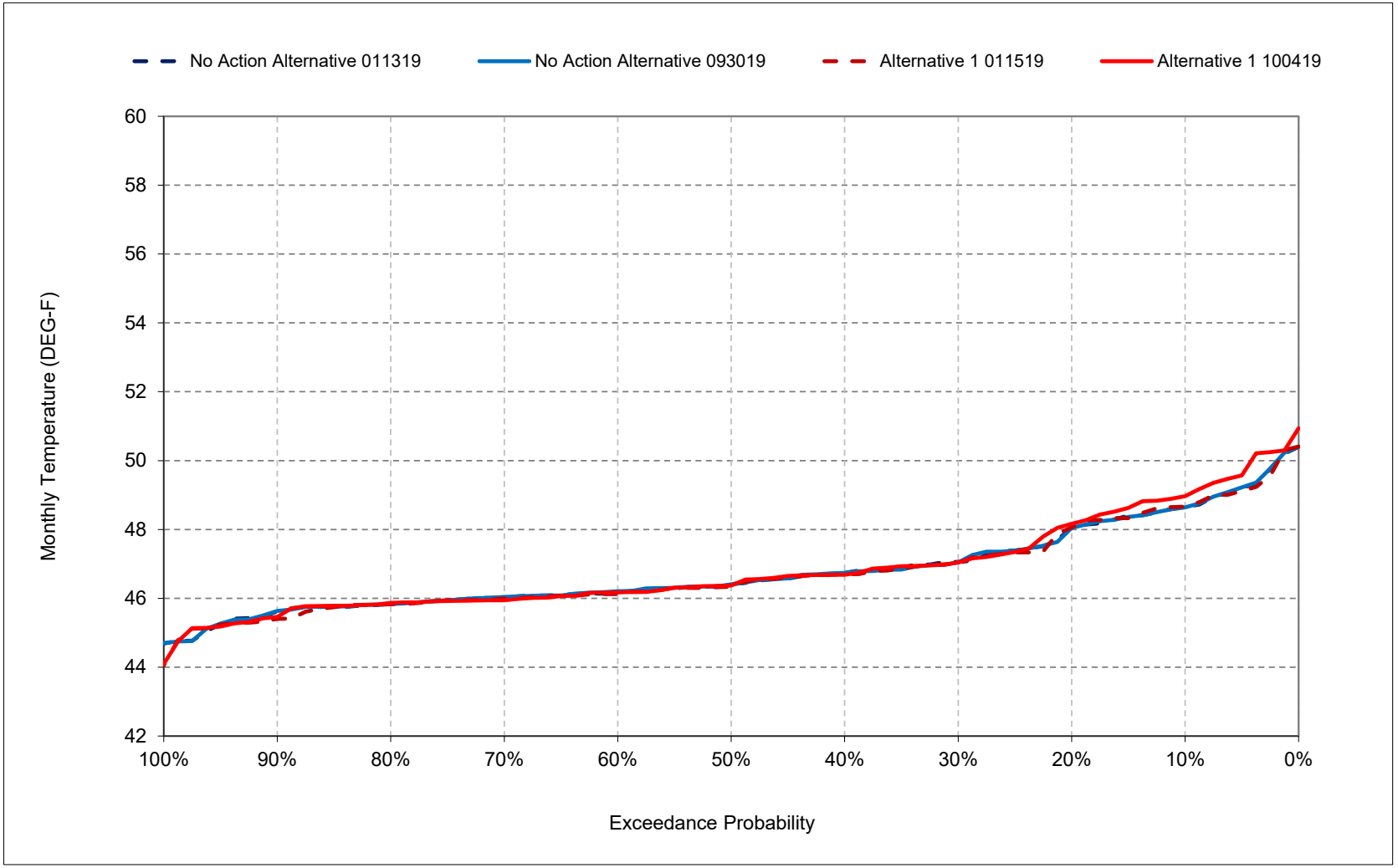

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-8. Clear Creek below Whiskeytown, November**



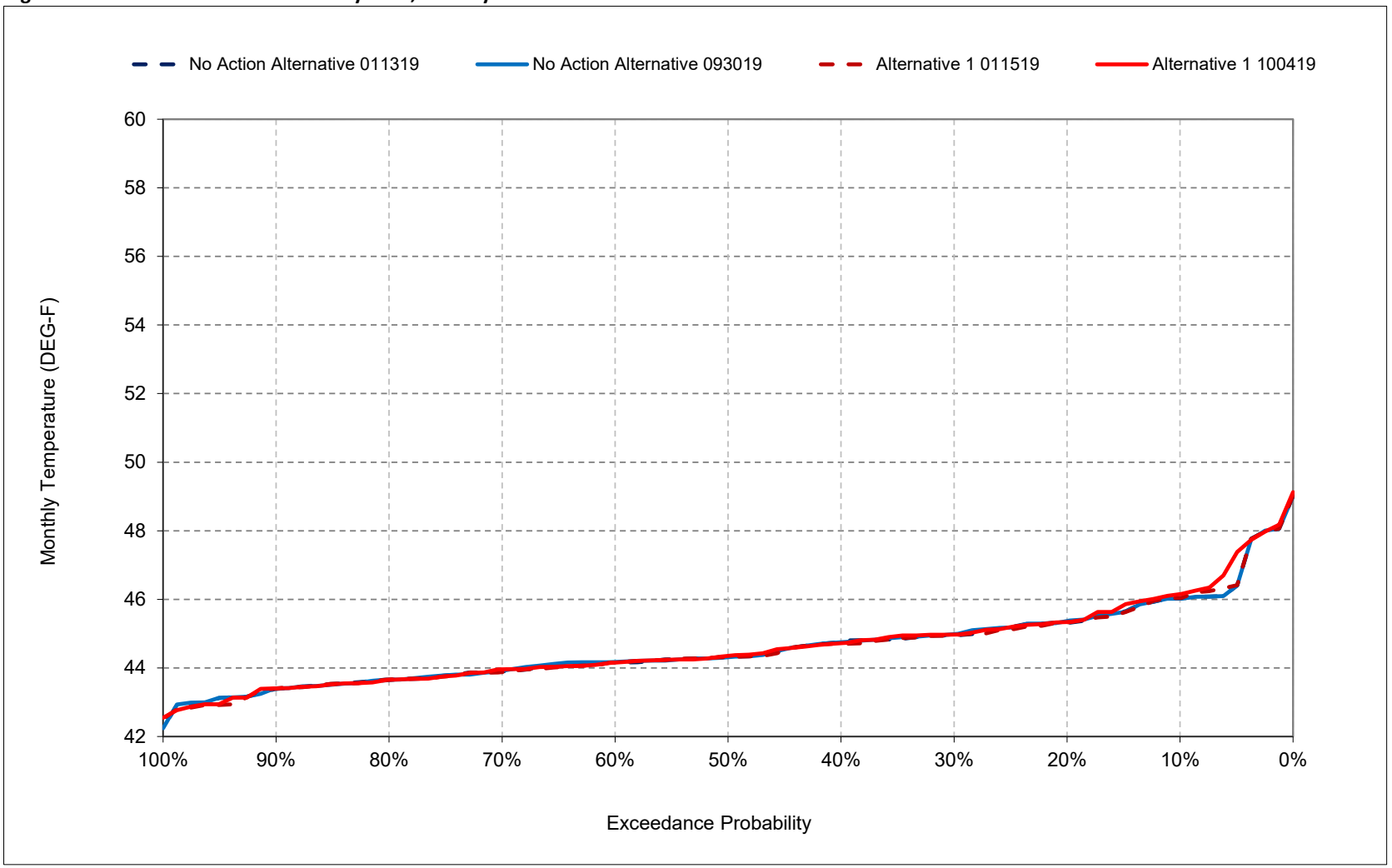

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-9. Clear Creek below Whiskeytown, December**



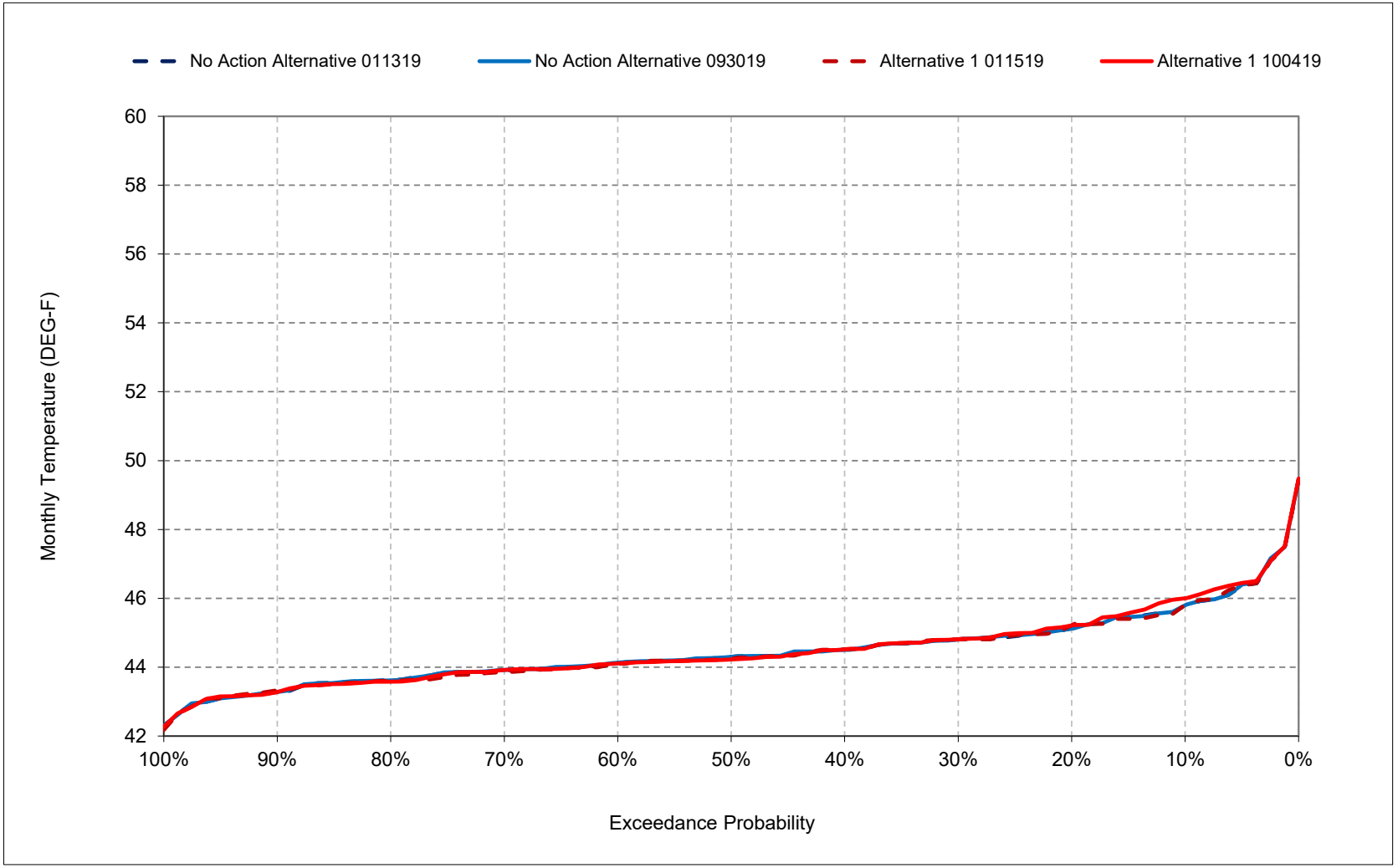

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-10. Clear Creek below Whiskeytown, January**



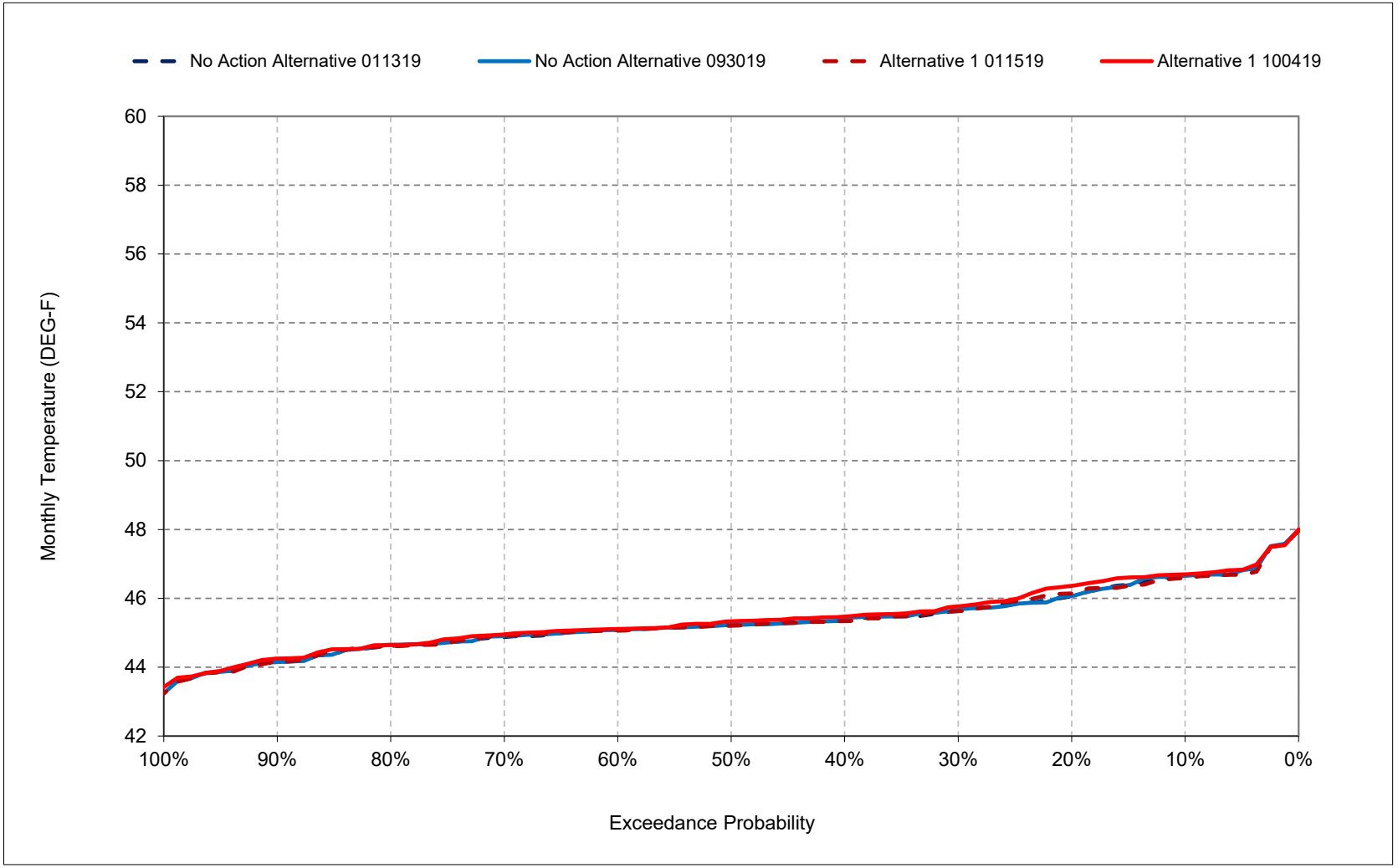

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-11. Clear Creek below Whiskeytown, February**



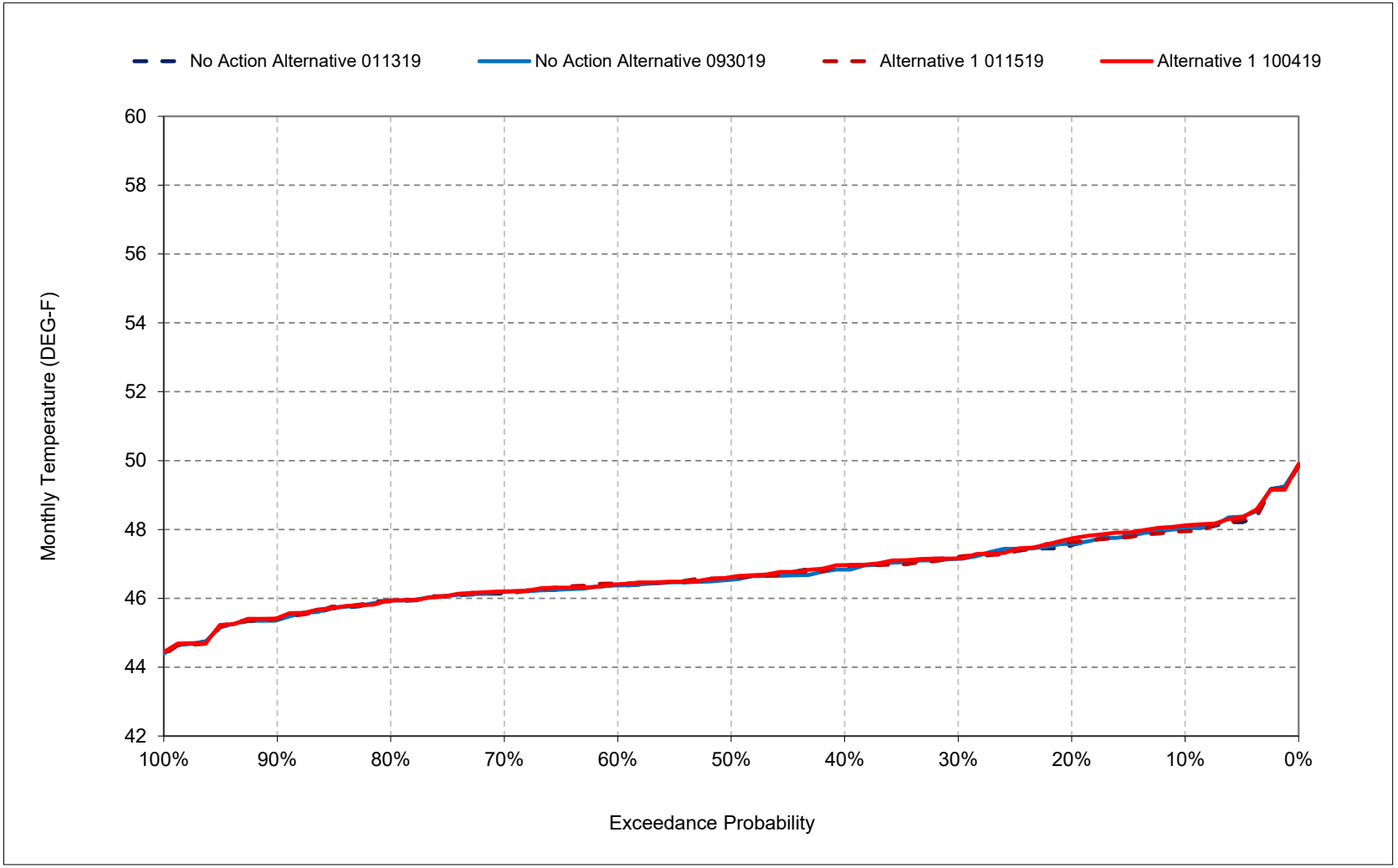

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-12. Clear Creek below Whiskeytown, March**



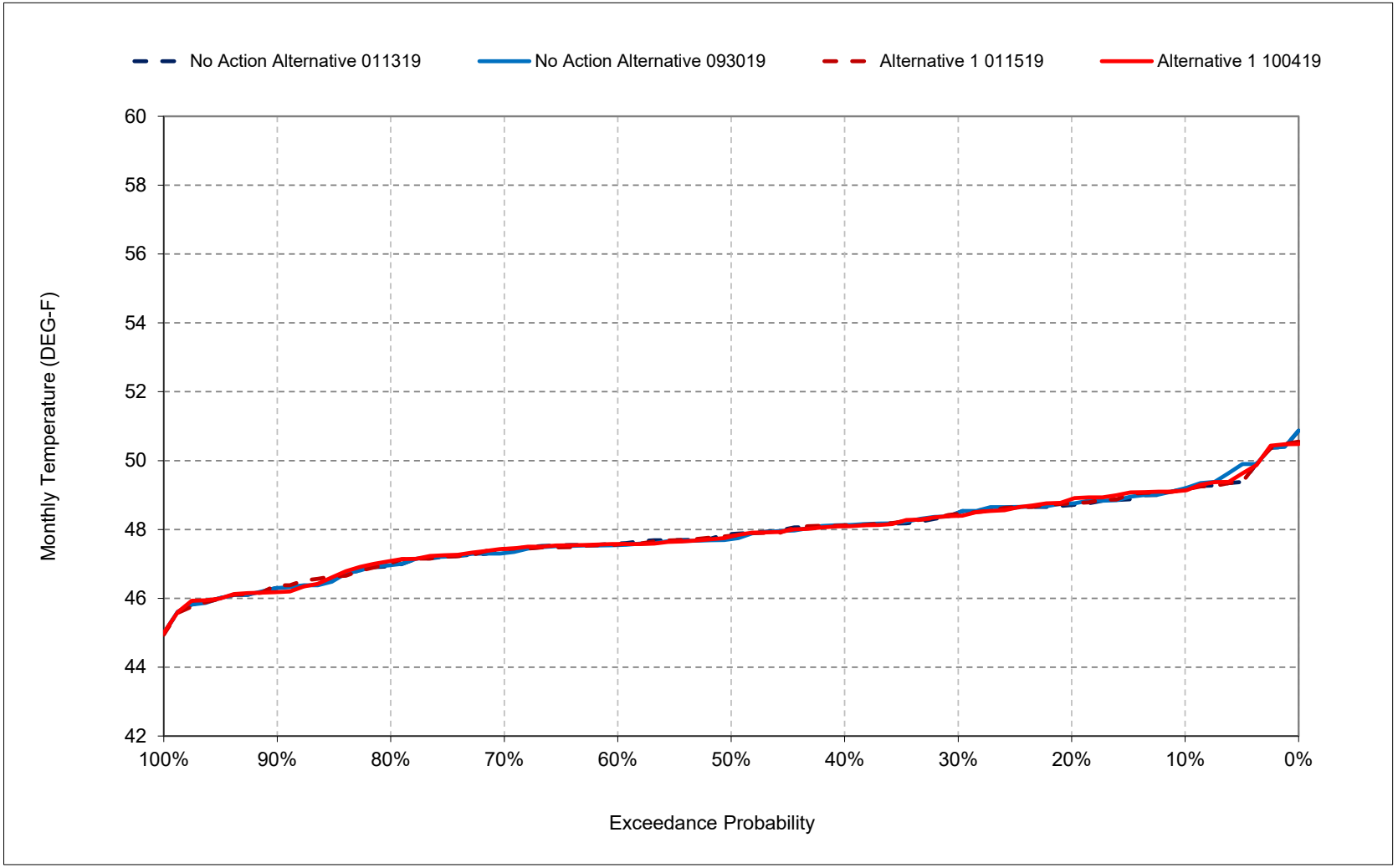

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-13. Clear Creek below Whiskeytown, April**



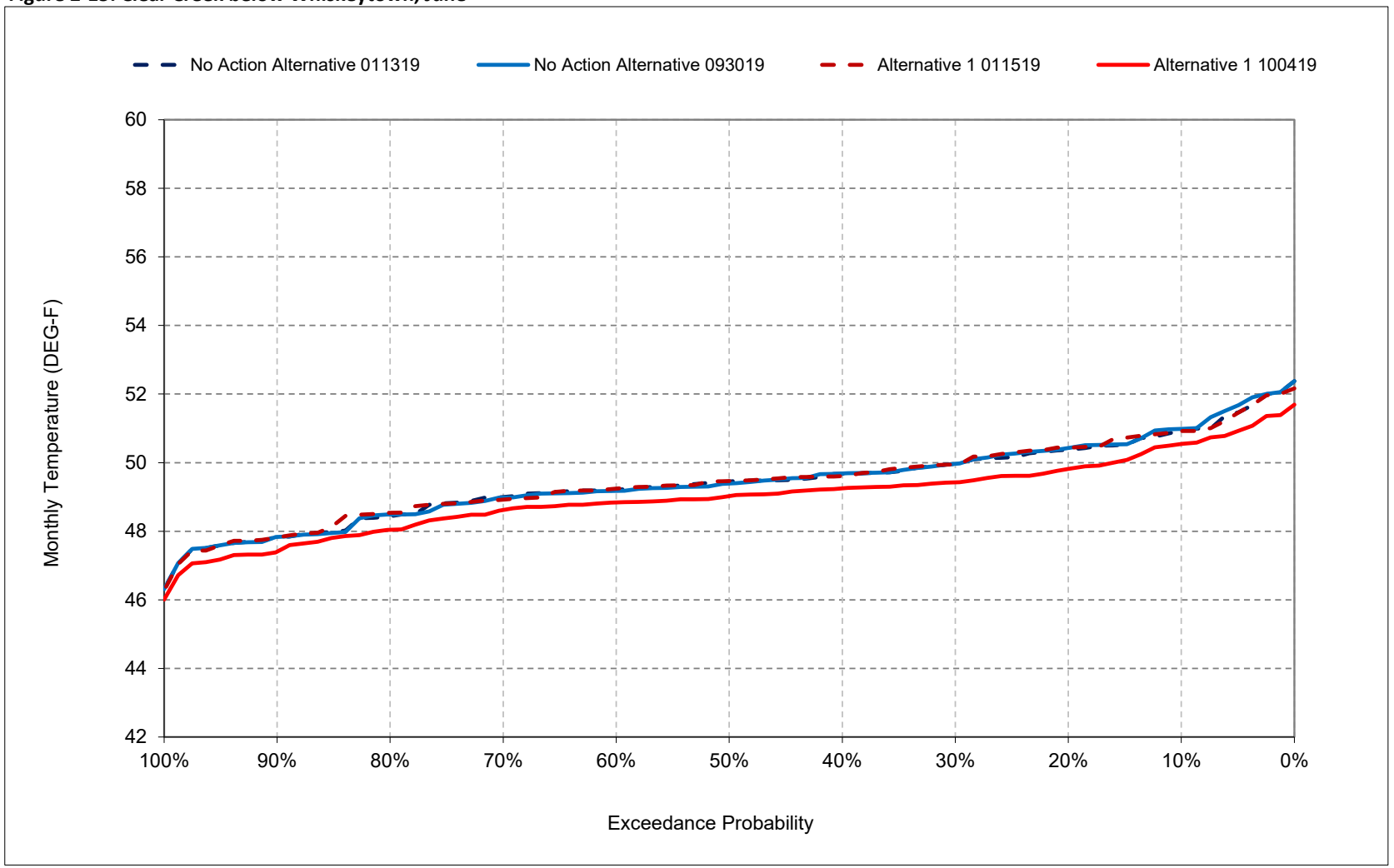

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-14. Clear Creek below Whiskeytown, May**



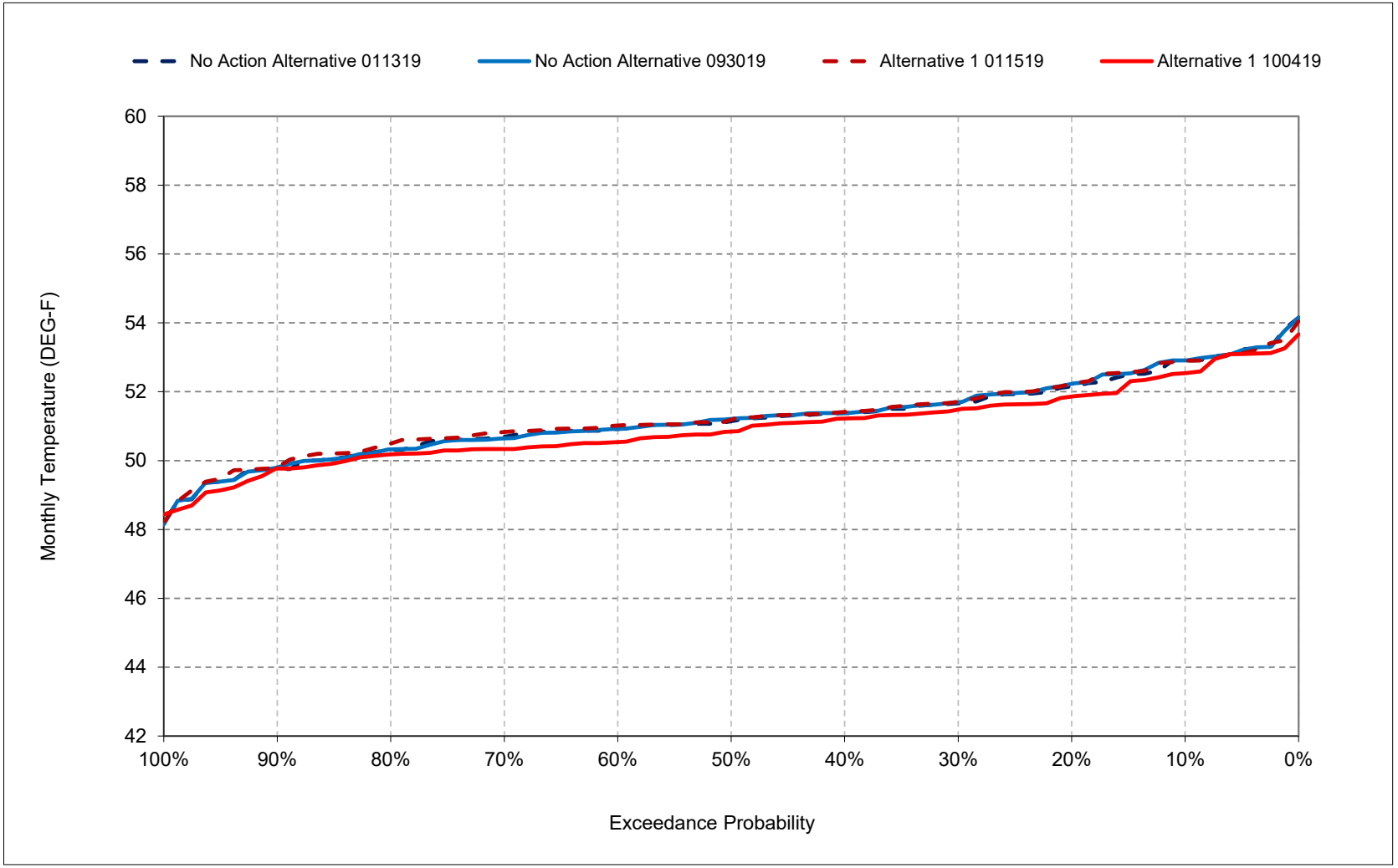

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-15. Clear Creek below Whiskeytown, June**



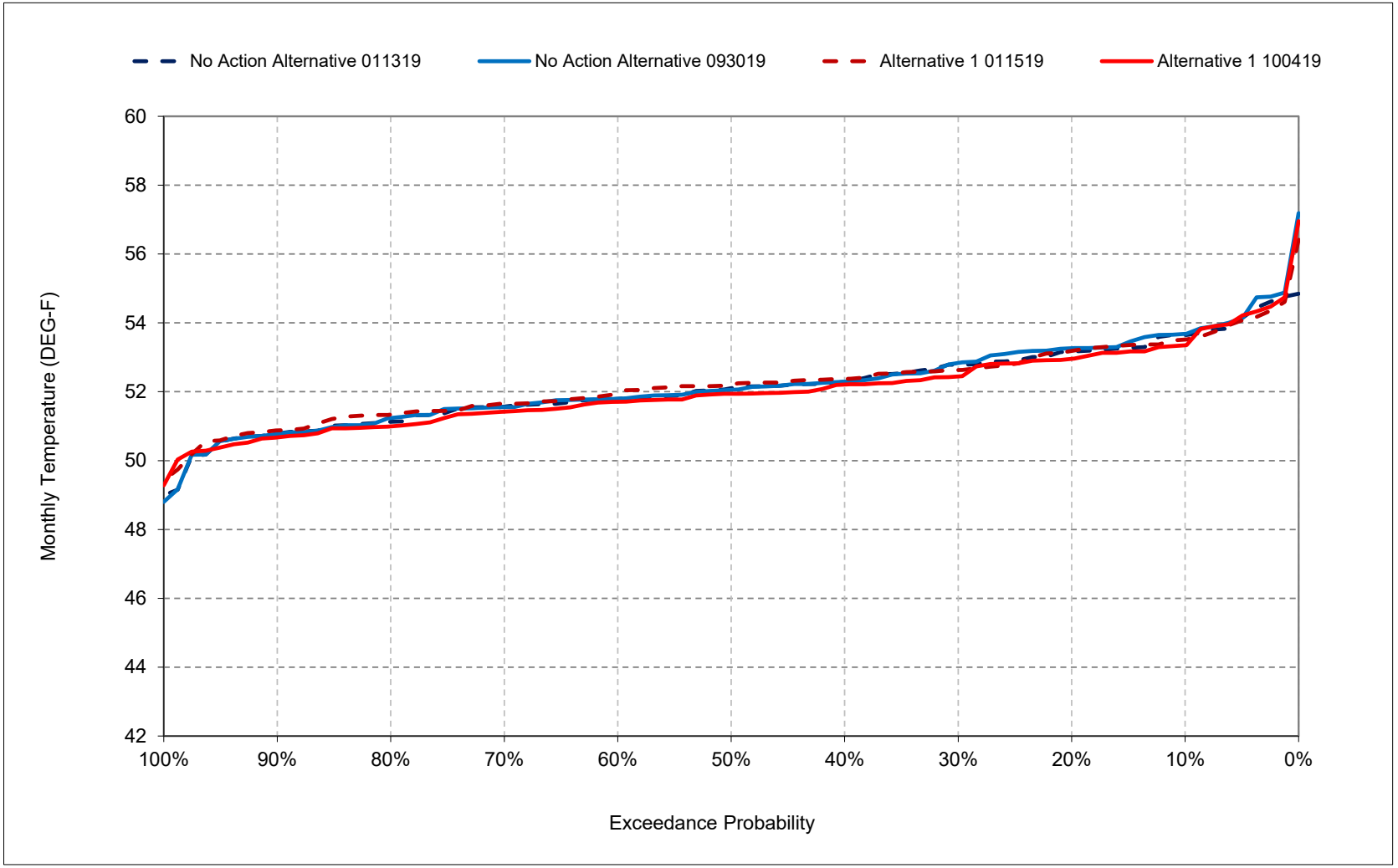

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-16. Clear Creek below Whiskeytown, July**



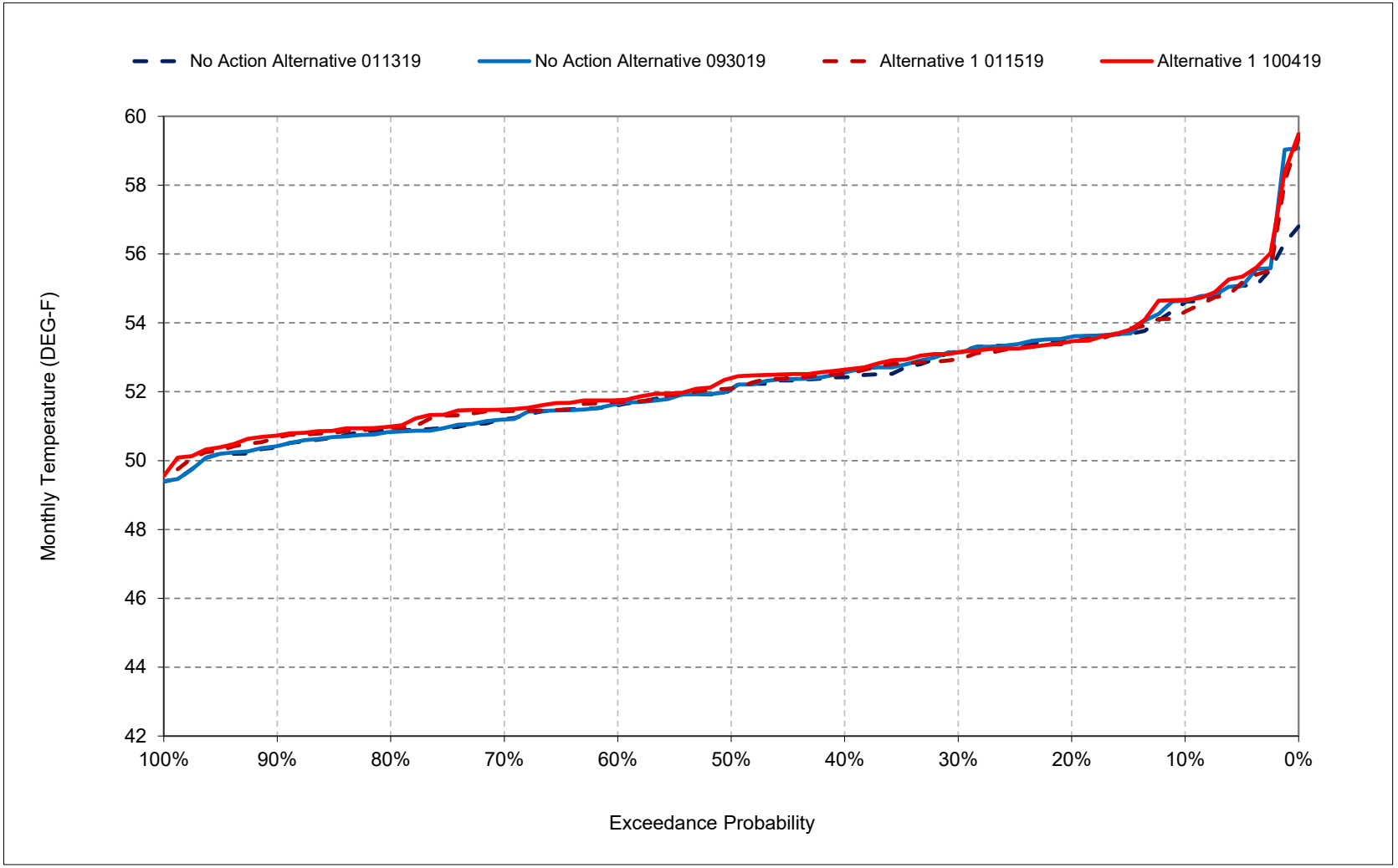

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-17. Clear Creek below Whiskeytown, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-18. Clear Creek below Whiskeytown, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-1. Clear Creek at Igo, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 55.4 | 52.4 | 48.7 | 46.2 | 46.1 | 47.3 | 49.1 | 50.3 | 53.1 | 56.4 | 56.7 | 55.9 |
| 20% | 54.5 | 51.9 | 48.0 | 45.6 | 45.6 | 46.8 | 48.6 | 49.9 | 52.5 | 56.0 | 56.2 | 54.9 |
| 30% | 53.9 | 51.1 | 47.2 | 45.2 | 45.2 | 46.4 | 48.1 | 49.4 | 51.9 | 55.3 | 55.8 | 54.4 |
| 40% | 53.3 | 50.9 | 46.8 | 45.0 | 45.0 | 46.2 | 47.9 | 49.1 | 51.5 | 55.1 | 55.6 | 53.8 |
| 50% | 52.9 | 50.5 | 46.5 | 44.6 | 44.7 | 45.9 | 47.5 | 49.0 | 51.2 | 55.0 | 55.2 | 53.5 |
| 60% | 52.1 | 50.4 | 46.3 | 44.4 | 44.5 | 45.8 | 47.4 | 48.7 | 51.1 | 54.6 | 55.0 | 53.0 |
| 70% | 51.6 | 50.2 | 46.1 | 44.1 | 44.3 | 45.5 | 47.2 | 48.5 | 50.7 | 54.4 | 54.8 | 52.6 |
| 80% | 51.1 | 49.8 | 45.9 | 43.8 | 44.1 | 45.3 | 46.9 | 48.0 | 50.1 | 54.1 | 54.3 | 52.3 |
| 90% | 50.9 | 49.5 | 45.6 | 43.6 | 43.7 | 44.8 | 46.4 | 47.4 | 49.6 | 53.7 | 54.0 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.1 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.6 | 44.5 | 44.5 | 45.5 | 47.2 | 48.7 | 50.9 | 54.9 | 55.0 | 52.6 |
| Above Normal (16%) | 51.7 | 50.0 | 46.4 | 44.6 | 44.6 | 45.6 | 47.3 | 48.6 | 50.8 | 54.7 | 54.7 | 52.6 |
| Below Normal (13%) | 53.0 | 51.0 | 46.8 | 44.3 | 44.6 | 45.9 | 47.7 | 48.5 | 50.8 | 54.8 | 55.1 | 53.5 |
| Dry (24%) | 53.9 | 51.2 | 47.3 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.1 | 55.8 | 54.4 |
| Critical (15%) | 56.7 | 52.5 | 47.5 | 45.8 | 46.0 | 47.2 | 48.9 | 50.1 | 53.3 | 55.4 | 55.9 | 56.0 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 55.0 | 52.2 | 48.7 | 46.3 | 46.1 | 47.3 | 49.1 | 50.3 | 53.1 | 56.6 | 56.6 | 55.6 |
| 20% | 54.2 | 51.8 | 48.2 | 45.6 | 45.6 | 46.9 | 48.6 | 49.9 | 52.5 | 56.0 | 56.2 | 54.7 |
| 30% | 53.8 | 51.1 | 47.1 | 45.2 | 45.2 | 46.5 | 48.1 | 49.4 | 51.9 | 55.4 | 55.7 | 54.3 |
| 40% | 53.4 | 50.9 | 46.8 | 44.9 | 45.0 | 46.1 | 47.9 | 49.2 | 51.6 | 55.2 | 55.6 | 54.0 |
| 50% | 53.0 | 50.6 | 46.5 | 44.6 | 44.8 | 45.9 | 47.6 | 48.9 | 51.2 | 55.0 | 55.3 | 53.5 |
| 60% | 52.4 | 50.4 | 46.3 | 44.3 | 44.5 | 45.7 | 47.4 | 48.6 | 50.9 | 54.6 | 55.2 | 53.1 |
| 70% | 51.8 | 50.2 | 46.1 | 44.1 | 44.2 | 45.5 | 47.2 | 48.4 | 50.7 | 54.5 | 54.9 | 52.9 |
| 80% | 51.2 | 49.8 | 45.9 | 43.9 | 44.0 | 45.3 | 46.9 | 48.1 | 50.3 | 54.2 | 54.5 | 52.4 |
| 90% | 50.7 | 49.4 | 45.5 | 43.6 | 43.8 | 44.8 | 46.4 | 47.4 | 49.6 | 53.8 | 54.0 | 52.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.5 | 44.5 | 44.5 | 45.5 | 47.2 | 48.6 | 50.9 | 54.9 | 55.0 | 52.8 |
| Above Normal (16%) | 51.9 | 50.1 | 46.4 | 44.6 | 44.6 | 45.7 | 47.4 | 48.7 | 50.9 | 54.8 | 54.9 | 52.7 |
| Below Normal (13%) | 53.1 | 51.0 | 46.8 | 44.2 | 44.5 | 45.9 | 47.6 | 48.5 | 50.9 | 55.0 | 55.2 | 53.5 |
| Dry (24%) | 53.6 | 51.1 | 47.2 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.0 | 55.7 | 54.2 |
| Critical (15%) | 56.3 | 52.3 | 47.5 | 45.7 | 46.0 | 47.2 | 48.9 | 50.1 | 53.4 | 55.5 | 56.2 | 56.7 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.4 | -0.2 | 0.0 | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.2** | 0.0 | -0.2 |
| 20% | -0.4 | -0.1 | **0.2** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | -0.1 | -0.1 |
| 30% | -0.2 | **0.1** | 0.0 | 0.0 | **0.0** | **0.1** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | -0.1 |
| 40% | **0.0** | 0.0 | 0.0 | -0.1 | **0.0** | -0.1 | 0.0 | **0.0** | **0.1** | **0.1** | **0.0** | **0.2** |
| 50% | **0.1** | **0.1** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** |
| 60% | **0.3** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | -0.1 | -0.2 | **0.0** | **0.2** | **0.0** |
| 70% | **0.2** | 0.0 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | -0.1 | **0.1** | **0.1** | **0.2** |
| 80% | **0.0** | 0.0 | **0.0** | **0.1** | -0.1 | 0.0 | **0.0** | **0.0** | **0.2** | **0.1** | **0.2** | **0.1** |
| 90% | -0.2 | -0.1 | -0.1 | **0.0** | **0.1** | 0.0 | **0.1** | **0.0** | **0.0** | **0.1** | **0.0** | **0.3** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.2** |
| Above Normal (16%) | **0.2** | **0.2** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| Below Normal (13%) | **0.0** | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.2** | **0.0** | **0.0** |
| Dry (24%) | -0.2 | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.2 |
| Critical (15%) | -0.4 | -0.2 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | **0.2** | **0.3** | **0.7** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-2. Clear Creek at Igo, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.5 | 52.5 | 48.7 | 46.2 | 46.1 | 47.4 | 49.1 | 50.3 | 53.1 | 56.4 | 56.7 | 56.0 |
| 20% | 54.5 | 51.9 | 48.0 | 45.6 | 45.6 | 46.9 | 48.7 | 49.9 | 52.5 | 56.0 | 56.3 | 54.9 |
| 30% | 53.9 | 51.1 | 47.1 | 45.2 | 45.2 | 46.4 | 48.1 | 49.4 | 51.9 | 55.4 | 55.9 | 54.4 |
| 40% | 53.4 | 50.9 | 46.8 | 45.0 | 45.0 | 46.2 | 47.9 | 49.2 | 51.5 | 55.2 | 55.5 | 53.9 |
| 50% | 52.9 | 50.6 | 46.5 | 44.5 | 44.8 | 45.9 | 47.5 | 48.9 | 51.2 | 55.0 | 55.2 | 53.5 |
| 60% | 52.2 | 50.4 | 46.3 | 44.4 | 44.6 | 45.8 | 47.4 | 48.7 | 51.0 | 54.6 | 55.0 | 53.0 |
| 70% | 51.6 | 50.1 | 46.1 | 44.1 | 44.3 | 45.5 | 47.2 | 48.4 | 50.6 | 54.4 | 54.8 | 52.7 |
| 80% | 51.1 | 49.7 | 45.9 | 43.8 | 44.1 | 45.3 | 46.9 | 48.1 | 50.1 | 54.1 | 54.4 | 52.2 |
| 90% | 50.9 | 49.5 | 45.6 | 43.6 | 43.7 | 44.8 | 46.4 | 47.4 | 49.6 | 53.7 | 54.0 | 51.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.6 | 44.5 | 44.5 | 45.5 | 47.2 | 48.7 | 50.9 | 54.9 | 55.0 | 52.6 |
| Above Normal (16%) | 51.8 | 49.9 | 46.3 | 44.6 | 44.6 | 45.7 | 47.3 | 48.6 | 50.8 | 54.7 | 54.7 | 52.6 |
| Below Normal (13%) | 53.1 | 51.0 | 46.8 | 44.3 | 44.6 | 45.9 | 47.7 | 48.5 | 50.8 | 54.8 | 55.1 | 53.5 |
| Dry (24%) | 53.9 | 51.2 | 47.3 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.1 | 55.8 | 54.4 |
| Critical (15%) | 56.3 | 52.4 | 47.5 | 45.8 | 46.0 | 47.2 | 49.0 | 50.2 | 53.5 | 55.4 | 56.2 | 56.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.3 | 52.6 | 48.9 | 46.3 | 46.4 | 47.4 | 49.2 | 50.3 | 51.7 | 54.8 | 55.2 | 56.0 |
| 20% | 54.2 | 52.0 | 48.2 | 45.6 | 45.6 | 47.0 | 48.7 | 49.9 | 51.0 | 54.3 | 54.8 | 54.8 |
| 30% | 53.8 | 51.2 | 47.1 | 45.3 | 45.1 | 46.4 | 48.2 | 49.4 | 50.5 | 53.7 | 54.4 | 54.4 |
| 40% | 53.3 | 50.9 | 46.8 | 45.0 | 44.9 | 46.3 | 47.9 | 49.1 | 50.3 | 53.5 | 54.1 | 54.0 |
| 50% | 53.0 | 50.6 | 46.5 | 44.6 | 44.6 | 46.0 | 47.5 | 48.9 | 50.1 | 53.1 | 53.8 | 53.7 |
| 60% | 52.4 | 50.5 | 46.3 | 44.4 | 44.4 | 45.8 | 47.4 | 48.6 | 50.0 | 52.9 | 53.6 | 53.2 |
| 70% | 51.8 | 50.1 | 46.1 | 44.1 | 44.2 | 45.6 | 47.1 | 48.4 | 49.7 | 52.7 | 53.4 | 52.9 |
| 80% | 51.2 | 49.8 | 45.9 | 43.8 | 43.9 | 45.3 | 46.9 | 48.1 | 49.1 | 52.5 | 53.0 | 52.4 |
| 90% | 50.7 | 49.5 | 45.5 | 43.6 | 43.6 | 44.9 | 46.4 | 47.4 | 48.7 | 51.9 | 52.6 | 52.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 47.0 | 44.8 | 44.8 | 46.1 | 47.7 | 48.9 | 50.1 | 53.3 | 54.0 | 53.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 51.5 | 50.1 | 46.5 | 44.5 | 44.3 | 45.6 | 47.2 | 48.7 | 50.0 | 53.0 | 53.4 | 52.9 |
| Above Normal (16%) | 51.9 | 50.1 | 46.4 | 44.6 | 44.3 | 45.7 | 47.3 | 48.7 | 50.0 | 53.0 | 53.3 | 52.7 |
| Below Normal (13%) | 53.1 | 51.1 | 47.0 | 44.2 | 44.5 | 46.1 | 47.7 | 48.5 | 49.8 | 53.1 | 53.7 | 53.6 |
| Dry (24%) | 53.7 | 51.2 | 47.4 | 45.1 | 45.1 | 46.3 | 47.9 | 48.9 | 50.2 | 53.5 | 54.5 | 54.3 |
| Critical (15%) | 56.1 | 52.4 | 47.7 | 45.9 | 46.1 | 47.2 | 48.9 | 50.0 | 50.8 | 53.9 | 55.2 | 56.6 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.2 | **0.1** | **0.2** | **0.1** | **0.3** | **0.0** | **0.0** | **0.0** | -1.5 | -1.6 | -1.5 | 0.0 |
| 20% | -0.3 | **0.0** | **0.3** | 0.0 | 0.0 | **0.2** | **0.0** | 0.0 | -1.6 | -1.7 | -1.5 | -0.1 |
| 30% | -0.1 | **0.1** | **0.0** | **0.0** | -0.1 | **0.0** | **0.0** | 0.0 | -1.4 | -1.7 | -1.5 | **0.0** |
| 40% | 0.0 | **0.1** | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | -0.1 | -1.2 | -1.7 | -1.4 | **0.1** |
| 50% | **0.1** | **0.0** | 0.0 | **0.1** | -0.2 | **0.0** | **0.0** | 0.0 | -1.1 | -1.8 | -1.4 | **0.2** |
| 60% | **0.2** | **0.0** | 0.0 | 0.0 | -0.2 | **0.0** | **0.0** | 0.0 | -1.0 | -1.7 | -1.4 | **0.2** |
| 70% | **0.2** | 0.0 | -0.1 | 0.0 | -0.1 | **0.0** | -0.1 | 0.0 | -0.9 | -1.7 | -1.4 | **0.3** |
| 80% | **0.1** | **0.1** | **0.0** | **0.0** | -0.2 | 0.0 | **0.1** | **0.0** | -1.0 | -1.6 | -1.4 | **0.2** |
| 90% | -0.1 | **0.1** | -0.1 | **0.0** | -0.1 | **0.1** | **0.0** | 0.0 | -0.9 | -1.8 | -1.5 | **0.3** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.0** | **0.1** | **0.0** | -0.1 | **0.1** | **0.0** | 0.0 | -1.2 | -1.7 | -1.4 | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | 0.0 | -0.2 | **0.1** | **0.0** | 0.0 | -1.0 | -1.9 | -1.5 | **0.2** |
| Above Normal (16%) | **0.1** | **0.2** | **0.1** | 0.0 | -0.3 | **0.1** | **0.0** | **0.0** | -0.9 | -1.7 | -1.4 | **0.1** |
| Below Normal (13%) | **0.1** | **0.0** | **0.1** | -0.1 | -0.1 | **0.2** | **0.0** | 0.0 | -1.0 | -1.7 | -1.4 | **0.2** |
| Dry (24%) | -0.2 | 0.0 | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -1.1 | -1.6 | -1.4 | -0.1 |
| Critical (15%) | -0.2 | **0.0** | **0.1** | **0.1** | **0.1** | **0.0** | 0.0 | -0.2 | -2.7 | -1.5 | -1.0 | **0.1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-3. Clear Creek at Igo, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 55.4 | 52.4 | 48.7 | 46.2 | 46.1 | 47.3 | 49.1 | 50.3 | 53.1 | 56.4 | 56.7 | 55.9 |
| 20% | 54.5 | 51.9 | 48.0 | 45.6 | 45.6 | 46.8 | 48.6 | 49.9 | 52.5 | 56.0 | 56.2 | 54.9 |
| 30% | 53.9 | 51.1 | 47.2 | 45.2 | 45.2 | 46.4 | 48.1 | 49.4 | 51.9 | 55.3 | 55.8 | 54.4 |
| 40% | 53.3 | 50.9 | 46.8 | 45.0 | 45.0 | 46.2 | 47.9 | 49.1 | 51.5 | 55.1 | 55.6 | 53.8 |
| 50% | 52.9 | 50.5 | 46.5 | 44.6 | 44.7 | 45.9 | 47.5 | 49.0 | 51.2 | 55.0 | 55.2 | 53.5 |
| 60% | 52.1 | 50.4 | 46.3 | 44.4 | 44.5 | 45.8 | 47.4 | 48.7 | 51.1 | 54.6 | 55.0 | 53.0 |
| 70% | 51.6 | 50.2 | 46.1 | 44.1 | 44.3 | 45.5 | 47.2 | 48.5 | 50.7 | 54.4 | 54.8 | 52.6 |
| 80% | 51.1 | 49.8 | 45.9 | 43.8 | 44.1 | 45.3 | 46.9 | 48.0 | 50.1 | 54.1 | 54.3 | 52.3 |
| 90% | 50.9 | 49.5 | 45.6 | 43.6 | 43.7 | 44.8 | 46.4 | 47.4 | 49.6 | 53.7 | 54.0 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.1 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.6 | 44.5 | 44.5 | 45.5 | 47.2 | 48.7 | 50.9 | 54.9 | 55.0 | 52.6 |
| Above Normal (16%) | 51.7 | 50.0 | 46.4 | 44.6 | 44.6 | 45.6 | 47.3 | 48.6 | 50.8 | 54.7 | 54.7 | 52.6 |
| Below Normal (13%) | 53.0 | 51.0 | 46.8 | 44.3 | 44.6 | 45.9 | 47.7 | 48.5 | 50.8 | 54.8 | 55.1 | 53.5 |
| Dry (24%) | 53.9 | 51.2 | 47.3 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.1 | 55.8 | 54.4 |
| Critical (15%) | 56.7 | 52.5 | 47.5 | 45.8 | 46.0 | 47.2 | 48.9 | 50.1 | 53.3 | 55.4 | 55.9 | 56.0 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 55.5 | 52.5 | 48.7 | 46.2 | 46.1 | 47.4 | 49.1 | 50.3 | 53.1 | 56.4 | 56.7 | 56.0 |
| 20% | 54.5 | 51.9 | 48.0 | 45.6 | 45.6 | 46.9 | 48.7 | 49.9 | 52.5 | 56.0 | 56.3 | 54.9 |
| 30% | 53.9 | 51.1 | 47.1 | 45.2 | 45.2 | 46.4 | 48.1 | 49.4 | 51.9 | 55.4 | 55.9 | 54.4 |
| 40% | 53.4 | 50.9 | 46.8 | 45.0 | 45.0 | 46.2 | 47.9 | 49.2 | 51.5 | 55.2 | 55.5 | 53.9 |
| 50% | 52.9 | 50.6 | 46.5 | 44.5 | 44.8 | 45.9 | 47.5 | 48.9 | 51.2 | 55.0 | 55.2 | 53.5 |
| 60% | 52.2 | 50.4 | 46.3 | 44.4 | 44.6 | 45.8 | 47.4 | 48.7 | 51.0 | 54.6 | 55.0 | 53.0 |
| 70% | 51.6 | 50.1 | 46.1 | 44.1 | 44.3 | 45.5 | 47.2 | 48.4 | 50.6 | 54.4 | 54.8 | 52.7 |
| 80% | 51.1 | 49.7 | 45.9 | 43.8 | 44.1 | 45.3 | 46.9 | 48.1 | 50.1 | 54.1 | 54.4 | 52.2 |
| 90% | 50.9 | 49.5 | 45.6 | 43.6 | 43.7 | 44.8 | 46.4 | 47.4 | 49.6 | 53.7 | 54.0 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.7 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.6 | 44.5 | 44.5 | 45.5 | 47.2 | 48.7 | 50.9 | 54.9 | 55.0 | 52.6 |
| Above Normal (16%) | 51.8 | 49.9 | 46.3 | 44.6 | 44.6 | 45.7 | 47.3 | 48.6 | 50.8 | 54.7 | 54.7 | 52.6 |
| Below Normal (13%) | 53.1 | 51.0 | 46.8 | 44.3 | 44.6 | 45.9 | 47.7 | 48.5 | 50.8 | 54.8 | 55.1 | 53.5 |
| Dry (24%) | 53.9 | 51.2 | 47.3 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.1 | 55.8 | 54.4 |
| Critical (15%) | 56.3 | 52.4 | 47.5 | 45.8 | 46.0 | 47.2 | 49.0 | 50.2 | 53.5 | 55.4 | 56.2 | 56.5 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.1** | **0.1** |
| 20% | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | **0.0** |
| 30% | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | 0.0 |
| 40% | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | **0.2** |
| 50% | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** |
| 60% | **0.1** | 0.0 | **0.0** | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 |
| 70% | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** |
| 80% | 0.0 | -0.1 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | 0.0 | **0.1** | -0.1 |
| 90% | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** |
| Below Normal (13%) | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | **0.0** |
| Dry (24%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** |
| Critical (15%) | -0.4 | -0.1 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.1** | **0.0** | **0.4** | **0.5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-4. Clear Creek at Igo, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.0 | 52.2 | 48.7 | 46.3 | 46.1 | 47.3 | 49.1 | 50.3 | 53.1 | 56.6 | 56.6 | 55.6 |
| 20% | 54.2 | 51.8 | 48.2 | 45.6 | 45.6 | 46.9 | 48.6 | 49.9 | 52.5 | 56.0 | 56.2 | 54.7 |
| 30% | 53.8 | 51.1 | 47.1 | 45.2 | 45.2 | 46.5 | 48.1 | 49.4 | 51.9 | 55.4 | 55.7 | 54.3 |
| 40% | 53.4 | 50.9 | 46.8 | 44.9 | 45.0 | 46.1 | 47.9 | 49.2 | 51.6 | 55.2 | 55.6 | 54.0 |
| 50% | 53.0 | 50.6 | 46.5 | 44.6 | 44.8 | 45.9 | 47.6 | 48.9 | 51.2 | 55.0 | 55.3 | 53.5 |
| 60% | 52.4 | 50.4 | 46.3 | 44.3 | 44.5 | 45.7 | 47.4 | 48.6 | 50.9 | 54.6 | 55.2 | 53.1 |
| 70% | 51.8 | 50.2 | 46.1 | 44.1 | 44.2 | 45.5 | 47.2 | 48.4 | 50.7 | 54.5 | 54.9 | 52.9 |
| 80% | 51.2 | 49.8 | 45.9 | 43.9 | 44.0 | 45.3 | 46.9 | 48.1 | 50.3 | 54.2 | 54.5 | 52.4 |
| 90% | 50.7 | 49.4 | 45.5 | 43.6 | 43.8 | 44.8 | 46.4 | 47.4 | 49.6 | 53.8 | 54.0 | 52.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 46.9 | 44.8 | 44.9 | 46.0 | 47.7 | 48.9 | 51.4 | 55.0 | 55.3 | 53.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 51.4 | 50.1 | 46.5 | 44.5 | 44.5 | 45.5 | 47.2 | 48.6 | 50.9 | 54.9 | 55.0 | 52.8 |
| Above Normal (16%) | 51.9 | 50.1 | 46.4 | 44.6 | 44.6 | 45.7 | 47.4 | 48.7 | 50.9 | 54.8 | 54.9 | 52.7 |
| Below Normal (13%) | 53.1 | 51.0 | 46.8 | 44.2 | 44.5 | 45.9 | 47.6 | 48.5 | 50.9 | 55.0 | 55.2 | 53.5 |
| Dry (24%) | 53.6 | 51.1 | 47.2 | 45.0 | 45.1 | 46.3 | 47.9 | 48.9 | 51.3 | 55.0 | 55.7 | 54.2 |
| Critical (15%) | 56.3 | 52.3 | 47.5 | 45.7 | 46.0 | 47.2 | 48.9 | 50.1 | 53.4 | 55.5 | 56.2 | 56.7 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.3 | 52.6 | 48.9 | 46.3 | 46.4 | 47.4 | 49.2 | 50.3 | 51.7 | 54.8 | 55.2 | 56.0 |
| 20% | 54.2 | 52.0 | 48.2 | 45.6 | 45.6 | 47.0 | 48.7 | 49.9 | 51.0 | 54.3 | 54.8 | 54.8 |
| 30% | 53.8 | 51.2 | 47.1 | 45.3 | 45.1 | 46.4 | 48.2 | 49.4 | 50.5 | 53.7 | 54.4 | 54.4 |
| 40% | 53.3 | 50.9 | 46.8 | 45.0 | 44.9 | 46.3 | 47.9 | 49.1 | 50.3 | 53.5 | 54.1 | 54.0 |
| 50% | 53.0 | 50.6 | 46.5 | 44.6 | 44.6 | 46.0 | 47.5 | 48.9 | 50.1 | 53.1 | 53.8 | 53.7 |
| 60% | 52.4 | 50.5 | 46.3 | 44.4 | 44.4 | 45.8 | 47.4 | 48.6 | 50.0 | 52.9 | 53.6 | 53.2 |
| 70% | 51.8 | 50.1 | 46.1 | 44.1 | 44.2 | 45.6 | 47.1 | 48.4 | 49.7 | 52.7 | 53.4 | 52.9 |
| 80% | 51.2 | 49.8 | 45.9 | 43.8 | 43.9 | 45.3 | 46.9 | 48.1 | 49.1 | 52.5 | 53.0 | 52.4 |
| 90% | 50.7 | 49.5 | 45.5 | 43.6 | 43.6 | 44.9 | 46.4 | 47.4 | 48.7 | 51.9 | 52.6 | 52.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.0 | 50.8 | 47.0 | 44.8 | 44.8 | 46.1 | 47.7 | 48.9 | 50.1 | 53.3 | 54.0 | 53.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 51.5 | 50.1 | 46.5 | 44.5 | 44.3 | 45.6 | 47.2 | 48.7 | 50.0 | 53.0 | 53.4 | 52.9 |
| Above Normal (16%) | 51.9 | 50.1 | 46.4 | 44.6 | 44.3 | 45.7 | 47.3 | 48.7 | 50.0 | 53.0 | 53.3 | 52.7 |
| Below Normal (13%) | 53.1 | 51.1 | 47.0 | 44.2 | 44.5 | 46.1 | 47.7 | 48.5 | 49.8 | 53.1 | 53.7 | 53.6 |
| Dry (24%) | 53.7 | 51.2 | 47.4 | 45.1 | 45.1 | 46.3 | 47.9 | 48.9 | 50.2 | 53.5 | 54.5 | 54.3 |
| Critical (15%) | 56.1 | 52.4 | 47.7 | 45.9 | 46.1 | 47.2 | 48.9 | 50.0 | 50.8 | 53.9 | 55.2 | 56.6 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.3 | 0.3 | 0.2 | 0.0 | 0.3 | 0.1 | 0.1 | 0.0 | -1.4 | -1.8 | -1.5 | 0.3 |
| 20% | 0.0 | 0.1 | 0.0 | 0.0 | -0.1 | 0.1 | 0.0 | 0.0 | -1.6 | -1.7 | -1.4 | 0.0 |
| 30% | 0.0 | 0.1 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | -1.4 | -1.7 | -1.3 | 0.1 |
| 40% | 0.0 | 0.1 | 0.0 | 0.0 | -0.1 | 0.2 | 0.0 | -0.1 | -1.3 | -1.7 | -1.5 | 0.1 |
| 50% | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0.1 | 0.0 | -0.1 | -1.1 | -1.8 | -1.5 | 0.2 |
| 60% | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.1 | 0.0 | 0.0 | -0.9 | -1.8 | -1.6 | 0.1 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | -1.0 | -1.8 | -1.5 | 0.1 |
| 80% | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0.0 | 0.0 | 0.0 | -1.2 | -1.7 | -1.5 | 0.1 |
| 90% | 0.0 | 0.1 | 0.0 | 0.0 | -0.2 | 0.1 | 0.0 | -0.1 | -1.0 | -1.8 | -1.5 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.1 | 0.1 | 0.0 | -0.1 | 0.1 | 0.0 | 0.0 | -1.3 | -1.8 | -1.4 | 0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | 0.1 | 0.0 | 0.0 | -1.0 | -1.9 | -1.5 | 0.1 |
| Above Normal (16%) | 0.0 | 0.0 | 0.1 | 0.0 | -0.3 | 0.0 | -0.1 | -0.1 | -1.0 | -1.8 | -1.6 | 0.0 |
| Below Normal (13%) | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | -1.1 | -1.9 | -1.5 | 0.1 |
| Dry (24%) | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -1.0 | -1.6 | -1.3 | 0.2 |
| Critical (15%) | -0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -2.7 | -1.7 | -1.0 | -0.1 |

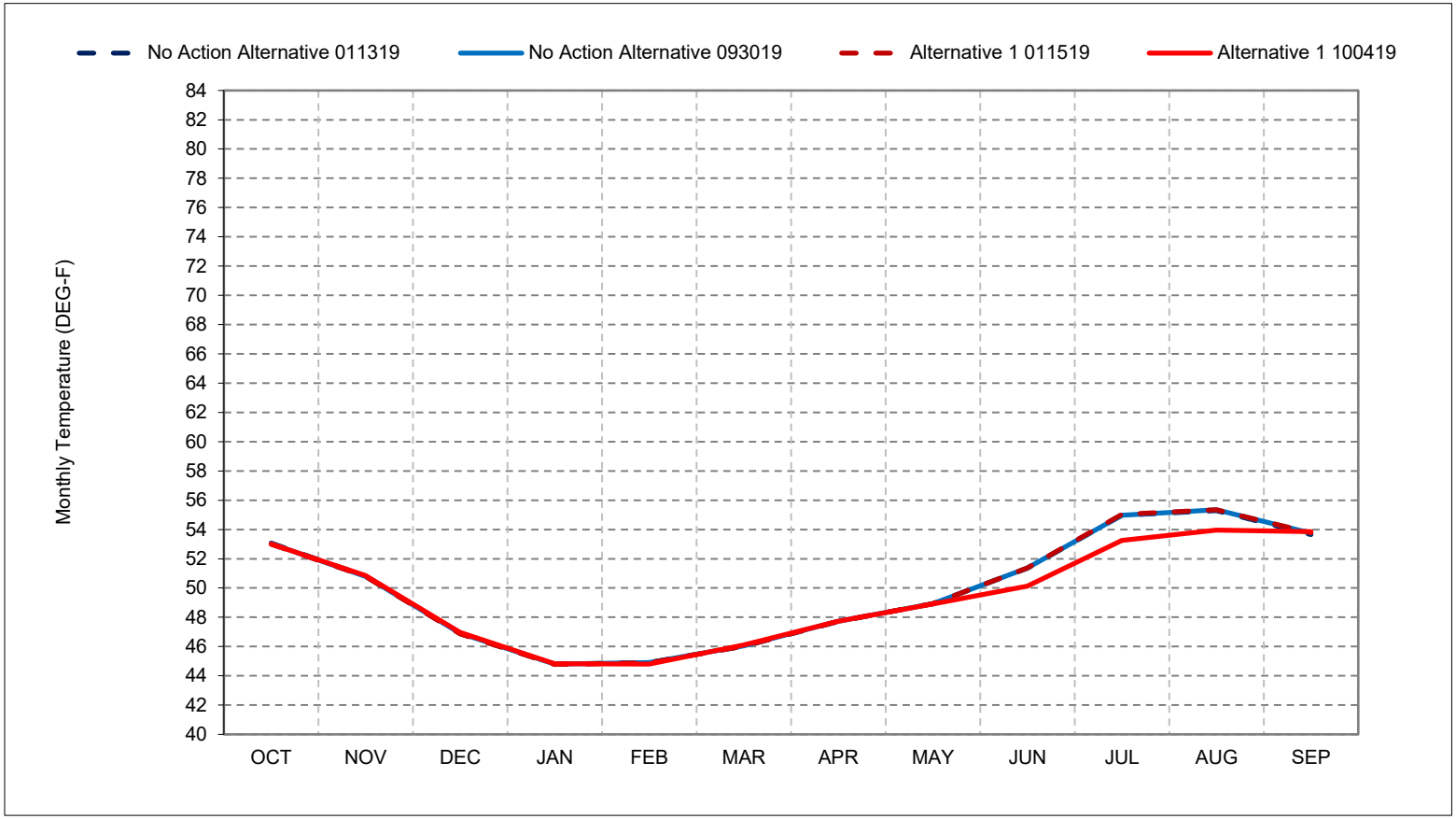
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-1. Clear Creek at Igo, Long-Term Average Temperature

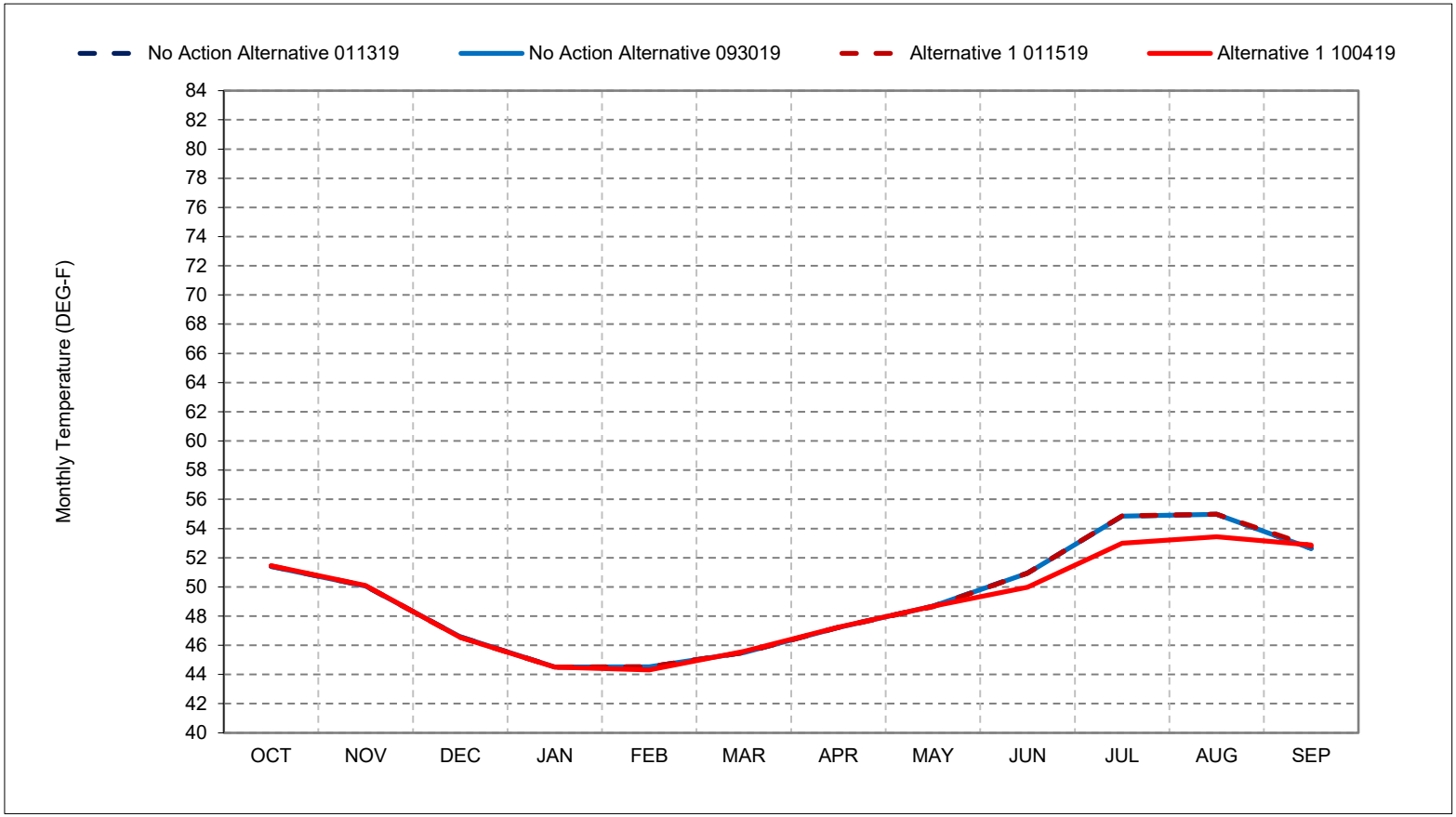



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-2. Clear Creek at Igo, Wet Year Average Temperature

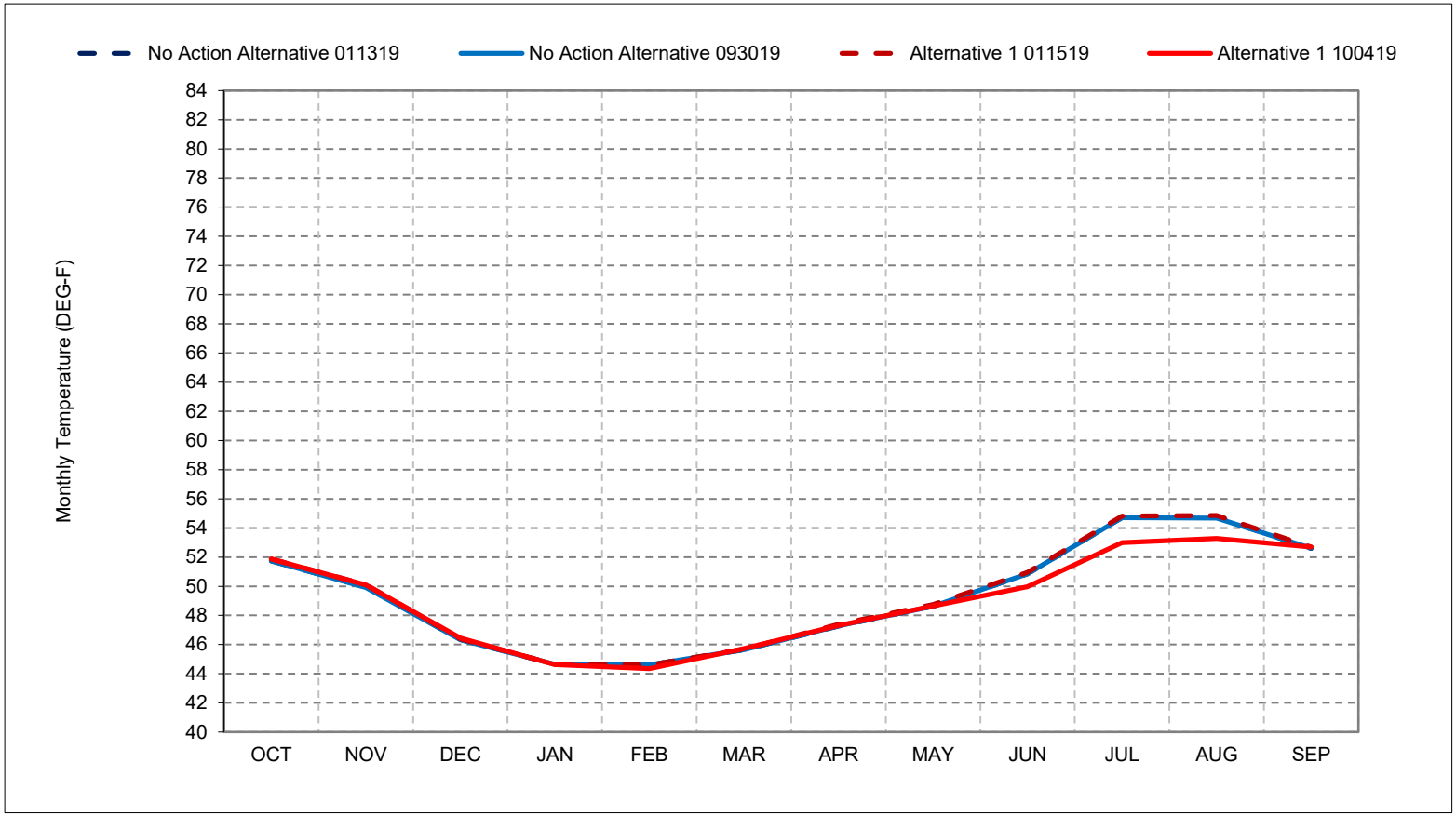



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-3. Clear Creek at Igo, Above Normal Year Average Temperature

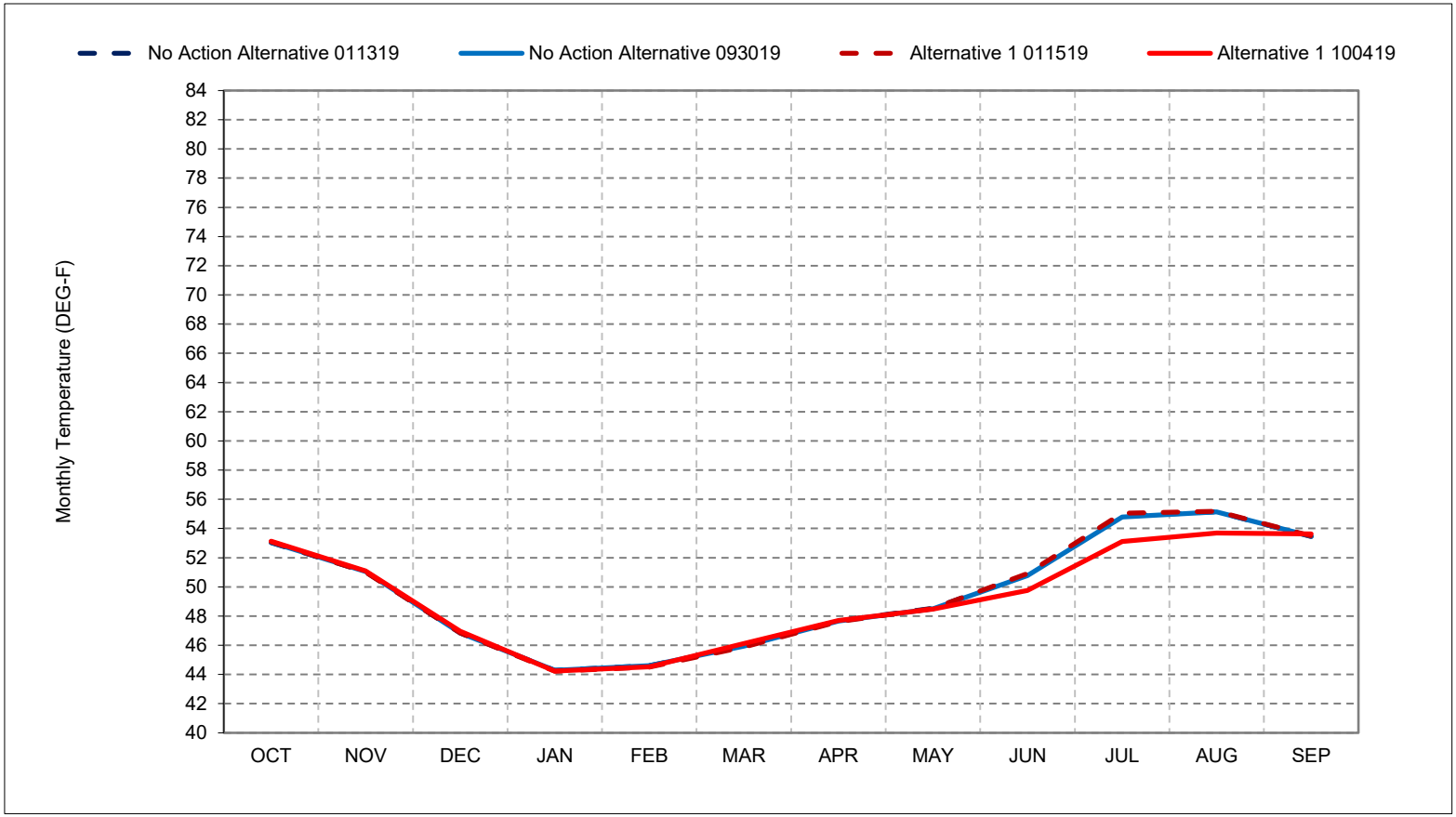



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-4. Clear Creek at Igo, Below Normal Year Average Temperature

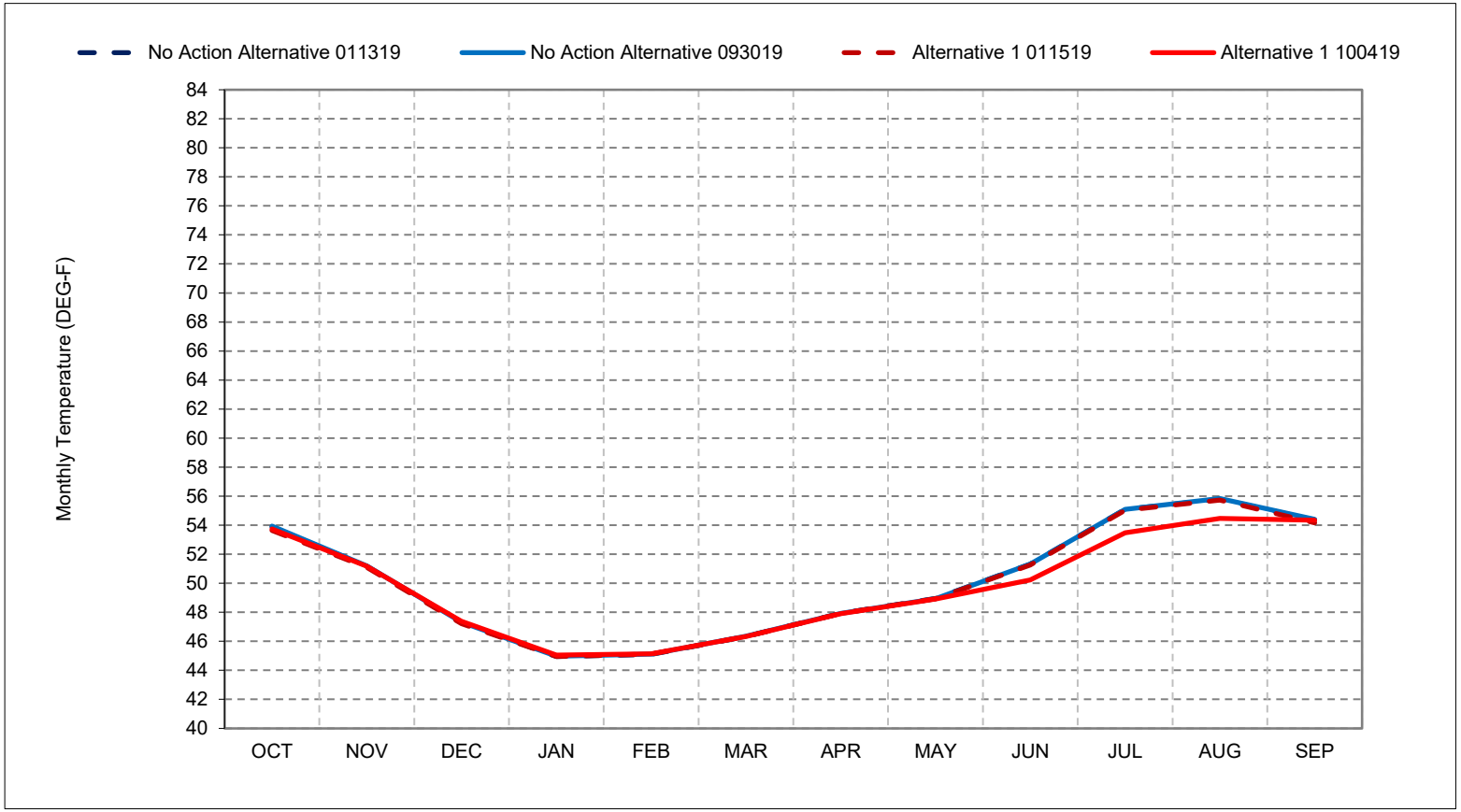



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-5. Clear Creek at Igo, Dry Year Average Temperature

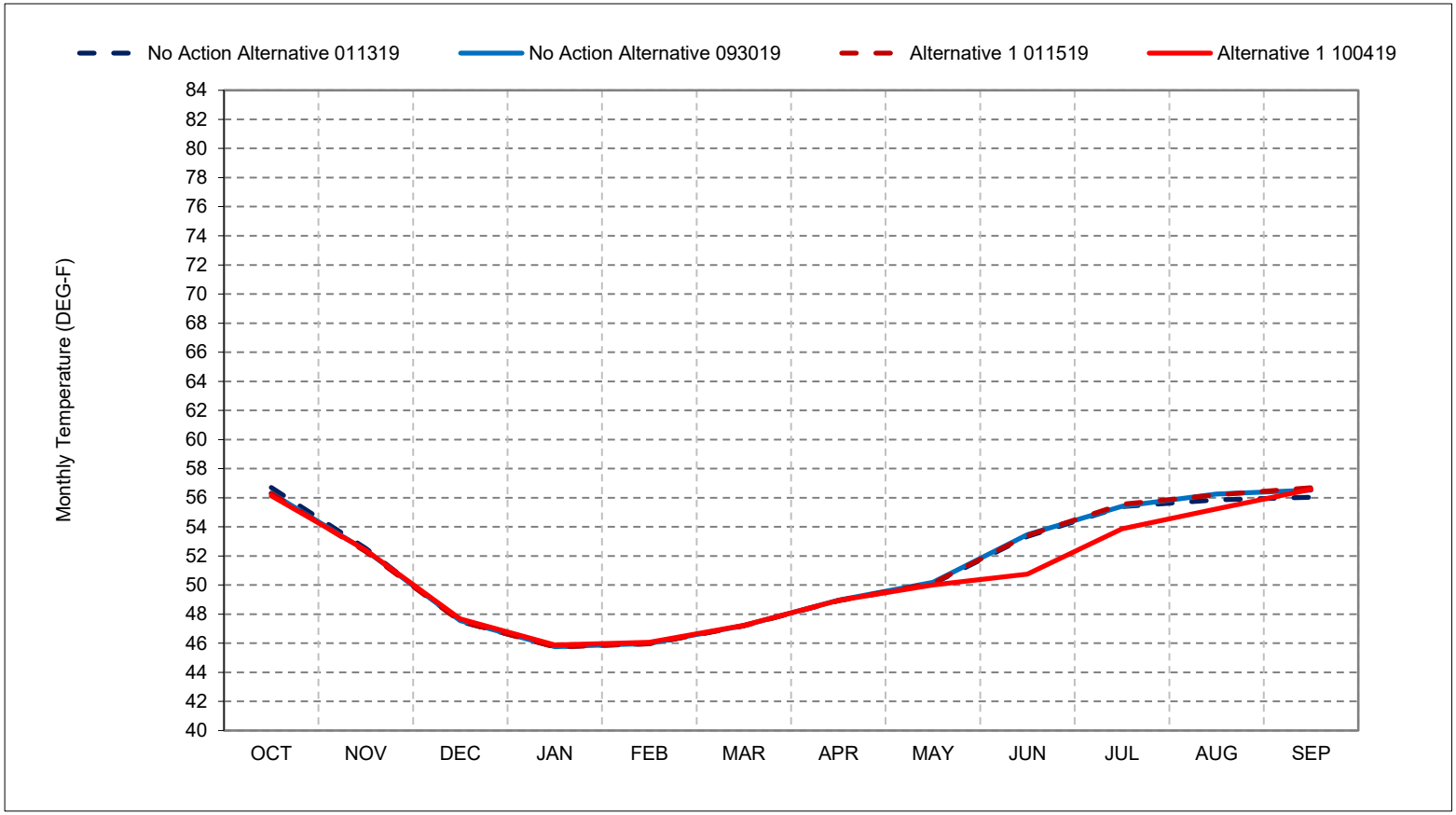



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-6. Clear Creek at Igo, Critical Year Average Temperature

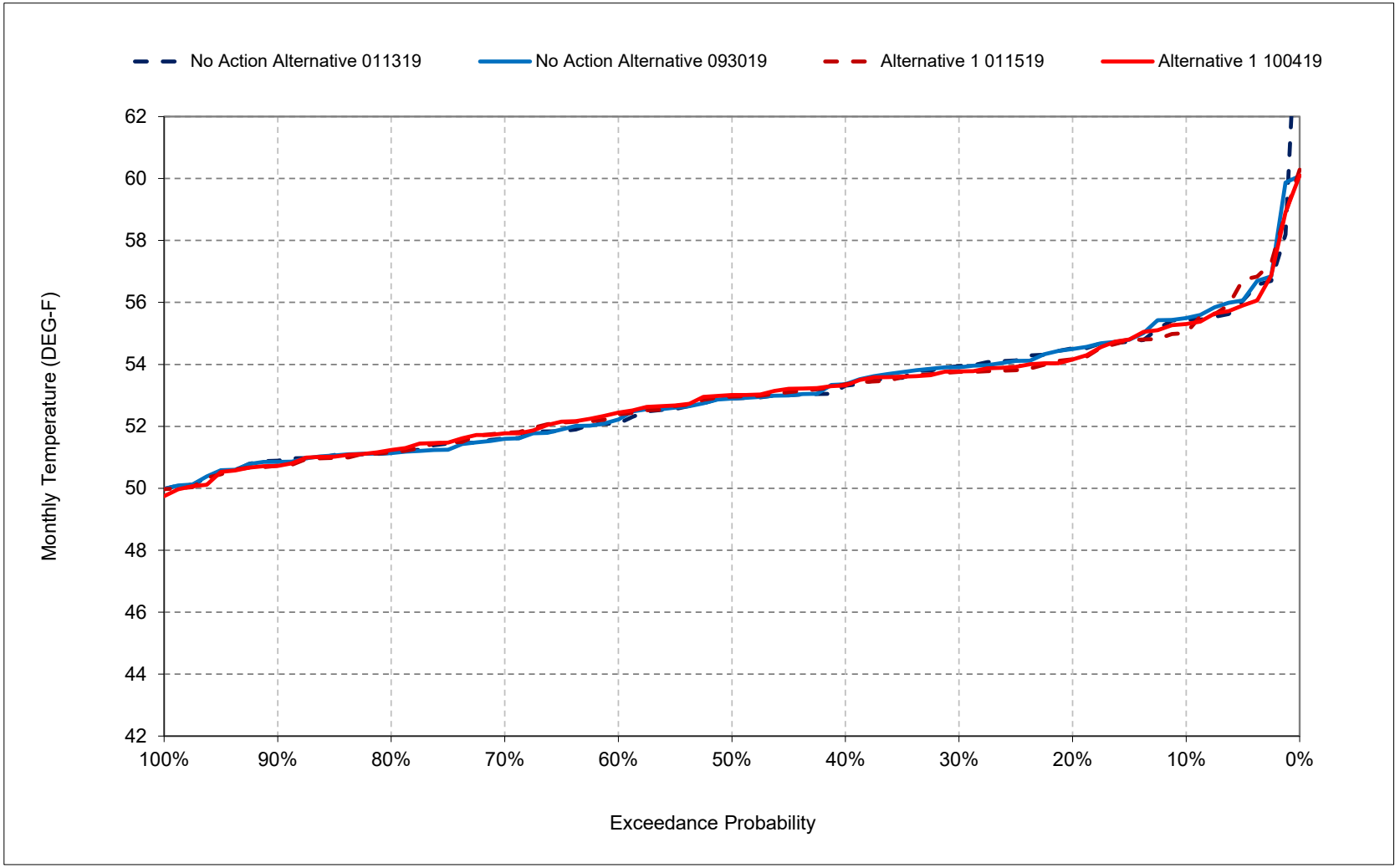



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

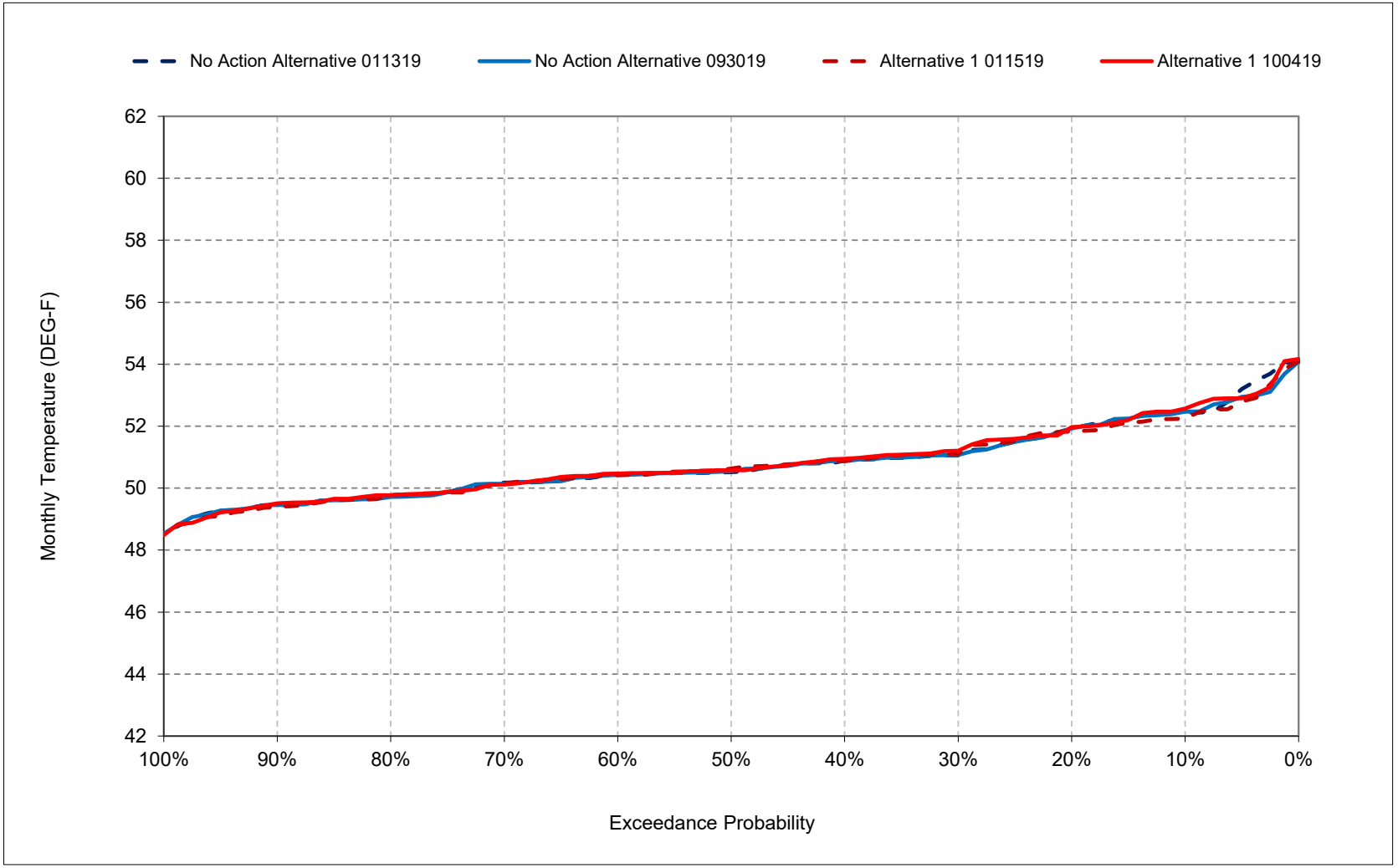
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-7. Clear Creek at Igo, October**



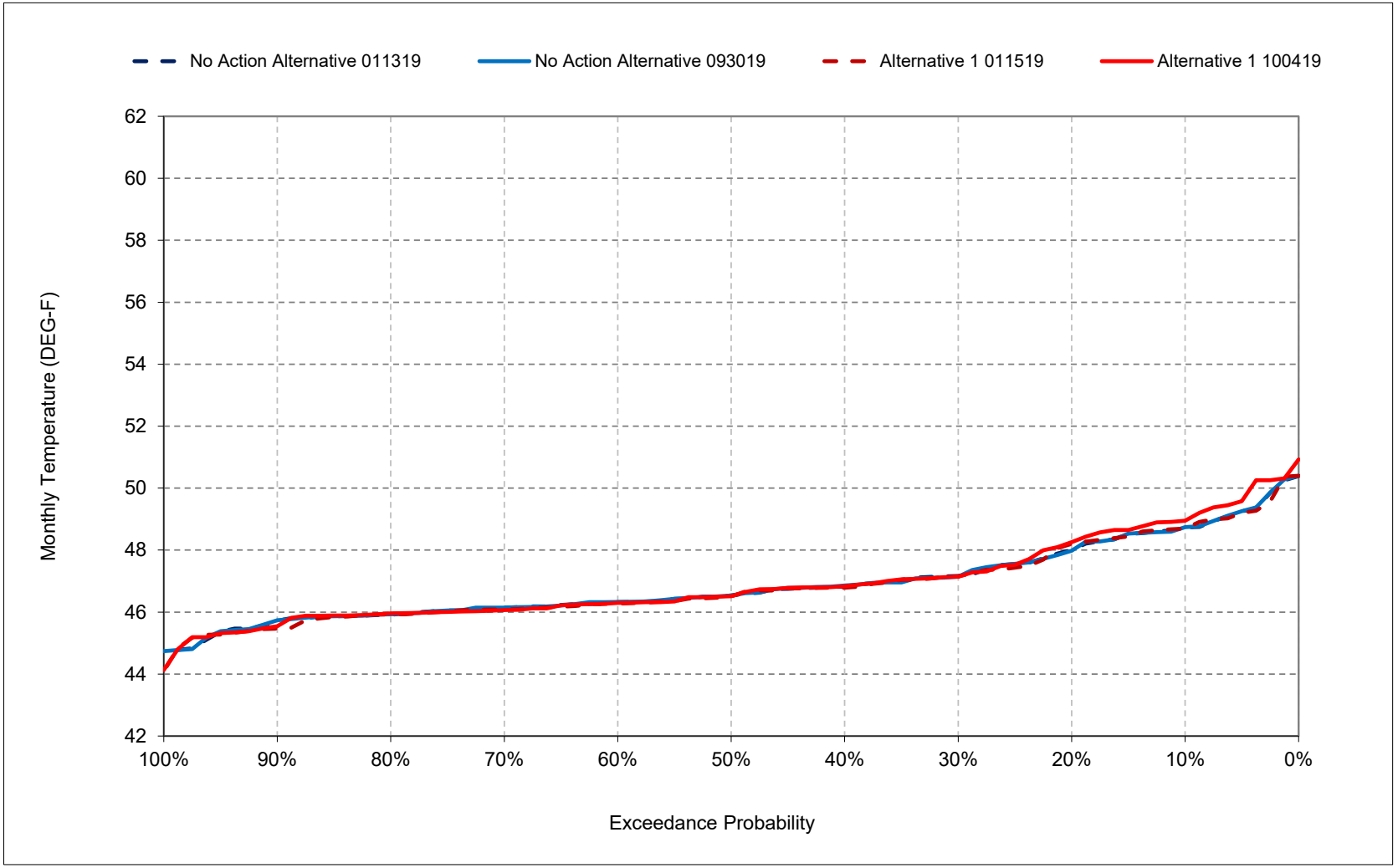

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-8. Clear Creek at Igo, November**



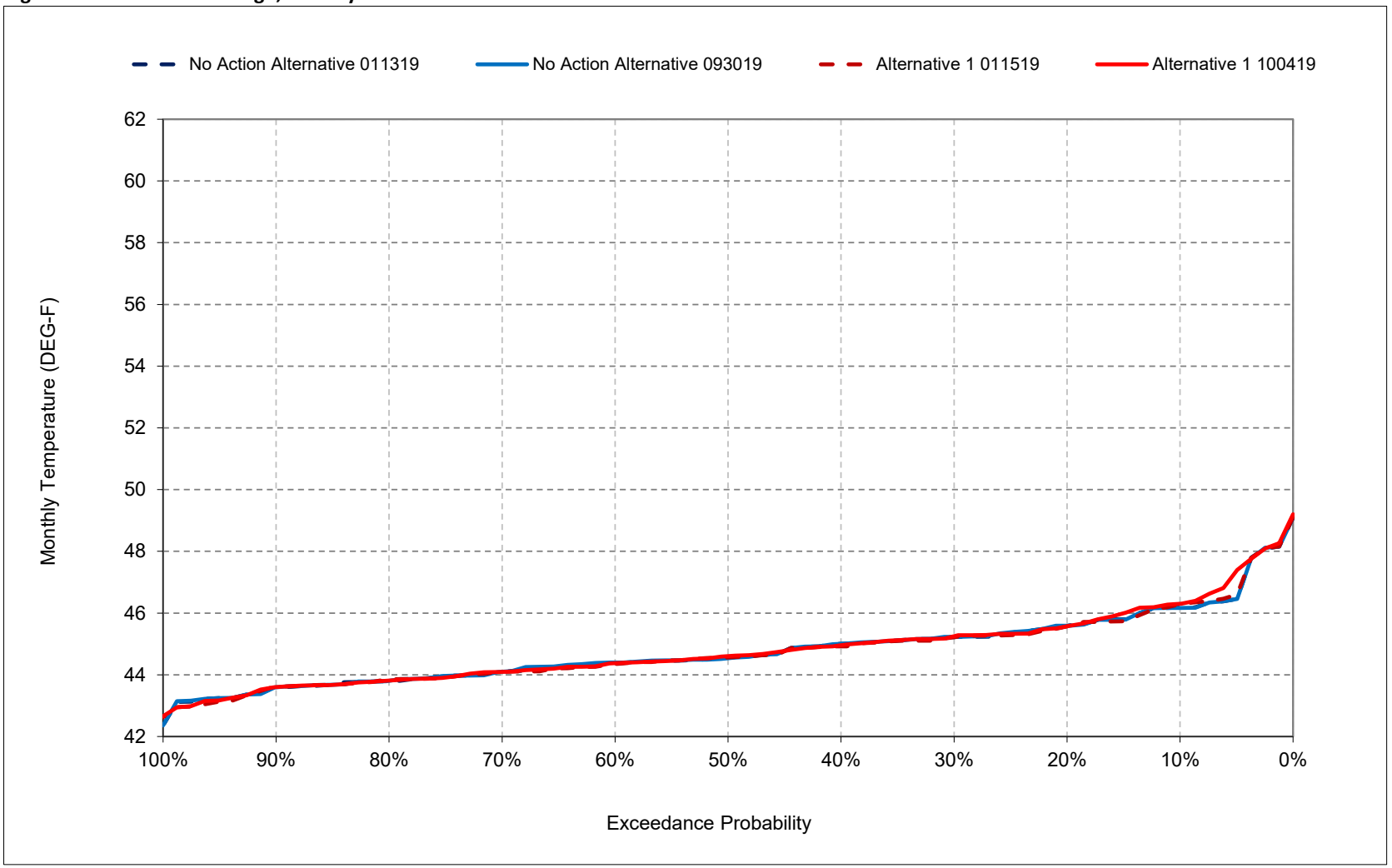

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-9. Clear Creek at Igo, December**



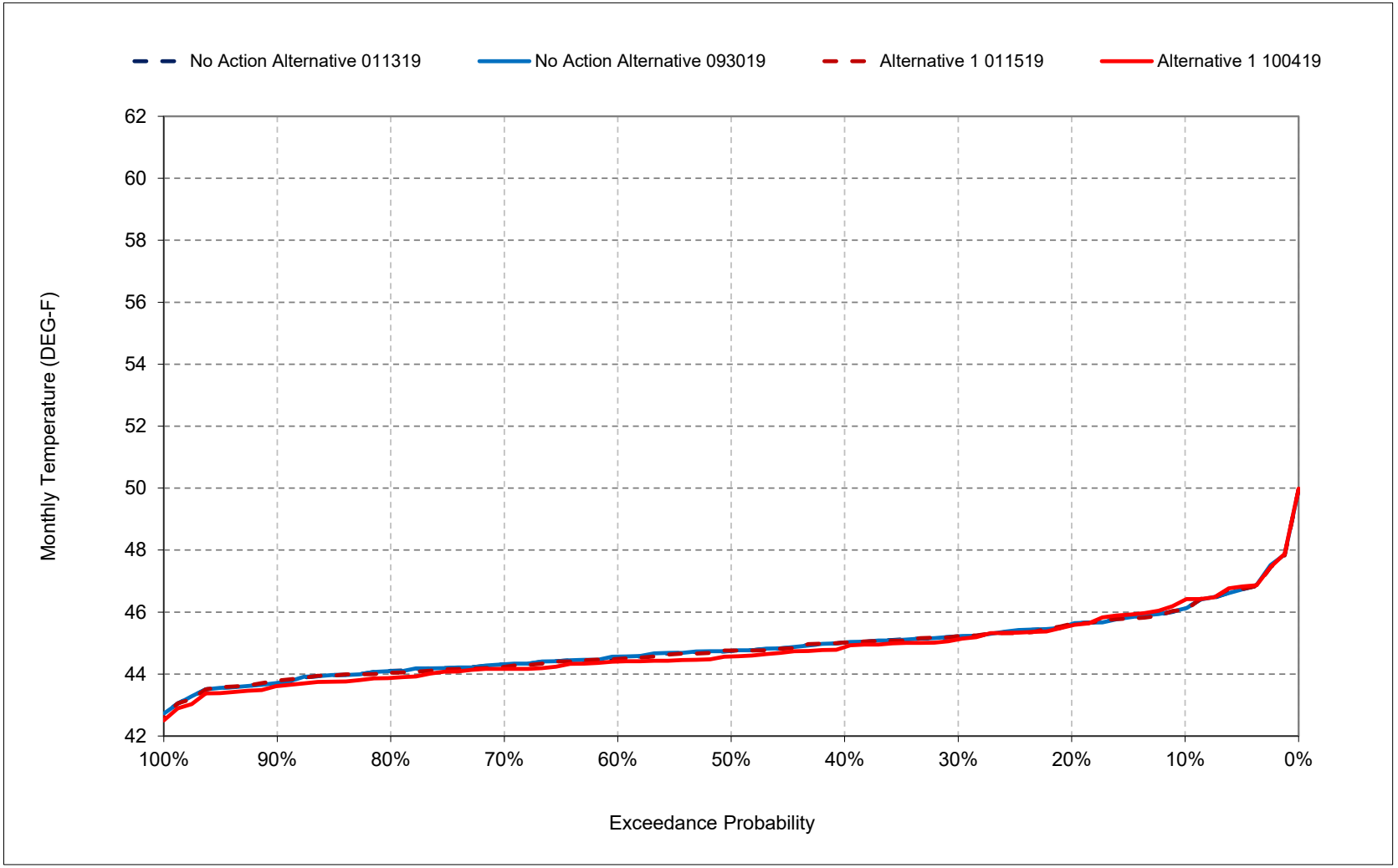

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-10. Clear Creek at Igo, January**



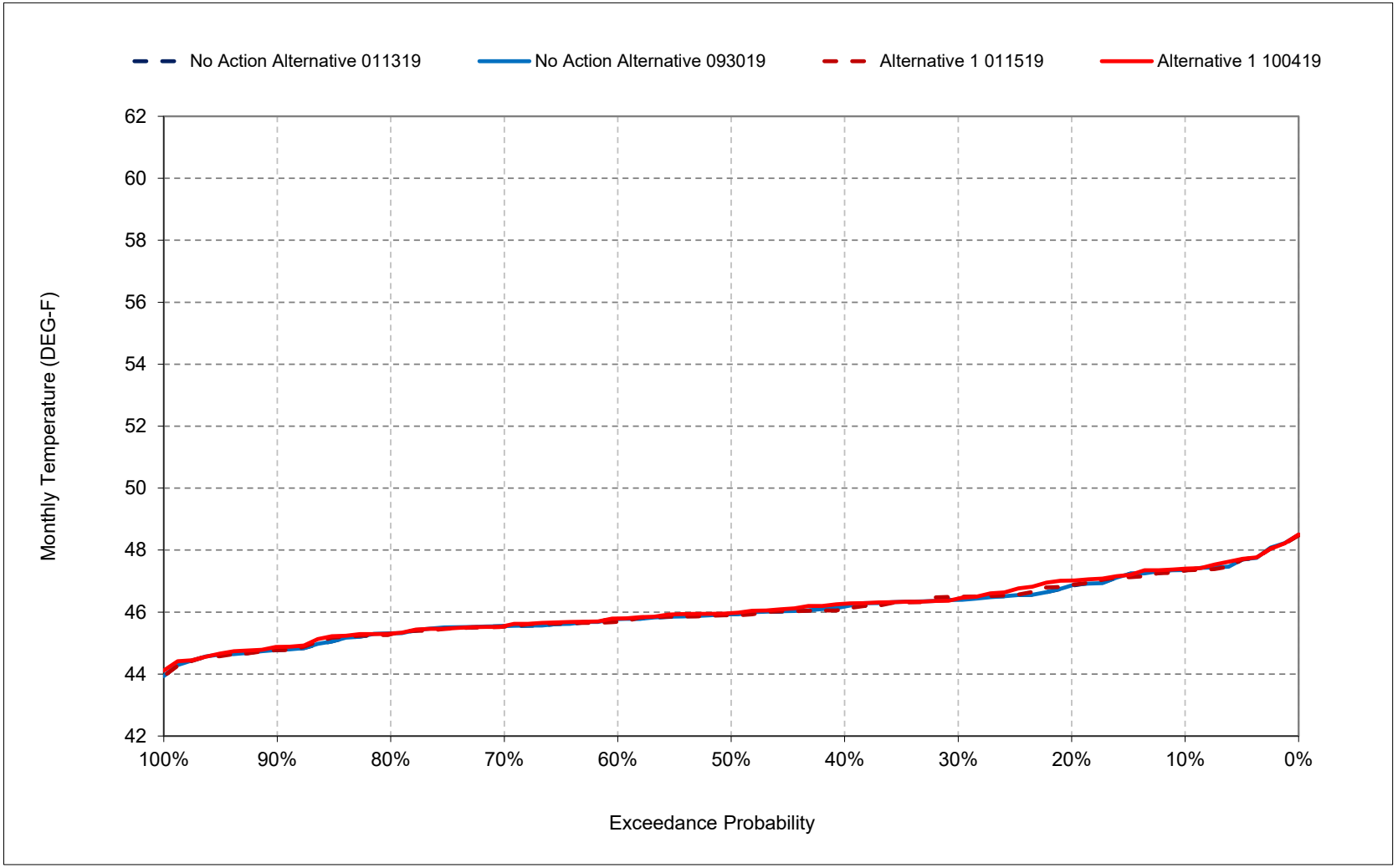

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-11. Clear Creek at Igo, February**



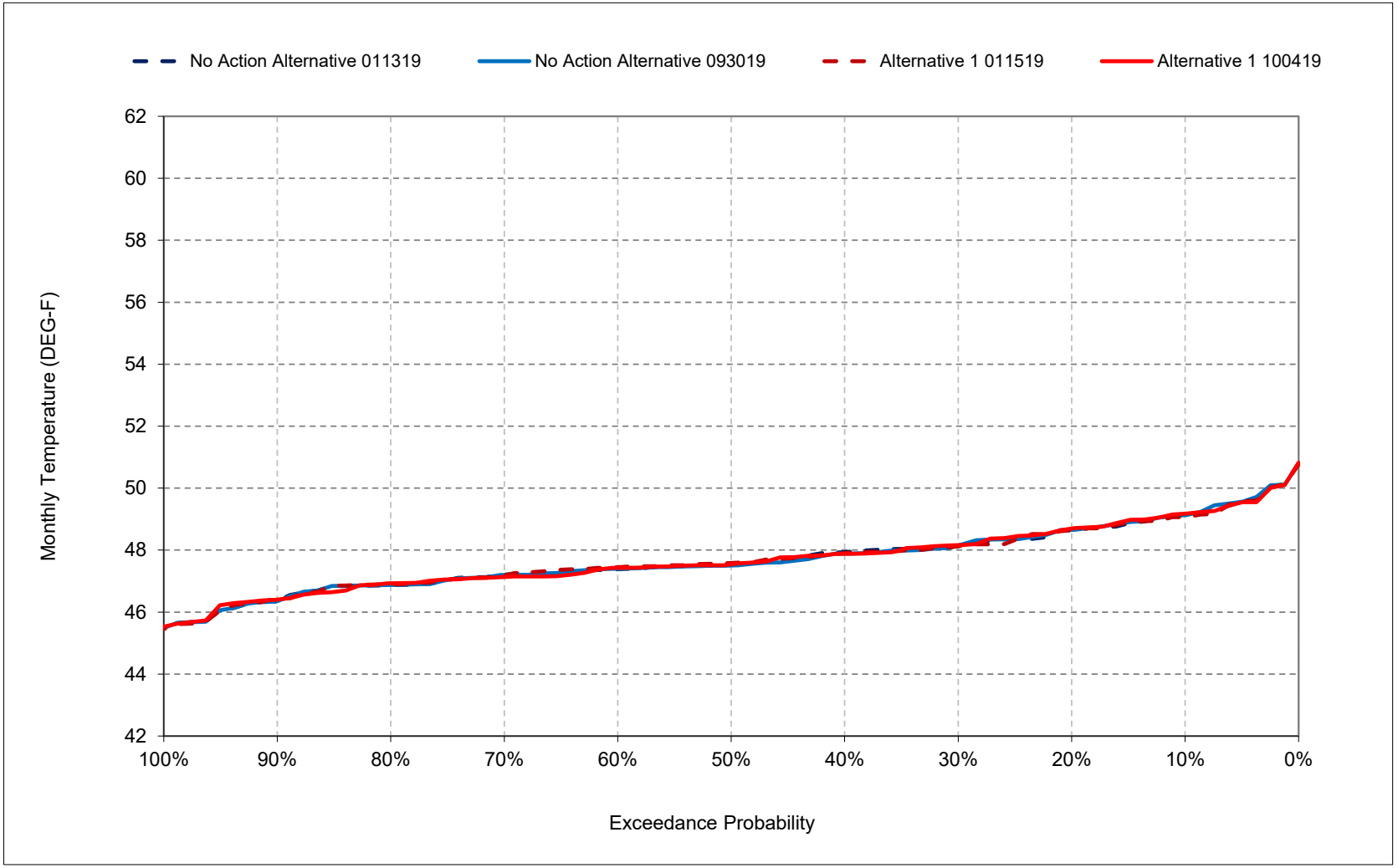

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-12. Clear Creek at Igo, March**



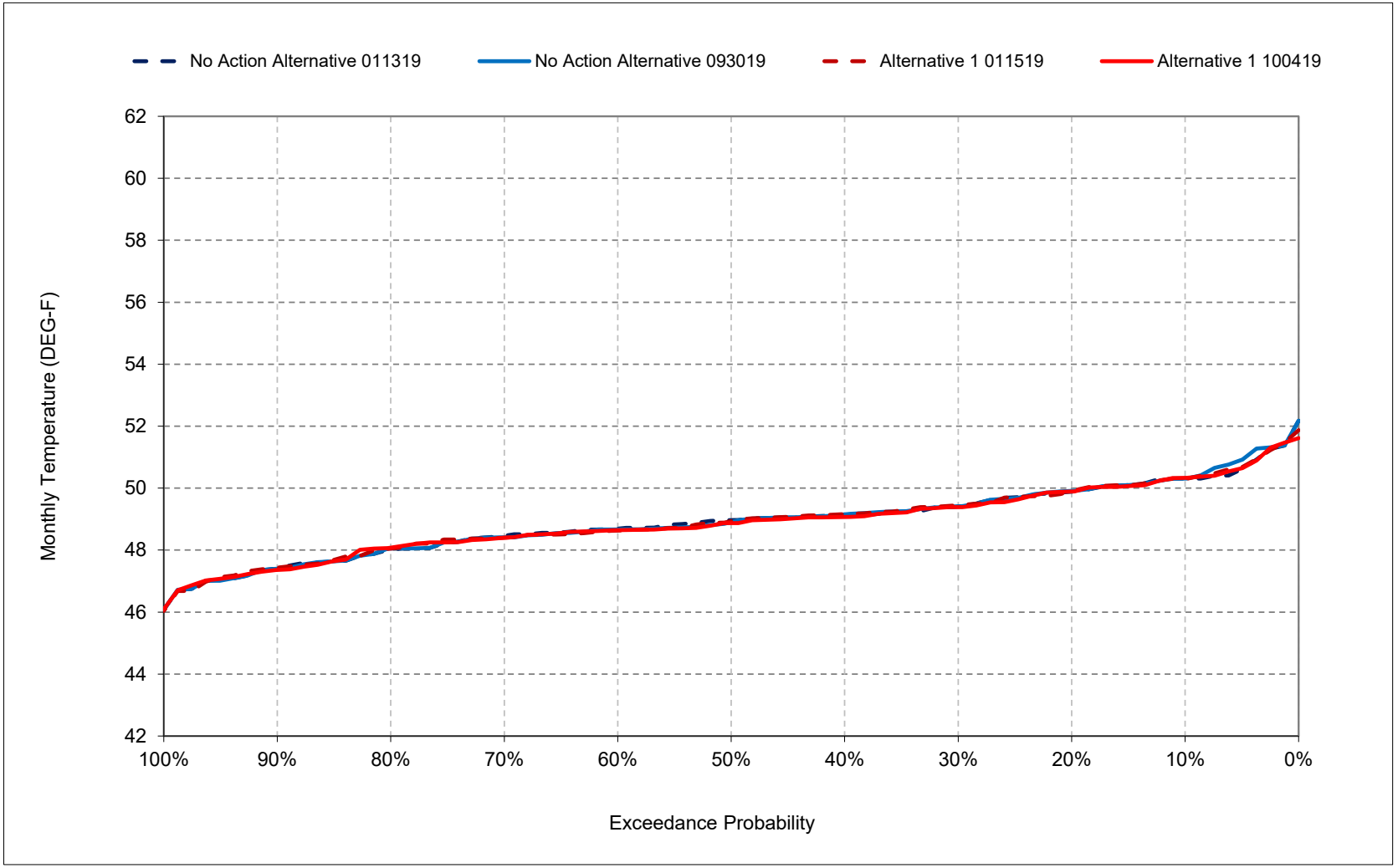

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-13. Clear Creek at Igo, April**



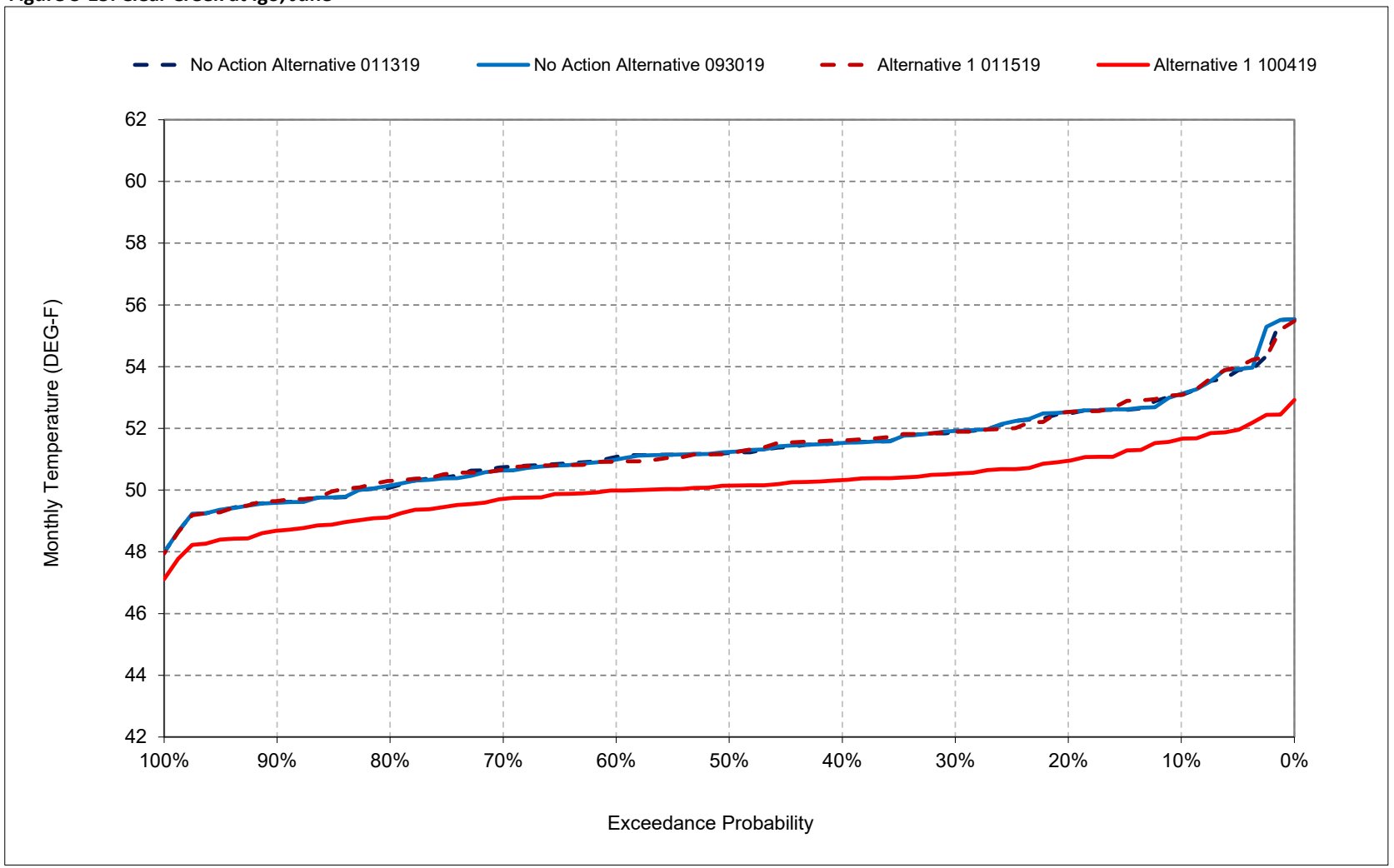

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-14. Clear Creek at Igo, May**



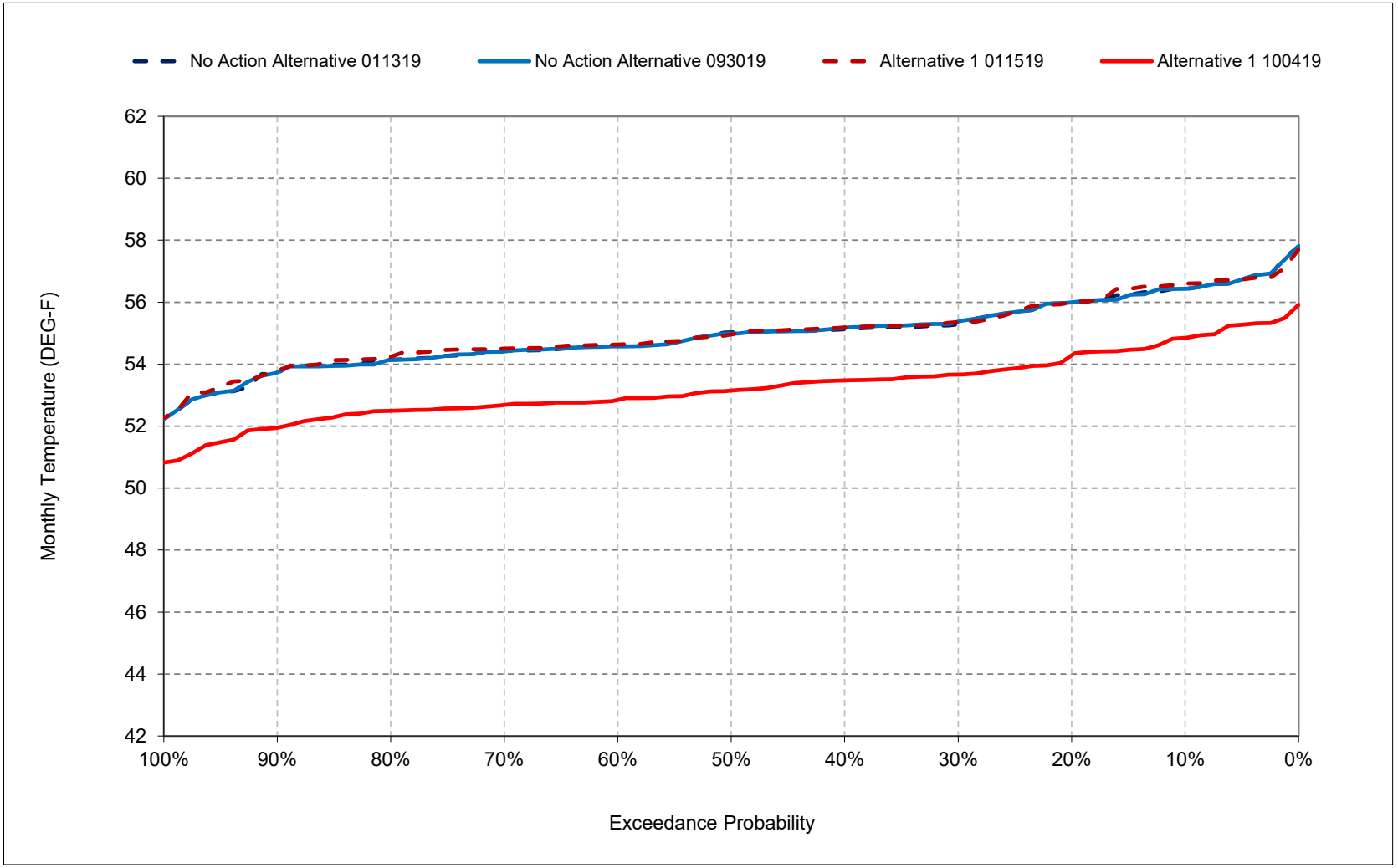

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-15. Clear Creek at Igo, June**



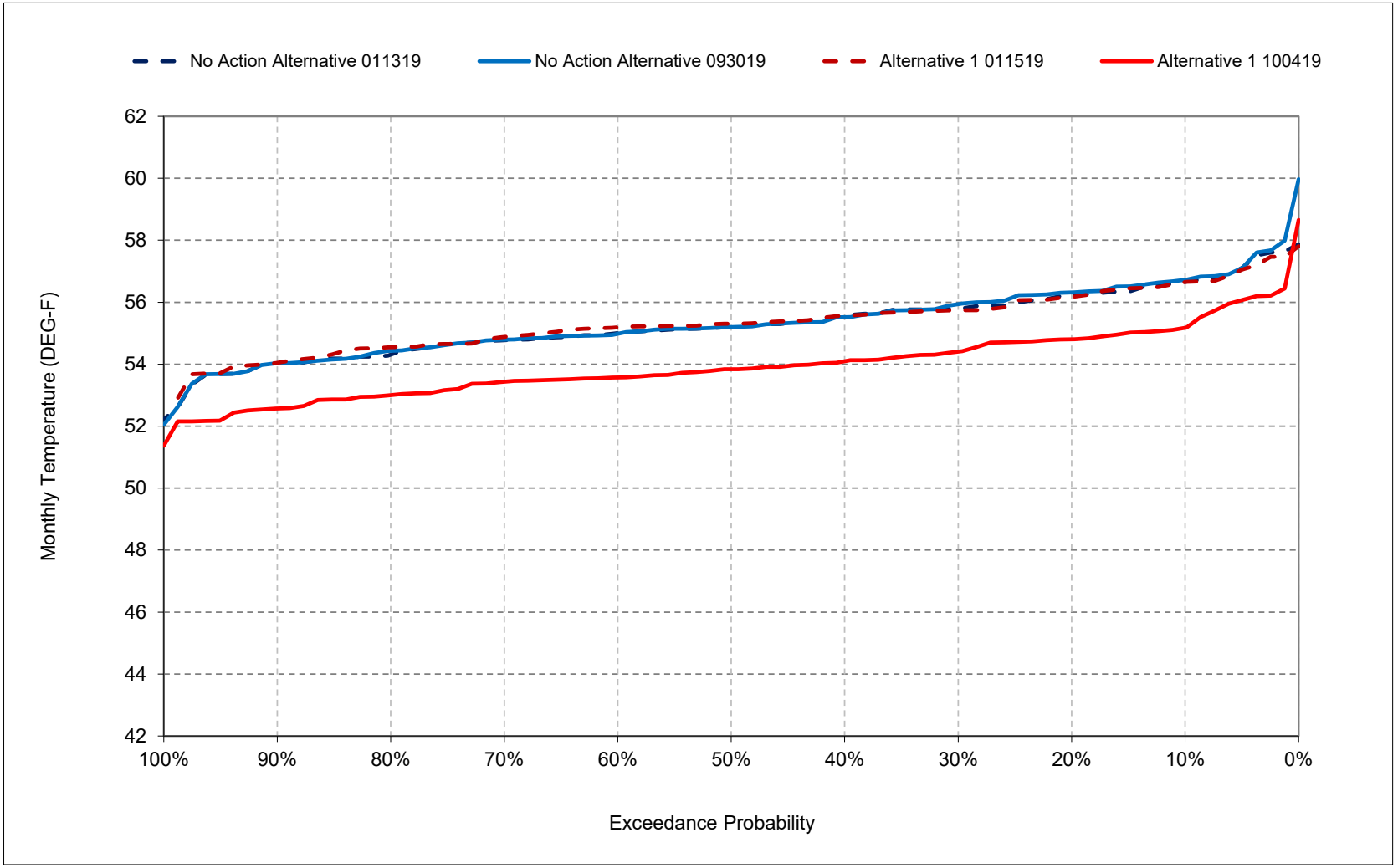

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-16. Clear Creek at Igo, July**



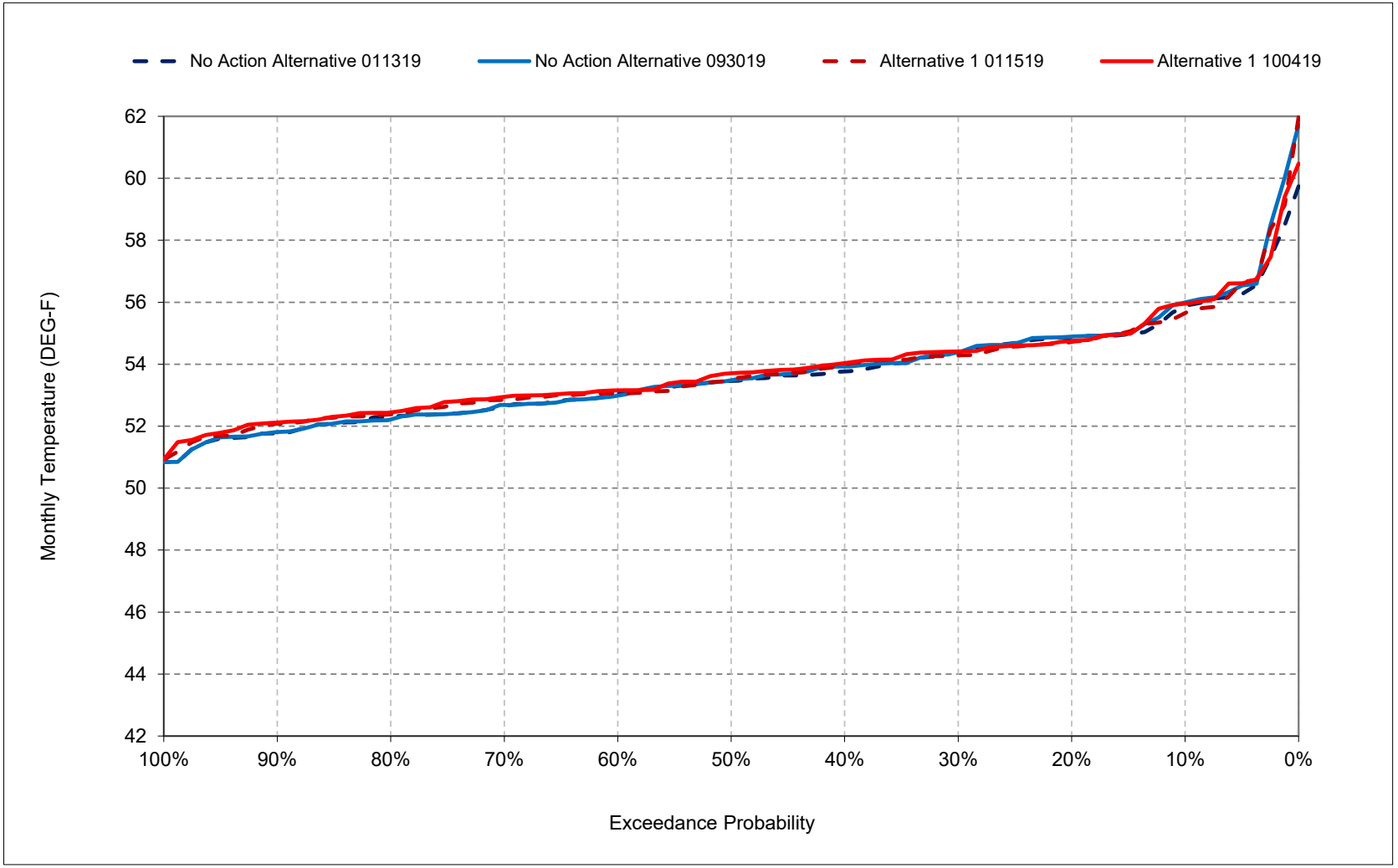

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-17. Clear Creek at Igo, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-18. Clear Creek at Igo, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-1. Clear Creek at Mouth, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 56.4 | 52.8 | 48.9 | 46.4 | 46.6 | 48.4 | 50.9 | 52.3 | 56.8 | 62.2 | 61.5 | 57.9 |
| 20% | 55.5 | 52.3 | 48.3 | 45.8 | 46.3 | 48.2 | 50.3 | 51.7 | 55.4 | 61.6 | 61.0 | 57.0 |
| 30% | 54.8 | 51.5 | 47.4 | 45.6 | 45.9 | 47.7 | 49.8 | 51.3 | 54.9 | 61.1 | 60.7 | 56.6 |
| 40% | 54.1 | 51.2 | 47.0 | 45.4 | 45.8 | 47.4 | 49.6 | 51.0 | 54.5 | 60.9 | 60.5 | 56.1 |
| 50% | 53.8 | 50.9 | 46.8 | 45.0 | 45.5 | 47.1 | 49.2 | 50.7 | 54.1 | 60.6 | 60.2 | 55.8 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.0 | 50.6 | 53.8 | 60.3 | 60.0 | 55.3 |
| 70% | 52.6 | 50.5 | 46.3 | 44.4 | 45.0 | 46.6 | 48.8 | 50.2 | 53.4 | 60.1 | 59.7 | 55.0 |
| 80% | 52.1 | 50.0 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.8 | 53.1 | 59.9 | 59.3 | 54.7 |
| 90% | 51.8 | 49.8 | 45.7 | 43.9 | 44.5 | 45.9 | 48.1 | 49.2 | 52.5 | 59.5 | 59.0 | 54.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.0 | 51.1 | 47.1 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.6 | 60.2 | 56.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.8 | 44.9 | 45.2 | 46.6 | 48.8 | 50.5 | 53.7 | 60.6 | 60.0 | 55.0 |
| Above Normal (16%) | 52.6 | 50.2 | 46.5 | 45.0 | 45.3 | 46.8 | 48.9 | 50.5 | 53.7 | 60.4 | 59.6 | 54.9 |
| Below Normal (13%) | 53.9 | 51.3 | 47.0 | 44.6 | 45.3 | 47.0 | 49.4 | 50.3 | 53.7 | 60.5 | 60.0 | 55.7 |
| Dry (24%) | 54.8 | 51.5 | 47.5 | 45.2 | 45.8 | 47.5 | 49.6 | 50.8 | 54.4 | 60.7 | 60.6 | 56.5 |
| Critical (15%) | 57.9 | 52.9 | 47.6 | 46.0 | 46.8 | 48.5 | 50.9 | 52.2 | 57.8 | 61.2 | 60.7 | 58.6 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 56.0 | 52.6 | 48.9 | 46.6 | 46.6 | 48.4 | 50.9 | 52.1 | 56.9 | 62.2 | 61.4 | 57.7 |
| 20% | 55.1 | 52.1 | 48.3 | 45.9 | 46.3 | 48.2 | 50.3 | 51.8 | 55.5 | 61.7 | 61.0 | 56.9 |
| 30% | 54.6 | 51.6 | 47.4 | 45.5 | 45.9 | 47.9 | 49.8 | 51.3 | 54.9 | 61.1 | 60.7 | 56.6 |
| 40% | 54.2 | 51.2 | 47.0 | 45.3 | 45.8 | 47.4 | 49.5 | 50.9 | 54.5 | 60.8 | 60.5 | 56.3 |
| 50% | 53.9 | 50.9 | 46.8 | 44.9 | 45.5 | 47.0 | 49.2 | 50.7 | 54.1 | 60.6 | 60.2 | 55.8 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.1 | 50.5 | 53.8 | 60.4 | 60.1 | 55.4 |
| 70% | 52.7 | 50.5 | 46.3 | 44.3 | 45.0 | 46.6 | 48.9 | 50.2 | 53.4 | 60.1 | 59.8 | 55.2 |
| 80% | 52.2 | 50.1 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.9 | 53.1 | 59.9 | 59.4 | 54.8 |
| 90% | 51.8 | 49.7 | 45.6 | 43.9 | 44.5 | 45.9 | 48.1 | 49.1 | 52.5 | 59.5 | 59.1 | 54.4 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 51.1 | 47.0 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.7 | 60.2 | 56.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.7 | 44.9 | 45.2 | 46.6 | 48.8 | 50.4 | 53.7 | 60.6 | 60.0 | 55.2 |
| Above Normal (16%) | 52.8 | 50.4 | 46.6 | 45.0 | 45.3 | 46.9 | 49.0 | 50.6 | 53.8 | 60.5 | 59.8 | 55.0 |
| Below Normal (13%) | 53.9 | 51.3 | 47.0 | 44.5 | 45.2 | 47.0 | 49.4 | 50.3 | 53.8 | 60.6 | 60.0 | 55.7 |
| Dry (24%) | 54.5 | 51.4 | 47.4 | 45.2 | 45.8 | 47.5 | 49.6 | 50.7 | 54.3 | 60.7 | 60.6 | 56.4 |
| Critical (15%) | 57.5 | 52.7 | 47.6 | 46.0 | 46.8 | 48.5 | 50.9 | 52.3 | 57.9 | 61.3 | 60.8 | 59.1 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.4 | -0.2 | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | -0.2 | **0.1** | **0.1** | 0.0 | -0.2 |
| 20% | -0.4 | -0.2 | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | **0.1** | **0.1** | **0.1** | -0.1 | -0.1 |
| 30% | -0.3 | **0.1** | 0.0 | 0.0 | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** |
| 40% | **0.1** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | **0.2** |
| 50% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** | 0.0 | **0.0** | **0.1** |
| 60% | **0.1** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | -0.1 | **0.0** | **0.1** | **0.1** | **0.1** |
| 70% | **0.1** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.1** | **0.1** | **0.3** |
| 80% | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | **0.0** | **0.0** | **0.1** | **0.1** |
| 90% | 0.0 | -0.1 | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | 0.0 | **0.1** | **0.3** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.0** | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.2** |
| Above Normal (16%) | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| Below Normal (13%) | **0.0** | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.2** | **0.0** | **0.0** |
| Dry (24%) | -0.2 | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.2 |
| Critical (15%) | -0.4 | -0.2 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | **0.1** | **0.1** | **0.6** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-2. Clear Creek at Mouth, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.4 | 52.9 | 48.9 | 46.4 | 46.6 | 48.4 | 51.1 | 52.4 | 56.8 | 62.2 | 61.5 | 58.3 |
| 20% | 55.5 | 52.3 | 48.3 | 45.9 | 46.3 | 48.2 | 50.3 | 51.7 | 55.4 | 61.6 | 61.1 | 57.1 |
| 30% | 54.8 | 51.4 | 47.4 | 45.6 | 45.9 | 47.7 | 49.9 | 51.3 | 55.0 | 61.1 | 60.8 | 56.6 |
| 40% | 54.2 | 51.2 | 47.1 | 45.4 | 45.8 | 47.4 | 49.5 | 51.0 | 54.5 | 60.9 | 60.5 | 56.2 |
| 50% | 53.8 | 50.9 | 46.8 | 44.9 | 45.5 | 47.1 | 49.2 | 50.7 | 54.1 | 60.5 | 60.2 | 55.9 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.0 | 50.5 | 53.7 | 60.2 | 59.9 | 55.3 |
| 70% | 52.6 | 50.5 | 46.3 | 44.4 | 45.0 | 46.6 | 48.8 | 50.2 | 53.3 | 60.0 | 59.7 | 54.9 |
| 80% | 52.1 | 50.0 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.8 | 53.0 | 59.8 | 59.4 | 54.6 |
| 90% | 51.8 | 49.8 | 45.7 | 43.9 | 44.5 | 45.9 | 48.1 | 49.2 | 52.4 | 59.5 | 59.0 | 54.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.0 | 51.1 | 47.1 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.6 | 60.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.8 | 44.9 | 45.2 | 46.6 | 48.8 | 50.5 | 53.7 | 60.6 | 60.0 | 55.0 |
| Above Normal (16%) | 52.7 | 50.2 | 46.5 | 45.0 | 45.4 | 46.8 | 48.9 | 50.5 | 53.7 | 60.4 | 59.6 | 54.9 |
| Below Normal (13%) | 53.9 | 51.3 | 46.9 | 44.6 | 45.3 | 47.1 | 49.4 | 50.2 | 53.7 | 60.4 | 60.0 | 55.7 |
| Dry (24%) | 54.8 | 51.5 | 47.5 | 45.2 | 45.8 | 47.5 | 49.6 | 50.8 | 54.4 | 60.7 | 60.6 | 56.6 |
| Critical (15%) | 57.5 | 52.7 | 47.7 | 46.0 | 46.8 | 48.6 | 50.9 | 52.3 | 57.9 | 61.0 | 61.0 | 59.0 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.3 | 52.9 | 49.1 | 46.6 | 46.7 | 48.5 | 51.0 | 52.2 | 53.6 | 58.5 | 58.3 | 58.1 |
| 20% | 55.1 | 52.2 | 48.5 | 45.9 | 46.2 | 48.1 | 50.4 | 51.6 | 52.9 | 57.9 | 57.9 | 56.9 |
| 30% | 54.6 | 51.7 | 47.4 | 45.5 | 45.7 | 47.8 | 49.8 | 51.1 | 52.5 | 57.3 | 57.6 | 56.6 |
| 40% | 54.2 | 51.3 | 47.1 | 45.3 | 45.4 | 47.4 | 49.5 | 50.8 | 52.2 | 57.1 | 57.3 | 56.4 |
| 50% | 53.9 | 50.9 | 46.8 | 44.9 | 45.1 | 47.2 | 49.1 | 50.6 | 52.0 | 56.9 | 57.0 | 55.9 |
| 60% | 53.3 | 50.7 | 46.5 | 44.7 | 44.9 | 47.0 | 49.0 | 50.4 | 51.9 | 56.6 | 56.7 | 55.5 |
| 70% | 52.7 | 50.3 | 46.2 | 44.3 | 44.6 | 46.6 | 48.7 | 50.2 | 51.6 | 56.4 | 56.6 | 55.2 |
| 80% | 52.3 | 50.1 | 46.1 | 44.1 | 44.4 | 46.4 | 48.5 | 49.8 | 51.1 | 56.2 | 56.3 | 54.9 |
| 90% | 51.8 | 49.8 | 45.6 | 43.9 | 44.1 | 45.9 | 48.1 | 49.2 | 50.7 | 55.8 | 55.8 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 51.1 | 47.1 | 45.1 | 45.3 | 47.2 | 49.4 | 50.7 | 52.0 | 57.0 | 57.1 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.5 | 46.7 | 44.9 | 44.7 | 46.7 | 48.8 | 50.5 | 51.9 | 56.8 | 56.7 | 55.3 |
| Above Normal (16%) | 52.8 | 50.4 | 46.6 | 45.0 | 44.8 | 46.9 | 48.9 | 50.5 | 51.9 | 56.7 | 56.4 | 55.0 |
| Below Normal (13%) | 54.0 | 51.4 | 47.1 | 44.5 | 44.9 | 47.2 | 49.4 | 50.2 | 51.7 | 56.8 | 56.8 | 55.8 |
| Dry (24%) | 54.6 | 51.5 | 47.6 | 45.3 | 45.8 | 47.4 | 49.5 | 50.7 | 52.2 | 57.1 | 57.6 | 56.5 |
| Critical (15%) | 57.1 | 52.7 | 47.8 | 46.1 | 46.8 | 48.5 | 50.7 | 51.9 | 52.6 | 57.6 | 58.2 | 58.6 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.1 | **0.0** | **0.2** | **0.2** | **0.1** | **0.1** | -0.1 | -0.2 | -3.3 | -3.7 | -3.2 | -0.1 |
| 20% | -0.4 | -0.1 | **0.3** | **0.1** | -0.1 | -0.1 | **0.1** | -0.1 | -2.5 | -3.6 | -3.2 | -0.1 |
| 30% | -0.2 | **0.3** | **0.0** | 0.0 | -0.2 | **0.1** | 0.0 | -0.2 | -2.5 | -3.8 | -3.2 | **0.0** |
| 40% | **0.0** | **0.0** | **0.0** | -0.1 | -0.4 | **0.0** | 0.0 | -0.2 | -2.3 | -3.8 | -3.2 | **0.2** |
| 50% | **0.2** | 0.0 | 0.0 | 0.0 | -0.4 | **0.1** | 0.0 | -0.1 | -2.1 | -3.6 | -3.2 | **0.0** |
| 60% | **0.2** | **0.1** | 0.0 | **0.0** | -0.4 | **0.1** | **0.0** | -0.1 | -1.8 | -3.7 | -3.2 | **0.2** |
| 70% | **0.1** | -0.1 | -0.1 | -0.1 | -0.4 | **0.0** | -0.1 | 0.0 | -1.7 | -3.7 | -3.2 | **0.3** |
| 80% | **0.1** | **0.1** | **0.0** | **0.0** | -0.4 | **0.0** | -0.1 | 0.0 | -1.9 | -3.7 | -3.1 | **0.3** |
| 90% | **0.0** | **0.0** | -0.2 | **0.0** | -0.4 | **0.0** | 0.0 | **0.1** | -1.8 | -3.7 | -3.2 | **0.2** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | **0.0** | **0.1** | **0.0** | -0.3 | **0.0** | 0.0 | -0.1 | -2.4 | -3.7 | -3.1 | **0.0** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | 0.0 | 0.0 | -0.5 | **0.1** | **0.0** | 0.0 | -1.8 | -3.8 | -3.3 | **0.2** |
| Above Normal (16%) | **0.1** | **0.2** | **0.1** | 0.0 | -0.6 | **0.0** | 0.0 | **0.0** | -1.8 | -3.7 | -3.2 | **0.1** |
| Below Normal (13%) | **0.1** | **0.0** | **0.1** | -0.1 | -0.4 | **0.1** | 0.0 | 0.0 | -2.0 | -3.6 | -3.2 | **0.1** |
| Dry (24%) | -0.2 | 0.0 | **0.1** | **0.1** | 0.0 | -0.1 | -0.1 | -0.1 | -2.2 | -3.6 | -3.1 | -0.1 |
| Critical (15%) | -0.5 | 0.0 | **0.1** | **0.1** | **0.0** | -0.1 | -0.2 | -0.5 | -5.3 | -3.4 | -2.8 | -0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-3. Clear Creek at Mouth, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.4 | 52.8 | 48.9 | 46.4 | 46.6 | 48.4 | 50.9 | 52.3 | 56.8 | 62.2 | 61.5 | 57.9 |
| 20% | 55.5 | 52.3 | 48.3 | 45.8 | 46.3 | 48.2 | 50.3 | 51.7 | 55.4 | 61.6 | 61.0 | 57.0 |
| 30% | 54.8 | 51.5 | 47.4 | 45.6 | 45.9 | 47.7 | 49.8 | 51.3 | 54.9 | 61.1 | 60.7 | 56.6 |
| 40% | 54.1 | 51.2 | 47.0 | 45.4 | 45.8 | 47.4 | 49.6 | 51.0 | 54.5 | 60.9 | 60.5 | 56.1 |
| 50% | 53.8 | 50.9 | 46.8 | 45.0 | 45.5 | 47.1 | 49.2 | 50.7 | 54.1 | 60.6 | 60.2 | 55.8 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.0 | 50.6 | 53.8 | 60.3 | 60.0 | 55.3 |
| 70% | 52.6 | 50.5 | 46.3 | 44.4 | 45.0 | 46.6 | 48.8 | 50.2 | 53.4 | 60.1 | 59.7 | 55.0 |
| 80% | 52.1 | 50.0 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.8 | 53.1 | 59.9 | 59.3 | 54.7 |
| 90% | 51.8 | 49.8 | 45.7 | 43.9 | 44.5 | 45.9 | 48.1 | 49.2 | 52.5 | 59.5 | 59.0 | 54.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.0 | 51.1 | 47.1 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.6 | 60.2 | 56.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.8 | 44.9 | 45.2 | 46.6 | 48.8 | 50.5 | 53.7 | 60.6 | 60.0 | 55.0 |
| Above Normal (16%) | 52.6 | 50.2 | 46.5 | 45.0 | 45.3 | 46.8 | 48.9 | 50.5 | 53.7 | 60.4 | 59.6 | 54.9 |
| Below Normal (13%) | 53.9 | 51.3 | 47.0 | 44.6 | 45.3 | 47.0 | 49.4 | 50.3 | 53.7 | 60.5 | 60.0 | 55.7 |
| Dry (24%) | 54.8 | 51.5 | 47.5 | 45.2 | 45.8 | 47.5 | 49.6 | 50.8 | 54.4 | 60.7 | 60.6 | 56.5 |
| Critical (15%) | 57.9 | 52.9 | 47.6 | 46.0 | 46.8 | 48.5 | 50.9 | 52.2 | 57.8 | 61.2 | 60.7 | 58.6 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.4 | 52.9 | 48.9 | 46.4 | 46.6 | 48.4 | 51.1 | 52.4 | 56.8 | 62.2 | 61.5 | 58.3 |
| 20% | 55.5 | 52.3 | 48.3 | 45.9 | 46.3 | 48.2 | 50.3 | 51.7 | 55.4 | 61.6 | 61.1 | 57.1 |
| 30% | 54.8 | 51.4 | 47.4 | 45.6 | 45.9 | 47.7 | 49.9 | 51.3 | 55.0 | 61.1 | 60.8 | 56.6 |
| 40% | 54.2 | 51.2 | 47.1 | 45.4 | 45.8 | 47.4 | 49.5 | 51.0 | 54.5 | 60.9 | 60.5 | 56.2 |
| 50% | 53.8 | 50.9 | 46.8 | 44.9 | 45.5 | 47.1 | 49.2 | 50.7 | 54.1 | 60.5 | 60.2 | 55.9 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.0 | 50.5 | 53.7 | 60.2 | 59.9 | 55.3 |
| 70% | 52.6 | 50.5 | 46.3 | 44.4 | 45.0 | 46.6 | 48.8 | 50.2 | 53.3 | 60.0 | 59.7 | 54.9 |
| 80% | 52.1 | 50.0 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.8 | 53.0 | 59.8 | 59.4 | 54.6 |
| 90% | 51.8 | 49.8 | 45.7 | 43.9 | 44.5 | 45.9 | 48.1 | 49.2 | 52.4 | 59.5 | 59.0 | 54.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.0 | 51.1 | 47.1 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.6 | 60.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.8 | 44.9 | 45.2 | 46.6 | 48.8 | 50.5 | 53.7 | 60.6 | 60.0 | 55.0 |
| Above Normal (16%) | 52.7 | 50.2 | 46.5 | 45.0 | 45.4 | 46.8 | 48.9 | 50.5 | 53.7 | 60.4 | 59.6 | 54.9 |
| Below Normal (13%) | 53.9 | 51.3 | 46.9 | 44.6 | 45.3 | 47.1 | 49.4 | 50.2 | 53.7 | 60.4 | 60.0 | 55.7 |
| Dry (24%) | 54.8 | 51.5 | 47.5 | 45.2 | 45.8 | 47.5 | 49.6 | 50.8 | 54.4 | 60.7 | 60.6 | 56.6 |
| Critical (15%) | 57.5 | 52.7 | 47.7 | 46.0 | 46.8 | 48.6 | 50.9 | 52.3 | 57.9 | 61.0 | 61.0 | 59.0 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 | 0.4 |
| 20% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.1 | -0.1 | 0.1 | 0.0 |
| 30% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 |
| 40% | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | -0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.1 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80% | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (13%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 |
| Dry (24%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Critical (15%) | -0.4 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | -0.2 | 0.3 | 0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-4. Clear Creek at Mouth, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.0 | 52.6 | 48.9 | 46.6 | 46.6 | 48.4 | 50.9 | 52.1 | 56.9 | 62.2 | 61.4 | 57.7 |
| 20% | 55.1 | 52.1 | 48.3 | 45.9 | 46.3 | 48.2 | 50.3 | 51.8 | 55.5 | 61.7 | 61.0 | 56.9 |
| 30% | 54.6 | 51.6 | 47.4 | 45.5 | 45.9 | 47.9 | 49.8 | 51.3 | 54.9 | 61.1 | 60.7 | 56.6 |
| 40% | 54.2 | 51.2 | 47.0 | 45.3 | 45.8 | 47.4 | 49.5 | 50.9 | 54.5 | 60.8 | 60.5 | 56.3 |
| 50% | 53.9 | 50.9 | 46.8 | 44.9 | 45.5 | 47.0 | 49.2 | 50.7 | 54.1 | 60.6 | 60.2 | 55.8 |
| 60% | 53.1 | 50.7 | 46.5 | 44.7 | 45.2 | 46.9 | 49.1 | 50.5 | 53.8 | 60.4 | 60.1 | 55.4 |
| 70% | 52.7 | 50.5 | 46.3 | 44.3 | 45.0 | 46.6 | 48.9 | 50.2 | 53.4 | 60.1 | 59.8 | 55.2 |
| 80% | 52.2 | 50.1 | 46.1 | 44.1 | 44.7 | 46.4 | 48.5 | 49.9 | 53.1 | 59.9 | 59.4 | 54.8 |
| 90% | 51.8 | 49.7 | 45.6 | 43.9 | 44.5 | 45.9 | 48.1 | 49.1 | 52.5 | 59.5 | 59.1 | 54.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 51.1 | 47.0 | 45.1 | 45.6 | 47.2 | 49.4 | 50.8 | 54.5 | 60.7 | 60.2 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.4 | 46.7 | 44.9 | 45.2 | 46.6 | 48.8 | 50.4 | 53.7 | 60.6 | 60.0 | 55.2 |
| Above Normal (16%) | 52.8 | 50.4 | 46.6 | 45.0 | 45.3 | 46.9 | 49.0 | 50.6 | 53.8 | 60.5 | 59.8 | 55.0 |
| Below Normal (13%) | 53.9 | 51.3 | 47.0 | 44.5 | 45.2 | 47.0 | 49.4 | 50.3 | 53.8 | 60.6 | 60.0 | 55.7 |
| Dry (24%) | 54.5 | 51.4 | 47.4 | 45.2 | 45.8 | 47.5 | 49.6 | 50.7 | 54.3 | 60.7 | 60.6 | 56.4 |
| Critical (15%) | 57.5 | 52.7 | 47.6 | 46.0 | 46.8 | 48.5 | 50.9 | 52.3 | 57.9 | 61.3 | 60.8 | 59.1 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.3 | 52.9 | 49.1 | 46.6 | 46.7 | 48.5 | 51.0 | 52.2 | 53.6 | 58.5 | 58.3 | 58.1 |
| 20% | 55.1 | 52.2 | 48.5 | 45.9 | 46.2 | 48.1 | 50.4 | 51.6 | 52.9 | 57.9 | 57.9 | 56.9 |
| 30% | 54.6 | 51.7 | 47.4 | 45.5 | 45.7 | 47.8 | 49.8 | 51.1 | 52.5 | 57.3 | 57.6 | 56.6 |
| 40% | 54.2 | 51.3 | 47.1 | 45.3 | 45.4 | 47.4 | 49.5 | 50.8 | 52.2 | 57.1 | 57.3 | 56.4 |
| 50% | 53.9 | 50.9 | 46.8 | 44.9 | 45.1 | 47.2 | 49.1 | 50.6 | 52.0 | 56.9 | 57.0 | 55.9 |
| 60% | 53.3 | 50.7 | 46.5 | 44.7 | 44.9 | 47.0 | 49.0 | 50.4 | 51.9 | 56.6 | 56.7 | 55.5 |
| 70% | 52.7 | 50.3 | 46.2 | 44.3 | 44.6 | 46.6 | 48.7 | 50.2 | 51.6 | 56.4 | 56.6 | 55.2 |
| 80% | 52.3 | 50.1 | 46.1 | 44.1 | 44.4 | 46.4 | 48.5 | 49.8 | 51.1 | 56.2 | 56.3 | 54.9 |
| 90% | 51.8 | 49.8 | 45.6 | 43.9 | 44.1 | 45.9 | 48.1 | 49.2 | 50.7 | 55.8 | 55.8 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 51.1 | 47.1 | 45.1 | 45.3 | 47.2 | 49.4 | 50.7 | 52.0 | 57.0 | 57.1 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.4 | 50.5 | 46.7 | 44.9 | 44.7 | 46.7 | 48.8 | 50.5 | 51.9 | 56.8 | 56.7 | 55.3 |
| Above Normal (16%) | 52.8 | 50.4 | 46.6 | 45.0 | 44.8 | 46.9 | 48.9 | 50.5 | 51.9 | 56.7 | 56.4 | 55.0 |
| Below Normal (13%) | 54.0 | 51.4 | 47.1 | 44.5 | 44.9 | 47.2 | 49.4 | 50.2 | 51.7 | 56.8 | 56.8 | 55.8 |
| Dry (24%) | 54.6 | 51.5 | 47.6 | 45.3 | 45.8 | 47.4 | 49.5 | 50.7 | 52.2 | 57.1 | 57.6 | 56.5 |
| Critical (15%) | 57.1 | 52.7 | 47.8 | 46.1 | 46.8 | 48.5 | 50.7 | 51.9 | 52.6 | 57.6 | 58.2 | 58.6 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | -3.4 | -3.7 | -3.1 | 0.4 |
| 20% | 0.0 | 0.1 | 0.2 | 0.0 | -0.1 | -0.1 | 0.1 | -0.2 | -2.6 | -3.8 | -3.1 | 0.0 |
| 30% | 0.1 | 0.2 | 0.0 | 0.0 | -0.2 | 0.0 | 0.0 | -0.1 | -2.4 | -3.7 | -3.1 | 0.0 |
| 40% | 0.0 | 0.1 | 0.1 | 0.0 | -0.4 | 0.0 | 0.0 | -0.1 | -2.3 | -3.7 | -3.2 | 0.1 |
| 50% | 0.1 | 0.0 | 0.0 | 0.0 | -0.4 | 0.1 | -0.1 | -0.1 | -2.1 | -3.7 | -3.2 | 0.1 |
| 60% | 0.1 | 0.0 | 0.0 | 0.0 | -0.3 | 0.1 | 0.0 | -0.1 | -1.9 | -3.8 | -3.3 | 0.1 |
| 70% | 0.0 | -0.2 | 0.0 | 0.0 | -0.3 | 0.1 | -0.2 | 0.0 | -1.8 | -3.8 | -3.3 | 0.0 |
| 80% | 0.1 | 0.0 | 0.0 | 0.0 | -0.3 | 0.0 | -0.1 | 0.0 | -2.0 | -3.8 | -3.1 | 0.1 |
| 90% | 0.0 | 0.1 | 0.0 | 0.0 | -0.4 | 0.0 | 0.0 | 0.1 | -1.8 | -3.7 | -3.3 | -0.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.1 | 0.0 | -0.3 | 0.0 | -0.1 | -0.1 | -2.4 | -3.7 | -3.1 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.0 | 0.0 | 0.0 | -0.5 | 0.1 | 0.0 | 0.0 | -1.8 | -3.8 | -3.3 | 0.0 |
| Above Normal (16%) | 0.0 | 0.0 | 0.1 | 0.0 | -0.6 | 0.0 | -0.1 | -0.1 | -1.9 | -3.8 | -3.3 | -0.1 |
| Below Normal (13%) | 0.0 | 0.1 | 0.1 | 0.0 | -0.3 | 0.2 | 0.0 | -0.1 | -2.1 | -3.9 | -3.2 | 0.1 |
| Dry (24%) | 0.0 | 0.1 | 0.2 | 0.1 | 0.0 | -0.1 | -0.1 | -0.1 | -2.1 | -3.5 | -3.0 | 0.1 |
| Critical (15%) | -0.4 | 0.0 | 0.2 | 0.1 | 0.1 | -0.1 | -0.2 | -0.4 | -5.3 | -3.7 | -2.5 | -0.5 |

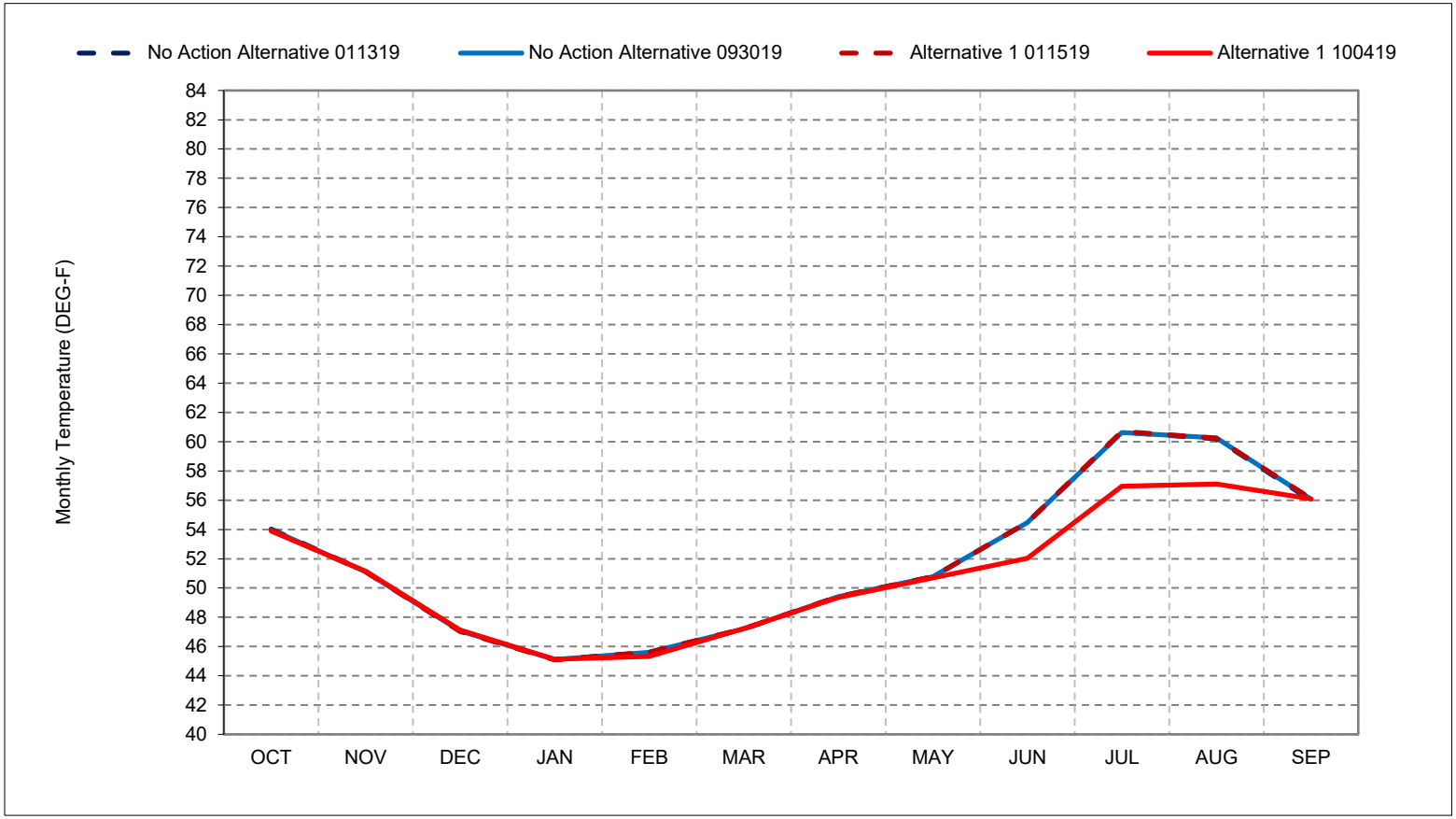
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-1. Clear Creek at Mouth, Long-Term Average Temperature

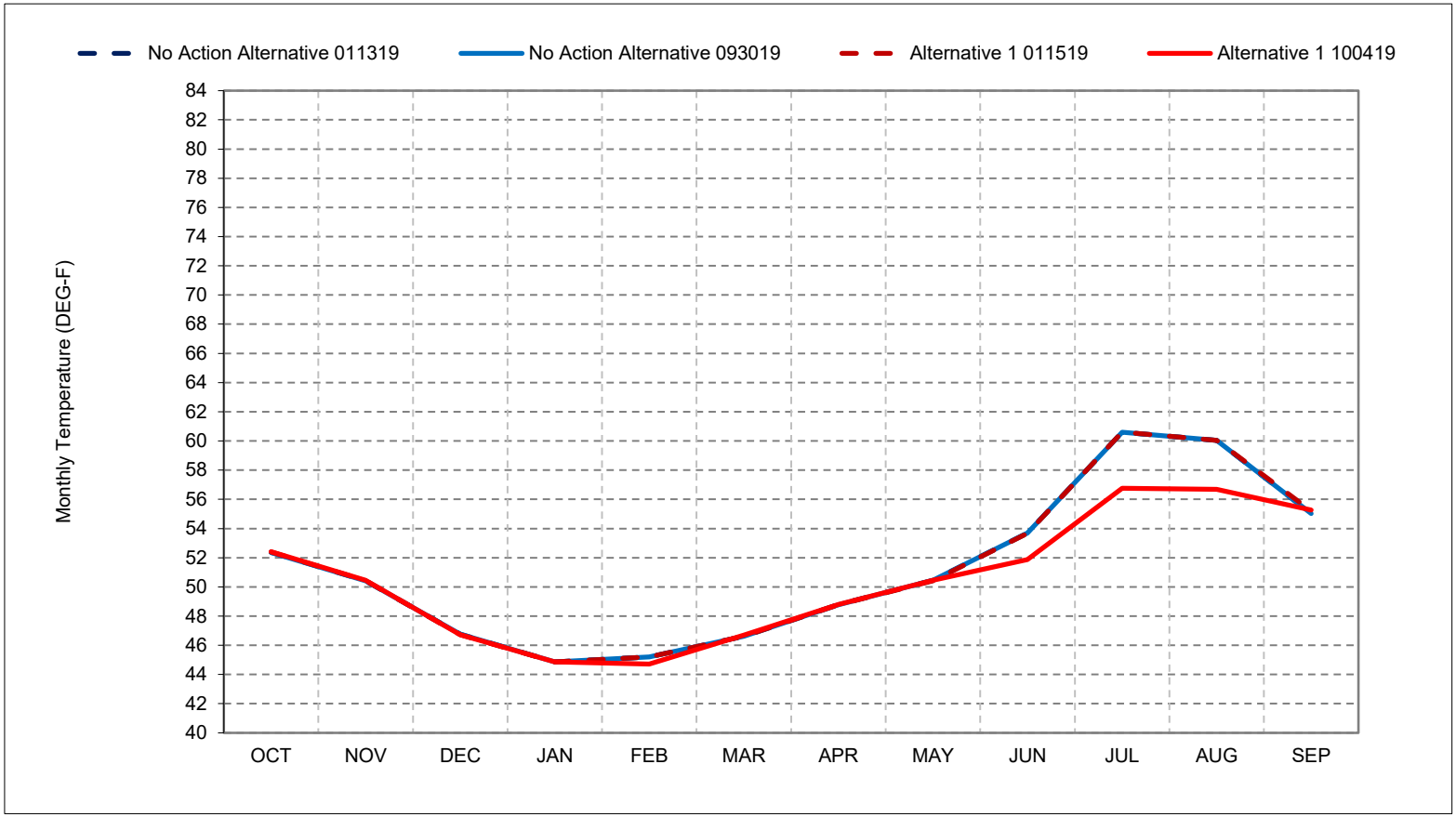



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-2. Clear Creek at Mouth, Wet Year Average Temperature

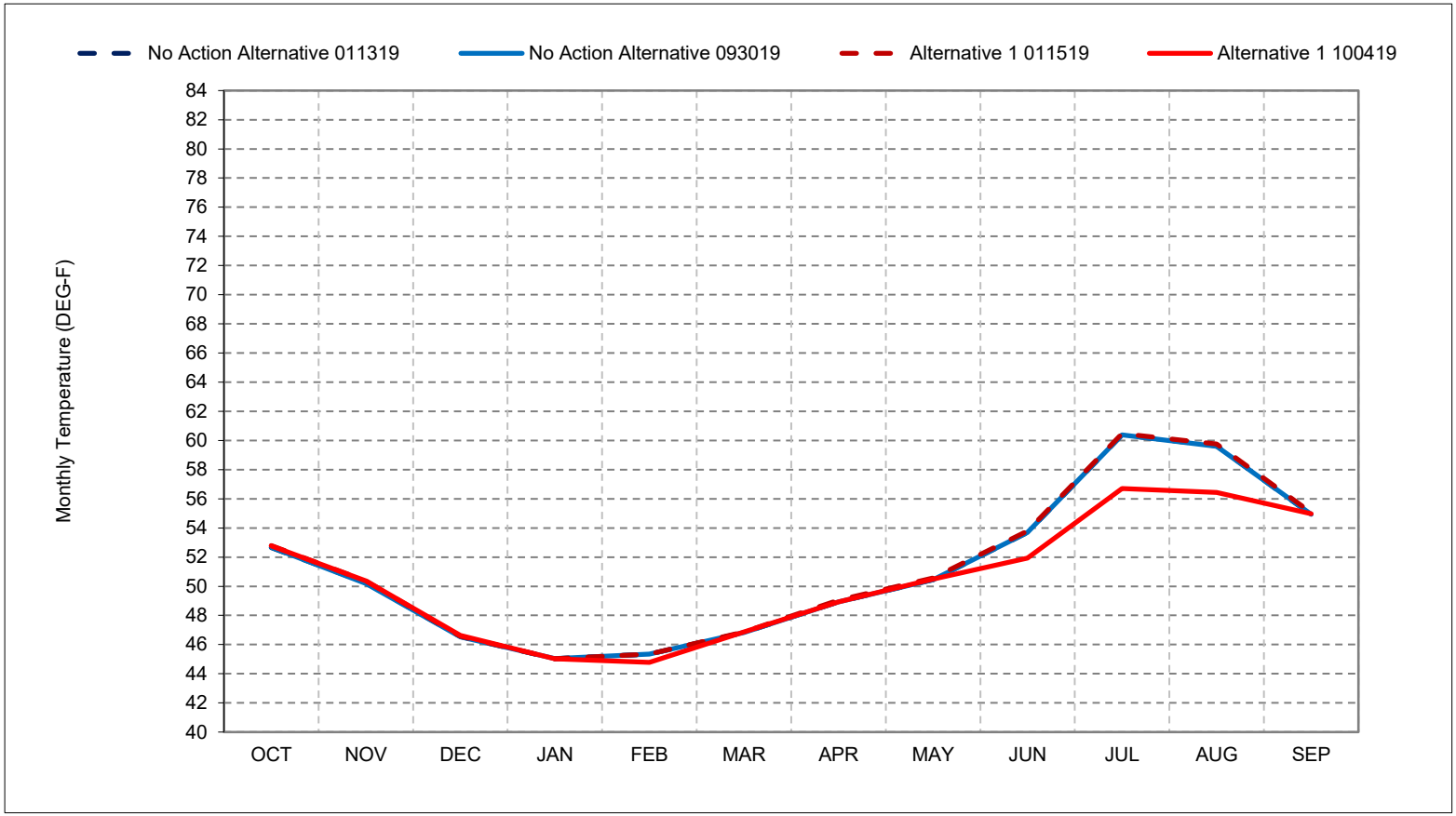



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-3. Clear Creek at Mouth, Above Normal Year Average Temperature

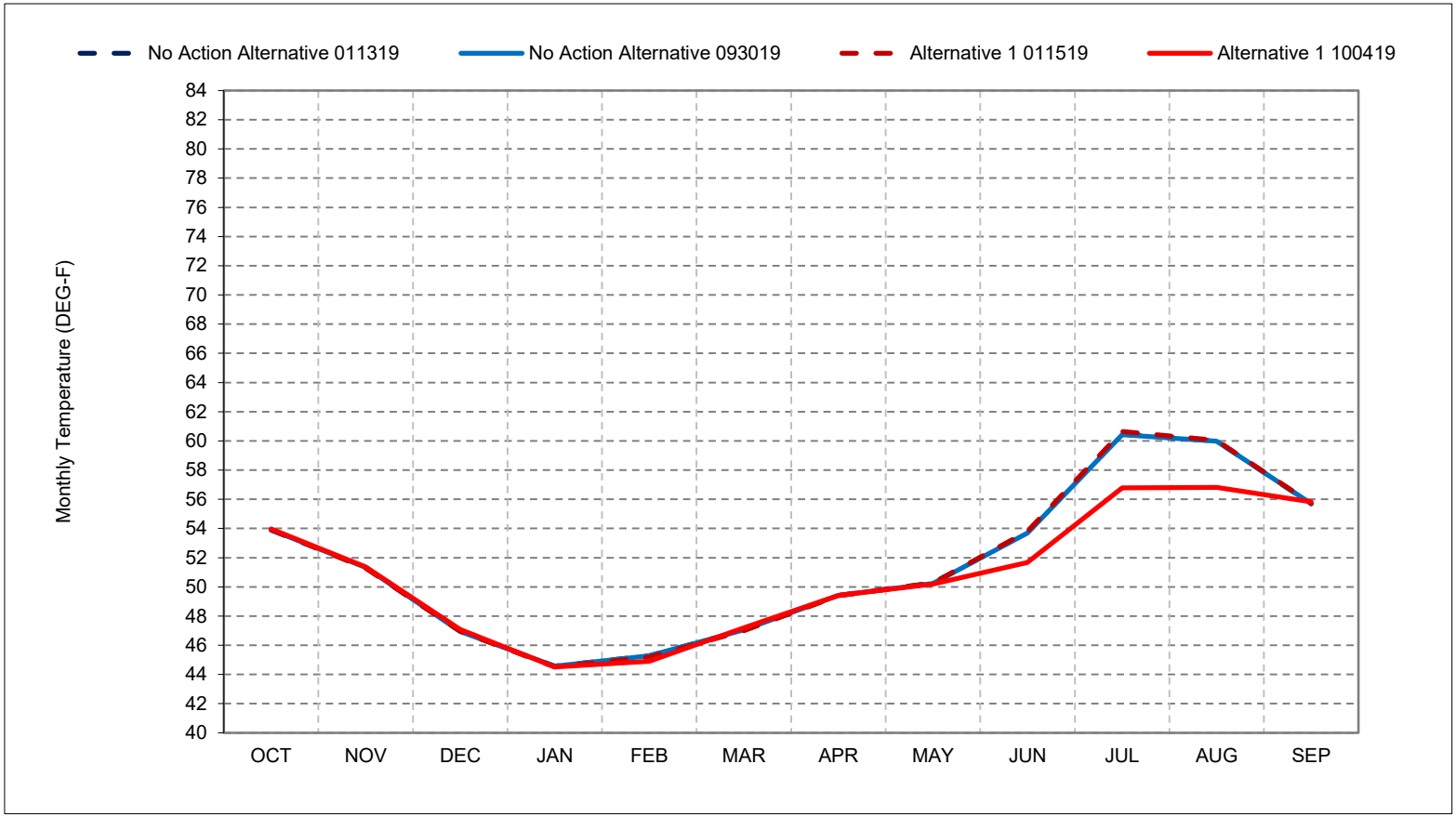



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-4. Clear Creek at Mouth, Below Normal Year Average Temperature

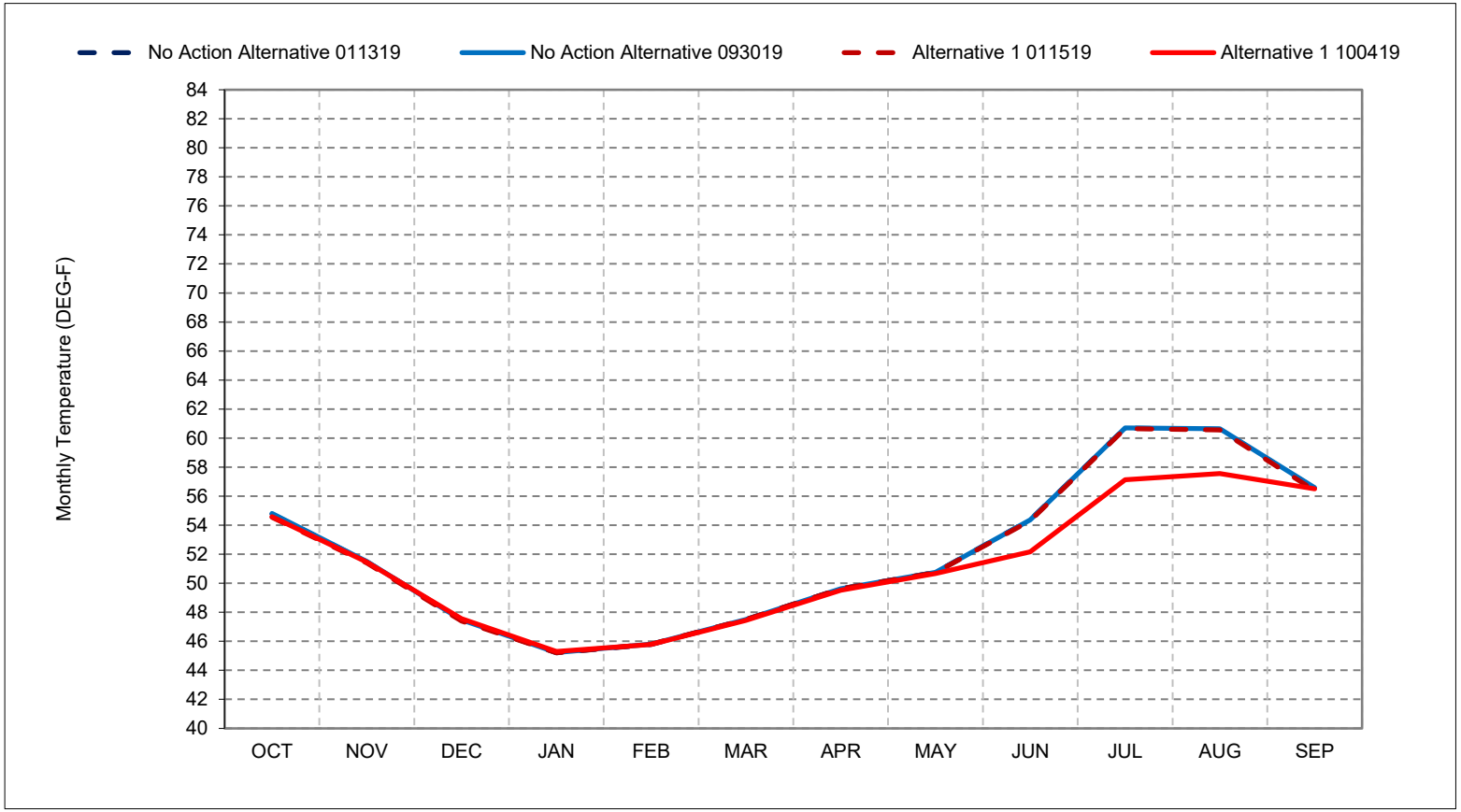



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-5. Clear Creek at Mouth, Dry Year Average Temperature

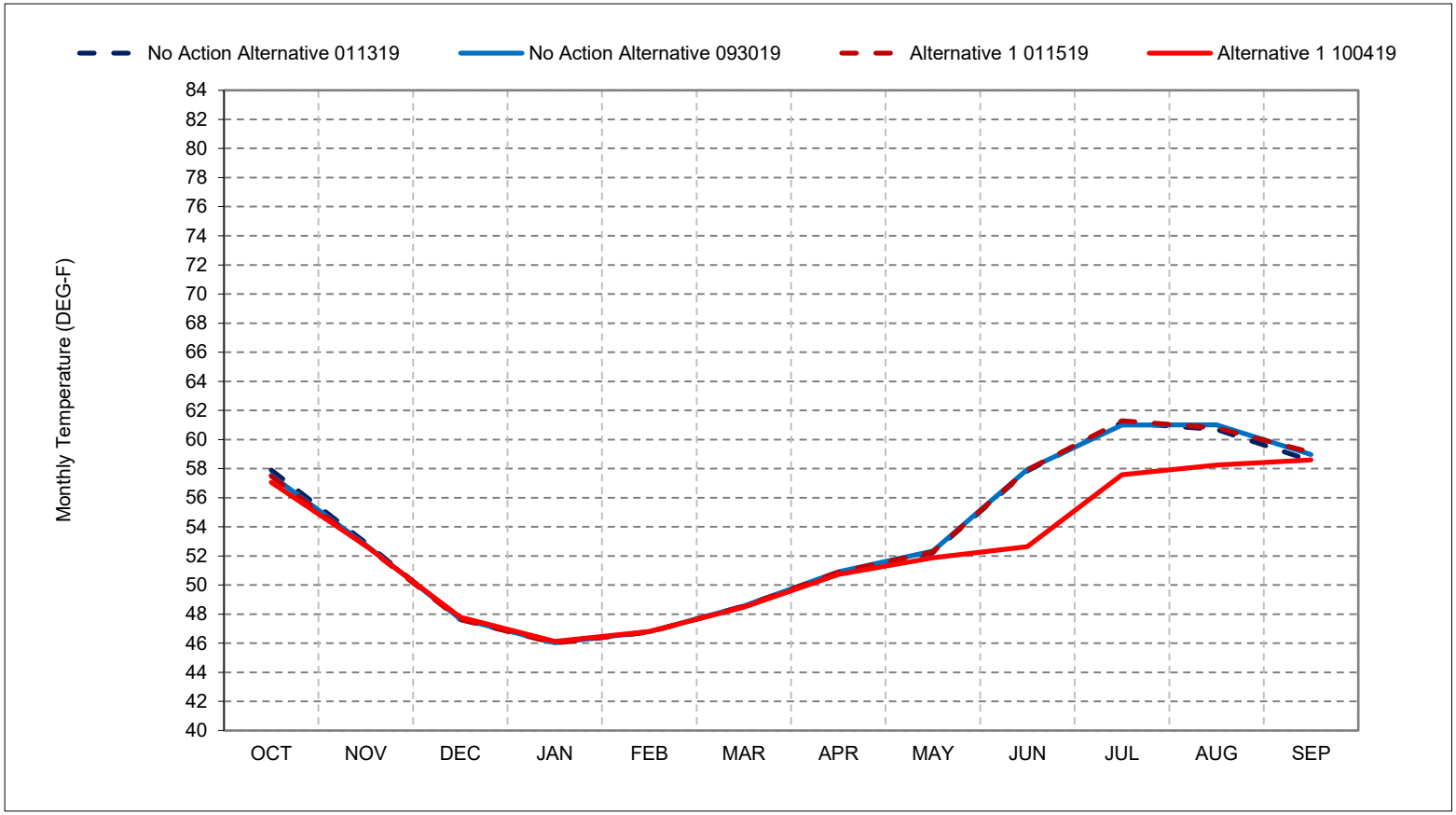



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-6. Clear Creek at Mouth, Critical Year Average Temperature

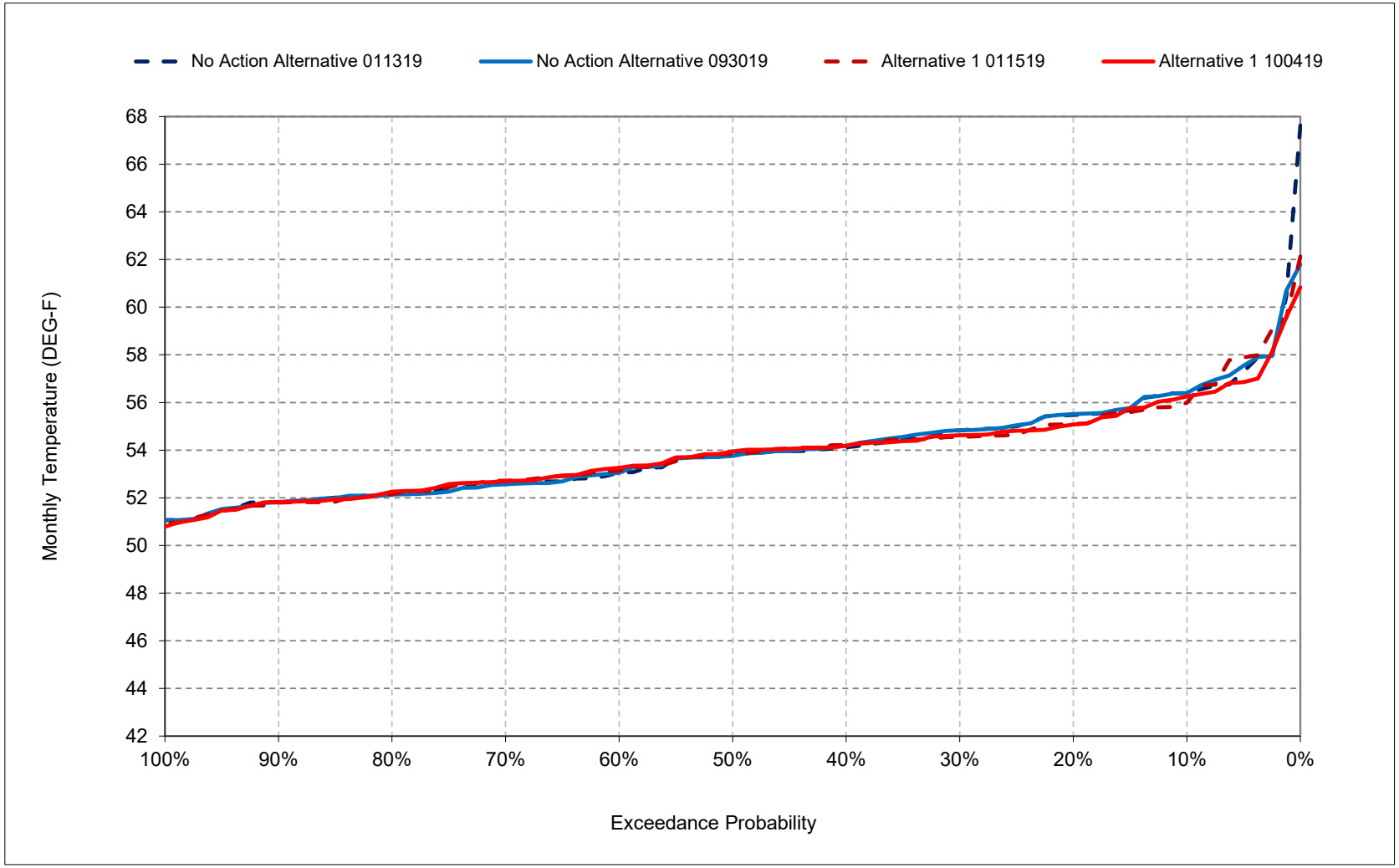



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

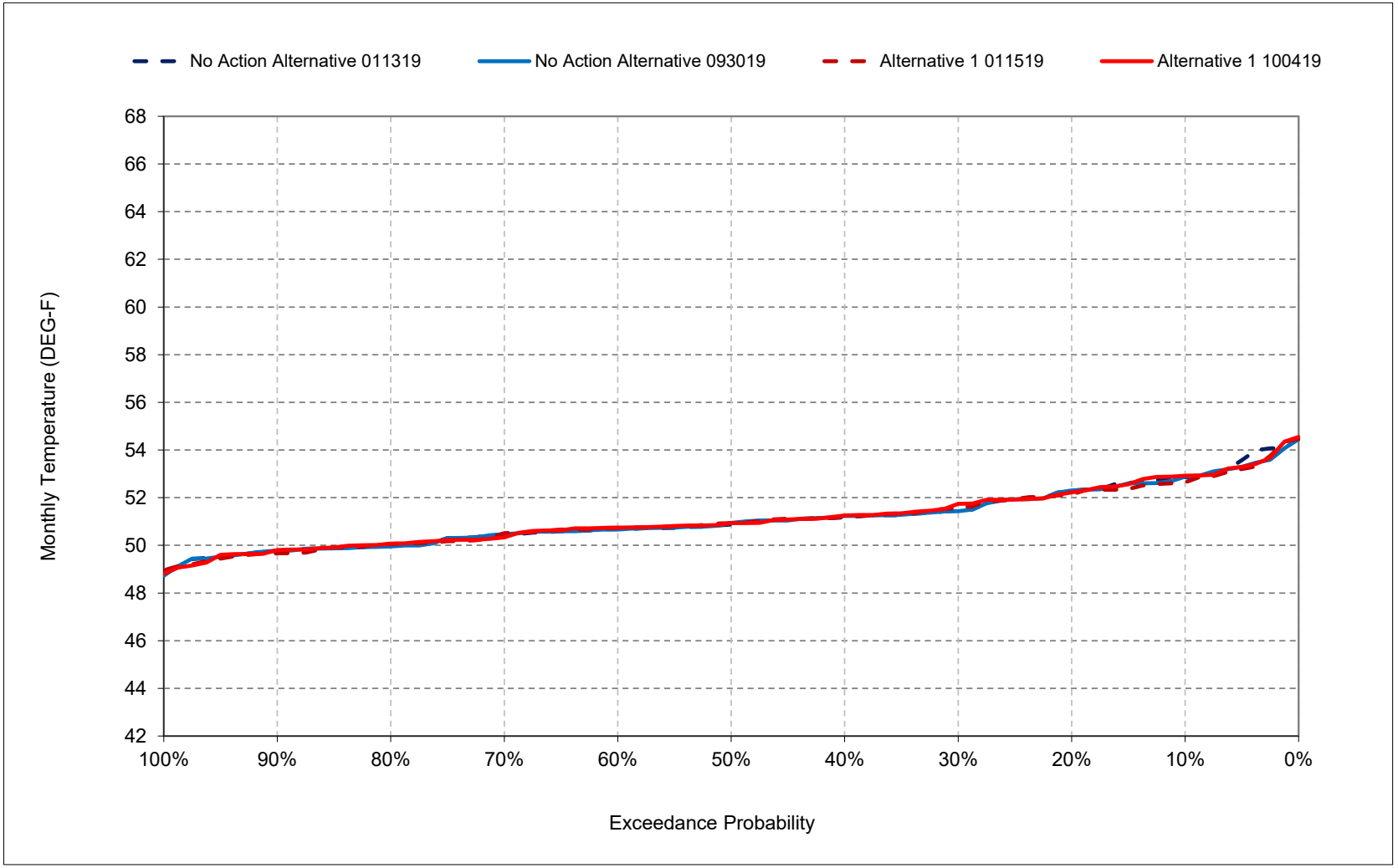
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-7. Clear Creek at Mouth, October**



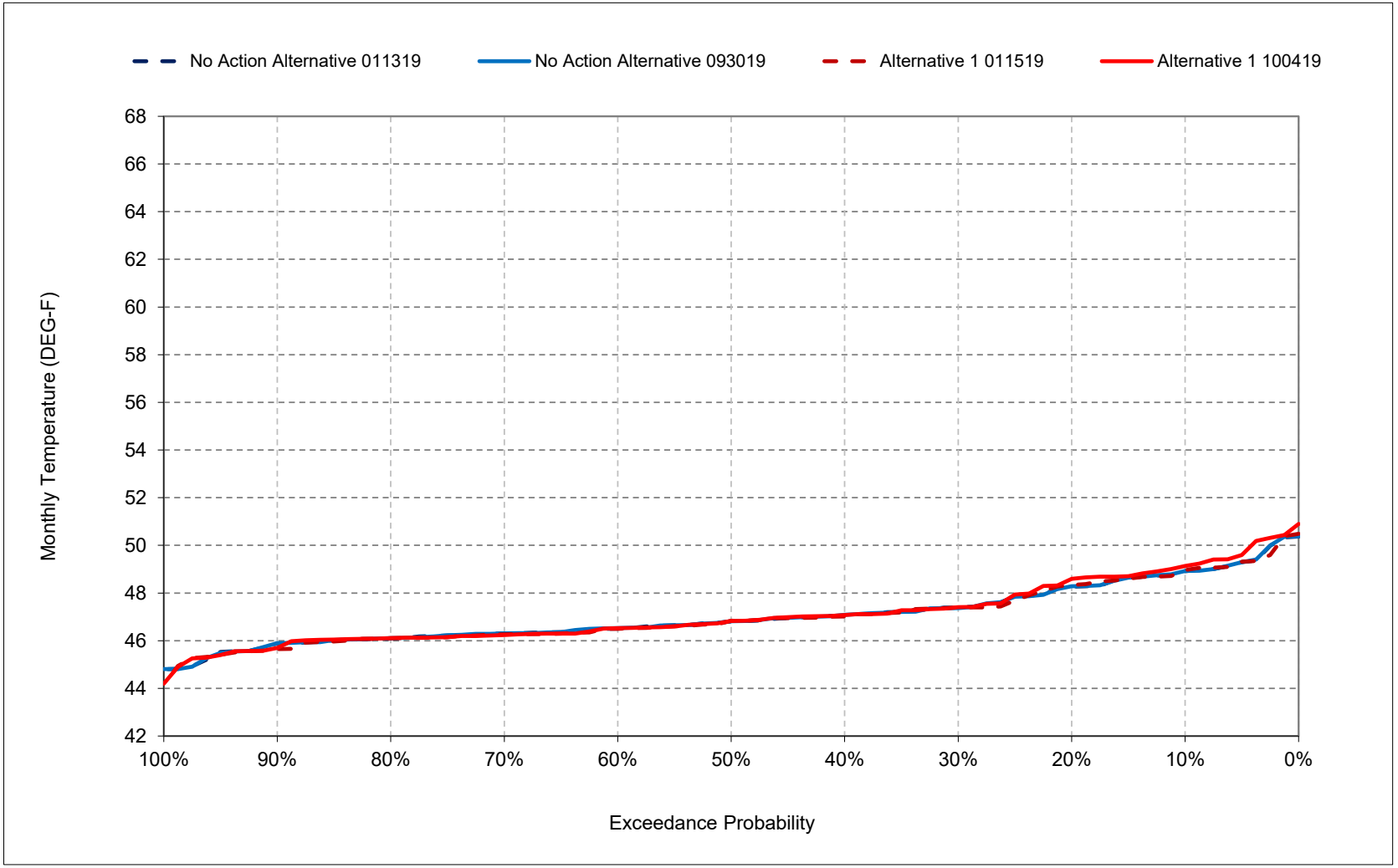

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-8. Clear Creek at Mouth, November**



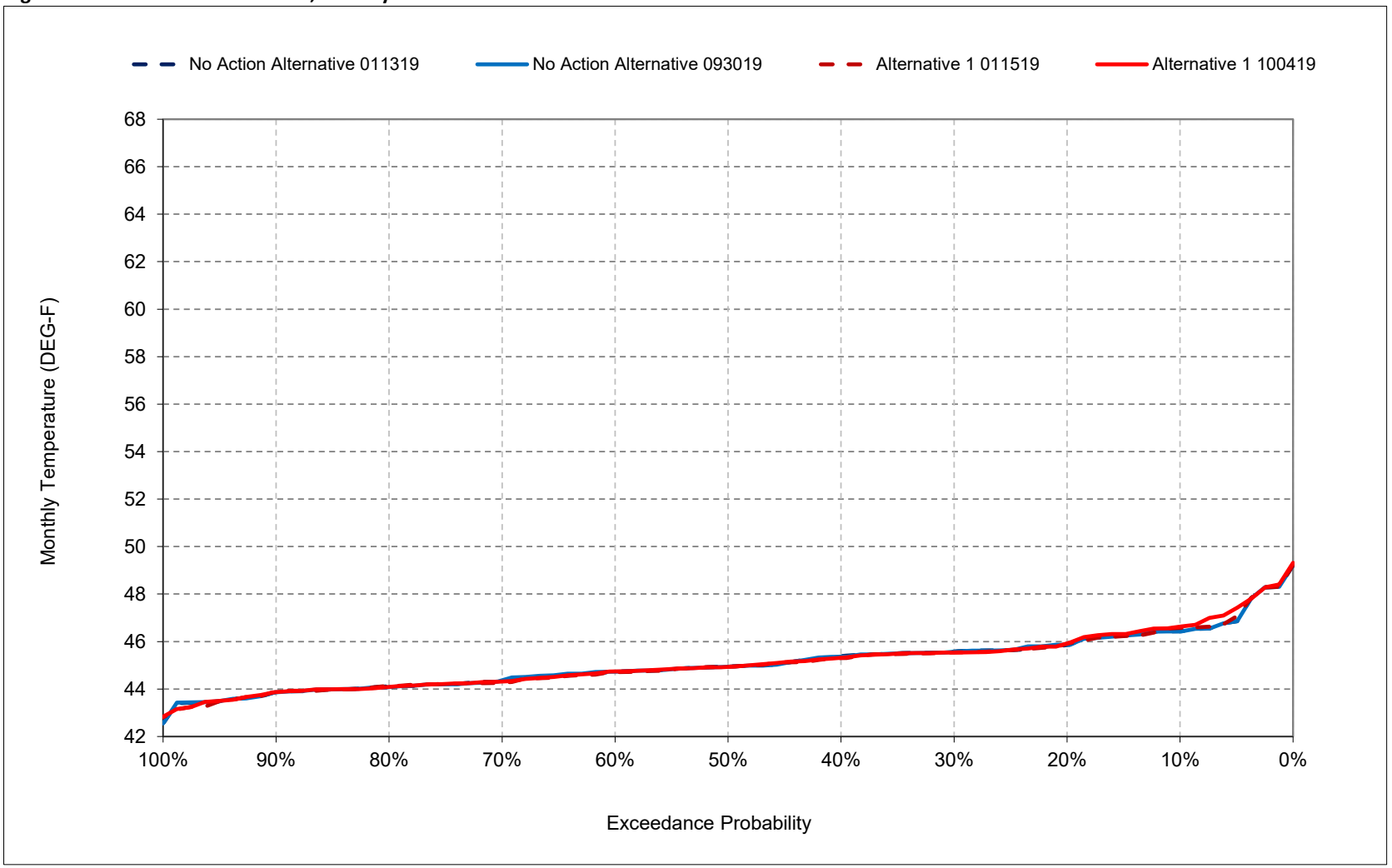

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-9. Clear Creek at Mouth, December**



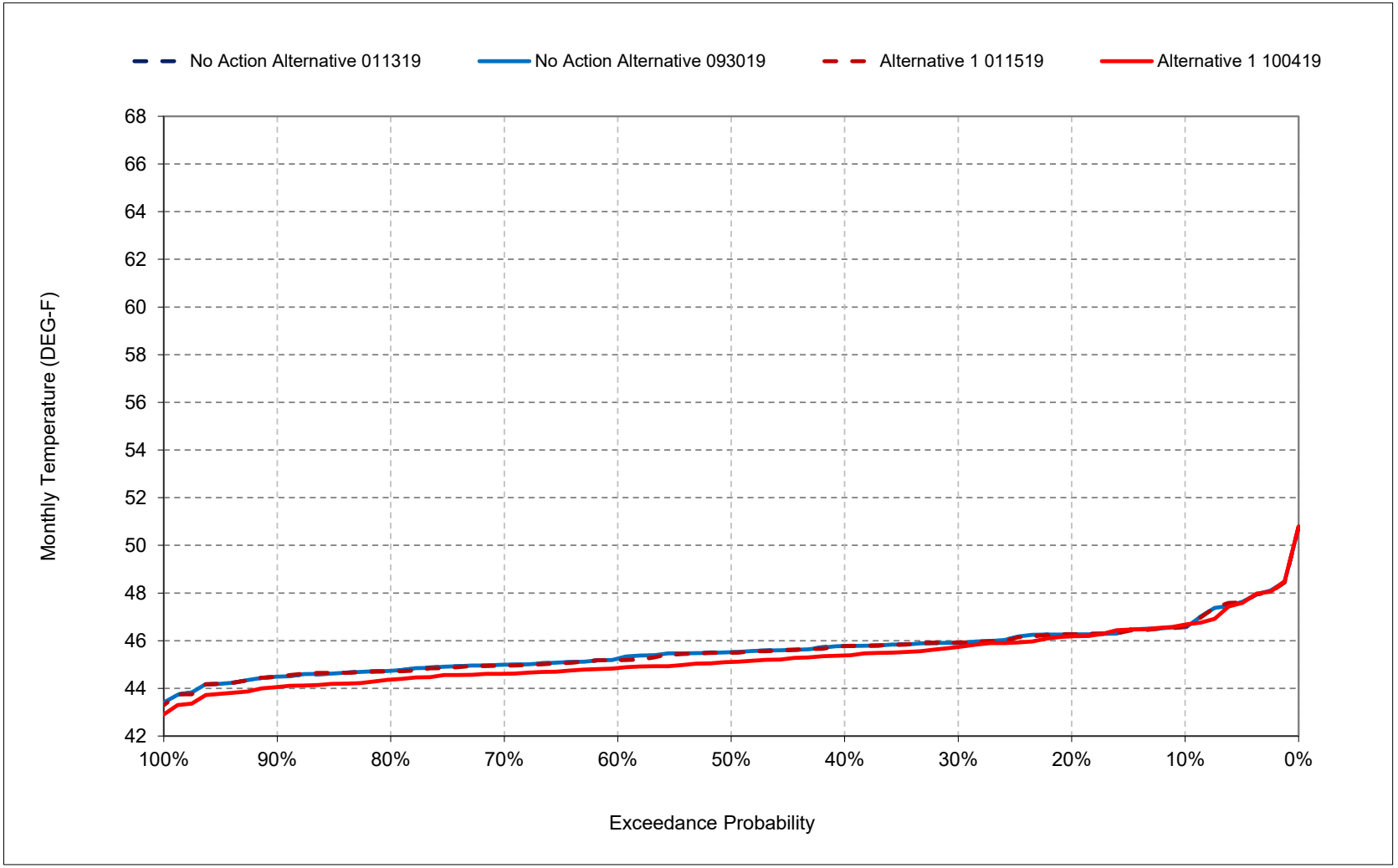

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-10. Clear Creek at Mouth, January**



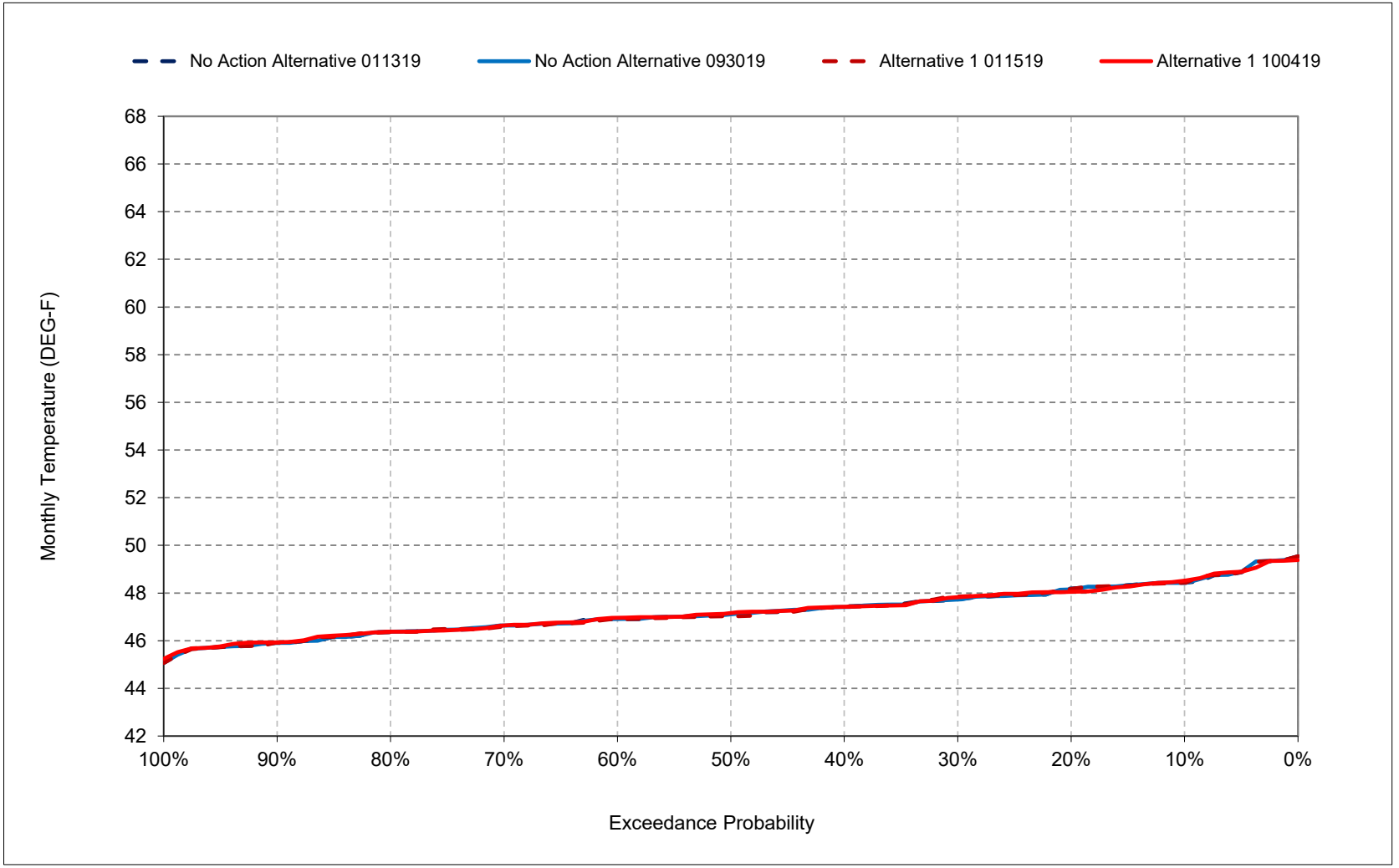

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-11. Clear Creek at Mouth, February**



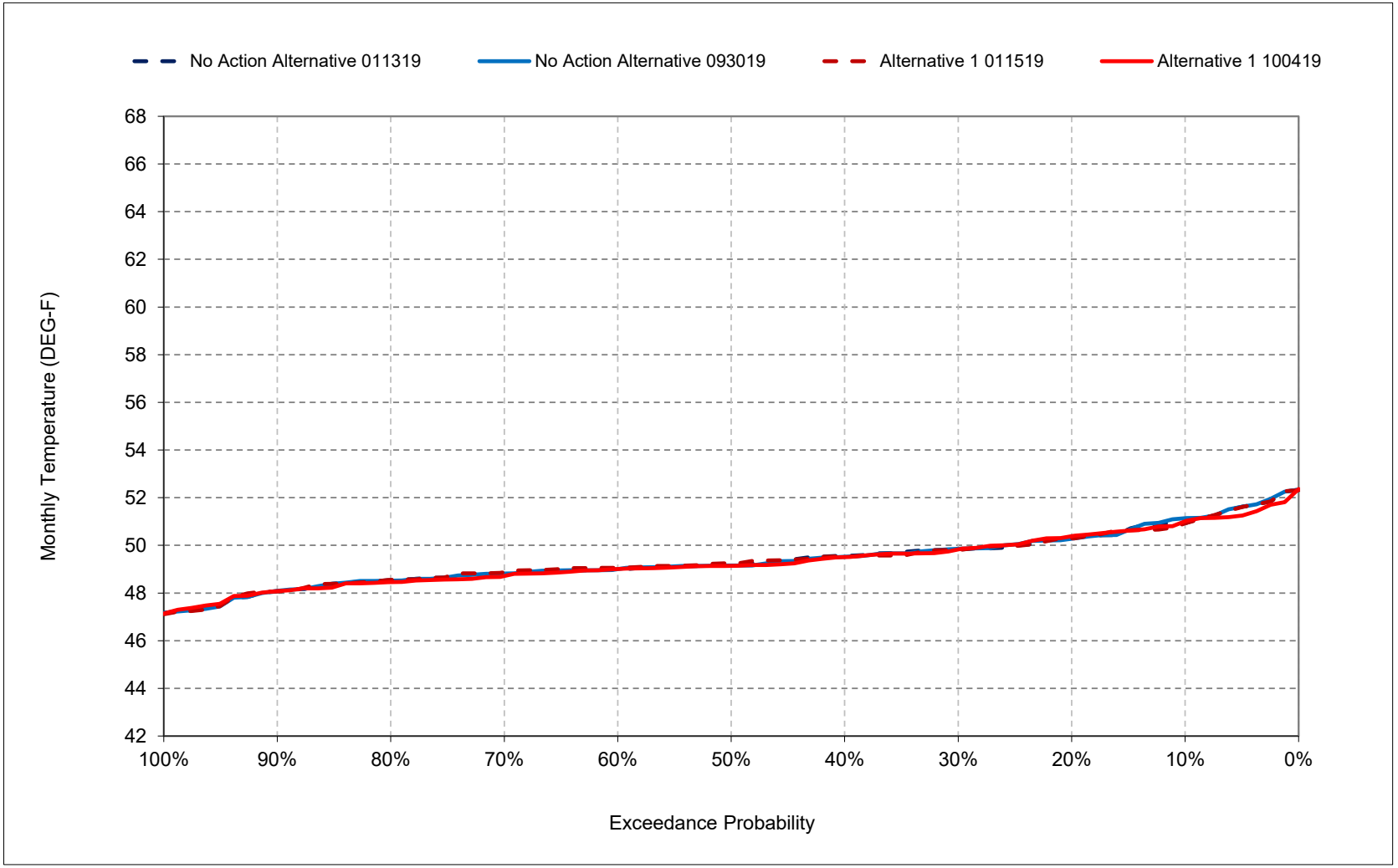

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-12. Clear Creek at Mouth, March**



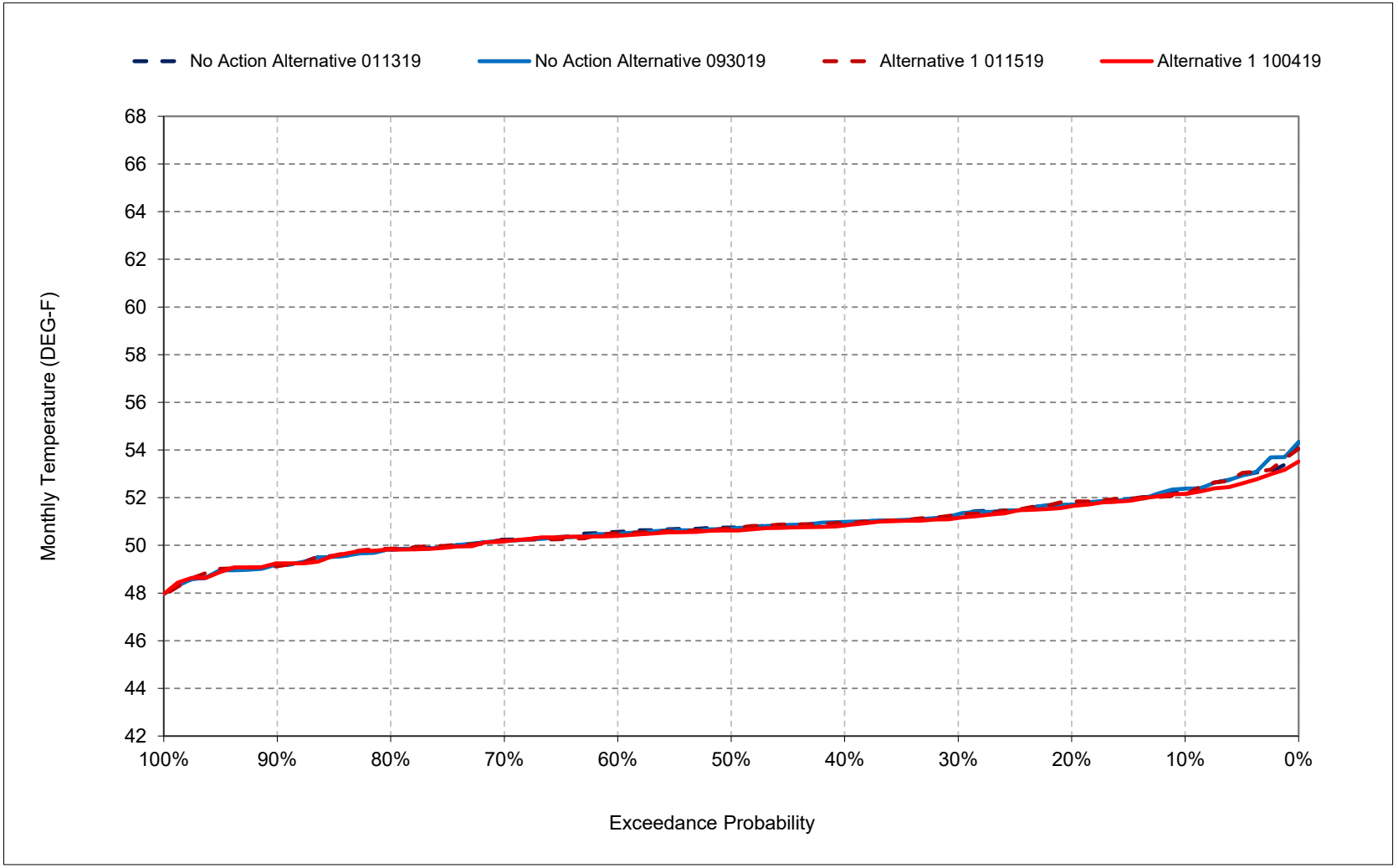

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-13. Clear Creek at Mouth, April**



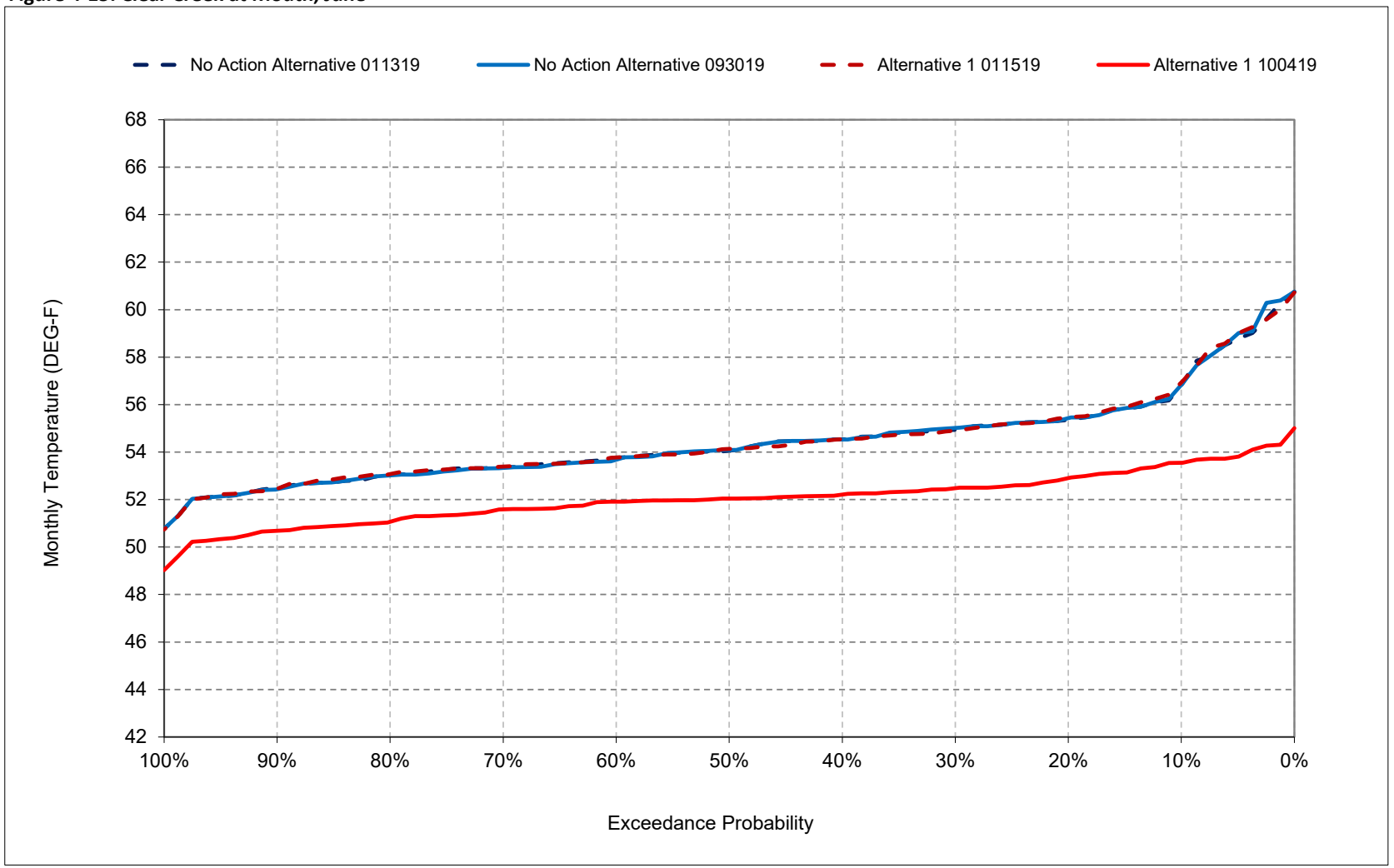

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-14. Clear Creek at Mouth, May**



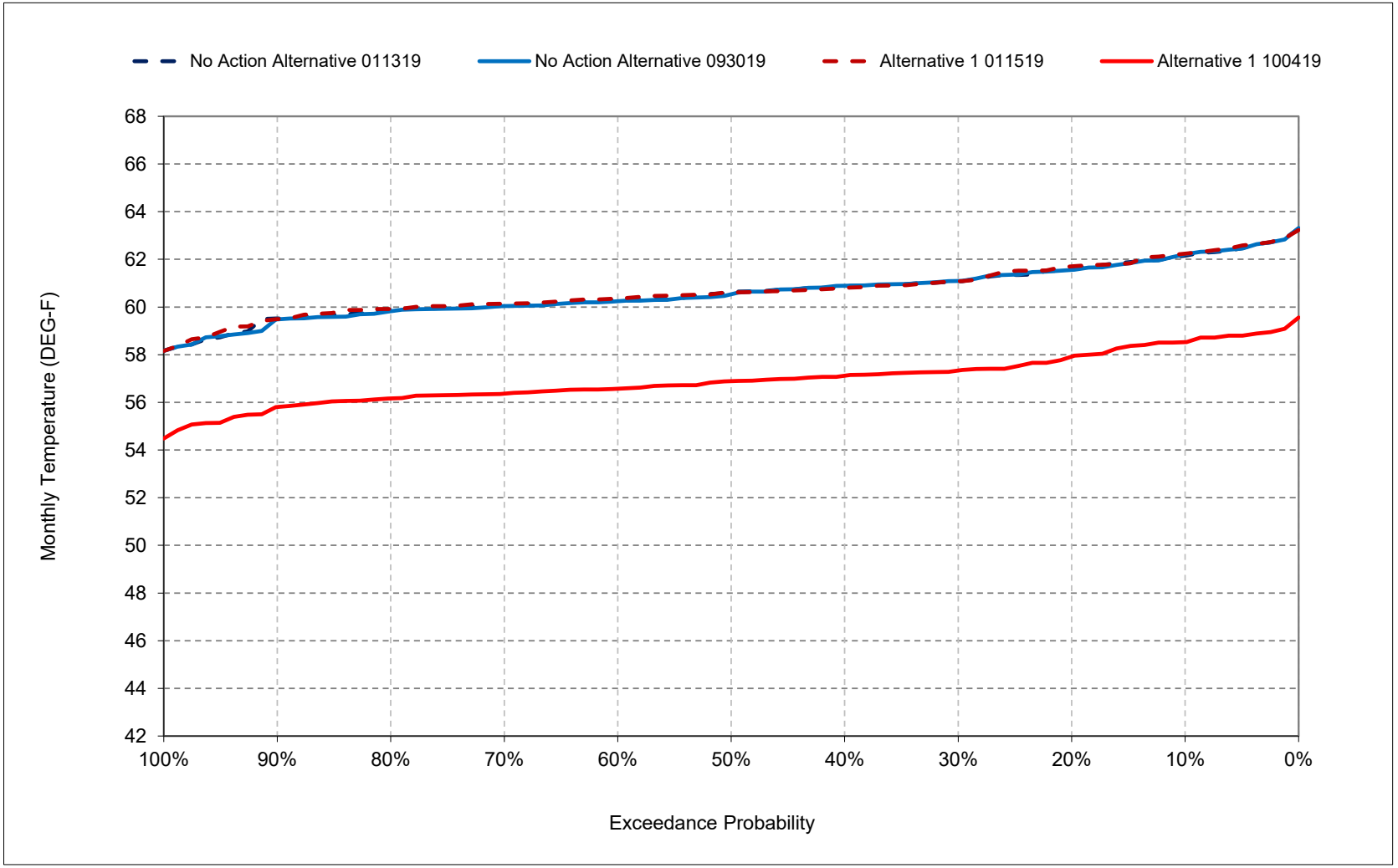

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-15. Clear Creek at Mouth, June**



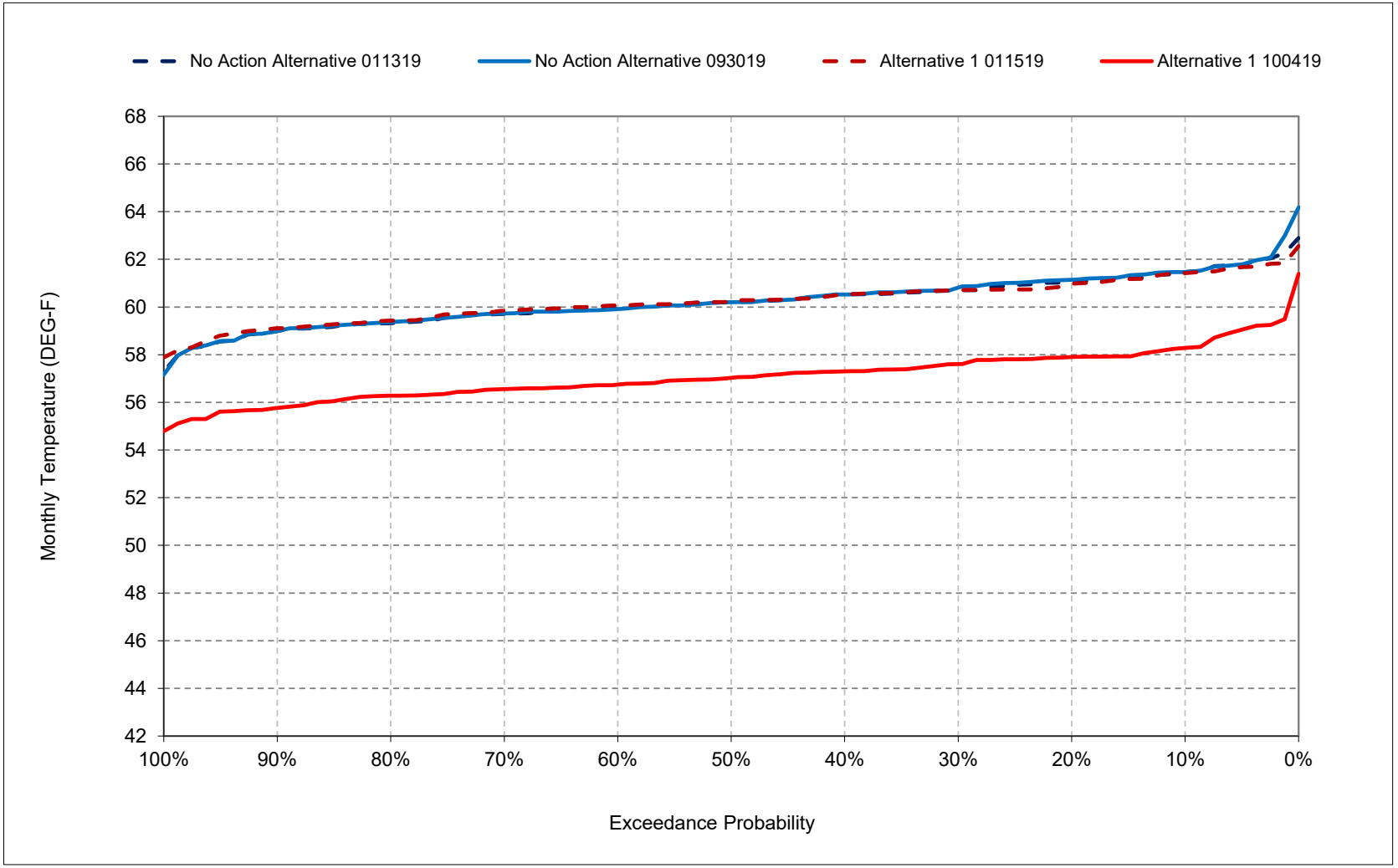

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-16. Clear Creek at Mouth, July**



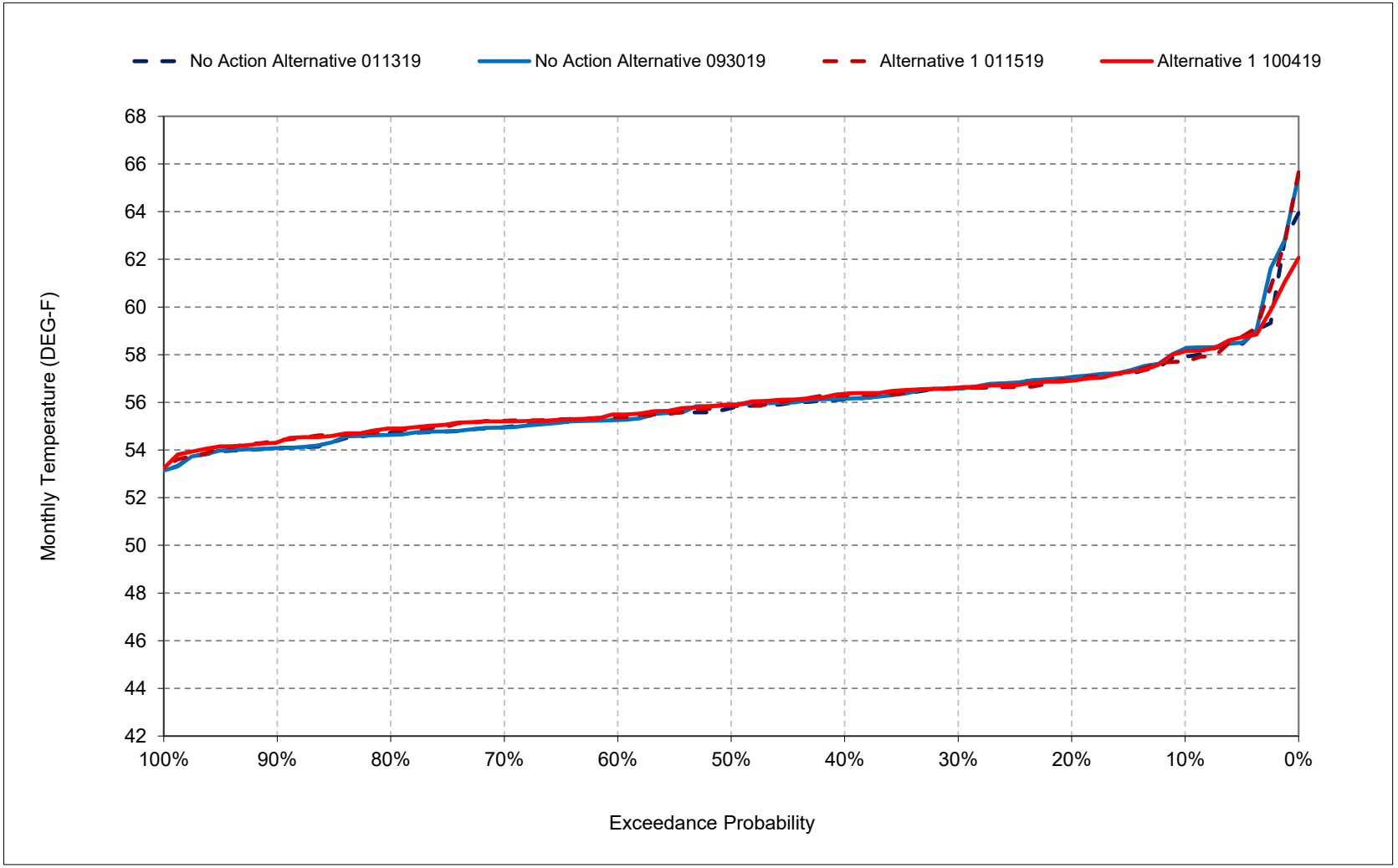

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-17. Clear Creek at Mouth, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-18. Clear Creek at Mouth, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-1. Sacramento River below Keswick, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.1 | 56.1 | 53.6 | 50.2 | 48.2 | 49.1 | 50.3 | 50.5 | 52.0 | 53.9 | 54.4 | 54.6 |
| 20% | 55.5 | 55.9 | 52.4 | 49.2 | 47.7 | 48.4 | 49.7 | 50.2 | 51.0 | 52.4 | 54.2 | 54.0 |
| 30% | 55.2 | 55.7 | 52.0 | 48.6 | 47.3 | 48.1 | 49.3 | 49.8 | 50.5 | 51.9 | 53.0 | 53.6 |
| 40% | 54.7 | 55.4 | 51.9 | 48.1 | 47.1 | 47.6 | 49.1 | 49.4 | 50.1 | 51.1 | 52.3 | 52.8 |
| 50% | 54.4 | 55.1 | 51.5 | 47.8 | 46.8 | 47.1 | 48.7 | 49.1 | 49.9 | 50.8 | 51.9 | 52.0 |
| 60% | 54.1 | 54.9 | 50.8 | 47.4 | 46.0 | 46.7 | 48.2 | 48.9 | 49.6 | 50.5 | 51.5 | 51.6 |
| 70% | 53.9 | 54.6 | 50.6 | 47.1 | 45.8 | 46.4 | 47.9 | 48.7 | 49.4 | 50.1 | 51.3 | 51.0 |
| 80% | 53.7 | 54.1 | 50.2 | 46.7 | 45.4 | 45.8 | 47.5 | 48.2 | 49.2 | 49.8 | 51.1 | 50.8 |
| 90% | 53.5 | 53.4 | 49.4 | 46.0 | 44.7 | 45.4 | 46.8 | 47.8 | 48.5 | 49.3 | 50.8 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 55.1 | 51.4 | 47.9 | 46.6 | 47.2 | 48.6 | 49.3 | 50.1 | 51.2 | 52.6 | 52.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.3 | 55.4 | 52.0 | 47.3 | 45.9 | 46.3 | 47.8 | 48.7 | 49.6 | 50.4 | 51.4 | 51.0 |
| Above Normal (16%) | 53.9 | 54.9 | 51.4 | 47.6 | 46.0 | 46.5 | 48.1 | 48.6 | 49.3 | 50.0 | 51.1 | 51.0 |
| Below Normal (13%) | 54.2 | 54.3 | 51.3 | 48.2 | 46.9 | 47.8 | 49.1 | 49.4 | 49.7 | 50.8 | 52.0 | 52.8 |
| Dry (24%) | 54.5 | 54.4 | 50.8 | 48.4 | 47.3 | 47.8 | 49.1 | 49.5 | 50.1 | 51.4 | 53.0 | 53.2 |
| Critical (15%) | 58.9 | 56.3 | 51.5 | 48.2 | 47.1 | 48.1 | 49.5 | 50.7 | 52.3 | 53.9 | 56.2 | 58.4 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.6 | 56.5 | 53.5 | 50.2 | 48.5 | 49.1 | 50.3 | 50.5 | 51.6 | 52.5 | 53.5 | 56.0 |
| 20% | 54.6 | 56.0 | 52.8 | 49.4 | 48.1 | 48.5 | 49.8 | 50.2 | 51.0 | 51.9 | 52.4 | 54.4 |
| 30% | 53.5 | 55.6 | 52.2 | 48.9 | 47.5 | 48.0 | 49.5 | 49.7 | 50.4 | 51.7 | 52.0 | 53.1 |
| 40% | 52.8 | 55.3 | 51.8 | 48.3 | 47.2 | 47.5 | 49.2 | 49.5 | 50.1 | 51.3 | 51.8 | 52.7 |
| 50% | 52.7 | 54.9 | 51.4 | 47.9 | 46.9 | 47.2 | 48.9 | 49.2 | 49.8 | 51.0 | 51.7 | 52.1 |
| 60% | 52.6 | 54.5 | 51.0 | 47.7 | 46.2 | 46.9 | 48.2 | 48.9 | 49.6 | 50.7 | 51.6 | 51.6 |
| 70% | 52.5 | 54.2 | 50.8 | 47.4 | 45.9 | 46.5 | 48.0 | 48.7 | 49.5 | 50.3 | 51.4 | 51.4 |
| 80% | 52.4 | 53.7 | 50.6 | 46.8 | 45.5 | 45.8 | 47.7 | 48.2 | 49.1 | 50.0 | 51.1 | 51.0 |
| 90% | 52.2 | 53.5 | 49.5 | 45.9 | 44.7 | 45.5 | 46.8 | 47.7 | 48.6 | 49.6 | 50.8 | 50.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 54.9 | 51.6 | 48.1 | 46.7 | 47.3 | 48.7 | 49.2 | 50.0 | 51.1 | 52.2 | 53.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.7 | 54.7 | 51.7 | 47.5 | 46.0 | 46.4 | 47.8 | 48.7 | 49.6 | 50.5 | 51.3 | 51.5 |
| Above Normal (16%) | 52.4 | 54.1 | 51.1 | 47.7 | 46.0 | 46.6 | 48.2 | 48.6 | 49.4 | 50.1 | 51.4 | 51.9 |
| Below Normal (13%) | 53.7 | 54.8 | 51.9 | 48.4 | 47.0 | 47.9 | 49.3 | 49.2 | 49.7 | 50.7 | 51.6 | 52.6 |
| Dry (24%) | 53.2 | 54.8 | 51.4 | 48.5 | 47.4 | 47.9 | 49.2 | 49.4 | 49.9 | 51.2 | 52.0 | 52.6 |
| Critical (15%) | 59.0 | 56.5 | 51.8 | 48.6 | 47.4 | 48.3 | 49.7 | 50.6 | 51.7 | 53.3 | 55.8 | 59.2 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.6** | **0.4** | -0.1 | 0.0 | **0.3** | **0.0** | **0.0** | **0.0** | -0.4 | -1.4 | -0.9 | **1.3** |
| 20% | -0.9 | **0.1** | **0.4** | **0.2** | **0.3** | **0.1** | **0.1** | 0.0 | 0.0 | -0.5 | -1.8 | **0.4** |
| 30% | -1.7 | -0.1 | **0.1** | **0.3** | **0.2** | -0.1 | **0.2** | -0.1 | 0.0 | -0.3 | -1.0 | -0.5 |
| 40% | -1.9 | -0.2 | -0.1 | **0.2** | **0.1** | -0.1 | **0.1** | **0.1** | **0.0** | **0.2** | -0.5 | -0.1 |
| 50% | -1.6 | -0.2 | -0.1 | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | -0.1 | **0.2** | -0.3 | **0.1** |
| 60% | -1.5 | -0.4 | **0.2** | **0.3** | **0.1** | **0.2** | **0.0** | 0.0 | **0.0** | **0.2** | **0.0** | **0.0** |
| 70% | -1.5 | -0.4 | **0.1** | **0.3** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.3** |
| 80% | -1.3 | -0.4 | **0.3** | **0.1** | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | **0.2** | **0.1** | **0.2** |
| 90% | -1.2 | **0.1** | **0.1** | -0.1 | 0.0 | **0.1** | **0.1** | -0.1 | **0.0** | **0.3** | **0.1** | **0.3** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1.1 | -0.1 | **0.1** | **0.2** | **0.1** | **0.1** | **0.1** | -0.1 | -0.1 | -0.1 | -0.4 | **0.2** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.5 | -0.7 | -0.2 | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | **0.1** | **0.1** | -0.1 | **0.5** |
| Above Normal (16%) | -1.5 | -0.8 | -0.3 | **0.0** | **0.1** | **0.1** | **0.1** | **0.0** | **0.1** | **0.1** | **0.2** | **0.9** |
| Below Normal (13%) | -0.5 | **0.5** | **0.6** | **0.1** | **0.1** | **0.1** | **0.2** | -0.3 | **0.0** | -0.1 | -0.4 | -0.2 |
| Dry (24%) | -1.3 | **0.4** | **0.6** | **0.1** | **0.2** | **0.0** | **0.1** | 0.0 | -0.1 | -0.1 | -1.0 | -0.6 |
| Critical (15%) | **0.1** | **0.2** | **0.3** | **0.5** | **0.4** | **0.2** | **0.2** | -0.2 | -0.5 | -0.6 | -0.5 | **0.8** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-2. Sacramento River below Keswick, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.8 | 56.0 | 53.6 | 50.2 | 48.2 | 48.9 | 50.3 | 50.4 | 52.0 | 53.9 | 54.6 | 54.9 |
| 20% | 55.5 | 55.9 | 52.4 | 49.1 | 47.7 | 48.4 | 49.7 | 50.1 | 50.9 | 52.5 | 54.1 | 54.0 |
| 30% | 55.2 | 55.7 | 52.1 | 48.6 | 47.3 | 48.1 | 49.3 | 49.7 | 50.5 | 52.0 | 53.1 | 53.6 |
| 40% | 54.7 | 55.5 | 51.9 | 48.0 | 47.1 | 47.5 | 49.1 | 49.3 | 50.1 | 51.1 | 52.2 | 52.8 |
| 50% | 54.4 | 55.2 | 51.5 | 47.8 | 46.8 | 47.1 | 48.7 | 49.1 | 49.8 | 50.8 | 51.9 | 51.9 |
| 60% | 54.1 | 55.0 | 50.9 | 47.4 | 46.0 | 46.7 | 48.2 | 48.9 | 49.6 | 50.4 | 51.6 | 51.6 |
| 70% | 53.9 | 54.7 | 50.6 | 47.1 | 45.8 | 46.4 | 47.9 | 48.6 | 49.4 | 50.1 | 51.3 | 51.1 |
| 80% | 53.7 | 54.2 | 50.3 | 46.7 | 45.4 | 45.7 | 47.4 | 48.2 | 49.1 | 49.8 | 51.1 | 50.8 |
| 90% | 53.5 | 53.6 | 49.4 | 46.0 | 44.7 | 45.4 | 46.7 | 47.6 | 48.5 | 49.3 | 50.7 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 55.1 | 51.4 | 47.9 | 46.5 | 47.1 | 48.6 | 49.2 | 50.0 | 51.2 | 52.6 | 52.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.3 | 55.4 | 52.0 | 47.3 | 45.9 | 46.3 | 47.8 | 48.7 | 49.6 | 50.4 | 51.4 | 51.0 |
| Above Normal (16%) | 53.9 | 54.9 | 51.4 | 47.6 | 45.9 | 46.5 | 48.1 | 48.6 | 49.2 | 49.9 | 51.2 | 51.0 |
| Below Normal (13%) | 54.2 | 54.4 | 51.4 | 48.2 | 46.9 | 47.8 | 49.1 | 49.4 | 49.7 | 50.8 | 52.0 | 52.8 |
| Dry (24%) | 54.5 | 54.5 | 50.8 | 48.4 | 47.2 | 47.8 | 49.0 | 49.4 | 50.0 | 51.4 | 53.0 | 53.3 |
| Critical (15%) | 59.2 | 56.4 | 51.4 | 48.2 | 47.0 | 48.0 | 49.5 | 50.6 | 52.3 | 54.1 | 56.6 | 58.9 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.7 | 56.3 | 53.6 | 50.1 | 48.5 | 49.1 | 50.4 | 50.6 | 51.8 | 52.4 | 53.7 | 56.1 |
| 20% | 54.5 | 56.0 | 52.8 | 49.3 | 48.0 | 48.5 | 49.8 | 50.1 | 51.0 | 52.1 | 52.6 | 54.2 |
| 30% | 53.5 | 55.7 | 52.2 | 48.9 | 47.5 | 48.0 | 49.5 | 49.7 | 50.4 | 51.8 | 52.1 | 53.1 |
| 40% | 53.0 | 55.3 | 51.8 | 48.4 | 47.3 | 47.7 | 49.2 | 49.4 | 50.2 | 51.3 | 51.8 | 52.5 |
| 50% | 52.8 | 54.9 | 51.3 | 47.9 | 46.9 | 47.1 | 48.8 | 49.1 | 49.8 | 51.0 | 51.7 | 52.0 |
| 60% | 52.6 | 54.5 | 51.0 | 47.6 | 46.2 | 46.8 | 48.1 | 48.9 | 49.6 | 50.6 | 51.6 | 51.6 |
| 70% | 52.5 | 54.2 | 50.8 | 47.3 | 45.8 | 46.3 | 47.9 | 48.7 | 49.4 | 50.3 | 51.3 | 51.1 |
| 80% | 52.4 | 54.0 | 50.4 | 46.8 | 45.5 | 45.8 | 47.3 | 48.2 | 49.1 | 50.0 | 51.2 | 50.7 |
| 90% | 52.2 | 53.6 | 49.6 | 46.1 | 44.7 | 45.5 | 46.6 | 47.7 | 48.6 | 49.6 | 50.8 | 50.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 55.0 | 51.6 | 48.0 | 46.7 | 47.2 | 48.6 | 49.2 | 50.0 | 51.1 | 52.2 | 53.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.8 | 54.8 | 51.8 | 47.5 | 46.0 | 46.3 | 47.8 | 48.7 | 49.6 | 50.5 | 51.3 | 51.5 |
| Above Normal (16%) | 52.8 | 54.7 | 51.4 | 47.7 | 46.0 | 46.5 | 48.1 | 48.7 | 49.3 | 50.1 | 51.4 | 51.2 |
| Below Normal (13%) | 53.2 | 54.6 | 51.7 | 48.3 | 47.0 | 47.9 | 49.2 | 49.2 | 49.7 | 50.8 | 51.7 | 52.6 |
| Dry (24%) | 53.2 | 54.7 | 51.3 | 48.5 | 47.4 | 47.9 | 49.2 | 49.4 | 50.1 | 51.3 | 52.0 | 52.6 |
| Critical (15%) | 59.1 | 56.5 | 51.8 | 48.6 | 47.4 | 48.3 | 49.6 | 50.7 | 51.7 | 53.4 | 56.0 | 59.3 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.1 | 0.3 | 0.0 | -0.1 | 0.3 | 0.2 | 0.0 | 0.2 | -0.2 | -1.4 | -0.9 | 1.1 |
| 20% | -0.9 | 0.1 | 0.4 | 0.2 | 0.3 | 0.1 | 0.1 | 0.0 | 0.1 | -0.3 | -1.5 | 0.2 |
| 30% | -1.7 | 0.0 | 0.1 | 0.2 | 0.1 | -0.1 | 0.2 | 0.0 | 0.0 | -0.1 | -1.0 | -0.5 |
| 40% | -1.7 | -0.2 | -0.1 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | -0.4 | -0.2 |
| 50% | -1.6 | -0.3 | -0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | -0.2 | 0.1 |
| 60% | -1.5 | -0.4 | 0.2 | 0.2 | 0.1 | 0.1 | -0.1 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 |
| 70% | -1.4 | -0.5 | 0.2 | 0.2 | 0.0 | -0.1 | 0.0 | 0.1 | 0.1 | 0.3 | 0.0 | 0.0 |
| 80% | -1.3 | -0.2 | 0.1 | 0.0 | 0.1 | 0.1 | -0.1 | 0.0 | 0.0 | 0.3 | 0.1 | -0.1 |
| 90% | -1.3 | 0.0 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.3 | 0.1 | 0.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1.1 | -0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -0.1 | -0.4 | 0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.5 | -0.6 | -0.2 | 0.1 | 0.1 | 0.0 | -0.1 | 0.0 | 0.0 | 0.1 | -0.1 | 0.5 |
| Above Normal (16%) | -1.2 | -0.2 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 |
| Below Normal (13%) | -1.0 | 0.3 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | -0.2 | 0.0 | 0.0 | -0.3 | -0.3 |
| Dry (24%) | -1.4 | 0.2 | 0.4 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -1.0 | -0.7 |
| Critical (15%) | -0.1 | 0.1 | 0.3 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | -0.6 | -0.7 | -0.6 | 0.5 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-3. Sacramento River below Keswick, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.1 | 56.1 | 53.6 | 50.2 | 48.2 | 49.1 | 50.3 | 50.5 | 52.0 | 53.9 | 54.4 | 54.6 |
| 20% | 55.5 | 55.9 | 52.4 | 49.2 | 47.7 | 48.4 | 49.7 | 50.2 | 51.0 | 52.4 | 54.2 | 54.0 |
| 30% | 55.2 | 55.7 | 52.0 | 48.6 | 47.3 | 48.1 | 49.3 | 49.8 | 50.5 | 51.9 | 53.0 | 53.6 |
| 40% | 54.7 | 55.4 | 51.9 | 48.1 | 47.1 | 47.6 | 49.1 | 49.4 | 50.1 | 51.1 | 52.3 | 52.8 |
| 50% | 54.4 | 55.1 | 51.5 | 47.8 | 46.8 | 47.1 | 48.7 | 49.1 | 49.9 | 50.8 | 51.9 | 52.0 |
| 60% | 54.1 | 54.9 | 50.8 | 47.4 | 46.0 | 46.7 | 48.2 | 48.9 | 49.6 | 50.5 | 51.5 | 51.6 |
| 70% | 53.9 | 54.6 | 50.6 | 47.1 | 45.8 | 46.4 | 47.9 | 48.7 | 49.4 | 50.1 | 51.3 | 51.0 |
| 80% | 53.7 | 54.1 | 50.2 | 46.7 | 45.4 | 45.8 | 47.5 | 48.2 | 49.2 | 49.8 | 51.1 | 50.8 |
| 90% | 53.5 | 53.4 | 49.4 | 46.0 | 44.7 | 45.4 | 46.8 | 47.8 | 48.5 | 49.3 | 50.8 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 55.1 | 51.4 | 47.9 | 46.6 | 47.2 | 48.6 | 49.3 | 50.1 | 51.2 | 52.6 | 52.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.3 | 55.4 | 52.0 | 47.3 | 45.9 | 46.3 | 47.8 | 48.7 | 49.6 | 50.4 | 51.4 | 51.0 |
| Above Normal (16%) | 53.9 | 54.9 | 51.4 | 47.6 | 46.0 | 46.5 | 48.1 | 48.6 | 49.3 | 50.0 | 51.1 | 51.0 |
| Below Normal (13%) | 54.2 | 54.3 | 51.3 | 48.2 | 46.9 | 47.8 | 49.1 | 49.4 | 49.7 | 50.8 | 52.0 | 52.8 |
| Dry (24%) | 54.5 | 54.4 | 50.8 | 48.4 | 47.3 | 47.8 | 49.1 | 49.5 | 50.1 | 51.4 | 53.0 | 53.2 |
| Critical (15%) | 58.9 | 56.3 | 51.5 | 48.2 | 47.1 | 48.1 | 49.5 | 50.7 | 52.3 | 53.9 | 56.2 | 58.4 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.8 | 56.0 | 53.6 | 50.2 | 48.2 | 48.9 | 50.3 | 50.4 | 52.0 | 53.9 | 54.6 | 54.9 |
| 20% | 55.5 | 55.9 | 52.4 | 49.1 | 47.7 | 48.4 | 49.7 | 50.1 | 50.9 | 52.5 | 54.1 | 54.0 |
| 30% | 55.2 | 55.7 | 52.1 | 48.6 | 47.3 | 48.1 | 49.3 | 49.7 | 50.5 | 52.0 | 53.1 | 53.6 |
| 40% | 54.7 | 55.5 | 51.9 | 48.0 | 47.1 | 47.5 | 49.1 | 49.3 | 50.1 | 51.1 | 52.2 | 52.8 |
| 50% | 54.4 | 55.2 | 51.5 | 47.8 | 46.8 | 47.1 | 48.7 | 49.1 | 49.8 | 50.8 | 51.9 | 51.9 |
| 60% | 54.1 | 55.0 | 50.9 | 47.4 | 46.0 | 46.7 | 48.2 | 48.9 | 49.6 | 50.4 | 51.6 | 51.6 |
| 70% | 53.9 | 54.7 | 50.6 | 47.1 | 45.8 | 46.4 | 47.9 | 48.6 | 49.4 | 50.1 | 51.3 | 51.1 |
| 80% | 53.7 | 54.2 | 50.3 | 46.7 | 45.4 | 45.7 | 47.4 | 48.2 | 49.1 | 49.8 | 51.1 | 50.8 |
| 90% | 53.5 | 53.6 | 49.4 | 46.0 | 44.7 | 45.4 | 46.7 | 47.6 | 48.5 | 49.3 | 50.7 | 50.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 55.1 | 51.4 | 47.9 | 46.5 | 47.1 | 48.6 | 49.2 | 50.0 | 51.2 | 52.6 | 52.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.3 | 55.4 | 52.0 | 47.3 | 45.9 | 46.3 | 47.8 | 48.7 | 49.6 | 50.4 | 51.4 | 51.0 |
| Above Normal (16%) | 53.9 | 54.9 | 51.4 | 47.6 | 45.9 | 46.5 | 48.1 | 48.6 | 49.2 | 49.9 | 51.2 | 51.0 |
| Below Normal (13%) | 54.2 | 54.4 | 51.4 | 48.2 | 46.9 | 47.8 | 49.1 | 49.4 | 49.7 | 50.8 | 52.0 | 52.8 |
| Dry (24%) | 54.5 | 54.5 | 50.8 | 48.4 | 47.2 | 47.8 | 49.0 | 49.4 | 50.0 | 51.4 | 53.0 | 53.3 |
| Critical (15%) | 59.2 | 56.4 | 51.4 | 48.2 | 47.0 | 48.0 | 49.5 | 50.6 | 52.3 | 54.1 | 56.6 | 58.9 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.8** | -0.1 | **0.1** | **0.1** | 0.0 | -0.2 | **0.0** | 0.0 | **0.1** | 0.0 | **0.1** | **0.3** |
| 20% | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | **0.1** | -0.1 | **0.0** |
| 30% | 0.0 | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 |
| 40% | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | -0.1 | 0.0 | **0.1** | 0.0 | 0.0 |
| 50% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | -0.1 |
| 60% | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 |
| 70% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** |
| 80% | **0.0** | **0.0** | **0.1** | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.0** |
| 90% | **0.1** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | -0.2 | 0.0 | **0.0** | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | **0.0** | 0.0 |
| Below Normal (13%) | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 |
| Dry (24%) | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | **0.0** | **0.0** | **0.0** |
| Critical (15%) | **0.3** | **0.1** | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** | -0.2 | **0.0** | **0.2** | **0.3** | **0.5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-4. Sacramento River below Keswick, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.6 | 56.5 | 53.5 | 50.2 | 48.5 | 49.1 | 50.3 | 50.5 | 51.6 | 52.5 | 53.5 | 56.0 |
| 20% | 54.6 | 56.0 | 52.8 | 49.4 | 48.1 | 48.5 | 49.8 | 50.2 | 51.0 | 51.9 | 52.4 | 54.4 |
| 30% | 53.5 | 55.6 | 52.2 | 48.9 | 47.5 | 48.0 | 49.5 | 49.7 | 50.4 | 51.7 | 52.0 | 53.1 |
| 40% | 52.8 | 55.3 | 51.8 | 48.3 | 47.2 | 47.5 | 49.2 | 49.5 | 50.1 | 51.3 | 51.8 | 52.7 |
| 50% | 52.7 | 54.9 | 51.4 | 47.9 | 46.9 | 47.2 | 48.9 | 49.2 | 49.8 | 51.0 | 51.7 | 52.1 |
| 60% | 52.6 | 54.5 | 51.0 | 47.7 | 46.2 | 46.9 | 48.2 | 48.9 | 49.6 | 50.7 | 51.6 | 51.6 |
| 70% | 52.5 | 54.2 | 50.8 | 47.4 | 45.9 | 46.5 | 48.0 | 48.7 | 49.5 | 50.3 | 51.4 | 51.4 |
| 80% | 52.4 | 53.7 | 50.6 | 46.8 | 45.5 | 45.8 | 47.7 | 48.2 | 49.1 | 50.0 | 51.1 | 51.0 |
| 90% | 52.2 | 53.5 | 49.5 | 45.9 | 44.7 | 45.5 | 46.8 | 47.7 | 48.6 | 49.6 | 50.8 | 50.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 54.9 | 51.6 | 48.1 | 46.7 | 47.3 | 48.7 | 49.2 | 50.0 | 51.1 | 52.2 | 53.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.7 | 54.7 | 51.7 | 47.5 | 46.0 | 46.4 | 47.8 | 48.7 | 49.6 | 50.5 | 51.3 | 51.5 |
| Above Normal (16%) | 52.4 | 54.1 | 51.1 | 47.7 | 46.0 | 46.6 | 48.2 | 48.6 | 49.4 | 50.1 | 51.4 | 51.9 |
| Below Normal (13%) | 53.7 | 54.8 | 51.9 | 48.4 | 47.0 | 47.9 | 49.3 | 49.2 | 49.7 | 50.7 | 51.6 | 52.6 |
| Dry (24%) | 53.2 | 54.8 | 51.4 | 48.5 | 47.4 | 47.9 | 49.2 | 49.4 | 49.9 | 51.2 | 52.0 | 52.6 |
| Critical (15%) | 59.0 | 56.5 | 51.8 | 48.6 | 47.4 | 48.3 | 49.7 | 50.6 | 51.7 | 53.3 | 55.8 | 59.2 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.7 | 56.3 | 53.6 | 50.1 | 48.5 | 49.1 | 50.4 | 50.6 | 51.8 | 52.4 | 53.7 | 56.1 |
| 20% | 54.5 | 56.0 | 52.8 | 49.3 | 48.0 | 48.5 | 49.8 | 50.1 | 51.0 | 52.1 | 52.6 | 54.2 |
| 30% | 53.5 | 55.7 | 52.2 | 48.9 | 47.5 | 48.0 | 49.5 | 49.7 | 50.4 | 51.8 | 52.1 | 53.1 |
| 40% | 53.0 | 55.3 | 51.8 | 48.4 | 47.3 | 47.7 | 49.2 | 49.4 | 50.2 | 51.3 | 51.8 | 52.5 |
| 50% | 52.8 | 54.9 | 51.3 | 47.9 | 46.9 | 47.1 | 48.8 | 49.1 | 49.8 | 51.0 | 51.7 | 52.0 |
| 60% | 52.6 | 54.5 | 51.0 | 47.6 | 46.2 | 46.8 | 48.1 | 48.9 | 49.6 | 50.6 | 51.6 | 51.6 |
| 70% | 52.5 | 54.2 | 50.8 | 47.3 | 45.8 | 46.3 | 47.9 | 48.7 | 49.4 | 50.3 | 51.3 | 51.1 |
| 80% | 52.4 | 54.0 | 50.4 | 46.8 | 45.5 | 45.8 | 47.3 | 48.2 | 49.1 | 50.0 | 51.2 | 50.7 |
| 90% | 52.2 | 53.6 | 49.6 | 46.1 | 44.7 | 45.5 | 46.6 | 47.7 | 48.6 | 49.6 | 50.8 | 50.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.9 | 55.0 | 51.6 | 48.0 | 46.7 | 47.2 | 48.6 | 49.2 | 50.0 | 51.1 | 52.2 | 53.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 52.8 | 54.8 | 51.8 | 47.5 | 46.0 | 46.3 | 47.8 | 48.7 | 49.6 | 50.5 | 51.3 | 51.5 |
| Above Normal (16%) | 52.8 | 54.7 | 51.4 | 47.7 | 46.0 | 46.5 | 48.1 | 48.7 | 49.3 | 50.1 | 51.4 | 51.2 |
| Below Normal (13%) | 53.2 | 54.6 | 51.7 | 48.3 | 47.0 | 47.9 | 49.2 | 49.2 | 49.7 | 50.8 | 51.7 | 52.6 |
| Dry (24%) | 53.2 | 54.7 | 51.3 | 48.5 | 47.4 | 47.9 | 49.2 | 49.4 | 50.1 | 51.3 | 52.0 | 52.6 |
| Critical (15%) | 59.1 | 56.5 | 51.8 | 48.6 | 47.4 | 48.3 | 49.6 | 50.7 | 51.7 | 53.4 | 56.0 | 59.3 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.1 | -0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.0 | 0.1 | 0.1 |
| 20% | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | -0.2 |
| 30% | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 |
| 40% | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | -0.2 |
| 50% | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 |
| 60% | 0.1 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | -0.2 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 |
| 70% | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | 0.0 | -0.1 | 0.0 | -0.1 | -0.3 |
| 80% | 0.0 | 0.2 | -0.2 | 0.0 | 0.0 | 0.0 | -0.3 | 0.0 | 0.0 | 0.0 | 0.0 | -0.3 |
| 90% | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | -0.2 | 0.0 | 0.1 | -0.1 | 0.0 | -0.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.1 | 0.1 | -0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.3 | 0.6 | 0.3 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | -0.7 |
| Below Normal (13%) | -0.5 | -0.2 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.1 | 0.1 | 0.0 |
| Dry (24%) | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 |
| Critical (15%) | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.1 |

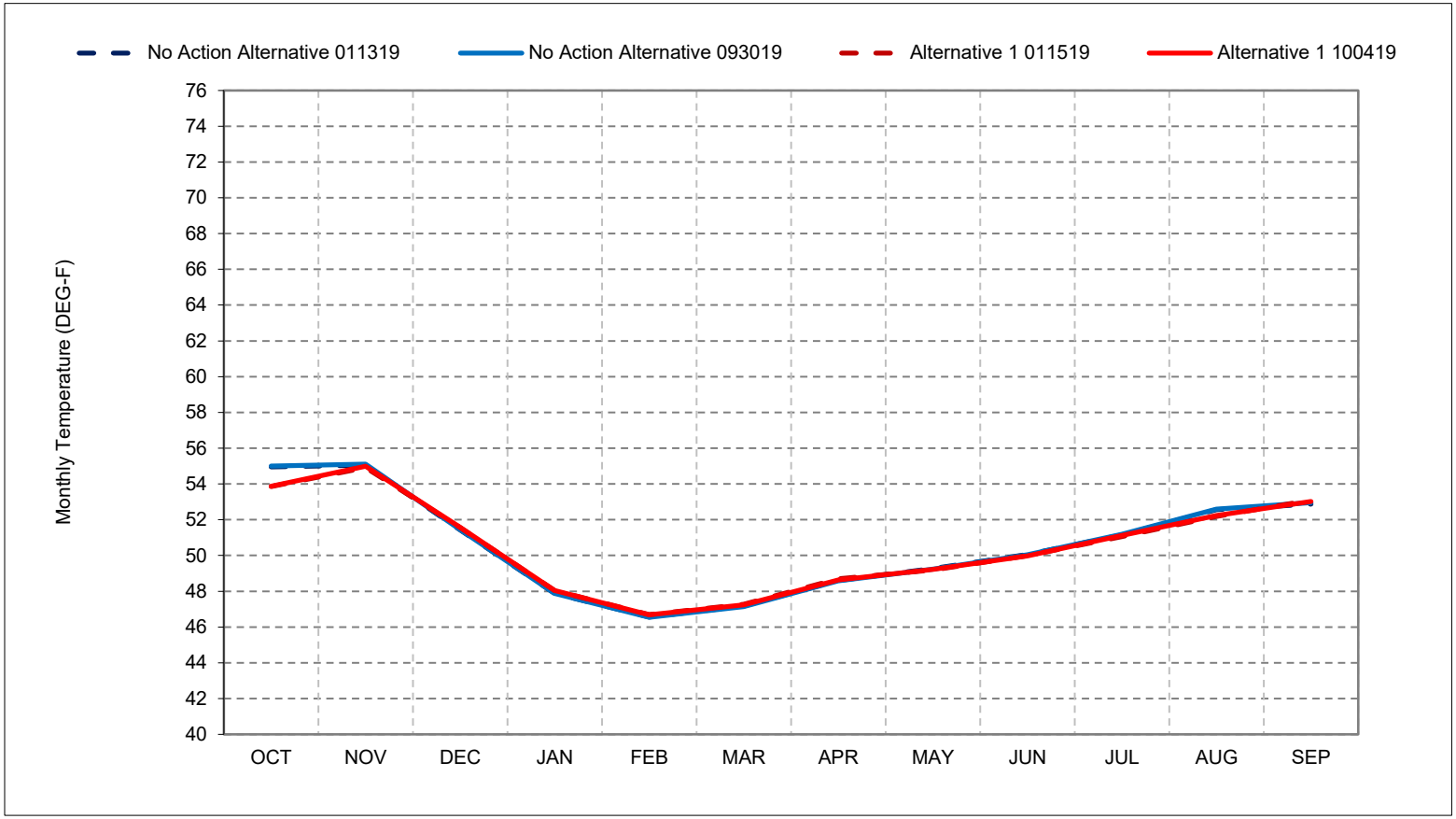
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-1. Sacramento River below Keswick, Long-Term Average Temperature

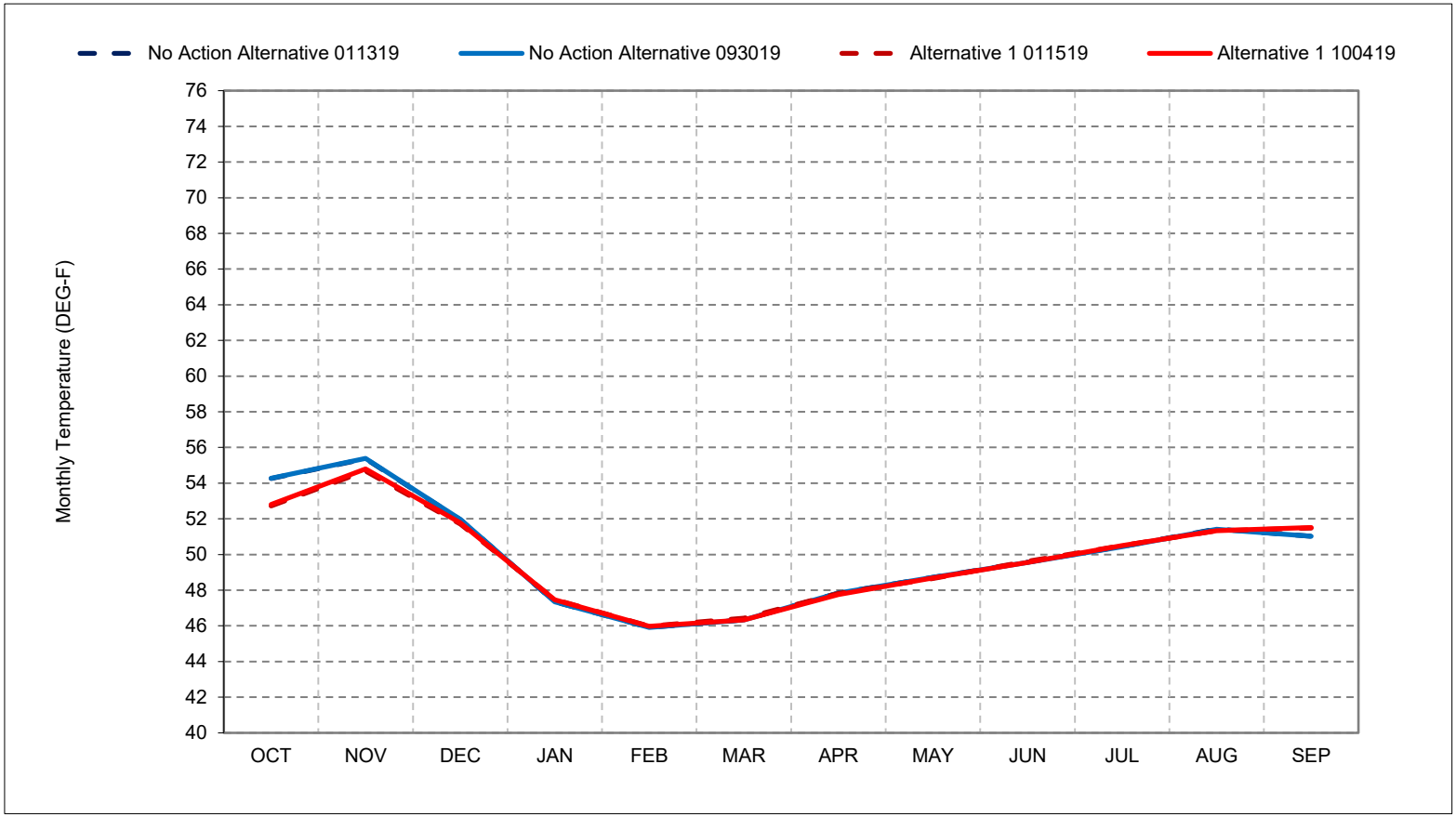



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-2. Sacramento River below Keswick, Wet Year Average Temperature

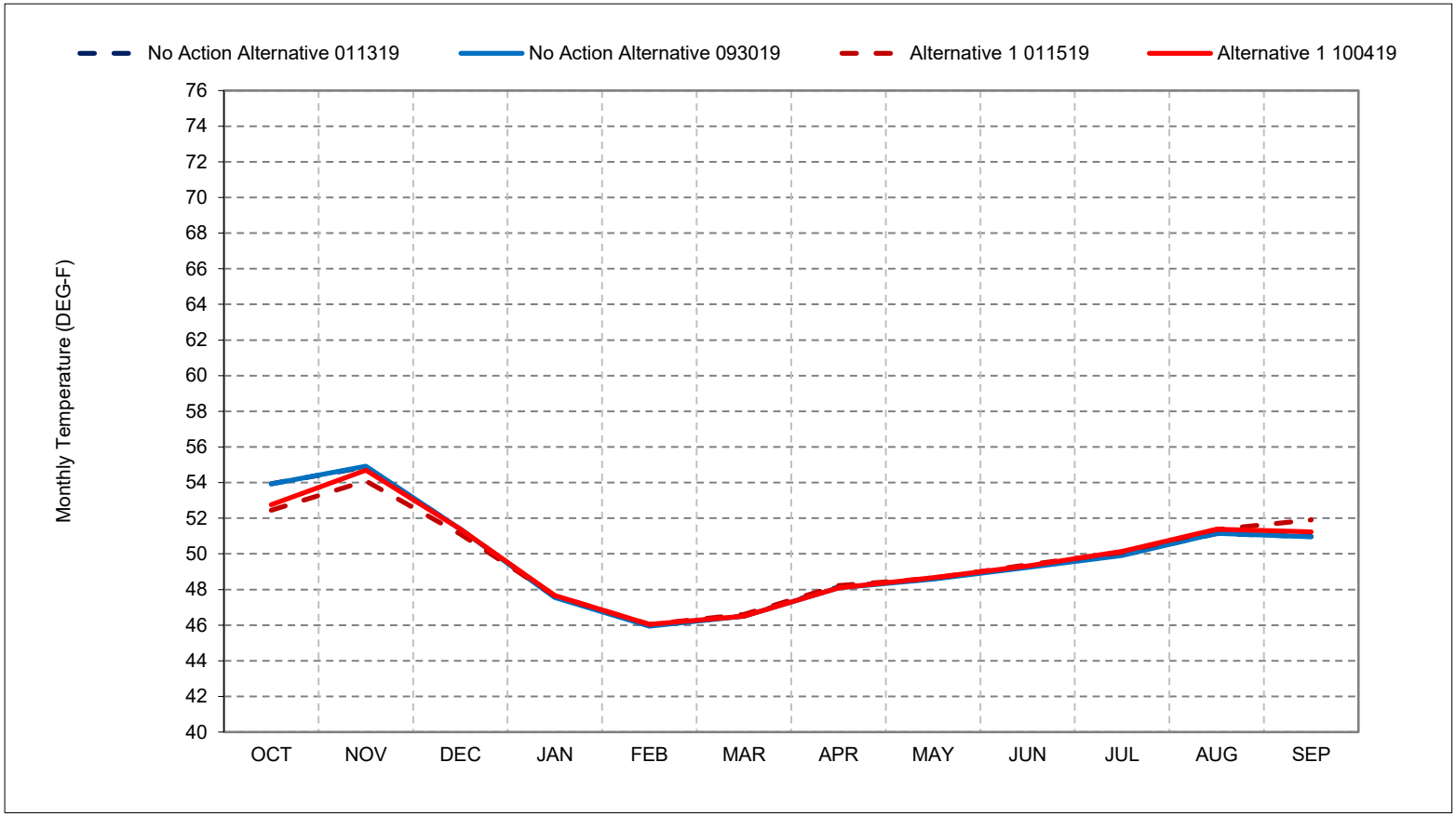



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-3. Sacramento River below Keswick, Above Normal Year Average Temperature

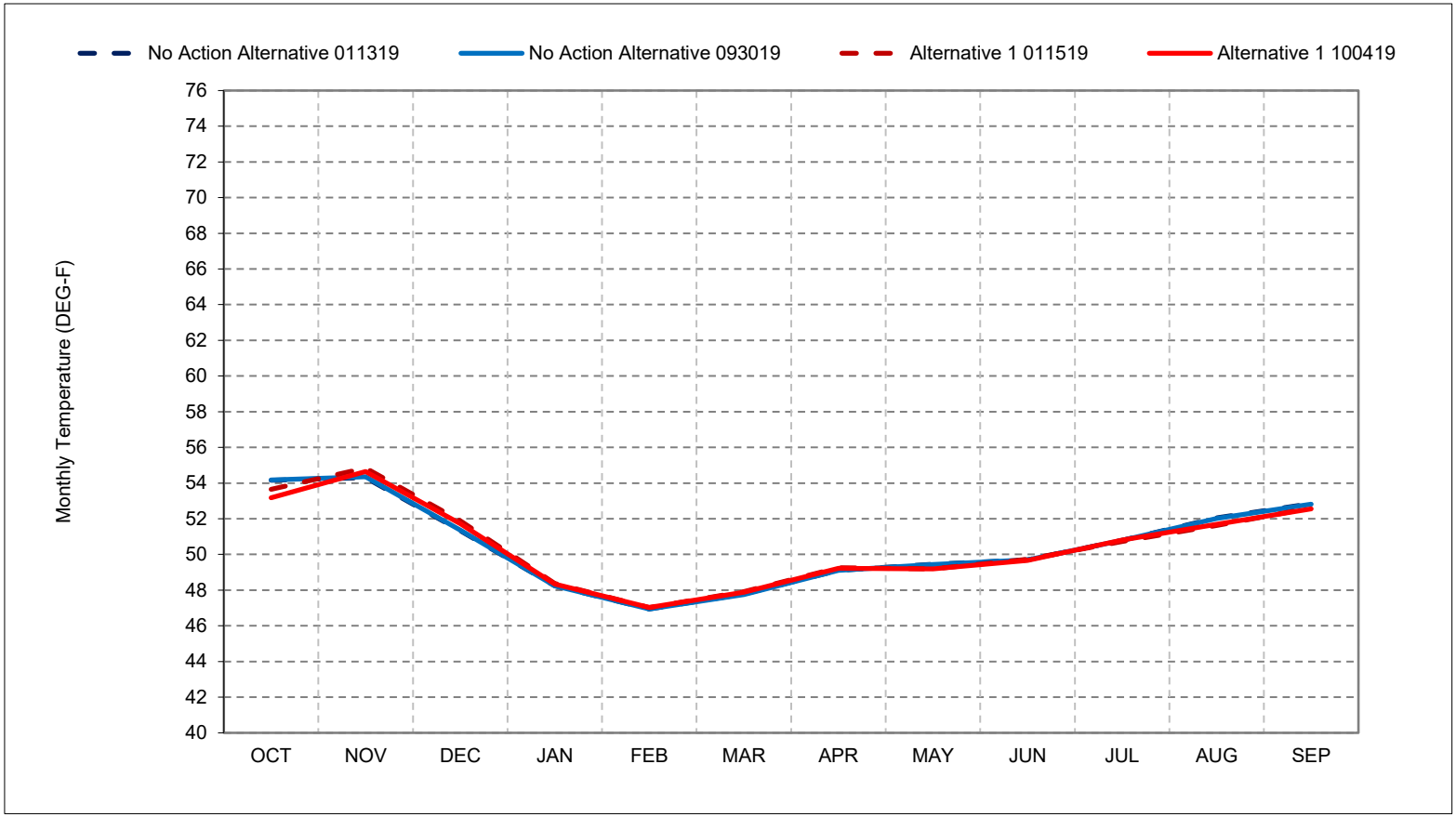



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-4. Sacramento River below Keswick, Below Normal Year Average Temperature

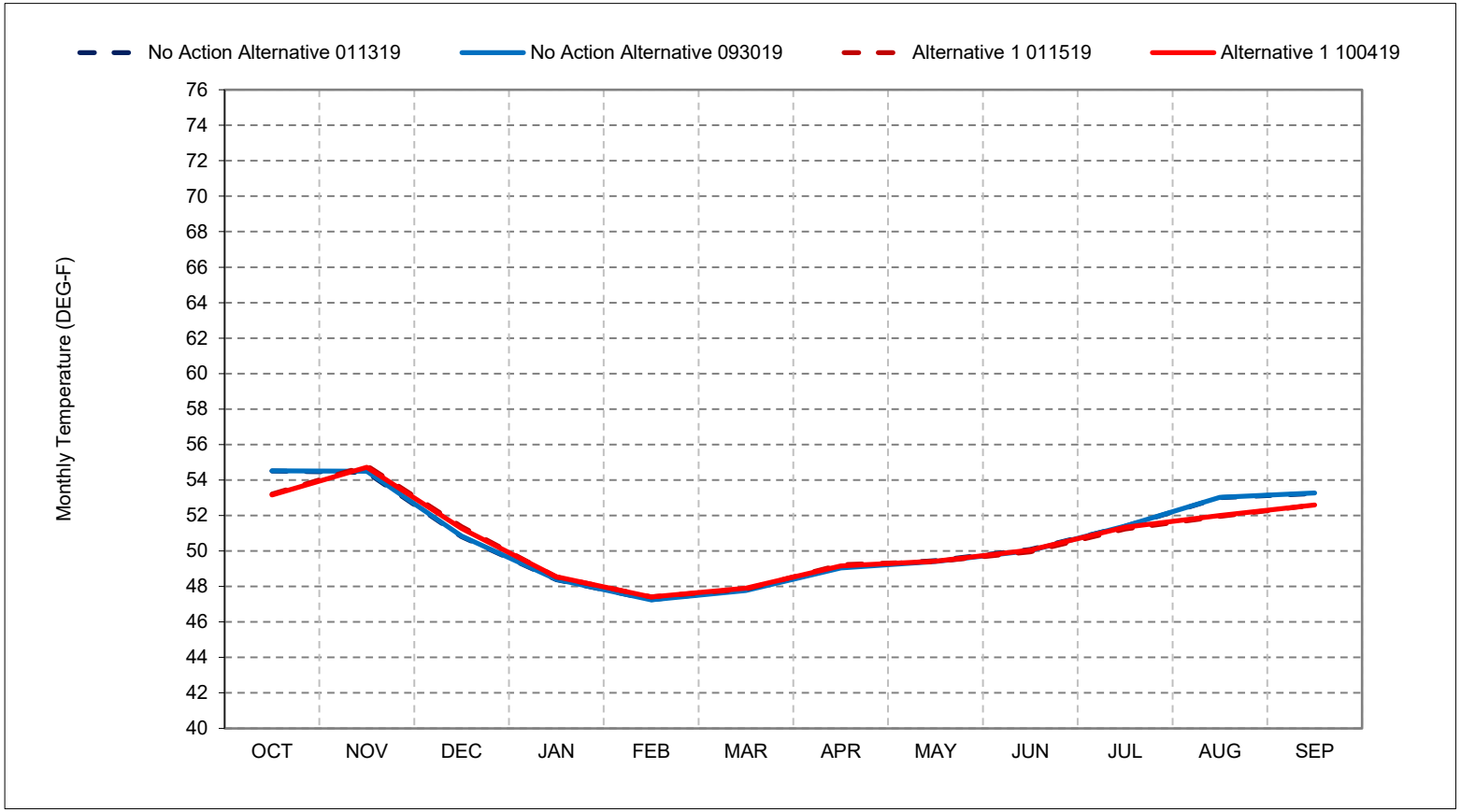



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-5. Sacramento River below Keswick, Dry Year Average Temperature

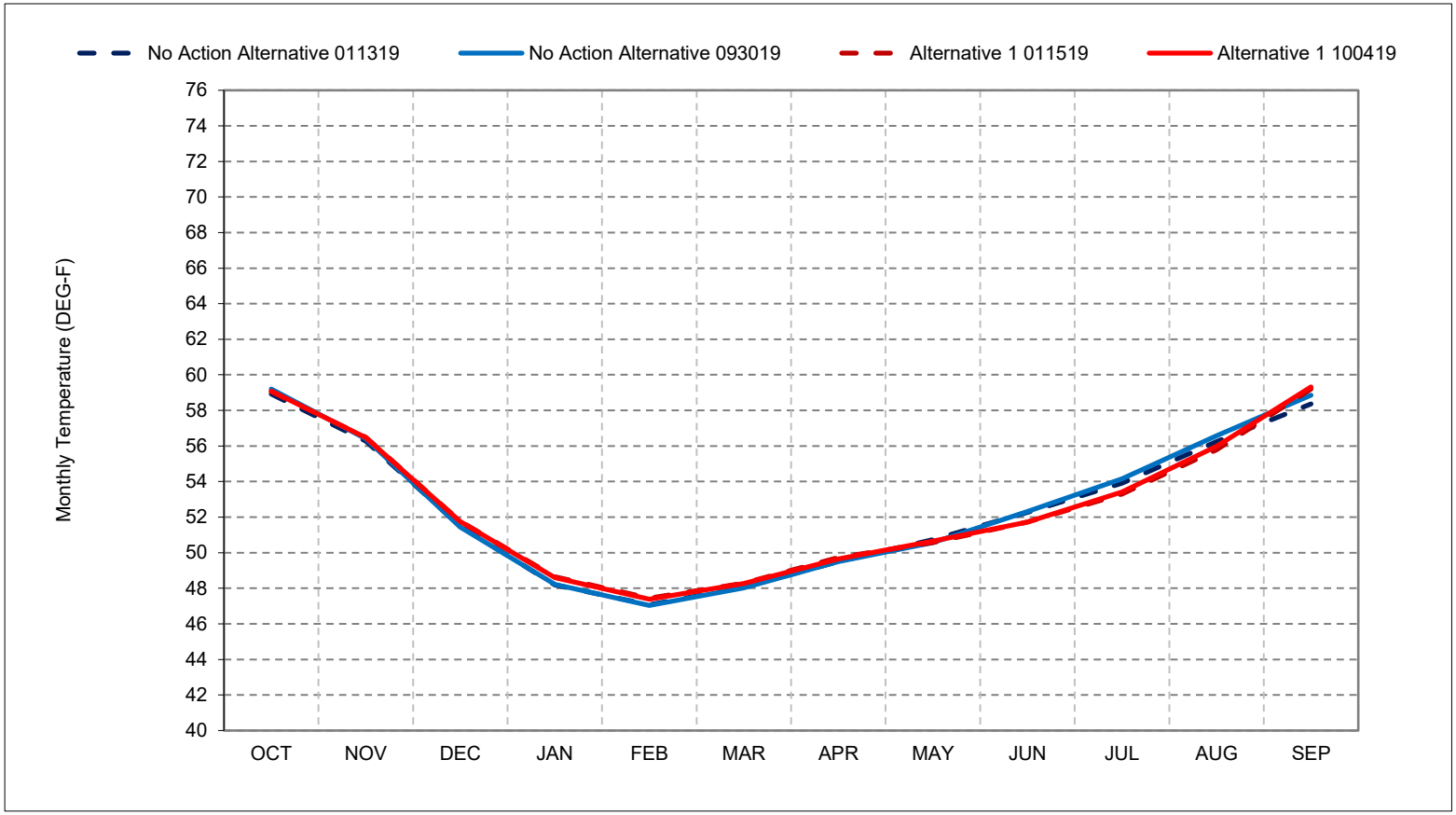



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-6. Sacramento River below Keswick, Critical Year Average Temperature

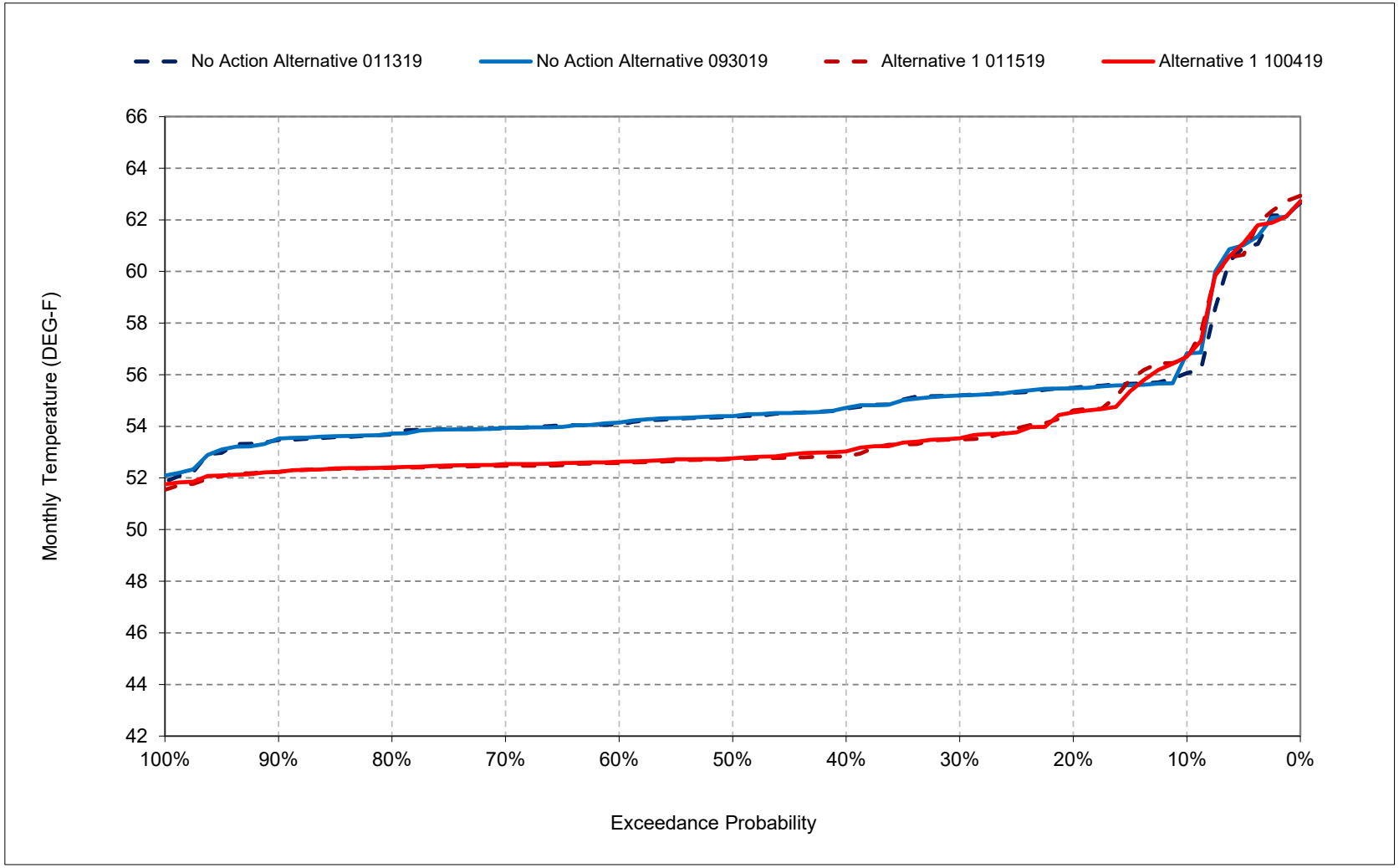



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

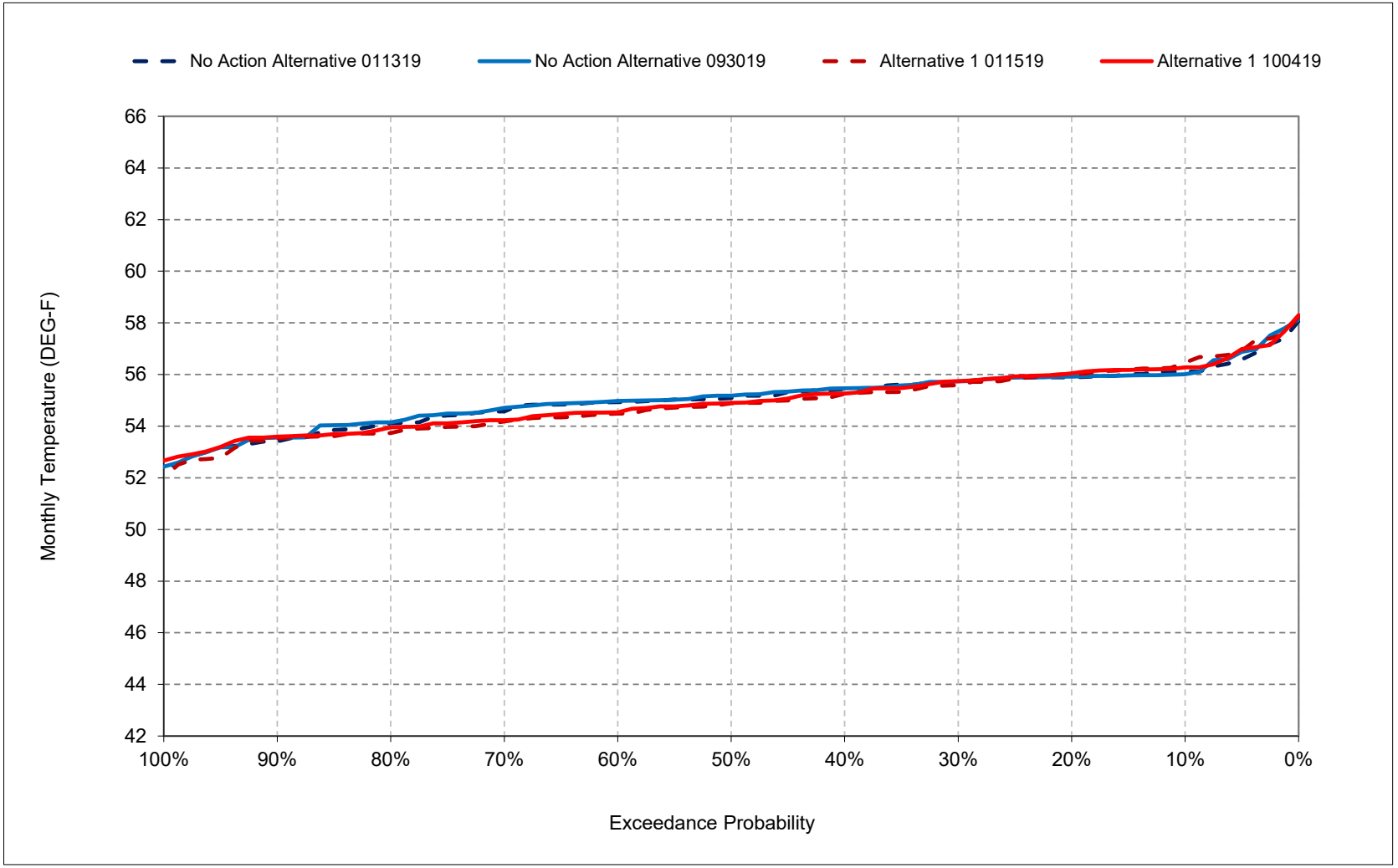
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-7. Sacramento River below Keswick, October**



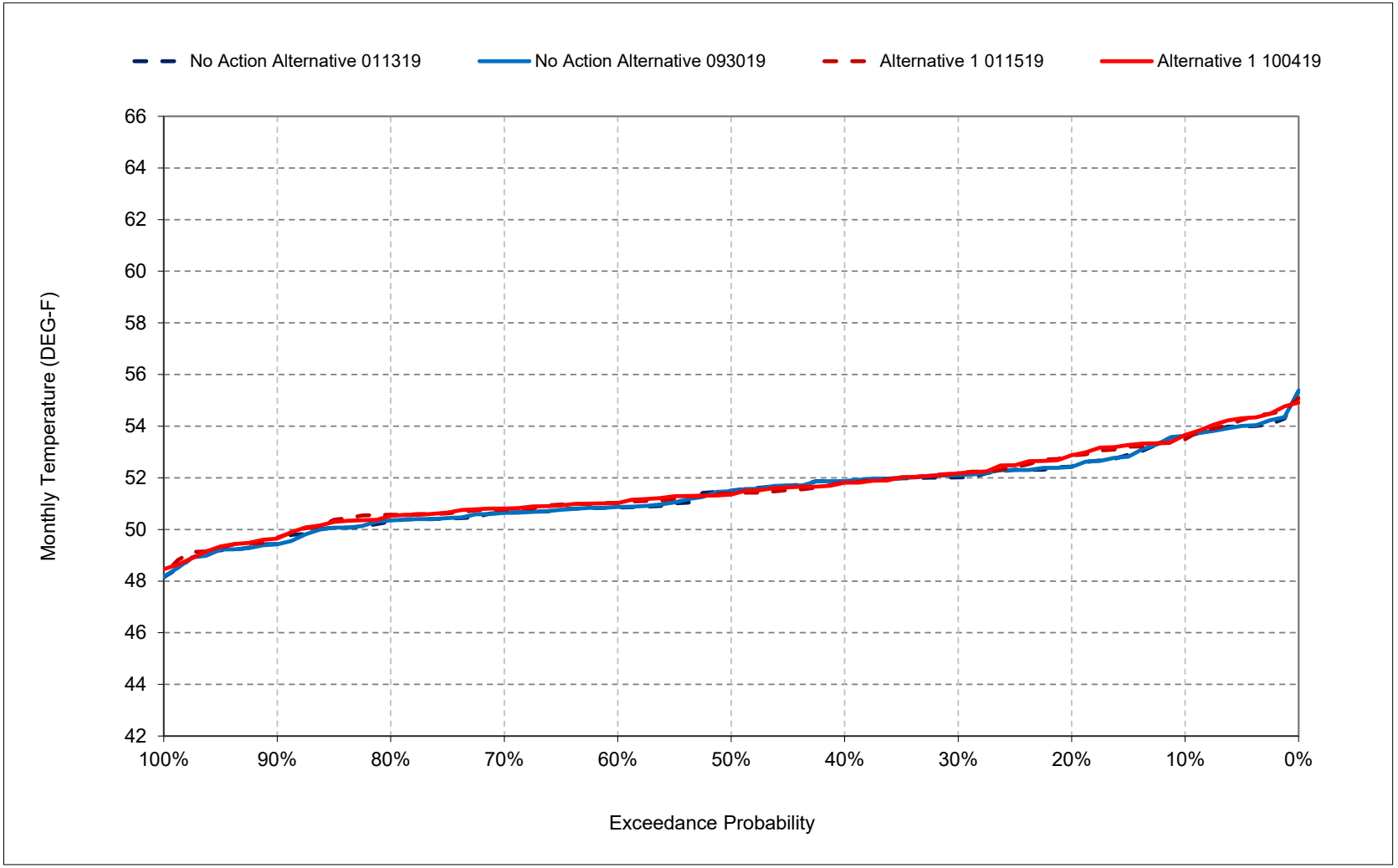

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-8. Sacramento River below Keswick, November**



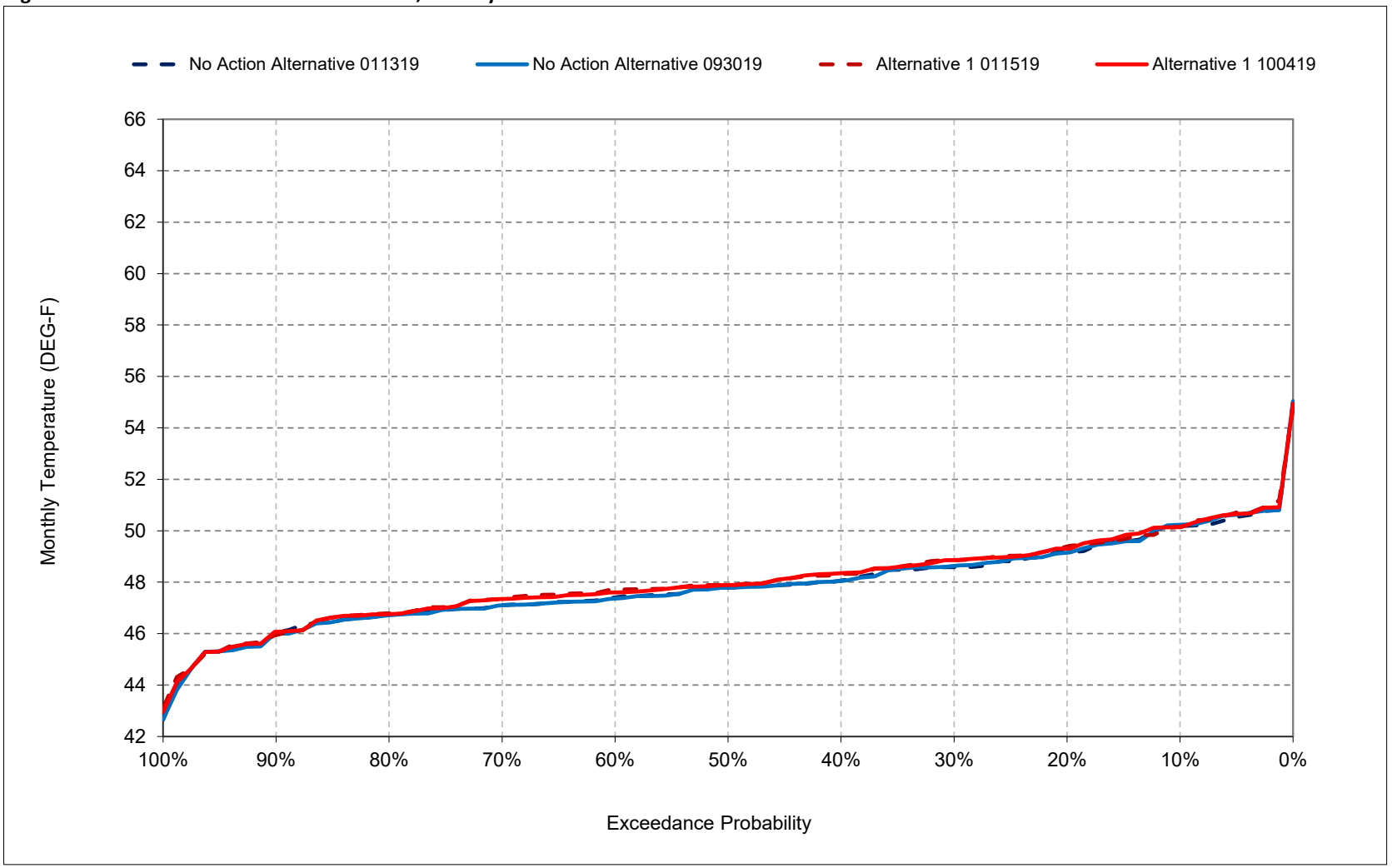

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-9. Sacramento River below Keswick, December**



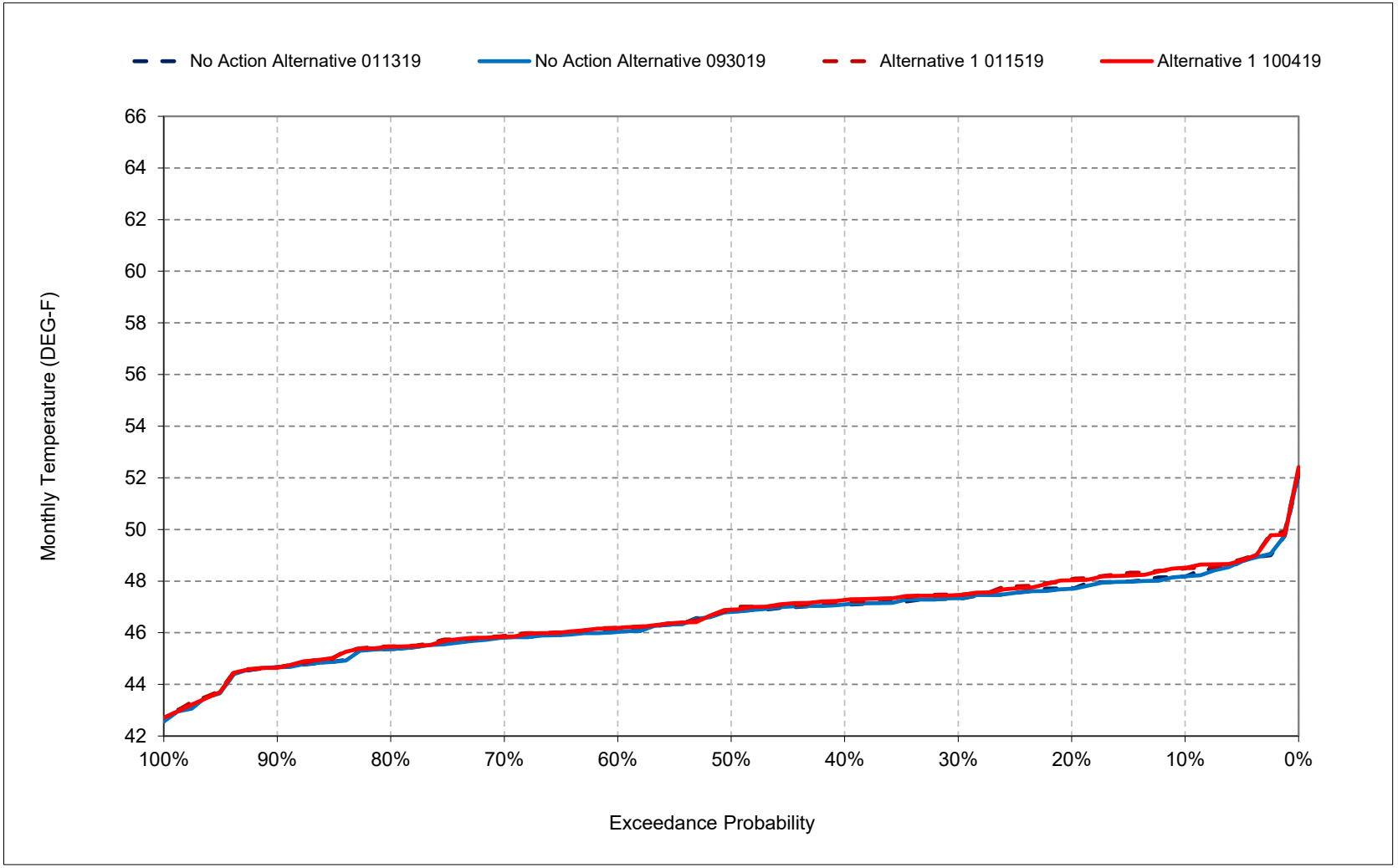

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-10. Sacramento River below Keswick, January**



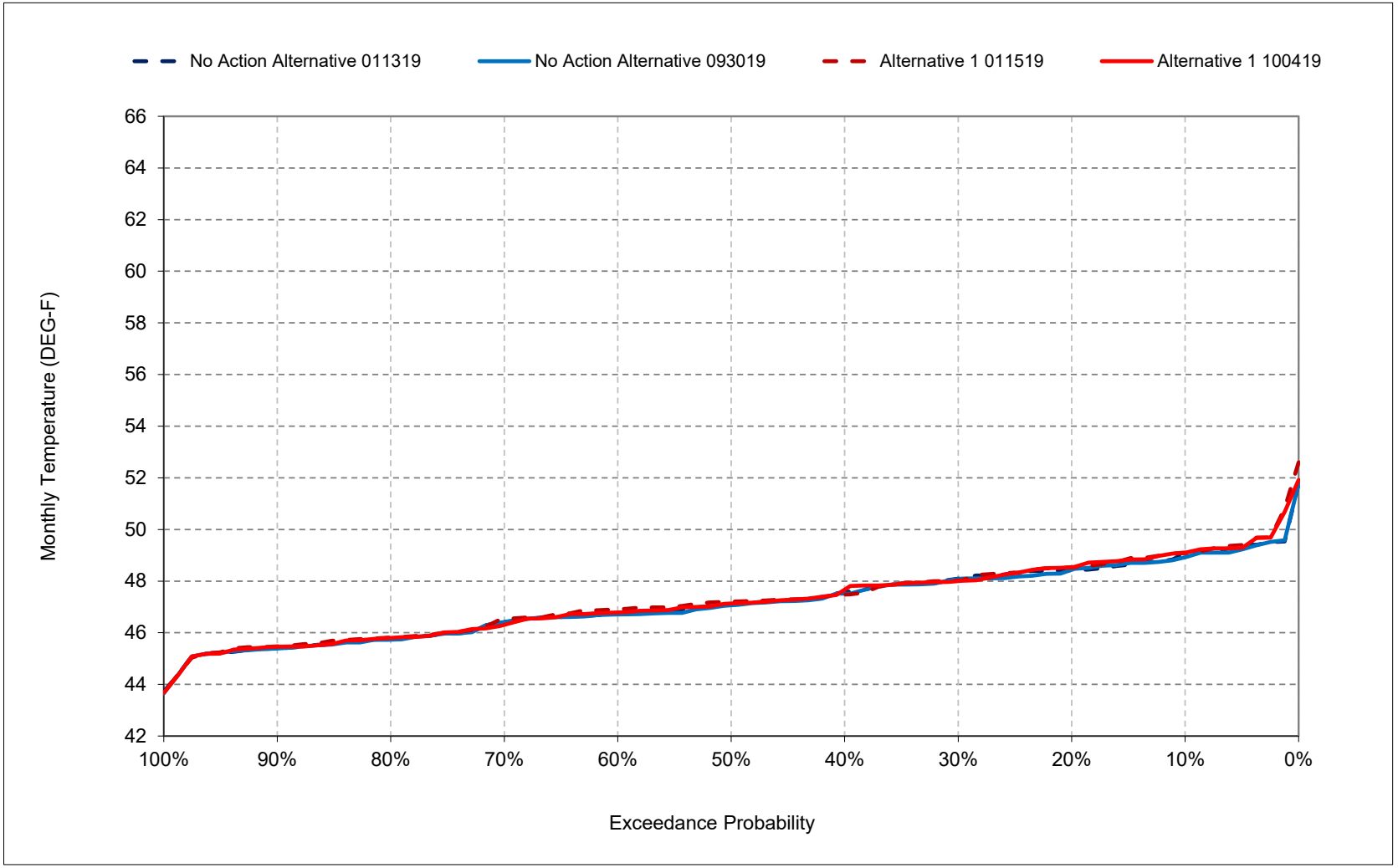

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-11. Sacramento River below Keswick, February**



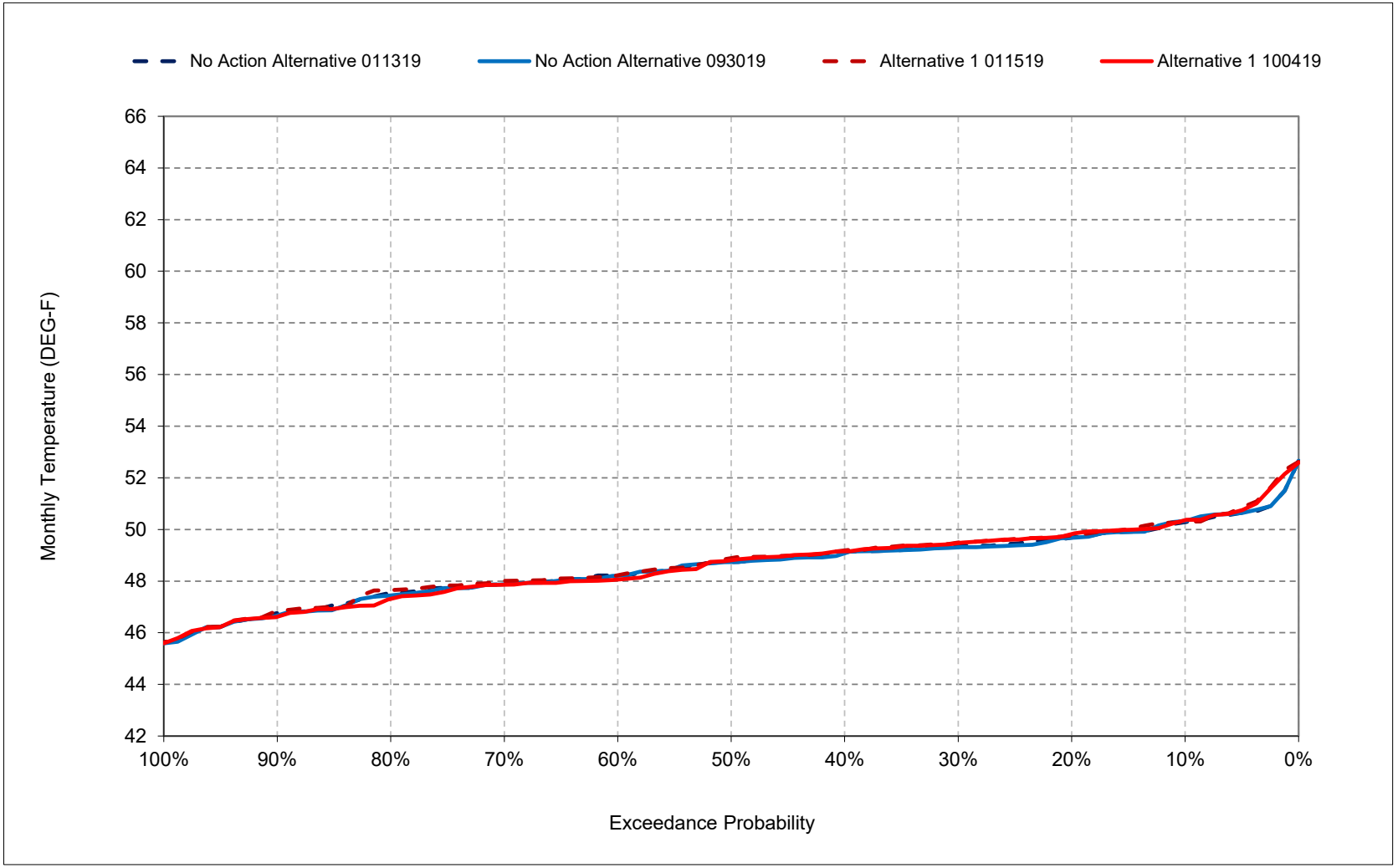

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-12. Sacramento River below Keswick, March**



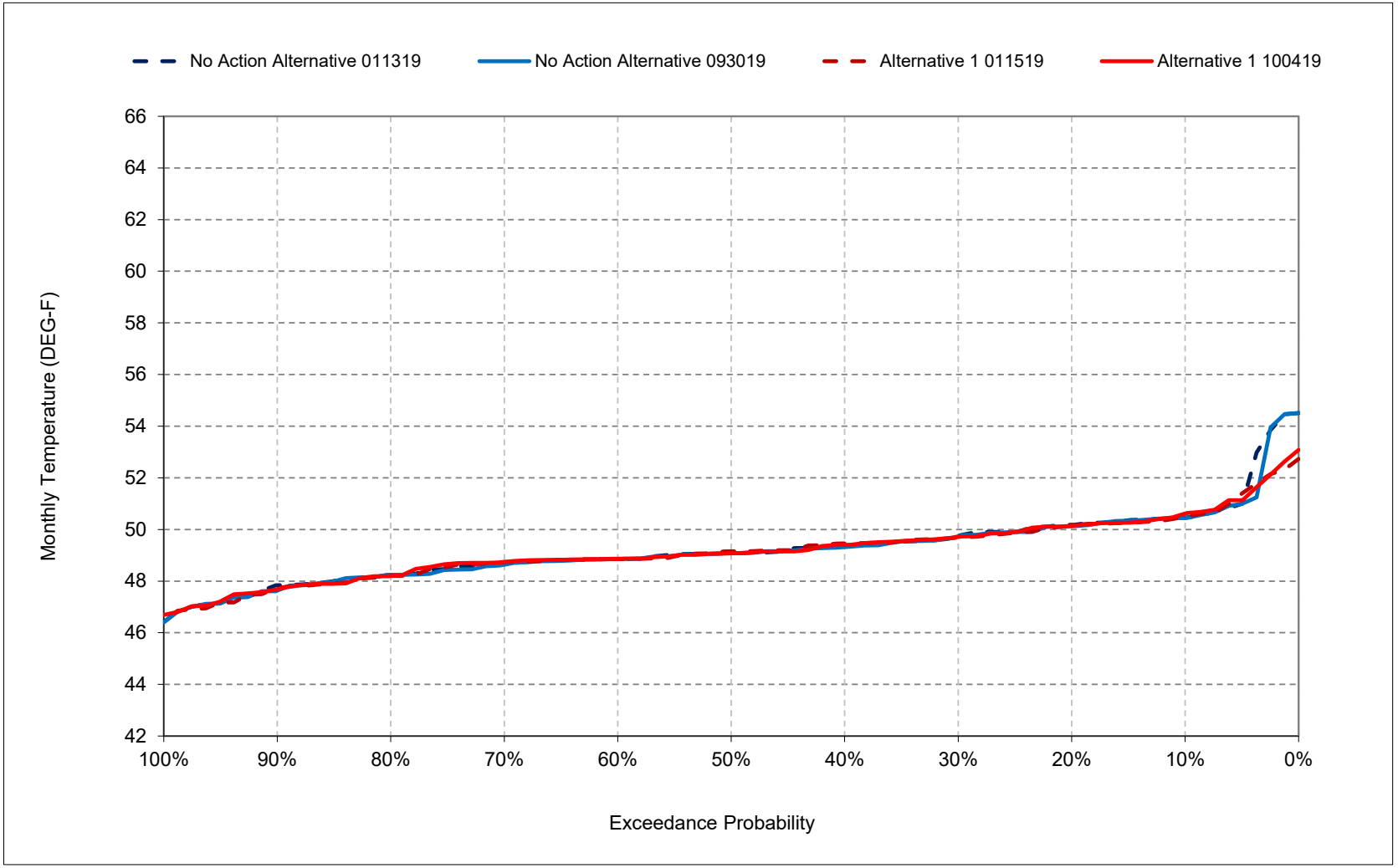

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-13. Sacramento River below Keswick, April**



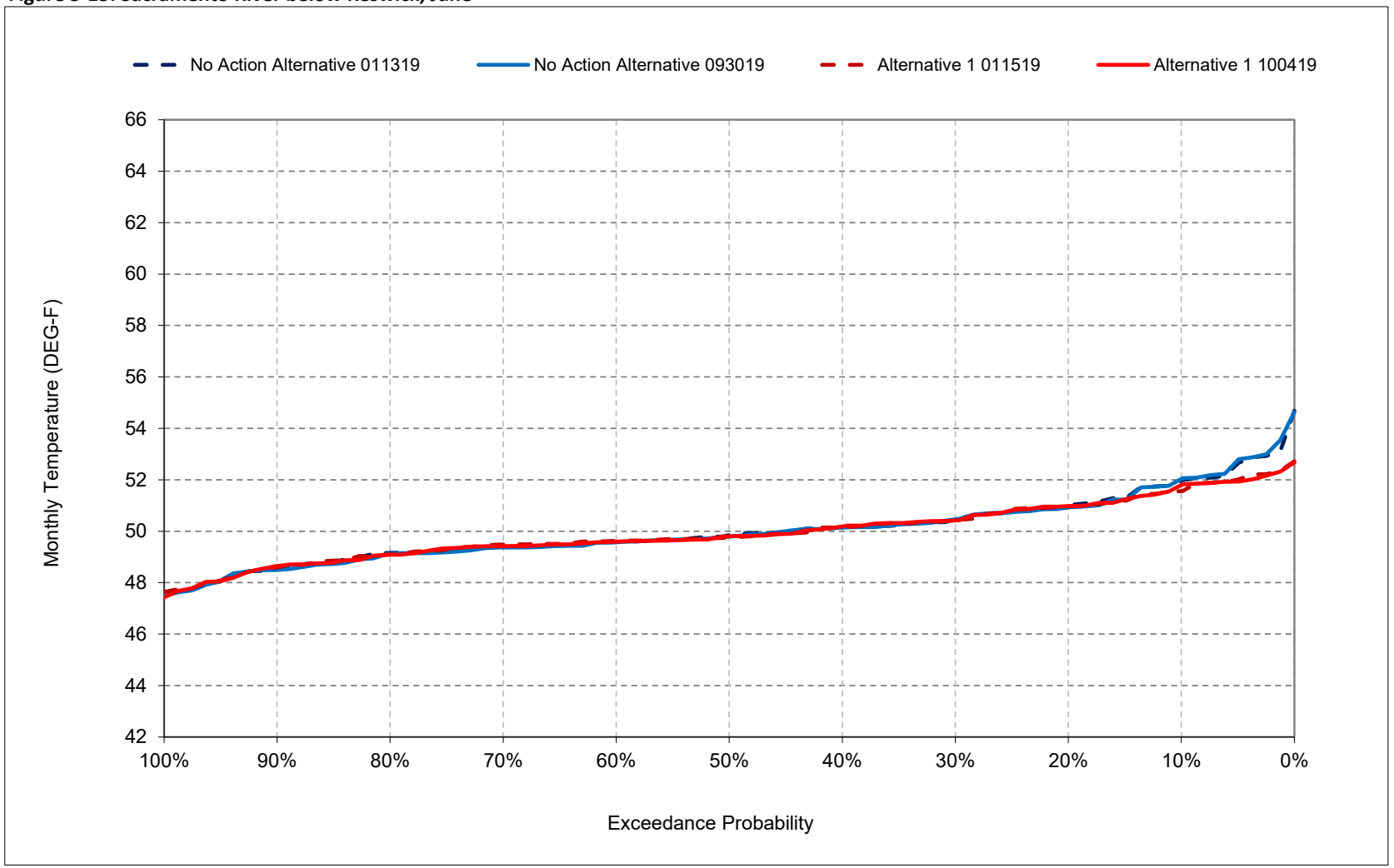

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-14. Sacramento River below Keswick, May**



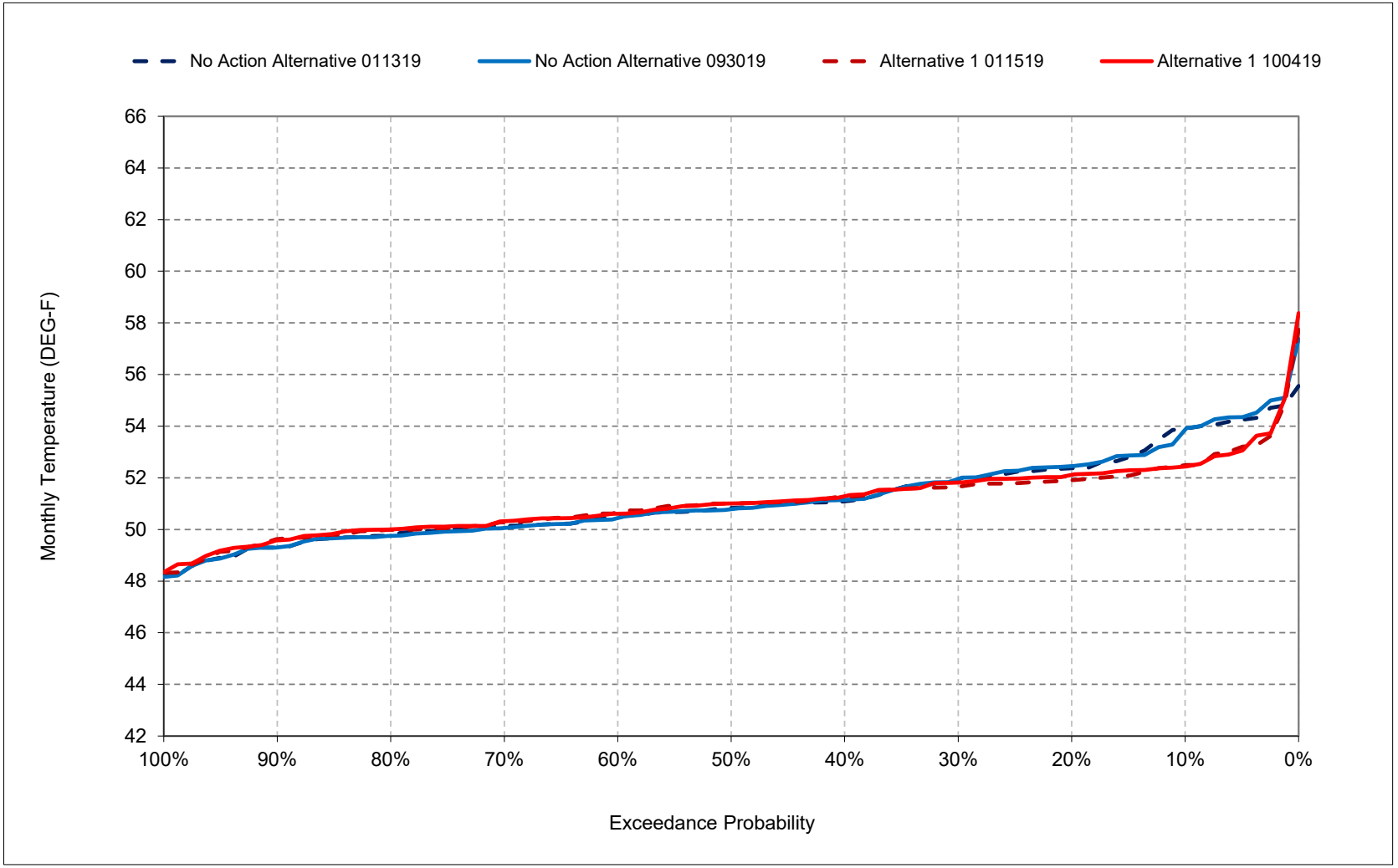

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-15. Sacramento River below Keswick, June**



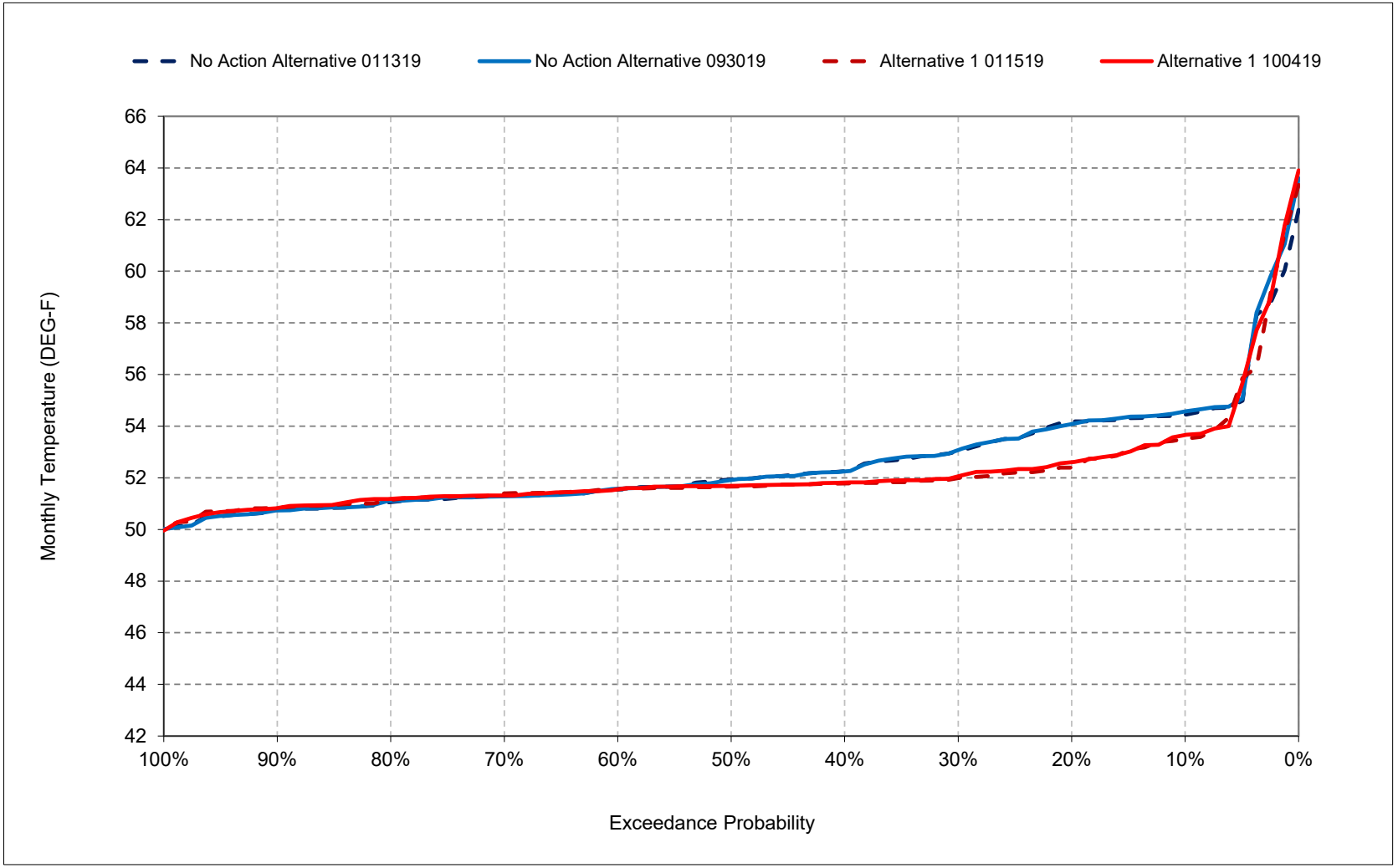

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-16. Sacramento River below Keswick, July**



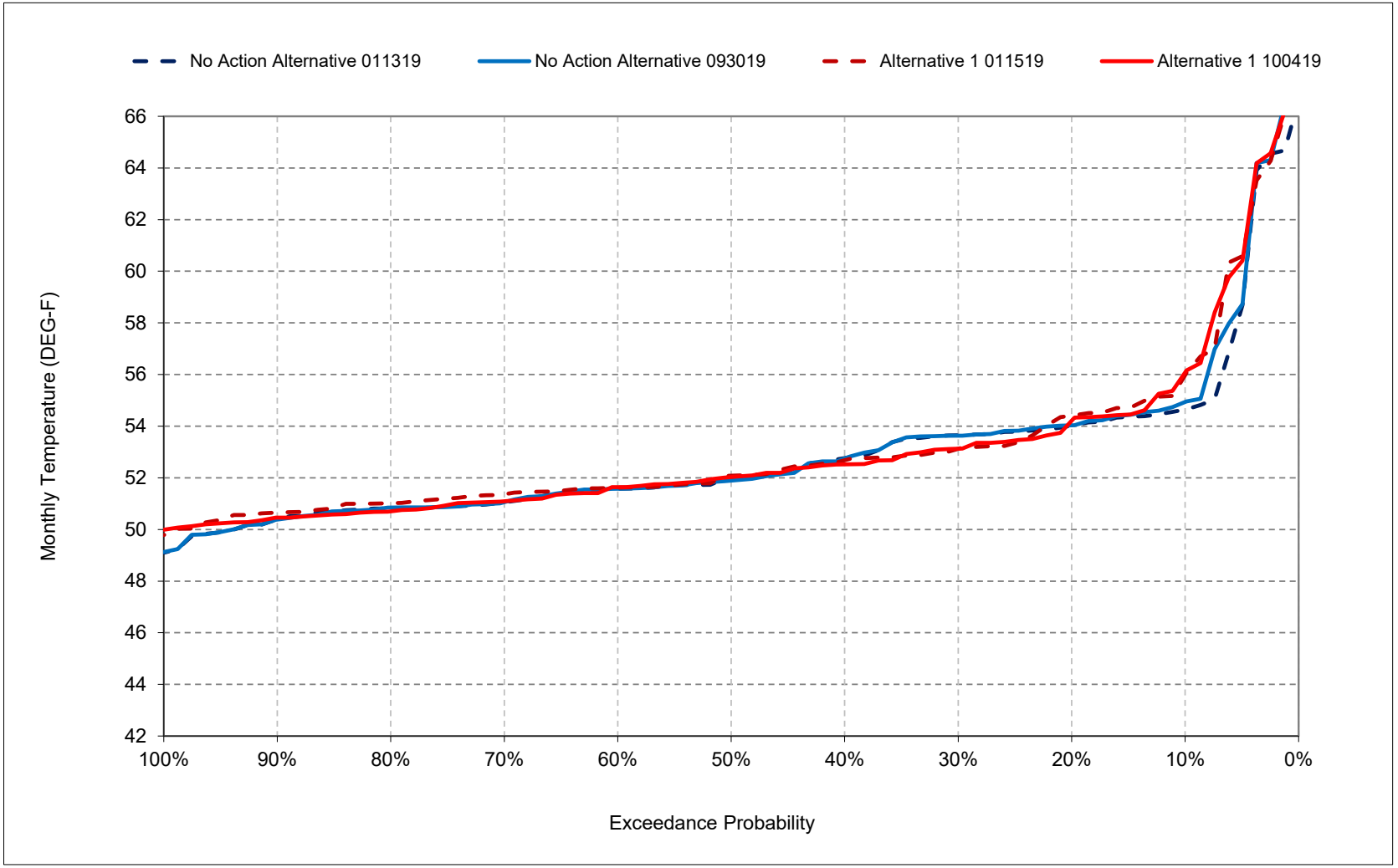

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-17. Sacramento River below Keswick, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-18. Sacramento River below Keswick, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-1. Sacramento River at Clear Creek, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.8 | 56.1 | 53.1 | 50.0 | 48.8 | 50.2 | 52.5 | 52.5 | 53.9 | 55.5 | 56.3 | 56.4 |
| 20% | 56.1 | 55.8 | 52.2 | 49.0 | 48.3 | 49.7 | 51.8 | 51.8 | 52.8 | 53.9 | 55.6 | 55.8 |
| 30% | 55.7 | 55.6 | 51.7 | 48.6 | 48.0 | 49.3 | 51.3 | 51.5 | 52.1 | 53.4 | 54.5 | 55.3 |
| 40% | 55.2 | 55.3 | 51.4 | 48.1 | 47.8 | 48.9 | 51.1 | 51.0 | 51.8 | 52.6 | 54.0 | 54.2 |
| 50% | 54.8 | 55.0 | 51.0 | 47.8 | 47.2 | 48.2 | 50.7 | 50.9 | 51.5 | 52.3 | 53.4 | 53.6 |
| 60% | 54.6 | 54.7 | 50.6 | 47.4 | 46.6 | 47.8 | 50.0 | 50.6 | 51.4 | 51.9 | 53.1 | 52.7 |
| 70% | 54.4 | 54.4 | 50.4 | 47.1 | 46.2 | 47.1 | 49.8 | 50.2 | 51.1 | 51.5 | 52.8 | 52.1 |
| 80% | 54.2 | 54.0 | 50.0 | 46.7 | 45.5 | 46.5 | 48.9 | 49.9 | 50.8 | 51.3 | 52.5 | 51.7 |
| 90% | 53.9 | 53.4 | 49.4 | 46.1 | 45.1 | 46.0 | 47.4 | 49.1 | 50.4 | 50.8 | 52.1 | 51.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 54.9 | 51.1 | 47.9 | 47.0 | 48.2 | 50.3 | 50.9 | 51.8 | 52.6 | 54.1 | 54.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 55.3 | 51.6 | 47.3 | 46.2 | 47.0 | 49.2 | 50.3 | 51.4 | 51.9 | 52.9 | 51.9 |
| Above Normal (16%) | 54.4 | 54.7 | 51.0 | 47.7 | 46.4 | 47.4 | 49.9 | 50.3 | 51.0 | 51.3 | 52.6 | 52.1 |
| Below Normal (13%) | 54.7 | 54.2 | 51.0 | 48.1 | 47.4 | 49.0 | 51.1 | 51.0 | 51.3 | 52.1 | 53.5 | 54.5 |
| Dry (24%) | 55.2 | 54.3 | 50.6 | 48.3 | 47.9 | 49.1 | 51.0 | 51.2 | 51.7 | 52.8 | 54.6 | 55.0 |
| Critical (15%) | 59.4 | 56.1 | 51.2 | 48.2 | 47.8 | 49.5 | 51.4 | 52.4 | 54.0 | 55.5 | 57.8 | 59.8 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.1 | 56.5 | 53.3 | 50.1 | 49.0 | 50.4 | 52.3 | 52.6 | 53.4 | 54.1 | 55.3 | 58.0 |
| 20% | 55.2 | 55.9 | 52.3 | 49.2 | 48.5 | 49.8 | 51.8 | 51.7 | 52.7 | 53.5 | 54.0 | 55.8 |
| 30% | 54.1 | 55.4 | 51.8 | 48.7 | 48.1 | 49.2 | 51.4 | 51.4 | 52.1 | 53.1 | 53.6 | 55.0 |
| 40% | 53.6 | 54.9 | 51.4 | 48.3 | 47.6 | 48.7 | 51.1 | 51.0 | 51.7 | 52.7 | 53.4 | 54.5 |
| 50% | 53.5 | 54.7 | 51.0 | 47.9 | 47.2 | 48.1 | 50.8 | 50.9 | 51.5 | 52.4 | 53.2 | 53.7 |
| 60% | 53.4 | 54.3 | 50.7 | 47.6 | 46.7 | 47.9 | 50.2 | 50.4 | 51.2 | 52.2 | 53.0 | 53.5 |
| 70% | 53.2 | 54.0 | 50.6 | 47.4 | 46.2 | 47.2 | 49.8 | 50.2 | 51.0 | 51.5 | 52.8 | 52.9 |
| 80% | 52.9 | 53.6 | 50.2 | 46.8 | 45.6 | 46.5 | 49.0 | 49.7 | 50.7 | 51.3 | 52.7 | 52.6 |
| 90% | 52.7 | 53.4 | 49.4 | 46.0 | 45.1 | 46.1 | 47.4 | 49.0 | 50.4 | 51.0 | 52.2 | 51.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.5 | 54.8 | 51.3 | 48.0 | 47.2 | 48.2 | 50.4 | 50.8 | 51.6 | 52.5 | 53.7 | 54.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 54.6 | 51.4 | 47.5 | 46.3 | 47.1 | 49.2 | 50.2 | 51.5 | 52.0 | 52.8 | 52.9 |
| Above Normal (16%) | 53.1 | 53.9 | 50.8 | 47.7 | 46.4 | 47.4 | 49.9 | 50.3 | 51.0 | 51.4 | 52.8 | 53.7 |
| Below Normal (13%) | 54.3 | 54.7 | 51.5 | 48.2 | 47.4 | 49.0 | 51.1 | 50.6 | 51.2 | 52.1 | 53.0 | 54.2 |
| Dry (24%) | 54.0 | 54.6 | 51.1 | 48.4 | 48.0 | 49.0 | 51.2 | 51.1 | 51.5 | 52.7 | 53.6 | 54.4 |
| Critical (15%) | 59.5 | 56.3 | 51.4 | 48.6 | 48.2 | 49.6 | 51.6 | 52.2 | 53.4 | 55.0 | 57.4 | 60.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.3 | 0.4 | 0.2 | 0.1 | 0.2 | 0.2 | -0.1 | 0.1 | -0.5 | -1.4 | -0.9 | 1.6 |
| 20% | -0.9 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.0 | -0.2 | -0.1 | -0.5 | -1.6 | 0.1 |
| 30% | -1.6 | -0.1 | 0.1 | 0.1 | 0.1 | -0.1 | 0.1 | -0.1 | 0.0 | -0.3 | -1.0 | -0.3 |
| 40% | -1.6 | -0.4 | 0.0 | 0.2 | -0.2 | -0.2 | 0.0 | 0.0 | -0.2 | 0.1 | -0.5 | 0.3 |
| 50% | -1.4 | -0.3 | 0.0 | 0.2 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.2 | -0.2 | 0.1 |
| 60% | -1.2 | -0.4 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | -0.2 | -0.2 | 0.3 | -0.1 | 0.7 |
| 70% | -1.2 | -0.5 | 0.2 | 0.2 | 0.1 | 0.1 | -0.1 | 0.0 | -0.1 | 0.1 | 0.0 | 0.8 |
| 80% | -1.3 | -0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | -0.2 | 0.0 | 0.0 | 0.1 | 1.0 |
| 90% | -1.2 | 0.1 | 0.0 | -0.1 | 0.1 | 0.1 | 0.1 | -0.1 | 0.0 | 0.1 | 0.2 | 0.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1.0 | -0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | -0.2 | -0.1 | -0.1 | -0.4 | 0.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.4 | -0.7 | -0.2 | 0.1 | 0.1 | 0.1 | 0.0 | -0.1 | 0.0 | 0.1 | -0.1 | 1.0 |
| Above Normal (16%) | -1.4 | -0.8 | -0.3 | 0.0 | 0.0 | 0.0 | 0.1 | -0.1 | 0.0 | 0.1 | 0.2 | 1.7 |
| Below Normal (13%) | -0.4 | 0.5 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | -0.4 | -0.1 | -0.1 | -0.4 | -0.3 |
| Dry (24%) | -1.2 | 0.3 | 0.5 | 0.1 | 0.1 | 0.0 | 0.1 | -0.2 | -0.2 | -0.1 | -1.0 | -0.6 |
| Critical (15%) | 0.1 | 0.2 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | -0.2 | -0.6 | -0.5 | -0.4 | 0.8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-2. Sacramento River at Clear Creek, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.3 | 55.9 | 53.0 | 50.1 | 48.7 | 50.2 | 52.4 | 52.6 | 53.7 | 55.3 | 56.3 | 56.6 |
| 20% | 56.0 | 55.8 | 52.2 | 49.0 | 48.3 | 49.7 | 51.7 | 51.8 | 52.7 | 54.0 | 55.6 | 55.8 |
| 30% | 55.7 | 55.5 | 51.7 | 48.6 | 48.0 | 49.3 | 51.2 | 51.4 | 52.2 | 53.3 | 54.5 | 55.3 |
| 40% | 55.2 | 55.3 | 51.4 | 48.1 | 47.8 | 48.8 | 51.1 | 51.0 | 51.8 | 52.6 | 53.9 | 54.2 |
| 50% | 54.8 | 55.0 | 50.9 | 47.7 | 47.2 | 48.2 | 50.6 | 50.8 | 51.6 | 52.3 | 53.4 | 53.5 |
| 60% | 54.7 | 54.7 | 50.6 | 47.4 | 46.6 | 47.7 | 50.1 | 50.6 | 51.3 | 51.9 | 53.1 | 52.7 |
| 70% | 54.4 | 54.5 | 50.4 | 47.1 | 46.2 | 47.1 | 49.8 | 50.2 | 51.1 | 51.4 | 52.8 | 52.1 |
| 80% | 54.2 | 54.1 | 50.0 | 46.7 | 45.5 | 46.5 | 48.9 | 49.9 | 50.7 | 51.1 | 52.6 | 51.6 |
| 90% | 54.0 | 53.4 | 49.3 | 46.1 | 45.1 | 46.0 | 47.4 | 49.1 | 50.3 | 50.9 | 52.1 | 51.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 55.0 | 51.1 | 47.9 | 47.0 | 48.2 | 50.3 | 50.9 | 51.7 | 52.6 | 54.1 | 54.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 55.3 | 51.6 | 47.3 | 46.2 | 47.0 | 49.2 | 50.3 | 51.4 | 51.9 | 52.9 | 51.9 |
| Above Normal (16%) | 54.4 | 54.8 | 51.0 | 47.6 | 46.3 | 47.4 | 49.8 | 50.3 | 50.9 | 51.2 | 52.6 | 52.0 |
| Below Normal (13%) | 54.8 | 54.2 | 51.0 | 48.1 | 47.4 | 49.0 | 51.1 | 51.0 | 51.3 | 52.1 | 53.4 | 54.4 |
| Dry (24%) | 55.2 | 54.4 | 50.6 | 48.3 | 47.9 | 49.0 | 51.0 | 51.2 | 51.7 | 52.9 | 54.7 | 55.1 |
| Critical (15%) | 59.7 | 56.2 | 51.1 | 48.2 | 47.8 | 49.4 | 51.4 | 52.2 | 53.9 | 55.7 | 58.1 | 60.2 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.3 | 56.2 | 53.2 | 50.1 | 49.0 | 50.4 | 52.2 | 52.6 | 53.4 | 54.2 | 55.4 | 58.0 |
| 20% | 55.2 | 55.9 | 52.4 | 49.2 | 48.5 | 49.8 | 51.8 | 51.7 | 52.6 | 53.6 | 54.3 | 55.7 |
| 30% | 54.2 | 55.5 | 51.8 | 48.7 | 48.1 | 49.3 | 51.4 | 51.4 | 52.2 | 53.4 | 53.6 | 55.1 |
| 40% | 53.9 | 55.1 | 51.4 | 48.3 | 47.7 | 48.7 | 51.1 | 51.0 | 51.7 | 52.7 | 53.5 | 54.3 |
| 50% | 53.5 | 54.7 | 51.0 | 47.9 | 47.3 | 48.1 | 50.6 | 50.8 | 51.4 | 52.5 | 53.3 | 53.7 |
| 60% | 53.4 | 54.4 | 50.9 | 47.5 | 46.5 | 47.8 | 50.0 | 50.5 | 51.3 | 52.3 | 53.0 | 53.3 |
| 70% | 53.1 | 54.1 | 50.5 | 47.3 | 46.2 | 47.1 | 49.4 | 50.2 | 51.0 | 51.6 | 52.9 | 52.5 |
| 80% | 53.0 | 53.8 | 50.3 | 46.8 | 45.6 | 46.6 | 48.7 | 49.7 | 50.7 | 51.4 | 52.8 | 52.0 |
| 90% | 52.8 | 53.5 | 49.5 | 46.1 | 45.1 | 46.1 | 47.4 | 49.0 | 50.4 | 51.0 | 52.2 | 51.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.5 | 54.8 | 51.3 | 48.0 | 47.1 | 48.2 | 50.3 | 50.8 | 51.6 | 52.6 | 53.8 | 54.6 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.4 | 54.7 | 51.5 | 47.4 | 46.2 | 47.0 | 49.1 | 50.3 | 51.4 | 52.0 | 52.8 | 52.9 |
| Above Normal (16%) | 53.4 | 54.5 | 51.1 | 47.7 | 46.3 | 47.3 | 49.7 | 50.3 | 50.9 | 51.4 | 52.8 | 52.7 |
| Below Normal (13%) | 53.9 | 54.5 | 51.3 | 48.2 | 47.4 | 48.9 | 51.1 | 50.6 | 51.1 | 52.2 | 53.2 | 54.3 |
| Dry (24%) | 53.9 | 54.6 | 51.0 | 48.4 | 48.0 | 49.1 | 51.1 | 51.1 | 51.6 | 52.9 | 53.7 | 54.5 |
| Critical (15%) | 59.5 | 56.3 | 51.4 | 48.6 | 48.1 | 49.6 | 51.5 | 52.3 | 53.3 | 55.1 | 57.6 | 60.7 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.0 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | -0.2 | 0.0 | -0.3 | -1.1 | -1.0 | 1.4 |
| 20% | -0.9 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | -0.1 | 0.0 | -0.4 | -1.4 | -0.1 |
| 30% | -1.4 | -0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | -0.8 | -0.2 |
| 40% | -1.3 | -0.2 | 0.0 | 0.2 | -0.1 | -0.1 | 0.0 | -0.1 | -0.2 | 0.1 | -0.4 | 0.0 |
| 50% | -1.4 | -0.3 | 0.1 | 0.2 | 0.0 | -0.1 | 0.0 | -0.1 | -0.2 | 0.2 | -0.1 | 0.3 |
| 60% | -1.3 | -0.3 | 0.3 | 0.1 | -0.1 | 0.1 | -0.1 | -0.2 | -0.1 | 0.4 | -0.1 | 0.7 |
| 70% | -1.2 | -0.3 | 0.2 | 0.2 | 0.0 | 0.0 | -0.5 | 0.1 | -0.1 | 0.2 | 0.1 | 0.4 |
| 80% | -1.2 | -0.3 | 0.2 | 0.1 | 0.1 | 0.1 | -0.1 | -0.2 | -0.1 | 0.2 | 0.1 | 0.4 |
| 90% | -1.1 | 0.1 | 0.2 | 0.0 | 0.1 | 0.1 | 0.1 | -0.1 | 0.1 | 0.2 | 0.1 | 0.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1.0 | -0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | -0.3 | 0.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.3 | -0.6 | -0.1 | 0.1 | 0.0 | 0.0 | -0.2 | 0.0 | 0.0 | 0.1 | -0.1 | 1.0 |
| Above Normal (16%) | -1.1 | -0.3 | 0.0 | 0.1 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.2 | 0.2 | 0.6 |
| Below Normal (13%) | -0.9 | 0.3 | 0.3 | 0.1 | -0.1 | 0.0 | 0.0 | -0.3 | -0.2 | 0.1 | -0.2 | -0.1 |
| Dry (24%) | -1.2 | 0.2 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | -0.1 | -0.1 | 0.0 | -1.0 | -0.6 |
| Critical (15%) | -0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | -0.6 | -0.6 | -0.5 | 0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-3. Sacramento River at Clear Creek, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 56.8 | 56.1 | 53.1 | 50.0 | 48.8 | 50.2 | 52.5 | 52.5 | 53.9 | 55.5 | 56.3 | 56.4 |
| 20% | 56.1 | 55.8 | 52.2 | 49.0 | 48.3 | 49.7 | 51.8 | 51.8 | 52.8 | 53.9 | 55.6 | 55.8 |
| 30% | 55.7 | 55.6 | 51.7 | 48.6 | 48.0 | 49.3 | 51.3 | 51.5 | 52.1 | 53.4 | 54.5 | 55.3 |
| 40% | 55.2 | 55.3 | 51.4 | 48.1 | 47.8 | 48.9 | 51.1 | 51.0 | 51.8 | 52.6 | 54.0 | 54.2 |
| 50% | 54.8 | 55.0 | 51.0 | 47.8 | 47.2 | 48.2 | 50.7 | 50.9 | 51.5 | 52.3 | 53.4 | 53.6 |
| 60% | 54.6 | 54.7 | 50.6 | 47.4 | 46.6 | 47.8 | 50.0 | 50.6 | 51.4 | 51.9 | 53.1 | 52.7 |
| 70% | 54.4 | 54.4 | 50.4 | 47.1 | 46.2 | 47.1 | 49.8 | 50.2 | 51.1 | 51.5 | 52.8 | 52.1 |
| 80% | 54.2 | 54.0 | 50.0 | 46.7 | 45.5 | 46.5 | 48.9 | 49.9 | 50.8 | 51.3 | 52.5 | 51.7 |
| 90% | 53.9 | 53.4 | 49.4 | 46.1 | 45.1 | 46.0 | 47.4 | 49.1 | 50.4 | 50.8 | 52.1 | 51.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 54.9 | 51.1 | 47.9 | 47.0 | 48.2 | 50.3 | 50.9 | 51.8 | 52.6 | 54.1 | 54.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 55.3 | 51.6 | 47.3 | 46.2 | 47.0 | 49.2 | 50.3 | 51.4 | 51.9 | 52.9 | 51.9 |
| Above Normal (16%) | 54.4 | 54.7 | 51.0 | 47.7 | 46.4 | 47.4 | 49.9 | 50.3 | 51.0 | 51.3 | 52.6 | 52.1 |
| Below Normal (13%) | 54.7 | 54.2 | 51.0 | 48.1 | 47.4 | 49.0 | 51.1 | 51.0 | 51.3 | 52.1 | 53.5 | 54.5 |
| Dry (24%) | 55.2 | 54.3 | 50.6 | 48.3 | 47.9 | 49.1 | 51.0 | 51.2 | 51.7 | 52.8 | 54.6 | 55.0 |
| Critical (15%) | 59.4 | 56.1 | 51.2 | 48.2 | 47.8 | 49.5 | 51.4 | 52.4 | 54.0 | 55.5 | 57.8 | 59.8 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.3 | 55.9 | 53.0 | 50.1 | 48.7 | 50.2 | 52.4 | 52.6 | 53.7 | 55.3 | 56.3 | 56.6 |
| 20% | 56.0 | 55.8 | 52.2 | 49.0 | 48.3 | 49.7 | 51.7 | 51.8 | 52.7 | 54.0 | 55.6 | 55.8 |
| 30% | 55.7 | 55.5 | 51.7 | 48.6 | 48.0 | 49.3 | 51.2 | 51.4 | 52.2 | 53.3 | 54.5 | 55.3 |
| 40% | 55.2 | 55.3 | 51.4 | 48.1 | 47.8 | 48.8 | 51.1 | 51.0 | 51.8 | 52.6 | 53.9 | 54.2 |
| 50% | 54.8 | 55.0 | 50.9 | 47.7 | 47.2 | 48.2 | 50.6 | 50.8 | 51.6 | 52.3 | 53.4 | 53.5 |
| 60% | 54.7 | 54.7 | 50.6 | 47.4 | 46.6 | 47.7 | 50.1 | 50.6 | 51.3 | 51.9 | 53.1 | 52.7 |
| 70% | 54.4 | 54.5 | 50.4 | 47.1 | 46.2 | 47.1 | 49.8 | 50.2 | 51.1 | 51.4 | 52.8 | 52.1 |
| 80% | 54.2 | 54.1 | 50.0 | 46.7 | 45.5 | 46.5 | 48.9 | 49.9 | 50.7 | 51.1 | 52.6 | 51.6 |
| 90% | 54.0 | 53.4 | 49.3 | 46.1 | 45.1 | 46.0 | 47.4 | 49.1 | 50.3 | 50.9 | 52.1 | 51.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 55.0 | 51.1 | 47.9 | 47.0 | 48.2 | 50.3 | 50.9 | 51.7 | 52.6 | 54.1 | 54.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 55.3 | 51.6 | 47.3 | 46.2 | 47.0 | 49.2 | 50.3 | 51.4 | 51.9 | 52.9 | 51.9 |
| Above Normal (16%) | 54.4 | 54.8 | 51.0 | 47.6 | 46.3 | 47.4 | 49.8 | 50.3 | 50.9 | 51.2 | 52.6 | 52.0 |
| Below Normal (13%) | 54.8 | 54.2 | 51.0 | 48.1 | 47.4 | 49.0 | 51.1 | 51.0 | 51.3 | 52.1 | 53.4 | 54.4 |
| Dry (24%) | 55.2 | 54.4 | 50.6 | 48.3 | 47.9 | 49.0 | 51.0 | 51.2 | 51.7 | 52.9 | 54.7 | 55.1 |
| Critical (15%) | 59.7 | 56.2 | 51.1 | 48.2 | 47.8 | 49.4 | 51.4 | 52.2 | 53.9 | 55.7 | 58.1 | 60.2 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.6** | -0.1 | 0.0 | **0.0** | -0.1 | 0.0 | 0.0 | **0.1** | -0.1 | -0.1 | **0.1** | **0.2** |
| 20% | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** |
| 30% | -0.1 | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | -0.1 | **0.0** |
| 40% | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 |
| 50% | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | **0.0** | **0.1** | 0.0 | -0.1 |
| 60% | **0.1** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 |
| 70% | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | -0.1 | 0.0 | **0.0** |
| 80% | 0.0 | **0.1** | **0.0** | 0.0 | **0.0** | **0.0** | -0.1 | 0.0 | 0.0 | -0.2 | **0.1** | -0.1 |
| 90% | **0.0** | **0.1** | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | **0.0** | **0.0** | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | **0.0** | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | -0.1 |
| Dry (24%) | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | **0.0** | **0.0** | **0.0** |
| Critical (15%) | **0.2** | **0.1** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | 0.0 | **0.3** | **0.3** | **0.5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-4. Sacramento River at Clear Creek, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.1 | 56.5 | 53.3 | 50.1 | 49.0 | 50.4 | 52.3 | 52.6 | 53.4 | 54.1 | 55.3 | 58.0 |
| 20% | 55.2 | 55.9 | 52.3 | 49.2 | 48.5 | 49.8 | 51.8 | 51.7 | 52.7 | 53.5 | 54.0 | 55.8 |
| 30% | 54.1 | 55.4 | 51.8 | 48.7 | 48.1 | 49.2 | 51.4 | 51.4 | 52.1 | 53.1 | 53.6 | 55.0 |
| 40% | 53.6 | 54.9 | 51.4 | 48.3 | 47.6 | 48.7 | 51.1 | 51.0 | 51.7 | 52.7 | 53.4 | 54.5 |
| 50% | 53.5 | 54.7 | 51.0 | 47.9 | 47.2 | 48.1 | 50.8 | 50.9 | 51.5 | 52.4 | 53.2 | 53.7 |
| 60% | 53.4 | 54.3 | 50.7 | 47.6 | 46.7 | 47.9 | 50.2 | 50.4 | 51.2 | 52.2 | 53.0 | 53.5 |
| 70% | 53.2 | 54.0 | 50.6 | 47.4 | 46.2 | 47.2 | 49.8 | 50.2 | 51.0 | 51.5 | 52.8 | 52.9 |
| 80% | 52.9 | 53.6 | 50.2 | 46.8 | 45.6 | 46.5 | 49.0 | 49.7 | 50.7 | 51.3 | 52.7 | 52.6 |
| 90% | 52.7 | 53.4 | 49.4 | 46.0 | 45.1 | 46.1 | 47.4 | 49.0 | 50.4 | 51.0 | 52.2 | 51.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.5 | 54.8 | 51.3 | 48.0 | 47.2 | 48.2 | 50.4 | 50.8 | 51.6 | 52.5 | 53.7 | 54.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 54.6 | 51.4 | 47.5 | 46.3 | 47.1 | 49.2 | 50.2 | 51.5 | 52.0 | 52.8 | 52.9 |
| Above Normal (16%) | 53.1 | 53.9 | 50.8 | 47.7 | 46.4 | 47.4 | 49.9 | 50.3 | 51.0 | 51.4 | 52.8 | 53.7 |
| Below Normal (13%) | 54.3 | 54.7 | 51.5 | 48.2 | 47.4 | 49.0 | 51.1 | 50.6 | 51.2 | 52.1 | 53.0 | 54.2 |
| Dry (24%) | 54.0 | 54.6 | 51.1 | 48.4 | 48.0 | 49.0 | 51.2 | 51.1 | 51.5 | 52.7 | 53.6 | 54.4 |
| Critical (15%) | 59.5 | 56.3 | 51.4 | 48.6 | 48.2 | 49.6 | 51.6 | 52.2 | 53.4 | 55.0 | 57.4 | 60.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.3 | 56.2 | 53.2 | 50.1 | 49.0 | 50.4 | 52.2 | 52.6 | 53.4 | 54.2 | 55.4 | 58.0 |
| 20% | 55.2 | 55.9 | 52.4 | 49.2 | 48.5 | 49.8 | 51.8 | 51.7 | 52.6 | 53.6 | 54.3 | 55.7 |
| 30% | 54.2 | 55.5 | 51.8 | 48.7 | 48.1 | 49.3 | 51.4 | 51.4 | 52.2 | 53.4 | 53.6 | 55.1 |
| 40% | 53.9 | 55.1 | 51.4 | 48.3 | 47.7 | 48.7 | 51.1 | 51.0 | 51.7 | 52.7 | 53.5 | 54.3 |
| 50% | 53.5 | 54.7 | 51.0 | 47.9 | 47.3 | 48.1 | 50.6 | 50.8 | 51.4 | 52.5 | 53.3 | 53.7 |
| 60% | 53.4 | 54.4 | 50.9 | 47.5 | 46.5 | 47.8 | 50.0 | 50.5 | 51.3 | 52.3 | 53.0 | 53.3 |
| 70% | 53.1 | 54.1 | 50.5 | 47.3 | 46.2 | 47.1 | 49.4 | 50.2 | 51.0 | 51.6 | 52.9 | 52.5 |
| 80% | 53.0 | 53.8 | 50.3 | 46.8 | 45.6 | 46.6 | 48.7 | 49.7 | 50.7 | 51.4 | 52.8 | 52.0 |
| 90% | 52.8 | 53.5 | 49.5 | 46.1 | 45.1 | 46.1 | 47.4 | 49.0 | 50.4 | 51.0 | 52.2 | 51.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.5 | 54.8 | 51.3 | 48.0 | 47.1 | 48.2 | 50.3 | 50.8 | 51.6 | 52.6 | 53.8 | 54.6 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.4 | 54.7 | 51.5 | 47.4 | 46.2 | 47.0 | 49.1 | 50.3 | 51.4 | 52.0 | 52.8 | 52.9 |
| Above Normal (16%) | 53.4 | 54.5 | 51.1 | 47.7 | 46.3 | 47.3 | 49.7 | 50.3 | 50.9 | 51.4 | 52.8 | 52.7 |
| Below Normal (13%) | 53.9 | 54.5 | 51.3 | 48.2 | 47.4 | 48.9 | 51.1 | 50.6 | 51.1 | 52.2 | 53.2 | 54.3 |
| Dry (24%) | 53.9 | 54.6 | 51.0 | 48.4 | 48.0 | 49.1 | 51.1 | 51.1 | 51.6 | 52.9 | 53.7 | 54.5 |
| Critical (15%) | 59.5 | 56.3 | 51.4 | 48.6 | 48.1 | 49.6 | 51.5 | 52.3 | 53.3 | 55.1 | 57.6 | 60.7 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.2** | -0.3 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | **0.0** | **0.0** | **0.1** | **0.0** | 0.0 |
| 20% | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | **0.0** | -0.1 | **0.1** | **0.3** | -0.1 |
| 30% | **0.1** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | **0.0** | **0.0** | **0.0** | **0.3** | **0.1** | **0.1** |
| 40% | **0.3** | **0.2** | 0.0 | **0.0** | **0.1** | 0.0 | 0.0 | -0.1 | **0.0** | **0.0** | **0.1** | -0.3 |
| 50% | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | -0.1 | -0.1 | -0.1 | **0.0** | **0.1** | **0.1** |
| 60% | 0.0 | **0.1** | **0.1** | -0.1 | -0.1 | -0.1 | -0.2 | **0.0** | **0.1** | **0.1** | **0.0** | -0.1 |
| 70% | -0.1 | **0.2** | 0.0 | 0.0 | -0.1 | -0.1 | -0.4 | **0.0** | -0.1 | **0.0** | **0.0** | -0.4 |
| 80% | **0.1** | **0.2** | **0.1** | **0.0** | 0.0 | **0.1** | -0.3 | **0.0** | -0.1 | **0.0** | **0.1** | -0.6 |
| 90% | **0.1** | **0.1** | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.1** | 0.0 | -0.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** | **0.1** | -0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | -0.1 | -0.1 | **0.1** | -0.1 | 0.0 | **0.0** | **0.0** |
| Above Normal (16%) | **0.3** | **0.6** | **0.3** | **0.0** | 0.0 | -0.1 | -0.2 | **0.1** | -0.1 | **0.1** | 0.0 | -1.1 |
| Below Normal (13%) | -0.4 | -0.2 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | -0.1 | **0.1** | **0.2** | **0.1** |
| Dry (24%) | 0.0 | -0.1 | -0.1 | **0.0** | 0.0 | **0.1** | -0.1 | **0.0** | **0.1** | **0.2** | **0.1** | **0.0** |
| Critical (15%) | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | **0.0** | -0.1 | **0.1** | 0.0 | **0.2** | **0.2** | **0.1** |

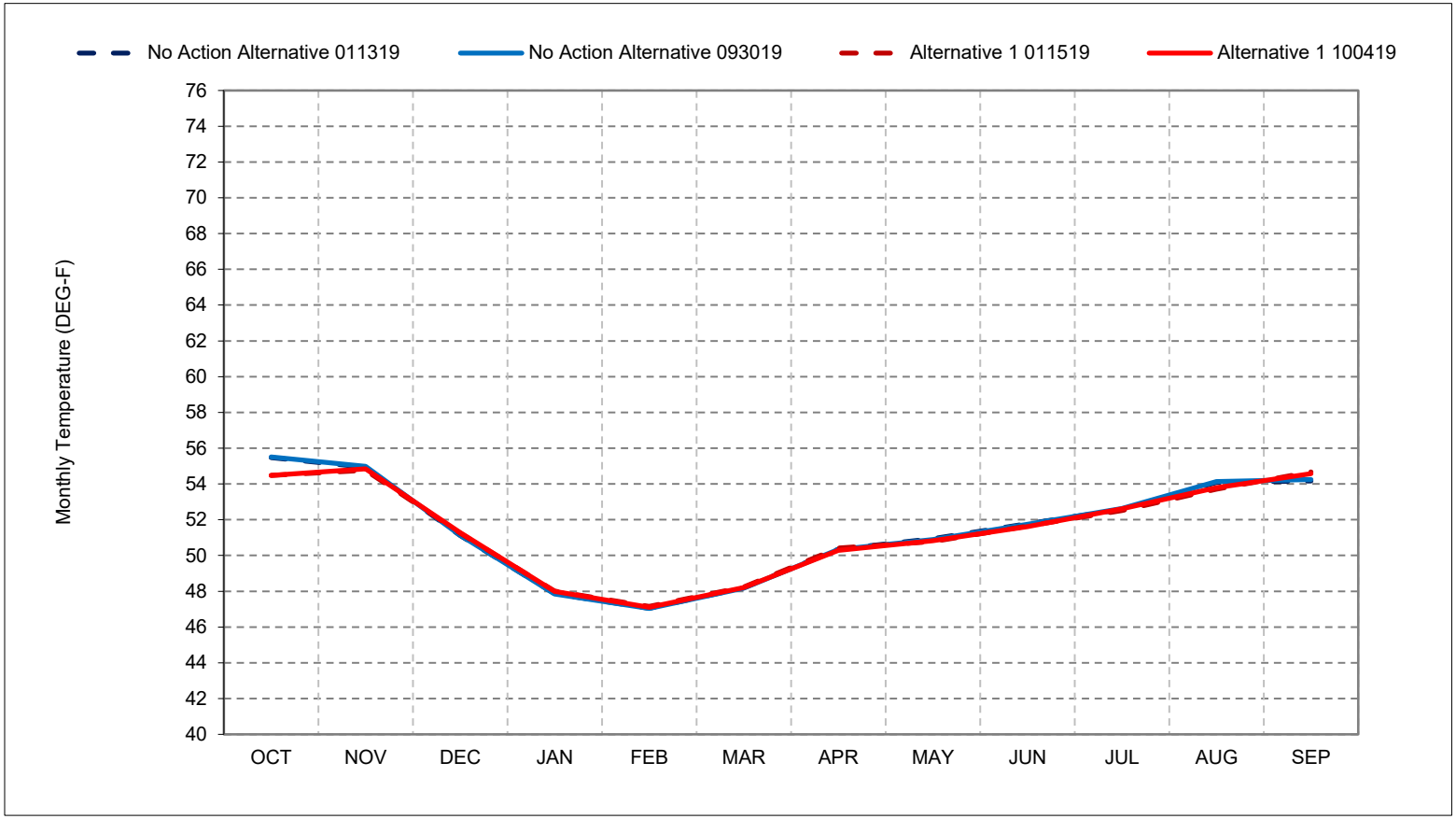
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-1. Sacramento River at Clear Creek, Long-Term Average Temperature

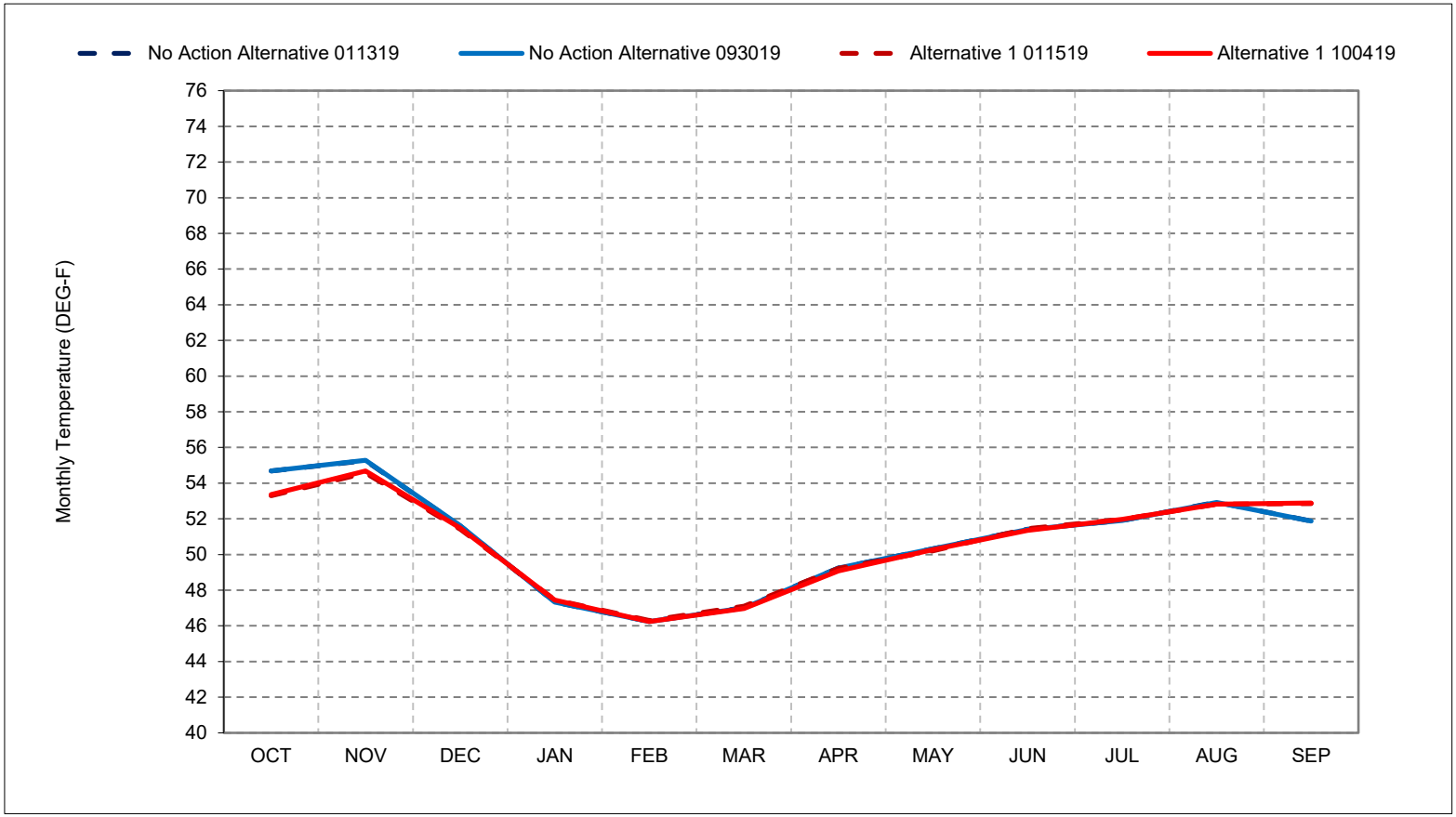



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-2. Sacramento River at Clear Creek, Wet Year Average Temperature

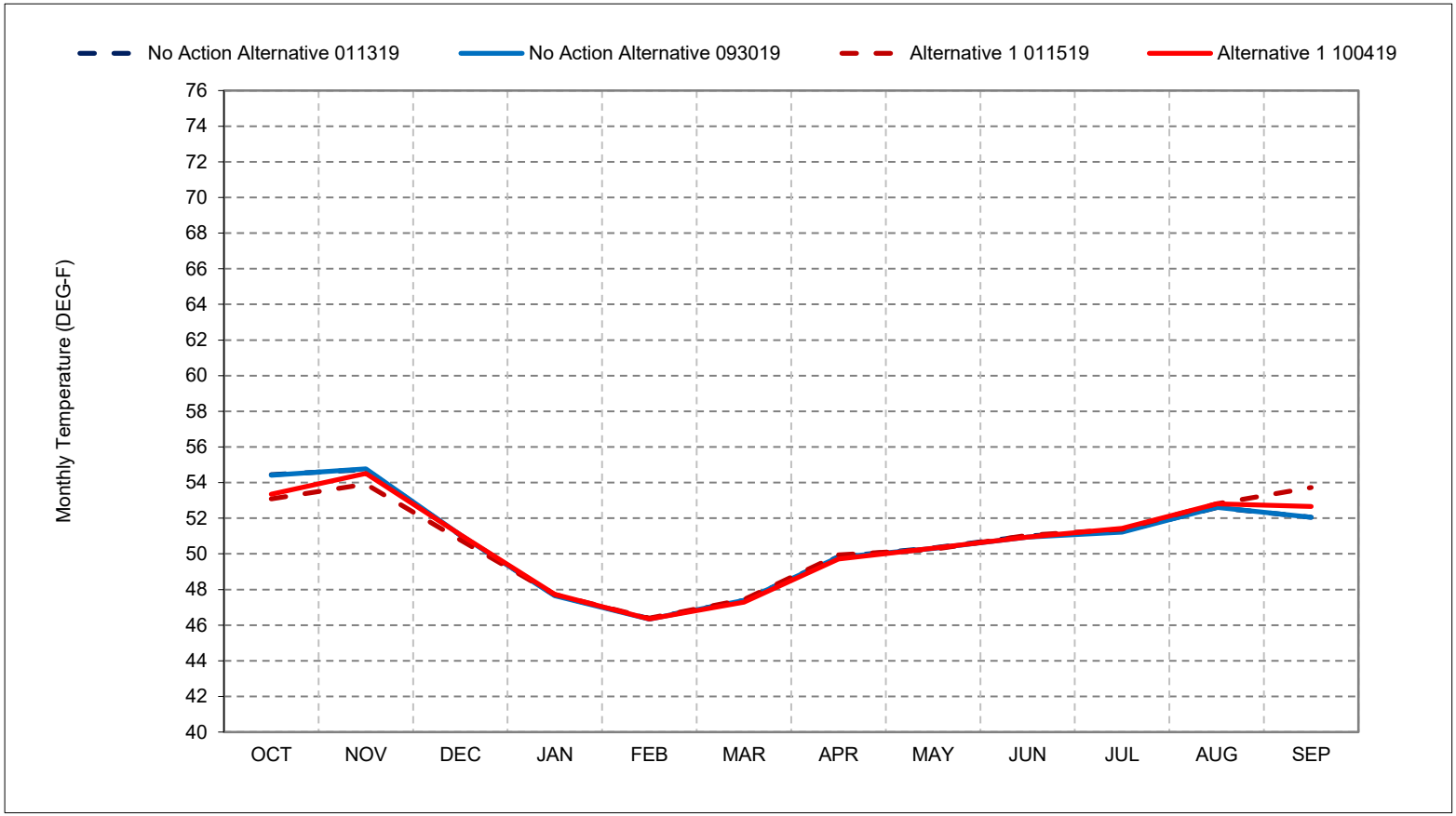



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-3. Sacramento River at Clear Creek, Above Normal Year Average Temperature

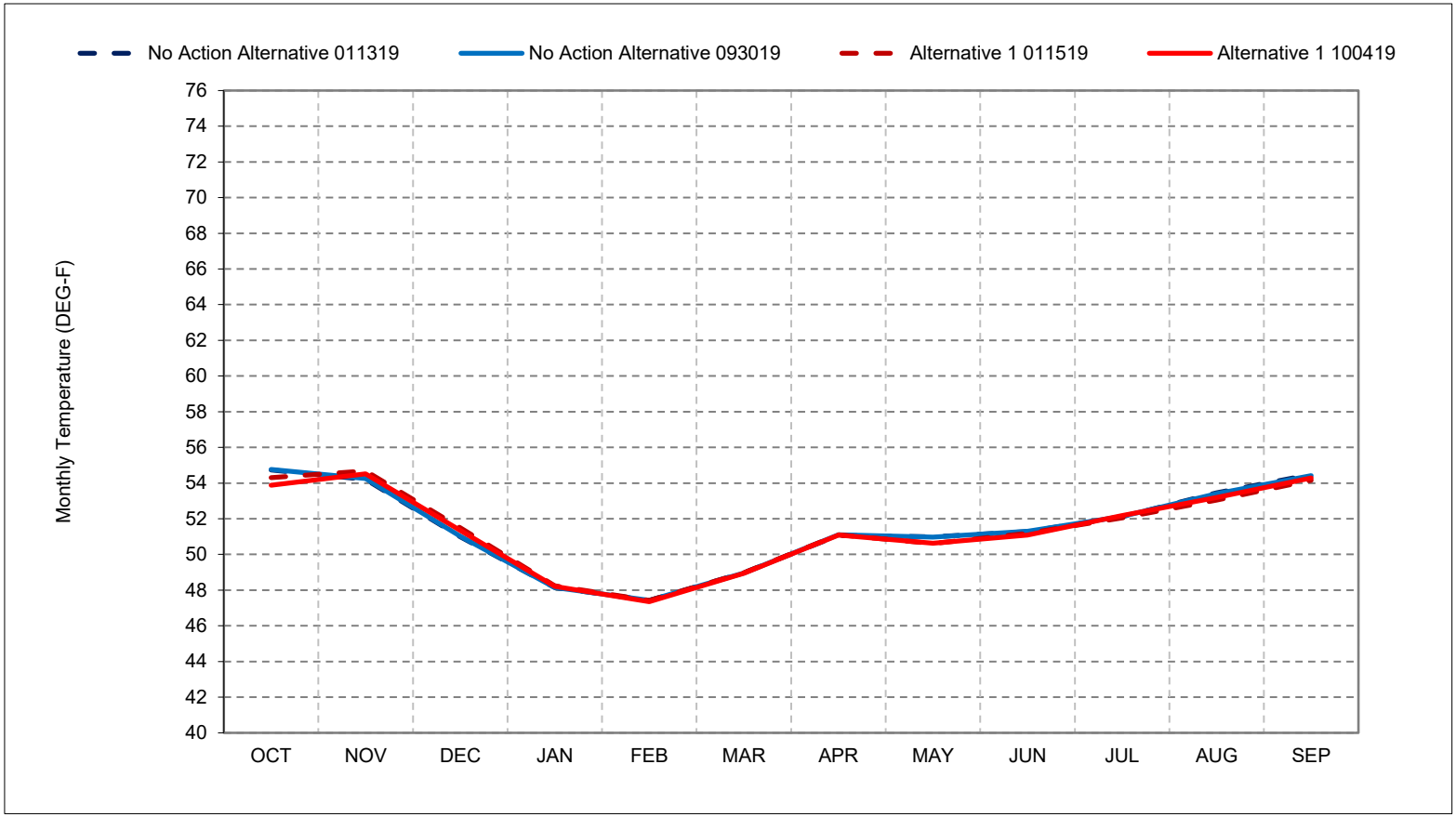



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-4. Sacramento River at Clear Creek, Below Normal Year Average Temperature

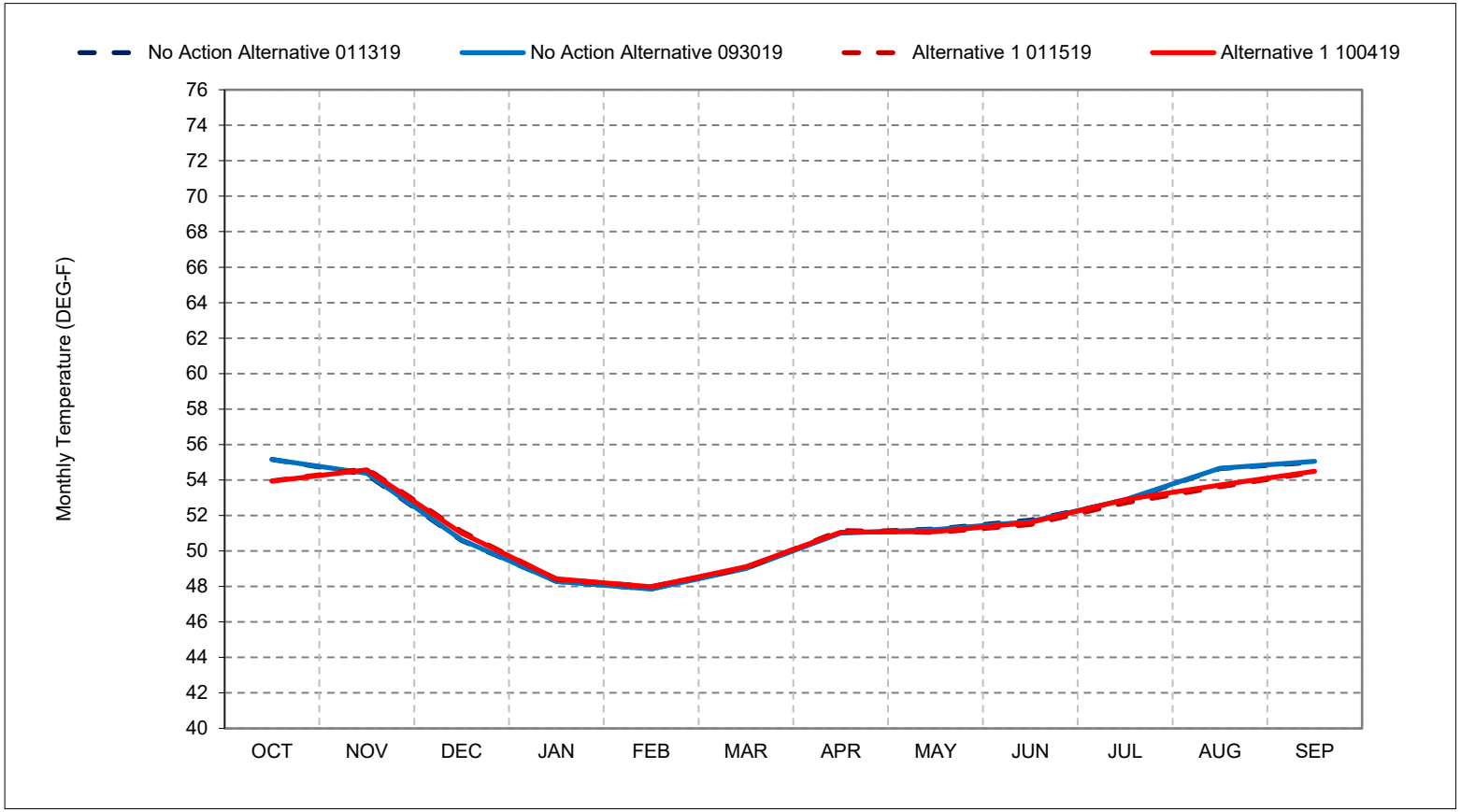



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-5. Sacramento River at Clear Creek, Dry Year Average Temperature

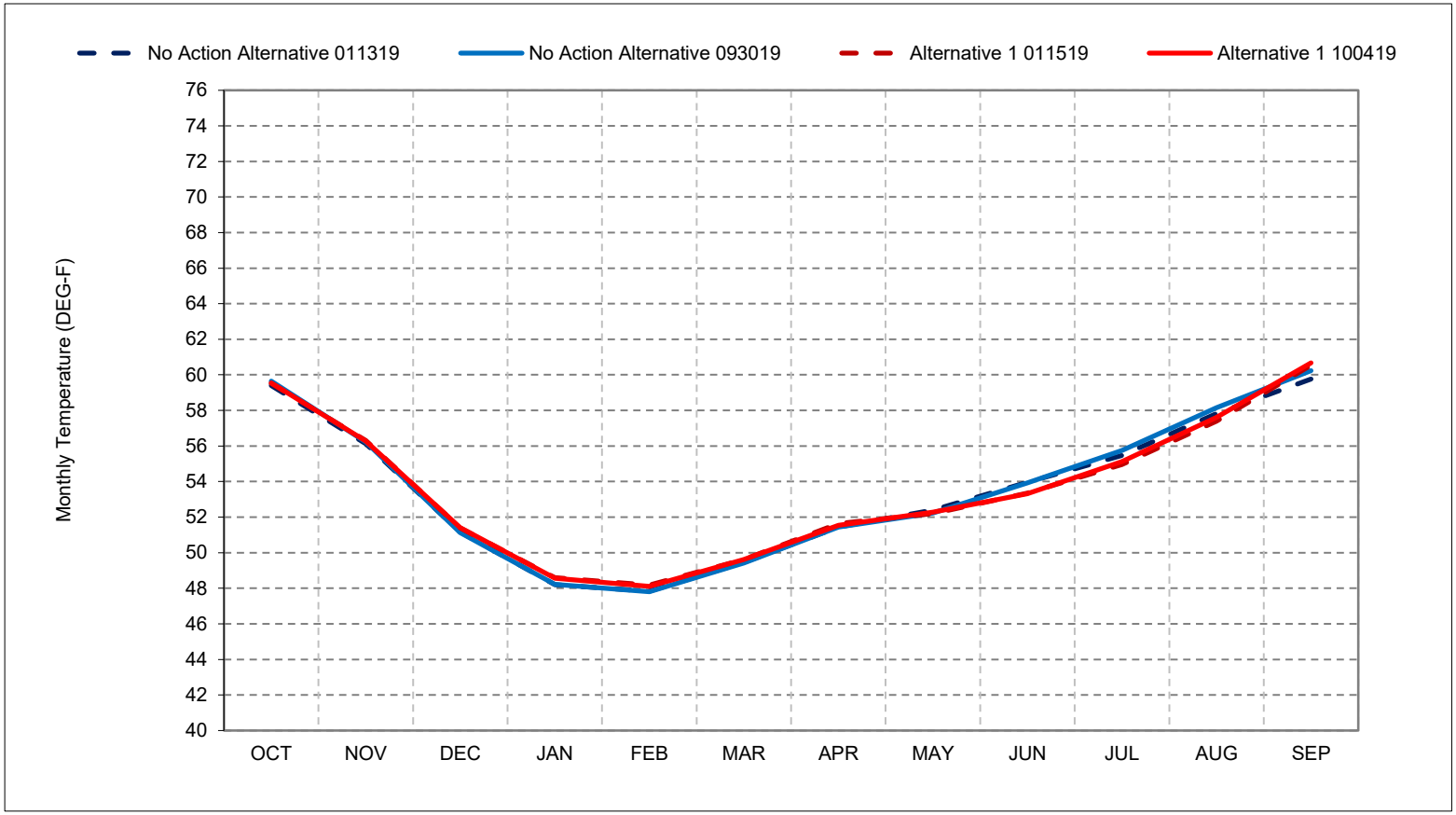



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-6. Sacramento River at Clear Creek, Critical Year Average Temperature

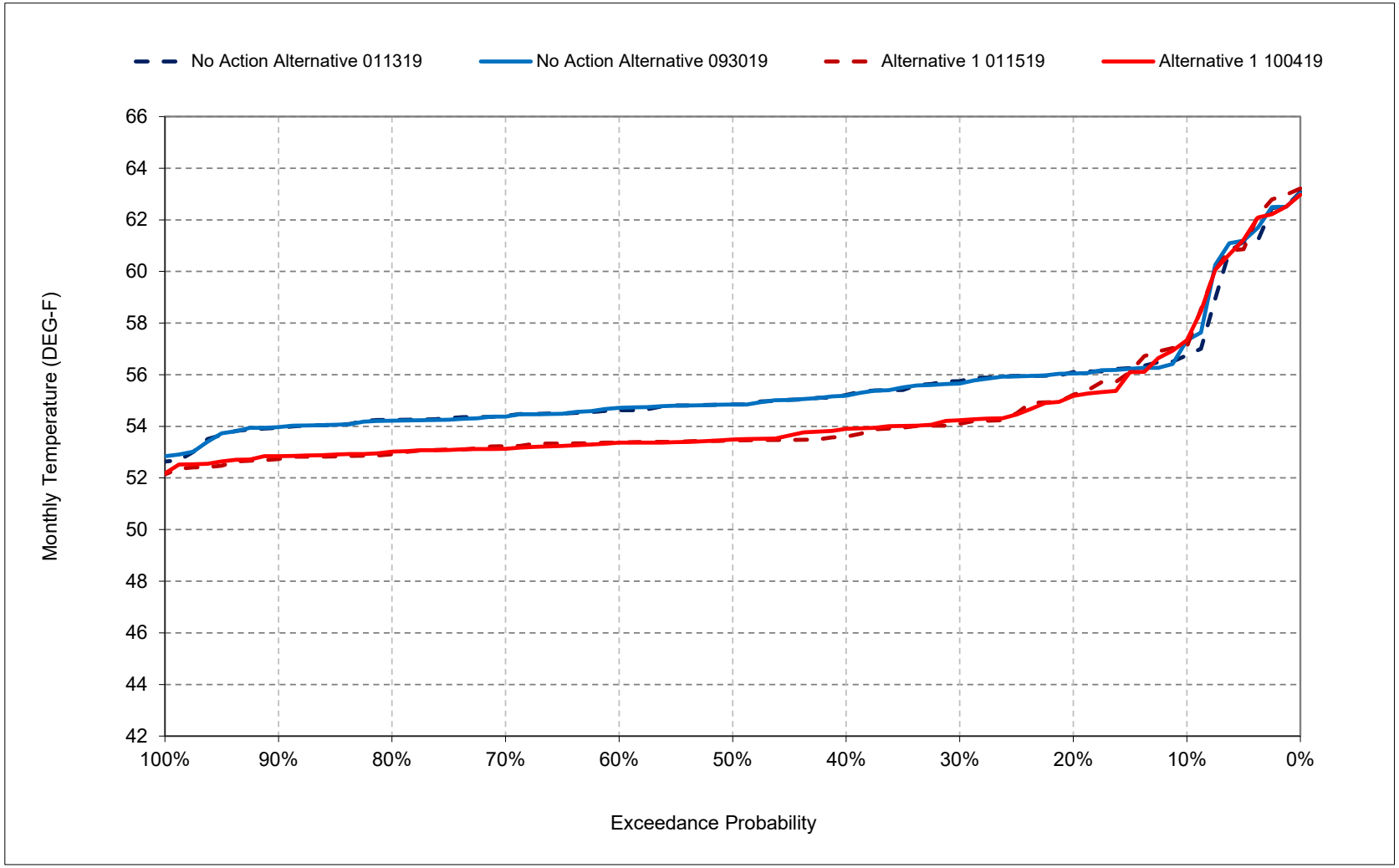



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

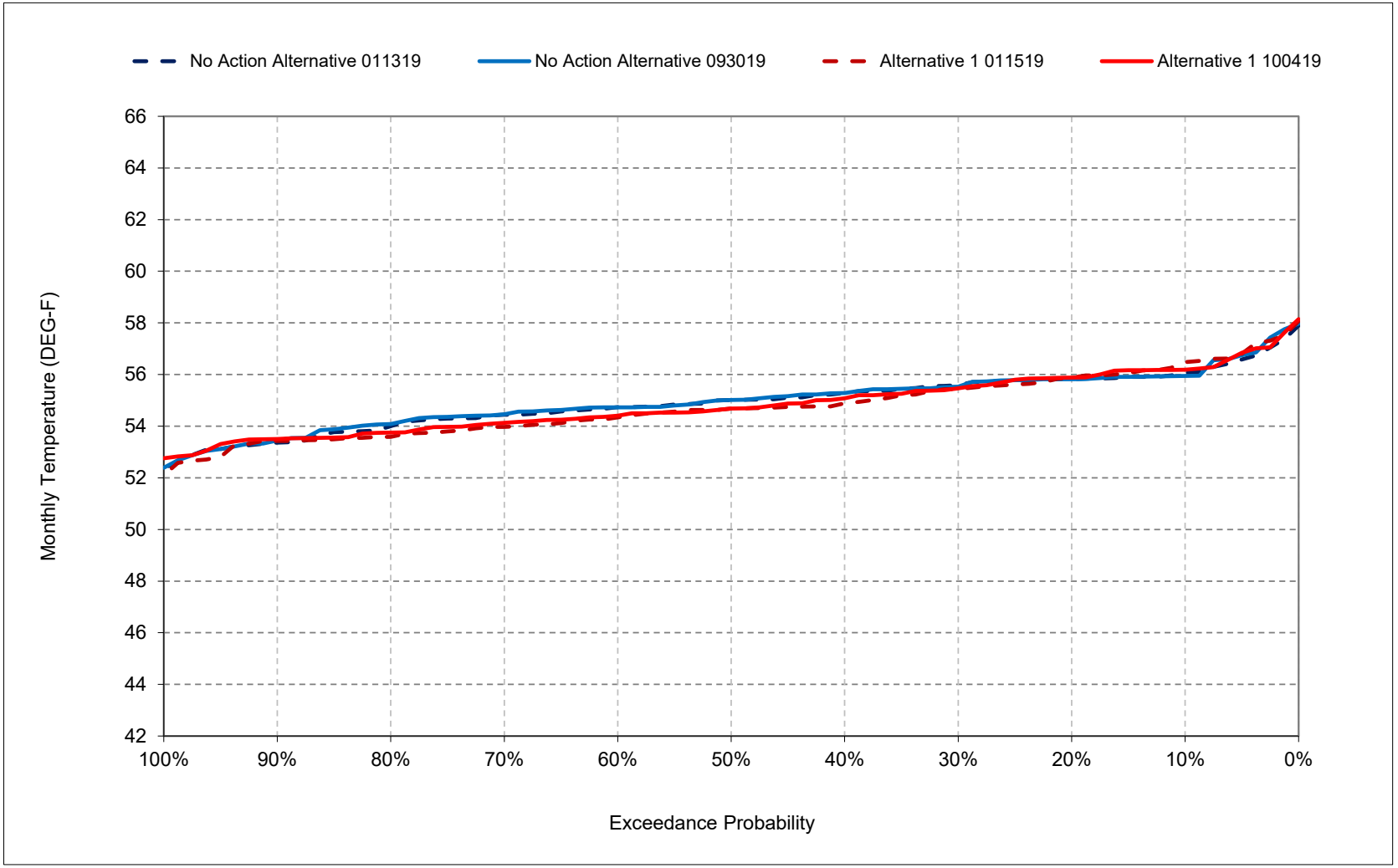
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-7. Sacramento River at Clear Creek, October**



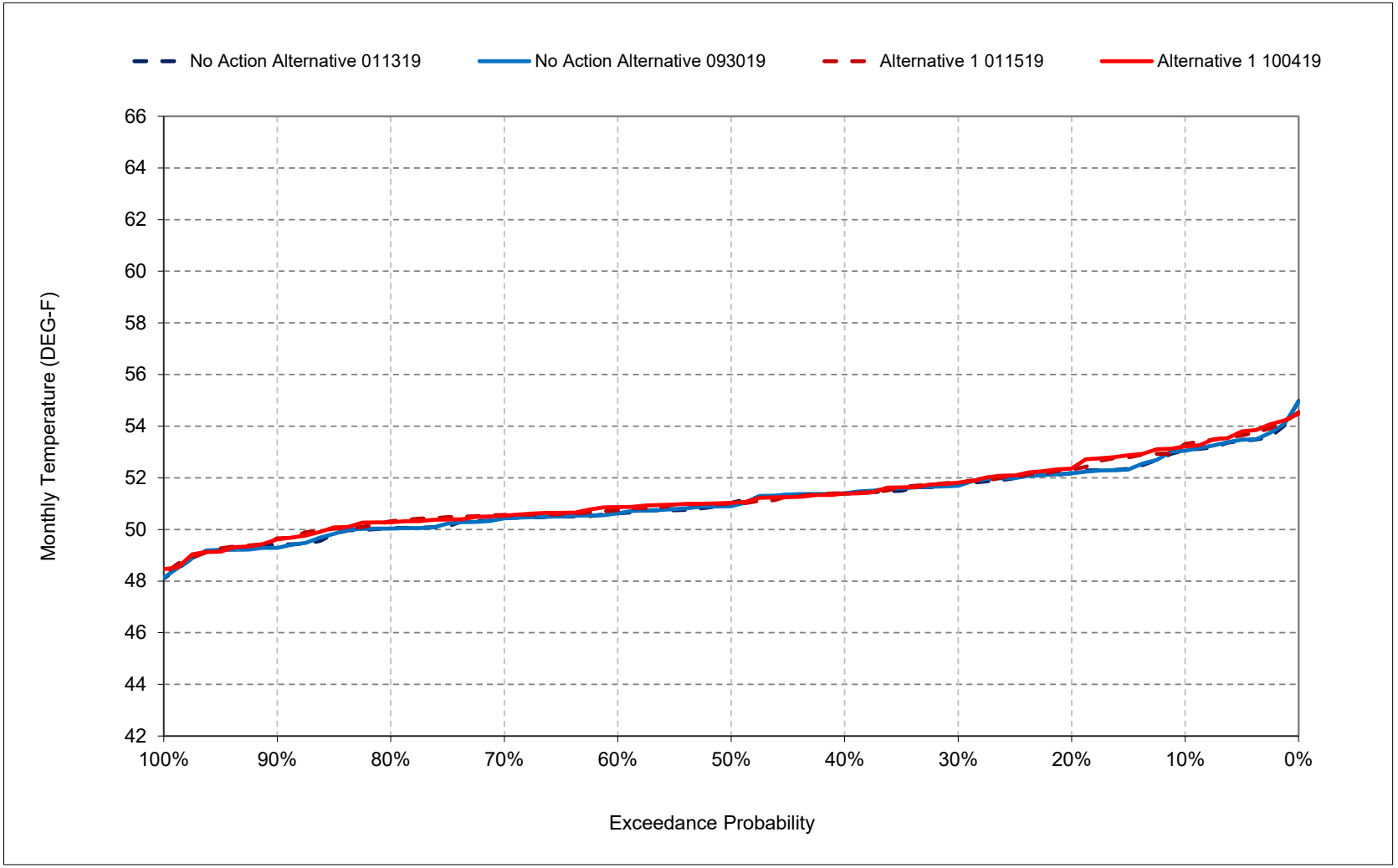

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-8. Sacramento River at Clear Creek, November**



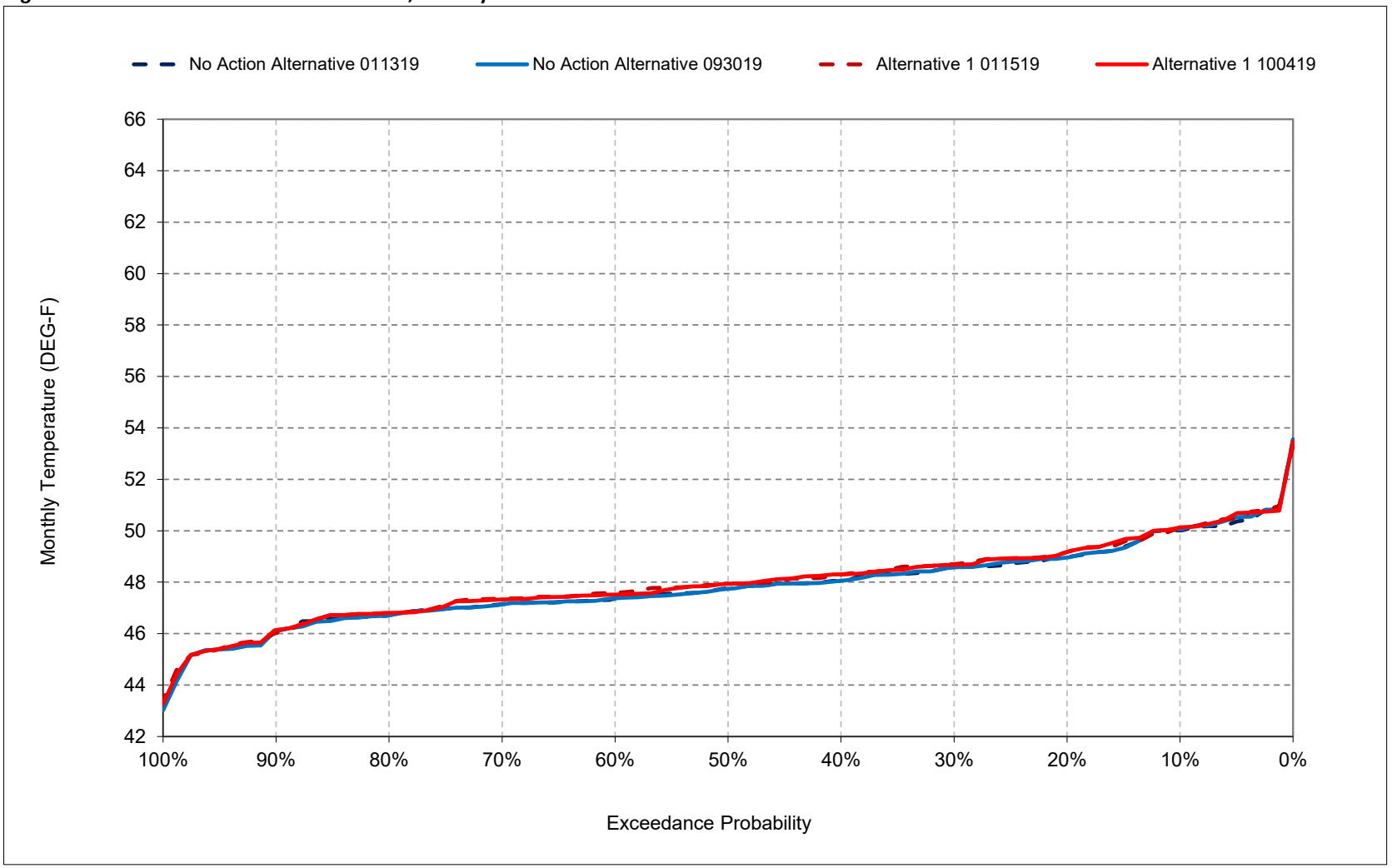

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-9. Sacramento River at Clear Creek, December**



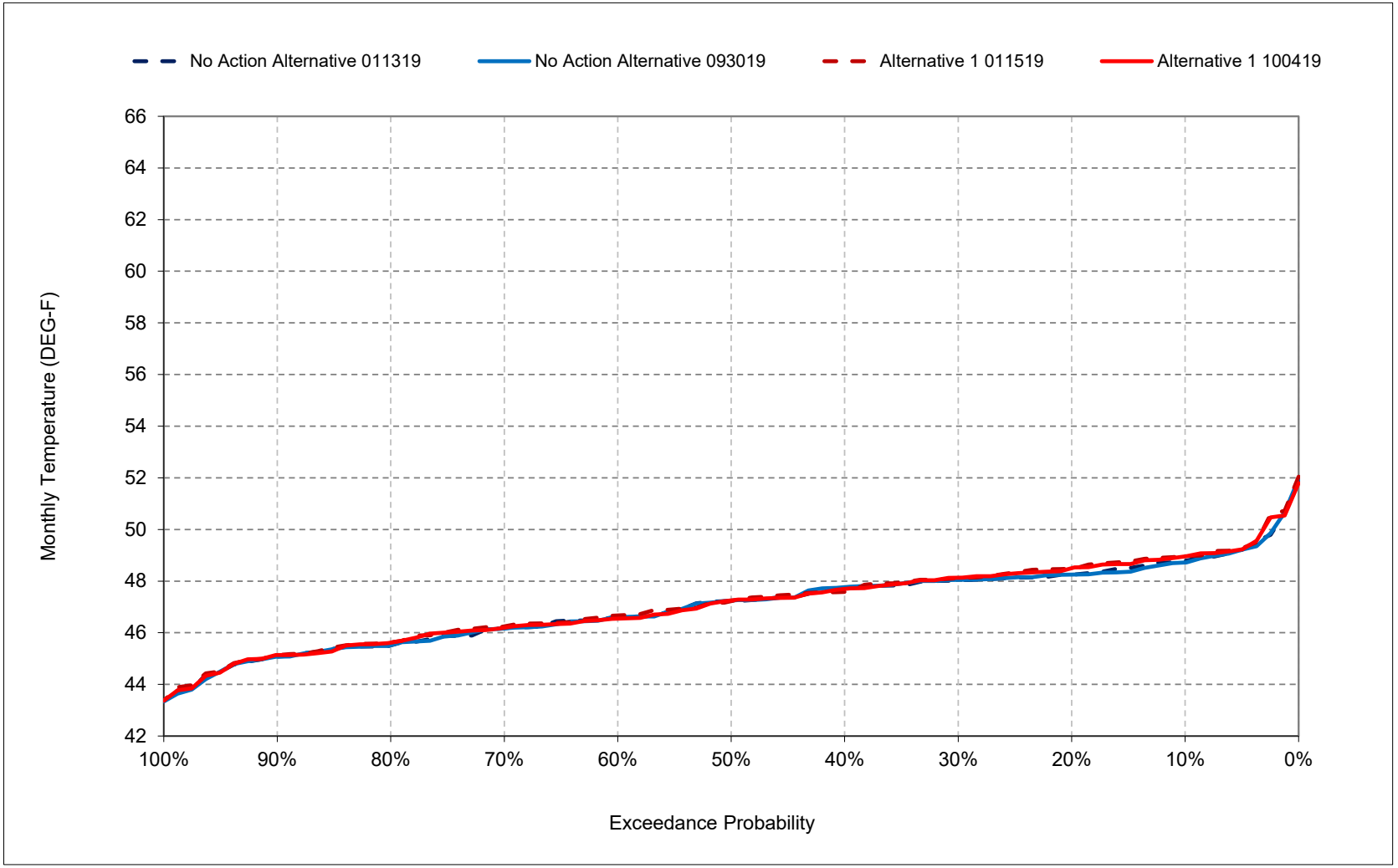

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-10. Sacramento River at Clear Creek, January**



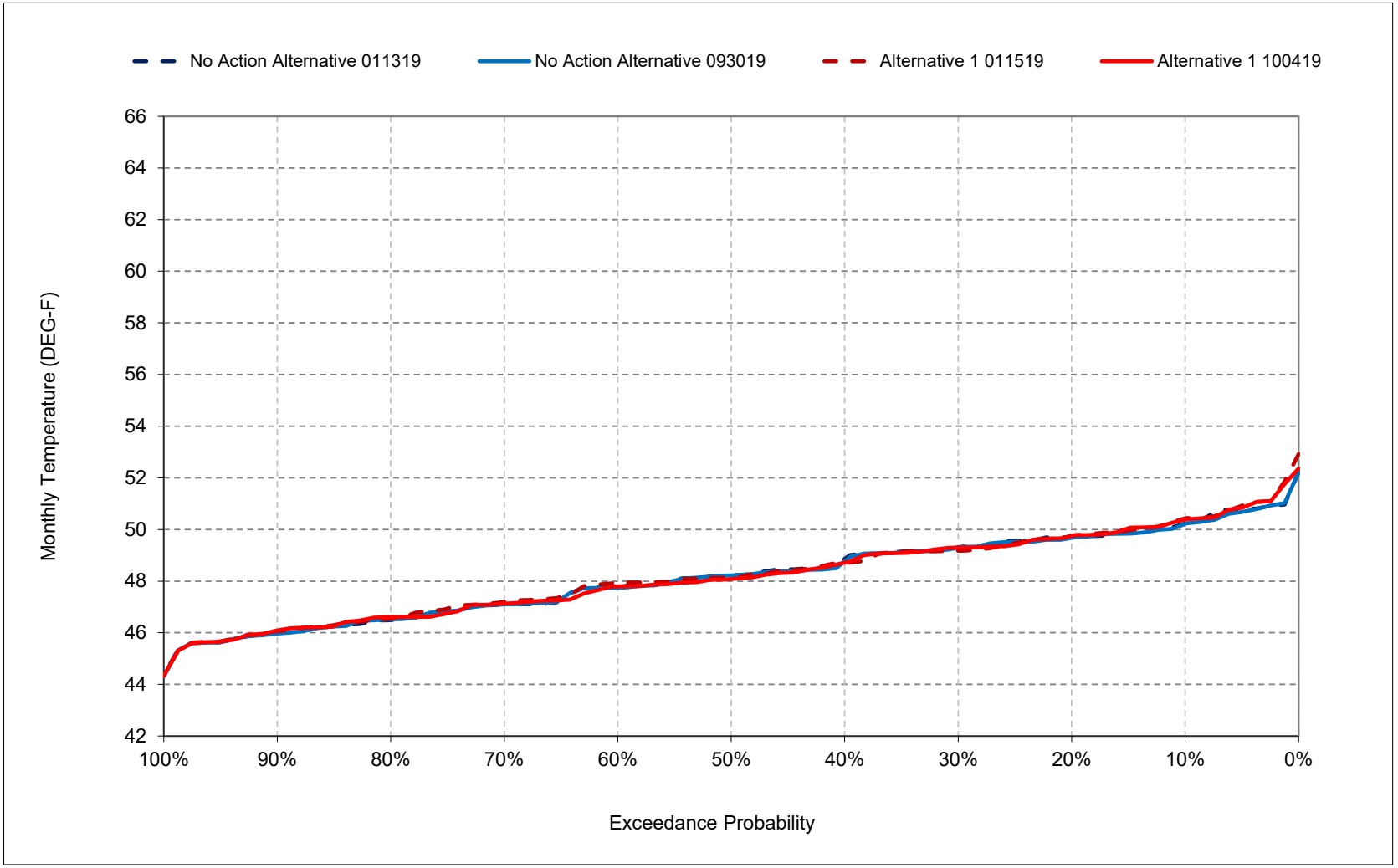

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-11. Sacramento River at Clear Creek, February**



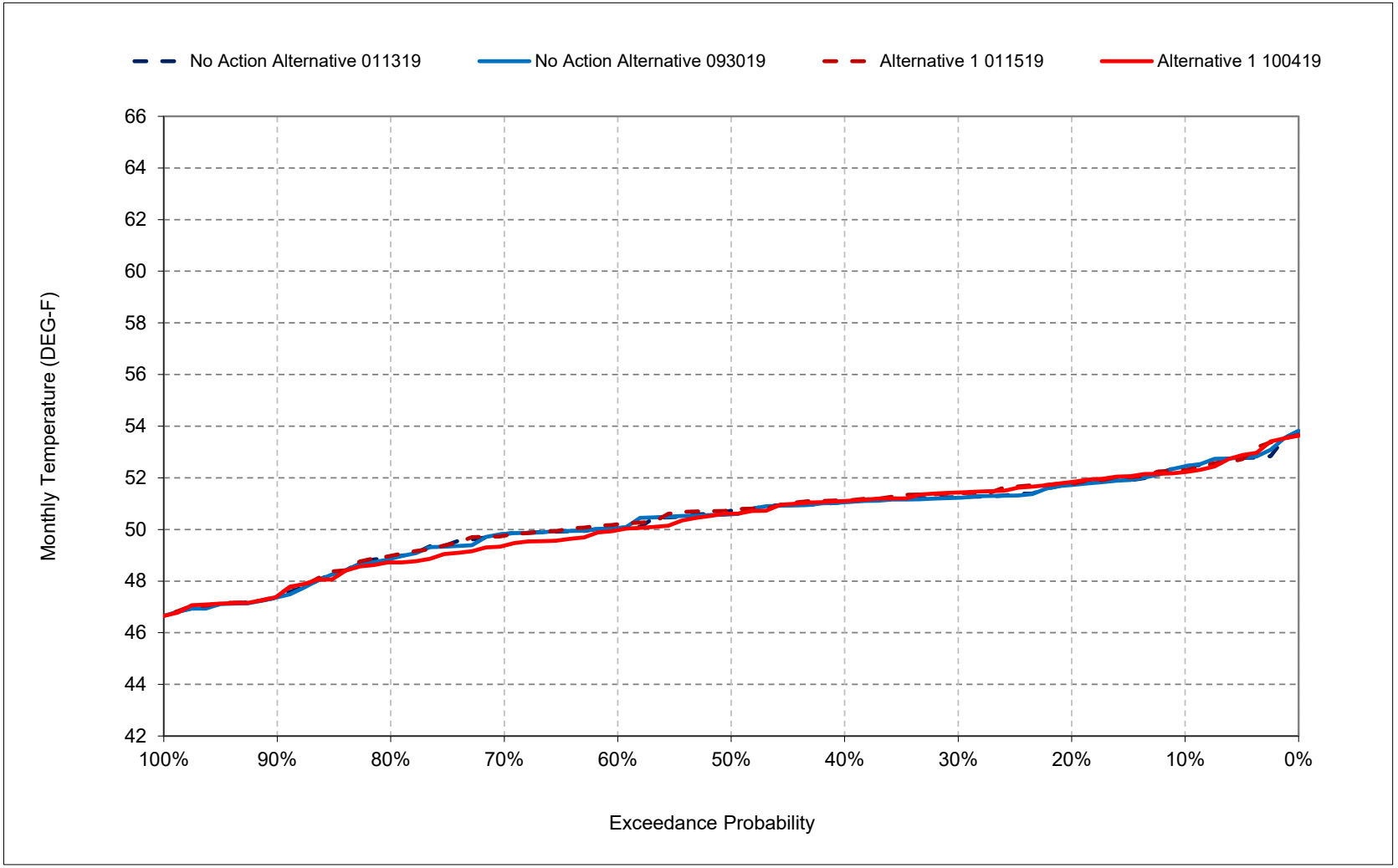

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-12. Sacramento River at Clear Creek, March**



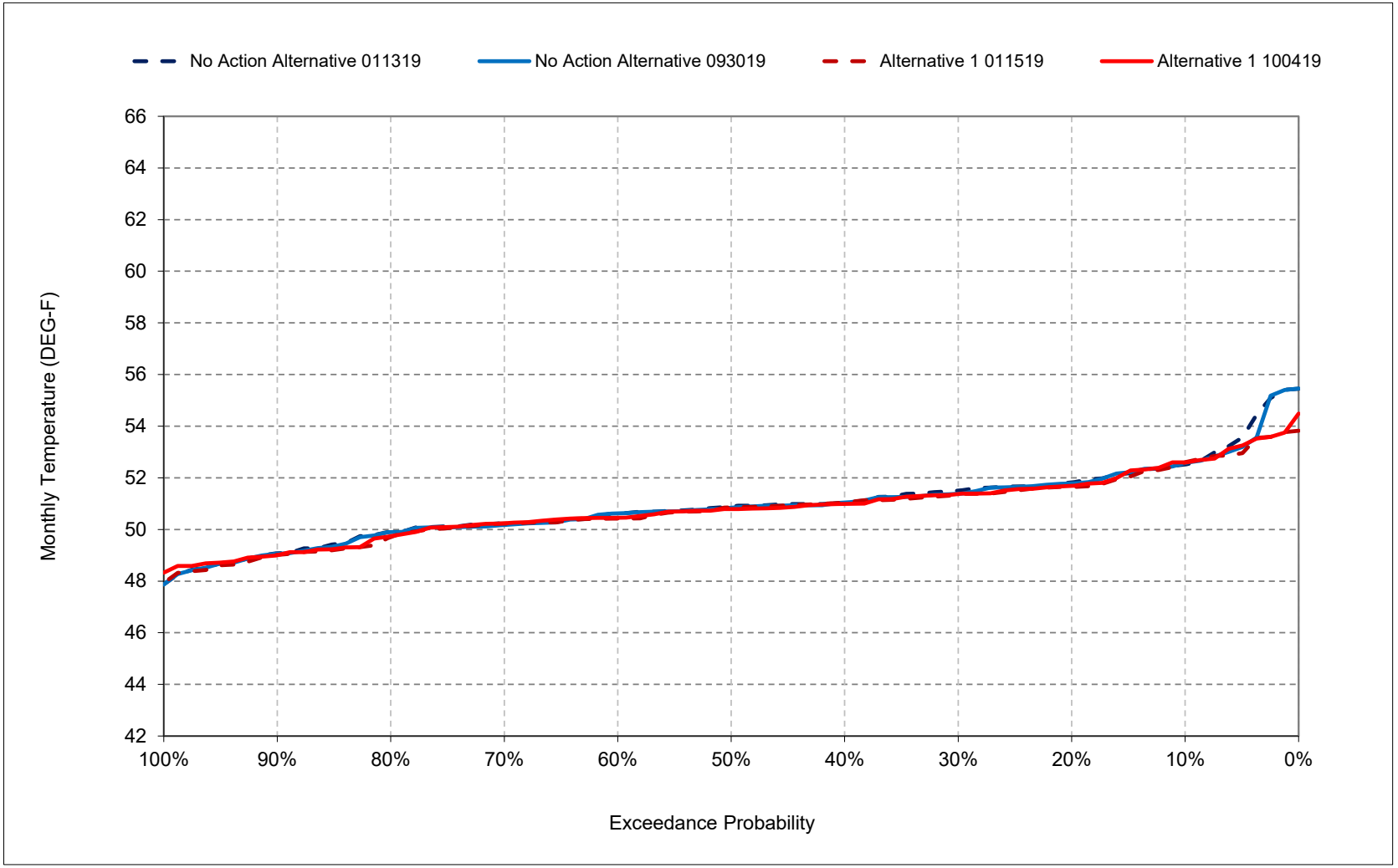

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-13. Sacramento River at Clear Creek, April**



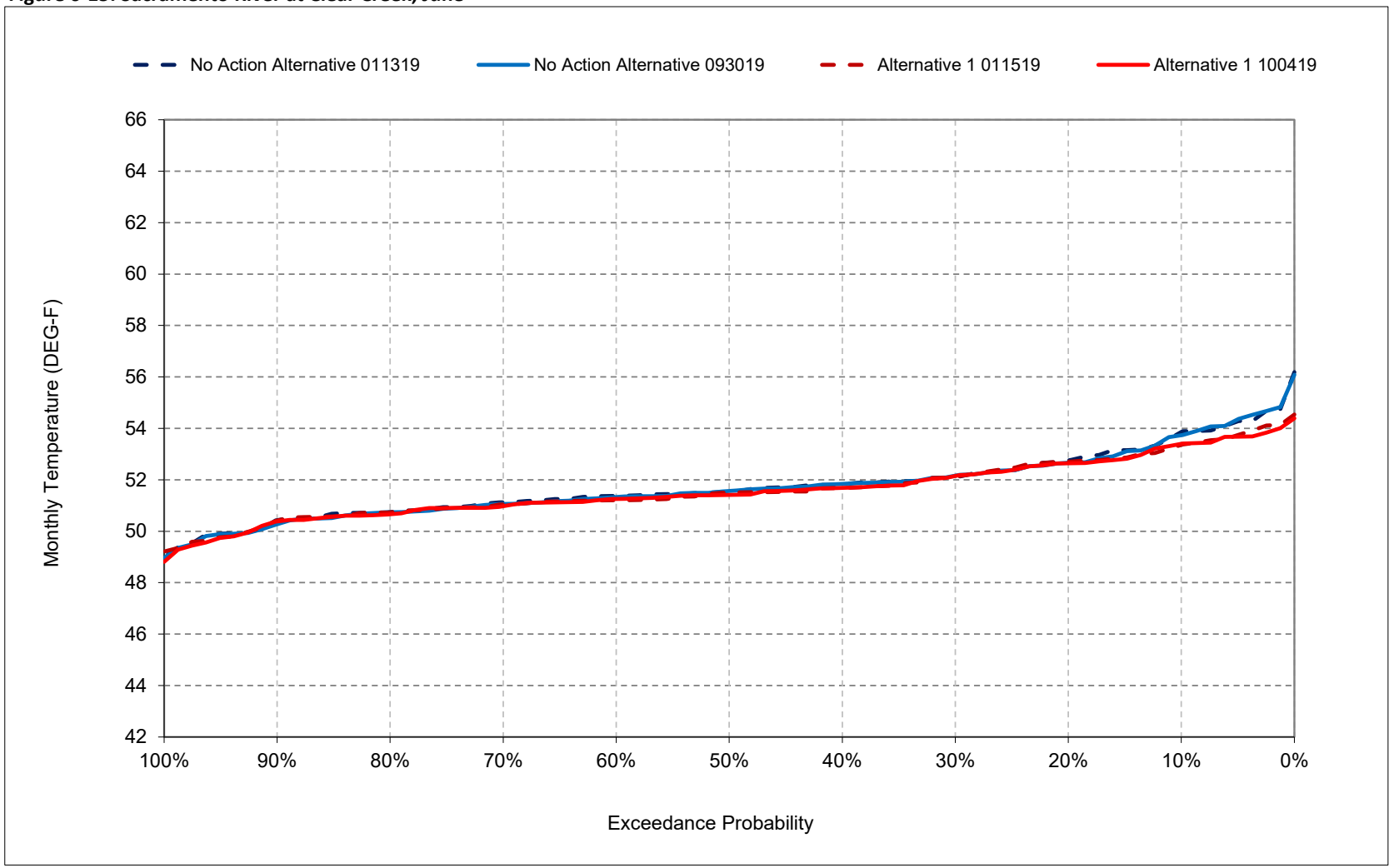

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-14. Sacramento River at Clear Creek, May**



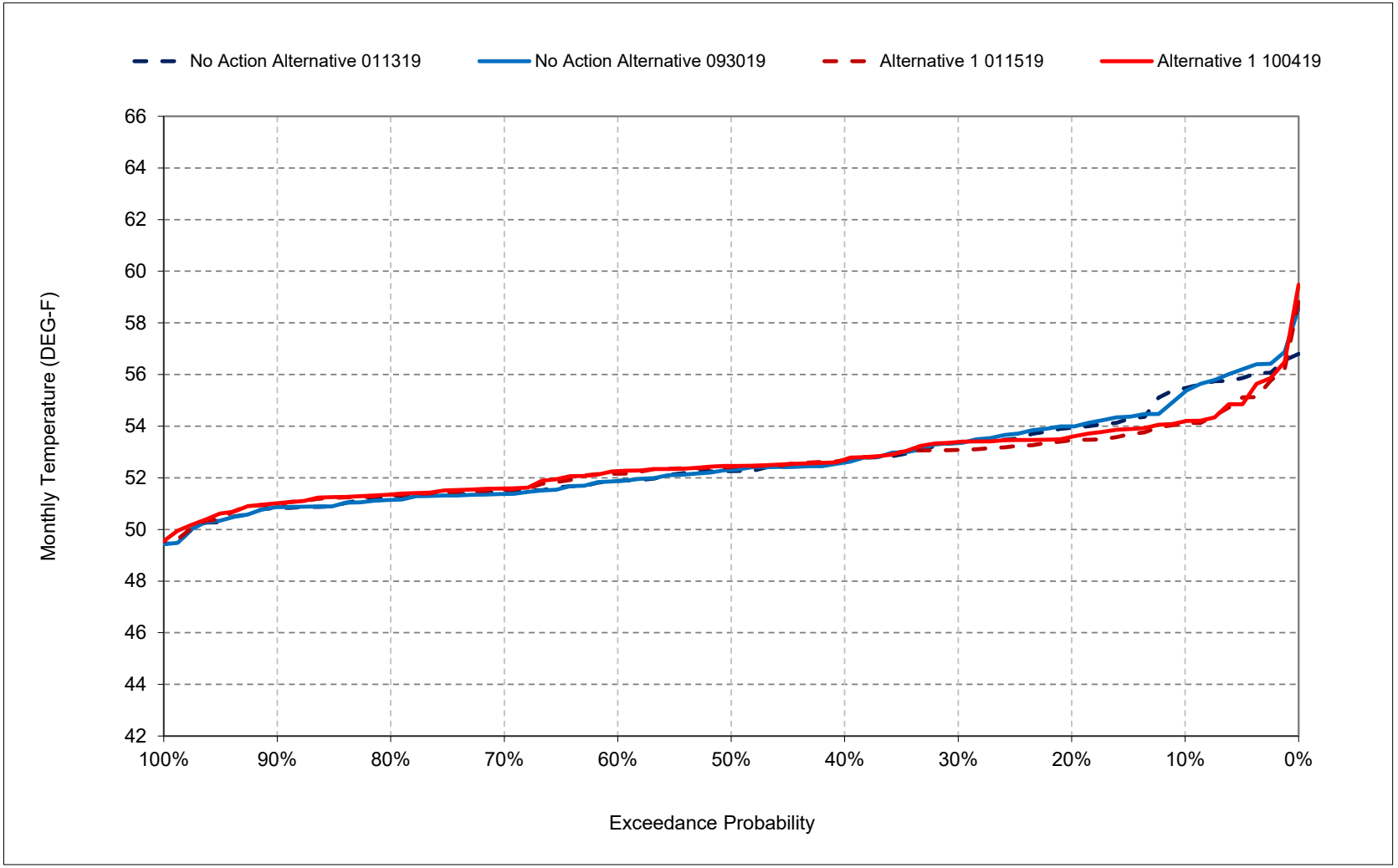

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-15. Sacramento River at Clear Creek, June**



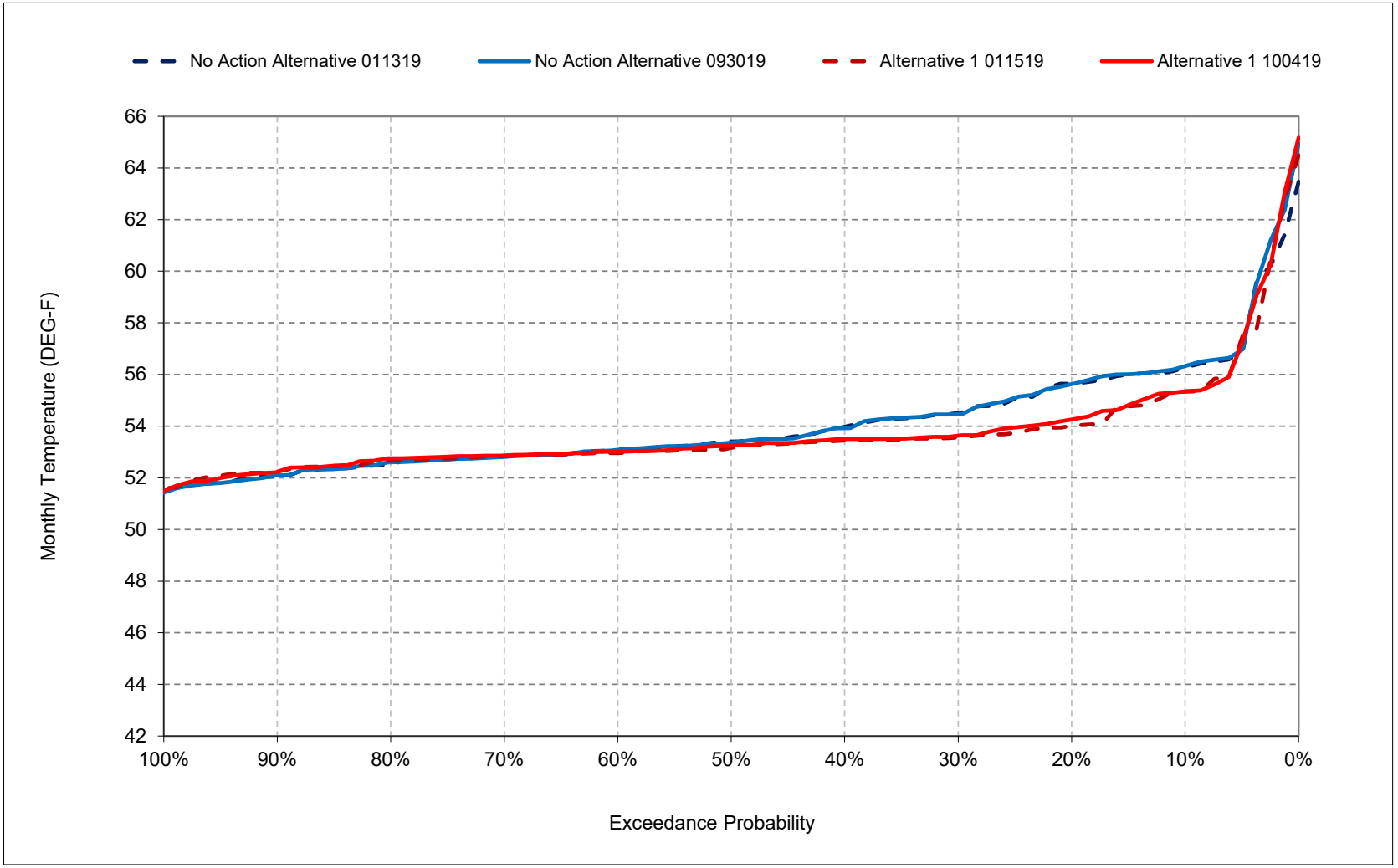

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-16. Sacramento River at Clear Creek, July**



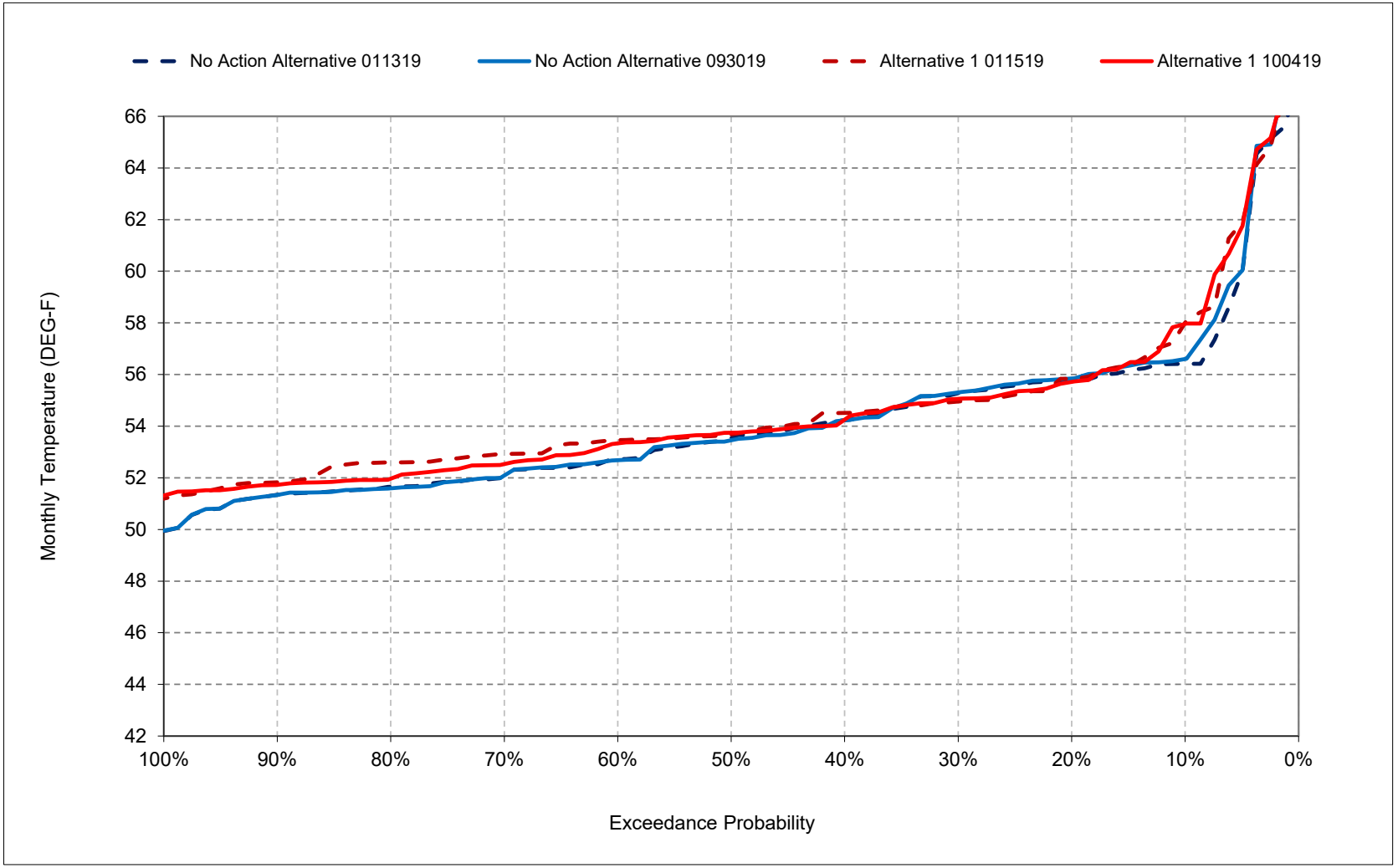

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-17. Sacramento River at Clear Creek, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-18. Sacramento River at Clear Creek, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-1. Sacramento River at Balls Ferry, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.2 | 55.8 | 52.5 | 49.2 | 48.8 | 51.1 | 54.3 | 54.8 | 55.4 | 56.7 | 57.7 | 57.8 |
| 20% | 56.6 | 55.7 | 51.3 | 48.6 | 48.4 | 50.4 | 53.4 | 53.7 | 54.6 | 55.2 | 56.8 | 57.2 |
| 30% | 56.2 | 55.3 | 50.8 | 47.9 | 48.1 | 50.1 | 53.1 | 53.3 | 54.1 | 54.5 | 55.8 | 56.5 |
| 40% | 55.7 | 55.0 | 50.4 | 47.4 | 47.7 | 49.5 | 52.9 | 52.9 | 53.7 | 54.1 | 55.3 | 55.5 |
| 50% | 55.3 | 54.6 | 50.2 | 47.2 | 47.3 | 49.2 | 52.3 | 52.6 | 53.3 | 53.6 | 54.6 | 54.7 |
| 60% | 55.1 | 54.2 | 49.7 | 46.8 | 46.9 | 48.5 | 51.9 | 52.3 | 53.1 | 53.1 | 54.4 | 53.7 |
| 70% | 54.9 | 53.8 | 49.4 | 46.6 | 46.3 | 48.0 | 51.7 | 52.0 | 52.8 | 52.7 | 54.1 | 53.0 |
| 80% | 54.6 | 53.4 | 48.8 | 46.4 | 45.9 | 47.2 | 50.7 | 51.7 | 52.6 | 52.4 | 53.8 | 52.4 |
| 90% | 54.4 | 52.8 | 48.4 | 45.8 | 45.3 | 46.6 | 48.7 | 51.1 | 52.0 | 51.9 | 53.1 | 52.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 54.5 | 50.2 | 47.3 | 47.2 | 49.0 | 52.0 | 52.8 | 53.5 | 53.8 | 55.3 | 55.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.1 | 54.9 | 50.7 | 46.9 | 46.4 | 47.7 | 50.8 | 52.5 | 53.6 | 53.3 | 54.2 | 52.6 |
| Above Normal (16%) | 54.9 | 54.4 | 50.2 | 47.0 | 46.6 | 48.2 | 51.6 | 52.3 | 52.7 | 52.4 | 53.8 | 53.0 |
| Below Normal (13%) | 55.3 | 53.8 | 50.2 | 47.4 | 47.6 | 49.8 | 52.9 | 52.6 | 52.8 | 53.3 | 54.6 | 55.8 |
| Dry (24%) | 55.7 | 53.8 | 49.8 | 47.7 | 47.9 | 49.8 | 52.8 | 53.0 | 53.2 | 54.1 | 55.9 | 56.4 |
| Critical (15%) | 59.7 | 55.7 | 50.1 | 47.9 | 48.2 | 50.4 | 53.0 | 54.0 | 55.4 | 56.7 | 59.1 | 60.8 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.5 | 56.4 | 52.6 | 49.5 | 49.1 | 51.2 | 54.1 | 54.8 | 54.8 | 55.4 | 56.8 | 59.1 |
| 20% | 55.9 | 55.5 | 51.5 | 48.7 | 48.5 | 50.5 | 53.5 | 53.6 | 54.5 | 54.8 | 55.3 | 57.1 |
| 30% | 54.6 | 54.9 | 50.8 | 48.1 | 48.2 | 50.0 | 53.2 | 53.2 | 54.0 | 54.3 | 54.9 | 56.3 |
| 40% | 54.4 | 54.5 | 50.5 | 47.7 | 47.7 | 49.5 | 52.9 | 52.8 | 53.8 | 54.1 | 54.7 | 55.9 |
| 50% | 54.1 | 54.2 | 50.2 | 47.4 | 47.4 | 49.2 | 52.5 | 52.5 | 53.2 | 53.8 | 54.4 | 55.1 |
| 60% | 54.0 | 53.8 | 50.0 | 47.0 | 46.9 | 48.6 | 52.0 | 52.2 | 52.8 | 53.2 | 54.2 | 54.8 |
| 70% | 53.7 | 53.4 | 49.8 | 46.8 | 46.4 | 47.9 | 51.6 | 51.9 | 52.6 | 52.9 | 54.1 | 54.2 |
| 80% | 53.4 | 53.1 | 49.2 | 46.5 | 45.9 | 47.3 | 50.7 | 51.3 | 52.3 | 52.6 | 53.9 | 53.8 |
| 90% | 53.2 | 52.8 | 48.7 | 45.7 | 45.4 | 46.7 | 48.9 | 51.0 | 51.9 | 52.1 | 53.6 | 53.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 54.3 | 50.4 | 47.5 | 47.3 | 49.0 | 52.1 | 52.6 | 53.3 | 53.8 | 55.0 | 55.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.8 | 54.2 | 50.7 | 47.1 | 46.5 | 47.8 | 50.8 | 52.4 | 53.6 | 53.4 | 54.1 | 54.0 |
| Above Normal (16%) | 53.7 | 53.5 | 50.0 | 47.2 | 46.6 | 48.2 | 51.7 | 52.1 | 52.7 | 52.5 | 54.0 | 55.2 |
| Below Normal (13%) | 54.9 | 54.3 | 50.7 | 47.6 | 47.6 | 49.7 | 52.8 | 52.1 | 52.6 | 53.2 | 54.2 | 55.4 |
| Dry (24%) | 54.6 | 54.1 | 50.3 | 47.9 | 48.0 | 49.8 | 52.9 | 52.7 | 52.8 | 53.9 | 55.0 | 55.8 |
| Critical (15%) | 59.8 | 55.9 | 50.3 | 48.2 | 48.5 | 50.5 | 53.1 | 53.7 | 54.7 | 56.3 | 58.6 | 61.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.3** | **0.6** | **0.1** | **0.3** | **0.3** | **0.1** | -0.2 | -0.1 | -0.6 | -1.3 | -0.9 | **1.3** |
| 20% | -0.6 | -0.2 | **0.2** | **0.1** | **0.1** | **0.0** | **0.1** | -0.1 | -0.1 | -0.5 | -1.5 | -0.2 |
| 30% | -1.5 | -0.4 | **0.0** | **0.2** | **0.1** | -0.1 | **0.1** | -0.1 | -0.1 | -0.1 | -0.9 | -0.2 |
| 40% | -1.3 | -0.5 | **0.0** | **0.3** | 0.0 | 0.0 | **0.0** | -0.1 | **0.1** | **0.0** | -0.6 | **0.5** |
| 50% | -1.2 | -0.4 | **0.1** | **0.2** | **0.0** | -0.1 | **0.2** | -0.1 | -0.1 | **0.2** | -0.2 | **0.4** |
| 60% | -1.1 | -0.4 | **0.3** | **0.2** | **0.0** | **0.1** | **0.1** | -0.1 | -0.4 | **0.1** | -0.1 | **1.2** |
| 70% | -1.2 | -0.4 | **0.4** | **0.1** | **0.1** | -0.1 | 0.0 | -0.1 | -0.3 | **0.2** | 0.0 | **1.2** |
| 80% | -1.2 | -0.3 | **0.4** | **0.1** | **0.1** | **0.1** | **0.1** | -0.4 | -0.3 | **0.2** | **0.0** | **1.5** |
| 90% | -1.2 | **0.0** | **0.2** | -0.1 | **0.0** | **0.1** | **0.2** | -0.1 | -0.1 | **0.2** | **0.4** | **0.8** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.9 | -0.2 | **0.2** | **0.2** | **0.1** | **0.0** | **0.0** | -0.2 | -0.2 | -0.1 | -0.4 | **0.7** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.3 | -0.7 | 0.0 | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | **0.0** | **0.1** | -0.1 | **1.4** |
| Above Normal (16%) | -1.2 | -0.9 | -0.1 | **0.1** | **0.0** | **0.0** | **0.1** | -0.1 | 0.0 | **0.1** | **0.2** | **2.2** |
| Below Normal (13%) | -0.4 | **0.4** | **0.4** | **0.2** | 0.0 | -0.1 | -0.1 | -0.5 | -0.2 | -0.1 | -0.4 | -0.4 |
| Dry (24%) | -1.1 | **0.3** | **0.5** | **0.1** | **0.1** | 0.0 | **0.1** | -0.3 | -0.3 | -0.1 | -1.0 | -0.5 |
| Critical (15%) | **0.1** | **0.2** | **0.2** | **0.3** | **0.3** | **0.1** | **0.2** | -0.2 | -0.6 | -0.5 | -0.4 | **0.7** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-2. Sacramento River at Balls Ferry, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.7 | 55.9 | 52.5 | 49.3 | 48.8 | 50.9 | 54.3 | 54.8 | 55.3 | 56.5 | 57.8 | 57.9 |
| 20% | 56.6 | 55.6 | 51.3 | 48.7 | 48.5 | 50.4 | 53.4 | 53.7 | 54.7 | 55.4 | 56.8 | 57.3 |
| 30% | 56.1 | 55.2 | 50.8 | 47.9 | 48.2 | 50.1 | 53.1 | 53.3 | 54.1 | 54.5 | 55.8 | 56.6 |
| 40% | 55.7 | 55.0 | 50.4 | 47.4 | 47.7 | 49.5 | 52.9 | 52.9 | 53.7 | 54.1 | 55.3 | 55.3 |
| 50% | 55.3 | 54.6 | 50.1 | 47.2 | 47.4 | 49.2 | 52.4 | 52.5 | 53.2 | 53.6 | 54.6 | 54.7 |
| 60% | 55.1 | 54.3 | 49.7 | 46.8 | 46.9 | 48.6 | 51.9 | 52.4 | 53.1 | 53.1 | 54.4 | 53.6 |
| 70% | 55.0 | 53.9 | 49.4 | 46.6 | 46.3 | 48.0 | 51.6 | 51.9 | 52.8 | 52.7 | 54.1 | 53.0 |
| 80% | 54.6 | 53.5 | 48.8 | 46.4 | 45.8 | 47.2 | 50.6 | 51.7 | 52.5 | 52.4 | 53.8 | 52.3 |
| 90% | 54.4 | 52.8 | 48.4 | 45.6 | 45.3 | 46.6 | 48.7 | 51.0 | 51.8 | 51.9 | 53.1 | 52.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.6 | 50.2 | 47.3 | 47.2 | 48.9 | 52.0 | 52.8 | 53.5 | 53.9 | 55.4 | 55.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.1 | 54.9 | 50.7 | 46.9 | 46.4 | 47.7 | 50.8 | 52.5 | 53.6 | 53.3 | 54.2 | 52.6 |
| Above Normal (16%) | 54.9 | 54.4 | 50.2 | 47.0 | 46.6 | 48.2 | 51.6 | 52.2 | 52.7 | 52.4 | 53.8 | 53.0 |
| Below Normal (13%) | 55.3 | 53.9 | 50.2 | 47.4 | 47.6 | 49.8 | 52.9 | 52.6 | 52.9 | 53.3 | 54.6 | 55.7 |
| Dry (24%) | 55.7 | 53.8 | 49.8 | 47.8 | 47.9 | 49.8 | 52.8 | 53.0 | 53.1 | 54.1 | 56.0 | 56.4 |
| Critical (15%) | 60.0 | 55.8 | 50.0 | 47.9 | 48.2 | 50.3 | 53.0 | 53.8 | 55.3 | 57.0 | 59.4 | 61.3 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.8 | 56.1 | 52.7 | 49.5 | 49.1 | 51.1 | 54.0 | 54.7 | 54.8 | 55.6 | 56.8 | 59.3 |
| 20% | 55.7 | 55.6 | 51.6 | 48.7 | 48.5 | 50.4 | 53.4 | 53.7 | 54.4 | 55.0 | 55.7 | 57.2 |
| 30% | 54.8 | 55.1 | 51.0 | 48.1 | 48.2 | 50.1 | 53.2 | 53.2 | 54.0 | 54.6 | 55.0 | 56.3 |
| 40% | 54.5 | 54.7 | 50.5 | 47.8 | 47.7 | 49.5 | 52.8 | 52.8 | 53.6 | 54.2 | 54.8 | 55.7 |
| 50% | 54.1 | 54.2 | 50.3 | 47.3 | 47.3 | 49.0 | 52.2 | 52.5 | 53.2 | 53.9 | 54.5 | 55.2 |
| 60% | 53.9 | 53.9 | 50.0 | 47.0 | 46.8 | 48.5 | 51.7 | 52.2 | 52.8 | 53.4 | 54.3 | 54.4 |
| 70% | 53.7 | 53.6 | 49.6 | 46.7 | 46.4 | 47.9 | 51.0 | 51.8 | 52.6 | 52.9 | 54.2 | 53.8 |
| 80% | 53.6 | 53.4 | 49.1 | 46.5 | 45.8 | 47.3 | 50.3 | 51.4 | 52.3 | 52.6 | 54.0 | 53.1 |
| 90% | 53.3 | 52.9 | 48.6 | 45.7 | 45.4 | 46.7 | 49.0 | 51.0 | 51.8 | 52.2 | 53.4 | 52.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 54.4 | 50.4 | 47.5 | 47.3 | 48.9 | 51.9 | 52.7 | 53.3 | 53.9 | 55.1 | 55.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.9 | 54.3 | 50.7 | 47.0 | 46.4 | 47.6 | 50.6 | 52.5 | 53.5 | 53.4 | 54.1 | 54.1 |
| Above Normal (16%) | 53.9 | 54.1 | 50.3 | 47.2 | 46.6 | 48.1 | 51.4 | 52.2 | 52.6 | 52.6 | 54.0 | 53.8 |
| Below Normal (13%) | 54.5 | 54.1 | 50.5 | 47.6 | 47.5 | 49.7 | 52.8 | 52.2 | 52.5 | 53.4 | 54.4 | 55.6 |
| Dry (24%) | 54.5 | 54.1 | 50.2 | 47.9 | 48.0 | 49.9 | 52.8 | 52.8 | 53.0 | 54.2 | 55.1 | 55.9 |
| Critical (15%) | 59.9 | 55.9 | 50.3 | 48.2 | 48.4 | 50.5 | 53.0 | 53.8 | 54.7 | 56.5 | 58.9 | 61.7 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | -0.3 | 0.0 | -0.5 | -0.9 | -1.0 | 1.4 |
| 20% | -0.8 | 0.0 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.3 | -0.4 | -1.1 | -0.1 |
| 30% | -1.3 | -0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.2 | -0.1 | -0.1 | 0.1 | -0.7 | -0.3 |
| 40% | -1.2 | -0.3 | 0.0 | 0.4 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | 0.1 | -0.5 | 0.4 |
| 50% | -1.2 | -0.4 | 0.1 | 0.2 | 0.0 | -0.2 | -0.2 | 0.0 | -0.1 | 0.3 | -0.2 | 0.5 |
| 60% | -1.2 | -0.4 | 0.3 | 0.2 | 0.0 | 0.0 | -0.2 | -0.2 | -0.2 | 0.3 | -0.1 | 0.8 |
| 70% | -1.3 | -0.3 | 0.2 | 0.1 | 0.1 | -0.1 | -0.6 | -0.1 | -0.2 | 0.2 | 0.0 | 0.8 |
| 80% | -1.0 | -0.1 | 0.3 | 0.1 | 0.0 | 0.1 | -0.3 | -0.2 | -0.2 | 0.3 | 0.2 | 0.8 |
| 90% | -1.1 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.3 | 0.3 | 0.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.9 | -0.1 | 0.2 | 0.2 | 0.1 | 0.0 | -0.1 | -0.1 | -0.2 | 0.0 | -0.3 | 0.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.2 | -0.6 | 0.0 | 0.1 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | 0.1 | -0.1 | 1.4 |
| Above Normal (16%) | -1.0 | -0.3 | 0.1 | 0.2 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | 0.2 | 0.2 | 0.9 |
| Below Normal (13%) | -0.8 | 0.3 | 0.3 | 0.2 | -0.1 | -0.1 | -0.1 | -0.4 | -0.3 | 0.1 | -0.1 | -0.1 |
| Dry (24%) | -1.1 | 0.2 | 0.4 | 0.1 | 0.1 | 0.1 | 0.0 | -0.2 | -0.1 | 0.1 | -0.9 | -0.5 |
| Critical (15%) | -0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | -0.6 | -0.5 | -0.5 | 0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-3. Sacramento River at Balls Ferry, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 57.2 | 55.8 | 52.5 | 49.2 | 48.8 | 51.1 | 54.3 | 54.8 | 55.4 | 56.7 | 57.7 | 57.8 |
| 20% | 56.6 | 55.7 | 51.3 | 48.6 | 48.4 | 50.4 | 53.4 | 53.7 | 54.6 | 55.2 | 56.8 | 57.2 |
| 30% | 56.2 | 55.3 | 50.8 | 47.9 | 48.1 | 50.1 | 53.1 | 53.3 | 54.1 | 54.5 | 55.8 | 56.5 |
| 40% | 55.7 | 55.0 | 50.4 | 47.4 | 47.7 | 49.5 | 52.9 | 52.9 | 53.7 | 54.1 | 55.3 | 55.5 |
| 50% | 55.3 | 54.6 | 50.2 | 47.2 | 47.3 | 49.2 | 52.3 | 52.6 | 53.3 | 53.6 | 54.6 | 54.7 |
| 60% | 55.1 | 54.2 | 49.7 | 46.8 | 46.9 | 48.5 | 51.9 | 52.3 | 53.1 | 53.1 | 54.4 | 53.7 |
| 70% | 54.9 | 53.8 | 49.4 | 46.6 | 46.3 | 48.0 | 51.7 | 52.0 | 52.8 | 52.7 | 54.1 | 53.0 |
| 80% | 54.6 | 53.4 | 48.8 | 46.4 | 45.9 | 47.2 | 50.7 | 51.7 | 52.6 | 52.4 | 53.8 | 52.4 |
| 90% | 54.4 | 52.8 | 48.4 | 45.8 | 45.3 | 46.6 | 48.7 | 51.1 | 52.0 | 51.9 | 53.1 | 52.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 54.5 | 50.2 | 47.3 | 47.2 | 49.0 | 52.0 | 52.8 | 53.5 | 53.8 | 55.3 | 55.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.1 | 54.9 | 50.7 | 46.9 | 46.4 | 47.7 | 50.8 | 52.5 | 53.6 | 53.3 | 54.2 | 52.6 |
| Above Normal (16%) | 54.9 | 54.4 | 50.2 | 47.0 | 46.6 | 48.2 | 51.6 | 52.3 | 52.7 | 52.4 | 53.8 | 53.0 |
| Below Normal (13%) | 55.3 | 53.8 | 50.2 | 47.4 | 47.6 | 49.8 | 52.9 | 52.6 | 52.8 | 53.3 | 54.6 | 55.8 |
| Dry (24%) | 55.7 | 53.8 | 49.8 | 47.7 | 47.9 | 49.8 | 52.8 | 53.0 | 53.2 | 54.1 | 55.9 | 56.4 |
| Critical (15%) | 59.7 | 55.7 | 50.1 | 47.9 | 48.2 | 50.4 | 53.0 | 54.0 | 55.4 | 56.7 | 59.1 | 60.8 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 57.7 | 55.9 | 52.5 | 49.3 | 48.8 | 50.9 | 54.3 | 54.8 | 55.3 | 56.5 | 57.8 | 57.9 |
| 20% | 56.6 | 55.6 | 51.3 | 48.7 | 48.5 | 50.4 | 53.4 | 53.7 | 54.7 | 55.4 | 56.8 | 57.3 |
| 30% | 56.1 | 55.2 | 50.8 | 47.9 | 48.2 | 50.1 | 53.1 | 53.3 | 54.1 | 54.5 | 55.8 | 56.6 |
| 40% | 55.7 | 55.0 | 50.4 | 47.4 | 47.7 | 49.5 | 52.9 | 52.9 | 53.7 | 54.1 | 55.3 | 55.3 |
| 50% | 55.3 | 54.6 | 50.1 | 47.2 | 47.4 | 49.2 | 52.4 | 52.5 | 53.2 | 53.6 | 54.6 | 54.7 |
| 60% | 55.1 | 54.3 | 49.7 | 46.8 | 46.9 | 48.6 | 51.9 | 52.4 | 53.1 | 53.1 | 54.4 | 53.6 |
| 70% | 55.0 | 53.9 | 49.4 | 46.6 | 46.3 | 48.0 | 51.6 | 51.9 | 52.8 | 52.7 | 54.1 | 53.0 |
| 80% | 54.6 | 53.5 | 48.8 | 46.4 | 45.8 | 47.2 | 50.6 | 51.7 | 52.5 | 52.4 | 53.8 | 52.3 |
| 90% | 54.4 | 52.8 | 48.4 | 45.6 | 45.3 | 46.6 | 48.7 | 51.0 | 51.8 | 51.9 | 53.1 | 52.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.6 | 50.2 | 47.3 | 47.2 | 48.9 | 52.0 | 52.8 | 53.5 | 53.9 | 55.4 | 55.3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.1 | 54.9 | 50.7 | 46.9 | 46.4 | 47.7 | 50.8 | 52.5 | 53.6 | 53.3 | 54.2 | 52.6 |
| Above Normal (16%) | 54.9 | 54.4 | 50.2 | 47.0 | 46.6 | 48.2 | 51.6 | 52.2 | 52.7 | 52.4 | 53.8 | 53.0 |
| Below Normal (13%) | 55.3 | 53.9 | 50.2 | 47.4 | 47.6 | 49.8 | 52.9 | 52.6 | 52.9 | 53.3 | 54.6 | 55.7 |
| Dry (24%) | 55.7 | 53.8 | 49.8 | 47.8 | 47.9 | 49.8 | 52.8 | 53.0 | 53.1 | 54.1 | 56.0 | 56.4 |
| Critical (15%) | 60.0 | 55.8 | 50.0 | 47.9 | 48.2 | 50.3 | 53.0 | 53.8 | 55.3 | 57.0 | 59.4 | 61.3 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.5** | **0.0** | **0.1** | **0.0** | 0.0 | -0.1 | **0.0** | -0.1 | 0.0 | -0.2 | **0.1** | **0.1** |
| 20% | 0.0 | 0.0 | **0.0** | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | **0.1** | **0.2** | -0.1 | **0.1** |
| 30% | -0.1 | 0.0 | **0.0** | **0.0** | **0.1** | **0.0** | -0.1 | -0.1 | 0.0 | **0.1** | -0.1 | **0.0** |
| 40% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | 0.0 | **0.0** | -0.1 |
| 50% | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 |
| 60% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | 0.0 | **0.0** | -0.1 |
| 70% | **0.0** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | **0.0** |
| 80% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 |
| 90% | 0.0 | **0.1** | **0.0** | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | -0.2 | 0.0 | **0.0** | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 |
| Dry (24%) | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| Critical (15%) | **0.2** | **0.1** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | -0.1 | **0.3** | **0.3** | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-4. Sacramento River at Balls Ferry, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 57.5 | 56.4 | 52.6 | 49.5 | 49.1 | 51.2 | 54.1 | 54.8 | 54.8 | 55.4 | 56.8 | 59.1 |
| 20% | 55.9 | 55.5 | 51.5 | 48.7 | 48.5 | 50.5 | 53.5 | 53.6 | 54.5 | 54.8 | 55.3 | 57.1 |
| 30% | 54.6 | 54.9 | 50.8 | 48.1 | 48.2 | 50.0 | 53.2 | 53.2 | 54.0 | 54.3 | 54.9 | 56.3 |
| 40% | 54.4 | 54.5 | 50.5 | 47.7 | 47.7 | 49.5 | 52.9 | 52.8 | 53.8 | 54.1 | 54.7 | 55.9 |
| 50% | 54.1 | 54.2 | 50.2 | 47.4 | 47.4 | 49.2 | 52.5 | 52.5 | 53.2 | 53.8 | 54.4 | 55.1 |
| 60% | 54.0 | 53.8 | 50.0 | 47.0 | 46.9 | 48.6 | 52.0 | 52.2 | 52.8 | 53.2 | 54.2 | 54.8 |
| 70% | 53.7 | 53.4 | 49.8 | 46.8 | 46.4 | 47.9 | 51.6 | 51.9 | 52.6 | 52.9 | 54.1 | 54.2 |
| 80% | 53.4 | 53.1 | 49.2 | 46.5 | 45.9 | 47.3 | 50.7 | 51.3 | 52.3 | 52.6 | 53.9 | 53.8 |
| 90% | 53.2 | 52.8 | 48.7 | 45.7 | 45.4 | 46.7 | 48.9 | 51.0 | 51.9 | 52.1 | 53.6 | 53.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 54.3 | 50.4 | 47.5 | 47.3 | 49.0 | 52.1 | 52.6 | 53.3 | 53.8 | 55.0 | 55.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 53.8 | 54.2 | 50.7 | 47.1 | 46.5 | 47.8 | 50.8 | 52.4 | 53.6 | 53.4 | 54.1 | 54.0 |
| Above Normal (16%) | 53.7 | 53.5 | 50.0 | 47.2 | 46.6 | 48.2 | 51.7 | 52.1 | 52.7 | 52.5 | 54.0 | 55.2 |
| Below Normal (13%) | 54.9 | 54.3 | 50.7 | 47.6 | 47.6 | 49.7 | 52.8 | 52.1 | 52.6 | 53.2 | 54.2 | 55.4 |
| Dry (24%) | 54.6 | 54.1 | 50.3 | 47.9 | 48.0 | 49.8 | 52.9 | 52.7 | 52.8 | 53.9 | 55.0 | 55.8 |
| Critical (15%) | 59.8 | 55.9 | 50.3 | 48.2 | 48.5 | 50.5 | 53.1 | 53.7 | 54.7 | 56.3 | 58.6 | 61.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 57.8 | 56.1 | 52.7 | 49.5 | 49.1 | 51.1 | 54.0 | 54.7 | 54.8 | 55.6 | 56.8 | 59.3 |
| 20% | 55.7 | 55.6 | 51.6 | 48.7 | 48.5 | 50.4 | 53.4 | 53.7 | 54.4 | 55.0 | 55.7 | 57.2 |
| 30% | 54.8 | 55.1 | 51.0 | 48.1 | 48.2 | 50.1 | 53.2 | 53.2 | 54.0 | 54.6 | 55.0 | 56.3 |
| 40% | 54.5 | 54.7 | 50.5 | 47.8 | 47.7 | 49.5 | 52.8 | 52.8 | 53.6 | 54.2 | 54.8 | 55.7 |
| 50% | 54.1 | 54.2 | 50.3 | 47.3 | 47.3 | 49.0 | 52.2 | 52.5 | 53.2 | 53.9 | 54.5 | 55.2 |
| 60% | 53.9 | 53.9 | 50.0 | 47.0 | 46.8 | 48.5 | 51.7 | 52.2 | 52.8 | 53.4 | 54.3 | 54.4 |
| 70% | 53.7 | 53.6 | 49.6 | 46.7 | 46.4 | 47.9 | 51.0 | 51.8 | 52.6 | 52.9 | 54.2 | 53.8 |
| 80% | 53.6 | 53.4 | 49.1 | 46.5 | 45.8 | 47.3 | 50.3 | 51.4 | 52.3 | 52.6 | 54.0 | 53.1 |
| 90% | 53.3 | 52.9 | 48.6 | 45.7 | 45.4 | 46.7 | 49.0 | 51.0 | 51.8 | 52.2 | 53.4 | 52.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.0 | 54.4 | 50.4 | 47.5 | 47.3 | 48.9 | 51.9 | 52.7 | 53.3 | 53.9 | 55.1 | 55.8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 53.9 | 54.3 | 50.7 | 47.0 | 46.4 | 47.6 | 50.6 | 52.5 | 53.5 | 53.4 | 54.1 | 54.1 |
| Above Normal (16%) | 53.9 | 54.1 | 50.3 | 47.2 | 46.6 | 48.1 | 51.4 | 52.2 | 52.6 | 52.6 | 54.0 | 53.8 |
| Below Normal (13%) | 54.5 | 54.1 | 50.5 | 47.6 | 47.5 | 49.7 | 52.8 | 52.2 | 52.5 | 53.4 | 54.4 | 55.6 |
| Dry (24%) | 54.5 | 54.1 | 50.2 | 47.9 | 48.0 | 49.9 | 52.8 | 52.8 | 53.0 | 54.2 | 55.1 | 55.9 |
| Critical (15%) | 59.9 | 55.9 | 50.3 | 48.2 | 48.4 | 50.5 | 53.0 | 53.8 | 54.7 | 56.5 | 58.9 | 61.7 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.2** | -0.3 | **0.1** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.2** | **0.0** | **0.1** |
| 20% | -0.2 | **0.1** | **0.1** | **0.1** | 0.0 | 0.0 | -0.1 | **0.1** | -0.1 | **0.3** | **0.4** | **0.1** |
| 30% | **0.1** | **0.2** | **0.2** | -0.1 | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 | **0.3** | **0.1** | 0.0 |
| 40% | **0.1** | **0.2** | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | **0.1** | **0.1** | -0.2 |
| 50% | 0.0 | **0.0** | **0.0** | -0.1 | 0.0 | -0.2 | -0.3 | 0.0 | **0.0** | **0.1** | **0.0** | **0.1** |
| 60% | -0.1 | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | -0.3 | **0.0** | **0.0** | **0.1** | **0.1** | -0.4 |
| 70% | 0.0 | **0.1** | -0.2 | 0.0 | 0.0 | 0.0 | -0.6 | -0.1 | **0.1** | 0.0 | **0.0** | -0.4 |
| 80% | **0.2** | **0.3** | -0.1 | 0.0 | -0.1 | **0.0** | -0.4 | **0.1** | 0.0 | **0.1** | **0.1** | -0.7 |
| 90% | **0.1** | **0.1** | 0.0 | 0.0 | **0.0** | 0.0 | **0.1** | **0.1** | 0.0 | **0.0** | -0.1 | -0.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** | **0.1** | -0.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.1** | **0.1** | **0.1** | 0.0 | 0.0 | -0.1 | -0.2 | **0.1** | -0.1 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | **0.2** | **0.6** | **0.2** | 0.0 | 0.0 | -0.1 | -0.3 | **0.1** | -0.1 | **0.1** | 0.0 | -1.4 |
| Below Normal (13%) | -0.4 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | **0.0** | **0.1** | -0.1 | **0.2** | **0.2** | **0.3** |
| Dry (24%) | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | **0.1** | -0.1 | **0.1** | **0.1** | **0.2** | **0.1** | **0.1** |
| Critical (15%) | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | **0.0** | -0.1 | **0.1** | 0.0 | **0.2** | **0.2** | **0.2** |

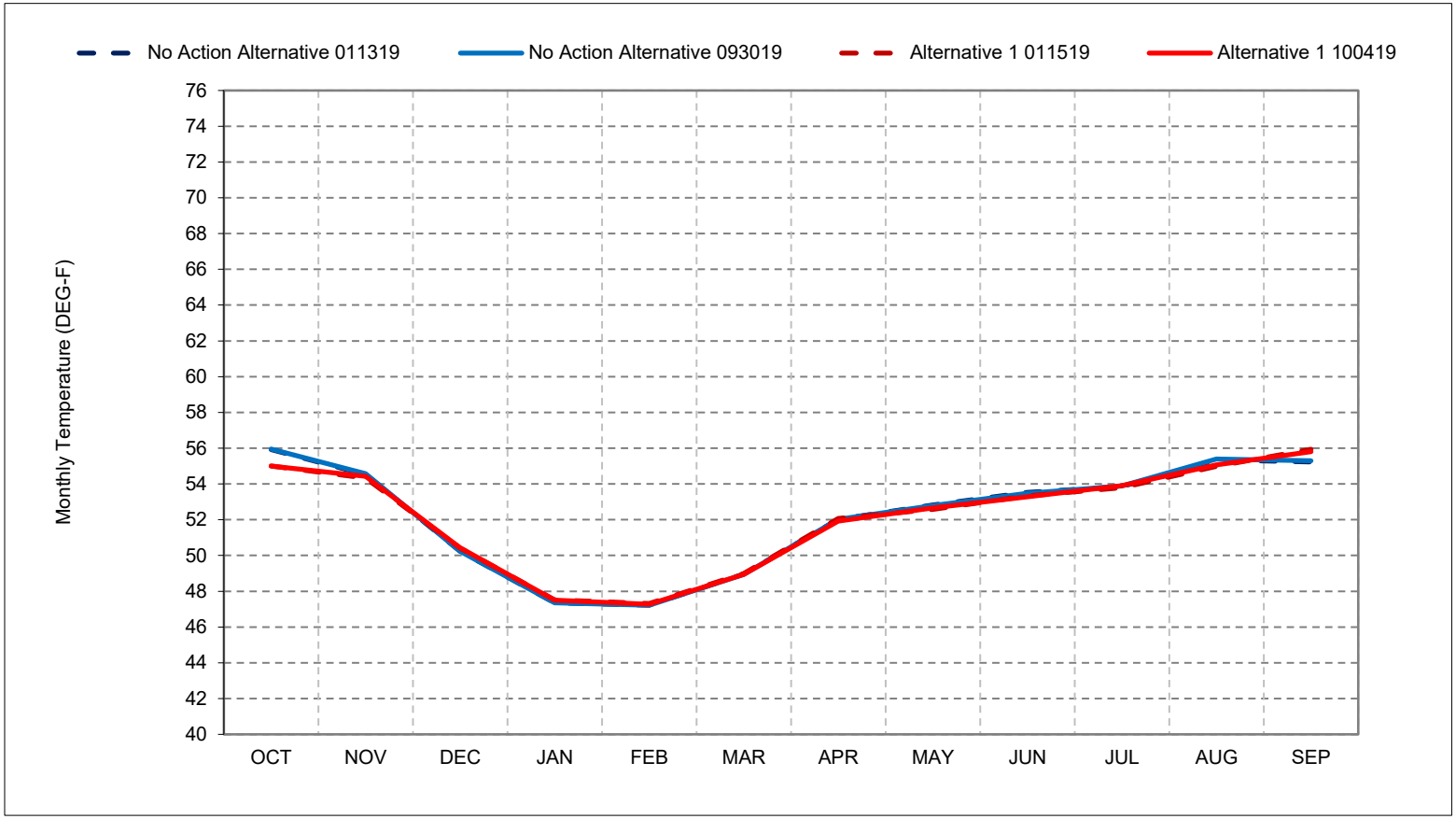
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-1. Sacramento River at Balls Ferry, Long-Term Average Temperature

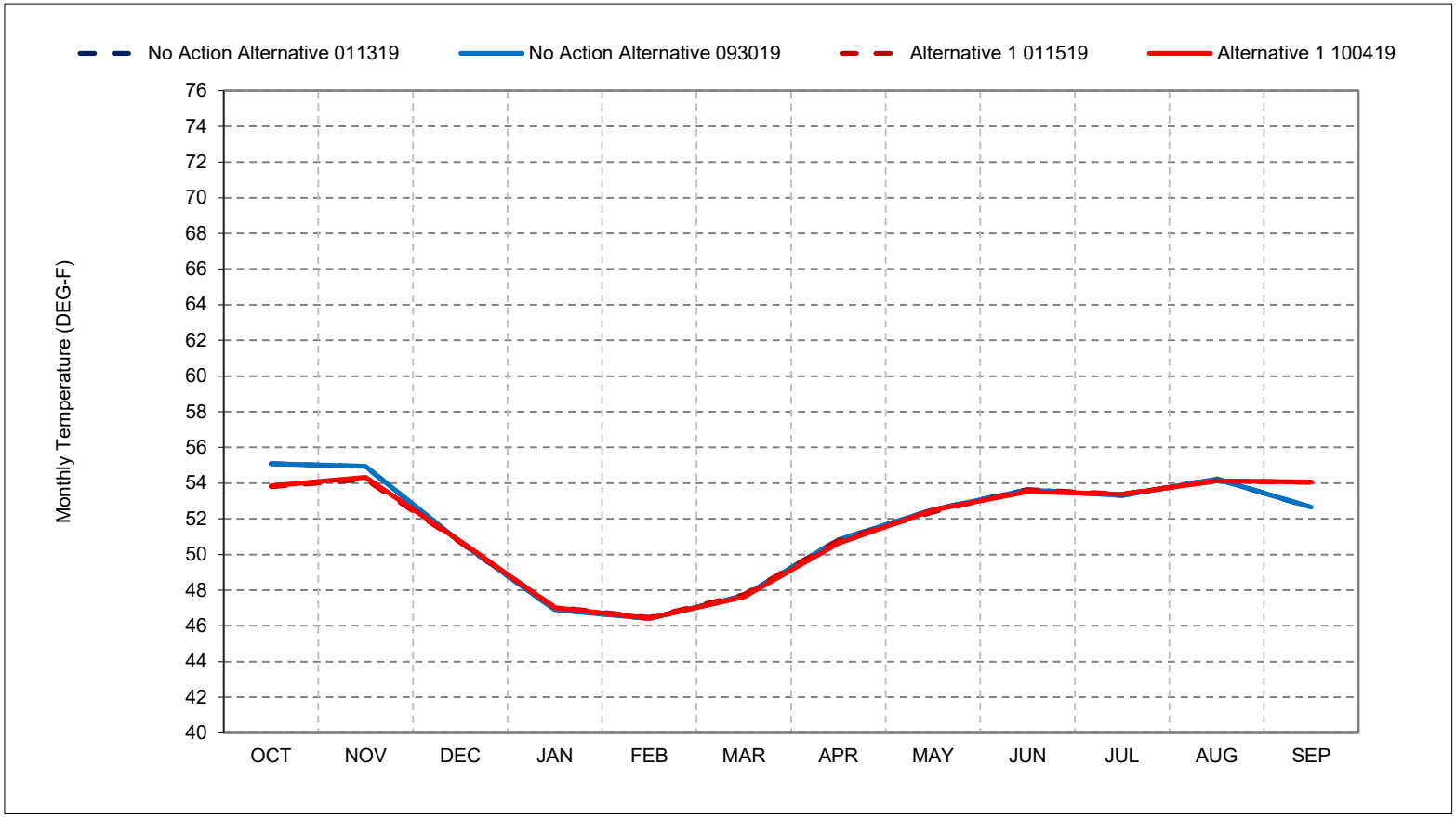



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-2. Sacramento River at Balls Ferry, Wet Year Average Temperature

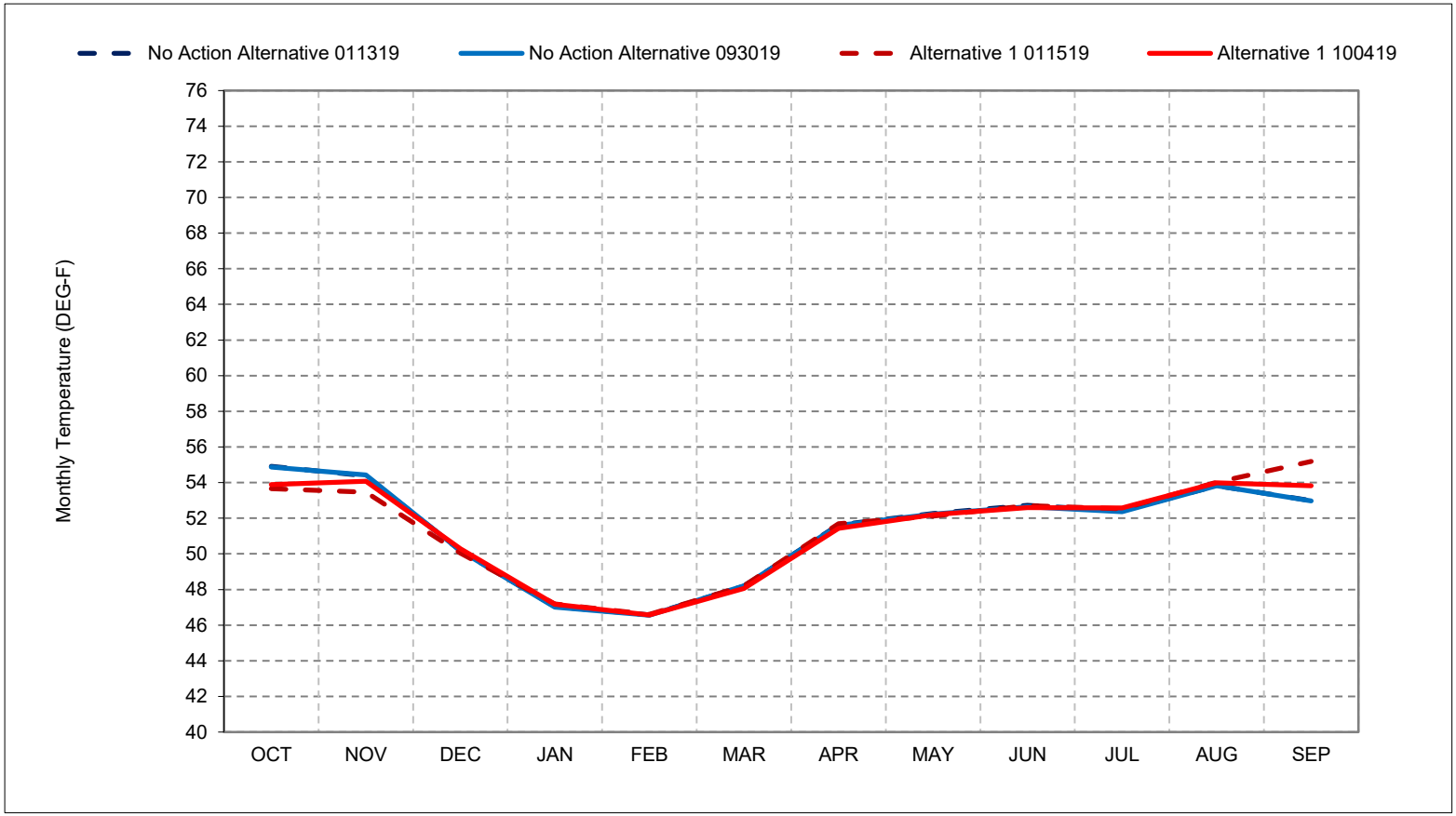



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-3. Sacramento River at Balls Ferry, Above Normal Year Average Temperature

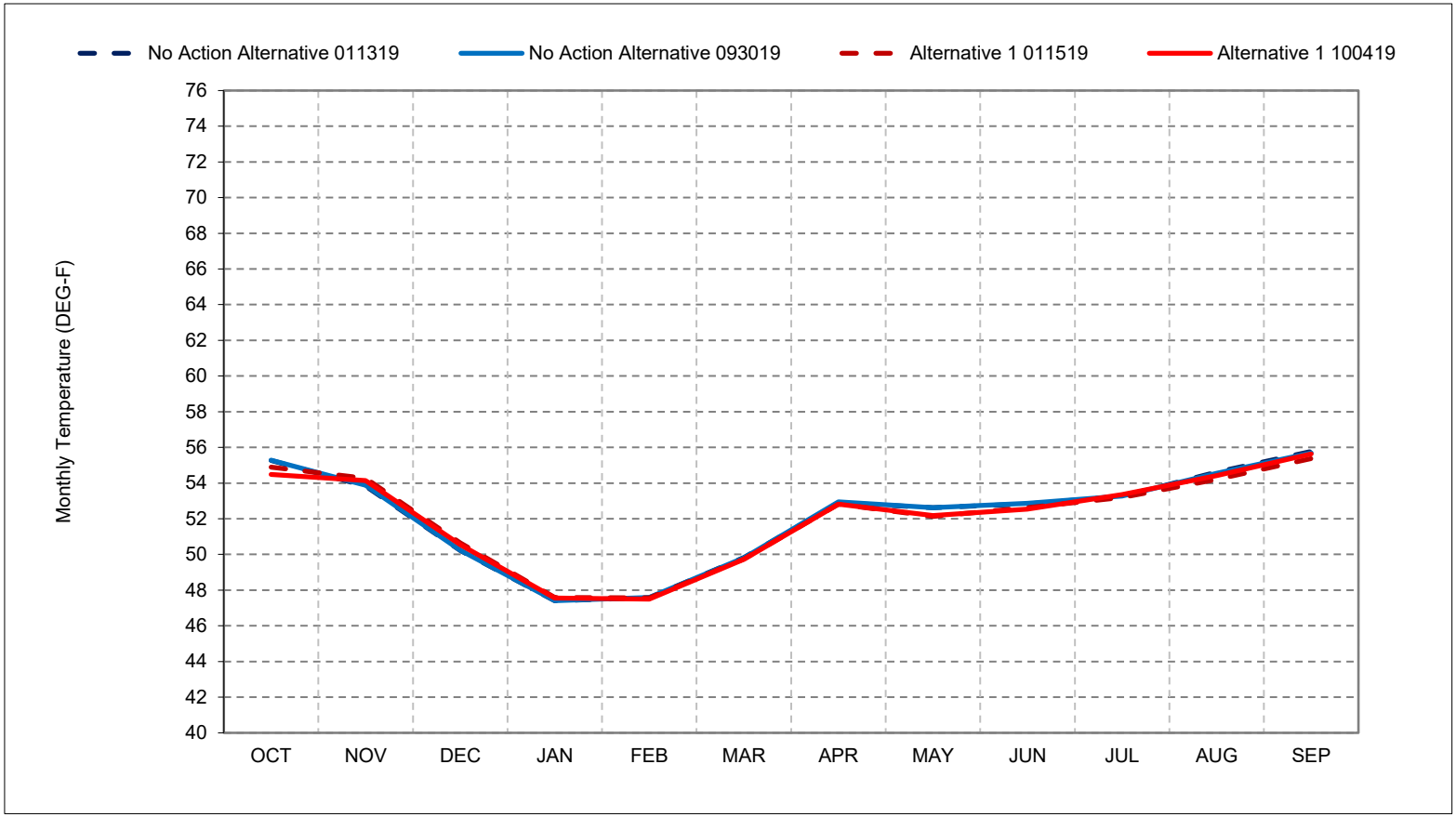



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-4. Sacramento River at Balls Ferry, Below Normal Year Average Temperature

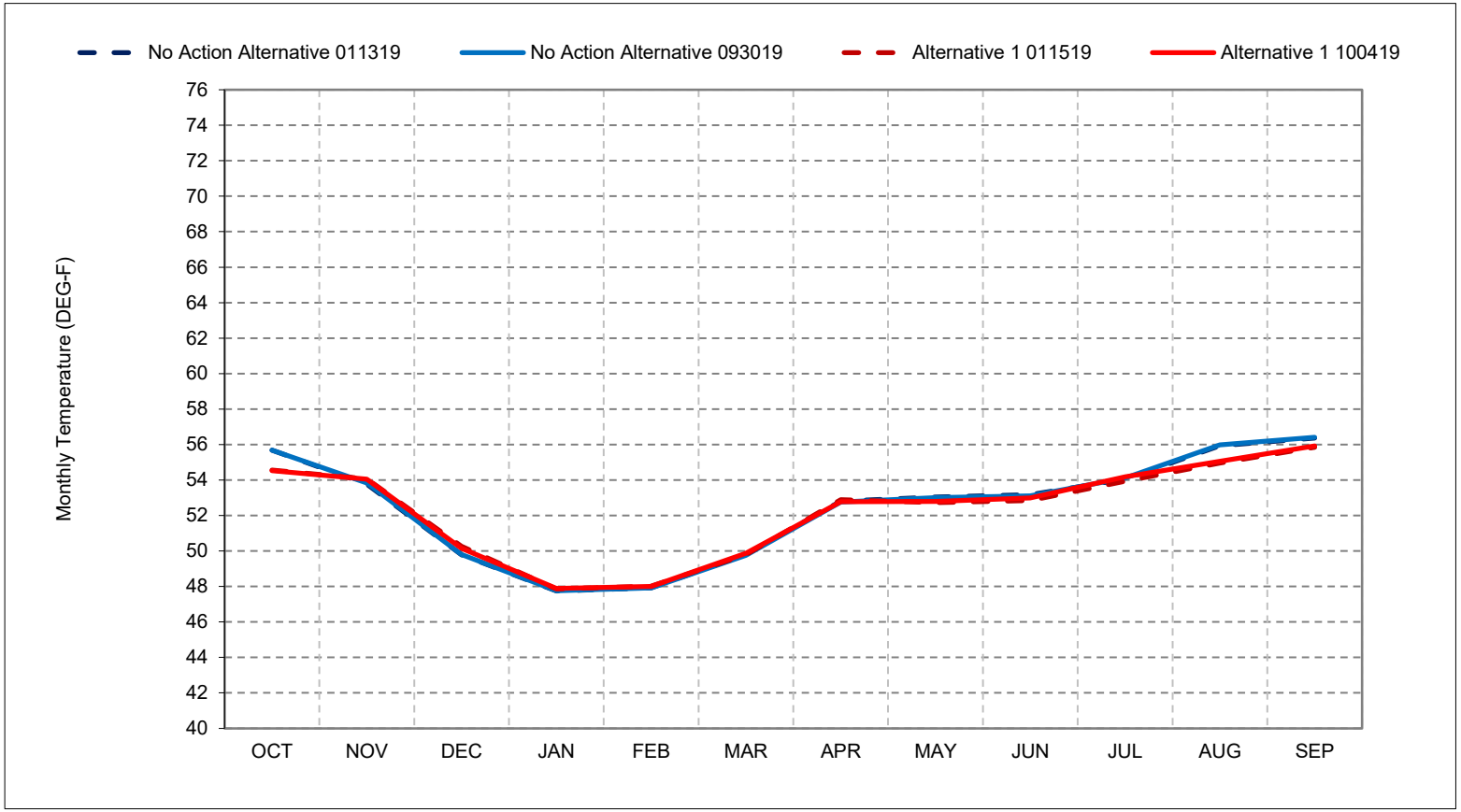



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-5. Sacramento River at Balls Ferry, Dry Year Average Temperature

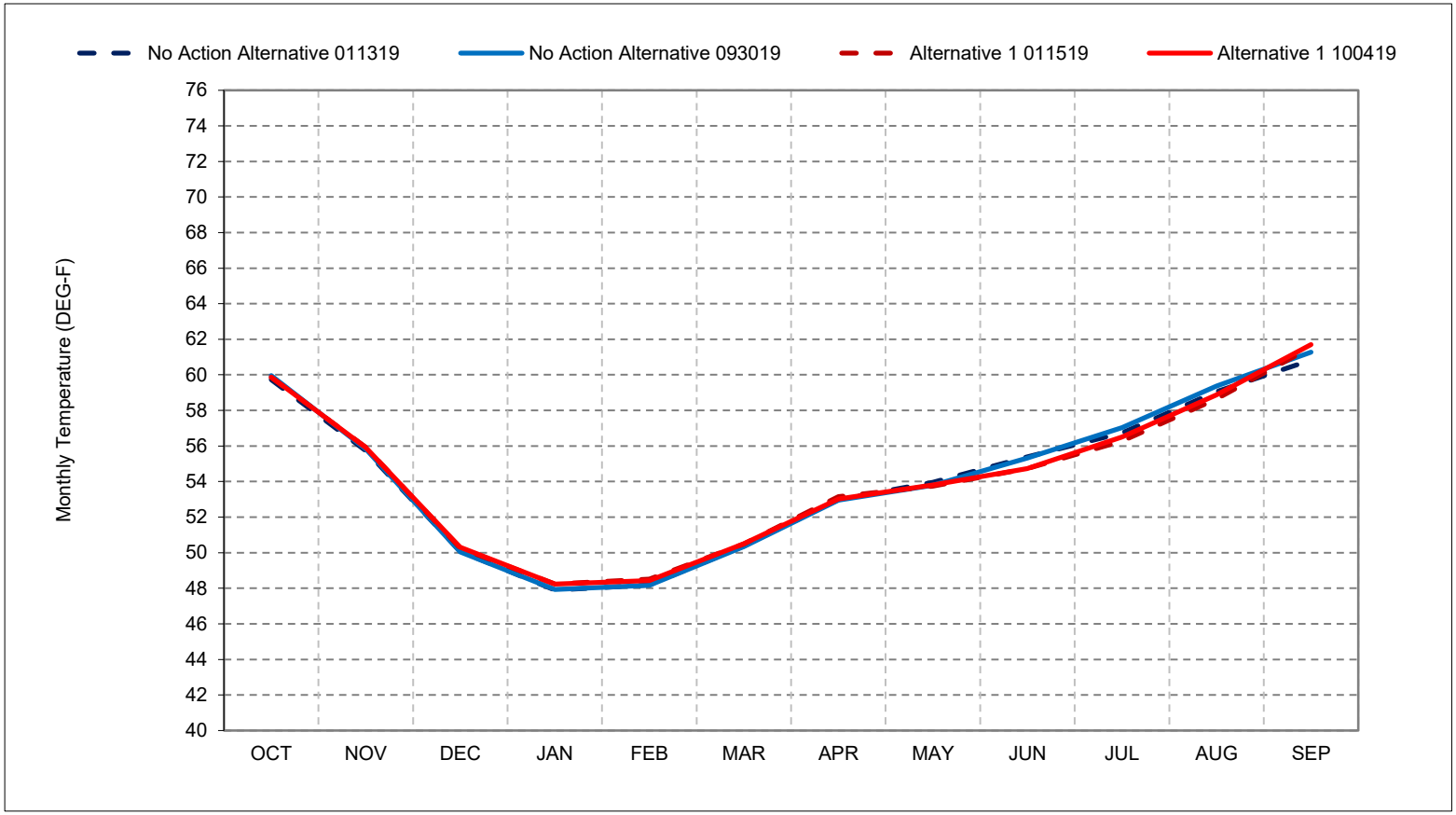



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-6. Sacramento River at Balls Ferry, Critical Year Average Temperature

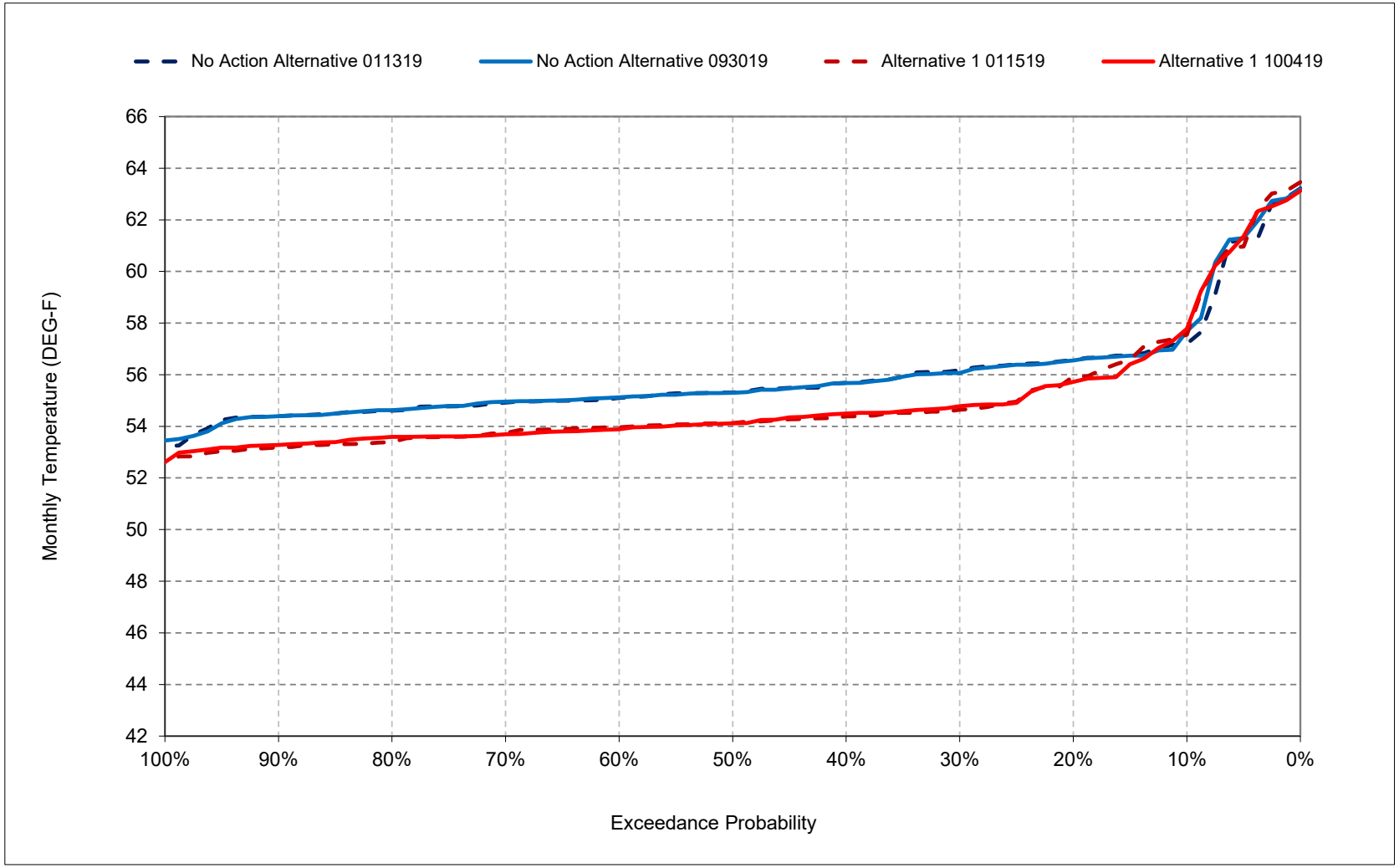



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

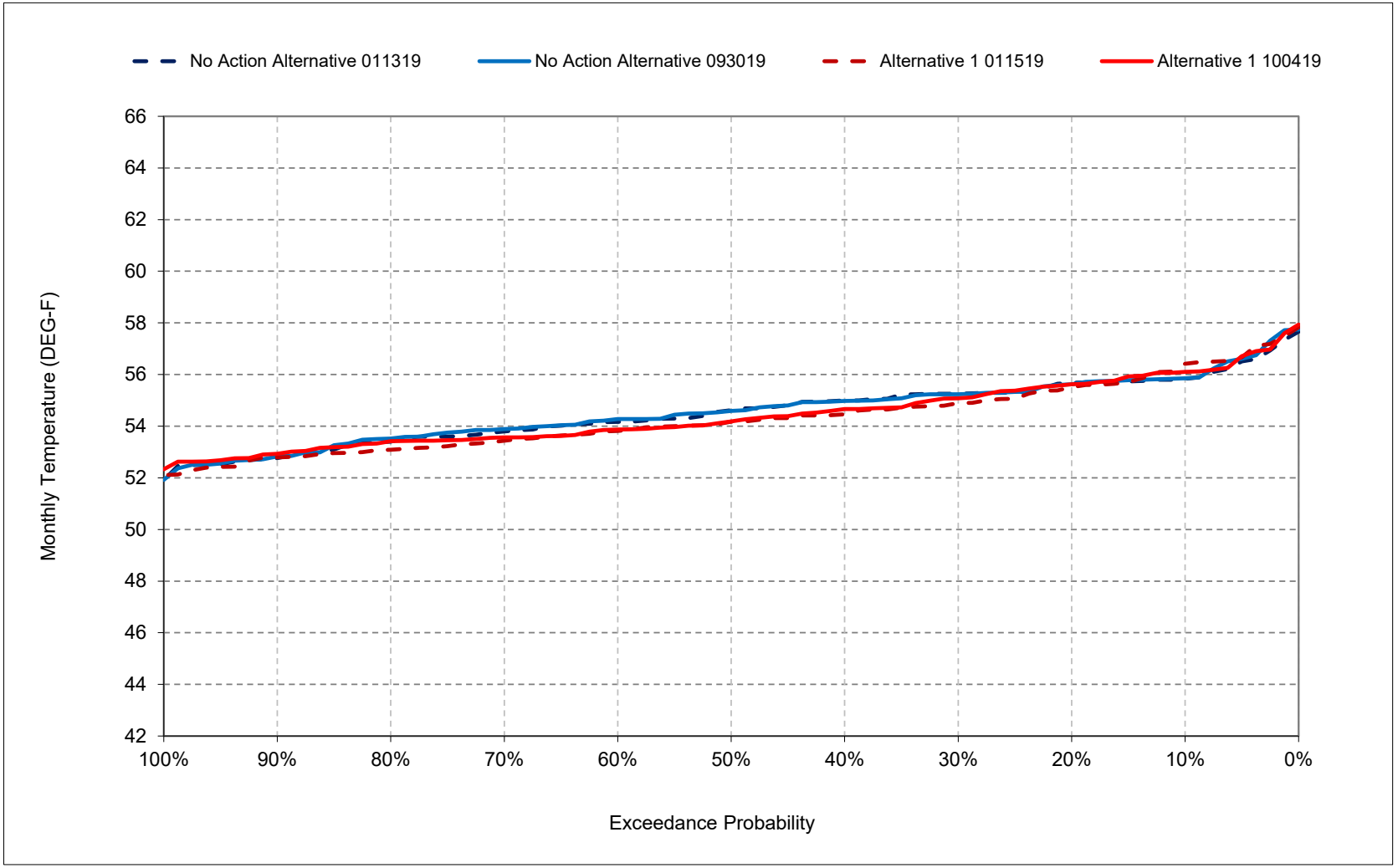
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-7. Sacramento River at Balls Ferry, October**



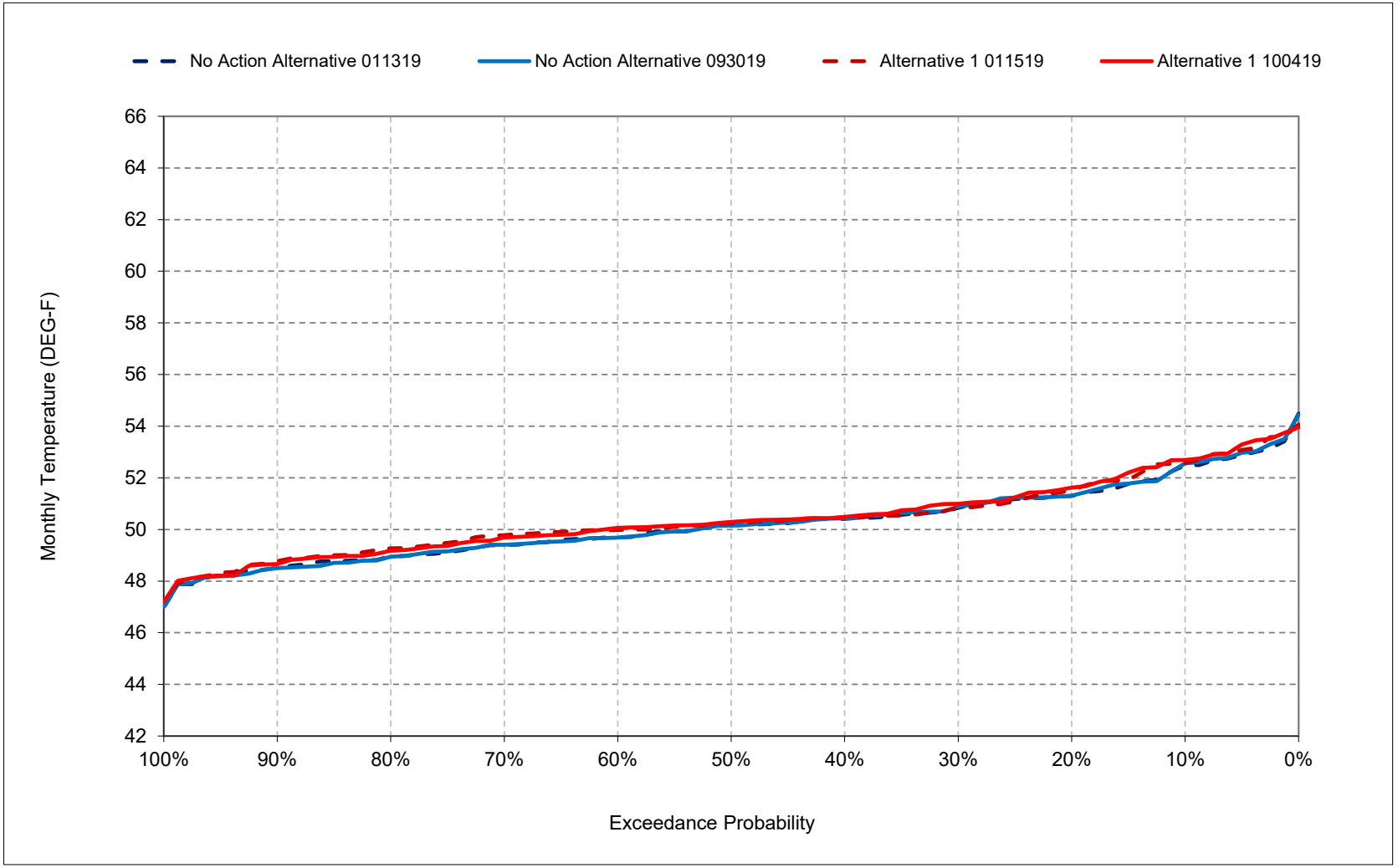

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-8. Sacramento River at Balls Ferry, November**



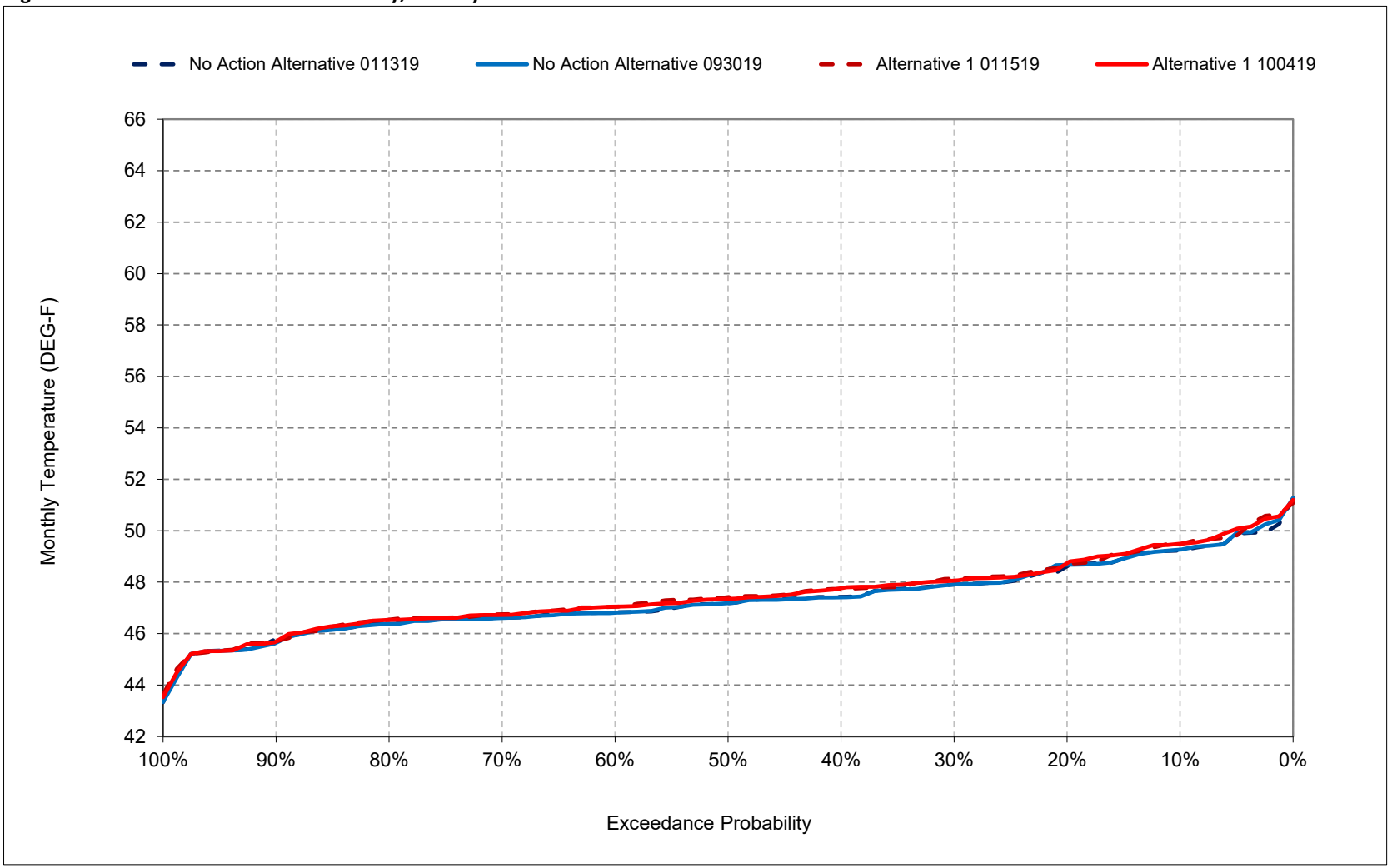

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-9. Sacramento River at Balls Ferry, December**



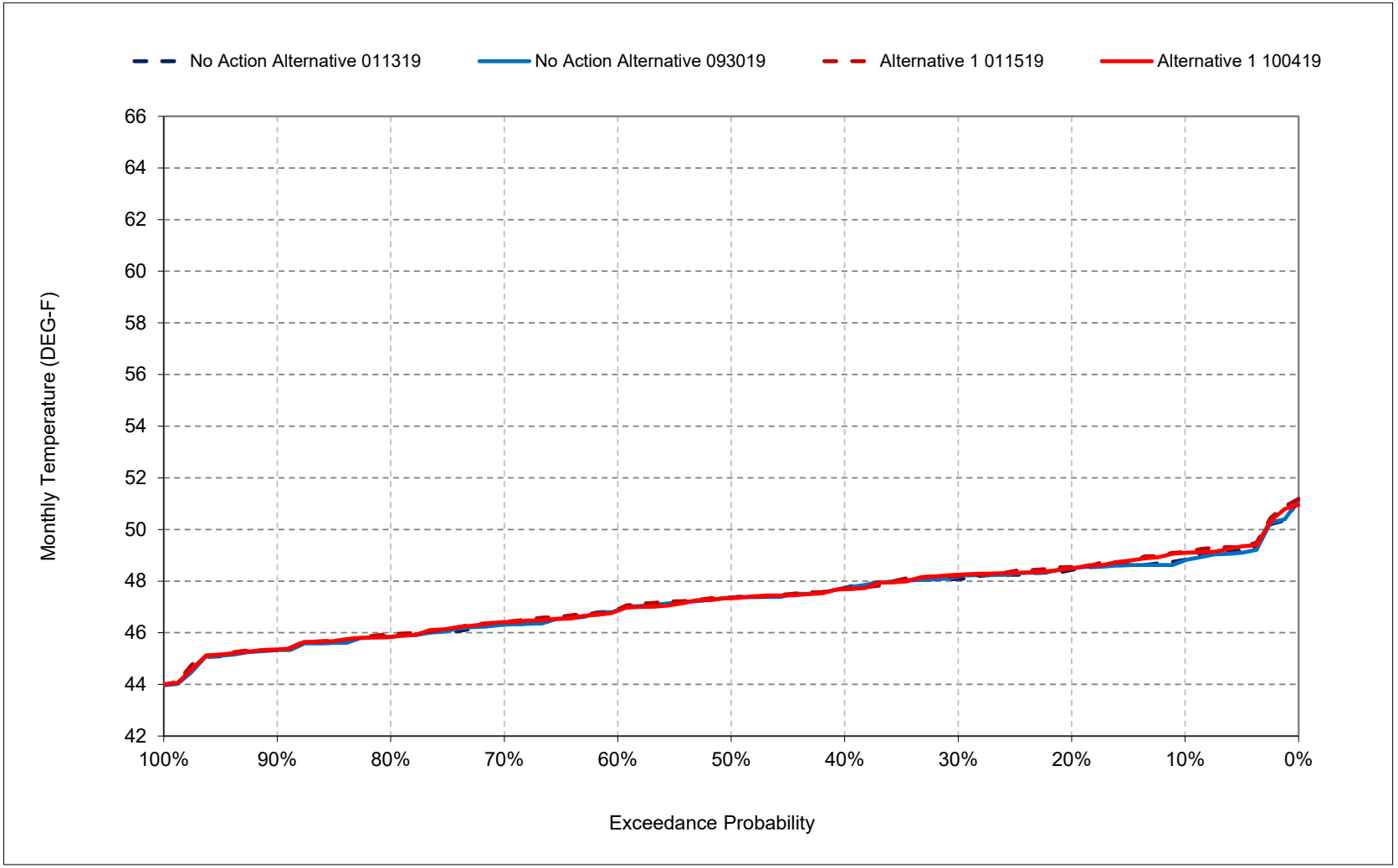

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-10. Sacramento River at Balls Ferry, January**



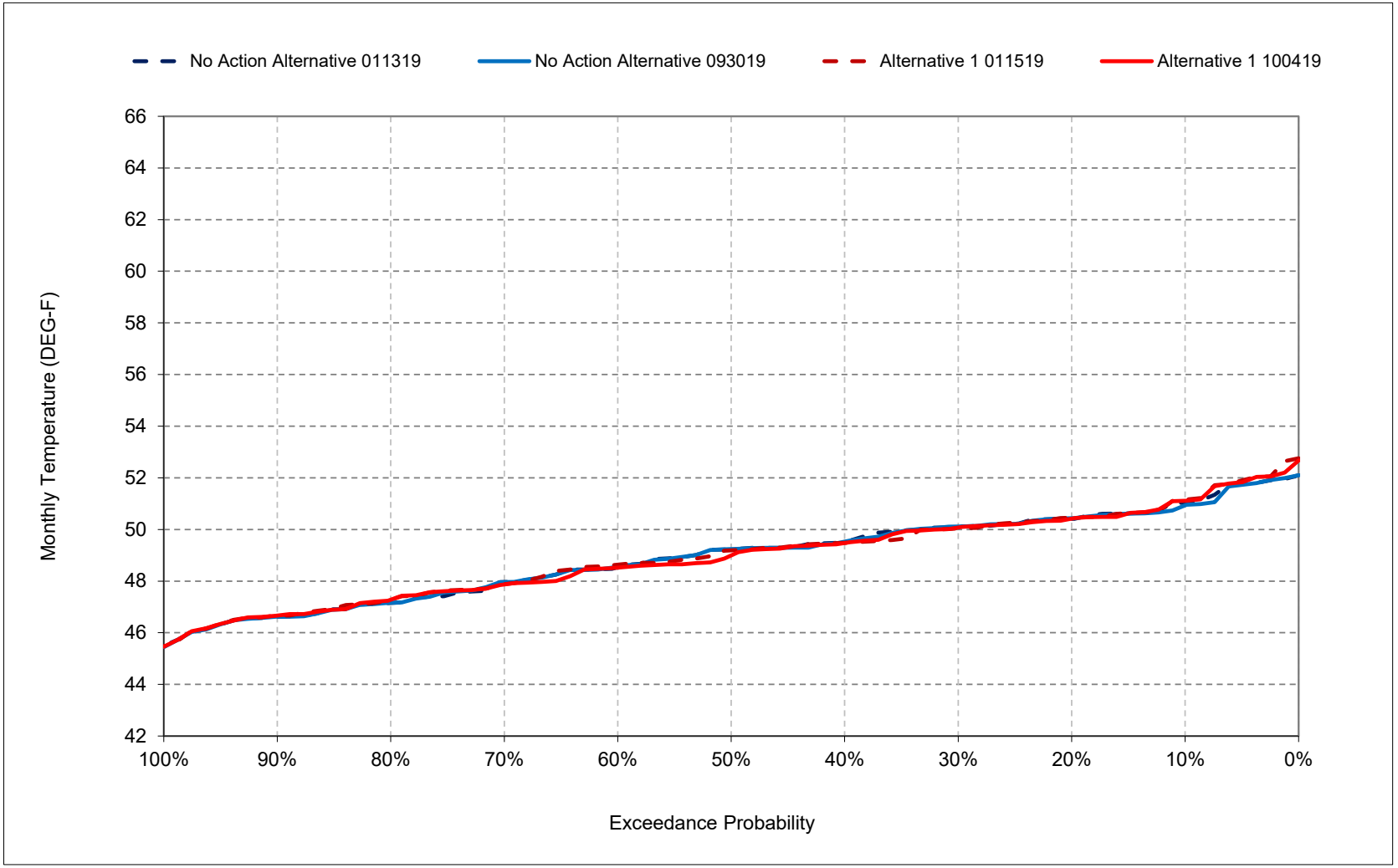

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-11. Sacramento River at Balls Ferry, February**



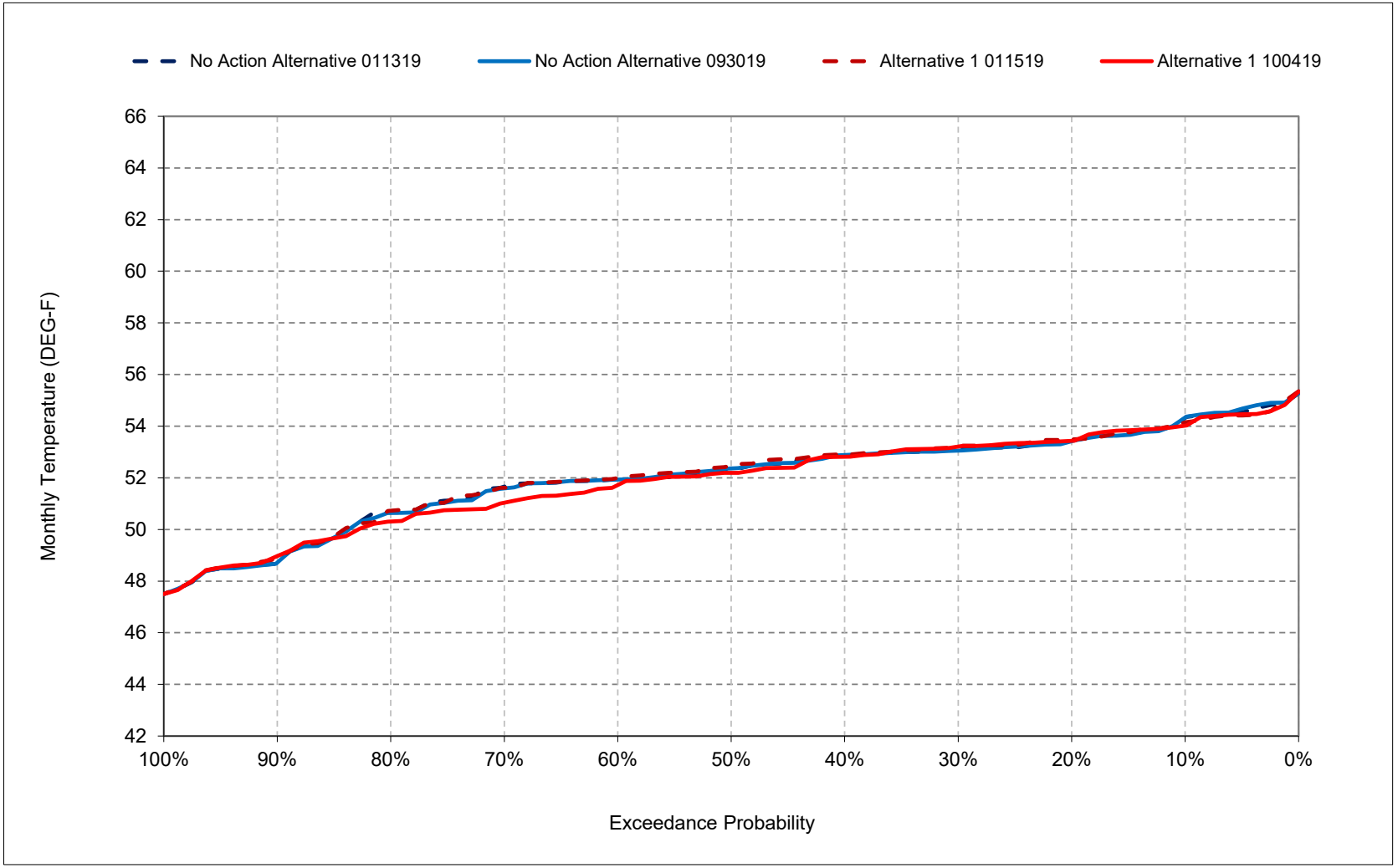

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-12. Sacramento River at Balls Ferry, March**



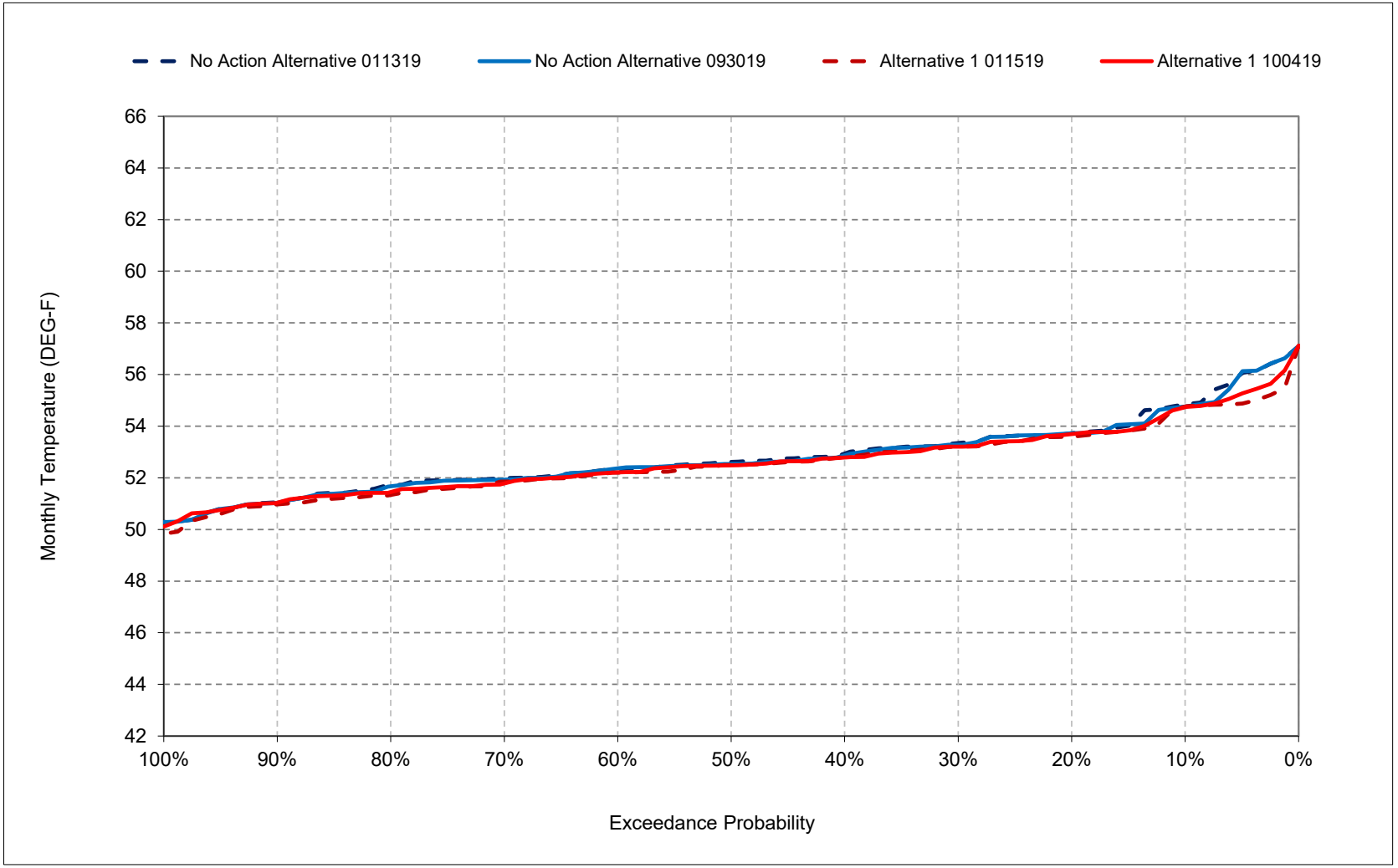

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-13. Sacramento River at Balls Ferry, April**



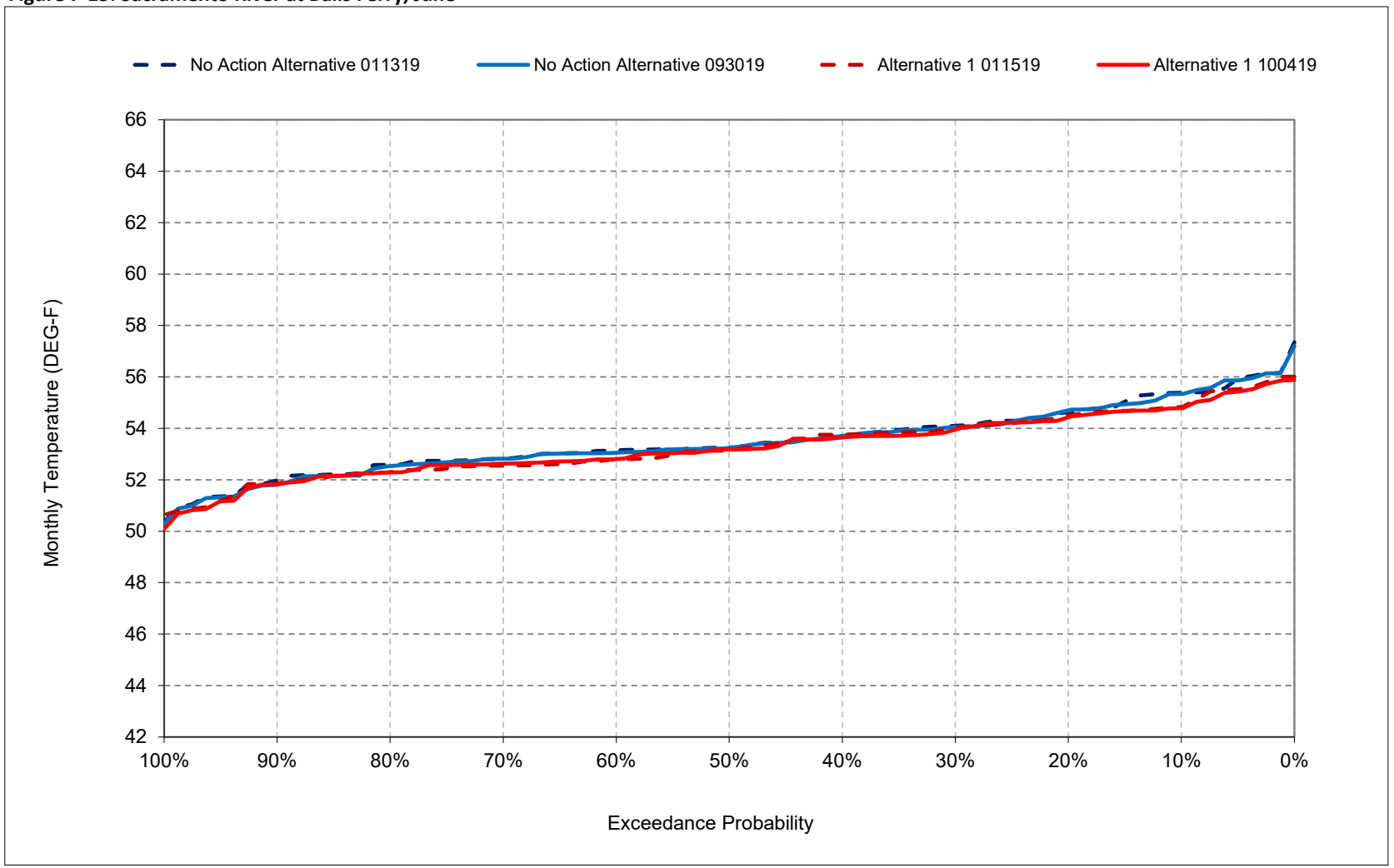

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-14. Sacramento River at Balls Ferry, May**



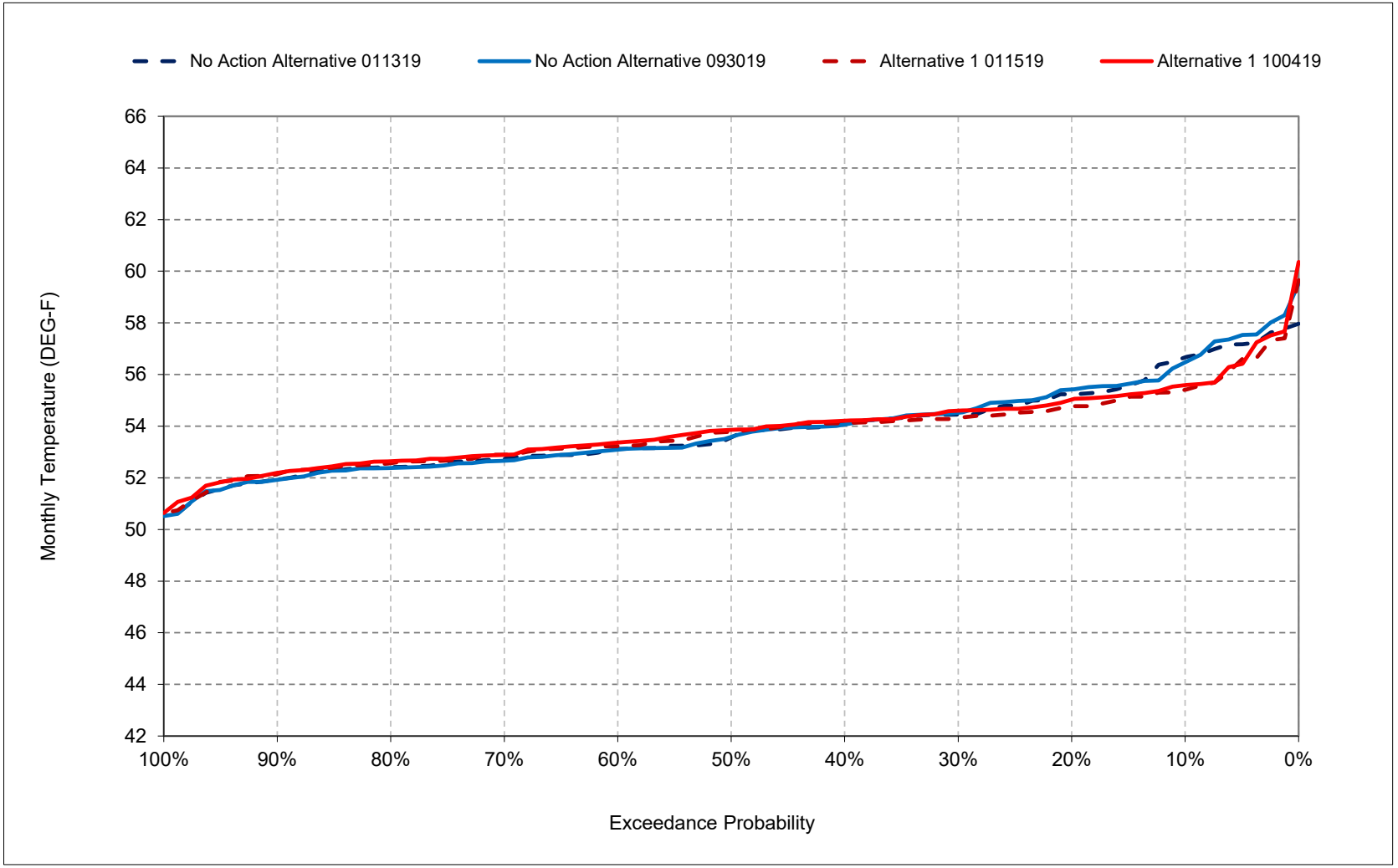

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-15. Sacramento River at Balls Ferry, June**



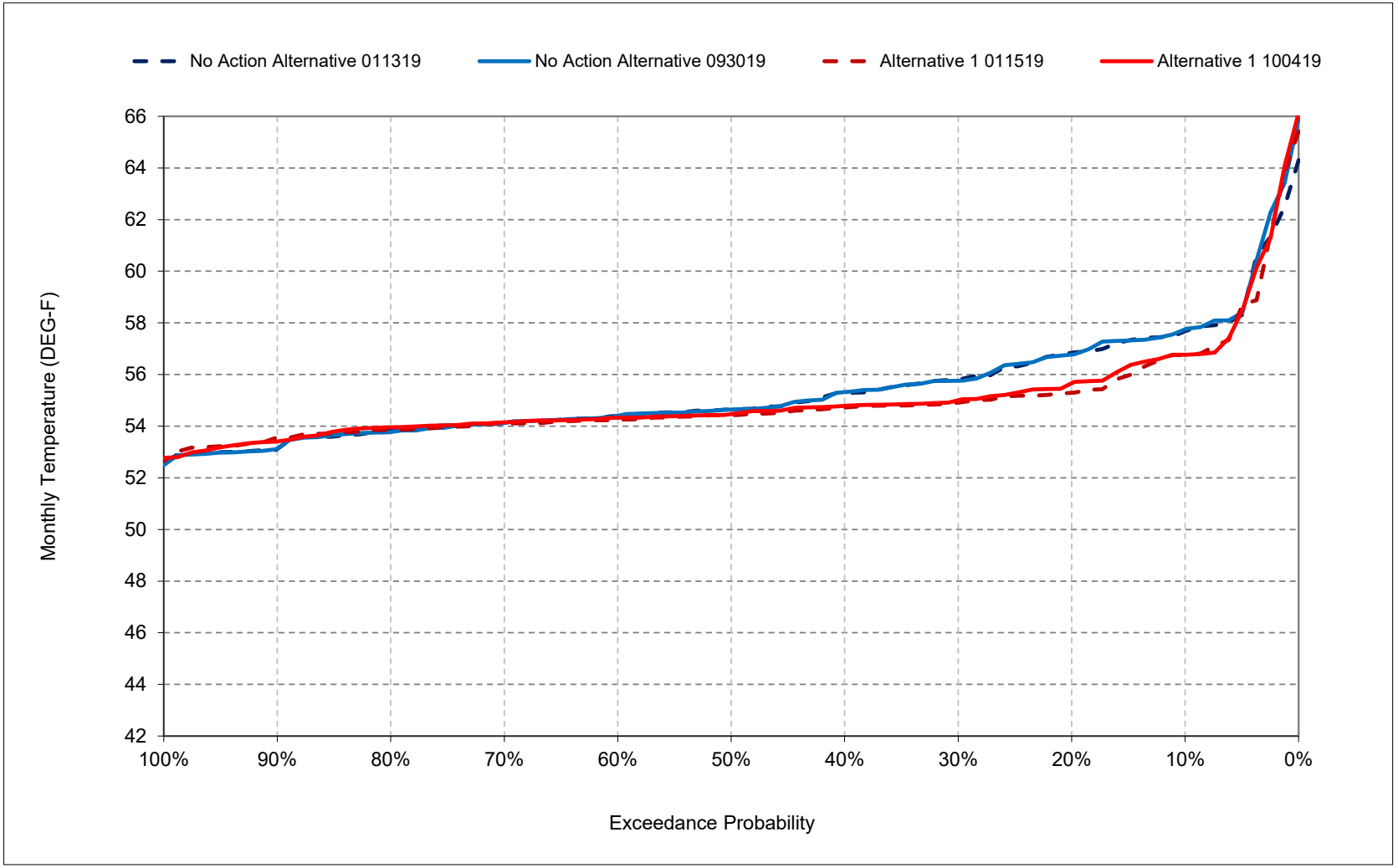

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-16. Sacramento River at Balls Ferry, July**



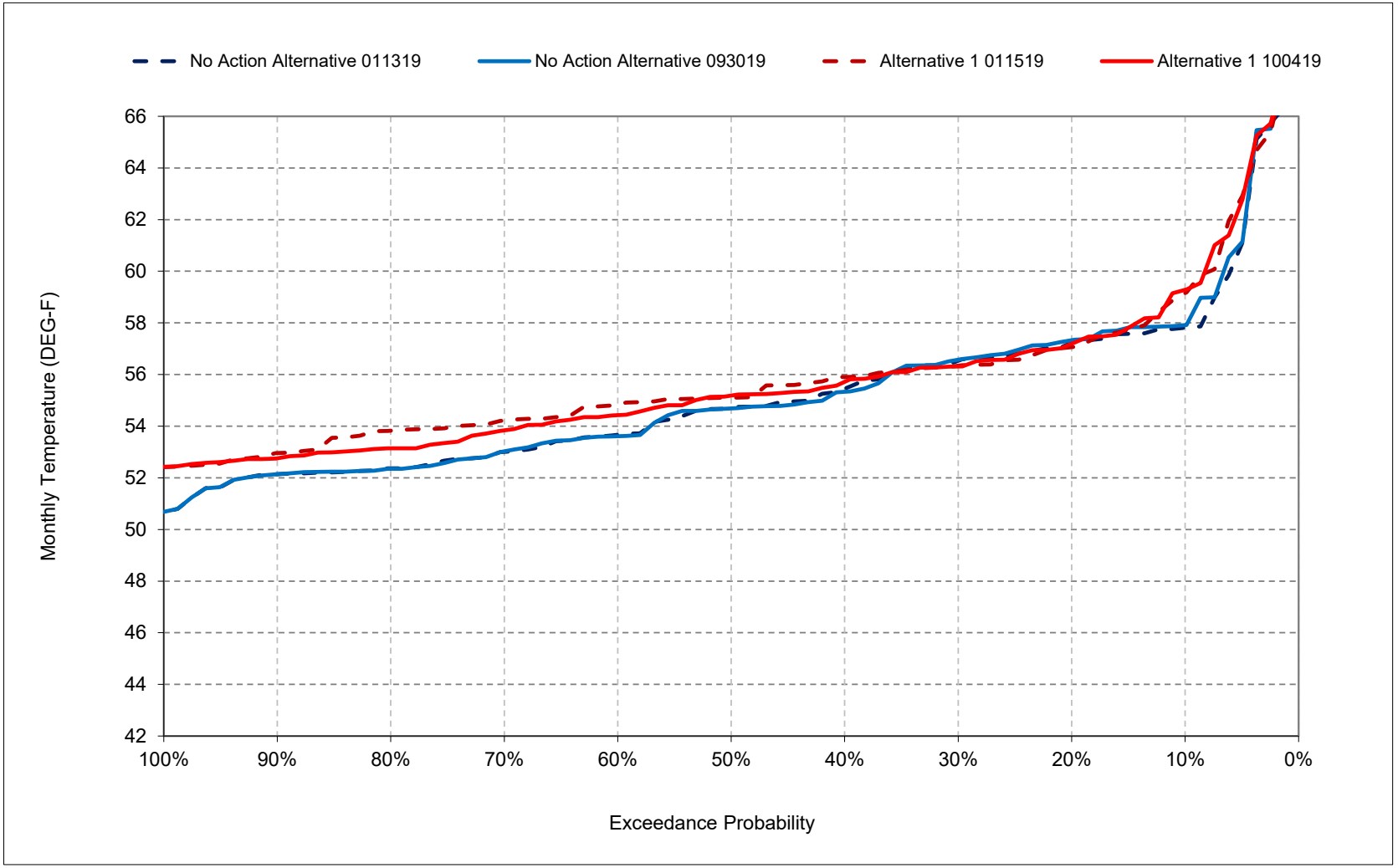

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-17. Sacramento River at Balls Ferry, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-18. Sacramento River at Balls Ferry, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-1. Sacramento River at Jellys Ferry, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.6 | 55.7 | 51.3 | 48.6 | 48.9 | 51.8 | 55.7 | 57.0 | 57.6 | 58.0 | 59.3 | 59.5 |
| 20% | 57.0 | 55.4 | 50.5 | 47.8 | 48.5 | 51.2 | 55.0 | 56.1 | 56.8 | 56.7 | 58.2 | 58.8 |
| 30% | 56.6 | 54.8 | 50.0 | 47.4 | 48.0 | 50.7 | 54.6 | 55.3 | 56.5 | 56.2 | 57.3 | 57.9 |
| 40% | 56.2 | 54.6 | 49.5 | 46.9 | 47.7 | 50.3 | 54.4 | 55.0 | 56.0 | 55.7 | 56.7 | 57.1 |
| 50% | 55.8 | 54.2 | 49.2 | 46.7 | 47.4 | 50.0 | 53.9 | 54.7 | 55.4 | 55.1 | 56.2 | 56.1 |
| 60% | 55.6 | 53.7 | 48.7 | 46.5 | 47.1 | 49.4 | 53.5 | 54.4 | 54.9 | 54.5 | 56.0 | 55.0 |
| 70% | 55.4 | 53.3 | 48.4 | 46.2 | 46.5 | 48.7 | 53.0 | 54.0 | 54.6 | 54.1 | 55.7 | 53.9 |
| 80% | 55.0 | 53.0 | 48.1 | 46.0 | 46.2 | 47.9 | 52.2 | 53.7 | 54.4 | 53.8 | 55.4 | 53.3 |
| 90% | 54.8 | 52.5 | 47.7 | 45.5 | 45.7 | 47.3 | 50.4 | 53.1 | 53.7 | 53.3 | 54.7 | 53.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.4 | 54.1 | 49.4 | 46.9 | 47.3 | 49.7 | 53.6 | 54.9 | 55.6 | 55.3 | 56.8 | 56.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.5 | 49.8 | 46.5 | 46.6 | 48.4 | 52.3 | 54.8 | 56.2 | 55.1 | 55.8 | 53.6 |
| Above Normal (16%) | 55.4 | 54.0 | 49.3 | 46.6 | 46.7 | 48.9 | 53.2 | 54.5 | 54.8 | 53.8 | 55.3 | 54.1 |
| Below Normal (13%) | 55.8 | 53.4 | 49.5 | 46.8 | 47.7 | 50.5 | 54.5 | 54.4 | 54.6 | 54.6 | 56.0 | 57.3 |
| Dry (24%) | 56.2 | 53.3 | 49.0 | 47.2 | 47.9 | 50.4 | 54.3 | 55.0 | 54.9 | 55.5 | 57.4 | 57.9 |
| Critical (15%) | 59.9 | 55.2 | 49.2 | 47.5 | 48.4 | 51.1 | 54.5 | 55.6 | 57.1 | 58.2 | 60.4 | 62.0 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.0 | 56.1 | 51.8 | 48.7 | 49.1 | 51.8 | 55.6 | 56.4 | 57.4 | 57.2 | 58.5 | 60.6 |
| 20% | 56.4 | 55.0 | 50.7 | 48.0 | 48.7 | 51.1 | 55.0 | 55.7 | 56.8 | 56.5 | 56.9 | 58.8 |
| 30% | 55.3 | 54.3 | 50.0 | 47.7 | 48.1 | 50.8 | 54.7 | 55.2 | 56.1 | 56.0 | 56.5 | 57.9 |
| 40% | 55.1 | 54.0 | 49.7 | 47.2 | 47.7 | 50.1 | 54.5 | 54.8 | 55.9 | 55.7 | 56.3 | 57.5 |
| 50% | 54.8 | 53.7 | 49.3 | 46.9 | 47.4 | 49.9 | 53.9 | 54.5 | 55.3 | 55.2 | 56.0 | 56.9 |
| 60% | 54.6 | 53.4 | 49.0 | 46.6 | 47.1 | 49.3 | 53.6 | 54.0 | 54.6 | 54.7 | 55.8 | 56.5 |
| 70% | 54.4 | 53.0 | 48.9 | 46.4 | 46.6 | 48.8 | 53.2 | 53.7 | 54.1 | 54.4 | 55.6 | 55.7 |
| 80% | 54.0 | 52.6 | 48.3 | 46.1 | 46.2 | 47.9 | 52.2 | 53.2 | 53.9 | 54.0 | 55.2 | 55.3 |
| 90% | 53.7 | 52.1 | 48.0 | 45.6 | 45.8 | 47.3 | 50.5 | 52.9 | 53.6 | 53.5 | 54.9 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 53.9 | 49.6 | 47.0 | 47.4 | 49.7 | 53.6 | 54.6 | 55.3 | 55.3 | 56.5 | 57.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.4 | 53.8 | 49.9 | 46.7 | 46.6 | 48.4 | 52.3 | 54.6 | 56.2 | 55.1 | 55.7 | 55.5 |
| Above Normal (16%) | 54.3 | 53.0 | 49.2 | 46.8 | 46.7 | 48.9 | 53.2 | 54.3 | 54.8 | 53.9 | 55.5 | 56.9 |
| Below Normal (13%) | 55.4 | 53.8 | 49.8 | 47.0 | 47.6 | 50.4 | 54.3 | 53.8 | 54.2 | 54.5 | 55.6 | 56.8 |
| Dry (24%) | 55.2 | 53.6 | 49.4 | 47.3 | 48.0 | 50.4 | 54.4 | 54.6 | 54.5 | 55.4 | 56.5 | 57.5 |
| Critical (15%) | 60.0 | 55.4 | 49.4 | 47.7 | 48.7 | 51.2 | 54.6 | 55.4 | 56.4 | 57.8 | 60.0 | 62.6 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.4 | 0.4 | 0.5 | 0.1 | 0.3 | 0.0 | -0.1 | -0.5 | -0.2 | -0.8 | -0.8 | 1.2 |
| 20% | -0.6 | -0.4 | 0.2 | 0.2 | 0.2 | -0.1 | 0.0 | -0.4 | 0.0 | -0.2 | -1.3 | 0.0 |
| 30% | -1.3 | -0.5 | 0.0 | 0.2 | 0.1 | 0.0 | 0.1 | -0.1 | -0.4 | -0.2 | -0.8 | 0.0 |
| 40% | -1.1 | -0.6 | 0.2 | 0.3 | 0.0 | -0.1 | 0.1 | -0.1 | -0.2 | 0.0 | -0.4 | 0.4 |
| 50% | -1.0 | -0.5 | 0.1 | 0.2 | 0.1 | -0.1 | 0.0 | -0.2 | -0.1 | 0.1 | -0.2 | 0.8 |
| 60% | -1.0 | -0.3 | 0.3 | 0.1 | 0.0 | 0.0 | 0.1 | -0.4 | -0.4 | 0.3 | -0.2 | 1.5 |
| 70% | -0.9 | -0.3 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | -0.3 | -0.5 | 0.3 | -0.1 | 1.9 |
| 80% | -1.0 | -0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 | -0.5 | -0.5 | 0.2 | -0.1 | 2.0 |
| 90% | -1.1 | -0.4 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | -0.3 | -0.1 | 0.2 | 0.2 | 1.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.8 | -0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.3 | -0.3 | 0.0 | -0.4 | 1.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.2 | -0.8 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0.0 | 0.1 | -0.1 | 1.9 |
| Above Normal (16%) | -1.1 | -1.0 | -0.1 | 0.2 | 0.0 | 0.0 | 0.1 | -0.2 | -0.1 | 0.1 | 0.2 | 2.8 |
| Below Normal (13%) | -0.3 | 0.4 | 0.4 | 0.2 | 0.0 | -0.1 | -0.2 | -0.6 | -0.3 | -0.1 | -0.4 | -0.5 |
| Dry (24%) | -1.0 | 0.3 | 0.4 | 0.1 | 0.1 | 0.0 | 0.1 | -0.4 | -0.4 | -0.1 | -0.9 | -0.5 |
| Critical (15%) | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | -0.2 | -0.7 | -0.4 | -0.4 | 0.6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-2. Sacramento River at Jellys Ferry, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.0 | 55.7 | 51.4 | 48.6 | 48.9 | 51.8 | 55.7 | 56.9 | 57.5 | 58.0 | 59.3 | 59.8 |
| 20% | 57.1 | 55.4 | 50.6 | 47.8 | 48.6 | 51.2 | 55.0 | 56.1 | 56.8 | 56.9 | 58.1 | 58.9 |
| 30% | 56.6 | 54.8 | 50.0 | 47.5 | 48.0 | 50.8 | 54.6 | 55.3 | 56.5 | 56.3 | 57.4 | 58.1 |
| 40% | 56.1 | 54.6 | 49.5 | 46.9 | 47.7 | 50.3 | 54.4 | 55.0 | 55.9 | 55.8 | 56.8 | 56.6 |
| 50% | 55.8 | 54.3 | 49.2 | 46.6 | 47.4 | 50.0 | 53.9 | 54.6 | 55.3 | 55.1 | 56.2 | 56.1 |
| 60% | 55.7 | 53.8 | 48.7 | 46.5 | 47.1 | 49.3 | 53.5 | 54.3 | 54.8 | 54.5 | 56.0 | 54.9 |
| 70% | 55.4 | 53.4 | 48.4 | 46.2 | 46.5 | 48.9 | 53.0 | 54.0 | 54.6 | 54.1 | 55.7 | 54.0 |
| 80% | 55.0 | 53.1 | 48.2 | 46.0 | 46.2 | 47.9 | 52.2 | 53.6 | 54.4 | 53.8 | 55.3 | 53.3 |
| 90% | 54.8 | 52.5 | 47.6 | 45.5 | 45.7 | 47.3 | 50.4 | 53.1 | 53.6 | 53.3 | 54.7 | 53.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.4 | 54.2 | 49.4 | 46.9 | 47.3 | 49.7 | 53.5 | 54.8 | 55.5 | 55.4 | 56.9 | 56.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.6 | 49.8 | 46.5 | 46.6 | 48.4 | 52.3 | 54.8 | 56.2 | 55.0 | 55.8 | 53.6 |
| Above Normal (16%) | 55.4 | 54.1 | 49.3 | 46.6 | 46.7 | 49.0 | 53.2 | 54.5 | 54.7 | 53.7 | 55.3 | 54.1 |
| Below Normal (13%) | 55.8 | 53.5 | 49.5 | 46.8 | 47.7 | 50.5 | 54.6 | 54.4 | 54.6 | 54.6 | 55.9 | 57.2 |
| Dry (24%) | 56.2 | 53.4 | 49.0 | 47.2 | 47.9 | 50.4 | 54.3 | 55.0 | 54.8 | 55.5 | 57.5 | 58.0 |
| Critical (15%) | 60.1 | 55.3 | 49.2 | 47.5 | 48.4 | 51.1 | 54.5 | 55.5 | 56.9 | 58.5 | 60.7 | 62.4 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.2 | 55.9 | 51.8 | 48.7 | 49.1 | 51.7 | 55.5 | 56.5 | 57.3 | 57.3 | 58.4 | 60.7 |
| 20% | 56.4 | 55.3 | 50.9 | 48.0 | 48.6 | 50.9 | 55.1 | 55.7 | 56.6 | 56.6 | 57.1 | 59.0 |
| 30% | 55.3 | 54.7 | 50.3 | 47.6 | 48.1 | 50.8 | 54.6 | 55.2 | 56.1 | 56.1 | 56.6 | 58.0 |
| 40% | 55.1 | 54.1 | 49.7 | 47.2 | 47.7 | 50.1 | 54.4 | 54.8 | 55.8 | 55.9 | 56.3 | 57.3 |
| 50% | 54.8 | 53.7 | 49.3 | 46.8 | 47.4 | 49.7 | 53.7 | 54.5 | 55.1 | 55.4 | 56.1 | 56.7 |
| 60% | 54.6 | 53.5 | 49.1 | 46.6 | 47.1 | 49.2 | 53.2 | 54.1 | 54.6 | 54.8 | 55.9 | 56.0 |
| 70% | 54.3 | 53.1 | 48.7 | 46.3 | 46.5 | 48.7 | 52.7 | 53.7 | 54.2 | 54.5 | 55.6 | 55.4 |
| 80% | 54.2 | 52.9 | 48.3 | 46.1 | 46.2 | 47.9 | 52.1 | 53.4 | 54.0 | 54.1 | 55.4 | 54.6 |
| 90% | 53.9 | 52.4 | 47.8 | 45.6 | 45.8 | 47.3 | 50.5 | 53.1 | 53.6 | 53.7 | 54.8 | 54.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 54.0 | 49.6 | 47.0 | 47.4 | 49.6 | 53.4 | 54.7 | 55.3 | 55.4 | 56.6 | 57.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.4 | 53.9 | 49.9 | 46.6 | 46.6 | 48.3 | 52.1 | 54.7 | 56.0 | 55.1 | 55.7 | 55.5 |
| Above Normal (16%) | 54.5 | 53.7 | 49.5 | 46.7 | 46.7 | 48.8 | 53.0 | 54.4 | 54.6 | 54.0 | 55.4 | 55.2 |
| Below Normal (13%) | 55.1 | 53.8 | 49.7 | 47.0 | 47.6 | 50.4 | 54.4 | 53.9 | 54.1 | 54.7 | 55.9 | 57.2 |
| Dry (24%) | 55.2 | 53.6 | 49.3 | 47.4 | 48.0 | 50.5 | 54.3 | 54.7 | 54.6 | 55.7 | 56.6 | 57.6 |
| Critical (15%) | 60.1 | 55.4 | 49.4 | 47.8 | 48.6 | 51.2 | 54.5 | 55.5 | 56.4 | 58.1 | 60.3 | 62.8 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.2 | 0.1 | 0.4 | 0.1 | 0.2 | -0.1 | -0.2 | -0.4 | -0.2 | -0.7 | -1.0 | 0.9 |
| 20% | -0.7 | -0.2 | 0.3 | 0.2 | 0.1 | -0.2 | 0.1 | -0.3 | -0.2 | -0.3 | -1.0 | 0.1 |
| 30% | -1.3 | -0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | -0.1 | -0.5 | -0.2 | -0.7 | -0.1 |
| 40% | -1.0 | -0.5 | 0.2 | 0.3 | 0.0 | -0.1 | 0.0 | -0.1 | -0.1 | 0.1 | -0.5 | 0.7 |
| 50% | -1.0 | -0.6 | 0.2 | 0.1 | 0.0 | -0.3 | -0.2 | -0.1 | -0.2 | 0.3 | -0.1 | 0.6 |
| 60% | -1.1 | -0.3 | 0.3 | 0.1 | 0.0 | -0.1 | -0.3 | -0.1 | -0.3 | 0.3 | -0.1 | 1.1 |
| 70% | -1.1 | -0.3 | 0.3 | 0.1 | 0.0 | -0.2 | -0.3 | -0.3 | -0.3 | 0.3 | -0.1 | 1.4 |
| 80% | -0.8 | -0.2 | 0.1 | 0.1 | 0.1 | 0.1 | -0.1 | -0.2 | -0.3 | 0.3 | 0.1 | 1.3 |
| 90% | -1.0 | 0.0 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | -0.1 | 0.0 | 0.4 | 0.1 | 1.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.8 | -0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.1 | -0.2 | -0.3 | 0.0 | -0.3 | 0.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.1 | -0.7 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | 0.1 | -0.1 | 1.9 |
| Above Normal (16%) | -0.9 | -0.4 | 0.1 | 0.2 | 0.0 | -0.2 | -0.2 | -0.1 | -0.1 | 0.2 | 0.1 | 1.1 |
| Below Normal (13%) | -0.7 | 0.3 | 0.3 | 0.2 | -0.1 | -0.1 | -0.2 | -0.5 | -0.5 | 0.1 | 0.0 | 0.0 |
| Dry (24%) | -1.0 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | -0.3 | -0.2 | 0.1 | -0.9 | -0.4 |
| Critical (15%) | -0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | -0.6 | -0.4 | -0.4 | 0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-3. Sacramento River at Jellys Ferry, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 57.6 | 55.7 | 51.3 | 48.6 | 48.9 | 51.8 | 55.7 | 57.0 | 57.6 | 58.0 | 59.3 | 59.5 |
| 20% | 57.0 | 55.4 | 50.5 | 47.8 | 48.5 | 51.2 | 55.0 | 56.1 | 56.8 | 56.7 | 58.2 | 58.8 |
| 30% | 56.6 | 54.8 | 50.0 | 47.4 | 48.0 | 50.7 | 54.6 | 55.3 | 56.5 | 56.2 | 57.3 | 57.9 |
| 40% | 56.2 | 54.6 | 49.5 | 46.9 | 47.7 | 50.3 | 54.4 | 55.0 | 56.0 | 55.7 | 56.7 | 57.1 |
| 50% | 55.8 | 54.2 | 49.2 | 46.7 | 47.4 | 50.0 | 53.9 | 54.7 | 55.4 | 55.1 | 56.2 | 56.1 |
| 60% | 55.6 | 53.7 | 48.7 | 46.5 | 47.1 | 49.4 | 53.5 | 54.4 | 54.9 | 54.5 | 56.0 | 55.0 |
| 70% | 55.4 | 53.3 | 48.4 | 46.2 | 46.5 | 48.7 | 53.0 | 54.0 | 54.6 | 54.1 | 55.7 | 53.9 |
| 80% | 55.0 | 53.0 | 48.1 | 46.0 | 46.2 | 47.9 | 52.2 | 53.7 | 54.4 | 53.8 | 55.4 | 53.3 |
| 90% | 54.8 | 52.5 | 47.7 | 45.5 | 45.7 | 47.3 | 50.4 | 53.1 | 53.7 | 53.3 | 54.7 | 53.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.4 | 54.1 | 49.4 | 46.9 | 47.3 | 49.7 | 53.6 | 54.9 | 55.6 | 55.3 | 56.8 | 56.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.5 | 49.8 | 46.5 | 46.6 | 48.4 | 52.3 | 54.8 | 56.2 | 55.1 | 55.8 | 53.6 |
| Above Normal (16%) | 55.4 | 54.0 | 49.3 | 46.6 | 46.7 | 48.9 | 53.2 | 54.5 | 54.8 | 53.8 | 55.3 | 54.1 |
| Below Normal (13%) | 55.8 | 53.4 | 49.5 | 46.8 | 47.7 | 50.5 | 54.5 | 54.4 | 54.6 | 54.6 | 56.0 | 57.3 |
| Dry (24%) | 56.2 | 53.3 | 49.0 | 47.2 | 47.9 | 50.4 | 54.3 | 55.0 | 54.9 | 55.5 | 57.4 | 57.9 |
| Critical (15%) | 59.9 | 55.2 | 49.2 | 47.5 | 48.4 | 51.1 | 54.5 | 55.6 | 57.1 | 58.2 | 60.4 | 62.0 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.0 | 55.7 | 51.4 | 48.6 | 48.9 | 51.8 | 55.7 | 56.9 | 57.5 | 58.0 | 59.3 | 59.8 |
| 20% | 57.1 | 55.4 | 50.6 | 47.8 | 48.6 | 51.2 | 55.0 | 56.1 | 56.8 | 56.9 | 58.1 | 58.9 |
| 30% | 56.6 | 54.8 | 50.0 | 47.5 | 48.0 | 50.8 | 54.6 | 55.3 | 56.5 | 56.3 | 57.4 | 58.1 |
| 40% | 56.1 | 54.6 | 49.5 | 46.9 | 47.7 | 50.3 | 54.4 | 55.0 | 55.9 | 55.8 | 56.8 | 56.6 |
| 50% | 55.8 | 54.3 | 49.2 | 46.6 | 47.4 | 50.0 | 53.9 | 54.6 | 55.3 | 55.1 | 56.2 | 56.1 |
| 60% | 55.7 | 53.8 | 48.7 | 46.5 | 47.1 | 49.3 | 53.5 | 54.3 | 54.8 | 54.5 | 56.0 | 54.9 |
| 70% | 55.4 | 53.4 | 48.4 | 46.2 | 46.5 | 48.9 | 53.0 | 54.0 | 54.6 | 54.1 | 55.7 | 54.0 |
| 80% | 55.0 | 53.1 | 48.2 | 46.0 | 46.2 | 47.9 | 52.2 | 53.6 | 54.4 | 53.8 | 55.3 | 53.3 |
| 90% | 54.8 | 52.5 | 47.6 | 45.5 | 45.7 | 47.3 | 50.4 | 53.1 | 53.6 | 53.3 | 54.7 | 53.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.4 | 54.2 | 49.4 | 46.9 | 47.3 | 49.7 | 53.5 | 54.8 | 55.5 | 55.4 | 56.9 | 56.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.6 | 49.8 | 46.5 | 46.6 | 48.4 | 52.3 | 54.8 | 56.2 | 55.0 | 55.8 | 53.6 |
| Above Normal (16%) | 55.4 | 54.1 | 49.3 | 46.6 | 46.7 | 49.0 | 53.2 | 54.5 | 54.7 | 53.7 | 55.3 | 54.1 |
| Below Normal (13%) | 55.8 | 53.5 | 49.5 | 46.8 | 47.7 | 50.5 | 54.6 | 54.4 | 54.6 | 54.6 | 55.9 | 57.2 |
| Dry (24%) | 56.2 | 53.4 | 49.0 | 47.2 | 47.9 | 50.4 | 54.3 | 55.0 | 54.8 | 55.5 | 57.5 | 58.0 |
| Critical (15%) | 60.1 | 55.3 | 49.2 | 47.5 | 48.4 | 51.1 | 54.5 | 55.5 | 56.9 | 58.5 | 60.7 | 62.4 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.4** | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | **0.1** | **0.3** |
| 20% | **0.0** | **0.1** | **0.1** | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | -0.1 | **0.1** |
| 30% | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | **0.0** | **0.1** |
| 40% | -0.1 | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.1** | -0.4 |
| 50% | **0.0** | **0.1** | -0.1 | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** |
| 60% | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | -0.1 | **0.1** | 0.0 | 0.0 |
| 70% | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | **0.2** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** |
| 80% | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| 90% | 0.0 | 0.0 | -0.2 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 |
| Dry (24%) | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| Critical (15%) | **0.2** | **0.1** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | -0.1 | **0.3** | **0.3** | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-4. Sacramento River at Jellys Ferry, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.0 | 56.1 | 51.8 | 48.7 | 49.1 | 51.8 | 55.6 | 56.4 | 57.4 | 57.2 | 58.5 | 60.6 |
| 20% | 56.4 | 55.0 | 50.7 | 48.0 | 48.7 | 51.1 | 55.0 | 55.7 | 56.8 | 56.5 | 56.9 | 58.8 |
| 30% | 55.3 | 54.3 | 50.0 | 47.7 | 48.1 | 50.8 | 54.7 | 55.2 | 56.1 | 56.0 | 56.5 | 57.9 |
| 40% | 55.1 | 54.0 | 49.7 | 47.2 | 47.7 | 50.1 | 54.5 | 54.8 | 55.9 | 55.7 | 56.3 | 57.5 |
| 50% | 54.8 | 53.7 | 49.3 | 46.9 | 47.4 | 49.9 | 53.9 | 54.5 | 55.3 | 55.2 | 56.0 | 56.9 |
| 60% | 54.6 | 53.4 | 49.0 | 46.6 | 47.1 | 49.3 | 53.6 | 54.0 | 54.6 | 54.7 | 55.8 | 56.5 |
| 70% | 54.4 | 53.0 | 48.9 | 46.4 | 46.6 | 48.8 | 53.2 | 53.7 | 54.1 | 54.4 | 55.6 | 55.7 |
| 80% | 54.0 | 52.6 | 48.3 | 46.1 | 46.2 | 47.9 | 52.2 | 53.2 | 53.9 | 54.0 | 55.2 | 55.3 |
| 90% | 53.7 | 52.1 | 48.0 | 45.6 | 45.8 | 47.3 | 50.5 | 52.9 | 53.6 | 53.5 | 54.9 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 53.9 | 49.6 | 47.0 | 47.4 | 49.7 | 53.6 | 54.6 | 55.3 | 55.3 | 56.5 | 57.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.4 | 53.8 | 49.9 | 46.7 | 46.6 | 48.4 | 52.3 | 54.6 | 56.2 | 55.1 | 55.7 | 55.5 |
| Above Normal (16%) | 54.3 | 53.0 | 49.2 | 46.8 | 46.7 | 48.9 | 53.2 | 54.3 | 54.8 | 53.9 | 55.5 | 56.9 |
| Below Normal (13%) | 55.4 | 53.8 | 49.8 | 47.0 | 47.6 | 50.4 | 54.3 | 53.8 | 54.2 | 54.5 | 55.6 | 56.8 |
| Dry (24%) | 55.2 | 53.6 | 49.4 | 47.3 | 48.0 | 50.4 | 54.4 | 54.6 | 54.5 | 55.4 | 56.5 | 57.5 |
| Critical (15%) | 60.0 | 55.4 | 49.4 | 47.7 | 48.7 | 51.2 | 54.6 | 55.4 | 56.4 | 57.8 | 60.0 | 62.6 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.2 | 55.9 | 51.8 | 48.7 | 49.1 | 51.7 | 55.5 | 56.5 | 57.3 | 57.3 | 58.4 | 60.7 |
| 20% | 56.4 | 55.3 | 50.9 | 48.0 | 48.6 | 50.9 | 55.1 | 55.7 | 56.6 | 56.6 | 57.1 | 59.0 |
| 30% | 55.3 | 54.7 | 50.3 | 47.6 | 48.1 | 50.8 | 54.6 | 55.2 | 56.1 | 56.1 | 56.6 | 58.0 |
| 40% | 55.1 | 54.1 | 49.7 | 47.2 | 47.7 | 50.1 | 54.4 | 54.8 | 55.8 | 55.9 | 56.3 | 57.3 |
| 50% | 54.8 | 53.7 | 49.3 | 46.8 | 47.4 | 49.7 | 53.7 | 54.5 | 55.1 | 55.4 | 56.1 | 56.7 |
| 60% | 54.6 | 53.5 | 49.1 | 46.6 | 47.1 | 49.2 | 53.2 | 54.1 | 54.6 | 54.8 | 55.9 | 56.0 |
| 70% | 54.3 | 53.1 | 48.7 | 46.3 | 46.5 | 48.7 | 52.7 | 53.7 | 54.2 | 54.5 | 55.6 | 55.4 |
| 80% | 54.2 | 52.9 | 48.3 | 46.1 | 46.2 | 47.9 | 52.1 | 53.4 | 54.0 | 54.1 | 55.4 | 54.6 |
| 90% | 53.9 | 52.4 | 47.8 | 45.6 | 45.8 | 47.3 | 50.5 | 53.1 | 53.6 | 53.7 | 54.8 | 54.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.5 | 54.0 | 49.6 | 47.0 | 47.4 | 49.6 | 53.4 | 54.7 | 55.3 | 55.4 | 56.6 | 57.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.4 | 53.9 | 49.9 | 46.6 | 46.6 | 48.3 | 52.1 | 54.7 | 56.0 | 55.1 | 55.7 | 55.5 |
| Above Normal (16%) | 54.5 | 53.7 | 49.5 | 46.7 | 46.7 | 48.8 | 53.0 | 54.4 | 54.6 | 54.0 | 55.4 | 55.2 |
| Below Normal (13%) | 55.1 | 53.8 | 49.7 | 47.0 | 47.6 | 50.4 | 54.4 | 53.9 | 54.1 | 54.7 | 55.9 | 57.2 |
| Dry (24%) | 55.2 | 53.6 | 49.3 | 47.4 | 48.0 | 50.5 | 54.3 | 54.7 | 54.6 | 55.7 | 56.6 | 57.6 |
| Critical (15%) | 60.1 | 55.4 | 49.4 | 47.8 | 48.6 | 51.2 | 54.5 | 55.5 | 56.4 | 58.1 | 60.3 | 62.8 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.2** | -0.2 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | **0.1** | -0.1 | **0.1** | -0.1 | **0.1** |
| 20% | -0.1 | **0.3** | **0.2** | 0.0 | -0.1 | -0.2 | **0.1** | **0.0** | -0.1 | **0.1** | **0.2** | **0.2** |
| 30% | 0.0 | **0.3** | **0.3** | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | -0.1 | **0.1** | **0.1** | **0.1** |
| 40% | **0.0** | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | **0.2** | **0.0** | -0.2 |
| 50% | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | -0.2 | -0.3 | **0.0** | -0.1 | **0.2** | **0.1** | -0.1 |
| 60% | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | -0.1 | -0.4 | **0.2** | **0.0** | **0.1** | **0.1** | -0.4 |
| 70% | -0.1 | **0.1** | -0.1 | 0.0 | -0.1 | -0.1 | -0.5 | 0.0 | **0.1** | **0.0** | **0.1** | -0.3 |
| 80% | **0.1** | **0.3** | -0.1 | **0.0** | **0.0** | **0.0** | -0.2 | **0.2** | **0.1** | **0.1** | **0.2** | -0.6 |
| 90% | **0.1** | **0.3** | -0.2 | 0.0 | 0.0 | 0.0 | **0.0** | **0.2** | **0.1** | **0.1** | -0.1 | -0.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** | **0.1** | -0.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.1** | **0.1** | 0.0 | 0.0 | -0.1 | -0.2 | **0.1** | -0.1 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | **0.2** | **0.6** | **0.2** | 0.0 | 0.0 | -0.1 | -0.3 | **0.1** | -0.1 | **0.1** | 0.0 | -1.7 |
| Below Normal (13%) | -0.4 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | **0.0** | **0.1** | -0.1 | **0.2** | **0.3** | **0.4** |
| Dry (24%) | 0.0 | **0.0** | -0.1 | **0.0** | 0.0 | **0.1** | -0.1 | **0.1** | **0.2** | **0.3** | **0.1** | **0.1** |
| Critical (15%) | **0.1** | **0.0** | **0.1** | **0.0** | -0.1 | **0.0** | -0.1 | **0.0** | **0.0** | **0.3** | **0.2** | **0.2** |

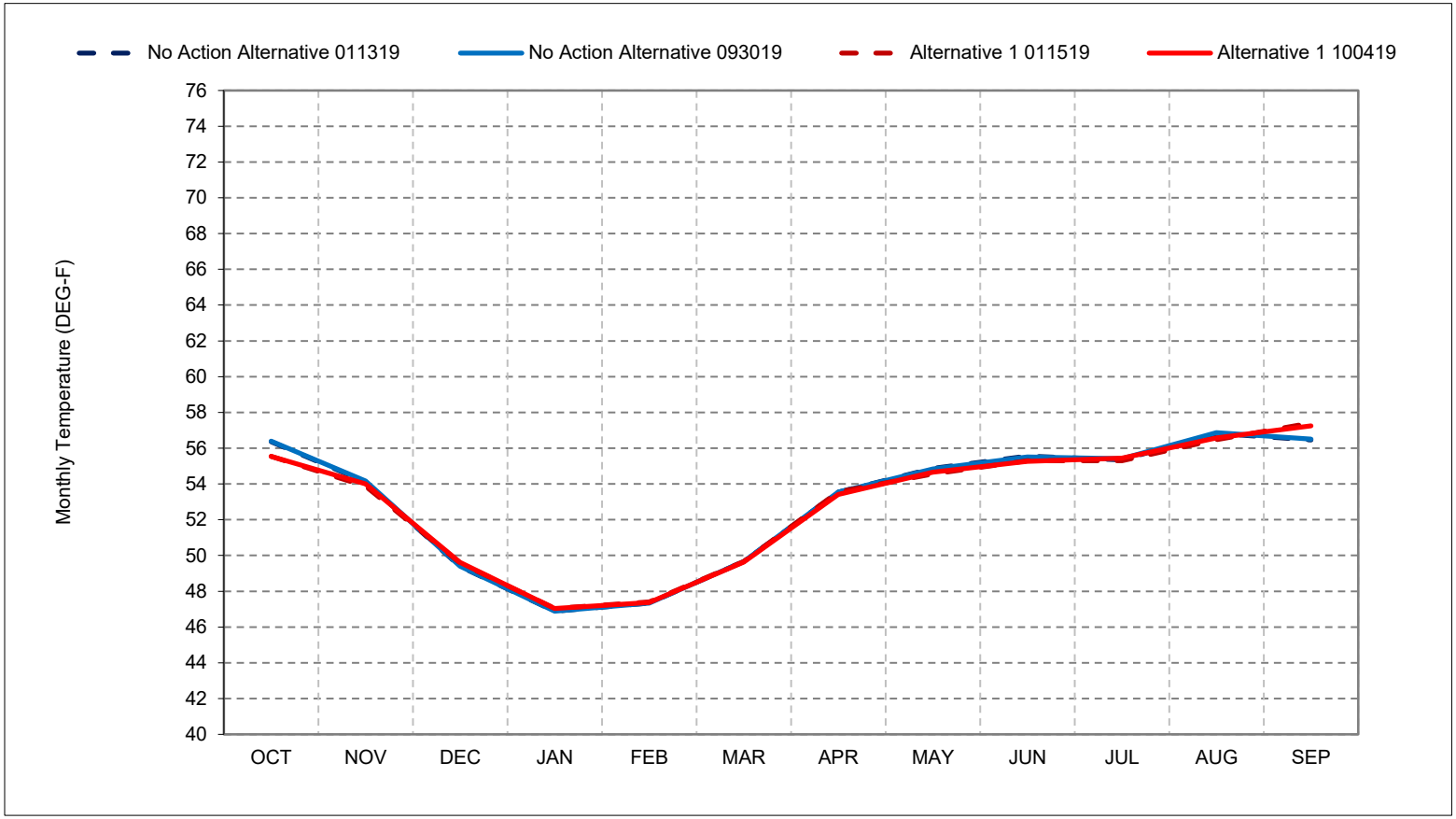
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-1. Sacramento River at Jellys Ferry, Long-Term Average Temperature

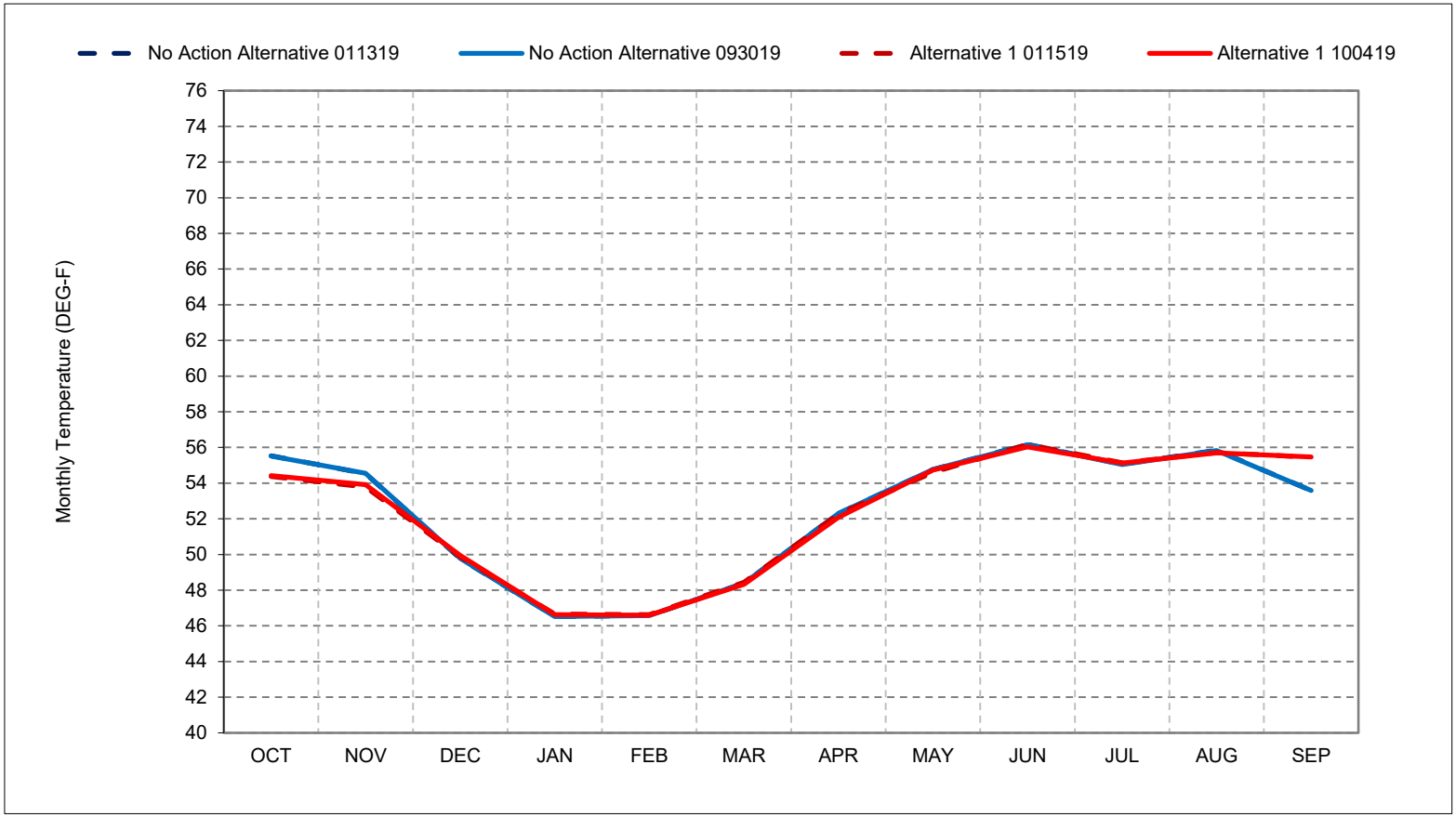



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-2. Sacramento River at Jellys Ferry, Wet Year Average Temperature

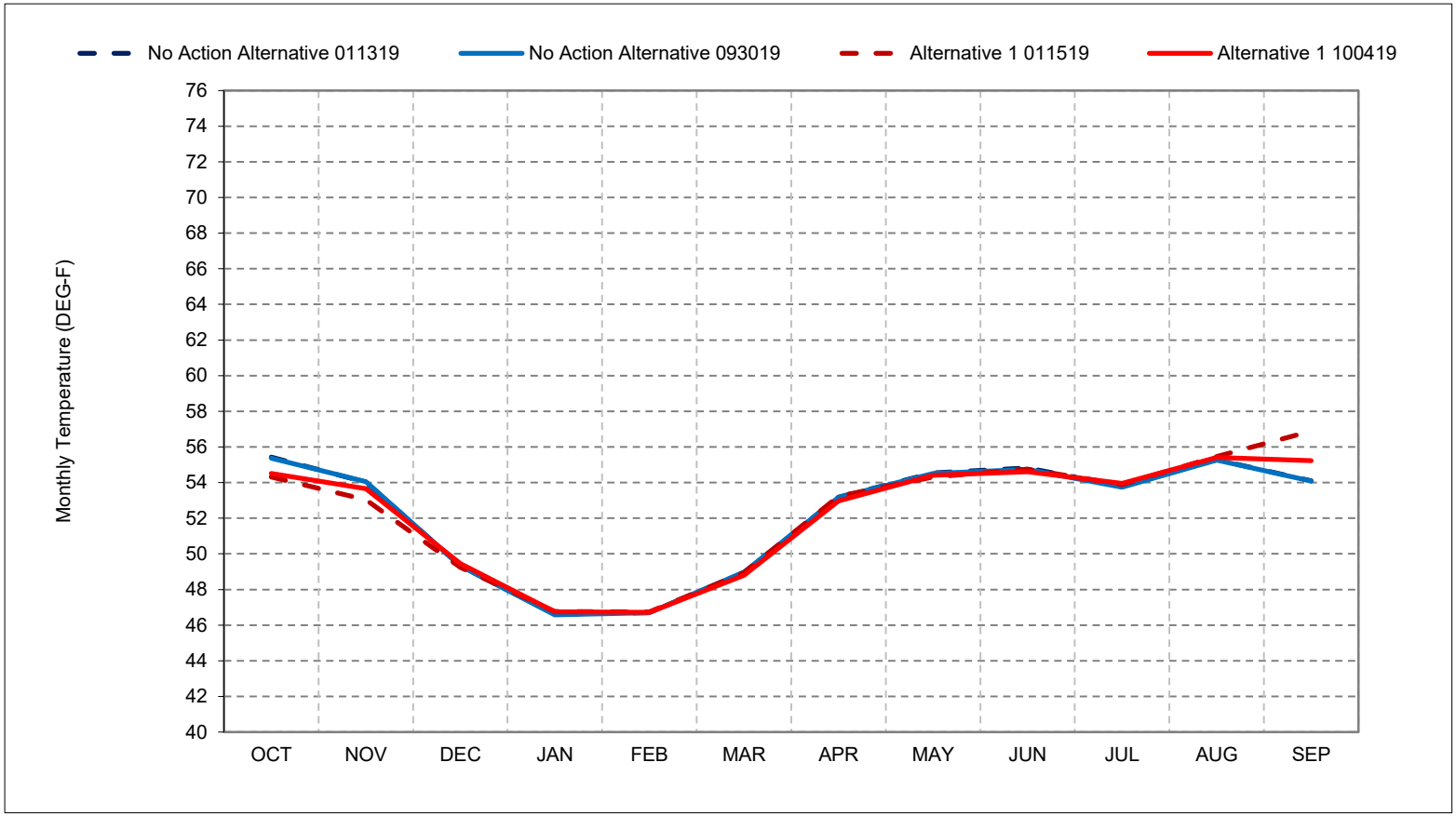



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-3. Sacramento River at Jellys Ferry, Above Normal Year Average Temperature

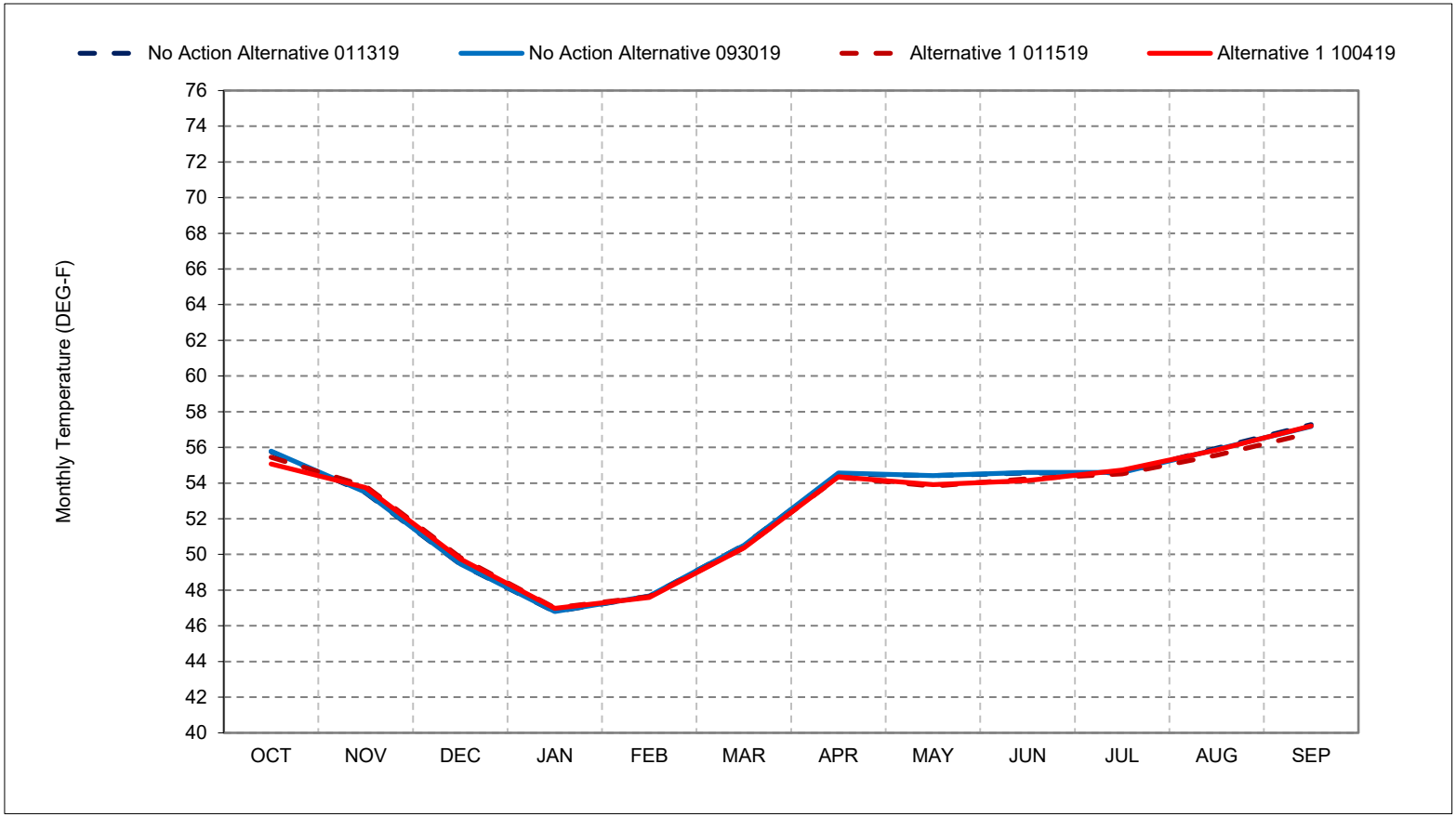



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-4. Sacramento River at Jellys Ferry, Below Normal Year Average Temperature

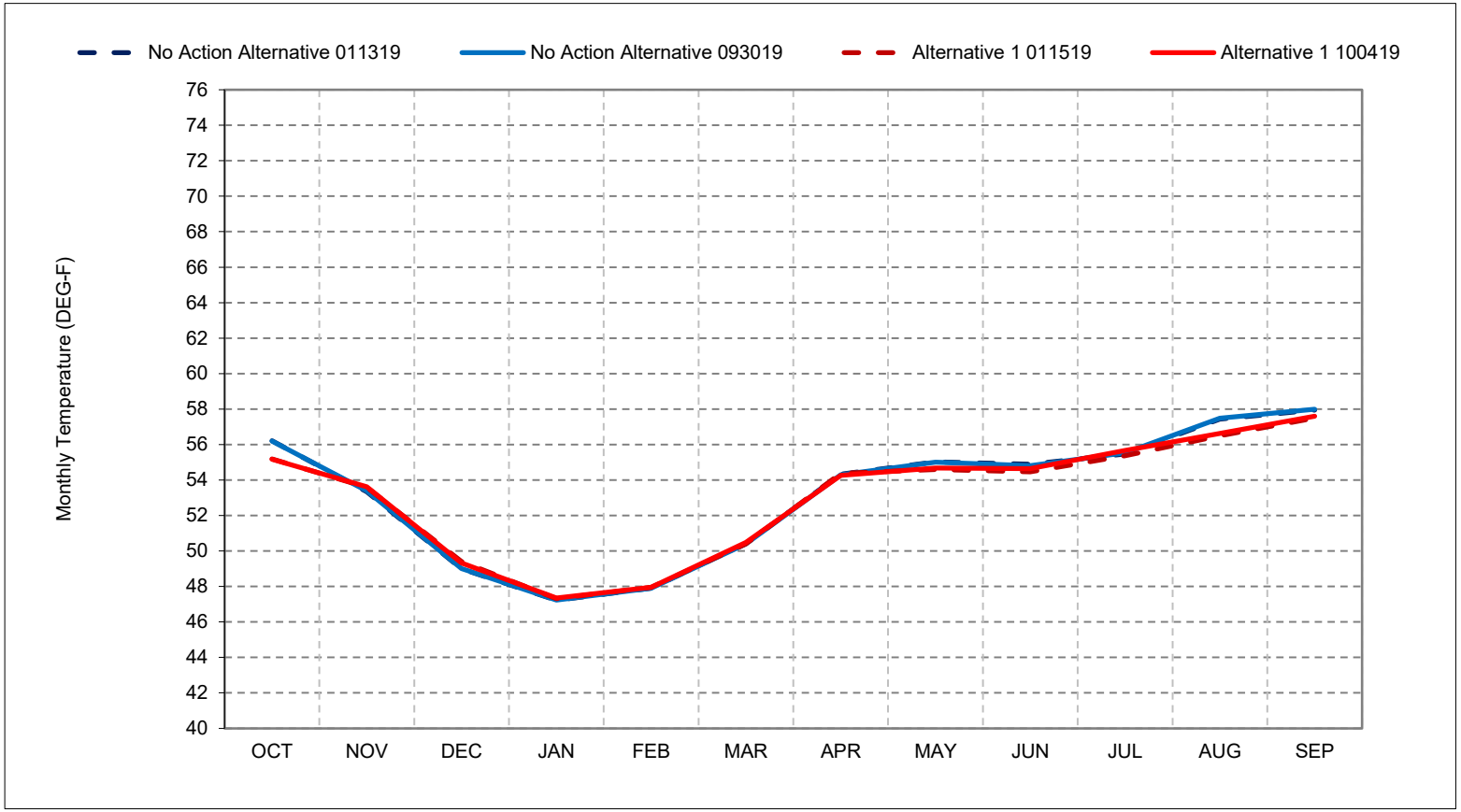



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-5. Sacramento River at Jellys Ferry, Dry Year Average Temperature

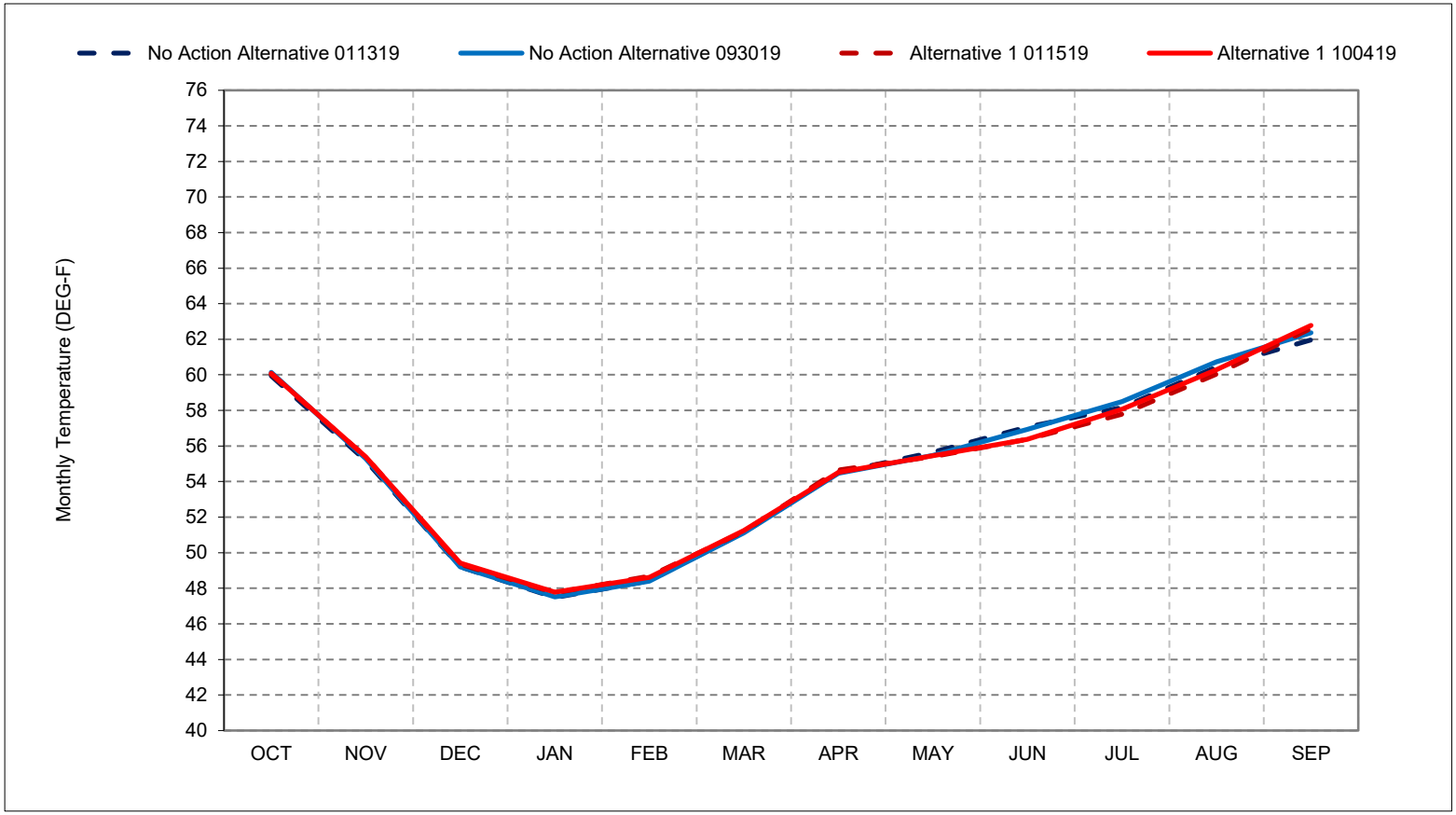



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-6. Sacramento River at Jellys Ferry, Critical Year Average Temperature

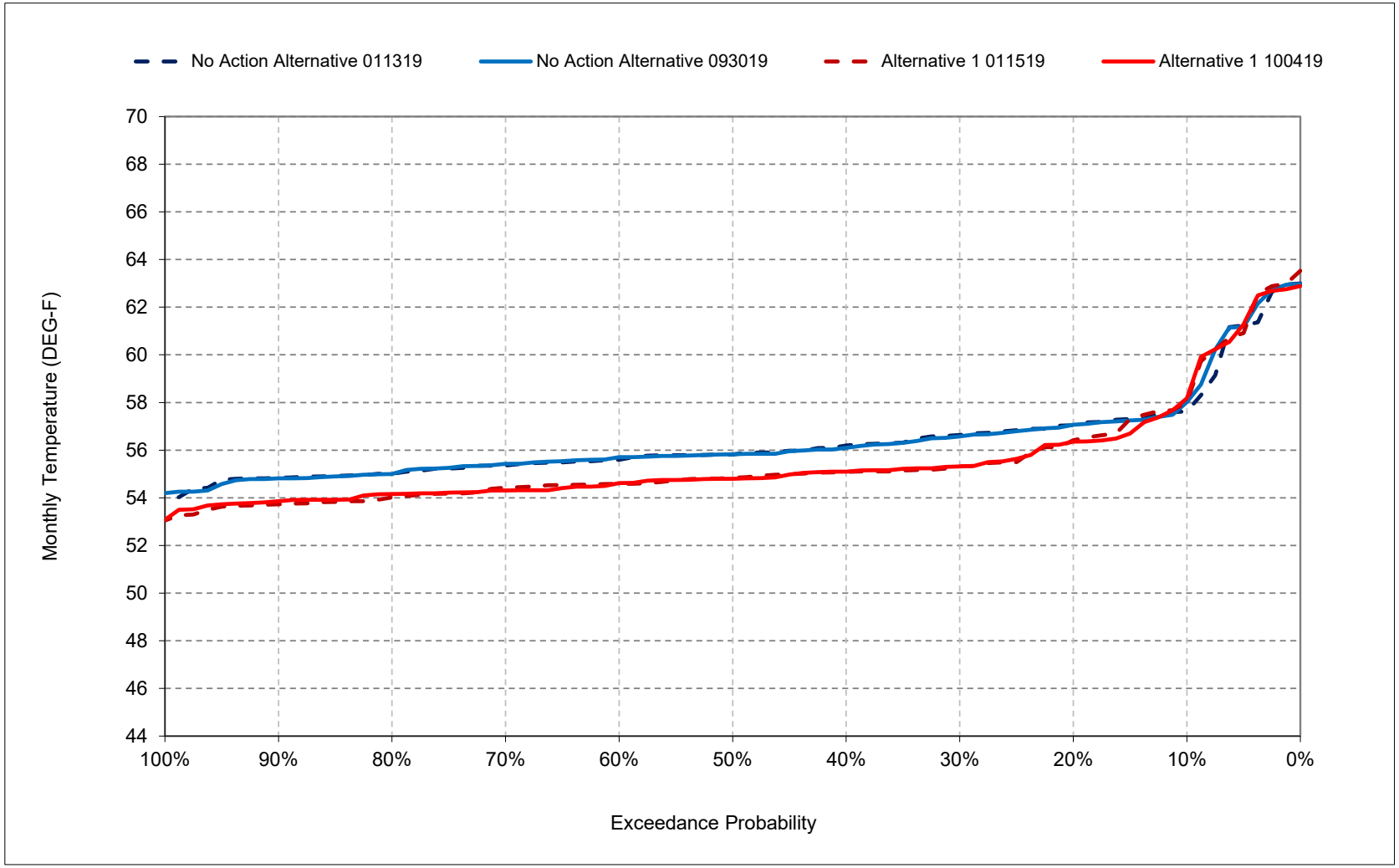



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

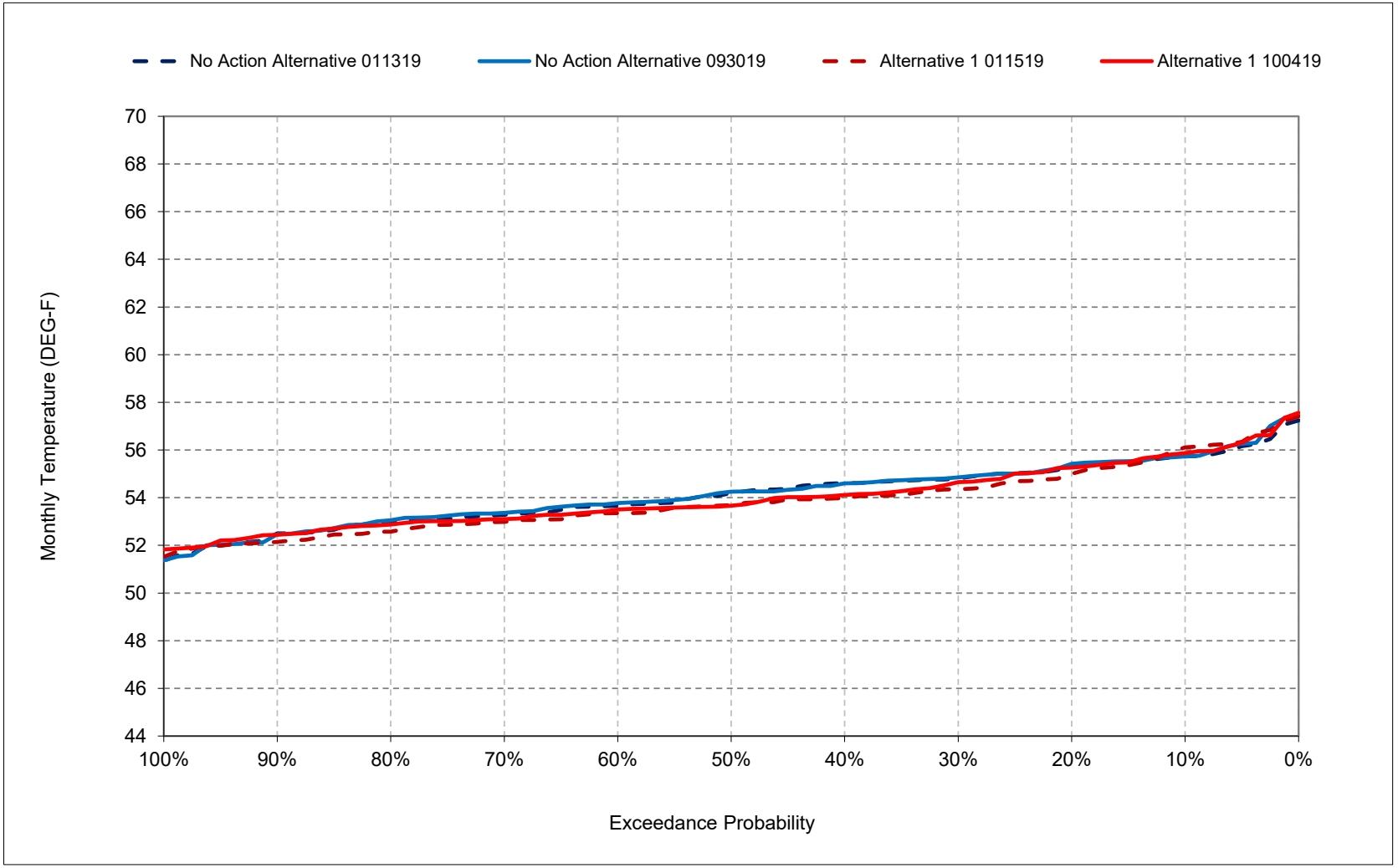
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-7. Sacramento River at Jellys Ferry, October**



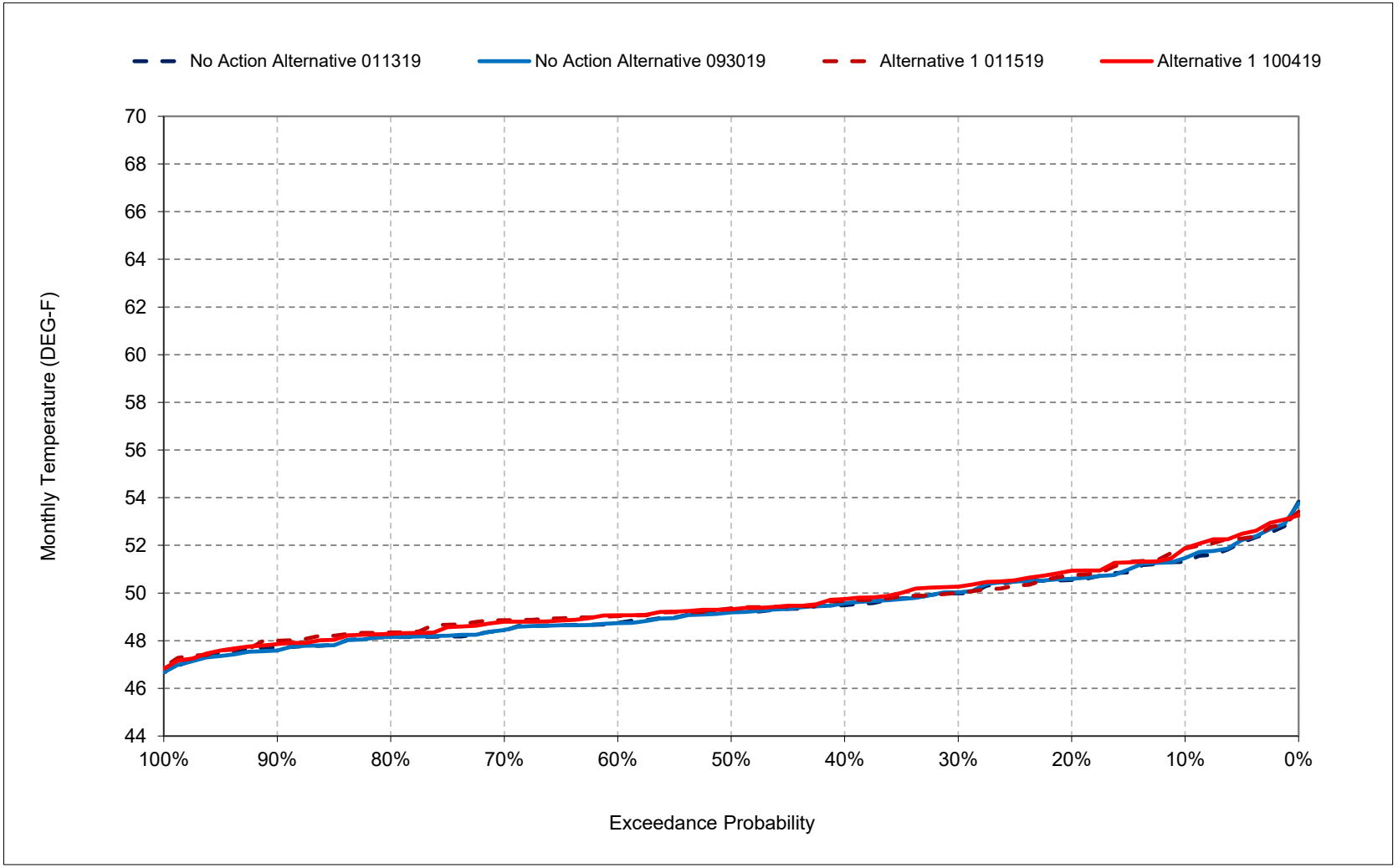

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-8. Sacramento River at Jellys Ferry, November**



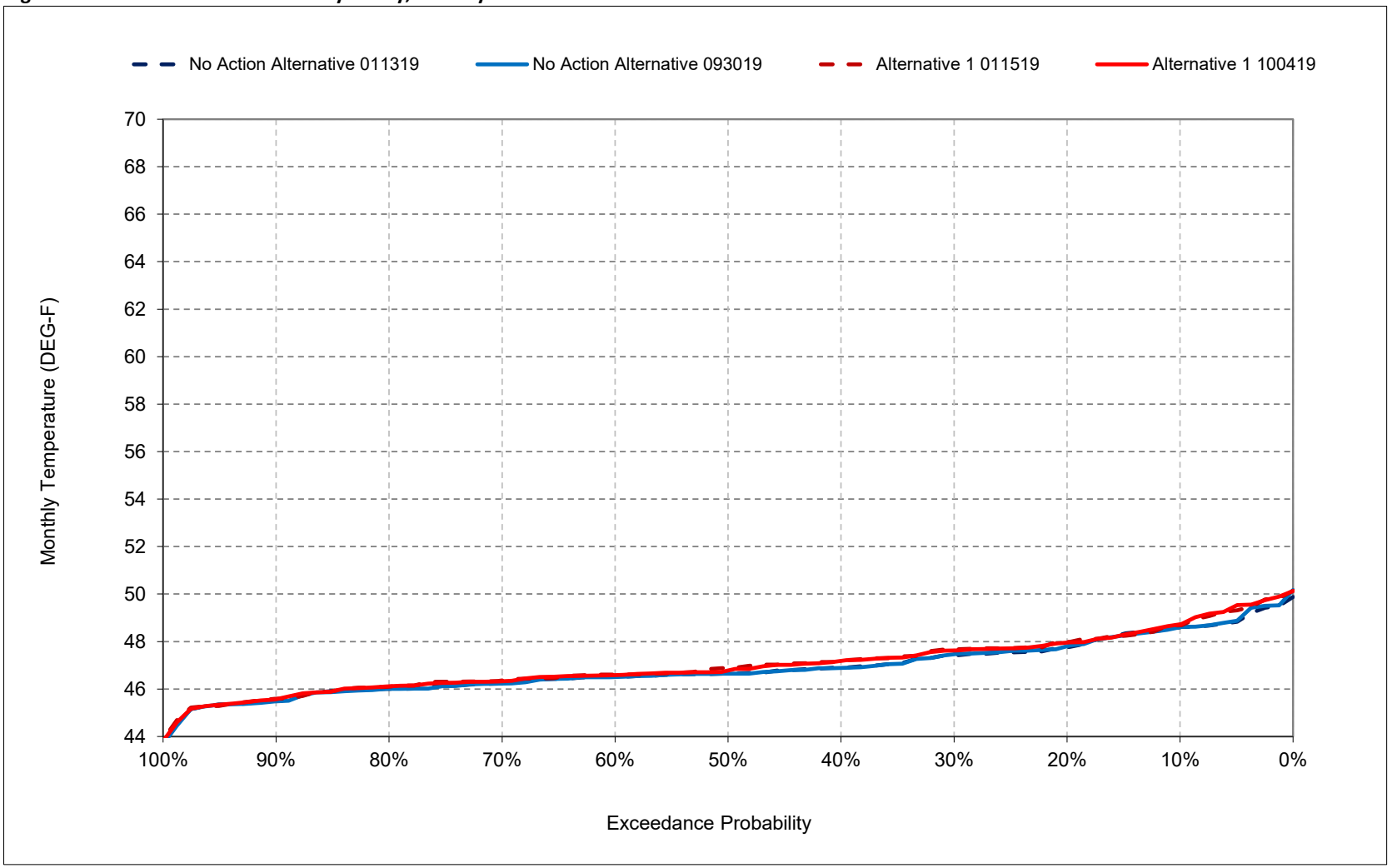

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-9. Sacramento River at Jellys Ferry, December**



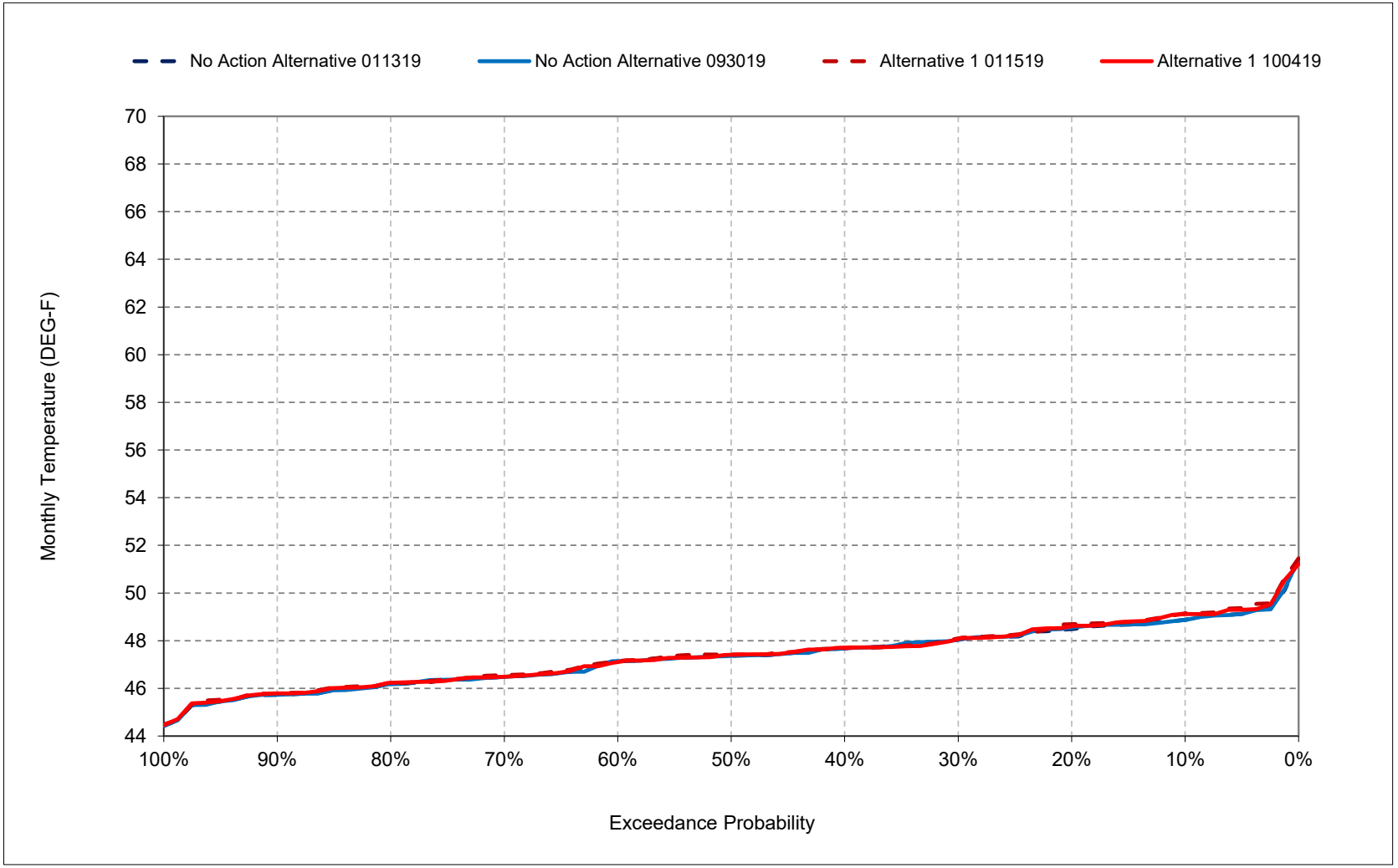

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-10. Sacramento River at Jellys Ferry, January**



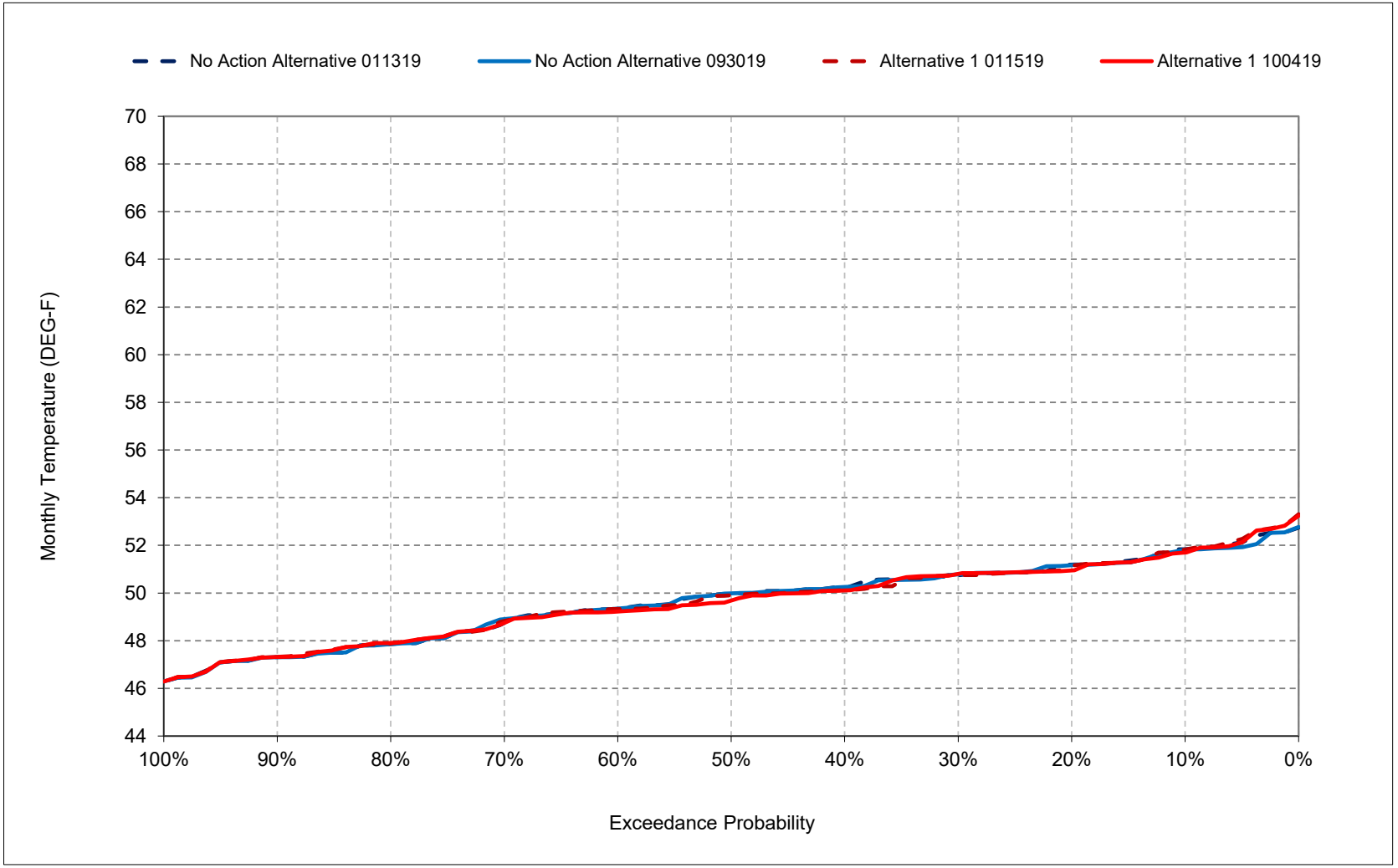

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-11. Sacramento River at Jellys Ferry, February**



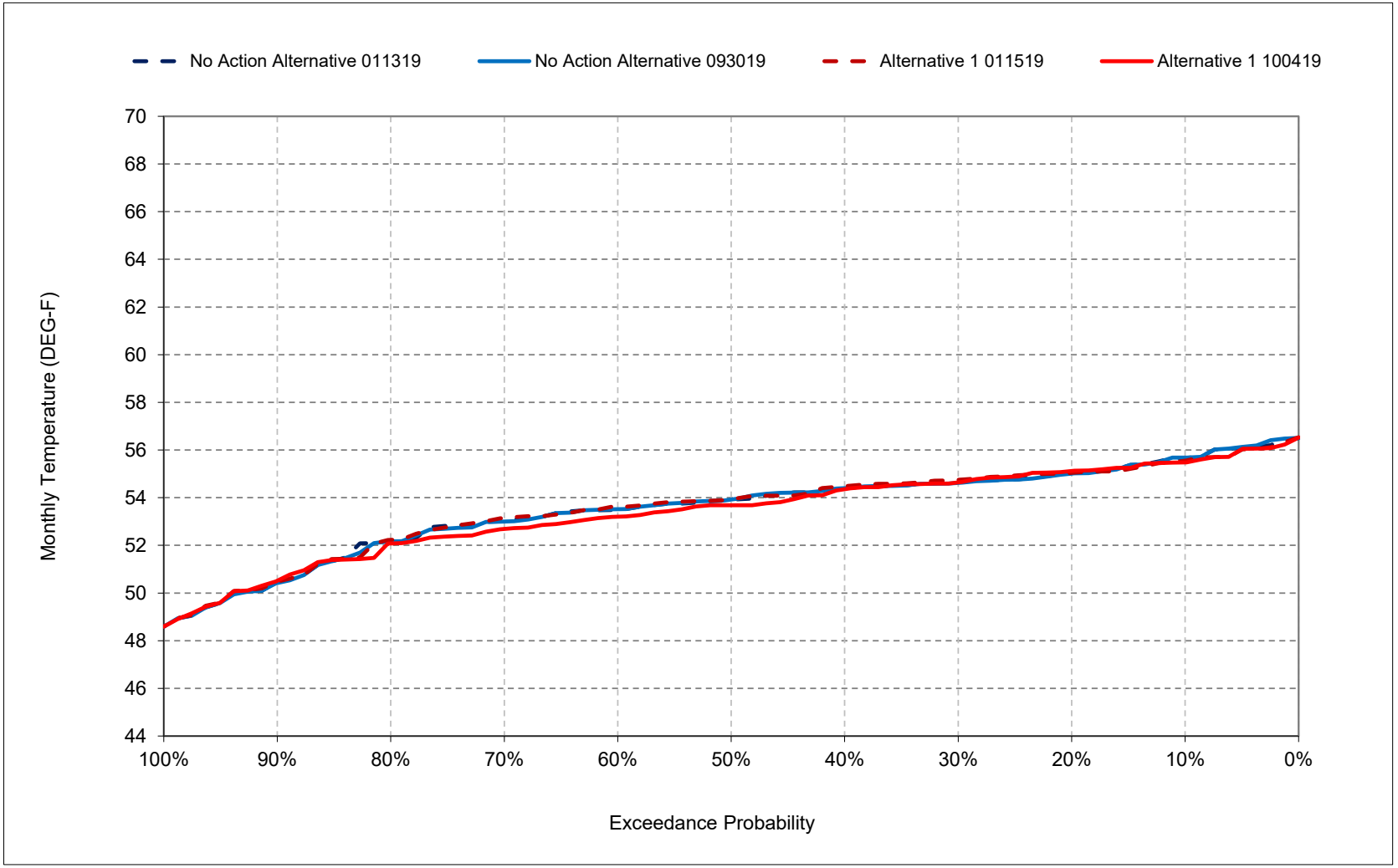

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-12. Sacramento River at Jellys Ferry, March**



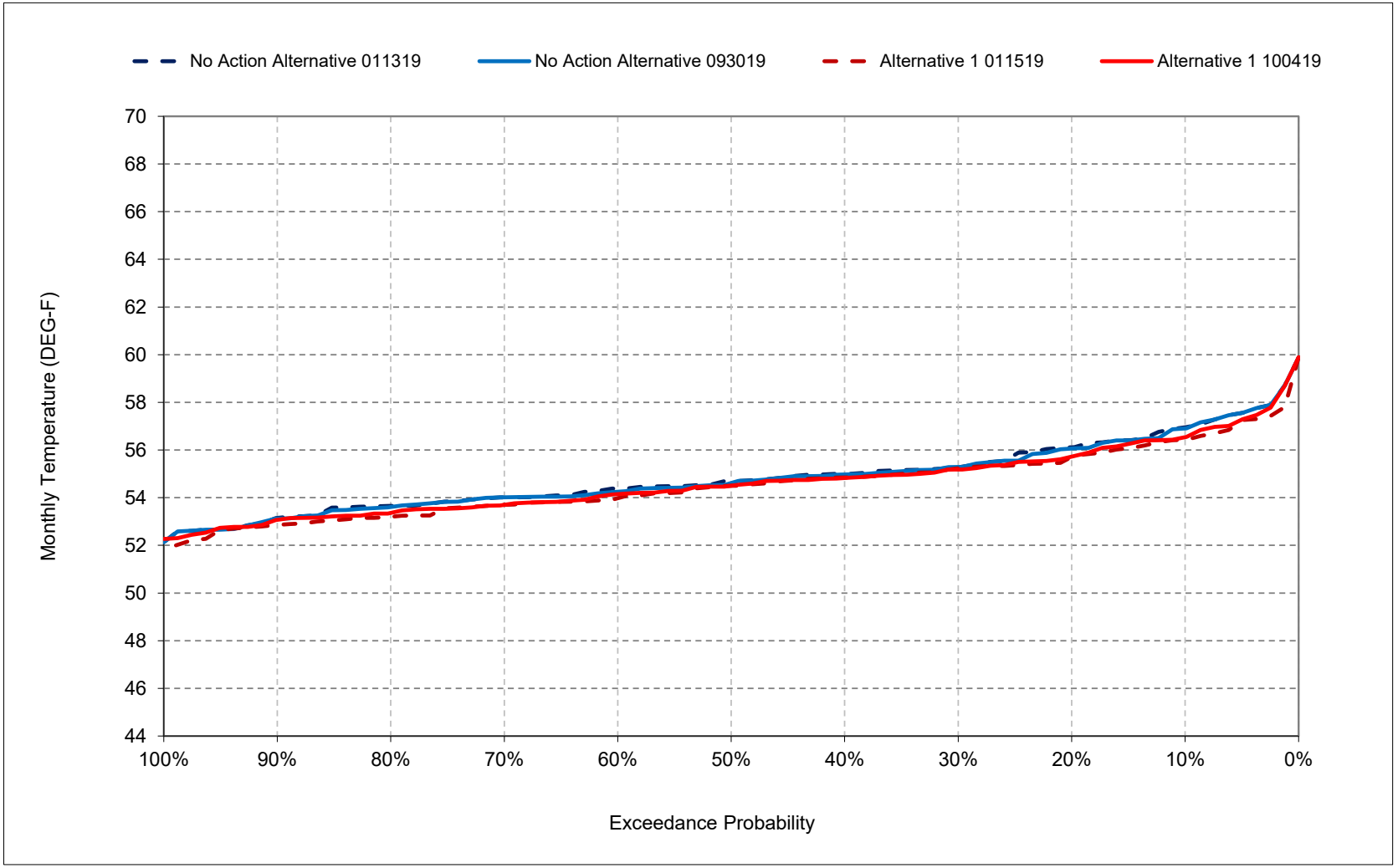

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-13. Sacramento River at Jellys Ferry, April**



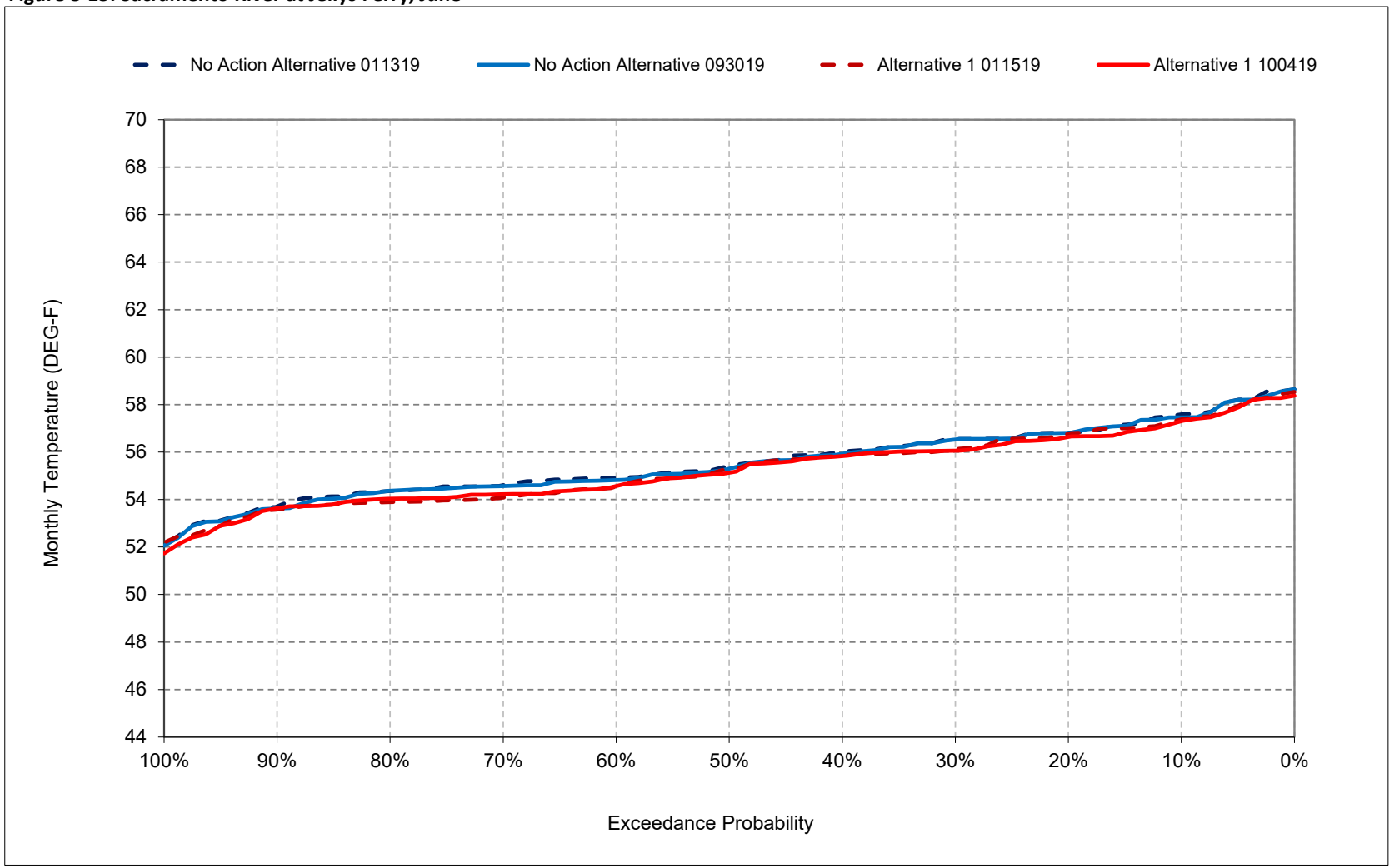

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-14. Sacramento River at Jellys Ferry, May**



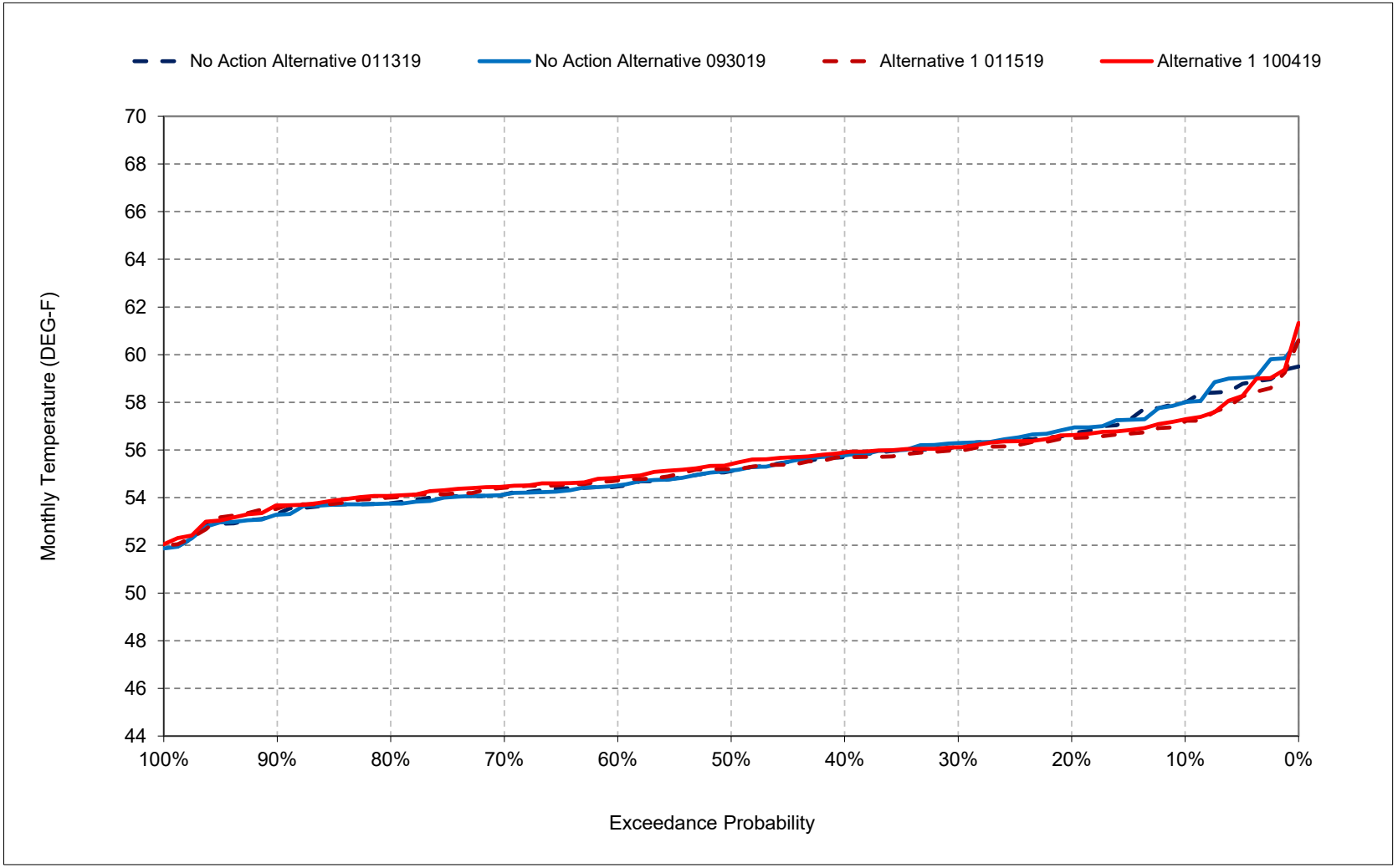

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-15. Sacramento River at Jellys Ferry, June**



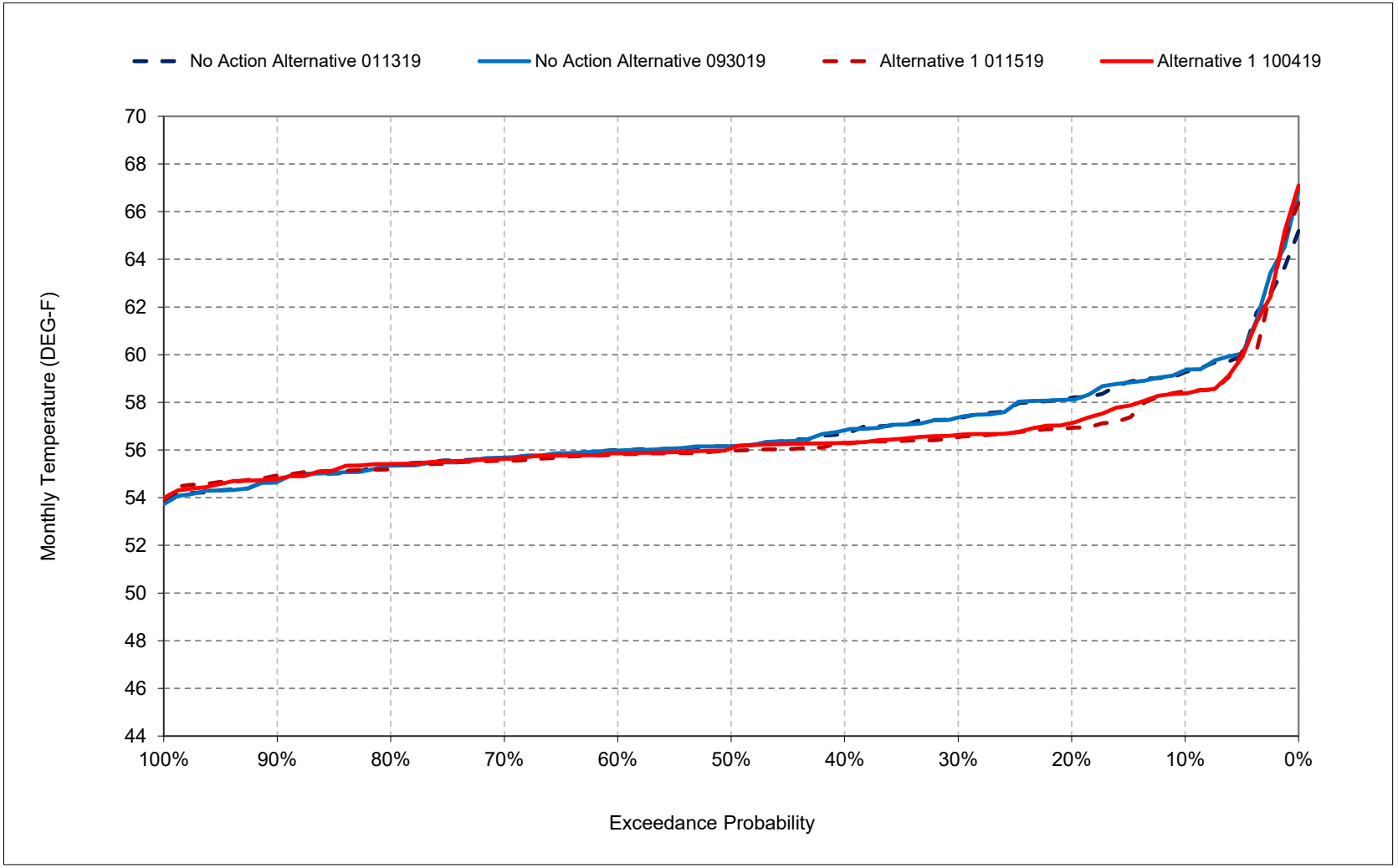

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-16. Sacramento River at Jellys Ferry, July**



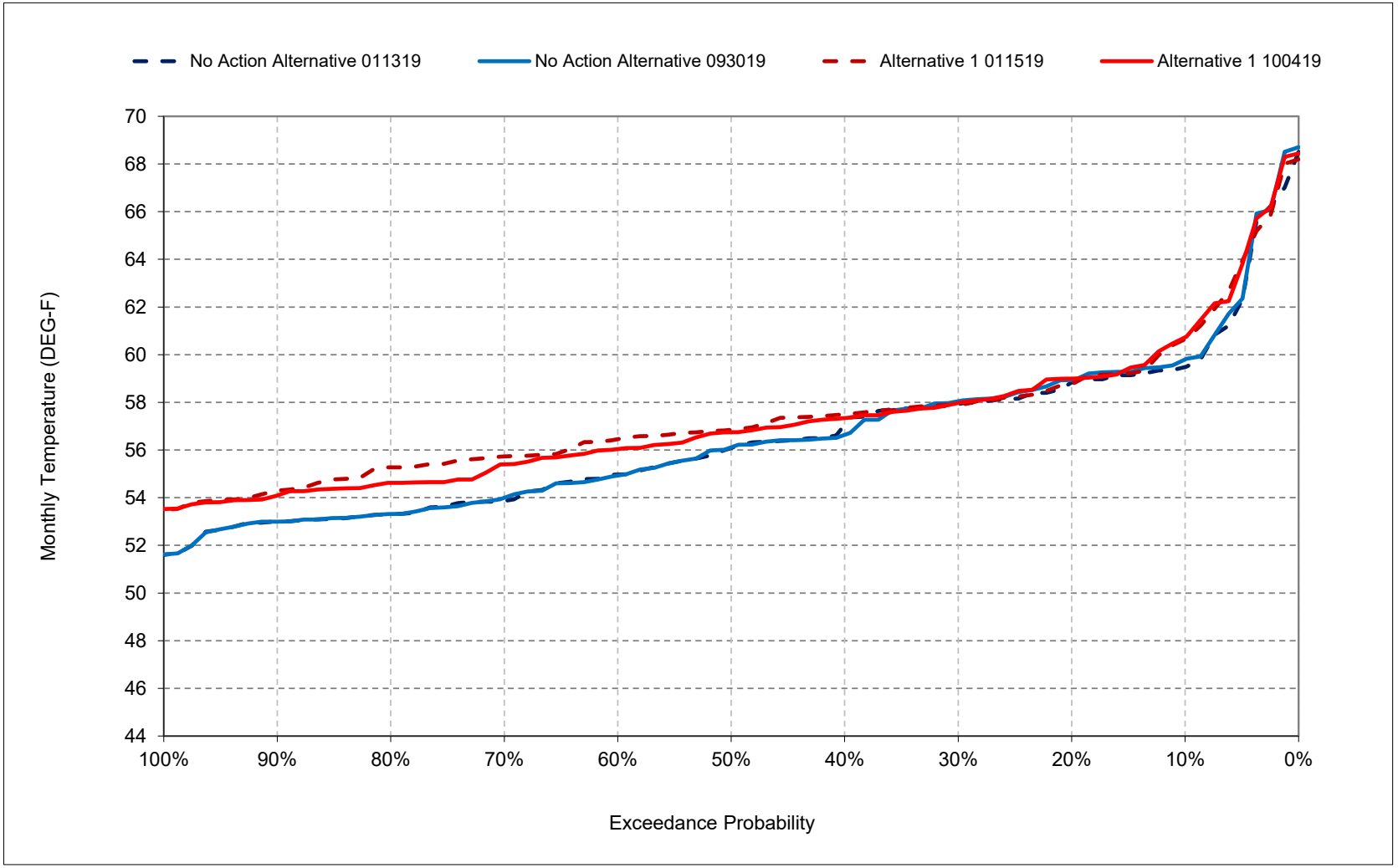

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-17. Sacramento River at Jellys Ferry, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-18. Sacramento River at Jellys Ferry, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-1. Sacramento River at Bend Bridge, Monthly Temperature

### No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.0 | 55.6 | 51.0 | 48.1 | 48.9 | 52.3 | 56.3 | 57.9 | 58.8 | 59.3 | 60.6 | 60.7 |
| 20% | 57.4 | 55.2 | 50.2 | 47.6 | 48.5 | 51.7 | 55.9 | 57.1 | 58.1 | 58.0 | 59.4 | 59.8 |
| 30% | 56.9 | 54.6 | 49.3 | 47.1 | 48.2 | 51.3 | 55.5 | 56.6 | 57.5 | 57.4 | 58.9 | 59.1 |
| 40% | 56.5 | 54.2 | 48.9 | 46.7 | 47.7 | 50.8 | 55.1 | 55.9 | 57.1 | 56.9 | 58.0 | 58.1 |
| 50% | 56.1 | 53.8 | 48.7 | 46.6 | 47.5 | 50.5 | 54.6 | 55.6 | 56.5 | 56.3 | 57.5 | 57.3 |
| 60% | 56.0 | 53.2 | 48.4 | 46.4 | 47.2 | 50.0 | 54.3 | 55.4 | 56.1 | 55.8 | 57.1 | 55.8 |
| 70% | 55.7 | 53.0 | 47.9 | 46.2 | 46.7 | 49.3 | 54.0 | 55.1 | 55.8 | 55.4 | 56.9 | 54.7 |
| 80% | 55.3 | 52.5 | 47.7 | 46.0 | 46.4 | 48.5 | 52.9 | 54.6 | 55.5 | 54.9 | 56.4 | 54.1 |
| 90% | 55.1 | 51.9 | 47.3 | 45.6 | 46.0 | 47.9 | 51.4 | 53.9 | 54.9 | 54.3 | 55.9 | 53.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 53.8 | 48.9 | 46.7 | 47.5 | 50.2 | 54.4 | 55.8 | 56.7 | 56.5 | 58.0 | 57.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.8 | 54.3 | 49.3 | 46.5 | 46.8 | 48.9 | 53.0 | 55.6 | 57.3 | 56.2 | 57.0 | 54.3 |
| Above Normal (16%) | 55.7 | 53.7 | 48.9 | 46.5 | 46.9 | 49.6 | 54.1 | 55.6 | 55.9 | 54.8 | 56.5 | 55.0 |
| Below Normal (13%) | 56.1 | 53.2 | 49.0 | 46.7 | 47.8 | 51.1 | 55.3 | 55.4 | 55.6 | 55.7 | 57.1 | 58.4 |
| Dry (24%) | 56.6 | 52.9 | 48.6 | 46.9 | 48.0 | 51.0 | 55.1 | 56.1 | 56.1 | 56.7 | 58.7 | 59.1 |
| Critical (15%) | 60.1 | 54.6 | 48.7 | 47.2 | 48.5 | 51.7 | 55.4 | 56.6 | 58.2 | 59.3 | 61.5 | 62.7 |

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.3 | 55.9 | 51.2 | 48.2 | 49.0 | 52.4 | 56.3 | 57.3 | 58.5 | 58.4 | 59.5 | 61.5 |
| 20% | 56.7 | 54.7 | 50.1 | 47.7 | 48.6 | 51.7 | 55.8 | 56.6 | 57.9 | 57.7 | 58.4 | 59.9 |
| 30% | 55.8 | 53.9 | 49.6 | 47.3 | 48.2 | 51.3 | 55.7 | 56.2 | 57.2 | 57.2 | 57.9 | 59.2 |
| 40% | 55.5 | 53.6 | 49.2 | 47.0 | 47.7 | 50.8 | 55.2 | 55.7 | 57.0 | 56.8 | 57.5 | 58.6 |
| 50% | 55.3 | 53.3 | 48.9 | 46.7 | 47.5 | 50.3 | 54.7 | 55.5 | 56.3 | 56.3 | 57.2 | 58.1 |
| 60% | 55.0 | 52.9 | 48.5 | 46.5 | 47.2 | 49.9 | 54.3 | 55.1 | 55.8 | 56.0 | 56.9 | 57.5 |
| 70% | 54.8 | 52.7 | 48.2 | 46.3 | 46.7 | 49.5 | 54.0 | 54.6 | 55.2 | 55.4 | 56.7 | 56.9 |
| 80% | 54.3 | 52.3 | 48.1 | 46.0 | 46.4 | 48.5 | 53.0 | 54.1 | 54.9 | 55.2 | 56.4 | 56.3 |
| 90% | 54.1 | 51.8 | 47.4 | 45.6 | 46.0 | 48.0 | 51.4 | 53.7 | 54.6 | 54.5 | 56.0 | 55.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 53.5 | 49.1 | 46.9 | 47.5 | 50.2 | 54.4 | 55.5 | 56.4 | 56.4 | 57.7 | 58.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 53.5 | 49.5 | 46.6 | 46.8 | 49.0 | 53.0 | 55.4 | 57.3 | 56.3 | 56.9 | 56.5 |
| Above Normal (16%) | 54.7 | 52.7 | 48.8 | 46.7 | 46.9 | 49.6 | 54.2 | 55.3 | 55.9 | 54.9 | 56.7 | 58.1 |
| Below Normal (13%) | 55.8 | 53.5 | 49.3 | 46.9 | 47.7 | 50.9 | 55.1 | 54.8 | 55.3 | 55.6 | 56.7 | 57.9 |
| Dry (24%) | 55.6 | 53.2 | 48.9 | 47.0 | 48.0 | 50.9 | 55.2 | 55.6 | 55.6 | 56.6 | 57.8 | 58.7 |
| Critical (15%) | 60.2 | 54.8 | 48.8 | 47.5 | 48.8 | 51.7 | 55.5 | 56.4 | 57.5 | 59.0 | 61.1 | 63.3 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.4** | **0.3** | **0.2** | **0.1** | **0.1** | **0.1** | 0.0 | -0.6 | -0.3 | -0.9 | -1.1 | **0.8** |
| 20% | -0.7 | -0.5 | -0.1 | **0.1** | **0.0** | **0.0** | 0.0 | -0.4 | -0.2 | -0.2 | -0.9 | **0.2** |
| 30% | -1.2 | -0.7 | **0.2** | **0.3** | -0.1 | **0.0** | **0.1** | -0.4 | -0.3 | -0.2 | -0.9 | **0.1** |
| 40% | -1.0 | -0.7 | **0.3** | **0.2** | **0.0** | -0.1 | **0.0** | -0.2 | -0.2 | -0.1 | -0.5 | **0.5** |
| 50% | -0.8 | -0.5 | **0.2** | **0.2** | **0.0** | -0.1 | **0.1** | -0.1 | -0.2 | -0.1 | -0.2 | **0.8** |
| 60% | -1.0 | -0.3 | **0.1** | **0.1** | **0.0** | -0.1 | 0.0 | -0.3 | -0.3 | **0.2** | -0.2 | **1.6** |
| 70% | -0.9 | -0.3 | **0.3** | **0.1** | **0.1** | **0.2** | **0.0** | -0.5 | -0.6 | **0.1** | -0.2 | **2.2** |
| 80% | -0.9 | -0.2 | **0.3** | **0.1** | **0.1** | **0.0** | **0.1** | -0.5 | -0.6 | **0.3** | 0.0 | **2.2** |
| 90% | -1.0 | -0.2 | **0.2** | **0.0** | **0.0** | **0.1** | **0.0** | -0.2 | -0.3 | **0.2** | **0.1** | **1.6** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.8 | -0.3 | **0.2** | **0.1** | **0.1** | 0.0 | 0.0 | -0.3 | -0.3 | 0.0 | -0.3 | **1.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -1.1 | -0.8 | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | -0.2 | 0.0 | **0.1** | -0.1 | **2.2** |
| Above Normal (16%) | -1.0 | -1.0 | -0.1 | **0.2** | **0.0** | 0.0 | **0.0** | -0.3 | -0.1 | **0.1** | **0.2** | **3.1** |
| Below Normal (13%) | -0.3 | **0.4** | **0.3** | **0.2** | 0.0 | -0.2 | -0.2 | -0.6 | -0.4 | -0.1 | -0.4 | -0.5 |
| Dry (24%) | -0.9 | **0.2** | **0.4** | **0.1** | **0.0** | 0.0 | **0.1** | -0.5 | -0.5 | -0.1 | -0.9 | -0.4 |
| Critical (15%) | **0.1** | **0.2** | **0.1** | **0.2** | **0.2** | **0.0** | **0.1** | -0.3 | -0.7 | -0.3 | -0.4 | **0.6** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-2. Sacramento River at Bend Bridge, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.2 | 55.6 | 51.0 | 48.1 | 48.9 | 52.3 | 56.3 | 58.0 | 58.7 | 59.1 | 60.7 | 60.8 |
| 20% | 57.4 | 55.3 | 50.2 | 47.7 | 48.5 | 51.7 | 55.8 | 56.8 | 58.0 | 58.0 | 59.5 | 60.1 |
| 30% | 56.9 | 54.6 | 49.3 | 47.1 | 48.2 | 51.2 | 55.5 | 56.5 | 57.5 | 57.5 | 58.8 | 59.2 |
| 40% | 56.4 | 54.2 | 49.0 | 46.7 | 47.7 | 50.8 | 55.1 | 55.9 | 57.1 | 56.9 | 58.0 | 57.8 |
| 50% | 56.1 | 53.8 | 48.7 | 46.6 | 47.5 | 50.5 | 54.7 | 55.6 | 56.5 | 56.3 | 57.5 | 57.3 |
| 60% | 56.0 | 53.3 | 48.4 | 46.4 | 47.2 | 50.0 | 54.3 | 55.3 | 56.0 | 55.8 | 57.1 | 55.8 |
| 70% | 55.7 | 53.0 | 47.9 | 46.2 | 46.6 | 49.6 | 53.9 | 55.1 | 55.8 | 55.3 | 56.9 | 54.8 |
| 80% | 55.3 | 52.6 | 47.7 | 45.9 | 46.4 | 48.5 | 52.9 | 54.6 | 55.3 | 54.9 | 56.4 | 54.1 |
| 90% | 55.1 | 51.9 | 47.3 | 45.6 | 46.0 | 47.9 | 51.3 | 53.9 | 54.8 | 54.3 | 55.9 | 53.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 53.8 | 48.9 | 46.7 | 47.5 | 50.2 | 54.3 | 55.8 | 56.6 | 56.6 | 58.1 | 57.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.8 | 54.3 | 49.4 | 46.5 | 46.8 | 48.9 | 53.0 | 55.6 | 57.3 | 56.2 | 57.0 | 54.3 |
| Above Normal (16%) | 55.7 | 53.7 | 48.9 | 46.5 | 46.9 | 49.6 | 54.1 | 55.6 | 55.9 | 54.8 | 56.5 | 55.0 |
| Below Normal (13%) | 56.1 | 53.2 | 49.0 | 46.7 | 47.8 | 51.0 | 55.4 | 55.4 | 55.7 | 55.7 | 57.0 | 58.3 |
| Dry (24%) | 56.5 | 53.0 | 48.6 | 46.9 | 48.0 | 51.0 | 55.1 | 56.1 | 56.0 | 56.8 | 58.8 | 59.2 |
| Critical (15%) | 60.3 | 54.7 | 48.7 | 47.3 | 48.5 | 51.6 | 55.3 | 56.4 | 58.0 | 59.7 | 61.8 | 63.1 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.4 | 55.8 | 51.1 | 48.2 | 49.0 | 52.1 | 56.3 | 57.6 | 58.4 | 58.6 | 59.6 | 61.8 |
| 20% | 56.7 | 55.0 | 50.3 | 47.7 | 48.6 | 51.7 | 55.9 | 56.7 | 57.7 | 57.8 | 58.7 | 60.0 |
| 30% | 55.8 | 54.3 | 49.8 | 47.3 | 48.1 | 51.3 | 55.6 | 56.2 | 57.2 | 57.4 | 57.9 | 59.1 |
| 40% | 55.4 | 53.7 | 49.2 | 47.0 | 47.7 | 50.7 | 55.0 | 55.7 | 57.0 | 57.1 | 57.7 | 58.6 |
| 50% | 55.2 | 53.4 | 48.8 | 46.7 | 47.5 | 50.3 | 54.4 | 55.4 | 56.3 | 56.6 | 57.4 | 58.0 |
| 60% | 55.1 | 53.0 | 48.6 | 46.5 | 47.2 | 49.8 | 54.1 | 55.2 | 55.7 | 56.1 | 57.1 | 57.2 |
| 70% | 54.7 | 52.8 | 48.1 | 46.3 | 46.7 | 49.4 | 53.4 | 54.6 | 55.3 | 55.6 | 56.8 | 56.5 |
| 80% | 54.5 | 52.5 | 47.9 | 46.0 | 46.4 | 48.5 | 52.8 | 54.3 | 55.0 | 55.3 | 56.5 | 55.5 |
| 90% | 54.2 | 52.0 | 47.4 | 45.6 | 46.0 | 47.9 | 51.7 | 54.0 | 54.7 | 54.6 | 55.9 | 55.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 53.6 | 49.2 | 46.9 | 47.5 | 50.2 | 54.2 | 55.6 | 56.4 | 56.6 | 57.8 | 58.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 54.8 | 53.6 | 49.5 | 46.6 | 46.8 | 48.9 | 52.8 | 55.6 | 57.1 | 56.3 | 56.9 | 56.5 |
| Above Normal (16%) | 54.9 | 53.3 | 49.0 | 46.7 | 46.9 | 49.4 | 53.9 | 55.5 | 55.7 | 55.0 | 56.6 | 56.3 |
| Below Normal (13%) | 55.4 | 53.5 | 49.2 | 46.8 | 47.7 | 50.9 | 55.1 | 54.9 | 55.2 | 55.8 | 57.1 | 58.3 |
| Dry (24%) | 55.6 | 53.2 | 48.9 | 47.1 | 48.0 | 51.0 | 55.1 | 55.7 | 55.8 | 56.9 | 58.0 | 58.8 |
| Critical (15%) | 60.3 | 54.8 | 48.9 | 47.5 | 48.7 | 51.7 | 55.4 | 56.4 | 57.5 | 59.3 | 61.4 | 63.5 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | -0.2 | 0.0 | -0.4 | -0.3 | -0.5 | -1.1 | 1.0 |
| 20% | -0.7 | -0.3 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | -0.1 | -0.2 | -0.2 | -0.8 | 0.0 |
| 30% | -1.1 | -0.4 | 0.5 | 0.3 | -0.1 | 0.0 | 0.1 | -0.3 | -0.2 | -0.1 | -0.9 | -0.1 |
| 40% | -1.0 | -0.5 | 0.3 | 0.2 | 0.0 | -0.1 | -0.1 | -0.2 | 0.0 | 0.2 | -0.3 | 0.8 |
| 50% | -0.9 | -0.4 | 0.2 | 0.2 | 0.0 | -0.1 | -0.3 | -0.1 | -0.2 | 0.2 | -0.1 | 0.7 |
| 60% | -0.9 | -0.2 | 0.2 | 0.1 | 0.0 | -0.2 | -0.2 | -0.1 | -0.3 | 0.3 | -0.1 | 1.4 |
| 70% | -1.1 | -0.1 | 0.2 | 0.1 | 0.0 | -0.2 | -0.5 | -0.5 | -0.5 | 0.3 | -0.1 | 1.7 |
| 80% | -0.8 | -0.1 | 0.2 | 0.1 | 0.1 | 0.0 | -0.2 | -0.3 | -0.3 | 0.3 | 0.1 | 1.4 |
| 90% | -0.9 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 | -0.2 | 0.2 | 0.0 | 1.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.8 | -0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.1 | -0.2 | -0.3 | 0.1 | -0.3 | 0.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -1.0 | -0.7 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | 0.1 | -0.1 | 2.2 |
| Above Normal (16%) | -0.8 | -0.4 | 0.1 | 0.2 | 0.0 | -0.2 | -0.2 | -0.1 | -0.2 | 0.2 | 0.1 | 1.3 |
| Below Normal (13%) | -0.7 | 0.3 | 0.2 | 0.2 | -0.1 | -0.2 | -0.3 | -0.5 | -0.5 | 0.1 | 0.0 | 0.1 |
| Dry (24%) | -0.9 | 0.2 | 0.3 | 0.1 | 0.0 | 0.1 | 0.0 | -0.4 | -0.2 | 0.2 | -0.8 | -0.3 |
| Critical (15%) | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | -0.5 | -0.3 | -0.4 | 0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-3. Sacramento River at Bend Bridge, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.0 | 55.6 | 51.0 | 48.1 | 48.9 | 52.3 | 56.3 | 57.9 | 58.8 | 59.3 | 60.6 | 60.7 |
| 20% | 57.4 | 55.2 | 50.2 | 47.6 | 48.5 | 51.7 | 55.9 | 57.1 | 58.1 | 58.0 | 59.4 | 59.8 |
| 30% | 56.9 | 54.6 | 49.3 | 47.1 | 48.2 | 51.3 | 55.5 | 56.6 | 57.5 | 57.4 | 58.9 | 59.1 |
| 40% | 56.5 | 54.2 | 48.9 | 46.7 | 47.7 | 50.8 | 55.1 | 55.9 | 57.1 | 56.9 | 58.0 | 58.1 |
| 50% | 56.1 | 53.8 | 48.7 | 46.6 | 47.5 | 50.5 | 54.6 | 55.6 | 56.5 | 56.3 | 57.5 | 57.3 |
| 60% | 56.0 | 53.2 | 48.4 | 46.4 | 47.2 | 50.0 | 54.3 | 55.4 | 56.1 | 55.8 | 57.1 | 55.8 |
| 70% | 55.7 | 53.0 | 47.9 | 46.2 | 46.7 | 49.3 | 54.0 | 55.1 | 55.8 | 55.4 | 56.9 | 54.7 |
| 80% | 55.3 | 52.5 | 47.7 | 46.0 | 46.4 | 48.5 | 52.9 | 54.6 | 55.5 | 54.9 | 56.4 | 54.1 |
| 90% | 55.1 | 51.9 | 47.3 | 45.6 | 46.0 | 47.9 | 51.4 | 53.9 | 54.9 | 54.3 | 55.9 | 53.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 53.8 | 48.9 | 46.7 | 47.5 | 50.2 | 54.4 | 55.8 | 56.7 | 56.5 | 58.0 | 57.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.8 | 54.3 | 49.3 | 46.5 | 46.8 | 48.9 | 53.0 | 55.6 | 57.3 | 56.2 | 57.0 | 54.3 |
| Above Normal (16%) | 55.7 | 53.7 | 48.9 | 46.5 | 46.9 | 49.6 | 54.1 | 55.6 | 55.9 | 54.8 | 56.5 | 55.0 |
| Below Normal (13%) | 56.1 | 53.2 | 49.0 | 46.7 | 47.8 | 51.1 | 55.3 | 55.4 | 55.6 | 55.7 | 57.1 | 58.4 |
| Dry (24%) | 56.6 | 52.9 | 48.6 | 46.9 | 48.0 | 51.0 | 55.1 | 56.1 | 56.1 | 56.7 | 58.7 | 59.1 |
| Critical (15%) | 60.1 | 54.6 | 48.7 | 47.2 | 48.5 | 51.7 | 55.4 | 56.6 | 58.2 | 59.3 | 61.5 | 62.7 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.2 | 55.6 | 51.0 | 48.1 | 48.9 | 52.3 | 56.3 | 58.0 | 58.7 | 59.1 | 60.7 | 60.8 |
| 20% | 57.4 | 55.3 | 50.2 | 47.7 | 48.5 | 51.7 | 55.8 | 56.8 | 58.0 | 58.0 | 59.5 | 60.1 |
| 30% | 56.9 | 54.6 | 49.3 | 47.1 | 48.2 | 51.2 | 55.5 | 56.5 | 57.5 | 57.5 | 58.8 | 59.2 |
| 40% | 56.4 | 54.2 | 49.0 | 46.7 | 47.7 | 50.8 | 55.1 | 55.9 | 57.1 | 56.9 | 58.0 | 57.8 |
| 50% | 56.1 | 53.8 | 48.7 | 46.6 | 47.5 | 50.5 | 54.7 | 55.6 | 56.5 | 56.3 | 57.5 | 57.3 |
| 60% | 56.0 | 53.3 | 48.4 | 46.4 | 47.2 | 50.0 | 54.3 | 55.3 | 56.0 | 55.8 | 57.1 | 55.8 |
| 70% | 55.7 | 53.0 | 47.9 | 46.2 | 46.6 | 49.6 | 53.9 | 55.1 | 55.8 | 55.3 | 56.9 | 54.8 |
| 80% | 55.3 | 52.6 | 47.7 | 45.9 | 46.4 | 48.5 | 52.9 | 54.6 | 55.3 | 54.9 | 56.4 | 54.1 |
| 90% | 55.1 | 51.9 | 47.3 | 45.6 | 46.0 | 47.9 | 51.3 | 53.9 | 54.8 | 54.3 | 55.9 | 53.5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 53.8 | 48.9 | 46.7 | 47.5 | 50.2 | 54.3 | 55.8 | 56.6 | 56.6 | 58.1 | 57.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.8 | 54.3 | 49.4 | 46.5 | 46.8 | 48.9 | 53.0 | 55.6 | 57.3 | 56.2 | 57.0 | 54.3 |
| Above Normal (16%) | 55.7 | 53.7 | 48.9 | 46.5 | 46.9 | 49.6 | 54.1 | 55.6 | 55.9 | 54.8 | 56.5 | 55.0 |
| Below Normal (13%) | 56.1 | 53.2 | 49.0 | 46.7 | 47.8 | 51.0 | 55.4 | 55.4 | 55.7 | 55.7 | 57.0 | 58.3 |
| Dry (24%) | 56.5 | 53.0 | 48.6 | 46.9 | 48.0 | 51.0 | 55.1 | 56.1 | 56.0 | 56.8 | 58.8 | 59.2 |
| Critical (15%) | 60.3 | 54.7 | 48.7 | 47.3 | 48.5 | 51.6 | 55.3 | 56.4 | 58.0 | 59.7 | 61.8 | 63.1 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.3** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | **0.1** | **0.1** |
| 20% | **0.0** | **0.1** | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | -0.3 | -0.1 | **0.0** | **0.1** | **0.3** |
| 30% | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | **0.0** | **0.2** | -0.1 | **0.1** |
| 40% | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | -0.3 |
| 50% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** |
| 60% | 0.0 | **0.1** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 | -0.1 | **0.0** | **0.0** | 0.0 |
| 70% | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | **0.1** |
| 80% | 0.0 | **0.1** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | -0.2 | 0.0 | 0.0 | **0.0** |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 |
| Dry (24%) | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.1** | **0.0** |
| Critical (15%) | **0.2** | **0.1** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | **0.3** | **0.3** | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-4. Sacramento River at Bend Bridge, Monthly Temperature

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.3 | 55.9 | 51.2 | 48.2 | 49.0 | 52.4 | 56.3 | 57.3 | 58.5 | 58.4 | 59.5 | 61.5 |
| 20% | 56.7 | 54.7 | 50.1 | 47.7 | 48.6 | 51.7 | 55.8 | 56.6 | 57.9 | 57.7 | 58.4 | 59.9 |
| 30% | 55.8 | 53.9 | 49.6 | 47.3 | 48.2 | 51.3 | 55.7 | 56.2 | 57.2 | 57.2 | 57.9 | 59.2 |
| 40% | 55.5 | 53.6 | 49.2 | 47.0 | 47.7 | 50.8 | 55.2 | 55.7 | 57.0 | 56.8 | 57.5 | 58.6 |
| 50% | 55.3 | 53.3 | 48.9 | 46.7 | 47.5 | 50.3 | 54.7 | 55.5 | 56.3 | 56.3 | 57.2 | 58.1 |
| 60% | 55.0 | 52.9 | 48.5 | 46.5 | 47.2 | 49.9 | 54.3 | 55.1 | 55.8 | 56.0 | 56.9 | 57.5 |
| 70% | 54.8 | 52.7 | 48.2 | 46.3 | 46.7 | 49.5 | 54.0 | 54.6 | 55.2 | 55.4 | 56.7 | 56.9 |
| 80% | 54.3 | 52.3 | 48.1 | 46.0 | 46.4 | 48.5 | 53.0 | 54.1 | 54.9 | 55.2 | 56.4 | 56.3 |
| 90% | 54.1 | 51.8 | 47.4 | 45.6 | 46.0 | 48.0 | 51.4 | 53.7 | 54.6 | 54.5 | 56.0 | 55.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 53.5 | 49.1 | 46.9 | 47.5 | 50.2 | 54.4 | 55.5 | 56.4 | 56.4 | 57.7 | 58.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 54.7 | 53.5 | 49.5 | 46.6 | 46.8 | 49.0 | 53.0 | 55.4 | 57.3 | 56.3 | 56.9 | 56.5 |
| Above Normal (16%) | 54.7 | 52.7 | 48.8 | 46.7 | 46.9 | 49.6 | 54.2 | 55.3 | 55.9 | 54.9 | 56.7 | 58.1 |
| Below Normal (13%) | 55.8 | 53.5 | 49.3 | 46.9 | 47.7 | 50.9 | 55.1 | 54.8 | 55.3 | 55.6 | 56.7 | 57.9 |
| Dry (24%) | 55.6 | 53.2 | 48.9 | 47.0 | 48.0 | 50.9 | 55.2 | 55.6 | 55.6 | 56.6 | 57.8 | 58.7 |
| Critical (15%) | 60.2 | 54.8 | 48.8 | 47.5 | 48.8 | 51.7 | 55.5 | 56.4 | 57.5 | 59.0 | 61.1 | 63.3 |

### Alternative 1 100419

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.4 | 55.8 | 51.1 | 48.2 | 49.0 | 52.1 | 56.3 | 57.6 | 58.4 | 58.6 | 59.6 | 61.8 |
| 20% | 56.7 | 55.0 | 50.3 | 47.7 | 48.6 | 51.7 | 55.9 | 56.7 | 57.7 | 57.8 | 58.7 | 60.0 |
| 30% | 55.8 | 54.3 | 49.8 | 47.3 | 48.1 | 51.3 | 55.6 | 56.2 | 57.2 | 57.4 | 57.9 | 59.1 |
| 40% | 55.4 | 53.7 | 49.2 | 47.0 | 47.7 | 50.7 | 55.0 | 55.7 | 57.0 | 57.1 | 57.7 | 58.6 |
| 50% | 55.2 | 53.4 | 48.8 | 46.7 | 47.5 | 50.3 | 54.4 | 55.4 | 56.3 | 56.6 | 57.4 | 58.0 |
| 60% | 55.1 | 53.0 | 48.6 | 46.5 | 47.2 | 49.8 | 54.1 | 55.2 | 55.7 | 56.1 | 57.1 | 57.2 |
| 70% | 54.7 | 52.8 | 48.1 | 46.3 | 46.7 | 49.4 | 53.4 | 54.6 | 55.3 | 55.6 | 56.8 | 56.5 |
| 80% | 54.5 | 52.5 | 47.9 | 46.0 | 46.4 | 48.5 | 52.8 | 54.3 | 55.0 | 55.3 | 56.5 | 55.5 |
| 90% | 54.2 | 52.0 | 47.4 | 45.6 | 46.0 | 47.9 | 51.7 | 54.0 | 54.7 | 54.6 | 55.9 | 55.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.9 | 53.6 | 49.2 | 46.9 | 47.5 | 50.2 | 54.2 | 55.6 | 56.4 | 56.6 | 57.8 | 58.3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 54.8 | 53.6 | 49.5 | 46.6 | 46.8 | 48.9 | 52.8 | 55.6 | 57.1 | 56.3 | 56.9 | 56.5 |
| Above Normal (16%) | 54.9 | 53.3 | 49.0 | 46.7 | 46.9 | 49.4 | 53.9 | 55.5 | 55.7 | 55.0 | 56.6 | 56.3 |
| Below Normal (13%) | 55.4 | 53.5 | 49.2 | 46.8 | 47.7 | 50.9 | 55.1 | 54.9 | 55.2 | 55.8 | 57.1 | 58.3 |
| Dry (24%) | 55.6 | 53.2 | 48.9 | 47.1 | 48.0 | 51.0 | 55.1 | 55.7 | 55.8 | 56.9 | 58.0 | 58.8 |
| Critical (15%) | 60.3 | 54.8 | 48.9 | 47.5 | 48.7 | 51.7 | 55.4 | 56.4 | 57.5 | 59.3 | 61.4 | 63.5 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.1** | -0.1 | -0.1 | **0.0** | 0.0 | -0.3 | **0.0** | **0.3** | -0.1 | **0.2** | **0.0** | **0.2** |
| 20% | 0.0 | **0.3** | **0.1** | -0.1 | **0.0** | 0.0 | **0.0** | **0.1** | -0.2 | **0.1** | **0.3** | **0.1** |
| 30% | **0.0** | **0.4** | **0.2** | **0.0** | 0.0 | **0.0** | -0.1 | 0.0 | **0.0** | **0.2** | -0.1 | -0.1 |
| 40% | 0.0 | **0.2** | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | **0.0** | **0.1** | **0.3** | **0.2** | -0.1 |
| 50% | -0.1 | **0.1** | -0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0.0 | 0.0 | **0.3** | **0.2** | -0.2 |
| 60% | **0.1** | **0.2** | **0.1** | 0.0 | 0.0 | -0.1 | -0.2 | **0.1** | -0.1 | **0.1** | **0.1** | -0.3 |
| 70% | -0.2 | **0.1** | -0.1 | 0.0 | 0.0 | -0.2 | -0.6 | 0.0 | **0.1** | **0.1** | **0.0** | -0.4 |
| 80% | **0.1** | **0.2** | -0.1 | 0.0 | **0.0** | 0.0 | -0.2 | **0.3** | **0.2** | **0.1** | **0.1** | -0.8 |
| 90% | **0.1** | **0.2** | 0.0 | 0.0 | 0.0 | -0.1 | **0.3** | **0.3** | **0.1** | **0.1** | -0.1 | -0.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.2** | **0.1** | -0.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.1** | **0.1** | 0.0 | 0.0 | -0.1 | -0.2 | **0.2** | -0.1 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | **0.2** | **0.6** | **0.2** | 0.0 | 0.0 | -0.1 | -0.3 | **0.1** | -0.2 | **0.1** | -0.1 | -1.8 |
| Below Normal (13%) | -0.3 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | -0.1 | **0.2** | **0.3** | **0.5** |
| Dry (24%) | 0.0 | **0.1** | -0.1 | **0.0** | 0.0 | **0.1** | -0.1 | **0.1** | **0.2** | **0.4** | **0.2** | **0.1** |
| Critical (15%) | **0.1** | **0.0** | **0.1** | **0.1** | -0.1 | **0.0** | -0.1 | **0.0** | **0.0** | **0.3** | **0.2** | **0.2** |

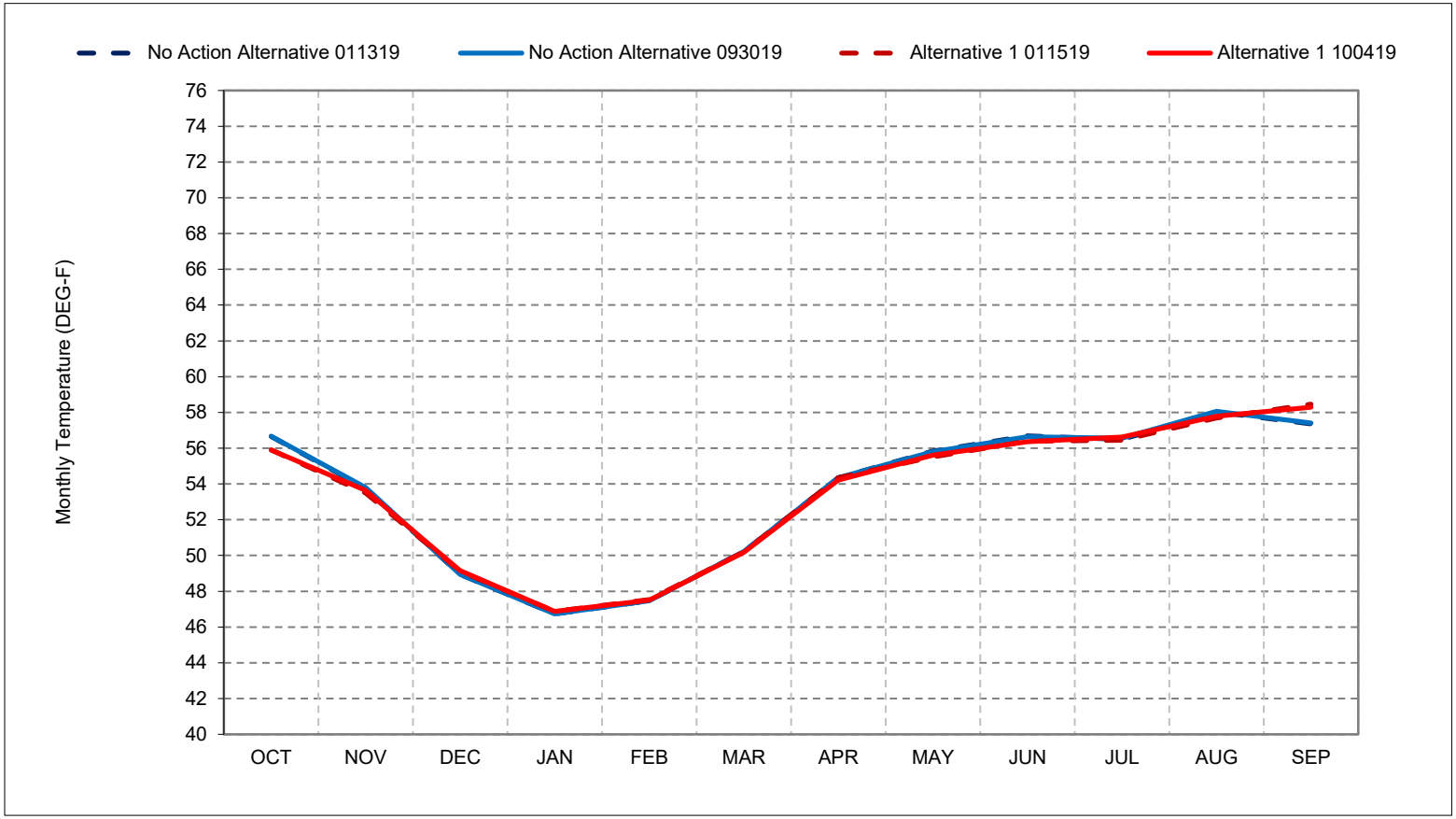
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-1. Sacramento River at Bend Bridge, Long-Term Average Temperature

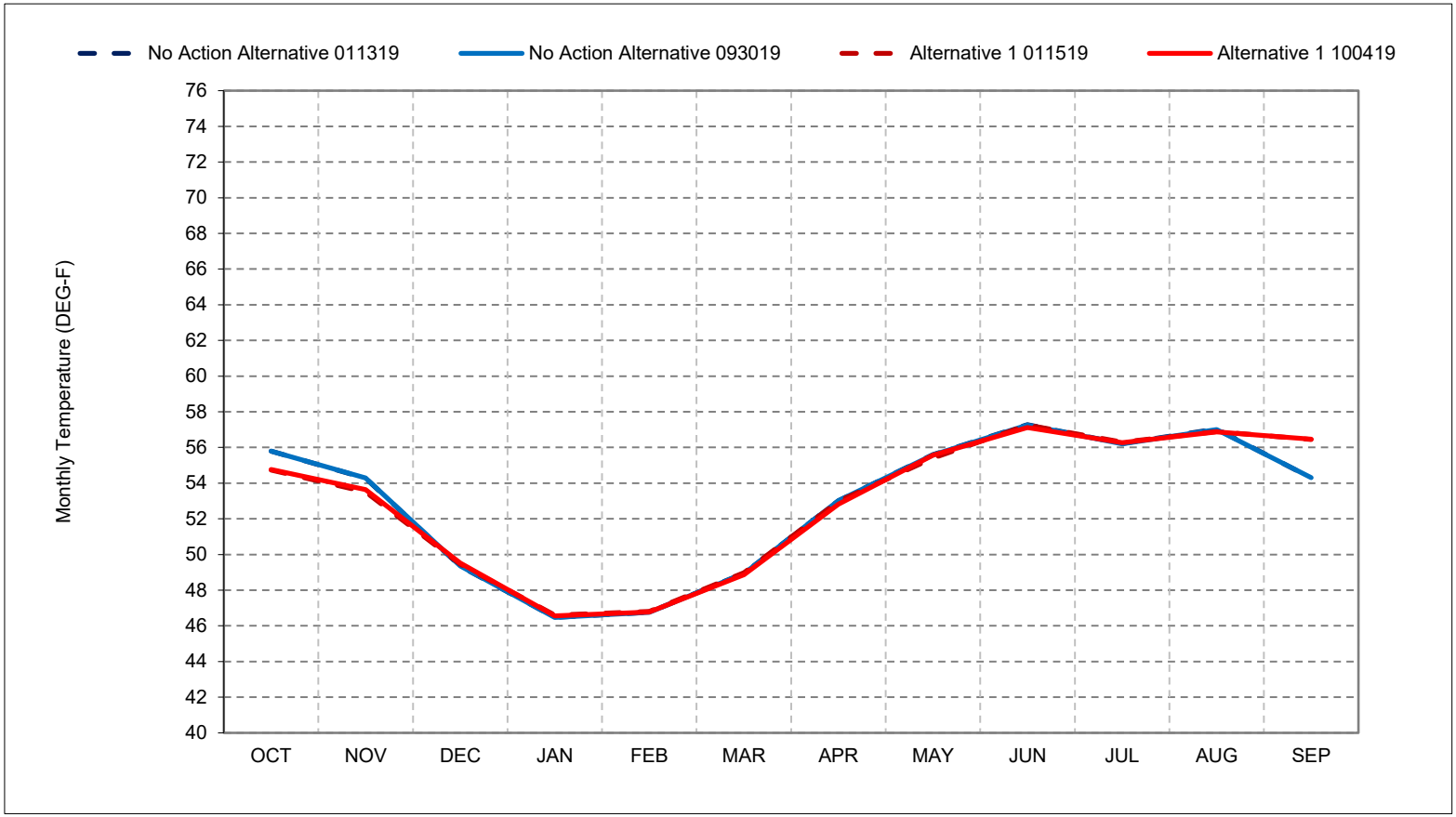



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-2. Sacramento River at Bend Bridge, Wet Year Average Temperature

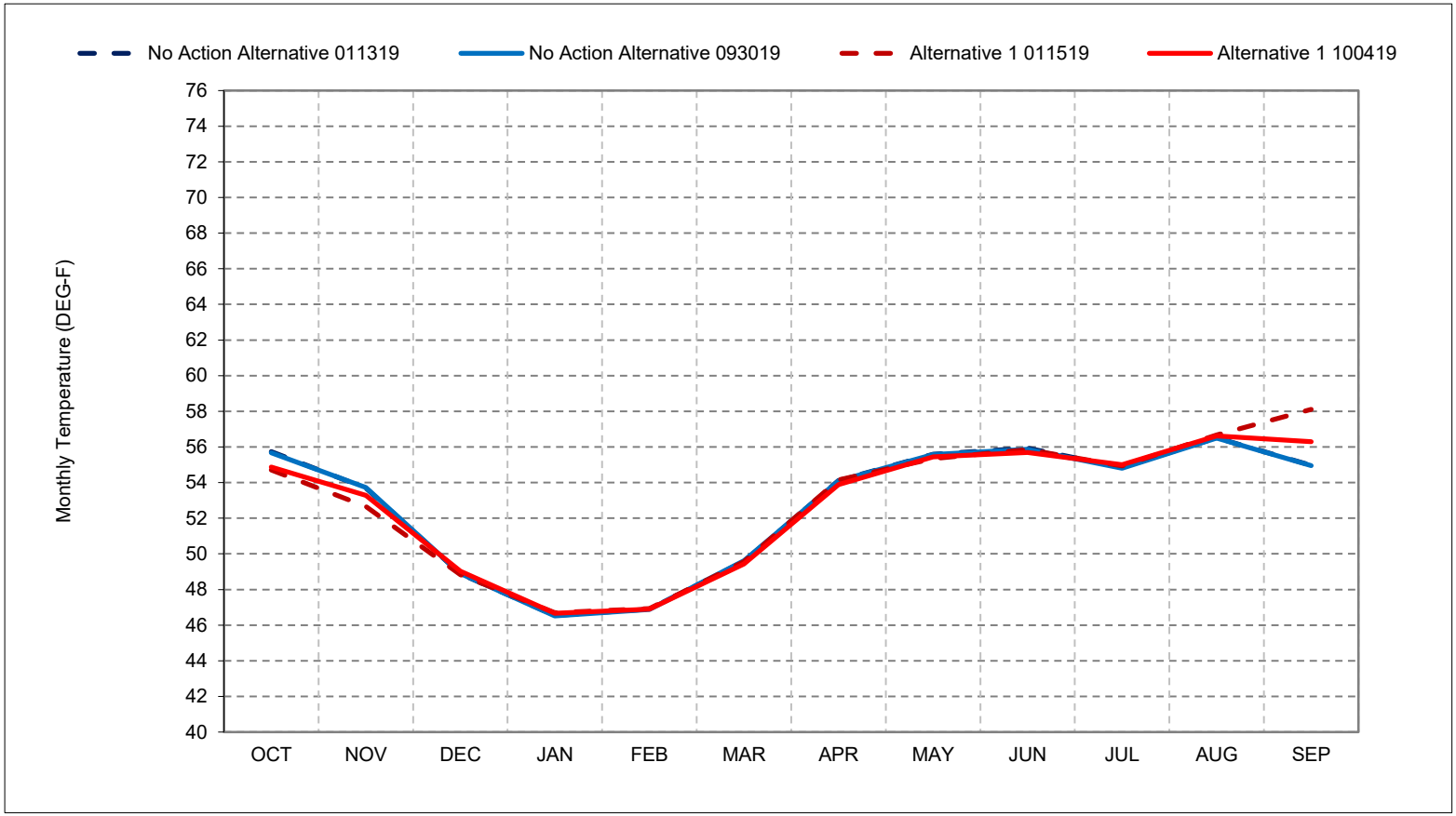



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-3. Sacramento River at Bend Bridge, Above Normal Year Average Temperature

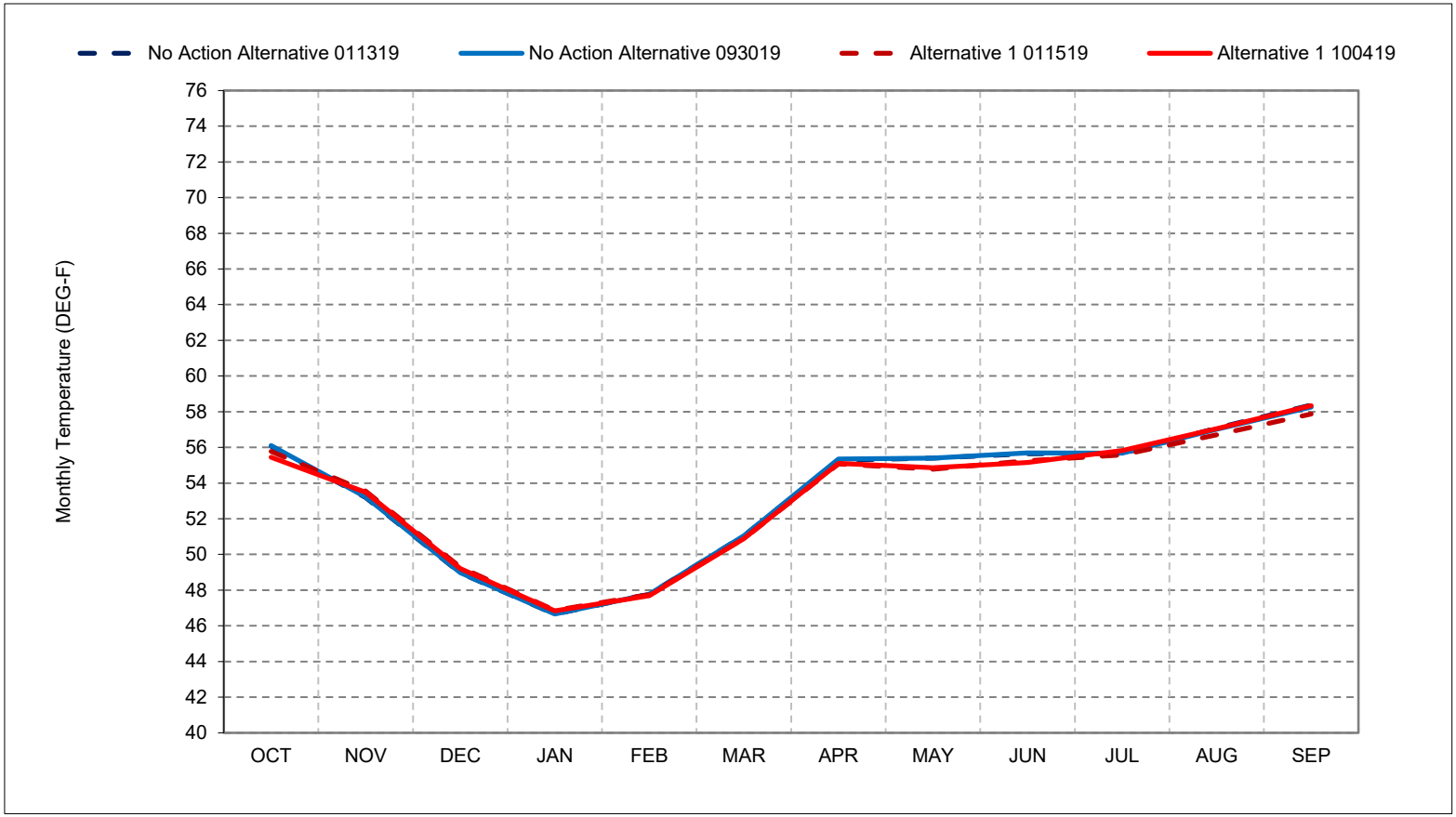



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-4. Sacramento River at Bend Bridge, Below Normal Year Average Temperature

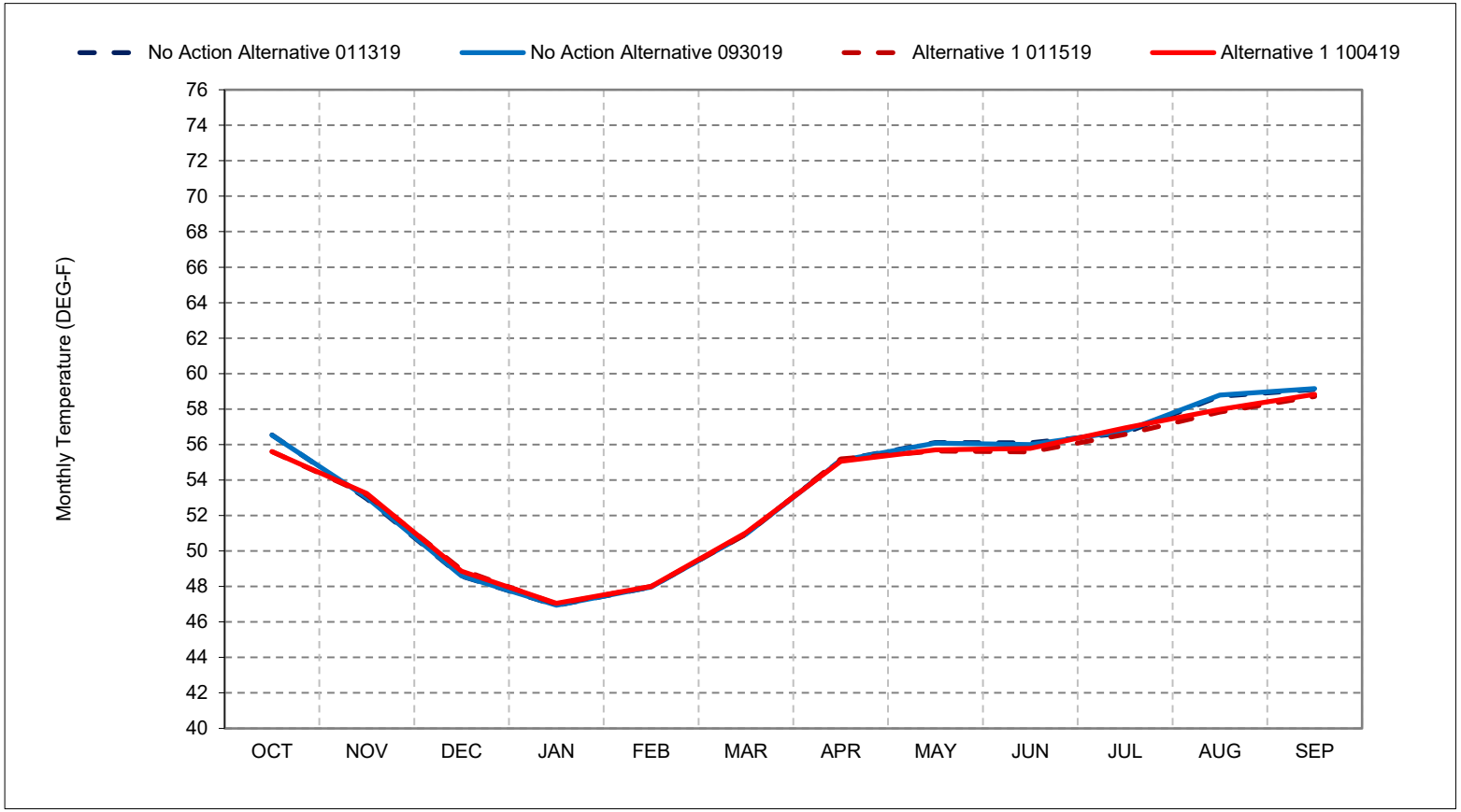



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-5. Sacramento River at Bend Bridge, Dry Year Average Temperature

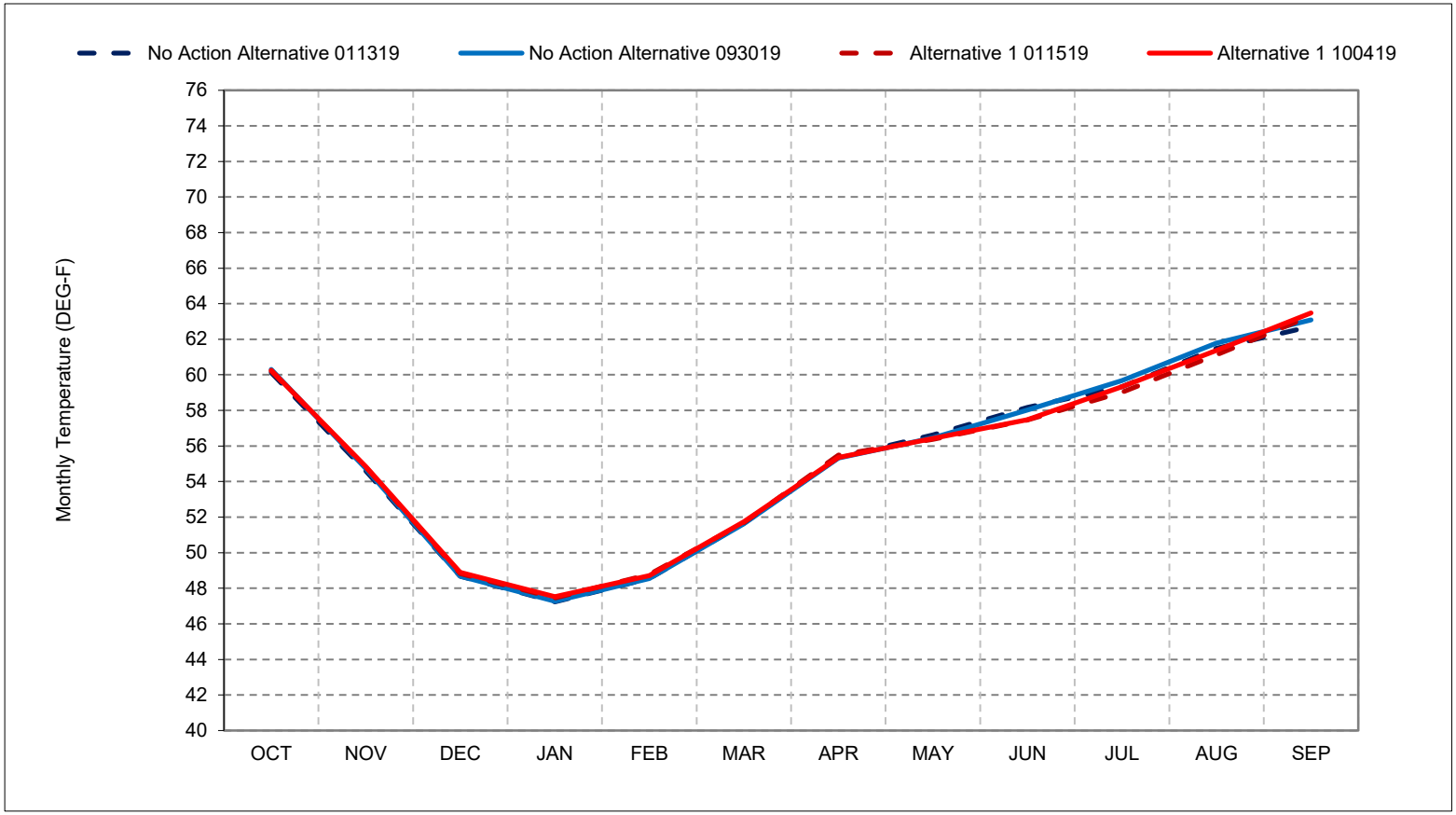



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-6. Sacramento River at Bend Bridge, Critical Year Average Temperature

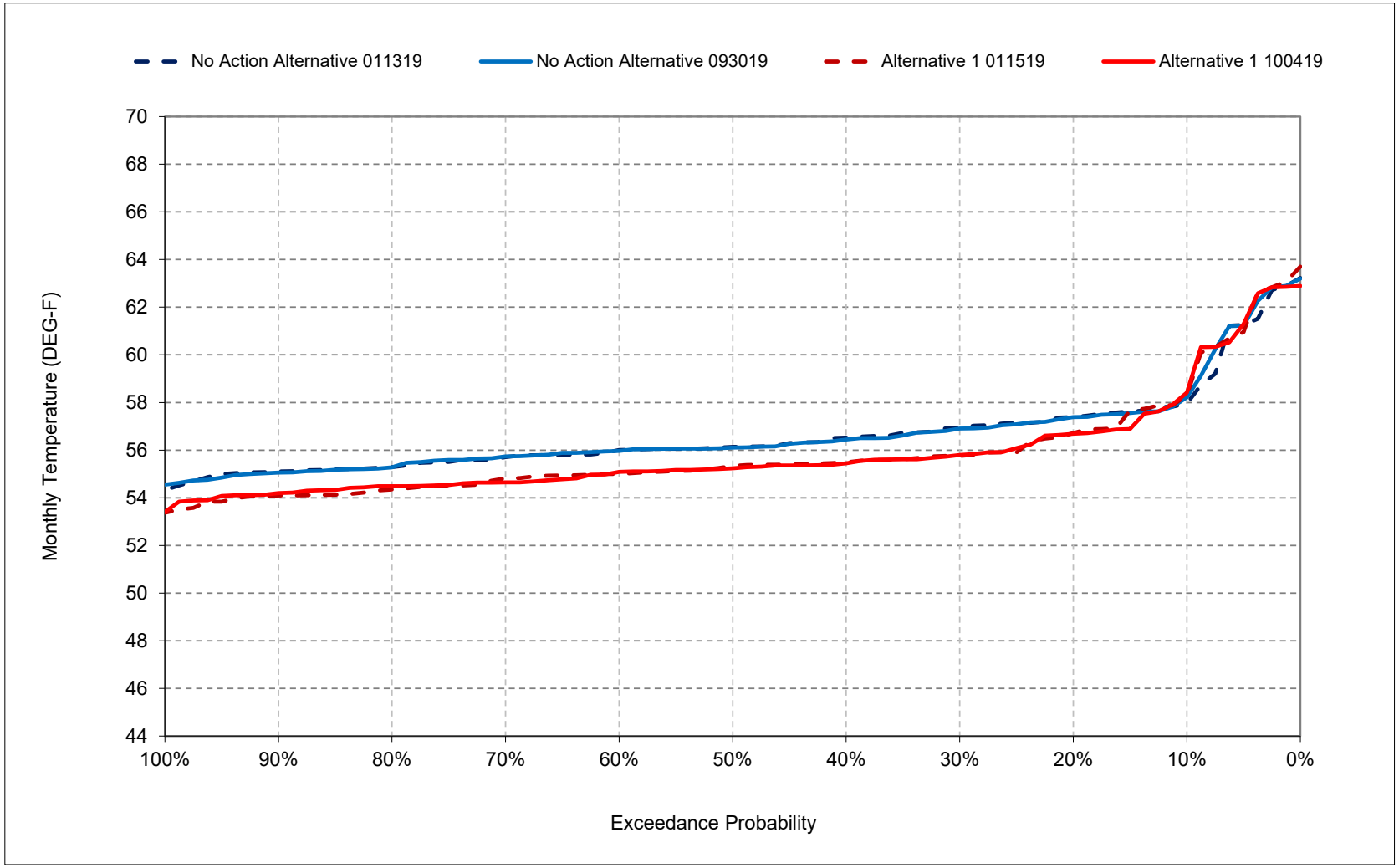



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

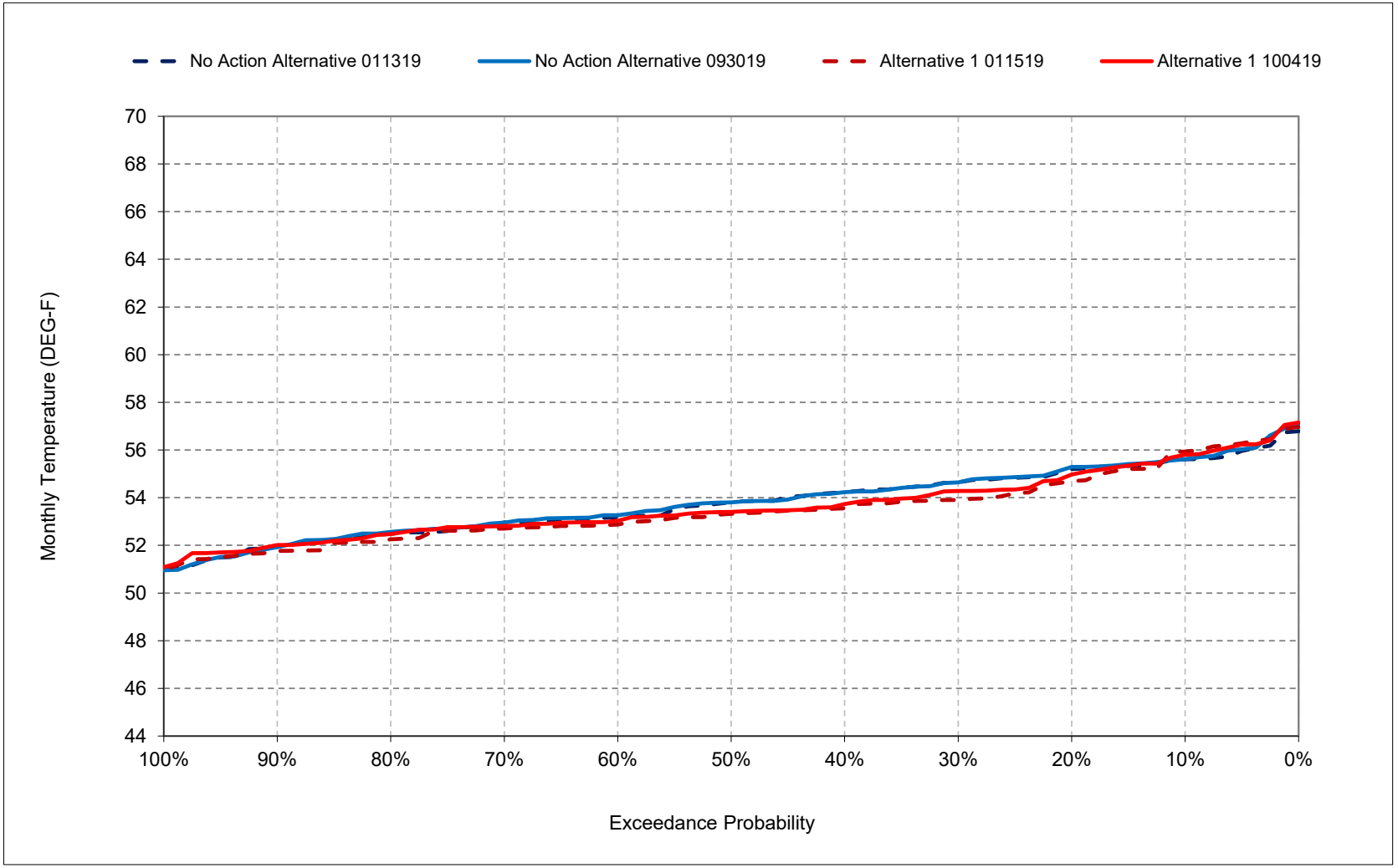
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-7. Sacramento River at Bend Bridge, October**



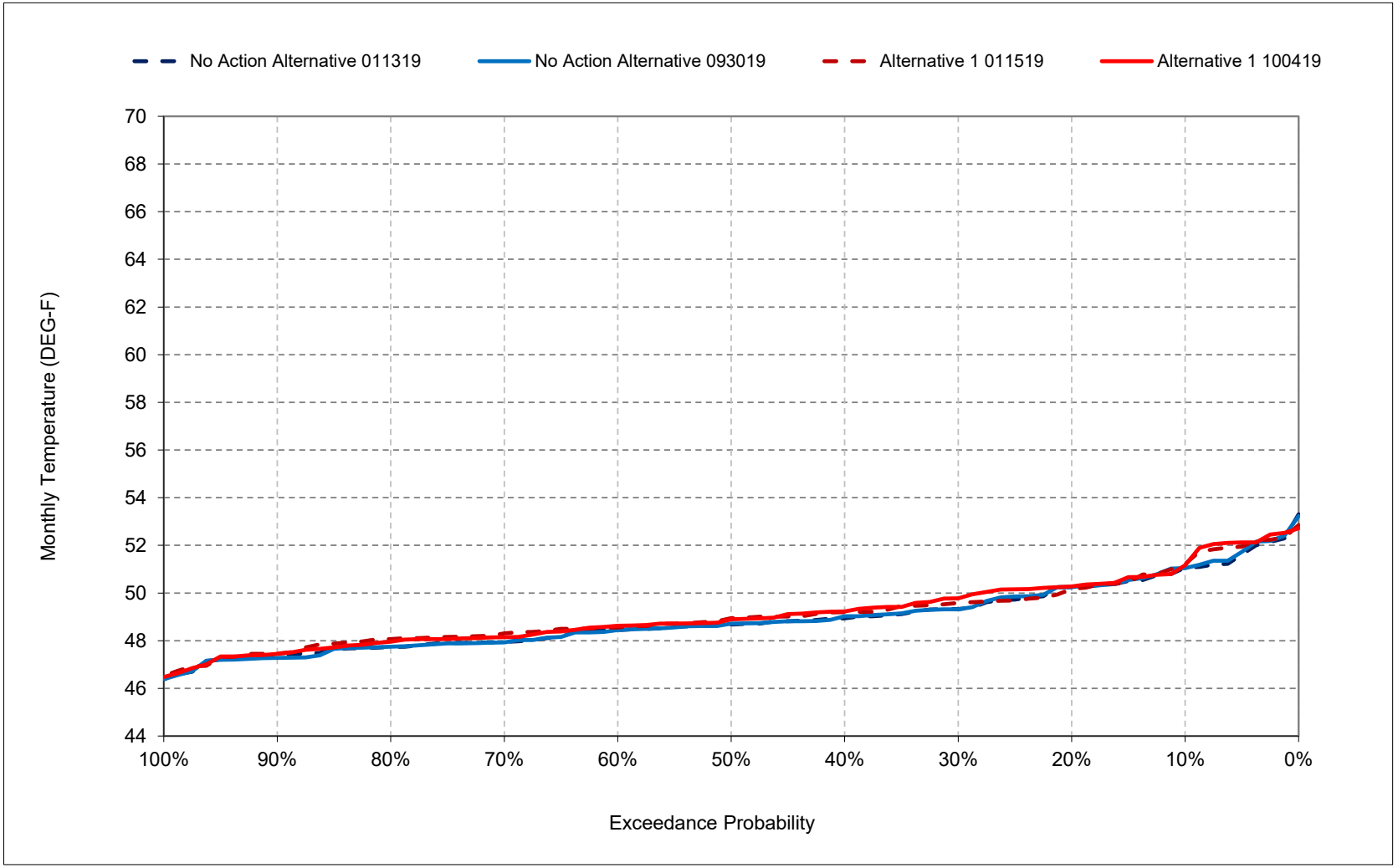

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-8. Sacramento River at Bend Bridge, November**



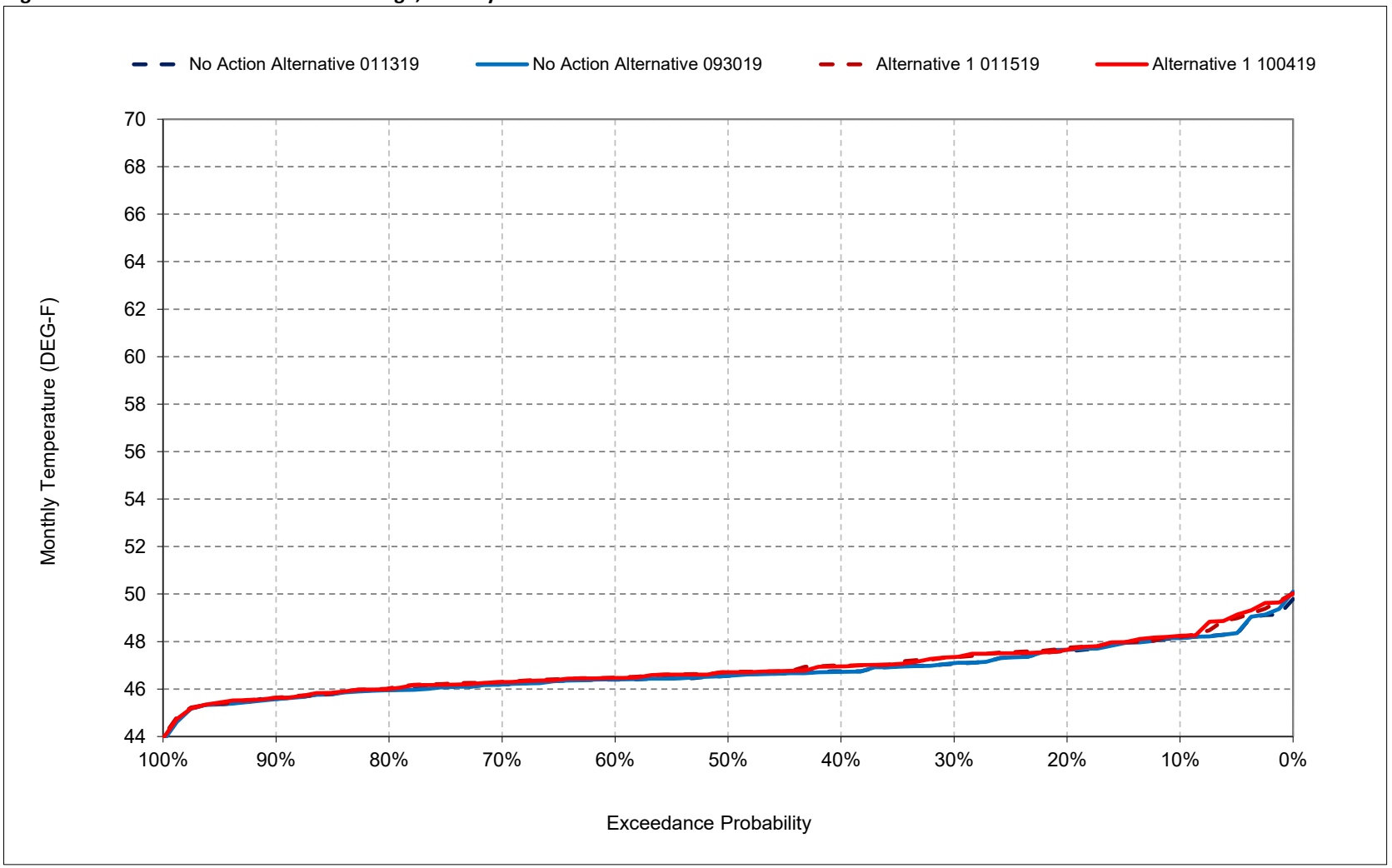

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-9. Sacramento River at Bend Bridge, December**



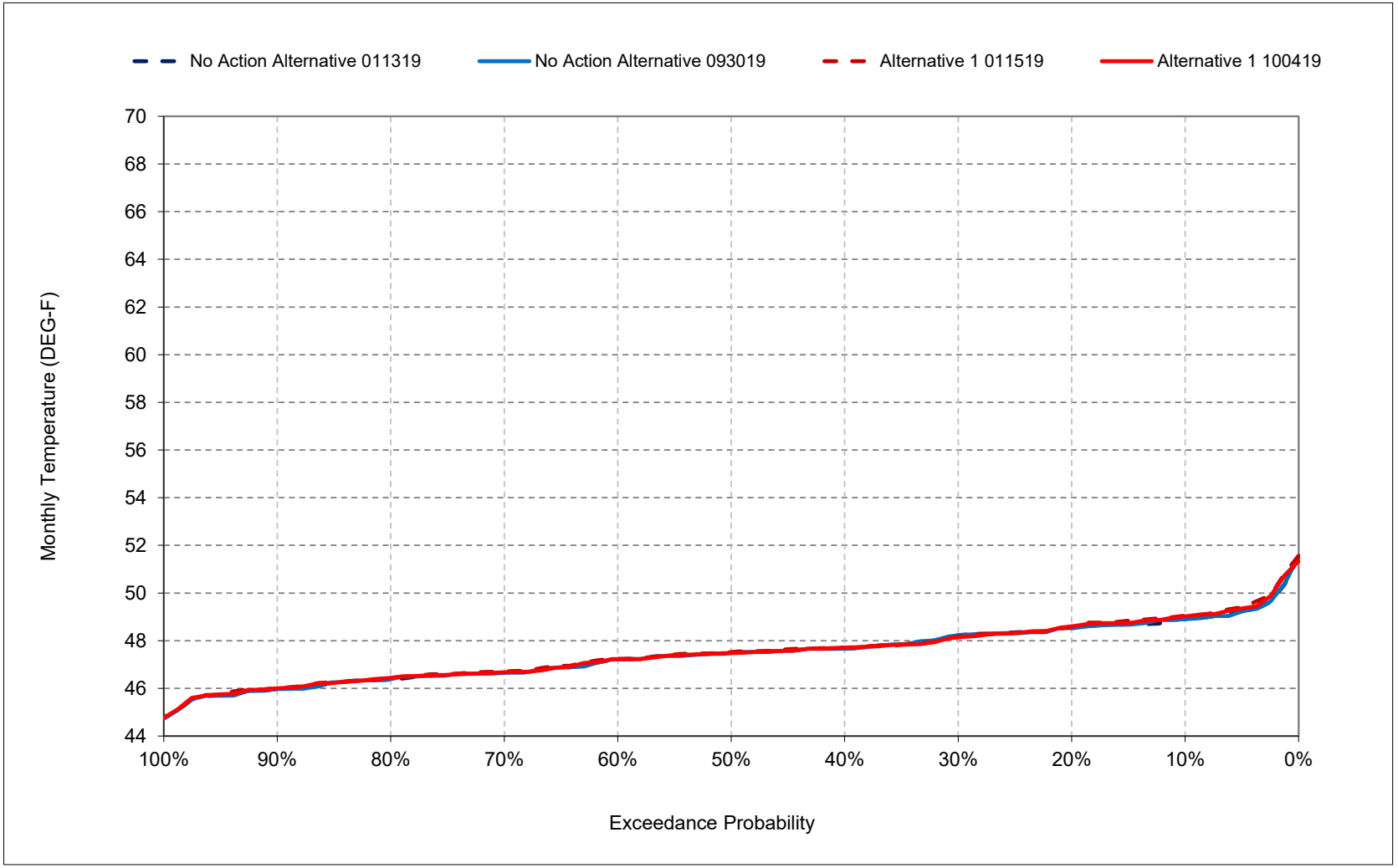

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-10. Sacramento River at Bend Bridge, January**



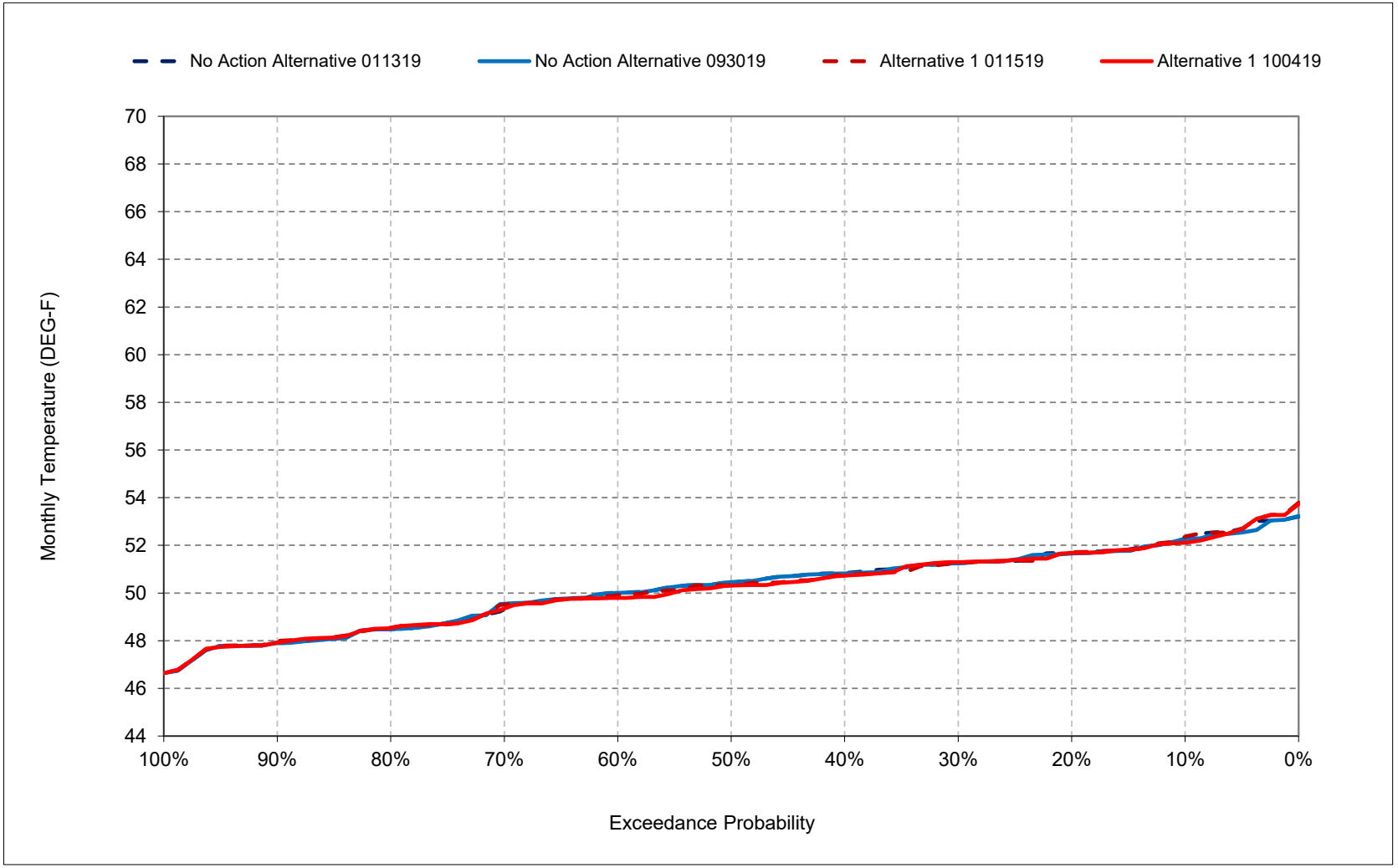

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-11. Sacramento River at Bend Bridge, February**



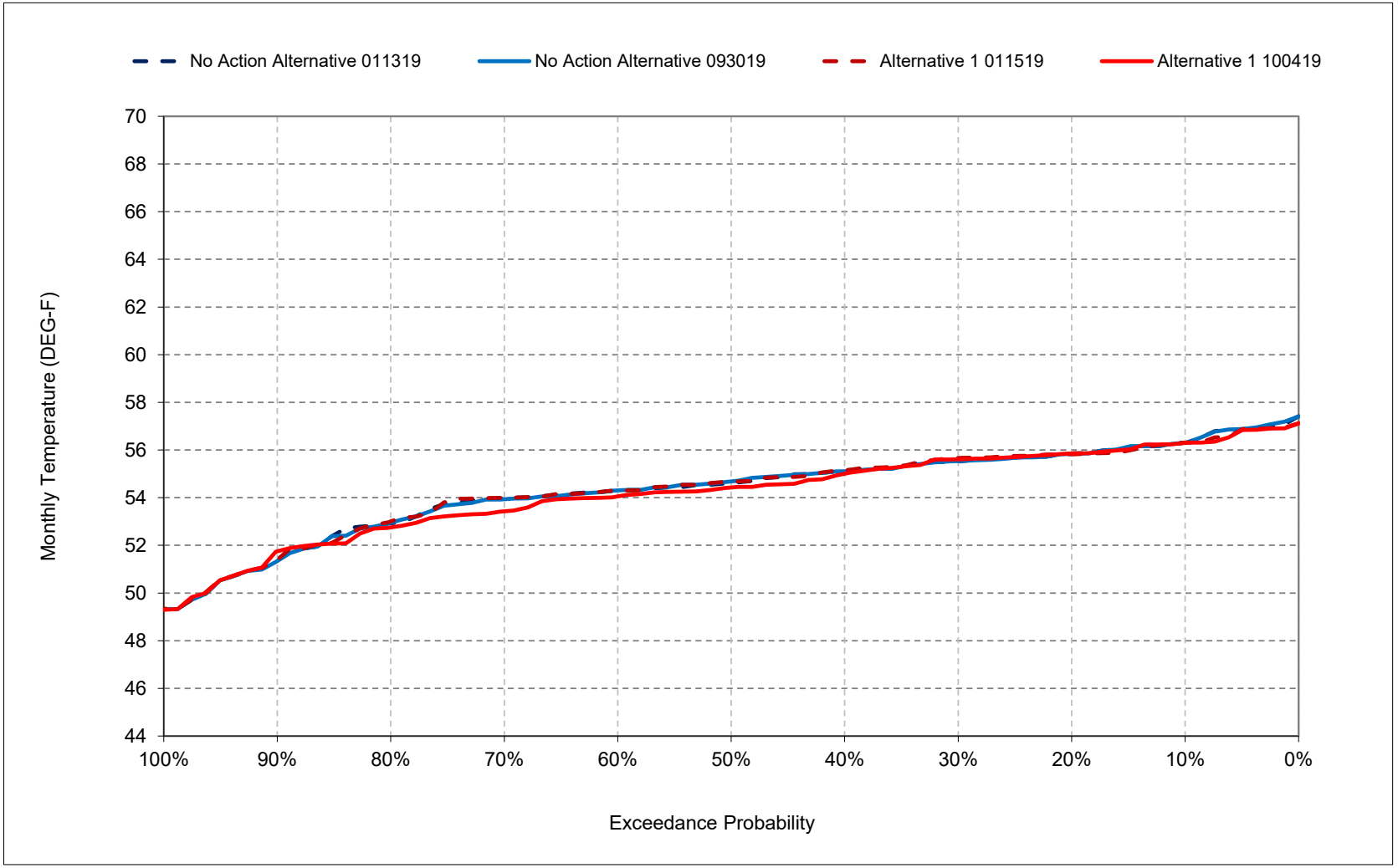

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-12. Sacramento River at Bend Bridge, March**



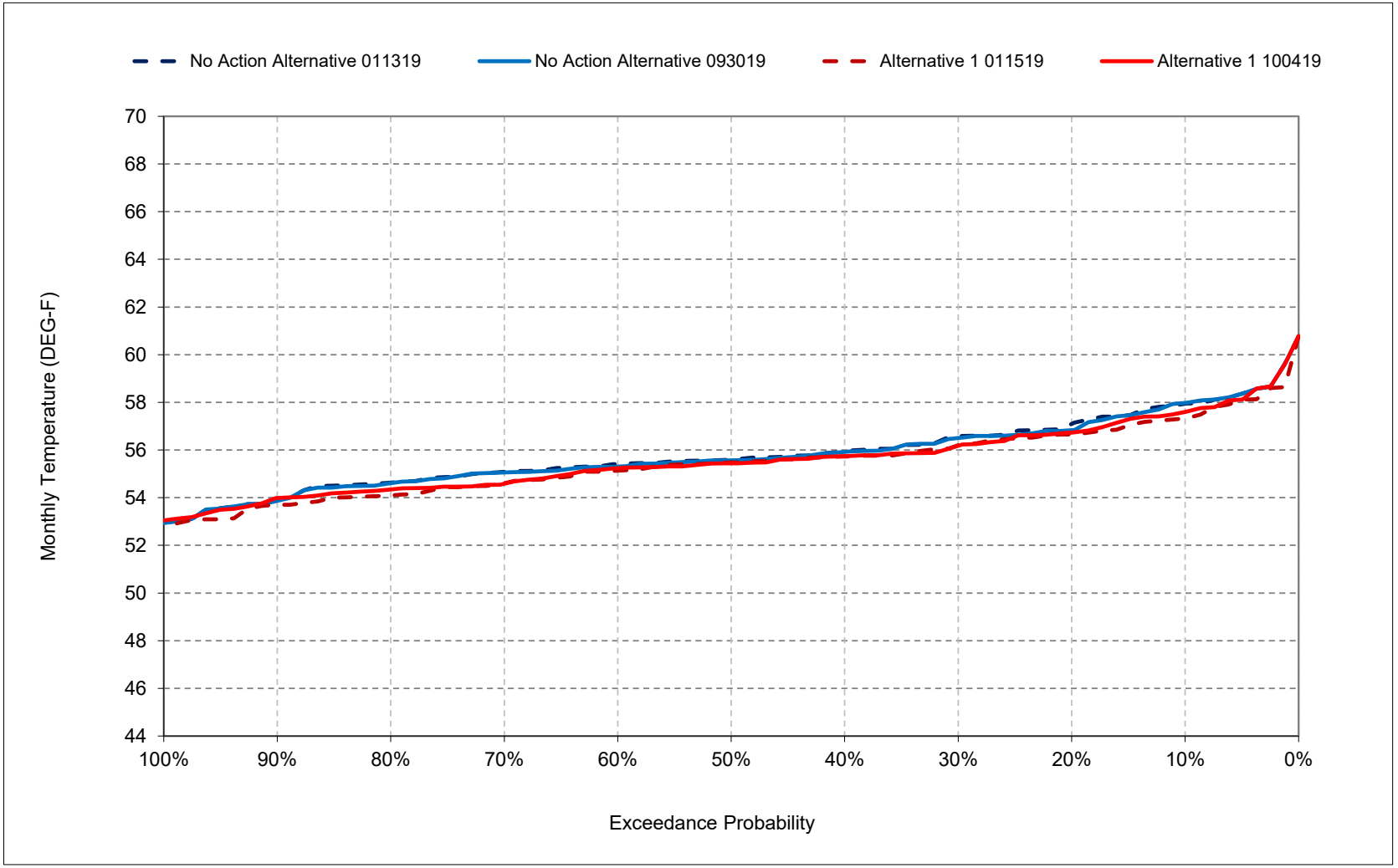

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-13. Sacramento River at Bend Bridge, April**



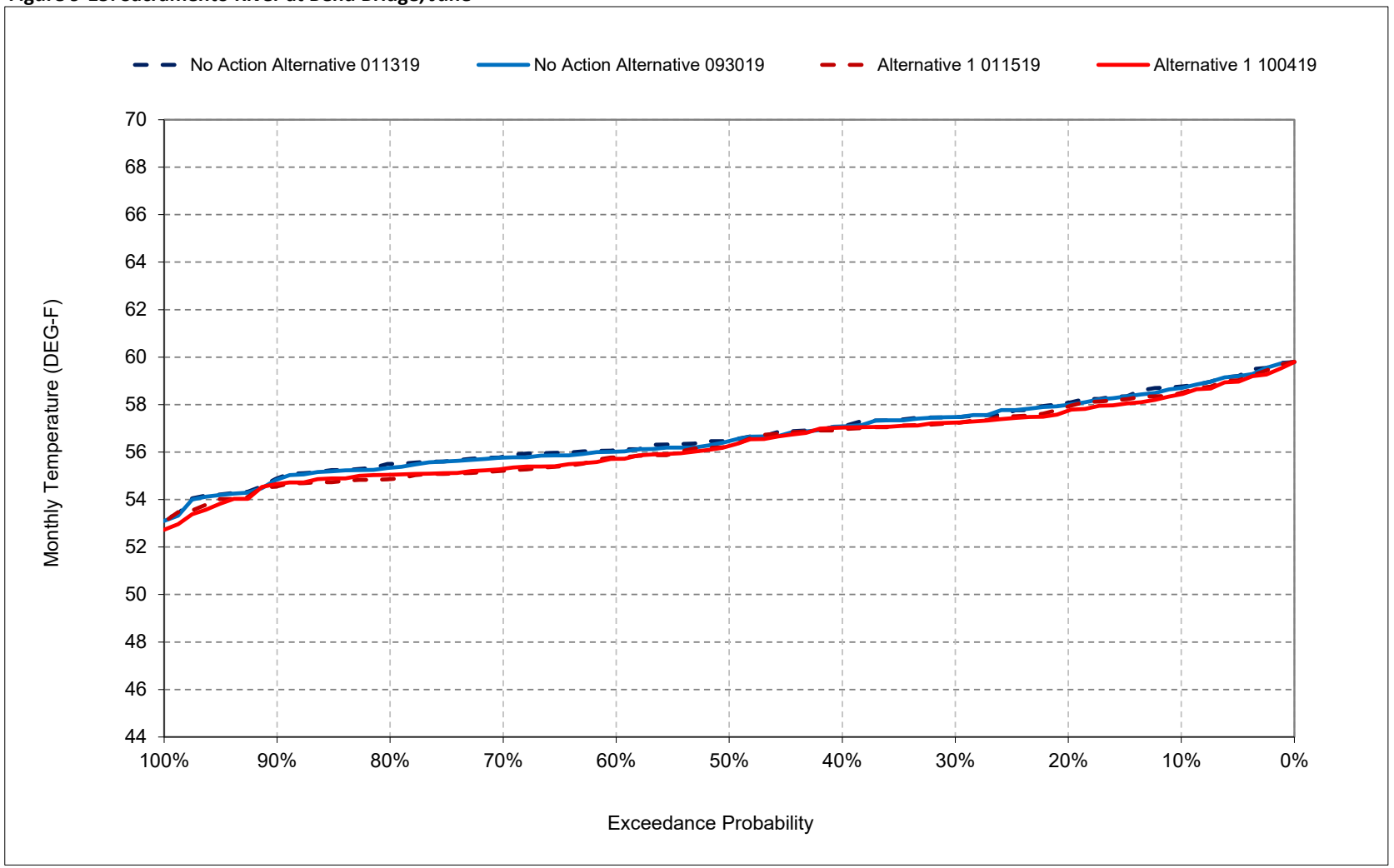

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-14. Sacramento River at Bend Bridge, May**



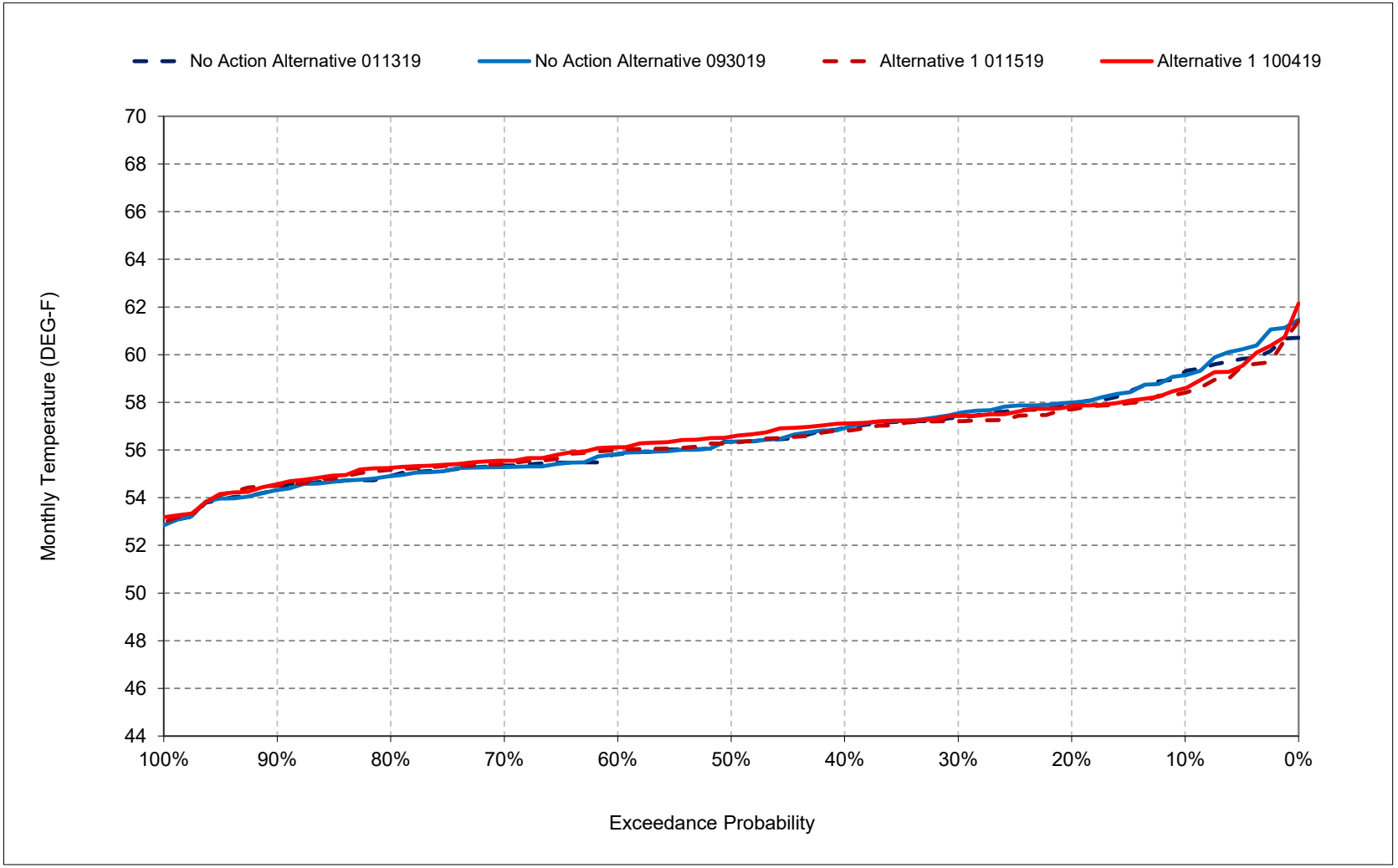

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-15. Sacramento River at Bend Bridge, June**



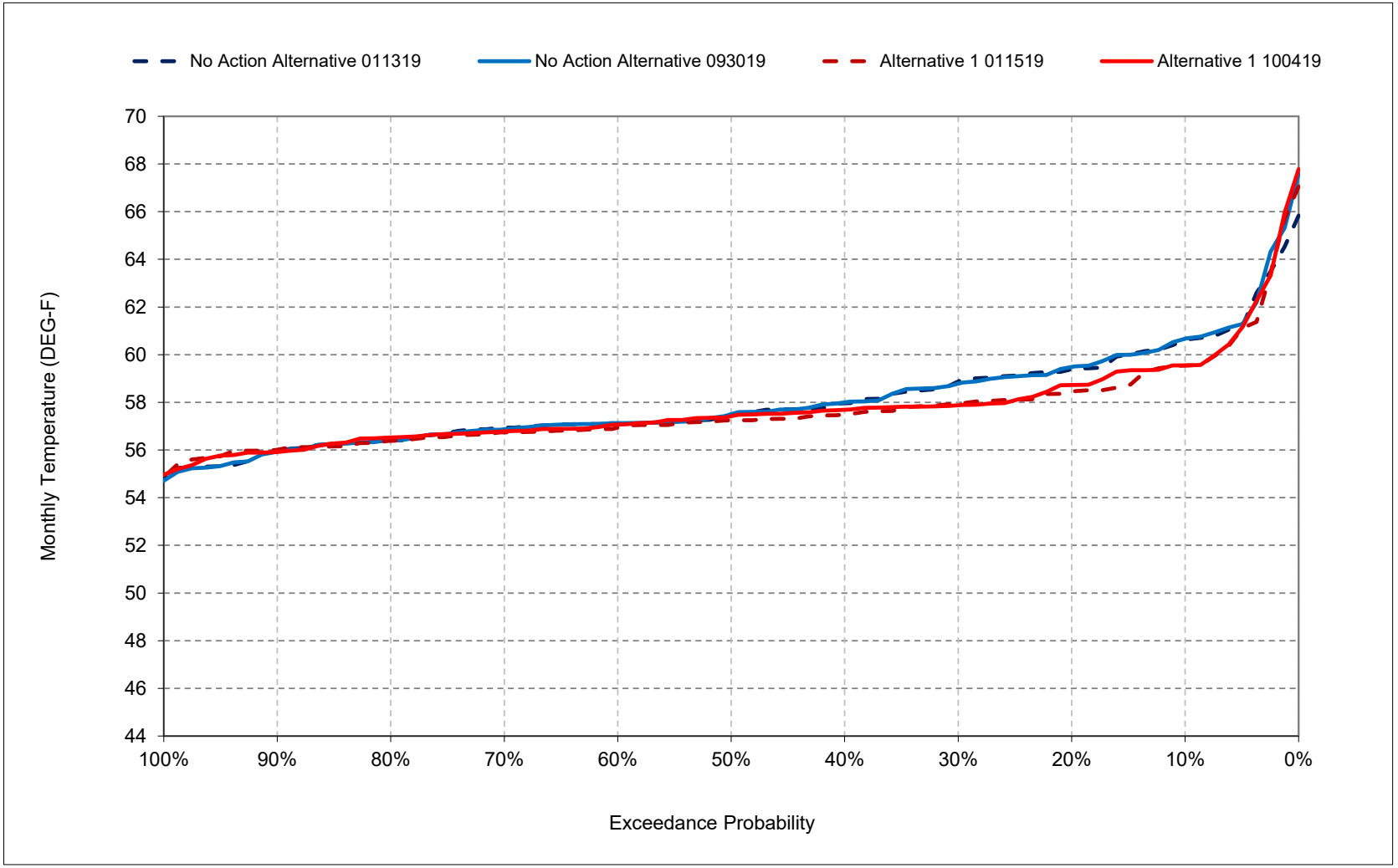

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-16. Sacramento River at Bend Bridge, July**



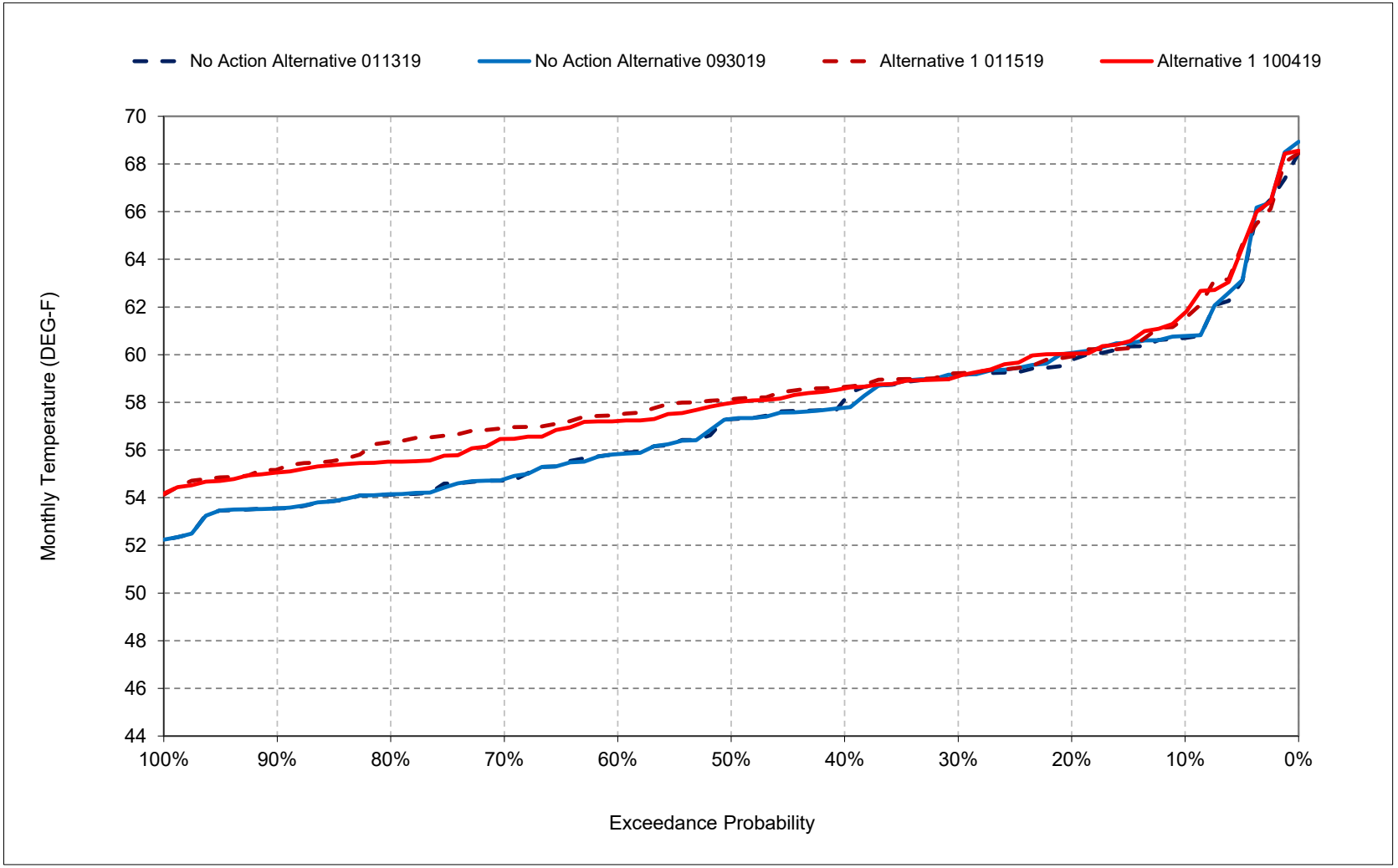

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-17. Sacramento River at Bend Bridge, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-18. Sacramento River at Bend Bridge, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-1. Sacramento River at Red Bluff, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.7 | 55.7 | 50.7 | 48.2 | 49.3 | 53.0 | 57.5 | 59.3 | 60.4 | 61.1 | 62.5 | 62.7 |
| 20% | 58.1 | 55.3 | 50.0 | 47.5 | 48.8 | 52.4 | 56.9 | 58.5 | 59.8 | 59.9 | 61.2 | 61.5 |
| 30% | 57.6 | 54.7 | 49.3 | 47.1 | 48.6 | 51.9 | 56.6 | 57.9 | 59.3 | 59.5 | 60.8 | 60.9 |
| 40% | 57.1 | 54.2 | 48.9 | 46.8 | 48.0 | 51.5 | 56.1 | 57.2 | 58.9 | 58.7 | 59.7 | 59.9 |
| 50% | 56.7 | 53.8 | 48.6 | 46.5 | 47.7 | 51.0 | 55.6 | 56.9 | 58.4 | 58.1 | 59.4 | 58.8 |
| 60% | 56.4 | 53.2 | 48.4 | 46.4 | 47.4 | 50.5 | 55.3 | 56.7 | 57.9 | 57.5 | 59.0 | 57.1 |
| 70% | 56.2 | 53.0 | 47.9 | 46.2 | 46.9 | 49.8 | 54.7 | 56.3 | 57.6 | 57.1 | 58.7 | 56.0 |
| 80% | 55.8 | 52.5 | 47.7 | 46.0 | 46.6 | 48.8 | 53.9 | 55.9 | 57.2 | 56.6 | 58.1 | 55.2 |
| 90% | 55.5 | 52.1 | 47.3 | 45.6 | 46.1 | 48.1 | 51.9 | 55.1 | 56.6 | 55.9 | 57.9 | 54.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 53.8 | 48.9 | 46.8 | 47.7 | 50.8 | 55.3 | 57.1 | 58.5 | 58.3 | 59.9 | 58.8 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 56.2 | 54.3 | 49.3 | 46.5 | 47.0 | 49.3 | 53.7 | 56.7 | 59.1 | 58.1 | 58.9 | 55.4 |
| Above Normal (16%) | 56.2 | 53.7 | 48.8 | 46.6 | 47.1 | 50.0 | 54.9 | 56.9 | 57.8 | 56.5 | 58.3 | 56.3 |
| Below Normal (13%) | 56.6 | 53.3 | 48.9 | 46.7 | 48.0 | 51.7 | 56.4 | 56.7 | 57.4 | 57.4 | 58.8 | 60.1 |
| Dry (24%) | 57.1 | 53.0 | 48.5 | 46.9 | 48.3 | 51.5 | 56.1 | 57.5 | 57.9 | 58.5 | 60.6 | 60.9 |
| Critical (15%) | 60.6 | 54.7 | 48.6 | 47.3 | 49.0 | 52.4 | 56.6 | 58.0 | 60.0 | 61.2 | 63.3 | 64.3 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 51.2 | 48.2 | 49.4 | 52.9 | 57.4 | 58.8 | 60.3 | 60.5 | 61.6 | 63.3 |
| 20% | 57.3 | 54.7 | 50.0 | 47.7 | 48.9 | 52.3 | 57.0 | 58.0 | 59.7 | 59.6 | 60.4 | 61.7 |
| 30% | 56.4 | 54.0 | 49.4 | 47.4 | 48.4 | 51.9 | 56.5 | 57.5 | 59.1 | 59.1 | 60.0 | 61.0 |
| 40% | 56.2 | 53.5 | 49.1 | 47.0 | 48.0 | 51.4 | 56.1 | 57.0 | 58.8 | 58.7 | 59.4 | 60.6 |
| 50% | 55.9 | 53.3 | 48.8 | 46.7 | 47.7 | 50.8 | 55.6 | 56.7 | 58.0 | 58.1 | 59.1 | 59.9 |
| 60% | 55.7 | 53.0 | 48.6 | 46.5 | 47.4 | 50.4 | 55.3 | 56.4 | 57.5 | 57.7 | 58.9 | 59.3 |
| 70% | 55.4 | 52.7 | 48.2 | 46.3 | 46.9 | 49.9 | 54.7 | 55.7 | 57.0 | 57.1 | 58.4 | 58.8 |
| 80% | 54.9 | 52.3 | 47.9 | 46.1 | 46.6 | 48.8 | 53.7 | 55.4 | 56.6 | 56.8 | 58.1 | 57.8 |
| 90% | 54.6 | 51.8 | 47.4 | 45.7 | 46.2 | 48.2 | 51.9 | 54.8 | 56.1 | 56.1 | 57.7 | 56.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.5 | 53.5 | 49.0 | 46.9 | 47.8 | 50.7 | 55.3 | 56.7 | 58.1 | 58.3 | 59.5 | 60.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.3 | 53.6 | 49.4 | 46.6 | 47.0 | 49.4 | 53.7 | 56.5 | 59.0 | 58.2 | 58.7 | 58.0 |
| Above Normal (16%) | 55.3 | 52.7 | 48.8 | 46.8 | 47.1 | 50.0 | 55.0 | 56.6 | 57.7 | 56.6 | 58.5 | 59.9 |
| Below Normal (13%) | 56.4 | 53.6 | 49.2 | 46.9 | 48.0 | 51.5 | 56.1 | 56.0 | 56.9 | 57.3 | 58.4 | 59.5 |
| Dry (24%) | 56.3 | 53.2 | 48.9 | 47.0 | 48.3 | 51.5 | 56.2 | 56.9 | 57.3 | 58.4 | 59.8 | 60.6 |
| Critical (15%) | 60.7 | 54.9 | 48.7 | 47.5 | 49.2 | 52.4 | 56.7 | 57.7 | 59.2 | 61.0 | 63.0 | 64.8 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.3** | **0.3** | **0.4** | **0.0** | **0.1** | -0.1 | 0.0 | -0.5 | -0.1 | -0.6 | -0.9 | **0.6** |
| 20% | -0.8 | -0.5 | 0.0 | **0.2** | **0.1** | 0.0 | **0.1** | -0.6 | -0.2 | -0.2 | -0.8 | **0.2** |
| 30% | -1.1 | -0.6 | **0.0** | **0.3** | -0.2 | -0.1 | -0.1 | -0.4 | -0.2 | -0.4 | -0.8 | **0.1** |
| 40% | -0.8 | -0.7 | **0.2** | **0.2** | **0.0** | -0.1 | 0.0 | -0.2 | -0.1 | **0.0** | -0.3 | **0.7** |
| 50% | -0.8 | -0.5 | **0.2** | **0.2** | **0.0** | -0.1 | **0.0** | -0.2 | -0.4 | 0.0 | -0.3 | **1.1** |
| 60% | -0.7 | -0.2 | **0.1** | **0.1** | **0.0** | -0.1 | **0.0** | -0.3 | -0.4 | **0.3** | 0.0 | **2.2** |
| 70% | -0.8 | -0.3 | **0.3** | **0.1** | **0.0** | **0.1** | **0.0** | -0.6 | -0.7 | **0.0** | -0.3 | **2.7** |
| 80% | -0.9 | -0.2 | **0.3** | **0.1** | **0.0** | **0.0** | -0.2 | -0.5 | -0.6 | **0.2** | **0.0** | **2.6** |
| 90% | -0.9 | -0.3 | **0.1** | **0.1** | **0.1** | **0.1** | **0.0** | -0.3 | -0.5 | **0.2** | -0.1 | **2.0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.3 | **0.2** | **0.1** | **0.1** | 0.0 | 0.0 | -0.4 | -0.4 | 0.0 | -0.3 | **1.3** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -0.9 | -0.7 | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | -0.2 | 0.0 | **0.1** | -0.2 | **2.6** |
| Above Normal (16%) | -0.9 | -1.0 | -0.1 | **0.1** | **0.0** | 0.0 | **0.0** | -0.3 | -0.1 | **0.1** | **0.2** | **3.6** |
| Below Normal (13%) | -0.3 | **0.3** | **0.3** | **0.2** | 0.0 | -0.2 | -0.3 | -0.7 | -0.5 | -0.1 | -0.4 | -0.6 |
| Dry (24%) | -0.9 | **0.2** | **0.3** | **0.1** | **0.0** | 0.0 | **0.0** | -0.5 | -0.6 | -0.1 | -0.8 | -0.4 |
| Critical (15%) | **0.1** | **0.2** | **0.1** | **0.2** | **0.2** | **0.0** | **0.1** | -0.3 | -0.7 | -0.2 | -0.3 | **0.5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-2. Sacramento River at Red Bluff, Monthly Temperature

### No Action Alternative 093019

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.7 | 55.7 | 50.9 | 48.2 | 49.3 | 53.0 | 57.5 | 59.3 | 60.3 | 61.0 | 62.6 | 62.7 |
| 20% | 58.0 | 55.2 | 50.0 | 47.5 | 48.8 | 52.3 | 56.9 | 58.4 | 59.8 | 59.9 | 61.3 | 61.9 |
| 30% | 57.4 | 54.7 | 49.3 | 47.1 | 48.6 | 51.9 | 56.6 | 57.9 | 59.3 | 59.6 | 60.8 | 61.1 |
| 40% | 57.0 | 54.2 | 48.9 | 46.8 | 48.0 | 51.4 | 56.1 | 57.1 | 58.9 | 58.7 | 59.8 | 59.5 |
| 50% | 56.6 | 53.8 | 48.6 | 46.5 | 47.7 | 50.9 | 55.6 | 56.9 | 58.4 | 58.2 | 59.4 | 58.7 |
| 60% | 56.4 | 53.3 | 48.4 | 46.4 | 47.4 | 50.5 | 55.2 | 56.7 | 57.8 | 57.5 | 58.9 | 57.0 |
| 70% | 56.2 | 53.1 | 47.9 | 46.2 | 46.9 | 50.0 | 54.7 | 56.3 | 57.5 | 57.0 | 58.7 | 56.0 |
| 80% | 55.7 | 52.6 | 47.7 | 46.0 | 46.6 | 48.8 | 53.7 | 55.8 | 57.1 | 56.6 | 58.1 | 55.2 |
| 90% | 55.5 | 52.1 | 47.3 | 45.6 | 46.1 | 48.1 | 51.9 | 55.1 | 56.6 | 55.9 | 57.9 | 54.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 53.8 | 48.9 | 46.8 | 47.7 | 50.7 | 55.3 | 57.1 | 58.4 | 58.4 | 59.9 | 58.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 56.2 | 54.3 | 49.3 | 46.5 | 47.0 | 49.3 | 53.7 | 56.7 | 59.0 | 58.0 | 58.9 | 55.4 |
| Above Normal (16%) | 56.2 | 53.7 | 48.8 | 46.6 | 47.1 | 50.1 | 54.9 | 56.9 | 57.7 | 56.5 | 58.3 | 56.3 |
| Below Normal (13%) | 56.7 | 53.3 | 48.9 | 46.7 | 48.0 | 51.7 | 56.4 | 56.7 | 57.4 | 57.4 | 58.7 | 60.0 |
| Dry (24%) | 57.1 | 53.1 | 48.6 | 47.0 | 48.3 | 51.5 | 56.1 | 57.4 | 57.8 | 58.6 | 60.7 | 61.0 |
| Critical (15%) | 60.8 | 54.8 | 48.6 | 47.3 | 49.0 | 52.4 | 56.5 | 57.8 | 59.8 | 61.6 | 63.6 | 64.6 |

### Alternative 1 100419

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 59.0 | 55.8 | 51.1 | 48.3 | 49.4 | 52.9 | 57.5 | 59.0 | 60.2 | 60.7 | 61.6 | 63.5 |
| 20% | 57.3 | 54.9 | 50.2 | 47.6 | 48.8 | 52.3 | 56.9 | 58.1 | 59.5 | 59.8 | 60.7 | 62.0 |
| 30% | 56.5 | 54.2 | 49.7 | 47.4 | 48.3 | 51.9 | 56.4 | 57.4 | 59.1 | 59.4 | 59.9 | 61.0 |
| 40% | 56.0 | 53.7 | 49.1 | 47.0 | 48.0 | 51.3 | 55.8 | 57.0 | 58.7 | 58.9 | 59.6 | 60.5 |
| 50% | 55.9 | 53.4 | 48.8 | 46.7 | 47.7 | 50.8 | 55.4 | 56.7 | 58.0 | 58.5 | 59.4 | 59.4 |
| 60% | 55.6 | 53.1 | 48.6 | 46.5 | 47.4 | 50.3 | 54.8 | 56.5 | 57.6 | 57.9 | 59.0 | 58.9 |
| 70% | 55.3 | 52.8 | 48.1 | 46.4 | 46.9 | 49.9 | 54.4 | 55.7 | 57.1 | 57.3 | 58.5 | 58.0 |
| 80% | 55.1 | 52.6 | 47.9 | 46.1 | 46.6 | 48.9 | 53.6 | 55.5 | 56.7 | 56.9 | 58.3 | 57.0 |
| 90% | 54.7 | 52.0 | 47.4 | 45.7 | 46.1 | 48.2 | 52.3 | 54.9 | 56.3 | 56.2 | 57.7 | 56.5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.5 | 53.7 | 49.1 | 46.9 | 47.8 | 50.7 | 55.1 | 56.9 | 58.1 | 58.5 | 59.7 | 59.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 55.3 | 53.7 | 49.4 | 46.6 | 47.0 | 49.3 | 53.5 | 56.7 | 58.9 | 58.1 | 58.7 | 58.0 |
| Above Normal (16%) | 55.5 | 53.3 | 49.0 | 46.7 | 47.1 | 49.9 | 54.7 | 56.7 | 57.5 | 56.7 | 58.4 | 57.9 |
| Below Normal (13%) | 56.1 | 53.5 | 49.1 | 46.9 | 47.9 | 51.5 | 56.2 | 56.1 | 56.8 | 57.6 | 58.9 | 60.1 |
| Dry (24%) | 56.3 | 53.3 | 48.8 | 47.1 | 48.3 | 51.6 | 56.0 | 57.0 | 57.6 | 58.9 | 60.0 | 60.7 |
| Critical (15%) | 60.8 | 54.9 | 48.8 | 47.5 | 49.1 | 52.5 | 56.5 | 57.8 | 59.3 | 61.4 | 63.3 | 65.0 |

### Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.4** | **0.1** | **0.2** | **0.1** | **0.1** | -0.1 | **0.0** | -0.2 | -0.1 | -0.2 | -1.0 | **0.8** |
| 20% | -0.7 | -0.3 | **0.2** | **0.1** | **0.0** | 0.0 | **0.0** | -0.3 | -0.3 | 0.0 | -0.6 | **0.1** |
| 30% | -0.9 | -0.5 | **0.4** | **0.3** | -0.3 | 0.0 | -0.1 | -0.4 | -0.3 | -0.1 | -0.9 | -0.1 |
| 40% | -0.9 | -0.5 | **0.2** | **0.2** | 0.0 | -0.2 | -0.3 | -0.1 | -0.2 | **0.3** | -0.2 | **1.0** |
| 50% | -0.7 | -0.4 | **0.2** | **0.2** | **0.0** | -0.2 | -0.2 | -0.2 | -0.4 | **0.4** | **0.0** | **0.7** |
| 60% | -0.8 | -0.3 | **0.1** | **0.1** | **0.0** | -0.2 | -0.4 | -0.2 | -0.3 | **0.4** | **0.0** | **1.9** |
| 70% | -0.9 | -0.3 | **0.2** | **0.1** | 0.0 | -0.1 | -0.3 | -0.6 | -0.4 | **0.3** | -0.2 | **2.0** |
| 80% | -0.7 | 0.0 | **0.1** | **0.1** | **0.0** | **0.1** | -0.1 | -0.3 | -0.4 | **0.3** | **0.2** | **1.8** |
| 90% | -0.8 | 0.0 | **0.1** | **0.1** | **0.1** | **0.0** | **0.4** | -0.1 | -0.3 | **0.2** | -0.2 | **1.9** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.2 | **0.2** | **0.1** | **0.0** | 0.0 | -0.2 | -0.2 | -0.3 | **0.1** | -0.2 | **1.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -0.9 | -0.6 | **0.2** | **0.1** | **0.0** | -0.1 | -0.2 | 0.0 | -0.2 | **0.1** | -0.1 | **2.6** |
| Above Normal (16%) | -0.7 | -0.4 | **0.1** | **0.1** | **0.0** | -0.2 | -0.2 | -0.2 | -0.2 | **0.2** | **0.1** | **1.6** |
| Below Normal (13%) | -0.6 | **0.2** | **0.2** | **0.2** | -0.1 | -0.2 | -0.3 | -0.6 | -0.6 | **0.2** | **0.2** | **0.1** |
| Dry (24%) | -0.8 | **0.2** | **0.3** | **0.1** | **0.0** | **0.1** | 0.0 | -0.4 | -0.3 | **0.3** | -0.7 | -0.3 |
| Critical (15%) | 0.0 | **0.1** | **0.2** | **0.2** | **0.2** | **0.1** | **0.0** | 0.0 | -0.5 | -0.2 | -0.4 | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-3. Sacramento River at Red Bluff, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.7 | 55.7 | 50.7 | 48.2 | 49.3 | 53.0 | 57.5 | 59.3 | 60.4 | 61.1 | 62.5 | 62.7 |
| 20% | 58.1 | 55.3 | 50.0 | 47.5 | 48.8 | 52.4 | 56.9 | 58.5 | 59.8 | 59.9 | 61.2 | 61.5 |
| 30% | 57.6 | 54.7 | 49.3 | 47.1 | 48.6 | 51.9 | 56.6 | 57.9 | 59.3 | 59.5 | 60.8 | 60.9 |
| 40% | 57.1 | 54.2 | 48.9 | 46.8 | 48.0 | 51.5 | 56.1 | 57.2 | 58.9 | 58.7 | 59.7 | 59.9 |
| 50% | 56.7 | 53.8 | 48.6 | 46.5 | 47.7 | 51.0 | 55.6 | 56.9 | 58.4 | 58.1 | 59.4 | 58.8 |
| 60% | 56.4 | 53.2 | 48.4 | 46.4 | 47.4 | 50.5 | 55.3 | 56.7 | 57.9 | 57.5 | 59.0 | 57.1 |
| 70% | 56.2 | 53.0 | 47.9 | 46.2 | 46.9 | 49.8 | 54.7 | 56.3 | 57.6 | 57.1 | 58.7 | 56.0 |
| 80% | 55.8 | 52.5 | 47.7 | 46.0 | 46.6 | 48.8 | 53.9 | 55.9 | 57.2 | 56.6 | 58.1 | 55.2 |
| 90% | 55.5 | 52.1 | 47.3 | 45.6 | 46.1 | 48.1 | 51.9 | 55.1 | 56.6 | 55.9 | 57.9 | 54.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 53.8 | 48.9 | 46.8 | 47.7 | 50.8 | 55.3 | 57.1 | 58.5 | 58.3 | 59.9 | 58.8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 56.2 | 54.3 | 49.3 | 46.5 | 47.0 | 49.3 | 53.7 | 56.7 | 59.1 | 58.1 | 58.9 | 55.4 |
| Above Normal (16%) | 56.2 | 53.7 | 48.8 | 46.6 | 47.1 | 50.0 | 54.9 | 56.9 | 57.8 | 56.5 | 58.3 | 56.3 |
| Below Normal (13%) | 56.6 | 53.3 | 48.9 | 46.7 | 48.0 | 51.7 | 56.4 | 56.7 | 57.4 | 57.4 | 58.8 | 60.1 |
| Dry (24%) | 57.1 | 53.0 | 48.5 | 46.9 | 48.3 | 51.5 | 56.1 | 57.5 | 57.9 | 58.5 | 60.6 | 60.9 |
| Critical (15%) | 60.6 | 54.7 | 48.6 | 47.3 | 49.0 | 52.4 | 56.6 | 58.0 | 60.0 | 61.2 | 63.3 | 64.3 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.7 | 55.7 | 50.9 | 48.2 | 49.3 | 53.0 | 57.5 | 59.3 | 60.3 | 61.0 | 62.6 | 62.7 |
| 20% | 58.0 | 55.2 | 50.0 | 47.5 | 48.8 | 52.3 | 56.9 | 58.4 | 59.8 | 59.9 | 61.3 | 61.9 |
| 30% | 57.4 | 54.7 | 49.3 | 47.1 | 48.6 | 51.9 | 56.6 | 57.9 | 59.3 | 59.6 | 60.8 | 61.1 |
| 40% | 57.0 | 54.2 | 48.9 | 46.8 | 48.0 | 51.4 | 56.1 | 57.1 | 58.9 | 58.7 | 59.8 | 59.5 |
| 50% | 56.6 | 53.8 | 48.6 | 46.5 | 47.7 | 50.9 | 55.6 | 56.9 | 58.4 | 58.2 | 59.4 | 58.7 |
| 60% | 56.4 | 53.3 | 48.4 | 46.4 | 47.4 | 50.5 | 55.2 | 56.7 | 57.8 | 57.5 | 58.9 | 57.0 |
| 70% | 56.2 | 53.1 | 47.9 | 46.2 | 46.9 | 50.0 | 54.7 | 56.3 | 57.5 | 57.0 | 58.7 | 56.0 |
| 80% | 55.7 | 52.6 | 47.7 | 46.0 | 46.6 | 48.8 | 53.7 | 55.8 | 57.1 | 56.6 | 58.1 | 55.2 |
| 90% | 55.5 | 52.1 | 47.3 | 45.6 | 46.1 | 48.1 | 51.9 | 55.1 | 56.6 | 55.9 | 57.9 | 54.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 53.8 | 48.9 | 46.8 | 47.7 | 50.7 | 55.3 | 57.1 | 58.4 | 58.4 | 59.9 | 58.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 56.2 | 54.3 | 49.3 | 46.5 | 47.0 | 49.3 | 53.7 | 56.7 | 59.0 | 58.0 | 58.9 | 55.4 |
| Above Normal (16%) | 56.2 | 53.7 | 48.8 | 46.6 | 47.1 | 50.1 | 54.9 | 56.9 | 57.7 | 56.5 | 58.3 | 56.3 |
| Below Normal (13%) | 56.7 | 53.3 | 48.9 | 46.7 | 48.0 | 51.7 | 56.4 | 56.7 | 57.4 | 57.4 | 58.7 | 60.0 |
| Dry (24%) | 57.1 | 53.1 | 48.6 | 47.0 | 48.3 | 51.5 | 56.1 | 57.4 | 57.8 | 58.6 | 60.7 | 61.0 |
| Critical (15%) | 60.8 | 54.8 | 48.6 | 47.3 | 49.0 | 52.4 | 56.5 | 57.8 | 59.8 | 61.6 | 63.6 | 64.6 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.0** | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | **0.2** | **0.0** |
| 20% | -0.1 | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.1** | **0.4** |
| 30% | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.1** | 0.0 | **0.2** |
| 40% | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | -0.3 |
| 50% | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | **0.1** | -0.1 | -0.1 |
| 60% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | 0.0 |
| 70% | **0.0** | **0.1** | 0.0 | 0.0 | 0.0 | **0.2** | **0.0** | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| 80% | 0.0 | **0.1** | **0.0** | 0.0 | **0.0** | **0.0** | -0.2 | -0.1 | -0.1 | **0.0** | 0.0 | **0.0** |
| 90% | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | **0.0** | **0.0** | **0.0** | -0.1 | -0.1 |
| Dry (24%) | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.1** | **0.1** |
| Critical (15%) | **0.2** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | **0.4** | **0.3** | **0.3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-4. Sacramento River at Red Bluff, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 51.2 | 48.2 | 49.4 | 52.9 | 57.4 | 58.8 | 60.3 | 60.5 | 61.6 | 63.3 |
| 20% | 57.3 | 54.7 | 50.0 | 47.7 | 48.9 | 52.3 | 57.0 | 58.0 | 59.7 | 59.6 | 60.4 | 61.7 |
| 30% | 56.4 | 54.0 | 49.4 | 47.4 | 48.4 | 51.9 | 56.5 | 57.5 | 59.1 | 59.1 | 60.0 | 61.0 |
| 40% | 56.2 | 53.5 | 49.1 | 47.0 | 48.0 | 51.4 | 56.1 | 57.0 | 58.8 | 58.7 | 59.4 | 60.6 |
| 50% | 55.9 | 53.3 | 48.8 | 46.7 | 47.7 | 50.8 | 55.6 | 56.7 | 58.0 | 58.1 | 59.1 | 59.9 |
| 60% | 55.7 | 53.0 | 48.6 | 46.5 | 47.4 | 50.4 | 55.3 | 56.4 | 57.5 | 57.7 | 58.9 | 59.3 |
| 70% | 55.4 | 52.7 | 48.2 | 46.3 | 46.9 | 49.9 | 54.7 | 55.7 | 57.0 | 57.1 | 58.4 | 58.8 |
| 80% | 54.9 | 52.3 | 47.9 | 46.1 | 46.6 | 48.8 | 53.7 | 55.4 | 56.6 | 56.8 | 58.1 | 57.8 |
| 90% | 54.6 | 51.8 | 47.4 | 45.7 | 46.2 | 48.2 | 51.9 | 54.8 | 56.1 | 56.1 | 57.7 | 56.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.5 | 53.5 | 49.0 | 46.9 | 47.8 | 50.7 | 55.3 | 56.7 | 58.1 | 58.3 | 59.5 | 60.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.3 | 53.6 | 49.4 | 46.6 | 47.0 | 49.4 | 53.7 | 56.5 | 59.0 | 58.2 | 58.7 | 58.0 |
| Above Normal (16%) | 55.3 | 52.7 | 48.8 | 46.8 | 47.1 | 50.0 | 55.0 | 56.6 | 57.7 | 56.6 | 58.5 | 59.9 |
| Below Normal (13%) | 56.4 | 53.6 | 49.2 | 46.9 | 48.0 | 51.5 | 56.1 | 56.0 | 56.9 | 57.3 | 58.4 | 59.5 |
| Dry (24%) | 56.3 | 53.2 | 48.9 | 47.0 | 48.3 | 51.5 | 56.2 | 56.9 | 57.3 | 58.4 | 59.8 | 60.6 |
| Critical (15%) | 60.7 | 54.9 | 48.7 | 47.5 | 49.2 | 52.4 | 56.7 | 57.7 | 59.2 | 61.0 | 63.0 | 64.8 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 59.0 | 55.8 | 51.1 | 48.3 | 49.4 | 52.9 | 57.5 | 59.0 | 60.2 | 60.7 | 61.6 | 63.5 |
| 20% | 57.3 | 54.9 | 50.2 | 47.6 | 48.8 | 52.3 | 56.9 | 58.1 | 59.5 | 59.8 | 60.7 | 62.0 |
| 30% | 56.5 | 54.2 | 49.7 | 47.4 | 48.3 | 51.9 | 56.4 | 57.4 | 59.1 | 59.4 | 59.9 | 61.0 |
| 40% | 56.0 | 53.7 | 49.1 | 47.0 | 48.0 | 51.3 | 55.8 | 57.0 | 58.7 | 58.9 | 59.6 | 60.5 |
| 50% | 55.9 | 53.4 | 48.8 | 46.7 | 47.7 | 50.8 | 55.4 | 56.7 | 58.0 | 58.5 | 59.4 | 59.4 |
| 60% | 55.6 | 53.1 | 48.6 | 46.5 | 47.4 | 50.3 | 54.8 | 56.5 | 57.6 | 57.9 | 59.0 | 58.9 |
| 70% | 55.3 | 52.8 | 48.1 | 46.4 | 46.9 | 49.9 | 54.4 | 55.7 | 57.1 | 57.3 | 58.5 | 58.0 |
| 80% | 55.1 | 52.6 | 47.9 | 46.1 | 46.6 | 48.9 | 53.6 | 55.5 | 56.7 | 56.9 | 58.3 | 57.0 |
| 90% | 54.7 | 52.0 | 47.4 | 45.7 | 46.1 | 48.2 | 52.3 | 54.9 | 56.3 | 56.2 | 57.7 | 56.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.5 | 53.7 | 49.1 | 46.9 | 47.8 | 50.7 | 55.1 | 56.9 | 58.1 | 58.5 | 59.7 | 59.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.3 | 53.7 | 49.4 | 46.6 | 47.0 | 49.3 | 53.5 | 56.7 | 58.9 | 58.1 | 58.7 | 58.0 |
| Above Normal (16%) | 55.5 | 53.3 | 49.0 | 46.7 | 47.1 | 49.9 | 54.7 | 56.7 | 57.5 | 56.7 | 58.4 | 57.9 |
| Below Normal (13%) | 56.1 | 53.5 | 49.1 | 46.9 | 47.9 | 51.5 | 56.2 | 56.1 | 56.8 | 57.6 | 58.9 | 60.1 |
| Dry (24%) | 56.3 | 53.3 | 48.8 | 47.1 | 48.3 | 51.6 | 56.0 | 57.0 | 57.6 | 58.9 | 60.0 | 60.7 |
| Critical (15%) | 60.8 | 54.9 | 48.8 | 47.5 | 49.1 | 52.5 | 56.5 | 57.8 | 59.3 | 61.4 | 63.3 | 65.0 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.1 | -0.2 | -0.1 | 0.0 | 0.0 | -0.1 | 0.1 | 0.3 | -0.1 | 0.2 | 0.0 | 0.3 |
| 20% | 0.0 | 0.2 | 0.2 | -0.1 | -0.1 | 0.0 | -0.1 | 0.1 | -0.1 | 0.2 | 0.3 | 0.3 |
| 30% | 0.1 | 0.2 | 0.3 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | -0.1 | 0.0 |
| 40% | -0.2 | 0.2 | 0.0 | 0.0 | 0.0 | -0.1 | -0.3 | 0.0 | 0.0 | 0.3 | 0.2 | -0.1 |
| 50% | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | 0.4 | 0.2 | -0.6 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.4 | 0.1 | 0.0 | 0.2 | 0.0 | -0.3 |
| 70% | -0.1 | 0.1 | -0.1 | 0.0 | -0.1 | 0.0 | -0.3 | 0.0 | 0.1 | 0.2 | 0.1 | -0.7 |
| 80% | 0.2 | 0.3 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.1 | 0.1 | 0.1 | 0.2 | -0.8 |
| 90% | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.1 | 0.0 | 0.2 | 0.1 | -0.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | -0.1 | -0.2 | 0.2 | -0.1 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.1 | 0.6 | 0.2 | 0.0 | 0.0 | -0.1 | -0.3 | 0.1 | -0.2 | 0.1 | -0.1 | -2.0 |
| Below Normal (13%) | -0.3 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | -0.1 | 0.3 | 0.4 | 0.6 |
| Dry (24%) | 0.0 | 0.1 | -0.1 | 0.0 | 0.0 | 0.1 | -0.1 | 0.1 | 0.2 | 0.5 | 0.2 | 0.1 |
| Critical (15%) | 0.1 | 0.0 | 0.1 | 0.1 | -0.1 | 0.1 | -0.1 | 0.0 | 0.0 | 0.4 | 0.3 | 0.2 |

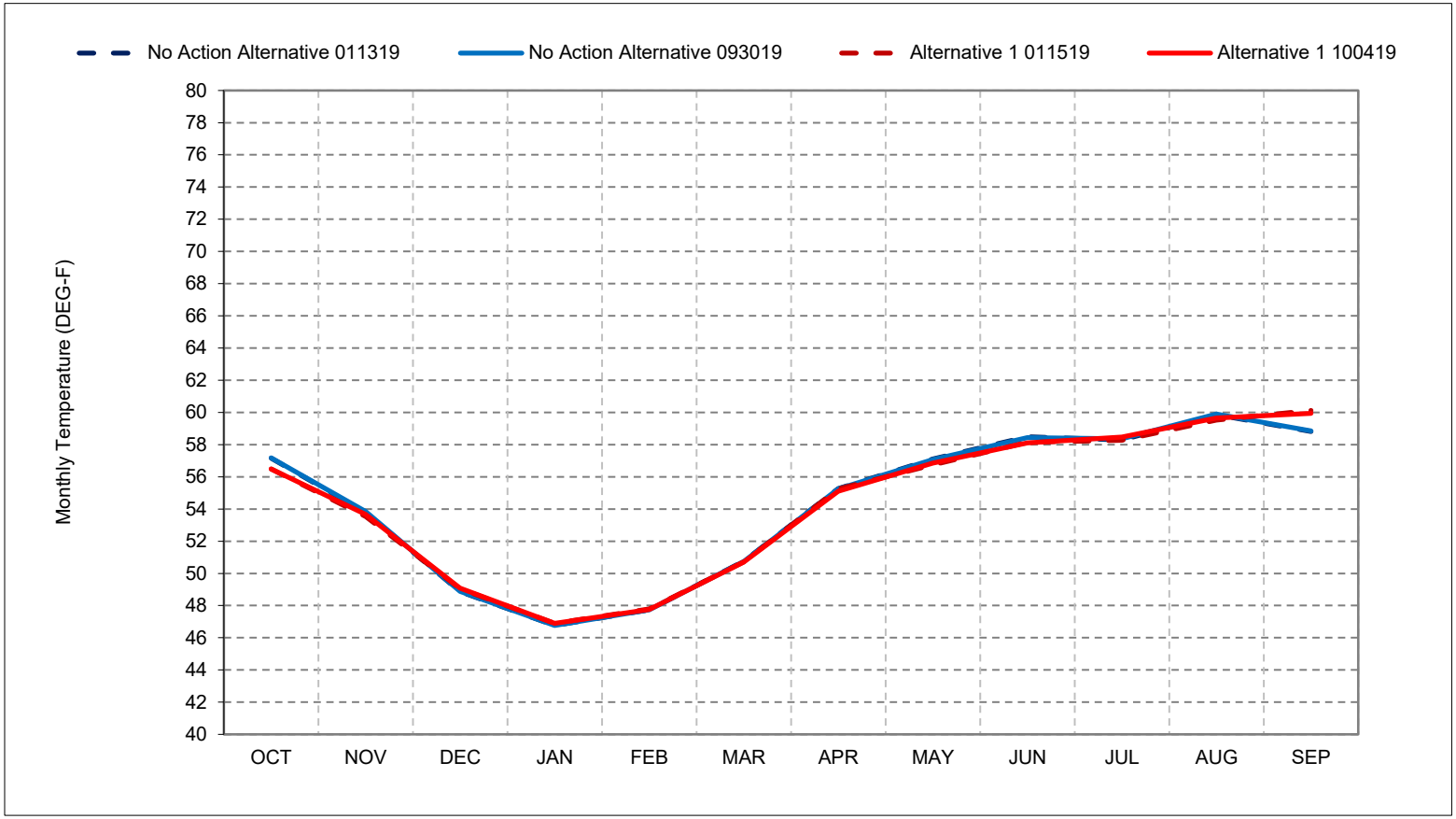
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-1. Sacramento River at Red Bluff, Long-Term Average Temperature

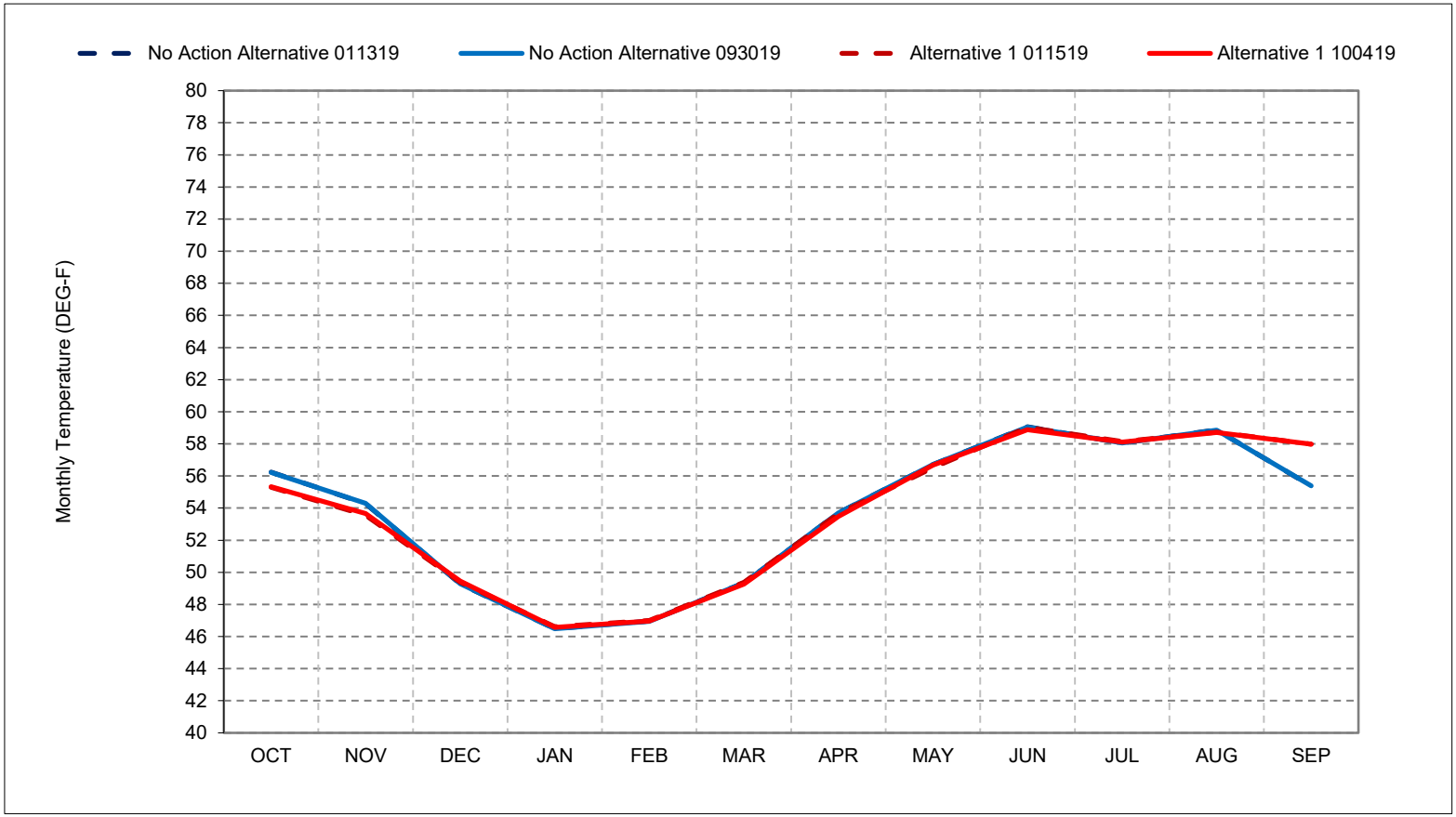



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-2. Sacramento River at Red Bluff, Wet Year Average Temperature

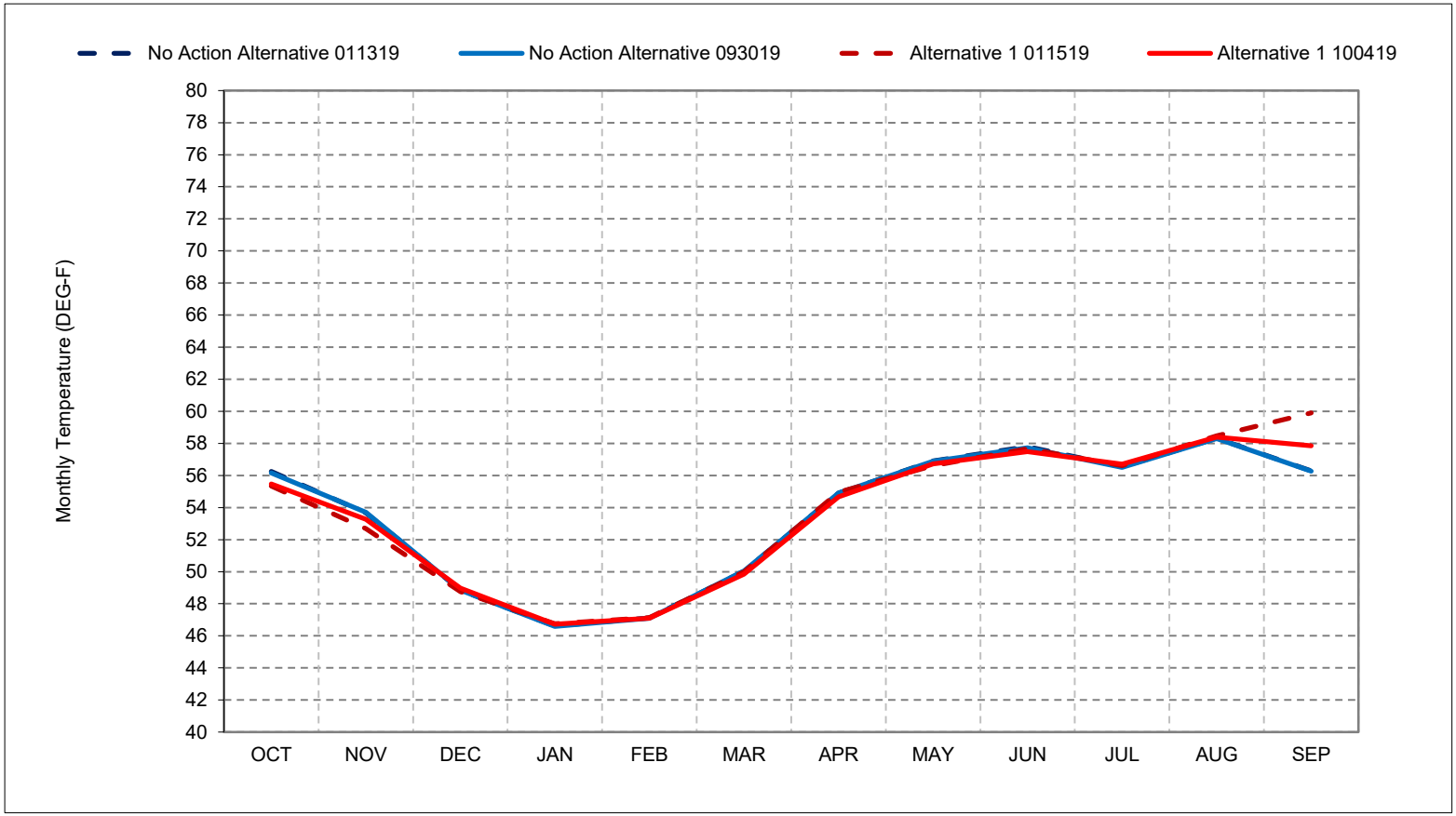



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-3. Sacramento River at Red Bluff, Above Normal Year Average Temperature

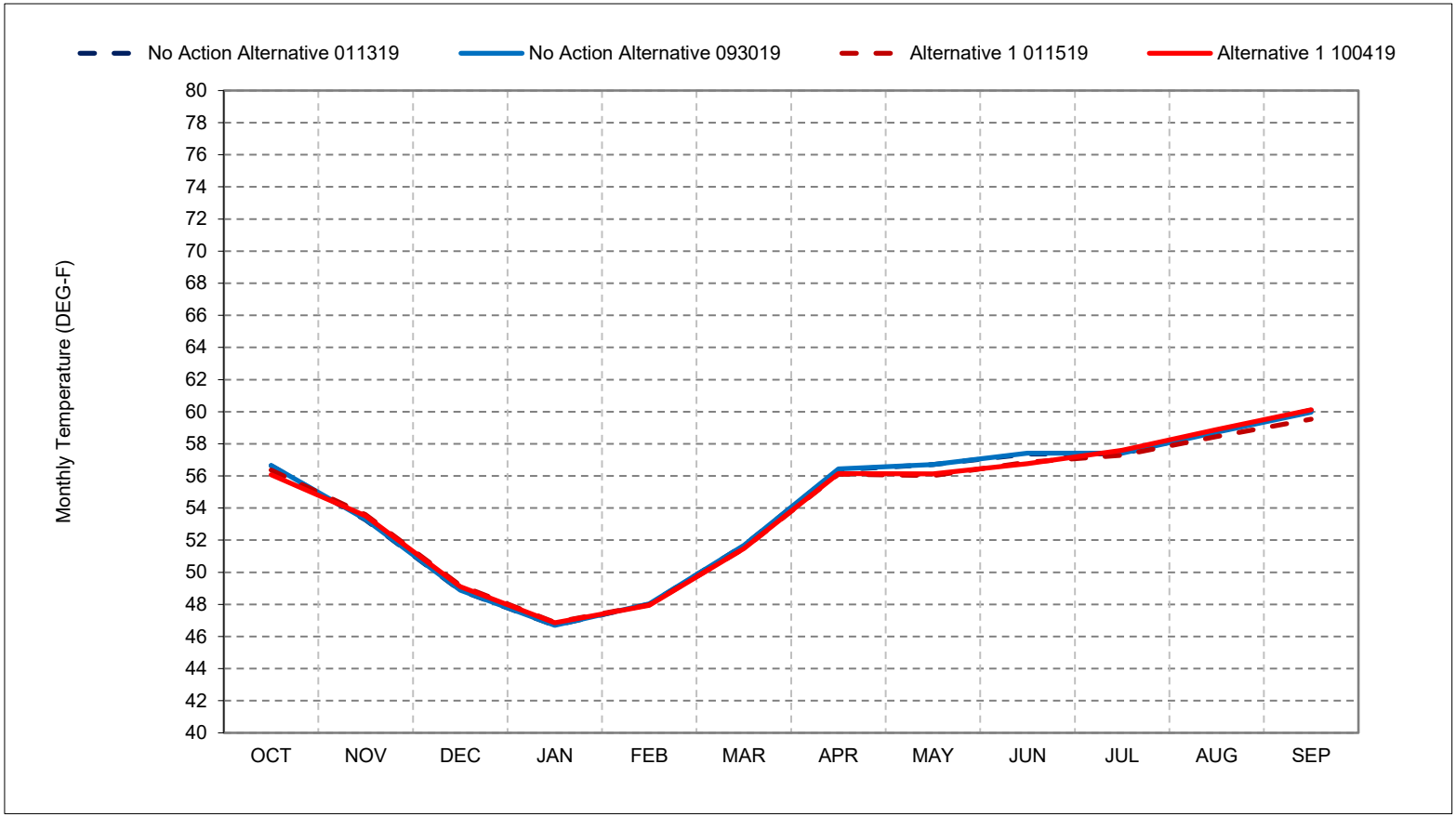



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-4. Sacramento River at Red Bluff, Below Normal Year Average Temperature

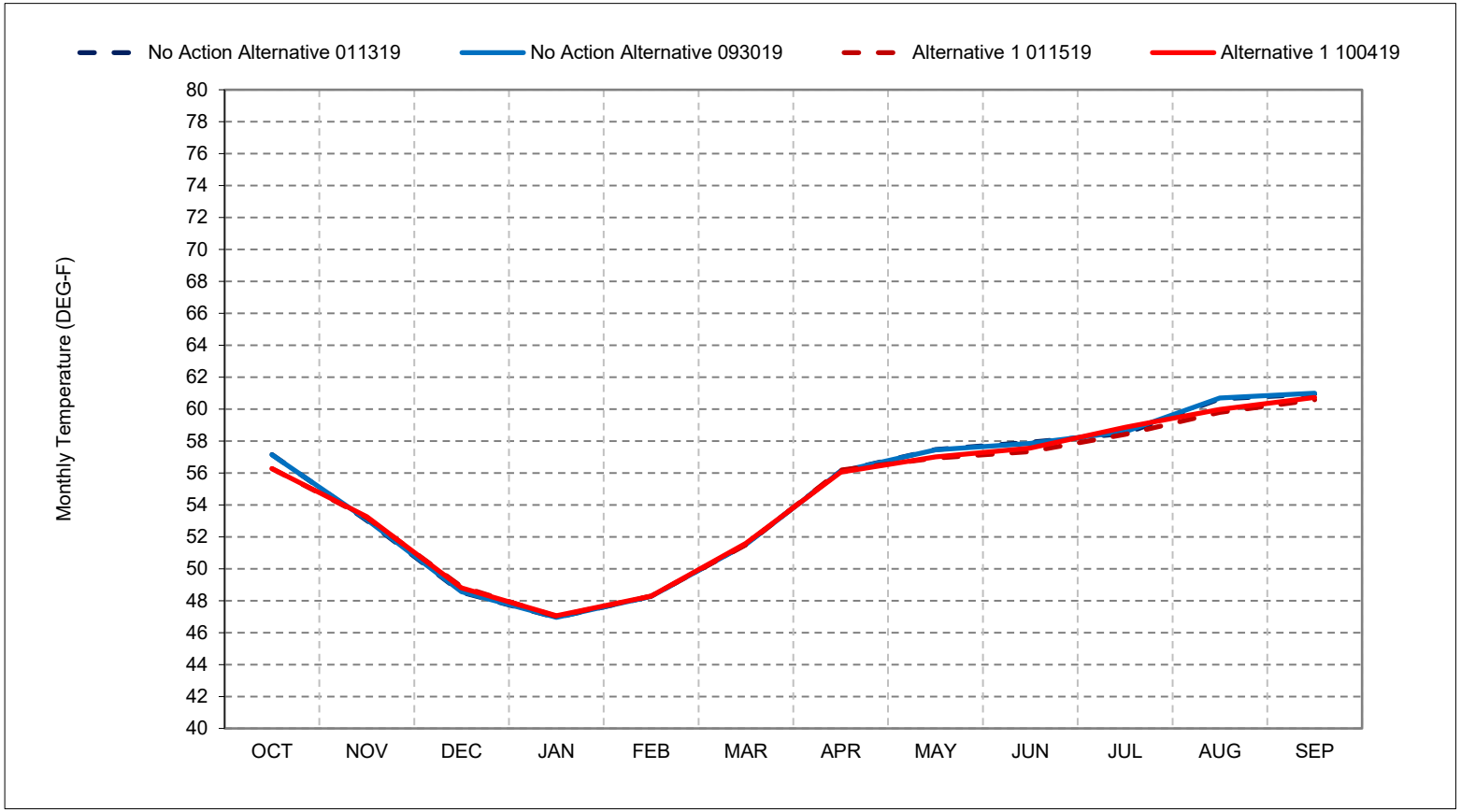



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-5. Sacramento River at Red Bluff, Dry Year Average Temperature

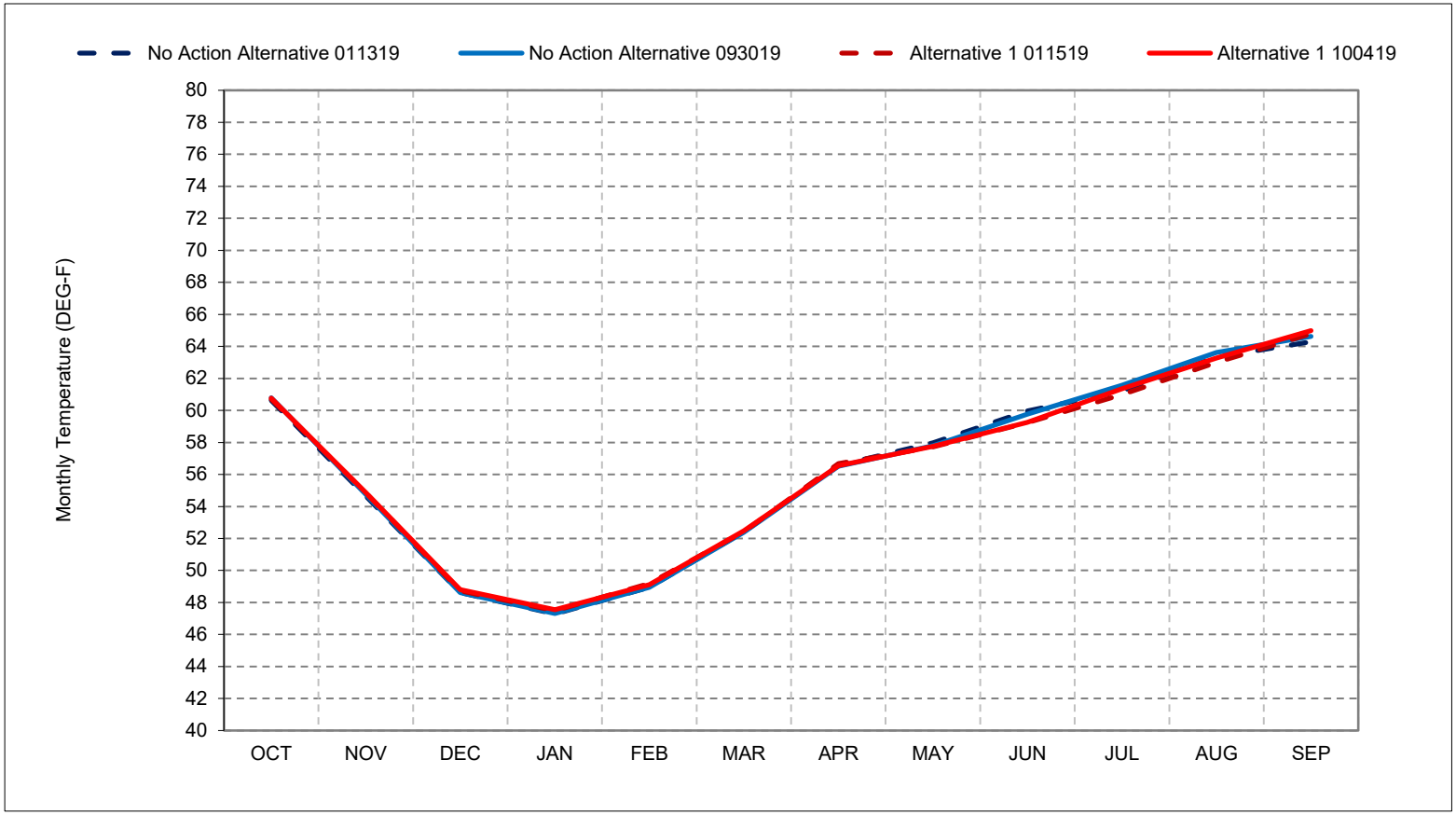



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-6. Sacramento River at Red Bluff, Critical Year Average Temperature

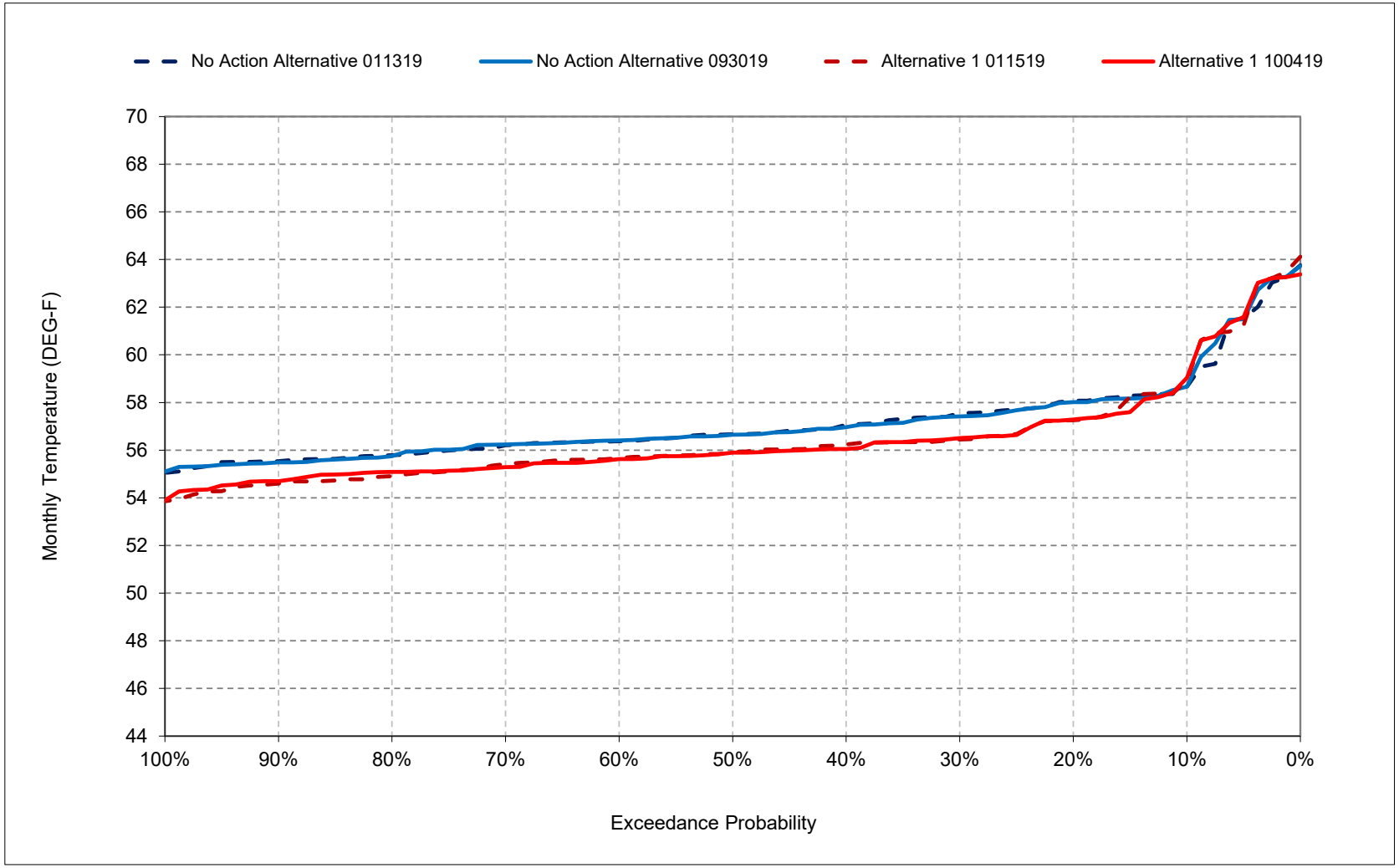



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

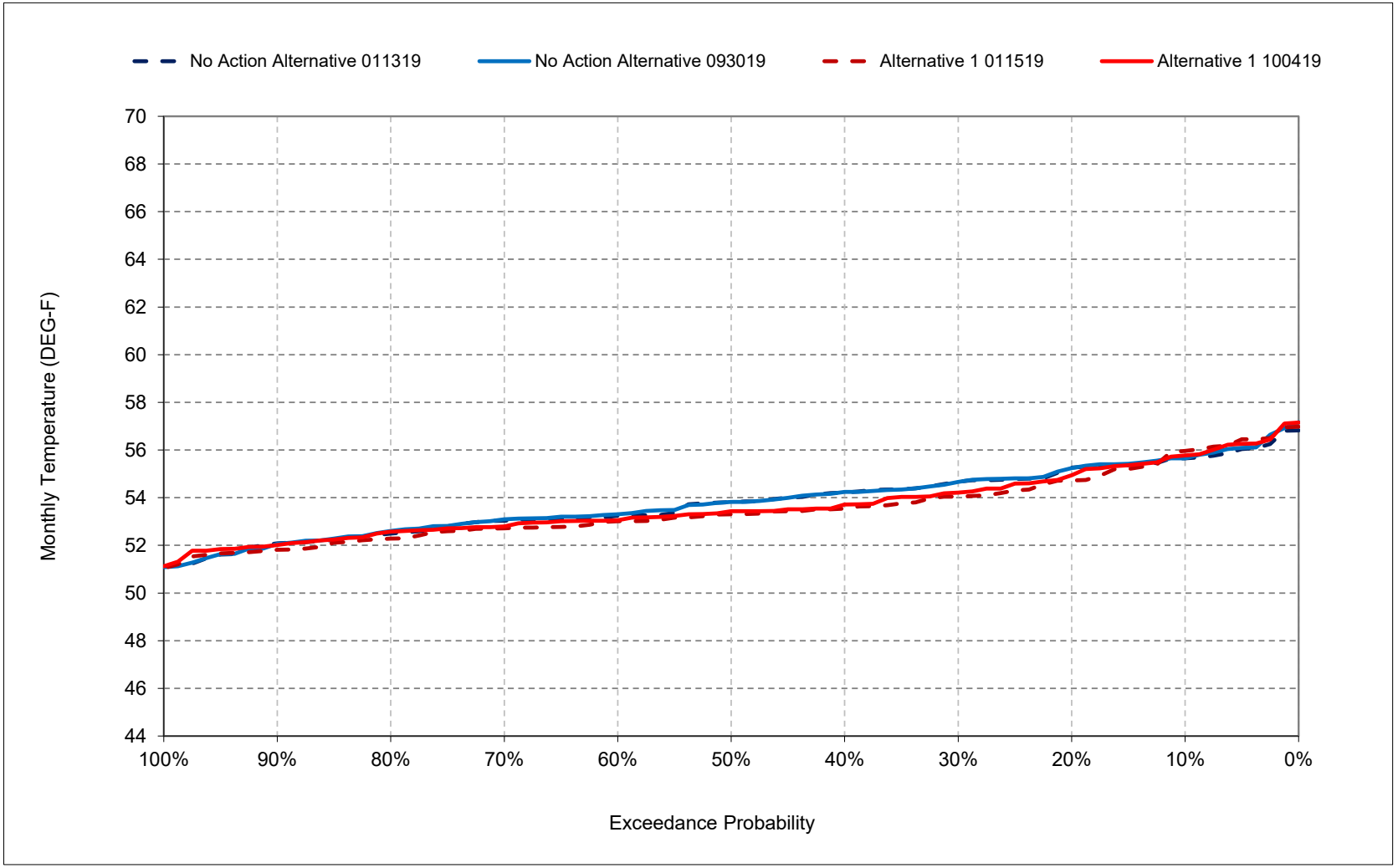
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-7. Sacramento River at Red Bluff, October**



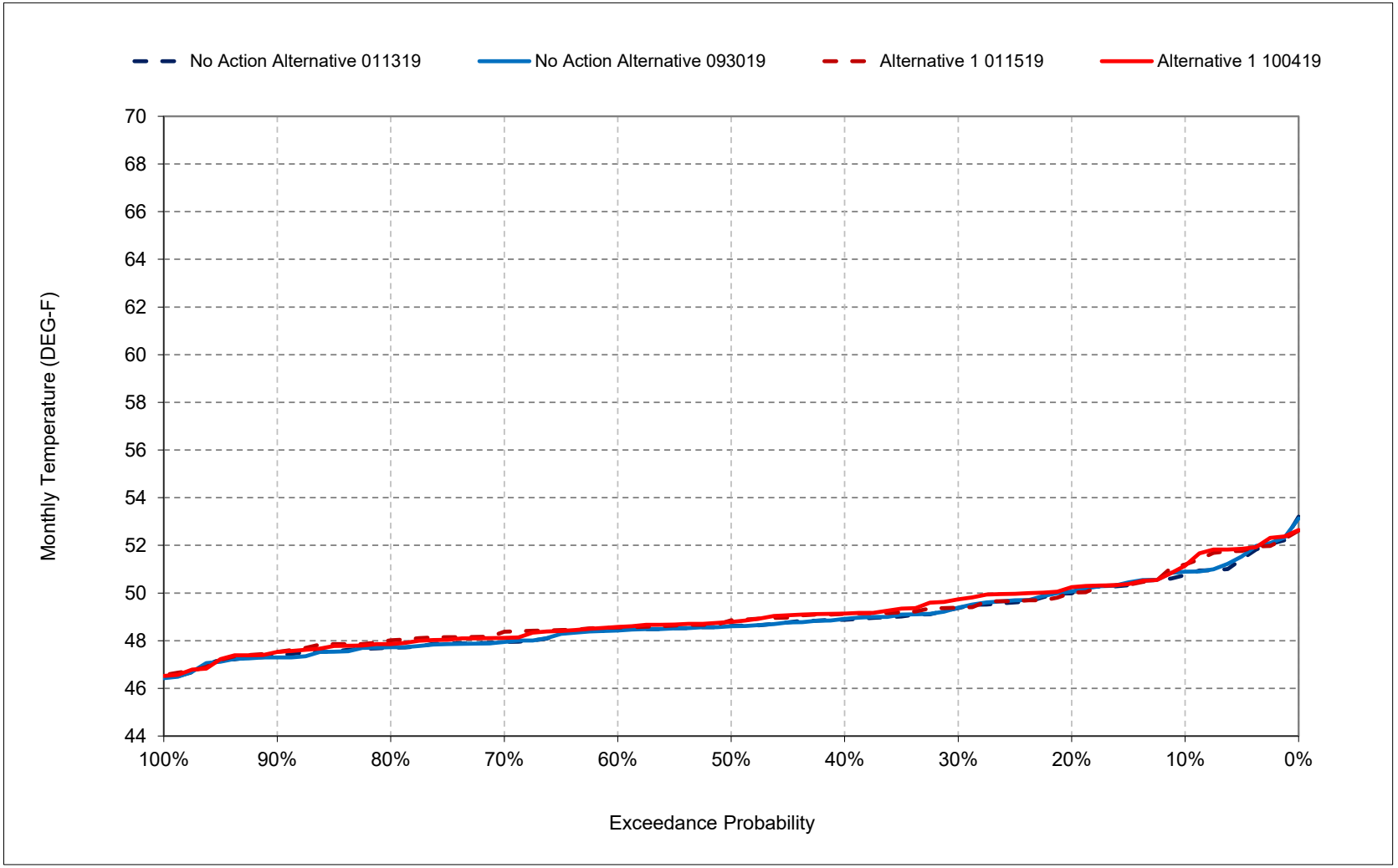

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-8. Sacramento River at Red Bluff, November**



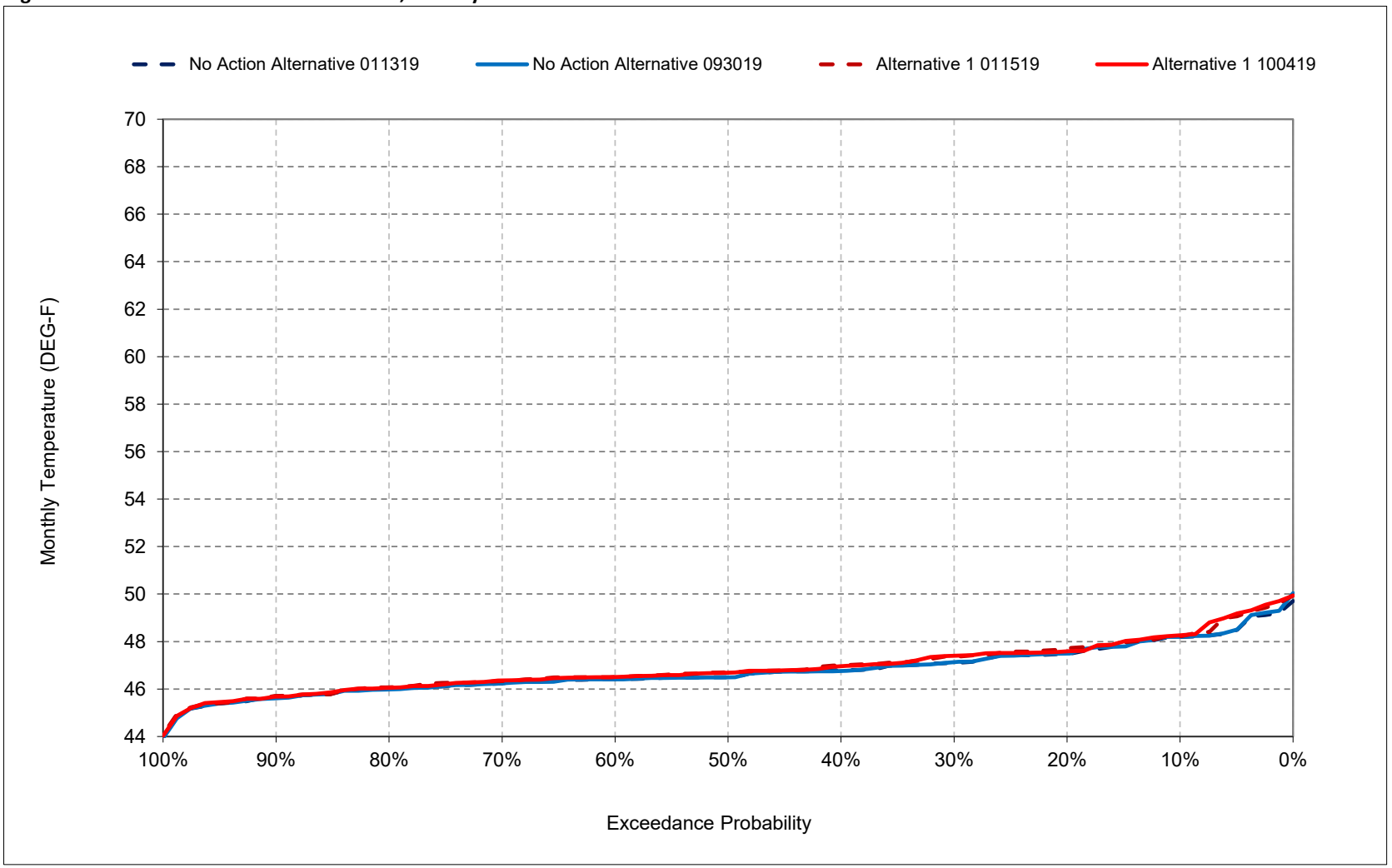

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-9. Sacramento River at Red Bluff, December**



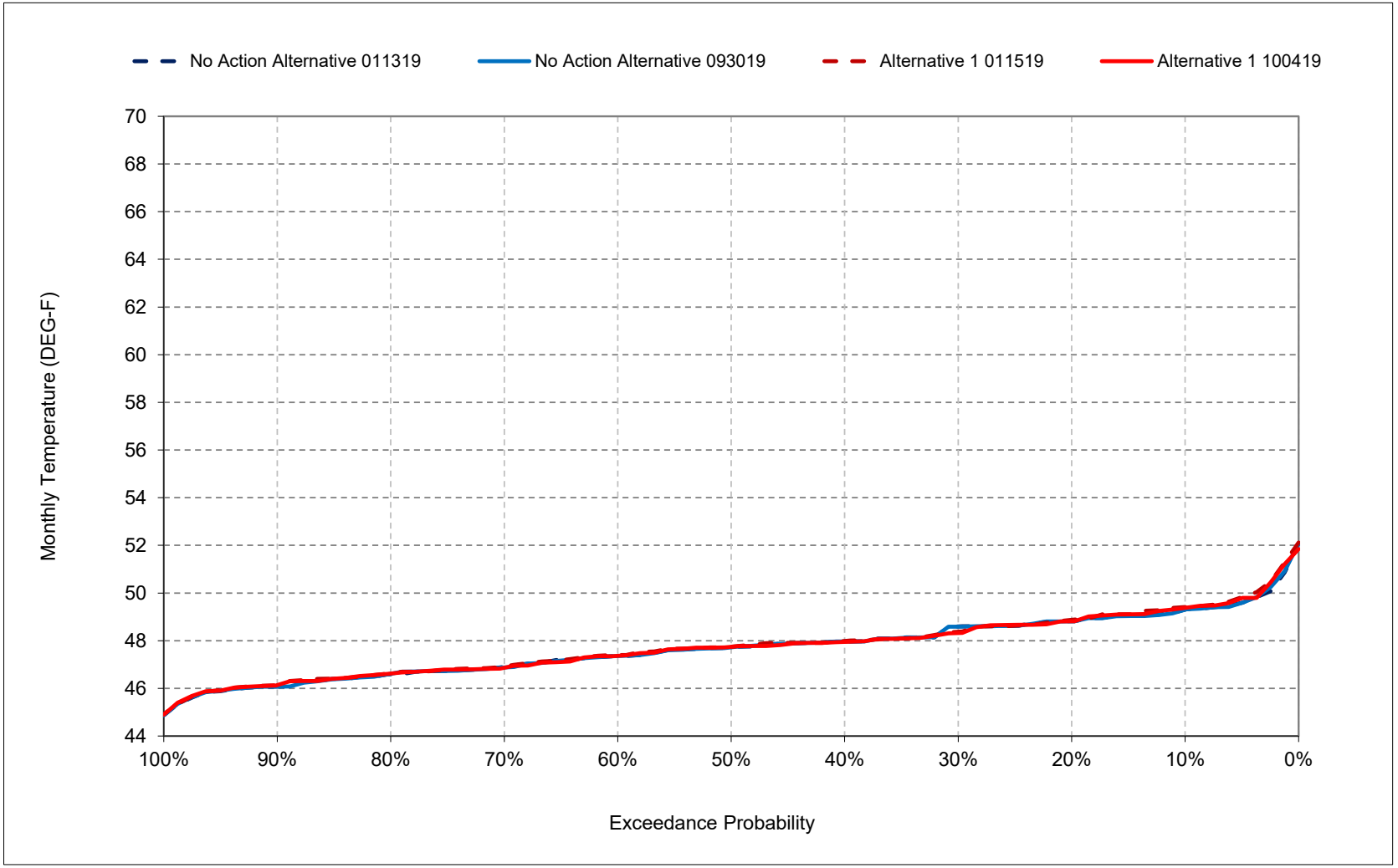

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-10. Sacramento River at Red Bluff, January**



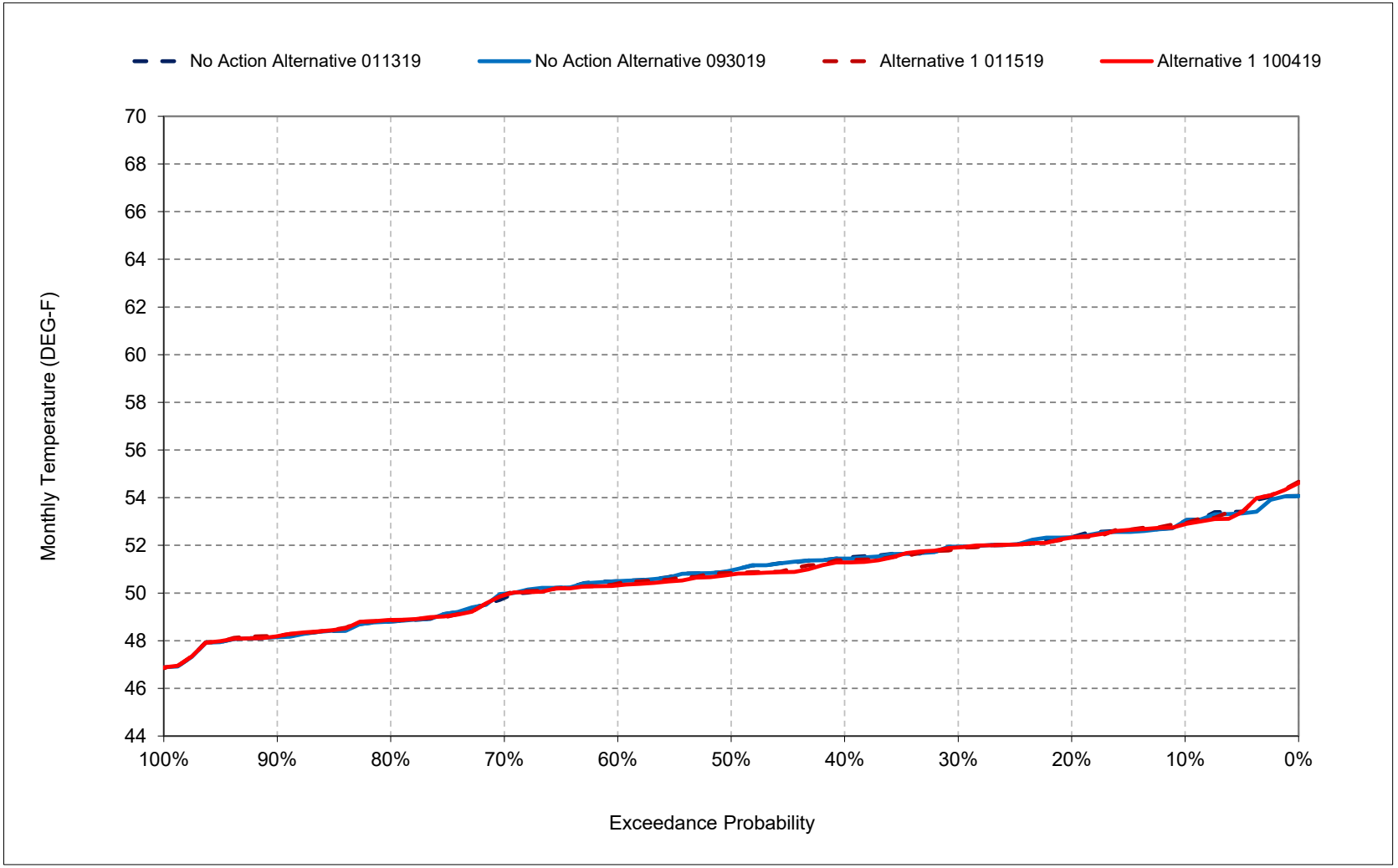

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-11. Sacramento River at Red Bluff, February**



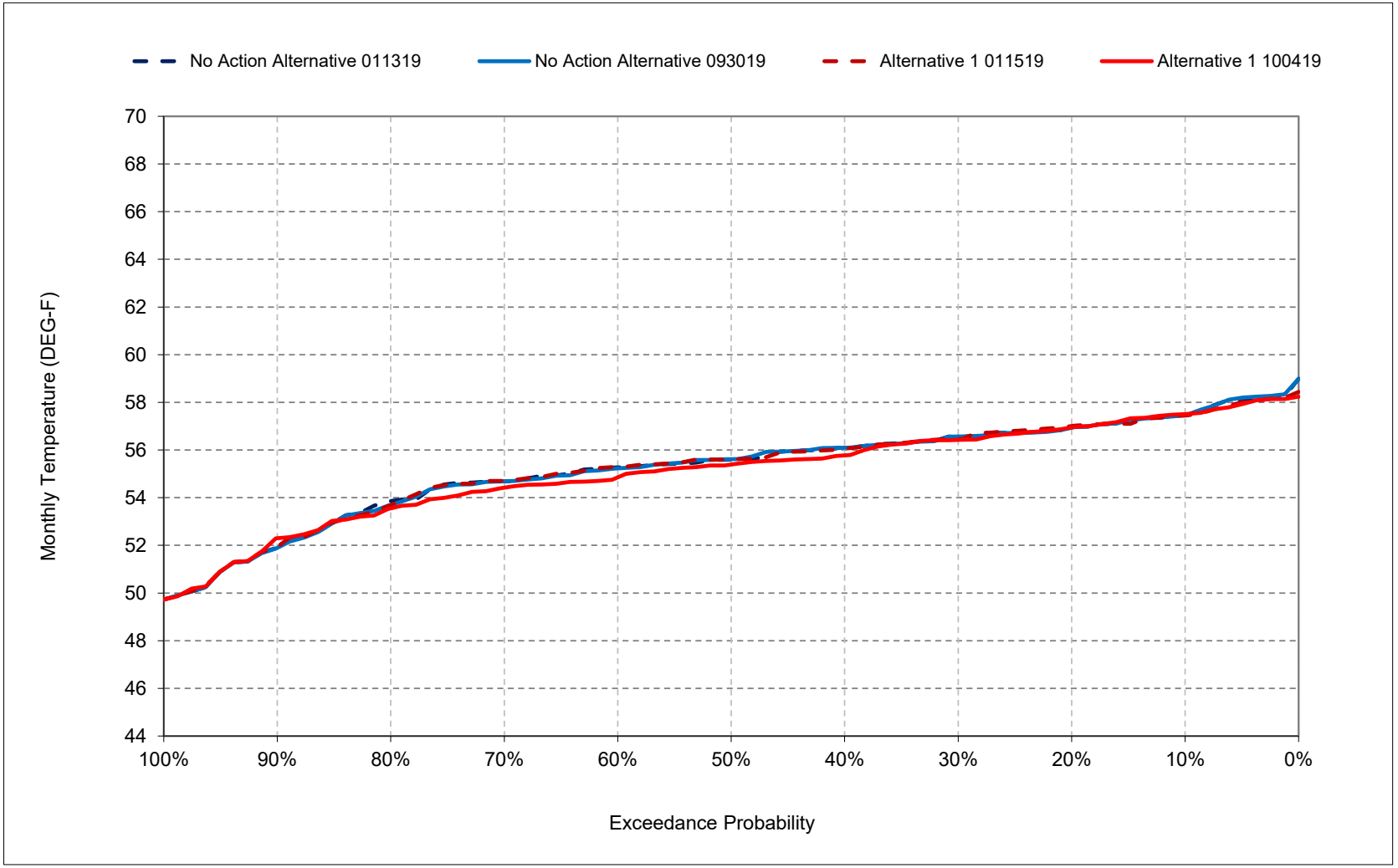

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-12. Sacramento River at Red Bluff, March**



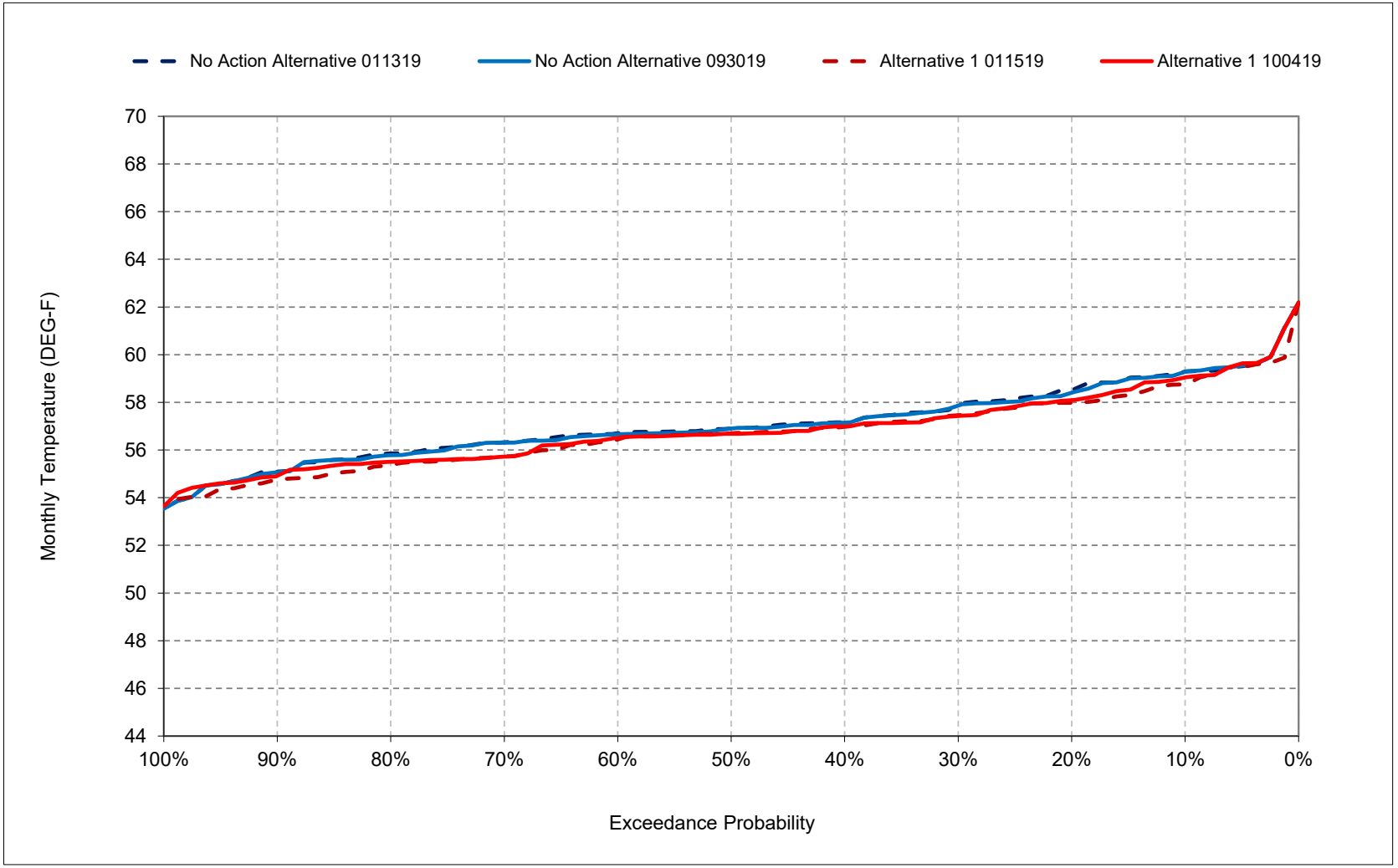

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-13. Sacramento River at Red Bluff, April**



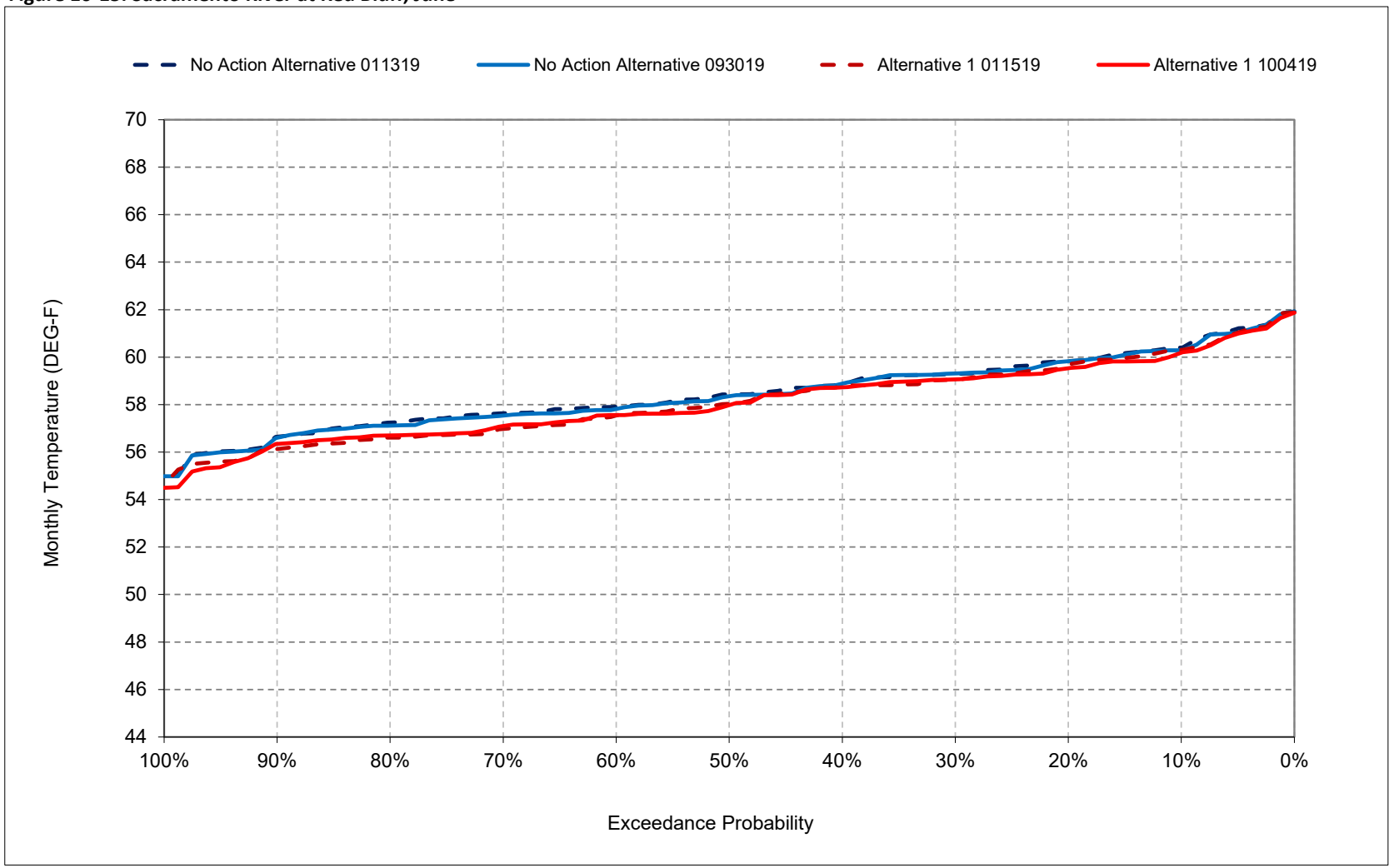

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-14. Sacramento River at Red Bluff, May**



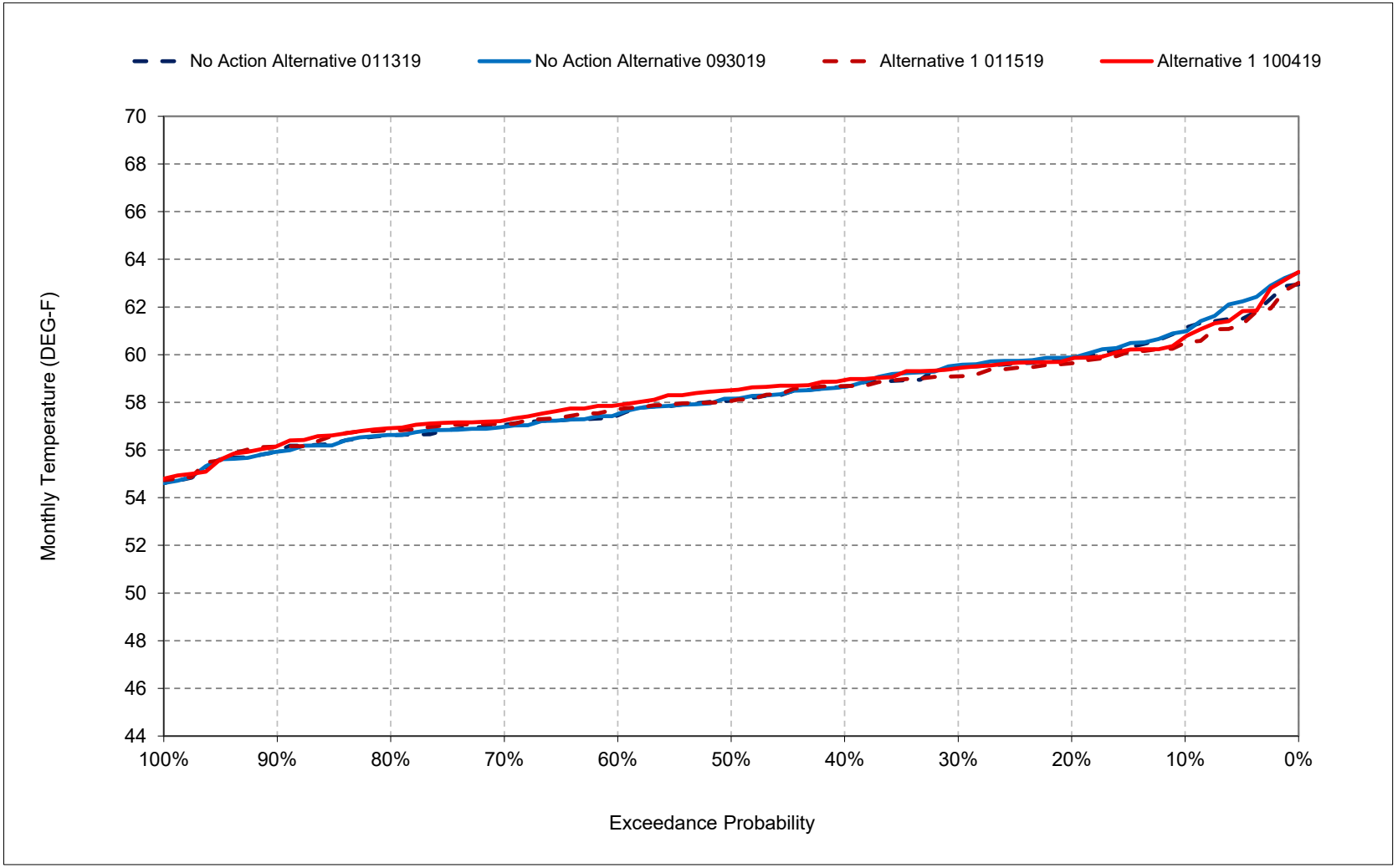

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-15. Sacramento River at Red Bluff, June**



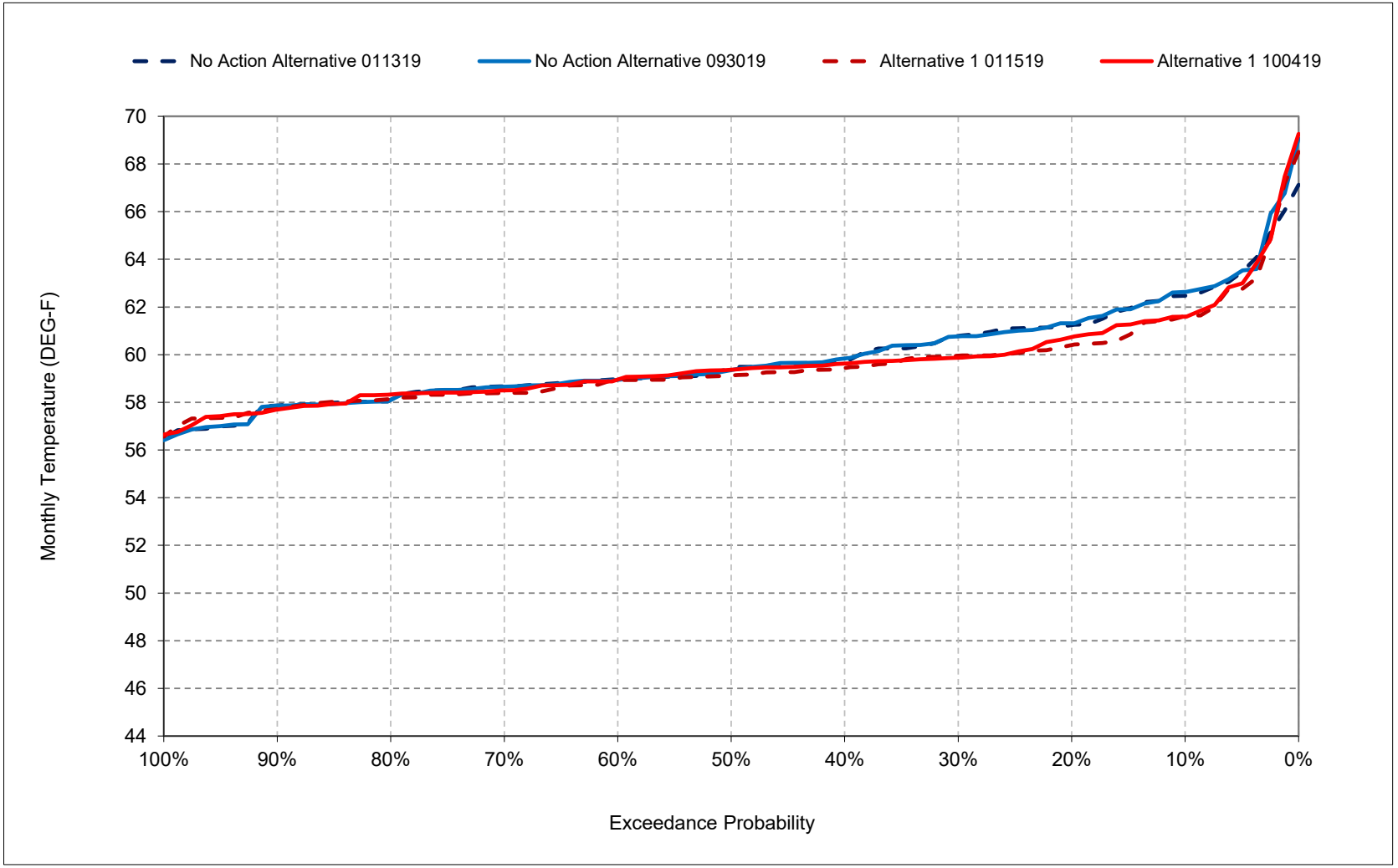

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-16. Sacramento River at Red Bluff, July**



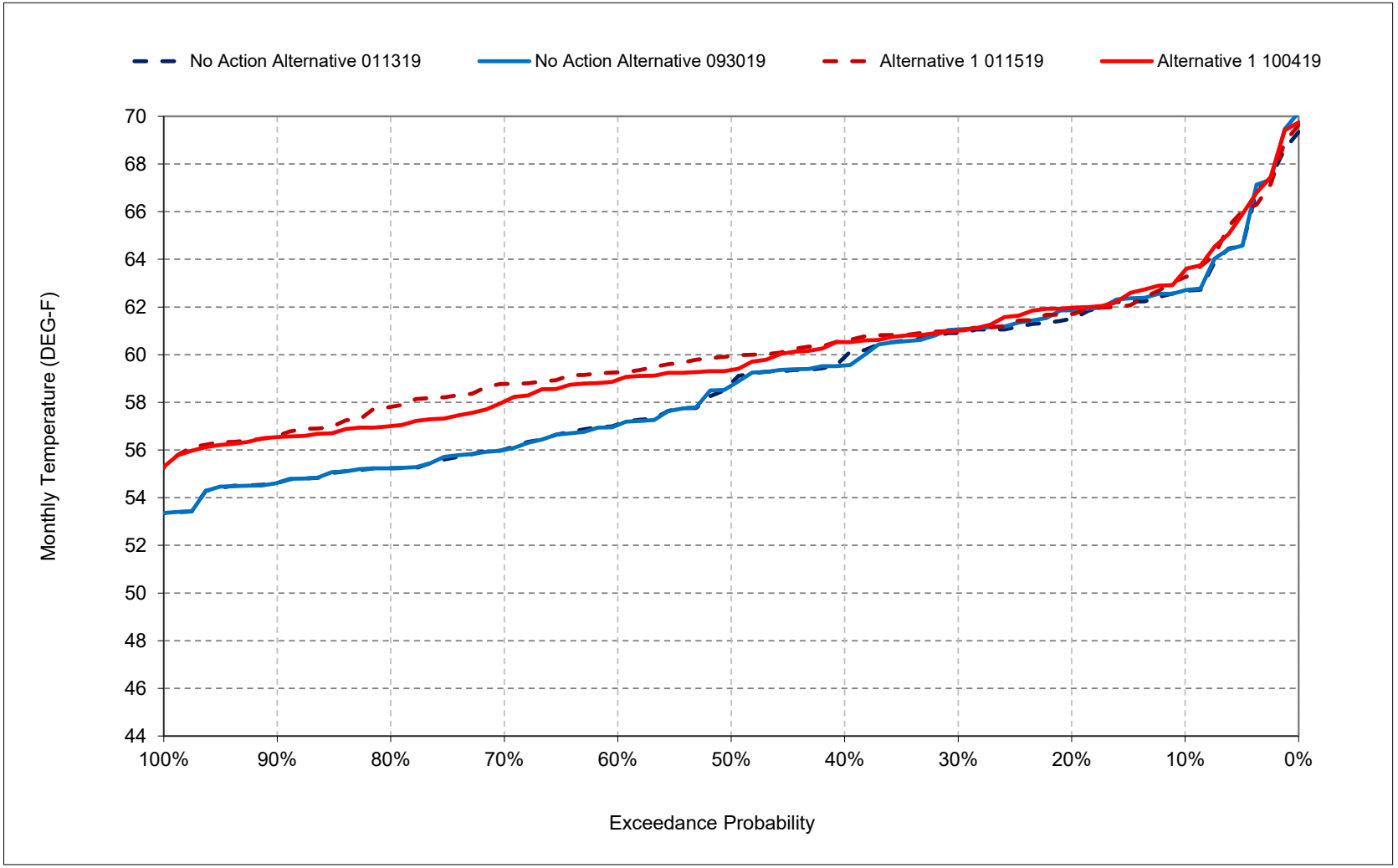

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-17. Sacramento River at Red Bluff, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-18. Sacramento River at Red Bluff, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-1. Sacramento River below Hamilton City, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.6 | 55.9 | 50.2 | 48.2 | 50.3 | 54.8 | 60.1 | 63.2 | 65.5 | 65.6 | 67.3 | 67.1 |
| 20% | 60.0 | 55.1 | 49.7 | 47.7 | 49.6 | 53.9 | 59.6 | 62.7 | 64.8 | 65.0 | 66.2 | 65.7 |
| 30% | 59.5 | 54.7 | 48.9 | 47.1 | 49.1 | 53.3 | 59.0 | 62.2 | 64.3 | 64.4 | 65.6 | 65.1 |
| 40% | 58.9 | 54.2 | 48.5 | 46.8 | 48.6 | 52.8 | 58.5 | 61.4 | 63.9 | 63.4 | 64.8 | 63.9 |
| 50% | 58.4 | 53.8 | 48.4 | 46.6 | 48.3 | 52.2 | 57.9 | 61.0 | 63.2 | 62.9 | 64.2 | 62.5 |
| 60% | 58.2 | 53.4 | 48.1 | 46.4 | 48.0 | 51.5 | 57.6 | 60.6 | 62.9 | 62.2 | 63.7 | 60.3 |
| 70% | 57.7 | 53.2 | 47.7 | 46.2 | 47.6 | 50.9 | 56.6 | 60.1 | 62.3 | 61.4 | 63.2 | 59.2 |
| 80% | 57.5 | 52.7 | 47.6 | 46.0 | 47.0 | 49.6 | 55.3 | 59.7 | 61.9 | 60.8 | 62.8 | 58.1 |
| 90% | 57.1 | 52.1 | 47.2 | 45.7 | 46.4 | 49.1 | 53.6 | 58.4 | 61.0 | 60.2 | 62.2 | 57.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.9 | 53.9 | 48.6 | 46.8 | 48.4 | 52.0 | 57.5 | 61.0 | 63.3 | 63.0 | 64.5 | 62.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.8 | 54.3 | 48.9 | 46.5 | 47.4 | 50.4 | 55.4 | 60.2 | 64.1 | 63.0 | 63.7 | 58.2 |
| Above Normal (16%) | 58.0 | 53.6 | 48.6 | 46.7 | 47.6 | 51.1 | 56.8 | 61.0 | 62.8 | 61.0 | 62.9 | 59.6 |
| Below Normal (13%) | 58.5 | 53.5 | 48.5 | 46.7 | 48.6 | 53.1 | 58.9 | 60.7 | 62.0 | 61.8 | 63.2 | 64.2 |
| Dry (24%) | 59.1 | 53.3 | 48.3 | 46.9 | 49.0 | 52.8 | 58.5 | 61.5 | 62.7 | 63.1 | 65.3 | 65.1 |
| Critical (15%) | 62.2 | 54.8 | 48.3 | 47.4 | 50.0 | 54.2 | 59.6 | 62.1 | 64.5 | 65.9 | 67.9 | 67.9 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.9 | 56.2 | 50.8 | 48.2 | 50.3 | 54.7 | 60.2 | 63.0 | 65.2 | 65.7 | 66.8 | 67.4 |
| 20% | 59.2 | 54.8 | 49.5 | 47.8 | 49.6 | 53.8 | 59.6 | 62.1 | 64.7 | 65.0 | 65.4 | 66.1 |
| 30% | 58.8 | 54.4 | 48.9 | 47.3 | 48.8 | 53.3 | 59.0 | 61.4 | 64.1 | 64.2 | 64.9 | 65.4 |
| 40% | 58.4 | 53.6 | 48.7 | 46.9 | 48.6 | 52.7 | 58.5 | 61.0 | 63.6 | 63.6 | 64.4 | 64.9 |
| 50% | 57.9 | 53.3 | 48.5 | 46.8 | 48.3 | 51.9 | 58.0 | 60.6 | 63.0 | 63.0 | 63.9 | 64.1 |
| 60% | 57.7 | 53.1 | 48.3 | 46.5 | 48.0 | 51.4 | 57.5 | 60.1 | 62.0 | 62.1 | 63.7 | 63.5 |
| 70% | 57.4 | 52.8 | 48.0 | 46.3 | 47.6 | 50.9 | 56.4 | 59.6 | 61.6 | 61.5 | 63.0 | 62.9 |
| 80% | 56.9 | 52.4 | 47.8 | 46.0 | 46.9 | 49.7 | 55.3 | 59.1 | 61.1 | 61.0 | 62.7 | 61.5 |
| 90% | 56.3 | 52.1 | 47.4 | 45.7 | 46.5 | 49.1 | 53.6 | 58.4 | 60.4 | 60.3 | 62.1 | 60.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.4 | 53.7 | 48.7 | 46.9 | 48.4 | 52.0 | 57.4 | 60.6 | 62.9 | 63.0 | 64.2 | 64.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.2 | 53.7 | 49.0 | 46.6 | 47.4 | 50.4 | 55.3 | 60.0 | 64.1 | 63.1 | 63.5 | 61.7 |
| Above Normal (16%) | 57.4 | 52.8 | 48.5 | 46.8 | 47.6 | 51.0 | 56.8 | 60.6 | 62.6 | 61.0 | 63.0 | 64.2 |
| Below Normal (13%) | 58.3 | 53.7 | 48.7 | 46.8 | 48.6 | 52.9 | 58.6 | 60.0 | 61.2 | 61.7 | 62.9 | 63.5 |
| Dry (24%) | 58.4 | 53.4 | 48.6 | 47.0 | 49.0 | 52.8 | 58.5 | 60.9 | 61.9 | 63.1 | 64.7 | 64.9 |
| Critical (15%) | 62.2 | 55.0 | 48.4 | 47.5 | 50.2 | 54.2 | 59.7 | 61.8 | 63.7 | 65.9 | 67.6 | 68.2 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.3** | **0.3** | **0.6** | **0.0** | **0.0** | -0.1 | **0.1** | -0.3 | -0.2 | **0.1** | -0.5 | **0.3** |
| 20% | -0.9 | -0.3 | -0.2 | **0.1** | **0.0** | -0.1 | 0.0 | -0.5 | -0.1 | 0.0 | -0.8 | **0.4** |
| 30% | -0.7 | -0.3 | 0.0 | **0.2** | -0.3 | -0.1 | 0.0 | -0.7 | -0.3 | -0.2 | -0.7 | **0.3** |
| 40% | -0.5 | -0.6 | **0.1** | **0.1** | **0.1** | -0.1 | **0.0** | -0.4 | -0.4 | **0.2** | -0.4 | **1.0** |
| 50% | -0.5 | -0.5 | **0.1** | **0.2** | **0.0** | -0.3 | **0.0** | -0.4 | -0.2 | **0.1** | -0.3 | **1.6** |
| 60% | -0.4 | -0.3 | **0.1** | **0.1** | **0.0** | -0.1 | -0.1 | -0.5 | -0.9 | 0.0 | 0.0 | **3.2** |
| 70% | -0.3 | -0.4 | **0.3** | **0.1** | 0.0 | 0.0 | -0.2 | -0.5 | -0.8 | **0.1** | -0.2 | **3.7** |
| 80% | -0.6 | -0.3 | **0.2** | **0.0** | 0.0 | **0.0** | **0.0** | -0.6 | -0.9 | **0.2** | -0.1 | **3.4** |
| 90% | -0.8 | **0.0** | **0.1** | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | -0.6 | **0.2** | 0.0 | **2.7** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.5 | -0.2 | **0.1** | **0.1** | **0.0** | -0.1 | 0.0 | -0.4 | -0.5 | **0.0** | -0.3 | **1.7** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -0.6 | -0.6 | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | -0.2 | -0.1 | **0.1** | -0.2 | **3.5** |
| Above Normal (16%) | -0.6 | -0.8 | -0.1 | **0.1** | **0.0** | -0.1 | **0.0** | -0.4 | -0.2 | **0.1** | **0.1** | **4.6** |
| Below Normal (13%) | -0.2 | **0.2** | **0.2** | **0.1** | -0.1 | -0.2 | -0.3 | -0.7 | -0.7 | -0.1 | -0.3 | -0.7 |
| Dry (24%) | -0.7 | **0.1** | **0.3** | **0.1** | **0.0** | 0.0 | **0.0** | -0.6 | -0.8 | **0.0** | -0.7 | -0.2 |
| Critical (15%) | **0.1** | **0.1** | **0.1** | **0.2** | **0.2** | -0.1 | **0.1** | -0.3 | -0.8 | 0.0 | -0.2 | **0.3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-2. Sacramento River below Hamilton City, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 55.9 | 50.2 | 48.2 | 50.2 | 54.8 | 60.1 | 63.1 | 65.2 | 66.0 | 67.2 | 67.1 |
| 20% | 60.0 | 55.2 | 49.7 | 47.7 | 49.6 | 53.9 | 59.6 | 62.5 | 64.8 | 65.2 | 66.1 | 66.0 |
| 30% | 59.3 | 54.7 | 49.0 | 47.1 | 49.1 | 53.3 | 59.0 | 62.2 | 64.3 | 64.5 | 65.5 | 65.1 |
| 40% | 58.8 | 54.2 | 48.5 | 46.8 | 48.6 | 52.8 | 58.5 | 61.4 | 63.8 | 63.6 | 64.9 | 63.9 |
| 50% | 58.4 | 53.8 | 48.3 | 46.6 | 48.3 | 52.2 | 57.9 | 60.9 | 63.3 | 63.0 | 64.4 | 62.4 |
| 60% | 58.2 | 53.5 | 48.1 | 46.4 | 48.0 | 51.5 | 57.6 | 60.5 | 62.8 | 62.2 | 63.8 | 60.3 |
| 70% | 57.8 | 53.1 | 47.7 | 46.2 | 47.6 | 51.0 | 56.6 | 60.0 | 62.3 | 61.7 | 63.1 | 59.2 |
| 80% | 57.5 | 52.7 | 47.5 | 46.0 | 46.9 | 49.6 | 55.3 | 59.7 | 61.8 | 60.8 | 62.8 | 58.2 |
| 90% | 57.1 | 52.0 | 47.2 | 45.7 | 46.4 | 49.1 | 53.6 | 58.3 | 61.0 | 60.1 | 62.1 | 57.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.9 | 53.9 | 48.6 | 46.8 | 48.4 | 52.0 | 57.4 | 61.0 | 63.3 | 63.1 | 64.5 | 62.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.8 | 54.3 | 48.9 | 46.5 | 47.4 | 50.4 | 55.4 | 60.2 | 64.1 | 63.0 | 63.6 | 58.2 |
| Above Normal (16%) | 57.9 | 53.6 | 48.6 | 46.7 | 47.6 | 51.1 | 56.8 | 60.9 | 62.8 | 61.0 | 62.9 | 59.6 |
| Below Normal (13%) | 58.6 | 53.5 | 48.5 | 46.7 | 48.7 | 53.1 | 59.0 | 60.7 | 62.0 | 61.9 | 63.1 | 64.0 |
| Dry (24%) | 59.1 | 53.3 | 48.3 | 47.0 | 49.0 | 52.8 | 58.4 | 61.5 | 62.6 | 63.2 | 65.4 | 65.2 |
| Critical (15%) | 62.3 | 54.9 | 48.3 | 47.4 | 50.0 | 54.2 | 59.6 | 61.9 | 64.2 | 66.3 | 68.1 | 68.1 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 61.0 | 55.9 | 50.7 | 48.3 | 50.2 | 54.7 | 60.2 | 63.1 | 65.1 | 66.2 | 66.9 | 67.6 |
| 20% | 59.4 | 55.2 | 49.7 | 47.7 | 49.6 | 53.8 | 59.4 | 62.2 | 64.6 | 65.1 | 65.8 | 66.3 |
| 30% | 58.7 | 54.3 | 49.2 | 47.3 | 48.9 | 53.3 | 58.7 | 61.5 | 64.1 | 64.6 | 64.9 | 65.6 |
| 40% | 58.3 | 53.6 | 48.7 | 46.9 | 48.6 | 52.5 | 58.2 | 61.0 | 63.4 | 64.0 | 64.4 | 64.7 |
| 50% | 57.8 | 53.4 | 48.5 | 46.7 | 48.3 | 51.9 | 57.8 | 60.6 | 63.0 | 63.3 | 64.3 | 63.6 |
| 60% | 57.7 | 53.2 | 48.3 | 46.5 | 48.0 | 51.5 | 57.0 | 60.1 | 62.0 | 62.8 | 63.8 | 62.8 |
| 70% | 57.3 | 52.9 | 47.9 | 46.3 | 47.6 | 50.9 | 56.4 | 59.7 | 61.6 | 61.9 | 63.1 | 62.2 |
| 80% | 57.0 | 52.5 | 47.7 | 46.0 | 46.9 | 49.7 | 55.2 | 59.2 | 61.0 | 61.0 | 62.8 | 60.8 |
| 90% | 56.7 | 52.2 | 47.3 | 45.7 | 46.5 | 49.1 | 53.8 | 58.4 | 60.4 | 60.4 | 62.2 | 60.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.4 | 53.8 | 48.7 | 46.9 | 48.4 | 51.9 | 57.3 | 60.7 | 62.9 | 63.3 | 64.4 | 63.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.2 | 53.8 | 49.1 | 46.5 | 47.4 | 50.3 | 55.2 | 60.2 | 63.9 | 63.0 | 63.5 | 61.7 |
| Above Normal (16%) | 57.4 | 53.2 | 48.7 | 46.8 | 47.6 | 50.9 | 56.6 | 60.7 | 62.4 | 61.2 | 62.9 | 61.7 |
| Below Normal (13%) | 58.1 | 53.7 | 48.7 | 46.8 | 48.5 | 52.9 | 58.7 | 60.1 | 61.2 | 62.2 | 63.5 | 64.3 |
| Dry (24%) | 58.4 | 53.4 | 48.5 | 47.0 | 49.0 | 52.9 | 58.4 | 61.0 | 62.2 | 63.7 | 64.9 | 65.0 |
| Critical (15%) | 62.3 | 55.0 | 48.4 | 47.6 | 50.1 | 54.3 | 59.6 | 61.8 | 63.8 | 66.4 | 68.0 | 68.5 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.3 | 0.0 | 0.5 | 0.0 | 0.1 | -0.1 | 0.1 | -0.1 | -0.1 | 0.2 | -0.3 | 0.4 |
| 20% | -0.6 | 0.0 | 0.0 | 0.1 | 0.0 | -0.1 | -0.2 | -0.3 | -0.3 | -0.1 | -0.3 | 0.3 |
| 30% | -0.6 | -0.3 | 0.2 | 0.2 | -0.2 | -0.1 | -0.3 | -0.6 | -0.2 | 0.1 | -0.5 | 0.5 |
| 40% | -0.5 | -0.5 | 0.2 | 0.1 | 0.0 | -0.3 | -0.3 | -0.4 | -0.4 | 0.4 | -0.4 | 0.8 |
| 50% | -0.6 | -0.4 | 0.2 | 0.2 | 0.0 | -0.3 | -0.2 | -0.3 | -0.3 | 0.4 | 0.0 | 1.1 |
| 60% | -0.5 | -0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.6 | -0.4 | -0.7 | 0.6 | 0.1 | 2.5 |
| 70% | -0.5 | -0.3 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | -0.4 | -0.6 | 0.2 | 0.0 | 3.1 |
| 80% | -0.5 | -0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | -0.5 | -0.7 | 0.2 | 0.0 | 2.7 |
| 90% | -0.4 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | -0.6 | 0.2 | 0.1 | 2.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.5 | -0.2 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | -0.3 | -0.4 | 0.2 | -0.2 | 1.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -0.6 | -0.5 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | 0.0 | -0.2 | 0.0 | -0.2 | 3.5 |
| Above Normal (16%) | -0.5 | -0.4 | 0.1 | 0.1 | 0.0 | -0.2 | -0.2 | -0.2 | -0.4 | 0.2 | 0.0 | 2.1 |
| Below Normal (13%) | -0.4 | 0.1 | 0.2 | 0.1 | -0.1 | -0.2 | -0.3 | -0.6 | -0.9 | 0.3 | 0.5 | 0.3 |
| Dry (24%) | -0.6 | 0.1 | 0.2 | 0.1 | 0.0 | 0.1 | -0.1 | -0.5 | -0.4 | 0.5 | -0.5 | -0.1 |
| Critical (15%) | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.1 | -0.4 | 0.0 | -0.2 | 0.3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-3. Sacramento River below Hamilton City, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.6 | 55.9 | 50.2 | 48.2 | 50.3 | 54.8 | 60.1 | 63.2 | 65.5 | 65.6 | 67.3 | 67.1 |
| 20% | 60.0 | 55.1 | 49.7 | 47.7 | 49.6 | 53.9 | 59.6 | 62.7 | 64.8 | 65.0 | 66.2 | 65.7 |
| 30% | 59.5 | 54.7 | 48.9 | 47.1 | 49.1 | 53.3 | 59.0 | 62.2 | 64.3 | 64.4 | 65.6 | 65.1 |
| 40% | 58.9 | 54.2 | 48.5 | 46.8 | 48.6 | 52.8 | 58.5 | 61.4 | 63.9 | 63.4 | 64.8 | 63.9 |
| 50% | 58.4 | 53.8 | 48.4 | 46.6 | 48.3 | 52.2 | 57.9 | 61.0 | 63.2 | 62.9 | 64.2 | 62.5 |
| 60% | 58.2 | 53.4 | 48.1 | 46.4 | 48.0 | 51.5 | 57.6 | 60.6 | 62.9 | 62.2 | 63.7 | 60.3 |
| 70% | 57.7 | 53.2 | 47.7 | 46.2 | 47.6 | 50.9 | 56.6 | 60.1 | 62.3 | 61.4 | 63.2 | 59.2 |
| 80% | 57.5 | 52.7 | 47.6 | 46.0 | 47.0 | 49.6 | 55.3 | 59.7 | 61.9 | 60.8 | 62.8 | 58.1 |
| 90% | 57.1 | 52.1 | 47.2 | 45.7 | 46.4 | 49.1 | 53.6 | 58.4 | 61.0 | 60.2 | 62.2 | 57.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.9 | 53.9 | 48.6 | 46.8 | 48.4 | 52.0 | 57.5 | 61.0 | 63.3 | 63.0 | 64.5 | 62.3 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.8 | 54.3 | 48.9 | 46.5 | 47.4 | 50.4 | 55.4 | 60.2 | 64.1 | 63.0 | 63.7 | 58.2 |
| Above Normal (16%) | 58.0 | 53.6 | 48.6 | 46.7 | 47.6 | 51.1 | 56.8 | 61.0 | 62.8 | 61.0 | 62.9 | 59.6 |
| Below Normal (13%) | 58.5 | 53.5 | 48.5 | 46.7 | 48.6 | 53.1 | 58.9 | 60.7 | 62.0 | 61.8 | 63.2 | 64.2 |
| Dry (24%) | 59.1 | 53.3 | 48.3 | 46.9 | 49.0 | 52.8 | 58.5 | 61.5 | 62.7 | 63.1 | 65.3 | 65.1 |
| Critical (15%) | 62.2 | 54.8 | 48.3 | 47.4 | 50.0 | 54.2 | 59.6 | 62.1 | 64.5 | 65.9 | 67.9 | 67.9 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 55.9 | 50.2 | 48.2 | 50.2 | 54.8 | 60.1 | 63.1 | 65.2 | 66.0 | 67.2 | 67.1 |
| 20% | 60.0 | 55.2 | 49.7 | 47.7 | 49.6 | 53.9 | 59.6 | 62.5 | 64.8 | 65.2 | 66.1 | 66.0 |
| 30% | 59.3 | 54.7 | 49.0 | 47.1 | 49.1 | 53.3 | 59.0 | 62.2 | 64.3 | 64.5 | 65.5 | 65.1 |
| 40% | 58.8 | 54.2 | 48.5 | 46.8 | 48.6 | 52.8 | 58.5 | 61.4 | 63.8 | 63.6 | 64.9 | 63.9 |
| 50% | 58.4 | 53.8 | 48.3 | 46.6 | 48.3 | 52.2 | 57.9 | 60.9 | 63.3 | 63.0 | 64.4 | 62.4 |
| 60% | 58.2 | 53.5 | 48.1 | 46.4 | 48.0 | 51.5 | 57.6 | 60.5 | 62.8 | 62.2 | 63.8 | 60.3 |
| 70% | 57.8 | 53.1 | 47.7 | 46.2 | 47.6 | 51.0 | 56.6 | 60.0 | 62.3 | 61.7 | 63.1 | 59.2 |
| 80% | 57.5 | 52.7 | 47.5 | 46.0 | 46.9 | 49.6 | 55.3 | 59.7 | 61.8 | 60.8 | 62.8 | 58.2 |
| 90% | 57.1 | 52.0 | 47.2 | 45.7 | 46.4 | 49.1 | 53.6 | 58.3 | 61.0 | 60.1 | 62.1 | 57.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.9 | 53.9 | 48.6 | 46.8 | 48.4 | 52.0 | 57.4 | 61.0 | 63.3 | 63.1 | 64.5 | 62.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.8 | 54.3 | 48.9 | 46.5 | 47.4 | 50.4 | 55.4 | 60.2 | 64.1 | 63.0 | 63.6 | 58.2 |
| Above Normal (16%) | 57.9 | 53.6 | 48.6 | 46.7 | 47.6 | 51.1 | 56.8 | 60.9 | 62.8 | 61.0 | 62.9 | 59.6 |
| Below Normal (13%) | 58.6 | 53.5 | 48.5 | 46.7 | 48.7 | 53.1 | 59.0 | 60.7 | 62.0 | 61.9 | 63.1 | 64.0 |
| Dry (24%) | 59.1 | 53.3 | 48.3 | 47.0 | 49.0 | 52.8 | 58.4 | 61.5 | 62.6 | 63.2 | 65.4 | 65.2 |
| Critical (15%) | 62.3 | 54.9 | 48.3 | 47.4 | 50.0 | 54.2 | 59.6 | 61.9 | 64.2 | 66.3 | 68.1 | 68.1 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.1** | 0.0 | **0.0** | **0.0** | -0.1 | 0.0 | **0.0** | -0.1 | -0.3 | **0.4** | -0.1 | **0.0** |
| 20% | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | **0.0** | **0.1** | -0.1 | **0.3** |
| 30% | -0.2 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.0** | -0.1 | **0.0** |
| 40% | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | -0.2 | **0.1** | **0.0** | -0.1 |
| 50% | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 | **0.1** | **0.0** | **0.1** | -0.1 |
| 60% | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | -0.2 | **0.0** | **0.1** | 0.0 |
| 70% | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | -0.1 | **0.3** | -0.1 | 0.0 |
| 80% | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | **0.0** | 0.0 | **0.1** |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (13%) | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.1** | **0.1** | -0.1 | -0.1 |
| Dry (24%) | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.2** | **0.1** | **0.1** |
| Critical (15%) | **0.1** | **0.1** | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | -0.2 | -0.3 | **0.4** | **0.3** | **0.3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-4. Sacramento River below Hamilton City, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.9 | 56.2 | 50.8 | 48.2 | 50.3 | 54.7 | 60.2 | 63.0 | 65.2 | 65.7 | 66.8 | 67.4 |
| 20% | 59.2 | 54.8 | 49.5 | 47.8 | 49.6 | 53.8 | 59.6 | 62.1 | 64.7 | 65.0 | 65.4 | 66.1 |
| 30% | 58.8 | 54.4 | 48.9 | 47.3 | 48.8 | 53.3 | 59.0 | 61.4 | 64.1 | 64.2 | 64.9 | 65.4 |
| 40% | 58.4 | 53.6 | 48.7 | 46.9 | 48.6 | 52.7 | 58.5 | 61.0 | 63.6 | 63.6 | 64.4 | 64.9 |
| 50% | 57.9 | 53.3 | 48.5 | 46.8 | 48.3 | 51.9 | 58.0 | 60.6 | 63.0 | 63.0 | 63.9 | 64.1 |
| 60% | 57.7 | 53.1 | 48.3 | 46.5 | 48.0 | 51.4 | 57.5 | 60.1 | 62.0 | 62.1 | 63.7 | 63.5 |
| 70% | 57.4 | 52.8 | 48.0 | 46.3 | 47.6 | 50.9 | 56.4 | 59.6 | 61.6 | 61.5 | 63.0 | 62.9 |
| 80% | 56.9 | 52.4 | 47.8 | 46.0 | 46.9 | 49.7 | 55.3 | 59.1 | 61.1 | 61.0 | 62.7 | 61.5 |
| 90% | 56.3 | 52.1 | 47.4 | 45.7 | 46.5 | 49.1 | 53.6 | 58.4 | 60.4 | 60.3 | 62.1 | 60.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.4 | 53.7 | 48.7 | 46.9 | 48.4 | 52.0 | 57.4 | 60.6 | 62.9 | 63.0 | 64.2 | 64.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.2 | 53.7 | 49.0 | 46.6 | 47.4 | 50.4 | 55.3 | 60.0 | 64.1 | 63.1 | 63.5 | 61.7 |
| Above Normal (16%) | 57.4 | 52.8 | 48.5 | 46.8 | 47.6 | 51.0 | 56.8 | 60.6 | 62.6 | 61.0 | 63.0 | 64.2 |
| Below Normal (13%) | 58.3 | 53.7 | 48.7 | 46.8 | 48.6 | 52.9 | 58.6 | 60.0 | 61.2 | 61.7 | 62.9 | 63.5 |
| Dry (24%) | 58.4 | 53.4 | 48.6 | 47.0 | 49.0 | 52.8 | 58.5 | 60.9 | 61.9 | 63.1 | 64.7 | 64.9 |
| Critical (15%) | 62.2 | 55.0 | 48.4 | 47.5 | 50.2 | 54.2 | 59.7 | 61.8 | 63.7 | 65.9 | 67.6 | 68.2 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 61.0 | 55.9 | 50.7 | 48.3 | 50.2 | 54.7 | 60.2 | 63.1 | 65.1 | 66.2 | 66.9 | 67.6 |
| 20% | 59.4 | 55.2 | 49.7 | 47.7 | 49.6 | 53.8 | 59.4 | 62.2 | 64.6 | 65.1 | 65.8 | 66.3 |
| 30% | 58.7 | 54.3 | 49.2 | 47.3 | 48.9 | 53.3 | 58.7 | 61.5 | 64.1 | 64.6 | 64.9 | 65.6 |
| 40% | 58.3 | 53.6 | 48.7 | 46.9 | 48.6 | 52.5 | 58.2 | 61.0 | 63.4 | 64.0 | 64.4 | 64.7 |
| 50% | 57.8 | 53.4 | 48.5 | 46.7 | 48.3 | 51.9 | 57.8 | 60.6 | 63.0 | 63.3 | 64.3 | 63.6 |
| 60% | 57.7 | 53.2 | 48.3 | 46.5 | 48.0 | 51.5 | 57.0 | 60.1 | 62.0 | 62.8 | 63.8 | 62.8 |
| 70% | 57.3 | 52.9 | 47.9 | 46.3 | 47.6 | 50.9 | 56.4 | 59.7 | 61.6 | 61.9 | 63.1 | 62.2 |
| 80% | 57.0 | 52.5 | 47.7 | 46.0 | 46.9 | 49.7 | 55.2 | 59.2 | 61.0 | 61.0 | 62.8 | 60.8 |
| 90% | 56.7 | 52.2 | 47.3 | 45.7 | 46.5 | 49.1 | 53.8 | 58.4 | 60.4 | 60.4 | 62.2 | 60.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 58.4 | 53.8 | 48.7 | 46.9 | 48.4 | 51.9 | 57.3 | 60.7 | 62.9 | 63.3 | 64.4 | 63.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 57.2 | 53.8 | 49.1 | 46.5 | 47.4 | 50.3 | 55.2 | 60.2 | 63.9 | 63.0 | 63.5 | 61.7 |
| Above Normal (16%) | 57.4 | 53.2 | 48.7 | 46.8 | 47.6 | 50.9 | 56.6 | 60.7 | 62.4 | 61.2 | 62.9 | 61.7 |
| Below Normal (13%) | 58.1 | 53.7 | 48.7 | 46.8 | 48.5 | 52.9 | 58.7 | 60.1 | 61.2 | 62.2 | 63.5 | 64.3 |
| Dry (24%) | 58.4 | 53.4 | 48.5 | 47.0 | 49.0 | 52.9 | 58.4 | 61.0 | 62.2 | 63.7 | 64.9 | 65.0 |
| Critical (15%) | 62.3 | 55.0 | 48.4 | 47.6 | 50.1 | 54.3 | 59.6 | 61.8 | 63.8 | 66.4 | 68.0 | 68.5 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.1** | -0.3 | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | **0.5** | **0.1** | **0.2** |
| 20% | **0.2** | **0.4** | **0.2** | -0.1 | 0.0 | **0.0** | -0.2 | **0.1** | -0.1 | **0.1** | **0.4** | **0.2** |
| 30% | -0.1 | 0.0 | **0.3** | 0.0 | **0.1** | 0.0 | -0.3 | **0.1** | **0.0** | **0.4** | **0.1** | **0.2** |
| 40% | -0.1 | **0.1** | **0.0** | **0.0** | -0.1 | -0.2 | -0.3 | **0.0** | -0.1 | **0.4** | **0.0** | -0.3 |
| 50% | -0.1 | **0.1** | **0.0** | 0.0 | **0.0** | 0.0 | -0.2 | **0.0** | **0.0** | **0.3** | **0.4** | -0.5 |
| 60% | -0.1 | **0.1** | **0.0** | 0.0 | -0.1 | **0.1** | -0.6 | **0.1** | 0.0 | **0.6** | **0.2** | -0.7 |
| 70% | -0.2 | **0.1** | -0.1 | **0.0** | 0.0 | 0.0 | 0.0 | **0.1** | **0.1** | **0.4** | **0.2** | -0.6 |
| 80% | **0.1** | **0.1** | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | **0.1** | -0.7 |
| 90% | **0.4** | **0.1** | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | **0.0** | **0.1** | **0.0** | **0.1** | -0.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.3** | **0.2** | -0.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.1** | **0.1** | 0.0 | 0.0 | -0.1 | -0.2 | **0.2** | -0.2 | -0.1 | 0.0 | 0.0 |
| Above Normal (16%) | **0.0** | **0.5** | **0.2** | 0.0 | 0.0 | -0.1 | -0.2 | **0.1** | -0.2 | **0.1** | -0.1 | -2.5 |
| Below Normal (13%) | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | -0.1 | **0.4** | **0.7** | **0.8** |
| Dry (24%) | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | **0.1** | **0.3** | **0.6** | **0.2** | **0.2** |
| Critical (15%) | **0.1** | **0.0** | **0.1** | **0.1** | -0.1 | **0.1** | -0.1 | **0.0** | **0.1** | **0.5** | **0.3** | **0.2** |

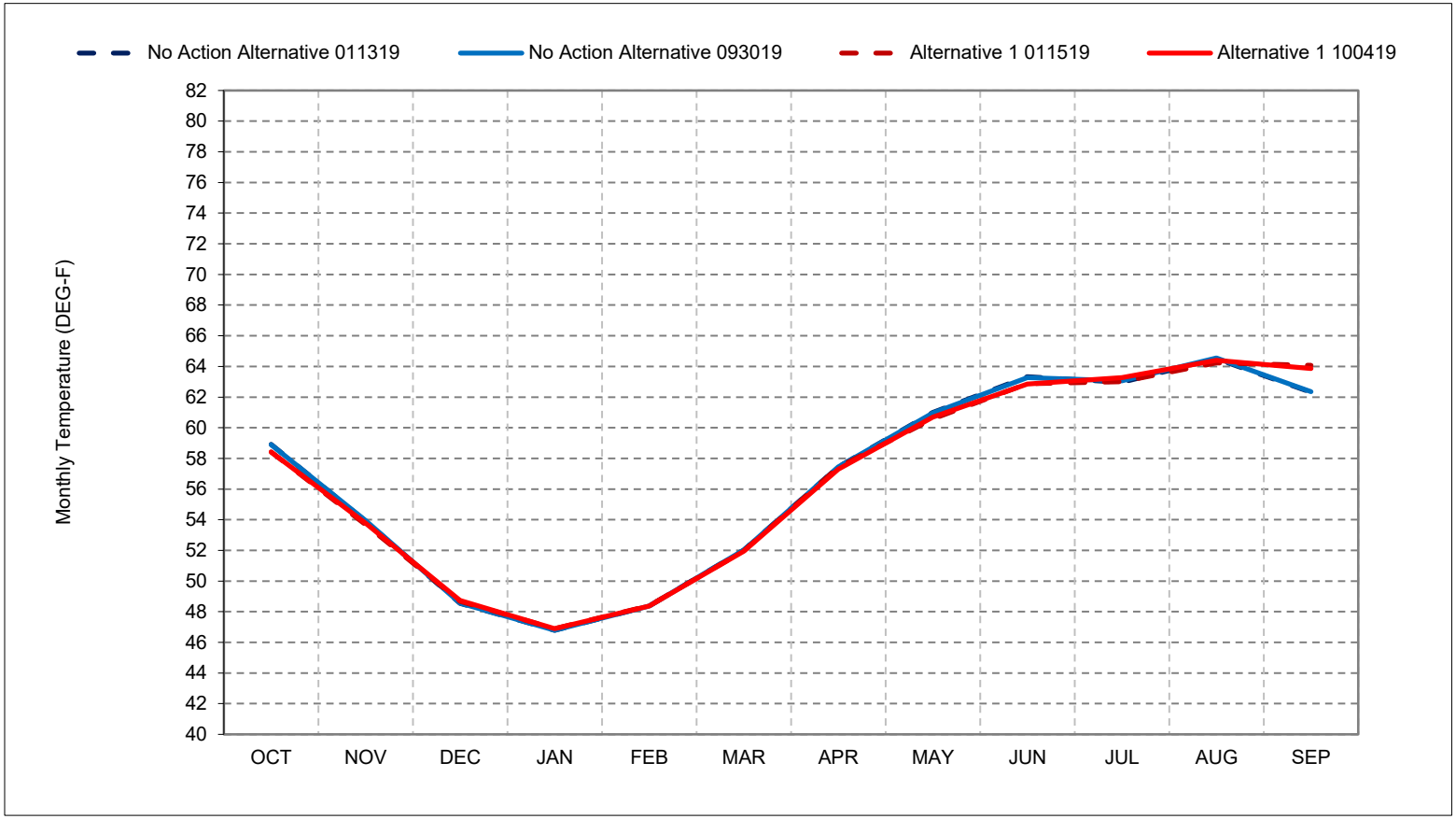
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-1. Sacramento River below Hamilton City, Long-Term Average Temperature

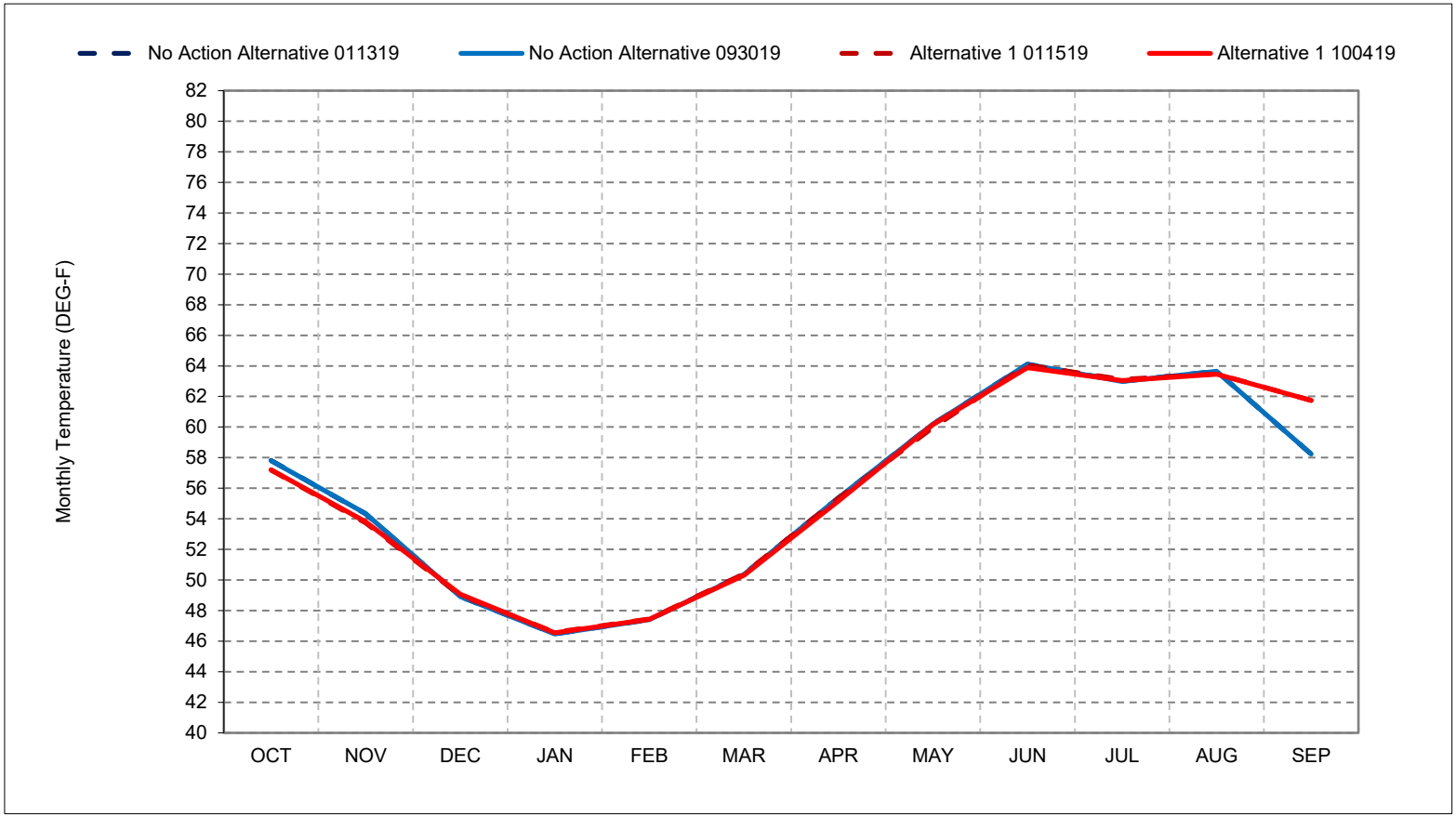



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-2. Sacramento River below Hamilton City, Wet Year Average Temperature

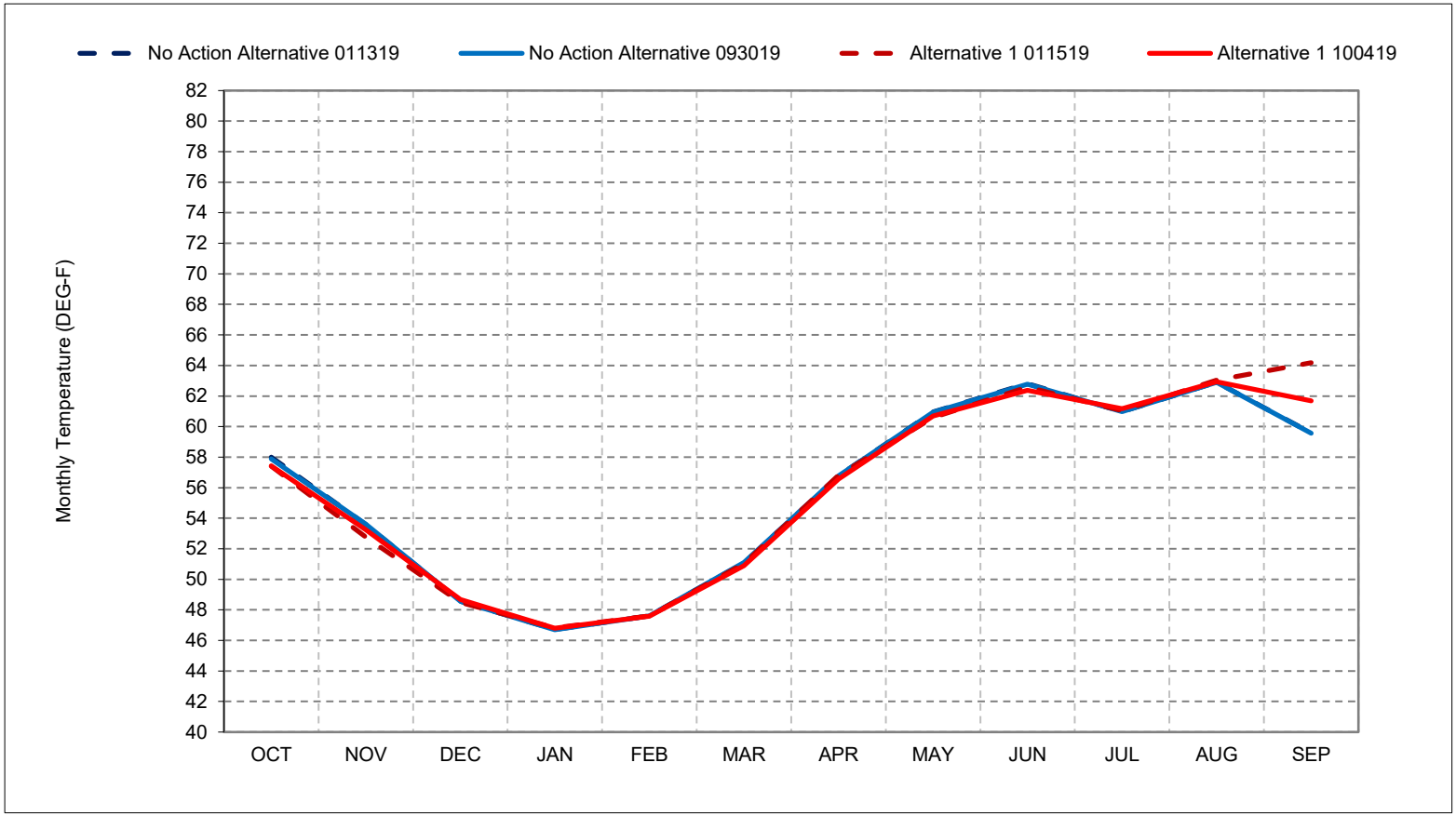



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-3. Sacramento River below Hamilton City, Above Normal Year Average Temperature

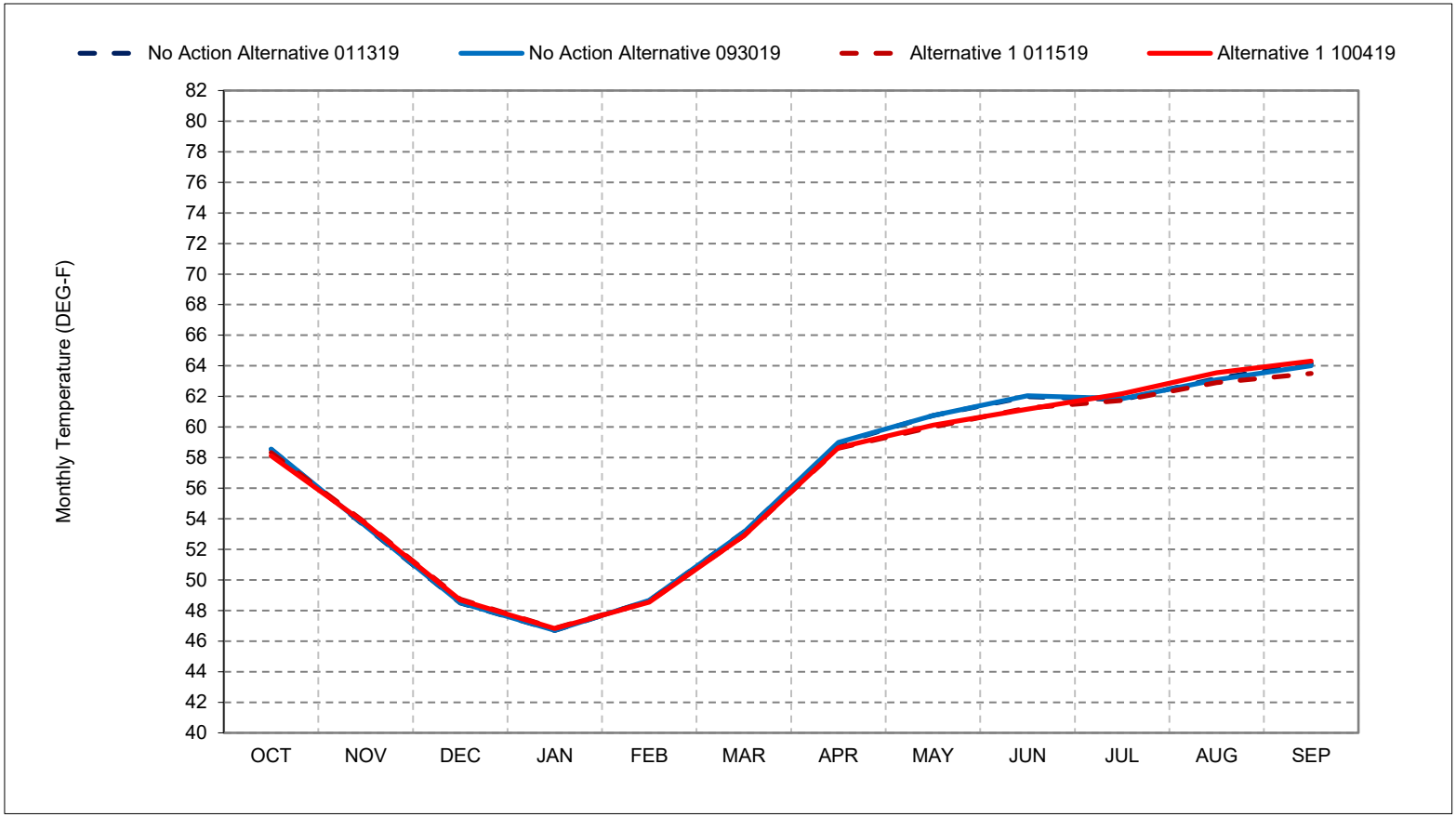



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-4. Sacramento River below Hamilton City, Below Normal Year Average Temperature

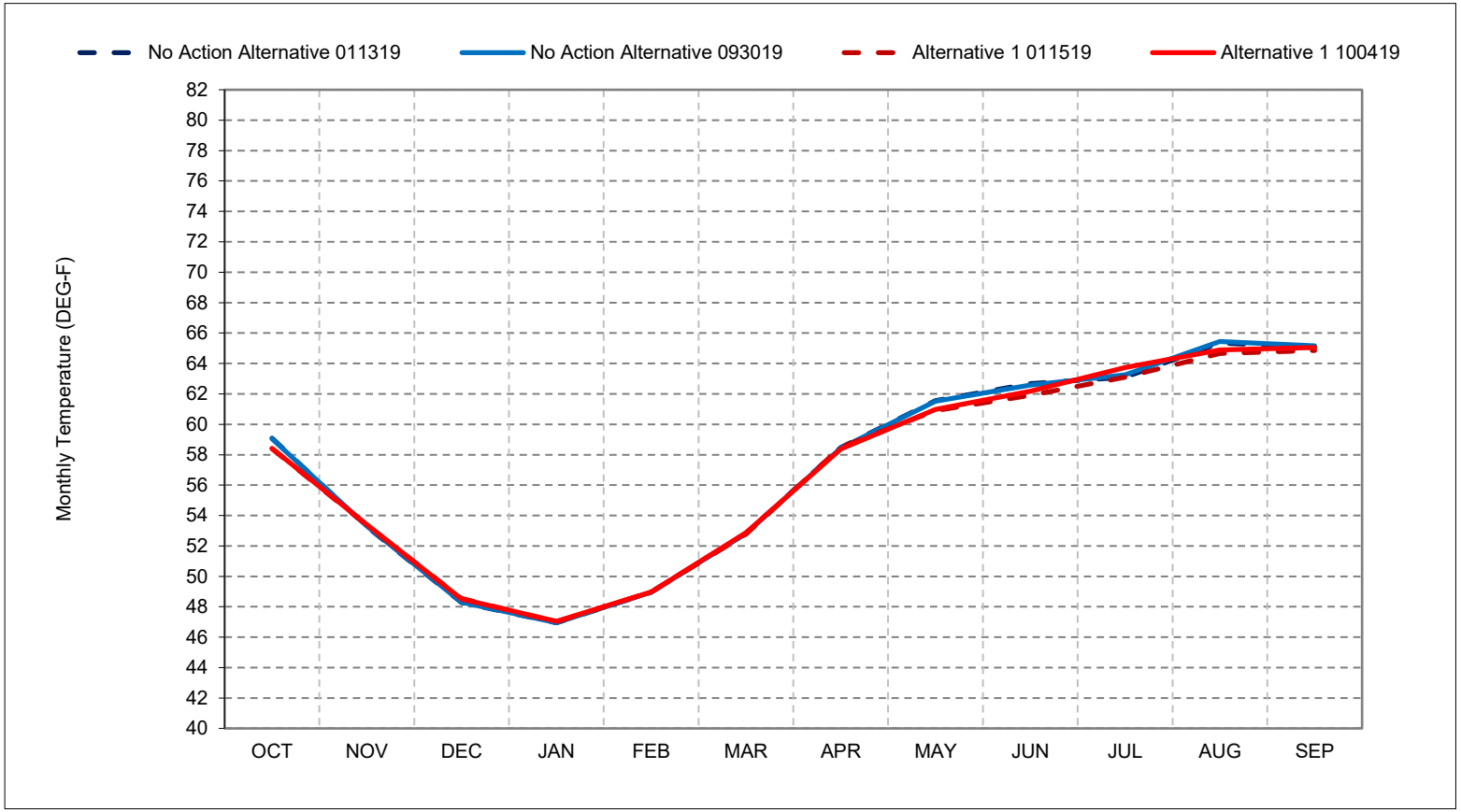



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-5. Sacramento River below Hamilton City, Dry Year Average Temperature

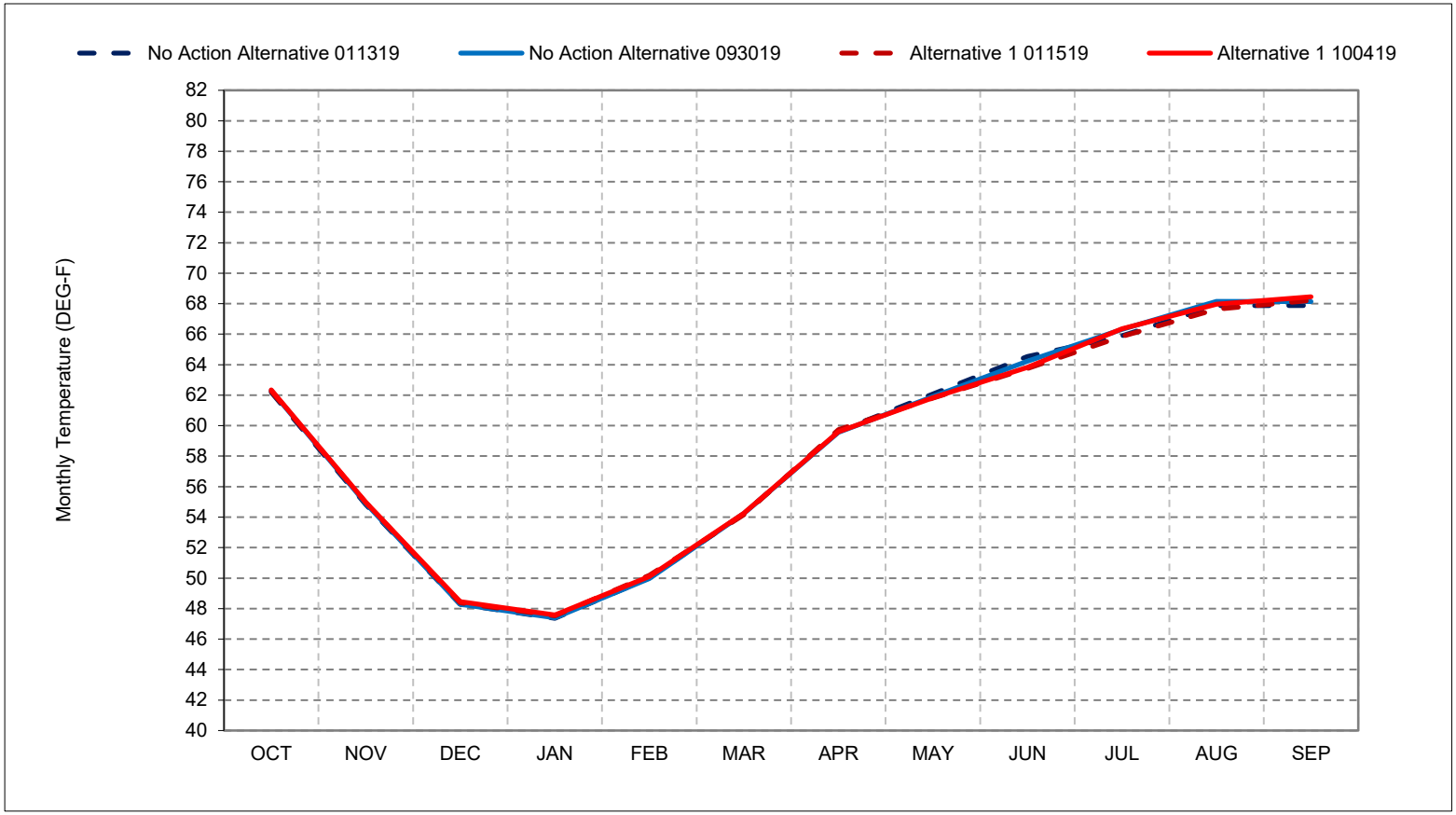



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-6. Sacramento River below Hamilton City, Critical Year Average Temperature

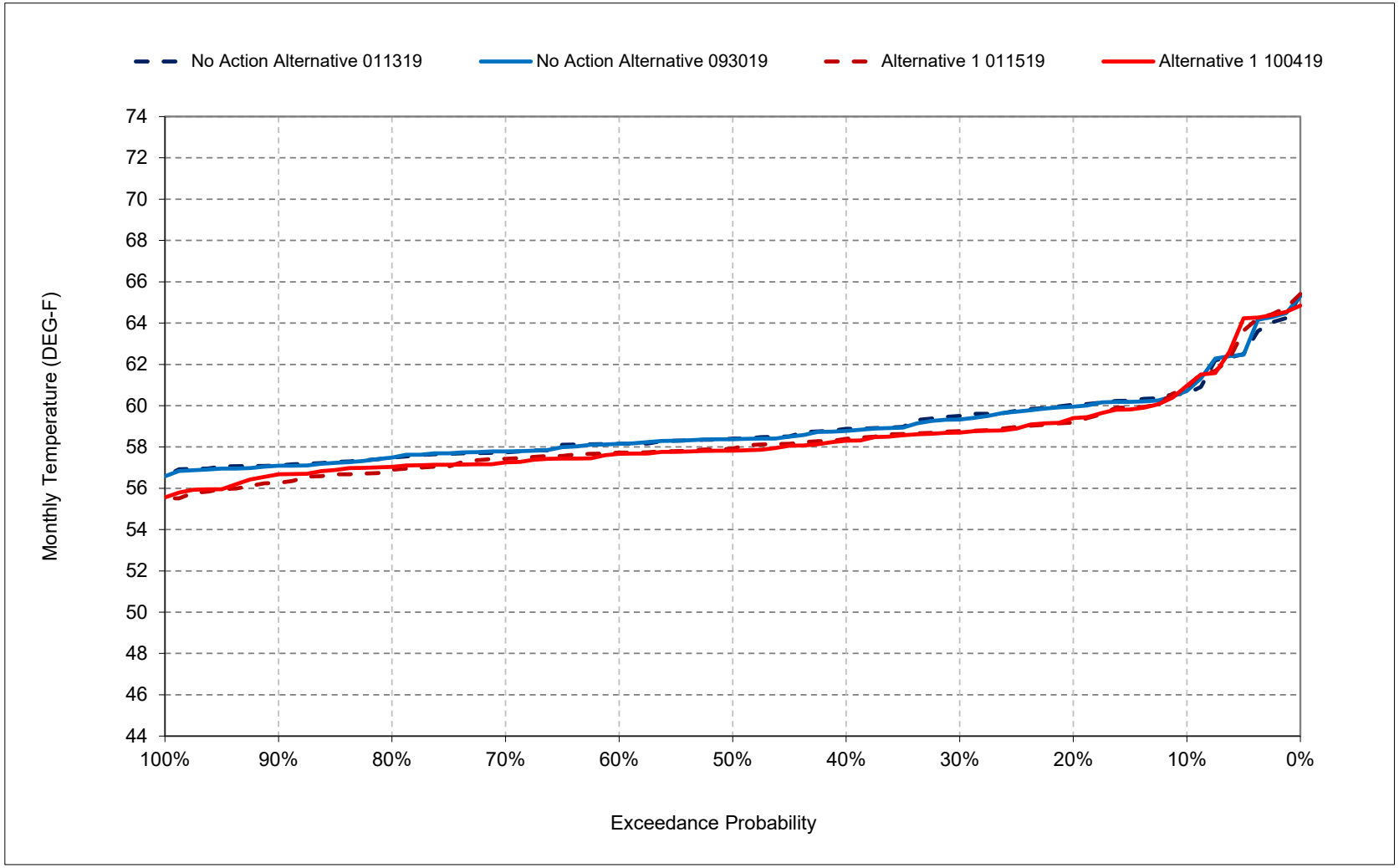



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

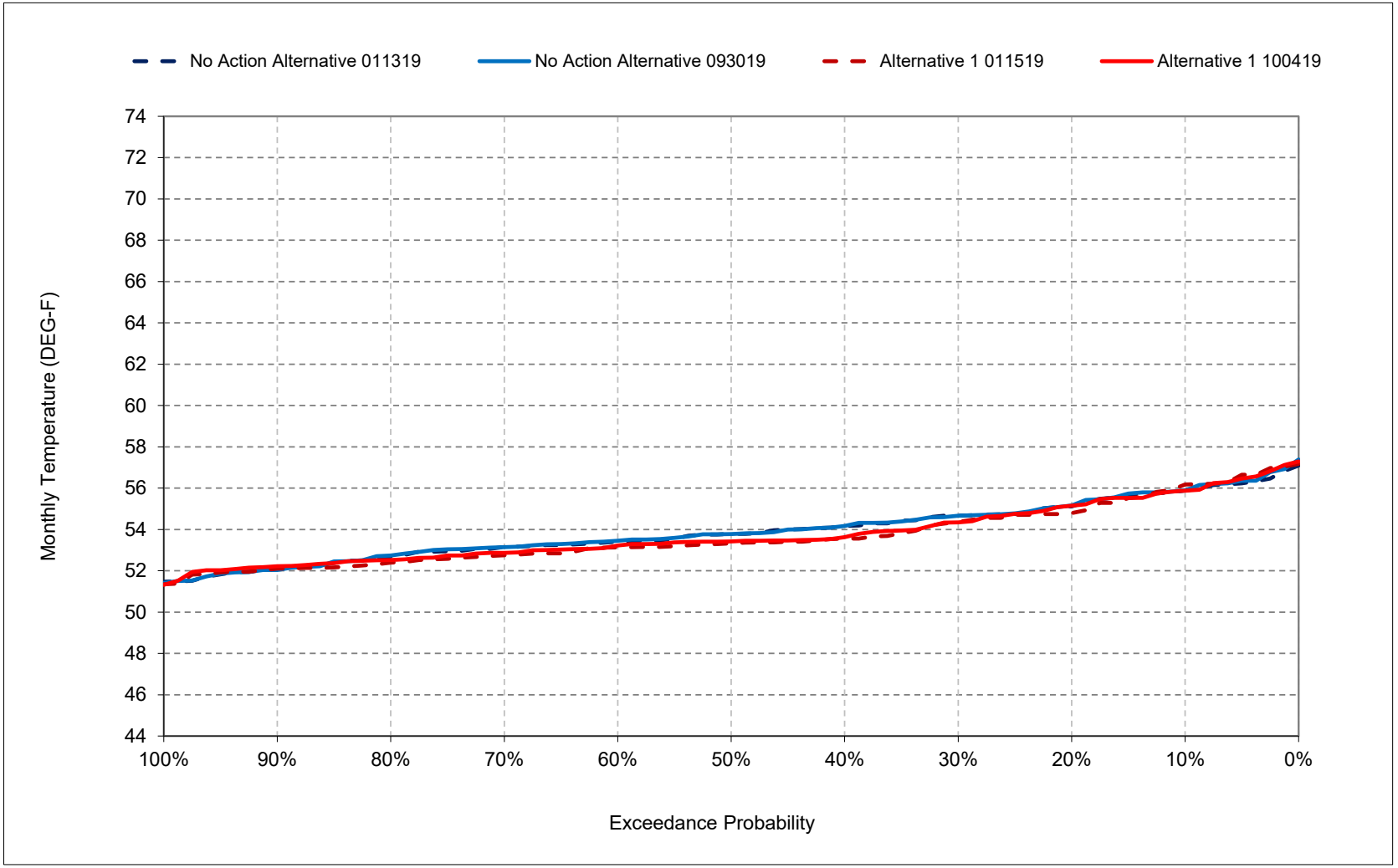
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-7. Sacramento River below Hamilton City, October**



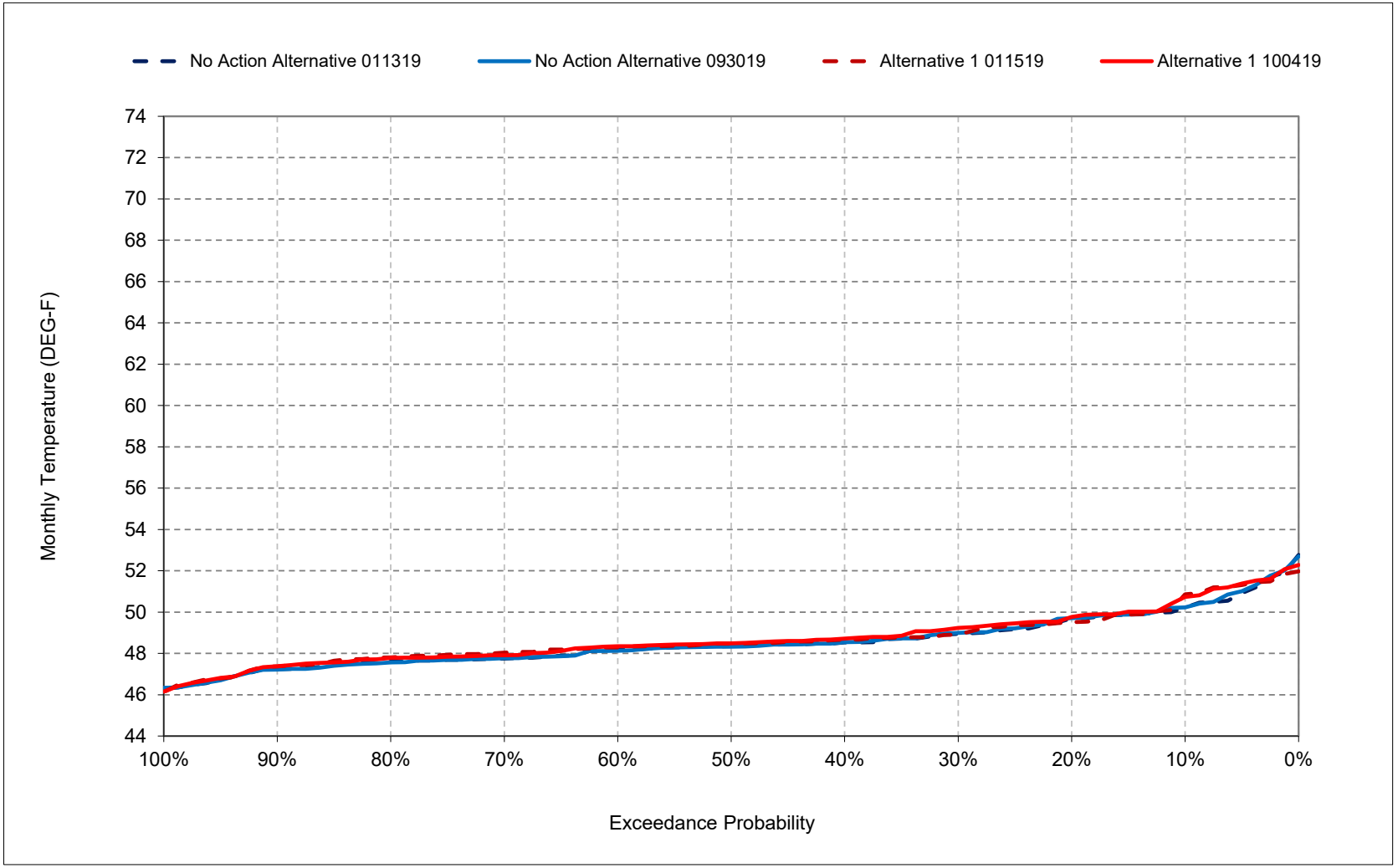

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-8. Sacramento River below Hamilton City, November**



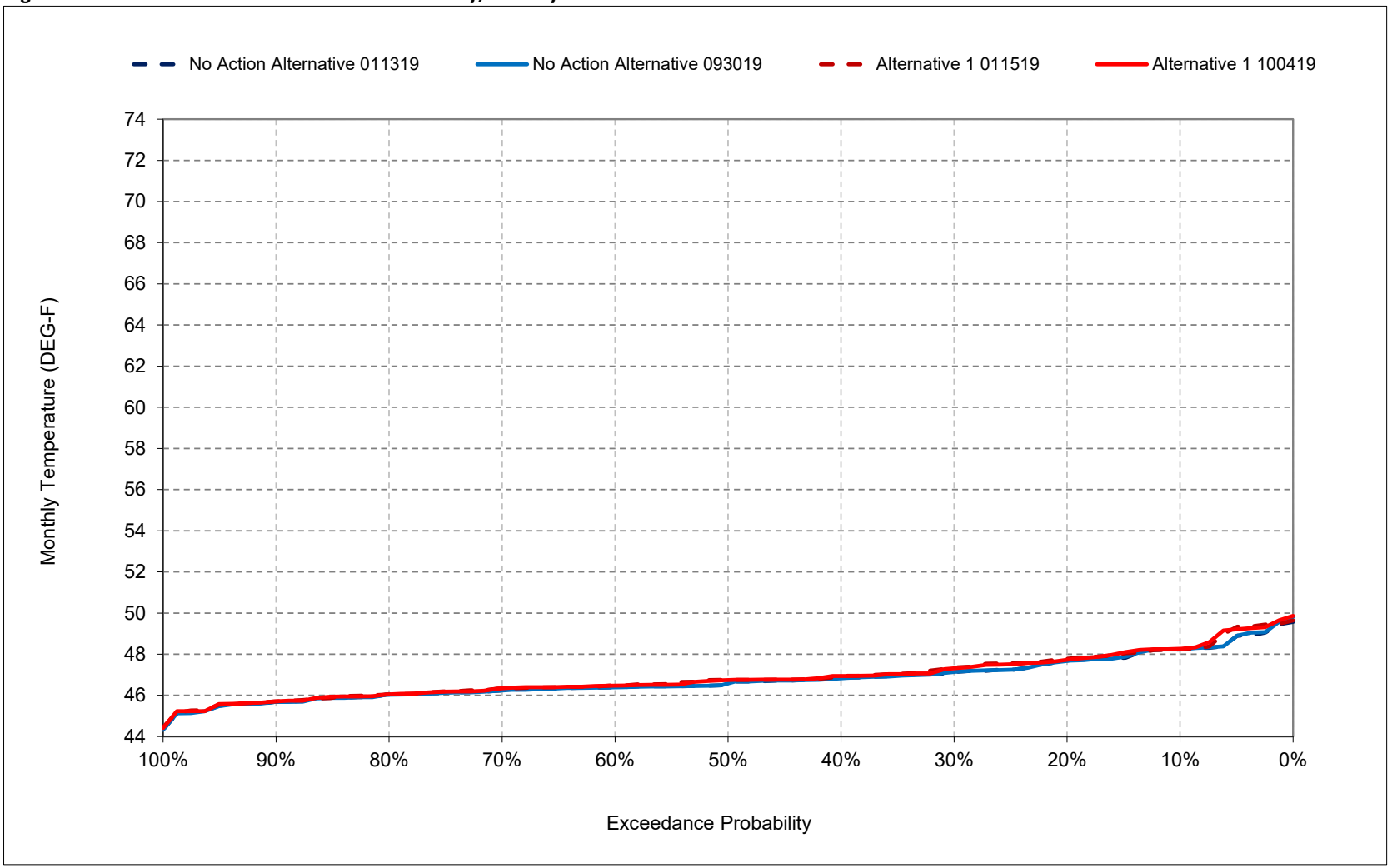

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-9. Sacramento River below Hamilton City, December**



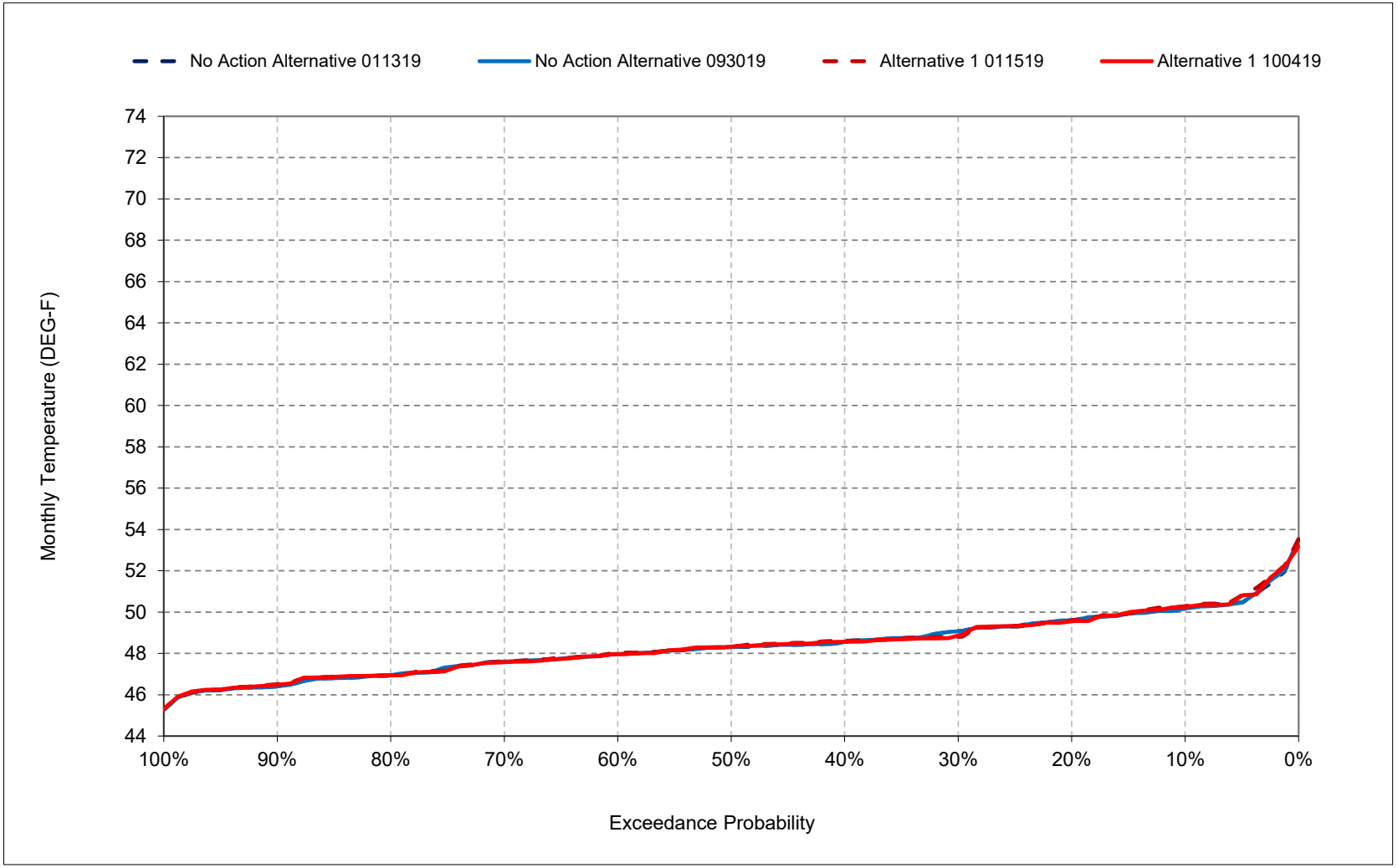

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-10. Sacramento River below Hamilton City, January**



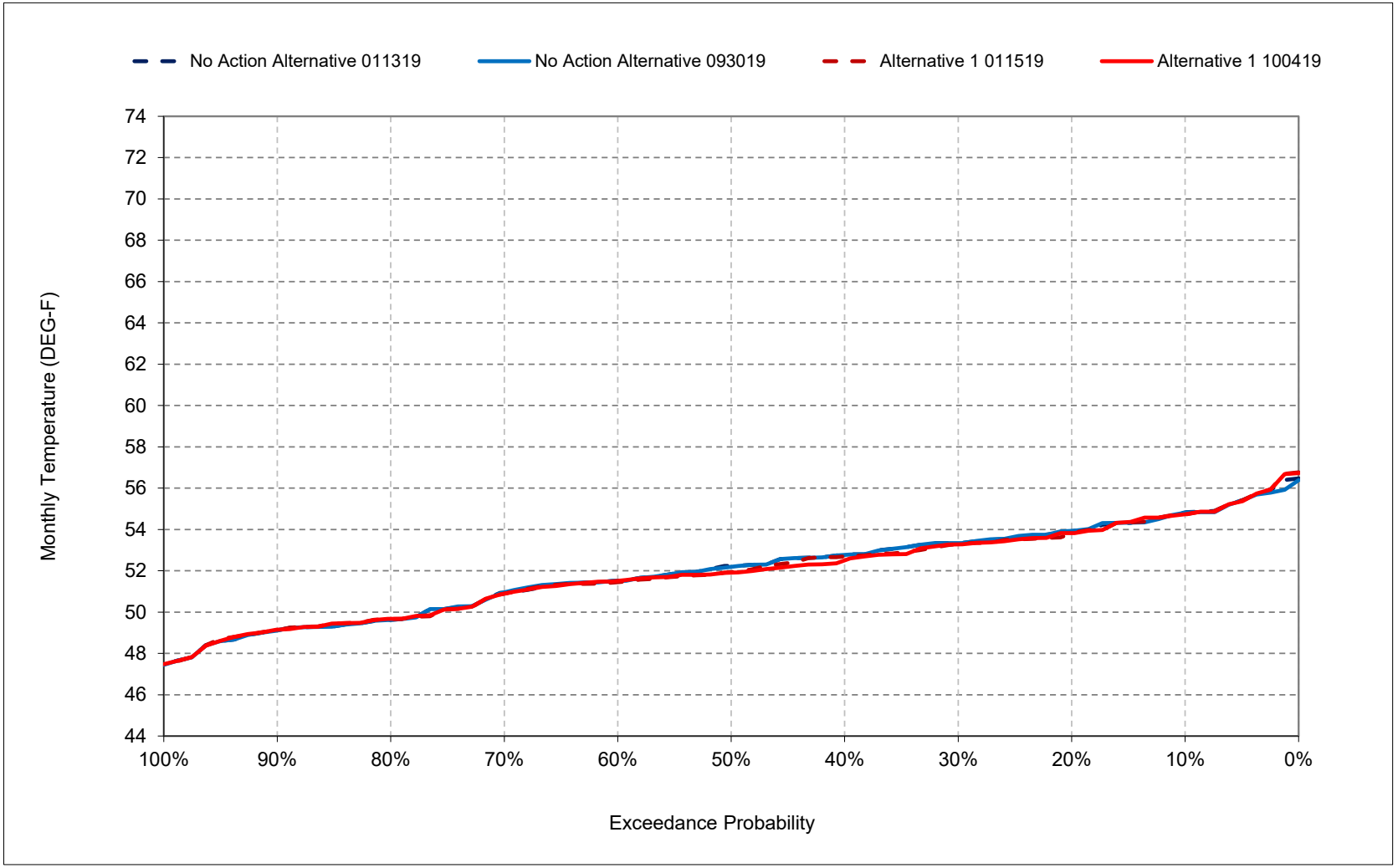

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-11. Sacramento River below Hamilton City, February**



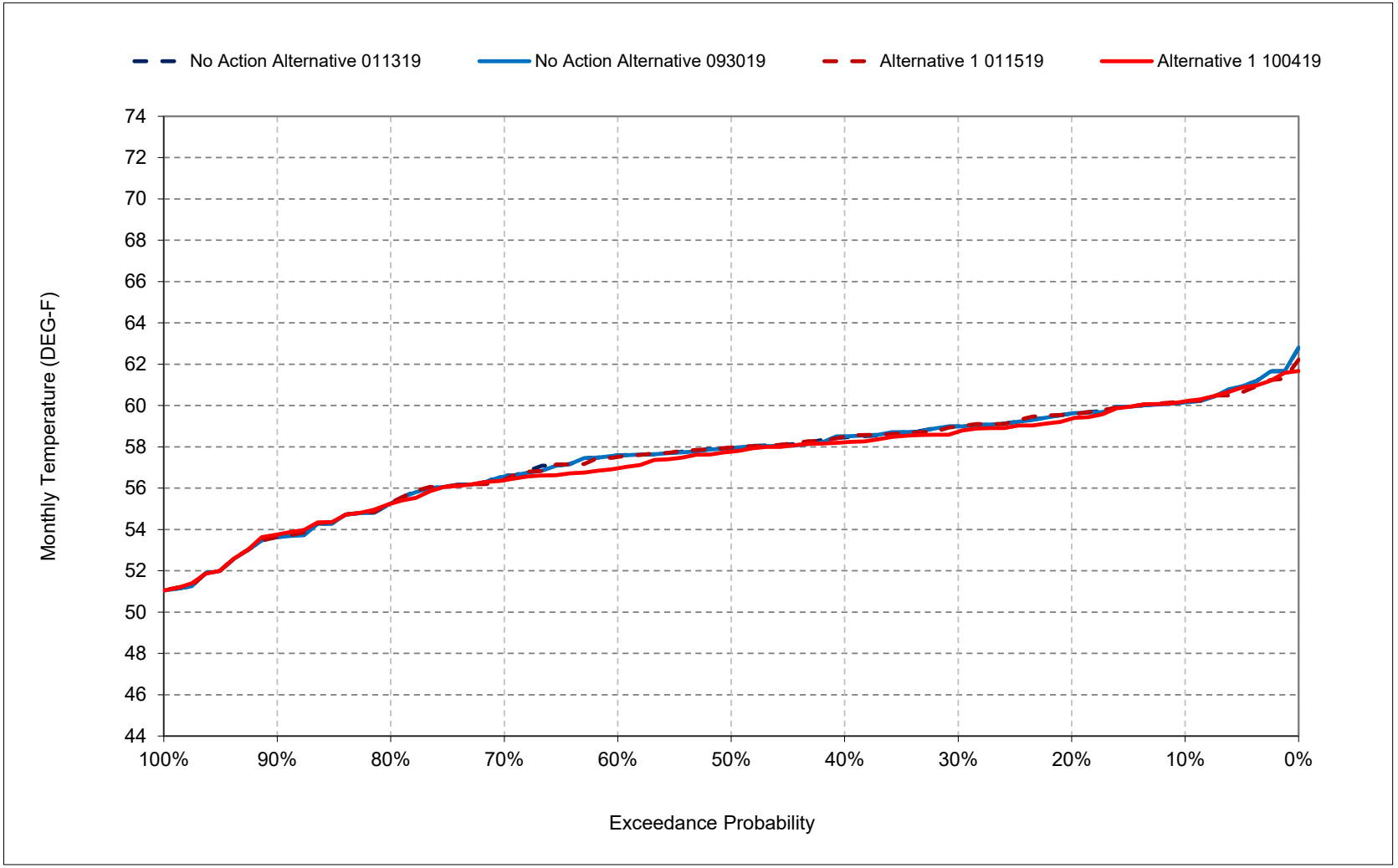

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-12. Sacramento River below Hamilton City, March**



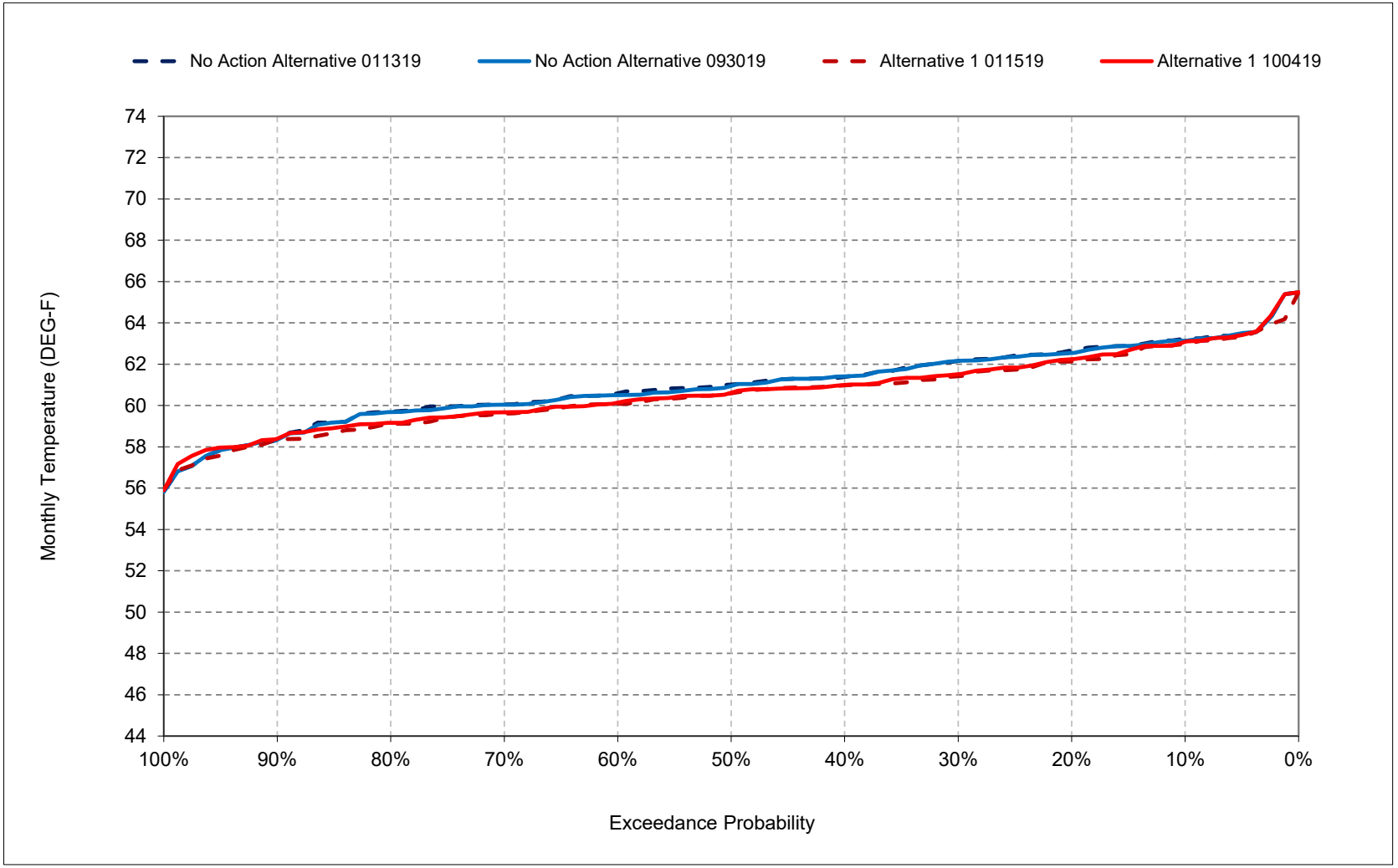

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-13. Sacramento River below Hamilton City, April**



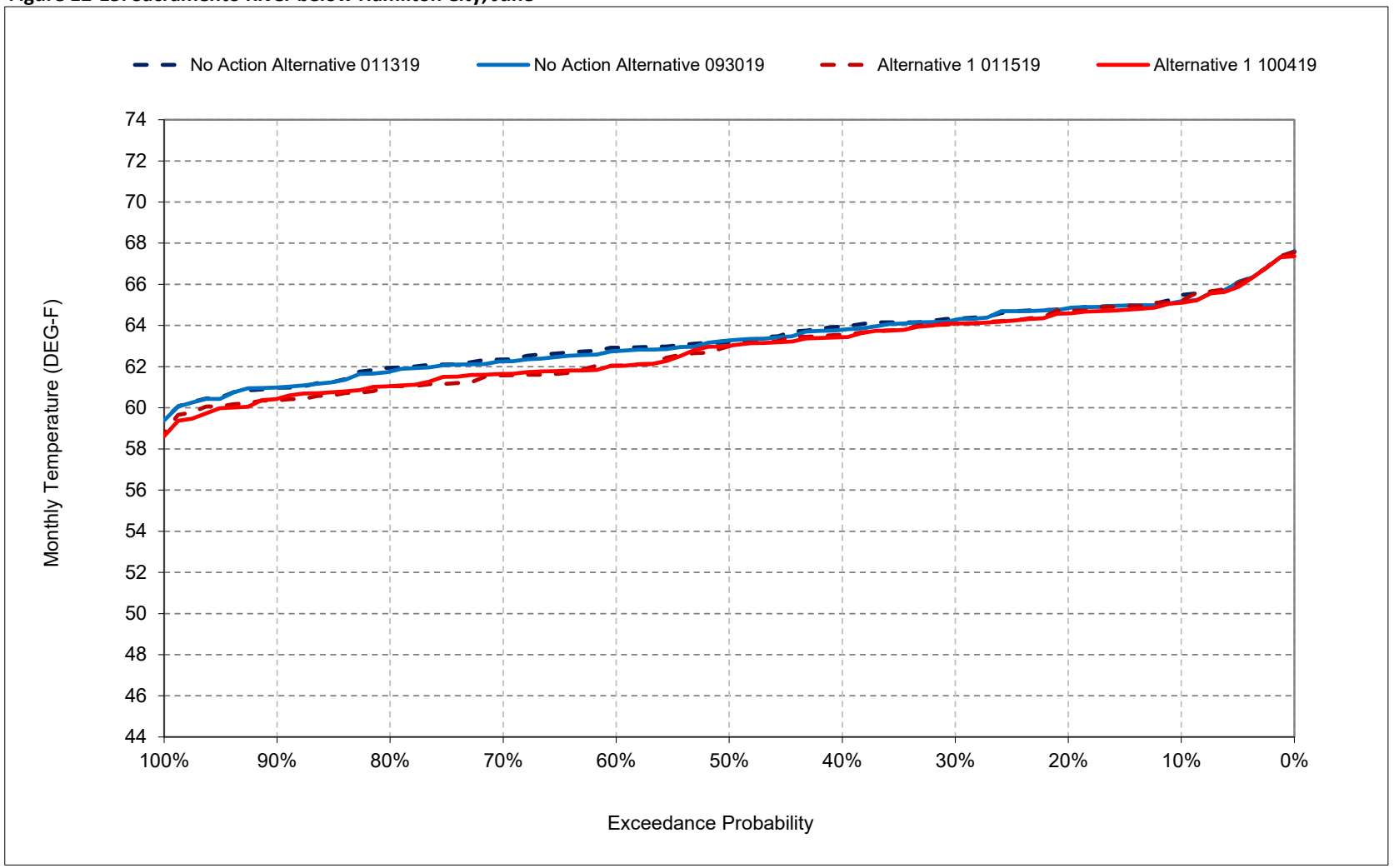

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-14. Sacramento River below Hamilton City, May**



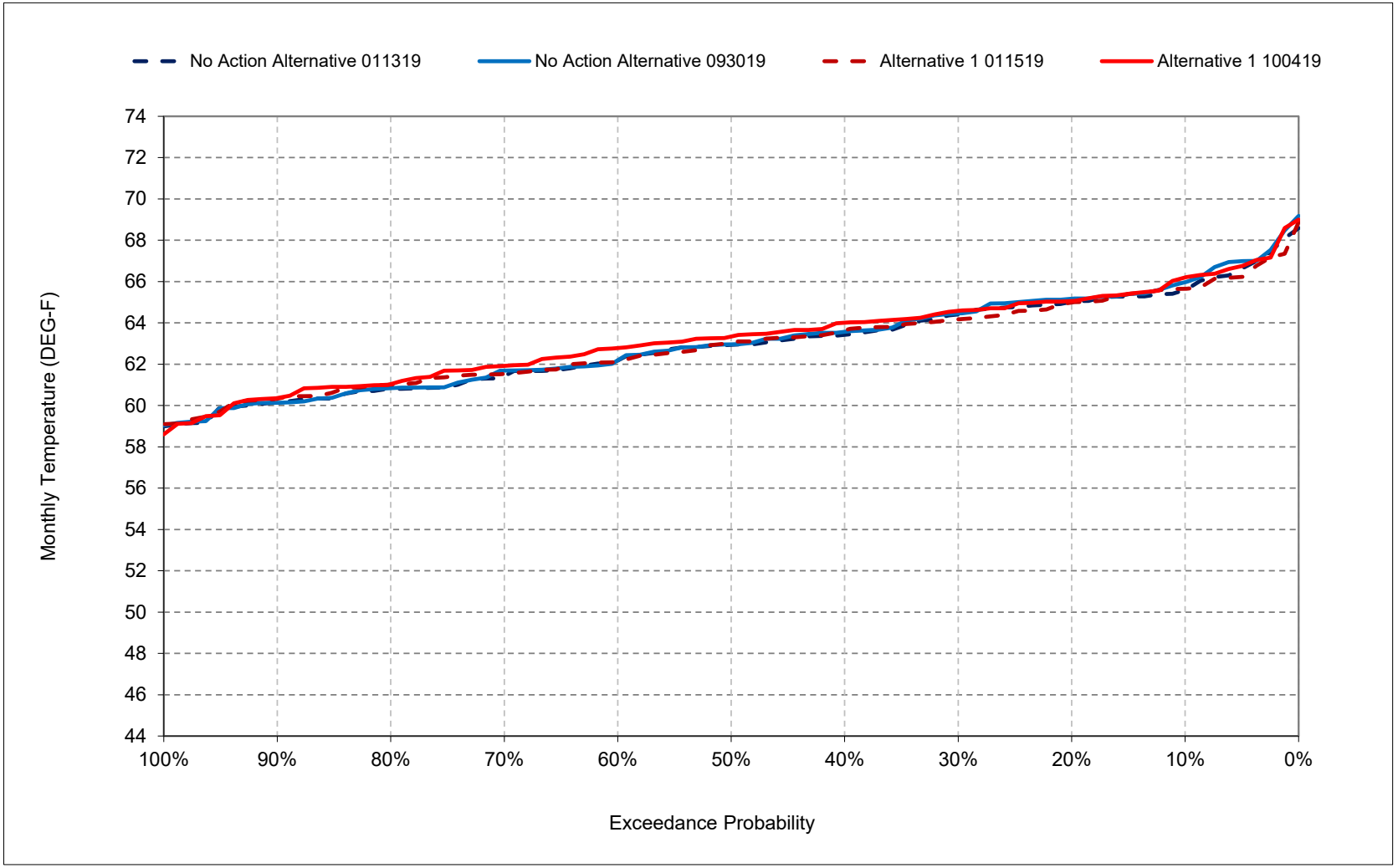

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-15. Sacramento River below Hamilton City, June**



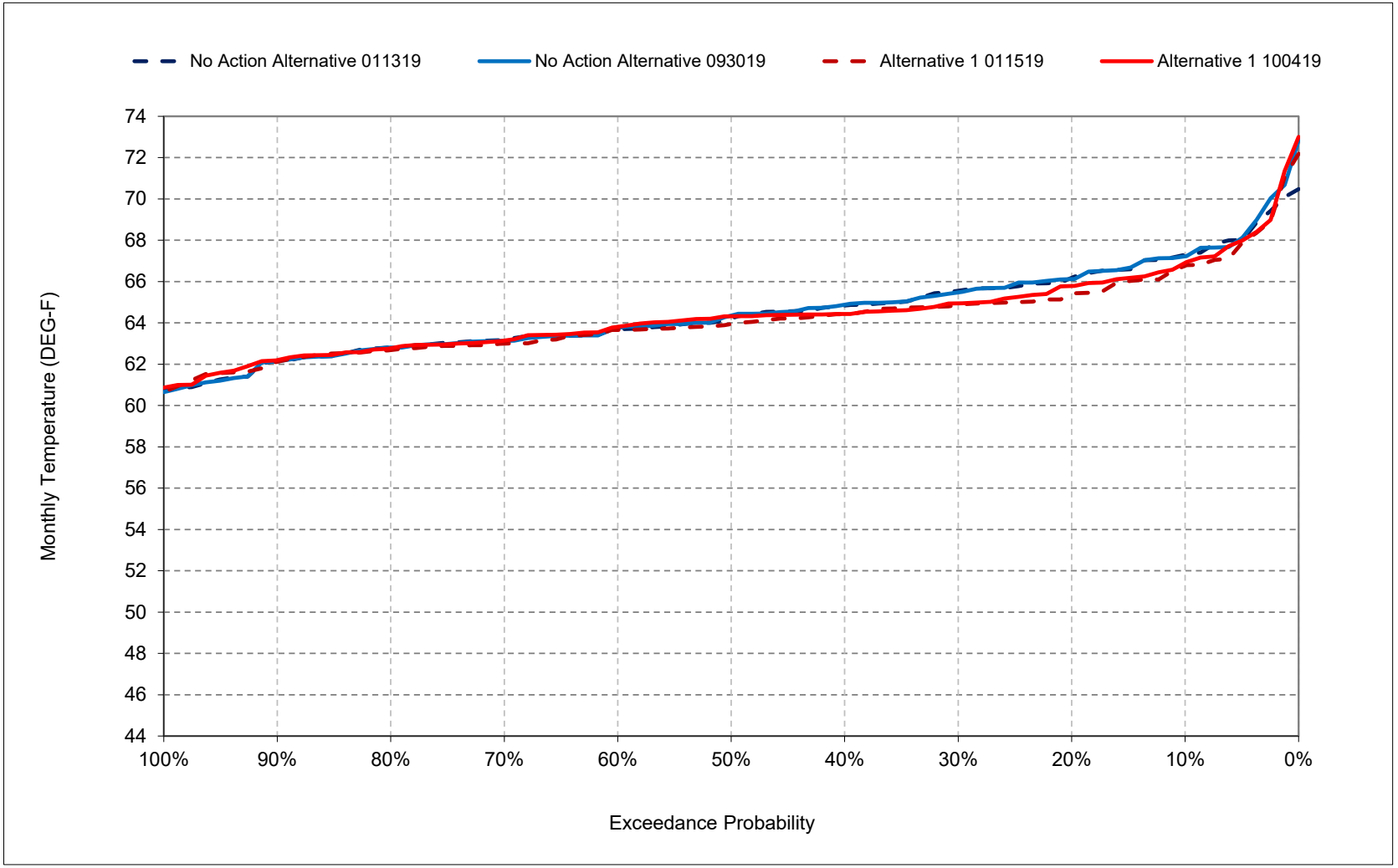

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-16. Sacramento River below Hamilton City, July**



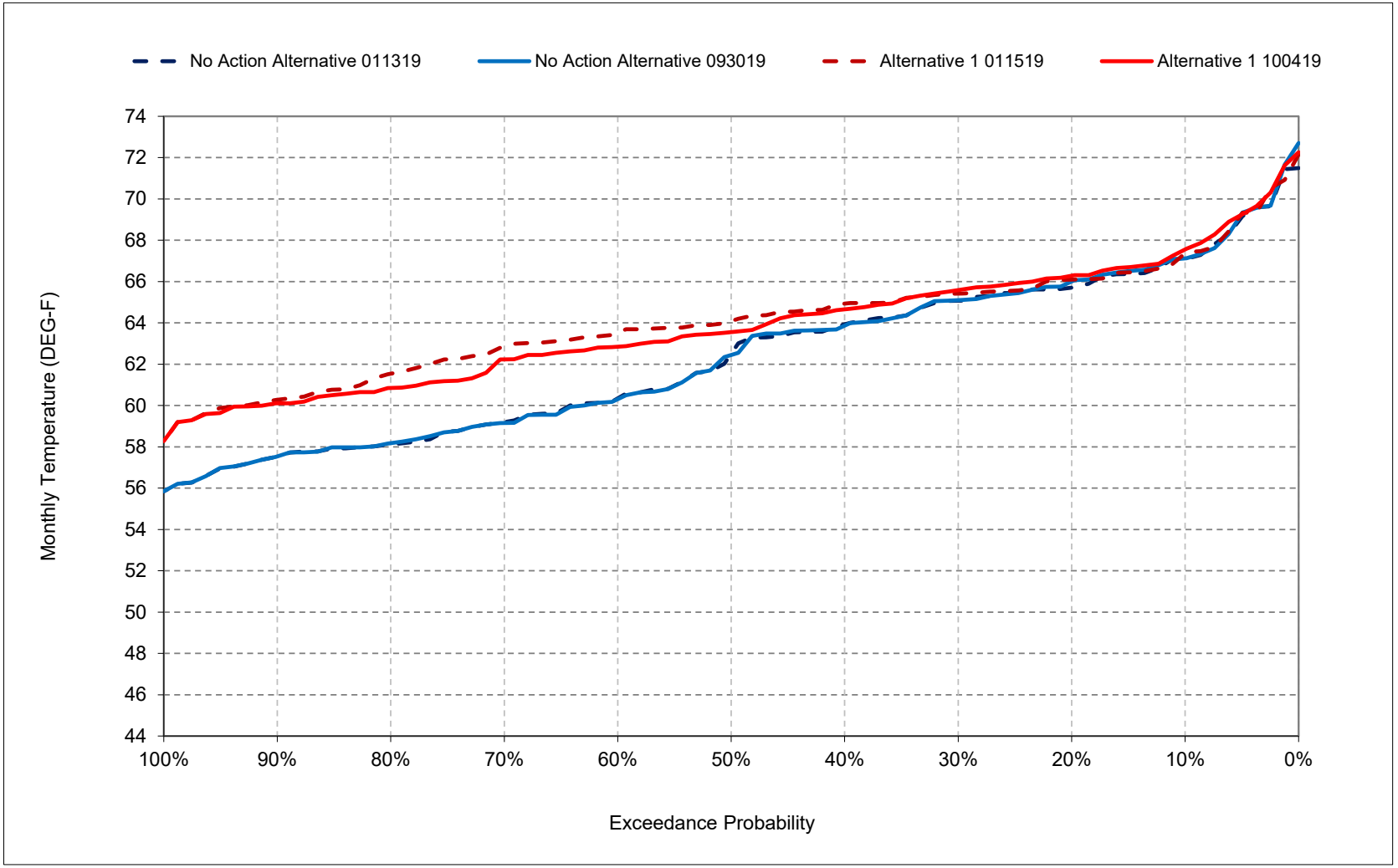

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-17. Sacramento River below Hamilton City, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-18. Sacramento River below Hamilton City, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-1. American River below Nimbus Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 66.6 | 58.4 | 53.0 | 47.8 | 48.5 | 52.1 | 58.0 | 63.1 | 68.1 | 69.6 | 67.3 | 68.1 |
| 20% | 65.6 | 57.9 | 51.7 | 47.2 | 47.7 | 51.6 | 57.0 | 62.0 | 65.9 | 67.6 | 66.9 | 67.6 |
| 30% | 64.7 | 57.7 | 51.2 | 46.9 | 47.3 | 50.7 | 56.0 | 60.6 | 64.8 | 65.7 | 65.5 | 66.4 |
| 40% | 63.6 | 57.5 | 50.7 | 46.8 | 46.9 | 49.9 | 55.2 | 59.5 | 63.1 | 65.1 | 65.0 | 65.8 |
| 50% | 63.3 | 57.2 | 50.2 | 46.3 | 46.7 | 49.4 | 54.6 | 58.5 | 61.8 | 64.7 | 64.5 | 65.3 |
| 60% | 63.1 | 56.9 | 49.3 | 45.7 | 46.3 | 49.0 | 54.0 | 57.8 | 60.6 | 64.5 | 63.8 | 64.8 |
| 70% | 62.8 | 56.6 | 48.7 | 45.4 | 46.0 | 48.6 | 53.4 | 57.0 | 59.7 | 64.2 | 63.3 | 64.2 |
| 80% | 62.6 | 56.2 | 48.2 | 45.0 | 45.8 | 48.3 | 52.4 | 56.5 | 59.3 | 63.5 | 62.8 | 64.0 |
| 90% | 59.2 | 55.6 | 46.9 | 44.6 | 45.4 | 48.0 | 51.9 | 54.9 | 59.0 | 63.1 | 62.5 | 63.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.6 | 57.1 | 50.1 | 46.2 | 46.8 | 49.9 | 54.8 | 59.0 | 62.6 | 65.6 | 64.7 | 65.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.7 | 57.0 | 50.6 | 45.6 | 46.0 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.7 |
| Above Normal (16%) | 63.2 | 56.7 | 49.9 | 46.3 | 46.5 | 49.0 | 54.2 | 58.3 | 61.9 | 64.3 | 64.3 | 65.0 |
| Below Normal (13%) | 64.1 | 57.3 | 50.2 | 46.6 | 46.7 | 50.0 | 56.1 | 60.3 | 63.8 | 65.1 | 65.3 | 65.8 |
| Dry (24%) | 64.7 | 57.1 | 49.6 | 46.5 | 47.3 | 50.7 | 55.6 | 60.2 | 64.2 | 66.1 | 65.4 | 66.4 |
| Critical (15%) | 65.6 | 57.7 | 49.6 | 46.7 | 48.0 | 52.1 | 57.3 | 61.8 | 65.8 | 70.4 | 67.2 | 67.9 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 66.3 | 58.8 | 53.0 | 48.3 | 48.6 | 52.1 | 57.0 | 63.5 | 67.0 | 69.6 | 67.6 | 67.9 |
| 20% | 65.3 | 58.0 | 52.0 | 47.7 | 47.9 | 51.2 | 56.6 | 61.7 | 65.7 | 66.8 | 65.9 | 67.1 |
| 30% | 64.7 | 57.8 | 51.7 | 47.2 | 47.6 | 50.5 | 55.9 | 60.3 | 65.0 | 65.3 | 65.5 | 66.3 |
| 40% | 63.4 | 57.6 | 51.0 | 46.9 | 47.1 | 49.9 | 55.2 | 59.4 | 63.2 | 65.0 | 64.8 | 65.7 |
| 50% | 63.1 | 57.3 | 50.6 | 46.4 | 46.8 | 49.4 | 54.6 | 58.5 | 62.3 | 64.6 | 64.4 | 65.3 |
| 60% | 63.0 | 57.0 | 49.8 | 46.1 | 46.3 | 49.0 | 54.1 | 57.8 | 61.0 | 64.3 | 64.0 | 64.8 |
| 70% | 62.7 | 56.7 | 49.2 | 45.7 | 46.1 | 48.7 | 53.4 | 57.0 | 59.8 | 64.1 | 63.3 | 64.4 |
| 80% | 62.4 | 56.4 | 48.6 | 45.1 | 45.8 | 48.3 | 52.4 | 56.5 | 59.5 | 63.7 | 63.0 | 64.0 |
| 90% | 59.2 | 55.7 | 47.3 | 44.6 | 45.5 | 48.0 | 51.9 | 54.9 | 59.0 | 63.2 | 62.5 | 63.5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.4 | 57.2 | 50.4 | 46.5 | 46.9 | 49.8 | 54.6 | 59.0 | 62.5 | 65.4 | 64.6 | 65.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 57.1 | 51.3 | 45.7 | 46.1 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.9 |
| Above Normal (16%) | 63.2 | 56.8 | 50.2 | 46.6 | 46.7 | 49.0 | 54.2 | 58.2 | 62.0 | 64.2 | 64.2 | 65.0 |
| Below Normal (13%) | 63.9 | 57.0 | 50.1 | 47.1 | 46.9 | 49.9 | 55.7 | 60.3 | 63.4 | 65.3 | 64.6 | 65.9 |
| Dry (24%) | 64.4 | 57.2 | 49.9 | 46.6 | 47.3 | 50.6 | 55.3 | 60.5 | 63.9 | 65.9 | 65.5 | 66.3 |
| Critical (15%) | 65.2 | 57.6 | 49.9 | 47.2 | 48.3 | 51.9 | 56.7 | 61.1 | 65.7 | 69.2 | 67.3 | 67.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.3 | **0.4** | **0.0** | **0.4** | **0.1** | 0.0 | -1.0 | **0.4** | -1.1 | **0.0** | **0.3** | -0.1 |
| 20% | -0.3 | **0.1** | **0.3** | **0.5** | **0.2** | -0.3 | -0.4 | -0.3 | -0.1 | -0.8 | -1.0 | -0.4 |
| 30% | **0.0** | **0.0** | **0.5** | **0.3** | **0.2** | -0.2 | -0.1 | -0.3 | **0.2** | -0.4 | **0.0** | -0.2 |
| 40% | -0.2 | **0.1** | **0.3** | **0.1** | **0.2** | **0.1** | **0.0** | -0.1 | **0.1** | -0.1 | -0.2 | -0.1 |
| 50% | -0.1 | **0.1** | **0.4** | **0.1** | **0.1** | **0.1** | **0.0** | **0.1** | **0.5** | -0.1 | -0.1 | 0.0 |
| 60% | -0.1 | **0.1** | **0.5** | **0.3** | **0.1** | **0.0** | **0.1** | 0.0 | **0.4** | -0.1 | **0.2** | **0.1** |
| 70% | -0.1 | **0.1** | **0.5** | **0.3** | **0.1** | **0.1** | 0.0 | **0.0** | **0.1** | -0.1 | **0.0** | **0.2** |
| 80% | -0.2 | **0.1** | **0.4** | **0.2** | **0.1** | 0.0 | **0.0** | 0.0 | **0.2** | **0.2** | **0.2** | **0.0** |
| 90% | **0.0** | **0.0** | **0.3** | 0.0 | **0.1** | **0.1** | **0.0** | **0.0** | **0.0** | **0.1** | -0.1 | **0.4** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.2 | **0.1** | **0.3** | **0.3** | **0.1** | -0.1 | -0.2 | -0.1 | -0.1 | -0.2 | -0.1 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -0.1 | **0.2** | **0.6** | **0.2** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** | **0.2** |
| Above Normal (16%) | **0.0** | **0.1** | **0.3** | **0.3** | **0.1** | **0.0** | **0.0** | 0.0 | **0.1** | -0.1 | -0.1 | **0.0** |
| Below Normal (13%) | -0.3 | -0.2 | -0.1 | **0.5** | **0.2** | -0.1 | -0.4 | **0.0** | -0.4 | **0.3** | -0.7 | **0.0** |
| Dry (24%) | -0.3 | **0.1** | **0.3** | **0.1** | **0.1** | -0.1 | -0.2 | **0.3** | -0.3 | -0.2 | **0.0** | -0.1 |
| Critical (15%) | -0.4 | -0.1 | **0.3** | **0.6** | **0.3** | -0.2 | -0.7 | -0.7 | -0.1 | -1.1 | **0.1** | -0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-2. American River below Nimbus Dam, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 66.6 | 58.5 | 52.9 | 47.9 | 48.5 | 52.3 | 57.9 | 63.5 | 68.0 | 69.4 | 67.7 | 68.1 |
| 20% | 65.4 | 57.9 | 51.6 | 47.2 | 47.7 | 51.7 | 57.0 | 62.0 | 65.9 | 67.8 | 66.7 | 67.5 |
| 30% | 64.4 | 57.7 | 51.1 | 46.9 | 47.3 | 50.8 | 56.0 | 60.3 | 64.6 | 65.7 | 65.5 | 66.4 |
| 40% | 63.6 | 57.5 | 50.7 | 46.7 | 46.9 | 49.8 | 55.2 | 59.5 | 63.0 | 65.1 | 64.9 | 65.8 |
| 50% | 63.3 | 57.2 | 50.1 | 46.2 | 46.6 | 49.4 | 54.6 | 58.4 | 61.8 | 64.7 | 64.5 | 65.3 |
| 60% | 63.0 | 56.8 | 49.3 | 45.8 | 46.3 | 49.0 | 54.1 | 57.8 | 60.5 | 64.5 | 63.7 | 64.8 |
| 70% | 62.8 | 56.6 | 48.8 | 45.4 | 46.0 | 48.6 | 53.4 | 57.0 | 59.7 | 64.2 | 63.2 | 64.2 |
| 80% | 62.6 | 56.2 | 48.2 | 45.0 | 45.7 | 48.3 | 52.4 | 56.5 | 59.3 | 63.6 | 62.9 | 64.0 |
| 90% | 59.2 | 55.7 | 46.8 | 44.5 | 45.4 | 48.0 | 51.9 | 54.9 | 58.9 | 63.1 | 62.5 | 63.2 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.5 | 57.1 | 50.0 | 46.2 | 46.8 | 49.9 | 54.8 | 59.0 | 62.6 | 65.6 | 64.7 | 65.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 56.9 | 50.6 | 45.6 | 46.0 | 48.5 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.7 |
| Above Normal (16%) | 63.2 | 56.7 | 49.9 | 46.3 | 46.5 | 49.0 | 54.2 | 58.3 | 61.9 | 64.3 | 64.2 | 64.9 |
| Below Normal (13%) | 63.9 | 57.2 | 50.1 | 46.6 | 46.7 | 50.0 | 56.0 | 60.3 | 63.7 | 65.2 | 65.2 | 65.7 |
| Dry (24%) | 64.6 | 57.1 | 49.6 | 46.4 | 47.2 | 50.7 | 55.5 | 60.2 | 64.0 | 66.3 | 65.4 | 66.4 |
| Critical (15%) | 65.5 | 57.7 | 49.5 | 46.6 | 47.9 | 52.2 | 57.3 | 61.9 | 65.7 | 69.9 | 67.5 | 67.9 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 66.3 | 58.5 | 53.1 | 48.2 | 48.8 | 52.2 | 57.2 | 63.0 | 67.0 | 69.8 | 67.3 | 67.9 |
| 20% | 65.3 | 58.0 | 52.1 | 47.7 | 47.9 | 51.3 | 56.6 | 61.5 | 65.8 | 67.4 | 66.1 | 67.0 |
| 30% | 64.5 | 57.7 | 51.6 | 47.2 | 47.6 | 50.5 | 55.6 | 60.1 | 65.0 | 65.9 | 65.6 | 66.2 |
| 40% | 63.6 | 57.6 | 51.1 | 46.9 | 47.0 | 50.0 | 55.0 | 59.5 | 63.2 | 65.0 | 64.7 | 65.7 |
| 50% | 63.3 | 57.3 | 50.5 | 46.4 | 46.7 | 49.4 | 54.6 | 58.3 | 62.3 | 64.5 | 64.3 | 65.3 |
| 60% | 63.0 | 57.0 | 49.8 | 46.0 | 46.4 | 49.0 | 54.0 | 57.8 | 60.7 | 64.2 | 63.8 | 64.8 |
| 70% | 62.7 | 56.7 | 49.1 | 45.6 | 46.1 | 48.7 | 53.4 | 57.0 | 59.9 | 64.1 | 63.2 | 64.4 |
| 80% | 62.4 | 56.3 | 48.8 | 45.2 | 45.8 | 48.3 | 52.4 | 56.5 | 59.6 | 63.7 | 62.8 | 64.1 |
| 90% | 59.2 | 55.8 | 47.2 | 44.6 | 45.5 | 48.0 | 51.9 | 54.9 | 59.0 | 63.4 | 62.2 | 63.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.3 | 57.1 | 50.4 | 46.5 | 46.9 | 49.8 | 54.6 | 58.9 | 62.6 | 65.5 | 64.5 | 65.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 57.1 | 51.3 | 45.7 | 46.1 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.9 |
| Above Normal (16%) | 63.2 | 56.8 | 50.1 | 46.6 | 46.7 | 49.0 | 54.2 | 58.2 | 62.1 | 64.2 | 63.9 | 65.0 |
| Below Normal (13%) | 63.7 | 57.2 | 50.3 | 47.0 | 46.9 | 49.9 | 55.7 | 60.2 | 63.3 | 65.4 | 64.5 | 65.7 |
| Dry (24%) | 64.3 | 57.1 | 49.8 | 46.6 | 47.3 | 50.5 | 55.2 | 60.1 | 63.9 | 66.1 | 65.4 | 66.3 |
| Critical (15%) | 65.2 | 57.5 | 49.8 | 47.2 | 48.3 | 52.1 | 56.7 | 61.0 | 65.8 | 69.2 | 67.2 | 67.5 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.3 | 0.0 | 0.2 | 0.3 | 0.3 | -0.1 | -0.6 | -0.5 | -1.0 | 0.4 | -0.4 | -0.2 |
| 20% | -0.1 | 0.1 | 0.4 | 0.5 | 0.1 | -0.4 | -0.4 | -0.5 | -0.1 | -0.4 | -0.7 | -0.5 |
| 30% | 0.1 | 0.0 | 0.5 | 0.3 | 0.2 | -0.3 | -0.4 | -0.2 | 0.4 | 0.2 | 0.0 | -0.2 |
| 40% | 0.0 | 0.1 | 0.4 | 0.2 | 0.1 | 0.1 | -0.2 | 0.0 | 0.2 | -0.1 | -0.3 | -0.1 |
| 50% | 0.0 | 0.2 | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | -0.1 | 0.5 | -0.1 | -0.2 | 0.0 |
| 60% | 0.0 | 0.2 | 0.4 | 0.2 | 0.1 | 0.0 | -0.1 | 0.0 | 0.2 | -0.2 | 0.1 | 0.1 |
| 70% | -0.1 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | -0.1 | 0.0 | 0.2 |
| 80% | -0.2 | 0.0 | 0.6 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 | -0.1 | 0.1 |
| 90% | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.3 | -0.3 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.1 | 0.4 | 0.3 | 0.1 | -0.1 | -0.2 | -0.2 | 0.0 | -0.1 | -0.2 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.2 | 0.7 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 |
| Above Normal (16%) | 0.0 | 0.1 | 0.2 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | -0.1 | -0.4 | 0.0 |
| Below Normal (13%) | -0.2 | 0.0 | 0.2 | 0.4 | 0.2 | -0.1 | -0.3 | -0.1 | -0.4 | 0.3 | -0.7 | 0.0 |
| Dry (24%) | -0.3 | 0.0 | 0.3 | 0.2 | 0.1 | -0.2 | -0.3 | -0.1 | 0.0 | -0.1 | -0.1 | -0.1 |
| Critical (15%) | -0.3 | -0.2 | 0.3 | 0.6 | 0.4 | -0.2 | -0.5 | -0.8 | 0.0 | -0.8 | -0.3 | -0.4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-3. American River below Nimbus Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 66.6 | 58.4 | 53.0 | 47.8 | 48.5 | 52.1 | 58.0 | 63.1 | 68.1 | 69.6 | 67.3 | 68.1 |
| 20% | 65.6 | 57.9 | 51.7 | 47.2 | 47.7 | 51.6 | 57.0 | 62.0 | 65.9 | 67.6 | 66.9 | 67.6 |
| 30% | 64.7 | 57.7 | 51.2 | 46.9 | 47.3 | 50.7 | 56.0 | 60.6 | 64.8 | 65.7 | 65.5 | 66.4 |
| 40% | 63.6 | 57.5 | 50.7 | 46.8 | 46.9 | 49.9 | 55.2 | 59.5 | 63.1 | 65.1 | 65.0 | 65.8 |
| 50% | 63.3 | 57.2 | 50.2 | 46.3 | 46.7 | 49.4 | 54.6 | 58.5 | 61.8 | 64.7 | 64.5 | 65.3 |
| 60% | 63.1 | 56.9 | 49.3 | 45.7 | 46.3 | 49.0 | 54.0 | 57.8 | 60.6 | 64.5 | 63.8 | 64.8 |
| 70% | 62.8 | 56.6 | 48.7 | 45.4 | 46.0 | 48.6 | 53.4 | 57.0 | 59.7 | 64.2 | 63.3 | 64.2 |
| 80% | 62.6 | 56.2 | 48.2 | 45.0 | 45.8 | 48.3 | 52.4 | 56.5 | 59.3 | 63.5 | 62.8 | 64.0 |
| 90% | 59.2 | 55.6 | 46.9 | 44.6 | 45.4 | 48.0 | 51.9 | 54.9 | 59.0 | 63.1 | 62.5 | 63.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.6 | 57.1 | 50.1 | 46.2 | 46.8 | 49.9 | 54.8 | 59.0 | 62.6 | 65.6 | 64.7 | 65.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.7 | 57.0 | 50.6 | 45.6 | 46.0 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.7 |
| Above Normal (16%) | 63.2 | 56.7 | 49.9 | 46.3 | 46.5 | 49.0 | 54.2 | 58.3 | 61.9 | 64.3 | 64.3 | 65.0 |
| Below Normal (13%) | 64.1 | 57.3 | 50.2 | 46.6 | 46.7 | 50.0 | 56.1 | 60.3 | 63.8 | 65.1 | 65.3 | 65.8 |
| Dry (24%) | 64.7 | 57.1 | 49.6 | 46.5 | 47.3 | 50.7 | 55.6 | 60.2 | 64.2 | 66.1 | 65.4 | 66.4 |
| Critical (15%) | 65.6 | 57.7 | 49.6 | 46.7 | 48.0 | 52.1 | 57.3 | 61.8 | 65.8 | 70.4 | 67.2 | 67.9 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 66.6 | 58.5 | 52.9 | 47.9 | 48.5 | 52.3 | 57.9 | 63.5 | 68.0 | 69.4 | 67.7 | 68.1 |
| 20% | 65.4 | 57.9 | 51.6 | 47.2 | 47.7 | 51.7 | 57.0 | 62.0 | 65.9 | 67.8 | 66.7 | 67.5 |
| 30% | 64.4 | 57.7 | 51.1 | 46.9 | 47.3 | 50.8 | 56.0 | 60.3 | 64.6 | 65.7 | 65.5 | 66.4 |
| 40% | 63.6 | 57.5 | 50.7 | 46.7 | 46.9 | 49.8 | 55.2 | 59.5 | 63.0 | 65.1 | 64.9 | 65.8 |
| 50% | 63.3 | 57.2 | 50.1 | 46.2 | 46.6 | 49.4 | 54.6 | 58.4 | 61.8 | 64.7 | 64.5 | 65.3 |
| 60% | 63.0 | 56.8 | 49.3 | 45.8 | 46.3 | 49.0 | 54.1 | 57.8 | 60.5 | 64.5 | 63.7 | 64.8 |
| 70% | 62.8 | 56.6 | 48.8 | 45.4 | 46.0 | 48.6 | 53.4 | 57.0 | 59.7 | 64.2 | 63.2 | 64.2 |
| 80% | 62.6 | 56.2 | 48.2 | 45.0 | 45.7 | 48.3 | 52.4 | 56.5 | 59.3 | 63.6 | 62.9 | 64.0 |
| 90% | 59.2 | 55.7 | 46.8 | 44.5 | 45.4 | 48.0 | 51.9 | 54.9 | 58.9 | 63.1 | 62.5 | 63.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.5 | 57.1 | 50.0 | 46.2 | 46.8 | 49.9 | 54.8 | 59.0 | 62.6 | 65.6 | 64.7 | 65.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 56.9 | 50.6 | 45.6 | 46.0 | 48.5 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.7 |
| Above Normal (16%) | 63.2 | 56.7 | 49.9 | 46.3 | 46.5 | 49.0 | 54.2 | 58.3 | 61.9 | 64.3 | 64.2 | 64.9 |
| Below Normal (13%) | 63.9 | 57.2 | 50.1 | 46.6 | 46.7 | 50.0 | 56.0 | 60.3 | 63.7 | 65.2 | 65.2 | 65.7 |
| Dry (24%) | 64.6 | 57.1 | 49.6 | 46.4 | 47.2 | 50.7 | 55.5 | 60.2 | 64.0 | 66.3 | 65.4 | 66.4 |
| Critical (15%) | 65.5 | 57.7 | 49.5 | 46.6 | 47.9 | 52.2 | 57.3 | 61.9 | 65.7 | 69.9 | 67.5 | 67.9 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | **0.1** | -0.1 | **0.0** | 0.0 | **0.2** | -0.1 | **0.4** | -0.1 | -0.2 | **0.4** | **0.1** |
| 20% | -0.2 | **0.0** | 0.0 | 0.0 | 0.0 | **0.2** | **0.0** | 0.0 | **0.0** | **0.2** | -0.2 | -0.1 |
| 30% | -0.3 | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | 0.0 | -0.3 | -0.2 | **0.1** | **0.0** | -0.1 |
| 40% | 0.0 | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | **0.0** | 0.0 | -0.1 |
| 50% | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | 0.0 | -0.1 | 0.0 | -0.1 | 0.0 |
| 70% | 0.0 | 0.0 | **0.1** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 | 0.0 |
| 80% | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | 0.0 |
| 90% | -0.1 | **0.1** | -0.1 | -0.1 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 |
| Above Normal (16%) | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (13%) | -0.2 | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | -0.1 |
| Dry (24%) | -0.1 | **0.0** | **0.0** | -0.1 | 0.0 | **0.1** | 0.0 | 0.0 | -0.2 | **0.2** | **0.0** | 0.0 |
| Critical (15%) | 0.0 | **0.1** | -0.1 | -0.1 | 0.0 | **0.1** | -0.1 | **0.1** | 0.0 | -0.5 | **0.3** | **0.0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-4. American River below Nimbus Dam, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 66.3 | 58.8 | 53.0 | 48.3 | 48.6 | 52.1 | 57.0 | 63.5 | 67.0 | 69.6 | 67.6 | 67.9 |
| 20% | 65.3 | 58.0 | 52.0 | 47.7 | 47.9 | 51.2 | 56.6 | 61.7 | 65.7 | 66.8 | 65.9 | 67.1 |
| 30% | 64.7 | 57.8 | 51.7 | 47.2 | 47.6 | 50.5 | 55.9 | 60.3 | 65.0 | 65.3 | 65.5 | 66.3 |
| 40% | 63.4 | 57.6 | 51.0 | 46.9 | 47.1 | 49.9 | 55.2 | 59.4 | 63.2 | 65.0 | 64.8 | 65.7 |
| 50% | 63.1 | 57.3 | 50.6 | 46.4 | 46.8 | 49.4 | 54.6 | 58.5 | 62.3 | 64.6 | 64.4 | 65.3 |
| 60% | 63.0 | 57.0 | 49.8 | 46.1 | 46.3 | 49.0 | 54.1 | 57.8 | 61.0 | 64.3 | 64.0 | 64.8 |
| 70% | 62.7 | 56.7 | 49.2 | 45.7 | 46.1 | 48.7 | 53.4 | 57.0 | 59.8 | 64.1 | 63.3 | 64.4 |
| 80% | 62.4 | 56.4 | 48.6 | 45.1 | 45.8 | 48.3 | 52.4 | 56.5 | 59.5 | 63.7 | 63.0 | 64.0 |
| 90% | 59.2 | 55.7 | 47.3 | 44.6 | 45.5 | 48.0 | 51.9 | 54.9 | 59.0 | 63.2 | 62.5 | 63.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.4 | 57.2 | 50.4 | 46.5 | 46.9 | 49.8 | 54.6 | 59.0 | 62.5 | 65.4 | 64.6 | 65.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 57.1 | 51.3 | 45.7 | 46.1 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.9 |
| Above Normal (16%) | 63.2 | 56.8 | 50.2 | 46.6 | 46.7 | 49.0 | 54.2 | 58.2 | 62.0 | 64.2 | 64.2 | 65.0 |
| Below Normal (13%) | 63.9 | 57.0 | 50.1 | 47.1 | 46.9 | 49.9 | 55.7 | 60.3 | 63.4 | 65.3 | 64.6 | 65.9 |
| Dry (24%) | 64.4 | 57.2 | 49.9 | 46.6 | 47.3 | 50.6 | 55.3 | 60.5 | 63.9 | 65.9 | 65.5 | 66.3 |
| Critical (15%) | 65.2 | 57.6 | 49.9 | 47.2 | 48.3 | 51.9 | 56.7 | 61.1 | 65.7 | 69.2 | 67.3 | 67.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 66.3 | 58.5 | 53.1 | 48.2 | 48.8 | 52.2 | 57.2 | 63.0 | 67.0 | 69.8 | 67.3 | 67.9 |
| 20% | 65.3 | 58.0 | 52.1 | 47.7 | 47.9 | 51.3 | 56.6 | 61.5 | 65.8 | 67.4 | 66.1 | 67.0 |
| 30% | 64.5 | 57.7 | 51.6 | 47.2 | 47.6 | 50.5 | 55.6 | 60.1 | 65.0 | 65.9 | 65.6 | 66.2 |
| 40% | 63.6 | 57.6 | 51.1 | 46.9 | 47.0 | 50.0 | 55.0 | 59.5 | 63.2 | 65.0 | 64.7 | 65.7 |
| 50% | 63.3 | 57.3 | 50.5 | 46.4 | 46.7 | 49.4 | 54.6 | 58.3 | 62.3 | 64.5 | 64.3 | 65.3 |
| 60% | 63.0 | 57.0 | 49.8 | 46.0 | 46.4 | 49.0 | 54.0 | 57.8 | 60.7 | 64.2 | 63.8 | 64.8 |
| 70% | 62.7 | 56.7 | 49.1 | 45.6 | 46.1 | 48.7 | 53.4 | 57.0 | 59.9 | 64.1 | 63.2 | 64.4 |
| 80% | 62.4 | 56.3 | 48.8 | 45.2 | 45.8 | 48.3 | 52.4 | 56.5 | 59.6 | 63.7 | 62.8 | 64.1 |
| 90% | 59.2 | 55.8 | 47.2 | 44.6 | 45.5 | 48.0 | 51.9 | 54.9 | 59.0 | 63.4 | 62.2 | 63.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 63.3 | 57.1 | 50.4 | 46.5 | 46.9 | 49.8 | 54.6 | 58.9 | 62.6 | 65.5 | 64.5 | 65.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 57.1 | 51.3 | 45.7 | 46.1 | 48.6 | 52.8 | 56.6 | 59.9 | 63.8 | 62.8 | 63.9 |
| Above Normal (16%) | 63.2 | 56.8 | 50.1 | 46.6 | 46.7 | 49.0 | 54.2 | 58.2 | 62.1 | 64.2 | 63.9 | 65.0 |
| Below Normal (13%) | 63.7 | 57.2 | 50.3 | 47.0 | 46.9 | 49.9 | 55.7 | 60.2 | 63.3 | 65.4 | 64.5 | 65.7 |
| Dry (24%) | 64.3 | 57.1 | 49.8 | 46.6 | 47.3 | 50.5 | 55.2 | 60.1 | 63.9 | 66.1 | 65.4 | 66.3 |
| Critical (15%) | 65.2 | 57.5 | 49.8 | 47.2 | 48.3 | 52.1 | 56.7 | 61.0 | 65.8 | 69.2 | 67.2 | 67.5 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.0** | -0.2 | **0.1** | -0.1 | **0.1** | **0.1** | **0.2** | -0.5 | 0.0 | **0.2** | -0.3 | **0.0** |
| 20% | **0.0** | **0.0** | **0.1** | 0.0 | 0.0 | **0.1** | 0.0 | -0.2 | **0.1** | **0.6** | **0.1** | -0.1 |
| 30% | -0.2 | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | -0.3 | -0.2 | **0.0** | **0.7** | **0.0** | -0.1 |
| 40% | **0.1** | 0.0 | **0.0** | **0.1** | -0.1 | **0.0** | -0.2 | **0.1** | **0.0** | **0.0** | -0.1 | **0.0** |
| 50% | **0.2** | **0.0** | -0.1 | **0.0** | 0.0 | -0.1 | 0.0 | -0.2 | **0.0** | -0.1 | -0.1 | **0.0** |
| 60% | **0.1** | **0.0** | 0.0 | -0.1 | **0.0** | **0.0** | -0.1 | 0.0 | -0.3 | -0.1 | -0.2 | 0.0 |
| 70% | -0.1 | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | -0.1 | **0.0** |
| 80% | 0.0 | -0.1 | **0.2** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.1** | 0.0 | -0.2 | **0.0** |
| 90% | **0.0** | **0.2** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.2** | -0.2 | -0.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | -0.1 | **0.0** | **0.1** | -0.1 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 |
| Above Normal (16%) | 0.0 | **0.0** | -0.1 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.1** | **0.0** | -0.3 | 0.0 |
| Below Normal (13%) | -0.2 | **0.1** | **0.3** | -0.1 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | **0.1** | -0.1 | -0.2 |
| Dry (24%) | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | -0.4 | **0.0** | **0.3** | -0.1 | **0.0** |
| Critical (15%) | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | **0.2** | **0.1** | 0.0 | **0.1** | -0.1 | -0.1 | **0.0** |

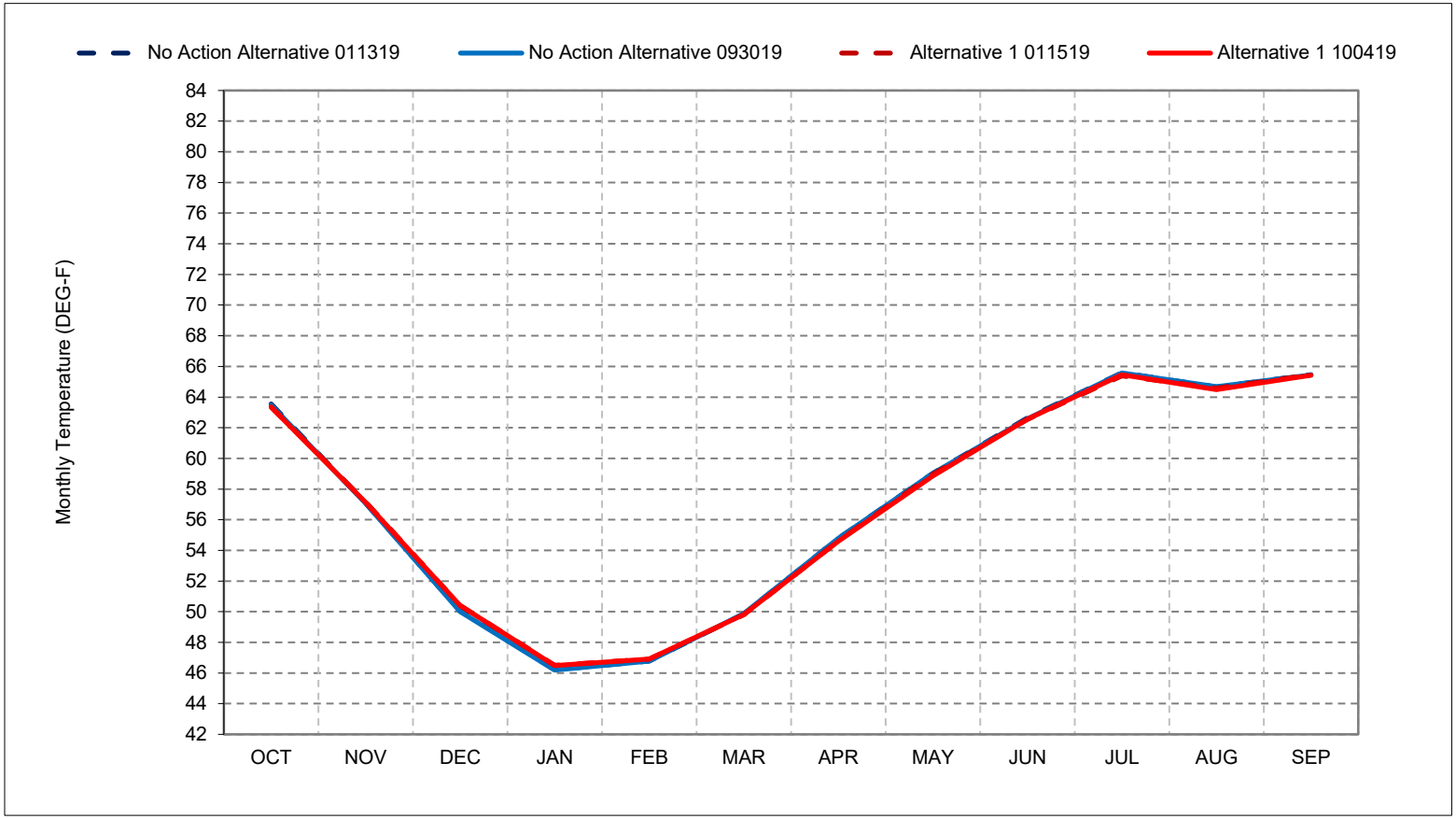
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-1. American River below Nimbus Dam, Long-Term Average Temperature

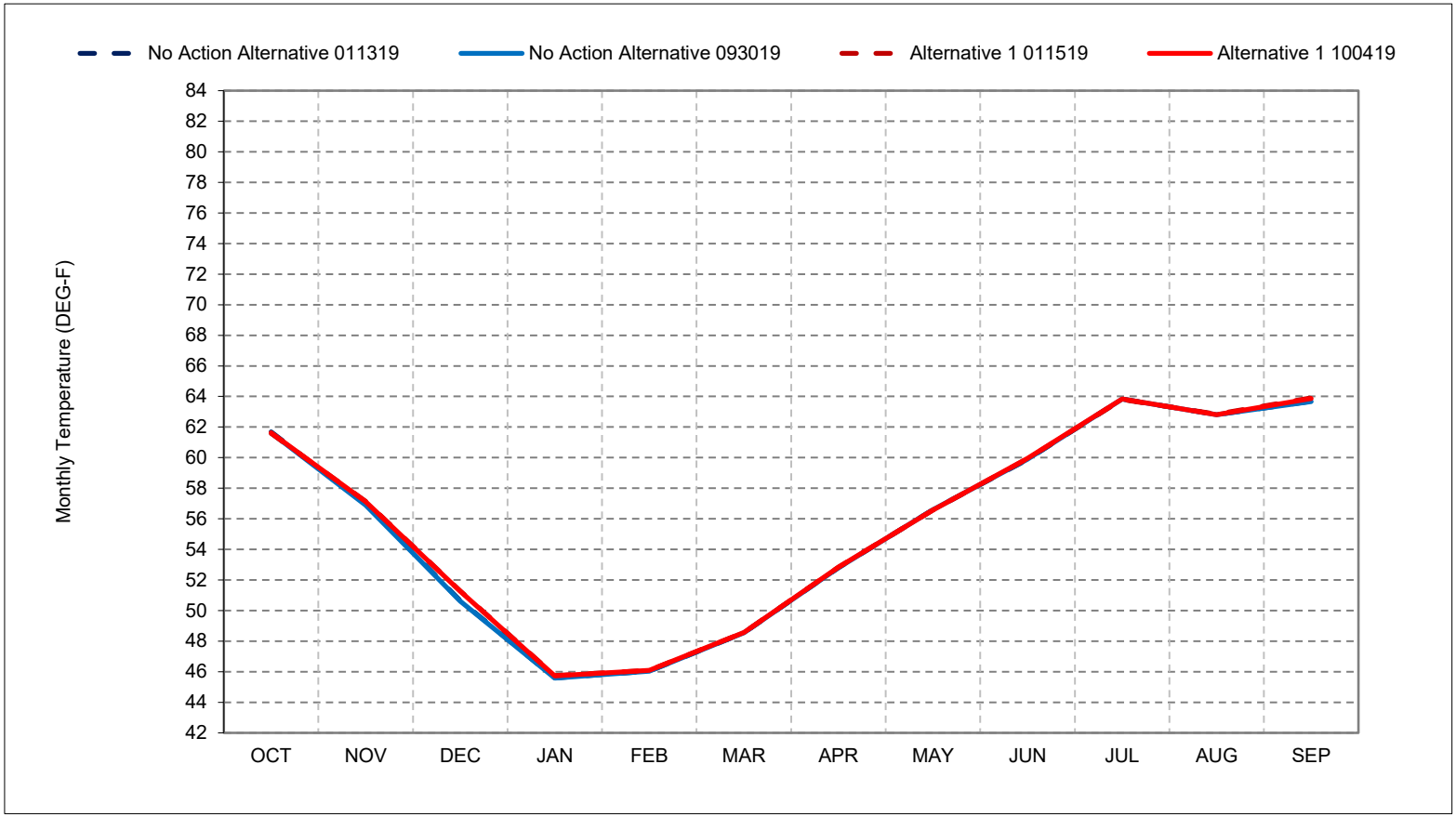



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-2. American River below Nimbus Dam, Wet Year Average Temperature

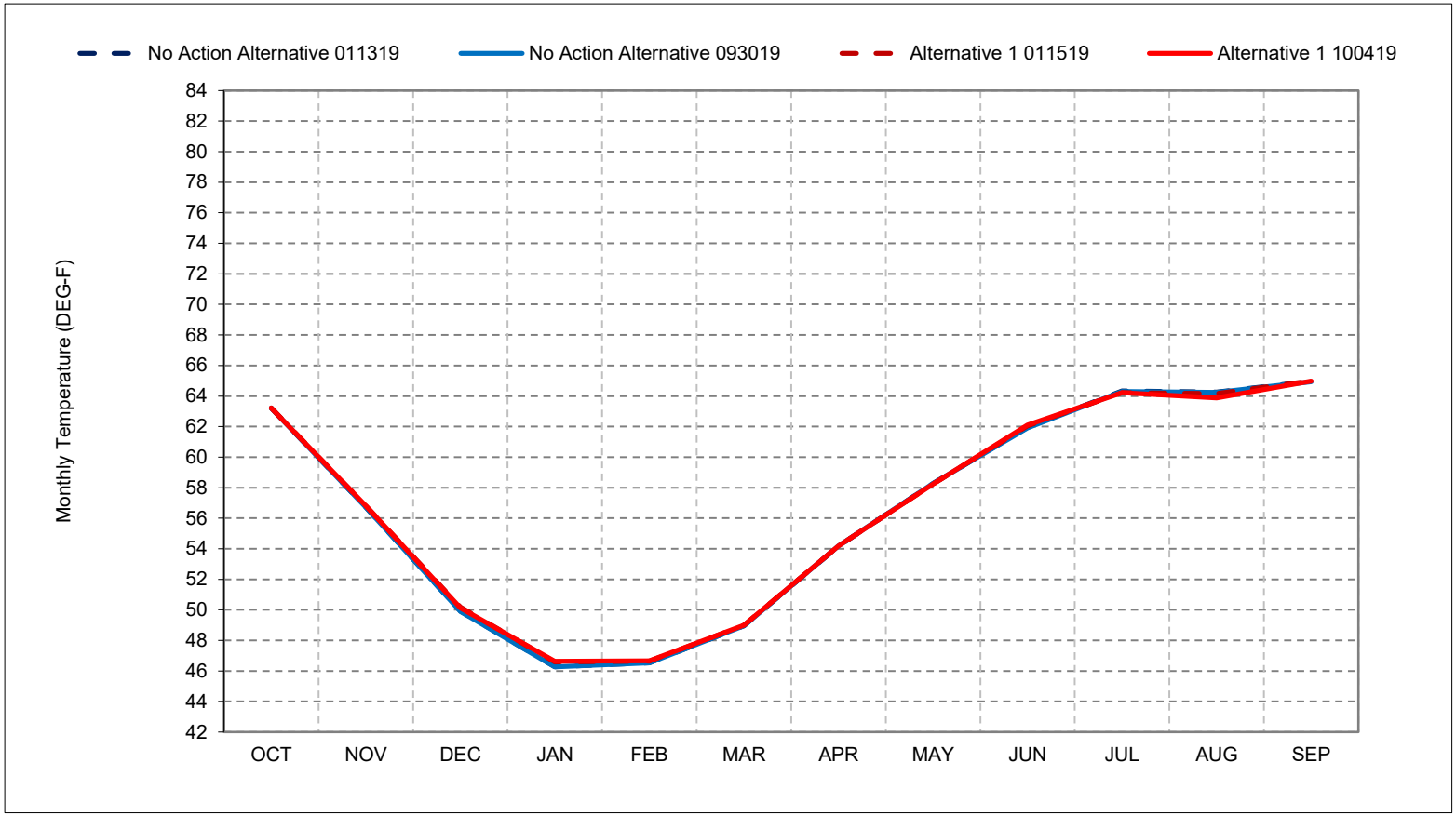



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-3. American River below Nimbus Dam, Above Normal Year Average Temperature

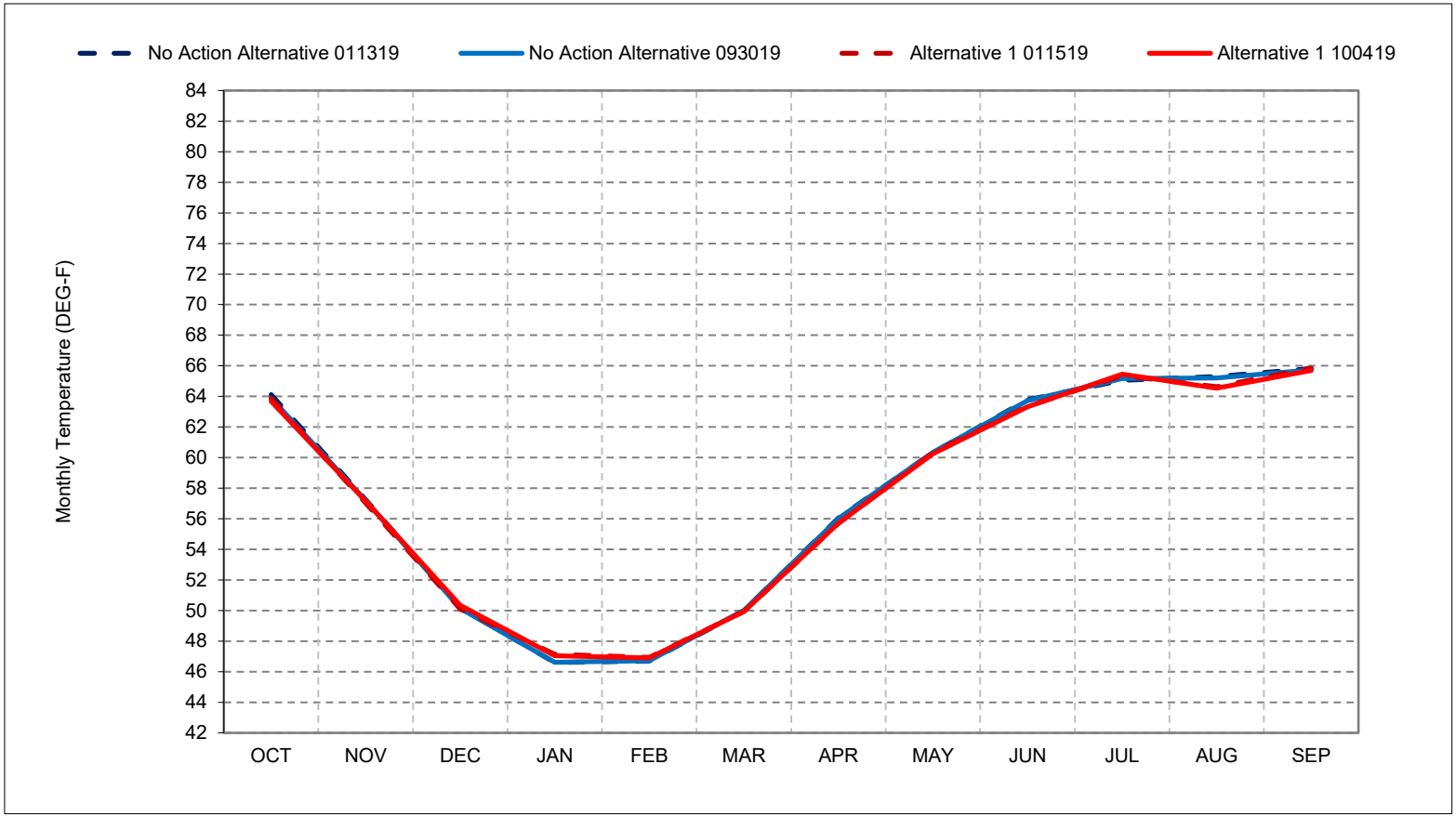



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-4. American River below Nimbus Dam, Below Normal Year Average Temperature

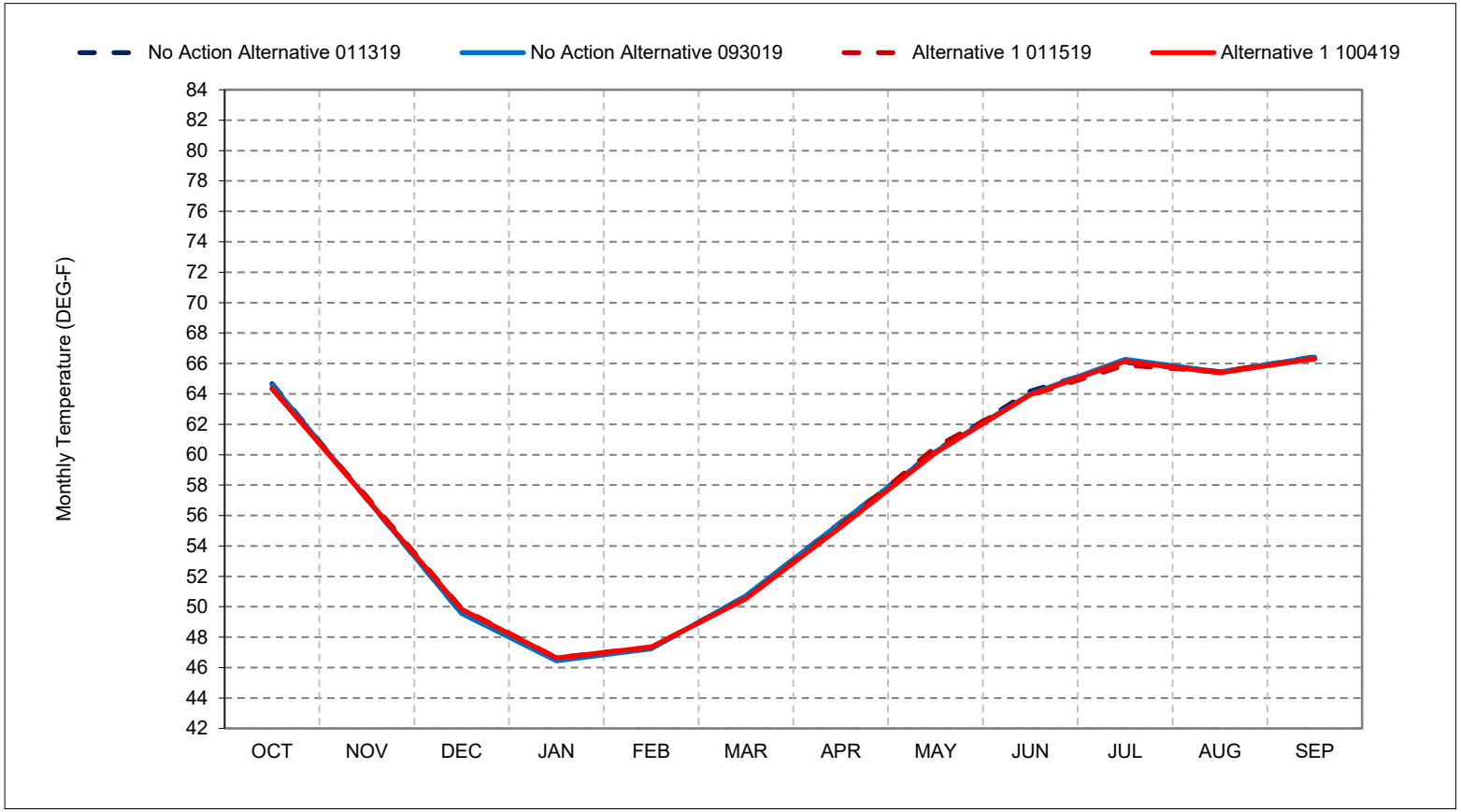



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-5. American River below Nimbus Dam, Dry Year Average Temperature

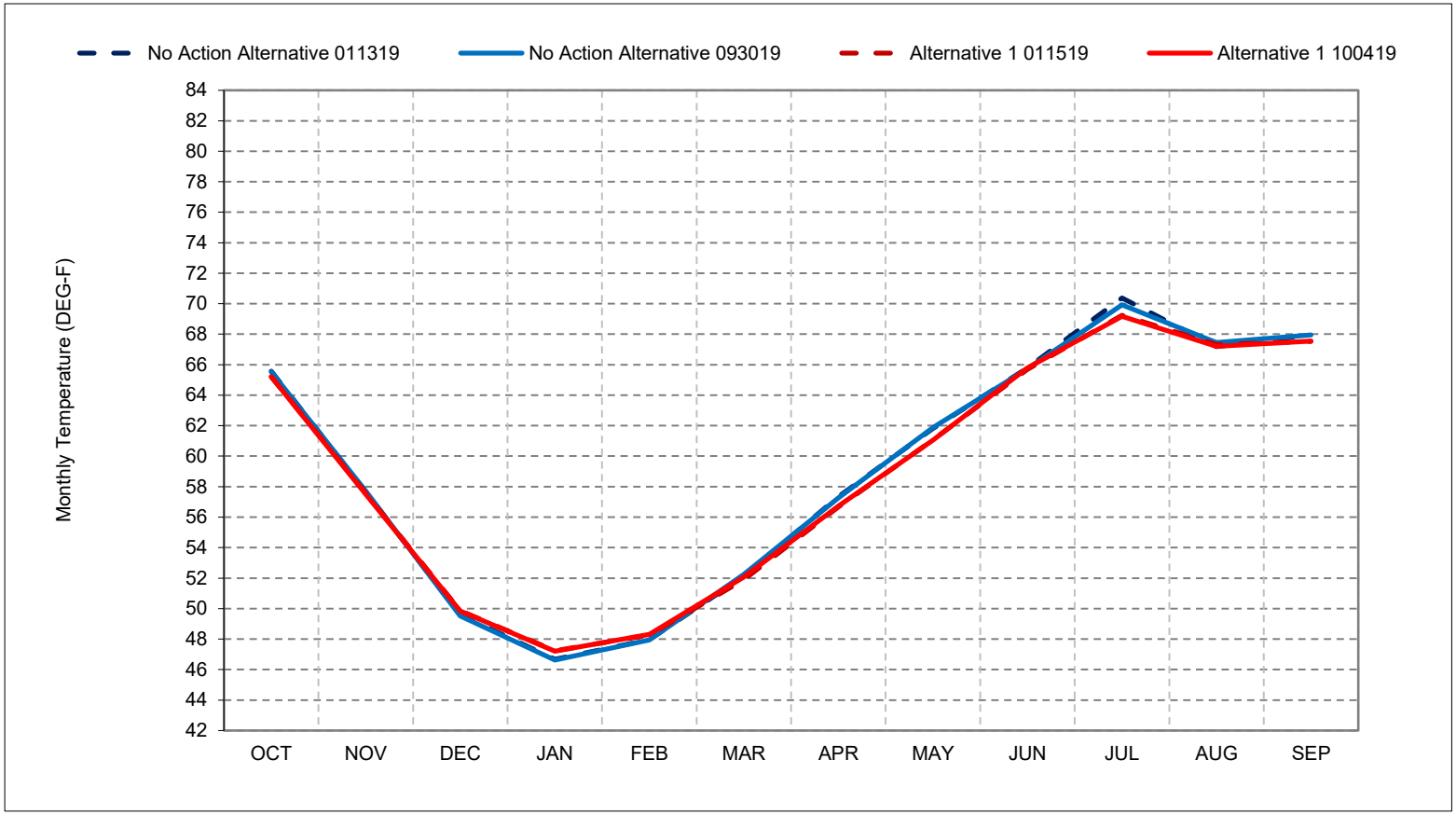



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-6. American River below Nimbus Dam, Critical Year Average Temperature

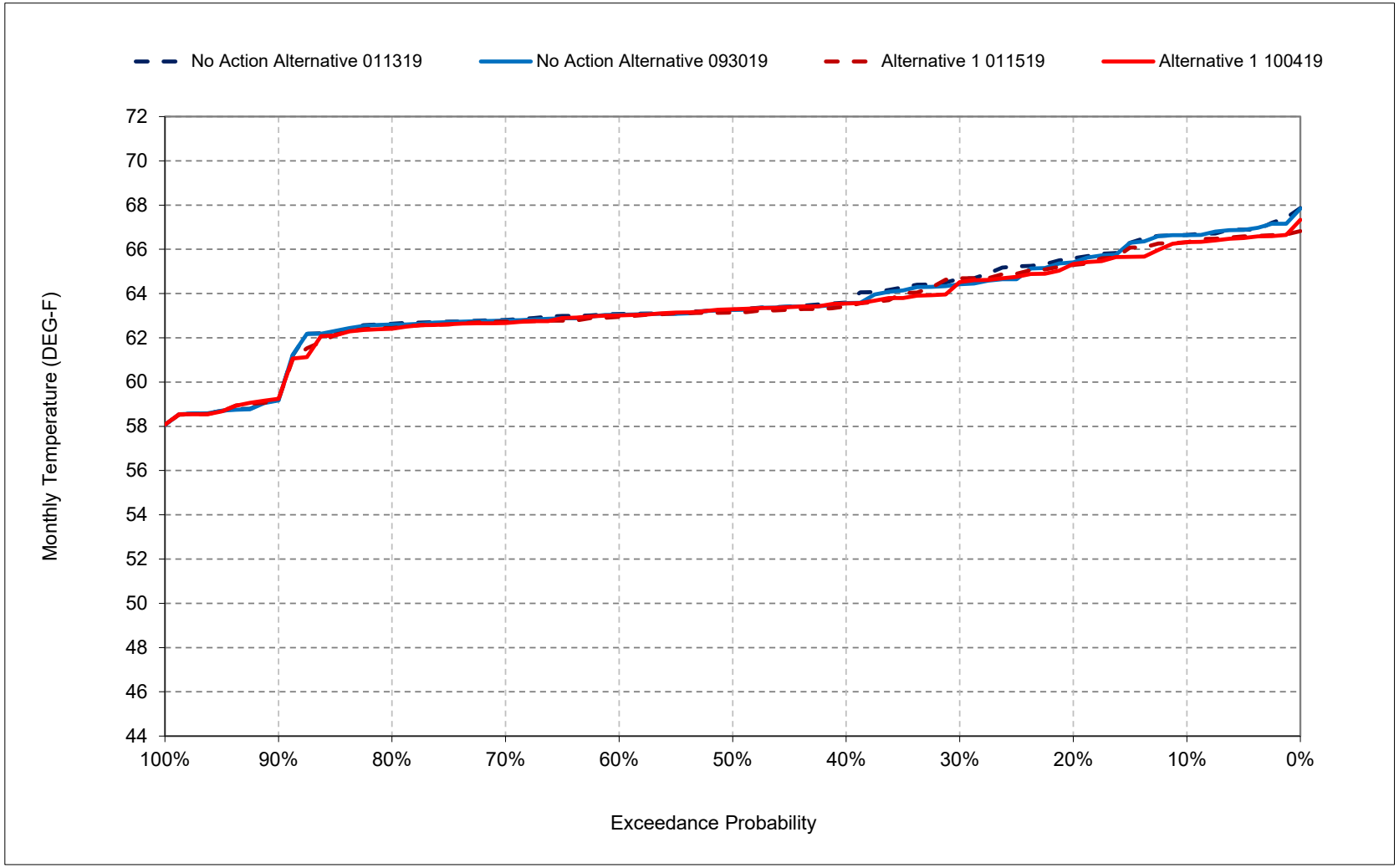



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

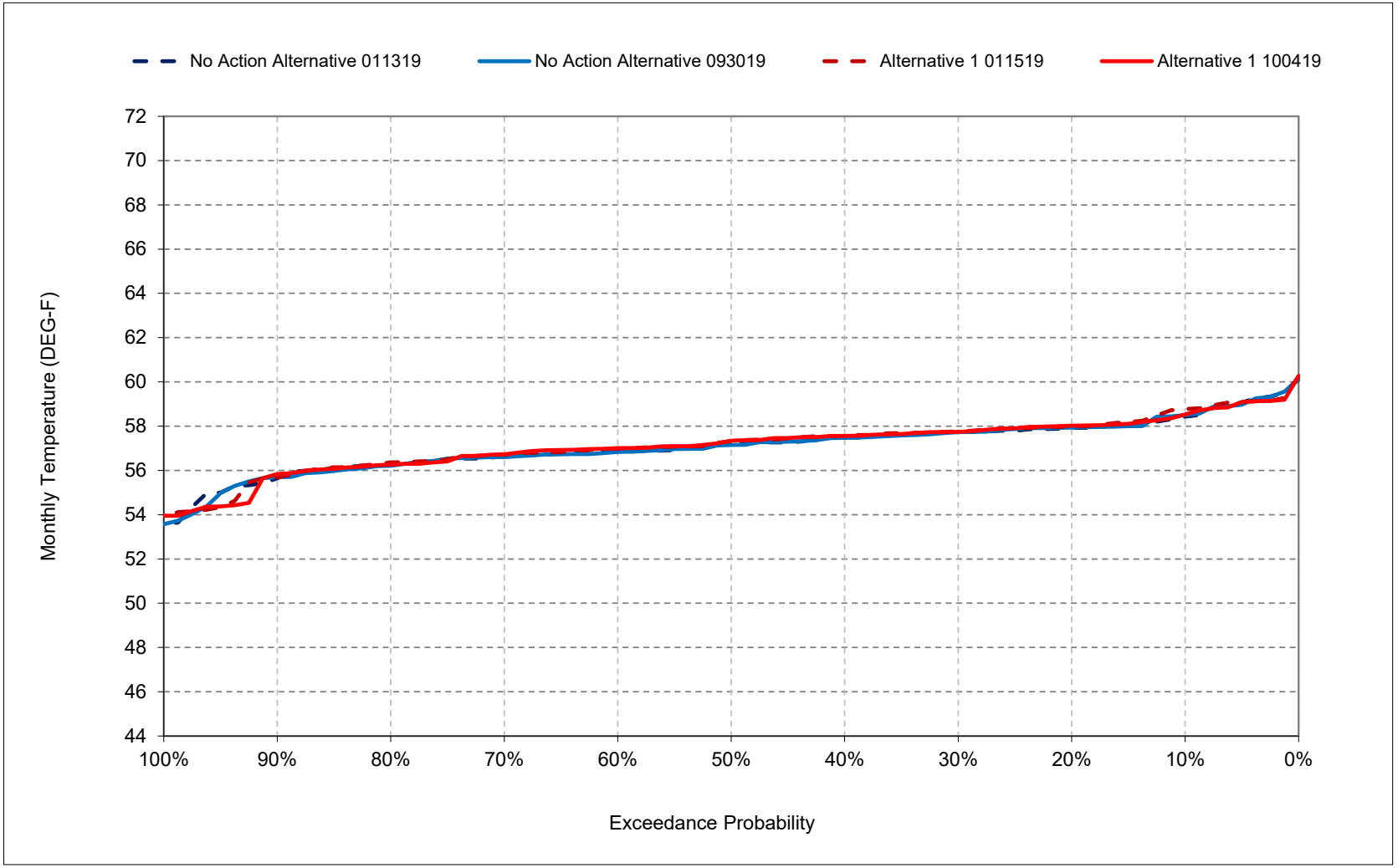
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-7. American River below Nimbus Dam, October**



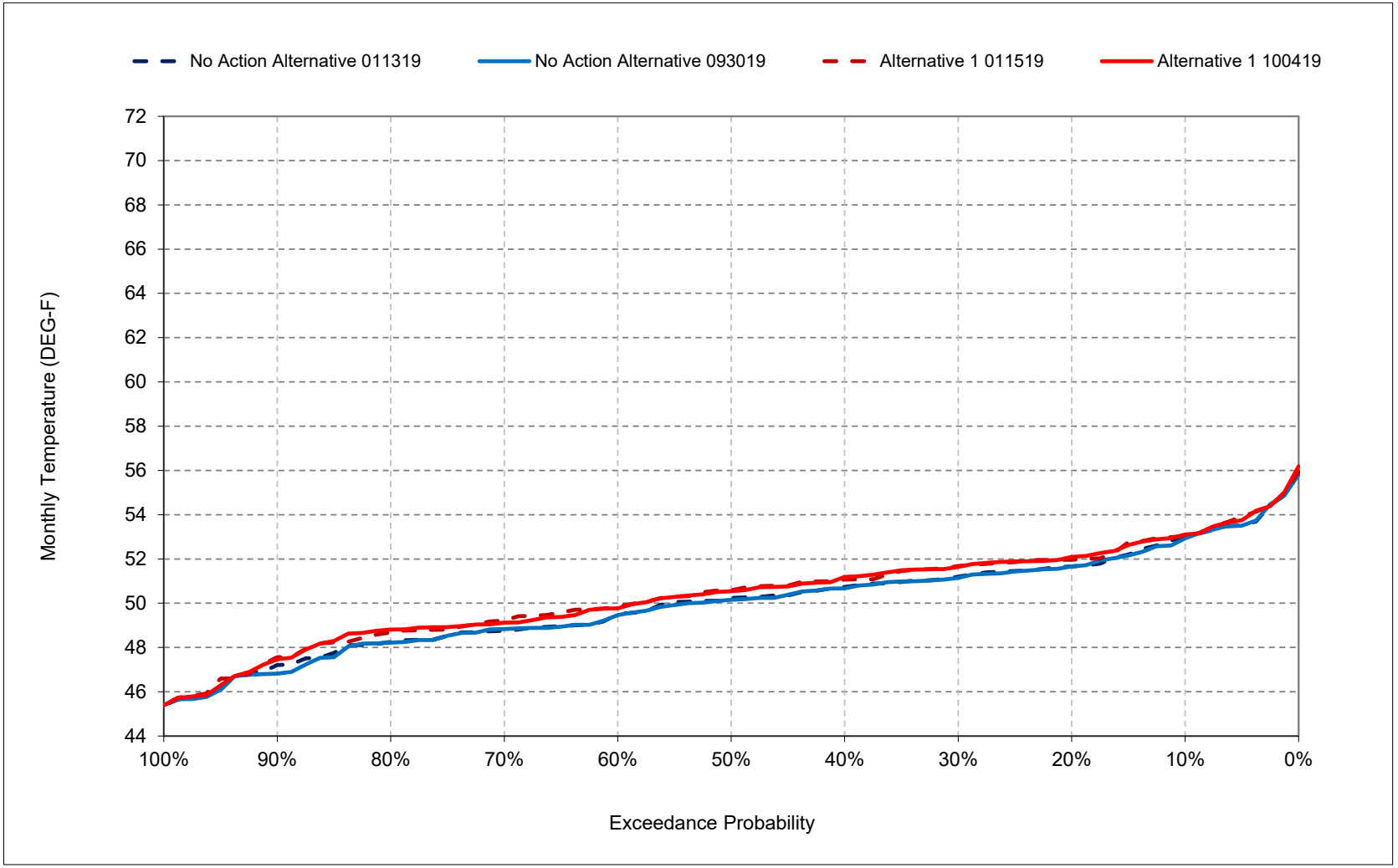

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-8. American River below Nimbus Dam, November**



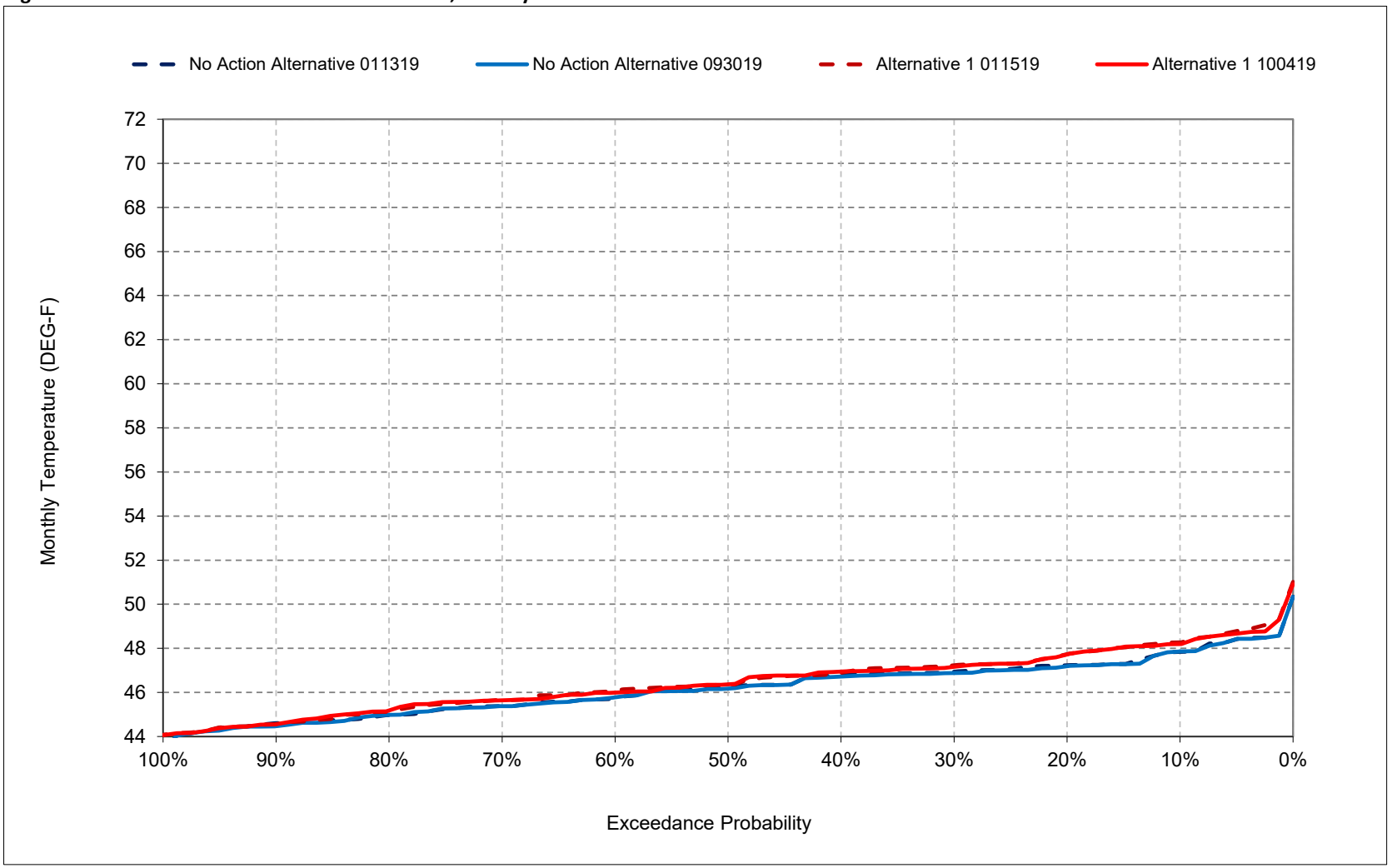

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-9. American River below Nimbus Dam, December**



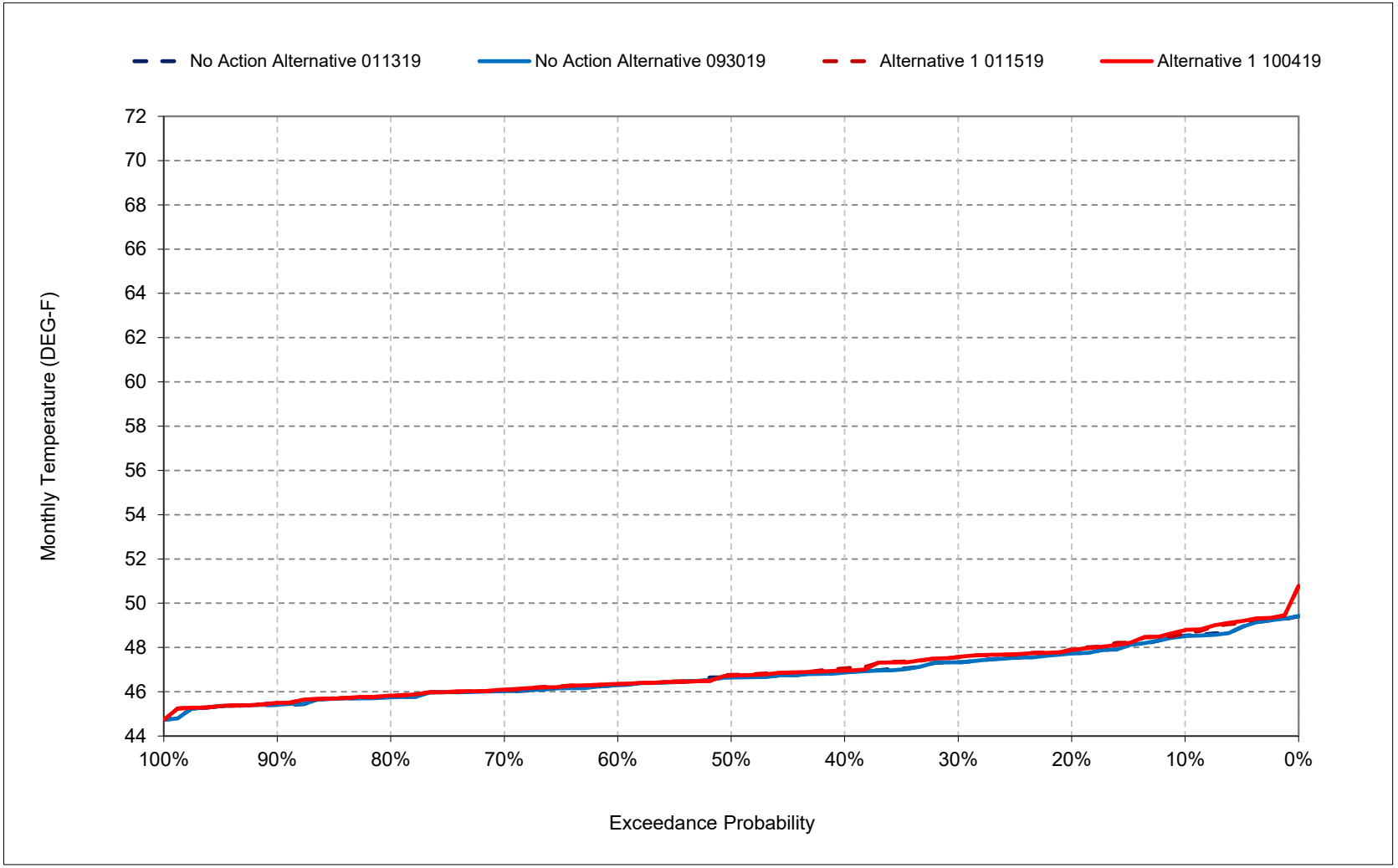

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-10. American River below Nimbus Dam, January**



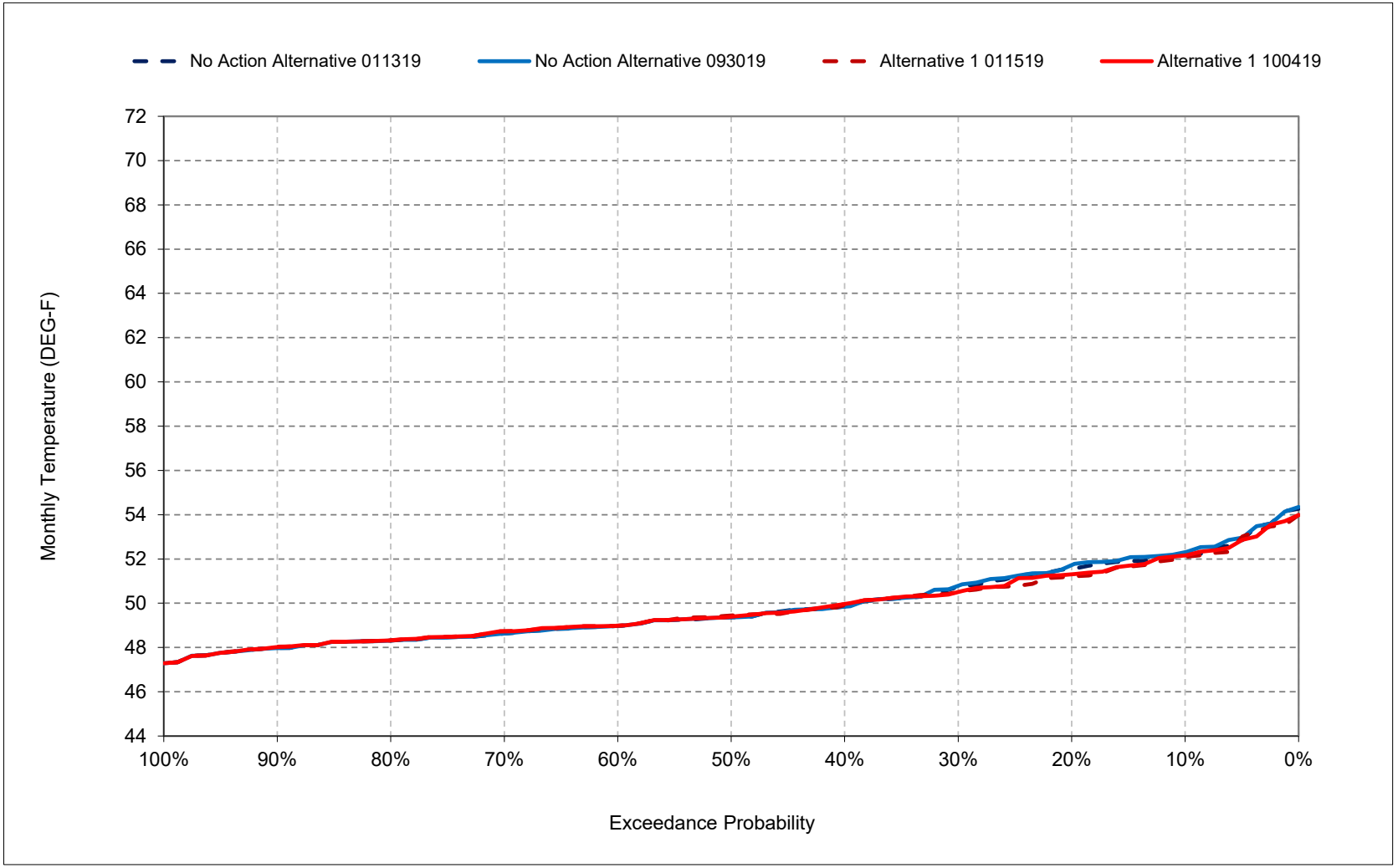

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-11. American River below Nimbus Dam, February**



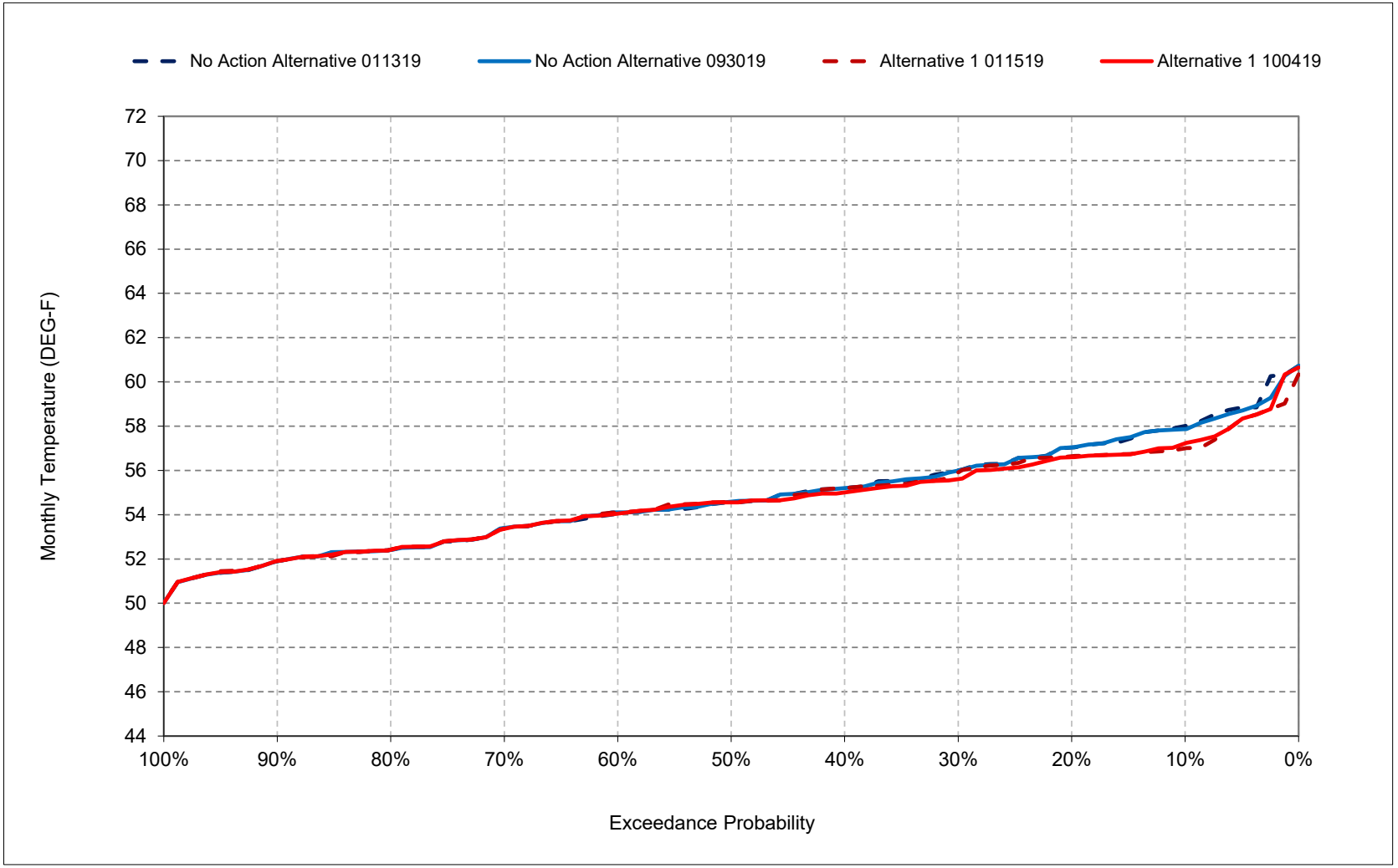

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-12. American River below Nimbus Dam, March**



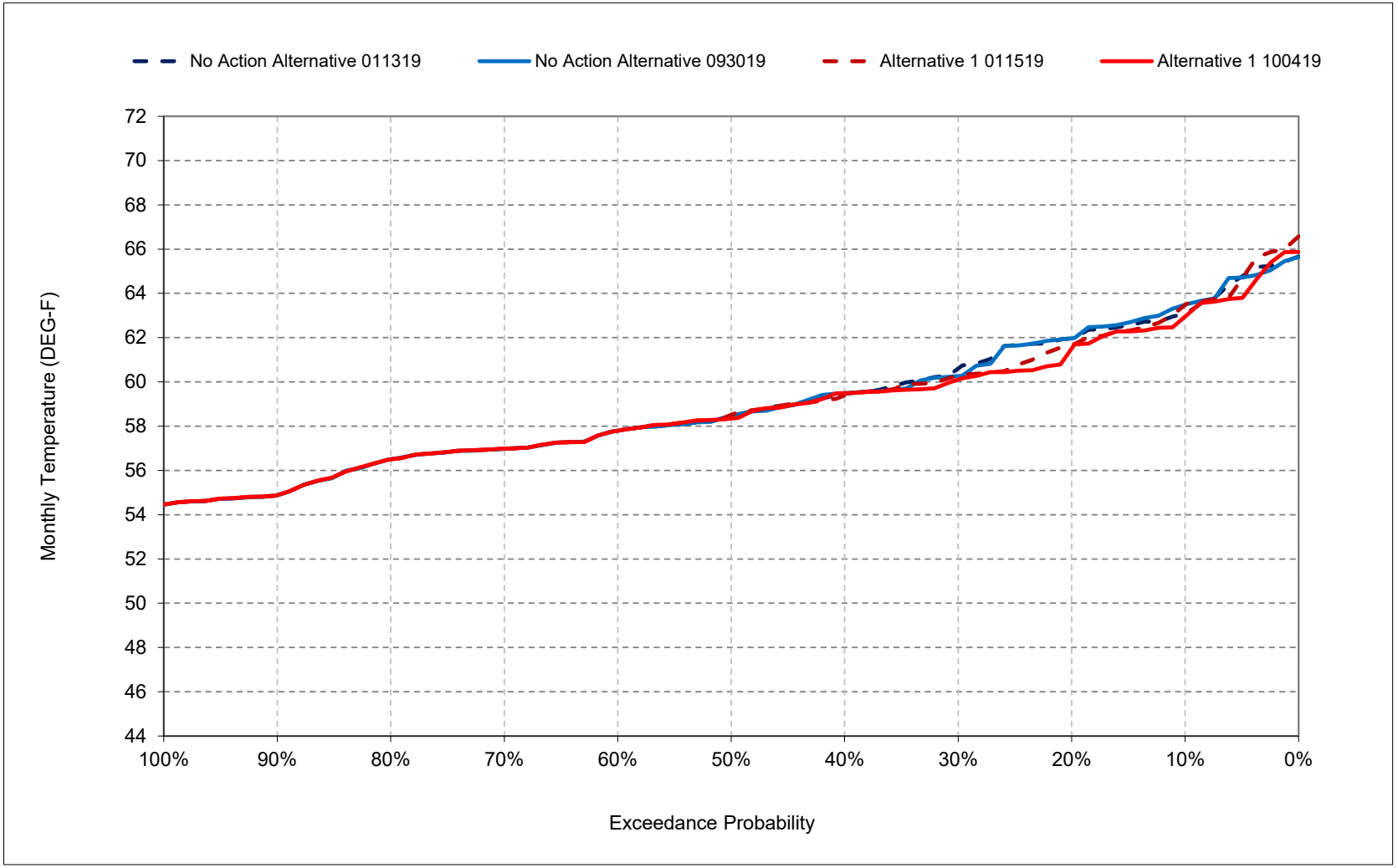

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-13. American River below Nimbus Dam, April**



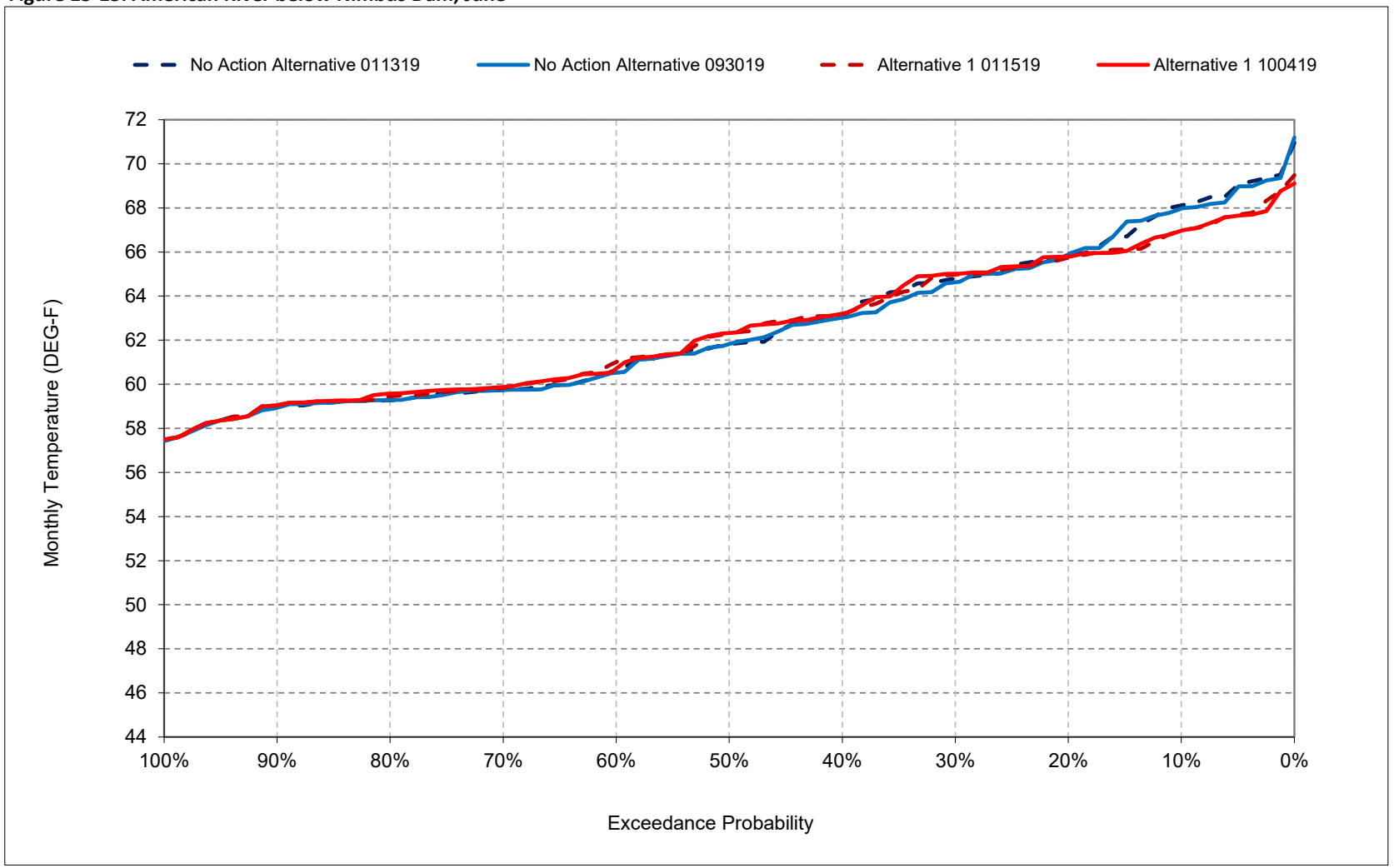

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-14. American River below Nimbus Dam, May**



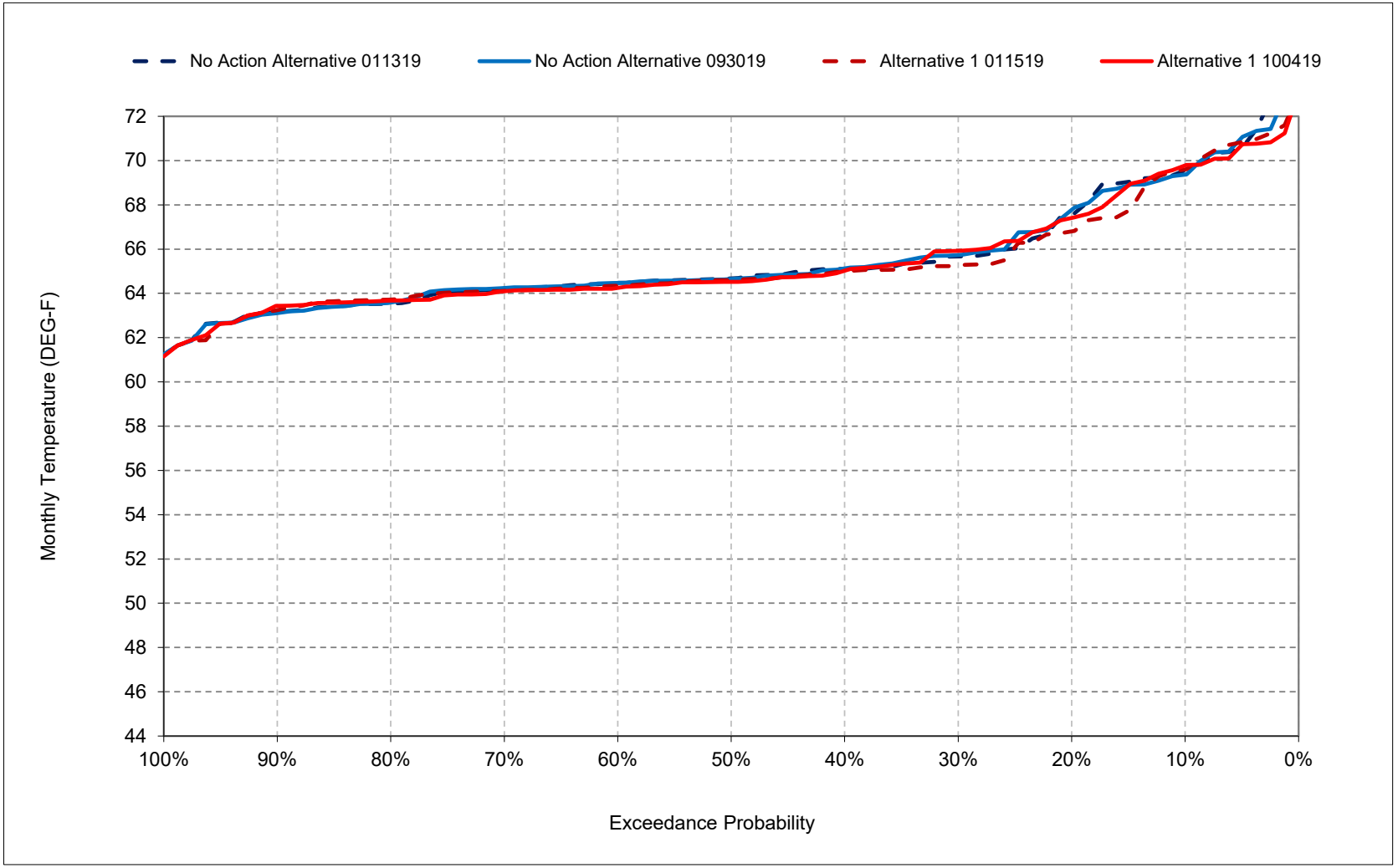

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-15. American River below Nimbus Dam, June**



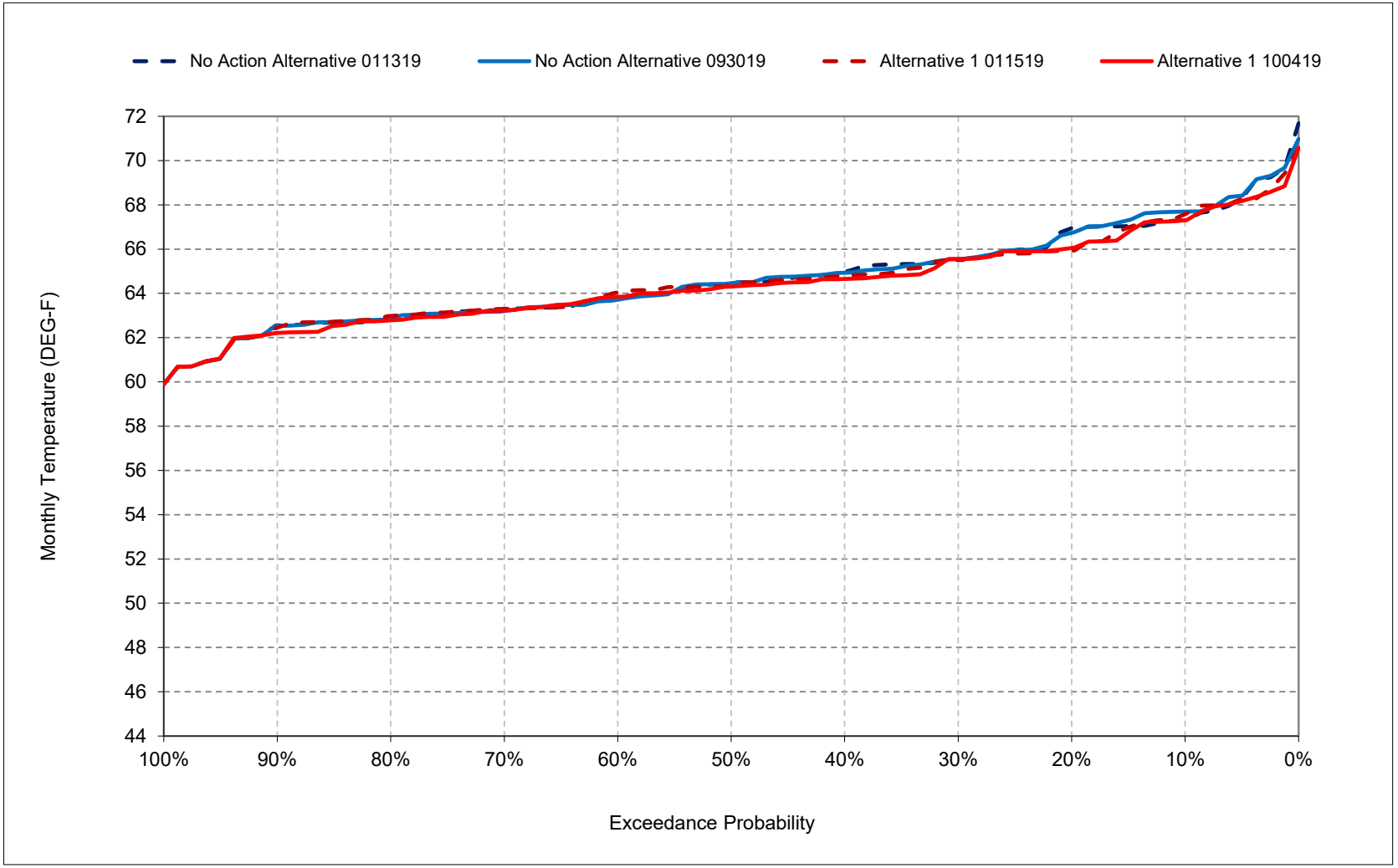

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-16. American River below Nimbus Dam, July**



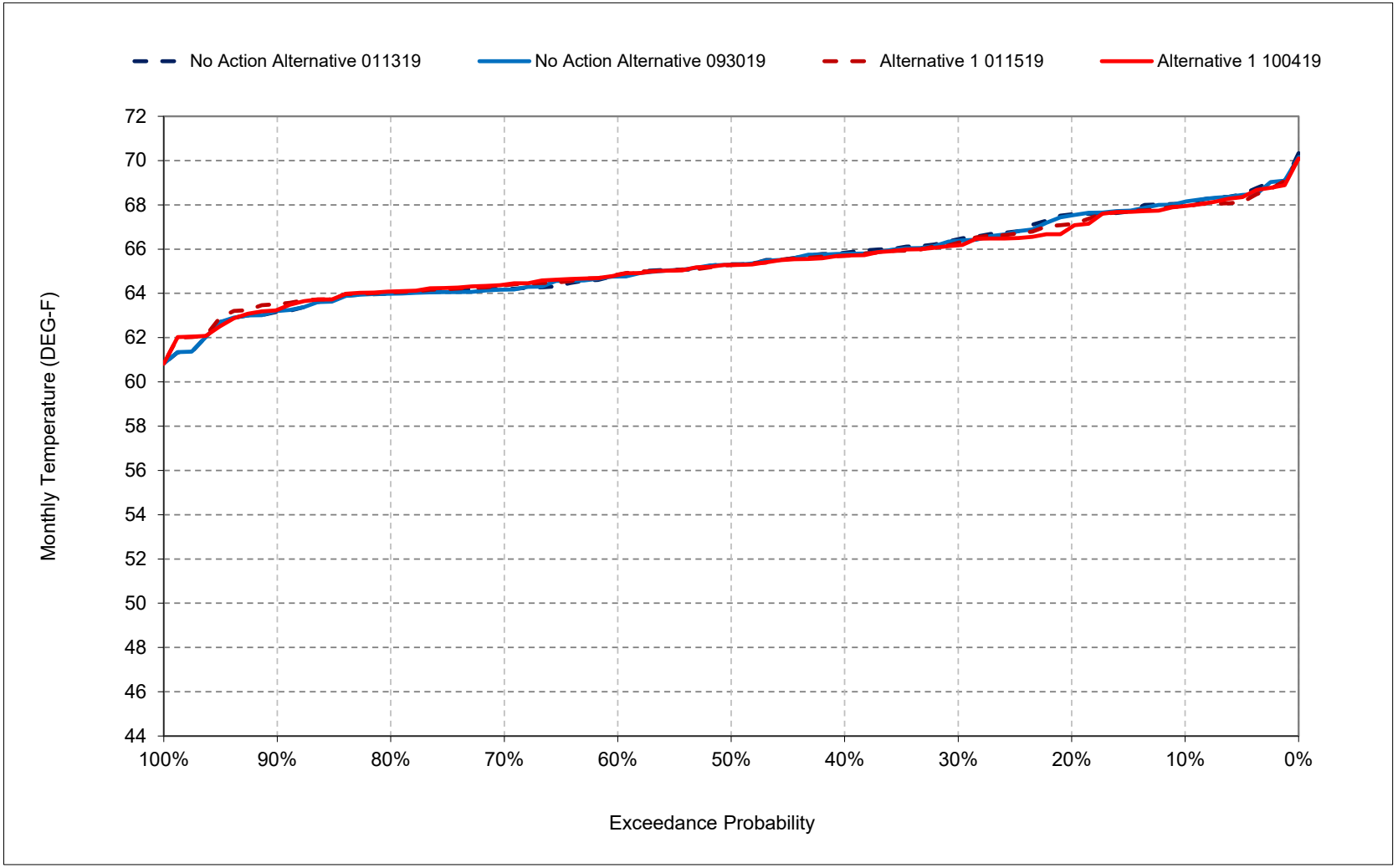

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-17. American River below Nimbus Dam, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-18. American River below Nimbus Dam, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-1. American River at Watt Avenue, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.3 | 58.4 | 52.2 | 48.3 | 49.9 | 56.2 | 62.7 | 68.0 | 73.9 | 74.8 | 73.2 | 71.4 |
| 20% | 65.9 | 58.0 | 51.5 | 47.8 | 49.5 | 55.0 | 60.6 | 66.8 | 70.6 | 71.0 | 72.0 | 70.2 |
| 30% | 65.0 | 57.7 | 50.8 | 47.3 | 48.6 | 53.5 | 59.1 | 65.3 | 68.9 | 69.5 | 69.7 | 69.0 |
| 40% | 64.5 | 57.3 | 50.4 | 47.1 | 48.2 | 51.9 | 57.8 | 63.9 | 67.1 | 68.6 | 69.2 | 68.3 |
| 50% | 64.1 | 57.1 | 50.1 | 46.8 | 47.7 | 51.3 | 57.0 | 62.4 | 66.1 | 68.2 | 68.7 | 67.8 |
| 60% | 63.7 | 56.8 | 49.2 | 46.4 | 47.2 | 50.4 | 56.5 | 61.1 | 64.6 | 67.7 | 67.9 | 66.7 |
| 70% | 63.3 | 56.5 | 48.6 | 45.8 | 46.9 | 50.0 | 55.0 | 59.8 | 63.7 | 67.5 | 67.3 | 66.3 |
| 80% | 63.0 | 56.2 | 48.0 | 45.4 | 46.5 | 49.7 | 54.2 | 59.1 | 63.1 | 67.0 | 66.8 | 66.0 |
| 90% | 61.1 | 55.8 | 47.3 | 44.9 | 46.1 | 49.2 | 53.4 | 57.1 | 61.9 | 66.4 | 65.9 | 65.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.2 | 57.1 | 49.9 | 46.7 | 48.0 | 52.0 | 57.5 | 62.7 | 66.8 | 69.5 | 69.1 | 68.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.0 | 50.4 | 45.9 | 46.7 | 49.9 | 54.7 | 59.3 | 63.3 | 67.5 | 66.8 | 65.8 |
| Above Normal (16%) | 63.9 | 56.6 | 49.7 | 46.7 | 47.5 | 50.4 | 56.4 | 62.0 | 66.0 | 67.2 | 68.4 | 67.3 |
| Below Normal (13%) | 64.6 | 57.2 | 49.9 | 47.0 | 47.8 | 52.6 | 59.2 | 64.0 | 68.2 | 68.2 | 70.0 | 68.7 |
| Dry (24%) | 65.2 | 57.0 | 49.4 | 47.1 | 48.7 | 53.1 | 58.7 | 64.4 | 68.5 | 70.2 | 69.9 | 69.2 |
| Critical (15%) | 66.2 | 57.7 | 49.5 | 47.3 | 50.5 | 55.7 | 61.4 | 66.7 | 71.0 | 76.4 | 72.7 | 71.0 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.2 | 58.4 | 52.4 | 48.7 | 50.4 | 55.2 | 61.3 | 67.6 | 72.8 | 74.6 | 73.2 | 71.1 |
| 20% | 65.8 | 58.1 | 51.8 | 48.0 | 49.4 | 53.9 | 60.1 | 66.3 | 71.2 | 70.5 | 70.2 | 69.4 |
| 30% | 64.9 | 57.7 | 51.3 | 47.6 | 48.7 | 53.1 | 59.2 | 65.2 | 68.7 | 69.5 | 69.6 | 68.7 |
| 40% | 64.5 | 57.4 | 50.6 | 47.3 | 48.1 | 51.9 | 58.2 | 64.2 | 67.1 | 68.7 | 69.0 | 68.2 |
| 50% | 63.9 | 57.2 | 50.3 | 46.7 | 47.7 | 51.2 | 57.2 | 62.5 | 66.1 | 68.3 | 68.5 | 67.6 |
| 60% | 63.6 | 56.9 | 49.6 | 46.5 | 47.2 | 50.5 | 56.5 | 61.0 | 64.7 | 67.9 | 67.8 | 67.3 |
| 70% | 63.3 | 56.8 | 49.1 | 46.2 | 46.9 | 50.0 | 55.1 | 59.8 | 63.9 | 67.6 | 67.2 | 66.9 |
| 80% | 62.8 | 56.1 | 48.5 | 45.6 | 46.4 | 49.7 | 54.1 | 59.1 | 62.9 | 67.2 | 66.6 | 66.5 |
| 90% | 61.1 | 55.7 | 47.3 | 45.0 | 46.2 | 49.2 | 53.4 | 57.1 | 62.0 | 66.5 | 65.9 | 66.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 50.1 | 46.9 | 48.0 | 51.7 | 57.3 | 62.6 | 66.6 | 69.4 | 68.9 | 68.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.2 | 51.0 | 46.0 | 46.8 | 49.9 | 54.7 | 59.4 | 63.2 | 67.6 | 66.8 | 66.6 |
| Above Normal (16%) | 63.9 | 56.7 | 50.0 | 47.0 | 47.5 | 50.4 | 56.4 | 62.0 | 65.9 | 67.2 | 68.2 | 67.4 |
| Below Normal (13%) | 64.5 | 57.0 | 49.8 | 47.4 | 47.9 | 52.2 | 58.8 | 63.8 | 67.6 | 68.5 | 68.7 | 68.3 |
| Dry (24%) | 65.0 | 57.1 | 49.6 | 47.2 | 48.7 | 52.8 | 58.5 | 64.6 | 68.5 | 70.3 | 69.8 | 68.8 |
| Critical (15%) | 66.0 | 57.6 | 49.6 | 47.8 | 50.2 | 54.9 | 60.4 | 65.9 | 70.8 | 74.9 | 72.9 | 70.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.2 | 0.0 | **0.2** | **0.3** | **0.5** | -1.0 | -1.4 | -0.5 | -1.1 | -0.2 | 0.0 | -0.4 |
| 20% | -0.1 | **0.1** | **0.3** | **0.2** | -0.1 | -1.0 | -0.5 | -0.5 | **0.7** | -0.5 | -1.8 | -0.8 |
| 30% | -0.1 | **0.0** | **0.5** | **0.3** | **0.1** | -0.4 | **0.1** | -0.1 | -0.2 | 0.0 | -0.1 | -0.3 |
| 40% | **0.1** | **0.1** | **0.2** | **0.2** | -0.1 | **0.0** | **0.4** | **0.4** | **0.0** | **0.0** | -0.1 | -0.1 |
| 50% | -0.2 | **0.0** | **0.2** | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** | **0.0** | -0.2 | -0.2 |
| 60% | -0.1 | **0.1** | **0.4** | **0.1** | **0.0** | **0.1** | **0.0** | -0.1 | **0.1** | **0.2** | 0.0 | **0.6** |
| 70% | 0.0 | **0.3** | **0.4** | **0.4** | 0.0 | **0.0** | **0.1** | **0.0** | **0.2** | **0.1** | 0.0 | **0.5** |
| 80% | -0.2 | -0.1 | **0.4** | **0.2** | 0.0 | **0.0** | 0.0 | 0.0 | -0.2 | **0.2** | -0.2 | **0.5** |
| 90% | 0.0 | -0.1 | **0.0** | **0.1** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.1** | **0.0** | **0.4** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | **0.0** | **0.3** | **0.2** | 0.0 | -0.2 | -0.2 | -0.1 | -0.2 | -0.1 | -0.2 | **0.1** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | **0.1** | **0.6** | **0.1** | **0.0** | **0.0** | **0.1** | **0.0** | -0.1 | **0.1** | **0.0** | **0.8** |
| Above Normal (16%) | **0.0** | **0.1** | **0.2** | **0.3** | **0.0** | 0.0 | **0.1** | **0.0** | -0.1 | **0.1** | -0.1 | **0.1** |
| Below Normal (13%) | -0.1 | -0.2 | -0.1 | **0.5** | **0.0** | -0.3 | -0.4 | -0.2 | -0.6 | **0.3** | -1.3 | -0.4 |
| Dry (24%) | -0.2 | **0.1** | **0.2** | **0.1** | **0.0** | -0.3 | -0.2 | **0.2** | -0.1 | **0.2** | -0.1 | -0.4 |
| Critical (15%) | -0.2 | -0.1 | **0.1** | **0.4** | -0.3 | -0.8 | -1.0 | -0.8 | -0.1 | -1.5 | **0.2** | -0.5 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-2. American River at Watt Avenue, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.2 | 58.5 | 52.0 | 48.4 | 50.1 | 56.3 | 62.5 | 68.1 | 73.9 | 75.1 | 73.6 | 71.4 |
| 20% | 65.9 | 58.0 | 51.4 | 47.7 | 49.5 | 55.0 | 60.5 | 66.9 | 70.7 | 71.2 | 71.9 | 70.1 |
| 30% | 64.8 | 57.7 | 50.8 | 47.3 | 48.6 | 53.6 | 59.0 | 65.2 | 68.7 | 69.5 | 69.6 | 69.0 |
| 40% | 64.4 | 57.4 | 50.4 | 47.1 | 48.2 | 51.9 | 57.9 | 63.7 | 67.1 | 68.7 | 69.1 | 68.3 |
| 50% | 64.0 | 57.1 | 50.0 | 46.7 | 47.7 | 51.3 | 57.1 | 62.4 | 66.1 | 68.1 | 68.8 | 67.6 |
| 60% | 63.7 | 56.9 | 49.3 | 46.4 | 47.2 | 50.4 | 56.5 | 61.1 | 64.5 | 67.7 | 67.8 | 66.8 |
| 70% | 63.3 | 56.5 | 48.6 | 45.8 | 46.9 | 50.0 | 55.0 | 59.8 | 63.6 | 67.5 | 67.2 | 66.3 |
| 80% | 63.0 | 56.2 | 48.1 | 45.4 | 46.5 | 49.7 | 54.2 | 59.1 | 63.0 | 67.0 | 66.9 | 66.0 |
| 90% | 61.1 | 55.7 | 47.0 | 44.8 | 46.1 | 49.2 | 53.4 | 57.1 | 61.8 | 66.4 | 65.9 | 65.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 49.8 | 46.6 | 48.1 | 52.0 | 57.5 | 62.7 | 66.8 | 69.5 | 69.1 | 68.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.0 | 50.4 | 45.9 | 46.7 | 49.9 | 54.7 | 59.3 | 63.3 | 67.5 | 66.8 | 65.7 |
| Above Normal (16%) | 63.8 | 56.6 | 49.7 | 46.7 | 47.5 | 50.4 | 56.4 | 62.0 | 66.0 | 67.1 | 68.3 | 67.2 |
| Below Normal (13%) | 64.4 | 57.2 | 49.8 | 47.0 | 47.8 | 52.6 | 59.2 | 64.1 | 68.1 | 68.2 | 69.8 | 68.6 |
| Dry (24%) | 65.1 | 57.1 | 49.4 | 47.0 | 48.7 | 53.2 | 58.7 | 64.4 | 68.4 | 70.5 | 69.9 | 69.2 |
| Critical (15%) | 66.2 | 57.7 | 49.5 | 47.3 | 50.6 | 55.8 | 61.3 | 66.7 | 71.5 | 75.9 | 73.1 | 71.0 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.1 | 58.4 | 52.5 | 48.7 | 50.3 | 55.0 | 61.3 | 67.4 | 72.8 | 74.7 | 73.0 | 71.1 |
| 20% | 65.6 | 58.0 | 51.9 | 48.1 | 49.4 | 54.1 | 59.9 | 66.0 | 70.8 | 71.8 | 70.3 | 69.3 |
| 30% | 64.9 | 57.7 | 51.3 | 47.6 | 48.7 | 53.0 | 59.0 | 65.2 | 68.8 | 69.6 | 69.6 | 68.6 |
| 40% | 64.5 | 57.5 | 50.7 | 47.3 | 48.1 | 51.9 | 58.2 | 64.0 | 67.4 | 69.1 | 68.9 | 68.1 |
| 50% | 64.0 | 57.1 | 50.2 | 46.8 | 47.7 | 51.3 | 57.2 | 62.6 | 66.0 | 68.6 | 68.2 | 67.6 |
| 60% | 63.7 | 57.0 | 49.6 | 46.4 | 47.3 | 50.5 | 56.5 | 61.0 | 64.5 | 68.0 | 67.7 | 67.3 |
| 70% | 63.4 | 56.8 | 49.0 | 46.2 | 46.9 | 50.0 | 55.1 | 59.8 | 63.7 | 67.6 | 67.1 | 67.0 |
| 80% | 62.9 | 56.3 | 48.6 | 45.7 | 46.4 | 49.7 | 54.2 | 59.1 | 63.2 | 67.4 | 66.2 | 66.4 |
| 90% | 61.2 | 55.7 | 47.3 | 45.0 | 46.2 | 49.2 | 53.4 | 57.1 | 62.0 | 66.7 | 65.8 | 65.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 50.1 | 46.9 | 48.0 | 51.8 | 57.3 | 62.5 | 66.6 | 69.6 | 68.7 | 68.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.6 | 57.1 | 51.0 | 46.0 | 46.8 | 49.9 | 54.7 | 59.4 | 63.2 | 67.7 | 66.6 | 66.5 |
| Above Normal (16%) | 63.9 | 56.7 | 49.9 | 47.0 | 47.5 | 50.4 | 56.4 | 62.0 | 65.9 | 67.4 | 67.7 | 67.3 |
| Below Normal (13%) | 64.3 | 57.1 | 50.0 | 47.4 | 47.9 | 52.2 | 58.8 | 63.7 | 67.5 | 69.0 | 68.6 | 68.1 |
| Dry (24%) | 65.0 | 57.0 | 49.6 | 47.2 | 48.7 | 52.8 | 58.4 | 64.2 | 68.3 | 70.7 | 69.8 | 68.8 |
| Critical (15%) | 66.0 | 57.6 | 49.7 | 47.7 | 50.2 | 55.0 | 60.7 | 66.0 | 70.9 | 74.8 | 72.7 | 70.5 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.1 | -0.1 | **0.4** | **0.3** | **0.2** | -1.2 | -1.1 | -0.6 | -1.1 | -0.4 | -0.6 | -0.4 |
| 20% | -0.2 | **0.0** | **0.5** | **0.4** | -0.1 | -0.9 | -0.6 | -0.9 | **0.0** | **0.5** | -1.6 | -0.8 |
| 30% | **0.1** | **0.0** | **0.5** | **0.3** | **0.1** | -0.6 | **0.0** | **0.0** | **0.1** | **0.1** | 0.0 | -0.3 |
| 40% | **0.1** | **0.1** | **0.2** | **0.3** | -0.1 | 0.0 | **0.3** | **0.3** | **0.2** | **0.4** | -0.2 | -0.1 |
| 50% | -0.1 | **0.1** | **0.2** | **0.1** | 0.0 | -0.1 | **0.1** | **0.2** | -0.1 | **0.5** | -0.6 | **0.0** |
| 60% | **0.0** | **0.1** | **0.3** | **0.1** | **0.0** | **0.0** | **0.0** | -0.1 | 0.0 | **0.3** | -0.1 | **0.5** |
| 70% | **0.1** | **0.3** | **0.4** | **0.5** | **0.0** | **0.0** | **0.1** | **0.0** | **0.0** | **0.1** | 0.0 | **0.7** |
| 80% | -0.1 | **0.0** | **0.5** | **0.3** | 0.0 | **0.0** | **0.0** | 0.0 | **0.2** | **0.4** | -0.7 | **0.4** |
| 90% | **0.2** | 0.0 | **0.3** | **0.2** | **0.0** | **0.0** | 0.0 | **0.0** | **0.1** | **0.3** | -0.1 | **0.2** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.0** | **0.3** | **0.3** | 0.0 | -0.2 | -0.2 | -0.2 | -0.2 | **0.1** | -0.4 | **0.0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.1** | **0.2** | **0.6** | **0.1** | **0.0** | **0.0** | **0.1** | **0.1** | -0.1 | **0.2** | -0.1 | **0.7** |
| Above Normal (16%) | **0.0** | **0.1** | **0.2** | **0.3** | **0.0** | 0.0 | **0.1** | **0.0** | -0.1 | **0.3** | -0.7 | **0.1** |
| Below Normal (13%) | -0.1 | -0.1 | **0.2** | **0.4** | **0.0** | -0.4 | -0.4 | -0.3 | -0.6 | **0.8** | -1.2 | -0.5 |
| Dry (24%) | -0.1 | -0.1 | **0.2** | **0.2** | **0.0** | -0.4 | -0.3 | -0.1 | -0.1 | **0.2** | -0.1 | -0.4 |
| Critical (15%) | -0.2 | -0.2 | **0.2** | **0.5** | -0.4 | -0.8 | -0.6 | -0.7 | -0.6 | -1.1 | -0.4 | -0.5 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-3. American River at Watt Avenue, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 67.3 | 58.4 | 52.2 | 48.3 | 49.9 | 56.2 | 62.7 | 68.0 | 73.9 | 74.8 | 73.2 | 71.4 |
| 20% | 65.9 | 58.0 | 51.5 | 47.8 | 49.5 | 55.0 | 60.6 | 66.8 | 70.6 | 71.0 | 72.0 | 70.2 |
| 30% | 65.0 | 57.7 | 50.8 | 47.3 | 48.6 | 53.5 | 59.1 | 65.3 | 68.9 | 69.5 | 69.7 | 69.0 |
| 40% | 64.5 | 57.3 | 50.4 | 47.1 | 48.2 | 51.9 | 57.8 | 63.9 | 67.1 | 68.6 | 69.2 | 68.3 |
| 50% | 64.1 | 57.1 | 50.1 | 46.8 | 47.7 | 51.3 | 57.0 | 62.4 | 66.1 | 68.2 | 68.7 | 67.8 |
| 60% | 63.7 | 56.8 | 49.2 | 46.4 | 47.2 | 50.4 | 56.5 | 61.1 | 64.6 | 67.7 | 67.9 | 66.7 |
| 70% | 63.3 | 56.5 | 48.6 | 45.8 | 46.9 | 50.0 | 55.0 | 59.8 | 63.7 | 67.5 | 67.3 | 66.3 |
| 80% | 63.0 | 56.2 | 48.0 | 45.4 | 46.5 | 49.7 | 54.2 | 59.1 | 63.1 | 67.0 | 66.8 | 66.0 |
| 90% | 61.1 | 55.8 | 47.3 | 44.9 | 46.1 | 49.2 | 53.4 | 57.1 | 61.9 | 66.4 | 65.9 | 65.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.2 | 57.1 | 49.9 | 46.7 | 48.0 | 52.0 | 57.5 | 62.7 | 66.8 | 69.5 | 69.1 | 68.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.0 | 50.4 | 45.9 | 46.7 | 49.9 | 54.7 | 59.3 | 63.3 | 67.5 | 66.8 | 65.8 |
| Above Normal (16%) | 63.9 | 56.6 | 49.7 | 46.7 | 47.5 | 50.4 | 56.4 | 62.0 | 66.0 | 67.2 | 68.4 | 67.3 |
| Below Normal (13%) | 64.6 | 57.2 | 49.9 | 47.0 | 47.8 | 52.6 | 59.2 | 64.0 | 68.2 | 68.2 | 70.0 | 68.7 |
| Dry (24%) | 65.2 | 57.0 | 49.4 | 47.1 | 48.7 | 53.1 | 58.7 | 64.4 | 68.5 | 70.2 | 69.9 | 69.2 |
| Critical (15%) | 66.2 | 57.7 | 49.5 | 47.3 | 50.5 | 55.7 | 61.4 | 66.7 | 71.0 | 76.4 | 72.7 | 71.0 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 67.2 | 58.5 | 52.0 | 48.4 | 50.1 | 56.3 | 62.5 | 68.1 | 73.9 | 75.1 | 73.6 | 71.4 |
| 20% | 65.9 | 58.0 | 51.4 | 47.7 | 49.5 | 55.0 | 60.5 | 66.9 | 70.7 | 71.2 | 71.9 | 70.1 |
| 30% | 64.8 | 57.7 | 50.8 | 47.3 | 48.6 | 53.6 | 59.0 | 65.2 | 68.7 | 69.5 | 69.6 | 69.0 |
| 40% | 64.4 | 57.4 | 50.4 | 47.1 | 48.2 | 51.9 | 57.9 | 63.7 | 67.1 | 68.7 | 69.1 | 68.3 |
| 50% | 64.0 | 57.1 | 50.0 | 46.7 | 47.7 | 51.3 | 57.1 | 62.4 | 66.1 | 68.1 | 68.8 | 67.6 |
| 60% | 63.7 | 56.9 | 49.3 | 46.4 | 47.2 | 50.4 | 56.5 | 61.1 | 64.5 | 67.7 | 67.8 | 66.8 |
| 70% | 63.3 | 56.5 | 48.6 | 45.8 | 46.9 | 50.0 | 55.0 | 59.8 | 63.6 | 67.5 | 67.2 | 66.3 |
| 80% | 63.0 | 56.2 | 48.1 | 45.4 | 46.5 | 49.7 | 54.2 | 59.1 | 63.0 | 67.0 | 66.9 | 66.0 |
| 90% | 61.1 | 55.7 | 47.0 | 44.8 | 46.1 | 49.2 | 53.4 | 57.1 | 61.8 | 66.4 | 65.9 | 65.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 49.8 | 46.6 | 48.1 | 52.0 | 57.5 | 62.7 | 66.8 | 69.5 | 69.1 | 68.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.0 | 50.4 | 45.9 | 46.7 | 49.9 | 54.7 | 59.3 | 63.3 | 67.5 | 66.8 | 65.7 |
| Above Normal (16%) | 63.8 | 56.6 | 49.7 | 46.7 | 47.5 | 50.4 | 56.4 | 62.0 | 66.0 | 67.1 | 68.3 | 67.2 |
| Below Normal (13%) | 64.4 | 57.2 | 49.8 | 47.0 | 47.8 | 52.6 | 59.2 | 64.1 | 68.1 | 68.2 | 69.8 | 68.6 |
| Dry (24%) | 65.1 | 57.1 | 49.4 | 47.0 | 48.7 | 53.2 | 58.7 | 64.4 | 68.4 | 70.5 | 69.9 | 69.2 |
| Critical (15%) | 66.2 | 57.7 | 49.5 | 47.3 | 50.6 | 55.8 | 61.3 | 66.7 | 71.5 | 75.9 | 73.1 | 71.0 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.1 | **0.1** | -0.1 | **0.0** | **0.2** | **0.0** | -0.2 | **0.0** | 0.0 | **0.3** | **0.4** | **0.0** |
| 20% | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | **0.0** | -0.1 | **0.1** | **0.1** | **0.2** | -0.1 | -0.1 |
| 30% | -0.2 | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | -0.1 | -0.1 | -0.2 | **0.0** | -0.1 | **0.0** |
| 40% | -0.1 | **0.1** | **0.0** | -0.1 | 0.0 | **0.0** | **0.1** | -0.2 | **0.1** | **0.0** | -0.1 | 0.0 |
| 50% | -0.1 | -0.1 | 0.0 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | -0.1 | **0.1** | -0.1 |
| 60% | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | **0.0** |
| 70% | -0.1 | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 |
| 80% | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | **0.1** | **0.0** |
| 90% | 0.0 | -0.1 | -0.3 | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | **0.0** | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.1** | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 |
| Above Normal (16%) | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (13%) | -0.2 | -0.1 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | -0.1 | -0.2 |
| Dry (24%) | -0.1 | **0.0** | **0.0** | -0.1 | 0.0 | **0.1** | **0.0** | 0.0 | -0.2 | **0.3** | **0.0** | **0.0** |
| Critical (15%) | 0.0 | **0.1** | -0.1 | 0.0 | **0.1** | **0.1** | -0.1 | 0.0 | **0.5** | -0.5 | **0.4** | 0.0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-4. American River at Watt Avenue, Monthly Temperature

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.2 | 58.4 | 52.4 | 48.7 | 50.4 | 55.2 | 61.3 | 67.6 | 72.8 | 74.6 | 73.2 | 71.1 |
| 20% | 65.8 | 58.1 | 51.8 | 48.0 | 49.4 | 53.9 | 60.1 | 66.3 | 71.2 | 70.5 | 70.2 | 69.4 |
| 30% | 64.9 | 57.7 | 51.3 | 47.6 | 48.7 | 53.1 | 59.2 | 65.2 | 68.7 | 69.5 | 69.6 | 68.7 |
| 40% | 64.5 | 57.4 | 50.6 | 47.3 | 48.1 | 51.9 | 58.2 | 64.2 | 67.1 | 68.7 | 69.0 | 68.2 |
| 50% | 63.9 | 57.2 | 50.3 | 46.7 | 47.7 | 51.2 | 57.2 | 62.5 | 66.1 | 68.3 | 68.5 | 67.6 |
| 60% | 63.6 | 56.9 | 49.6 | 46.5 | 47.2 | 50.5 | 56.5 | 61.0 | 64.7 | 67.9 | 67.8 | 67.3 |
| 70% | 63.3 | 56.8 | 49.1 | 46.2 | 46.9 | 50.0 | 55.1 | 59.8 | 63.9 | 67.6 | 67.2 | 66.9 |
| 80% | 62.8 | 56.1 | 48.5 | 45.6 | 46.4 | 49.7 | 54.1 | 59.1 | 62.9 | 67.2 | 66.6 | 66.5 |
| 90% | 61.1 | 55.7 | 47.3 | 45.0 | 46.2 | 49.2 | 53.4 | 57.1 | 62.0 | 66.5 | 65.9 | 66.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 50.1 | 46.9 | 48.0 | 51.7 | 57.3 | 62.6 | 66.6 | 69.4 | 68.9 | 68.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.5 | 57.2 | 51.0 | 46.0 | 46.8 | 49.9 | 54.7 | 59.4 | 63.2 | 67.6 | 66.8 | 66.6 |
| Above Normal (16%) | 63.9 | 56.7 | 50.0 | 47.0 | 47.5 | 50.4 | 56.4 | 62.0 | 65.9 | 67.2 | 68.2 | 67.4 |
| Below Normal (13%) | 64.5 | 57.0 | 49.8 | 47.4 | 47.9 | 52.2 | 58.8 | 63.8 | 67.6 | 68.5 | 68.7 | 68.3 |
| Dry (24%) | 65.0 | 57.1 | 49.6 | 47.2 | 48.7 | 52.8 | 58.5 | 64.6 | 68.5 | 70.3 | 69.8 | 68.8 |
| Critical (15%) | 66.0 | 57.6 | 49.6 | 47.8 | 50.2 | 54.9 | 60.4 | 65.9 | 70.8 | 74.9 | 72.9 | 70.5 |

### Alternative 1 100419

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.1 | 58.4 | 52.5 | 48.7 | 50.3 | 55.0 | 61.3 | 67.4 | 72.8 | 74.7 | 73.0 | 71.1 |
| 20% | 65.6 | 58.0 | 51.9 | 48.1 | 49.4 | 54.1 | 59.9 | 66.0 | 70.8 | 71.8 | 70.3 | 69.3 |
| 30% | 64.9 | 57.7 | 51.3 | 47.6 | 48.7 | 53.0 | 59.0 | 65.2 | 68.8 | 69.6 | 69.6 | 68.6 |
| 40% | 64.5 | 57.5 | 50.7 | 47.3 | 48.1 | 51.9 | 58.2 | 64.0 | 67.4 | 69.1 | 68.9 | 68.1 |
| 50% | 64.0 | 57.1 | 50.2 | 46.8 | 47.7 | 51.3 | 57.2 | 62.6 | 66.0 | 68.6 | 68.2 | 67.6 |
| 60% | 63.7 | 57.0 | 49.6 | 46.4 | 47.3 | 50.5 | 56.5 | 61.0 | 64.5 | 68.0 | 67.7 | 67.3 |
| 70% | 63.4 | 56.8 | 49.0 | 46.2 | 46.9 | 50.0 | 55.1 | 59.8 | 63.7 | 67.6 | 67.1 | 67.0 |
| 80% | 62.9 | 56.3 | 48.6 | 45.7 | 46.4 | 49.7 | 54.2 | 59.1 | 63.2 | 67.4 | 66.2 | 66.4 |
| 90% | 61.2 | 55.7 | 47.3 | 45.0 | 46.2 | 49.2 | 53.4 | 57.1 | 62.0 | 66.7 | 65.8 | 65.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.1 | 57.1 | 50.1 | 46.9 | 48.0 | 51.8 | 57.3 | 62.5 | 66.6 | 69.6 | 68.7 | 68.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62.6 | 57.1 | 51.0 | 46.0 | 46.8 | 49.9 | 54.7 | 59.4 | 63.2 | 67.7 | 66.6 | 66.5 |
| Above Normal (16%) | 63.9 | 56.7 | 49.9 | 47.0 | 47.5 | 50.4 | 56.4 | 62.0 | 65.9 | 67.4 | 67.7 | 67.3 |
| Below Normal (13%) | 64.3 | 57.1 | 50.0 | 47.4 | 47.9 | 52.2 | 58.8 | 63.7 | 67.5 | 69.0 | 68.6 | 68.1 |
| Dry (24%) | 65.0 | 57.0 | 49.6 | 47.2 | 48.7 | 52.8 | 58.4 | 64.2 | 68.3 | 70.7 | 69.8 | 68.8 |
| Critical (15%) | 66.0 | 57.6 | 49.7 | 47.7 | 50.2 | 55.0 | 60.7 | 66.0 | 70.9 | 74.8 | 72.7 | 70.5 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.1 | 0.0 | **0.1** | **0.0** | -0.1 | -0.1 | **0.0** | -0.2 | **0.0** | **0.1** | -0.2 | 0.0 |
| 20% | -0.1 | -0.1 | **0.1** | **0.1** | 0.0 | **0.2** | -0.2 | -0.3 | -0.5 | **1.2** | **0.1** | -0.1 |
| 30% | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | -0.2 | **0.0** | **0.1** | **0.1** | 0.0 | -0.1 |
| 40% | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | -0.2 | **0.3** | **0.4** | -0.2 | 0.0 |
| 50% | **0.1** | 0.0 | -0.1 | **0.1** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | **0.3** | -0.3 | **0.1** |
| 60% | **0.1** | **0.0** | 0.0 | -0.1 | **0.0** | -0.1 | 0.0 | **0.0** | -0.3 | **0.1** | -0.1 | 0.0 |
| 70% | **0.1** | **0.0** | -0.1 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | -0.2 | **0.0** | -0.1 | **0.1** |
| 80% | **0.1** | **0.2** | **0.1** | **0.0** | **0.0** | 0.0 | **0.1** | 0.0 | **0.2** | **0.2** | -0.4 | -0.1 |
| 90% | **0.2** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.2** | -0.1 | -0.2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | -0.1 | **0.2** | -0.2 | -0.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | -0.1 | **0.1** | -0.1 | -0.1 |
| Above Normal (16%) | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.2** | -0.6 | -0.1 |
| Below Normal (13%) | -0.1 | **0.1** | **0.2** | -0.1 | 0.0 | 0.0 | **0.0** | -0.1 | -0.1 | **0.5** | -0.1 | -0.2 |
| Dry (24%) | **0.0** | -0.1 | -0.1 | **0.0** | 0.0 | 0.0 | -0.1 | -0.4 | -0.2 | **0.4** | 0.0 | **0.0** |
| Critical (15%) | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.1** | **0.3** | **0.0** | **0.0** | -0.1 | -0.1 | 0.0 |

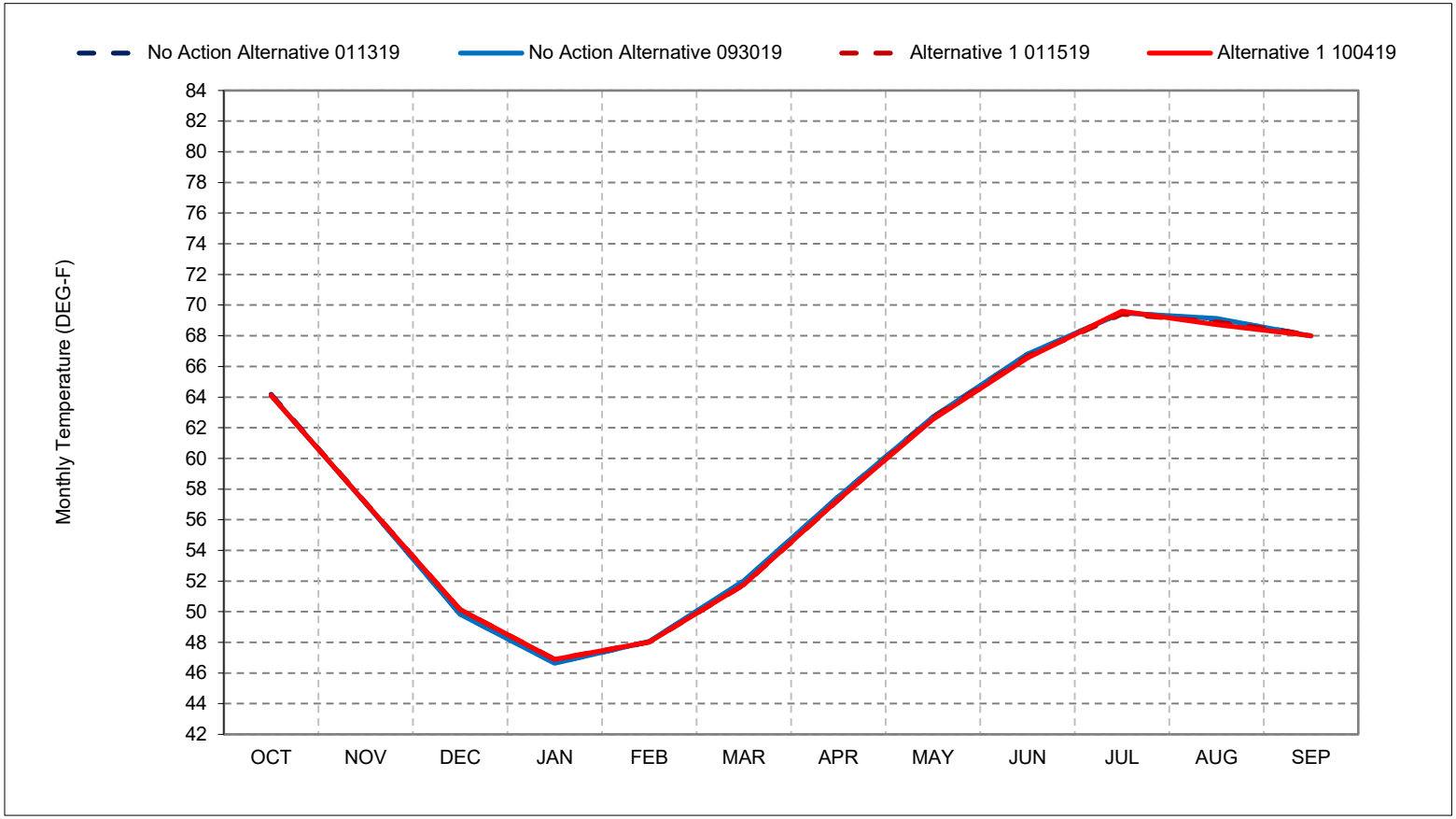
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-1. American River at Watt Avenue, Long-Term Average Temperature

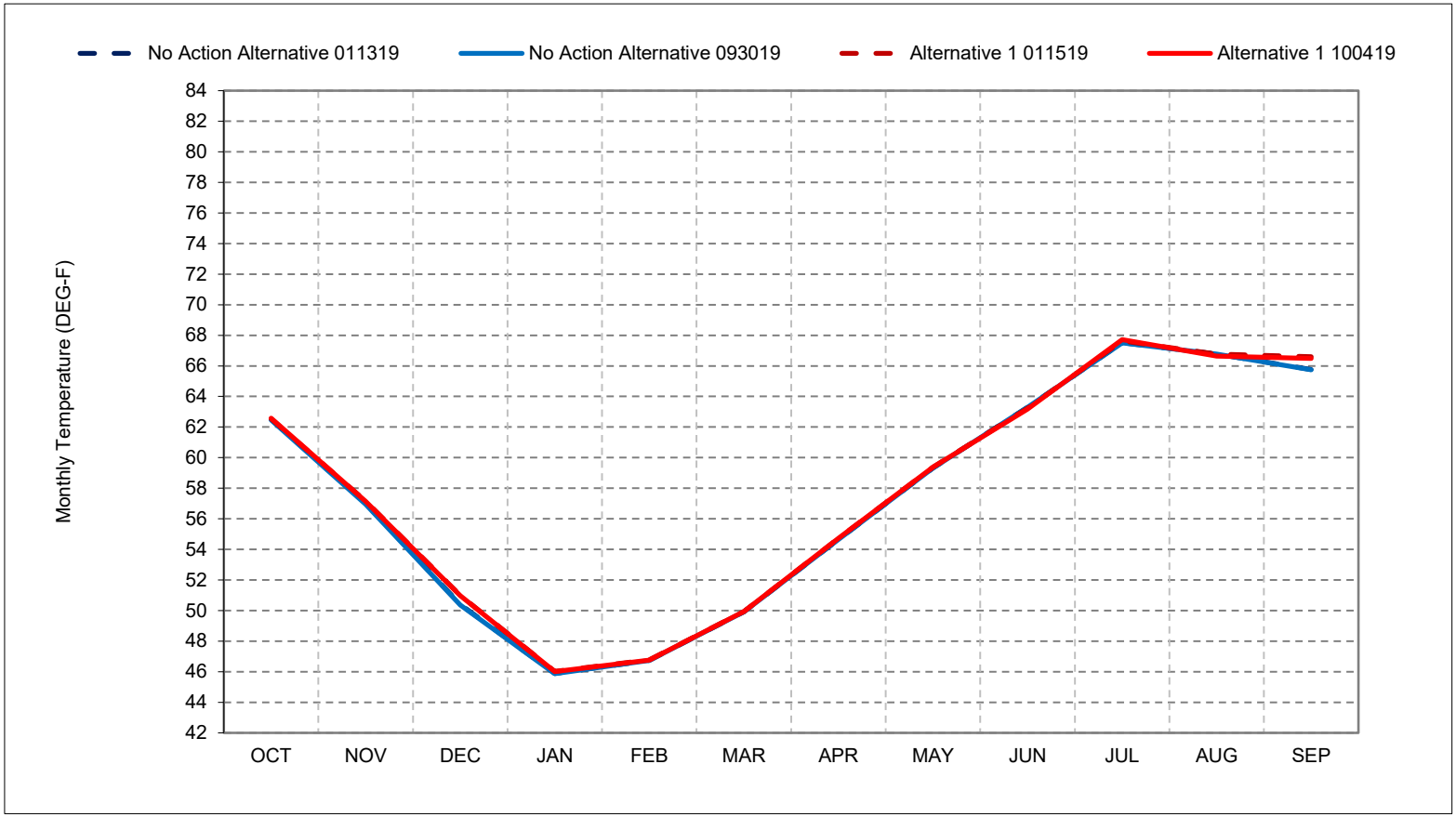



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-2. American River at Watt Avenue, Wet Year Average Temperature

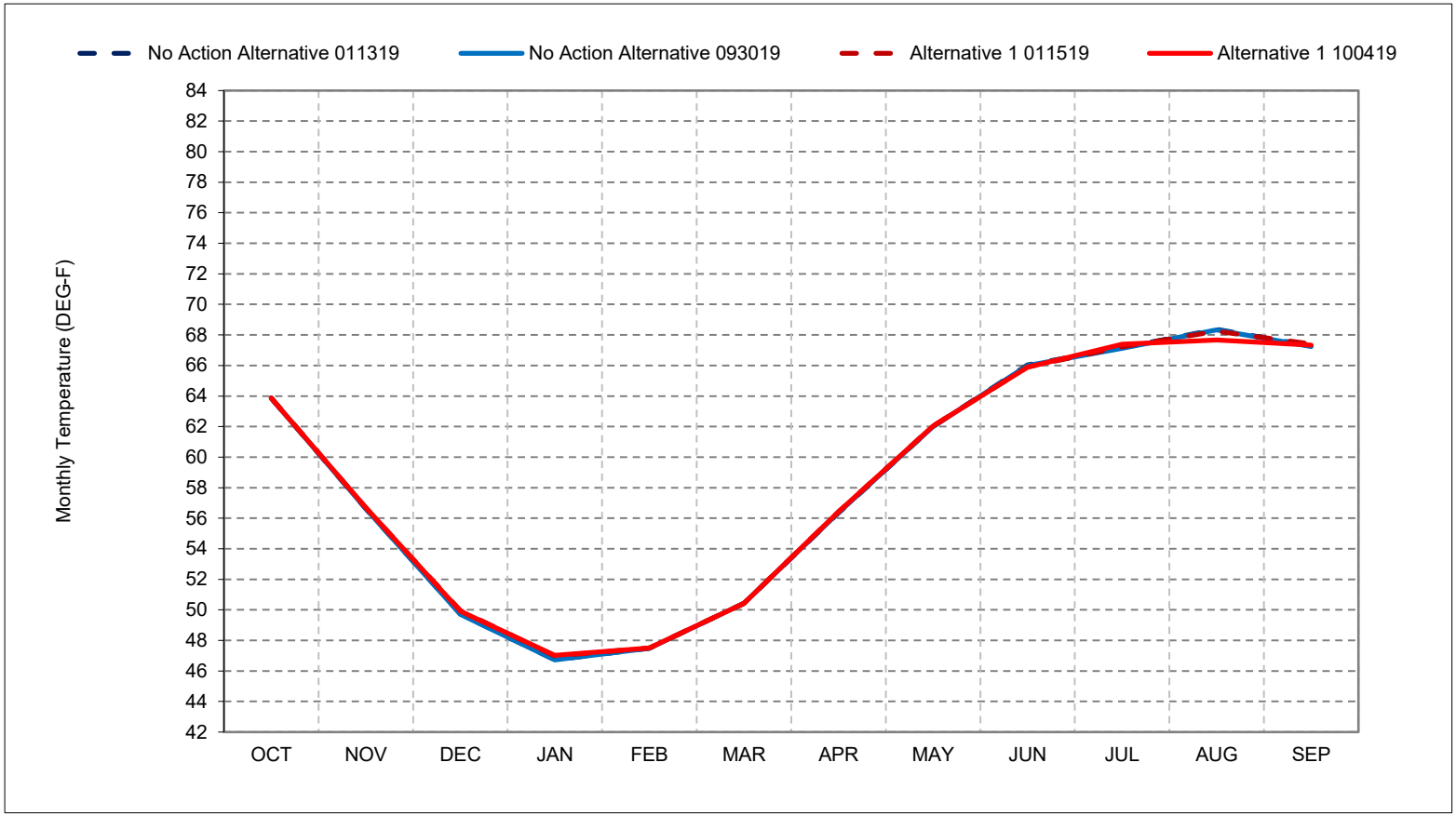



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-3. American River at Watt Avenue, Above Normal Year Average Temperature

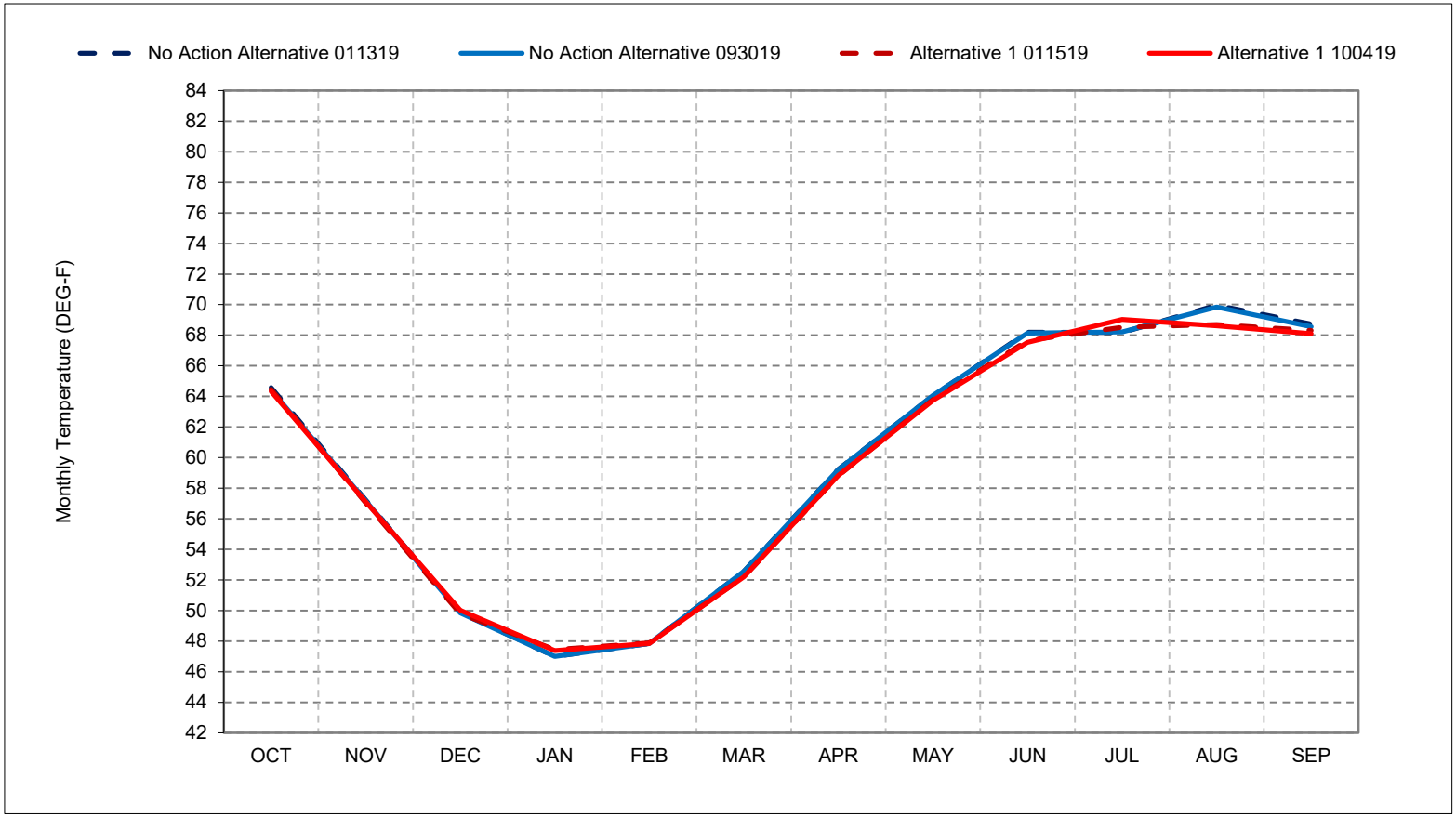



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-4. American River at Watt Avenue, Below Normal Year Average Temperature

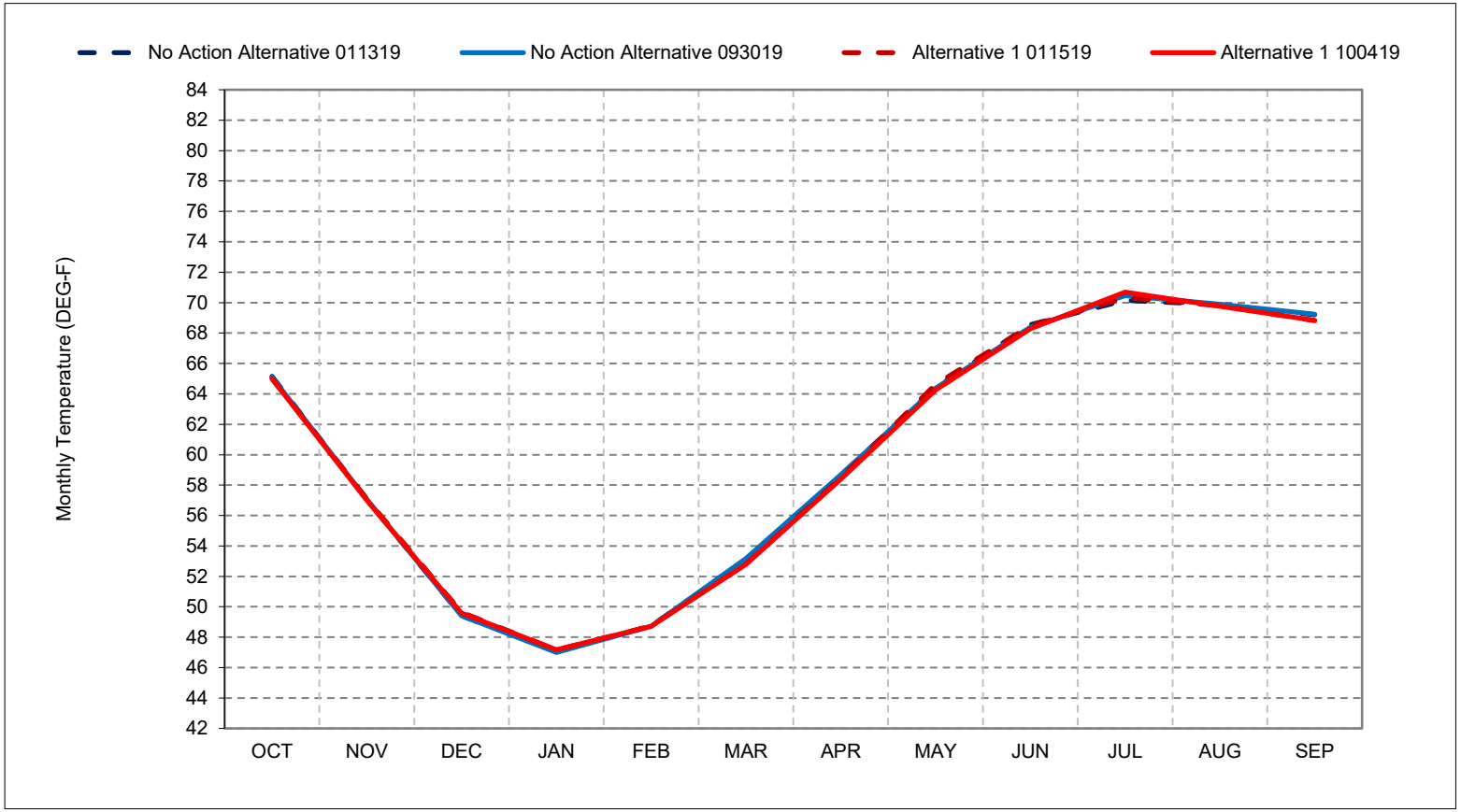



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-5. American River at Watt Avenue, Dry Year Average Temperature

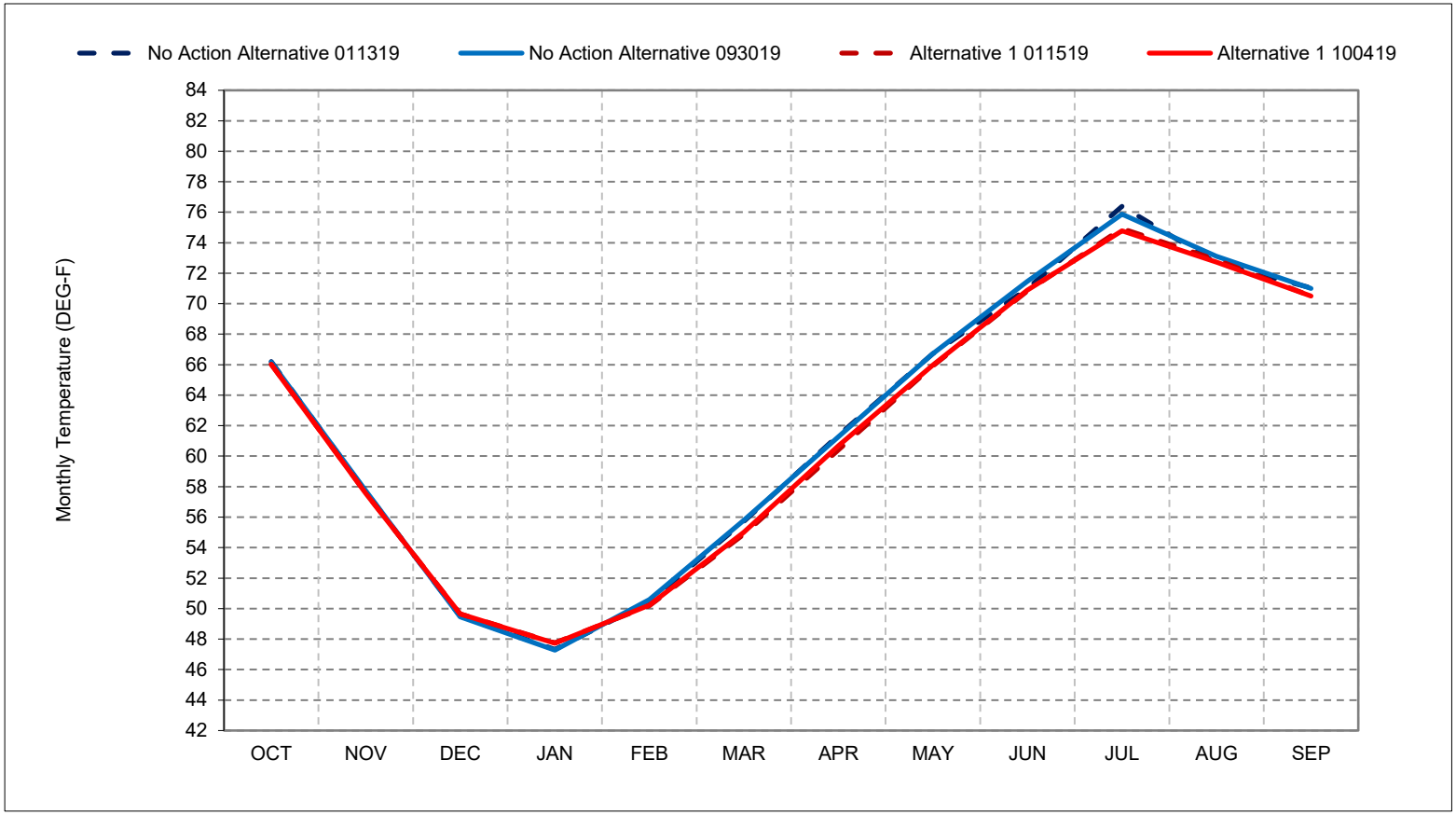



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-6. American River at Watt Avenue, Critical Year Average Temperature

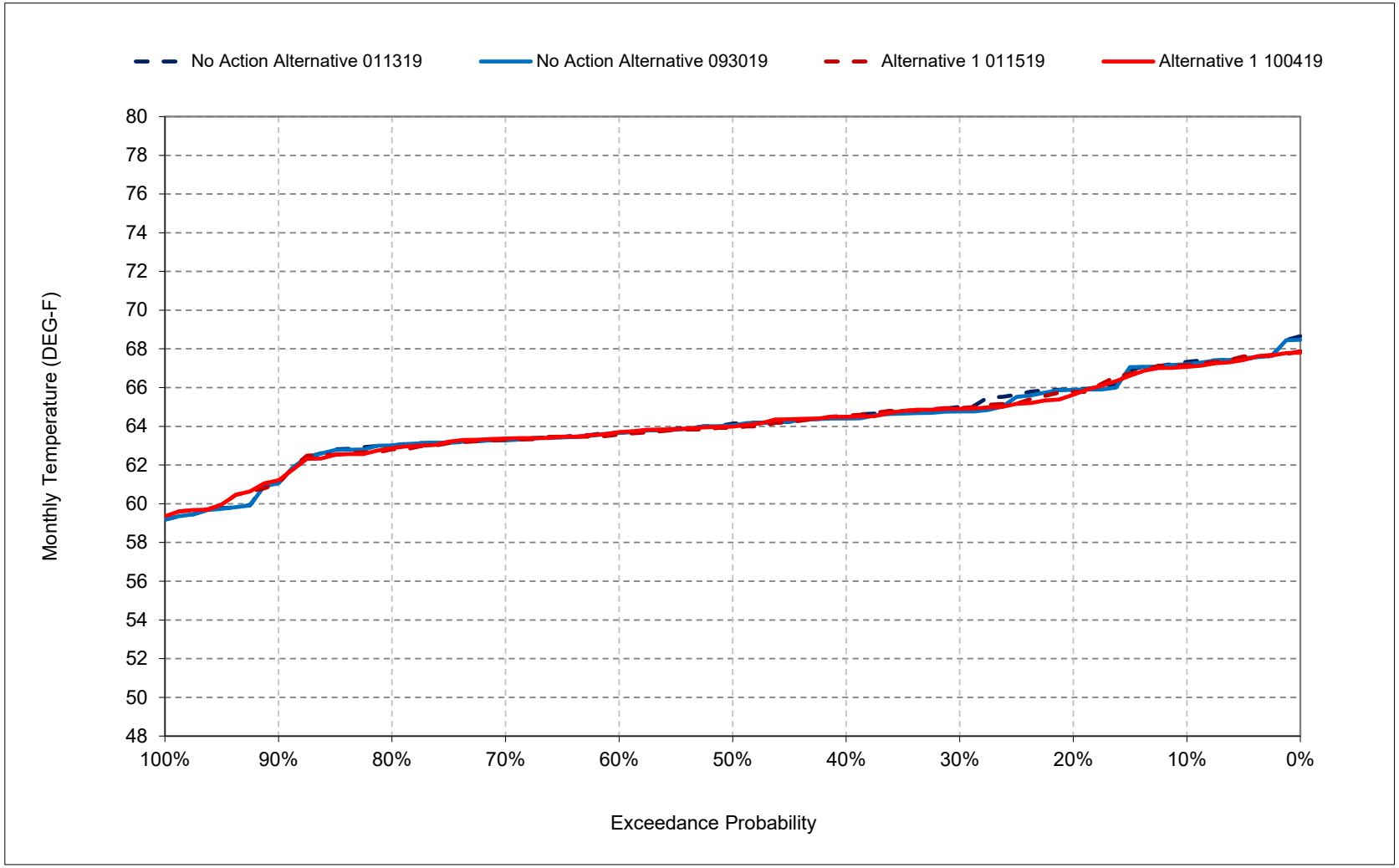



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

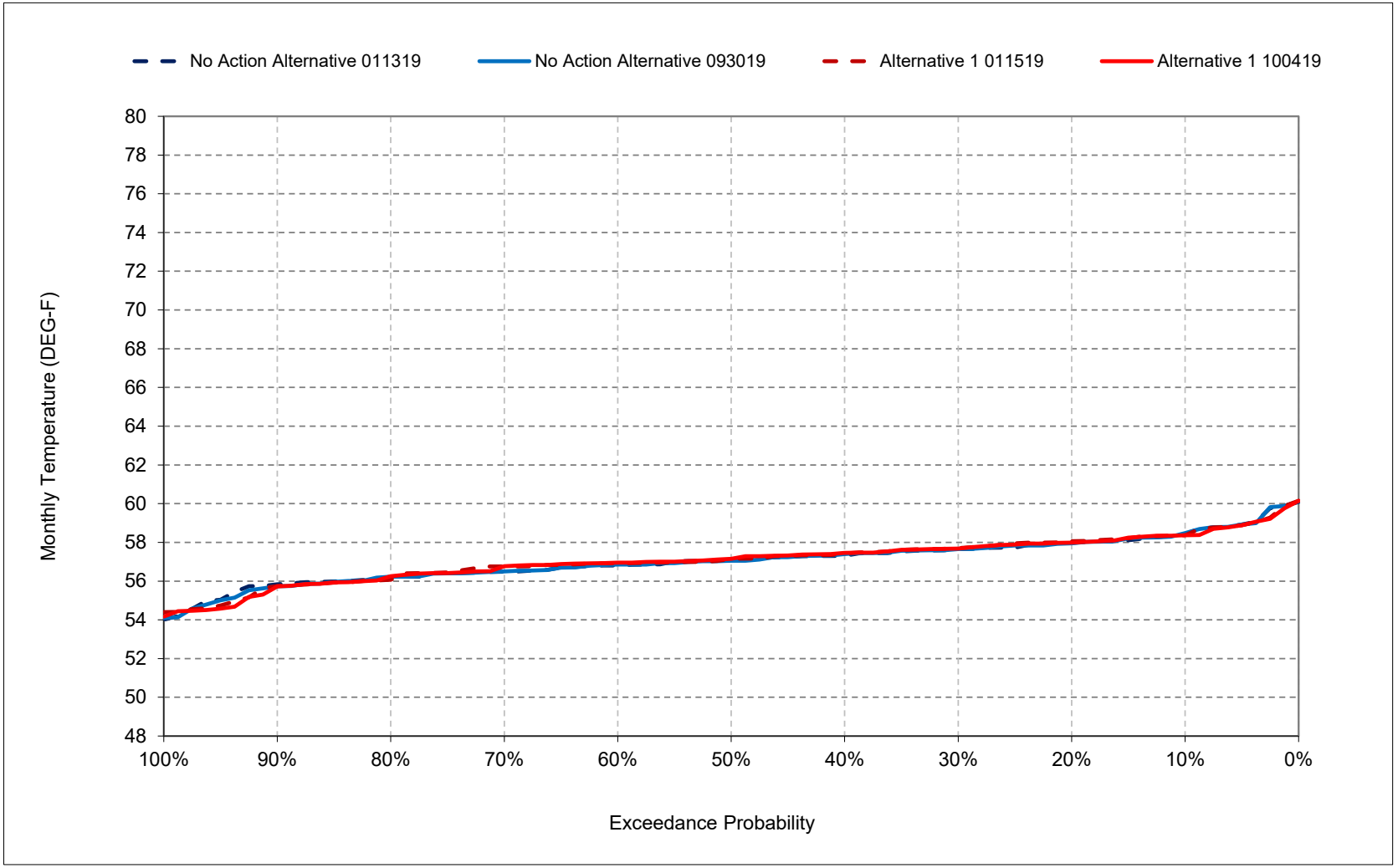
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-7. American River at Watt Avenue, October**



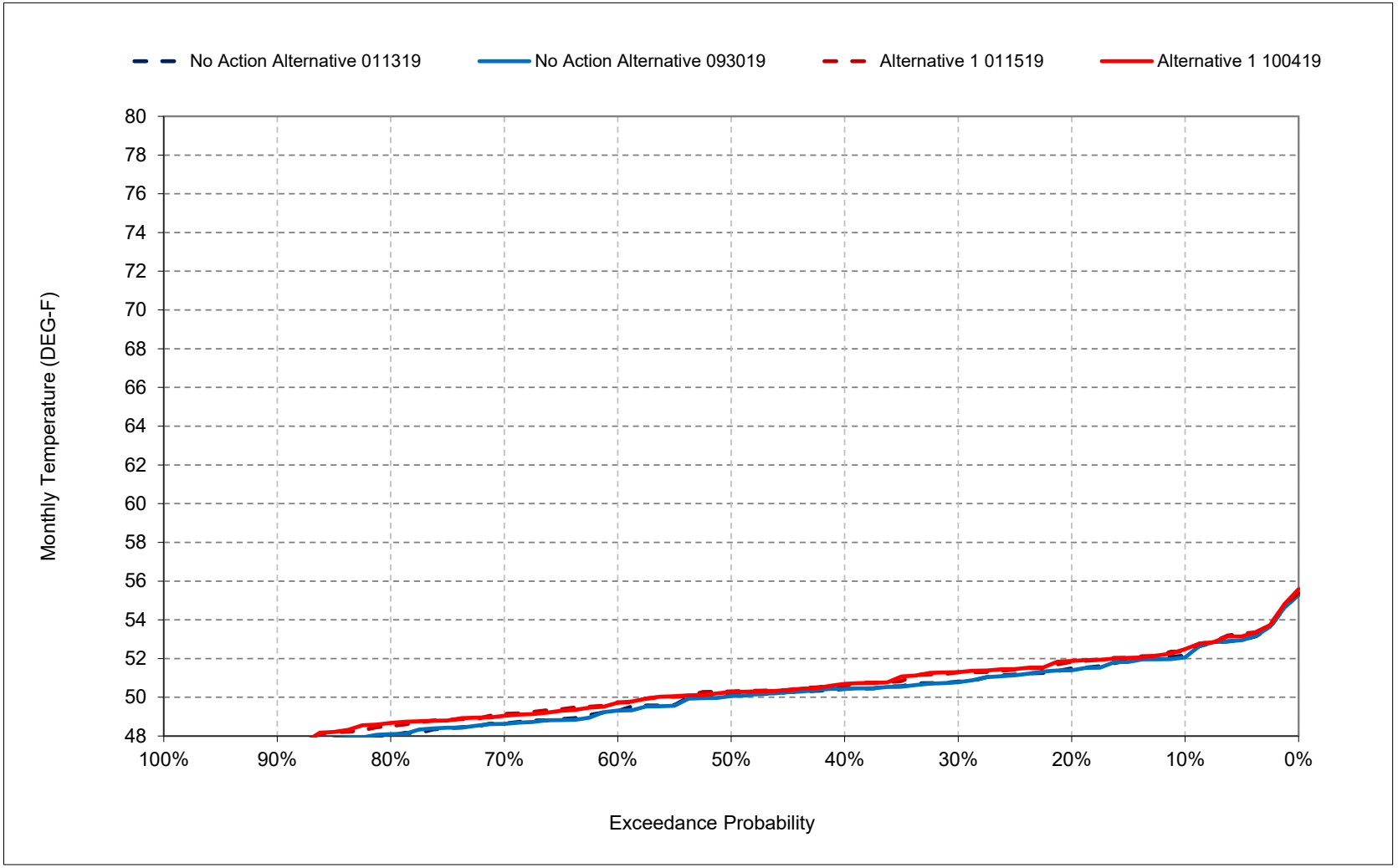

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-8. American River at Watt Avenue, November**



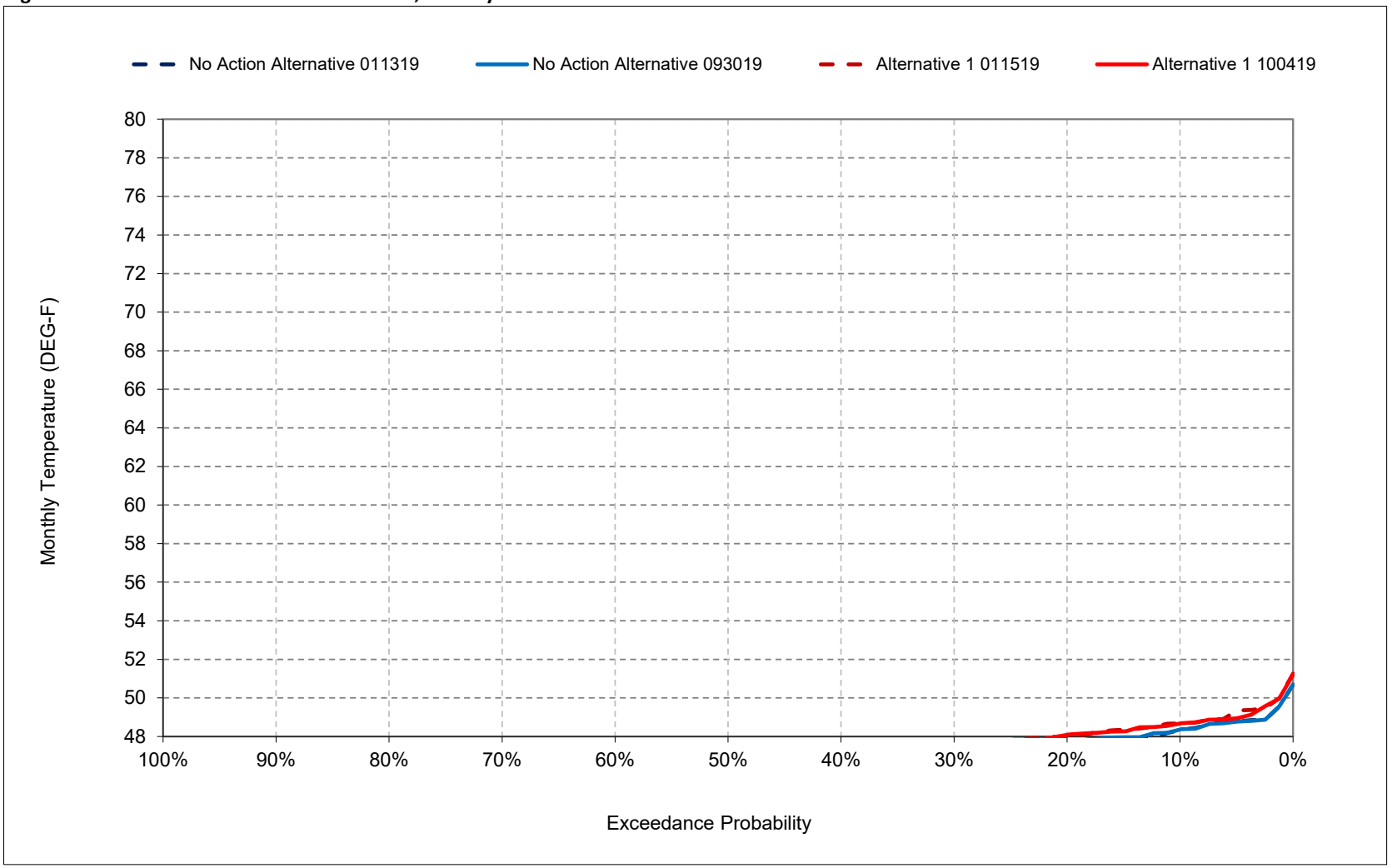

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-9. American River at Watt Avenue, December**



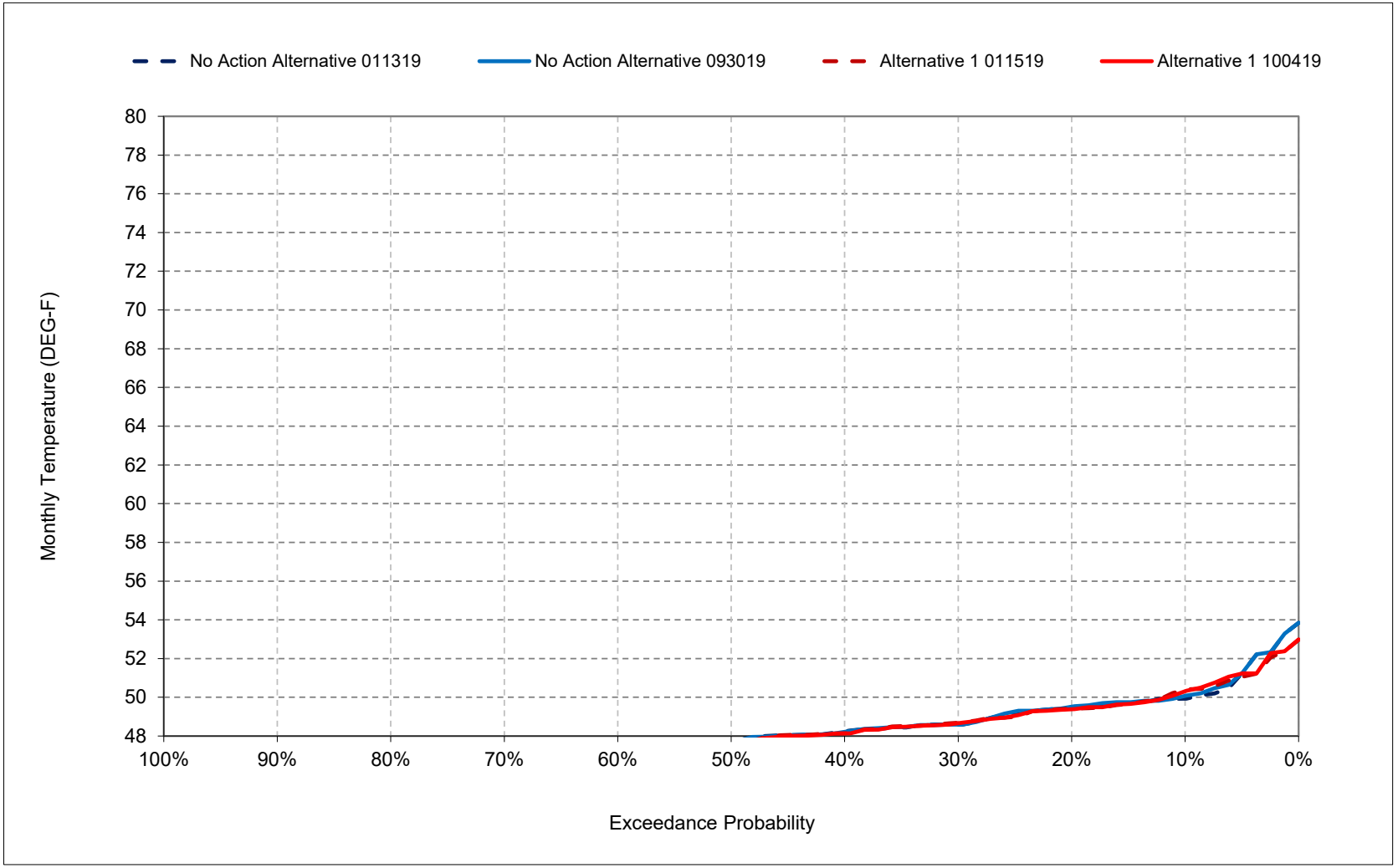

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-10. American River at Watt Avenue, January**



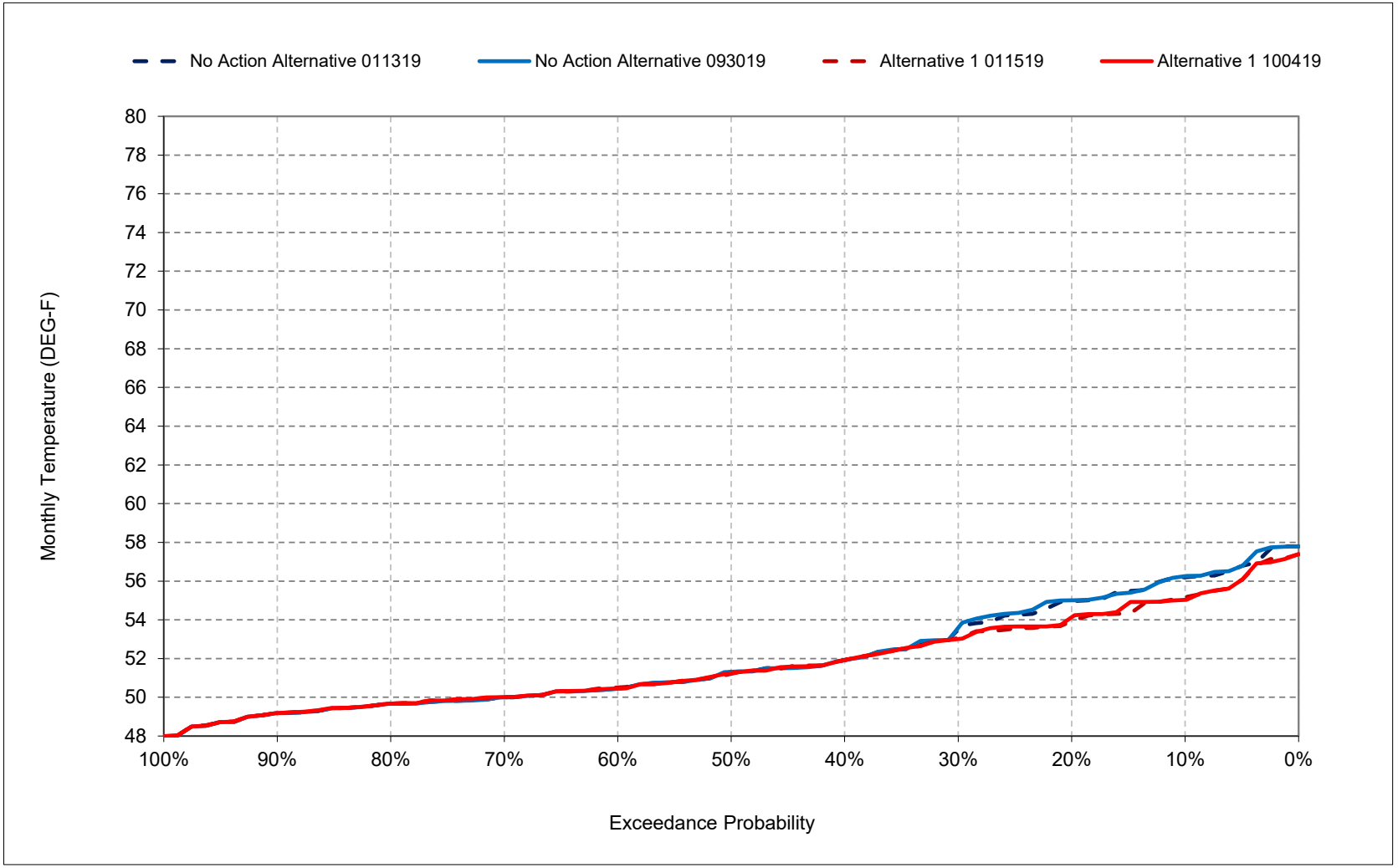

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-11. American River at Watt Avenue, February**



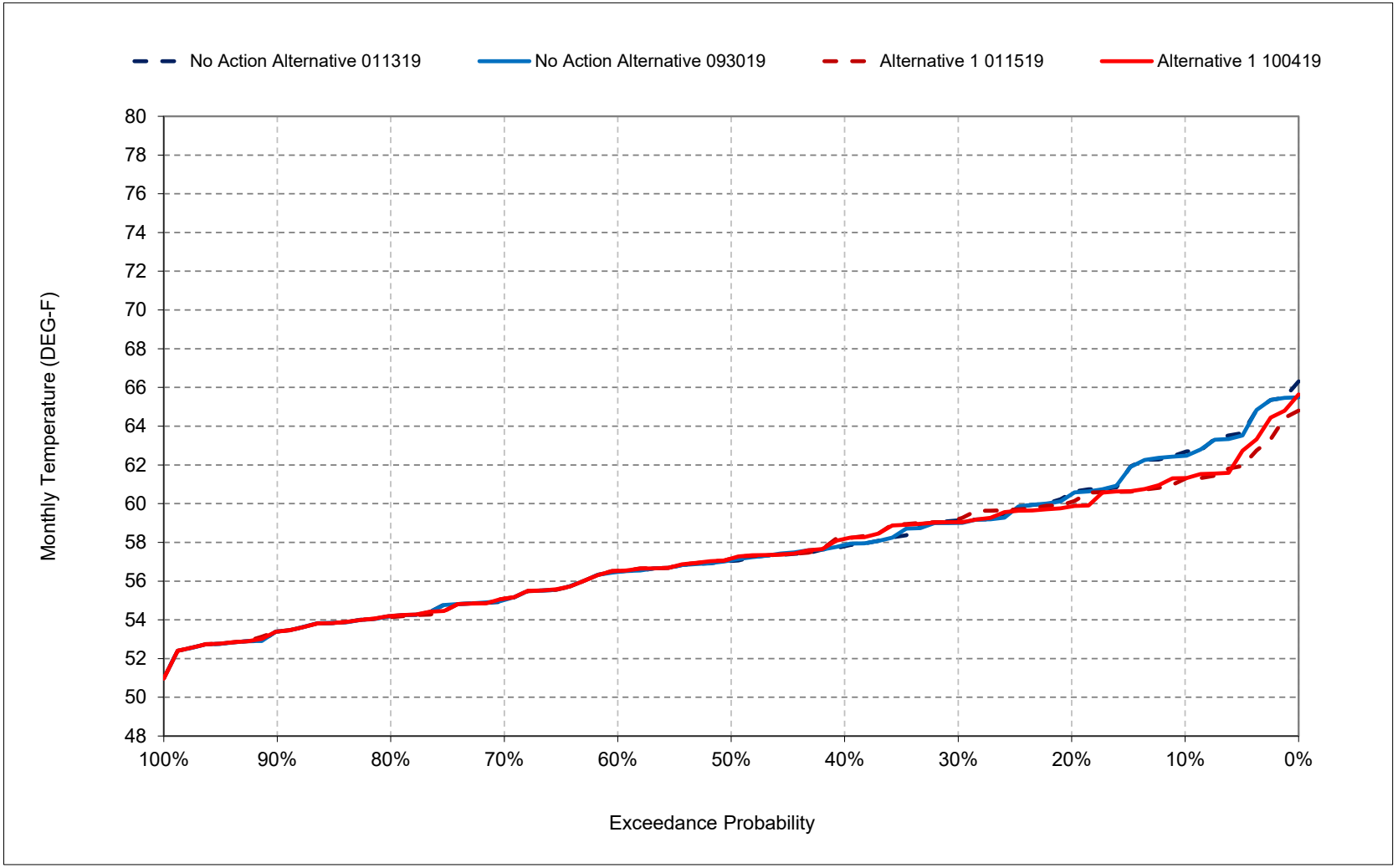

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-12. American River at Watt Avenue, March**



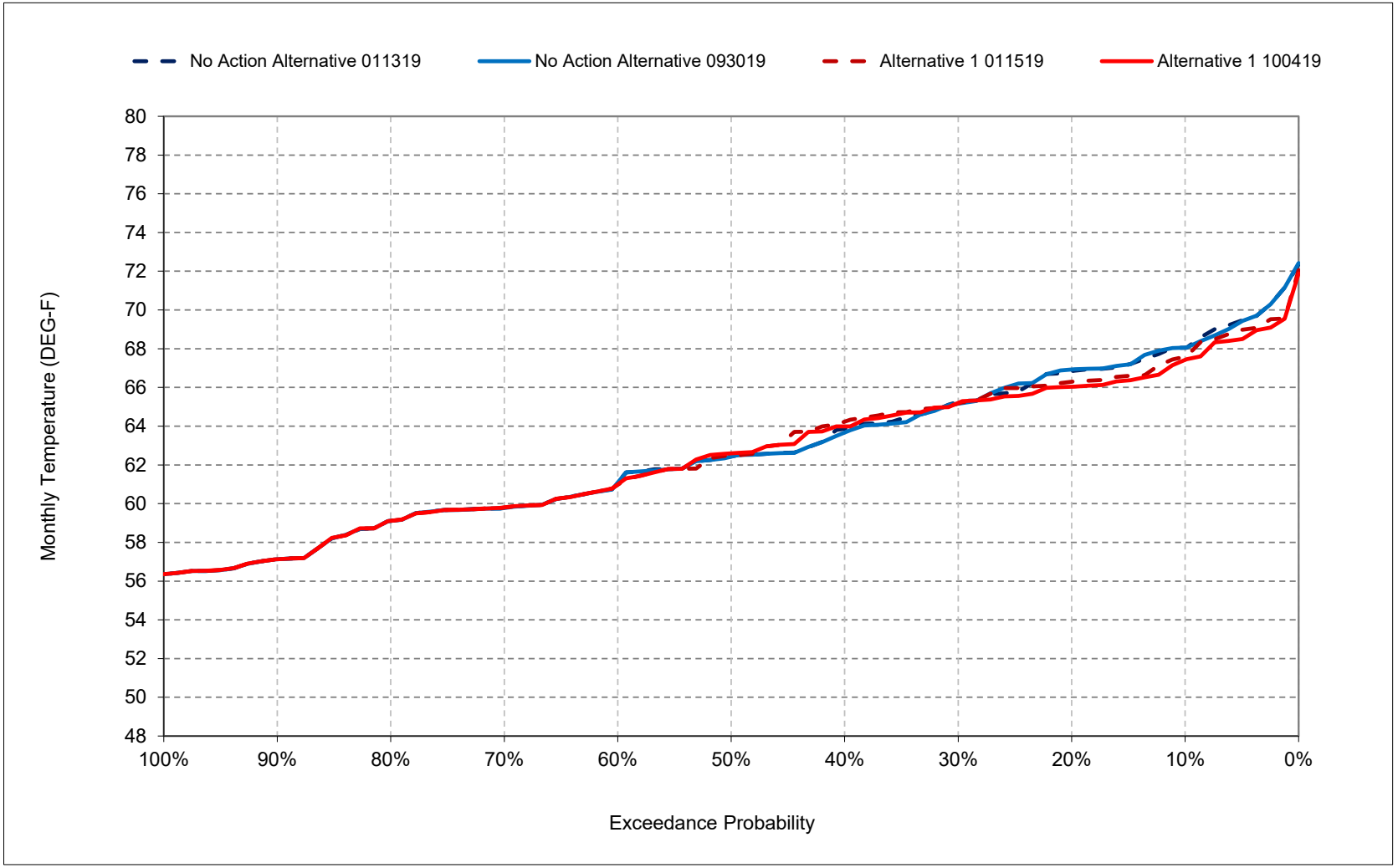

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-13. American River at Watt Avenue, April**



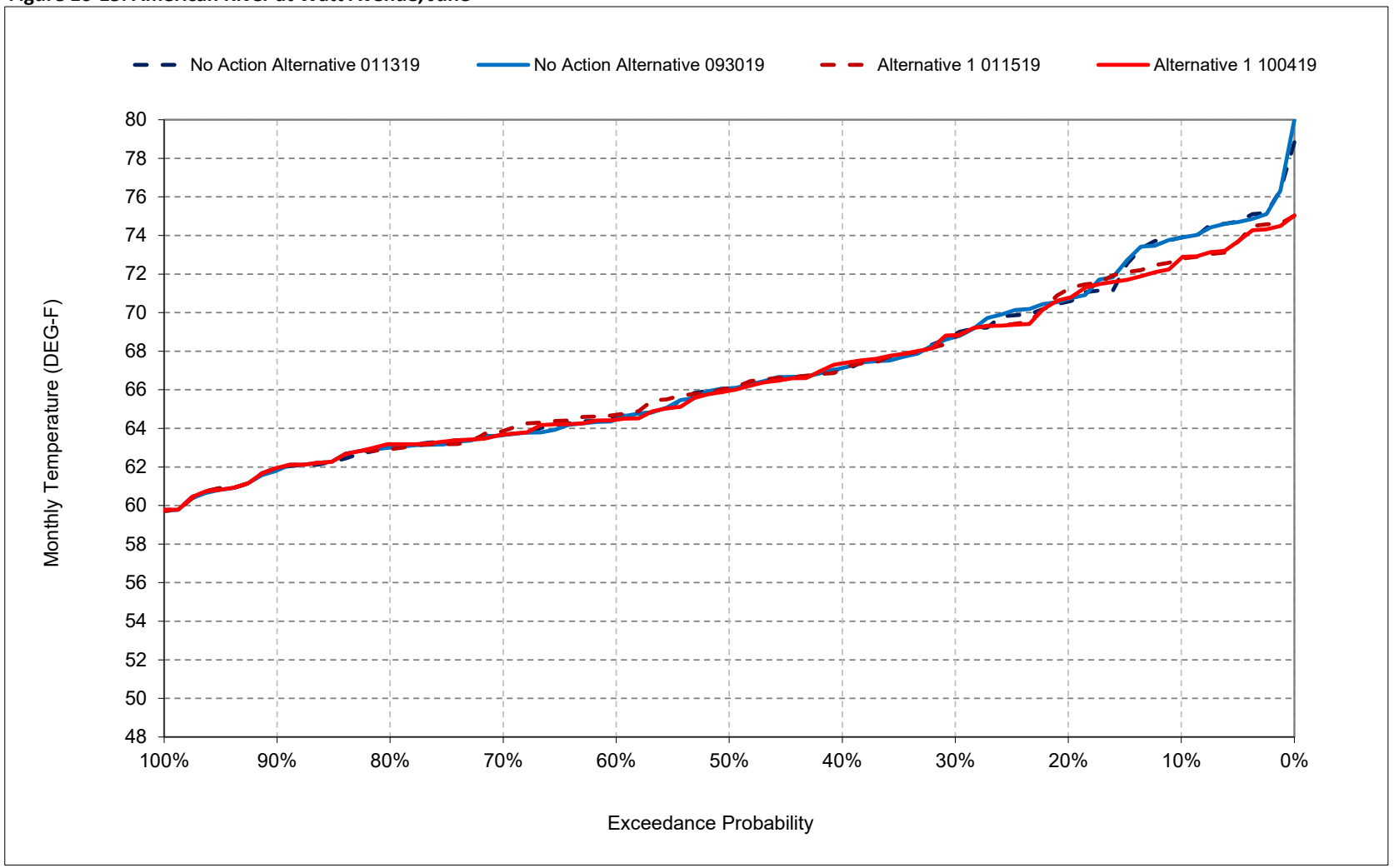

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-14. American River at Watt Avenue, May**



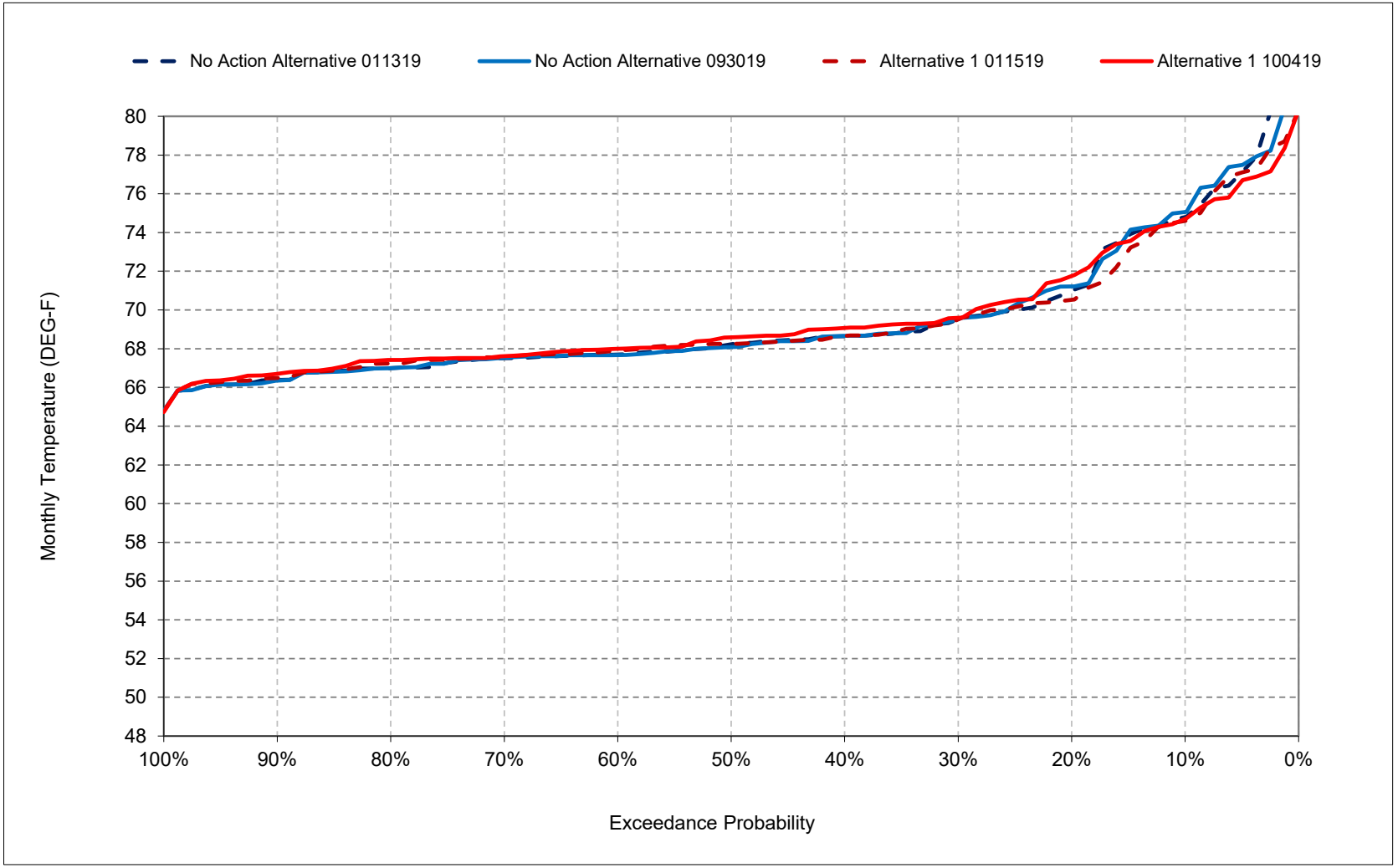

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-15. American River at Watt Avenue, June**



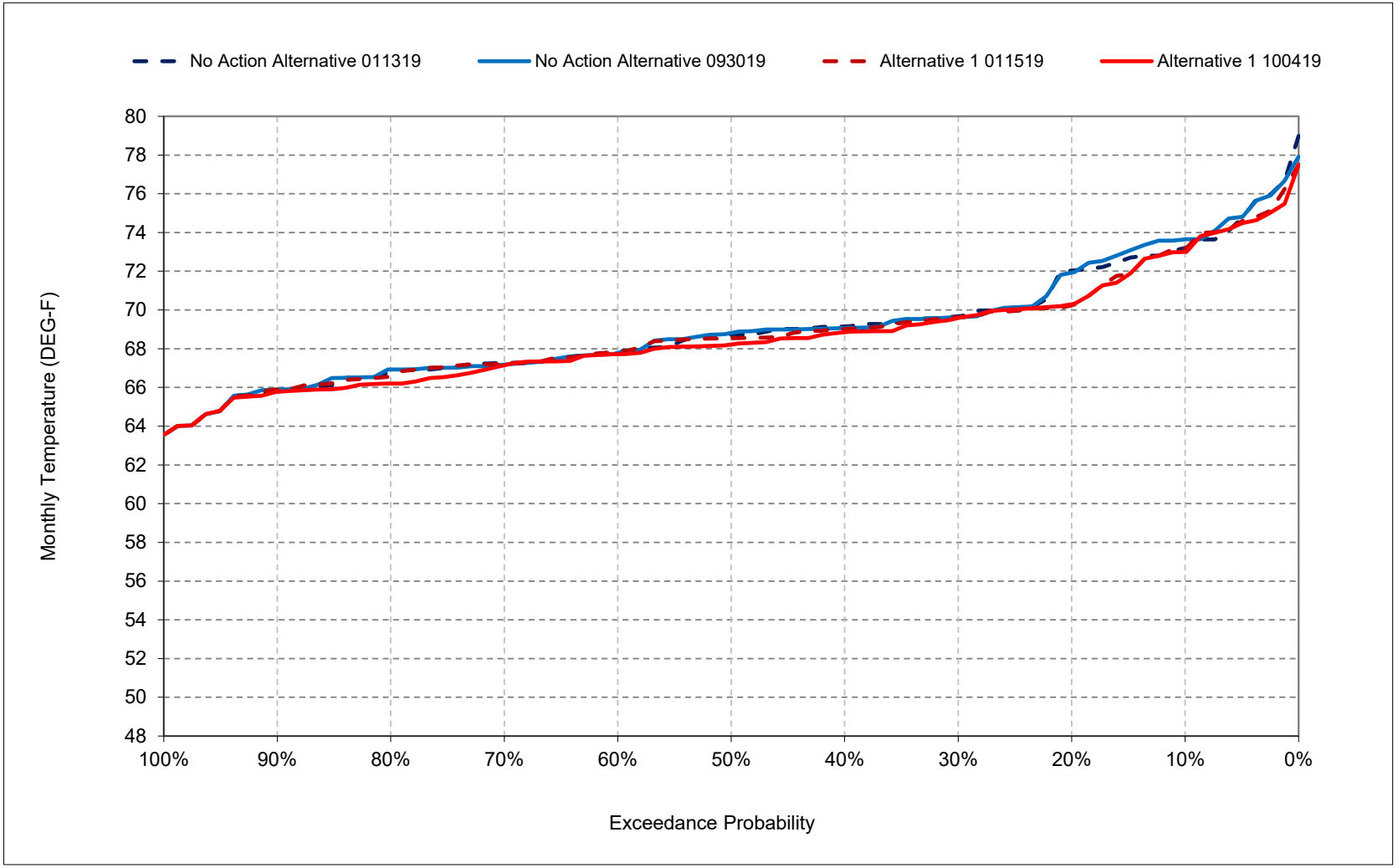

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-16. American River at Watt Avenue, July**



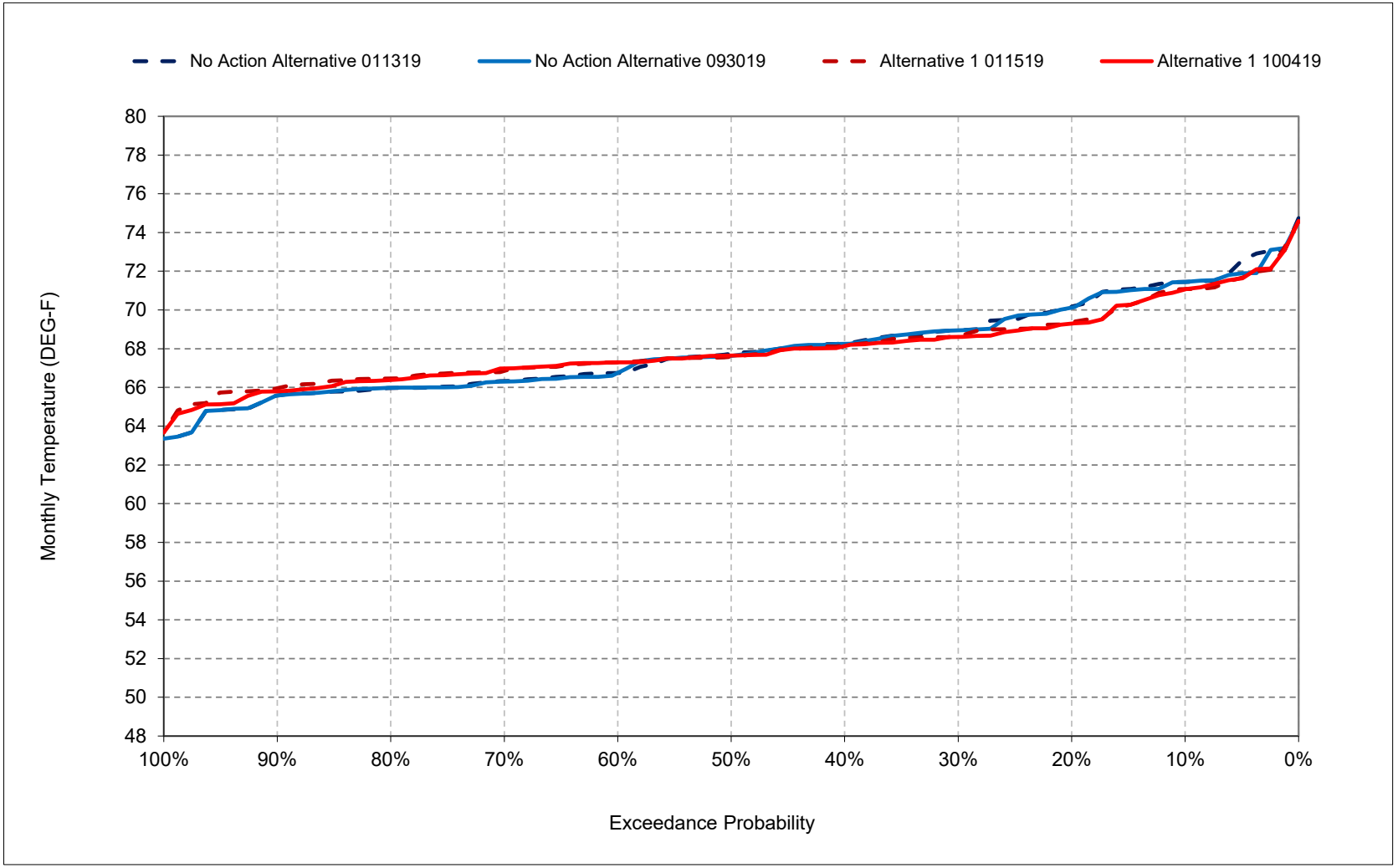

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-17. American River at Watt Avenue, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-18. American River at Watt Avenue, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-1. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.9 | 58.6 | 52.1 | 48.7 | 51.4 | 58.9 | 66.0 | 71.8 | 77.9 | 78.6 | 77.4 | 74.2 |
| 20% | 66.4 | 58.1 | 51.2 | 48.1 | 50.6 | 57.3 | 62.7 | 70.2 | 73.8 | 73.8 | 75.7 | 72.5 |
| 30% | 65.7 | 57.7 | 50.7 | 47.6 | 49.8 | 55.3 | 61.0 | 68.0 | 71.7 | 72.4 | 72.8 | 71.1 |
| 40% | 65.1 | 57.4 | 50.3 | 47.4 | 49.2 | 53.3 | 60.0 | 66.9 | 70.0 | 71.6 | 72.2 | 70.1 |
| 50% | 64.6 | 57.1 | 49.9 | 47.1 | 48.4 | 52.6 | 58.7 | 65.0 | 68.6 | 71.0 | 71.8 | 69.6 |
| 60% | 64.2 | 56.8 | 49.0 | 46.6 | 48.0 | 51.5 | 58.1 | 63.4 | 67.5 | 70.5 | 70.9 | 68.7 |
| 70% | 63.8 | 56.5 | 48.6 | 46.0 | 47.3 | 50.9 | 56.5 | 61.8 | 66.4 | 69.7 | 70.2 | 68.0 |
| 80% | 63.3 | 56.2 | 48.0 | 45.6 | 46.9 | 50.4 | 55.2 | 60.8 | 65.5 | 69.1 | 69.6 | 67.5 |
| 90% | 62.4 | 55.9 | 47.3 | 45.0 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.5 | 68.5 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.1 | 49.7 | 47.0 | 48.9 | 53.4 | 59.4 | 65.2 | 69.6 | 72.2 | 72.3 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 63.2 | 57.1 | 50.2 | 46.1 | 47.2 | 50.8 | 55.9 | 61.1 | 65.6 | 70.2 | 69.7 | 67.4 |
| Above Normal (16%) | 64.4 | 56.6 | 49.6 | 47.0 | 48.1 | 51.4 | 57.9 | 64.6 | 68.9 | 69.1 | 71.4 | 69.1 |
| Below Normal (13%) | 65.0 | 57.3 | 49.7 | 47.3 | 48.6 | 54.4 | 61.6 | 66.7 | 71.3 | 70.5 | 73.3 | 71.1 |
| Dry (24%) | 65.6 | 57.1 | 49.3 | 47.4 | 49.8 | 54.8 | 60.9 | 67.3 | 71.6 | 73.1 | 73.1 | 71.4 |
| Critical (15%) | 66.9 | 57.8 | 49.4 | 47.8 | 52.2 | 58.2 | 64.2 | 69.8 | 74.1 | 80.0 | 76.4 | 73.5 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 68.1 | 58.7 | 52.2 | 49.0 | 51.6 | 57.5 | 64.2 | 71.0 | 77.2 | 77.7 | 77.3 | 73.5 |
| 20% | 66.3 | 58.1 | 51.4 | 48.4 | 50.5 | 55.9 | 62.9 | 69.5 | 74.1 | 73.8 | 73.6 | 71.2 |
| 30% | 65.6 | 57.7 | 50.9 | 47.8 | 49.7 | 54.9 | 61.6 | 68.5 | 71.7 | 72.7 | 72.6 | 70.7 |
| 40% | 65.1 | 57.4 | 50.4 | 47.6 | 49.0 | 53.4 | 60.4 | 67.3 | 69.9 | 71.7 | 72.1 | 70.0 |
| 50% | 64.6 | 57.2 | 50.0 | 47.3 | 48.4 | 52.5 | 58.7 | 65.3 | 68.4 | 71.3 | 71.5 | 69.5 |
| 60% | 64.1 | 56.9 | 49.5 | 46.7 | 47.8 | 51.3 | 58.2 | 63.1 | 67.8 | 70.9 | 70.9 | 69.3 |
| 70% | 63.9 | 56.6 | 49.0 | 46.4 | 47.3 | 50.9 | 56.4 | 61.8 | 66.6 | 70.0 | 70.1 | 68.8 |
| 80% | 63.3 | 56.1 | 48.3 | 45.9 | 46.9 | 50.4 | 55.2 | 60.8 | 65.2 | 69.4 | 69.5 | 68.6 |
| 90% | 62.5 | 55.8 | 47.4 | 45.1 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.6 | 68.5 | 67.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.2 | 49.9 | 47.2 | 48.8 | 53.1 | 59.2 | 65.2 | 69.5 | 72.3 | 72.0 | 70.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 63.3 | 57.2 | 50.8 | 46.2 | 47.2 | 50.8 | 56.0 | 61.2 | 65.5 | 70.4 | 69.7 | 68.7 |
| Above Normal (16%) | 64.5 | 56.6 | 49.8 | 47.3 | 48.1 | 51.4 | 58.0 | 64.7 | 68.6 | 69.4 | 71.2 | 69.3 |
| Below Normal (13%) | 65.0 | 57.1 | 49.6 | 47.7 | 48.5 | 53.9 | 61.1 | 66.3 | 70.6 | 70.9 | 71.7 | 70.2 |
| Dry (24%) | 65.6 | 57.1 | 49.4 | 47.5 | 49.7 | 54.4 | 60.7 | 67.5 | 71.6 | 73.5 | 72.9 | 70.8 |
| Critical (15%) | 66.9 | 57.8 | 49.5 | 48.1 | 51.5 | 57.0 | 63.1 | 69.2 | 74.2 | 78.7 | 76.8 | 72.9 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | -1.4 | -1.8 | -0.8 | -0.7 | -0.9 | 0.0 | -0.7 |
| 20% | -0.1 | 0.0 | 0.2 | 0.3 | -0.2 | -1.4 | 0.2 | -0.7 | 0.2 | 0.0 | -2.1 | -1.4 |
| 30% | -0.2 | 0.1 | 0.2 | 0.2 | -0.1 | -0.4 | 0.6 | 0.5 | 0.0 | 0.3 | -0.2 | -0.4 |
| 40% | 0.0 | 0.0 | 0.2 | 0.3 | -0.3 | 0.1 | 0.4 | 0.5 | -0.1 | 0.1 | -0.1 | -0.1 |
| 50% | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | -0.1 | 0.0 | 0.3 | -0.2 | 0.3 | -0.2 | -0.1 |
| 60% | -0.1 | 0.1 | 0.4 | 0.1 | -0.2 | -0.2 | 0.1 | -0.2 | 0.3 | 0.4 | 0.0 | 0.6 |
| 70% | 0.0 | 0.1 | 0.4 | 0.4 | 0.0 | 0.0 | -0.1 | 0.0 | 0.3 | 0.2 | -0.1 | 0.8 |
| 80% | 0.0 | 0.0 | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0.4 | -0.1 | 1.1 |
| 90% | 0.1 | -0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 1.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.1 | 0.0 | 0.2 | 0.2 | -0.1 | -0.3 | -0.2 | -0.1 | -0.2 | 0.1 | -0.2 | 0.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.2 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | -0.1 | 0.3 | 0.0 | 1.3 |
| Above Normal (16%) | 0.0 | 0.1 | 0.2 | 0.2 | -0.1 | 0.0 | 0.1 | 0.1 | -0.3 | 0.2 | -0.2 | 0.2 |
| Below Normal (13%) | 0.0 | -0.2 | -0.1 | 0.4 | -0.1 | -0.6 | -0.5 | -0.4 | -0.7 | 0.4 | -1.6 | -0.8 |
| Dry (24%) | 0.0 | 0.0 | 0.2 | 0.1 | -0.1 | -0.4 | -0.2 | 0.2 | 0.0 | 0.4 | -0.1 | -0.6 |
| Critical (15%) | 0.0 | -0.1 | 0.0 | 0.3 | -0.6 | -1.2 | -1.1 | -0.6 | 0.1 | -1.4 | 0.3 | -0.6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-2. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 67.9 | 58.6 | 52.1 | 48.7 | 51.4 | 58.9 | 65.8 | 71.6 | 77.9 | 78.9 | 77.9 | 74.2 |
| 20% | 66.3 | 58.1 | 51.2 | 48.1 | 50.7 | 57.3 | 62.6 | 70.3 | 74.5 | 74.2 | 75.6 | 72.5 |
| 30% | 65.4 | 57.7 | 50.6 | 47.6 | 49.8 | 55.7 | 61.0 | 68.1 | 71.7 | 72.4 | 72.7 | 71.1 |
| 40% | 65.1 | 57.4 | 50.3 | 47.3 | 49.2 | 53.3 | 60.1 | 66.5 | 70.0 | 71.6 | 72.2 | 70.2 |
| 50% | 64.7 | 57.0 | 49.9 | 47.1 | 48.5 | 52.6 | 58.7 | 65.0 | 68.5 | 70.9 | 71.9 | 69.6 |
| 60% | 64.1 | 56.8 | 49.0 | 46.5 | 48.0 | 51.5 | 58.1 | 63.4 | 67.5 | 70.3 | 70.9 | 68.8 |
| 70% | 63.8 | 56.6 | 48.6 | 46.1 | 47.3 | 50.9 | 56.5 | 61.8 | 66.3 | 69.8 | 70.2 | 68.0 |
| 80% | 63.3 | 56.2 | 48.1 | 45.6 | 46.9 | 50.4 | 55.2 | 60.7 | 65.5 | 69.0 | 69.6 | 67.5 |
| 90% | 62.4 | 55.8 | 47.2 | 45.0 | 46.5 | 49.8 | 54.2 | 58.4 | 63.9 | 68.4 | 68.5 | 66.9 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.7 | 57.1 | 49.7 | 46.9 | 48.9 | 53.5 | 59.4 | 65.2 | 69.7 | 72.2 | 72.4 | 70.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 63.1 | 57.0 | 50.2 | 46.0 | 47.2 | 50.8 | 55.9 | 61.1 | 65.6 | 70.2 | 69.7 | 67.4 |
| Above Normal (16%) | 64.4 | 56.6 | 49.6 | 47.0 | 48.1 | 51.4 | 57.9 | 64.6 | 68.9 | 69.1 | 71.3 | 69.0 |
| Below Normal (13%) | 64.9 | 57.2 | 49.6 | 47.3 | 48.6 | 54.4 | 61.5 | 66.7 | 71.2 | 70.5 | 73.2 | 70.8 |
| Dry (24%) | 65.6 | 57.1 | 49.3 | 47.4 | 49.8 | 54.9 | 60.9 | 67.3 | 71.4 | 73.5 | 73.2 | 71.5 |
| Critical (15%) | 66.9 | 57.9 | 49.4 | 47.8 | 52.4 | 58.3 | 64.1 | 69.8 | 74.8 | 79.6 | 77.0 | 73.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 68.0 | 58.6 | 52.2 | 48.9 | 51.7 | 57.5 | 64.6 | 70.6 | 76.6 | 77.7 | 77.3 | 73.4 |
| 20% | 66.1 | 58.1 | 51.5 | 48.5 | 50.4 | 56.2 | 62.5 | 69.4 | 74.0 | 75.4 | 73.6 | 71.2 |
| 30% | 65.7 | 57.8 | 51.1 | 47.9 | 49.7 | 55.0 | 61.7 | 68.1 | 71.6 | 73.0 | 72.5 | 70.7 |
| 40% | 65.2 | 57.4 | 50.4 | 47.6 | 48.9 | 53.4 | 60.3 | 67.3 | 69.8 | 72.1 | 71.9 | 69.9 |
| 50% | 64.8 | 57.1 | 49.9 | 47.3 | 48.4 | 52.5 | 58.7 | 65.4 | 68.3 | 71.5 | 71.2 | 69.6 |
| 60% | 64.1 | 56.9 | 49.5 | 46.7 | 47.8 | 51.4 | 58.2 | 63.2 | 67.0 | 71.0 | 70.7 | 69.2 |
| 70% | 63.9 | 56.7 | 48.9 | 46.4 | 47.3 | 50.9 | 56.4 | 61.8 | 66.3 | 70.5 | 69.7 | 68.9 |
| 80% | 63.4 | 56.2 | 48.4 | 46.0 | 46.9 | 50.4 | 55.2 | 60.8 | 65.4 | 69.8 | 69.0 | 68.1 |
| 90% | 62.5 | 55.7 | 47.4 | 45.1 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.8 | 68.3 | 67.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.2 | 50.0 | 47.2 | 48.8 | 53.1 | 59.2 | 65.1 | 69.3 | 72.6 | 71.8 | 70.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 63.4 | 57.2 | 50.8 | 46.2 | 47.2 | 50.8 | 56.0 | 61.2 | 65.4 | 70.6 | 69.5 | 68.5 |
| Above Normal (16%) | 64.4 | 56.7 | 49.8 | 47.3 | 48.1 | 51.4 | 58.0 | 64.7 | 68.6 | 69.7 | 70.5 | 69.1 |
| Below Normal (13%) | 64.9 | 57.2 | 49.8 | 47.6 | 48.5 | 53.9 | 61.1 | 66.2 | 70.5 | 71.7 | 71.7 | 70.0 |
| Dry (24%) | 65.6 | 57.0 | 49.4 | 47.5 | 49.7 | 54.4 | 60.6 | 67.2 | 71.3 | 74.0 | 72.9 | 70.8 |
| Critical (15%) | 66.9 | 57.8 | 49.5 | 48.1 | 51.6 | 57.1 | 63.5 | 69.3 | 74.2 | 78.5 | 76.6 | 72.8 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | -1.5 | -1.2 | -1.0 | -1.3 | -1.2 | -0.7 | -0.8 |
| 20% | -0.2 | 0.0 | 0.4 | 0.3 | -0.3 | -1.2 | -0.1 | -0.9 | -0.5 | 1.1 | -2.0 | -1.4 |
| 30% | 0.3 | 0.1 | 0.5 | 0.3 | -0.1 | -0.8 | 0.7 | 0.0 | -0.1 | 0.6 | -0.2 | -0.4 |
| 40% | 0.1 | 0.0 | 0.1 | 0.3 | -0.3 | 0.1 | 0.2 | 0.7 | -0.2 | 0.5 | -0.3 | -0.3 |
| 50% | 0.1 | 0.2 | 0.0 | 0.2 | -0.1 | -0.1 | 0.0 | 0.5 | -0.2 | 0.6 | -0.7 | 0.0 |
| 60% | 0.0 | 0.1 | 0.5 | 0.1 | -0.2 | -0.2 | 0.1 | -0.2 | -0.5 | 0.7 | -0.2 | 0.4 |
| 70% | 0.1 | 0.1 | 0.3 | 0.3 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.7 | -0.5 | 0.8 |
| 80% | 0.1 | 0.0 | 0.3 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.7 | -0.7 | 0.6 |
| 90% | 0.1 | -0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | -0.2 | 0.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.1 | 0.0 | 0.3 | 0.2 | -0.2 | -0.4 | -0.2 | -0.1 | -0.3 | 0.3 | -0.5 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.2 | 0.1 | 0.6 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | -0.2 | 0.4 | -0.2 | 1.1 |
| Above Normal (16%) | 0.0 | 0.1 | 0.2 | 0.3 | -0.1 | 0.0 | 0.1 | 0.1 | -0.3 | 0.6 | -0.9 | 0.1 |
| Below Normal (13%) | 0.0 | -0.1 | 0.1 | 0.3 | -0.1 | -0.6 | -0.4 | -0.5 | -0.8 | 1.2 | -1.6 | -0.8 |
| Dry (24%) | 0.1 | -0.1 | 0.1 | 0.2 | -0.1 | -0.5 | -0.3 | -0.1 | -0.1 | 0.5 | -0.2 | -0.6 |
| Critical (15%) | 0.0 | -0.1 | 0.1 | 0.3 | -0.8 | -1.1 | -0.6 | -0.5 | -0.5 | -1.1 | -0.4 | -0.6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-3. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.9 | 58.6 | 52.1 | 48.7 | 51.4 | 58.9 | 66.0 | 71.8 | 77.9 | 78.6 | 77.4 | 74.2 |
| 20% | 66.4 | 58.1 | 51.2 | 48.1 | 50.6 | 57.3 | 62.7 | 70.2 | 73.8 | 73.8 | 75.7 | 72.5 |
| 30% | 65.7 | 57.7 | 50.7 | 47.6 | 49.8 | 55.3 | 61.0 | 68.0 | 71.7 | 72.4 | 72.8 | 71.1 |
| 40% | 65.1 | 57.4 | 50.3 | 47.4 | 49.2 | 53.3 | 60.0 | 66.9 | 70.0 | 71.6 | 72.2 | 70.1 |
| 50% | 64.6 | 57.1 | 49.9 | 47.1 | 48.4 | 52.6 | 58.7 | 65.0 | 68.6 | 71.0 | 71.8 | 69.6 |
| 60% | 64.2 | 56.8 | 49.0 | 46.6 | 48.0 | 51.5 | 58.1 | 63.4 | 67.5 | 70.5 | 70.9 | 68.7 |
| 70% | 63.8 | 56.5 | 48.6 | 46.0 | 47.3 | 50.9 | 56.5 | 61.8 | 66.4 | 69.7 | 70.2 | 68.0 |
| 80% | 63.3 | 56.2 | 48.0 | 45.6 | 46.9 | 50.4 | 55.2 | 60.8 | 65.5 | 69.1 | 69.6 | 67.5 |
| 90% | 62.4 | 55.9 | 47.3 | 45.0 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.5 | 68.5 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.1 | 49.7 | 47.0 | 48.9 | 53.4 | 59.4 | 65.2 | 69.6 | 72.2 | 72.3 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 63.2 | 57.1 | 50.2 | 46.1 | 47.2 | 50.8 | 55.9 | 61.1 | 65.6 | 70.2 | 69.7 | 67.4 |
| Above Normal (16%) | 64.4 | 56.6 | 49.6 | 47.0 | 48.1 | 51.4 | 57.9 | 64.6 | 68.9 | 69.1 | 71.4 | 69.1 |
| Below Normal (13%) | 65.0 | 57.3 | 49.7 | 47.3 | 48.6 | 54.4 | 61.6 | 66.7 | 71.3 | 70.5 | 73.3 | 71.1 |
| Dry (24%) | 65.6 | 57.1 | 49.3 | 47.4 | 49.8 | 54.8 | 60.9 | 67.3 | 71.6 | 73.1 | 73.1 | 71.4 |
| Critical (15%) | 66.9 | 57.8 | 49.4 | 47.8 | 52.2 | 58.2 | 64.2 | 69.8 | 74.1 | 80.0 | 76.4 | 73.5 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 67.9 | 58.6 | 52.1 | 48.7 | 51.4 | 58.9 | 65.8 | 71.6 | 77.9 | 78.9 | 77.9 | 74.2 |
| 20% | 66.3 | 58.1 | 51.2 | 48.1 | 50.7 | 57.3 | 62.6 | 70.3 | 74.5 | 74.2 | 75.6 | 72.5 |
| 30% | 65.4 | 57.7 | 50.6 | 47.6 | 49.8 | 55.7 | 61.0 | 68.1 | 71.7 | 72.4 | 72.7 | 71.1 |
| 40% | 65.1 | 57.4 | 50.3 | 47.3 | 49.2 | 53.3 | 60.1 | 66.5 | 70.0 | 71.6 | 72.2 | 70.2 |
| 50% | 64.7 | 57.0 | 49.9 | 47.1 | 48.5 | 52.6 | 58.7 | 65.0 | 68.5 | 70.9 | 71.9 | 69.6 |
| 60% | 64.1 | 56.8 | 49.0 | 46.5 | 48.0 | 51.5 | 58.1 | 63.4 | 67.5 | 70.3 | 70.9 | 68.8 |
| 70% | 63.8 | 56.6 | 48.6 | 46.1 | 47.3 | 50.9 | 56.5 | 61.8 | 66.3 | 69.8 | 70.2 | 68.0 |
| 80% | 63.3 | 56.2 | 48.1 | 45.6 | 46.9 | 50.4 | 55.2 | 60.7 | 65.5 | 69.0 | 69.6 | 67.5 |
| 90% | 62.4 | 55.8 | 47.2 | 45.0 | 46.5 | 49.8 | 54.2 | 58.4 | 63.9 | 68.4 | 68.5 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.7 | 57.1 | 49.7 | 46.9 | 48.9 | 53.5 | 59.4 | 65.2 | 69.7 | 72.2 | 72.4 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 63.1 | 57.0 | 50.2 | 46.0 | 47.2 | 50.8 | 55.9 | 61.1 | 65.6 | 70.2 | 69.7 | 67.4 |
| Above Normal (16%) | 64.4 | 56.6 | 49.6 | 47.0 | 48.1 | 51.4 | 57.9 | 64.6 | 68.9 | 69.1 | 71.3 | 69.0 |
| Below Normal (13%) | 64.9 | 57.2 | 49.6 | 47.3 | 48.6 | 54.4 | 61.5 | 66.7 | 71.2 | 70.5 | 73.2 | 70.8 |
| Dry (24%) | 65.6 | 57.1 | 49.3 | 47.4 | 49.8 | 54.9 | 60.9 | 67.3 | 71.4 | 73.5 | 73.2 | 71.5 |
| Critical (15%) | 66.9 | 57.9 | 49.4 | 47.8 | 52.4 | 58.3 | 64.1 | 69.8 | 74.8 | 79.6 | 77.0 | 73.5 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | -0.1 | **0.0** | **0.0** | **0.0** | 0.0 | -0.2 | -0.2 | **0.0** | **0.3** | **0.6** | 0.0 |
| 20% | -0.1 | 0.0 | -0.1 | 0.0 | **0.0** | **0.0** | -0.1 | **0.1** | **0.7** | **0.4** | -0.1 | 0.0 |
| 30% | -0.4 | **0.1** | 0.0 | 0.0 | **0.0** | **0.4** | 0.0 | **0.0** | **0.1** | 0.0 | -0.1 | -0.1 |
| 40% | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.1** | -0.3 | 0.0 | 0.0 | 0.0 | **0.2** |
| 50% | **0.0** | -0.1 | 0.0 | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** |
| 60% | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | **0.1** |
| 70% | 0.0 | **0.1** | 0.0 | **0.1** | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | **0.1** | **0.0** | 0.0 |
| 80% | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.0** | **0.0** |
| 90% | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | -0.1 | **0.0** | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.1** | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 |
| Above Normal (16%) | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 |
| Below Normal (13%) | -0.1 | -0.1 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | **0.0** | -0.1 | -0.2 |
| Dry (24%) | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | **0.1** | **0.0** | 0.0 | -0.2 | **0.4** | **0.1** | **0.1** |
| Critical (15%) | 0.0 | **0.1** | 0.0 | 0.0 | **0.2** | **0.0** | -0.1 | -0.1 | **0.6** | -0.4 | **0.6** | 0.0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-4. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 68.1 | 58.7 | 52.2 | 49.0 | 51.6 | 57.5 | 64.2 | 71.0 | 77.2 | 77.7 | 77.3 | 73.5 |
| 20% | 66.3 | 58.1 | 51.4 | 48.4 | 50.5 | 55.9 | 62.9 | 69.5 | 74.1 | 73.8 | 73.6 | 71.2 |
| 30% | 65.6 | 57.7 | 50.9 | 47.8 | 49.7 | 54.9 | 61.6 | 68.5 | 71.7 | 72.7 | 72.6 | 70.7 |
| 40% | 65.1 | 57.4 | 50.4 | 47.6 | 49.0 | 53.4 | 60.4 | 67.3 | 69.9 | 71.7 | 72.1 | 70.0 |
| 50% | 64.6 | 57.2 | 50.0 | 47.3 | 48.4 | 52.5 | 58.7 | 65.3 | 68.4 | 71.3 | 71.5 | 69.5 |
| 60% | 64.1 | 56.9 | 49.5 | 46.7 | 47.8 | 51.3 | 58.2 | 63.1 | 67.8 | 70.9 | 70.9 | 69.3 |
| 70% | 63.9 | 56.6 | 49.0 | 46.4 | 47.3 | 50.9 | 56.4 | 61.8 | 66.6 | 70.0 | 70.1 | 68.8 |
| 80% | 63.3 | 56.1 | 48.3 | 45.9 | 46.9 | 50.4 | 55.2 | 60.8 | 65.2 | 69.4 | 69.5 | 68.6 |
| 90% | 62.5 | 55.8 | 47.4 | 45.1 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.6 | 68.5 | 67.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.2 | 49.9 | 47.2 | 48.8 | 53.1 | 59.2 | 65.2 | 69.5 | 72.3 | 72.0 | 70.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 63.3 | 57.2 | 50.8 | 46.2 | 47.2 | 50.8 | 56.0 | 61.2 | 65.5 | 70.4 | 69.7 | 68.7 |
| Above Normal (16%) | 64.5 | 56.6 | 49.8 | 47.3 | 48.1 | 51.4 | 58.0 | 64.7 | 68.6 | 69.4 | 71.2 | 69.3 |
| Below Normal (13%) | 65.0 | 57.1 | 49.6 | 47.7 | 48.5 | 53.9 | 61.1 | 66.3 | 70.6 | 70.9 | 71.7 | 70.2 |
| Dry (24%) | 65.6 | 57.1 | 49.4 | 47.5 | 49.7 | 54.4 | 60.7 | 67.5 | 71.6 | 73.5 | 72.9 | 70.8 |
| Critical (15%) | 66.9 | 57.8 | 49.5 | 48.1 | 51.5 | 57.0 | 63.1 | 69.2 | 74.2 | 78.7 | 76.8 | 72.9 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 68.0 | 58.6 | 52.2 | 48.9 | 51.7 | 57.5 | 64.6 | 70.6 | 76.6 | 77.7 | 77.3 | 73.4 |
| 20% | 66.1 | 58.1 | 51.5 | 48.5 | 50.4 | 56.2 | 62.5 | 69.4 | 74.0 | 75.4 | 73.6 | 71.2 |
| 30% | 65.7 | 57.8 | 51.1 | 47.9 | 49.7 | 55.0 | 61.7 | 68.1 | 71.6 | 73.0 | 72.5 | 70.7 |
| 40% | 65.2 | 57.4 | 50.4 | 47.6 | 48.9 | 53.4 | 60.3 | 67.3 | 69.8 | 72.1 | 71.9 | 69.9 |
| 50% | 64.8 | 57.1 | 49.9 | 47.3 | 48.4 | 52.5 | 58.7 | 65.4 | 68.3 | 71.5 | 71.2 | 69.6 |
| 60% | 64.1 | 56.9 | 49.5 | 46.7 | 47.8 | 51.4 | 58.2 | 63.2 | 67.0 | 71.0 | 70.7 | 69.2 |
| 70% | 63.9 | 56.7 | 48.9 | 46.4 | 47.3 | 50.9 | 56.4 | 61.8 | 66.3 | 70.5 | 69.7 | 68.9 |
| 80% | 63.4 | 56.2 | 48.4 | 46.0 | 46.9 | 50.4 | 55.2 | 60.8 | 65.4 | 69.8 | 69.0 | 68.1 |
| 90% | 62.5 | 55.7 | 47.4 | 45.1 | 46.5 | 49.8 | 54.2 | 58.4 | 64.0 | 68.8 | 68.3 | 67.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 64.8 | 57.2 | 50.0 | 47.2 | 48.8 | 53.1 | 59.2 | 65.1 | 69.3 | 72.6 | 71.8 | 70.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 63.4 | 57.2 | 50.8 | 46.2 | 47.2 | 50.8 | 56.0 | 61.2 | 65.4 | 70.6 | 69.5 | 68.5 |
| Above Normal (16%) | 64.4 | 56.7 | 49.8 | 47.3 | 48.1 | 51.4 | 58.0 | 64.7 | 68.6 | 69.7 | 70.5 | 69.1 |
| Below Normal (13%) | 64.9 | 57.2 | 49.8 | 47.6 | 48.5 | 53.9 | 61.1 | 66.2 | 70.5 | 71.7 | 71.7 | 70.0 |
| Dry (24%) | 65.6 | 57.0 | 49.4 | 47.5 | 49.7 | 54.4 | 60.6 | 67.2 | 71.3 | 74.0 | 72.9 | 70.8 |
| Critical (15%) | 66.9 | 57.8 | 49.5 | 48.1 | 51.6 | 57.1 | 63.5 | 69.3 | 74.2 | 78.5 | 76.6 | 72.8 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.1 | 0.0 | 0.0 | -0.1 | **0.0** | 0.0 | **0.4** | -0.4 | -0.5 | **0.0** | -0.1 | -0.2 |
| 20% | -0.3 | 0.0 | **0.1** | **0.1** | -0.1 | **0.2** | -0.4 | -0.1 | -0.1 | **1.5** | 0.0 | **0.0** |
| 30% | **0.1** | **0.0** | **0.2** | **0.1** | **0.0** | **0.0** | **0.0** | -0.4 | -0.1 | **0.3** | -0.1 | 0.0 |
| 40% | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | **0.4** | -0.2 | -0.1 |
| 50% | **0.1** | 0.0 | -0.1 | **0.0** | 0.0 | **0.0** | **0.0** | **0.1** | -0.1 | **0.2** | -0.3 | **0.0** |
| 60% | **0.0** | **0.0** | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | **0.0** | -0.8 | **0.1** | -0.2 | -0.1 |
| 70% | **0.1** | **0.1** | -0.1 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | -0.3 | **0.5** | -0.4 | **0.0** |
| 80% | **0.1** | **0.1** | **0.1** | **0.1** | **0.0** | **0.0** | **0.0** | **0.0** | **0.2** | **0.3** | -0.5 | -0.5 |
| 90% | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | -0.1 | 0.0 | 0.0 | **0.2** | -0.2 | -0.4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | **0.3** | -0.2 | -0.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | **0.1** | -0.2 | -0.2 |
| Above Normal (16%) | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | -0.1 | **0.3** | -0.8 | -0.1 |
| Below Normal (13%) | -0.1 | **0.0** | **0.2** | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | **0.8** | -0.1 | -0.2 |
| Dry (24%) | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.4 | -0.3 | **0.4** | 0.0 | **0.0** |
| Critical (15%) | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.1** | **0.4** | **0.1** | **0.0** | -0.2 | -0.1 | 0.0 |

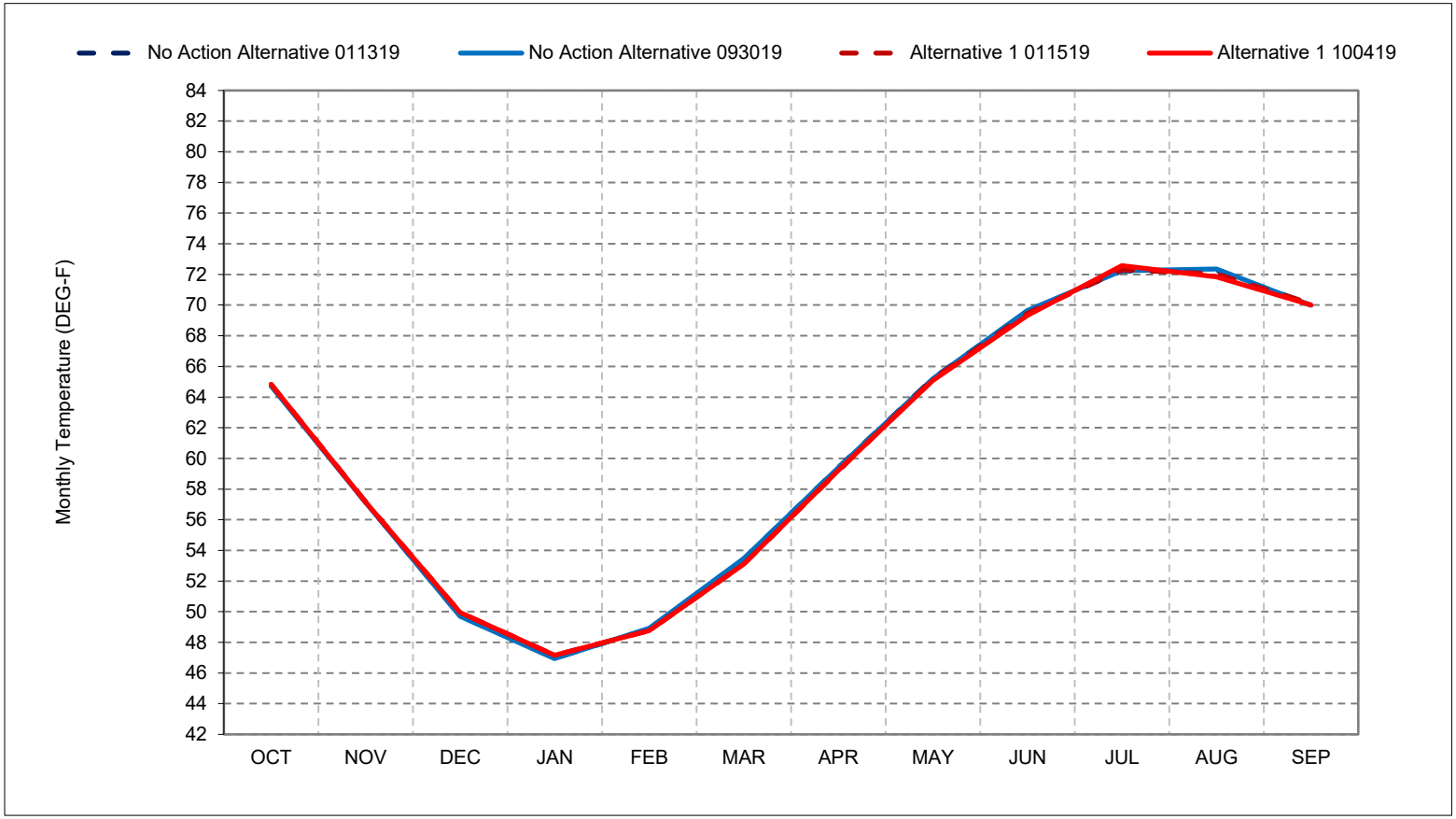
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-1. American River at the Mouth, Long-Term Average Temperature

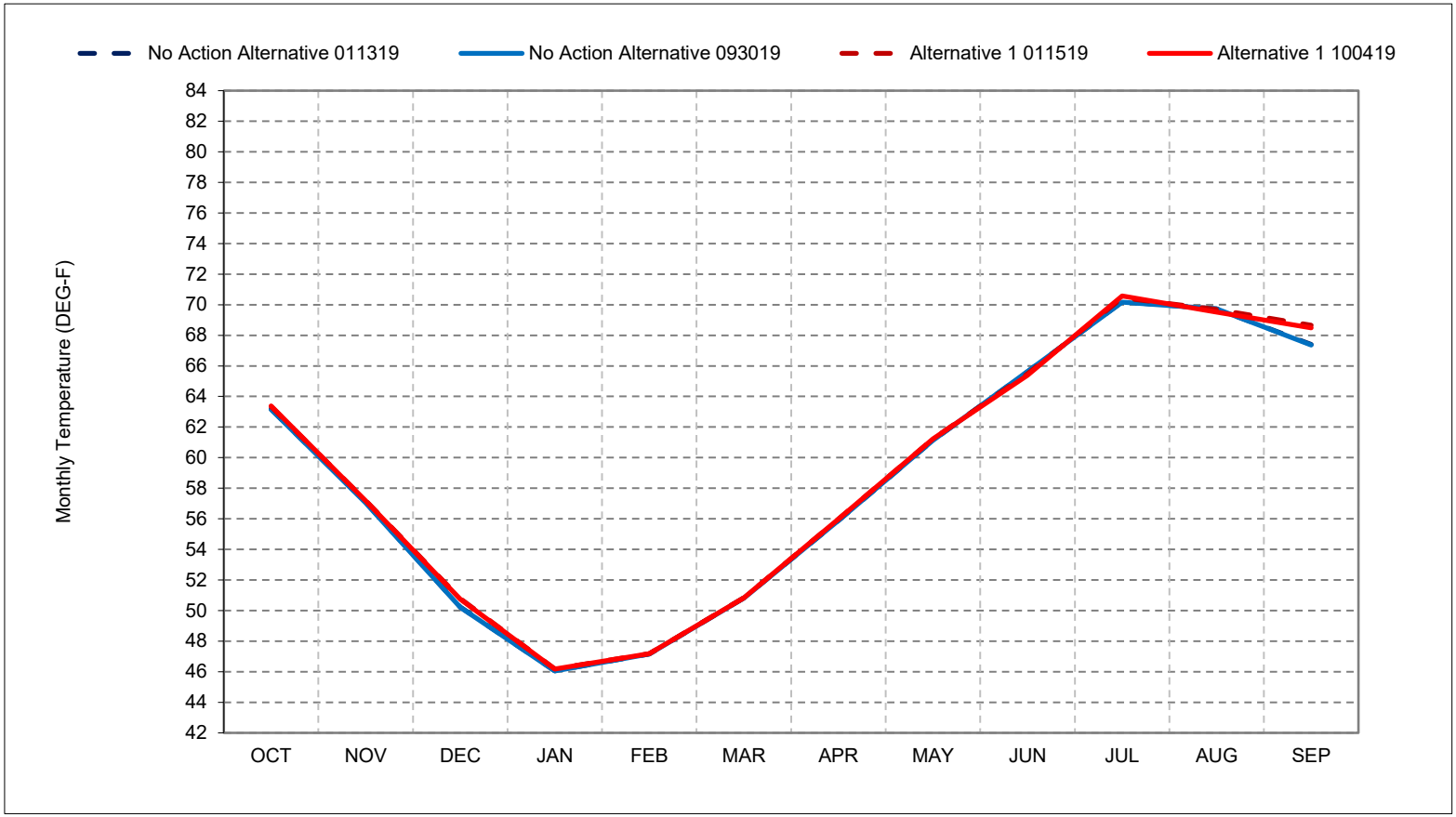



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-2. American River at the Mouth, Wet Year Average Temperature

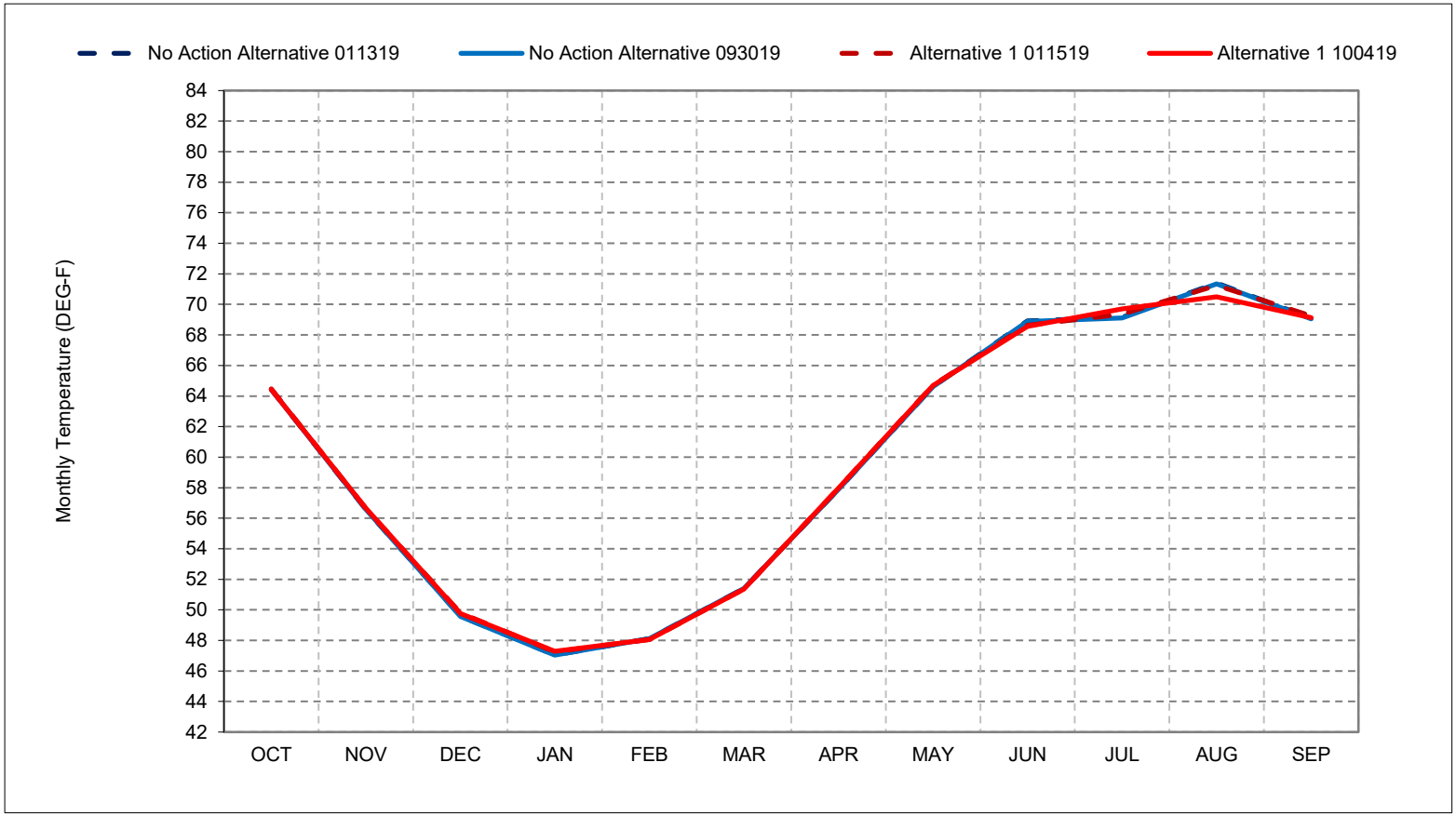



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-3. American River at the Mouth, Above Normal Year Average Temperature

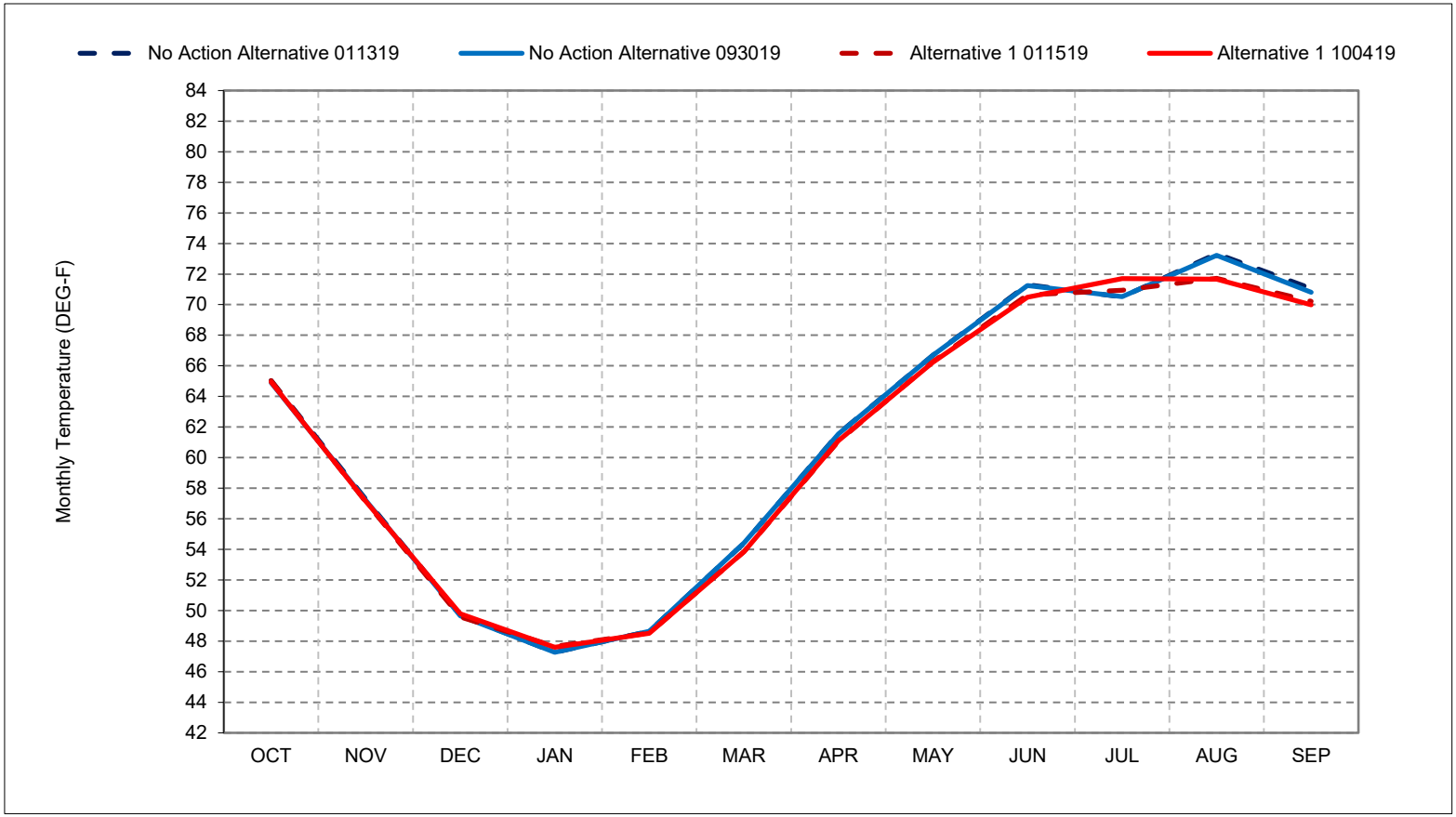



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-4. American River at the Mouth, Below Normal Year Average Temperature

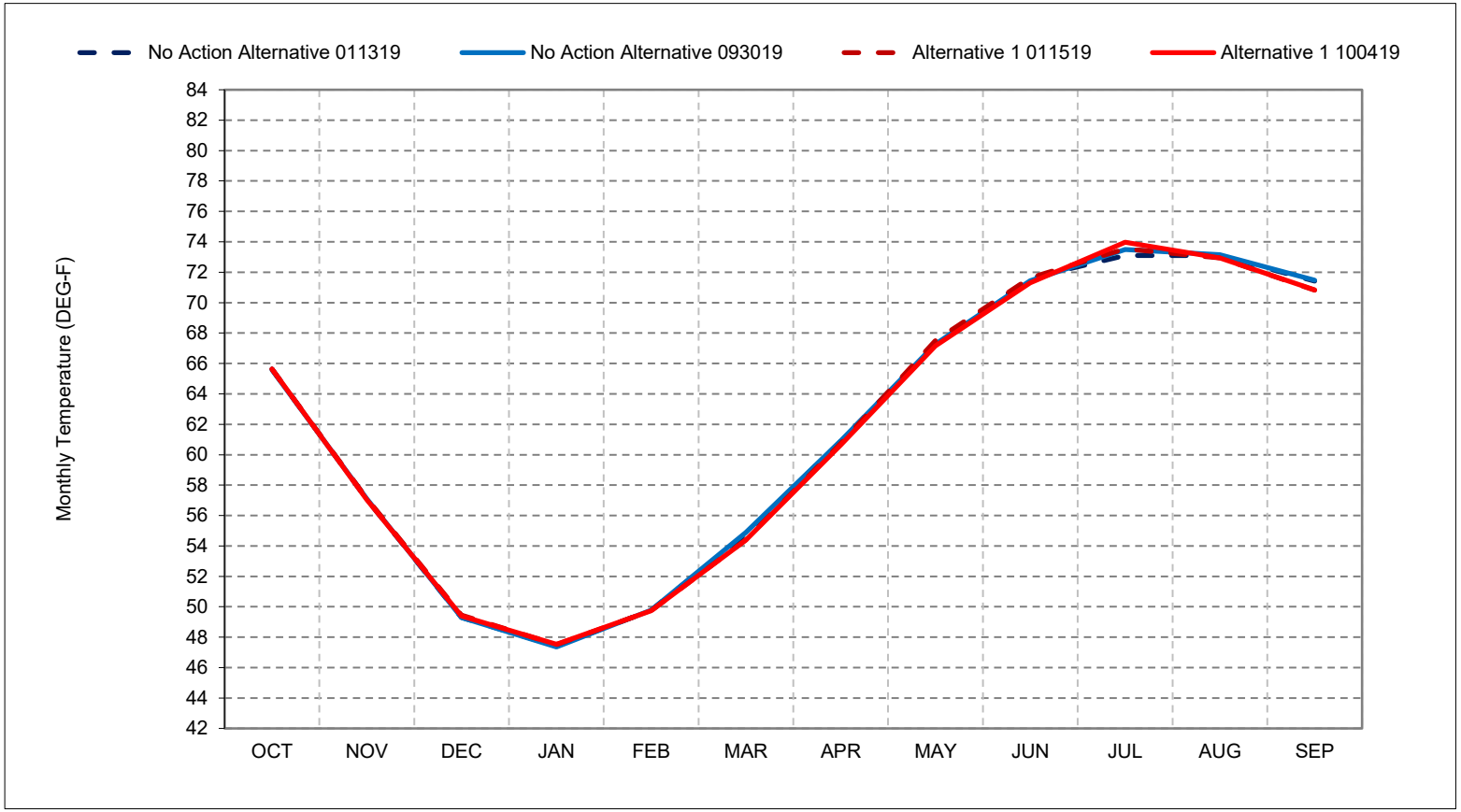



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-5. American River at the Mouth, Dry Year Average Temperature

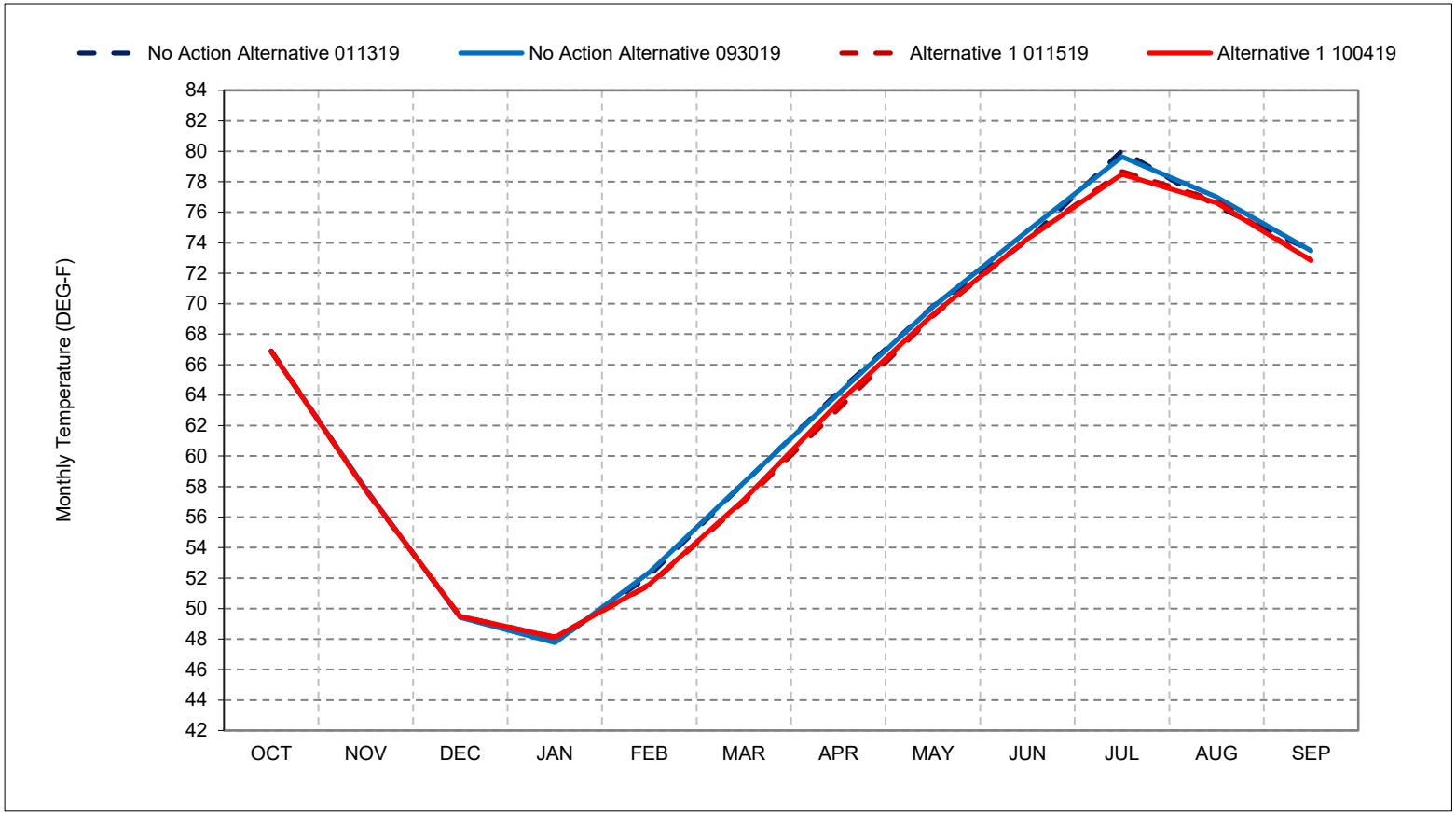



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-6. American River at the Mouth, Critical Year Average Temperature

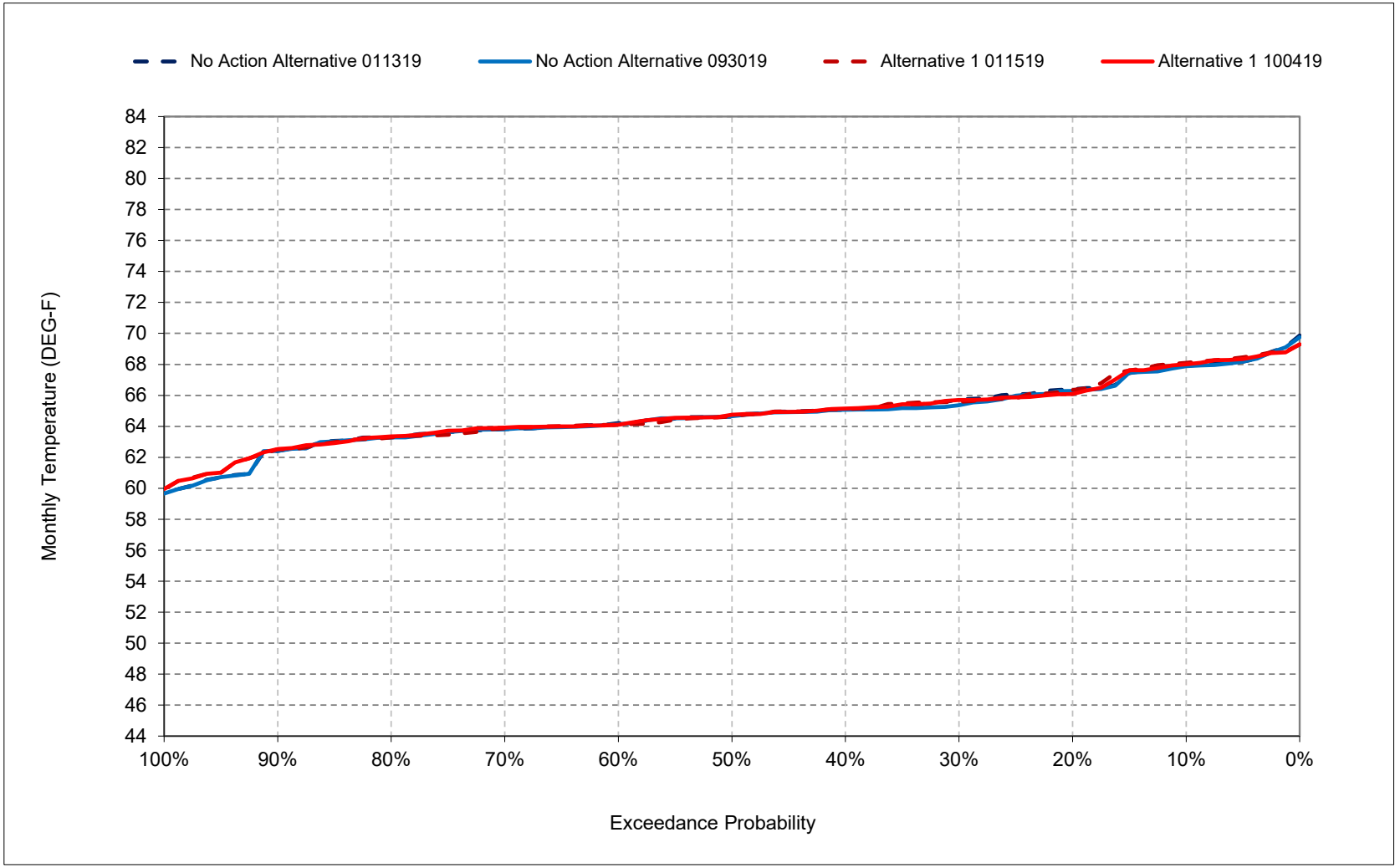



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

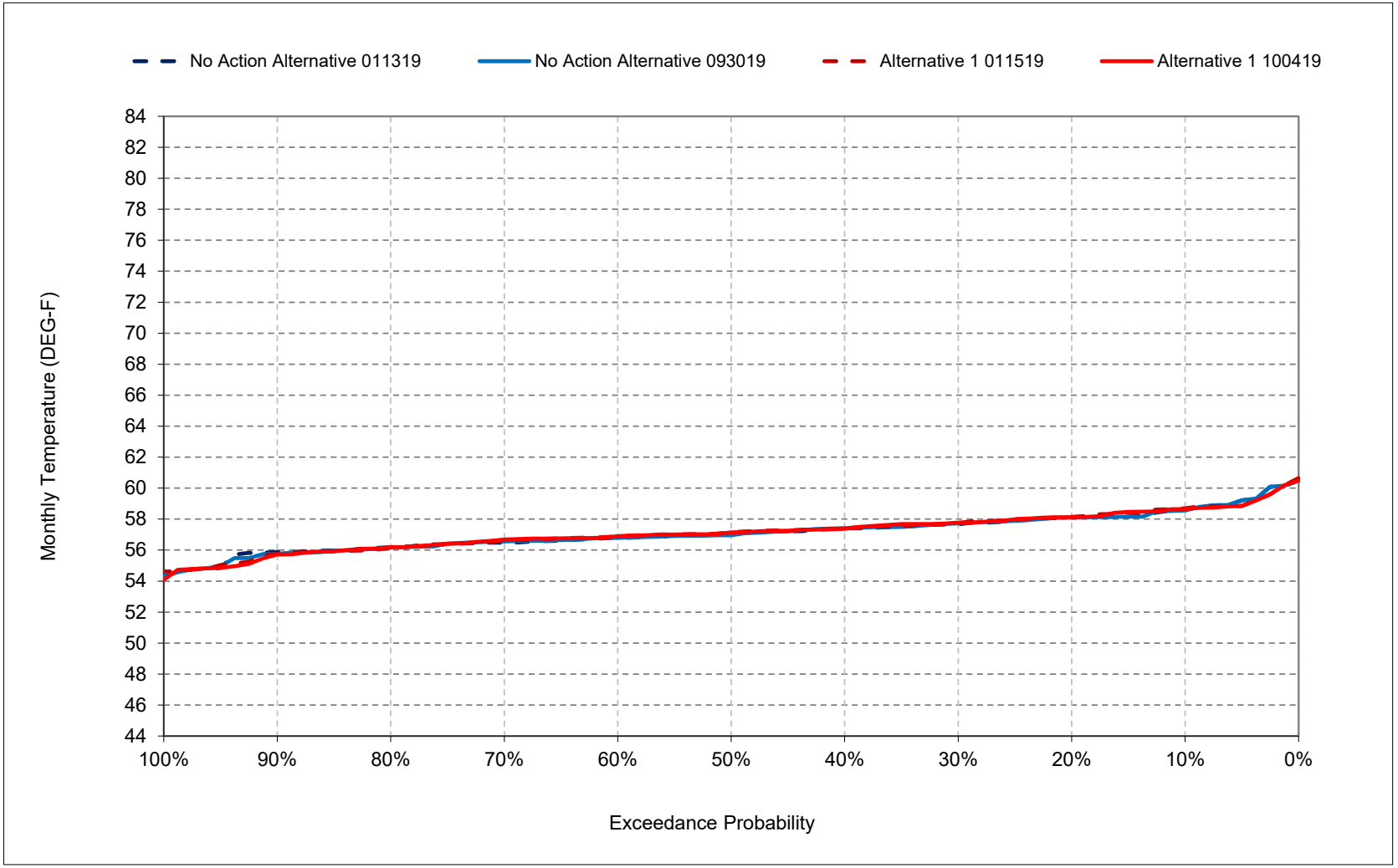
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-7. American River at the Mouth, October**



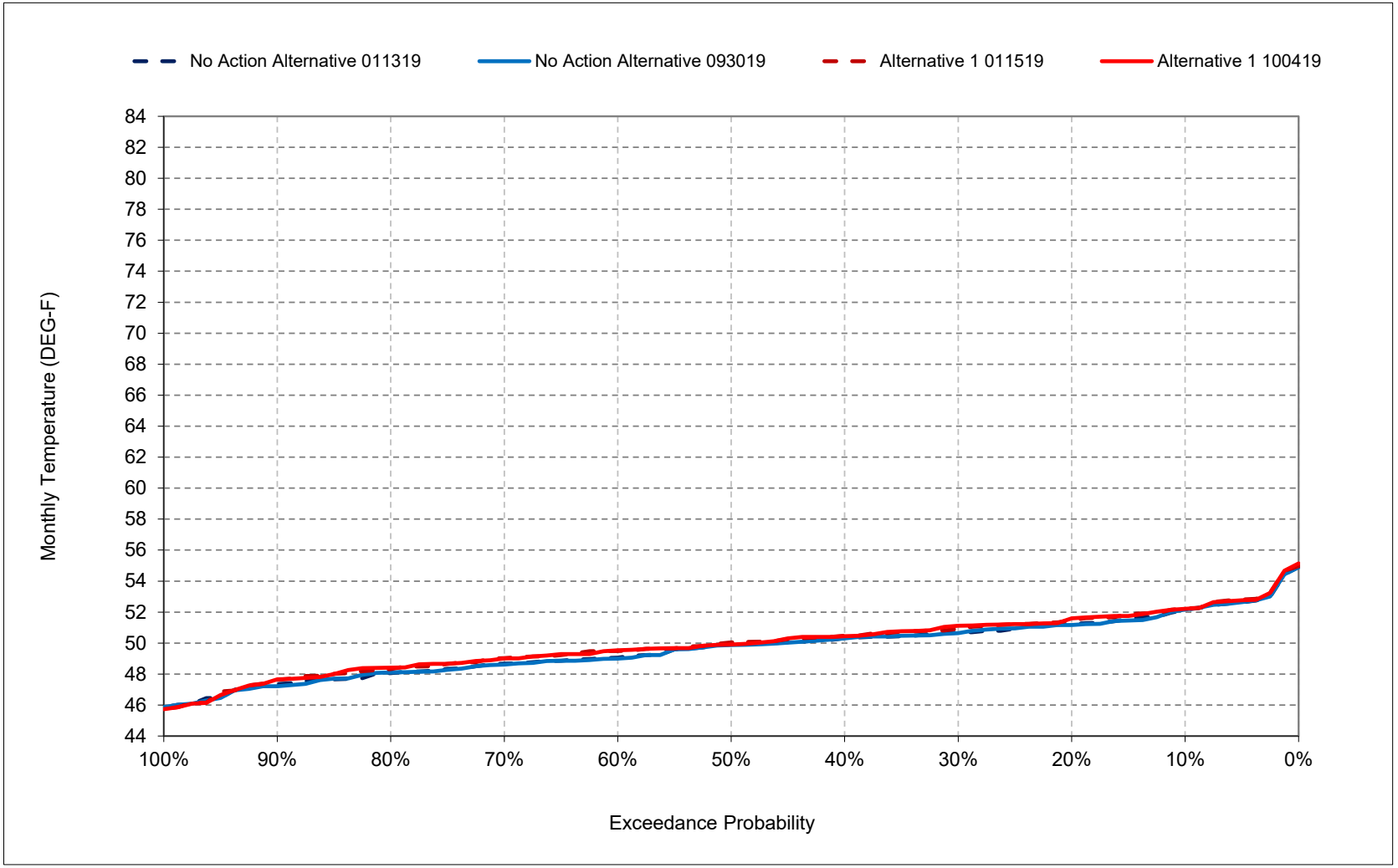

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-8. American River at the Mouth, November**



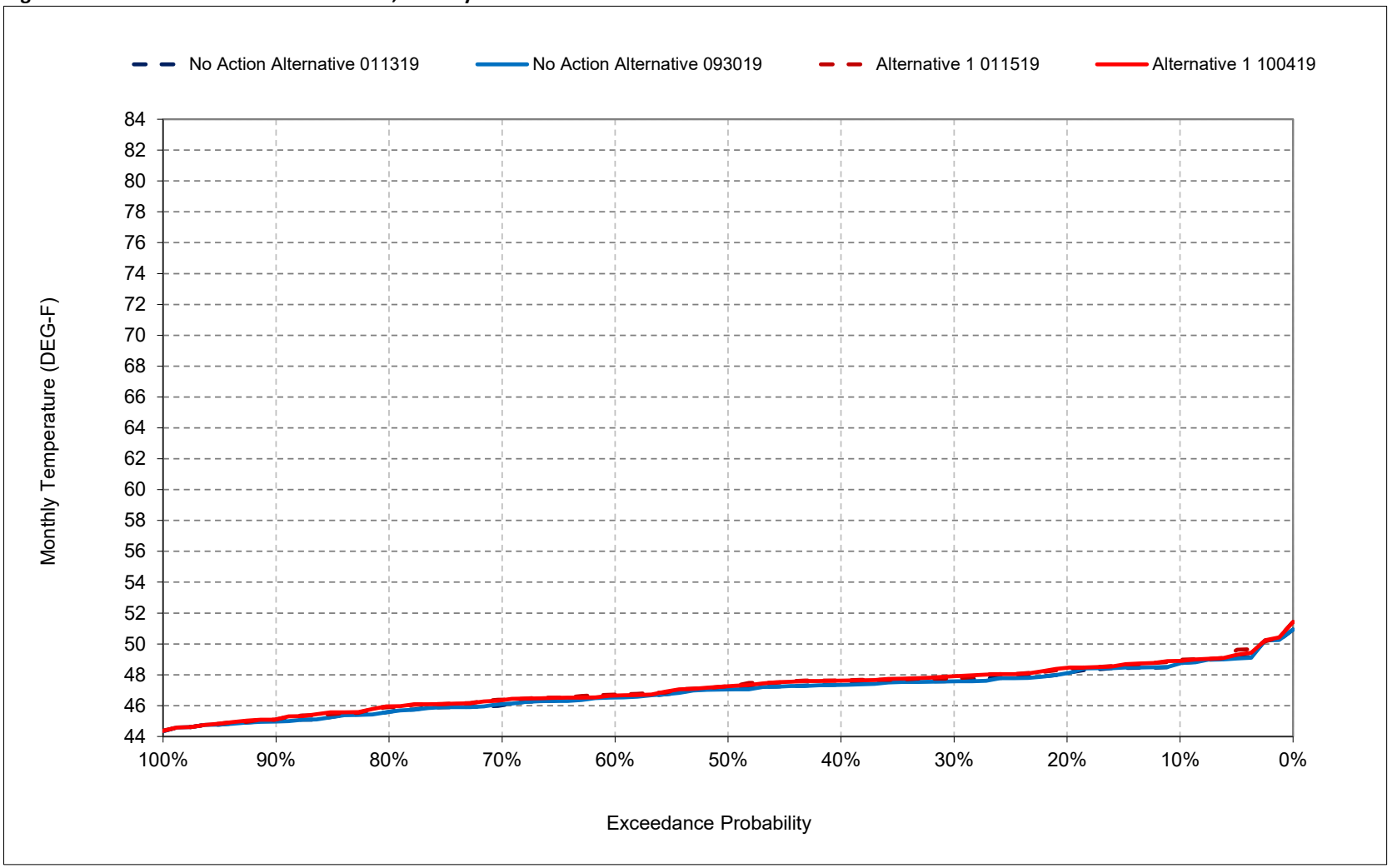

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-9. American River at the Mouth, December**



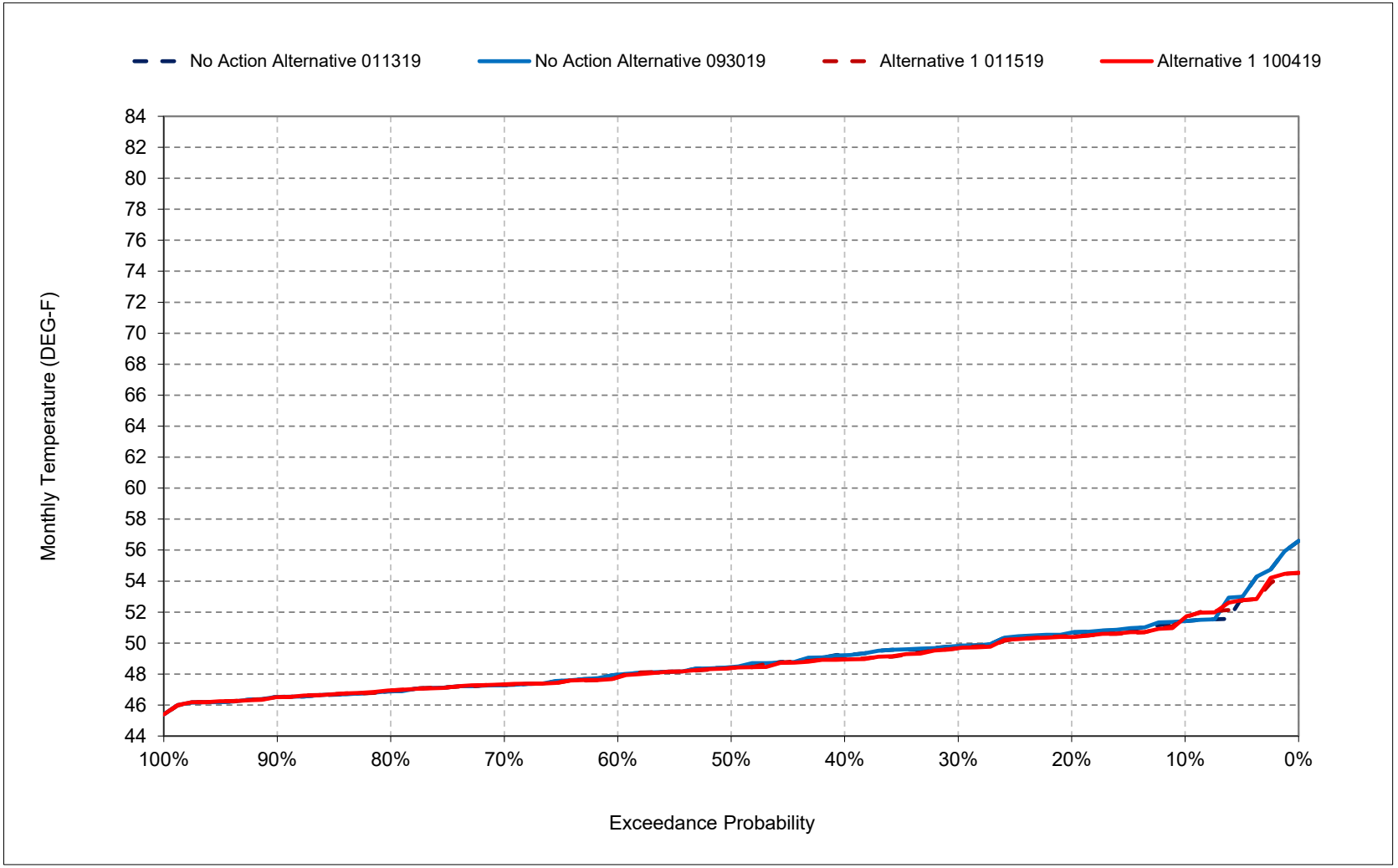

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-10. American River at the Mouth, January**



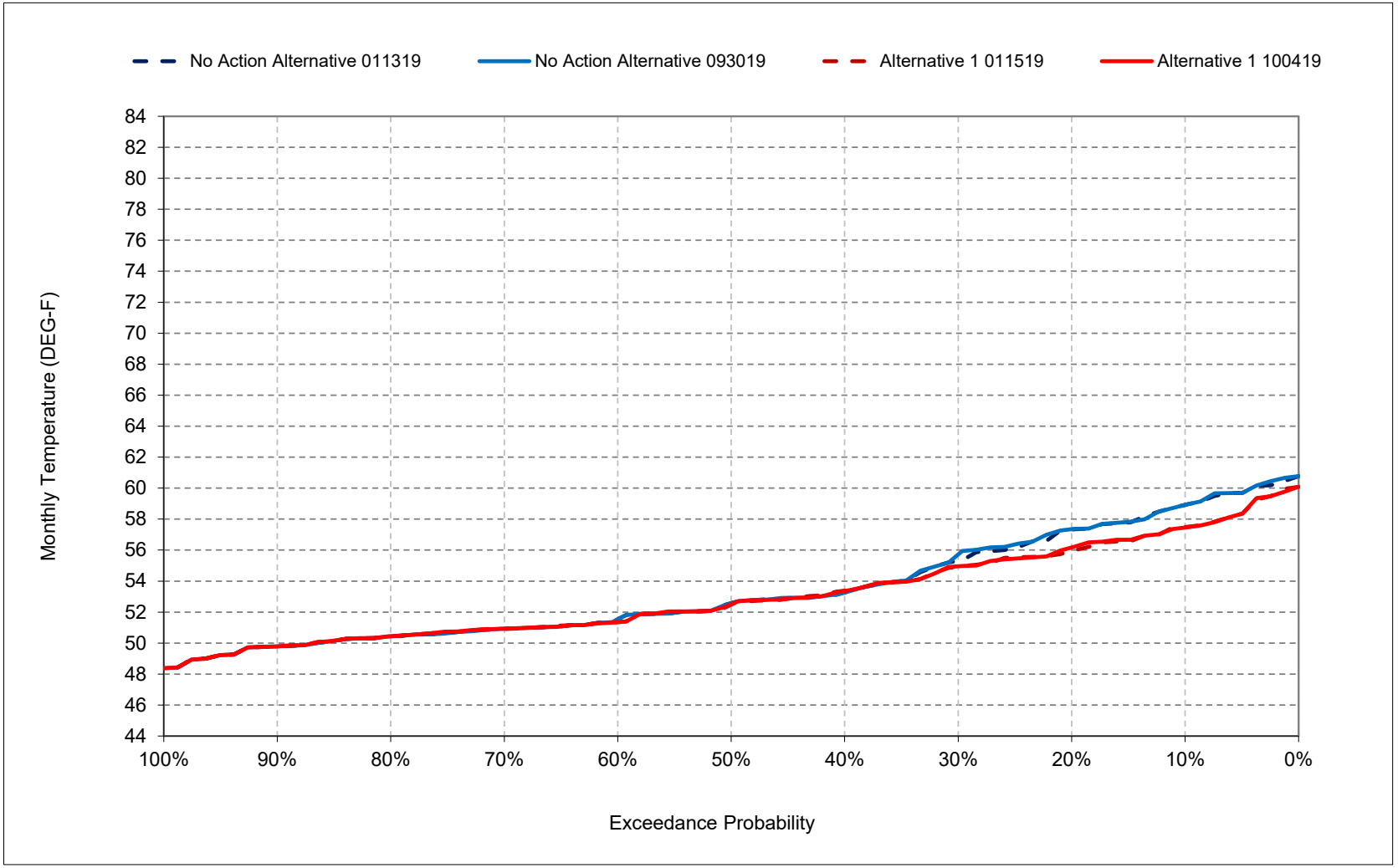

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-11. American River at the Mouth, February**



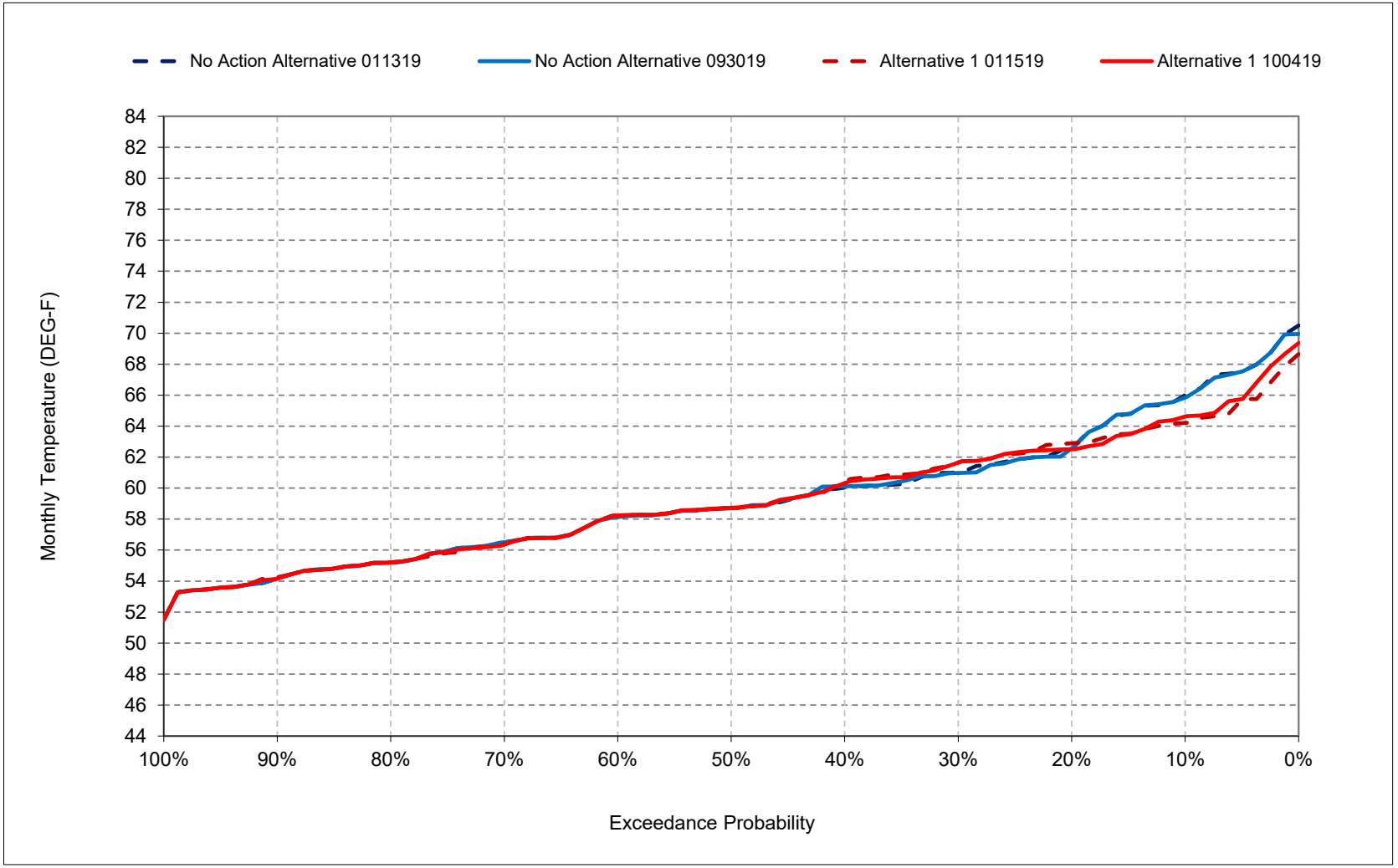

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-12. American River at the Mouth, March**



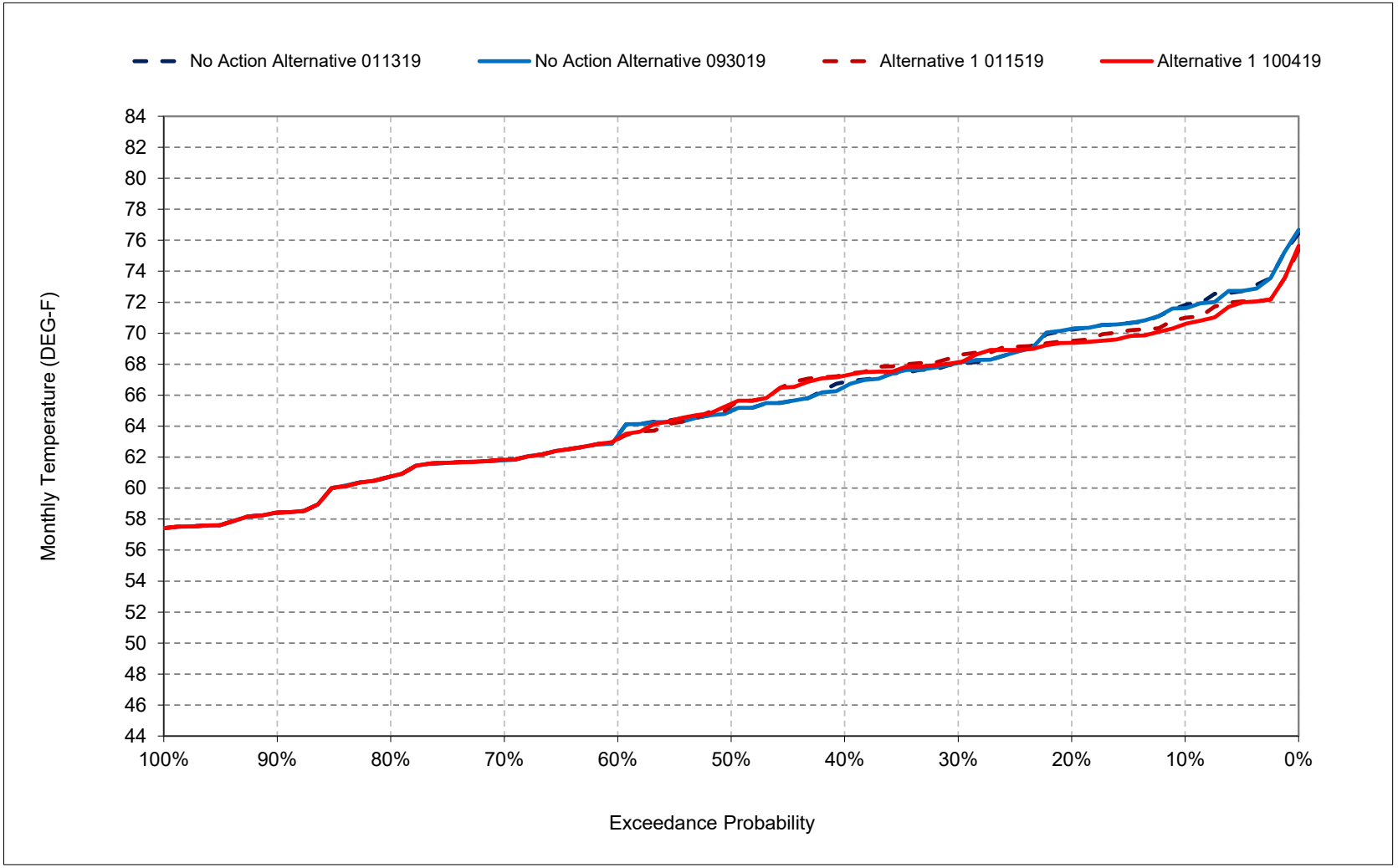

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-13. American River at the Mouth, April**



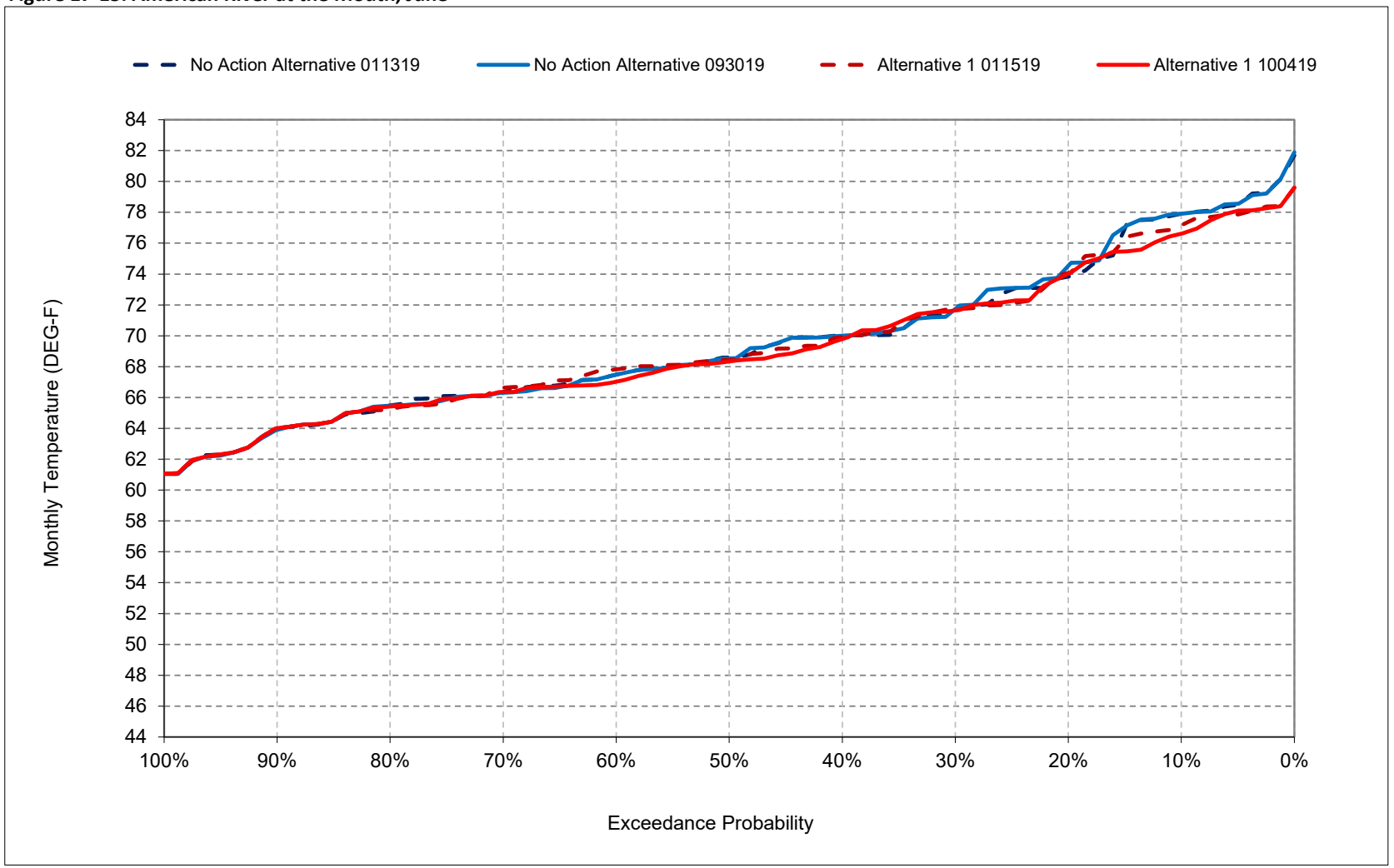

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-14. American River at the Mouth, May**



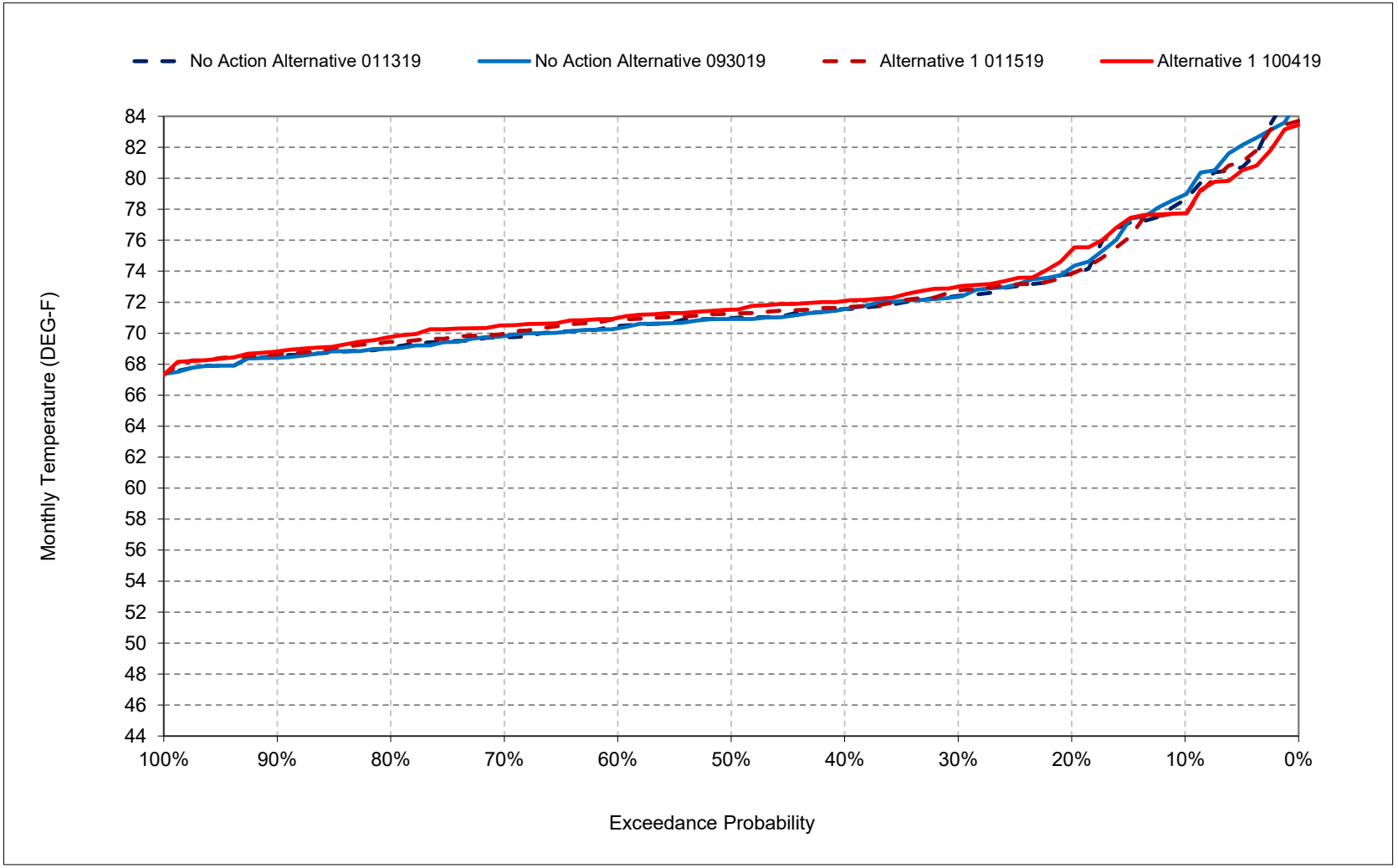

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-15. American River at the Mouth, June**



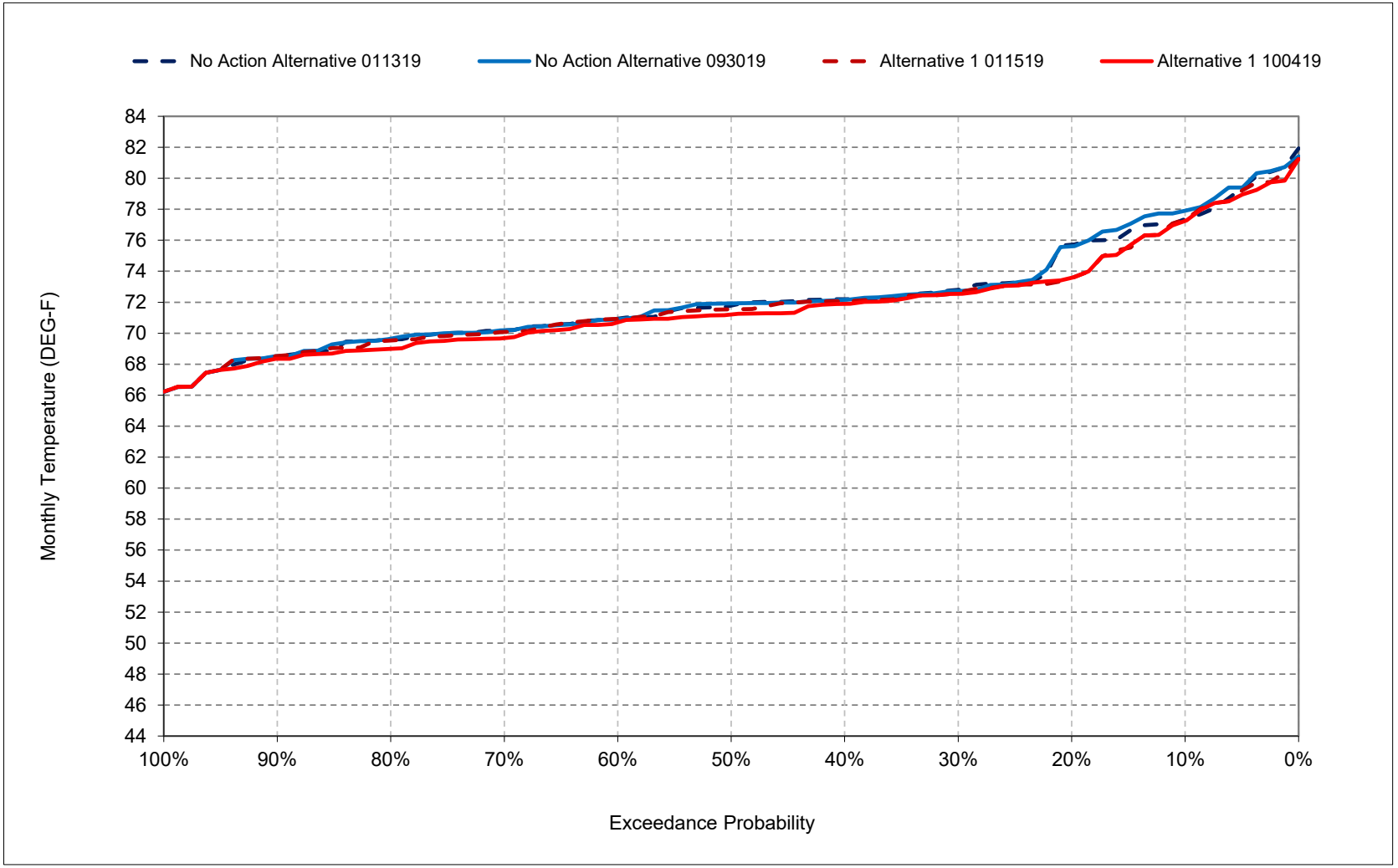

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-16. American River at the Mouth, July**



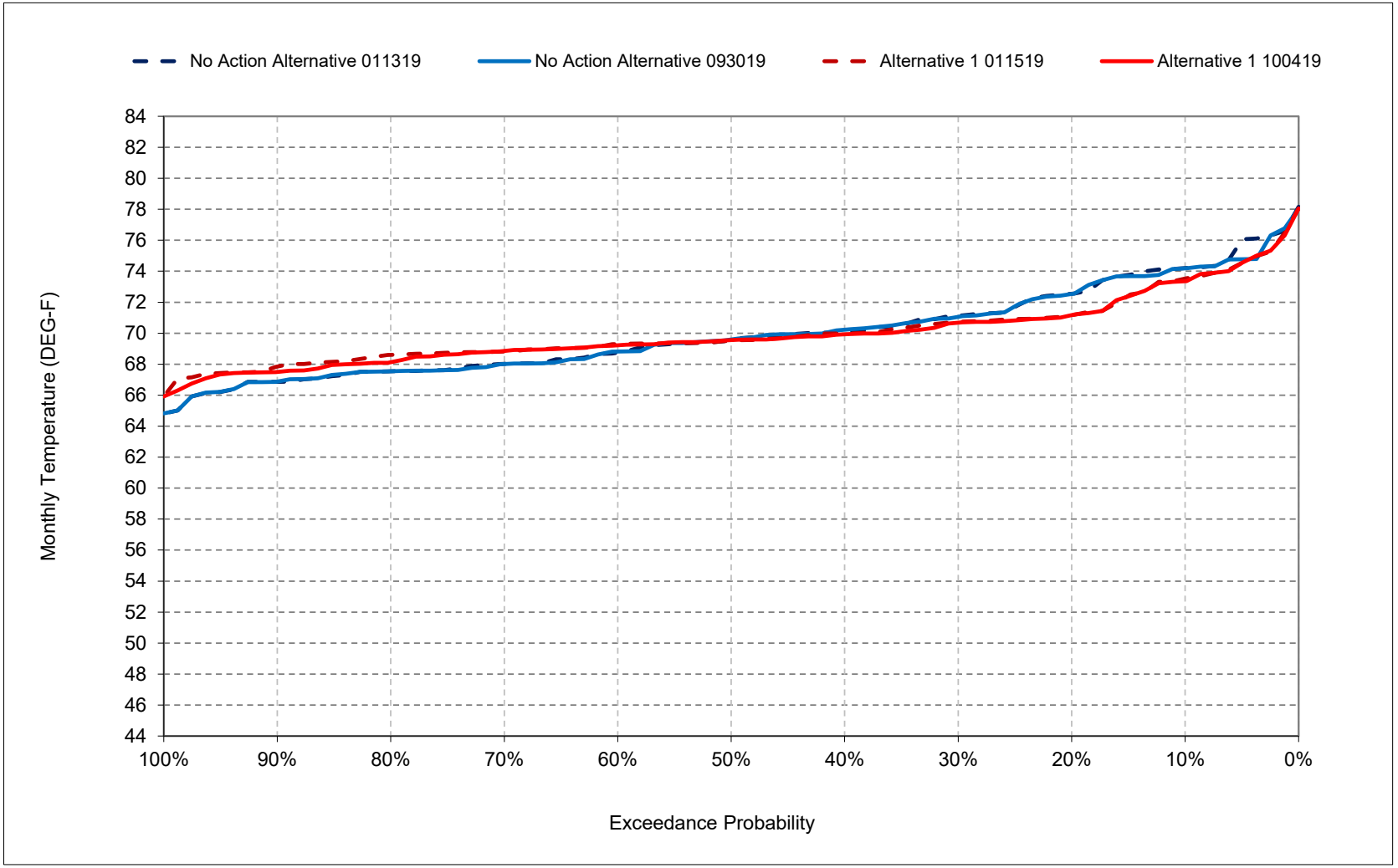

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-17. American River at the Mouth, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-18. American River at the Mouth, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 20-1. Stanislaus River below New Melones Reservoir, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 53.6 | 52.1 | 51.1 | 50.7 | 51.0 | 51.6 | 52.6 | 53.7 | 55.2 | 57.5 |
| 20% | 55.6 | 54.6 | 52.7 | 51.5 | 50.4 | 49.9 | 50.2 | 51.1 | 51.8 | 52.5 | 53.0 | 54.4 |
| 30% | 53.4 | 53.3 | 52.3 | 50.9 | 49.7 | 49.5 | 49.9 | 50.5 | 51.1 | 51.8 | 52.5 | 53.0 |
| 40% | 52.9 | 52.8 | 51.8 | 50.6 | 49.4 | 49.2 | 49.7 | 50.3 | 50.8 | 51.4 | 51.9 | 52.5 |
| 50% | 52.4 | 52.5 | 51.5 | 50.2 | 49.2 | 49.0 | 49.3 | 49.7 | 50.3 | 51.1 | 51.6 | 52.0 |
| 60% | 52.0 | 52.1 | 51.3 | 49.9 | 48.9 | 48.7 | 48.9 | 49.3 | 49.7 | 50.4 | 50.9 | 51.4 |
| 70% | 51.4 | 51.6 | 51.0 | 49.6 | 48.7 | 48.1 | 48.4 | 49.0 | 49.3 | 50.0 | 50.5 | 51.0 |
| 80% | 51.1 | 51.2 | 50.2 | 49.2 | 48.0 | 47.5 | 48.0 | 48.4 | 48.9 | 49.6 | 50.1 | 50.7 |
| 90% | 49.9 | 50.0 | 49.7 | 48.3 | 47.0 | 46.8 | 46.9 | 47.2 | 47.5 | 48.5 | 48.9 | 49.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.4 | 52.8 | 51.7 | 50.2 | 49.1 | 48.8 | 49.2 | 49.9 | 50.6 | 51.3 | 52.2 | 53.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 50.4 | 50.6 | 50.6 | 49.4 | 48.1 | 47.8 | 47.8 | 48.1 | 48.5 | 49.0 | 49.5 | 49.9 |
| Above Normal (24%) | 52.7 | 52.6 | 51.6 | 49.6 | 48.2 | 48.0 | 48.4 | 48.9 | 49.6 | 50.4 | 51.4 | 52.2 |
| Below Normal (10%) | 52.5 | 52.5 | 51.8 | 50.3 | 49.2 | 48.8 | 49.1 | 49.6 | 50.2 | 50.9 | 51.5 | 52.1 |
| Dry (16%) | 54.3 | 53.6 | 52.0 | 50.7 | 49.8 | 49.4 | 49.7 | 50.3 | 51.0 | 51.9 | 53.0 | 53.8 |
| Critical (27%) | 56.3 | 54.5 | 52.4 | 51.2 | 50.4 | 50.0 | 50.8 | 52.1 | 53.1 | 53.8 | 55.0 | 56.8 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.9 | 55.4 | 53.1 | 52.0 | 51.1 | 50.8 | 51.0 | 51.5 | 52.2 | 52.6 | 54.2 | 55.7 |
| 20% | 53.2 | 53.1 | 52.5 | 51.3 | 50.4 | 50.1 | 50.4 | 51.0 | 51.4 | 52.0 | 52.6 | 52.9 |
| 30% | 52.5 | 52.5 | 52.0 | 50.9 | 50.0 | 49.6 | 50.0 | 50.3 | 50.9 | 51.6 | 52.1 | 52.3 |
| 40% | 52.1 | 52.2 | 51.7 | 50.7 | 49.6 | 49.3 | 49.6 | 50.1 | 50.6 | 51.1 | 51.6 | 51.9 |
| 50% | 51.8 | 52.0 | 51.4 | 50.5 | 49.3 | 49.1 | 49.3 | 49.7 | 50.1 | 50.7 | 51.2 | 51.6 |
| 60% | 51.5 | 51.6 | 51.2 | 50.2 | 49.1 | 48.8 | 49.1 | 49.5 | 49.9 | 50.5 | 50.9 | 51.2 |
| 70% | 51.2 | 51.3 | 51.0 | 49.6 | 48.7 | 48.6 | 48.8 | 49.1 | 49.6 | 50.1 | 50.5 | 50.9 |
| 80% | 50.8 | 51.0 | 50.4 | 49.3 | 48.0 | 47.7 | 47.9 | 48.6 | 49.1 | 49.5 | 50.0 | 50.6 |
| 90% | 50.0 | 50.1 | 49.6 | 48.3 | 47.4 | 47.1 | 47.4 | 47.6 | 48.1 | 48.5 | 49.3 | 49.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 52.3 | 51.5 | 50.3 | 49.3 | 48.9 | 49.2 | 49.8 | 50.4 | 51.1 | 51.9 | 52.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 50.5 | 50.8 | 50.7 | 49.3 | 48.1 | 47.8 | 47.9 | 48.2 | 48.7 | 49.1 | 49.7 | 50.1 |
| Above Normal (24%) | 52.8 | 52.2 | 51.4 | 49.7 | 48.5 | 48.1 | 48.4 | 49.1 | 49.8 | 50.7 | 51.7 | 52.6 |
| Below Normal (10%) | 52.0 | 52.1 | 51.7 | 50.3 | 49.4 | 49.1 | 49.3 | 49.8 | 50.3 | 50.8 | 51.3 | 51.6 |
| Dry (16%) | 52.8 | 52.6 | 51.7 | 50.5 | 49.8 | 49.6 | 49.8 | 50.2 | 50.7 | 51.3 | 51.9 | 52.5 |
| Critical (27%) | 54.0 | 53.7 | 52.1 | 51.4 | 50.7 | 50.2 | 50.6 | 51.4 | 52.2 | 53.3 | 54.3 | 54.4 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -3.0 | -0.7 | -0.5 | -0.1 | 0.0 | 0.1 | -0.1 | -0.2 | -0.4 | -1.1 | -1.0 | -1.8 |
| 20% | -2.4 | -1.4 | -0.3 | -0.1 | 0.0 | 0.2 | 0.2 | -0.1 | -0.4 | -0.5 | -0.3 | -1.5 |
| 30% | -0.9 | -0.8 | -0.3 | 0.0 | 0.3 | 0.2 | 0.1 | -0.2 | -0.2 | -0.3 | -0.4 | -0.7 |
| 40% | -0.8 | -0.6 | -0.1 | 0.1 | 0.2 | 0.2 | -0.1 | -0.2 | -0.2 | -0.3 | -0.4 | -0.6 |
| 50% | -0.5 | -0.5 | -0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | -0.4 | -0.3 | -0.4 |
| 60% | -0.5 | -0.5 | -0.1 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | -0.2 |
| 70% | -0.2 | -0.2 | 0.0 | 0.0 | 0.1 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | 0.0 | -0.1 |
| 80% | -0.3 | -0.2 | 0.1 | 0.1 | -0.1 | 0.2 | 0.0 | 0.2 | 0.2 | -0.1 | -0.1 | -0.2 |
| 90% | 0.0 | 0.1 | -0.1 | 0.0 | 0.4 | 0.2 | 0.4 | 0.4 | 0.5 | 0.0 | 0.4 | 0.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.9 | -0.5 | -0.2 | 0.1 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | -0.2 | -0.2 | -0.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 0.2 | 0.1 | 0.1 | -0.1 | 0.0 | -0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| Above Normal (24%) | 0.1 | -0.4 | -0.2 | 0.2 | 0.3 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 |
| Below Normal (10%) | -0.5 | -0.4 | -0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.0 | -0.1 | -0.3 | -0.4 |
| Dry (16%) | -1.5 | -1.0 | -0.2 | -0.1 | 0.1 | 0.2 | 0.1 | -0.1 | -0.3 | -0.6 | -1.0 | -1.3 |
| Critical (27%) | -2.4 | -0.9 | -0.4 | 0.2 | 0.2 | 0.3 | -0.2 | -0.7 | -0.9 | -0.6 | -0.6 | -2.4 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 20-2. Stanislaus River below New Melones Reservoir, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 53.6 | 52.1 | 51.1 | 50.7 | 51.0 | 51.6 | 52.6 | 53.7 | 55.2 | 57.5 |
| 20% | 55.6 | 54.6 | 52.7 | 51.5 | 50.4 | 49.9 | 50.2 | 51.1 | 51.8 | 52.5 | 53.0 | 54.4 |
| 30% | 53.4 | 53.3 | 52.3 | 50.9 | 49.7 | 49.5 | 49.9 | 50.5 | 51.1 | 51.8 | 52.5 | 53.0 |
| 40% | 53.0 | 52.8 | 51.8 | 50.6 | 49.4 | 49.2 | 49.7 | 50.3 | 50.8 | 51.4 | 51.9 | 52.5 |
| 50% | 52.4 | 52.5 | 51.5 | 50.2 | 49.2 | 49.0 | 49.3 | 49.7 | 50.3 | 51.1 | 51.6 | 52.0 |
| 60% | 52.0 | 52.1 | 51.3 | 49.9 | 48.9 | 48.7 | 48.9 | 49.3 | 49.7 | 50.4 | 50.9 | 51.4 |
| 70% | 51.4 | 51.6 | 51.0 | 49.6 | 48.7 | 48.1 | 48.4 | 49.0 | 49.3 | 50.0 | 50.5 | 51.0 |
| 80% | 51.1 | 51.2 | 50.2 | 49.2 | 48.0 | 47.5 | 48.0 | 48.4 | 48.9 | 49.6 | 50.1 | 50.7 |
| 90% | 49.9 | 50.0 | 49.7 | 48.3 | 47.0 | 46.8 | 46.9 | 47.2 | 47.5 | 48.5 | 48.9 | 49.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.3 | 52.8 | 51.7 | 50.2 | 49.1 | 48.8 | 49.2 | 49.9 | 50.6 | 51.3 | 52.2 | 53.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 50.4 | 50.6 | 50.6 | 49.4 | 48.1 | 47.8 | 47.8 | 48.1 | 48.5 | 49.0 | 49.5 | 49.9 |
| Above Normal (24%) | 52.7 | 52.6 | 51.6 | 49.5 | 48.2 | 48.0 | 48.4 | 48.9 | 49.6 | 50.4 | 51.4 | 52.2 |
| Below Normal (10%) | 52.5 | 52.5 | 51.8 | 50.3 | 49.2 | 48.8 | 49.1 | 49.6 | 50.2 | 50.9 | 51.5 | 52.1 |
| Dry (16%) | 54.3 | 53.6 | 52.0 | 50.7 | 49.8 | 49.4 | 49.7 | 50.3 | 51.0 | 51.9 | 53.0 | 53.8 |
| Critical (27%) | 56.3 | 54.5 | 52.4 | 51.2 | 50.4 | 50.0 | 50.8 | 52.1 | 53.2 | 53.8 | 55.0 | 56.8 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 55.9 | 55.4 | 53.1 | 52.0 | 51.1 | 50.8 | 51.0 | 51.5 | 52.2 | 52.6 | 54.2 | 55.7 |
| 20% | 53.2 | 53.1 | 52.5 | 51.3 | 50.4 | 50.1 | 50.4 | 51.0 | 51.4 | 52.0 | 52.6 | 52.9 |
| 30% | 52.5 | 52.5 | 52.0 | 50.9 | 50.0 | 49.6 | 50.0 | 50.3 | 50.9 | 51.6 | 52.1 | 52.3 |
| 40% | 52.1 | 52.2 | 51.7 | 50.7 | 49.6 | 49.3 | 49.6 | 50.1 | 50.6 | 51.1 | 51.6 | 51.9 |
| 50% | 51.8 | 52.0 | 51.4 | 50.5 | 49.3 | 49.1 | 49.3 | 49.7 | 50.1 | 50.7 | 51.2 | 51.6 |
| 60% | 51.5 | 51.6 | 51.2 | 50.2 | 49.1 | 48.8 | 49.1 | 49.5 | 49.9 | 50.5 | 50.9 | 51.2 |
| 70% | 51.2 | 51.3 | 51.0 | 49.6 | 48.7 | 48.6 | 48.8 | 49.1 | 49.6 | 50.1 | 50.5 | 50.9 |
| 80% | 50.8 | 51.0 | 50.4 | 49.3 | 48.0 | 47.7 | 47.9 | 48.6 | 49.1 | 49.5 | 50.0 | 50.6 |
| 90% | 50.0 | 50.1 | 49.6 | 48.3 | 47.4 | 47.1 | 47.4 | 47.6 | 48.1 | 48.5 | 49.3 | 49.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 52.5 | 52.3 | 51.5 | 50.3 | 49.3 | 48.9 | 49.2 | 49.8 | 50.4 | 51.1 | 51.9 | 52.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 50.5 | 50.8 | 50.7 | 49.3 | 48.1 | 47.8 | 47.9 | 48.2 | 48.7 | 49.1 | 49.7 | 50.1 |
| Above Normal (24%) | 52.8 | 52.2 | 51.4 | 49.7 | 48.5 | 48.1 | 48.4 | 49.1 | 49.8 | 50.7 | 51.7 | 52.6 |
| Below Normal (10%) | 52.0 | 52.1 | 51.7 | 50.3 | 49.4 | 49.1 | 49.3 | 49.8 | 50.3 | 50.8 | 51.3 | 51.6 |
| Dry (16%) | 52.8 | 52.6 | 51.7 | 50.5 | 49.8 | 49.6 | 49.8 | 50.2 | 50.7 | 51.3 | 51.9 | 52.5 |
| Critical (27%) | 54.0 | 53.7 | 52.1 | 51.4 | 50.7 | 50.2 | 50.6 | 51.4 | 52.2 | 53.3 | 54.3 | 54.4 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -3.0 | -0.7 | -0.5 | -0.1 | 0.0 | 0.1 | -0.1 | -0.2 | -0.4 | -1.1 | -1.0 | -1.8 |
| 20% | -2.4 | -1.4 | -0.3 | -0.1 | 0.0 | 0.2 | 0.2 | -0.1 | -0.4 | -0.5 | -0.3 | -1.5 |
| 30% | -0.9 | -0.8 | -0.3 | 0.0 | 0.3 | 0.2 | 0.1 | -0.2 | -0.2 | -0.3 | -0.4 | -0.7 |
| 40% | -0.8 | -0.6 | -0.1 | 0.1 | 0.2 | 0.2 | -0.1 | -0.2 | -0.2 | -0.3 | -0.4 | -0.6 |
| 50% | -0.5 | -0.5 | -0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | -0.4 | -0.3 | -0.4 |
| 60% | -0.5 | -0.5 | -0.1 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | -0.2 |
| 70% | -0.2 | -0.2 | 0.0 | 0.0 | 0.1 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | 0.0 | -0.1 |
| 80% | -0.3 | -0.2 | 0.1 | 0.1 | -0.1 | 0.2 | 0.0 | 0.2 | 0.2 | -0.1 | -0.1 | -0.2 |
| 90% | 0.1 | 0.1 | -0.1 | 0.0 | 0.4 | 0.2 | 0.4 | 0.4 | 0.5 | 0.0 | 0.4 | 0.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.8 | -0.5 | -0.2 | 0.1 | 0.2 | 0.1 | 0.0 | -0.1 | -0.2 | -0.2 | -0.2 | -0.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 0.2 | 0.1 | 0.1 | -0.1 | 0.0 | -0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| Above Normal (24%) | 0.1 | -0.4 | -0.2 | 0.2 | 0.3 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 |
| Below Normal (10%) | -0.5 | -0.4 | -0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.0 | -0.1 | -0.3 | -0.4 |
| Dry (16%) | -1.5 | -1.0 | -0.2 | -0.1 | 0.1 | 0.2 | 0.1 | -0.1 | -0.3 | -0.6 | -1.0 | -1.3 |
| Critical (27%) | -2.4 | -0.9 | -0.4 | 0.2 | 0.2 | 0.3 | -0.2 | -0.7 | -0.9 | -0.6 | -0.7 | -2.4 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 20-3. Stanislaus River below New Melones Reservoir, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 53.6 | 52.1 | 51.1 | 50.7 | 51.0 | 51.6 | 52.6 | 53.7 | 55.2 | 57.5 |
| 20% | 55.6 | 54.6 | 52.7 | 51.5 | 50.4 | 49.9 | 50.2 | 51.1 | 51.8 | 52.5 | 53.0 | 54.4 |
| 30% | 53.4 | 53.3 | 52.3 | 50.9 | 49.7 | 49.5 | 49.9 | 50.5 | 51.1 | 51.8 | 52.5 | 53.0 |
| 40% | 52.9 | 52.8 | 51.8 | 50.6 | 49.4 | 49.2 | 49.7 | 50.3 | 50.8 | 51.4 | 51.9 | 52.5 |
| 50% | 52.4 | 52.5 | 51.5 | 50.2 | 49.2 | 49.0 | 49.3 | 49.7 | 50.3 | 51.1 | 51.6 | 52.0 |
| 60% | 52.0 | 52.1 | 51.3 | 49.9 | 48.9 | 48.7 | 48.9 | 49.3 | 49.7 | 50.4 | 50.9 | 51.4 |
| 70% | 51.4 | 51.6 | 51.0 | 49.6 | 48.7 | 48.1 | 48.4 | 49.0 | 49.3 | 50.0 | 50.5 | 51.0 |
| 80% | 51.1 | 51.2 | 50.2 | 49.2 | 48.0 | 47.5 | 48.0 | 48.4 | 48.9 | 49.6 | 50.1 | 50.7 |
| 90% | 49.9 | 50.0 | 49.7 | 48.3 | 47.0 | 46.8 | 46.9 | 47.2 | 47.5 | 48.5 | 48.9 | 49.3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.4 | 52.8 | 51.7 | 50.2 | 49.1 | 48.8 | 49.2 | 49.9 | 50.6 | 51.3 | 52.2 | 53.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 50.4 | 50.6 | 50.6 | 49.4 | 48.1 | 47.8 | 47.8 | 48.1 | 48.5 | 49.0 | 49.5 | 49.9 |
| Above Normal (24%) | 52.7 | 52.6 | 51.6 | 49.6 | 48.2 | 48.0 | 48.4 | 48.9 | 49.6 | 50.4 | 51.4 | 52.2 |
| Below Normal (10%) | 52.5 | 52.5 | 51.8 | 50.3 | 49.2 | 48.8 | 49.1 | 49.6 | 50.2 | 50.9 | 51.5 | 52.1 |
| Dry (16%) | 54.3 | 53.6 | 52.0 | 50.7 | 49.8 | 49.4 | 49.7 | 50.3 | 51.0 | 51.9 | 53.0 | 53.8 |
| Critical (27%) | 56.3 | 54.5 | 52.4 | 51.2 | 50.4 | 50.0 | 50.8 | 52.1 | 53.1 | 53.8 | 55.0 | 56.8 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.9 | 56.0 | 53.6 | 52.1 | 51.1 | 50.7 | 51.0 | 51.6 | 52.6 | 53.7 | 55.2 | 57.5 |
| 20% | 55.6 | 54.6 | 52.7 | 51.5 | 50.4 | 49.9 | 50.2 | 51.1 | 51.8 | 52.5 | 53.0 | 54.4 |
| 30% | 53.4 | 53.3 | 52.3 | 50.9 | 49.7 | 49.5 | 49.9 | 50.5 | 51.1 | 51.8 | 52.5 | 53.0 |
| 40% | 53.0 | 52.8 | 51.8 | 50.6 | 49.4 | 49.2 | 49.7 | 50.3 | 50.8 | 51.4 | 51.9 | 52.5 |
| 50% | 52.4 | 52.5 | 51.5 | 50.2 | 49.2 | 49.0 | 49.3 | 49.7 | 50.3 | 51.1 | 51.6 | 52.0 |
| 60% | 52.0 | 52.1 | 51.3 | 49.9 | 48.9 | 48.7 | 48.9 | 49.3 | 49.7 | 50.4 | 50.9 | 51.4 |
| 70% | 51.4 | 51.6 | 51.0 | 49.6 | 48.7 | 48.1 | 48.4 | 49.0 | 49.3 | 50.0 | 50.5 | 51.0 |
| 80% | 51.1 | 51.2 | 50.2 | 49.2 | 48.0 | 47.5 | 48.0 | 48.4 | 48.9 | 49.6 | 50.1 | 50.7 |
| 90% | 49.9 | 50.0 | 49.7 | 48.3 | 47.0 | 46.8 | 46.9 | 47.2 | 47.5 | 48.5 | 48.9 | 49.3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 53.3 | 52.8 | 51.7 | 50.2 | 49.1 | 48.8 | 49.2 | 49.9 | 50.6 | 51.3 | 52.2 | 53.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 50.4 | 50.6 | 50.6 | 49.4 | 48.1 | 47.8 | 47.8 | 48.1 | 48.5 | 49.0 | 49.5 | 49.9 |
| Above Normal (24%) | 52.7 | 52.6 | 51.6 | 49.5 | 48.2 | 48.0 | 48.4 | 48.9 | 49.6 | 50.4 | 51.4 | 52.2 |
| Below Normal (10%) | 52.5 | 52.5 | 51.8 | 50.3 | 49.2 | 48.8 | 49.1 | 49.6 | 50.2 | 50.9 | 51.5 | 52.1 |
| Dry (16%) | 54.3 | 53.6 | 52.0 | 50.7 | 49.8 | 49.4 | 49.7 | 50.3 | 51.0 | 51.9 | 53.0 | 53.8 |
| Critical (27%) | 56.3 | 54.5 | 52.4 | 51.2 | 50.4 | 50.0 | 50.8 | 52.1 | 53.2 | 53.8 | 55.0 | 56.8 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** |
| 20% | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 |
| 30% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** |
| 40% | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| 60% | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 |
| 70% | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 |
| 80% | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 |
| 90% | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 |
| Above Normal (24%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 |
| Dry (16%) | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Critical (27%) | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 20-4. Stanislaus River below New Melones Reservoir, Monthly Temperature

**Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 55.9 | 55.4 | 53.1 | 52.0 | 51.1 | 50.8 | 51.0 | 51.5 | 52.2 | 52.6 | 54.2 | 55.7 |
| **20%** | 53.2 | 53.1 | 52.5 | 51.3 | 50.4 | 50.1 | 50.4 | 51.0 | 51.4 | 52.0 | 52.6 | 52.9 |
| **30%** | 52.5 | 52.5 | 52.0 | 50.9 | 50.0 | 49.6 | 50.0 | 50.3 | 50.9 | 51.6 | 52.1 | 52.3 |
| **40%** | 52.1 | 52.2 | 51.7 | 50.7 | 49.6 | 49.3 | 49.6 | 50.1 | 50.6 | 51.1 | 51.6 | 51.9 |
| **50%** | 51.8 | 52.0 | 51.4 | 50.5 | 49.3 | 49.1 | 49.3 | 49.7 | 50.1 | 50.7 | 51.2 | 51.6 |
| **60%** | 51.5 | 51.6 | 51.2 | 50.2 | 49.1 | 48.8 | 49.1 | 49.5 | 49.9 | 50.5 | 50.9 | 51.2 |
| **70%** | 51.2 | 51.3 | 51.0 | 49.6 | 48.7 | 48.6 | 48.8 | 49.1 | 49.6 | 50.1 | 50.5 | 50.9 |
| **80%** | 50.8 | 51.0 | 50.4 | 49.3 | 48.0 | 47.7 | 47.9 | 48.6 | 49.1 | 49.5 | 50.0 | 50.6 |
| **90%** | 50.0 | 50.1 | 49.6 | 48.3 | 47.4 | 47.1 | 47.4 | 47.6 | 48.1 | 48.5 | 49.3 | 49.7 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 52.5 | 52.3 | 51.5 | 50.3 | 49.3 | 48.9 | 49.2 | 49.8 | 50.4 | 51.1 | 51.9 | 52.4 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 50.5 | 50.8 | 50.7 | 49.3 | 48.1 | 47.8 | 47.9 | 48.2 | 48.7 | 49.1 | 49.7 | 50.1 |
| **Above Normal (24%)** | 52.8 | 52.2 | 51.4 | 49.7 | 48.5 | 48.1 | 48.4 | 49.1 | 49.8 | 50.7 | 51.7 | 52.6 |
| **Below Normal (10%)** | 52.0 | 52.1 | 51.7 | 50.3 | 49.4 | 49.1 | 49.3 | 49.8 | 50.3 | 50.8 | 51.3 | 51.6 |
| **Dry (16%)** | 52.8 | 52.6 | 51.7 | 50.5 | 49.8 | 49.6 | 49.8 | 50.2 | 50.7 | 51.3 | 51.9 | 52.5 |
| **Critical (27%)** | 54.0 | 53.7 | 52.1 | 51.4 | 50.7 | 50.2 | 50.6 | 51.4 | 52.2 | 53.3 | 54.3 | 54.4 |

**Alternative 1 100419**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 55.9 | 55.4 | 53.1 | 52.0 | 51.1 | 50.8 | 51.0 | 51.5 | 52.2 | 52.6 | 54.2 | 55.7 |
| **20%** | 53.2 | 53.1 | 52.5 | 51.3 | 50.4 | 50.1 | 50.4 | 51.0 | 51.4 | 52.0 | 52.6 | 52.9 |
| **30%** | 52.5 | 52.5 | 52.0 | 50.9 | 50.0 | 49.6 | 50.0 | 50.3 | 50.9 | 51.6 | 52.1 | 52.3 |
| **40%** | 52.1 | 52.2 | 51.7 | 50.7 | 49.6 | 49.3 | 49.6 | 50.1 | 50.6 | 51.1 | 51.6 | 51.9 |
| **50%** | 51.8 | 52.0 | 51.4 | 50.5 | 49.3 | 49.1 | 49.3 | 49.7 | 50.1 | 50.7 | 51.2 | 51.6 |
| **60%** | 51.5 | 51.6 | 51.2 | 50.2 | 49.1 | 48.8 | 49.1 | 49.5 | 49.9 | 50.5 | 50.9 | 51.2 |
| **70%** | 51.2 | 51.3 | 51.0 | 49.6 | 48.7 | 48.6 | 48.8 | 49.1 | 49.6 | 50.1 | 50.5 | 50.9 |
| **80%** | 50.8 | 51.0 | 50.4 | 49.3 | 48.0 | 47.7 | 47.9 | 48.6 | 49.1 | 49.5 | 50.0 | 50.6 |
| **90%** | 50.0 | 50.1 | 49.6 | 48.3 | 47.4 | 47.1 | 47.4 | 47.6 | 48.1 | 48.5 | 49.3 | 49.7 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 52.5 | 52.3 | 51.5 | 50.3 | 49.3 | 48.9 | 49.2 | 49.8 | 50.4 | 51.1 | 51.9 | 52.4 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 50.5 | 50.8 | 50.7 | 49.3 | 48.1 | 47.8 | 47.9 | 48.2 | 48.7 | 49.1 | 49.7 | 50.1 |
| **Above Normal (24%)** | 52.8 | 52.2 | 51.4 | 49.7 | 48.5 | 48.1 | 48.4 | 49.1 | 49.8 | 50.7 | 51.7 | 52.6 |
| **Below Normal (10%)** | 52.0 | 52.1 | 51.7 | 50.3 | 49.4 | 49.1 | 49.3 | 49.8 | 50.3 | 50.8 | 51.3 | 51.6 |
| **Dry (16%)** | 52.8 | 52.6 | 51.7 | 50.5 | 49.8 | 49.6 | 49.8 | 50.2 | 50.7 | 51.3 | 51.9 | 52.5 |
| **Critical (27%)** | 54.0 | 53.7 | 52.1 | 51.4 | 50.7 | 50.2 | 50.6 | 51.4 | 52.2 | 53.3 | 54.3 | 54.4 |

**Alternative 1 100419 minus Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance**[a] | | | | | | | | | | | | |
| **10%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **20%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **30%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **40%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **50%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **60%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **70%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **80%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **90%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Above Normal (24%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Below Normal (10%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Dry (16%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Critical (27%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

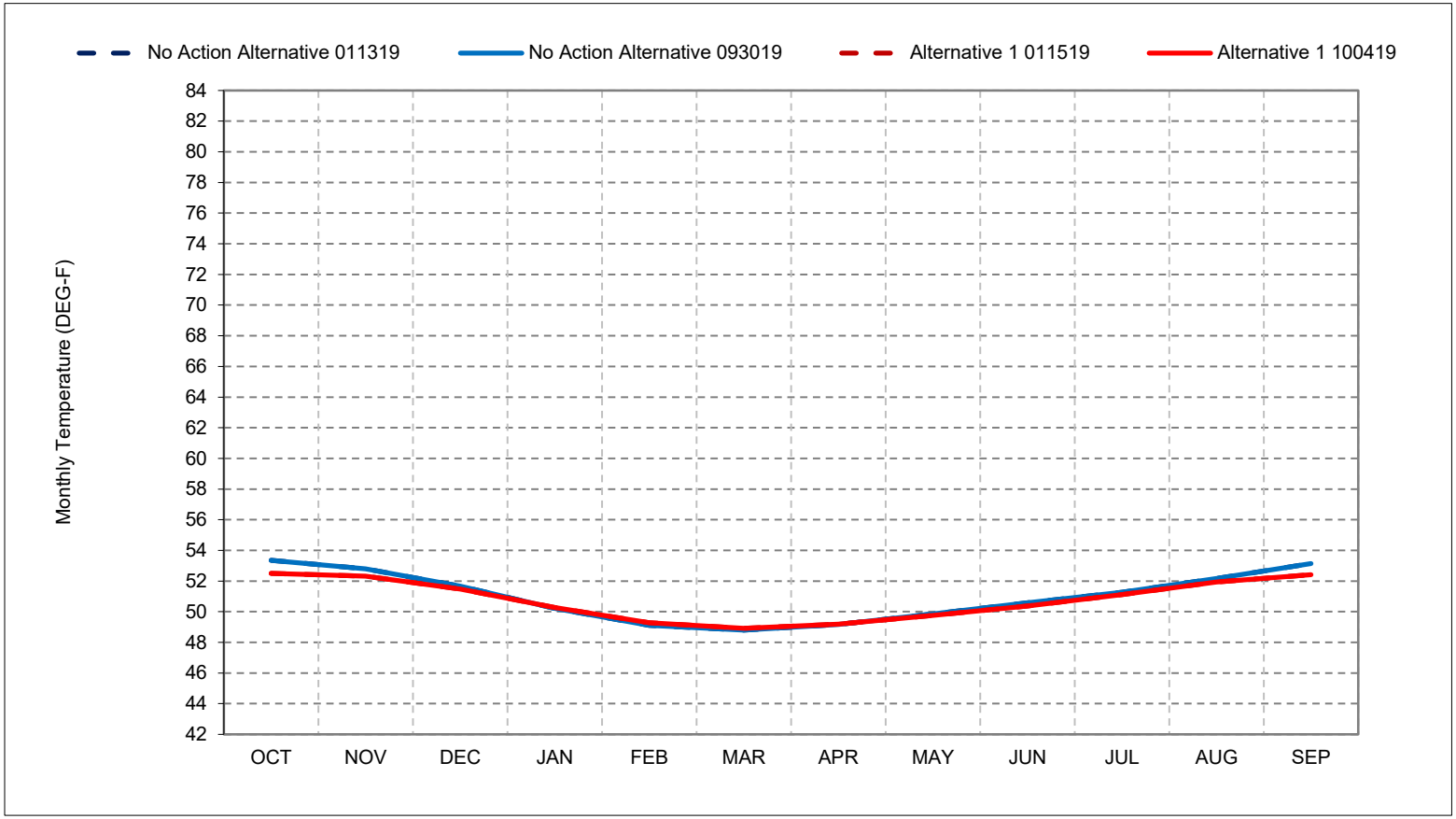
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

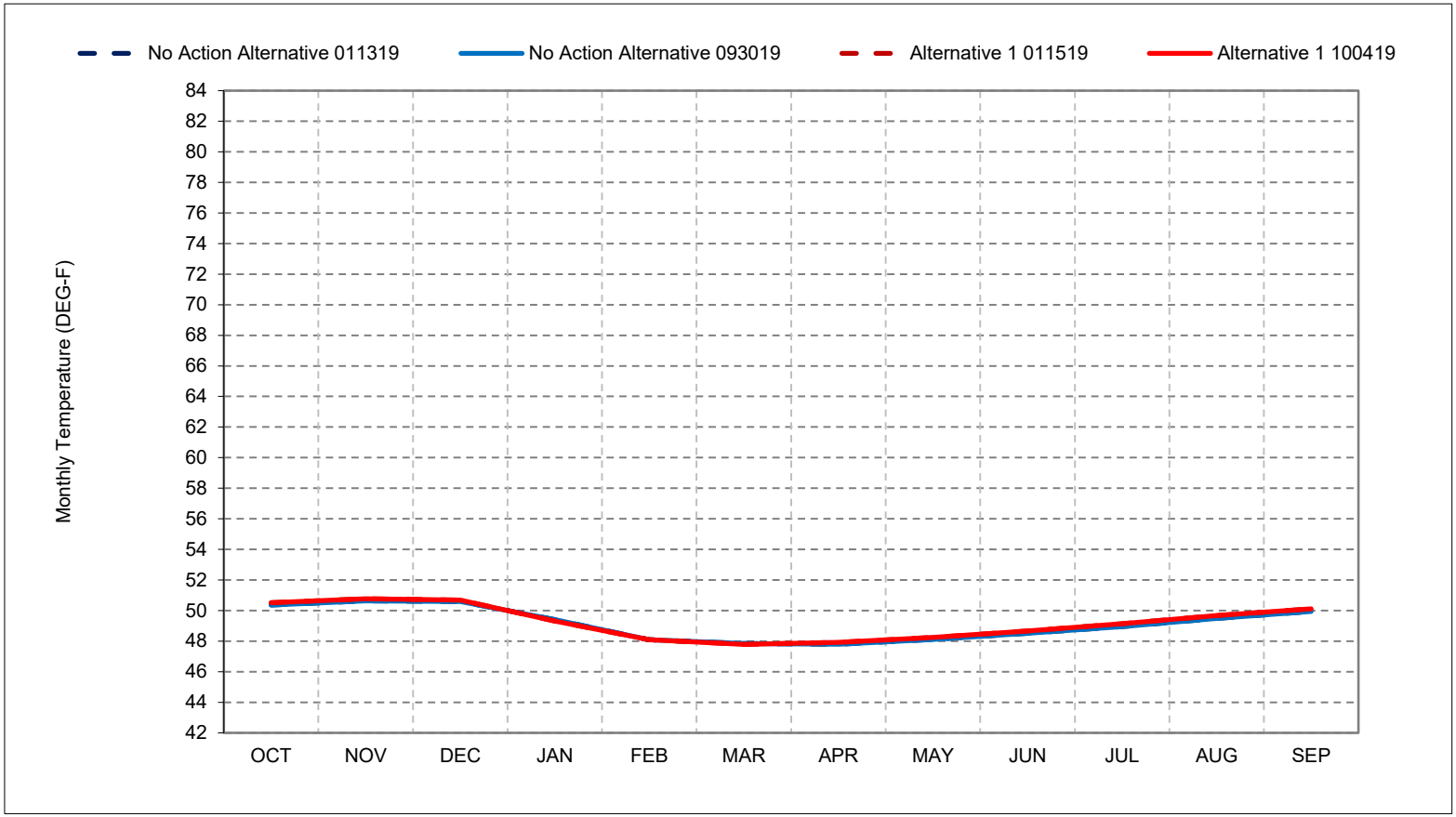
e New Melones forecasts are used as the basis of water operations.

## Figure 20-1. Stanislaus River below New Melones Reservoir, Long-Term Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 20-2. Stanislaus River below New Melones Reservoir, Wet Year Average Temperature



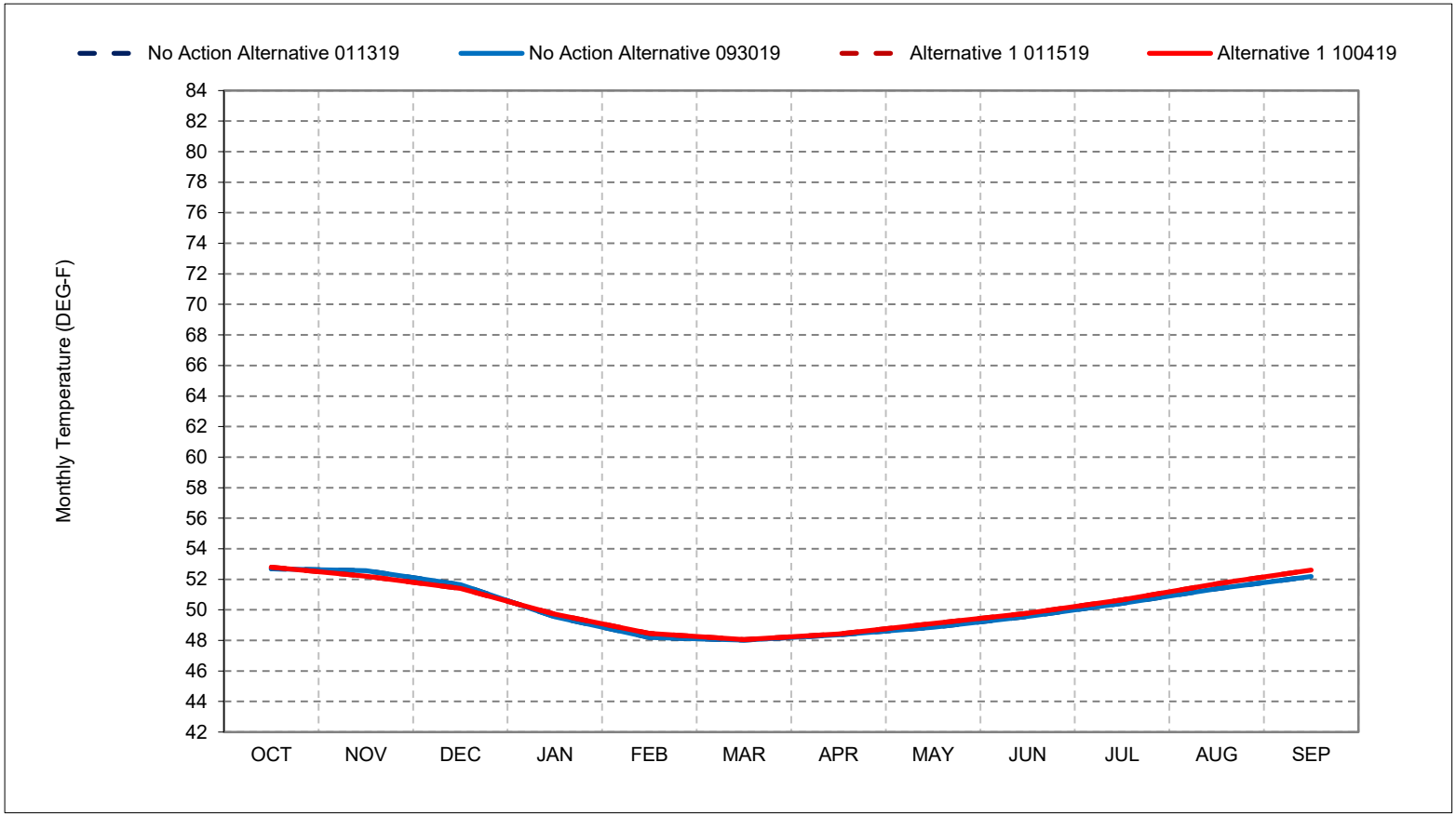

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 20-3. Stanislaus River below New Melones Reservoir, Above Normal Year Average Temper



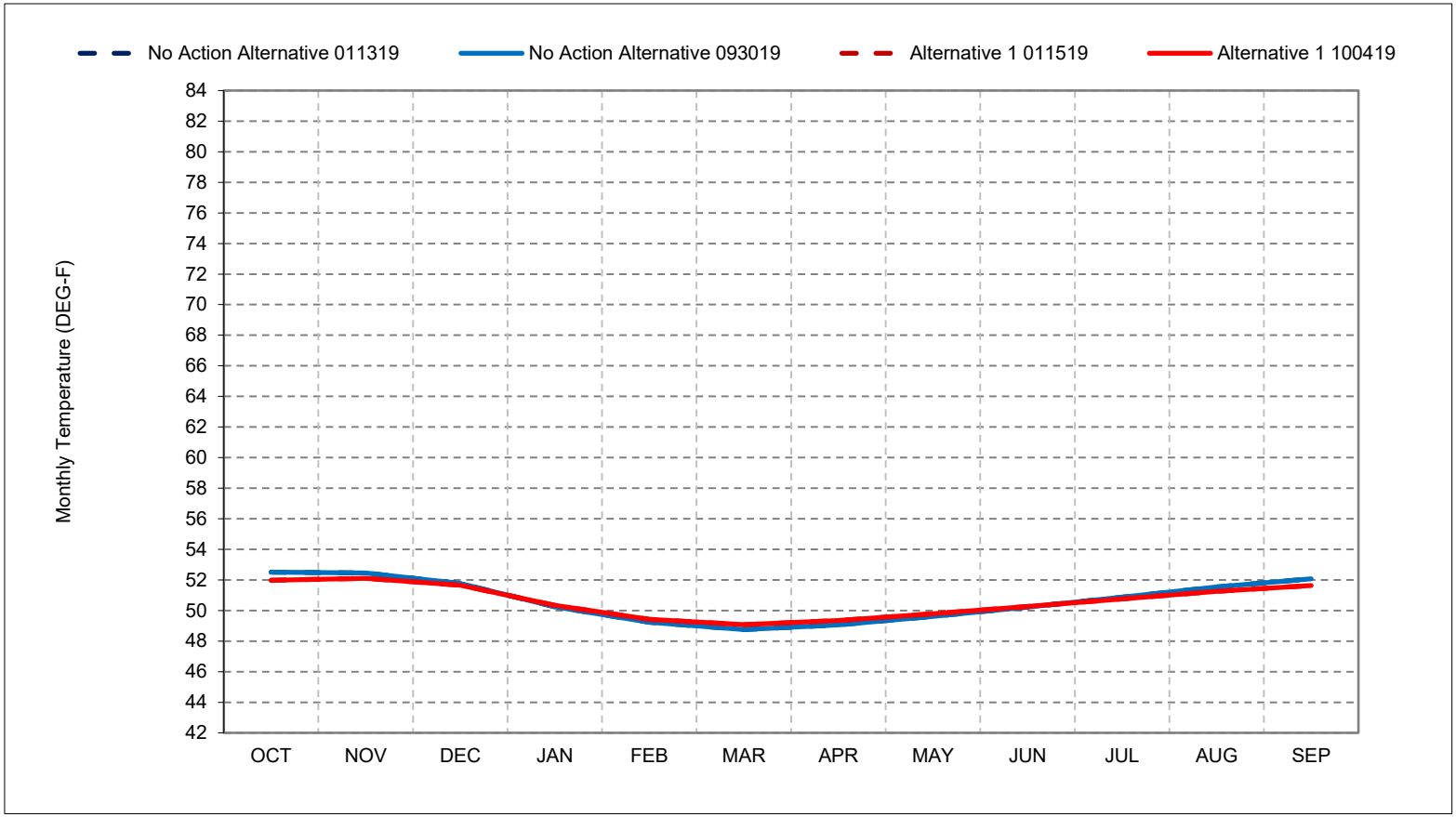

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

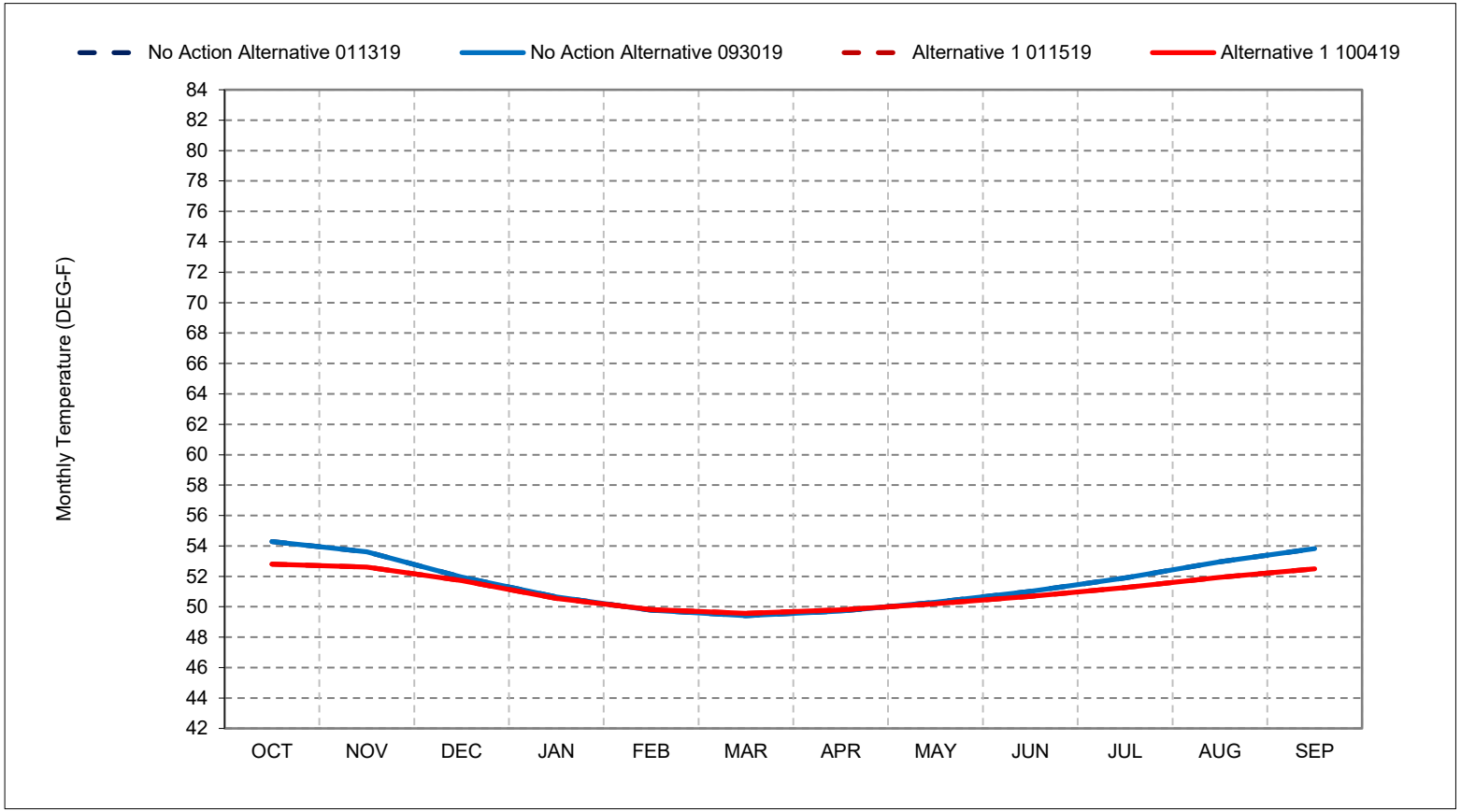
*New Melones forecasts are used as the basis of water operations.

## Figure 20-4. Stanislaus River below New Melones Reservoir, Below Normal Year Average Tempera




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 20-5. Stanislaus River below New Melones Reservoir, Dry Year Average Temperature



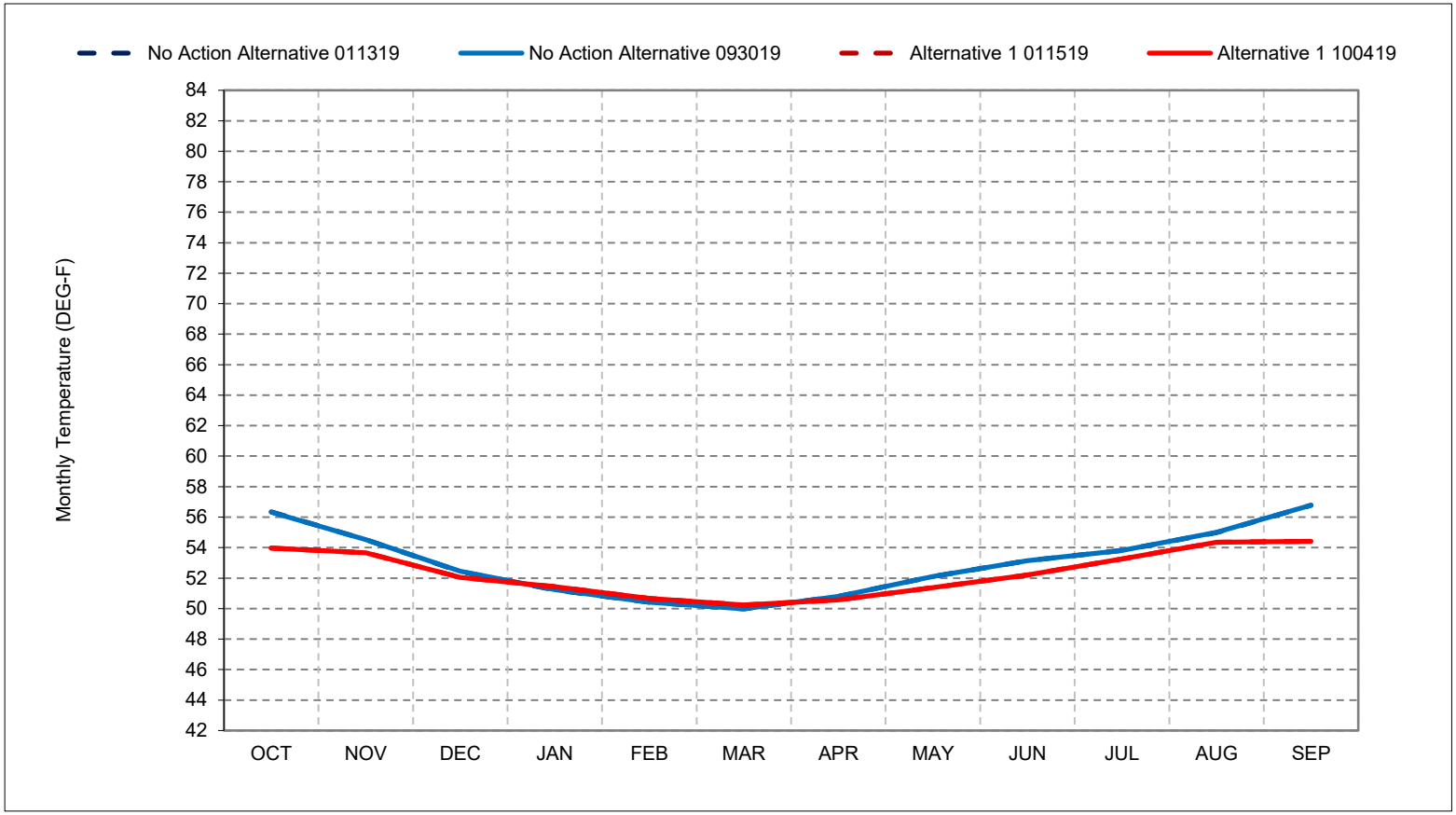

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

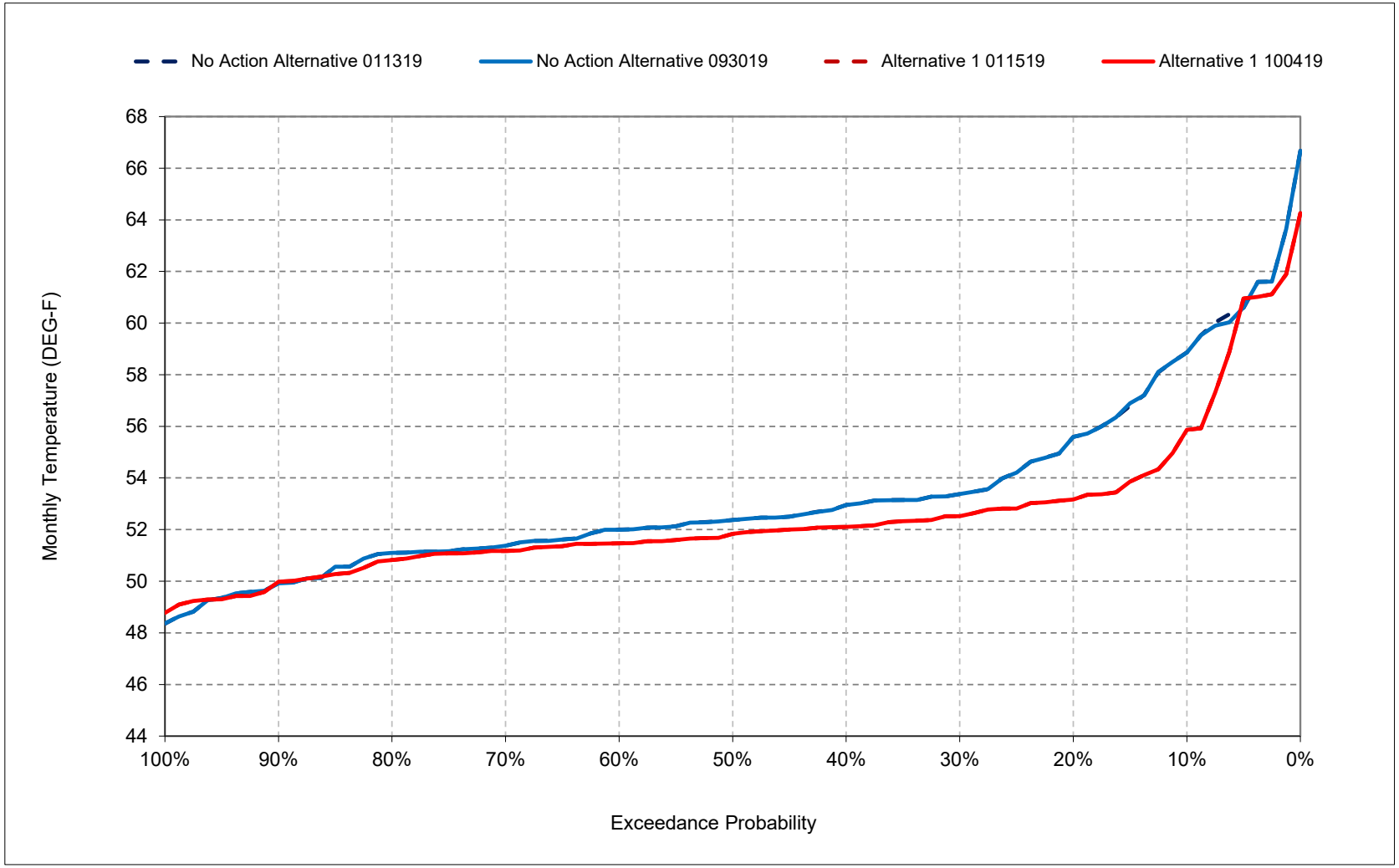
*New Melones forecasts are used as the basis of water operations.

## Figure 20-6. Stanislaus River below New Melones Reservoir, Critical Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

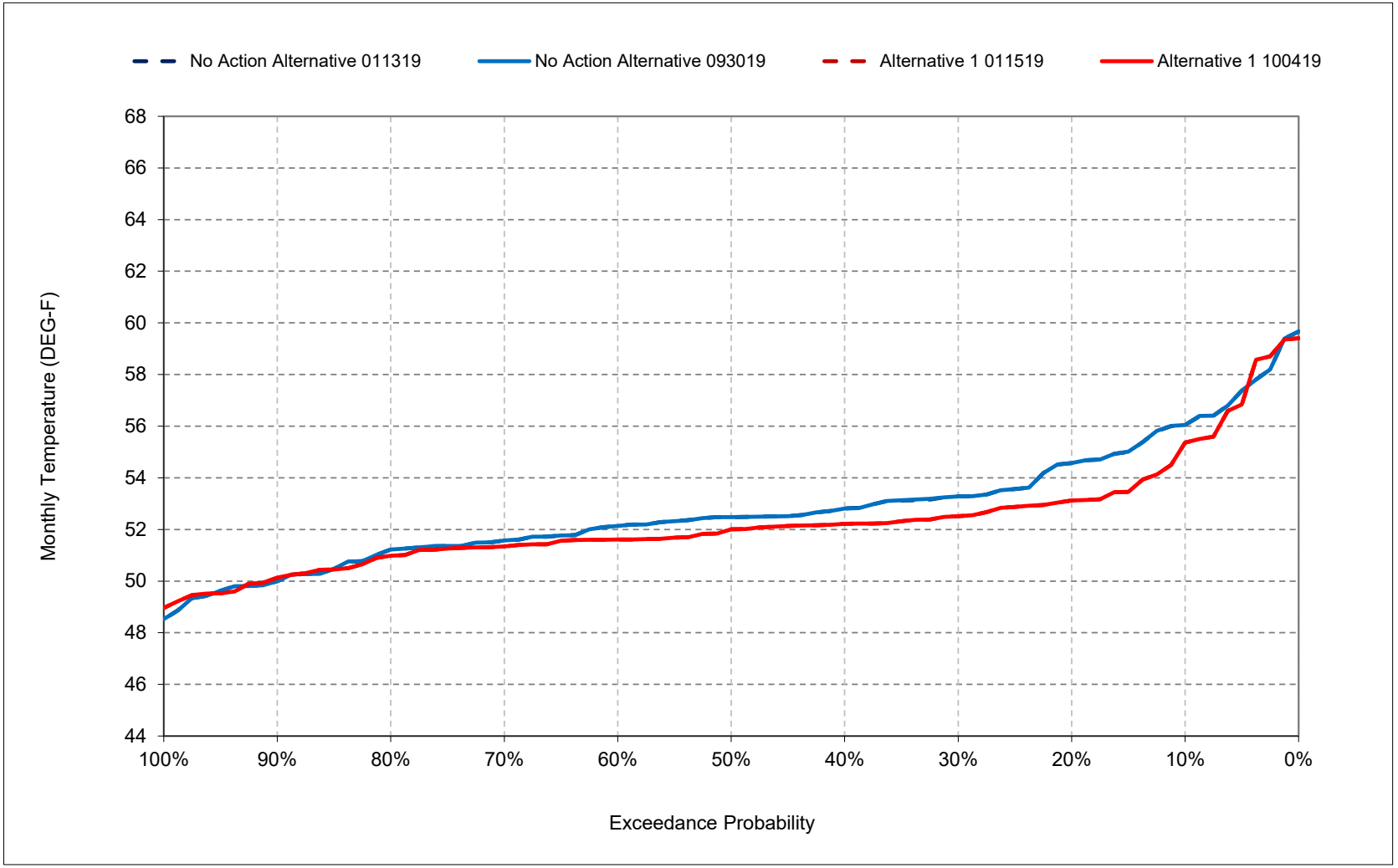
**Figure 20-7. Stanislaus River below New Melones Reservoir, October**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

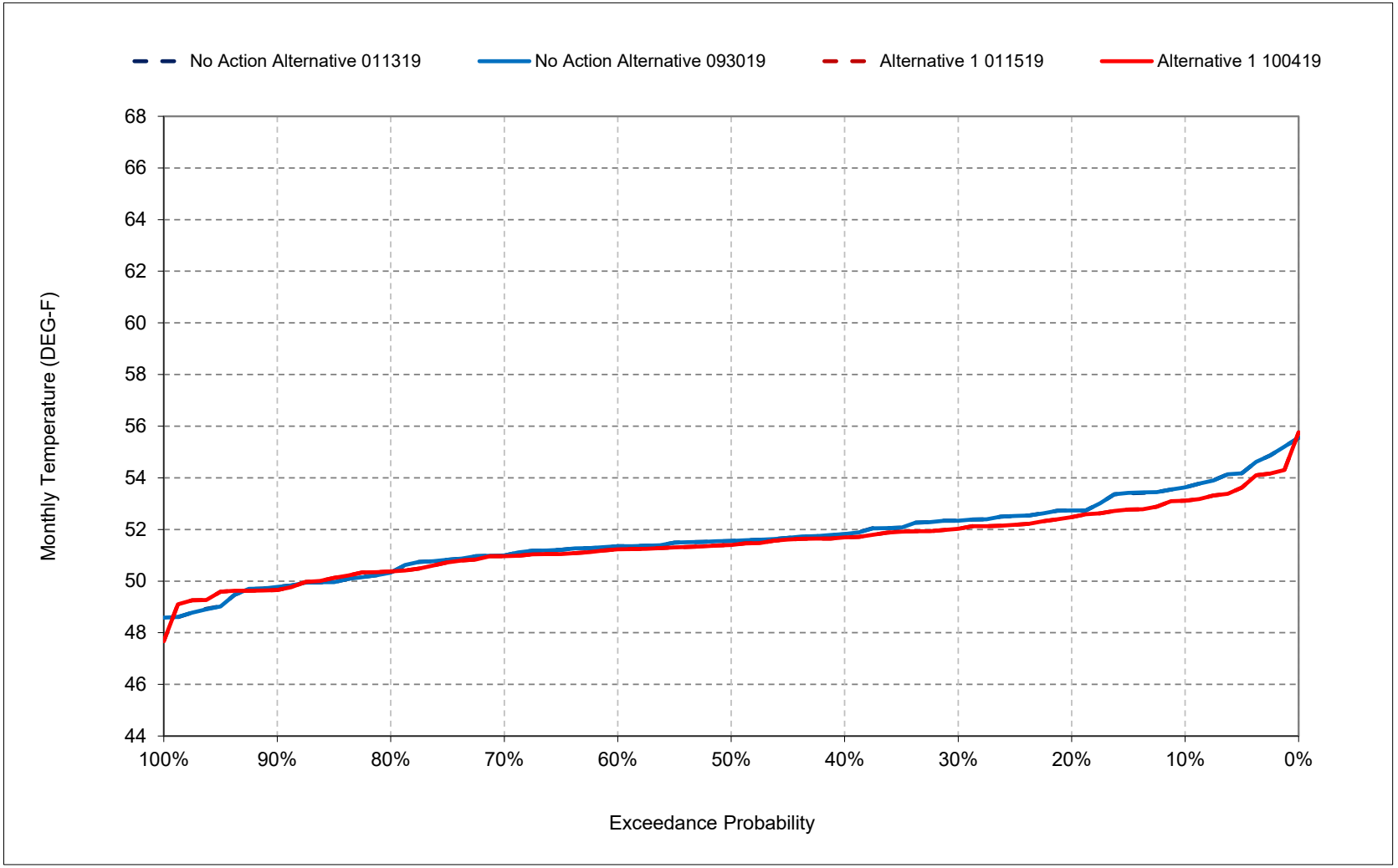
**Figure 20-8. Stanislaus River below New Melones Reservoir, November**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

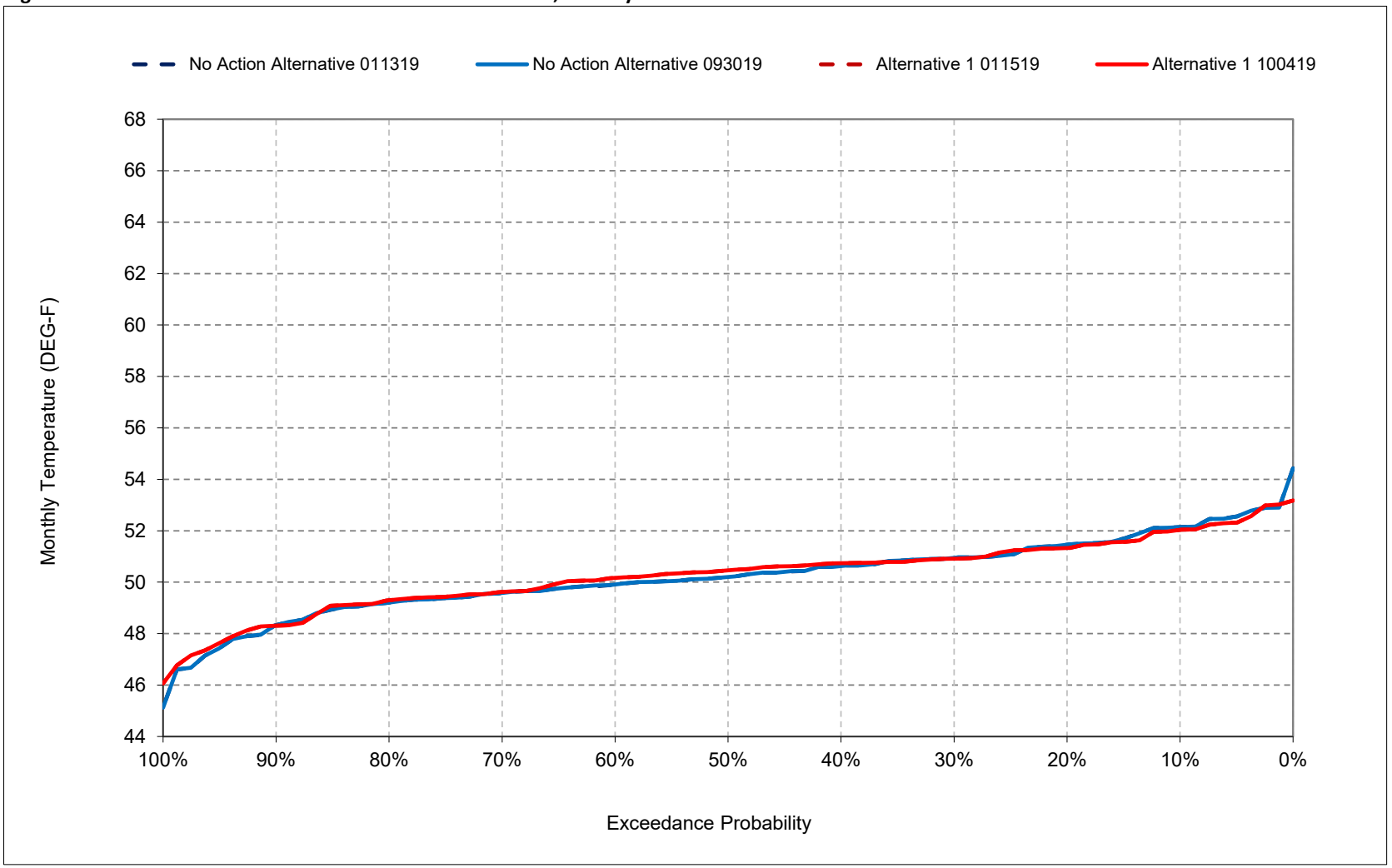
**Figure 20-9. Stanislaus River below New Melones Reservoir, December**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

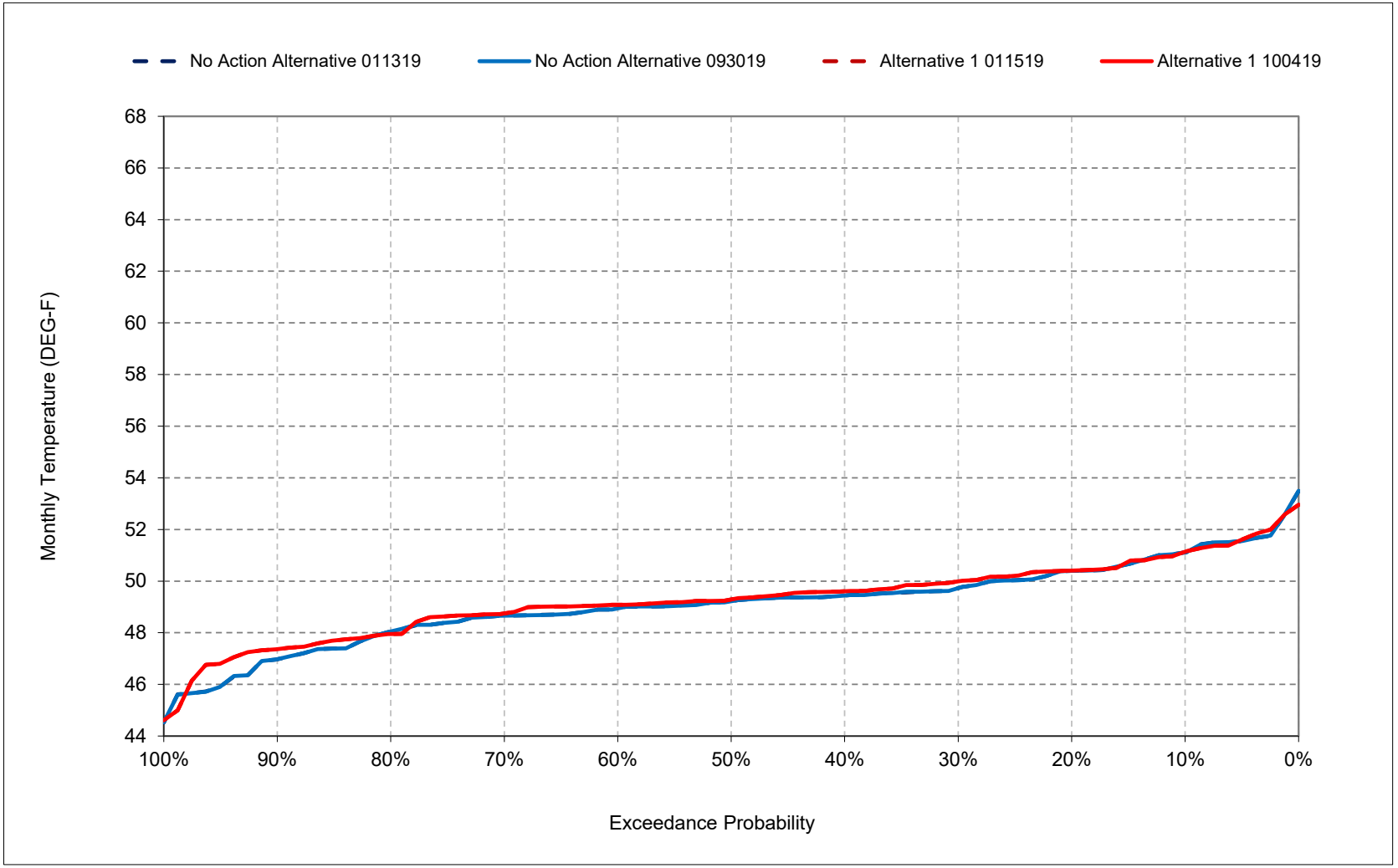
**Figure 20-10. Stanislaus River below New Melones Reservoir, January**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

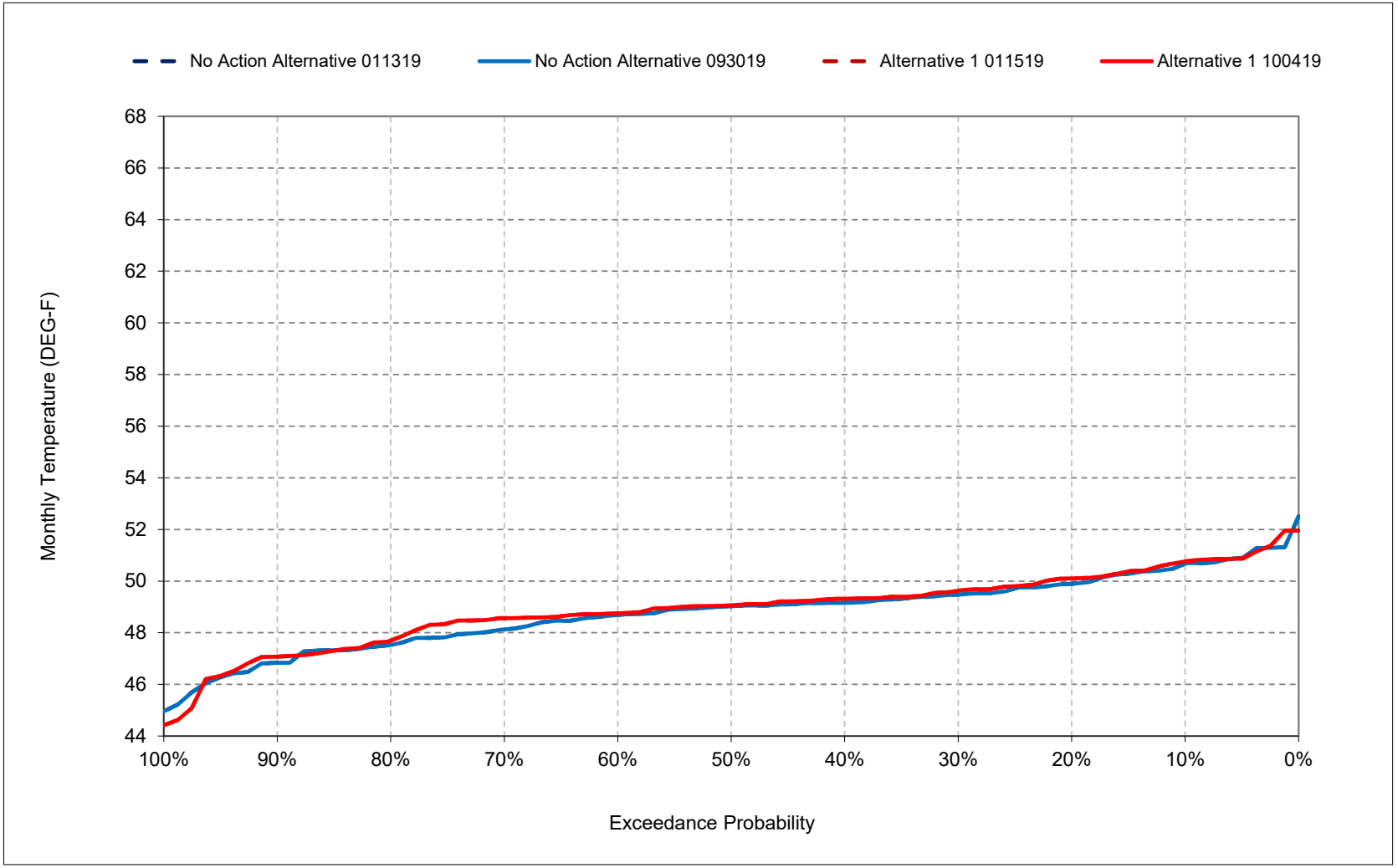
**Figure 20-11. Stanislaus River below New Melones Reservoir, February**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

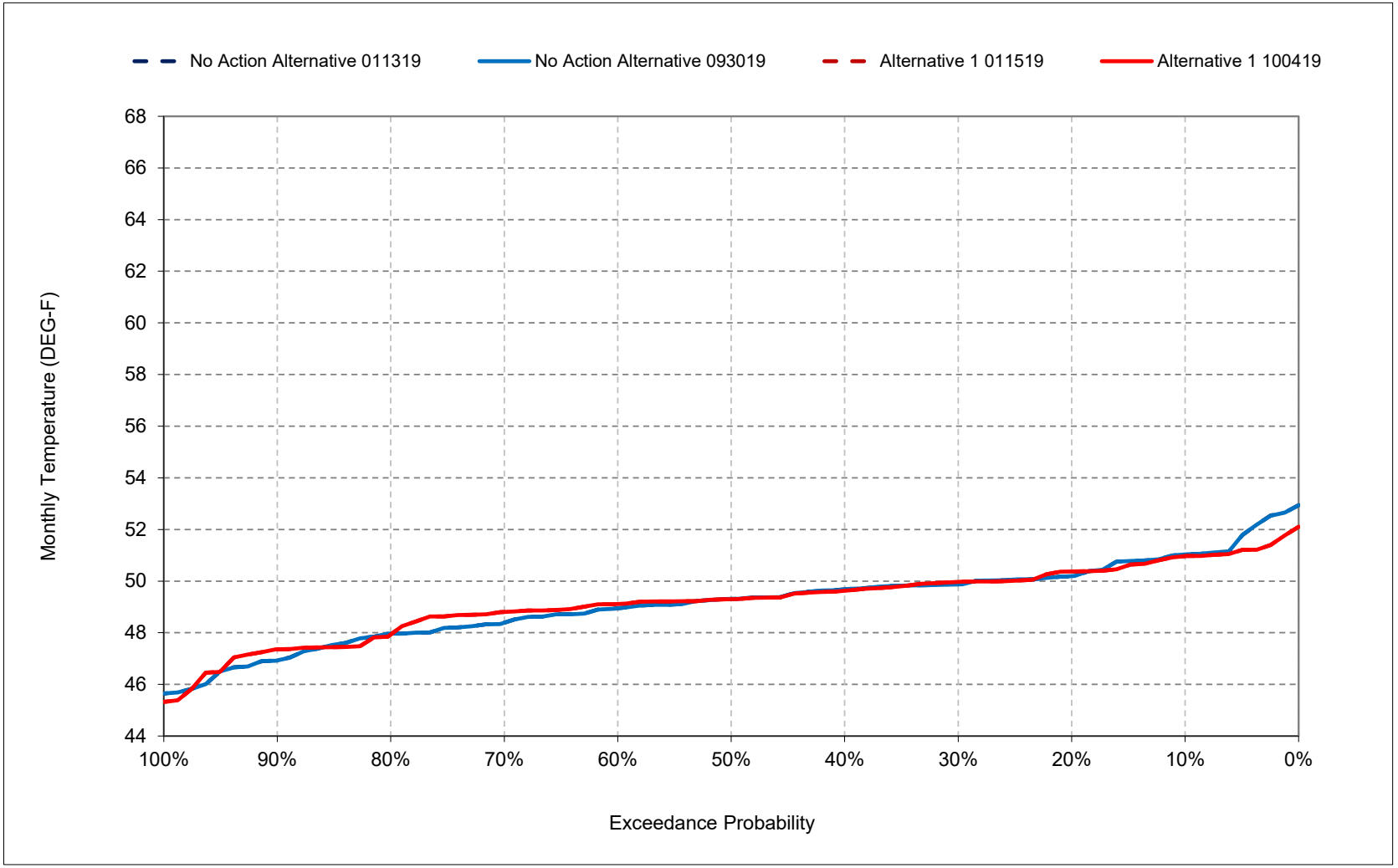
**Figure 20-12. Stanislaus River below New Melones Reservoir, March**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

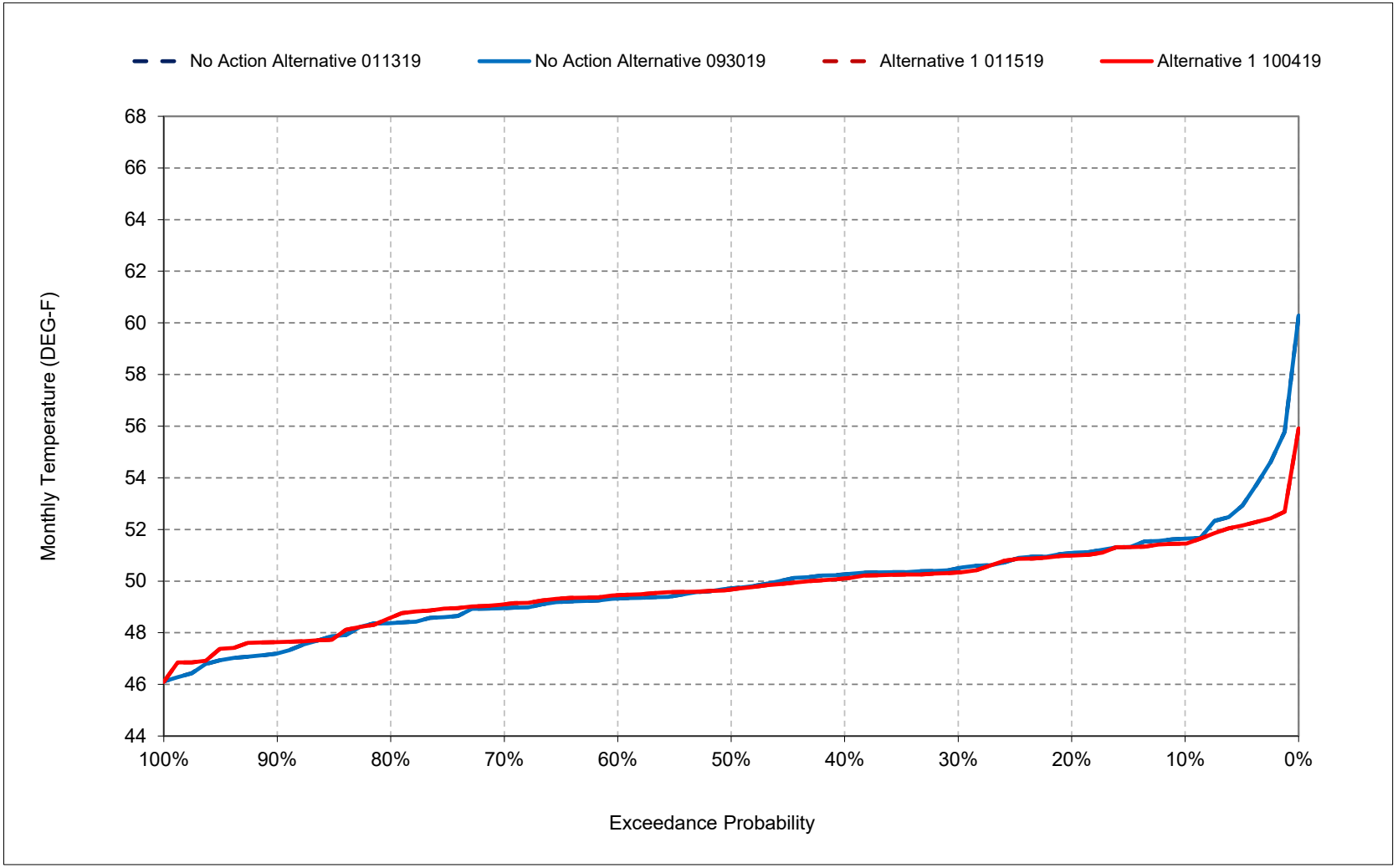
**Figure 20-13. Stanislaus River below New Melones Reservoir, April**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

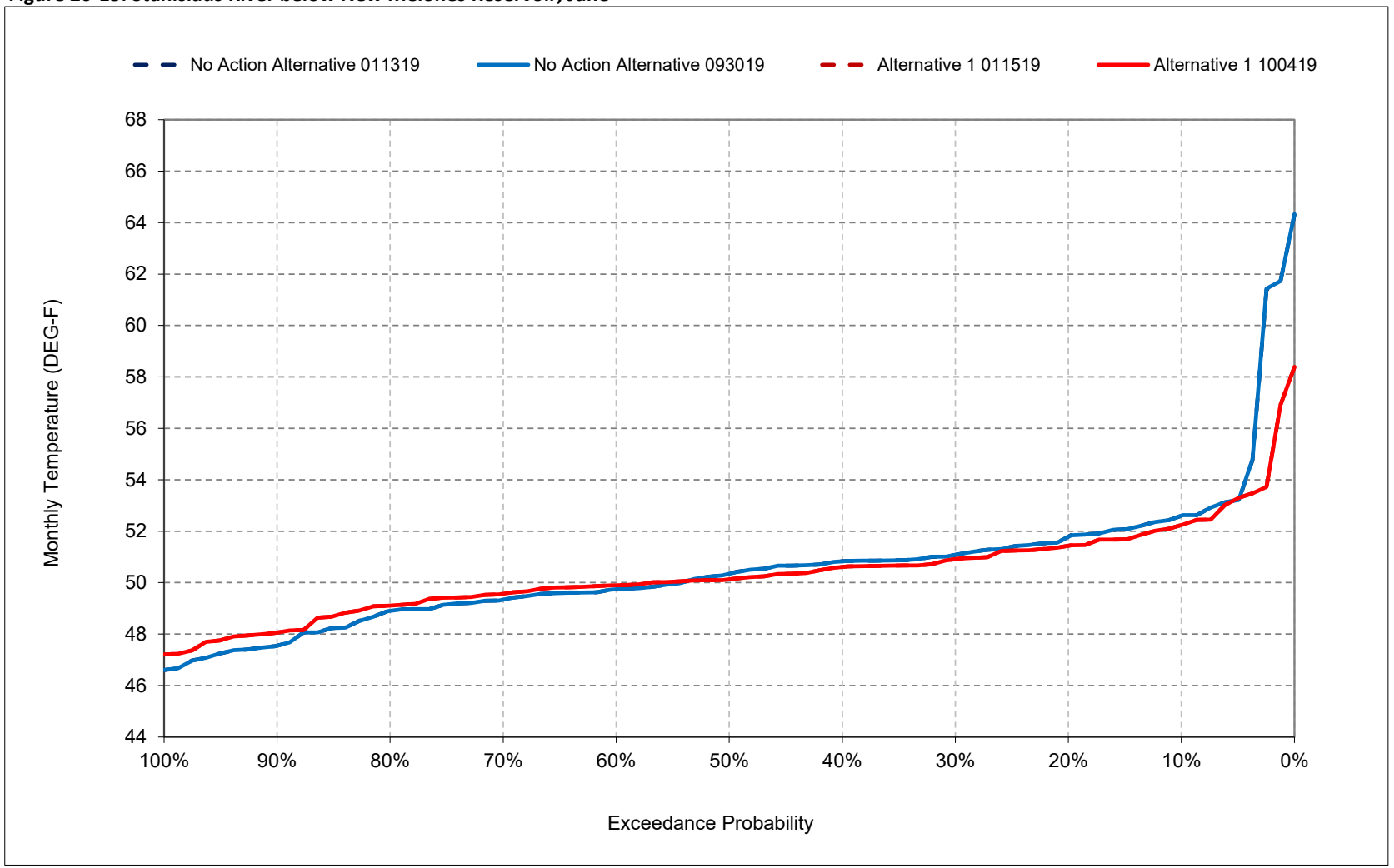
**Figure 20-14. Stanislaus River below New Melones Reservoir, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

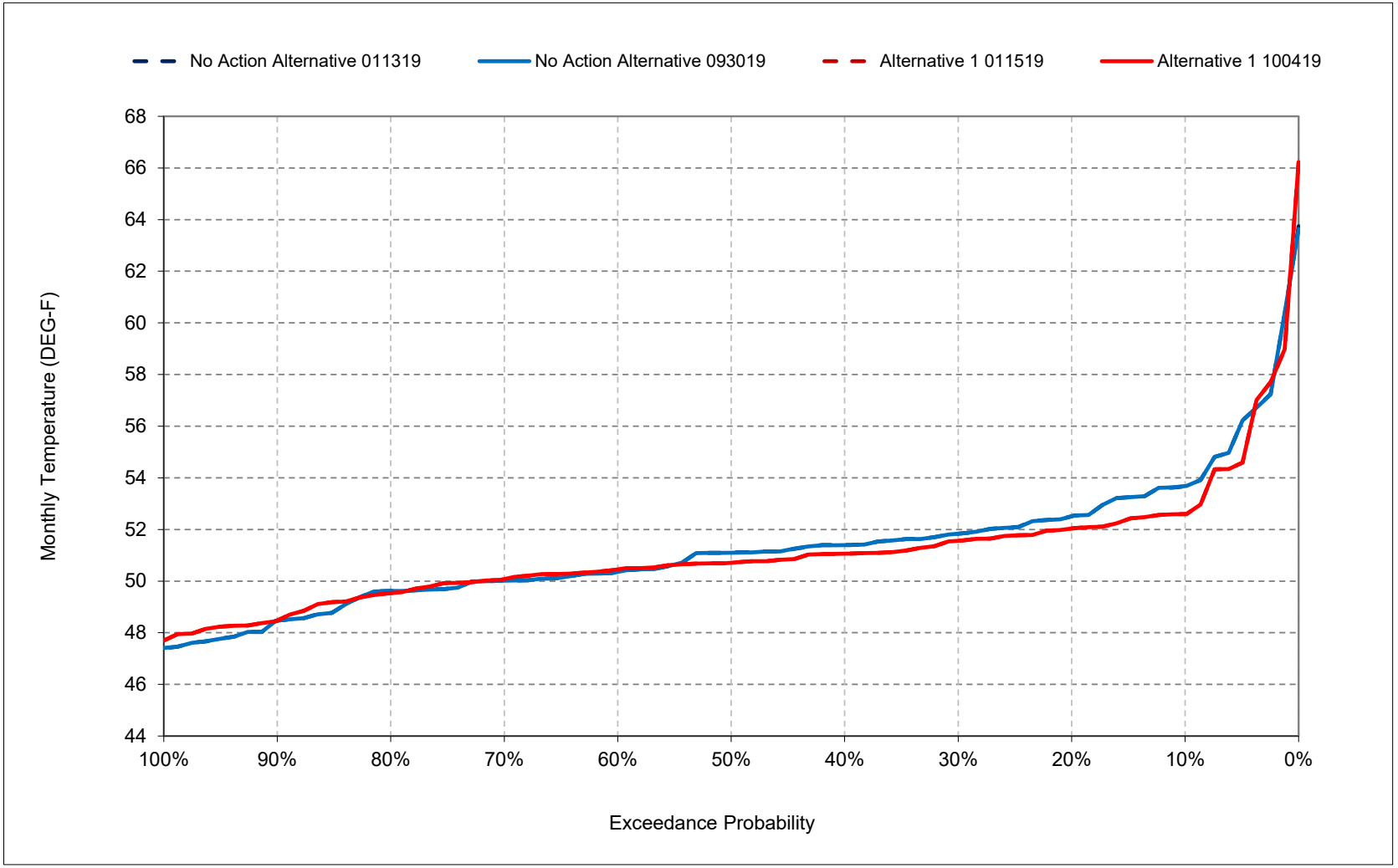
**Figure 20-15. Stanislaus River below New Melones Reservoir, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

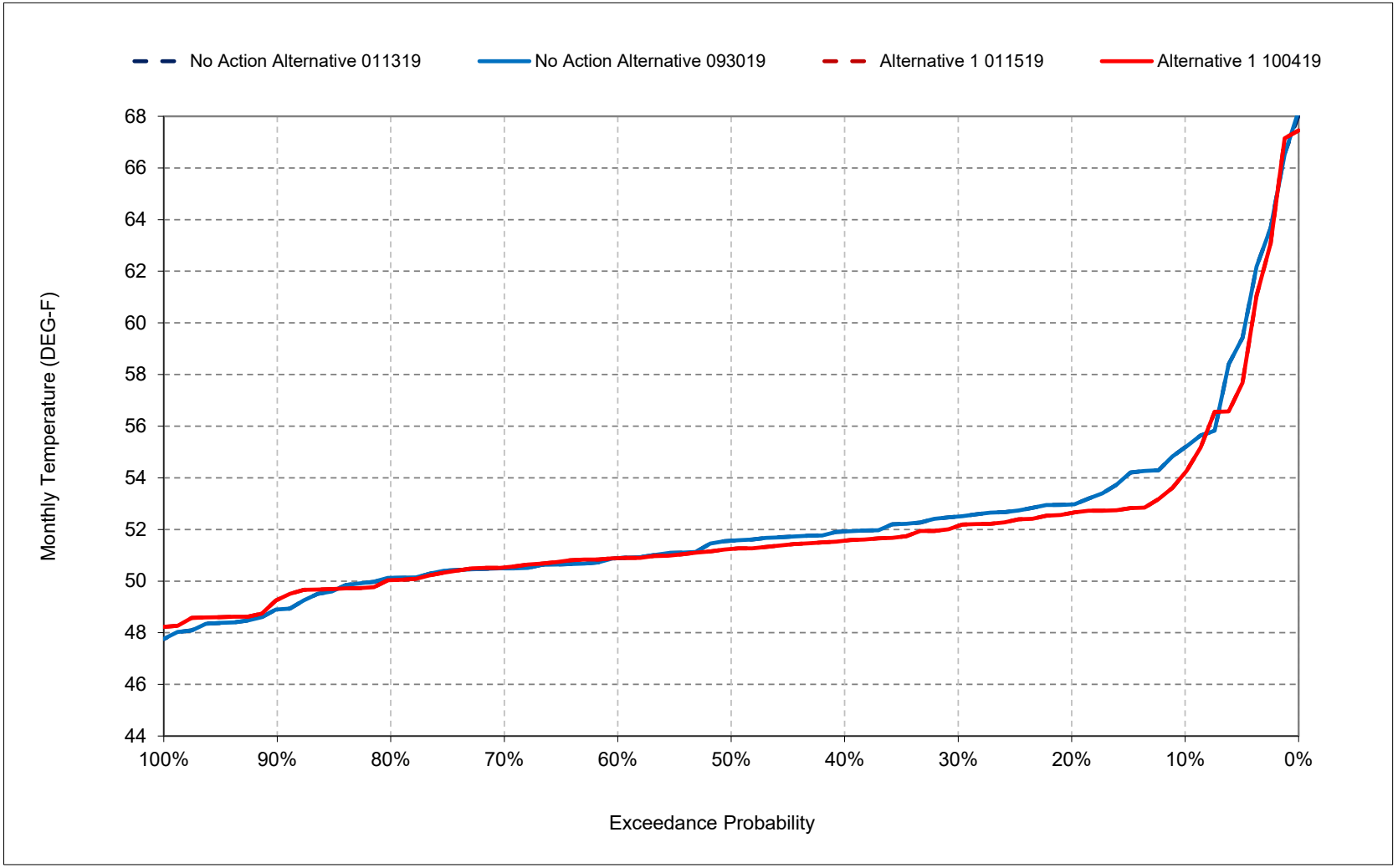
**Figure 20-16. Stanislaus River below New Melones Reservoir, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

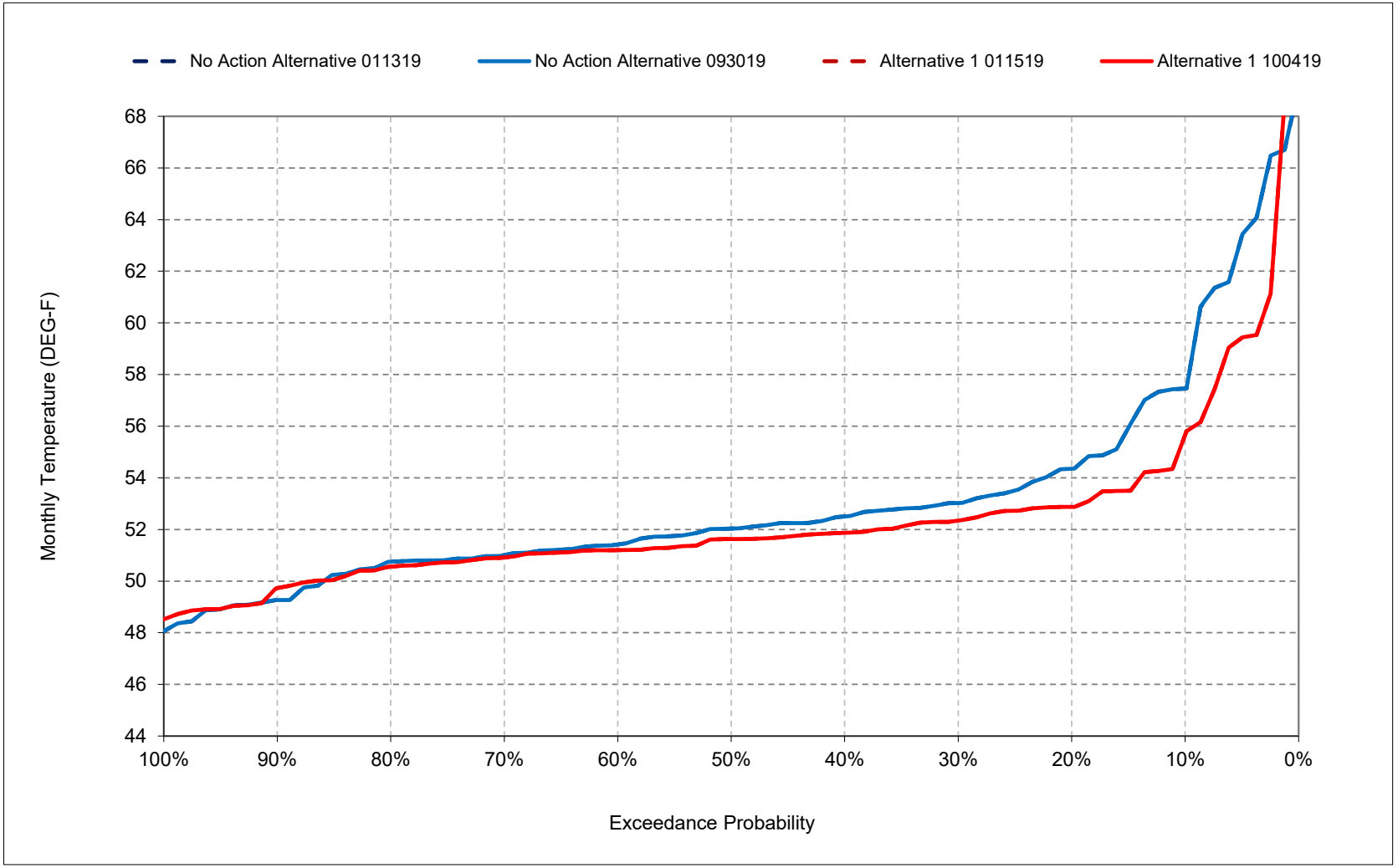
**Figure 20-17. Stanislaus River below New Melones Reservoir, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

**Figure 20-18. Stanislaus River below New Melones Reservoir, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Table 21-1. Stanislaus River below Tulloch Reservoir, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 60.5 | 59.0 | 54.7 | 50.7 | 50.2 | 51.2 | 52.6 | 53.6 | 54.7 | 56.5 | 57.4 | 59.2 |
| 20% | 57.4 | 56.5 | 53.3 | 50.3 | 49.5 | 50.6 | 52.1 | 53.0 | 54.1 | 55.0 | 55.7 | 56.7 |
| 30% | 55.6 | 55.1 | 52.7 | 49.5 | 48.9 | 50.2 | 51.7 | 52.6 | 53.4 | 54.3 | 55.0 | 55.6 |
| 40% | 55.1 | 54.6 | 51.9 | 49.0 | 48.5 | 49.8 | 51.3 | 52.4 | 52.9 | 53.9 | 54.5 | 54.9 |
| 50% | 54.5 | 54.0 | 51.6 | 48.7 | 48.0 | 49.6 | 51.0 | 52.1 | 52.6 | 53.7 | 54.1 | 54.5 |
| 60% | 54.1 | 53.9 | 51.3 | 48.3 | 47.8 | 49.3 | 50.6 | 51.7 | 52.2 | 52.7 | 53.5 | 54.0 |
| 70% | 53.6 | 53.2 | 50.9 | 47.8 | 47.5 | 48.9 | 50.1 | 51.3 | 51.8 | 52.4 | 53.1 | 53.5 |
| 80% | 53.1 | 52.6 | 50.3 | 47.1 | 46.7 | 48.4 | 49.7 | 51.0 | 51.4 | 51.8 | 52.8 | 53.1 |
| 90% | 52.0 | 51.8 | 49.6 | 46.3 | 45.8 | 47.5 | 48.8 | 50.2 | 50.2 | 50.8 | 51.5 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.6 | 54.7 | 51.9 | 48.6 | 48.1 | 49.5 | 50.9 | 52.1 | 52.8 | 53.7 | 54.6 | 55.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 52.5 | 52.1 | 50.6 | 47.5 | 47.1 | 48.8 | 49.6 | 50.9 | 51.0 | 51.5 | 52.2 | 52.4 |
| Above Normal (24%) | 54.8 | 54.3 | 51.8 | 48.1 | 47.4 | 48.7 | 50.2 | 51.4 | 51.9 | 52.7 | 53.7 | 54.5 |
| Below Normal (10%) | 54.5 | 54.0 | 51.6 | 48.3 | 48.1 | 49.4 | 51.0 | 51.7 | 52.2 | 53.3 | 54.0 | 54.4 |
| Dry (16%) | 56.3 | 55.4 | 52.3 | 49.0 | 48.6 | 50.0 | 51.6 | 52.3 | 53.2 | 54.3 | 55.3 | 56.0 |
| Critical (27%) | 59.0 | 57.1 | 53.0 | 49.6 | 49.2 | 50.7 | 52.3 | 53.7 | 55.1 | 56.4 | 57.3 | 58.8 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.6 | 57.0 | 53.7 | 50.6 | 50.1 | 51.3 | 52.6 | 53.6 | 54.6 | 55.8 | 56.5 | 57.5 |
| 20% | 56.0 | 55.4 | 53.1 | 50.0 | 49.4 | 50.6 | 52.1 | 53.0 | 53.8 | 54.7 | 55.4 | 55.8 |
| 30% | 55.2 | 54.5 | 52.6 | 49.4 | 48.9 | 50.2 | 51.6 | 52.6 | 53.2 | 54.3 | 54.9 | 55.2 |
| 40% | 54.5 | 54.1 | 51.9 | 49.0 | 48.6 | 49.9 | 51.3 | 52.3 | 52.8 | 53.7 | 54.2 | 54.5 |
| 50% | 54.2 | 53.7 | 51.5 | 48.7 | 48.1 | 49.6 | 51.1 | 52.1 | 52.5 | 53.4 | 53.9 | 54.2 |
| 60% | 53.8 | 53.4 | 51.2 | 48.3 | 47.8 | 49.5 | 50.9 | 51.8 | 52.1 | 53.0 | 53.5 | 53.8 |
| 70% | 53.6 | 53.0 | 50.8 | 47.9 | 47.5 | 49.0 | 50.5 | 51.5 | 51.7 | 52.6 | 53.1 | 53.5 |
| 80% | 53.0 | 52.5 | 50.4 | 47.2 | 46.8 | 48.5 | 49.8 | 51.0 | 51.3 | 52.1 | 52.6 | 53.0 |
| 90% | 51.9 | 51.8 | 49.4 | 46.6 | 46.4 | 47.8 | 49.0 | 50.4 | 50.5 | 51.3 | 52.0 | 51.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 54.2 | 51.7 | 48.5 | 48.1 | 49.6 | 50.9 | 52.0 | 52.6 | 53.6 | 54.4 | 54.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 52.6 | 52.3 | 50.7 | 47.5 | 47.4 | 48.8 | 49.6 | 51.0 | 51.2 | 51.7 | 52.3 | 52.5 |
| Above Normal (24%) | 55.0 | 54.1 | 51.6 | 48.3 | 47.6 | 48.9 | 50.3 | 51.5 | 51.8 | 53.1 | 54.0 | 54.8 |
| Below Normal (10%) | 54.0 | 53.6 | 51.4 | 48.3 | 48.2 | 49.5 | 51.3 | 51.8 | 52.2 | 53.3 | 53.8 | 54.1 |
| Dry (16%) | 55.1 | 54.4 | 52.0 | 48.8 | 48.5 | 50.0 | 51.5 | 52.3 | 53.1 | 53.9 | 54.5 | 55.0 |
| Critical (27%) | 56.9 | 56.1 | 52.8 | 49.5 | 49.2 | 50.8 | 52.2 | 53.3 | 54.6 | 55.7 | 56.9 | 57.2 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -1.8 | -2.0 | -1.0 | -0.1 | -0.2 | **0.1** | 0.0 | **0.0** | -0.1 | -0.7 | -0.9 | -1.7 |
| 20% | -1.4 | -1.1 | -0.2 | -0.3 | -0.1 | **0.1** | **0.0** | **0.0** | -0.3 | -0.3 | -0.3 | -0.9 |
| 30% | -0.5 | -0.6 | -0.1 | -0.2 | **0.1** | 0.0 | -0.1 | **0.0** | -0.1 | **0.0** | -0.2 | -0.4 |
| 40% | -0.6 | -0.5 | 0.0 | -0.1 | **0.1** | **0.1** | **0.0** | -0.1 | -0.1 | -0.2 | -0.3 | -0.4 |
| 50% | -0.3 | -0.3 | -0.1 | **0.0** | **0.1** | **0.0** | **0.1** | 0.0 | -0.1 | -0.3 | -0.2 | -0.3 |
| 60% | -0.2 | -0.4 | -0.1 | 0.0 | **0.0** | **0.1** | **0.2** | **0.1** | -0.1 | **0.2** | **0.0** | -0.1 |
| 70% | -0.1 | -0.2 | 0.0 | **0.1** | 0.0 | **0.0** | **0.4** | **0.2** | -0.1 | **0.2** | 0.0 | 0.0 |
| 80% | -0.1 | 0.0 | **0.1** | **0.2** | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | **0.3** | -0.1 | -0.1 |
| 90% | -0.1 | -0.1 | -0.2 | **0.4** | **0.5** | **0.2** | **0.2** | **0.2** | **0.3** | **0.5** | **0.5** | **0.1** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.5 | -0.2 | 0.0 | **0.1** | **0.1** | **0.0** | 0.0 | -0.2 | -0.1 | -0.1 | -0.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | **0.2** | **0.2** | **0.0** | 0.0 | **0.3** | 0.0 | **0.0** | **0.1** | **0.2** | **0.2** | **0.1** | **0.2** |
| Above Normal (24%) | **0.2** | -0.2 | -0.2 | **0.1** | **0.2** | **0.2** | **0.1** | **0.1** | -0.2 | **0.4** | **0.3** | **0.4** |
| Below Normal (10%) | -0.5 | -0.4 | -0.2 | **0.1** | **0.1** | **0.1** | **0.3** | **0.2** | **0.0** | -0.1 | -0.2 | -0.4 |
| Dry (16%) | -1.2 | -0.9 | -0.3 | -0.2 | -0.1 | 0.0 | -0.1 | 0.0 | -0.1 | -0.4 | -0.7 | -1.0 |
| Critical (27%) | -2.1 | -1.0 | -0.3 | -0.1 | -0.1 | **0.0** | -0.1 | -0.4 | -0.6 | -0.7 | -0.4 | -1.5 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 21-2. Stanislaus River below Tulloch Reservoir, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.4 | 59.0 | 54.7 | 50.7 | 50.2 | 51.2 | 52.6 | 53.6 | 54.7 | 56.5 | 57.4 | 59.2 |
| 20% | 57.3 | 56.5 | 53.3 | 50.2 | 49.5 | 50.6 | 52.1 | 53.0 | 54.1 | 55.0 | 55.7 | 56.7 |
| 30% | 55.6 | 55.1 | 52.7 | 49.5 | 48.8 | 50.2 | 51.7 | 52.6 | 53.4 | 54.2 | 55.0 | 55.6 |
| 40% | 55.1 | 54.6 | 51.9 | 49.0 | 48.5 | 49.8 | 51.3 | 52.4 | 52.9 | 53.9 | 54.5 | 54.9 |
| 50% | 54.5 | 54.0 | 51.6 | 48.7 | 48.0 | 49.6 | 51.0 | 52.1 | 52.6 | 53.7 | 54.1 | 54.5 |
| 60% | 54.1 | 53.9 | 51.3 | 48.3 | 47.8 | 49.3 | 50.6 | 51.7 | 52.2 | 52.7 | 53.5 | 53.9 |
| 70% | 53.6 | 53.2 | 50.9 | 47.8 | 47.5 | 48.9 | 50.1 | 51.3 | 51.8 | 52.4 | 53.1 | 53.5 |
| 80% | 53.1 | 52.6 | 50.3 | 47.1 | 46.7 | 48.4 | 49.7 | 51.0 | 51.4 | 51.8 | 52.7 | 53.0 |
| 90% | 52.0 | 51.8 | 49.6 | 46.2 | 45.8 | 47.5 | 48.8 | 50.2 | 50.3 | 50.8 | 51.5 | 51.8 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.6 | 54.7 | 51.9 | 48.5 | 48.1 | 49.5 | 50.9 | 52.1 | 52.8 | 53.7 | 54.6 | 55.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.5 | 52.1 | 50.6 | 47.5 | 47.1 | 48.8 | 49.6 | 50.9 | 51.0 | 51.5 | 52.2 | 52.4 |
| Above Normal (24%) | 54.8 | 54.3 | 51.7 | 48.1 | 47.4 | 48.7 | 50.2 | 51.4 | 51.9 | 52.7 | 53.7 | 54.5 |
| Below Normal (10%) | 54.5 | 54.0 | 51.6 | 48.3 | 48.1 | 49.4 | 51.0 | 51.7 | 52.2 | 53.3 | 54.0 | 54.4 |
| Dry (16%) | 56.3 | 55.4 | 52.2 | 49.0 | 48.6 | 50.0 | 51.6 | 52.3 | 53.2 | 54.3 | 55.2 | 56.0 |
| Critical (27%) | 59.0 | 57.1 | 53.0 | 49.6 | 49.2 | 50.7 | 52.3 | 53.7 | 55.1 | 56.4 | 57.3 | 58.8 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.6 | 57.0 | 53.7 | 50.6 | 50.1 | 51.3 | 52.6 | 53.6 | 54.6 | 55.8 | 56.5 | 57.5 |
| 20% | 56.0 | 55.4 | 53.1 | 50.0 | 49.4 | 50.6 | 52.1 | 53.0 | 53.8 | 54.7 | 55.4 | 55.8 |
| 30% | 55.2 | 54.5 | 52.6 | 49.4 | 48.9 | 50.2 | 51.6 | 52.6 | 53.2 | 54.3 | 54.9 | 55.2 |
| 40% | 54.5 | 54.1 | 51.9 | 49.0 | 48.6 | 49.9 | 51.3 | 52.3 | 52.8 | 53.7 | 54.2 | 54.5 |
| 50% | 54.2 | 53.7 | 51.5 | 48.7 | 48.1 | 49.6 | 51.1 | 52.1 | 52.5 | 53.4 | 53.9 | 54.2 |
| 60% | 53.8 | 53.4 | 51.2 | 48.3 | 47.8 | 49.5 | 50.9 | 51.8 | 52.1 | 53.0 | 53.5 | 53.8 |
| 70% | 53.6 | 53.0 | 50.8 | 47.9 | 47.5 | 49.0 | 50.5 | 51.5 | 51.7 | 52.6 | 53.1 | 53.5 |
| 80% | 53.0 | 52.5 | 50.4 | 47.2 | 46.8 | 48.5 | 49.8 | 51.0 | 51.3 | 52.1 | 52.6 | 53.0 |
| 90% | 51.9 | 51.8 | 49.4 | 46.6 | 46.4 | 47.8 | 49.0 | 50.4 | 50.5 | 51.3 | 52.0 | 51.9 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 54.2 | 51.7 | 48.5 | 48.1 | 49.6 | 50.9 | 52.0 | 52.6 | 53.6 | 54.4 | 54.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.6 | 52.3 | 50.7 | 47.5 | 47.4 | 48.8 | 49.6 | 51.0 | 51.2 | 51.7 | 52.3 | 52.5 |
| Above Normal (24%) | 55.0 | 54.1 | 51.6 | 48.3 | 47.6 | 48.9 | 50.3 | 51.5 | 51.8 | 53.1 | 54.0 | 54.8 |
| Below Normal (10%) | 54.0 | 53.6 | 51.4 | 48.3 | 48.2 | 49.5 | 51.3 | 51.8 | 52.2 | 53.3 | 53.8 | 54.1 |
| Dry (16%) | 55.1 | 54.4 | 52.0 | 48.8 | 48.5 | 50.0 | 51.5 | 52.3 | 53.1 | 53.9 | 54.5 | 55.0 |
| Critical (27%) | 56.9 | 56.1 | 52.8 | 49.5 | 49.2 | 50.8 | 52.2 | 53.3 | 54.6 | 55.7 | 56.9 | 57.2 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -1.8 | -2.0 | -1.0 | -0.1 | -0.1 | **0.1** | 0.0 | **0.0** | -0.1 | -0.6 | -0.9 | -1.7 |
| 20% | -1.4 | -1.1 | -0.2 | -0.3 | -0.1 | **0.1** | **0.0** | **0.0** | -0.3 | -0.3 | -0.3 | -0.9 |
| 30% | -0.5 | -0.6 | -0.1 | -0.2 | **0.1** | 0.0 | -0.1 | **0.0** | -0.1 | **0.0** | -0.2 | -0.4 |
| 40% | -0.6 | -0.5 | 0.0 | 0.0 | **0.1** | **0.1** | **0.0** | -0.1 | -0.1 | -0.2 | -0.3 | -0.4 |
| 50% | -0.3 | -0.3 | -0.1 | **0.0** | **0.1** | **0.0** | **0.1** | 0.0 | -0.1 | -0.3 | -0.2 | -0.3 |
| 60% | -0.2 | -0.4 | -0.1 | 0.0 | **0.0** | **0.1** | **0.2** | **0.1** | -0.1 | **0.2** | **0.0** | -0.1 |
| 70% | -0.1 | -0.2 | 0.0 | **0.1** | 0.0 | **0.0** | **0.4** | **0.2** | -0.1 | **0.1** | 0.0 | 0.0 |
| 80% | -0.1 | 0.0 | **0.1** | **0.2** | **0.1** | **0.1** | **0.1** | 0.0 | -0.1 | **0.3** | -0.1 | 0.0 |
| 90% | -0.1 | 0.0 | -0.2 | **0.4** | **0.5** | **0.2** | **0.2** | **0.2** | **0.3** | **0.5** | **0.4** | **0.1** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.5 | -0.2 | 0.0 | **0.1** | **0.1** | **0.0** | 0.0 | -0.2 | -0.1 | -0.1 | -0.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | **0.2** | **0.2** | **0.1** | 0.0 | **0.3** | **0.0** | **0.0** | **0.1** | **0.2** | **0.2** | **0.1** | **0.2** |
| Above Normal (24%) | **0.2** | -0.2 | -0.1 | **0.1** | **0.2** | **0.2** | **0.1** | **0.1** | -0.2 | **0.4** | **0.3** | **0.4** |
| Below Normal (10%) | -0.5 | -0.4 | -0.2 | **0.1** | **0.1** | **0.1** | **0.3** | **0.2** | **0.0** | 0.0 | -0.2 | -0.4 |
| Dry (16%) | -1.2 | -0.9 | -0.3 | -0.2 | -0.1 | 0.0 | -0.1 | 0.0 | -0.1 | -0.4 | -0.7 | -1.0 |
| Critical (27%) | -2.1 | -1.0 | -0.2 | -0.1 | -0.1 | **0.0** | -0.1 | -0.4 | -0.6 | -0.7 | -0.4 | -1.5 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 21-3. Stanislaus River below Tulloch Reservoir, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 60.5 | 59.0 | 54.7 | 50.7 | 50.2 | 51.2 | 52.6 | 53.6 | 54.7 | 56.5 | 57.4 | 59.2 |
| 20% | 57.4 | 56.5 | 53.3 | 50.3 | 49.5 | 50.6 | 52.1 | 53.0 | 54.1 | 55.0 | 55.7 | 56.7 |
| 30% | 55.6 | 55.1 | 52.7 | 49.5 | 48.9 | 50.2 | 51.7 | 52.6 | 53.4 | 54.3 | 55.0 | 55.6 |
| 40% | 55.1 | 54.6 | 51.9 | 49.0 | 48.5 | 49.8 | 51.3 | 52.4 | 52.9 | 53.9 | 54.5 | 54.9 |
| 50% | 54.5 | 54.0 | 51.6 | 48.7 | 48.0 | 49.6 | 51.0 | 52.1 | 52.6 | 53.7 | 54.1 | 54.5 |
| 60% | 54.1 | 53.9 | 51.3 | 48.3 | 47.8 | 49.3 | 50.6 | 51.7 | 52.2 | 52.7 | 53.5 | 54.0 |
| 70% | 53.6 | 53.2 | 50.9 | 47.8 | 47.5 | 48.9 | 50.1 | 51.3 | 51.8 | 52.4 | 53.1 | 53.5 |
| 80% | 53.1 | 52.6 | 50.3 | 47.1 | 46.7 | 48.4 | 49.7 | 51.0 | 51.4 | 51.8 | 52.8 | 53.1 |
| 90% | 52.0 | 51.8 | 49.6 | 46.3 | 45.8 | 47.5 | 48.8 | 50.2 | 50.2 | 50.8 | 51.5 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.6 | 54.7 | 51.9 | 48.6 | 48.1 | 49.5 | 50.9 | 52.1 | 52.8 | 53.7 | 54.6 | 55.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 52.5 | 52.1 | 50.6 | 47.5 | 47.1 | 48.8 | 49.6 | 50.9 | 51.0 | 51.5 | 52.2 | 52.4 |
| Above Normal (24%) | 54.8 | 54.3 | 51.8 | 48.1 | 47.4 | 48.7 | 50.2 | 51.4 | 51.9 | 52.7 | 53.7 | 54.5 |
| Below Normal (10%) | 54.5 | 54.0 | 51.6 | 48.3 | 48.1 | 49.4 | 51.0 | 51.7 | 52.2 | 53.3 | 54.0 | 54.4 |
| Dry (16%) | 56.3 | 55.4 | 52.3 | 49.0 | 48.6 | 50.0 | 51.6 | 52.3 | 53.2 | 54.3 | 55.3 | 56.0 |
| Critical (27%) | 59.0 | 57.1 | 53.0 | 49.6 | 49.2 | 50.7 | 52.3 | 53.7 | 55.1 | 56.4 | 57.3 | 58.8 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 60.4 | 59.0 | 54.7 | 50.7 | 50.2 | 51.2 | 52.6 | 53.6 | 54.7 | 56.5 | 57.4 | 59.2 |
| 20% | 57.3 | 56.5 | 53.3 | 50.2 | 49.5 | 50.6 | 52.1 | 53.0 | 54.1 | 55.0 | 55.7 | 56.7 |
| 30% | 55.6 | 55.1 | 52.7 | 49.5 | 48.8 | 50.2 | 51.7 | 52.6 | 53.4 | 54.2 | 55.0 | 55.6 |
| 40% | 55.1 | 54.6 | 51.9 | 49.0 | 48.5 | 49.8 | 51.3 | 52.4 | 52.9 | 53.9 | 54.5 | 54.9 |
| 50% | 54.5 | 54.0 | 51.6 | 48.7 | 48.0 | 49.6 | 51.0 | 52.1 | 52.6 | 53.7 | 54.1 | 54.5 |
| 60% | 54.1 | 53.9 | 51.3 | 48.3 | 47.8 | 49.3 | 50.6 | 51.7 | 52.2 | 52.7 | 53.5 | 53.9 |
| 70% | 53.6 | 53.2 | 50.9 | 47.8 | 47.5 | 48.9 | 50.1 | 51.3 | 51.8 | 52.4 | 53.1 | 53.5 |
| 80% | 53.1 | 52.6 | 50.3 | 47.1 | 46.7 | 48.4 | 49.7 | 51.0 | 51.4 | 51.8 | 52.7 | 53.0 |
| 90% | 52.0 | 51.8 | 49.6 | 46.2 | 45.8 | 47.5 | 48.8 | 50.2 | 50.3 | 50.8 | 51.5 | 51.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.6 | 54.7 | 51.9 | 48.5 | 48.1 | 49.5 | 50.9 | 52.1 | 52.8 | 53.7 | 54.6 | 55.4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 52.5 | 52.1 | 50.6 | 47.5 | 47.1 | 48.8 | 49.6 | 50.9 | 51.0 | 51.5 | 52.2 | 52.4 |
| Above Normal (24%) | 54.8 | 54.3 | 51.7 | 48.1 | 47.4 | 48.7 | 50.2 | 51.4 | 51.9 | 52.7 | 53.7 | 54.5 |
| Below Normal (10%) | 54.5 | 54.0 | 51.6 | 48.3 | 48.1 | 49.4 | 51.0 | 51.7 | 52.2 | 53.3 | 54.0 | 54.4 |
| Dry (16%) | 56.3 | 55.4 | 52.2 | 49.0 | 48.6 | 50.0 | 51.6 | 52.3 | 53.2 | 54.3 | 55.2 | 56.0 |
| Critical (27%) | 59.0 | 57.1 | 53.0 | 49.6 | 49.2 | 50.7 | 52.3 | 53.7 | 55.1 | 56.4 | 57.3 | 58.8 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (24%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dry (16%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Critical (27%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 21-4. Stanislaus River below Tulloch Reservoir, Monthly Temperature

**Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 58.6 | 57.0 | 53.7 | 50.6 | 50.1 | 51.3 | 52.6 | 53.6 | 54.6 | 55.8 | 56.5 | 57.5 |
| **20%** | 56.0 | 55.4 | 53.1 | 50.0 | 49.4 | 50.6 | 52.1 | 53.0 | 53.8 | 54.7 | 55.4 | 55.8 |
| **30%** | 55.2 | 54.5 | 52.6 | 49.4 | 48.9 | 50.2 | 51.6 | 52.6 | 53.2 | 54.3 | 54.9 | 55.2 |
| **40%** | 54.5 | 54.1 | 51.9 | 49.0 | 48.6 | 49.9 | 51.3 | 52.3 | 52.8 | 53.7 | 54.2 | 54.5 |
| **50%** | 54.2 | 53.7 | 51.5 | 48.7 | 48.1 | 49.6 | 51.1 | 52.1 | 52.5 | 53.4 | 53.9 | 54.2 |
| **60%** | 53.8 | 53.4 | 51.2 | 48.3 | 47.8 | 49.5 | 50.9 | 51.8 | 52.1 | 53.0 | 53.5 | 53.8 |
| **70%** | 53.6 | 53.0 | 50.8 | 47.9 | 47.5 | 49.0 | 50.5 | 51.5 | 51.7 | 52.6 | 53.1 | 53.5 |
| **80%** | 53.0 | 52.5 | 50.4 | 47.2 | 46.8 | 48.5 | 49.8 | 51.0 | 51.3 | 52.1 | 52.6 | 53.0 |
| **90%** | 51.9 | 51.8 | 49.4 | 46.6 | 46.4 | 47.8 | 49.0 | 50.4 | 50.5 | 51.3 | 52.0 | 51.9 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period[a]** | 54.9 | 54.2 | 51.7 | 48.5 | 48.1 | 49.6 | 50.9 | 52.0 | 52.6 | 53.6 | 54.4 | 54.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| **Wet (23%)** | 52.6 | 52.3 | 50.7 | 47.5 | 47.4 | 48.8 | 49.6 | 51.0 | 51.2 | 51.7 | 52.3 | 52.5 |
| **Above Normal (24%)** | 55.0 | 54.1 | 51.6 | 48.3 | 47.6 | 48.9 | 50.3 | 51.5 | 51.8 | 53.1 | 54.0 | 54.8 |
| **Below Normal (10%)** | 54.0 | 53.6 | 51.4 | 48.3 | 48.2 | 49.5 | 51.3 | 51.8 | 52.2 | 53.3 | 53.8 | 54.1 |
| **Dry (16%)** | 55.1 | 54.4 | 52.0 | 48.8 | 48.5 | 50.0 | 51.5 | 52.3 | 53.1 | 53.9 | 54.5 | 55.0 |
| **Critical (27%)** | 56.9 | 56.1 | 52.8 | 49.5 | 49.2 | 50.8 | 52.2 | 53.3 | 54.6 | 55.7 | 56.9 | 57.2 |

**Alternative 1 100419**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 58.6 | 57.0 | 53.7 | 50.6 | 50.1 | 51.3 | 52.6 | 53.6 | 54.6 | 55.8 | 56.5 | 57.5 |
| **20%** | 56.0 | 55.4 | 53.1 | 50.0 | 49.4 | 50.6 | 52.1 | 53.0 | 53.8 | 54.7 | 55.4 | 55.8 |
| **30%** | 55.2 | 54.5 | 52.6 | 49.4 | 48.9 | 50.2 | 51.6 | 52.6 | 53.2 | 54.3 | 54.9 | 55.2 |
| **40%** | 54.5 | 54.1 | 51.9 | 49.0 | 48.6 | 49.9 | 51.3 | 52.3 | 52.8 | 53.7 | 54.2 | 54.5 |
| **50%** | 54.2 | 53.7 | 51.5 | 48.7 | 48.1 | 49.6 | 51.1 | 52.1 | 52.5 | 53.4 | 53.9 | 54.2 |
| **60%** | 53.8 | 53.4 | 51.2 | 48.3 | 47.8 | 49.5 | 50.9 | 51.8 | 52.1 | 53.0 | 53.5 | 53.8 |
| **70%** | 53.6 | 53.0 | 50.8 | 47.9 | 47.5 | 49.0 | 50.5 | 51.5 | 51.7 | 52.6 | 53.1 | 53.5 |
| **80%** | 53.0 | 52.5 | 50.4 | 47.2 | 46.8 | 48.5 | 49.8 | 51.0 | 51.3 | 52.1 | 52.6 | 53.0 |
| **90%** | 51.9 | 51.8 | 49.4 | 46.6 | 46.4 | 47.8 | 49.0 | 50.4 | 50.5 | 51.3 | 52.0 | 51.9 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period[a]** | 54.9 | 54.2 | 51.7 | 48.5 | 48.1 | 49.6 | 50.9 | 52.0 | 52.6 | 53.6 | 54.4 | 54.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| **Wet (23%)** | 52.6 | 52.3 | 50.7 | 47.5 | 47.4 | 48.8 | 49.6 | 51.0 | 51.2 | 51.7 | 52.3 | 52.5 |
| **Above Normal (24%)** | 55.0 | 54.1 | 51.6 | 48.3 | 47.6 | 48.9 | 50.3 | 51.5 | 51.8 | 53.1 | 54.0 | 54.8 |
| **Below Normal (10%)** | 54.0 | 53.6 | 51.4 | 48.3 | 48.2 | 49.5 | 51.3 | 51.8 | 52.2 | 53.3 | 53.8 | 54.1 |
| **Dry (16%)** | 55.1 | 54.4 | 52.0 | 48.8 | 48.5 | 50.0 | 51.5 | 52.3 | 53.1 | 53.9 | 54.5 | 55.0 |
| **Critical (27%)** | 56.9 | 56.1 | 52.8 | 49.5 | 49.2 | 50.8 | 52.2 | 53.3 | 54.6 | 55.7 | 56.9 | 57.2 |

**Alternative 1 100419 minus Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| **10%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **20%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **30%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **40%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **50%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **60%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **70%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **80%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **90%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period[a]** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| **Wet (23%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Above Normal (24%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Below Normal (10%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Dry (16%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Critical (27%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

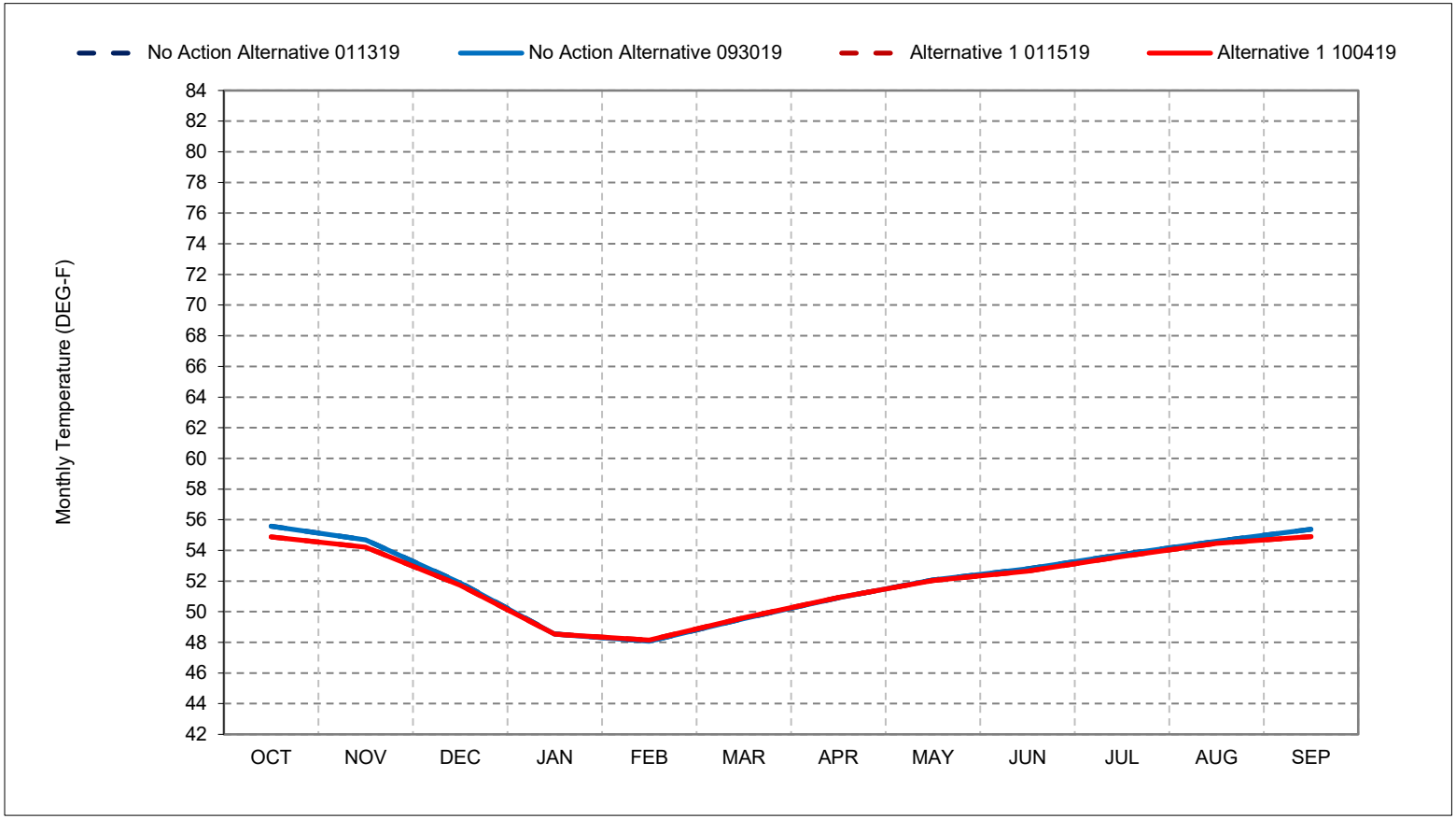
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Figure 21-1. Stanislaus River below Tulloch Reservoir, Long-Term Average Temperature



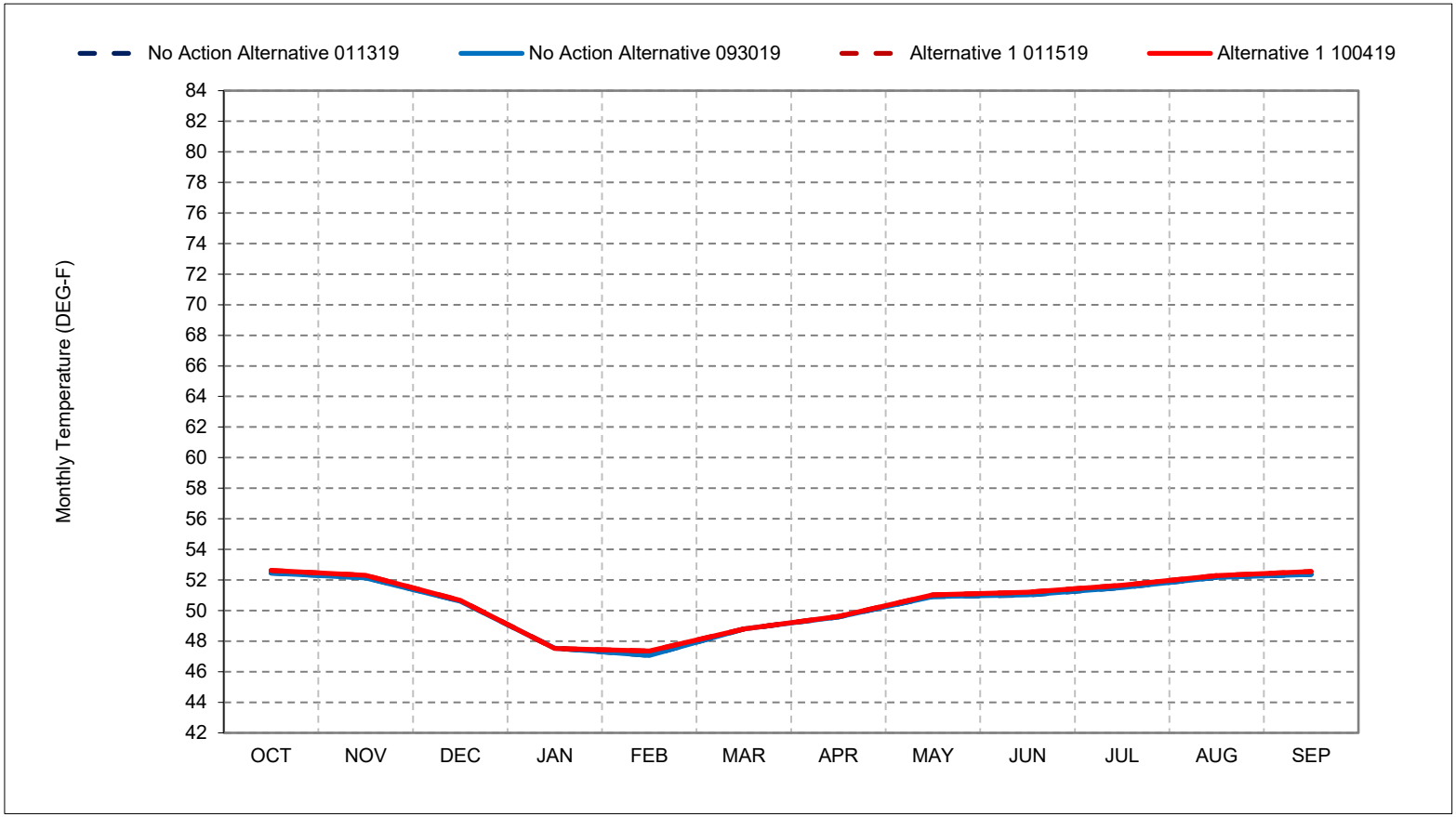

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 21-2. Stanislaus River below Tulloch Reservoir, Wet Year Average Temperature



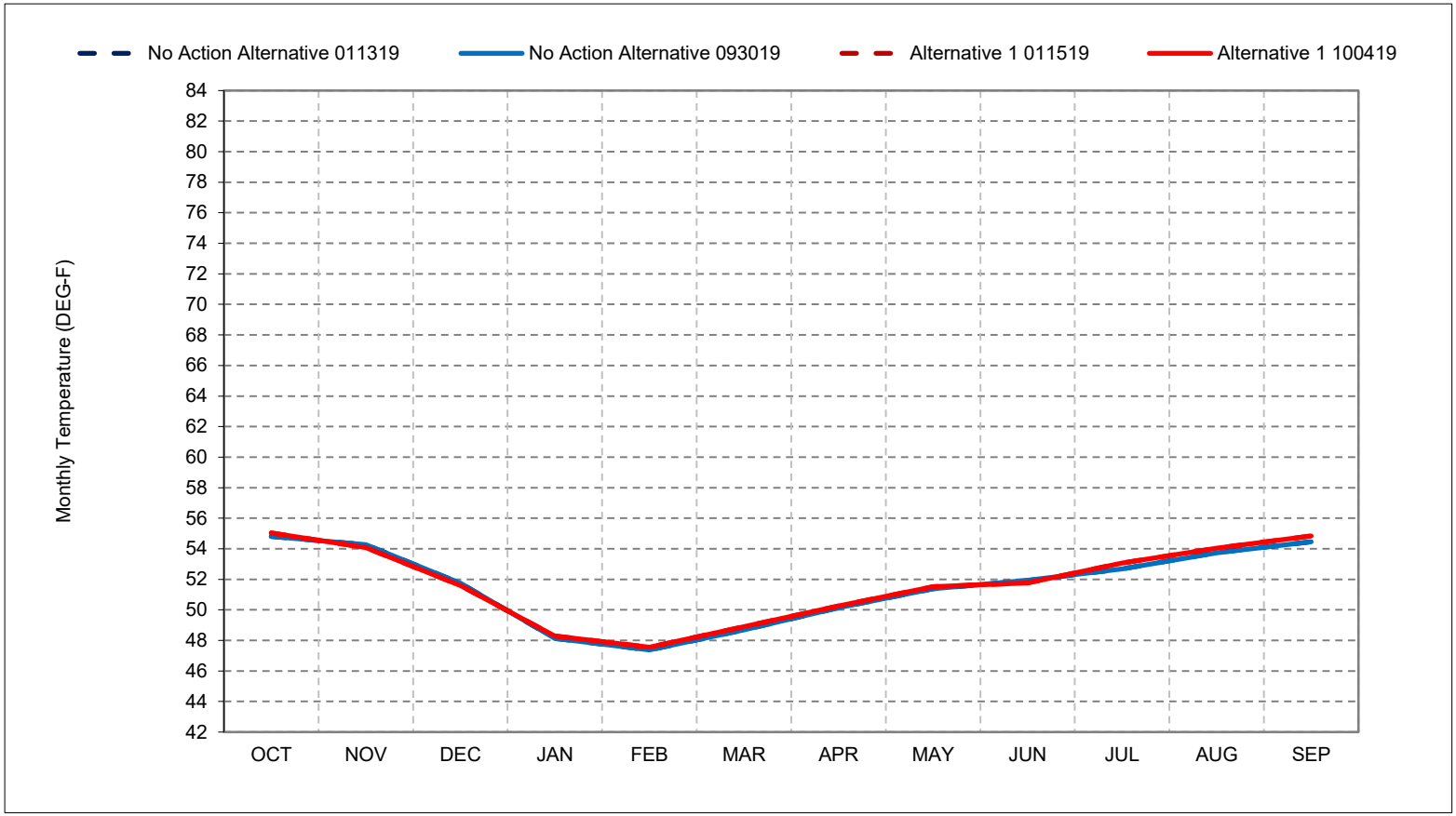

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 21-3. Stanislaus River below Tulloch Reservoir, Above Normal Year Average Temperature



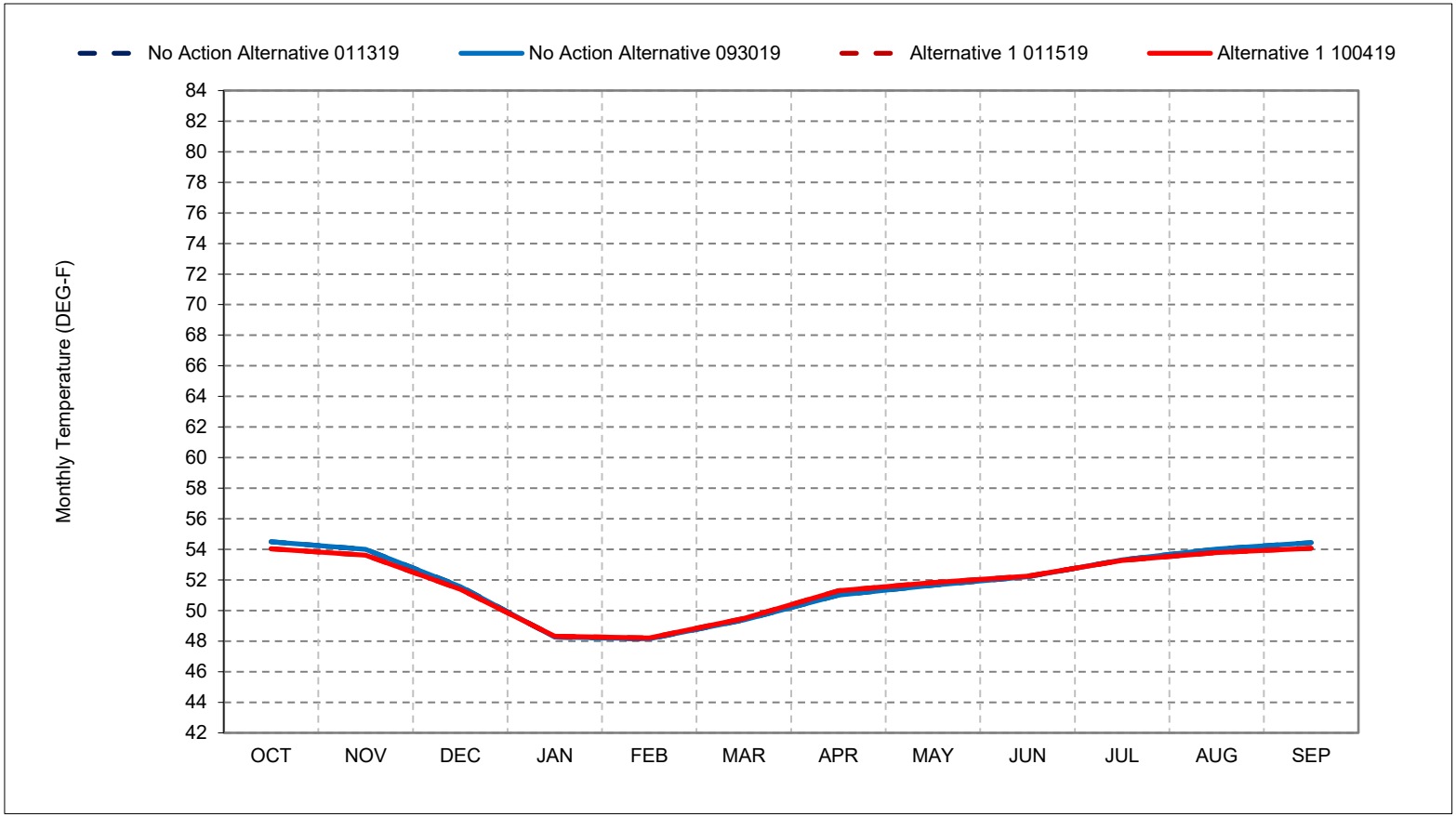

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

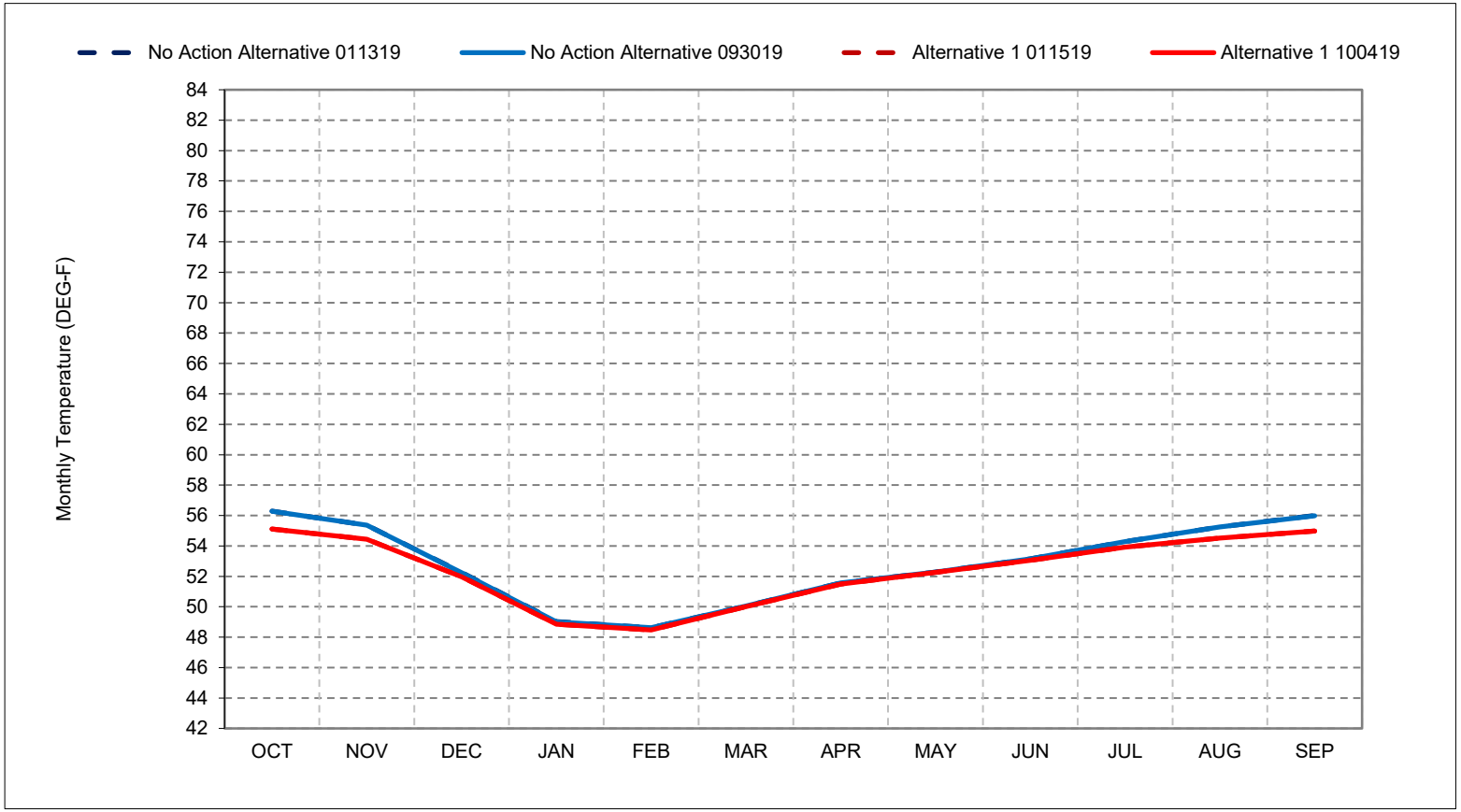
*New Melones forecasts are used as the basis of water operations.

## Figure 21-4. Stanislaus River below Tulloch Reservoir, Below Normal Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 21-5. Stanislaus River below Tulloch Reservoir, Dry Year Average Temperature



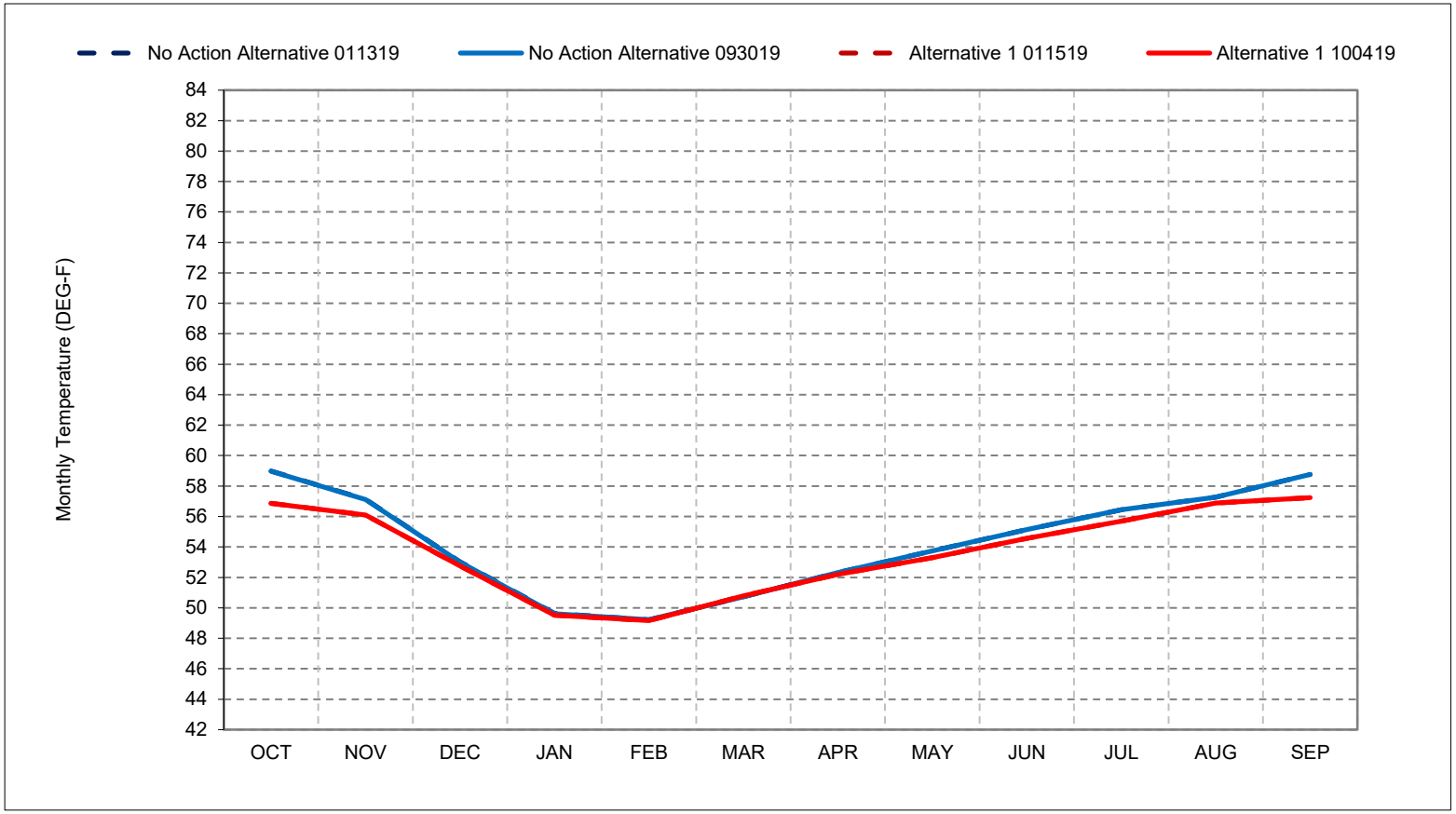

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

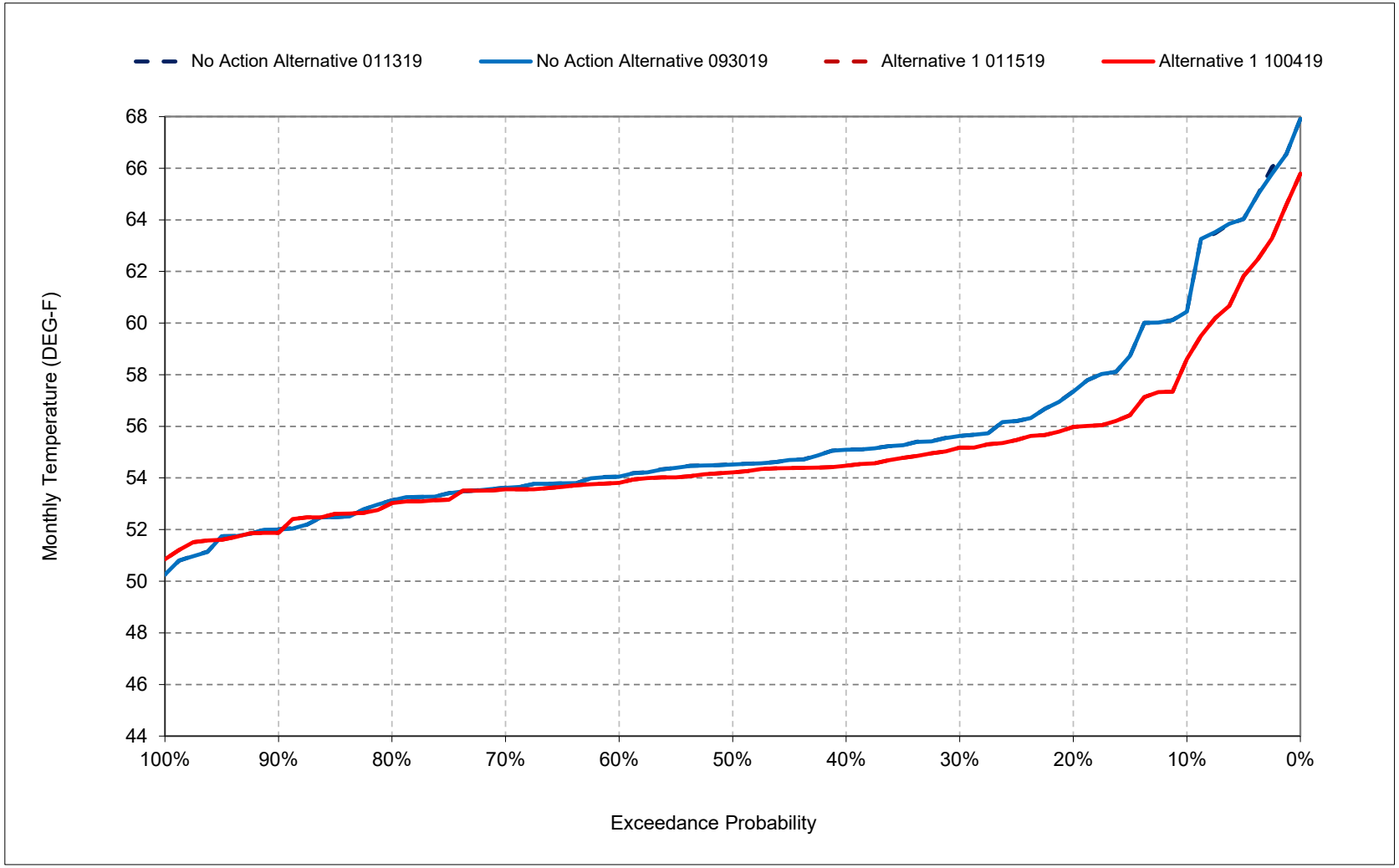
*New Melones forecasts are used as the basis of water operations.

## Figure 21-6. Stanislaus River below Tulloch Reservoir, Critical Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

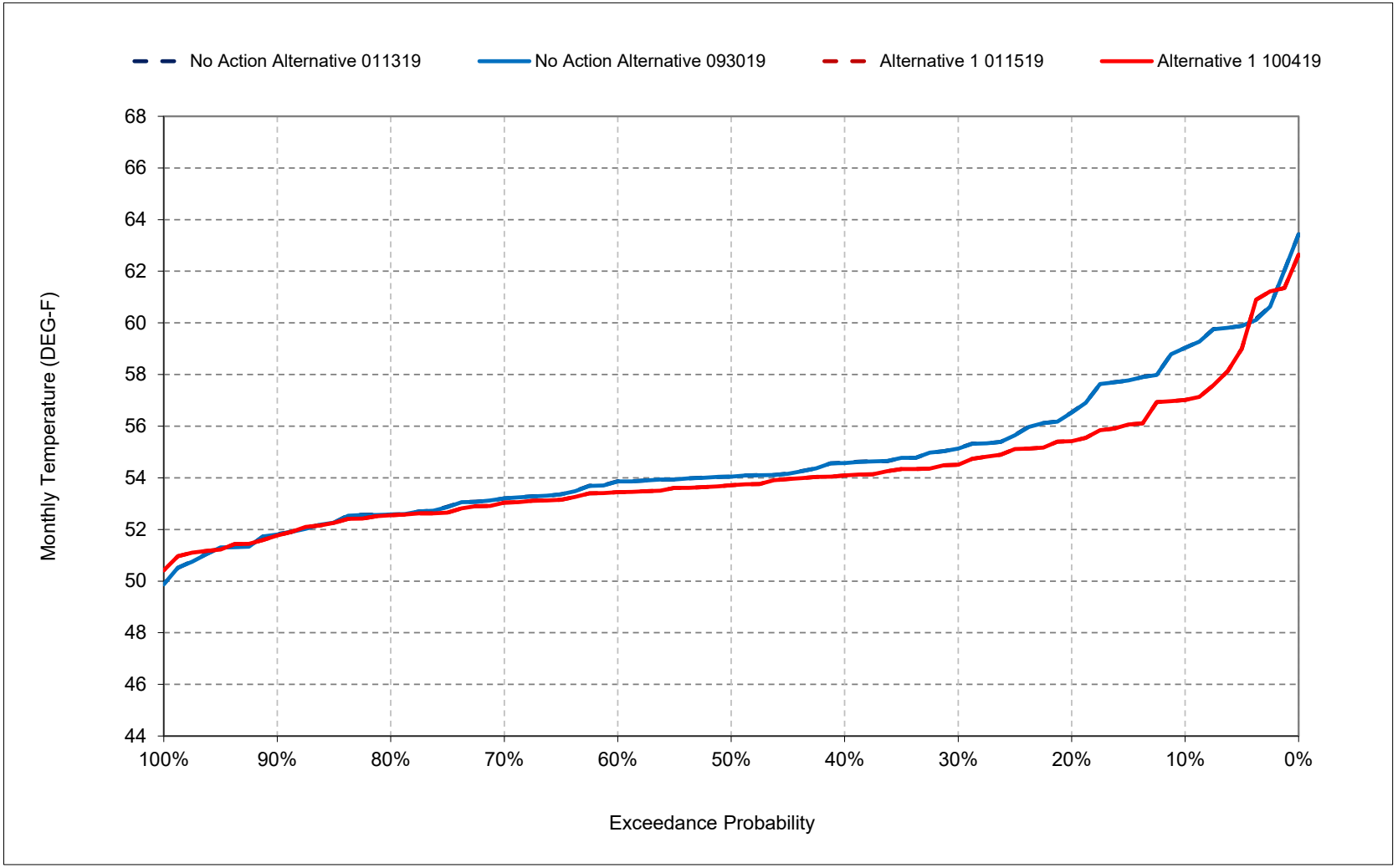
**Figure 21-7. Stanislaus River below Tulloch Reservoir, October**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

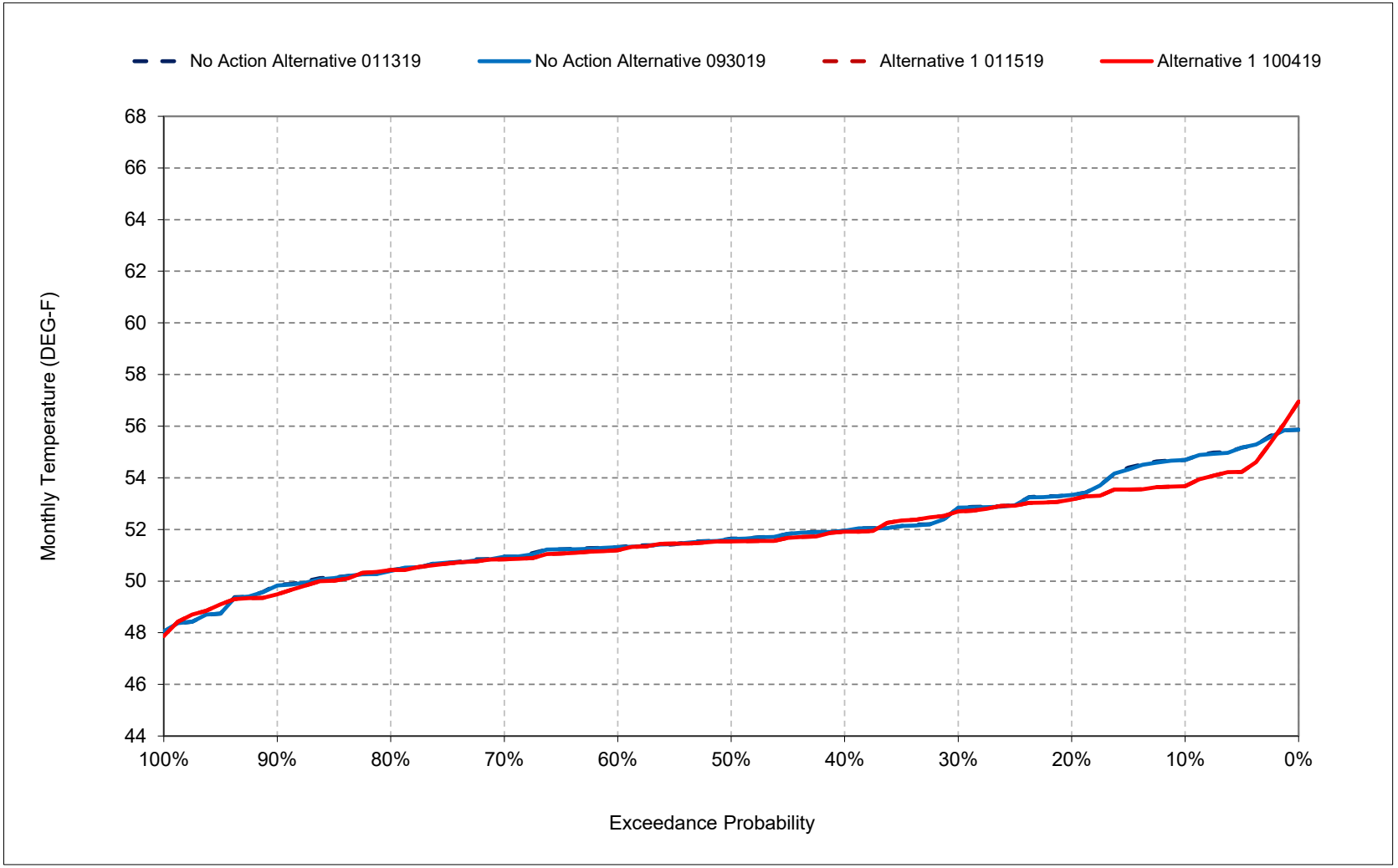
**Figure 21-8. Stanislaus River below Tulloch Reservoir, November**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

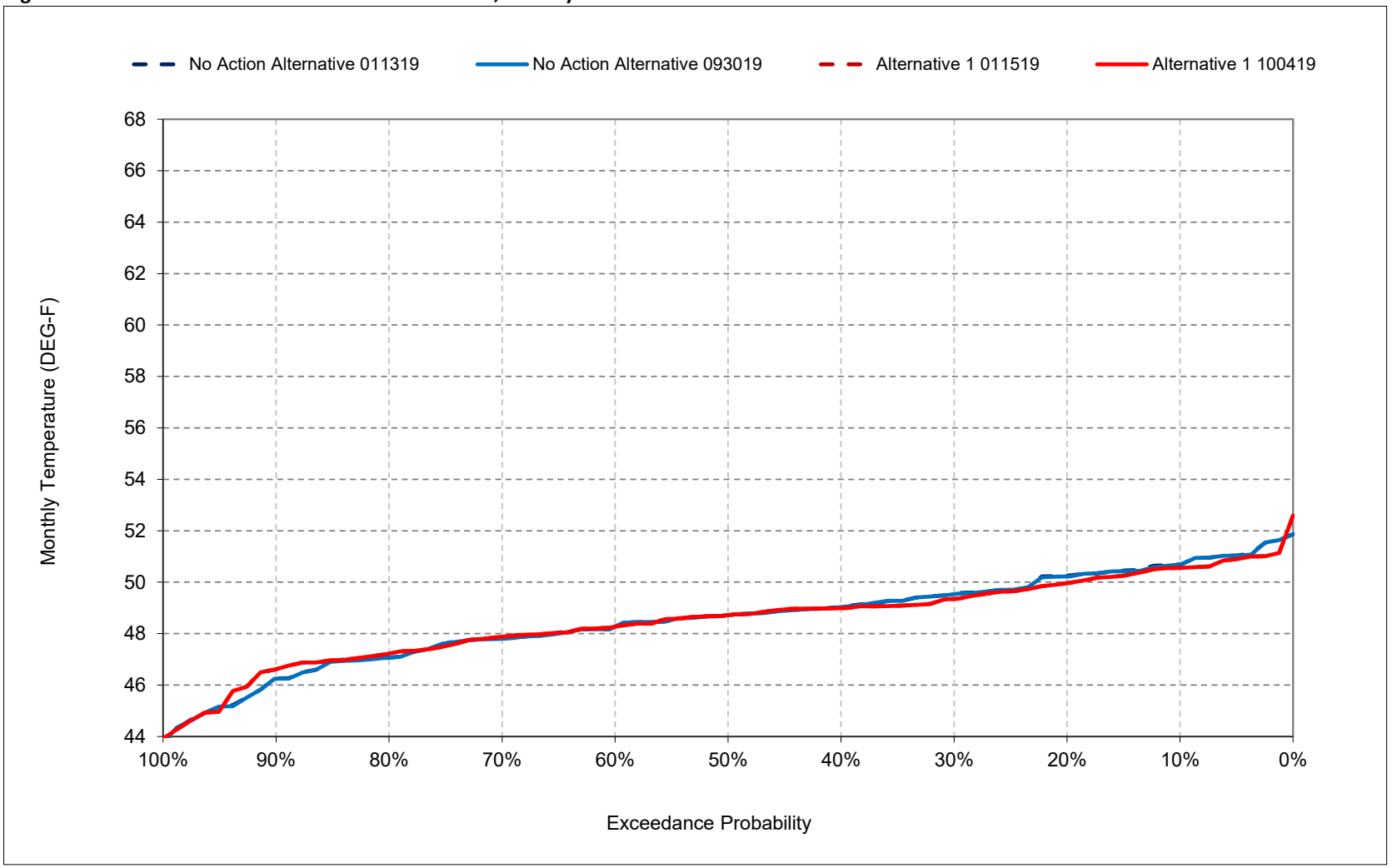
**Figure 21-9. Stanislaus River below Tulloch Reservoir, December**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

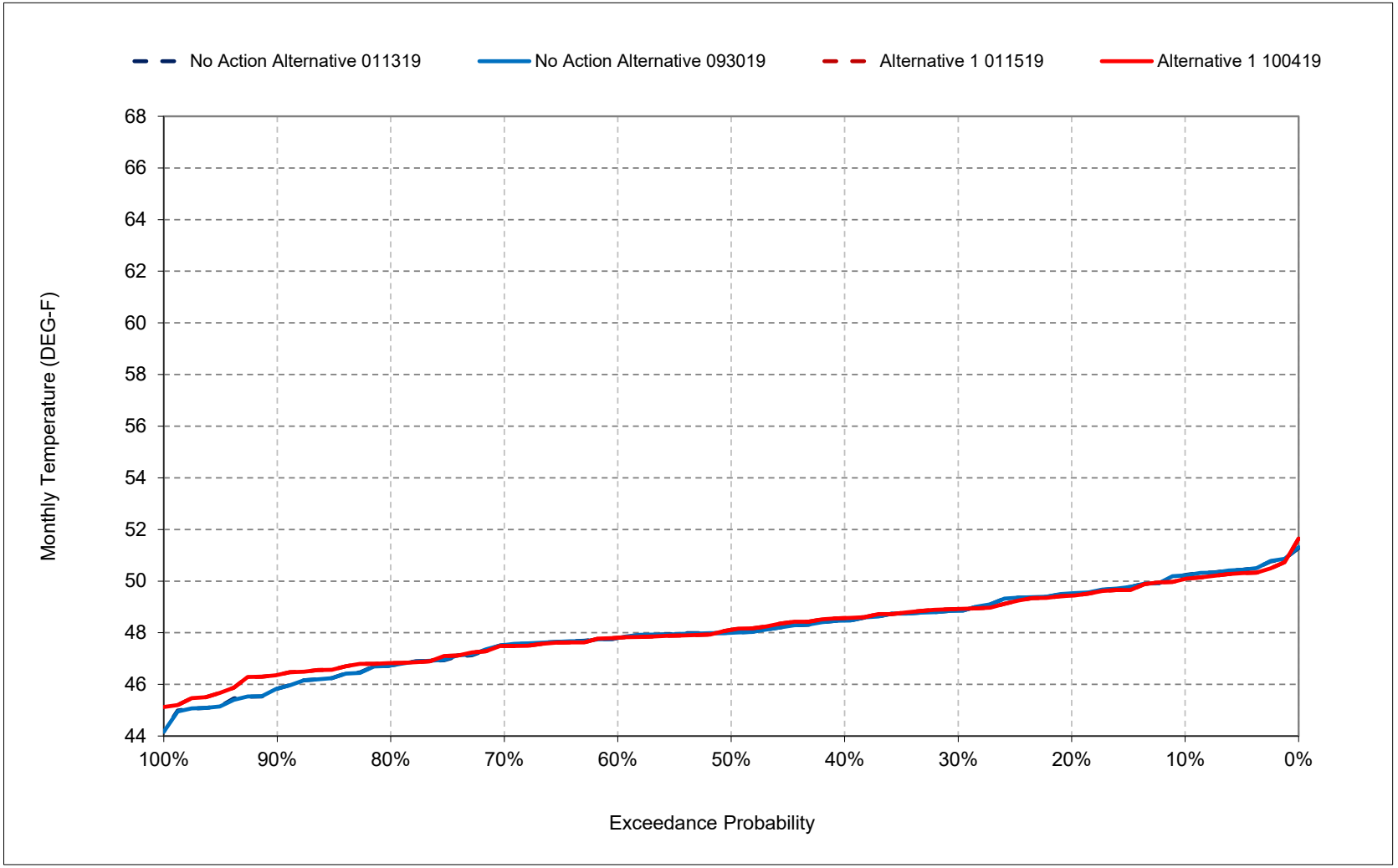
**Figure 21-10. Stanislaus River below Tulloch Reservoir, January**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

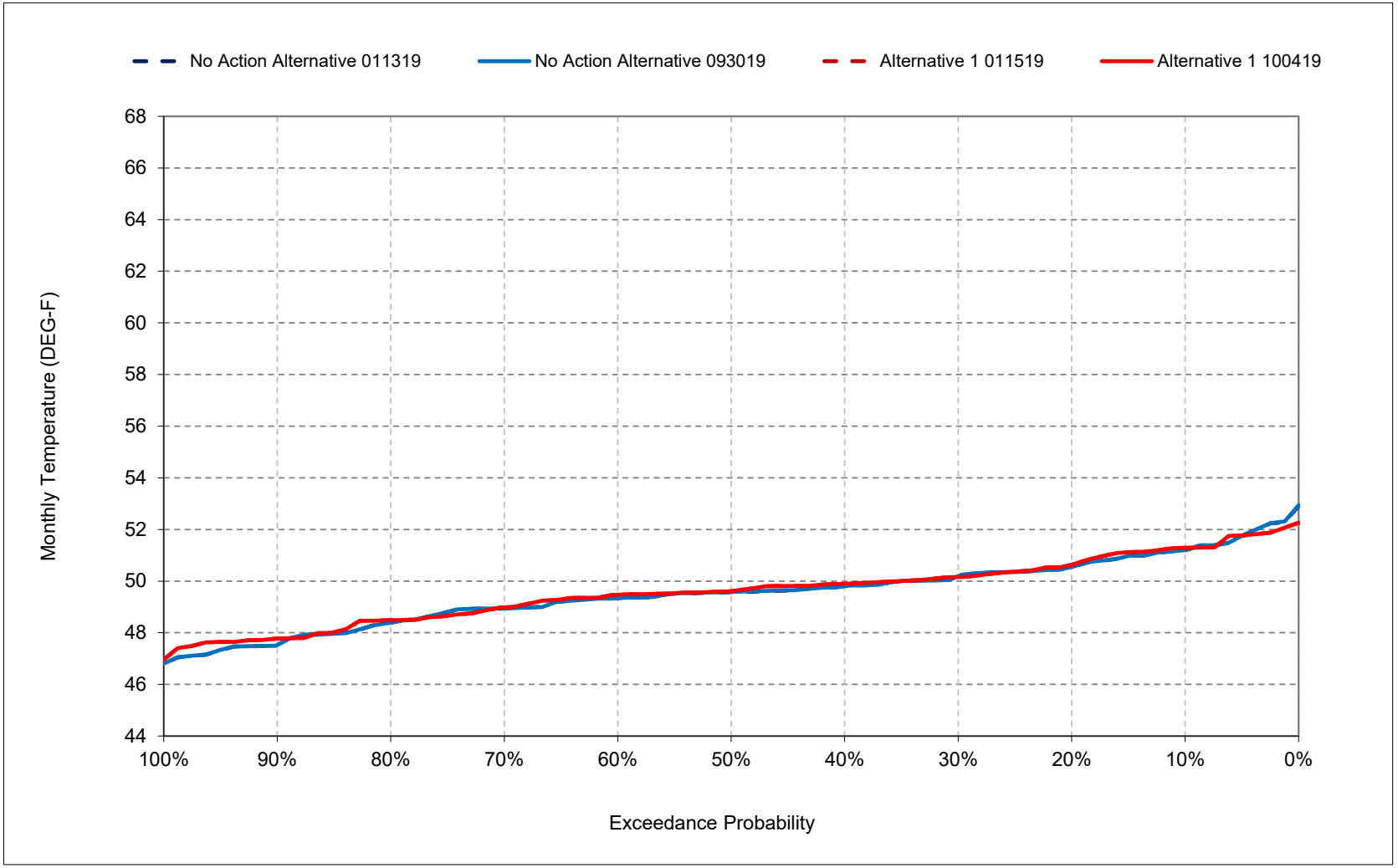
**Figure 21-11. Stanislaus River below Tulloch Reservoir, February**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

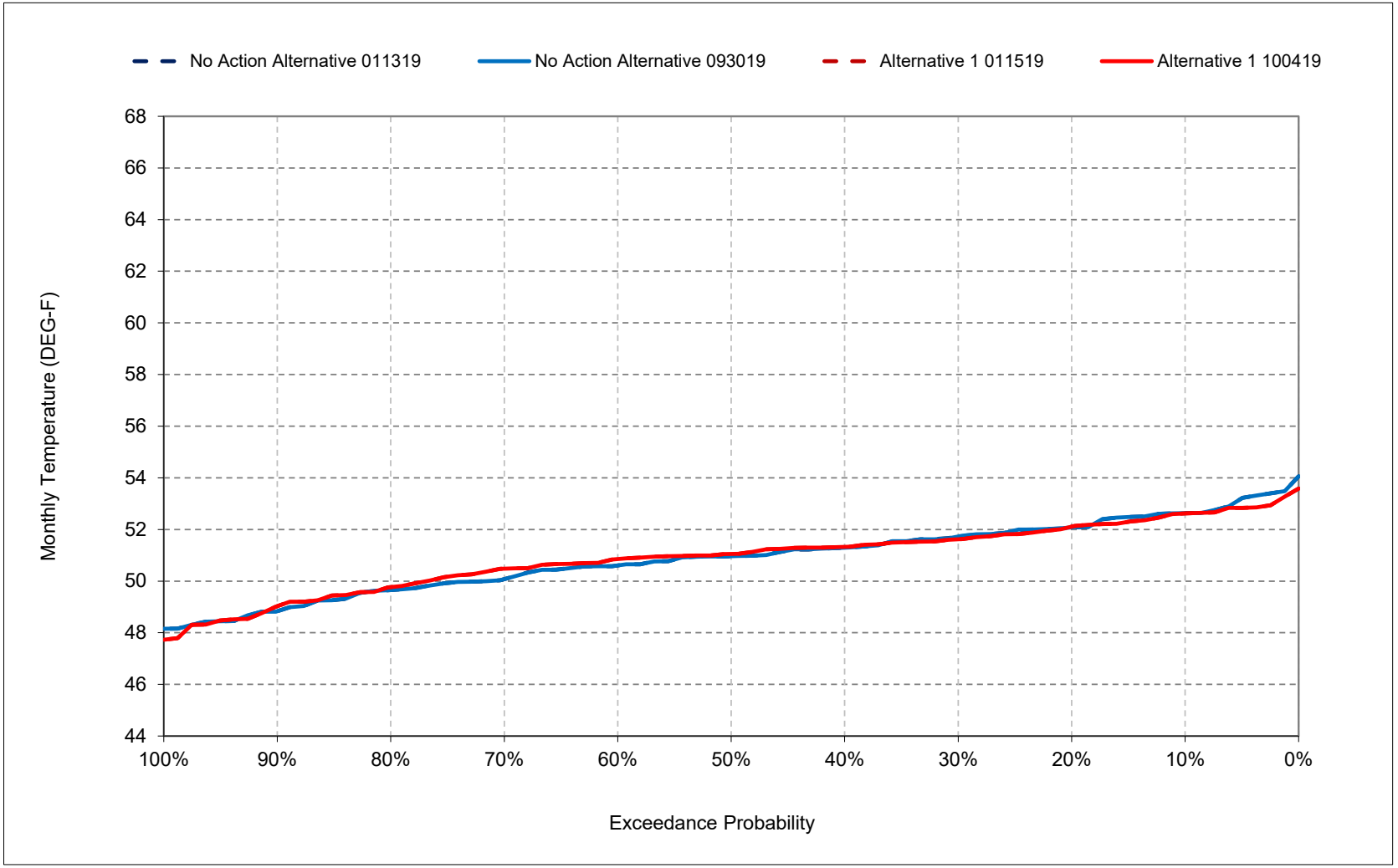
**Figure 21-12. Stanislaus River below Tulloch Reservoir, March**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

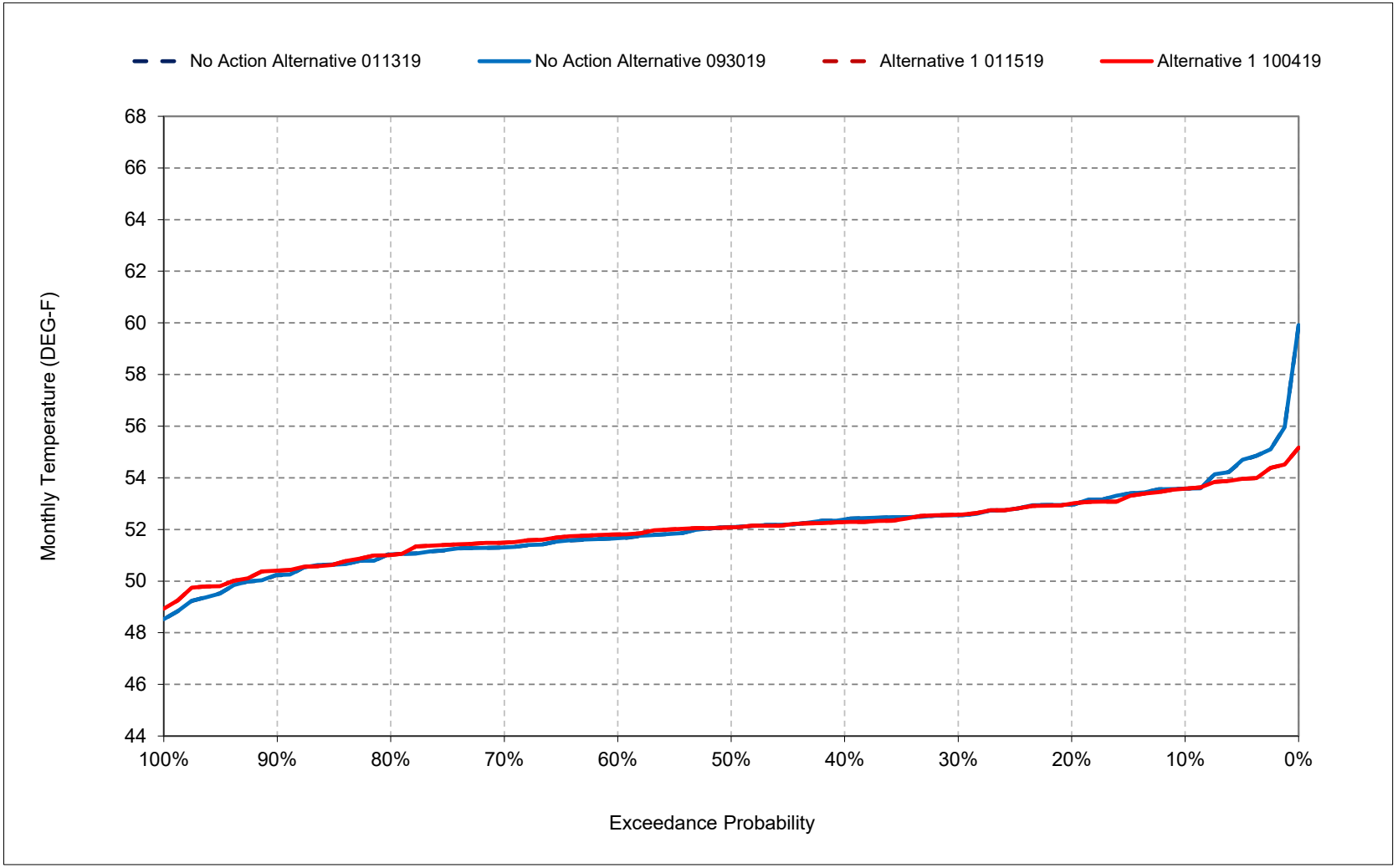
**Figure 21-13. Stanislaus River below Tulloch Reservoir, April**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

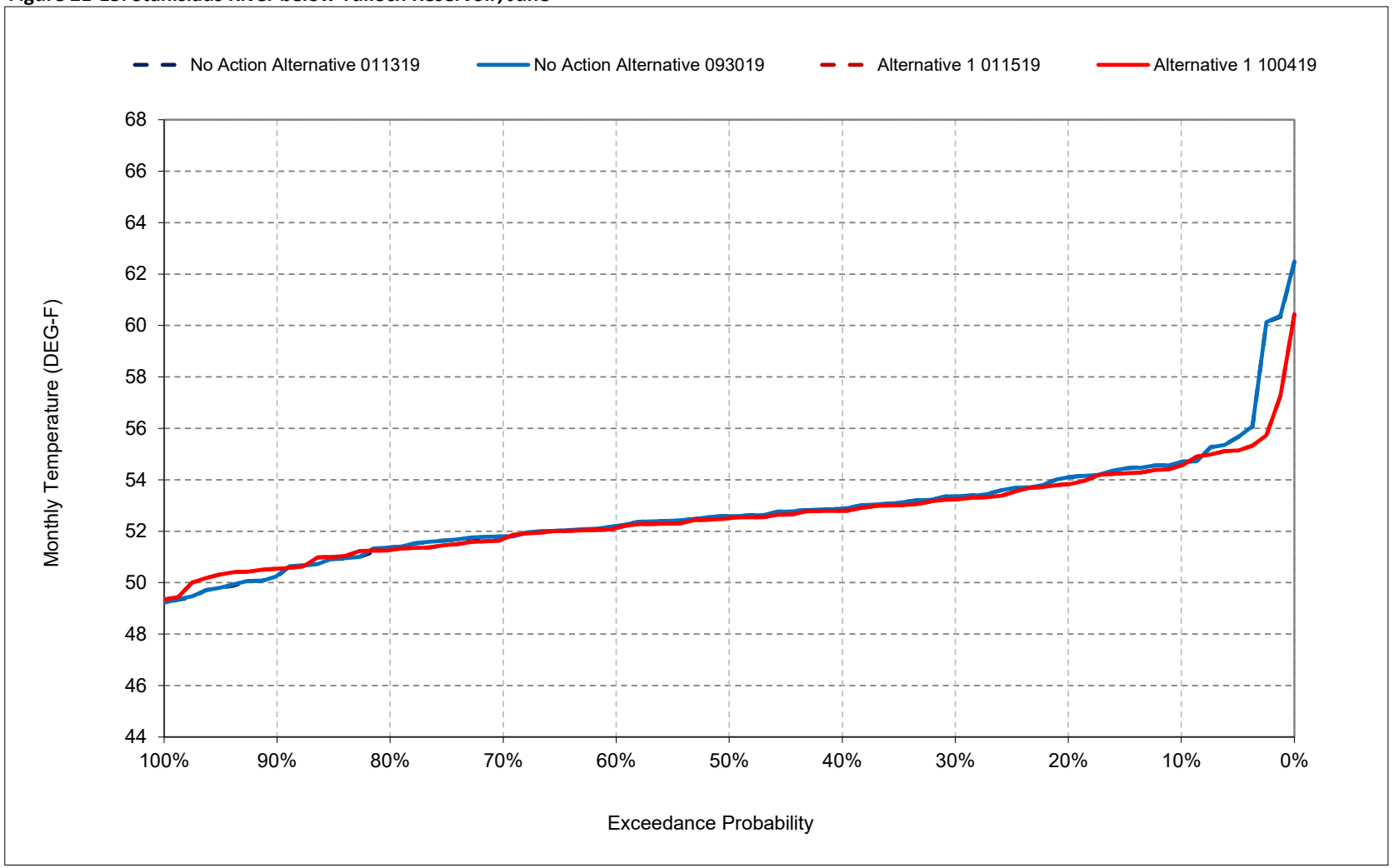
**Figure 21-14. Stanislaus River below Tulloch Reservoir, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

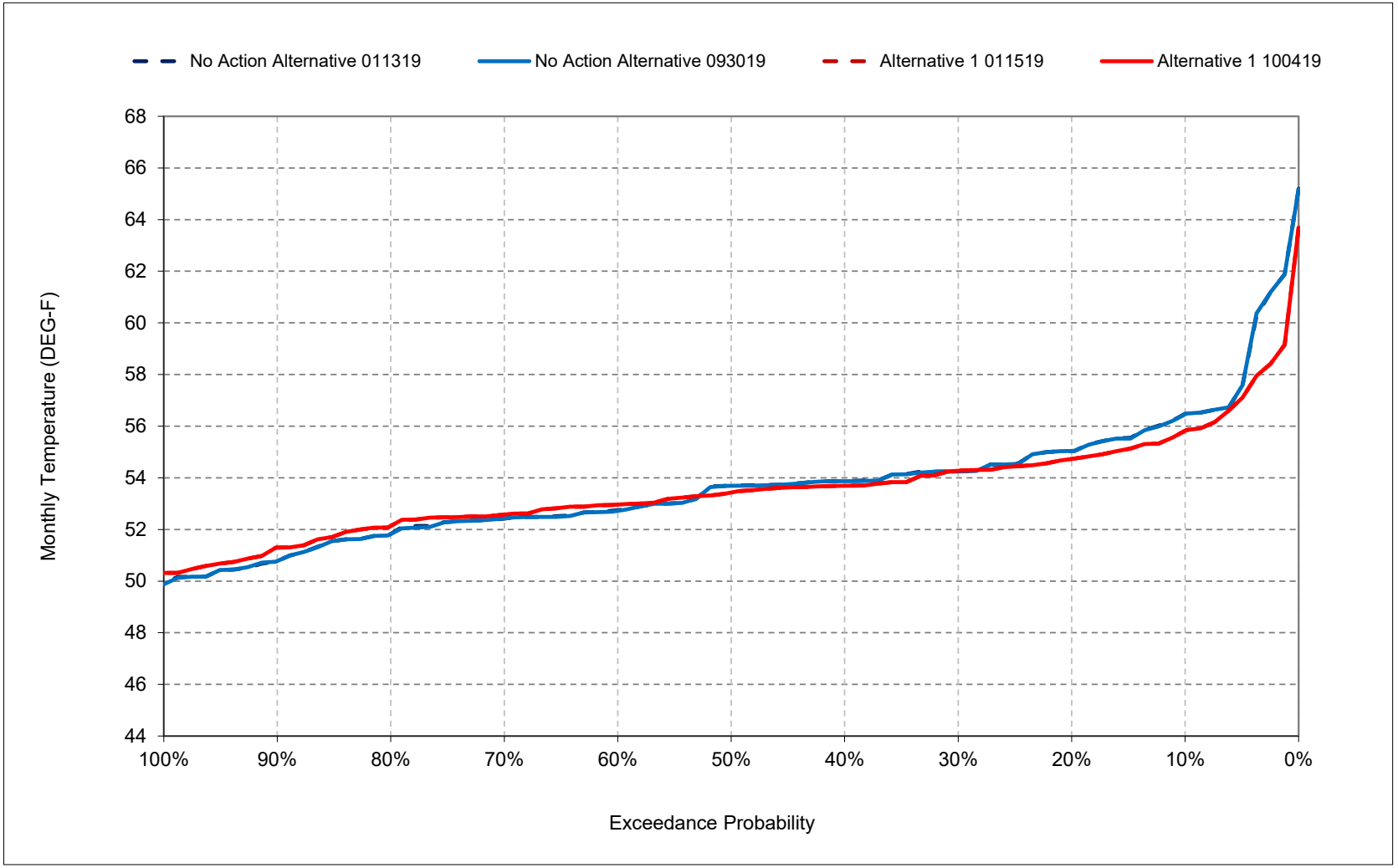
**Figure 21-15. Stanislaus River below Tulloch Reservoir, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

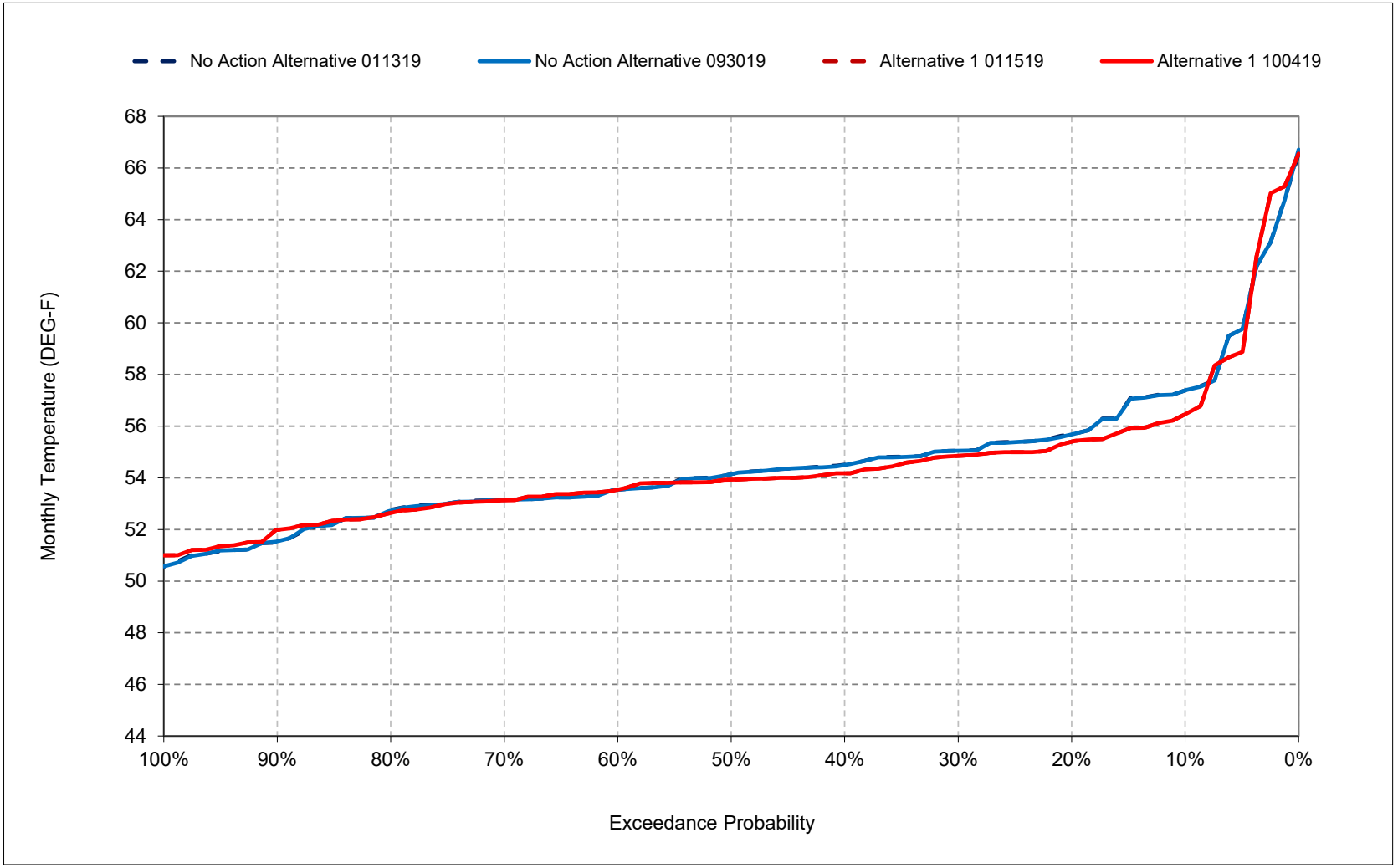
**Figure 21-16. Stanislaus River below Tulloch Reservoir, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

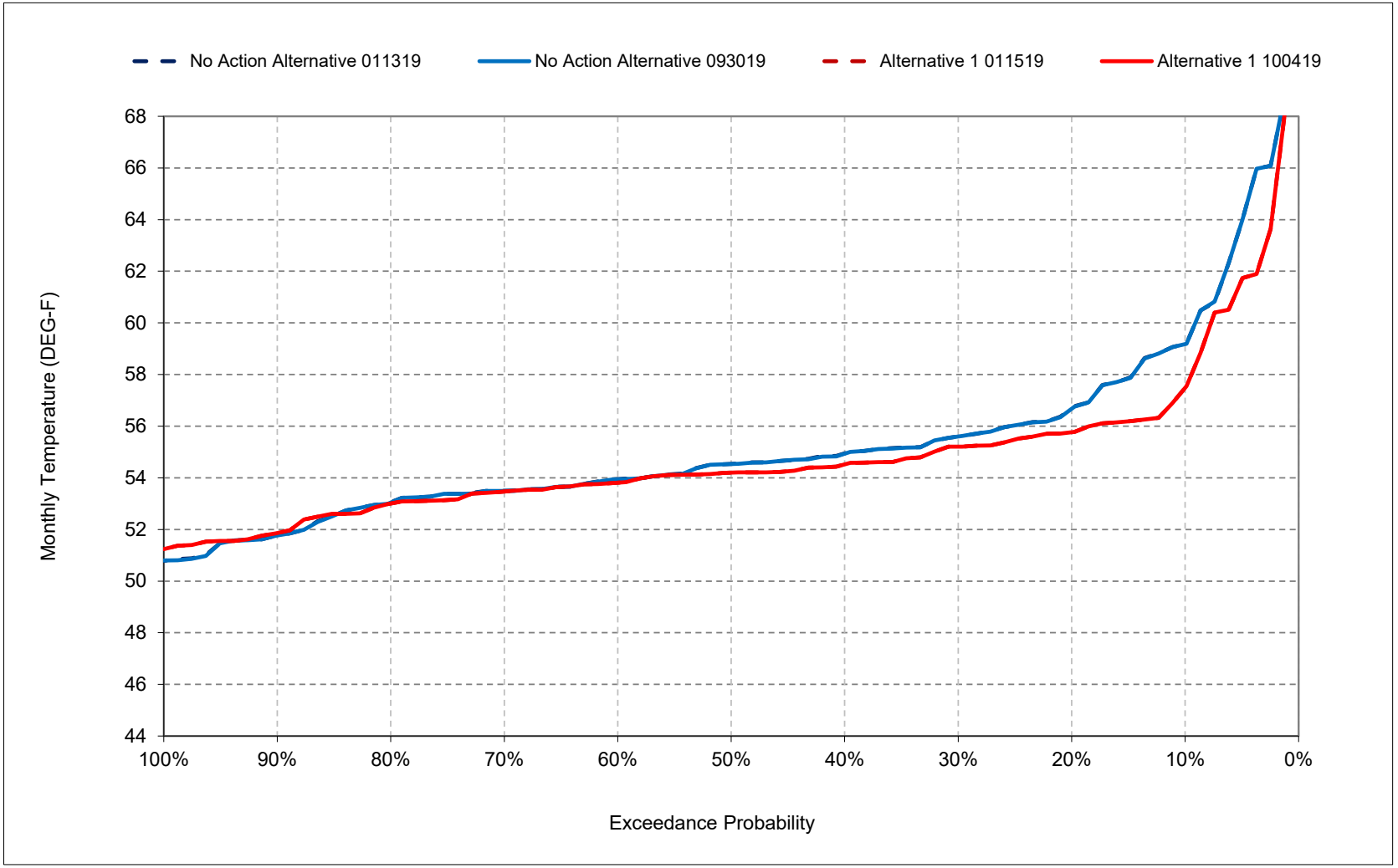
**Figure 21-17. Stanislaus River below Tulloch Reservoir, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

**Figure 21-18. Stanislaus River below Tulloch Reservoir, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Table 22-1. Stanislaus River below Goodwin Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 59.2 | 54.6 | 51.1 | 50.8 | 51.9 | 53.1 | 54.1 | 55.6 | 57.6 | 58.3 | 60.1 |
| 20% | 58.0 | 56.5 | 53.3 | 50.3 | 50.2 | 51.4 | 52.4 | 53.6 | 54.8 | 55.9 | 56.5 | 57.4 |
| 30% | 56.1 | 55.5 | 52.5 | 49.7 | 49.5 | 50.8 | 52.1 | 53.0 | 54.0 | 55.2 | 55.8 | 56.4 |
| 40% | 55.5 | 54.8 | 51.9 | 49.3 | 48.9 | 50.6 | 51.7 | 52.8 | 53.7 | 54.6 | 55.2 | 55.7 |
| 50% | 55.0 | 54.2 | 51.6 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.3 | 54.4 | 54.8 | 55.3 |
| 60% | 54.5 | 54.0 | 51.2 | 48.4 | 48.4 | 50.0 | 51.0 | 52.1 | 52.7 | 53.5 | 54.2 | 54.6 |
| 70% | 54.0 | 53.5 | 51.0 | 48.0 | 47.9 | 49.8 | 50.6 | 51.8 | 52.5 | 53.2 | 53.9 | 54.2 |
| 80% | 53.5 | 52.9 | 50.4 | 47.3 | 47.4 | 49.0 | 50.1 | 51.5 | 52.0 | 52.6 | 53.3 | 53.7 |
| 90% | 52.4 | 52.1 | 49.8 | 46.4 | 46.7 | 48.3 | 49.2 | 50.6 | 50.8 | 51.5 | 52.2 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.9 | 51.8 | 48.7 | 48.7 | 50.2 | 51.3 | 52.5 | 53.5 | 54.6 | 55.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.9 | 52.4 | 50.6 | 47.9 | 47.7 | 49.2 | 50.0 | 51.3 | 51.6 | 52.2 | 52.8 | 53.0 |
| Above Normal (24%) | 55.2 | 54.5 | 51.7 | 48.4 | 48.0 | 49.6 | 50.6 | 51.9 | 52.5 | 53.5 | 54.5 | 55.2 |
| Below Normal (10%) | 54.9 | 54.2 | 51.5 | 48.4 | 48.7 | 50.0 | 51.3 | 52.1 | 52.9 | 54.1 | 54.7 | 55.1 |
| Dry (16%) | 56.7 | 55.6 | 52.2 | 49.2 | 49.2 | 50.9 | 51.9 | 52.8 | 53.9 | 55.1 | 56.0 | 56.7 |
| Critical (27%) | 59.4 | 57.3 | 52.9 | 49.7 | 49.9 | 51.5 | 52.7 | 54.3 | 56.0 | 57.5 | 58.2 | 59.5 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.8 | 57.1 | 53.7 | 50.7 | 50.6 | 52.0 | 53.0 | 54.3 | 55.6 | 57.0 | 57.5 | 58.1 |
| 20% | 56.4 | 55.7 | 53.1 | 50.2 | 50.1 | 51.4 | 52.5 | 53.5 | 54.8 | 55.7 | 56.3 | 56.7 |
| 30% | 55.6 | 54.7 | 52.5 | 49.5 | 49.4 | 50.9 | 52.1 | 53.1 | 54.1 | 55.1 | 55.5 | 56.1 |
| 40% | 55.0 | 54.3 | 51.8 | 49.1 | 49.1 | 50.6 | 51.8 | 52.9 | 53.7 | 54.7 | 55.0 | 55.3 |
| 50% | 54.7 | 53.9 | 51.4 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.2 | 54.2 | 54.7 | 55.0 |
| 60% | 54.3 | 53.7 | 51.2 | 48.4 | 48.4 | 50.0 | 51.2 | 52.2 | 52.7 | 53.7 | 54.3 | 54.6 |
| 70% | 53.9 | 53.3 | 50.8 | 48.0 | 47.9 | 49.8 | 50.8 | 52.0 | 52.4 | 53.3 | 53.8 | 54.2 |
| 80% | 53.4 | 52.8 | 50.3 | 47.4 | 47.5 | 49.0 | 50.1 | 51.5 | 51.9 | 53.0 | 53.3 | 53.7 |
| 90% | 52.3 | 52.2 | 49.5 | 46.9 | 47.0 | 48.5 | 49.4 | 50.8 | 51.1 | 51.8 | 52.5 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.3 | 54.4 | 51.7 | 48.7 | 48.8 | 50.3 | 51.3 | 52.5 | 53.4 | 54.4 | 55.2 | 55.6 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 53.0 | 52.6 | 50.7 | 47.9 | 47.9 | 49.1 | 50.0 | 51.4 | 51.7 | 52.4 | 53.0 | 53.2 |
| Above Normal (24%) | 55.4 | 54.3 | 51.6 | 48.5 | 48.2 | 49.7 | 50.6 | 51.9 | 52.5 | 53.8 | 54.7 | 55.5 |
| Below Normal (10%) | 54.4 | 53.8 | 51.3 | 48.5 | 48.7 | 50.1 | 51.6 | 52.2 | 52.9 | 54.0 | 54.5 | 54.7 |
| Dry (16%) | 55.6 | 54.7 | 51.9 | 49.0 | 49.1 | 50.9 | 51.9 | 52.8 | 53.9 | 54.8 | 55.3 | 55.8 |
| Critical (27%) | 57.4 | 56.3 | 52.7 | 49.6 | 49.8 | 51.6 | 52.7 | 54.0 | 55.6 | 56.7 | 57.8 | 58.1 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -1.9 | -2.0 | -0.9 | -0.4 | -0.2 | **0.1** | -0.1 | **0.2** | **0.0** | -0.6 | -0.8 | -2.0 |
| 20% | -1.6 | -0.8 | -0.2 | 0.0 | -0.1 | **0.0** | **0.1** | -0.1 | -0.1 | -0.1 | -0.2 | -0.7 |
| 30% | -0.5 | -0.8 | **0.0** | -0.1 | -0.1 | **0.1** | 0.0 | **0.0** | **0.1** | 0.0 | -0.3 | -0.3 |
| 40% | -0.5 | -0.4 | -0.1 | -0.2 | **0.1** | **0.0** | **0.1** | **0.1** | **0.1** | **0.0** | -0.3 | -0.4 |
| 50% | -0.3 | -0.3 | -0.1 | **0.1** | -0.1 | **0.0** | **0.0** | **0.0** | -0.1 | -0.2 | -0.1 | -0.3 |
| 60% | -0.2 | -0.3 | -0.1 | **0.0** | 0.0 | 0.0 | **0.2** | **0.2** | 0.0 | **0.2** | **0.0** | 0.0 |
| 70% | -0.1 | -0.1 | -0.2 | **0.0** | -0.1 | **0.0** | **0.2** | **0.1** | -0.1 | **0.1** | 0.0 | 0.0 |
| 80% | -0.1 | -0.1 | 0.0 | **0.1** | **0.1** | -0.1 | -0.1 | 0.0 | -0.1 | **0.4** | -0.1 | 0.0 |
| 90% | -0.1 | **0.1** | -0.2 | **0.4** | **0.4** | **0.2** | **0.2** | **0.2** | **0.3** | **0.3** | **0.3** | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.5 | -0.2 | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | -0.1 | -0.1 | -0.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | **0.2** | **0.2** | **0.1** | 0.0 | **0.2** | -0.1 | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.2** |
| Above Normal (24%) | **0.2** | -0.2 | -0.1 | **0.1** | **0.2** | **0.1** | **0.0** | **0.1** | 0.0 | **0.4** | **0.3** | **0.3** |
| Below Normal (10%) | -0.4 | -0.4 | -0.2 | **0.0** | 0.0 | **0.1** | **0.3** | **0.1** | **0.0** | -0.1 | -0.2 | -0.4 |
| Dry (16%) | -1.1 | -0.9 | -0.3 | -0.2 | -0.1 | **0.0** | 0.0 | **0.0** | 0.0 | -0.3 | -0.7 | -0.9 |
| Critical (27%) | -2.0 | -1.0 | -0.3 | -0.1 | 0.0 | **0.1** | 0.0 | -0.3 | -0.5 | -0.7 | -0.4 | -1.4 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 22-2. Stanislaus River below Goodwin Dam, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 59.2 | 54.6 | 51.1 | 50.8 | 51.9 | 53.1 | 54.1 | 55.6 | 57.6 | 58.3 | 60.1 |
| 20% | 57.9 | 56.5 | 53.3 | 50.2 | 50.2 | 51.4 | 52.4 | 53.6 | 54.8 | 55.9 | 56.5 | 57.4 |
| 30% | 56.1 | 55.5 | 52.5 | 49.7 | 49.5 | 50.8 | 52.1 | 53.0 | 54.0 | 55.1 | 55.8 | 56.3 |
| 40% | 55.5 | 54.8 | 51.9 | 49.3 | 48.9 | 50.6 | 51.7 | 52.8 | 53.7 | 54.6 | 55.2 | 55.7 |
| 50% | 55.0 | 54.2 | 51.6 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.3 | 54.4 | 54.8 | 55.3 |
| 60% | 54.5 | 54.0 | 51.2 | 48.4 | 48.4 | 50.0 | 51.0 | 52.1 | 52.7 | 53.5 | 54.2 | 54.6 |
| 70% | 54.0 | 53.5 | 51.0 | 47.9 | 48.0 | 49.8 | 50.6 | 51.8 | 52.5 | 53.2 | 53.9 | 54.2 |
| 80% | 53.5 | 52.9 | 50.3 | 47.3 | 47.4 | 49.0 | 50.1 | 51.5 | 52.0 | 52.6 | 53.3 | 53.7 |
| 90% | 52.4 | 52.1 | 49.7 | 46.4 | 46.7 | 48.3 | 49.2 | 50.6 | 50.8 | 51.5 | 52.2 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.9 | 51.8 | 48.7 | 48.7 | 50.2 | 51.3 | 52.5 | 53.5 | 54.6 | 55.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.9 | 52.4 | 50.6 | 47.9 | 47.7 | 49.2 | 50.0 | 51.3 | 51.6 | 52.2 | 52.8 | 53.0 |
| Above Normal (24%) | 55.2 | 54.5 | 51.7 | 48.4 | 48.0 | 49.6 | 50.6 | 51.9 | 52.5 | 53.4 | 54.4 | 55.2 |
| Below Normal (10%) | 54.8 | 54.2 | 51.5 | 48.4 | 48.7 | 50.0 | 51.3 | 52.1 | 52.9 | 54.1 | 54.7 | 55.1 |
| Dry (16%) | 56.7 | 55.6 | 52.2 | 49.2 | 49.2 | 50.9 | 51.9 | 52.8 | 53.9 | 55.1 | 56.0 | 56.7 |
| Critical (27%) | 59.4 | 57.3 | 52.9 | 49.7 | 49.9 | 51.5 | 52.7 | 54.3 | 56.0 | 57.5 | 58.2 | 59.5 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 58.8 | 57.1 | 53.7 | 50.7 | 50.6 | 52.0 | 53.0 | 54.3 | 55.6 | 57.0 | 57.5 | 58.1 |
| 20% | 56.4 | 55.7 | 53.1 | 50.2 | 50.1 | 51.4 | 52.5 | 53.5 | 54.8 | 55.7 | 56.3 | 56.7 |
| 30% | 55.6 | 54.7 | 52.5 | 49.5 | 49.4 | 50.9 | 52.1 | 53.1 | 54.1 | 55.1 | 55.5 | 56.1 |
| 40% | 55.0 | 54.3 | 51.8 | 49.1 | 49.1 | 50.6 | 51.8 | 52.9 | 53.7 | 54.7 | 55.0 | 55.3 |
| 50% | 54.7 | 53.9 | 51.4 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.2 | 54.2 | 54.7 | 55.0 |
| 60% | 54.3 | 53.7 | 51.2 | 48.4 | 48.4 | 50.0 | 51.2 | 52.2 | 52.7 | 53.7 | 54.3 | 54.6 |
| 70% | 53.9 | 53.3 | 50.8 | 48.0 | 47.9 | 49.8 | 50.8 | 52.0 | 52.4 | 53.3 | 53.8 | 54.2 |
| 80% | 53.4 | 52.8 | 50.3 | 47.4 | 47.5 | 49.0 | 50.1 | 51.5 | 51.9 | 53.0 | 53.3 | 53.7 |
| 90% | 52.3 | 52.2 | 49.5 | 46.9 | 47.0 | 48.5 | 49.4 | 50.8 | 51.1 | 51.8 | 52.5 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 55.3 | 54.4 | 51.7 | 48.7 | 48.8 | 50.3 | 51.3 | 52.5 | 53.4 | 54.4 | 55.2 | 55.6 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 53.0 | 52.6 | 50.7 | 47.9 | 47.9 | 49.1 | 50.0 | 51.4 | 51.7 | 52.4 | 53.0 | 53.2 |
| Above Normal (24%) | 55.4 | 54.3 | 51.6 | 48.5 | 48.2 | 49.7 | 50.6 | 51.9 | 52.5 | 53.8 | 54.7 | 55.5 |
| Below Normal (10%) | 54.4 | 53.8 | 51.3 | 48.5 | 48.7 | 50.1 | 51.6 | 52.2 | 52.9 | 54.0 | 54.5 | 54.7 |
| Dry (16%) | 55.6 | 54.7 | 51.9 | 49.0 | 49.1 | 50.9 | 51.9 | 52.8 | 53.9 | 54.8 | 55.3 | 55.8 |
| Critical (27%) | 57.4 | 56.3 | 52.7 | 49.6 | 49.8 | 51.6 | 52.7 | 54.0 | 55.6 | 56.7 | 57.8 | 58.1 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -1.9 | -2.0 | -0.9 | -0.4 | -0.2 | **0.1** | -0.1 | **0.2** | **0.0** | -0.6 | -0.8 | -2.0 |
| 20% | -1.6 | -0.8 | -0.2 | 0.0 | -0.1 | **0.0** | **0.1** | -0.1 | -0.1 | -0.1 | -0.2 | -0.7 |
| 30% | -0.5 | -0.8 | **0.0** | -0.1 | -0.1 | **0.1** | 0.0 | **0.0** | **0.1** | 0.0 | -0.3 | -0.3 |
| 40% | -0.5 | -0.4 | -0.1 | -0.2 | **0.1** | **0.0** | **0.1** | **0.1** | **0.1** | **0.0** | -0.3 | -0.4 |
| 50% | -0.3 | -0.3 | -0.1 | **0.1** | -0.1 | **0.0** | **0.0** | 0.0 | -0.1 | -0.2 | -0.1 | -0.3 |
| 60% | -0.2 | -0.3 | -0.1 | **0.0** | 0.0 | 0.0 | **0.2** | **0.2** | 0.0 | **0.3** | **0.0** | 0.0 |
| 70% | -0.1 | -0.1 | -0.2 | **0.1** | -0.1 | **0.0** | **0.2** | **0.1** | -0.1 | **0.1** | 0.0 | 0.0 |
| 80% | -0.1 | -0.1 | 0.0 | **0.1** | **0.1** | 0.0 | -0.1 | 0.0 | -0.1 | **0.4** | 0.0 | 0.0 |
| 90% | -0.1 | **0.1** | -0.2 | **0.5** | **0.4** | **0.2** | **0.2** | **0.2** | **0.2** | **0.3** | **0.3** | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.7 | -0.4 | -0.1 | 0.0 | **0.1** | **0.0** | **0.0** | 0.0 | -0.1 | -0.1 | -0.1 | -0.4 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | **0.2** | **0.2** | **0.1** | 0.0 | **0.2** | -0.1 | **0.0** | **0.1** | **0.1** | **0.1** | **0.1** | **0.2** |
| Above Normal (24%) | **0.2** | -0.2 | -0.1 | **0.1** | **0.2** | **0.1** | **0.0** | **0.1** | 0.0 | **0.4** | **0.3** | **0.3** |
| Below Normal (10%) | -0.4 | -0.4 | -0.2 | **0.0** | 0.0 | **0.1** | **0.3** | **0.1** | **0.1** | -0.1 | -0.2 | -0.4 |
| Dry (16%) | -1.1 | -0.9 | -0.3 | -0.2 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | -0.3 | -0.7 | -0.9 |
| Critical (27%) | -2.0 | -1.0 | -0.3 | -0.1 | 0.0 | **0.1** | 0.0 | -0.3 | -0.5 | -0.7 | -0.4 | -1.4 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 22-3. Stanislaus River below Goodwin Dam, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 59.2 | 54.6 | 51.1 | 50.8 | 51.9 | 53.1 | 54.1 | 55.6 | 57.6 | 58.3 | 60.1 |
| 20% | 58.0 | 56.5 | 53.3 | 50.3 | 50.2 | 51.4 | 52.4 | 53.6 | 54.8 | 55.9 | 56.5 | 57.4 |
| 30% | 56.1 | 55.5 | 52.5 | 49.7 | 49.5 | 50.8 | 52.1 | 53.0 | 54.0 | 55.2 | 55.8 | 56.4 |
| 40% | 55.5 | 54.8 | 51.9 | 49.3 | 48.9 | 50.6 | 51.7 | 52.8 | 53.7 | 54.6 | 55.2 | 55.7 |
| 50% | 55.0 | 54.2 | 51.6 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.3 | 54.4 | 54.8 | 55.3 |
| 60% | 54.5 | 54.0 | 51.2 | 48.4 | 48.4 | 50.0 | 51.0 | 52.1 | 52.7 | 53.5 | 54.2 | 54.6 |
| 70% | 54.0 | 53.5 | 51.0 | 48.0 | 47.9 | 49.8 | 50.6 | 51.8 | 52.5 | 53.2 | 53.9 | 54.2 |
| 80% | 53.5 | 52.9 | 50.4 | 47.3 | 47.4 | 49.0 | 50.1 | 51.5 | 52.0 | 52.6 | 53.3 | 53.7 |
| 90% | 52.4 | 52.1 | 49.8 | 46.4 | 46.7 | 48.3 | 49.2 | 50.6 | 50.8 | 51.5 | 52.2 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.9 | 51.8 | 48.7 | 48.7 | 50.2 | 51.3 | 52.5 | 53.5 | 54.6 | 55.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.9 | 52.4 | 50.6 | 47.9 | 47.7 | 49.2 | 50.0 | 51.3 | 51.6 | 52.2 | 52.8 | 53.0 |
| Above Normal (24%) | 55.2 | 54.5 | 51.7 | 48.4 | 48.0 | 49.6 | 50.6 | 51.9 | 52.5 | 53.5 | 54.5 | 55.2 |
| Below Normal (10%) | 54.9 | 54.2 | 51.5 | 48.4 | 48.7 | 50.0 | 51.3 | 52.1 | 52.9 | 54.1 | 54.7 | 55.1 |
| Dry (16%) | 56.7 | 55.6 | 52.2 | 49.2 | 49.2 | 50.9 | 51.9 | 52.8 | 53.9 | 55.1 | 56.0 | 56.7 |
| Critical (27%) | 59.4 | 57.3 | 52.9 | 49.7 | 49.9 | 51.5 | 52.7 | 54.3 | 56.0 | 57.5 | 58.2 | 59.5 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.7 | 59.2 | 54.6 | 51.1 | 50.8 | 51.9 | 53.1 | 54.1 | 55.6 | 57.6 | 58.3 | 60.1 |
| 20% | 57.9 | 56.5 | 53.3 | 50.2 | 50.2 | 51.4 | 52.4 | 53.6 | 54.8 | 55.9 | 56.5 | 57.4 |
| 30% | 56.1 | 55.5 | 52.5 | 49.7 | 49.5 | 50.8 | 52.1 | 53.0 | 54.0 | 55.1 | 55.8 | 56.3 |
| 40% | 55.5 | 54.8 | 51.9 | 49.3 | 48.9 | 50.6 | 51.7 | 52.8 | 53.7 | 54.6 | 55.2 | 55.7 |
| 50% | 55.0 | 54.2 | 51.6 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.3 | 54.4 | 54.8 | 55.3 |
| 60% | 54.5 | 54.0 | 51.2 | 48.4 | 48.4 | 50.0 | 51.0 | 52.1 | 52.7 | 53.5 | 54.2 | 54.6 |
| 70% | 54.0 | 53.5 | 51.0 | 47.9 | 48.0 | 49.8 | 50.6 | 51.8 | 52.5 | 53.2 | 53.9 | 54.2 |
| 80% | 53.5 | 52.9 | 50.3 | 47.3 | 47.4 | 49.0 | 50.1 | 51.5 | 52.0 | 52.6 | 53.3 | 53.7 |
| 90% | 52.4 | 52.1 | 49.7 | 46.4 | 46.7 | 48.3 | 49.2 | 50.6 | 50.8 | 51.5 | 52.2 | 52.5 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.0 | 54.9 | 51.8 | 48.7 | 48.7 | 50.2 | 51.3 | 52.5 | 53.5 | 54.6 | 55.3 | 56.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 52.9 | 52.4 | 50.6 | 47.9 | 47.7 | 49.2 | 50.0 | 51.3 | 51.6 | 52.2 | 52.8 | 53.0 |
| Above Normal (24%) | 55.2 | 54.5 | 51.7 | 48.4 | 48.0 | 49.6 | 50.6 | 51.9 | 52.5 | 53.4 | 54.4 | 55.2 |
| Below Normal (10%) | 54.8 | 54.2 | 51.5 | 48.4 | 48.7 | 50.0 | 51.3 | 52.1 | 52.9 | 54.1 | 54.7 | 55.1 |
| Dry (16%) | 56.7 | 55.6 | 52.2 | 49.2 | 49.2 | 50.9 | 51.9 | 52.8 | 53.9 | 55.1 | 56.0 | 56.7 |
| Critical (27%) | 59.4 | 57.3 | 52.9 | 49.7 | 49.9 | 51.5 | 52.7 | 54.3 | 56.0 | 57.5 | 58.2 | 59.5 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (24%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dry (16%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Critical (27%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 22-4. Stanislaus River below Goodwin Dam, Monthly Temperature

**Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 58.8 | 57.1 | 53.7 | 50.7 | 50.6 | 52.0 | 53.0 | 54.3 | 55.6 | 57.0 | 57.5 | 58.1 |
| **20%** | 56.4 | 55.7 | 53.1 | 50.2 | 50.1 | 51.4 | 52.5 | 53.5 | 54.8 | 55.7 | 56.3 | 56.7 |
| **30%** | 55.6 | 54.7 | 52.5 | 49.5 | 49.4 | 50.9 | 52.1 | 53.1 | 54.1 | 55.1 | 55.5 | 56.1 |
| **40%** | 55.0 | 54.3 | 51.8 | 49.1 | 49.1 | 50.6 | 51.8 | 52.9 | 53.7 | 54.7 | 55.0 | 55.3 |
| **50%** | 54.7 | 53.9 | 51.4 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.2 | 54.2 | 54.7 | 55.0 |
| **60%** | 54.3 | 53.7 | 51.2 | 48.4 | 48.4 | 50.0 | 51.2 | 52.2 | 52.7 | 53.7 | 54.3 | 54.6 |
| **70%** | 53.9 | 53.3 | 50.8 | 48.0 | 47.9 | 49.8 | 50.8 | 52.0 | 52.4 | 53.3 | 53.8 | 54.2 |
| **80%** | 53.4 | 52.8 | 50.3 | 47.4 | 47.5 | 49.0 | 50.1 | 51.5 | 51.9 | 53.0 | 53.3 | 53.7 |
| **90%** | 52.3 | 52.2 | 49.5 | 46.9 | 47.0 | 48.5 | 49.4 | 50.8 | 51.1 | 51.8 | 52.5 | 52.5 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 55.3 | 54.4 | 51.7 | 48.7 | 48.8 | 50.3 | 51.3 | 52.5 | 53.4 | 54.4 | 55.2 | 55.6 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 53.0 | 52.6 | 50.7 | 47.9 | 47.9 | 49.1 | 50.0 | 51.4 | 51.7 | 52.4 | 53.0 | 53.2 |
| **Above Normal (24%)** | 55.4 | 54.3 | 51.6 | 48.5 | 48.2 | 49.7 | 50.6 | 51.9 | 52.5 | 53.8 | 54.7 | 55.5 |
| **Below Normal (10%)** | 54.4 | 53.8 | 51.3 | 48.5 | 48.7 | 50.1 | 51.6 | 52.2 | 52.9 | 54.0 | 54.5 | 54.7 |
| **Dry (16%)** | 55.6 | 54.7 | 51.9 | 49.0 | 49.1 | 50.9 | 51.9 | 52.8 | 53.9 | 54.8 | 55.3 | 55.8 |
| **Critical (27%)** | 57.4 | 56.3 | 52.7 | 49.6 | 49.8 | 51.6 | 52.7 | 54.0 | 55.6 | 56.7 | 57.8 | 58.1 |

**Alternative 1 100419**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 58.8 | 57.1 | 53.7 | 50.7 | 50.6 | 52.0 | 53.0 | 54.3 | 55.6 | 57.0 | 57.5 | 58.1 |
| **20%** | 56.4 | 55.7 | 53.1 | 50.2 | 50.1 | 51.4 | 52.5 | 53.5 | 54.8 | 55.7 | 56.3 | 56.7 |
| **30%** | 55.6 | 54.7 | 52.5 | 49.5 | 49.4 | 50.9 | 52.1 | 53.1 | 54.1 | 55.1 | 55.5 | 56.1 |
| **40%** | 55.0 | 54.3 | 51.8 | 49.1 | 49.1 | 50.6 | 51.8 | 52.9 | 53.7 | 54.7 | 55.0 | 55.3 |
| **50%** | 54.7 | 53.9 | 51.4 | 48.9 | 48.8 | 50.3 | 51.4 | 52.6 | 53.2 | 54.2 | 54.7 | 55.0 |
| **60%** | 54.3 | 53.7 | 51.2 | 48.4 | 48.4 | 50.0 | 51.2 | 52.2 | 52.7 | 53.7 | 54.3 | 54.6 |
| **70%** | 53.9 | 53.3 | 50.8 | 48.0 | 47.9 | 49.8 | 50.8 | 52.0 | 52.4 | 53.3 | 53.8 | 54.2 |
| **80%** | 53.4 | 52.8 | 50.3 | 47.4 | 47.5 | 49.0 | 50.1 | 51.5 | 51.9 | 53.0 | 53.3 | 53.7 |
| **90%** | 52.3 | 52.2 | 49.5 | 46.9 | 47.0 | 48.5 | 49.4 | 50.8 | 51.1 | 51.8 | 52.5 | 52.5 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 55.3 | 54.4 | 51.7 | 48.7 | 48.8 | 50.3 | 51.3 | 52.5 | 53.4 | 54.4 | 55.2 | 55.6 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 53.0 | 52.6 | 50.7 | 47.9 | 47.9 | 49.1 | 50.0 | 51.4 | 51.7 | 52.4 | 53.0 | 53.2 |
| **Above Normal (24%)** | 55.4 | 54.3 | 51.6 | 48.5 | 48.2 | 49.7 | 50.6 | 51.9 | 52.5 | 53.8 | 54.7 | 55.5 |
| **Below Normal (10%)** | 54.4 | 53.8 | 51.3 | 48.5 | 48.7 | 50.1 | 51.6 | 52.2 | 52.9 | 54.0 | 54.5 | 54.7 |
| **Dry (16%)** | 55.6 | 54.7 | 51.9 | 49.0 | 49.1 | 50.9 | 51.9 | 52.8 | 53.9 | 54.8 | 55.3 | 55.8 |
| **Critical (27%)** | 57.4 | 56.3 | 52.7 | 49.6 | 49.8 | 51.6 | 52.7 | 54.0 | 55.6 | 56.7 | 57.8 | 58.1 |

**Alternative 1 100419 minus Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance**[a] | | | | | | | | | | | | |
| **10%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **20%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **30%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **40%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **50%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **60%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **70%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **80%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **90%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Above Normal (24%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Below Normal (10%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Dry (16%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Critical (27%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

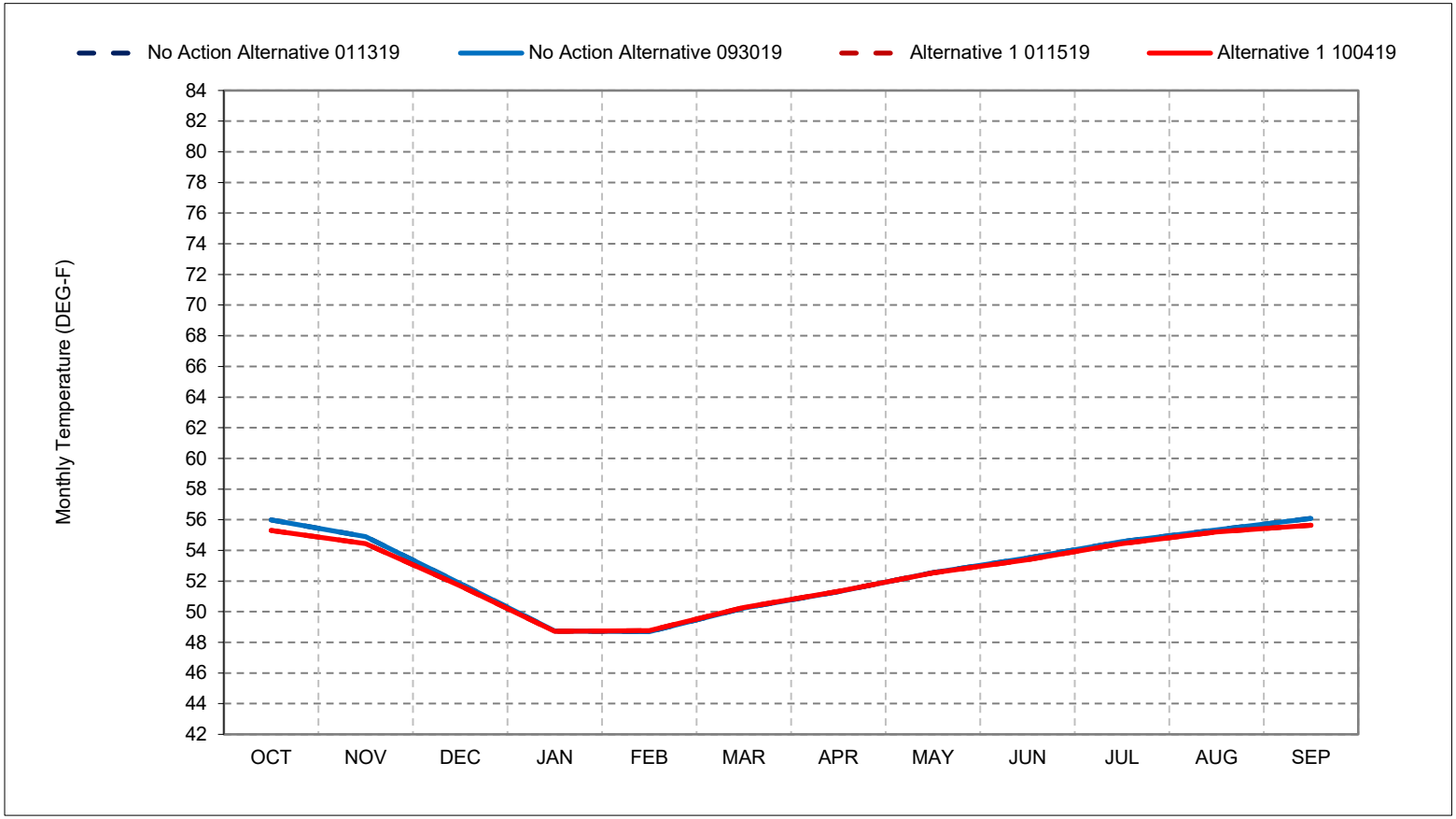
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Figure 22-1. Stanislaus River below Goodwin Dam, Long-Term Average Temperature



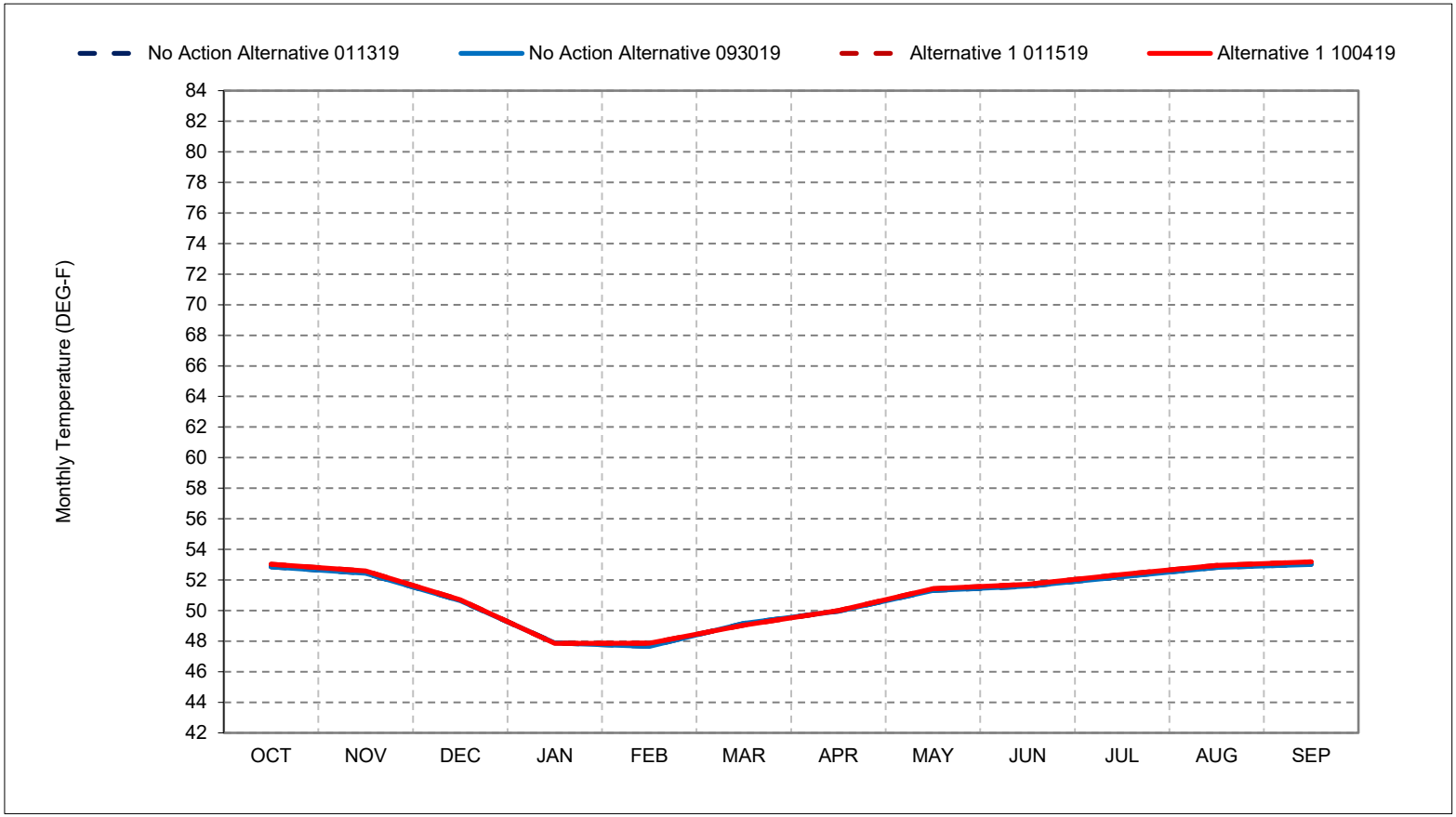

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 22-2. Stanislaus River below Goodwin Dam, Wet Year Average Temperature



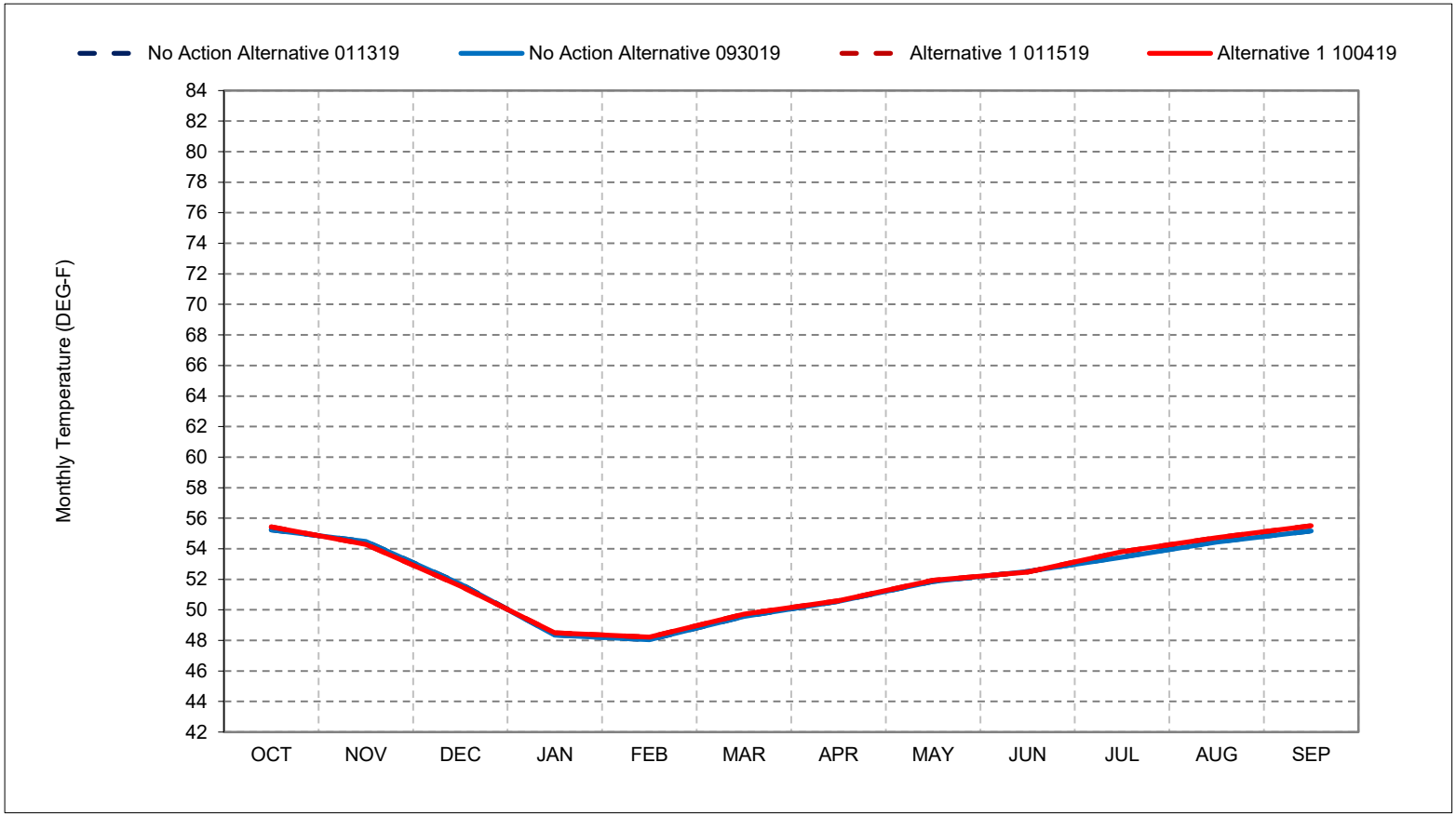

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 22-3. Stanislaus River below Goodwin Dam, Above Normal Year Average Temperature



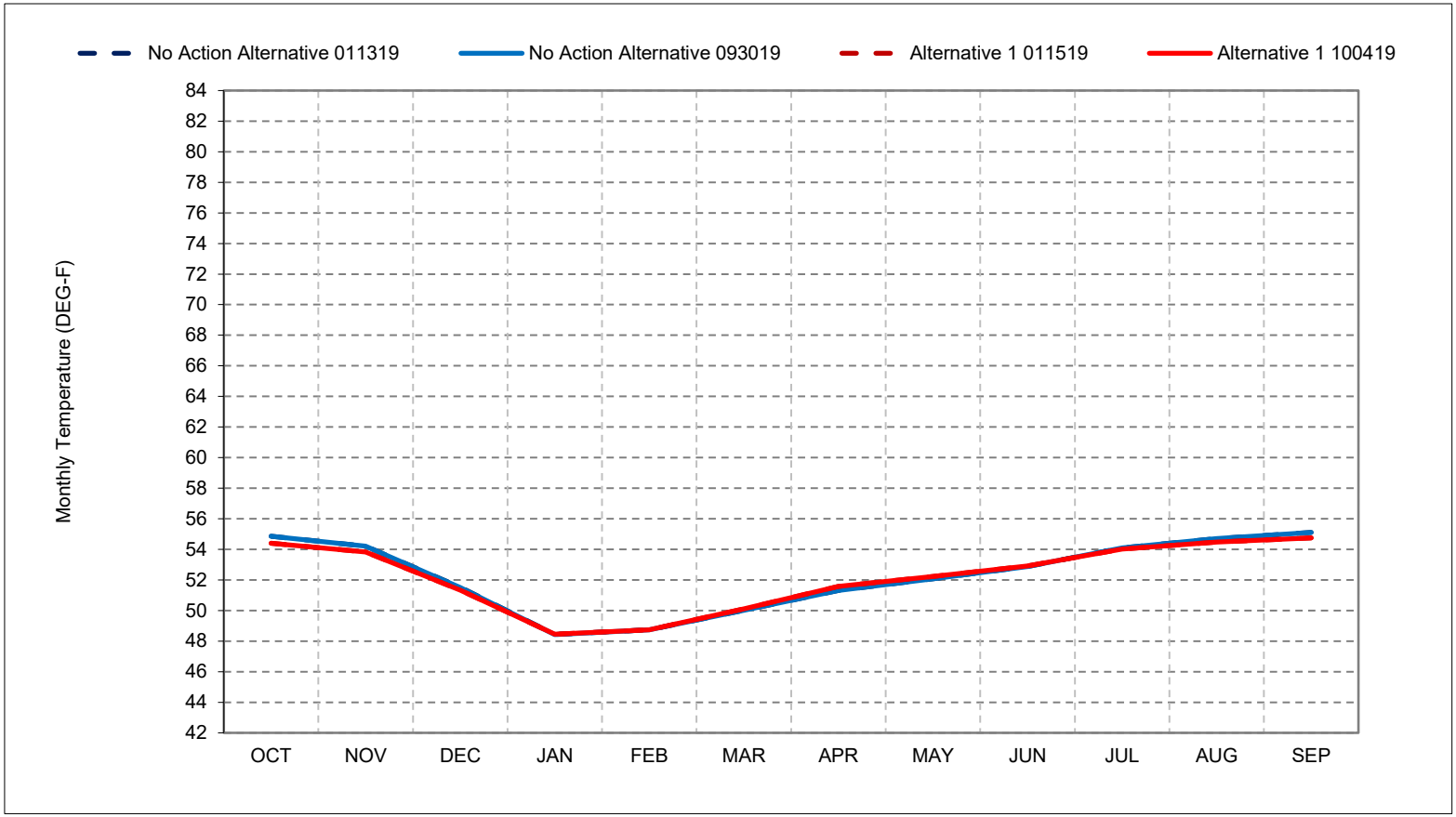

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 22-4. Stanislaus River below Goodwin Dam, Below Normal Year Average Temperature



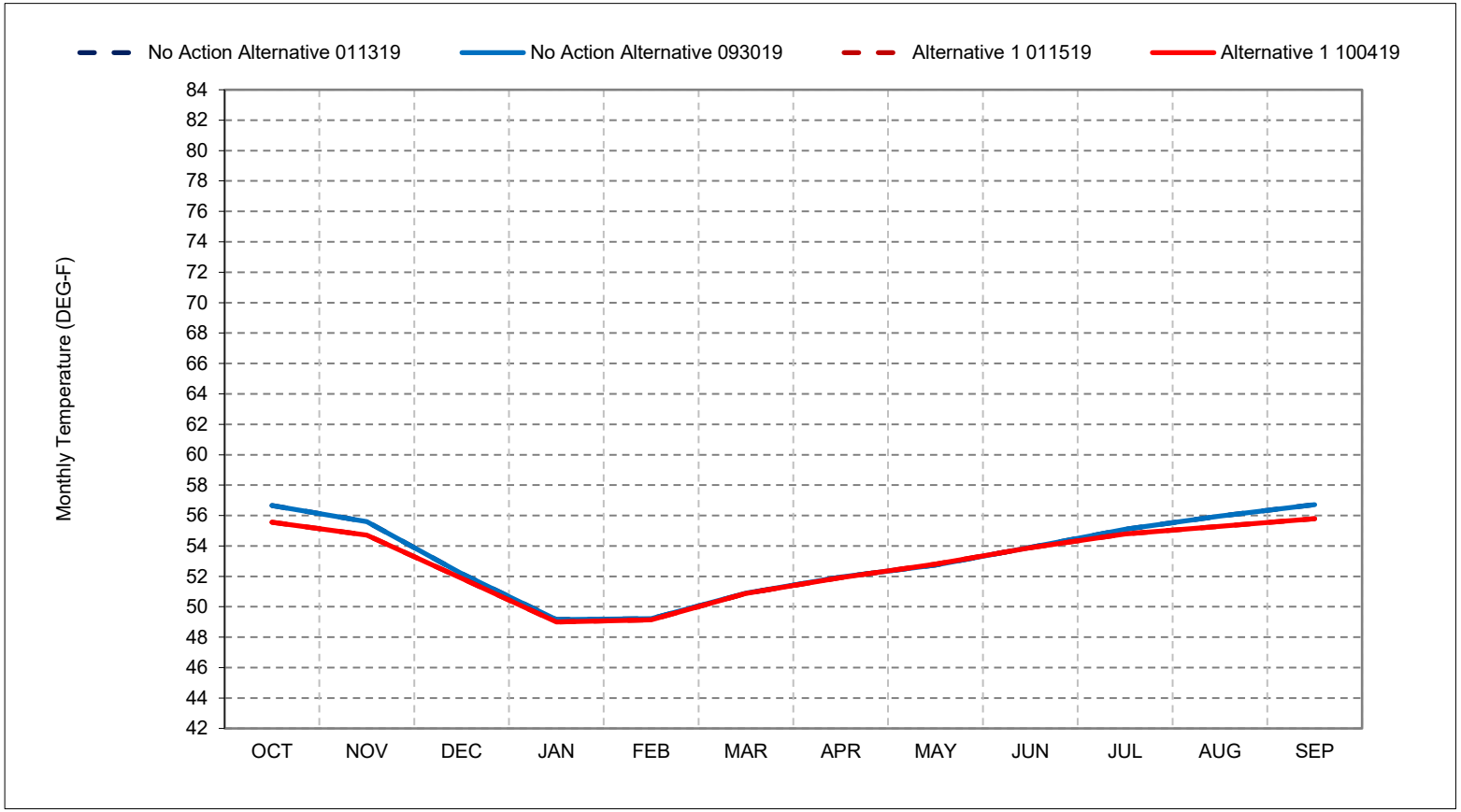

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 22-5. Stanislaus River below Goodwin Dam, Dry Year Average Temperature



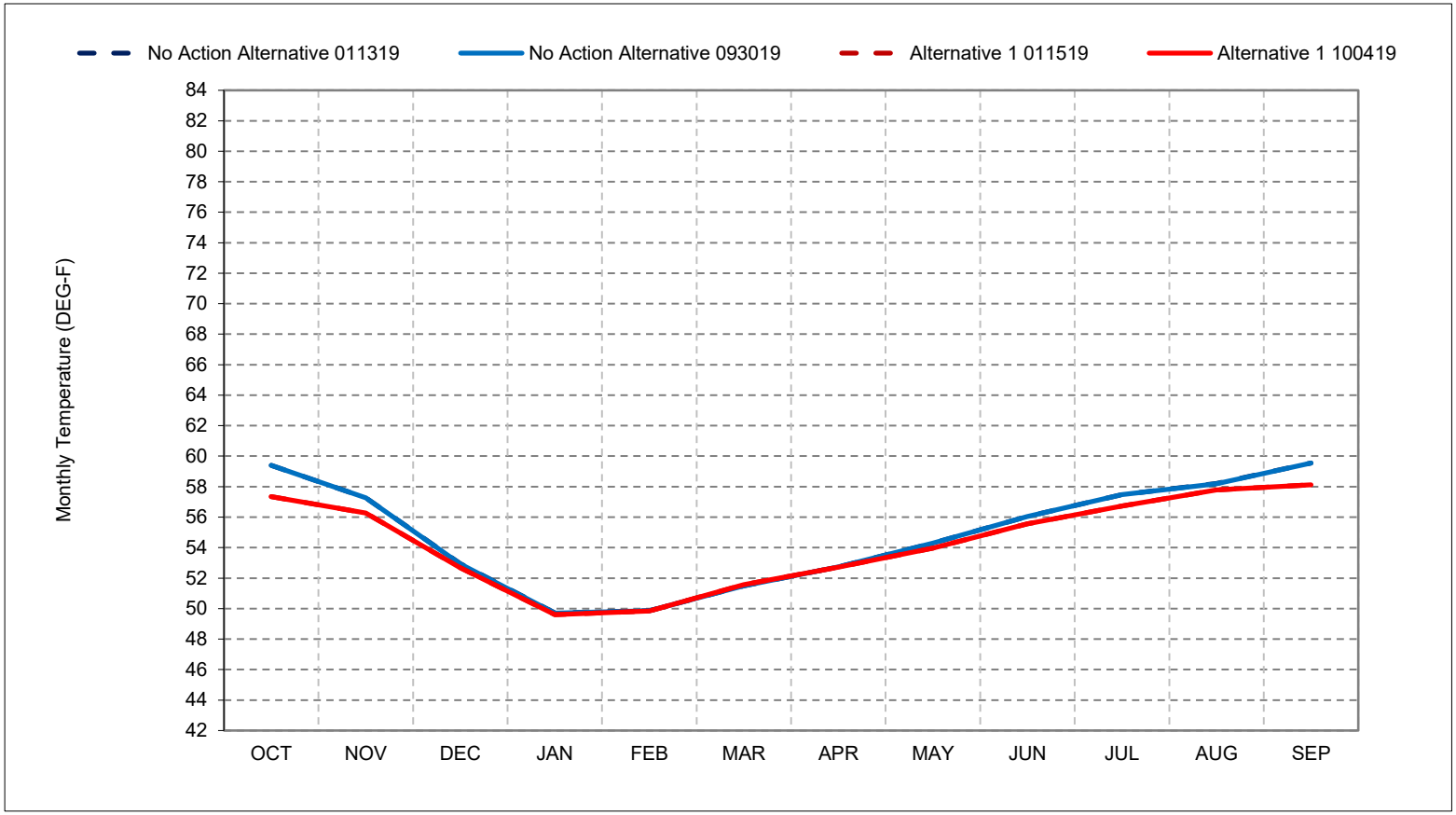

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

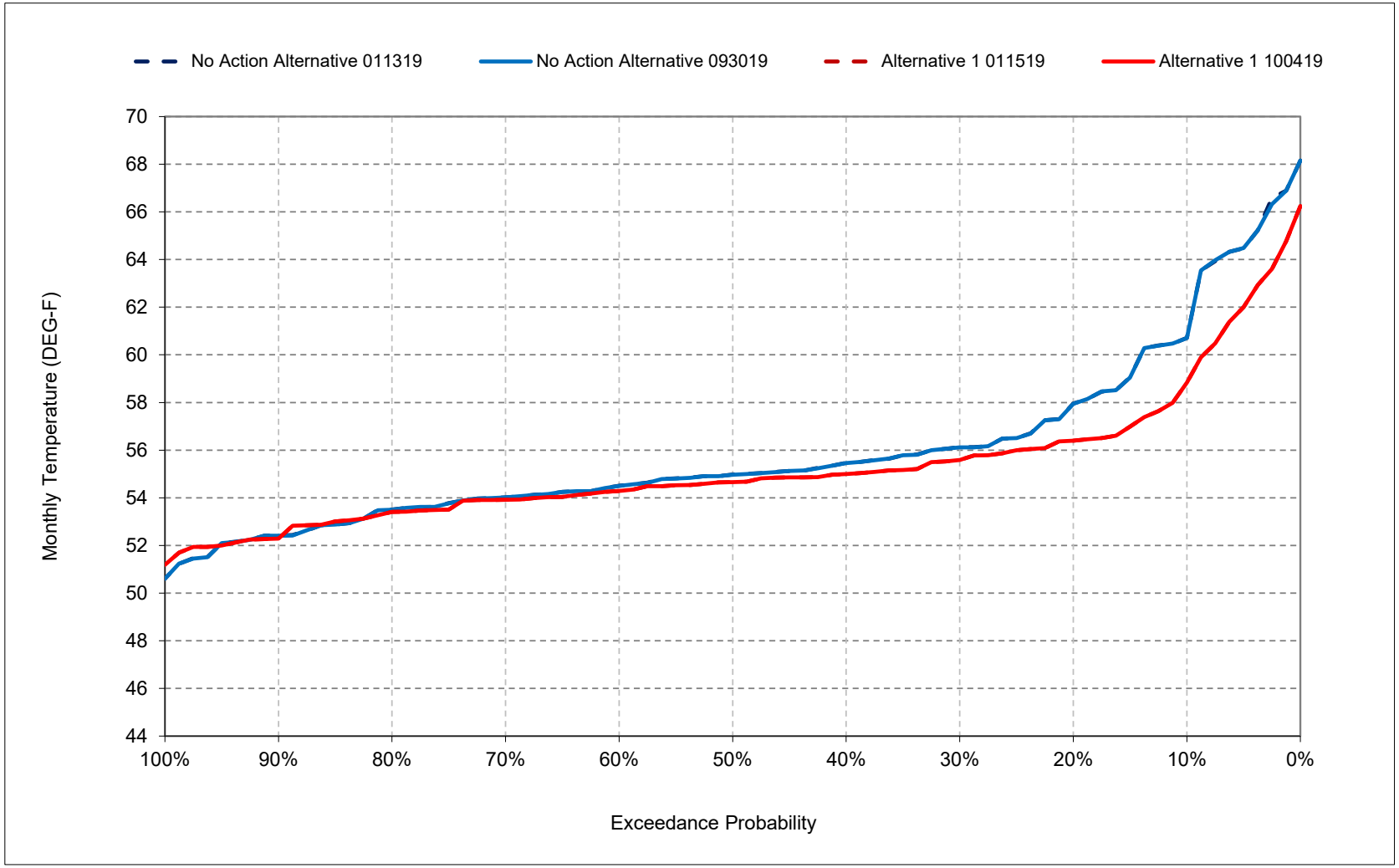
*New Melones forecasts are used as the basis of water operations.

## Figure 22-6. Stanislaus River below Goodwin Dam, Critical Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

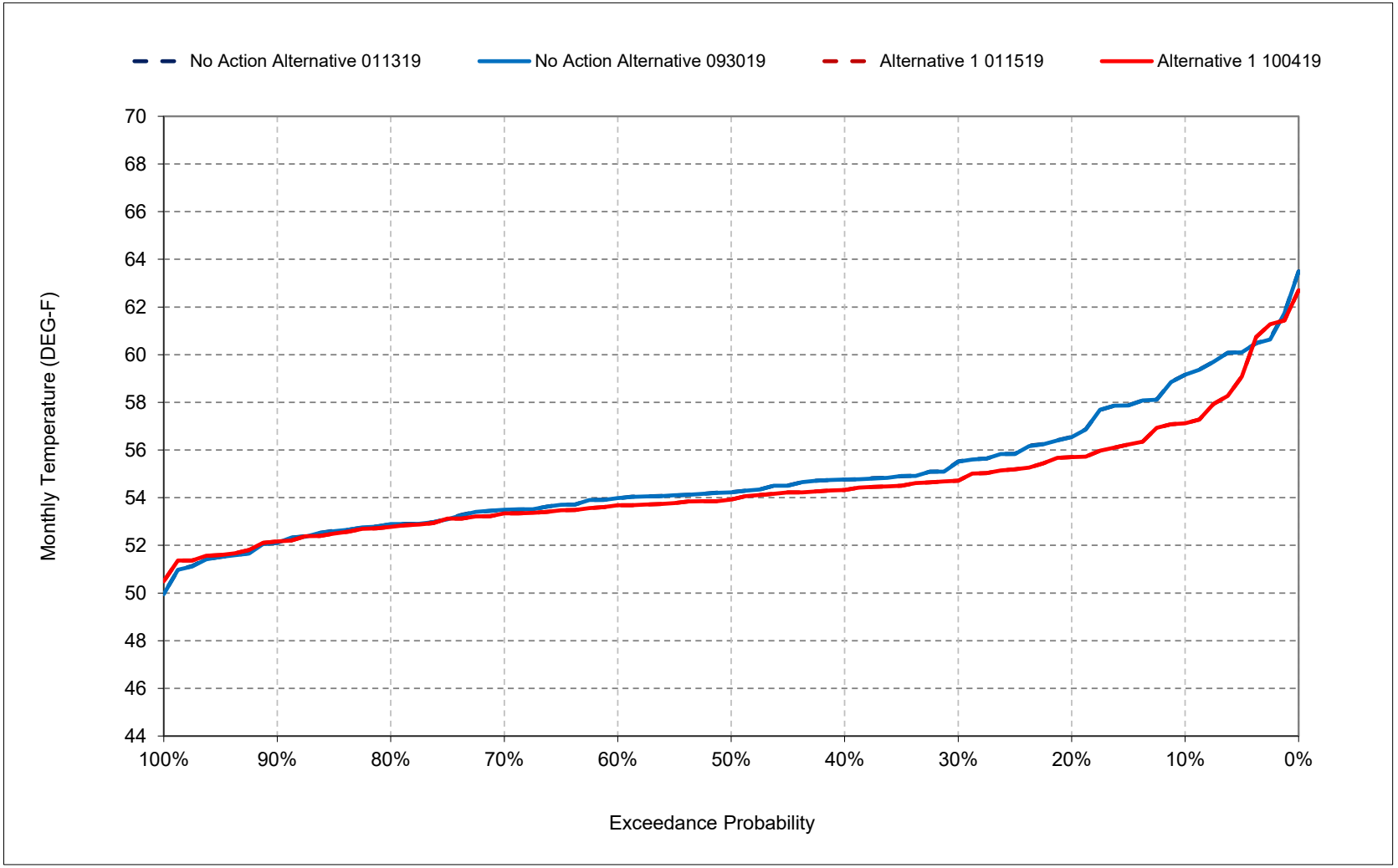
**Figure 22-7. Stanislaus River below Goodwin Dam, October**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

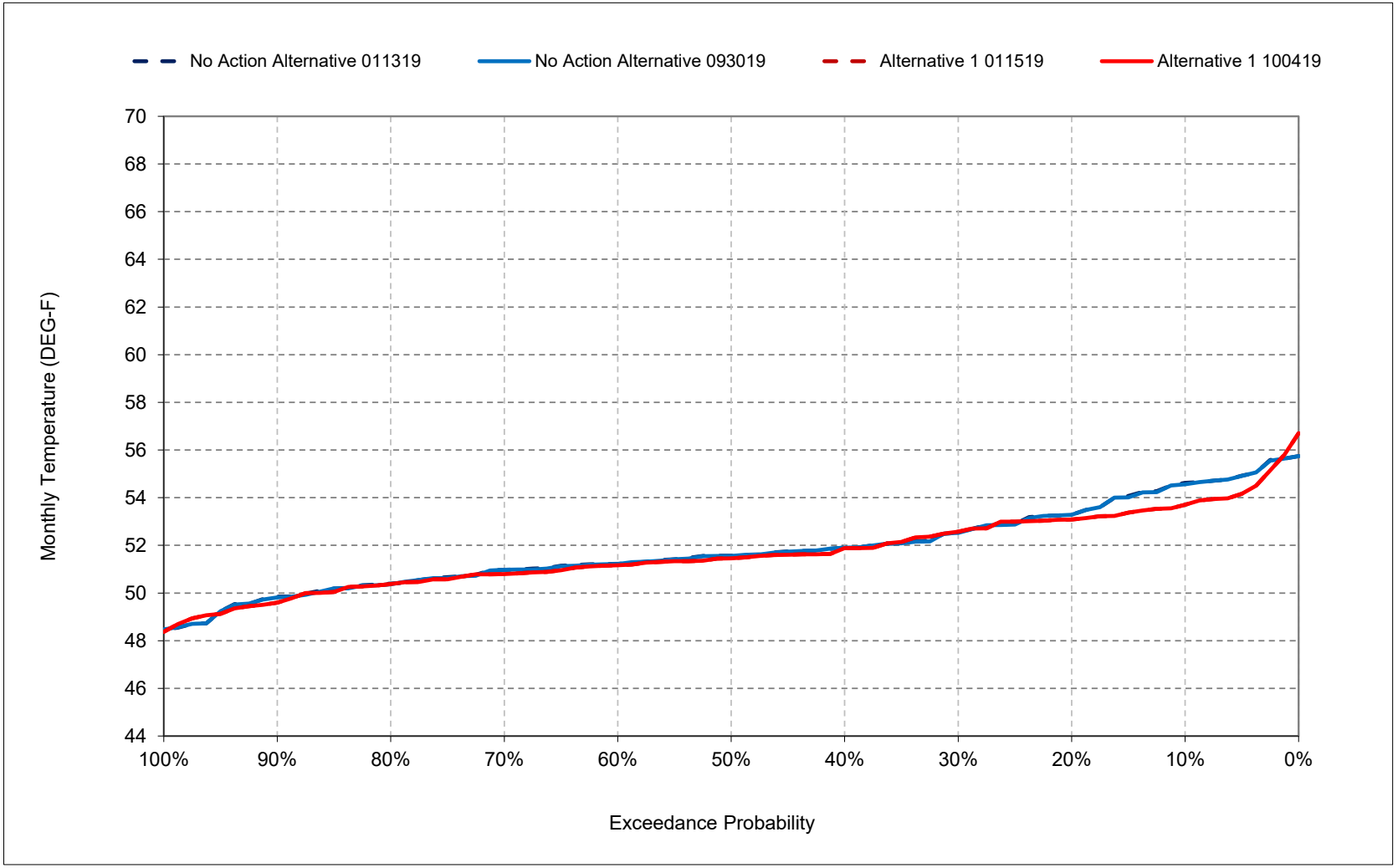
**Figure 22-8. Stanislaus River below Goodwin Dam, November**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

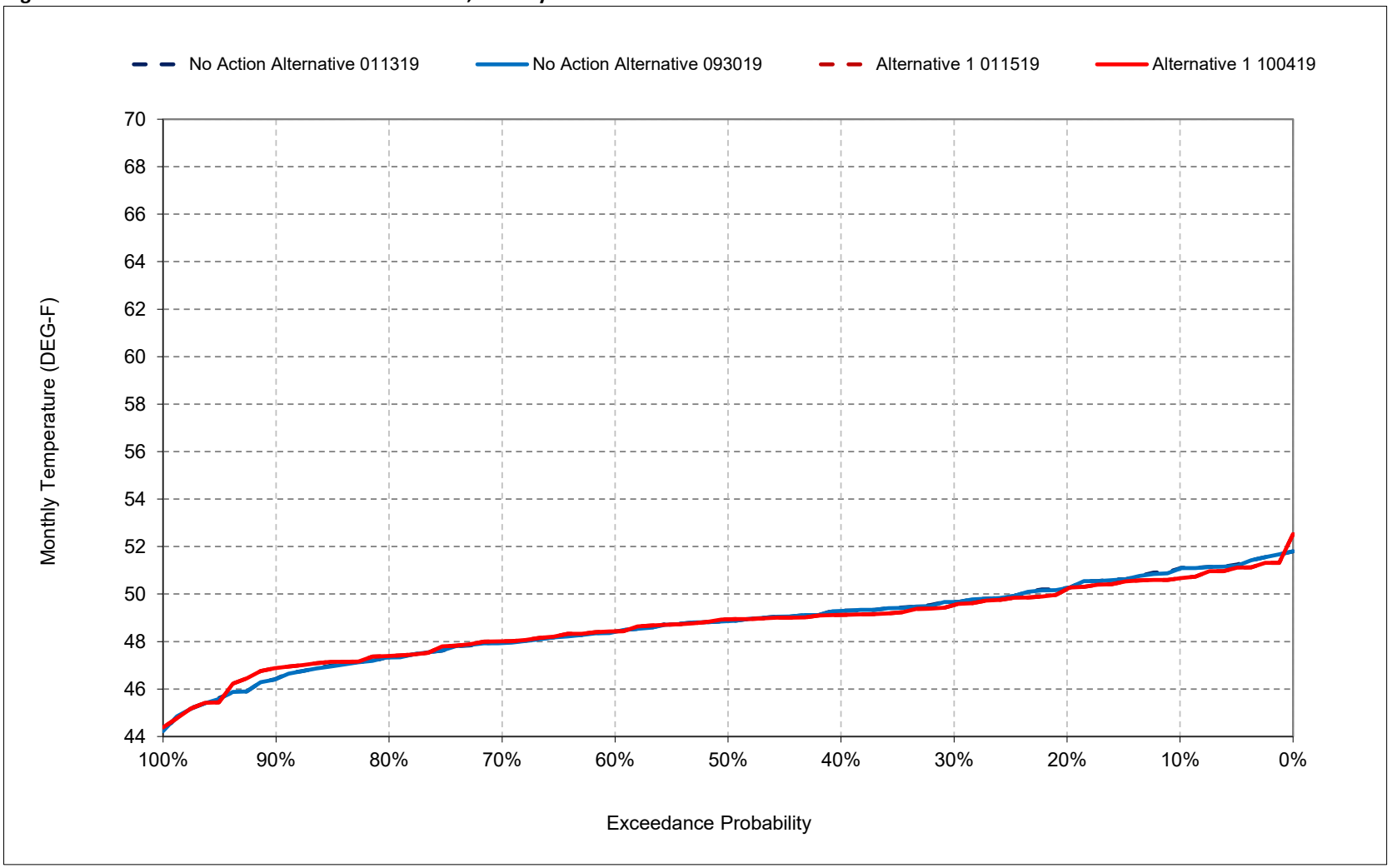
**Figure 22-9. Stanislaus River below Goodwin Dam, December**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

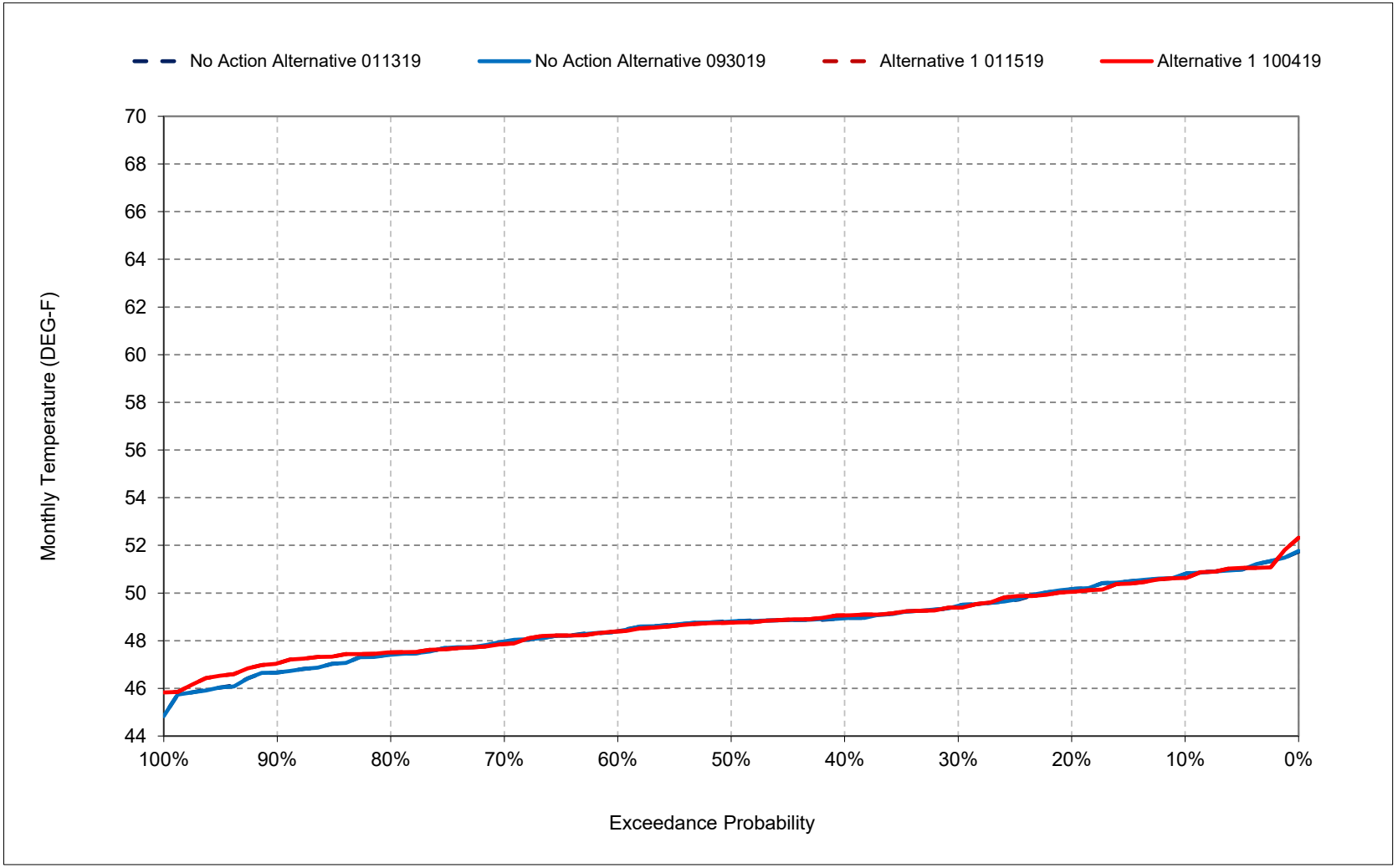
**Figure 22-10. Stanislaus River below Goodwin Dam, January**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

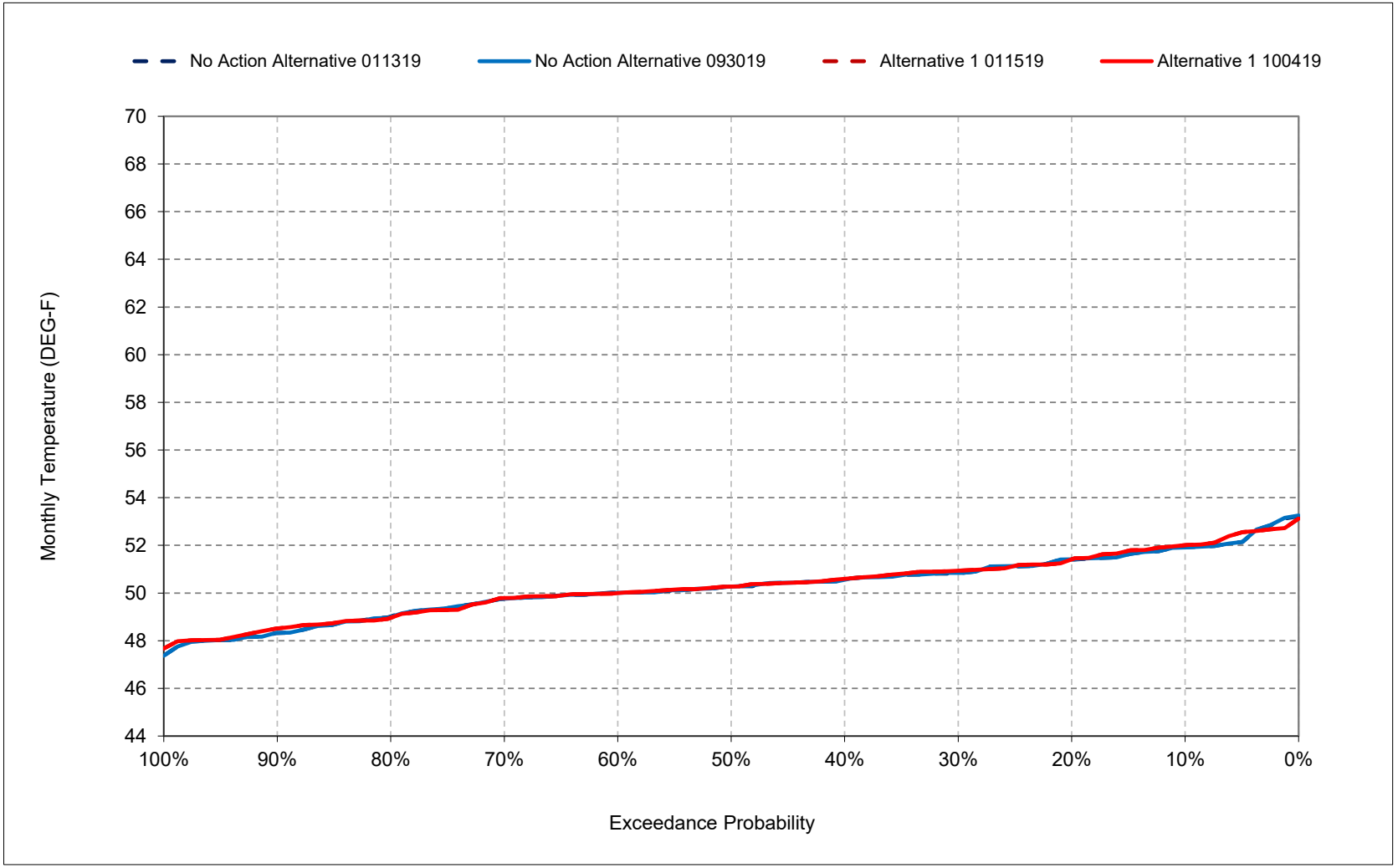
**Figure 22-11. Stanislaus River below Goodwin Dam, February**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

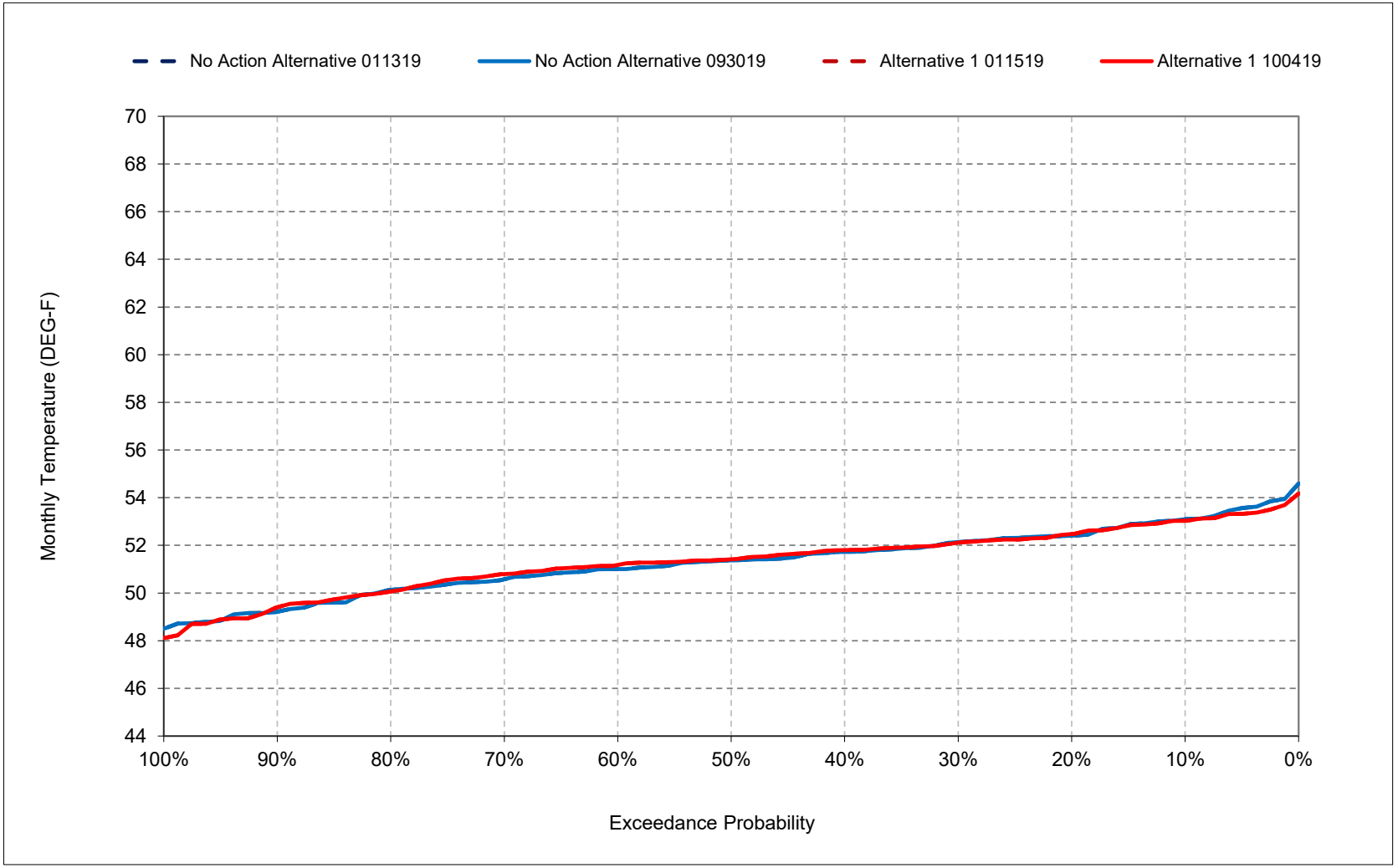
**Figure 22-12. Stanislaus River below Goodwin Dam, March**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

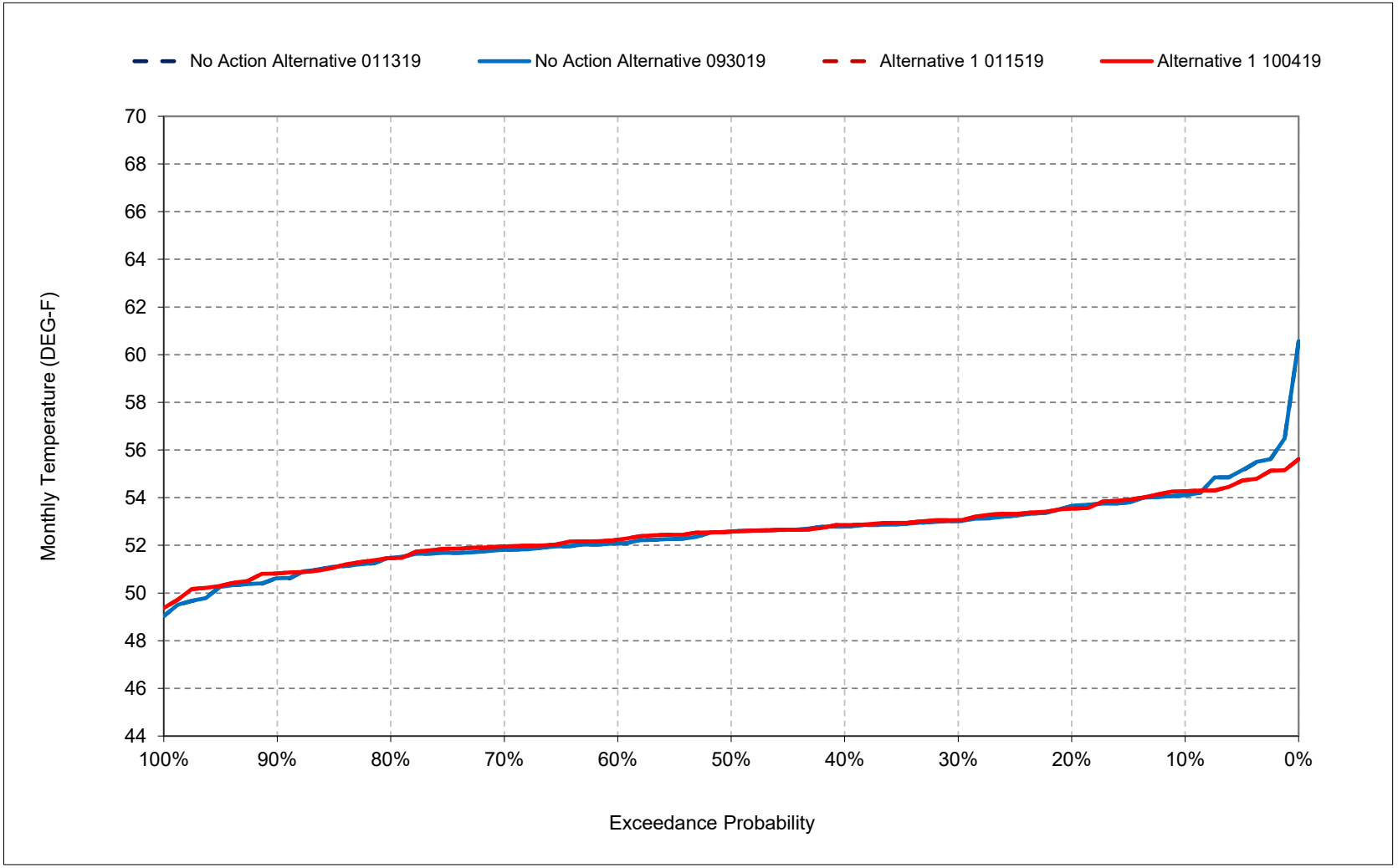
**Figure 22-13. Stanislaus River below Goodwin Dam, April**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

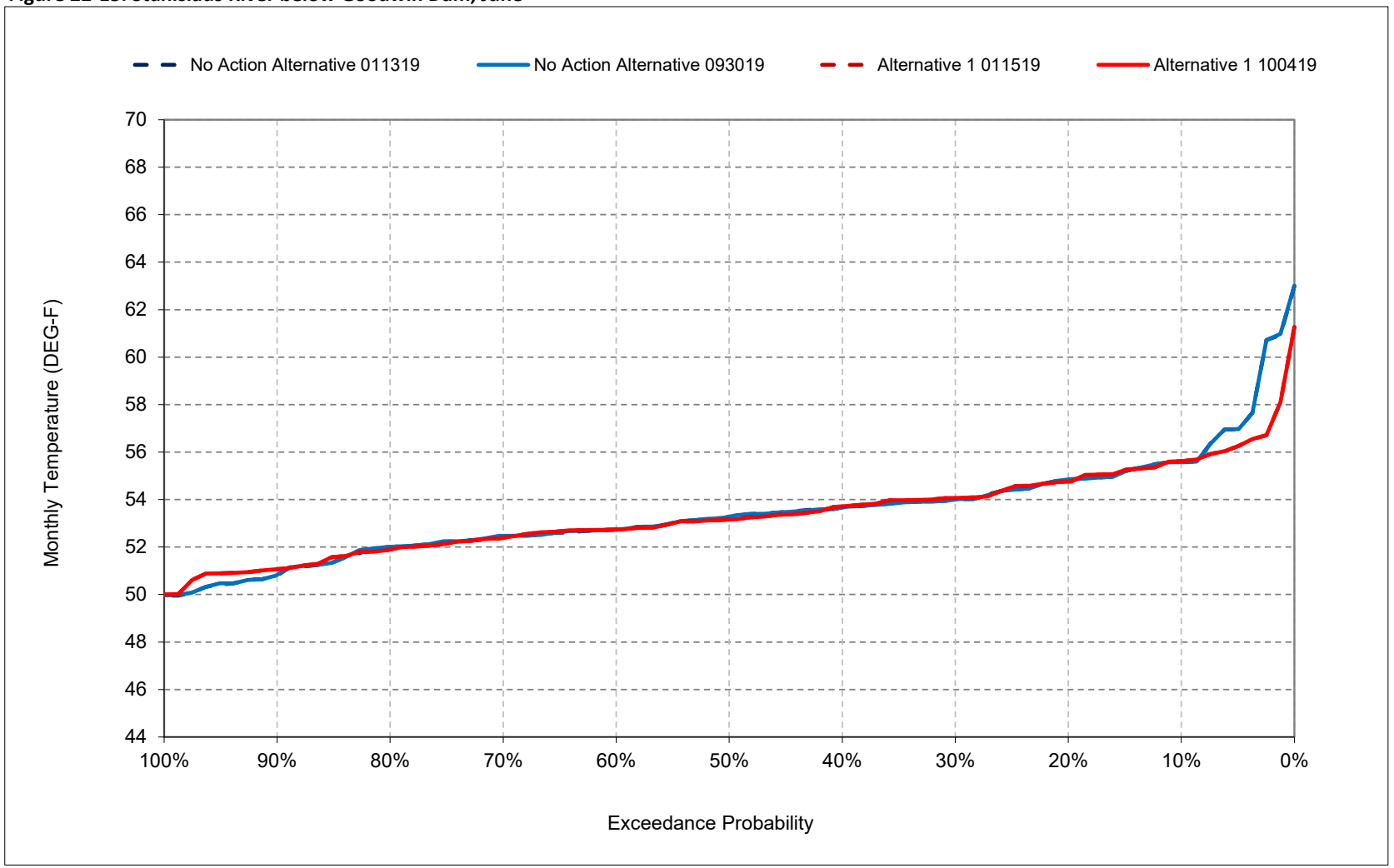
**Figure 22-14. Stanislaus River below Goodwin Dam, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

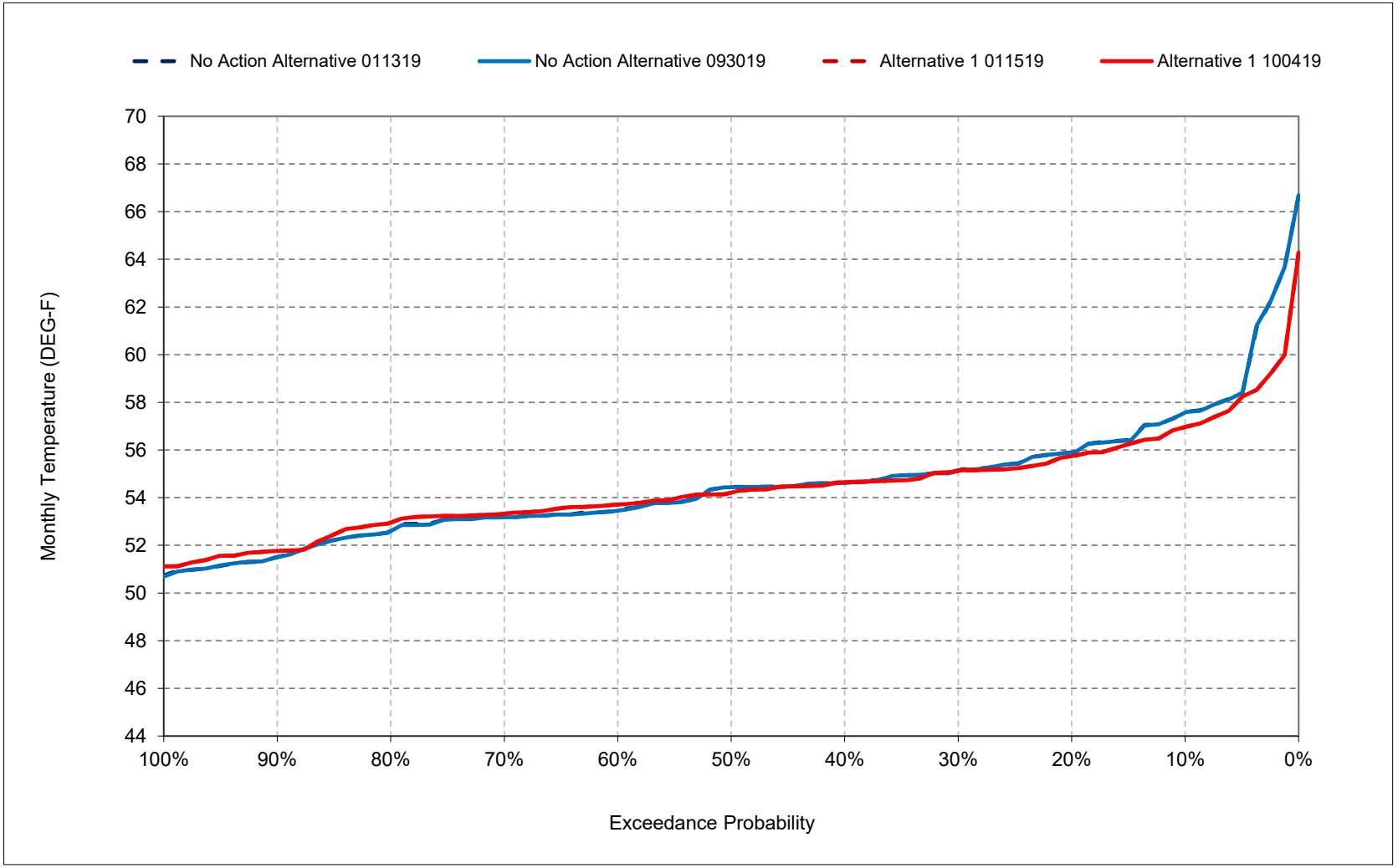
**Figure 22-15. Stanislaus River below Goodwin Dam, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

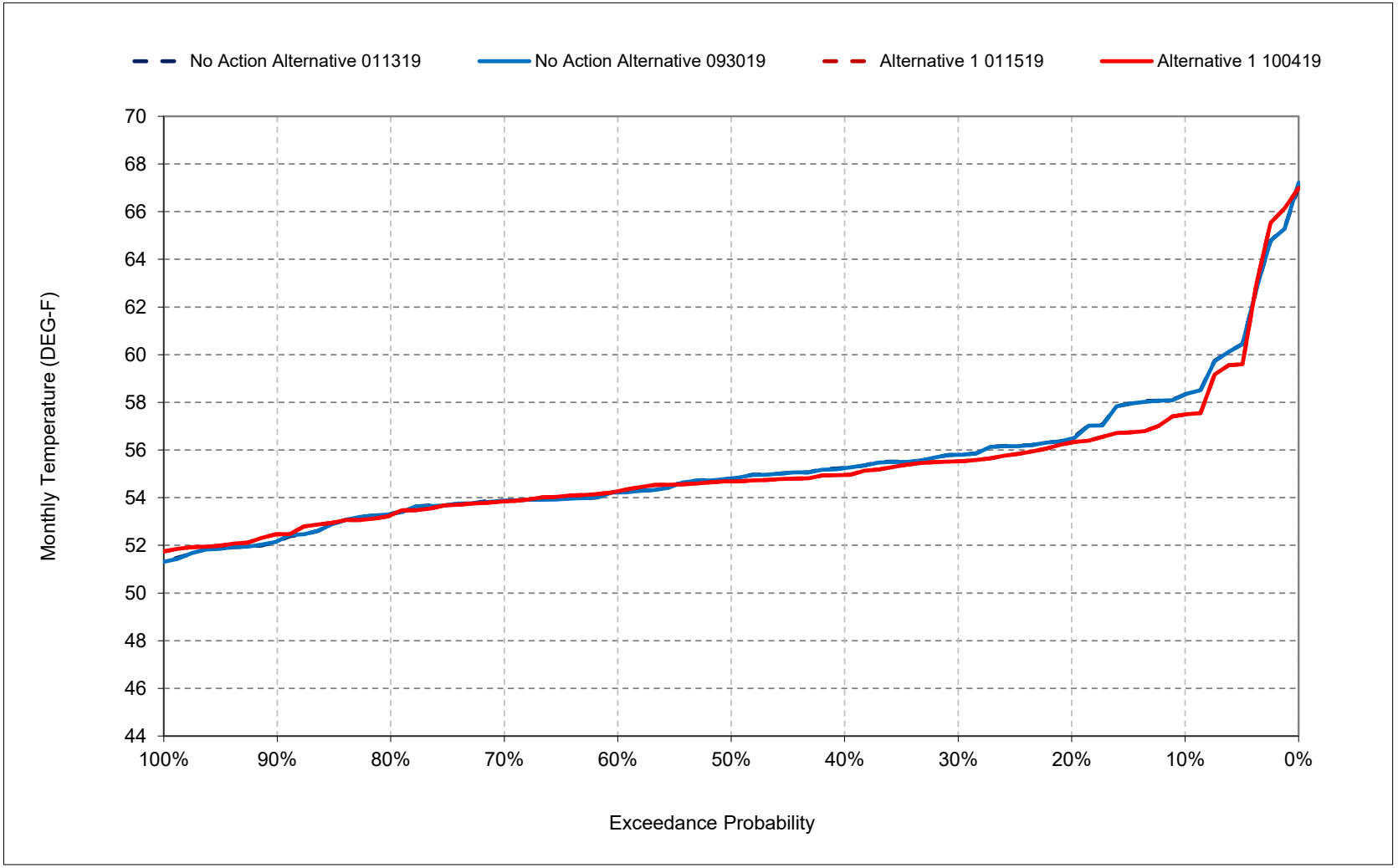
**Figure 22-16. Stanislaus River below Goodwin Dam, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

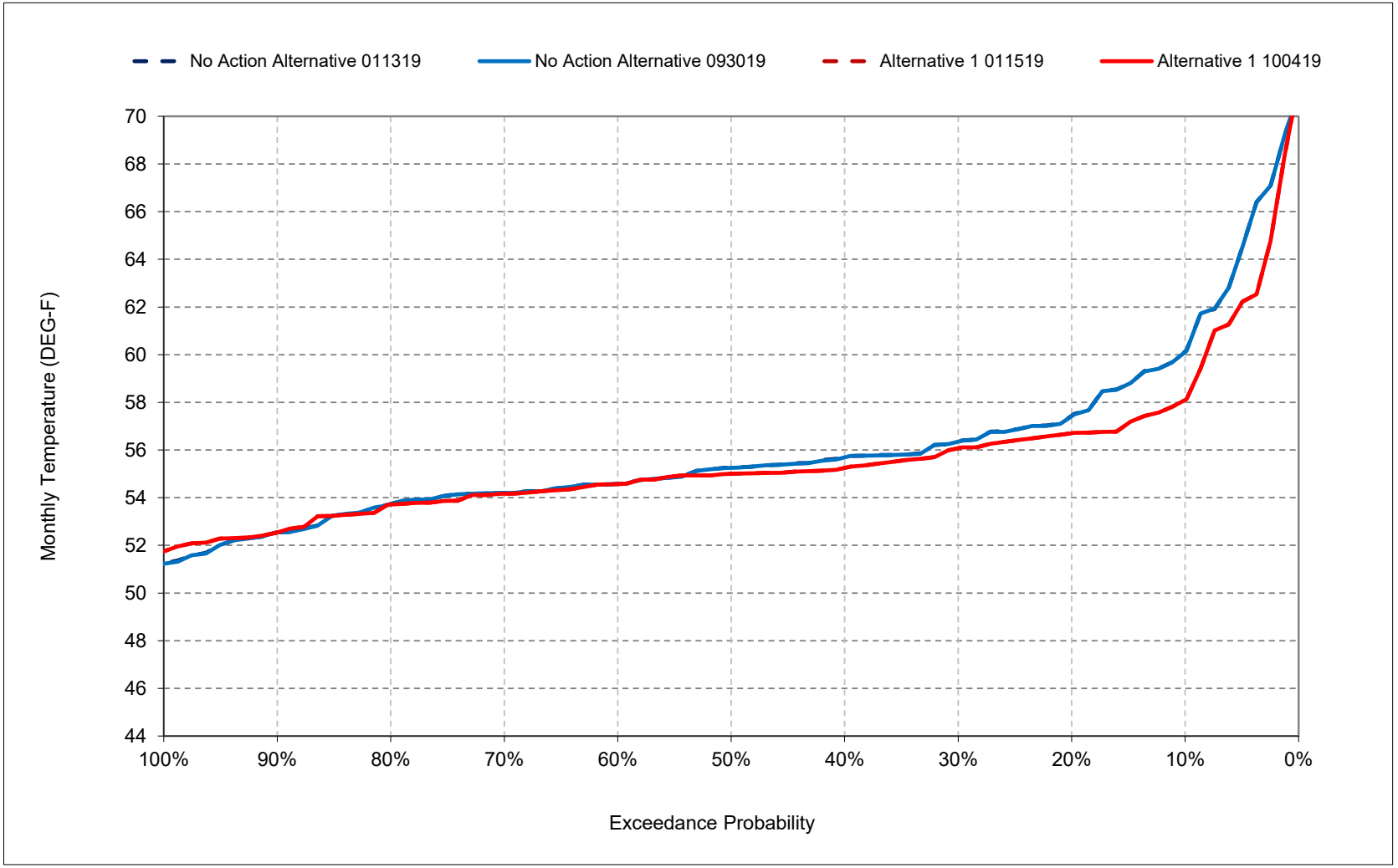
**Figure 22-17. Stanislaus River below Goodwin Dam, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

**Figure 22-18. Stanislaus River below Goodwin Dam, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Table 23-1. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

### No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 61.6 | 58.7 | 53.4 | 51.3 | 52.5 | 55.8 | 55.2 | 57.7 | 63.7 | 65.5 | 65.4 | 64.5 |
| 20% | 59.3 | 56.9 | 52.6 | 50.8 | 51.7 | 55.1 | 54.8 | 56.8 | 62.4 | 64.6 | 64.2 | 63.3 |
| 30% | 57.5 | 56.2 | 52.2 | 50.1 | 51.2 | 54.6 | 54.1 | 55.9 | 61.6 | 64.1 | 63.4 | 62.0 |
| 40% | 56.8 | 55.0 | 51.5 | 49.6 | 50.7 | 54.0 | 53.7 | 55.3 | 60.6 | 63.7 | 62.9 | 61.7 |
| 50% | 56.4 | 54.9 | 51.0 | 49.1 | 50.4 | 53.8 | 53.1 | 55.0 | 59.3 | 63.2 | 62.5 | 61.2 |
| 60% | 55.8 | 54.5 | 50.7 | 48.8 | 50.1 | 53.2 | 52.7 | 54.4 | 56.6 | 62.6 | 62.2 | 60.7 |
| 70% | 55.2 | 54.1 | 50.5 | 48.3 | 49.6 | 52.1 | 52.2 | 53.9 | 55.9 | 62.1 | 61.9 | 60.4 |
| 80% | 54.9 | 53.7 | 50.1 | 47.9 | 49.2 | 51.0 | 51.9 | 53.6 | 55.3 | 61.5 | 61.5 | 59.9 |
| 90% | 54.0 | 52.7 | 49.7 | 47.1 | 48.4 | 49.6 | 50.8 | 52.6 | 54.4 | 58.6 | 59.8 | 58.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 55.3 | 51.4 | 49.2 | 50.4 | 53.2 | 53.2 | 55.1 | 59.0 | 62.9 | 62.7 | 61.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 54.3 | 53.4 | 50.5 | 48.7 | 49.3 | 50.2 | 51.3 | 53.2 | 55.2 | 59.5 | 59.4 | 57.8 |
| Above Normal (24%) | 56.6 | 54.9 | 51.2 | 49.0 | 49.9 | 52.7 | 52.4 | 54.6 | 56.3 | 61.9 | 62.2 | 61.1 |
| Below Normal (10%) | 56.0 | 54.7 | 51.0 | 48.9 | 50.3 | 53.4 | 52.9 | 54.2 | 58.8 | 63.3 | 62.4 | 61.0 |
| Dry (16%) | 57.8 | 56.0 | 51.6 | 49.5 | 50.9 | 54.5 | 54.0 | 55.4 | 61.2 | 64.1 | 63.5 | 62.4 |
| Critical (27%) | 60.5 | 57.2 | 52.2 | 49.8 | 51.6 | 55.2 | 55.2 | 57.4 | 63.4 | 65.9 | 65.5 | 64.6 |

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 59.7 | 57.0 | 52.7 | 51.1 | 52.6 | 55.7 | 56.3 | 58.6 | 65.2 | 67.8 | 67.2 | 64.5 |
| 20% | 58.0 | 56.1 | 52.5 | 50.5 | 51.9 | 55.1 | 55.6 | 58.1 | 64.6 | 66.5 | 65.6 | 63.2 |
| 30% | 57.2 | 55.5 | 52.0 | 50.0 | 51.3 | 54.7 | 54.6 | 56.7 | 63.3 | 65.4 | 64.7 | 62.6 |
| 40% | 56.6 | 54.9 | 51.5 | 49.5 | 50.9 | 54.3 | 53.8 | 55.8 | 61.9 | 64.1 | 63.1 | 62.0 |
| 50% | 56.2 | 54.6 | 51.0 | 49.1 | 50.5 | 53.7 | 52.9 | 54.8 | 60.0 | 63.5 | 62.7 | 61.2 |
| 60% | 55.8 | 54.4 | 50.6 | 48.9 | 50.1 | 53.1 | 52.5 | 54.3 | 59.3 | 63.2 | 62.1 | 60.8 |
| 70% | 55.1 | 53.9 | 50.4 | 48.4 | 49.5 | 51.9 | 52.0 | 54.0 | 58.7 | 62.8 | 61.9 | 60.2 |
| 80% | 54.7 | 53.5 | 50.0 | 47.9 | 49.3 | 50.6 | 51.4 | 53.4 | 56.2 | 61.9 | 61.6 | 60.0 |
| 90% | 53.9 | 53.2 | 49.7 | 47.4 | 48.5 | 49.4 | 50.7 | 52.8 | 54.7 | 60.9 | 60.4 | 58.3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 55.0 | 51.2 | 49.2 | 50.5 | 53.2 | 53.3 | 55.4 | 60.3 | 63.8 | 63.2 | 61.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 54.5 | 53.6 | 50.6 | 48.7 | 49.3 | 49.9 | 51.4 | 53.3 | 54.7 | 59.7 | 59.7 | 58.0 |
| Above Normal (24%) | 56.7 | 54.8 | 51.1 | 49.1 | 50.0 | 52.9 | 51.9 | 54.1 | 59.3 | 63.2 | 62.6 | 61.5 |
| Below Normal (10%) | 55.6 | 54.4 | 50.9 | 48.8 | 50.2 | 53.5 | 52.8 | 54.2 | 59.4 | 63.4 | 62.3 | 60.9 |
| Dry (16%) | 57.0 | 55.3 | 51.3 | 49.4 | 51.1 | 54.5 | 54.3 | 56.3 | 62.6 | 64.6 | 63.3 | 61.9 |
| Critical (27%) | 58.8 | 56.4 | 52.0 | 49.7 | 51.8 | 55.4 | 55.9 | 58.5 | 65.0 | 67.4 | 66.9 | 64.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -1.9 | -1.7 | -0.7 | -0.2 | 0.1 | -0.1 | 1.0 | 0.9 | 1.5 | 2.4 | 1.8 | -0.1 |
| 20% | -1.3 | -0.9 | -0.1 | -0.3 | 0.2 | 0.1 | 0.8 | 1.3 | 2.2 | 1.9 | 1.4 | -0.1 |
| 30% | -0.3 | -0.6 | -0.2 | -0.1 | 0.1 | 0.1 | 0.5 | 0.7 | 1.7 | 1.3 | 1.2 | 0.6 |
| 40% | -0.3 | -0.1 | 0.0 | -0.1 | 0.1 | 0.3 | 0.1 | 0.5 | 1.3 | 0.4 | 0.2 | 0.4 |
| 50% | -0.2 | -0.2 | -0.1 | 0.0 | 0.1 | 0.0 | -0.2 | -0.1 | 0.8 | 0.3 | 0.1 | 0.0 |
| 60% | -0.1 | -0.2 | -0.1 | 0.1 | 0.0 | -0.1 | -0.2 | -0.1 | 2.7 | 0.6 | -0.1 | 0.1 |
| 70% | -0.2 | -0.2 | 0.0 | 0.0 | -0.1 | -0.2 | -0.2 | 0.0 | 2.8 | 0.7 | 0.1 | -0.3 |
| 80% | -0.1 | -0.1 | -0.1 | 0.0 | 0.1 | -0.4 | -0.5 | -0.2 | 0.9 | 0.3 | 0.1 | 0.1 |
| 90% | -0.1 | 0.5 | -0.1 | 0.3 | 0.1 | -0.2 | -0.1 | 0.2 | 0.2 | 2.3 | 0.6 | 0.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.6 | -0.3 | -0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.3 | 1.3 | 0.9 | 0.5 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | -0.4 | 0.0 | 0.1 | -0.5 | 0.2 | 0.3 | 0.2 |
| Above Normal (24%) | 0.1 | -0.1 | -0.1 | 0.1 | 0.2 | 0.2 | -0.5 | -0.5 | 3.0 | 1.4 | 0.4 | 0.4 |
| Below Normal (10%) | -0.4 | -0.3 | -0.1 | -0.1 | -0.1 | 0.1 | -0.1 | 0.0 | 0.6 | 0.1 | -0.1 | -0.1 |
| Dry (16%) | -0.9 | -0.7 | -0.3 | -0.1 | 0.2 | 0.0 | 0.3 | 0.9 | 1.4 | 0.5 | -0.2 | -0.5 |
| Critical (27%) | -1.7 | -0.8 | -0.2 | -0.1 | 0.1 | 0.1 | 0.7 | 1.1 | 1.6 | 1.5 | 1.4 | -0.1 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 23-2. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 61.6 | 58.7 | 53.4 | 51.3 | 52.5 | 55.8 | 55.2 | 57.7 | 63.7 | 65.5 | 65.4 | 64.5 |
| 20% | 59.3 | 56.9 | 52.6 | 50.8 | 51.7 | 55.1 | 54.8 | 56.8 | 62.4 | 64.6 | 64.2 | 63.3 |
| 30% | 57.5 | 56.2 | 52.2 | 50.1 | 51.2 | 54.6 | 54.1 | 55.9 | 61.6 | 64.1 | 63.4 | 62.0 |
| 40% | 56.8 | 55.0 | 51.5 | 49.6 | 50.7 | 54.0 | 53.7 | 55.3 | 60.6 | 63.7 | 62.9 | 61.7 |
| 50% | 56.4 | 54.9 | 51.0 | 49.1 | 50.4 | 53.8 | 53.1 | 55.0 | 59.3 | 63.2 | 62.5 | 61.2 |
| 60% | 55.8 | 54.5 | 50.7 | 48.8 | 50.1 | 53.2 | 52.7 | 54.4 | 56.7 | 62.6 | 62.2 | 60.7 |
| 70% | 55.2 | 54.1 | 50.5 | 48.3 | 49.6 | 52.1 | 52.2 | 53.9 | 55.9 | 62.1 | 61.9 | 60.4 |
| 80% | 54.9 | 53.7 | 50.1 | 47.9 | 49.2 | 51.0 | 51.9 | 53.6 | 55.3 | 61.5 | 61.5 | 59.9 |
| 90% | 54.0 | 52.7 | 49.8 | 47.1 | 48.3 | 49.6 | 50.8 | 52.6 | 54.4 | 58.6 | 59.8 | 58.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 55.3 | 51.4 | 49.2 | 50.4 | 53.2 | 53.2 | 55.1 | 59.0 | 62.9 | 62.7 | 61.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 54.3 | 53.4 | 50.5 | 48.7 | 49.3 | 50.2 | 51.3 | 53.2 | 55.2 | 59.5 | 59.4 | 57.8 |
| Above Normal (24%) | 56.6 | 54.9 | 51.2 | 49.0 | 49.9 | 52.7 | 52.4 | 54.6 | 56.4 | 61.9 | 62.2 | 61.1 |
| Below Normal (10%) | 56.0 | 54.7 | 51.0 | 48.8 | 50.3 | 53.4 | 52.9 | 54.2 | 58.8 | 63.3 | 62.4 | 61.0 |
| Dry (16%) | 57.8 | 56.0 | 51.6 | 49.5 | 50.9 | 54.5 | 54.0 | 55.4 | 61.2 | 64.1 | 63.5 | 62.4 |
| Critical (27%) | 60.5 | 57.2 | 52.2 | 49.8 | 51.6 | 55.2 | 55.2 | 57.4 | 63.4 | 65.8 | 65.5 | 64.6 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 59.7 | 57.0 | 52.7 | 51.1 | 52.6 | 55.7 | 56.3 | 58.6 | 65.2 | 67.8 | 67.2 | 64.5 |
| 20% | 58.0 | 56.1 | 52.5 | 50.5 | 51.9 | 55.1 | 55.6 | 58.1 | 64.6 | 66.5 | 65.6 | 63.2 |
| 30% | 57.2 | 55.5 | 52.0 | 50.0 | 51.3 | 54.7 | 54.6 | 56.7 | 63.3 | 65.4 | 64.7 | 62.6 |
| 40% | 56.6 | 54.9 | 51.5 | 49.5 | 50.9 | 54.3 | 53.8 | 55.8 | 61.9 | 64.1 | 63.1 | 62.0 |
| 50% | 56.2 | 54.6 | 51.0 | 49.1 | 50.5 | 53.7 | 52.9 | 54.8 | 60.0 | 63.5 | 62.7 | 61.2 |
| 60% | 55.8 | 54.4 | 50.6 | 48.9 | 50.1 | 53.1 | 52.5 | 54.3 | 59.3 | 63.2 | 62.1 | 60.8 |
| 70% | 55.1 | 53.9 | 50.4 | 48.4 | 49.5 | 51.9 | 52.0 | 54.0 | 58.7 | 62.8 | 61.9 | 60.2 |
| 80% | 54.7 | 53.5 | 50.0 | 47.9 | 49.3 | 50.6 | 51.4 | 53.4 | 56.2 | 61.9 | 61.6 | 60.0 |
| 90% | 53.9 | 53.2 | 49.7 | 47.4 | 48.5 | 49.4 | 50.7 | 52.8 | 54.7 | 60.9 | 60.4 | 58.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.7 | 55.0 | 51.2 | 49.2 | 50.5 | 53.2 | 53.3 | 55.4 | 60.3 | 63.8 | 63.2 | 61.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 54.5 | 53.6 | 50.6 | 48.7 | 49.3 | 49.9 | 51.4 | 53.3 | 54.7 | 59.7 | 59.7 | 58.0 |
| Above Normal (24%) | 56.7 | 54.8 | 51.1 | 49.1 | 50.0 | 52.9 | 51.9 | 54.1 | 59.3 | 63.2 | 62.6 | 61.5 |
| Below Normal (10%) | 55.6 | 54.4 | 50.9 | 48.8 | 50.2 | 53.5 | 52.8 | 54.2 | 59.4 | 63.4 | 62.3 | 60.9 |
| Dry (16%) | 57.0 | 55.3 | 51.3 | 49.4 | 51.1 | 54.5 | 54.3 | 56.3 | 62.6 | 64.6 | 63.3 | 61.9 |
| Critical (27%) | 58.8 | 56.4 | 52.0 | 49.7 | 51.8 | 55.4 | 55.9 | 58.5 | 65.0 | 67.4 | 66.9 | 64.5 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -1.9 | -1.7 | -0.7 | -0.2 | 0.1 | -0.1 | 1.0 | 0.9 | 1.5 | 2.4 | 1.8 | 0.0 |
| 20% | -1.3 | -0.9 | -0.1 | -0.3 | 0.2 | 0.1 | 0.8 | 1.3 | 2.2 | 1.9 | 1.4 | -0.1 |
| 30% | -0.3 | -0.6 | -0.2 | -0.1 | 0.1 | 0.1 | 0.5 | 0.7 | 1.7 | 1.3 | 1.2 | 0.6 |
| 40% | -0.2 | -0.1 | 0.0 | -0.1 | 0.1 | 0.3 | 0.1 | 0.5 | 1.3 | 0.4 | 0.2 | 0.4 |
| 50% | -0.2 | -0.2 | -0.1 | 0.0 | 0.1 | 0.0 | -0.2 | -0.1 | 0.8 | 0.3 | 0.1 | 0.0 |
| 60% | -0.1 | -0.2 | -0.1 | 0.1 | 0.0 | -0.1 | -0.2 | -0.1 | 2.7 | 0.6 | -0.1 | 0.1 |
| 70% | -0.2 | -0.2 | 0.0 | 0.0 | -0.1 | -0.2 | -0.2 | 0.0 | 2.8 | 0.7 | 0.1 | -0.3 |
| 80% | -0.1 | -0.1 | -0.1 | 0.0 | 0.1 | -0.4 | -0.5 | -0.2 | 0.9 | 0.3 | 0.1 | 0.1 |
| 90% | -0.1 | 0.5 | -0.1 | 0.3 | 0.1 | -0.2 | -0.1 | 0.2 | 0.2 | 2.3 | 0.6 | 0.1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.5 | -0.3 | -0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.3 | 1.3 | 0.9 | 0.5 | 0.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (23%) | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | -0.3 | 0.0 | 0.1 | -0.5 | 0.2 | 0.3 | 0.2 |
| Above Normal (24%) | 0.1 | -0.1 | -0.1 | 0.1 | 0.2 | 0.2 | -0.5 | -0.5 | 3.0 | 1.4 | 0.4 | 0.4 |
| Below Normal (10%) | -0.4 | -0.3 | -0.1 | -0.1 | -0.1 | 0.1 | -0.1 | 0.0 | 0.6 | 0.1 | -0.1 | -0.1 |
| Dry (16%) | -0.9 | -0.7 | -0.3 | -0.1 | 0.2 | 0.0 | 0.3 | 0.9 | 1.4 | 0.5 | -0.2 | -0.5 |
| Critical (27%) | -1.7 | -0.8 | -0.2 | -0.1 | 0.1 | 0.1 | 0.7 | 1.1 | 1.6 | 1.5 | 1.4 | -0.1 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 23-3. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 61.6 | 58.7 | 53.4 | 51.3 | 52.5 | 55.8 | 55.2 | 57.7 | 63.7 | 65.5 | 65.4 | 64.5 |
| 20% | 59.3 | 56.9 | 52.6 | 50.8 | 51.7 | 55.1 | 54.8 | 56.8 | 62.4 | 64.6 | 64.2 | 63.3 |
| 30% | 57.5 | 56.2 | 52.2 | 50.1 | 51.2 | 54.6 | 54.1 | 55.9 | 61.6 | 64.1 | 63.4 | 62.0 |
| 40% | 56.8 | 55.0 | 51.5 | 49.6 | 50.7 | 54.0 | 53.7 | 55.3 | 60.6 | 63.7 | 62.9 | 61.7 |
| 50% | 56.4 | 54.9 | 51.0 | 49.1 | 50.4 | 53.8 | 53.1 | 55.0 | 59.3 | 63.2 | 62.5 | 61.2 |
| 60% | 55.8 | 54.5 | 50.7 | 48.8 | 50.1 | 53.2 | 52.7 | 54.4 | 56.6 | 62.6 | 62.2 | 60.7 |
| 70% | 55.2 | 54.1 | 50.5 | 48.3 | 49.6 | 52.1 | 52.2 | 53.9 | 55.9 | 62.1 | 61.9 | 60.4 |
| 80% | 54.9 | 53.7 | 50.1 | 47.9 | 49.2 | 51.0 | 51.9 | 53.6 | 55.3 | 61.5 | 61.5 | 59.9 |
| 90% | 54.0 | 52.7 | 49.7 | 47.1 | 48.4 | 49.6 | 50.8 | 52.6 | 54.4 | 58.6 | 59.8 | 58.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 55.3 | 51.4 | 49.2 | 50.4 | 53.2 | 53.2 | 55.1 | 59.0 | 62.9 | 62.7 | 61.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 54.3 | 53.4 | 50.5 | 48.7 | 49.3 | 50.2 | 51.3 | 53.2 | 55.2 | 59.5 | 59.4 | 57.8 |
| Above Normal (24%) | 56.6 | 54.9 | 51.2 | 49.0 | 49.9 | 52.7 | 52.4 | 54.6 | 56.3 | 61.9 | 62.2 | 61.1 |
| Below Normal (10%) | 56.0 | 54.7 | 51.0 | 48.9 | 50.3 | 53.4 | 52.9 | 54.2 | 58.8 | 63.3 | 62.4 | 61.0 |
| Dry (16%) | 57.8 | 56.0 | 51.6 | 49.5 | 50.9 | 54.5 | 54.0 | 55.4 | 61.2 | 64.1 | 63.5 | 62.4 |
| Critical (27%) | 60.5 | 57.2 | 52.2 | 49.8 | 51.6 | 55.2 | 55.2 | 57.4 | 63.4 | 65.9 | 65.5 | 64.6 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 61.6 | 58.7 | 53.4 | 51.3 | 52.5 | 55.8 | 55.2 | 57.7 | 63.7 | 65.5 | 65.4 | 64.5 |
| 20% | 59.3 | 56.9 | 52.6 | 50.8 | 51.7 | 55.1 | 54.8 | 56.8 | 62.4 | 64.6 | 64.2 | 63.3 |
| 30% | 57.5 | 56.2 | 52.2 | 50.1 | 51.2 | 54.6 | 54.1 | 55.9 | 61.6 | 64.1 | 63.4 | 62.0 |
| 40% | 56.8 | 55.0 | 51.5 | 49.6 | 50.7 | 54.0 | 53.7 | 55.3 | 60.6 | 63.7 | 62.9 | 61.7 |
| 50% | 56.4 | 54.9 | 51.0 | 49.1 | 50.4 | 53.8 | 53.1 | 55.0 | 59.3 | 63.2 | 62.5 | 61.2 |
| 60% | 55.8 | 54.5 | 50.7 | 48.8 | 50.1 | 53.2 | 52.7 | 54.4 | 56.7 | 62.6 | 62.2 | 60.7 |
| 70% | 55.2 | 54.1 | 50.5 | 48.3 | 49.6 | 52.1 | 52.2 | 53.9 | 55.9 | 62.1 | 61.9 | 60.4 |
| 80% | 54.9 | 53.7 | 50.1 | 47.9 | 49.2 | 51.0 | 51.9 | 53.6 | 55.3 | 61.5 | 61.5 | 59.9 |
| 90% | 54.0 | 52.7 | 49.8 | 47.1 | 48.3 | 49.6 | 50.8 | 52.6 | 54.4 | 58.6 | 59.8 | 58.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57.2 | 55.3 | 51.4 | 49.2 | 50.4 | 53.2 | 53.2 | 55.1 | 59.0 | 62.9 | 62.7 | 61.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 54.3 | 53.4 | 50.5 | 48.7 | 49.3 | 50.2 | 51.3 | 53.2 | 55.2 | 59.5 | 59.4 | 57.8 |
| Above Normal (24%) | 56.6 | 54.9 | 51.2 | 49.0 | 49.9 | 52.7 | 52.4 | 54.6 | 56.4 | 61.9 | 62.2 | 61.1 |
| Below Normal (10%) | 56.0 | 54.7 | 51.0 | 48.8 | 50.3 | 53.4 | 52.9 | 54.2 | 58.8 | 63.3 | 62.4 | 61.0 |
| Dry (16%) | 57.8 | 56.0 | 51.6 | 49.5 | 50.9 | 54.5 | 54.0 | 55.4 | 61.2 | 64.1 | 63.5 | 62.4 |
| Critical (27%) | 60.5 | 57.2 | 52.2 | 49.8 | 51.6 | 55.2 | 55.2 | 57.4 | 63.4 | 65.8 | 65.5 | 64.6 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| 30% | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 |
| 40% | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60% | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| 70% | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 |
| 80% | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** |
| 90% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 |
| Above Normal (24%) | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 |
| Dry (16%) | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Critical (27%) | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 23-4. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

**Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 59.7 | 57.0 | 52.7 | 51.1 | 52.6 | 55.7 | 56.3 | 58.6 | 65.2 | 67.8 | 67.2 | 64.5 |
| **20%** | 58.0 | 56.1 | 52.5 | 50.5 | 51.9 | 55.1 | 55.6 | 58.1 | 64.6 | 66.5 | 65.6 | 63.2 |
| **30%** | 57.2 | 55.5 | 52.0 | 50.0 | 51.3 | 54.7 | 54.6 | 56.7 | 63.3 | 65.4 | 64.7 | 62.6 |
| **40%** | 56.6 | 54.9 | 51.5 | 49.5 | 50.9 | 54.3 | 53.8 | 55.8 | 61.9 | 64.1 | 63.1 | 62.0 |
| **50%** | 56.2 | 54.6 | 51.0 | 49.1 | 50.5 | 53.7 | 52.9 | 54.8 | 60.0 | 63.5 | 62.7 | 61.2 |
| **60%** | 55.8 | 54.4 | 50.6 | 48.9 | 50.1 | 53.1 | 52.5 | 54.3 | 59.3 | 63.2 | 62.1 | 60.8 |
| **70%** | 55.1 | 53.9 | 50.4 | 48.4 | 49.5 | 51.9 | 52.0 | 54.0 | 58.7 | 62.8 | 61.9 | 60.2 |
| **80%** | 54.7 | 53.5 | 50.0 | 47.9 | 49.3 | 50.6 | 51.4 | 53.4 | 56.2 | 61.9 | 61.6 | 60.0 |
| **90%** | 53.9 | 53.2 | 49.7 | 47.4 | 48.5 | 49.4 | 50.7 | 52.8 | 54.7 | 60.9 | 60.4 | 58.3 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 56.7 | 55.0 | 51.2 | 49.2 | 50.5 | 53.2 | 53.3 | 55.4 | 60.3 | 63.8 | 63.2 | 61.5 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 54.5 | 53.6 | 50.6 | 48.7 | 49.3 | 49.9 | 51.4 | 53.3 | 54.7 | 59.7 | 59.7 | 58.0 |
| **Above Normal (24%)** | 56.7 | 54.8 | 51.1 | 49.1 | 50.0 | 52.9 | 51.9 | 54.1 | 59.3 | 63.2 | 62.6 | 61.5 |
| **Below Normal (10%)** | 55.6 | 54.4 | 50.9 | 48.8 | 50.2 | 53.5 | 52.8 | 54.2 | 59.4 | 63.4 | 62.3 | 60.9 |
| **Dry (16%)** | 57.0 | 55.3 | 51.3 | 49.4 | 51.1 | 54.5 | 54.3 | 56.3 | 62.6 | 64.6 | 63.3 | 61.9 |
| **Critical (27%)** | 58.8 | 56.4 | 52.0 | 49.7 | 51.8 | 55.4 | 55.9 | 58.5 | 65.0 | 67.4 | 66.9 | 64.5 |

**Alternative 1 100419**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 59.7 | 57.0 | 52.7 | 51.1 | 52.6 | 55.7 | 56.3 | 58.6 | 65.2 | 67.8 | 67.2 | 64.5 |
| **20%** | 58.0 | 56.1 | 52.5 | 50.5 | 51.9 | 55.1 | 55.6 | 58.1 | 64.6 | 66.5 | 65.6 | 63.2 |
| **30%** | 57.2 | 55.5 | 52.0 | 50.0 | 51.3 | 54.7 | 54.6 | 56.7 | 63.3 | 65.4 | 64.7 | 62.6 |
| **40%** | 56.6 | 54.9 | 51.5 | 49.5 | 50.9 | 54.3 | 53.8 | 55.8 | 61.9 | 64.1 | 63.1 | 62.0 |
| **50%** | 56.2 | 54.6 | 51.0 | 49.1 | 50.5 | 53.7 | 52.9 | 54.8 | 60.0 | 63.5 | 62.7 | 61.2 |
| **60%** | 55.8 | 54.4 | 50.6 | 48.9 | 50.1 | 53.1 | 52.5 | 54.3 | 59.3 | 63.2 | 62.1 | 60.8 |
| **70%** | 55.1 | 53.9 | 50.4 | 48.4 | 49.5 | 51.9 | 52.0 | 54.0 | 58.7 | 62.8 | 61.9 | 60.2 |
| **80%** | 54.7 | 53.5 | 50.0 | 47.9 | 49.3 | 50.6 | 51.4 | 53.4 | 56.2 | 61.9 | 61.6 | 60.0 |
| **90%** | 53.9 | 53.2 | 49.7 | 47.4 | 48.5 | 49.4 | 50.7 | 52.8 | 54.7 | 60.9 | 60.4 | 58.3 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 56.7 | 55.0 | 51.2 | 49.2 | 50.5 | 53.2 | 53.3 | 55.4 | 60.3 | 63.8 | 63.2 | 61.5 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 54.5 | 53.6 | 50.6 | 48.7 | 49.3 | 49.9 | 51.4 | 53.3 | 54.7 | 59.7 | 59.7 | 58.0 |
| **Above Normal (24%)** | 56.7 | 54.8 | 51.1 | 49.1 | 50.0 | 52.9 | 51.9 | 54.1 | 59.3 | 63.2 | 62.6 | 61.5 |
| **Below Normal (10%)** | 55.6 | 54.4 | 50.9 | 48.8 | 50.2 | 53.5 | 52.8 | 54.2 | 59.4 | 63.4 | 62.3 | 60.9 |
| **Dry (16%)** | 57.0 | 55.3 | 51.3 | 49.4 | 51.1 | 54.5 | 54.3 | 56.3 | 62.6 | 64.6 | 63.3 | 61.9 |
| **Critical (27%)** | 58.8 | 56.4 | 52.0 | 49.7 | 51.8 | 55.4 | 55.9 | 58.5 | 65.0 | 67.4 | 66.9 | 64.5 |

**Alternative 1 100419 minus Alternative 1 011519**

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance**[a] | | | | | | | | | | | | |
| **10%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **20%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **30%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **40%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **50%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **60%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **70%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **80%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **90%** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (23%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Above Normal (24%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Below Normal (10%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Dry (16%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Critical (27%)** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

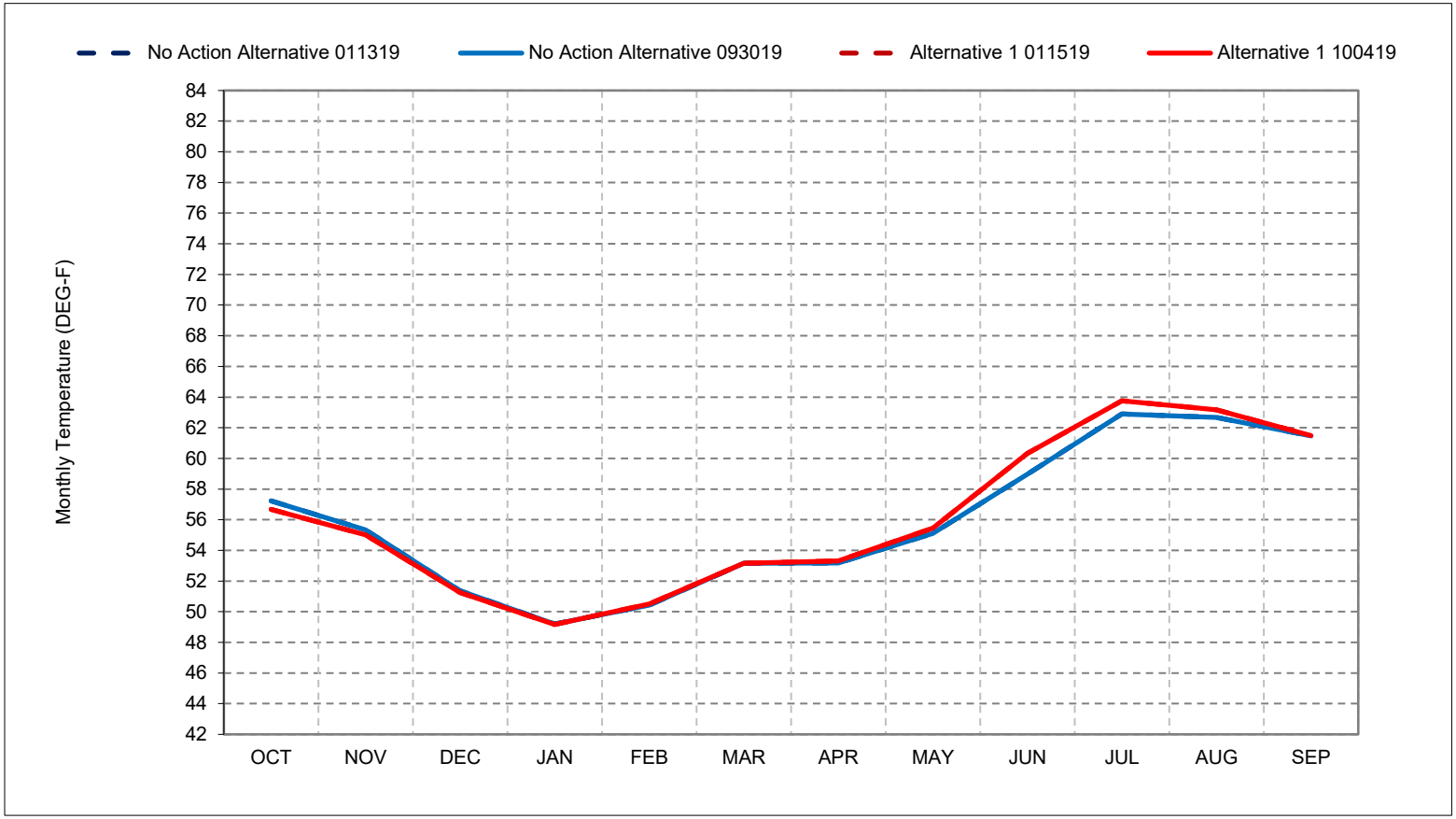
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

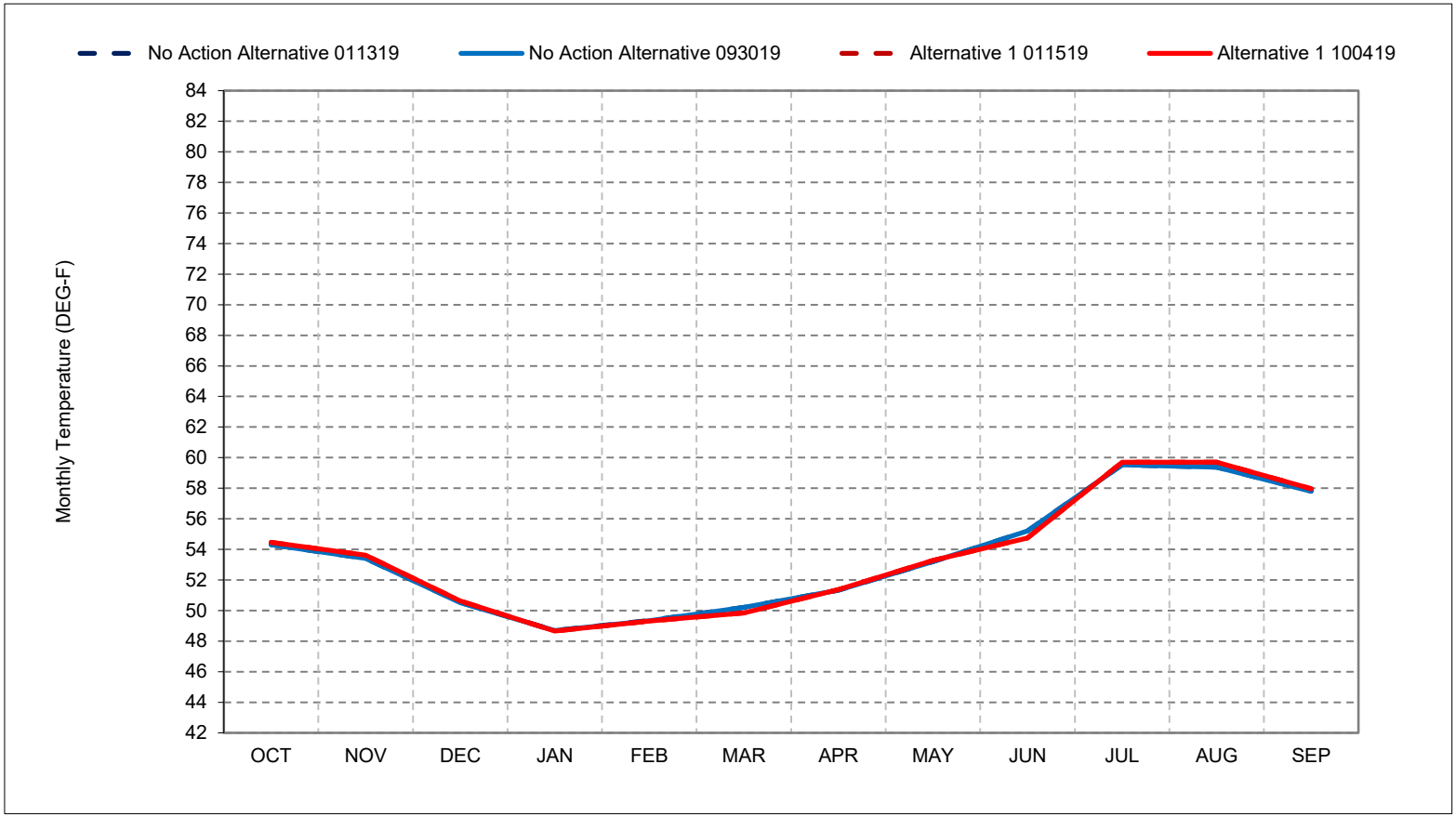
e New Melones forecasts are used as the basis of water operations.

## Figure 23-1. Stanislaus River at Orange Blossom Bridge, Long-Term Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 23-2. Stanislaus River at Orange Blossom Bridge, Wet Year Average Temperature



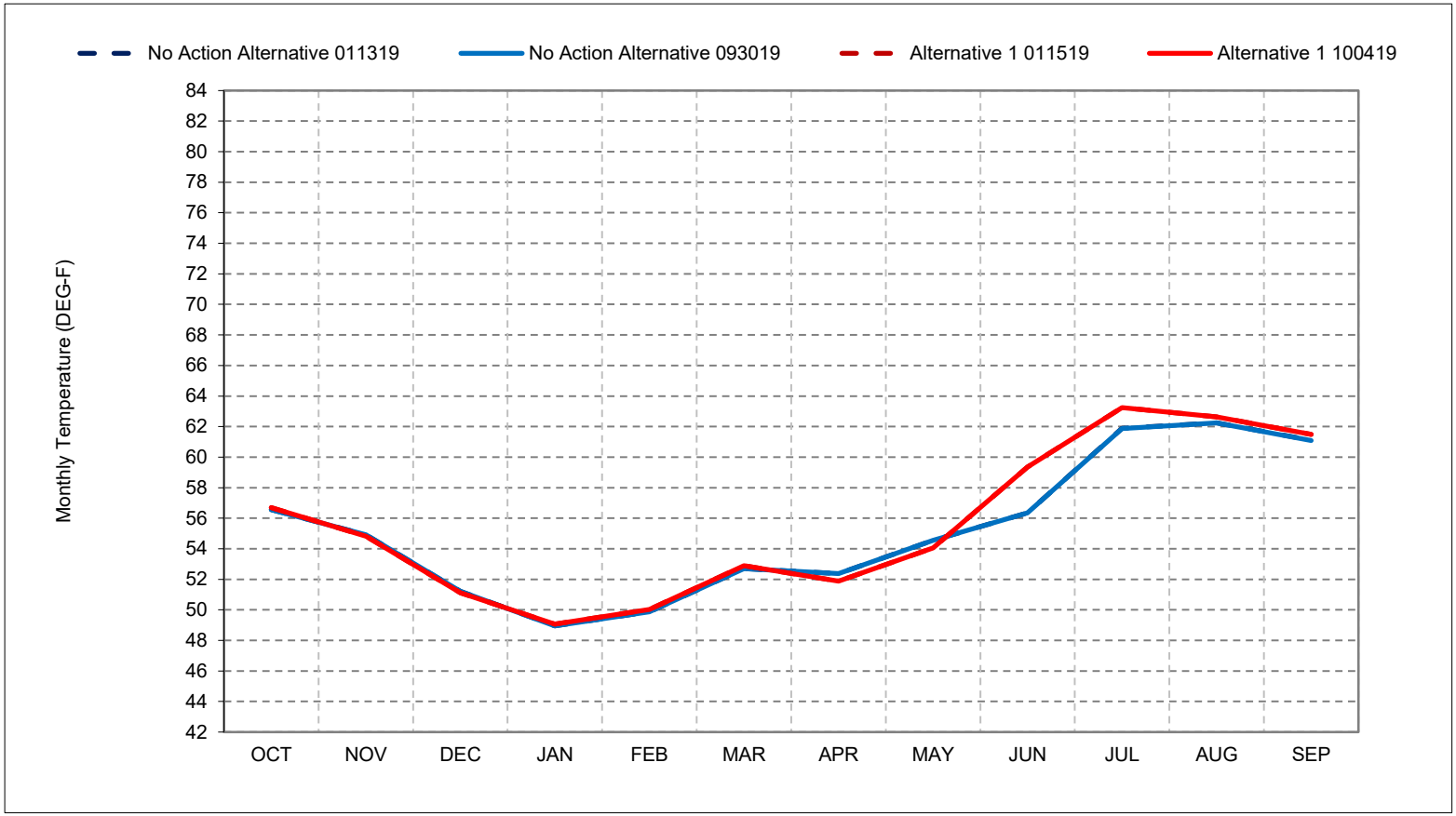

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

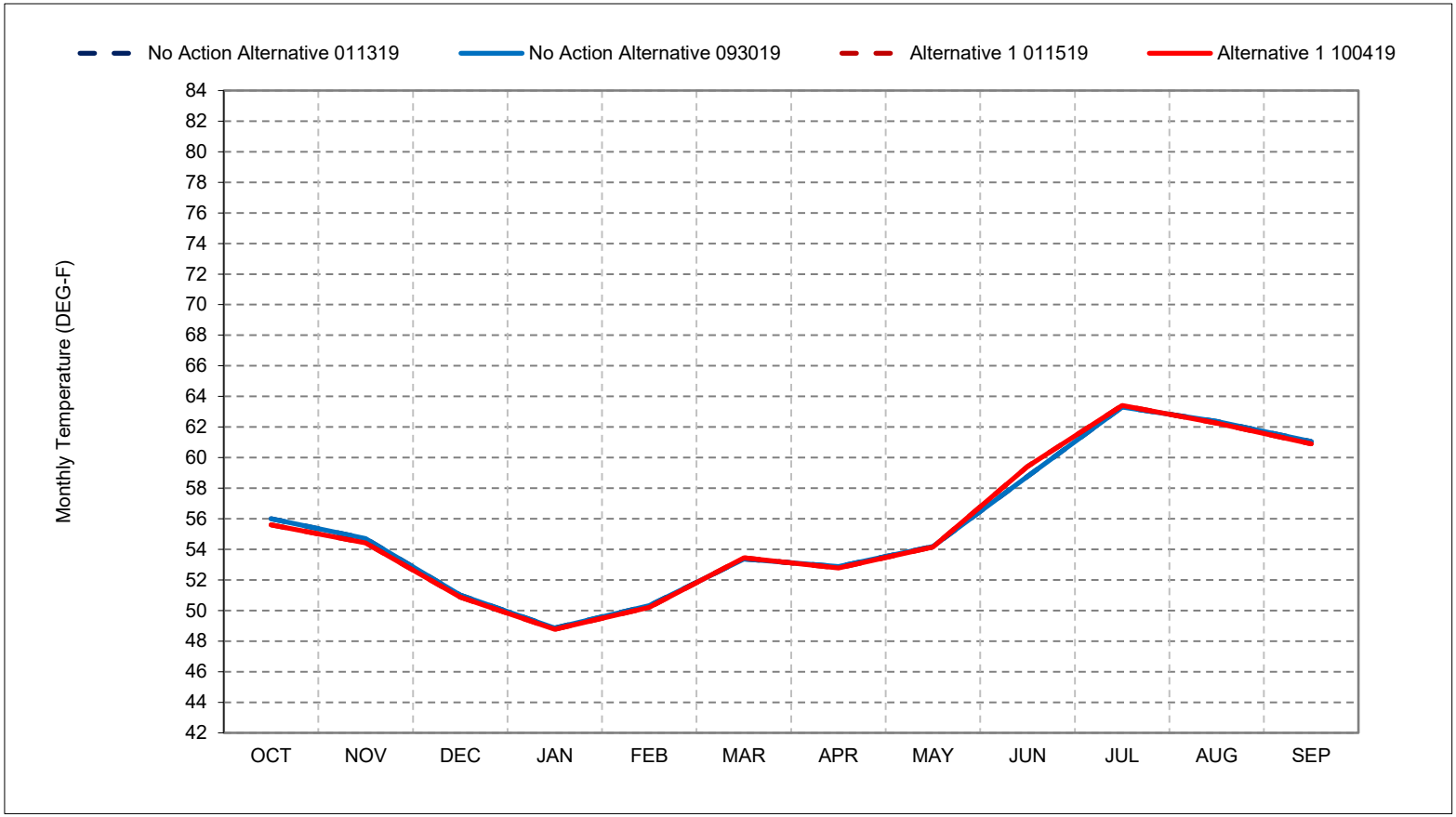
*New Melones forecasts are used as the basis of water operations.

## Figure 23-3. Stanislaus River at Orange Blossom Bridge, Above Normal Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 23-4. Stanislaus River at Orange Blossom Bridge, Below Normal Year Average Temperature



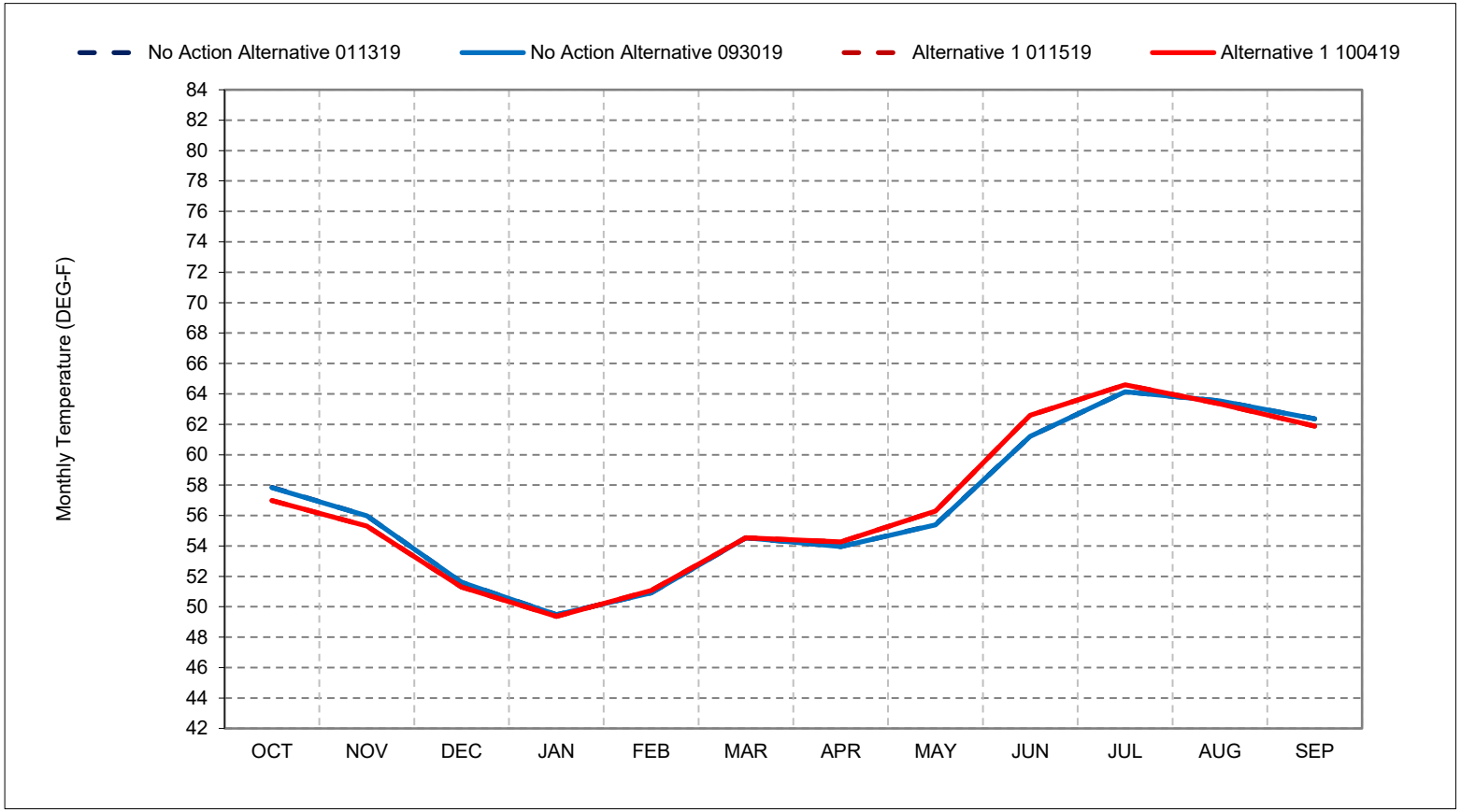

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 23-5. Stanislaus River at Orange Blossom Bridge, Dry Year Average Temperature



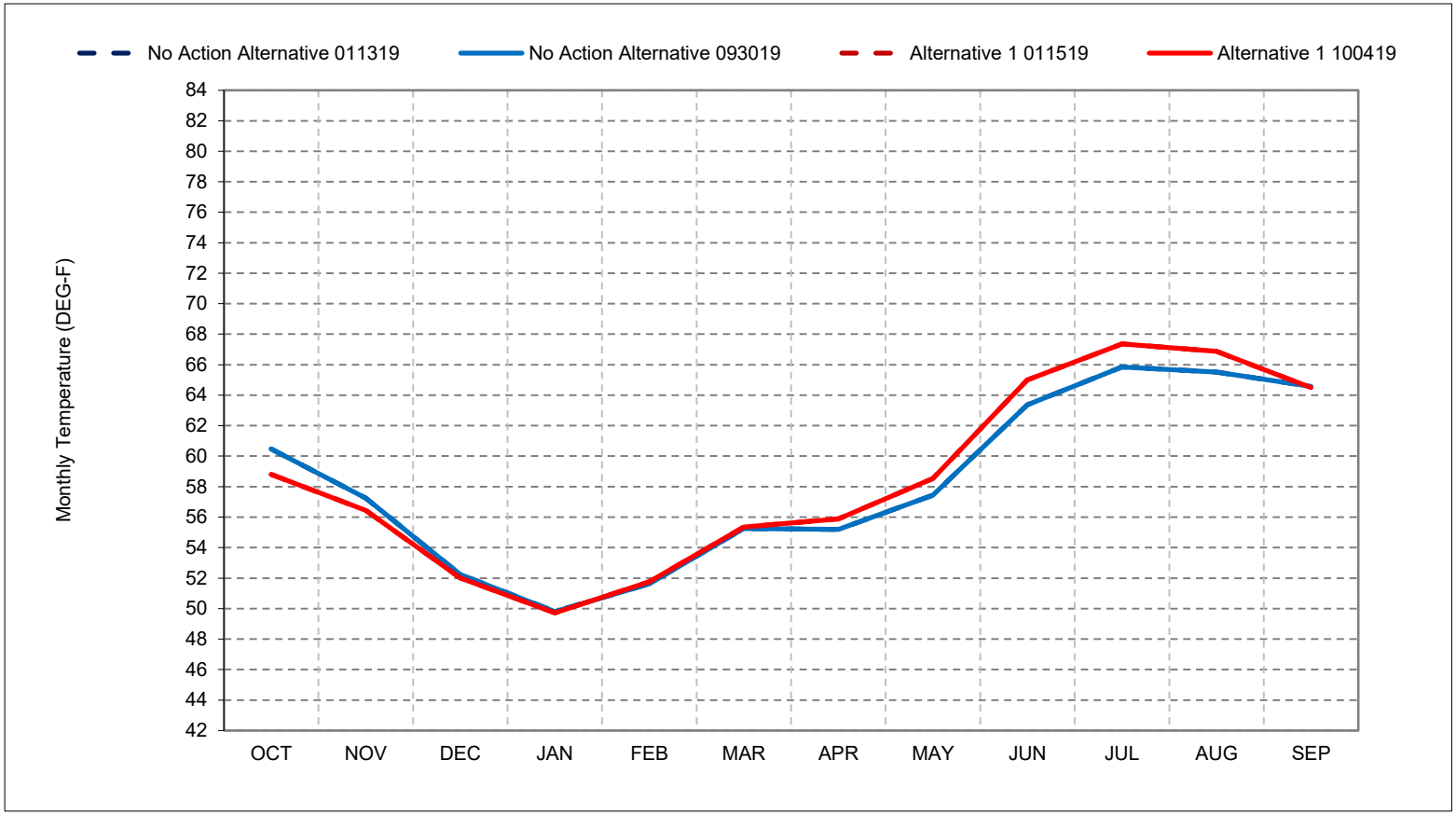

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

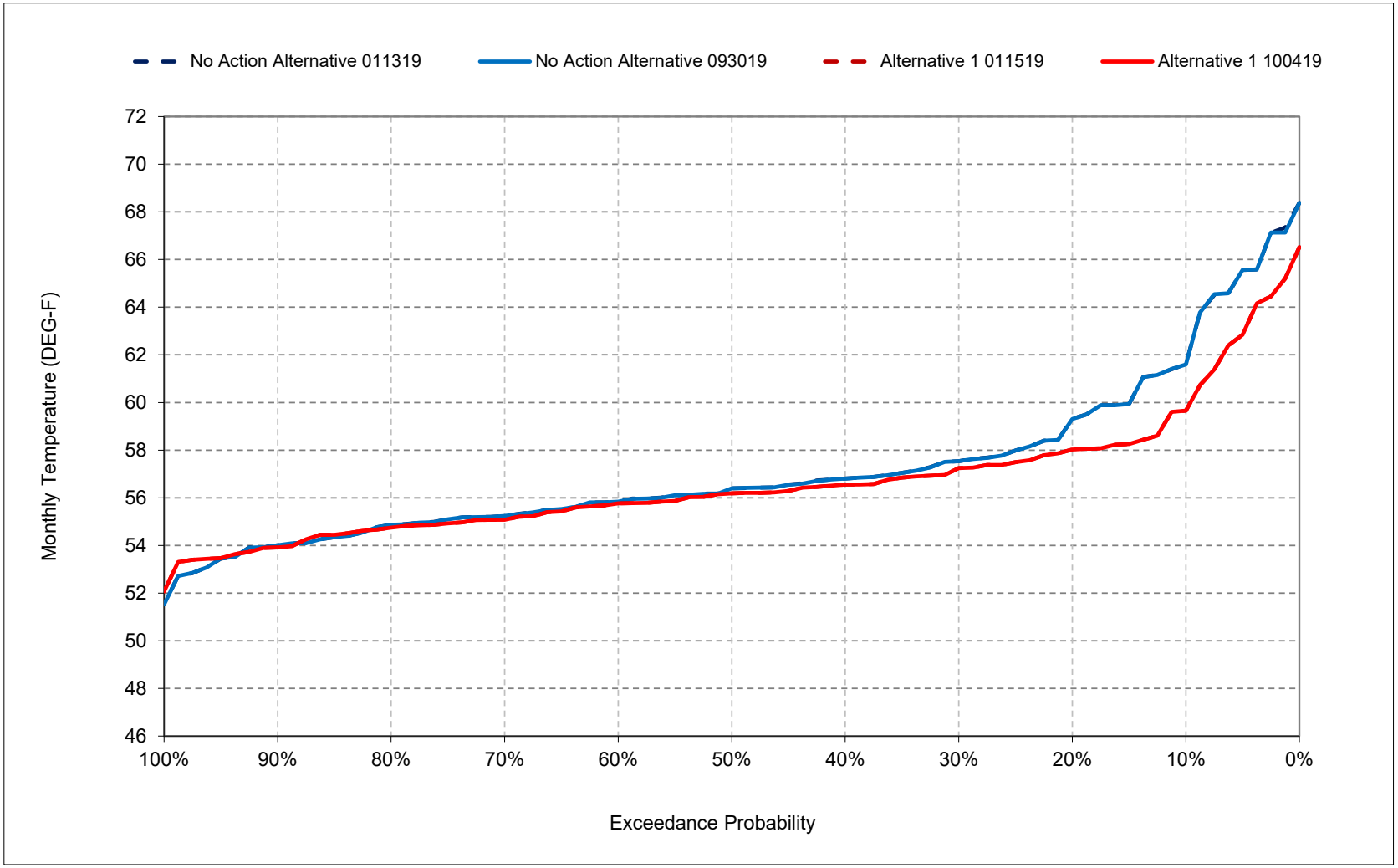
*New Melones forecasts are used as the basis of water operations.

## Figure 23-6. Stanislaus River at Orange Blossom Bridge, Critical Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

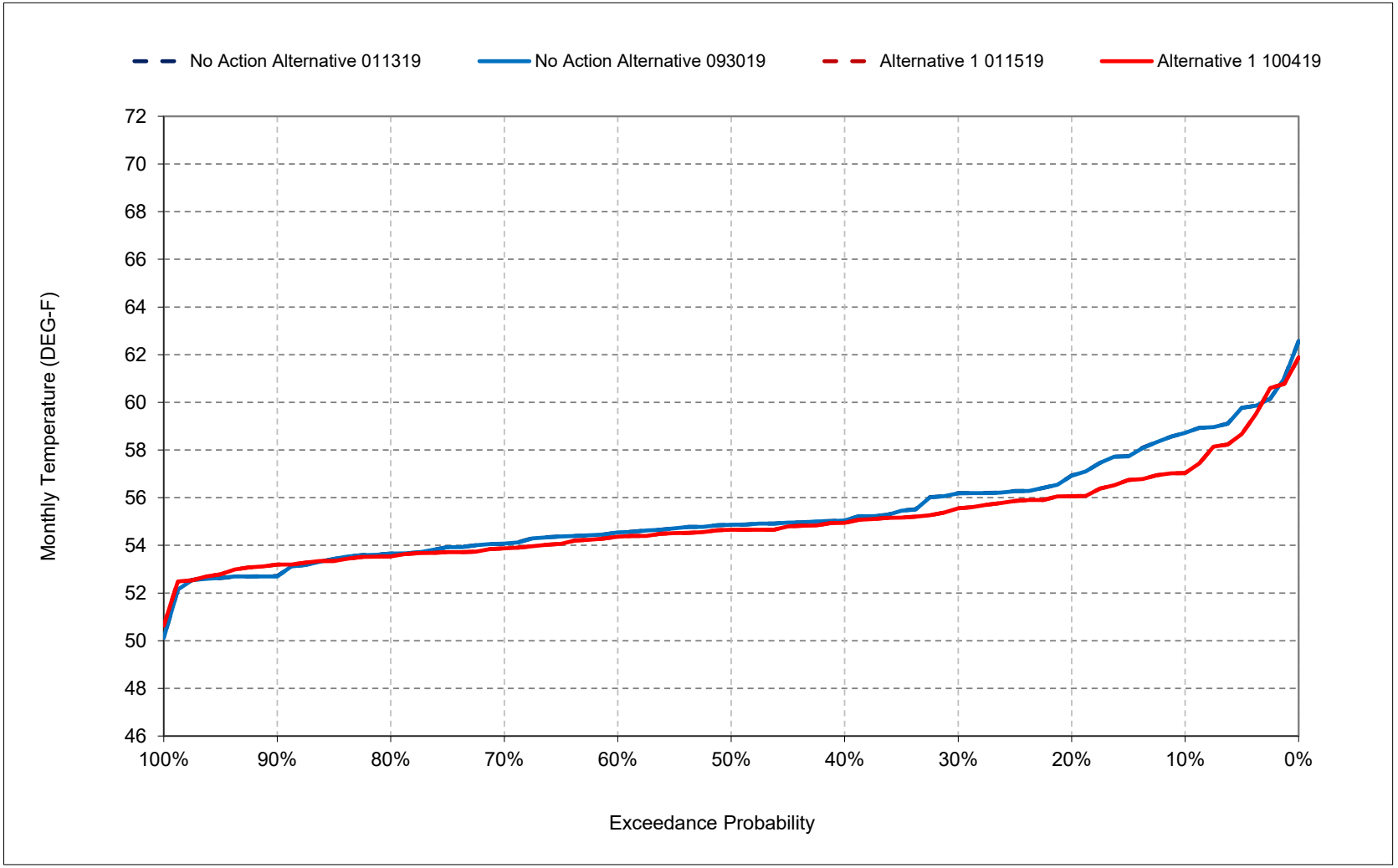
**Figure 23-7. Stanislaus River at Orange Blossom Bridge, October**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

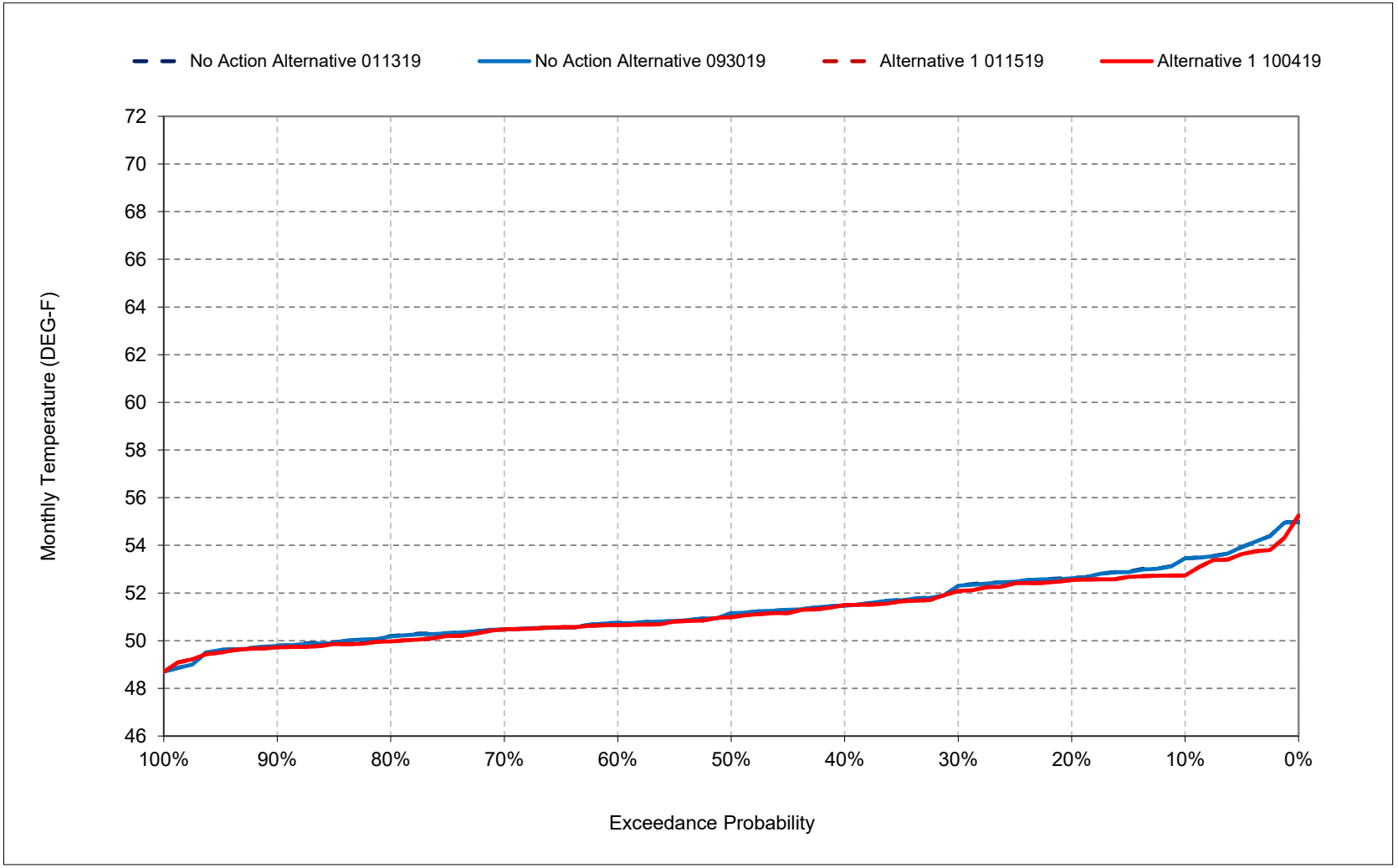
**Figure 23-8. Stanislaus River at Orange Blossom Bridge, November**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

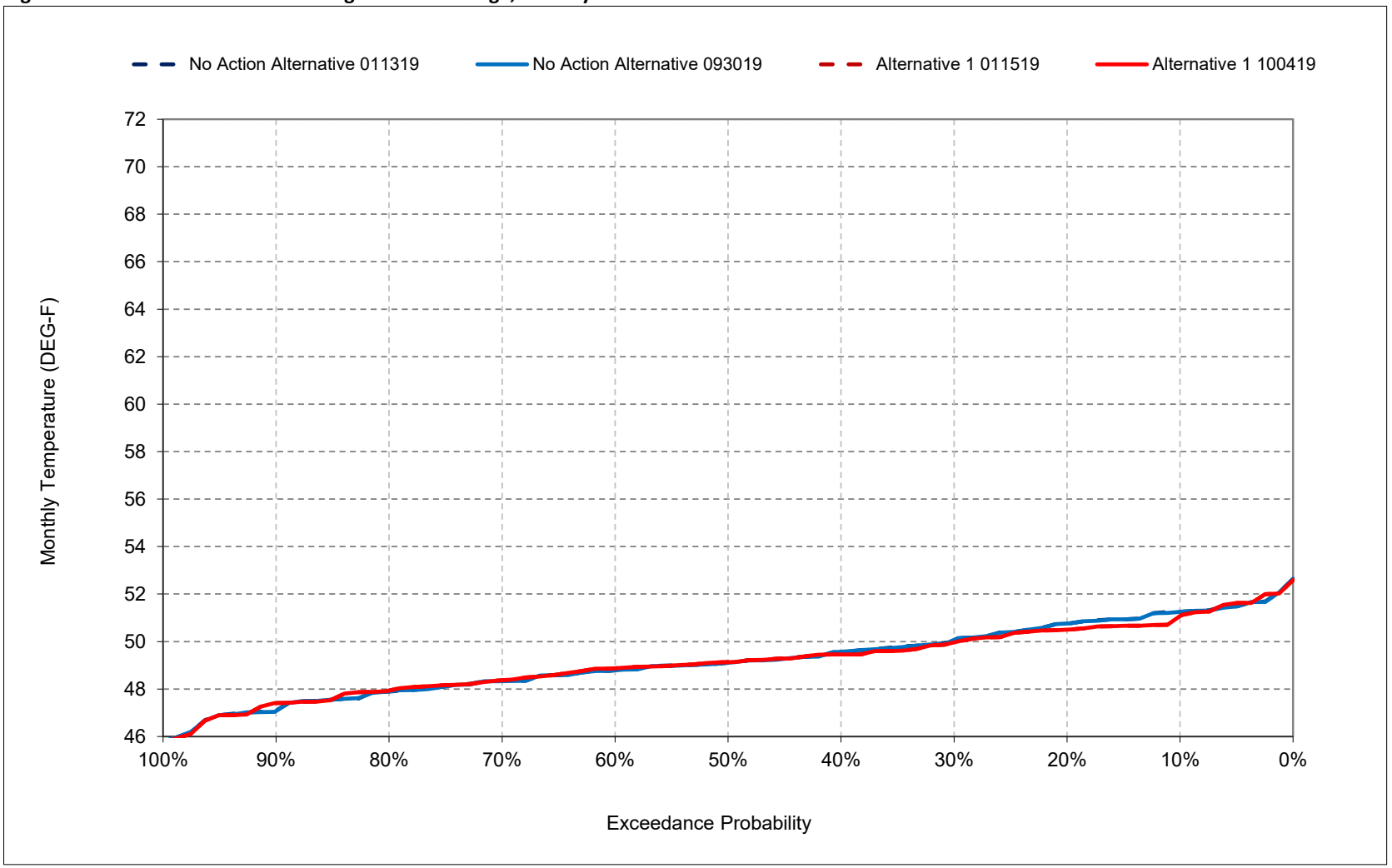
**Figure 23-9. Stanislaus River at Orange Blossom Bridge, December**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

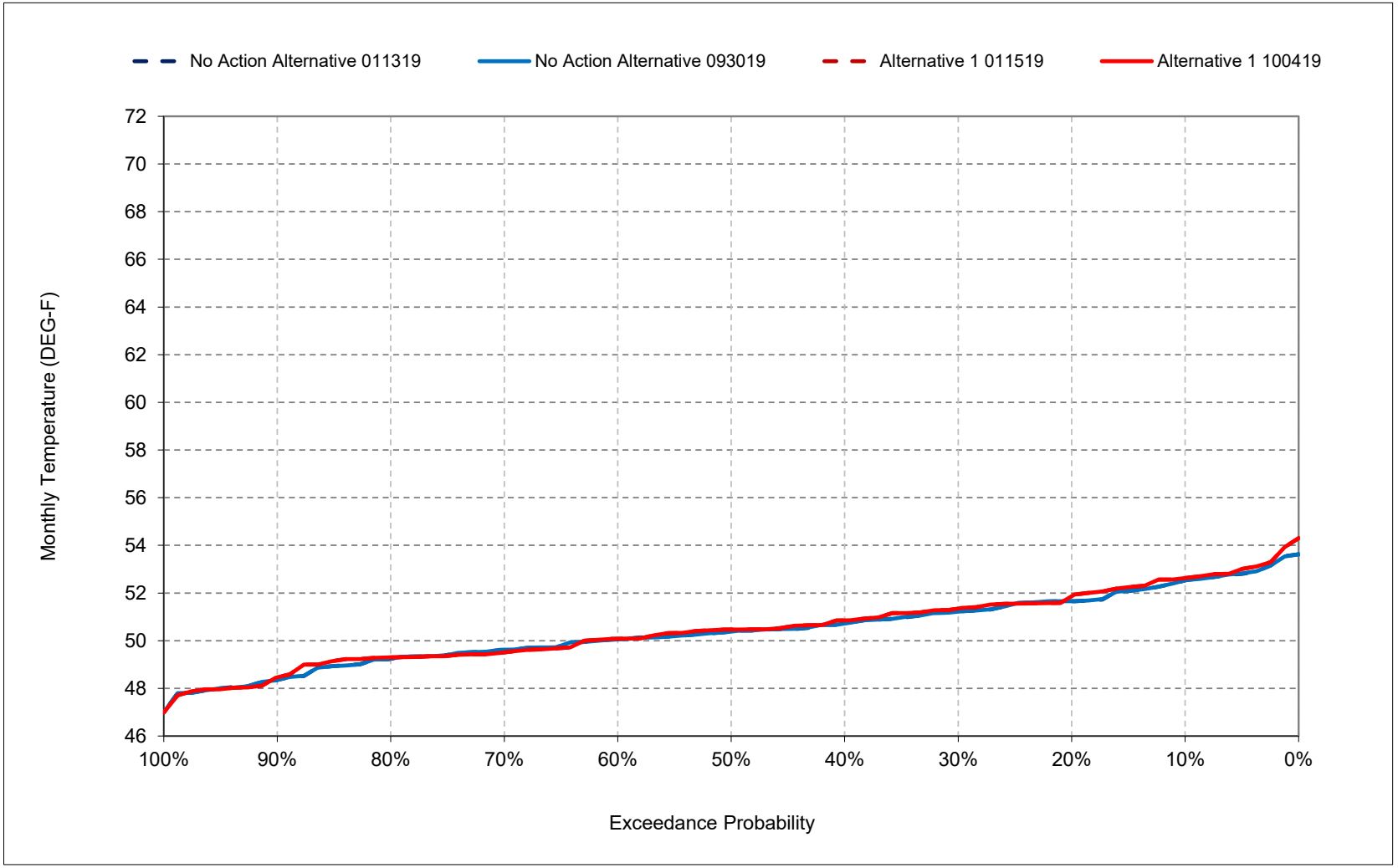
**Figure 23-10. Stanislaus River at Orange Blossom Bridge, January**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

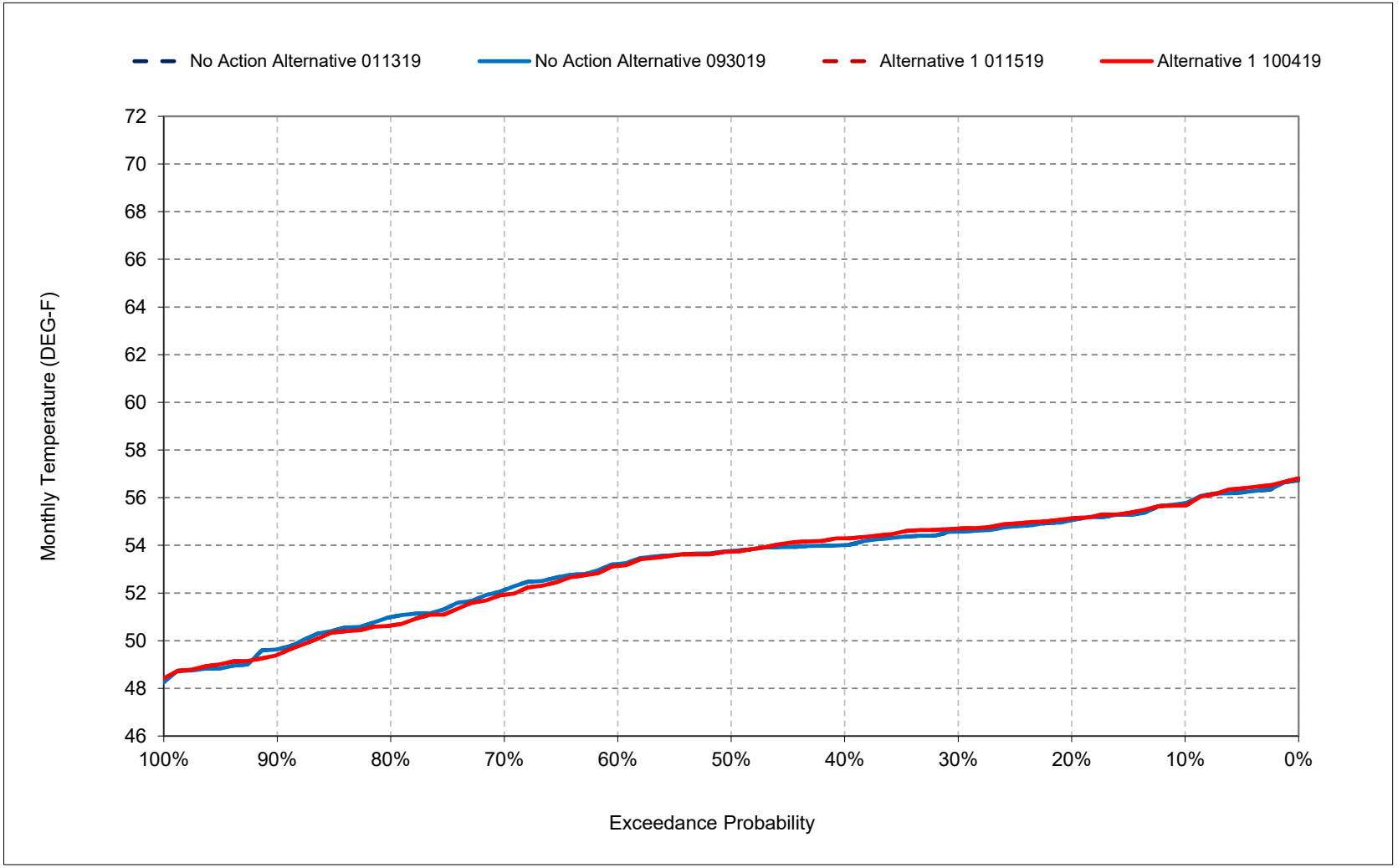
**Figure 23-11. Stanislaus River at Orange Blossom Bridge, February**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

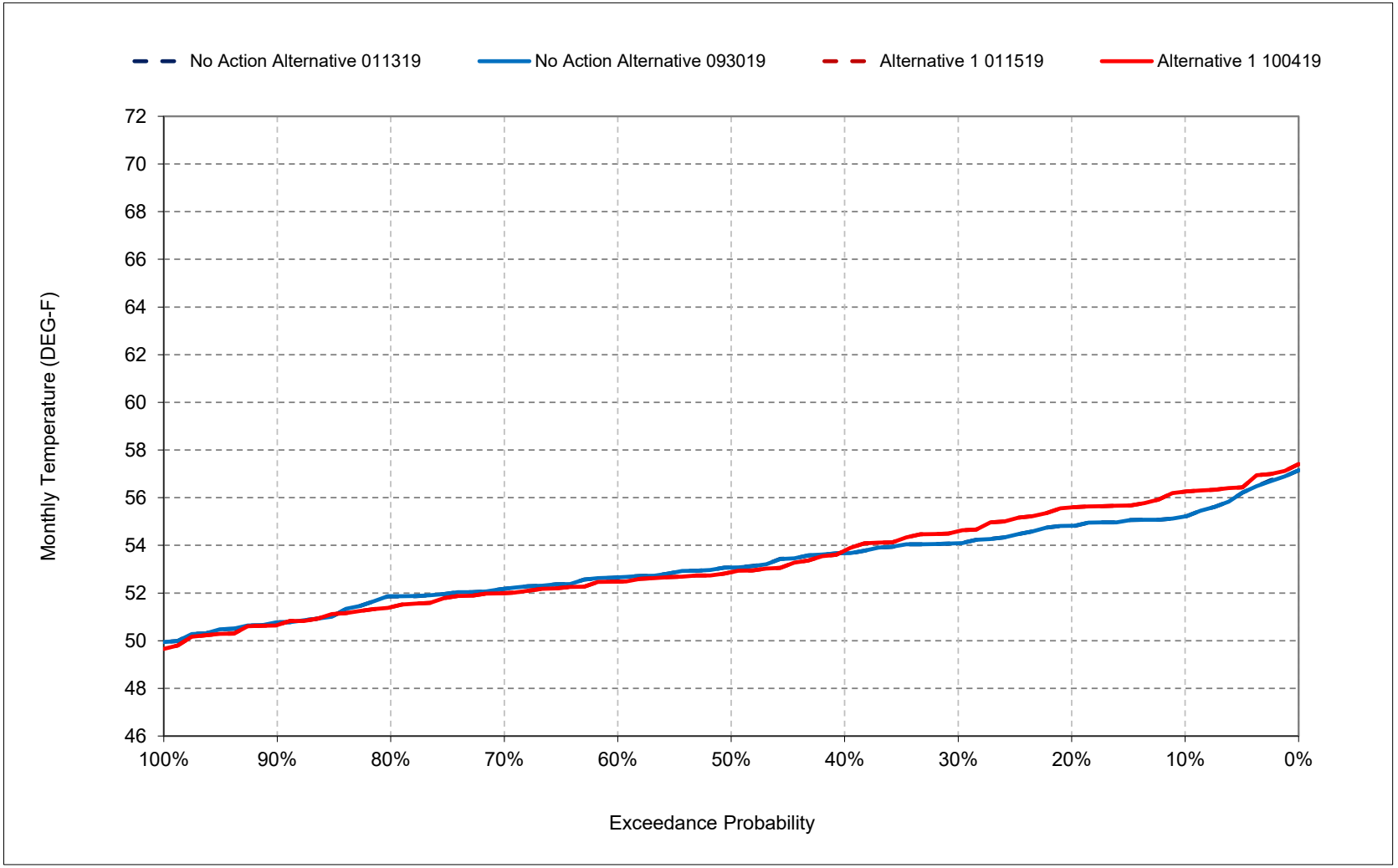
**Figure 23-12. Stanislaus River at Orange Blossom Bridge, March**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

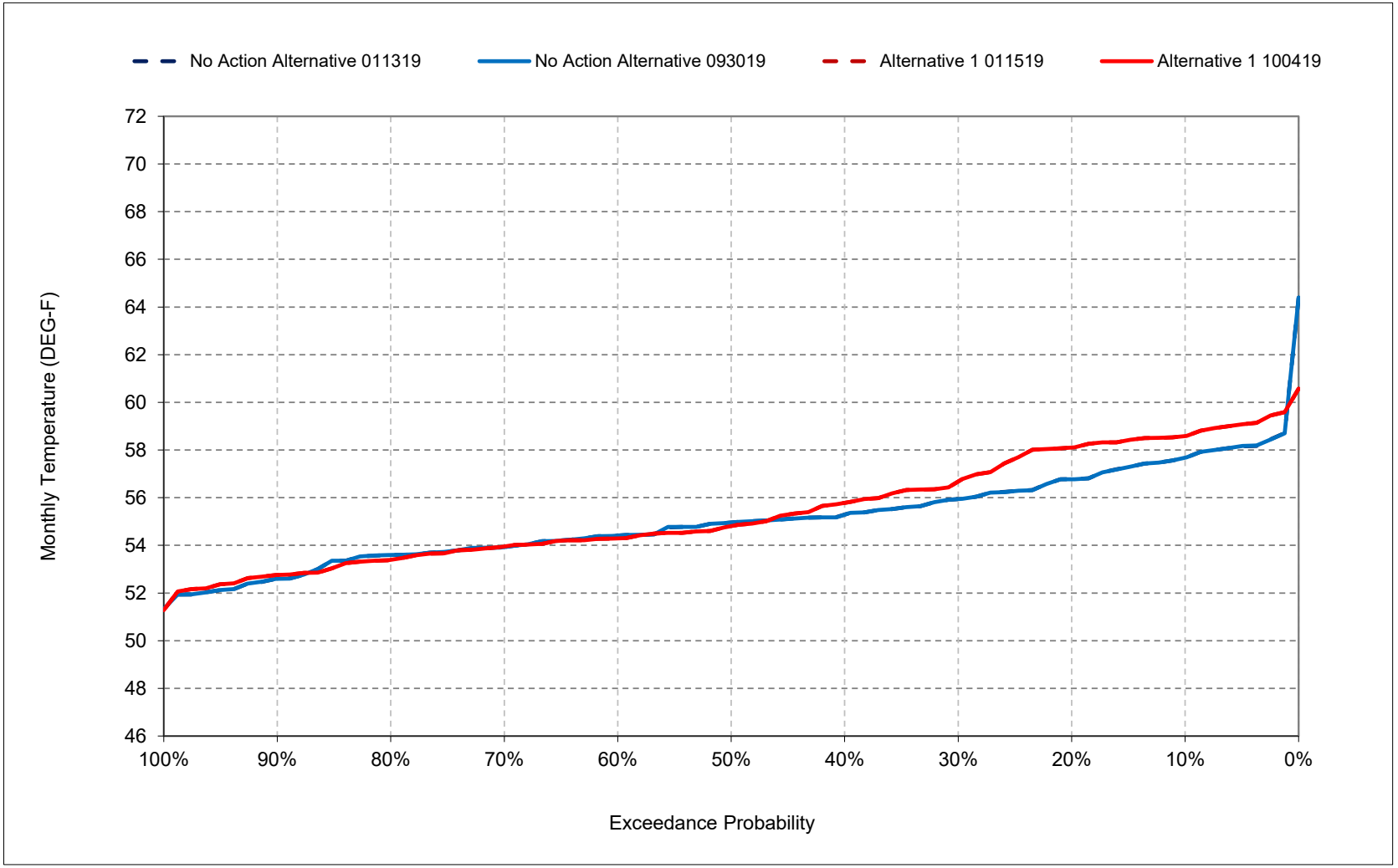
**Figure 23-13. Stanislaus River at Orange Blossom Bridge, April**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

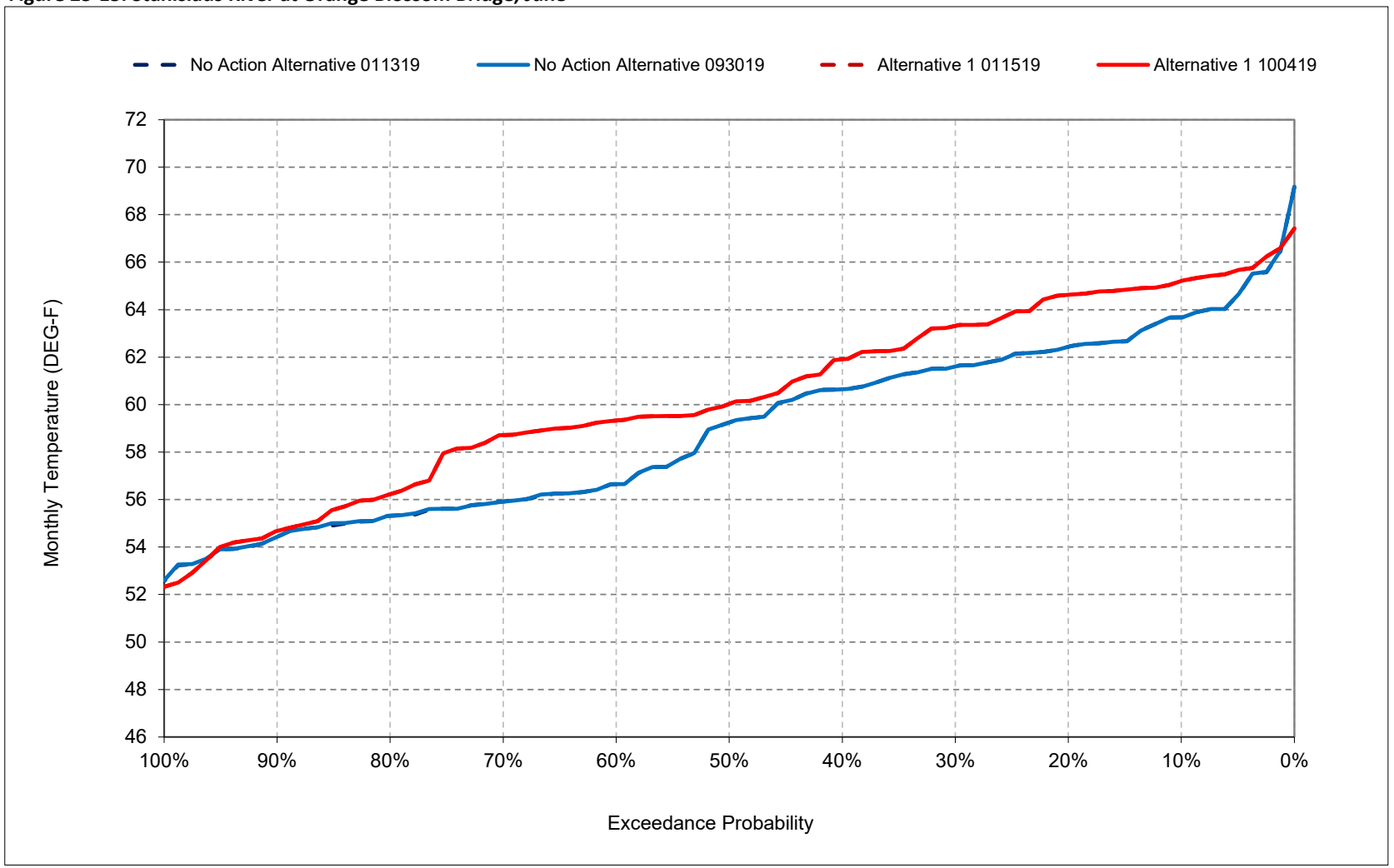
**Figure 23-14. Stanislaus River at Orange Blossom Bridge, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

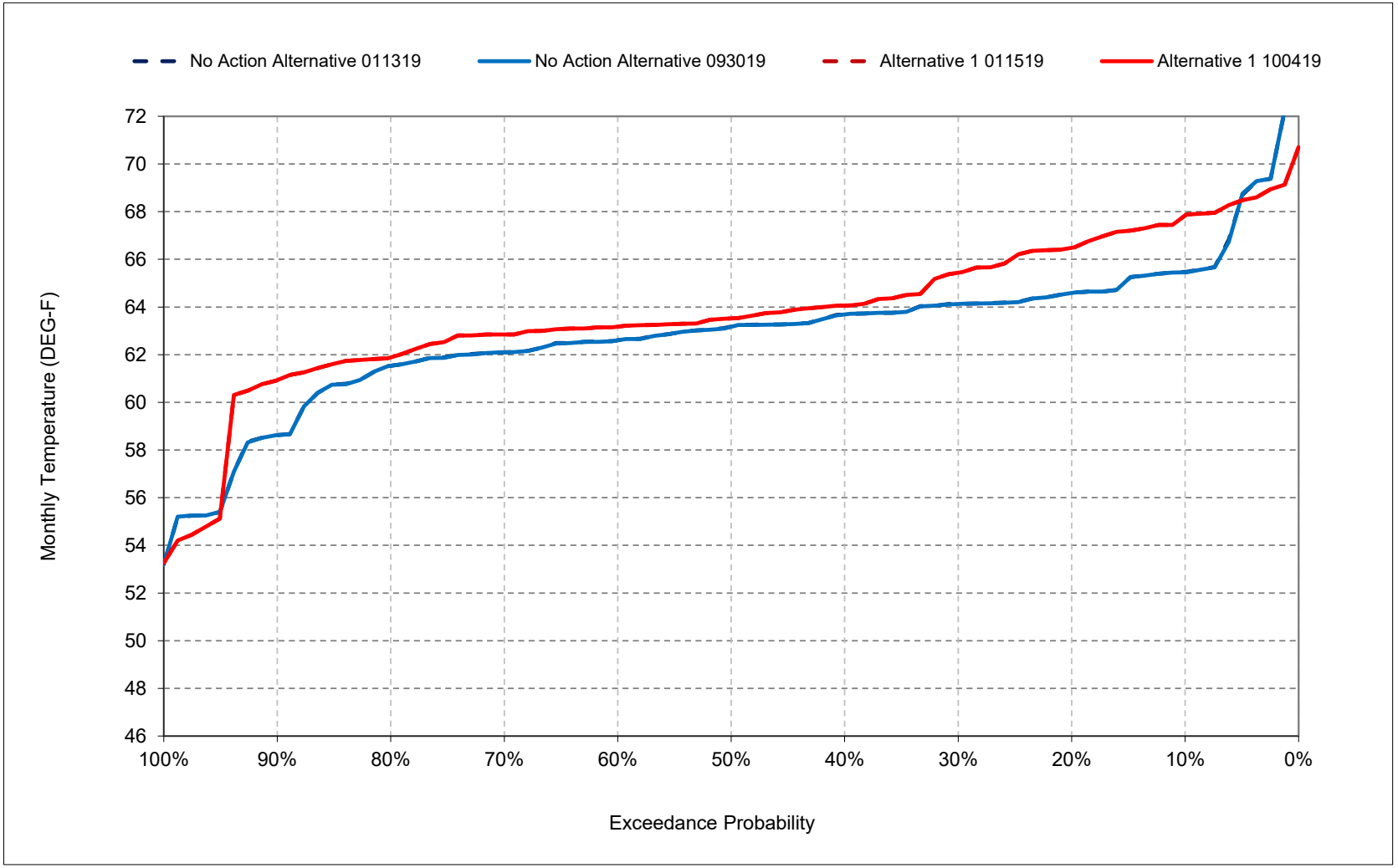
**Figure 23-15. Stanislaus River at Orange Blossom Bridge, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

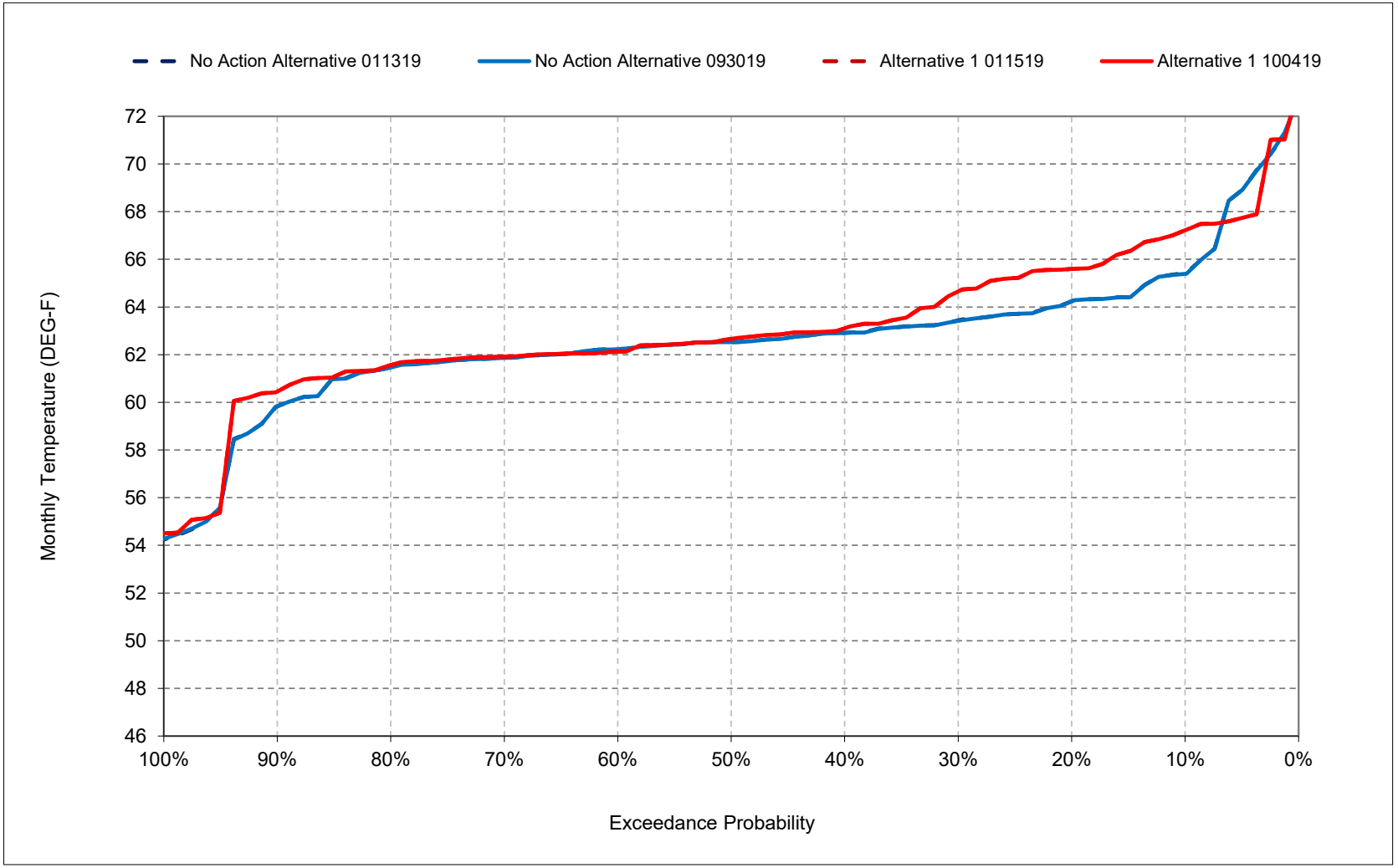
**Figure 23-16. Stanislaus River at Orange Blossom Bridge, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

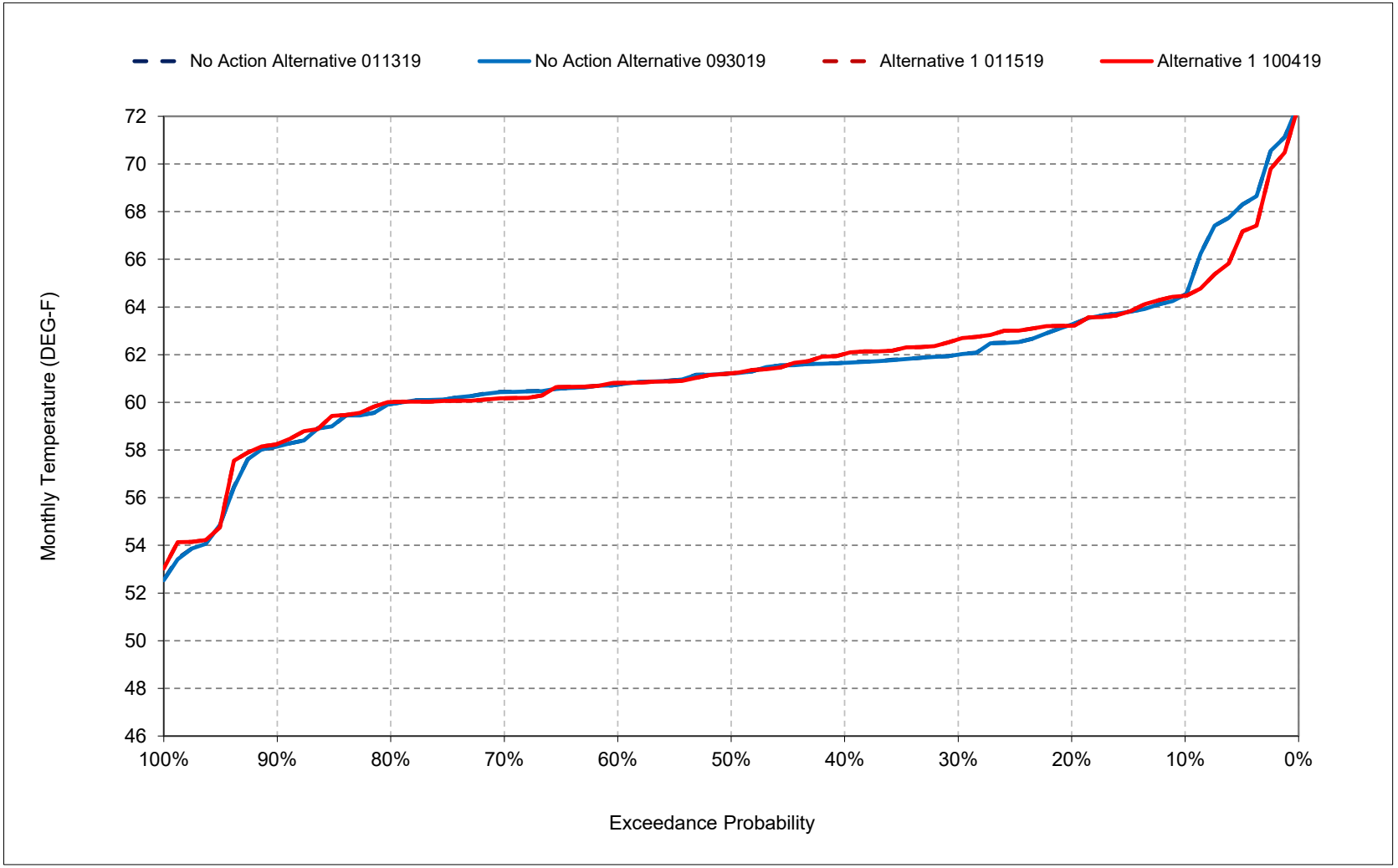
**Figure 23-17. Stanislaus River at Orange Blossom Bridge, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

**Figure 23-18. Stanislaus River at Orange Blossom Bridge, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Table 24-1. Stanislaus River at Mouth, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.3 | 58.6 | 51.9 | 51.4 | 55.1 | 60.5 | 62.1 | 65.5 | 72.3 | 76.5 | 75.2 | 71.8 |
| 20% | 63.0 | 57.4 | 51.6 | 50.8 | 54.4 | 59.7 | 61.1 | 64.6 | 71.7 | 75.4 | 74.4 | 70.7 |
| 30% | 61.7 | 56.8 | 51.0 | 50.2 | 53.9 | 59.1 | 60.3 | 63.6 | 70.8 | 74.8 | 73.8 | 70.4 |
| 40% | 60.6 | 56.5 | 50.7 | 49.7 | 53.2 | 58.7 | 58.8 | 62.1 | 70.2 | 74.3 | 73.4 | 69.8 |
| 50% | 60.1 | 55.7 | 50.3 | 49.4 | 52.9 | 58.0 | 57.9 | 61.0 | 67.8 | 73.8 | 73.0 | 69.5 |
| 60% | 59.6 | 55.2 | 49.9 | 49.0 | 52.6 | 57.0 | 57.1 | 60.7 | 65.3 | 73.1 | 72.6 | 69.0 |
| 70% | 59.0 | 55.0 | 49.7 | 48.8 | 52.1 | 55.7 | 56.2 | 59.8 | 63.8 | 72.9 | 72.4 | 68.6 |
| 80% | 58.6 | 54.7 | 49.3 | 48.5 | 51.5 | 53.6 | 55.7 | 58.7 | 62.7 | 71.7 | 71.9 | 68.1 |
| 90% | 58.2 | 54.2 | 48.9 | 47.9 | 50.6 | 52.1 | 54.8 | 58.0 | 61.7 | 69.3 | 70.7 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.8 | 56.0 | 50.4 | 49.6 | 52.9 | 57.1 | 58.3 | 61.6 | 67.3 | 73.1 | 72.6 | 69.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.4 | 55.0 | 50.3 | 49.6 | 51.8 | 53.0 | 55.4 | 58.9 | 63.1 | 69.6 | 69.6 | 65.7 |
| Above Normal (24%) | 60.3 | 55.7 | 50.1 | 49.5 | 52.5 | 56.8 | 57.2 | 61.3 | 64.3 | 72.1 | 72.6 | 69.2 |
| Below Normal (10%) | 59.3 | 55.6 | 50.0 | 49.3 | 52.5 | 57.3 | 57.4 | 59.9 | 67.6 | 73.9 | 72.6 | 69.0 |
| Dry (16%) | 61.2 | 56.5 | 50.5 | 49.7 | 53.3 | 58.6 | 59.6 | 62.1 | 70.3 | 75.0 | 73.4 | 70.0 |
| Critical (27%) | 63.4 | 57.2 | 50.8 | 49.6 | 54.2 | 59.9 | 61.3 | 64.7 | 72.0 | 75.7 | 74.6 | 71.1 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63.5 | 57.9 | 52.2 | 51.4 | 55.4 | 60.7 | 63.0 | 67.3 | 73.5 | 77.2 | 76.0 | 72.1 |
| 20% | 62.1 | 57.2 | 51.4 | 50.7 | 54.5 | 59.7 | 62.2 | 66.2 | 73.1 | 76.6 | 75.2 | 71.2 |
| 30% | 61.2 | 56.8 | 51.0 | 50.1 | 54.0 | 59.2 | 60.8 | 64.2 | 72.0 | 75.7 | 74.4 | 70.7 |
| 40% | 60.7 | 56.3 | 50.6 | 49.7 | 53.3 | 58.7 | 58.9 | 62.8 | 71.1 | 75.1 | 73.8 | 70.0 |
| 50% | 60.3 | 55.5 | 50.2 | 49.3 | 52.8 | 58.1 | 57.2 | 60.8 | 69.4 | 74.3 | 73.4 | 69.6 |
| 60% | 59.5 | 55.2 | 49.9 | 49.0 | 52.5 | 56.9 | 56.4 | 60.3 | 68.1 | 73.9 | 72.8 | 69.3 |
| 70% | 58.9 | 55.0 | 49.6 | 48.7 | 52.1 | 54.9 | 56.0 | 59.8 | 67.2 | 73.5 | 72.4 | 68.8 |
| 80% | 58.6 | 54.6 | 49.3 | 48.5 | 51.4 | 53.5 | 55.5 | 59.0 | 64.3 | 72.9 | 72.1 | 68.2 |
| 90% | 58.2 | 54.1 | 48.9 | 47.9 | 50.5 | 52.2 | 54.9 | 58.7 | 62.6 | 71.6 | 71.4 | 67.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.5 | 55.9 | 50.4 | 49.5 | 52.9 | 57.1 | 58.5 | 62.2 | 68.8 | 73.9 | 73.0 | 69.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.5 | 55.1 | 50.4 | 49.6 | 51.5 | 52.5 | 55.4 | 58.9 | 62.3 | 69.4 | 69.8 | 65.8 |
| Above Normal (24%) | 60.4 | 55.6 | 50.1 | 49.6 | 52.6 | 57.0 | 56.0 | 60.2 | 68.6 | 74.0 | 73.0 | 69.4 |
| Below Normal (10%) | 59.1 | 55.4 | 50.0 | 49.1 | 52.2 | 57.5 | 56.8 | 59.6 | 68.4 | 74.1 | 72.6 | 69.0 |
| Dry (16%) | 60.9 | 56.2 | 50.3 | 49.6 | 53.6 | 58.7 | 60.5 | 63.8 | 71.7 | 75.5 | 73.4 | 69.9 |
| Critical (27%) | 62.7 | 56.8 | 50.7 | 49.5 | 54.3 | 60.0 | 62.7 | 66.9 | 73.2 | 76.8 | 75.7 | 71.7 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.8 | -0.7 | **0.3** | **0.0** | **0.4** | **0.3** | **0.9** | **1.8** | **1.2** | **0.7** | **0.8** | **0.3** |
| 20% | -0.8 | -0.2 | -0.1 | -0.1 | **0.1** | **0.0** | **1.1** | **1.6** | **1.4** | **1.2** | **0.8** | **0.5** |
| 30% | -0.5 | 0.0 | 0.0 | 0.0 | **0.1** | **0.1** | **0.6** | **0.7** | **1.2** | **1.0** | **0.6** | **0.3** |
| 40% | **0.1** | -0.2 | 0.0 | 0.0 | **0.1** | **0.0** | **0.1** | **0.7** | **0.9** | **0.8** | **0.4** | **0.2** |
| 50% | **0.2** | -0.2 | -0.1 | 0.0 | -0.1 | **0.1** | -0.7 | -0.1 | **1.6** | **0.5** | **0.4** | **0.1** |
| 60% | -0.1 | 0.0 | **0.1** | 0.0 | -0.1 | -0.1 | -0.7 | -0.4 | **2.8** | **0.7** | **0.2** | **0.2** |
| 70% | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | -0.8 | -0.3 | 0.0 | **3.3** | **0.6** | **0.1** | **0.1** |
| 80% | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.2 | **0.3** | **1.6** | **1.2** | **0.1** | **0.1** |
| 90% | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | **0.2** | **0.1** | **0.7** | **0.8** | **2.2** | **0.8** | **0.2** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | **0.6** | **1.5** | **0.8** | **0.5** | **0.2** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | **0.1** | **0.2** | **0.1** | 0.0 | -0.3 | -0.6 | **0.0** | 0.0 | -0.8 | -0.3 | **0.3** | **0.1** |
| Above Normal (24%) | **0.0** | 0.0 | 0.0 | **0.1** | **0.1** | **0.2** | -1.2 | -1.1 | **4.3** | **1.8** | **0.4** | **0.2** |
| Below Normal (10%) | -0.3 | -0.1 | -0.1 | -0.1 | -0.3 | **0.2** | -0.6 | -0.3 | **0.8** | **0.2** | **0.0** | **0.0** |
| Dry (16%) | -0.3 | -0.3 | -0.2 | 0.0 | **0.3** | **0.1** | **0.8** | **1.7** | **1.4** | **0.5** | **0.1** | -0.1 |
| Critical (27%) | -0.7 | -0.4 | -0.1 | 0.0 | **0.2** | **0.1** | **1.4** | **2.2** | **1.2** | **1.1** | **1.1** | **0.6** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 24-2. Stanislaus River at Mouth, Monthly Temperature

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.3 | 58.6 | 51.9 | 51.4 | 55.1 | 60.5 | 62.1 | 65.5 | 72.3 | 76.5 | 75.2 | 71.8 |
| 20% | 62.9 | 57.4 | 51.6 | 50.8 | 54.4 | 59.7 | 61.1 | 64.6 | 71.7 | 75.4 | 74.4 | 70.7 |
| 30% | 61.7 | 56.8 | 51.0 | 50.2 | 53.9 | 59.1 | 60.3 | 63.6 | 70.8 | 74.8 | 73.8 | 70.4 |
| 40% | 60.6 | 56.5 | 50.7 | 49.7 | 53.2 | 58.7 | 58.8 | 62.1 | 70.2 | 74.3 | 73.4 | 69.8 |
| 50% | 60.1 | 55.7 | 50.3 | 49.4 | 52.9 | 58.0 | 57.9 | 61.0 | 67.8 | 73.8 | 73.0 | 69.5 |
| 60% | 59.6 | 55.2 | 49.9 | 49.0 | 52.6 | 57.0 | 57.1 | 60.7 | 65.3 | 73.1 | 72.6 | 69.0 |
| 70% | 59.0 | 55.0 | 49.7 | 48.8 | 52.1 | 55.7 | 56.3 | 59.8 | 63.8 | 72.9 | 72.4 | 68.6 |
| 80% | 58.6 | 54.7 | 49.3 | 48.5 | 51.5 | 53.6 | 55.7 | 58.7 | 62.7 | 71.7 | 71.9 | 68.1 |
| 90% | 58.2 | 54.2 | 48.9 | 47.8 | 50.6 | 52.1 | 54.8 | 58.0 | 61.7 | 69.3 | 70.7 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.7 | 56.0 | 50.4 | 49.6 | 52.9 | 57.1 | 58.3 | 61.6 | 67.3 | 73.1 | 72.6 | 69.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.4 | 55.0 | 50.3 | 49.6 | 51.8 | 53.0 | 55.4 | 58.9 | 63.1 | 69.6 | 69.6 | 65.7 |
| Above Normal (24%) | 60.3 | 55.7 | 50.1 | 49.5 | 52.5 | 56.8 | 57.2 | 61.3 | 64.3 | 72.1 | 72.6 | 69.2 |
| Below Normal (10%) | 59.3 | 55.6 | 50.0 | 49.3 | 52.5 | 57.3 | 57.4 | 59.9 | 67.6 | 73.9 | 72.6 | 69.0 |
| Dry (16%) | 61.2 | 56.5 | 50.5 | 49.7 | 53.3 | 58.6 | 59.6 | 62.1 | 70.3 | 75.0 | 73.4 | 70.0 |
| Critical (27%) | 63.4 | 57.2 | 50.8 | 49.6 | 54.2 | 59.9 | 61.3 | 64.7 | 72.0 | 75.7 | 74.6 | 71.1 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63.5 | 57.9 | 52.2 | 51.4 | 55.4 | 60.7 | 63.0 | 67.3 | 73.5 | 77.2 | 76.0 | 72.1 |
| 20% | 62.1 | 57.2 | 51.4 | 50.7 | 54.5 | 59.7 | 62.2 | 66.2 | 73.1 | 76.6 | 75.2 | 71.2 |
| 30% | 61.2 | 56.8 | 51.0 | 50.1 | 54.0 | 59.2 | 60.8 | 64.2 | 72.0 | 75.7 | 74.4 | 70.7 |
| 40% | 60.7 | 56.3 | 50.6 | 49.7 | 53.3 | 58.7 | 58.9 | 62.8 | 71.1 | 75.1 | 73.8 | 70.0 |
| 50% | 60.3 | 55.5 | 50.2 | 49.3 | 52.8 | 58.1 | 57.2 | 60.8 | 69.4 | 74.3 | 73.4 | 69.6 |
| 60% | 59.5 | 55.2 | 49.9 | 49.0 | 52.5 | 56.9 | 56.4 | 60.3 | 68.1 | 73.9 | 72.8 | 69.3 |
| 70% | 58.9 | 55.0 | 49.6 | 48.7 | 52.1 | 54.9 | 56.0 | 59.8 | 67.2 | 73.5 | 72.4 | 68.8 |
| 80% | 58.6 | 54.6 | 49.3 | 48.5 | 51.4 | 53.5 | 55.5 | 59.0 | 64.3 | 72.9 | 72.1 | 68.2 |
| 90% | 58.2 | 54.1 | 48.9 | 47.9 | 50.5 | 52.2 | 54.9 | 58.7 | 62.6 | 71.6 | 71.4 | 67.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.5 | 55.9 | 50.4 | 49.5 | 52.9 | 57.1 | 58.5 | 62.2 | 68.8 | 73.9 | 73.0 | 69.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.5 | 55.1 | 50.4 | 49.6 | 51.5 | 52.5 | 55.4 | 58.9 | 62.3 | 69.4 | 69.8 | 65.8 |
| Above Normal (24%) | 60.4 | 55.6 | 50.1 | 49.6 | 52.6 | 57.0 | 56.0 | 60.2 | 68.6 | 74.0 | 73.0 | 69.4 |
| Below Normal (10%) | 59.1 | 55.4 | 50.0 | 49.1 | 52.2 | 57.5 | 56.8 | 59.6 | 68.4 | 74.1 | 72.6 | 69.0 |
| Dry (16%) | 60.9 | 56.2 | 50.3 | 49.6 | 53.6 | 58.7 | 60.5 | 63.8 | 71.7 | 75.5 | 73.4 | 69.9 |
| Critical (27%) | 62.7 | 56.8 | 50.7 | 49.5 | 54.3 | 60.0 | 62.7 | 66.9 | 73.2 | 76.8 | 75.7 | 71.7 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.8 | -0.7 | **0.3** | **0.0** | **0.4** | **0.3** | **0.9** | **1.8** | **1.2** | **0.7** | **0.8** | **0.3** |
| 20% | -0.8 | -0.2 | -0.1 | -0.1 | **0.1** | **0.0** | **1.1** | **1.6** | **1.4** | **1.2** | **0.8** | **0.5** |
| 30% | -0.5 | 0.0 | 0.0 | 0.0 | **0.1** | **0.1** | **0.6** | **0.7** | **1.2** | **1.0** | **0.6** | **0.3** |
| 40% | **0.1** | -0.2 | 0.0 | **0.0** | **0.1** | **0.0** | **0.1** | **0.7** | **0.9** | **0.8** | **0.4** | **0.2** |
| 50% | **0.2** | -0.2 | -0.1 | 0.0 | -0.1 | **0.1** | -0.7 | -0.1 | **1.6** | **0.5** | **0.4** | **0.1** |
| 60% | -0.1 | 0.0 | **0.1** | 0.0 | -0.1 | -0.1 | -0.7 | -0.4 | **2.8** | **0.7** | **0.3** | **0.2** |
| 70% | -0.1 | -0.1 | -0.1 | -0.1 | **0.0** | -0.8 | -0.3 | 0.0 | **3.3** | **0.6** | **0.1** | **0.1** |
| 80% | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.2 | **0.3** | **1.6** | **1.2** | **0.1** | **0.1** |
| 90% | **0.0** | -0.1 | 0.0 | **0.1** | 0.0 | **0.2** | **0.1** | **0.7** | **0.8** | **2.2** | **0.8** | **0.2** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | **0.6** | **1.5** | **0.8** | **0.5** | **0.2** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | **0.1** | **0.2** | **0.1** | 0.0 | -0.3 | -0.6 | **0.0** | 0.0 | -0.8 | -0.3 | **0.3** | **0.1** |
| Above Normal (24%) | **0.0** | 0.0 | 0.0 | **0.1** | **0.1** | **0.2** | -1.2 | -1.1 | **4.3** | **1.8** | **0.4** | **0.2** |
| Below Normal (10%) | -0.3 | -0.1 | -0.1 | -0.1 | -0.3 | **0.2** | -0.6 | -0.3 | **0.8** | **0.2** | **0.0** | **0.0** |
| Dry (16%) | -0.3 | -0.3 | -0.2 | 0.0 | **0.3** | **0.1** | **0.8** | **1.7** | **1.4** | **0.5** | **0.1** | -0.1 |
| Critical (27%) | -0.7 | -0.4 | -0.1 | 0.0 | **0.2** | **0.1** | **1.4** | **2.2** | **1.2** | **1.1** | **1.1** | **0.6** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 24-3. Stanislaus River at Mouth, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.3 | 58.6 | 51.9 | 51.4 | 55.1 | 60.5 | 62.1 | 65.5 | 72.3 | 76.5 | 75.2 | 71.8 |
| 20% | 63.0 | 57.4 | 51.6 | 50.8 | 54.4 | 59.7 | 61.1 | 64.6 | 71.7 | 75.4 | 74.4 | 70.7 |
| 30% | 61.7 | 56.8 | 51.0 | 50.2 | 53.9 | 59.1 | 60.3 | 63.6 | 70.8 | 74.8 | 73.8 | 70.4 |
| 40% | 60.6 | 56.5 | 50.7 | 49.7 | 53.2 | 58.7 | 58.8 | 62.1 | 70.2 | 74.3 | 73.4 | 69.8 |
| 50% | 60.1 | 55.7 | 50.3 | 49.4 | 52.9 | 58.0 | 57.9 | 61.0 | 67.8 | 73.8 | 73.0 | 69.5 |
| 60% | 59.6 | 55.2 | 49.9 | 49.0 | 52.6 | 57.0 | 57.1 | 60.7 | 65.3 | 73.1 | 72.6 | 69.0 |
| 70% | 59.0 | 55.0 | 49.7 | 48.8 | 52.1 | 55.7 | 56.2 | 59.8 | 63.8 | 72.9 | 72.4 | 68.6 |
| 80% | 58.6 | 54.7 | 49.3 | 48.5 | 51.5 | 53.6 | 55.7 | 58.7 | 62.7 | 71.7 | 71.9 | 68.1 |
| 90% | 58.2 | 54.2 | 48.9 | 47.9 | 50.6 | 52.1 | 54.8 | 58.0 | 61.7 | 69.3 | 70.7 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.8 | 56.0 | 50.4 | 49.6 | 52.9 | 57.1 | 58.3 | 61.6 | 67.3 | 73.1 | 72.6 | 69.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.4 | 55.0 | 50.3 | 49.6 | 51.8 | 53.0 | 55.4 | 58.9 | 63.1 | 69.6 | 69.6 | 65.7 |
| Above Normal (24%) | 60.3 | 55.7 | 50.1 | 49.5 | 52.5 | 56.8 | 57.2 | 61.3 | 64.3 | 72.1 | 72.6 | 69.2 |
| Below Normal (10%) | 59.3 | 55.6 | 50.0 | 49.3 | 52.5 | 57.3 | 57.4 | 59.9 | 67.6 | 73.9 | 72.6 | 69.0 |
| Dry (16%) | 61.2 | 56.5 | 50.5 | 49.7 | 53.3 | 58.6 | 59.6 | 62.1 | 70.3 | 75.0 | 73.4 | 70.0 |
| Critical (27%) | 63.4 | 57.2 | 50.8 | 49.6 | 54.2 | 59.9 | 61.3 | 64.7 | 72.0 | 75.7 | 74.6 | 71.1 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.3 | 58.6 | 51.9 | 51.4 | 55.1 | 60.5 | 62.1 | 65.5 | 72.3 | 76.5 | 75.2 | 71.8 |
| 20% | 62.9 | 57.4 | 51.6 | 50.8 | 54.4 | 59.7 | 61.1 | 64.6 | 71.7 | 75.4 | 74.4 | 70.7 |
| 30% | 61.7 | 56.8 | 51.0 | 50.2 | 53.9 | 59.1 | 60.3 | 63.6 | 70.8 | 74.8 | 73.8 | 70.4 |
| 40% | 60.6 | 56.5 | 50.7 | 49.7 | 53.2 | 58.7 | 58.8 | 62.1 | 70.2 | 74.3 | 73.4 | 69.8 |
| 50% | 60.1 | 55.7 | 50.3 | 49.4 | 52.9 | 58.0 | 57.9 | 61.0 | 67.8 | 73.8 | 73.0 | 69.5 |
| 60% | 59.6 | 55.2 | 49.9 | 49.0 | 52.6 | 57.0 | 57.1 | 60.7 | 65.3 | 73.1 | 72.6 | 69.0 |
| 70% | 59.0 | 55.0 | 49.7 | 48.8 | 52.1 | 55.7 | 56.3 | 59.8 | 63.8 | 72.9 | 72.4 | 68.6 |
| 80% | 58.6 | 54.7 | 49.3 | 48.5 | 51.5 | 53.6 | 55.7 | 58.7 | 62.7 | 71.7 | 71.9 | 68.1 |
| 90% | 58.2 | 54.2 | 48.9 | 47.8 | 50.6 | 52.1 | 54.8 | 58.0 | 61.7 | 69.3 | 70.7 | 66.9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.7 | 56.0 | 50.4 | 49.6 | 52.9 | 57.1 | 58.3 | 61.6 | 67.3 | 73.1 | 72.6 | 69.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.4 | 55.0 | 50.3 | 49.6 | 51.8 | 53.0 | 55.4 | 58.9 | 63.1 | 69.6 | 69.6 | 65.7 |
| Above Normal (24%) | 60.3 | 55.7 | 50.1 | 49.5 | 52.5 | 56.8 | 57.2 | 61.3 | 64.3 | 72.1 | 72.6 | 69.2 |
| Below Normal (10%) | 59.3 | 55.6 | 50.0 | 49.3 | 52.5 | 57.3 | 57.4 | 59.9 | 67.6 | 73.9 | 72.6 | 69.0 |
| Dry (16%) | 61.2 | 56.5 | 50.5 | 49.7 | 53.3 | 58.6 | 59.6 | 62.1 | 70.3 | 75.0 | 73.4 | 70.0 |
| Critical (27%) | 63.4 | 57.2 | 50.8 | 49.6 | 54.2 | 59.9 | 61.3 | 64.7 | 72.0 | 75.7 | 74.6 | 71.1 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 |
| 20% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| 30% | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** |
| 40% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| 90% | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 |
| Above Normal (24%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| Dry (16%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Critical (27%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Table 24-4. Stanislaus River at Mouth, Monthly Temperature

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63.5 | 57.9 | 52.2 | 51.4 | 55.4 | 60.7 | 63.0 | 67.3 | 73.5 | 77.2 | 76.0 | 72.1 |
| 20% | 62.1 | 57.2 | 51.4 | 50.7 | 54.5 | 59.7 | 62.2 | 66.2 | 73.1 | 76.6 | 75.2 | 71.2 |
| 30% | 61.2 | 56.8 | 51.0 | 50.1 | 54.0 | 59.2 | 60.8 | 64.2 | 72.0 | 75.7 | 74.4 | 70.7 |
| 40% | 60.7 | 56.3 | 50.6 | 49.7 | 53.3 | 58.7 | 58.9 | 62.8 | 71.1 | 75.1 | 73.8 | 70.0 |
| 50% | 60.3 | 55.5 | 50.2 | 49.3 | 52.8 | 58.1 | 57.2 | 60.8 | 69.4 | 74.3 | 73.4 | 69.6 |
| 60% | 59.5 | 55.2 | 49.9 | 49.0 | 52.5 | 56.9 | 56.4 | 60.3 | 68.1 | 73.9 | 72.8 | 69.3 |
| 70% | 58.9 | 55.0 | 49.6 | 48.7 | 52.1 | 54.9 | 56.0 | 59.8 | 67.2 | 73.5 | 72.4 | 68.8 |
| 80% | 58.6 | 54.6 | 49.3 | 48.5 | 51.4 | 53.5 | 55.5 | 59.0 | 64.3 | 72.9 | 72.1 | 68.2 |
| 90% | 58.2 | 54.1 | 48.9 | 47.9 | 50.5 | 52.2 | 54.9 | 58.7 | 62.6 | 71.6 | 71.4 | 67.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.5 | 55.9 | 50.4 | 49.5 | 52.9 | 57.1 | 58.5 | 62.2 | 68.8 | 73.9 | 73.0 | 69.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.5 | 55.1 | 50.4 | 49.6 | 51.5 | 52.5 | 55.4 | 58.9 | 62.3 | 69.4 | 69.8 | 65.8 |
| Above Normal (24%) | 60.4 | 55.6 | 50.1 | 49.6 | 52.6 | 57.0 | 56.0 | 60.2 | 68.6 | 74.0 | 73.0 | 69.4 |
| Below Normal (10%) | 59.1 | 55.4 | 50.0 | 49.1 | 52.2 | 57.5 | 56.8 | 59.6 | 68.4 | 74.1 | 72.6 | 69.0 |
| Dry (16%) | 60.9 | 56.2 | 50.3 | 49.6 | 53.6 | 58.7 | 60.5 | 63.8 | 71.7 | 75.5 | 73.4 | 69.9 |
| Critical (27%) | 62.7 | 56.8 | 50.7 | 49.5 | 54.3 | 60.0 | 62.7 | 66.9 | 73.2 | 76.8 | 75.7 | 71.7 |

### Alternative 1 100419

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 63.5 | 57.9 | 52.2 | 51.4 | 55.4 | 60.7 | 63.0 | 67.3 | 73.5 | 77.2 | 76.0 | 72.1 |
| 20% | 62.1 | 57.2 | 51.4 | 50.7 | 54.5 | 59.7 | 62.2 | 66.2 | 73.1 | 76.6 | 75.2 | 71.2 |
| 30% | 61.2 | 56.8 | 51.0 | 50.1 | 54.0 | 59.2 | 60.8 | 64.2 | 72.0 | 75.7 | 74.4 | 70.7 |
| 40% | 60.7 | 56.3 | 50.6 | 49.7 | 53.3 | 58.7 | 58.9 | 62.8 | 71.1 | 75.1 | 73.8 | 70.0 |
| 50% | 60.3 | 55.5 | 50.2 | 49.3 | 52.8 | 58.1 | 57.2 | 60.8 | 69.4 | 74.3 | 73.4 | 69.6 |
| 60% | 59.5 | 55.2 | 49.9 | 49.0 | 52.5 | 56.9 | 56.4 | 60.3 | 68.1 | 73.9 | 72.8 | 69.3 |
| 70% | 58.9 | 55.0 | 49.6 | 48.7 | 52.1 | 54.9 | 56.0 | 59.8 | 67.2 | 73.5 | 72.4 | 68.8 |
| 80% | 58.6 | 54.6 | 49.3 | 48.5 | 51.4 | 53.5 | 55.5 | 59.0 | 64.3 | 72.9 | 72.1 | 68.2 |
| 90% | 58.2 | 54.1 | 48.9 | 47.9 | 50.5 | 52.2 | 54.9 | 58.7 | 62.6 | 71.6 | 71.4 | 67.1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 60.5 | 55.9 | 50.4 | 49.5 | 52.9 | 57.1 | 58.5 | 62.2 | 68.8 | 73.9 | 73.0 | 69.2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 58.5 | 55.1 | 50.4 | 49.6 | 51.5 | 52.5 | 55.4 | 58.9 | 62.3 | 69.4 | 69.8 | 65.8 |
| Above Normal (24%) | 60.4 | 55.6 | 50.1 | 49.6 | 52.6 | 57.0 | 56.0 | 60.2 | 68.6 | 74.0 | 73.0 | 69.4 |
| Below Normal (10%) | 59.1 | 55.4 | 50.0 | 49.1 | 52.2 | 57.5 | 56.8 | 59.6 | 68.4 | 74.1 | 72.6 | 69.0 |
| Dry (16%) | 60.9 | 56.2 | 50.3 | 49.6 | 53.6 | 58.7 | 60.5 | 63.8 | 71.7 | 75.5 | 73.4 | 69.9 |
| Critical (27%) | 62.7 | 56.8 | 50.7 | 49.5 | 54.3 | 60.0 | 62.7 | 66.9 | 73.2 | 76.8 | 75.7 | 71.7 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 |
| 20% | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 |
| 30% | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** |
| 40% | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 |
| 50% | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 |
| 70% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** |
| 80% | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90% | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (23%) | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 |
| Above Normal (24%) | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 |
| Below Normal (10%) | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 |
| Dry (16%) | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 |
| Critical (27%) | **0.0** | **0.0** | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** |

a Based on the 82-year simulation period.

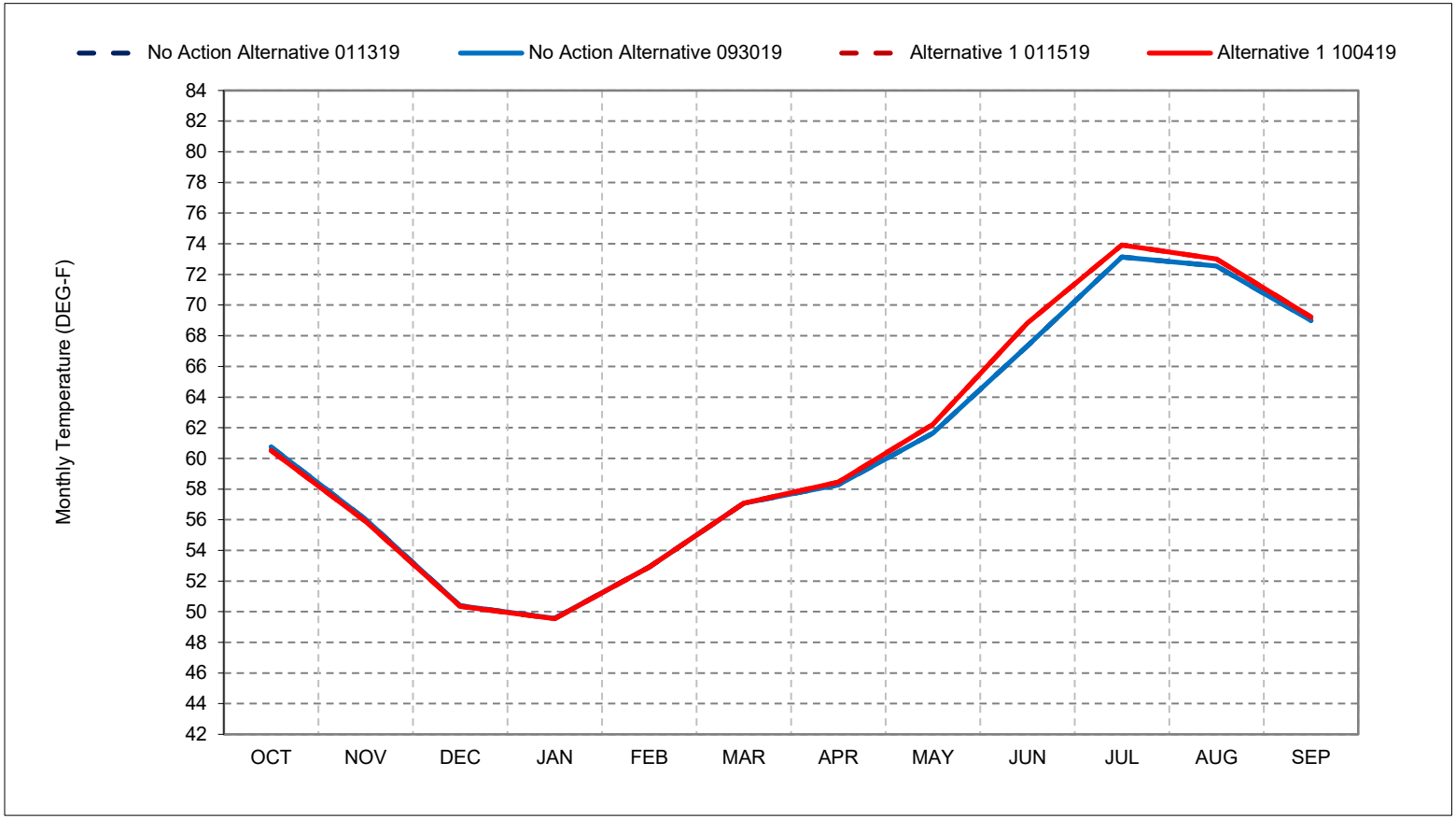
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e New Melones forecasts are used as the basis of water operations.

## Figure 24-1. Stanislaus River at Mouth, Long-Term Average Temperature



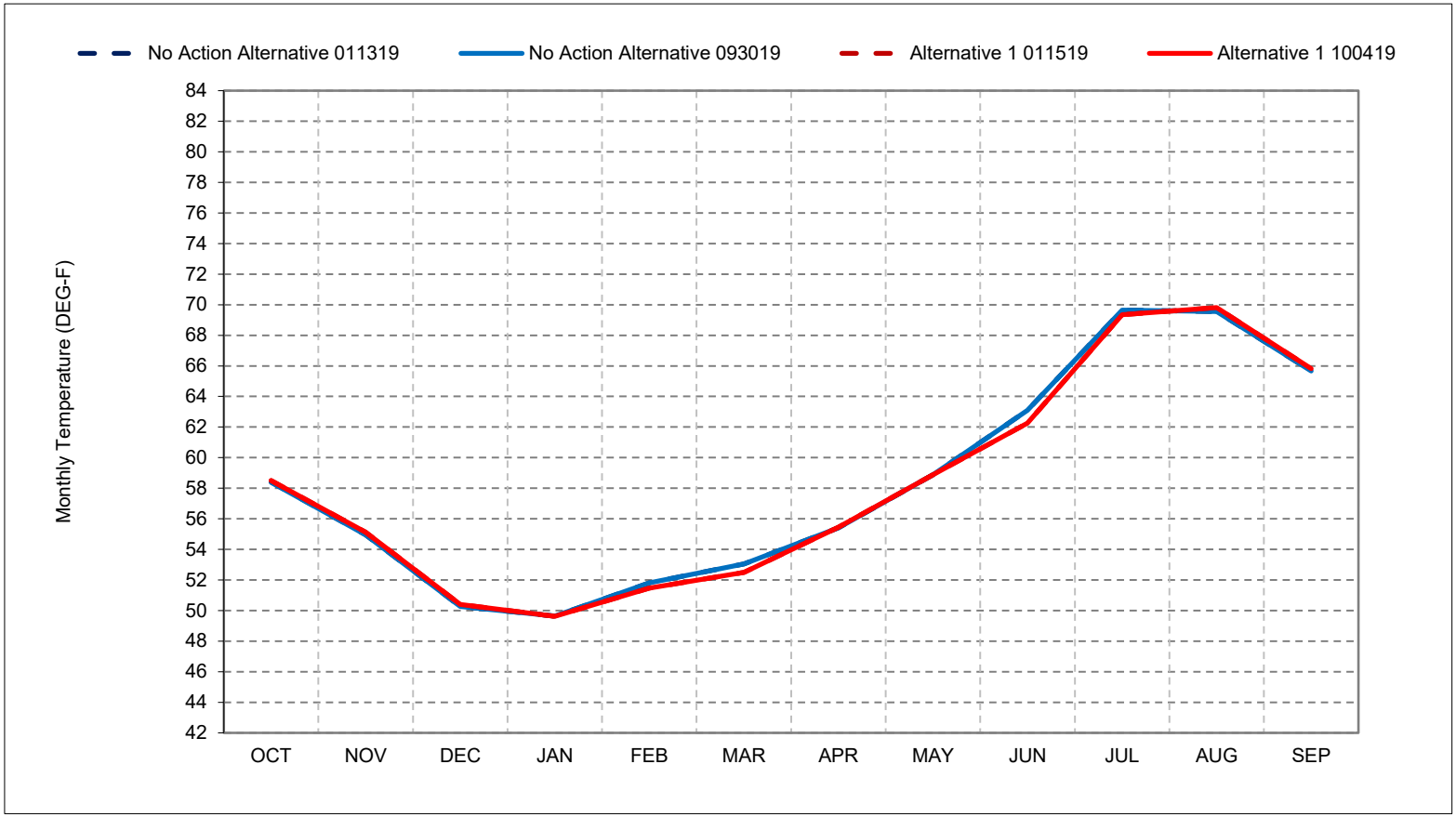

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

## Figure 24-2. Stanislaus River at Mouth, Wet Year Average Temperature



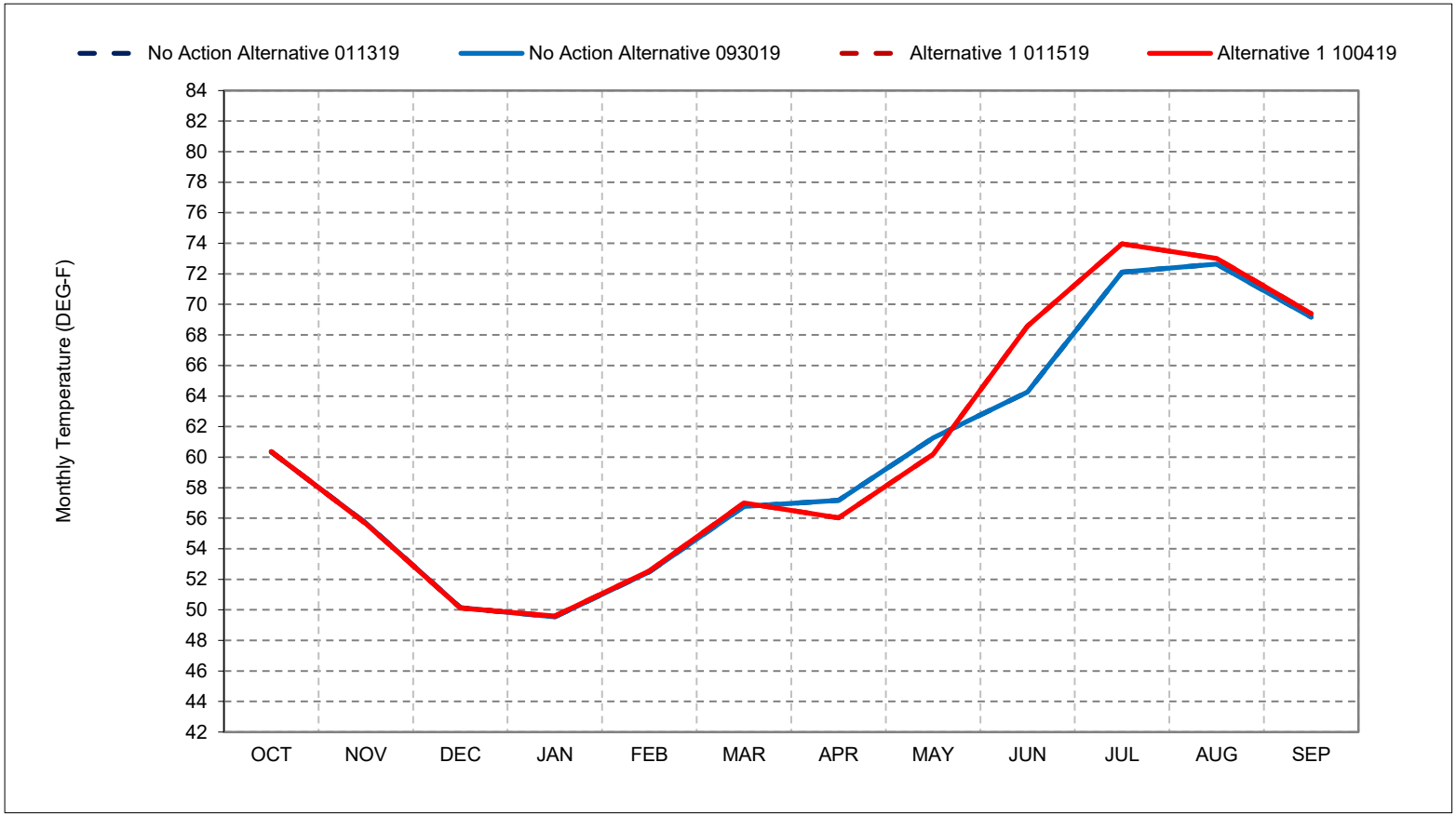

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

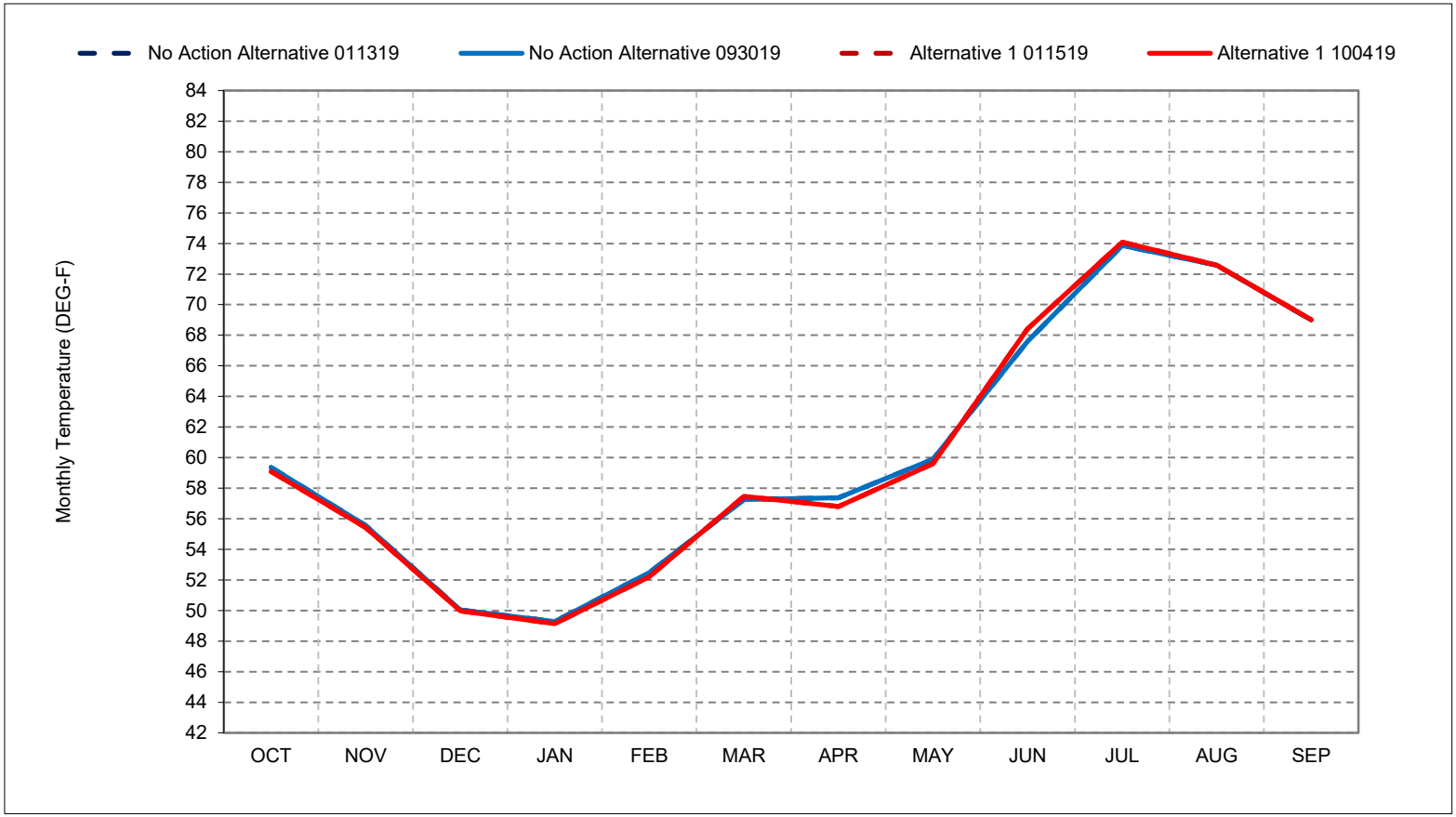
*New Melones forecasts are used as the basis of water operations.

## Figure 24-3. Stanislaus River at Mouth, Above Normal Year Average Temperature



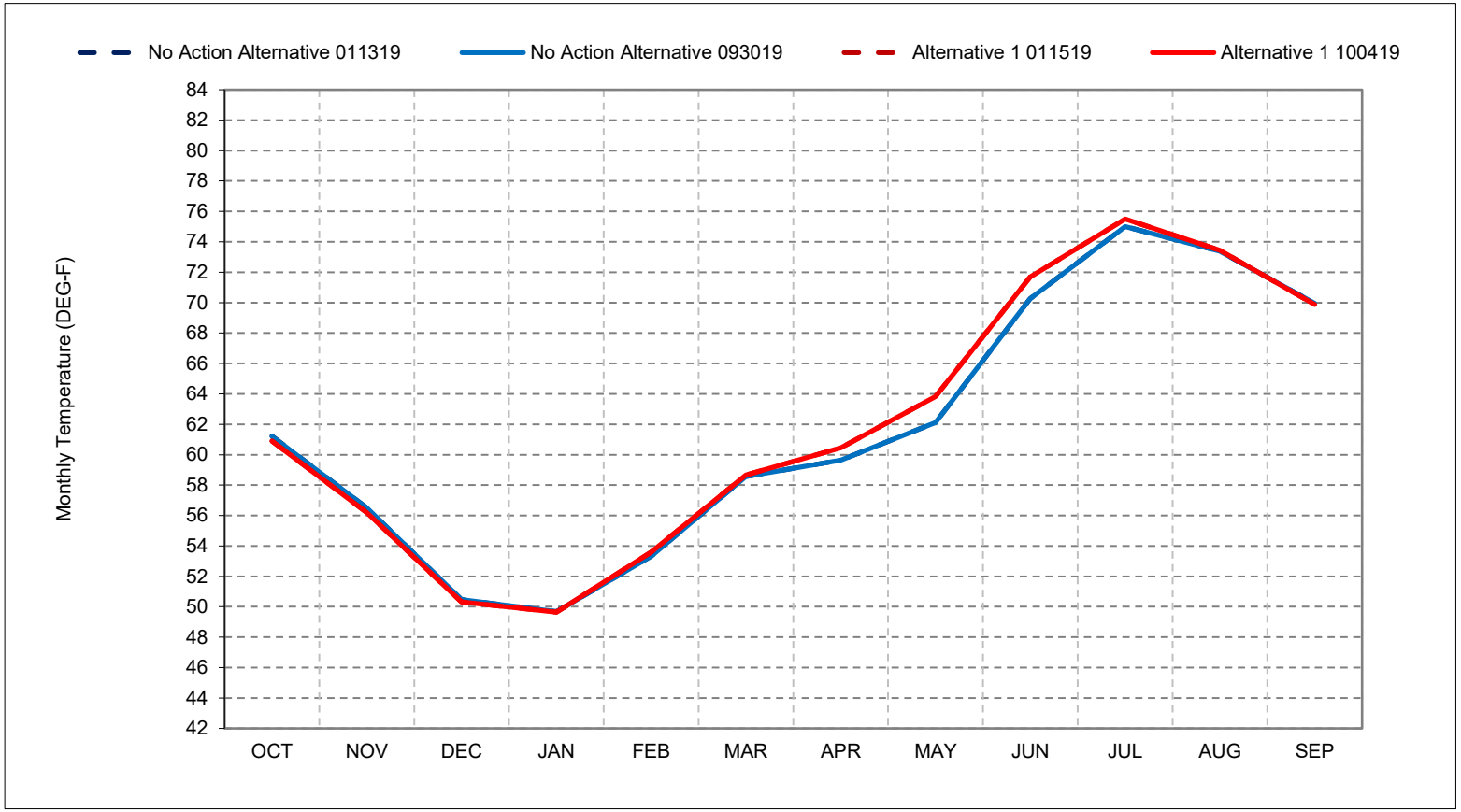

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 24-4. Stanislaus River at Mouth, Below Normal Year Average Temperature



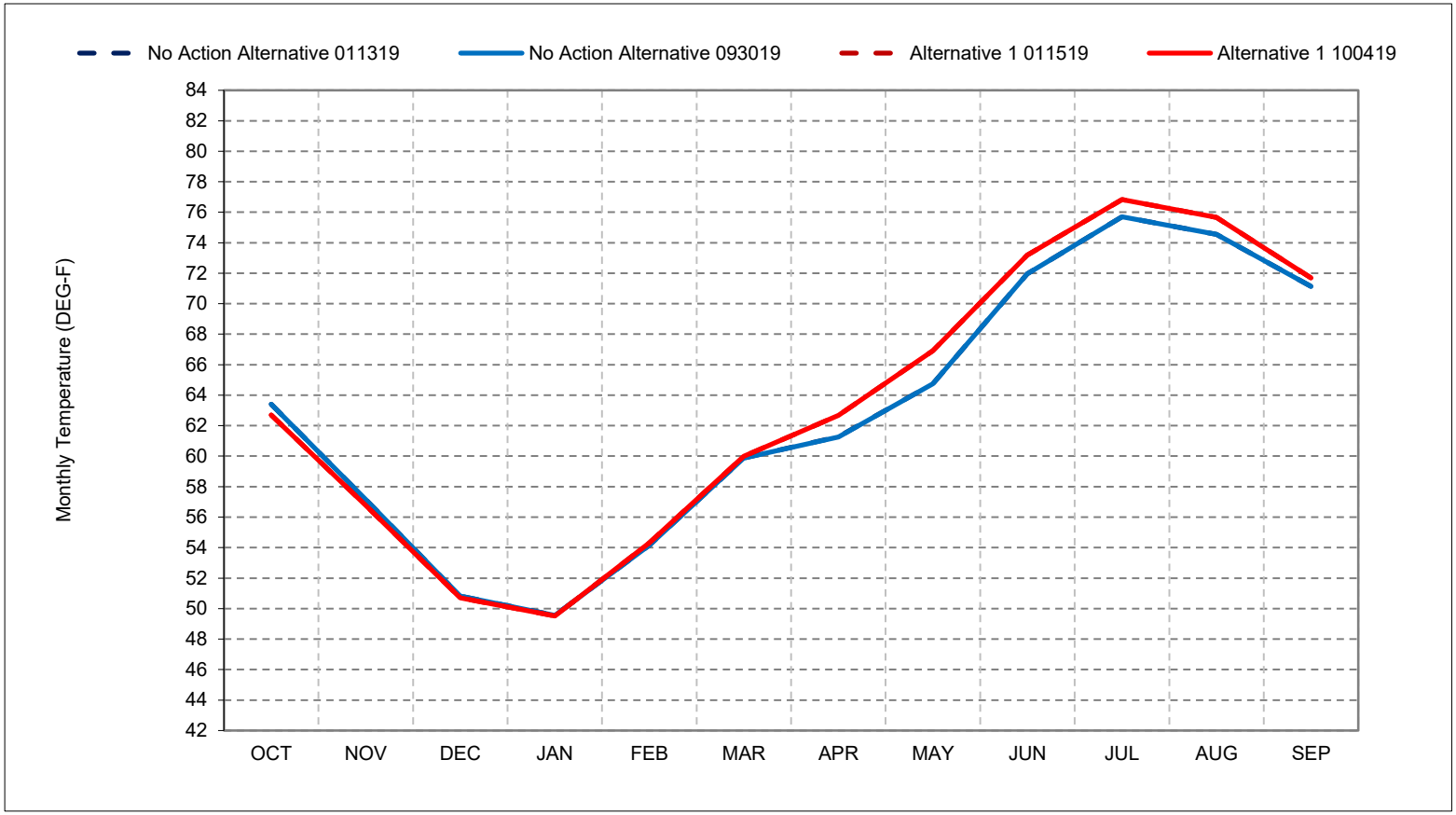

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 24-5. Stanislaus River at Mouth, Dry Year Average Temperature



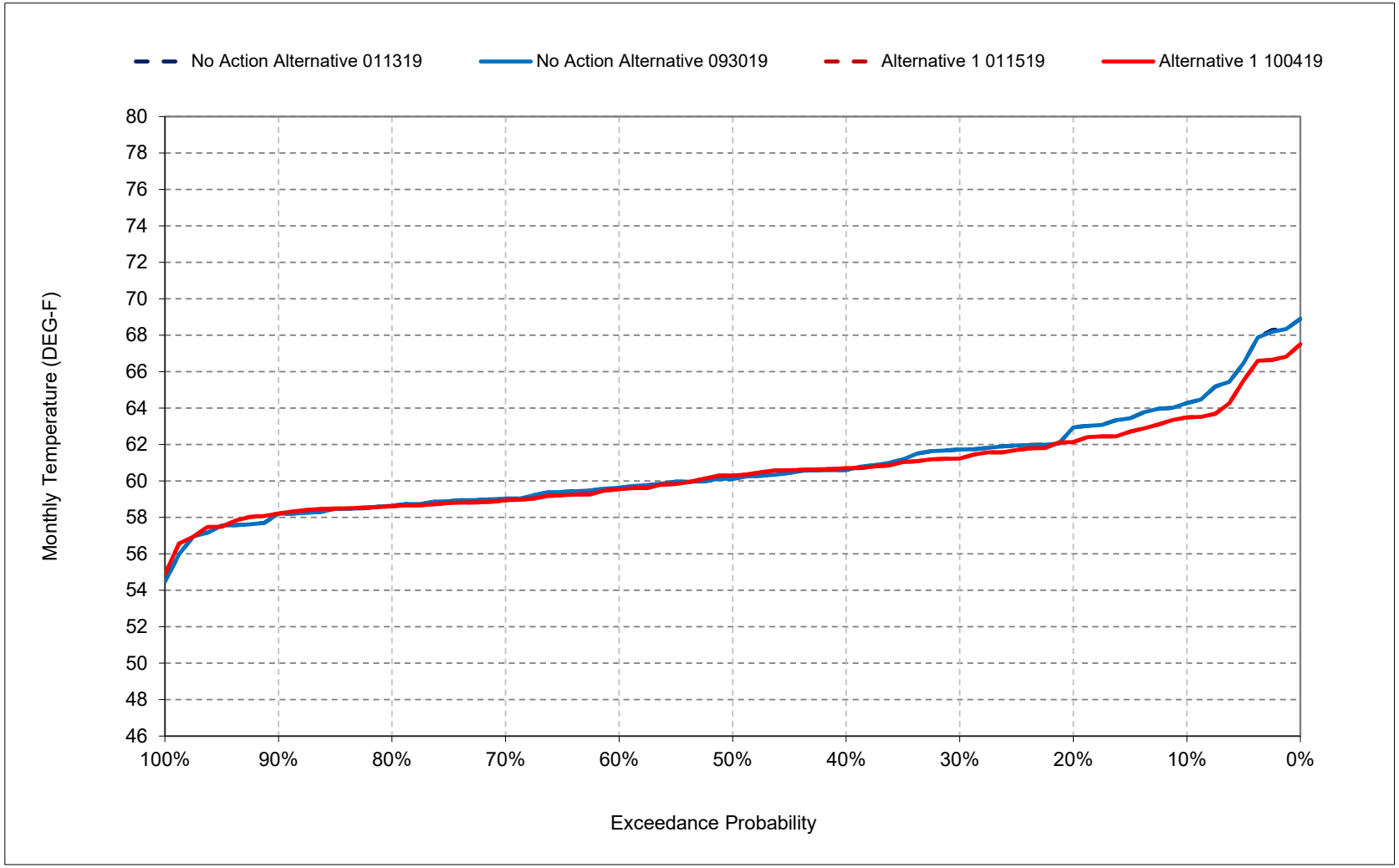

*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

## Figure 24-6. Stanislaus River at Mouth, Critical Year Average Temperature




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*New Melones forecasts are used as the basis of water operations.

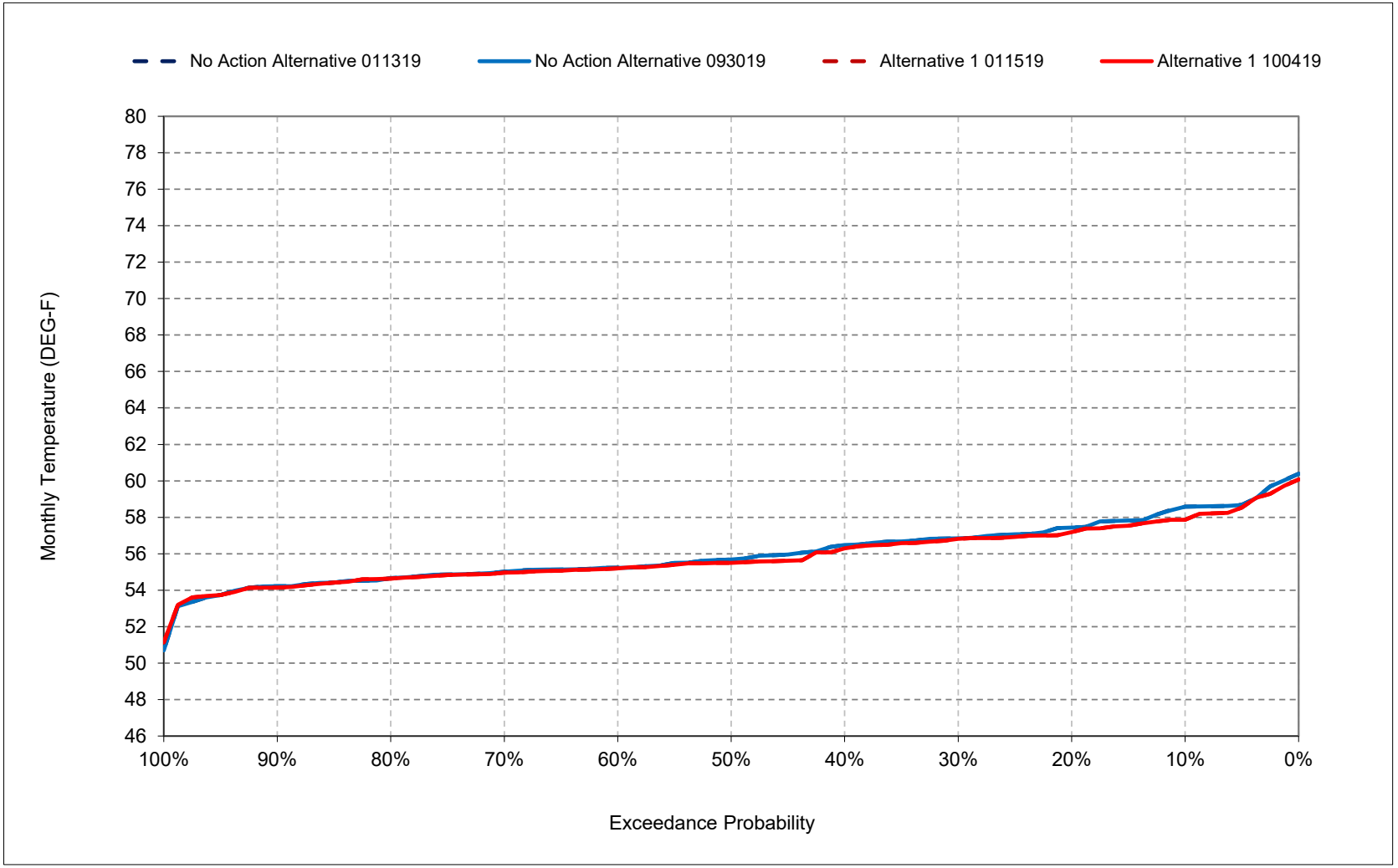
**Figure 24-7. Stanislaus River at Mouth, October**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

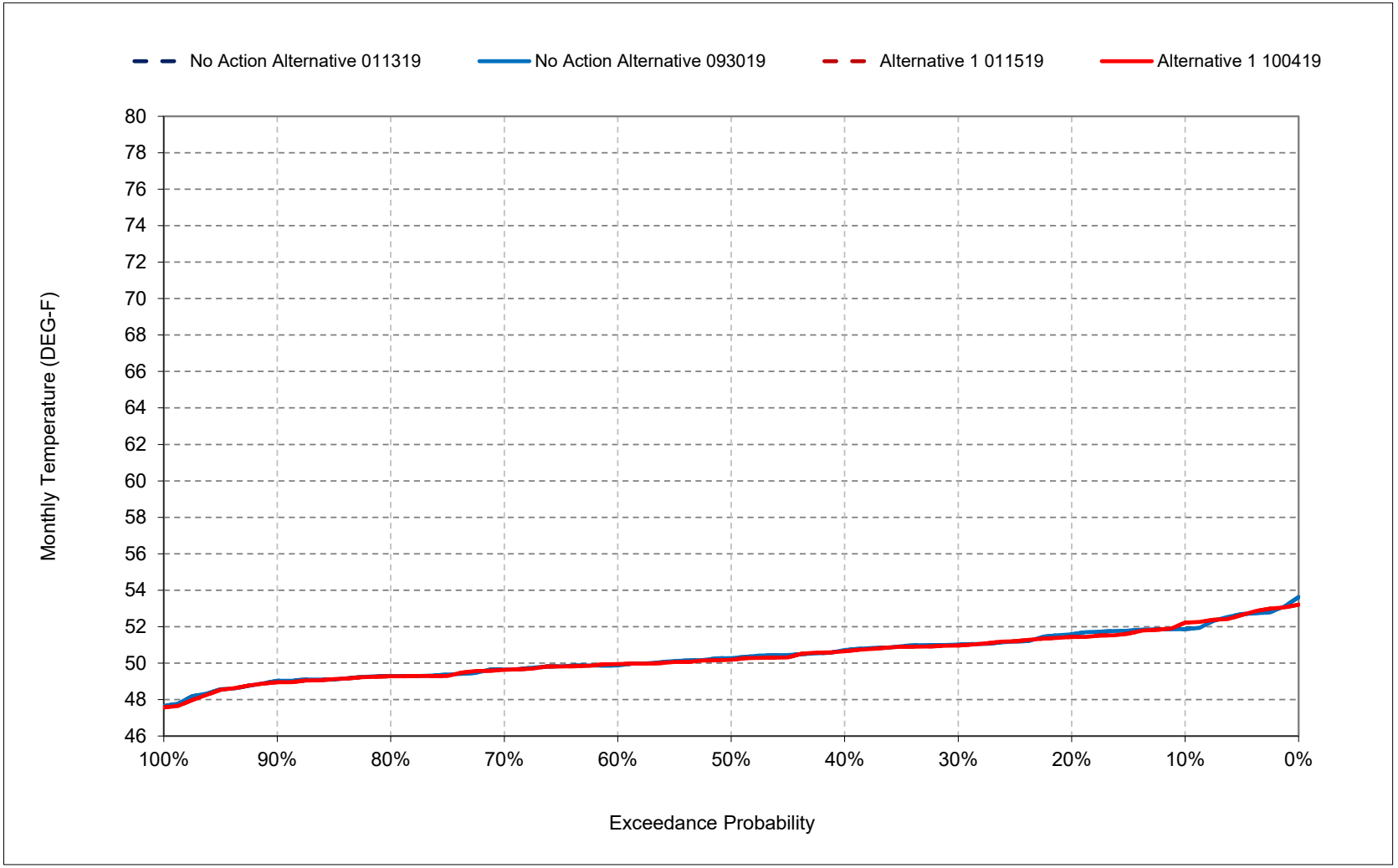
**Figure 24-8. Stanislaus River at Mouth, November**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

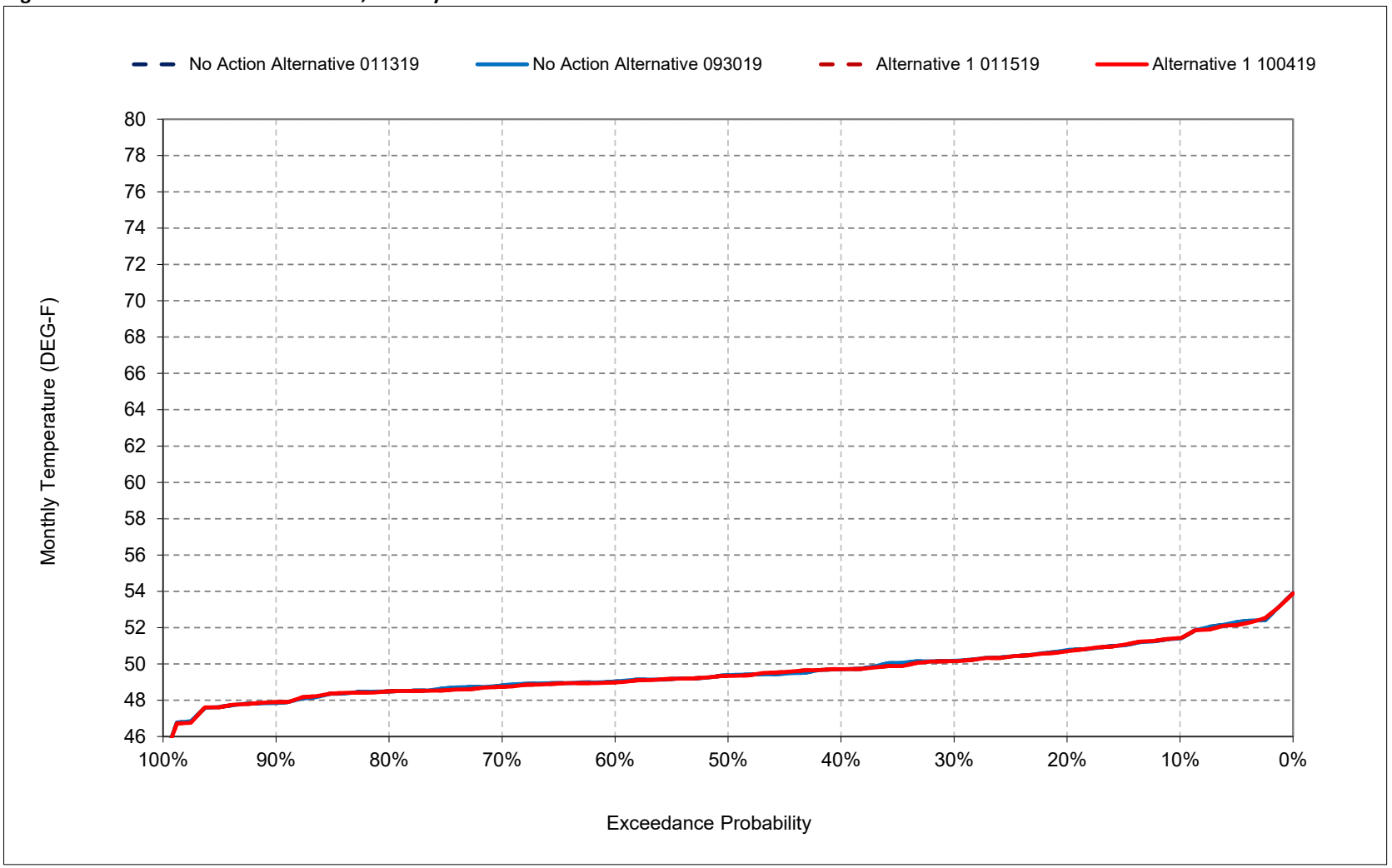
**Figure 24-9. Stanislaus River at Mouth, December**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

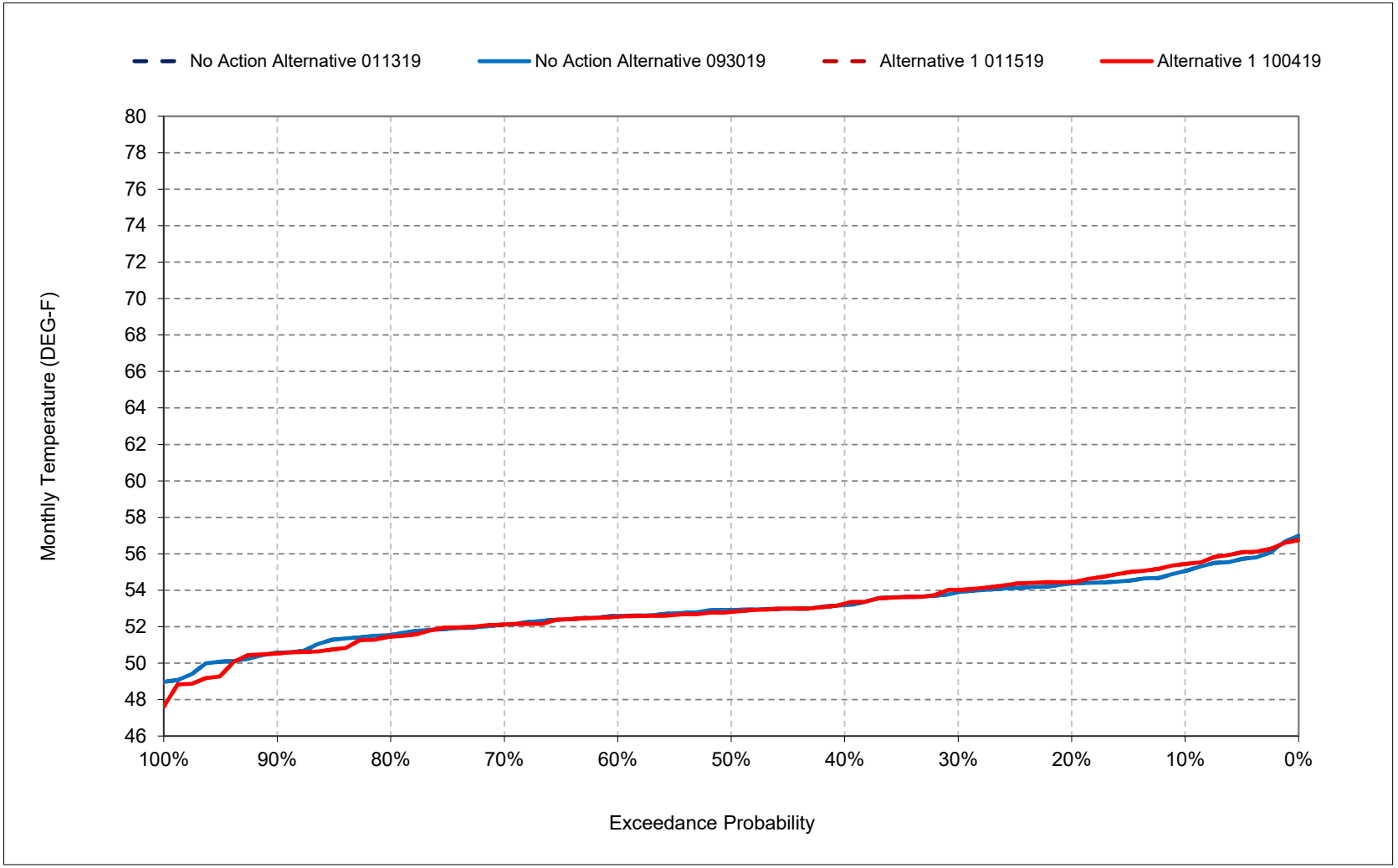
**Figure 24-10. Stanislaus River at Mouth, January**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

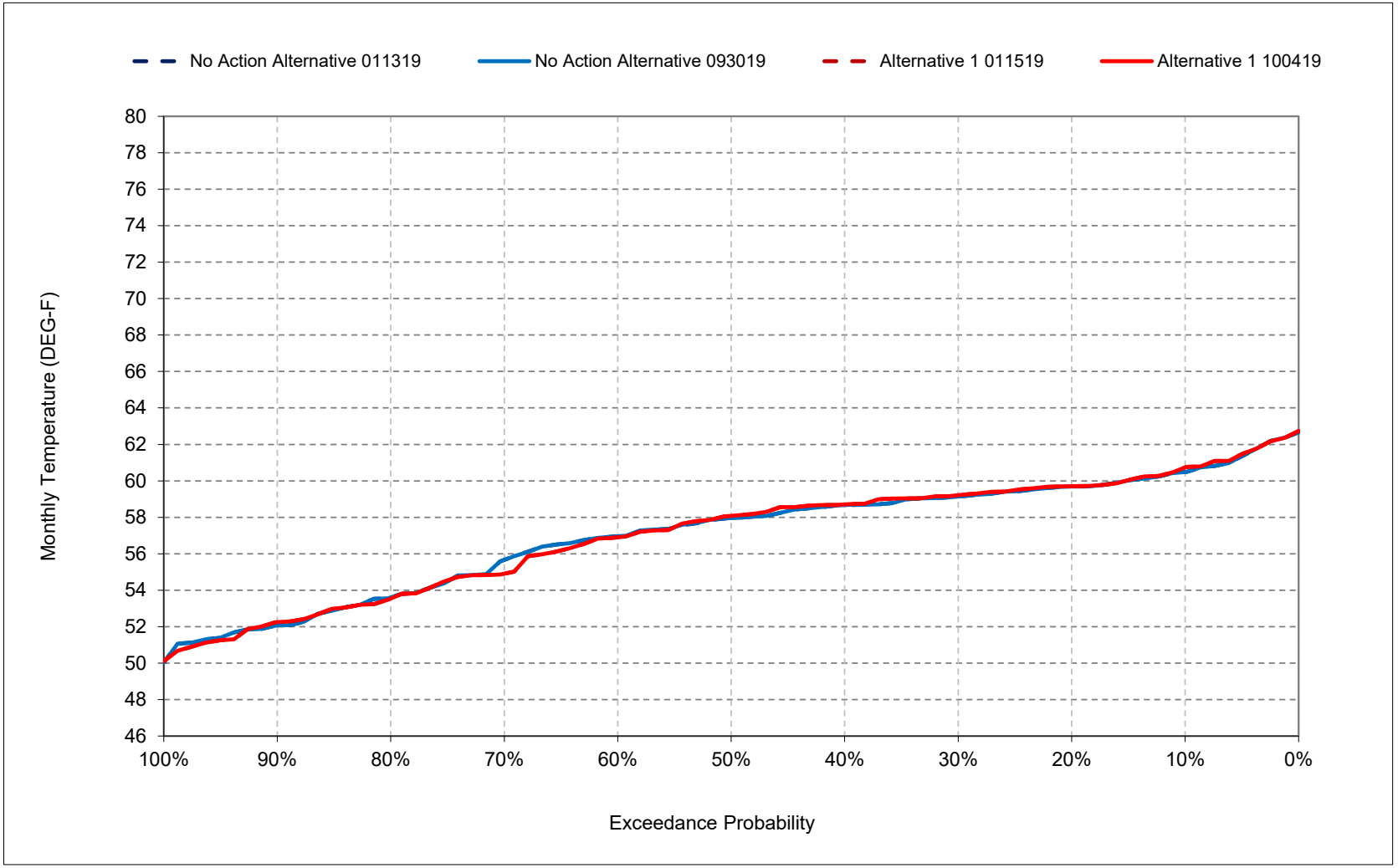
**Figure 24-11. Stanislaus River at Mouth, February**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

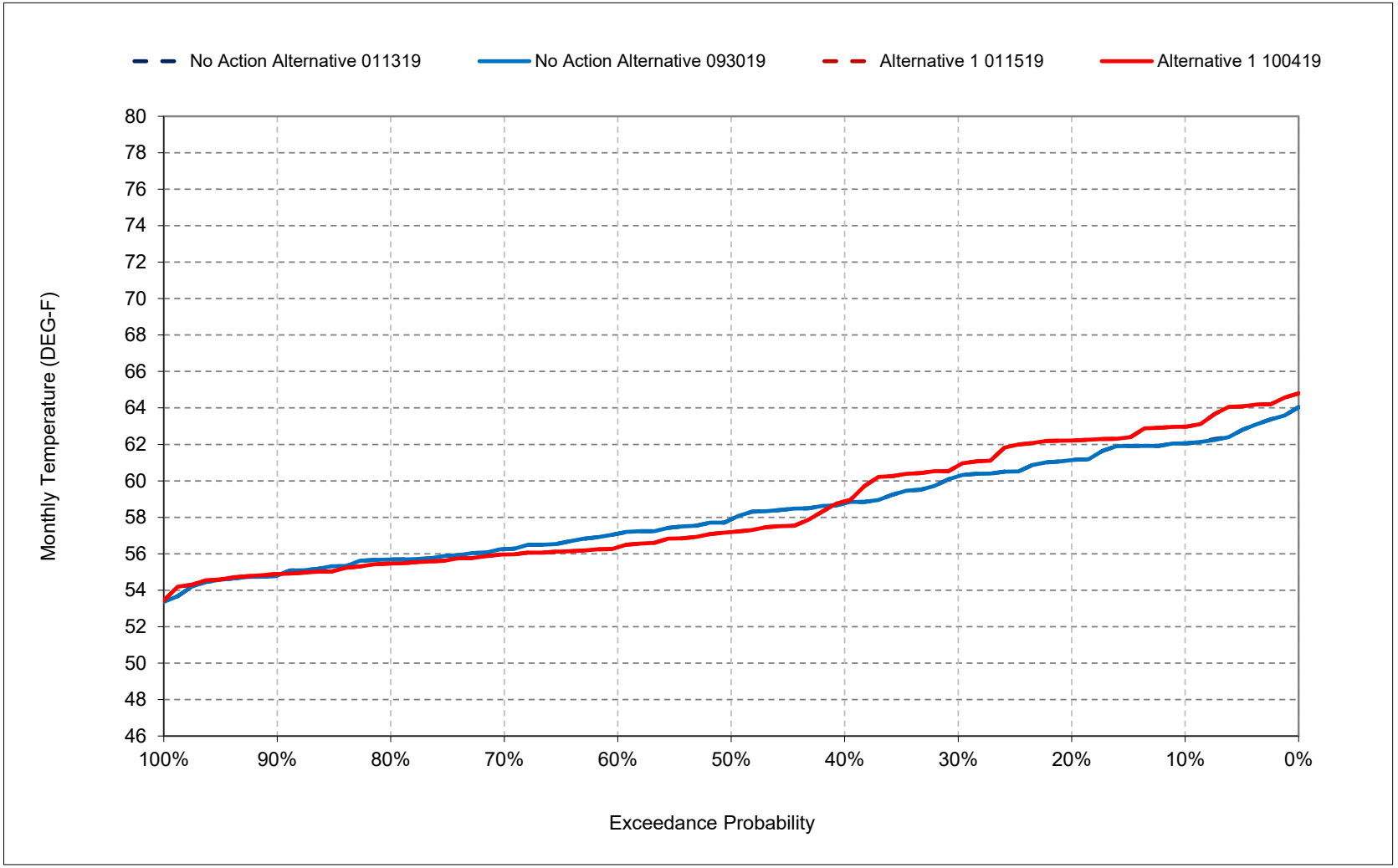
**Figure 24-12. Stanislaus River at Mouth, March**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

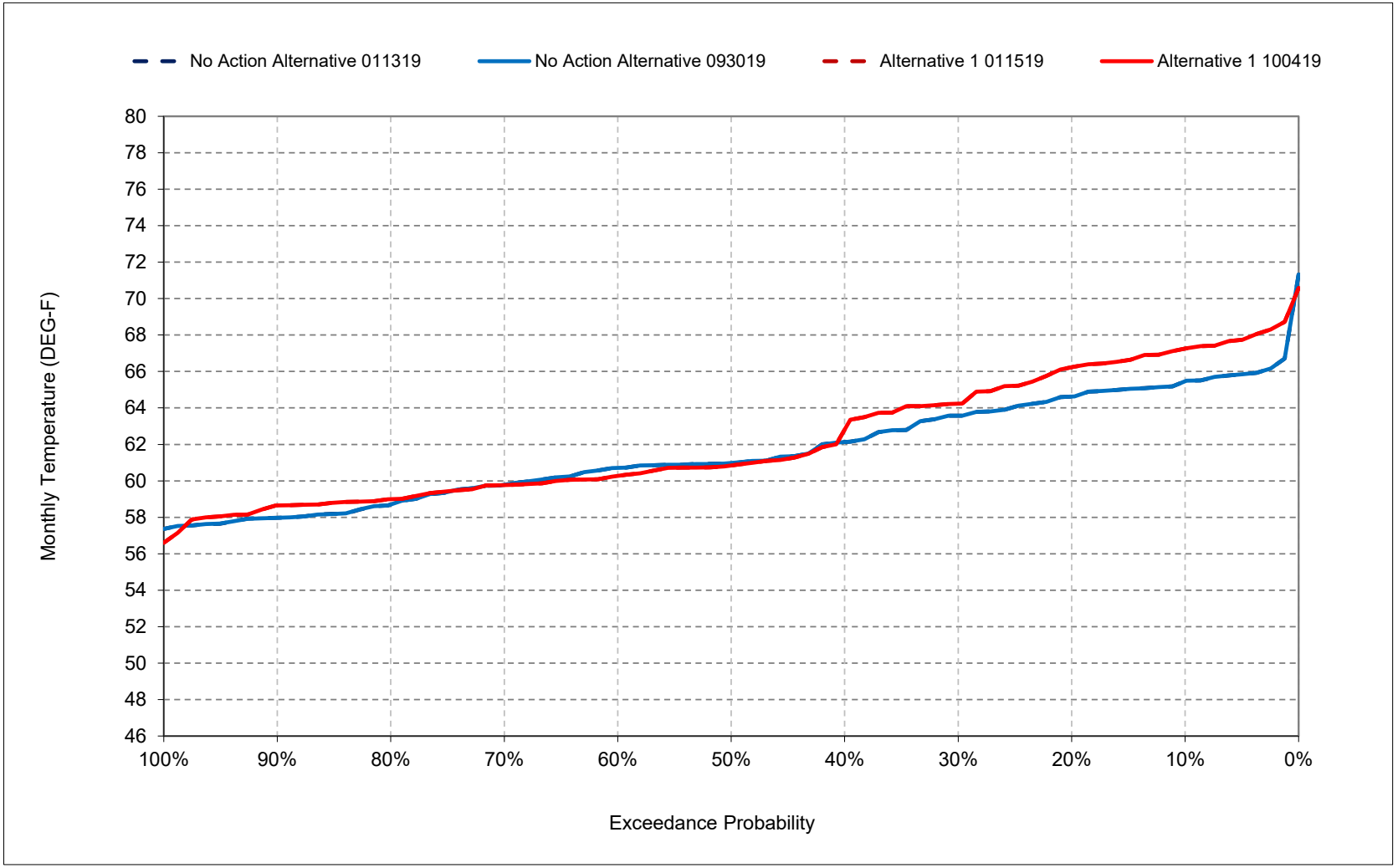
**Figure 24-13. Stanislaus River at Mouth, April**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

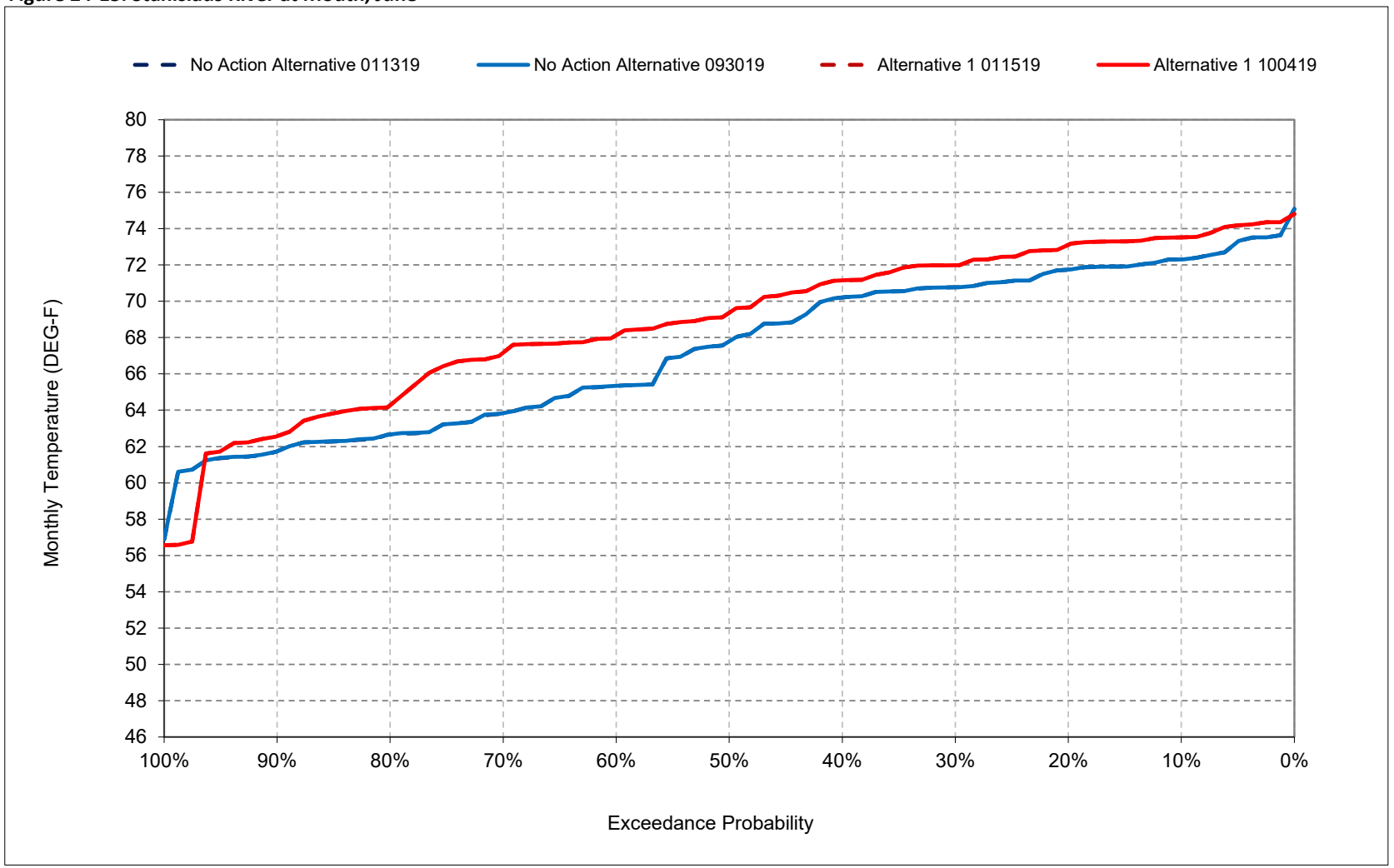
**Figure 24-14. Stanislaus River at Mouth, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

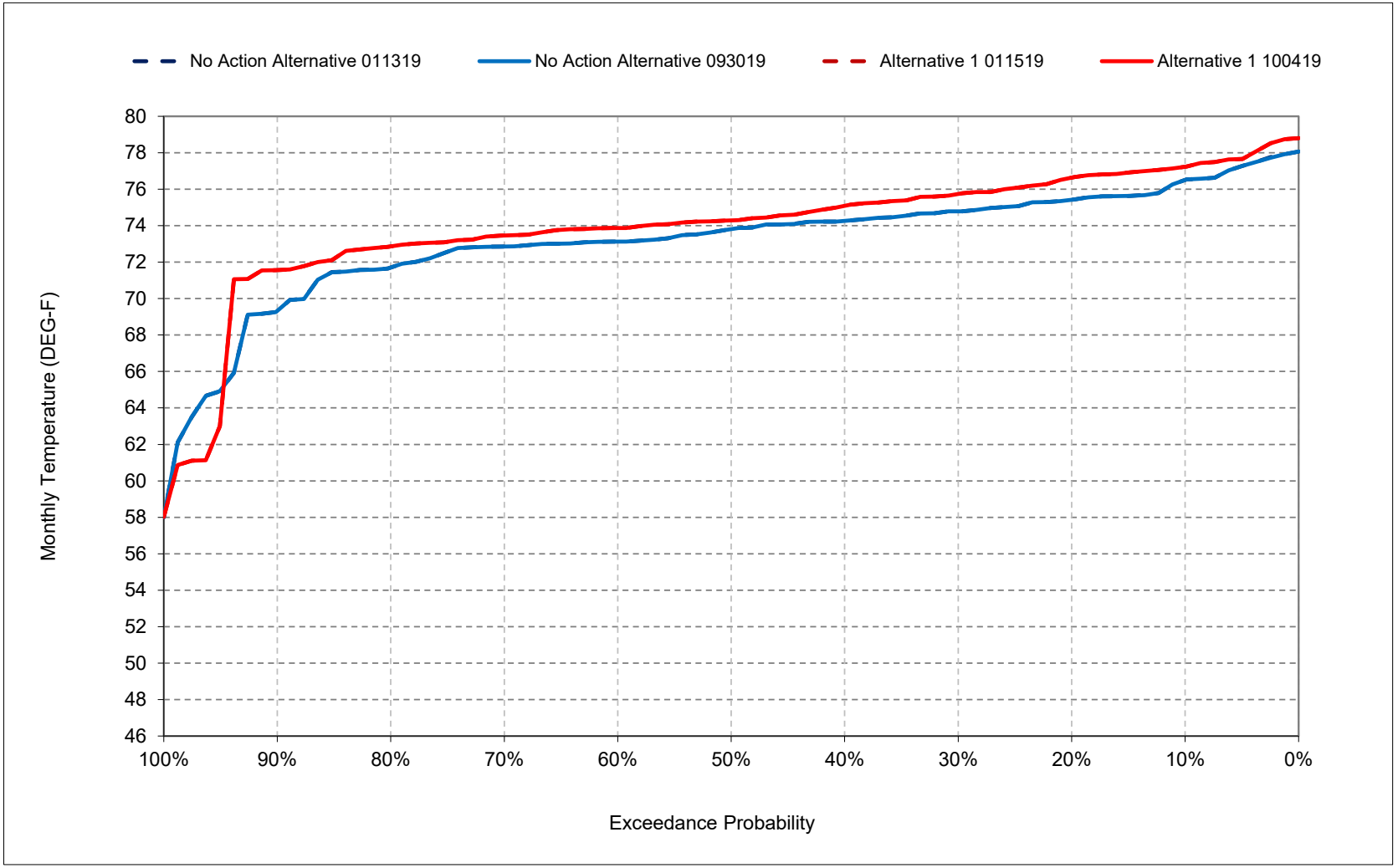
**Figure 24-15. Stanislaus River at Mouth, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

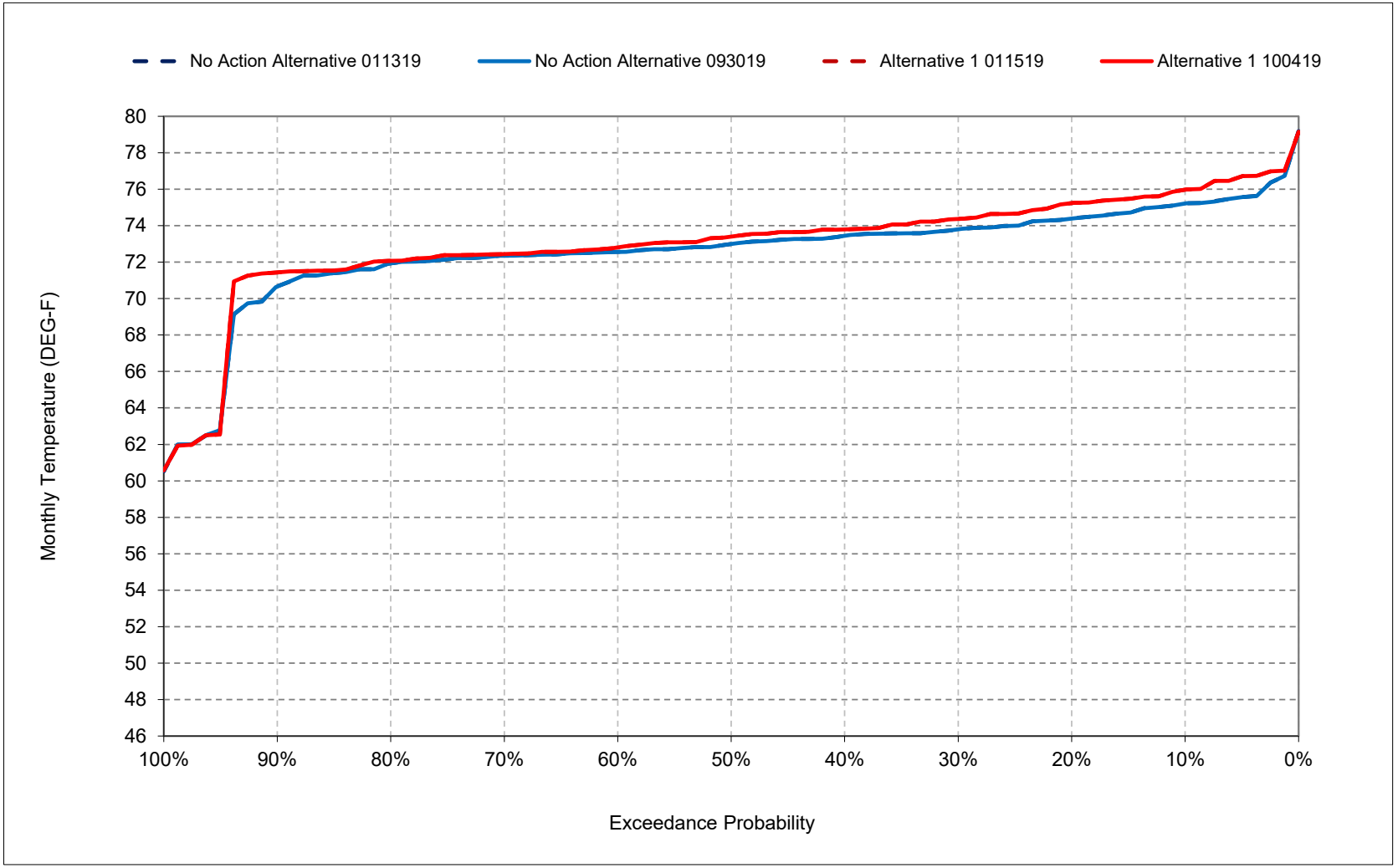
**Figure 24-16. Stanislaus River at Mouth, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

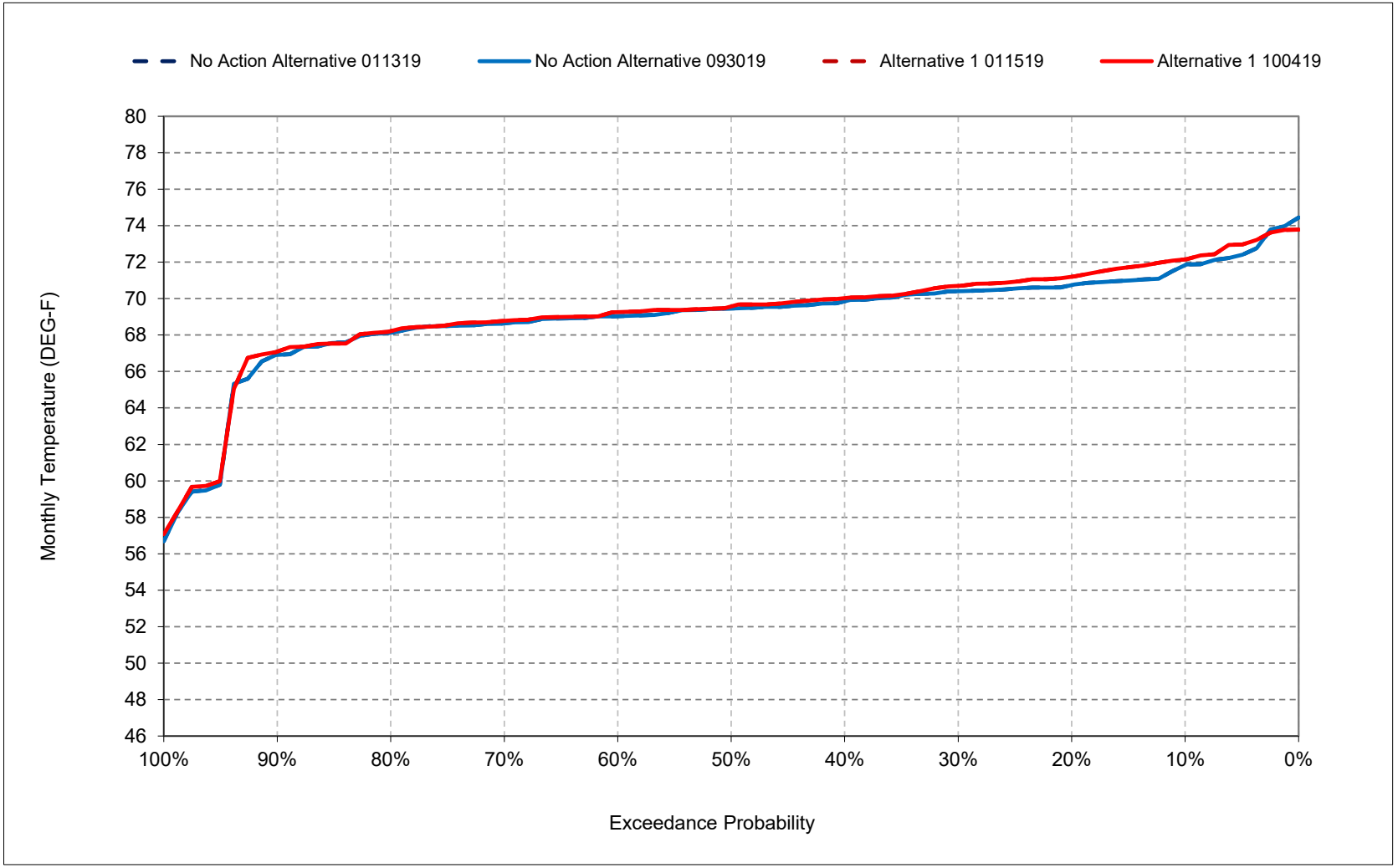
**Figure 24-17. Stanislaus River at Mouth, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

**Figure 24-18. Stanislaus River at Mouth, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*New Melones forecasts are used as the basis of water operations.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.5 Temperature Results (Reclamation Temperature Model)

The following results of the Reclamation Temperature model are included for river temperature conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Feather River Low Flow Channel | FISH_DAM | 1-1 to 1-4 | 1-1 to 1-18 |
| Feather River at Robinson Riffle | ABV_THERMALITO_AB | 2-1 to 2-4 | 2-1 to 2-18 |
| Feather River at Gridley Bridge | GRIDLEY | 3-1 to 3-4 | 3-1 to 3-18 |
| Feather River at Mouth | FEATHER_AT_SACRIV | 4-1 to 4-4 | 4-1 to 4-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

# Table 1-1. Feather River Low Flow Channel, Monthly Temperature

## No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 60.3 | 58.2 | 54.4 | 51.4 | 51.8 | 53.6 | 53.5 | 56.9 | 58.8 | 62.3 | 62.5 | 58.3 |
| 20% | 54.9 | 56.2 | 53.6 | 50.5 | 51.0 | 52.5 | 53.0 | 56.6 | 58.5 | 62.0 | 62.0 | 57.0 |
| 30% | 54.3 | 55.5 | 52.8 | 49.9 | 50.5 | 51.9 | 52.5 | 56.2 | 58.4 | 61.4 | 61.4 | 56.7 |
| 40% | 53.9 | 54.9 | 52.4 | 49.5 | 49.9 | 51.3 | 52.2 | 56.0 | 58.2 | 61.3 | 61.1 | 56.2 |
| 50% | 53.6 | 54.3 | 51.9 | 49.1 | 49.5 | 50.8 | 52.0 | 55.9 | 58.0 | 61.2 | 60.6 | 55.3 |
| 60% | 53.4 | 53.4 | 51.4 | 48.8 | 49.2 | 50.1 | 51.8 | 55.5 | 57.9 | 61.1 | 60.3 | 54.8 |
| 70% | 53.3 | 52.9 | 51.1 | 48.1 | 49.0 | 49.8 | 51.4 | 55.2 | 57.6 | 61.0 | 60.1 | 54.7 |
| 80% | 53.1 | 52.5 | 50.5 | 47.5 | 48.3 | 49.3 | 50.6 | 54.8 | 57.5 | 60.9 | 59.9 | 54.5 |
| 90% | 52.9 | 52.1 | 49.1 | 47.0 | 47.3 | 48.4 | 50.2 | 54.5 | 57.2 | 60.8 | 59.8 | 54.3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 54.6 | 52.0 | 49.2 | 49.6 | 50.9 | 52.0 | 55.8 | 58.0 | 61.4 | 61.1 | 56.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 54.2 | 52.9 | 48.9 | 48.9 | 49.5 | 51.0 | 55.1 | 57.8 | 61.4 | 60.5 | 54.6 |
| Above Normal (16%) | 53.3 | 53.2 | 51.4 | 49.3 | 49.5 | 50.1 | 51.9 | 56.3 | 58.4 | 61.0 | 59.9 | 54.5 |
| Below Normal (15%) | 54.1 | 54.1 | 51.8 | 49.9 | 50.3 | 51.6 | 52.7 | 55.8 | 58.2 | 61.1 | 60.5 | 56.4 |
| Dry (24%) | 54.6 | 54.7 | 52.0 | 49.0 | 49.9 | 52.1 | 52.7 | 56.0 | 57.8 | 61.4 | 61.7 | 56.8 |
| Critical (15%) | 61.1 | 57.5 | 50.9 | 49.2 | 50.4 | 52.4 | 52.3 | 56.2 | 58.1 | 62.3 | 63.4 | 62.3 |

## Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 58.3 | 57.4 | 53.5 | 51.6 | 51.7 | 53.6 | 53.5 | 56.8 | 58.5 | 62.3 | 62.4 | 59.0 |
| 20% | 55.0 | 55.9 | 52.7 | 50.5 | 51.2 | 52.9 | 53.0 | 56.4 | 58.3 | 62.0 | 61.9 | 57.5 |
| 30% | 54.2 | 54.6 | 52.2 | 50.1 | 50.6 | 51.9 | 52.5 | 56.0 | 58.1 | 61.6 | 61.4 | 57.1 |
| 40% | 53.8 | 53.7 | 51.8 | 49.6 | 50.0 | 51.3 | 52.4 | 55.9 | 57.9 | 61.3 | 61.1 | 56.8 |
| 50% | 53.6 | 52.9 | 51.4 | 49.1 | 49.6 | 50.7 | 52.0 | 55.6 | 57.8 | 61.1 | 60.5 | 56.3 |
| 60% | 53.4 | 52.6 | 51.0 | 48.7 | 49.3 | 50.2 | 51.8 | 55.3 | 57.6 | 61.1 | 60.3 | 55.6 |
| 70% | 53.4 | 52.4 | 50.6 | 48.2 | 48.8 | 49.7 | 51.4 | 55.1 | 57.4 | 61.0 | 60.1 | 55.3 |
| 80% | 53.2 | 52.2 | 49.8 | 47.4 | 48.1 | 49.3 | 50.6 | 54.7 | 57.3 | 60.9 | 59.9 | 55.1 |
| 90% | 53.0 | 52.1 | 48.7 | 47.0 | 47.0 | 48.5 | 50.3 | 54.5 | 57.1 | 60.8 | 59.8 | 54.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.8 | 54.0 | 51.4 | 49.1 | 49.7 | 51.0 | 52.0 | 55.6 | 57.8 | 61.4 | 61.1 | 57.1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 52.5 | 51.1 | 48.9 | 49.0 | 49.6 | 51.0 | 55.0 | 57.7 | 61.4 | 60.5 | 56.1 |
| Above Normal (16%) | 53.3 | 53.0 | 51.0 | 49.3 | 49.5 | 50.2 | 52.0 | 56.1 | 58.2 | 60.9 | 59.9 | 54.8 |
| Below Normal (15%) | 54.0 | 53.8 | 51.7 | 49.8 | 50.1 | 51.6 | 52.7 | 55.7 | 57.9 | 61.0 | 60.2 | 56.4 |
| Dry (24%) | 54.5 | 54.7 | 52.0 | 49.0 | 49.9 | 52.0 | 52.7 | 55.8 | 57.5 | 61.5 | 61.6 | 56.9 |
| Critical (15%) | 60.9 | 57.5 | 50.7 | 49.1 | 50.4 | 52.4 | 52.4 | 56.1 | 58.0 | 62.2 | 63.5 | 62.7 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -2.0 | -0.8 | -0.9 | **0.2** | -0.1 | 0.0 | **0.0** | -0.1 | -0.3 | 0.0 | -0.1 | **0.7** |
| 20% | **0.1** | -0.3 | -0.9 | 0.0 | **0.2** | **0.4** | 0.0 | -0.2 | -0.2 | 0.0 | -0.1 | **0.5** |
| 30% | -0.1 | -0.9 | -0.6 | **0.2** | **0.1** | **0.0** | 0.0 | -0.2 | -0.3 | **0.2** | 0.0 | **0.4** |
| 40% | -0.1 | -1.2 | -0.6 | **0.1** | **0.1** | **0.0** | **0.2** | -0.1 | -0.3 | 0.0 | 0.0 | **0.6** |
| 50% | 0.0 | -1.4 | -0.5 | 0.0 | **0.1** | 0.0 | 0.0 | -0.2 | -0.2 | -0.1 | -0.1 | **1.0** |
| 60% | 0.0 | -0.8 | -0.4 | -0.1 | **0.1** | **0.1** | 0.0 | -0.2 | -0.3 | 0.0 | **0.0** | **0.8** |
| 70% | **0.1** | -0.5 | -0.5 | **0.0** | -0.2 | -0.1 | -0.1 | -0.1 | -0.2 | 0.0 | 0.0 | **0.6** |
| 80% | **0.1** | -0.3 | -0.7 | -0.1 | -0.2 | 0.0 | 0.0 | -0.1 | -0.2 | 0.0 | 0.0 | **0.6** |
| 90% | **0.1** | 0.0 | -0.4 | 0.0 | -0.3 | **0.1** | **0.1** | 0.0 | -0.1 | 0.0 | 0.0 | **0.5** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | -0.6 | -0.7 | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | -0.2 | 0.0 | 0.0 | **0.6** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0.0 | -1.7 | -1.8 | **0.1** | **0.1** | **0.1** | **0.0** | -0.1 | -0.1 | **0.0** | **0.1** | **1.5** |
| Above Normal (16%) | 0.0 | -0.2 | -0.4 | **0.0** | 0.0 | **0.1** | **0.1** | -0.1 | -0.2 | 0.0 | 0.0 | **0.3** |
| Below Normal (15%) | -0.1 | -0.3 | -0.1 | -0.1 | -0.1 | **0.0** | **0.0** | -0.1 | -0.3 | -0.1 | -0.3 | **0.0** |
| Dry (24%) | -0.1 | 0.0 | **0.0** | 0.0 | **0.0** | 0.0 | **0.1** | -0.1 | -0.3 | **0.1** | -0.1 | **0.0** |
| Critical (15%) | -0.2 | **0.1** | -0.1 | -0.1 | **0.0** | **0.0** | **0.0** | -0.1 | -0.1 | -0.1 | **0.1** | **0.4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-3. Feather River Low Flow Channel, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.3 | 58.2 | 54.4 | 51.4 | 51.8 | 53.6 | 53.5 | 56.9 | 58.8 | 62.3 | 62.5 | 58.3 |
| 20% | 54.9 | 56.2 | 53.6 | 50.5 | 51.0 | 52.5 | 53.0 | 56.6 | 58.5 | 62.0 | 62.0 | 57.0 |
| 30% | 54.3 | 55.5 | 52.8 | 49.9 | 50.5 | 51.9 | 52.5 | 56.2 | 58.4 | 61.4 | 61.4 | 56.7 |
| 40% | 53.9 | 54.9 | 52.4 | 49.5 | 49.9 | 51.3 | 52.2 | 56.0 | 58.2 | 61.3 | 61.1 | 56.2 |
| 50% | 53.6 | 54.3 | 51.9 | 49.1 | 49.5 | 50.8 | 52.0 | 55.9 | 58.0 | 61.2 | 60.6 | 55.3 |
| 60% | 53.4 | 53.4 | 51.4 | 48.8 | 49.2 | 50.1 | 51.8 | 55.5 | 57.9 | 61.1 | 60.3 | 54.8 |
| 70% | 53.3 | 52.9 | 51.1 | 48.1 | 49.0 | 49.8 | 51.4 | 55.2 | 57.6 | 61.0 | 60.1 | 54.7 |
| 80% | 53.1 | 52.5 | 50.5 | 47.5 | 48.3 | 49.3 | 50.6 | 54.8 | 57.5 | 60.9 | 59.9 | 54.5 |
| 90% | 52.9 | 52.1 | 49.1 | 47.0 | 47.3 | 48.4 | 50.2 | 54.5 | 57.2 | 60.8 | 59.8 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 54.6 | 52.0 | 49.2 | 49.6 | 50.9 | 52.0 | 55.8 | 58.0 | 61.4 | 61.1 | 56.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 54.2 | 52.9 | 48.9 | 48.9 | 49.5 | 51.0 | 55.1 | 57.8 | 61.4 | 60.5 | 54.6 |
| Above Normal (16%) | 53.3 | 53.2 | 51.4 | 49.3 | 49.5 | 50.1 | 51.9 | 56.3 | 58.4 | 61.0 | 59.9 | 54.5 |
| Below Normal (15%) | 54.1 | 54.1 | 51.8 | 49.9 | 50.3 | 51.6 | 52.7 | 55.8 | 58.2 | 61.1 | 60.5 | 56.4 |
| Dry (24%) | 54.6 | 54.7 | 52.0 | 49.0 | 49.9 | 52.1 | 52.7 | 56.0 | 57.8 | 61.4 | 61.7 | 56.8 |
| Critical (15%) | 61.1 | 57.5 | 50.9 | 49.2 | 50.4 | 52.4 | 52.3 | 56.2 | 58.1 | 62.3 | 63.4 | 62.3 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 61.2 | 58.4 | 54.4 | 51.4 | 51.8 | 53.6 | 53.5 | 56.9 | 58.8 | 62.4 | 62.5 | 58.8 |
| 20% | 54.9 | 56.2 | 53.6 | 50.5 | 51.0 | 52.5 | 52.9 | 56.5 | 58.5 | 62.0 | 62.0 | 57.0 |
| 30% | 54.4 | 55.5 | 52.8 | 49.9 | 50.5 | 51.9 | 52.5 | 56.2 | 58.3 | 61.5 | 61.4 | 56.8 |
| 40% | 53.8 | 55.1 | 52.3 | 49.5 | 49.9 | 51.4 | 52.2 | 56.0 | 58.2 | 61.3 | 61.1 | 56.2 |
| 50% | 53.6 | 54.2 | 51.8 | 49.0 | 49.5 | 50.9 | 52.0 | 55.9 | 57.9 | 61.2 | 60.5 | 55.4 |
| 60% | 53.4 | 53.4 | 51.3 | 48.8 | 49.2 | 50.1 | 51.8 | 55.5 | 57.8 | 61.1 | 60.3 | 54.8 |
| 70% | 53.3 | 52.8 | 51.0 | 48.1 | 48.6 | 49.7 | 51.4 | 55.2 | 57.6 | 61.0 | 60.1 | 54.7 |
| 80% | 53.1 | 52.5 | 50.4 | 47.3 | 48.1 | 49.3 | 50.6 | 54.7 | 57.5 | 60.9 | 59.9 | 54.5 |
| 90% | 52.9 | 52.1 | 49.1 | 46.8 | 47.4 | 48.5 | 50.2 | 54.5 | 57.2 | 60.8 | 59.8 | 54.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 54.9 | 54.8 | 52.0 | 49.1 | 49.6 | 50.9 | 52.0 | 55.7 | 58.0 | 61.5 | 61.2 | 56.7 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 53.3 | 54.2 | 52.9 | 48.9 | 48.9 | 49.5 | 51.0 | 55.1 | 57.8 | 61.3 | 60.5 | 54.6 |
| Above Normal (16%) | 53.3 | 53.1 | 51.4 | 49.3 | 49.5 | 50.3 | 52.0 | 56.3 | 58.4 | 61.0 | 59.9 | 54.6 |
| Below Normal (15%) | 54.1 | 54.3 | 51.9 | 49.9 | 50.2 | 51.6 | 52.7 | 55.8 | 58.2 | 61.1 | 60.5 | 56.4 |
| Dry (24%) | 54.6 | 55.0 | 52.1 | 48.9 | 49.8 | 52.0 | 52.6 | 56.0 | 57.8 | 61.5 | 61.7 | 56.8 |
| Critical (15%) | 61.2 | 57.6 | 50.3 | 49.0 | 50.3 | 52.3 | 52.3 | 56.0 | 58.1 | 63.0 | 64.0 | 63.3 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.9** | **0.2** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | 0.0 | **0.5** |
| 20% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30% | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | **0.1** |
| 40% | -0.1 | **0.2** | -0.1 | 0.0 | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50% | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | **0.0** |
| 60% | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | **0.0** | **0.0** |
| 70% | 0.0 | -0.1 | 0.0 | 0.0 | -0.4 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | -0.1 | -0.2 | -0.2 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90% | 0.0 | 0.0 | 0.0 | -0.2 | **0.1** | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | -0.1 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | **0.1** | **0.2** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | **0.2** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Below Normal (15%) | **0.0** | **0.2** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** |
| Dry (24%) | **0.0** | **0.3** | **0.1** | -0.1 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | **0.1** | 0.0 | **0.0** |
| Critical (15%) | **0.2** | **0.2** | -0.6 | -0.2 | -0.2 | -0.1 | **0.0** | -0.2 | **0.1** | **0.7** | **0.5** | **1.0** |

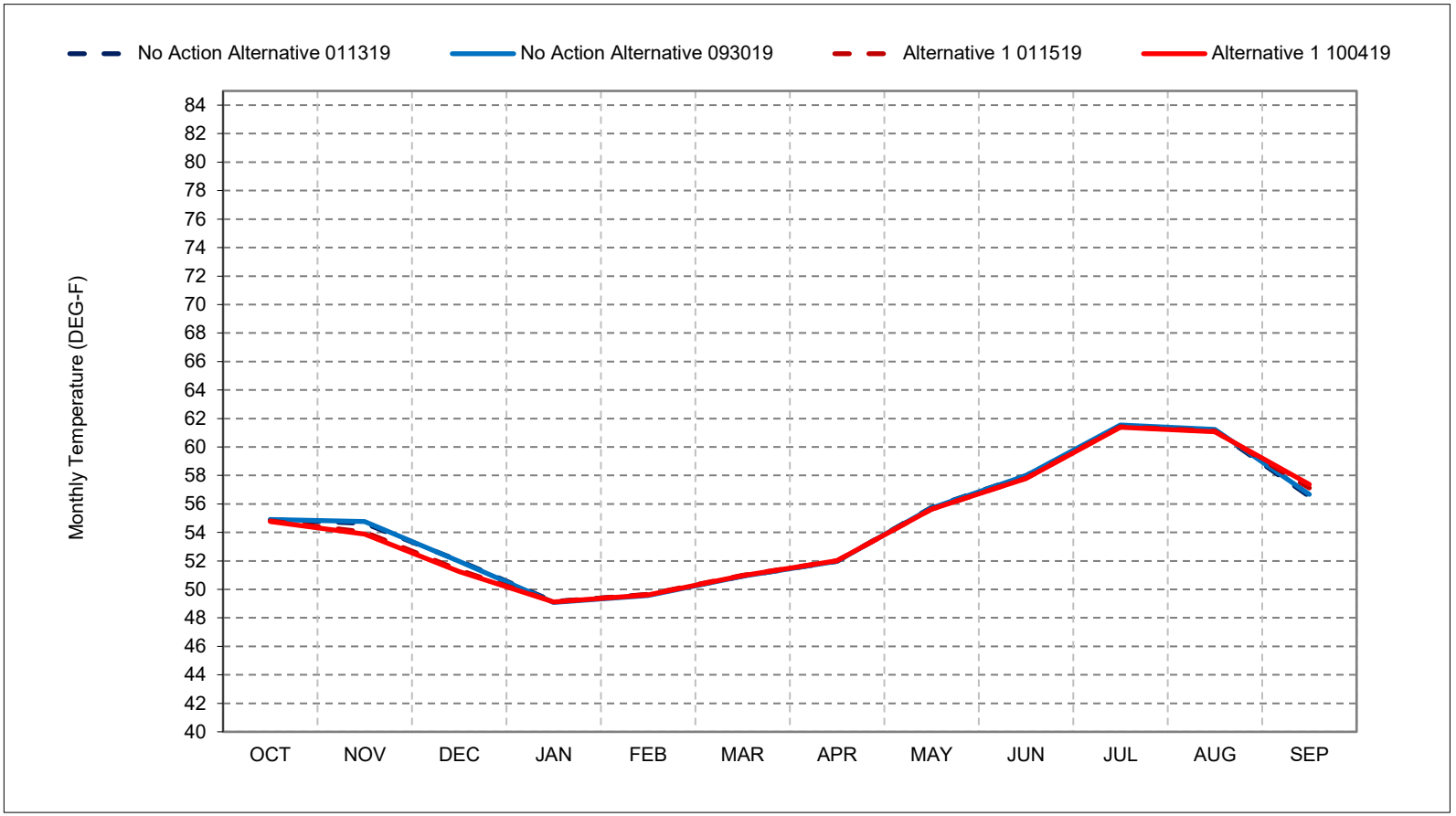
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-1. Feather River Low Flow Channel, Long-Term Average Temperature

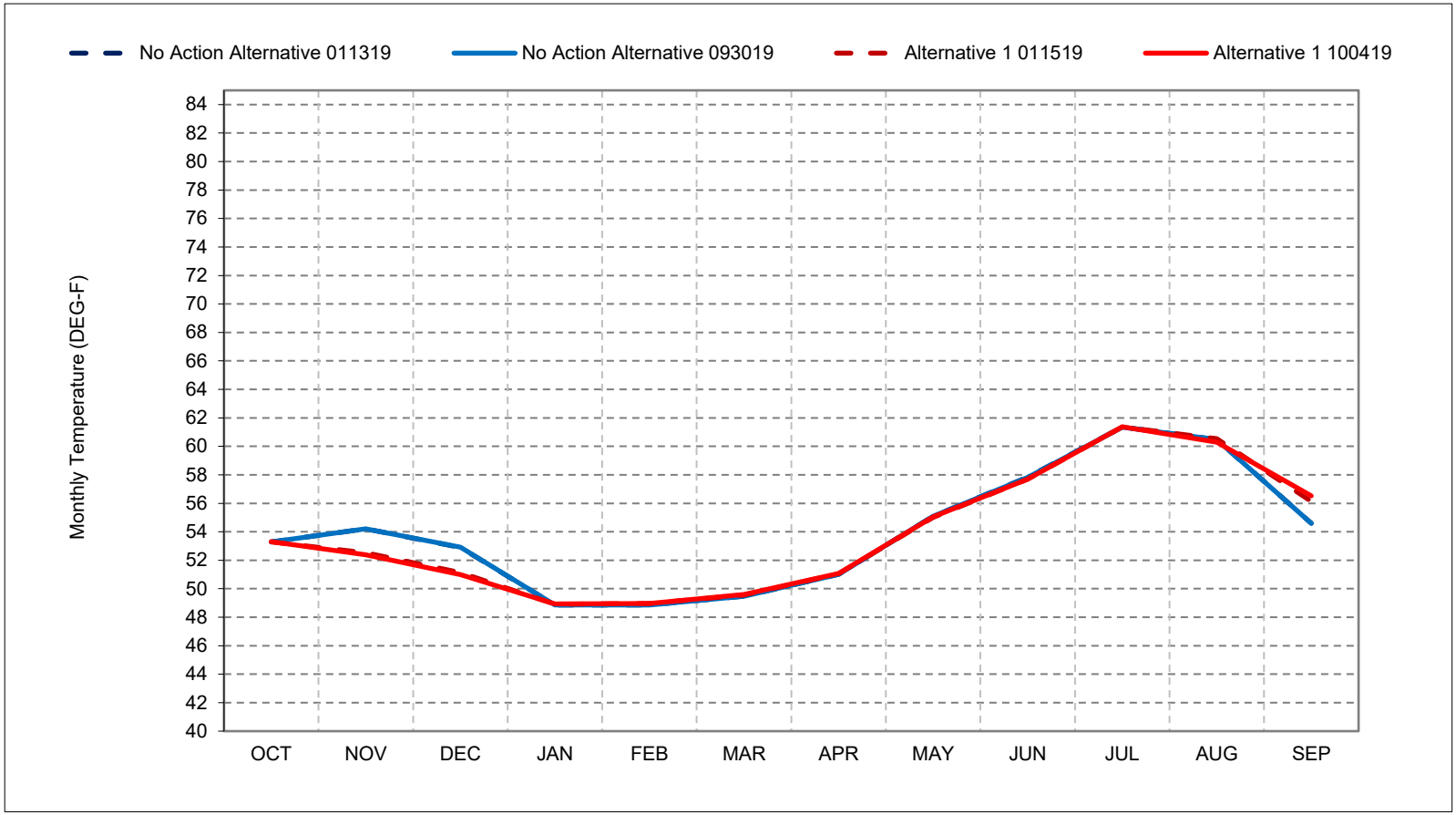



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-2. Feather River Low Flow Channel, Wet Year Average Temperature

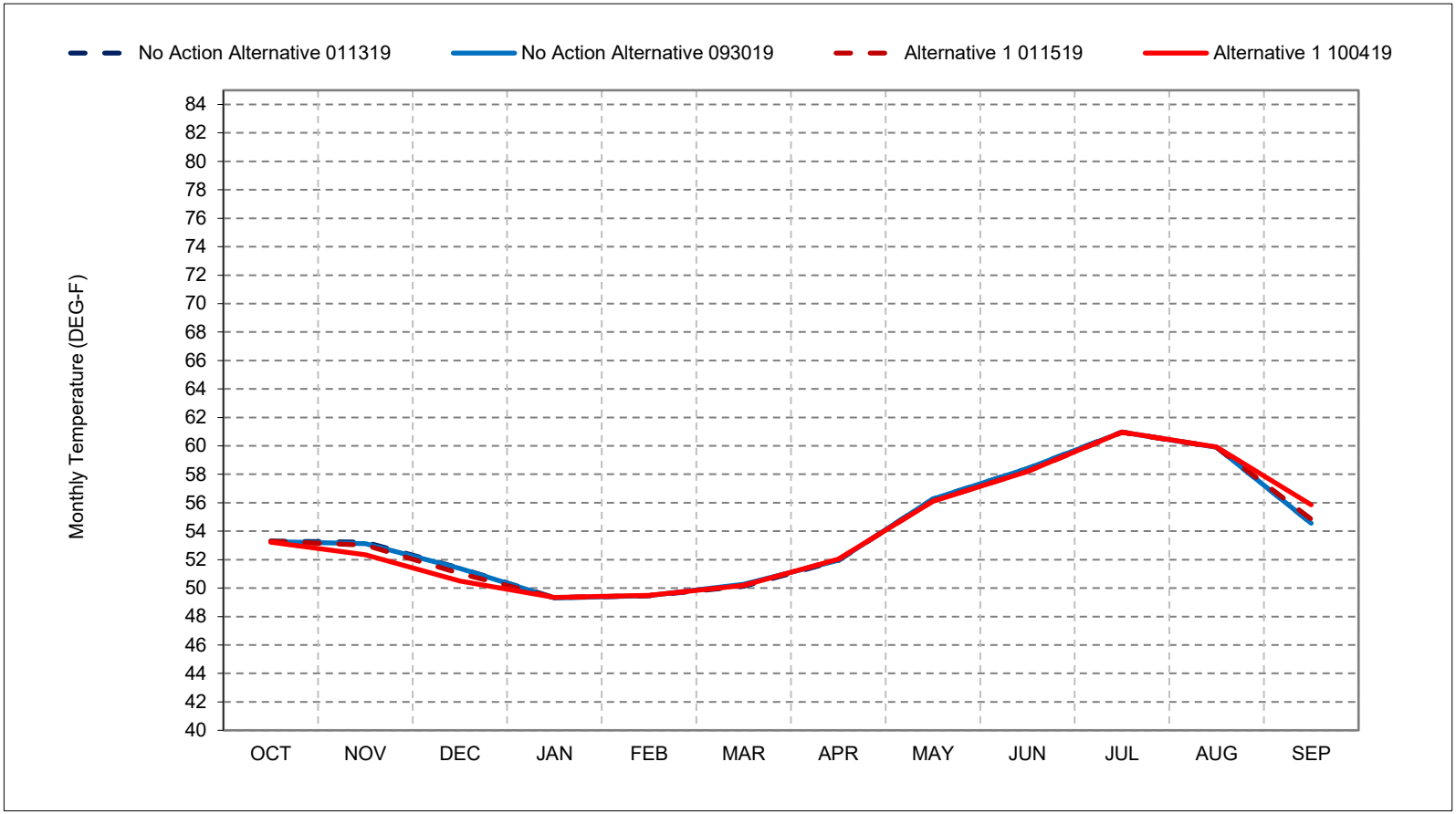



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-3. Feather River Low Flow Channel, Above Normal Year Average Temperature

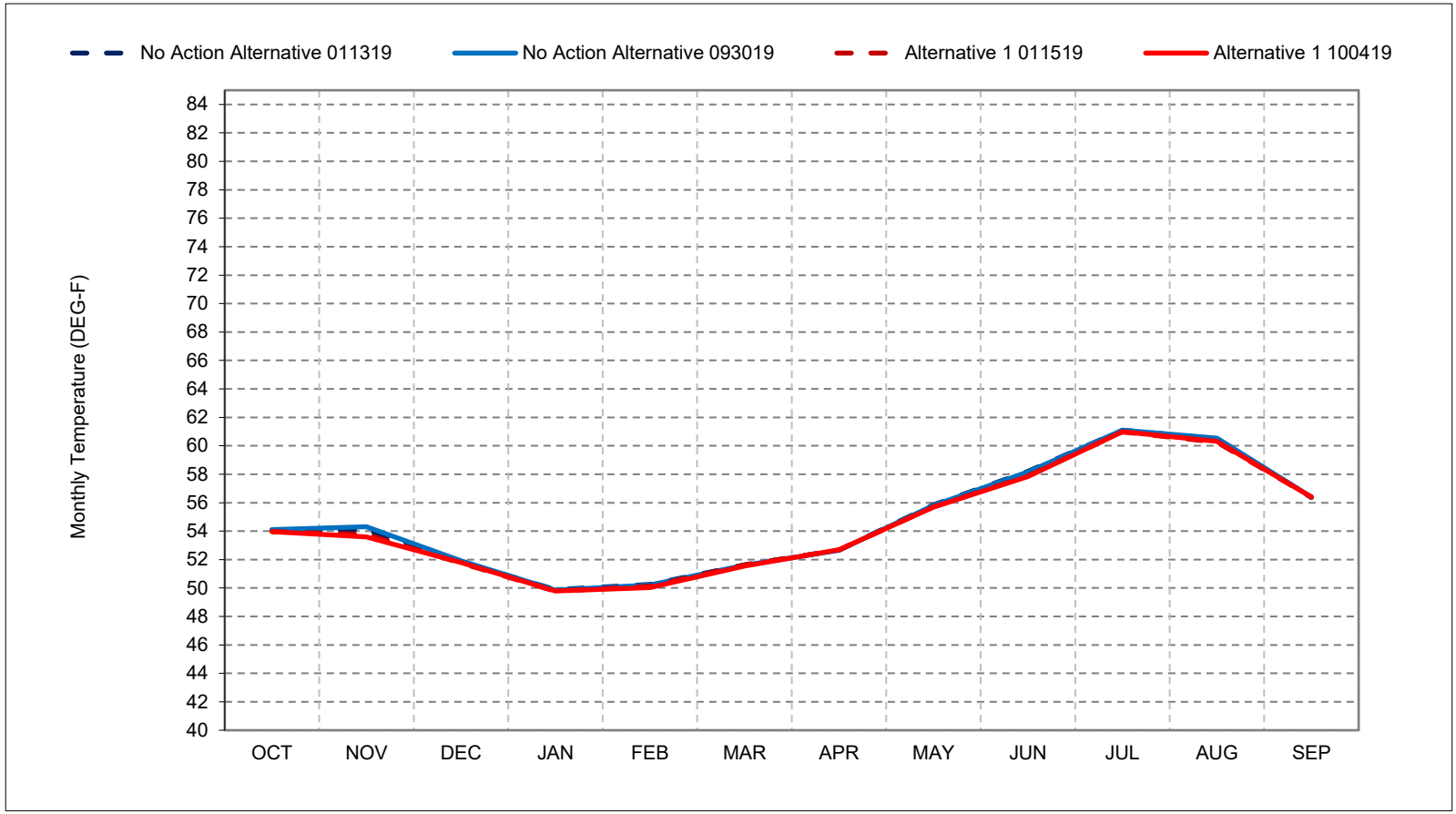



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-4. Feather River Low Flow Channel, Below Normal Year Average Temperature

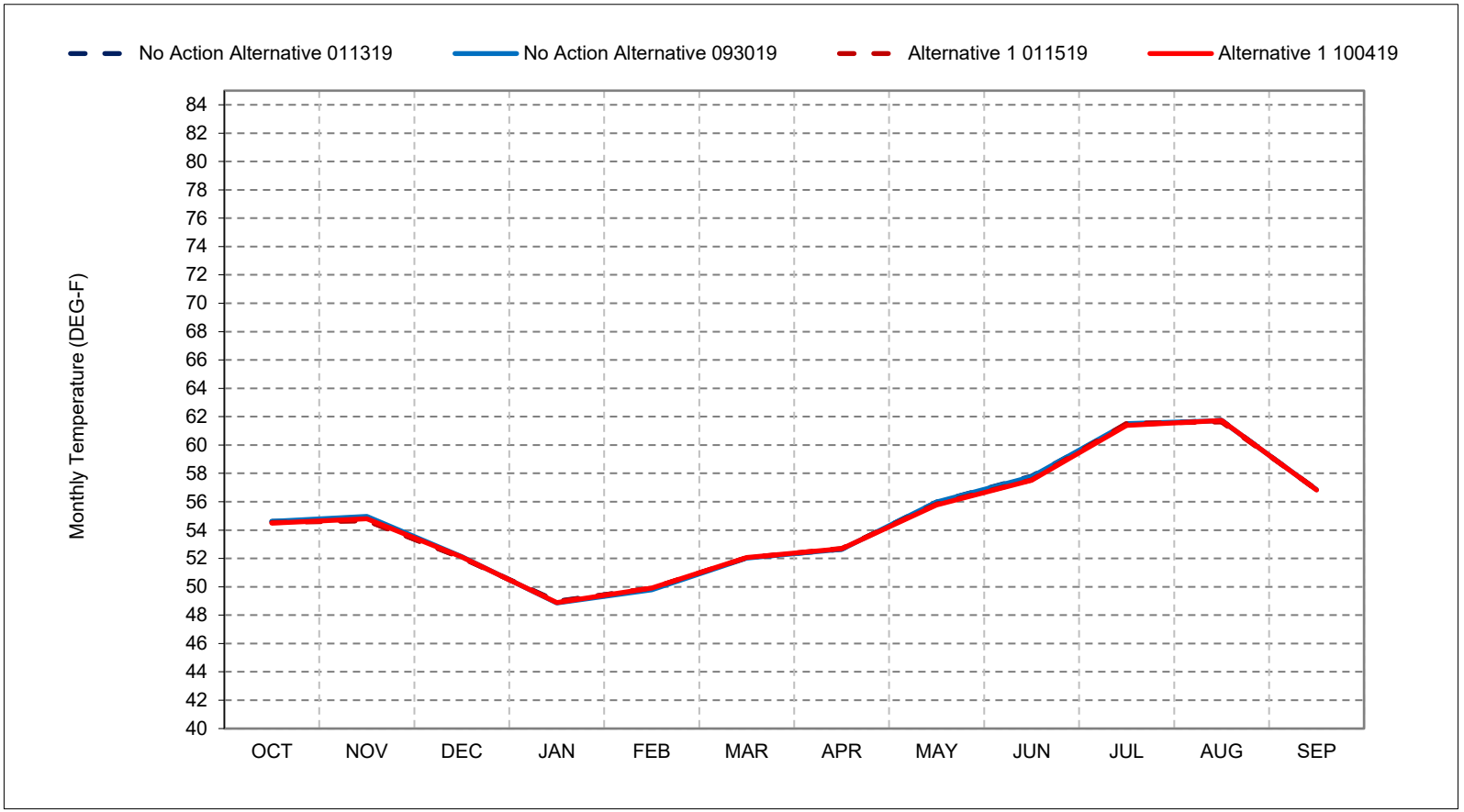



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-5. Feather River Low Flow Channel, Dry Year Average Temperature

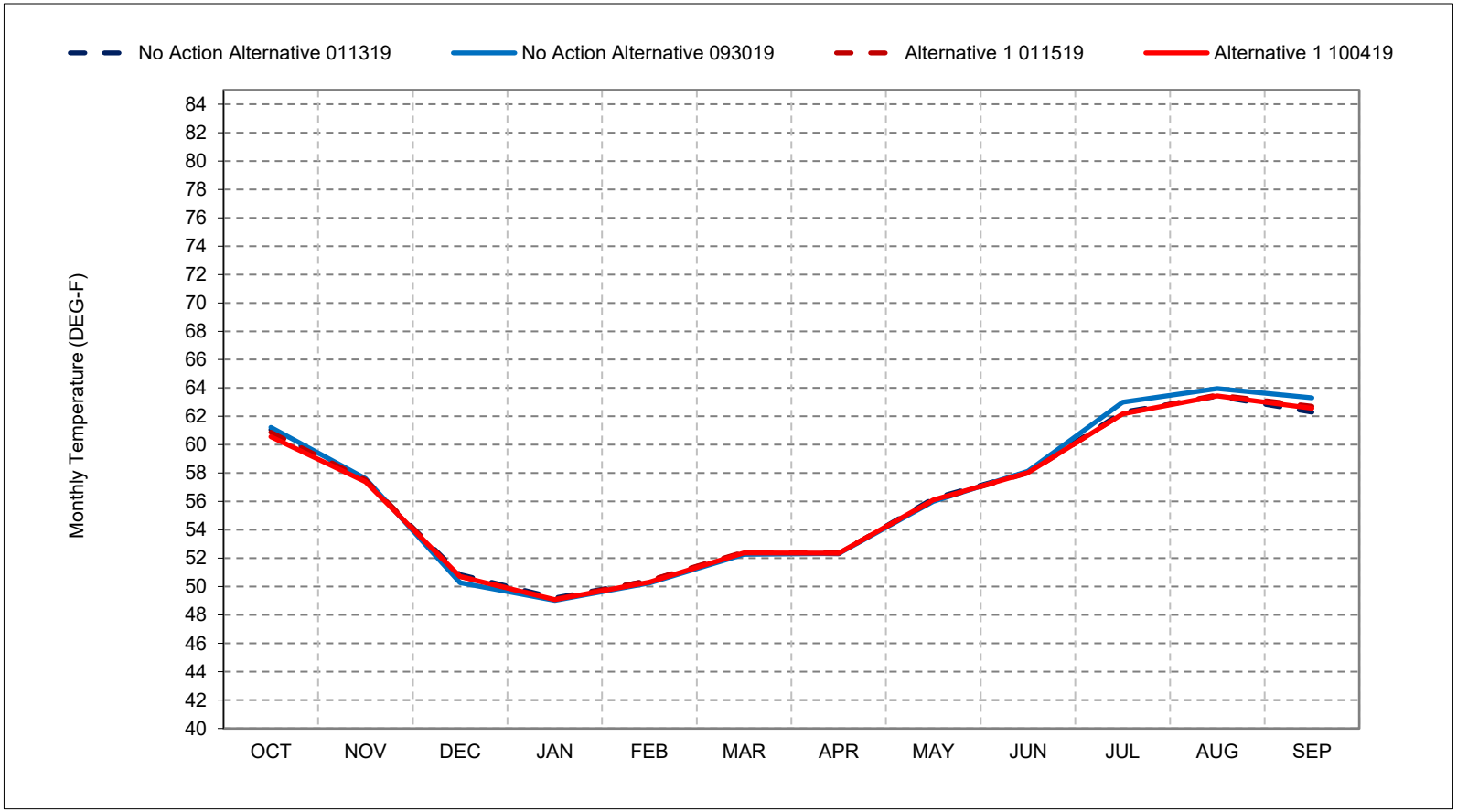



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 1-6. Feather River Low Flow Channel, Critical Year Average Temperature

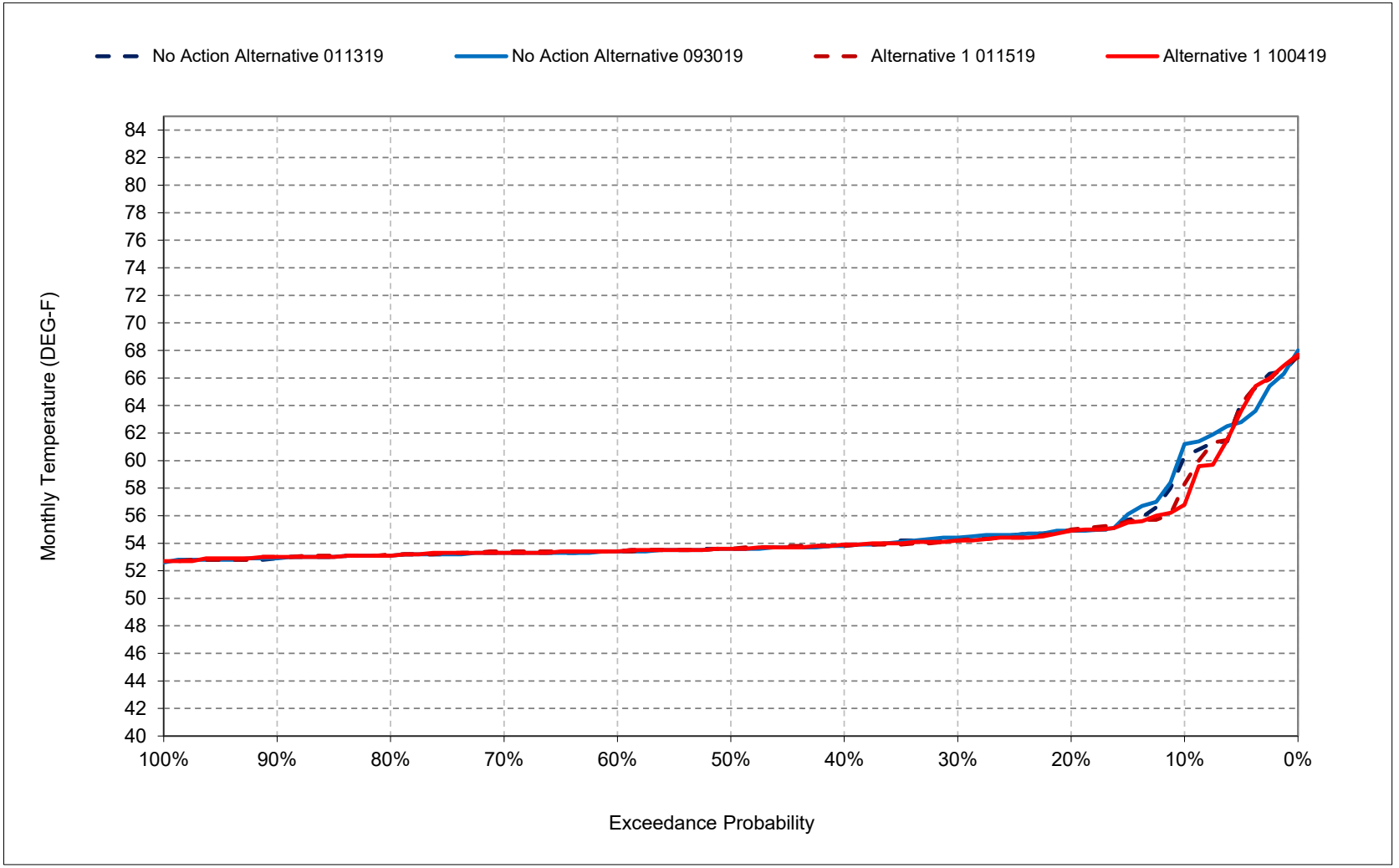



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

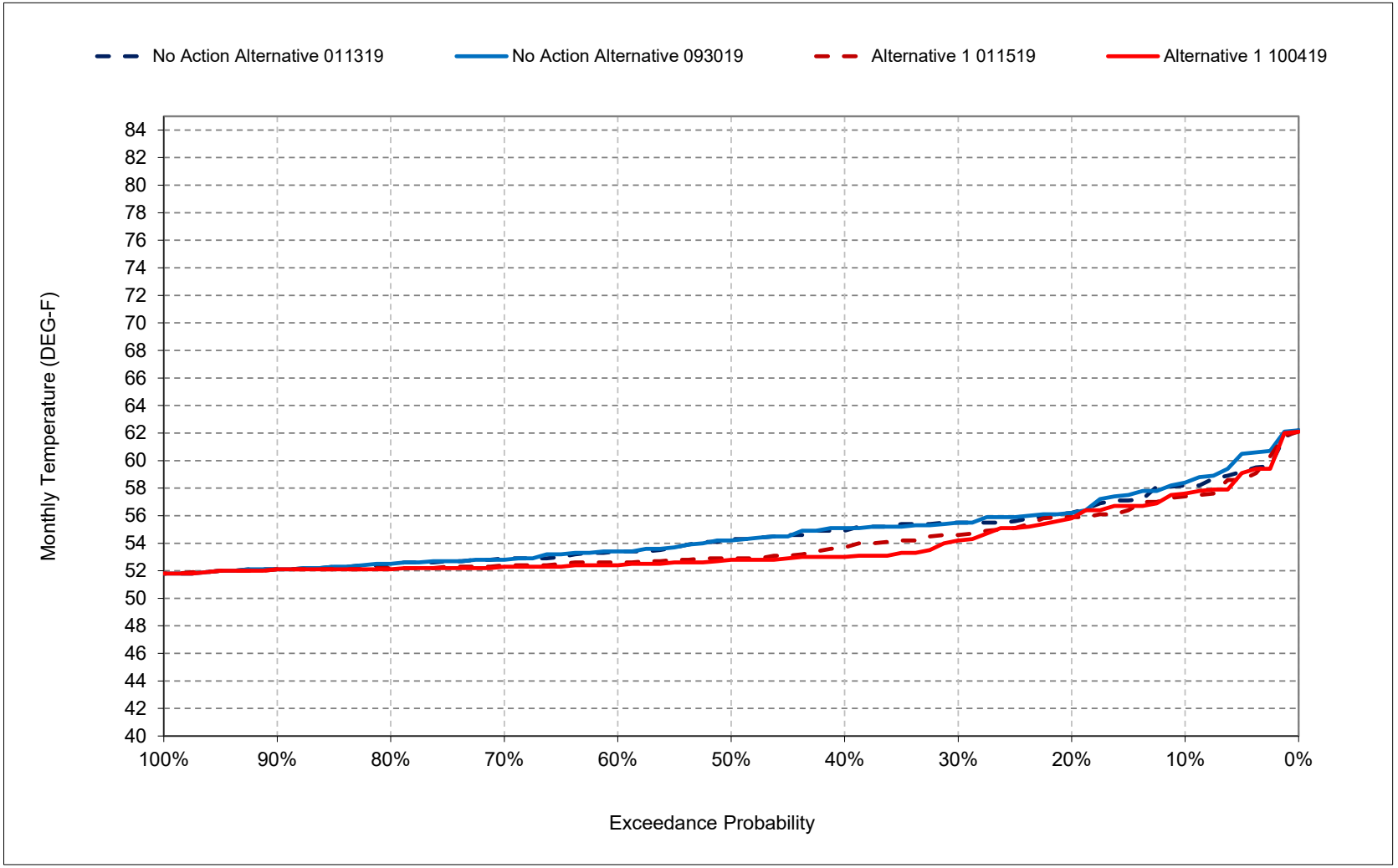
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-7. Feather River Low Flow Channel, October**



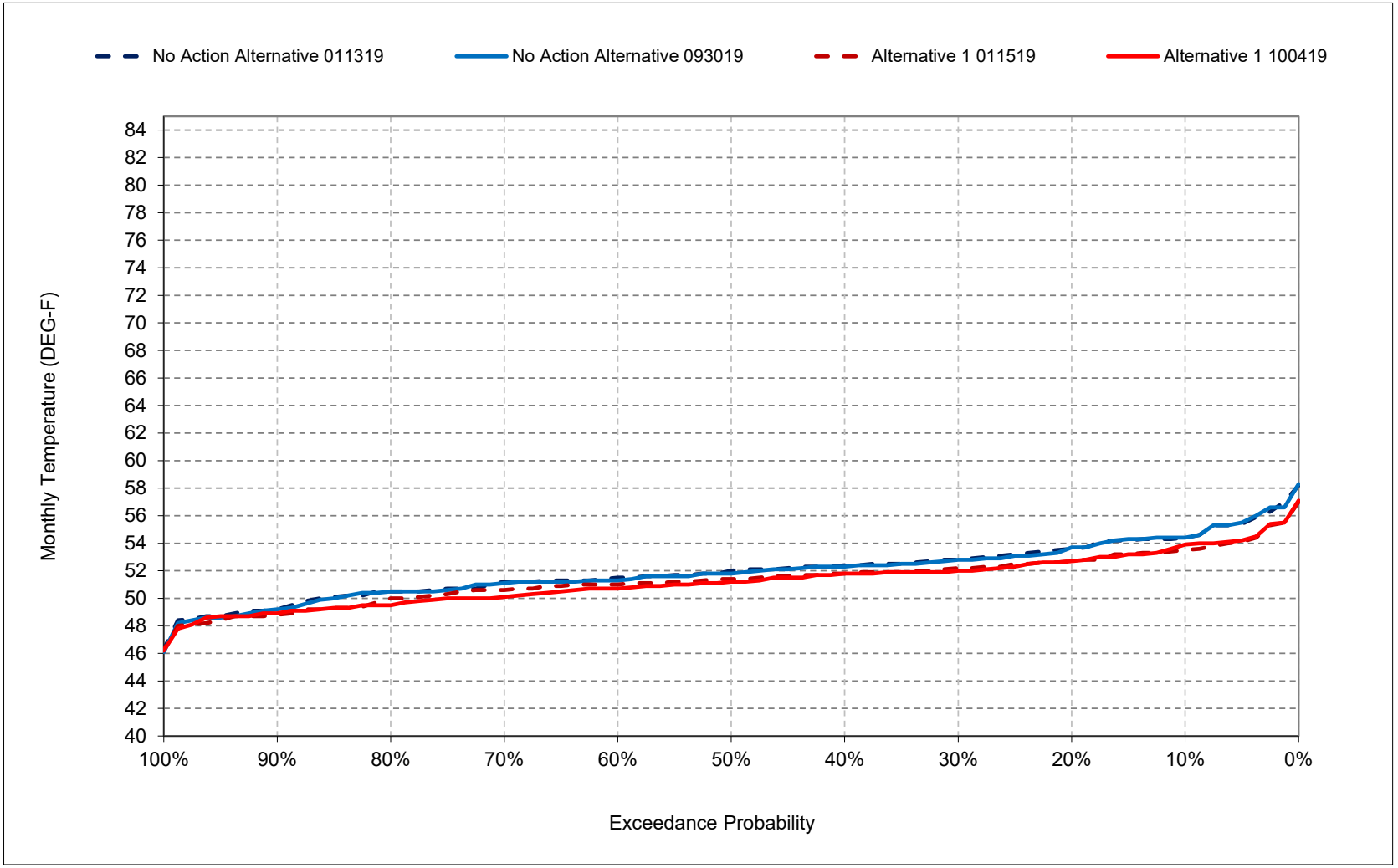

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-8. Feather River Low Flow Channel, November**



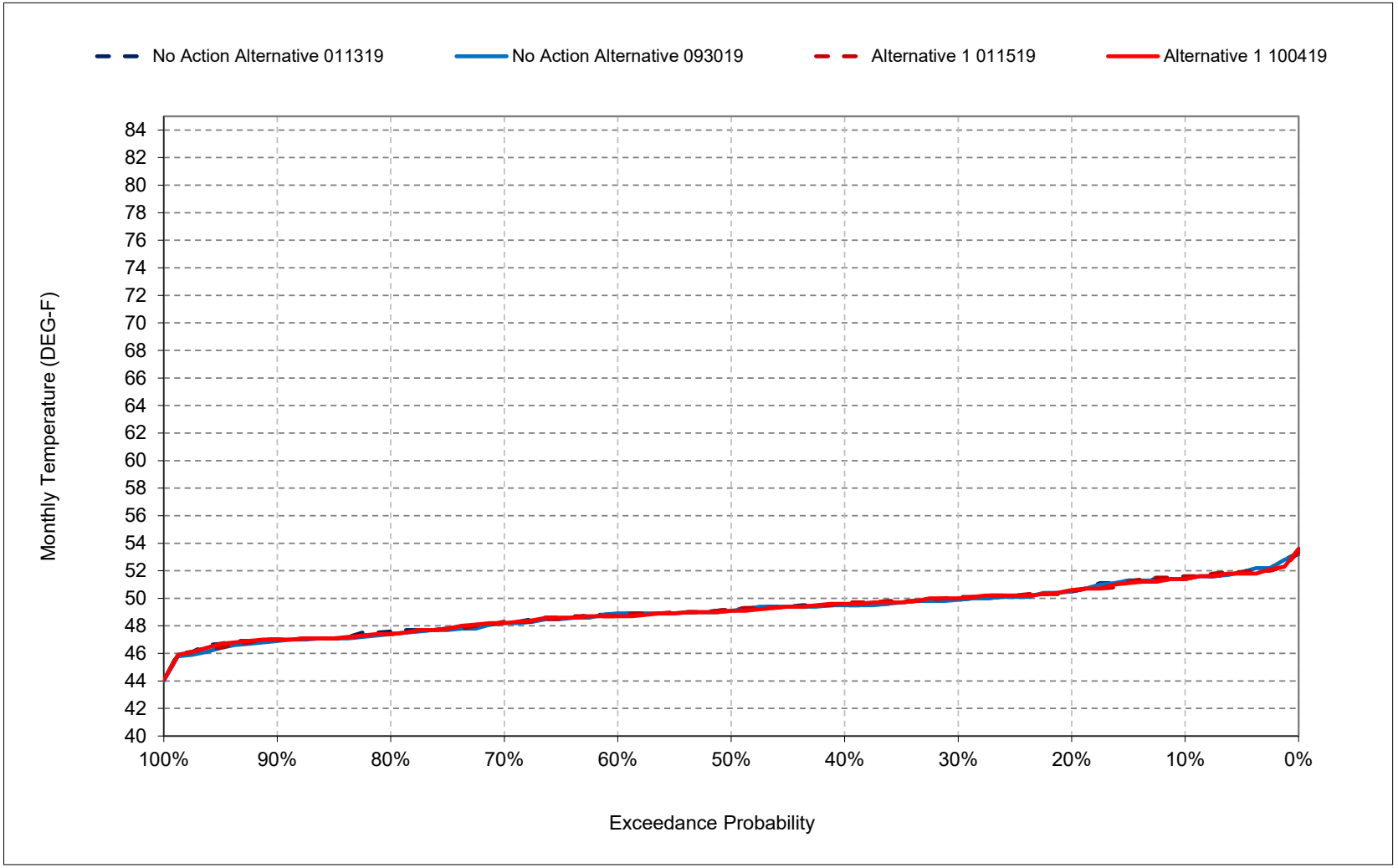

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-9. Feather River Low Flow Channel, December**



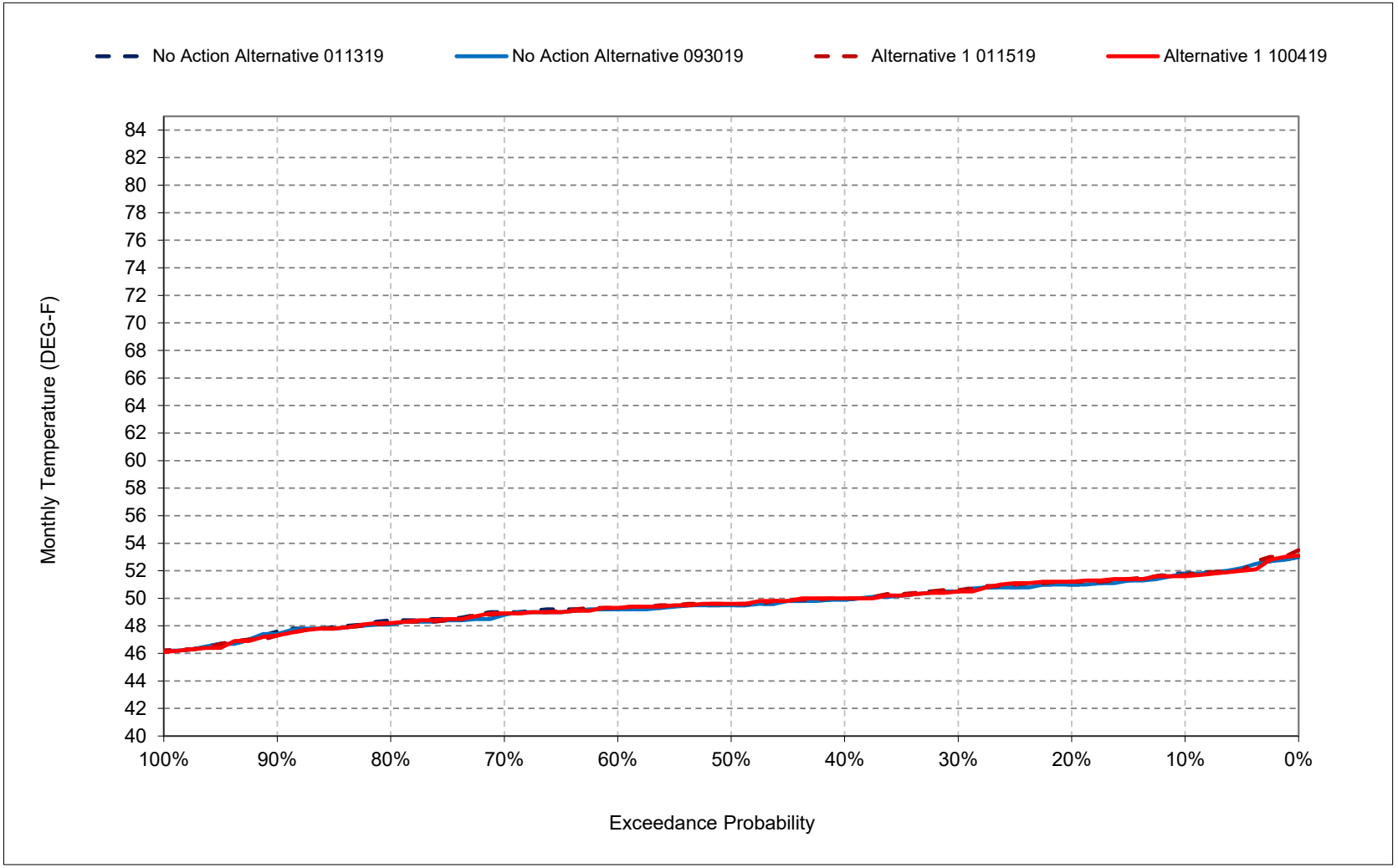

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-10. Feather River Low Flow Channel, January**



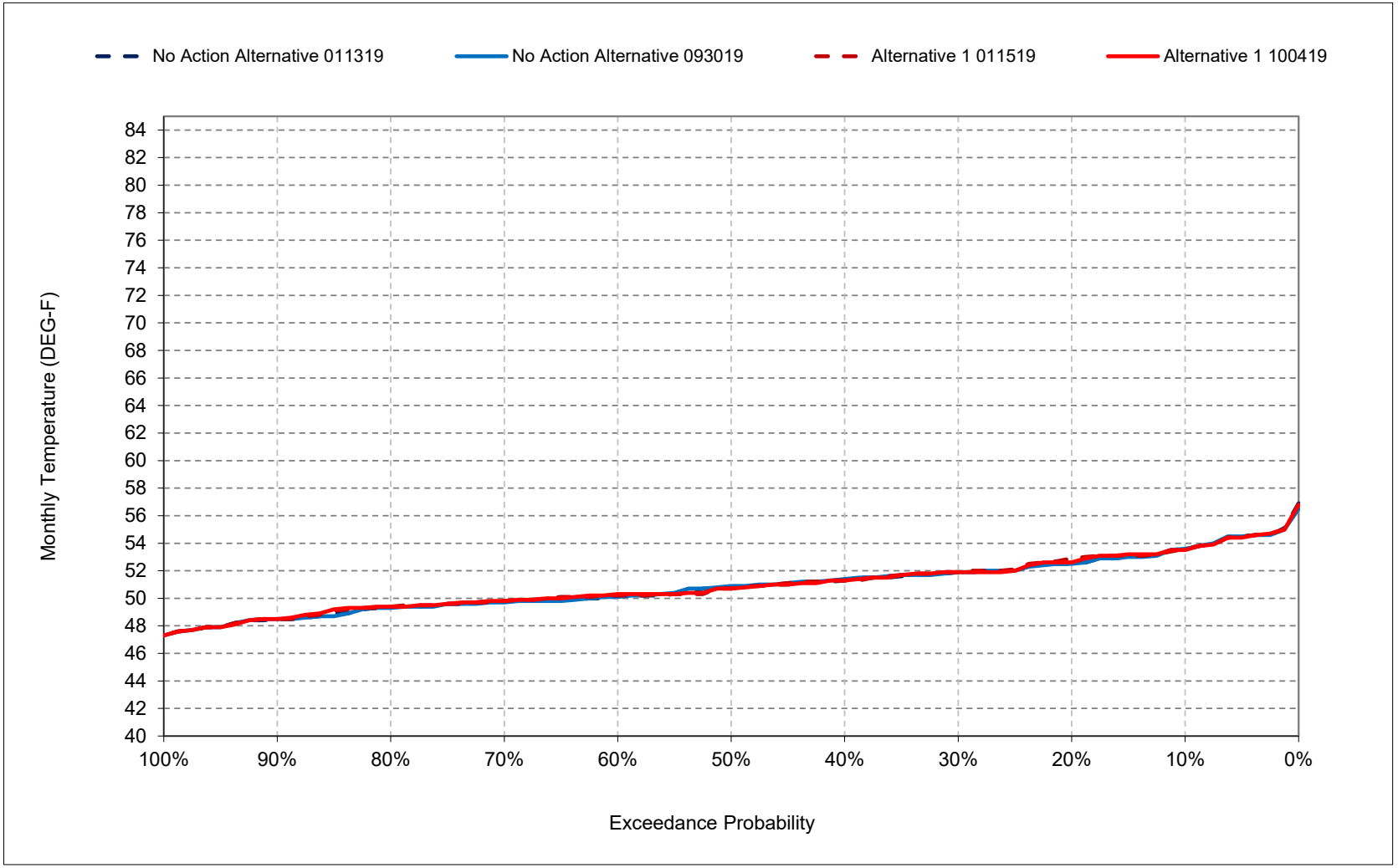

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-11. Feather River Low Flow Channel, February**



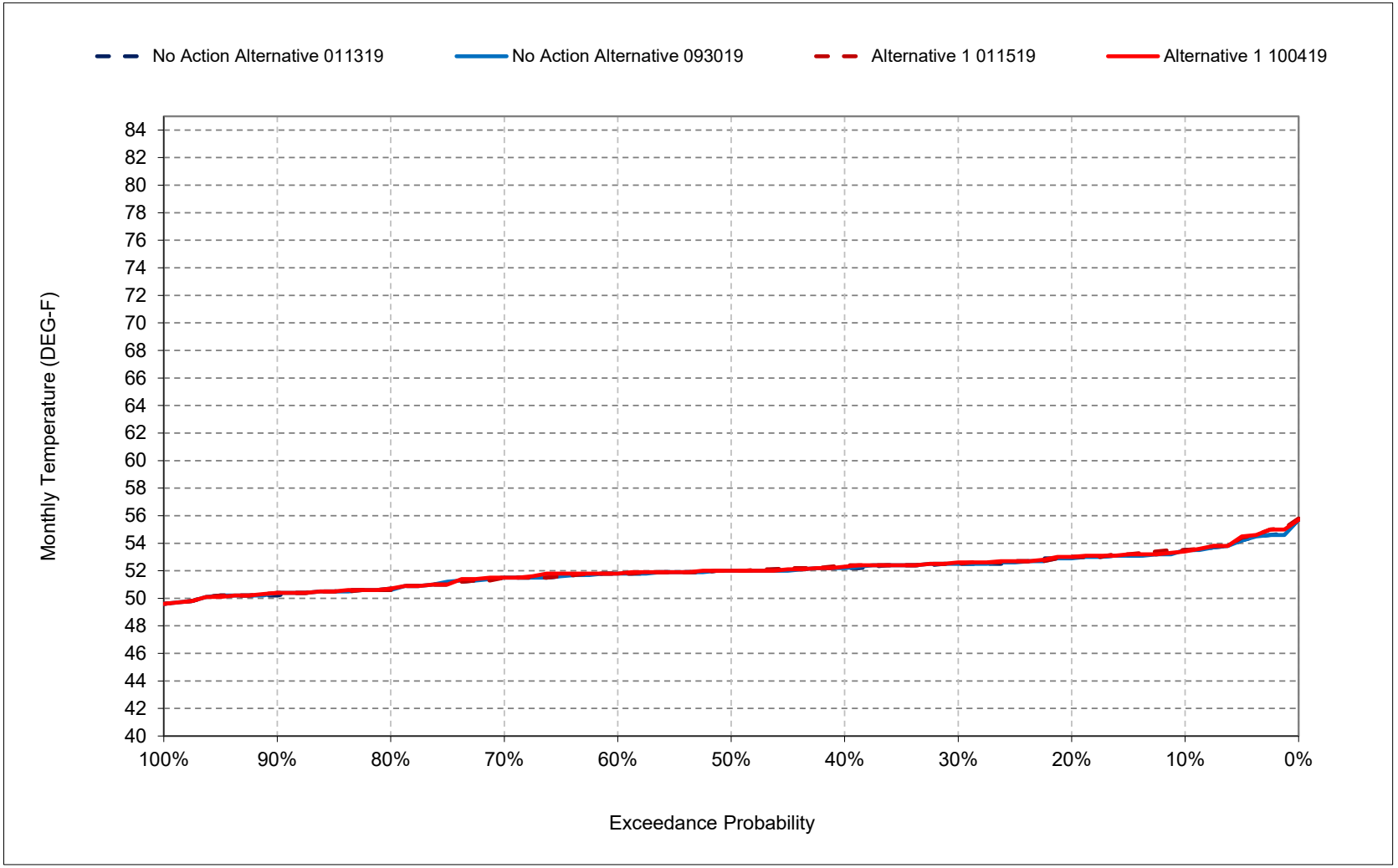

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-12. Feather River Low Flow Channel, March**



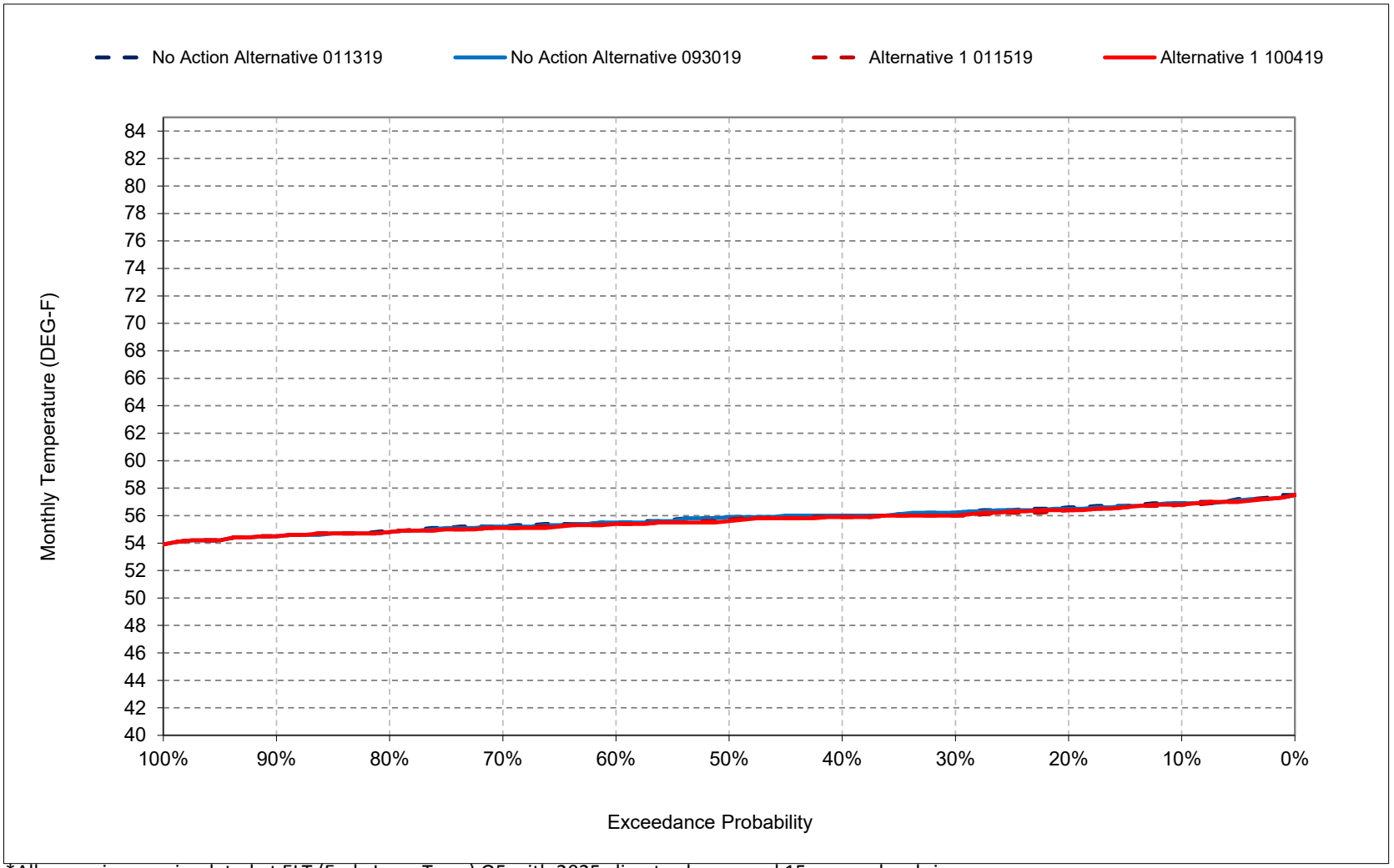

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-13. Feather River Low Flow Channel, April**



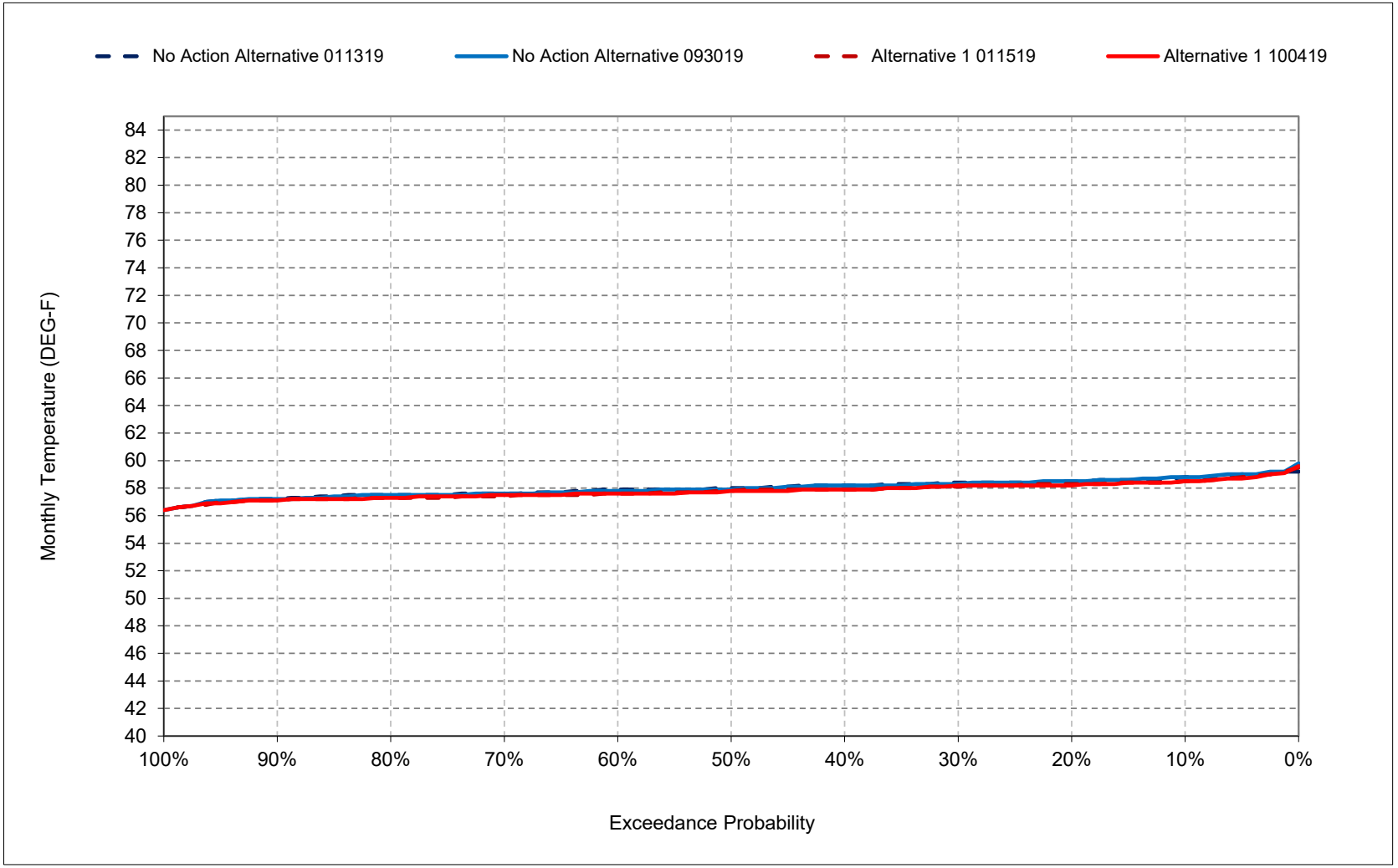

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-14. Feather River Low Flow Channel, May**



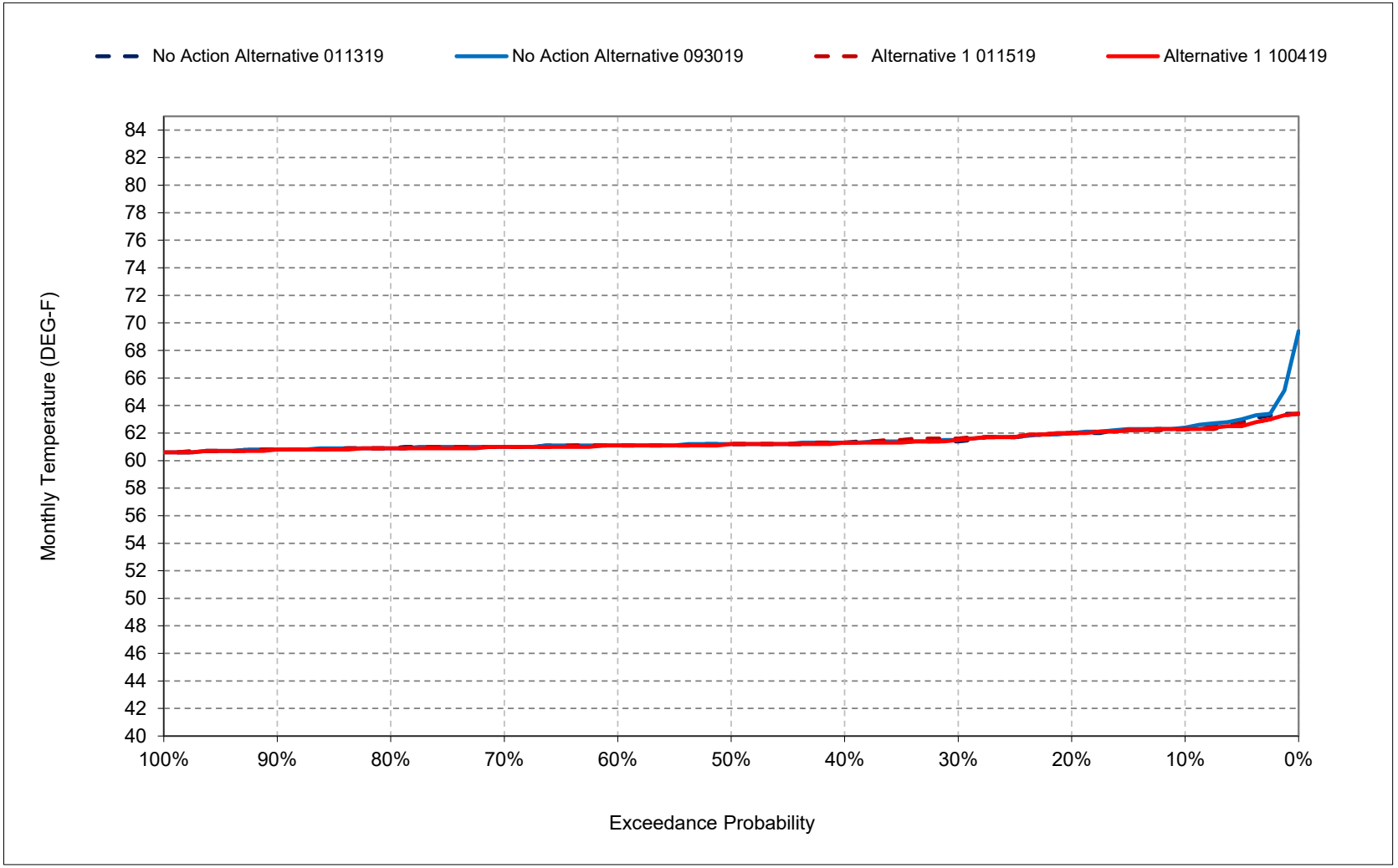

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-15. Feather River Low Flow Channel, June**



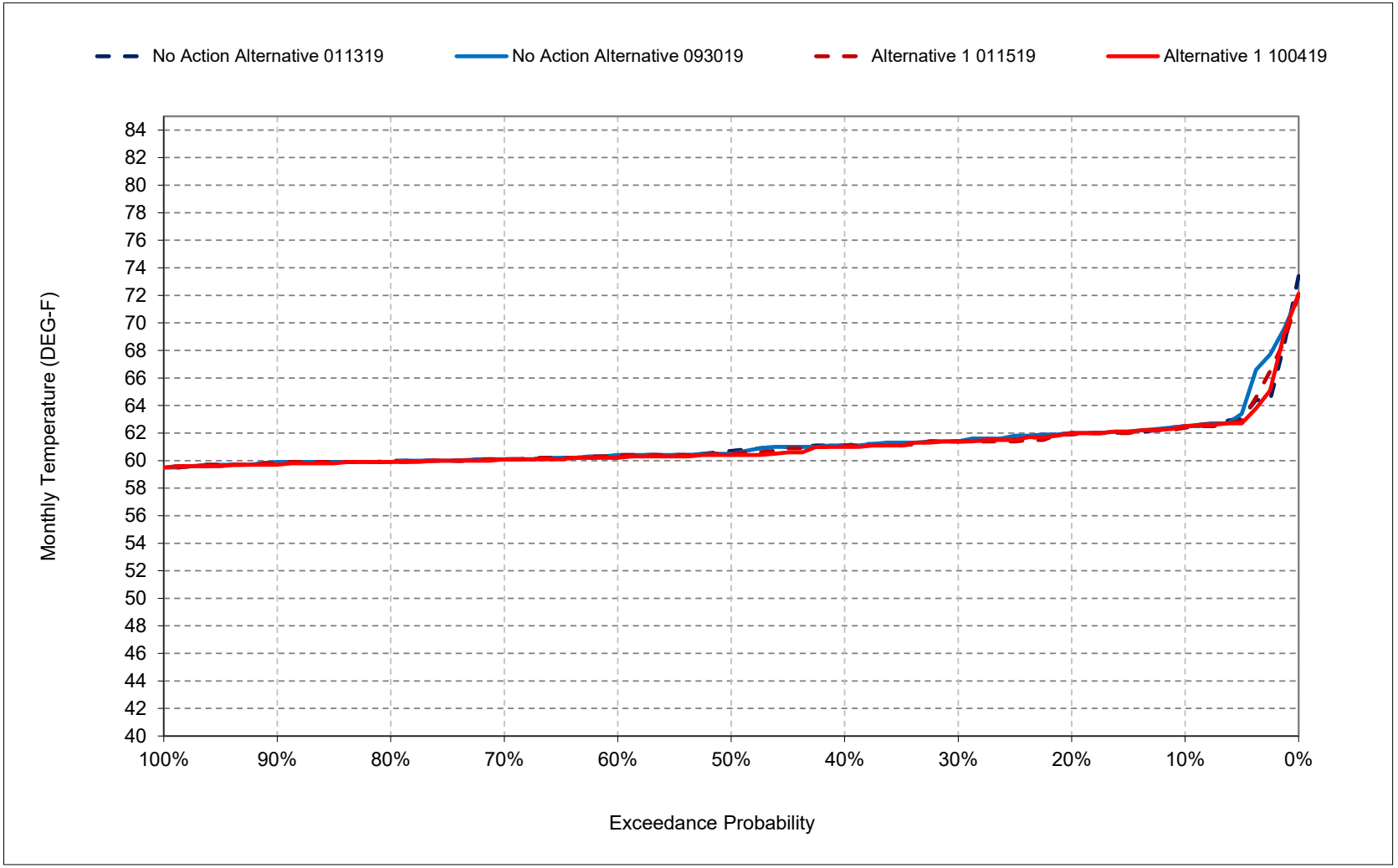

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-16. Feather River Low Flow Channel, July**



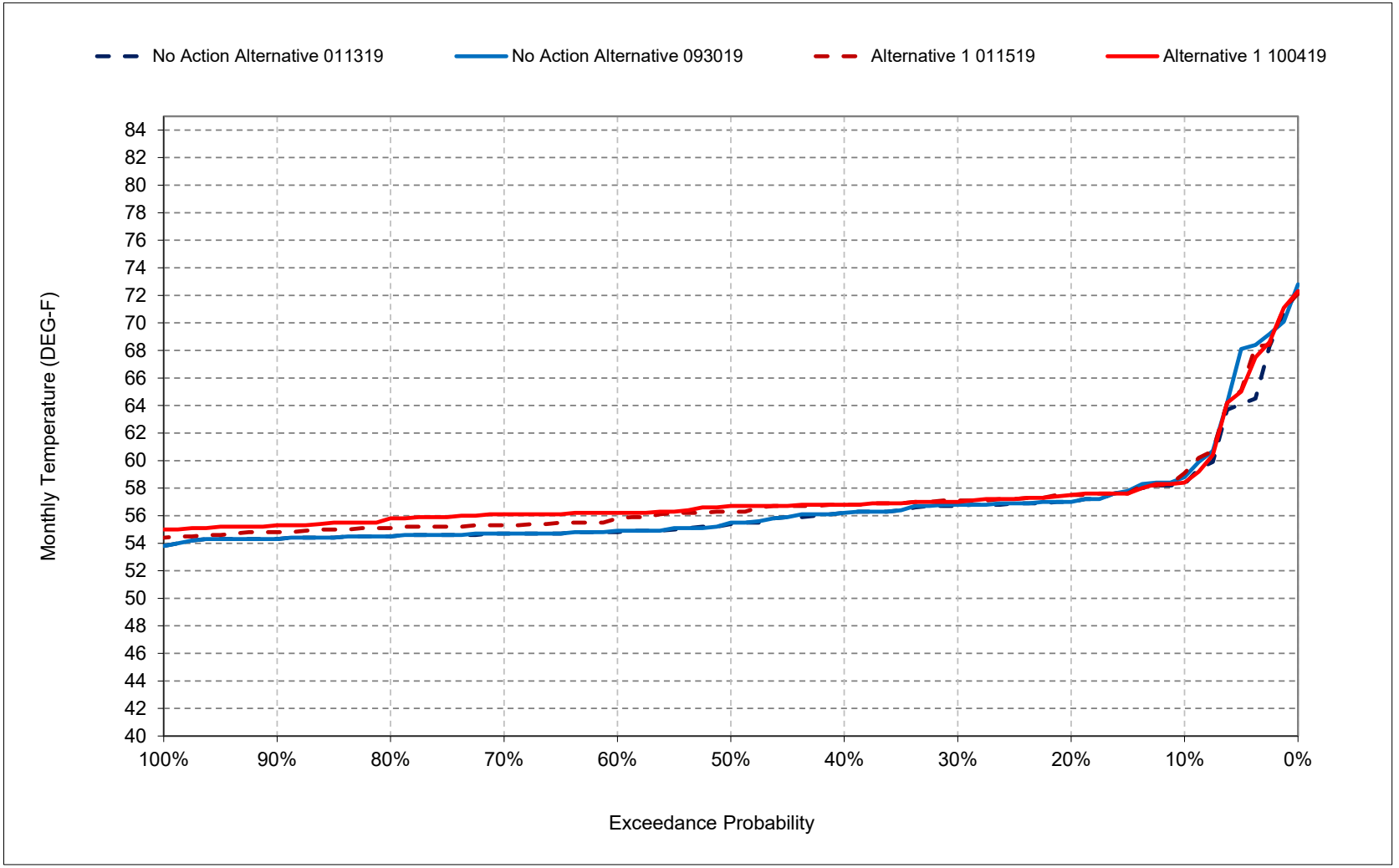

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-17. Feather River Low Flow Channel, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-18. Feather River Low Flow Channel, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-1. Feather River at Robinson Riffle, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.8 | 57.7 | 53.2 | 50.6 | 52.5 | 55.0 | 57.4 | 62.1 | 66.1 | 69.5 | 68.7 | 62.7 |
| 20% | 57.2 | 56.1 | 52.6 | 50.0 | 51.5 | 54.0 | 56.5 | 61.6 | 65.8 | 69.1 | 68.1 | 61.7 |
| 30% | 56.6 | 55.3 | 51.9 | 49.7 | 51.0 | 53.5 | 55.9 | 61.2 | 65.3 | 68.8 | 67.6 | 61.3 |
| 40% | 56.4 | 55.0 | 51.4 | 49.1 | 50.6 | 52.9 | 55.5 | 60.8 | 65.0 | 68.5 | 67.1 | 60.9 |
| 50% | 56.2 | 54.2 | 51.0 | 48.8 | 50.3 | 52.3 | 55.0 | 60.6 | 64.6 | 68.3 | 66.5 | 60.4 |
| 60% | 55.8 | 53.7 | 50.6 | 48.4 | 50.0 | 51.8 | 54.7 | 60.2 | 64.0 | 68.1 | 66.3 | 60.1 |
| 70% | 55.6 | 53.4 | 50.3 | 47.8 | 49.7 | 51.3 | 54.4 | 59.9 | 63.7 | 67.7 | 66.1 | 59.7 |
| 80% | 55.1 | 53.0 | 49.5 | 47.0 | 48.9 | 50.9 | 53.9 | 59.8 | 63.4 | 67.3 | 65.9 | 59.4 |
| 90% | 54.8 | 52.3 | 48.8 | 46.4 | 48.2 | 50.1 | 53.3 | 59.0 | 62.7 | 66.9 | 65.3 | 58.9 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.9 | 54.6 | 51.1 | 48.7 | 50.3 | 52.5 | 55.3 | 60.7 | 64.5 | 68.3 | 67.0 | 61.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.3 | 51.9 | 48.6 | 49.7 | 51.3 | 54.1 | 60.2 | 64.0 | 68.4 | 66.7 | 59.8 |
| Above Normal (16%) | 55.5 | 53.2 | 50.5 | 49.0 | 50.3 | 52.0 | 55.4 | 61.2 | 65.0 | 67.9 | 66.0 | 59.4 |
| Below Normal (15%) | 56.3 | 54.3 | 50.8 | 49.3 | 50.7 | 53.0 | 56.2 | 60.5 | 65.0 | 68.3 | 66.7 | 61.0 |
| Dry (24%) | 56.7 | 54.8 | 51.3 | 48.3 | 50.4 | 53.4 | 55.9 | 60.9 | 64.8 | 68.1 | 67.3 | 61.1 |
| Critical (15%) | 62.0 | 57.0 | 49.9 | 48.6 | 51.1 | 53.8 | 55.8 | 60.8 | 64.3 | 69.0 | 68.5 | 65.1 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 59.7 | 57.3 | 52.4 | 50.8 | 52.4 | 55.1 | 57.5 | 61.9 | 66.0 | 69.6 | 68.6 | 63.4 |
| 20% | 57.3 | 55.5 | 51.7 | 50.0 | 51.7 | 54.1 | 56.4 | 61.6 | 65.5 | 69.1 | 68.0 | 62.3 |
| 30% | 56.7 | 54.5 | 51.3 | 49.7 | 51.1 | 53.6 | 56.0 | 61.1 | 65.2 | 68.8 | 67.5 | 61.8 |
| 40% | 56.3 | 53.8 | 50.9 | 49.1 | 50.7 | 52.9 | 55.5 | 60.8 | 64.9 | 68.5 | 67.1 | 61.3 |
| 50% | 56.0 | 53.6 | 50.6 | 48.7 | 50.4 | 52.3 | 55.1 | 60.6 | 64.5 | 68.3 | 66.6 | 60.9 |
| 60% | 55.7 | 53.1 | 50.3 | 48.4 | 49.9 | 51.8 | 54.8 | 60.2 | 63.9 | 68.1 | 66.3 | 60.5 |
| 70% | 55.4 | 52.8 | 49.9 | 47.8 | 49.6 | 51.4 | 54.4 | 59.9 | 63.6 | 67.7 | 66.1 | 60.0 |
| 80% | 55.2 | 52.6 | 49.3 | 47.0 | 48.9 | 50.9 | 53.9 | 59.7 | 63.3 | 67.3 | 65.7 | 59.6 |
| 90% | 54.8 | 52.2 | 48.4 | 46.2 | 48.1 | 50.1 | 53.2 | 59.0 | 62.6 | 67.0 | 65.3 | 59.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.8 | 54.1 | 50.5 | 48.7 | 50.3 | 52.6 | 55.3 | 60.6 | 64.4 | 68.3 | 67.0 | 61.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 52.9 | 50.4 | 48.6 | 49.8 | 51.3 | 54.1 | 60.1 | 63.9 | 68.4 | 66.8 | 60.9 |
| Above Normal (16%) | 55.5 | 53.1 | 50.2 | 49.0 | 50.2 | 52.0 | 55.5 | 61.1 | 64.9 | 67.9 | 66.0 | 59.6 |
| Below Normal (15%) | 56.2 | 54.0 | 50.7 | 49.2 | 50.6 | 53.1 | 56.3 | 60.4 | 64.8 | 68.2 | 66.6 | 61.1 |
| Dry (24%) | 56.7 | 54.7 | 51.3 | 48.3 | 50.5 | 53.4 | 56.0 | 60.8 | 64.6 | 68.2 | 67.2 | 61.2 |
| Critical (15%) | 61.8 | 57.0 | 49.8 | 48.6 | 51.1 | 53.9 | 55.8 | 60.7 | 64.2 | 68.9 | 68.6 | 65.4 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -1.1 | -0.4 | -0.8 | **0.2** | -0.1 | **0.1** | **0.1** | -0.2 | -0.1 | **0.1** | -0.1 | **0.7** |
| 20% | **0.1** | -0.6 | -0.9 | 0.0 | **0.2** | **0.1** | -0.1 | 0.0 | -0.3 | 0.0 | -0.1 | **0.6** |
| 30% | **0.1** | -0.8 | -0.6 | 0.0 | **0.1** | **0.1** | **0.1** | -0.1 | -0.1 | 0.0 | -0.1 | **0.5** |
| 40% | -0.1 | -1.2 | -0.5 | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.4** |
| 50% | -0.2 | -0.6 | -0.4 | -0.1 | **0.1** | 0.0 | **0.1** | 0.0 | -0.1 | 0.0 | **0.0** | **0.5** |
| 60% | -0.1 | -0.6 | -0.3 | 0.0 | -0.1 | **0.0** | **0.1** | 0.0 | -0.1 | 0.0 | 0.0 | **0.4** |
| 70% | -0.2 | -0.6 | -0.4 | 0.0 | -0.1 | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.3** |
| 80% | **0.1** | -0.4 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | **0.0** | -0.2 | **0.2** |
| 90% | 0.0 | -0.1 | -0.4 | -0.2 | -0.1 | **0.0** | -0.1 | 0.0 | -0.1 | **0.1** | 0.0 | **0.4** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -0.1 | -0.5 | -0.6 | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | -0.1 | 0.0 | 0.0 | **0.4** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | -1.4 | -1.5 | **0.0** | **0.1** | **0.1** | **0.0** | -0.1 | -0.1 | **0.0** | **0.0** | **1.1** |
| Above Normal (16%) | 0.0 | -0.2 | -0.3 | 0.0 | 0.0 | **0.0** | **0.1** | -0.1 | -0.2 | 0.0 | **0.0** | **0.2** |
| Below Normal (15%) | -0.1 | -0.3 | -0.1 | -0.1 | -0.1 | **0.0** | **0.0** | -0.1 | -0.2 | -0.1 | -0.2 | **0.0** |
| Dry (24%) | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | -0.1 | -0.2 | **0.1** | -0.1 | **0.0** |
| Critical (15%) | -0.2 | **0.1** | -0.1 | -0.1 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 | 0.0 | **0.0** | **0.3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-3. Feather River at Robinson Riffle, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.8 | 57.7 | 53.2 | 50.6 | 52.5 | 55.0 | 57.4 | 62.1 | 66.1 | 69.5 | 68.7 | 62.7 |
| 20% | 57.2 | 56.1 | 52.6 | 50.0 | 51.5 | 54.0 | 56.5 | 61.6 | 65.8 | 69.1 | 68.1 | 61.7 |
| 30% | 56.6 | 55.3 | 51.9 | 49.7 | 51.0 | 53.5 | 55.9 | 61.2 | 65.3 | 68.8 | 67.6 | 61.3 |
| 40% | 56.4 | 55.0 | 51.4 | 49.1 | 50.6 | 52.9 | 55.5 | 60.8 | 65.0 | 68.5 | 67.1 | 60.9 |
| 50% | 56.2 | 54.2 | 51.0 | 48.8 | 50.3 | 52.3 | 55.0 | 60.6 | 64.6 | 68.3 | 66.5 | 60.4 |
| 60% | 55.8 | 53.7 | 50.6 | 48.4 | 50.0 | 51.8 | 54.7 | 60.2 | 64.0 | 68.1 | 66.3 | 60.1 |
| 70% | 55.6 | 53.4 | 50.3 | 47.8 | 49.7 | 51.3 | 54.4 | 59.9 | 63.7 | 67.7 | 66.1 | 59.7 |
| 80% | 55.1 | 53.0 | 49.5 | 47.0 | 48.9 | 50.9 | 53.9 | 59.8 | 63.4 | 67.3 | 65.9 | 59.4 |
| 90% | 54.8 | 52.3 | 48.8 | 46.4 | 48.2 | 50.1 | 53.3 | 59.0 | 62.7 | 66.9 | 65.3 | 58.9 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.9 | 54.6 | 51.1 | 48.7 | 50.3 | 52.5 | 55.3 | 60.7 | 64.5 | 68.3 | 67.0 | 61.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.3 | 51.9 | 48.6 | 49.7 | 51.3 | 54.1 | 60.2 | 64.0 | 68.4 | 66.7 | 59.8 |
| Above Normal (16%) | 55.5 | 53.2 | 50.5 | 49.0 | 50.3 | 52.0 | 55.4 | 61.2 | 65.0 | 67.9 | 66.0 | 59.4 |
| Below Normal (15%) | 56.3 | 54.3 | 50.8 | 49.3 | 50.7 | 53.0 | 56.2 | 60.5 | 65.0 | 68.3 | 66.7 | 61.0 |
| Dry (24%) | 56.7 | 54.8 | 51.3 | 48.3 | 50.4 | 53.4 | 55.9 | 60.9 | 64.8 | 68.1 | 67.3 | 61.1 |
| Critical (15%) | 62.0 | 57.0 | 49.9 | 48.6 | 51.1 | 53.8 | 55.8 | 60.8 | 64.3 | 69.0 | 68.5 | 65.1 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 60.8 | 57.8 | 53.2 | 50.6 | 52.4 | 55.0 | 57.4 | 62.1 | 66.1 | 69.7 | 68.9 | 63.5 |
| 20% | 57.5 | 56.0 | 52.6 | 50.0 | 51.5 | 54.1 | 56.4 | 61.6 | 65.8 | 69.2 | 68.1 | 61.7 |
| 30% | 56.6 | 55.6 | 51.8 | 49.6 | 51.0 | 53.6 | 55.9 | 61.2 | 65.1 | 68.9 | 67.6 | 61.3 |
| 40% | 56.4 | 54.7 | 51.4 | 49.0 | 50.6 | 52.9 | 55.5 | 60.8 | 64.9 | 68.6 | 67.1 | 60.8 |
| 50% | 56.1 | 54.5 | 50.9 | 48.8 | 50.2 | 52.3 | 55.0 | 60.6 | 64.6 | 68.3 | 66.6 | 60.5 |
| 60% | 55.9 | 53.7 | 50.5 | 48.3 | 49.9 | 51.8 | 54.7 | 60.3 | 63.9 | 68.1 | 66.3 | 60.1 |
| 70% | 55.5 | 53.4 | 50.1 | 47.8 | 49.5 | 51.3 | 54.4 | 59.9 | 63.7 | 67.6 | 66.1 | 59.8 |
| 80% | 55.1 | 52.8 | 49.6 | 46.9 | 48.8 | 50.9 | 53.9 | 59.7 | 63.4 | 67.3 | 65.9 | 59.5 |
| 90% | 54.8 | 52.3 | 48.8 | 46.1 | 48.2 | 50.1 | 53.3 | 59.0 | 62.7 | 66.9 | 65.3 | 58.9 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 56.9 | 54.7 | 51.1 | 48.6 | 50.3 | 52.5 | 55.3 | 60.6 | 64.5 | 68.4 | 67.1 | 61.1 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 55.5 | 54.3 | 51.9 | 48.6 | 49.7 | 51.3 | 54.1 | 60.2 | 64.0 | 68.4 | 66.7 | 59.8 |
| Above Normal (16%) | 55.5 | 53.1 | 50.5 | 49.0 | 50.3 | 52.1 | 55.4 | 61.2 | 65.0 | 67.9 | 66.0 | 59.4 |
| Below Normal (15%) | 56.3 | 54.5 | 50.8 | 49.3 | 50.7 | 53.0 | 56.2 | 60.4 | 64.9 | 68.3 | 66.8 | 61.1 |
| Dry (24%) | 56.8 | 55.0 | 51.4 | 48.2 | 50.4 | 53.4 | 55.9 | 60.9 | 64.8 | 68.2 | 67.3 | 61.1 |
| Critical (15%) | 62.1 | 57.1 | 49.4 | 48.5 | 50.9 | 53.7 | 55.8 | 60.7 | 64.3 | 69.5 | 68.9 | 65.9 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | 0.0 | **0.1** | **0.0** | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | **0.2** | **0.8** |
| 20% | **0.3** | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | -0.1 | 0.0 | 0.0 | **0.1** | 0.0 | **0.0** |
| 30% | 0.0 | **0.3** | -0.1 | -0.1 | 0.0 | **0.1** | 0.0 | 0.0 | -0.2 | **0.1** | 0.0 | 0.0 |
| 40% | 0.0 | -0.3 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | -0.1 |
| 50% | -0.1 | **0.3** | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** |
| 60% | **0.1** | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | **0.0** | **0.1** | -0.1 | 0.0 | 0.0 | 0.0 |
| 70% | -0.1 | 0.0 | -0.2 | 0.0 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | **0.1** |
| 80% | 0.0 | -0.2 | **0.1** | -0.1 | -0.1 | 0.0 | **0.0** | -0.1 | 0.0 | **0.0** | 0.0 | **0.1** |
| 90% | 0.0 | 0.0 | 0.0 | -0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.0** | **0.1** | 0.0 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.1** | **0.0** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Below Normal (15%) | **0.0** | **0.2** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** |
| Dry (24%) | **0.0** | **0.3** | **0.1** | -0.1 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | **0.1** | 0.0 | 0.0 |
| Critical (15%) | **0.1** | **0.1** | -0.5 | -0.1 | -0.2 | -0.1 | **0.0** | -0.1 | **0.0** | **0.5** | **0.3** | **0.7** |

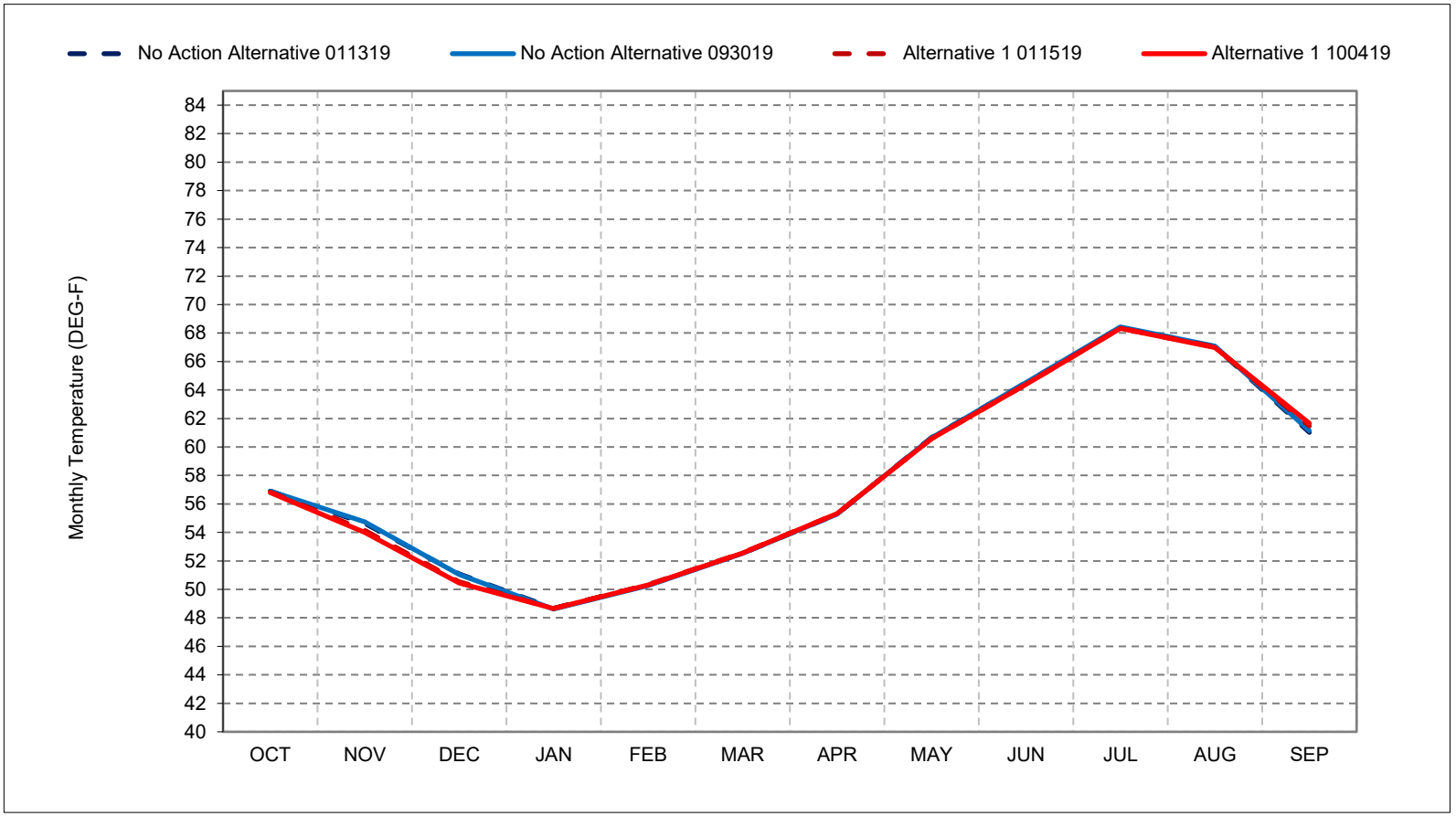
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-1. Feather River at Robinson Riffle, Long-Term Average Temperature

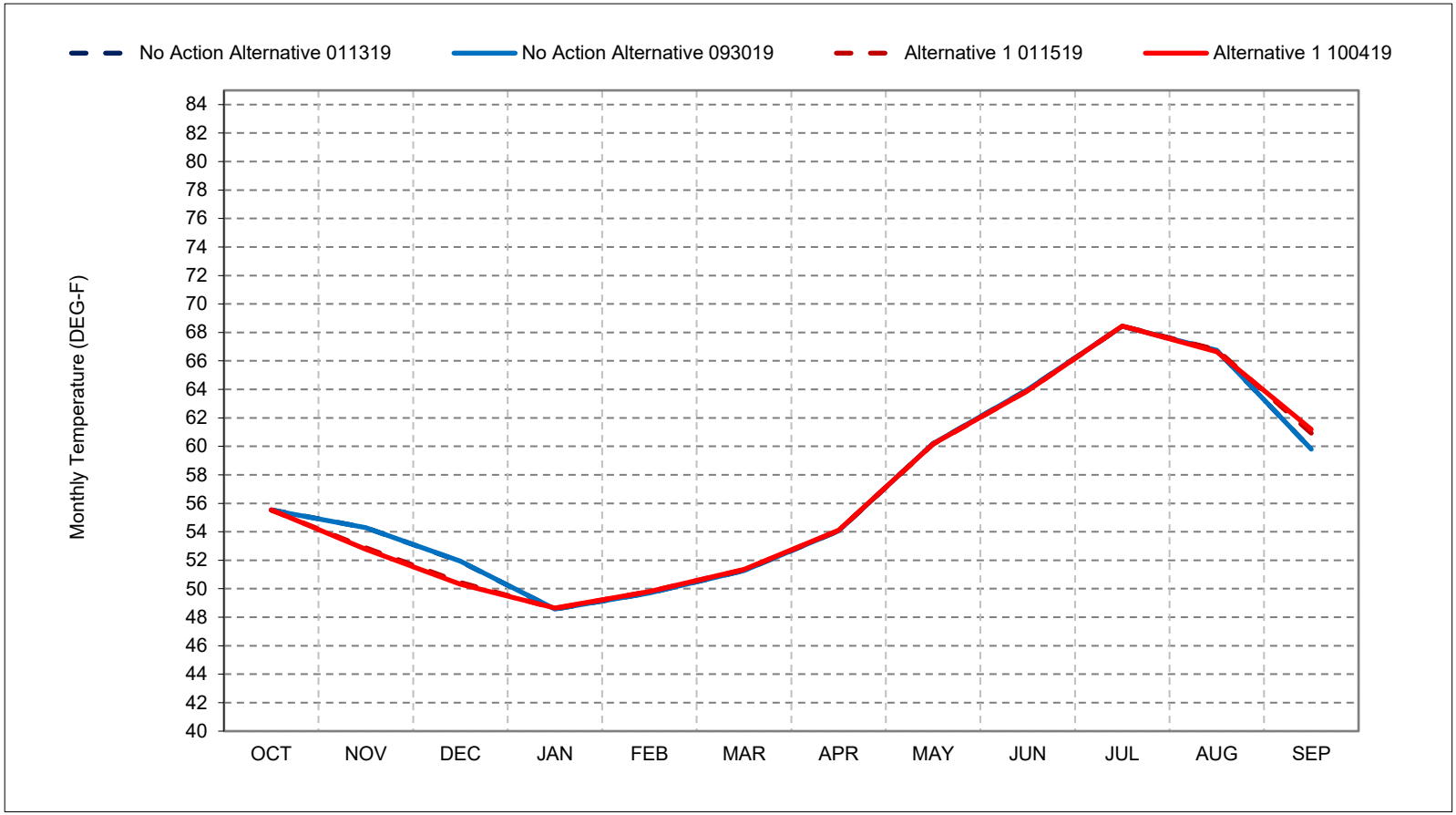



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-2. Feather River at Robinson Riffle, Wet Year Average Temperature

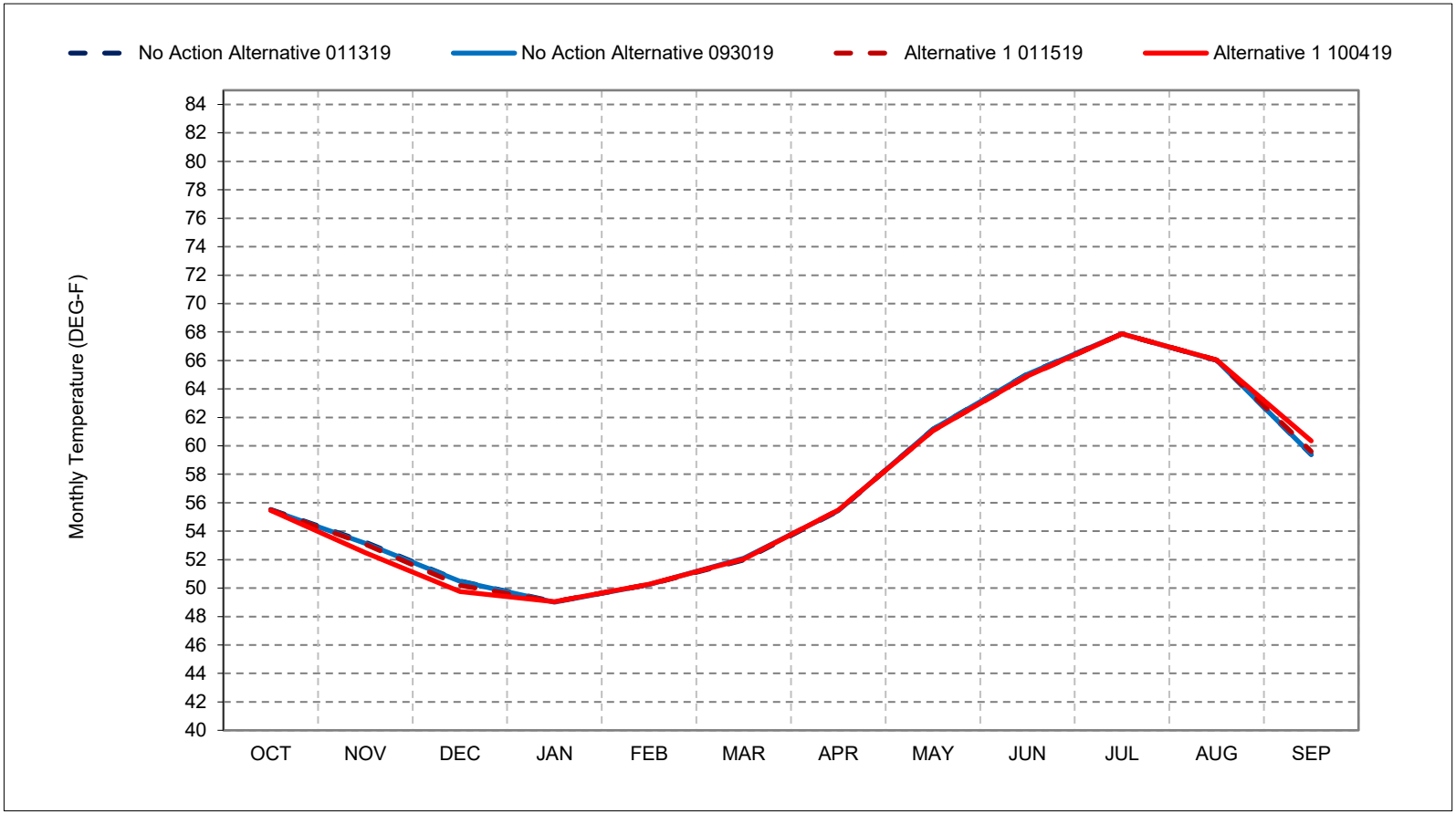



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-3. Feather River at Robinson Riffle, Above Normal Year Average Temperature

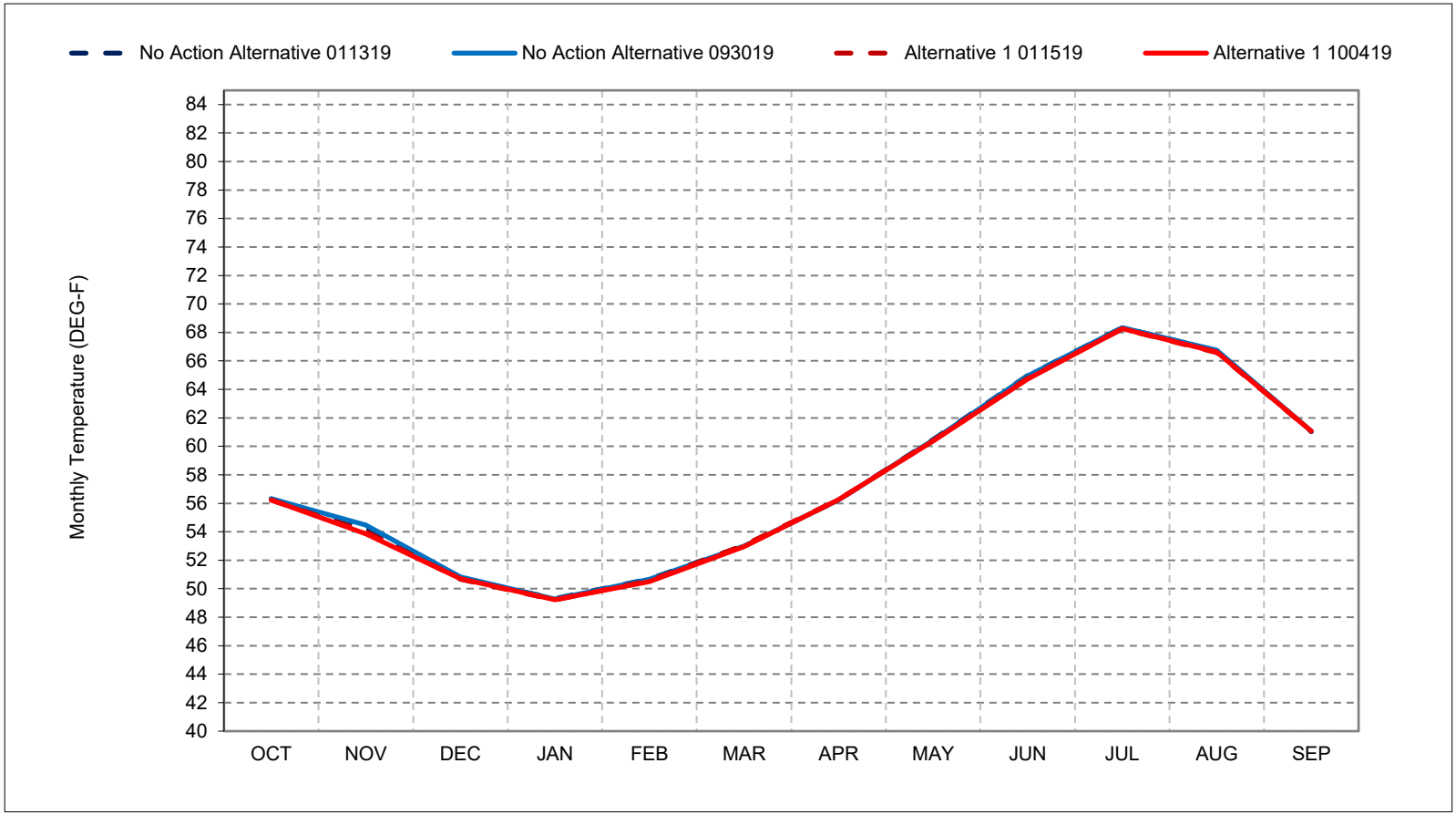



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-4. Feather River at Robinson Riffle, Below Normal Year Average Temperature

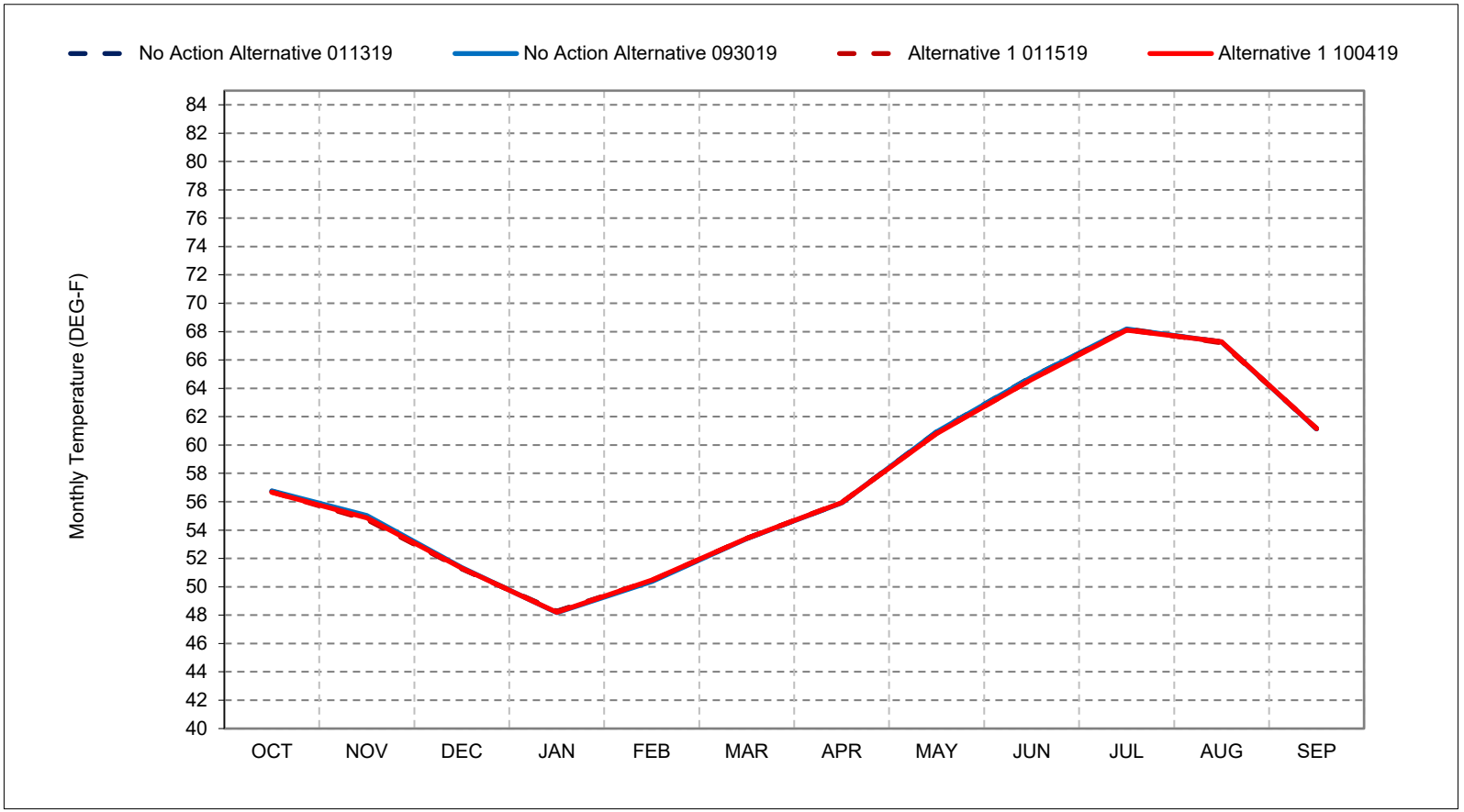



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-5. Feather River at Robinson Riffle, Dry Year Average Temperature

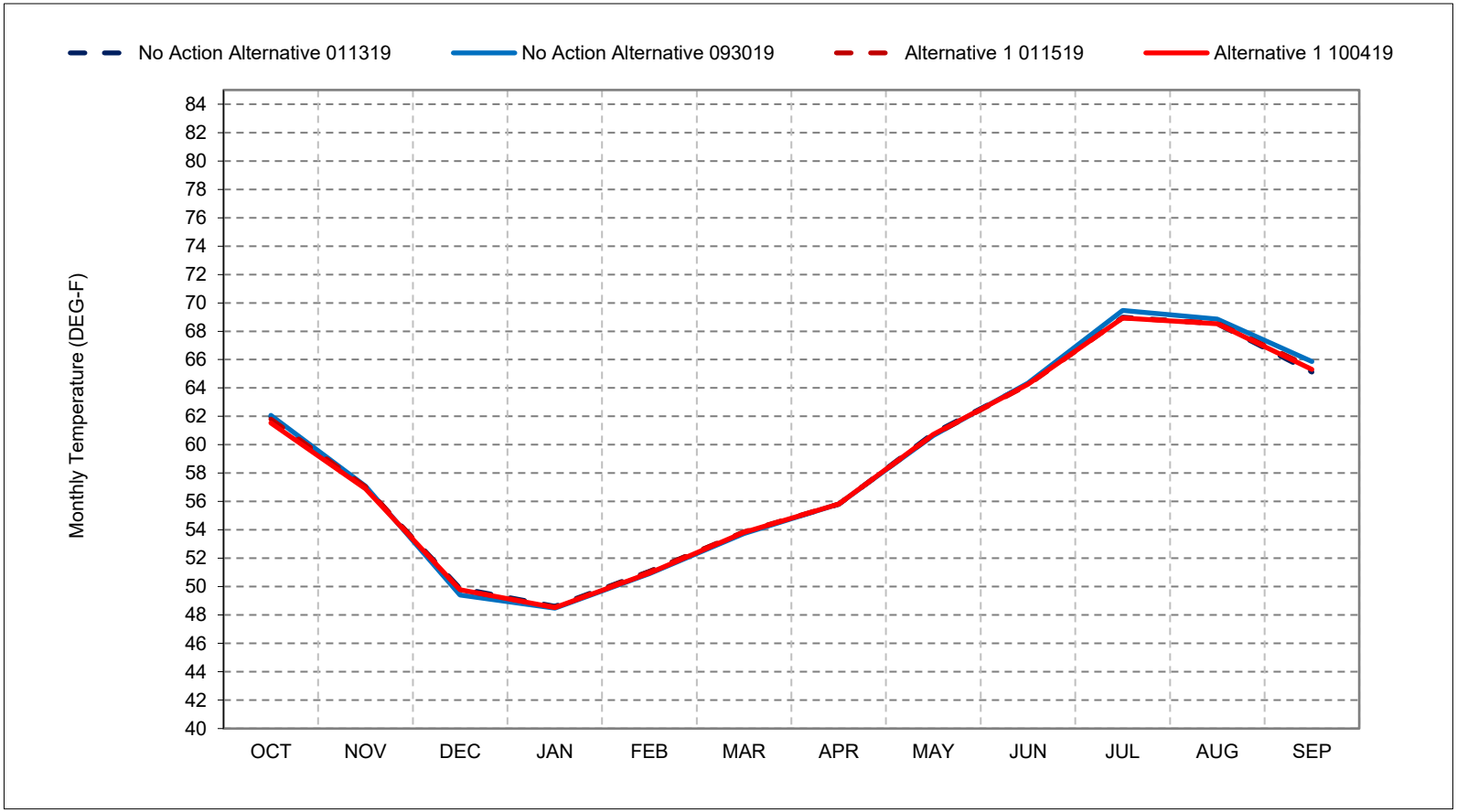



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 2-6. Feather River at Robinson Riffle, Critical Year Average Temperature

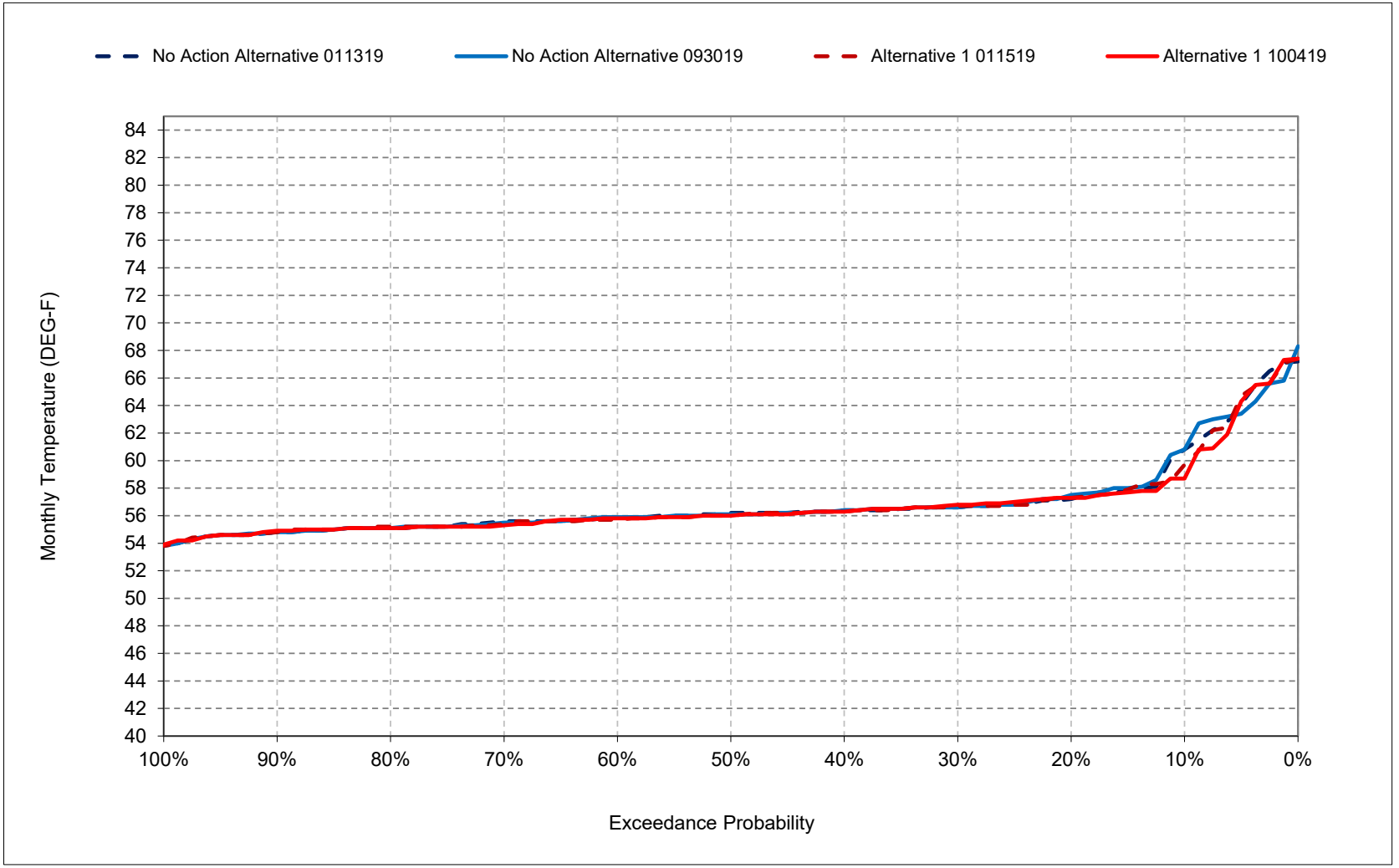



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

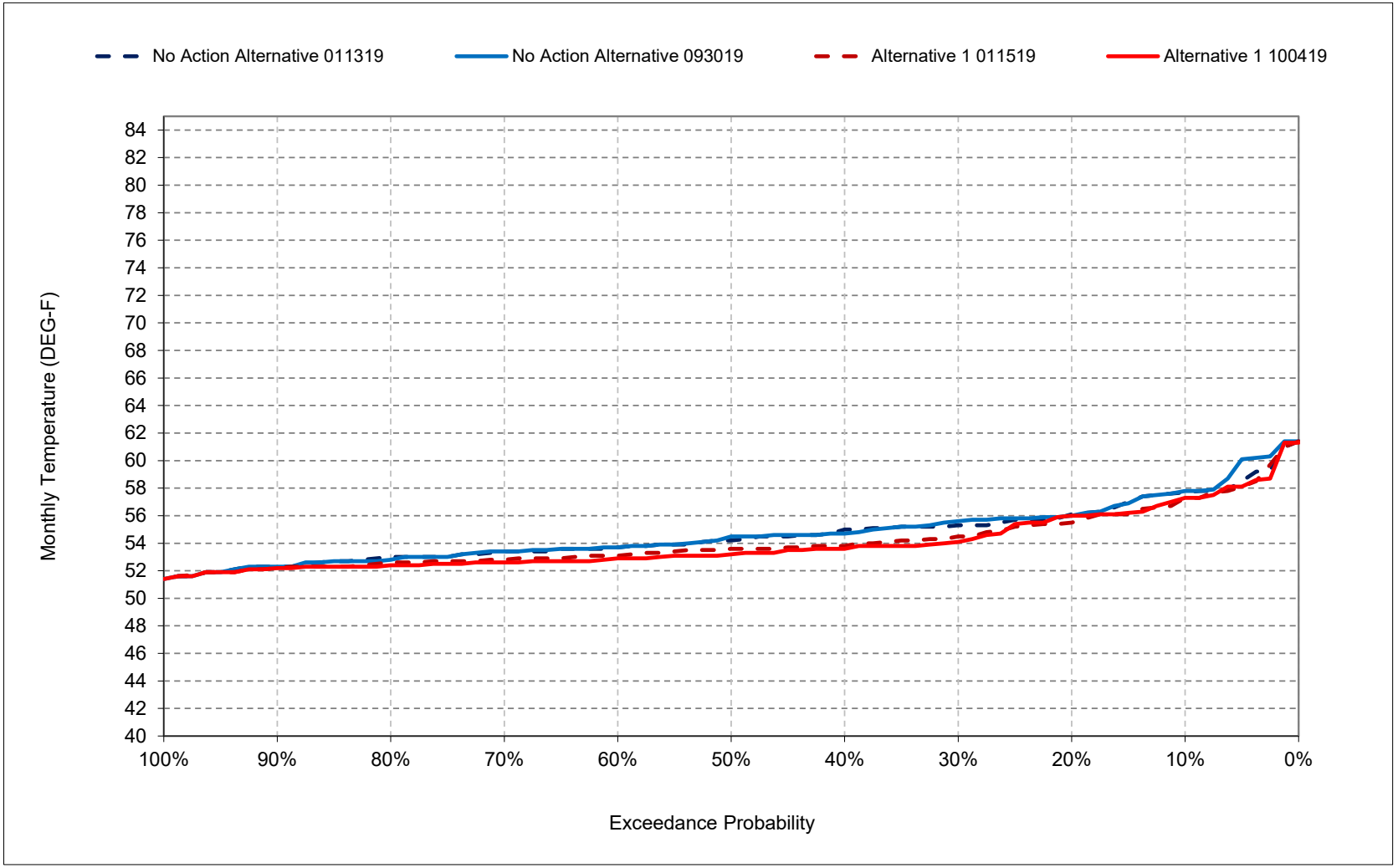
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-7. Feather River at Robinson Riffle, October**



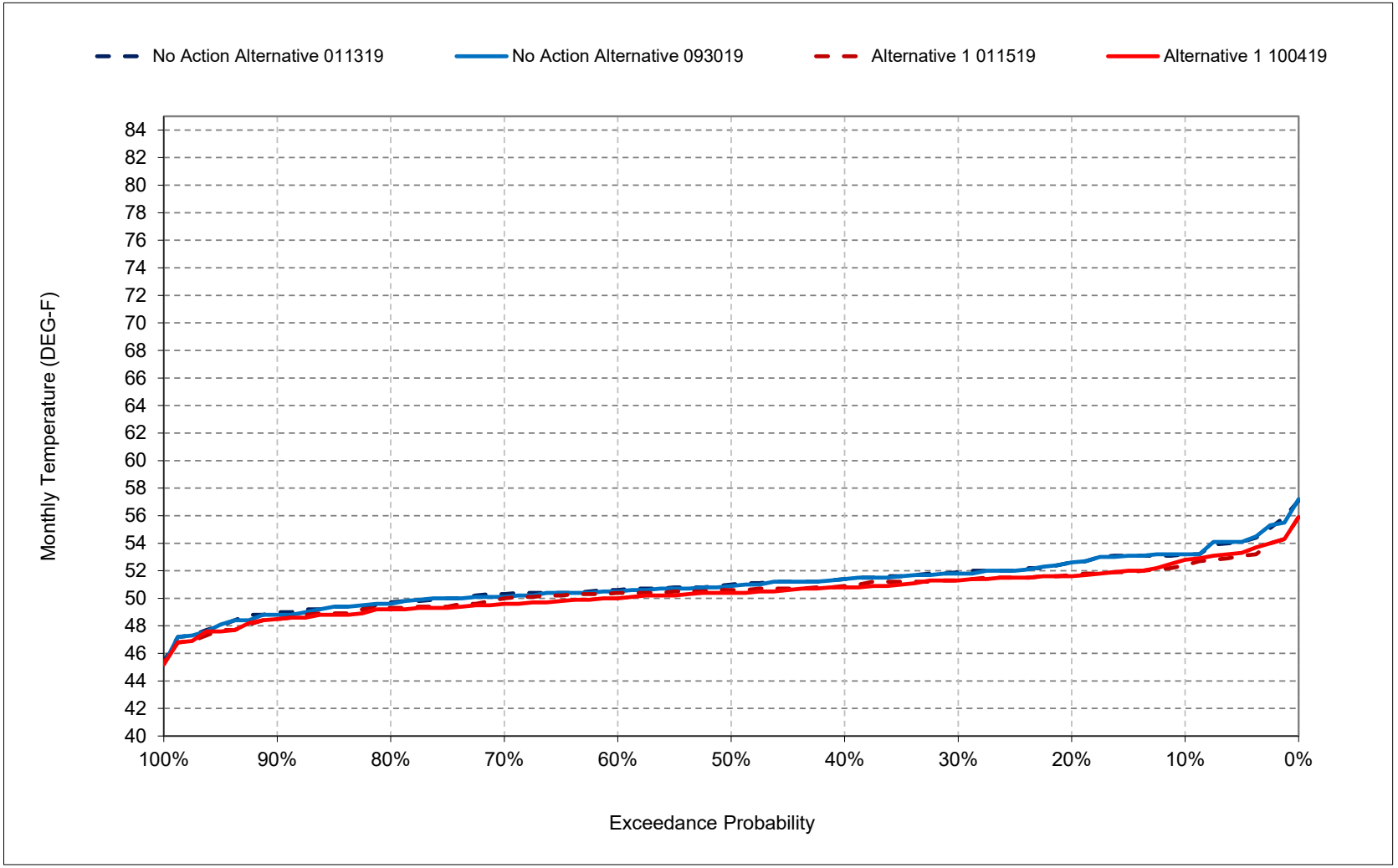

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-8. Feather River at Robinson Riffle, November**



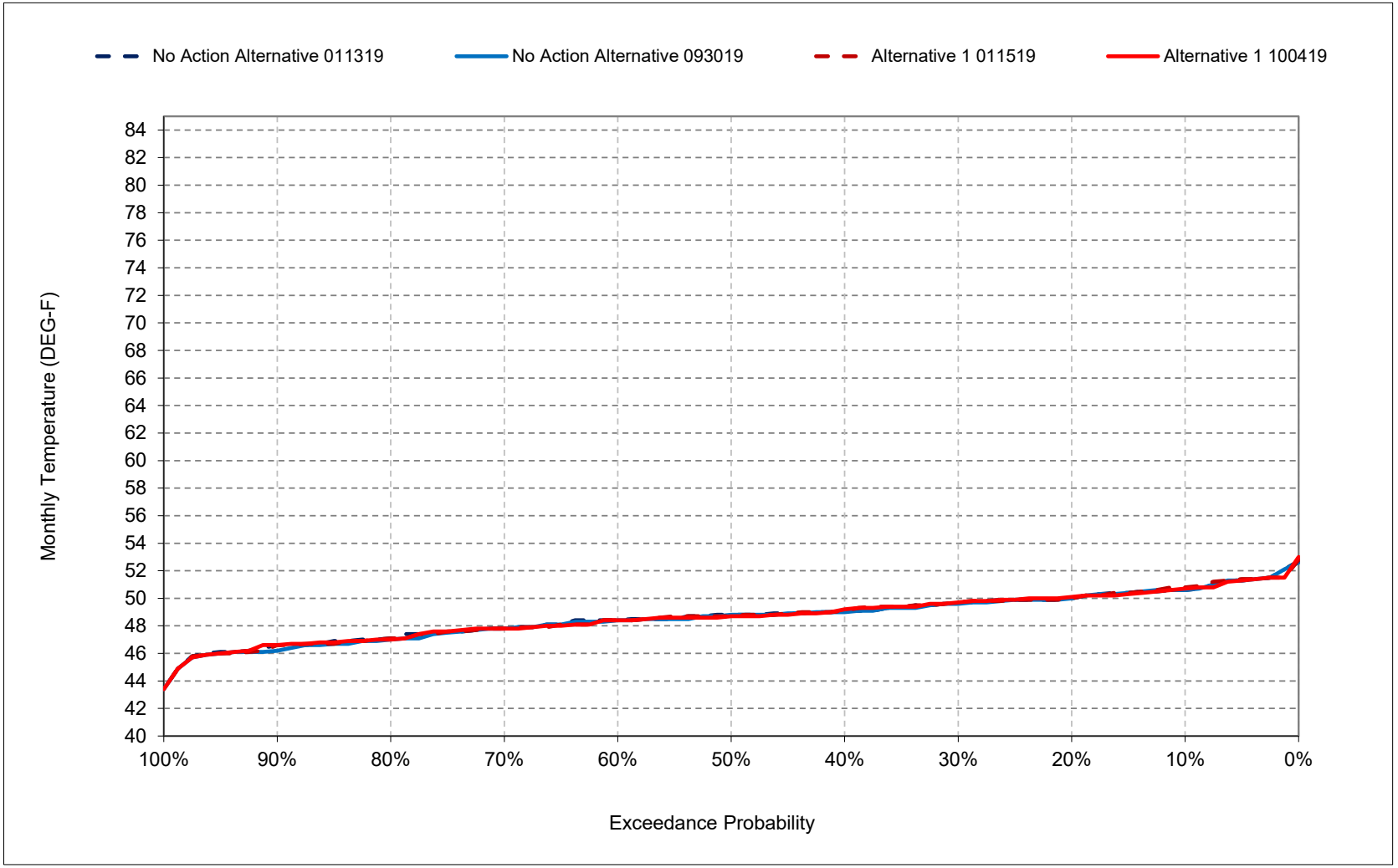

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-9. Feather River at Robinson Riffle, December**



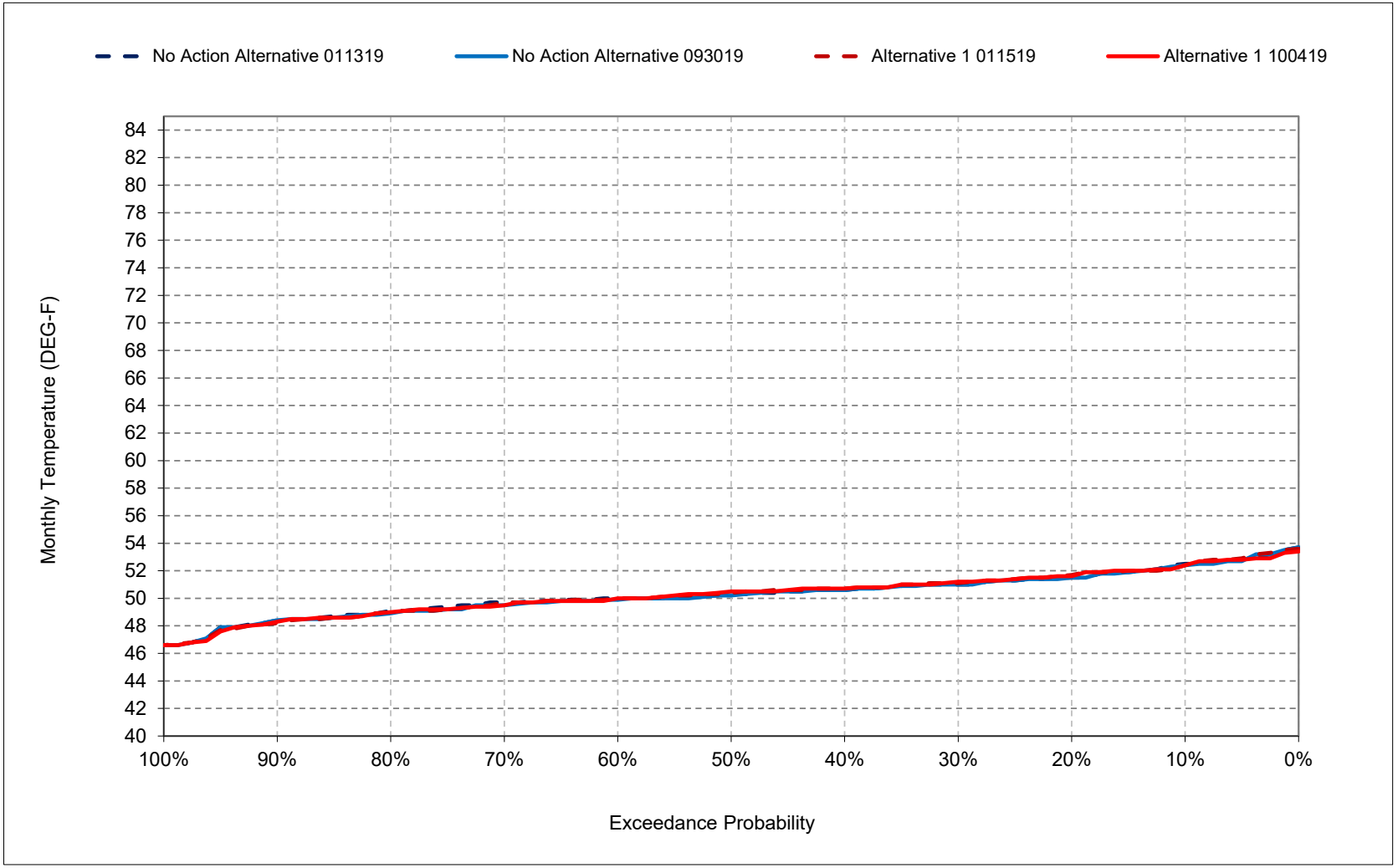

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-10. Feather River at Robinson Riffle, January**



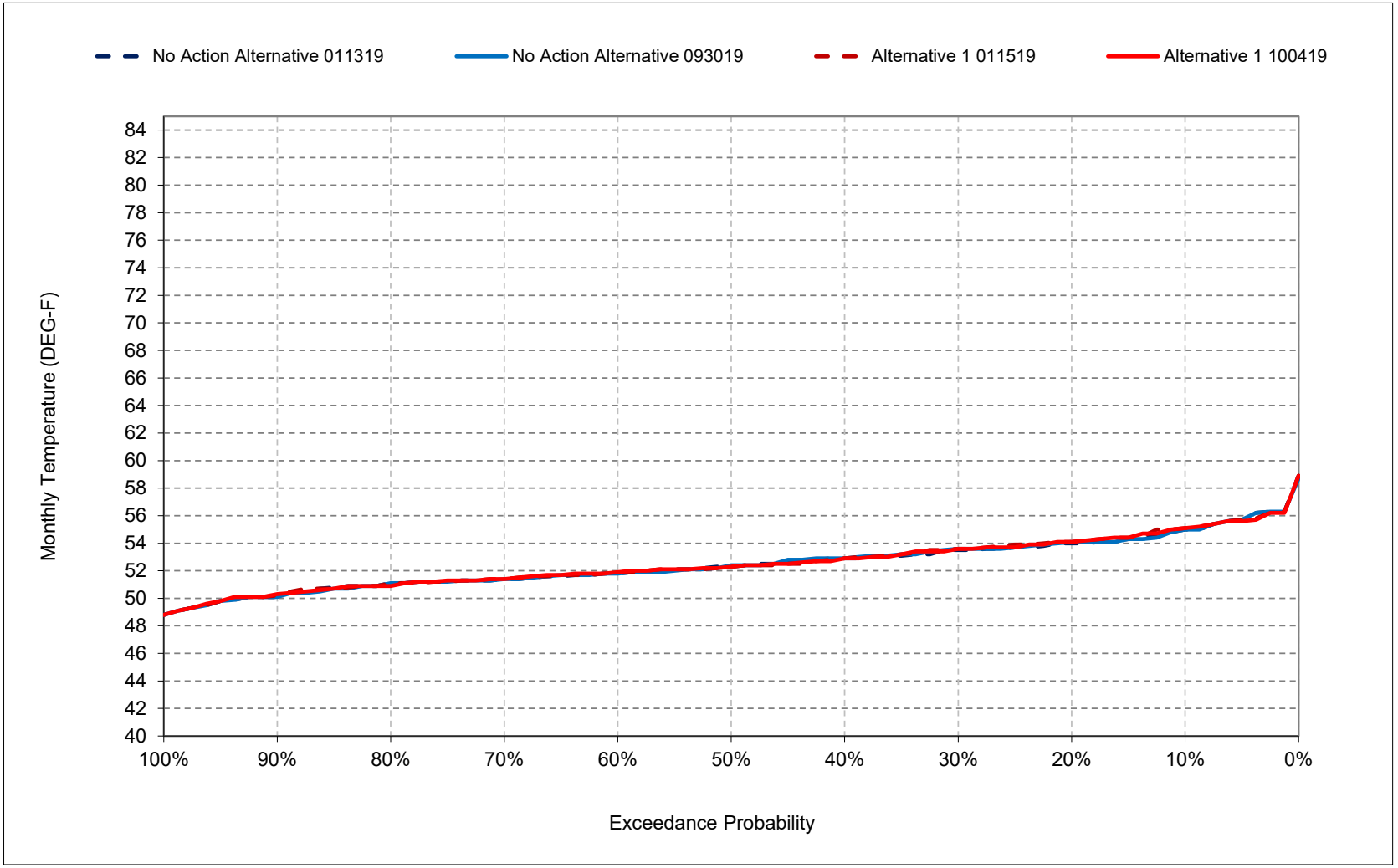

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-11. Feather River at Robinson Riffle, February**



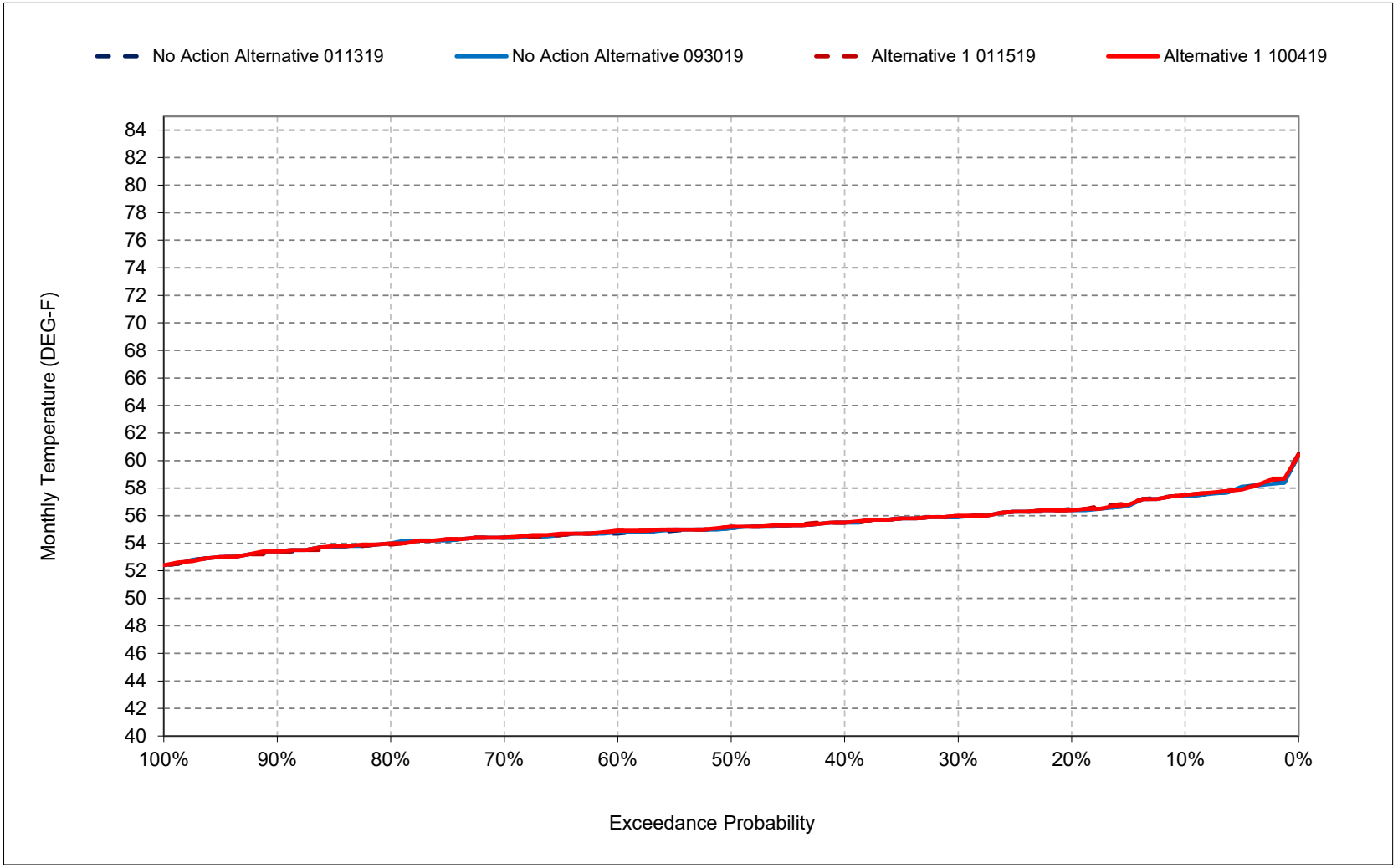

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-12. Feather River at Robinson Riffle, March**



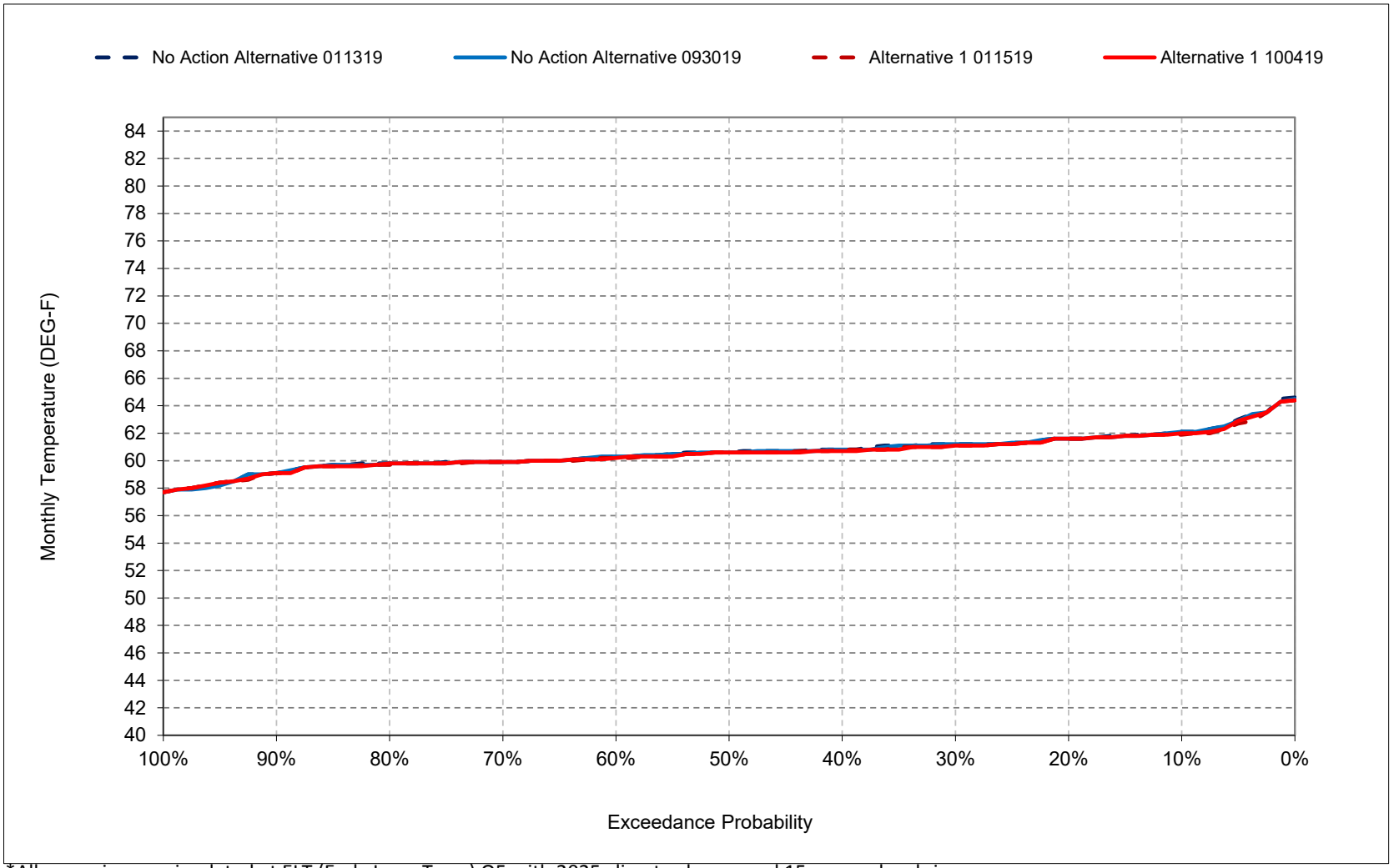

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-13. Feather River at Robinson Riffle, April**



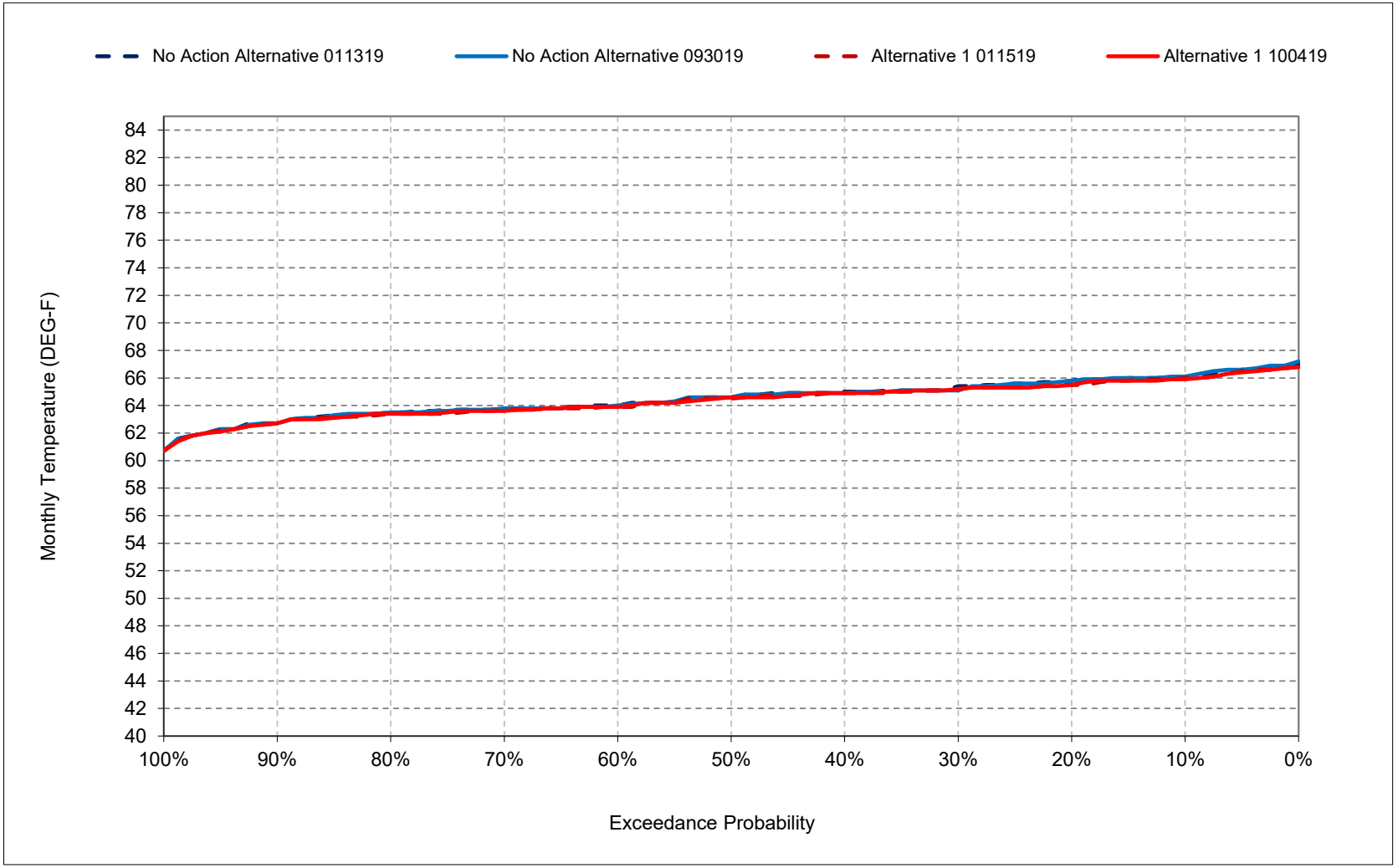

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-14. Feather River at Robinson Riffle, May**



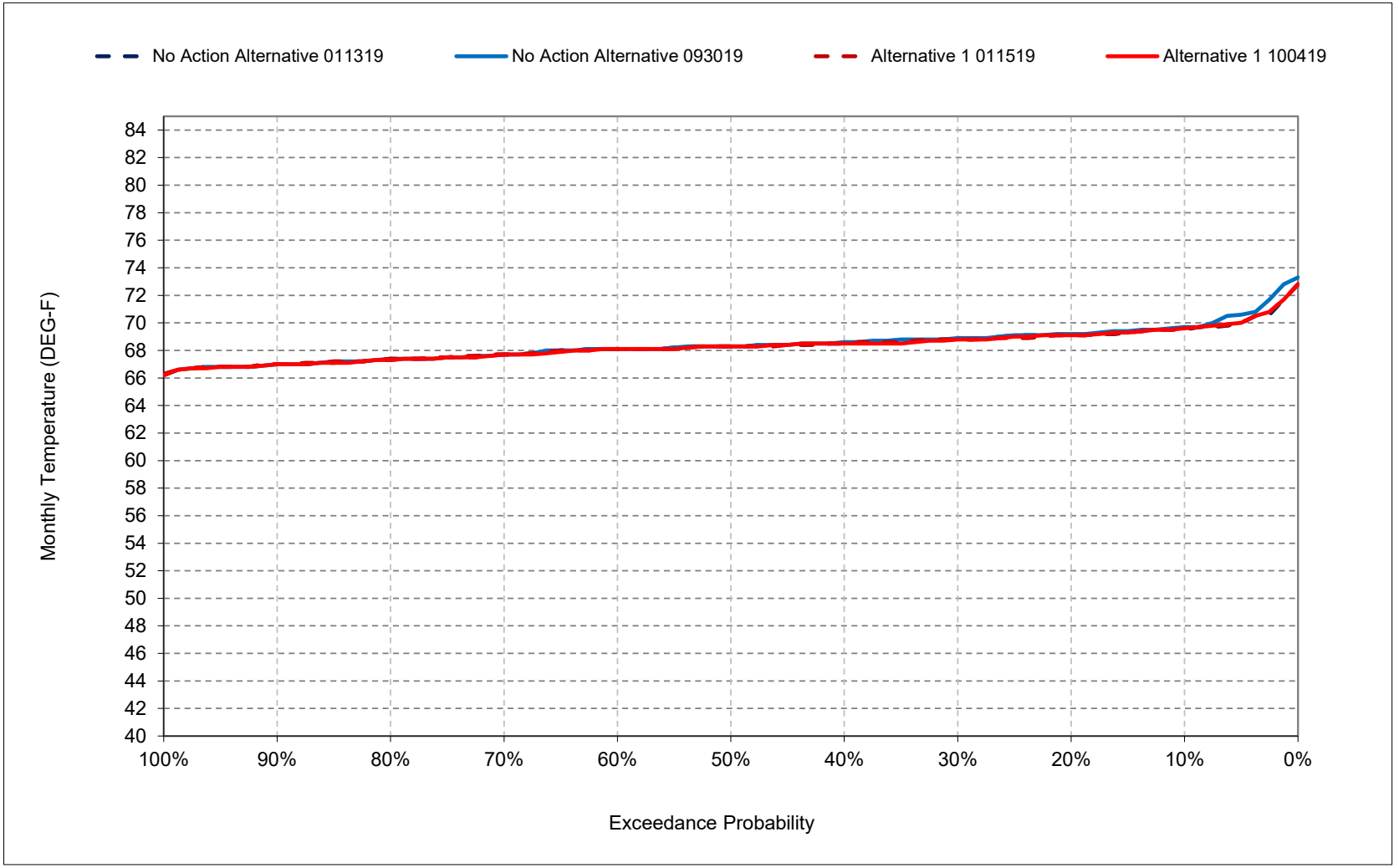

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-15. Feather River at Robinson Riffle, June**



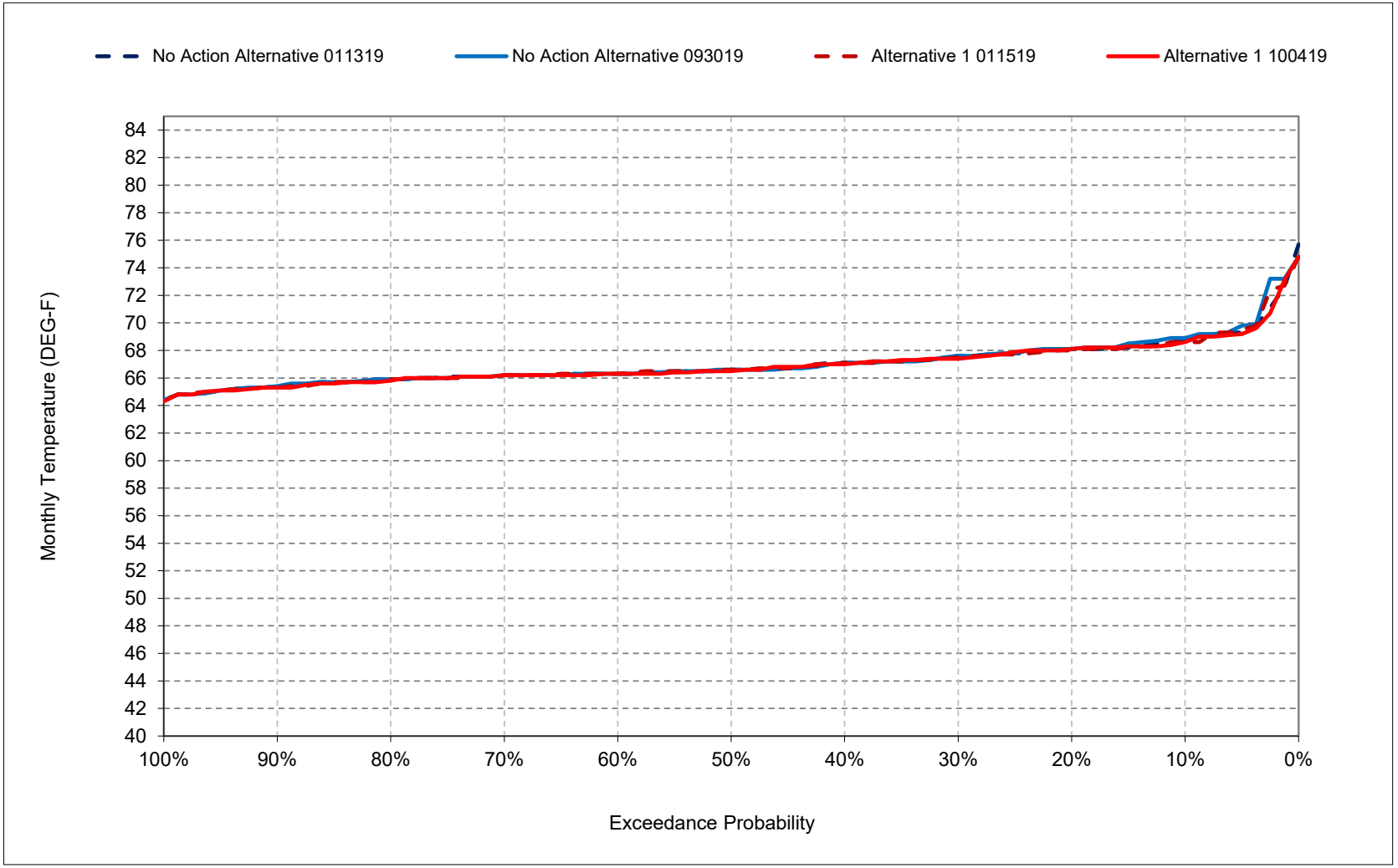

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-16. Feather River at Robinson Riffle, July**



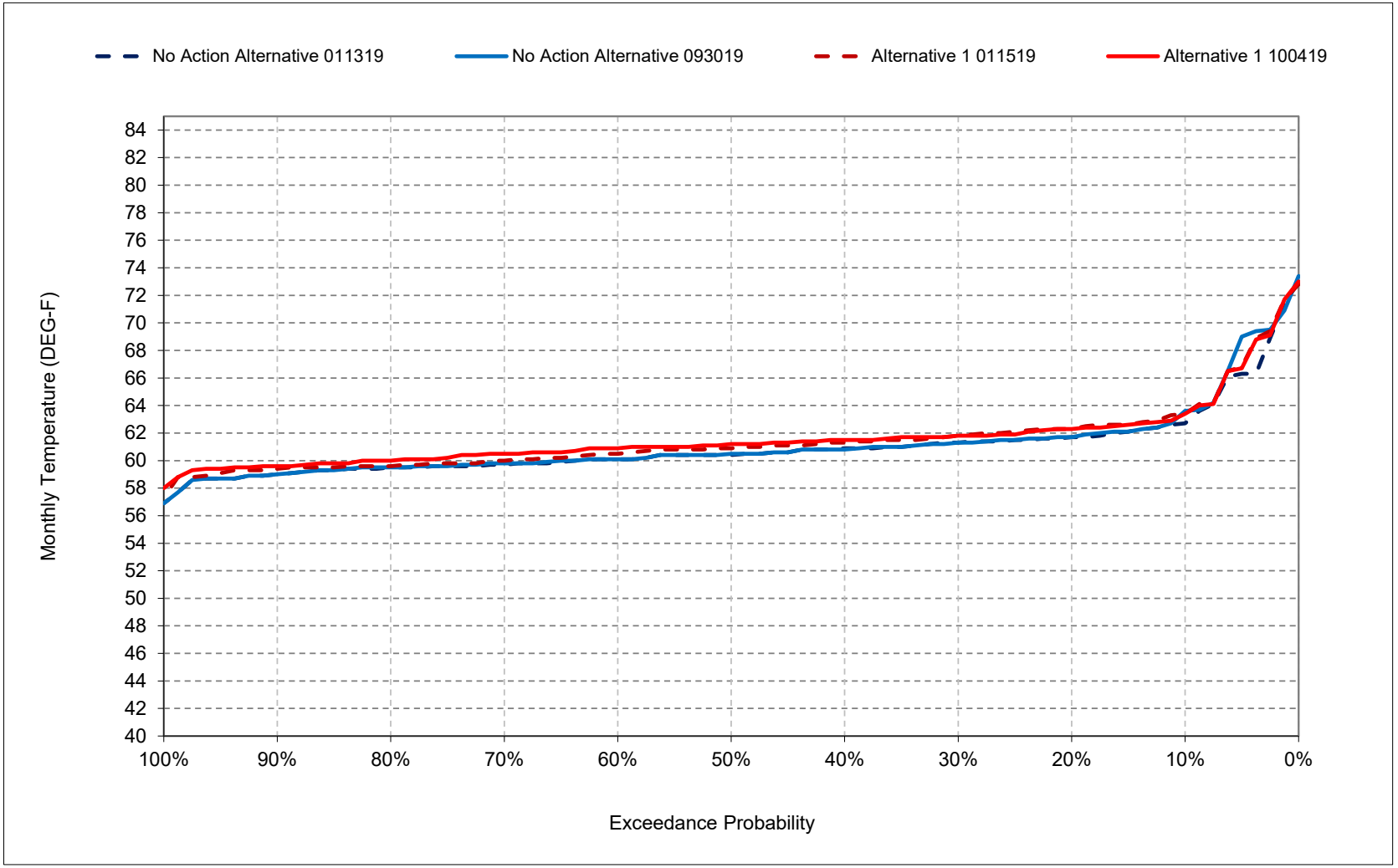

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-17. Feather River at Robinson Riffle, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 2-18. Feather River at Robinson Riffle, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-1. Feather River at Gridley Bridge, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 62.9 | 56.6 | 51.5 | 50.0 | 53.4 | 57.1 | 61.3 | 67.6 | 72.5 | 75.5 | 74.9 | 68.2 |
| 20% | 60.6 | 56.2 | 50.8 | 49.5 | 52.7 | 56.3 | 60.2 | 66.3 | 71.9 | 73.8 | 73.6 | 67.0 |
| 30% | 60.3 | 55.6 | 50.5 | 48.9 | 52.2 | 55.8 | 59.1 | 65.8 | 70.9 | 71.9 | 72.9 | 65.8 |
| 40% | 59.8 | 55.1 | 50.2 | 48.4 | 51.6 | 55.2 | 58.9 | 65.2 | 70.4 | 71.3 | 71.6 | 65.4 |
| 50% | 59.4 | 54.5 | 49.6 | 48.1 | 51.0 | 54.4 | 58.4 | 64.6 | 69.7 | 70.8 | 71.0 | 63.9 |
| 60% | 58.9 | 53.8 | 49.2 | 47.4 | 50.4 | 53.7 | 58.1 | 64.4 | 69.0 | 70.4 | 70.4 | 62.9 |
| 70% | 58.5 | 53.5 | 48.4 | 47.0 | 49.9 | 52.6 | 57.3 | 63.5 | 68.7 | 70.1 | 69.6 | 62.6 |
| 80% | 57.8 | 53.2 | 48.1 | 46.0 | 49.6 | 51.8 | 56.4 | 62.1 | 68.0 | 69.4 | 68.8 | 62.0 |
| 90% | 57.1 | 52.5 | 46.6 | 45.2 | 48.9 | 50.5 | 55.0 | 61.1 | 66.5 | 68.5 | 67.8 | 61.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 59.7 | 54.6 | 49.4 | 47.8 | 51.1 | 54.3 | 58.3 | 64.6 | 69.7 | 71.5 | 71.3 | 64.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 58.5 | 54.4 | 50.2 | 48.1 | 50.1 | 52.3 | 56.2 | 62.6 | 68.5 | 71.1 | 70.5 | 62.2 |
| Above Normal (16%) | 58.8 | 53.2 | 48.6 | 48.5 | 51.4 | 54.1 | 59.0 | 65.5 | 70.6 | 69.7 | 68.5 | 62.4 |
| Below Normal (15%) | 59.9 | 54.5 | 48.6 | 48.0 | 51.7 | 55.5 | 59.8 | 65.0 | 70.8 | 70.3 | 70.6 | 66.2 |
| Dry (24%) | 59.8 | 54.8 | 50.1 | 46.9 | 51.4 | 55.3 | 59.3 | 65.7 | 69.9 | 71.7 | 72.9 | 65.6 |
| Critical (15%) | 62.9 | 56.3 | 48.3 | 47.6 | 52.1 | 55.8 | 59.2 | 65.5 | 70.2 | 75.0 | 74.1 | 68.3 |

### Alternative 1 011519

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 62.0 | 56.7 | 51.1 | 49.9 | 53.0 | 56.8 | 61.4 | 67.2 | 72.0 | 74.9 | 74.8 | 68.2 |
| 20% | 61.1 | 55.8 | 50.5 | 49.5 | 52.8 | 56.4 | 60.1 | 66.3 | 71.1 | 73.6 | 73.3 | 67.8 |
| 30% | 60.3 | 55.2 | 50.2 | 49.0 | 52.2 | 55.4 | 59.1 | 65.8 | 70.5 | 72.4 | 72.7 | 67.0 |
| 40% | 59.9 | 54.5 | 49.9 | 48.5 | 51.5 | 55.2 | 59.0 | 65.1 | 69.9 | 71.3 | 71.7 | 66.4 |
| 50% | 59.4 | 53.9 | 49.4 | 48.1 | 50.9 | 54.4 | 58.4 | 64.6 | 69.4 | 70.7 | 71.1 | 65.9 |
| 60% | 59.1 | 53.3 | 48.7 | 47.4 | 50.4 | 53.5 | 58.1 | 64.3 | 68.5 | 70.3 | 70.7 | 65.6 |
| 70% | 58.6 | 53.2 | 48.3 | 47.0 | 49.9 | 52.4 | 57.4 | 63.4 | 68.0 | 70.0 | 69.6 | 64.8 |
| 80% | 58.0 | 52.8 | 47.6 | 45.9 | 49.5 | 51.8 | 56.4 | 62.1 | 67.4 | 69.4 | 68.5 | 63.9 |
| 90% | 57.2 | 52.3 | 46.4 | 45.2 | 48.9 | 50.5 | 55.0 | 61.1 | 66.4 | 68.5 | 67.8 | 62.7 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 59.8 | 54.3 | 49.1 | 47.8 | 51.1 | 54.2 | 58.4 | 64.5 | 69.2 | 71.5 | 71.3 | 66.0 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 58.8 | 53.5 | 49.3 | 48.1 | 50.1 | 52.3 | 56.3 | 62.7 | 68.4 | 71.0 | 70.6 | 65.9 |
| Above Normal (16%) | 58.8 | 53.1 | 48.5 | 48.5 | 51.2 | 53.7 | 59.0 | 65.5 | 70.4 | 69.5 | 68.5 | 64.0 |
| Below Normal (15%) | 59.9 | 54.4 | 48.5 | 48.0 | 51.4 | 55.5 | 59.8 | 64.7 | 70.0 | 69.8 | 69.9 | 66.4 |
| Dry (24%) | 59.8 | 54.8 | 50.1 | 46.9 | 51.4 | 55.4 | 59.3 | 65.6 | 68.9 | 72.1 | 72.9 | 65.5 |
| Critical (15%) | 62.8 | 56.4 | 48.3 | 47.6 | 52.1 | 55.8 | 59.3 | 65.5 | 69.7 | 75.0 | 74.2 | 68.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | -0.9 | **0.1** | -0.4 | -0.1 | -0.4 | -0.3 | **0.1** | -0.5 | -0.5 | -0.6 | -0.1 | **0.0** |
| 20% | **0.5** | -0.4 | -0.3 | **0.0** | **0.1** | **0.1** | 0.0 | 0.0 | -0.8 | -0.2 | -0.3 | **0.8** |
| 30% | 0.0 | -0.4 | -0.3 | **0.1** | 0.0 | -0.4 | 0.0 | -0.1 | -0.4 | **0.5** | -0.2 | **1.2** |
| 40% | **0.1** | -0.6 | -0.3 | **0.1** | 0.0 | 0.0 | **0.1** | -0.1 | -0.5 | 0.0 | **0.1** | **1.0** |
| 50% | 0.0 | -0.6 | -0.2 | -0.1 | -0.1 | 0.0 | **0.1** | 0.0 | -0.3 | -0.1 | **0.1** | **2.0** |
| 60% | **0.2** | -0.5 | -0.5 | 0.0 | -0.1 | -0.2 | 0.0 | -0.1 | -0.5 | -0.1 | **0.3** | **2.7** |
| 70% | **0.1** | -0.3 | -0.1 | 0.0 | **0.0** | -0.2 | **0.1** | -0.1 | -0.7 | -0.1 | 0.0 | **2.2** |
| 80% | **0.2** | -0.4 | -0.5 | 0.0 | -0.1 | **0.0** | **0.0** | **0.0** | -0.6 | 0.0 | -0.3 | **1.9** |
| 90% | **0.1** | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **1.7** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.1** | -0.3 | -0.3 | **0.0** | -0.1 | 0.0 | **0.0** | -0.1 | -0.5 | 0.0 | 0.0 | **1.5** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.3** | -0.9 | -0.9 | **0.1** | **0.0** | 0.0 | **0.0** | **0.0** | -0.1 | 0.0 | **0.2** | **3.7** |
| Above Normal (16%) | -0.1 | -0.1 | -0.1 | **0.0** | -0.2 | -0.4 | 0.0 | 0.0 | -0.2 | -0.2 | **0.0** | **1.6** |
| Below Normal (15%) | **0.0** | -0.2 | -0.1 | 0.0 | -0.2 | 0.0 | 0.0 | -0.3 | -0.8 | -0.5 | -0.6 | **0.2** |
| Dry (24%) | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | -0.1 | -1.0 | **0.3** | **0.0** | -0.1 |
| Critical (15%) | -0.1 | **0.1** | -0.1 | -0.1 | 0.0 | **0.0** | **0.0** | -0.1 | -0.5 | **0.0** | **0.1** | **0.2** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-3. Feather River at Gridley Bridge, Monthly Temperature

### No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 62.9 | 56.6 | 51.5 | 50.0 | 53.4 | 57.1 | 61.3 | 67.6 | 72.5 | 75.5 | 74.9 | 68.2 |
| 20% | 60.6 | 56.2 | 50.8 | 49.5 | 52.7 | 56.3 | 60.2 | 66.3 | 71.9 | 73.8 | 73.6 | 67.0 |
| 30% | 60.3 | 55.6 | 50.5 | 48.9 | 52.2 | 55.8 | 59.1 | 65.8 | 70.9 | 71.9 | 72.9 | 65.8 |
| 40% | 59.8 | 55.1 | 50.2 | 48.4 | 51.6 | 55.2 | 58.9 | 65.2 | 70.4 | 71.3 | 71.6 | 65.4 |
| 50% | 59.4 | 54.5 | 49.6 | 48.1 | 51.0 | 54.4 | 58.4 | 64.6 | 69.7 | 70.8 | 71.0 | 63.9 |
| 60% | 58.9 | 53.8 | 49.2 | 47.4 | 50.4 | 53.7 | 58.1 | 64.4 | 69.0 | 70.4 | 70.4 | 62.9 |
| 70% | 58.5 | 53.5 | 48.4 | 47.0 | 49.9 | 52.6 | 57.3 | 63.5 | 68.7 | 70.1 | 69.6 | 62.6 |
| 80% | 57.8 | 53.2 | 48.1 | 46.0 | 49.6 | 51.8 | 56.4 | 62.1 | 68.0 | 69.4 | 68.8 | 62.0 |
| 90% | 57.1 | 52.5 | 46.6 | 45.2 | 48.9 | 50.5 | 55.0 | 61.1 | 66.5 | 68.5 | 67.8 | 61.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 59.7 | 54.6 | 49.4 | 47.8 | 51.1 | 54.3 | 58.3 | 64.6 | 69.7 | 71.5 | 71.3 | 64.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 58.5 | 54.4 | 50.2 | 48.1 | 50.1 | 52.3 | 56.2 | 62.6 | 68.5 | 71.1 | 70.5 | 62.2 |
| Above Normal (16%) | 58.8 | 53.2 | 48.6 | 48.5 | 51.4 | 54.1 | 59.0 | 65.5 | 70.6 | 69.7 | 68.5 | 62.4 |
| Below Normal (15%) | 59.9 | 54.5 | 48.6 | 48.0 | 51.7 | 55.5 | 59.8 | 65.0 | 70.8 | 70.3 | 70.6 | 66.2 |
| Dry (24%) | 59.8 | 54.8 | 50.1 | 46.9 | 51.4 | 55.3 | 59.3 | 65.7 | 69.9 | 71.7 | 72.9 | 65.6 |
| Critical (15%) | 62.9 | 56.3 | 48.3 | 47.6 | 52.1 | 55.8 | 59.2 | 65.5 | 70.2 | 75.0 | 74.1 | 68.3 |

### No Action Alternative 093019

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 63.7 | 56.7 | 51.5 | 50.0 | 53.4 | 57.0 | 61.3 | 67.6 | 72.5 | 75.6 | 75.1 | 68.2 |
| 20% | 61.0 | 56.1 | 50.7 | 49.5 | 52.7 | 56.3 | 60.2 | 66.4 | 71.7 | 73.9 | 73.7 | 67.1 |
| 30% | 60.4 | 55.6 | 50.4 | 48.9 | 52.2 | 55.5 | 59.1 | 65.8 | 70.8 | 72.4 | 72.9 | 65.8 |
| 40% | 59.9 | 55.1 | 50.2 | 48.4 | 51.6 | 55.2 | 58.9 | 65.2 | 70.4 | 71.4 | 71.6 | 65.5 |
| 50% | 59.6 | 54.7 | 49.5 | 48.1 | 51.0 | 54.4 | 58.4 | 64.6 | 69.6 | 70.9 | 71.0 | 64.0 |
| 60% | 59.1 | 53.8 | 49.2 | 47.4 | 50.4 | 53.7 | 58.1 | 64.3 | 69.0 | 70.4 | 70.5 | 63.0 |
| 70% | 58.6 | 53.4 | 48.3 | 47.0 | 49.8 | 52.6 | 57.4 | 63.5 | 68.6 | 70.0 | 69.6 | 62.6 |
| 80% | 58.1 | 53.1 | 47.9 | 46.0 | 49.6 | 51.8 | 56.4 | 62.1 | 68.0 | 69.4 | 68.7 | 62.0 |
| 90% | 57.3 | 52.3 | 46.5 | 45.2 | 48.9 | 50.5 | 55.0 | 61.1 | 66.5 | 68.8 | 67.8 | 61.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 59.9 | 54.7 | 49.4 | 47.7 | 51.1 | 54.2 | 58.4 | 64.6 | 69.6 | 71.6 | 71.4 | 64.6 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 58.6 | 54.4 | 50.2 | 48.1 | 50.1 | 52.3 | 56.2 | 62.6 | 68.5 | 71.0 | 70.5 | 62.2 |
| Above Normal (16%) | 58.8 | 53.2 | 48.6 | 48.4 | 51.3 | 54.0 | 59.1 | 65.5 | 70.6 | 69.6 | 68.5 | 62.5 |
| Below Normal (15%) | 60.0 | 54.7 | 48.6 | 48.0 | 51.6 | 55.5 | 59.8 | 65.0 | 70.7 | 70.3 | 70.8 | 66.2 |
| Dry (24%) | 60.1 | 55.0 | 50.1 | 46.8 | 51.4 | 55.3 | 59.3 | 65.7 | 69.8 | 72.1 | 72.9 | 65.6 |
| Critical (15%) | 63.2 | 56.2 | 48.0 | 47.5 | 52.0 | 55.7 | 59.3 | 65.4 | 70.0 | 75.3 | 74.3 | 68.8 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance[a] | | | | | | | | | | | | |
| 10% | **0.8** | **0.1** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | **0.1** | **0.2** | **0.0** |
| 20% | **0.4** | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | **0.1** | -0.2 | **0.1** | **0.1** | **0.1** |
| 30% | **0.1** | 0.0 | -0.1 | 0.0 | 0.0 | -0.2 | 0.0 | 0.0 | -0.1 | **0.5** | **0.1** | 0.0 |
| 40% | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | 0.0 | **0.1** |
| 50% | **0.2** | **0.2** | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | **0.0** | **0.1** |
| 60% | **0.2** | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | **0.2** | **0.1** |
| 70% | **0.1** | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | **0.1** | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 |
| 80% | **0.3** | -0.1 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 |
| 90% | **0.2** | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.3** | 0.0 | 0.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.1** | **0.0** | -0.1 | 0.0 | 0.0 | 0.0 | **0.0** | 0.0 | -0.1 | **0.1** | **0.0** | **0.1** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Above Normal (16%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.1** | 0.0 | 0.0 | -0.1 | 0.0 | **0.1** |
| Below Normal (15%) | **0.1** | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 | **0.2** | **0.0** |
| Dry (24%) | **0.3** | **0.2** | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | **0.0** | -0.1 | **0.4** | 0.0 | 0.0 |
| Critical (15%) | **0.3** | -0.2 | -0.4 | -0.1 | -0.1 | 0.0 | **0.0** | -0.1 | -0.2 | **0.3** | **0.2** | **0.5** |

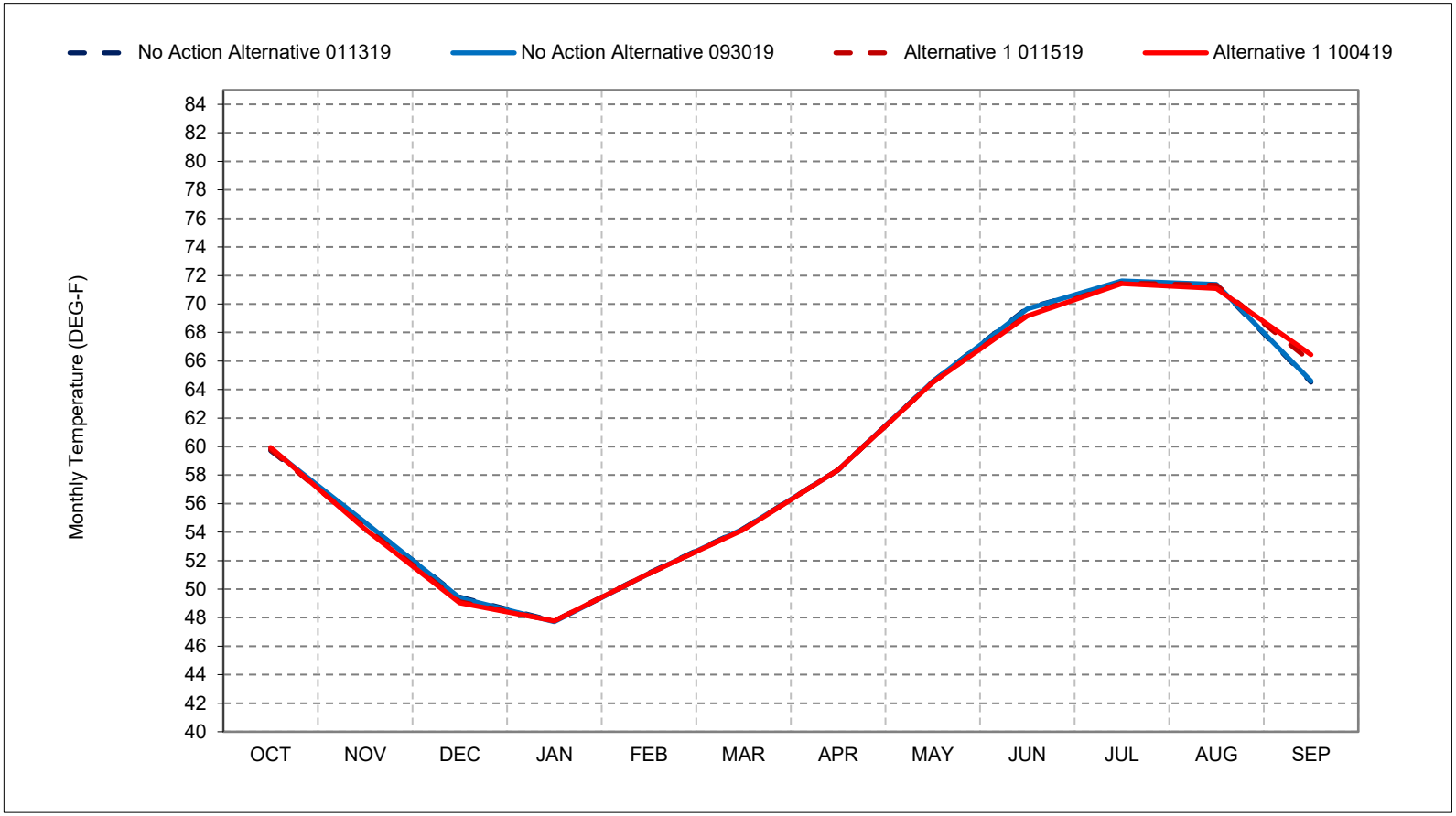
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-1. Feather River at Gridley Bridge, Long-Term Average Temperature

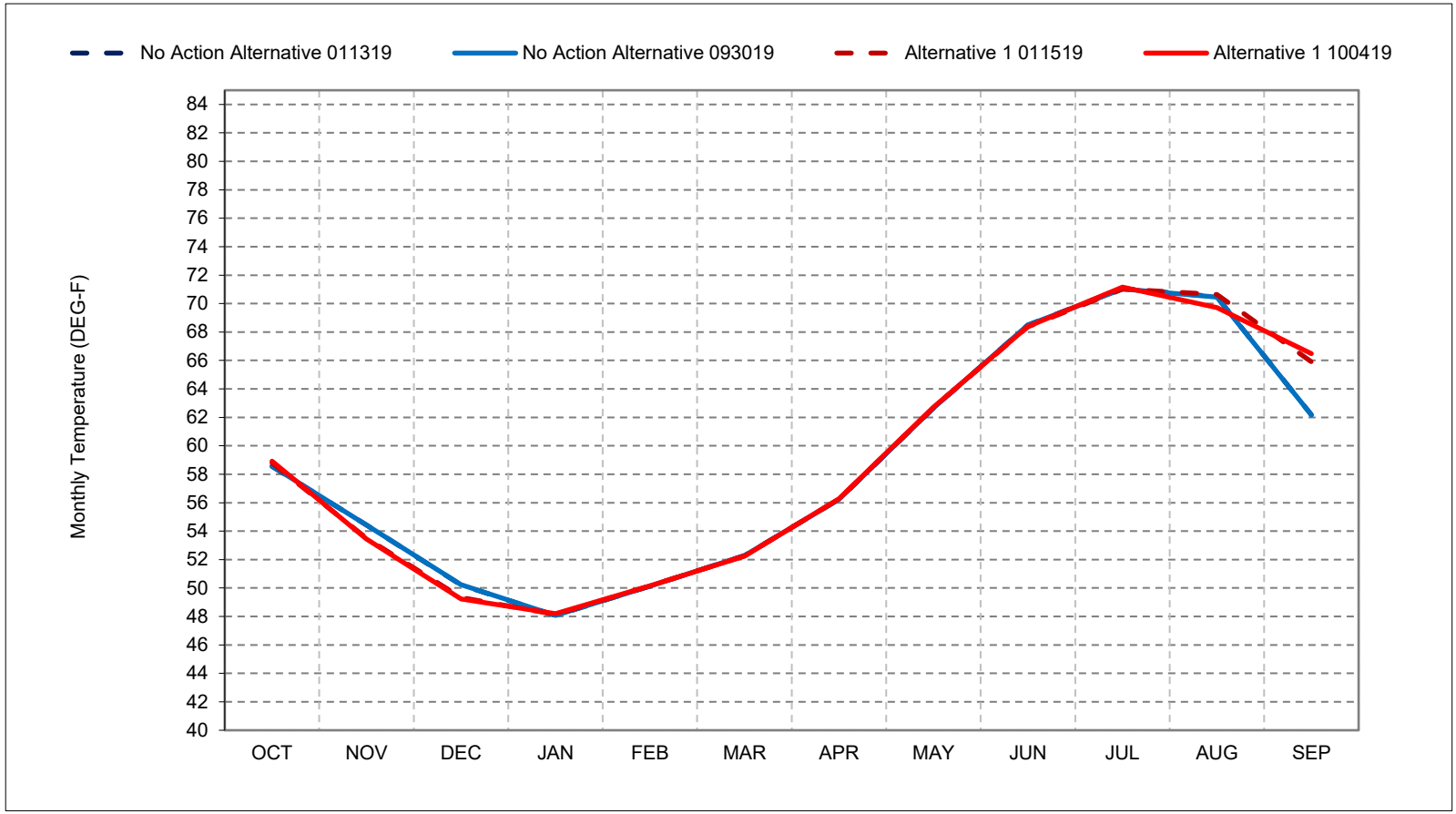



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-2. Feather River at Gridley Bridge, Wet Year Average Temperature

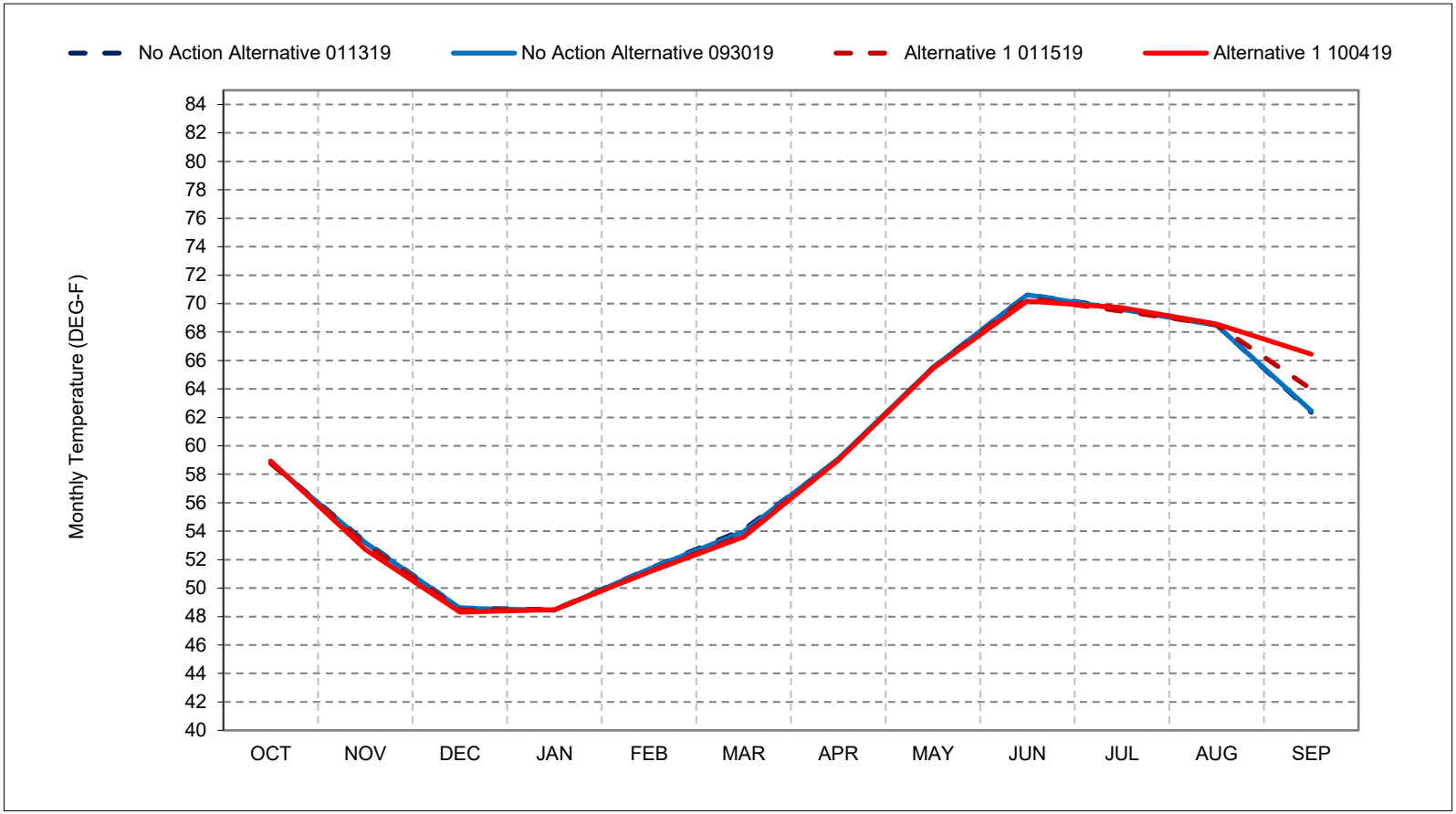



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-3. Feather River at Gridley Bridge, Above Normal Year Average Temperature

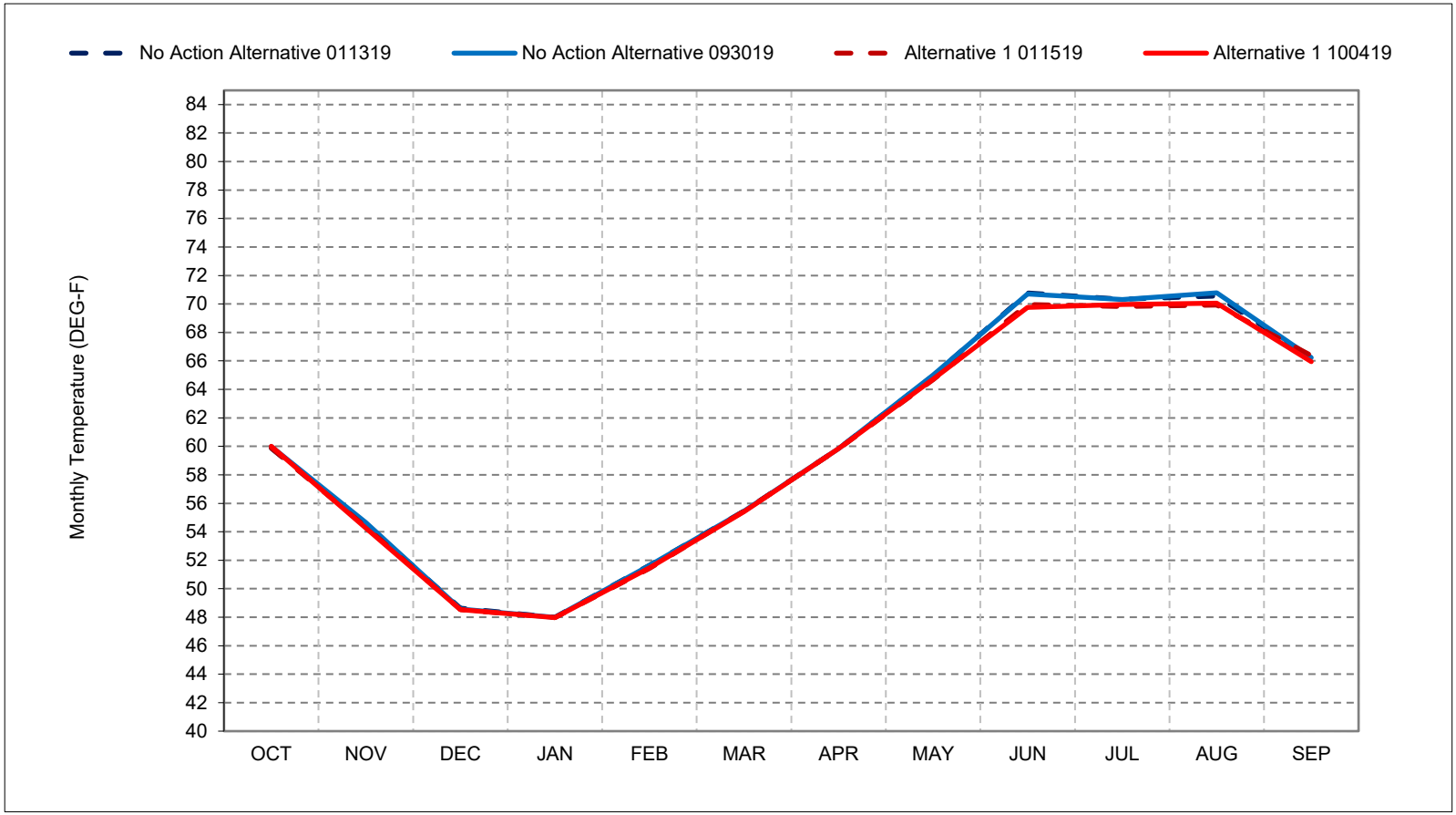



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-4. Feather River at Gridley Bridge, Below Normal Year Average Temperature

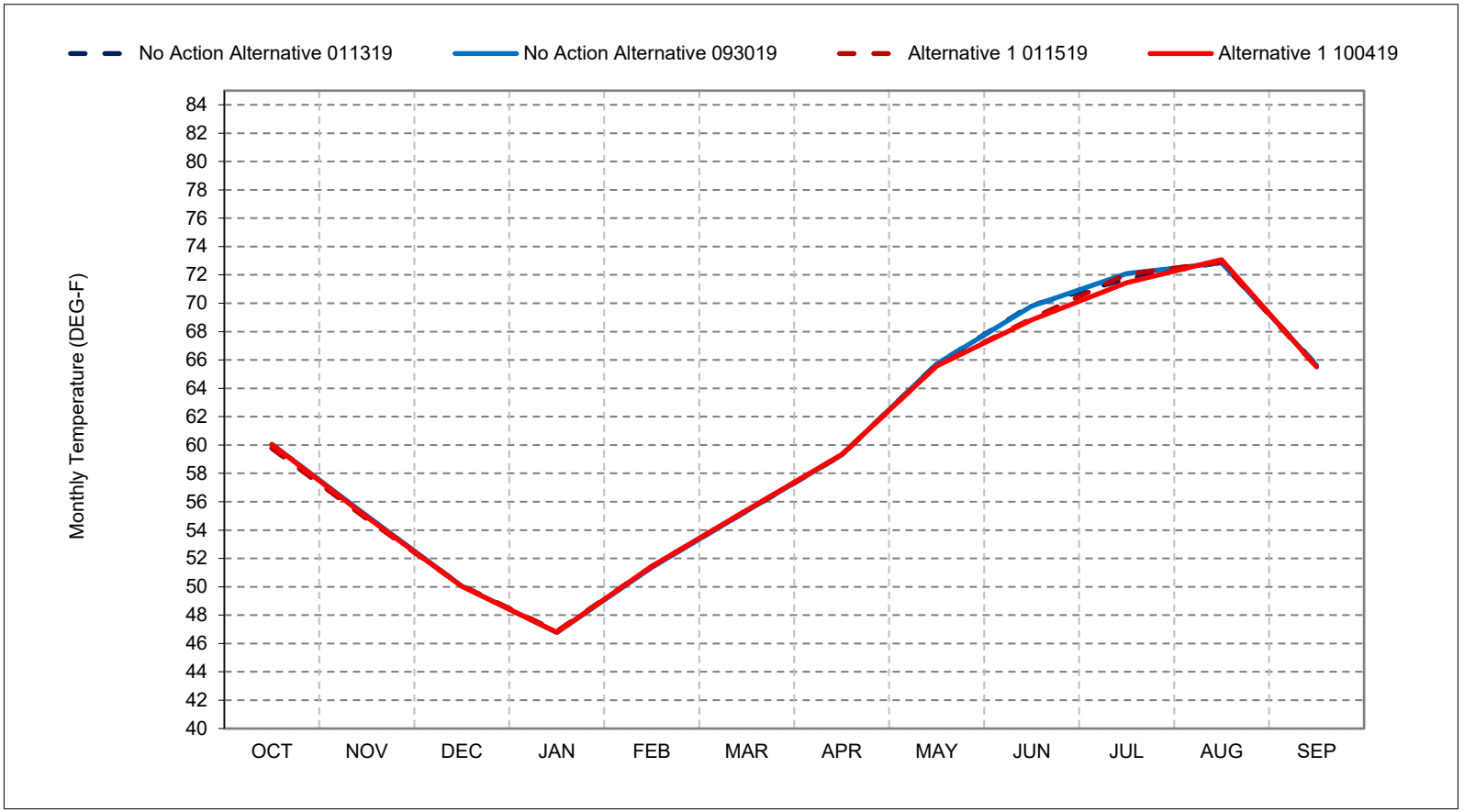



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-5. Feather River at Gridley Bridge, Dry Year Average Temperature

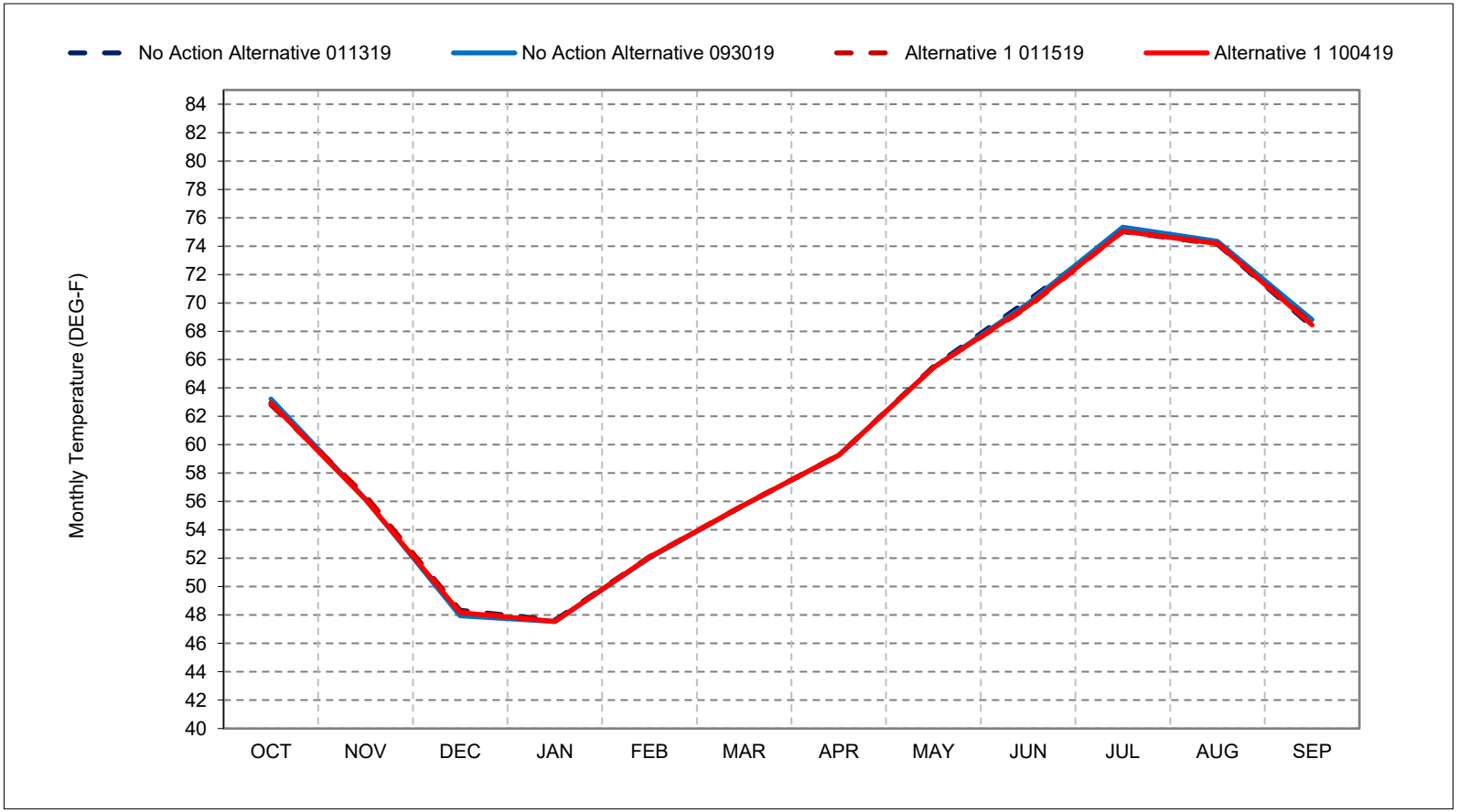



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 3-6. Feather River at Gridley Bridge, Critical Year Average Temperature

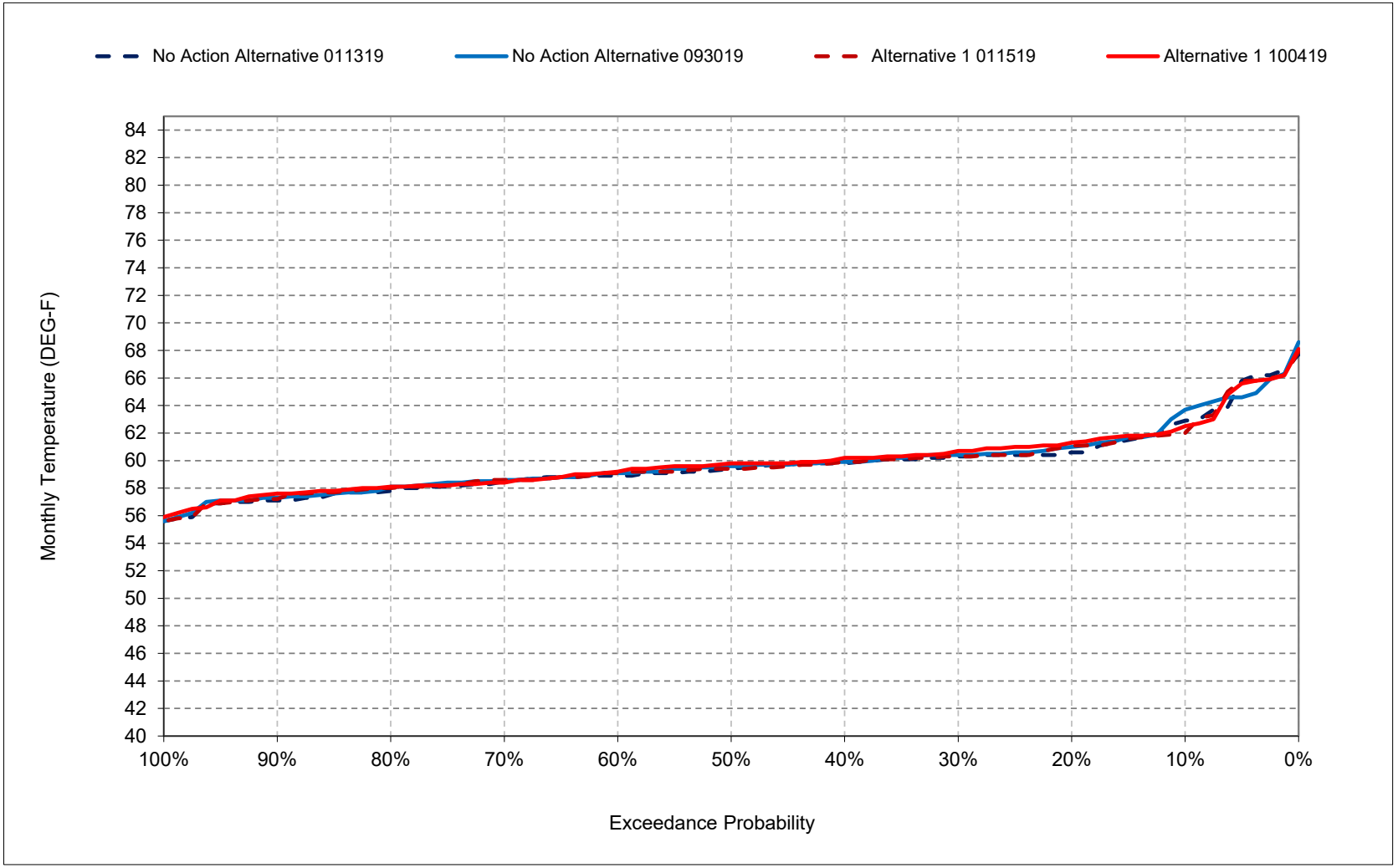



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

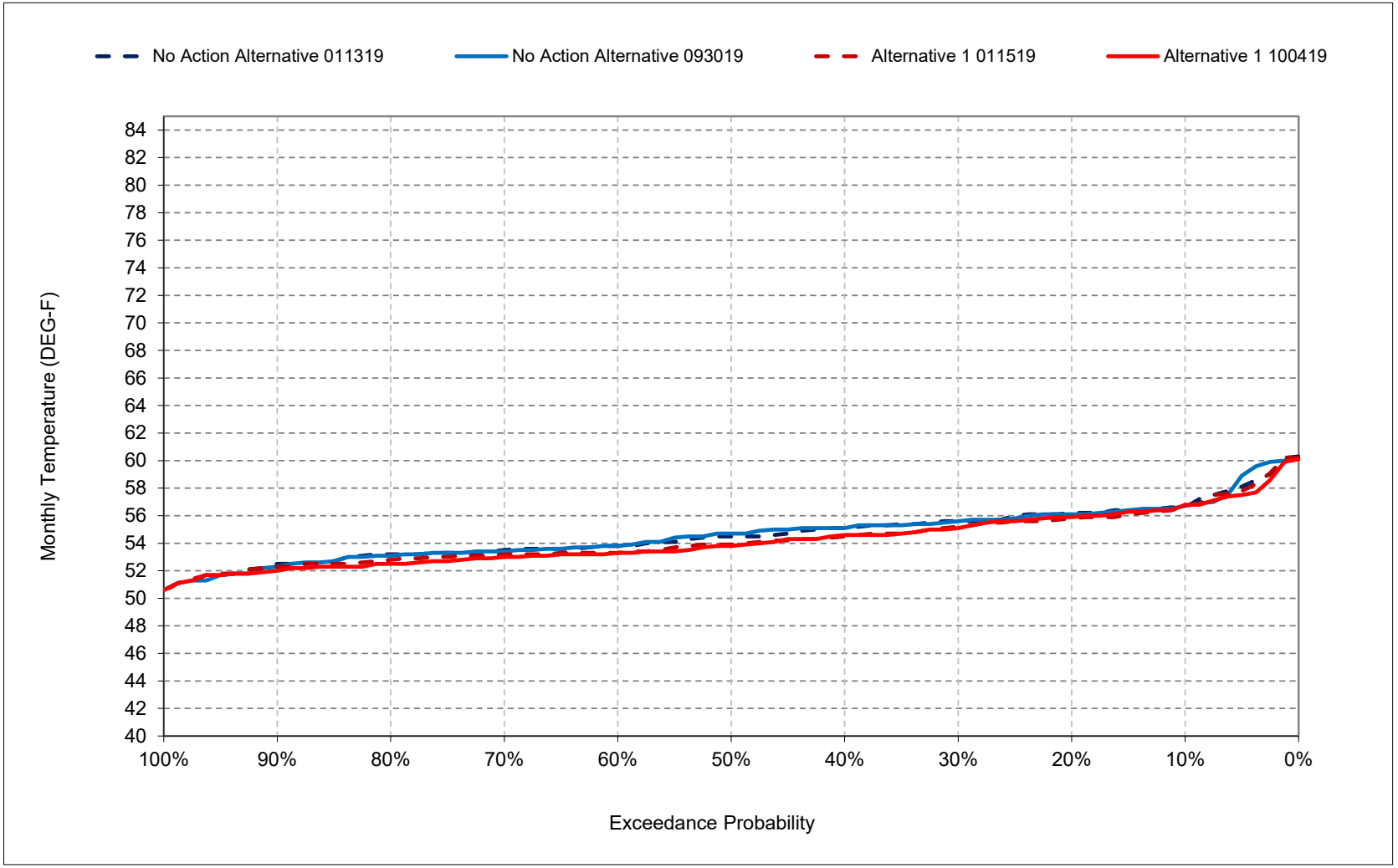
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-7. Feather River at Gridley Bridge, October**



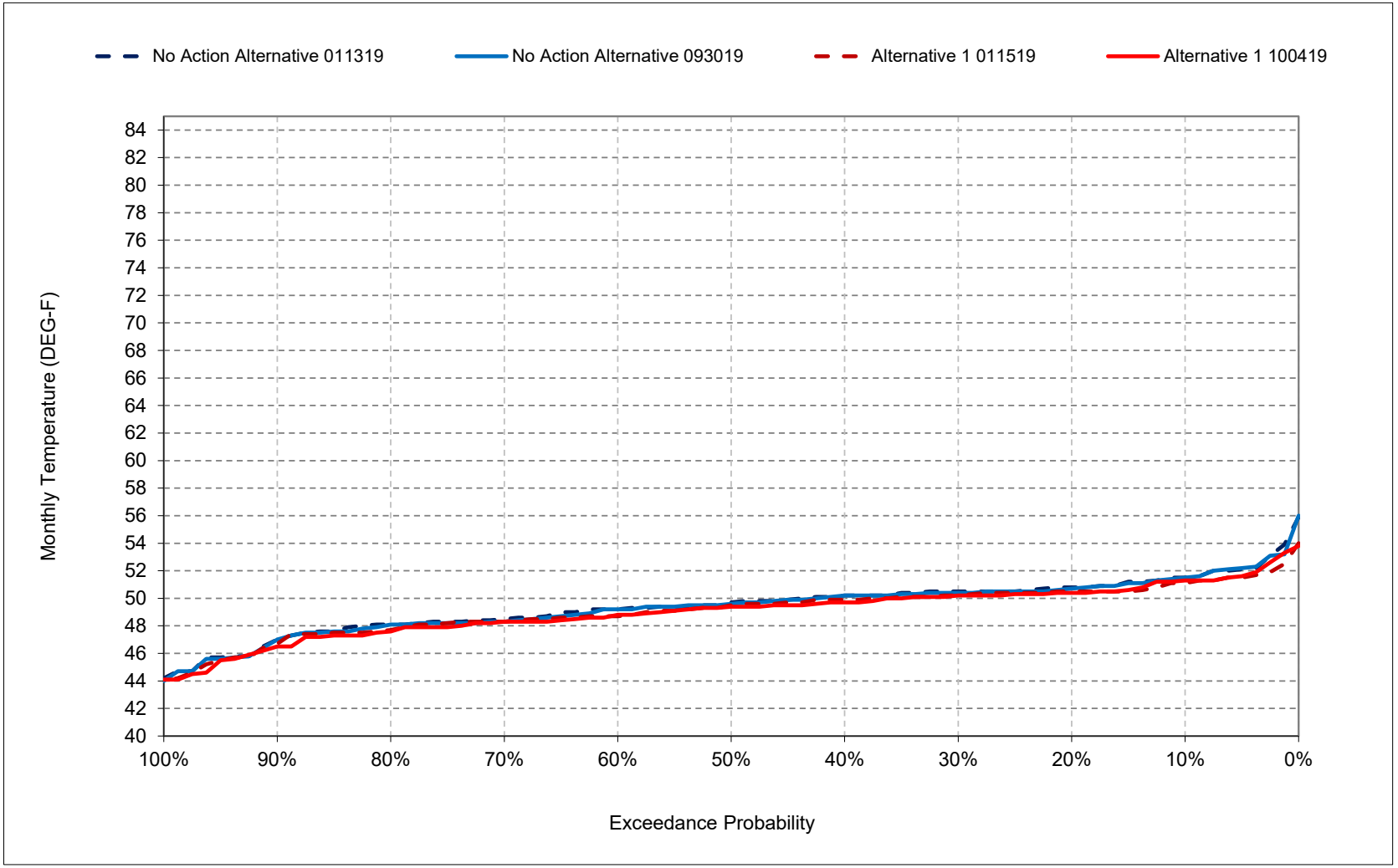

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-8. Feather River at Gridley Bridge, November**



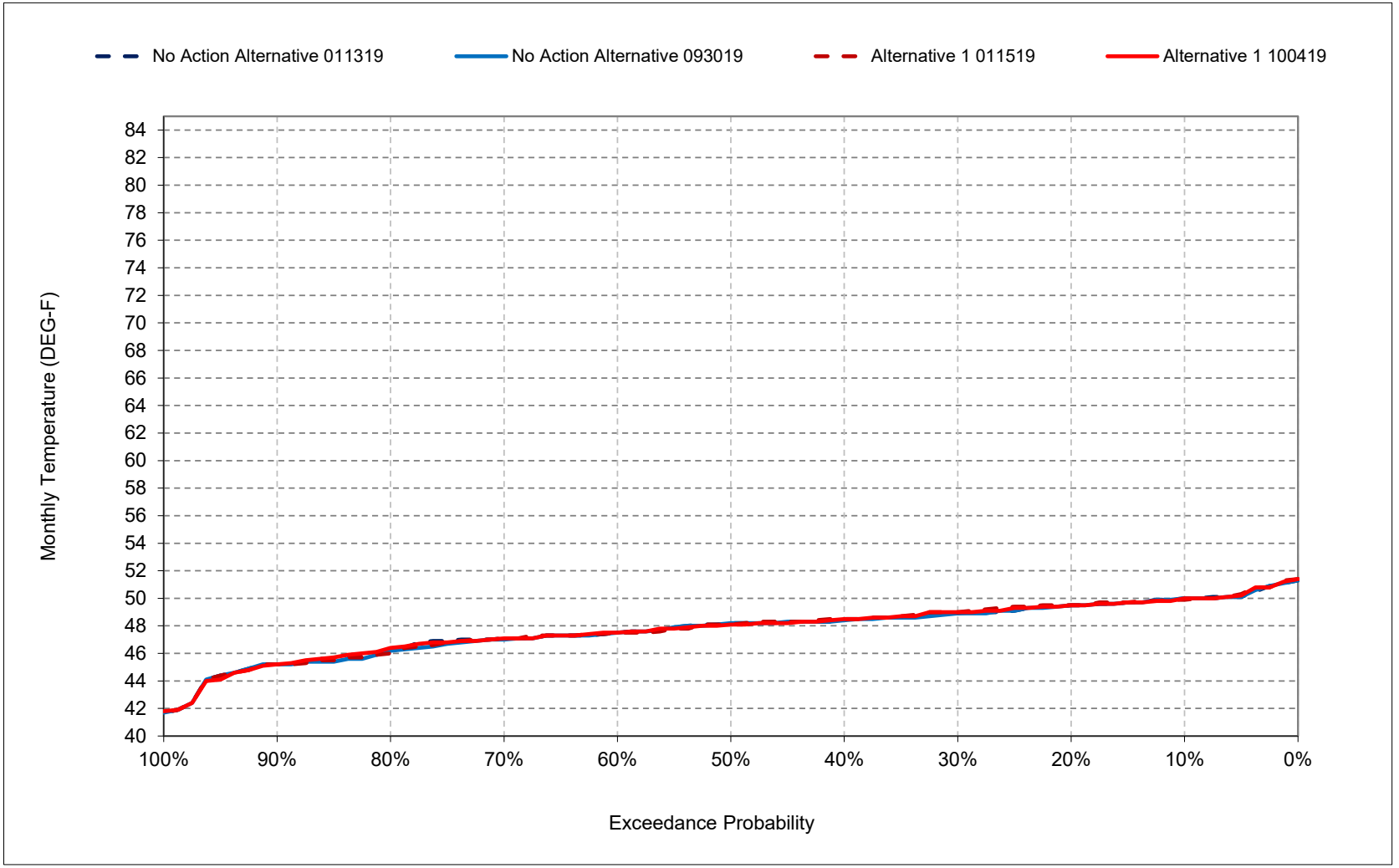

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-9. Feather River at Gridley Bridge, December**



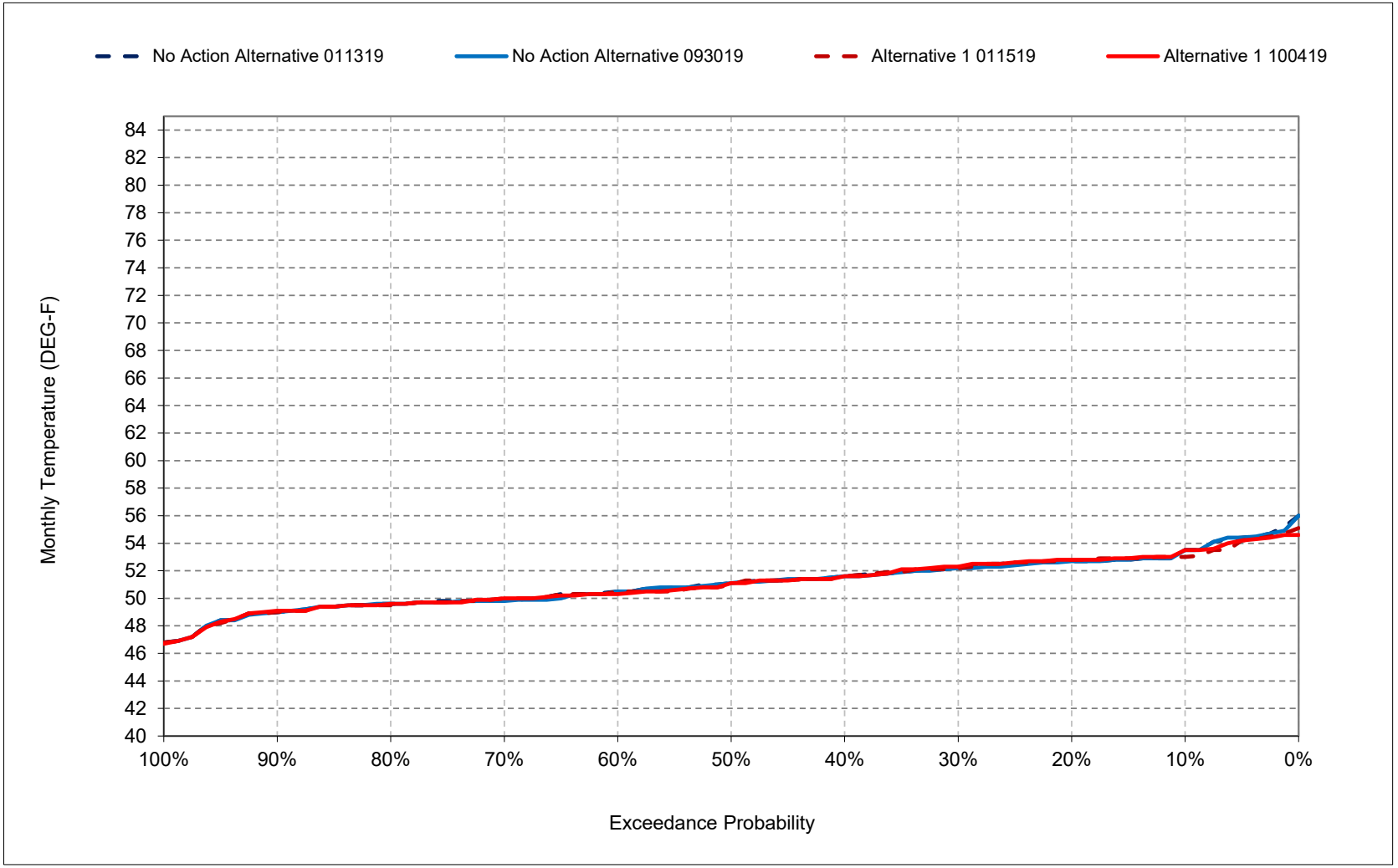

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-10. Feather River at Gridley Bridge, January**



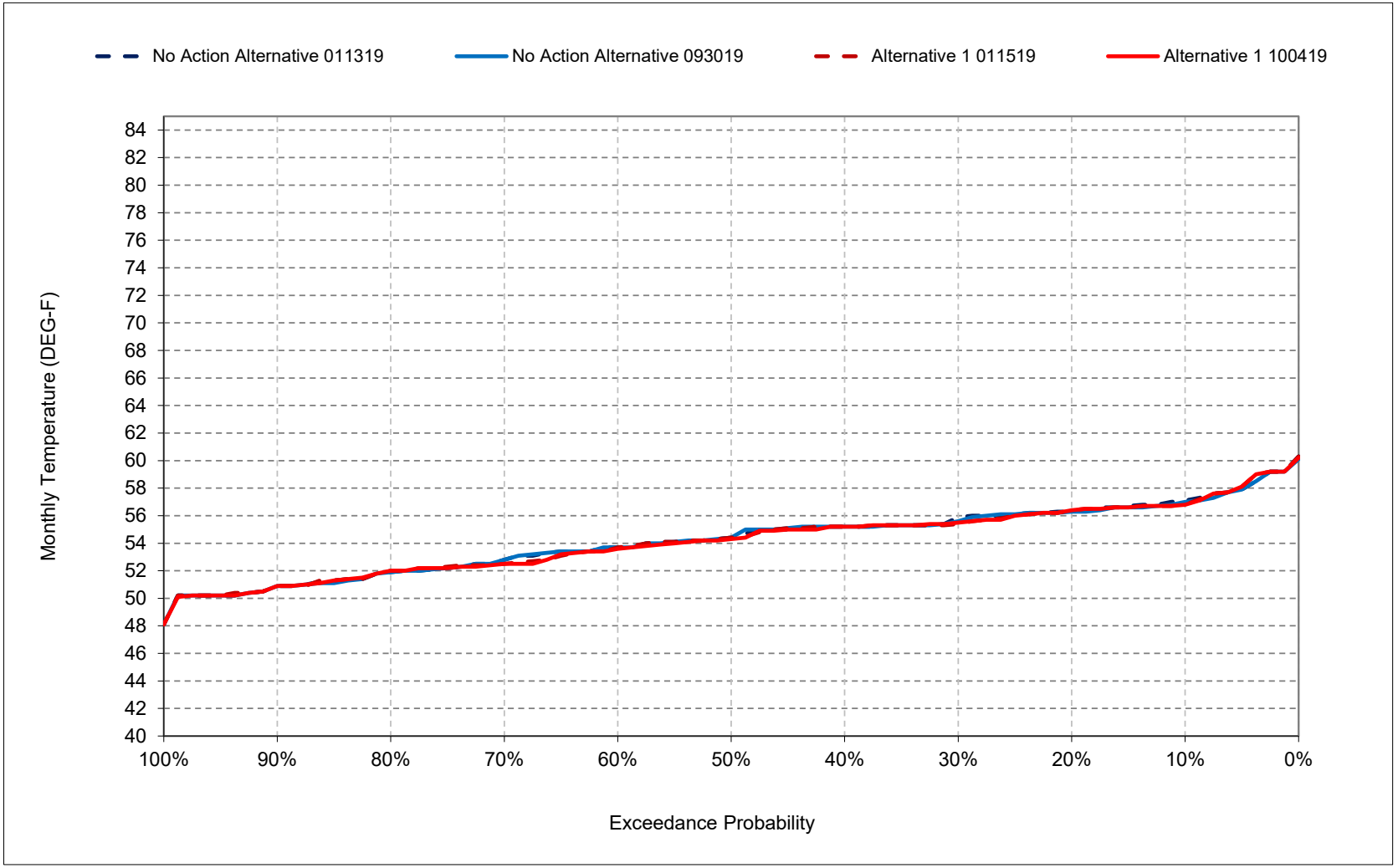

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-11. Feather River at Gridley Bridge, February**



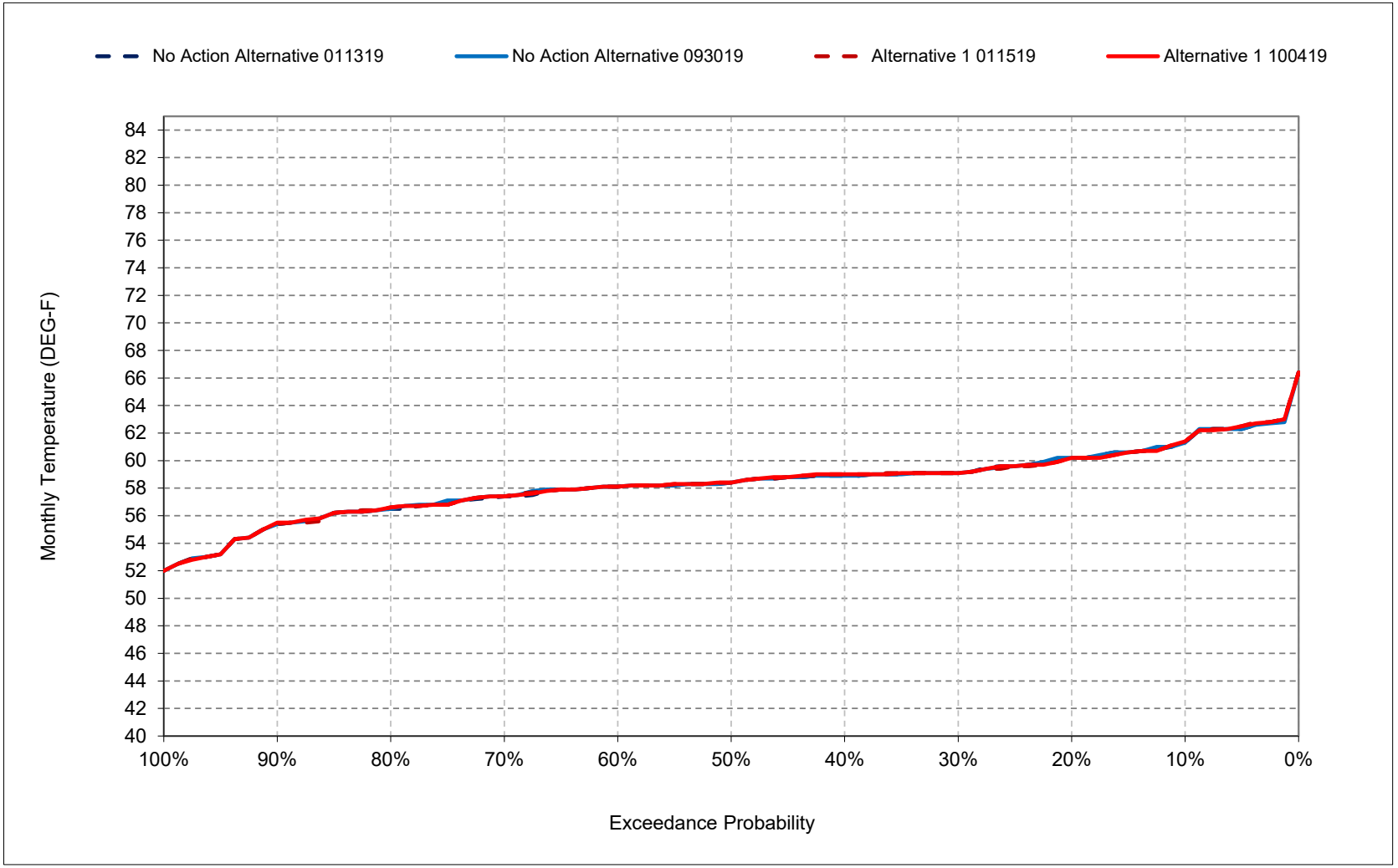

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-12. Feather River at Gridley Bridge, March**



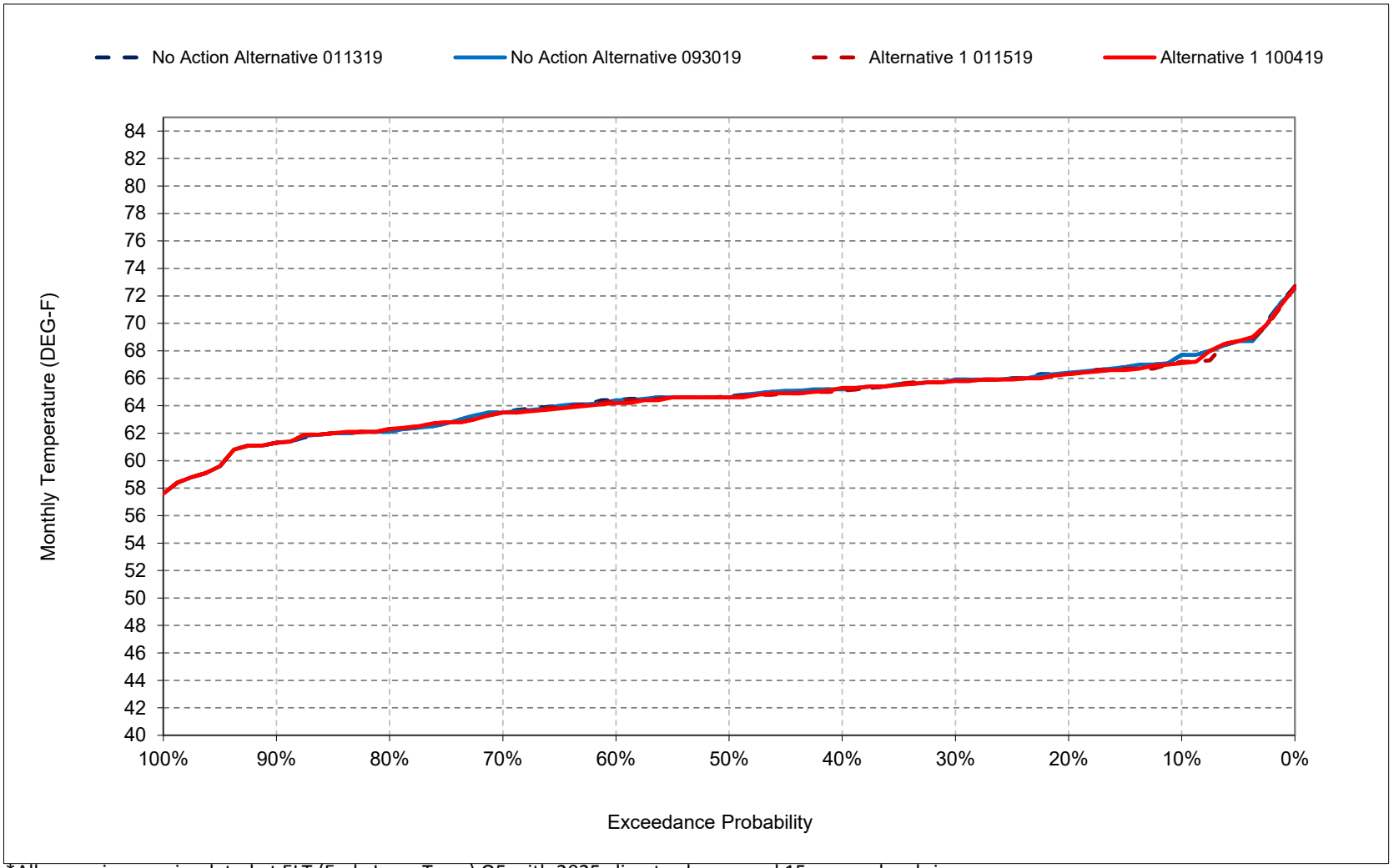

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-13. Feather River at Gridley Bridge, April**



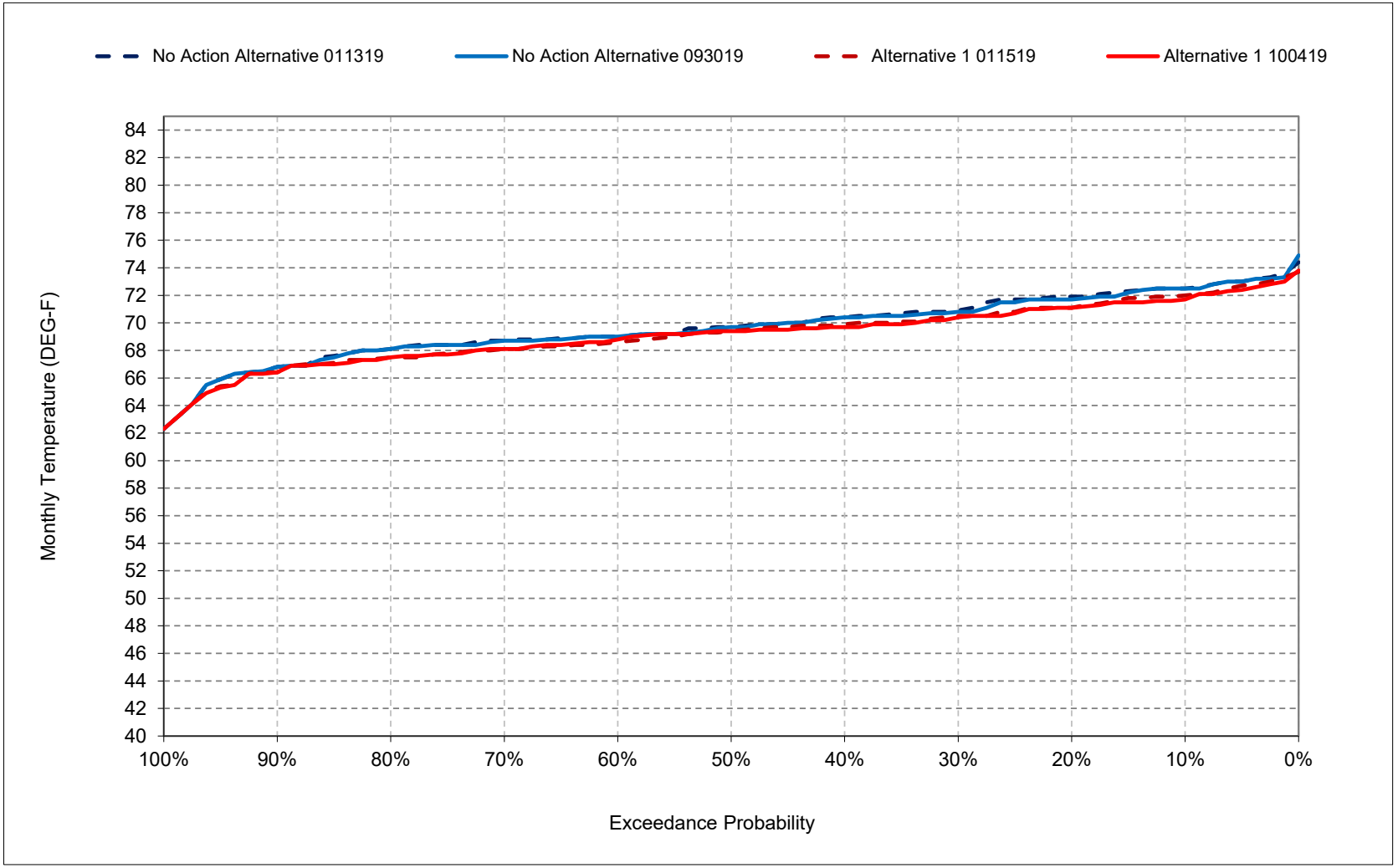

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-14. Feather River at Gridley Bridge, May**



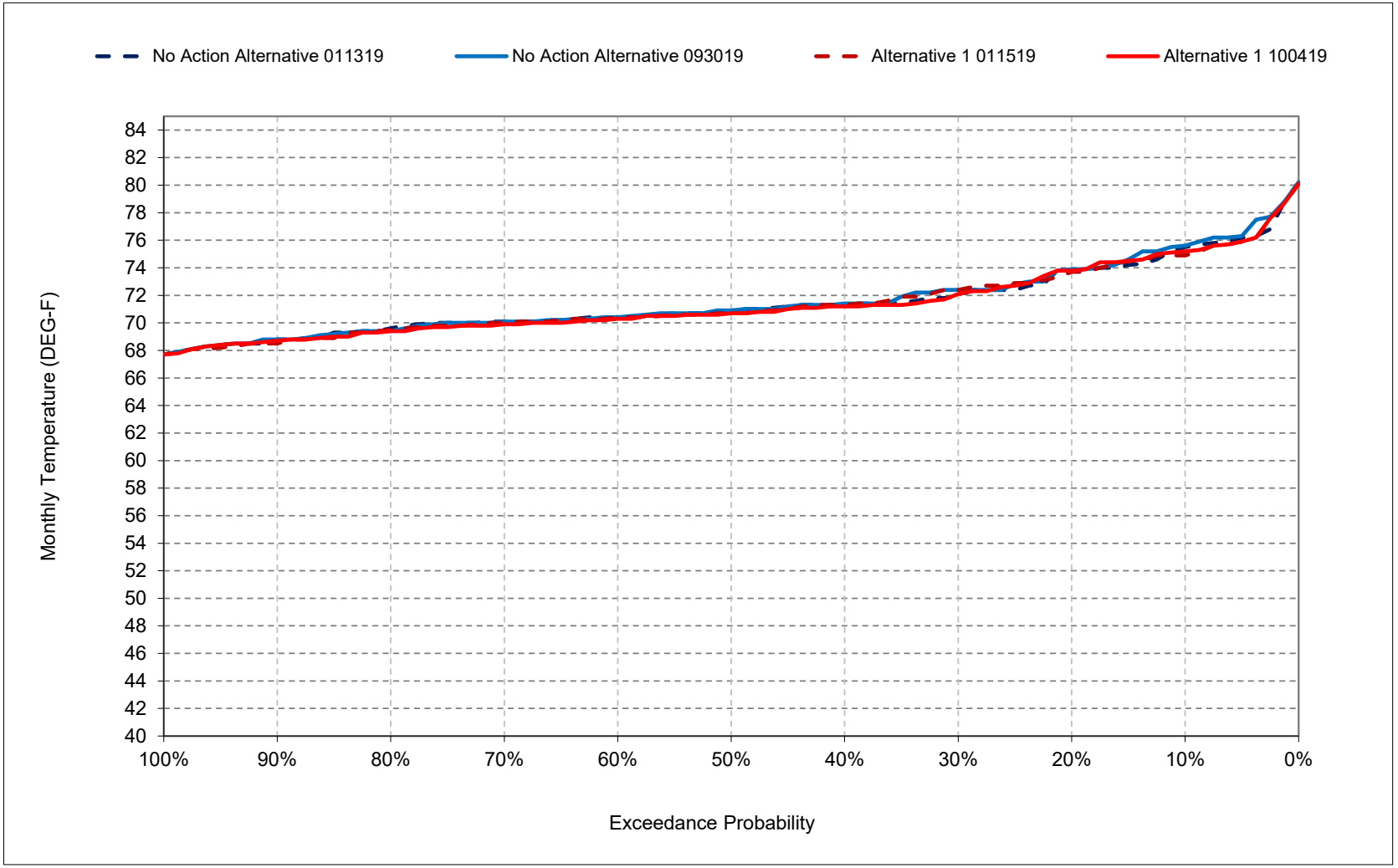

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-15. Feather River at Gridley Bridge, June**



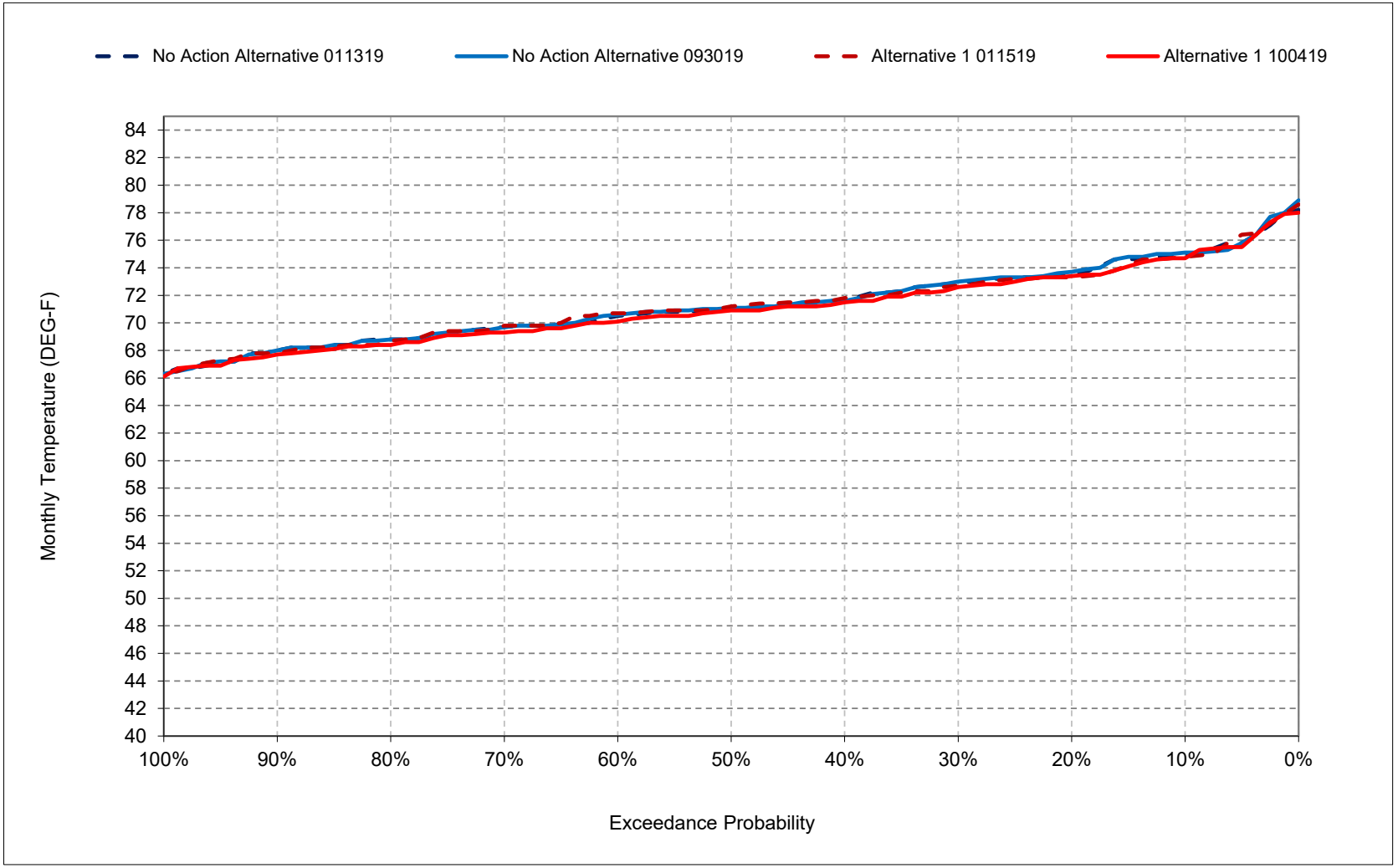

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-16. Feather River at Gridley Bridge, July**



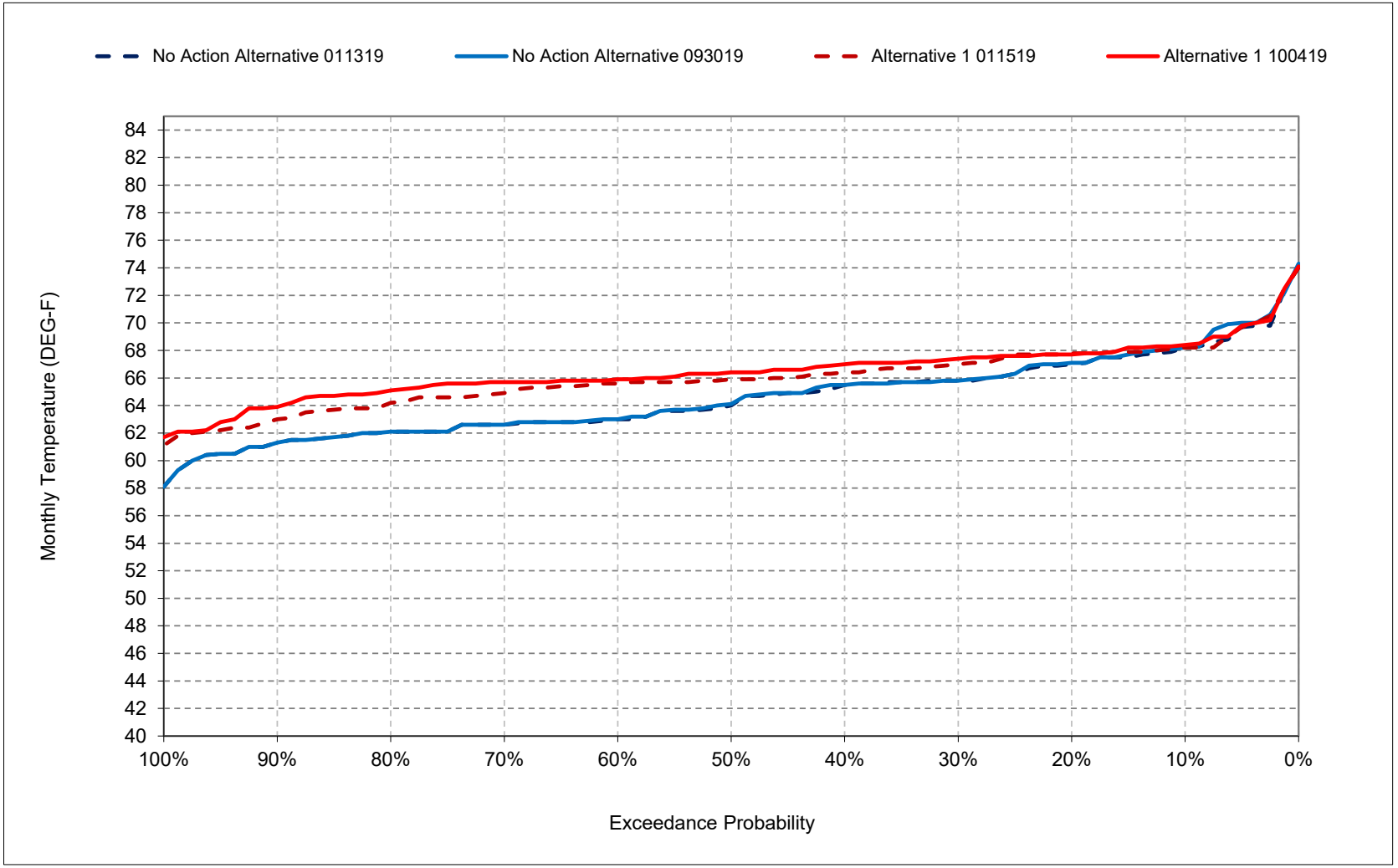

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-17. Feather River at Gridley Bridge, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 3-18. Feather River at Gridley Bridge, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-1. Feather River at Mouth, Monthly Temperature

### No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.7 | 55.7 | 49.5 | 48.7 | 53.1 | 57.7 | 65.6 | 71.1 | 76.6 | 78.2 | 78.1 | 73.6 |
| 20% | 63.7 | 55.0 | 48.9 | 48.1 | 52.3 | 56.9 | 63.4 | 69.7 | 75.7 | 77.2 | 77.3 | 72.9 |
| 30% | 63.1 | 54.4 | 48.5 | 48.0 | 51.8 | 56.2 | 62.8 | 69.1 | 74.6 | 76.3 | 76.0 | 71.7 |
| 40% | 62.6 | 54.1 | 48.1 | 47.5 | 51.3 | 55.6 | 61.9 | 68.6 | 74.2 | 75.7 | 75.5 | 70.7 |
| 50% | 62.1 | 53.5 | 47.5 | 46.7 | 51.0 | 55.3 | 61.4 | 67.9 | 73.5 | 75.3 | 74.4 | 69.9 |
| 60% | 61.7 | 53.1 | 47.1 | 46.4 | 50.6 | 54.7 | 60.8 | 67.5 | 72.6 | 74.9 | 73.8 | 68.8 |
| 70% | 61.3 | 52.9 | 46.7 | 45.9 | 50.2 | 54.2 | 59.7 | 66.1 | 71.9 | 74.0 | 72.9 | 67.9 |
| 80% | 60.2 | 52.3 | 46.3 | 45.1 | 49.9 | 53.6 | 58.4 | 65.1 | 71.1 | 73.7 | 72.1 | 67.2 |
| 90% | 59.8 | 51.6 | 44.5 | 44.3 | 49.0 | 52.5 | 57.5 | 64.1 | 69.8 | 72.9 | 71.2 | 66.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62.3 | 53.6 | 47.5 | 46.7 | 51.1 | 55.2 | 61.4 | 67.8 | 73.3 | 75.6 | 74.7 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.2 | 53.8 | 48.2 | 47.2 | 50.8 | 53.9 | 59.3 | 65.8 | 71.7 | 75.3 | 74.1 | 67.9 |
| Above Normal (16%) | 61.1 | 52.5 | 46.9 | 47.3 | 51.1 | 55.1 | 61.3 | 68.0 | 73.7 | 73.9 | 72.0 | 67.4 |
| Below Normal (15%) | 62.7 | 53.4 | 46.5 | 46.7 | 50.7 | 55.6 | 62.5 | 68.1 | 74.3 | 74.7 | 73.8 | 71.2 |
| Dry (24%) | 62.9 | 53.8 | 47.9 | 45.7 | 51.1 | 56.0 | 62.2 | 69.3 | 74.3 | 75.7 | 76.0 | 72.1 |
| Critical (15%) | 64.3 | 53.9 | 46.6 | 46.2 | 51.9 | 56.6 | 64.0 | 69.2 | 73.9 | 78.6 | 77.2 | 72.5 |

### Alternative 1 011519

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.7 | 55.4 | 49.4 | 48.7 | 53.1 | 57.7 | 65.6 | 70.8 | 76.0 | 78.0 | 78.1 | 74.4 |
| 20% | 63.9 | 54.9 | 48.8 | 48.2 | 52.3 | 56.9 | 63.4 | 69.5 | 75.1 | 77.4 | 77.5 | 73.5 |
| 30% | 63.4 | 54.1 | 48.3 | 48.0 | 51.8 | 56.1 | 62.8 | 68.8 | 74.2 | 76.4 | 76.3 | 72.8 |
| 40% | 62.7 | 53.8 | 48.1 | 47.5 | 51.3 | 55.6 | 61.9 | 68.3 | 73.5 | 75.7 | 75.4 | 72.2 |
| 50% | 62.1 | 53.3 | 47.4 | 46.7 | 51.0 | 55.3 | 61.4 | 67.9 | 72.9 | 75.1 | 74.4 | 71.3 |
| 60% | 61.5 | 53.0 | 47.0 | 46.4 | 50.6 | 54.7 | 60.8 | 67.1 | 72.3 | 74.7 | 73.9 | 70.7 |
| 70% | 61.3 | 52.8 | 46.6 | 45.9 | 50.2 | 54.2 | 59.7 | 66.0 | 71.8 | 74.2 | 72.9 | 70.1 |
| 80% | 61.0 | 52.1 | 46.3 | 45.1 | 49.9 | 53.5 | 58.4 | 65.1 | 71.0 | 73.5 | 72.1 | 69.3 |
| 90% | 60.0 | 51.6 | 44.7 | 44.3 | 49.0 | 52.5 | 57.5 | 64.1 | 69.6 | 72.7 | 71.6 | 68.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62.4 | 53.4 | 47.4 | 46.7 | 51.1 | 55.2 | 61.4 | 67.7 | 72.9 | 75.5 | 74.7 | 71.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.6 | 53.4 | 47.9 | 47.3 | 50.8 | 53.9 | 59.3 | 65.8 | 71.5 | 75.2 | 74.3 | 72.0 |
| Above Normal (16%) | 61.1 | 52.5 | 46.8 | 47.3 | 51.0 | 55.1 | 61.2 | 67.9 | 73.5 | 73.7 | 72.1 | 68.7 |
| Below Normal (15%) | 62.7 | 53.4 | 46.5 | 46.7 | 50.8 | 55.5 | 62.6 | 67.8 | 73.7 | 74.3 | 73.4 | 71.2 |
| Dry (24%) | 62.9 | 53.8 | 47.9 | 45.7 | 51.1 | 56.0 | 62.2 | 69.1 | 73.6 | 75.9 | 76.1 | 72.0 |
| Critical (15%) | 64.3 | 53.9 | 46.5 | 46.2 | 51.8 | 56.6 | 64.0 | 69.2 | 73.5 | 78.6 | 77.3 | 72.5 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | 0.0 | -0.3 | -0.1 | 0.0 | 0.0 | **0.0** | 0.0 | -0.3 | -0.6 | -0.2 | **0.0** | **0.8** |
| 20% | **0.2** | -0.1 | -0.1 | **0.1** | **0.0** | 0.0 | 0.0 | -0.2 | -0.6 | **0.2** | **0.2** | **0.6** |
| 30% | **0.3** | -0.3 | -0.2 | 0.0 | 0.0 | -0.1 | 0.0 | -0.2 | -0.4 | **0.1** | **0.3** | **1.1** |
| 40% | **0.1** | -0.3 | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | -0.3 | -0.7 | 0.0 | -0.1 | **1.5** |
| 50% | 0.0 | -0.2 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.6 | -0.1 | 0.0 | **1.3** |
| 60% | -0.2 | -0.1 | -0.1 | **0.0** | 0.0 | 0.0 | **0.0** | -0.4 | -0.3 | -0.1 | **0.1** | **1.9** |
| 70% | 0.0 | -0.1 | -0.1 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | **0.2** | 0.0 | **2.2** |
| 80% | **0.8** | -0.2 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | -0.2 | 0.0 | **2.1** |
| 90% | **0.2** | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | **0.4** | **1.9** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **0.1** | -0.1 | -0.1 | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | -0.4 | 0.0 | **0.0** | **1.5** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.4** | -0.4 | -0.3 | **0.1** | **0.0** | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | **0.1** | **4.1** |
| Above Normal (16%) | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.2 | -0.2 | **0.0** | **1.4** |
| Below Normal (15%) | **0.0** | -0.1 | 0.0 | 0.0 | **0.1** | 0.0 | **0.0** | -0.3 | -0.5 | -0.4 | -0.4 | **0.0** |
| Dry (24%) | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | -0.2 | -0.7 | **0.3** | **0.1** | 0.0 |
| Critical (15%) | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | -0.1 | -0.4 | **0.0** | **0.1** | **0.0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-3. Feather River at Mouth, Monthly Temperature

### No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.7 | 55.7 | 49.5 | 48.7 | 53.1 | 57.7 | 65.6 | 71.1 | 76.6 | 78.2 | 78.1 | 73.6 |
| 20% | 63.7 | 55.0 | 48.9 | 48.1 | 52.3 | 56.9 | 63.4 | 69.7 | 75.7 | 77.2 | 77.3 | 72.9 |
| 30% | 63.1 | 54.4 | 48.5 | 48.0 | 51.8 | 56.2 | 62.8 | 69.1 | 74.6 | 76.3 | 76.0 | 71.7 |
| 40% | 62.6 | 54.1 | 48.1 | 47.5 | 51.3 | 55.6 | 61.9 | 68.6 | 74.2 | 75.7 | 75.5 | 70.7 |
| 50% | 62.1 | 53.5 | 47.5 | 46.7 | 51.0 | 55.3 | 61.4 | 67.9 | 73.5 | 75.3 | 74.4 | 69.9 |
| 60% | 61.7 | 53.1 | 47.1 | 46.4 | 50.6 | 54.7 | 60.8 | 67.5 | 72.6 | 74.9 | 73.8 | 68.8 |
| 70% | 61.3 | 52.9 | 46.7 | 45.9 | 50.2 | 54.2 | 59.7 | 66.1 | 71.9 | 74.0 | 72.9 | 67.9 |
| 80% | 60.2 | 52.3 | 46.3 | 45.1 | 49.9 | 53.6 | 58.4 | 65.1 | 71.1 | 73.7 | 72.1 | 67.2 |
| 90% | 59.8 | 51.6 | 44.5 | 44.3 | 49.0 | 52.5 | 57.5 | 64.1 | 69.8 | 72.9 | 71.2 | 66.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62.3 | 53.6 | 47.5 | 46.7 | 51.1 | 55.2 | 61.4 | 67.8 | 73.3 | 75.6 | 74.7 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.2 | 53.8 | 48.2 | 47.2 | 50.8 | 53.9 | 59.3 | 65.8 | 71.7 | 75.3 | 74.1 | 67.9 |
| Above Normal (16%) | 61.1 | 52.5 | 46.9 | 47.3 | 51.1 | 55.1 | 61.3 | 68.0 | 73.7 | 73.9 | 72.0 | 67.4 |
| Below Normal (15%) | 62.7 | 53.4 | 46.5 | 46.7 | 50.7 | 55.6 | 62.5 | 68.1 | 74.3 | 74.7 | 73.8 | 71.2 |
| Dry (24%) | 62.9 | 53.8 | 47.9 | 45.7 | 51.1 | 56.0 | 62.2 | 69.3 | 74.3 | 75.7 | 76.0 | 72.1 |
| Critical (15%) | 64.3 | 53.9 | 46.6 | 46.2 | 51.9 | 56.6 | 64.0 | 69.2 | 73.9 | 78.6 | 77.2 | 72.5 |

### No Action Alternative 093019

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 64.5 | 55.7 | 49.4 | 48.7 | 53.1 | 57.7 | 65.6 | 71.1 | 76.6 | 78.2 | 78.0 | 73.6 |
| 20% | 63.6 | 55.0 | 48.9 | 48.1 | 52.3 | 56.9 | 63.4 | 69.7 | 75.7 | 77.5 | 77.3 | 72.8 |
| 30% | 63.1 | 54.4 | 48.5 | 48.0 | 51.8 | 56.3 | 62.8 | 69.0 | 74.6 | 76.4 | 76.0 | 71.7 |
| 40% | 62.6 | 54.2 | 48.1 | 47.5 | 51.3 | 55.6 | 61.9 | 68.6 | 74.1 | 75.7 | 75.5 | 70.7 |
| 50% | 62.1 | 53.6 | 47.5 | 46.7 | 51.0 | 55.3 | 61.4 | 67.8 | 73.2 | 75.3 | 74.4 | 69.9 |
| 60% | 61.7 | 53.1 | 47.1 | 46.4 | 50.6 | 54.7 | 60.8 | 67.4 | 72.5 | 74.8 | 73.9 | 68.8 |
| 70% | 61.3 | 52.9 | 46.7 | 45.9 | 50.2 | 54.2 | 59.7 | 66.0 | 71.9 | 74.1 | 72.9 | 67.9 |
| 80% | 60.2 | 52.3 | 46.4 | 45.1 | 49.9 | 53.6 | 58.4 | 65.1 | 71.1 | 73.9 | 72.1 | 67.3 |
| 90% | 59.9 | 51.6 | 44.6 | 44.3 | 49.0 | 52.5 | 57.5 | 64.1 | 69.8 | 72.9 | 71.4 | 66.7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62.3 | 53.6 | 47.5 | 46.7 | 51.1 | 55.2 | 61.4 | 67.8 | 73.3 | 75.6 | 74.7 | 70.0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 61.2 | 53.8 | 48.2 | 47.2 | 50.8 | 53.9 | 59.3 | 65.8 | 71.7 | 75.2 | 74.1 | 67.9 |
| Above Normal (16%) | 61.1 | 52.5 | 46.9 | 47.3 | 51.1 | 55.2 | 61.3 | 68.0 | 73.7 | 73.8 | 72.0 | 67.4 |
| Below Normal (15%) | 62.6 | 53.5 | 46.6 | 46.7 | 50.7 | 55.6 | 62.6 | 68.0 | 74.2 | 74.7 | 74.0 | 71.2 |
| Dry (24%) | 62.9 | 53.9 | 47.9 | 45.7 | 51.1 | 56.0 | 62.2 | 69.3 | 74.2 | 75.9 | 76.0 | 72.0 |
| Critical (15%) | 64.3 | 54.0 | 46.4 | 46.2 | 51.9 | 56.6 | 64.0 | 69.1 | 73.8 | 78.7 | 77.3 | 72.6 |

### No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Monthly Temperature (DEG-F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance[a]** | | | | | | | | | | | | |
| 10% | -0.2 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | 0.0 |
| 20% | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.3** | 0.0 | -0.1 |
| 30% | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.1** | 0.0 | -0.1 | **0.0** | **0.1** | 0.0 | **0.0** |
| 40% | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 |
| 50% | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.3 | **0.1** | 0.0 | 0.0 |
| 60% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | **0.1** | 0.0 |
| 70% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.1** | 0.0 | 0.0 |
| 80% | 0.0 | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | 0.0 | **0.1** |
| 90% | **0.1** | 0.0 | **0.1** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | **0.1** | **0.0** | **0.0** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **0.0** | 0.0 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Above Normal (16%) | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | -0.1 | 0.0 | **0.1** |
| Below Normal (15%) | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | -0.1 | -0.1 | 0.0 | **0.1** | **0.0** |
| Dry (24%) | 0.0 | **0.1** | **0.0** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | **0.2** | 0.0 | 0.0 |
| Critical (15%) | 0.0 | **0.1** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | -0.1 | -0.2 | **0.1** | **0.1** | **0.0** |

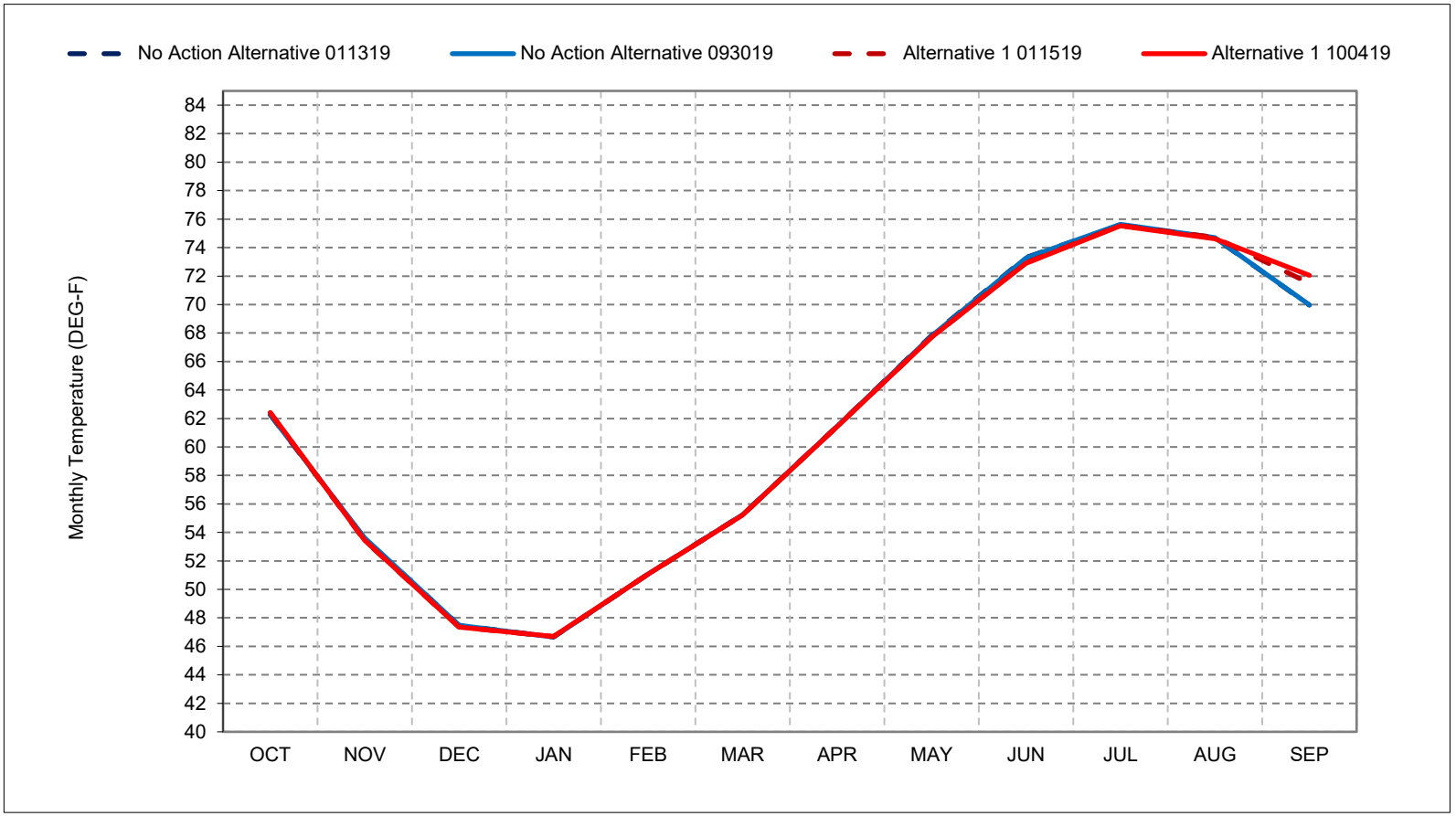
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-1. Feather River at Mouth, Long-Term Average Temperature

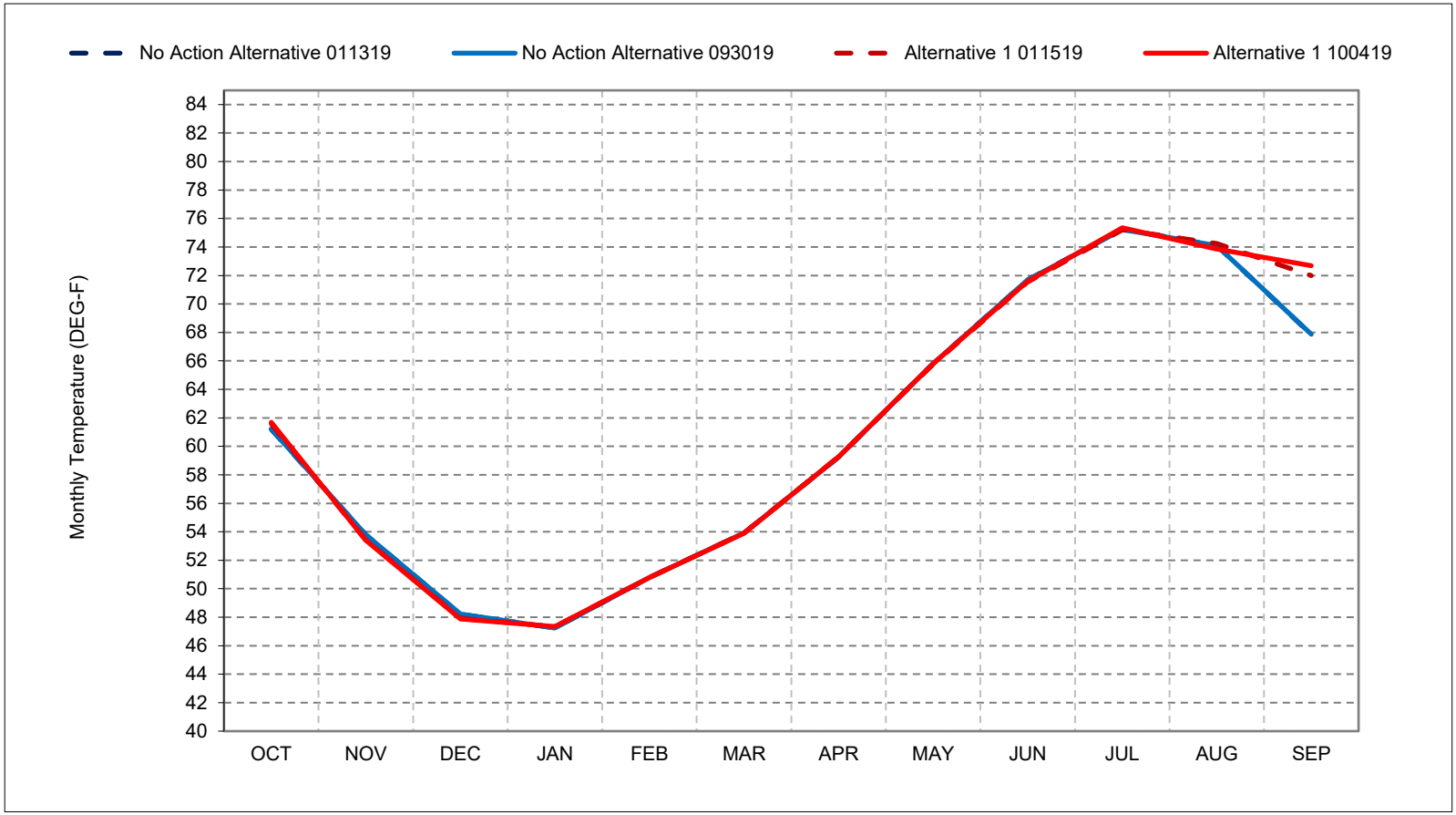



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-2. Feather River at Mouth, Wet Year Average Temperature

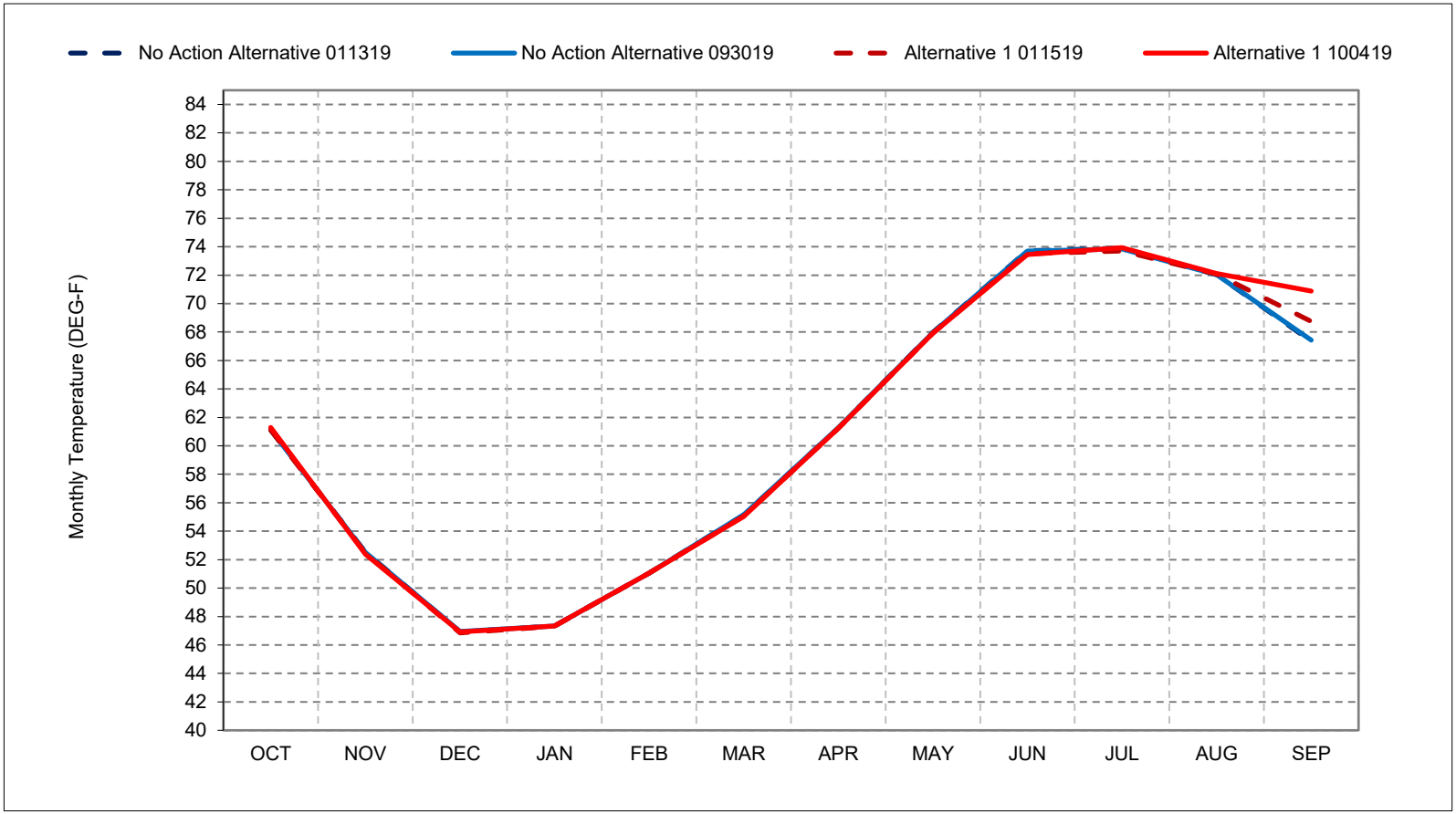



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-3. Feather River at Mouth, Above Normal Year Average Temperature

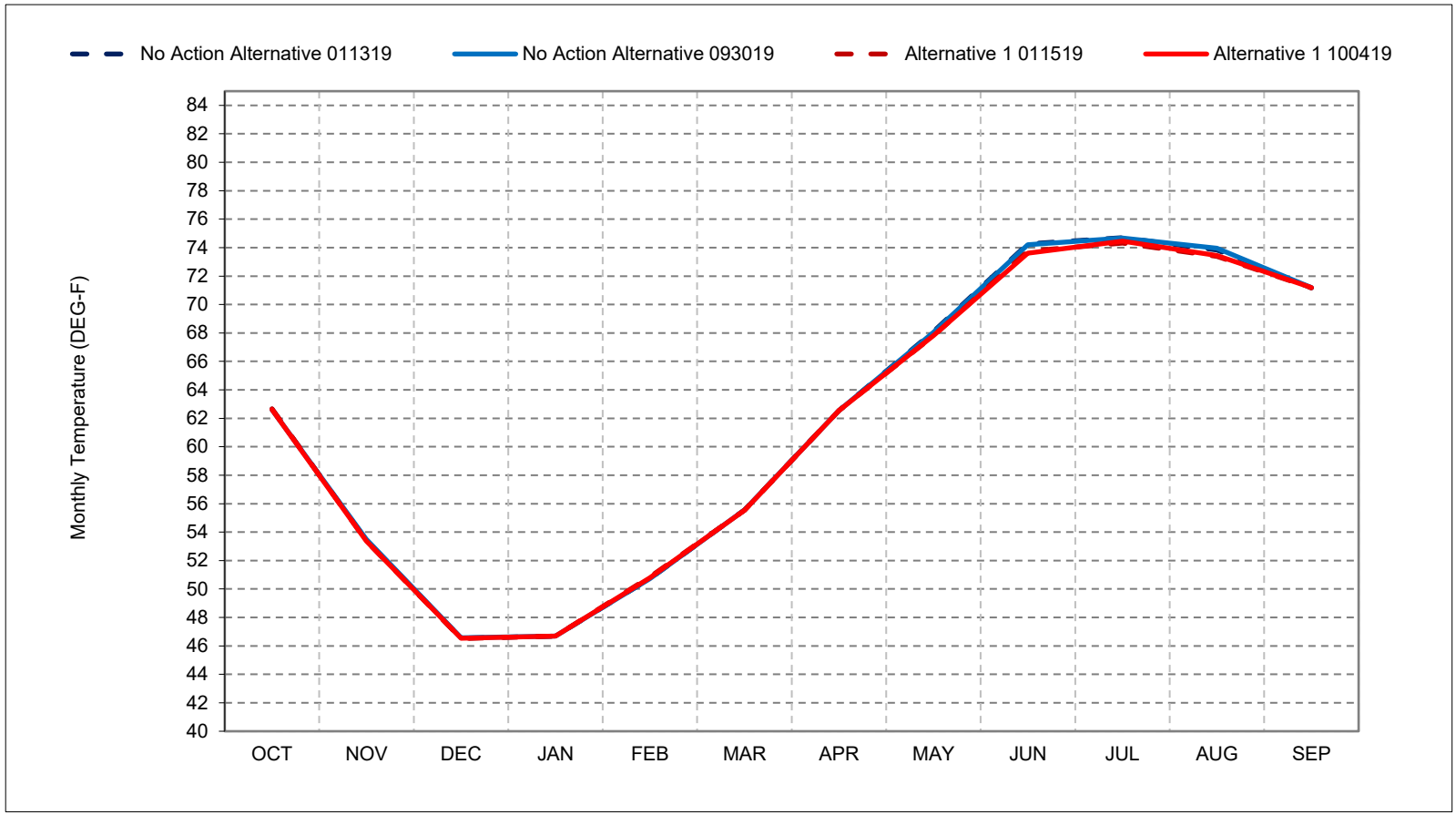



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-4. Feather River at Mouth, Below Normal Year Average Temperature

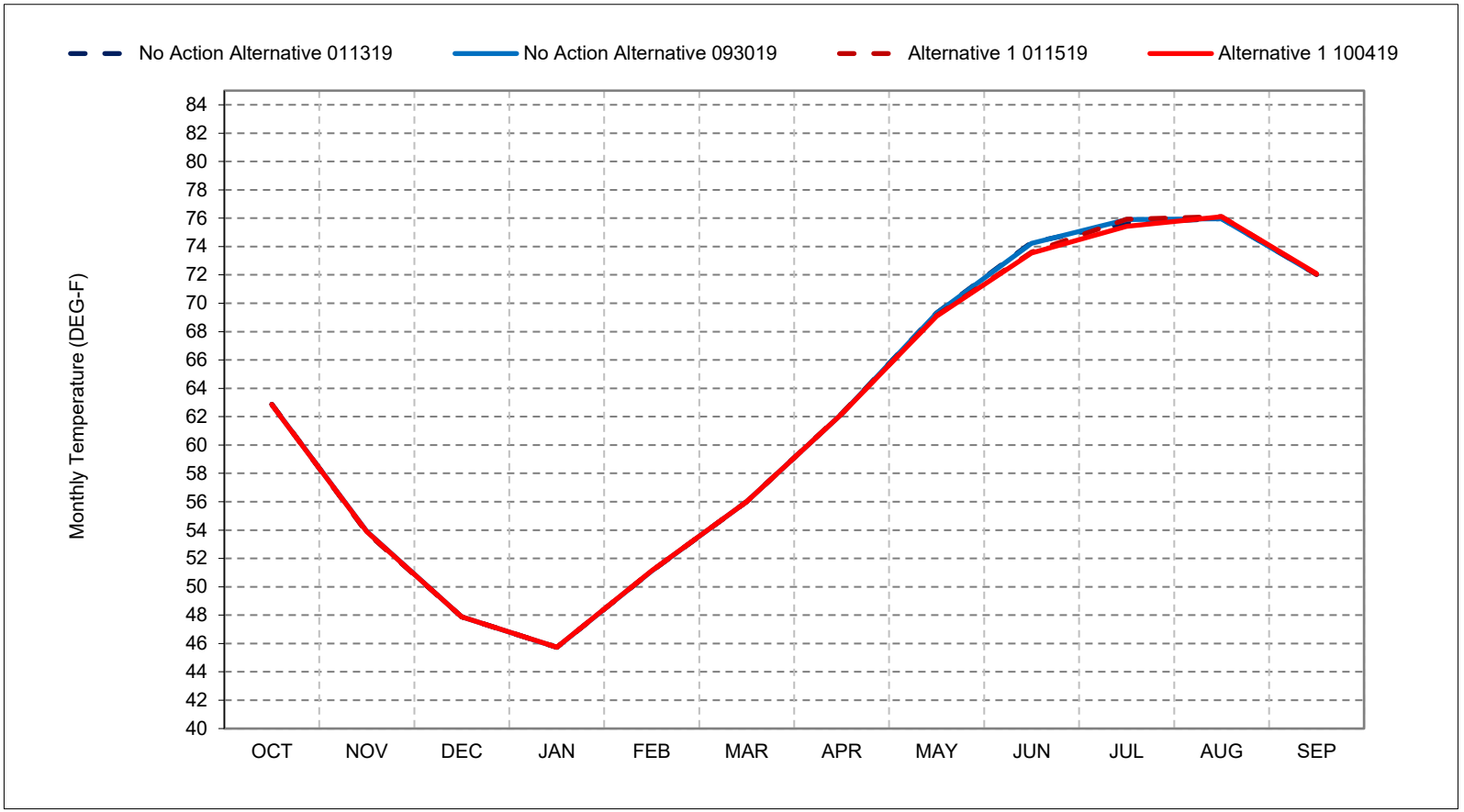



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-5. Feather River at Mouth, Dry Year Average Temperature

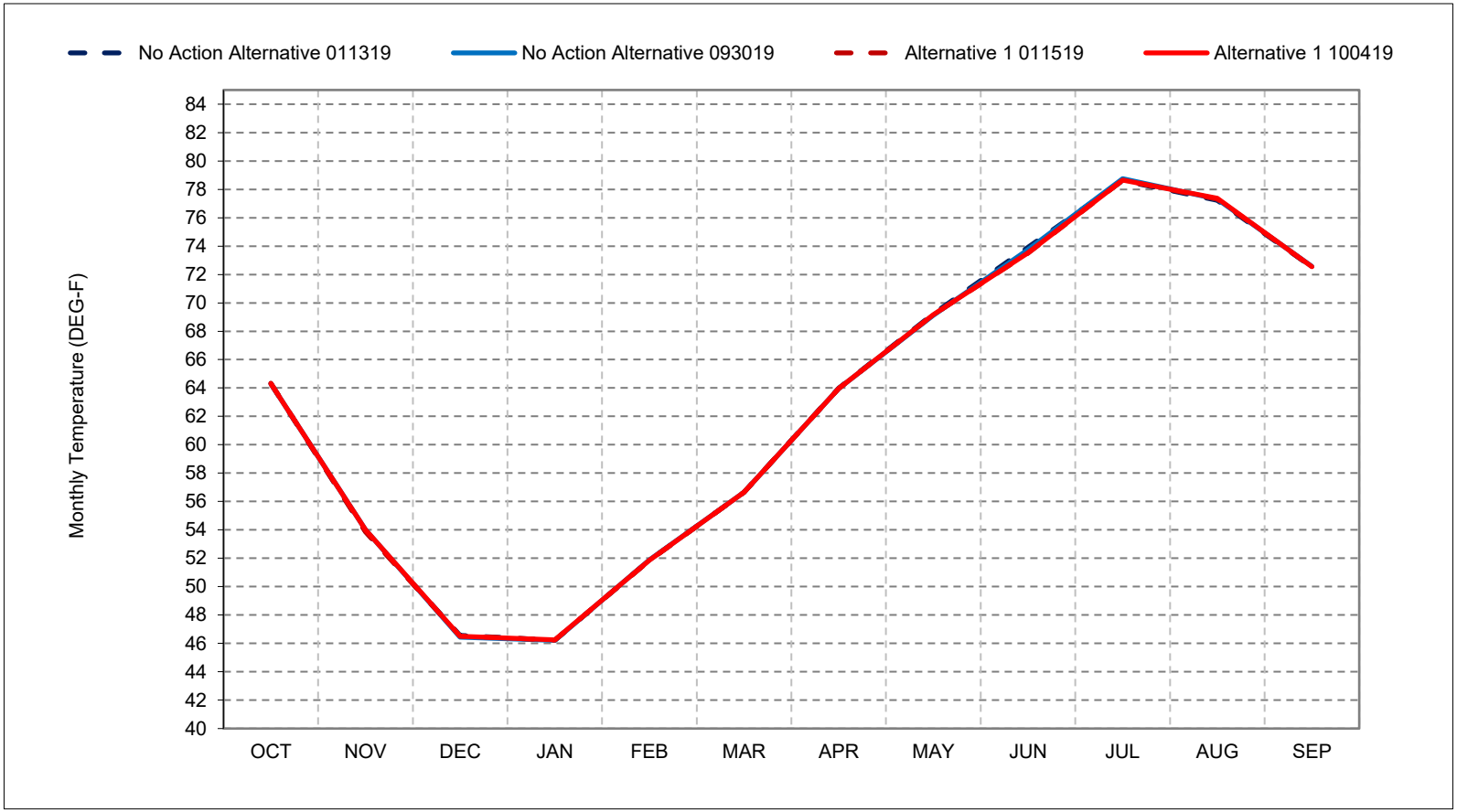



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-6. Feather River at Mouth, Critical Year Average Temperature

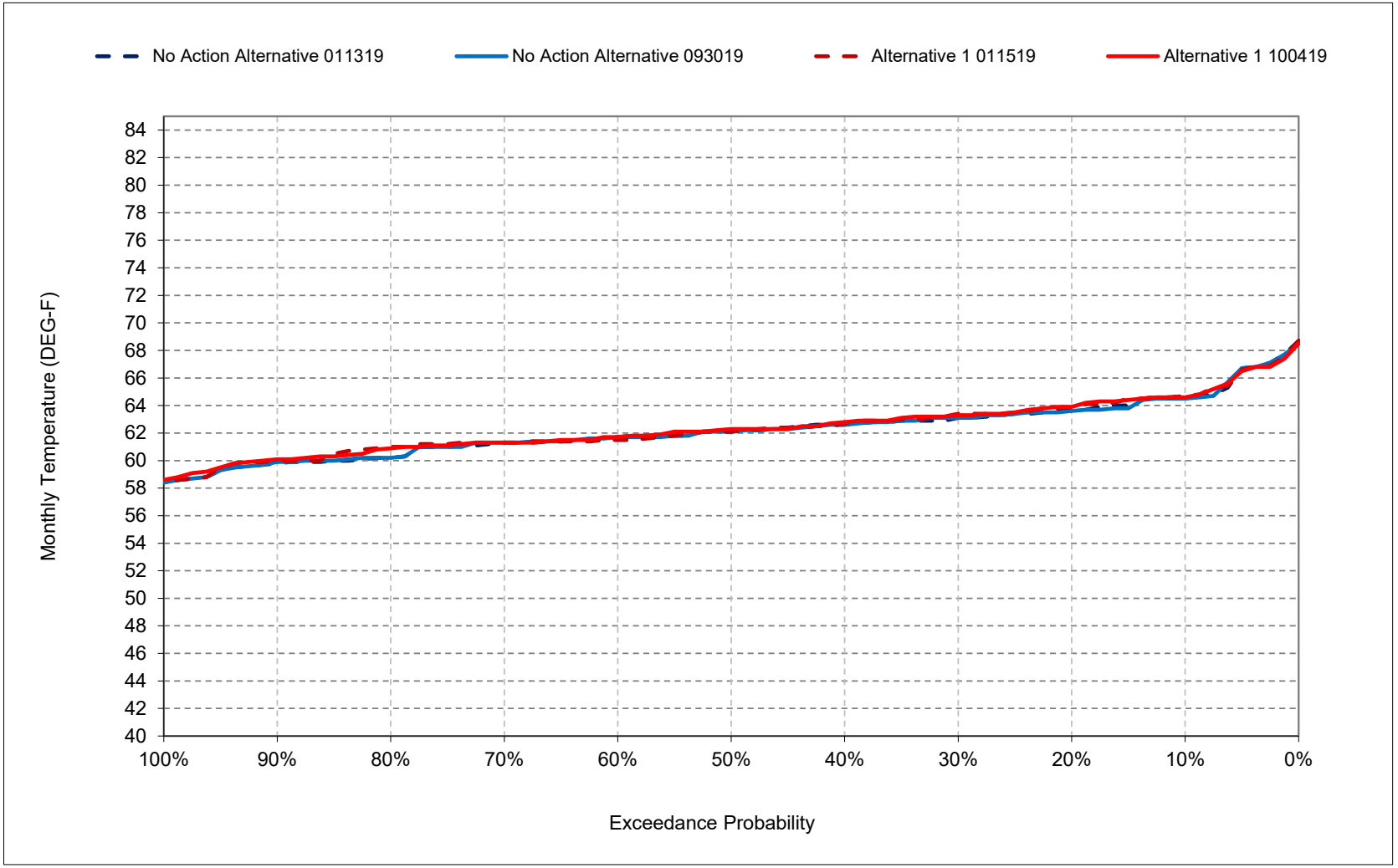



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

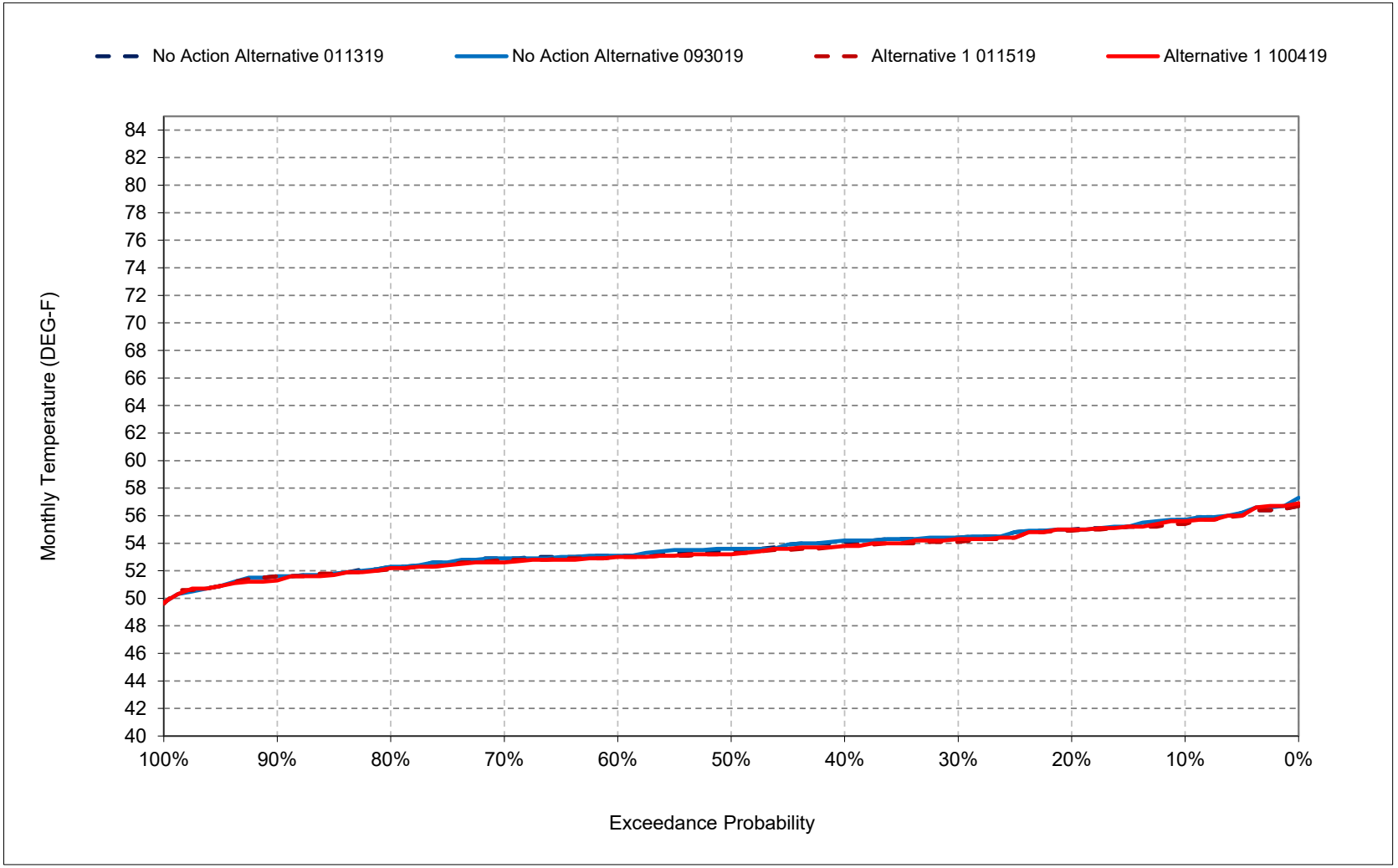
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-7. Feather River at Mouth, October**



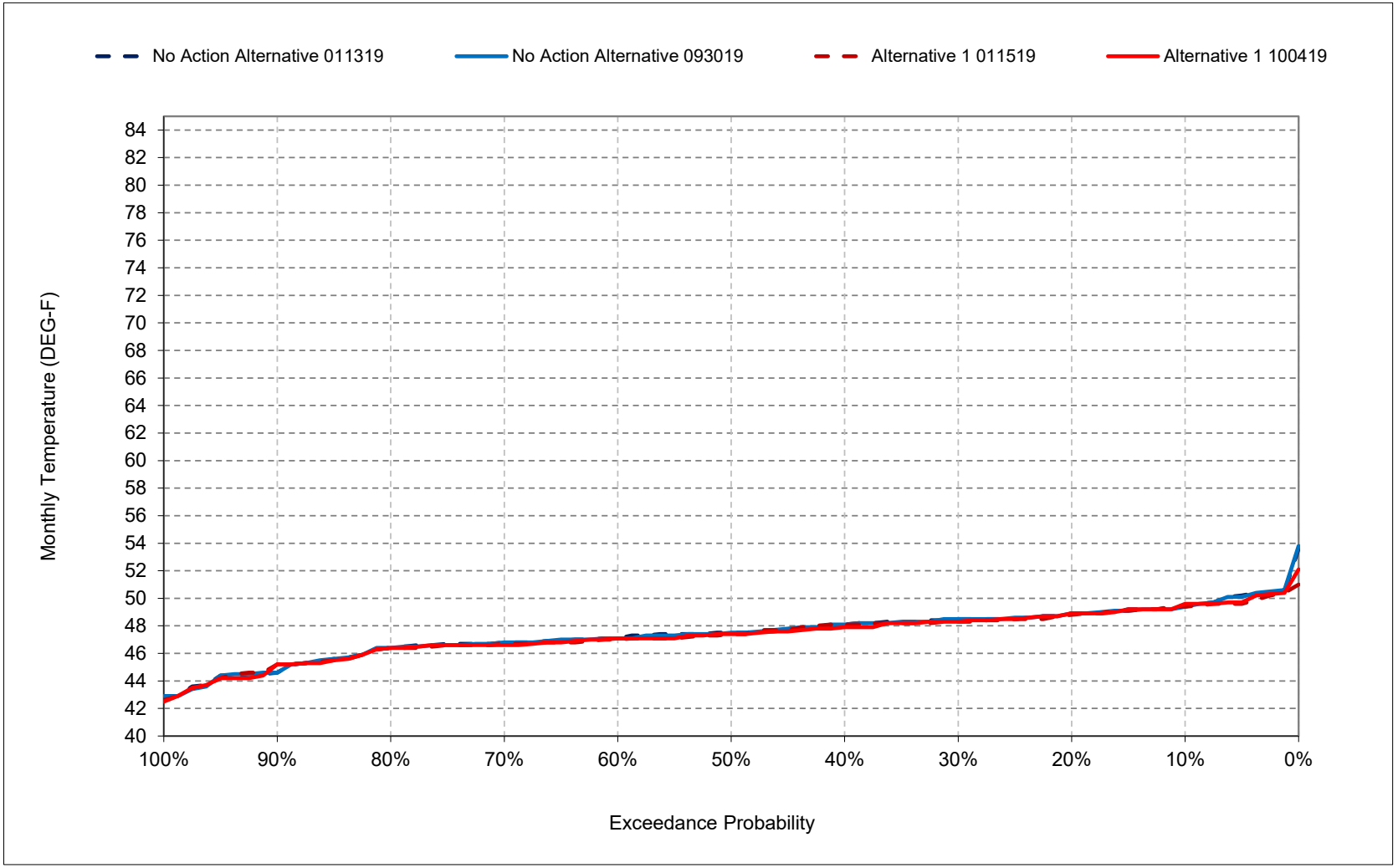

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-8. Feather River at Mouth, November**



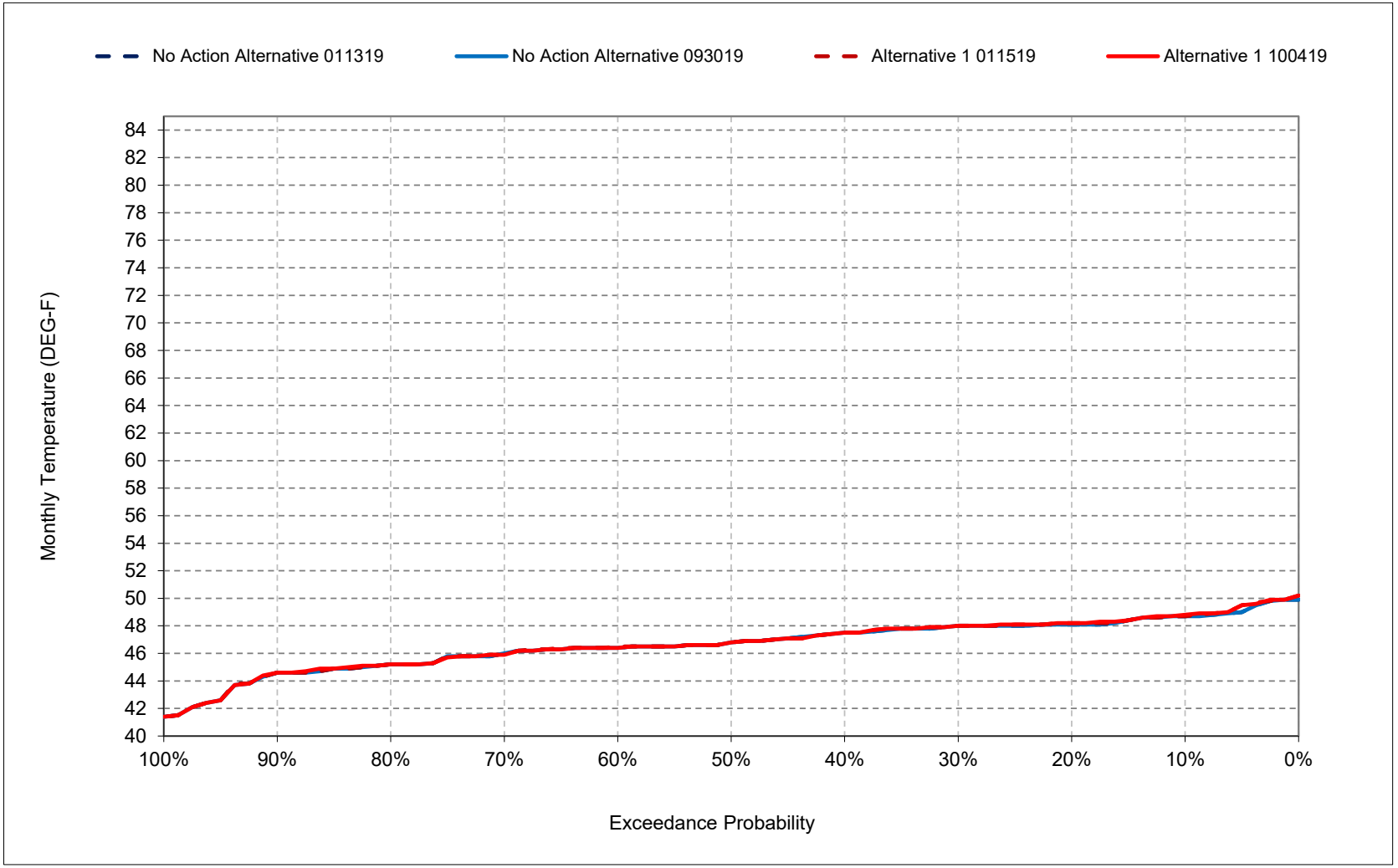

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-9. Feather River at Mouth, December**



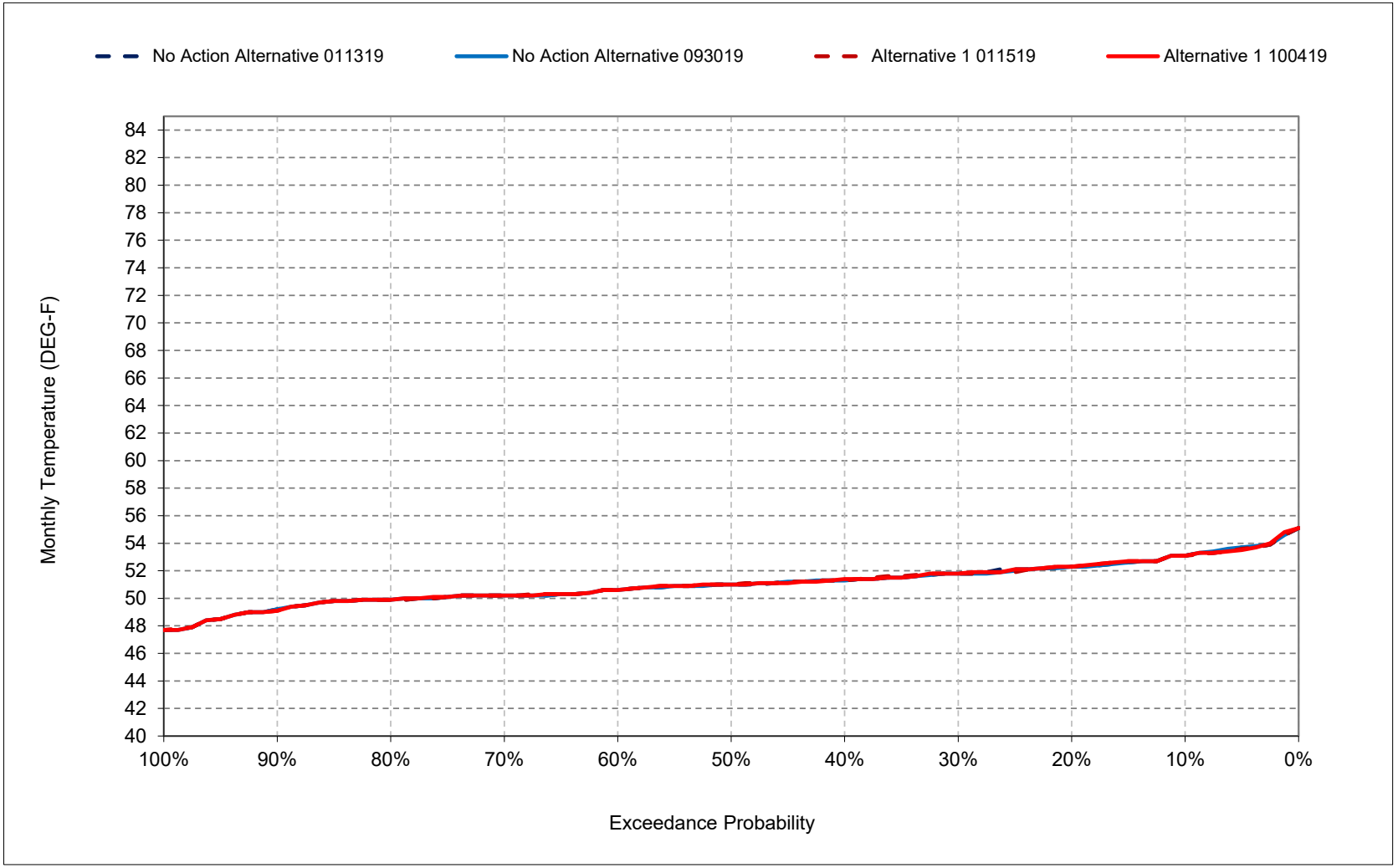

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-10. Feather River at Mouth, January**



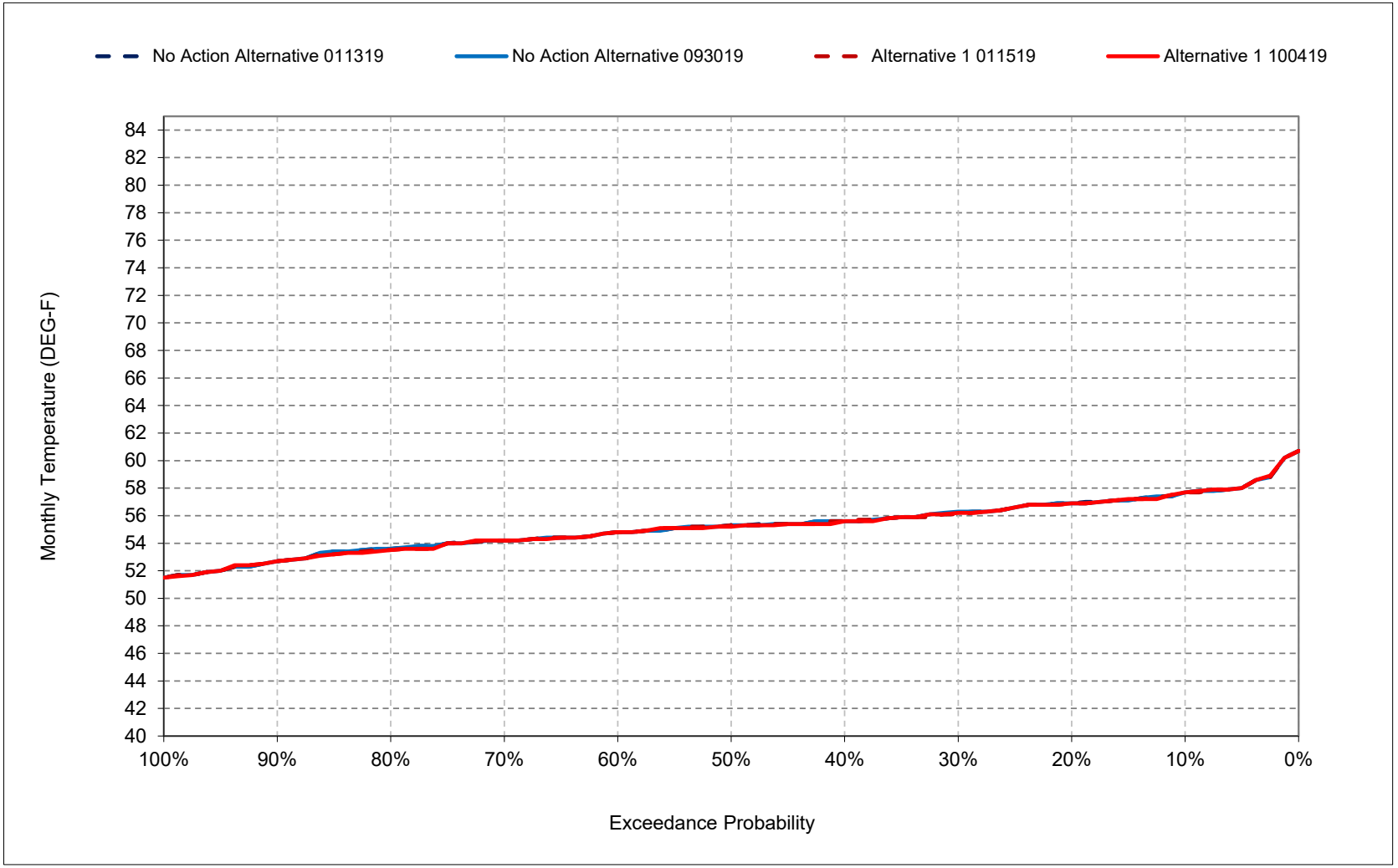

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-11. Feather River at Mouth, February**



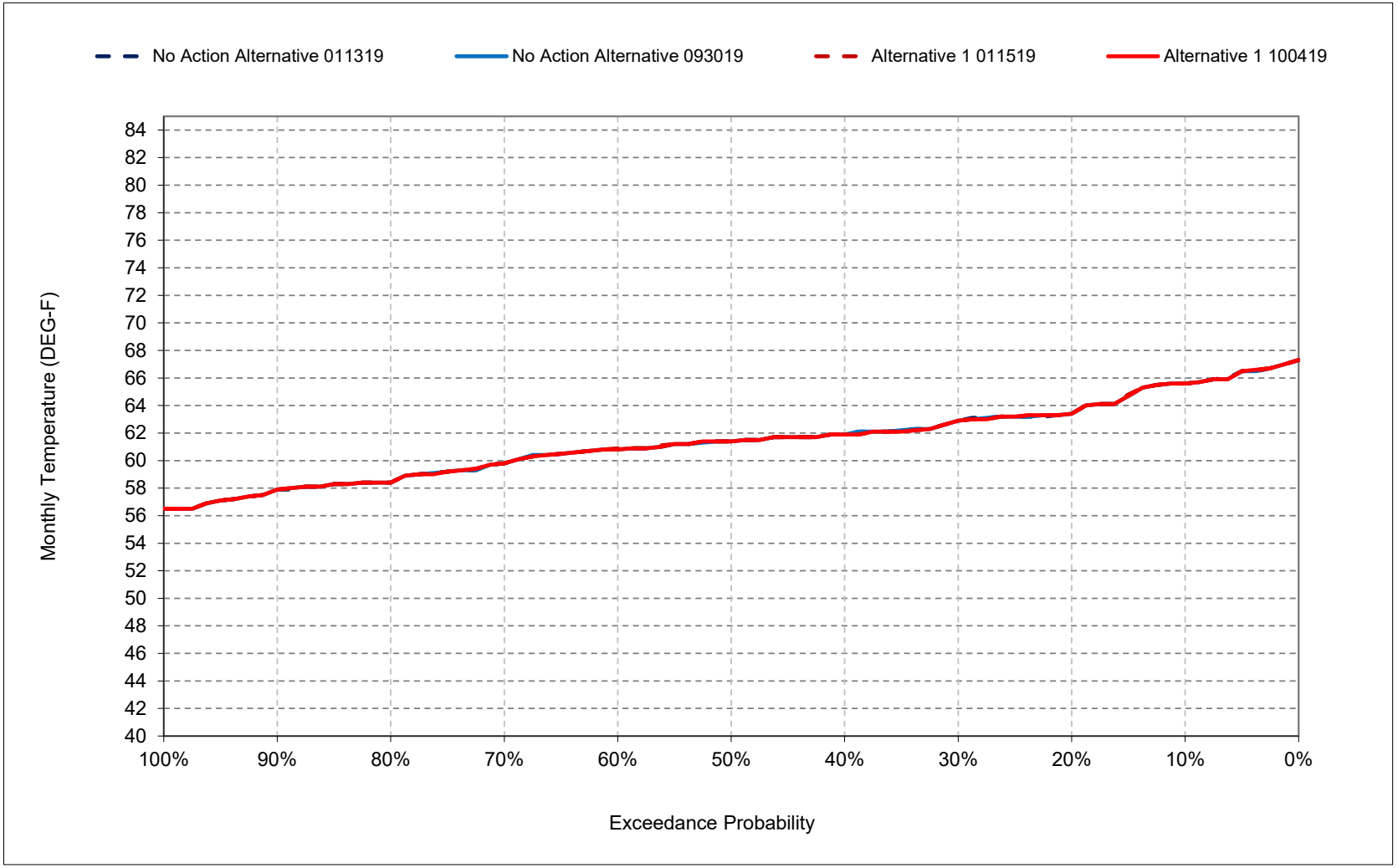

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-12. Feather River at Mouth, March**



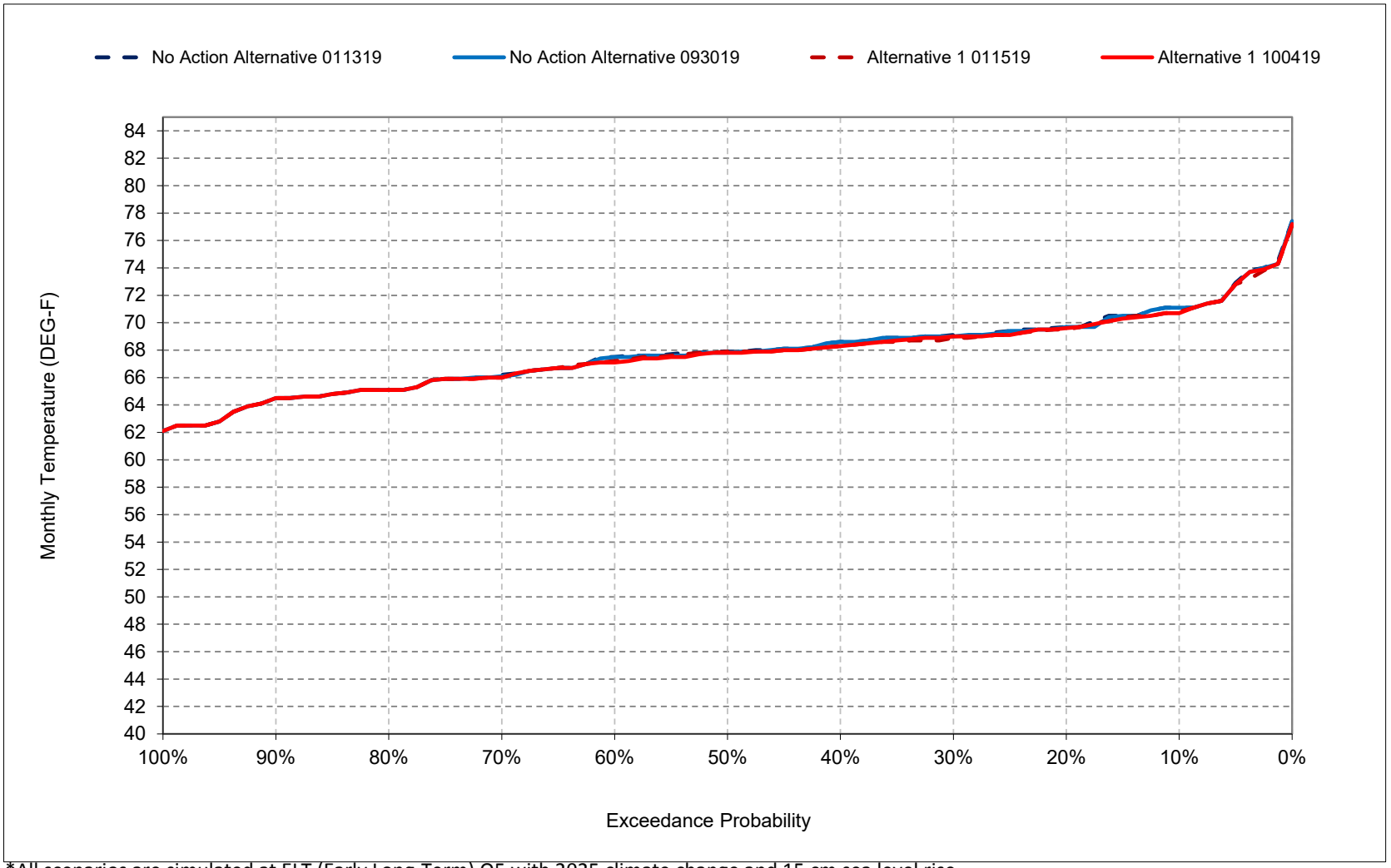

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-13. Feather River at Mouth, April**



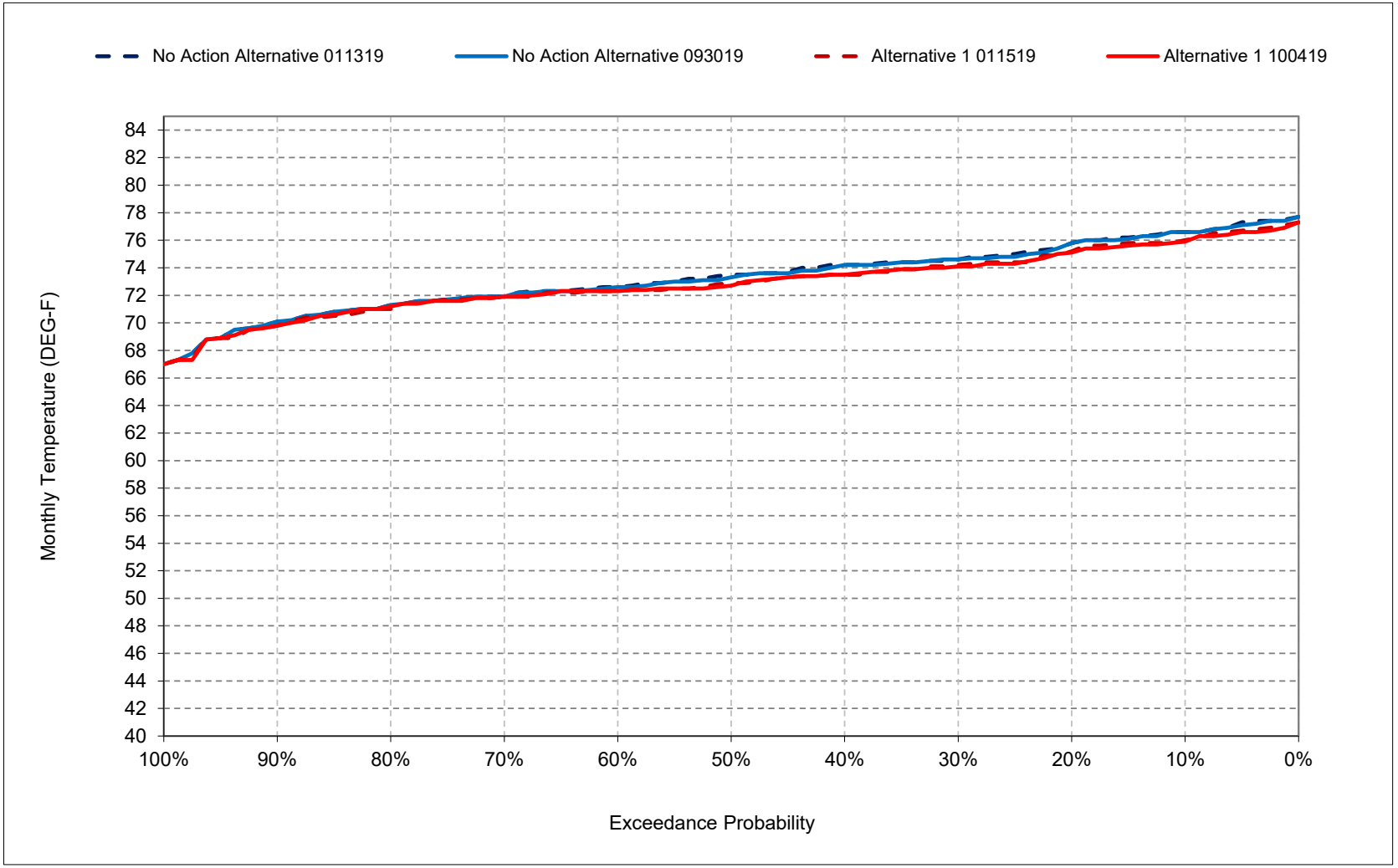

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-14. Feather River at Mouth, May**



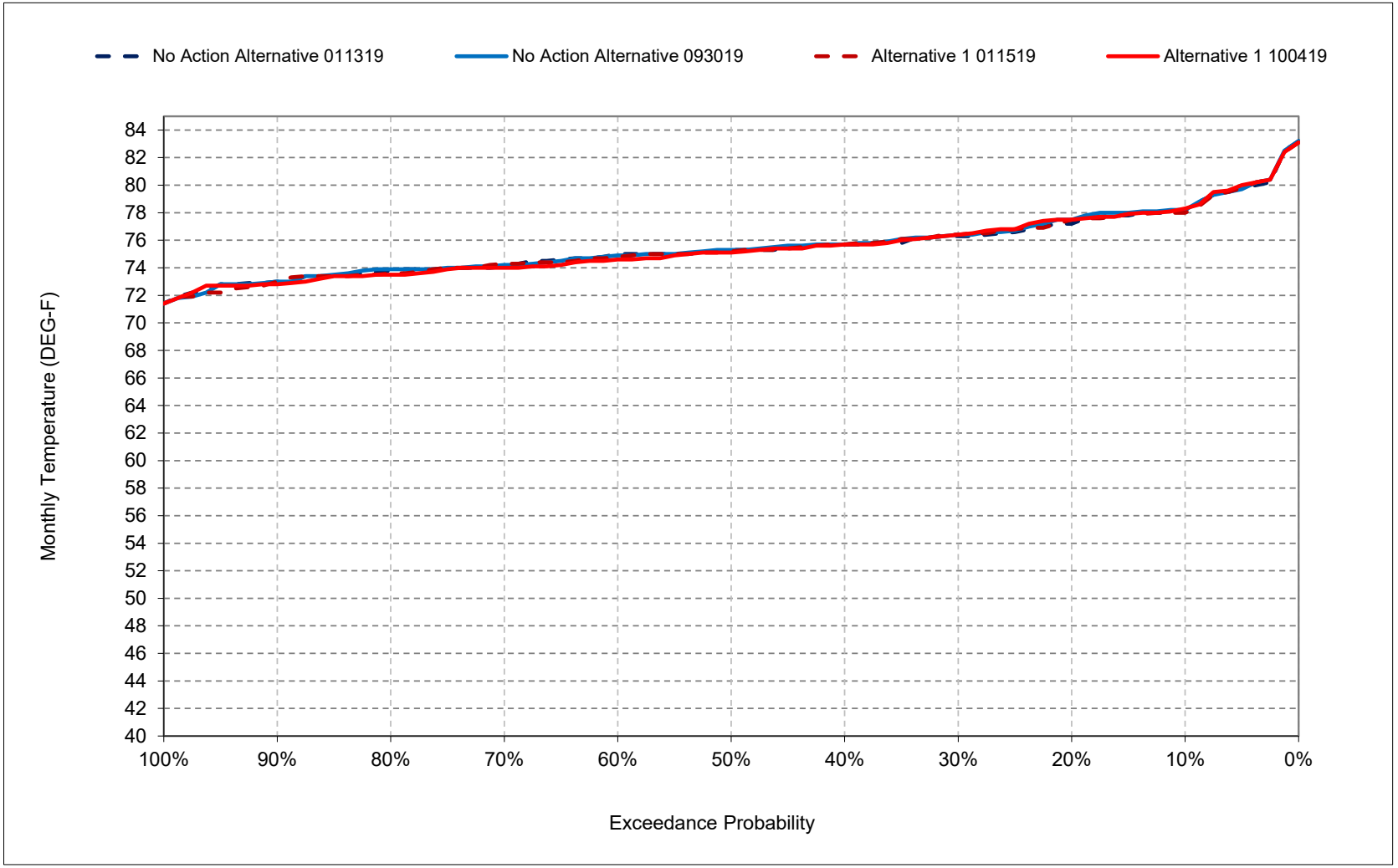

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-15. Feather River at Mouth, June**



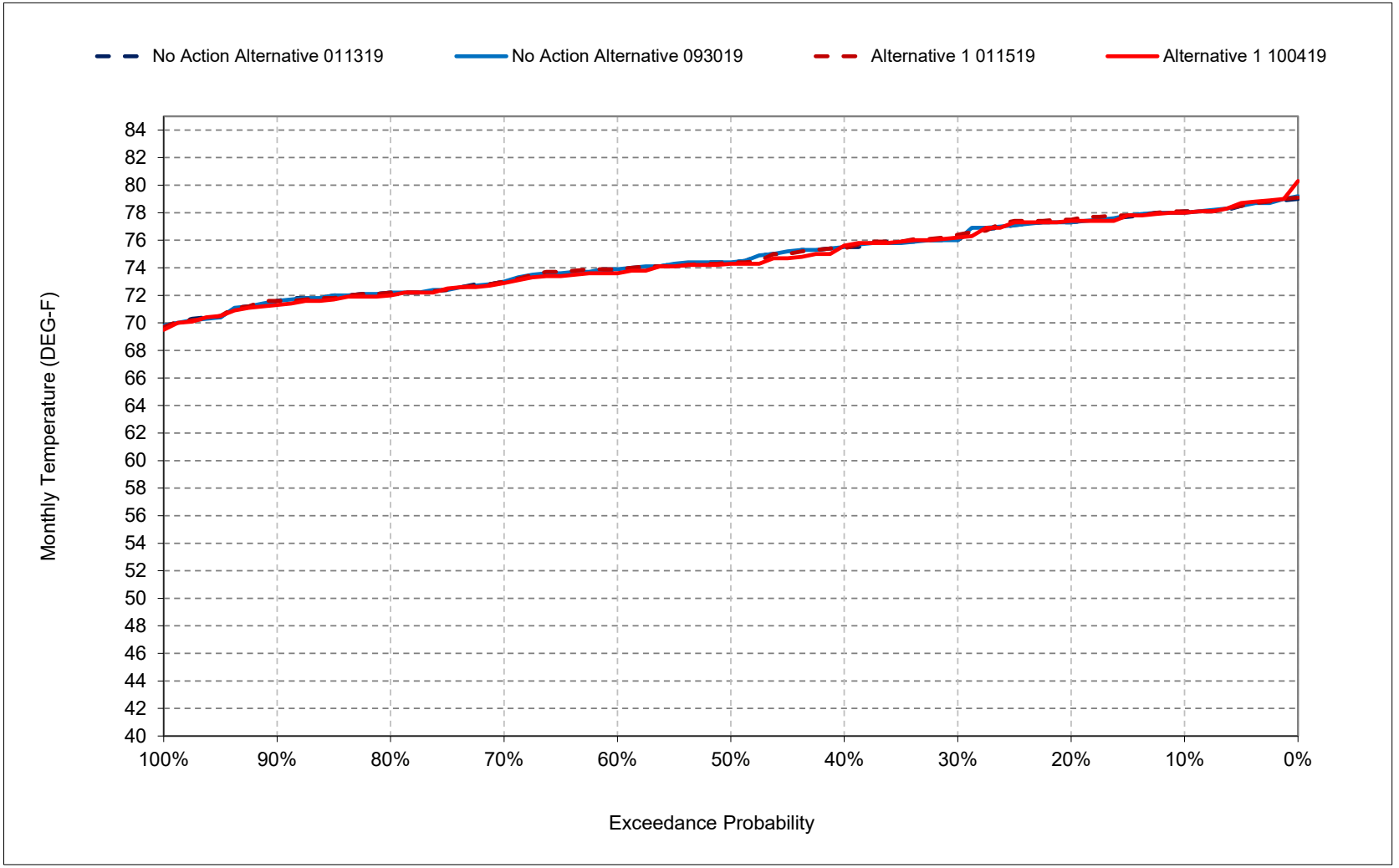

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-16. Feather River at Mouth, July**



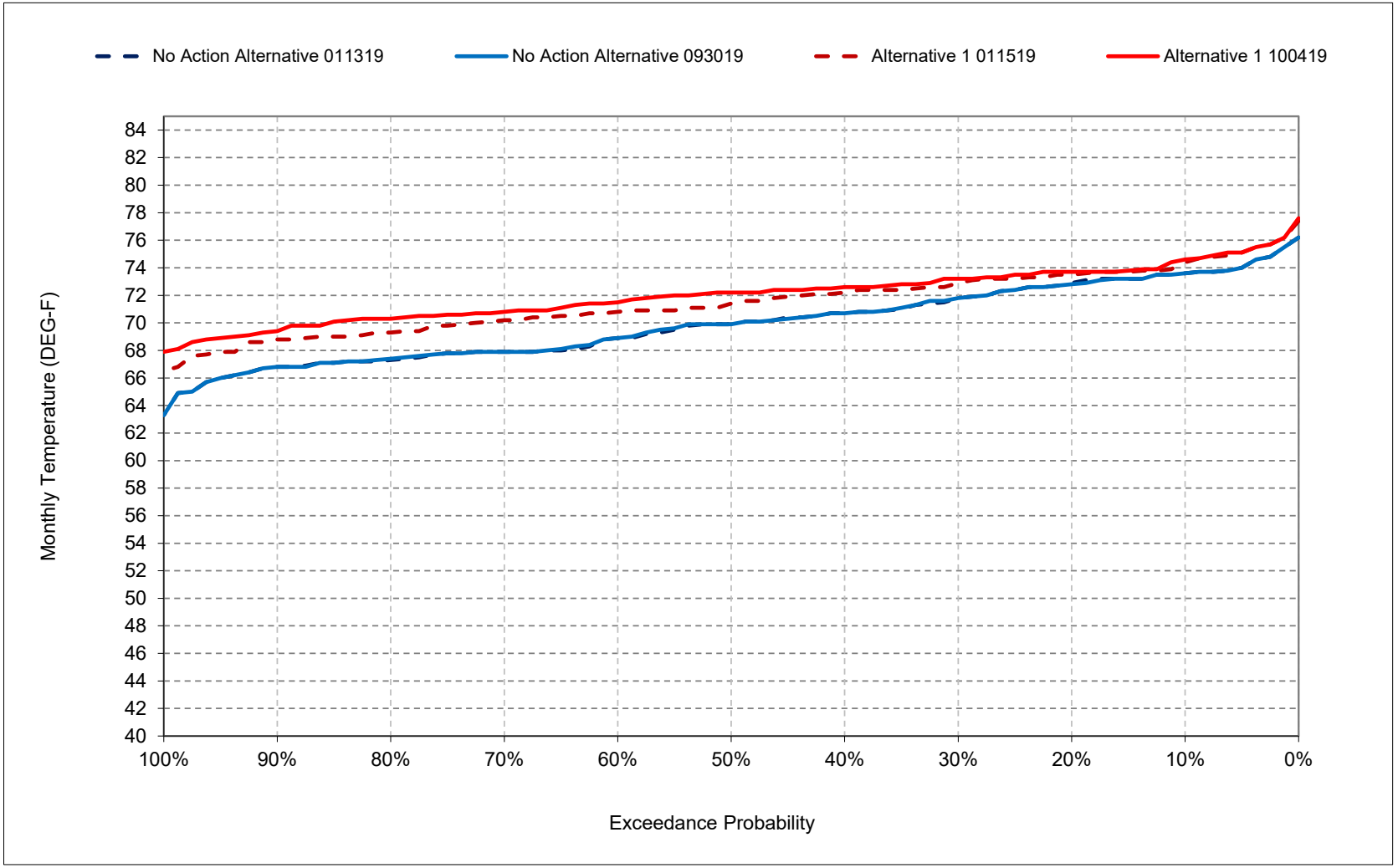

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-17. Feather River at Mouth, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-18. Feather River at Mouth, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.6 Salinity Results (DSM2-QUAL)

The following results of the DSM2-QUAL model are included for Delta salinity conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Sacramento River downstream of Steamboat Slough Salinity | SAC_DS_STMBTSL | 1-1 to 1-4 | None |
| Cache Slough at Ryer Island Salinity | CACHE_RYER | 2-1 to 2-4 | None |
| Sacramento River downstream of Georgiana Slough Salinity | RSAC123 | 3-1 to 3-4 | None |
| Sacramento River at Emmaton Salinity | RSAC092 | 4-1 to 4-4 | 4-1 to 4-18 |
| Sacramento River at Rio Vista Salinity | RSAC101 | 5-1 to 5-4 | 5-1 to 5-18 |
| San Joaquin River at Vernalis Salinity (40-30-30) | RSAN112 | 6-1 to 6-4 | 6-1 to 6-18 |
| San Joaquin River at Vernalis Salinity (60-20-20) | RSAN112 | 6b-1 to 6b-4 | 6b-1 to 6b-18 |
| San Joaquin River at Jersey Point Salinity | RSAN018 | 7-1 to 7-4 | 7-1 to 7-18 |
| Old River at Rock Slough Salinity | ROLD024 | 8-1 to 8-4 | 8-1 to 8-18 |
| San Joaquin River at Antioch Salinity | RSAN007 | 9-1 to 9-4 | 9-1 to 9-18 |
| Sacramento River at Mallard Slough Salinity | RSAC075 | 10-1 to 10-4 | 10-1 to 10-18 |
| Sacramento River at Collinsville Salinity | RSAC081 | 11-1 to 11-4 | 11-1 to 11-18 |
| Chipps Island North Channel Salinity | CHIPS_N_437 | 12-1 to 12-4 | 12-1 to 12-18 |
| Chipps Island South Channel Salinity | CHIPS_S_442 | 13-1 to 13-4 | 13-1 to 13-18 |
| Sacramento River at Port Chicago Salinity | RSAC064 | 14-1 to 14-4 | 14-1 to 14-18 |
| Jones Pumping Plant South Delta Exports Salinity | CHDMC006 | 15-1 to 15-4 | 15-1 to 15-18 |
| Banks Pumping Plant South Delta Exports Salinity | CLIFTON_COURT | 16-1 to 16-4 | 16-1 to 16-18 |
| Old River at Highway 4 | ROLD034 | 17-1 to 17-4 | 17-1 to 17-18 |
| Victoria Canal | CHVCT000 | 18-1 to 18-4 | 18-1 to 18-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 1-1. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 176 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-2. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 175 | 175 | 176 | 178 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 175 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 175 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 178 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-3. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 175 | 175 | 176 | 178 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | **0** | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** |
| 20% | 0 | 0 | **0** | **0** | 0 | **0** | **0** | 0 | 0 | **0** | **0** | **0** |
| 30% | 0 | 0 | 0 | **0** | 0 | **0** | **0** | 0 | 0 | **0** | **0** | **0** |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 |
| 50% | 0 | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | **0** | 0 | **0** |
| 60% | 0 | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **0** |
| 70% | 0 | 0 | 0 | **0** | **0** | 0 | **0** | **0** | 0 | 0 | **0** | **0** |
| 80% | 0 | **0** | 0 | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | **0** |
| 90% | **0** | 0 | 0 | **0** | **0** | 0 | 0 | **0** | **0** | 0 | **0** | **0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | **0** | **0** | **0** | **0** | **0** | **0** | 0 | **0** | **0** |
| Above Normal (16%) | 0 | 0 | 0 | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | **0** |
| Below Normal (13%) | 0 | 0 | **0** | 0 | **0** | **0** | **0** | 0 | 0 | **0** | **0** | **0** |
| Dry (24%) | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-4. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 176 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 175 | 176 | 177 | 176 | 176 | 175 | 176 | 176 | 175 | 175 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 175 | 176 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 176 | 176 | 175 | 175 | 176 | 175 | 175 | 176 |
| Above Normal (16%) | 175 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 175 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 178 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | **0** | 0 | **0** | 0 | 0 | **0** | **0** | **0** | **0** |
| 20% | 0 | **0** | **0** | **0** | 0 | **0** | 0 | **0** | **0** | **0** | **0** | **0** |
| 30% | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** |
| 40% | 0 | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| 50% | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| 70% | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** | 0 | **0** |
| 80% | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **0** | 0 | **0** | 0 | **0** |
| 90% | **0** | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** | 0 | **0** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| Above Normal (16%) | **0** | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| Below Normal (13%) | 0 | 0 | 0 | **0** | **0** | 0 | **0** | **0** | 0 | **0** | **0** | **0** |
| Dry (24%) | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **0** | **0** | **0** |
| Critical (15%) | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** | **0** | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-1. Cache Slough at Ryer Island Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 197 | 200 | 191 | 201 | 199 | 194 | 187 | 184 | 185 | 185 | 190 | 190 |
| 20% | 187 | 187 | 188 | 196 | 195 | 191 | 186 | 183 | 184 | 182 | 186 | 185 |
| 30% | 186 | 185 | 187 | 193 | 191 | 189 | 185 | 183 | 183 | 181 | 184 | 183 |
| 40% | 185 | 184 | 186 | 191 | 189 | 186 | 184 | 182 | 183 | 181 | 181 | 182 |
| 50% | 181 | 181 | 183 | 190 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 180 | 180 | 182 | 188 | 186 | 184 | 183 | 182 | 182 | 180 | 180 | 179 |
| 70% | 180 | 180 | 181 | 187 | 185 | 183 | 182 | 181 | 182 | 180 | 180 | 178 |
| 80% | 179 | 179 | 180 | 186 | 183 | 182 | 181 | 180 | 181 | 179 | 179 | 178 |
| 90% | 179 | 179 | 179 | 182 | 180 | 181 | 180 | 178 | 179 | 179 | 179 | 178 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 185 | 185 | 191 | 189 | 186 | 184 | 182 | 183 | 181 | 183 | 182 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 179 | 180 | 183 | 189 | 184 | 183 | 182 | 180 | 181 | 180 | 180 | 178 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 188 | 184 | 182 | 181 | 182 | 180 | 179 | 179 |
| Below Normal (13%) | 184 | 185 | 185 | 191 | 189 | 188 | 185 | 182 | 182 | 180 | 180 | 181 |
| Dry (24%) | 186 | 184 | 185 | 193 | 193 | 188 | 184 | 182 | 183 | 181 | 185 | 184 |
| Critical (15%) | 198 | 203 | 192 | 193 | 195 | 192 | 186 | 184 | 189 | 189 | 191 | 191 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 197 | 200 | 192 | 201 | 199 | 193 | 187 | 184 | 184 | 185 | 190 | 188 |
| 20% | 187 | 188 | 189 | 196 | 196 | 191 | 186 | 183 | 182 | 182 | 186 | 185 |
| 30% | 185 | 186 | 187 | 193 | 191 | 189 | 185 | 182 | 182 | 181 | 184 | 183 |
| 40% | 184 | 185 | 186 | 191 | 188 | 186 | 184 | 182 | 182 | 181 | 181 | 182 |
| 50% | 182 | 183 | 184 | 189 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 181 | 183 | 183 | 188 | 185 | 184 | 183 | 181 | 181 | 180 | 180 | 180 |
| 70% | 181 | 182 | 182 | 187 | 184 | 182 | 182 | 180 | 181 | 180 | 180 | 180 |
| 80% | 180 | 181 | 180 | 185 | 183 | 181 | 181 | 180 | 181 | 179 | 179 | 180 |
| 90% | 180 | 180 | 179 | 182 | 180 | 180 | 180 | 179 | 179 | 179 | 179 | 180 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 185 | 186 | 185 | 191 | 189 | 186 | 184 | 181 | 182 | 182 | 183 | 183 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 181 | 182 | 183 | 189 | 184 | 183 | 182 | 180 | 180 | 180 | 180 | 180 |
| Above Normal (16%) | 181 | 182 | 184 | 190 | 187 | 183 | 182 | 181 | 181 | 180 | 179 | 180 |
| Below Normal (13%) | 184 | 185 | 185 | 190 | 188 | 188 | 184 | 181 | 181 | 180 | 180 | 181 |
| Dry (24%) | 186 | 184 | 185 | 193 | 193 | 188 | 185 | 182 | 182 | 181 | 185 | 184 |
| Critical (15%) | 199 | 203 | 193 | 193 | 195 | 191 | 186 | 184 | 187 | 189 | 192 | 191 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **0** | **0** | **1** | **0** | 0 | 0 | 0 | **0** | -1 | **0** | **0** | -2 |
| 20% | **0** | **0** | **1** | **0** | **1** | **0** | 0 | 0 | -1 | **1** | **0** | **0** |
| 30% | 0 | **1** | 0 | **0** | 0 | 0 | **0** | 0 | -1 | **0** | **0** | 0 |
| 40% | 0 | **1** | 0 | 0 | -1 | 0 | **0** | 0 | -1 | **0** | 0 | 0 |
| 50% | **1** | **2** | **1** | -1 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **1** |
| 60% | **1** | **3** | **1** | 0 | 0 | **0** | **0** | 0 | -1 | 0 | 0 | **1** |
| 70% | **1** | **2** | **1** | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | **2** |
| 80% | **1** | **1** | **0** | -1 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **2** |
| 90% | **1** | **1** | 0 | **0** | 0 | 0 | **0** | **0** | **0** | **0** | **0** | **2** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **1** | **0** | 0 | 0 | 0 | 0 | 0 | -1 | **0** | **0** | **1** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **1** | **2** | **0** | -1 | 0 | 0 | **0** | 0 | 0 | **0** | **0** | **2** |
| Above Normal (16%) | **1** | **2** | **1** | 0 | -1 | 0 | **0** | 0 | 0 | 0 | 0 | **1** |
| Below Normal (13%) | 0 | **1** | **0** | 0 | -1 | -1 | 0 | 0 | -1 | 0 | 0 | 0 |
| Dry (24%) | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 | -1 | **0** | 0 | **0** |
| Critical (15%) | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | -2 | **0** | **1** | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-2. Cache Slough at Ryer Island Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 194 | 196 | 190 | 201 | 199 | 194 | 187 | 184 | 185 | 187 | 189 | 189 |
| 20% | 186 | 186 | 187 | 196 | 196 | 191 | 186 | 183 | 183 | 182 | 186 | 185 |
| 30% | 184 | 184 | 186 | 193 | 191 | 189 | 185 | 183 | 183 | 181 | 184 | 184 |
| 40% | 184 | 183 | 185 | 191 | 188 | 186 | 184 | 182 | 183 | 181 | 181 | 182 |
| 50% | 182 | 181 | 183 | 189 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 180 | 180 | 182 | 188 | 186 | 184 | 183 | 182 | 182 | 180 | 180 | 179 |
| 70% | 180 | 180 | 181 | 187 | 185 | 183 | 182 | 181 | 182 | 180 | 180 | 179 |
| 80% | 179 | 179 | 180 | 186 | 183 | 182 | 181 | 180 | 181 | 179 | 180 | 178 |
| 90% | 179 | 179 | 180 | 182 | 181 | 181 | 180 | 178 | 179 | 179 | 179 | 178 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 184 | 191 | 189 | 186 | 184 | 182 | 183 | 182 | 183 | 182 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 179 | 180 | 182 | 189 | 184 | 183 | 182 | 180 | 181 | 180 | 180 | 178 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 188 | 184 | 182 | 181 | 182 | 180 | 180 | 179 |
| Below Normal (13%) | 183 | 184 | 184 | 191 | 189 | 188 | 185 | 182 | 182 | 180 | 180 | 181 |
| Dry (24%) | 185 | 183 | 184 | 193 | 193 | 188 | 185 | 182 | 182 | 182 | 185 | 184 |
| Critical (15%) | 195 | 197 | 191 | 192 | 194 | 191 | 186 | 184 | 187 | 189 | 191 | 190 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 193 | 194 | 190 | 201 | 199 | 193 | 187 | 184 | 184 | 186 | 191 | 190 |
| 20% | 185 | 187 | 187 | 196 | 195 | 191 | 186 | 183 | 183 | 182 | 186 | 185 |
| 30% | 184 | 185 | 186 | 193 | 191 | 189 | 185 | 182 | 182 | 181 | 184 | 183 |
| 40% | 183 | 183 | 185 | 191 | 188 | 186 | 184 | 182 | 182 | 181 | 181 | 182 |
| 50% | 181 | 182 | 183 | 188 | 186 | 185 | 183 | 181 | 181 | 180 | 180 | 180 |
| 60% | 181 | 181 | 182 | 187 | 186 | 184 | 182 | 181 | 181 | 180 | 180 | 180 |
| 70% | 180 | 181 | 181 | 186 | 184 | 182 | 182 | 180 | 181 | 180 | 179 | 180 |
| 80% | 180 | 180 | 180 | 185 | 184 | 181 | 181 | 180 | 180 | 179 | 179 | 180 |
| 90% | 180 | 180 | 179 | 182 | 180 | 180 | 180 | 178 | 179 | 179 | 179 | 180 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 184 | 191 | 189 | 186 | 183 | 181 | 182 | 182 | 183 | 183 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 180 | 181 | 182 | 189 | 184 | 183 | 182 | 180 | 180 | 180 | 180 | 180 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 187 | 183 | 182 | 181 | 181 | 180 | 179 | 180 |
| Below Normal (13%) | 183 | 184 | 184 | 190 | 188 | 188 | 184 | 181 | 181 | 180 | 180 | 181 |
| Dry (24%) | 184 | 183 | 184 | 193 | 193 | 188 | 184 | 182 | 182 | 181 | 185 | 184 |
| Critical (15%) | 194 | 197 | 190 | 192 | 194 | 191 | 186 | 184 | 187 | 190 | 192 | 191 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -1 | -2 | 0 | 0 | 0 | 0 | 0 | **0** | -1 | 0 | **2** | **1** |
| 20% | 0 | **1** | 0 | **0** | -1 | 0 | **0** | -1 | -1 | **0** | 0 | 0 |
| 30% | 0 | **0** | -1 | **0** | **0** | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 40% | -1 | **0** | 0 | 0 | -1 | 0 | 0 | 0 | -1 | 0 | 0 | **0** |
| 50% | -1 | **1** | **0** | -1 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | **0** |
| 60% | **0** | **1** | **0** | -1 | 0 | **0** | 0 | -1 | -1 | 0 | 0 | **1** |
| 70% | **1** | **1** | **0** | -1 | 0 | 0 | **0** | 0 | -1 | 0 | 0 | **1** |
| 80% | **1** | **1** | **0** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| 90% | **1** | **1** | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **2** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | **1** | 0 | 0 | 0 | 0 | 0 | 0 | -1 | **0** | 0 | **1** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **1** | **1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| Above Normal (16%) | **0** | **1** | 0 | 0 | -1 | 0 | 0 | 0 | -1 | 0 | 0 | **1** |
| Below Normal (13%) | 0 | **0** | 0 | -1 | -1 | -1 | -1 | -1 | -1 | 0 | 0 | 0 |
| Dry (24%) | -1 | **0** | 0 | 0 | 0 | **0** | 0 | -1 | -1 | 0 | 0 | 0 |
| Critical (15%) | -1 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **1** | **1** | **1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-3. Cache Slough at Ryer Island Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 197 | 200 | 191 | 201 | 199 | 194 | 187 | 184 | 185 | 185 | 190 | 190 |
| 20% | 187 | 187 | 188 | 196 | 195 | 191 | 186 | 183 | 184 | 182 | 186 | 185 |
| 30% | 186 | 185 | 187 | 193 | 191 | 189 | 185 | 183 | 183 | 181 | 184 | 183 |
| 40% | 185 | 184 | 186 | 191 | 189 | 186 | 184 | 182 | 183 | 181 | 181 | 182 |
| 50% | 181 | 181 | 183 | 190 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 180 | 180 | 182 | 188 | 186 | 184 | 183 | 182 | 182 | 180 | 180 | 179 |
| 70% | 180 | 180 | 181 | 187 | 185 | 183 | 182 | 181 | 182 | 180 | 180 | 178 |
| 80% | 179 | 179 | 180 | 186 | 183 | 182 | 181 | 180 | 181 | 179 | 179 | 178 |
| 90% | 179 | 179 | 179 | 182 | 180 | 181 | 180 | 178 | 179 | 179 | 179 | 178 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 185 | 185 | 191 | 189 | 186 | 184 | 182 | 183 | 181 | 183 | 182 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 179 | 180 | 183 | 189 | 184 | 183 | 182 | 180 | 181 | 180 | 180 | 178 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 188 | 184 | 182 | 181 | 182 | 180 | 179 | 179 |
| Below Normal (13%) | 184 | 185 | 185 | 191 | 189 | 188 | 185 | 182 | 182 | 180 | 180 | 181 |
| Dry (24%) | 186 | 184 | 185 | 193 | 193 | 188 | 184 | 182 | 183 | 181 | 185 | 184 |
| Critical (15%) | 198 | 203 | 192 | 193 | 195 | 192 | 186 | 184 | 189 | 189 | 191 | 191 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 194 | 196 | 190 | 201 | 199 | 194 | 187 | 184 | 185 | 187 | 189 | 189 |
| 20% | 186 | 186 | 187 | 196 | 196 | 191 | 186 | 183 | 183 | 182 | 186 | 185 |
| 30% | 184 | 184 | 186 | 193 | 191 | 189 | 185 | 183 | 183 | 181 | 184 | 184 |
| 40% | 184 | 183 | 185 | 191 | 188 | 186 | 184 | 182 | 183 | 181 | 181 | 182 |
| 50% | 182 | 181 | 183 | 189 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 180 | 180 | 182 | 188 | 186 | 184 | 183 | 182 | 182 | 180 | 180 | 179 |
| 70% | 180 | 180 | 181 | 187 | 185 | 183 | 182 | 181 | 182 | 180 | 180 | 179 |
| 80% | 179 | 179 | 180 | 186 | 183 | 182 | 181 | 180 | 181 | 179 | 180 | 178 |
| 90% | 179 | 179 | 180 | 182 | 181 | 181 | 180 | 178 | 179 | 179 | 179 | 178 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 184 | 191 | 189 | 186 | 184 | 182 | 183 | 182 | 183 | 182 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 179 | 180 | 182 | 189 | 184 | 183 | 182 | 180 | 181 | 180 | 180 | 178 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 188 | 184 | 182 | 181 | 182 | 180 | 180 | 179 |
| Below Normal (13%) | 183 | 184 | 184 | 191 | 189 | 188 | 185 | 182 | 182 | 180 | 180 | 181 |
| Dry (24%) | 185 | 183 | 184 | 193 | 193 | 188 | 185 | 182 | 182 | 182 | 185 | 184 |
| Critical (15%) | 195 | 197 | 191 | 192 | 194 | 191 | 186 | 184 | 187 | 189 | 191 | 190 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3 | -3 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | -1 | -1 |
| 20% | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 30% | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | -1 | -1 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | -3 | -7 | -2 | -1 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 2-4. Cache Slough at Ryer Island Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 197 | 200 | 192 | 201 | 199 | 193 | 187 | 184 | 184 | 185 | 190 | 188 |
| 20% | 187 | 188 | 189 | 196 | 196 | 191 | 186 | 183 | 182 | 182 | 186 | 185 |
| 30% | 185 | 186 | 187 | 193 | 191 | 189 | 185 | 182 | 182 | 181 | 184 | 183 |
| 40% | 184 | 185 | 186 | 191 | 188 | 186 | 184 | 182 | 182 | 181 | 181 | 182 |
| 50% | 182 | 183 | 184 | 189 | 187 | 185 | 183 | 182 | 182 | 180 | 180 | 180 |
| 60% | 181 | 183 | 183 | 188 | 185 | 184 | 183 | 181 | 181 | 180 | 180 | 180 |
| 70% | 181 | 182 | 182 | 187 | 184 | 182 | 182 | 180 | 181 | 180 | 180 | 180 |
| 80% | 180 | 181 | 180 | 185 | 183 | 181 | 181 | 180 | 181 | 179 | 179 | 180 |
| 90% | 180 | 180 | 179 | 182 | 180 | 180 | 180 | 179 | 179 | 179 | 179 | 180 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 185 | 186 | 185 | 191 | 189 | 186 | 184 | 181 | 182 | 182 | 183 | 183 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 181 | 182 | 183 | 189 | 184 | 183 | 182 | 180 | 180 | 180 | 180 | 180 |
| Above Normal (16%) | 181 | 182 | 184 | 190 | 187 | 183 | 182 | 181 | 181 | 180 | 179 | 180 |
| Below Normal (13%) | 184 | 185 | 185 | 190 | 188 | 188 | 184 | 181 | 181 | 180 | 180 | 181 |
| Dry (24%) | 186 | 184 | 185 | 193 | 193 | 188 | 185 | 182 | 182 | 181 | 185 | 184 |
| Critical (15%) | 199 | 203 | 193 | 193 | 195 | 191 | 186 | 184 | 187 | 189 | 192 | 191 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 193 | 194 | 190 | 201 | 199 | 193 | 187 | 184 | 184 | 186 | 191 | 190 |
| 20% | 185 | 187 | 187 | 196 | 195 | 191 | 186 | 183 | 183 | 182 | 186 | 185 |
| 30% | 184 | 185 | 186 | 193 | 191 | 189 | 185 | 182 | 182 | 181 | 184 | 183 |
| 40% | 183 | 183 | 185 | 191 | 188 | 186 | 184 | 182 | 182 | 181 | 181 | 182 |
| 50% | 181 | 182 | 183 | 188 | 186 | 185 | 183 | 181 | 181 | 180 | 180 | 180 |
| 60% | 181 | 181 | 182 | 187 | 186 | 184 | 182 | 181 | 181 | 180 | 180 | 180 |
| 70% | 180 | 181 | 181 | 186 | 184 | 182 | 182 | 180 | 181 | 180 | 179 | 180 |
| 80% | 180 | 180 | 180 | 185 | 184 | 181 | 181 | 180 | 180 | 179 | 179 | 180 |
| 90% | 180 | 180 | 179 | 182 | 180 | 180 | 180 | 178 | 179 | 179 | 179 | 180 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 184 | 184 | 191 | 189 | 186 | 183 | 181 | 182 | 182 | 183 | 183 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 180 | 181 | 182 | 189 | 184 | 183 | 182 | 180 | 180 | 180 | 180 | 180 |
| Above Normal (16%) | 180 | 180 | 183 | 190 | 187 | 183 | 182 | 181 | 181 | 180 | 179 | 180 |
| Below Normal (13%) | 183 | 184 | 184 | 190 | 188 | 188 | 184 | 181 | 181 | 180 | 180 | 181 |
| Dry (24%) | 184 | 183 | 184 | 193 | 193 | 188 | 184 | 182 | 182 | 181 | 185 | 184 |
| Critical (15%) | 194 | 197 | 190 | 192 | 194 | 191 | 186 | 184 | 187 | 190 | 192 | 191 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -4 | -6 | -2 | -1 | 0 | **0** | **0** | 0 | 0 | **1** | **1** | **2** |
| 20% | -2 | -1 | -2 | 0 | -1 | 0 | 0 | **0** | **0** | **0** | 0 | 0 |
| 30% | -1 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| 40% | -1 | -2 | -1 | **0** | 0 | **0** | 0 | **0** | 0 | 0 | 0 | **1** |
| 50% | -1 | -2 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | -1 | -2 | -1 | -1 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | -1 | -1 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| 90% | 0 | **0** | 0 | **0** | **0** | 0 | **0** | 0 | **0** | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -2 | -1 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | -1 | -1 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -1 | -2 | -1 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 |
| Below Normal (13%) | -1 | -1 | -1 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | **0** | **0** |
| Dry (24%) | -2 | -1 | -1 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | -5 | -6 | -2 | -1 | 0 | **0** | 0 | 0 | **0** | **1** | **0** | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-1. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 179 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 176 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 176 | 176 | 176 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 |
| 20% | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 |
| 30% | 0 | **0** | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** |
| 40% | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** | 0 |
| 50% | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** |
| 60% | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** |
| 70% | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** |
| 80% | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 | **0** |
| 90% | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 | **0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** |
| Above Normal (16%) | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** |
| Below Normal (13%) | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | **0** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 |
| Critical (15%) | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-2. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 179 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 70% | 176 | 176 | 176 | 177 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 176 | 176 | 176 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-3. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 179 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 179 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 70% | 176 | 175 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 175 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 175 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 175 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 175 | 176 | 175 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 175 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 3-4. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 177 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 70% | 176 | 176 | 176 | 178 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 176 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 176 | 176 | 176 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 176 | 177 | 178 | 181 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 20% | 176 | 176 | 178 | 180 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |
| 30% | 176 | 176 | 177 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 40% | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 50% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 60% | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| 70% | 176 | 176 | 176 | 177 | 176 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| 80% | 175 | 175 | 176 | 177 | 176 | 176 | 175 | 175 | 176 | 175 | 176 | 176 |
| 90% | 175 | 175 | 175 | 177 | 176 | 175 | 175 | 175 | 175 | 175 | 176 | 176 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 175 | 176 | 176 | 176 | 176 |
| Above Normal (16%) | 176 | 176 | 177 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Below Normal (13%) | 176 | 176 | 176 | 178 | 177 | 176 | 176 | 176 | 176 | 175 | 176 | 176 |
| Dry (24%) | 176 | 176 | 176 | 179 | 177 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Critical (15%) | 176 | 176 | 178 | 179 | 178 | 177 | 176 | 176 | 176 | 176 | 176 | 176 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-1. Sacramento River at Emmaton Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 4,263 | 4,349 | 2,795 | 1,037 | 329 | 309 | 364 | 585 | 884 | 1,642 | 2,755 | 3,560 |
| **20%** | 3,477 | 2,922 | 1,767 | 770 | 258 | 233 | 245 | 429 | 703 | 1,046 | 2,289 | 3,013 |
| **30%** | 3,295 | 2,748 | 996 | 542 | 229 | 199 | 219 | 363 | 652 | 901 | 2,153 | 2,931 |
| **40%** | 3,153 | 1,983 | 792 | 387 | 206 | 194 | 204 | 245 | 559 | 631 | 1,326 | 2,531 |
| **50%** | 1,697 | 520 | 582 | 309 | 196 | 190 | 197 | 215 | 465 | 480 | 1,051 | 1,863 |
| **60%** | 654 | 459 | 503 | 222 | 190 | 188 | 190 | 207 | 376 | 363 | 984 | 541 |
| **70%** | 310 | 257 | 268 | 195 | 185 | 183 | 188 | 196 | 301 | 334 | 905 | 347 |
| **80%** | 282 | 239 | 208 | 188 | 183 | 181 | 184 | 185 | 235 | 313 | 797 | 328 |
| **90%** | 270 | 227 | 182 | 182 | 182 | 181 | 181 | 180 | 188 | 283 | 736 | 310 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,993 | 1,566 | 992 | 492 | 257 | 223 | 241 | 341 | 596 | 772 | 1,502 | 1,731 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 279 | 235 | 397 | 216 | 184 | 183 | 186 | 192 | 278 | 305 | 841 | 315 |
| **Above Normal (16%)** | 621 | 470 | 633 | 285 | 195 | 184 | 191 | 208 | 397 | 353 | 841 | 545 |
| **Below Normal (13%)** | 2,766 | 2,052 | 1,347 | 497 | 249 | 224 | 238 | 292 | 546 | 522 | 1,122 | 2,270 |
| **Dry (24%)** | 3,252 | 2,165 | 1,255 | 647 | 297 | 224 | 235 | 336 | 611 | 996 | 2,125 | 2,905 |
| **Critical (15%)** | 4,387 | 4,192 | 1,909 | 1,053 | 421 | 346 | 426 | 857 | 1,522 | 2,093 | 2,962 | 3,636 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 4,290 | 4,353 | 2,806 | 1,158 | 369 | 325 | 411 | 600 | 846 | 1,602 | 2,886 | 3,580 |
| **20%** | 3,508 | 3,092 | 2,410 | 820 | 261 | 240 | 282 | 443 | 669 | 1,123 | 2,330 | 3,062 |
| **30%** | 3,295 | 2,815 | 1,635 | 557 | 232 | 199 | 229 | 369 | 630 | 1,039 | 2,146 | 2,962 |
| **40%** | 3,101 | 2,589 | 1,093 | 355 | 206 | 193 | 206 | 266 | 517 | 582 | 1,203 | 2,520 |
| **50%** | 2,595 | 2,349 | 897 | 298 | 195 | 189 | 195 | 240 | 444 | 485 | 1,028 | 1,856 |
| **60%** | 2,365 | 2,045 | 663 | 222 | 188 | 186 | 188 | 214 | 372 | 368 | 954 | 1,711 |
| **70%** | 2,063 | 1,243 | 301 | 193 | 184 | 183 | 185 | 194 | 290 | 345 | 900 | 1,618 |
| **80%** | 1,720 | 901 | 236 | 187 | 183 | 181 | 182 | 181 | 235 | 306 | 822 | 1,562 |
| **90%** | 915 | 443 | 185 | 182 | 182 | 181 | 180 | 179 | 187 | 283 | 737 | 1,340 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 2,603 | 2,179 | 1,196 | 512 | 263 | 228 | 249 | 358 | 579 | 791 | 1,507 | 2,232 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 1,474 | 1,327 | 804 | 206 | 184 | 183 | 186 | 198 | 271 | 308 | 822 | 1,381 |
| **Above Normal (16%)** | 2,070 | 1,924 | 1,096 | 307 | 193 | 184 | 191 | 212 | 372 | 353 | 851 | 1,623 |
| **Below Normal (13%)** | 2,661 | 2,143 | 1,336 | 540 | 262 | 234 | 245 | 323 | 537 | 515 | 1,056 | 2,135 |
| **Dry (24%)** | 3,307 | 2,249 | 1,262 | 706 | 307 | 227 | 247 | 350 | 584 | 1,025 | 2,151 | 2,933 |
| **Critical (15%)** | 4,400 | 4,219 | 1,913 | 1,048 | 440 | 371 | 456 | 909 | 1,504 | 2,176 | 3,038 | 3,660 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | **26** | **4** | **12** | **121** | **40** | **16** | **48** | **15** | -38 | -41 | **132** | **20** |
| **20%** | **30** | **171** | **643** | **50** | **3** | **7** | **37** | **14** | -34 | **76** | **41** | **49** |
| **30%** | **0** | **67** | **639** | **15** | **3** | -1 | **10** | **6** | -23 | **138** | -7 | **31** |
| **40%** | -52 | **605** | **301** | -32 | **0** | -1 | **2** | **21** | -42 | -49 | -124 | -10 |
| **50%** | **898** | **1,829** | **315** | -12 | -1 | -1 | -2 | **25** | -21 | **5** | -23 | -7 |
| **60%** | **1,710** | **1,586** | **159** | -1 | -2 | -2 | -3 | **7** | -4 | **5** | -30 | **1,170** |
| **70%** | **1,753** | **986** | **33** | -1 | 0 | 0 | -3 | -2 | -11 | **11** | -5 | **1,271** |
| **80%** | **1,438** | **662** | **28** | -1 | 0 | 0 | -2 | -4 | **0** | -6 | **25** | **1,234** |
| **90%** | **645** | **216** | **3** | 0 | **0** | 0 | -1 | -1 | -1 | 0 | **1** | **1,030** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **610** | **613** | **203** | **20** | **7** | **6** | **8** | **18** | -17 | **19** | **4** | **501** |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **1,195** | **1,092** | **407** | -9 | -1 | 0 | 0 | **6** | -7 | **3** | -19 | **1,065** |
| **Above Normal (16%)** | **1,449** | **1,454** | **463** | **22** | -2 | 0 | -1 | **4** | -25 | -1 | **9** | **1,078** |
| **Below Normal (13%)** | -105 | **91** | -11 | **43** | **14** | **10** | **7** | **31** | -8 | -7 | -66 | -134 |
| **Dry (24%)** | **55** | **84** | **7** | **59** | **10** | **3** | **12** | **14** | -28 | **29** | **26** | **28** |
| **Critical (15%)** | **13** | **27** | **4** | -5 | **19** | **25** | **30** | **52** | -17 | **82** | **76** | **23** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-2. Sacramento River at Emmaton Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,860 | 3,659 | 2,207 | 968 | 332 | 301 | 364 | 627 | 863 | 1,684 | 2,782 | 3,452 |
| 20% | 3,139 | 2,507 | 1,504 | 692 | 257 | 229 | 245 | 438 | 716 | 1,114 | 2,253 | 3,004 |
| 30% | 2,979 | 2,351 | 914 | 510 | 231 | 199 | 217 | 348 | 653 | 949 | 2,116 | 2,871 |
| 40% | 2,904 | 1,715 | 723 | 369 | 205 | 194 | 205 | 246 | 558 | 639 | 1,297 | 2,511 |
| 50% | 1,852 | 505 | 591 | 294 | 195 | 190 | 197 | 216 | 465 | 472 | 1,048 | 1,739 |
| 60% | 613 | 445 | 478 | 217 | 190 | 188 | 190 | 207 | 376 | 363 | 1,001 | 542 |
| 70% | 306 | 251 | 262 | 195 | 185 | 183 | 188 | 196 | 299 | 334 | 904 | 347 |
| 80% | 279 | 235 | 206 | 188 | 183 | 181 | 184 | 185 | 236 | 310 | 796 | 328 |
| 90% | 267 | 224 | 181 | 182 | 182 | 181 | 181 | 180 | 188 | 283 | 736 | 310 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,834 | 1,366 | 865 | 447 | 244 | 222 | 242 | 345 | 595 | 784 | 1,481 | 1,701 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 274 | 231 | 393 | 215 | 184 | 183 | 186 | 192 | 279 | 304 | 839 | 315 |
| Above Normal (16%) | 585 | 459 | 620 | 285 | 195 | 184 | 191 | 208 | 397 | 353 | 841 | 546 |
| Below Normal (13%) | 2,534 | 1,746 | 1,128 | 476 | 249 | 225 | 239 | 290 | 547 | 525 | 1,120 | 2,252 |
| Dry (24%) | 2,981 | 1,869 | 1,052 | 591 | 294 | 226 | 237 | 342 | 610 | 1,025 | 2,090 | 2,855 |
| Critical (15%) | 4,012 | 3,620 | 1,597 | 858 | 339 | 335 | 432 | 878 | 1,512 | 2,123 | 2,880 | 3,524 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 3,830 | 3,678 | 2,343 | 995 | 324 | 306 | 388 | 607 | 862 | 1,648 | 2,738 | 3,447 |
| 20% | 3,127 | 2,611 | 1,521 | 729 | 251 | 229 | 288 | 446 | 685 | 1,147 | 2,212 | 3,051 |
| 30% | 2,944 | 2,383 | 1,343 | 520 | 222 | 197 | 221 | 368 | 636 | 910 | 2,138 | 2,959 |
| 40% | 2,813 | 1,864 | 1,208 | 372 | 203 | 193 | 205 | 278 | 538 | 704 | 1,358 | 2,651 |
| 50% | 1,654 | 1,035 | 838 | 285 | 194 | 189 | 194 | 238 | 442 | 537 | 1,045 | 1,740 |
| 60% | 500 | 971 | 590 | 217 | 189 | 186 | 187 | 212 | 374 | 393 | 774 | 705 |
| 70% | 481 | 915 | 301 | 195 | 184 | 183 | 185 | 193 | 301 | 358 | 729 | 676 |
| 80% | 451 | 828 | 231 | 187 | 183 | 181 | 182 | 181 | 237 | 316 | 699 | 628 |
| 90% | 424 | 343 | 184 | 182 | 182 | 181 | 180 | 179 | 187 | 291 | 667 | 581 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,843 | 1,646 | 1,020 | 458 | 244 | 225 | 247 | 359 | 586 | 819 | 1,438 | 1,835 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 443 | 776 | 742 | 227 | 184 | 183 | 184 | 201 | 277 | 319 | 674 | 622 |
| Above Normal (16%) | 479 | 869 | 863 | 305 | 193 | 184 | 190 | 215 | 377 | 378 | 744 | 647 |
| Below Normal (13%) | 2,462 | 1,839 | 1,151 | 514 | 251 | 229 | 245 | 326 | 540 | 596 | 1,166 | 2,261 |
| Dry (24%) | 2,923 | 1,956 | 1,076 | 593 | 274 | 219 | 241 | 347 | 589 | 1,038 | 2,118 | 2,904 |
| Critical (15%) | 3,988 | 3,679 | 1,583 | 851 | 370 | 369 | 453 | 911 | 1,516 | 2,220 | 2,964 | 3,581 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -30 | **19** | **136** | **28** | -8 | **6** | **23** | -20 | -1 | -36 | -44 | -5 |
| 20% | -12 | **104** | **17** | **37** | -5 | **0** | **43** | **8** | -31 | **33** | -41 | **47** |
| 30% | -35 | **32** | **429** | **10** | -9 | -2 | **4** | **21** | -18 | -39 | **22** | **88** |
| 40% | -91 | **149** | **485** | **2** | -2 | -1 | **0** | **33** | -20 | **65** | **61** | **140** |
| 50% | -198 | **530** | **248** | -10 | -1 | -1 | -3 | **22** | -23 | **65** | -3 | **2** |
| 60% | -112 | **525** | **112** | **0** | -1 | -2 | -4 | **5** | -2 | **30** | -227 | **163** |
| 70% | **176** | **664** | **39** | **0** | -1 | 0 | -3 | -3 | **2** | **25** | -175 | **329** |
| 80% | **172** | **593** | **25** | -1 | 0 | 0 | -2 | -4 | **1** | **6** | -98 | **300** |
| 90% | **157** | **119** | **3** | 0 | 0 | 0 | -1 | -1 | -1 | **8** | -69 | **270** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **9** | **280** | **156** | **12** | 0 | **4** | **4** | **15** | -9 | **35** | -43 | **135** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | **169** | **545** | **349** | **12** | 0 | 0 | -2 | **9** | -2 | **15** | -165 | **307** |
| Above Normal (16%) | -106 | **409** | **242** | **19** | -2 | -1 | -1 | **7** | -20 | **25** | -97 | **100** |
| Below Normal (13%) | -72 | **93** | **23** | **38** | **2** | **4** | **6** | **36** | -7 | **71** | **46** | **9** |
| Dry (24%) | -59 | **87** | **24** | **2** | -19 | -7 | **5** | **5** | -21 | **12** | **28** | **50** |
| Critical (15%) | -24 | **59** | -15 | -7 | **31** | **34** | **21** | **32** | **4** | **97** | **84** | **57** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-3. Sacramento River at Emmaton Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 4,263 | 4,349 | 2,795 | 1,037 | 329 | 309 | 364 | 585 | 884 | 1,642 | 2,755 | 3,560 |
| **20%** | 3,477 | 2,922 | 1,767 | 770 | 258 | 233 | 245 | 429 | 703 | 1,046 | 2,289 | 3,013 |
| **30%** | 3,295 | 2,748 | 996 | 542 | 229 | 199 | 219 | 363 | 652 | 901 | 2,153 | 2,931 |
| **40%** | 3,153 | 1,983 | 792 | 387 | 206 | 194 | 204 | 245 | 559 | 631 | 1,326 | 2,531 |
| **50%** | 1,697 | 520 | 582 | 309 | 196 | 190 | 197 | 215 | 465 | 480 | 1,051 | 1,863 |
| **60%** | 654 | 459 | 503 | 222 | 190 | 188 | 190 | 207 | 376 | 363 | 984 | 541 |
| **70%** | 310 | 257 | 268 | 195 | 185 | 183 | 188 | 196 | 301 | 334 | 905 | 347 |
| **80%** | 282 | 239 | 208 | 188 | 183 | 181 | 184 | 185 | 235 | 313 | 797 | 328 |
| **90%** | 270 | 227 | 182 | 182 | 182 | 181 | 181 | 180 | 188 | 283 | 736 | 310 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,993 | 1,566 | 992 | 492 | 257 | 223 | 241 | 341 | 596 | 772 | 1,502 | 1,731 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 279 | 235 | 397 | 216 | 184 | 183 | 186 | 192 | 278 | 305 | 841 | 315 |
| **Above Normal (16%)** | 621 | 470 | 633 | 285 | 195 | 184 | 191 | 208 | 397 | 353 | 841 | 545 |
| **Below Normal (13%)** | 2,766 | 2,052 | 1,347 | 497 | 249 | 224 | 238 | 292 | 546 | 522 | 1,122 | 2,270 |
| **Dry (24%)** | 3,252 | 2,165 | 1,255 | 647 | 297 | 224 | 235 | 336 | 611 | 996 | 2,125 | 2,905 |
| **Critical (15%)** | 4,387 | 4,192 | 1,909 | 1,053 | 421 | 346 | 426 | 857 | 1,522 | 2,093 | 2,962 | 3,636 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 3,860 | 3,659 | 2,207 | 968 | 332 | 301 | 364 | 627 | 863 | 1,684 | 2,782 | 3,452 |
| **20%** | 3,139 | 2,507 | 1,504 | 692 | 257 | 229 | 245 | 438 | 716 | 1,114 | 2,253 | 3,004 |
| **30%** | 2,979 | 2,351 | 914 | 510 | 231 | 199 | 217 | 348 | 653 | 949 | 2,116 | 2,871 |
| **40%** | 2,904 | 1,715 | 723 | 369 | 205 | 194 | 205 | 246 | 558 | 639 | 1,297 | 2,511 |
| **50%** | 1,852 | 505 | 591 | 294 | 195 | 190 | 197 | 216 | 465 | 472 | 1,048 | 1,739 |
| **60%** | 613 | 445 | 478 | 217 | 190 | 188 | 190 | 207 | 376 | 363 | 1,001 | 542 |
| **70%** | 306 | 251 | 262 | 195 | 185 | 183 | 188 | 196 | 299 | 334 | 904 | 347 |
| **80%** | 279 | 235 | 206 | 188 | 183 | 181 | 184 | 185 | 236 | 310 | 796 | 328 |
| **90%** | 267 | 224 | 181 | 182 | 182 | 181 | 181 | 180 | 188 | 283 | 736 | 310 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,834 | 1,366 | 865 | 447 | 244 | 222 | 242 | 345 | 595 | 784 | 1,481 | 1,701 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 274 | 231 | 393 | 215 | 184 | 183 | 186 | 192 | 279 | 304 | 839 | 315 |
| **Above Normal (16%)** | 585 | 459 | 620 | 285 | 195 | 184 | 191 | 208 | 397 | 353 | 841 | 546 |
| **Below Normal (13%)** | 2,534 | 1,746 | 1,128 | 476 | 249 | 225 | 239 | 290 | 547 | 525 | 1,120 | 2,252 |
| **Dry (24%)** | 2,981 | 1,869 | 1,052 | 591 | 294 | 226 | 237 | 342 | 610 | 1,025 | 2,090 | 2,855 |
| **Critical (15%)** | 4,012 | 3,620 | 1,597 | 858 | 339 | 335 | 432 | 878 | 1,512 | 2,123 | 2,880 | 3,524 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | -403 | -689 | -587 | -69 | **3** | -8 | **1** | **42** | -21 | **41** | **27** | -108 |
| **20%** | -339 | -414 | -263 | -78 | -1 | -4 | 0 | **10** | **14** | **68** | -36 | -9 |
| **30%** | -316 | -397 | -82 | -32 | **2** | **0** | -1 | -15 | **1** | **48** | -37 | -60 |
| **40%** | -249 | -268 | -70 | -17 | -1 | 0 | **0** | **0** | -1 | **8** | -30 | -20 |
| **50%** | **155** | -14 | **9** | -15 | 0 | 0 | 0 | **0** | **1** | -8 | -4 | -125 |
| **60%** | -41 | -13 | -26 | -6 | **0** | 0 | 0 | 0 | 0 | 0 | **17** | **0** |
| **70%** | -5 | -6 | -6 | 0 | 0 | **0** | 0 | **0** | -2 | 0 | -1 | 0 |
| **80%** | -4 | -3 | -2 | 0 | 0 | **0** | 0 | **0** | **1** | -3 | -1 | **0** |
| **90%** | -3 | -3 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | **0** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | -159 | -200 | -128 | -45 | -13 | -1 | **1** | **4** | -1 | **12** | -21 | -31 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | -5 | -4 | -4 | -1 | **0** | **0** | 0 | **0** | **0** | -1 | -2 | 0 |
| **Above Normal (16%)** | -36 | -11 | -13 | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | **1** |
| **Below Normal (13%)** | -232 | -306 | -219 | -21 | **0** | **0** | **1** | -2 | **1** | **3** | -3 | -17 |
| **Dry (24%)** | -270 | -296 | -203 | -56 | -3 | **2** | **1** | **6** | -1 | **30** | -35 | -50 |
| **Critical (15%)** | -375 | -571 | -312 | -195 | -82 | -11 | **6** | **21** | -10 | **30** | -82 | -113 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 4-4. Sacramento River at Emmaton Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 4,290 | 4,353 | 2,806 | 1,158 | 369 | 325 | 411 | 600 | 846 | 1,602 | 2,886 | 3,580 |
| 20% | 3,508 | 3,092 | 2,410 | 820 | 261 | 240 | 282 | 443 | 669 | 1,123 | 2,330 | 3,062 |
| 30% | 3,295 | 2,815 | 1,635 | 557 | 232 | 199 | 229 | 369 | 630 | 1,039 | 2,146 | 2,962 |
| 40% | 3,101 | 2,589 | 1,093 | 355 | 206 | 193 | 206 | 266 | 517 | 582 | 1,203 | 2,520 |
| 50% | 2,595 | 2,349 | 897 | 298 | 195 | 189 | 195 | 240 | 444 | 485 | 1,028 | 1,856 |
| 60% | 2,365 | 2,045 | 663 | 222 | 188 | 186 | 188 | 214 | 372 | 368 | 954 | 1,711 |
| 70% | 2,063 | 1,243 | 301 | 193 | 184 | 183 | 185 | 194 | 290 | 345 | 900 | 1,618 |
| 80% | 1,720 | 901 | 236 | 187 | 183 | 181 | 182 | 181 | 235 | 306 | 822 | 1,562 |
| 90% | 915 | 443 | 185 | 182 | 182 | 181 | 180 | 179 | 187 | 283 | 737 | 1,340 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,603 | 2,179 | 1,196 | 512 | 263 | 228 | 249 | 358 | 579 | 791 | 1,507 | 2,232 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,474 | 1,327 | 804 | 206 | 184 | 183 | 186 | 198 | 271 | 308 | 822 | 1,381 |
| Above Normal (16%) | 2,070 | 1,924 | 1,096 | 307 | 193 | 184 | 191 | 212 | 372 | 353 | 851 | 1,623 |
| Below Normal (13%) | 2,661 | 2,143 | 1,336 | 540 | 262 | 234 | 245 | 323 | 537 | 515 | 1,056 | 2,135 |
| Dry (24%) | 3,307 | 2,249 | 1,262 | 706 | 307 | 227 | 247 | 350 | 584 | 1,025 | 2,151 | 2,933 |
| Critical (15%) | 4,400 | 4,219 | 1,913 | 1,048 | 440 | 371 | 456 | 909 | 1,504 | 2,176 | 3,038 | 3,660 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 3,830 | 3,678 | 2,343 | 995 | 324 | 306 | 388 | 607 | 862 | 1,648 | 2,738 | 3,447 |
| 20% | 3,127 | 2,611 | 1,521 | 729 | 251 | 229 | 288 | 446 | 685 | 1,147 | 2,212 | 3,051 |
| 30% | 2,944 | 2,383 | 1,343 | 520 | 222 | 197 | 221 | 368 | 636 | 910 | 2,138 | 2,959 |
| 40% | 2,813 | 1,864 | 1,208 | 372 | 203 | 193 | 205 | 278 | 538 | 704 | 1,358 | 2,651 |
| 50% | 1,654 | 1,035 | 838 | 285 | 194 | 189 | 194 | 238 | 442 | 537 | 1,045 | 1,740 |
| 60% | 500 | 971 | 590 | 217 | 189 | 186 | 187 | 212 | 374 | 393 | 774 | 705 |
| 70% | 481 | 915 | 301 | 195 | 184 | 183 | 185 | 193 | 301 | 358 | 729 | 676 |
| 80% | 451 | 828 | 231 | 187 | 183 | 181 | 182 | 181 | 237 | 316 | 699 | 628 |
| 90% | 424 | 343 | 184 | 182 | 182 | 181 | 180 | 179 | 187 | 291 | 667 | 581 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,843 | 1,646 | 1,020 | 458 | 244 | 225 | 247 | 359 | 586 | 819 | 1,438 | 1,835 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 443 | 776 | 742 | 227 | 184 | 183 | 184 | 201 | 277 | 319 | 674 | 622 |
| Above Normal (16%) | 479 | 869 | 863 | 305 | 193 | 184 | 190 | 215 | 377 | 378 | 744 | 647 |
| Below Normal (13%) | 2,462 | 1,839 | 1,151 | 514 | 251 | 229 | 245 | 326 | 540 | 596 | 1,166 | 2,261 |
| Dry (24%) | 2,923 | 1,956 | 1,076 | 593 | 274 | 219 | 241 | 347 | 589 | 1,038 | 2,118 | 2,904 |
| Critical (15%) | 3,988 | 3,679 | 1,583 | 851 | 370 | 369 | 453 | 911 | 1,516 | 2,220 | 2,964 | 3,581 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -460 | -675 | -463 | -162 | -45 | -19 | -24 | 7 | 16 | 47 | -148 | -133 |
| 20% | -381 | -482 | -889 | -90 | -10 | -11 | 6 | 3 | 16 | 24 | -118 | -12 |
| 30% | -352 | -432 | -292 | -38 | -10 | -2 | -8 | 0 | 6 | -129 | -9 | -3 |
| 40% | -288 | -724 | 115 | 17 | -3 | 0 | -1 | 12 | 21 | 122 | 155 | 130 |
| 50% | -941 | -1,314 | -59 | -13 | 0 | 0 | -1 | -2 | -2 | 52 | 17 | -116 |
| 60% | -1,864 | -1,074 | -73 | -5 | 1 | 0 | -1 | -2 | 1 | 24 | -180 | -1,007 |
| 70% | -1,582 | -329 | 0 | 1 | 0 | 0 | 0 | -1 | 11 | 14 | -171 | -943 |
| 80% | -1,269 | -72 | -5 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | -124 | -934 |
| 90% | -491 | -100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | -70 | -760 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -760 | -533 | -175 | -54 | -20 | -3 | -2 | 1 | 6 | 28 | -68 | -397 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -1,031 | -552 | -62 | 21 | 0 | 0 | -1 | 3 | 6 | 11 | -148 | -758 |
| Above Normal (16%) | -1,591 | -1,055 | -234 | -2 | 0 | 0 | 0 | 3 | 6 | 26 | -107 | -977 |
| Below Normal (13%) | -199 | -303 | -185 | -25 | -11 | -5 | 0 | 3 | 3 | 81 | 110 | 126 |
| Dry (24%) | -384 | -292 | -186 | -113 | -33 | -8 | -6 | -3 | 6 | 13 | -33 | -29 |
| Critical (15%) | -413 | -539 | -331 | -197 | -70 | -2 | -3 | 1 | 12 | 44 | -75 | -79 |

a Based on the 82-year simulation period.

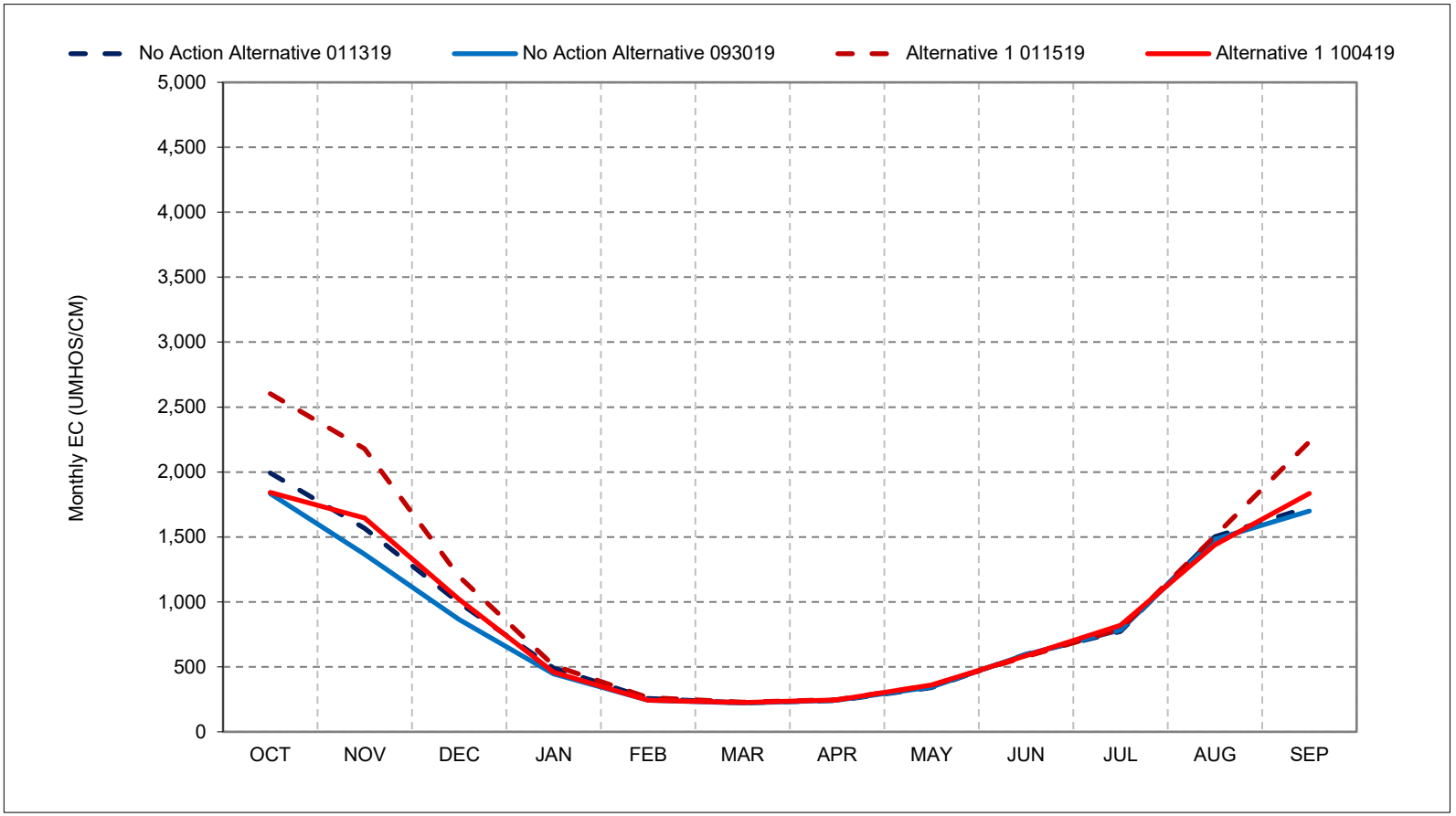
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-1. Sacramento River at Emmaton Salinity, Long-Term Average EC

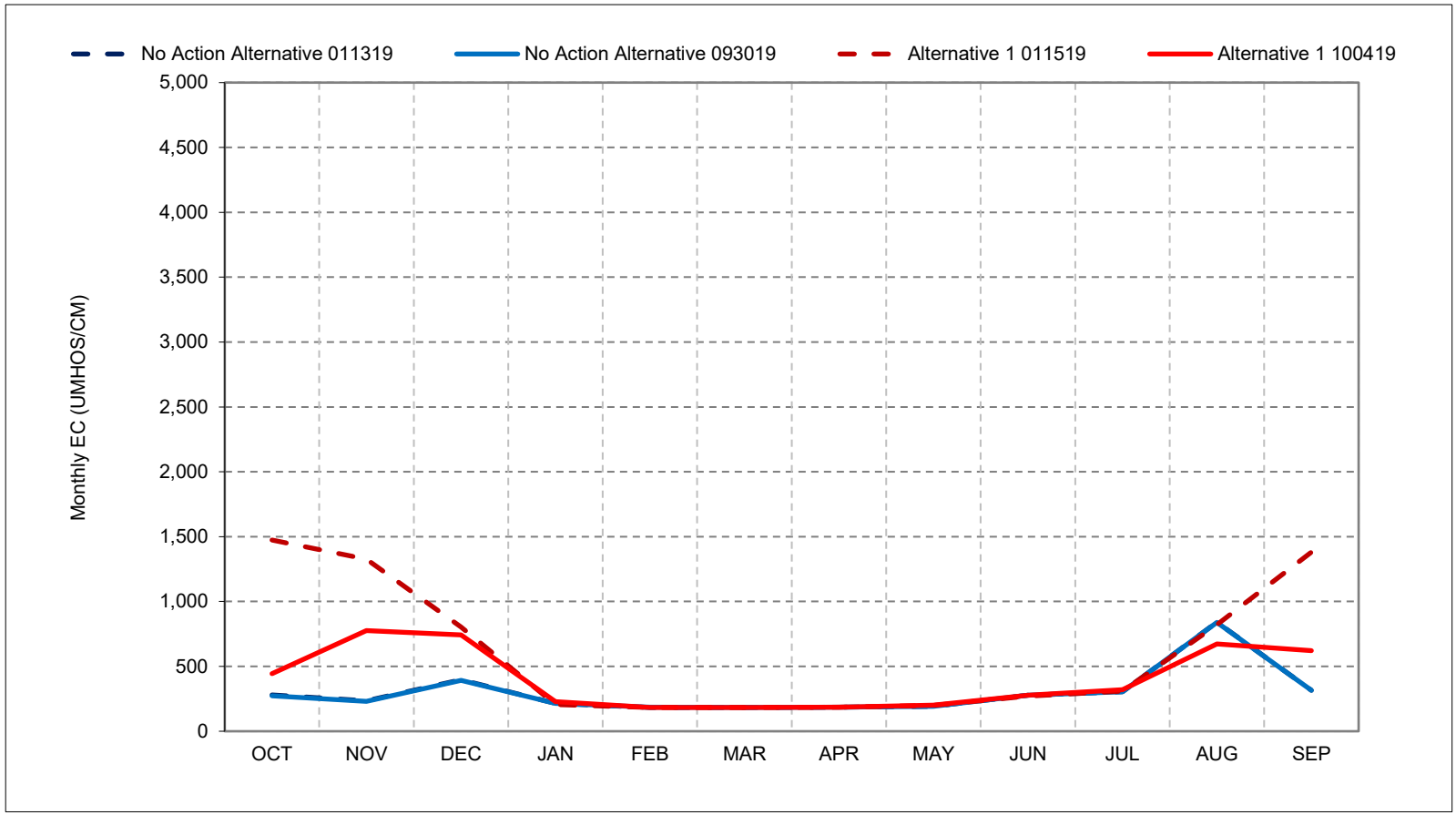



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-2. Sacramento River at Emmaton Salinity, Wet Year Average EC

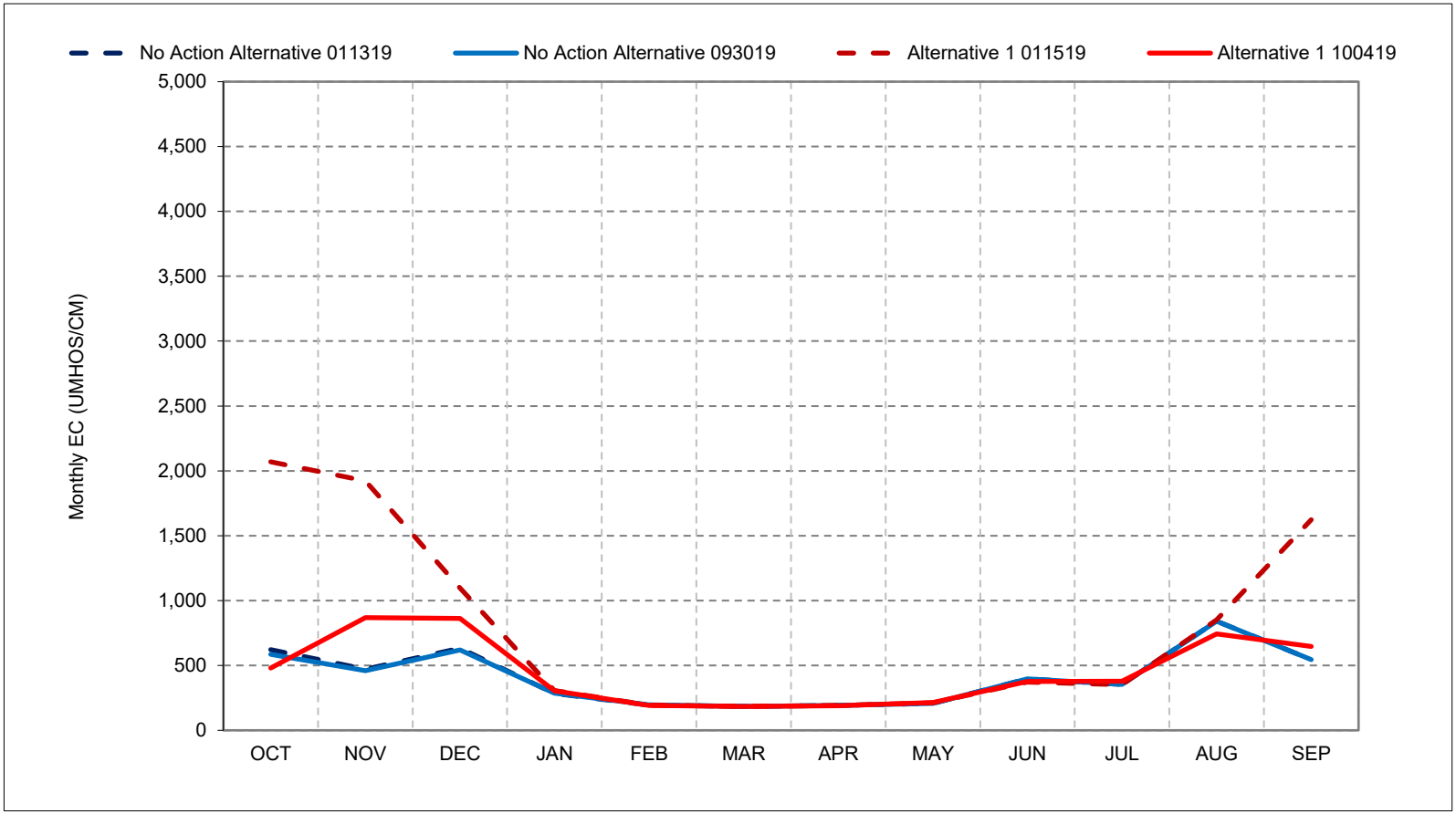



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-3. Sacramento River at Emmaton Salinity, Above Normal Year Average EC

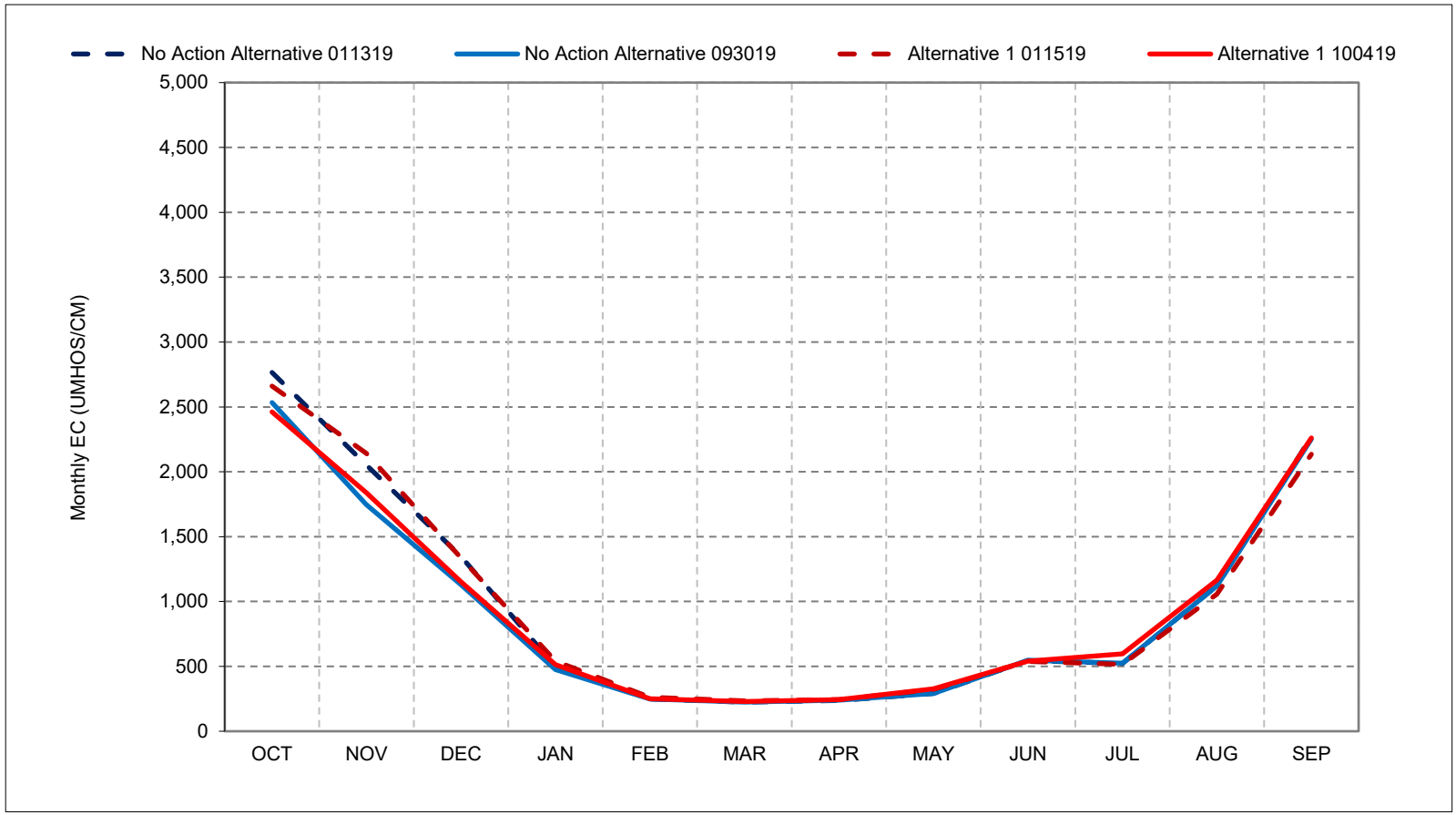



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-4. Sacramento River at Emmaton Salinity, Below Normal Year Average EC

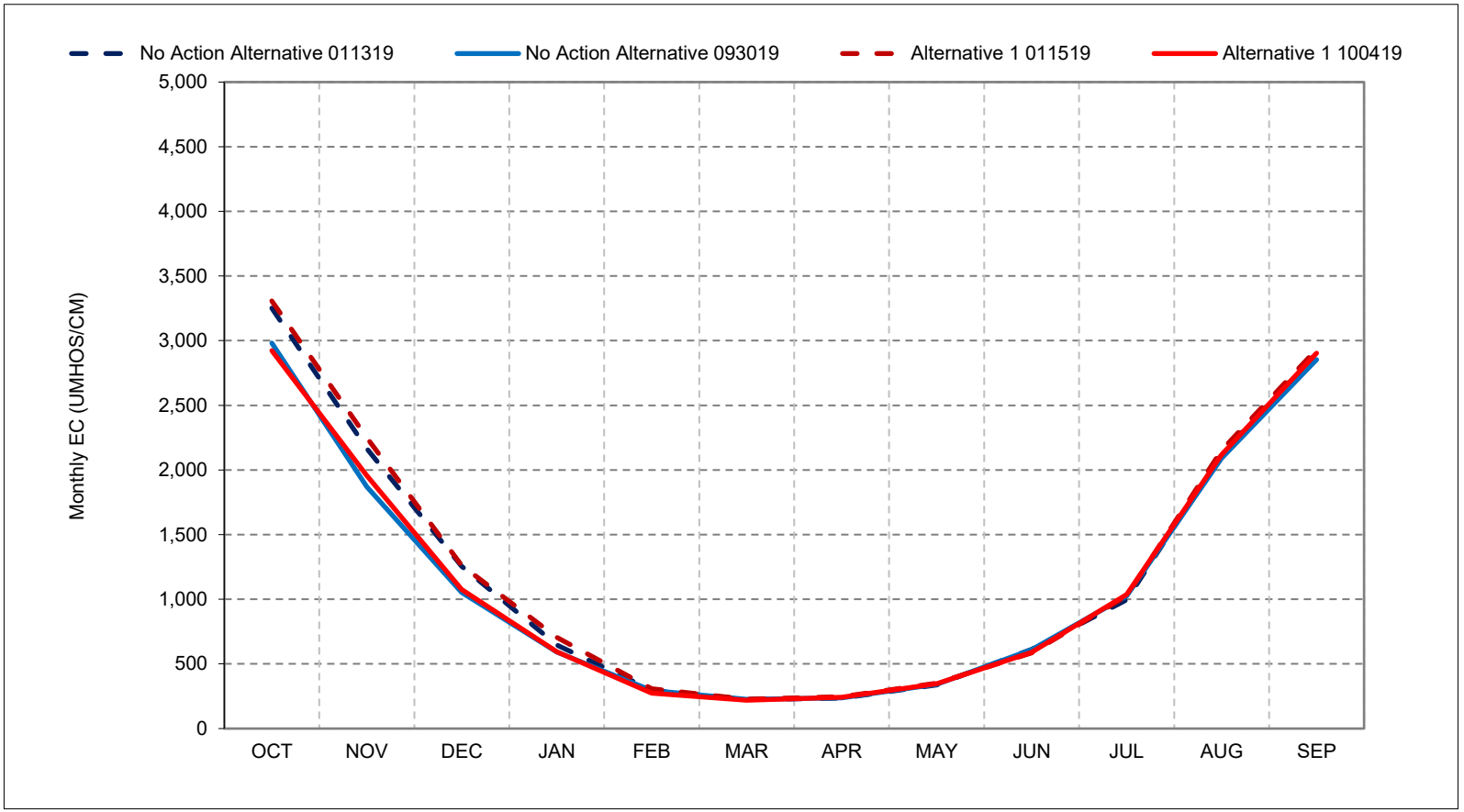



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-5. Sacramento River at Emmaton Salinity, Dry Year Average EC

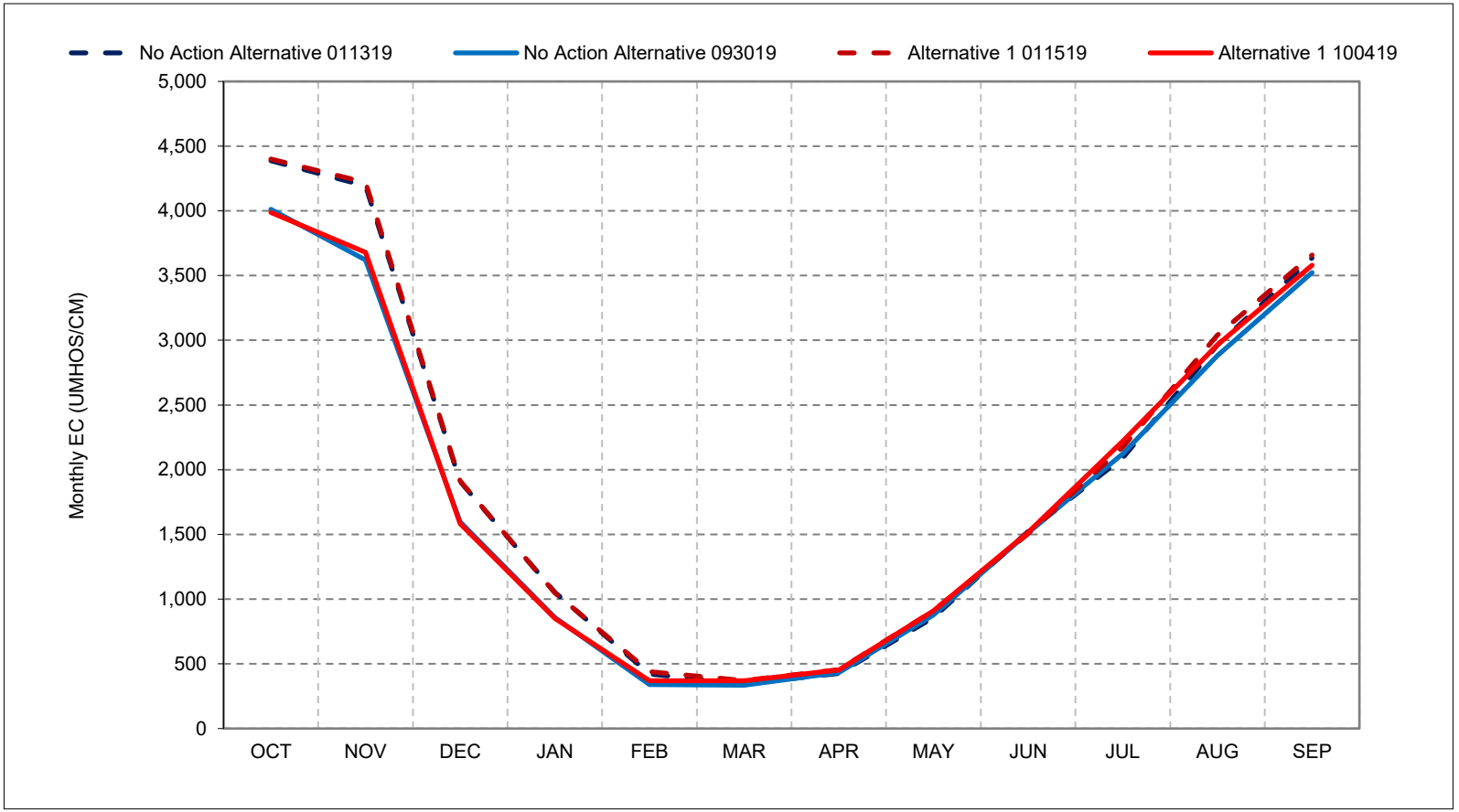



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 4-6. Sacramento River at Emmaton Salinity, Critical Year Average EC

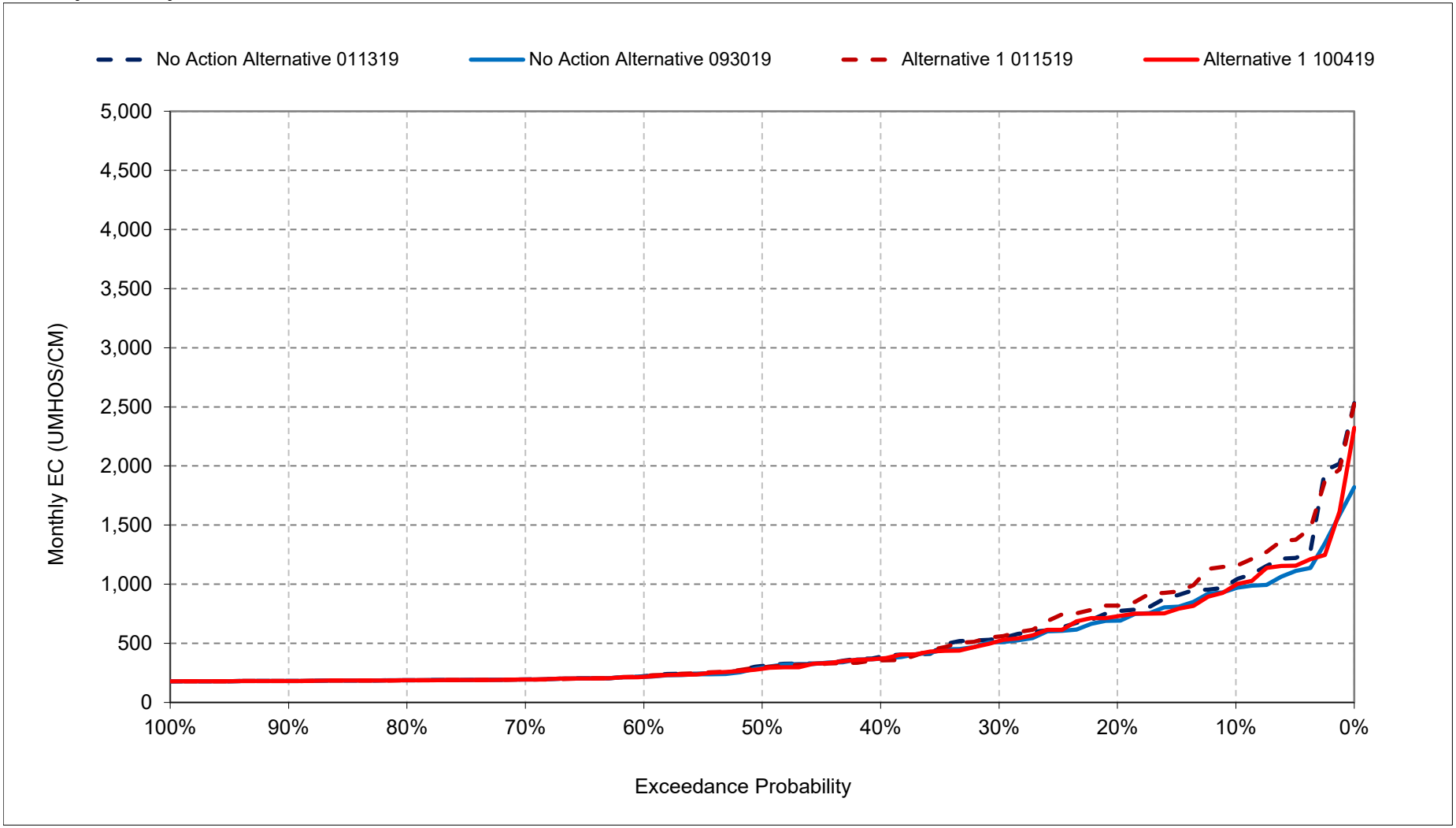



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

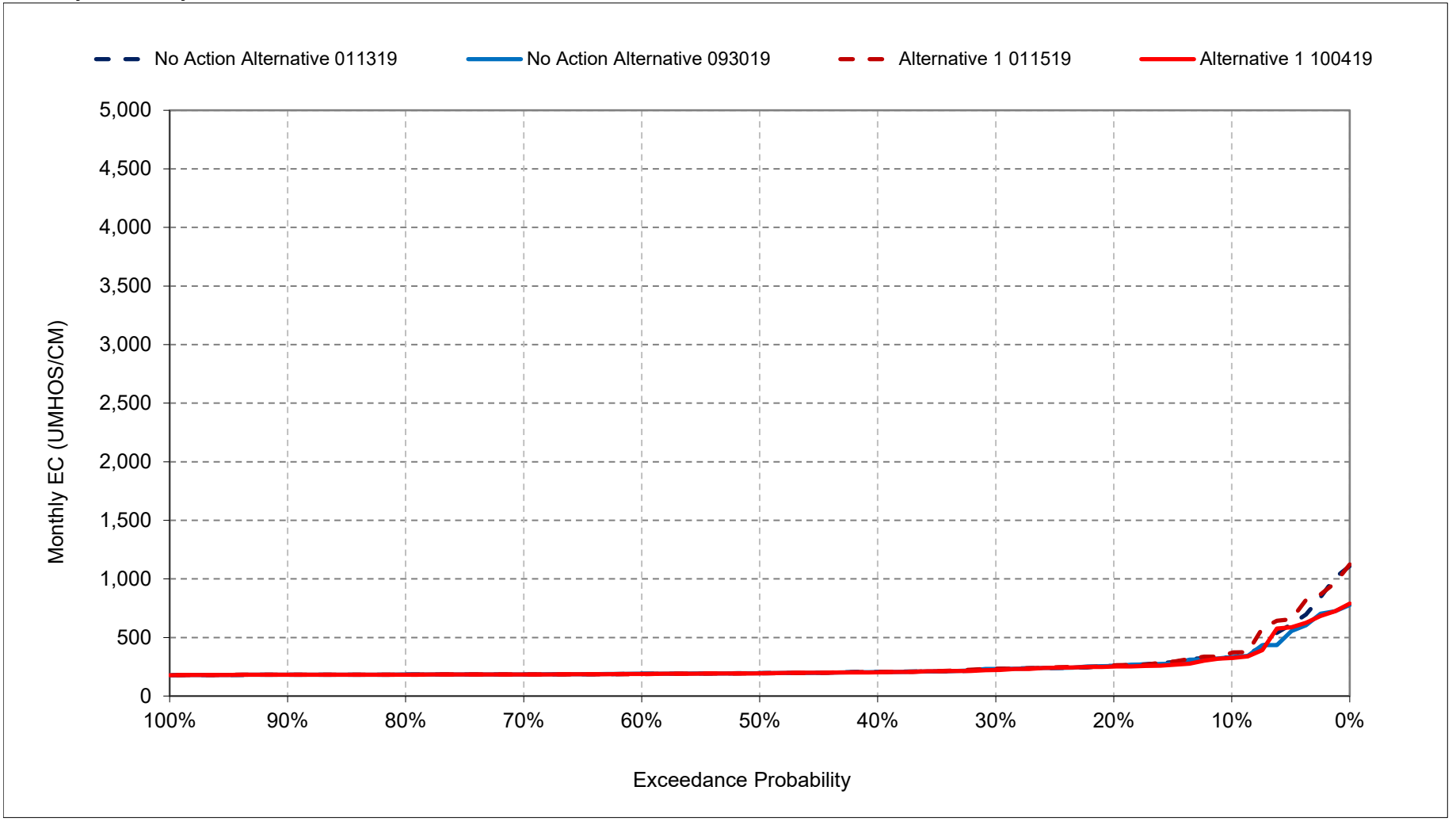
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-7. Sacramento River at Emmaton**
**Salinity, January EC**



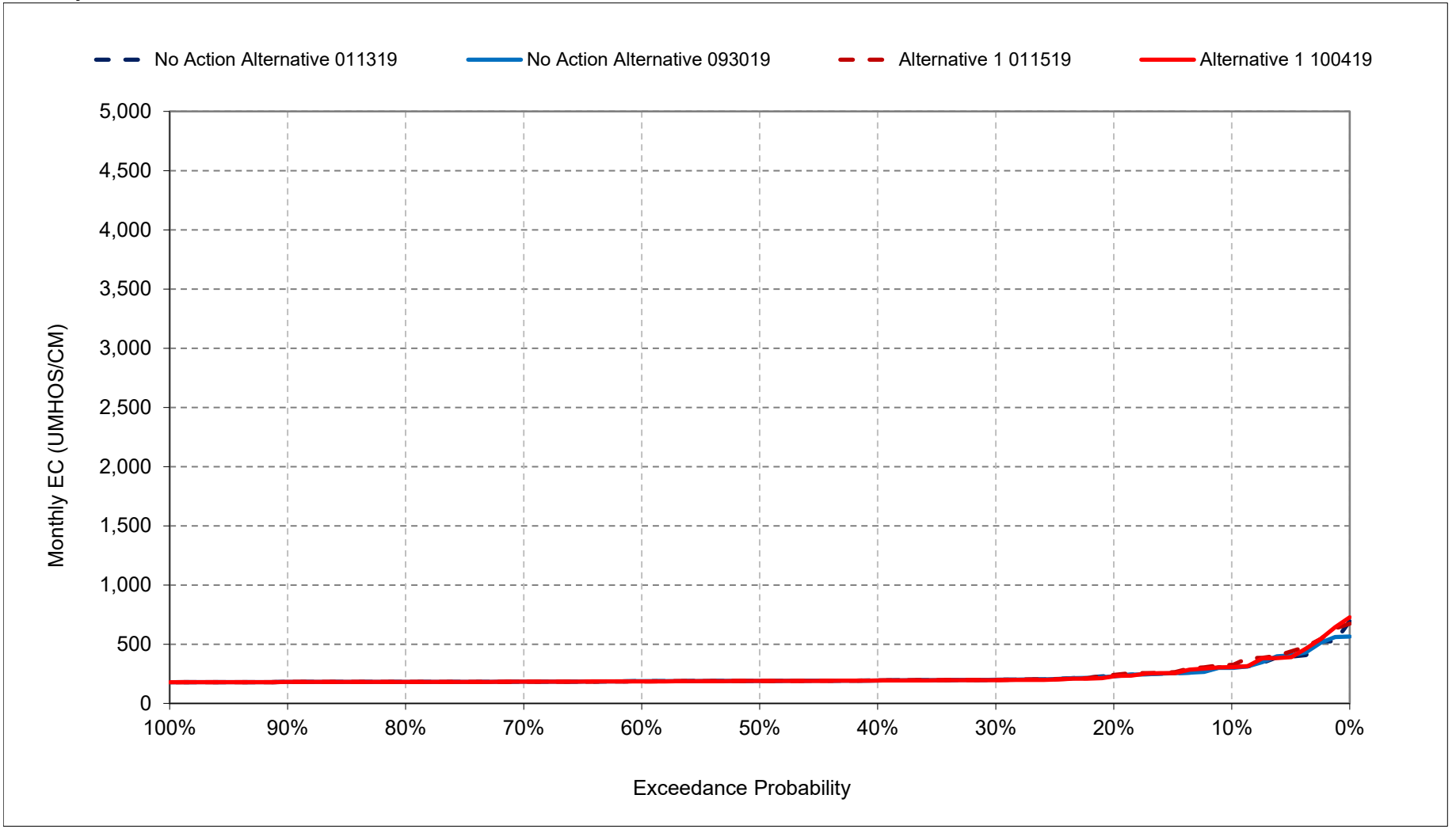

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-8. Sacramento River at Emmaton**
**Salinity, February EC**



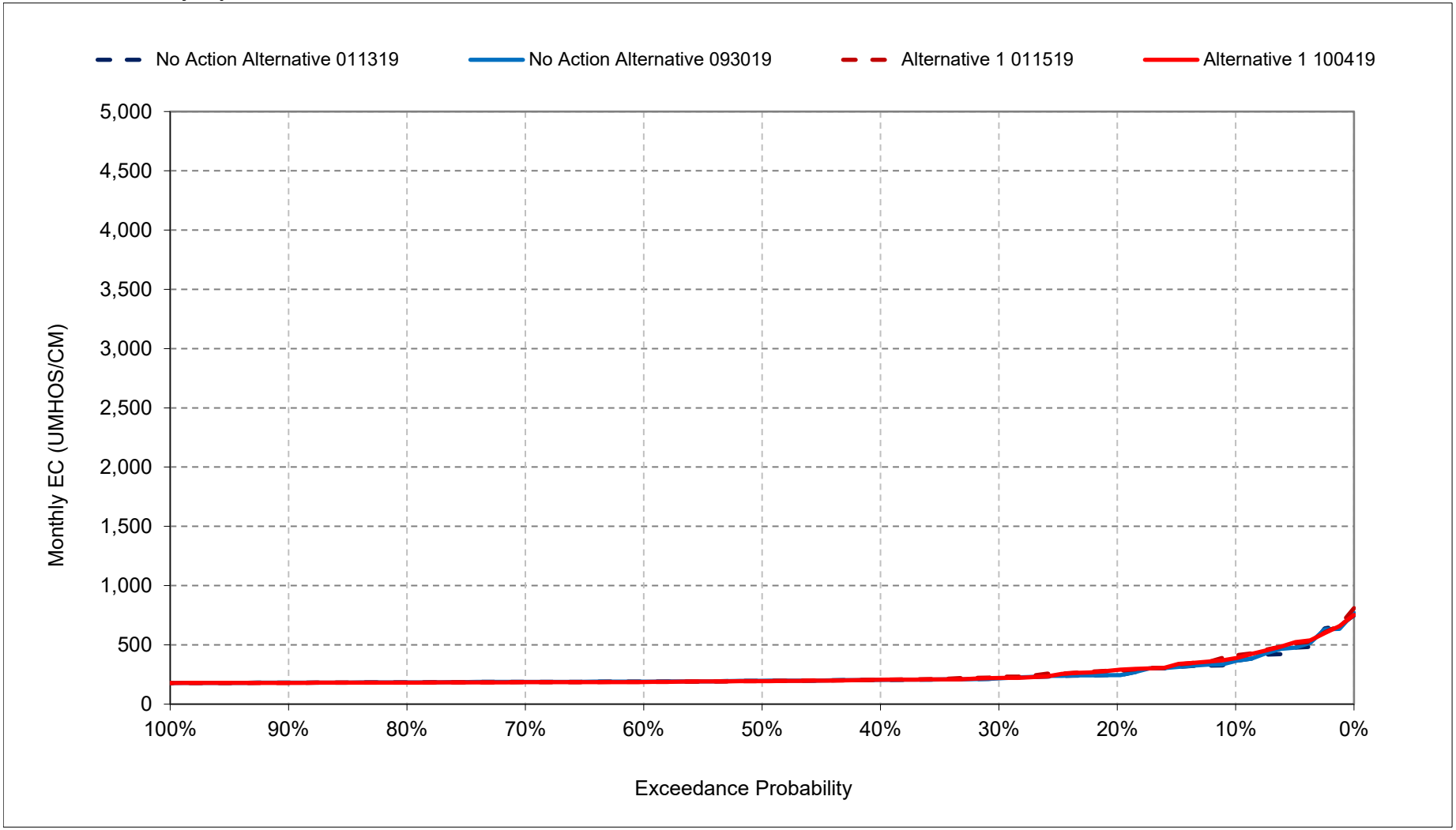

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-9. Sacramento River at Emmaton**
**Salinity, March EC**



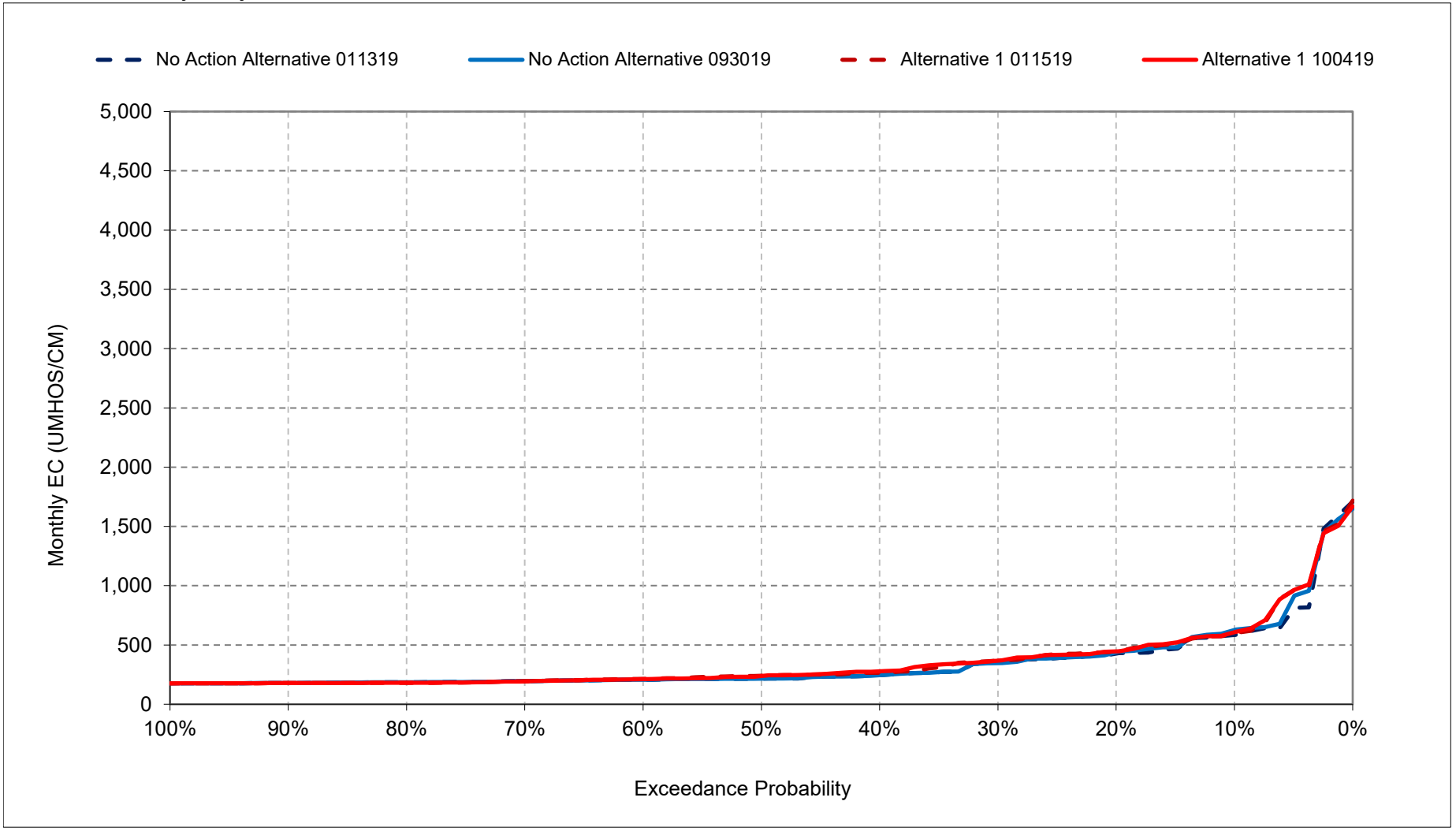

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-10. Sacramento River at Emmaton Salinity, April EC**



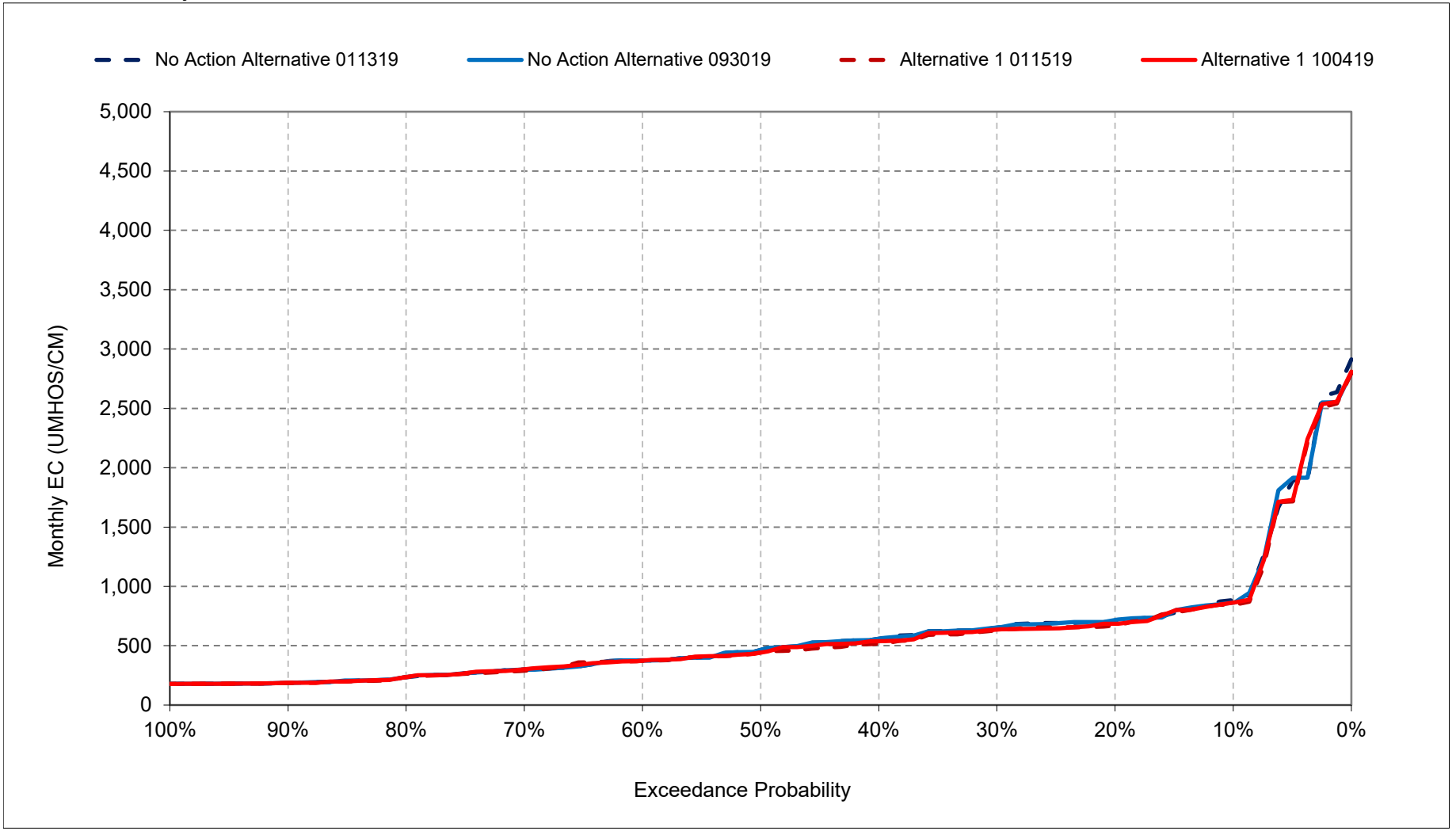

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-11. Sacramento River at Emmaton Salinity, May EC**



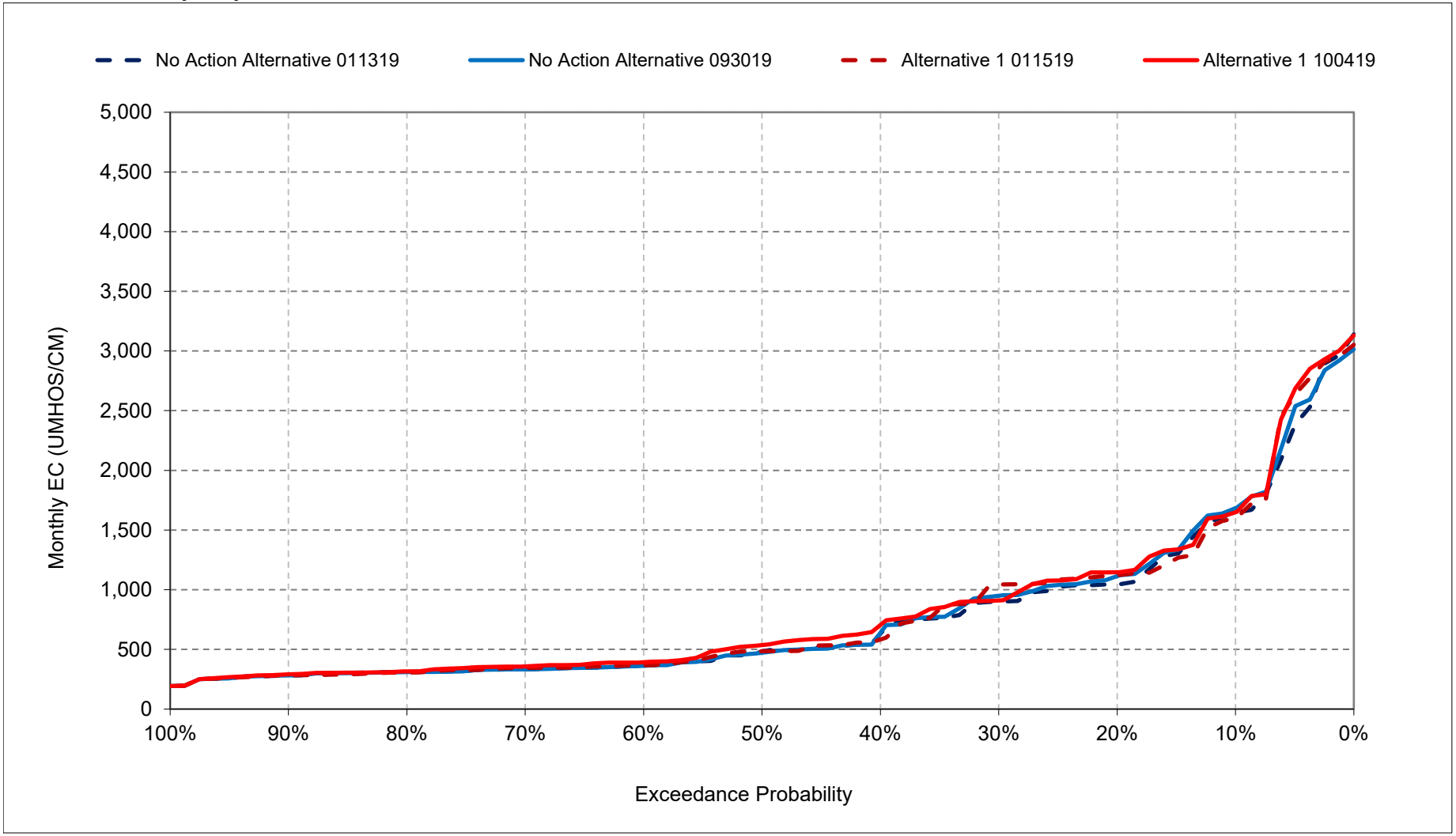

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-12. Sacramento River at Emmaton Salinity, June EC**



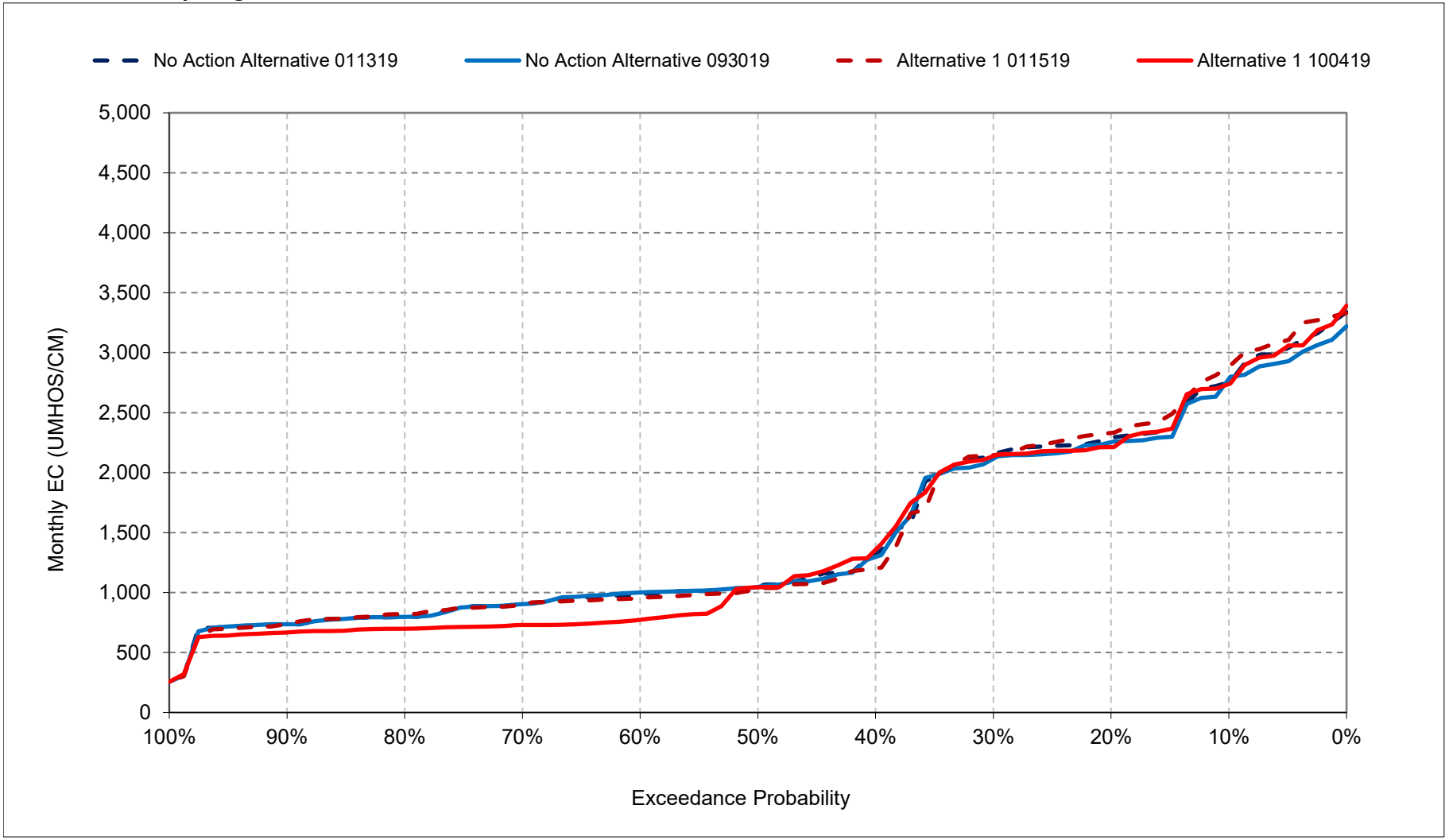

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-13. Sacramento River at Emmaton Salinity, July EC**



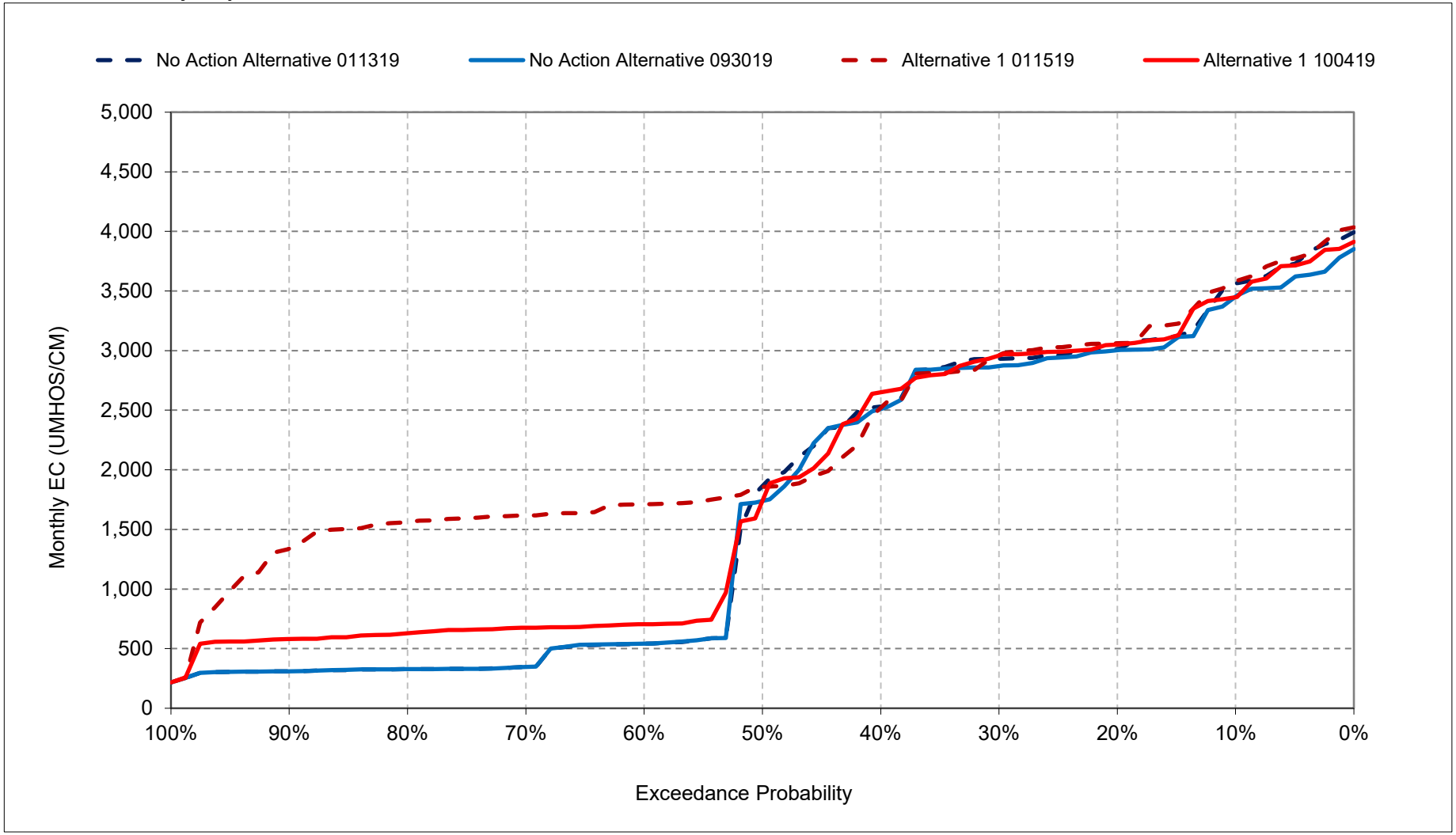

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-14. Sacramento River at Emmaton Salinity, August EC**



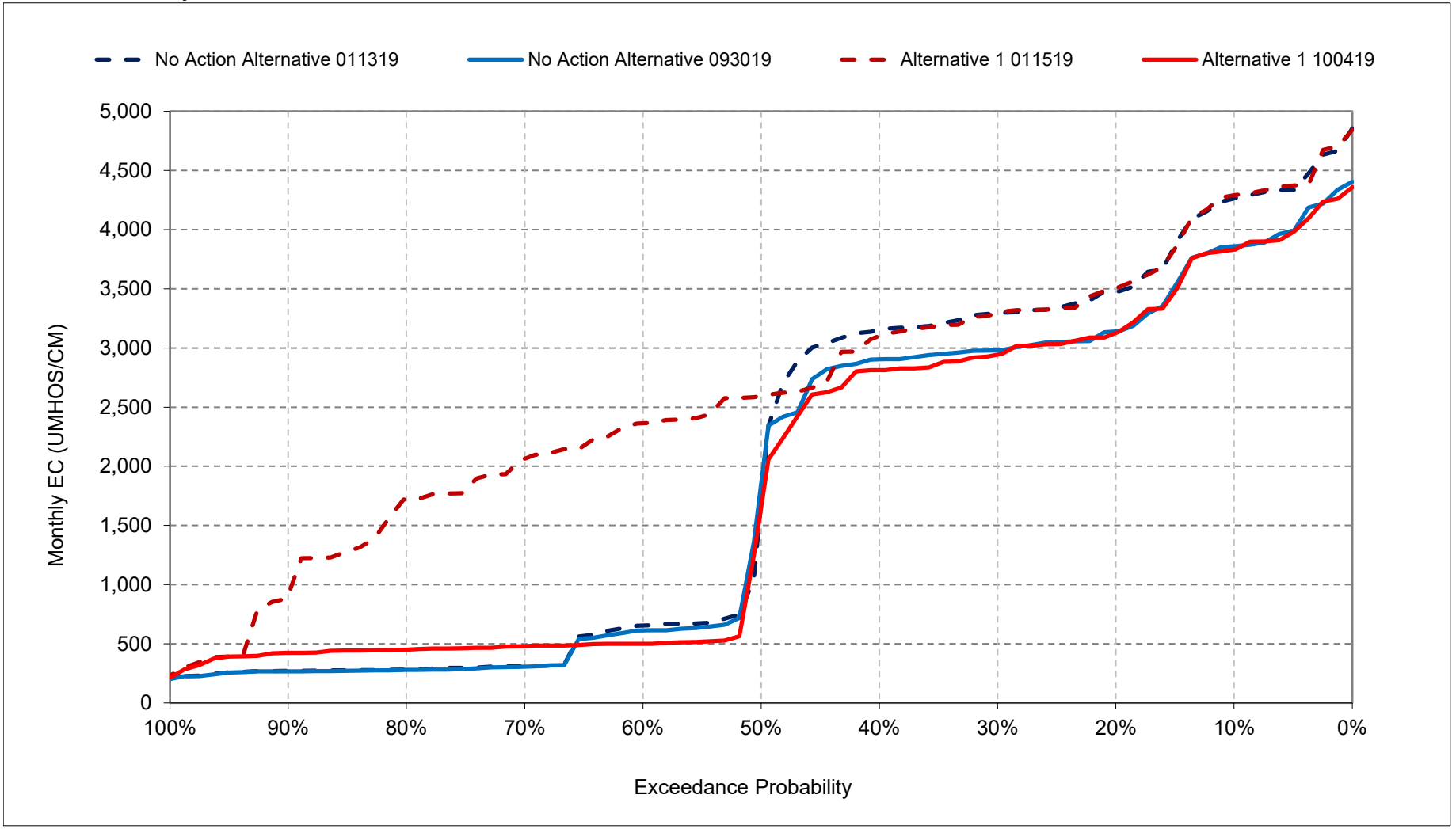

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-15. Sacramento River at Emmaton Salinity, September EC**



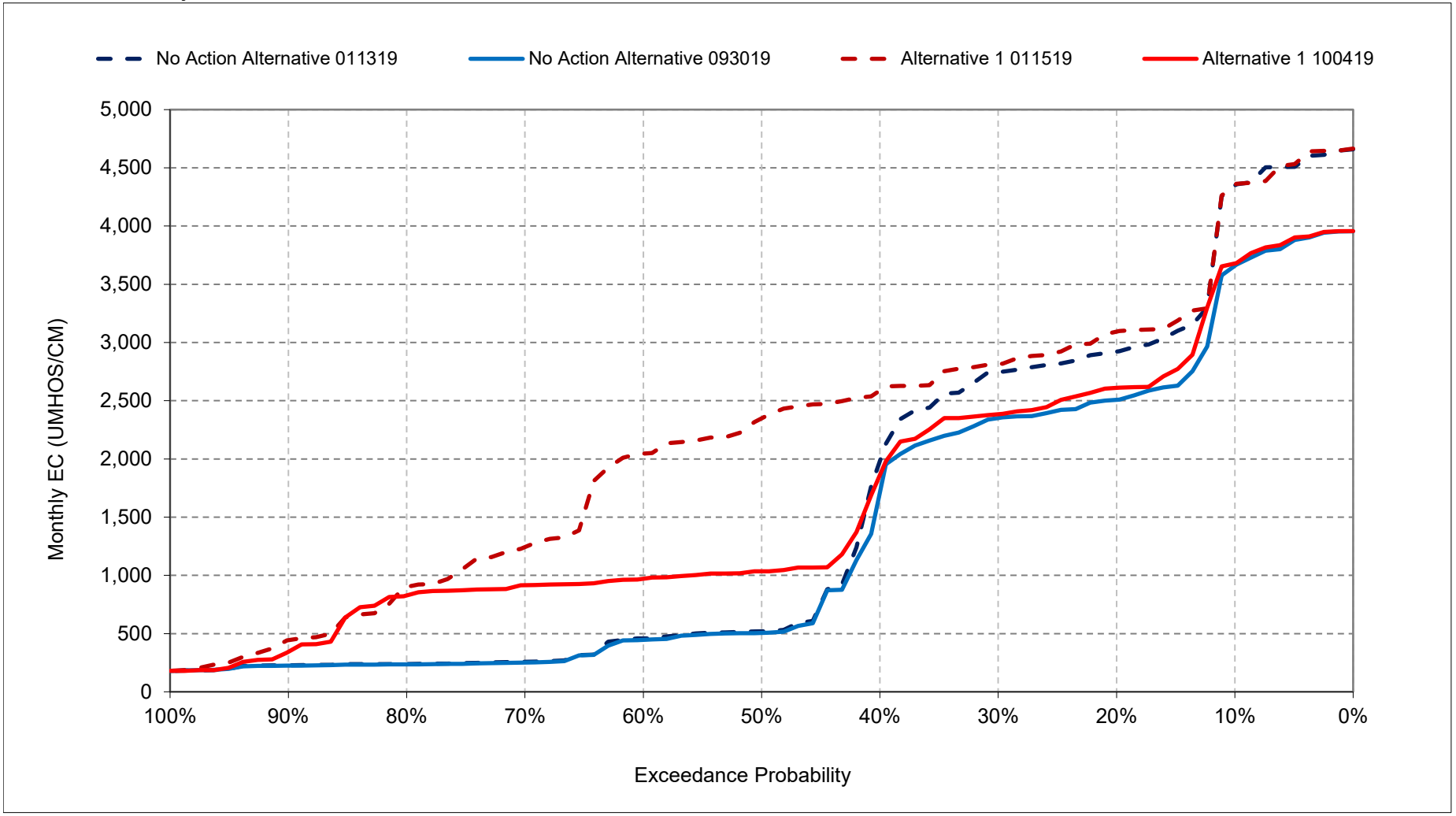

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-16. Sacramento River at Emmaton Salinity, October EC**



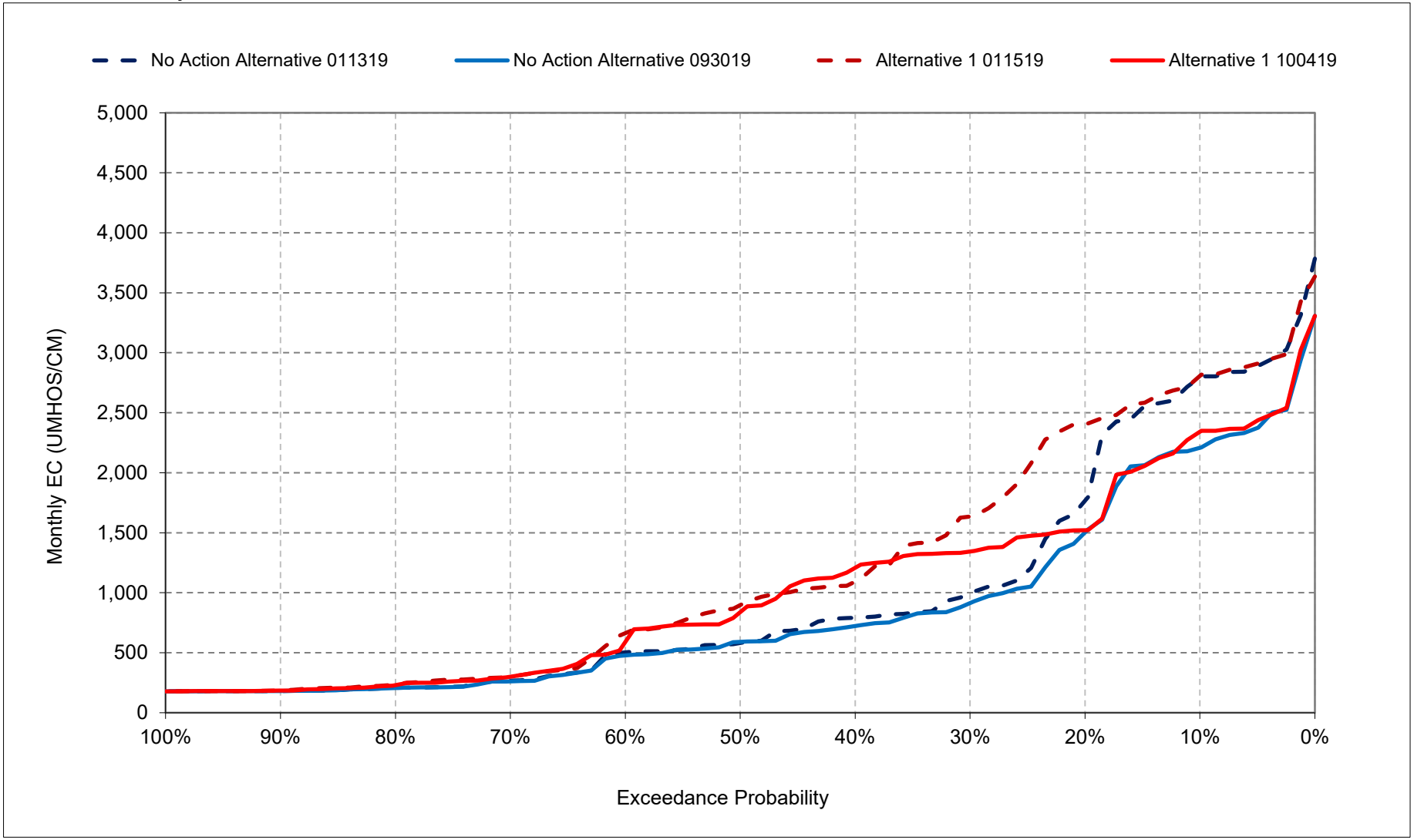

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-17. Sacramento River at Emmaton Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 4-18. Sacramento River at Emmaton Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-1. Sacramento River at Rio Vista Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 640 | 663 | 426 | 249 | 201 | 195 | 192 | 203 | 224 | 293 | 438 | 509 |
| 20% | 500 | 419 | 318 | 228 | 196 | 189 | 189 | 192 | 209 | 239 | 370 | 433 |
| 30% | 464 | 384 | 240 | 215 | 193 | 187 | 187 | 189 | 204 | 220 | 347 | 411 |
| 40% | 434 | 315 | 223 | 203 | 190 | 184 | 186 | 188 | 200 | 203 | 265 | 382 |
| 50% | 297 | 199 | 205 | 198 | 186 | 183 | 184 | 186 | 194 | 194 | 238 | 317 |
| 60% | 200 | 191 | 198 | 196 | 184 | 182 | 182 | 184 | 190 | 187 | 232 | 200 |
| 70% | 187 | 182 | 188 | 189 | 183 | 180 | 180 | 182 | 187 | 185 | 226 | 187 |
| 80% | 185 | 181 | 183 | 185 | 181 | 180 | 179 | 179 | 183 | 184 | 219 | 182 |
| 90% | 184 | 180 | 179 | 180 | 180 | 179 | 178 | 177 | 180 | 183 | 215 | 181 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 354 | 310 | 253 | 210 | 190 | 185 | 185 | 190 | 210 | 223 | 290 | 318 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 184 | 181 | 194 | 188 | 182 | 181 | 180 | 180 | 185 | 184 | 220 | 182 |
| Above Normal (16%) | 199 | 193 | 213 | 194 | 185 | 181 | 182 | 183 | 192 | 186 | 222 | 200 |
| Below Normal (13%) | 407 | 330 | 283 | 209 | 190 | 188 | 187 | 188 | 199 | 197 | 245 | 357 |
| Dry (24%) | 458 | 346 | 282 | 223 | 195 | 186 | 186 | 189 | 203 | 232 | 350 | 417 |
| Critical (15%) | 665 | 641 | 347 | 256 | 206 | 197 | 196 | 226 | 306 | 354 | 458 | 536 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 643 | 645 | 422 | 264 | 201 | 195 | 192 | 201 | 218 | 292 | 459 | 510 |
| 20% | 499 | 427 | 387 | 233 | 196 | 189 | 189 | 192 | 204 | 244 | 379 | 440 |
| 30% | 456 | 407 | 301 | 220 | 193 | 187 | 186 | 188 | 201 | 231 | 345 | 417 |
| 40% | 437 | 387 | 259 | 203 | 189 | 184 | 185 | 184 | 195 | 202 | 254 | 385 |
| 50% | 382 | 352 | 237 | 198 | 185 | 183 | 183 | 183 | 191 | 197 | 236 | 313 |
| 60% | 351 | 336 | 219 | 192 | 183 | 182 | 181 | 182 | 187 | 187 | 230 | 297 |
| 70% | 326 | 256 | 189 | 188 | 183 | 180 | 180 | 180 | 185 | 186 | 224 | 291 |
| 80% | 291 | 222 | 184 | 184 | 181 | 180 | 179 | 178 | 182 | 185 | 220 | 286 |
| 90% | 225 | 192 | 179 | 180 | 180 | 179 | 178 | 177 | 179 | 183 | 216 | 262 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 405 | 365 | 272 | 212 | 190 | 185 | 185 | 190 | 206 | 225 | 291 | 360 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 278 | 273 | 233 | 188 | 182 | 181 | 180 | 179 | 183 | 185 | 219 | 269 |
| Above Normal (16%) | 331 | 322 | 260 | 195 | 185 | 181 | 181 | 181 | 188 | 186 | 223 | 294 |
| Below Normal (13%) | 397 | 344 | 280 | 212 | 190 | 187 | 185 | 186 | 196 | 198 | 241 | 347 |
| Dry (24%) | 464 | 357 | 281 | 229 | 196 | 186 | 185 | 188 | 199 | 234 | 350 | 423 |
| Critical (15%) | 669 | 645 | 349 | 256 | 206 | 197 | 197 | 228 | 295 | 366 | 470 | 540 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **3** | -18 | -4 | **15** | 0 | **0** | **0** | -1 | -6 | -1 | **21** | **1** |
| 20% | -1 | **8** | **69** | **6** | **0** | **0** | 0 | -1 | -6 | **5** | **9** | **7** |
| 30% | -8 | **23** | **61** | **5** | **0** | **0** | -1 | -1 | -4 | **11** | -2 | **6** |
| 40% | **3** | **72** | **35** | -1 | -1 | **0** | -1 | -3 | -6 | -2 | -11 | **3** |
| 50% | **85** | **153** | **32** | -1 | 0 | 0 | 0 | -3 | -3 | **3** | -2 | -4 |
| 60% | **151** | **146** | **21** | -3 | 0 | **0** | -1 | -2 | -3 | 0 | -2 | **96** |
| 70% | **140** | **74** | **2** | -1 | 0 | 0 | **0** | -2 | -2 | **1** | -2 | **104** |
| 80% | **106** | **42** | **1** | -1 | **0** | 0 | 0 | 0 | -1 | **1** | **1** | **104** |
| 90% | **41** | **12** | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | **2** | **82** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **51** | **55** | **20** | **2** | **0** | 0 | 0 | -1 | -4 | **2** | **1** | **43** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **93** | **92** | **40** | -1 | 0 | 0 | 0 | -1 | -2 | **0** | -1 | **87** |
| Above Normal (16%) | **132** | **129** | **47** | **1** | -1 | 0 | -1 | -2 | -4 | 0 | **1** | **94** |
| Below Normal (13%) | -10 | **13** | -3 | **4** | **0** | 0 | -2 | -2 | -3 | **1** | -4 | -10 |
| Dry (24%) | **6** | **11** | -1 | **6** | **0** | **0** | 0 | -1 | -4 | **2** | 0 | **6** |
| Critical (15%) | **4** | **4** | **2** | -1 | 0 | **0** | **1** | **2** | -11 | **12** | **12** | **3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-2. Sacramento River at Rio Vista Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 570 | 539 | 356 | 243 | 200 | 195 | 192 | 201 | 219 | 300 | 420 | 490 |
| 20% | 444 | 364 | 288 | 220 | 196 | 189 | 189 | 192 | 208 | 244 | 364 | 429 |
| 30% | 419 | 341 | 235 | 212 | 193 | 187 | 187 | 189 | 204 | 222 | 337 | 407 |
| 40% | 393 | 286 | 217 | 203 | 190 | 184 | 186 | 188 | 200 | 204 | 262 | 380 |
| 50% | 308 | 198 | 205 | 198 | 186 | 183 | 184 | 186 | 194 | 194 | 238 | 308 |
| 60% | 197 | 190 | 198 | 196 | 184 | 182 | 182 | 184 | 190 | 187 | 233 | 200 |
| 70% | 187 | 182 | 187 | 189 | 183 | 180 | 180 | 182 | 187 | 185 | 226 | 187 |
| 80% | 185 | 181 | 184 | 185 | 181 | 180 | 179 | 179 | 183 | 184 | 219 | 182 |
| 90% | 184 | 180 | 179 | 180 | 180 | 179 | 178 | 177 | 180 | 183 | 215 | 181 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 329 | 281 | 237 | 206 | 189 | 185 | 185 | 190 | 209 | 224 | 287 | 313 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 184 | 181 | 193 | 188 | 182 | 181 | 180 | 180 | 185 | 184 | 220 | 182 |
| Above Normal (16%) | 196 | 192 | 211 | 194 | 185 | 181 | 182 | 183 | 192 | 186 | 222 | 200 |
| Below Normal (13%) | 376 | 295 | 257 | 207 | 190 | 188 | 187 | 187 | 199 | 197 | 244 | 355 |
| Dry (24%) | 417 | 309 | 255 | 217 | 195 | 186 | 186 | 189 | 202 | 234 | 343 | 410 |
| Critical (15%) | 596 | 536 | 309 | 236 | 199 | 196 | 195 | 222 | 297 | 358 | 446 | 519 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 570 | 540 | 357 | 248 | 200 | 194 | 192 | 202 | 219 | 301 | 436 | 512 |
| 20% | 445 | 374 | 294 | 225 | 194 | 188 | 188 | 191 | 203 | 246 | 365 | 436 |
| 30% | 413 | 355 | 276 | 216 | 192 | 187 | 186 | 188 | 201 | 224 | 342 | 414 |
| 40% | 391 | 301 | 261 | 203 | 189 | 184 | 184 | 185 | 193 | 207 | 263 | 392 |
| 50% | 290 | 230 | 231 | 197 | 186 | 183 | 183 | 183 | 190 | 197 | 236 | 303 |
| 60% | 189 | 225 | 215 | 193 | 183 | 182 | 181 | 182 | 186 | 188 | 212 | 210 |
| 70% | 188 | 220 | 188 | 188 | 183 | 180 | 180 | 180 | 184 | 186 | 210 | 206 |
| 80% | 188 | 214 | 184 | 184 | 181 | 180 | 179 | 178 | 182 | 184 | 206 | 202 |
| 90% | 187 | 184 | 179 | 180 | 180 | 179 | 178 | 177 | 179 | 183 | 203 | 197 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 324 | 302 | 251 | 208 | 189 | 185 | 184 | 190 | 206 | 227 | 283 | 324 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 187 | 213 | 226 | 189 | 182 | 181 | 180 | 179 | 183 | 185 | 205 | 203 |
| Above Normal (16%) | 188 | 219 | 236 | 195 | 185 | 181 | 181 | 181 | 187 | 186 | 210 | 203 |
| Below Normal (13%) | 368 | 305 | 258 | 211 | 189 | 187 | 185 | 186 | 194 | 200 | 248 | 360 |
| Dry (24%) | 409 | 323 | 256 | 220 | 193 | 186 | 185 | 187 | 200 | 235 | 344 | 418 |
| Critical (15%) | 587 | 547 | 307 | 238 | 201 | 197 | 196 | 228 | 297 | 375 | 460 | 530 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | 1 | 1 | 5 | -1 | 0 | 0 | 1 | -1 | 1 | 16 | 21 |
| 20% | 1 | 10 | 6 | 5 | -1 | -1 | -1 | -1 | -5 | 2 | 1 | 8 |
| 30% | -6 | 14 | 41 | 4 | -1 | 0 | -1 | -2 | -4 | 3 | 4 | 7 |
| 40% | -1 | 14 | 44 | 0 | -1 | 0 | -2 | -3 | -7 | 3 | 1 | 12 |
| 50% | -18 | 32 | 26 | -1 | 0 | 0 | -1 | -3 | -4 | 3 | -2 | -5 |
| 60% | -7 | 35 | 17 | -2 | 0 | 0 | -1 | -2 | -3 | 0 | -21 | 10 |
| 70% | 2 | 38 | 0 | -1 | 0 | 0 | 0 | -2 | -2 | 0 | -16 | 18 |
| 80% | 3 | 34 | 0 | -1 | 0 | 0 | 0 | 0 | -1 | 0 | -13 | 20 |
| 90% | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -12 | 16 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | 21 | 14 | 2 | 0 | 0 | -1 | 0 | -3 | 3 | -4 | 11 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 3 | 32 | 33 | 1 | 0 | 0 | 0 | -1 | -2 | 0 | -15 | 21 |
| Above Normal (16%) | -8 | 27 | 24 | 1 | -1 | 0 | -1 | -2 | -4 | 0 | -12 | 3 |
| Below Normal (13%) | -8 | 11 | 1 | 4 | -1 | -1 | -2 | -1 | -5 | 3 | 4 | 4 |
| Dry (24%) | -7 | 13 | 0 | 3 | -2 | 0 | -1 | -1 | -2 | 1 | 1 | 8 |
| Critical (15%) | -9 | 10 | -1 | 2 | 2 | 1 | 1 | 6 | 0 | 17 | 14 | 11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-3. Sacramento River at Rio Vista Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 640 | 663 | 426 | 249 | 201 | 195 | 192 | 203 | 224 | 293 | 438 | 509 |
| 20% | 500 | 419 | 318 | 228 | 196 | 189 | 189 | 192 | 209 | 239 | 370 | 433 |
| 30% | 464 | 384 | 240 | 215 | 193 | 187 | 187 | 189 | 204 | 220 | 347 | 411 |
| 40% | 434 | 315 | 223 | 203 | 190 | 184 | 186 | 188 | 200 | 203 | 265 | 382 |
| 50% | 297 | 199 | 205 | 198 | 186 | 183 | 184 | 186 | 194 | 194 | 238 | 317 |
| 60% | 200 | 191 | 198 | 196 | 184 | 182 | 182 | 184 | 190 | 187 | 232 | 200 |
| 70% | 187 | 182 | 188 | 189 | 183 | 180 | 180 | 182 | 187 | 185 | 226 | 187 |
| 80% | 185 | 181 | 183 | 185 | 181 | 180 | 179 | 179 | 183 | 184 | 219 | 182 |
| 90% | 184 | 180 | 179 | 180 | 180 | 179 | 178 | 177 | 180 | 183 | 215 | 181 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 354 | 310 | 253 | 210 | 190 | 185 | 185 | 190 | 210 | 223 | 290 | 318 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 184 | 181 | 194 | 188 | 182 | 181 | 180 | 180 | 185 | 184 | 220 | 182 |
| Above Normal (16%) | 199 | 193 | 213 | 194 | 185 | 181 | 182 | 183 | 192 | 186 | 222 | 200 |
| Below Normal (13%) | 407 | 330 | 283 | 209 | 190 | 188 | 187 | 188 | 199 | 197 | 245 | 357 |
| Dry (24%) | 458 | 346 | 282 | 223 | 195 | 186 | 186 | 189 | 203 | 232 | 350 | 417 |
| Critical (15%) | 665 | 641 | 347 | 256 | 206 | 197 | 196 | 226 | 306 | 354 | 458 | 536 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 570 | 539 | 356 | 243 | 200 | 195 | 192 | 201 | 219 | 300 | 420 | 490 |
| 20% | 444 | 364 | 288 | 220 | 196 | 189 | 189 | 192 | 208 | 244 | 364 | 429 |
| 30% | 419 | 341 | 235 | 212 | 193 | 187 | 187 | 189 | 204 | 222 | 337 | 407 |
| 40% | 393 | 286 | 217 | 203 | 190 | 184 | 186 | 188 | 200 | 204 | 262 | 380 |
| 50% | 308 | 198 | 205 | 198 | 186 | 183 | 184 | 186 | 194 | 194 | 238 | 308 |
| 60% | 197 | 190 | 198 | 196 | 184 | 182 | 182 | 184 | 190 | 187 | 233 | 200 |
| 70% | 187 | 182 | 187 | 189 | 183 | 180 | 180 | 182 | 187 | 185 | 226 | 187 |
| 80% | 185 | 181 | 184 | 185 | 181 | 180 | 179 | 179 | 183 | 184 | 219 | 182 |
| 90% | 184 | 180 | 179 | 180 | 180 | 179 | 178 | 177 | 180 | 183 | 215 | 181 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 329 | 281 | 237 | 206 | 189 | 185 | 185 | 190 | 209 | 224 | 287 | 313 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 184 | 181 | 193 | 188 | 182 | 181 | 180 | 180 | 185 | 184 | 220 | 182 |
| Above Normal (16%) | 196 | 192 | 211 | 194 | 185 | 181 | 182 | 183 | 192 | 186 | 222 | 200 |
| Below Normal (13%) | 376 | 295 | 257 | 207 | 190 | 188 | 187 | 187 | 199 | 197 | 244 | 355 |
| Dry (24%) | 417 | 309 | 255 | 217 | 195 | 186 | 186 | 189 | 202 | 234 | 343 | 410 |
| Critical (15%) | 596 | 536 | 309 | 236 | 199 | 196 | 195 | 222 | 297 | 358 | 446 | 519 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -69 | -124 | -70 | -7 | -1 | 0 | 0 | -2 | -4 | 8 | -18 | -18 |
| 20% | -56 | -55 | -30 | -8 | 0 | 0 | 0 | -1 | -1 | 5 | -6 | -4 |
| 30% | -45 | -43 | -5 | -3 | 0 | 0 | 0 | 0 | 0 | 2 | -10 | -4 |
| 40% | -42 | -29 | -6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | -2 |
| 50% | 11 | -1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -9 |
| 60% | -4 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -25 | -29 | -16 | -5 | -1 | 0 | 0 | -1 | -1 | 1 | -3 | -4 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -3 | -1 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -31 | -36 | -26 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -2 |
| Dry (24%) | -41 | -37 | -27 | -6 | -1 | 0 | 0 | 0 | -1 | 2 | -7 | -7 |
| Critical (15%) | -69 | -104 | -38 | -21 | -6 | -1 | -1 | -4 | -9 | 5 | -12 | -17 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 5-4. Sacramento River at Rio Vista Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 643 | 645 | 422 | 264 | 201 | 195 | 192 | 201 | 218 | 292 | 459 | 510 |
| 20% | 499 | 427 | 387 | 233 | 196 | 189 | 189 | 192 | 204 | 244 | 379 | 440 |
| 30% | 456 | 407 | 301 | 220 | 193 | 187 | 186 | 188 | 201 | 231 | 345 | 417 |
| 40% | 437 | 387 | 259 | 203 | 189 | 184 | 185 | 184 | 195 | 202 | 254 | 385 |
| 50% | 382 | 352 | 237 | 198 | 185 | 183 | 183 | 183 | 191 | 197 | 236 | 313 |
| 60% | 351 | 336 | 219 | 192 | 183 | 182 | 181 | 182 | 187 | 187 | 230 | 297 |
| 70% | 326 | 256 | 189 | 188 | 183 | 180 | 180 | 180 | 185 | 186 | 224 | 291 |
| 80% | 291 | 222 | 184 | 184 | 181 | 180 | 179 | 178 | 182 | 185 | 220 | 286 |
| 90% | 225 | 192 | 179 | 180 | 180 | 179 | 178 | 177 | 179 | 183 | 216 | 262 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 405 | 365 | 272 | 212 | 190 | 185 | 185 | 190 | 206 | 225 | 291 | 360 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 278 | 273 | 233 | 188 | 182 | 181 | 180 | 179 | 183 | 185 | 219 | 269 |
| Above Normal (16%) | 331 | 322 | 260 | 195 | 185 | 181 | 181 | 181 | 188 | 186 | 223 | 294 |
| Below Normal (13%) | 397 | 344 | 280 | 212 | 190 | 187 | 185 | 186 | 196 | 198 | 241 | 347 |
| Dry (24%) | 464 | 357 | 281 | 229 | 196 | 186 | 185 | 188 | 199 | 234 | 350 | 423 |
| Critical (15%) | 669 | 645 | 349 | 256 | 206 | 197 | 197 | 228 | 295 | 366 | 470 | 540 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 570 | 540 | 357 | 248 | 200 | 194 | 192 | 202 | 219 | 301 | 436 | 512 |
| 20% | 445 | 374 | 294 | 225 | 194 | 188 | 188 | 191 | 203 | 246 | 365 | 436 |
| 30% | 413 | 355 | 276 | 216 | 192 | 187 | 186 | 188 | 201 | 224 | 342 | 414 |
| 40% | 391 | 301 | 261 | 203 | 189 | 184 | 184 | 185 | 193 | 207 | 263 | 392 |
| 50% | 290 | 230 | 231 | 197 | 186 | 183 | 183 | 183 | 190 | 197 | 236 | 303 |
| 60% | 189 | 225 | 215 | 193 | 183 | 182 | 181 | 182 | 186 | 188 | 212 | 210 |
| 70% | 188 | 220 | 188 | 188 | 183 | 180 | 180 | 180 | 184 | 186 | 210 | 206 |
| 80% | 188 | 214 | 184 | 184 | 181 | 180 | 179 | 178 | 182 | 184 | 206 | 202 |
| 90% | 187 | 184 | 179 | 180 | 180 | 179 | 178 | 177 | 179 | 183 | 203 | 197 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 324 | 302 | 251 | 208 | 189 | 185 | 184 | 190 | 206 | 227 | 283 | 324 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 187 | 213 | 226 | 189 | 182 | 181 | 180 | 179 | 183 | 185 | 205 | 203 |
| Above Normal (16%) | 188 | 219 | 236 | 195 | 185 | 181 | 181 | 181 | 187 | 186 | 210 | 203 |
| Below Normal (13%) | 368 | 305 | 258 | 211 | 189 | 187 | 185 | 186 | 194 | 200 | 248 | 360 |
| Dry (24%) | 409 | 323 | 256 | 220 | 193 | 186 | 185 | 187 | 200 | 235 | 344 | 418 |
| Critical (15%) | 587 | 547 | 307 | 238 | 201 | 197 | 196 | 228 | 297 | 375 | 460 | 530 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -73 | -104 | -65 | -17 | -1 | -1 | -1 | **0** | **1** | **9** | -23 | **2** |
| 20% | -54 | -52 | -92 | -9 | -1 | -1 | -1 | 0 | -1 | **2** | -14 | -4 |
| 30% | -43 | -52 | -26 | -4 | -1 | 0 | **0** | 0 | **0** | -7 | -4 | -3 |
| 40% | -46 | -86 | **2** | **1** | 0 | -1 | -1 | **0** | -1 | **5** | **9** | **6** |
| 50% | -92 | -123 | -5 | 0 | **0** | 0 | -1 | **0** | -1 | **0** | 0 | -10 |
| 60% | -162 | -111 | -4 | **1** | **0** | 0 | **0** | 0 | -1 | **0** | -18 | -87 |
| 70% | -138 | -35 | -2 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | -14 | -85 |
| 80% | -103 | -8 | -1 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | -14 | -84 |
| 90% | -38 | -7 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | **0** | -13 | -65 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -81 | -63 | -21 | -5 | -1 | 0 | 0 | 0 | **0** | **2** | -8 | -36 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -90 | -59 | -8 | **2** | 0 | 0 | 0 | **0** | 0 | **0** | -14 | -66 |
| Above Normal (16%) | -143 | -103 | -24 | **0** | 0 | 0 | 0 | 0 | -1 | **0** | -13 | -90 |
| Below Normal (13%) | -30 | -38 | -22 | -2 | -1 | 0 | **0** | 0 | -2 | **2** | **7** | **13** |
| Dry (24%) | -55 | -34 | -26 | -9 | -3 | 0 | 0 | 0 | **0** | **1** | -5 | -5 |
| Critical (15%) | -82 | -99 | -42 | -18 | -5 | 0 | -1 | -1 | **3** | **9** | -9 | -9 |

a Based on the 82-year simulation period.

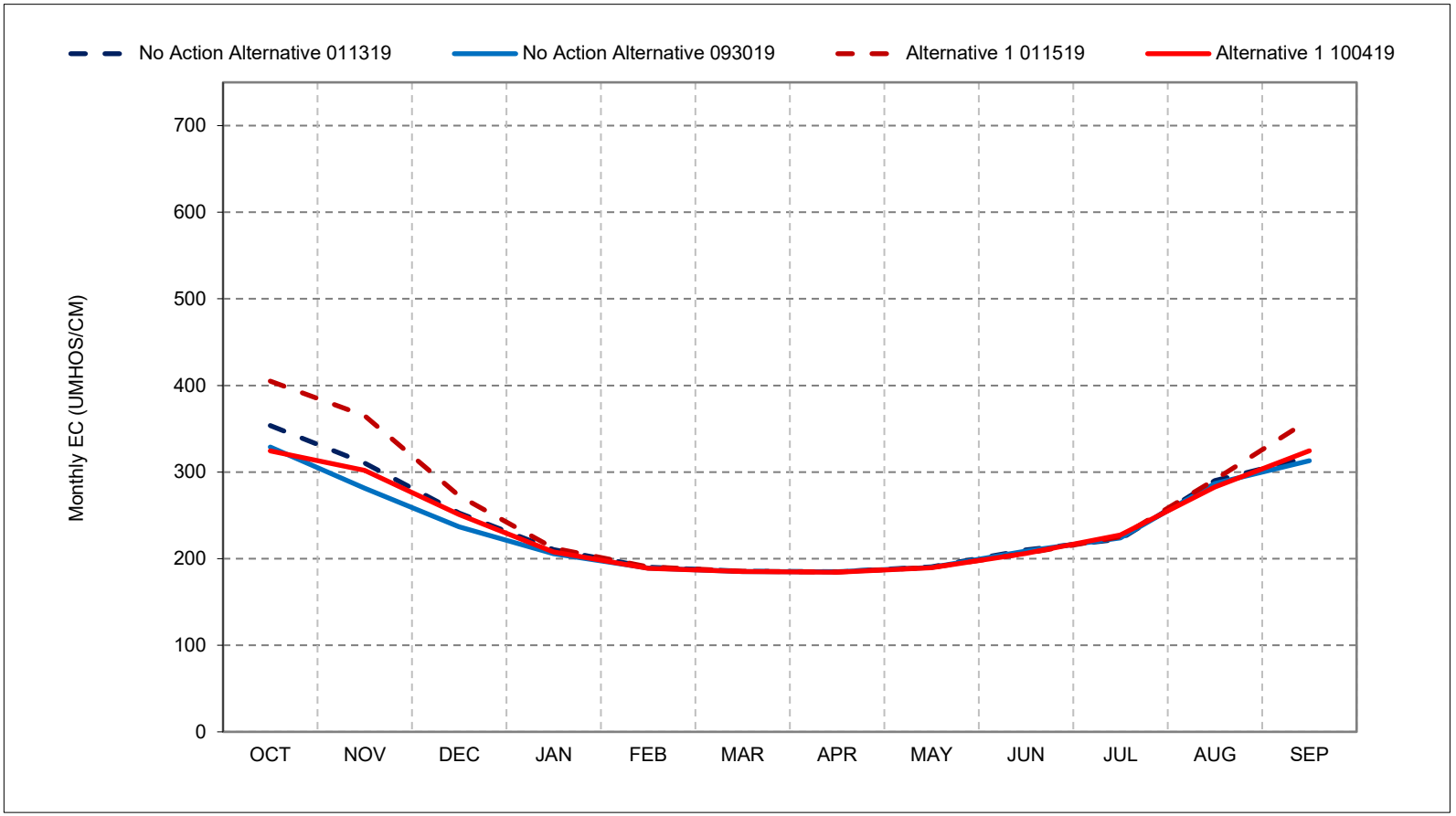
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-1. Sacramento River at Rio Vista Salinity, Long-Term Average EC

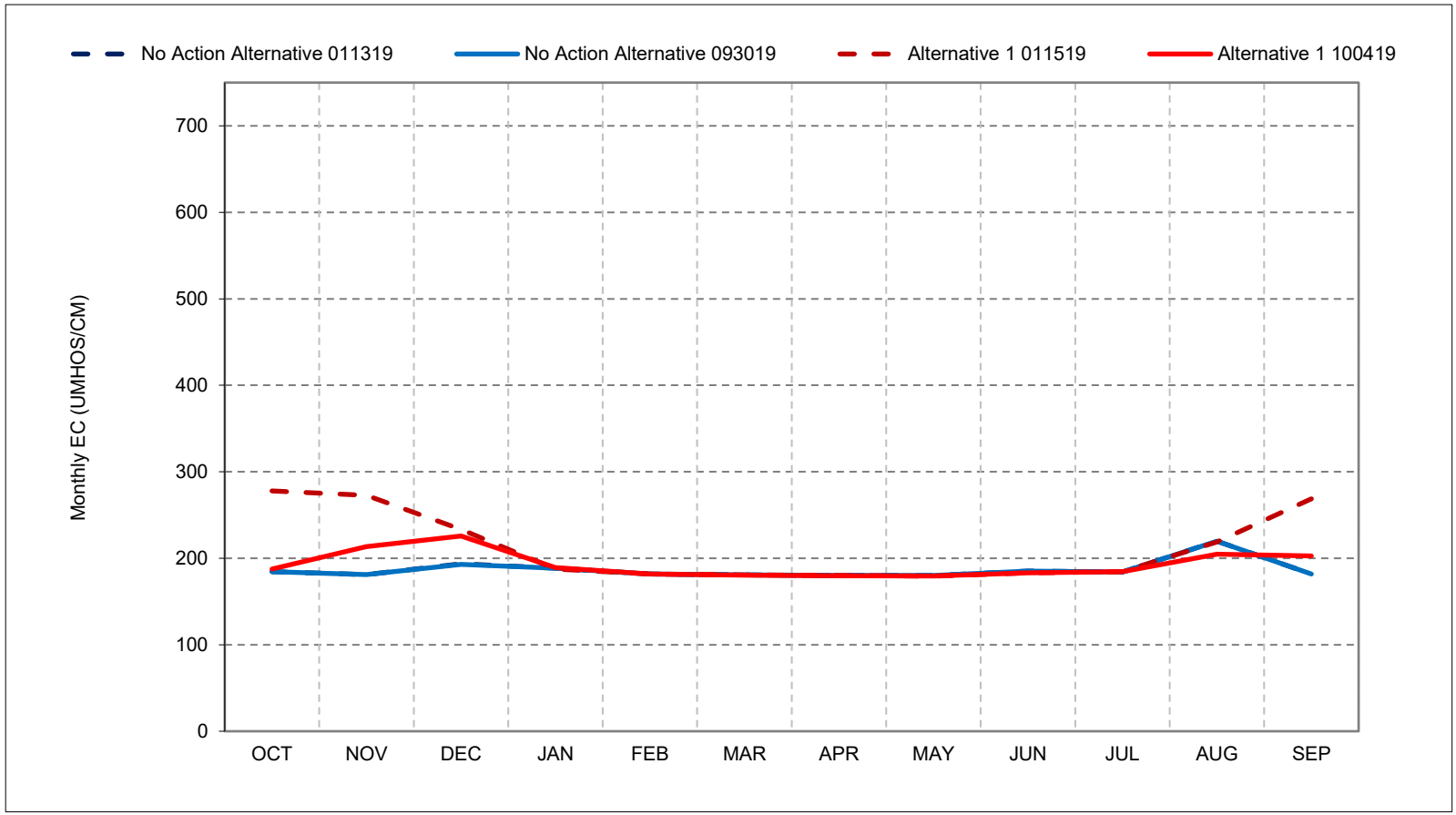



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-2. Sacramento River at Rio Vista Salinity, Wet Year Average EC

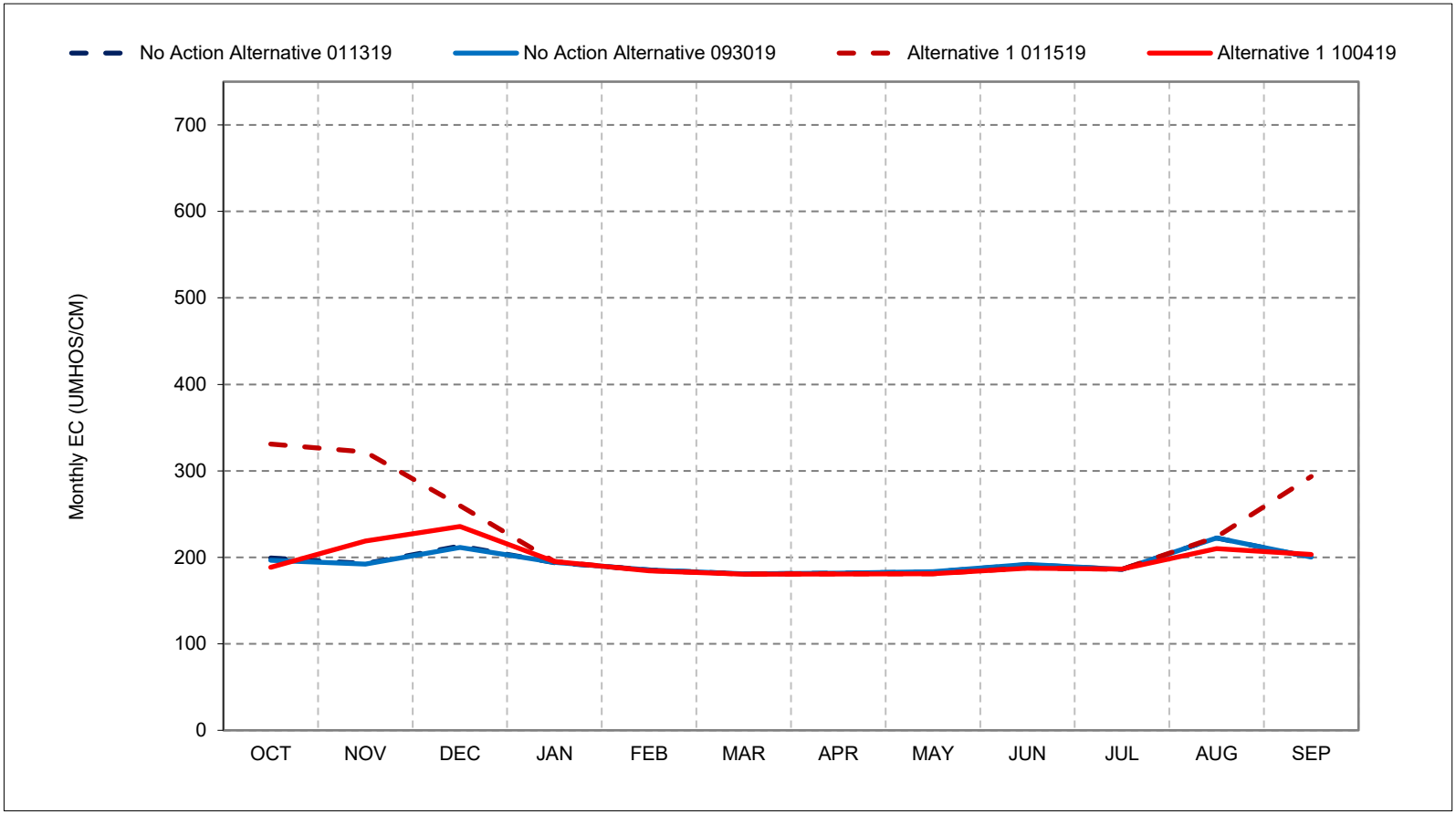



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-3. Sacramento River at Rio Vista Salinity, Above Normal Year Average EC

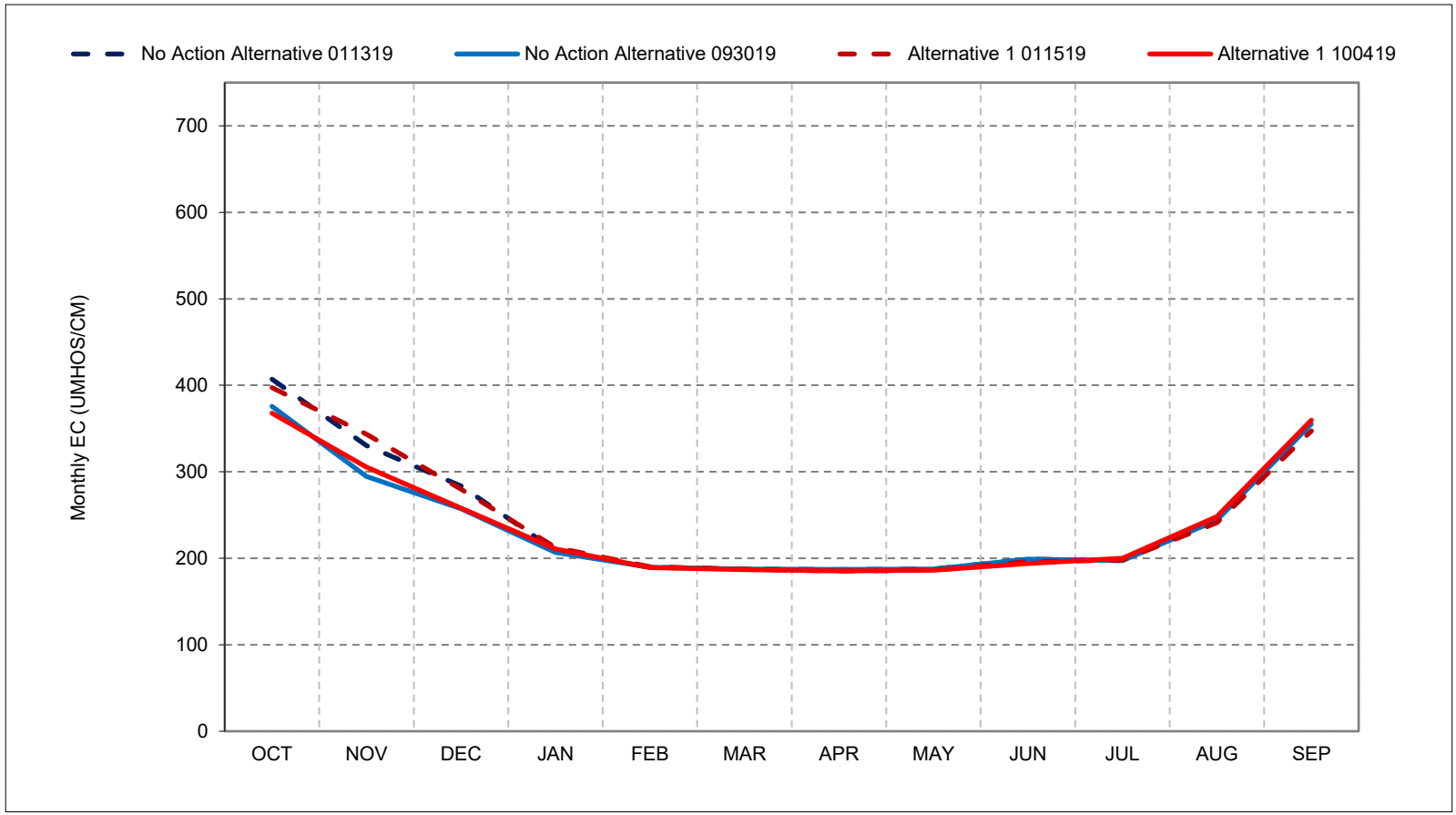



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-4. Sacramento River at Rio Vista Salinity, Below Normal Year Average EC

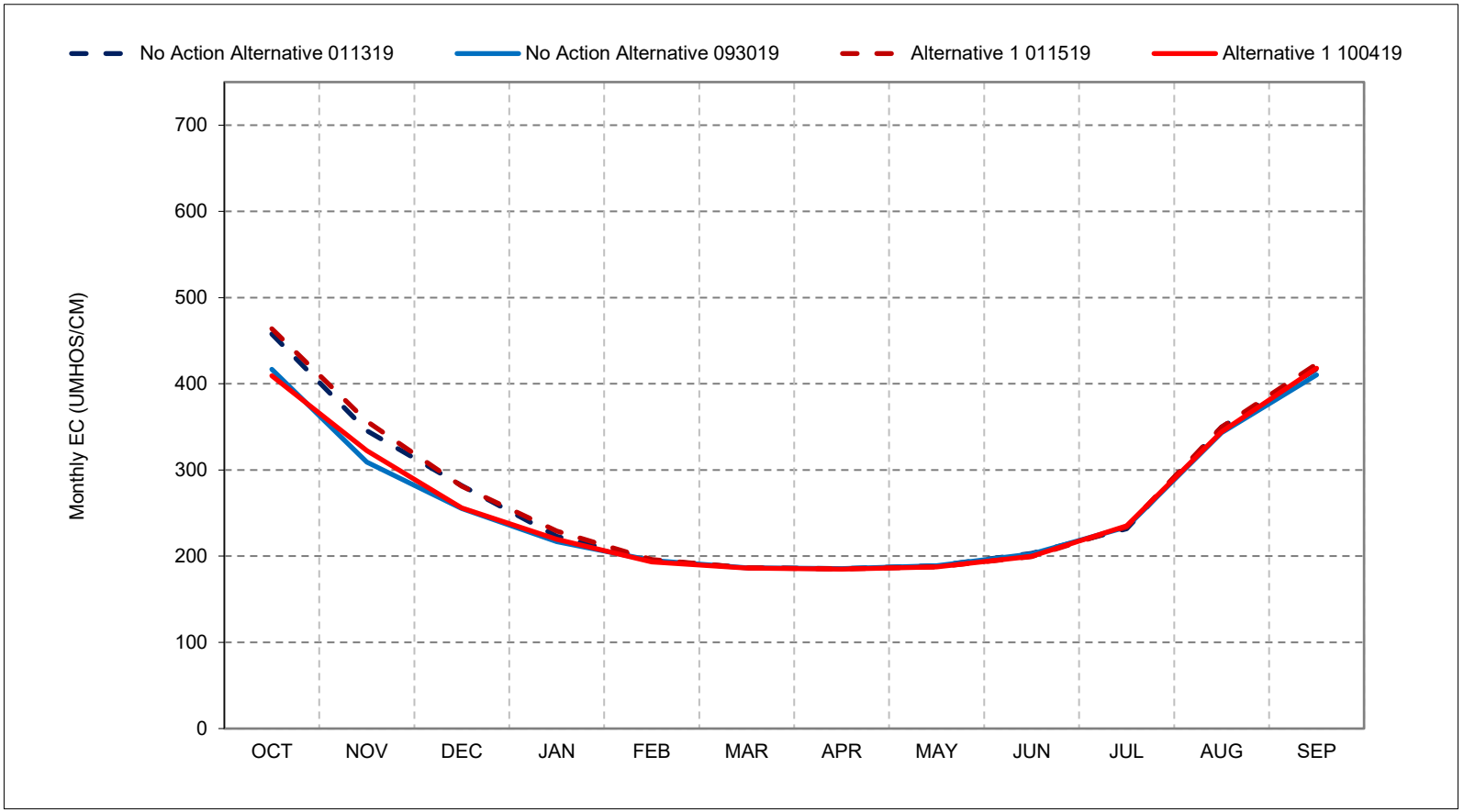



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-5. Sacramento River at Rio Vista Salinity, Dry Year Average EC

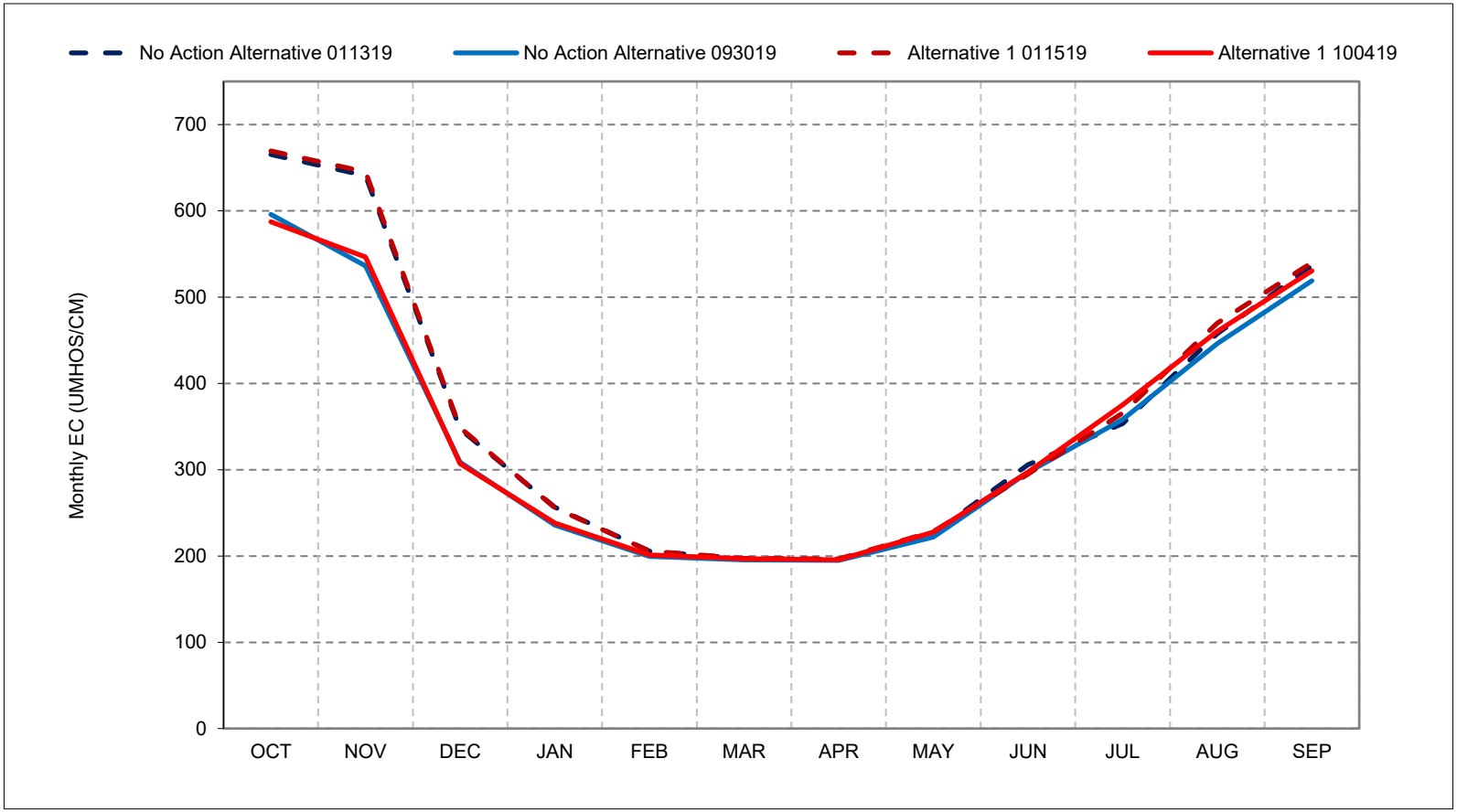



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 5-6. Sacramento River at Rio Vista Salinity, Critical Year Average EC

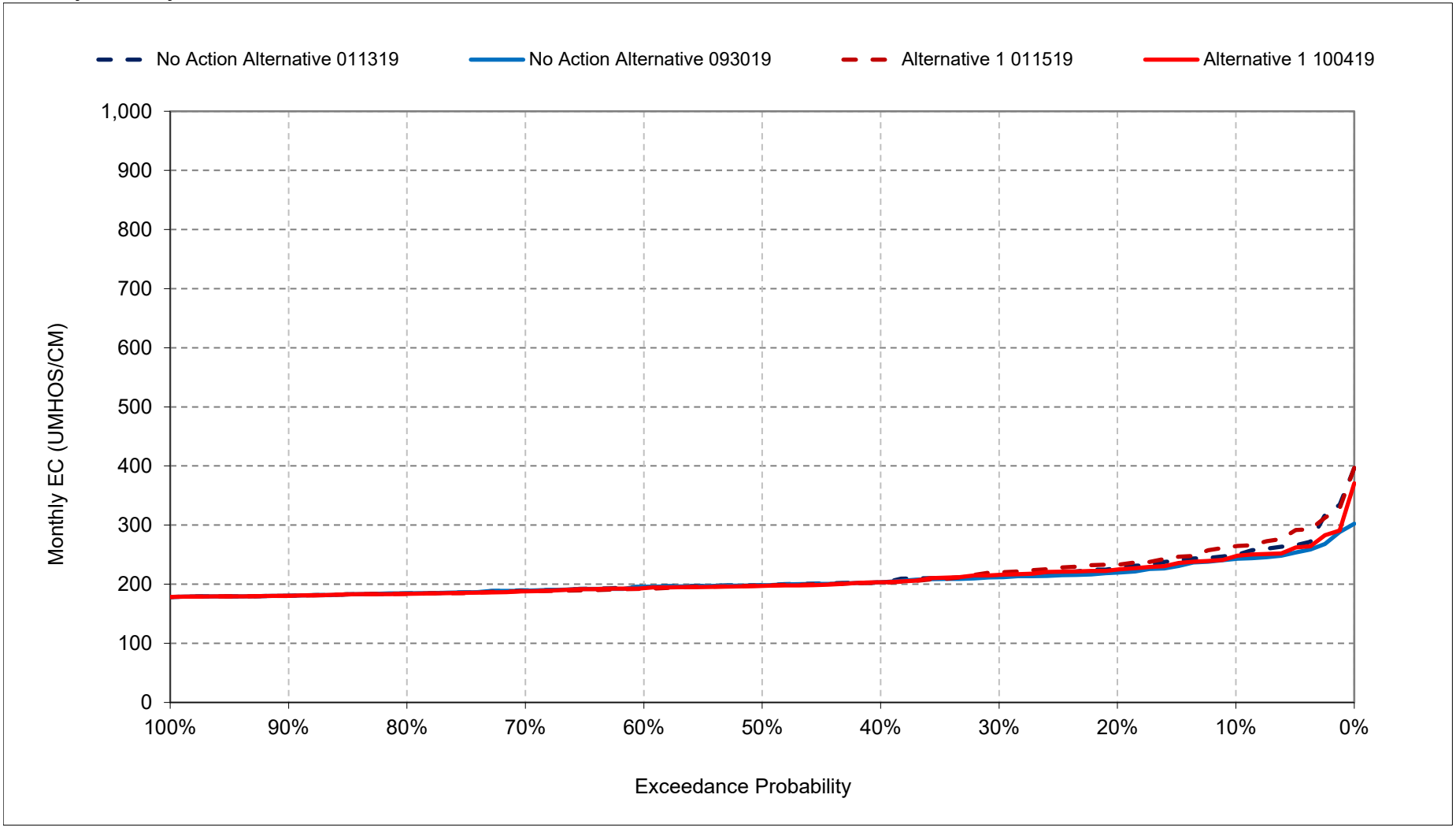



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

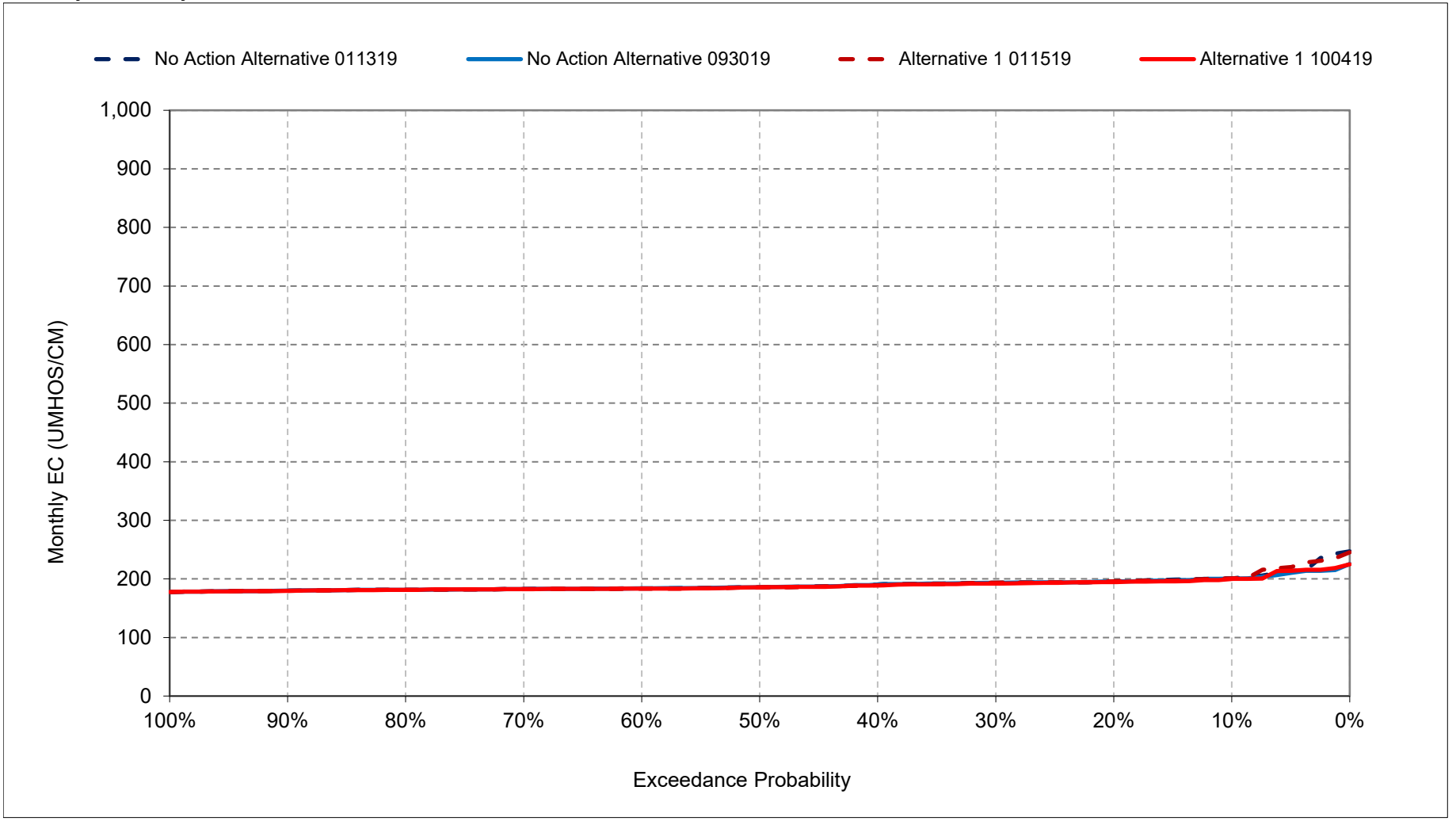
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-7. Sacramento River at Rio Vista**
**Salinity, January EC**



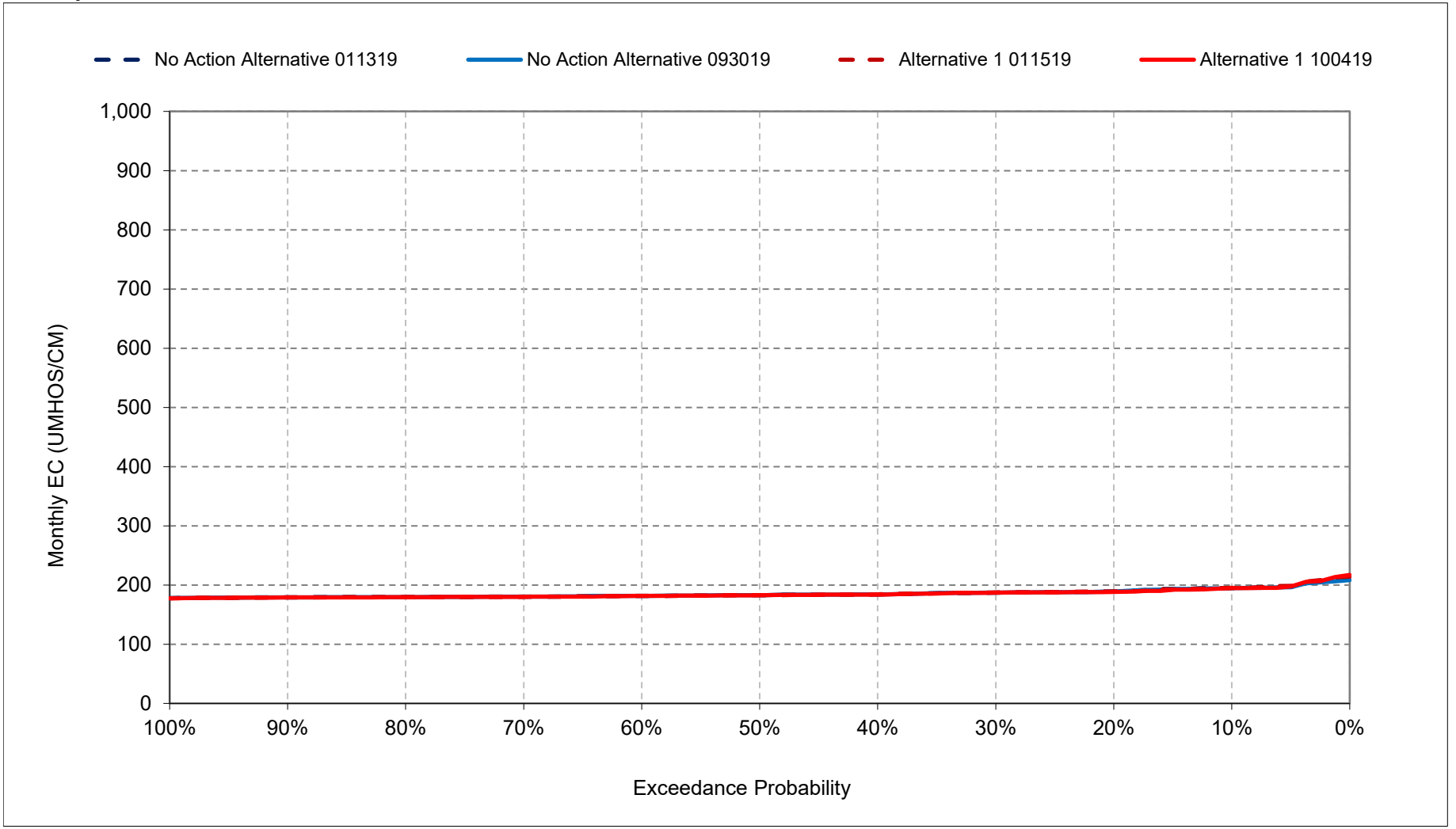

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-8. Sacramento River at Rio Vista**
**Salinity, February EC**



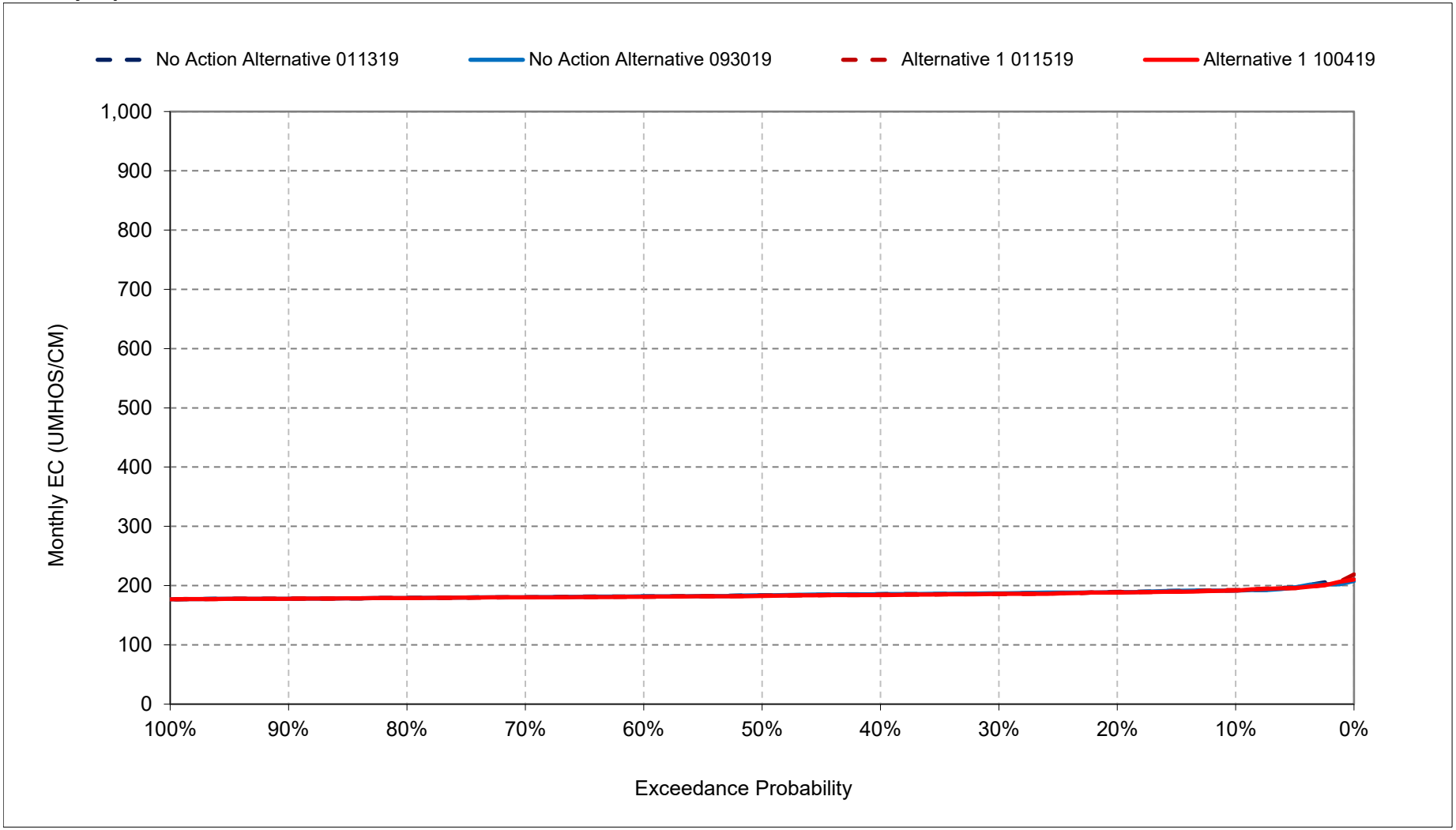

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-9. Sacramento River at Rio Vista**
**Salinity, March EC**



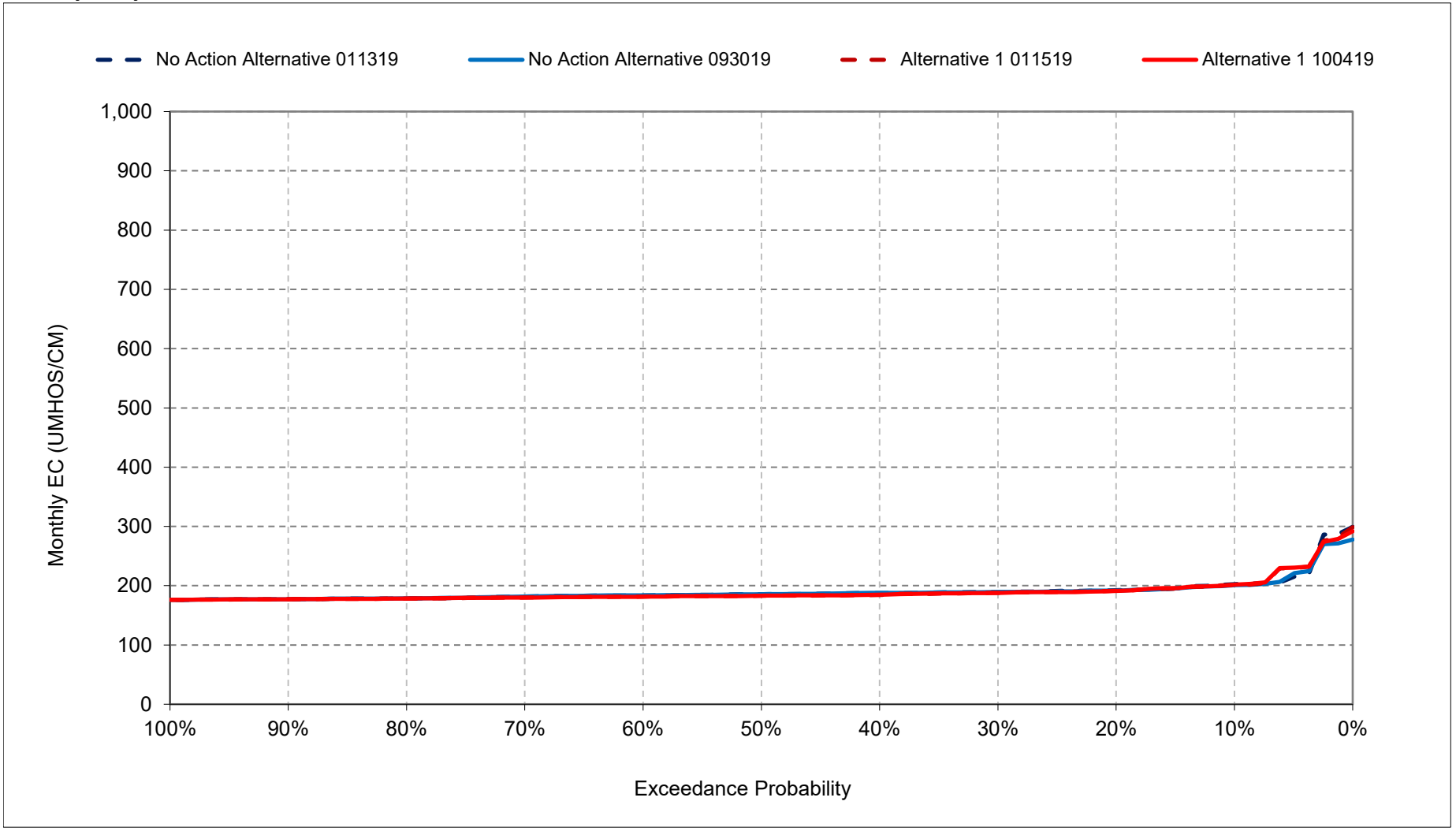

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-10. Sacramento River at Rio Vista**
**Salinity, April EC**



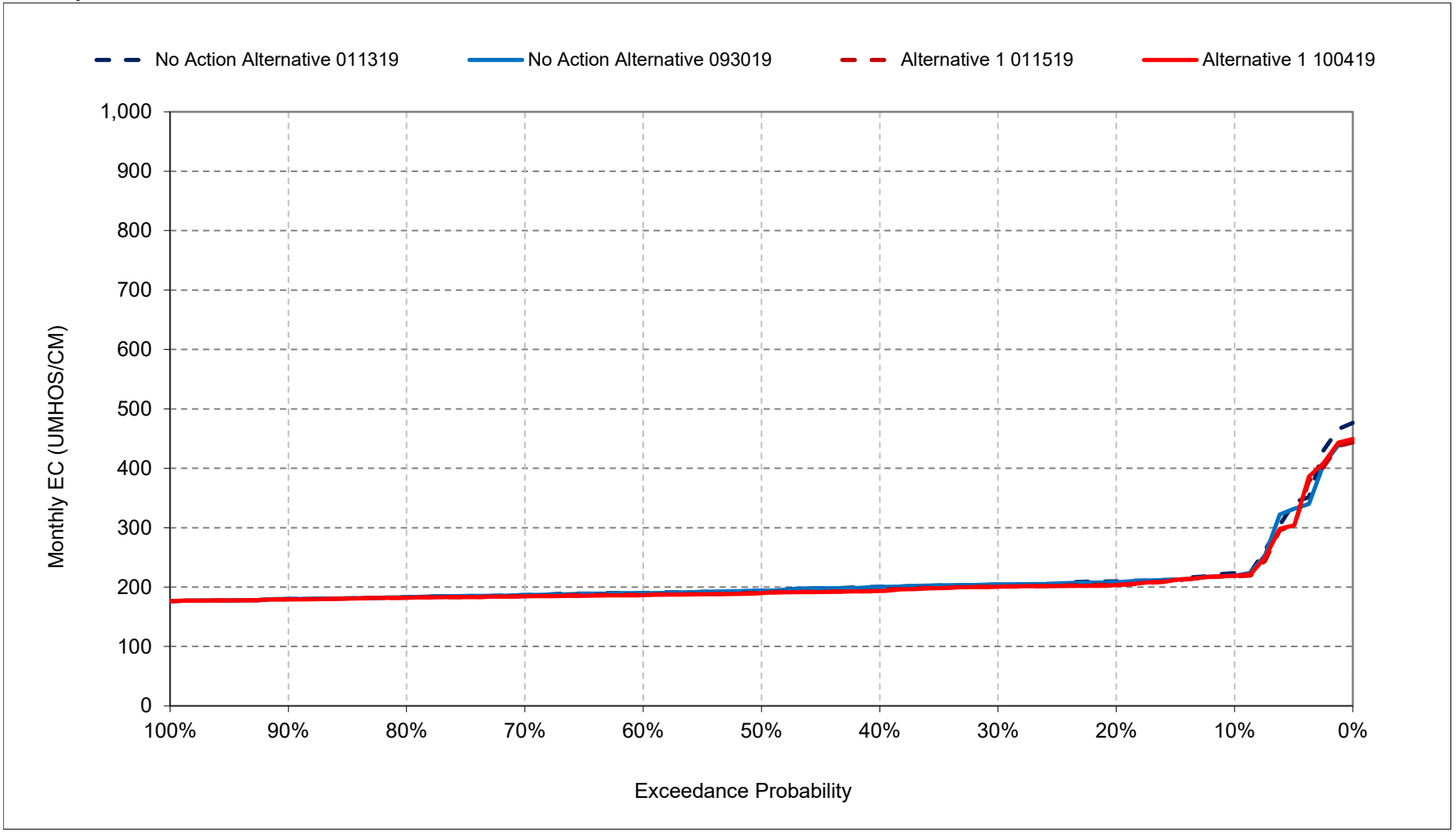

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-11. Sacramento River at Rio Vista**
**Salinity, May EC**



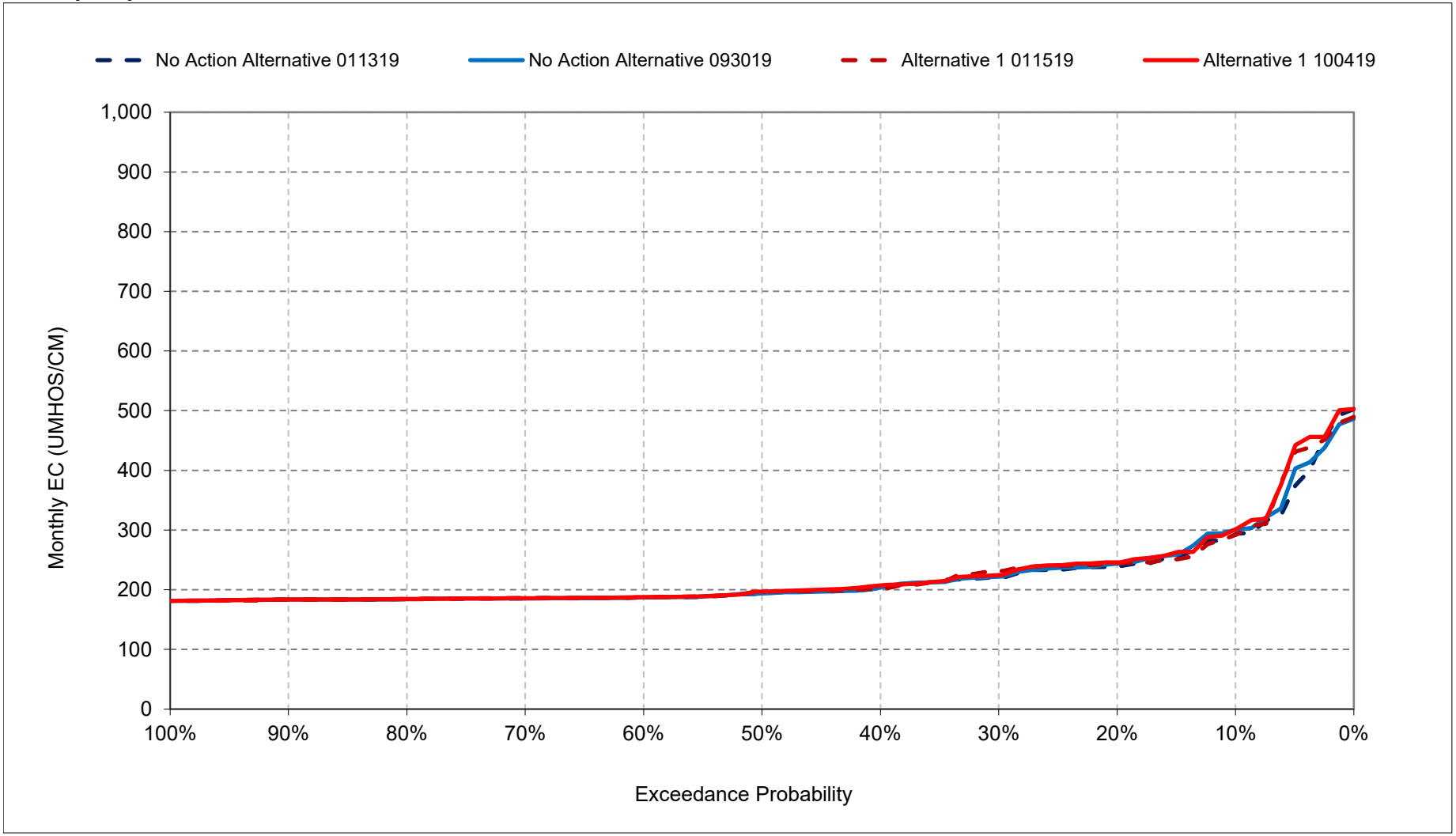

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-12. Sacramento River at Rio Vista**
**Salinity, June EC**



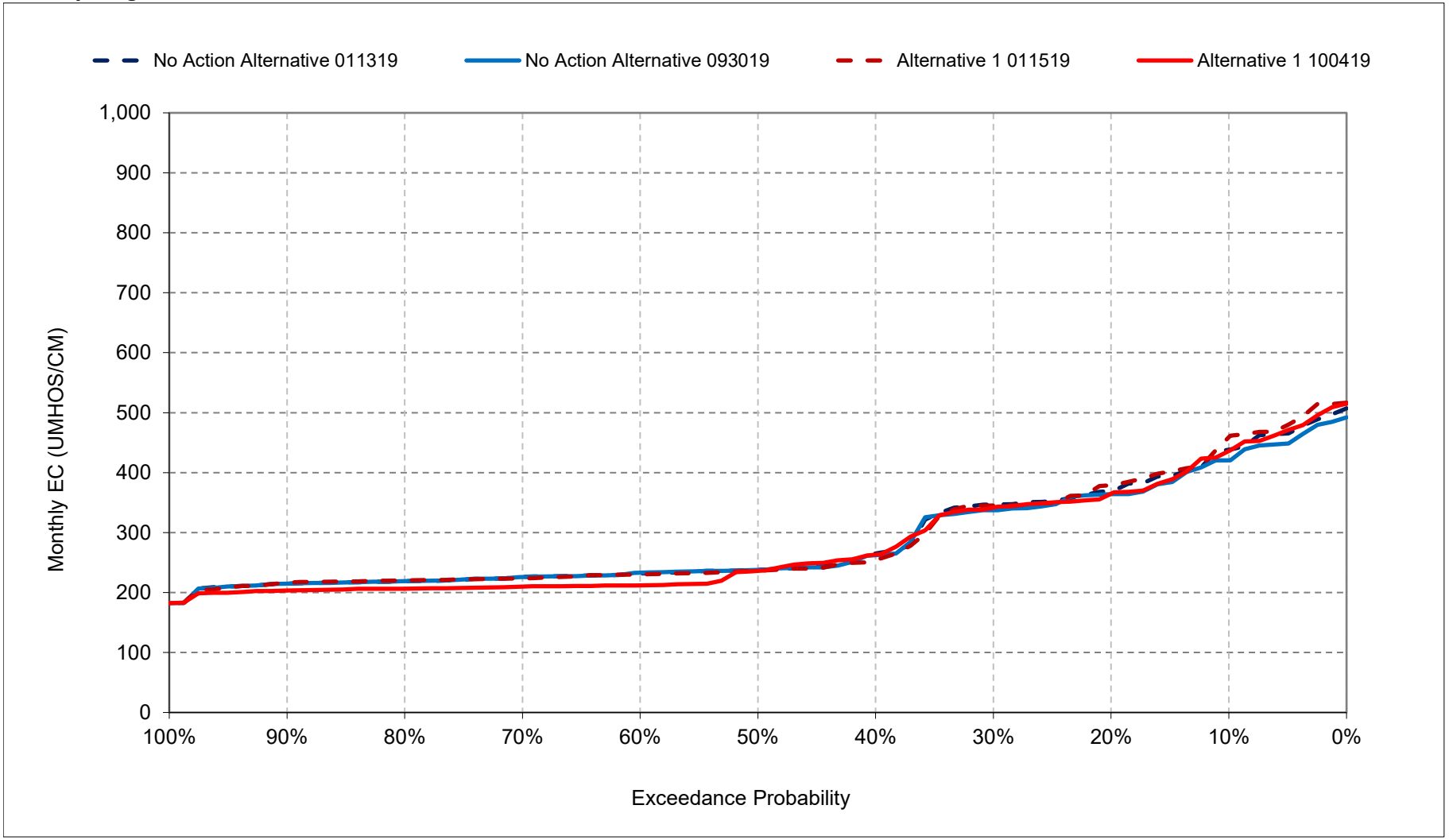

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-13. Sacramento River at Rio Vista**
**Salinity, July EC**



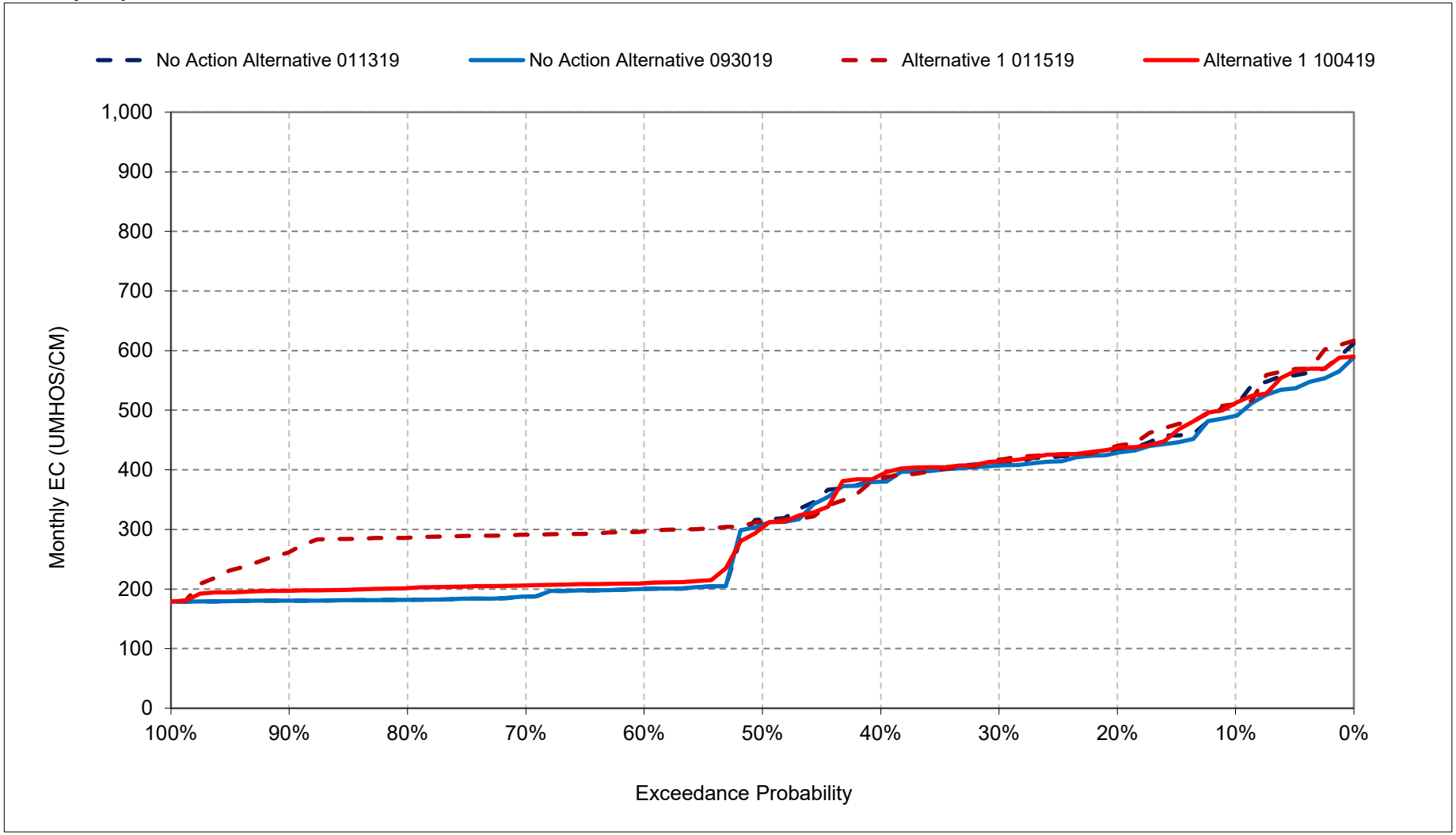

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-14. Sacramento River at Rio Vista**
**Salinity, August EC**



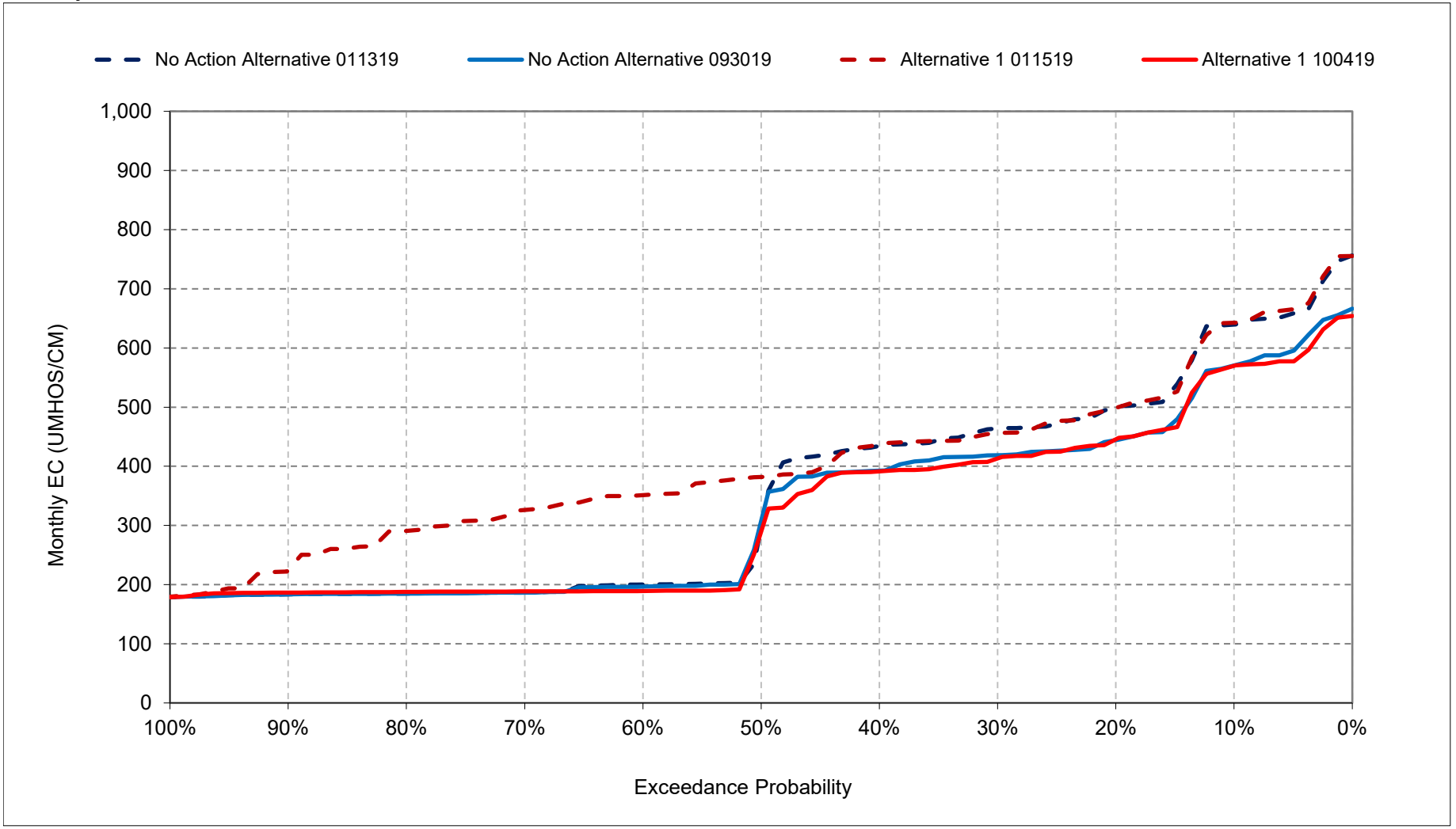

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-15. Sacramento River at Rio Vista**
**Salinity, September EC**



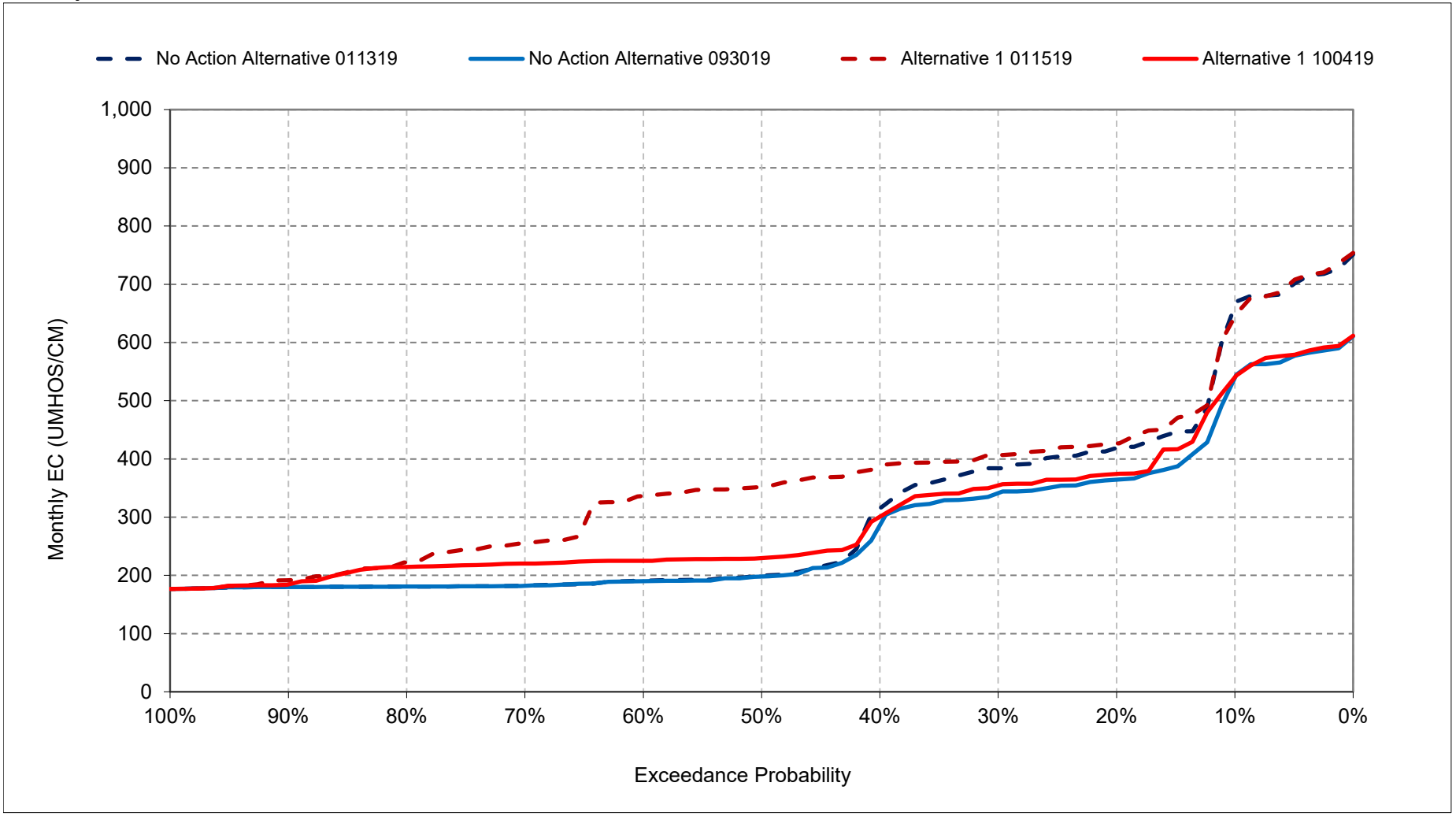

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-16. Sacramento River at Rio Vista**
**Salinity, October EC**



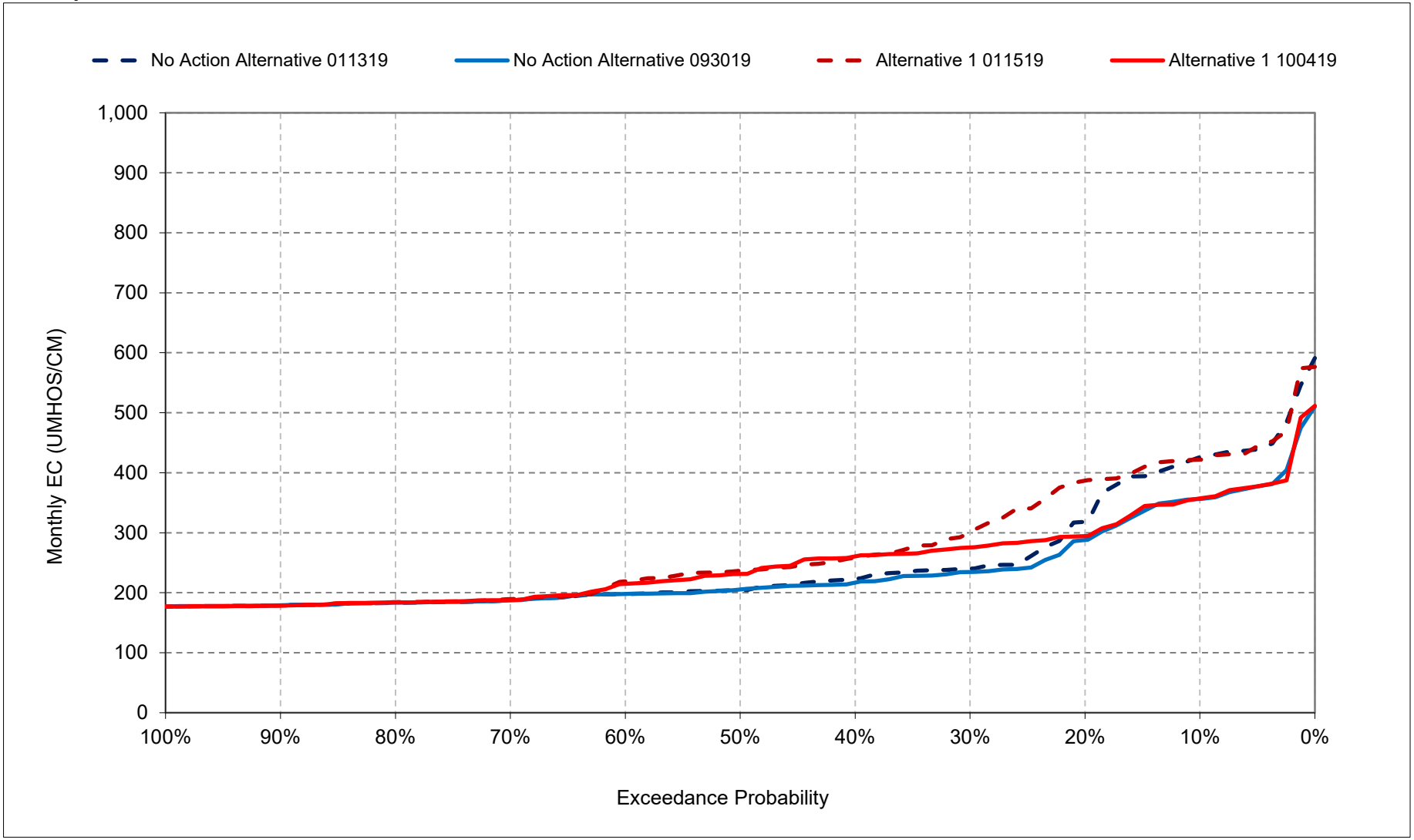

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-17. Sacramento River at Rio Vista**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 5-18. Sacramento River at Rio Vista**
**Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-1. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 614 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 205 | 190 | 361 | 491 | 431 | 441 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 439 | 483 | 664 | 536 | 397 | 333 | 241 | 270 | 407 | 520 | 444 | 447 |
| Above Normal (16%) | 493 | 541 | 735 | 656 | 610 | 502 | 312 | 356 | 514 | 621 | 539 | 520 |
| Below Normal (13%) | 507 | 572 | 741 | 709 | 700 | 595 | 349 | 418 | 557 | 622 | 554 | 534 |
| Dry (24%) | 544 | 592 | 731 | 727 | 814 | 716 | 433 | 482 | 591 | 633 | 586 | 569 |
| Critical (15%) | 578 | 641 | 797 | 776 | 901 | 853 | 556 | 587 | 628 | 669 | 656 | 626 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 584 | 639 | 800 | 776 | 945 | 847 | 612 | 662 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 698 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 543 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 452 | 610 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 563 | 629 | 560 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 356 | 501 | 616 | 548 | 525 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 344 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 585 | 321 | 297 | 261 | 293 | 420 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 277 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 440 | 486 | 663 | 532 | 392 | 335 | 240 | 273 | 414 | 525 | 447 | 449 |
| Above Normal (16%) | 488 | 541 | 735 | 654 | 607 | 497 | 302 | 350 | 510 | 643 | 540 | 520 |
| Below Normal (13%) | 515 | 573 | 741 | 712 | 703 | 603 | 375 | 465 | 578 | 630 | 558 | 537 |
| Dry (24%) | 549 | 592 | 731 | 731 | 820 | 716 | 461 | 527 | 613 | 662 | 608 | 579 |
| Critical (15%) | 577 | 641 | 797 | 776 | 926 | 879 | 590 | 644 | 669 | 704 | 677 | 631 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **9** | **0** | 0 | **2** | **5** | **0** | **51** | **91** | **39** | **59** | **27** | **12** |
| 20% | **11** | -1 | 0 | **2** | **1** | **0** | **26** | **72** | **25** | **50** | **36** | **12** |
| 30% | **11** | **1** | **0** | **1** | **2** | **0** | **37** | **54** | **16** | **29** | **12** | **0** |
| 40% | **1** | **0** | **0** | **1** | **0** | **1** | -1 | **17** | **21** | **3** | **1** | **1** |
| 50% | -1 | **0** | 0 | **2** | **1** | **0** | -15 | -6 | **8** | **4** | **2** | **2** |
| 60% | -3 | **1** | 0 | **3** | **1** | **4** | -5 | -4 | **2** | **2** | **3** | **4** |
| 70% | -1 | **7** | **4** | -3 | **0** | **6** | **0** | **2** | **6** | **1** | **8** | **2** |
| 80% | **1** | 0 | **0** | -1 | -8 | **1** | **0** | **0** | **1** | **2** | **0** | **3** |
| 90% | **4** | -1 | -20 | -1 | -9 | -10 | **0** | **1** | **0** | **6** | **9** | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **2** | **1** | 0 | 0 | **4** | **5** | **13** | **26** | **16** | **18** | **10** | **4** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | **1** | **3** | -1 | -4 | -5 | **3** | -1 | **4** | **7** | **5** | **3** | **2** |
| Above Normal (16%) | -5 | 0 | **0** | -2 | -3 | -5 | -10 | -6 | -3 | **22** | **1** | **0** |
| Below Normal (13%) | **9** | **0** | 0 | **3** | **3** | **8** | **26** | **47** | **22** | **8** | **4** | **3** |
| Dry (24%) | **5** | **0** | 0 | **4** | **6** | **0** | **28** | **45** | **22** | **29** | **22** | **9** |
| Critical (15%) | -1 | 0 | **0** | **0** | **25** | **26** | **34** | **57** | **41** | **35** | **22** | **5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-2. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 613 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 204 | 190 | 361 | 491 | 431 | 441 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 439 | 483 | 664 | 536 | 397 | 333 | 241 | 270 | 407 | 520 | 444 | 447 |
| Above Normal (16%) | 493 | 541 | 735 | 656 | 610 | 502 | 312 | 356 | 514 | 621 | 539 | 520 |
| Below Normal (13%) | 507 | 572 | 741 | 709 | 700 | 595 | 349 | 418 | 557 | 622 | 554 | 534 |
| Dry (24%) | 544 | 592 | 731 | 727 | 814 | 716 | 433 | 482 | 591 | 633 | 586 | 569 |
| Critical (15%) | 578 | 641 | 797 | 776 | 901 | 853 | 557 | 587 | 628 | 669 | 656 | 626 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 583 | 639 | 800 | 776 | 945 | 847 | 612 | 659 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 697 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 542 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 451 | 609 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 562 | 629 | 559 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 355 | 501 | 616 | 547 | 524 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 343 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 584 | 321 | 297 | 261 | 293 | 419 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 276 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 440 | 486 | 663 | 532 | 392 | 335 | 240 | 273 | 414 | 525 | 447 | 449 |
| Above Normal (16%) | 488 | 541 | 735 | 654 | 607 | 497 | 302 | 350 | 510 | 643 | 540 | 520 |
| Below Normal (13%) | 515 | 573 | 741 | 712 | 703 | 603 | 375 | 464 | 577 | 629 | 558 | 537 |
| Dry (24%) | 549 | 592 | 731 | 731 | 820 | 716 | 461 | 527 | 613 | 661 | 608 | 579 |
| Critical (15%) | 577 | 641 | 797 | 776 | 926 | 879 | 590 | 643 | 668 | 703 | 676 | 630 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **8** | **0** | 0 | **2** | **5** | **0** | **51** | **88** | **39** | **58** | **27** | **12** |
| 20% | **11** | -1 | **0** | **2** | **1** | **0** | **26** | **72** | **25** | **50** | **36** | **12** |
| 30% | **11** | **1** | **0** | **1** | **2** | **0** | **37** | **53** | **16** | **29** | **12** | **0** |
| 40% | **1** | **0** | **0** | **1** | 0 | **1** | -2 | **16** | **21** | **3** | **0** | **1** |
| 50% | -1 | **0** | **0** | **2** | **1** | **0** | -15 | -6 | **7** | **4** | **1** | **2** |
| 60% | -3 | **1** | 0 | **3** | **1** | **4** | -5 | -5 | **2** | **2** | **3** | **3** |
| 70% | -1 | **7** | **4** | -3 | 0 | **6** | 0 | **2** | **6** | **1** | **8** | **2** |
| 80% | **1** | 0 | **0** | -1 | -8 | **1** | **0** | **0** | 0 | **2** | **0** | **3** |
| 90% | **4** | -1 | -20 | -1 | -9 | -10 | **0** | **1** | **0** | **6** | **9** | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **2** | **1** | 0 | 0 | **4** | **5** | **13** | **26** | **15** | **18** | **10** | **4** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | **1** | **3** | -1 | -4 | -5 | **3** | -1 | **4** | **7** | **5** | **3** | **2** |
| Above Normal (16%) | -5 | 0 | **0** | -2 | -3 | -5 | -11 | -7 | -4 | **21** | **1** | **0** |
| Below Normal (13%) | **8** | **0** | 0 | **3** | **3** | **8** | **26** | **46** | **20** | **7** | **4** | **2** |
| Dry (24%) | **5** | **0** | 0 | **4** | **6** | **0** | **28** | **45** | **22** | **29** | **22** | **9** |
| Critical (15%) | -1 | 0 | **0** | **0** | **25** | **26** | **33** | **56** | **40** | **34** | **20** | **4** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-3. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 614 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 205 | 190 | 361 | 491 | 431 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 439 | 483 | 664 | 536 | 397 | 333 | 241 | 270 | 407 | 520 | 444 | 447 |
| Above Normal (16%) | 493 | 541 | 735 | 656 | 610 | 502 | 312 | 356 | 514 | 621 | 539 | 520 |
| Below Normal (13%) | 507 | 572 | 741 | 709 | 700 | 595 | 349 | 418 | 557 | 622 | 554 | 534 |
| Dry (24%) | 544 | 592 | 731 | 727 | 814 | 716 | 433 | 482 | 591 | 633 | 586 | 569 |
| Critical (15%) | 578 | 641 | 797 | 776 | 901 | 853 | 556 | 587 | 628 | 669 | 656 | 626 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 613 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 204 | 190 | 361 | 491 | 431 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 439 | 483 | 664 | 536 | 397 | 333 | 241 | 270 | 407 | 520 | 444 | 447 |
| Above Normal (16%) | 493 | 541 | 735 | 656 | 610 | 502 | 312 | 356 | 514 | 621 | 539 | 520 |
| Below Normal (13%) | 507 | 572 | 741 | 709 | 700 | 595 | 349 | 418 | 557 | 622 | 554 | 534 |
| Dry (24%) | 544 | 592 | 731 | 727 | 814 | 716 | 433 | 482 | 591 | 633 | 586 | 569 |
| Critical (15%) | 578 | 641 | 797 | 776 | 901 | 853 | 557 | 587 | 628 | 669 | 656 | 626 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | **0** | **0** | **0** | 0 | **0** | 0 | 0 | 0 | 0 |
| 20% | **0** | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 |
| 30% | 0 | **0** | **0** | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | **0** | 0 | **0** | **0** | 0 | 0 | 0 | **0** | **0** | 0 | **0** | 0 |
| 50% | 0 | **0** | **0** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** |
| 60% | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** |
| 70% | **0** | 0 | **0** | 0 | **0** | 0 | 0 | 0 | **0** | **0** | **0** | 0 |
| 80% | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | **0** | 0 | **0** |
| 90% | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | **0** | **0** | 0 | **0** | **0** | 0 | **0** | **0** | **0** | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** | **0** |
| Above Normal (16%) | 0 | 0 | **0** | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 0 |
| Below Normal (13%) | **0** | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | **0** | **0** | **0** |
| Dry (24%) | 0 | **0** | **0** | **0** | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | **0** | 0 | 0 | **0** | **0** | **0** | **0** | **0** | **0** | **0** | 0 | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6-4. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 584 | 639 | 800 | 776 | 945 | 847 | 612 | 662 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 698 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 543 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 452 | 610 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 563 | 629 | 560 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 356 | 501 | 616 | 548 | 525 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 344 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 585 | 321 | 297 | 261 | 293 | 420 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 277 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 440 | 486 | 663 | 532 | 392 | 335 | 240 | 273 | 414 | 525 | 447 | 449 |
| Above Normal (16%) | 488 | 541 | 735 | 654 | 607 | 497 | 302 | 350 | 510 | 643 | 540 | 520 |
| Below Normal (13%) | 515 | 573 | 741 | 712 | 703 | 603 | 375 | 465 | 578 | 630 | 558 | 537 |
| Dry (24%) | 549 | 592 | 731 | 731 | 820 | 716 | 461 | 527 | 613 | 662 | 608 | 579 |
| Critical (15%) | 577 | 641 | 797 | 776 | 926 | 879 | 590 | 644 | 669 | 704 | 677 | 631 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 583 | 639 | 800 | 776 | 945 | 847 | 612 | 659 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 697 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 542 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 451 | 609 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 562 | 629 | 559 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 355 | 501 | 616 | 547 | 524 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 343 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 584 | 321 | 297 | 261 | 293 | 419 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 276 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 440 | 486 | 663 | 532 | 392 | 335 | 240 | 273 | 414 | 525 | 447 | 449 |
| Above Normal (16%) | 488 | 541 | 735 | 654 | 607 | 497 | 302 | 350 | 510 | 643 | 540 | 520 |
| Below Normal (13%) | 515 | 573 | 741 | 712 | 703 | 603 | 375 | 464 | 577 | 629 | 558 | 537 |
| Dry (24%) | 549 | 592 | 731 | 731 | 820 | 716 | 461 | 527 | 613 | 661 | 608 | 579 |
| Critical (15%) | 577 | 641 | 797 | 776 | 926 | 879 | 590 | 643 | 668 | 703 | 676 | 630 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | 0 |

a Based on the 82-year simulation period.

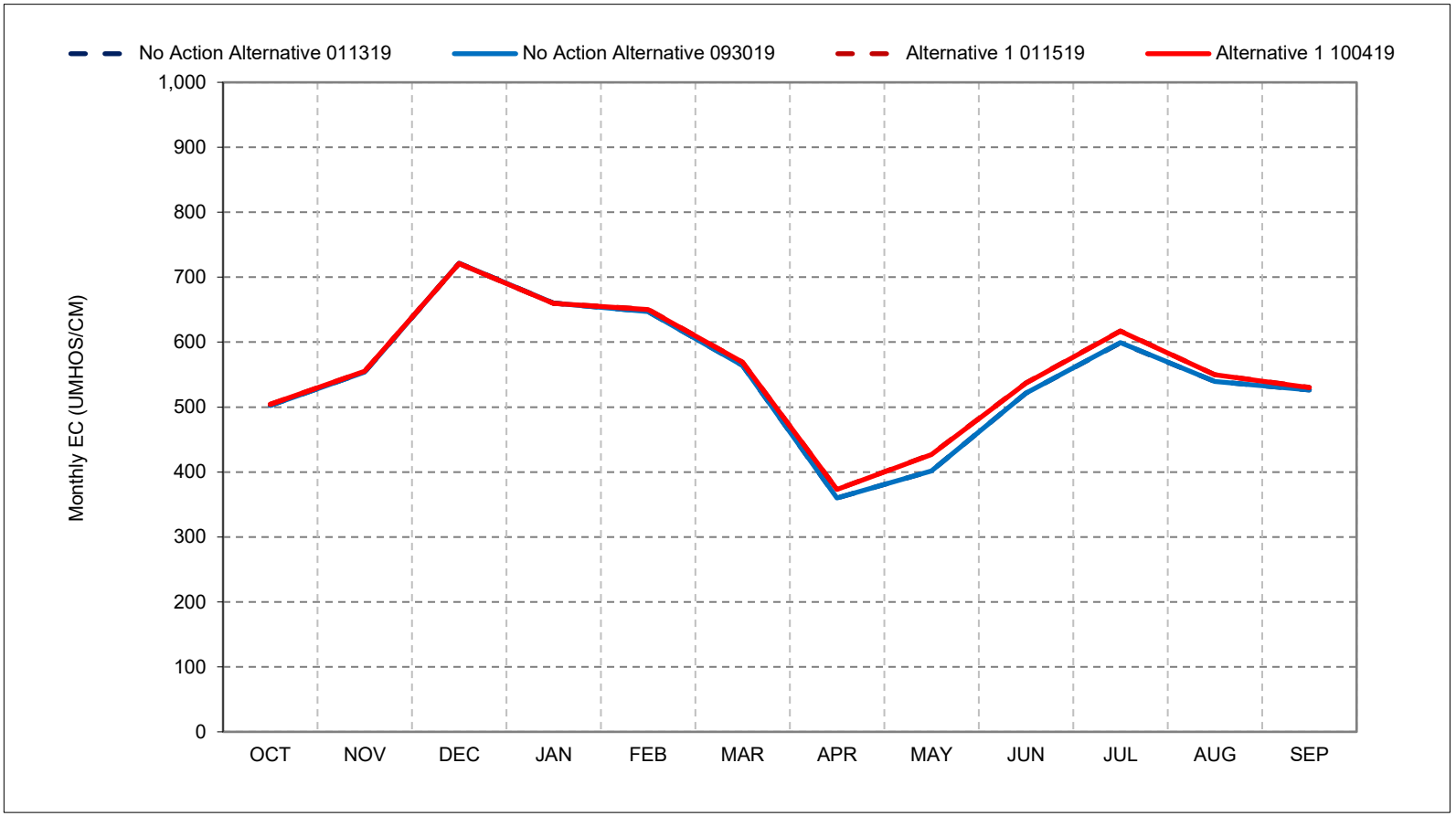
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-1. San Joaquin River at Vernalis Salinity (40-30-30), Long-Term Average EC

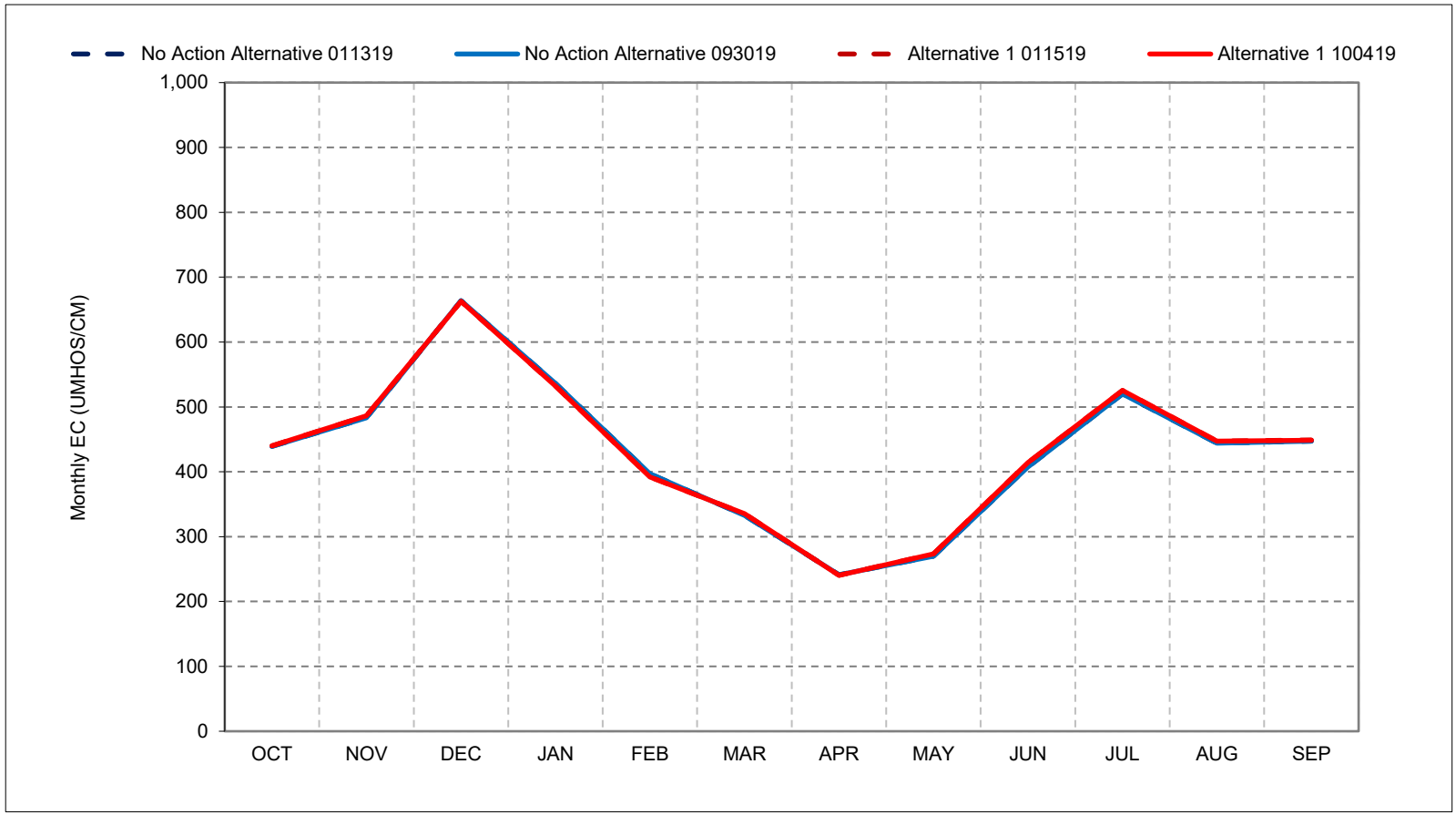



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-2. San Joaquin River at Vernalis Salinity (40-30-30), Wet Year Average EC

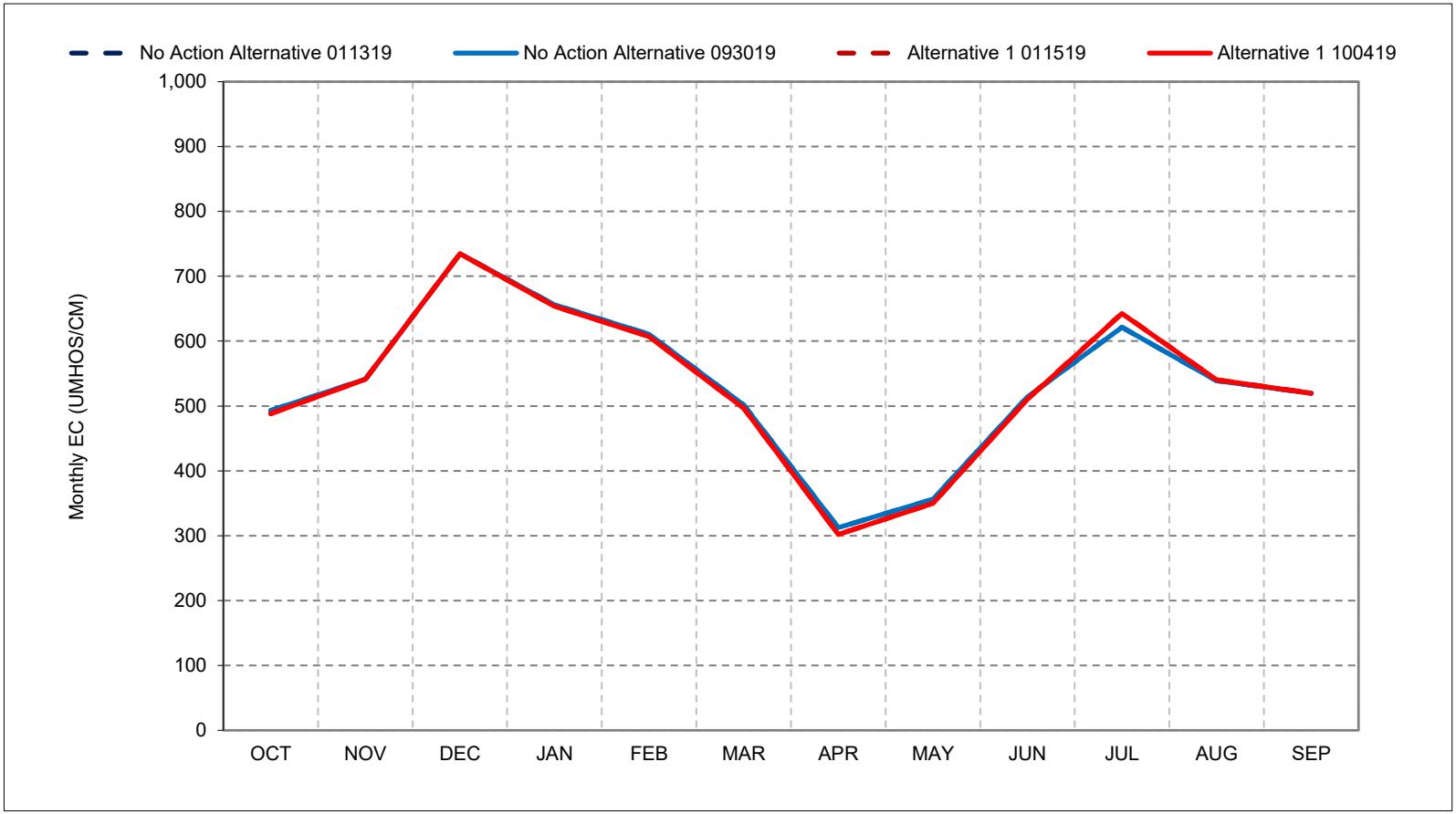



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-3. San Joaquin River at Vernalis Salinity (40-30-30), Above Normal Year Average EC

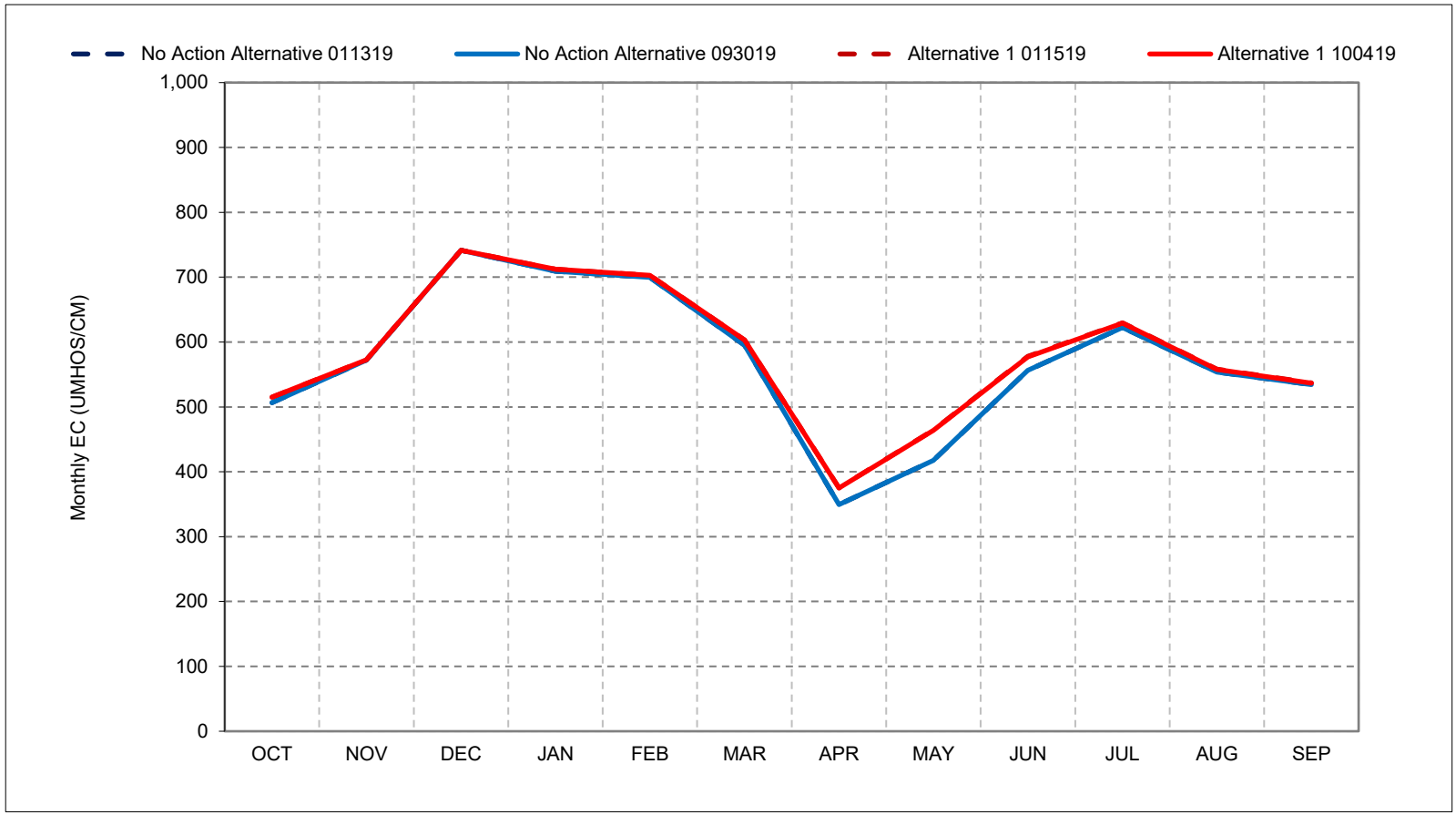



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-4. San Joaquin River at Vernalis Salinity (40-30-30), Below Normal Year Average EC

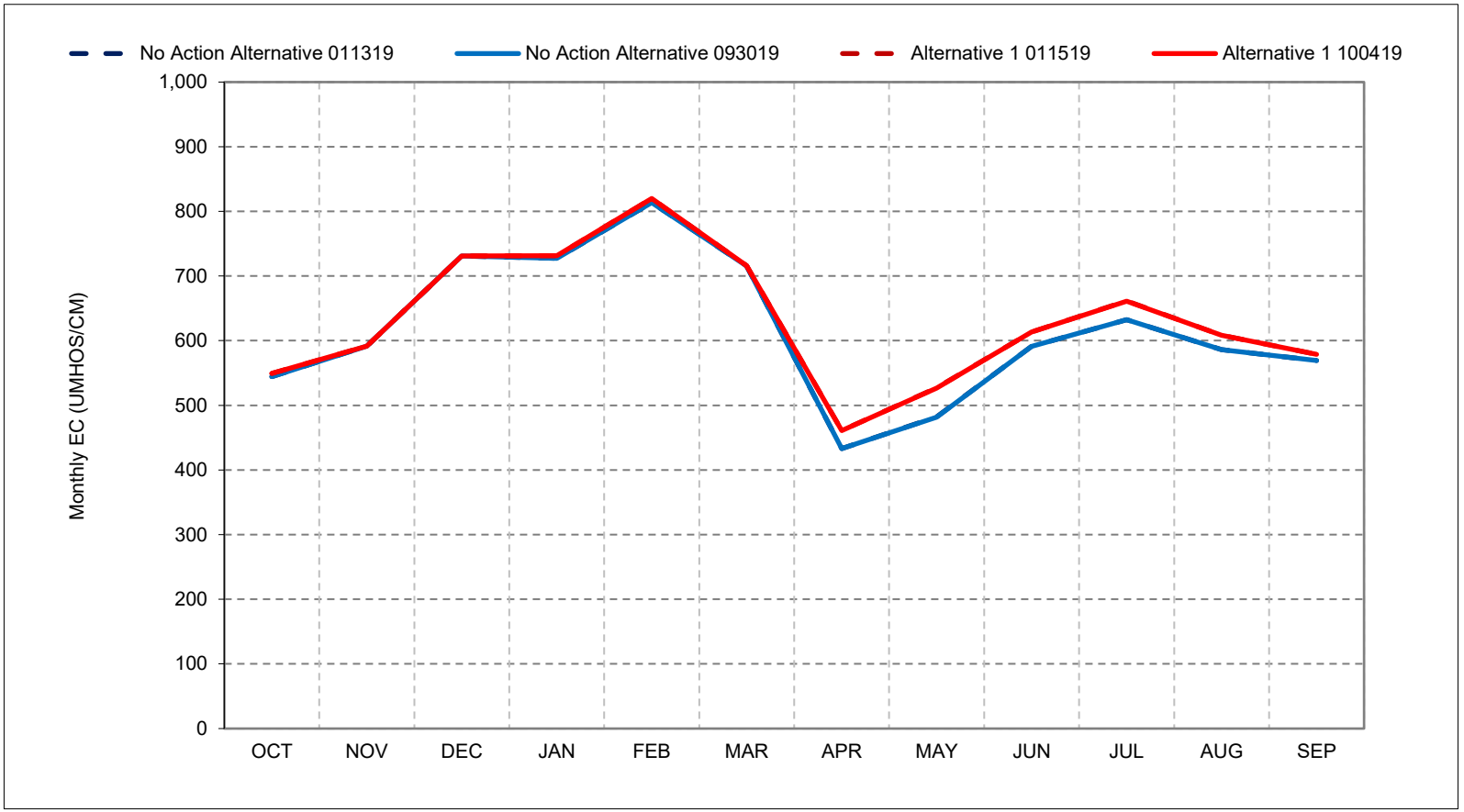



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-5. San Joaquin River at Vernalis Salinity (40-30-30), Dry Year Average EC

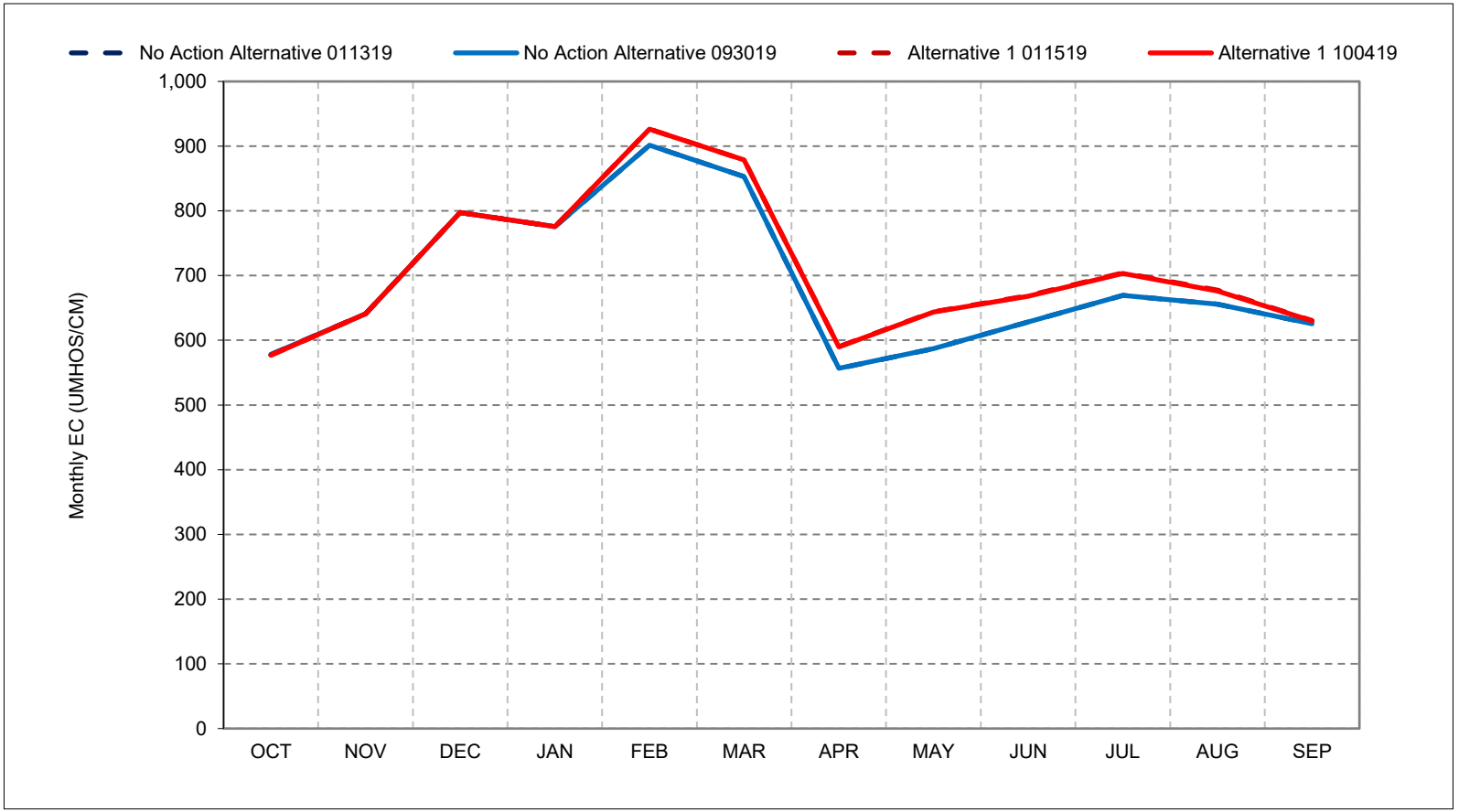



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6-6. San Joaquin River at Vernalis Salinity (40-30-30), Critical Year Average EC

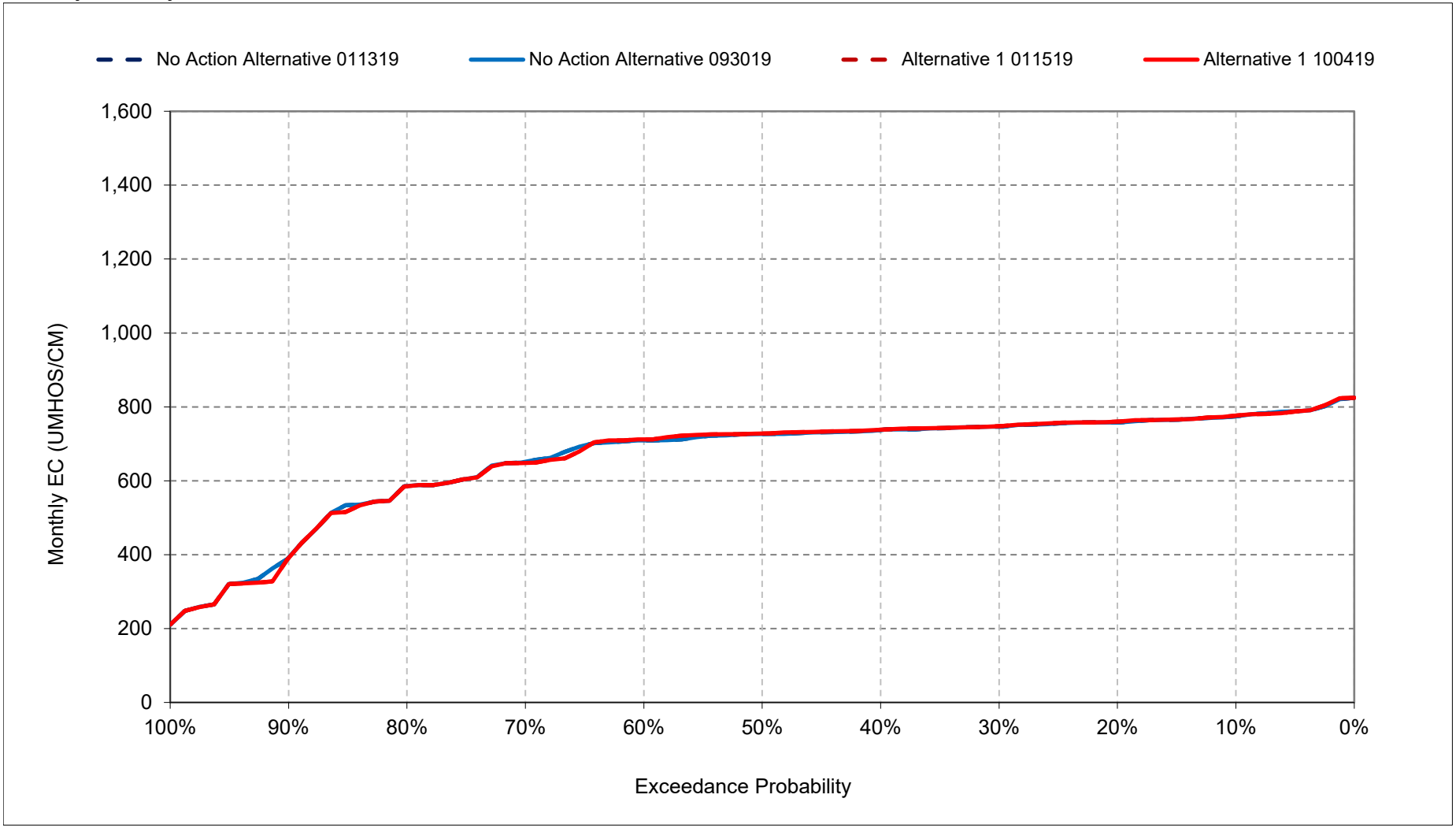



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

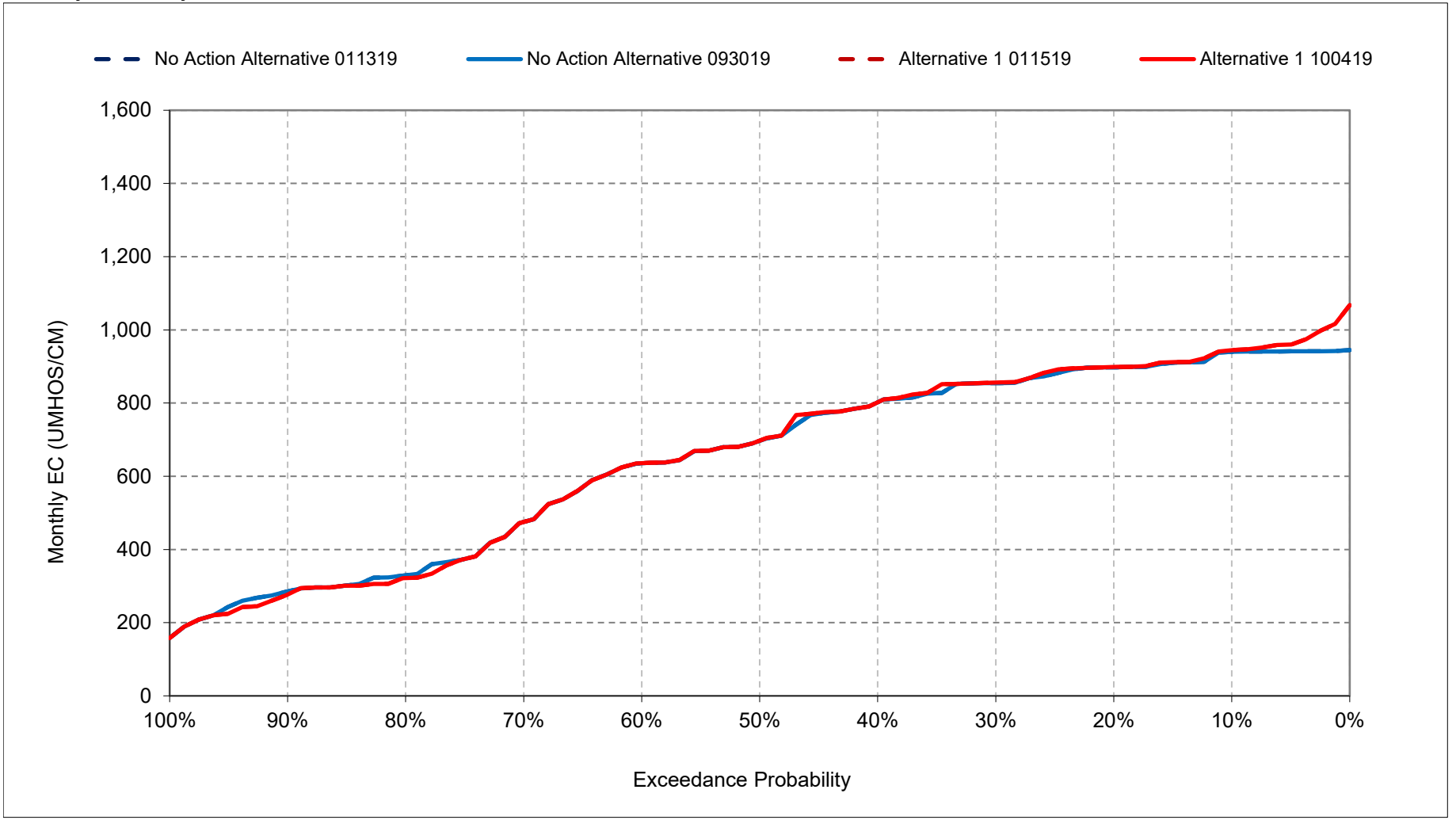
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-7. San Joaquin River at Vernalis**
**Salinity, January EC**



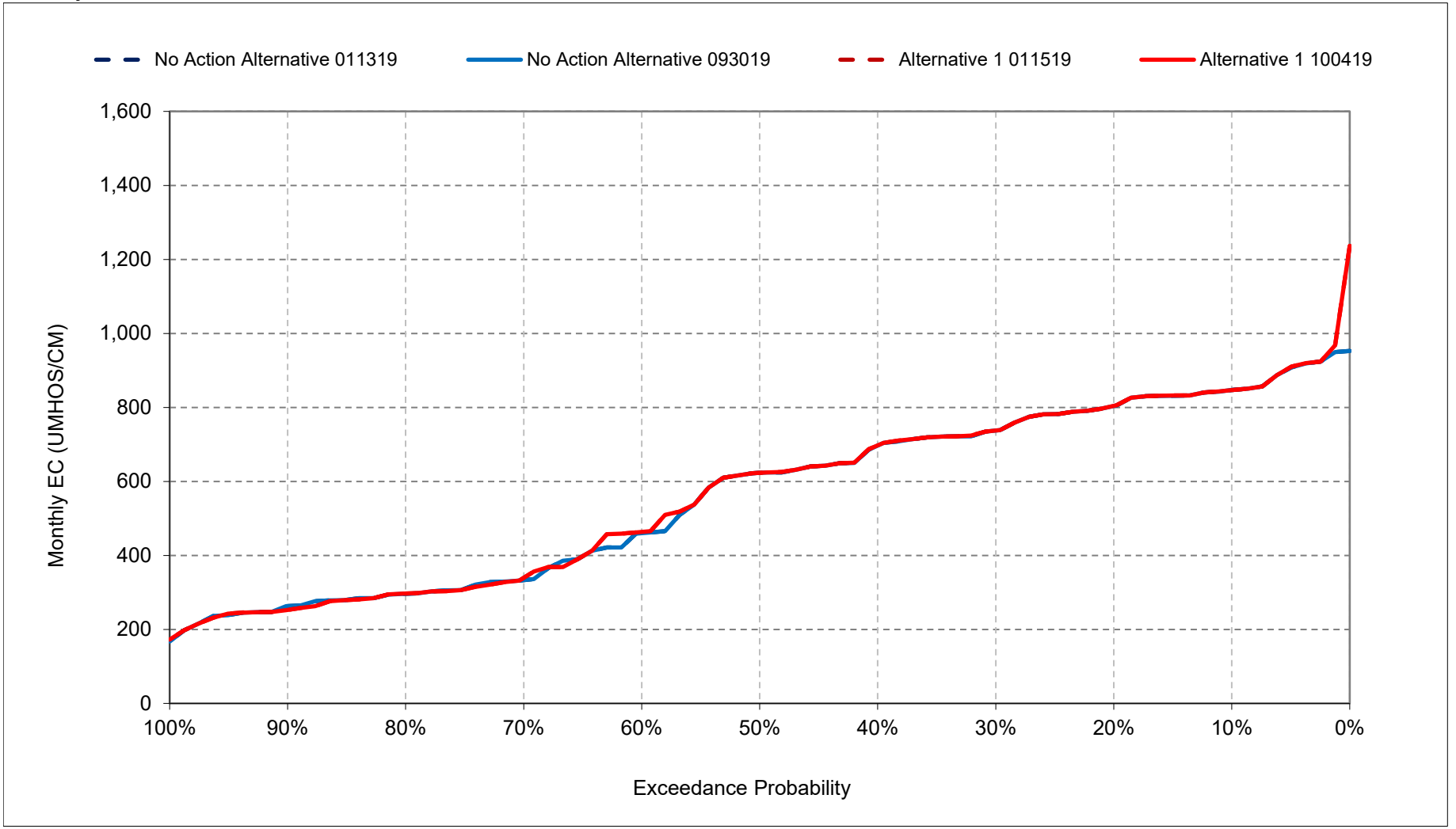

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-8. San Joaquin River at Vernalis Salinity, February EC**



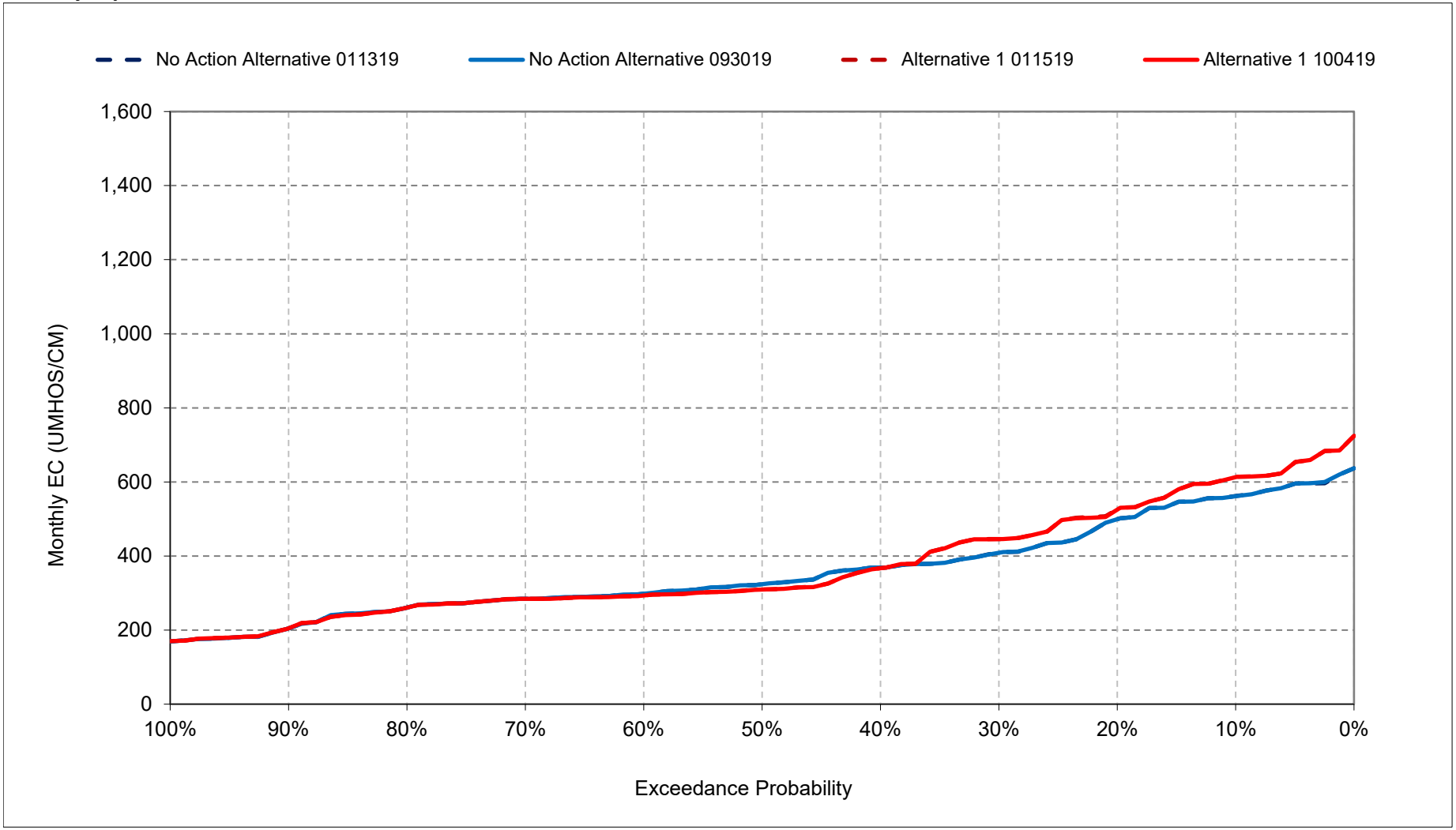

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-9. San Joaquin River at Vernalis Salinity, March EC**



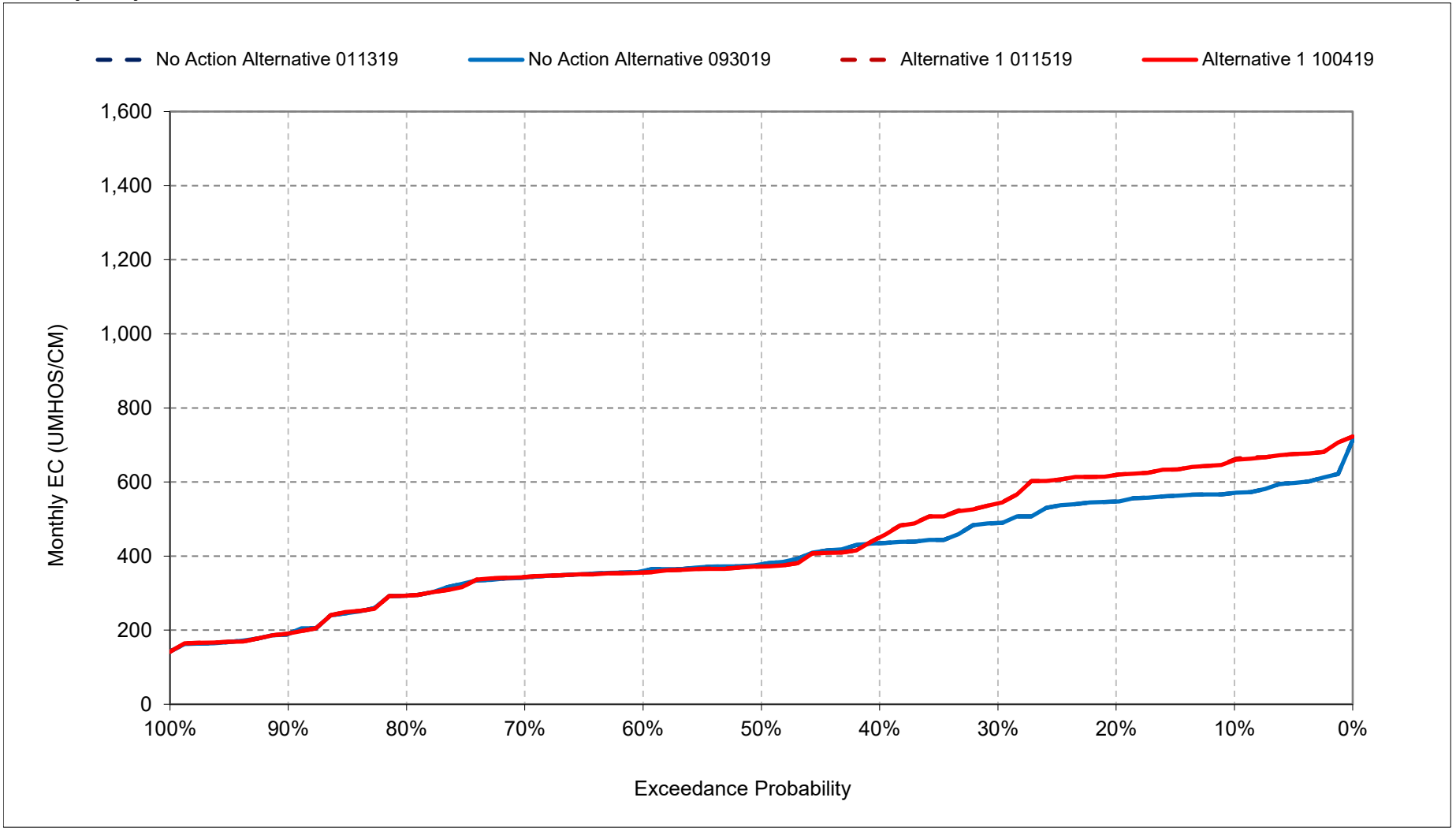

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-10. San Joaquin River at Vernalis**
**Salinity, April EC**



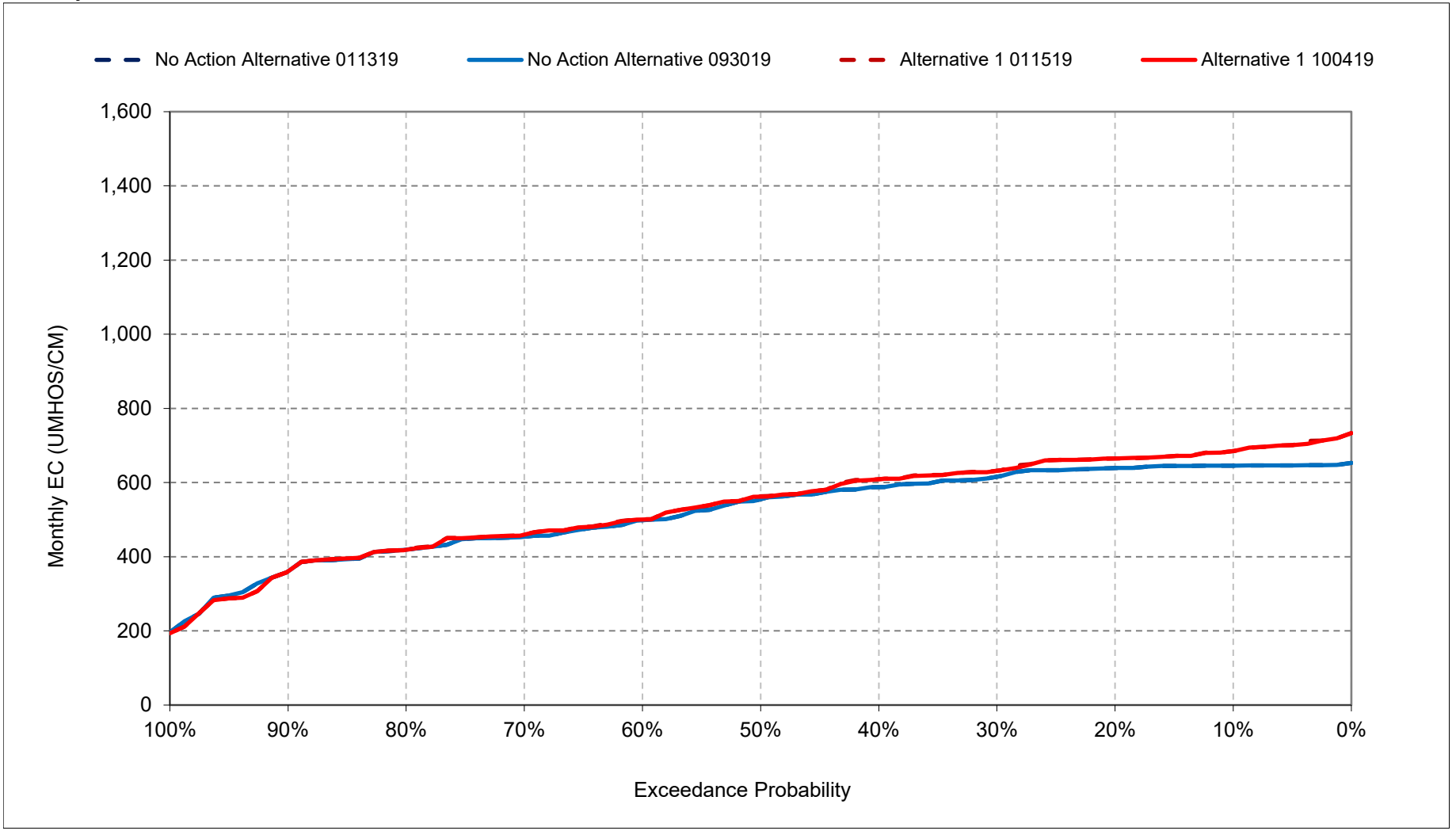

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-11. San Joaquin River at Vernalis**
**Salinity, May EC**



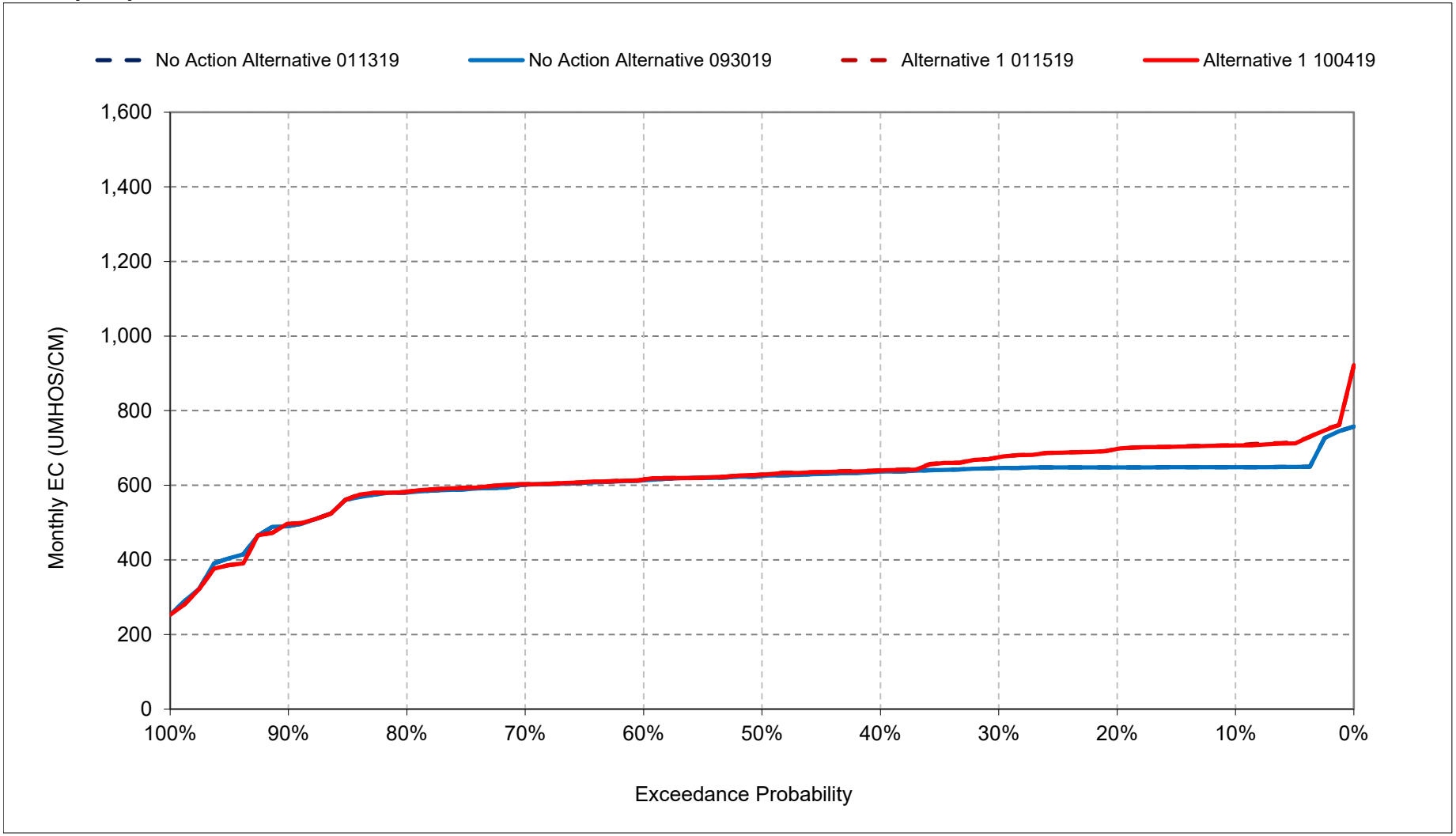

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-12. San Joaquin River at Vernalis**
**Salinity, June EC**



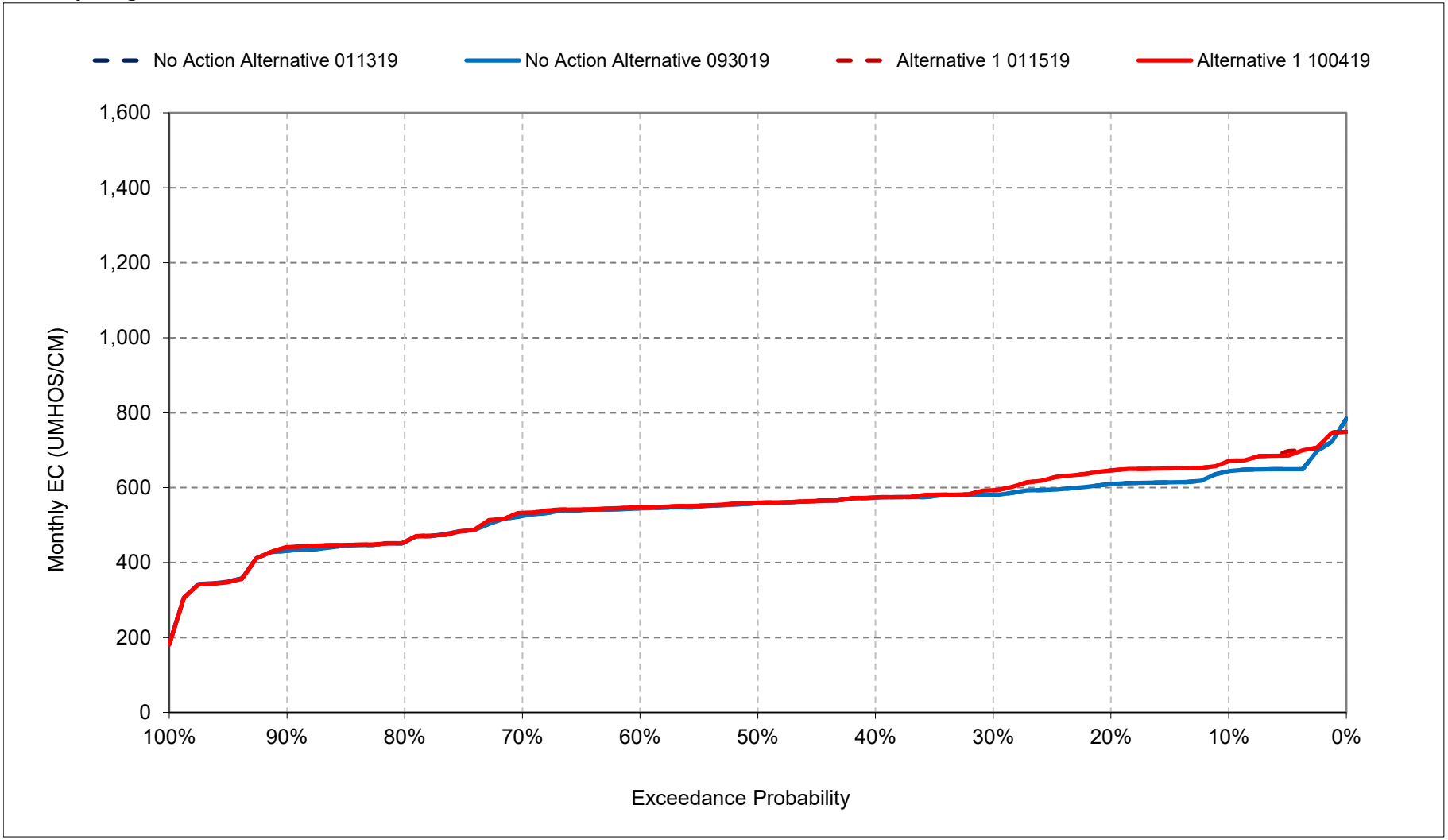

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-13. San Joaquin River at Vernalis**
**Salinity, July EC**



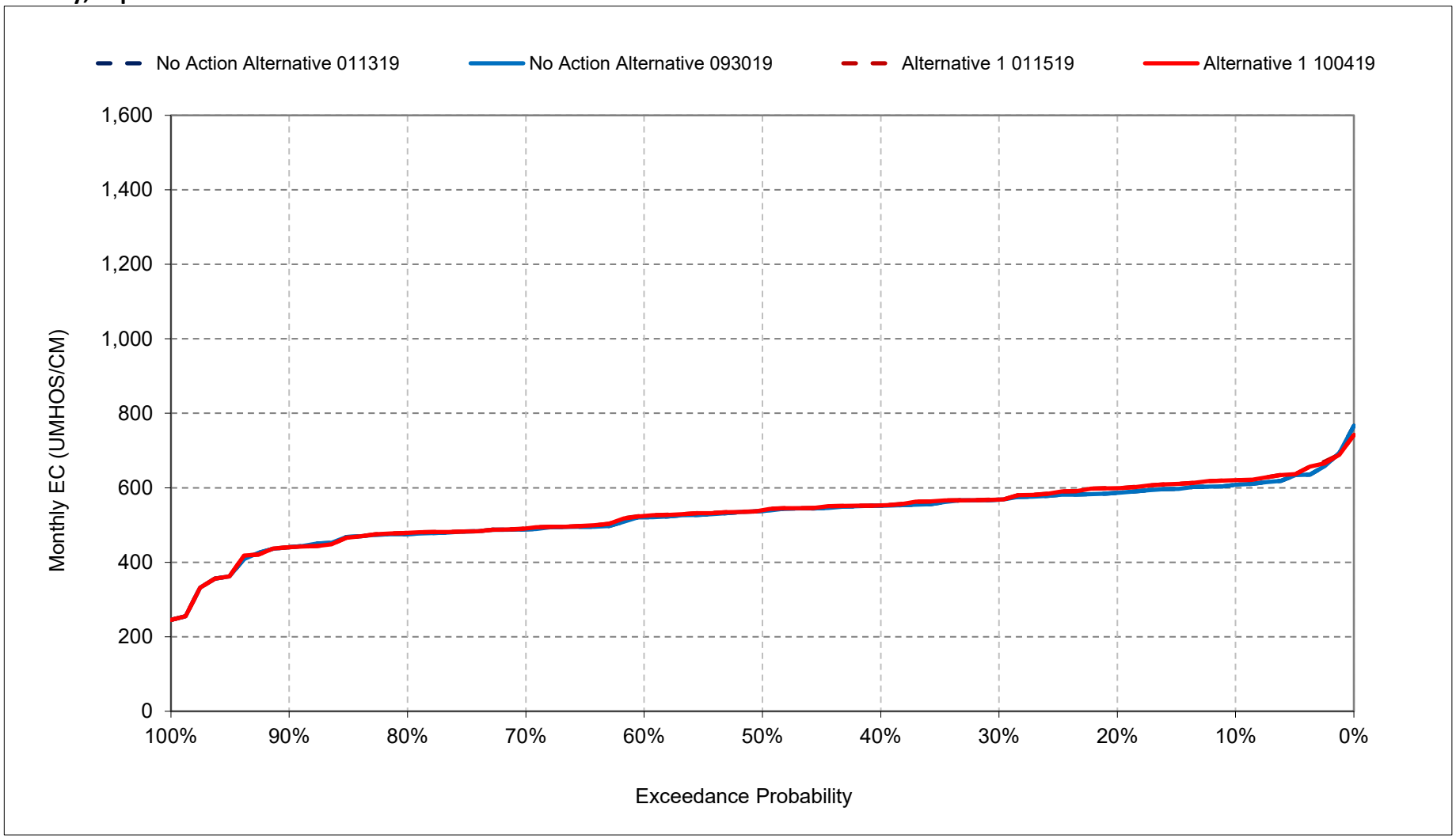

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-14. San Joaquin River at Vernalis**
**Salinity, August EC**



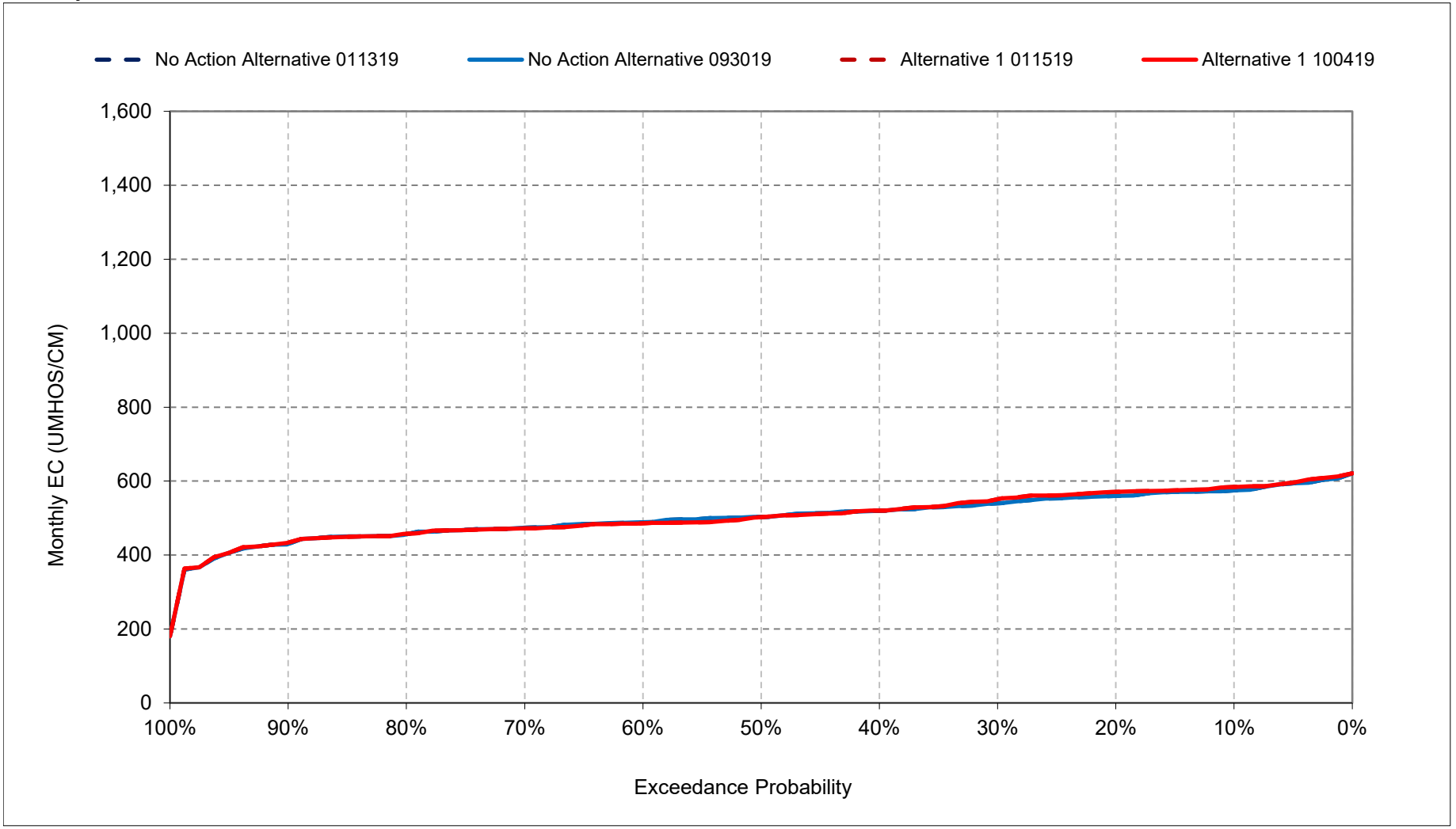

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-15. San Joaquin River at Vernalis**
**Salinity, September EC**



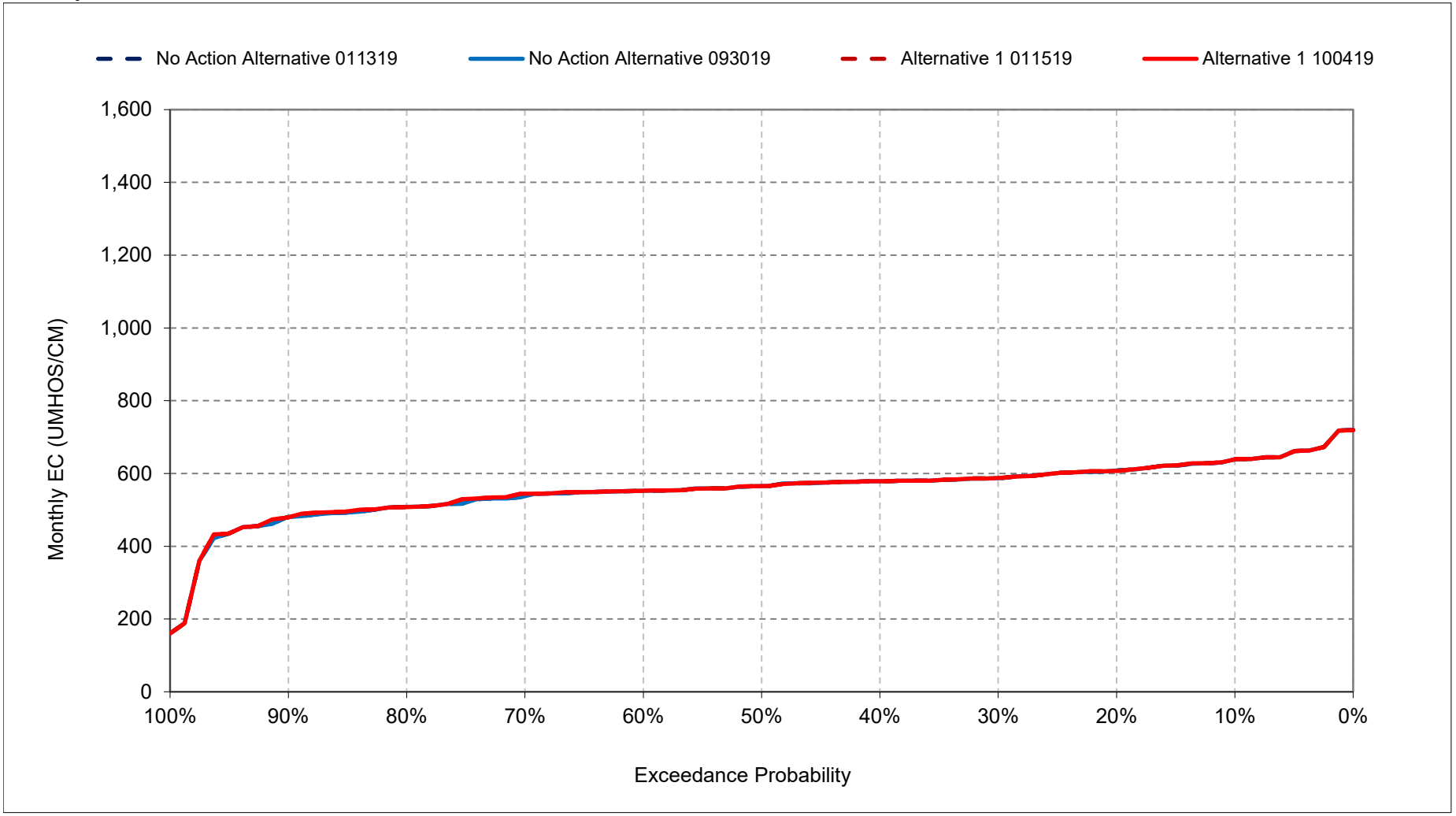

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-16. San Joaquin River at Vernalis**
**Salinity, October EC**



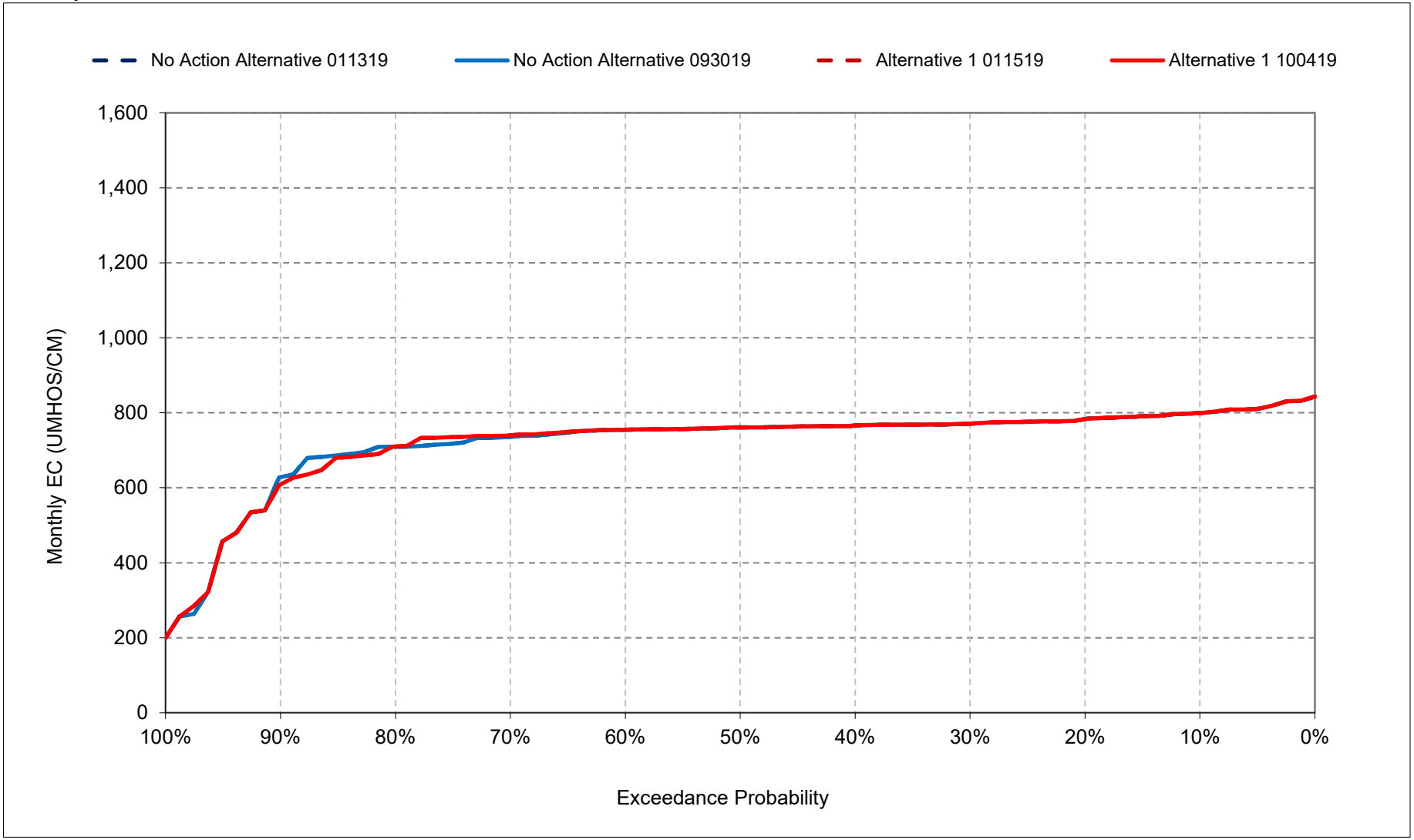

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-17. San Joaquin River at Vernalis**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 6-18. San Joaquin River at Vernalis**
**Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-1. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 614 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 205 | 190 | 361 | 491 | 431 | 441 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 427 | 465 | 633 | 527 | 369 | 296 | 222 | 227 | 371 | 490 | 416 | 420 |
| Above Normal (24%) | 479 | 530 | 716 | 626 | 490 | 416 | 300 | 360 | 493 | 613 | 517 | 507 |
| Below Normal (10%) | 509 | 583 | 764 | 679 | 702 | 606 | 308 | 362 | 537 | 608 | 563 | 552 |
| Dry (16%) | 533 | 585 | 726 | 727 | 829 | 697 | 394 | 468 | 581 | 632 | 583 | 561 |
| Critical (27%) | 571 | 627 | 784 | 758 | 902 | 836 | 531 | 565 | 636 | 658 | 632 | 606 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 584 | 639 | 800 | 776 | 945 | 847 | 612 | 662 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 698 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 543 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 452 | 610 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 563 | 629 | 560 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 356 | 501 | 616 | 548 | 525 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 344 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 585 | 321 | 297 | 261 | 293 | 420 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 277 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 427 | 468 | 634 | 528 | 364 | 293 | 223 | 228 | 367 | 488 | 418 | 420 |
| Above Normal (24%) | 473 | 530 | 714 | 622 | 487 | 420 | 289 | 353 | 502 | 636 | 520 | 509 |
| Below Normal (10%) | 506 | 583 | 764 | 677 | 701 | 616 | 302 | 358 | 546 | 610 | 564 | 554 |
| Dry (16%) | 543 | 585 | 726 | 730 | 833 | 698 | 413 | 510 | 596 | 644 | 587 | 562 |
| Critical (27%) | 580 | 627 | 784 | 760 | 919 | 851 | 583 | 643 | 679 | 700 | 664 | 618 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **9** | **0** | 0 | **2** | **5** | **0** | **51** | **91** | **39** | **59** | **27** | **12** |
| 20% | **11** | -1 | 0 | **2** | **1** | **0** | **26** | **72** | **25** | **50** | **36** | **12** |
| 30% | **11** | **1** | **0** | **1** | **2** | **0** | **37** | **54** | **16** | **29** | **12** | **0** |
| 40% | **1** | **0** | **0** | **1** | **0** | **1** | -1 | **17** | **21** | **3** | **1** | **1** |
| 50% | -1 | **0** | 0 | **2** | **1** | **0** | -15 | -6 | **8** | **4** | **2** | **2** |
| 60% | -3 | **1** | 0 | **3** | **1** | **4** | -5 | -4 | **2** | **2** | **3** | **4** |
| 70% | -1 | **7** | **4** | -3 | **0** | **6** | **0** | **2** | **6** | **1** | **8** | **2** |
| 80% | **1** | 0 | **0** | -1 | -8 | **1** | **0** | **0** | **1** | **2** | **0** | **3** |
| 90% | **4** | -1 | -20 | -1 | -9 | -10 | **0** | **1** | **0** | **6** | **9** | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **2** | **1** | 0 | 0 | **4** | **5** | **13** | **26** | **16** | **18** | **10** | **4** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 0 | **3** | **1** | **0** | -5 | -4 | **0** | **1** | -5 | -2 | **2** | **0** |
| Above Normal (24%) | -6 | **0** | -2 | -4 | -2 | **4** | -12 | -7 | **9** | **23** | **4** | **2** |
| Below Normal (10%) | -4 | 0 | **0** | -3 | -1 | **10** | -6 | -4 | **10** | **2** | **1** | **2** |
| Dry (16%) | **10** | **0** | 0 | **3** | **4** | **0** | **18** | **42** | **16** | **11** | **4** | **2** |
| Critical (27%) | **9** | **0** | **0** | **2** | **17** | **14** | **51** | **79** | **42** | **42** | **31** | **11** |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-2. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 613 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 204 | 190 | 361 | 491 | 431 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 427 | 465 | 633 | 527 | 369 | 296 | 222 | 227 | 371 | 490 | 416 | 420 |
| Above Normal (24%) | 479 | 530 | 716 | 626 | 490 | 416 | 300 | 360 | 493 | 613 | 517 | 507 |
| Below Normal (10%) | 509 | 583 | 764 | 679 | 702 | 606 | 308 | 362 | 537 | 608 | 563 | 552 |
| Dry (16%) | 533 | 585 | 726 | 727 | 829 | 697 | 394 | 468 | 581 | 632 | 583 | 561 |
| Critical (27%) | 571 | 627 | 784 | 758 | 902 | 837 | 532 | 565 | 636 | 658 | 632 | 606 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 583 | 639 | 800 | 776 | 945 | 847 | 612 | 659 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 697 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 542 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 451 | 609 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 562 | 629 | 559 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 355 | 501 | 616 | 547 | 524 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 343 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 584 | 321 | 297 | 261 | 293 | 419 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 276 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 427 | 468 | 634 | 527 | 364 | 293 | 223 | 228 | 367 | 488 | 418 | 420 |
| Above Normal (24%) | 473 | 530 | 714 | 622 | 487 | 420 | 289 | 353 | 502 | 635 | 520 | 509 |
| Below Normal (10%) | 505 | 583 | 764 | 677 | 701 | 616 | 302 | 358 | 546 | 610 | 564 | 554 |
| Dry (16%) | 543 | 585 | 726 | 730 | 833 | 698 | 412 | 509 | 595 | 643 | 586 | 562 |
| Critical (27%) | 580 | 627 | 784 | 760 | 919 | 851 | 582 | 643 | 678 | 699 | 663 | 617 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 8 | 0 | 0 | 2 | 5 | 0 | 51 | 88 | 39 | 58 | 27 | 12 |
| 20% | 11 | -1 | 0 | 2 | 1 | 0 | 26 | 72 | 25 | 50 | 36 | 12 |
| 30% | 11 | 1 | 0 | 1 | 2 | 0 | 37 | 53 | 16 | 29 | 12 | 0 |
| 40% | 1 | 0 | 0 | 1 | 0 | 1 | -2 | 16 | 21 | 3 | 0 | 1 |
| 50% | -1 | 0 | 0 | 2 | 1 | 0 | -15 | -6 | 7 | 4 | 1 | 2 |
| 60% | -3 | 1 | 0 | 3 | 1 | 4 | -5 | -5 | 2 | 2 | 3 | 3 |
| 70% | -1 | 7 | 4 | -3 | 0 | 6 | 0 | 2 | 6 | 1 | 8 | 2 |
| 80% | 1 | 0 | 0 | -1 | -8 | 1 | 0 | 0 | 0 | 2 | 0 | 3 |
| 90% | 4 | -1 | -20 | -1 | -9 | -10 | 0 | 1 | 0 | 6 | 9 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | 1 | 0 | 0 | 4 | 5 | 13 | 26 | 15 | 18 | 10 | 4 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 0 | 3 | 1 | 0 | -5 | -4 | 0 | 1 | -5 | -2 | 2 | 0 |
| Above Normal (24%) | -6 | 0 | -2 | -4 | -2 | 4 | -12 | -7 | 9 | 23 | 3 | 2 |
| Below Normal (10%) | -4 | 0 | 0 | -3 | -1 | 10 | -6 | -5 | 9 | 2 | 1 | 2 |
| Dry (16%) | 10 | 0 | 0 | 3 | 4 | 0 | 18 | 41 | 15 | 11 | 3 | 1 |
| Critical (27%) | 9 | 0 | 0 | 2 | 17 | 14 | 51 | 78 | 42 | 41 | 31 | 11 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-3. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 614 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 205 | 190 | 361 | 491 | 431 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 427 | 465 | 633 | 527 | 369 | 296 | 222 | 227 | 371 | 490 | 416 | 420 |
| Above Normal (24%) | 479 | 530 | 716 | 626 | 490 | 416 | 300 | 360 | 493 | 613 | 517 | 507 |
| Below Normal (10%) | 509 | 583 | 764 | 679 | 702 | 606 | 308 | 362 | 537 | 608 | 563 | 552 |
| Dry (16%) | 533 | 585 | 726 | 727 | 829 | 697 | 394 | 468 | 581 | 632 | 583 | 561 |
| Critical (27%) | 571 | 627 | 784 | 758 | 902 | 836 | 531 | 565 | 636 | 658 | 632 | 606 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 575 | 639 | 800 | 774 | 941 | 847 | 561 | 571 | 646 | 648 | 644 | 608 |
| 20% | 560 | 608 | 784 | 758 | 898 | 803 | 499 | 548 | 639 | 648 | 610 | 586 |
| 30% | 540 | 587 | 772 | 746 | 855 | 737 | 408 | 489 | 616 | 646 | 581 | 568 |
| 40% | 519 | 579 | 766 | 737 | 802 | 696 | 368 | 435 | 588 | 637 | 573 | 552 |
| 50% | 503 | 565 | 761 | 726 | 697 | 623 | 323 | 378 | 555 | 625 | 558 | 538 |
| 60% | 488 | 552 | 755 | 709 | 635 | 460 | 298 | 360 | 499 | 613 | 544 | 521 |
| 70% | 474 | 538 | 736 | 651 | 475 | 333 | 284 | 342 | 454 | 602 | 524 | 489 |
| 80% | 456 | 509 | 710 | 585 | 329 | 296 | 261 | 293 | 419 | 581 | 455 | 476 |
| 90% | 430 | 481 | 629 | 392 | 285 | 263 | 204 | 190 | 361 | 491 | 431 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 503 | 554 | 721 | 660 | 647 | 564 | 360 | 402 | 521 | 599 | 540 | 526 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 427 | 465 | 633 | 527 | 369 | 296 | 222 | 227 | 371 | 490 | 416 | 420 |
| Above Normal (24%) | 479 | 530 | 716 | 626 | 490 | 416 | 300 | 360 | 493 | 613 | 517 | 507 |
| Below Normal (10%) | 509 | 583 | 764 | 679 | 702 | 606 | 308 | 362 | 537 | 608 | 563 | 552 |
| Dry (16%) | 533 | 585 | 726 | 727 | 829 | 697 | 394 | 468 | 581 | 632 | 583 | 561 |
| Critical (27%) | 571 | 627 | 784 | 758 | 902 | 837 | 532 | 565 | 636 | 658 | 632 | 606 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | **0** | **0** | **0** | 0 | **0** | 0 | 0 | 0 | 0 |
| 20% | **0** | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 |
| 30% | 0 | **0** | **0** | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | **0** | 0 | **0** | **0** | 0 | 0 | 0 | **0** | **0** | 0 | **0** | 0 |
| 50% | 0 | **0** | **0** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** |
| 60% | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** |
| 70% | **0** | 0 | **0** | 0 | **0** | 0 | 0 | 0 | **0** | **0** | **0** | 0 |
| 80% | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | **0** | 0 | **0** |
| 90% | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | **0** | **0** | 0 | **0** | **0** | 0 | **0** | **0** | **0** | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** | **0** | **0** | **0** | **0** |
| Below Normal (10%) | **0** | **0** | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** | **0** | **0** |
| Dry (16%) | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** | **0** |
| Critical (27%) | 0 | 0 | 0 | **0** | 0 | **0** | **0** | 0 | **0** | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 6b-4. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 584 | 639 | 800 | 776 | 945 | 847 | 612 | 662 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 698 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 543 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 452 | 610 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 563 | 629 | 560 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 356 | 501 | 616 | 548 | 525 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 344 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 585 | 321 | 297 | 261 | 293 | 420 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 277 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 427 | 468 | 634 | 528 | 364 | 293 | 223 | 228 | 367 | 488 | 418 | 420 |
| Above Normal (24%) | 473 | 530 | 714 | 622 | 487 | 420 | 289 | 353 | 502 | 636 | 520 | 509 |
| Below Normal (10%) | 506 | 583 | 764 | 677 | 701 | 616 | 302 | 358 | 546 | 610 | 564 | 554 |
| Dry (16%) | 543 | 585 | 726 | 730 | 833 | 698 | 413 | 510 | 596 | 644 | 587 | 562 |
| Critical (27%) | 580 | 627 | 784 | 760 | 919 | 851 | 583 | 643 | 679 | 700 | 664 | 618 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 583 | 639 | 800 | 776 | 945 | 847 | 612 | 659 | 685 | 707 | 671 | 620 |
| 20% | 571 | 608 | 784 | 760 | 899 | 804 | 525 | 619 | 665 | 697 | 646 | 599 |
| 30% | 551 | 588 | 772 | 748 | 856 | 737 | 445 | 542 | 632 | 675 | 593 | 569 |
| 40% | 520 | 579 | 766 | 738 | 802 | 697 | 366 | 451 | 609 | 640 | 574 | 553 |
| 50% | 502 | 565 | 761 | 728 | 697 | 623 | 309 | 372 | 562 | 629 | 559 | 540 |
| 60% | 486 | 553 | 755 | 712 | 636 | 464 | 293 | 355 | 501 | 616 | 547 | 524 |
| 70% | 472 | 544 | 741 | 648 | 475 | 339 | 284 | 343 | 460 | 603 | 532 | 491 |
| 80% | 457 | 508 | 710 | 584 | 321 | 297 | 261 | 293 | 419 | 583 | 455 | 479 |
| 90% | 434 | 480 | 609 | 391 | 276 | 253 | 205 | 191 | 361 | 497 | 441 | 440 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 504 | 555 | 721 | 660 | 650 | 569 | 373 | 427 | 537 | 617 | 550 | 530 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 427 | 468 | 634 | 527 | 364 | 293 | 223 | 228 | 367 | 488 | 418 | 420 |
| Above Normal (24%) | 473 | 530 | 714 | 622 | 487 | 420 | 289 | 353 | 502 | 635 | 520 | 509 |
| Below Normal (10%) | 505 | 583 | 764 | 677 | 701 | 616 | 302 | 358 | 546 | 610 | 564 | 554 |
| Dry (16%) | 543 | 585 | 726 | 730 | 833 | 698 | 412 | 509 | 595 | 643 | 586 | 562 |
| Critical (27%) | 580 | 627 | 784 | 760 | 919 | 851 | 582 | 643 | 678 | 699 | 663 | 617 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -3 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (23%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (10%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | 0 | 0 |
| Critical (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | 0 |

a Based on the 82-year simulation period.

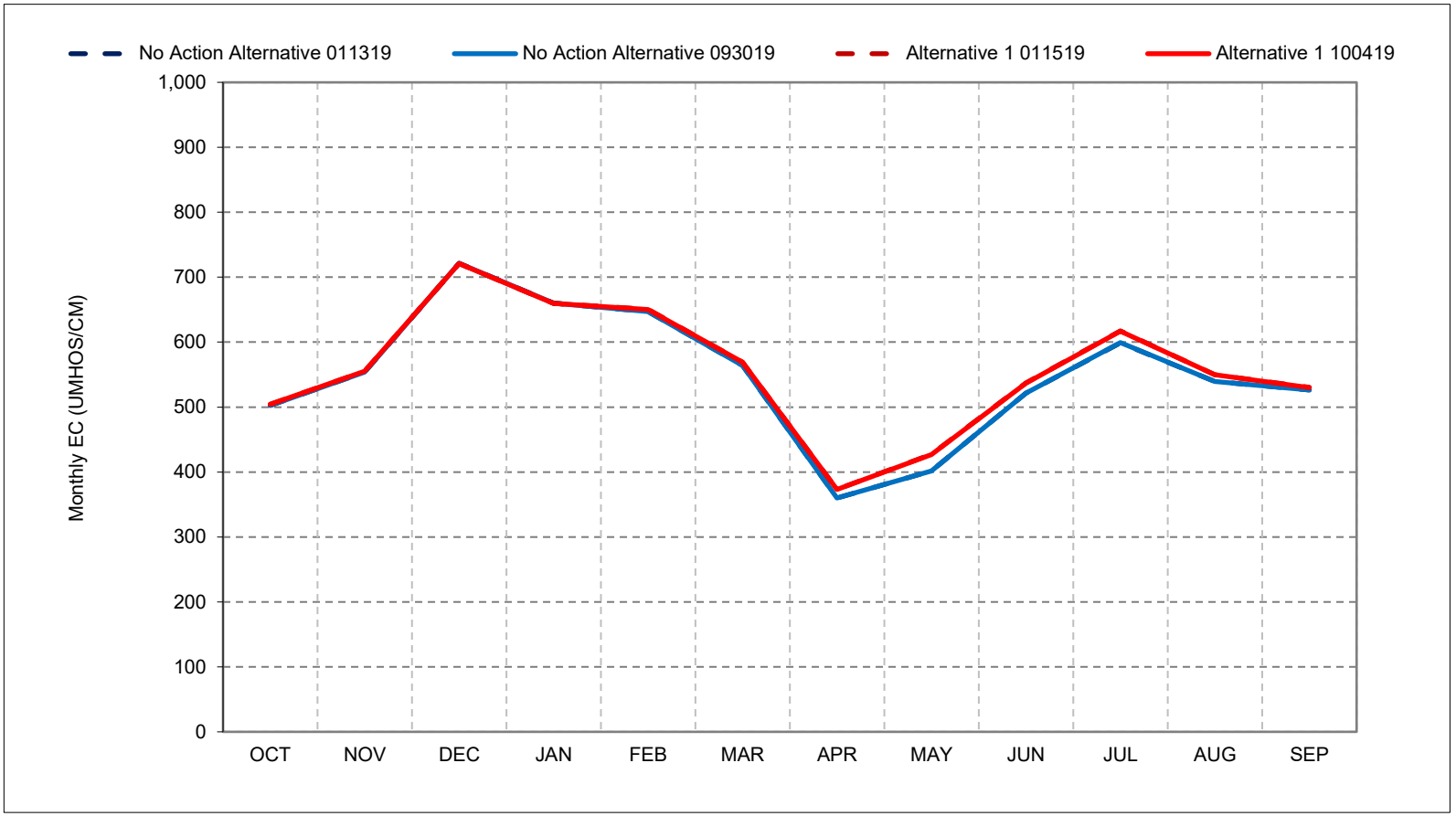
b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-1. San Joaquin River at Vernalis Salinity (60-20-20), Long-Term Average EC

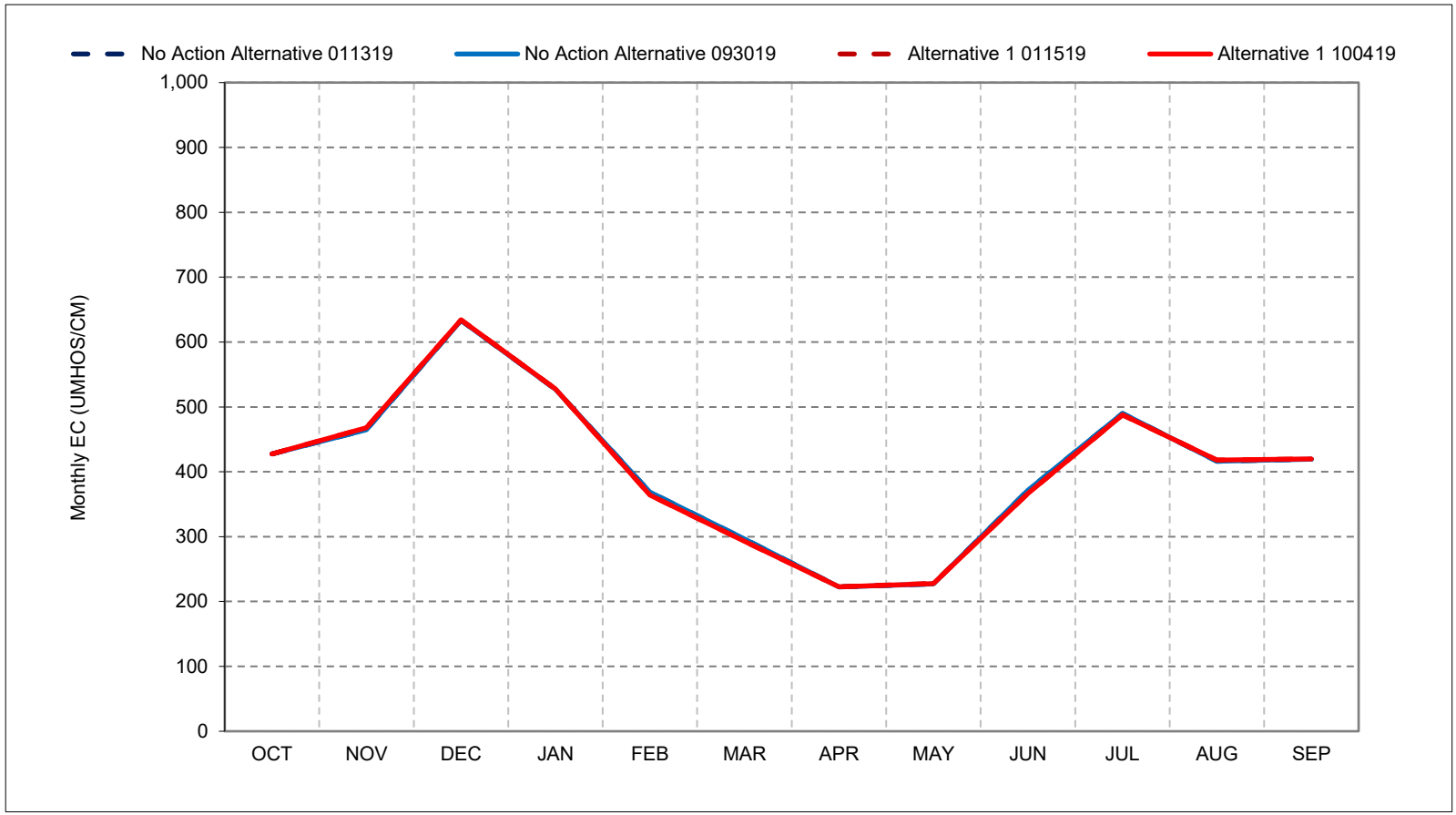



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-2. San Joaquin River at Vernalis Salinity (60-20-20), Wet Year Average EC

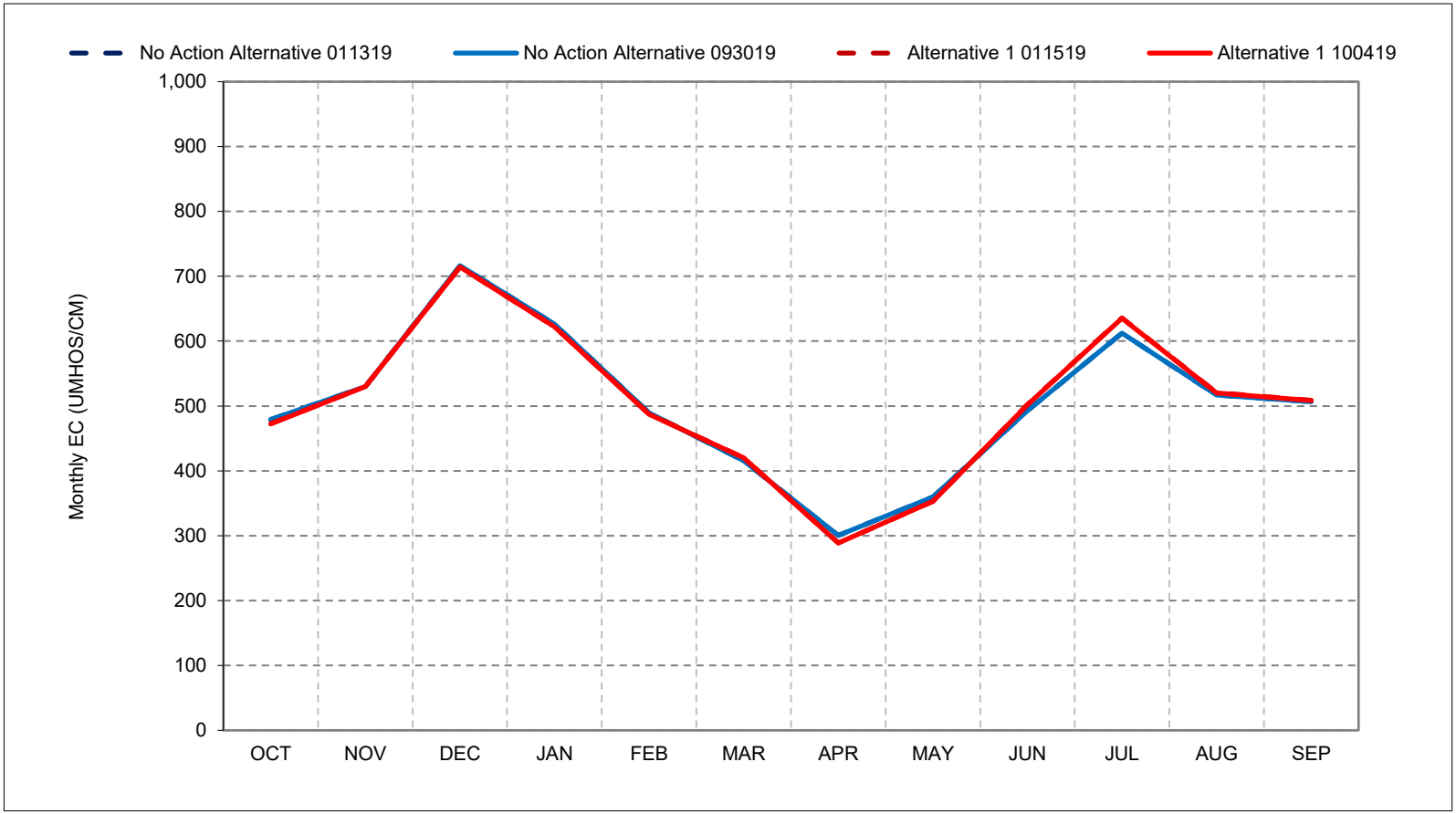



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-3. San Joaquin River at Vernalis Salinity (60-20-20), Above Normal Year Average EC

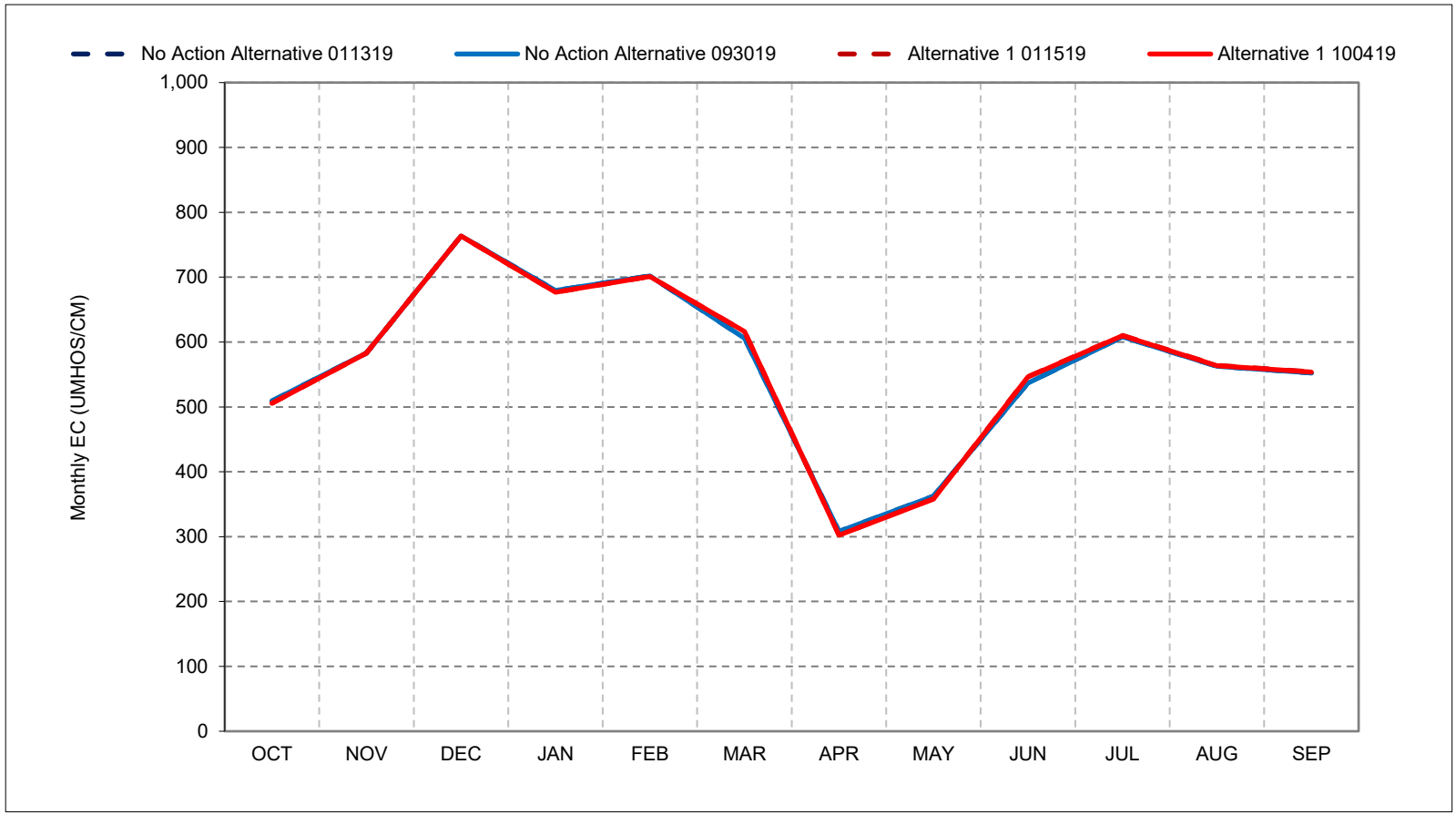



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-4. San Joaquin River at Vernalis Salinity (60-20-20), Below Normal Year Average EC

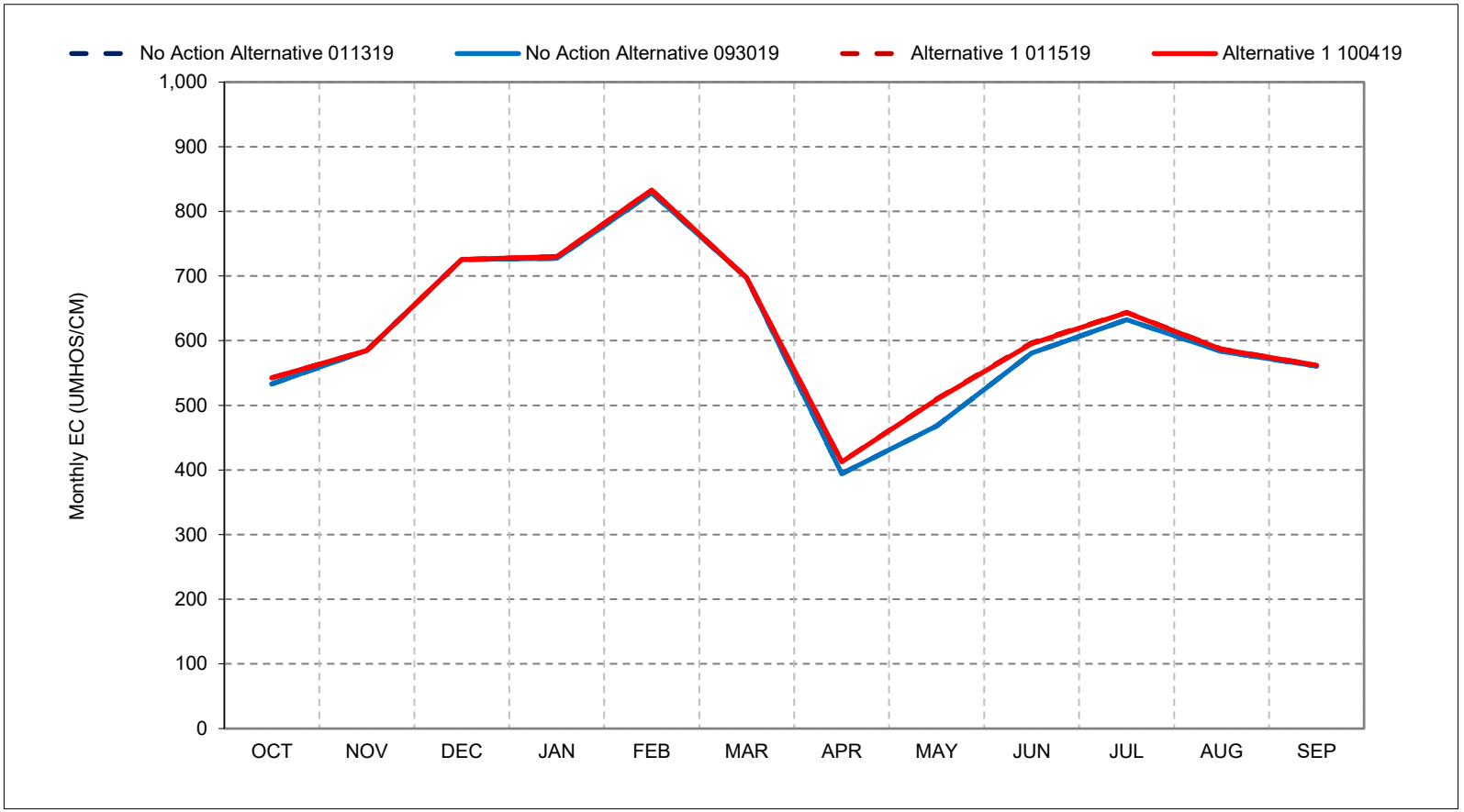



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-5. San Joaquin River at Vernalis Salinity (60-20-20), Dry Year Average EC

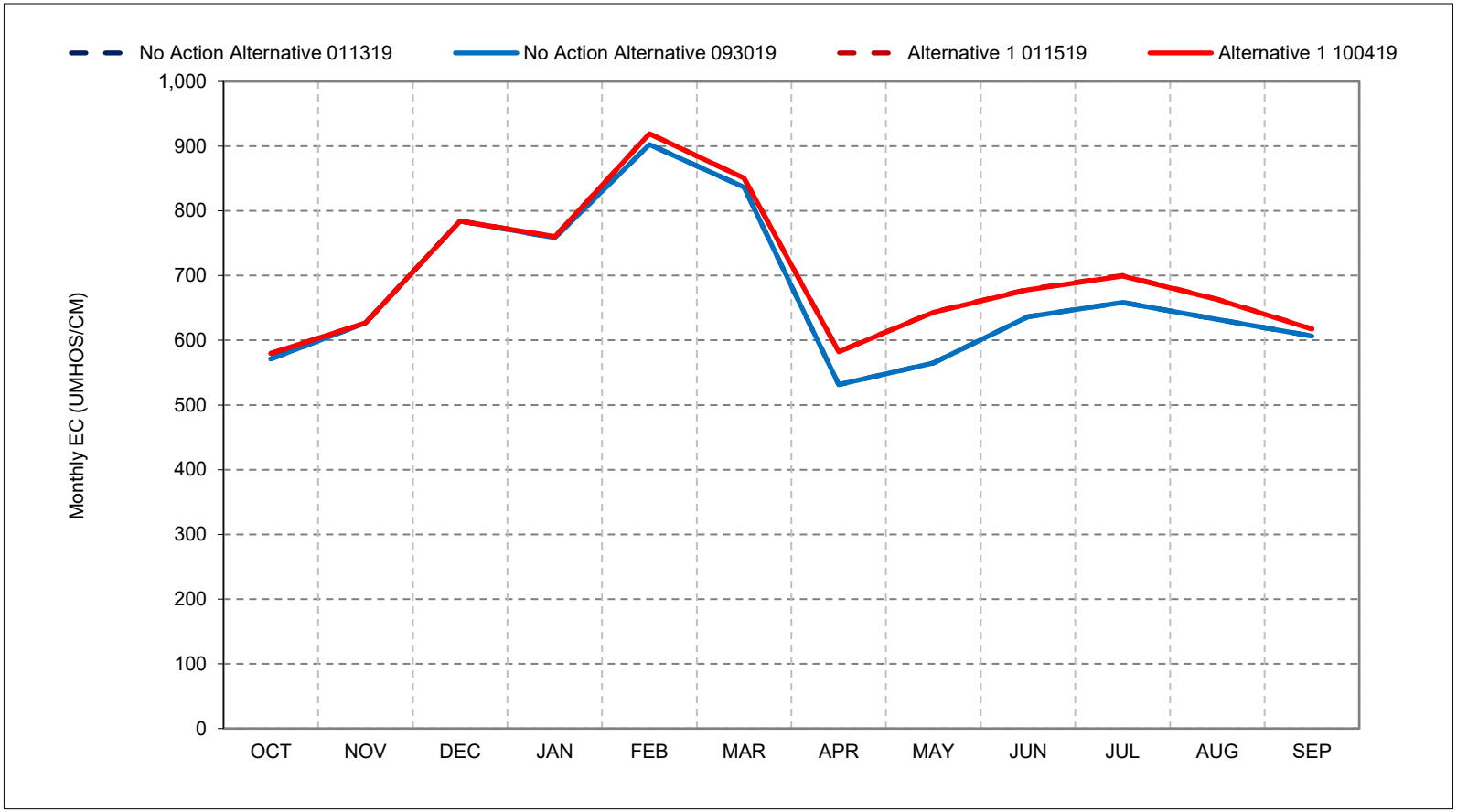



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 6b-6. San Joaquin River at Vernalis Salinity (60-20-20), Critical Year Average EC




*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-1. San Joaquin River at Jersey Point Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,783 | 3,051 | 2,489 | 1,380 | 547 | 303 | 295 | 424 | 518 | 1,397 | 1,786 | 2,642 |
| 20% | 2,589 | 2,678 | 2,235 | 1,127 | 383 | 277 | 261 | 324 | 471 | 1,094 | 1,660 | 2,487 |
| 30% | 2,458 | 2,474 | 1,606 | 898 | 308 | 252 | 251 | 284 | 428 | 909 | 1,504 | 2,428 |
| 40% | 2,353 | 2,130 | 1,313 | 703 | 290 | 241 | 239 | 249 | 374 | 829 | 1,377 | 2,296 |
| 50% | 1,702 | 1,054 | 845 | 536 | 274 | 229 | 231 | 242 | 320 | 647 | 1,336 | 2,143 |
| 60% | 522 | 597 | 744 | 346 | 251 | 223 | 228 | 237 | 290 | 476 | 1,282 | 1,081 |
| 70% | 348 | 343 | 508 | 257 | 235 | 218 | 225 | 227 | 252 | 411 | 1,148 | 1,055 |
| 80% | 301 | 289 | 264 | 233 | 218 | 209 | 219 | 224 | 219 | 367 | 1,087 | 1,007 |
| 90% | 278 | 252 | 215 | 219 | 212 | 201 | 213 | 198 | 204 | 292 | 979 | 954 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,495 | 1,445 | 1,162 | 695 | 339 | 248 | 249 | 291 | 398 | 759 | 1,352 | 1,740 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 292 | 282 | 519 | 287 | 236 | 219 | 221 | 213 | 239 | 346 | 1,073 | 905 |
| Above Normal (16%) | 530 | 679 | 909 | 463 | 254 | 218 | 231 | 237 | 308 | 445 | 1,144 | 1,057 |
| Below Normal (13%) | 2,304 | 2,043 | 1,544 | 723 | 334 | 246 | 247 | 271 | 369 | 774 | 1,355 | 2,403 |
| Dry (24%) | 2,403 | 2,168 | 1,397 | 987 | 408 | 262 | 243 | 287 | 406 | 1,100 | 1,553 | 2,445 |
| Critical (15%) | 2,894 | 3,041 | 2,090 | 1,321 | 546 | 324 | 343 | 545 | 857 | 1,413 | 1,848 | 2,505 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,846 | 3,091 | 2,581 | 1,651 | 642 | 345 | 361 | 466 | 590 | 1,477 | 1,844 | 2,640 |
| 20% | 2,772 | 2,887 | 2,351 | 1,197 | 410 | 277 | 251 | 395 | 554 | 1,003 | 1,705 | 2,574 |
| 30% | 2,619 | 2,760 | 2,189 | 1,013 | 329 | 249 | 234 | 331 | 501 | 910 | 1,555 | 2,483 |
| 40% | 2,585 | 2,534 | 1,809 | 775 | 284 | 237 | 220 | 257 | 408 | 851 | 1,466 | 2,413 |
| 50% | 2,508 | 2,386 | 1,617 | 471 | 271 | 230 | 219 | 230 | 322 | 585 | 1,370 | 2,321 |
| 60% | 2,430 | 2,217 | 1,208 | 344 | 254 | 220 | 211 | 218 | 276 | 493 | 1,253 | 2,252 |
| 70% | 2,350 | 1,775 | 803 | 258 | 234 | 216 | 209 | 209 | 240 | 436 | 1,140 | 2,230 |
| 80% | 2,125 | 1,436 | 563 | 238 | 219 | 209 | 208 | 198 | 209 | 374 | 1,073 | 2,201 |
| 90% | 1,278 | 994 | 295 | 220 | 213 | 204 | 201 | 192 | 197 | 289 | 1,026 | 1,925 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,330 | 2,189 | 1,493 | 748 | 367 | 262 | 247 | 308 | 440 | 759 | 1,373 | 2,265 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,857 | 1,777 | 1,271 | 283 | 233 | 220 | 210 | 203 | 232 | 348 | 1,045 | 1,866 |
| Above Normal (16%) | 2,403 | 2,212 | 1,499 | 557 | 263 | 218 | 212 | 216 | 286 | 452 | 1,160 | 2,279 |
| Below Normal (13%) | 2,295 | 2,104 | 1,537 | 848 | 372 | 259 | 241 | 304 | 443 | 814 | 1,442 | 2,432 |
| Dry (24%) | 2,570 | 2,221 | 1,408 | 1,095 | 458 | 272 | 244 | 320 | 480 | 1,051 | 1,603 | 2,516 |
| Critical (15%) | 2,911 | 3,082 | 2,067 | 1,292 | 617 | 386 | 373 | 614 | 986 | 1,443 | 1,868 | 2,543 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **62** | **40** | **92** | **271** | **95** | **41** | **66** | **42** | **72** | **80** | **58** | -1 |
| 20% | **183** | **209** | **115** | **70** | **27** | **0** | -10 | **71** | **83** | -91 | **44** | **87** |
| 30% | **161** | **286** | **582** | **115** | **20** | -3 | -17 | **47** | **73** | **1** | **50** | **55** |
| 40% | **232** | **404** | **495** | **72** | -5 | -4 | -18 | **9** | **34** | **23** | **89** | **117** |
| 50% | **806** | **1,332** | **772** | -64 | -3 | **1** | -13 | -12 | **2** | -62 | **33** | **178** |
| 60% | **1,907** | **1,620** | **464** | -2 | **2** | -3 | -16 | -19 | -15 | **17** | -29 | **1,171** |
| 70% | **2,002** | **1,432** | **296** | **1** | -1 | -2 | -16 | -19 | -12 | **24** | -8 | **1,176** |
| 80% | **1,825** | **1,147** | **299** | **5** | **1** | -1 | -11 | -25 | -10 | **7** | -14 | **1,194** |
| 90% | **1,000** | **743** | **80** | **1** | **1** | **2** | -12 | -6 | -6 | -3 | **46** | **970** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **835** | **744** | **330** | **53** | **28** | **13** | -3 | **16** | **41** | 0 | **20** | **525** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **1,564** | **1,495** | **752** | -4 | -3 | **0** | -12 | -9 | -7 | **2** | -28 | **960** |
| Above Normal (16%) | **1,872** | **1,533** | **590** | **94** | **10** | **0** | -20 | -20 | -22 | **7** | **16** | **1,222** |
| Below Normal (13%) | -9 | **61** | -7 | **124** | **37** | **13** | -6 | **33** | **74** | **40** | **86** | **30** |
| Dry (24%) | **167** | **53** | **12** | **108** | **49** | **10** | **1** | **33** | **73** | -49 | **50** | **71** |
| Critical (15%) | **17** | **41** | -23 | -29 | **71** | **62** | **30** | **69** | **129** | **31** | **20** | **38** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-2. San Joaquin River at Jersey Point Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 2,497 | 2,580 | 1,962 | 1,289 | 515 | 296 | 300 | 428 | 537 | 1,351 | 1,731 | 2,551 |
| **20%** | 2,324 | 2,364 | 1,717 | 948 | 358 | 269 | 258 | 329 | 476 | 1,050 | 1,595 | 2,420 |
| **30%** | 2,214 | 2,010 | 1,364 | 840 | 307 | 251 | 251 | 285 | 433 | 893 | 1,438 | 2,332 |
| **40%** | 2,125 | 1,707 | 1,131 | 676 | 286 | 238 | 239 | 249 | 382 | 811 | 1,345 | 2,245 |
| **50%** | 1,681 | 993 | 865 | 522 | 270 | 229 | 230 | 242 | 321 | 622 | 1,299 | 2,065 |
| **60%** | 506 | 554 | 720 | 319 | 252 | 223 | 227 | 237 | 290 | 476 | 1,250 | 1,081 |
| **70%** | 343 | 340 | 484 | 256 | 235 | 217 | 225 | 227 | 252 | 412 | 1,151 | 1,049 |
| **80%** | 303 | 287 | 259 | 234 | 218 | 209 | 219 | 224 | 219 | 367 | 1,087 | 1,000 |
| **90%** | 277 | 254 | 216 | 219 | 212 | 202 | 213 | 197 | 204 | 292 | 984 | 954 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,368 | 1,256 | 990 | 617 | 323 | 245 | 249 | 293 | 407 | 743 | 1,315 | 1,702 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 292 | 280 | 517 | 282 | 236 | 219 | 221 | 213 | 239 | 346 | 1,072 | 905 |
| **Above Normal (16%)** | 514 | 660 | 895 | 455 | 254 | 218 | 232 | 237 | 308 | 445 | 1,143 | 1,051 |
| **Below Normal (13%)** | 2,085 | 1,670 | 1,225 | 683 | 331 | 245 | 247 | 272 | 374 | 770 | 1,327 | 2,377 |
| **Dry (24%)** | 2,201 | 1,888 | 1,169 | 857 | 395 | 261 | 244 | 290 | 413 | 1,045 | 1,474 | 2,371 |
| **Critical (15%)** | 2,576 | 2,587 | 1,605 | 1,059 | 456 | 301 | 339 | 553 | 895 | 1,401 | 1,749 | 2,404 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 2,557 | 2,617 | 2,266 | 1,339 | 508 | 335 | 339 | 481 | 602 | 1,395 | 1,743 | 2,561 |
| **20%** | 2,375 | 2,404 | 2,125 | 1,112 | 379 | 267 | 252 | 397 | 562 | 1,026 | 1,653 | 2,447 |
| **30%** | 2,280 | 2,016 | 1,973 | 961 | 312 | 248 | 230 | 326 | 490 | 913 | 1,493 | 2,375 |
| **40%** | 2,132 | 1,775 | 1,758 | 798 | 287 | 237 | 225 | 263 | 421 | 867 | 1,381 | 2,284 |
| **50%** | 1,657 | 1,403 | 1,391 | 489 | 270 | 229 | 218 | 225 | 329 | 597 | 1,326 | 2,124 |
| **60%** | 428 | 1,245 | 1,056 | 338 | 256 | 225 | 214 | 217 | 274 | 497 | 1,001 | 621 |
| **70%** | 367 | 1,162 | 746 | 264 | 236 | 217 | 211 | 207 | 248 | 436 | 964 | 571 |
| **80%** | 320 | 1,077 | 499 | 234 | 218 | 210 | 206 | 199 | 209 | 369 | 932 | 551 |
| **90%** | 300 | 618 | 258 | 219 | 212 | 205 | 203 | 190 | 197 | 289 | 839 | 493 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,386 | 1,578 | 1,334 | 672 | 331 | 251 | 245 | 307 | 441 | 753 | 1,250 | 1,517 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 377 | 989 | 1,270 | 311 | 236 | 221 | 210 | 204 | 236 | 353 | 866 | 535 |
| **Above Normal (16%)** | 338 | 1,119 | 1,520 | 522 | 262 | 220 | 214 | 217 | 297 | 447 | 956 | 555 |
| **Below Normal (13%)** | 2,084 | 1,783 | 1,245 | 819 | 352 | 252 | 242 | 306 | 438 | 818 | 1,470 | 2,365 |
| **Dry (24%)** | 2,267 | 1,911 | 1,189 | 926 | 385 | 253 | 241 | 316 | 481 | 1,042 | 1,518 | 2,419 |
| **Critical (15%)** | 2,599 | 2,608 | 1,598 | 1,055 | 500 | 345 | 366 | 617 | 977 | 1,410 | 1,751 | 2,409 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | **60** | **37** | **304** | **50** | -7 | **39** | **39** | **53** | **66** | **45** | **13** | **10** |
| **20%** | **51** | **40** | **408** | **164** | **22** | -2 | -5 | **68** | **86** | -24 | **59** | **26** |
| **30%** | **66** | **6** | **609** | **121** | **4** | -4 | -21 | **41** | **56** | **20** | **55** | **44** |
| **40%** | **7** | **68** | **627** | **122** | **1** | -1 | -14 | **14** | **39** | **56** | **35** | **39** |
| **50%** | -25 | **410** | **526** | -32 | **1** | **0** | -12 | -17 | **8** | -25 | **27** | **59** |
| **60%** | -78 | **690** | **337** | **19** | **4** | **2** | -14 | -20 | -16 | **21** | -250 | -460 |
| **70%** | **24** | **821** | **262** | **8** | **1** | -1 | -14 | -20 | -4 | **24** | -187 | -478 |
| **80%** | **18** | **789** | **240** | 0 | 0 | **1** | -13 | -25 | -10 | **2** | -155 | -449 |
| **90%** | **23** | **364** | **42** | **1** | **0** | **3** | -10 | -7 | -7 | -2 | -145 | -461 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **18** | **322** | **344** | **54** | **8** | **6** | -4 | **14** | **34** | **10** | -65 | -185 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **85** | **710** | **753** | **29** | **1** | **2** | -12 | -9 | -2 | **7** | -206 | -370 |
| **Above Normal (16%)** | -175 | **459** | **625** | **67** | **8** | **3** | -18 | -19 | -11 | **2** | -187 | -496 |
| **Below Normal (13%)** | -1 | **113** | **19** | **136** | **21** | **7** | -5 | **34** | **64** | **48** | **143** | -12 |
| **Dry (24%)** | **65** | **23** | **20** | **69** | -10 | -8 | -3 | **26** | **68** | -2 | **44** | **48** |
| **Critical (15%)** | **23** | **21** | -8 | -4 | **44** | **43** | **27** | **64** | **82** | **10** | **2** | **5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-3. San Joaquin River at Jersey Point Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,783 | 3,051 | 2,489 | 1,380 | 547 | 303 | 295 | 424 | 518 | 1,397 | 1,786 | 2,642 |
| 20% | 2,589 | 2,678 | 2,235 | 1,127 | 383 | 277 | 261 | 324 | 471 | 1,094 | 1,660 | 2,487 |
| 30% | 2,458 | 2,474 | 1,606 | 898 | 308 | 252 | 251 | 284 | 428 | 909 | 1,504 | 2,428 |
| 40% | 2,353 | 2,130 | 1,313 | 703 | 290 | 241 | 239 | 249 | 374 | 829 | 1,377 | 2,296 |
| 50% | 1,702 | 1,054 | 845 | 536 | 274 | 229 | 231 | 242 | 320 | 647 | 1,336 | 2,143 |
| 60% | 522 | 597 | 744 | 346 | 251 | 223 | 228 | 237 | 290 | 476 | 1,282 | 1,081 |
| 70% | 348 | 343 | 508 | 257 | 235 | 218 | 225 | 227 | 252 | 411 | 1,148 | 1,055 |
| 80% | 301 | 289 | 264 | 233 | 218 | 209 | 219 | 224 | 219 | 367 | 1,087 | 1,007 |
| 90% | 278 | 252 | 215 | 219 | 212 | 201 | 213 | 198 | 204 | 292 | 979 | 954 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,495 | 1,445 | 1,162 | 695 | 339 | 248 | 249 | 291 | 398 | 759 | 1,352 | 1,740 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 292 | 282 | 519 | 287 | 236 | 219 | 221 | 213 | 239 | 346 | 1,073 | 905 |
| Above Normal (16%) | 530 | 679 | 909 | 463 | 254 | 218 | 231 | 237 | 308 | 445 | 1,144 | 1,057 |
| Below Normal (13%) | 2,304 | 2,043 | 1,544 | 723 | 334 | 246 | 247 | 271 | 369 | 774 | 1,355 | 2,403 |
| Dry (24%) | 2,403 | 2,168 | 1,397 | 987 | 408 | 262 | 243 | 287 | 406 | 1,100 | 1,553 | 2,445 |
| Critical (15%) | 2,894 | 3,041 | 2,090 | 1,321 | 546 | 324 | 343 | 545 | 857 | 1,413 | 1,848 | 2,505 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,497 | 2,580 | 1,962 | 1,289 | 515 | 296 | 300 | 428 | 537 | 1,351 | 1,731 | 2,551 |
| 20% | 2,324 | 2,364 | 1,717 | 948 | 358 | 269 | 258 | 329 | 476 | 1,050 | 1,595 | 2,420 |
| 30% | 2,214 | 2,010 | 1,364 | 840 | 307 | 251 | 251 | 285 | 433 | 893 | 1,438 | 2,332 |
| 40% | 2,125 | 1,707 | 1,131 | 676 | 286 | 238 | 239 | 249 | 382 | 811 | 1,345 | 2,245 |
| 50% | 1,681 | 993 | 865 | 522 | 270 | 229 | 230 | 242 | 321 | 622 | 1,299 | 2,065 |
| 60% | 506 | 554 | 720 | 319 | 252 | 223 | 227 | 237 | 290 | 476 | 1,250 | 1,081 |
| 70% | 343 | 340 | 484 | 256 | 235 | 217 | 225 | 227 | 252 | 412 | 1,151 | 1,049 |
| 80% | 303 | 287 | 259 | 234 | 218 | 209 | 219 | 224 | 219 | 367 | 1,087 | 1,000 |
| 90% | 277 | 254 | 216 | 219 | 212 | 202 | 213 | 197 | 204 | 292 | 984 | 954 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,368 | 1,256 | 990 | 617 | 323 | 245 | 249 | 293 | 407 | 743 | 1,315 | 1,702 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 292 | 280 | 517 | 282 | 236 | 219 | 221 | 213 | 239 | 346 | 1,072 | 905 |
| Above Normal (16%) | 514 | 660 | 895 | 455 | 254 | 218 | 232 | 237 | 308 | 445 | 1,143 | 1,051 |
| Below Normal (13%) | 2,085 | 1,670 | 1,225 | 683 | 331 | 245 | 247 | 272 | 374 | 770 | 1,327 | 2,377 |
| Dry (24%) | 2,201 | 1,888 | 1,169 | 857 | 395 | 261 | 244 | 290 | 413 | 1,045 | 1,474 | 2,371 |
| Critical (15%) | 2,576 | 2,587 | 1,605 | 1,059 | 456 | 301 | 339 | 553 | 895 | 1,401 | 1,749 | 2,404 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -286 | -471 | -527 | -91 | -32 | -7 | 5 | 4 | 18 | -47 | -55 | -91 |
| 20% | -264 | -314 | -518 | -179 | -26 | -8 | -3 | 5 | 4 | -44 | -66 | -67 |
| 30% | -244 | -464 | -242 | -58 | -1 | 0 | 0 | 1 | 5 | -15 | -66 | -96 |
| 40% | -228 | -423 | -182 | -27 | -3 | -3 | 0 | 0 | 8 | -18 | -32 | -51 |
| 50% | -21 | -61 | 20 | -14 | -4 | 0 | -1 | 0 | 1 | -26 | -37 | -79 |
| 60% | -16 | -43 | -24 | -28 | 1 | 0 | 0 | 0 | 0 | 1 | -32 | 0 |
| 70% | -5 | -3 | -24 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | -6 |
| 80% | 2 | -1 | -5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -7 |
| 90% | -1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -128 | -189 | -172 | -78 | -17 | -4 | 0 | 2 | 8 | -16 | -38 | -37 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -3 | -2 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 |
| Above Normal (16%) | -17 | -20 | -14 | -8 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -6 |
| Below Normal (13%) | -219 | -373 | -319 | -40 | -3 | 0 | 0 | 0 | 5 | -3 | -28 | -26 |
| Dry (24%) | -202 | -280 | -227 | -130 | -13 | -2 | 1 | 2 | 7 | -56 | -78 | -74 |
| Critical (15%) | -318 | -454 | -484 | -262 | -90 | -22 | -4 | 9 | 38 | -12 | -99 | -101 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 7-4. San Joaquin River at Jersey Point Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,846 | 3,091 | 2,581 | 1,651 | 642 | 345 | 361 | 466 | 590 | 1,477 | 1,844 | 2,640 |
| 20% | 2,772 | 2,887 | 2,351 | 1,197 | 410 | 277 | 251 | 395 | 554 | 1,003 | 1,705 | 2,574 |
| 30% | 2,619 | 2,760 | 2,189 | 1,013 | 329 | 249 | 234 | 331 | 501 | 910 | 1,555 | 2,483 |
| 40% | 2,585 | 2,534 | 1,809 | 775 | 284 | 237 | 220 | 257 | 408 | 851 | 1,466 | 2,413 |
| 50% | 2,508 | 2,386 | 1,617 | 471 | 271 | 230 | 219 | 230 | 322 | 585 | 1,370 | 2,321 |
| 60% | 2,430 | 2,217 | 1,208 | 344 | 254 | 220 | 211 | 218 | 276 | 493 | 1,253 | 2,252 |
| 70% | 2,350 | 1,775 | 803 | 258 | 234 | 216 | 209 | 209 | 240 | 436 | 1,140 | 2,230 |
| 80% | 2,125 | 1,436 | 563 | 238 | 219 | 209 | 208 | 198 | 209 | 374 | 1,073 | 2,201 |
| 90% | 1,278 | 994 | 295 | 220 | 213 | 204 | 201 | 192 | 197 | 289 | 1,026 | 1,925 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2,330 | 2,189 | 1,493 | 748 | 367 | 262 | 247 | 308 | 440 | 759 | 1,373 | 2,265 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 1,857 | 1,777 | 1,271 | 283 | 233 | 220 | 210 | 203 | 232 | 348 | 1,045 | 1,866 |
| Above Normal (16%) | 2,403 | 2,212 | 1,499 | 557 | 263 | 218 | 212 | 216 | 286 | 452 | 1,160 | 2,279 |
| Below Normal (13%) | 2,295 | 2,104 | 1,537 | 848 | 372 | 259 | 241 | 304 | 443 | 814 | 1,442 | 2,432 |
| Dry (24%) | 2,570 | 2,221 | 1,408 | 1,095 | 458 | 272 | 244 | 320 | 480 | 1,051 | 1,603 | 2,516 |
| Critical (15%) | 2,911 | 3,082 | 2,067 | 1,292 | 617 | 386 | 373 | 614 | 986 | 1,443 | 1,868 | 2,543 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,557 | 2,617 | 2,266 | 1,339 | 508 | 335 | 339 | 481 | 602 | 1,395 | 1,743 | 2,561 |
| 20% | 2,375 | 2,404 | 2,125 | 1,112 | 379 | 267 | 252 | 397 | 562 | 1,026 | 1,653 | 2,447 |
| 30% | 2,280 | 2,016 | 1,973 | 961 | 312 | 248 | 230 | 326 | 490 | 913 | 1,493 | 2,375 |
| 40% | 2,132 | 1,775 | 1,758 | 798 | 287 | 237 | 225 | 263 | 421 | 867 | 1,381 | 2,284 |
| 50% | 1,657 | 1,403 | 1,391 | 489 | 270 | 229 | 218 | 225 | 329 | 597 | 1,326 | 2,124 |
| 60% | 428 | 1,245 | 1,056 | 338 | 256 | 225 | 214 | 217 | 274 | 497 | 1,001 | 621 |
| 70% | 367 | 1,162 | 746 | 264 | 236 | 217 | 211 | 207 | 248 | 436 | 964 | 571 |
| 80% | 320 | 1,077 | 499 | 234 | 218 | 210 | 206 | 199 | 209 | 369 | 932 | 551 |
| 90% | 300 | 618 | 258 | 219 | 212 | 205 | 203 | 190 | 197 | 289 | 839 | 493 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,386 | 1,578 | 1,334 | 672 | 331 | 251 | 245 | 307 | 441 | 753 | 1,250 | 1,517 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 377 | 989 | 1,270 | 311 | 236 | 221 | 210 | 204 | 236 | 353 | 866 | 535 |
| Above Normal (16%) | 338 | 1,119 | 1,520 | 522 | 262 | 220 | 214 | 217 | 297 | 447 | 956 | 555 |
| Below Normal (13%) | 2,084 | 1,783 | 1,245 | 819 | 352 | 252 | 242 | 306 | 438 | 818 | 1,470 | 2,365 |
| Dry (24%) | 2,267 | 1,911 | 1,189 | 926 | 385 | 253 | 241 | 316 | 481 | 1,042 | 1,518 | 2,419 |
| Critical (15%) | 2,599 | 2,608 | 1,598 | 1,055 | 500 | 345 | 366 | 617 | 977 | 1,410 | 1,751 | 2,409 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -289 | -474 | -315 | -312 | -133 | -10 | -22 | **15** | **12** | -82 | -101 | -80 |
| 20% | -396 | -483 | -226 | -84 | -31 | -10 | **1** | **1** | **8** | **23** | -51 | -127 |
| 30% | -339 | -744 | -216 | -53 | -17 | -1 | -4 | -5 | -11 | **4** | -62 | -108 |
| 40% | -453 | -759 | -50 | **23** | **2** | 0 | **5** | **6** | **13** | **15** | -85 | -129 |
| 50% | -851 | -982 | -226 | **18** | -1 | -1 | 0 | -5 | **6** | **12** | -44 | -197 |
| 60% | -2,001 | -972 | -152 | -6 | **2** | **5** | **2** | -1 | -2 | **5** | -253 | -1,631 |
| 70% | -1,983 | -613 | -57 | **7** | **2** | **1** | **1** | -2 | **8** | **1** | -176 | -1,659 |
| 80% | -1,805 | -360 | -63 | -4 | -2 | **2** | -2 | **0** | 0 | -5 | -141 | -1,650 |
| 90% | -978 | -376 | -37 | -1 | 0 | **1** | **2** | -2 | -1 | **1** | -186 | -1,432 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -944 | -611 | -158 | -76 | -37 | -11 | -1 | 0 | **1** | -6 | -123 | -748 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -1,480 | -788 | -1 | **28** | **3** | **1** | 0 | **0** | **5** | **5** | -179 | -1,331 |
| Above Normal (16%) | -2,064 | -1,093 | **21** | -35 | -2 | **3** | **2** | **1** | **10** | -5 | -204 | -1,724 |
| Below Normal (13%) | -211 | -321 | -292 | -29 | -19 | -7 | **1** | **1** | -5 | **4** | **29** | -67 |
| Dry (24%) | -303 | -310 | -219 | -169 | -73 | -20 | -3 | -4 | **2** | -9 | -85 | -97 |
| Critical (15%) | -312 | -474 | -469 | -237 | -117 | -41 | -7 | **3** | -10 | -33 | -117 | -134 |

a Based on the 82-year simulation period.

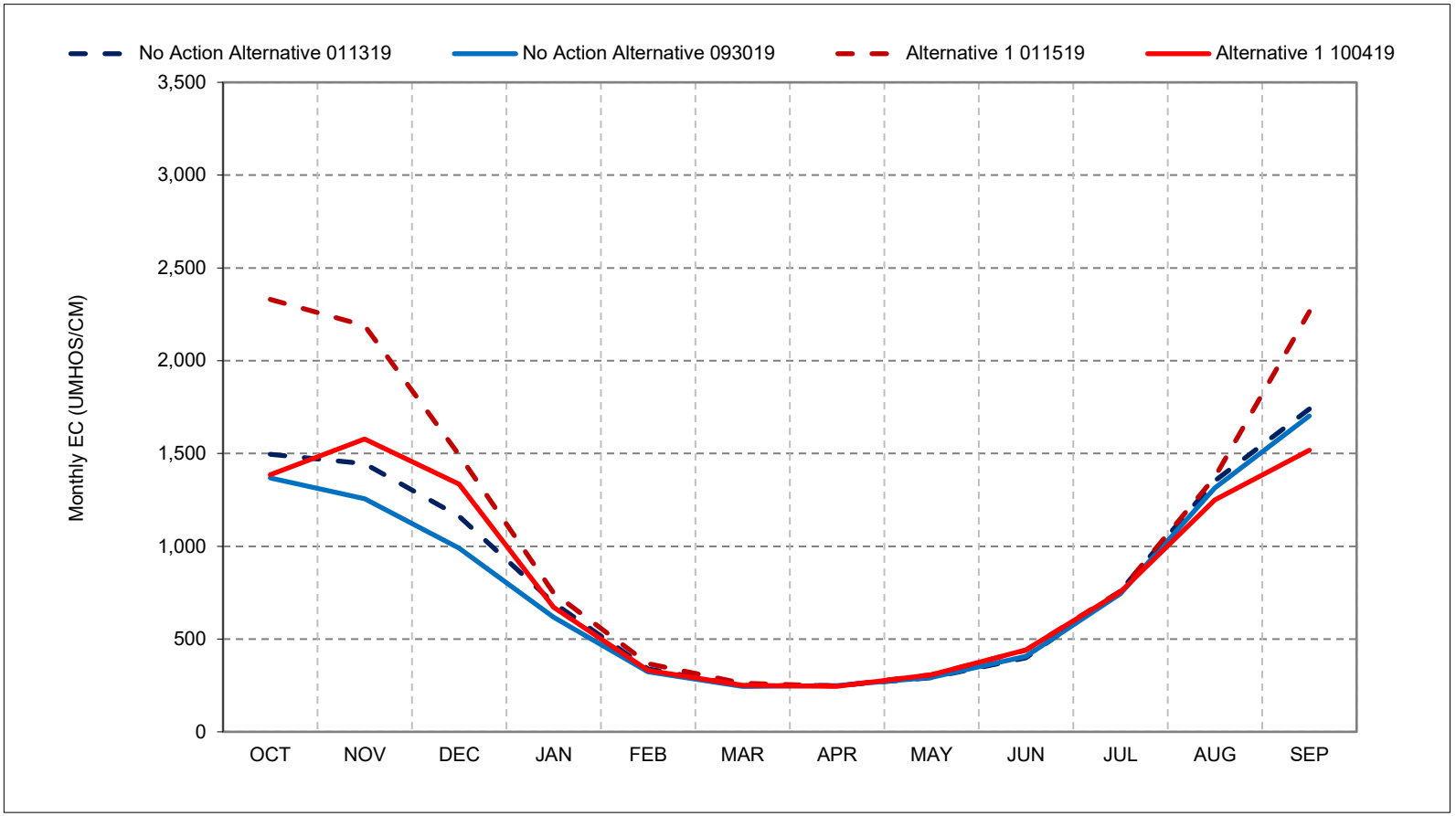
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-1. San Joaquin River at Jersey Point Salinity, Long-Term Average EC

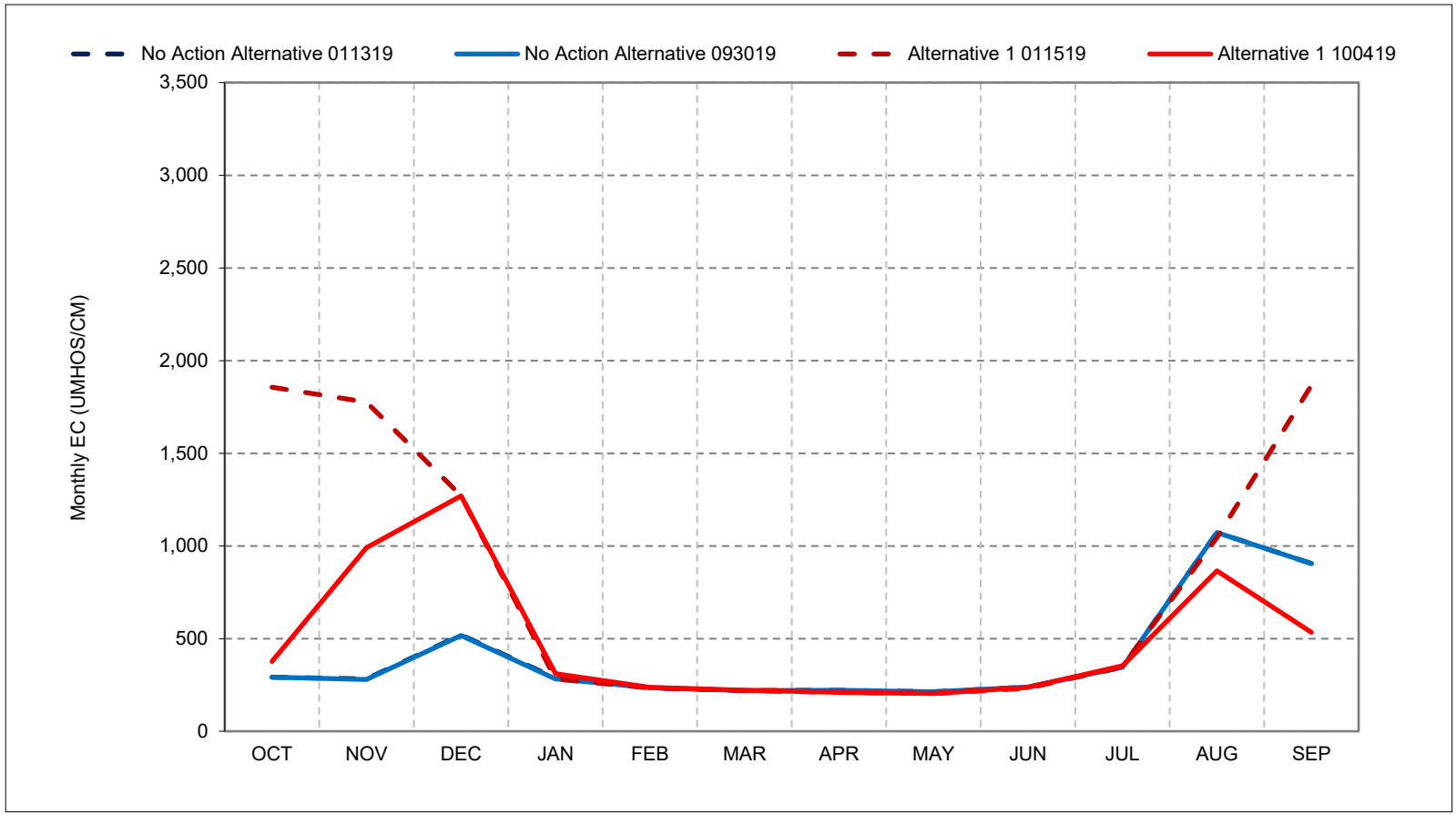



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-2. San Joaquin River at Jersey Point Salinity, Wet Year Average EC

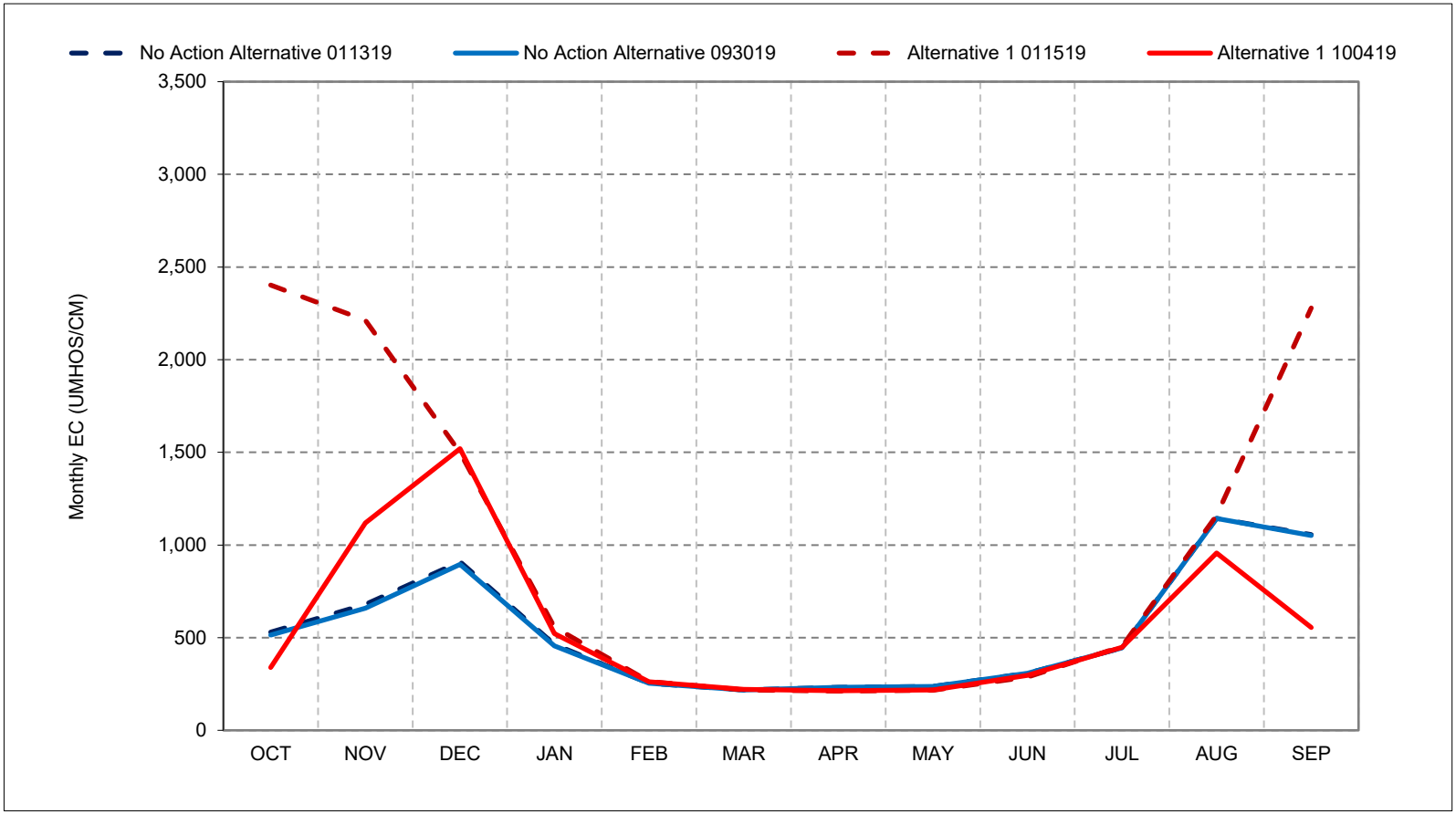



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-3. San Joaquin River at Jersey Point Salinity, Above Normal Year Average EC

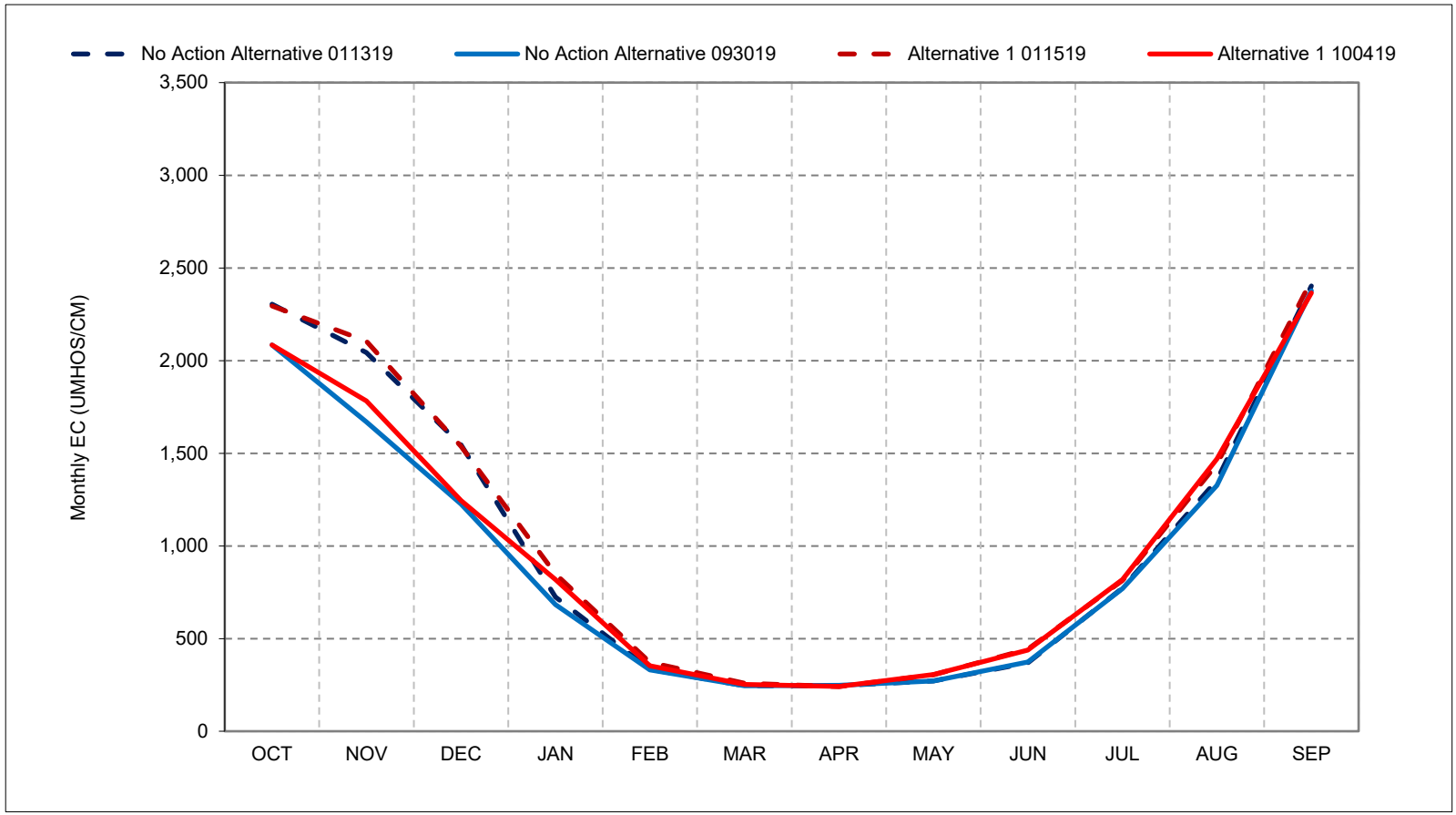



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-4. San Joaquin River at Jersey Point Salinity, Below Normal Year Average EC

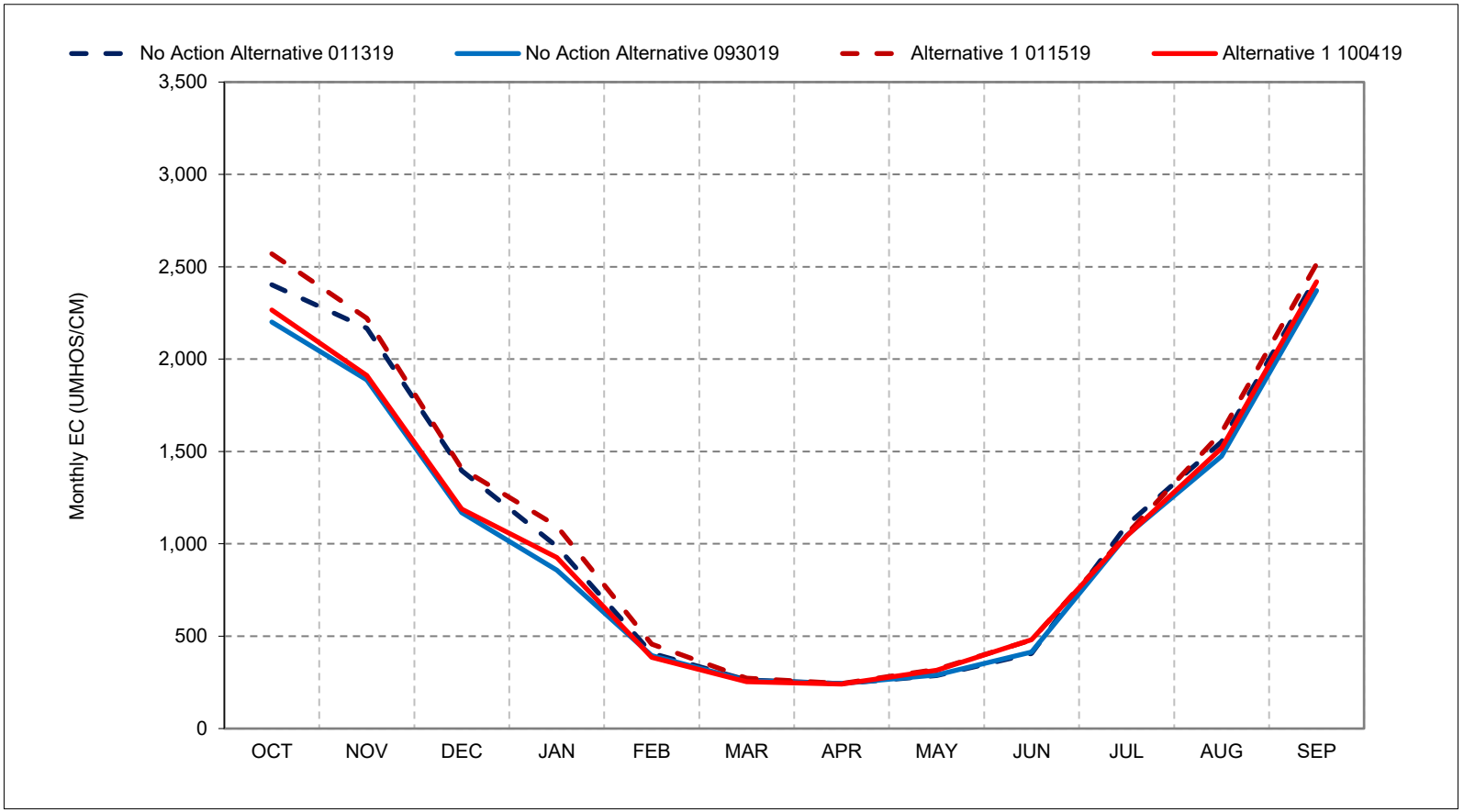



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-5. San Joaquin River at Jersey Point Salinity, Dry Year Average EC

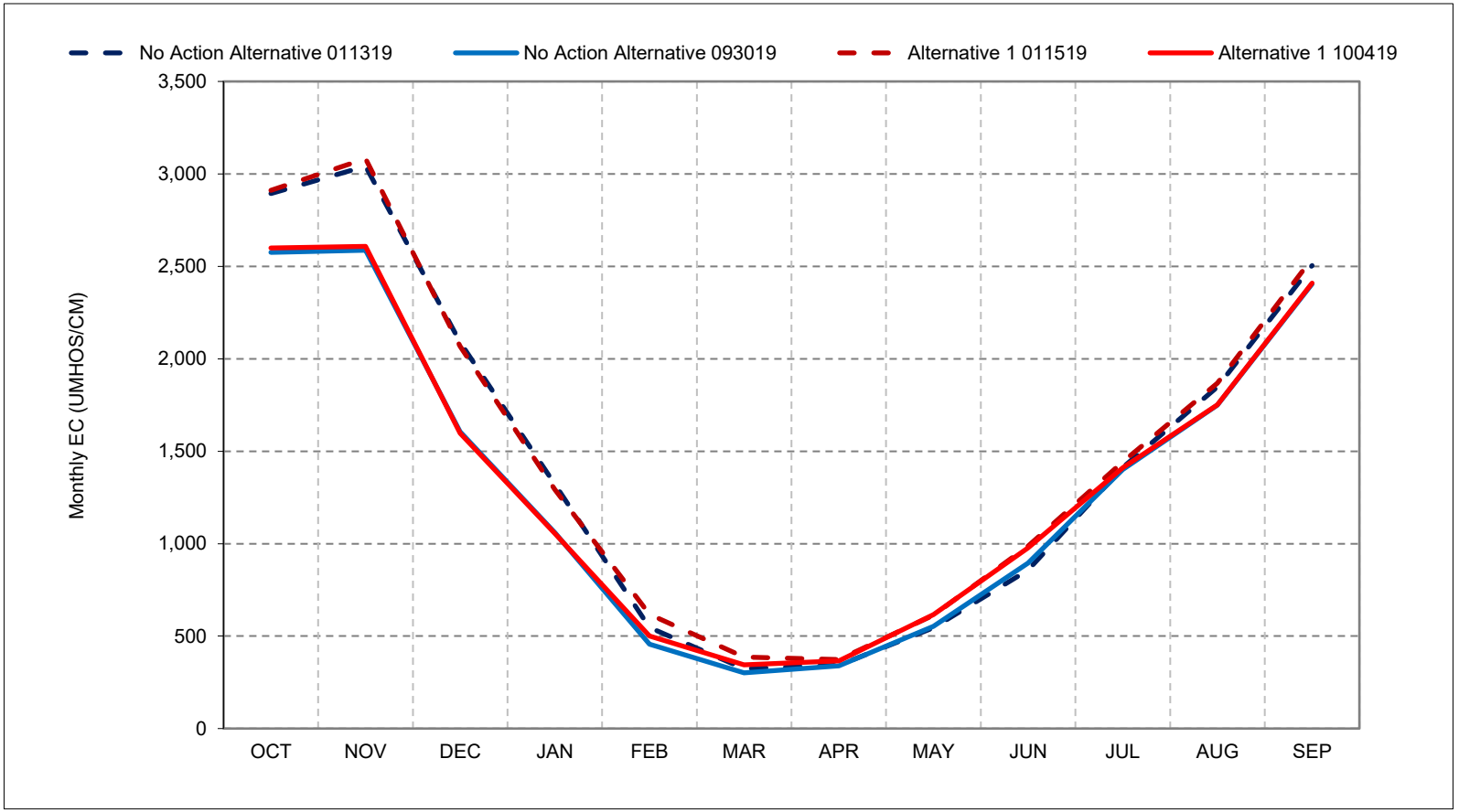



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 7-6. San Joaquin River at Jersey Point Salinity, Critical Year Average EC

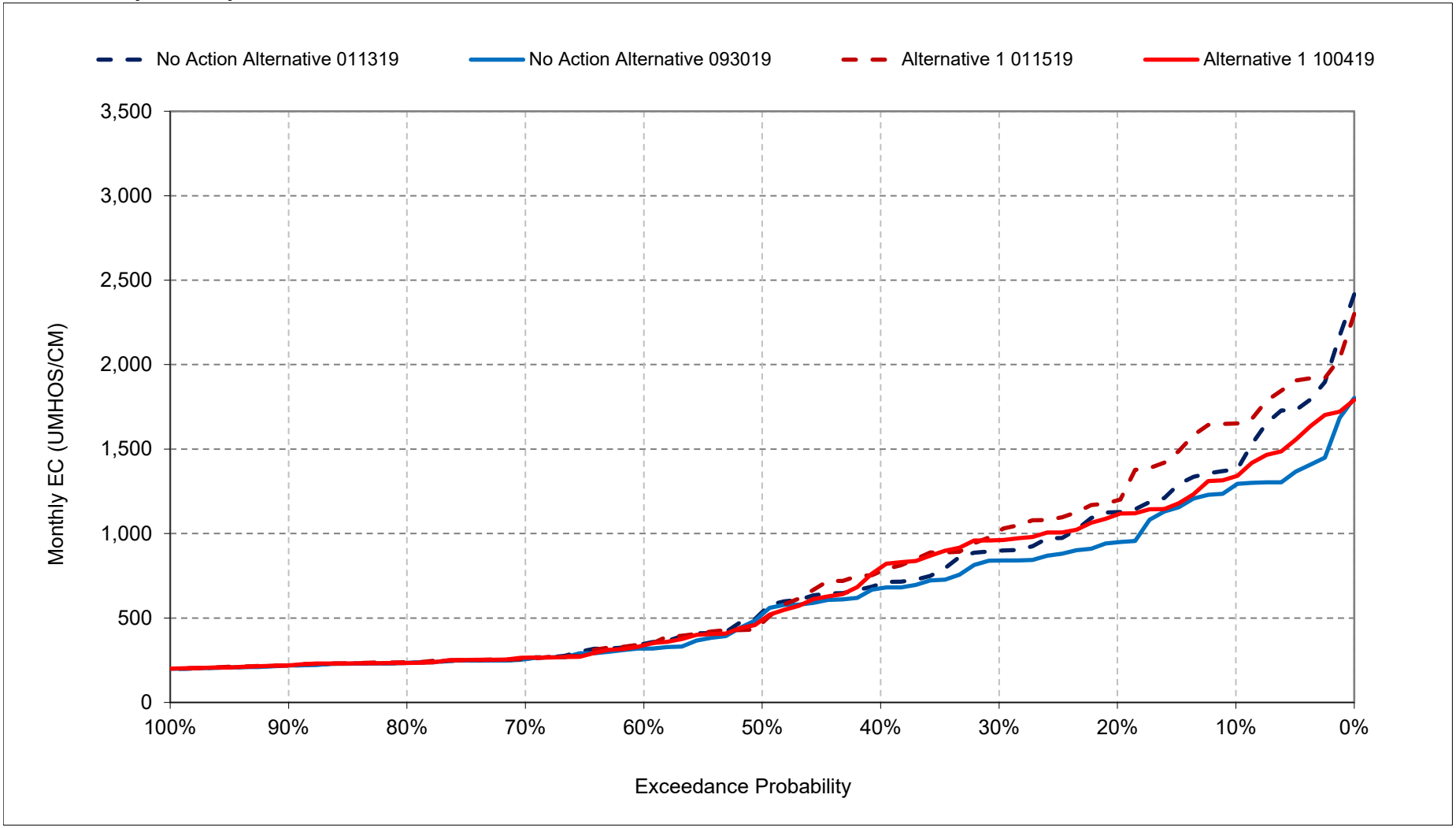



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

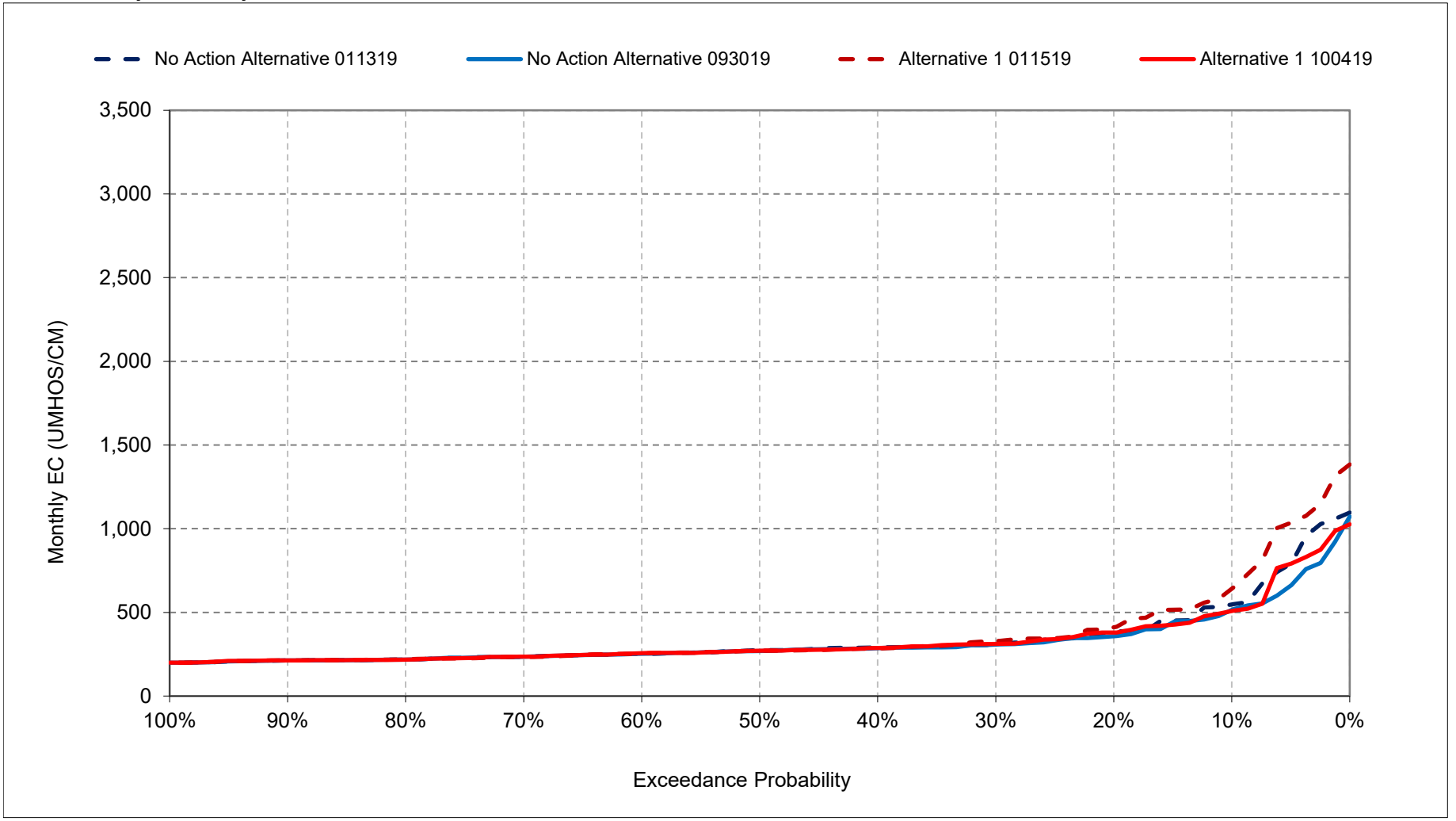
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-7. San Joaquin River at Jersey Point Salinity, January EC**



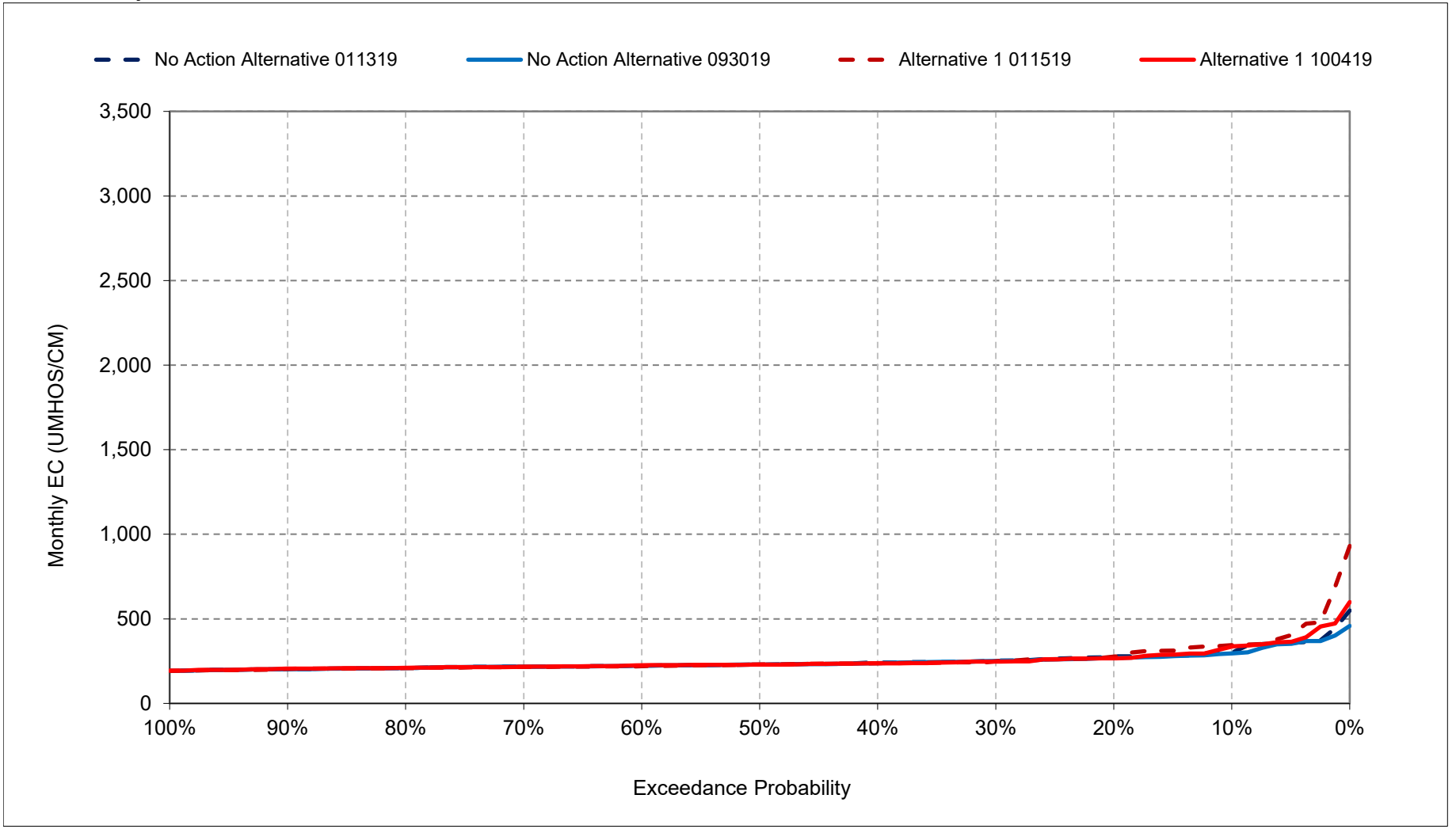

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-8. San Joaquin River at Jersey Point Salinity, February EC**



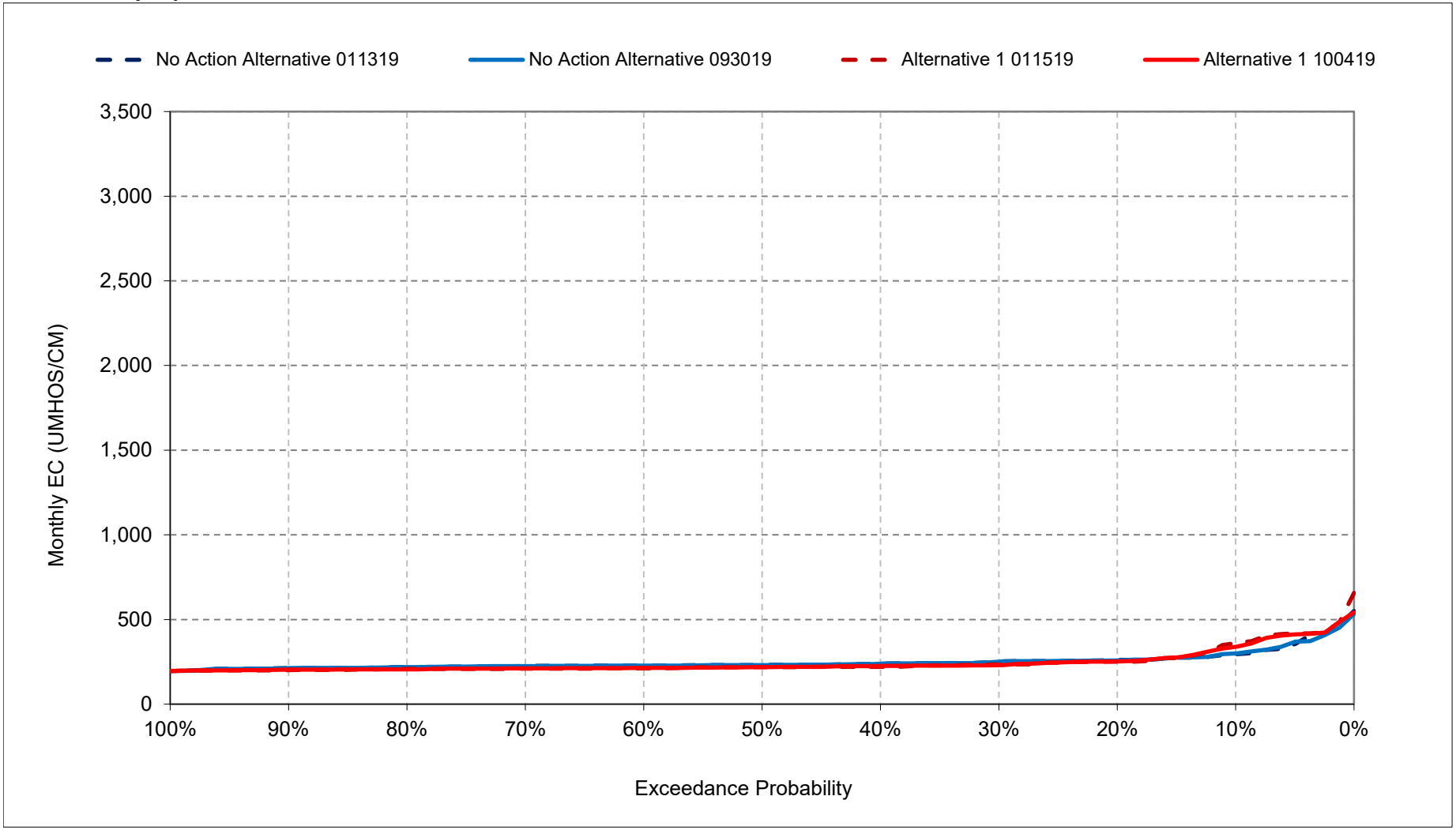

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-9. San Joaquin River at Jersey Point Salinity, March EC**



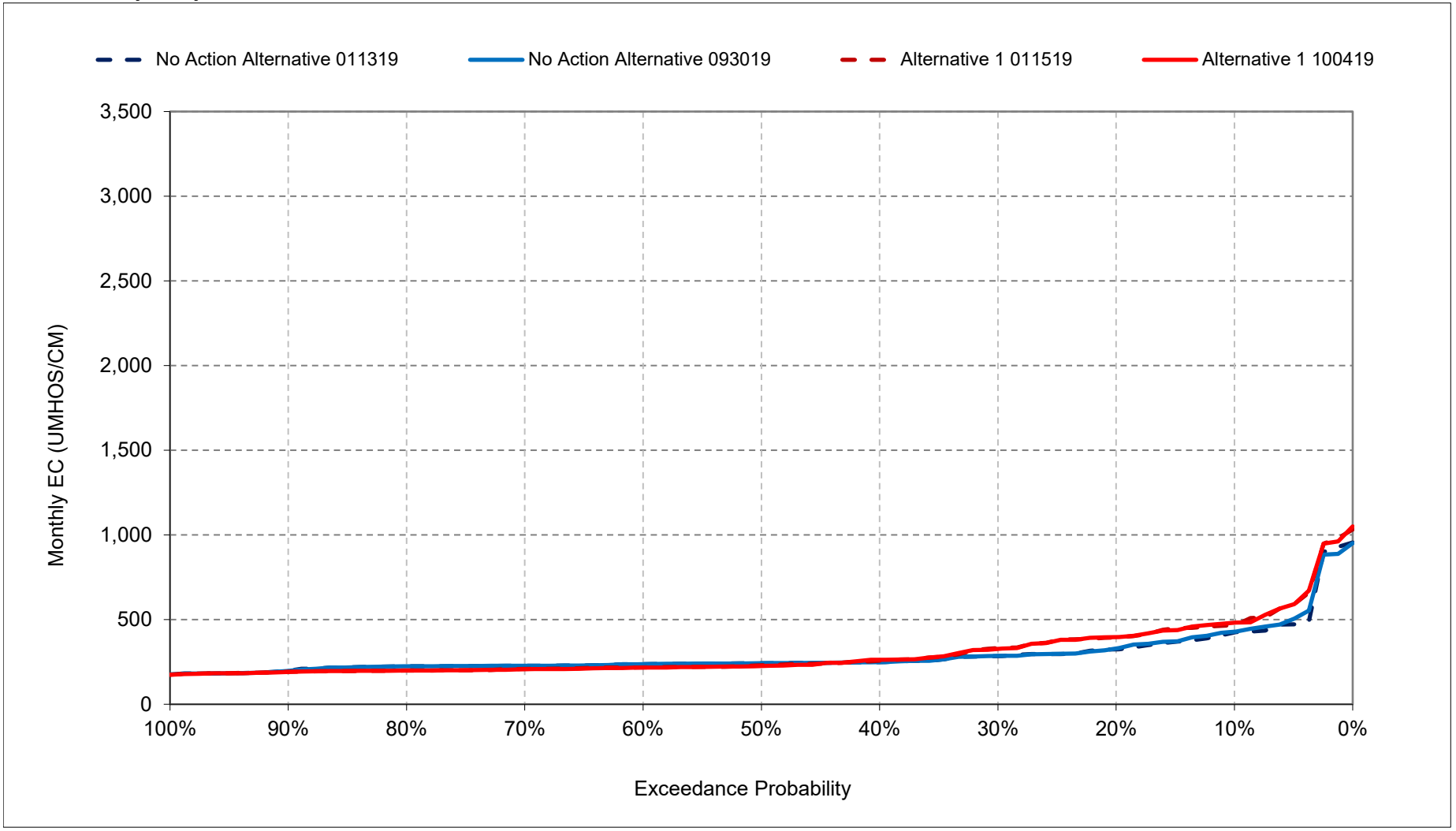

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-10. San Joaquin River at Jersey Point Salinity, April EC**



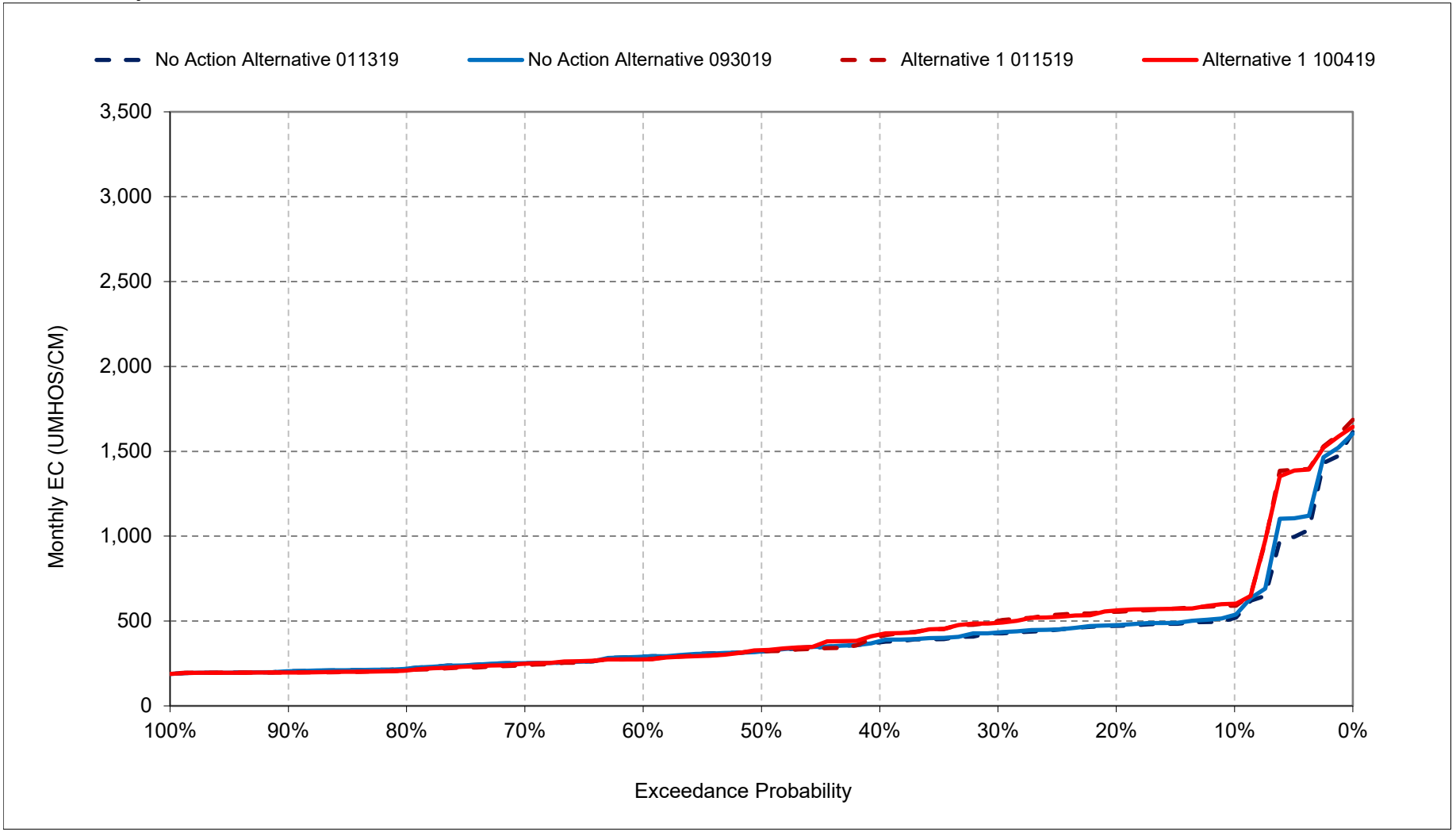

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-11. San Joaquin River at Jersey Point Salinity, May EC**



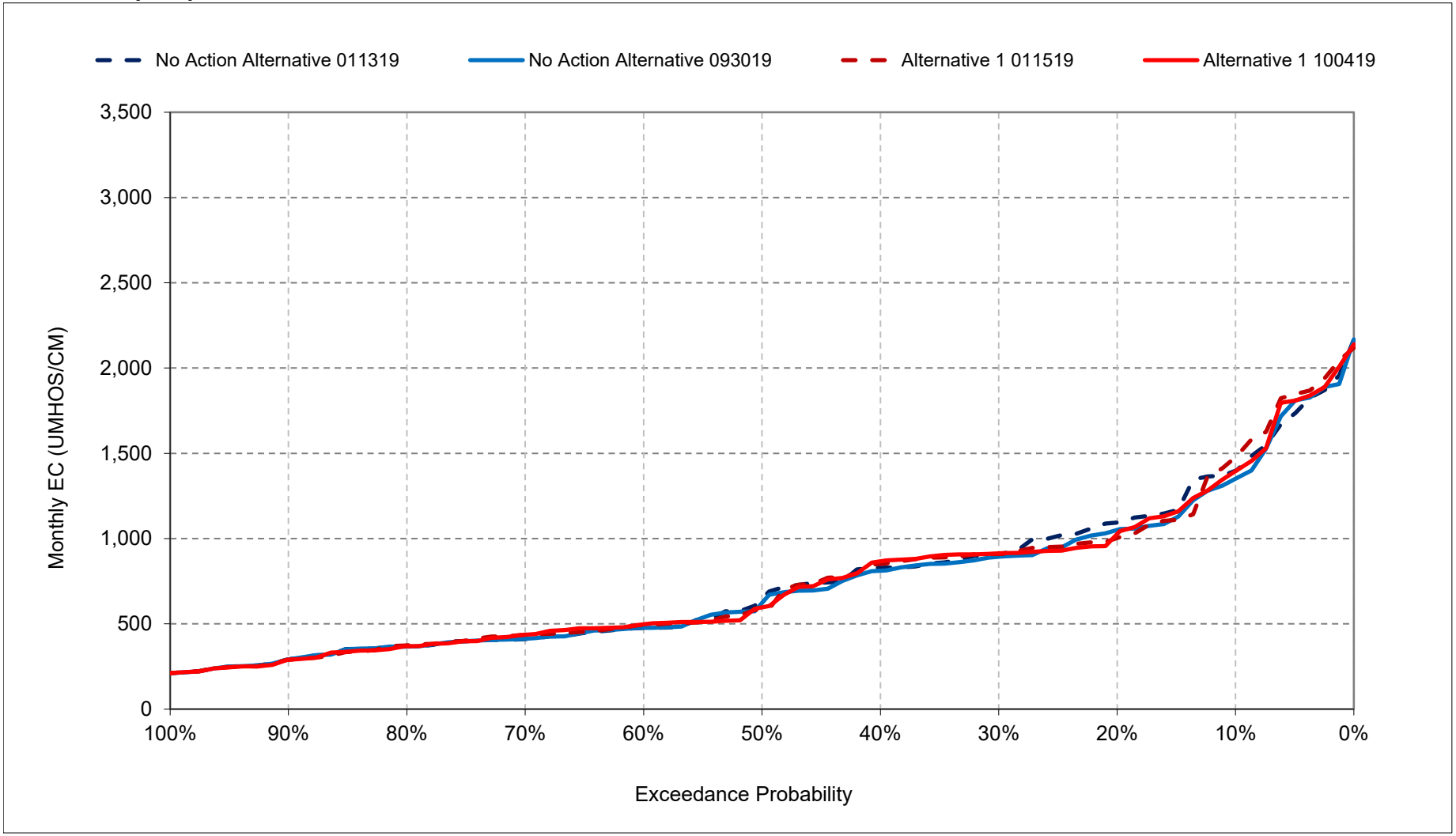

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-12. San Joaquin River at Jersey Point Salinity, June EC**



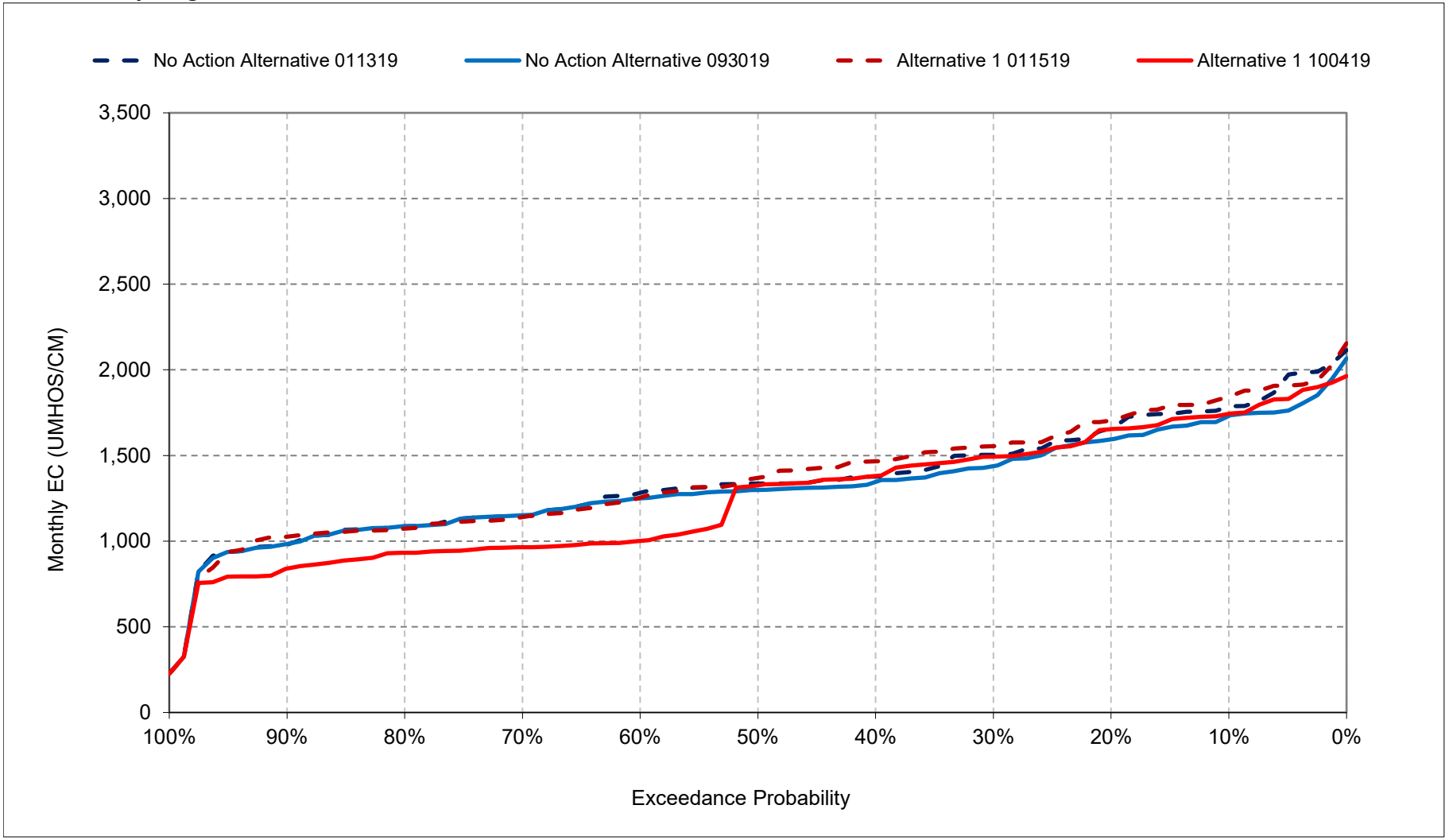

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-13. San Joaquin River at Jersey Point Salinity, July EC**



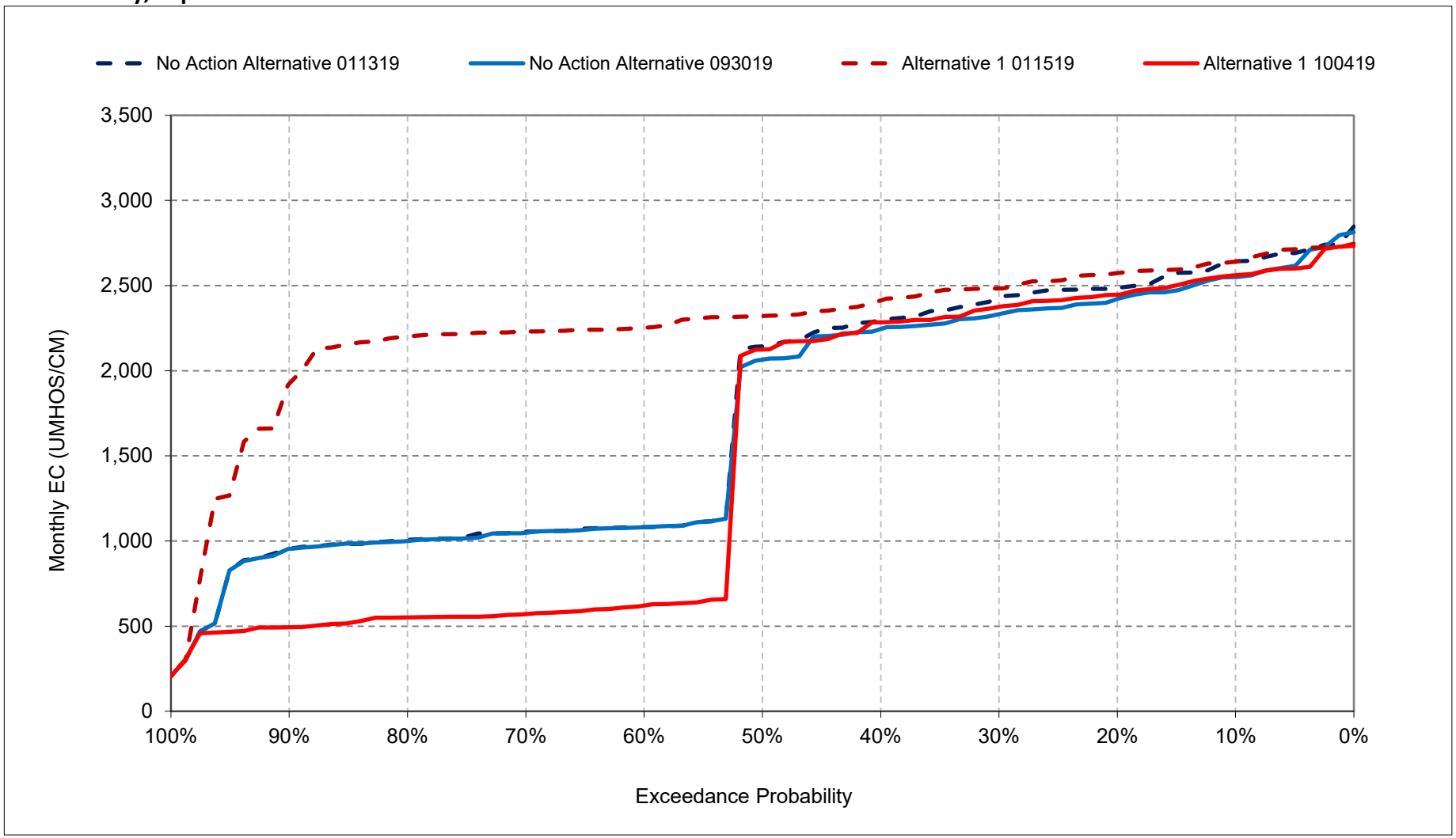

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-14. San Joaquin River at Jersey Point Salinity, August EC**



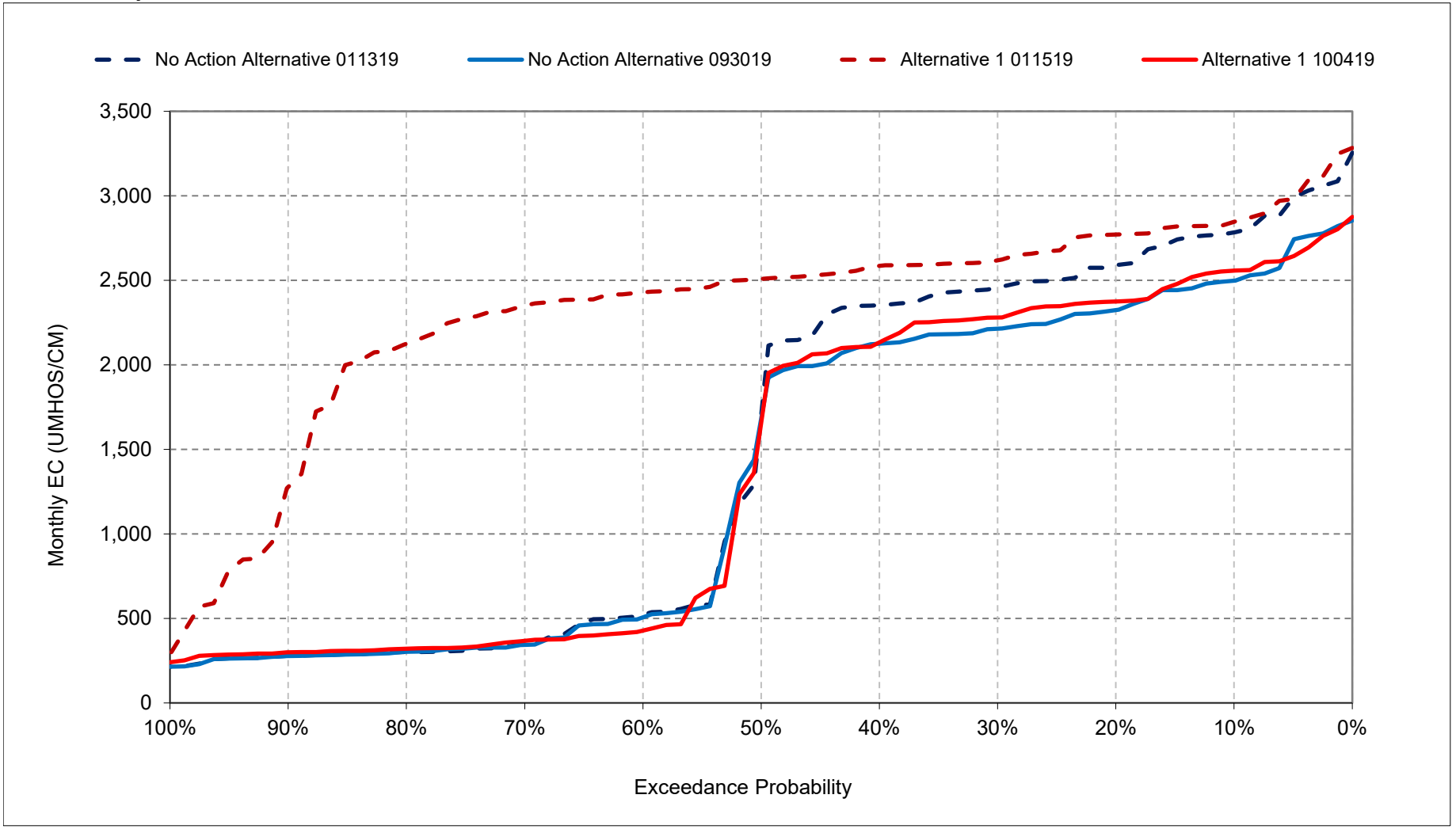

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-15. San Joaquin River at Jersey Point Salinity, September EC**



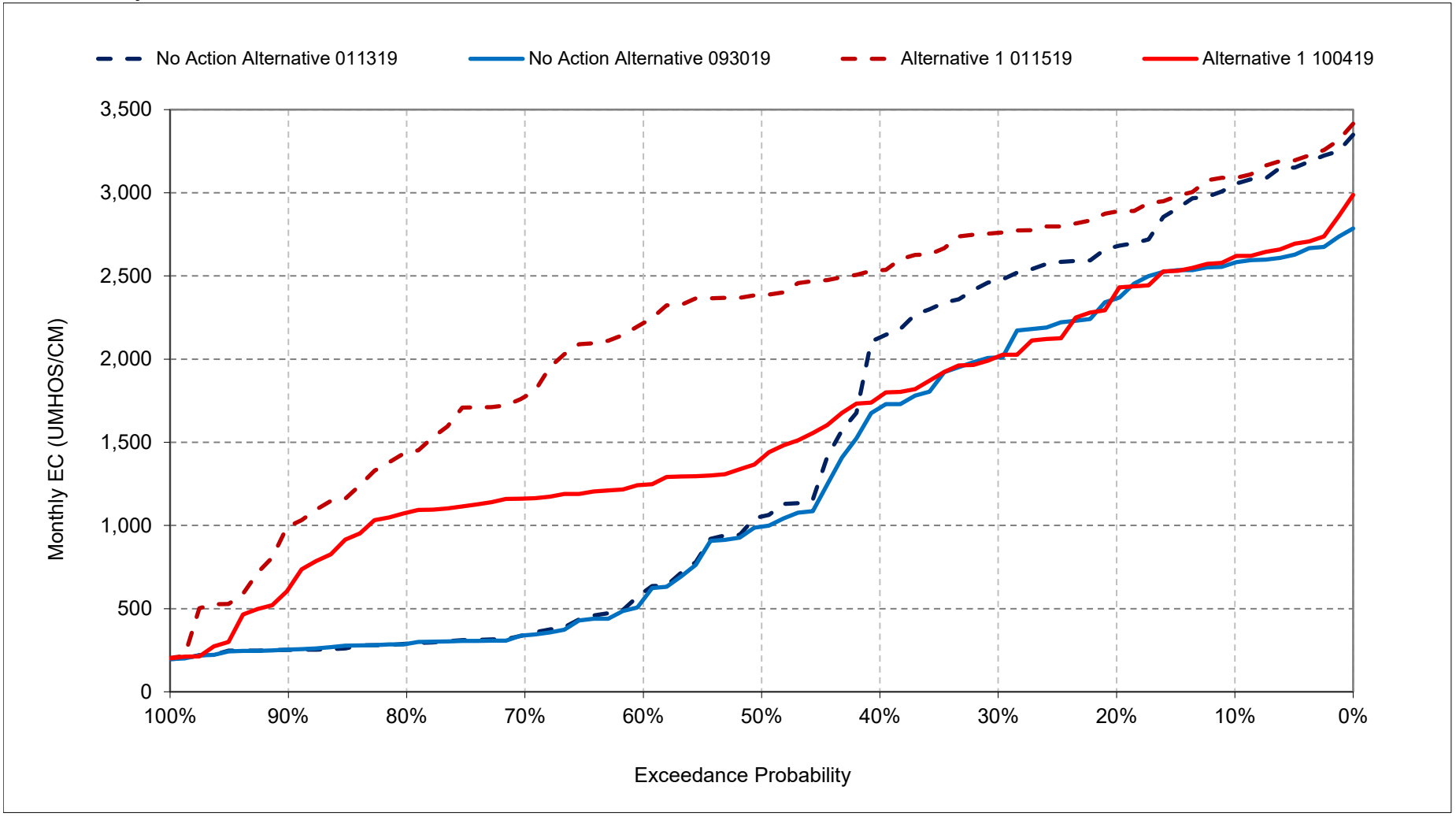

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-16. San Joaquin River at Jersey Point Salinity, October EC**



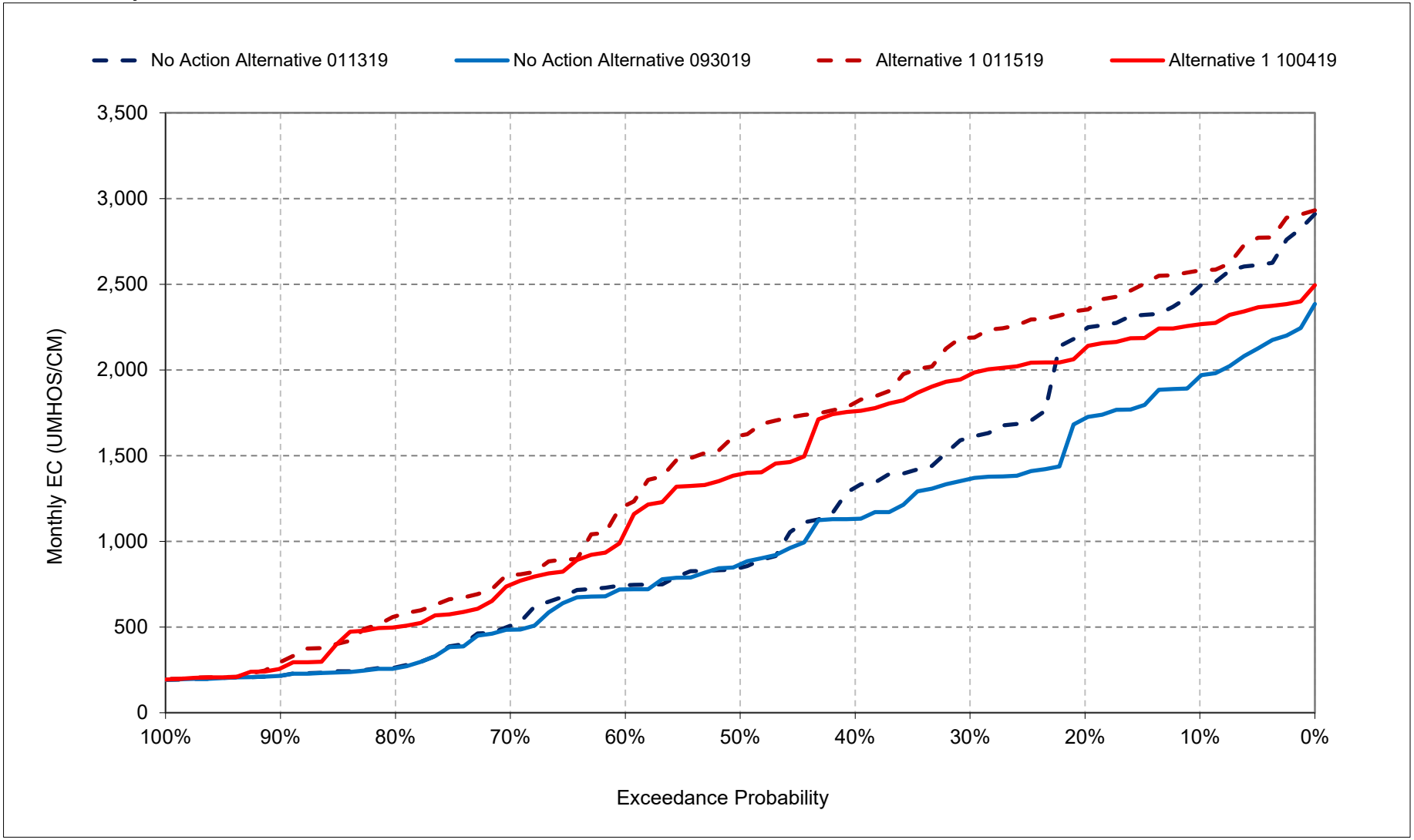

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-17. San Joaquin River at Jersey Point Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 7-18. San Joaquin River at Jersey Point Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-1. Old River at Rock Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,022 | 1,070 | 1,061 | 900 | 552 | 383 | 389 | 380 | 310 | 464 | 664 | 842 |
| 20% | 945 | 945 | 986 | 749 | 470 | 330 | 362 | 358 | 286 | 352 | 544 | 811 |
| 30% | 901 | 844 | 897 | 620 | 417 | 313 | 339 | 349 | 272 | 336 | 490 | 772 |
| 40% | 872 | 776 | 648 | 536 | 382 | 299 | 332 | 337 | 267 | 306 | 460 | 727 |
| 50% | 786 | 594 | 410 | 487 | 354 | 288 | 320 | 327 | 260 | 270 | 432 | 649 |
| 60% | 292 | 284 | 333 | 445 | 335 | 278 | 311 | 315 | 254 | 254 | 404 | 611 |
| 70% | 283 | 249 | 299 | 344 | 299 | 262 | 297 | 300 | 247 | 244 | 363 | 569 |
| 80% | 276 | 234 | 274 | 312 | 284 | 244 | 274 | 272 | 240 | 234 | 340 | 510 |
| 90% | 269 | 222 | 240 | 280 | 261 | 231 | 253 | 211 | 232 | 226 | 316 | 472 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 619 | 590 | 583 | 531 | 385 | 298 | 319 | 315 | 274 | 315 | 453 | 655 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 268 | 232 | 269 | 353 | 324 | 275 | 280 | 279 | 243 | 236 | 342 | 534 |
| Above Normal (16%) | 288 | 322 | 402 | 462 | 354 | 277 | 341 | 348 | 255 | 246 | 365 | 489 |
| Below Normal (13%) | 879 | 759 | 743 | 542 | 367 | 286 | 348 | 352 | 269 | 313 | 449 | 776 |
| Dry (24%) | 899 | 813 | 733 | 664 | 409 | 302 | 317 | 306 | 266 | 366 | 552 | 750 |
| Critical (15%) | 1,032 | 1,129 | 1,062 | 757 | 527 | 375 | 357 | 340 | 377 | 477 | 627 | 828 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,043 | 1,137 | 1,084 | 972 | 544 | 361 | 332 | 289 | 296 | 479 | 672 | 866 |
| 20% | 986 | 1,053 | 1,016 | 875 | 442 | 313 | 291 | 264 | 275 | 359 | 547 | 828 |
| 30% | 946 | 986 | 974 | 790 | 401 | 294 | 282 | 259 | 256 | 338 | 494 | 805 |
| 40% | 918 | 933 | 903 | 552 | 382 | 284 | 272 | 248 | 243 | 305 | 472 | 785 |
| 50% | 897 | 878 | 841 | 499 | 348 | 272 | 262 | 243 | 235 | 265 | 445 | 769 |
| 60% | 886 | 837 | 757 | 426 | 314 | 261 | 256 | 238 | 230 | 250 | 398 | 758 |
| 70% | 845 | 798 | 633 | 347 | 296 | 252 | 248 | 233 | 227 | 243 | 366 | 743 |
| 80% | 789 | 713 | 482 | 320 | 279 | 241 | 243 | 229 | 222 | 234 | 347 | 705 |
| 90% | 615 | 394 | 321 | 276 | 265 | 227 | 235 | 222 | 216 | 228 | 320 | 607 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 865 | 853 | 772 | 578 | 377 | 287 | 272 | 250 | 260 | 319 | 454 | 748 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 699 | 749 | 669 | 363 | 318 | 284 | 259 | 225 | 227 | 235 | 338 | 641 |
| Above Normal (16%) | 875 | 816 | 779 | 536 | 349 | 273 | 266 | 240 | 228 | 243 | 372 | 770 |
| Below Normal (13%) | 891 | 799 | 743 | 618 | 371 | 275 | 272 | 252 | 246 | 329 | 481 | 813 |
| Dry (24%) | 949 | 866 | 737 | 757 | 409 | 277 | 269 | 251 | 253 | 362 | 535 | 779 |
| Critical (15%) | 1,048 | 1,150 | 1,073 | 752 | 485 | 332 | 312 | 309 | 391 | 502 | 632 | 843 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **21** | **66** | **23** | **71** | -8 | -22 | -57 | -91 | -14 | **15** | **7** | **23** |
| 20% | **40** | **108** | **30** | **126** | -28 | -17 | -71 | -94 | -11 | **7** | **3** | **16** |
| 30% | **45** | **142** | **78** | **170** | -16 | -19 | -58 | -90 | -16 | **2** | **4** | **33** |
| 40% | **46** | **157** | **256** | **17** | 0 | -15 | -61 | -89 | -24 | -1 | **12** | **58** |
| 50% | **110** | **284** | **431** | **12** | -6 | -16 | -58 | -84 | -25 | -5 | **12** | **120** |
| 60% | **595** | **553** | **424** | -19 | -21 | -17 | -54 | -78 | -24 | -4 | -5 | **147** |
| 70% | **562** | **549** | **335** | **2** | -4 | -10 | -49 | -67 | -20 | -1 | **2** | **175** |
| 80% | **513** | **479** | **207** | **8** | -5 | -4 | -31 | -42 | -19 | -1 | **6** | **196** |
| 90% | **346** | **172** | **81** | -4 | **4** | -4 | -18 | **10** | -15 | **2** | **3** | **135** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **246** | **264** | **189** | **47** | -8 | -12 | -47 | -66 | -14 | **4** | **1** | **93** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **431** | **517** | **400** | **10** | -6 | **9** | -21 | -55 | -16 | -1 | -4 | **108** |
| Above Normal (16%) | **587** | **494** | **376** | **74** | -5 | -3 | -75 | -108 | -27 | -3 | **7** | **280** |
| Below Normal (13%) | **13** | **40** | **0** | **76** | **4** | -11 | -76 | -100 | -24 | **16** | **32** | **37** |
| Dry (24%) | **50** | **53** | **5** | **93** | **0** | -25 | -48 | -54 | -13 | -4 | -17 | **29** |
| Critical (15%) | **16** | **21** | **11** | -5 | -42 | -43 | -45 | -32 | **14** | **24** | **5** | **15** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-2. Old River at Rock Slough Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 944 | 902 | 870 | 711 | 492 | 380 | 384 | 377 | 300 | 432 | 639 | 810 |
| 20% | 887 | 835 | 800 | 671 | 454 | 325 | 356 | 358 | 284 | 349 | 513 | 781 |
| 30% | 848 | 714 | 719 | 564 | 401 | 312 | 335 | 348 | 272 | 330 | 472 | 746 |
| 40% | 810 | 649 | 559 | 504 | 373 | 294 | 329 | 337 | 266 | 303 | 449 | 706 |
| 50% | 755 | 532 | 397 | 451 | 347 | 285 | 317 | 326 | 260 | 265 | 420 | 630 |
| 60% | 290 | 282 | 328 | 397 | 318 | 278 | 309 | 311 | 255 | 254 | 401 | 605 |
| 70% | 281 | 246 | 292 | 340 | 295 | 261 | 298 | 300 | 247 | 244 | 363 | 569 |
| 80% | 273 | 235 | 270 | 312 | 283 | 244 | 275 | 274 | 240 | 234 | 341 | 507 |
| 90% | 268 | 221 | 240 | 280 | 261 | 230 | 253 | 211 | 232 | 226 | 314 | 472 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 588 | 522 | 510 | 477 | 365 | 293 | 317 | 315 | 272 | 312 | 442 | 640 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 268 | 231 | 268 | 346 | 324 | 275 | 280 | 280 | 244 | 235 | 342 | 534 |
| Above Normal (16%) | 285 | 315 | 395 | 446 | 353 | 276 | 341 | 348 | 255 | 246 | 365 | 488 |
| Below Normal (13%) | 832 | 636 | 600 | 507 | 360 | 286 | 348 | 352 | 266 | 313 | 439 | 762 |
| Dry (24%) | 847 | 712 | 636 | 561 | 386 | 299 | 315 | 305 | 263 | 352 | 522 | 720 |
| Critical (15%) | 954 | 952 | 863 | 629 | 439 | 348 | 348 | 335 | 371 | 480 | 610 | 787 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 971 | 956 | 928 | 958 | 459 | 357 | 305 | 285 | 299 | 453 | 625 | 815 |
| 20% | 895 | 876 | 871 | 791 | 418 | 318 | 289 | 267 | 275 | 346 | 528 | 797 |
| 30% | 870 | 746 | 836 | 723 | 391 | 298 | 283 | 255 | 257 | 332 | 480 | 761 |
| 40% | 831 | 677 | 780 | 573 | 372 | 293 | 275 | 246 | 242 | 313 | 458 | 703 |
| 50% | 740 | 581 | 719 | 467 | 350 | 281 | 270 | 239 | 235 | 263 | 412 | 653 |
| 60% | 257 | 370 | 684 | 406 | 309 | 271 | 261 | 237 | 227 | 251 | 334 | 433 |
| 70% | 247 | 338 | 560 | 338 | 294 | 263 | 257 | 233 | 225 | 242 | 319 | 394 |
| 80% | 240 | 318 | 452 | 315 | 276 | 250 | 250 | 230 | 220 | 231 | 306 | 356 |
| 90% | 232 | 275 | 309 | 275 | 263 | 240 | 244 | 221 | 214 | 227 | 282 | 321 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 582 | 576 | 671 | 551 | 357 | 290 | 272 | 248 | 259 | 316 | 425 | 577 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 243 | 330 | 610 | 373 | 323 | 286 | 256 | 222 | 226 | 236 | 300 | 360 |
| Above Normal (16%) | 249 | 349 | 716 | 510 | 339 | 288 | 268 | 237 | 226 | 241 | 320 | 386 |
| Below Normal (13%) | 831 | 686 | 610 | 634 | 362 | 288 | 279 | 252 | 243 | 313 | 474 | 782 |
| Dry (24%) | 870 | 748 | 639 | 688 | 370 | 283 | 274 | 252 | 253 | 360 | 520 | 741 |
| Critical (15%) | 966 | 966 | 865 | 678 | 422 | 318 | 302 | 305 | 390 | 496 | 612 | 792 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **27** | **54** | **59** | **247** | -33 | -22 | -80 | -92 | -1 | **21** | -14 | **5** |
| 20% | **8** | **41** | **71** | **120** | -36 | -7 | -67 | -91 | -9 | -3 | **16** | **17** |
| 30% | **23** | **31** | **117** | **159** | -11 | -14 | -52 | -94 | -15 | **2** | **9** | **15** |
| 40% | **21** | **28** | **221** | **69** | -1 | -2 | -54 | -91 | -25 | **10** | **10** | -3 |
| 50% | -15 | **49** | **322** | **16** | **3** | -5 | -47 | -87 | -25 | -2 | -8 | **22** |
| 60% | -33 | **89** | **356** | **9** | -9 | -7 | -48 | -75 | -27 | -3 | -66 | -173 |
| 70% | -34 | **92** | **268** | -2 | -2 | **3** | -41 | -67 | -22 | -2 | -44 | -174 |
| 80% | -32 | **83** | **182** | **3** | -8 | **6** | -25 | -44 | -20 | -3 | -35 | -151 |
| 90% | -37 | **53** | **69** | -4 | **2** | **10** | -10 | **9** | -18 | **1** | -32 | -151 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -6 | **54** | **162** | **74** | -9 | -3 | -45 | -67 | -13 | **4** | -16 | -63 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -25 | **98** | **342** | **27** | -1 | **11** | -25 | -58 | -17 | **0** | -42 | -174 |
| Above Normal (16%) | -36 | **34** | **320** | **63** | -14 | **12** | -72 | -110 | -29 | -5 | -45 | -102 |
| Below Normal (13%) | -1 | **50** | **9** | **128** | **2** | **2** | -69 | -100 | -23 | **0** | **34** | **21** |
| Dry (24%) | **24** | **36** | **3** | **127** | -16 | -17 | -41 | -53 | -10 | **8** | -2 | **21** |
| Critical (15%) | **12** | **13** | **3** | **49** | -16 | -30 | -46 | -30 | **19** | **16** | **2** | **5** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-3. Old River at Rock Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1,022 | 1,070 | 1,061 | 900 | 552 | 383 | 389 | 380 | 310 | 464 | 664 | 842 |
| 20% | 945 | 945 | 986 | 749 | 470 | 330 | 362 | 358 | 286 | 352 | 544 | 811 |
| 30% | 901 | 844 | 897 | 620 | 417 | 313 | 339 | 349 | 272 | 336 | 490 | 772 |
| 40% | 872 | 776 | 648 | 536 | 382 | 299 | 332 | 337 | 267 | 306 | 460 | 727 |
| 50% | 786 | 594 | 410 | 487 | 354 | 288 | 320 | 327 | 260 | 270 | 432 | 649 |
| 60% | 292 | 284 | 333 | 445 | 335 | 278 | 311 | 315 | 254 | 254 | 404 | 611 |
| 70% | 283 | 249 | 299 | 344 | 299 | 262 | 297 | 300 | 247 | 244 | 363 | 569 |
| 80% | 276 | 234 | 274 | 312 | 284 | 244 | 274 | 272 | 240 | 234 | 340 | 510 |
| 90% | 269 | 222 | 240 | 280 | 261 | 231 | 253 | 211 | 232 | 226 | 316 | 472 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 619 | 590 | 583 | 531 | 385 | 298 | 319 | 315 | 274 | 315 | 453 | 655 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 268 | 232 | 269 | 353 | 324 | 275 | 280 | 279 | 243 | 236 | 342 | 534 |
| Above Normal (16%) | 288 | 322 | 402 | 462 | 354 | 277 | 341 | 348 | 255 | 246 | 365 | 489 |
| Below Normal (13%) | 879 | 759 | 743 | 542 | 367 | 286 | 348 | 352 | 269 | 313 | 449 | 776 |
| Dry (24%) | 899 | 813 | 733 | 664 | 409 | 302 | 317 | 306 | 266 | 366 | 552 | 750 |
| Critical (15%) | 1,032 | 1,129 | 1,062 | 757 | 527 | 375 | 357 | 340 | 377 | 477 | 627 | 828 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 944 | 902 | 870 | 711 | 492 | 380 | 384 | 377 | 300 | 432 | 639 | 810 |
| 20% | 887 | 835 | 800 | 671 | 454 | 325 | 356 | 358 | 284 | 349 | 513 | 781 |
| 30% | 848 | 714 | 719 | 564 | 401 | 312 | 335 | 348 | 272 | 330 | 472 | 746 |
| 40% | 810 | 649 | 559 | 504 | 373 | 294 | 329 | 337 | 266 | 303 | 449 | 706 |
| 50% | 755 | 532 | 397 | 451 | 347 | 285 | 317 | 326 | 260 | 265 | 420 | 630 |
| 60% | 290 | 282 | 328 | 397 | 318 | 278 | 309 | 311 | 255 | 254 | 401 | 605 |
| 70% | 281 | 246 | 292 | 340 | 295 | 261 | 298 | 300 | 247 | 244 | 363 | 569 |
| 80% | 273 | 235 | 270 | 312 | 283 | 244 | 275 | 274 | 240 | 234 | 341 | 507 |
| 90% | 268 | 221 | 240 | 280 | 261 | 230 | 253 | 211 | 232 | 226 | 314 | 472 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 588 | 522 | 510 | 477 | 365 | 293 | 317 | 315 | 272 | 312 | 442 | 640 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 268 | 231 | 268 | 346 | 324 | 275 | 280 | 280 | 244 | 235 | 342 | 534 |
| Above Normal (16%) | 285 | 315 | 395 | 446 | 353 | 276 | 341 | 348 | 255 | 246 | 365 | 488 |
| Below Normal (13%) | 832 | 636 | 600 | 507 | 360 | 286 | 348 | 352 | 266 | 313 | 439 | 762 |
| Dry (24%) | 847 | 712 | 636 | 561 | 386 | 299 | 315 | 305 | 263 | 352 | 522 | 720 |
| Critical (15%) | 954 | 952 | 863 | 629 | 439 | 348 | 348 | 335 | 371 | 480 | 610 | 787 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -78 | -168 | -191 | -189 | -60 | -3 | -4 | -3 | -10 | -32 | -25 | -33 |
| 20% | -59 | -110 | -186 | -78 | -16 | -6 | -5 | 0 | -2 | -3 | -32 | -31 |
| 30% | -53 | -129 | -178 | -56 | -16 | -1 | -4 | -1 | 0 | -6 | -19 | -26 |
| 40% | -62 | -127 | -88 | -31 | -9 | -5 | -4 | 0 | -1 | -4 | -11 | -20 |
| 50% | -31 | -62 | -14 | -36 | -7 | -2 | -3 | -1 | 0 | -5 | -13 | -19 |
| 60% | -2 | -2 | -5 | -48 | -17 | -1 | -1 | -4 | 0 | 0 | -3 | -6 |
| 70% | -2 | -3 | -7 | -4 | -4 | -1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 80% | -3 | 1 | -5 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | -3 |
| 90% | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | -2 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -31 | -68 | -73 | -53 | -20 | -5 | -2 | -1 | -2 | -3 | -11 | -16 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | -1 | -7 | -1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -3 | -7 | -7 | -15 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | -1 |
| Below Normal (13%) | -47 | -123 | -143 | -36 | -7 | -1 | 0 | 0 | -3 | 0 | -9 | -14 |
| Dry (24%) | -52 | -101 | -97 | -104 | -23 | -3 | -2 | -1 | -2 | -14 | -30 | -30 |
| Critical (15%) | -78 | -176 | -200 | -128 | -88 | -27 | -9 | -6 | -6 | 3 | -17 | -41 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 8-4. Old River at Rock Slough Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,043 | 1,137 | 1,084 | 972 | 544 | 361 | 332 | 289 | 296 | 479 | 672 | 866 |
| 20% | 986 | 1,053 | 1,016 | 875 | 442 | 313 | 291 | 264 | 275 | 359 | 547 | 828 |
| 30% | 946 | 986 | 974 | 790 | 401 | 294 | 282 | 259 | 256 | 338 | 494 | 805 |
| 40% | 918 | 933 | 903 | 552 | 382 | 284 | 272 | 248 | 243 | 305 | 472 | 785 |
| 50% | 897 | 878 | 841 | 499 | 348 | 272 | 262 | 243 | 235 | 265 | 445 | 769 |
| 60% | 886 | 837 | 757 | 426 | 314 | 261 | 256 | 238 | 230 | 250 | 398 | 758 |
| 70% | 845 | 798 | 633 | 347 | 296 | 252 | 248 | 233 | 227 | 243 | 366 | 743 |
| 80% | 789 | 713 | 482 | 320 | 279 | 241 | 243 | 229 | 222 | 234 | 347 | 705 |
| 90% | 615 | 394 | 321 | 276 | 265 | 227 | 235 | 222 | 216 | 228 | 320 | 607 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 865 | 853 | 772 | 578 | 377 | 287 | 272 | 250 | 260 | 319 | 454 | 748 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 699 | 749 | 669 | 363 | 318 | 284 | 259 | 225 | 227 | 235 | 338 | 641 |
| Above Normal (16%) | 875 | 816 | 779 | 536 | 349 | 273 | 266 | 240 | 228 | 243 | 372 | 770 |
| Below Normal (13%) | 891 | 799 | 743 | 618 | 371 | 275 | 272 | 252 | 246 | 329 | 481 | 813 |
| Dry (24%) | 949 | 866 | 737 | 757 | 409 | 277 | 269 | 251 | 253 | 362 | 535 | 779 |
| Critical (15%) | 1,048 | 1,150 | 1,073 | 752 | 485 | 332 | 312 | 309 | 391 | 502 | 632 | 843 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 971 | 956 | 928 | 958 | 459 | 357 | 305 | 285 | 299 | 453 | 625 | 815 |
| 20% | 895 | 876 | 871 | 791 | 418 | 318 | 289 | 267 | 275 | 346 | 528 | 797 |
| 30% | 870 | 746 | 836 | 723 | 391 | 298 | 283 | 255 | 257 | 332 | 480 | 761 |
| 40% | 831 | 677 | 780 | 573 | 372 | 293 | 275 | 246 | 242 | 313 | 458 | 703 |
| 50% | 740 | 581 | 719 | 467 | 350 | 281 | 270 | 239 | 235 | 263 | 412 | 653 |
| 60% | 257 | 370 | 684 | 406 | 309 | 271 | 261 | 237 | 227 | 251 | 334 | 433 |
| 70% | 247 | 338 | 560 | 338 | 294 | 263 | 257 | 233 | 225 | 242 | 319 | 394 |
| 80% | 240 | 318 | 452 | 315 | 276 | 250 | 250 | 230 | 220 | 231 | 306 | 356 |
| 90% | 232 | 275 | 309 | 275 | 263 | 240 | 244 | 221 | 214 | 227 | 282 | 321 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 582 | 576 | 671 | 551 | 357 | 290 | 272 | 248 | 259 | 316 | 425 | 577 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 243 | 330 | 610 | 373 | 323 | 286 | 256 | 222 | 226 | 236 | 300 | 360 |
| Above Normal (16%) | 249 | 349 | 716 | 510 | 339 | 288 | 268 | 237 | 226 | 241 | 320 | 386 |
| Below Normal (13%) | 831 | 686 | 610 | 634 | 362 | 288 | 279 | 252 | 243 | 313 | 474 | 782 |
| Dry (24%) | 870 | 748 | 639 | 688 | 370 | 283 | 274 | 252 | 253 | 360 | 520 | 741 |
| Critical (15%) | 966 | 966 | 865 | 678 | 422 | 318 | 302 | 305 | 390 | 496 | 612 | 792 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -72 | -180 | -156 | -14 | -85 | -4 | -27 | -4 | 2 | -27 | -47 | -51 |
| 20% | -91 | -177 | -145 | -84 | -24 | 5 | -2 | 3 | 0 | -13 | -19 | -30 |
| 30% | -76 | -240 | -138 | -67 | -10 | 4 | 2 | -4 | 1 | -5 | -14 | -44 |
| 40% | -86 | -256 | -123 | 21 | -10 | 8 | 3 | -1 | -2 | 8 | -13 | -82 |
| 50% | -156 | -297 | -122 | -32 | 2 | 9 | 8 | -4 | -1 | -2 | -33 | -116 |
| 60% | -629 | -467 | -74 | -19 | -5 | 10 | 5 | -1 | -3 | 1 | -64 | -326 |
| 70% | -598 | -459 | -73 | -8 | -2 | 11 | 9 | 0 | -2 | -1 | -46 | -349 |
| 80% | -549 | -395 | -30 | -5 | -3 | 10 | 7 | 0 | -1 | -3 | -41 | -349 |
| 90% | -383 | -119 | -12 | -1 | -1 | 12 | 9 | -1 | -2 | -1 | -37 | -286 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -283 | -278 | -101 | -26 | -20 | 4 | 0 | -2 | -1 | -3 | -28 | -171 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -456 | -419 | -59 | 10 | 5 | 2 | -3 | -3 | -1 | 1 | -38 | -281 |
| Above Normal (16%) | -626 | -467 | -63 | -26 | -10 | 15 | 2 | -3 | -2 | -3 | -52 | -383 |
| Below Normal (13%) | -60 | -113 | -134 | 16 | -9 | 13 | 7 | 0 | -2 | -15 | -7 | -30 |
| Dry (24%) | -78 | -118 | -98 | -69 | -40 | 5 | 5 | 0 | 0 | -2 | -16 | -38 |
| Critical (15%) | -81 | -185 | -208 | -74 | -62 | -14 | -11 | -4 | -1 | -5 | -20 | -51 |

a Based on the 82-year simulation period.

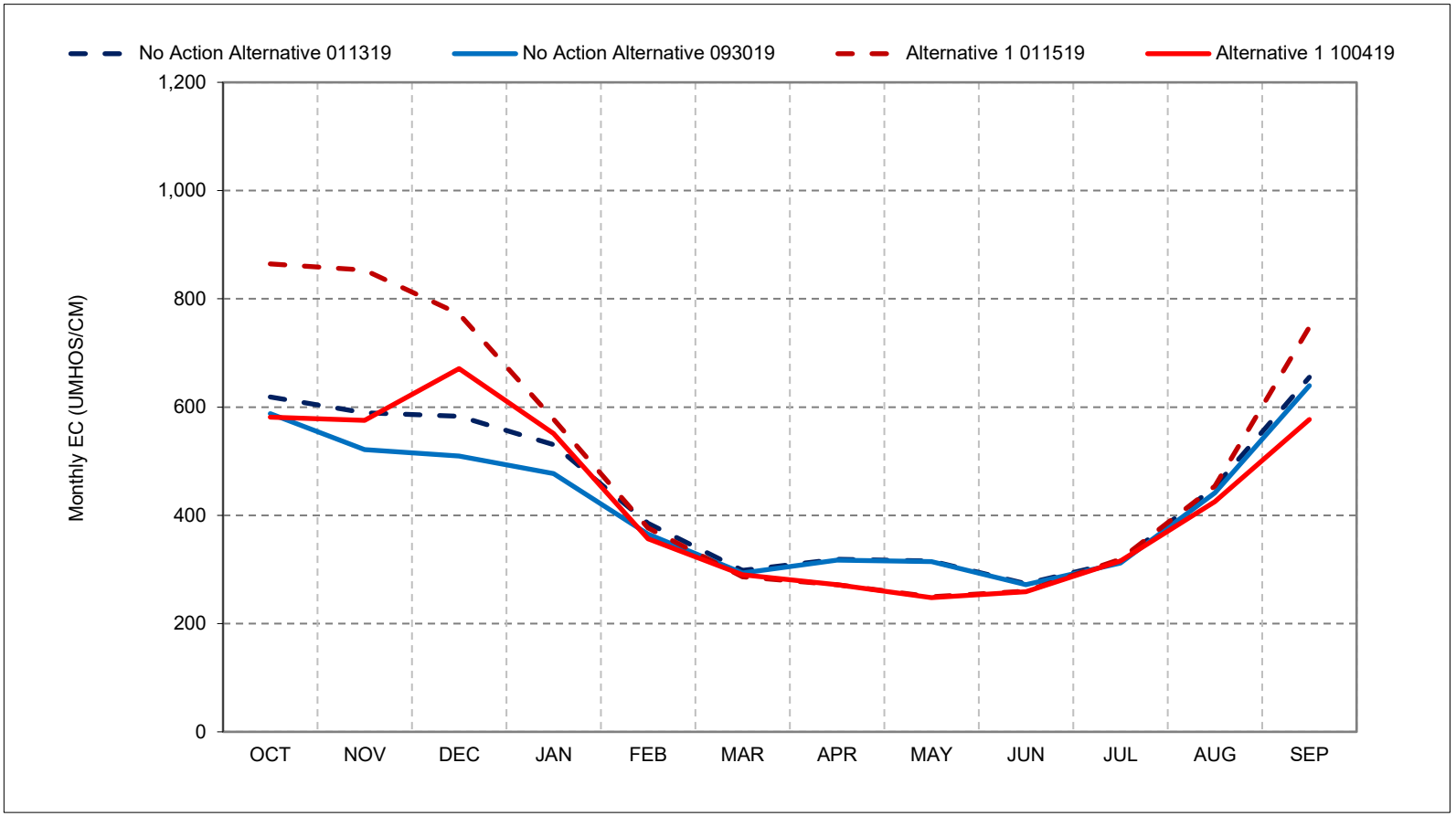
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-1. Old River at Rock Slough Salinity, Long-Term Average EC

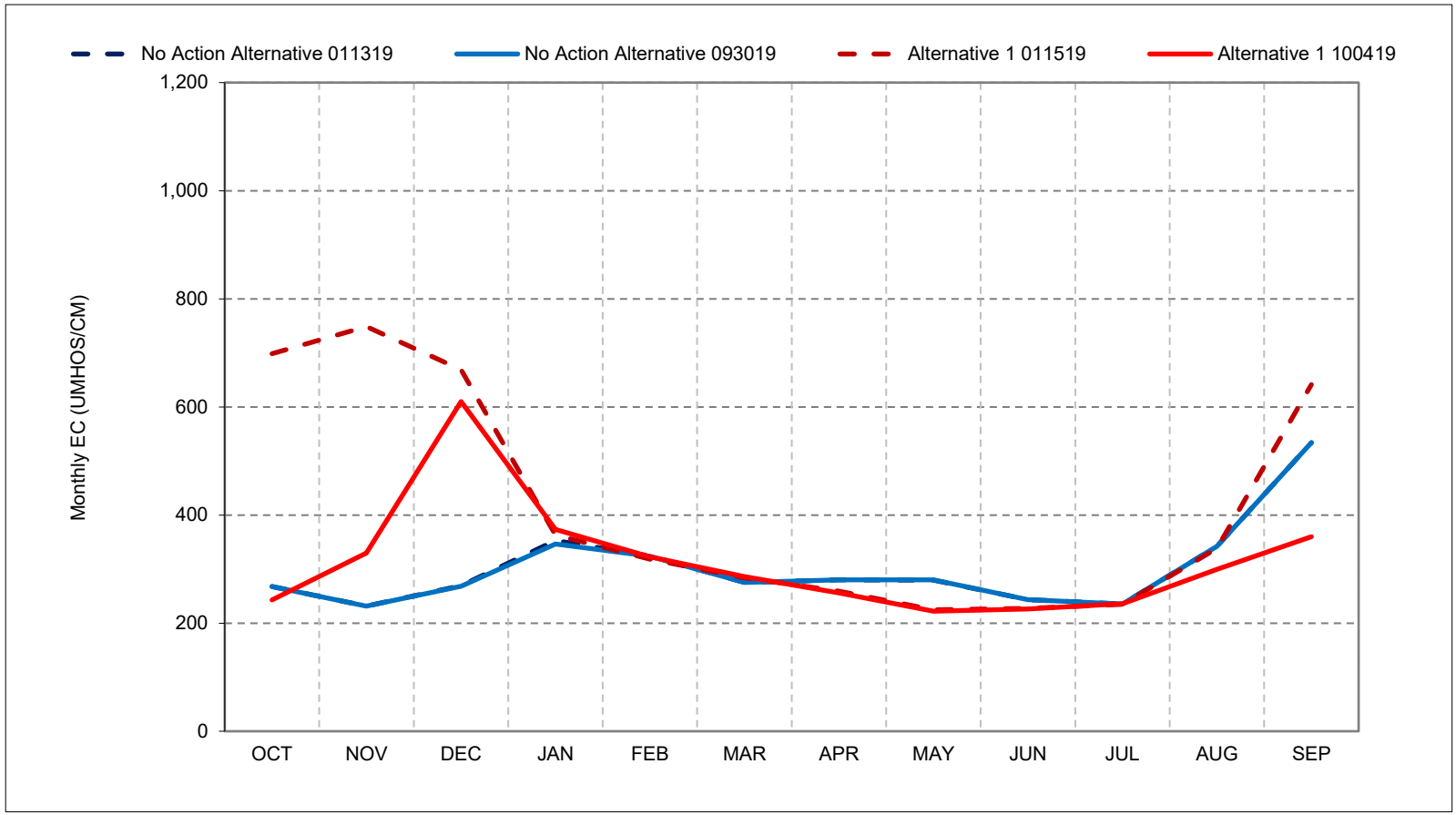



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-2. Old River at Rock Slough Salinity, Wet Year Average EC

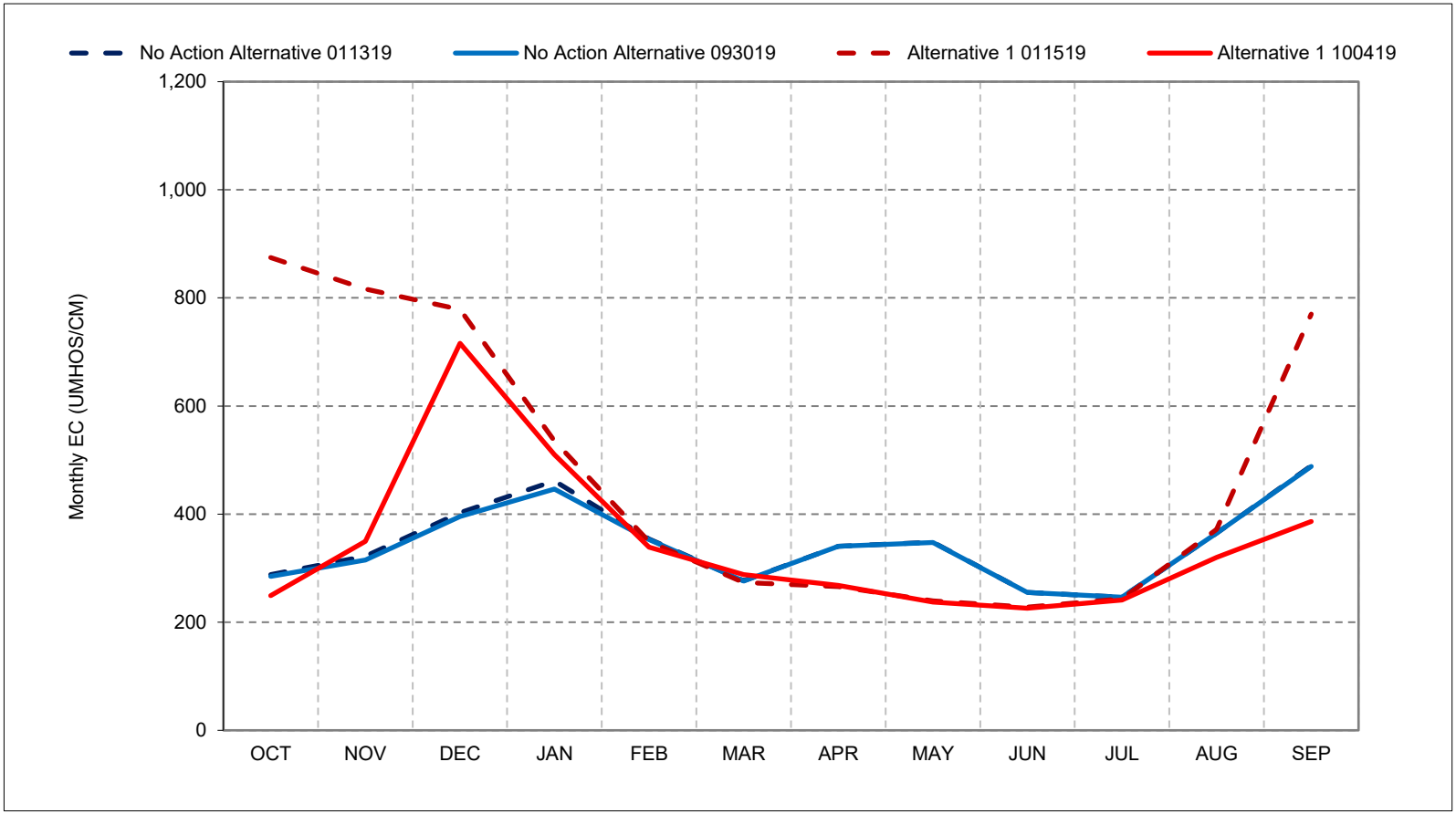



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-3. Old River at Rock Slough Salinity, Above Normal Year Average EC

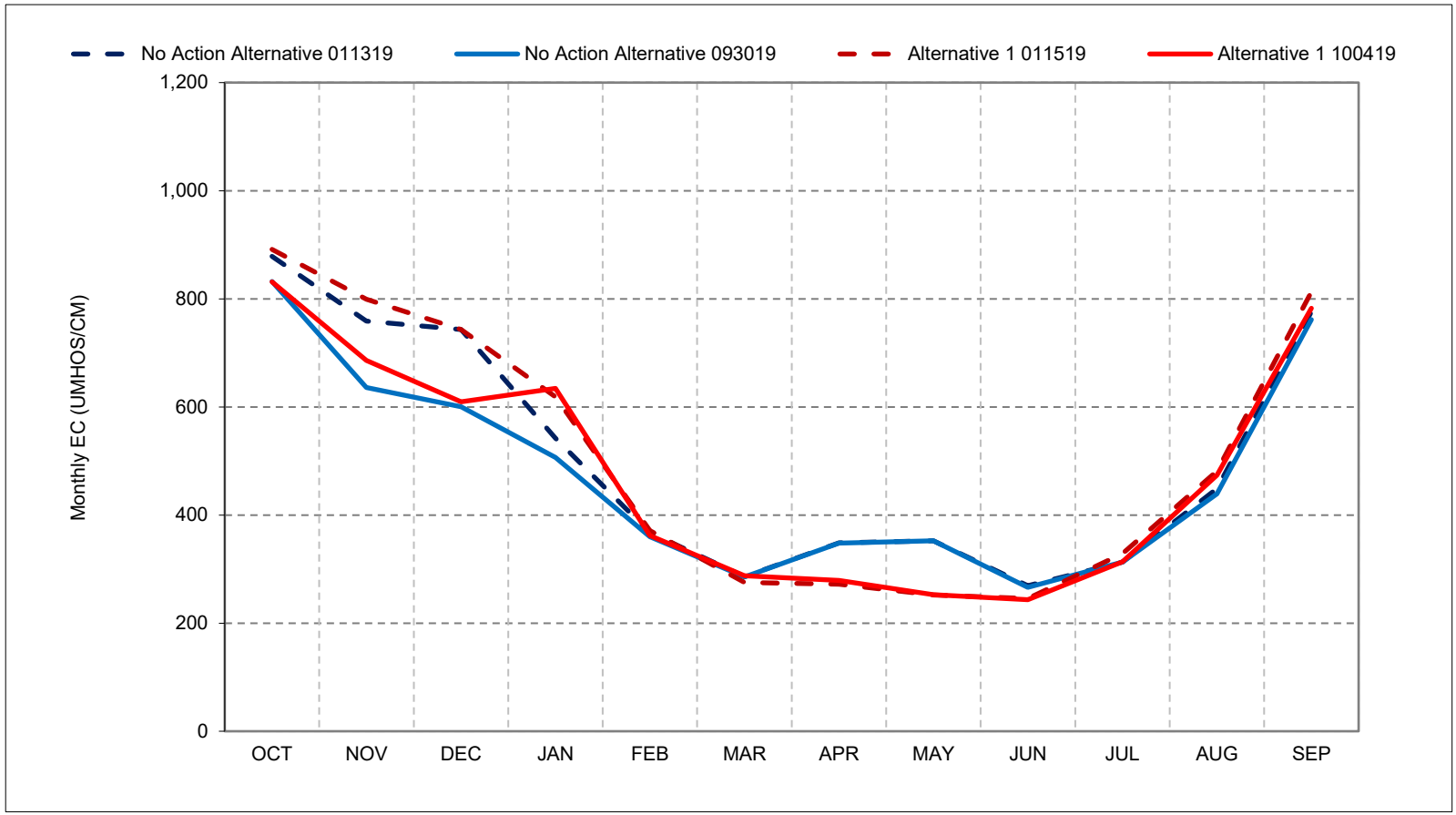



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-4. Old River at Rock Slough Salinity, Below Normal Year Average EC

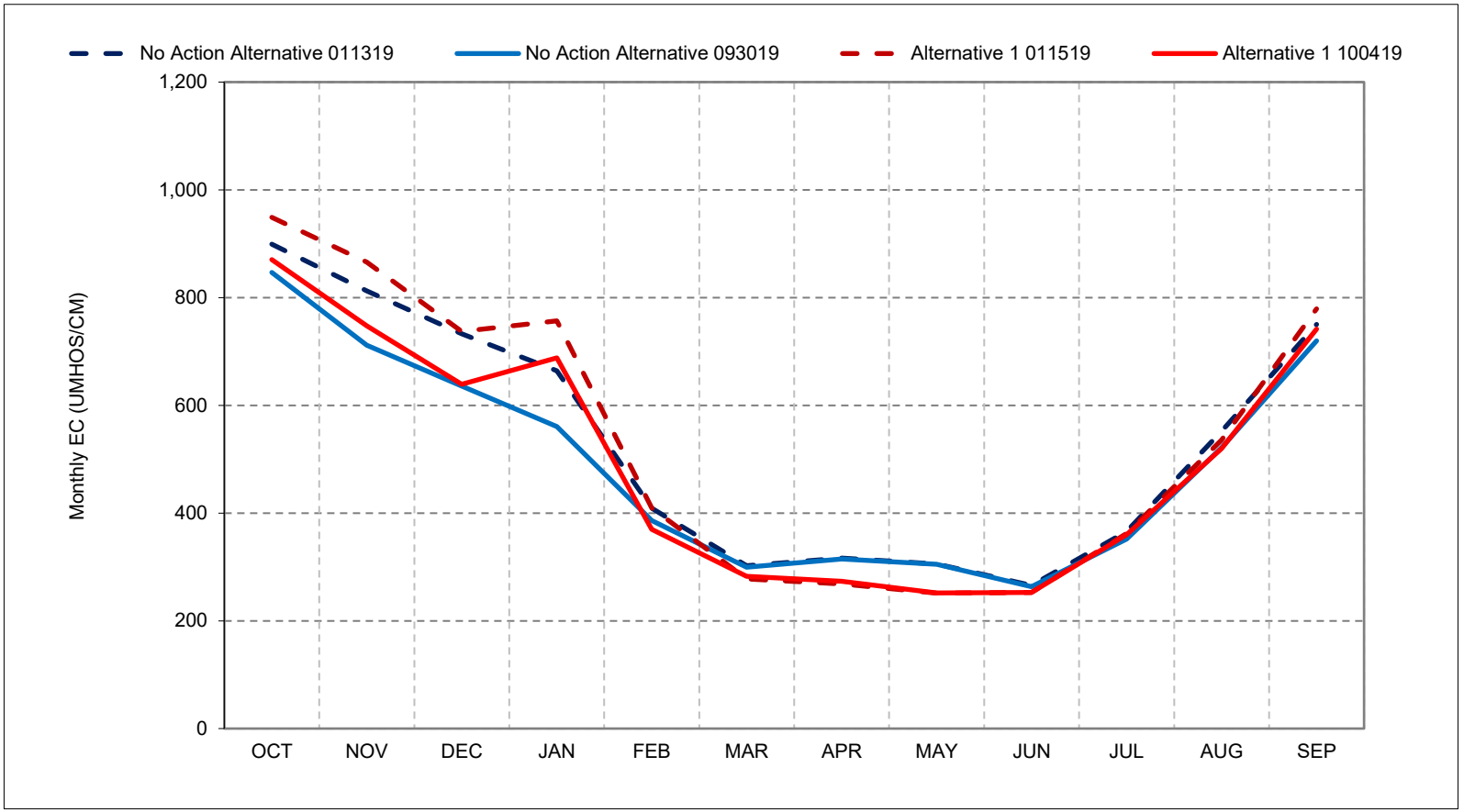



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-5. Old River at Rock Slough Salinity, Dry Year Average EC

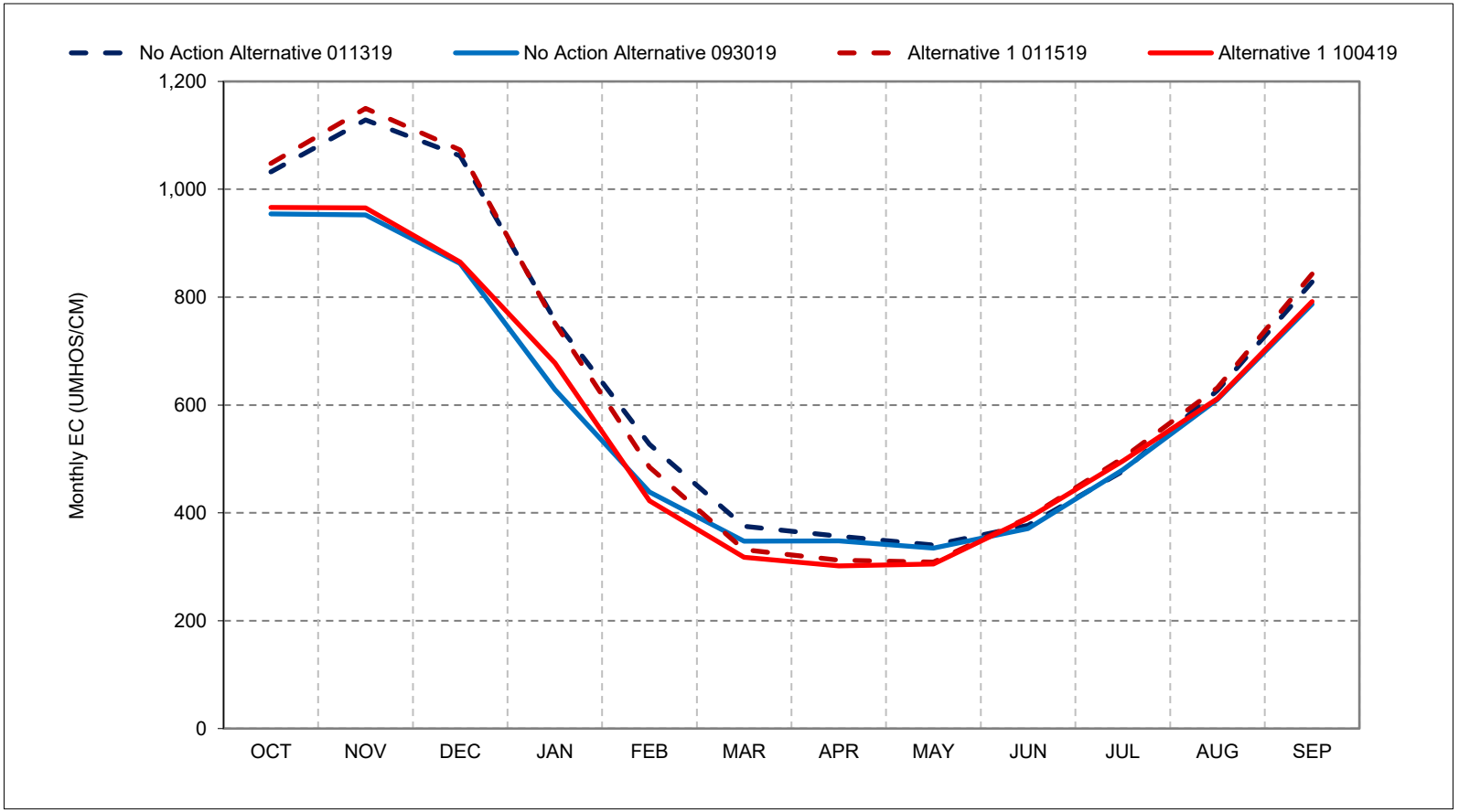



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 8-6. Old River at Rock Slough Salinity, Critical Year Average EC

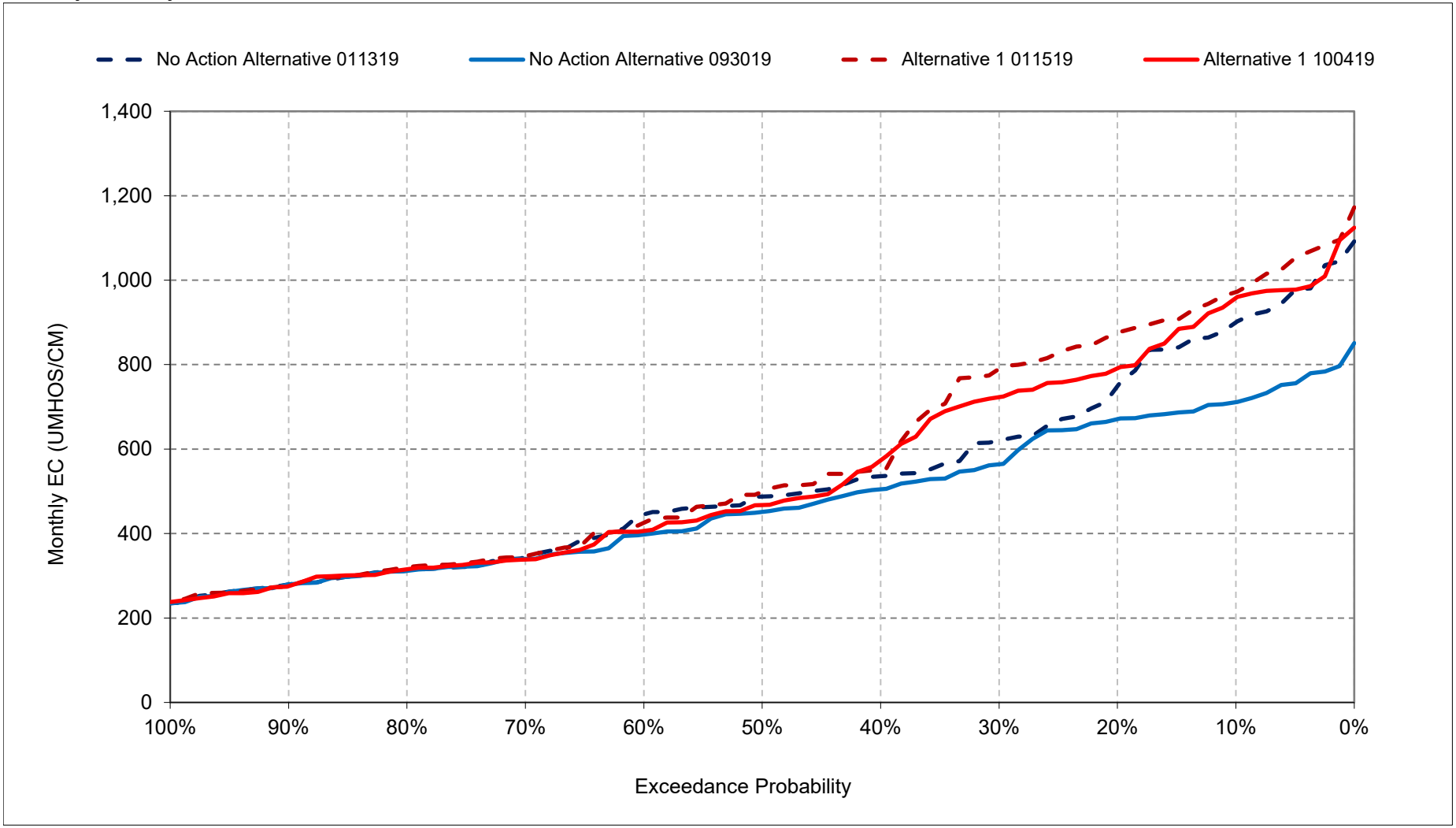



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

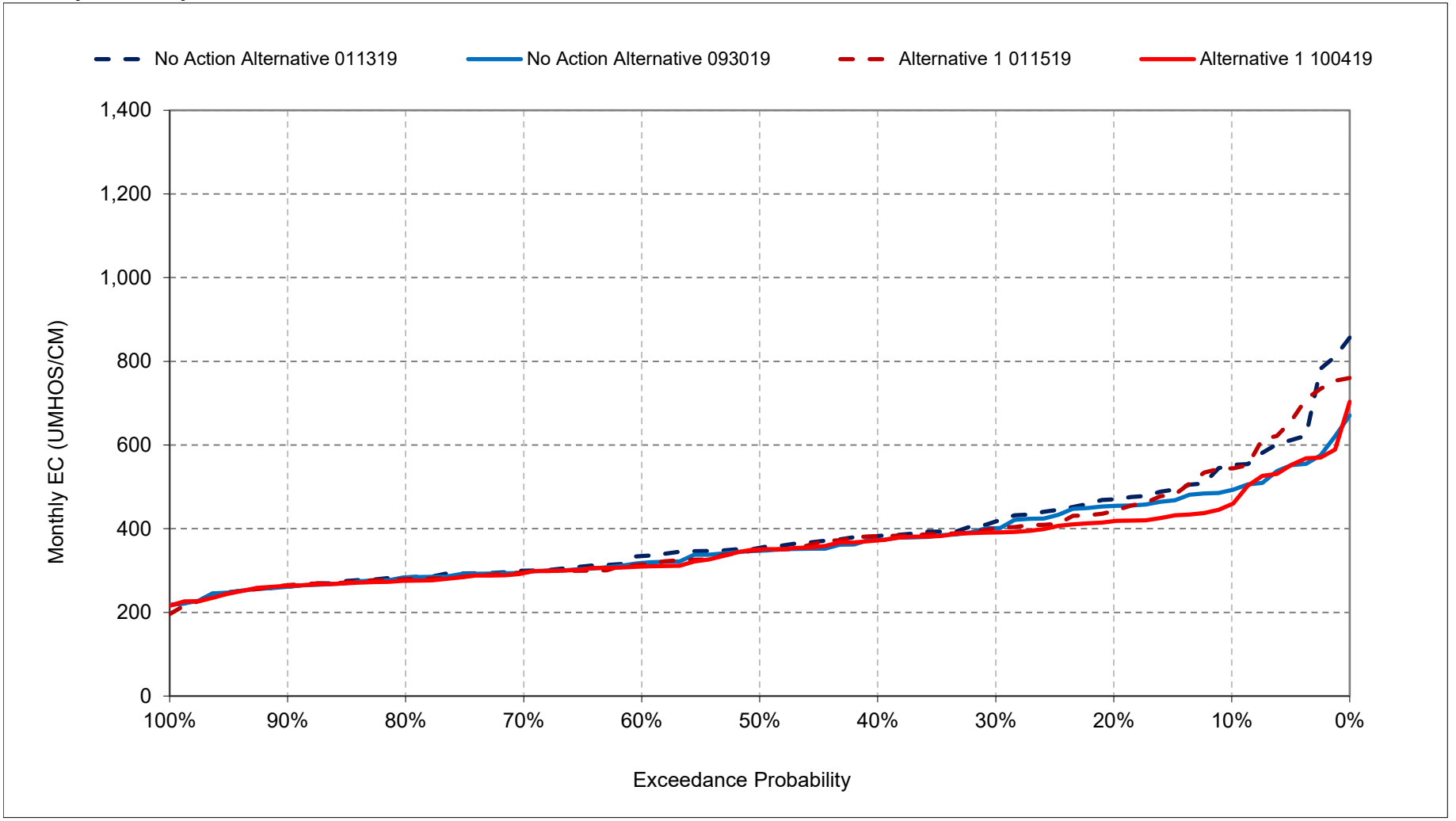
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-7. Old River at Rock Slough**
**Salinity, January EC**



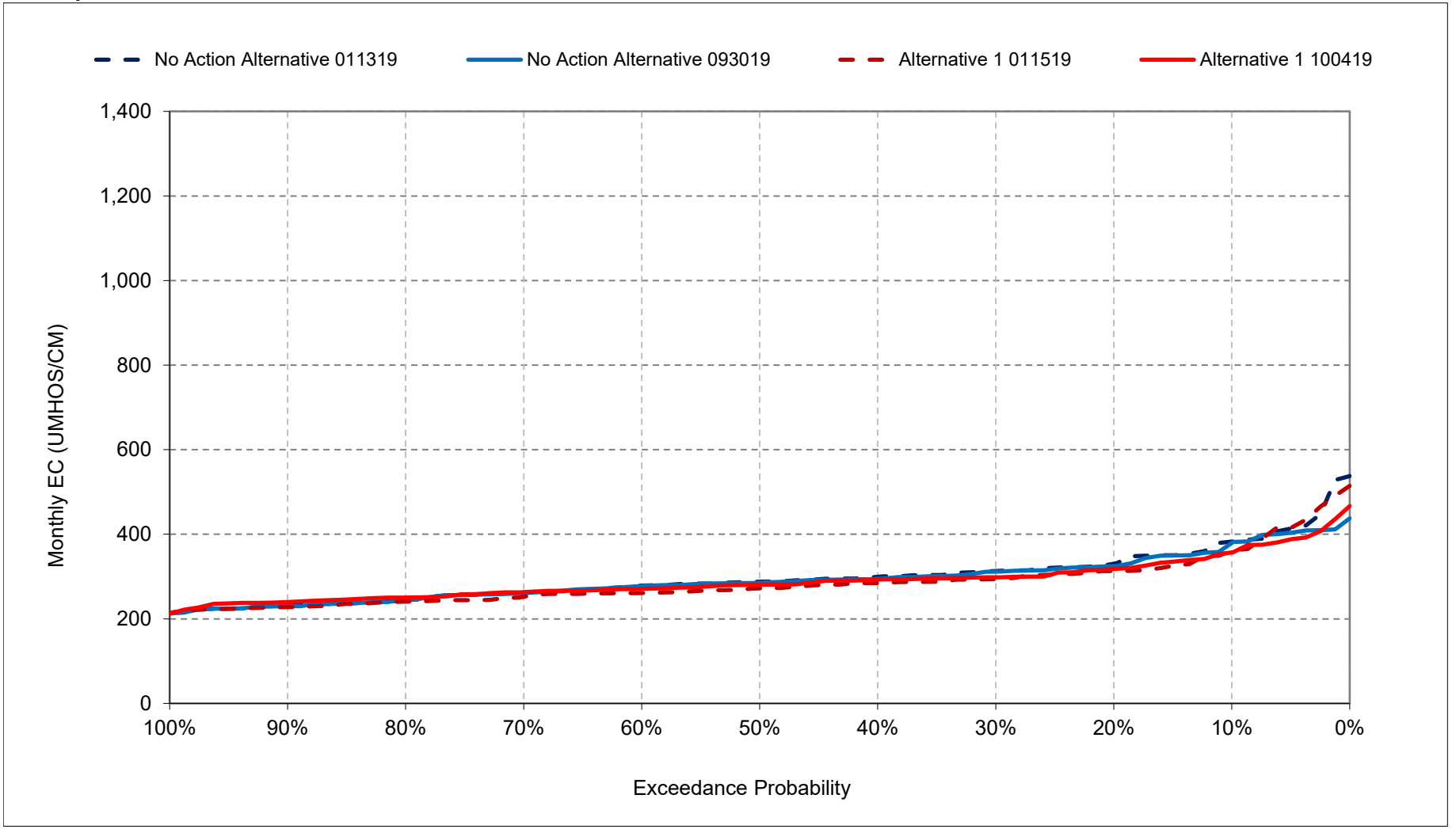

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-8. Old River at Rock Slough**
**Salinity, February EC**



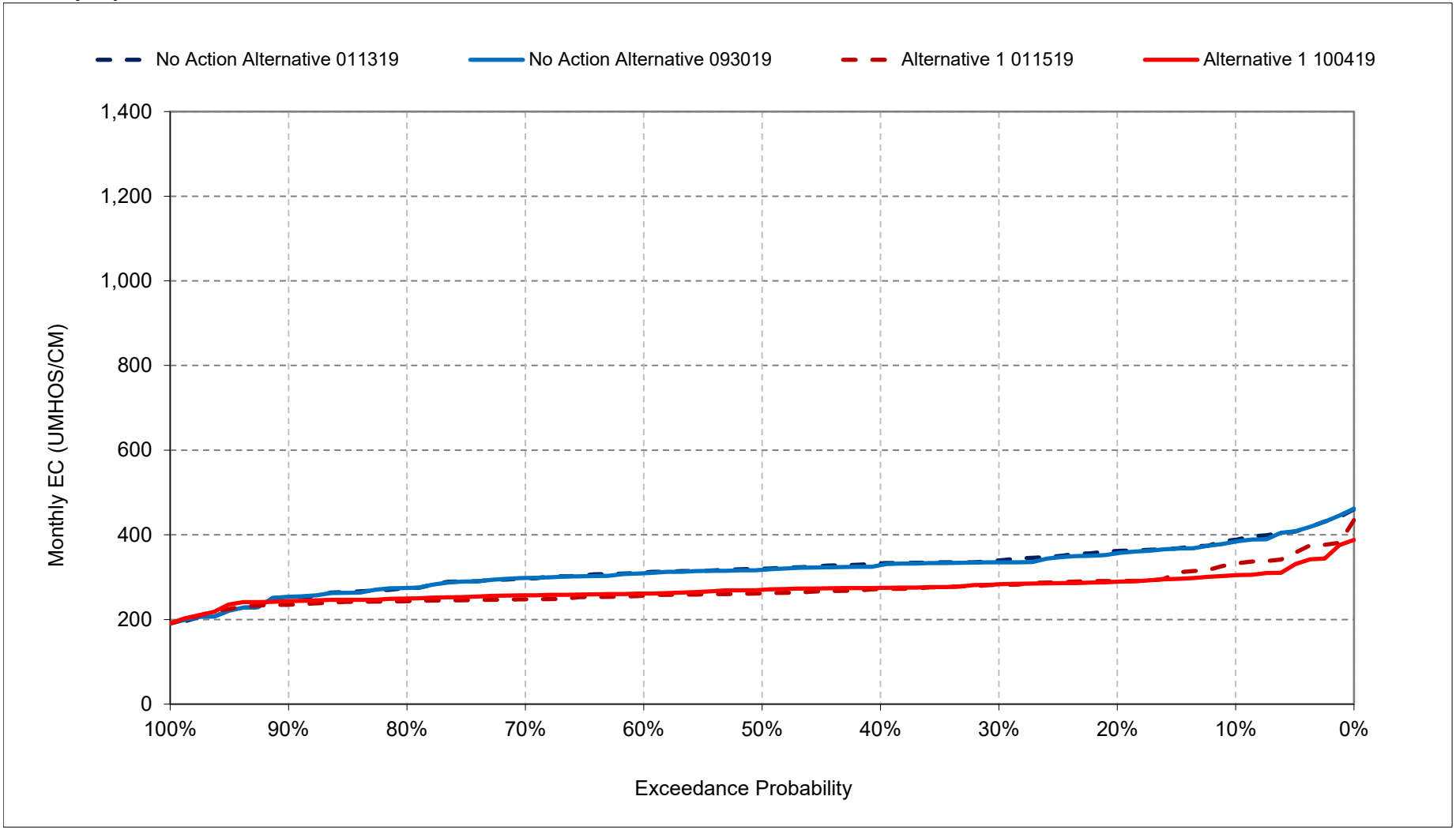

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-9. Old River at Rock Slough**
**Salinity, March EC**



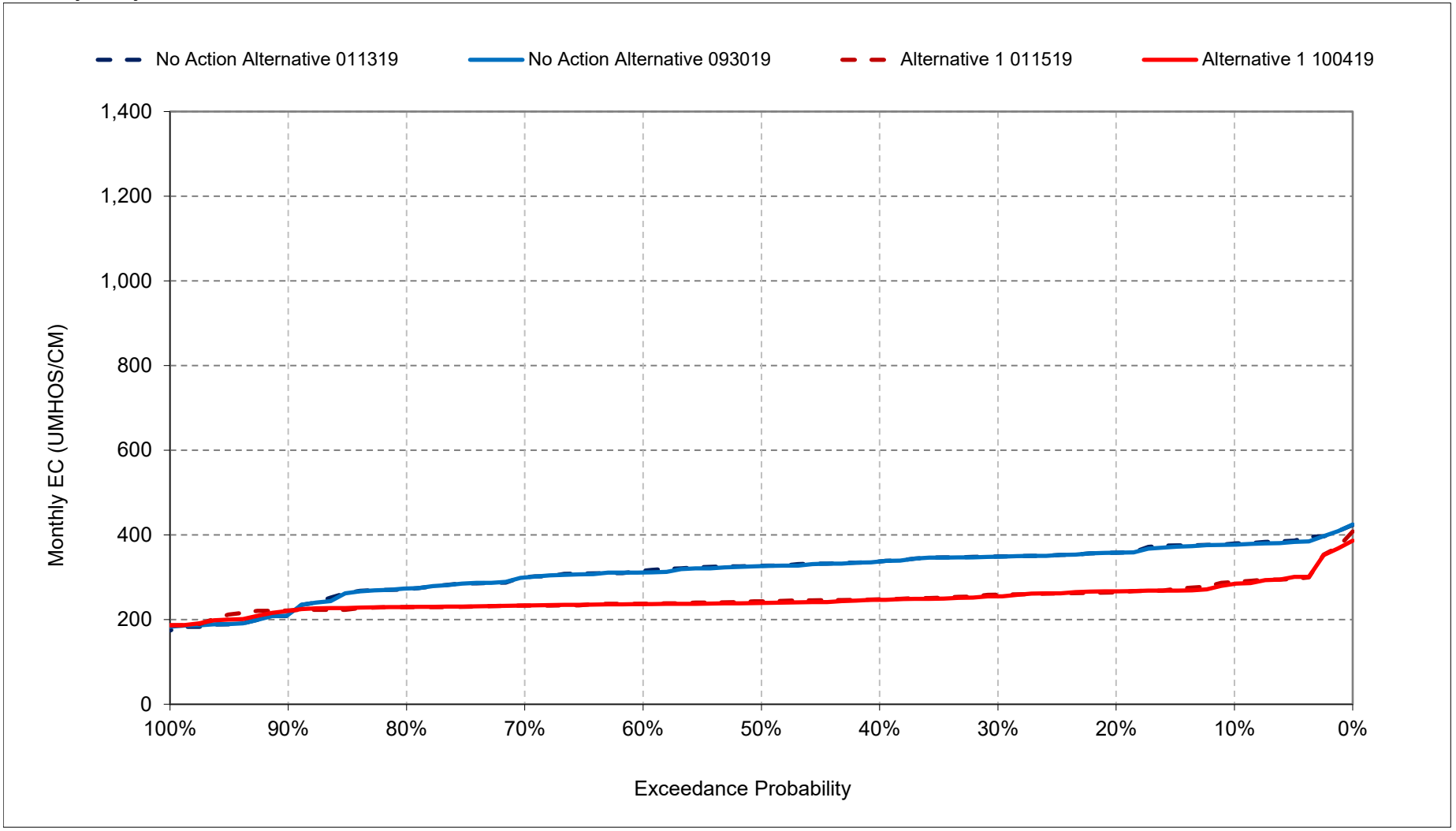

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-10. Old River at Rock Slough**
**Salinity, April EC**



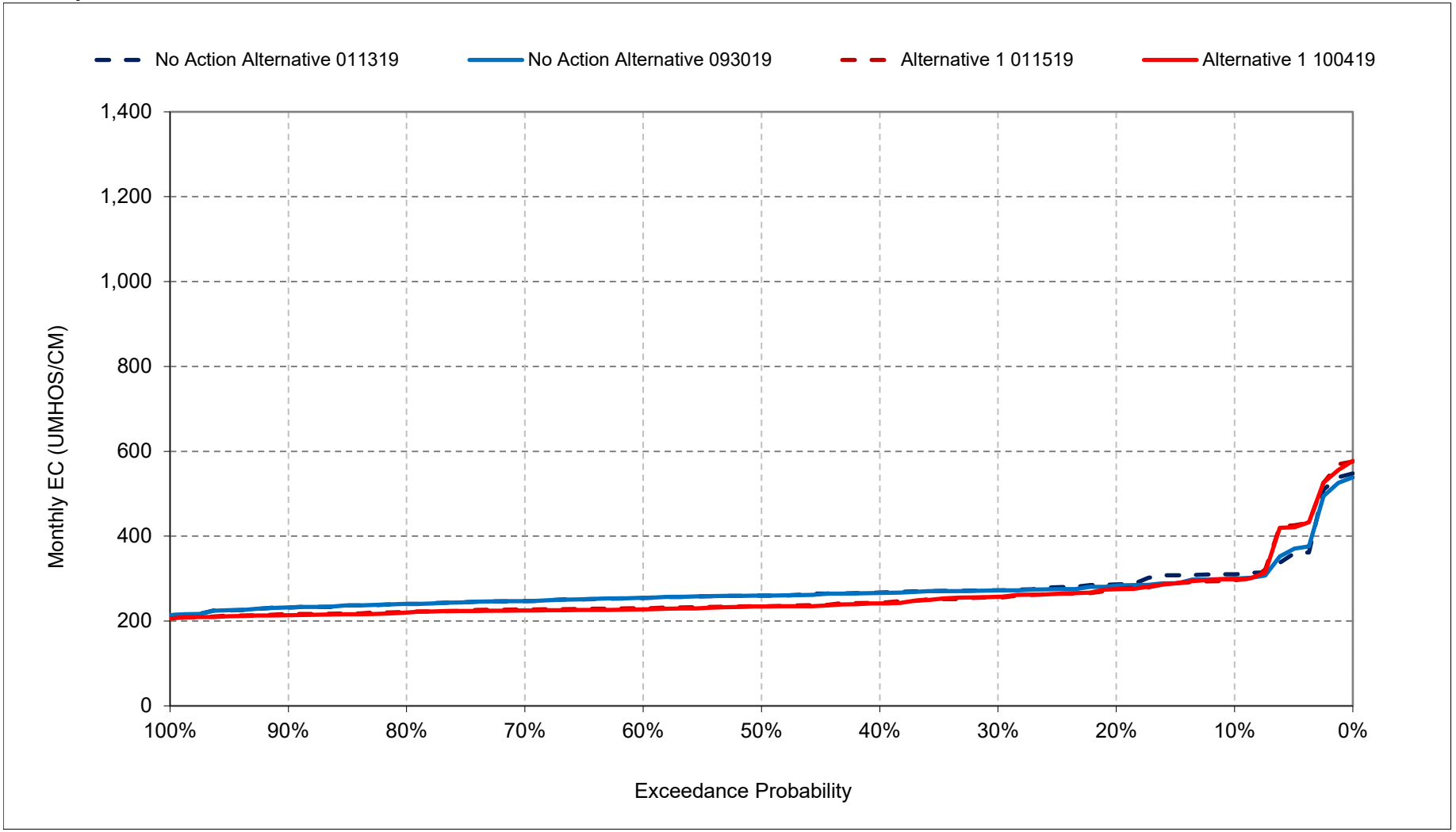

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-11. Old River at Rock Slough**
**Salinity, May EC**



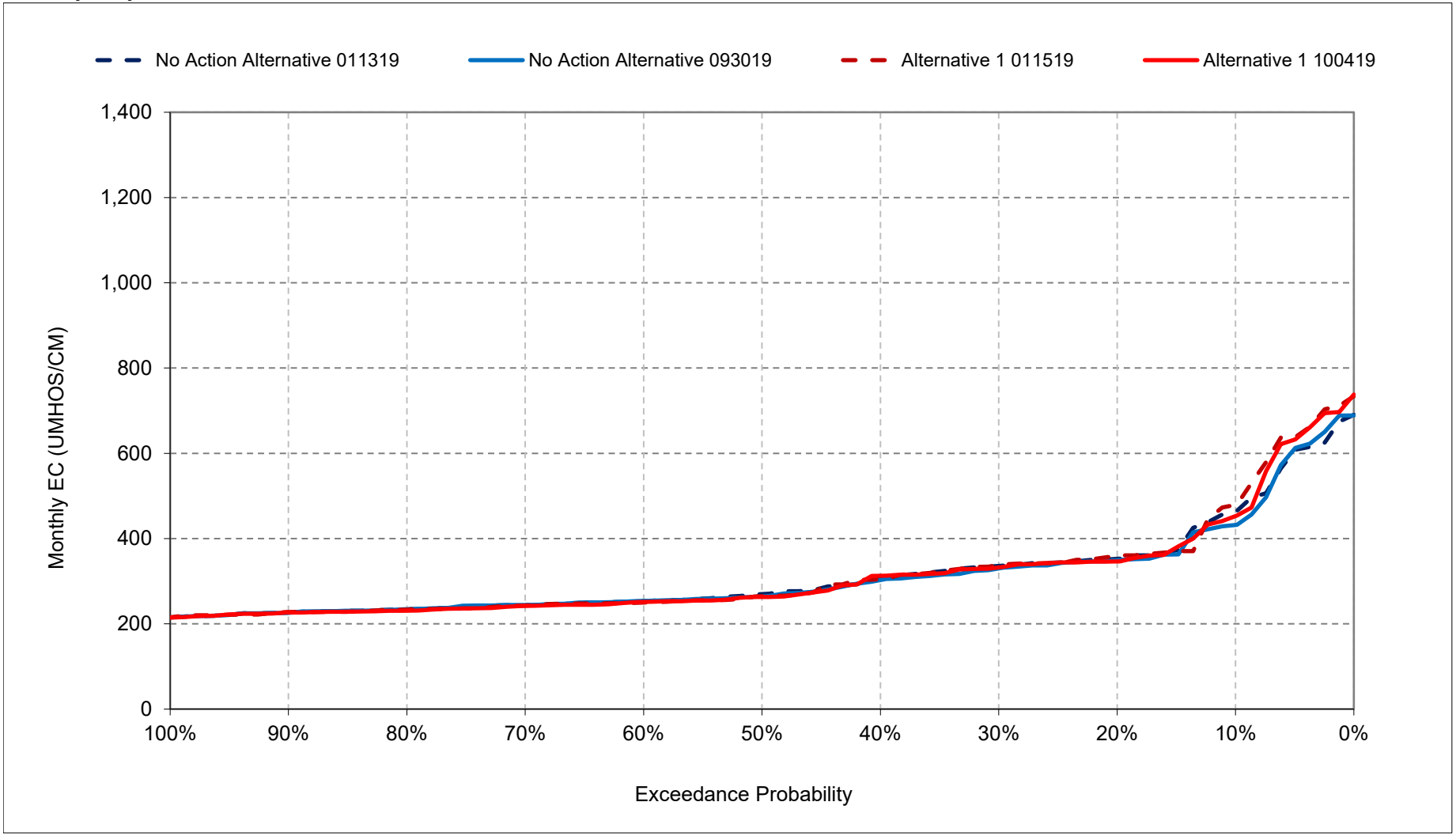

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-12. Old River at Rock Slough**
**Salinity, June EC**



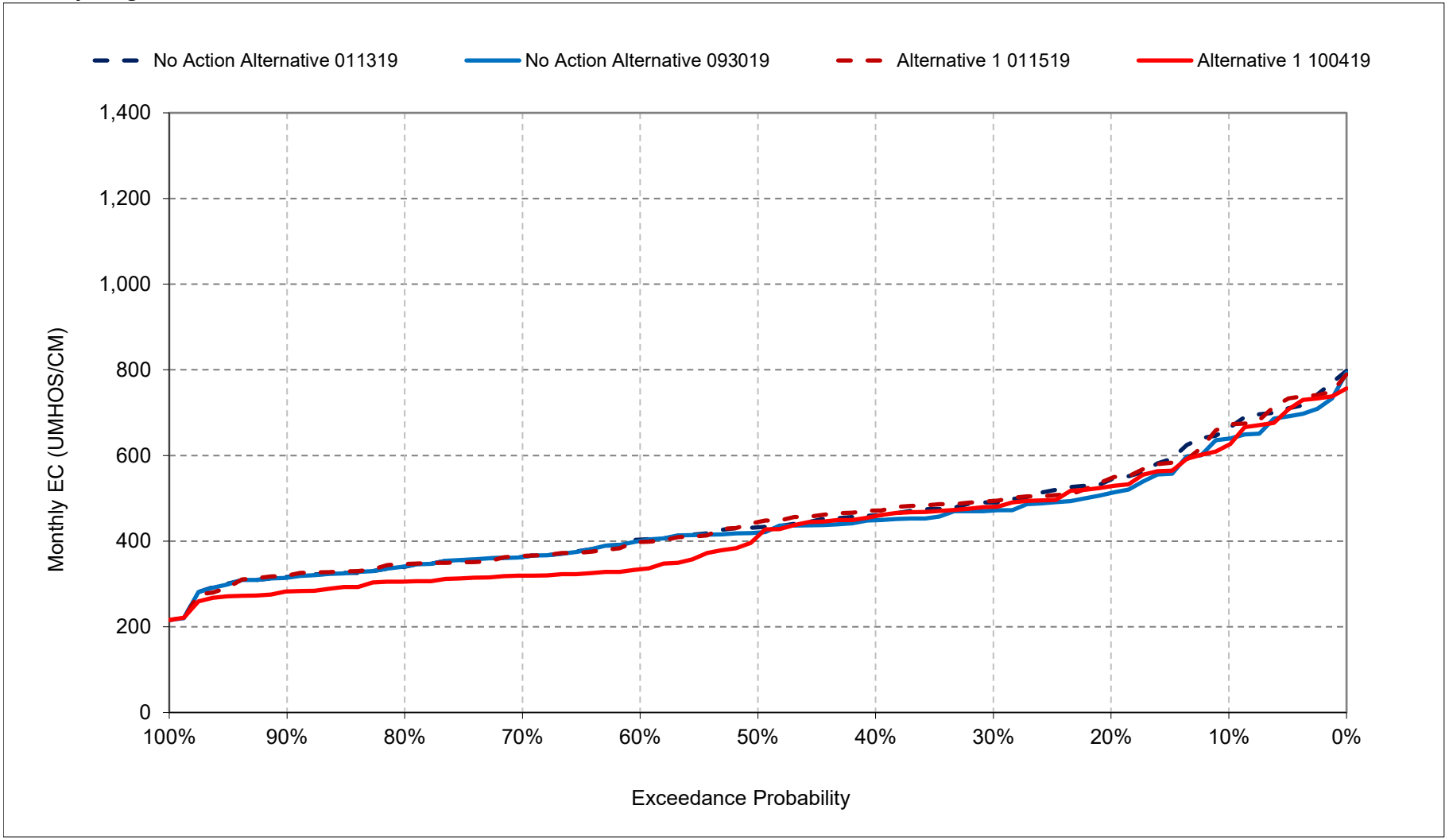

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-13. Old River at Rock Slough**
**Salinity, July EC**



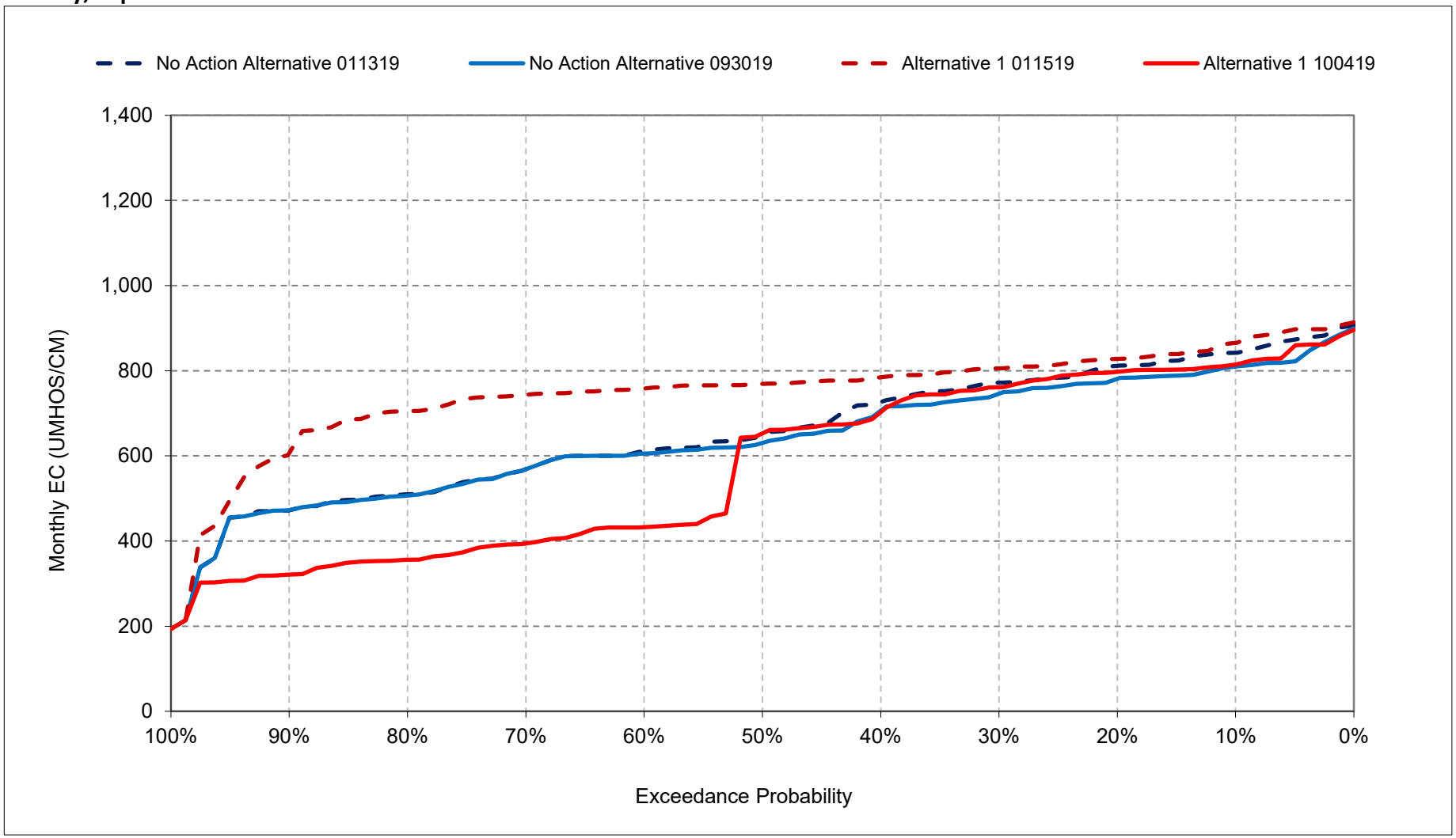

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-14. Old River at Rock Slough Salinity, August EC**



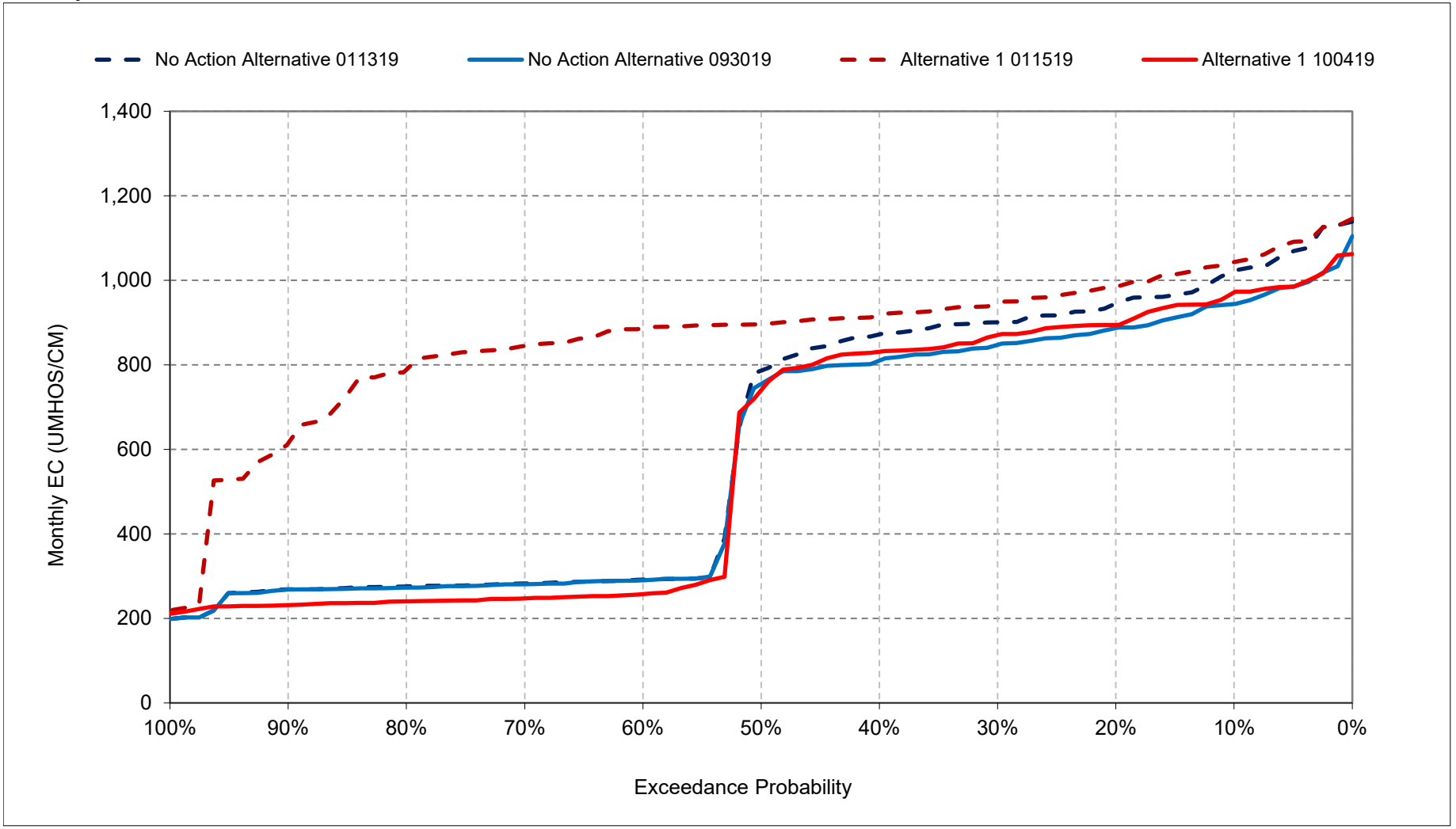

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-15. Old River at Rock Slough**
**Salinity, September EC**



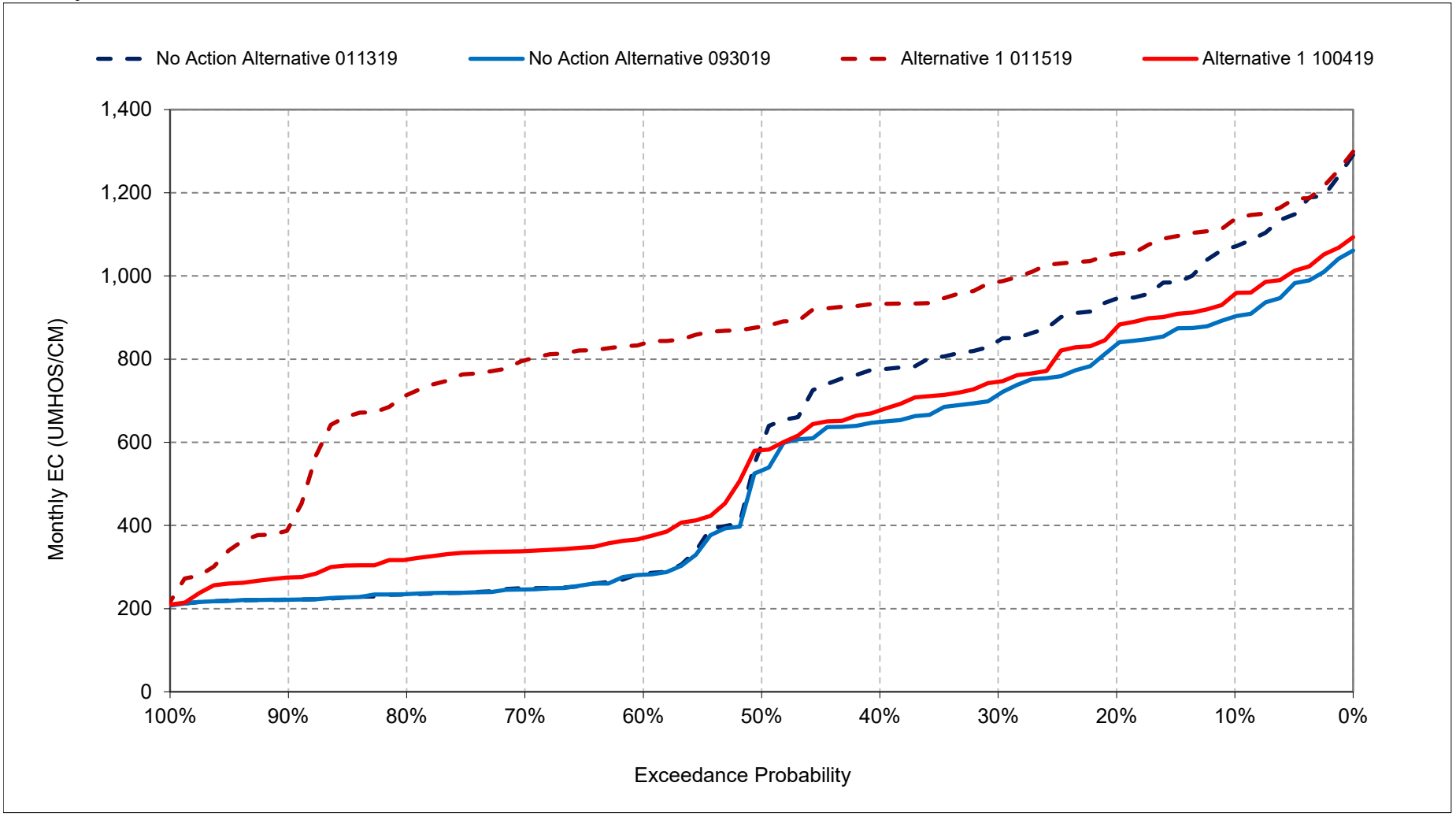

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-16. Old River at Rock Slough Salinity, October EC**



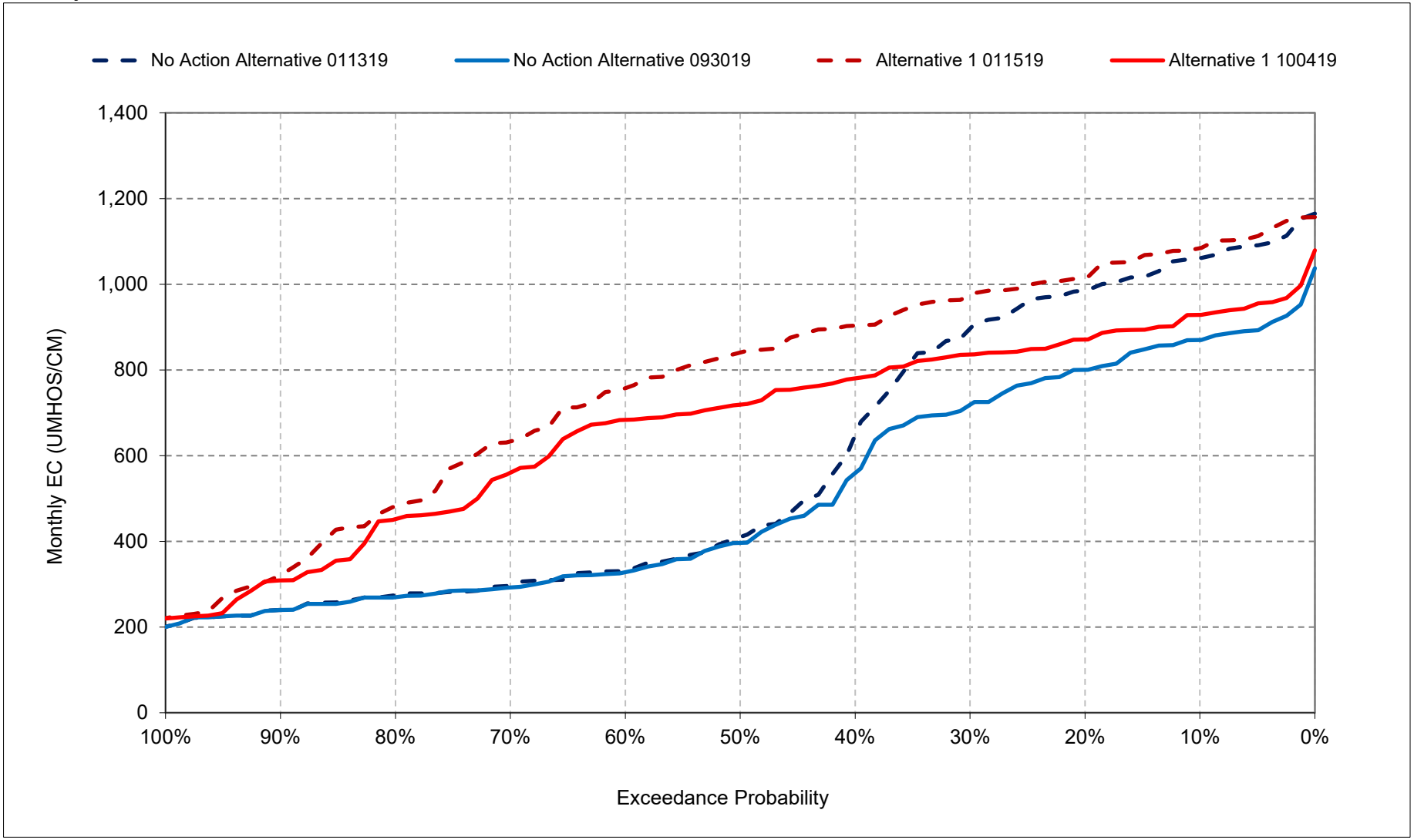

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-17. Old River at Rock Slough**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 8-18. Old River at Rock Slough Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-1. San Joaquin River at Antioch Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 8,127 | 8,487 | 6,741 | 3,539 | 1,136 | 751 | 904 | 1,646 | 2,184 | 3,988 | 5,814 | 7,103 |
| 20% | 7,445 | 7,093 | 5,483 | 2,802 | 737 | 507 | 465 | 1,218 | 1,976 | 3,370 | 5,051 | 6,809 |
| 30% | 7,222 | 6,847 | 3,321 | 2,051 | 452 | 307 | 353 | 894 | 1,748 | 3,015 | 4,873 | 6,602 |
| 40% | 6,958 | 6,130 | 2,936 | 1,337 | 355 | 267 | 277 | 463 | 1,497 | 2,204 | 4,010 | 6,214 |
| 50% | 4,638 | 2,042 | 2,186 | 1,077 | 286 | 244 | 246 | 341 | 1,188 | 1,876 | 3,436 | 5,390 |
| 60% | 1,915 | 1,828 | 1,811 | 447 | 261 | 235 | 229 | 275 | 974 | 1,287 | 3,265 | 2,242 |
| 70% | 800 | 752 | 839 | 263 | 241 | 222 | 222 | 239 | 678 | 1,125 | 3,039 | 1,417 |
| 80% | 728 | 675 | 382 | 234 | 228 | 214 | 218 | 219 | 416 | 1,048 | 2,734 | 1,317 |
| 90% | 671 | 607 | 230 | 214 | 211 | 199 | 212 | 199 | 207 | 816 | 2,549 | 1,212 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,317 | 3,821 | 2,791 | 1,493 | 575 | 383 | 433 | 715 | 1,394 | 2,210 | 3,877 | 4,208 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 699 | 634 | 1,225 | 382 | 242 | 221 | 220 | 241 | 549 | 919 | 2,790 | 1,231 |
| Above Normal (16%) | 1,875 | 1,787 | 2,096 | 769 | 285 | 224 | 231 | 295 | 997 | 1,226 | 2,852 | 2,252 |
| Below Normal (13%) | 6,360 | 5,458 | 3,652 | 1,662 | 593 | 399 | 416 | 642 | 1,429 | 1,981 | 3,514 | 5,822 |
| Dry (24%) | 7,087 | 5,637 | 3,322 | 2,244 | 778 | 419 | 437 | 816 | 1,616 | 3,153 | 4,879 | 6,638 |
| Critical (15%) | 8,308 | 8,404 | 5,262 | 3,276 | 1,258 | 830 | 1,123 | 2,100 | 3,253 | 4,715 | 6,003 | 7,244 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 8,199 | 8,519 | 6,809 | 4,072 | 1,248 | 1,026 | 1,307 | 1,755 | 2,341 | 3,909 | 5,953 | 7,194 |
| 20% | 7,479 | 7,245 | 6,395 | 2,970 | 808 | 556 | 655 | 1,393 | 2,087 | 3,385 | 5,162 | 6,938 |
| 30% | 7,237 | 6,893 | 5,224 | 2,007 | 523 | 320 | 422 | 1,131 | 1,933 | 3,042 | 4,988 | 6,687 |
| 40% | 6,938 | 6,709 | 4,116 | 1,327 | 366 | 266 | 329 | 693 | 1,570 | 2,152 | 3,906 | 6,216 |
| 50% | 6,572 | 6,473 | 3,377 | 978 | 281 | 240 | 265 | 501 | 1,248 | 1,896 | 3,389 | 5,340 |
| 60% | 6,156 | 5,871 | 2,375 | 454 | 262 | 233 | 226 | 393 | 1,037 | 1,322 | 3,241 | 5,170 |
| 70% | 5,914 | 4,281 | 1,193 | 264 | 240 | 220 | 213 | 267 | 736 | 1,205 | 2,931 | 4,959 |
| 80% | 5,511 | 3,177 | 816 | 238 | 223 | 215 | 208 | 199 | 421 | 1,028 | 2,824 | 4,875 |
| 90% | 3,094 | 1,716 | 404 | 219 | 213 | 201 | 203 | 191 | 201 | 837 | 2,616 | 4,390 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,170 | 5,538 | 3,437 | 1,565 | 634 | 427 | 487 | 846 | 1,477 | 2,224 | 3,902 | 5,617 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 4,461 | 4,053 | 2,608 | 350 | 236 | 221 | 224 | 290 | 559 | 929 | 2,735 | 4,279 |
| Above Normal (16%) | 5,793 | 5,418 | 3,360 | 866 | 292 | 227 | 242 | 375 | 977 | 1,237 | 2,885 | 4,988 |
| Below Normal (13%) | 6,237 | 5,574 | 3,662 | 1,837 | 673 | 457 | 498 | 875 | 1,606 | 1,986 | 3,489 | 5,675 |
| Dry (24%) | 7,306 | 5,775 | 3,355 | 2,430 | 861 | 449 | 513 | 976 | 1,732 | 3,130 | 4,995 | 6,719 |
| Critical (15%) | 8,330 | 8,460 | 5,246 | 3,262 | 1,452 | 1,028 | 1,270 | 2,321 | 3,462 | 4,806 | 6,086 | 7,305 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **72** | **32** | **67** | **533** | **113** | **275** | **403** | **109** | **156** | -79 | **139** | **91** |
| 20% | **35** | **152** | **912** | **168** | **71** | **49** | **190** | **175** | **111** | **16** | **111** | **129** |
| 30% | **15** | **46** | **1,903** | -44 | **71** | **12** | **69** | **237** | **185** | **27** | **116** | **85** |
| 40% | -20 | **579** | **1,180** | -10 | **11** | -1 | **52** | **230** | **73** | -52 | -104 | **1** |
| 50% | **1,935** | **4,431** | **1,191** | -99 | -5 | -4 | **19** | **160** | **61** | **19** | -46 | -50 |
| 60% | **4,242** | **4,043** | **564** | **7** | **1** | -2 | -3 | **118** | **62** | **36** | -24 | **2,928** |
| 70% | **5,114** | **3,528** | **354** | **1** | -1 | -2 | -9 | **29** | **58** | **80** | -108 | **3,542** |
| 80% | **4,782** | **2,501** | **434** | **4** | -5 | **2** | -10 | -20 | **4** | -20 | **90** | **3,558** |
| 90% | **2,423** | **1,110** | **174** | **4** | **2** | **2** | -9 | -9 | -6 | **20** | **67** | **3,178** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **1,854** | **1,717** | **646** | **72** | **59** | **45** | **54** | **131** | **83** | **14** | **25** | **1,409** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **3,762** | **3,418** | **1,383** | -31 | -6 | **0** | **4** | **50** | **10** | **10** | -55 | **3,048** |
| Above Normal (16%) | **3,918** | **3,631** | **1,264** | **98** | **7** | **3** | **11** | **80** | -20 | **11** | **34** | **2,736** |
| Below Normal (13%) | -122 | **116** | **10** | **175** | **81** | **58** | **82** | **233** | **177** | **6** | -25 | -148 |
| Dry (24%) | **219** | **138** | **34** | **186** | **83** | **30** | **76** | **160** | **116** | -22 | **116** | **81** |
| Critical (15%) | **21** | **56** | -15 | -13 | **194** | **198** | **147** | **221** | **210** | **91** | **83** | **61** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-2. San Joaquin River at Antioch Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 7,575 | 7,569 | 5,718 | 3,282 | 1,106 | 738 | 926 | 1,772 | 2,270 | 3,937 | 5,662 | 6,974 |
| 20% | 7,028 | 6,429 | 4,609 | 2,660 | 706 | 486 | 498 | 1,362 | 2,009 | 3,341 | 4,986 | 6,714 |
| 30% | 6,767 | 6,153 | 3,208 | 1,936 | 484 | 304 | 348 | 896 | 1,758 | 2,963 | 4,723 | 6,488 |
| 40% | 6,576 | 5,247 | 2,674 | 1,260 | 365 | 267 | 275 | 464 | 1,522 | 2,197 | 3,930 | 6,233 |
| 50% | 4,981 | 2,045 | 2,185 | 1,007 | 282 | 243 | 246 | 341 | 1,191 | 1,878 | 3,430 | 5,217 |
| 60% | 1,891 | 1,772 | 1,666 | 377 | 260 | 234 | 229 | 275 | 973 | 1,280 | 3,260 | 2,244 |
| 70% | 769 | 710 | 789 | 260 | 241 | 222 | 221 | 239 | 679 | 1,125 | 3,038 | 1,417 |
| 80% | 696 | 640 | 392 | 234 | 227 | 214 | 218 | 219 | 418 | 1,030 | 2,723 | 1,318 |
| 90% | 646 | 569 | 227 | 214 | 211 | 199 | 212 | 199 | 207 | 816 | 2,549 | 1,209 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,080 | 3,478 | 2,503 | 1,361 | 536 | 381 | 447 | 753 | 1,414 | 2,204 | 3,822 | 4,150 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 673 | 601 | 1,225 | 376 | 242 | 221 | 220 | 241 | 550 | 916 | 2,785 | 1,231 |
| Above Normal (16%) | 1,845 | 1,771 | 2,092 | 757 | 285 | 224 | 231 | 295 | 997 | 1,225 | 2,851 | 2,253 |
| Below Normal (13%) | 5,970 | 4,821 | 3,132 | 1,594 | 591 | 399 | 421 | 646 | 1,447 | 1,981 | 3,493 | 5,789 |
| Dry (24%) | 6,714 | 5,113 | 2,911 | 2,055 | 767 | 429 | 448 | 855 | 1,637 | 3,137 | 4,781 | 6,530 |
| Critical (15%) | 7,763 | 7,606 | 4,459 | 2,782 | 1,014 | 800 | 1,191 | 2,288 | 3,338 | 4,704 | 5,824 | 7,060 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 7,612 | 7,623 | 5,876 | 3,567 | 1,009 | 972 | 1,138 | 1,799 | 2,337 | 3,864 | 5,746 | 7,015 |
| 20% | 7,039 | 6,591 | 5,039 | 2,695 | 704 | 469 | 625 | 1,409 | 2,128 | 3,385 | 5,083 | 6,802 |
| 30% | 6,794 | 6,137 | 4,711 | 1,903 | 500 | 278 | 391 | 1,122 | 1,945 | 3,082 | 4,812 | 6,508 |
| 40% | 6,560 | 5,521 | 4,200 | 1,365 | 350 | 257 | 313 | 732 | 1,627 | 2,443 | 4,078 | 6,215 |
| 50% | 4,731 | 3,522 | 3,174 | 904 | 284 | 240 | 257 | 478 | 1,364 | 2,180 | 3,550 | 5,183 |
| 60% | 1,592 | 3,350 | 2,238 | 430 | 261 | 228 | 225 | 383 | 1,051 | 1,503 | 2,788 | 2,067 |
| 70% | 1,543 | 3,251 | 1,153 | 261 | 244 | 221 | 213 | 277 | 792 | 1,338 | 2,678 | 1,970 |
| 80% | 1,456 | 3,065 | 749 | 234 | 223 | 217 | 208 | 200 | 428 | 1,157 | 2,567 | 1,904 |
| 90% | 1,372 | 1,337 | 364 | 216 | 213 | 201 | 201 | 191 | 202 | 849 | 2,447 | 1,848 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,266 | 4,386 | 3,093 | 1,395 | 549 | 399 | 477 | 849 | 1,516 | 2,316 | 3,757 | 4,317 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,447 | 2,665 | 2,538 | 426 | 244 | 221 | 219 | 296 | 602 | 1,003 | 2,464 | 1,857 |
| Above Normal (16%) | 1,457 | 3,016 | 3,043 | 829 | 289 | 223 | 240 | 389 | 1,050 | 1,390 | 2,678 | 1,930 |
| Below Normal (13%) | 5,909 | 5,030 | 3,201 | 1,744 | 622 | 424 | 490 | 888 | 1,714 | 2,327 | 3,723 | 5,748 |
| Dry (24%) | 6,737 | 5,193 | 2,980 | 2,050 | 712 | 396 | 482 | 950 | 1,736 | 3,135 | 4,879 | 6,609 |
| Critical (15%) | 7,791 | 7,665 | 4,440 | 2,694 | 1,154 | 958 | 1,274 | 2,339 | 3,456 | 4,785 | 5,891 | 7,102 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **37** | **54** | **158** | **284** | -96 | **234** | **211** | **27** | **66** | -73 | **84** | **41** |
| 20% | **11** | **163** | **430** | **36** | -2 | -17 | **126** | **47** | **119** | **44** | **97** | **87** |
| 30% | **27** | -15 | **1,503** | -33 | **16** | -26 | **42** | **226** | **187** | **119** | **90** | **20** |
| 40% | -16 | **274** | **1,525** | **105** | -15 | -10 | **37** | **268** | **105** | **246** | **148** | -18 |
| 50% | -250 | **1,477** | **989** | -103 | **1** | -4 | **11** | **137** | **173** | **301** | **120** | -33 |
| 60% | -299 | **1,578** | **572** | **53** | **1** | -7 | -4 | **108** | **78** | **223** | -471 | -176 |
| 70% | **774** | **2,541** | **363** | **1** | **3** | -1 | -8 | **38** | **113** | **213** | -360 | **553** |
| 80% | **760** | **2,425** | **357** | **0** | -4 | **3** | -9 | -19 | **10** | **127** | -157 | **586** |
| 90% | **726** | **768** | **136** | **2** | **2** | **2** | -11 | -8 | -6 | **33** | -102 | **638** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **186** | **908** | **590** | **33** | **13** | **18** | **30** | **96** | **102** | **112** | -65 | **168** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **774** | **2,064** | **1,313** | **50** | **2** | -1 | -2 | **55** | **52** | **87** | -321 | **626** |
| Above Normal (16%) | -388 | **1,245** | **951** | **72** | **4** | -1 | **9** | **94** | **53** | **165** | -173 | -323 |
| Below Normal (13%) | -60 | **209** | **69** | **150** | **31** | **24** | **68** | **242** | **267** | **347** | **230** | -40 |
| Dry (24%) | **23** | **80** | **69** | -5 | -55 | -33 | **33** | **96** | **99** | -2 | **98** | **80** |
| Critical (15%) | **29** | **59** | -19 | -88 | **140** | **158** | **83** | **51** | **118** | **81** | **67** | **43** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-3. San Joaquin River at Antioch Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 8,127 | 8,487 | 6,741 | 3,539 | 1,136 | 751 | 904 | 1,646 | 2,184 | 3,988 | 5,814 | 7,103 |
| 20% | 7,445 | 7,093 | 5,483 | 2,802 | 737 | 507 | 465 | 1,218 | 1,976 | 3,370 | 5,051 | 6,809 |
| 30% | 7,222 | 6,847 | 3,321 | 2,051 | 452 | 307 | 353 | 894 | 1,748 | 3,015 | 4,873 | 6,602 |
| 40% | 6,958 | 6,130 | 2,936 | 1,337 | 355 | 267 | 277 | 463 | 1,497 | 2,204 | 4,010 | 6,214 |
| 50% | 4,638 | 2,042 | 2,186 | 1,077 | 286 | 244 | 246 | 341 | 1,188 | 1,876 | 3,436 | 5,390 |
| 60% | 1,915 | 1,828 | 1,811 | 447 | 261 | 235 | 229 | 275 | 974 | 1,287 | 3,265 | 2,242 |
| 70% | 800 | 752 | 839 | 263 | 241 | 222 | 222 | 239 | 678 | 1,125 | 3,039 | 1,417 |
| 80% | 728 | 675 | 382 | 234 | 228 | 214 | 218 | 219 | 416 | 1,048 | 2,734 | 1,317 |
| 90% | 671 | 607 | 230 | 214 | 211 | 199 | 212 | 199 | 207 | 816 | 2,549 | 1,212 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,317 | 3,821 | 2,791 | 1,493 | 575 | 383 | 433 | 715 | 1,394 | 2,210 | 3,877 | 4,208 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 699 | 634 | 1,225 | 382 | 242 | 221 | 220 | 241 | 549 | 919 | 2,790 | 1,231 |
| Above Normal (16%) | 1,875 | 1,787 | 2,096 | 769 | 285 | 224 | 231 | 295 | 997 | 1,226 | 2,852 | 2,252 |
| Below Normal (13%) | 6,360 | 5,458 | 3,652 | 1,662 | 593 | 399 | 416 | 642 | 1,429 | 1,981 | 3,514 | 5,822 |
| Dry (24%) | 7,087 | 5,637 | 3,322 | 2,244 | 778 | 419 | 437 | 816 | 1,616 | 3,153 | 4,879 | 6,638 |
| Critical (15%) | 8,308 | 8,404 | 5,262 | 3,276 | 1,258 | 830 | 1,123 | 2,100 | 3,253 | 4,715 | 6,003 | 7,244 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 7,575 | 7,569 | 5,718 | 3,282 | 1,106 | 738 | 926 | 1,772 | 2,270 | 3,937 | 5,662 | 6,974 |
| 20% | 7,028 | 6,429 | 4,609 | 2,660 | 706 | 486 | 498 | 1,362 | 2,009 | 3,341 | 4,986 | 6,714 |
| 30% | 6,767 | 6,153 | 3,208 | 1,936 | 484 | 304 | 348 | 896 | 1,758 | 2,963 | 4,723 | 6,488 |
| 40% | 6,576 | 5,247 | 2,674 | 1,260 | 365 | 267 | 275 | 464 | 1,522 | 2,197 | 3,930 | 6,233 |
| 50% | 4,981 | 2,045 | 2,185 | 1,007 | 282 | 243 | 246 | 341 | 1,191 | 1,878 | 3,430 | 5,217 |
| 60% | 1,891 | 1,772 | 1,666 | 377 | 260 | 234 | 229 | 275 | 973 | 1,280 | 3,260 | 2,244 |
| 70% | 769 | 710 | 789 | 260 | 241 | 222 | 221 | 239 | 679 | 1,125 | 3,038 | 1,417 |
| 80% | 696 | 640 | 392 | 234 | 227 | 214 | 218 | 219 | 418 | 1,030 | 2,723 | 1,318 |
| 90% | 646 | 569 | 227 | 214 | 211 | 199 | 212 | 199 | 207 | 816 | 2,549 | 1,209 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,080 | 3,478 | 2,503 | 1,361 | 536 | 381 | 447 | 753 | 1,414 | 2,204 | 3,822 | 4,150 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 673 | 601 | 1,225 | 376 | 242 | 221 | 220 | 241 | 550 | 916 | 2,785 | 1,231 |
| Above Normal (16%) | 1,845 | 1,771 | 2,092 | 757 | 285 | 224 | 231 | 295 | 997 | 1,225 | 2,851 | 2,253 |
| Below Normal (13%) | 5,970 | 4,821 | 3,132 | 1,594 | 591 | 399 | 421 | 646 | 1,447 | 1,981 | 3,493 | 5,789 |
| Dry (24%) | 6,714 | 5,113 | 2,911 | 2,055 | 767 | 429 | 448 | 855 | 1,637 | 3,137 | 4,781 | 6,530 |
| Critical (15%) | 7,763 | 7,606 | 4,459 | 2,782 | 1,014 | 800 | 1,191 | 2,288 | 3,338 | 4,704 | 5,824 | 7,060 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -552 | -918 | -1,023 | -256 | -30 | -13 | 23 | 126 | 86 | -50 | -151 | -129 |
| 20% | -416 | -664 | -874 | -142 | -32 | -21 | 33 | 144 | 33 | -29 | -65 | -95 |
| 30% | -455 | -695 | -113 | -115 | 32 | -3 | -5 | 2 | 10 | -52 | -150 | -114 |
| 40% | -382 | -883 | -262 | -77 | 10 | 0 | -1 | 1 | 24 | -7 | -80 | 19 |
| 50% | 344 | 3 | -1 | -70 | -4 | -1 | 0 | 0 | 3 | 2 | -6 | -174 |
| 60% | -23 | -56 | -146 | -71 | -1 | 0 | 0 | 0 | -1 | -6 | -5 | 2 |
| 70% | -31 | -42 | -50 | -2 | 0 | 0 | -1 | 0 | 1 | 0 | -1 | 0 |
| 80% | -33 | -36 | 9 | 0 | -1 | 0 | 0 | 0 | 1 | -19 | -10 | 1 |
| 90% | -25 | -38 | -3 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | -3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -236 | -343 | -288 | -131 | -39 | -2 | 13 | 38 | 20 | -6 | -55 | -58 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -27 | -33 | 0 | -6 | 0 | 0 | 0 | 0 | 1 | -3 | -5 | -1 |
| Above Normal (16%) | -31 | -16 | -4 | -12 | 1 | 0 | 0 | 0 | 1 | 0 | -1 | 1 |
| Below Normal (13%) | -390 | -637 | -519 | -68 | -2 | 0 | 5 | 4 | 17 | 0 | -21 | -34 |
| Dry (24%) | -373 | -525 | -411 | -189 | -12 | 10 | 11 | 39 | 20 | -16 | -98 | -109 |
| Critical (15%) | -546 | -798 | -803 | -494 | -244 | -30 | 68 | 188 | 86 | -11 | -179 | -184 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 9-4. San Joaquin River at Antioch Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 8,199 | 8,519 | 6,809 | 4,072 | 1,248 | 1,026 | 1,307 | 1,755 | 2,341 | 3,909 | 5,953 | 7,194 |
| 20% | 7,479 | 7,245 | 6,395 | 2,970 | 808 | 556 | 655 | 1,393 | 2,087 | 3,385 | 5,162 | 6,938 |
| 30% | 7,237 | 6,893 | 5,224 | 2,007 | 523 | 320 | 422 | 1,131 | 1,933 | 3,042 | 4,988 | 6,687 |
| 40% | 6,938 | 6,709 | 4,116 | 1,327 | 366 | 266 | 329 | 693 | 1,570 | 2,152 | 3,906 | 6,216 |
| 50% | 6,572 | 6,473 | 3,377 | 978 | 281 | 240 | 265 | 501 | 1,248 | 1,896 | 3,389 | 5,340 |
| 60% | 6,156 | 5,871 | 2,375 | 454 | 262 | 233 | 226 | 393 | 1,037 | 1,322 | 3,241 | 5,170 |
| 70% | 5,914 | 4,281 | 1,193 | 264 | 240 | 220 | 213 | 267 | 736 | 1,205 | 2,931 | 4,959 |
| 80% | 5,511 | 3,177 | 816 | 238 | 223 | 215 | 208 | 199 | 421 | 1,028 | 2,824 | 4,875 |
| 90% | 3,094 | 1,716 | 404 | 219 | 213 | 201 | 203 | 191 | 201 | 837 | 2,616 | 4,390 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,170 | 5,538 | 3,437 | 1,565 | 634 | 427 | 487 | 846 | 1,477 | 2,224 | 3,902 | 5,617 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 4,461 | 4,053 | 2,608 | 350 | 236 | 221 | 224 | 290 | 559 | 929 | 2,735 | 4,279 |
| Above Normal (16%) | 5,793 | 5,418 | 3,360 | 866 | 292 | 227 | 242 | 375 | 977 | 1,237 | 2,885 | 4,988 |
| Below Normal (13%) | 6,237 | 5,574 | 3,662 | 1,837 | 673 | 457 | 498 | 875 | 1,606 | 1,986 | 3,489 | 5,675 |
| Dry (24%) | 7,306 | 5,775 | 3,355 | 2,430 | 861 | 449 | 513 | 976 | 1,732 | 3,130 | 4,995 | 6,719 |
| Critical (15%) | 8,330 | 8,460 | 5,246 | 3,262 | 1,452 | 1,028 | 1,270 | 2,321 | 3,462 | 4,806 | 6,086 | 7,305 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 7,612 | 7,623 | 5,876 | 3,567 | 1,009 | 972 | 1,138 | 1,799 | 2,337 | 3,864 | 5,746 | 7,015 |
| 20% | 7,039 | 6,591 | 5,039 | 2,695 | 704 | 469 | 625 | 1,409 | 2,128 | 3,385 | 5,083 | 6,802 |
| 30% | 6,794 | 6,137 | 4,711 | 1,903 | 500 | 278 | 391 | 1,122 | 1,945 | 3,082 | 4,812 | 6,508 |
| 40% | 6,560 | 5,521 | 4,200 | 1,365 | 350 | 257 | 313 | 732 | 1,627 | 2,443 | 4,078 | 6,215 |
| 50% | 4,731 | 3,522 | 3,174 | 904 | 284 | 240 | 257 | 478 | 1,364 | 2,180 | 3,550 | 5,183 |
| 60% | 1,592 | 3,350 | 2,238 | 430 | 261 | 228 | 225 | 383 | 1,051 | 1,503 | 2,788 | 2,067 |
| 70% | 1,543 | 3,251 | 1,153 | 261 | 244 | 221 | 213 | 277 | 792 | 1,338 | 2,678 | 1,970 |
| 80% | 1,456 | 3,065 | 749 | 234 | 223 | 217 | 208 | 200 | 428 | 1,157 | 2,567 | 1,904 |
| 90% | 1,372 | 1,337 | 364 | 216 | 213 | 201 | 201 | 191 | 202 | 849 | 2,447 | 1,848 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 4,266 | 4,386 | 3,093 | 1,395 | 549 | 399 | 477 | 849 | 1,516 | 2,316 | 3,757 | 4,317 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 1,447 | 2,665 | 2,538 | 426 | 244 | 221 | 219 | 296 | 602 | 1,003 | 2,464 | 1,857 |
| Above Normal (16%) | 1,457 | 3,016 | 3,043 | 829 | 289 | 223 | 240 | 389 | 1,050 | 1,390 | 2,678 | 1,930 |
| Below Normal (13%) | 5,909 | 5,030 | 3,201 | 1,744 | 622 | 424 | 490 | 888 | 1,714 | 2,327 | 3,723 | 5,748 |
| Dry (24%) | 6,737 | 5,193 | 2,980 | 2,050 | 712 | 396 | 482 | 950 | 1,736 | 3,135 | 4,879 | 6,609 |
| Critical (15%) | 7,791 | 7,665 | 4,440 | 2,694 | 1,154 | 958 | 1,274 | 2,339 | 3,456 | 4,785 | 5,891 | 7,102 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -587 | -896 | -933 | -505 | -239 | -54 | -169 | 44 | -4 | -45 | -206 | -179 |
| 20% | -440 | -653 | -1,356 | -274 | -104 | -88 | -31 | 16 | 41 | 0 | -79 | -136 |
| 30% | -443 | -756 | -513 | -104 | -23 | -41 | -31 | -10 | 12 | 40 | -176 | -179 |
| 40% | -378 | -1,188 | 83 | 38 | -16 | -9 | -17 | 39 | 57 | 291 | 172 | 0 |
| 50% | -1,841 | -2,951 | -203 | -74 | 3 | 0 | -8 | -23 | 116 | 284 | 161 | -157 |
| 60% | -4,564 | -2,521 | -137 | -24 | -1 | -5 | -1 | -10 | 14 | 181 | -453 | -3,102 |
| 70% | -4,371 | -1,030 | -40 | -3 | 5 | 1 | 0 | 9 | 56 | 132 | -253 | -2,989 |
| 80% | -4,054 | -112 | -67 | -4 | 0 | 2 | 0 | 1 | 7 | 129 | -257 | -2,971 |
| 90% | -1,722 | -380 | -41 | -2 | 0 | -1 | -2 | 0 | 0 | 13 | -169 | -2,542 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1,905 | -1,152 | -344 | -170 | -85 | -28 | -10 | 2 | 40 | 92 | -144 | -1,299 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -3,014 | -1,387 | -70 | 76 | 8 | -1 | -6 | 6 | 43 | 74 | -271 | -2,422 |
| Above Normal (16%) | -4,336 | -2,402 | -317 | -37 | -2 | -4 | -2 | 15 | 74 | 154 | -208 | -3,058 |
| Below Normal (13%) | -328 | -544 | -461 | -93 | -51 | -34 | -9 | 12 | 107 | 341 | 234 | 74 |
| Dry (24%) | -568 | -582 | -375 | -380 | -149 | -53 | -32 | -26 | 4 | 5 | -116 | -110 |
| Critical (15%) | -538 | -794 | -807 | -568 | -299 | -70 | 4 | 18 | -6 | -21 | -195 | -203 |

a Based on the 82-year simulation period.

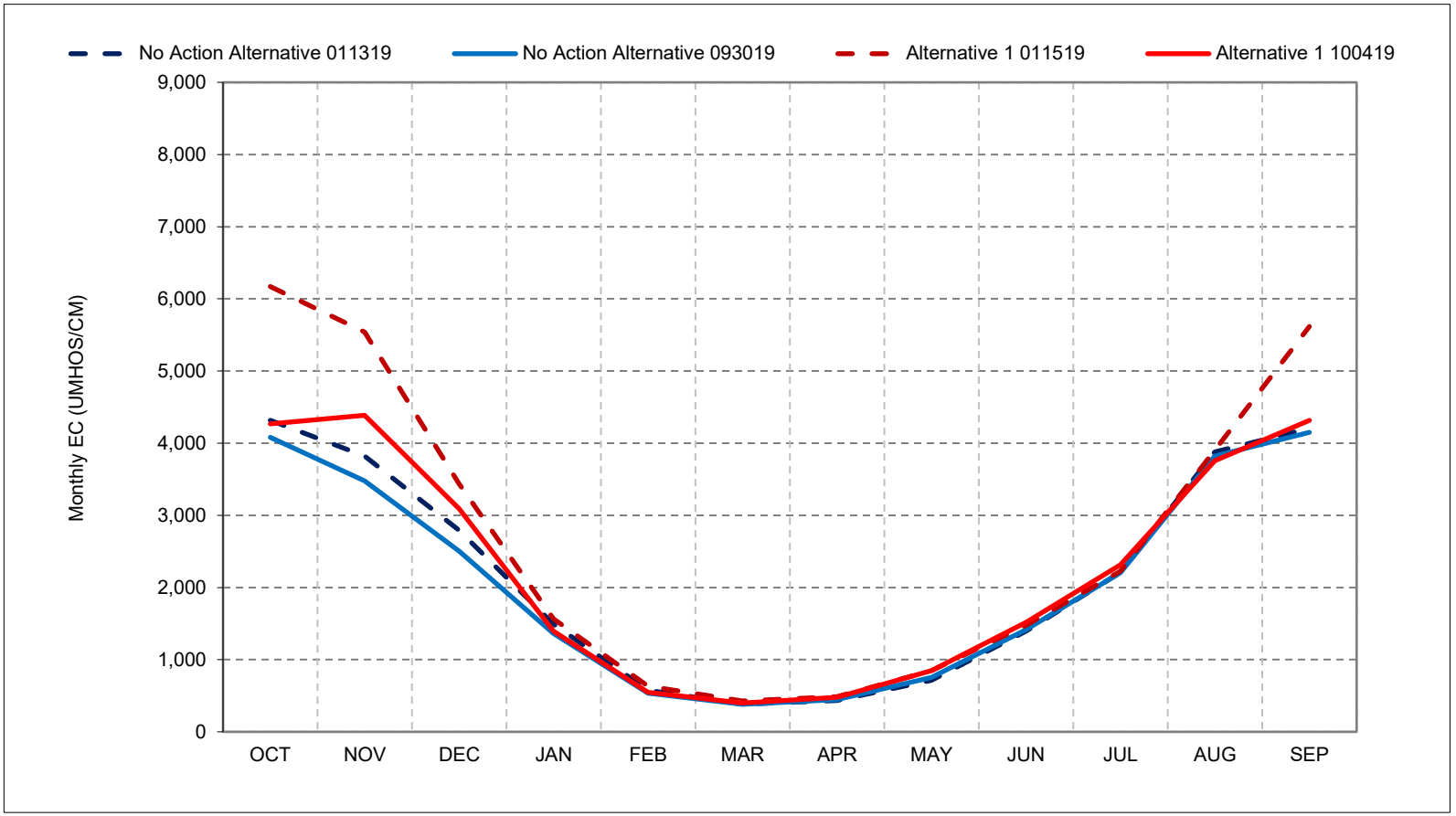
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-1. San Joaquin River at Antioch Salinity, Long-Term Average EC

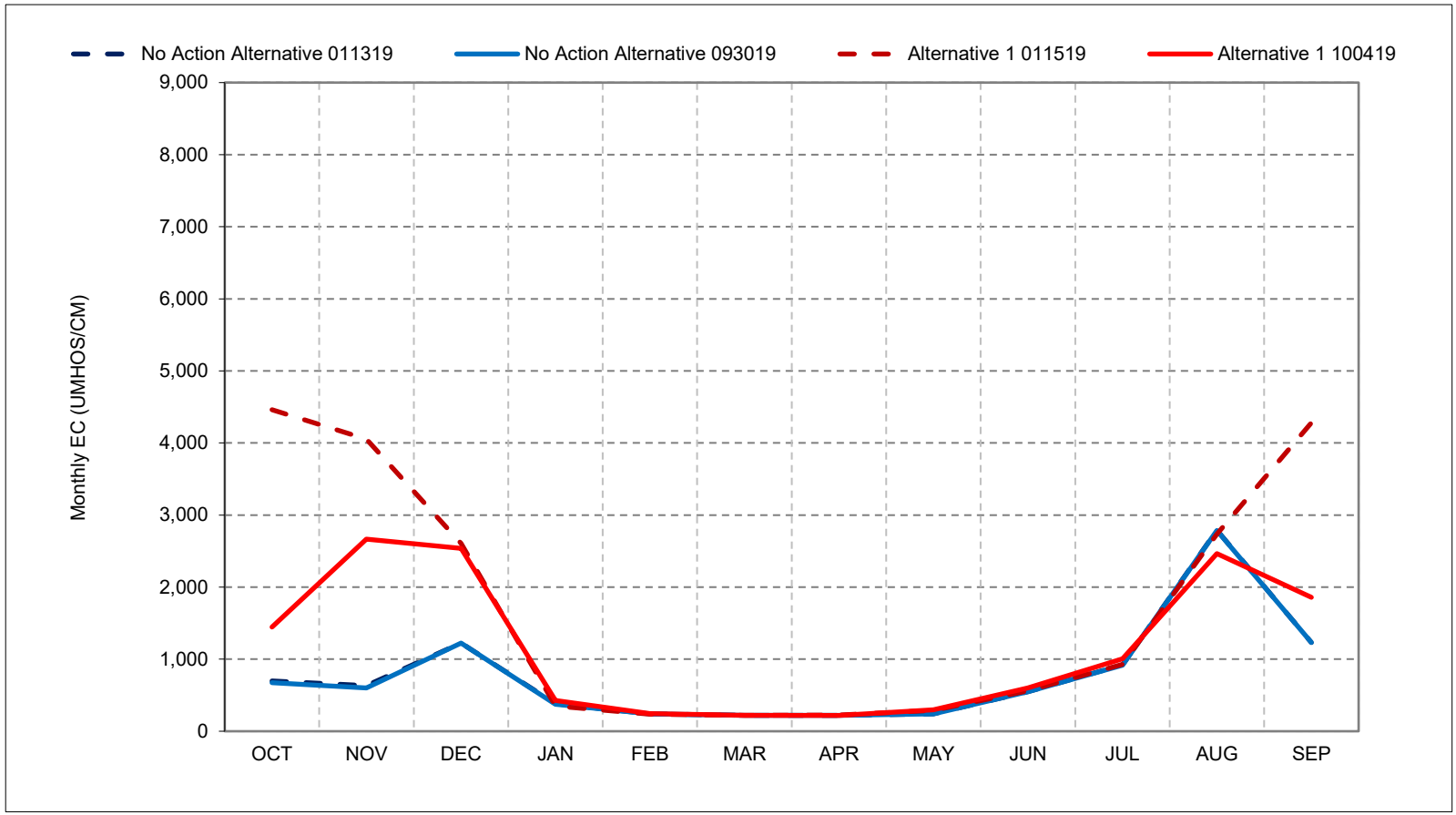



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-2. San Joaquin River at Antioch Salinity, Wet Year Average EC

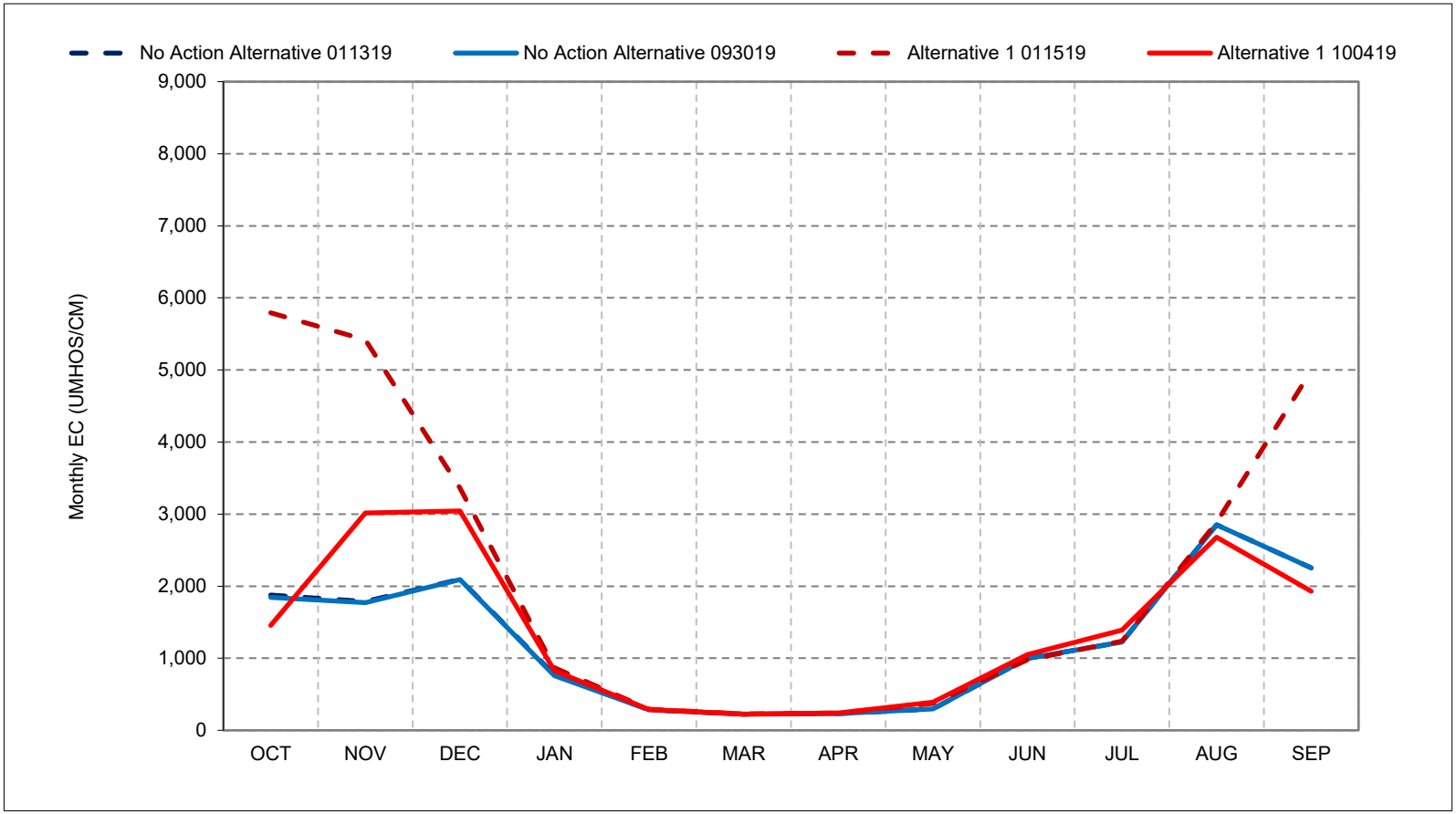



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-3. San Joaquin River at Antioch Salinity, Above Normal Year Average EC

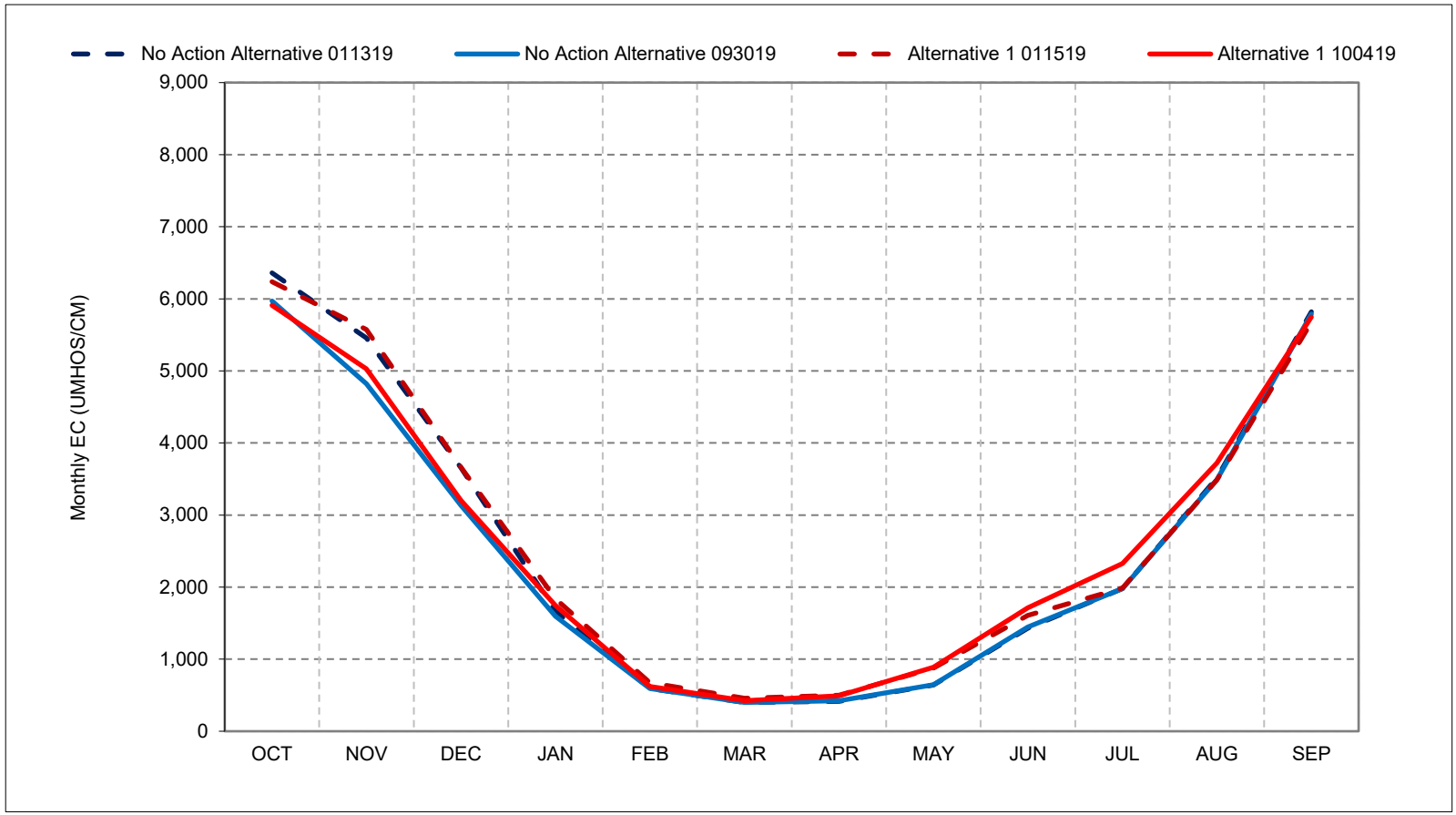



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-4. San Joaquin River at Antioch Salinity, Below Normal Year Average EC

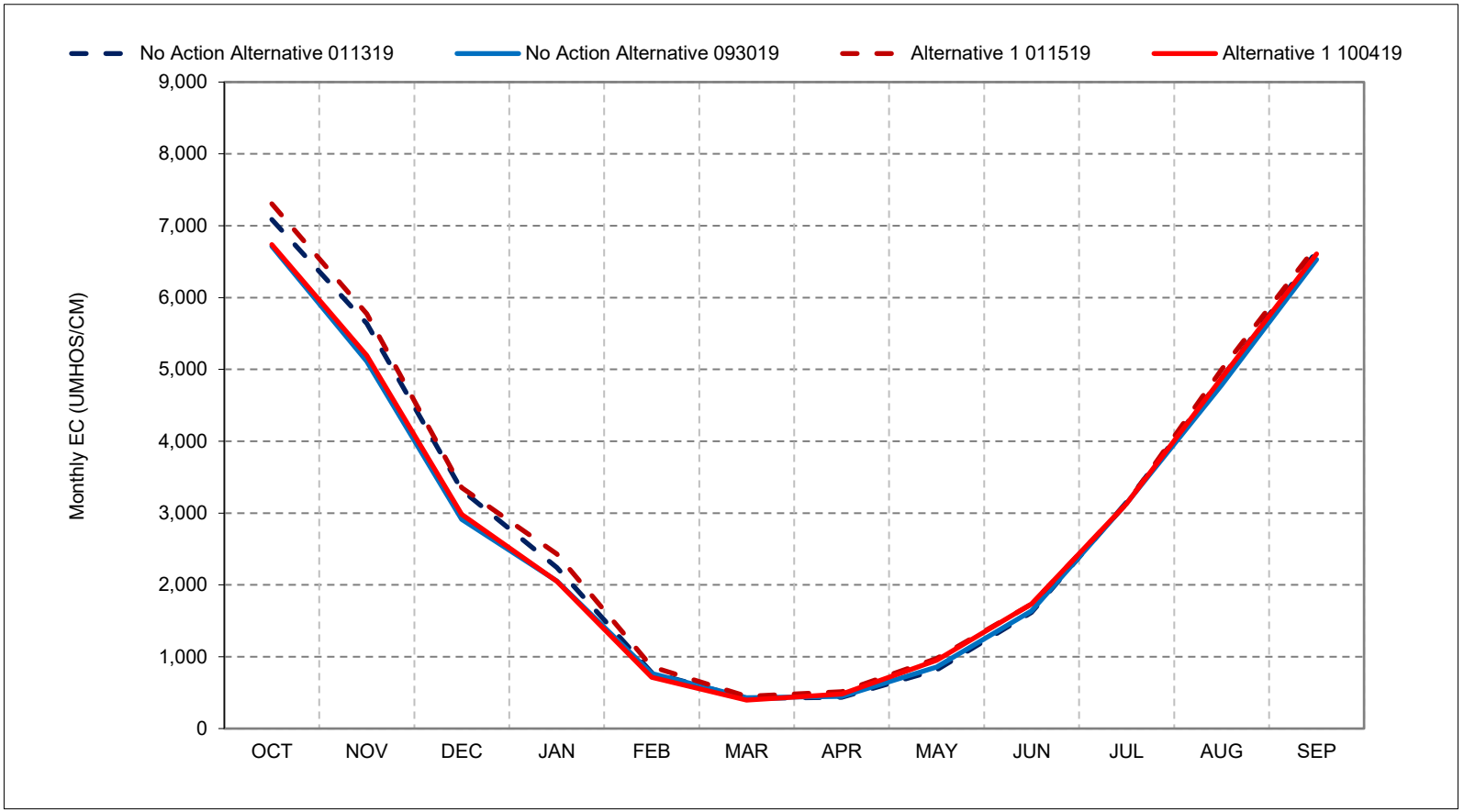



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-5. San Joaquin River at Antioch Salinity, Dry Year Average EC

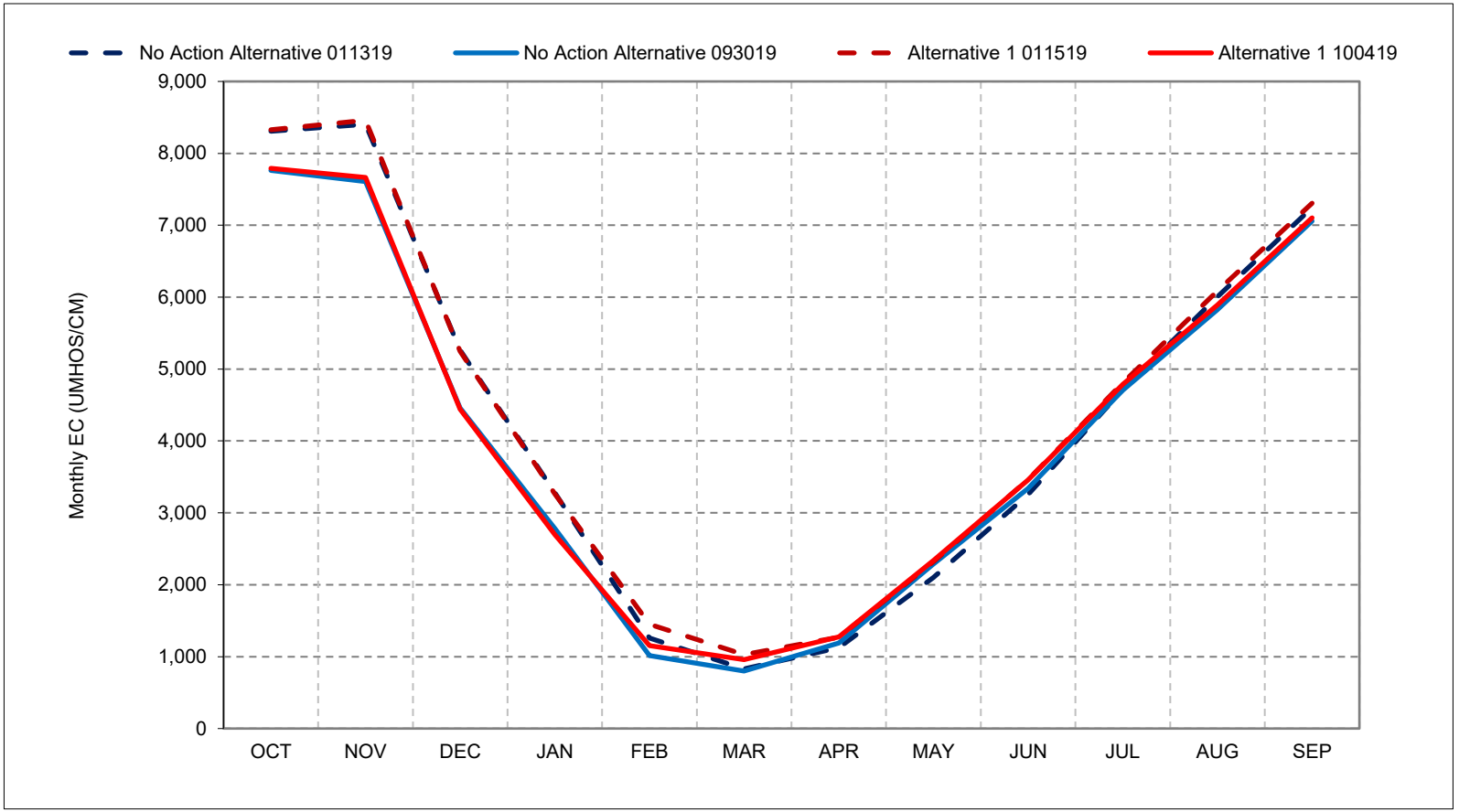



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 9-6. San Joaquin River at Antioch Salinity, Critical Year Average EC

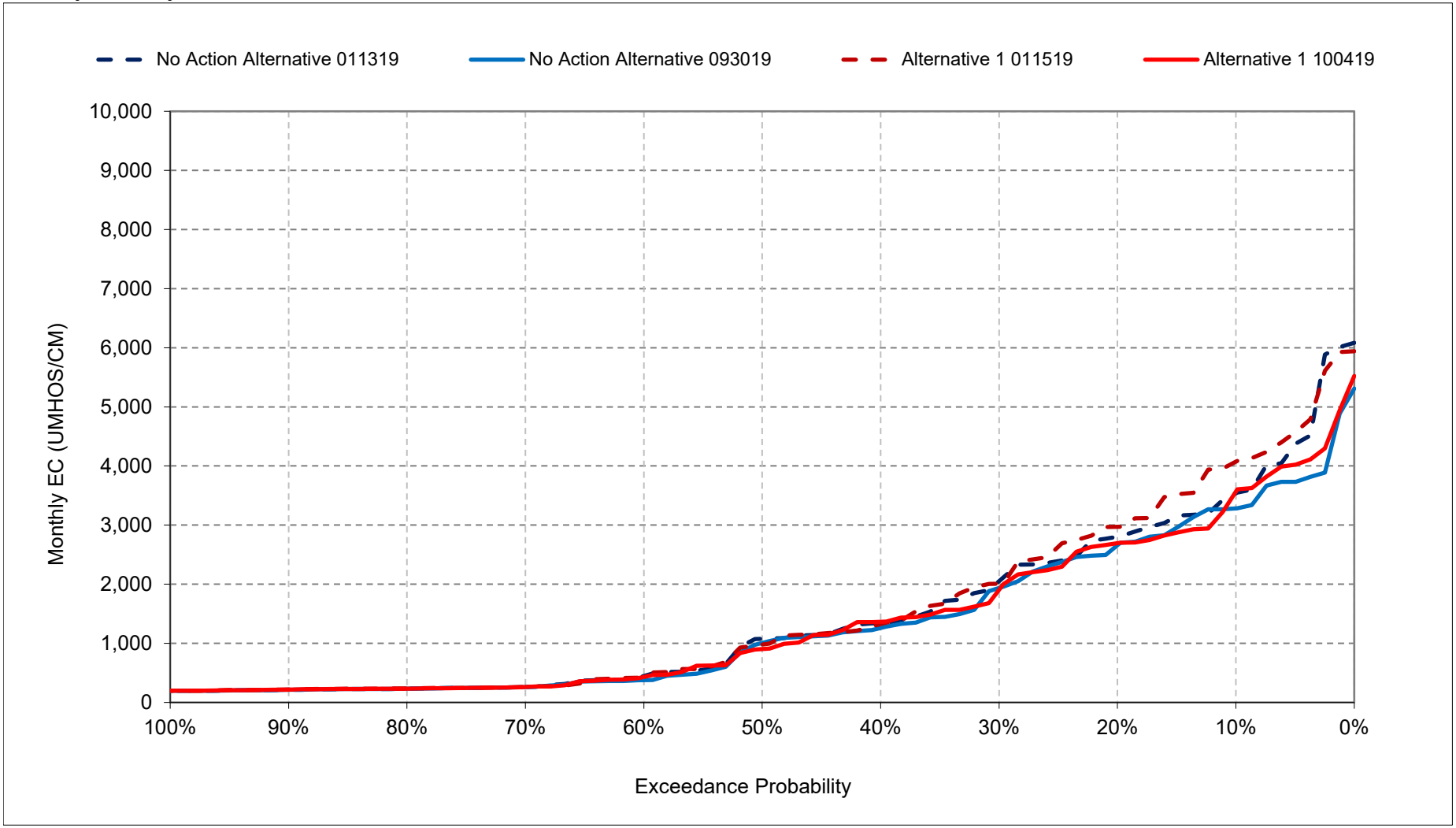



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

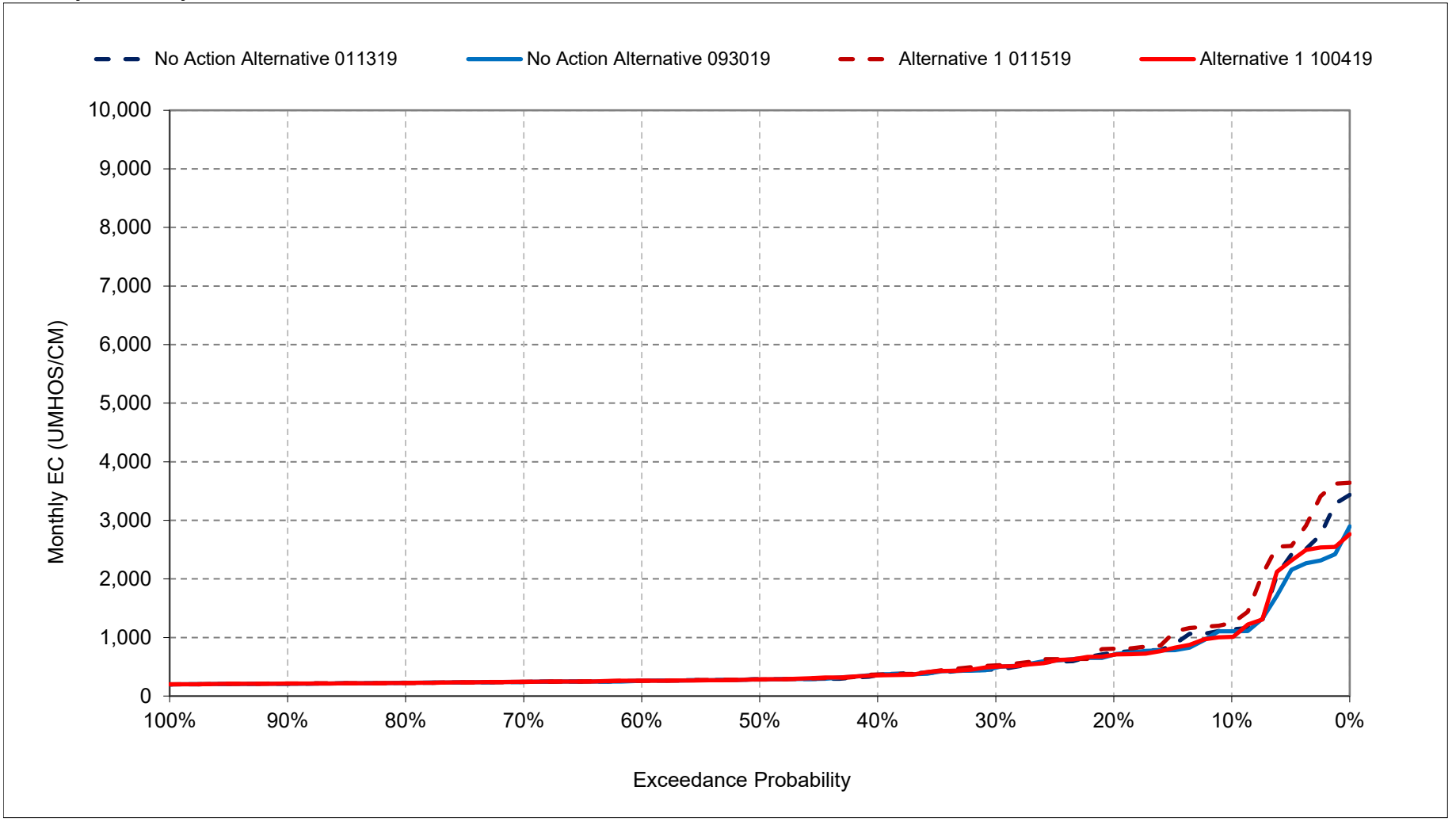
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-7. San Joaquin River at Antioch**
**Salinity, January EC**



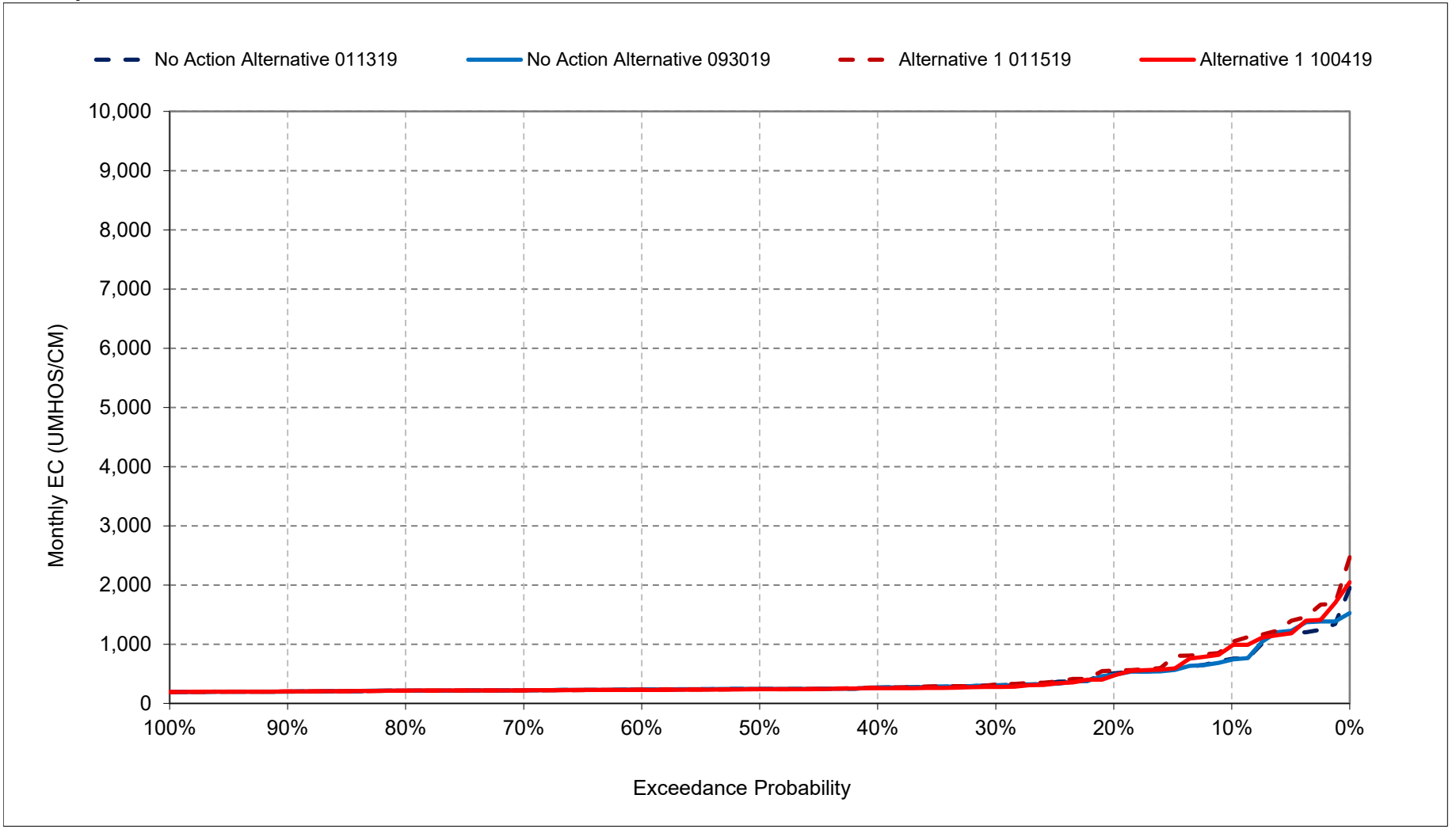

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-8. San Joaquin River at Antioch**
**Salinity, February EC**



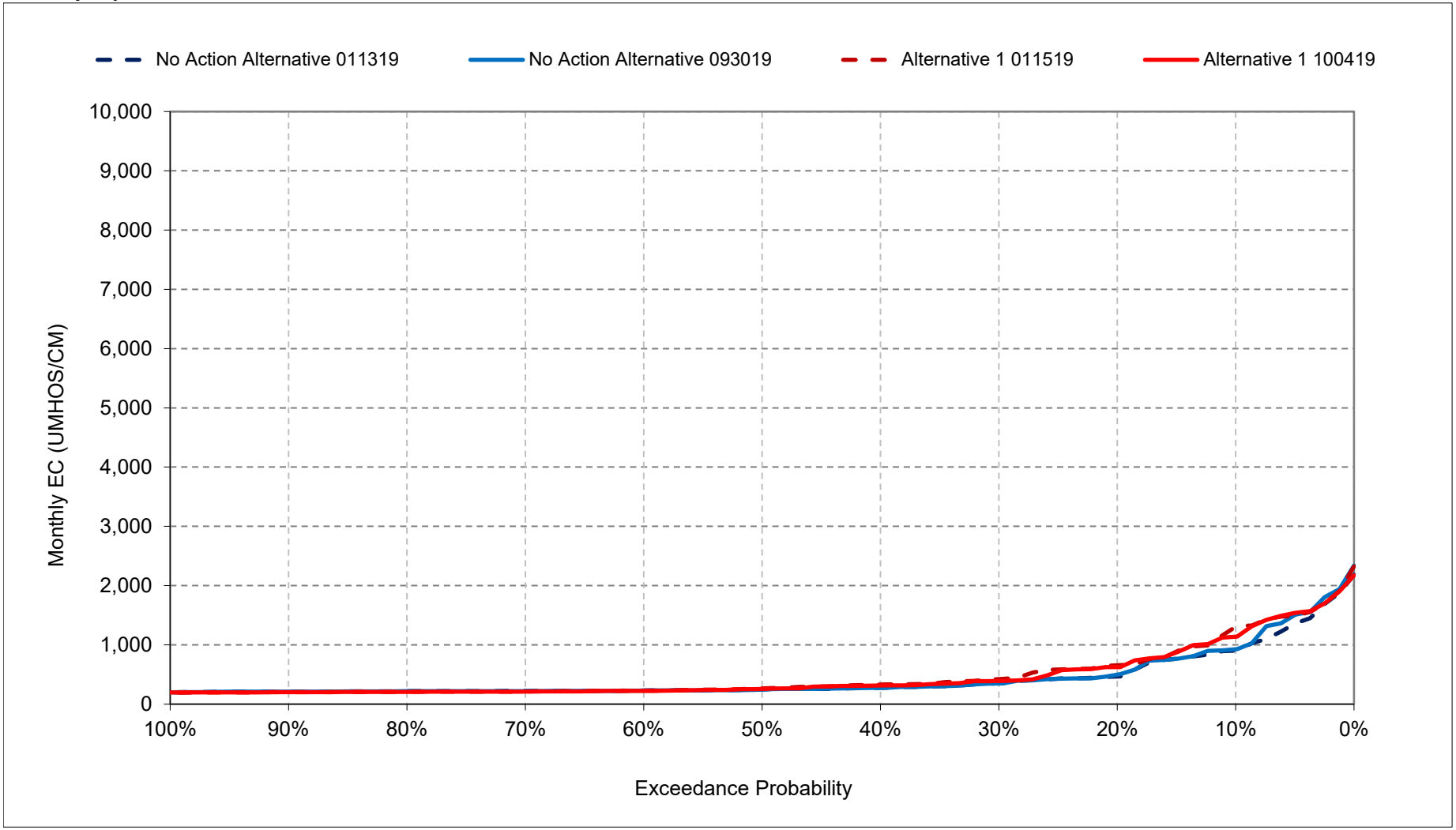

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-9. San Joaquin River at Antioch**
**Salinity, March EC**



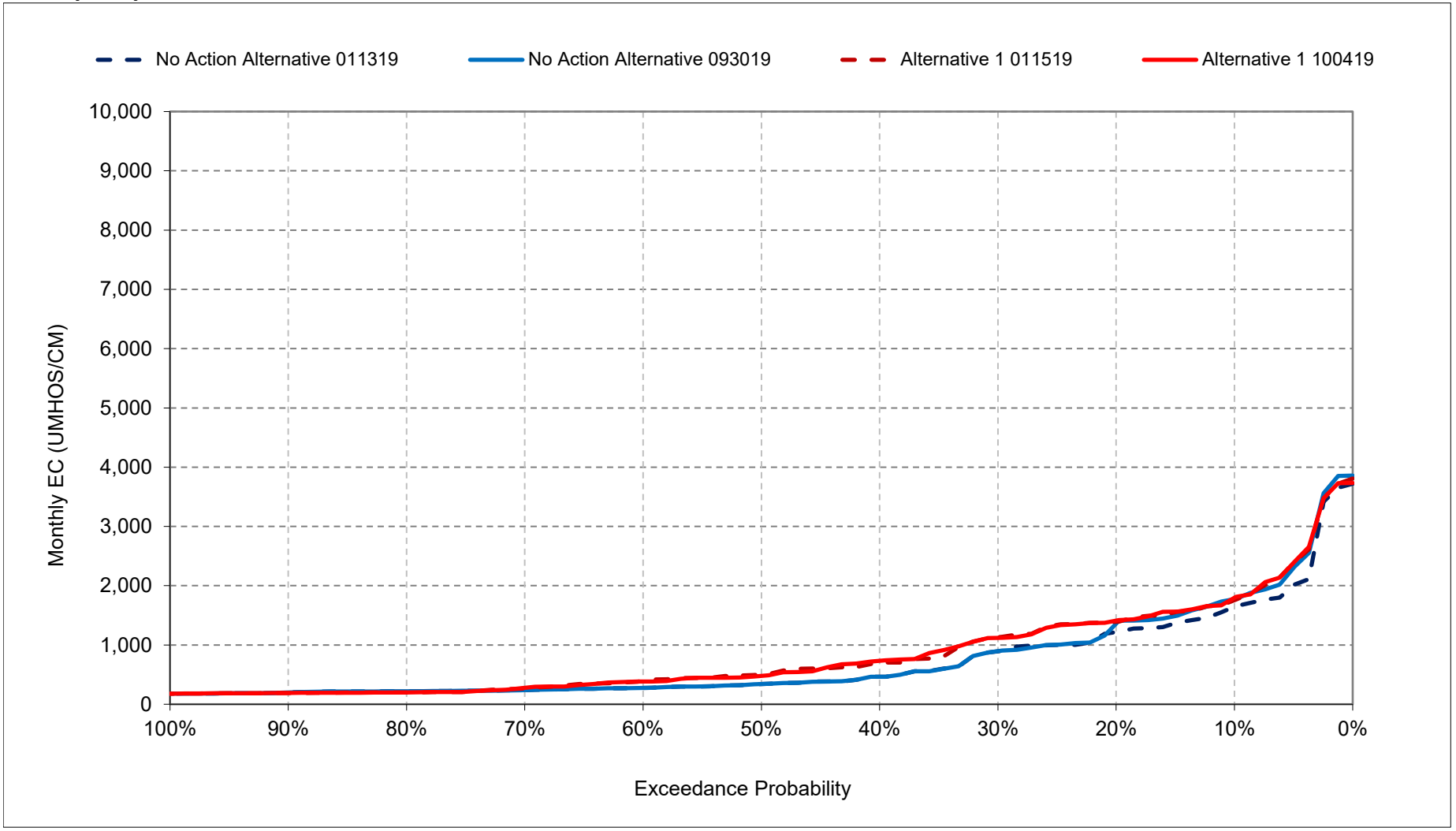

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-10. San Joaquin River at Antioch**
**Salinity, April EC**



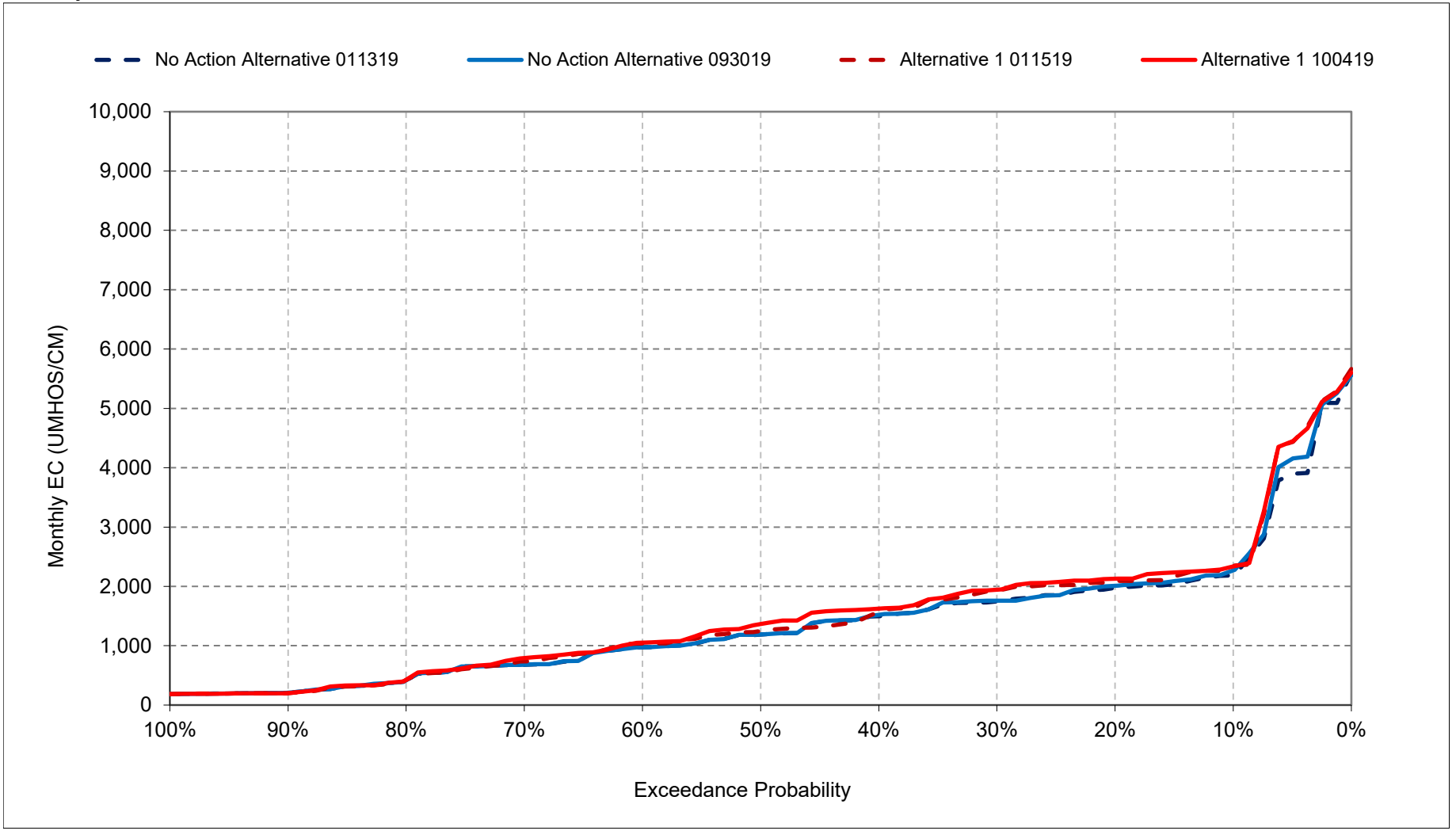

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-11. San Joaquin River at Antioch**
**Salinity, May EC**



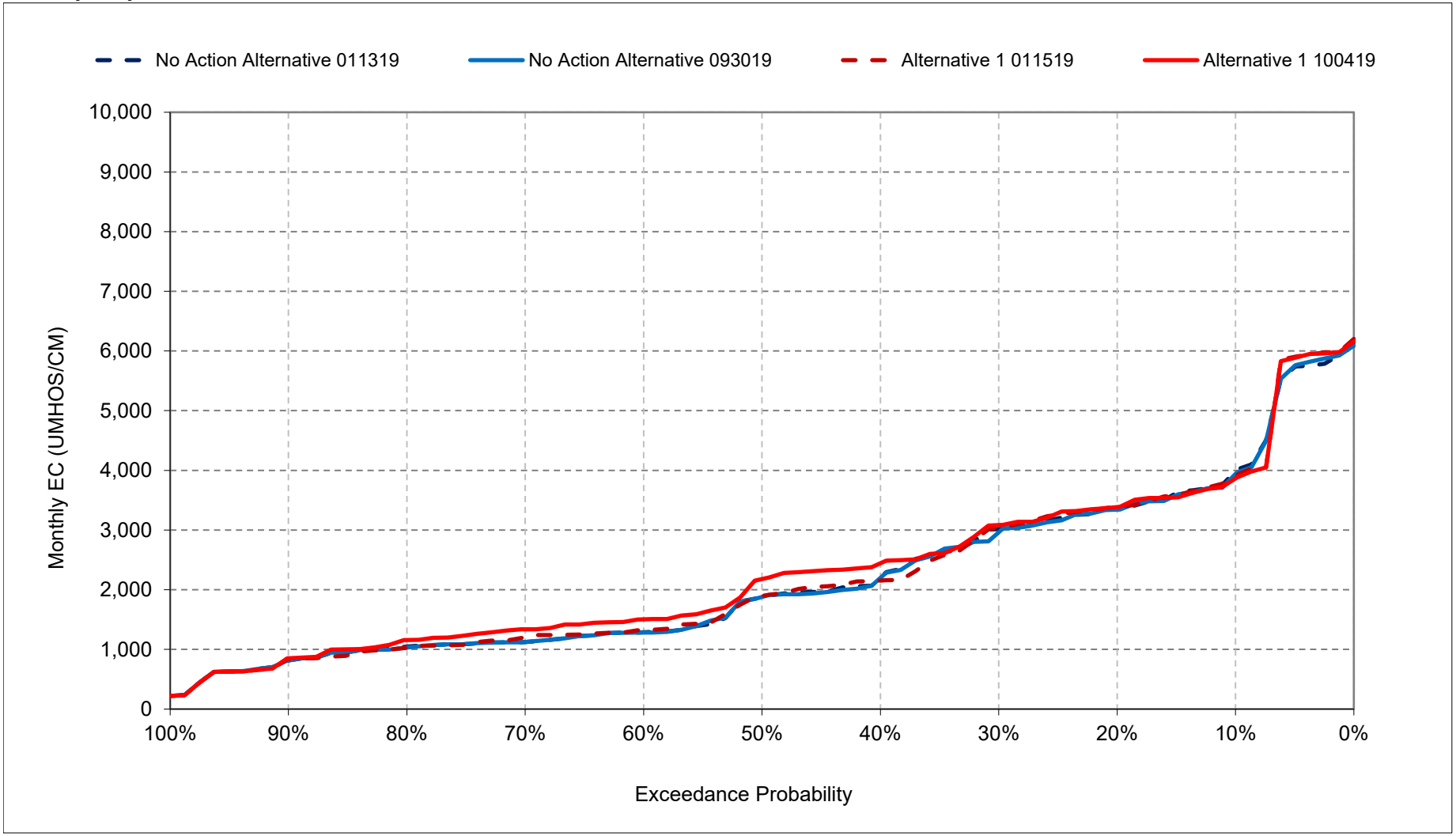

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-12. San Joaquin River at Antioch**
**Salinity, June EC**



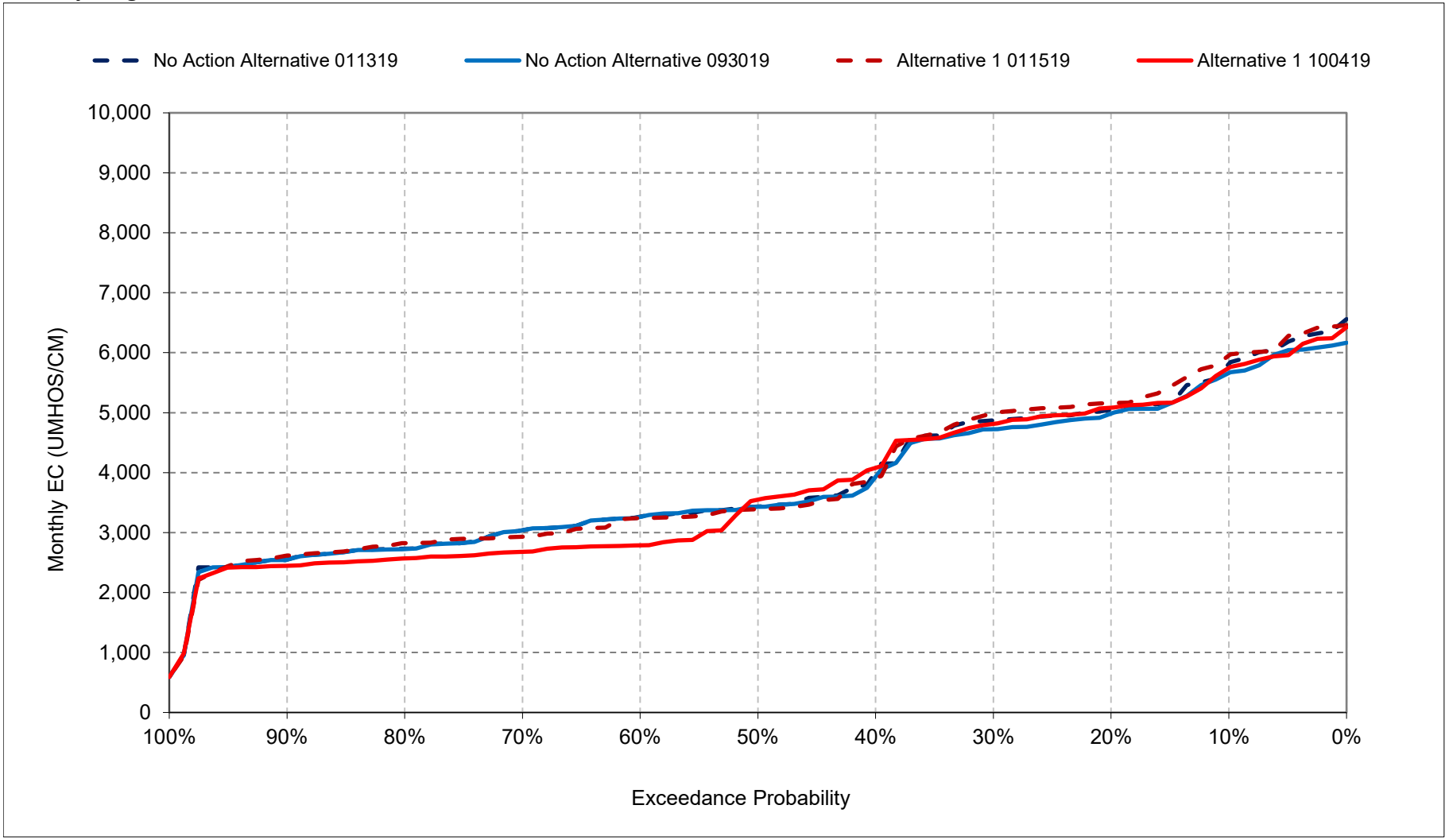

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-13. San Joaquin River at Antioch**
**Salinity, July EC**



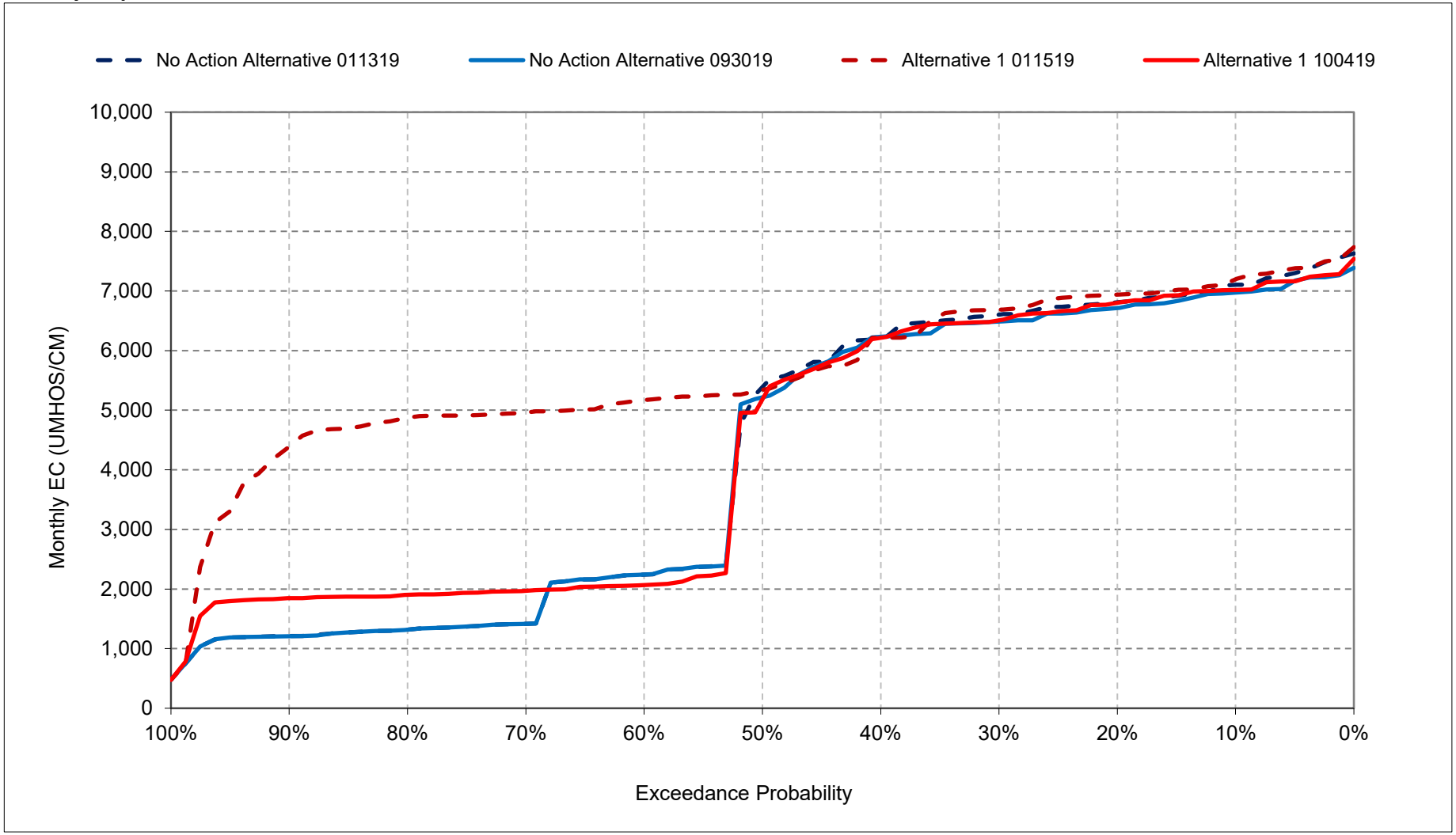

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-14. San Joaquin River at Antioch**
**Salinity, August EC**



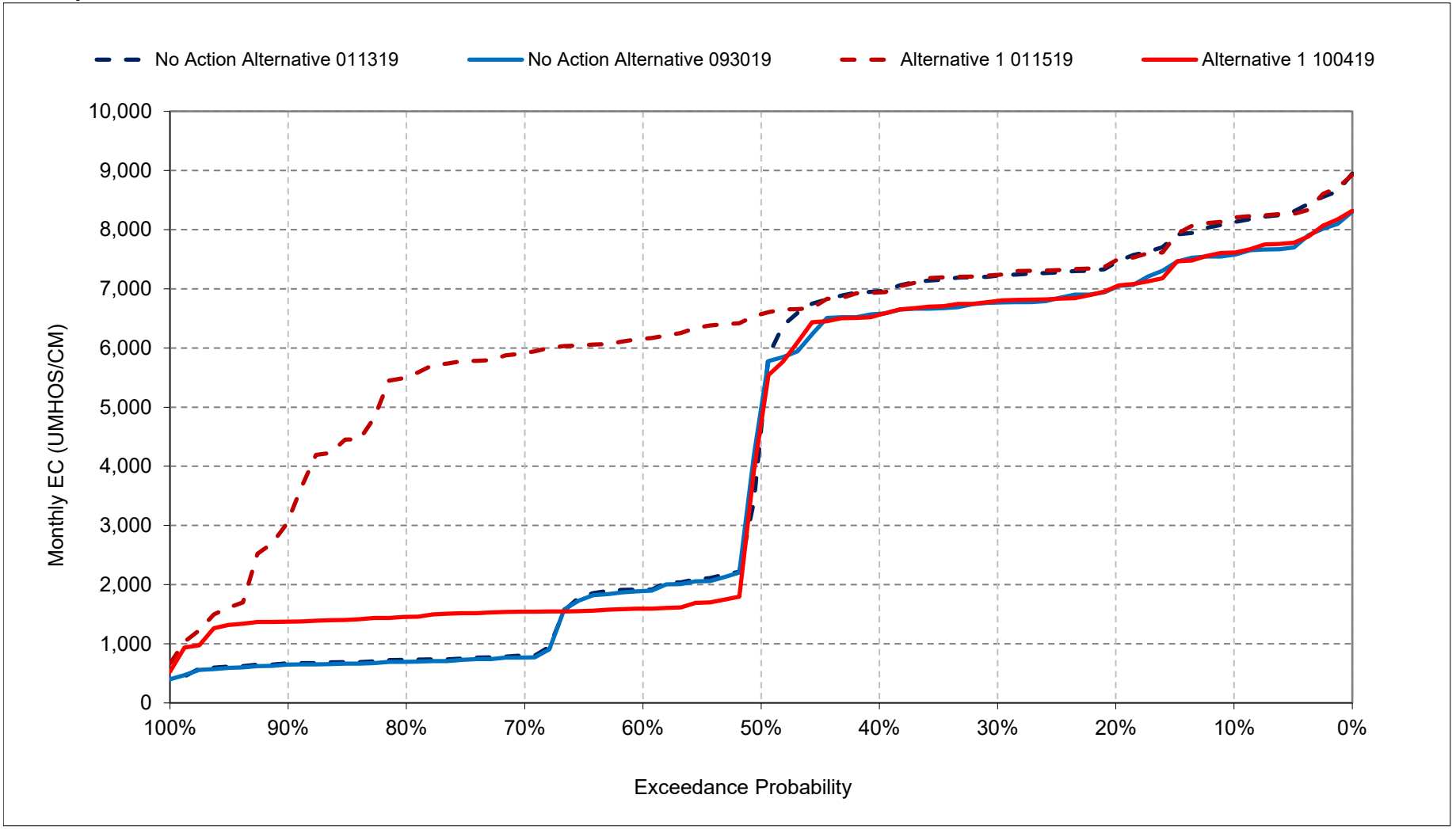

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-15. San Joaquin River at Antioch**
**Salinity, September EC**



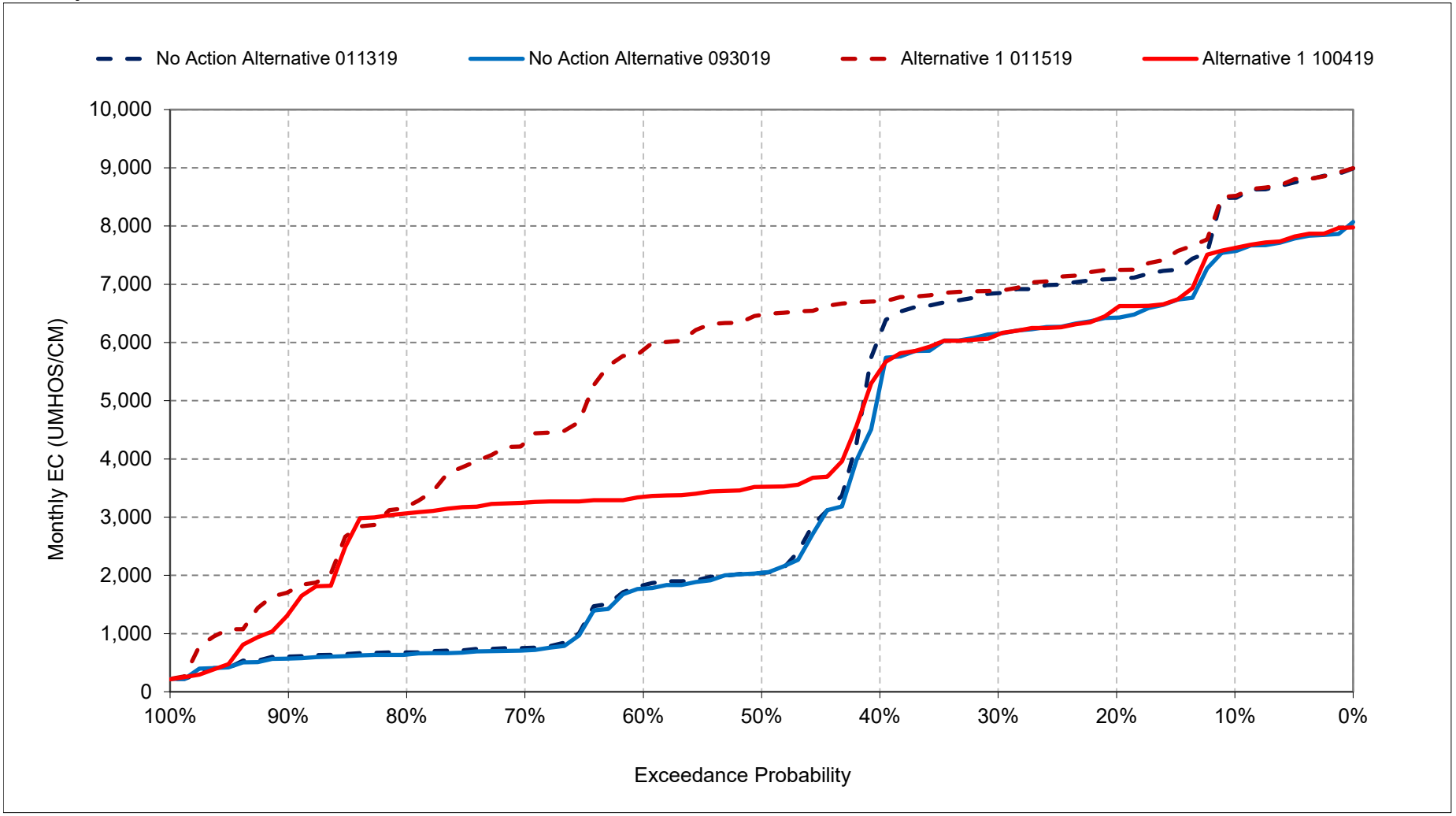

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-16. San Joaquin River at Antioch**
**Salinity, October EC**



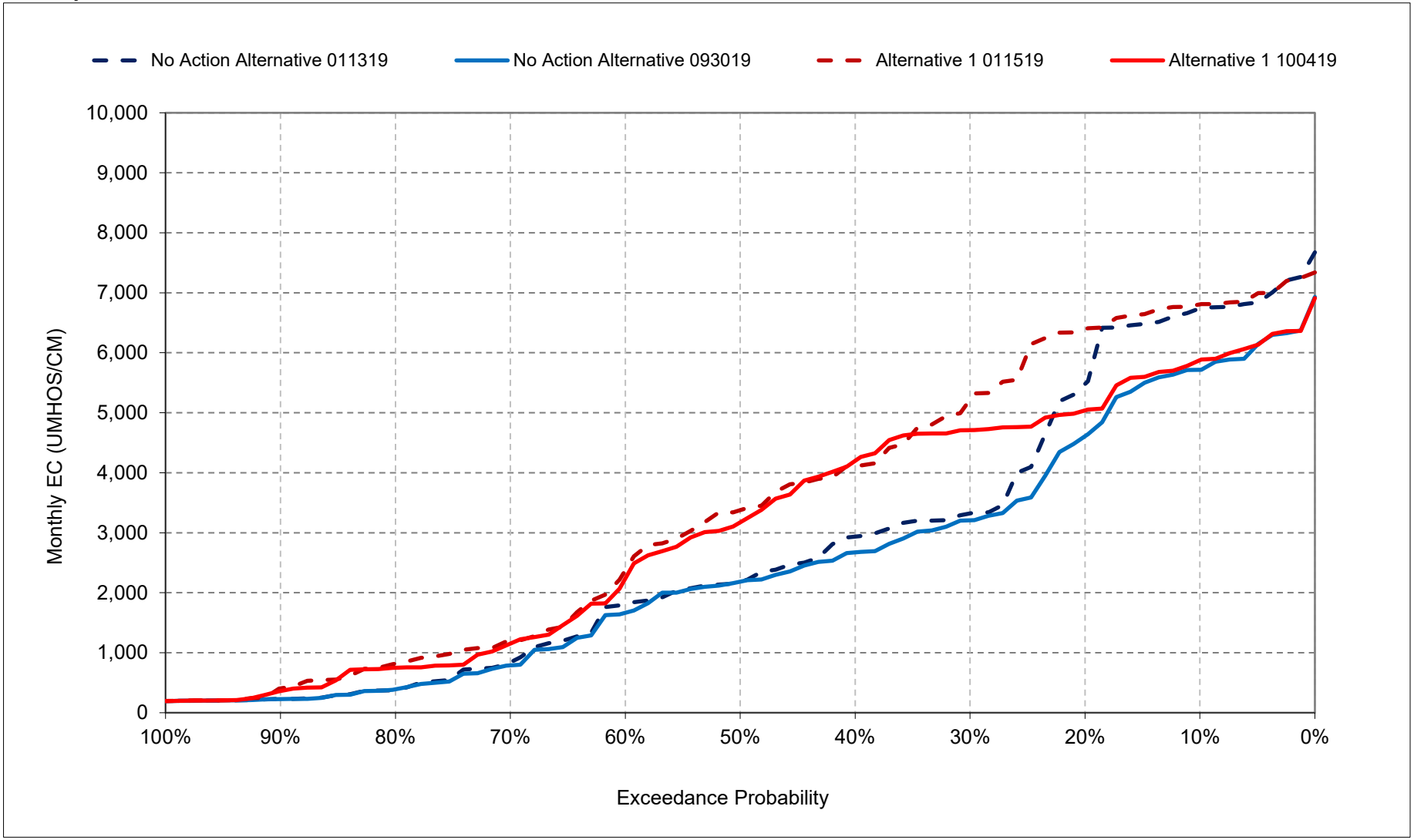

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-17. San Joaquin River at Antioch**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 9-18. San Joaquin River at Antioch**
**Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-1. Sacramento River at Mallard Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 15,173 | 15,607 | 13,402 | 8,674 | 3,845 | 3,203 | 4,090 | 5,729 | 7,301 | 9,811 | 12,233 | 13,569 |
| 20% | 14,118 | 13,796 | 11,717 | 7,375 | 2,503 | 2,299 | 2,316 | 4,804 | 6,486 | 8,500 | 11,031 | 12,899 |
| 30% | 13,976 | 13,602 | 8,362 | 5,953 | 1,301 | 1,041 | 1,682 | 3,949 | 6,007 | 7,871 | 10,812 | 12,806 |
| 40% | 13,642 | 12,455 | 7,403 | 3,581 | 731 | 820 | 998 | 2,263 | 5,353 | 6,414 | 9,291 | 12,033 |
| 50% | 10,566 | 6,114 | 6,175 | 2,517 | 470 | 475 | 687 | 1,670 | 4,449 | 5,727 | 8,256 | 10,945 |
| 60% | 6,270 | 5,817 | 5,551 | 1,306 | 277 | 295 | 399 | 1,057 | 3,993 | 4,537 | 7,973 | 5,885 |
| 70% | 3,157 | 3,125 | 2,438 | 323 | 217 | 213 | 288 | 740 | 3,079 | 4,153 | 7,585 | 3,228 |
| 80% | 3,056 | 2,808 | 840 | 216 | 201 | 198 | 212 | 319 | 1,900 | 3,875 | 7,177 | 2,999 |
| 90% | 2,900 | 2,690 | 317 | 194 | 192 | 192 | 195 | 195 | 527 | 3,235 | 6,787 | 2,933 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,158 | 8,217 | 6,363 | 3,679 | 1,491 | 1,148 | 1,458 | 2,470 | 4,542 | 6,134 | 9,004 | 8,537 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,982 | 2,667 | 3,581 | 770 | 244 | 274 | 315 | 590 | 2,028 | 3,444 | 7,118 | 2,974 |
| Above Normal (16%) | 6,039 | 5,530 | 5,449 | 1,722 | 510 | 345 | 450 | 1,079 | 3,801 | 4,349 | 7,277 | 5,880 |
| Below Normal (13%) | 12,324 | 11,196 | 7,654 | 4,537 | 1,742 | 1,536 | 1,737 | 2,725 | 5,084 | 5,988 | 8,499 | 11,498 |
| Dry (24%) | 13,795 | 11,226 | 6,904 | 5,807 | 2,193 | 1,331 | 1,749 | 3,284 | 5,560 | 8,128 | 10,770 | 12,738 |
| Critical (15%) | 15,289 | 15,405 | 11,295 | 7,767 | 3,854 | 3,250 | 4,282 | 6,459 | 8,600 | 10,709 | 12,480 | 13,749 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 15,214 | 15,650 | 13,410 | 9,793 | 4,500 | 4,018 | 4,806 | 5,816 | 7,264 | 9,491 | 12,378 | 13,687 |
| 20% | 14,191 | 13,902 | 12,830 | 7,953 | 2,542 | 2,425 | 3,067 | 5,084 | 6,582 | 8,613 | 11,208 | 13,050 |
| 30% | 13,998 | 13,644 | 11,186 | 5,930 | 1,549 | 1,084 | 2,089 | 4,500 | 6,156 | 8,126 | 10,909 | 12,916 |
| 40% | 13,487 | 13,107 | 9,493 | 3,588 | 849 | 834 | 1,553 | 3,031 | 5,463 | 6,411 | 9,078 | 11,901 |
| 50% | 12,696 | 12,825 | 8,320 | 2,402 | 437 | 478 | 936 | 2,382 | 4,846 | 5,730 | 8,241 | 10,892 |
| 60% | 12,309 | 11,877 | 6,188 | 1,265 | 239 | 282 | 563 | 1,802 | 4,310 | 4,632 | 7,888 | 10,477 |
| 70% | 11,926 | 10,011 | 2,757 | 311 | 214 | 208 | 322 | 1,086 | 3,224 | 4,277 | 7,516 | 10,311 |
| 80% | 11,404 | 8,156 | 1,358 | 212 | 200 | 198 | 209 | 376 | 1,987 | 3,886 | 7,255 | 10,145 |
| 90% | 8,281 | 4,304 | 468 | 196 | 192 | 192 | 191 | 199 | 520 | 3,213 | 6,987 | 9,560 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 12,217 | 11,079 | 7,324 | 3,761 | 1,599 | 1,252 | 1,704 | 2,916 | 4,697 | 6,174 | 9,030 | 11,219 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 9,728 | 8,763 | 5,664 | 694 | 234 | 270 | 430 | 888 | 2,123 | 3,487 | 7,058 | 9,216 |
| Above Normal (16%) | 11,573 | 10,860 | 7,287 | 1,725 | 467 | 351 | 645 | 1,605 | 3,896 | 4,405 | 7,352 | 10,335 |
| Below Normal (13%) | 12,186 | 11,432 | 7,619 | 4,690 | 1,870 | 1,628 | 2,069 | 3,418 | 5,394 | 5,972 | 8,415 | 11,281 |
| Dry (24%) | 14,029 | 11,409 | 6,935 | 6,106 | 2,337 | 1,429 | 2,065 | 3,746 | 5,701 | 8,127 | 10,881 | 12,810 |
| Critical (15%) | 15,314 | 15,457 | 11,336 | 7,850 | 4,303 | 3,717 | 4,676 | 6,884 | 8,829 | 10,843 | 12,598 | 13,811 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **42** | **43** | **8** | **1,118** | **655** | **815** | **716** | **87** | -37 | -321 | **145** | **117** |
| 20% | **72** | **107** | **1,114** | **577** | **39** | **126** | **752** | **280** | **96** | **113** | **177** | **151** |
| 30% | **22** | **42** | **2,824** | -23 | **248** | **43** | **407** | **551** | **149** | **255** | **98** | **110** |
| 40% | -155 | **652** | **2,090** | **8** | **118** | **14** | **554** | **768** | **110** | -3 | -214 | -132 |
| 50% | **2,130** | **6,712** | **2,145** | -116 | -32 | **2** | **250** | **713** | **397** | **3** | -15 | -52 |
| 60% | **6,039** | **6,060** | **637** | -40 | -37 | -13 | **164** | **745** | **317** | **95** | -85 | **4,592** |
| 70% | **8,769** | **6,886** | **319** | -12 | -3 | -4 | **34** | **345** | **145** | **124** | -69 | **7,083** |
| 80% | **8,348** | **5,348** | **518** | -3 | 0 | **0** | -2 | **57** | **88** | **11** | **78** | **7,147** |
| 90% | **5,382** | **1,614** | **151** | **2** | **1** | **0** | -4 | **4** | -7 | -23 | **200** | **6,627** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **3,058** | **2,862** | **961** | **82** | **108** | **104** | **247** | **446** | **155** | **40** | **26** | **2,683** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **6,746** | **6,096** | **2,083** | -76 | -10 | -4 | **114** | **298** | **95** | **43** | -60 | **6,242** |
| Above Normal (16%) | **5,534** | **5,330** | **1,838** | **3** | -43 | **6** | **196** | **527** | **96** | **56** | **76** | **4,455** |
| Below Normal (13%) | -138 | **235** | -35 | **152** | **128** | **91** | **332** | **693** | **310** | -16 | -84 | -217 |
| Dry (24%) | **234** | **184** | **31** | **298** | **144** | **98** | **316** | **462** | **141** | 0 | **111** | **72** |
| Critical (15%) | **24** | **52** | **41** | **83** | **449** | **467** | **394** | **426** | **229** | **134** | **118** | **62** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-2. Sacramento River at Mallard Slough Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,671 | 14,734 | 12,375 | 8,402 | 3,553 | 3,153 | 4,107 | 6,114 | 7,182 | 9,762 | 12,069 | 13,448 |
| 20% | 13,689 | 13,054 | 10,780 | 7,223 | 2,590 | 2,299 | 2,475 | 5,124 | 6,497 | 8,520 | 10,928 | 12,849 |
| 30% | 13,514 | 12,799 | 8,033 | 5,696 | 1,422 | 1,032 | 1,688 | 3,960 | 5,965 | 7,900 | 10,730 | 12,669 |
| 40% | 13,301 | 11,441 | 7,097 | 3,319 | 706 | 824 | 1,003 | 2,263 | 5,355 | 6,427 | 9,184 | 11,959 |
| 50% | 11,179 | 6,080 | 6,153 | 2,190 | 466 | 475 | 687 | 1,669 | 4,455 | 5,720 | 8,303 | 10,767 |
| 60% | 6,223 | 5,733 | 5,112 | 1,211 | 276 | 295 | 399 | 1,060 | 3,988 | 4,536 | 7,981 | 5,888 |
| 70% | 2,994 | 2,939 | 2,433 | 329 | 217 | 213 | 288 | 741 | 3,077 | 4,152 | 7,584 | 3,223 |
| 80% | 2,903 | 2,704 | 842 | 217 | 201 | 198 | 212 | 320 | 1,910 | 3,849 | 7,176 | 2,999 |
| 90% | 2,766 | 2,532 | 318 | 194 | 192 | 192 | 195 | 195 | 527 | 3,235 | 6,785 | 2,934 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,899 | 7,817 | 5,992 | 3,468 | 1,401 | 1,157 | 1,502 | 2,563 | 4,546 | 6,129 | 8,952 | 8,478 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 2,837 | 2,509 | 3,554 | 754 | 244 | 274 | 315 | 590 | 2,030 | 3,433 | 7,109 | 2,973 |
| Above Normal (16%) | 5,994 | 5,477 | 5,406 | 1,680 | 503 | 348 | 450 | 1,079 | 3,802 | 4,347 | 7,275 | 5,887 |
| Below Normal (13%) | 11,940 | 10,495 | 7,039 | 4,395 | 1,712 | 1,538 | 1,756 | 2,735 | 5,103 | 5,988 | 8,473 | 11,459 |
| Dry (24%) | 13,447 | 10,666 | 6,407 | 5,498 | 2,156 | 1,374 | 1,782 | 3,398 | 5,566 | 8,137 | 10,685 | 12,632 |
| Critical (15%) | 14,810 | 14,650 | 10,257 | 7,053 | 3,338 | 3,236 | 4,511 | 6,895 | 8,594 | 10,683 | 12,312 | 13,559 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,680 | 14,750 | 12,439 | 8,904 | 3,918 | 3,733 | 4,573 | 5,823 | 7,295 | 9,528 | 12,210 | 13,501 |
| 20% | 13,720 | 13,114 | 10,753 | 7,335 | 2,453 | 2,175 | 2,998 | 5,004 | 6,872 | 8,669 | 11,007 | 12,980 |
| 30% | 13,527 | 12,855 | 10,267 | 5,265 | 1,324 | 871 | 1,783 | 4,429 | 6,297 | 8,039 | 10,853 | 12,772 |
| 40% | 13,161 | 11,810 | 9,861 | 3,455 | 833 | 688 | 1,419 | 3,309 | 5,689 | 6,886 | 9,232 | 11,996 |
| 50% | 10,760 | 8,588 | 8,072 | 2,329 | 460 | 413 | 923 | 2,207 | 5,196 | 6,492 | 8,286 | 10,655 |
| 60% | 5,738 | 8,391 | 6,131 | 1,246 | 251 | 254 | 498 | 1,791 | 4,312 | 5,158 | 7,380 | 6,529 |
| 70% | 5,637 | 8,191 | 2,716 | 323 | 214 | 209 | 355 | 1,126 | 3,373 | 4,792 | 7,154 | 6,265 |
| 80% | 5,542 | 8,021 | 1,339 | 216 | 201 | 197 | 209 | 386 | 2,016 | 4,353 | 7,028 | 6,085 |
| 90% | 5,366 | 3,448 | 439 | 195 | 192 | 192 | 191 | 203 | 548 | 3,256 | 6,726 | 5,896 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,611 | 9,607 | 6,872 | 3,461 | 1,421 | 1,163 | 1,653 | 2,920 | 4,823 | 6,439 | 8,892 | 9,476 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 5,340 | 6,796 | 5,565 | 836 | 243 | 253 | 396 | 905 | 2,258 | 3,715 | 6,744 | 5,943 |
| Above Normal (16%) | 5,587 | 7,587 | 6,795 | 1,685 | 456 | 308 | 618 | 1,656 | 4,105 | 4,917 | 7,155 | 6,104 |
| Below Normal (13%) | 11,837 | 10,884 | 7,056 | 4,486 | 1,728 | 1,483 | 2,025 | 3,469 | 5,756 | 6,752 | 8,716 | 11,384 |
| Dry (24%) | 13,423 | 10,802 | 6,505 | 5,448 | 2,051 | 1,258 | 1,927 | 3,651 | 5,696 | 8,144 | 10,781 | 12,717 |
| Critical (15%) | 14,830 | 14,722 | 10,234 | 6,822 | 3,688 | 3,605 | 4,698 | 6,934 | 8,847 | 10,865 | 12,437 | 13,631 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **9** | **16** | **64** | **502** | **365** | **579** | **465** | -291 | **113** | -233 | **140** | **52** |
| 20% | **31** | **60** | -27 | **112** | -138 | -124 | **522** | -120 | **375** | **149** | **79** | **130** |
| 30% | **13** | **55** | **2,235** | -431 | -99 | -161 | **95** | **469** | **333** | **140** | **123** | **103** |
| 40% | -140 | **369** | **2,764** | **137** | **127** | -135 | **417** | **1,046** | **334** | **459** | **48** | **37** |
| 50% | -419 | **2,509** | **1,918** | **140** | -6 | -62 | **236** | **537** | **742** | **772** | -17 | -112 |
| 60% | -485 | **2,659** | **1,019** | **36** | -25 | -42 | **99** | **731** | **324** | **622** | -601 | **641** |
| 70% | **2,643** | **5,252** | **283** | -6 | -2 | -4 | **68** | **385** | **296** | **640** | -431 | **3,042** |
| 80% | **2,638** | **5,317** | **497** | -1 | **0** | -1 | -3 | **66** | **105** | **504** | -148 | **3,086** |
| 90% | **2,601** | **916** | **121** | **1** | **0** | 0 | -4 | **7** | **21** | **21** | -59 | **2,962** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **712** | **1,790** | **881** | -7 | **20** | **5** | **151** | **357** | **276** | **310** | -60 | **997** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | **2,502** | **4,287** | **2,011** | **82** | -1 | -21 | **81** | **315** | **227** | **282** | -364 | **2,970** |
| Above Normal (16%) | -407 | **2,110** | **1,389** | **5** | -47 | -39 | **169** | **576** | **303** | **569** | -120 | **217** |
| Below Normal (13%) | -102 | **389** | **17** | **91** | **16** | -55 | **269** | **734** | **654** | **764** | **243** | -75 |
| Dry (24%) | -25 | **136** | **98** | -50 | -105 | -116 | **145** | **252** | **129** | **7** | **96** | **85** |
| Critical (15%) | **20** | **72** | -23 | -231 | **350** | **370** | **187** | **39** | **253** | **182** | **125** | **72** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-3. Sacramento River at Mallard Slough Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 15,173 | 15,607 | 13,402 | 8,674 | 3,845 | 3,203 | 4,090 | 5,729 | 7,301 | 9,811 | 12,233 | 13,569 |
| 20% | 14,118 | 13,796 | 11,717 | 7,375 | 2,503 | 2,299 | 2,316 | 4,804 | 6,486 | 8,500 | 11,031 | 12,899 |
| 30% | 13,976 | 13,602 | 8,362 | 5,953 | 1,301 | 1,041 | 1,682 | 3,949 | 6,007 | 7,871 | 10,812 | 12,806 |
| 40% | 13,642 | 12,455 | 7,403 | 3,581 | 731 | 820 | 998 | 2,263 | 5,353 | 6,414 | 9,291 | 12,033 |
| 50% | 10,566 | 6,114 | 6,175 | 2,517 | 470 | 475 | 687 | 1,670 | 4,449 | 5,727 | 8,256 | 10,945 |
| 60% | 6,270 | 5,817 | 5,551 | 1,306 | 277 | 295 | 399 | 1,057 | 3,993 | 4,537 | 7,973 | 5,885 |
| 70% | 3,157 | 3,125 | 2,438 | 323 | 217 | 213 | 288 | 740 | 3,079 | 4,153 | 7,585 | 3,228 |
| 80% | 3,056 | 2,808 | 840 | 216 | 201 | 198 | 212 | 319 | 1,900 | 3,875 | 7,177 | 2,999 |
| 90% | 2,900 | 2,690 | 317 | 194 | 192 | 192 | 195 | 195 | 527 | 3,235 | 6,787 | 2,933 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,158 | 8,217 | 6,363 | 3,679 | 1,491 | 1,148 | 1,458 | 2,470 | 4,542 | 6,134 | 9,004 | 8,537 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,982 | 2,667 | 3,581 | 770 | 244 | 274 | 315 | 590 | 2,028 | 3,444 | 7,118 | 2,974 |
| Above Normal (16%) | 6,039 | 5,530 | 5,449 | 1,722 | 510 | 345 | 450 | 1,079 | 3,801 | 4,349 | 7,277 | 5,880 |
| Below Normal (13%) | 12,324 | 11,196 | 7,654 | 4,537 | 1,742 | 1,536 | 1,737 | 2,725 | 5,084 | 5,988 | 8,499 | 11,498 |
| Dry (24%) | 13,795 | 11,226 | 6,904 | 5,807 | 2,193 | 1,331 | 1,749 | 3,284 | 5,560 | 8,128 | 10,770 | 12,738 |
| Critical (15%) | 15,289 | 15,405 | 11,295 | 7,767 | 3,854 | 3,250 | 4,282 | 6,459 | 8,600 | 10,709 | 12,480 | 13,749 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,671 | 14,734 | 12,375 | 8,402 | 3,553 | 3,153 | 4,107 | 6,114 | 7,182 | 9,762 | 12,069 | 13,448 |
| 20% | 13,689 | 13,054 | 10,780 | 7,223 | 2,590 | 2,299 | 2,475 | 5,124 | 6,497 | 8,520 | 10,928 | 12,849 |
| 30% | 13,514 | 12,799 | 8,033 | 5,696 | 1,422 | 1,032 | 1,688 | 3,960 | 5,965 | 7,900 | 10,730 | 12,669 |
| 40% | 13,301 | 11,441 | 7,097 | 3,319 | 706 | 824 | 1,003 | 2,263 | 5,355 | 6,427 | 9,184 | 11,959 |
| 50% | 11,179 | 6,080 | 6,153 | 2,190 | 466 | 475 | 687 | 1,669 | 4,455 | 5,720 | 8,303 | 10,767 |
| 60% | 6,223 | 5,733 | 5,112 | 1,211 | 276 | 295 | 399 | 1,060 | 3,988 | 4,536 | 7,981 | 5,888 |
| 70% | 2,994 | 2,939 | 2,433 | 329 | 217 | 213 | 288 | 741 | 3,077 | 4,152 | 7,584 | 3,223 |
| 80% | 2,903 | 2,704 | 842 | 217 | 201 | 198 | 212 | 320 | 1,910 | 3,849 | 7,176 | 2,999 |
| 90% | 2,766 | 2,532 | 318 | 194 | 192 | 192 | 195 | 195 | 527 | 3,235 | 6,785 | 2,934 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,899 | 7,817 | 5,992 | 3,468 | 1,401 | 1,157 | 1,502 | 2,563 | 4,546 | 6,129 | 8,952 | 8,478 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,837 | 2,509 | 3,554 | 754 | 244 | 274 | 315 | 590 | 2,030 | 3,433 | 7,109 | 2,973 |
| Above Normal (16%) | 5,994 | 5,477 | 5,406 | 1,680 | 503 | 348 | 450 | 1,079 | 3,802 | 4,347 | 7,275 | 5,887 |
| Below Normal (13%) | 11,940 | 10,495 | 7,039 | 4,395 | 1,712 | 1,538 | 1,756 | 2,735 | 5,103 | 5,988 | 8,473 | 11,459 |
| Dry (24%) | 13,447 | 10,666 | 6,407 | 5,498 | 2,156 | 1,374 | 1,782 | 3,398 | 5,566 | 8,137 | 10,685 | 12,632 |
| Critical (15%) | 14,810 | 14,650 | 10,257 | 7,053 | 3,338 | 3,236 | 4,511 | 6,895 | 8,594 | 10,683 | 12,312 | 13,559 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -501 | -873 | -1,027 | -272 | -292 | -50 | 17 | 385 | -120 | -50 | -164 | -121 |
| 20% | -430 | -742 | -937 | -152 | 87 | 0 | 159 | 320 | 11 | 20 | -103 | -50 |
| 30% | -462 | -803 | -329 | -257 | 121 | -9 | 6 | 11 | -42 | 29 | -81 | -137 |
| 40% | -341 | -1,014 | -306 | -262 | -24 | 4 | 5 | 0 | 1 | 13 | -107 | -74 |
| 50% | 613 | -34 | -21 | -328 | -4 | -1 | 0 | 0 | 6 | -6 | 47 | -178 |
| 60% | -47 | -84 | -439 | -95 | -1 | 0 | 0 | 3 | -5 | -1 | 8 | 3 |
| 70% | -163 | -186 | -5 | 6 | 0 | 0 | 0 | 1 | -2 | -1 | 0 | -5 |
| 80% | -152 | -104 | 2 | 1 | 0 | 0 | 0 | 1 | 11 | -26 | -1 | 1 |
| 90% | -134 | -158 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -259 | -400 | -371 | -211 | -90 | 9 | 44 | 93 | 4 | -5 | -52 | -58 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -145 | -158 | -27 | -16 | 0 | 0 | 0 | 0 | 2 | -11 | -10 | -1 |
| Above Normal (16%) | -45 | -53 | -43 | -42 | -7 | 2 | 0 | 1 | 2 | -2 | -2 | 7 |
| Below Normal (13%) | -384 | -702 | -615 | -142 | -29 | 2 | 20 | 11 | 19 | 0 | -26 | -39 |
| Dry (24%) | -348 | -560 | -497 | -310 | -36 | 43 | 33 | 114 | 7 | 9 | -85 | -107 |
| Critical (15%) | -479 | -755 | -1,038 | -714 | -517 | -14 | 229 | 436 | -6 | -26 | -168 | -190 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 10-4. Sacramento River at Mallard Slough Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,214 | 15,650 | 13,410 | 9,793 | 4,500 | 4,018 | 4,806 | 5,816 | 7,264 | 9,491 | 12,378 | 13,687 |
| 20% | 14,191 | 13,902 | 12,830 | 7,953 | 2,542 | 2,425 | 3,067 | 5,084 | 6,582 | 8,613 | 11,208 | 13,050 |
| 30% | 13,998 | 13,644 | 11,186 | 5,930 | 1,549 | 1,084 | 2,089 | 4,500 | 6,156 | 8,126 | 10,909 | 12,916 |
| 40% | 13,487 | 13,107 | 9,493 | 3,588 | 849 | 834 | 1,553 | 3,031 | 5,463 | 6,411 | 9,078 | 11,901 |
| 50% | 12,696 | 12,825 | 8,320 | 2,402 | 437 | 478 | 936 | 2,382 | 4,846 | 5,730 | 8,241 | 10,892 |
| 60% | 12,309 | 11,877 | 6,188 | 1,265 | 239 | 282 | 563 | 1,802 | 4,310 | 4,632 | 7,888 | 10,477 |
| 70% | 11,926 | 10,011 | 2,757 | 311 | 214 | 208 | 322 | 1,086 | 3,224 | 4,277 | 7,516 | 10,311 |
| 80% | 11,404 | 8,156 | 1,358 | 212 | 200 | 198 | 209 | 376 | 1,987 | 3,886 | 7,255 | 10,145 |
| 90% | 8,281 | 4,304 | 468 | 196 | 192 | 192 | 191 | 199 | 520 | 3,213 | 6,987 | 9,560 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 12,217 | 11,079 | 7,324 | 3,761 | 1,599 | 1,252 | 1,704 | 2,916 | 4,697 | 6,174 | 9,030 | 11,219 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 9,728 | 8,763 | 5,664 | 694 | 234 | 270 | 430 | 888 | 2,123 | 3,487 | 7,058 | 9,216 |
| Above Normal (16%) | 11,573 | 10,860 | 7,287 | 1,725 | 467 | 351 | 645 | 1,605 | 3,896 | 4,405 | 7,352 | 10,335 |
| Below Normal (13%) | 12,186 | 11,432 | 7,619 | 4,690 | 1,870 | 1,628 | 2,069 | 3,418 | 5,394 | 5,972 | 8,415 | 11,281 |
| Dry (24%) | 14,029 | 11,409 | 6,935 | 6,106 | 2,337 | 1,429 | 2,065 | 3,746 | 5,701 | 8,127 | 10,881 | 12,810 |
| Critical (15%) | 15,314 | 15,457 | 11,336 | 7,850 | 4,303 | 3,717 | 4,676 | 6,884 | 8,829 | 10,843 | 12,598 | 13,811 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,680 | 14,750 | 12,439 | 8,904 | 3,918 | 3,733 | 4,573 | 5,823 | 7,295 | 9,528 | 12,210 | 13,501 |
| 20% | 13,720 | 13,114 | 10,753 | 7,335 | 2,453 | 2,175 | 2,998 | 5,004 | 6,872 | 8,669 | 11,007 | 12,980 |
| 30% | 13,527 | 12,855 | 10,267 | 5,265 | 1,324 | 871 | 1,783 | 4,429 | 6,297 | 8,039 | 10,853 | 12,772 |
| 40% | 13,161 | 11,810 | 9,861 | 3,455 | 833 | 688 | 1,419 | 3,309 | 5,689 | 6,886 | 9,232 | 11,996 |
| 50% | 10,760 | 8,588 | 8,072 | 2,329 | 460 | 413 | 923 | 2,207 | 5,196 | 6,492 | 8,286 | 10,655 |
| 60% | 5,738 | 8,391 | 6,131 | 1,246 | 251 | 254 | 498 | 1,791 | 4,312 | 5,158 | 7,380 | 6,529 |
| 70% | 5,637 | 8,191 | 2,716 | 323 | 214 | 209 | 355 | 1,126 | 3,373 | 4,792 | 7,154 | 6,265 |
| 80% | 5,542 | 8,021 | 1,339 | 216 | 201 | 197 | 209 | 386 | 2,016 | 4,353 | 7,028 | 6,085 |
| 90% | 5,366 | 3,448 | 439 | 195 | 192 | 192 | 191 | 203 | 548 | 3,256 | 6,726 | 5,896 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,611 | 9,607 | 6,872 | 3,461 | 1,421 | 1,163 | 1,653 | 2,920 | 4,823 | 6,439 | 8,892 | 9,476 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 5,340 | 6,796 | 5,565 | 836 | 243 | 253 | 396 | 905 | 2,258 | 3,715 | 6,744 | 5,943 |
| Above Normal (16%) | 5,587 | 7,587 | 6,795 | 1,685 | 456 | 308 | 618 | 1,656 | 4,105 | 4,917 | 7,155 | 6,104 |
| Below Normal (13%) | 11,837 | 10,884 | 7,056 | 4,486 | 1,728 | 1,483 | 2,025 | 3,469 | 5,756 | 6,752 | 8,716 | 11,384 |
| Dry (24%) | 13,423 | 10,802 | 6,505 | 5,448 | 2,051 | 1,258 | 1,927 | 3,651 | 5,696 | 8,144 | 10,781 | 12,717 |
| Critical (15%) | 14,830 | 14,722 | 10,234 | 6,822 | 3,688 | 3,605 | 4,698 | 6,934 | 8,847 | 10,865 | 12,437 | 13,631 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -534 | -900 | -971 | -888 | -582 | -286 | -233 | 7 | 31 | 38 | -168 | -186 |
| 20% | -471 | -789 | -2,078 | -617 | -90 | -250 | -70 | -81 | 290 | 56 | -201 | -70 |
| 30% | -471 | -789 | -918 | -665 | -226 | -213 | -306 | -71 | 141 | -86 | -56 | -144 |
| 40% | -326 | -1,297 | 368 | -133 | -16 | -146 | -133 | 277 | 226 | 475 | 155 | 95 |
| 50% | -1,936 | -4,237 | -248 | -72 | 22 | -65 | -13 | -176 | 351 | 762 | 45 | -237 |
| 60% | -6,571 | -3,486 | -57 | -19 | 11 | -29 | -65 | -11 | 2 | 526 | -508 | -3,948 |
| 70% | -6,289 | -1,820 | -41 | 11 | 0 | 0 | 33 | 40 | 149 | 515 | -362 | -4,046 |
| 80% | -5,862 | -135 | -19 | 4 | 1 | -1 | 0 | 9 | 28 | 467 | -227 | -4,060 |
| 90% | -2,915 | -856 | -29 | -1 | 0 | 0 | 0 | 3 | 28 | 44 | -261 | -3,664 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2,606 | -1,472 | -451 | -300 | -178 | -90 | -51 | 4 | 126 | 265 | -138 | -1,744 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -4,388 | -1,967 | -99 | 142 | 9 | -17 | -34 | 17 | 134 | 227 | -313 | -3,273 |
| Above Normal (16%) | -5,986 | -3,273 | -492 | -40 | -11 | -43 | -27 | 50 | 209 | 512 | -198 | -4,232 |
| Below Normal (13%) | -348 | -548 | -564 | -203 | -141 | -145 | -44 | 51 | 362 | 780 | 302 | 103 |
| Dry (24%) | -606 | -607 | -430 | -658 | -286 | -171 | -138 | -95 | -5 | 16 | -100 | -93 |
| Critical (15%) | -484 | -735 | -1,102 | -1,028 | -615 | -112 | 22 | 50 | 18 | 22 | -161 | -180 |

a Based on the 82-year simulation period.

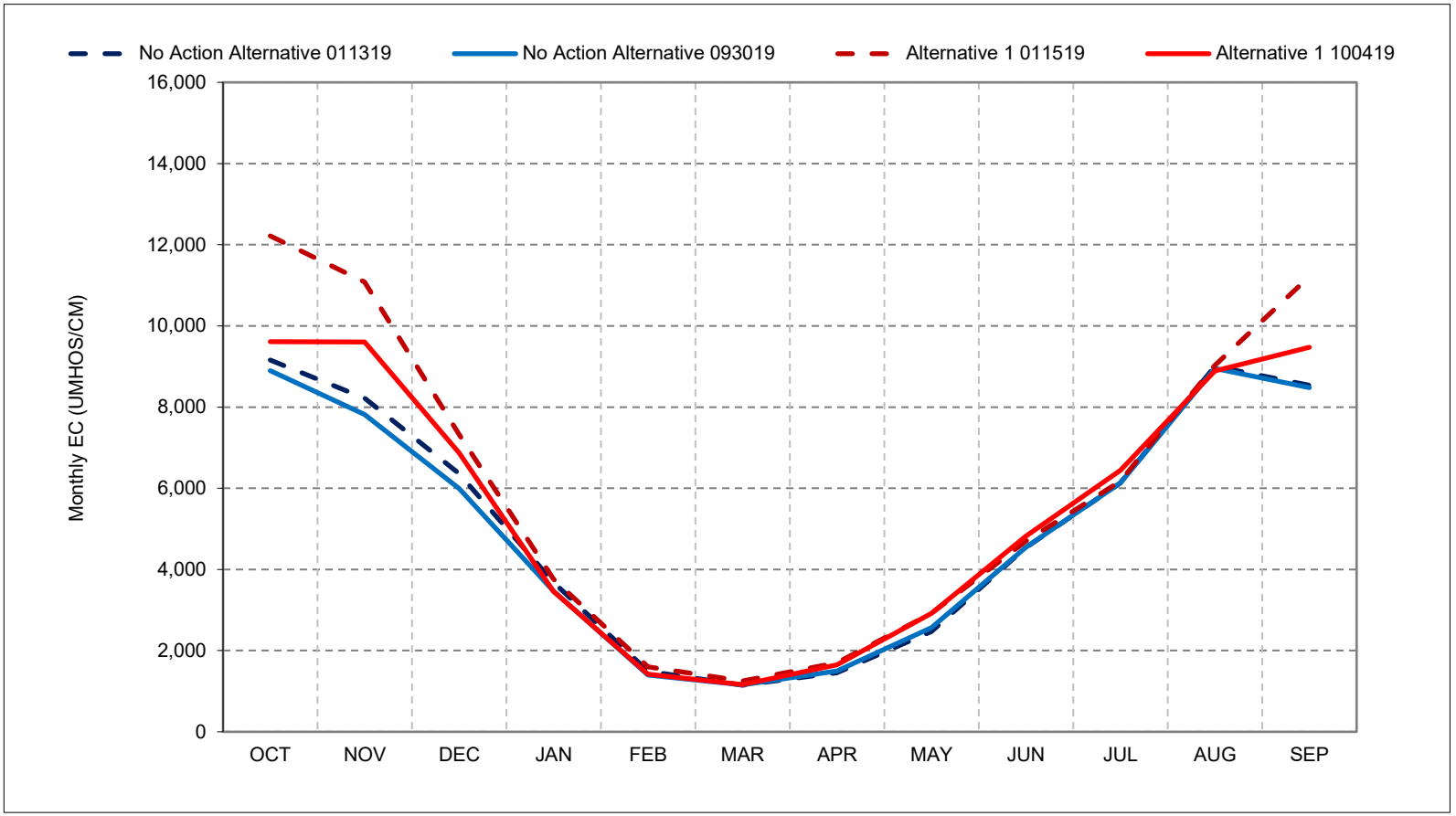
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-1. Sacramento River at Mallard Slough Salinity, Long-Term Average EC

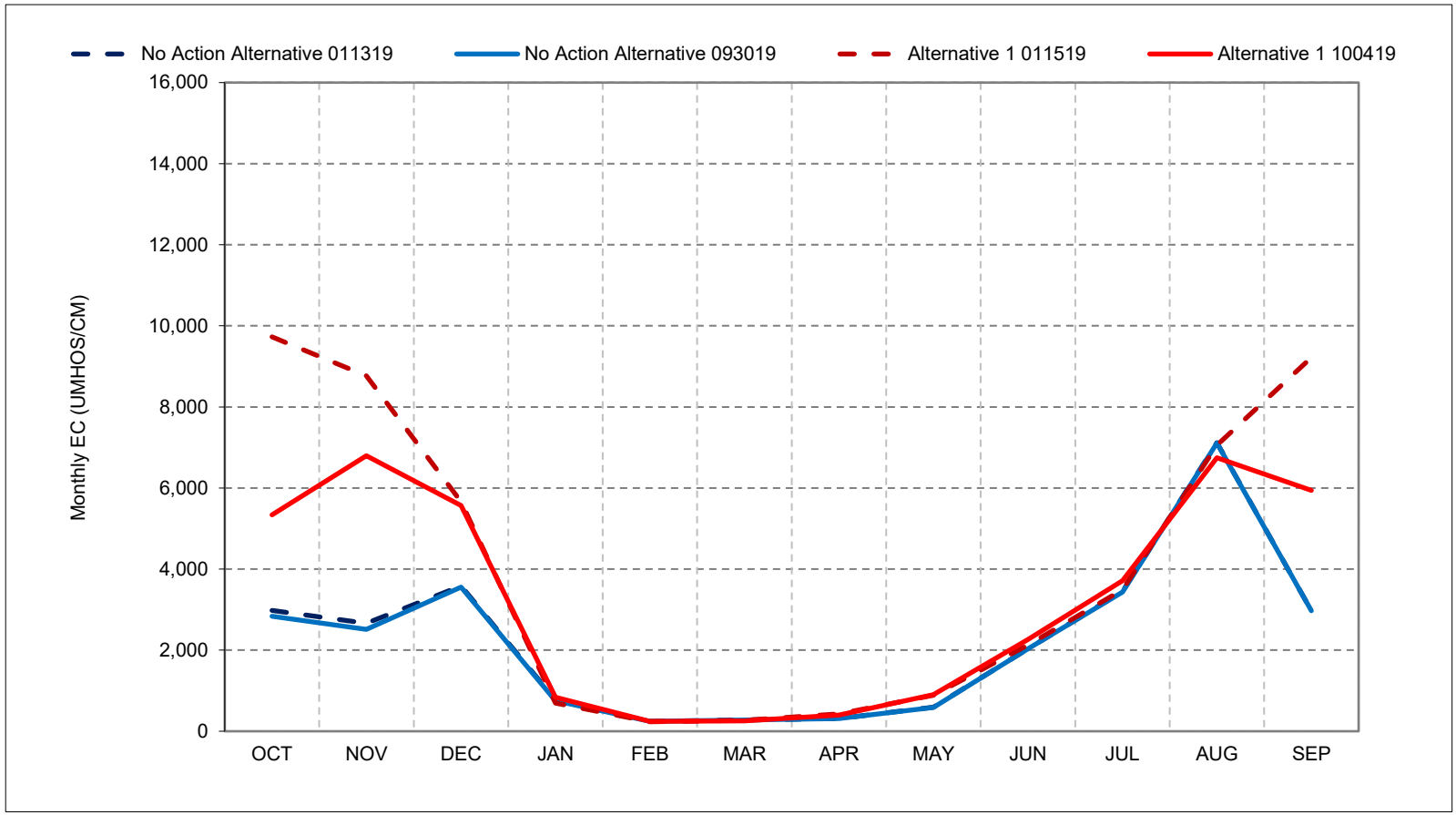



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-2. Sacramento River at Mallard Slough Salinity, Wet Year Average EC

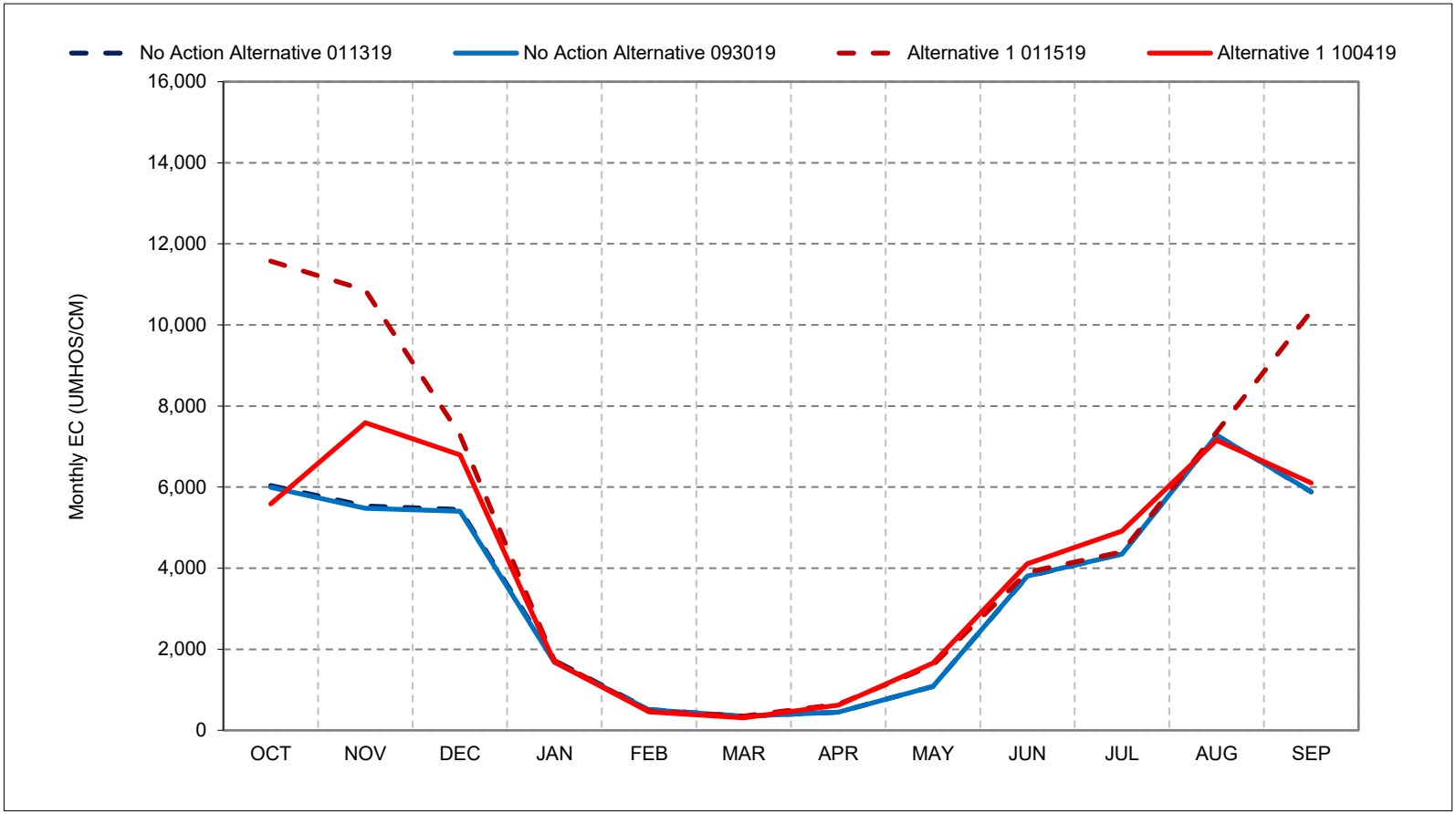



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-3. Sacramento River at Mallard Slough Salinity, Above Normal Year Average EC

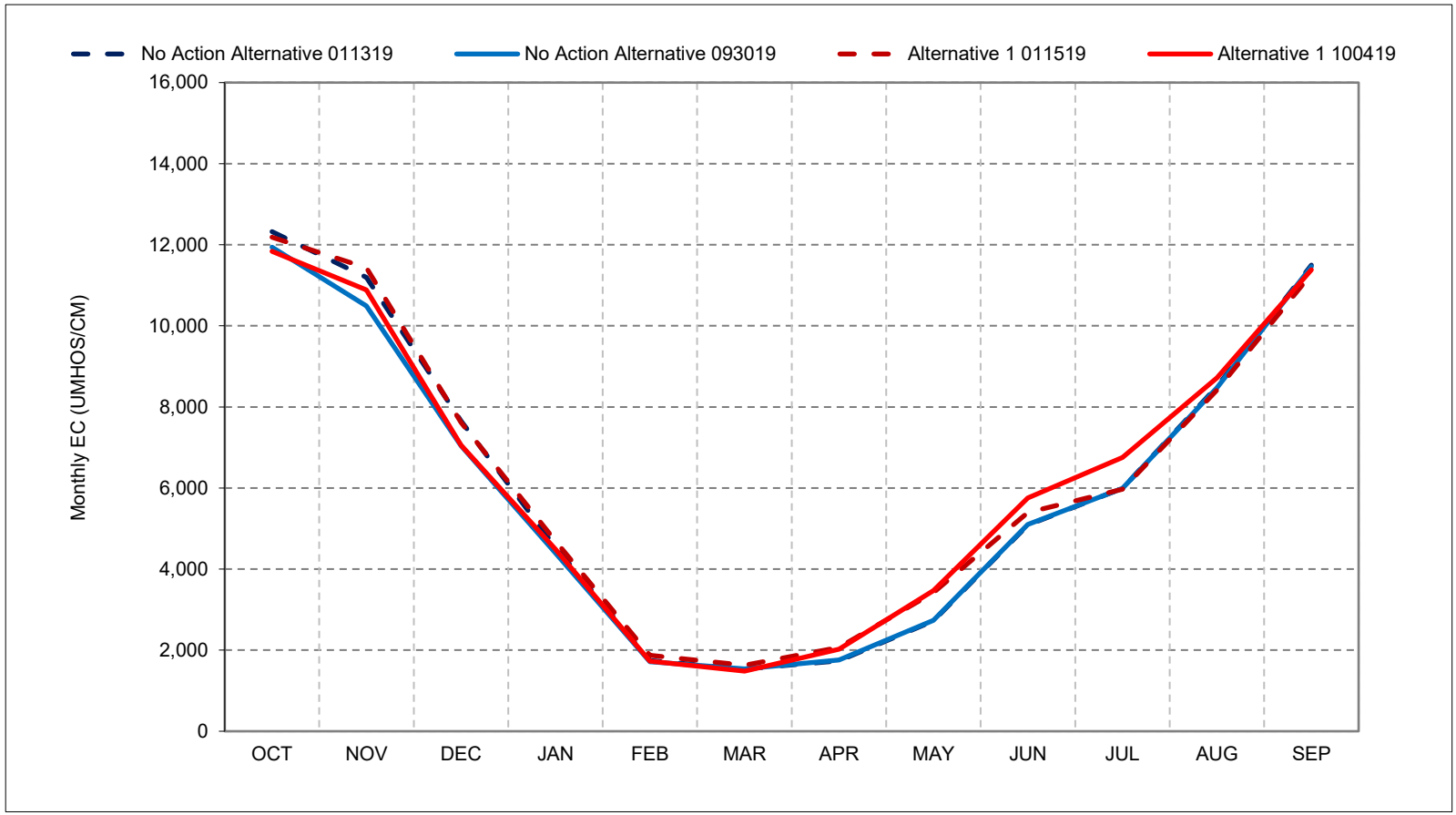



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-4. Sacramento River at Mallard Slough Salinity, Below Normal Year Average EC

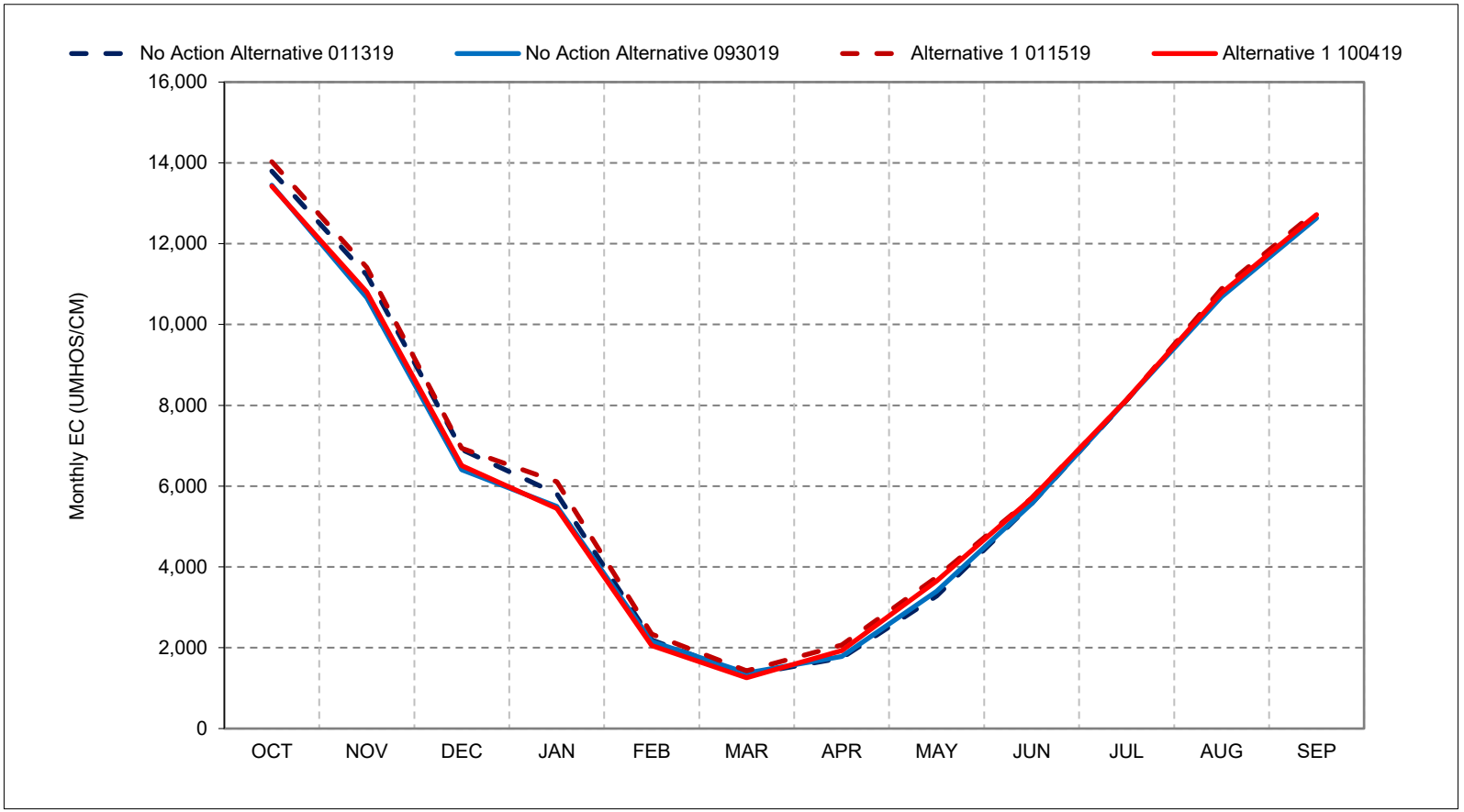



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-5. Sacramento River at Mallard Slough Salinity, Dry Year Average EC

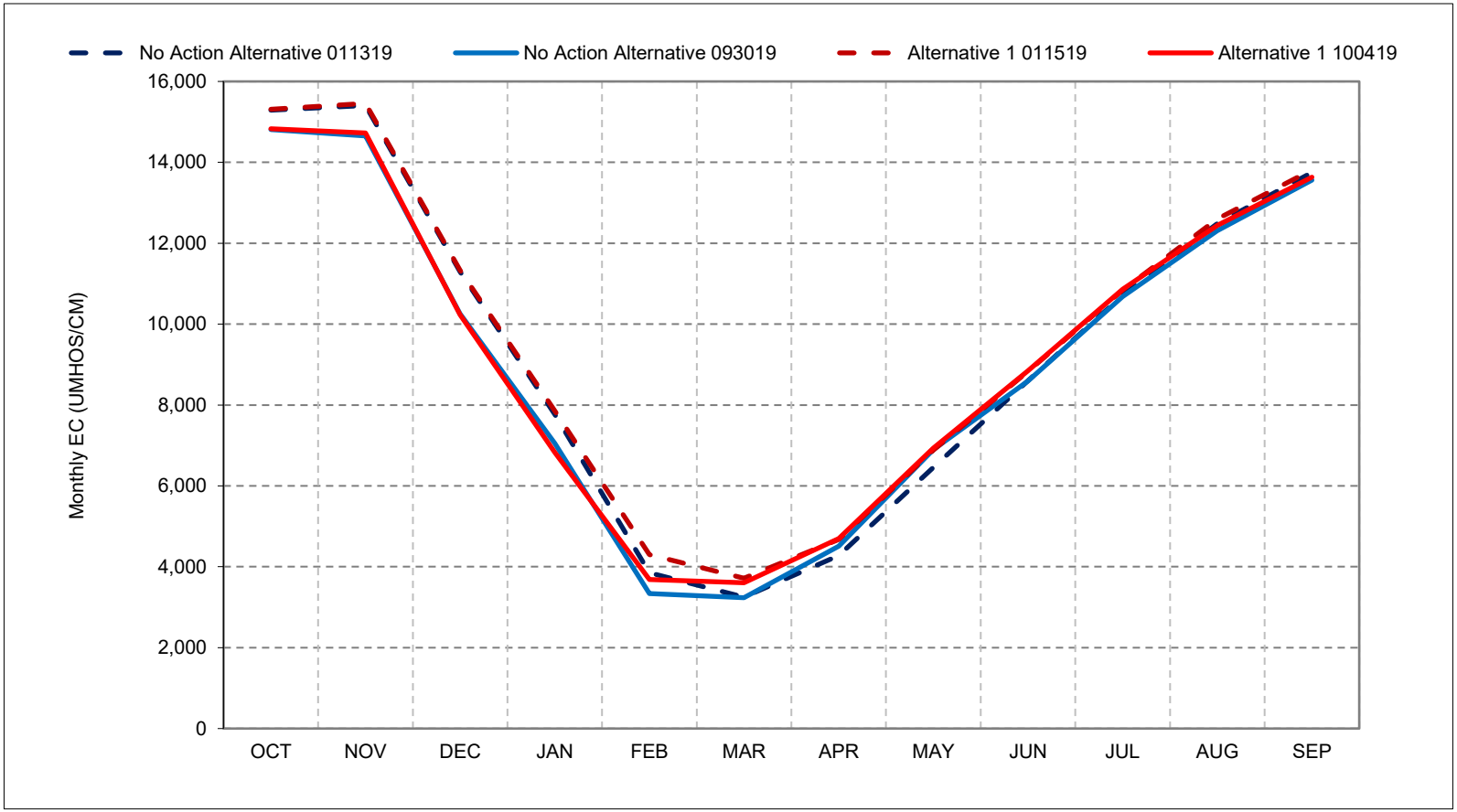



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 10-6. Sacramento River at Mallard Slough Salinity, Critical Year Average EC

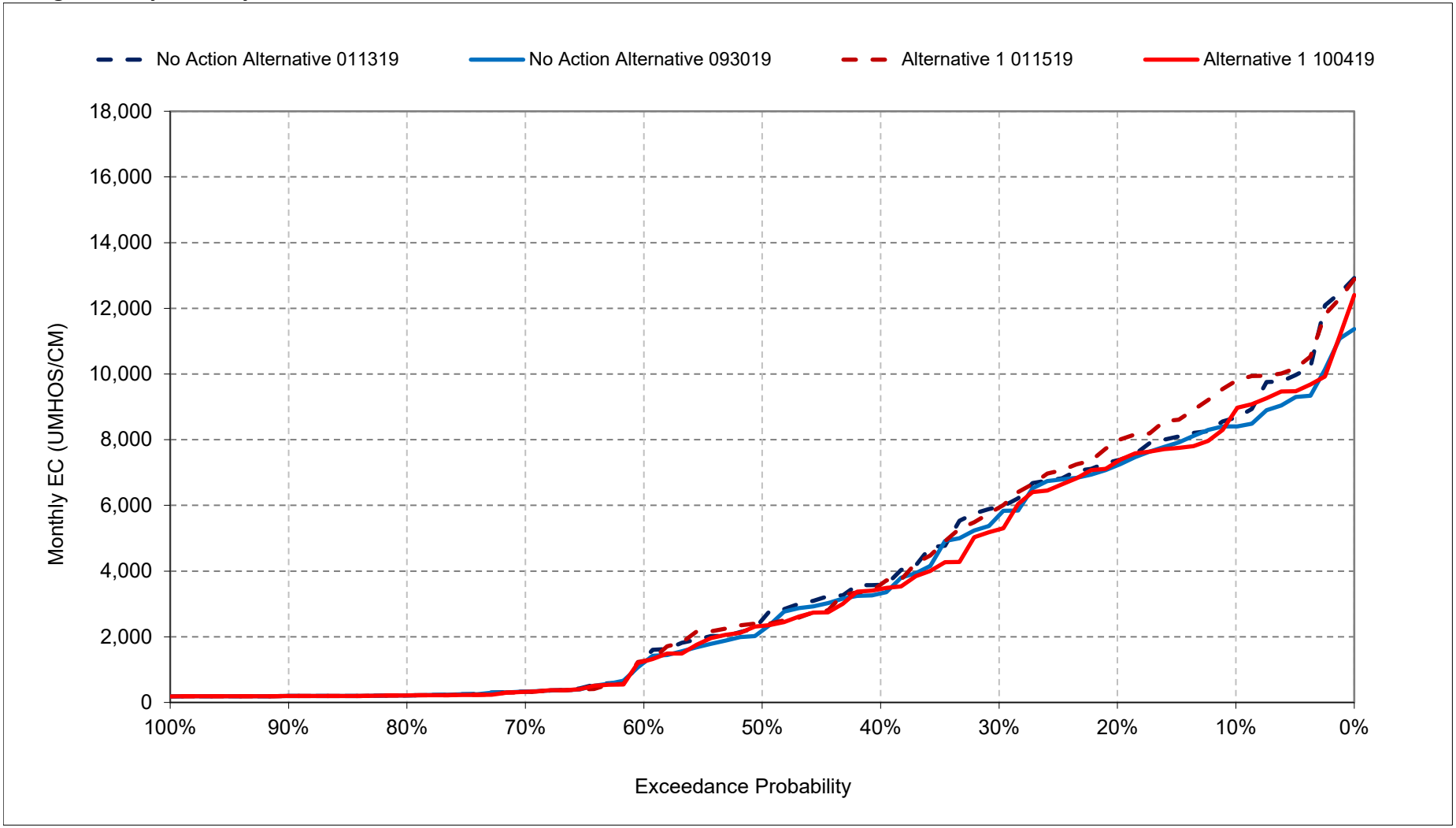



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

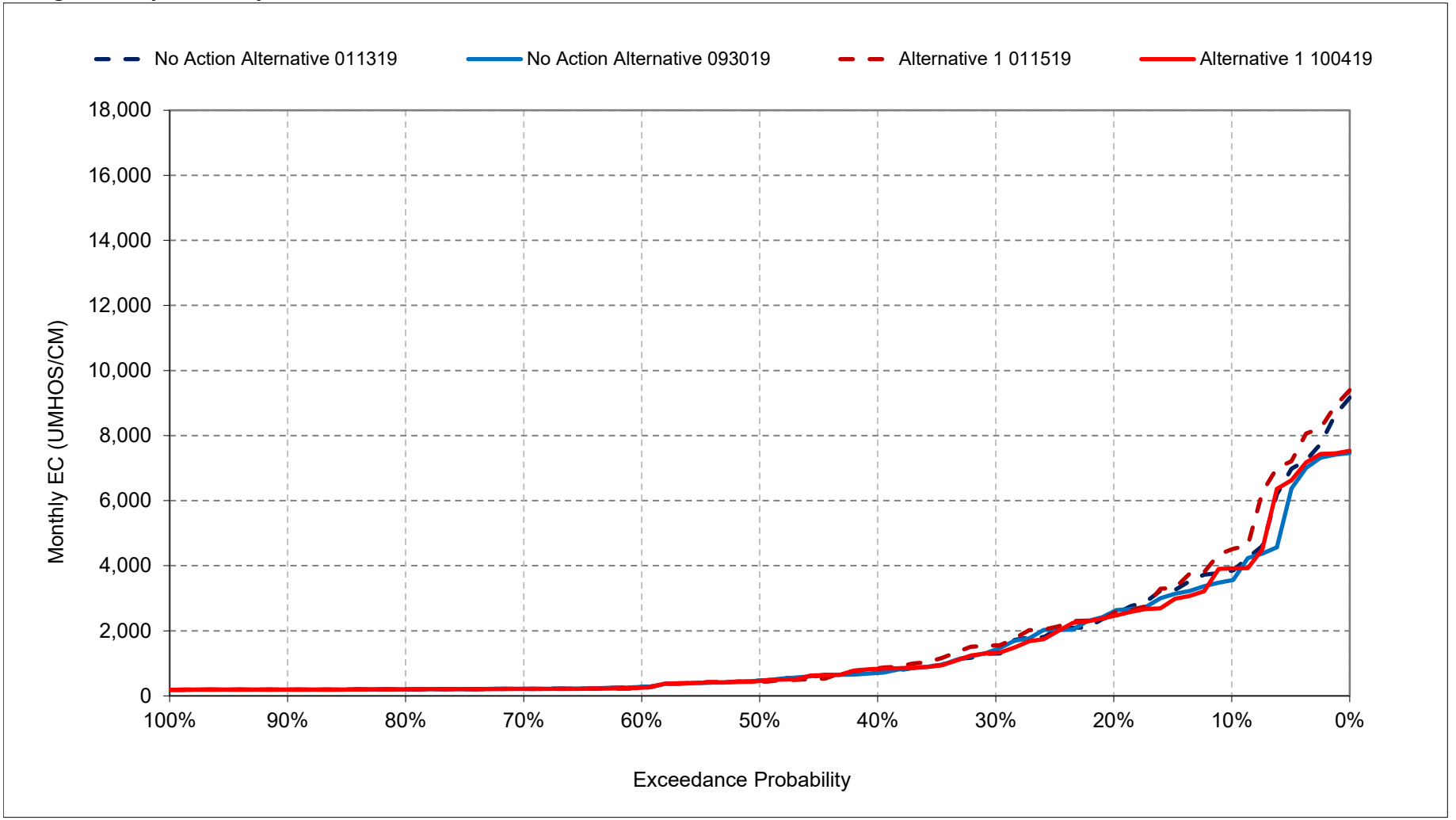
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-7. Sacramento River at Mallard Slough Salinity, January EC**



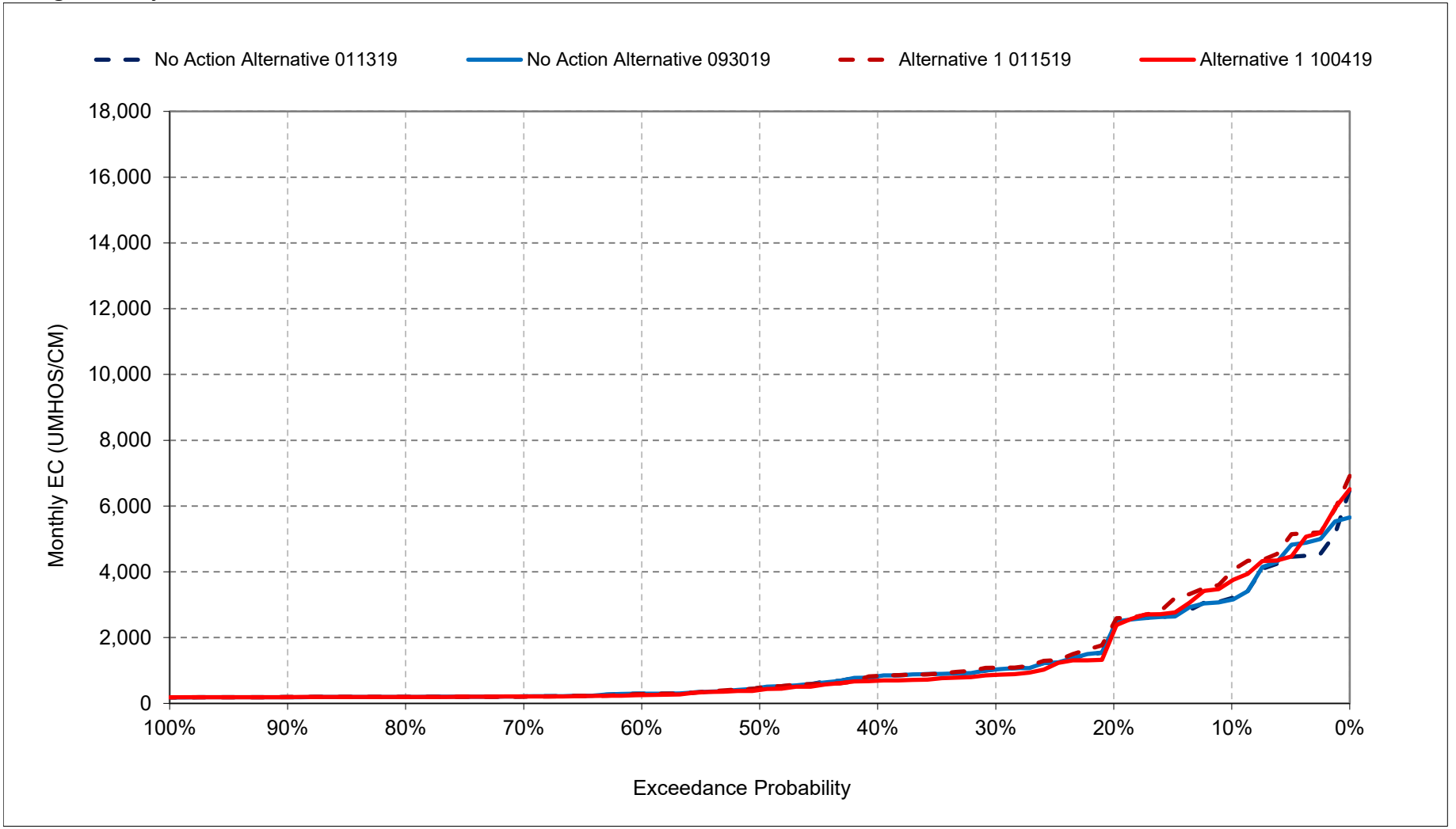

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-8. Sacramento River at Mallard Slough Salinity, February EC**



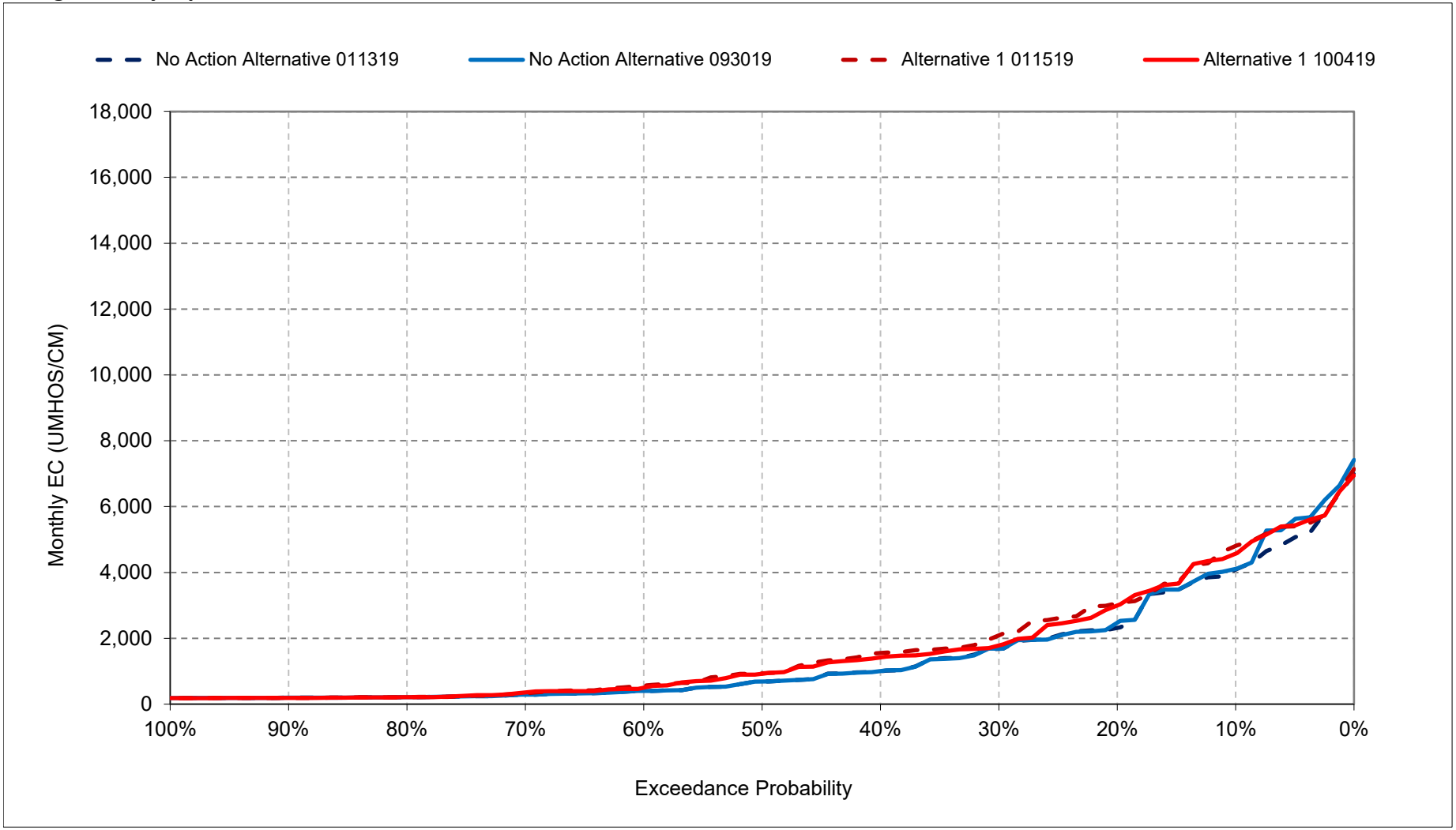

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-9. Sacramento River at Mallard Slough Salinity, March EC**



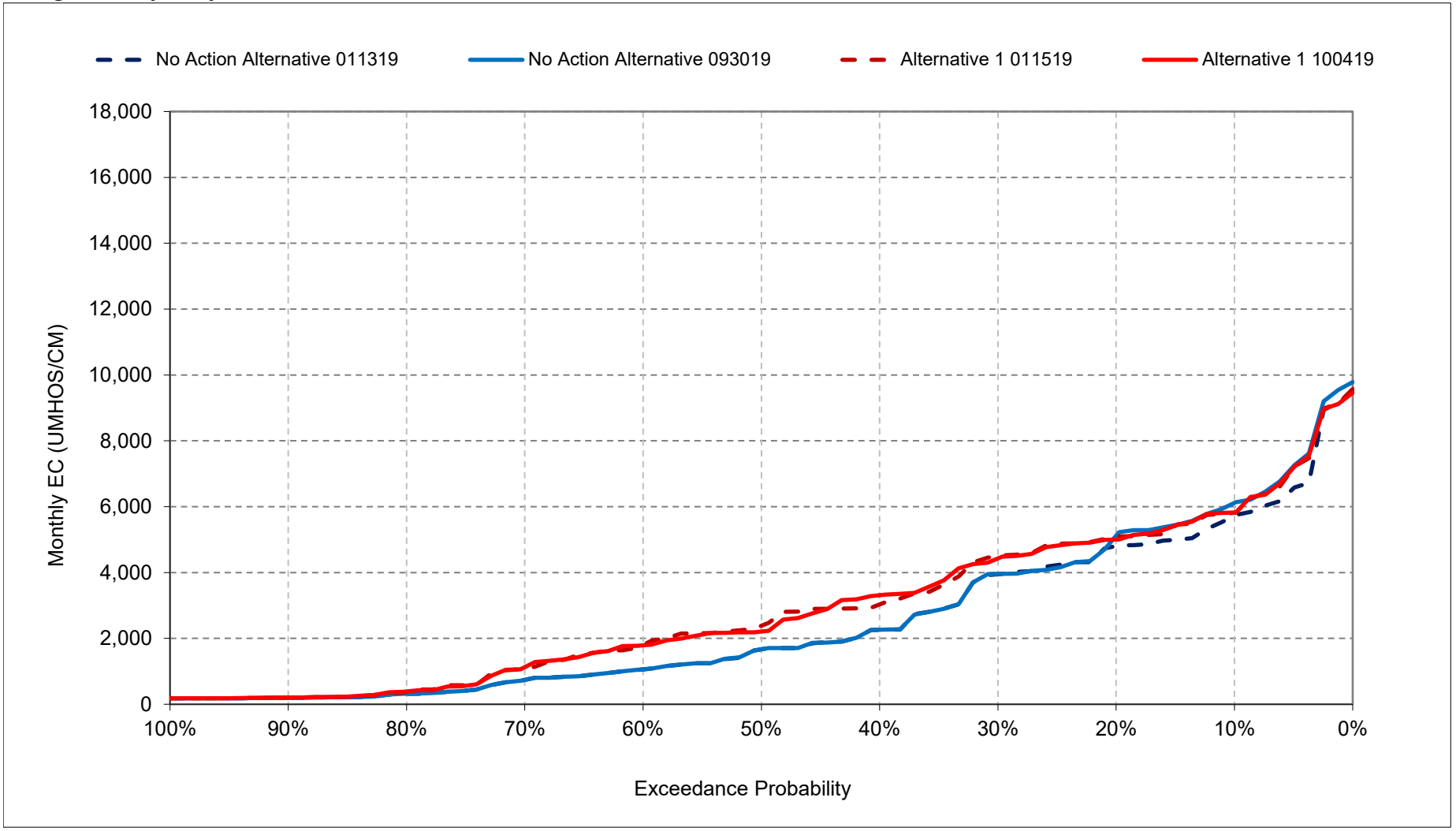

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-10. Sacramento River at Mallard Slough Salinity, April EC**



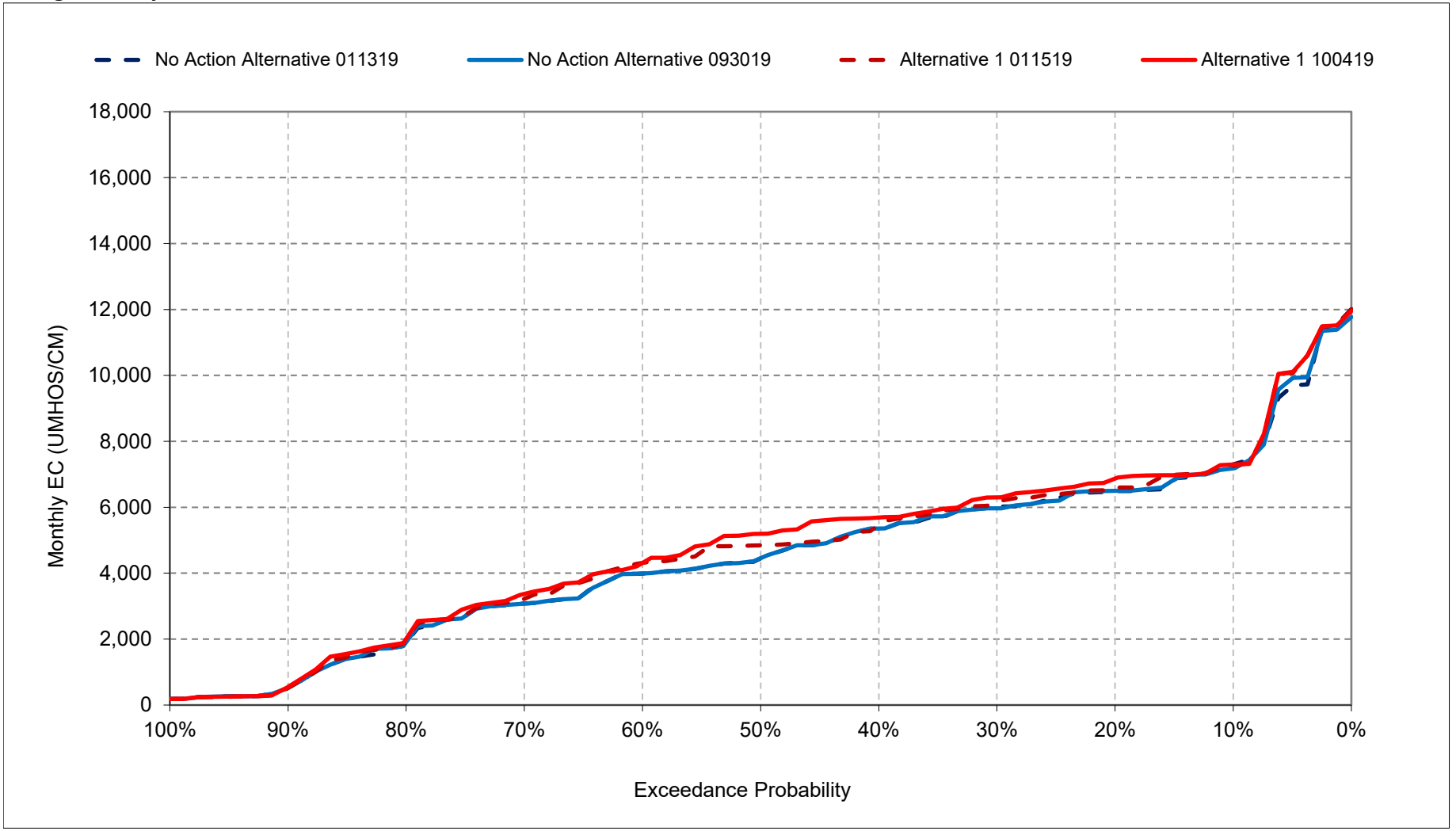

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-11. Sacramento River at Mallard Slough Salinity, May EC**



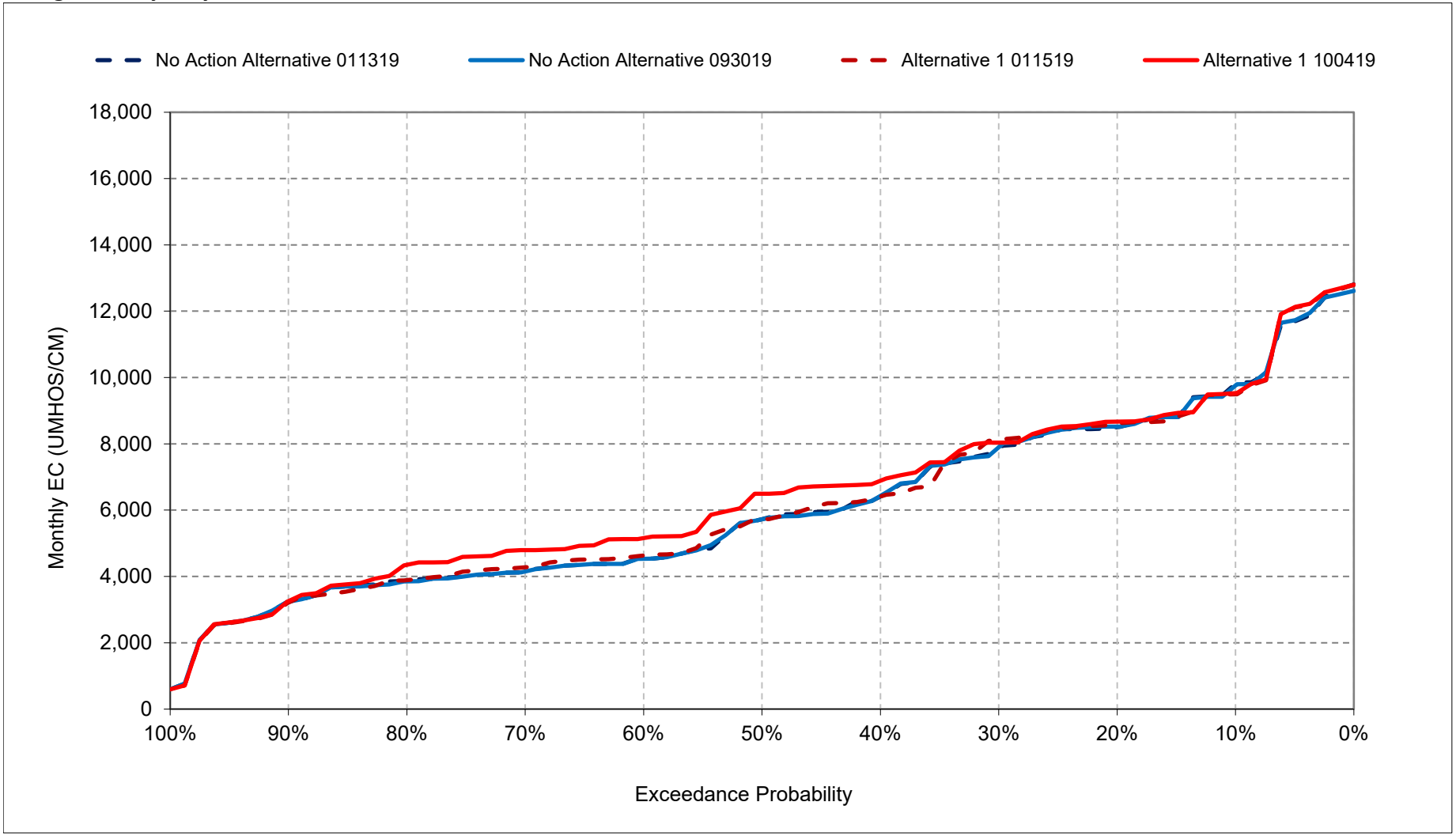

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-12. Sacramento River at Mallard Slough Salinity, June EC**



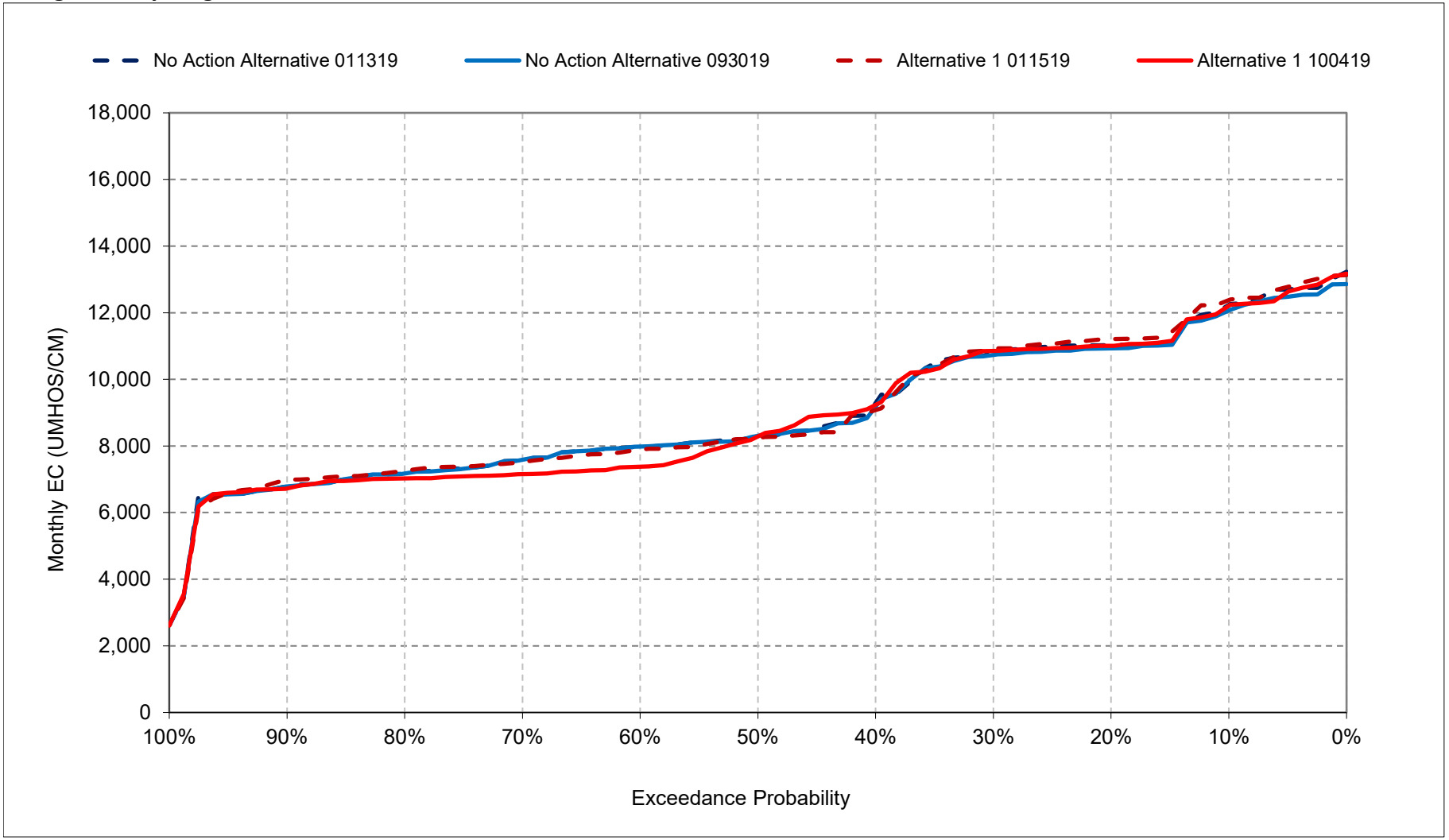

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-13. Sacramento River at Mallard Slough Salinity, July EC**



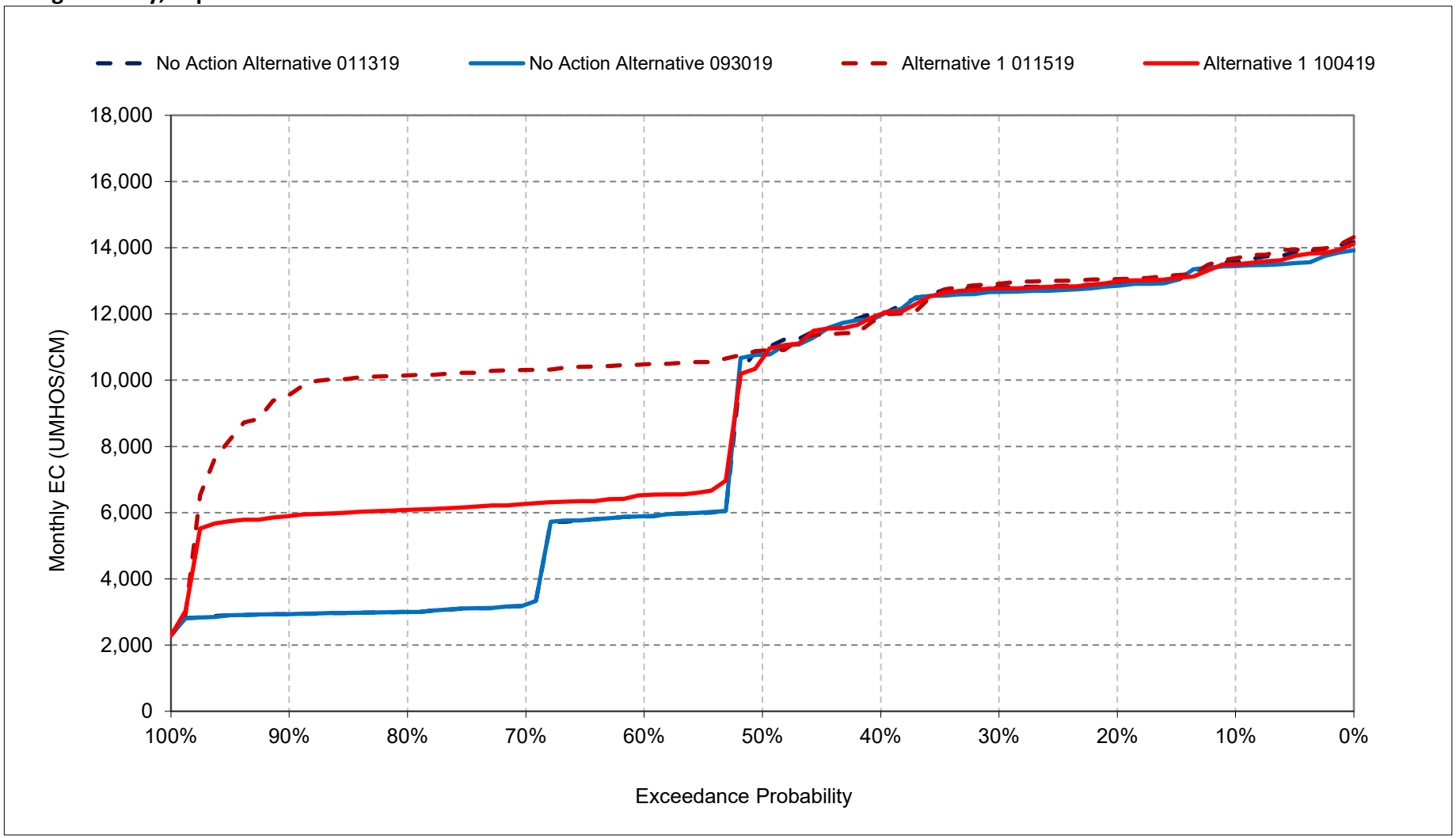

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-14. Sacramento River at Mallard Slough Salinity, August EC**



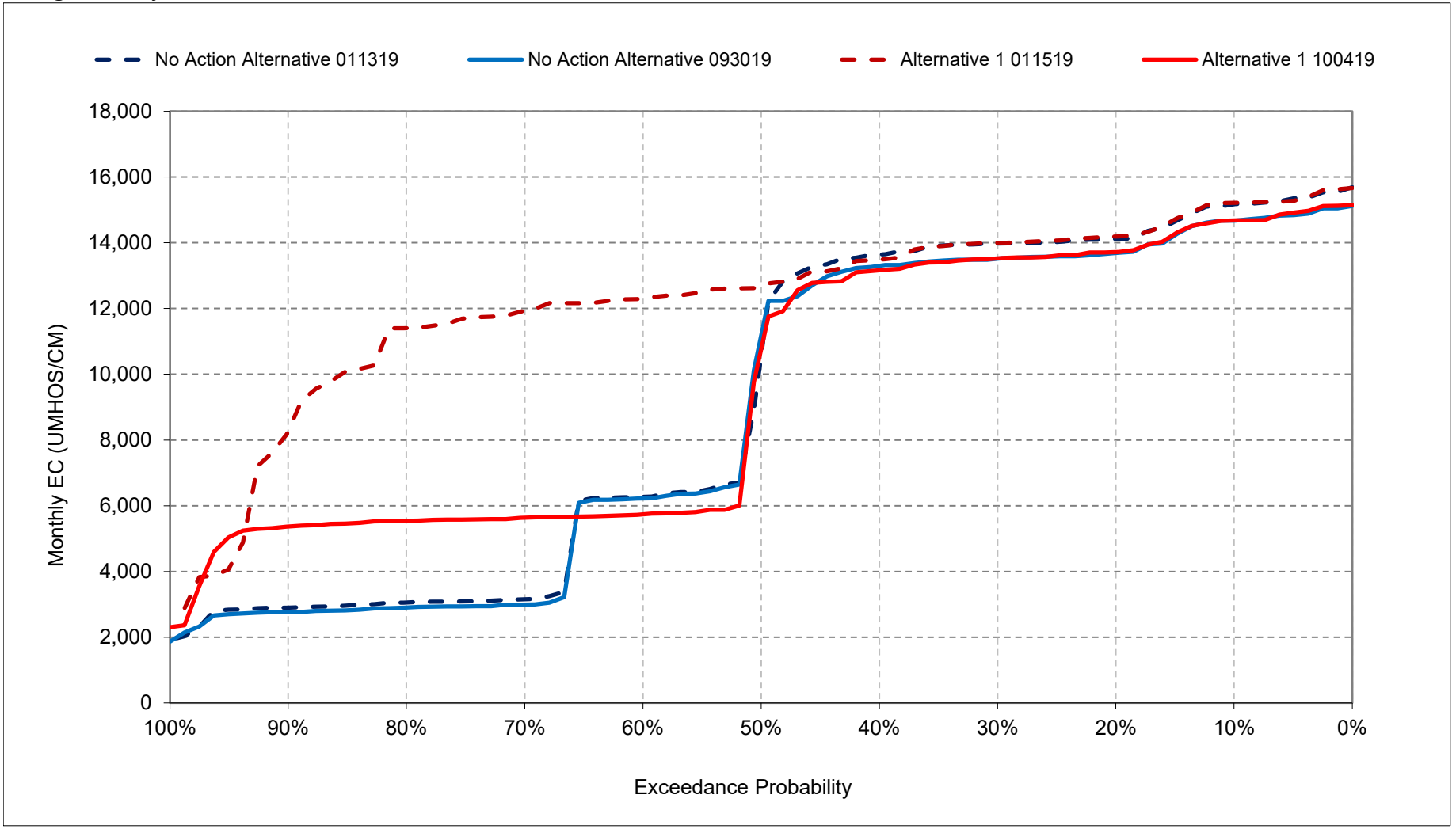

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-15. Sacramento River at Mallard Slough Salinity, September EC**



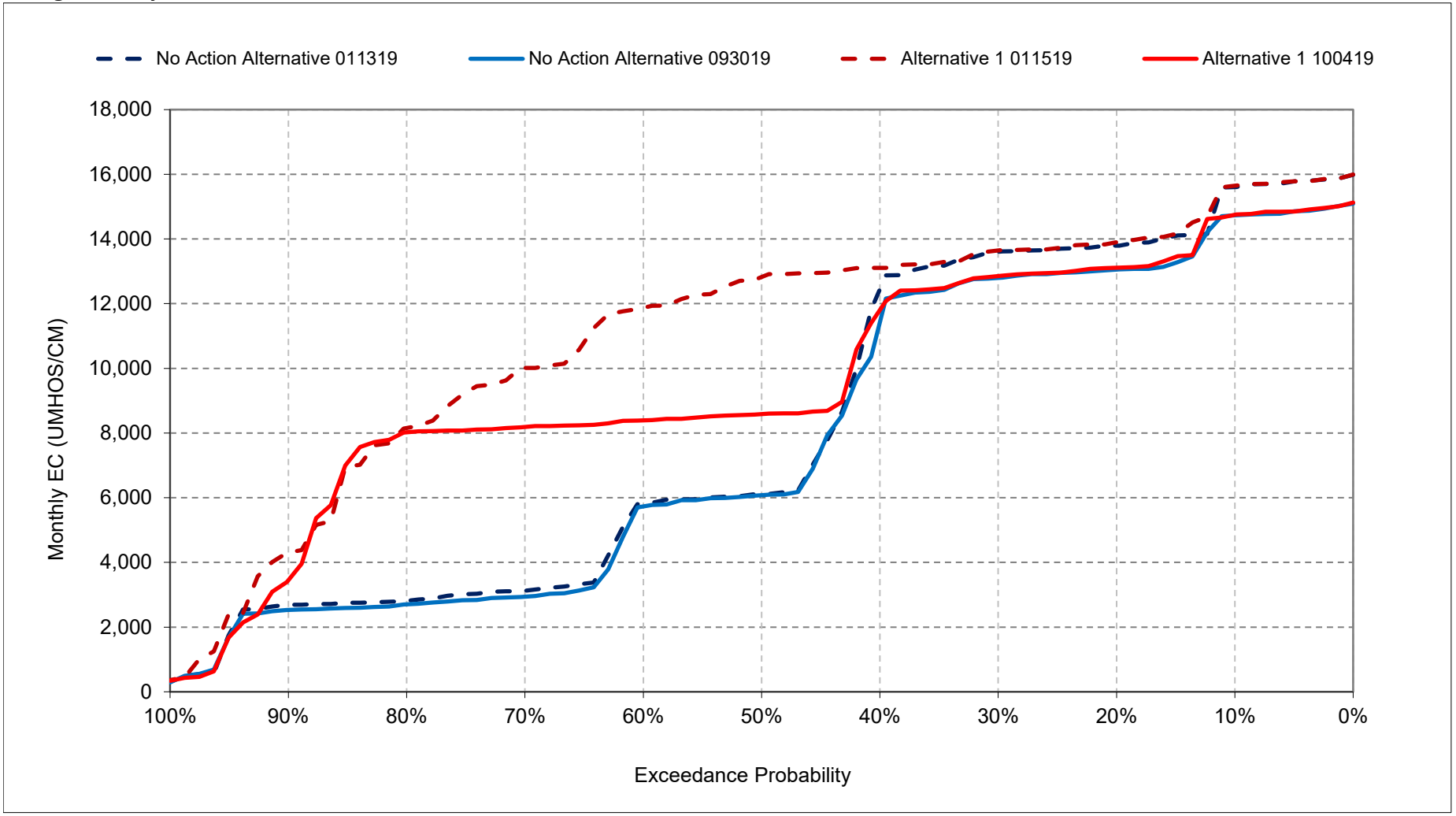

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-16. Sacramento River at Mallard Slough Salinity, October EC**



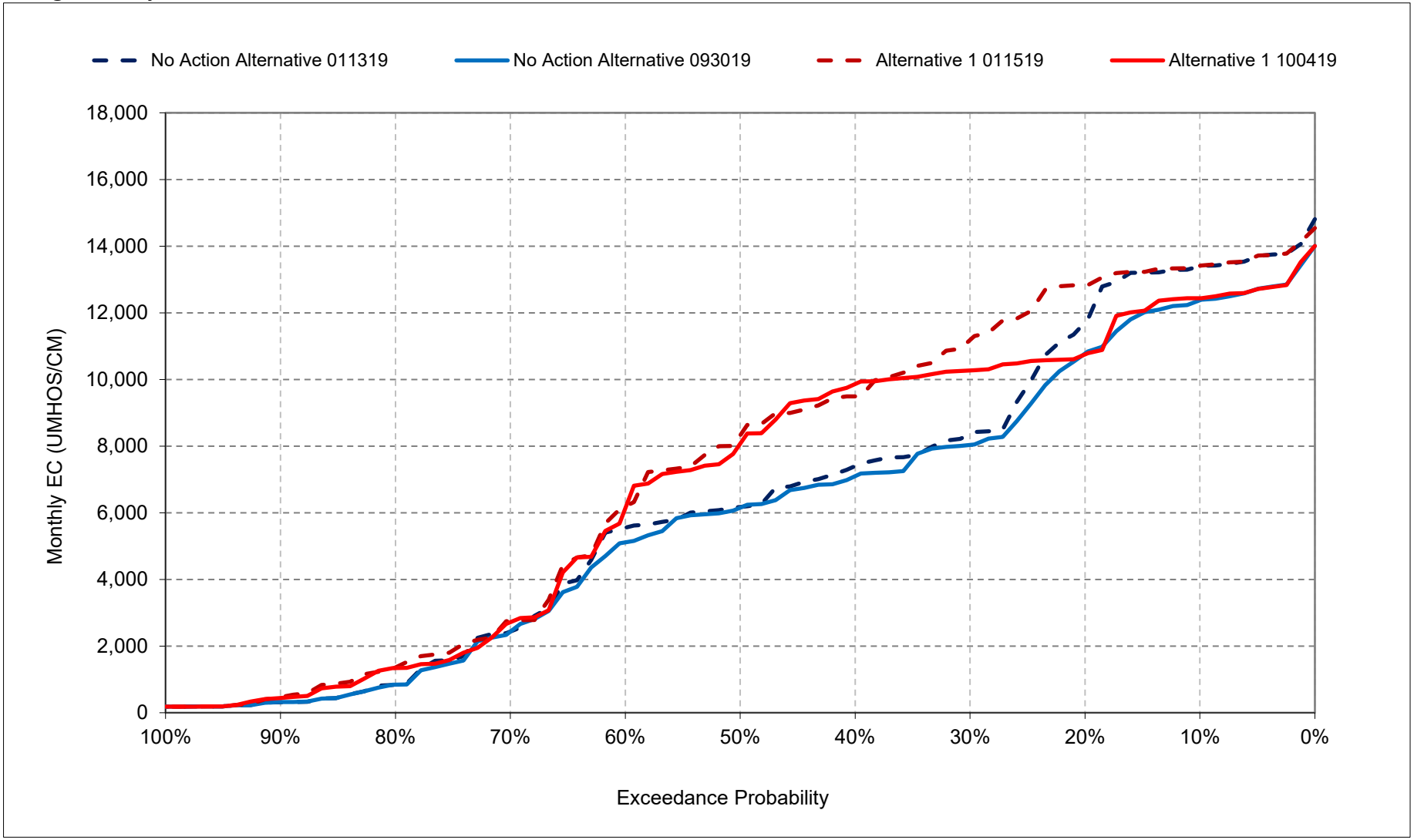

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-17. Sacramento River at Mallard Slough Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 10-18. Sacramento River at Mallard Slough Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 11-1. Sacramento River at Collinsville Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 11,503 | 11,926 | 9,552 | 5,279 | 1,765 | 1,435 | 1,927 | 3,135 | 4,215 | 6,367 | 8,537 | 9,877 |
| 20% | 10,414 | 10,042 | 7,723 | 4,178 | 1,059 | 939 | 961 | 2,417 | 3,638 | 5,111 | 7,507 | 9,221 |
| 30% | 10,219 | 9,690 | 5,019 | 3,126 | 641 | 425 | 661 | 1,909 | 3,339 | 4,606 | 7,315 | 9,119 |
| 40% | 9,939 | 8,433 | 4,160 | 1,781 | 372 | 350 | 423 | 953 | 2,896 | 3,531 | 5,754 | 8,396 |
| 50% | 6,904 | 3,217 | 3,418 | 1,284 | 285 | 248 | 297 | 668 | 2,351 | 2,939 | 4,953 | 7,270 |
| 60% | 3,495 | 2,954 | 2,995 | 545 | 215 | 210 | 232 | 435 | 1,977 | 2,180 | 4,770 | 3,060 |
| 70% | 1,468 | 1,391 | 1,107 | 225 | 199 | 194 | 211 | 326 | 1,415 | 1,972 | 4,476 | 1,559 |
| 80% | 1,393 | 1,208 | 458 | 202 | 191 | 189 | 197 | 210 | 849 | 1,800 | 4,152 | 1,387 |
| 90% | 1,292 | 1,110 | 222 | 188 | 186 | 187 | 189 | 188 | 251 | 1,451 | 3,878 | 1,315 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,298 | 5,462 | 4,004 | 2,107 | 786 | 573 | 723 | 1,289 | 2,546 | 3,507 | 5,744 | 5,653 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,351 | 1,135 | 1,951 | 449 | 203 | 206 | 219 | 318 | 1,023 | 1,629 | 4,169 | 1,360 |
| Above Normal (16%) | 3,332 | 2,894 | 3,155 | 940 | 298 | 227 | 255 | 475 | 1,939 | 2,086 | 4,245 | 3,064 |
| Below Normal (13%) | 8,853 | 7,678 | 5,064 | 2,453 | 854 | 678 | 775 | 1,280 | 2,741 | 3,133 | 5,164 | 7,857 |
| Dry (24%) | 10,051 | 7,803 | 4,573 | 3,254 | 1,116 | 625 | 789 | 1,603 | 3,049 | 4,853 | 7,235 | 9,058 |
| Critical (15%) | 11,632 | 11,684 | 7,452 | 4,733 | 1,963 | 1,558 | 2,162 | 3,761 | 5,488 | 7,214 | 8,826 | 10,067 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 11,514 | 11,954 | 9,610 | 5,997 | 2,115 | 1,860 | 2,367 | 3,154 | 4,190 | 6,101 | 8,659 | 10,004 |
| 20% | 10,491 | 10,111 | 8,974 | 4,632 | 1,070 | 992 | 1,369 | 2,581 | 3,660 | 5,193 | 7,653 | 9,387 |
| 30% | 10,203 | 9,752 | 7,210 | 3,115 | 721 | 449 | 875 | 2,193 | 3,412 | 4,839 | 7,326 | 9,232 |
| 40% | 9,784 | 9,269 | 5,741 | 1,613 | 361 | 346 | 627 | 1,371 | 2,931 | 3,458 | 5,566 | 8,296 |
| 50% | 8,999 | 8,922 | 4,808 | 1,120 | 267 | 240 | 391 | 1,026 | 2,504 | 2,922 | 4,936 | 7,167 |
| 60% | 8,587 | 8,113 | 3,436 | 549 | 213 | 206 | 258 | 735 | 2,106 | 2,254 | 4,689 | 6,875 |
| 70% | 8,134 | 6,214 | 1,189 | 222 | 196 | 194 | 213 | 443 | 1,519 | 2,064 | 4,436 | 6,670 |
| 80% | 7,543 | 4,843 | 745 | 198 | 190 | 188 | 194 | 212 | 884 | 1,761 | 4,208 | 6,532 |
| 90% | 4,820 | 2,182 | 299 | 188 | 187 | 187 | 185 | 184 | 247 | 1,506 | 4,018 | 5,942 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,623 | 7,683 | 4,736 | 2,173 | 847 | 631 | 838 | 1,515 | 2,615 | 3,541 | 5,762 | 7,638 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 6,290 | 5,636 | 3,502 | 396 | 198 | 205 | 256 | 445 | 1,056 | 1,656 | 4,112 | 5,830 |
| Above Normal (16%) | 7,923 | 7,437 | 4,614 | 979 | 279 | 232 | 324 | 696 | 1,946 | 2,111 | 4,292 | 6,691 |
| Below Normal (13%) | 8,687 | 7,869 | 5,045 | 2,597 | 939 | 751 | 930 | 1,653 | 2,903 | 3,110 | 5,058 | 7,624 |
| Dry (24%) | 10,256 | 7,969 | 4,606 | 3,471 | 1,191 | 665 | 943 | 1,842 | 3,103 | 4,876 | 7,340 | 9,120 |
| Critical (15%) | 11,653 | 11,736 | 7,473 | 4,764 | 2,211 | 1,821 | 2,394 | 4,048 | 5,637 | 7,343 | 8,946 | 10,124 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **11** | **28** | **58** | **719** | **350** | **425** | **440** | **19** | -25 | -266 | **122** | **127** |
| 20% | **76** | **69** | **1,251** | **454** | **10** | **53** | **408** | **164** | **23** | **81** | **146** | **166** |
| 30% | -16 | **61** | **2,191** | -11 | **81** | **24** | **214** | **284** | **74** | **233** | **11** | **113** |
| 40% | -155 | **836** | **1,581** | -167 | -11 | -5 | **205** | **418** | **35** | -73 | -188 | -100 |
| 50% | **2,095** | **5,705** | **1,390** | -165 | -18 | -8 | **94** | **359** | **152** | -16 | -16 | -103 |
| 60% | **5,092** | **5,159** | **441** | **4** | -3 | -4 | **26** | **299** | **129** | **74** | -81 | **3,815** |
| 70% | **6,666** | **4,823** | **82** | -4 | -3 | 0 | **1** | **116** | **104** | **92** | -39 | **5,111** |
| 80% | **6,150** | **3,635** | **287** | -4 | -1 | 0 | -3 | **2** | **35** | -39 | **57** | **5,145** |
| 90% | **3,528** | **1,072** | **78** | 0 | **1** | 0 | -4 | -4 | -4 | **56** | **140** | **4,626** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **2,325** | **2,221** | **732** | **66** | **62** | **59** | **115** | **226** | **68** | **34** | **18** | **1,985** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **4,939** | **4,501** | **1,551** | -53 | -5 | -1 | **37** | **127** | **33** | **27** | -57 | **4,470** |
| Above Normal (16%) | **4,591** | **4,542** | **1,460** | **39** | -18 | **5** | **68** | **221** | **7** | **26** | **47** | **3,627** |
| Below Normal (13%) | -166 | **191** | -19 | **144** | **86** | **73** | **156** | **373** | **163** | -23 | -106 | -232 |
| Dry (24%) | **205** | **165** | **33** | **217** | **75** | **41** | **154** | **239** | **54** | **23** | **104** | **62** |
| Critical (15%) | **21** | **52** | **21** | **32** | **248** | **263** | **232** | **287** | **150** | **129** | **120** | **57** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 11-2. Sacramento River at Collinsville Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,945 | 10,955 | 8,423 | 5,002 | 1,589 | 1,438 | 1,936 | 3,432 | 4,152 | 6,356 | 8,478 | 9,774 |
| 20% | 9,912 | 9,176 | 6,873 | 3,981 | 1,127 | 938 | 1,047 | 2,675 | 3,677 | 5,177 | 7,403 | 9,176 |
| 30% | 9,745 | 8,907 | 4,886 | 2,959 | 660 | 427 | 664 | 1,887 | 3,336 | 4,691 | 7,222 | 9,000 |
| 40% | 9,532 | 7,623 | 3,987 | 1,637 | 362 | 351 | 423 | 955 | 2,904 | 3,534 | 5,666 | 8,351 |
| 50% | 7,430 | 3,227 | 3,499 | 1,187 | 282 | 248 | 297 | 668 | 2,355 | 2,936 | 4,967 | 7,042 |
| 60% | 3,451 | 2,972 | 2,669 | 493 | 215 | 211 | 232 | 435 | 1,974 | 2,179 | 4,789 | 3,062 |
| 70% | 1,380 | 1,296 | 1,141 | 228 | 199 | 195 | 211 | 326 | 1,417 | 1,972 | 4,475 | 1,557 |
| 80% | 1,313 | 1,124 | 457 | 202 | 191 | 189 | 195 | 210 | 855 | 1,771 | 4,153 | 1,387 |
| 90% | 1,222 | 1,021 | 220 | 188 | 186 | 187 | 189 | 188 | 251 | 1,451 | 3,879 | 1,318 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,042 | 5,088 | 3,693 | 1,959 | 728 | 580 | 755 | 1,368 | 2,556 | 3,512 | 5,697 | 5,597 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,272 | 1,054 | 1,947 | 442 | 203 | 206 | 219 | 318 | 1,025 | 1,622 | 4,162 | 1,360 |
| Above Normal (16%) | 3,310 | 2,890 | 3,149 | 926 | 296 | 228 | 255 | 475 | 1,941 | 2,084 | 4,244 | 3,070 |
| Below Normal (13%) | 8,451 | 7,008 | 4,522 | 2,372 | 845 | 679 | 785 | 1,291 | 2,755 | 3,135 | 5,148 | 7,820 |
| Dry (24%) | 9,660 | 7,239 | 4,122 | 3,052 | 1,103 | 655 | 812 | 1,690 | 3,060 | 4,883 | 7,159 | 8,956 |
| Critical (15%) | 11,100 | 10,862 | 6,589 | 4,165 | 1,600 | 1,554 | 2,338 | 4,146 | 5,518 | 7,215 | 8,664 | 9,877 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,928 | 11,001 | 8,651 | 5,291 | 1,763 | 1,690 | 2,207 | 3,195 | 4,213 | 6,134 | 8,520 | 9,815 |
| 20% | 9,949 | 9,275 | 7,014 | 4,136 | 1,006 | 889 | 1,321 | 2,525 | 3,888 | 5,303 | 7,450 | 9,260 |
| 30% | 9,669 | 8,951 | 6,549 | 2,712 | 575 | 361 | 753 | 2,169 | 3,549 | 4,739 | 7,329 | 9,096 |
| 40% | 9,407 | 8,000 | 6,044 | 1,690 | 374 | 303 | 558 | 1,498 | 3,093 | 3,900 | 5,824 | 8,414 |
| 50% | 7,023 | 5,315 | 4,624 | 1,076 | 285 | 229 | 388 | 966 | 2,787 | 3,501 | 4,994 | 6,977 |
| 60% | 3,045 | 5,112 | 3,283 | 529 | 212 | 207 | 247 | 734 | 2,110 | 2,644 | 4,298 | 3,635 |
| 70% | 2,978 | 4,978 | 1,261 | 226 | 196 | 193 | 217 | 477 | 1,610 | 2,371 | 4,118 | 3,444 |
| 80% | 2,886 | 4,780 | 712 | 198 | 190 | 188 | 193 | 212 | 896 | 2,068 | 4,041 | 3,302 |
| 90% | 2,767 | 1,714 | 289 | 187 | 187 | 187 | 185 | 185 | 253 | 1,549 | 3,837 | 3,142 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,436 | 6,407 | 4,343 | 1,958 | 737 | 591 | 815 | 1,520 | 2,707 | 3,743 | 5,652 | 6,254 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,774 | 4,075 | 3,420 | 499 | 203 | 200 | 241 | 459 | 1,150 | 1,818 | 3,853 | 3,234 |
| Above Normal (16%) | 2,937 | 4,624 | 4,161 | 961 | 275 | 217 | 313 | 724 | 2,092 | 2,466 | 4,140 | 3,320 |
| Below Normal (13%) | 8,346 | 7,308 | 4,568 | 2,465 | 859 | 688 | 913 | 1,680 | 3,179 | 3,747 | 5,367 | 7,770 |
| Dry (24%) | 9,617 | 7,380 | 4,209 | 2,994 | 1,012 | 588 | 877 | 1,793 | 3,107 | 4,894 | 7,250 | 9,038 |
| Critical (15%) | 11,108 | 10,942 | 6,560 | 4,007 | 1,823 | 1,763 | 2,406 | 4,078 | 5,651 | 7,373 | 8,785 | 9,949 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -16 | **47** | **229** | **289** | **173** | **252** | **270** | -237 | **61** | -222 | **42** | **40** |
| 20% | **36** | **99** | **141** | **156** | -121 | -49 | **274** | -150 | **212** | **126** | **47** | **83** |
| 30% | -76 | **44** | **1,662** | -246 | -85 | -66 | **89** | **282** | **214** | **47** | **107** | **96** |
| 40% | -124 | **377** | **2,057** | **53** | **12** | -47 | **135** | **543** | **188** | **366** | **158** | **63** |
| 50% | -406 | **2,088** | **1,125** | -110 | **3** | -18 | **91** | **298** | **432** | **565** | **27** | -65 |
| 60% | -406 | **2,139** | **614** | **36** | -3 | -3 | **15** | **298** | **137** | **465** | -490 | **573** |
| 70% | **1,598** | **3,682** | **121** | -1 | -2 | -1 | **6** | **151** | **193** | **398** | -357 | **1,887** |
| 80% | **1,573** | **3,656** | **255** | -4 | -1 | 0 | -2 | **2** | **41** | **297** | -112 | **1,915** |
| 90% | **1,545** | **693** | **69** | 0 | **1** | **0** | -4 | -3 | **2** | **98** | -42 | **1,824** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **394** | **1,319** | **651** | -1 | **9** | **12** | **59** | **152** | **151** | **230** | -45 | **658** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **1,502** | **3,021** | **1,474** | **58** | 0 | -6 | **22** | **141** | **125** | **196** | -310 | **1,874** |
| Above Normal (16%) | -373 | **1,734** | **1,011** | **35** | -21 | -11 | **57** | **249** | **152** | **382** | -104 | **251** |
| Below Normal (13%) | -105 | **300** | **46** | **93** | **14** | **8** | **127** | **389** | **424** | **612** | **219** | -51 |
| Dry (24%) | -43 | **140** | **86** | -58 | -92 | -68 | **65** | **103** | **47** | **11** | **91** | **82** |
| Critical (15%) | **8** | **80** | -29 | -158 | **222** | **209** | **68** | -68 | **133** | **158** | **122** | **72** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 11-3. Sacramento River at Collinsville Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 11,503 | 11,926 | 9,552 | 5,279 | 1,765 | 1,435 | 1,927 | 3,135 | 4,215 | 6,367 | 8,537 | 9,877 |
| 20% | 10,414 | 10,042 | 7,723 | 4,178 | 1,059 | 939 | 961 | 2,417 | 3,638 | 5,111 | 7,507 | 9,221 |
| 30% | 10,219 | 9,690 | 5,019 | 3,126 | 641 | 425 | 661 | 1,909 | 3,339 | 4,606 | 7,315 | 9,119 |
| 40% | 9,939 | 8,433 | 4,160 | 1,781 | 372 | 350 | 423 | 953 | 2,896 | 3,531 | 5,754 | 8,396 |
| 50% | 6,904 | 3,217 | 3,418 | 1,284 | 285 | 248 | 297 | 668 | 2,351 | 2,939 | 4,953 | 7,270 |
| 60% | 3,495 | 2,954 | 2,995 | 545 | 215 | 210 | 232 | 435 | 1,977 | 2,180 | 4,770 | 3,060 |
| 70% | 1,468 | 1,391 | 1,107 | 225 | 199 | 194 | 211 | 326 | 1,415 | 1,972 | 4,476 | 1,559 |
| 80% | 1,393 | 1,208 | 458 | 202 | 191 | 189 | 197 | 210 | 849 | 1,800 | 4,152 | 1,387 |
| 90% | 1,292 | 1,110 | 222 | 188 | 186 | 187 | 189 | 188 | 251 | 1,451 | 3,878 | 1,315 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,298 | 5,462 | 4,004 | 2,107 | 786 | 573 | 723 | 1,289 | 2,546 | 3,507 | 5,744 | 5,653 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,351 | 1,135 | 1,951 | 449 | 203 | 206 | 219 | 318 | 1,023 | 1,629 | 4,169 | 1,360 |
| Above Normal (16%) | 3,332 | 2,894 | 3,155 | 940 | 298 | 227 | 255 | 475 | 1,939 | 2,086 | 4,245 | 3,064 |
| Below Normal (13%) | 8,853 | 7,678 | 5,064 | 2,453 | 854 | 678 | 775 | 1,280 | 2,741 | 3,133 | 5,164 | 7,857 |
| Dry (24%) | 10,051 | 7,803 | 4,573 | 3,254 | 1,116 | 625 | 789 | 1,603 | 3,049 | 4,853 | 7,235 | 9,058 |
| Critical (15%) | 11,632 | 11,684 | 7,452 | 4,733 | 1,963 | 1,558 | 2,162 | 3,761 | 5,488 | 7,214 | 8,826 | 10,067 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10,945 | 10,955 | 8,423 | 5,002 | 1,589 | 1,438 | 1,936 | 3,432 | 4,152 | 6,356 | 8,478 | 9,774 |
| 20% | 9,912 | 9,176 | 6,873 | 3,981 | 1,127 | 938 | 1,047 | 2,675 | 3,677 | 5,177 | 7,403 | 9,176 |
| 30% | 9,745 | 8,907 | 4,886 | 2,959 | 660 | 427 | 664 | 1,887 | 3,336 | 4,691 | 7,222 | 9,000 |
| 40% | 9,532 | 7,623 | 3,987 | 1,637 | 362 | 351 | 423 | 955 | 2,904 | 3,534 | 5,666 | 8,351 |
| 50% | 7,430 | 3,227 | 3,499 | 1,187 | 282 | 248 | 297 | 668 | 2,355 | 2,936 | 4,967 | 7,042 |
| 60% | 3,451 | 2,972 | 2,669 | 493 | 215 | 211 | 232 | 435 | 1,974 | 2,179 | 4,789 | 3,062 |
| 70% | 1,380 | 1,296 | 1,141 | 228 | 199 | 195 | 211 | 326 | 1,417 | 1,972 | 4,475 | 1,557 |
| 80% | 1,313 | 1,124 | 457 | 202 | 191 | 189 | 195 | 210 | 855 | 1,771 | 4,153 | 1,387 |
| 90% | 1,222 | 1,021 | 220 | 188 | 186 | 187 | 189 | 188 | 251 | 1,451 | 3,879 | 1,318 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,042 | 5,088 | 3,693 | 1,959 | 728 | 580 | 755 | 1,368 | 2,556 | 3,512 | 5,697 | 5,597 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,272 | 1,054 | 1,947 | 442 | 203 | 206 | 219 | 318 | 1,025 | 1,622 | 4,162 | 1,360 |
| Above Normal (16%) | 3,310 | 2,890 | 3,149 | 926 | 296 | 228 | 255 | 475 | 1,941 | 2,084 | 4,244 | 3,070 |
| Below Normal (13%) | 8,451 | 7,008 | 4,522 | 2,372 | 845 | 679 | 785 | 1,291 | 2,755 | 3,135 | 5,148 | 7,820 |
| Dry (24%) | 9,660 | 7,239 | 4,122 | 3,052 | 1,103 | 655 | 812 | 1,690 | 3,060 | 4,883 | 7,159 | 8,956 |
| Critical (15%) | 11,100 | 10,862 | 6,589 | 4,165 | 1,600 | 1,554 | 2,338 | 4,146 | 5,518 | 7,215 | 8,664 | 9,877 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -558 | -971 | -1,129 | -277 | -176 | **3** | **10** | **297** | -63 | -11 | -59 | -103 |
| 20% | -502 | -866 | -850 | -198 | **68** | 0 | **86** | **258** | **39** | **66** | -104 | -45 |
| 30% | -475 | -783 | -132 | -168 | **20** | **2** | **3** | -22 | -3 | **86** | -93 | -120 |
| 40% | -408 | -810 | -172 | -144 | -10 | **0** | **0** | **1** | **8** | **3** | -89 | -45 |
| 50% | **525** | **11** | **81** | -98 | -3 | 0 | **0** | **0** | **4** | -3 | **15** | -228 |
| 60% | -43 | **18** | -326 | -51 | 0 | **0** | 0 | **0** | -3 | -1 | **19** | **2** |
| 70% | -88 | -95 | **34** | **2** | 0 | **1** | 0 | 0 | **3** | **1** | -1 | -3 |
| 80% | -79 | -84 | -1 | 0 | 0 | **0** | -1 | 0 | **6** | -29 | **1** | **1** |
| 90% | -70 | -89 | -2 | -1 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | **3** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -256 | -374 | -311 | -148 | -58 | **7** | **33** | **79** | **10** | **5** | -47 | -57 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -80 | -81 | -5 | -7 | **0** | **0** | 0 | 0 | **2** | -7 | -7 | 0 |
| Above Normal (16%) | -22 | -4 | -6 | -15 | -2 | **1** | **0** | **0** | **1** | -1 | -1 | **6** |
| Below Normal (13%) | -402 | -670 | -542 | -81 | -9 | **2** | **11** | **11** | **15** | **2** | -16 | -36 |
| Dry (24%) | -391 | -564 | -450 | -202 | -12 | **31** | **23** | **87** | **11** | **30** | -77 | -102 |
| Critical (15%) | -533 | -822 | -863 | -568 | -363 | -5 | **176** | **385** | **30** | **1** | -163 | -191 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 11-4. Sacramento River at Collinsville Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 11,514 | 11,954 | 9,610 | 5,997 | 2,115 | 1,860 | 2,367 | 3,154 | 4,190 | 6,101 | 8,659 | 10,004 |
| 20% | 10,491 | 10,111 | 8,974 | 4,632 | 1,070 | 992 | 1,369 | 2,581 | 3,660 | 5,193 | 7,653 | 9,387 |
| 30% | 10,203 | 9,752 | 7,210 | 3,115 | 721 | 449 | 875 | 2,193 | 3,412 | 4,839 | 7,326 | 9,232 |
| 40% | 9,784 | 9,269 | 5,741 | 1,613 | 361 | 346 | 627 | 1,371 | 2,931 | 3,458 | 5,566 | 8,296 |
| 50% | 8,999 | 8,922 | 4,808 | 1,120 | 267 | 240 | 391 | 1,026 | 2,504 | 2,922 | 4,936 | 7,167 |
| 60% | 8,587 | 8,113 | 3,436 | 549 | 213 | 206 | 258 | 735 | 2,106 | 2,254 | 4,689 | 6,875 |
| 70% | 8,134 | 6,214 | 1,189 | 222 | 196 | 194 | 213 | 443 | 1,519 | 2,064 | 4,436 | 6,670 |
| 80% | 7,543 | 4,843 | 745 | 198 | 190 | 188 | 194 | 212 | 884 | 1,761 | 4,208 | 6,532 |
| 90% | 4,820 | 2,182 | 299 | 188 | 187 | 187 | 185 | 184 | 247 | 1,506 | 4,018 | 5,942 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,623 | 7,683 | 4,736 | 2,173 | 847 | 631 | 838 | 1,515 | 2,615 | 3,541 | 5,762 | 7,638 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 6,290 | 5,636 | 3,502 | 396 | 198 | 205 | 256 | 445 | 1,056 | 1,656 | 4,112 | 5,830 |
| Above Normal (16%) | 7,923 | 7,437 | 4,614 | 979 | 279 | 232 | 324 | 696 | 1,946 | 2,111 | 4,292 | 6,691 |
| Below Normal (13%) | 8,687 | 7,869 | 5,045 | 2,597 | 939 | 751 | 930 | 1,653 | 2,903 | 3,110 | 5,058 | 7,624 |
| Dry (24%) | 10,256 | 7,969 | 4,606 | 3,471 | 1,191 | 665 | 943 | 1,842 | 3,103 | 4,876 | 7,340 | 9,120 |
| Critical (15%) | 11,653 | 11,736 | 7,473 | 4,764 | 2,211 | 1,821 | 2,394 | 4,048 | 5,637 | 7,343 | 8,946 | 10,124 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10,928 | 11,001 | 8,651 | 5,291 | 1,763 | 1,690 | 2,207 | 3,195 | 4,213 | 6,134 | 8,520 | 9,815 |
| 20% | 9,949 | 9,275 | 7,014 | 4,136 | 1,006 | 889 | 1,321 | 2,525 | 3,888 | 5,303 | 7,450 | 9,260 |
| 30% | 9,669 | 8,951 | 6,549 | 2,712 | 575 | 361 | 753 | 2,169 | 3,549 | 4,739 | 7,329 | 9,096 |
| 40% | 9,407 | 8,000 | 6,044 | 1,690 | 374 | 303 | 558 | 1,498 | 3,093 | 3,900 | 5,824 | 8,414 |
| 50% | 7,023 | 5,315 | 4,624 | 1,076 | 285 | 229 | 388 | 966 | 2,787 | 3,501 | 4,994 | 6,977 |
| 60% | 3,045 | 5,112 | 3,283 | 529 | 212 | 207 | 247 | 734 | 2,110 | 2,644 | 4,298 | 3,635 |
| 70% | 2,978 | 4,978 | 1,261 | 226 | 196 | 193 | 217 | 477 | 1,610 | 2,371 | 4,118 | 3,444 |
| 80% | 2,886 | 4,780 | 712 | 198 | 190 | 188 | 193 | 212 | 896 | 2,068 | 4,041 | 3,302 |
| 90% | 2,767 | 1,714 | 289 | 187 | 187 | 187 | 185 | 185 | 253 | 1,549 | 3,837 | 3,142 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6,436 | 6,407 | 4,343 | 1,958 | 737 | 591 | 815 | 1,520 | 2,707 | 3,743 | 5,652 | 6,254 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 2,774 | 4,075 | 3,420 | 499 | 203 | 200 | 241 | 459 | 1,150 | 1,818 | 3,853 | 3,234 |
| Above Normal (16%) | 2,937 | 4,624 | 4,161 | 961 | 275 | 217 | 313 | 724 | 2,092 | 2,466 | 4,140 | 3,320 |
| Below Normal (13%) | 8,346 | 7,308 | 4,568 | 2,465 | 859 | 688 | 913 | 1,680 | 3,179 | 3,747 | 5,367 | 7,770 |
| Dry (24%) | 9,617 | 7,380 | 4,209 | 2,994 | 1,012 | 588 | 877 | 1,793 | 3,107 | 4,894 | 7,250 | 9,038 |
| Critical (15%) | 11,108 | 10,942 | 6,560 | 4,007 | 1,823 | 1,763 | 2,406 | 4,078 | 5,651 | 7,373 | 8,785 | 9,949 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -586 | -952 | -959 | -706 | -352 | -171 | -160 | **41** | **23** | **33** | -139 | -189 |
| 20% | -542 | -836 | -1,960 | -496 | -63 | -102 | -48 | -56 | **228** | **111** | -204 | -127 |
| 30% | -534 | -800 | -661 | -403 | -146 | -87 | -122 | -24 | **137** | -101 | **2** | -137 |
| 40% | -377 | -1,269 | **303** | **77** | **13** | -42 | -69 | **127** | **162** | **442** | **258** | **118** |
| 50% | -1,976 | -3,607 | -184 | -44 | **18** | -10 | -3 | -61 | **284** | **578** | **57** | -190 |
| 60% | -5,541 | -3,002 | -153 | -20 | 0 | **1** | -11 | -1 | **4** | **390** | -390 | -3,240 |
| 70% | -5,156 | -1,235 | **72** | **4** | **1** | -1 | **4** | **34** | **91** | **307** | -318 | -3,226 |
| 80% | -4,657 | -63 | -33 | 0 | 0 | 0 | 0 | 0 | **13** | **307** | -167 | -3,229 |
| 90% | -2,053 | -468 | -10 | -1 | 0 | **0** | **0** | **1** | **6** | **43** | -181 | -2,799 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2,187 | -1,276 | -392 | -215 | -110 | -40 | -23 | **5** | **93** | **202** | -110 | -1,384 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -3,516 | -1,560 | -81 | **104** | **5** | -5 | -15 | **14** | **93** | **161** | -259 | -2,596 |
| Above Normal (16%) | -4,986 | -2,812 | -454 | -18 | -5 | -15 | -11 | **29** | **146** | **355** | -152 | -3,371 |
| Below Normal (13%) | -341 | -561 | -477 | -132 | -80 | -63 | -18 | **26** | **276** | **637** | **309** | **145** |
| Dry (24%) | -638 | -589 | -397 | -477 | -179 | -78 | -65 | -49 | **4** | **18** | -90 | -82 |
| Critical (15%) | -545 | -794 | -913 | -758 | -389 | -58 | **11** | **30** | **13** | **30** | -161 | -175 |

a Based on the 82-year simulation period.

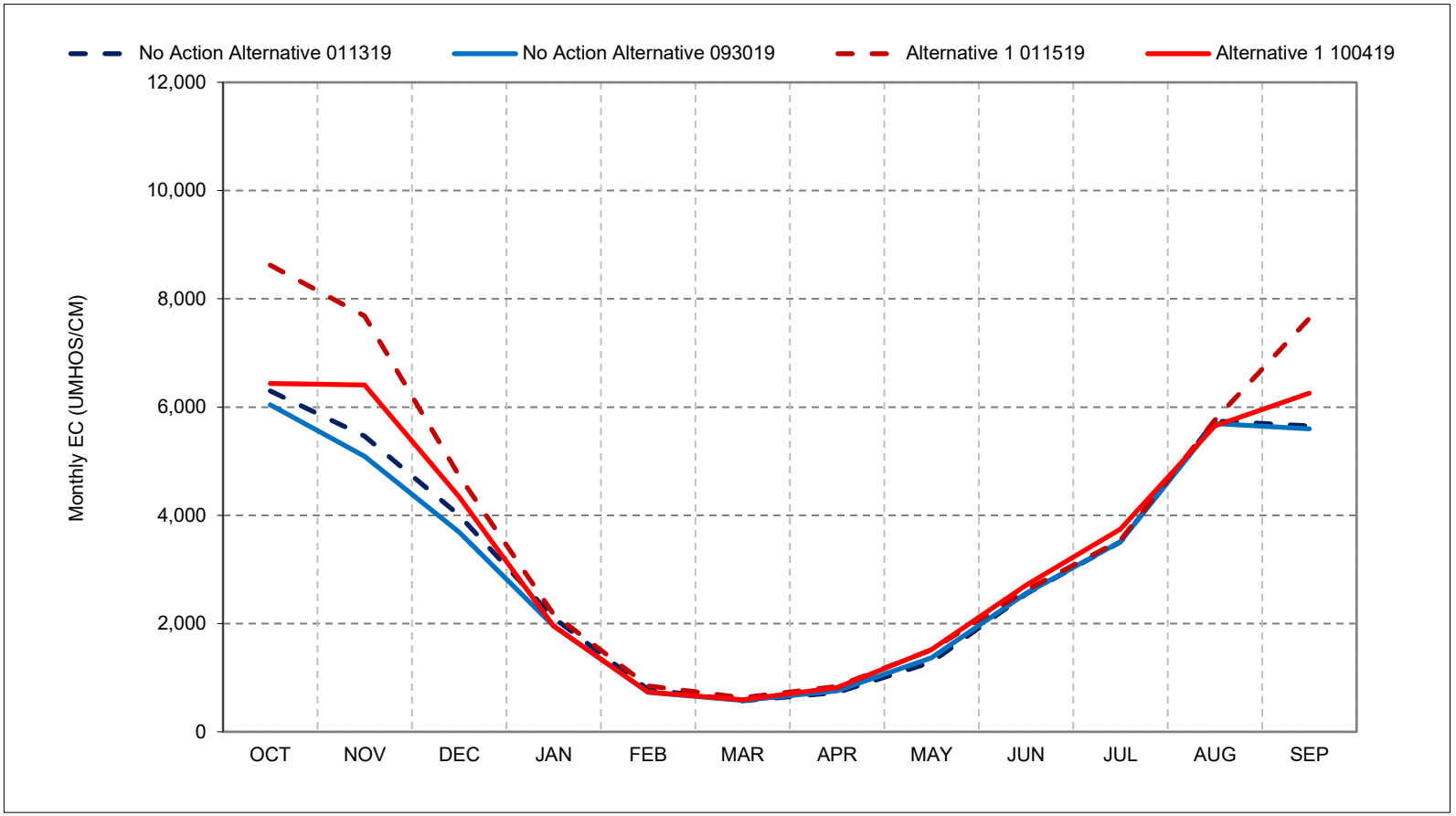
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-1. Sacramento River at Collinsville Salinity, Long-Term Average EC

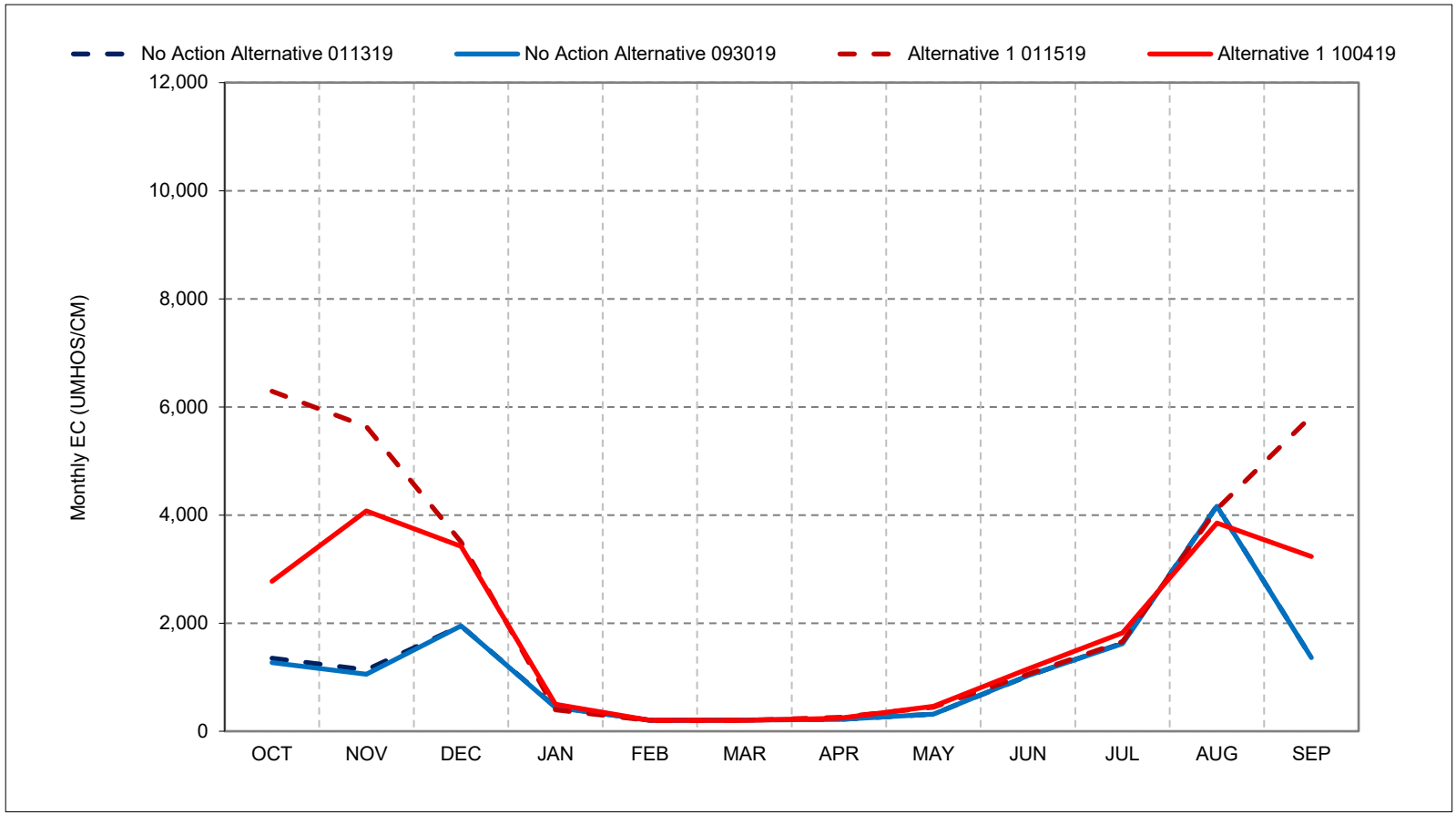



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-2. Sacramento River at Collinsville Salinity, Wet Year Average EC

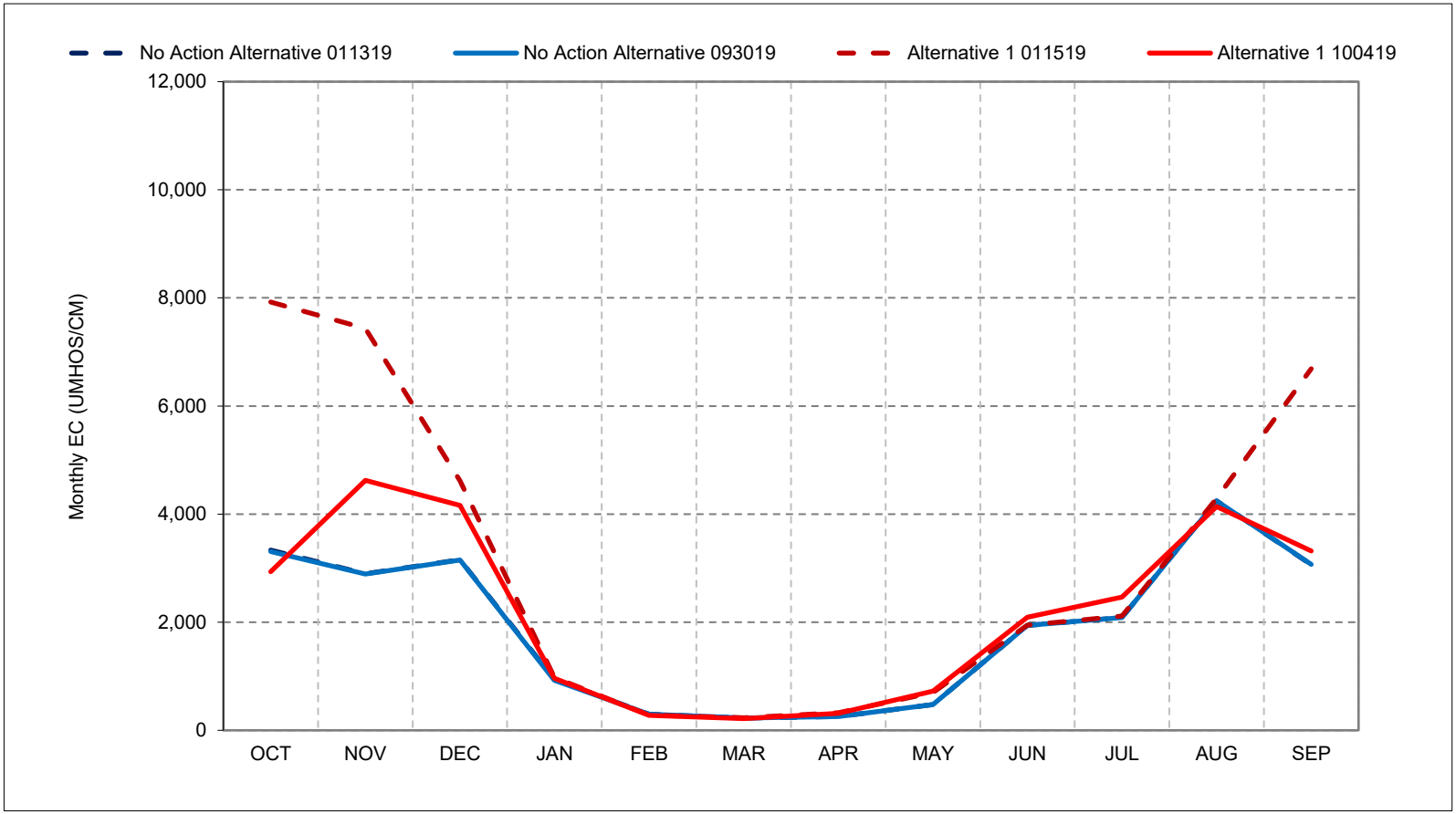



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-3. Sacramento River at Collinsville Salinity, Above Normal Year Average EC

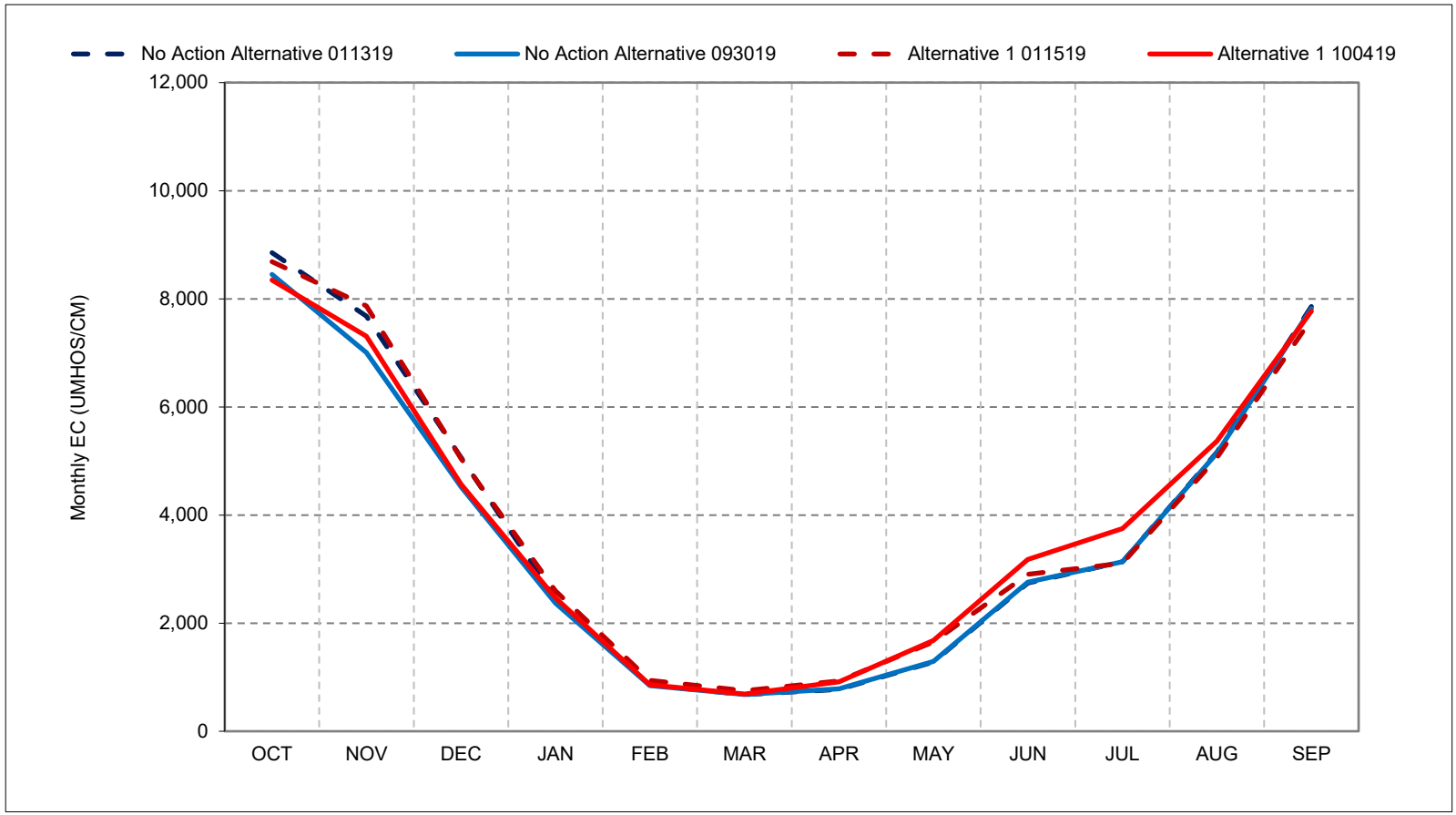



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-4. Sacramento River at Collinsville Salinity, Below Normal Year Average EC

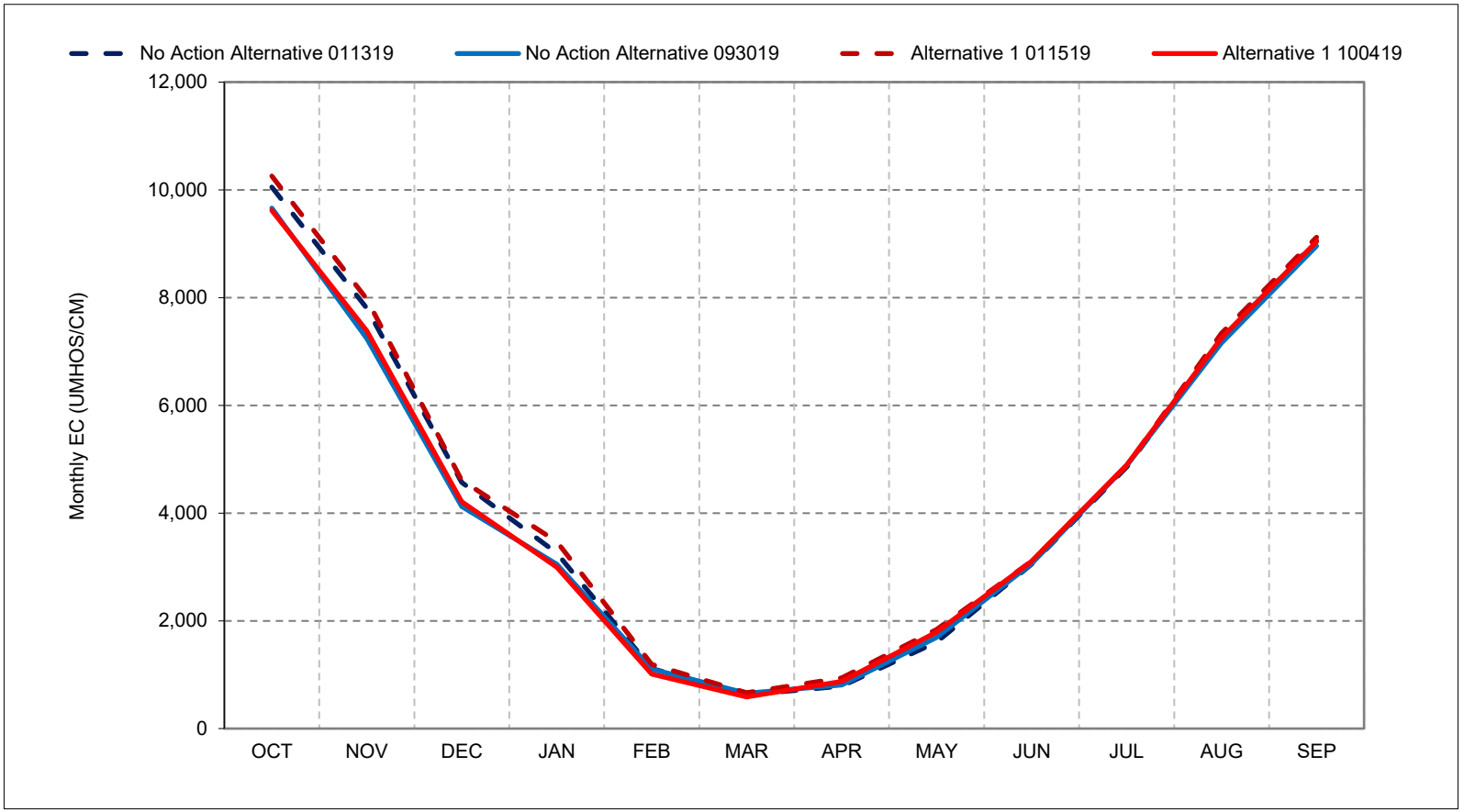



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-5. Sacramento River at Collinsville Salinity, Dry Year Average EC

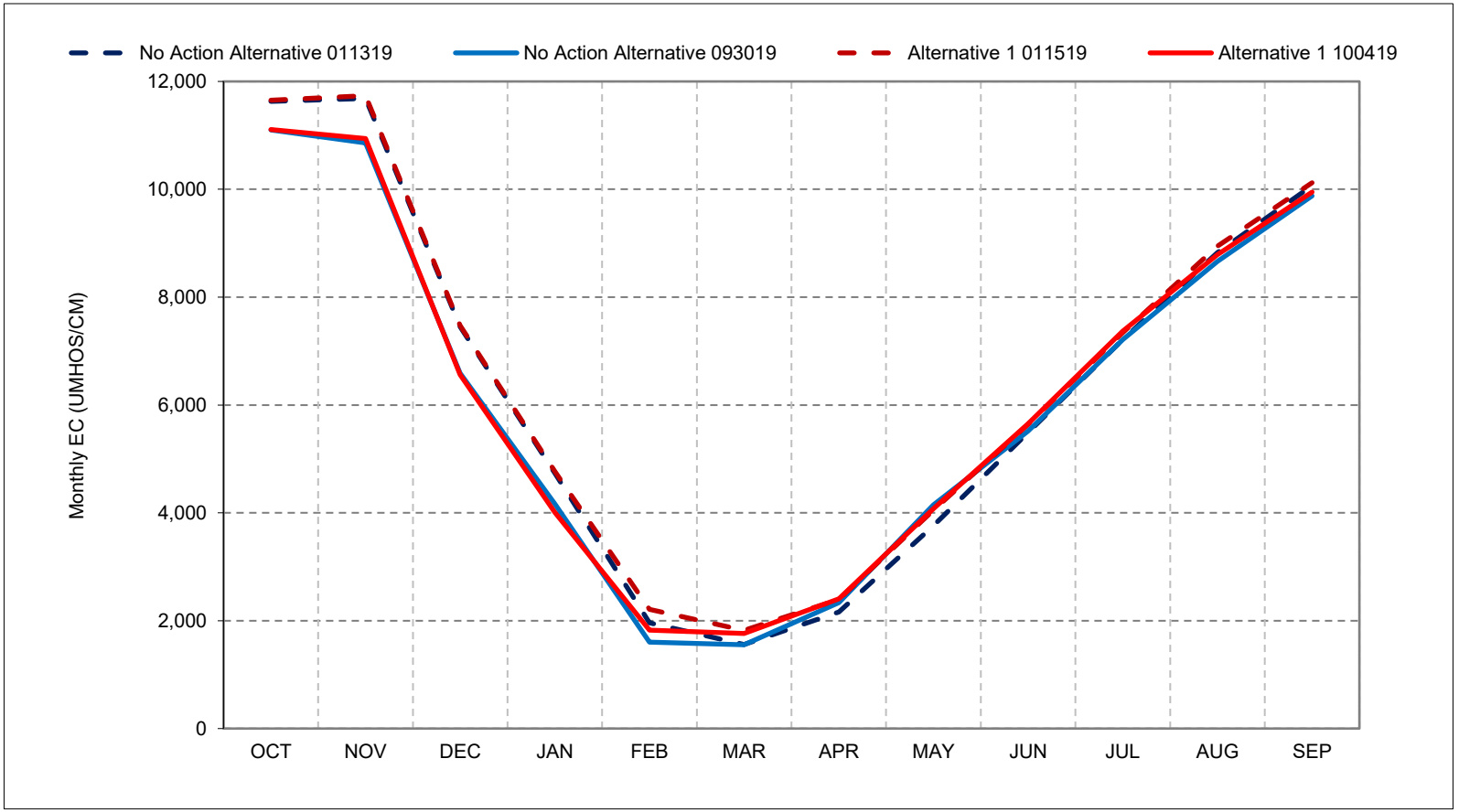



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 11-6. Sacramento River at Collinsville Salinity, Critical Year Average EC

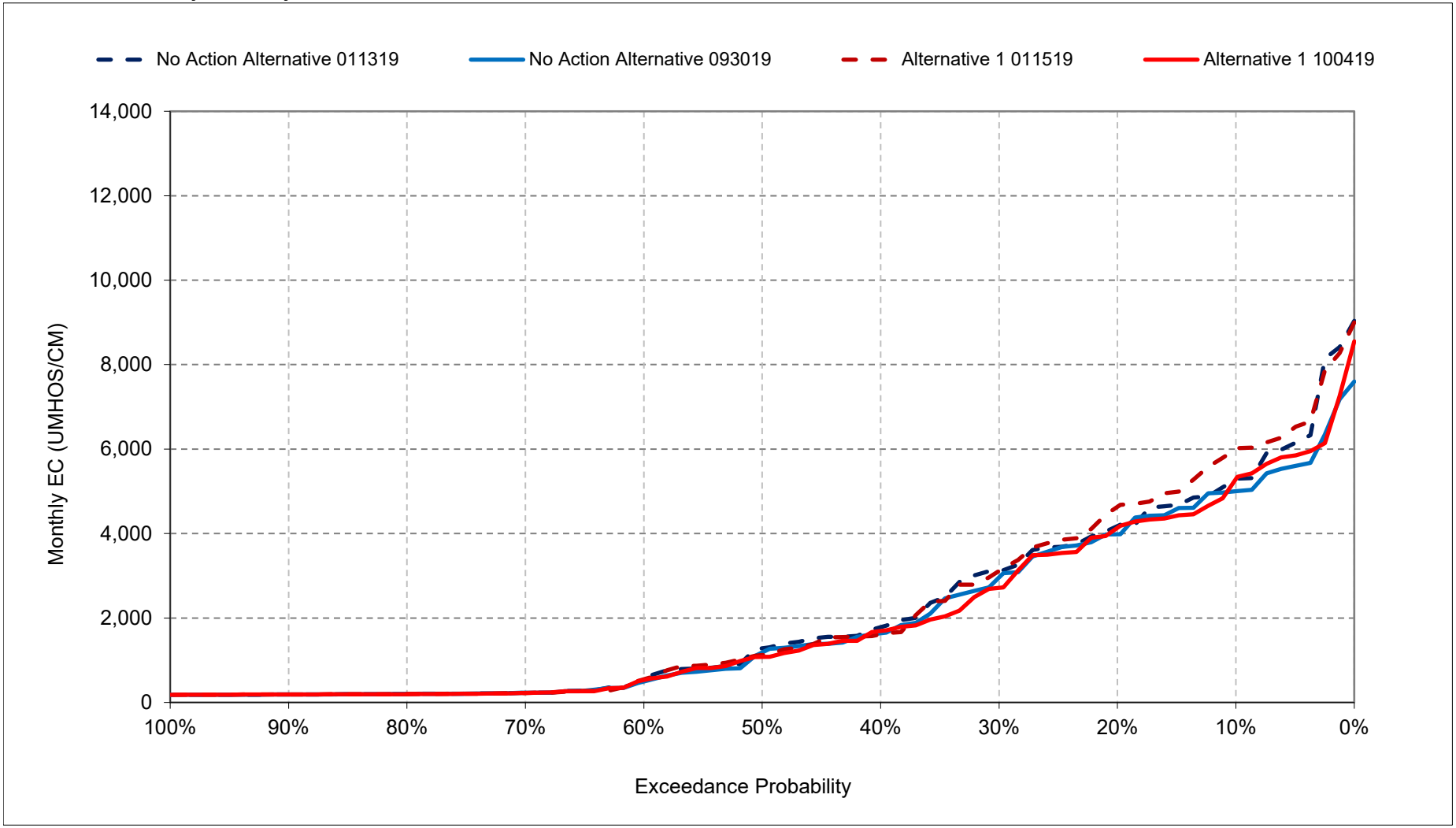



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

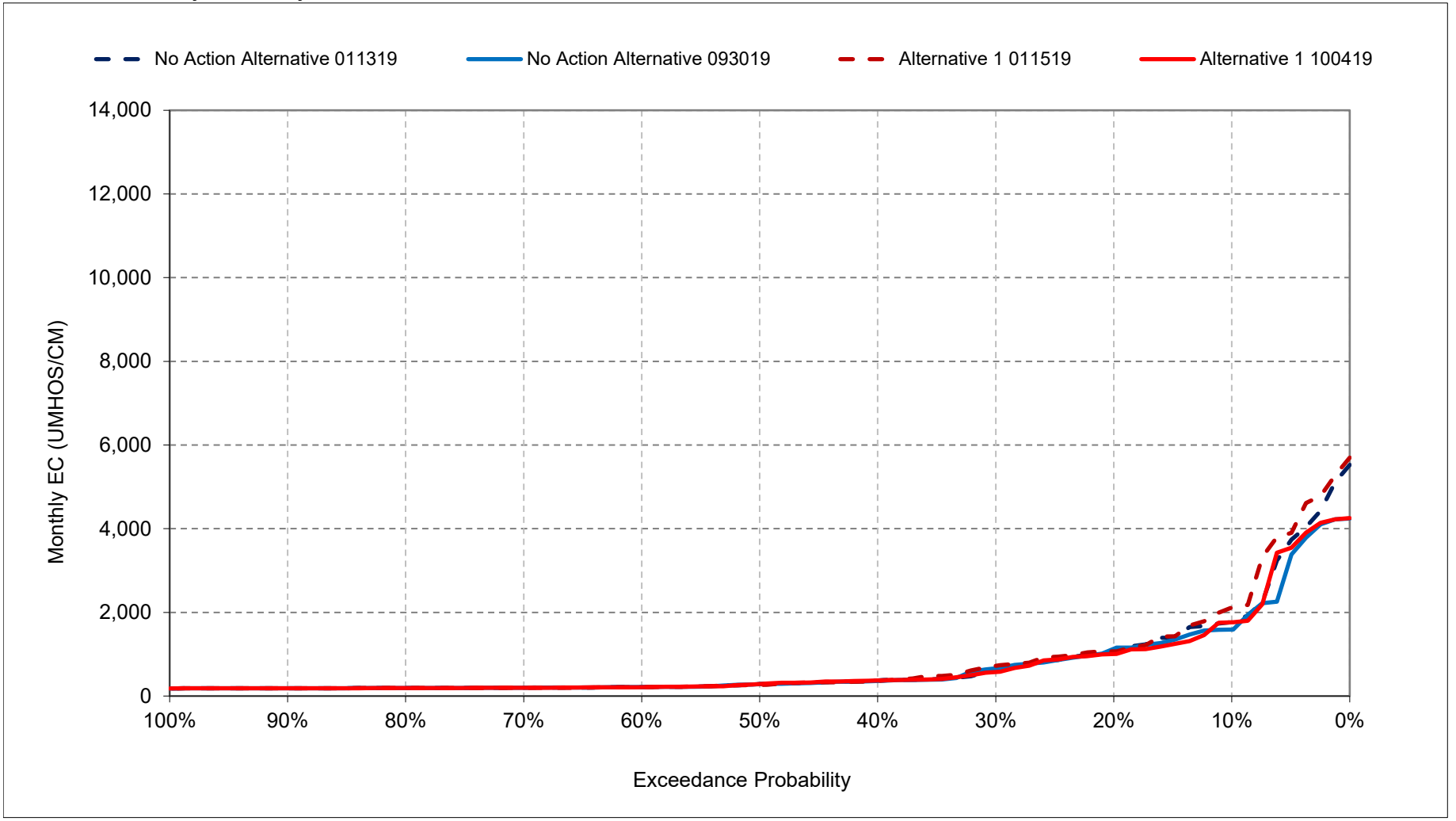
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-7. Sacramento River at Collinsville Salinity, January EC**



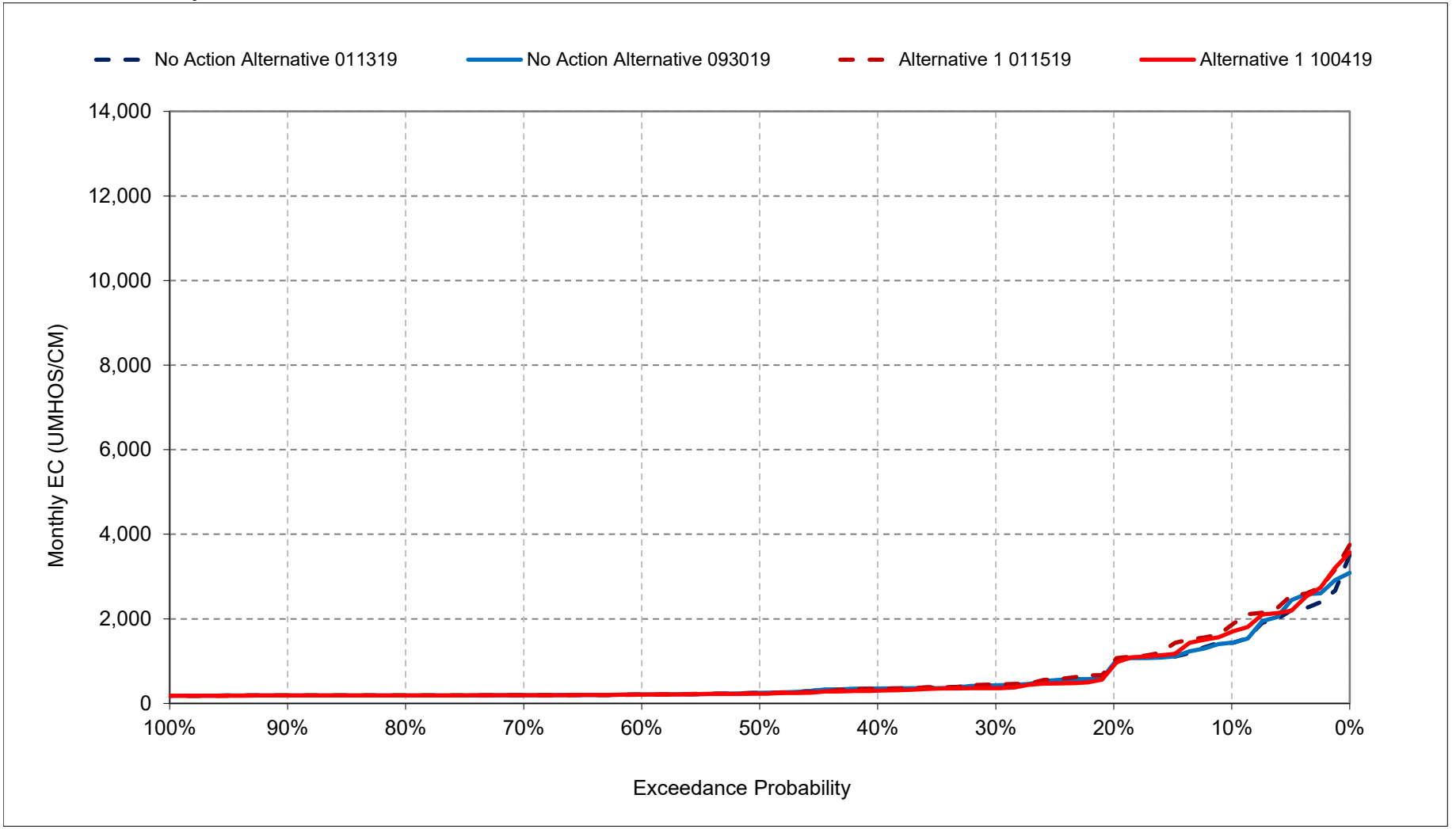

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-8. Sacramento River at Collinsville Salinity, February EC**



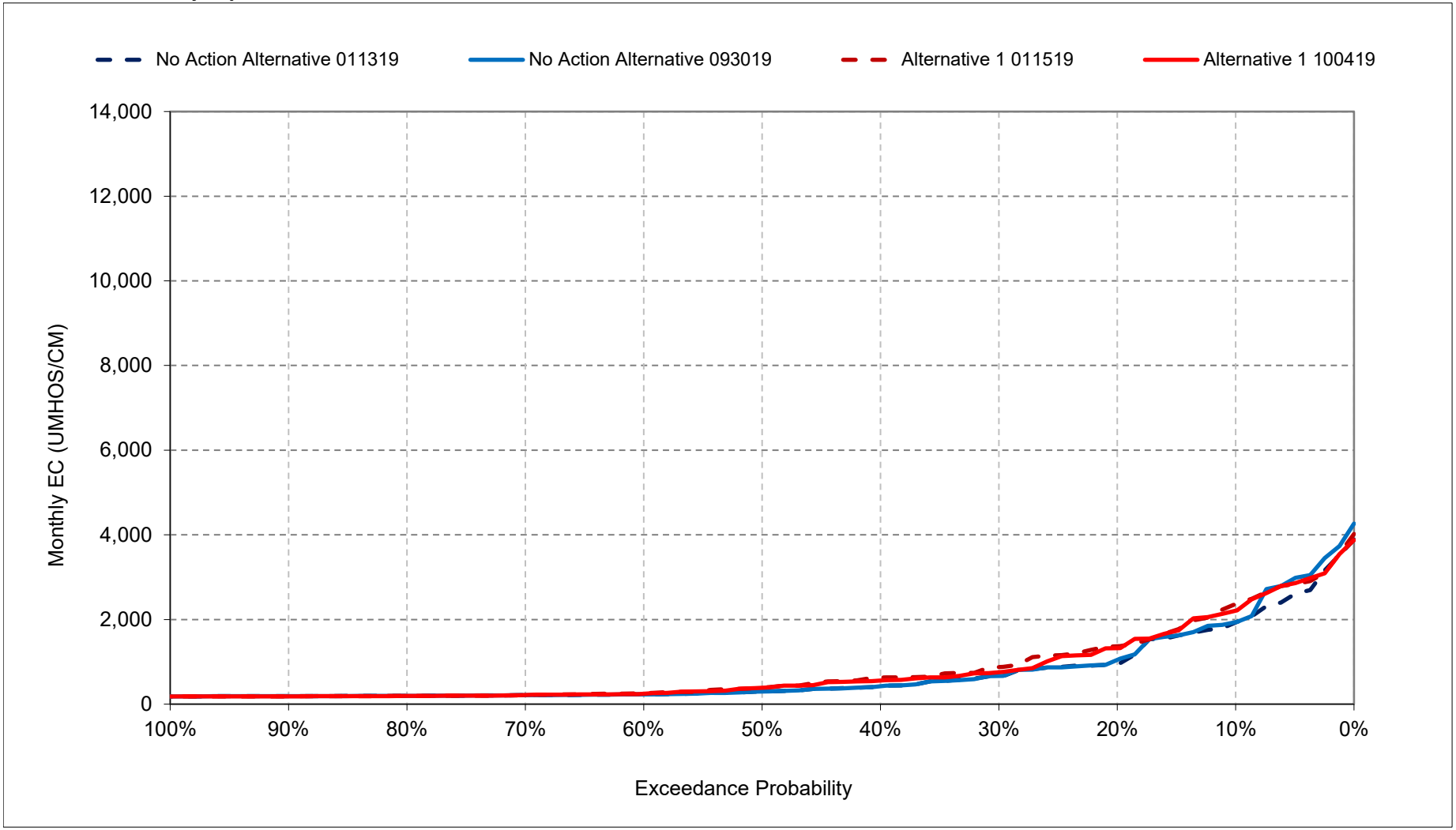

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-9. Sacramento River at Collinsville Salinity, March EC**



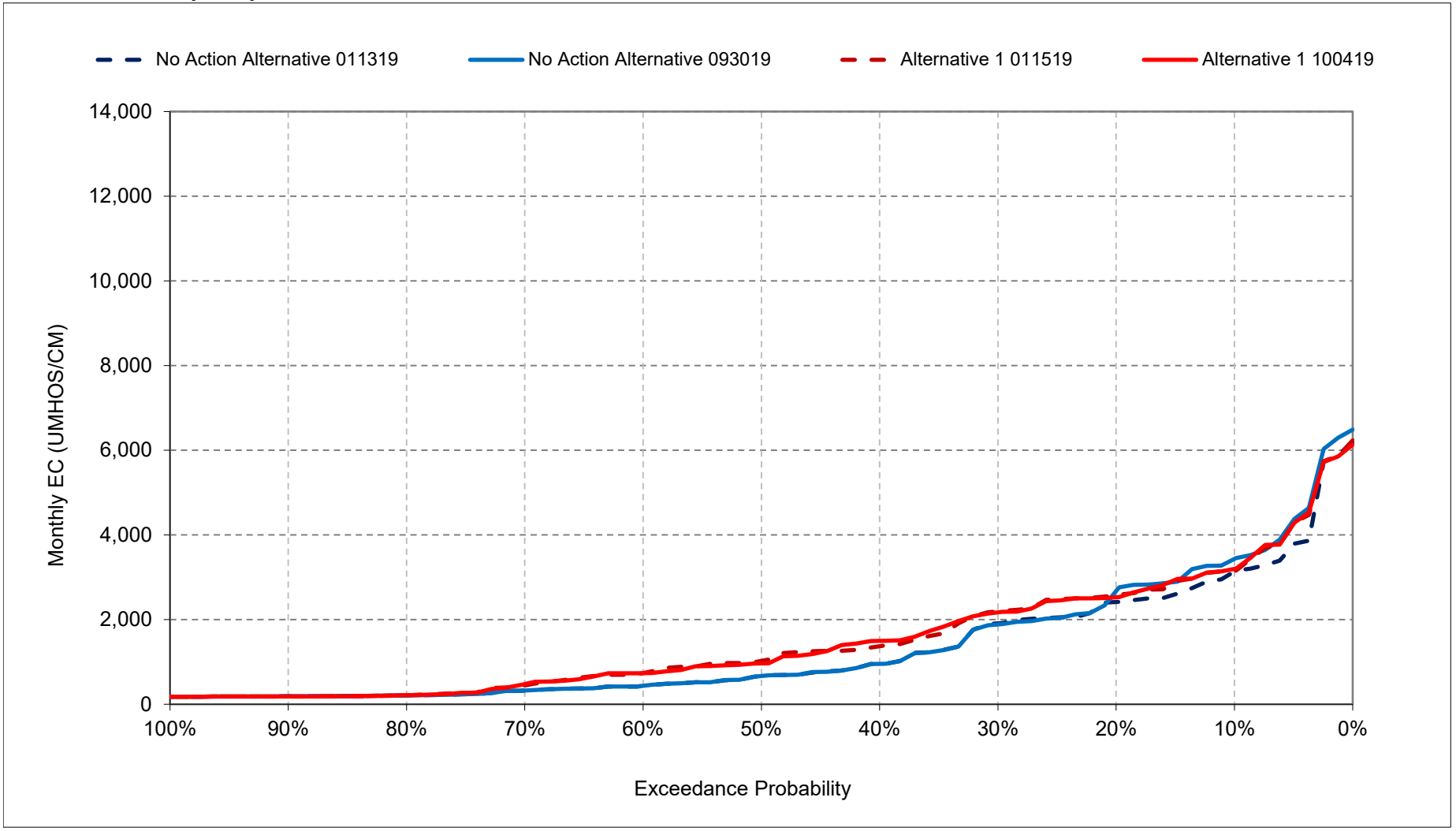

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-10. Sacramento River at Collinsville Salinity, April EC**



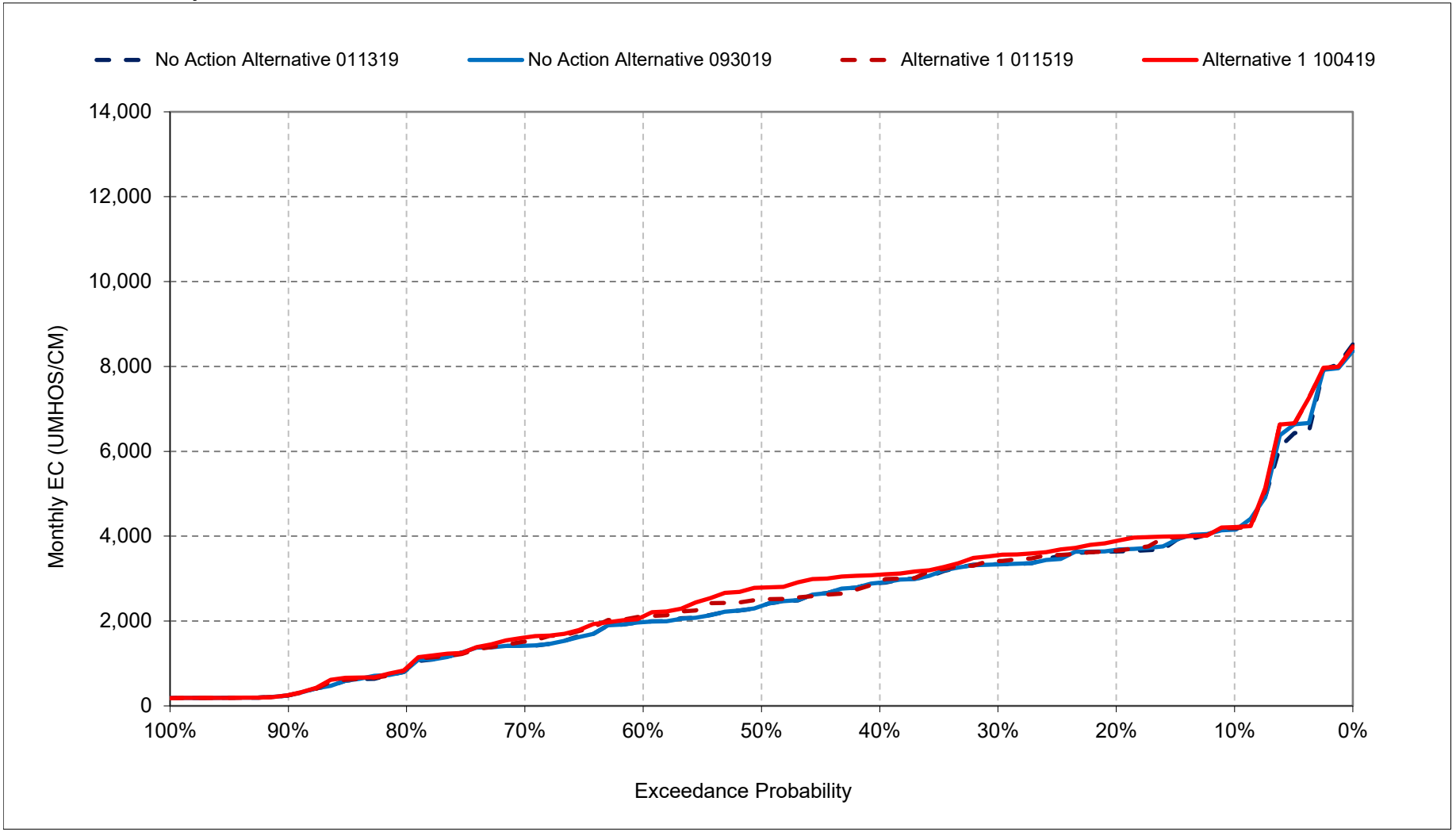

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-11. Sacramento River at Collinsville Salinity, May EC**



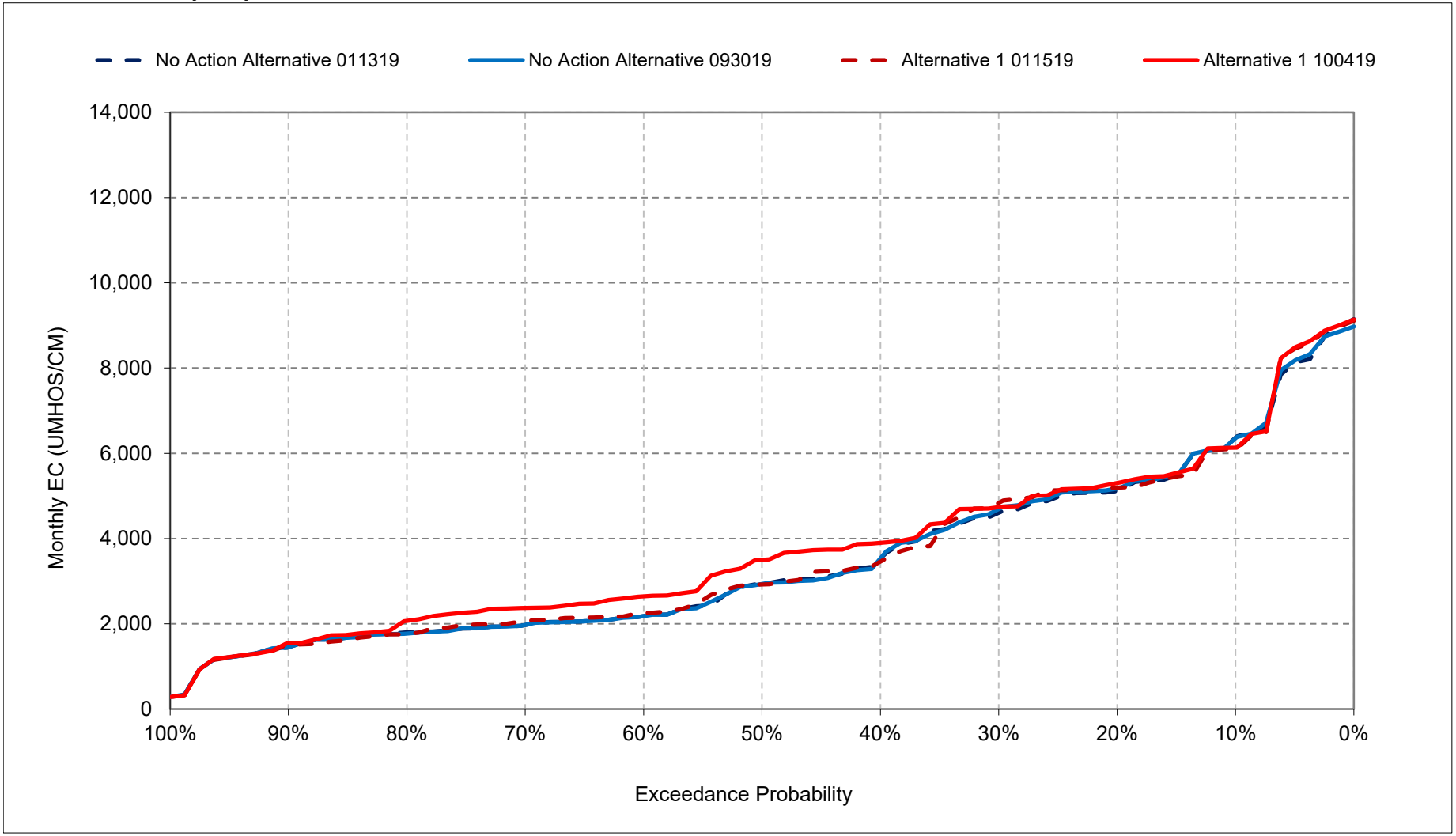

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-12. Sacramento River at Collinsville Salinity, June EC**



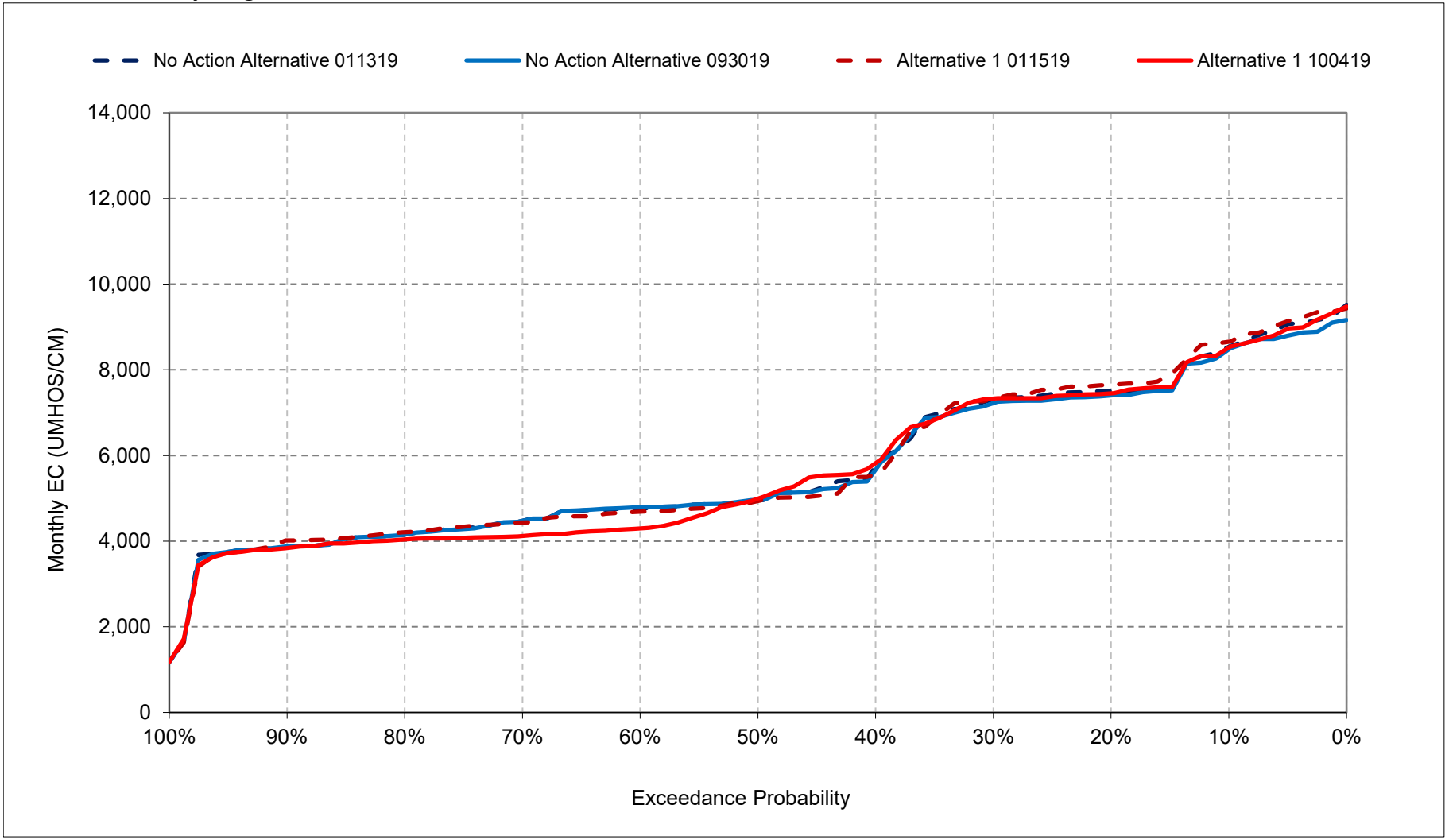

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-13. Sacramento River at Collinsville Salinity, July EC**



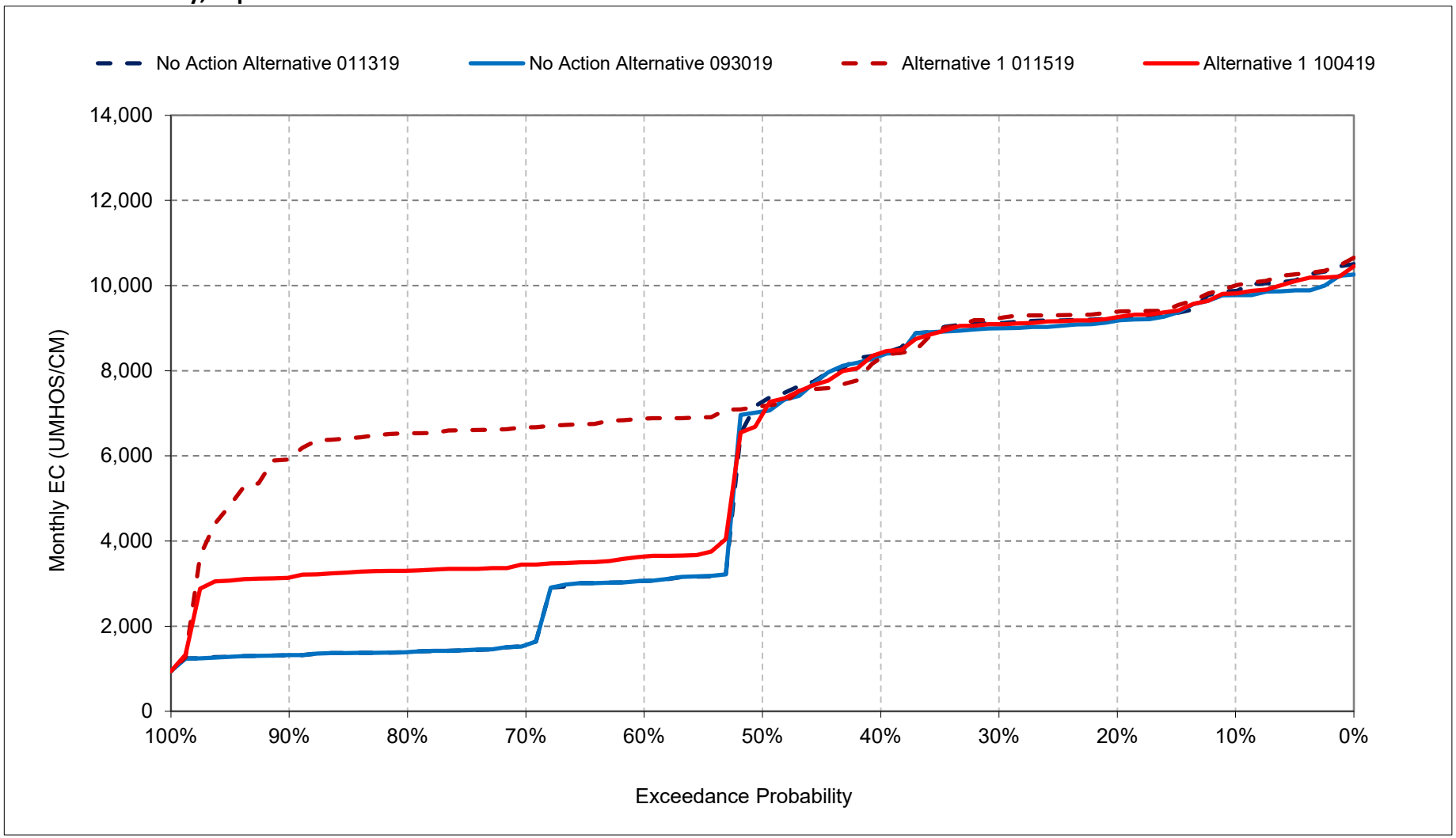

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-14. Sacramento River at Collinsville Salinity, August EC**



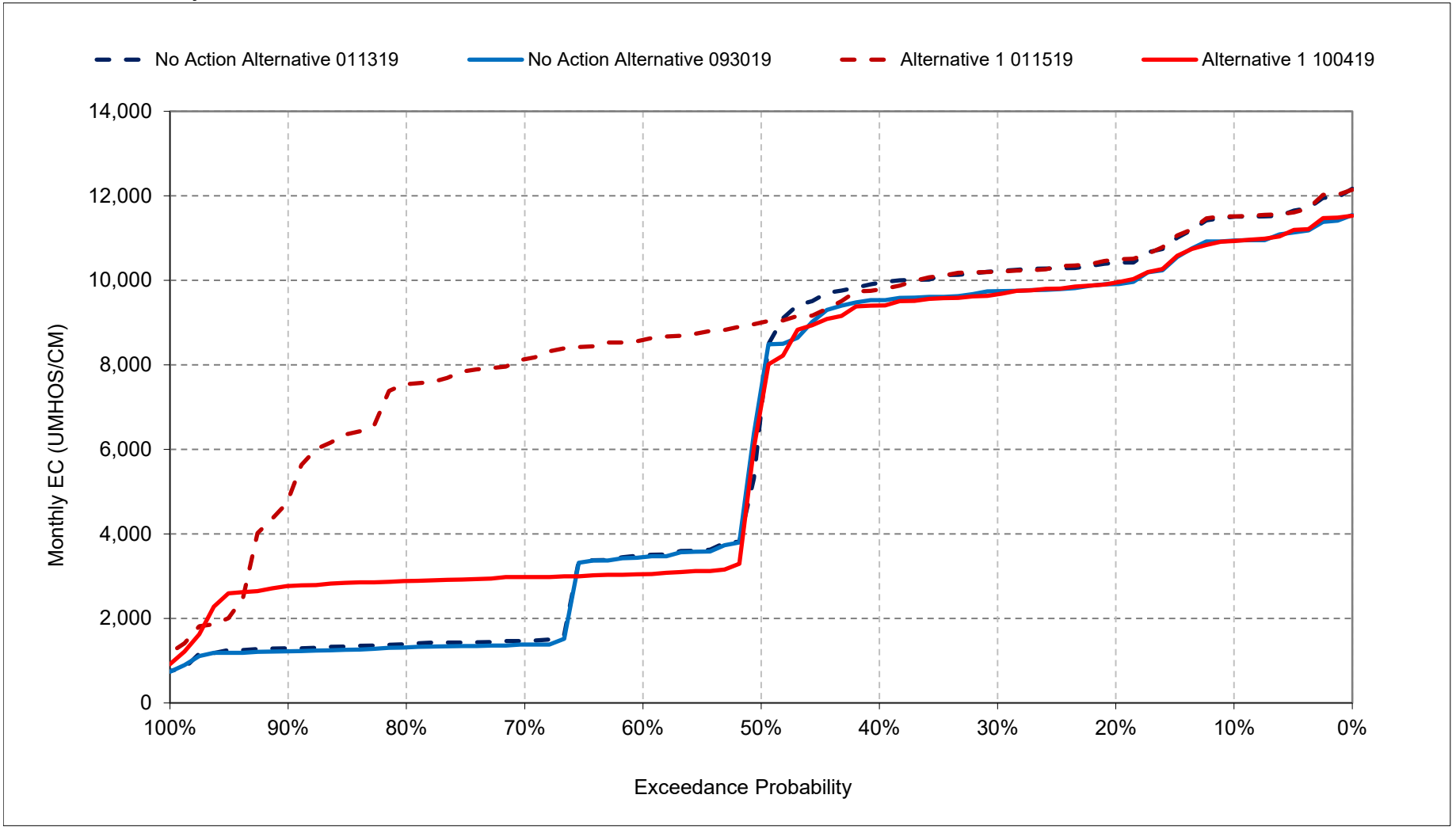

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-15. Sacramento River at Collinsville Salinity, September EC**



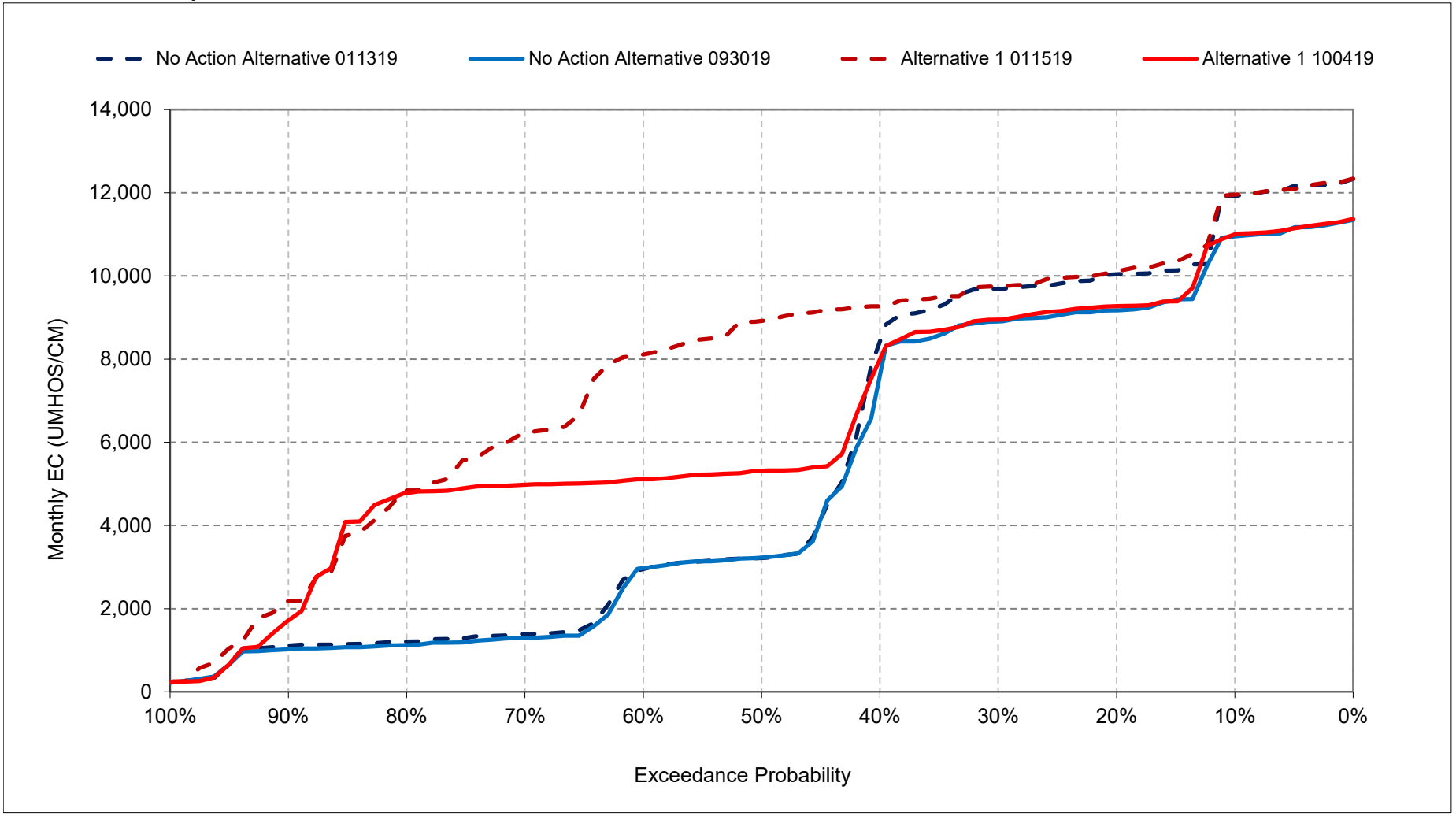

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-16. Sacramento River at Collinsville Salinity, October EC**



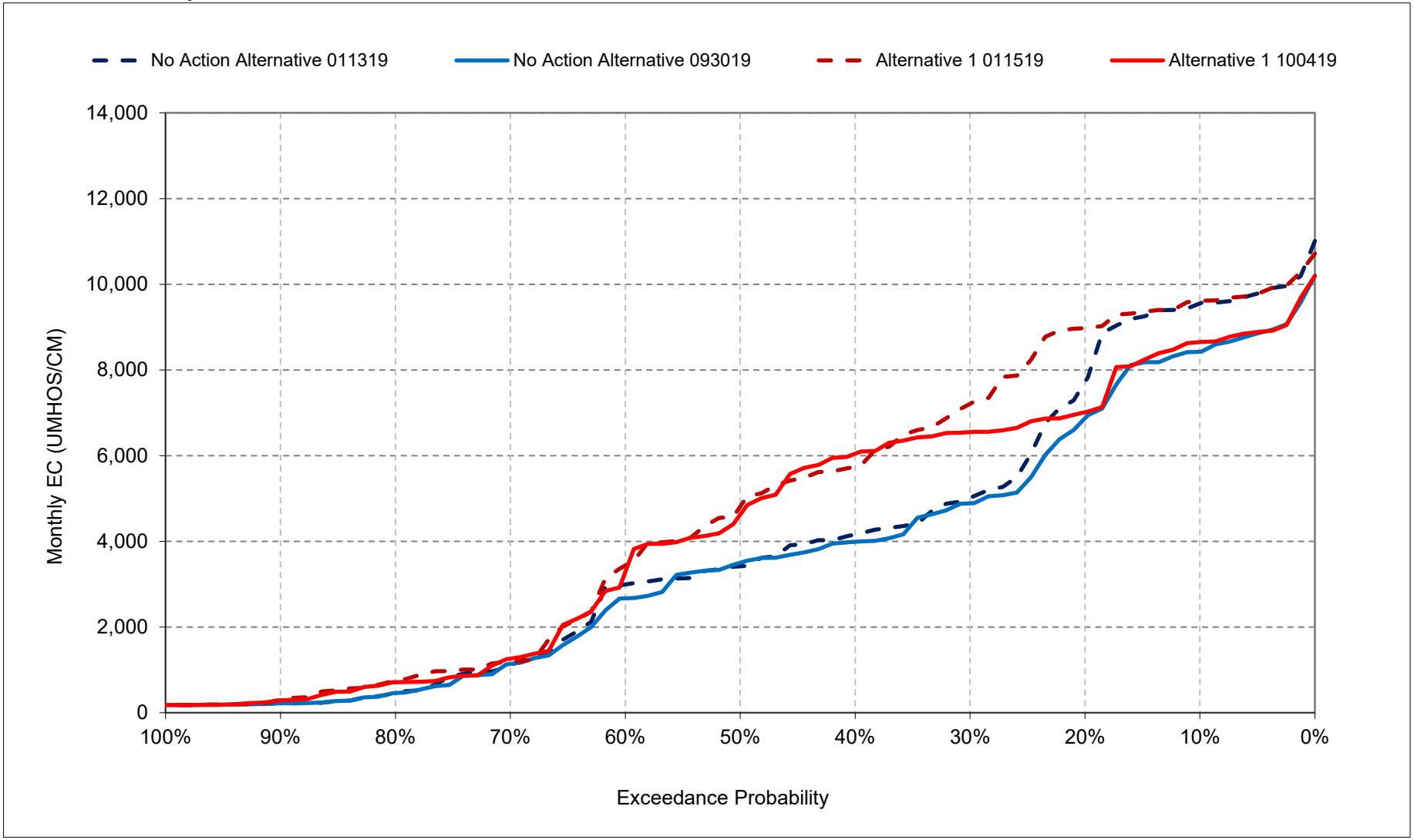

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-17. Sacramento River at Collinsville Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 11-18. Sacramento River at Collinsville Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-1. Chipps Island North Channel Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 16,047 | 16,468 | 14,342 | 9,586 | 4,567 | 3,838 | 4,822 | 6,482 | 8,206 | 10,723 | 13,180 | 14,552 |
| **20%** | 15,023 | 14,703 | 12,712 | 8,291 | 3,037 | 2,816 | 2,827 | 5,524 | 7,337 | 9,436 | 11,971 | 13,854 |
| **30%** | 14,888 | 14,526 | 9,201 | 6,815 | 1,618 | 1,297 | 2,090 | 4,639 | 6,817 | 8,804 | 11,754 | 13,756 |
| **40%** | 14,555 | 13,409 | 8,375 | 4,265 | 910 | 1,049 | 1,249 | 2,717 | 6,076 | 7,268 | 10,253 | 12,989 |
| **50%** | 11,551 | 6,975 | 6,958 | 2,925 | 555 | 592 | 862 | 2,066 | 5,113 | 6,602 | 9,204 | 11,927 |
| **60%** | 7,097 | 6,680 | 6,292 | 1,601 | 317 | 345 | 494 | 1,329 | 4,660 | 5,296 | 8,863 | 6,797 |
| **70%** | 3,730 | 3,736 | 2,963 | 389 | 218 | 222 | 331 | 932 | 3,654 | 4,872 | 8,480 | 3,843 |
| **80%** | 3,615 | 3,398 | 1,015 | 223 | 204 | 200 | 225 | 387 | 2,272 | 4,606 | 8,044 | 3,611 |
| **90%** | 3,461 | 3,214 | 368 | 196 | 192 | 192 | 195 | 200 | 660 | 3,804 | 7,616 | 3,551 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 9,932 | 8,973 | 7,014 | 4,159 | 1,740 | 1,368 | 1,728 | 2,867 | 5,156 | 6,921 | 9,906 | 9,375 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 3,545 | 3,212 | 4,067 | 883 | 262 | 307 | 363 | 704 | 2,367 | 4,049 | 7,960 | 3,582 |
| **Above Normal (16%)** | 6,840 | 6,321 | 6,095 | 1,990 | 599 | 402 | 543 | 1,326 | 4,396 | 5,095 | 8,140 | 6,786 |
| **Below Normal (13%)** | 13,193 | 12,087 | 8,351 | 5,194 | 2,061 | 1,875 | 2,110 | 3,228 | 5,805 | 6,858 | 9,432 | 12,461 |
| **Dry (24%)** | 14,717 | 12,092 | 7,534 | 6,579 | 2,575 | 1,612 | 2,114 | 3,848 | 6,326 | 9,046 | 11,723 | 13,696 |
| **Critical (15%)** | 16,158 | 16,276 | 12,300 | 8,625 | 4,490 | 3,840 | 4,977 | 7,259 | 9,478 | 11,642 | 13,438 | 14,700 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 16,081 | 16,512 | 14,339 | 10,827 | 5,309 | 4,770 | 5,597 | 6,628 | 8,174 | 10,422 | 13,360 | 14,654 |
| **20%** | 15,103 | 14,804 | 13,776 | 8,858 | 3,064 | 2,969 | 3,655 | 5,823 | 7,441 | 9,550 | 12,154 | 14,002 |
| **30%** | 14,921 | 14,569 | 12,236 | 6,770 | 1,939 | 1,348 | 2,537 | 5,242 | 6,978 | 9,046 | 11,850 | 13,875 |
| **40%** | 14,393 | 14,072 | 10,516 | 4,275 | 1,084 | 1,065 | 1,918 | 3,620 | 6,241 | 7,261 | 10,047 | 12,838 |
| **50%** | 13,624 | 13,734 | 9,305 | 2,901 | 548 | 596 | 1,195 | 2,868 | 5,583 | 6,591 | 9,173 | 11,867 |
| **60%** | 13,234 | 12,793 | 7,013 | 1,573 | 262 | 332 | 723 | 2,218 | 5,009 | 5,401 | 8,783 | 11,457 |
| **70%** | 12,876 | 11,004 | 3,346 | 370 | 217 | 213 | 384 | 1,364 | 3,783 | 5,019 | 8,403 | 11,304 |
| **80%** | 12,402 | 9,065 | 1,576 | 217 | 203 | 200 | 225 | 466 | 2,378 | 4,597 | 8,125 | 11,131 |
| **90%** | 9,282 | 5,012 | 527 | 197 | 192 | 192 | 193 | 212 | 655 | 3,769 | 7,841 | 10,561 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 13,122 | 11,935 | 8,022 | 4,243 | 1,859 | 1,484 | 2,016 | 3,376 | 5,337 | 6,962 | 9,933 | 12,177 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 10,642 | 9,590 | 6,261 | 803 | 251 | 302 | 506 | 1,058 | 2,485 | 4,094 | 7,903 | 10,159 |
| **Above Normal (16%)** | 12,495 | 11,714 | 8,013 | 1,980 | 549 | 406 | 782 | 1,948 | 4,526 | 5,155 | 8,224 | 11,318 |
| **Below Normal (13%)** | 13,066 | 12,327 | 8,315 | 5,340 | 2,195 | 1,963 | 2,495 | 4,005 | 6,156 | 6,844 | 9,353 | 12,252 |
| **Dry (24%)** | 14,949 | 12,277 | 7,561 | 6,896 | 2,741 | 1,729 | 2,477 | 4,370 | 6,492 | 9,041 | 11,830 | 13,769 |
| **Critical (15%)** | 16,183 | 16,327 | 12,346 | 8,723 | 4,986 | 4,362 | 5,414 | 7,715 | 9,724 | 11,776 | 13,554 | 14,761 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | **33** | **44** | -3 | **1,241** | **742** | **933** | **774** | **146** | -33 | -301 | **180** | **101** |
| **20%** | **80** | **101** | **1,063** | **567** | **27** | **154** | **828** | **299** | **104** | **114** | **183** | **147** |
| **30%** | **33** | **43** | **3,035** | -45 | **322** | **50** | **447** | **603** | **161** | **242** | **96** | **119** |
| **40%** | -162 | **663** | **2,141** | **10** | **173** | **16** | **669** | **903** | **166** | -8 | -206 | -150 |
| **50%** | **2,072** | **6,760** | **2,348** | -24 | -6 | **5** | **333** | **802** | **470** | -12 | -31 | -61 |
| **60%** | **6,137** | **6,113** | **722** | -27 | -56 | -13 | **229** | **889** | **349** | **105** | -81 | **4,660** |
| **70%** | **9,146** | **7,267** | **384** | -19 | -1 | -9 | **53** | **432** | **129** | **148** | -77 | **7,462** |
| **80%** | **8,787** | **5,667** | **561** | -6 | -1 | 0 | -1 | **79** | **106** | -9 | **80** | **7,520** |
| **90%** | **5,821** | **1,798** | **159** | **1** | **0** | **0** | -2 | **12** | -6 | -35 | **225** | **7,010** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **3,190** | **2,962** | **1,008** | **84** | **119** | **116** | **287** | **509** | **182** | **41** | **27** | **2,803** |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **7,097** | **6,377** | **2,194** | -80 | -11 | -5 | **142** | **354** | **118** | **45** | -58 | **6,576** |
| **Above Normal (16%)** | **5,655** | **5,393** | **1,917** | -11 | -50 | **4** | **239** | **622** | **130** | **61** | **84** | **4,532** |
| **Below Normal (13%)** | -127 | **241** | -37 | **146** | **134** | **88** | **386** | **778** | **351** | -13 | -79 | -209 |
| **Dry (24%)** | **232** | **185** | **28** | **317** | **166** | **117** | **364** | **521** | **166** | -4 | **107** | **73** |
| **Critical (15%)** | **25** | **51** | **46** | **98** | **496** | **522** | **436** | **456** | **245** | **134** | **115** | **62** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-2. Chipps Island North Channel Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 15,566 | 15,624 | 13,356 | 9,322 | 4,252 | 3,779 | 4,842 | 6,840 | 8,065 | 10,661 | 13,019 | 14,397 |
| **20%** | 14,606 | 13,992 | 11,810 | 8,176 | 3,080 | 2,815 | 2,993 | 5,843 | 7,344 | 9,460 | 11,875 | 13,793 |
| **30%** | 14,453 | 13,753 | 8,958 | 6,538 | 1,710 | 1,247 | 2,097 | 4,648 | 6,767 | 8,813 | 11,680 | 13,624 |
| **40%** | 14,229 | 12,403 | 8,017 | 3,952 | 884 | 1,052 | 1,252 | 2,717 | 6,077 | 7,278 | 10,159 | 12,908 |
| **50%** | 12,168 | 6,912 | 6,869 | 2,631 | 549 | 597 | 862 | 2,067 | 5,108 | 6,595 | 9,210 | 11,768 |
| **60%** | 7,034 | 6,585 | 5,833 | 1,489 | 316 | 345 | 495 | 1,333 | 4,658 | 5,295 | 8,866 | 6,800 |
| **70%** | 3,551 | 3,519 | 2,915 | 398 | 218 | 222 | 331 | 933 | 3,654 | 4,871 | 8,479 | 3,836 |
| **80%** | 3,451 | 3,268 | 1,017 | 225 | 204 | 200 | 225 | 388 | 2,284 | 4,562 | 8,043 | 3,612 |
| **90%** | 3,318 | 3,098 | 370 | 197 | 193 | 192 | 195 | 200 | 660 | 3,804 | 7,614 | 3,551 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 9,678 | 8,575 | 6,635 | 3,933 | 1,644 | 1,376 | 1,771 | 2,954 | 5,157 | 6,913 | 9,853 | 9,317 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 3,392 | 3,042 | 4,034 | 864 | 262 | 308 | 363 | 704 | 2,370 | 4,036 | 7,950 | 3,581 |
| **Above Normal (16%)** | 6,780 | 6,244 | 6,037 | 1,941 | 590 | 405 | 543 | 1,327 | 4,398 | 5,093 | 8,138 | 6,792 |
| **Below Normal (13%)** | 12,824 | 11,396 | 7,732 | 5,035 | 2,028 | 1,877 | 2,131 | 3,236 | 5,823 | 6,858 | 9,404 | 12,422 |
| **Dry (24%)** | 14,387 | 11,545 | 7,036 | 6,241 | 2,531 | 1,654 | 2,146 | 3,959 | 6,329 | 9,051 | 11,638 | 13,590 |
| **Critical (15%)** | 15,703 | 15,549 | 11,243 | 7,884 | 3,949 | 3,818 | 5,196 | 7,661 | 9,453 | 11,608 | 13,274 | 14,512 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 15,572 | 15,640 | 13,391 | 9,909 | 4,667 | 4,454 | 5,355 | 6,632 | 8,206 | 10,458 | 13,156 | 14,448 |
| **20%** | 14,645 | 14,047 | 11,681 | 8,264 | 3,016 | 2,678 | 3,611 | 5,805 | 7,721 | 9,604 | 11,963 | 13,922 |
| **30%** | 14,461 | 13,791 | 11,193 | 6,078 | 1,644 | 1,095 | 2,185 | 5,169 | 7,113 | 8,961 | 11,801 | 13,731 |
| **40%** | 14,089 | 12,757 | 10,858 | 4,093 | 1,048 | 884 | 1,766 | 3,927 | 6,453 | 7,738 | 10,157 | 12,924 |
| **50%** | 11,754 | 9,445 | 8,986 | 2,794 | 560 | 511 | 1,164 | 2,672 | 5,900 | 7,338 | 9,210 | 11,645 |
| **60%** | 6,539 | 9,239 | 6,965 | 1,550 | 274 | 293 | 636 | 2,193 | 5,003 | 5,915 | 8,238 | 7,385 |
| **70%** | 6,433 | 9,038 | 3,299 | 387 | 217 | 213 | 429 | 1,412 | 3,965 | 5,550 | 7,964 | 7,135 |
| **80%** | 6,337 | 8,874 | 1,587 | 217 | 206 | 199 | 223 | 488 | 2,410 | 5,063 | 7,845 | 6,936 |
| **90%** | 6,164 | 3,992 | 514 | 197 | 192 | 193 | 192 | 218 | 691 | 3,818 | 7,570 | 6,783 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 10,465 | 10,430 | 7,559 | 3,927 | 1,666 | 1,377 | 1,955 | 3,380 | 5,462 | 7,224 | 9,779 | 10,383 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 6,121 | 7,533 | 6,150 | 950 | 261 | 280 | 467 | 1,074 | 2,621 | 4,320 | 7,558 | 6,784 |
| **Above Normal (16%)** | 6,384 | 8,368 | 7,501 | 1,934 | 536 | 353 | 749 | 2,003 | 4,737 | 5,671 | 7,997 | 6,980 |
| **Below Normal (13%)** | 12,723 | 11,794 | 7,738 | 5,123 | 2,041 | 1,791 | 2,442 | 4,064 | 6,502 | 7,599 | 9,636 | 12,342 |
| **Dry (24%)** | 14,366 | 11,675 | 7,132 | 6,204 | 2,431 | 1,528 | 2,317 | 4,263 | 6,483 | 9,058 | 11,731 | 13,675 |
| **Critical (15%)** | 15,725 | 15,618 | 11,223 | 7,646 | 4,320 | 4,235 | 5,437 | 7,769 | 9,744 | 11,797 | 13,398 | 14,583 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | **6** | **16** | **34** | **587** | **414** | **675** | **513** | -208 | **141** | -204 | **137** | **51** |
| **20%** | **39** | **56** | -129 | **87** | -64 | -138 | **618** | -39 | **377** | **144** | **88** | **130** |
| **30%** | **7** | **37** | **2,235** | -460 | -66 | -152 | **88** | **521** | **346** | **148** | **121** | **107** |
| **40%** | -140 | **354** | **2,841** | **141** | **164** | -167 | **514** | **1,210** | **376** | **460** | -2 | **17** |
| **50%** | -413 | **2,533** | **2,117** | **163** | **11** | -86 | **302** | **605** | **792** | **743** | 0 | -123 |
| **60%** | -496 | **2,655** | **1,132** | **61** | -42 | -52 | **141** | **860** | **345** | **620** | -628 | **585** |
| **70%** | **2,882** | **5,519** | **384** | -11 | -1 | -9 | **98** | **479** | **311** | **679** | -515 | **3,299** |
| **80%** | **2,886** | **5,606** | **570** | -8 | **2** | -2 | -2 | **101** | **126** | **501** | -198 | **3,324** |
| **90%** | **2,846** | **894** | **144** | **0** | -1 | **1** | -2 | **18** | **30** | **14** | -44 | **3,232** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **787** | **1,856** | **925** | -6 | **22** | **2** | **184** | **426** | **305** | **311** | -75 | **1,066** |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **2,729** | **4,491** | **2,117** | **85** | -1 | -27 | **103** | **371** | **252** | **284** | -392 | **3,203** |
| **Above Normal (16%)** | -396 | **2,124** | **1,464** | -7 | -54 | -52 | **206** | **676** | **339** | **579** | -141 | **188** |
| **Below Normal (13%)** | -101 | **398** | **6** | **88** | **13** | -86 | **311** | **828** | **679** | **741** | **232** | -79 |
| **Dry (24%)** | -21 | **130** | **97** | -36 | -101 | -127 | **171** | **303** | **154** | **7** | **93** | **85** |
| **Critical (15%)** | **22** | **69** | -20 | -239 | **371** | **417** | **241** | **108** | **291** | **189** | **124** | **71** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-3. Chipps Island North Channel Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 16,047 | 16,468 | 14,342 | 9,586 | 4,567 | 3,838 | 4,822 | 6,482 | 8,206 | 10,723 | 13,180 | 14,552 |
| **20%** | 15,023 | 14,703 | 12,712 | 8,291 | 3,037 | 2,816 | 2,827 | 5,524 | 7,337 | 9,436 | 11,971 | 13,854 |
| **30%** | 14,888 | 14,526 | 9,201 | 6,815 | 1,618 | 1,297 | 2,090 | 4,639 | 6,817 | 8,804 | 11,754 | 13,756 |
| **40%** | 14,555 | 13,409 | 8,375 | 4,265 | 910 | 1,049 | 1,249 | 2,717 | 6,076 | 7,268 | 10,253 | 12,989 |
| **50%** | 11,551 | 6,975 | 6,958 | 2,925 | 555 | 592 | 862 | 2,066 | 5,113 | 6,602 | 9,204 | 11,927 |
| **60%** | 7,097 | 6,680 | 6,292 | 1,601 | 317 | 345 | 494 | 1,329 | 4,660 | 5,296 | 8,863 | 6,797 |
| **70%** | 3,730 | 3,736 | 2,963 | 389 | 218 | 222 | 331 | 932 | 3,654 | 4,872 | 8,480 | 3,843 |
| **80%** | 3,615 | 3,398 | 1,015 | 223 | 204 | 200 | 225 | 387 | 2,272 | 4,606 | 8,044 | 3,611 |
| **90%** | 3,461 | 3,214 | 368 | 196 | 192 | 192 | 195 | 200 | 660 | 3,804 | 7,616 | 3,551 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 9,932 | 8,973 | 7,014 | 4,159 | 1,740 | 1,368 | 1,728 | 2,867 | 5,156 | 6,921 | 9,906 | 9,375 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 3,545 | 3,212 | 4,067 | 883 | 262 | 307 | 363 | 704 | 2,367 | 4,049 | 7,960 | 3,582 |
| **Above Normal (16%)** | 6,840 | 6,321 | 6,095 | 1,990 | 599 | 402 | 543 | 1,326 | 4,396 | 5,095 | 8,140 | 6,786 |
| **Below Normal (13%)** | 13,193 | 12,087 | 8,351 | 5,194 | 2,061 | 1,875 | 2,110 | 3,228 | 5,805 | 6,858 | 9,432 | 12,461 |
| **Dry (24%)** | 14,717 | 12,092 | 7,534 | 6,579 | 2,575 | 1,612 | 2,114 | 3,848 | 6,326 | 9,046 | 11,723 | 13,696 |
| **Critical (15%)** | 16,158 | 16,276 | 12,300 | 8,625 | 4,490 | 3,840 | 4,977 | 7,259 | 9,478 | 11,642 | 13,438 | 14,700 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 15,566 | 15,624 | 13,356 | 9,322 | 4,252 | 3,779 | 4,842 | 6,840 | 8,065 | 10,661 | 13,019 | 14,397 |
| **20%** | 14,606 | 13,992 | 11,810 | 8,176 | 3,080 | 2,815 | 2,993 | 5,843 | 7,344 | 9,460 | 11,875 | 13,793 |
| **30%** | 14,453 | 13,753 | 8,958 | 6,538 | 1,710 | 1,247 | 2,097 | 4,648 | 6,767 | 8,813 | 11,680 | 13,624 |
| **40%** | 14,229 | 12,403 | 8,017 | 3,952 | 884 | 1,052 | 1,252 | 2,717 | 6,077 | 7,278 | 10,159 | 12,908 |
| **50%** | 12,168 | 6,912 | 6,869 | 2,631 | 549 | 597 | 862 | 2,067 | 5,108 | 6,595 | 9,210 | 11,768 |
| **60%** | 7,034 | 6,585 | 5,833 | 1,489 | 316 | 345 | 495 | 1,333 | 4,658 | 5,295 | 8,866 | 6,800 |
| **70%** | 3,551 | 3,519 | 2,915 | 398 | 218 | 222 | 331 | 933 | 3,654 | 4,871 | 8,479 | 3,836 |
| **80%** | 3,451 | 3,268 | 1,017 | 225 | 204 | 200 | 225 | 388 | 2,284 | 4,562 | 8,043 | 3,612 |
| **90%** | 3,318 | 3,098 | 370 | 197 | 193 | 192 | 195 | 200 | 660 | 3,804 | 7,614 | 3,551 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 9,678 | 8,575 | 6,635 | 3,933 | 1,644 | 1,376 | 1,771 | 2,954 | 5,157 | 6,913 | 9,853 | 9,317 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 3,392 | 3,042 | 4,034 | 864 | 262 | 308 | 363 | 704 | 2,370 | 4,036 | 7,950 | 3,581 |
| **Above Normal (16%)** | 6,780 | 6,244 | 6,037 | 1,941 | 590 | 405 | 543 | 1,327 | 4,398 | 5,093 | 8,138 | 6,792 |
| **Below Normal (13%)** | 12,824 | 11,396 | 7,732 | 5,035 | 2,028 | 1,877 | 2,131 | 3,236 | 5,823 | 6,858 | 9,404 | 12,422 |
| **Dry (24%)** | 14,387 | 11,545 | 7,036 | 6,241 | 2,531 | 1,654 | 2,146 | 3,959 | 6,329 | 9,051 | 11,638 | 13,590 |
| **Critical (15%)** | 15,703 | 15,549 | 11,243 | 7,884 | 3,949 | 3,818 | 5,196 | 7,661 | 9,453 | 11,608 | 13,274 | 14,512 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | -481 | -844 | -985 | -264 | -315 | -59 | **20** | **358** | -141 | -62 | -161 | -155 |
| **20%** | -418 | -711 | -902 | -115 | **43** | 0 | **166** | **320** | **6** | **24** | -96 | -62 |
| **30%** | -434 | -772 | -243 | -277 | **93** | -50 | **7** | **9** | -50 | **9** | -74 | -132 |
| **40%** | -326 | -1,006 | -358 | -313 | -26 | **2** | **3** | 0 | **1** | **10** | -94 | -81 |
| **50%** | **616** | -63 | -89 | -294 | -5 | **5** | **0** | **0** | -5 | -7 | **6** | -159 |
| **60%** | -63 | -95 | -459 | -111 | -1 | 0 | **0** | **4** | -2 | -1 | **3** | **3** |
| **70%** | -179 | -217 | -48 | **8** | 0 | **0** | **0** | **1** | **0** | -1 | 0 | -6 |
| **80%** | -164 | -130 | **2** | **2** | 0 | **0** | **0** | **1** | **12** | -45 | -1 | **1** |
| **90%** | -143 | -116 | **2** | **0** | **1** | **0** | 0 | 0 | **0** | **0** | -2 | **0** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | -255 | -399 | -379 | -226 | -96 | **8** | **43** | **87** | **1** | -8 | -52 | -58 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | -153 | -170 | -33 | -18 | 0 | **0** | 0 | 0 | **3** | -12 | -10 | -1 |
| **Above Normal (16%)** | -60 | -77 | -58 | -49 | -8 | **3** | 0 | **1** | **2** | -2 | -2 | **7** |
| **Below Normal (13%)** | -369 | -691 | -619 | -160 | -33 | **2** | **22** | **8** | **18** | 0 | -28 | -39 |
| **Dry (24%)** | -330 | -547 | -498 | -338 | -43 | **43** | **32** | **111** | **4** | **5** | -85 | -106 |
| **Critical (15%)** | -455 | -727 | -1,057 | -741 | -541 | -23 | **219** | **402** | -25 | -33 | -164 | -187 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 12-4. Chipps Island North Channel Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 16,081 | 16,512 | 14,339 | 10,827 | 5,309 | 4,770 | 5,597 | 6,628 | 8,174 | 10,422 | 13,360 | 14,654 |
| 20% | 15,103 | 14,804 | 13,776 | 8,858 | 3,064 | 2,969 | 3,655 | 5,823 | 7,441 | 9,550 | 12,154 | 14,002 |
| 30% | 14,921 | 14,569 | 12,236 | 6,770 | 1,939 | 1,348 | 2,537 | 5,242 | 6,978 | 9,046 | 11,850 | 13,875 |
| 40% | 14,393 | 14,072 | 10,516 | 4,275 | 1,084 | 1,065 | 1,918 | 3,620 | 6,241 | 7,261 | 10,047 | 12,838 |
| 50% | 13,624 | 13,734 | 9,305 | 2,901 | 548 | 596 | 1,195 | 2,868 | 5,583 | 6,591 | 9,173 | 11,867 |
| 60% | 13,234 | 12,793 | 7,013 | 1,573 | 262 | 332 | 723 | 2,218 | 5,009 | 5,401 | 8,783 | 11,457 |
| 70% | 12,876 | 11,004 | 3,346 | 370 | 217 | 213 | 384 | 1,364 | 3,783 | 5,019 | 8,403 | 11,304 |
| 80% | 12,402 | 9,065 | 1,576 | 217 | 203 | 200 | 225 | 466 | 2,378 | 4,597 | 8,125 | 11,131 |
| 90% | 9,282 | 5,012 | 527 | 197 | 192 | 192 | 193 | 212 | 655 | 3,769 | 7,841 | 10,561 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 13,122 | 11,935 | 8,022 | 4,243 | 1,859 | 1,484 | 2,016 | 3,376 | 5,337 | 6,962 | 9,933 | 12,177 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 10,642 | 9,590 | 6,261 | 803 | 251 | 302 | 506 | 1,058 | 2,485 | 4,094 | 7,903 | 10,159 |
| Above Normal (16%) | 12,495 | 11,714 | 8,013 | 1,980 | 549 | 406 | 782 | 1,948 | 4,526 | 5,155 | 8,224 | 11,318 |
| Below Normal (13%) | 13,066 | 12,327 | 8,315 | 5,340 | 2,195 | 1,963 | 2,495 | 4,005 | 6,156 | 6,844 | 9,353 | 12,252 |
| Dry (24%) | 14,949 | 12,277 | 7,561 | 6,896 | 2,741 | 1,729 | 2,477 | 4,370 | 6,492 | 9,041 | 11,830 | 13,769 |
| Critical (15%) | 16,183 | 16,327 | 12,346 | 8,723 | 4,986 | 4,362 | 5,414 | 7,715 | 9,724 | 11,776 | 13,554 | 14,761 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 15,572 | 15,640 | 13,391 | 9,909 | 4,667 | 4,454 | 5,355 | 6,632 | 8,206 | 10,458 | 13,156 | 14,448 |
| 20% | 14,645 | 14,047 | 11,681 | 8,264 | 3,016 | 2,678 | 3,611 | 5,805 | 7,721 | 9,604 | 11,963 | 13,922 |
| 30% | 14,461 | 13,791 | 11,193 | 6,078 | 1,644 | 1,095 | 2,185 | 5,169 | 7,113 | 8,961 | 11,801 | 13,731 |
| 40% | 14,089 | 12,757 | 10,858 | 4,093 | 1,048 | 884 | 1,766 | 3,927 | 6,453 | 7,738 | 10,157 | 12,924 |
| 50% | 11,754 | 9,445 | 8,986 | 2,794 | 560 | 511 | 1,164 | 2,672 | 5,900 | 7,338 | 9,210 | 11,645 |
| 60% | 6,539 | 9,239 | 6,965 | 1,550 | 274 | 293 | 636 | 2,193 | 5,003 | 5,915 | 8,238 | 7,385 |
| 70% | 6,433 | 9,038 | 3,299 | 387 | 217 | 213 | 429 | 1,412 | 3,965 | 5,550 | 7,964 | 7,135 |
| 80% | 6,337 | 8,874 | 1,587 | 217 | 206 | 199 | 223 | 488 | 2,410 | 5,063 | 7,845 | 6,936 |
| 90% | 6,164 | 3,992 | 514 | 197 | 192 | 193 | 192 | 218 | 691 | 3,818 | 7,570 | 6,783 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 10,465 | 10,430 | 7,559 | 3,927 | 1,666 | 1,377 | 1,955 | 3,380 | 5,462 | 7,224 | 9,779 | 10,383 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 6,121 | 7,533 | 6,150 | 950 | 261 | 280 | 467 | 1,074 | 2,621 | 4,320 | 7,558 | 6,784 |
| Above Normal (16%) | 6,384 | 8,368 | 7,501 | 1,934 | 536 | 353 | 749 | 2,003 | 4,737 | 5,671 | 7,997 | 6,980 |
| Below Normal (13%) | 12,723 | 11,794 | 7,738 | 5,123 | 2,041 | 1,791 | 2,442 | 4,064 | 6,502 | 7,599 | 9,636 | 12,342 |
| Dry (24%) | 14,366 | 11,675 | 7,132 | 6,204 | 2,431 | 1,528 | 2,317 | 4,263 | 6,483 | 9,058 | 11,731 | 13,675 |
| Critical (15%) | 15,725 | 15,618 | 11,223 | 7,646 | 4,320 | 4,235 | 5,437 | 7,769 | 9,744 | 11,797 | 13,398 | 14,583 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -508 | -872 | -948 | -918 | -642 | -316 | -242 | 4 | 32 | 36 | -204 | -206 |
| 20% | -459 | -757 | -2,094 | -595 | -48 | -291 | -44 | -19 | 279 | 54 | -192 | -79 |
| 30% | -460 | -778 | -1,043 | -692 | -295 | -253 | -352 | -73 | 135 | -84 | -49 | -144 |
| 40% | -304 | -1,315 | 341 | -182 | -36 | -181 | -152 | 307 | 212 | 478 | 110 | 86 |
| 50% | -1,869 | -4,289 | -319 | -107 | 12 | -86 | -31 | -196 | 317 | 748 | 37 | -221 |
| 60% | -6,695 | -3,554 | -49 | -23 | 13 | -39 | -88 | -25 | -6 | 514 | -545 | -4,072 |
| 70% | -6,443 | -1,965 | -47 | 17 | 0 | 0 | 45 | 47 | 182 | 531 | -439 | -4,169 |
| 80% | -6,065 | -191 | 11 | 0 | 3 | -1 | -1 | 22 | 32 | 466 | -280 | -4,195 |
| 90% | -3,118 | -1,020 | -13 | 0 | 0 | 0 | -1 | 6 | 36 | 49 | -271 | -3,778 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2,658 | -1,505 | -463 | -316 | -193 | -106 | -60 | 4 | 124 | 262 | -154 | -1,794 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -4,522 | -2,057 | -111 | 147 | 10 | -22 | -39 | 17 | 137 | 226 | -344 | -3,374 |
| Above Normal (16%) | -6,111 | -3,346 | -512 | -45 | -13 | -53 | -33 | 55 | 211 | 516 | -227 | -4,338 |
| Below Normal (13%) | -344 | -534 | -577 | -218 | -154 | -172 | -53 | 59 | 347 | 755 | 282 | 90 |
| Dry (24%) | -583 | -602 | -429 | -691 | -310 | -201 | -160 | -107 | -9 | 16 | -99 | -94 |
| Critical (15%) | -459 | -709 | -1,123 | -1,077 | -666 | -127 | 24 | 55 | 20 | 21 | -155 | -178 |

a Based on the 82-year simulation period.

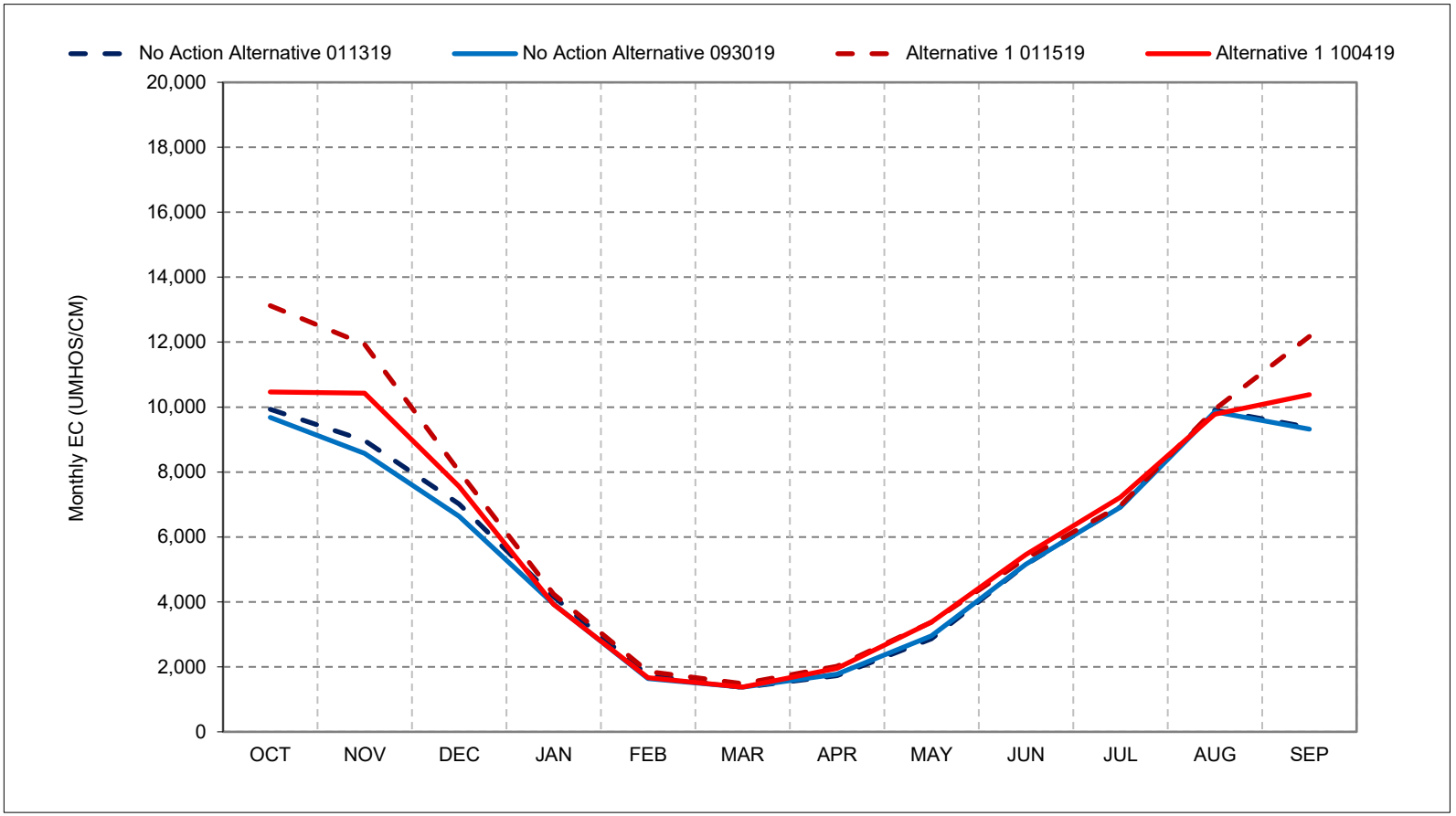
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-1. Chipps Island North Channel Salinity, Long-Term Average EC

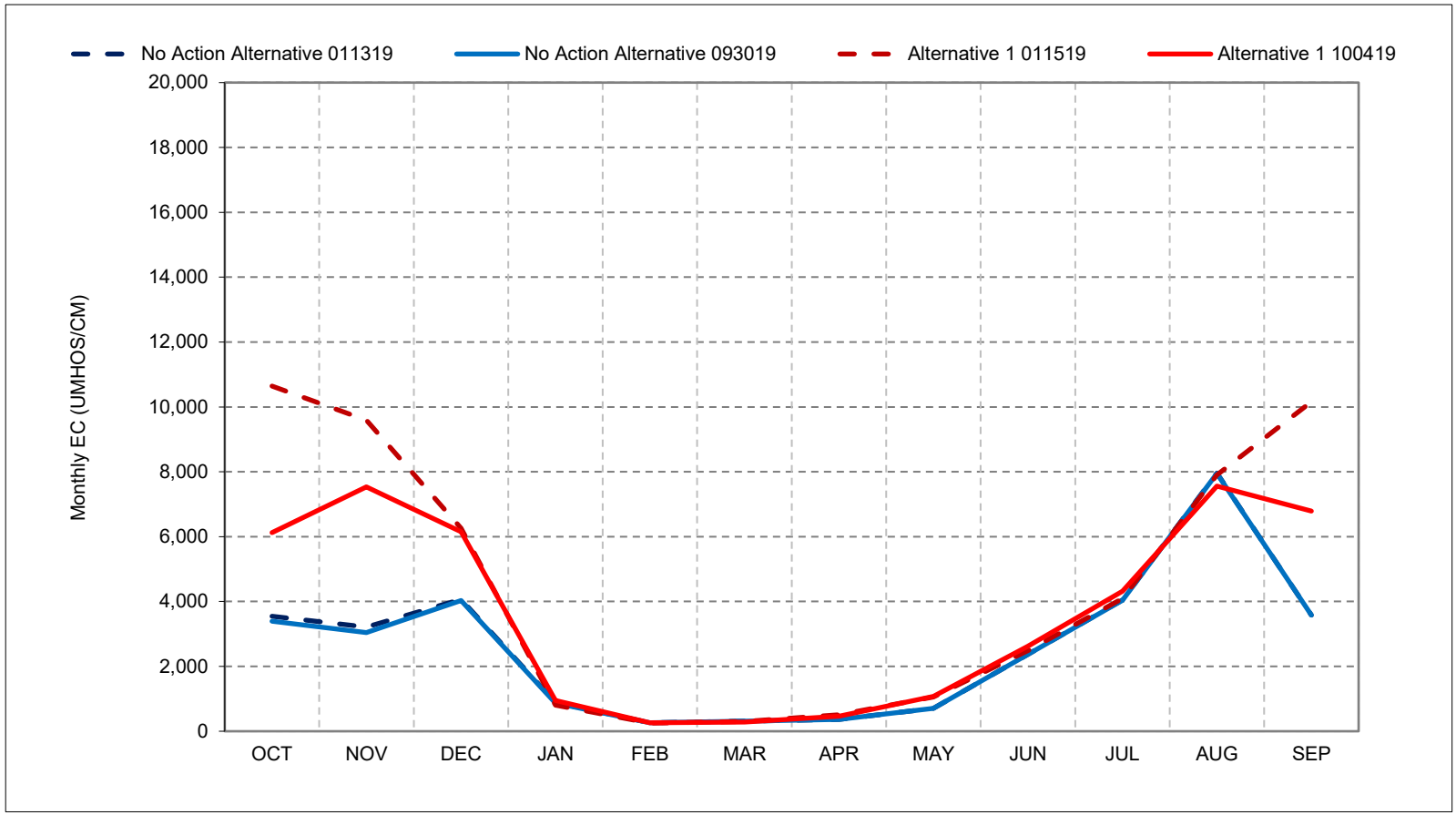



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-2. Chipps Island North Channel Salinity, Wet Year Average EC

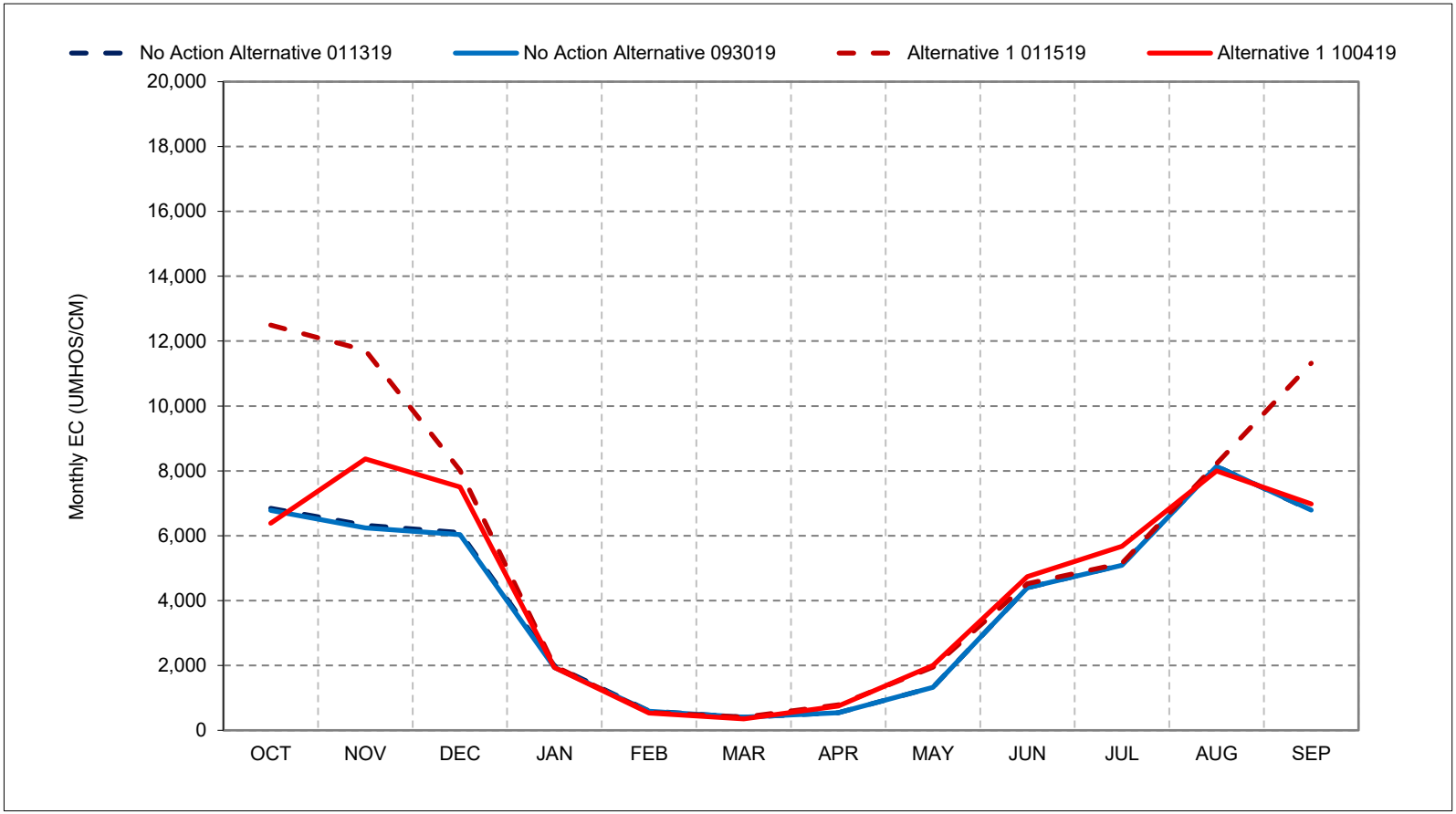



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-3. Chipps Island North Channel Salinity, Above Normal Year Average EC

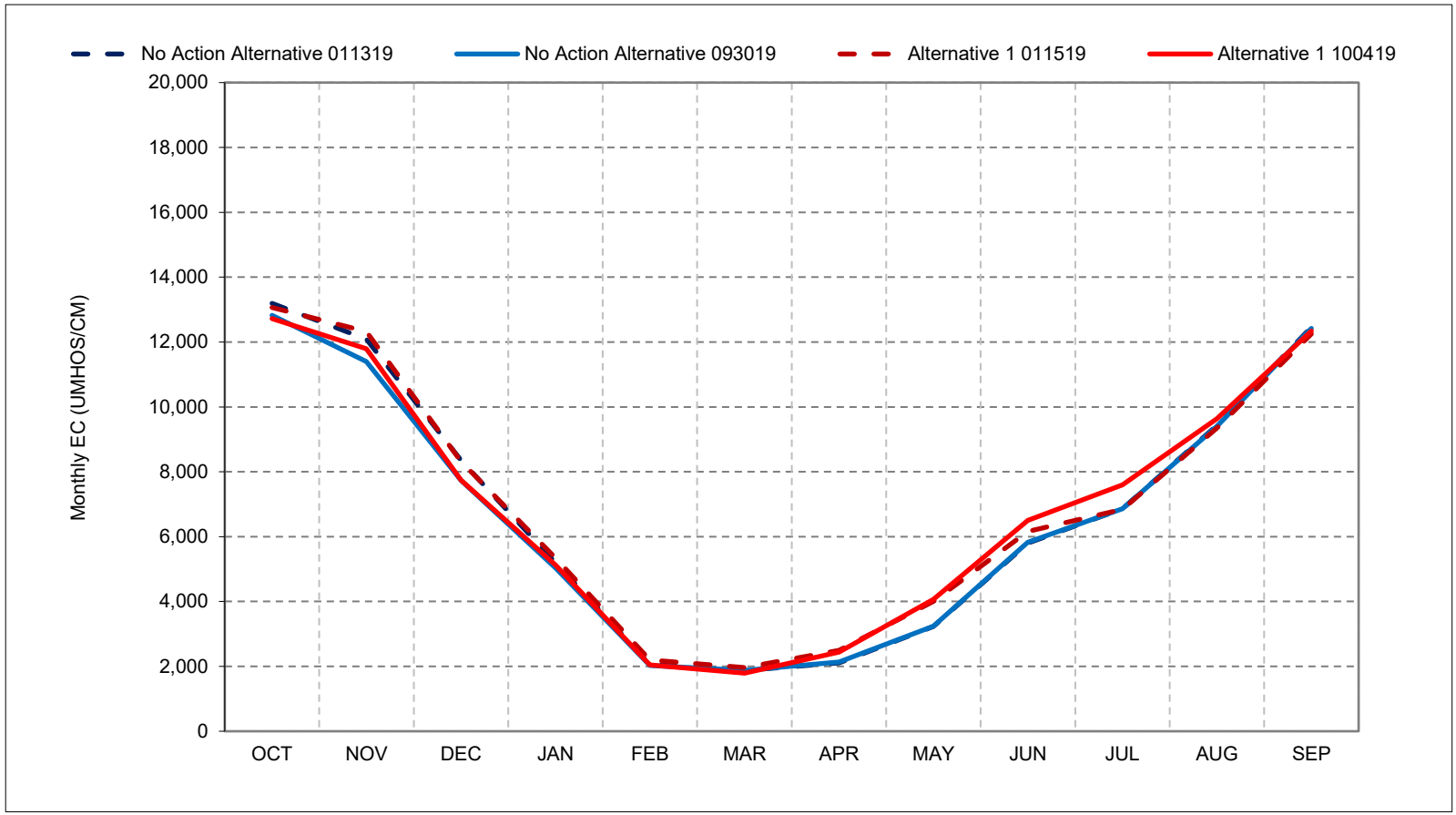



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-4. Chipps Island North Channel Salinity, Below Normal Year Average EC

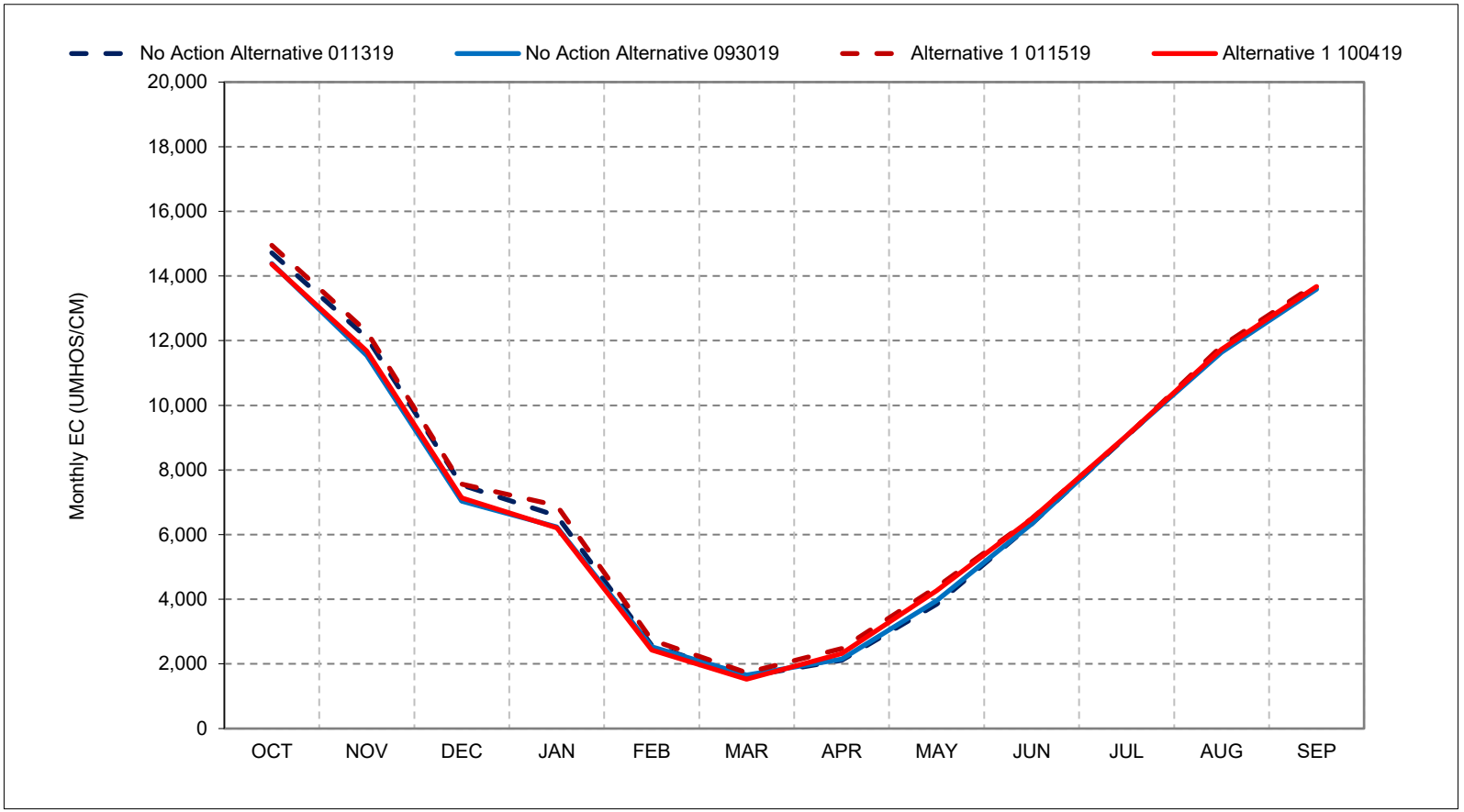



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-5. Chipps Island North Channel Salinity, Dry Year Average EC

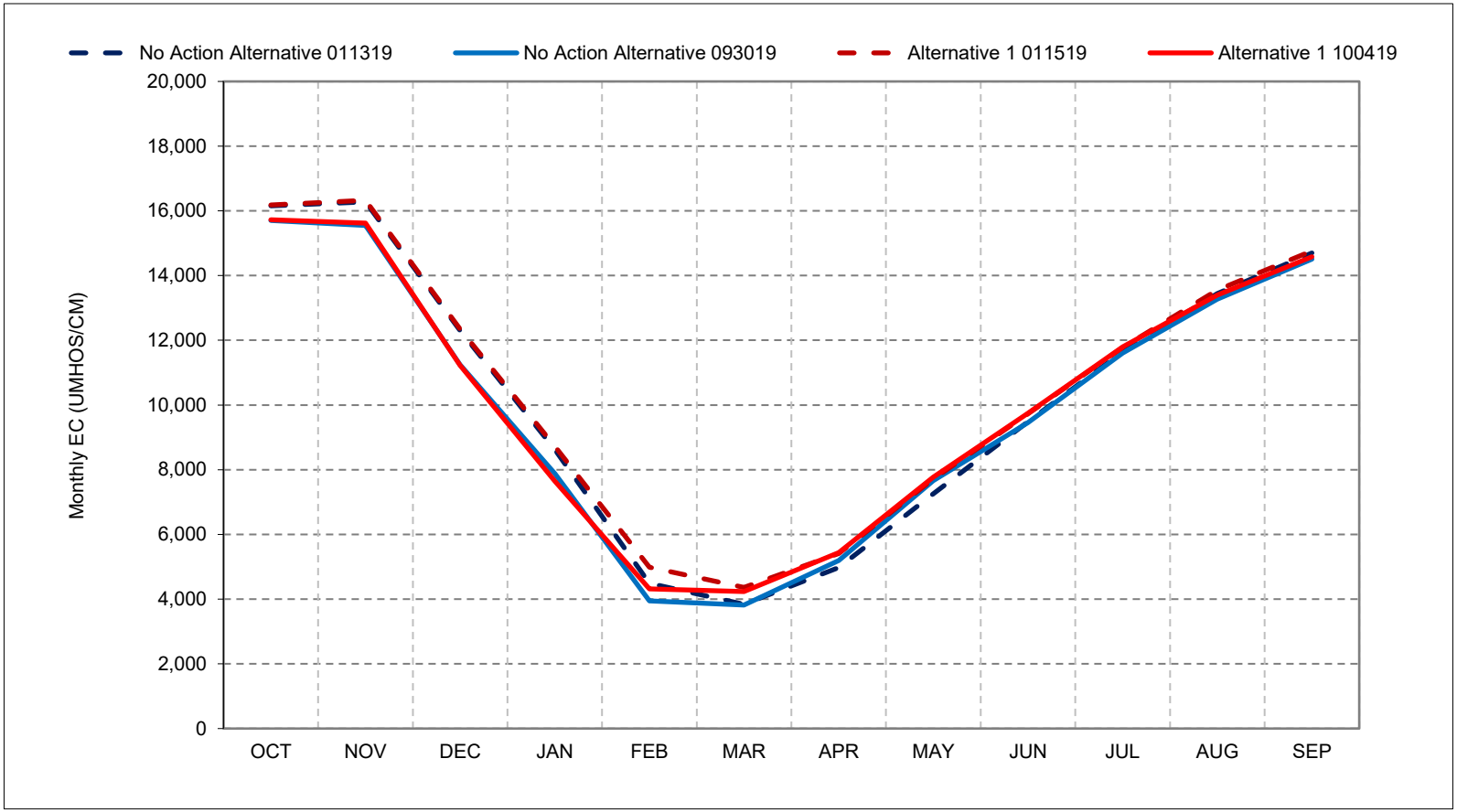



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 12-6. Chipps Island North Channel Salinity, Critical Year Average EC

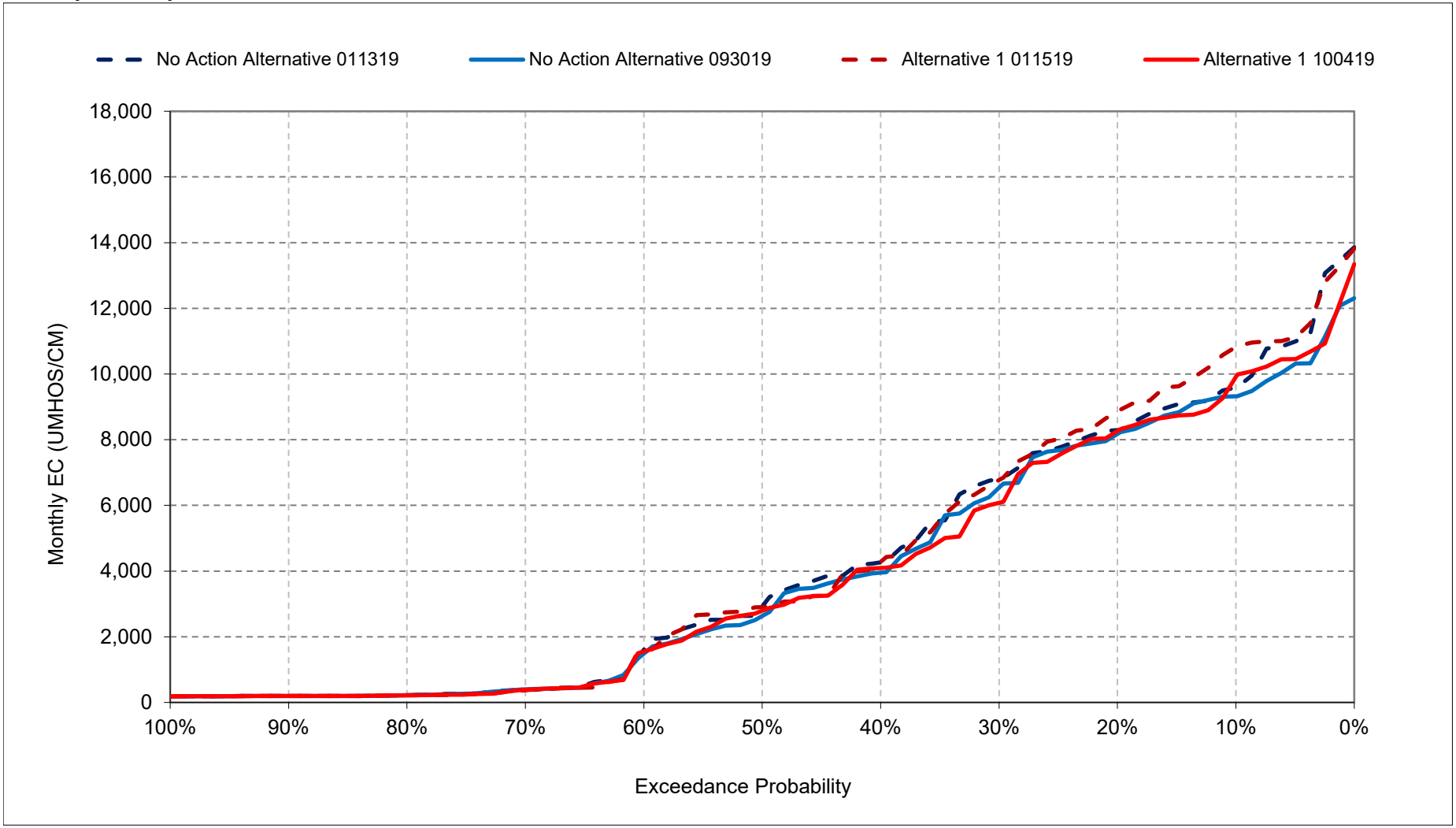



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

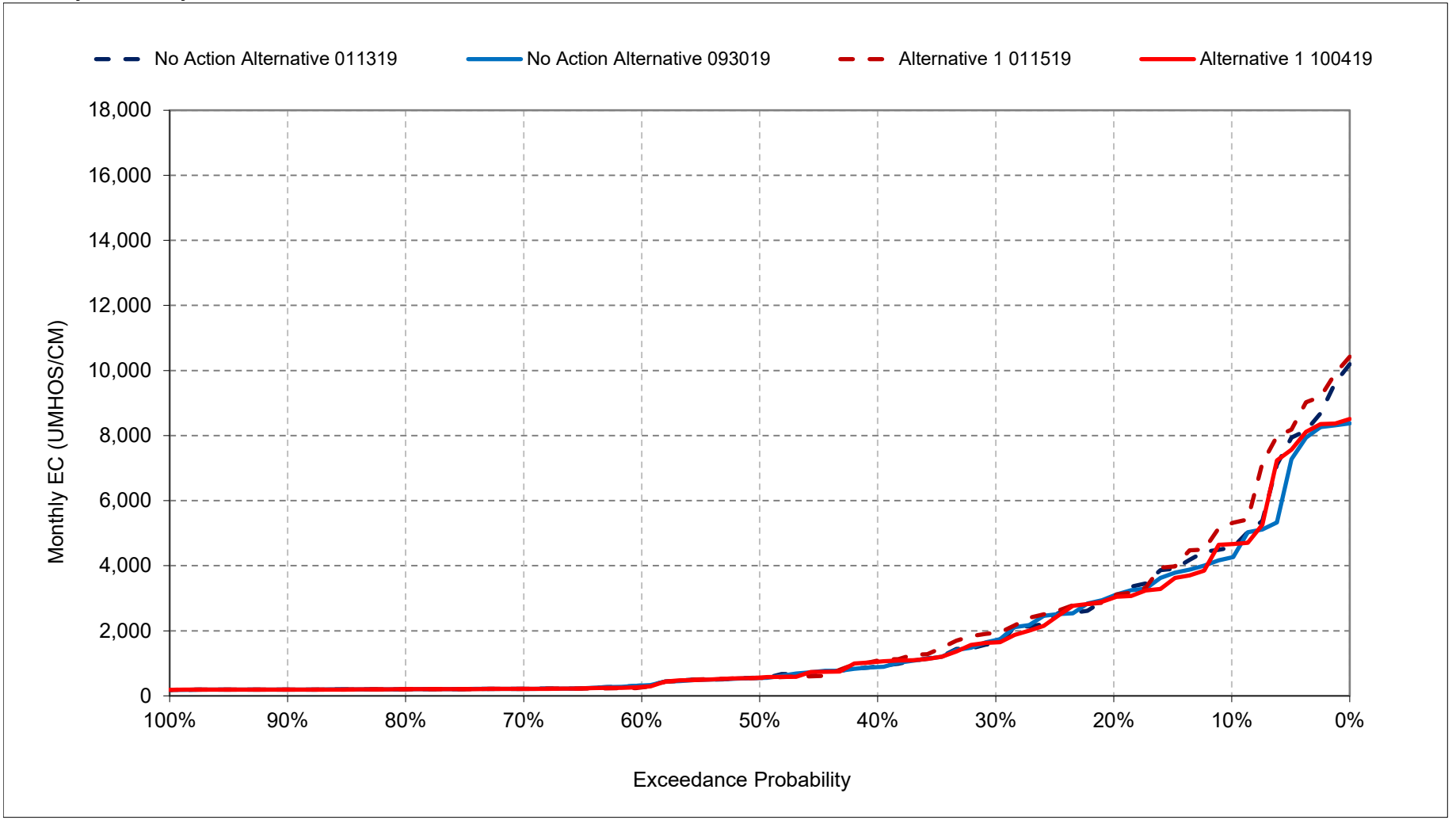
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-7. Chipps Island North Channel**
**Salinity, January EC**



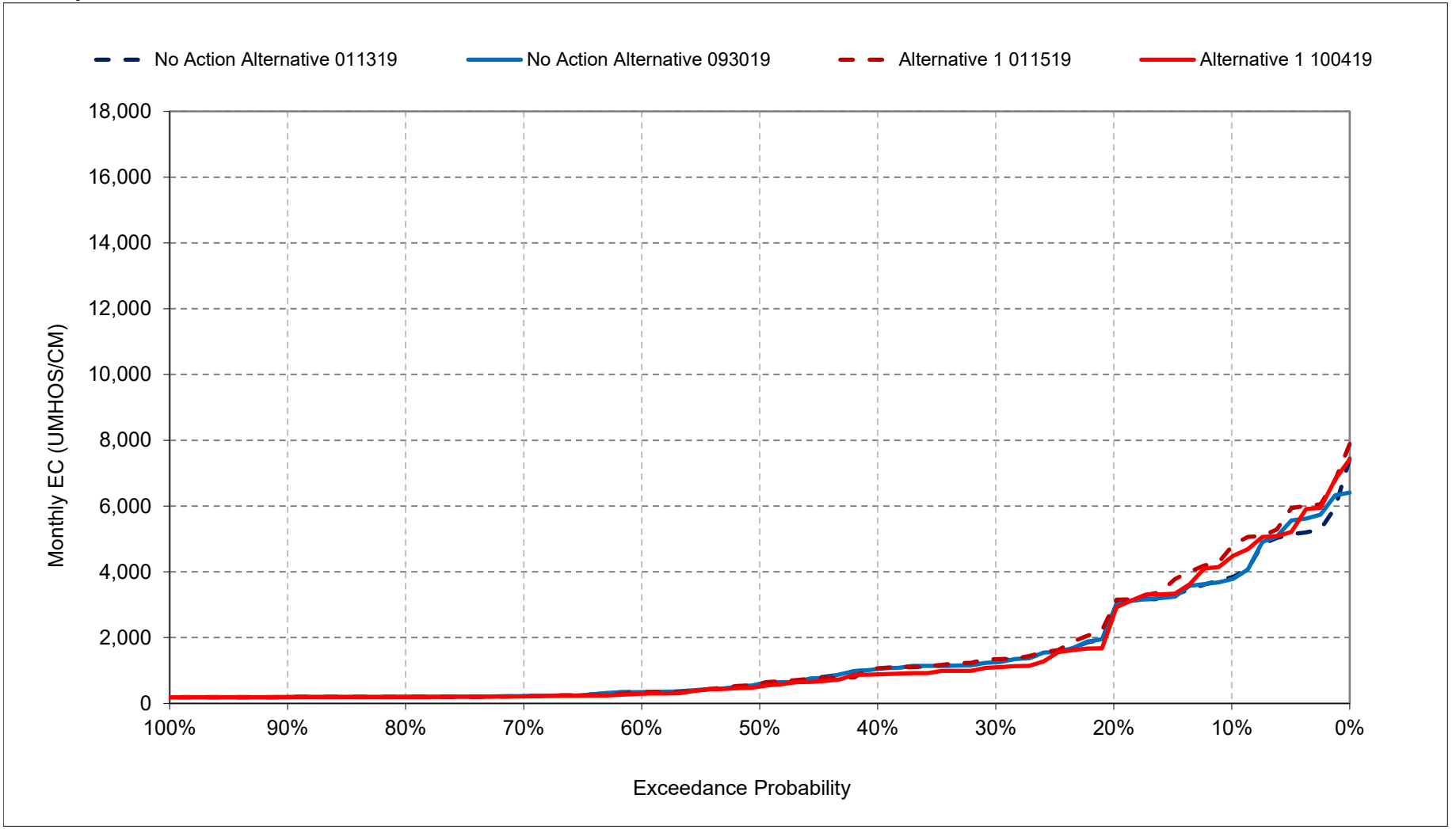

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-8. Chipps Island North Channel**
**Salinity, February EC**



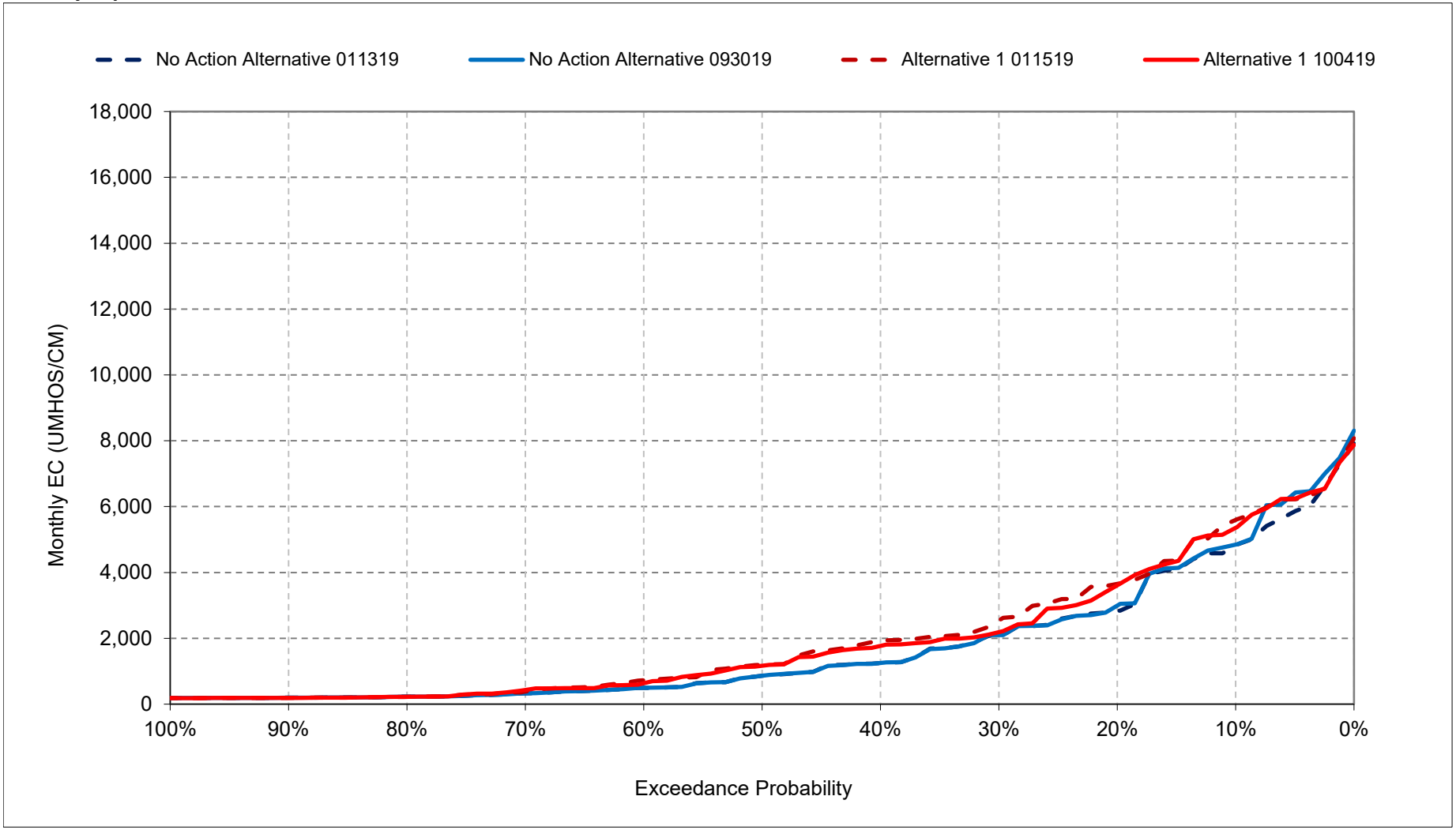

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-9. Chipps Island North Channel**
**Salinity, March EC**



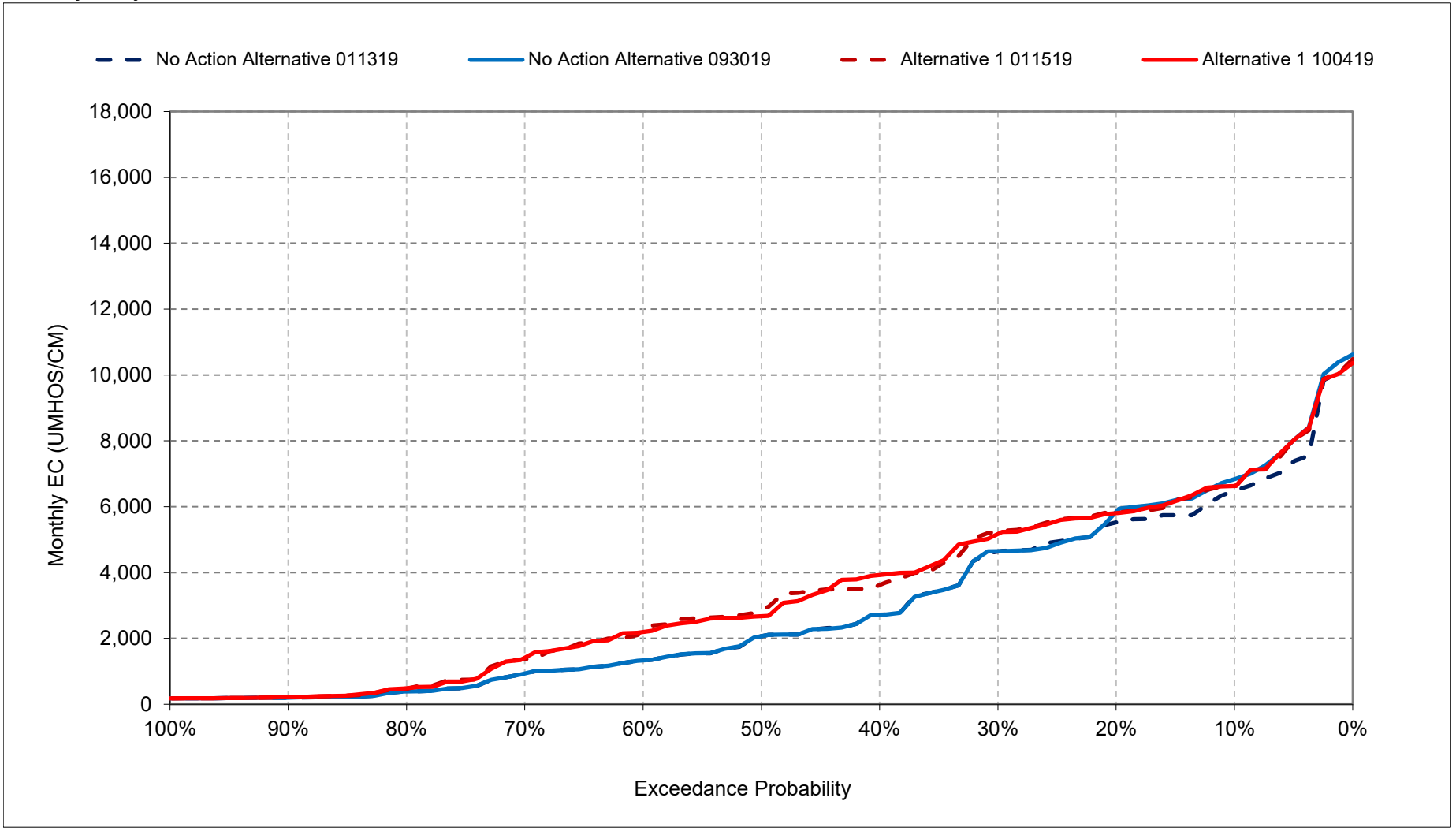

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-10. Chipps Island North Channel**
**Salinity, April EC**



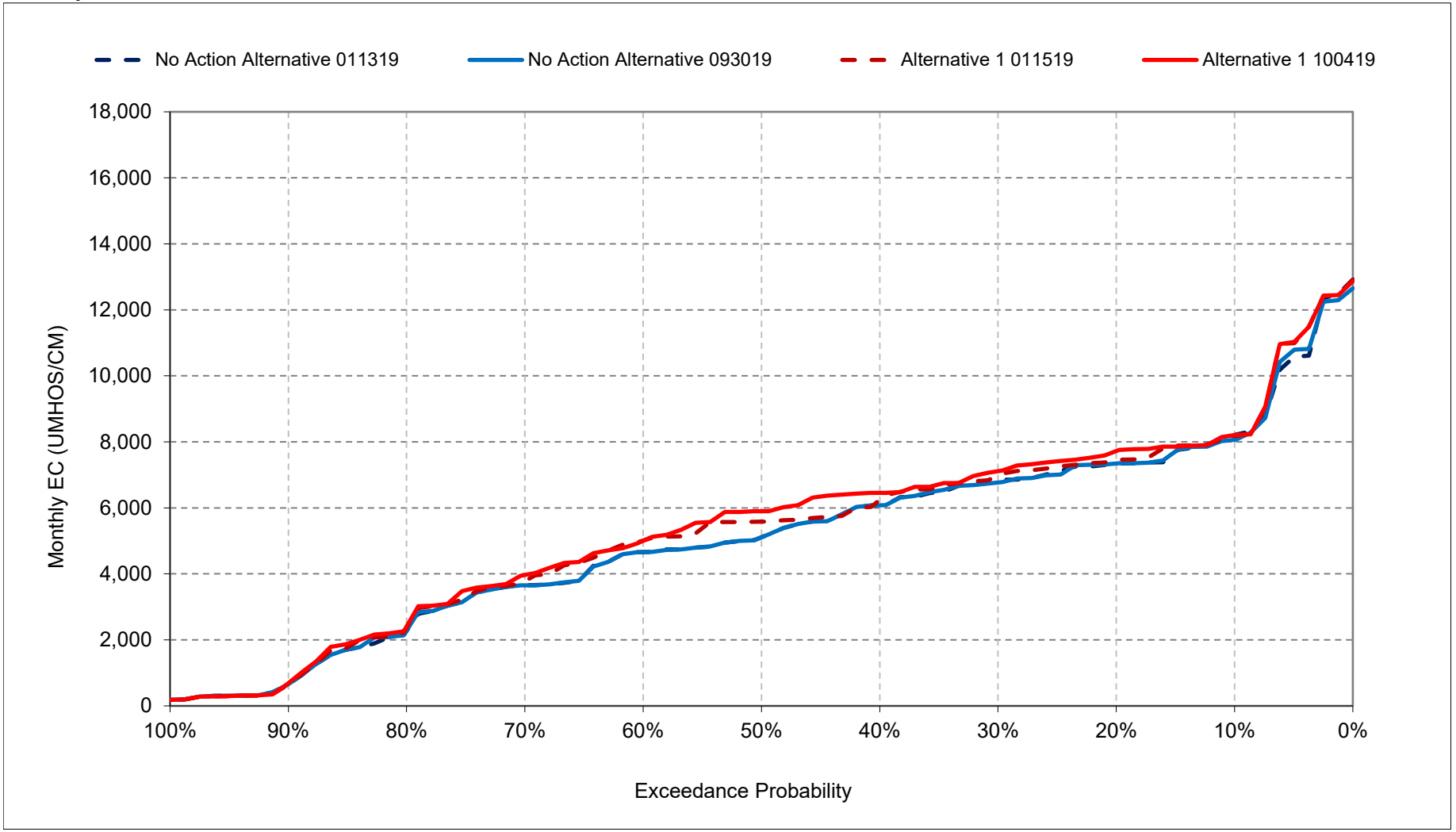

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-11. Chipps Island North Channel**
**Salinity, May EC**



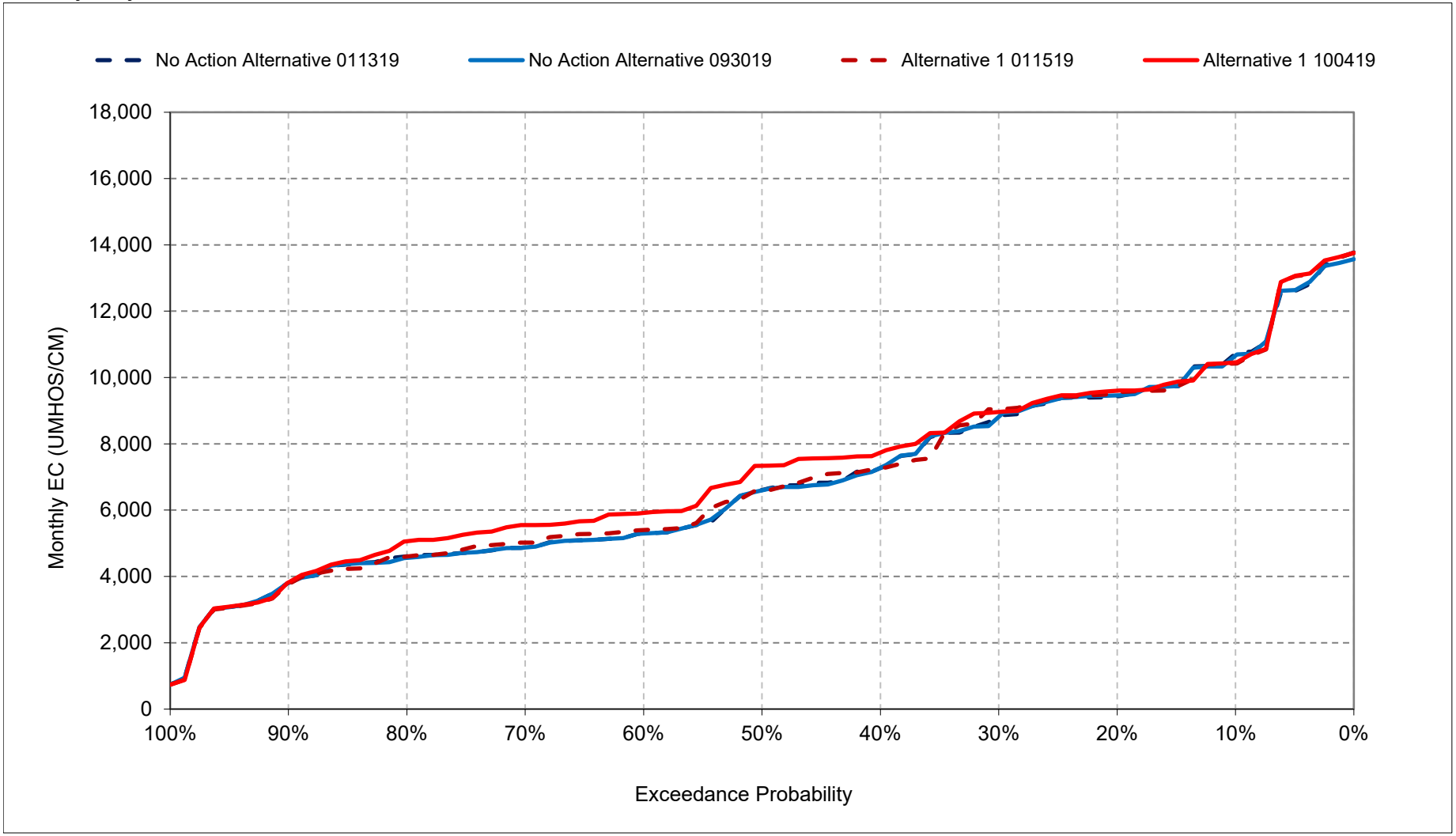

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-12. Chipps Island North Channel**
**Salinity, June EC**



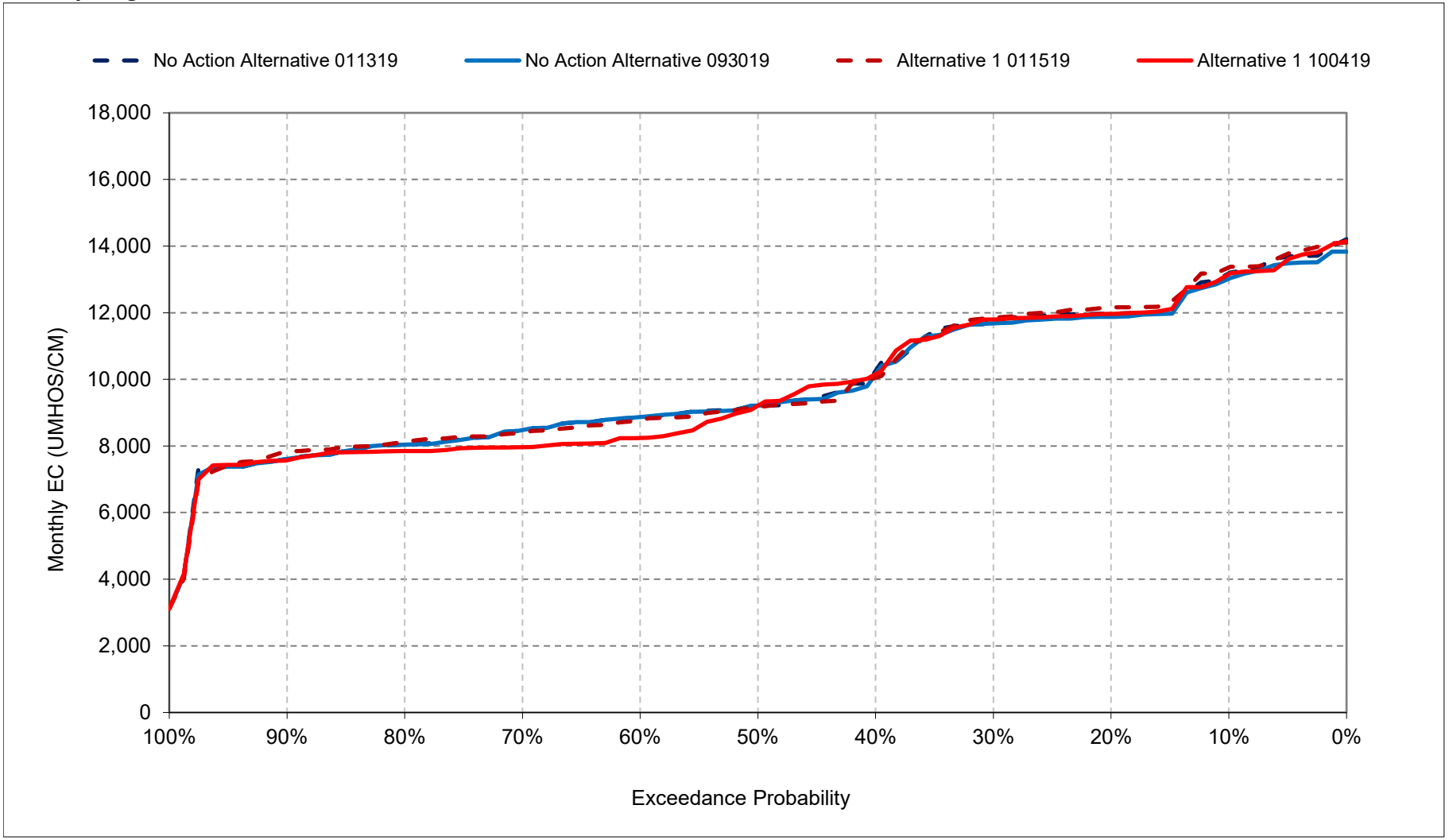

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-13. Chipps Island North Channel**
**Salinity, July EC**



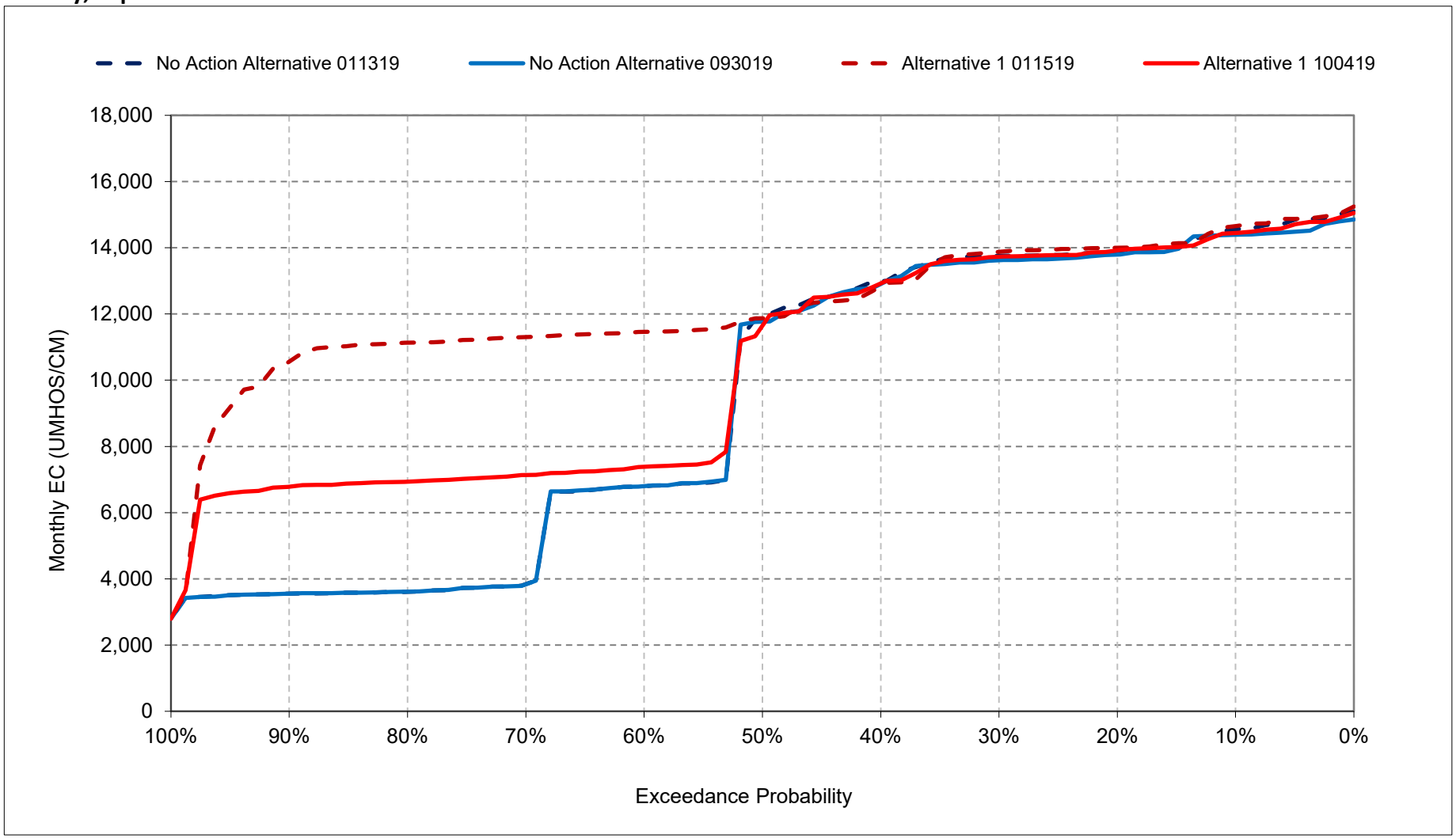

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-14. Chipps Island North Channel**
**Salinity, August EC**



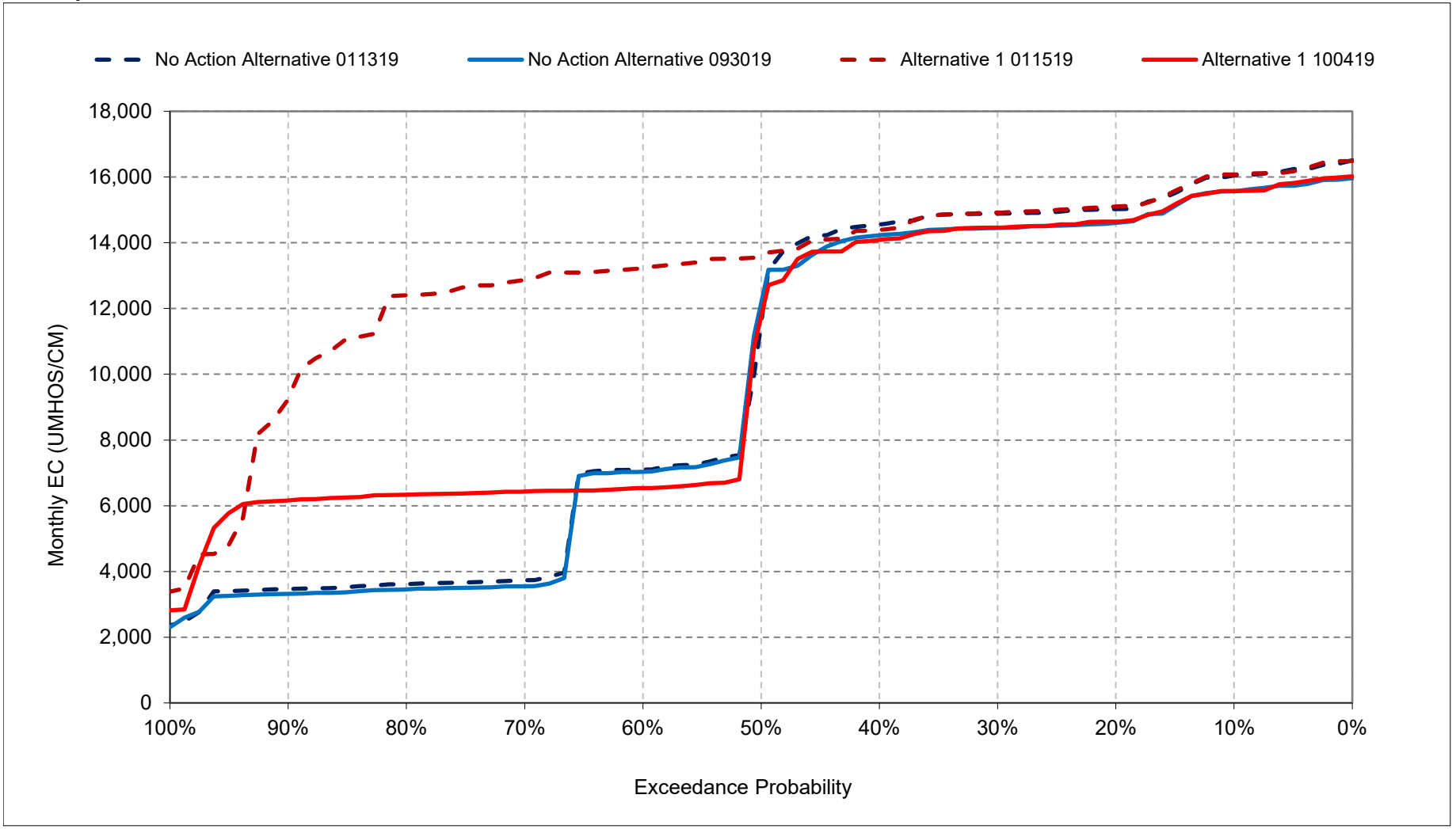

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-15. Chipps Island North Channel**
**Salinity, September EC**



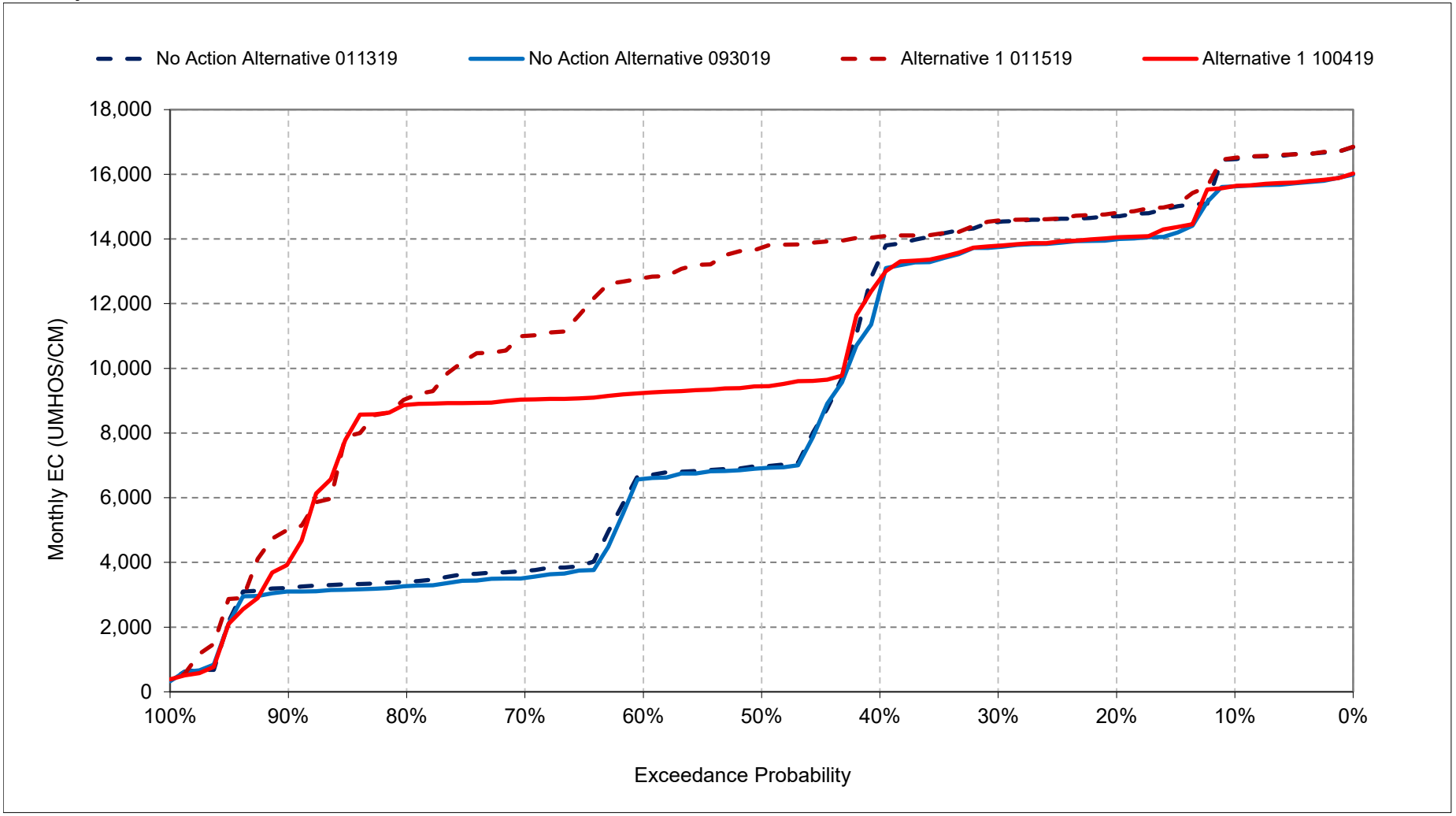

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-16. Chipps Island North Channel**
**Salinity, October EC**



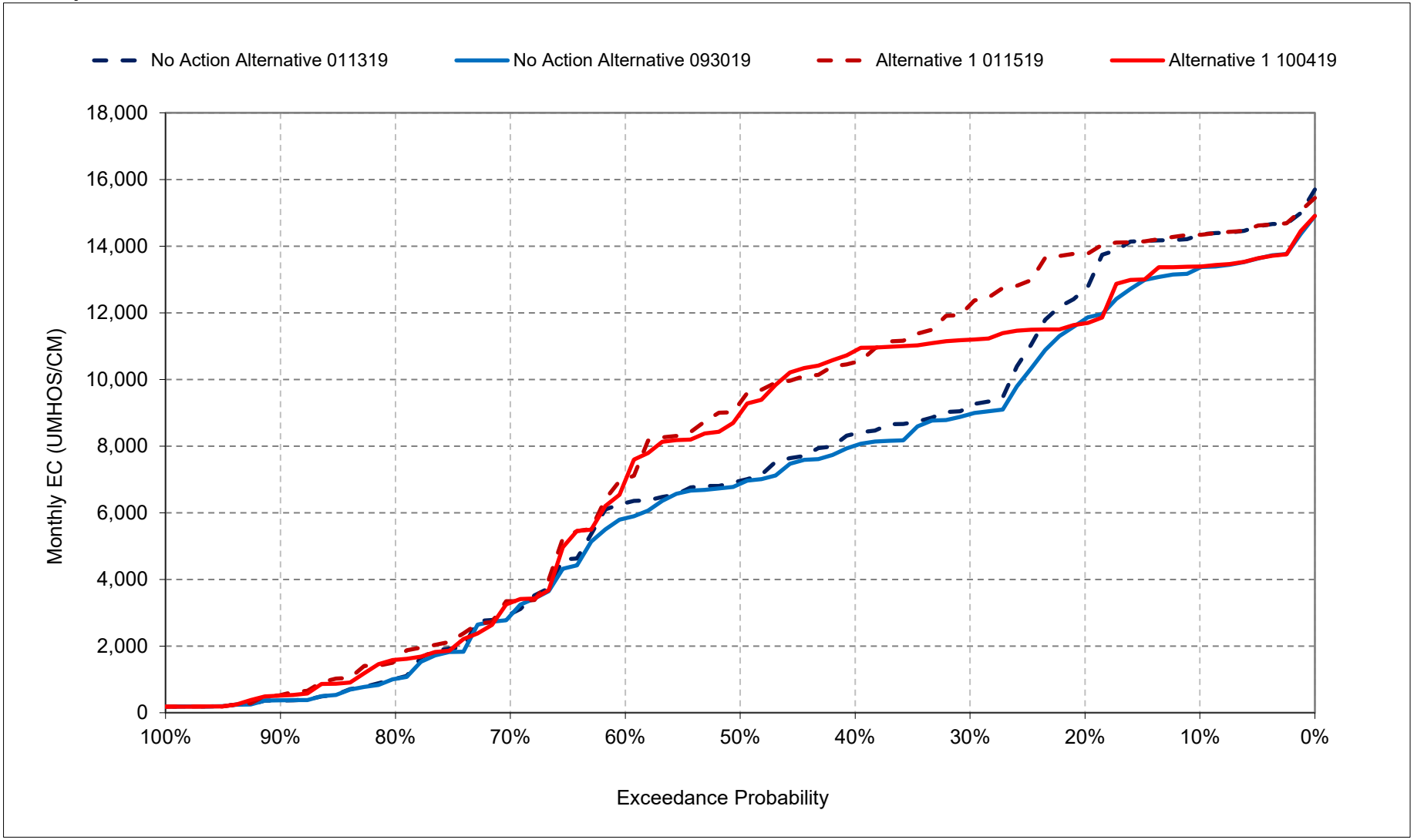

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-17. Chipps Island North Channel**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 12-18. Chipps Island North Channel Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 13-1. Chipps Island South Channel Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,889 | 15,271 | 12,984 | 8,269 | 3,571 | 2,867 | 3,727 | 5,175 | 6,614 | 9,157 | 11,760 | 13,232 |
| 20% | 13,807 | 13,473 | 11,277 | 7,040 | 2,205 | 1,997 | 1,956 | 4,283 | 5,936 | 7,945 | 10,553 | 12,539 |
| 30% | 13,670 | 13,223 | 7,780 | 5,608 | 1,363 | 875 | 1,405 | 3,463 | 5,408 | 7,336 | 10,348 | 12,394 |
| 40% | 13,360 | 12,043 | 7,003 | 3,438 | 749 | 699 | 820 | 1,863 | 4,772 | 5,859 | 8,757 | 11,609 |
| 50% | 10,186 | 5,748 | 5,610 | 2,555 | 501 | 392 | 564 | 1,326 | 3,896 | 5,248 | 7,726 | 10,525 |
| 60% | 5,882 | 5,390 | 5,002 | 1,083 | 295 | 258 | 334 | 842 | 3,442 | 4,033 | 7,483 | 5,614 |
| 70% | 2,775 | 2,818 | 2,324 | 302 | 217 | 203 | 262 | 576 | 2,629 | 3,772 | 7,089 | 3,180 |
| 80% | 2,716 | 2,496 | 888 | 213 | 199 | 197 | 206 | 266 | 1,565 | 3,529 | 6,598 | 2,889 |
| 90% | 2,553 | 2,404 | 347 | 193 | 191 | 191 | 194 | 191 | 410 | 2,809 | 6,245 | 2,821 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,826 | 7,913 | 6,056 | 3,502 | 1,403 | 1,029 | 1,290 | 2,175 | 4,081 | 5,642 | 8,508 | 8,255 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,630 | 2,374 | 3,241 | 726 | 247 | 252 | 279 | 496 | 1,739 | 3,038 | 6,607 | 2,854 |
| Above Normal (16%) | 5,633 | 5,178 | 5,093 | 1,674 | 469 | 311 | 382 | 878 | 3,301 | 3,900 | 6,755 | 5,601 |
| Below Normal (13%) | 12,043 | 10,865 | 7,377 | 4,276 | 1,635 | 1,347 | 1,515 | 2,358 | 4,553 | 5,463 | 7,964 | 11,091 |
| Dry (24%) | 13,500 | 10,962 | 6,686 | 5,519 | 2,055 | 1,189 | 1,522 | 2,868 | 5,009 | 7,551 | 10,297 | 12,364 |
| Critical (15%) | 14,973 | 15,093 | 10,936 | 7,425 | 3,618 | 2,932 | 3,872 | 5,892 | 8,025 | 10,151 | 12,040 | 13,383 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,900 | 15,314 | 13,031 | 9,416 | 4,203 | 3,627 | 4,435 | 5,226 | 6,642 | 8,863 | 11,953 | 13,393 |
| 20% | 13,896 | 13,573 | 12,480 | 7,509 | 2,224 | 2,076 | 2,694 | 4,521 | 5,963 | 7,984 | 10,709 | 12,696 |
| 30% | 13,726 | 13,250 | 10,871 | 5,523 | 1,491 | 904 | 1,727 | 3,968 | 5,633 | 7,585 | 10,431 | 12,538 |
| 40% | 13,188 | 12,771 | 9,192 | 3,283 | 729 | 687 | 1,256 | 2,633 | 4,846 | 5,873 | 8,571 | 11,500 |
| 50% | 12,389 | 12,474 | 7,948 | 2,292 | 467 | 393 | 805 | 2,004 | 4,285 | 5,215 | 7,691 | 10,520 |
| 60% | 12,000 | 11,449 | 5,810 | 1,115 | 273 | 247 | 472 | 1,514 | 3,750 | 4,160 | 7,388 | 10,081 |
| 70% | 11,532 | 9,713 | 2,451 | 287 | 212 | 203 | 280 | 840 | 2,742 | 3,897 | 7,008 | 9,933 |
| 80% | 11,038 | 7,690 | 1,464 | 211 | 198 | 196 | 204 | 302 | 1,642 | 3,396 | 6,767 | 9,761 |
| 90% | 8,046 | 4,136 | 607 | 195 | 192 | 191 | 191 | 192 | 405 | 2,781 | 6,405 | 9,245 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,903 | 10,776 | 7,079 | 3,589 | 1,503 | 1,130 | 1,508 | 2,580 | 4,237 | 5,678 | 8,535 | 10,845 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 9,394 | 8,442 | 5,443 | 646 | 234 | 249 | 370 | 752 | 1,834 | 3,072 | 6,545 | 8,854 |
| Above Normal (16%) | 11,256 | 10,553 | 7,056 | 1,699 | 430 | 317 | 544 | 1,340 | 3,399 | 3,942 | 6,832 | 9,942 |
| Below Normal (13%) | 11,894 | 11,089 | 7,357 | 4,441 | 1,759 | 1,445 | 1,809 | 3,003 | 4,863 | 5,445 | 7,882 | 10,873 |
| Dry (24%) | 13,733 | 11,162 | 6,728 | 5,827 | 2,190 | 1,278 | 1,807 | 3,296 | 5,151 | 7,557 | 10,414 | 12,443 |
| Critical (15%) | 14,998 | 15,144 | 10,977 | 7,500 | 4,035 | 3,383 | 4,242 | 6,306 | 8,257 | 10,286 | 12,162 | 13,447 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **11** | **44** | **47** | **1,146** | **633** | **760** | **707** | **51** | **28** | -294 | **193** | **162** |
| 20% | **89** | **100** | **1,203** | **469** | **18** | **79** | **738** | **237** | **27** | **39** | **156** | **157** |
| 30% | **56** | **27** | **3,091** | -85 | **127** | **29** | **322** | **504** | **225** | **249** | **83** | **145** |
| 40% | -172 | **728** | **2,189** | -155 | -20 | -12 | **435** | **771** | **74** | **15** | -186 | -109 |
| 50% | **2,204** | **6,726** | **2,338** | -263 | -34 | **1** | **241** | **678** | **389** | -32 | -35 | -5 |
| 60% | **6,118** | **6,059** | **808** | **32** | -22 | -12 | **137** | **672** | **308** | **128** | -95 | **4,468** |
| 70% | **8,757** | **6,895** | **127** | -15 | -5 | **1** | **18** | **264** | **113** | **125** | -81 | **6,752** |
| 80% | **8,321** | **5,194** | **576** | -2 | -1 | 0 | -2 | **36** | **77** | -132 | **170** | **6,872** |
| 90% | **5,493** | **1,732** | **260** | **2** | **1** | 0 | -2 | **0** | -5 | -29 | **161** | **6,424** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **3,077** | **2,862** | **1,023** | **87** | **101** | **101** | **218** | **405** | **156** | **36** | **28** | **2,590** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **6,764** | **6,068** | **2,203** | -80 | -13 | -3 | **91** | **255** | **95** | **34** | -62 | **6,001** |
| Above Normal (16%) | **5,624** | **5,374** | **1,963** | **25** | -38 | **6** | **162** | **462** | **97** | **42** | **77** | **4,341** |
| Below Normal (13%) | -149 | **224** | -20 | **165** | **125** | **98** | **295** | **644** | **311** | -18 | -82 | -218 |
| Dry (24%) | **233** | **200** | **42** | **308** | **135** | **89** | **285** | **428** | **142** | **5** | **117** | **79** |
| Critical (15%) | **25** | **52** | **41** | **75** | **417** | **451** | **371** | **413** | **231** | **135** | **122** | **64** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 13-2. Chipps Island South Channel Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,387 | 14,350 | 11,935 | 8,004 | 3,208 | 2,817 | 3,744 | 5,589 | 6,537 | 9,117 | 11,600 | 13,059 |
| 20% | 13,401 | 12,706 | 10,393 | 6,925 | 2,188 | 2,001 | 2,103 | 4,635 | 5,969 | 7,969 | 10,464 | 12,490 |
| 30% | 13,224 | 12,410 | 7,558 | 5,325 | 1,378 | 876 | 1,415 | 3,498 | 5,408 | 7,366 | 10,266 | 12,284 |
| 40% | 13,022 | 11,067 | 6,690 | 3,164 | 724 | 702 | 829 | 1,866 | 4,774 | 5,854 | 8,652 | 11,536 |
| 50% | 10,802 | 5,687 | 5,611 | 2,237 | 503 | 392 | 564 | 1,326 | 3,903 | 5,244 | 7,798 | 10,337 |
| 60% | 5,851 | 5,379 | 4,555 | 986 | 292 | 258 | 334 | 840 | 3,436 | 4,030 | 7,490 | 5,617 |
| 70% | 2,634 | 2,626 | 2,331 | 308 | 216 | 203 | 262 | 576 | 2,633 | 3,773 | 7,088 | 3,183 |
| 80% | 2,575 | 2,320 | 883 | 214 | 199 | 197 | 206 | 268 | 1,574 | 3,490 | 6,593 | 2,890 |
| 90% | 2,425 | 2,245 | 344 | 193 | 191 | 191 | 194 | 191 | 410 | 2,809 | 6,245 | 2,822 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 8,572 | 7,508 | 5,686 | 3,286 | 1,309 | 1,039 | 1,337 | 2,278 | 4,091 | 5,638 | 8,457 | 8,195 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 2,487 | 2,211 | 3,216 | 709 | 247 | 252 | 279 | 496 | 1,741 | 3,027 | 6,597 | 2,853 |
| Above Normal (16%) | 5,602 | 5,135 | 5,064 | 1,630 | 463 | 314 | 383 | 879 | 3,303 | 3,898 | 6,753 | 5,608 |
| Below Normal (13%) | 11,668 | 10,151 | 6,760 | 4,127 | 1,597 | 1,348 | 1,533 | 2,374 | 4,570 | 5,467 | 7,941 | 11,054 |
| Dry (24%) | 13,155 | 10,396 | 6,180 | 5,201 | 2,021 | 1,234 | 1,559 | 2,991 | 5,022 | 7,563 | 10,215 | 12,254 |
| Critical (15%) | 14,495 | 14,320 | 9,902 | 6,704 | 3,077 | 2,919 | 4,115 | 6,379 | 8,046 | 10,126 | 11,876 | 13,186 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 14,377 | 14,345 | 12,099 | 8,529 | 3,515 | 3,454 | 4,212 | 5,266 | 6,665 | 8,888 | 11,744 | 13,123 |
| 20% | 13,481 | 12,773 | 10,316 | 7,002 | 2,158 | 1,875 | 2,591 | 4,534 | 6,285 | 8,086 | 10,513 | 12,602 |
| 30% | 13,211 | 12,401 | 9,826 | 4,922 | 1,220 | 719 | 1,478 | 3,841 | 5,711 | 7,539 | 10,406 | 12,375 |
| 40% | 12,847 | 11,381 | 9,425 | 3,282 | 744 | 583 | 1,133 | 2,842 | 5,118 | 6,374 | 8,794 | 11,595 |
| 50% | 10,373 | 8,162 | 7,666 | 2,186 | 526 | 354 | 775 | 1,842 | 4,705 | 5,991 | 7,847 | 10,252 |
| 60% | 5,409 | 7,903 | 5,717 | 1,072 | 274 | 231 | 424 | 1,469 | 3,834 | 4,700 | 6,959 | 6,306 |
| 70% | 5,253 | 7,725 | 2,415 | 296 | 214 | 204 | 301 | 885 | 2,896 | 4,332 | 6,710 | 6,015 |
| 80% | 5,170 | 7,548 | 1,403 | 213 | 198 | 197 | 201 | 308 | 1,674 | 3,875 | 6,558 | 5,833 |
| 90% | 4,991 | 3,053 | 616 | 195 | 191 | 191 | 190 | 191 | 426 | 2,836 | 6,251 | 5,567 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,288 | 9,256 | 6,615 | 3,288 | 1,327 | 1,048 | 1,459 | 2,584 | 4,370 | 5,960 | 8,429 | 9,154 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 4,986 | 6,410 | 5,331 | 790 | 248 | 235 | 341 | 768 | 1,974 | 3,318 | 6,289 | 5,698 |
| Above Normal (16%) | 5,225 | 7,165 | 6,522 | 1,650 | 421 | 283 | 520 | 1,386 | 3,615 | 4,477 | 6,692 | 5,825 |
| Below Normal (13%) | 11,566 | 10,528 | 6,798 | 4,245 | 1,625 | 1,317 | 1,763 | 3,047 | 5,257 | 6,282 | 8,221 | 10,981 |
| Dry (24%) | 13,131 | 10,534 | 6,286 | 5,154 | 1,903 | 1,121 | 1,677 | 3,207 | 5,146 | 7,571 | 10,309 | 12,344 |
| Critical (15%) | 14,515 | 14,392 | 9,881 | 6,490 | 3,412 | 3,267 | 4,259 | 6,353 | 8,272 | 10,308 | 12,005 | 13,260 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -9 | -5 | **163** | **525** | **307** | **637** | **468** | -323 | **129** | -229 | **144** | **65** |
| 20% | **81** | **67** | -77 | **77** | -29 | -126 | **488** | -102 | **316** | **117** | **49** | **111** |
| 30% | -13 | -8 | **2,267** | -403 | -157 | -157 | **63** | **344** | **304** | **173** | **140** | **91** |
| 40% | -175 | **314** | **2,735** | **117** | **20** | -120 | **304** | **976** | **345** | **520** | **142** | **59** |
| 50% | -429 | **2,475** | **2,055** | -51 | **23** | -38 | **210** | **516** | **803** | **747** | **49** | -86 |
| 60% | -442 | **2,524** | **1,162** | **86** | -18 | -28 | **89** | **629** | **398** | **670** | -531 | **689** |
| 70% | **2,618** | **5,099** | **85** | -11 | -2 | **2** | **39** | **309** | **262** | **559** | -378 | **2,832** |
| 80% | **2,595** | **5,228** | **520** | -1 | -1 | 0 | -4 | **40** | **100** | **384** | -35 | **2,943** |
| 90% | **2,566** | **808** | **273** | **1** | **0** | 0 | -3 | **0** | **16** | **27** | **7** | **2,746** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **716** | **1,748** | **929** | **2** | **18** | **9** | **122** | **306** | **279** | **322** | -28 | **959** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **2,499** | **4,199** | **2,114** | **81** | **1** | -16 | **62** | **272** | **233** | **291** | -308 | **2,845** |
| Above Normal (16%) | -377 | **2,030** | **1,457** | **20** | -42 | -31 | **136** | **508** | **312** | **579** | -61 | **217** |
| Below Normal (13%) | -101 | **377** | **38** | **118** | **28** | -30 | **230** | **673** | **688** | **815** | **280** | -73 |
| Dry (24%) | -24 | **138** | **105** | -47 | -118 | -113 | **118** | **216** | **123** | **8** | **94** | **90** |
| Critical (15%) | **20** | **72** | -21 | -214 | **336** | **348** | **144** | -26 | **226** | **182** | **128** | **74** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 13-3. Chipps Island South Channel Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 14,889 | 15,271 | 12,984 | 8,269 | 3,571 | 2,867 | 3,727 | 5,175 | 6,614 | 9,157 | 11,760 | 13,232 |
| **20%** | 13,807 | 13,473 | 11,277 | 7,040 | 2,205 | 1,997 | 1,956 | 4,283 | 5,936 | 7,945 | 10,553 | 12,539 |
| **30%** | 13,670 | 13,223 | 7,780 | 5,608 | 1,363 | 875 | 1,405 | 3,463 | 5,408 | 7,336 | 10,348 | 12,394 |
| **40%** | 13,360 | 12,043 | 7,003 | 3,438 | 749 | 699 | 820 | 1,863 | 4,772 | 5,859 | 8,757 | 11,609 |
| **50%** | 10,186 | 5,748 | 5,610 | 2,555 | 501 | 392 | 564 | 1,326 | 3,896 | 5,248 | 7,726 | 10,525 |
| **60%** | 5,882 | 5,390 | 5,002 | 1,083 | 295 | 258 | 334 | 842 | 3,442 | 4,033 | 7,483 | 5,614 |
| **70%** | 2,775 | 2,818 | 2,324 | 302 | 217 | 203 | 262 | 576 | 2,629 | 3,772 | 7,089 | 3,180 |
| **80%** | 2,716 | 2,496 | 888 | 213 | 199 | 197 | 206 | 266 | 1,565 | 3,529 | 6,598 | 2,889 |
| **90%** | 2,553 | 2,404 | 347 | 193 | 191 | 191 | 194 | 191 | 410 | 2,809 | 6,245 | 2,821 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 8,826 | 7,913 | 6,056 | 3,502 | 1,403 | 1,029 | 1,290 | 2,175 | 4,081 | 5,642 | 8,508 | 8,255 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 2,630 | 2,374 | 3,241 | 726 | 247 | 252 | 279 | 496 | 1,739 | 3,038 | 6,607 | 2,854 |
| **Above Normal (16%)** | 5,633 | 5,178 | 5,093 | 1,674 | 469 | 311 | 382 | 878 | 3,301 | 3,900 | 6,755 | 5,601 |
| **Below Normal (13%)** | 12,043 | 10,865 | 7,377 | 4,276 | 1,635 | 1,347 | 1,515 | 2,358 | 4,553 | 5,463 | 7,964 | 11,091 |
| **Dry (24%)** | 13,500 | 10,962 | 6,686 | 5,519 | 2,055 | 1,189 | 1,522 | 2,868 | 5,009 | 7,551 | 10,297 | 12,364 |
| **Critical (15%)** | 14,973 | 15,093 | 10,936 | 7,425 | 3,618 | 2,932 | 3,872 | 5,892 | 8,025 | 10,151 | 12,040 | 13,383 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 14,387 | 14,350 | 11,935 | 8,004 | 3,208 | 2,817 | 3,744 | 5,589 | 6,537 | 9,117 | 11,600 | 13,059 |
| **20%** | 13,401 | 12,706 | 10,393 | 6,925 | 2,188 | 2,001 | 2,103 | 4,635 | 5,969 | 7,969 | 10,464 | 12,490 |
| **30%** | 13,224 | 12,410 | 7,558 | 5,325 | 1,378 | 876 | 1,415 | 3,498 | 5,408 | 7,366 | 10,266 | 12,284 |
| **40%** | 13,022 | 11,067 | 6,690 | 3,164 | 724 | 702 | 829 | 1,866 | 4,774 | 5,854 | 8,652 | 11,536 |
| **50%** | 10,802 | 5,687 | 5,611 | 2,237 | 503 | 392 | 564 | 1,326 | 3,903 | 5,244 | 7,798 | 10,337 |
| **60%** | 5,851 | 5,379 | 4,555 | 986 | 292 | 258 | 334 | 840 | 3,436 | 4,030 | 7,490 | 5,617 |
| **70%** | 2,634 | 2,626 | 2,331 | 308 | 216 | 203 | 262 | 576 | 2,633 | 3,773 | 7,088 | 3,183 |
| **80%** | 2,575 | 2,320 | 883 | 214 | 199 | 197 | 206 | 268 | 1,574 | 3,490 | 6,593 | 2,890 |
| **90%** | 2,425 | 2,245 | 344 | 193 | 191 | 191 | 194 | 191 | 410 | 2,809 | 6,245 | 2,822 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 8,572 | 7,508 | 5,686 | 3,286 | 1,309 | 1,039 | 1,337 | 2,278 | 4,091 | 5,638 | 8,457 | 8,195 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 2,487 | 2,211 | 3,216 | 709 | 247 | 252 | 279 | 496 | 1,741 | 3,027 | 6,597 | 2,853 |
| **Above Normal (16%)** | 5,602 | 5,135 | 5,064 | 1,630 | 463 | 314 | 383 | 879 | 3,303 | 3,898 | 6,753 | 5,608 |
| **Below Normal (13%)** | 11,668 | 10,151 | 6,760 | 4,127 | 1,597 | 1,348 | 1,533 | 2,374 | 4,570 | 5,467 | 7,941 | 11,054 |
| **Dry (24%)** | 13,155 | 10,396 | 6,180 | 5,201 | 2,021 | 1,234 | 1,559 | 2,991 | 5,022 | 7,563 | 10,215 | 12,254 |
| **Critical (15%)** | 14,495 | 14,320 | 9,902 | 6,704 | 3,077 | 2,919 | 4,115 | 6,379 | 8,046 | 10,126 | 11,876 | 13,186 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | -502 | -921 | -1,049 | -265 | -363 | -50 | **17** | **414** | -77 | -40 | -160 | -173 |
| **20%** | -406 | -767 | -883 | -115 | -17 | **4** | **147** | **352** | **33** | **24** | -89 | -49 |
| **30%** | -447 | -813 | -222 | -283 | **15** | **0** | **10** | **34** | -1 | **30** | -82 | -109 |
| **40%** | -338 | -976 | -313 | -274 | -26 | **3** | **9** | **3** | **1** | -5 | -104 | -72 |
| **50%** | **616** | -61 | **1** | -318 | **2** | 0 | **0** | **0** | **6** | -3 | **72** | -187 |
| **60%** | -31 | -11 | -447 | -96 | -3 | 0 | **0** | -1 | -6 | -2 | **7** | **3** |
| **70%** | -140 | -192 | **6** | **5** | 0 | **0** | **0** | **0** | **4** | **1** | -1 | **3** |
| **80%** | -141 | -176 | -5 | **1** | 0 | **0** | 0 | **2** | **10** | -38 | -5 | **0** |
| **90%** | -128 | -159 | -3 | 0 | **0** | 0 | 0 | 0 | **0** | **0** | 0 | **0** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | -255 | -405 | -370 | -215 | -93 | **10** | **47** | **103** | **10** | -4 | -50 | -60 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | -143 | -162 | -24 | -18 | 0 | **0** | 0 | 0 | **2** | -11 | -10 | -1 |
| **Above Normal (16%)** | -31 | -43 | -28 | -44 | -6 | **3** | **1** | **0** | **2** | -2 | -2 | **7** |
| **Below Normal (13%)** | -375 | -714 | -617 | -149 | -38 | **1** | **18** | **16** | **17** | **4** | -23 | -37 |
| **Dry (24%)** | -346 | -566 | -506 | -318 | -34 | **45** | **37** | **123** | **14** | **12** | -82 | -110 |
| **Critical (15%)** | -478 | -773 | -1,034 | -720 | -541 | -13 | **243** | **486** | **21** | -25 | -164 | -197 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 13-4. Chipps Island South Channel Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,900 | 15,314 | 13,031 | 9,416 | 4,203 | 3,627 | 4,435 | 5,226 | 6,642 | 8,863 | 11,953 | 13,393 |
| 20% | 13,896 | 13,573 | 12,480 | 7,509 | 2,224 | 2,076 | 2,694 | 4,521 | 5,963 | 7,984 | 10,709 | 12,696 |
| 30% | 13,726 | 13,250 | 10,871 | 5,523 | 1,491 | 904 | 1,727 | 3,968 | 5,633 | 7,585 | 10,431 | 12,538 |
| 40% | 13,188 | 12,771 | 9,192 | 3,283 | 729 | 687 | 1,256 | 2,633 | 4,846 | 5,873 | 8,571 | 11,500 |
| 50% | 12,389 | 12,474 | 7,948 | 2,292 | 467 | 393 | 805 | 2,004 | 4,285 | 5,215 | 7,691 | 10,520 |
| 60% | 12,000 | 11,449 | 5,810 | 1,115 | 273 | 247 | 472 | 1,514 | 3,750 | 4,160 | 7,388 | 10,081 |
| 70% | 11,532 | 9,713 | 2,451 | 287 | 212 | 203 | 280 | 840 | 2,742 | 3,897 | 7,008 | 9,933 |
| 80% | 11,038 | 7,690 | 1,464 | 211 | 198 | 196 | 204 | 302 | 1,642 | 3,396 | 6,767 | 9,761 |
| 90% | 8,046 | 4,136 | 607 | 195 | 192 | 191 | 191 | 192 | 405 | 2,781 | 6,405 | 9,245 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 11,903 | 10,776 | 7,079 | 3,589 | 1,503 | 1,130 | 1,508 | 2,580 | 4,237 | 5,678 | 8,535 | 10,845 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 9,394 | 8,442 | 5,443 | 646 | 234 | 249 | 370 | 752 | 1,834 | 3,072 | 6,545 | 8,854 |
| Above Normal (16%) | 11,256 | 10,553 | 7,056 | 1,699 | 430 | 317 | 544 | 1,340 | 3,399 | 3,942 | 6,832 | 9,942 |
| Below Normal (13%) | 11,894 | 11,089 | 7,357 | 4,441 | 1,759 | 1,445 | 1,809 | 3,003 | 4,863 | 5,445 | 7,882 | 10,873 |
| Dry (24%) | 13,733 | 11,162 | 6,728 | 5,827 | 2,190 | 1,278 | 1,807 | 3,296 | 5,151 | 7,557 | 10,414 | 12,443 |
| Critical (15%) | 14,998 | 15,144 | 10,977 | 7,500 | 4,035 | 3,383 | 4,242 | 6,306 | 8,257 | 10,286 | 12,162 | 13,447 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 14,377 | 14,345 | 12,099 | 8,529 | 3,515 | 3,454 | 4,212 | 5,266 | 6,665 | 8,888 | 11,744 | 13,123 |
| 20% | 13,481 | 12,773 | 10,316 | 7,002 | 2,158 | 1,875 | 2,591 | 4,534 | 6,285 | 8,086 | 10,513 | 12,602 |
| 30% | 13,211 | 12,401 | 9,826 | 4,922 | 1,220 | 719 | 1,478 | 3,841 | 5,711 | 7,539 | 10,406 | 12,375 |
| 40% | 12,847 | 11,381 | 9,425 | 3,282 | 744 | 583 | 1,133 | 2,842 | 5,118 | 6,374 | 8,794 | 11,595 |
| 50% | 10,373 | 8,162 | 7,666 | 2,186 | 526 | 354 | 775 | 1,842 | 4,705 | 5,991 | 7,847 | 10,252 |
| 60% | 5,409 | 7,903 | 5,717 | 1,072 | 274 | 231 | 424 | 1,469 | 3,834 | 4,700 | 6,959 | 6,306 |
| 70% | 5,253 | 7,725 | 2,415 | 296 | 214 | 204 | 301 | 885 | 2,896 | 4,332 | 6,710 | 6,015 |
| 80% | 5,170 | 7,548 | 1,403 | 213 | 198 | 197 | 201 | 308 | 1,674 | 3,875 | 6,558 | 5,833 |
| 90% | 4,991 | 3,053 | 616 | 195 | 191 | 191 | 190 | 191 | 426 | 2,836 | 6,251 | 5,567 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 9,288 | 9,256 | 6,615 | 3,288 | 1,327 | 1,048 | 1,459 | 2,584 | 4,370 | 5,960 | 8,429 | 9,154 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 4,986 | 6,410 | 5,331 | 790 | 248 | 235 | 341 | 768 | 1,974 | 3,318 | 6,289 | 5,698 |
| Above Normal (16%) | 5,225 | 7,165 | 6,522 | 1,650 | 421 | 283 | 520 | 1,386 | 3,615 | 4,477 | 6,692 | 5,825 |
| Below Normal (13%) | 11,566 | 10,528 | 6,798 | 4,245 | 1,625 | 1,317 | 1,763 | 3,047 | 5,257 | 6,282 | 8,221 | 10,981 |
| Dry (24%) | 13,131 | 10,534 | 6,286 | 5,154 | 1,903 | 1,121 | 1,677 | 3,207 | 5,146 | 7,571 | 10,309 | 12,344 |
| Critical (15%) | 14,515 | 14,392 | 9,881 | 6,490 | 3,412 | 3,267 | 4,259 | 6,353 | 8,272 | 10,308 | 12,005 | 13,260 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -522 | -970 | -932 | -887 | -689 | -172 | -223 | **40** | **23** | **25** | -209 | -270 |
| 20% | -414 | -800 | -2,164 | -507 | -65 | -202 | -103 | **13** | **322** | **102** | -196 | -94 |
| 30% | -515 | -849 | -1,046 | -601 | -270 | -186 | -249 | -126 | **78** | -46 | -25 | -163 |
| 40% | -341 | -1,390 | **233** | -2 | **14** | -105 | -123 | **208** | **272** | **501** | **223** | **95** |
| 50% | -2,016 | -4,312 | -281 | -106 | **59** | -39 | -31 | -161 | **420** | **776** | **157** | -268 |
| 60% | -6,591 | -3,546 | -93 | -42 | **1** | -16 | -48 | -45 | **84** | **540** | -429 | -3,775 |
| 70% | -6,279 | -1,988 | -36 | **9** | **2** | **1** | **21** | **45** | **153** | **435** | -297 | -3,918 |
| 80% | -5,867 | -142 | -61 | **2** | 0 | **0** | -2 | **6** | **32** | **478** | -209 | -3,929 |
| 90% | -3,055 | -1,083 | **10** | -1 | -1 | 0 | -1 | 0 | **21** | **55** | -154 | -3,678 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2,615 | -1,519 | -464 | -300 | -176 | -82 | -49 | **4** | **133** | **282** | -106 | -1,691 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -4,408 | -2,031 | -113 | **144** | **14** | -13 | -29 | **17** | **140** | **246** | -255 | -3,157 |
| Above Normal (16%) | -6,031 | -3,387 | -535 | -49 | -9 | -34 | -24 | **47** | **217** | **535** | -140 | -4,118 |
| Below Normal (13%) | -327 | -561 | -559 | -196 | -134 | -127 | -46 | **45** | **394** | **837** | **339** | **108** |
| Dry (24%) | -603 | -627 | -442 | -673 | -287 | -157 | -130 | -89 | -5 | **15** | -105 | -99 |
| Critical (15%) | -482 | -752 | -1,096 | -1,010 | -623 | -116 | **17** | **47** | **15** | **22** | -157 | -187 |

a Based on the 82-year simulation period.

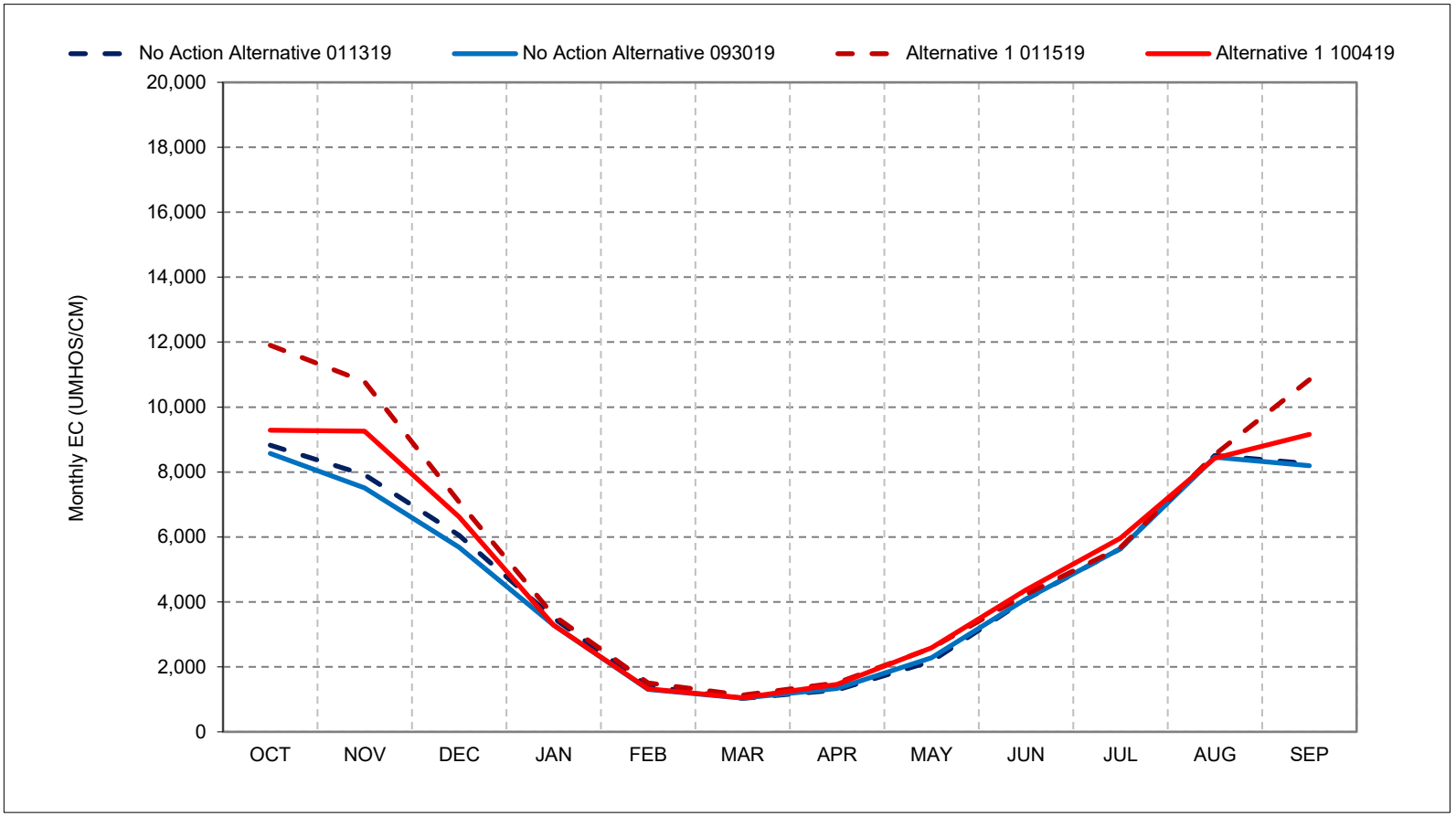
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-1. Chipps Island South Channel Salinity, Long-Term Average EC

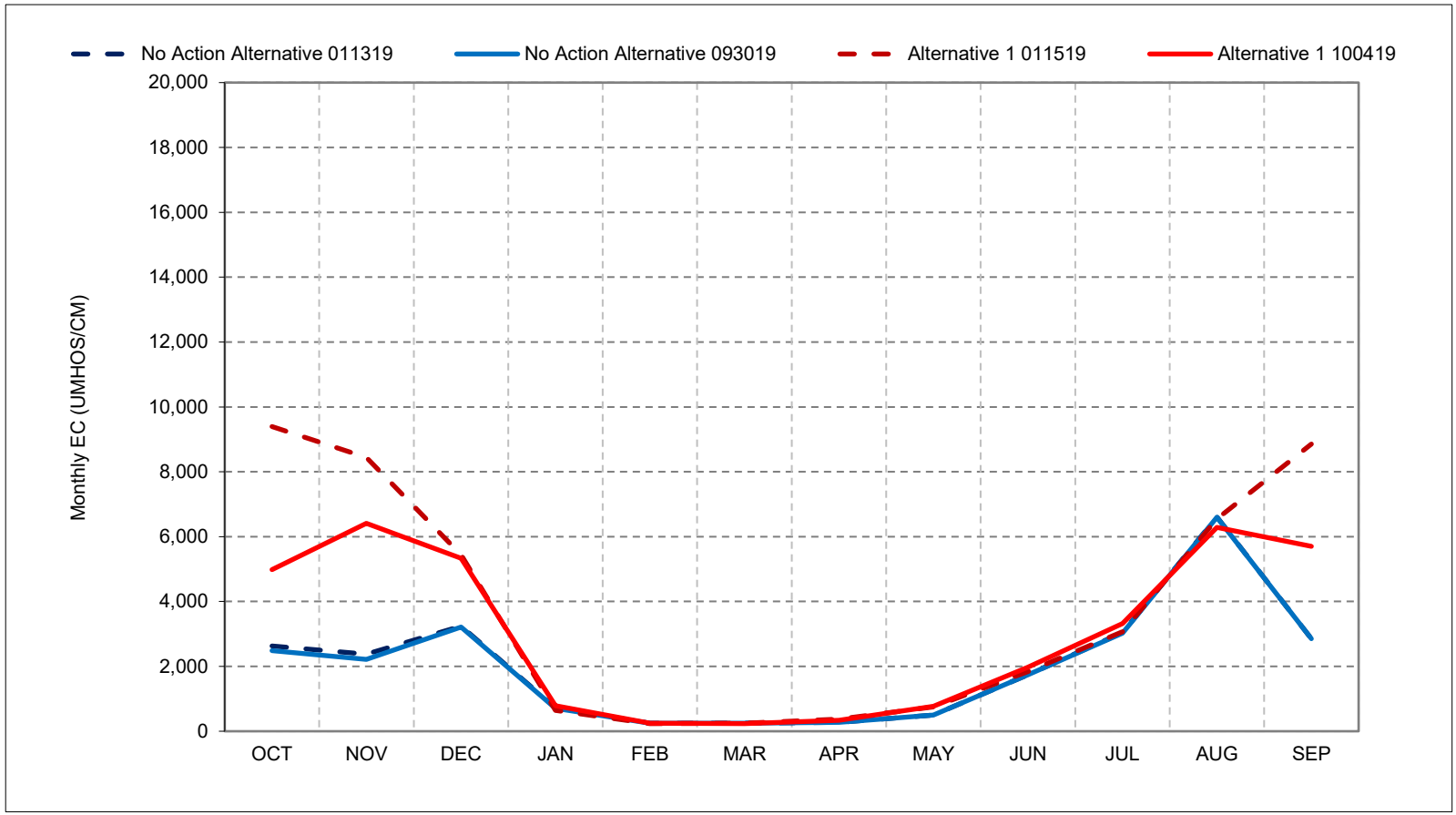



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-2. Chipps Island South Channel Salinity, Wet Year Average EC

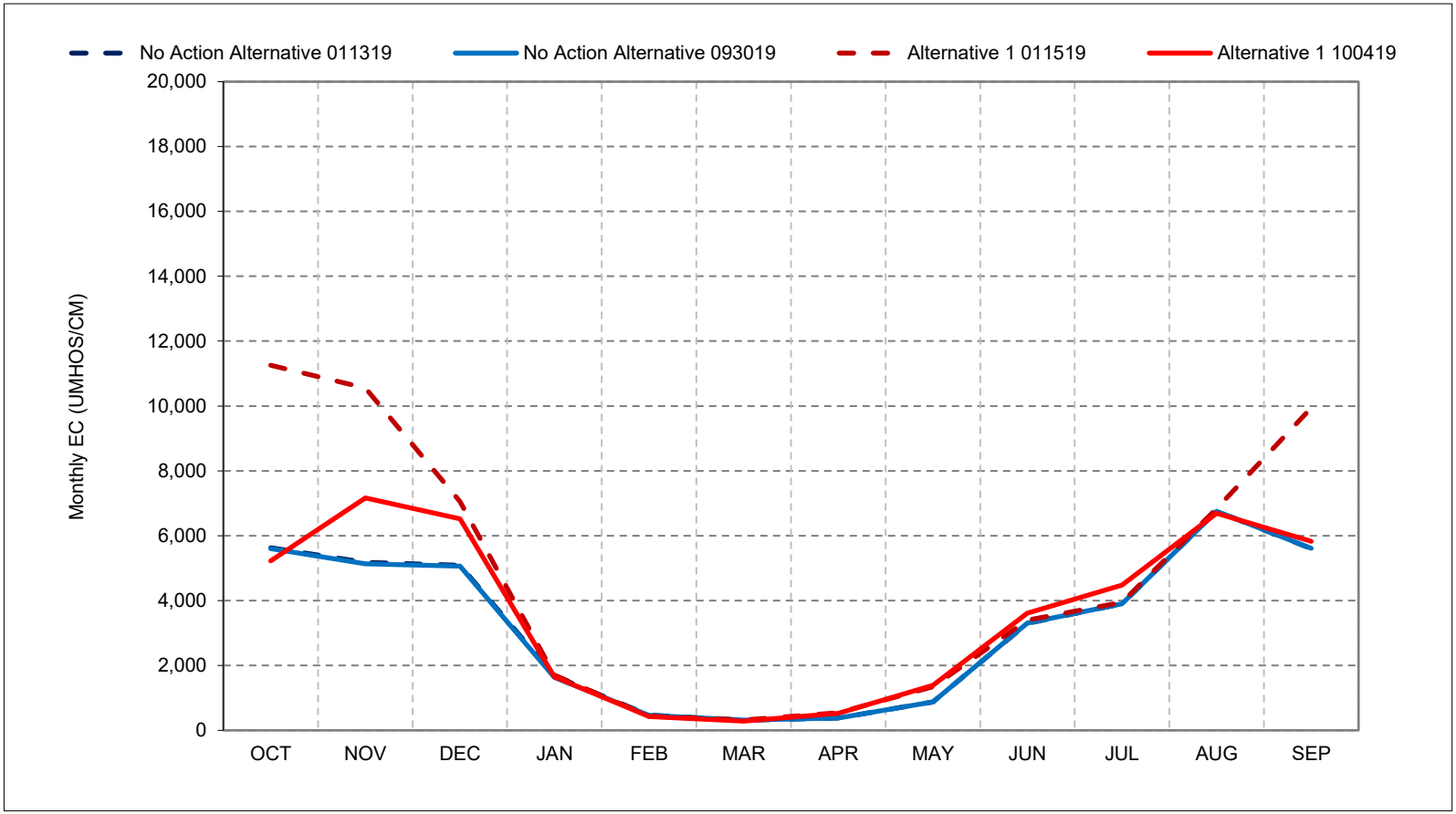



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-3. Chipps Island South Channel Salinity, Above Normal Year Average EC

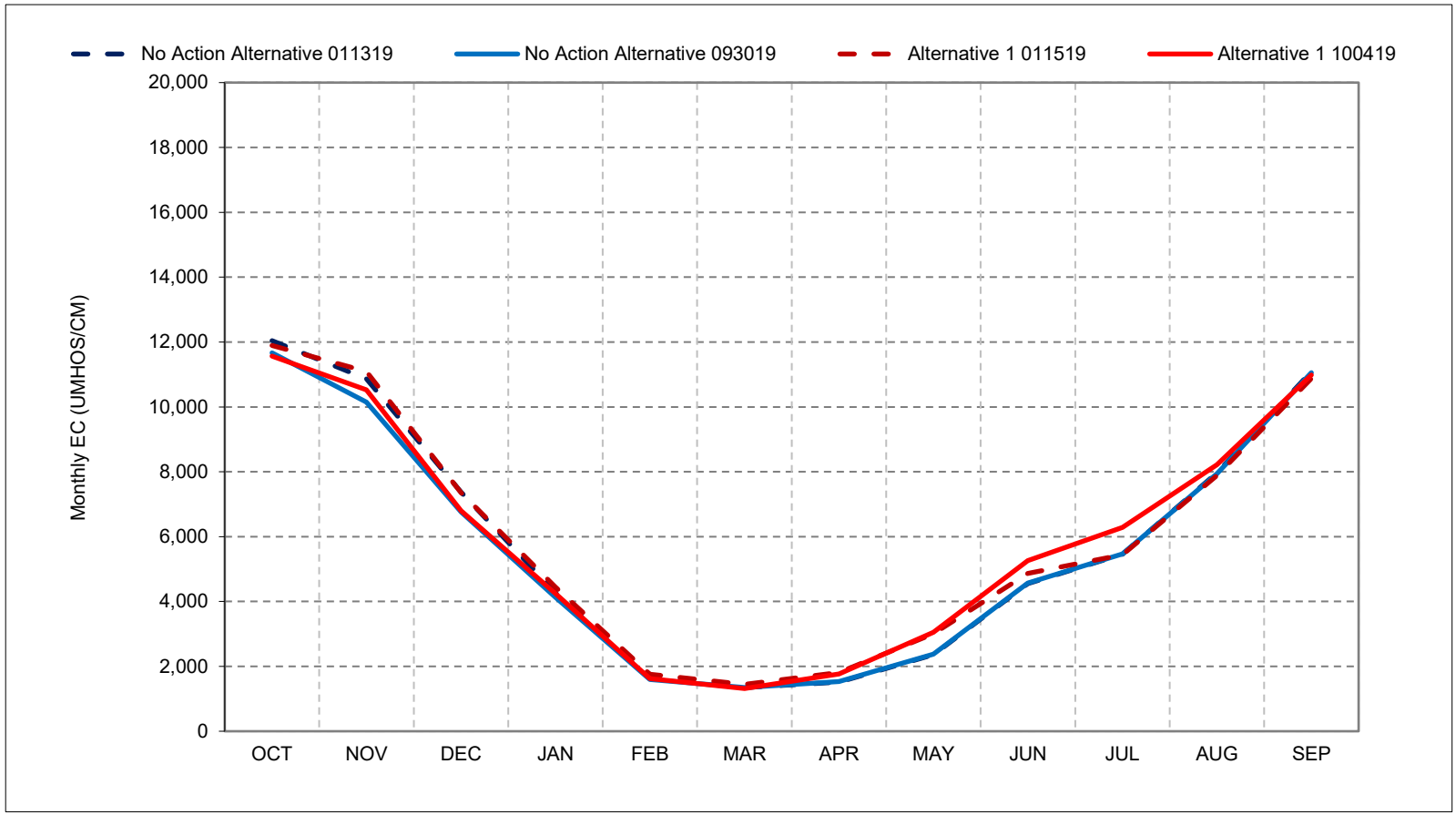



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-4. Chipps Island South Channel Salinity, Below Normal Year Average EC

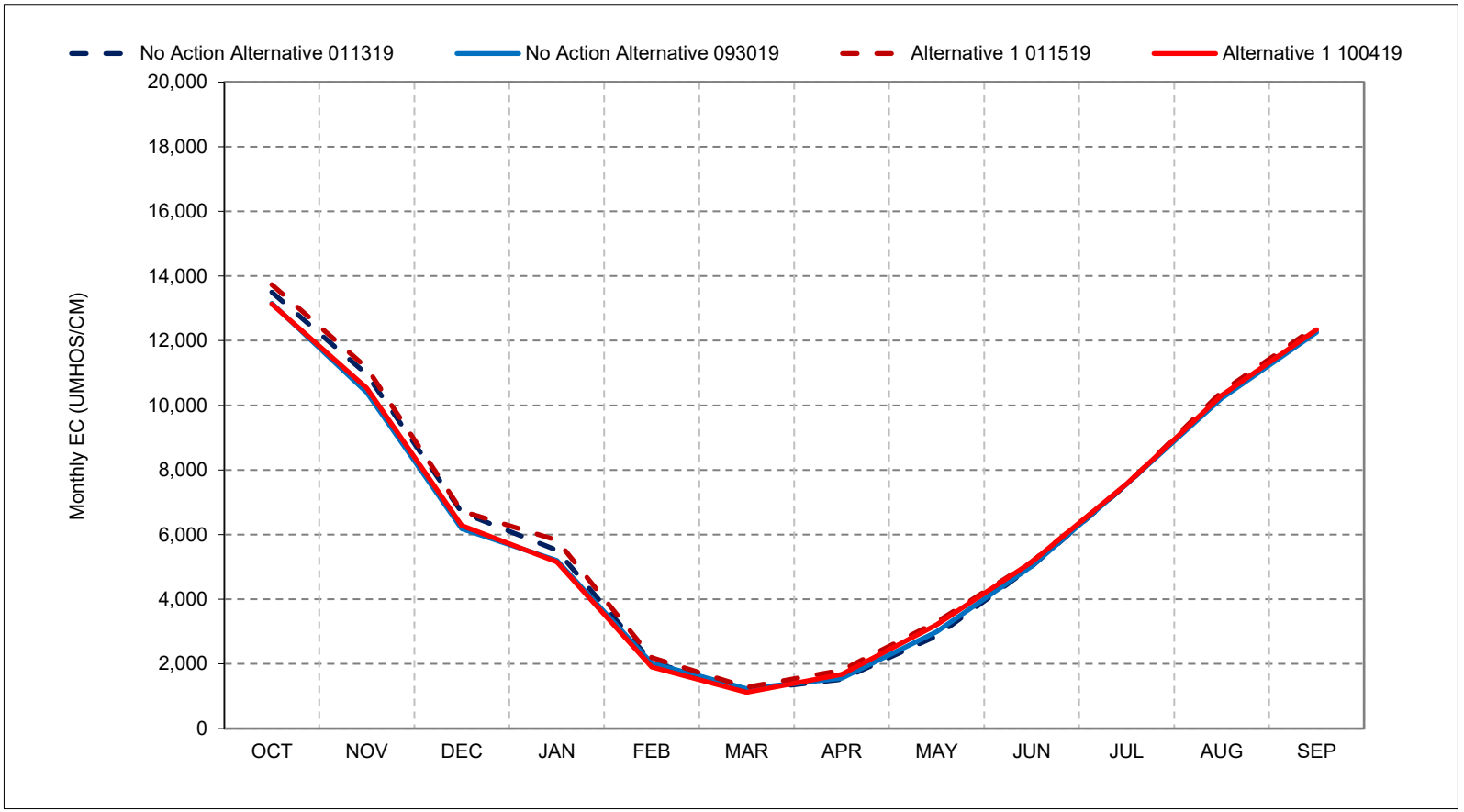



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-5. Chipps Island South Channel Salinity, Dry Year Average EC

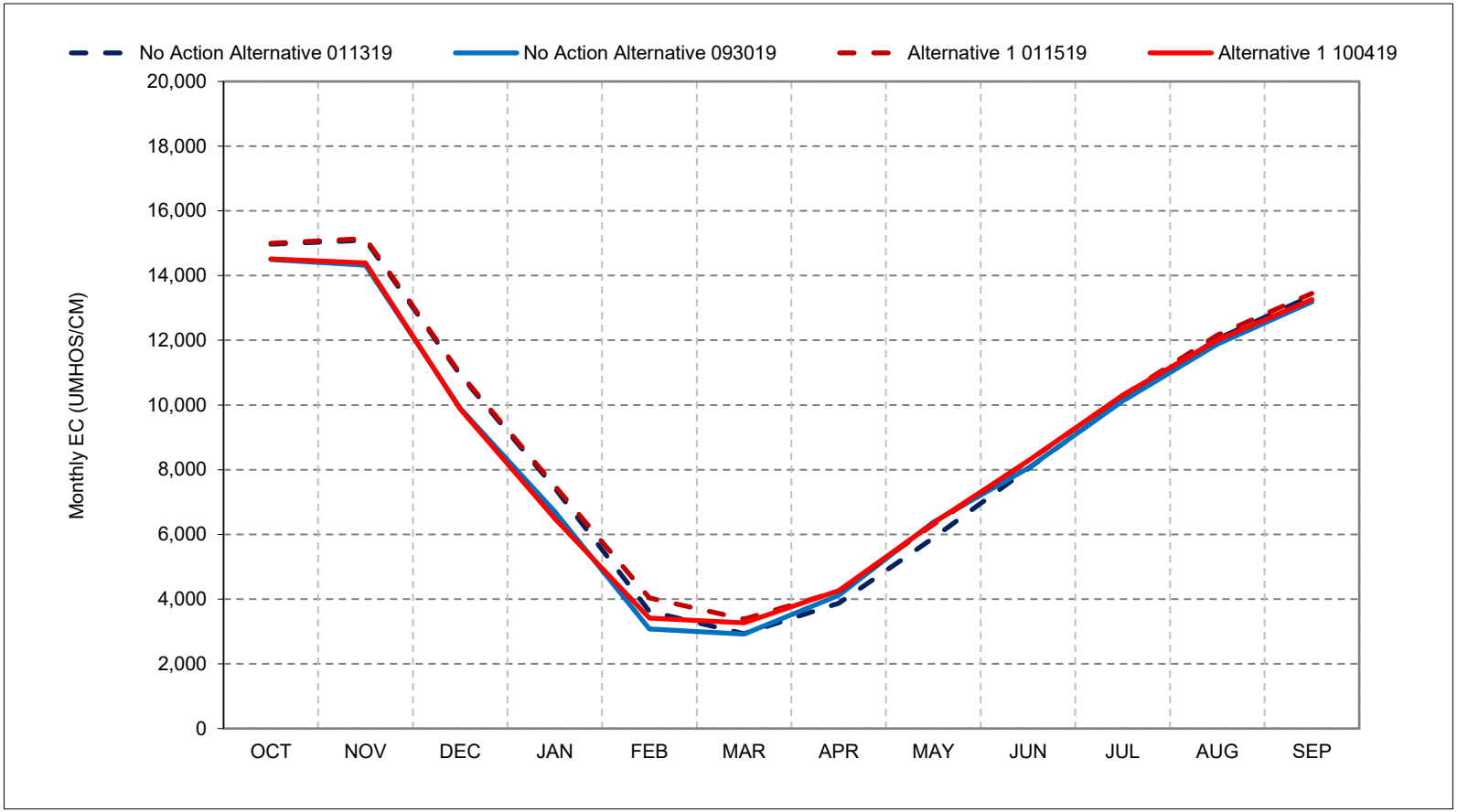



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 13-6. Chipps Island South Channel Salinity, Critical Year Average EC

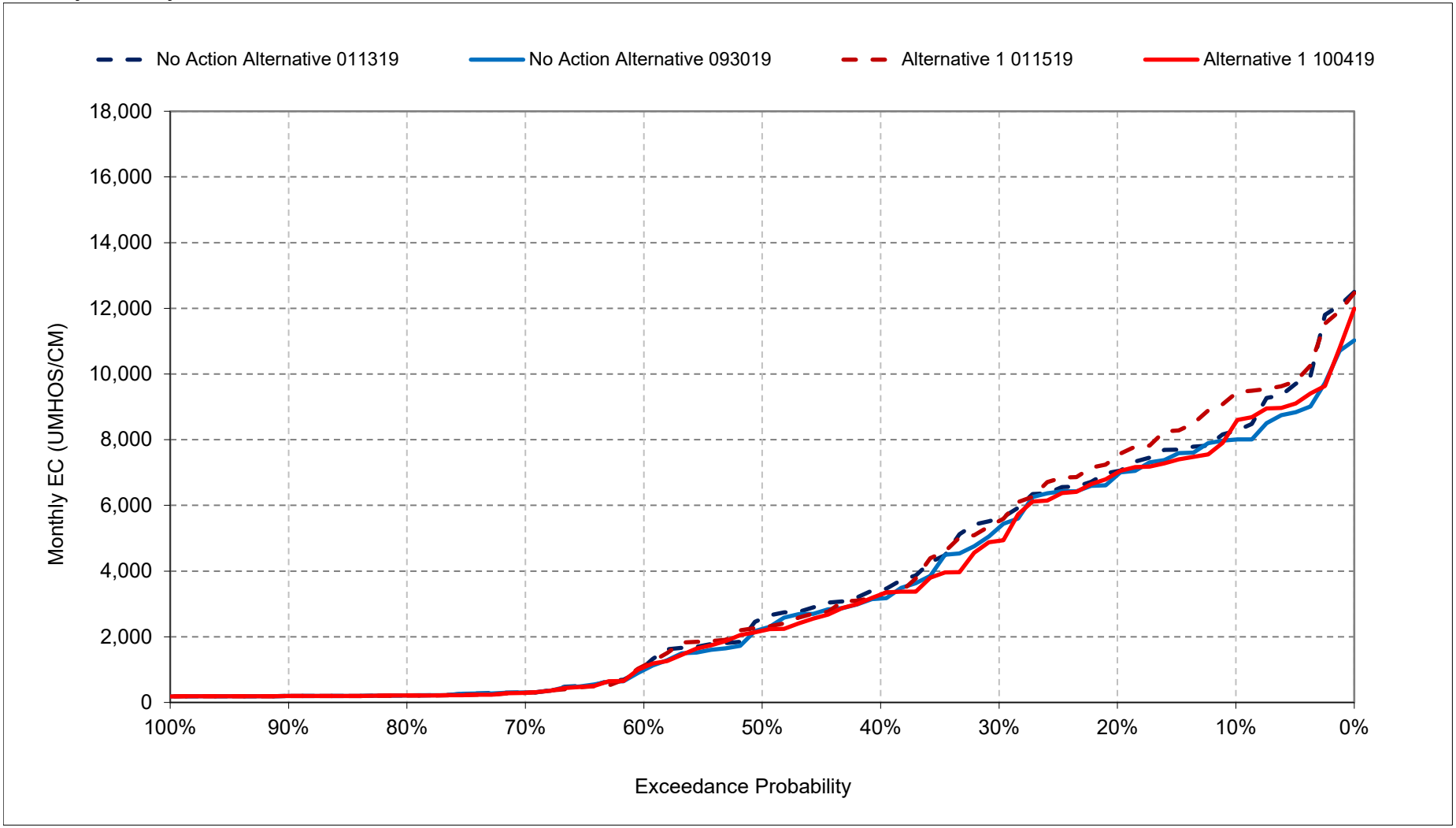



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

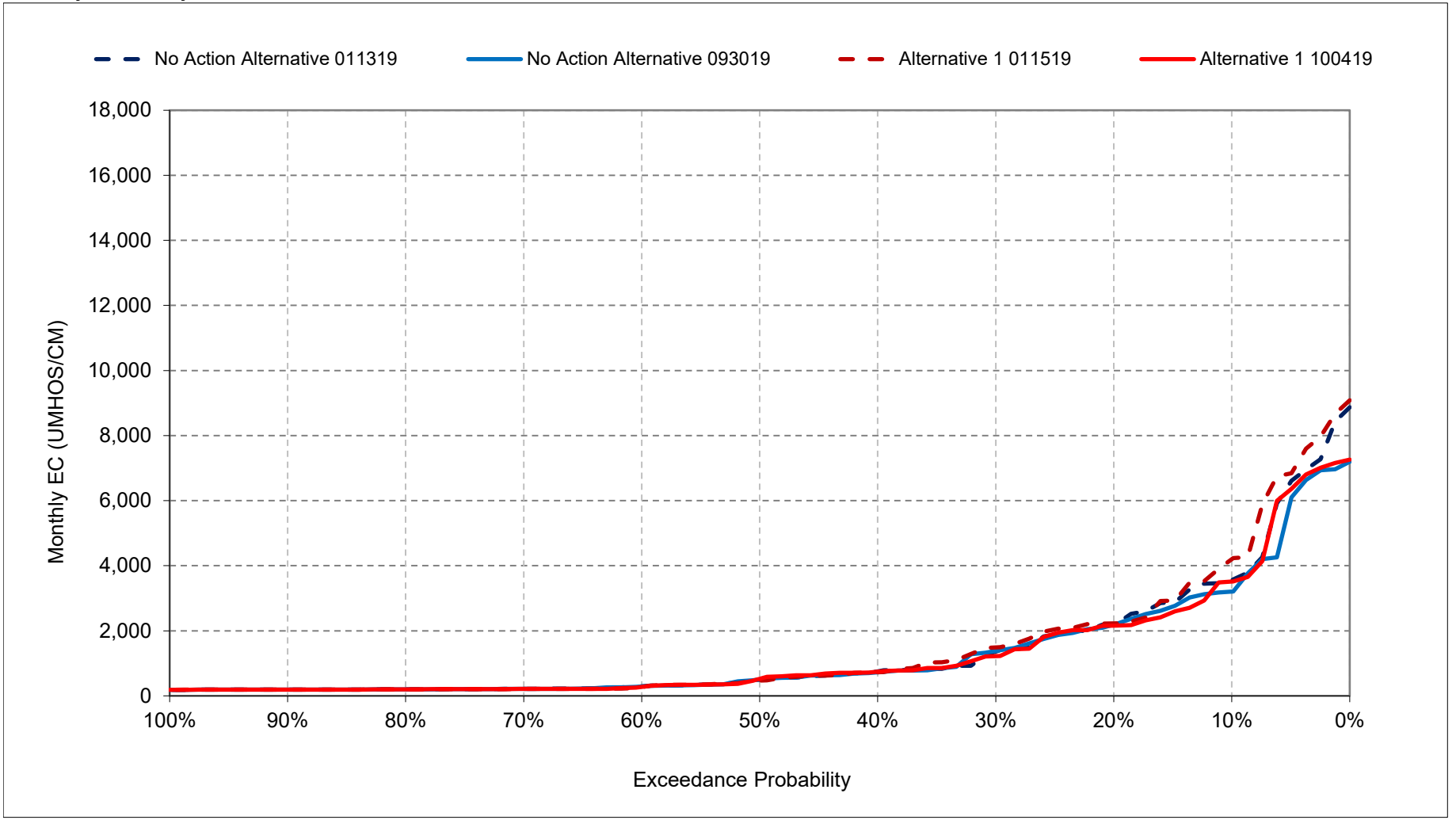
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-7. Chipps Island South Channel**
**Salinity, January EC**



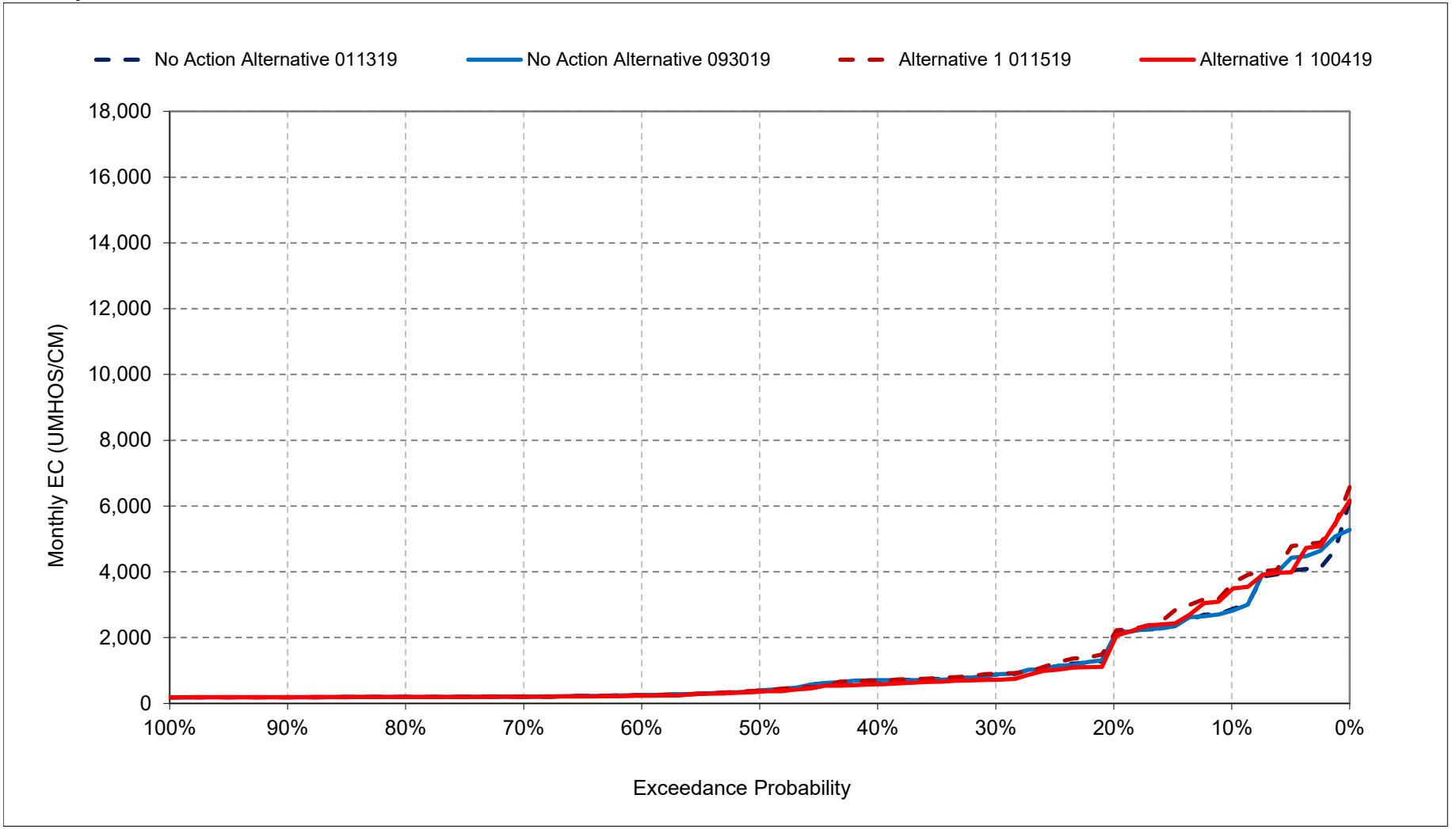

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-8. Chipps Island South Channel Salinity, February EC**



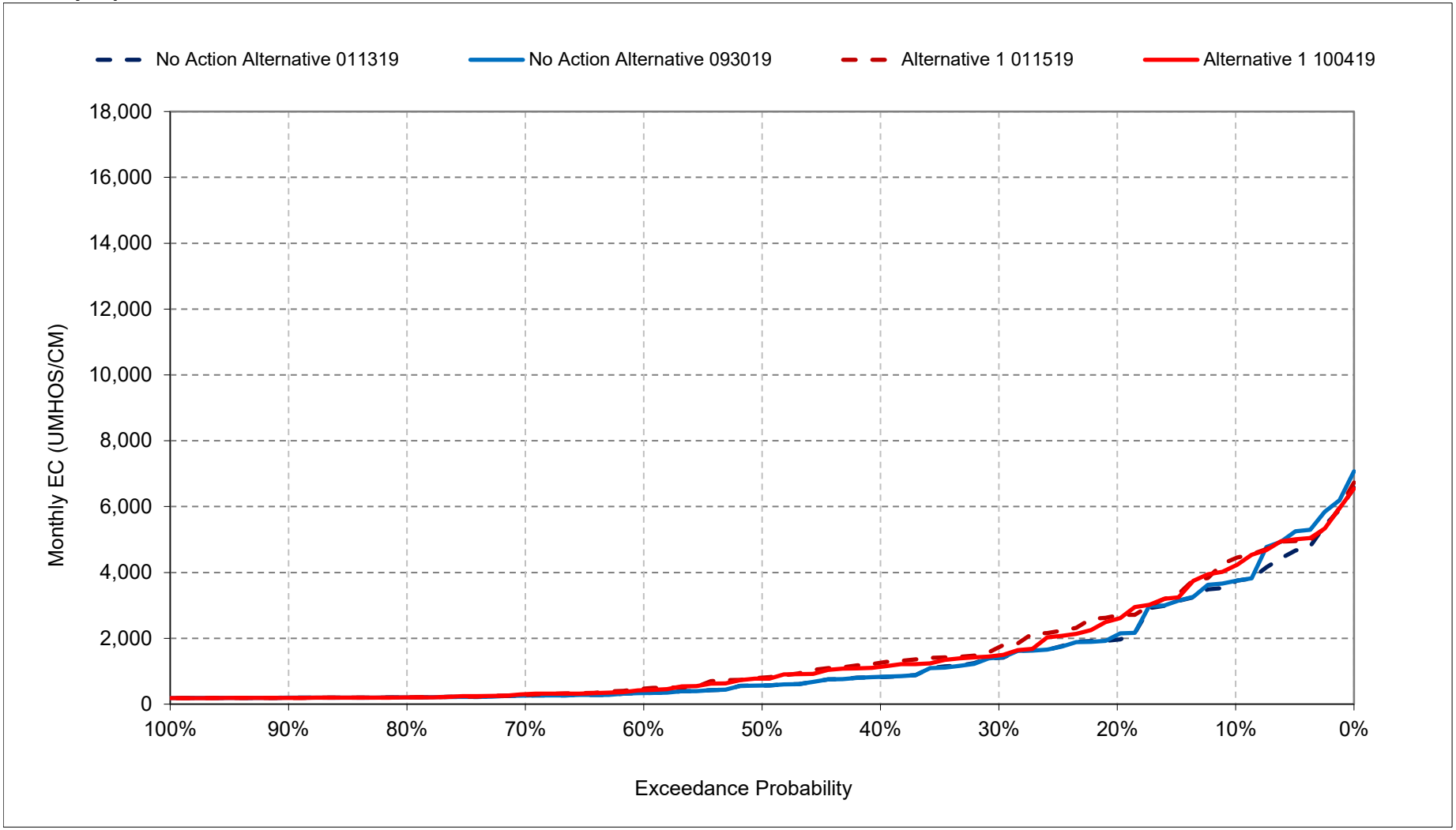

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-9. Chipps Island South Channel Salinity, March EC**



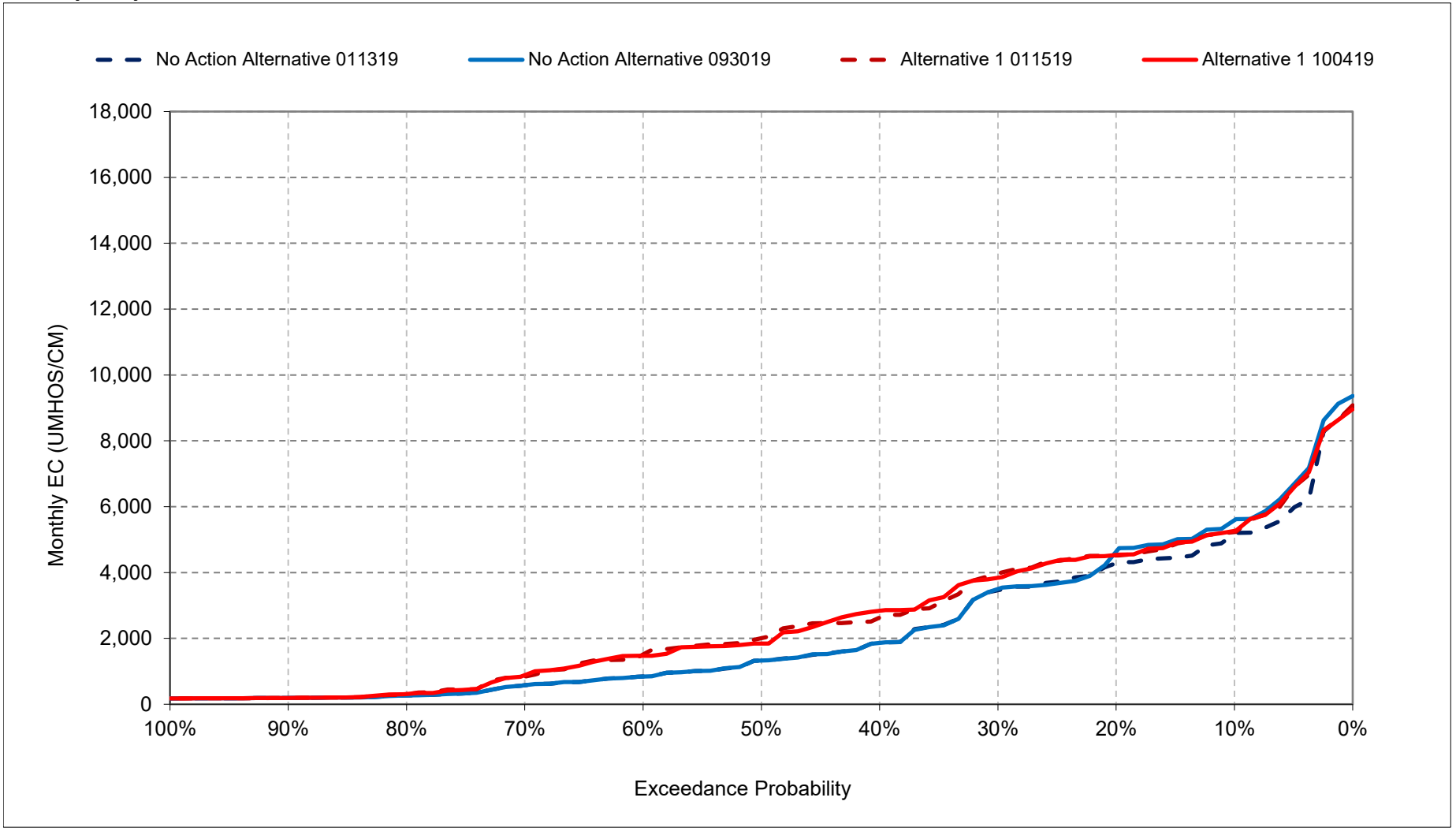

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-10. Chipps Island South Channel**
**Salinity, April EC**



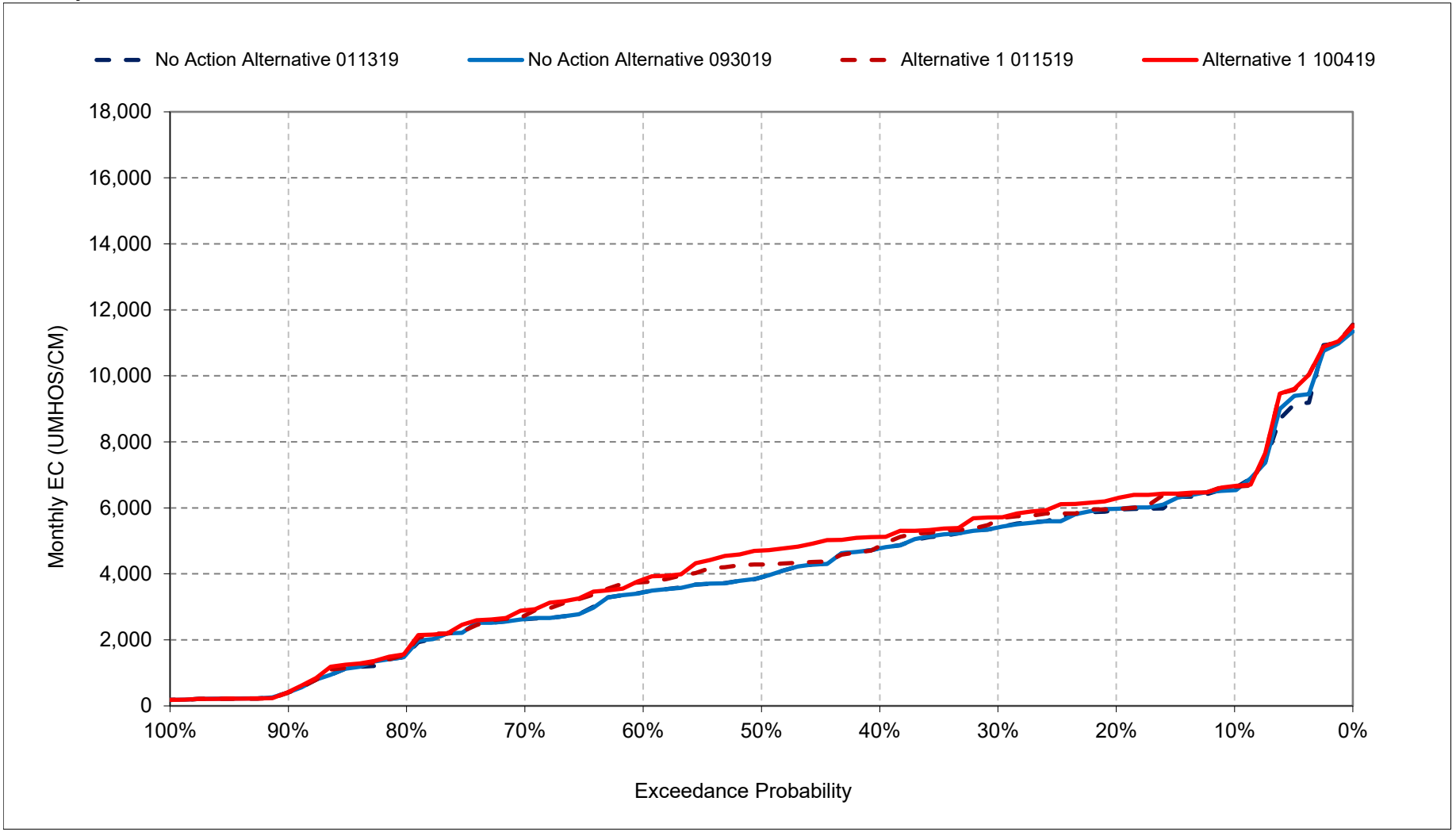

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-11. Chipps Island South Channel**
**Salinity, May EC**



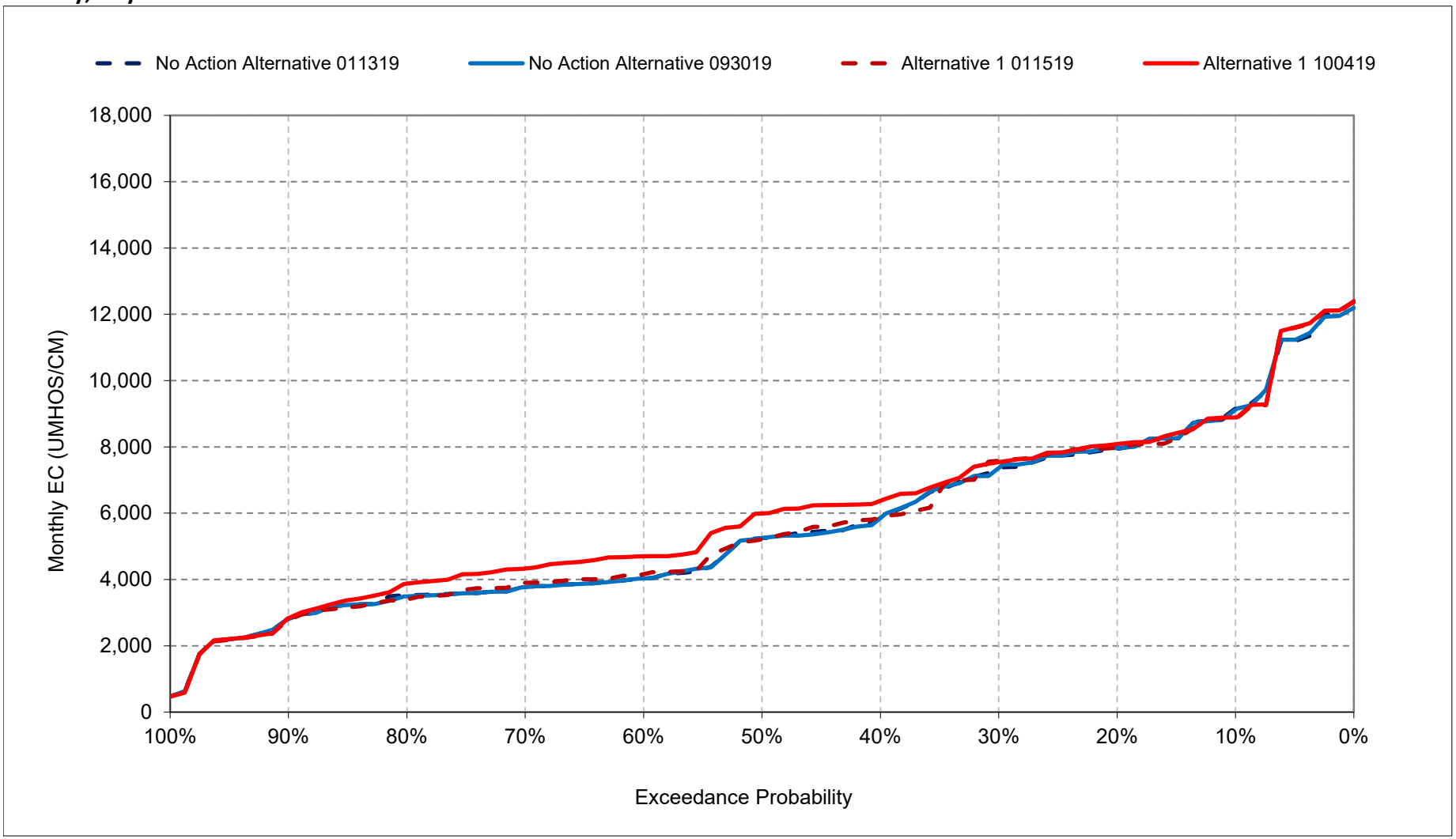

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-12. Chipps Island South Channel**
**Salinity, June EC**



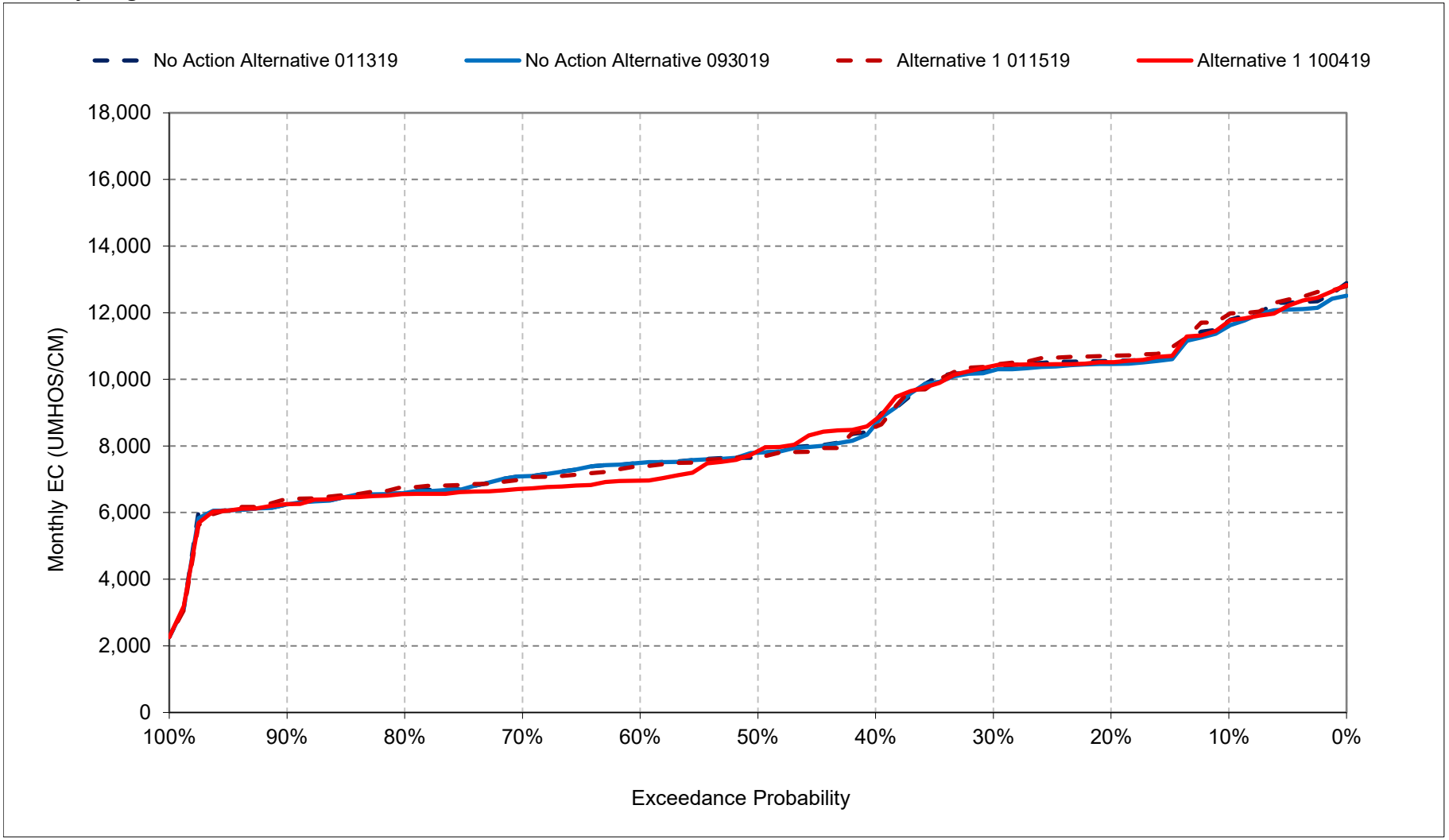

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-13. Chipps Island South Channel**
**Salinity, July EC**



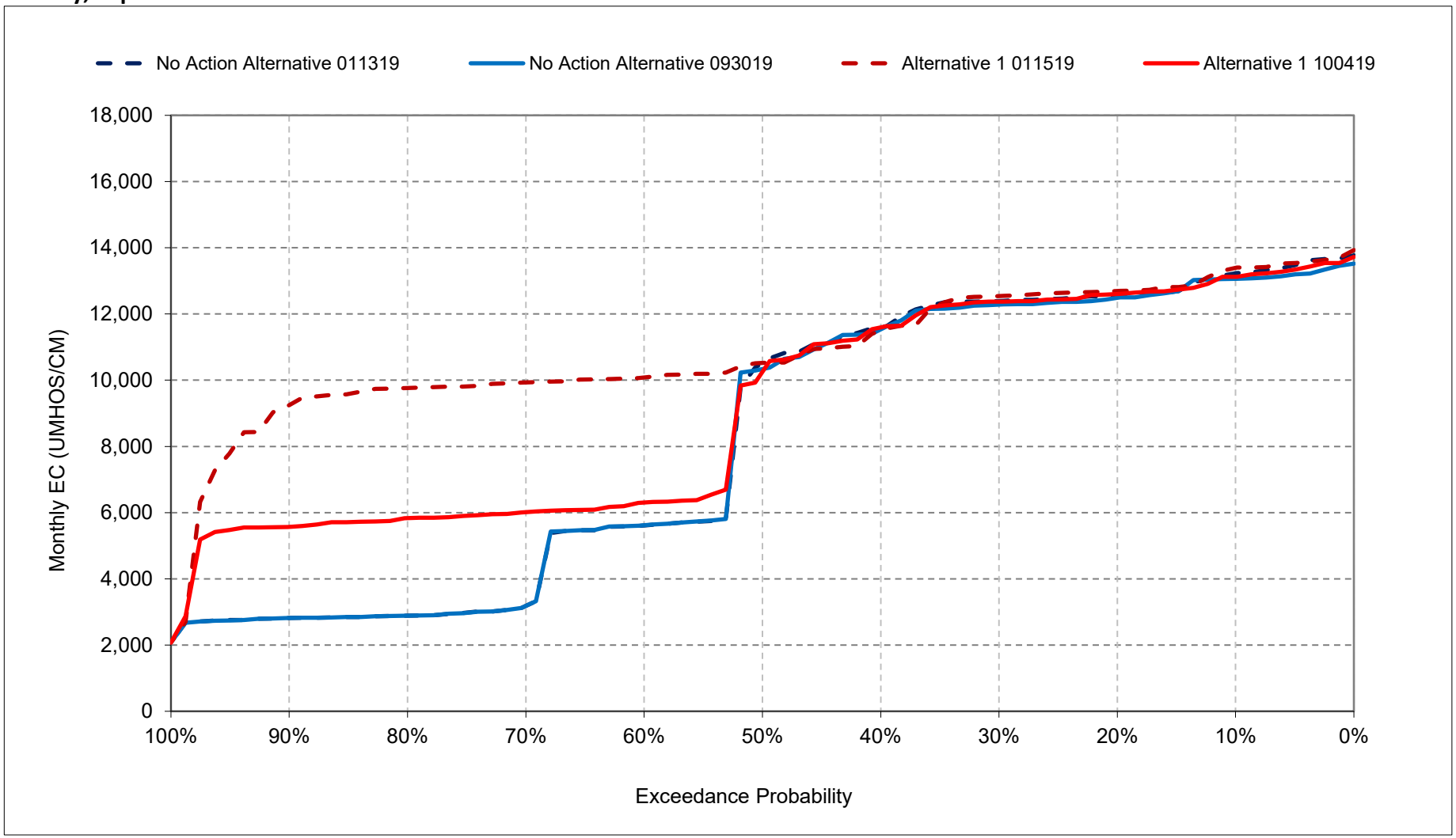

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-14. Chipps Island South Channel**
**Salinity, August EC**



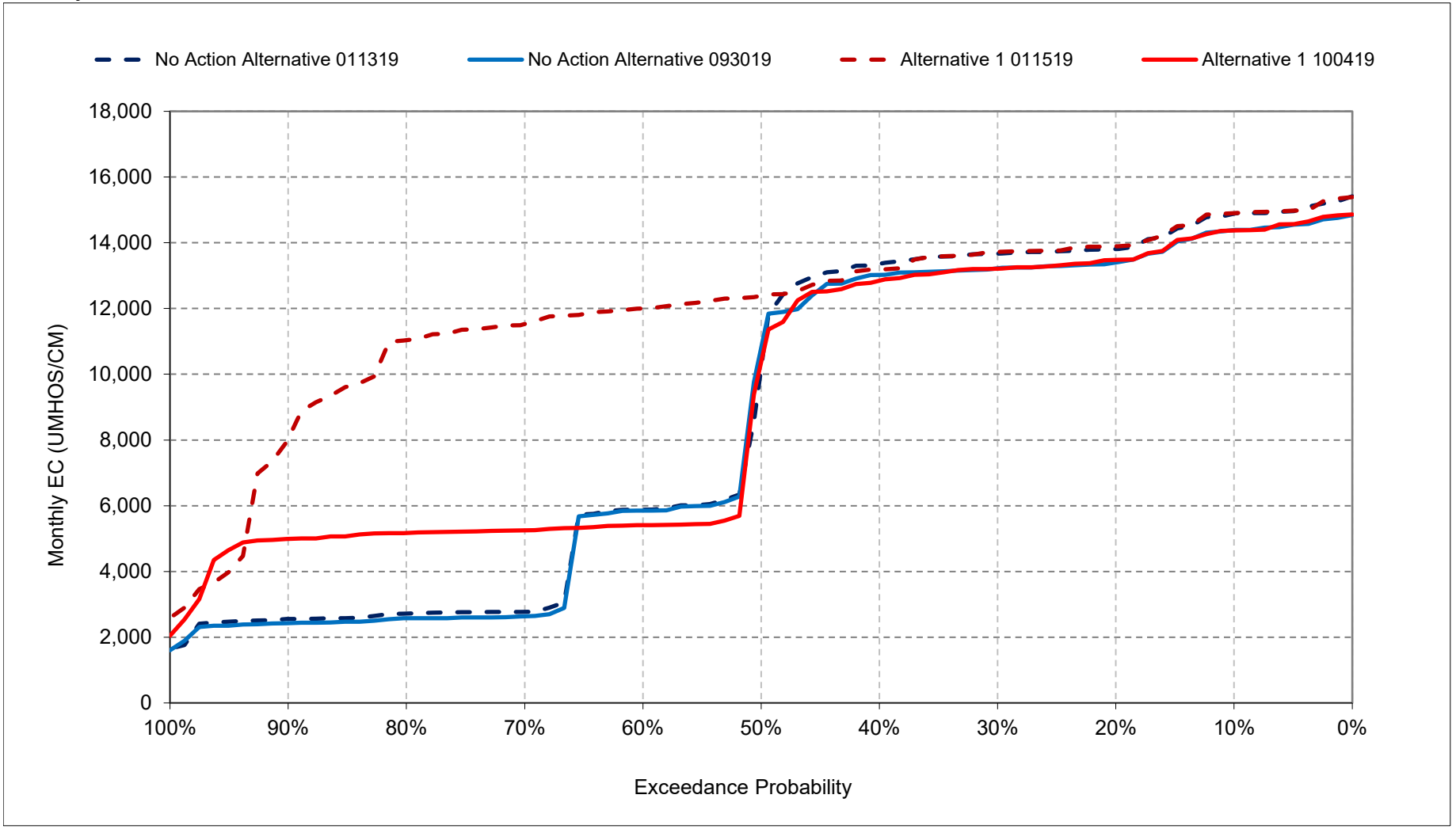

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-15. Chipps Island South Channel**
**Salinity, September EC**



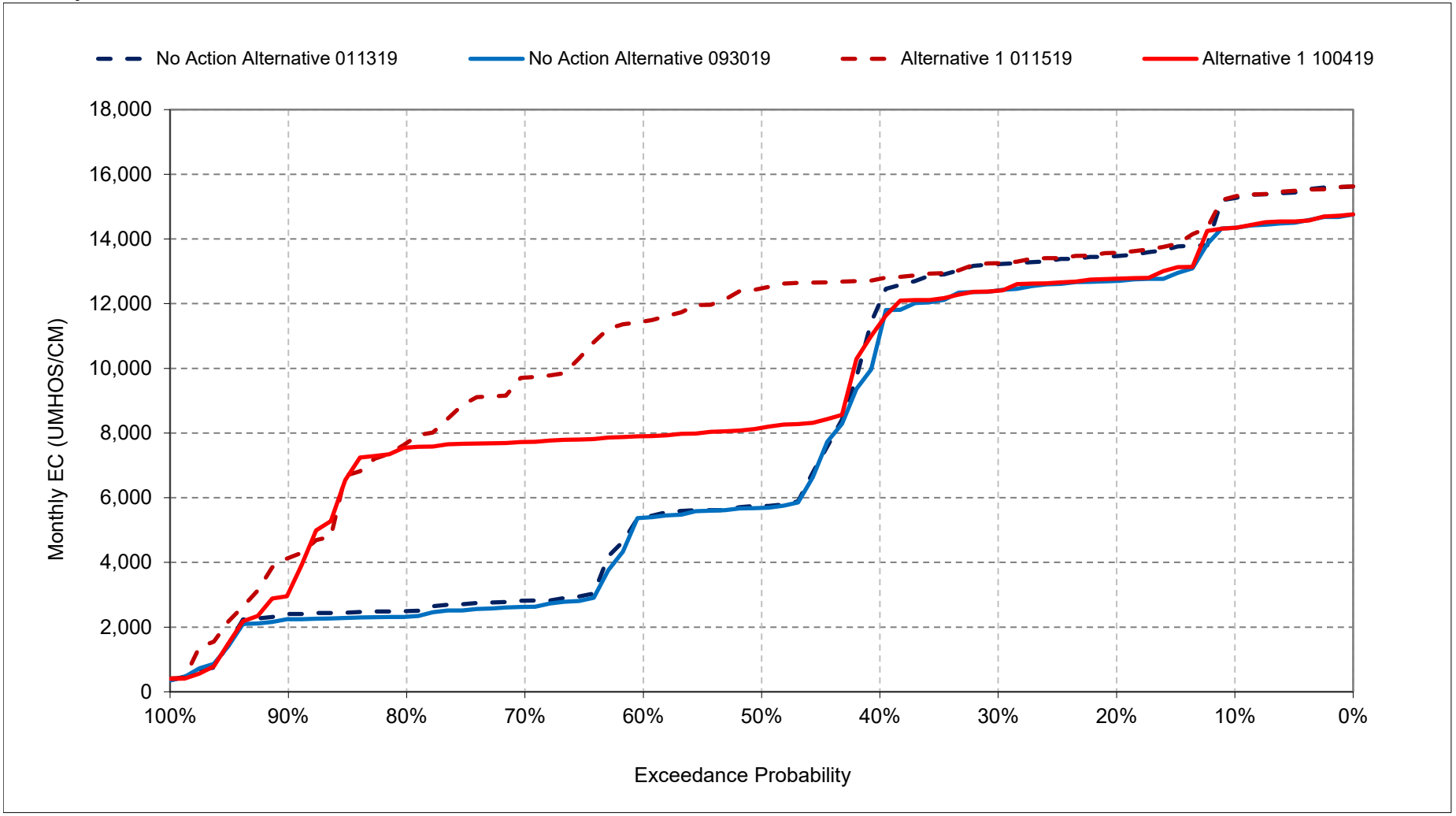

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-16. Chipps Island South Channel**
**Salinity, October EC**



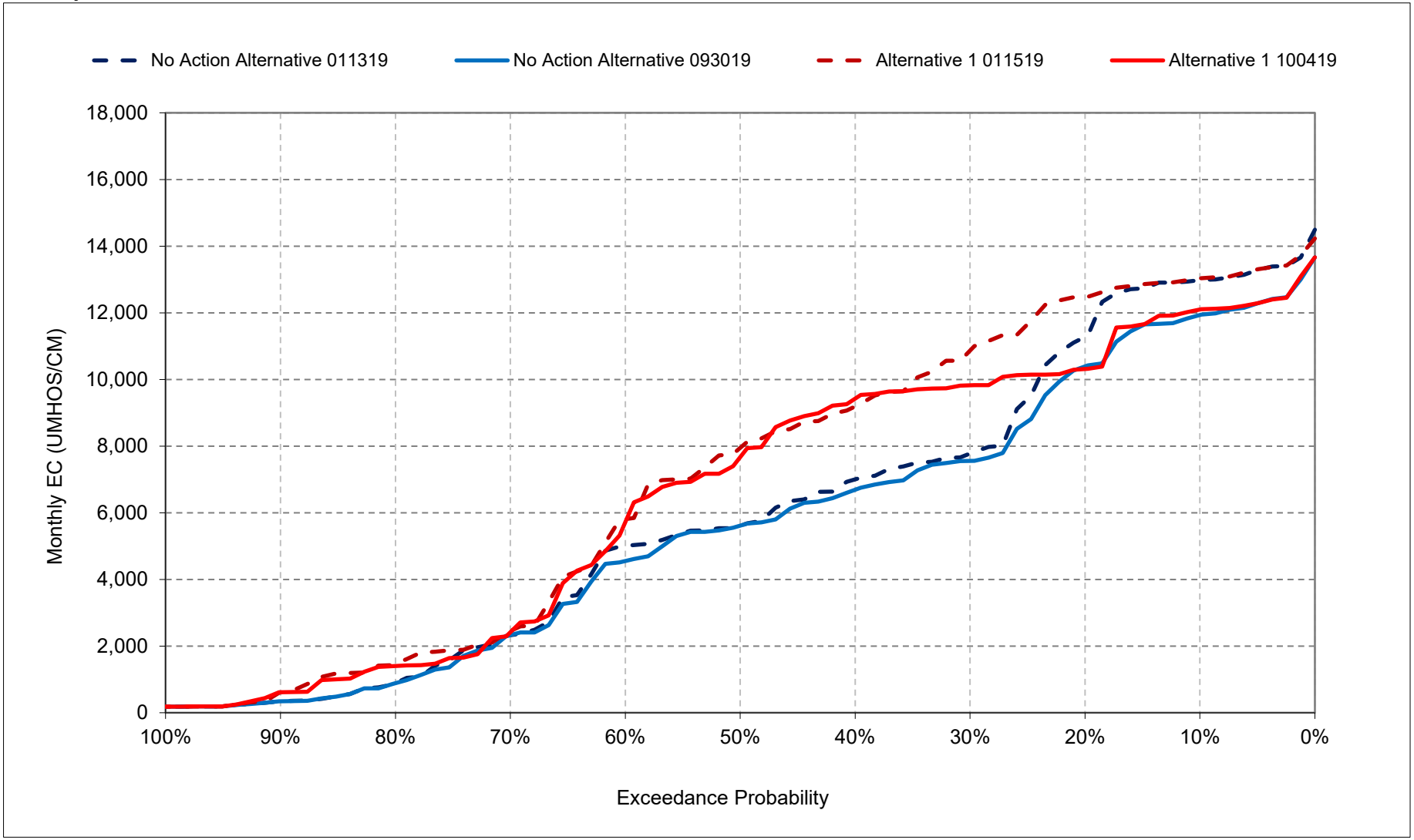

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-17. Chipps Island South Channel**
**Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 13-18. Chipps Island South Channel Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-1. Sacramento River at Port Chicago Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 19,721 | 20,087 | 18,443 | 14,099 | 9,142 | 8,191 | 9,388 | 11,113 | 13,136 | 15,401 | 17,559 | 18,778 |
| 20% | 18,931 | 18,683 | 17,240 | 13,238 | 6,908 | 6,716 | 6,664 | 10,006 | 12,043 | 14,401 | 16,567 | 18,140 |
| 30% | 18,823 | 18,475 | 13,724 | 11,521 | 4,387 | 3,756 | 5,530 | 8,915 | 11,428 | 13,786 | 16,389 | 18,072 |
| 40% | 18,521 | 17,643 | 13,221 | 8,703 | 3,053 | 3,370 | 3,880 | 6,281 | 10,697 | 12,245 | 15,091 | 17,394 |
| 50% | 16,128 | 11,663 | 11,389 | 6,403 | 1,655 | 1,922 | 2,996 | 5,402 | 9,491 | 11,597 | 14,052 | 16,578 |
| 60% | 11,769 | 11,372 | 10,698 | 4,099 | 974 | 1,320 | 1,902 | 4,014 | 9,020 | 10,054 | 13,685 | 11,760 |
| 70% | 7,853 | 7,805 | 6,844 | 1,055 | 372 | 558 | 1,211 | 3,138 | 7,654 | 9,574 | 13,258 | 8,038 |
| 80% | 7,551 | 7,420 | 2,783 | 459 | 241 | 288 | 543 | 1,504 | 5,455 | 9,215 | 12,846 | 7,772 |
| 90% | 7,416 | 7,096 | 925 | 257 | 214 | 234 | 266 | 506 | 2,470 | 7,859 | 12,424 | 7,645 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 13,938 | 12,910 | 10,512 | 6,917 | 3,516 | 3,188 | 3,895 | 5,735 | 9,056 | 11,518 | 14,605 | 13,745 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 7,512 | 6,972 | 7,194 | 1,756 | 541 | 795 | 1,043 | 1,917 | 5,064 | 8,189 | 12,689 | 7,704 |
| Above Normal (16%) | 11,382 | 10,668 | 9,754 | 3,785 | 1,459 | 1,124 | 1,762 | 3,710 | 8,470 | 9,795 | 12,929 | 11,758 |
| Below Normal (13%) | 17,100 | 16,236 | 11,954 | 9,071 | 4,311 | 4,663 | 5,128 | 6,837 | 10,256 | 11,843 | 14,333 | 16,965 |
| Dry (24%) | 18,668 | 16,053 | 10,711 | 10,792 | 5,300 | 4,041 | 5,057 | 7,738 | 10,925 | 13,935 | 16,366 | 18,027 |
| Critical (15%) | 19,849 | 19,916 | 16,867 | 13,058 | 8,487 | 7,834 | 9,317 | 11,848 | 14,128 | 16,267 | 17,887 | 18,899 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 19,798 | 20,097 | 18,465 | 15,515 | 10,008 | 9,412 | 10,221 | 11,460 | 13,085 | 15,248 | 17,726 | 18,846 |
| 20% | 19,009 | 18,727 | 17,915 | 13,505 | 6,749 | 7,017 | 7,767 | 10,494 | 12,269 | 14,427 | 16,711 | 18,286 |
| 30% | 18,852 | 18,512 | 16,926 | 11,464 | 4,992 | 3,892 | 6,127 | 9,805 | 11,710 | 13,948 | 16,496 | 18,172 |
| 40% | 18,389 | 18,115 | 15,251 | 8,623 | 3,447 | 3,508 | 5,031 | 7,671 | 10,978 | 12,194 | 14,976 | 17,206 |
| 50% | 17,782 | 17,786 | 14,143 | 6,551 | 1,593 | 1,981 | 3,778 | 6,560 | 10,204 | 11,636 | 14,064 | 16,505 |
| 60% | 17,442 | 16,979 | 11,640 | 4,284 | 702 | 1,286 | 2,616 | 5,564 | 9,526 | 10,132 | 13,623 | 16,087 |
| 70% | 17,221 | 15,527 | 7,162 | 920 | 370 | 534 | 1,496 | 4,056 | 8,005 | 9,772 | 13,200 | 16,017 |
| 80% | 16,795 | 13,642 | 3,601 | 422 | 239 | 287 | 612 | 1,894 | 5,764 | 9,210 | 12,906 | 15,810 |
| 90% | 14,054 | 9,389 | 1,099 | 252 | 212 | 232 | 286 | 635 | 2,483 | 7,789 | 12,573 | 15,388 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17,221 | 15,902 | 11,528 | 6,996 | 3,674 | 3,332 | 4,404 | 6,542 | 9,321 | 11,558 | 14,633 | 16,677 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 15,044 | 13,657 | 9,453 | 1,654 | 518 | 775 | 1,394 | 2,616 | 5,261 | 8,235 | 12,646 | 14,820 |
| Above Normal (16%) | 16,732 | 15,659 | 11,635 | 3,718 | 1,373 | 1,071 | 2,283 | 4,826 | 8,726 | 9,876 | 13,028 | 16,002 |
| Below Normal (13%) | 17,048 | 16,482 | 11,920 | 9,142 | 4,389 | 4,668 | 5,783 | 7,941 | 10,713 | 11,844 | 14,281 | 16,806 |
| Dry (24%) | 18,871 | 16,227 | 10,707 | 11,162 | 5,593 | 4,273 | 5,651 | 8,491 | 11,170 | 13,916 | 16,449 | 18,093 |
| Critical (15%) | 19,873 | 19,957 | 16,918 | 13,210 | 9,154 | 8,528 | 9,879 | 12,374 | 14,407 | 16,387 | 17,976 | 18,952 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **77** | **11** | **21** | **1,415** | **866** | **1,221** | **833** | **348** | -52 | -152 | **167** | **67** |
| 20% | **78** | **43** | **675** | **266** | -159 | **301** | **1,103** | **488** | **226** | **26** | **143** | **147** |
| 30% | **29** | **38** | **3,203** | -58 | **604** | **136** | **597** | **890** | **282** | **162** | **107** | **101** |
| 40% | -132 | **472** | **2,030** | -80 | **394** | **138** | **1,151** | **1,390** | **280** | -50 | -115 | -188 |
| 50% | **1,653** | **6,122** | **2,754** | **147** | -62 | **59** | **782** | **1,158** | **713** | **39** | **13** | -73 |
| 60% | **5,673** | **5,607** | **942** | **184** | -271 | -34 | **714** | **1,551** | **506** | **79** | -61 | **4,328** |
| 70% | **9,368** | **7,722** | **319** | -135 | -3 | -24 | **285** | **918** | **350** | **198** | -58 | **7,978** |
| 80% | **9,243** | **6,222** | **818** | -37 | -2 | -2 | **69** | **390** | **309** | -5 | **59** | **8,037** |
| 90% | **6,638** | **2,294** | **174** | -5 | -2 | -2 | **20** | **129** | **13** | -70 | **149** | **7,743** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **3,282** | **2,992** | **1,016** | **79** | **159** | **144** | **509** | **807** | **265** | **40** | **28** | **2,931** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **7,532** | **6,685** | **2,258** | -102 | -23 | -20 | **350** | **698** | **197** | **46** | -43 | **7,116** |
| Above Normal (16%) | **5,350** | **4,991** | **1,881** | -68 | -86 | -54 | **521** | **1,116** | **256** | **81** | **100** | **4,243** |
| Below Normal (13%) | -53 | **246** | -34 | **71** | **78** | **6** | **656** | **1,105** | **458** | **1** | -52 | -159 |
| Dry (24%) | **203** | **174** | -4 | **370** | **293** | **232** | **595** | **753** | **245** | -19 | **83** | **66** |
| Critical (15%) | **25** | **41** | **51** | **152** | **667** | **694** | **562** | **525** | **279** | **120** | **89** | **53** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-2. Sacramento River at Port Chicago Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,410 | 19,397 | 17,615 | 13,954 | 8,837 | 8,107 | 9,401 | 11,271 | 12,916 | 15,330 | 17,464 | 18,629 |
| 20% | 18,615 | 18,080 | 16,429 | 12,852 | 6,827 | 6,718 | 6,728 | 10,181 | 12,043 | 14,413 | 16,499 | 18,114 |
| 30% | 18,477 | 17,919 | 13,379 | 11,196 | 4,397 | 3,821 | 5,539 | 8,962 | 11,364 | 13,776 | 16,300 | 17,921 |
| 40% | 18,250 | 16,738 | 12,833 | 8,355 | 3,052 | 3,287 | 3,876 | 6,281 | 10,702 | 12,200 | 15,053 | 17,304 |
| 50% | 16,654 | 11,457 | 11,276 | 6,225 | 1,647 | 1,874 | 2,993 | 5,402 | 9,484 | 11,589 | 14,040 | 16,497 |
| 60% | 11,630 | 11,175 | 10,328 | 3,886 | 970 | 1,335 | 1,905 | 4,019 | 9,025 | 10,053 | 13,674 | 11,770 |
| 70% | 7,721 | 7,657 | 6,839 | 1,041 | 375 | 576 | 1,211 | 3,134 | 7,657 | 9,573 | 13,258 | 8,039 |
| 80% | 7,432 | 7,267 | 2,800 | 461 | 241 | 288 | 548 | 1,504 | 5,495 | 9,116 | 12,847 | 7,775 |
| 90% | 7,305 | 6,974 | 931 | 257 | 215 | 234 | 266 | 506 | 2,470 | 7,859 | 12,423 | 7,645 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 13,732 | 12,578 | 10,153 | 6,674 | 3,426 | 3,185 | 3,914 | 5,765 | 9,040 | 11,502 | 14,557 | 13,697 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 7,401 | 6,842 | 7,152 | 1,741 | 540 | 796 | 1,043 | 1,917 | 5,068 | 8,174 | 12,678 | 7,703 |
| Above Normal (16%) | 11,251 | 10,495 | 9,653 | 3,735 | 1,454 | 1,135 | 1,764 | 3,713 | 8,472 | 9,793 | 12,927 | 11,764 |
| Below Normal (13%) | 16,814 | 15,674 | 11,400 | 8,884 | 4,285 | 4,670 | 5,156 | 6,824 | 10,274 | 11,844 | 14,303 | 16,931 |
| Dry (24%) | 18,418 | 15,621 | 10,269 | 10,403 | 5,242 | 4,062 | 5,070 | 7,792 | 10,910 | 13,925 | 16,288 | 17,940 |
| Critical (15%) | 19,500 | 19,353 | 15,861 | 12,302 | 8,004 | 7,759 | 9,394 | 11,976 | 14,017 | 16,215 | 17,746 | 18,747 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,404 | 19,400 | 17,671 | 14,597 | 9,360 | 8,900 | 10,039 | 11,457 | 13,119 | 15,271 | 17,568 | 18,682 |
| 20% | 18,650 | 18,092 | 16,302 | 12,958 | 6,766 | 6,605 | 7,746 | 10,391 | 12,340 | 14,437 | 16,570 | 18,176 |
| 30% | 18,528 | 17,919 | 15,669 | 10,797 | 4,452 | 3,419 | 5,542 | 9,687 | 11,801 | 13,891 | 16,402 | 18,033 |
| 40% | 18,134 | 17,068 | 15,343 | 8,316 | 3,386 | 3,139 | 4,770 | 8,096 | 11,111 | 12,526 | 14,869 | 17,280 |
| 50% | 16,321 | 13,862 | 13,559 | 6,678 | 1,686 | 1,783 | 3,630 | 6,290 | 10,320 | 12,008 | 13,998 | 16,298 |
| 60% | 11,111 | 13,612 | 11,524 | 4,071 | 750 | 1,106 | 2,449 | 5,602 | 9,405 | 10,451 | 12,830 | 11,933 |
| 70% | 10,902 | 13,434 | 7,119 | 940 | 373 | 513 | 1,631 | 4,266 | 8,118 | 10,059 | 12,577 | 11,768 |
| 80% | 10,817 | 13,236 | 3,474 | 415 | 241 | 284 | 603 | 1,927 | 5,866 | 9,471 | 12,461 | 11,677 |
| 90% | 10,707 | 7,963 | 963 | 252 | 212 | 229 | 288 | 688 | 2,590 | 7,860 | 12,302 | 11,484 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 14,684 | 14,473 | 11,077 | 6,666 | 3,456 | 3,132 | 4,303 | 6,546 | 9,403 | 11,712 | 14,386 | 14,872 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 10,601 | 11,568 | 9,303 | 1,808 | 528 | 709 | 1,329 | 2,634 | 5,377 | 8,363 | 12,134 | 11,375 |
| Above Normal (16%) | 10,918 | 12,503 | 11,127 | 3,664 | 1,362 | 950 | 2,224 | 4,900 | 8,883 | 10,222 | 12,627 | 11,735 |
| Below Normal (13%) | 16,727 | 16,049 | 11,351 | 8,921 | 4,239 | 4,344 | 5,696 | 8,035 | 10,866 | 12,244 | 14,415 | 16,847 |
| Dry (24%) | 18,411 | 15,703 | 10,338 | 10,451 | 5,233 | 3,907 | 5,396 | 8,346 | 11,152 | 13,929 | 16,361 | 18,008 |
| Critical (15%) | 19,525 | 19,406 | 15,850 | 12,071 | 8,388 | 8,344 | 9,904 | 12,440 | 14,432 | 16,401 | 17,851 | 18,806 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -6 | **3** | **56** | **643** | **523** | **793** | **638** | **186** | **204** | -59 | **104** | **53** |
| 20% | **36** | **12** | -126 | **106** | -61 | -113 | **1,019** | **210** | **297** | **24** | **71** | **62** |
| 30% | **51** | **0** | **2,290** | -398 | **55** | -401 | **3** | **725** | **437** | **115** | **101** | **112** |
| 40% | -115 | **330** | **2,510** | -39 | **333** | -148 | **894** | **1,815** | **409** | **326** | -184 | -24 |
| 50% | -333 | **2,405** | **2,283** | **453** | **38** | -91 | **637** | **888** | **836** | **419** | -41 | -200 |
| 60% | -519 | **2,437** | **1,196** | **185** | -219 | -229 | **544** | **1,583** | **380** | **397** | -844 | **164** |
| 70% | **3,181** | **5,777** | **280** | -101 | -2 | -63 | **420** | **1,132** | **462** | **486** | -681 | **3,729** |
| 80% | **3,385** | **5,969** | **674** | -46 | 0 | -4 | **56** | **422** | **371** | **354** | -386 | **3,902** |
| 90% | **3,402** | **989** | **32** | -5 | -3 | -5 | **22** | **181** | **120** | **1** | -121 | **3,839** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **952** | **1,895** | **924** | -7 | **29** | -53 | **390** | **781** | **362** | **210** | -172 | **1,174** |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | **3,200** | **4,726** | **2,151** | **68** | -12 | -87 | **285** | **717** | **309** | **189** | -543 | **3,672** |
| Above Normal (16%) | -333 | **2,009** | **1,474** | -72 | -92 | -185 | **460** | **1,187** | **411** | **429** | -300 | -28 |
| Below Normal (13%) | -88 | **375** | -49 | **37** | -46 | -325 | **539** | **1,212** | **592** | **400** | **112** | -84 |
| Dry (24%) | -6 | **81** | **69** | **48** | -10 | -156 | **325** | **554** | **241** | **4** | **73** | **69** |
| Critical (15%) | **25** | **53** | -10 | -231 | **385** | **585** | **510** | **464** | **416** | **186** | **105** | **60** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-3. Sacramento River at Port Chicago Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,721 | 20,087 | 18,443 | 14,099 | 9,142 | 8,191 | 9,388 | 11,113 | 13,136 | 15,401 | 17,559 | 18,778 |
| 20% | 18,931 | 18,683 | 17,240 | 13,238 | 6,908 | 6,716 | 6,664 | 10,006 | 12,043 | 14,401 | 16,567 | 18,140 |
| 30% | 18,823 | 18,475 | 13,724 | 11,521 | 4,387 | 3,756 | 5,530 | 8,915 | 11,428 | 13,786 | 16,389 | 18,072 |
| 40% | 18,521 | 17,643 | 13,221 | 8,703 | 3,053 | 3,370 | 3,880 | 6,281 | 10,697 | 12,245 | 15,091 | 17,394 |
| 50% | 16,128 | 11,663 | 11,389 | 6,403 | 1,655 | 1,922 | 2,996 | 5,402 | 9,491 | 11,597 | 14,052 | 16,578 |
| 60% | 11,769 | 11,372 | 10,698 | 4,099 | 974 | 1,320 | 1,902 | 4,014 | 9,020 | 10,054 | 13,685 | 11,760 |
| 70% | 7,853 | 7,805 | 6,844 | 1,055 | 372 | 558 | 1,211 | 3,138 | 7,654 | 9,574 | 13,258 | 8,038 |
| 80% | 7,551 | 7,420 | 2,783 | 459 | 241 | 288 | 543 | 1,504 | 5,455 | 9,215 | 12,846 | 7,772 |
| 90% | 7,416 | 7,096 | 925 | 257 | 214 | 234 | 266 | 506 | 2,470 | 7,859 | 12,424 | 7,645 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 13,938 | 12,910 | 10,512 | 6,917 | 3,516 | 3,188 | 3,895 | 5,735 | 9,056 | 11,518 | 14,605 | 13,745 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 7,512 | 6,972 | 7,194 | 1,756 | 541 | 795 | 1,043 | 1,917 | 5,064 | 8,189 | 12,689 | 7,704 |
| Above Normal (16%) | 11,382 | 10,668 | 9,754 | 3,785 | 1,459 | 1,124 | 1,762 | 3,710 | 8,470 | 9,795 | 12,929 | 11,758 |
| Below Normal (13%) | 17,100 | 16,236 | 11,954 | 9,071 | 4,311 | 4,663 | 5,128 | 6,837 | 10,256 | 11,843 | 14,333 | 16,965 |
| Dry (24%) | 18,668 | 16,053 | 10,711 | 10,792 | 5,300 | 4,041 | 5,057 | 7,738 | 10,925 | 13,935 | 16,366 | 18,027 |
| Critical (15%) | 19,849 | 19,916 | 16,867 | 13,058 | 8,487 | 7,834 | 9,317 | 11,848 | 14,128 | 16,267 | 17,887 | 18,899 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,410 | 19,397 | 17,615 | 13,954 | 8,837 | 8,107 | 9,401 | 11,271 | 12,916 | 15,330 | 17,464 | 18,629 |
| 20% | 18,615 | 18,080 | 16,429 | 12,852 | 6,827 | 6,718 | 6,728 | 10,181 | 12,043 | 14,413 | 16,499 | 18,114 |
| 30% | 18,477 | 17,919 | 13,379 | 11,196 | 4,397 | 3,821 | 5,539 | 8,962 | 11,364 | 13,776 | 16,300 | 17,921 |
| 40% | 18,250 | 16,738 | 12,833 | 8,355 | 3,052 | 3,287 | 3,876 | 6,281 | 10,702 | 12,200 | 15,053 | 17,304 |
| 50% | 16,654 | 11,457 | 11,276 | 6,225 | 1,647 | 1,874 | 2,993 | 5,402 | 9,484 | 11,589 | 14,040 | 16,497 |
| 60% | 11,630 | 11,175 | 10,328 | 3,886 | 970 | 1,335 | 1,905 | 4,019 | 9,025 | 10,053 | 13,674 | 11,770 |
| 70% | 7,721 | 7,657 | 6,839 | 1,041 | 375 | 576 | 1,211 | 3,134 | 7,657 | 9,573 | 13,258 | 8,039 |
| 80% | 7,432 | 7,267 | 2,800 | 461 | 241 | 288 | 548 | 1,504 | 5,495 | 9,116 | 12,847 | 7,775 |
| 90% | 7,305 | 6,974 | 931 | 257 | 215 | 234 | 266 | 506 | 2,470 | 7,859 | 12,423 | 7,645 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 13,732 | 12,578 | 10,153 | 6,674 | 3,426 | 3,185 | 3,914 | 5,765 | 9,040 | 11,502 | 14,557 | 13,697 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 7,401 | 6,842 | 7,152 | 1,741 | 540 | 796 | 1,043 | 1,917 | 5,068 | 8,174 | 12,678 | 7,703 |
| Above Normal (16%) | 11,251 | 10,495 | 9,653 | 3,735 | 1,454 | 1,135 | 1,764 | 3,713 | 8,472 | 9,793 | 12,927 | 11,764 |
| Below Normal (13%) | 16,814 | 15,674 | 11,400 | 8,884 | 4,285 | 4,670 | 5,156 | 6,824 | 10,274 | 11,844 | 14,303 | 16,931 |
| Dry (24%) | 18,418 | 15,621 | 10,269 | 10,403 | 5,242 | 4,062 | 5,070 | 7,792 | 10,910 | 13,925 | 16,288 | 17,940 |
| Critical (15%) | 19,500 | 19,353 | 15,861 | 12,302 | 8,004 | 7,759 | 9,394 | 11,976 | 14,017 | 16,215 | 17,746 | 18,747 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -311 | -690 | -828 | -145 | -305 | -84 | 13 | 158 | -221 | -71 | -95 | -149 |
| 20% | -316 | -603 | -811 | -386 | -81 | 2 | 64 | 175 | 0 | 12 | -68 | -26 |
| 30% | -346 | -556 | -345 | -325 | 9 | 65 | 10 | 46 | -64 | -11 | -89 | -151 |
| 40% | -271 | -904 | -388 | -348 | -1 | -84 | -5 | 0 | 4 | -44 | -38 | -91 |
| 50% | 526 | -206 | -113 | -178 | -8 | -48 | -3 | 0 | -7 | -8 | -12 | -80 |
| 60% | -139 | -198 | -370 | -214 | -4 | 15 | 3 | 6 | 5 | -1 | -11 | 10 |
| 70% | -132 | -148 | -4 | -14 | 3 | 18 | 0 | -4 | 2 | -1 | 0 | 1 |
| 80% | -119 | -153 | 17 | 2 | 0 | 0 | 5 | 0 | 40 | -99 | 1 | 2 |
| 90% | -111 | -122 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | -2 | 0 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -207 | -332 | -359 | -243 | -89 | -3 | 19 | 30 | -16 | -15 | -48 | -48 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -111 | -130 | -43 | -16 | 0 | 1 | 0 | 0 | 3 | -15 | -11 | -1 |
| Above Normal (16%) | -132 | -173 | -102 | -50 | -5 | 10 | 2 | 3 | 3 | -2 | -2 | 5 |
| Below Normal (13%) | -286 | -563 | -554 | -187 | -26 | 7 | 29 | -13 | 18 | 0 | -30 | -34 |
| Dry (24%) | -250 | -431 | -442 | -389 | -57 | 21 | 14 | 54 | -15 | -10 | -78 | -88 |
| Critical (15%) | -349 | -562 | -1,006 | -756 | -483 | -76 | 77 | 127 | -112 | -52 | -141 | -153 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 14-4. Sacramento River at Port Chicago Salinity, Monthly EC

### Alternative 1 011519

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,798 | 20,097 | 18,465 | 15,515 | 10,008 | 9,412 | 10,221 | 11,460 | 13,085 | 15,248 | 17,726 | 18,846 |
| 20% | 19,009 | 18,727 | 17,915 | 13,505 | 6,749 | 7,017 | 7,767 | 10,494 | 12,269 | 14,427 | 16,711 | 18,286 |
| 30% | 18,852 | 18,512 | 16,926 | 11,464 | 4,992 | 3,892 | 6,127 | 9,805 | 11,710 | 13,948 | 16,496 | 18,172 |
| 40% | 18,389 | 18,115 | 15,251 | 8,623 | 3,447 | 3,508 | 5,031 | 7,671 | 10,978 | 12,194 | 14,976 | 17,206 |
| 50% | 17,782 | 17,786 | 14,143 | 6,551 | 1,593 | 1,981 | 3,778 | 6,560 | 10,204 | 11,636 | 14,064 | 16,505 |
| 60% | 17,442 | 16,979 | 11,640 | 4,284 | 702 | 1,286 | 2,616 | 5,564 | 9,526 | 10,132 | 13,623 | 16,087 |
| 70% | 17,221 | 15,527 | 7,162 | 920 | 370 | 534 | 1,496 | 4,056 | 8,005 | 9,772 | 13,200 | 16,017 |
| 80% | 16,795 | 13,642 | 3,601 | 422 | 239 | 287 | 612 | 1,894 | 5,764 | 9,210 | 12,906 | 15,810 |
| 90% | 14,054 | 9,389 | 1,099 | 252 | 212 | 232 | 286 | 635 | 2,483 | 7,789 | 12,573 | 15,388 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 17,221 | 15,902 | 11,528 | 6,996 | 3,674 | 3,332 | 4,404 | 6,542 | 9,321 | 11,558 | 14,633 | 16,677 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 15,044 | 13,657 | 9,453 | 1,654 | 518 | 775 | 1,394 | 2,616 | 5,261 | 8,235 | 12,646 | 14,820 |
| Above Normal (16%) | 16,732 | 15,659 | 11,635 | 3,718 | 1,373 | 1,071 | 2,283 | 4,826 | 8,726 | 9,876 | 13,028 | 16,002 |
| Below Normal (13%) | 17,048 | 16,482 | 11,920 | 9,142 | 4,389 | 4,668 | 5,783 | 7,941 | 10,713 | 11,844 | 14,281 | 16,806 |
| Dry (24%) | 18,871 | 16,227 | 10,707 | 11,162 | 5,593 | 4,273 | 5,651 | 8,491 | 11,170 | 13,916 | 16,449 | 18,093 |
| Critical (15%) | 19,873 | 19,957 | 16,918 | 13,210 | 9,154 | 8,528 | 9,879 | 12,374 | 14,407 | 16,387 | 17,976 | 18,952 |

### Alternative 1 100419

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19,404 | 19,400 | 17,671 | 14,597 | 9,360 | 8,900 | 10,039 | 11,457 | 13,119 | 15,271 | 17,568 | 18,682 |
| 20% | 18,650 | 18,092 | 16,302 | 12,958 | 6,766 | 6,605 | 7,746 | 10,391 | 12,340 | 14,437 | 16,570 | 18,176 |
| 30% | 18,528 | 17,919 | 15,669 | 10,797 | 4,452 | 3,419 | 5,542 | 9,687 | 11,801 | 13,891 | 16,402 | 18,033 |
| 40% | 18,134 | 17,068 | 15,343 | 8,316 | 3,386 | 3,139 | 4,770 | 8,096 | 11,111 | 12,526 | 14,869 | 17,280 |
| 50% | 16,321 | 13,862 | 13,559 | 6,678 | 1,686 | 1,783 | 3,630 | 6,290 | 10,320 | 12,008 | 13,998 | 16,298 |
| 60% | 11,111 | 13,612 | 11,524 | 4,071 | 750 | 1,106 | 2,449 | 5,602 | 9,405 | 10,451 | 12,830 | 11,933 |
| 70% | 10,902 | 13,434 | 7,119 | 940 | 373 | 513 | 1,631 | 4,266 | 8,118 | 10,059 | 12,577 | 11,768 |
| 80% | 10,817 | 13,236 | 3,474 | 415 | 241 | 284 | 603 | 1,927 | 5,866 | 9,471 | 12,461 | 11,677 |
| 90% | 10,707 | 7,963 | 963 | 252 | 212 | 229 | 288 | 688 | 2,590 | 7,860 | 12,302 | 11,484 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 14,684 | 14,473 | 11,077 | 6,666 | 3,456 | 3,132 | 4,303 | 6,546 | 9,403 | 11,712 | 14,386 | 14,872 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 10,601 | 11,568 | 9,303 | 1,808 | 528 | 709 | 1,329 | 2,634 | 5,377 | 8,363 | 12,134 | 11,375 |
| Above Normal (16%) | 10,918 | 12,503 | 11,127 | 3,664 | 1,362 | 950 | 2,224 | 4,900 | 8,883 | 10,222 | 12,627 | 11,735 |
| Below Normal (13%) | 16,727 | 16,049 | 11,351 | 8,921 | 4,239 | 4,344 | 5,696 | 8,035 | 10,866 | 12,244 | 14,415 | 16,847 |
| Dry (24%) | 18,411 | 15,703 | 10,338 | 10,451 | 5,233 | 3,907 | 5,396 | 8,346 | 11,152 | 13,929 | 16,361 | 18,008 |
| Critical (15%) | 19,525 | 19,406 | 15,850 | 12,071 | 8,388 | 8,344 | 9,904 | 12,440 | 14,432 | 16,401 | 17,851 | 18,806 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -394 | -698 | -794 | -918 | -648 | -512 | -182 | -3 | **35** | **23** | -158 | -164 |
| 20% | -359 | -634 | -1,613 | -547 | **17** | -411 | -20 | -103 | **70** | **10** | -140 | -111 |
| 30% | -324 | -593 | -1,257 | -666 | -540 | -472 | -585 | -118 | **91** | -57 | -95 | -139 |
| 40% | -255 | -1,046 | **91** | -307 | -62 | -369 | -261 | **425** | **133** | **332** | -107 | **73** |
| 50% | -1,460 | -3,924 | -584 | **128** | **93** | -198 | -148 | -270 | **116** | **372** | -66 | -207 |
| 60% | -6,331 | -3,368 | -116 | -213 | **48** | -180 | -167 | **38** | -121 | **318** | -793 | -4,154 |
| 70% | -6,319 | -2,094 | -43 | **20** | **3** | -21 | **135** | **210** | **113** | **287** | -623 | -4,249 |
| 80% | -5,977 | -406 | -127 | -7 | **2** | -3 | -8 | **33** | **102** | **260** | -445 | -4,133 |
| 90% | -3,347 | -1,426 | -136 | -1 | **0** | -3 | **2** | **53** | **107** | **72** | -271 | -3,904 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -2,537 | -1,429 | -451 | -329 | -219 | -200 | -101 | **4** | **81** | **154** | -248 | -1,805 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -4,443 | -2,089 | -150 | **154** | **10** | -66 | -65 | **19** | **116** | **128** | -511 | -3,445 |
| Above Normal (16%) | -5,815 | -3,155 | -509 | -54 | -11 | -121 | -59 | **74** | **158** | **346** | -402 | -4,266 |
| Below Normal (13%) | -321 | -433 | -569 | -221 | -151 | -324 | -88 | **94** | **153** | **400** | **134** | **41** |
| Dry (24%) | -459 | -524 | -369 | -711 | -360 | -366 | -256 | -145 | -19 | **13** | -88 | -85 |
| Critical (15%) | -348 | -550 | -1,067 | -1,139 | -766 | -185 | **25** | **66** | **26** | **14** | -125 | -146 |

a Based on the 82-year simulation period.

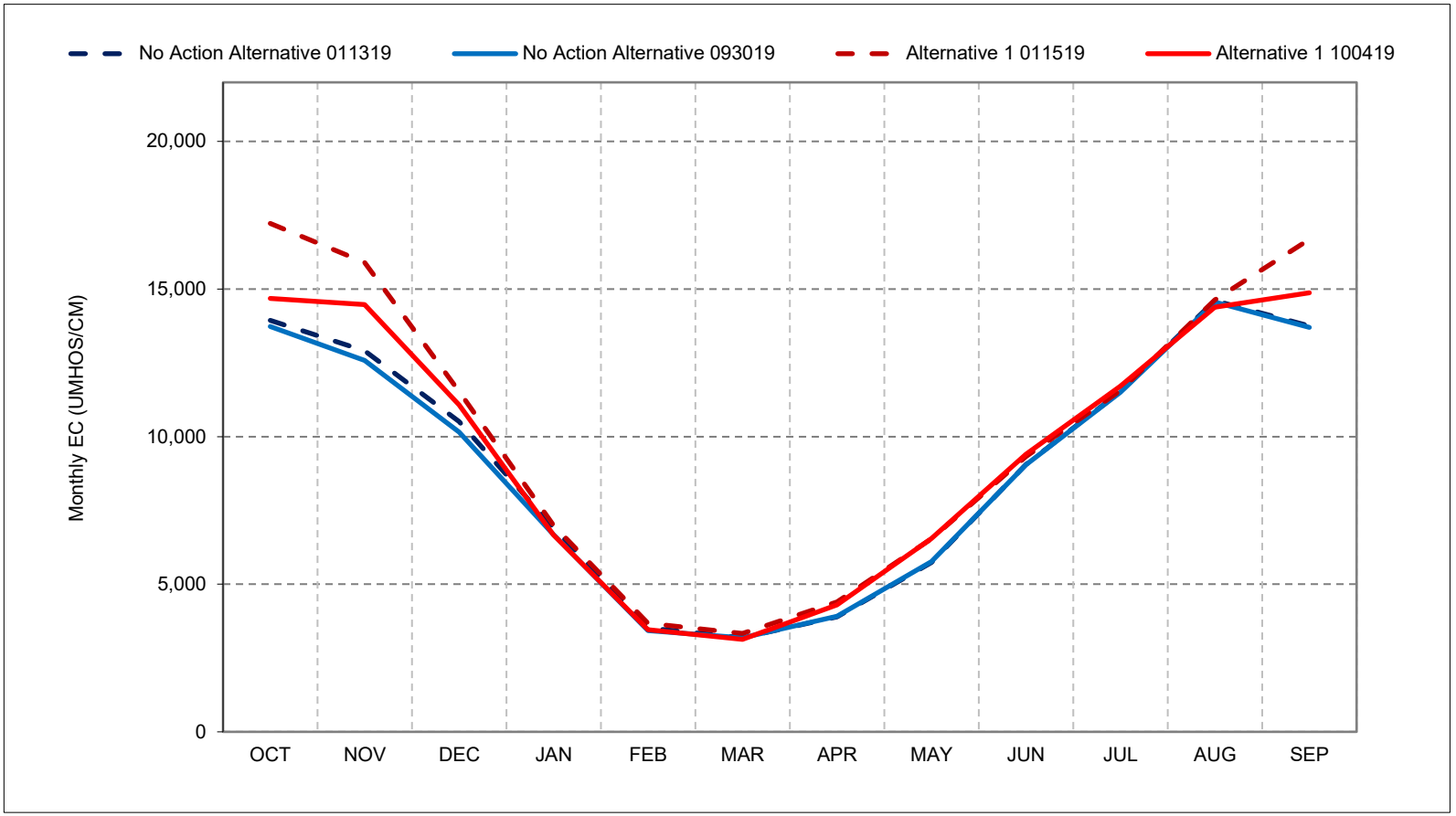
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-1. Sacramento River at Port Chicago Salinity, Long-Term Average EC

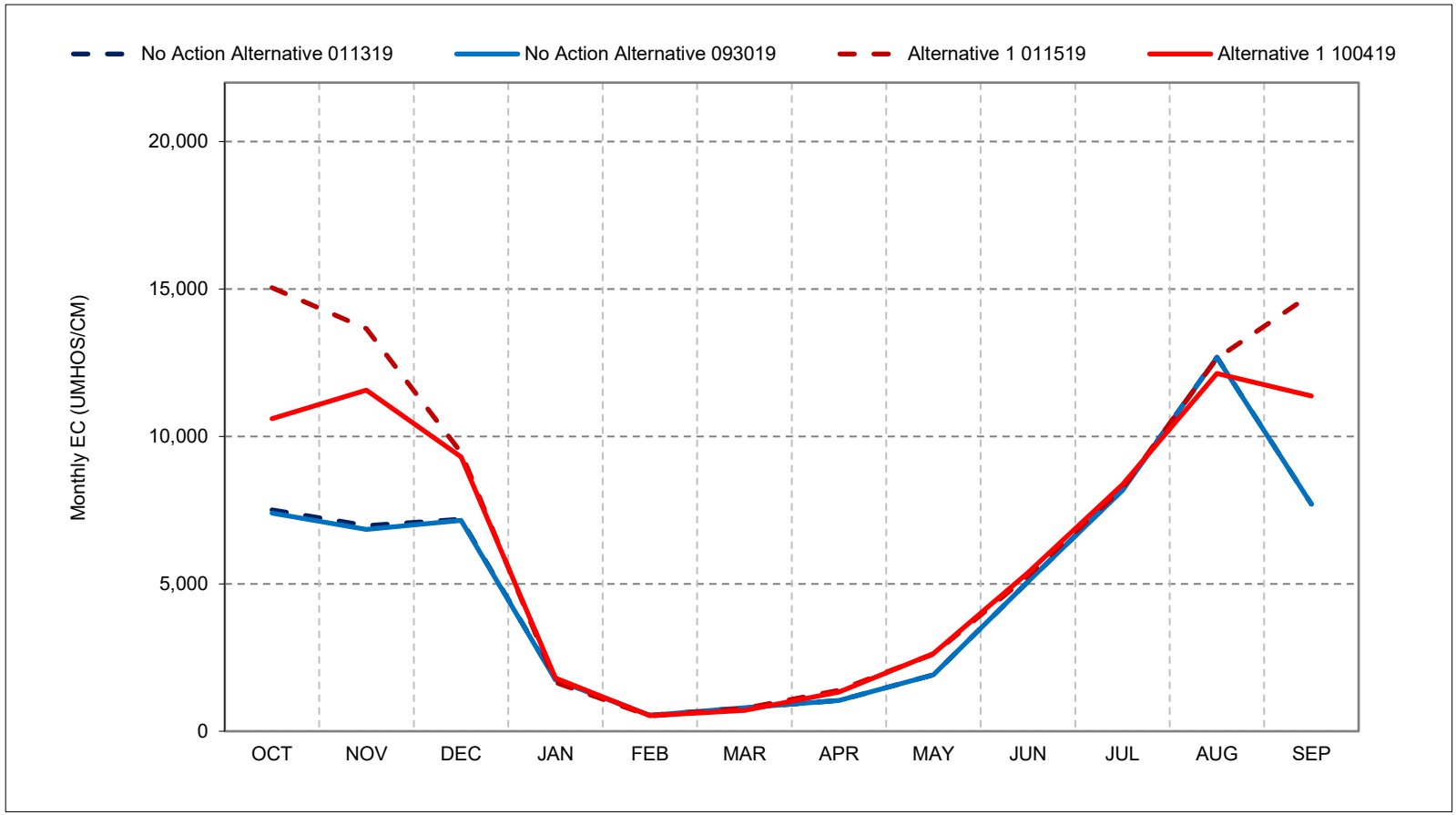



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-2. Sacramento River at Port Chicago Salinity, Wet Year Average EC

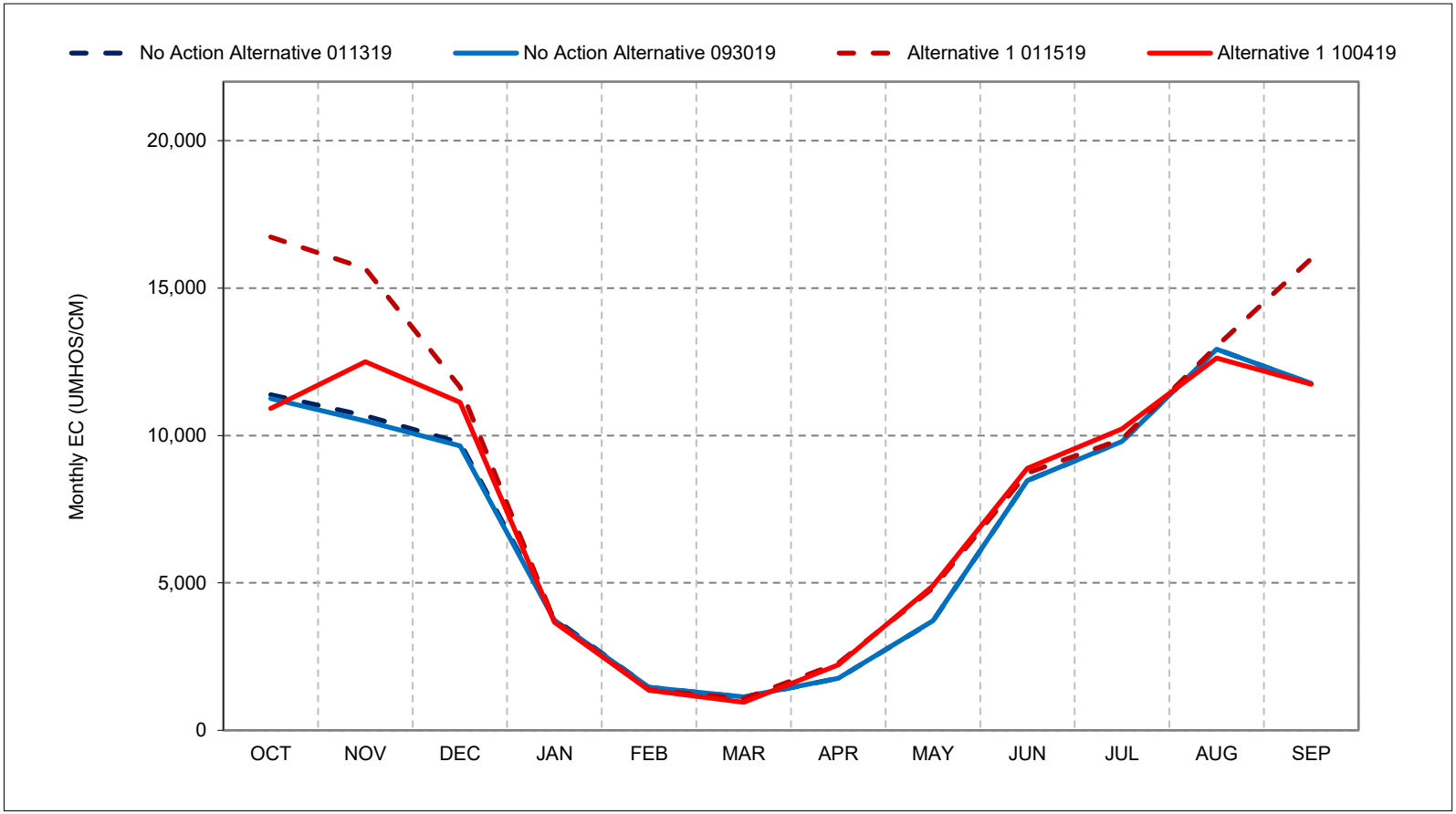



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-3. Sacramento River at Port Chicago Salinity, Above Normal Year Average EC

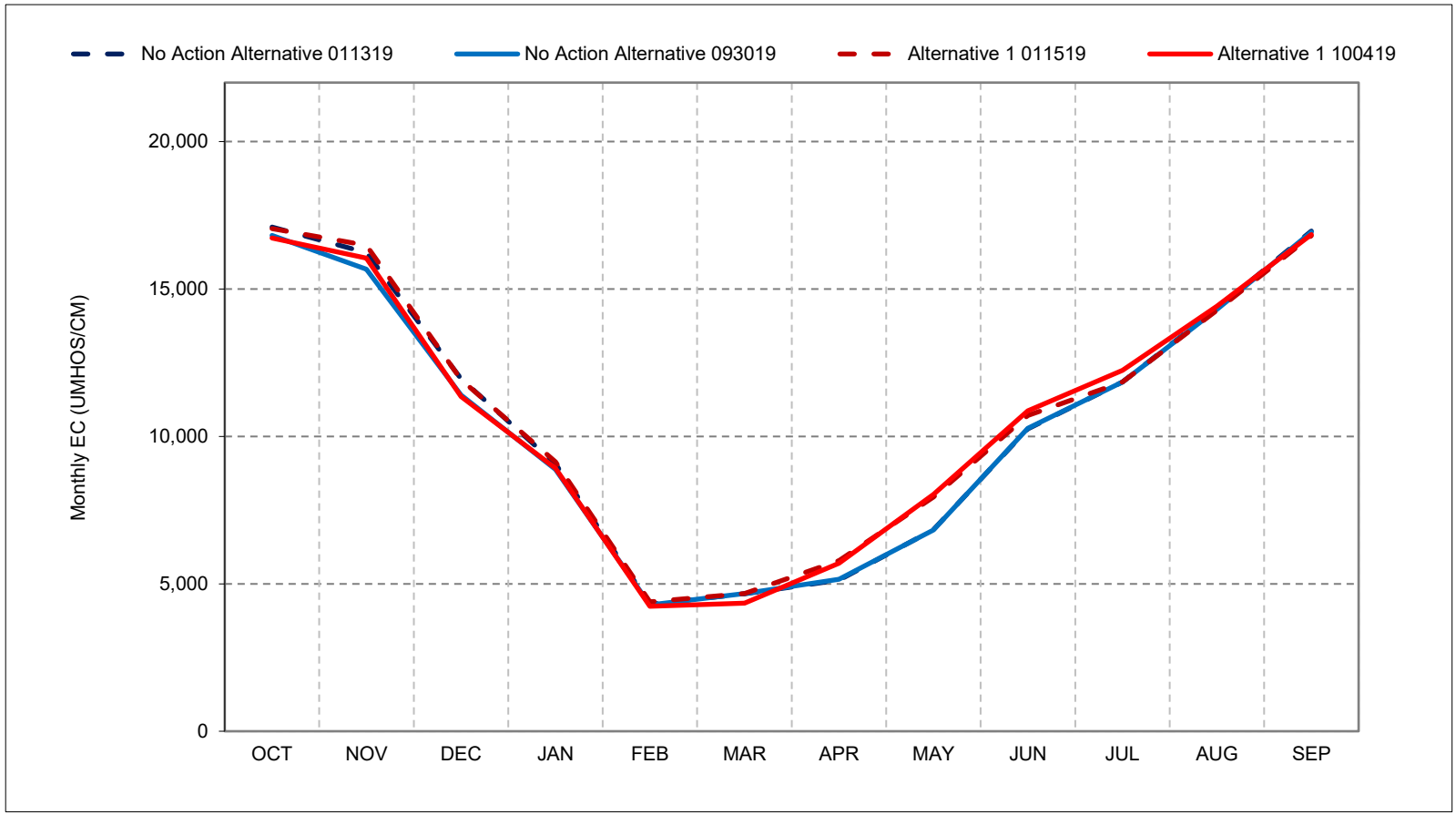



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-4. Sacramento River at Port Chicago Salinity, Below Normal Year Average EC

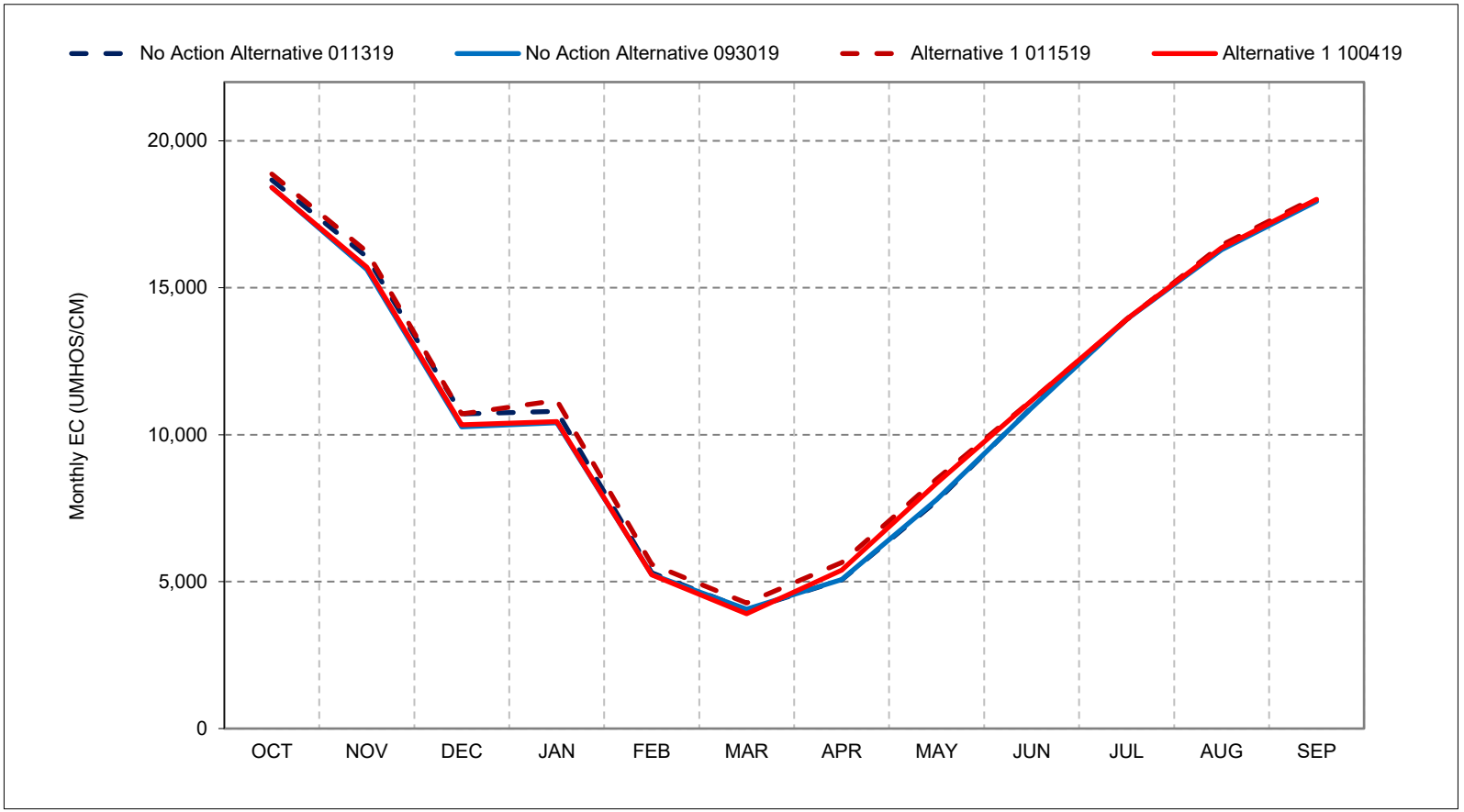



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-5. Sacramento River at Port Chicago Salinity, Dry Year Average EC

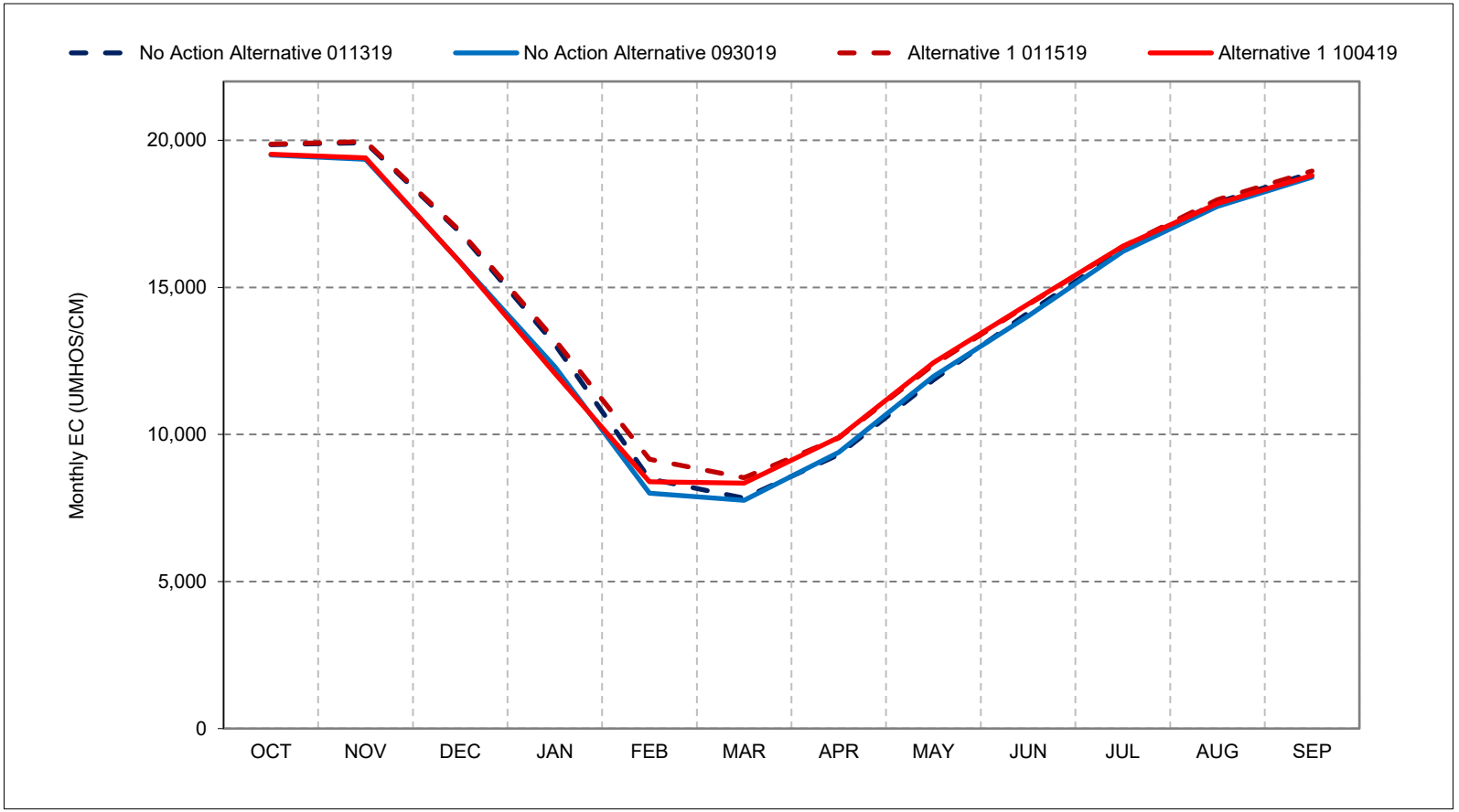



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 14-6. Sacramento River at Port Chicago Salinity, Critical Year Average EC

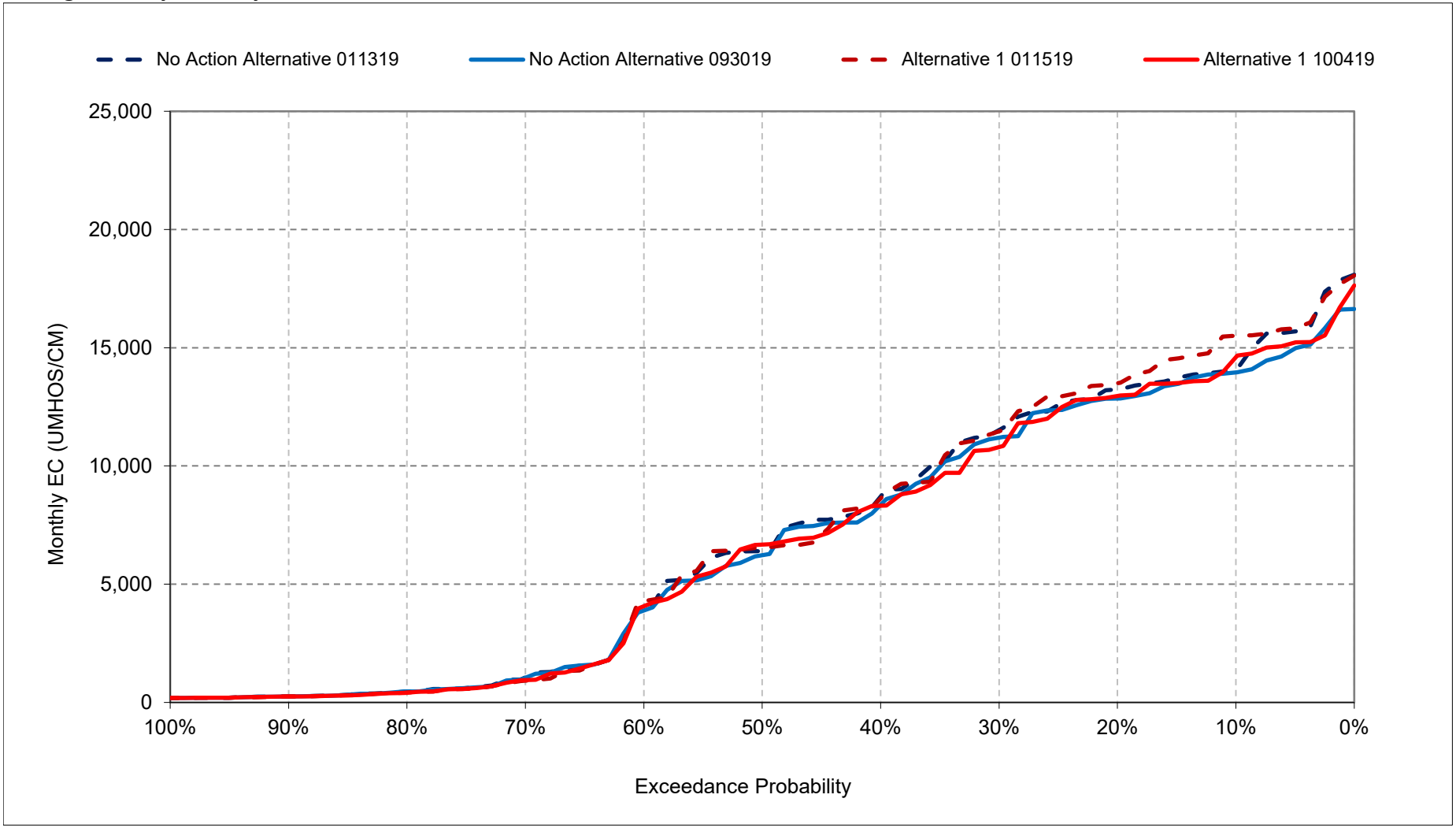



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

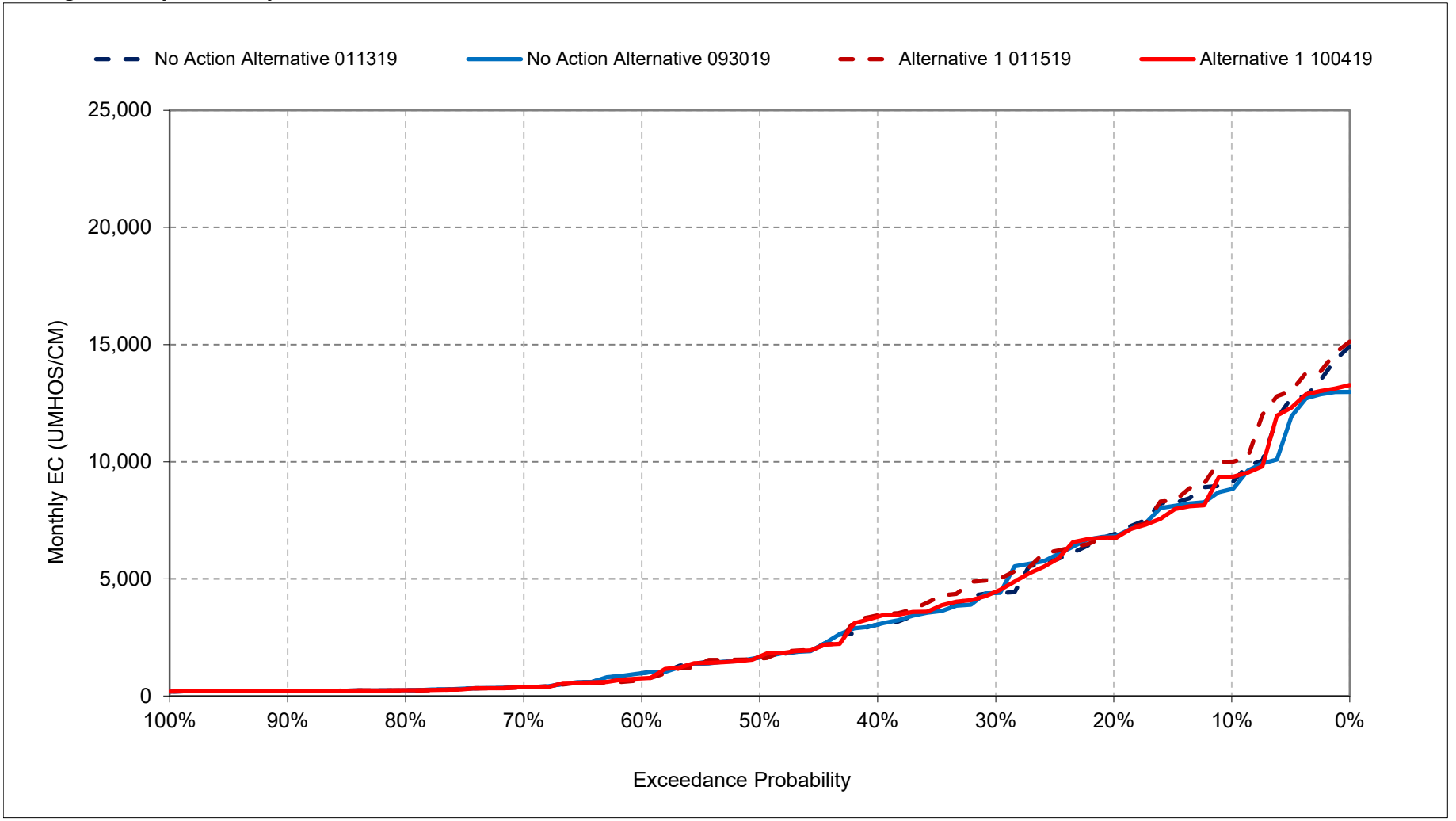
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-7. Sacramento River at Port Chicago Salinity, January EC**



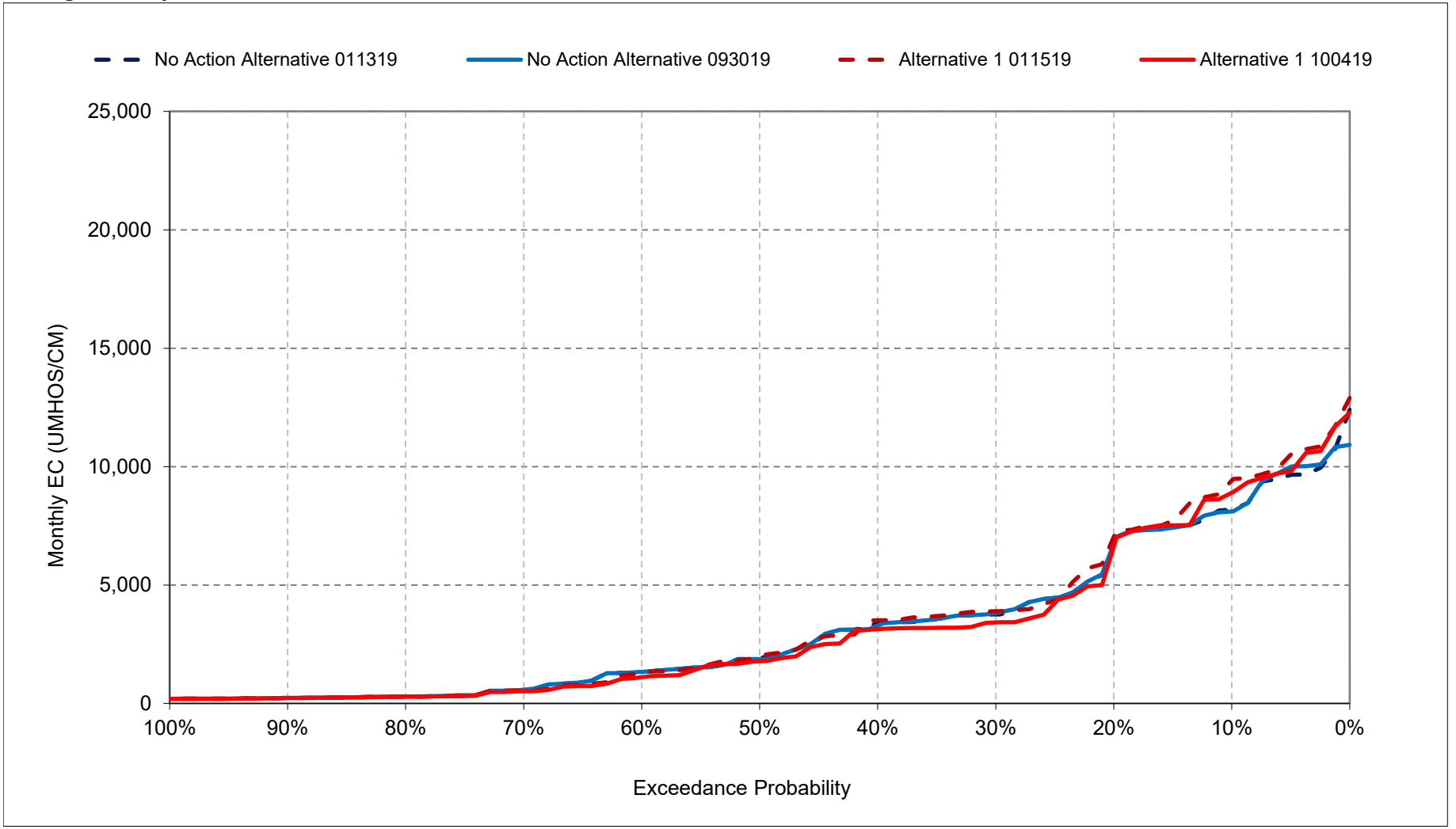

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-8. Sacramento River at Port Chicago Salinity, February EC**



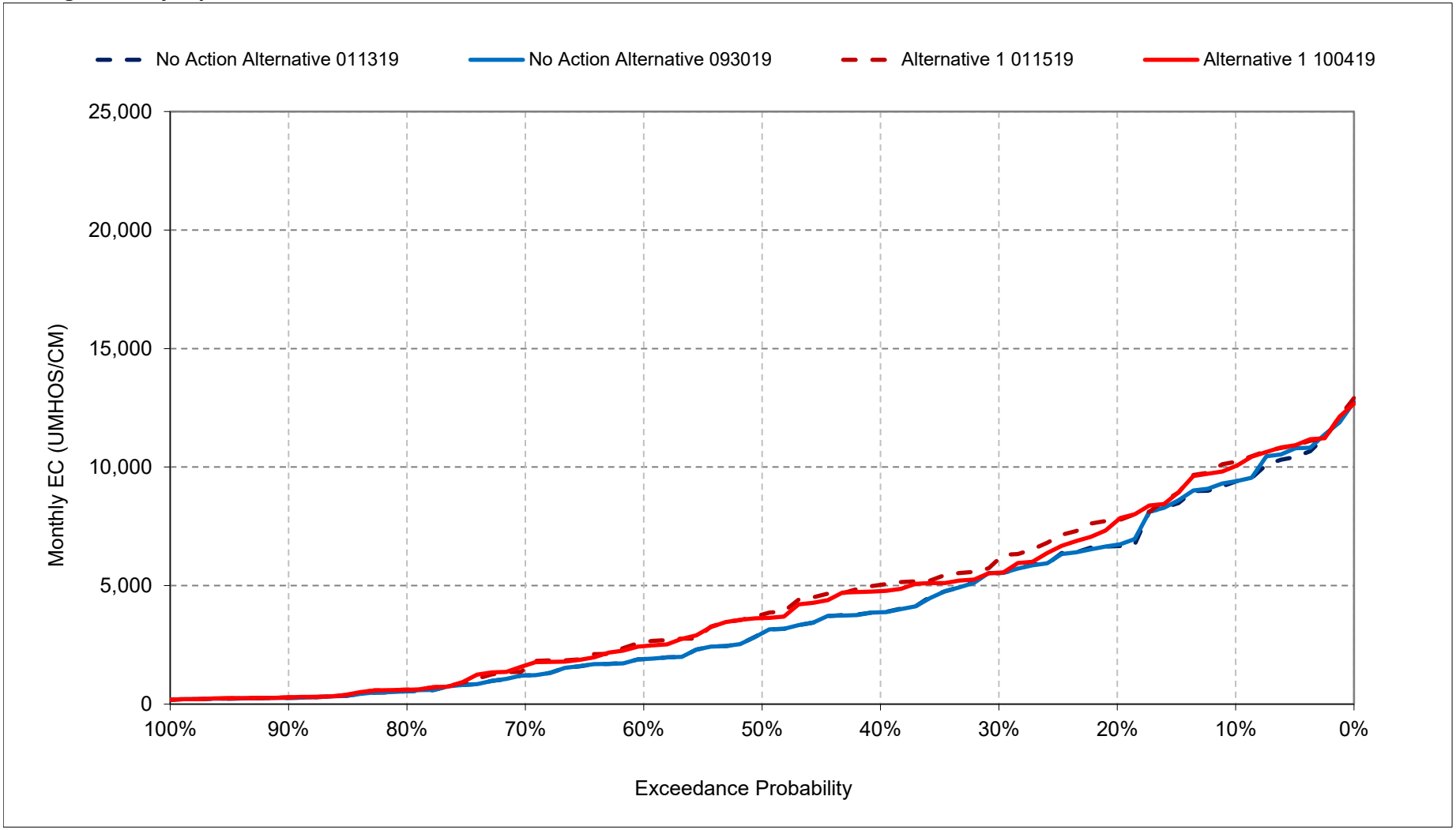

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-9. Sacramento River at Port Chicago Salinity, March EC**



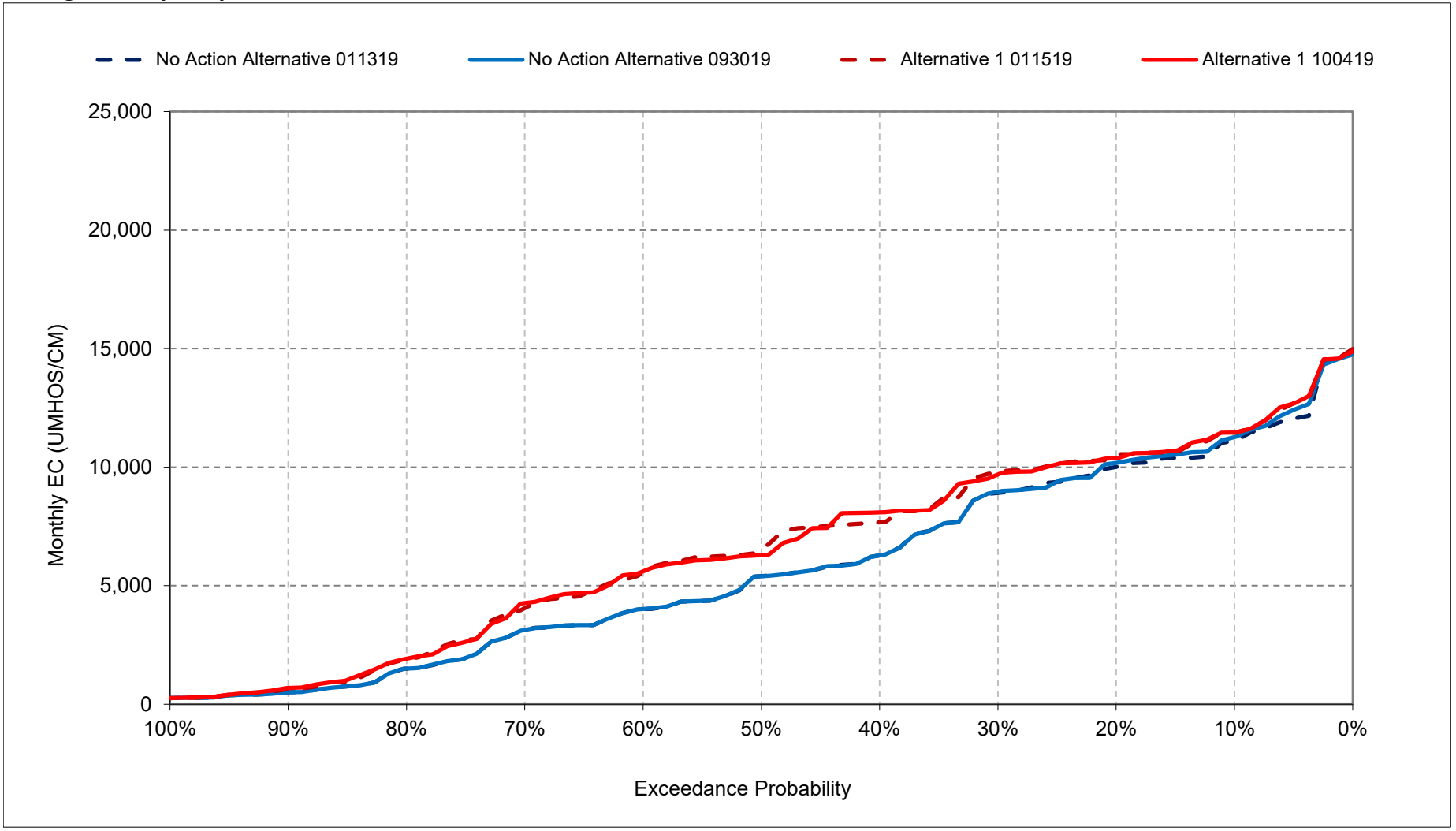

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-10. Sacramento River at Port Chicago Salinity, April EC**



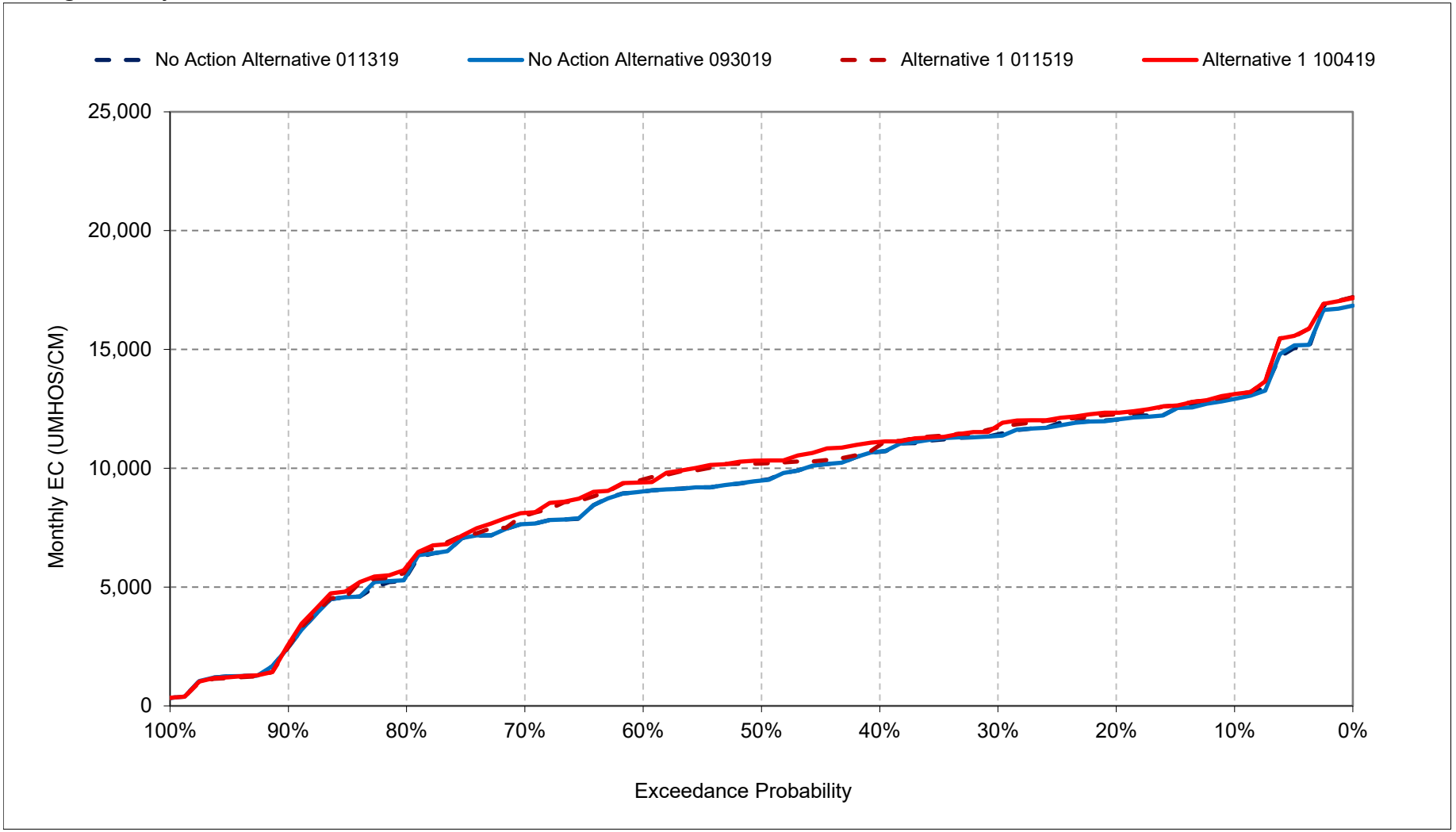

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-11. Sacramento River at Port Chicago Salinity, May EC**



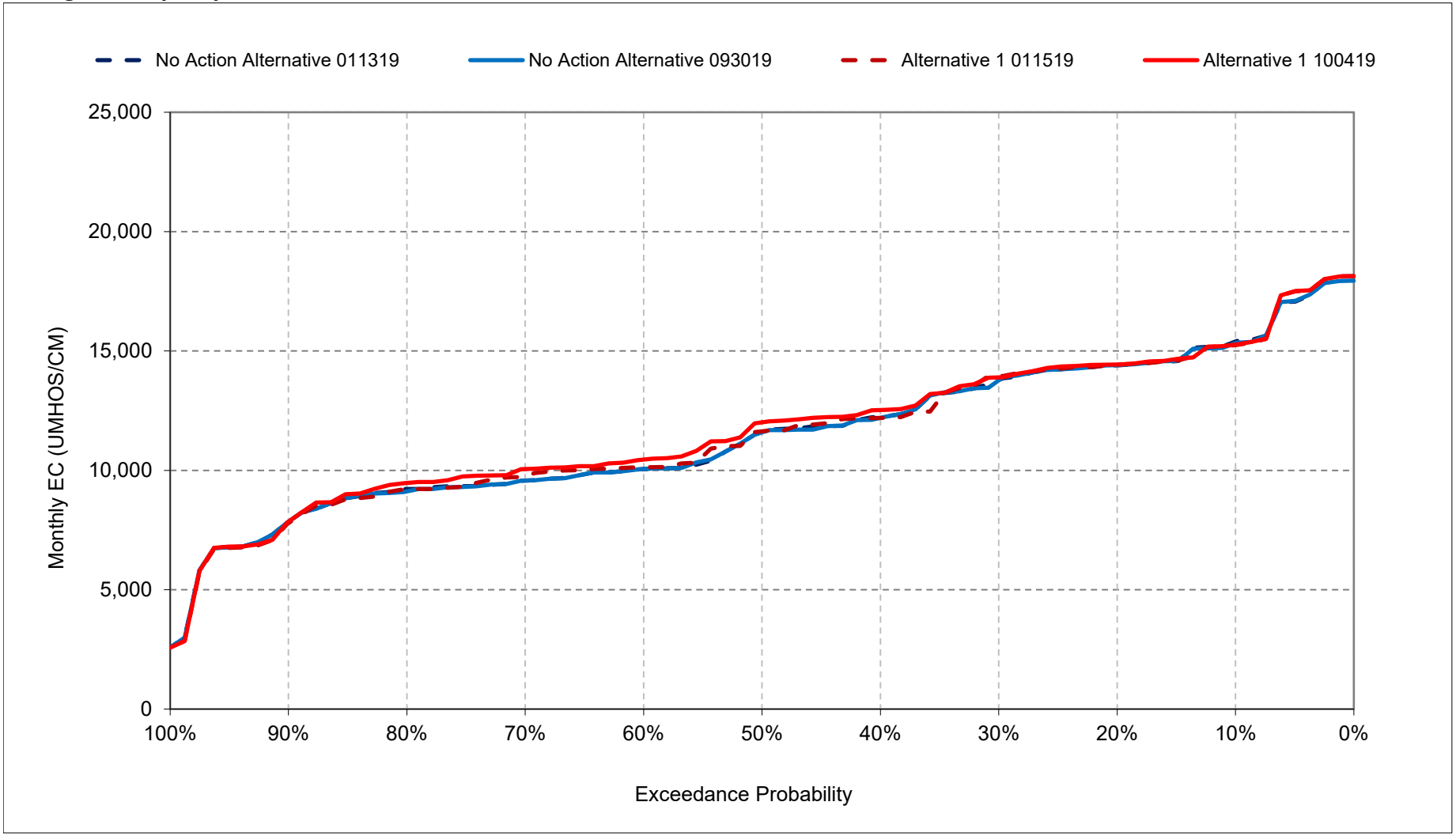

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-12. Sacramento River at Port Chicago Salinity, June EC**



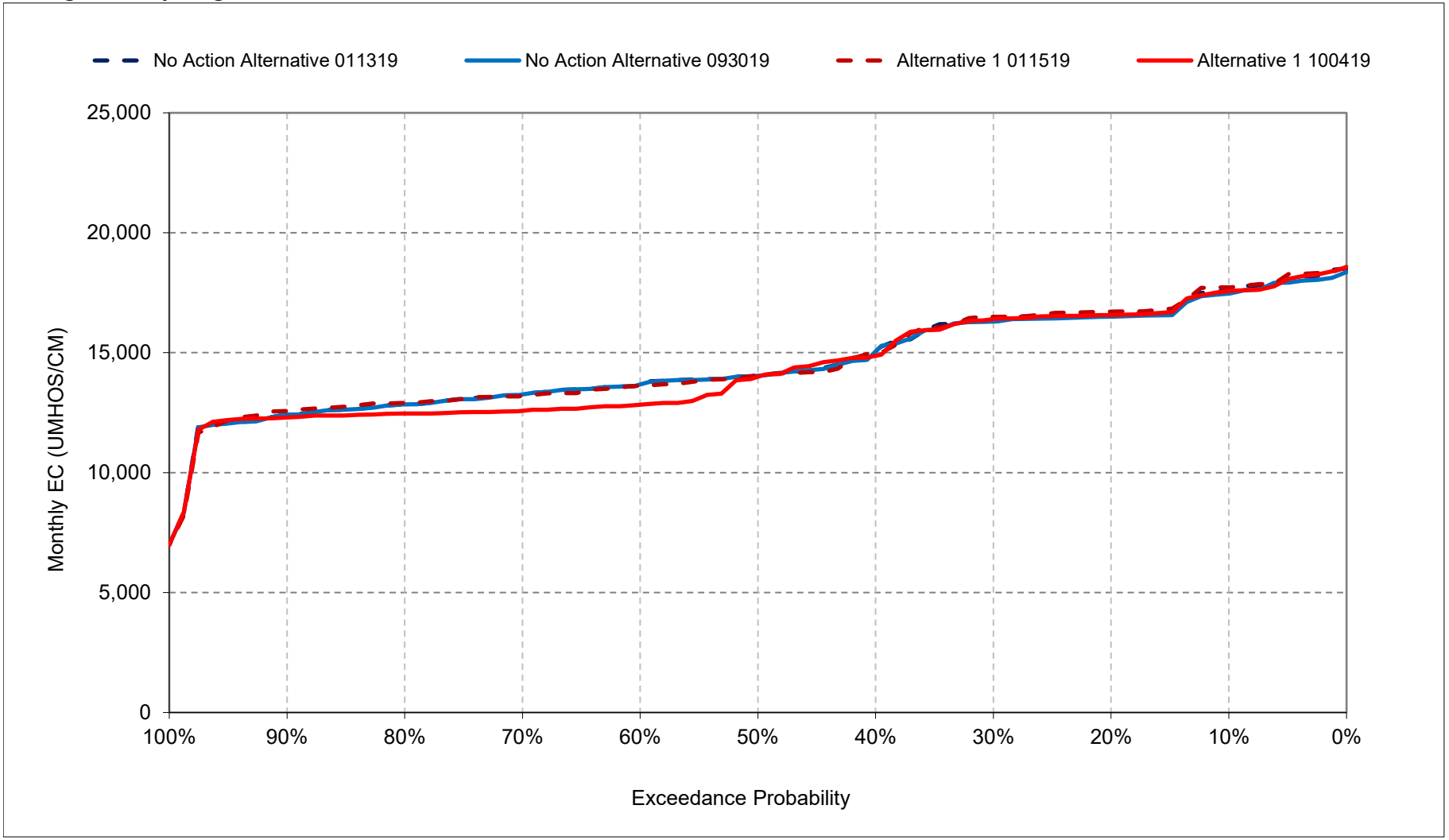

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-13. Sacramento River at Port Chicago Salinity, July EC**



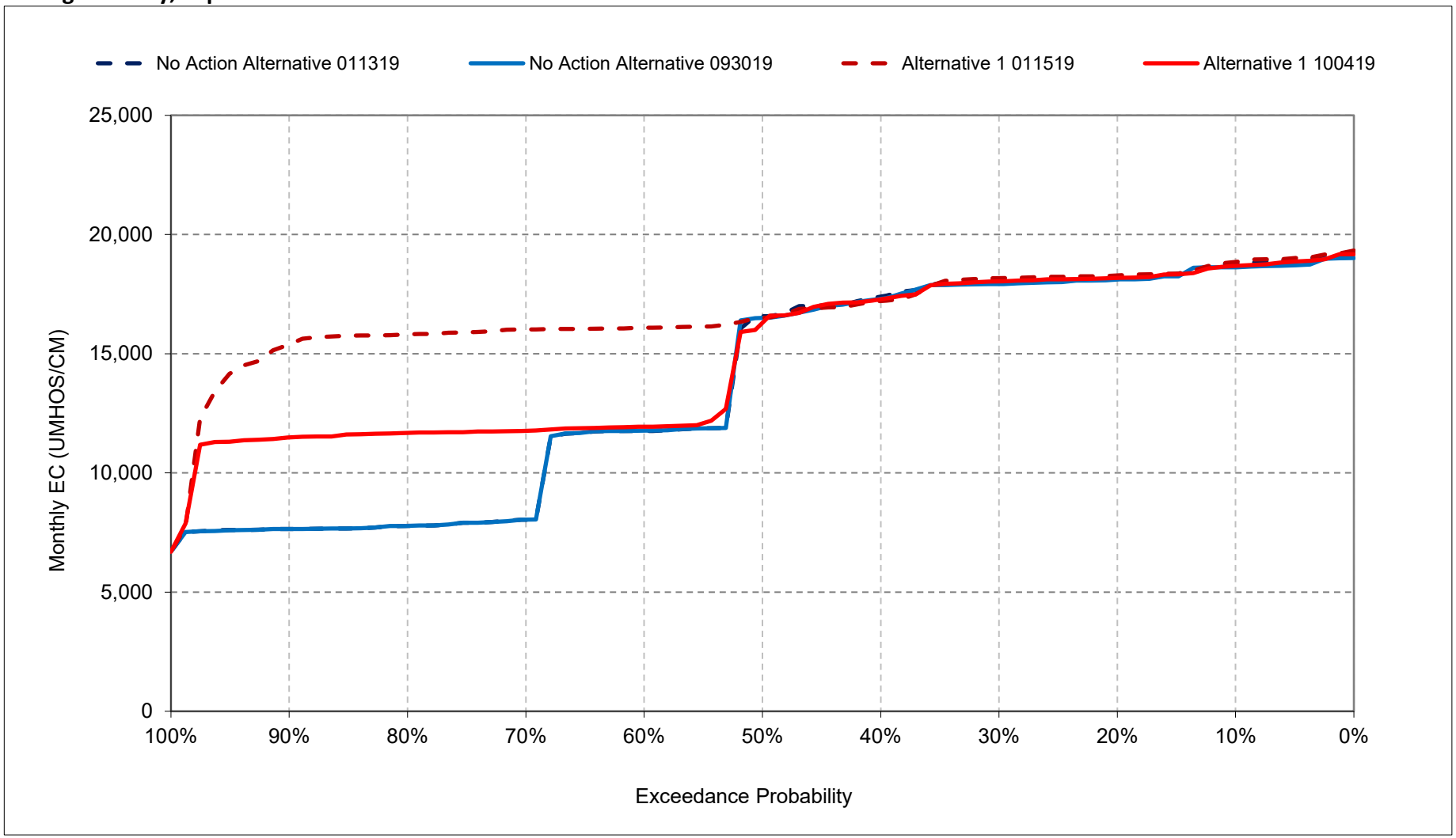

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-14. Sacramento River at Port Chicago Salinity, August EC**



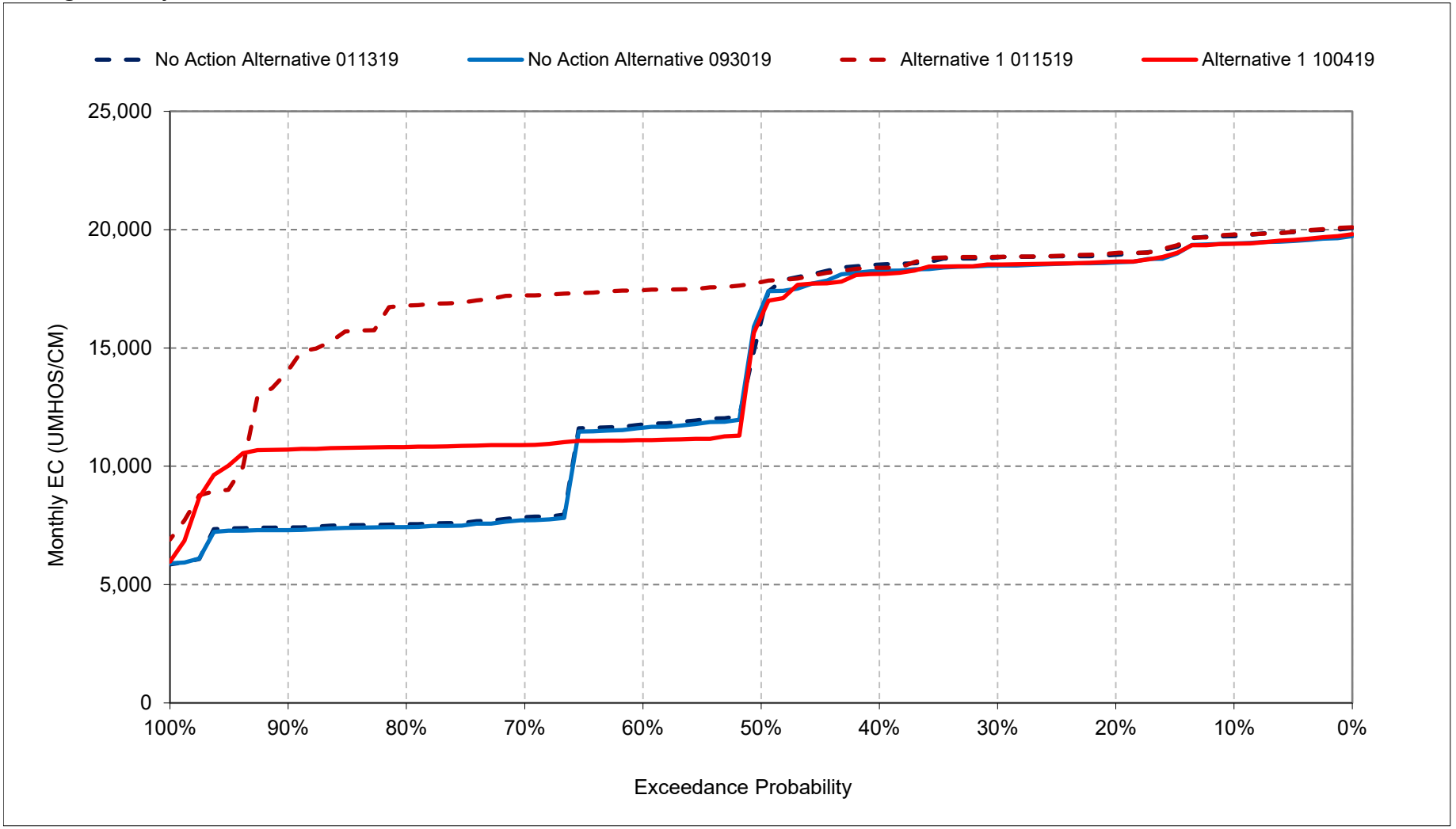

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-15. Sacramento River at Port Chicago Salinity, September EC**



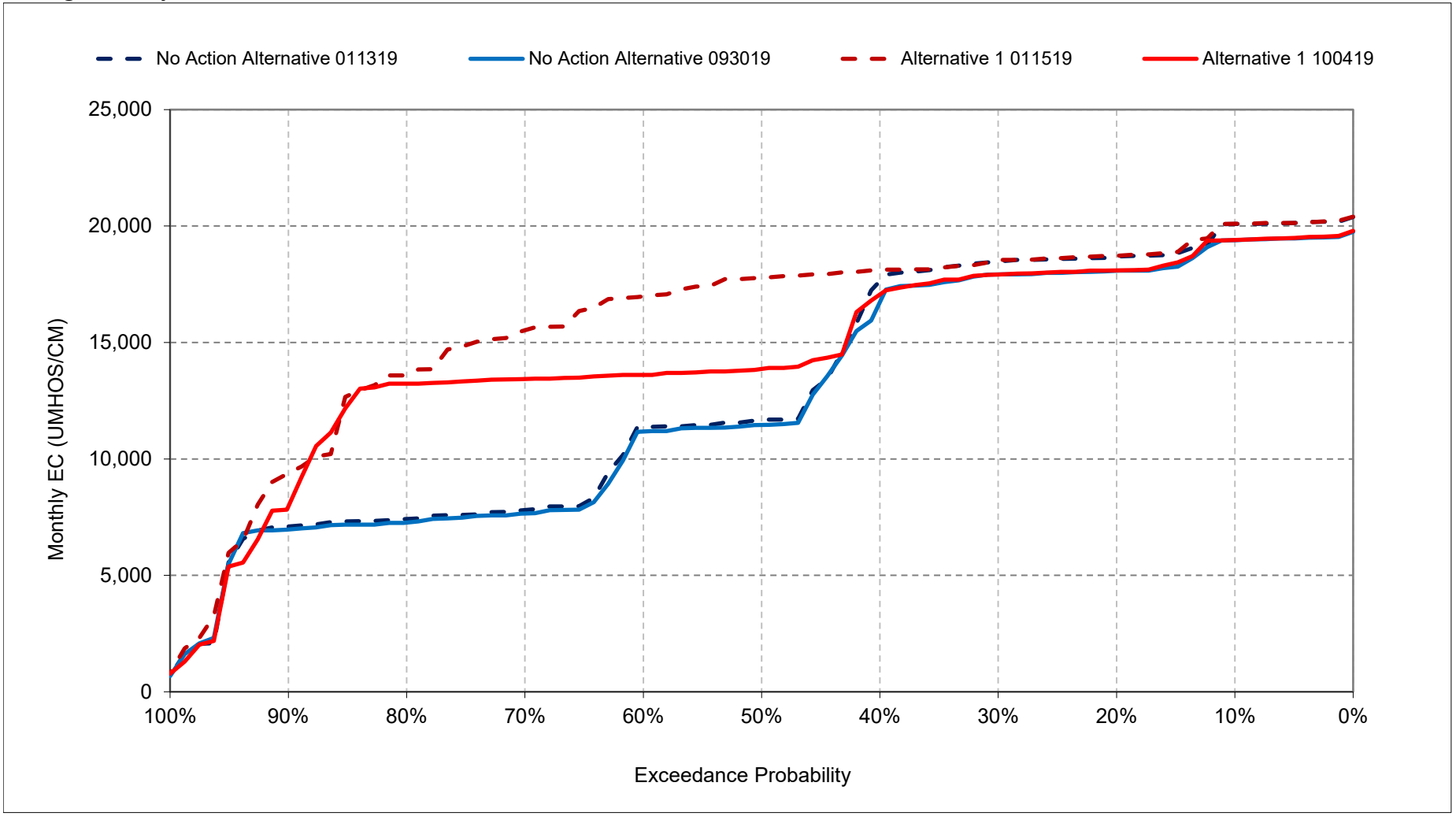

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-16. Sacramento River at Port Chicago Salinity, October EC**



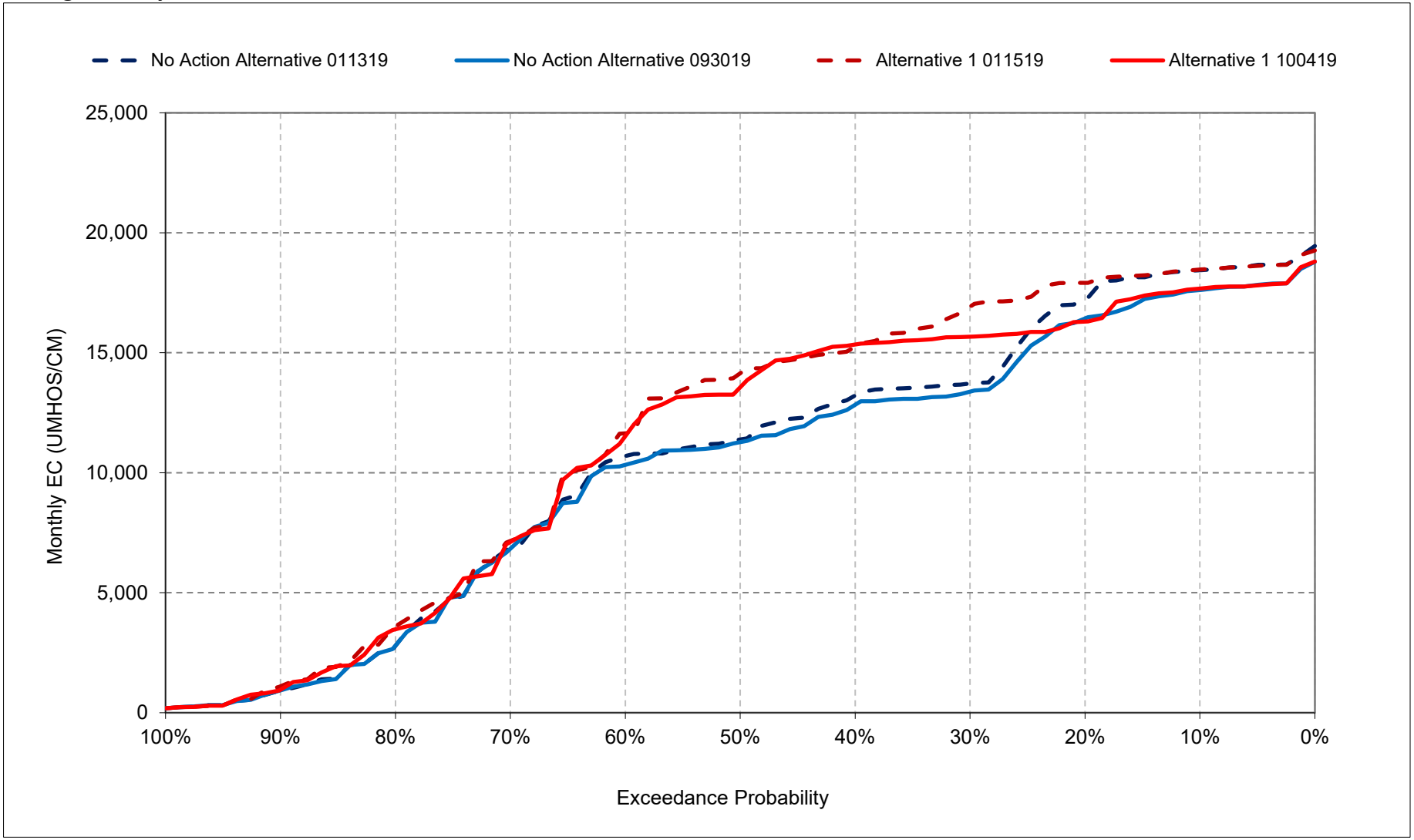

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-17. Sacramento River at Port Chicago Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 14-18. Sacramento River at Port Chicago Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-1. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 702 | 739 | 810 | 799 | 790 | 763 | 612 | 542 | 470 | 430 | 553 | 618 |
| **20%** | 675 | 691 | 763 | 765 | 702 | 644 | 538 | 524 | 429 | 398 | 452 | 597 |
| **30%** | 662 | 645 | 724 | 679 | 673 | 588 | 466 | 494 | 401 | 387 | 431 | 574 |
| **40%** | 634 | 611 | 690 | 651 | 643 | 553 | 435 | 445 | 388 | 376 | 414 | 548 |
| **50%** | 581 | 519 | 515 | 629 | 598 | 525 | 368 | 397 | 380 | 360 | 399 | 529 |
| **60%** | 394 | 396 | 485 | 596 | 537 | 436 | 329 | 375 | 377 | 350 | 370 | 509 |
| **70%** | 380 | 358 | 447 | 564 | 486 | 363 | 310 | 361 | 364 | 339 | 349 | 481 |
| **80%** | 368 | 344 | 429 | 514 | 406 | 316 | 282 | 314 | 354 | 333 | 339 | 452 |
| **90%** | 357 | 330 | 419 | 450 | 317 | 287 | 229 | 202 | 337 | 311 | 324 | 431 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 524 | 516 | 584 | 621 | 574 | 504 | 400 | 403 | 387 | 370 | 408 | 520 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 363 | 337 | 413 | 512 | 405 | 337 | 263 | 286 | 347 | 349 | 339 | 461 |
| **Above Normal (16%)** | 370 | 385 | 502 | 610 | 563 | 448 | 351 | 373 | 379 | 349 | 350 | 443 |
| **Below Normal (13%)** | 639 | 597 | 670 | 625 | 607 | 521 | 403 | 431 | 399 | 348 | 406 | 568 |
| **Dry (24%)** | 654 | 632 | 669 | 691 | 665 | 590 | 477 | 470 | 394 | 373 | 471 | 566 |
| **Critical (15%)** | 718 | 777 | 824 | 749 | 767 | 765 | 617 | 549 | 464 | 457 | 514 | 612 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 701 | 760 | 820 | 807 | 736 | 634 | 585 | 506 | 416 | 447 | 540 | 632 |
| **20%** | 678 | 714 | 780 | 788 | 679 | 582 | 528 | 465 | 390 | 402 | 449 | 607 |
| **30%** | 662 | 679 | 753 | 767 | 641 | 544 | 476 | 438 | 367 | 388 | 428 | 582 |
| **40%** | 644 | 656 | 733 | 715 | 607 | 533 | 404 | 395 | 349 | 369 | 417 | 576 |
| **50%** | 626 | 635 | 707 | 654 | 570 | 517 | 347 | 351 | 344 | 356 | 401 | 565 |
| **60%** | 606 | 621 | 685 | 611 | 532 | 461 | 322 | 337 | 339 | 350 | 369 | 554 |
| **70%** | 588 | 602 | 622 | 570 | 475 | 360 | 303 | 329 | 334 | 336 | 351 | 547 |
| **80%** | 556 | 563 | 553 | 517 | 399 | 315 | 270 | 301 | 315 | 329 | 343 | 522 |
| **90%** | 486 | 430 | 476 | 451 | 311 | 284 | 227 | 200 | 300 | 305 | 328 | 475 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 606 | 620 | 671 | 644 | 548 | 474 | 389 | 370 | 353 | 372 | 408 | 553 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 511 | 552 | 590 | 515 | 401 | 338 | 258 | 268 | 333 | 351 | 338 | 484 |
| **Above Normal (16%)** | 607 | 600 | 678 | 647 | 546 | 442 | 330 | 335 | 349 | 345 | 355 | 563 |
| **Below Normal (13%)** | 628 | 606 | 676 | 668 | 586 | 501 | 412 | 400 | 337 | 351 | 420 | 589 |
| **Dry (24%)** | 658 | 646 | 674 | 731 | 627 | 537 | 465 | 421 | 343 | 371 | 458 | 577 |
| **Critical (15%)** | 703 | 761 | 829 | 751 | 703 | 676 | 591 | 517 | 428 | 466 | 520 | 620 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 0 | **21** | **9** | **7** | -54 | -129 | -27 | -36 | -54 | **18** | -13 | **15** |
| **20%** | **3** | **23** | **17** | **23** | -23 | -61 | -10 | -59 | -38 | **4** | -3 | **10** |
| **30%** | 0 | **34** | **29** | **88** | -32 | -44 | **10** | -56 | -34 | **1** | -3 | **8** |
| **40%** | **10** | **45** | **43** | **64** | -36 | -20 | -31 | -51 | -38 | -7 | **3** | **28** |
| **50%** | **45** | **116** | **192** | **25** | -28 | -8 | -21 | -46 | -36 | -3 | **2** | **36** |
| **60%** | **212** | **225** | **200** | **15** | -5 | **25** | -7 | -38 | -38 | 0 | -1 | **45** |
| **70%** | **208** | **244** | **174** | **6** | -10 | -4 | -7 | -32 | -30 | -3 | **2** | **66** |
| **80%** | **188** | **219** | **124** | **2** | -7 | -1 | -12 | -13 | -38 | -4 | **4** | **70** |
| **90%** | **129** | **101** | **58** | **2** | -6 | -3 | -2 | -2 | -37 | -5 | **3** | **44** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **82** | **105** | **87** | **23** | -25 | -30 | -10 | -33 | -35 | **1** | **0** | **33** |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **148** | **215** | **177** | **3** | -4 | **1** | -5 | -18 | -13 | **2** | -1 | **23** |
| **Above Normal (16%)** | **237** | **215** | **176** | **37** | -17 | -6 | -20 | -39 | -31 | -4 | **5** | **120** |
| **Below Normal (13%)** | -11 | **9** | **6** | **43** | -21 | -21 | **10** | -31 | -61 | **4** | **14** | **21** |
| **Dry (24%)** | **4** | **14** | **5** | **40** | -38 | -53 | -12 | -49 | -51 | -2 | -14 | **11** |
| **Critical (15%)** | -15 | -16 | **4** | **3** | -64 | -90 | -26 | -32 | -35 | **9** | **6** | **7** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-2. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 675 | 675 | 761 | 725 | 769 | 764 | 610 | 540 | 445 | 424 | 519 | 602 |
| **20%** | 663 | 635 | 721 | 703 | 696 | 647 | 535 | 522 | 415 | 393 | 441 | 581 |
| **30%** | 636 | 583 | 669 | 665 | 666 | 590 | 466 | 494 | 402 | 384 | 416 | 562 |
| **40%** | 610 | 560 | 606 | 638 | 638 | 553 | 435 | 445 | 388 | 374 | 411 | 538 |
| **50%** | 562 | 496 | 512 | 620 | 594 | 524 | 368 | 397 | 380 | 361 | 395 | 513 |
| **60%** | 392 | 392 | 481 | 584 | 536 | 436 | 329 | 375 | 376 | 349 | 370 | 505 |
| **70%** | 378 | 359 | 447 | 559 | 485 | 363 | 310 | 361 | 364 | 337 | 348 | 482 |
| **80%** | 363 | 342 | 429 | 514 | 405 | 316 | 282 | 314 | 354 | 331 | 339 | 451 |
| **90%** | 355 | 329 | 419 | 450 | 317 | 287 | 229 | 202 | 337 | 311 | 324 | 431 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 512 | 488 | 558 | 597 | 564 | 503 | 399 | 402 | 382 | 369 | 402 | 513 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 362 | 336 | 413 | 509 | 405 | 337 | 263 | 286 | 347 | 349 | 339 | 461 |
| **Above Normal (16%)** | 369 | 384 | 500 | 604 | 563 | 447 | 350 | 373 | 379 | 351 | 350 | 442 |
| **Below Normal (13%)** | 621 | 547 | 614 | 608 | 605 | 521 | 403 | 431 | 391 | 347 | 401 | 560 |
| **Dry (24%)** | 633 | 588 | 633 | 644 | 655 | 590 | 476 | 470 | 387 | 366 | 455 | 550 |
| **Critical (15%)** | 688 | 710 | 760 | 691 | 717 | 763 | 613 | 546 | 444 | 454 | 511 | 596 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 679 | 684 | 758 | 828 | 692 | 642 | 572 | 507 | 409 | 450 | 513 | 608 |
| **20%** | 643 | 652 | 730 | 756 | 663 | 605 | 529 | 469 | 385 | 402 | 457 | 593 |
| **30%** | 632 | 593 | 686 | 725 | 646 | 588 | 495 | 438 | 366 | 391 | 427 | 564 |
| **40%** | 607 | 571 | 674 | 694 | 607 | 571 | 415 | 393 | 352 | 374 | 417 | 536 |
| **50%** | 556 | 504 | 655 | 637 | 576 | 553 | 357 | 353 | 343 | 362 | 387 | 513 |
| **60%** | 412 | 389 | 630 | 590 | 529 | 471 | 326 | 339 | 338 | 354 | 357 | 461 |
| **70%** | 398 | 379 | 599 | 566 | 476 | 362 | 304 | 332 | 332 | 349 | 340 | 444 |
| **80%** | 383 | 371 | 514 | 516 | 407 | 315 | 268 | 302 | 309 | 332 | 334 | 399 |
| **90%** | 348 | 361 | 467 | 451 | 324 | 285 | 228 | 200 | 295 | 305 | 324 | 372 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 513 | 501 | 625 | 633 | 541 | 494 | 394 | 372 | 351 | 376 | 401 | 495 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 363 | 360 | 552 | 518 | 402 | 344 | 261 | 271 | 329 | 352 | 327 | 392 |
| **Above Normal (16%)** | 412 | 391 | 635 | 634 | 546 | 462 | 334 | 333 | 340 | 358 | 345 | 441 |
| **Below Normal (13%)** | 604 | 567 | 624 | 677 | 585 | 531 | 421 | 400 | 339 | 360 | 421 | 572 |
| **Dry (24%)** | 629 | 602 | 633 | 707 | 611 | 575 | 472 | 430 | 346 | 373 | 453 | 559 |
| **Critical (15%)** | 672 | 699 | 761 | 721 | 682 | 683 | 588 | 512 | 430 | 465 | 518 | 599 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | **4** | **8** | -2 | **103** | -76 | -122 | -38 | -33 | -35 | **26** | -6 | **6** |
| **20%** | -19 | **16** | **9** | **52** | -33 | -42 | -6 | -54 | -30 | **9** | **16** | **12** |
| **30%** | -4 | **10** | **17** | **61** | -21 | -2 | **28** | -56 | -36 | **7** | **11** | **3** |
| **40%** | -2 | **10** | **69** | **56** | -31 | **18** | -20 | -52 | -36 | 0 | **6** | -2 |
| **50%** | -5 | **9** | **143** | **17** | -18 | **29** | -11 | -44 | -37 | **1** | -9 | -1 |
| **60%** | **20** | -3 | **149** | **6** | -8 | **35** | -3 | -36 | -38 | **5** | -13 | -43 |
| **70%** | **21** | **20** | **152** | **7** | -10 | -1 | -5 | -29 | -32 | **12** | -8 | -39 |
| **80%** | **20** | **29** | **85** | **1** | **2** | 0 | -13 | -12 | -45 | **1** | -5 | -52 |
| **90%** | -7 | **31** | **48** | **2** | **7** | -2 | -1 | -2 | -41 | -5 | 0 | -59 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **2** | **13** | **67** | **36** | -22 | -9 | -5 | -30 | -31 | **7** | -1 | -18 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | **1** | **24** | **139** | **9** | -3 | **7** | -2 | -16 | -18 | **3** | -11 | -70 |
| **Above Normal (16%)** | **43** | **7** | **135** | **29** | -16 | **15** | -16 | -40 | -40 | **7** | -5 | -2 |
| **Below Normal (13%)** | -17 | **20** | **10** | **69** | -20 | **10** | **19** | -31 | -53 | **13** | **20** | **12** |
| **Dry (24%)** | -3 | **14** | **1** | **63** | -44 | -15 | -4 | -39 | -40 | **6** | -3 | **9** |
| **Critical (15%)** | -16 | -11 | **1** | **30** | -35 | -80 | -25 | -33 | -15 | **11** | **7** | **3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-3. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 702 | 739 | 810 | 799 | 790 | 763 | 612 | 542 | 470 | 430 | 553 | 618 |
| 20% | 675 | 691 | 763 | 765 | 702 | 644 | 538 | 524 | 429 | 398 | 452 | 597 |
| 30% | 662 | 645 | 724 | 679 | 673 | 588 | 466 | 494 | 401 | 387 | 431 | 574 |
| 40% | 634 | 611 | 690 | 651 | 643 | 553 | 435 | 445 | 388 | 376 | 414 | 548 |
| 50% | 581 | 519 | 515 | 629 | 598 | 525 | 368 | 397 | 380 | 360 | 399 | 529 |
| 60% | 394 | 396 | 485 | 596 | 537 | 436 | 329 | 375 | 377 | 350 | 370 | 509 |
| 70% | 380 | 358 | 447 | 564 | 486 | 363 | 310 | 361 | 364 | 339 | 349 | 481 |
| 80% | 368 | 344 | 429 | 514 | 406 | 316 | 282 | 314 | 354 | 333 | 339 | 452 |
| 90% | 357 | 330 | 419 | 450 | 317 | 287 | 229 | 202 | 337 | 311 | 324 | 431 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 524 | 516 | 584 | 621 | 574 | 504 | 400 | 403 | 387 | 370 | 408 | 520 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 363 | 337 | 413 | 512 | 405 | 337 | 263 | 286 | 347 | 349 | 339 | 461 |
| Above Normal (16%) | 370 | 385 | 502 | 610 | 563 | 448 | 351 | 373 | 379 | 349 | 350 | 443 |
| Below Normal (13%) | 639 | 597 | 670 | 625 | 607 | 521 | 403 | 431 | 399 | 348 | 406 | 568 |
| Dry (24%) | 654 | 632 | 669 | 691 | 665 | 590 | 477 | 470 | 394 | 373 | 471 | 566 |
| Critical (15%) | 718 | 777 | 824 | 749 | 767 | 765 | 617 | 549 | 464 | 457 | 514 | 612 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 675 | 675 | 761 | 725 | 769 | 764 | 610 | 540 | 445 | 424 | 519 | 602 |
| 20% | 663 | 635 | 721 | 703 | 696 | 647 | 535 | 522 | 415 | 393 | 441 | 581 |
| 30% | 636 | 583 | 669 | 665 | 666 | 590 | 466 | 494 | 402 | 384 | 416 | 562 |
| 40% | 610 | 560 | 606 | 638 | 638 | 553 | 435 | 445 | 388 | 374 | 411 | 538 |
| 50% | 562 | 496 | 512 | 620 | 594 | 524 | 368 | 397 | 380 | 361 | 395 | 513 |
| 60% | 392 | 392 | 481 | 584 | 536 | 436 | 329 | 375 | 376 | 349 | 370 | 505 |
| 70% | 378 | 359 | 447 | 559 | 485 | 363 | 310 | 361 | 364 | 337 | 348 | 482 |
| 80% | 363 | 342 | 429 | 514 | 405 | 316 | 282 | 314 | 354 | 331 | 339 | 451 |
| 90% | 355 | 329 | 419 | 450 | 317 | 287 | 229 | 202 | 337 | 311 | 324 | 431 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 512 | 488 | 558 | 597 | 564 | 503 | 399 | 402 | 382 | 369 | 402 | 513 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 362 | 336 | 413 | 509 | 405 | 337 | 263 | 286 | 347 | 349 | 339 | 461 |
| Above Normal (16%) | 369 | 384 | 500 | 604 | 563 | 447 | 350 | 373 | 379 | 351 | 350 | 442 |
| Below Normal (13%) | 621 | 547 | 614 | 608 | 605 | 521 | 403 | 431 | 391 | 347 | 401 | 560 |
| Dry (24%) | 633 | 588 | 633 | 644 | 655 | 590 | 476 | 470 | 387 | 366 | 455 | 550 |
| Critical (15%) | 688 | 710 | 760 | 691 | 717 | 763 | 613 | 546 | 444 | 454 | 511 | 596 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -27 | -64 | -50 | -74 | -22 | 1 | -1 | -3 | -25 | -5 | -34 | -15 |
| 20% | -12 | -55 | -42 | -61 | -6 | 4 | -3 | -1 | -13 | -5 | -11 | -16 |
| 30% | -27 | -62 | -55 | -15 | -7 | 2 | 0 | 0 | 0 | -3 | -15 | -12 |
| 40% | -24 | -51 | -84 | -13 | -5 | 0 | 0 | 0 | 0 | -2 | -3 | -10 |
| 50% | -20 | -23 | -3 | -10 | -4 | 0 | 0 | 0 | 0 | 2 | -3 | -16 |
| 60% | -2 | -4 | -4 | -12 | 0 | 0 | 0 | -1 | -1 | -1 | 0 | -4 |
| 70% | -2 | 1 | -1 | -5 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 2 |
| 80% | -4 | -2 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | -2 | 0 | -1 |
| 90% | -1 | -1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | -1 | -1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -13 | -28 | -26 | -24 | -10 | -1 | -1 | -1 | -6 | -2 | -5 | -7 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 0 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -1 | -1 | -2 | -5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | -1 |
| Below Normal (13%) | -18 | -50 | -56 | -17 | -2 | -1 | 0 | 0 | -7 | -1 | -5 | -8 |
| Dry (24%) | -21 | -44 | -36 | -47 | -10 | 0 | -1 | -1 | -7 | -7 | -16 | -16 |
| Critical (15%) | -30 | -67 | -65 | -57 | -50 | -2 | -3 | -4 | -19 | -3 | -4 | -17 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 15-4. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 701 | 760 | 820 | 807 | 736 | 634 | 585 | 506 | 416 | 447 | 540 | 632 |
| 20% | 678 | 714 | 780 | 788 | 679 | 582 | 528 | 465 | 390 | 402 | 449 | 607 |
| 30% | 662 | 679 | 753 | 767 | 641 | 544 | 476 | 438 | 367 | 388 | 428 | 582 |
| 40% | 644 | 656 | 733 | 715 | 607 | 533 | 404 | 395 | 349 | 369 | 417 | 576 |
| 50% | 626 | 635 | 707 | 654 | 570 | 517 | 347 | 351 | 344 | 356 | 401 | 565 |
| 60% | 606 | 621 | 685 | 611 | 532 | 461 | 322 | 337 | 339 | 350 | 369 | 554 |
| 70% | 588 | 602 | 622 | 570 | 475 | 360 | 303 | 329 | 334 | 336 | 351 | 547 |
| 80% | 556 | 563 | 553 | 517 | 399 | 315 | 270 | 301 | 315 | 329 | 343 | 522 |
| 90% | 486 | 430 | 476 | 451 | 311 | 284 | 227 | 200 | 300 | 305 | 328 | 475 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 606 | 620 | 671 | 644 | 548 | 474 | 389 | 370 | 353 | 372 | 408 | 553 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 511 | 552 | 590 | 515 | 401 | 338 | 258 | 268 | 333 | 351 | 338 | 484 |
| Above Normal (16%) | 607 | 600 | 678 | 647 | 546 | 442 | 330 | 335 | 349 | 345 | 355 | 563 |
| Below Normal (13%) | 628 | 606 | 676 | 668 | 586 | 501 | 412 | 400 | 337 | 351 | 420 | 589 |
| Dry (24%) | 658 | 646 | 674 | 731 | 627 | 537 | 465 | 421 | 343 | 371 | 458 | 577 |
| Critical (15%) | 703 | 761 | 829 | 751 | 703 | 676 | 591 | 517 | 428 | 466 | 520 | 620 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 679 | 684 | 758 | 828 | 692 | 642 | 572 | 507 | 409 | 450 | 513 | 608 |
| 20% | 643 | 652 | 730 | 756 | 663 | 605 | 529 | 469 | 385 | 402 | 457 | 593 |
| 30% | 632 | 593 | 686 | 725 | 646 | 588 | 495 | 438 | 366 | 391 | 427 | 564 |
| 40% | 607 | 571 | 674 | 694 | 607 | 571 | 415 | 393 | 352 | 374 | 417 | 536 |
| 50% | 556 | 504 | 655 | 637 | 576 | 553 | 357 | 353 | 343 | 362 | 387 | 513 |
| 60% | 412 | 389 | 630 | 590 | 529 | 471 | 326 | 339 | 338 | 354 | 357 | 461 |
| 70% | 398 | 379 | 599 | 566 | 476 | 362 | 304 | 332 | 332 | 349 | 340 | 444 |
| 80% | 383 | 371 | 514 | 516 | 407 | 315 | 268 | 302 | 309 | 332 | 334 | 399 |
| 90% | 348 | 361 | 467 | 451 | 324 | 285 | 228 | 200 | 295 | 305 | 324 | 372 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 513 | 501 | 625 | 633 | 541 | 494 | 394 | 372 | 351 | 376 | 401 | 495 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 363 | 360 | 552 | 518 | 402 | 344 | 261 | 271 | 329 | 352 | 327 | 392 |
| Above Normal (16%) | 412 | 391 | 635 | 634 | 546 | 462 | 334 | 333 | 340 | 358 | 345 | 441 |
| Below Normal (13%) | 604 | 567 | 624 | 677 | 585 | 531 | 421 | 400 | 339 | 360 | 421 | 572 |
| Dry (24%) | 629 | 602 | 633 | 707 | 611 | 575 | 472 | 430 | 346 | 373 | 453 | 559 |
| Critical (15%) | 672 | 699 | 761 | 721 | 682 | 683 | 588 | 512 | 430 | 465 | 518 | 599 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -23 | -76 | -61 | 22 | -44 | 8 | -12 | 1 | -7 | 3 | -27 | -24 |
| 20% | -34 | -62 | -50 | -32 | -16 | 23 | 1 | 4 | -5 | 0 | 9 | -14 |
| 30% | -30 | -86 | -66 | -42 | 5 | 44 | 18 | 0 | -1 | 3 | -1 | -18 |
| 40% | -36 | -86 | -59 | -21 | 0 | 38 | 11 | -1 | 3 | 4 | 0 | -40 |
| 50% | -70 | -130 | -53 | -17 | 6 | 37 | 10 | 2 | -1 | 6 | -14 | -52 |
| 60% | -193 | -232 | -55 | -21 | -3 | 10 | 4 | 2 | -1 | 4 | -13 | -93 |
| 70% | -190 | -223 | -23 | -4 | 0 | 2 | 2 | 3 | -2 | 14 | -10 | -103 |
| 80% | -173 | -191 | -39 | -1 | 8 | 1 | -1 | 1 | -6 | 3 | -8 | -123 |
| 90% | -137 | -70 | -10 | 0 | 13 | 1 | 1 | 0 | -4 | 0 | -4 | -103 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -93 | -119 | -46 | -10 | -7 | 20 | 4 | 2 | -2 | 4 | -7 | -58 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -148 | -192 | -38 | 3 | 1 | 6 | 2 | 3 | -5 | 2 | -11 | -93 |
| Above Normal (16%) | -196 | -209 | -44 | -13 | 0 | 21 | 4 | -2 | -9 | 14 | -10 | -122 |
| Below Normal (13%) | -25 | -39 | -52 | 9 | -1 | 30 | 9 | 0 | 1 | 9 | 1 | -17 |
| Dry (24%) | -29 | -44 | -41 | -24 | -16 | 38 | 7 | 9 | 3 | 2 | -5 | -18 |
| Critical (15%) | -31 | -62 | -67 | -30 | -21 | 8 | -3 | -4 | 1 | -1 | -3 | -21 |

a Based on the 82-year simulation period.

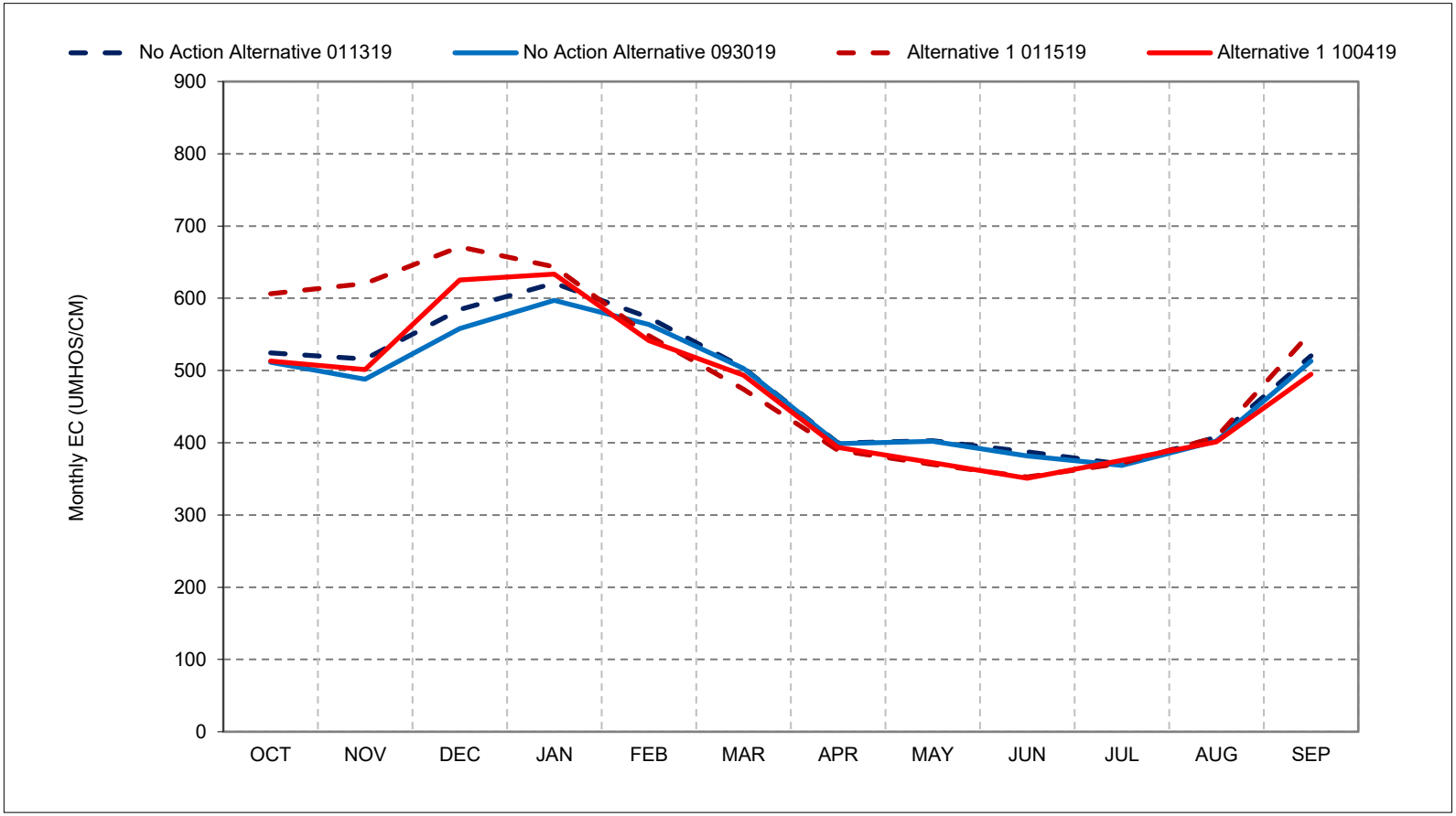
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-1. Jones Pumping Plant South Delta Exports Salinity, Long-Term Average EC

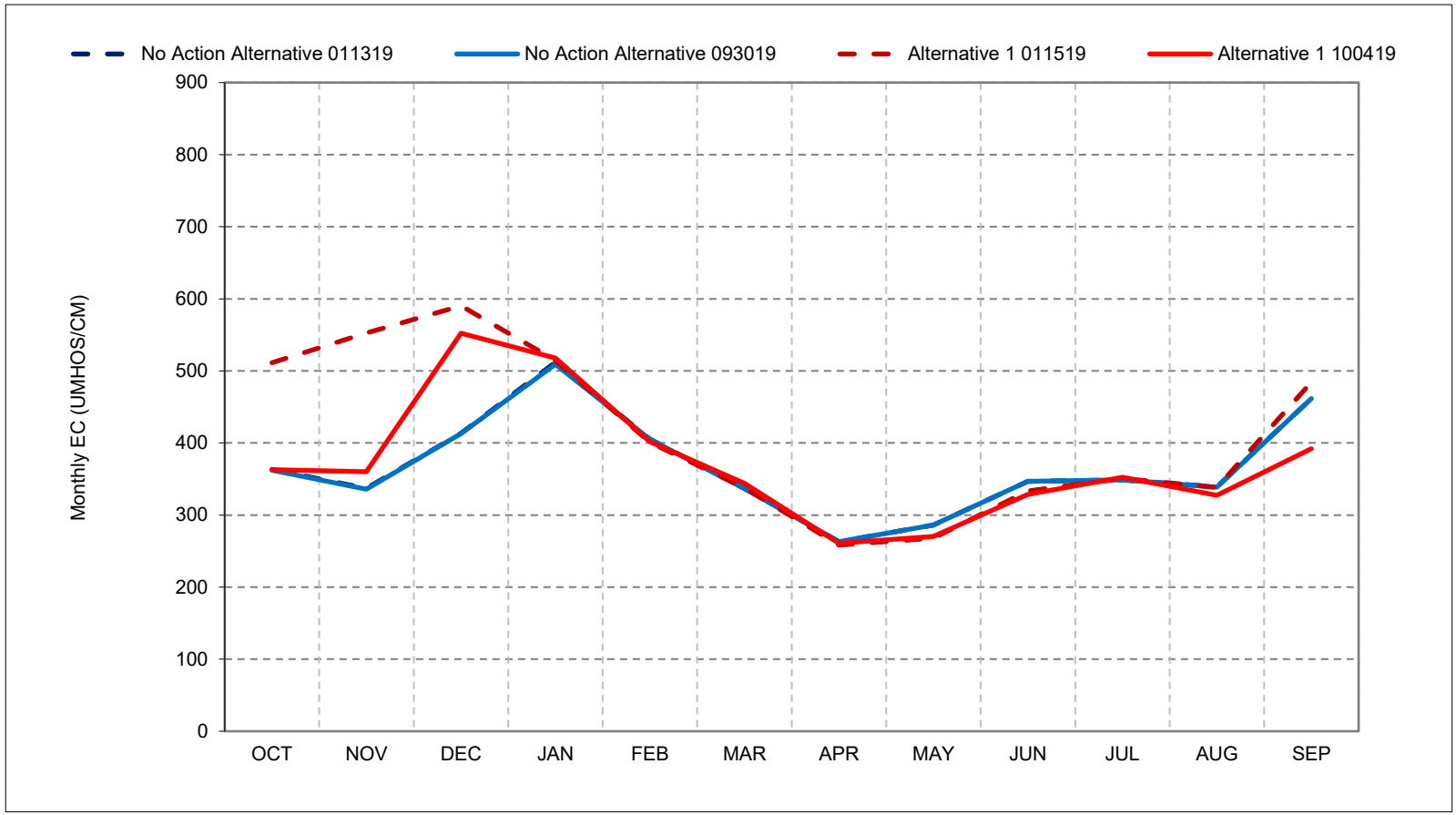



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-2. Jones Pumping Plant South Delta Exports Salinity, Wet Year Average EC

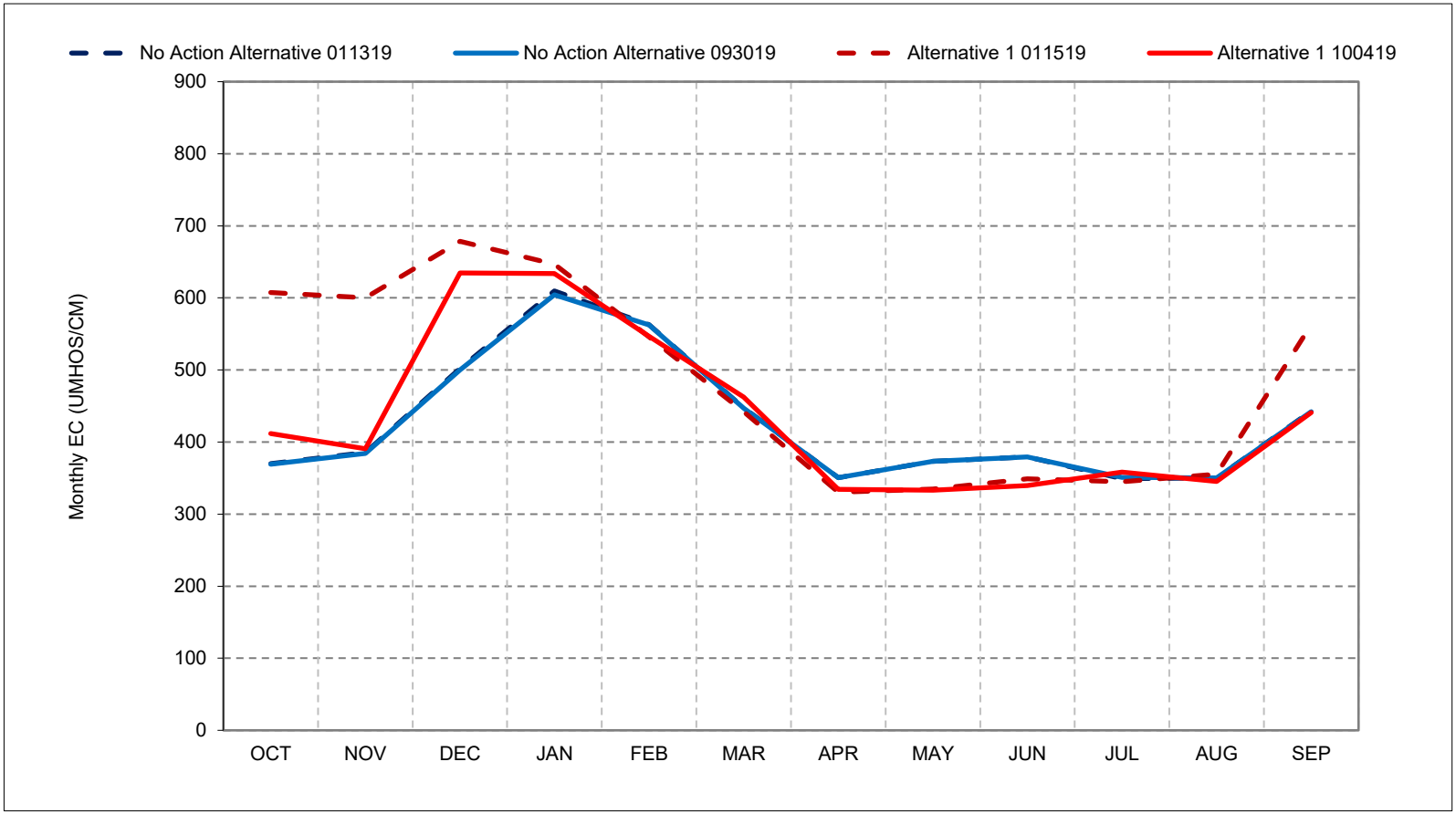



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-3. Jones Pumping Plant South Delta Exports Salinity, Above Normal Year Average EC

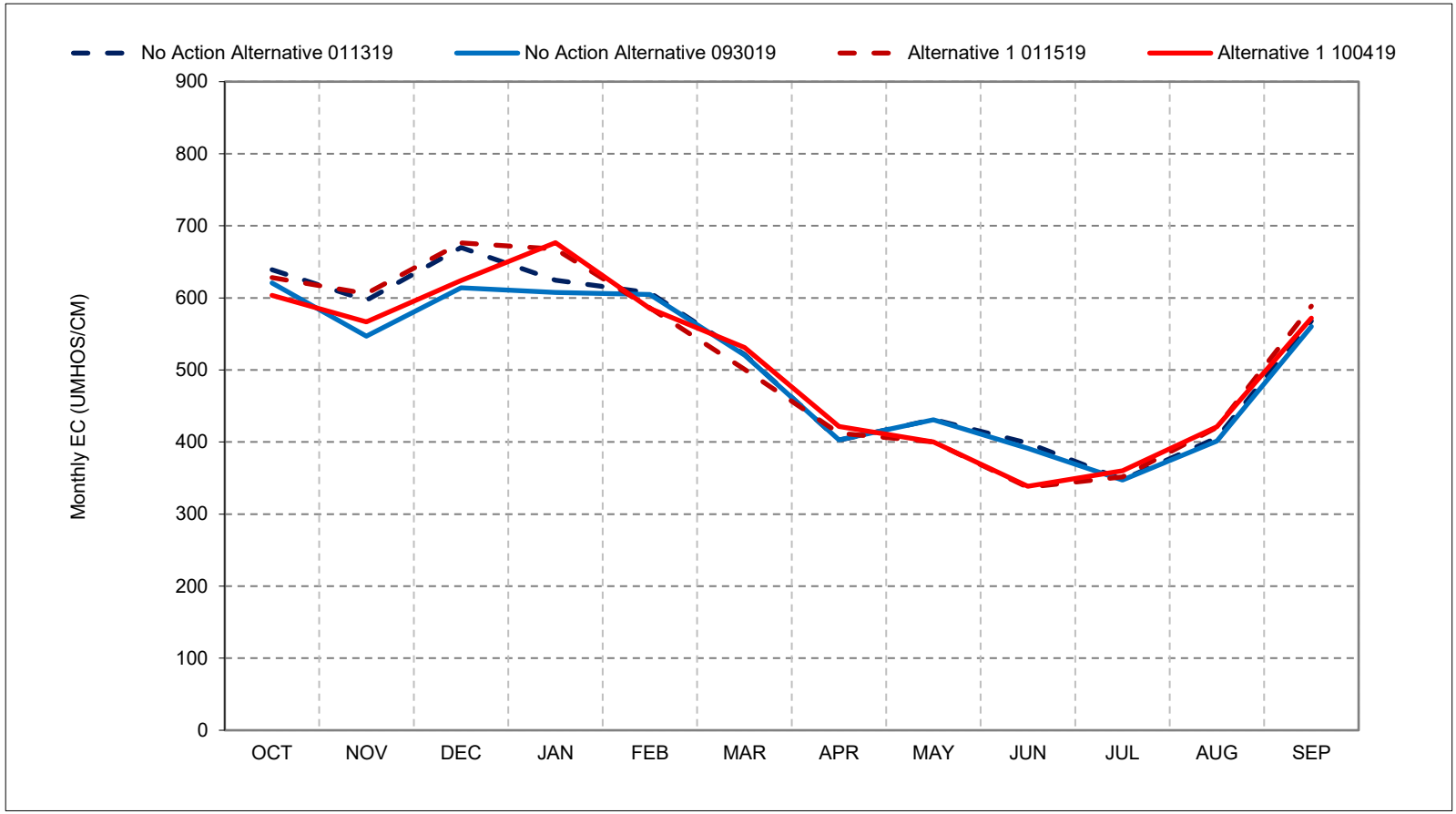



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-4. Jones Pumping Plant South Delta Exports Salinity, Below Normal Year Average EC

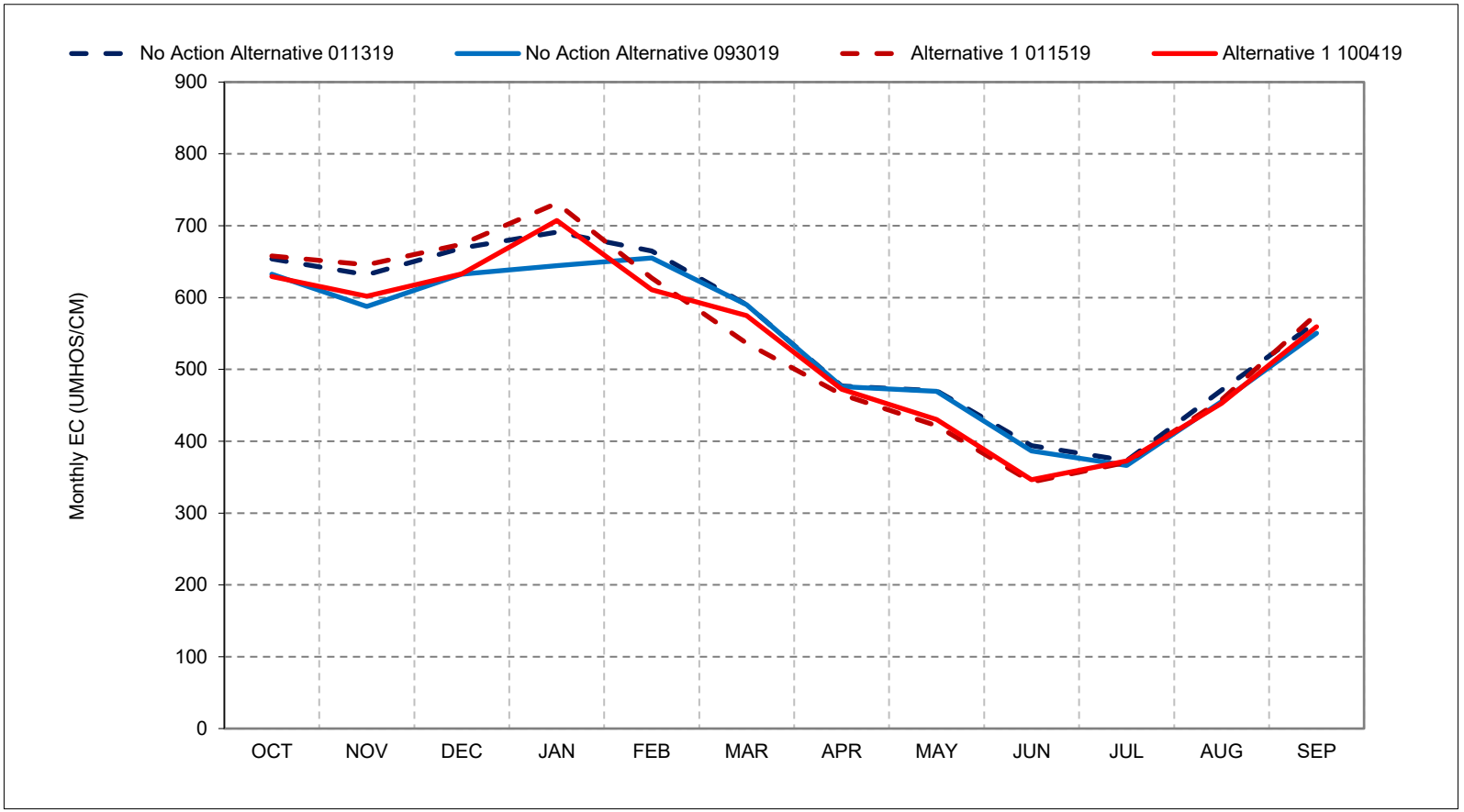



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-5. Jones Pumping Plant South Delta Exports Salinity, Dry Year Average EC

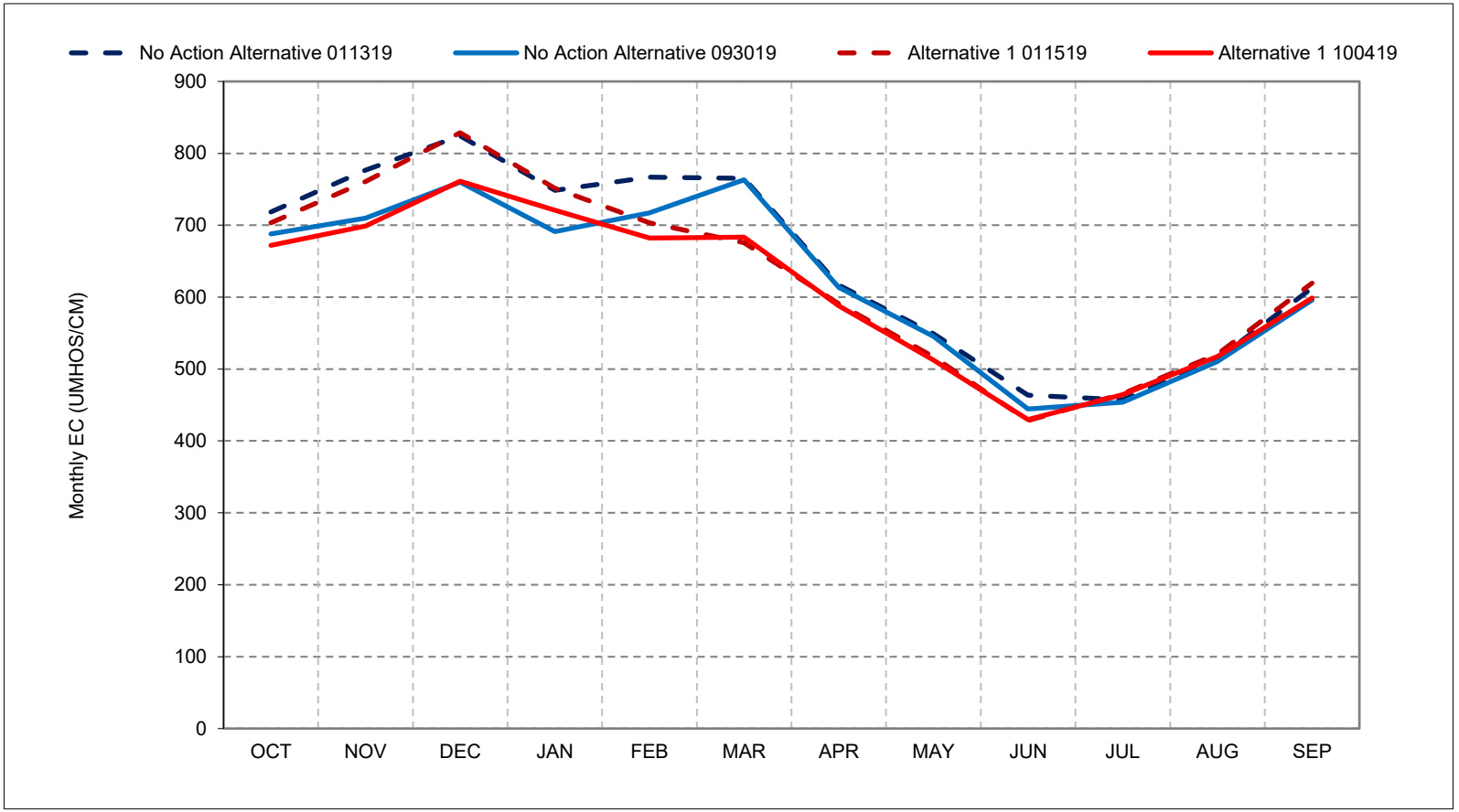



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 15-6. Jones Pumping Plant South Delta Exports Salinity, Critical Year Average EC

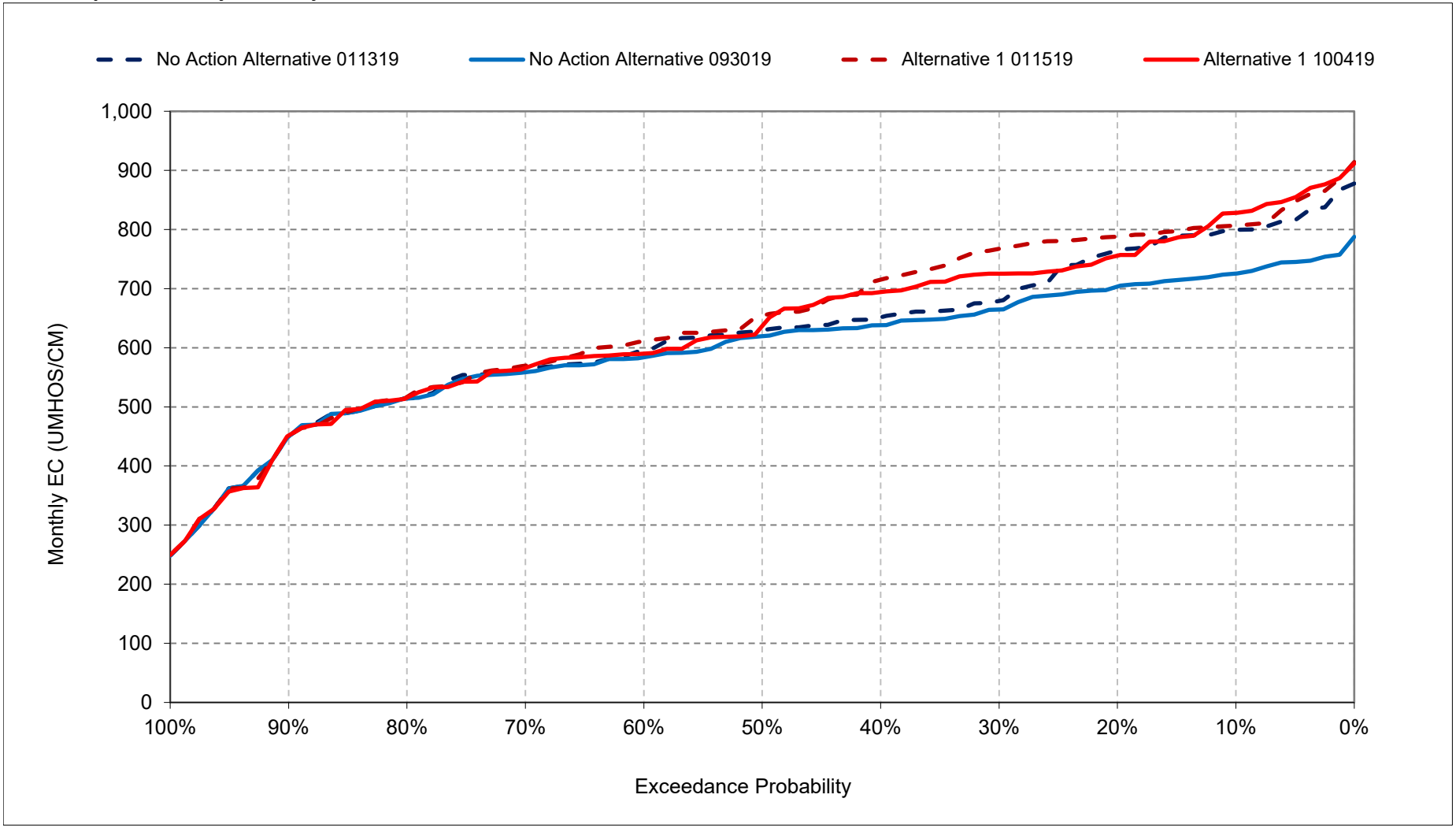



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

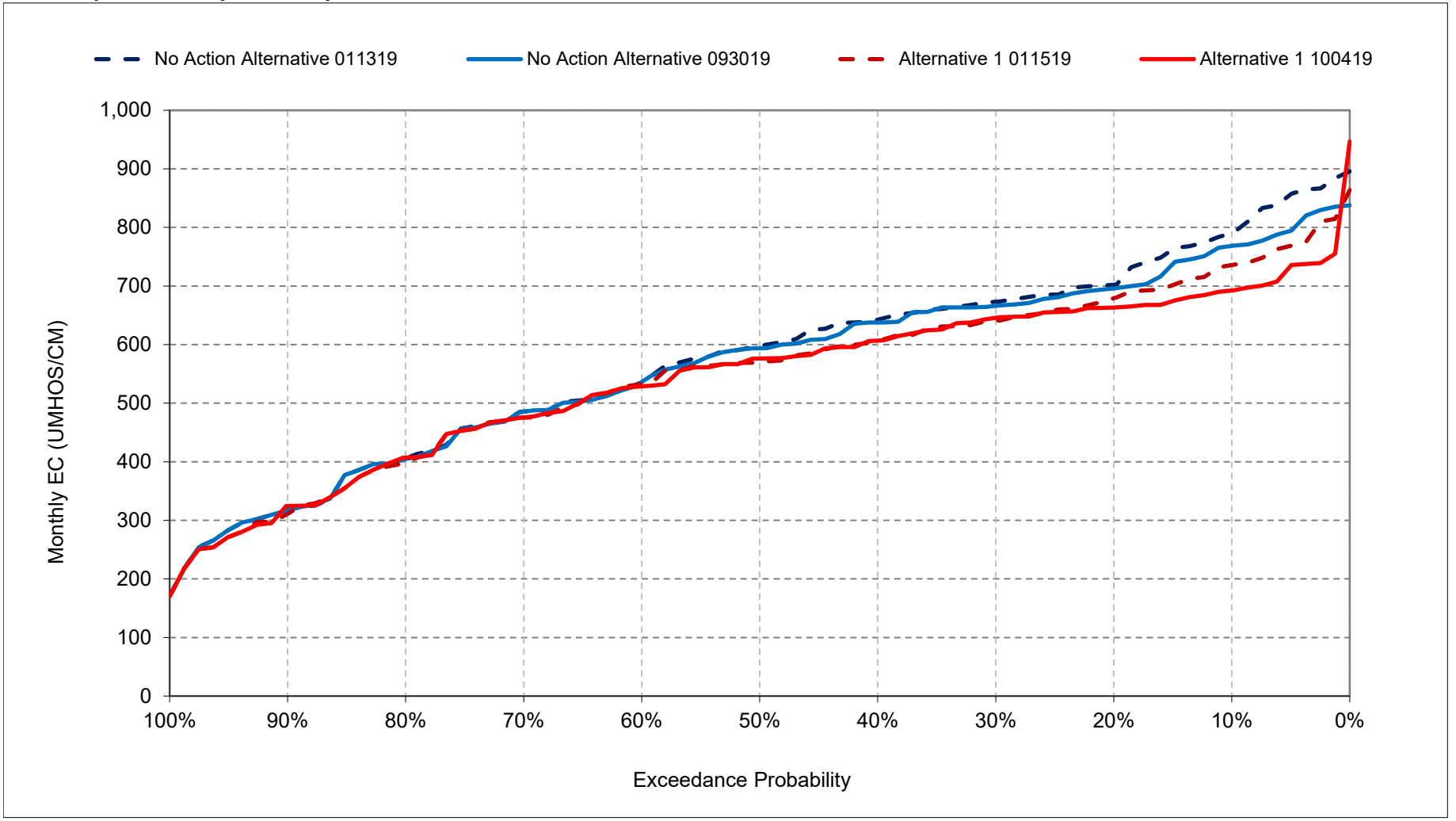
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-7. Jones Pumping Plant South Delta Exports Salinity, January EC**



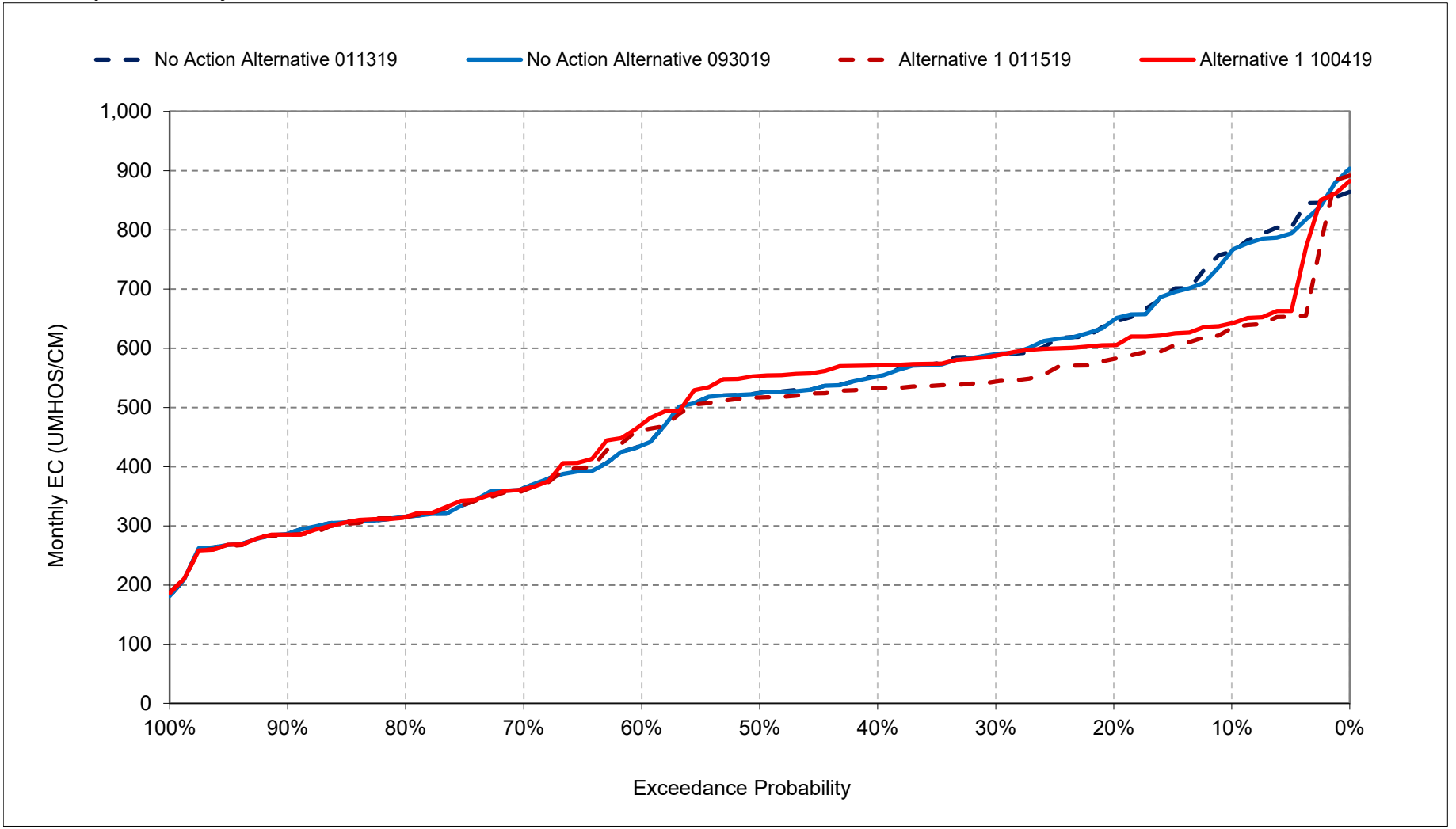

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-8. Jones Pumping Plant South Delta Exports Salinity, February EC**



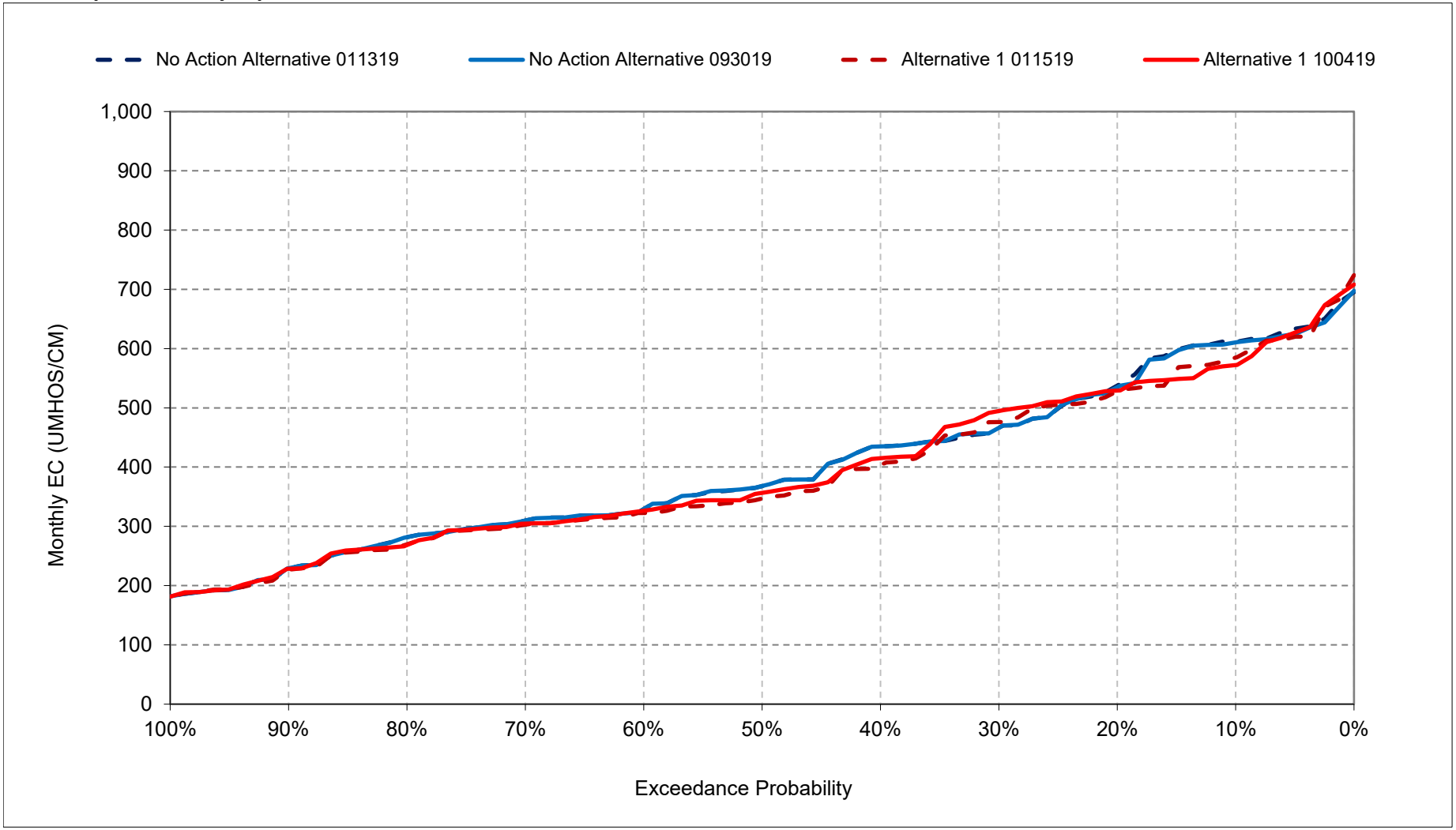

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-9. Jones Pumping Plant South Delta Exports Salinity, March EC**



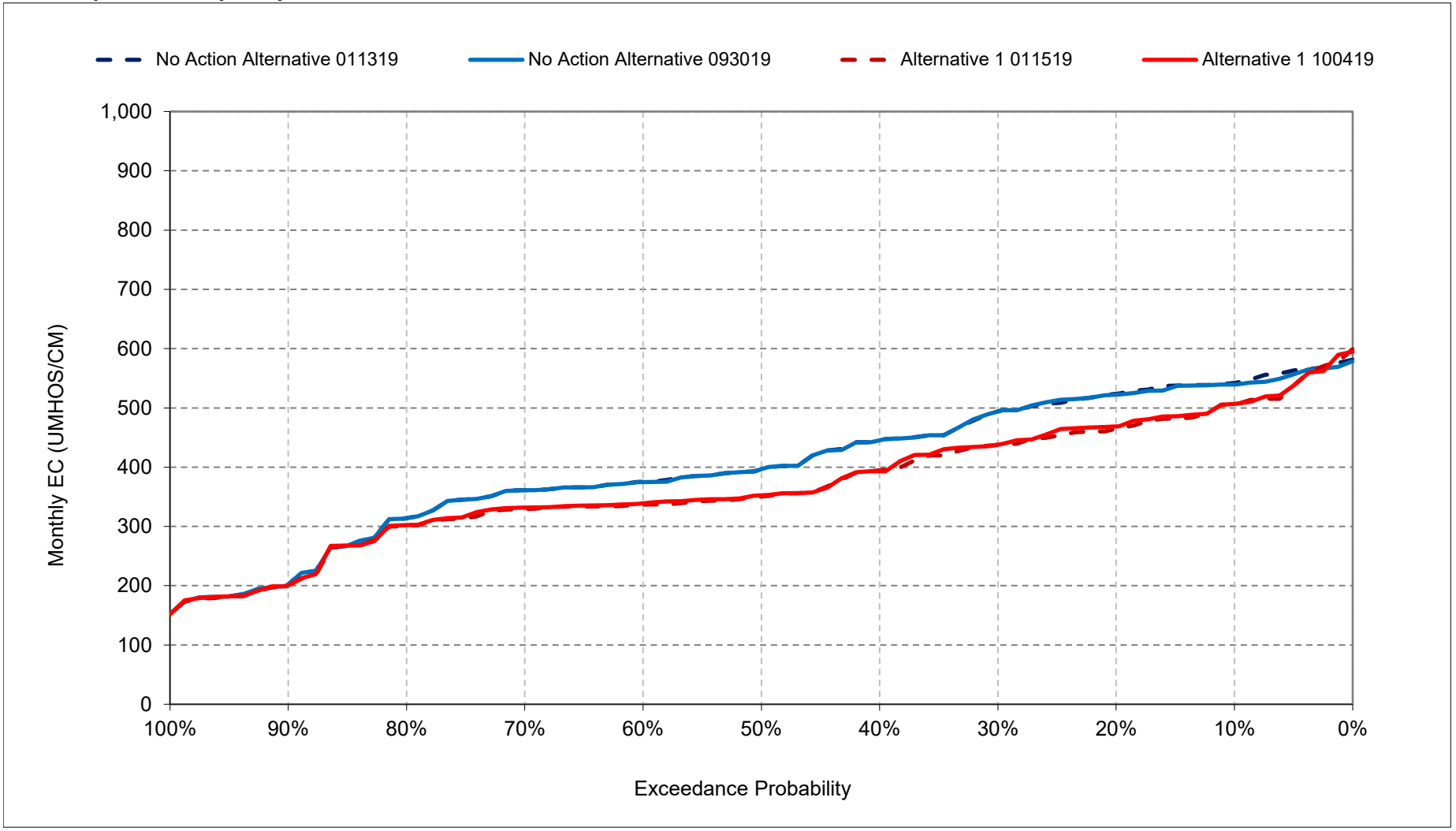

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-10. Jones Pumping Plant South Delta Exports Salinity, April EC**



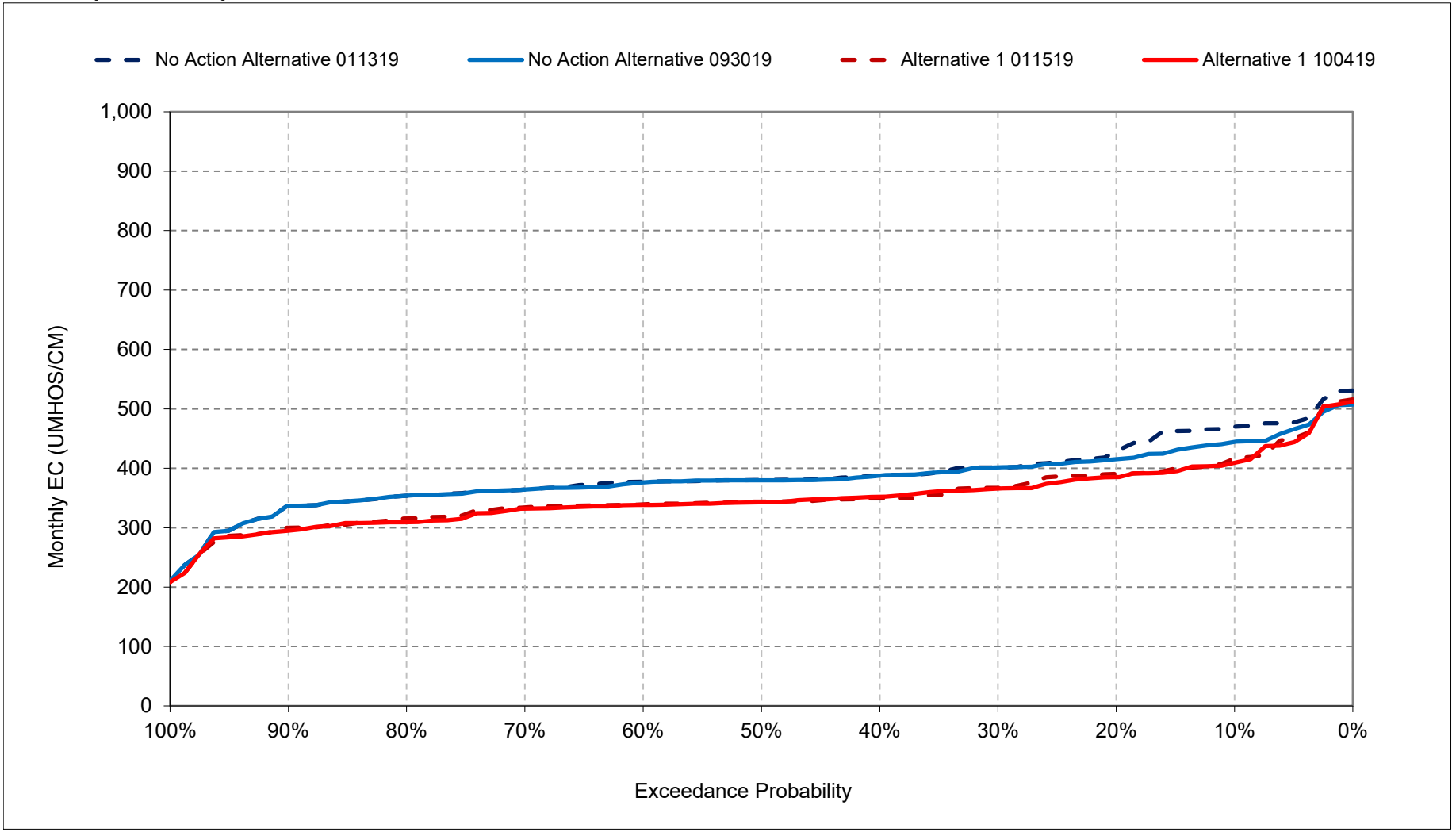

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-11. Jones Pumping Plant South Delta Exports Salinity, May EC**



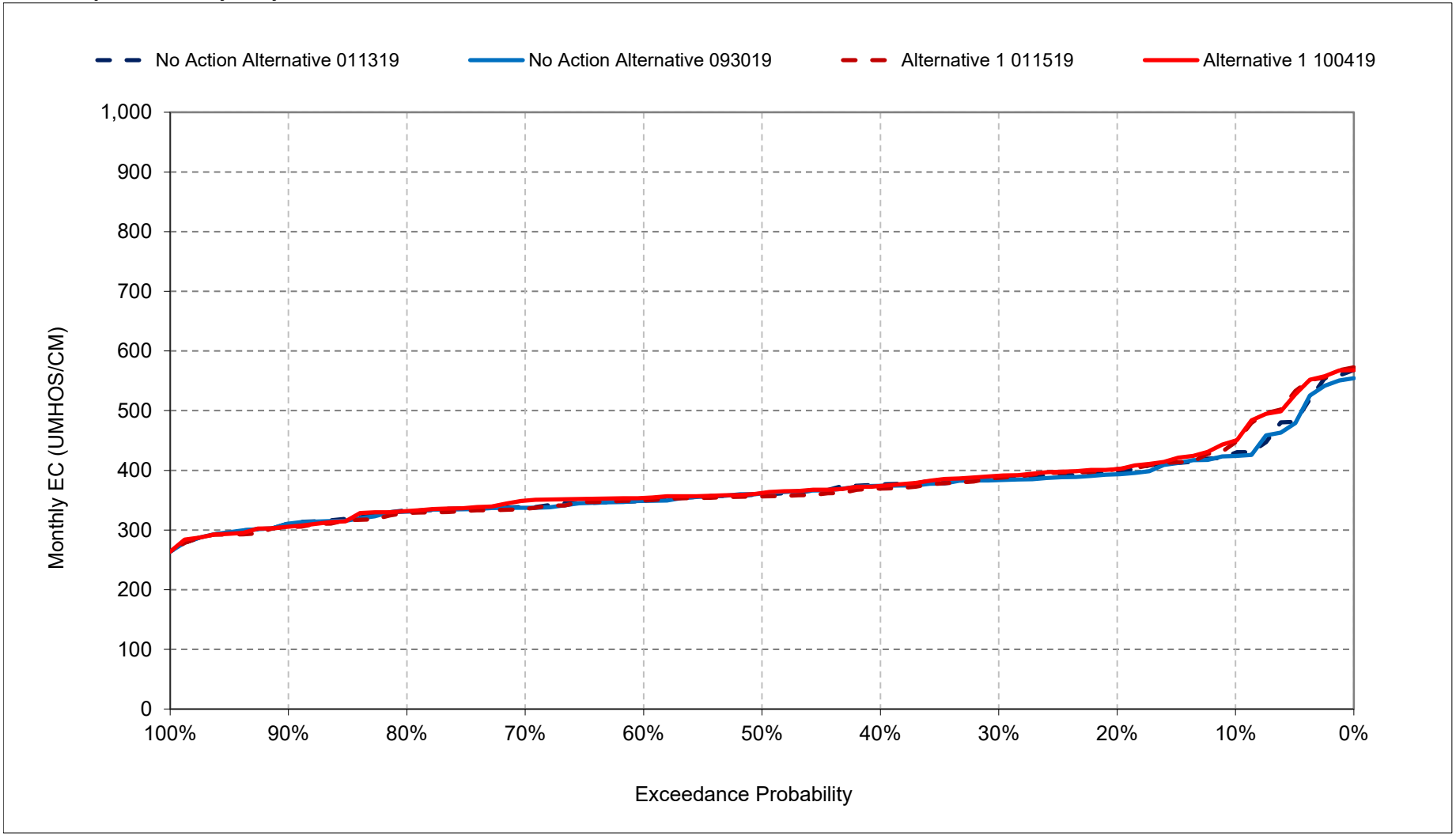

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-12. Jones Pumping Plant South Delta Exports Salinity, June EC**



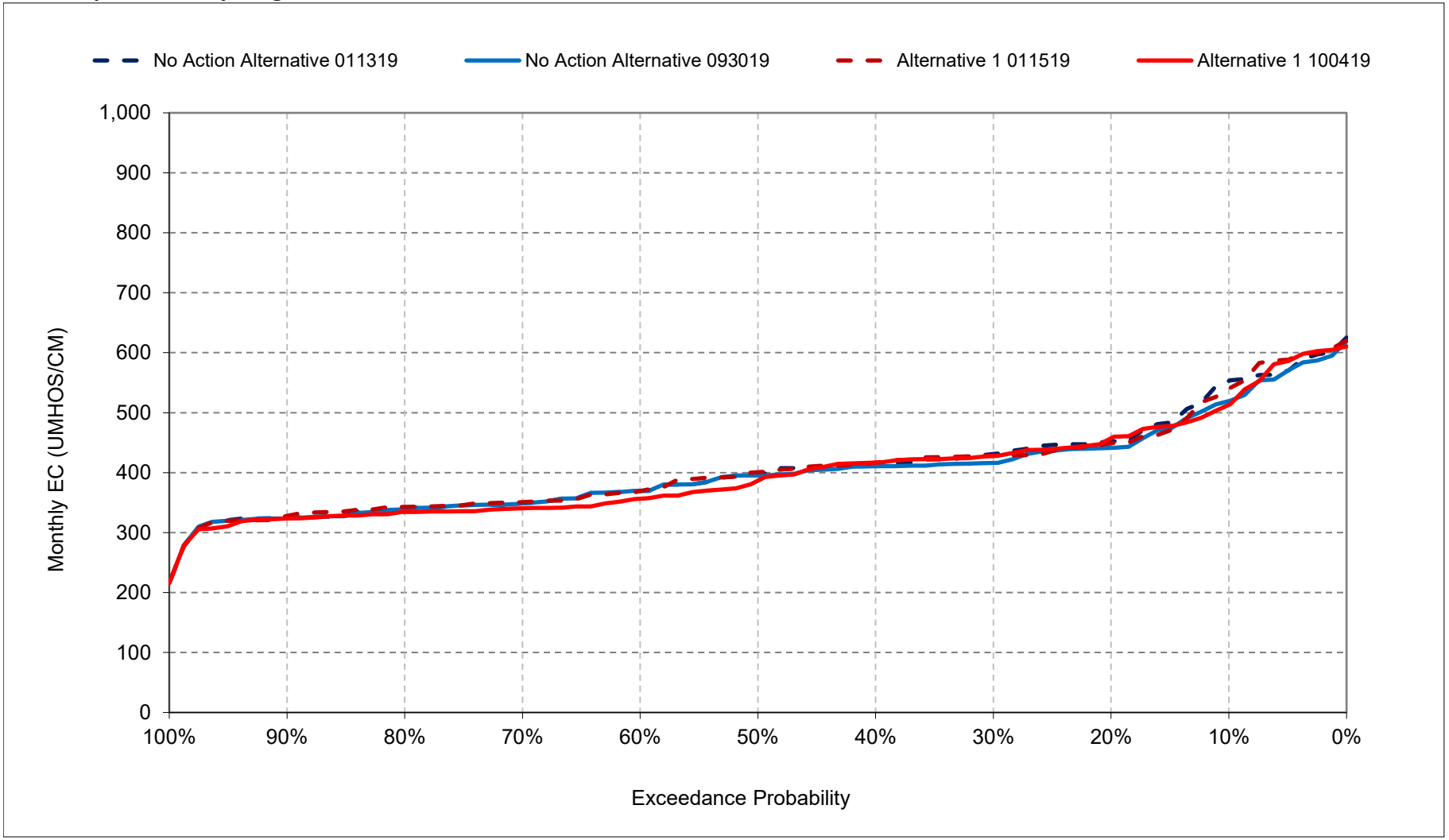

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-13. Jones Pumping Plant South Delta Exports Salinity, July EC**



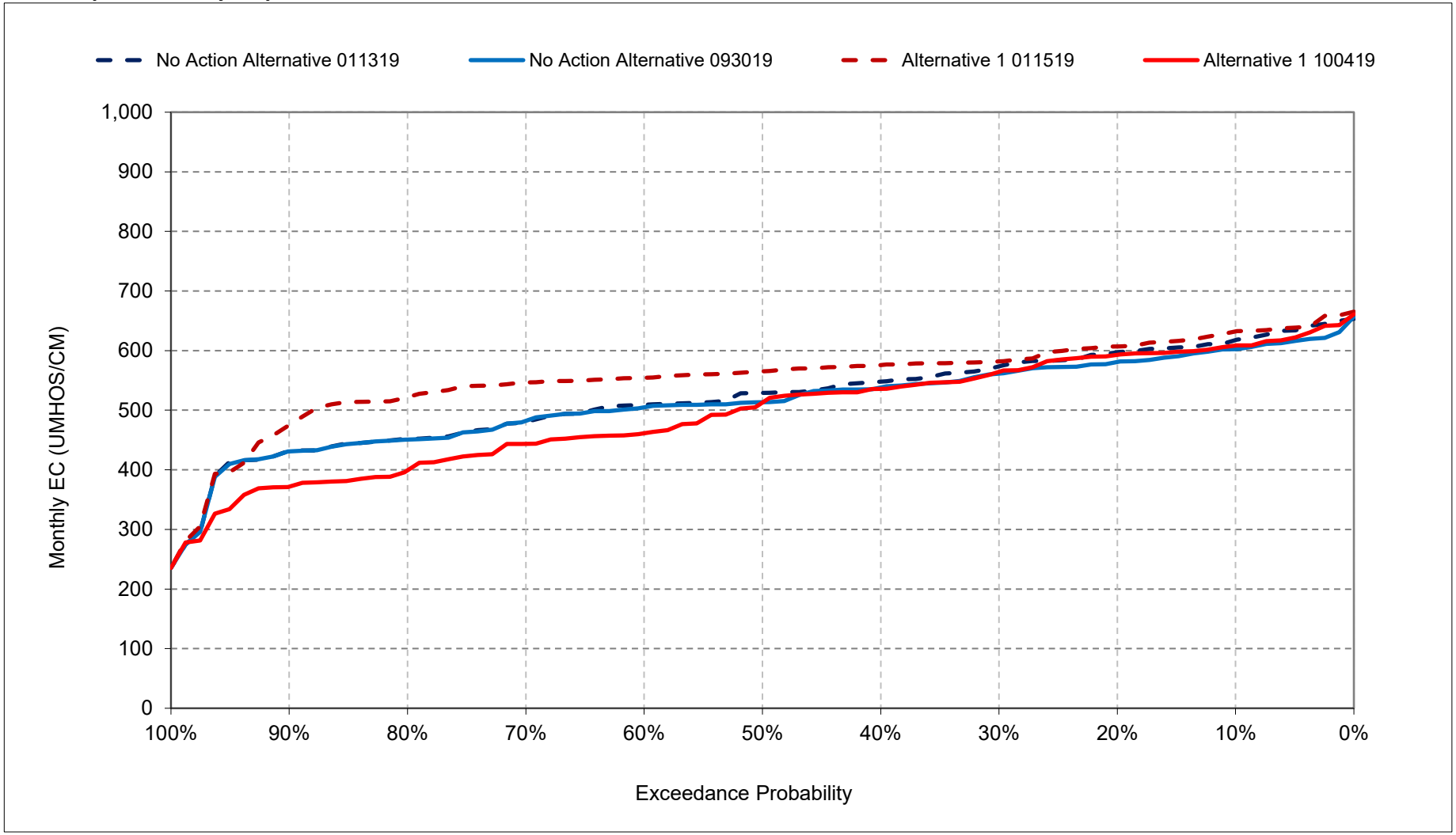

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-14. Jones Pumping Plant South Delta Exports Salinity, August EC**



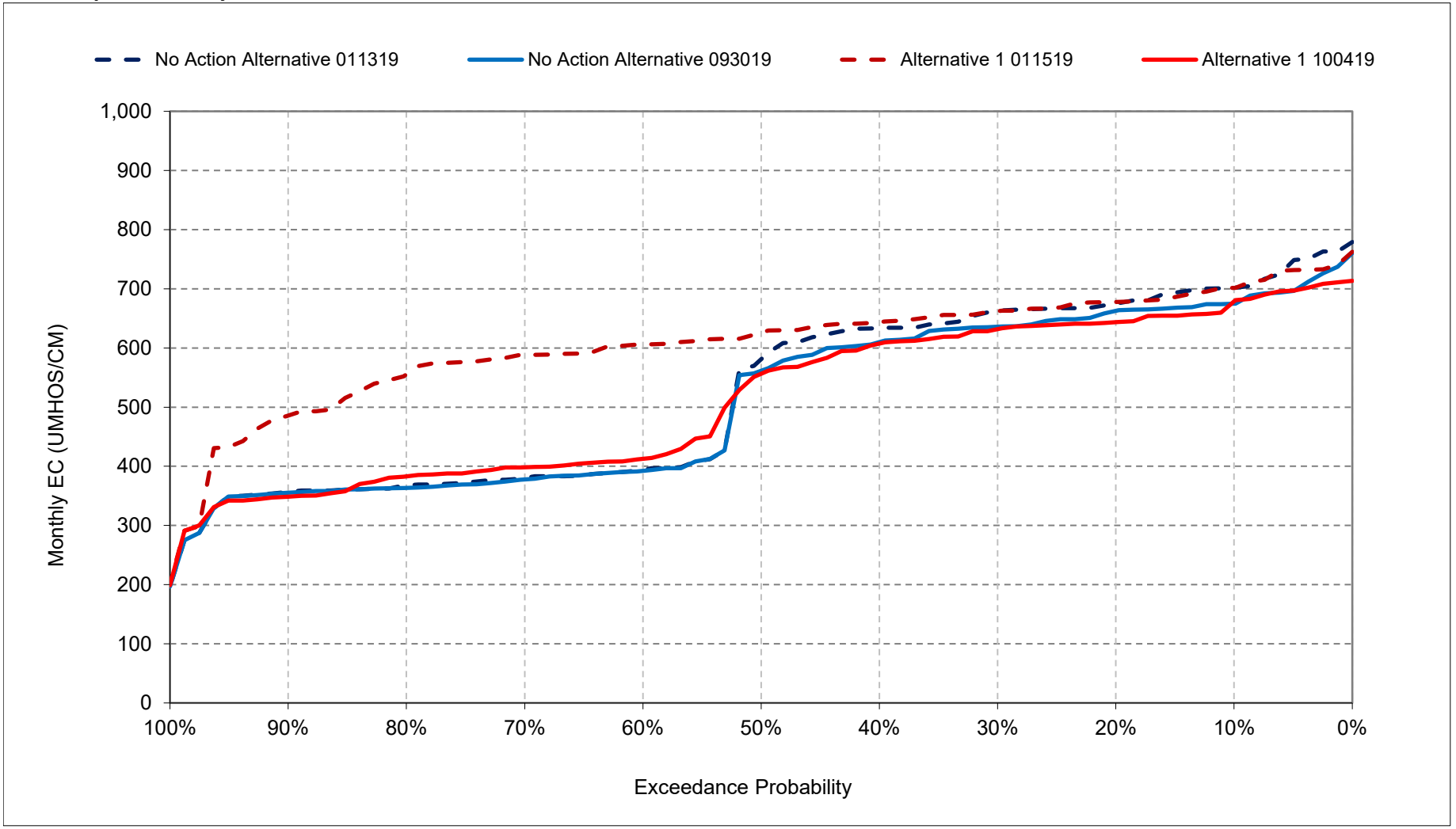

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-15. Jones Pumping Plant South Delta Exports Salinity, September EC**



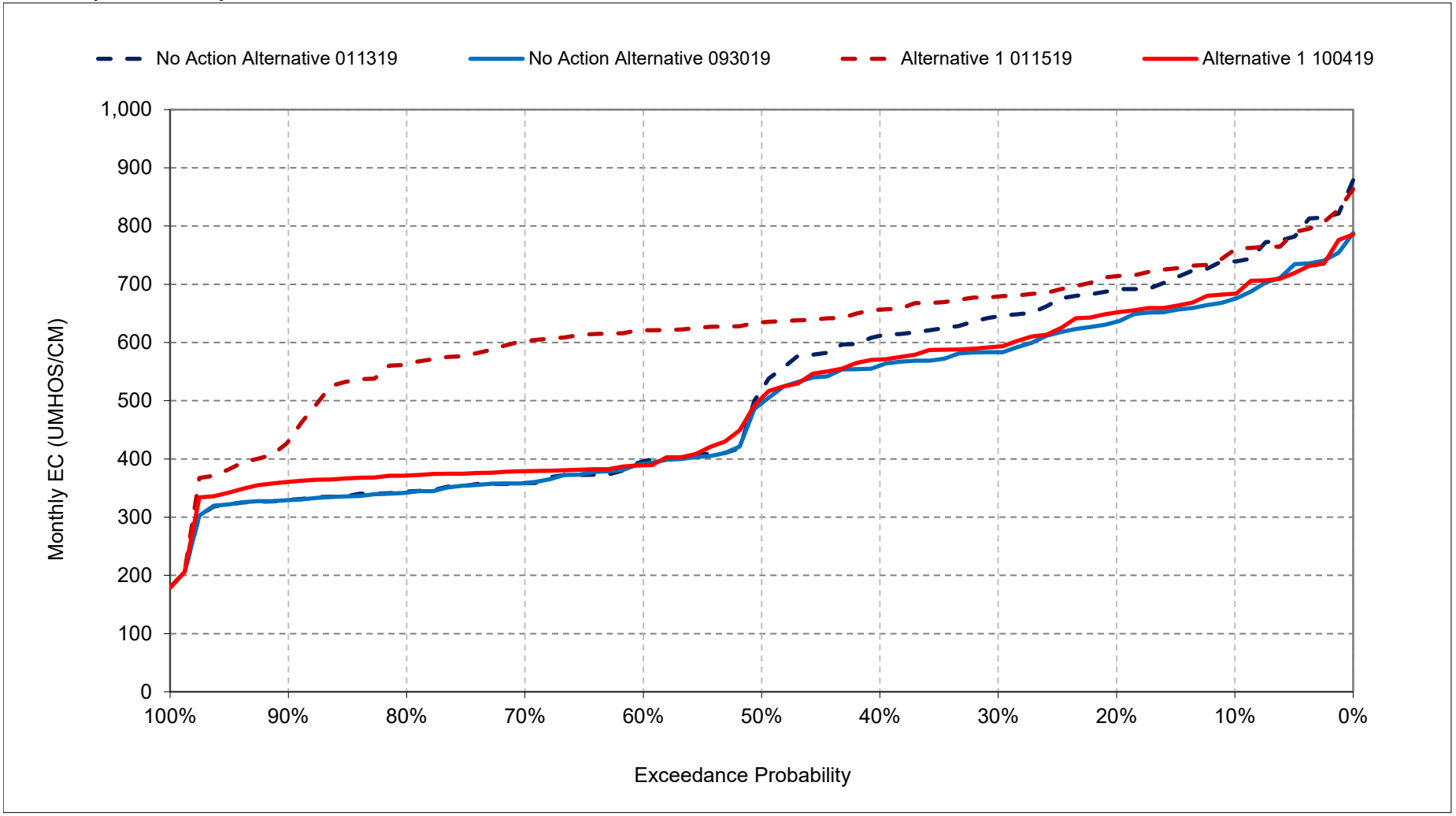

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-16. Jones Pumping Plant South Delta Exports Salinity, October EC**



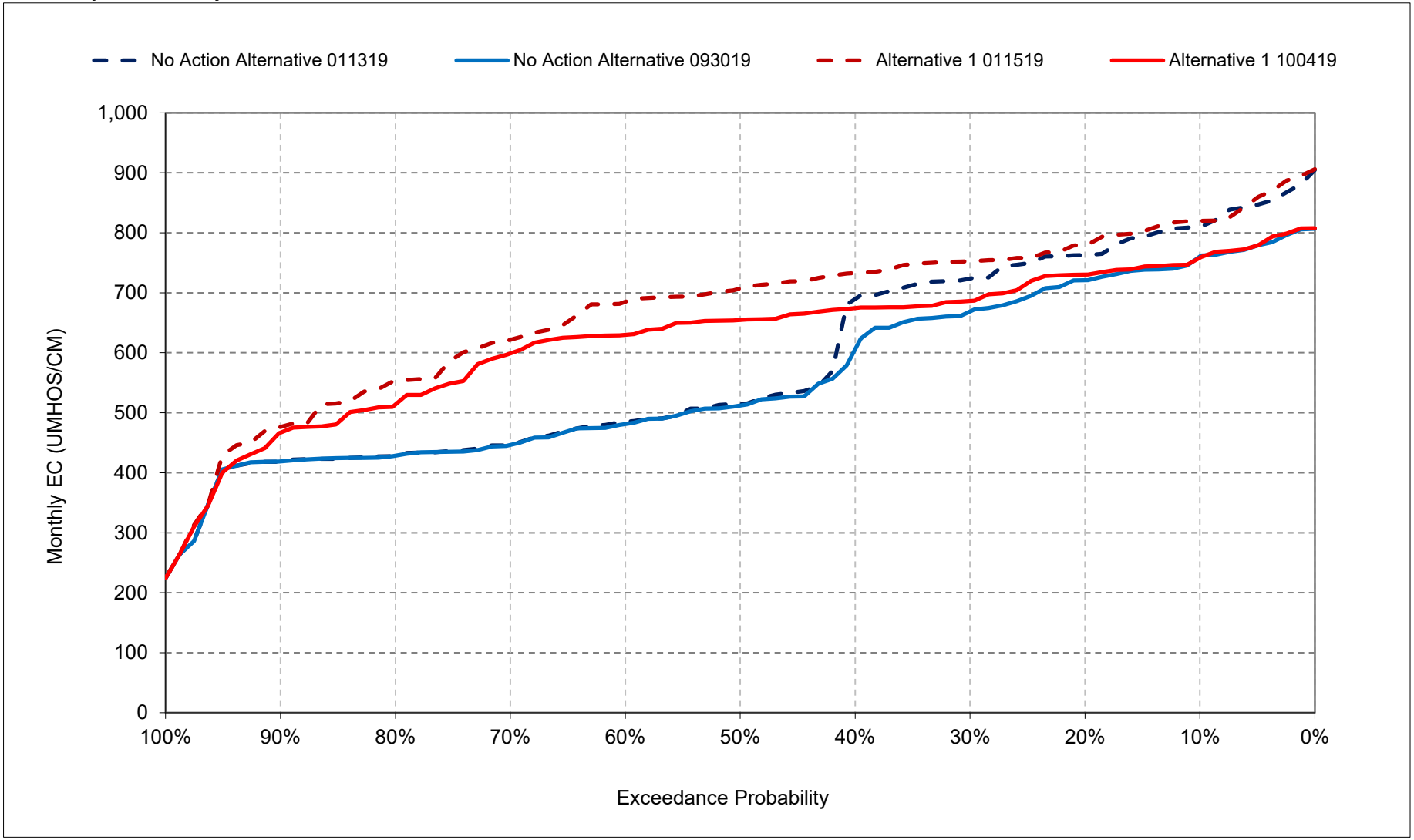

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-17. Jones Pumping Plant South Delta Exports Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 15-18. Jones Pumping Plant South Delta Exports Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-1. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 727 | 768 | 860 | 816 | 682 | 594 | 559 | 530 | 487 | 425 | 528 | 598 |
| 20% | 698 | 706 | 771 | 762 | 600 | 531 | 491 | 471 | 446 | 376 | 412 | 577 |
| 30% | 675 | 653 | 714 | 633 | 556 | 487 | 445 | 449 | 397 | 330 | 391 | 555 |
| 40% | 644 | 624 | 658 | 585 | 534 | 448 | 412 | 421 | 378 | 322 | 366 | 529 |
| 50% | 608 | 521 | 422 | 533 | 495 | 410 | 391 | 377 | 362 | 313 | 360 | 510 |
| 60% | 374 | 336 | 370 | 500 | 477 | 393 | 347 | 351 | 352 | 299 | 332 | 497 |
| 70% | 358 | 322 | 326 | 447 | 431 | 357 | 312 | 330 | 342 | 293 | 312 | 471 |
| 80% | 339 | 306 | 303 | 415 | 370 | 331 | 292 | 307 | 322 | 279 | 297 | 443 |
| 90% | 324 | 299 | 294 | 383 | 343 | 299 | 248 | 201 | 282 | 268 | 278 | 414 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 521 | 507 | 526 | 567 | 504 | 434 | 394 | 384 | 377 | 332 | 370 | 506 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 346 | 300 | 300 | 439 | 390 | 328 | 274 | 270 | 308 | 292 | 303 | 462 |
| Above Normal (16%) | 332 | 343 | 391 | 539 | 496 | 403 | 358 | 356 | 354 | 285 | 303 | 430 |
| Below Normal (13%) | 672 | 612 | 642 | 564 | 517 | 450 | 419 | 422 | 399 | 312 | 364 | 553 |
| Dry (24%) | 675 | 645 | 646 | 657 | 562 | 475 | 448 | 435 | 393 | 339 | 434 | 543 |
| Critical (15%) | 714 | 805 | 858 | 725 | 653 | 611 | 577 | 540 | 505 | 474 | 489 | 576 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 741 | 799 | 859 | 863 | 676 | 517 | 468 | 421 | 391 | 398 | 519 | 615 |
| 20% | 721 | 761 | 814 | 818 | 611 | 477 | 425 | 393 | 335 | 349 | 401 | 589 |
| 30% | 696 | 725 | 762 | 793 | 541 | 440 | 402 | 377 | 322 | 322 | 388 | 573 |
| 40% | 683 | 695 | 726 | 700 | 518 | 412 | 388 | 354 | 316 | 315 | 367 | 565 |
| 50% | 669 | 662 | 692 | 594 | 486 | 397 | 364 | 321 | 312 | 309 | 353 | 549 |
| 60% | 657 | 650 | 656 | 535 | 437 | 379 | 345 | 312 | 304 | 295 | 333 | 541 |
| 70% | 640 | 640 | 600 | 487 | 426 | 362 | 309 | 302 | 297 | 286 | 309 | 525 |
| 80% | 618 | 593 | 481 | 431 | 371 | 320 | 285 | 292 | 289 | 271 | 298 | 506 |
| 90% | 517 | 400 | 376 | 385 | 323 | 301 | 253 | 222 | 276 | 258 | 285 | 461 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 646 | 655 | 659 | 620 | 492 | 402 | 361 | 335 | 321 | 321 | 368 | 540 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 545 | 587 | 567 | 462 | 382 | 325 | 274 | 256 | 285 | 289 | 302 | 484 |
| Above Normal (16%) | 663 | 627 | 657 | 624 | 493 | 394 | 345 | 315 | 305 | 275 | 308 | 559 |
| Below Normal (13%) | 685 | 630 | 653 | 647 | 516 | 428 | 396 | 357 | 314 | 305 | 381 | 584 |
| Dry (24%) | 698 | 681 | 655 | 738 | 551 | 424 | 394 | 365 | 317 | 327 | 415 | 551 |
| Critical (15%) | 723 | 816 | 871 | 737 | 609 | 515 | 481 | 456 | 432 | 448 | 488 | 579 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **14** | **31** | -1 | **47** | -6 | -77 | -92 | -109 | -96 | -27 | -8 | **17** |
| 20% | **24** | **55** | **43** | **56** | **11** | -54 | -67 | -78 | -111 | -27 | -10 | **12** |
| 30% | **21** | **72** | **49** | **160** | -15 | -48 | -43 | -72 | -75 | -8 | -3 | **18** |
| 40% | **39** | **70** | **68** | **115** | -16 | -37 | -24 | -67 | -61 | -7 | **1** | **37** |
| 50% | **61** | **141** | **270** | **62** | -9 | -14 | -27 | -55 | -50 | -4 | -7 | **39** |
| 60% | **283** | **314** | **286** | **35** | -41 | -14 | -2 | -39 | -48 | -4 | **1** | **43** |
| 70% | **282** | **318** | **274** | **40** | -5 | **5** | -3 | -29 | -46 | -7 | -4 | **54** |
| 80% | **279** | **287** | **178** | **16** | **1** | -11 | -7 | -14 | -33 | -8 | **1** | **64** |
| 90% | **193** | **101** | **82** | **1** | -20 | **2** | **5** | **21** | -6 | -10 | **7** | **48** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **124** | **149** | **132** | **53** | -12 | -32 | -32 | -49 | -56 | -10 | -2 | **34** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **199** | **287** | **267** | **24** | -7 | -2 | 0 | -14 | -23 | -3 | -1 | **22** |
| Above Normal (16%) | **331** | **284** | **266** | **84** | -4 | -8 | -13 | -41 | -49 | -11 | **4** | **129** |
| Below Normal (13%) | **13** | **19** | **11** | **83** | -1 | -22 | -23 | -65 | -85 | -7 | **17** | **31** |
| Dry (24%) | **23** | **36** | **8** | **81** | -11 | -52 | -54 | -70 | -76 | -12 | -19 | **8** |
| Critical (15%) | **9** | **11** | **13** | **11** | -44 | -97 | -96 | -84 | -74 | -25 | -1 | **3** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-2. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 703 | 700 | 742 | 695 | 623 | 576 | 554 | 516 | 459 | 412 | 500 | 578 |
| 20% | 679 | 639 | 696 | 669 | 576 | 526 | 483 | 471 | 432 | 357 | 410 | 562 |
| 30% | 650 | 592 | 616 | 588 | 549 | 480 | 443 | 449 | 396 | 329 | 372 | 538 |
| 40% | 617 | 566 | 537 | 546 | 514 | 446 | 413 | 423 | 378 | 322 | 362 | 526 |
| 50% | 592 | 483 | 413 | 522 | 485 | 416 | 391 | 377 | 362 | 312 | 353 | 506 |
| 60% | 374 | 337 | 366 | 488 | 469 | 392 | 347 | 351 | 351 | 298 | 332 | 482 |
| 70% | 355 | 322 | 325 | 440 | 430 | 356 | 312 | 330 | 342 | 292 | 313 | 468 |
| 80% | 339 | 305 | 303 | 414 | 370 | 330 | 292 | 307 | 322 | 278 | 297 | 442 |
| 90% | 326 | 298 | 293 | 383 | 340 | 298 | 248 | 201 | 282 | 268 | 278 | 415 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 509 | 473 | 484 | 526 | 484 | 425 | 390 | 382 | 371 | 327 | 365 | 497 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 345 | 299 | 299 | 431 | 389 | 328 | 274 | 270 | 308 | 291 | 303 | 462 |
| Above Normal (16%) | 332 | 341 | 387 | 523 | 495 | 403 | 358 | 356 | 354 | 285 | 303 | 430 |
| Below Normal (13%) | 654 | 550 | 552 | 533 | 507 | 449 | 418 | 422 | 393 | 311 | 360 | 543 |
| Dry (24%) | 651 | 592 | 587 | 581 | 528 | 468 | 446 | 434 | 387 | 334 | 416 | 524 |
| Critical (15%) | 685 | 728 | 751 | 637 | 587 | 565 | 556 | 528 | 480 | 455 | 484 | 561 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 697 | 701 | 757 | 895 | 623 | 527 | 478 | 429 | 396 | 402 | 491 | 593 |
| 20% | 683 | 682 | 717 | 746 | 584 | 481 | 449 | 400 | 336 | 350 | 413 | 571 |
| 30% | 666 | 611 | 654 | 691 | 554 | 455 | 430 | 388 | 320 | 324 | 389 | 538 |
| 40% | 631 | 586 | 623 | 658 | 517 | 429 | 415 | 356 | 315 | 314 | 368 | 499 |
| 50% | 606 | 485 | 594 | 545 | 483 | 414 | 389 | 322 | 308 | 309 | 338 | 468 |
| 60% | 359 | 328 | 574 | 523 | 436 | 399 | 344 | 310 | 303 | 299 | 303 | 406 |
| 70% | 343 | 315 | 543 | 476 | 417 | 372 | 312 | 304 | 297 | 287 | 292 | 382 |
| 80% | 326 | 310 | 448 | 430 | 370 | 332 | 290 | 296 | 287 | 272 | 284 | 359 |
| 90% | 303 | 304 | 336 | 392 | 323 | 305 | 251 | 221 | 275 | 259 | 280 | 332 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 505 | 483 | 578 | 602 | 479 | 412 | 373 | 337 | 321 | 322 | 359 | 460 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 318 | 308 | 491 | 464 | 384 | 337 | 279 | 259 | 285 | 291 | 288 | 353 |
| Above Normal (16%) | 341 | 327 | 572 | 600 | 493 | 415 | 357 | 312 | 300 | 279 | 288 | 382 |
| Below Normal (13%) | 653 | 572 | 566 | 659 | 517 | 449 | 415 | 360 | 313 | 299 | 375 | 564 |
| Dry (24%) | 663 | 615 | 593 | 698 | 521 | 439 | 426 | 375 | 318 | 327 | 413 | 532 |
| Critical (15%) | 689 | 731 | 756 | 688 | 566 | 494 | 471 | 452 | 433 | 451 | 486 | 559 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -6 | **2** | **15** | **200** | 0 | -49 | -75 | -87 | -64 | -10 | -10 | **15** |
| 20% | **4** | **44** | **20** | **77** | **7** | -44 | -34 | -71 | -96 | -7 | **3** | **9** |
| 30% | **17** | **18** | **37** | **103** | **5** | -25 | -12 | -61 | -76 | -5 | **17** | 0 |
| 40% | **15** | **20** | **87** | **112** | **3** | -16 | **2** | -67 | -63 | -8 | **6** | -27 |
| 50% | **14** | **2** | **181** | **23** | -3 | -2 | -1 | -54 | -54 | -4 | -15 | -38 |
| 60% | -15 | -8 | **208** | **35** | -34 | **6** | -3 | -41 | -49 | **1** | -29 | -76 |
| 70% | -12 | -7 | **218** | **36** | -13 | **15** | **0** | -26 | -46 | -6 | -20 | -86 |
| 80% | -13 | **4** | **146** | **16** | 0 | **2** | -2 | -11 | -35 | -6 | -13 | -82 |
| 90% | -23 | **6** | **42** | **8** | -17 | **6** | **3** | **20** | -7 | -9 | **2** | -82 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | **10** | **94** | **75** | -5 | -12 | -17 | -44 | -51 | -5 | -5 | -38 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -27 | **9** | **192** | **33** | -4 | **9** | **5** | -11 | -23 | -1 | -15 | -109 |
| Above Normal (16%) | **10** | -14 | **185** | **77** | -2 | **13** | -1 | -45 | -55 | -7 | -15 | -48 |
| Below Normal (13%) | -1 | **23** | **14** | **127** | **10** | **0** | -4 | -62 | -80 | -12 | **16** | **21** |
| Dry (24%) | **12** | **24** | **6** | **117** | -7 | -28 | -21 | -59 | -70 | -6 | -3 | **8** |
| Critical (15%) | **4** | **3** | **4** | **51** | -21 | -71 | -85 | -76 | -47 | -4 | **3** | -2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-3. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 727 | 768 | 860 | 816 | 682 | 594 | 559 | 530 | 487 | 425 | 528 | 598 |
| 20% | 698 | 706 | 771 | 762 | 600 | 531 | 491 | 471 | 446 | 376 | 412 | 577 |
| 30% | 675 | 653 | 714 | 633 | 556 | 487 | 445 | 449 | 397 | 330 | 391 | 555 |
| 40% | 644 | 624 | 658 | 585 | 534 | 448 | 412 | 421 | 378 | 322 | 366 | 529 |
| 50% | 608 | 521 | 422 | 533 | 495 | 410 | 391 | 377 | 362 | 313 | 360 | 510 |
| 60% | 374 | 336 | 370 | 500 | 477 | 393 | 347 | 351 | 352 | 299 | 332 | 497 |
| 70% | 358 | 322 | 326 | 447 | 431 | 357 | 312 | 330 | 342 | 293 | 312 | 471 |
| 80% | 339 | 306 | 303 | 415 | 370 | 331 | 292 | 307 | 322 | 279 | 297 | 443 |
| 90% | 324 | 299 | 294 | 383 | 343 | 299 | 248 | 201 | 282 | 268 | 278 | 414 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 521 | 507 | 526 | 567 | 504 | 434 | 394 | 384 | 377 | 332 | 370 | 506 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 346 | 300 | 300 | 439 | 390 | 328 | 274 | 270 | 308 | 292 | 303 | 462 |
| Above Normal (16%) | 332 | 343 | 391 | 539 | 496 | 403 | 358 | 356 | 354 | 285 | 303 | 430 |
| Below Normal (13%) | 672 | 612 | 642 | 564 | 517 | 450 | 419 | 422 | 399 | 312 | 364 | 553 |
| Dry (24%) | 675 | 645 | 646 | 657 | 562 | 475 | 448 | 435 | 393 | 339 | 434 | 543 |
| Critical (15%) | 714 | 805 | 858 | 725 | 653 | 611 | 577 | 540 | 505 | 474 | 489 | 576 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 703 | 700 | 742 | 695 | 623 | 576 | 554 | 516 | 459 | 412 | 500 | 578 |
| 20% | 679 | 639 | 696 | 669 | 576 | 526 | 483 | 471 | 432 | 357 | 410 | 562 |
| 30% | 650 | 592 | 616 | 588 | 549 | 480 | 443 | 449 | 396 | 329 | 372 | 538 |
| 40% | 617 | 566 | 537 | 546 | 514 | 446 | 413 | 423 | 378 | 322 | 362 | 526 |
| 50% | 592 | 483 | 413 | 522 | 485 | 416 | 391 | 377 | 362 | 312 | 353 | 506 |
| 60% | 374 | 337 | 366 | 488 | 469 | 392 | 347 | 351 | 351 | 298 | 332 | 482 |
| 70% | 355 | 322 | 325 | 440 | 430 | 356 | 312 | 330 | 342 | 292 | 313 | 468 |
| 80% | 339 | 305 | 303 | 414 | 370 | 330 | 292 | 307 | 322 | 278 | 297 | 442 |
| 90% | 326 | 298 | 293 | 383 | 340 | 298 | 248 | 201 | 282 | 268 | 278 | 415 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 509 | 473 | 484 | 526 | 484 | 425 | 390 | 382 | 371 | 327 | 365 | 497 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 345 | 299 | 299 | 431 | 389 | 328 | 274 | 270 | 308 | 291 | 303 | 462 |
| Above Normal (16%) | 332 | 341 | 387 | 523 | 495 | 403 | 358 | 356 | 354 | 285 | 303 | 430 |
| Below Normal (13%) | 654 | 550 | 552 | 533 | 507 | 449 | 418 | 422 | 393 | 311 | 360 | 543 |
| Dry (24%) | 651 | 592 | 587 | 581 | 528 | 468 | 446 | 434 | 387 | 334 | 416 | 524 |
| Critical (15%) | 685 | 728 | 751 | 637 | 587 | 565 | 556 | 528 | 480 | 455 | 484 | 561 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -24 | -68 | -118 | -121 | -59 | -18 | -6 | -14 | -28 | -13 | -28 | -21 |
| 20% | -18 | -67 | -75 | -93 | -24 | -5 | -8 | 0 | -14 | -20 | -2 | -15 |
| 30% | -25 | -61 | -97 | -45 | -7 | -7 | -3 | 0 | -1 | -1 | -19 | -17 |
| 40% | -28 | -58 | -121 | -39 | -19 | -3 | 1 | 2 | 0 | 0 | -4 | -3 |
| 50% | -15 | -38 | -9 | -10 | -10 | 6 | 0 | 0 | 0 | -1 | -7 | -4 |
| 60% | 0 | 1 | -4 | -12 | -8 | 0 | 0 | 0 | 0 | 0 | 0 | -16 |
| 70% | -3 | 0 | -1 | -7 | -1 | 0 | -1 | 0 | 0 | -1 | 0 | -3 |
| 80% | 0 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 |
| 90% | 2 | -1 | -1 | 0 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -13 | -33 | -43 | -41 | -20 | -9 | -4 | -2 | -6 | -4 | -6 | -8 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 0 | -7 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -2 | -4 | -16 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -18 | -62 | -90 | -32 | -10 | -2 | 0 | -1 | -6 | -1 | -4 | -10 |
| Dry (24%) | -24 | -53 | -59 | -76 | -34 | -8 | -2 | -1 | -5 | -5 | -18 | -19 |
| Critical (15%) | -29 | -77 | -107 | -88 | -67 | -46 | -21 | -13 | -25 | -19 | -5 | -15 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 16-4. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 741 | 799 | 859 | 863 | 676 | 517 | 468 | 421 | 391 | 398 | 519 | 615 |
| 20% | 721 | 761 | 814 | 818 | 611 | 477 | 425 | 393 | 335 | 349 | 401 | 589 |
| 30% | 696 | 725 | 762 | 793 | 541 | 440 | 402 | 377 | 322 | 322 | 388 | 573 |
| 40% | 683 | 695 | 726 | 700 | 518 | 412 | 388 | 354 | 316 | 315 | 367 | 565 |
| 50% | 669 | 662 | 692 | 594 | 486 | 397 | 364 | 321 | 312 | 309 | 353 | 549 |
| 60% | 657 | 650 | 656 | 535 | 437 | 379 | 345 | 312 | 304 | 295 | 333 | 541 |
| 70% | 640 | 640 | 600 | 487 | 426 | 362 | 309 | 302 | 297 | 286 | 309 | 525 |
| 80% | 618 | 593 | 481 | 431 | 371 | 320 | 285 | 292 | 289 | 271 | 298 | 506 |
| 90% | 517 | 400 | 376 | 385 | 323 | 301 | 253 | 222 | 276 | 258 | 285 | 461 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 646 | 655 | 659 | 620 | 492 | 402 | 361 | 335 | 321 | 321 | 368 | 540 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 545 | 587 | 567 | 462 | 382 | 325 | 274 | 256 | 285 | 289 | 302 | 484 |
| Above Normal (16%) | 663 | 627 | 657 | 624 | 493 | 394 | 345 | 315 | 305 | 275 | 308 | 559 |
| Below Normal (13%) | 685 | 630 | 653 | 647 | 516 | 428 | 396 | 357 | 314 | 305 | 381 | 584 |
| Dry (24%) | 698 | 681 | 655 | 738 | 551 | 424 | 394 | 365 | 317 | 327 | 415 | 551 |
| Critical (15%) | 723 | 816 | 871 | 737 | 609 | 515 | 481 | 456 | 432 | 448 | 488 | 579 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 697 | 701 | 757 | 895 | 623 | 527 | 478 | 429 | 396 | 402 | 491 | 593 |
| 20% | 683 | 682 | 717 | 746 | 584 | 481 | 449 | 400 | 336 | 350 | 413 | 571 |
| 30% | 666 | 611 | 654 | 691 | 554 | 455 | 430 | 388 | 320 | 324 | 389 | 538 |
| 40% | 631 | 586 | 623 | 658 | 517 | 429 | 415 | 356 | 315 | 314 | 368 | 499 |
| 50% | 606 | 485 | 594 | 545 | 483 | 414 | 389 | 322 | 308 | 309 | 338 | 468 |
| 60% | 359 | 328 | 574 | 523 | 436 | 399 | 344 | 310 | 303 | 299 | 303 | 406 |
| 70% | 343 | 315 | 543 | 476 | 417 | 372 | 312 | 304 | 297 | 287 | 292 | 382 |
| 80% | 326 | 310 | 448 | 430 | 370 | 332 | 290 | 296 | 287 | 272 | 284 | 359 |
| 90% | 303 | 304 | 336 | 392 | 323 | 305 | 251 | 221 | 275 | 259 | 280 | 332 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 505 | 483 | 578 | 602 | 479 | 412 | 373 | 337 | 321 | 322 | 359 | 460 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 318 | 308 | 491 | 464 | 384 | 337 | 279 | 259 | 285 | 291 | 288 | 353 |
| Above Normal (16%) | 341 | 327 | 572 | 600 | 493 | 415 | 357 | 312 | 300 | 279 | 288 | 382 |
| Below Normal (13%) | 653 | 572 | 566 | 659 | 517 | 449 | 415 | 360 | 313 | 299 | 375 | 564 |
| Dry (24%) | 663 | 615 | 593 | 698 | 521 | 439 | 426 | 375 | 318 | 327 | 413 | 532 |
| Critical (15%) | 689 | 731 | 756 | 688 | 566 | 494 | 471 | 452 | 433 | 451 | 486 | 559 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -44 | -98 | -102 | 32 | -53 | 10 | 11 | 8 | 4 | 4 | -29 | -22 |
| 20% | -38 | -78 | -97 | -72 | -27 | 4 | 24 | 8 | 1 | 1 | 11 | -18 |
| 30% | -30 | -114 | -109 | -103 | 13 | 15 | 28 | 11 | -2 | 2 | 1 | -35 |
| 40% | -51 | -109 | -103 | -42 | -1 | 18 | 27 | 2 | -2 | -1 | 1 | -67 |
| 50% | -62 | -178 | -98 | -49 | -3 | 17 | 25 | 1 | -4 | 0 | -15 | -80 |
| 60% | -298 | -321 | -82 | -12 | -1 | 20 | -1 | -1 | -1 | 4 | -30 | -135 |
| 70% | -297 | -325 | -57 | -11 | -8 | 10 | 3 | 3 | 0 | 0 | -16 | -143 |
| 80% | -292 | -283 | -32 | -2 | -1 | 12 | 5 | 4 | -2 | 2 | -14 | -147 |
| 90% | -214 | -96 | -40 | 7 | 0 | 4 | -2 | -1 | -1 | 1 | -5 | -129 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -141 | -172 | -81 | -19 | -13 | 11 | 12 | 3 | -1 | 1 | -9 | -80 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -227 | -278 | -76 | 1 | 2 | 11 | 4 | 3 | 0 | 2 | -14 | -131 |
| Above Normal (16%) | -322 | -300 | -85 | -24 | 0 | 21 | 12 | -4 | -6 | 4 | -19 | -177 |
| Below Normal (13%) | -32 | -58 | -87 | 13 | 1 | 21 | 18 | 3 | -1 | -6 | -5 | -20 |
| Dry (24%) | -35 | -66 | -62 | -40 | -30 | 16 | 31 | 9 | 1 | 0 | -2 | -19 |
| Critical (15%) | -34 | -85 | -115 | -48 | -43 | -20 | -10 | -4 | 1 | 2 | -1 | -20 |

a Based on the 82-year simulation period.

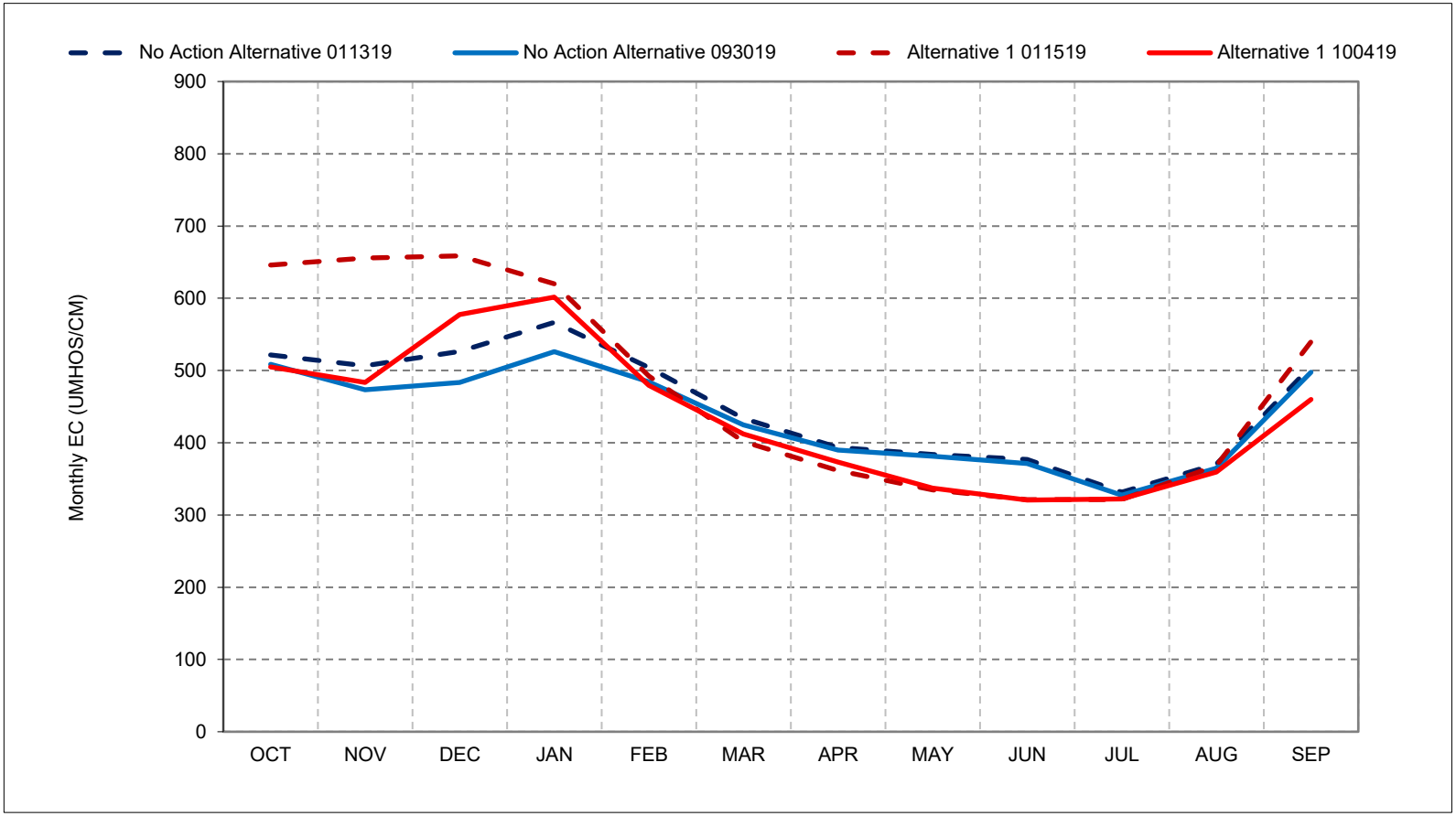
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-1. Banks Pumping Plant South Delta Exports Salinity, Long-Term Average EC

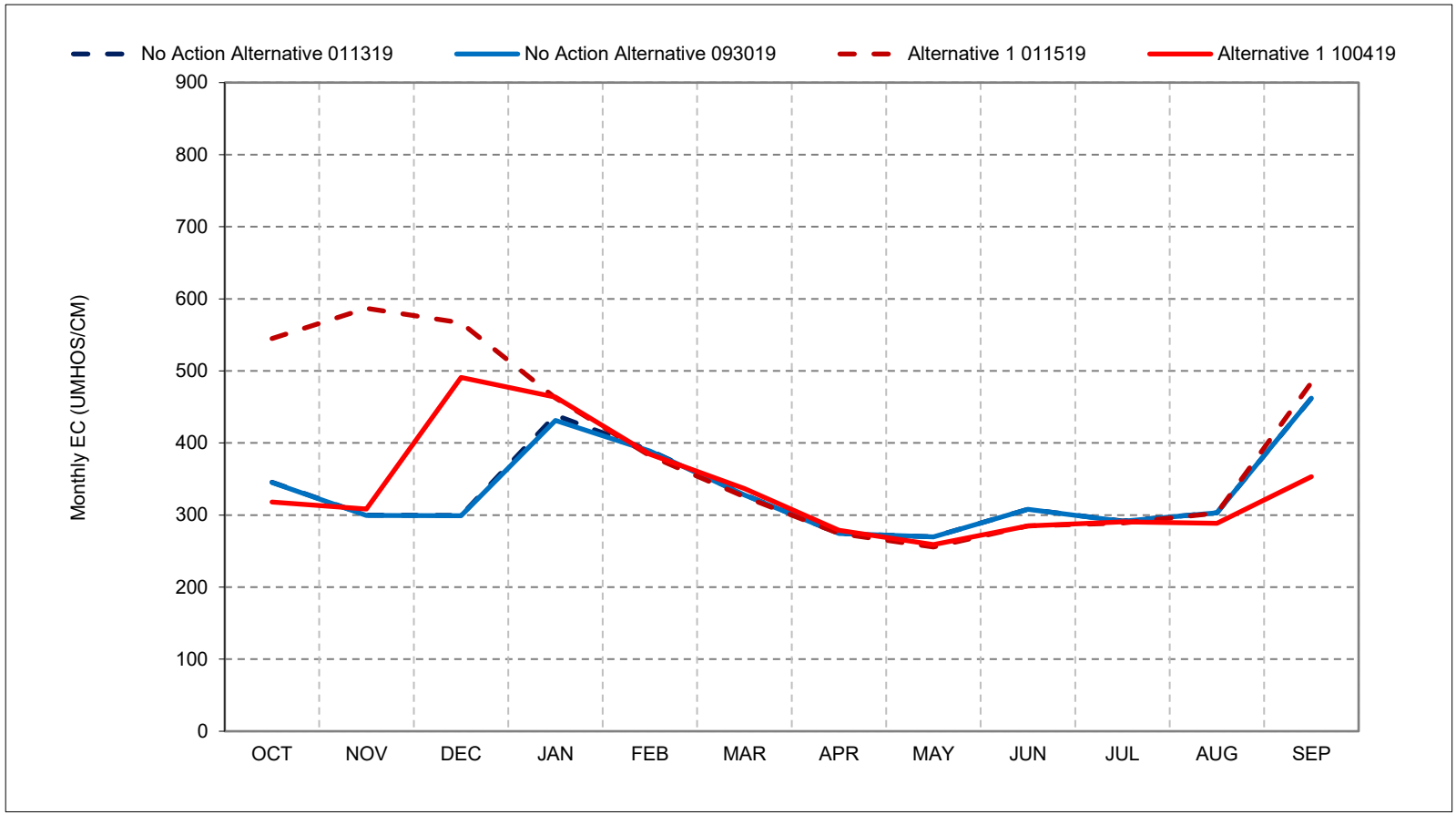



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-2. Banks Pumping Plant South Delta Exports Salinity, Wet Year Average EC

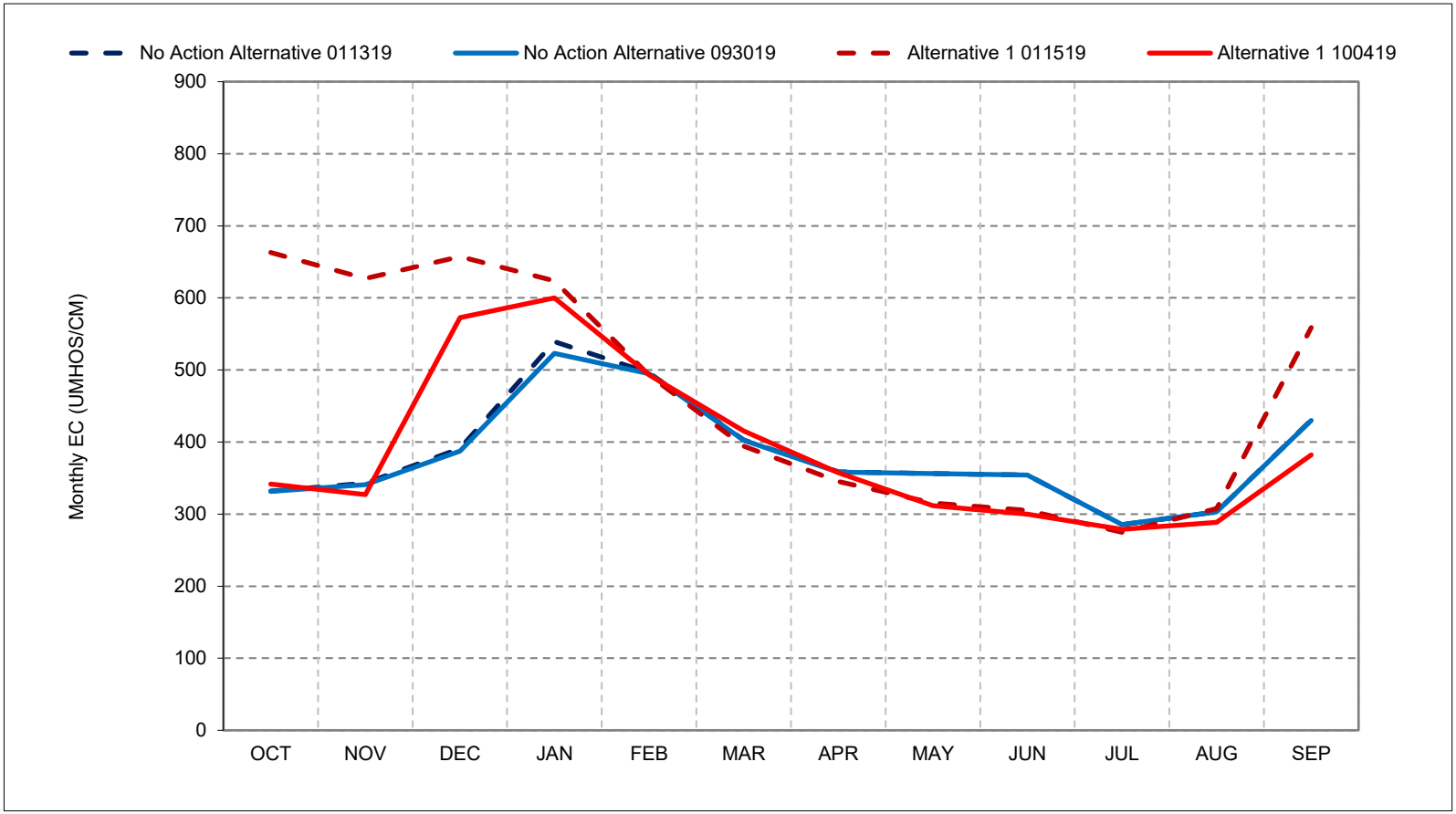



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-3. Banks Pumping Plant South Delta Exports Salinity, Above Normal Year Average EC

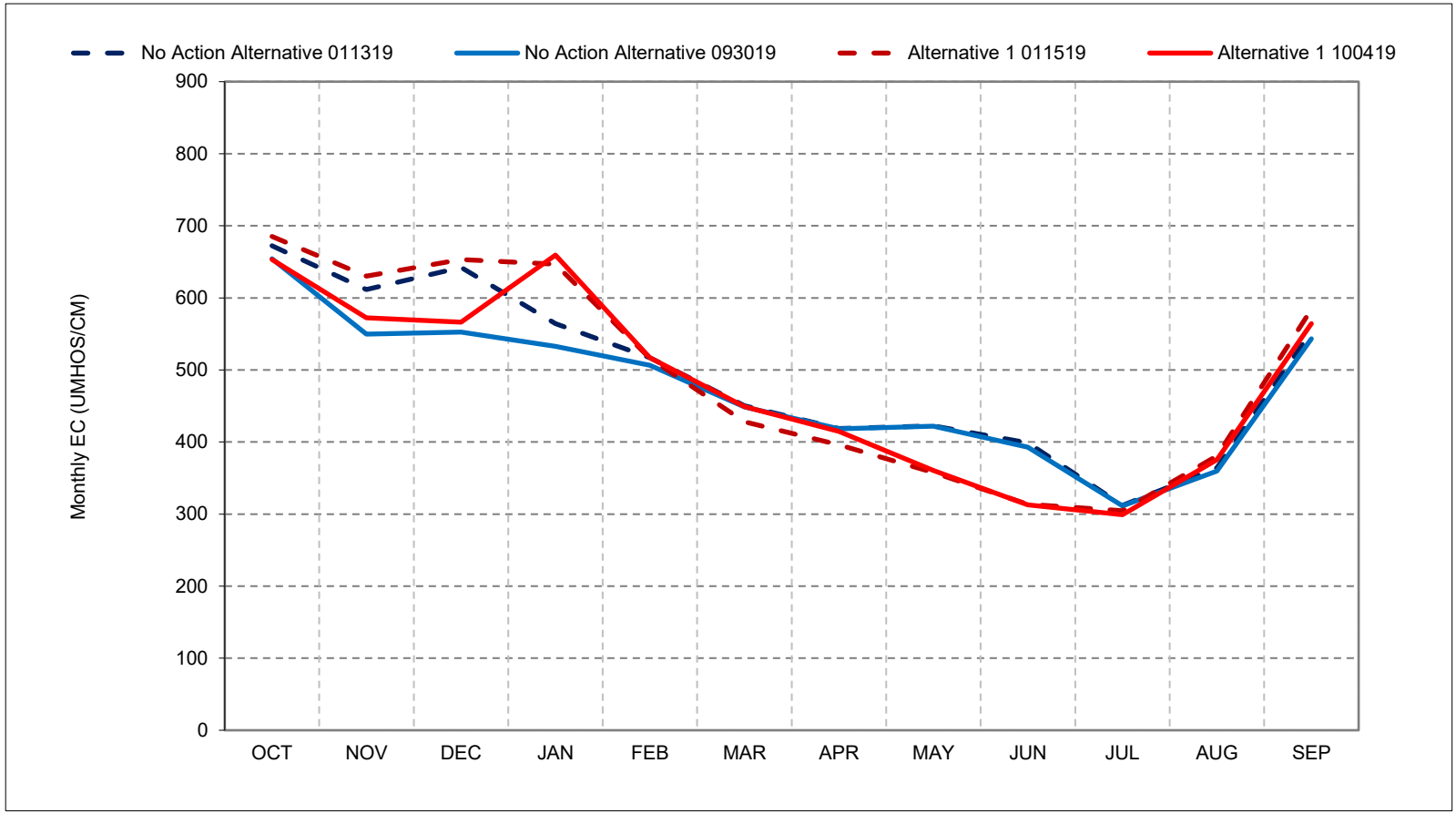



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-4. Banks Pumping Plant South Delta Exports Salinity, Below Normal Year Average EC

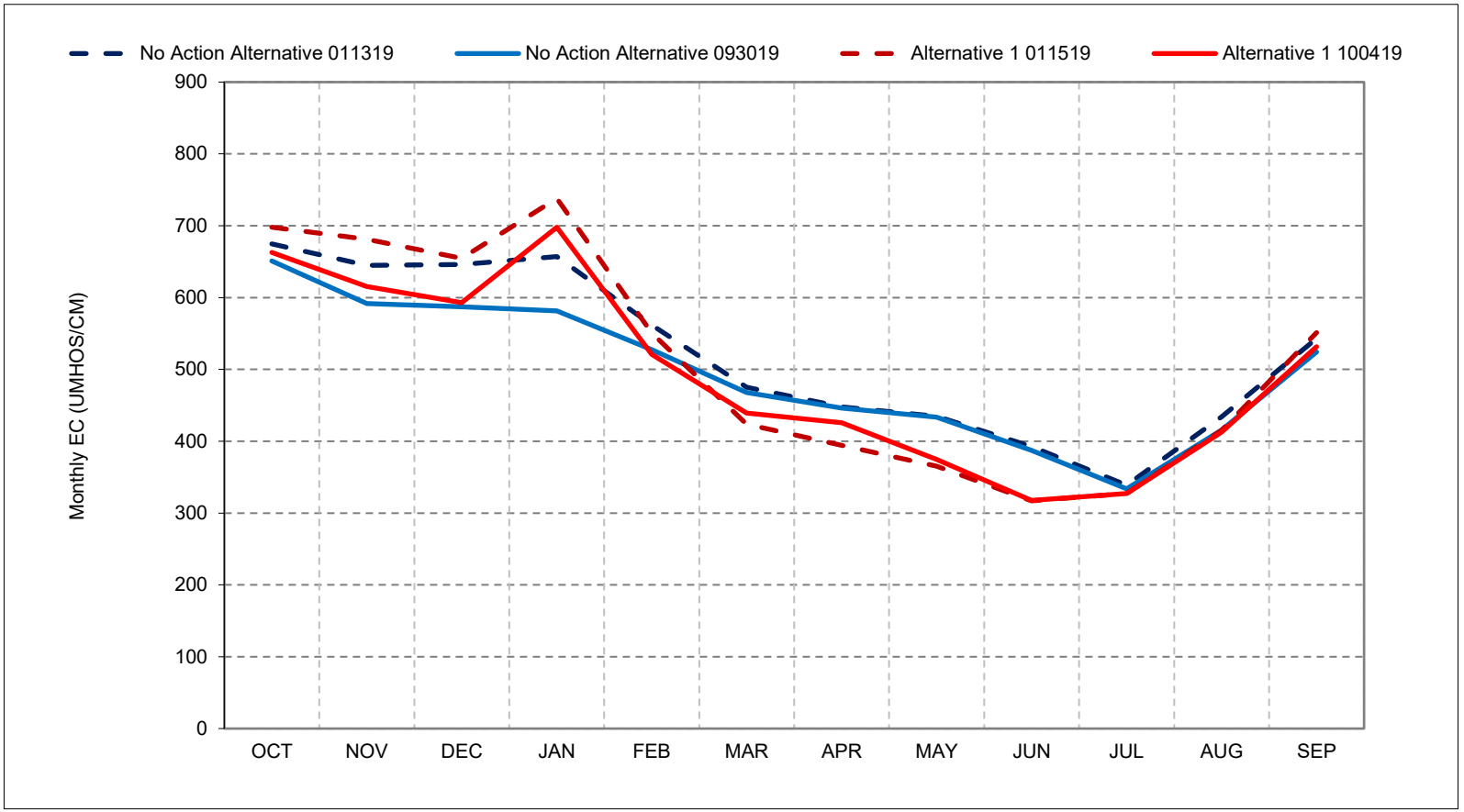



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-5. Banks Pumping Plant South Delta Exports Salinity, Dry Year Average EC

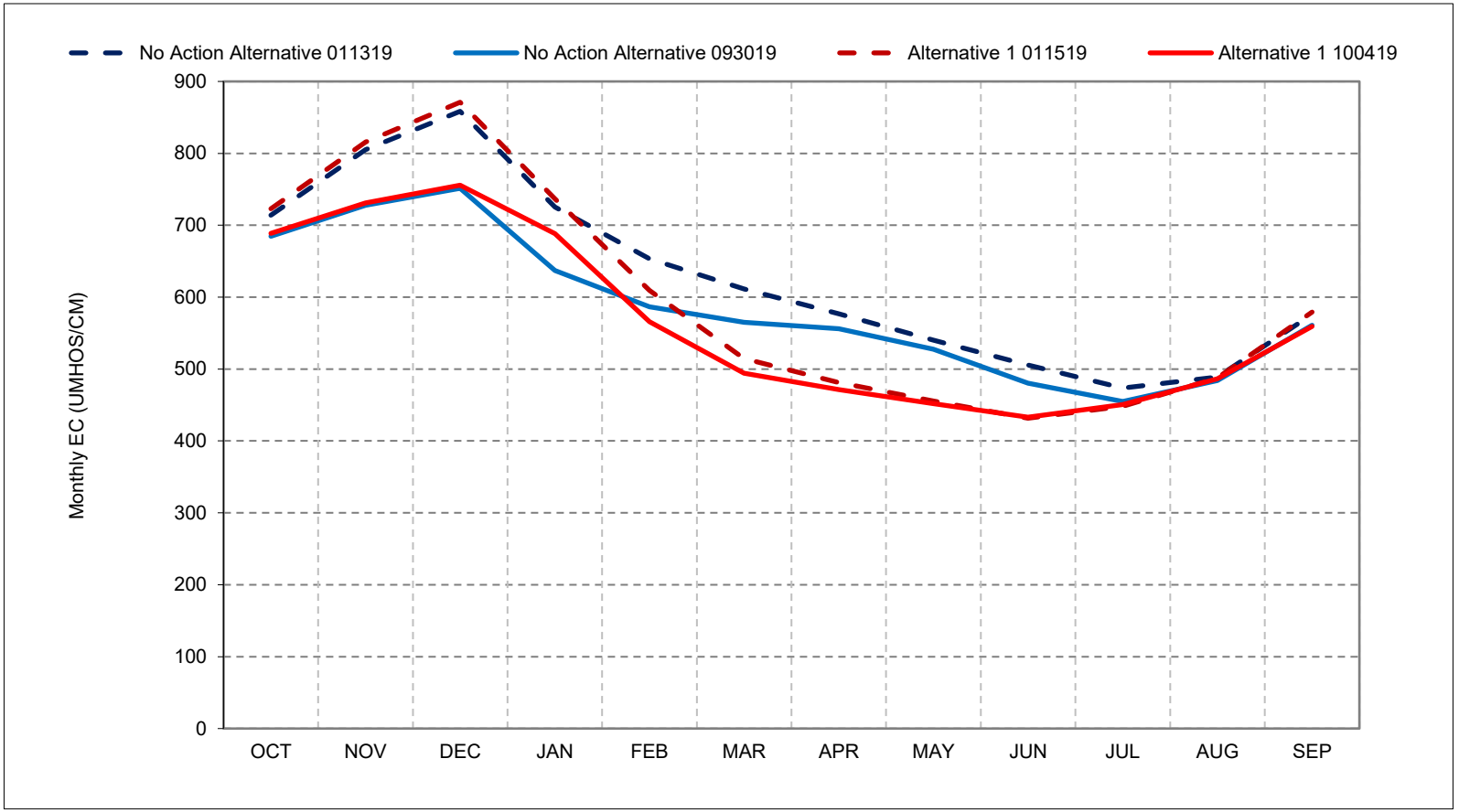



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 16-6. Banks Pumping Plant South Delta Exports Salinity, Critical Year Average EC

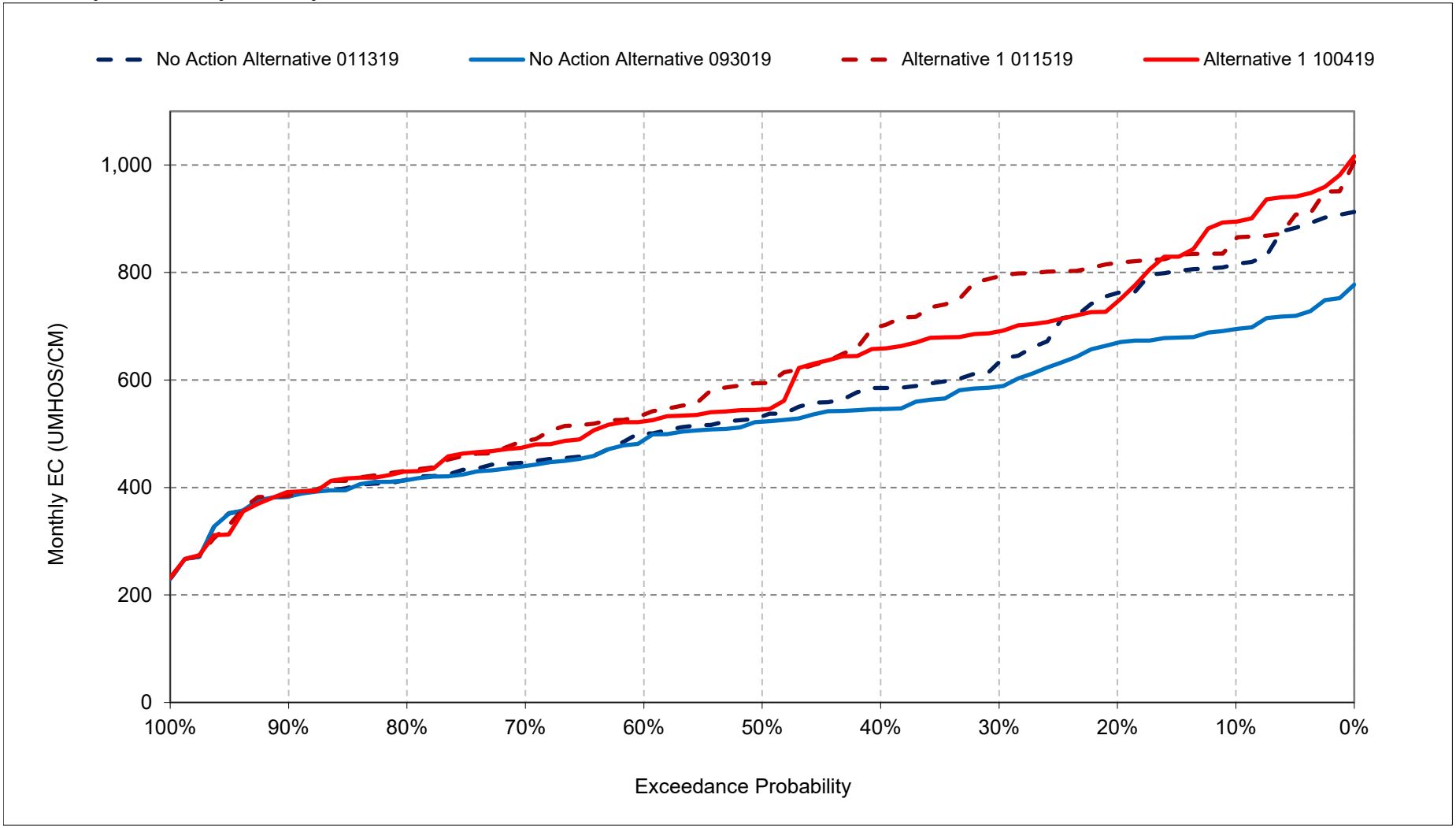



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

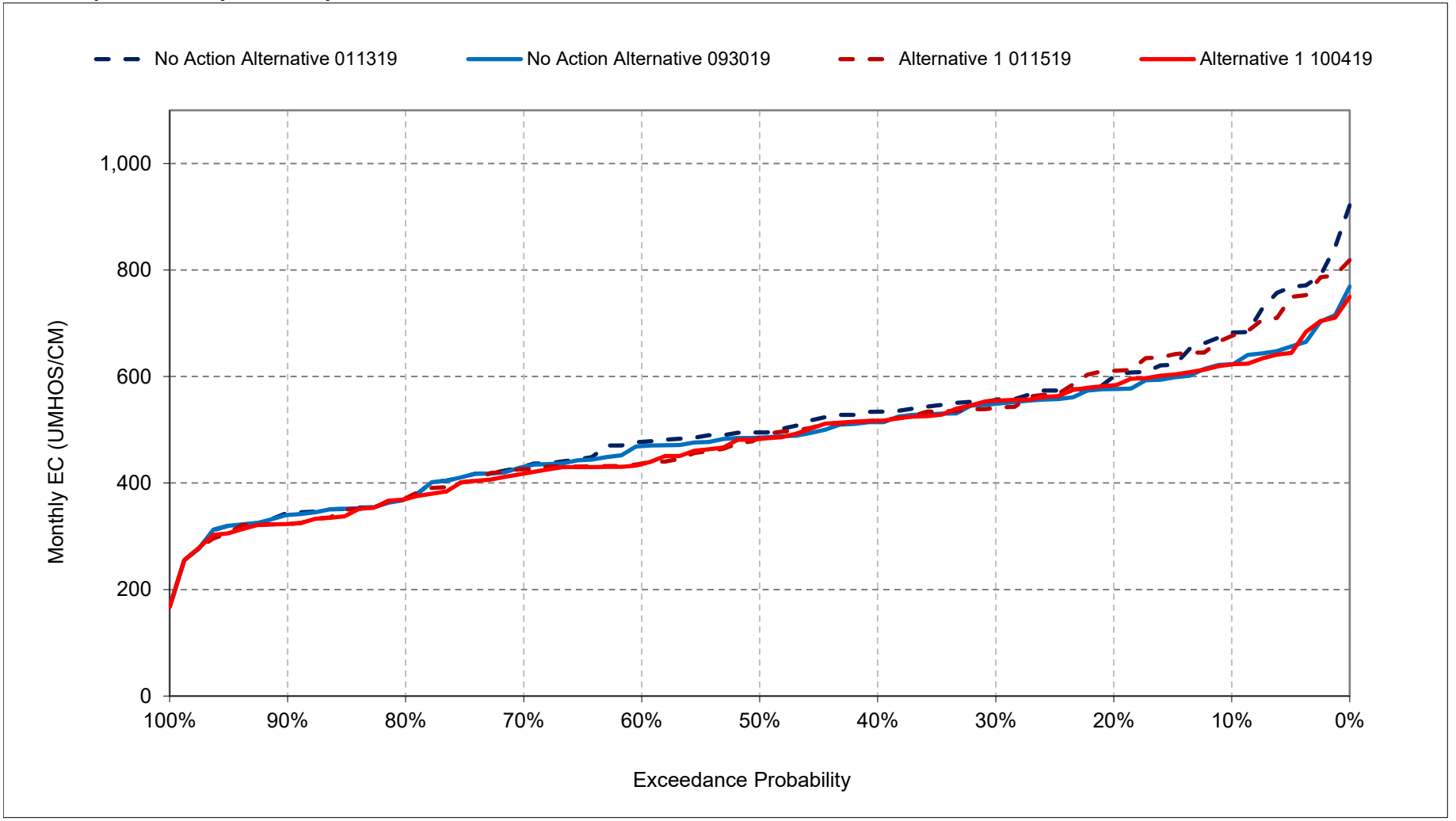
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-7. Banks Pumping Plant South Delta Exports Salinity, January EC**



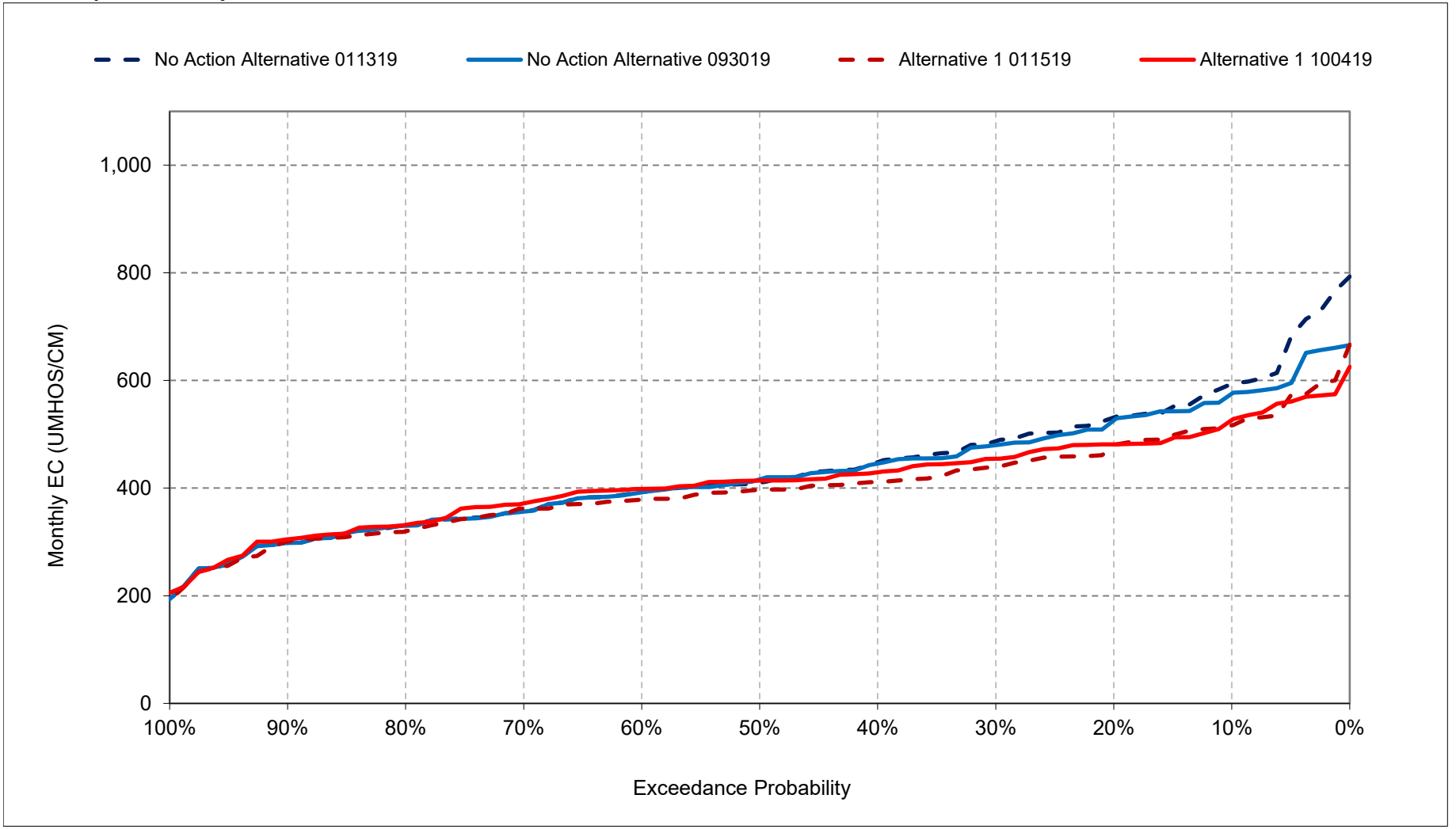

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-8. Banks Pumping Plant South Delta Exports Salinity, February EC**



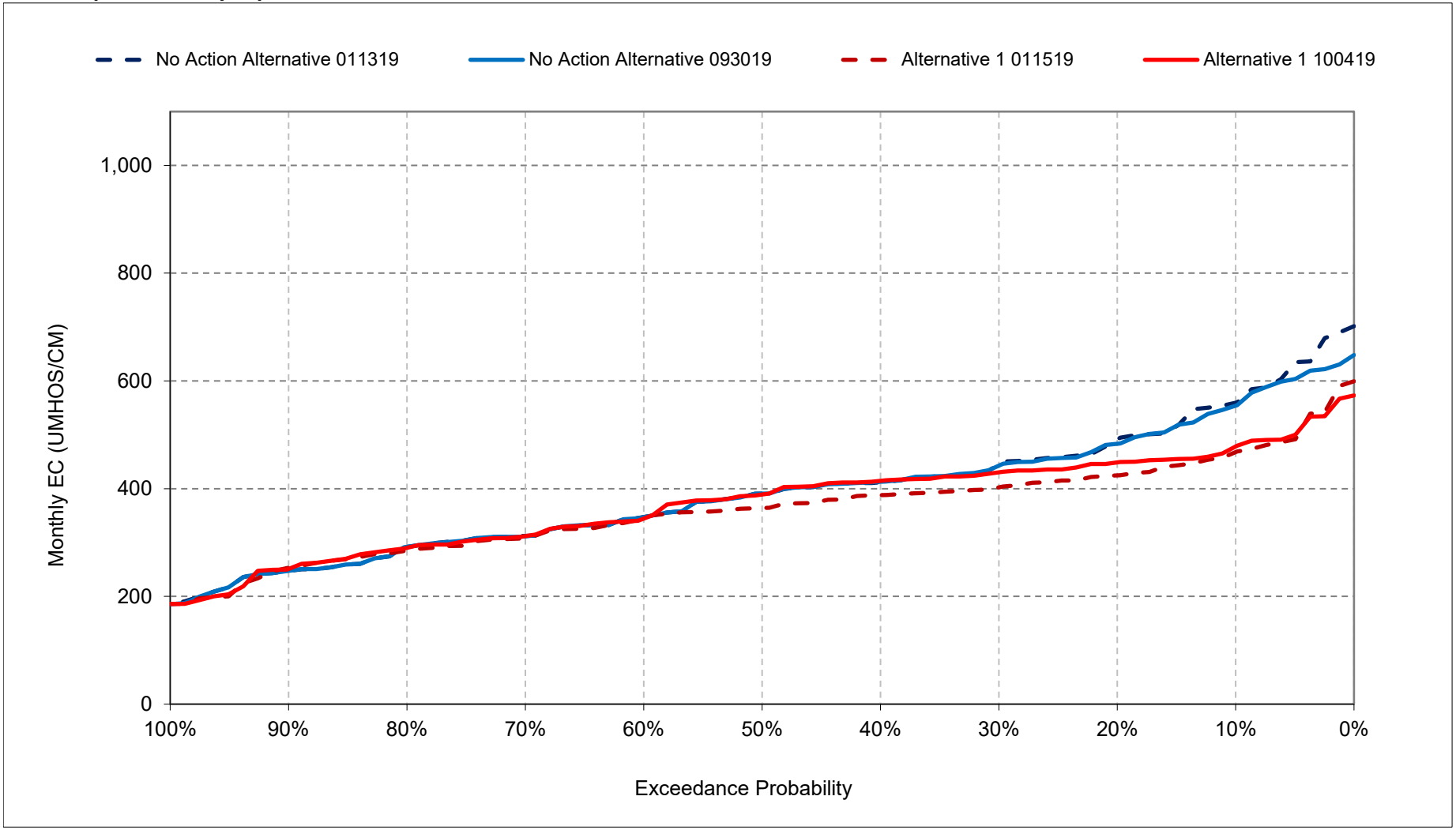

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-9. Banks Pumping Plant South Delta Exports Salinity, March EC**



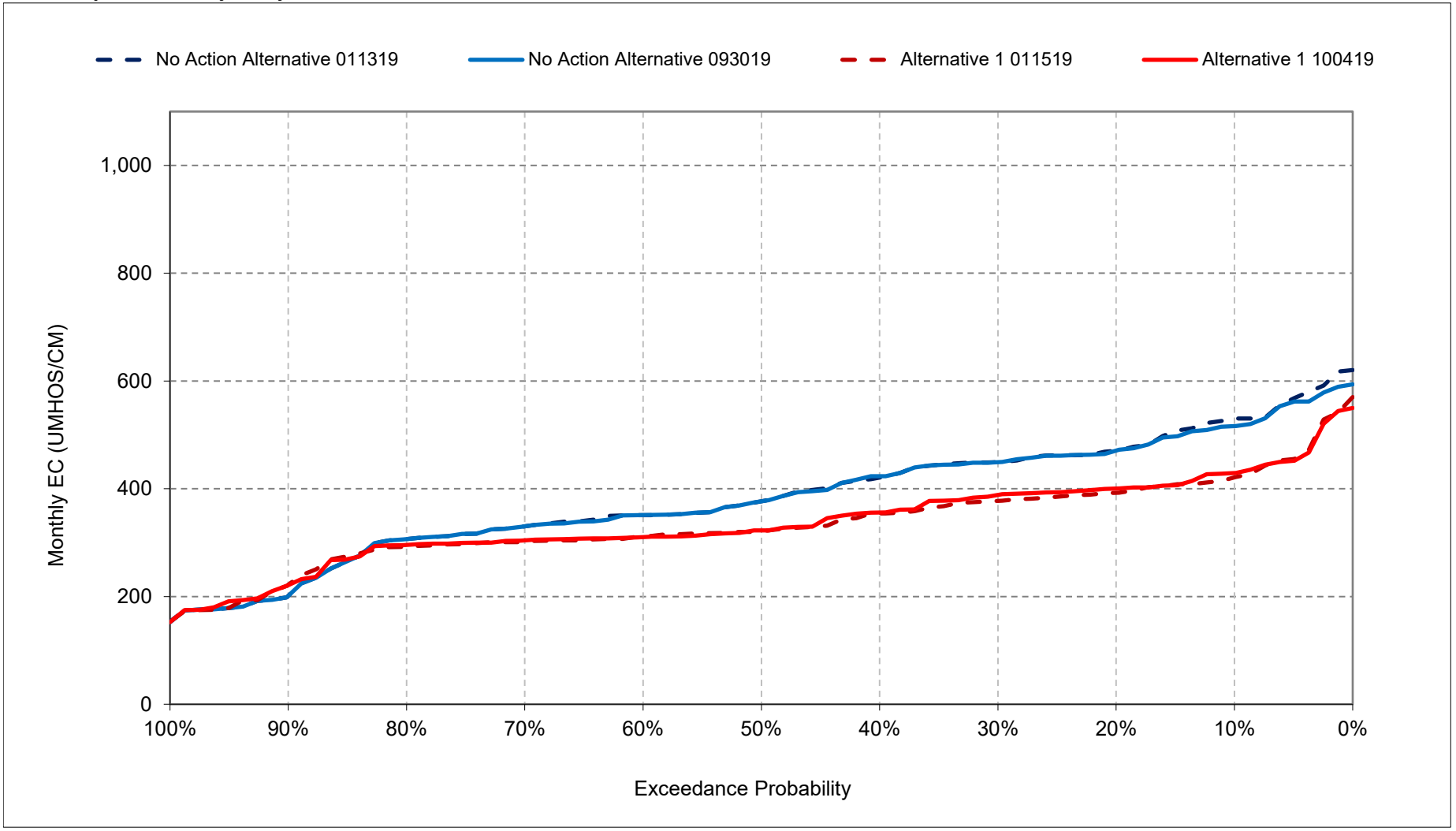

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-10. Banks Pumping Plant South Delta Exports Salinity, April EC**



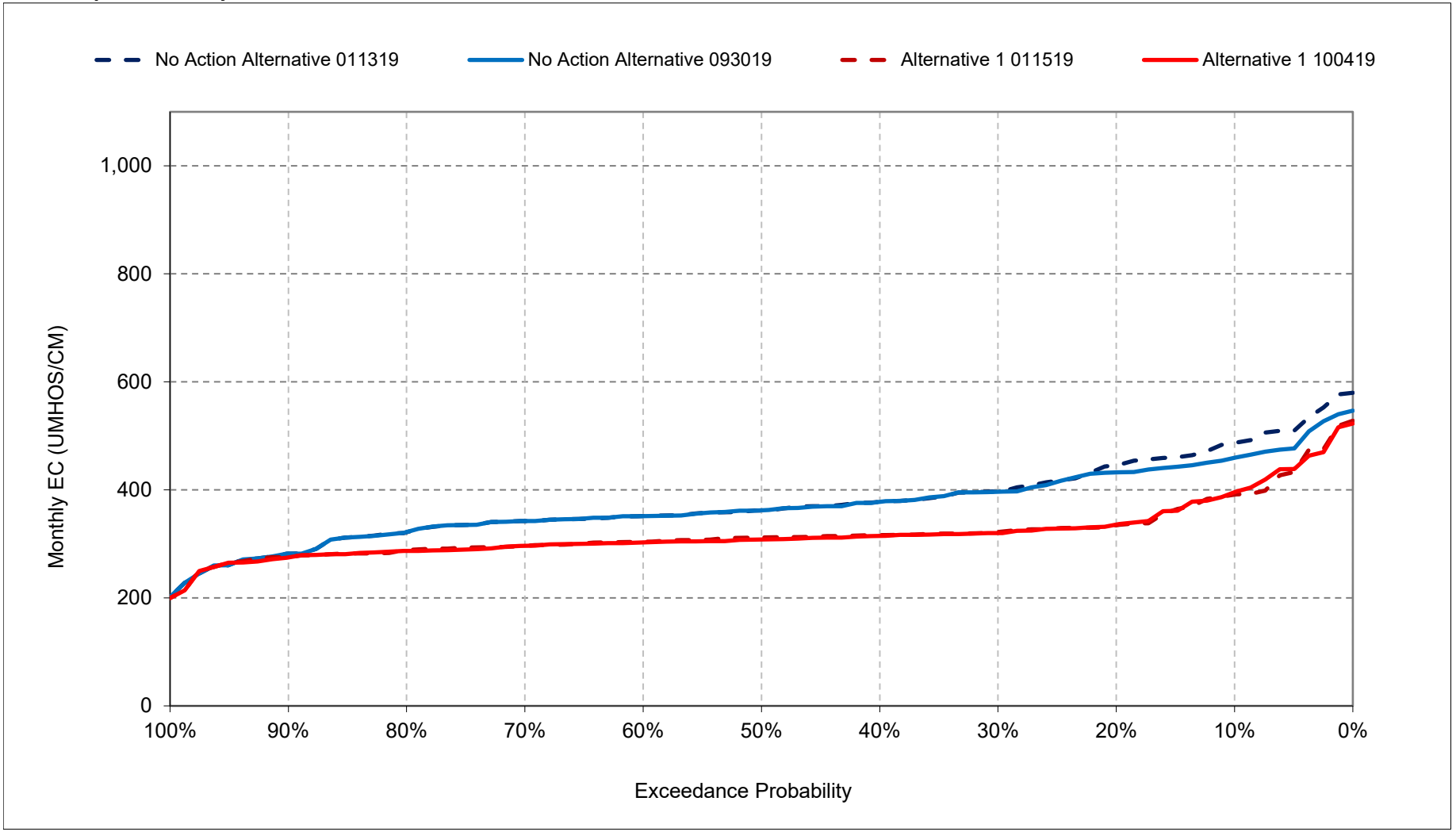

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-11. Banks Pumping Plant South Delta Exports Salinity, May EC**



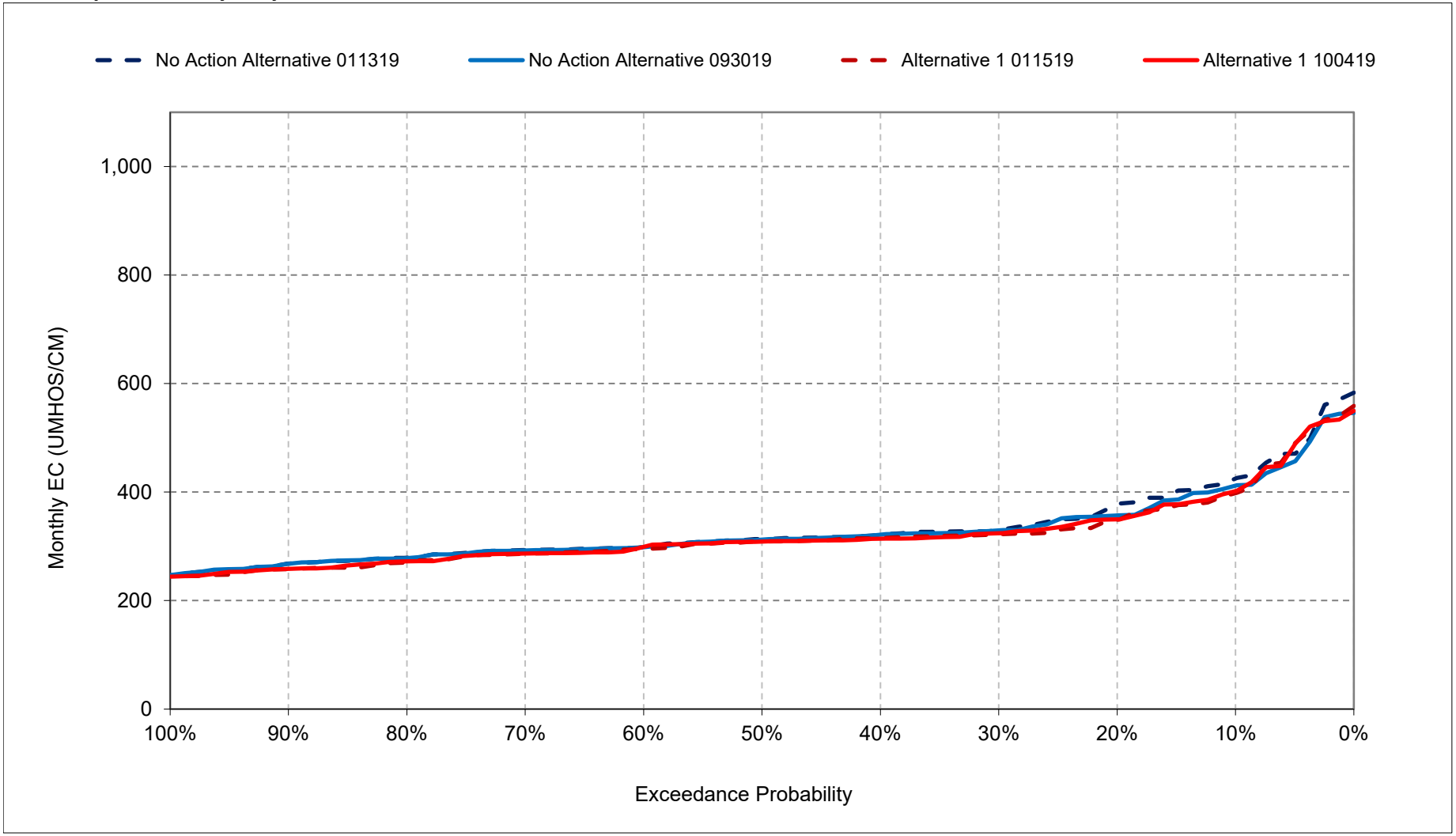

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-12. Banks Pumping Plant South Delta Exports Salinity, June EC**



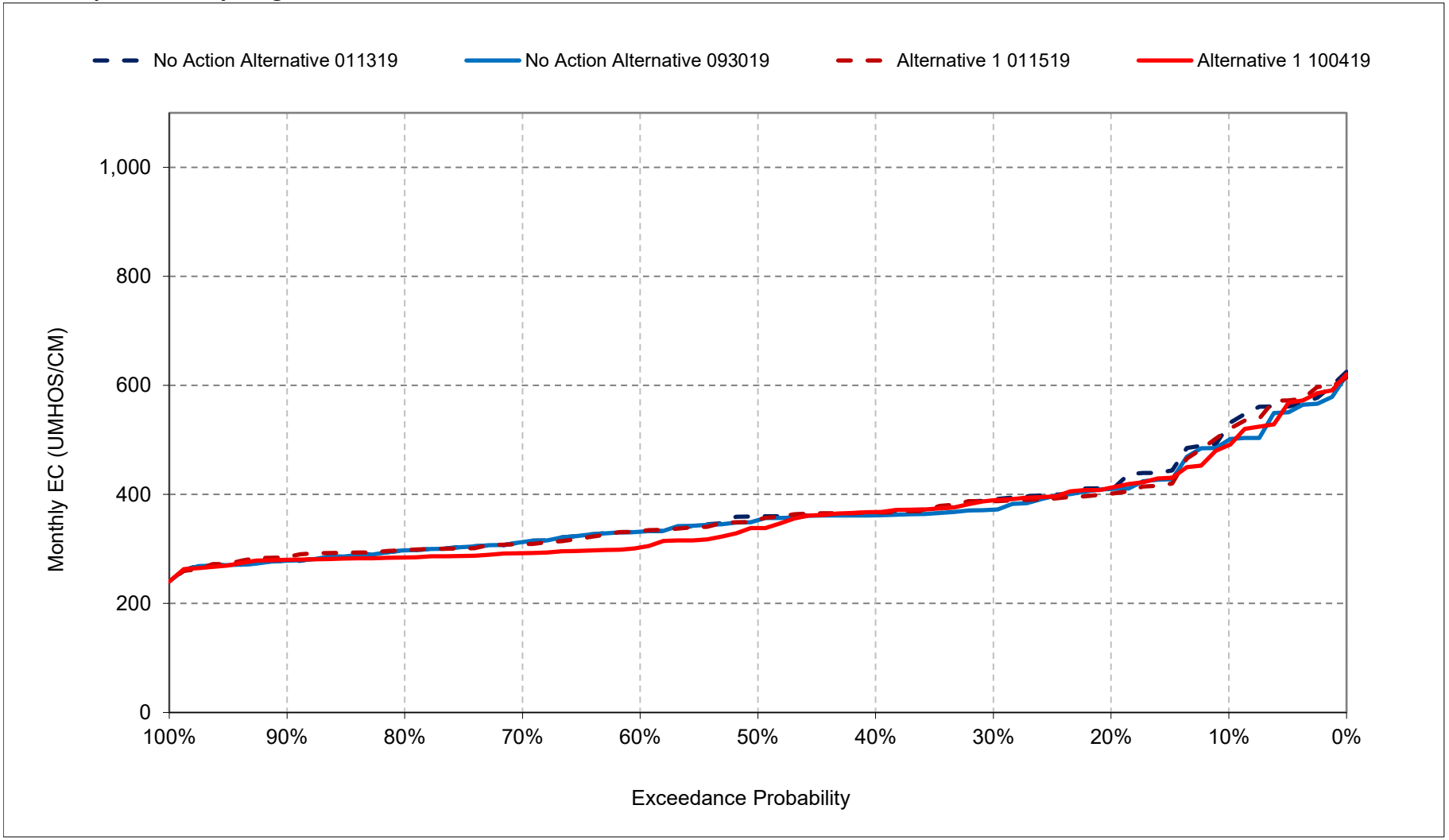

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-13. Banks Pumping Plant South Delta Exports Salinity, July EC**



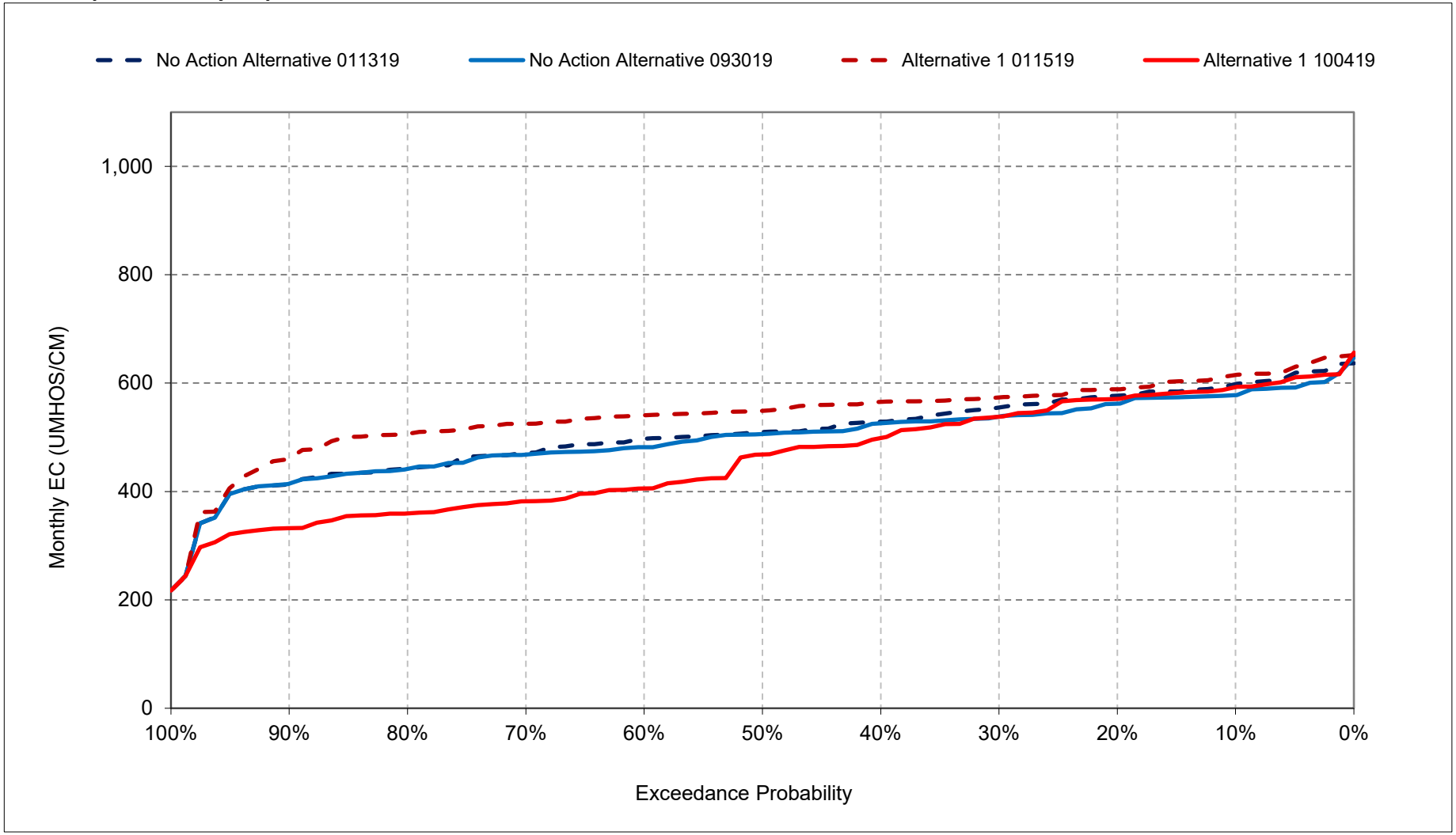

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-14. Banks Pumping Plant South Delta Exports Salinity, August EC**



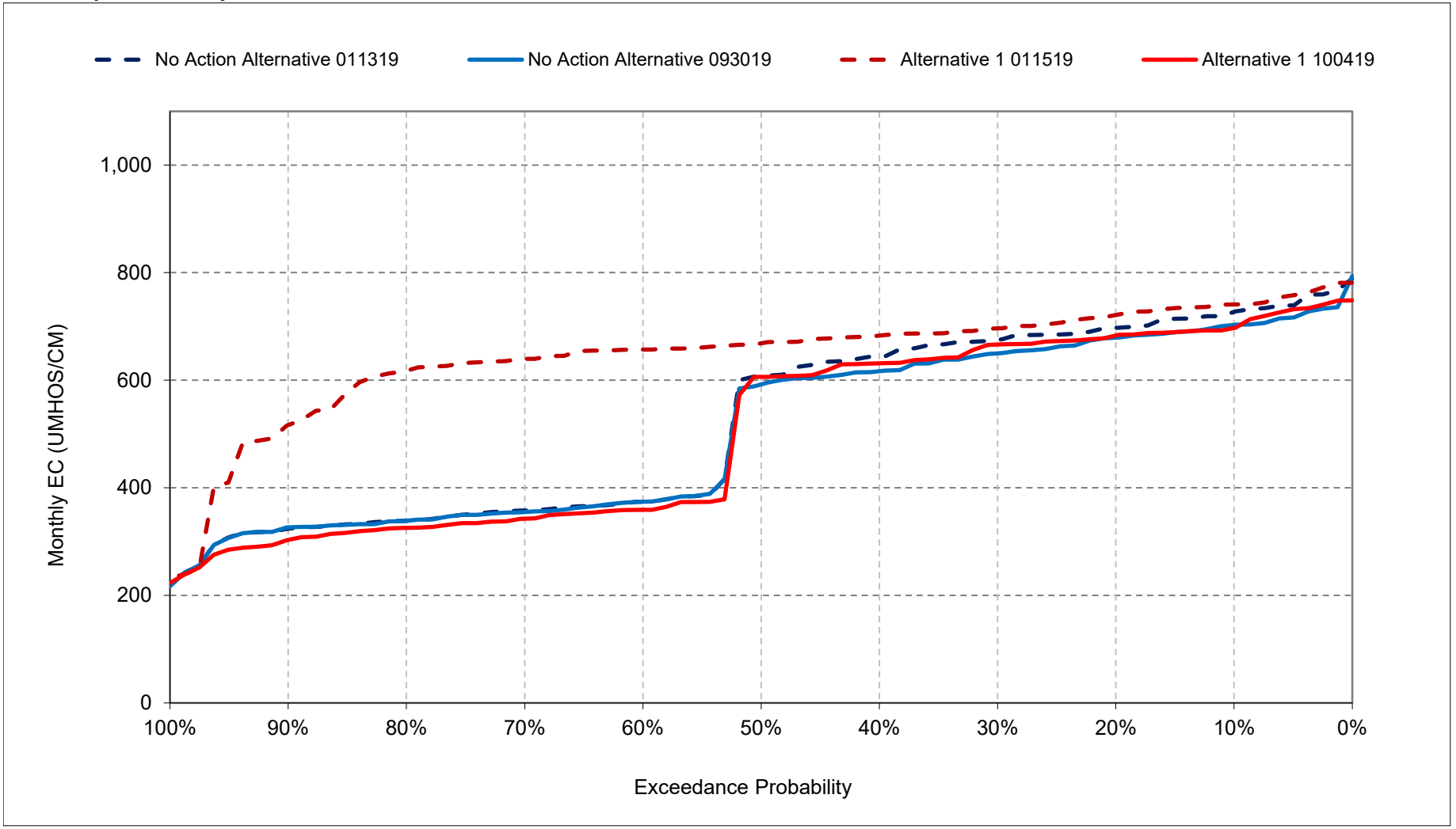

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-15. Banks Pumping Plant South Delta Exports Salinity, September EC**



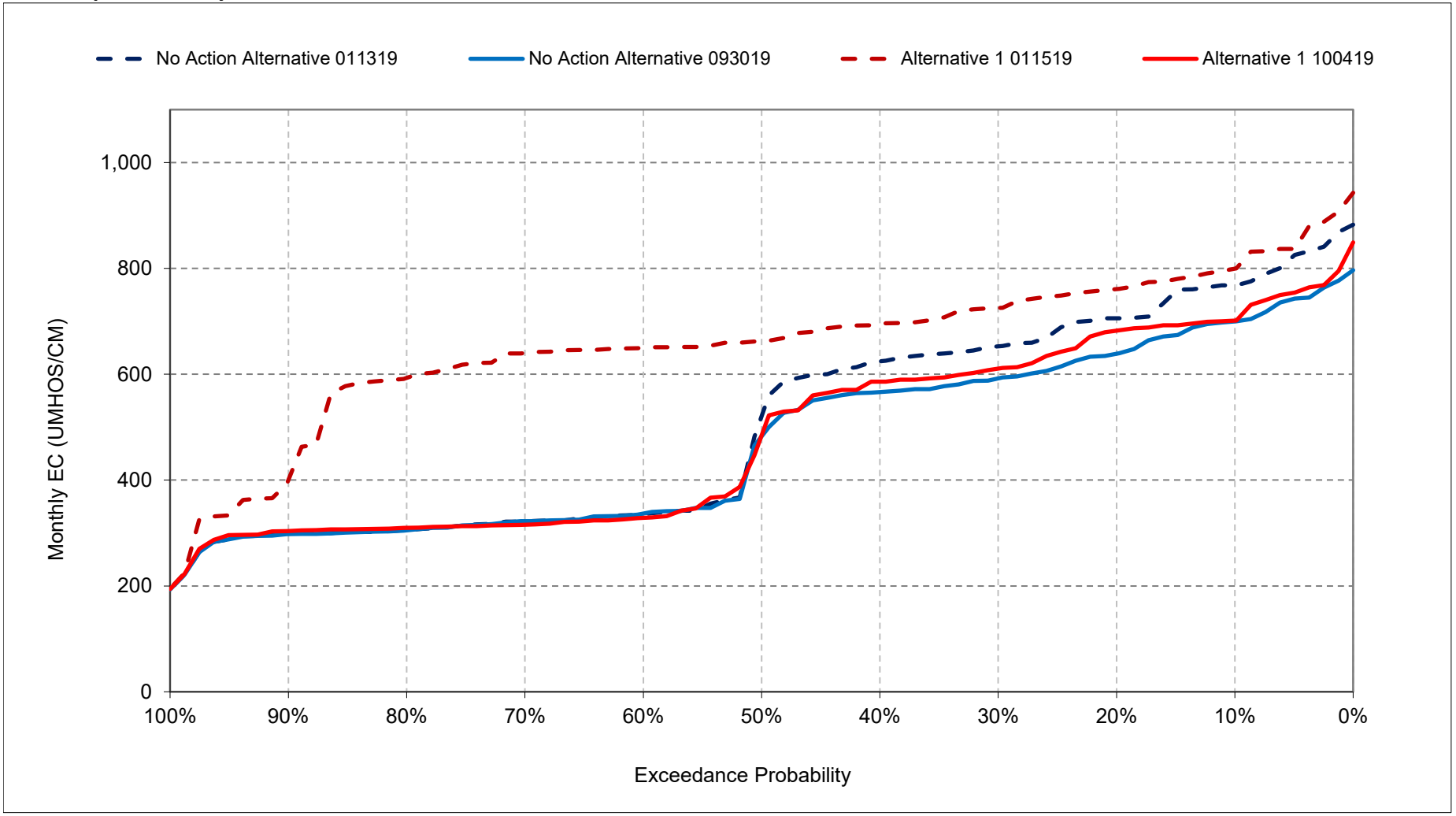

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-16. Banks Pumping Plant South Delta Exports Salinity, October EC**



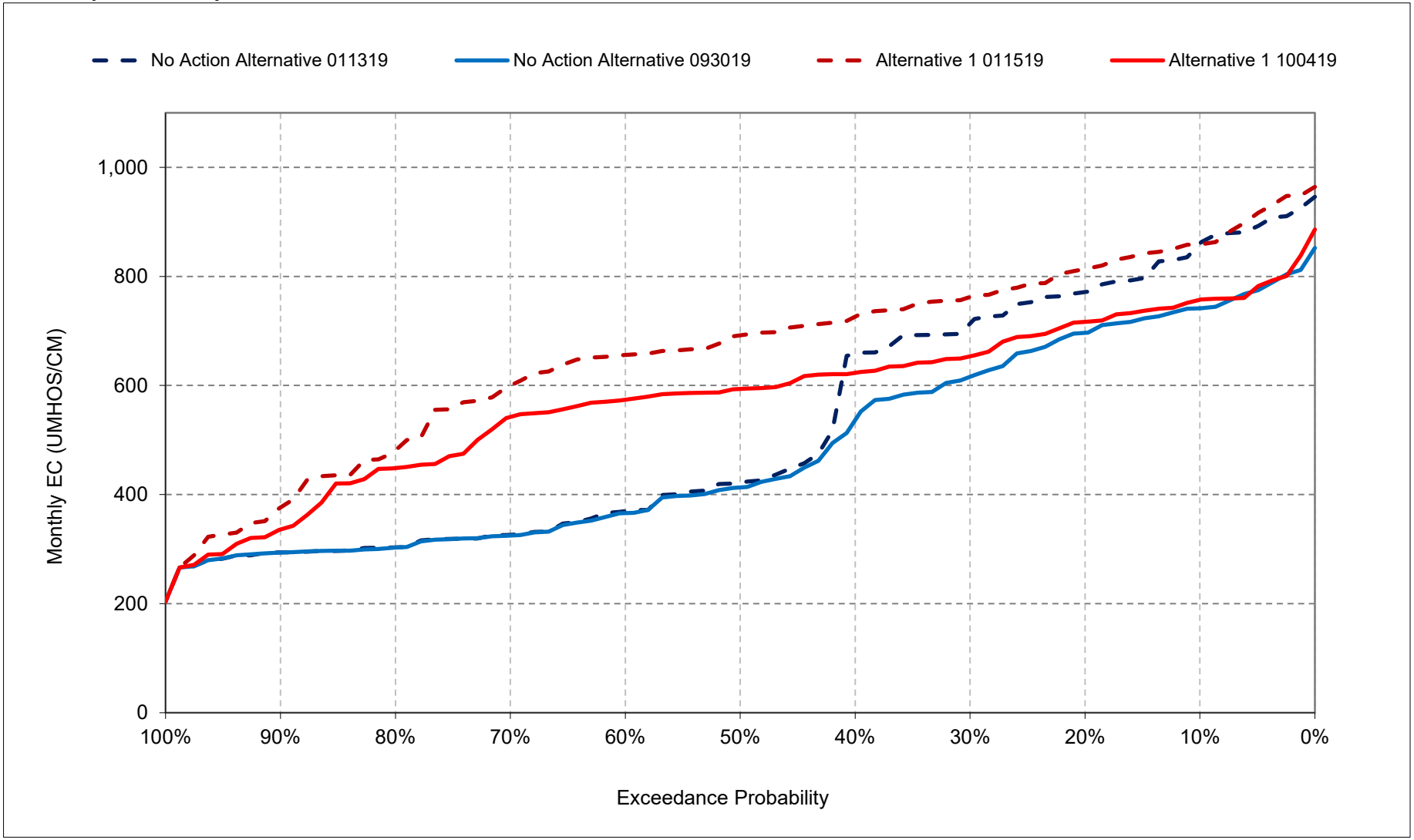

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-17. Banks Pumping Plant South Delta Exports Salinity, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 16-18. Banks Pumping Plant South Delta Exports Salinity, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-1. Old River at Highway 4, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 849 | 895 | 933 | 864 | 606 | 509 | 509 | 471 | 407 | 411 | 589 | 710 |
| 20% | 801 | 810 | 860 | 778 | 566 | 441 | 445 | 449 | 356 | 344 | 471 | 684 |
| 30% | 776 | 736 | 795 | 634 | 507 | 411 | 422 | 430 | 332 | 329 | 437 | 653 |
| 40% | 744 | 686 | 674 | 570 | 465 | 380 | 400 | 397 | 323 | 319 | 410 | 608 |
| 50% | 689 | 557 | 396 | 537 | 455 | 360 | 361 | 383 | 313 | 291 | 390 | 572 |
| 60% | 342 | 305 | 364 | 487 | 424 | 343 | 324 | 371 | 310 | 278 | 363 | 553 |
| 70% | 322 | 285 | 311 | 426 | 386 | 332 | 309 | 356 | 303 | 270 | 332 | 524 |
| 80% | 312 | 275 | 286 | 391 | 352 | 309 | 278 | 311 | 288 | 263 | 317 | 472 |
| 90% | 299 | 265 | 277 | 348 | 320 | 277 | 226 | 196 | 266 | 256 | 294 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 564 | 543 | 550 | 566 | 466 | 383 | 364 | 371 | 326 | 319 | 405 | 574 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 310 | 272 | 285 | 429 | 375 | 319 | 260 | 283 | 283 | 267 | 320 | 496 |
| Above Normal (16%) | 315 | 335 | 394 | 525 | 458 | 348 | 342 | 377 | 309 | 266 | 331 | 458 |
| Below Normal (13%) | 764 | 676 | 685 | 561 | 461 | 382 | 409 | 434 | 337 | 308 | 402 | 657 |
| Dry (24%) | 772 | 718 | 684 | 668 | 504 | 407 | 410 | 396 | 328 | 346 | 487 | 639 |
| Critical (15%) | 852 | 938 | 947 | 742 | 612 | 520 | 499 | 453 | 423 | 450 | 538 | 687 |

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 864 | 941 | 954 | 904 | 618 | 441 | 417 | 358 | 347 | 424 | 588 | 720 |
| 20% | 834 | 885 | 907 | 838 | 535 | 410 | 382 | 335 | 304 | 342 | 464 | 700 |
| 30% | 804 | 847 | 850 | 800 | 483 | 370 | 367 | 322 | 292 | 332 | 432 | 677 |
| 40% | 786 | 802 | 806 | 646 | 462 | 353 | 349 | 308 | 283 | 302 | 419 | 663 |
| 50% | 773 | 756 | 764 | 560 | 422 | 345 | 338 | 293 | 280 | 288 | 393 | 654 |
| 60% | 758 | 734 | 710 | 503 | 391 | 338 | 324 | 283 | 273 | 276 | 365 | 640 |
| 70% | 730 | 706 | 631 | 444 | 367 | 317 | 312 | 278 | 267 | 266 | 329 | 632 |
| 80% | 700 | 645 | 500 | 397 | 356 | 304 | 296 | 272 | 258 | 259 | 317 | 598 |
| 90% | 563 | 385 | 367 | 354 | 328 | 285 | 273 | 262 | 252 | 251 | 303 | 535 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 741 | 742 | 712 | 612 | 447 | 355 | 339 | 301 | 293 | 319 | 405 | 635 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 615 | 663 | 622 | 442 | 372 | 324 | 285 | 252 | 264 | 265 | 318 | 556 |
| Above Normal (16%) | 760 | 714 | 717 | 597 | 443 | 345 | 330 | 289 | 273 | 260 | 337 | 656 |
| Below Normal (13%) | 775 | 704 | 691 | 635 | 452 | 358 | 356 | 311 | 280 | 315 | 426 | 690 |
| Dry (24%) | 805 | 760 | 691 | 751 | 486 | 359 | 356 | 316 | 284 | 342 | 470 | 657 |
| Critical (15%) | 859 | 950 | 958 | 742 | 548 | 427 | 421 | 385 | 402 | 463 | 541 | 697 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **15** | **45** | **21** | **39** | **12** | -68 | -93 | -113 | -60 | **12** | -1 | **10** |
| 20% | **33** | **75** | **46** | **61** | -31 | -32 | -63 | -114 | -52 | -2 | -8 | **16** |
| 30% | **28** | **111** | **55** | **166** | -23 | -41 | -55 | -108 | -40 | **4** | -4 | **23** |
| 40% | **42** | **116** | **132** | **75** | -3 | -28 | -51 | -89 | -40 | -17 | **9** | **55** |
| 50% | **84** | **199** | **368** | **23** | -33 | -15 | -23 | -90 | -34 | -2 | **3** | **82** |
| 60% | **416** | **429** | **346** | **16** | -32 | -5 | **1** | -88 | -36 | -2 | **2** | **87** |
| 70% | **409** | **421** | **320** | **19** | -19 | -15 | **3** | -78 | -36 | -5 | -2 | **108** |
| 80% | **388** | **369** | **214** | **6** | **4** | -5 | **18** | -39 | -30 | -4 | **0** | **126** |
| 90% | **264** | **120** | **90** | **6** | **9** | **8** | **47** | **66** | -14 | -5 | **9** | **94** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **178** | **200** | **162** | **46** | -19 | -27 | -26 | -70 | -34 | **0** | 0 | **61** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **305** | **391** | **337** | **13** | -4 | **5** | **25** | -31 | -20 | -2 | -2 | **59** |
| Above Normal (16%) | **445** | **379** | **322** | **73** | -15 | -3 | -12 | -88 | -37 | -7 | **6** | **198** |
| Below Normal (13%) | **11** | **29** | **6** | **75** | -10 | -24 | -53 | -123 | -57 | **7** | **24** | **33** |
| Dry (24%) | **33** | **42** | **7** | **83** | -18 | -48 | -53 | -80 | -44 | -4 | -17 | **19** |
| Critical (15%) | **7** | **12** | **11** | **1** | -64 | -93 | -78 | -69 | -21 | **14** | **4** | **10** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-2. Old River at Highway 4, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 798 | 775 | 797 | 701 | 587 | 491 | 487 | 467 | 378 | 401 | 558 | 684 |
| 20% | 765 | 723 | 736 | 669 | 540 | 436 | 439 | 444 | 344 | 343 | 456 | 657 |
| 30% | 737 | 643 | 669 | 612 | 486 | 408 | 418 | 423 | 332 | 328 | 422 | 635 |
| 40% | 709 | 598 | 560 | 551 | 460 | 380 | 396 | 397 | 321 | 309 | 402 | 603 |
| 50% | 670 | 507 | 396 | 499 | 439 | 361 | 365 | 383 | 313 | 288 | 386 | 564 |
| 60% | 342 | 309 | 352 | 465 | 418 | 343 | 324 | 370 | 310 | 277 | 363 | 550 |
| 70% | 320 | 286 | 310 | 426 | 369 | 332 | 308 | 356 | 303 | 270 | 332 | 521 |
| 80% | 310 | 274 | 286 | 390 | 352 | 309 | 278 | 308 | 288 | 263 | 317 | 471 |
| 90% | 299 | 266 | 275 | 346 | 319 | 277 | 226 | 196 | 266 | 256 | 294 | 442 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 543 | 494 | 493 | 519 | 446 | 376 | 362 | 369 | 321 | 317 | 398 | 563 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 309 | 272 | 284 | 421 | 375 | 319 | 260 | 283 | 283 | 267 | 320 | 496 |
| Above Normal (16%) | 313 | 330 | 389 | 509 | 458 | 348 | 342 | 377 | 309 | 266 | 331 | 457 |
| Below Normal (13%) | 733 | 586 | 569 | 528 | 452 | 381 | 408 | 434 | 330 | 308 | 395 | 645 |
| Dry (24%) | 736 | 643 | 607 | 579 | 475 | 402 | 407 | 395 | 322 | 338 | 464 | 615 |
| Critical (15%) | 800 | 817 | 796 | 635 | 529 | 484 | 485 | 445 | 407 | 452 | 530 | 659 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 819 | 812 | 813 | 935 | 548 | 477 | 417 | 362 | 356 | 401 | 545 | 687 |
| 20% | 777 | 755 | 787 | 758 | 501 | 415 | 385 | 334 | 307 | 346 | 463 | 675 |
| 30% | 750 | 675 | 733 | 704 | 479 | 390 | 374 | 323 | 291 | 330 | 427 | 645 |
| 40% | 716 | 621 | 703 | 658 | 466 | 379 | 366 | 303 | 284 | 316 | 409 | 584 |
| 50% | 664 | 530 | 664 | 525 | 420 | 367 | 354 | 291 | 275 | 287 | 371 | 553 |
| 60% | 314 | 343 | 624 | 485 | 400 | 357 | 339 | 282 | 268 | 275 | 314 | 422 |
| 70% | 302 | 322 | 570 | 437 | 362 | 342 | 311 | 277 | 265 | 266 | 301 | 392 |
| 80% | 291 | 314 | 452 | 399 | 348 | 331 | 293 | 273 | 254 | 258 | 296 | 363 |
| 90% | 270 | 291 | 343 | 349 | 322 | 294 | 278 | 249 | 251 | 248 | 282 | 332 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 537 | 521 | 621 | 591 | 432 | 372 | 345 | 300 | 291 | 318 | 387 | 514 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 284 | 319 | 553 | 449 | 376 | 339 | 286 | 252 | 261 | 267 | 293 | 359 |
| Above Normal (16%) | 303 | 335 | 643 | 573 | 435 | 373 | 334 | 285 | 268 | 260 | 302 | 388 |
| Below Normal (13%) | 730 | 621 | 581 | 652 | 448 | 384 | 368 | 312 | 279 | 305 | 420 | 665 |
| Dry (24%) | 751 | 670 | 612 | 698 | 452 | 380 | 376 | 319 | 285 | 342 | 461 | 628 |
| Critical (15%) | 806 | 822 | 798 | 683 | 501 | 417 | 412 | 380 | 402 | 463 | 532 | 660 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **21** | **37** | **15** | **235** | -40 | -15 | -70 | -104 | -22 | **0** | -13 | **3** |
| 20% | **12** | **32** | **51** | **89** | -39 | -21 | -54 | -110 | -37 | **3** | **7** | **18** |
| 30% | **14** | **31** | **64** | **92** | -7 | -18 | -44 | -99 | -41 | **2** | **5** | **11** |
| 40% | **6** | **22** | **143** | **107** | **6** | -2 | -30 | -94 | -37 | **7** | **6** | -19 |
| 50% | -6 | **23** | **268** | **26** | -18 | **6** | -12 | -92 | -39 | -2 | -15 | -11 |
| 60% | -27 | **34** | **271** | **20** | -18 | **14** | **15** | -88 | -42 | -2 | -48 | -128 |
| 70% | -18 | **36** | **260** | **11** | -7 | **10** | **2** | -79 | -39 | -4 | -31 | -130 |
| 80% | -20 | **40** | **166** | **9** | -3 | **22** | **15** | -35 | -34 | -5 | -22 | -108 |
| 90% | -29 | **26** | **68** | **3** | **3** | **18** | **52** | **53** | -14 | -7 | -12 | -110 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -5 | **28** | **128** | **72** | -14 | -4 | -17 | -69 | -30 | **1** | -10 | -49 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -25 | **47** | **269** | **28** | **1** | **20** | **26** | -31 | -22 | 0 | -27 | -138 |
| Above Normal (16%) | -10 | **5** | **254** | **64** | -24 | **25** | -8 | -91 | -41 | -6 | -29 | -69 |
| Below Normal (13%) | -3 | **34** | **12** | **124** | -5 | **4** | -40 | -122 | -51 | -3 | **24** | **20** |
| Dry (24%) | **15** | **27** | **5** | **119** | -23 | -21 | -31 | -76 | -38 | **4** | -3 | **13** |
| Critical (15%) | **6** | **5** | **2** | **47** | -28 | -67 | -73 | -65 | -4 | **12** | **2** | **1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-3. Old River at Highway 4, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 849 | 895 | 933 | 864 | 606 | 509 | 509 | 471 | 407 | 411 | 589 | 710 |
| 20% | 801 | 810 | 860 | 778 | 566 | 441 | 445 | 449 | 356 | 344 | 471 | 684 |
| 30% | 776 | 736 | 795 | 634 | 507 | 411 | 422 | 430 | 332 | 329 | 437 | 653 |
| 40% | 744 | 686 | 674 | 570 | 465 | 380 | 400 | 397 | 323 | 319 | 410 | 608 |
| 50% | 689 | 557 | 396 | 537 | 455 | 360 | 361 | 383 | 313 | 291 | 390 | 572 |
| 60% | 342 | 305 | 364 | 487 | 424 | 343 | 324 | 371 | 310 | 278 | 363 | 553 |
| 70% | 322 | 285 | 311 | 426 | 386 | 332 | 309 | 356 | 303 | 270 | 332 | 524 |
| 80% | 312 | 275 | 286 | 391 | 352 | 309 | 278 | 311 | 288 | 263 | 317 | 472 |
| 90% | 299 | 265 | 277 | 348 | 320 | 277 | 226 | 196 | 266 | 256 | 294 | 441 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 564 | 543 | 550 | 566 | 466 | 383 | 364 | 371 | 326 | 319 | 405 | 574 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 310 | 272 | 285 | 429 | 375 | 319 | 260 | 283 | 283 | 267 | 320 | 496 |
| Above Normal (16%) | 315 | 335 | 394 | 525 | 458 | 348 | 342 | 377 | 309 | 266 | 331 | 458 |
| Below Normal (13%) | 764 | 676 | 685 | 561 | 461 | 382 | 409 | 434 | 337 | 308 | 402 | 657 |
| Dry (24%) | 772 | 718 | 684 | 668 | 504 | 407 | 410 | 396 | 328 | 346 | 487 | 639 |
| Critical (15%) | 852 | 938 | 947 | 742 | 612 | 520 | 499 | 453 | 423 | 450 | 538 | 687 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 798 | 775 | 797 | 701 | 587 | 491 | 487 | 467 | 378 | 401 | 558 | 684 |
| 20% | 765 | 723 | 736 | 669 | 540 | 436 | 439 | 444 | 344 | 343 | 456 | 657 |
| 30% | 737 | 643 | 669 | 612 | 486 | 408 | 418 | 423 | 332 | 328 | 422 | 635 |
| 40% | 709 | 598 | 560 | 551 | 460 | 380 | 396 | 397 | 321 | 309 | 402 | 603 |
| 50% | 670 | 507 | 396 | 499 | 439 | 361 | 365 | 383 | 313 | 288 | 386 | 564 |
| 60% | 342 | 309 | 352 | 465 | 418 | 343 | 324 | 370 | 310 | 277 | 363 | 550 |
| 70% | 320 | 286 | 310 | 426 | 369 | 332 | 308 | 356 | 303 | 270 | 332 | 521 |
| 80% | 310 | 274 | 286 | 390 | 352 | 309 | 278 | 308 | 288 | 263 | 317 | 471 |
| 90% | 299 | 266 | 275 | 346 | 319 | 277 | 226 | 196 | 266 | 256 | 294 | 442 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 543 | 494 | 493 | 519 | 446 | 376 | 362 | 369 | 321 | 317 | 398 | 563 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 309 | 272 | 284 | 421 | 375 | 319 | 260 | 283 | 283 | 267 | 320 | 496 |
| Above Normal (16%) | 313 | 330 | 389 | 509 | 458 | 348 | 342 | 377 | 309 | 266 | 331 | 457 |
| Below Normal (13%) | 733 | 586 | 569 | 528 | 452 | 381 | 408 | 434 | 330 | 308 | 395 | 645 |
| Dry (24%) | 736 | 643 | 607 | 579 | 475 | 402 | 407 | 395 | 322 | 338 | 464 | 615 |
| Critical (15%) | 800 | 817 | 796 | 635 | 529 | 484 | 485 | 445 | 407 | 452 | 530 | 659 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -51 | -120 | -136 | -164 | -18 | -17 | -23 | -4 | -29 | -10 | -30 | -26 |
| 20% | -36 | -88 | -125 | -109 | -25 | -5 | -6 | -5 | -12 | -1 | -16 | -27 |
| 30% | -39 | -93 | -126 | -22 | -21 | -3 | -3 | -7 | 0 | -1 | -15 | -19 |
| 40% | -35 | -88 | -114 | -19 | -5 | 0 | -4 | 1 | -2 | -10 | -8 | -5 |
| 50% | -19 | -50 | 1 | -38 | -16 | 1 | 5 | 0 | 0 | -2 | -4 | -8 |
| 60% | 0 | 3 | -12 | -22 | -5 | 0 | 0 | -1 | 0 | -1 | 0 | -3 |
| 70% | -2 | 1 | -1 | 0 | -17 | 0 | 0 | 0 | 0 | 0 | 0 | -2 |
| 80% | -1 | -1 | 0 | -1 | 0 | 0 | 0 | -3 | 0 | 0 | 0 | -1 |
| 90% | -1 | 0 | -2 | -2 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | 1 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -21 | -49 | -57 | -46 | -20 | -7 | -3 | -1 | -5 | -2 | -8 | -12 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -1 | 0 | -1 | -7 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -2 | -4 | -5 | -15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| Below Normal (13%) | -31 | -89 | -116 | -33 | -9 | -1 | -1 | 0 | -7 | 0 | -7 | -12 |
| Dry (24%) | -36 | -75 | -77 | -89 | -28 | -5 | -3 | -1 | -6 | -9 | -23 | -24 |
| Critical (15%) | -52 | -121 | -152 | -106 | -83 | -36 | -14 | -8 | -17 | 2 | -8 | -27 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 17-4. Old River at Highway 4, Monthly EC

### Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 864 | 941 | 954 | 904 | 618 | 441 | 417 | 358 | 347 | 424 | 588 | 720 |
| 20% | 834 | 885 | 907 | 838 | 535 | 410 | 382 | 335 | 304 | 342 | 464 | 700 |
| 30% | 804 | 847 | 850 | 800 | 483 | 370 | 367 | 322 | 292 | 332 | 432 | 677 |
| 40% | 786 | 802 | 806 | 646 | 462 | 353 | 349 | 308 | 283 | 302 | 419 | 663 |
| 50% | 773 | 756 | 764 | 560 | 422 | 345 | 338 | 293 | 280 | 288 | 393 | 654 |
| 60% | 758 | 734 | 710 | 503 | 391 | 338 | 324 | 283 | 273 | 276 | 365 | 640 |
| 70% | 730 | 706 | 631 | 444 | 367 | 317 | 312 | 278 | 267 | 266 | 329 | 632 |
| 80% | 700 | 645 | 500 | 397 | 356 | 304 | 296 | 272 | 258 | 259 | 317 | 598 |
| 90% | 563 | 385 | 367 | 354 | 328 | 285 | 273 | 262 | 252 | 251 | 303 | 535 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 741 | 742 | 712 | 612 | 447 | 355 | 339 | 301 | 293 | 319 | 405 | 635 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 615 | 663 | 622 | 442 | 372 | 324 | 285 | 252 | 264 | 265 | 318 | 556 |
| Above Normal (16%) | 760 | 714 | 717 | 597 | 443 | 345 | 330 | 289 | 273 | 260 | 337 | 656 |
| Below Normal (13%) | 775 | 704 | 691 | 635 | 452 | 358 | 356 | 311 | 280 | 315 | 426 | 690 |
| Dry (24%) | 805 | 760 | 691 | 751 | 486 | 359 | 356 | 316 | 284 | 342 | 470 | 657 |
| Critical (15%) | 859 | 950 | 958 | 742 | 548 | 427 | 421 | 385 | 402 | 463 | 541 | 697 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 819 | 812 | 813 | 935 | 548 | 477 | 417 | 362 | 356 | 401 | 545 | 687 |
| 20% | 777 | 755 | 787 | 758 | 501 | 415 | 385 | 334 | 307 | 346 | 463 | 675 |
| 30% | 750 | 675 | 733 | 704 | 479 | 390 | 374 | 323 | 291 | 330 | 427 | 645 |
| 40% | 716 | 621 | 703 | 658 | 466 | 379 | 366 | 303 | 284 | 316 | 409 | 584 |
| 50% | 664 | 530 | 664 | 525 | 420 | 367 | 354 | 291 | 275 | 287 | 371 | 553 |
| 60% | 314 | 343 | 624 | 485 | 400 | 357 | 339 | 282 | 268 | 275 | 314 | 422 |
| 70% | 302 | 322 | 570 | 437 | 362 | 342 | 311 | 277 | 265 | 266 | 301 | 392 |
| 80% | 291 | 314 | 452 | 399 | 348 | 331 | 293 | 273 | 254 | 258 | 296 | 363 |
| 90% | 270 | 291 | 343 | 349 | 322 | 294 | 278 | 249 | 251 | 248 | 282 | 332 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 537 | 521 | 621 | 591 | 432 | 372 | 345 | 300 | 291 | 318 | 387 | 514 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 284 | 319 | 553 | 449 | 376 | 339 | 286 | 252 | 261 | 267 | 293 | 359 |
| Above Normal (16%) | 303 | 335 | 643 | 573 | 435 | 373 | 334 | 285 | 268 | 260 | 302 | 388 |
| Below Normal (13%) | 730 | 621 | 581 | 652 | 448 | 384 | 368 | 312 | 279 | 305 | 420 | 665 |
| Dry (24%) | 751 | 670 | 612 | 698 | 452 | 380 | 376 | 319 | 285 | 342 | 461 | 628 |
| Critical (15%) | 806 | 822 | 798 | 683 | 501 | 417 | 412 | 380 | 402 | 463 | 532 | 660 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -45 | -129 | -141 | 32 | -70 | 36 | 0 | 5 | 9 | -22 | -43 | -33 |
| 20% | -57 | -130 | -120 | -80 | -34 | 5 | 3 | -1 | 2 | 5 | -1 | -25 |
| 30% | -54 | -172 | -117 | -96 | -4 | 20 | 7 | 1 | -1 | -3 | -5 | -31 |
| 40% | -70 | -182 | -103 | 12 | 4 | 26 | 17 | -4 | 1 | 14 | -10 | -79 |
| 50% | -109 | -226 | -100 | -34 | -1 | 22 | 16 | -2 | -5 | -1 | -22 | -101 |
| 60% | -443 | -391 | -87 | -18 | 9 | 19 | 14 | -1 | -5 | -1 | -51 | -217 |
| 70% | -429 | -384 | -61 | -7 | -5 | 25 | -1 | 0 | -3 | 1 | -28 | -240 |
| 80% | -409 | -331 | -48 | 2 | -7 | 27 | -3 | 1 | -5 | -1 | -22 | -235 |
| 90% | -294 | -94 | -24 | -6 | -6 | 10 | 6 | -13 | -1 | -2 | -22 | -203 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -204 | -221 | -91 | -21 | -16 | 17 | 6 | -1 | -1 | -1 | -18 | -121 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -331 | -344 | -69 | 7 | 4 | 15 | 2 | 0 | -2 | 2 | -25 | -197 |
| Above Normal (16%) | -457 | -378 | -74 | -24 | -8 | 28 | 4 | -4 | -5 | 0 | -34 | -268 |
| Below Normal (13%) | -45 | -84 | -110 | 16 | -4 | 26 | 13 | 1 | -1 | -10 | -6 | -25 |
| Dry (24%) | -54 | -90 | -79 | -53 | -34 | 22 | 19 | 2 | 1 | 0 | -9 | -29 |
| Critical (15%) | -53 | -128 | -160 | -60 | -47 | -10 | -9 | -5 | 0 | 0 | -10 | -36 |

a Based on the 82-year simulation period.

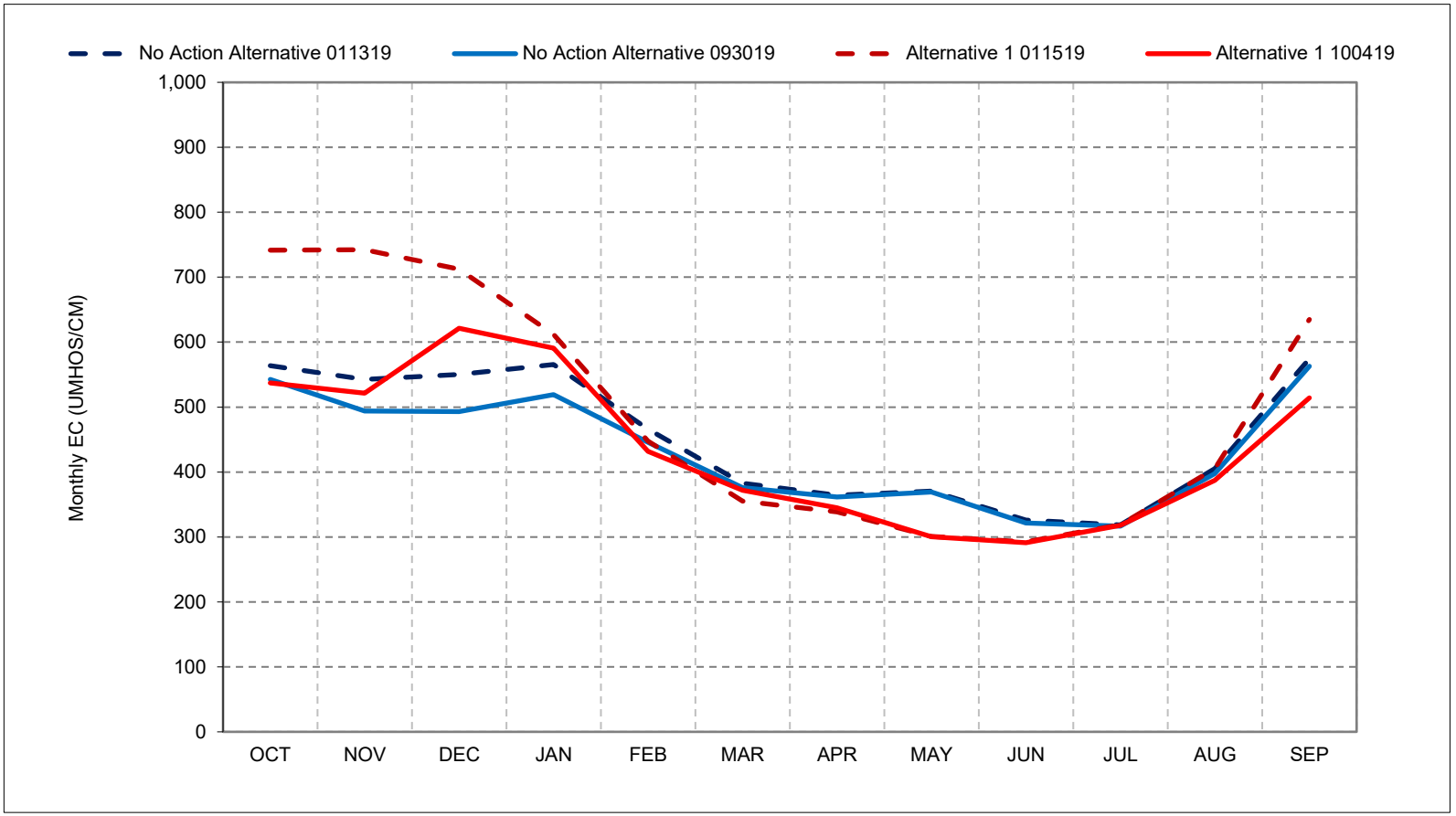
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-1. Old River at Highway 4, Long-Term Average EC

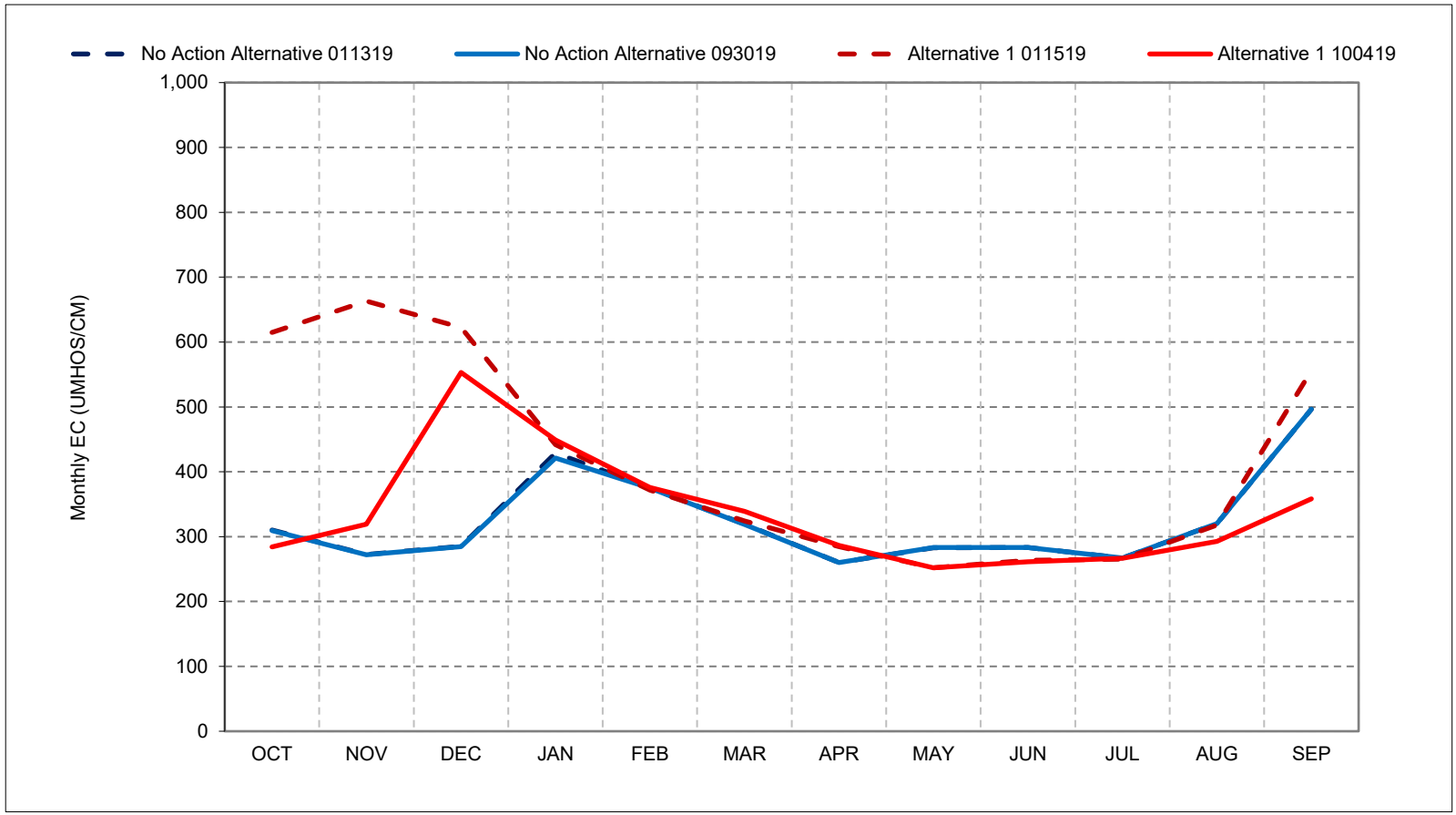



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-2. Old River at Highway 4, Wet Year Average EC

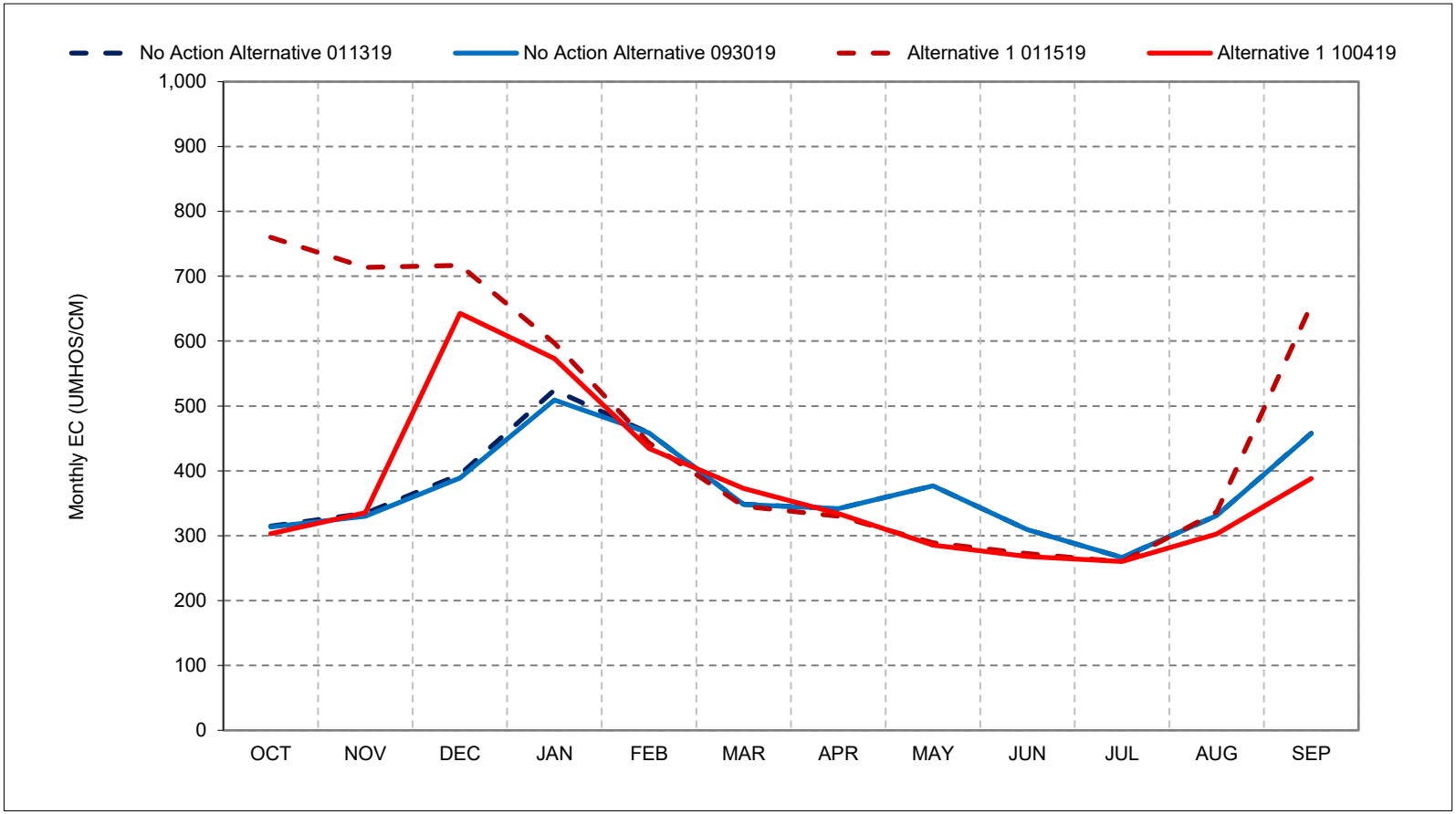



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-3. Old River at Highway 4, Above Normal Year Average EC

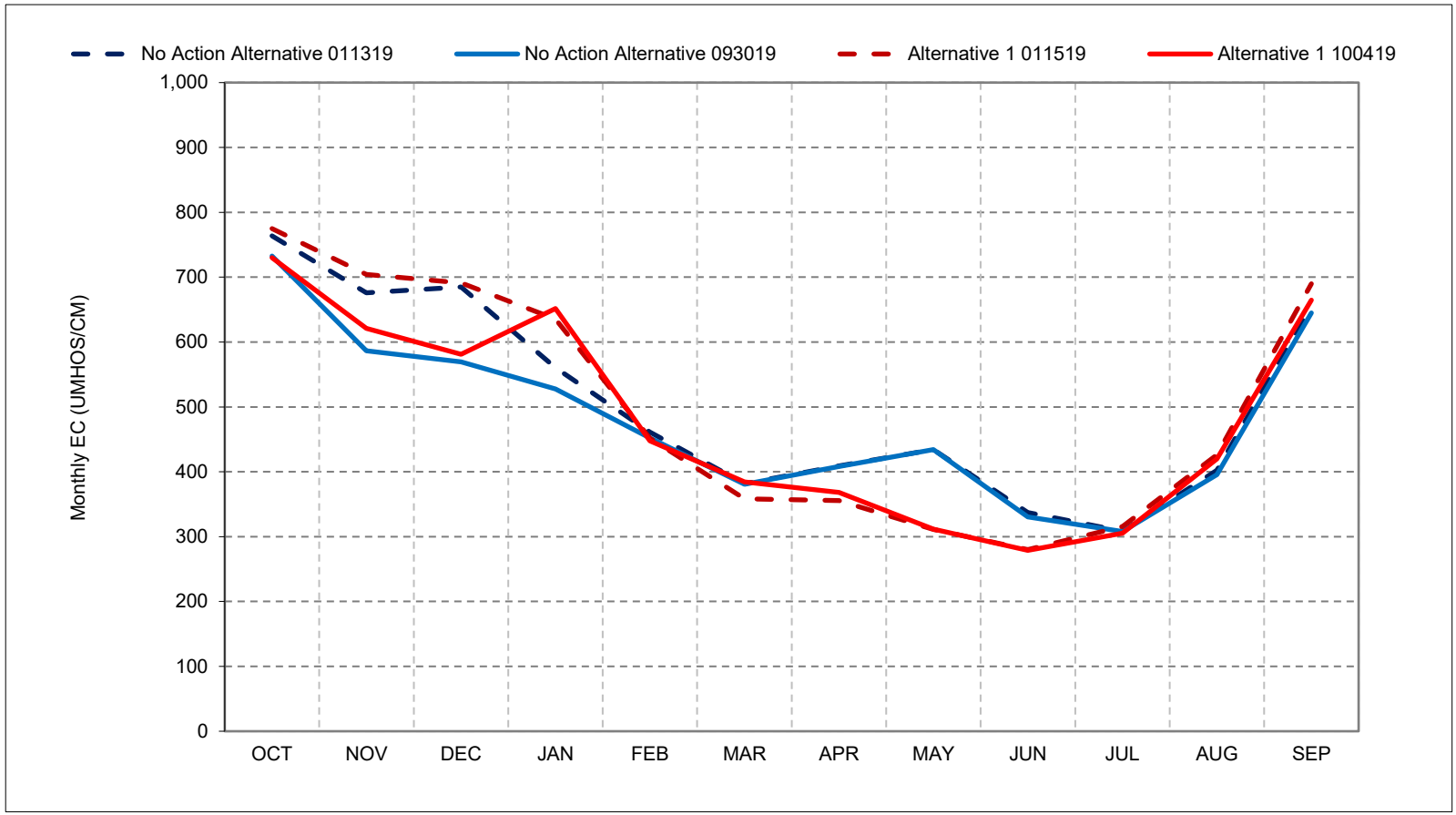



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-4. Old River at Highway 4, Below Normal Year Average EC

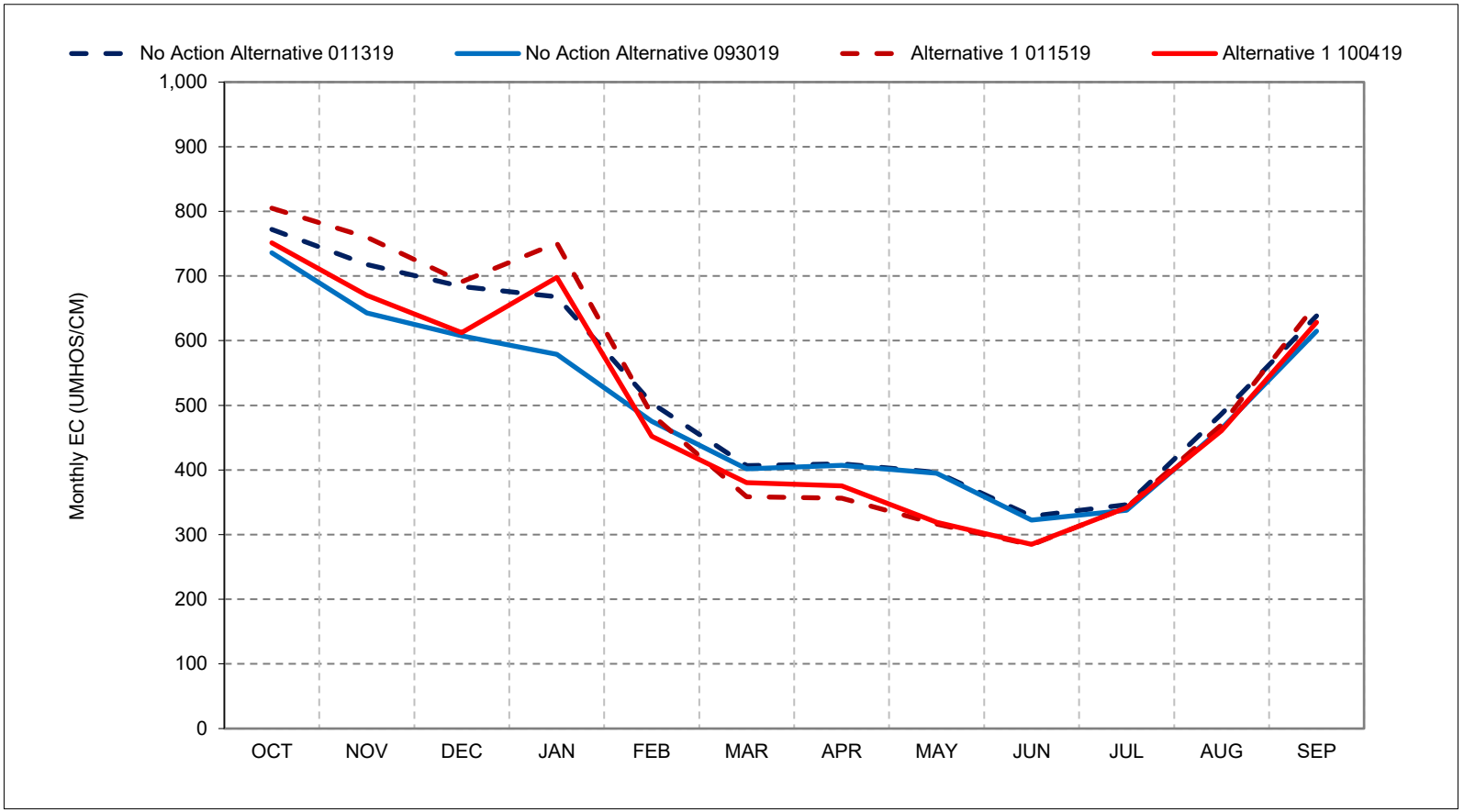



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-5. Old River at Highway 4, Dry Year Average EC

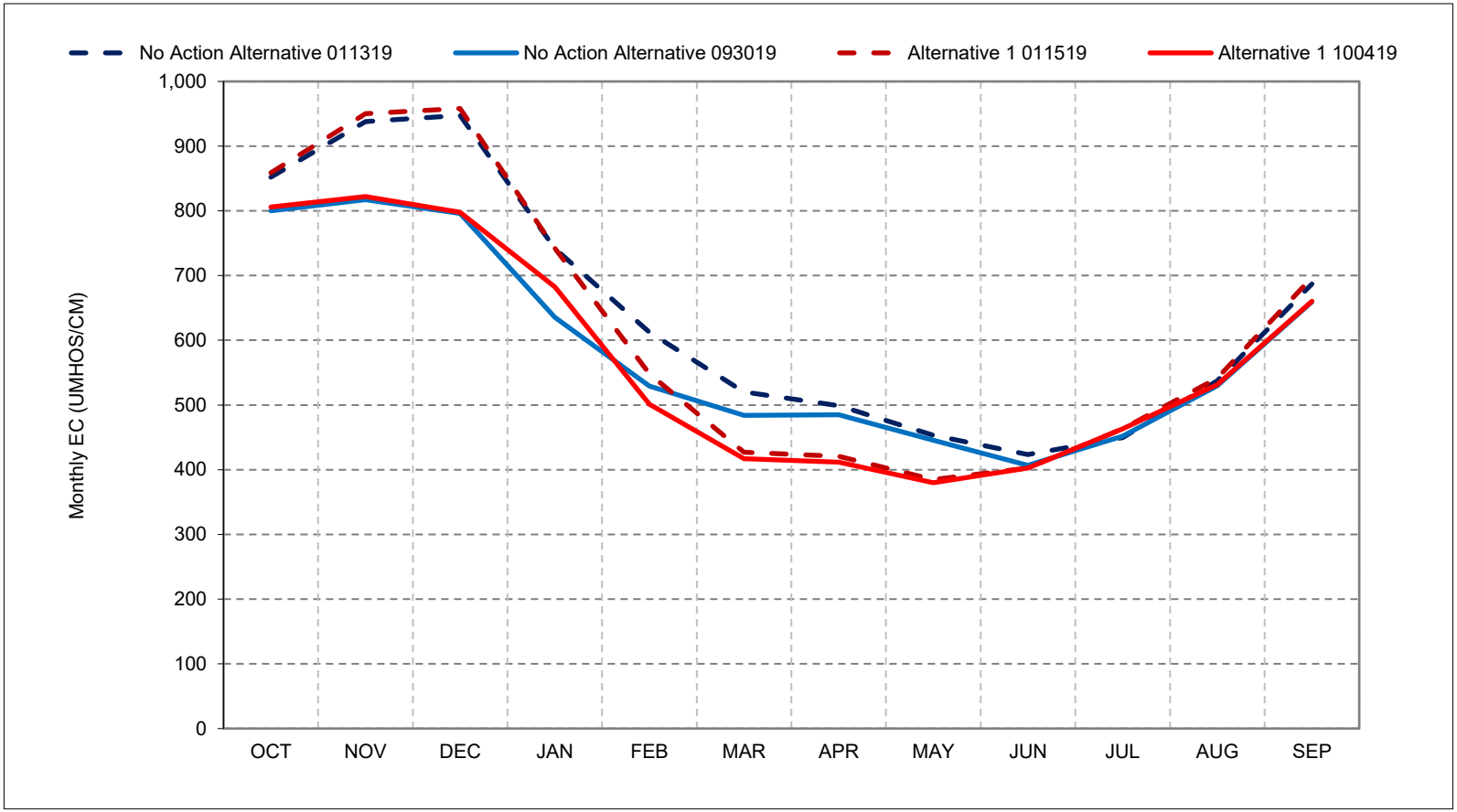



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 17-6. Old River at Highway 4, Critical Year Average EC

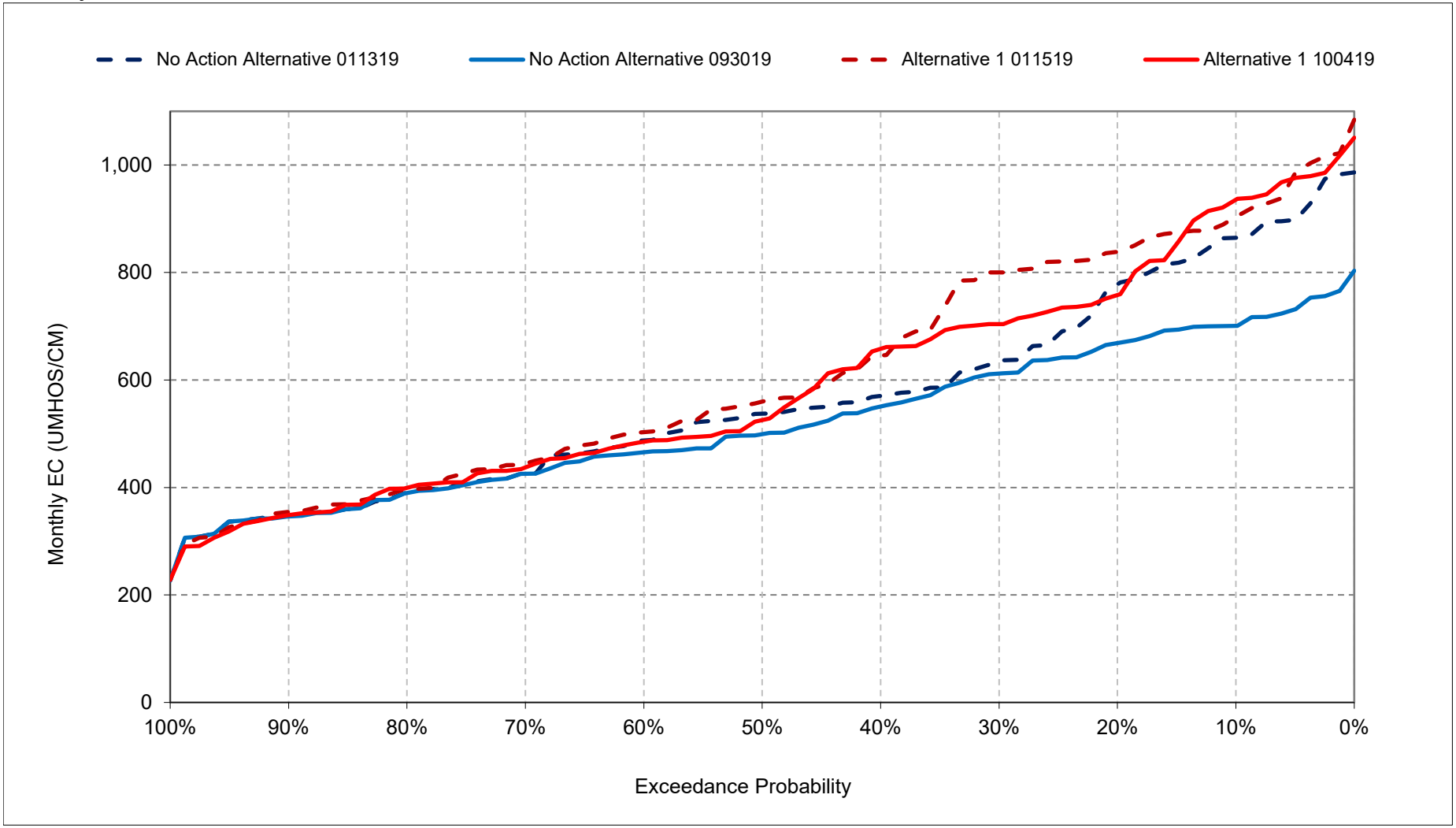



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

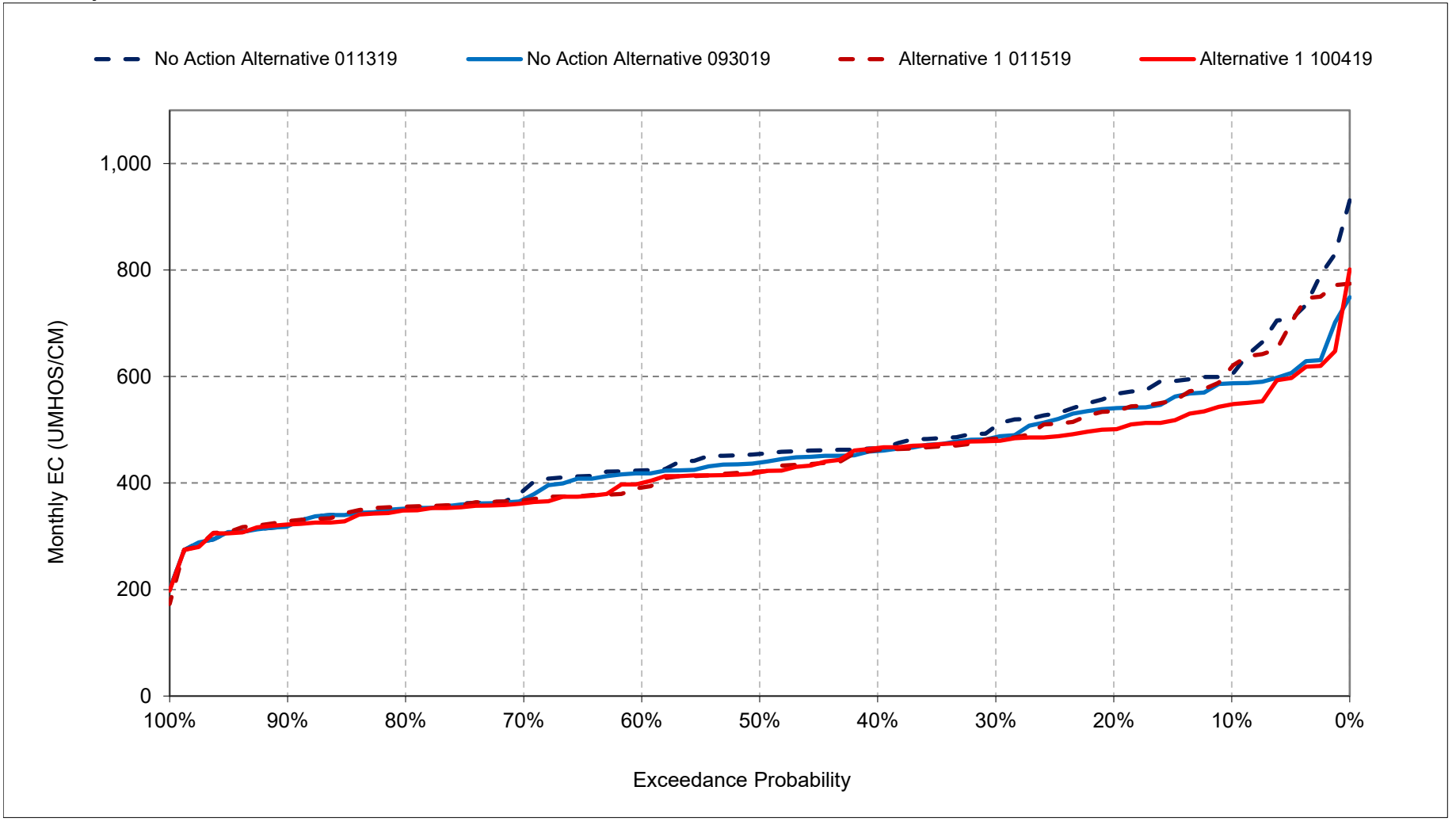
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-7. Old River at Highway 4, January EC**



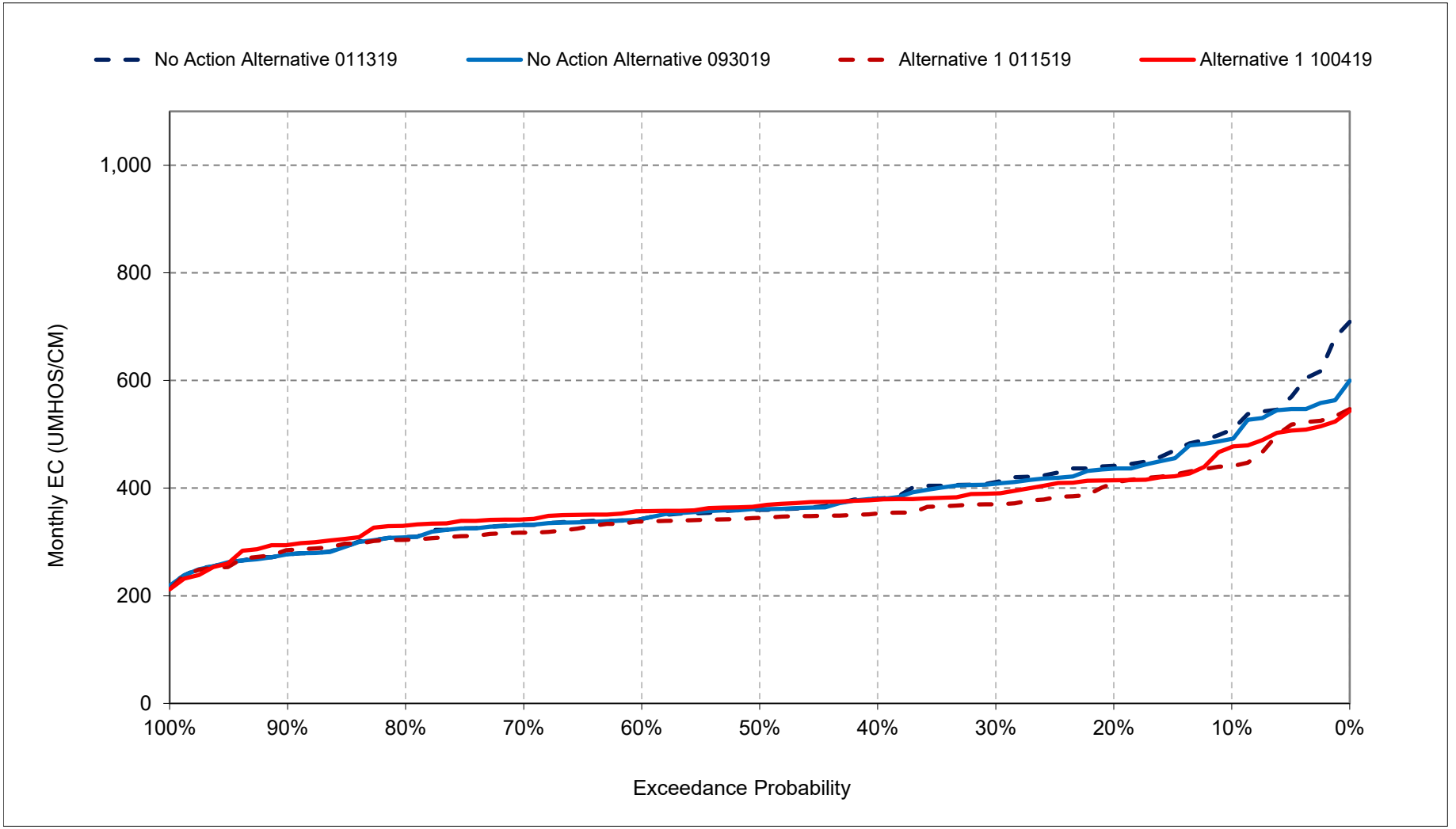

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-8. Old River at Highway 4, February EC**



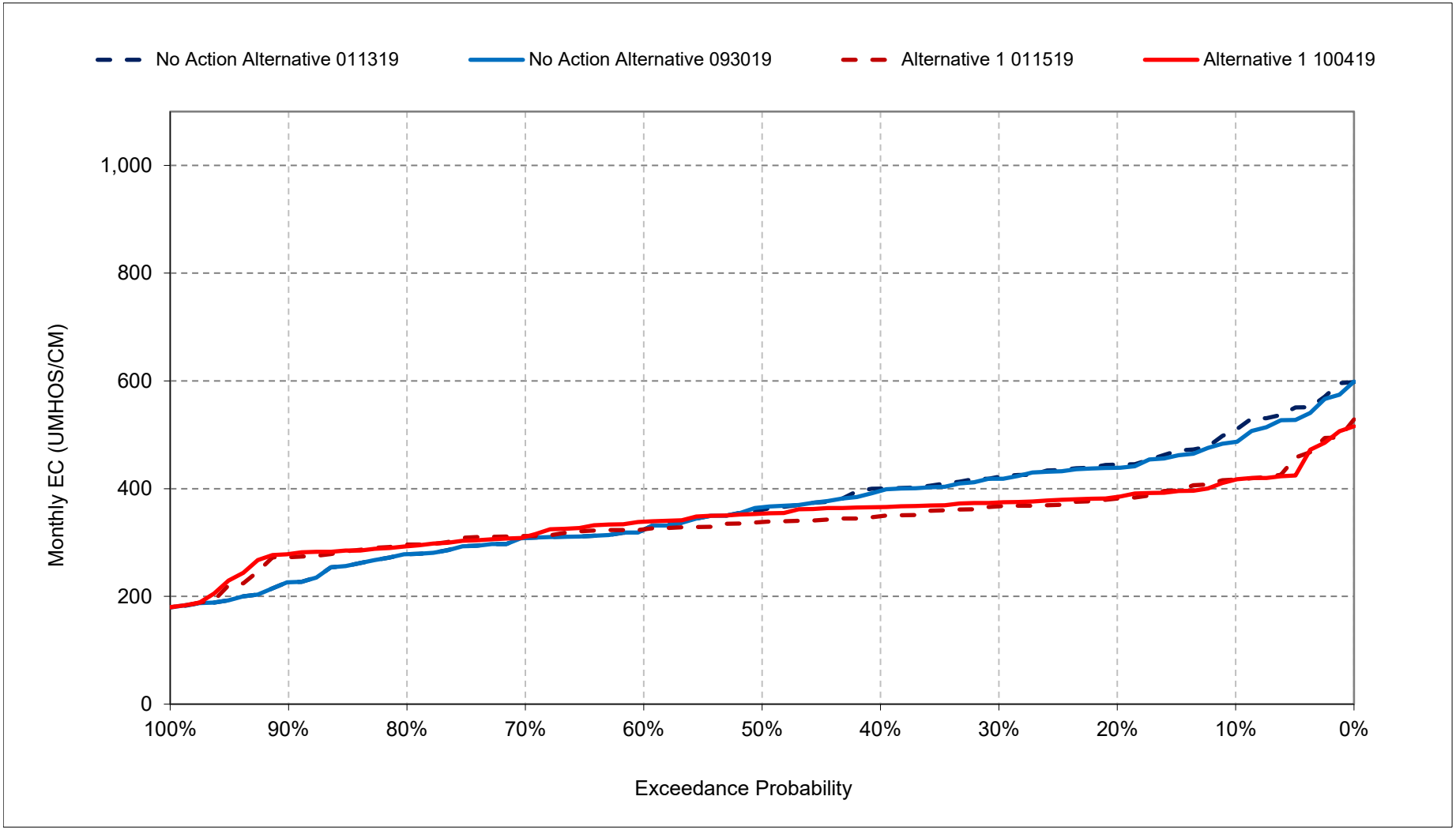

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-9. Old River at Highway 4, March EC**



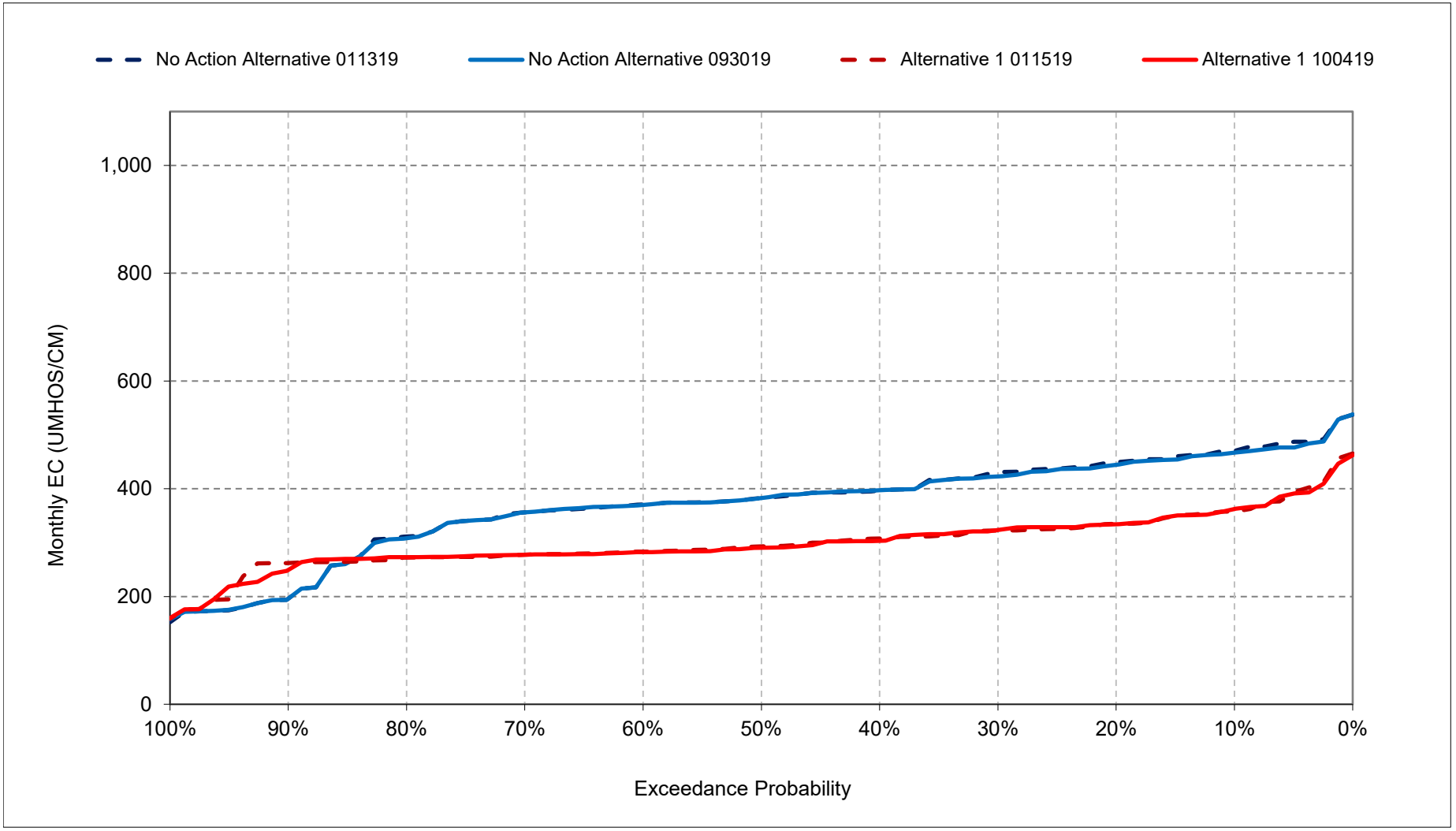

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-10. Old River at Highway 4, April EC**



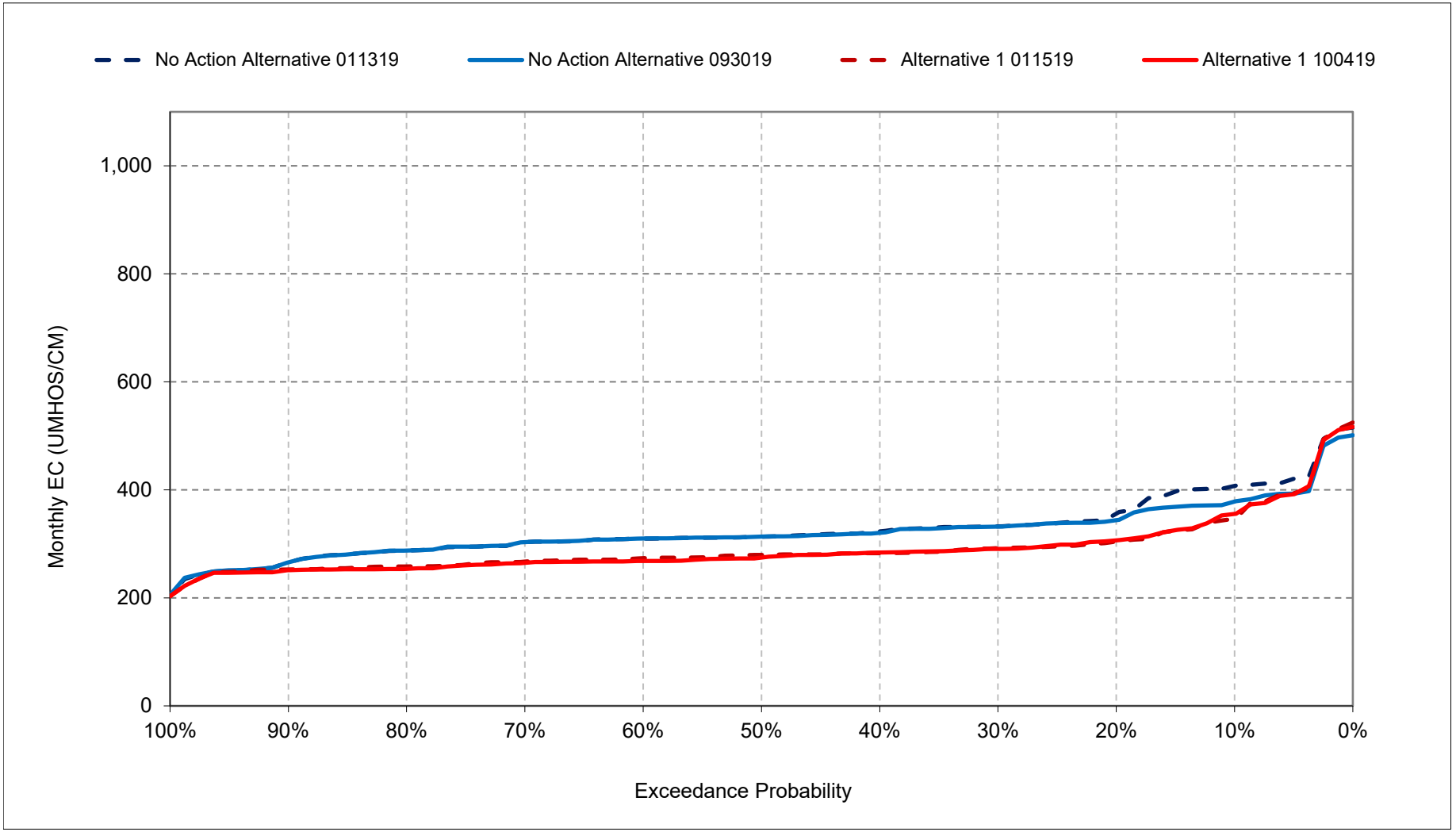

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-11. Old River at Highway 4, May EC**



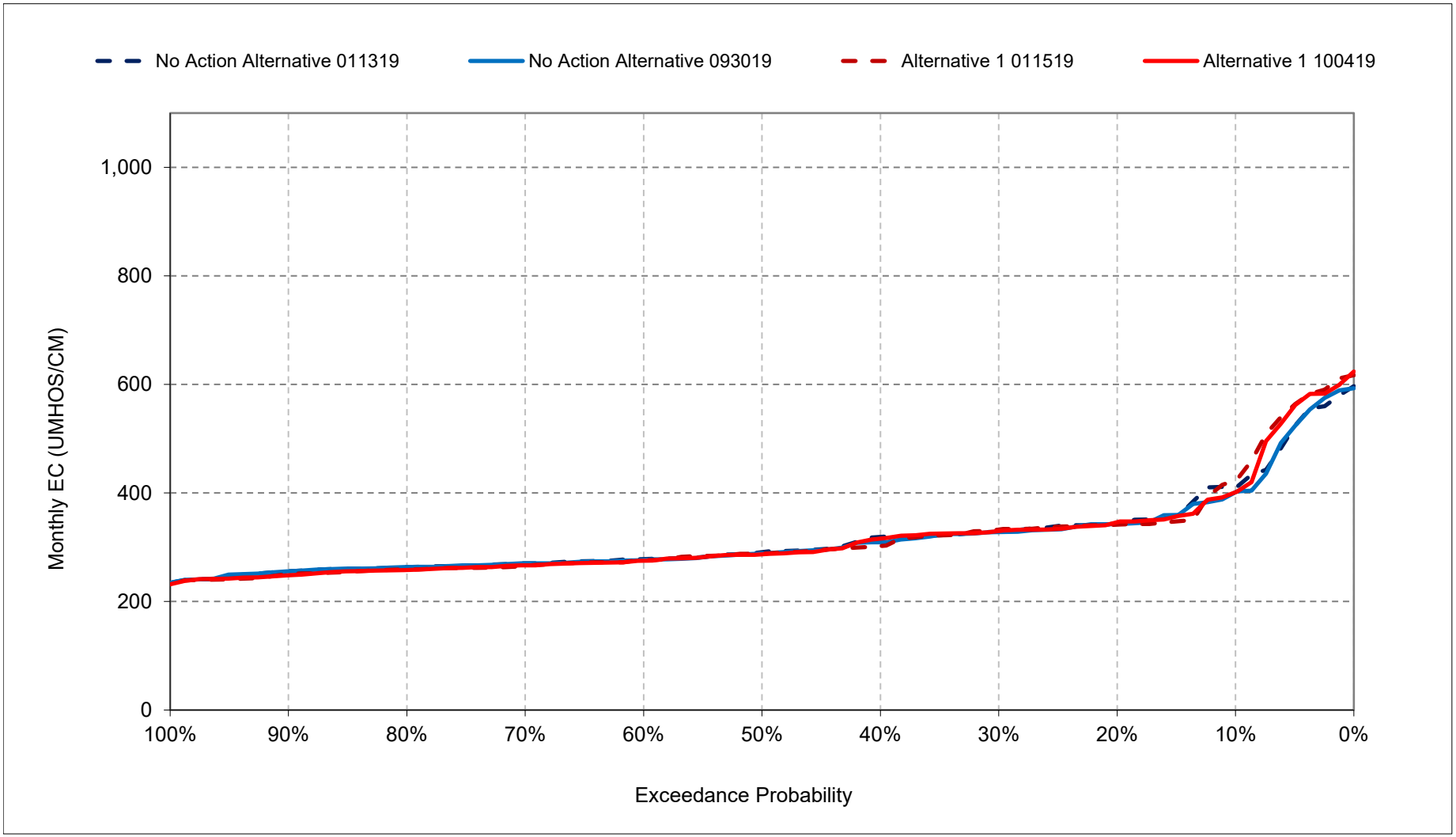

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-12. Old River at Highway 4, June EC**



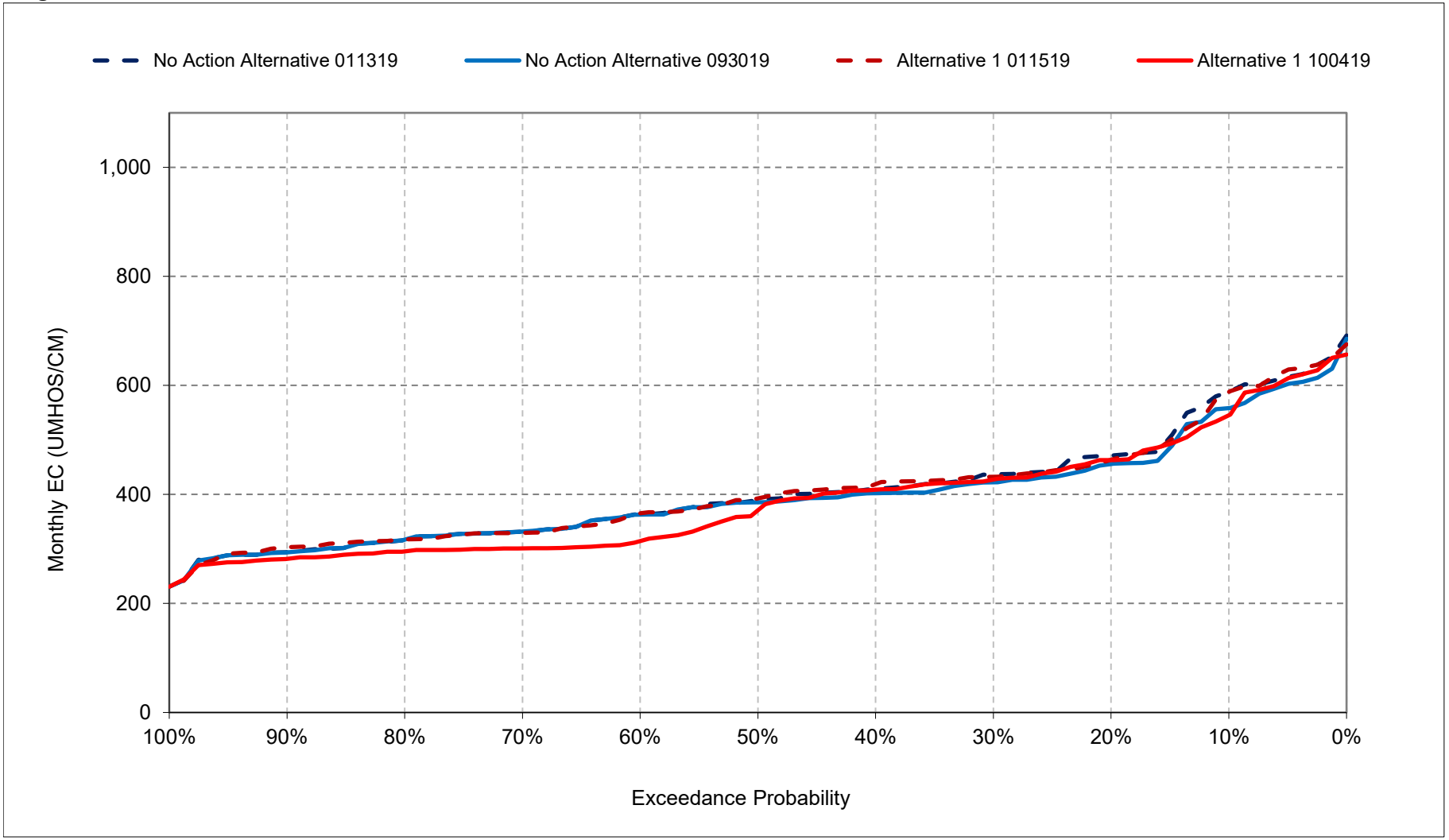

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-13. Old River at Highway 4, July EC**



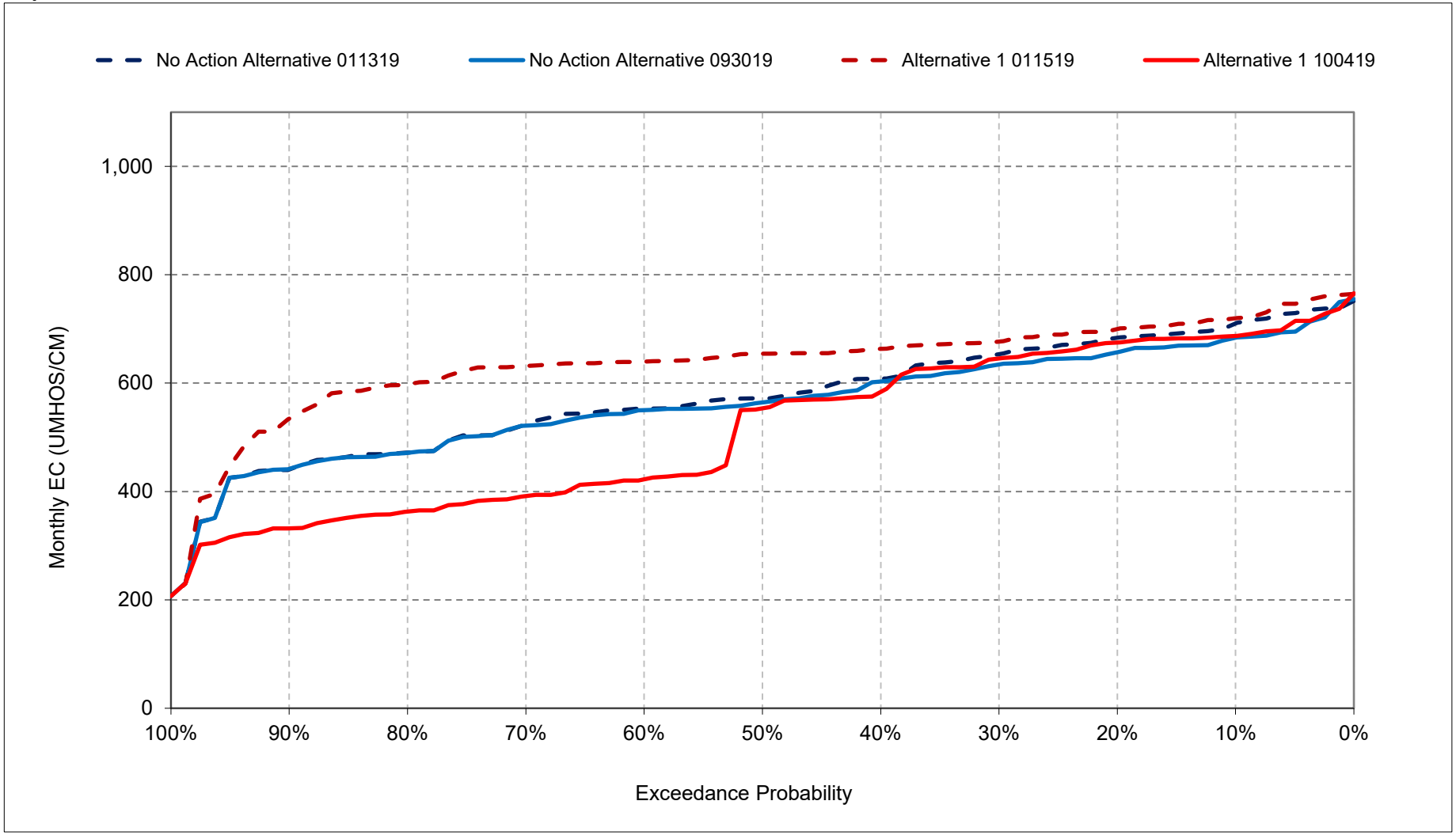

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-14. Old River at Highway 4, August EC**



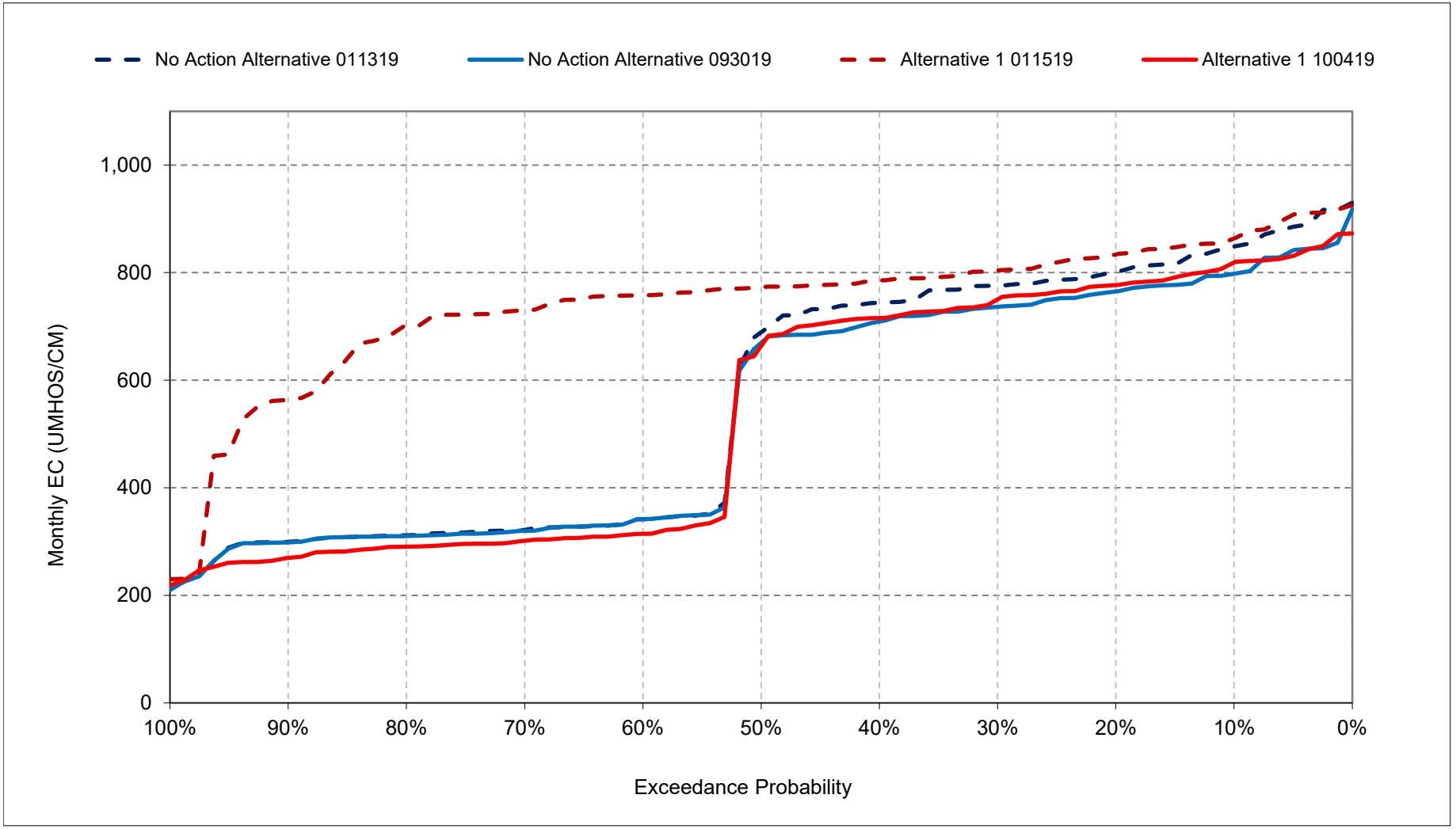

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-15. Old River at Highway 4, September EC**



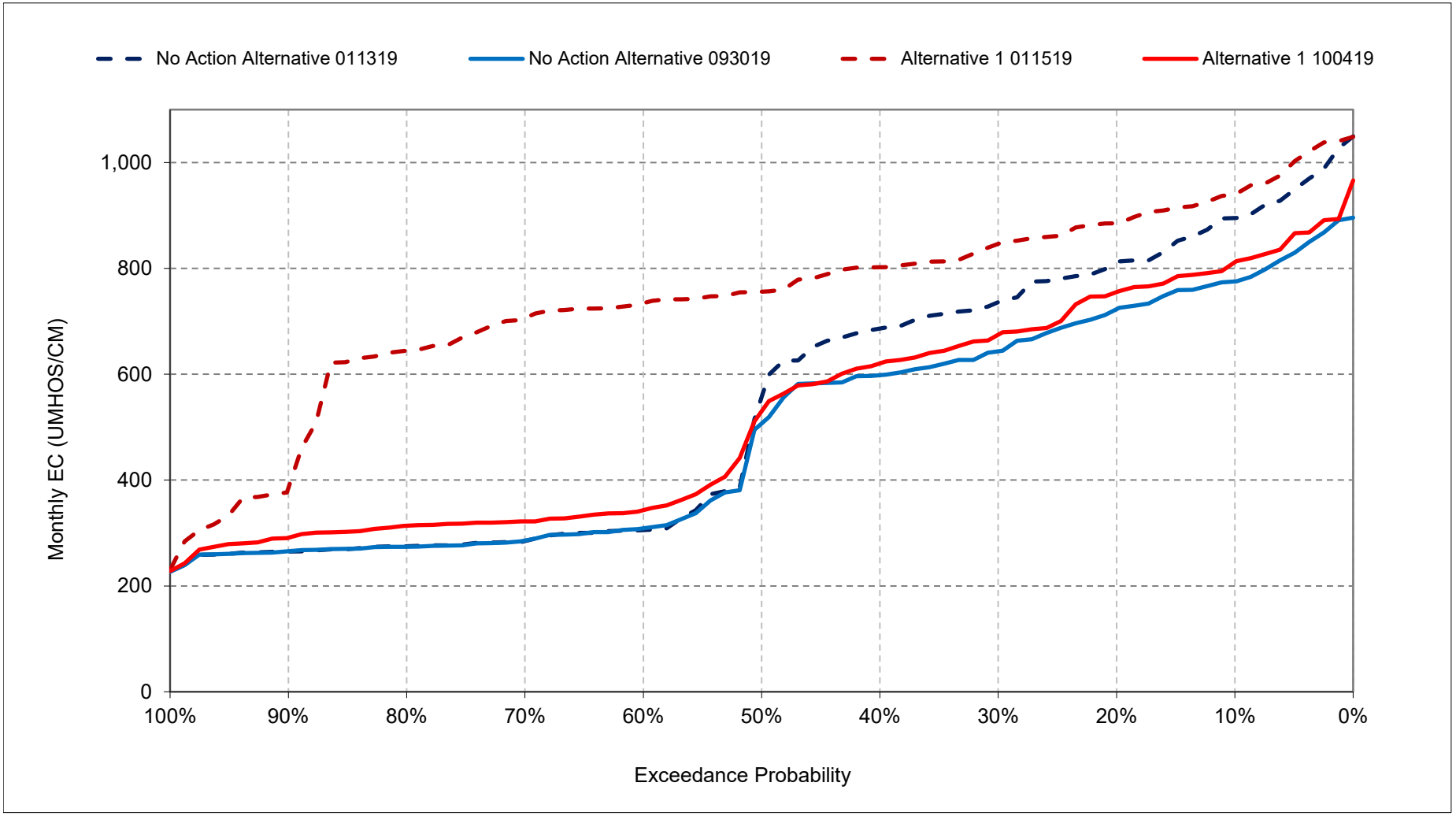

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-16. Old River at Highway 4, October EC**



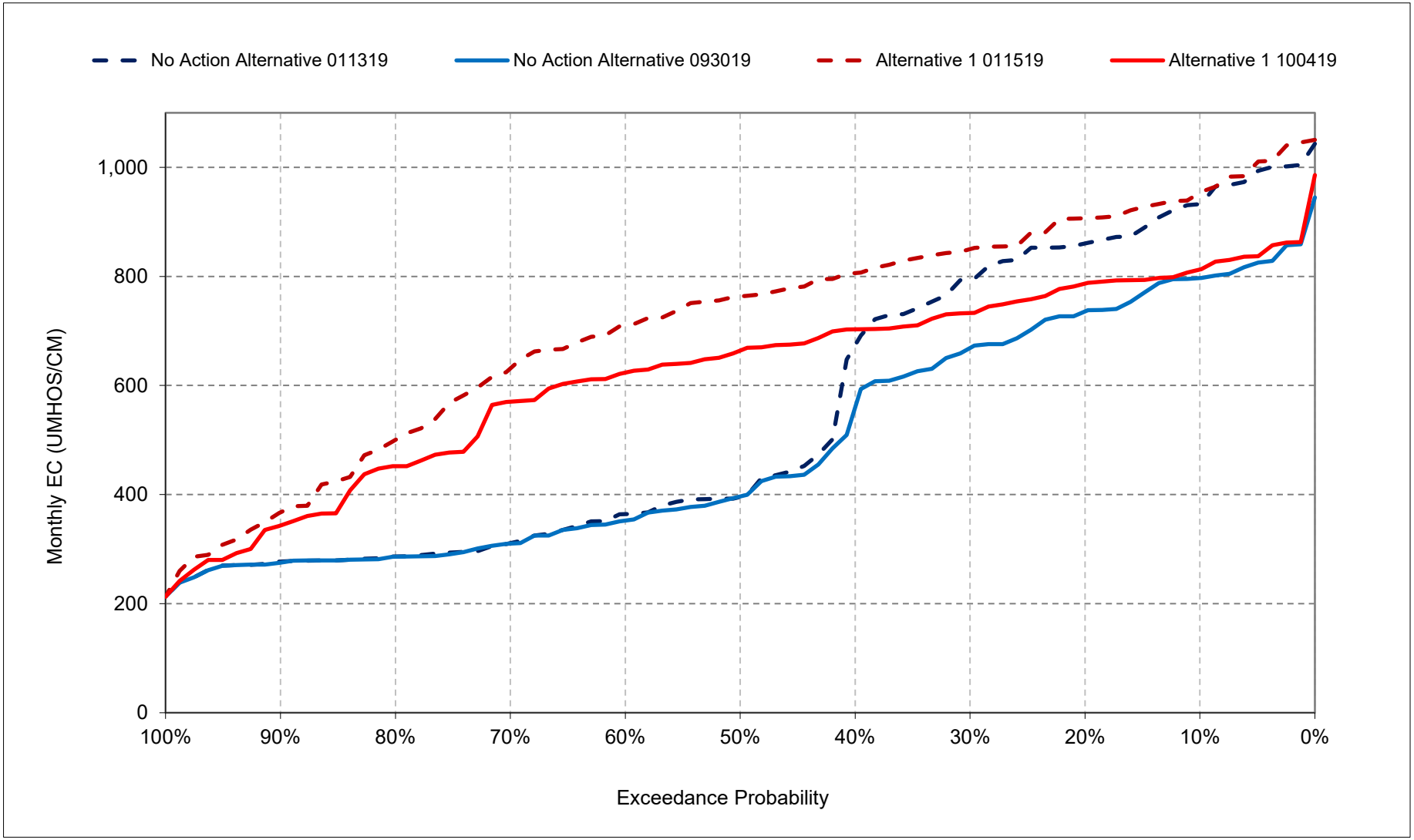

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-17. Old River at Highway 4, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 17-18. Old River at Highway 4, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-1. Victoria Canal, Monthly EC

### No Action Alternative 011319

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 548 | 578 | 693 | 721 | 662 | 582 | 565 | 482 | 423 | 373 | 434 | 467 |
| 20% | 521 | 532 | 621 | 680 | 611 | 556 | 506 | 464 | 393 | 354 | 363 | 449 |
| 30% | 511 | 504 | 578 | 591 | 575 | 527 | 475 | 447 | 373 | 330 | 351 | 439 |
| 40% | 490 | 474 | 517 | 557 | 551 | 500 | 454 | 430 | 365 | 312 | 327 | 423 |
| 50% | 461 | 432 | 405 | 534 | 528 | 471 | 415 | 390 | 360 | 300 | 305 | 419 |
| 60% | 381 | 362 | 363 | 501 | 505 | 434 | 335 | 364 | 355 | 290 | 301 | 409 |
| 70% | 369 | 351 | 344 | 477 | 479 | 397 | 305 | 348 | 347 | 284 | 289 | 395 |
| 80% | 350 | 345 | 318 | 444 | 425 | 346 | 272 | 305 | 337 | 274 | 270 | 359 |
| 90% | 336 | 337 | 292 | 417 | 359 | 308 | 224 | 193 | 311 | 263 | 257 | 341 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 439 | 436 | 461 | 548 | 521 | 459 | 393 | 377 | 362 | 314 | 326 | 409 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| Wet (32%) | 357 | 336 | 311 | 477 | 426 | 349 | 260 | 277 | 325 | 312 | 282 | 386 |
| Above Normal (16%) | 342 | 357 | 371 | 538 | 526 | 438 | 357 | 370 | 358 | 288 | 270 | 351 |
| Below Normal (13%) | 494 | 470 | 530 | 535 | 538 | 497 | 446 | 435 | 375 | 283 | 307 | 418 |
| Dry (24%) | 506 | 498 | 542 | 597 | 565 | 515 | 470 | 422 | 367 | 301 | 371 | 430 |
| Critical (15%) | 561 | 604 | 682 | 642 | 634 | 589 | 541 | 475 | 429 | 399 | 424 | 479 |

### Alternative 1 011519

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 563 | 616 | 697 | 734 | 639 | 546 | 484 | 410 | 366 | 370 | 421 | 475 |
| 20% | 541 | 564 | 650 | 695 | 595 | 502 | 455 | 387 | 351 | 353 | 361 | 459 |
| 30% | 527 | 536 | 596 | 684 | 575 | 487 | 438 | 373 | 333 | 324 | 336 | 439 |
| 40% | 514 | 514 | 572 | 648 | 539 | 462 | 418 | 354 | 324 | 304 | 323 | 425 |
| 50% | 491 | 499 | 534 | 579 | 510 | 446 | 404 | 330 | 321 | 291 | 310 | 421 |
| 60% | 472 | 482 | 508 | 535 | 481 | 424 | 370 | 320 | 314 | 281 | 301 | 418 |
| 70% | 467 | 469 | 490 | 509 | 458 | 399 | 321 | 310 | 307 | 275 | 291 | 405 |
| 80% | 452 | 445 | 431 | 475 | 429 | 341 | 300 | 303 | 298 | 265 | 270 | 397 |
| 90% | 410 | 372 | 364 | 422 | 361 | 308 | 267 | 232 | 287 | 250 | 260 | 366 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 486 | 497 | 537 | 581 | 507 | 431 | 382 | 333 | 324 | 308 | 325 | 419 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| Wet (32%) | 415 | 442 | 461 | 484 | 423 | 348 | 289 | 264 | 306 | 307 | 282 | 369 |
| Above Normal (16%) | 480 | 464 | 526 | 594 | 524 | 429 | 371 | 322 | 323 | 276 | 273 | 414 |
| Below Normal (13%) | 505 | 487 | 537 | 588 | 529 | 473 | 427 | 358 | 316 | 276 | 314 | 437 |
| Dry (24%) | 520 | 522 | 548 | 654 | 546 | 469 | 430 | 365 | 311 | 295 | 359 | 435 |
| Critical (15%) | 569 | 616 | 695 | 652 | 584 | 513 | 474 | 417 | 390 | 398 | 430 | 485 |

### Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **14** | **38** | **4** | **13** | -23 | -36 | -81 | -72 | -57 | -3 | -13 | **8** |
| 20% | **19** | **32** | **29** | **15** | -17 | -54 | -51 | -78 | -43 | -2 | -2 | **10** |
| 30% | **16** | **31** | **18** | **93** | -1 | -40 | -38 | -74 | -40 | -7 | -15 | **0** |
| 40% | **23** | **40** | **55** | **90** | -12 | -39 | -36 | -76 | -41 | -7 | -4 | **2** |
| 50% | **30** | **67** | **129** | **45** | -18 | -25 | -11 | -60 | -40 | -9 | **5** | **2** |
| 60% | **91** | **120** | **145** | **33** | -23 | -10 | **35** | -44 | -41 | -9 | -1 | **9** |
| 70% | **98** | **118** | **146** | **32** | -21 | **2** | **16** | -38 | -41 | -9 | **2** | **10** |
| 80% | **103** | **100** | **113** | **31** | **3** | -5 | **27** | -2 | -39 | -9 | **0** | **38** |
| 90% | **74** | **35** | **72** | **6** | **2** | **0** | **43** | **40** | -24 | -12 | **3** | **25** |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | **47** | **60** | **76** | **33** | -14 | -27 | -11 | -44 | -39 | -6 | -1 | **9** |
| **Water Year Types**[b] | | | | | | | | | | | | |
| Wet (32%) | **58** | **106** | **150** | **7** | -3 | -1 | **29** | -13 | -19 | -4 | **0** | -17 |
| Above Normal (16%) | **139** | **107** | **155** | **56** | -2 | -9 | **15** | -48 | -35 | -12 | **2** | **63** |
| Below Normal (13%) | **12** | **17** | **7** | **53** | -9 | -24 | -20 | -77 | -59 | -7 | **7** | **19** |
| Dry (24%) | **14** | **23** | **6** | **57** | -18 | -46 | -40 | -57 | -56 | -6 | -13 | **5** |
| Critical (15%) | **8** | **11** | **13** | **9** | -50 | -76 | -68 | -58 | -39 | -1 | **7** | **7** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-2. Victoria Canal, Monthly EC

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 545 | 541 | 608 | 634 | 632 | 582 | 552 | 477 | 407 | 372 | 407 | 457 |
| 20% | 513 | 501 | 577 | 596 | 584 | 553 | 504 | 459 | 394 | 354 | 363 | 443 |
| 30% | 499 | 477 | 506 | 574 | 570 | 520 | 475 | 448 | 373 | 330 | 339 | 430 |
| 40% | 480 | 453 | 463 | 534 | 537 | 494 | 451 | 431 | 365 | 310 | 323 | 420 |
| 50% | 453 | 416 | 402 | 521 | 522 | 465 | 415 | 389 | 360 | 296 | 305 | 410 |
| 60% | 382 | 362 | 363 | 499 | 496 | 434 | 335 | 364 | 354 | 291 | 300 | 402 |
| 70% | 365 | 352 | 343 | 477 | 477 | 397 | 304 | 348 | 348 | 283 | 290 | 394 |
| 80% | 349 | 345 | 318 | 442 | 425 | 346 | 272 | 305 | 337 | 273 | 270 | 358 |
| 90% | 336 | 334 | 291 | 414 | 359 | 308 | 224 | 193 | 311 | 264 | 257 | 341 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 433 | 421 | 434 | 521 | 507 | 454 | 391 | 376 | 359 | 313 | 323 | 405 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 356 | 336 | 311 | 473 | 426 | 349 | 260 | 277 | 325 | 311 | 282 | 386 |
| Above Normal (16%) | 342 | 358 | 369 | 528 | 526 | 438 | 357 | 371 | 359 | 289 | 270 | 351 |
| Below Normal (13%) | 487 | 446 | 476 | 514 | 532 | 497 | 446 | 435 | 371 | 282 | 304 | 412 |
| Dry (24%) | 494 | 474 | 507 | 547 | 543 | 511 | 470 | 421 | 363 | 300 | 361 | 420 |
| Critical (15%) | 546 | 564 | 613 | 583 | 577 | 560 | 530 | 469 | 415 | 393 | 424 | 469 |

### Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 546 | 552 | 617 | 772 | 618 | 549 | 505 | 411 | 372 | 383 | 400 | 460 |
| 20% | 516 | 530 | 582 | 682 | 582 | 523 | 481 | 390 | 349 | 358 | 367 | 447 |
| 30% | 508 | 481 | 538 | 621 | 560 | 495 | 457 | 372 | 334 | 330 | 338 | 427 |
| 40% | 486 | 458 | 502 | 596 | 534 | 475 | 442 | 358 | 321 | 308 | 323 | 415 |
| 50% | 459 | 404 | 477 | 572 | 502 | 463 | 431 | 331 | 318 | 292 | 306 | 391 |
| 60% | 378 | 329 | 459 | 518 | 482 | 433 | 371 | 318 | 314 | 282 | 293 | 364 |
| 70% | 358 | 317 | 438 | 504 | 463 | 406 | 322 | 312 | 306 | 274 | 284 | 343 |
| 80% | 350 | 311 | 408 | 469 | 428 | 352 | 301 | 305 | 298 | 268 | 270 | 336 |
| 90% | 320 | 304 | 342 | 421 | 345 | 311 | 265 | 221 | 287 | 255 | 256 | 321 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 432 | 412 | 484 | 571 | 499 | 443 | 394 | 334 | 323 | 310 | 323 | 389 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 335 | 305 | 411 | 486 | 425 | 356 | 293 | 266 | 305 | 309 | 278 | 327 |
| Above Normal (16%) | 362 | 326 | 471 | 581 | 518 | 445 | 380 | 320 | 318 | 281 | 267 | 346 |
| Below Normal (13%) | 490 | 458 | 481 | 601 | 530 | 492 | 446 | 360 | 316 | 275 | 311 | 427 |
| Dry (24%) | 502 | 488 | 509 | 628 | 529 | 489 | 461 | 370 | 313 | 295 | 357 | 425 |
| Critical (15%) | 550 | 568 | 613 | 619 | 560 | 507 | 472 | 413 | 391 | 403 | 432 | 475 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 1 | 11 | 8 | 138 | -14 | -33 | -47 | -67 | -34 | 12 | -7 | 3 |
| 20% | 3 | 29 | 4 | 86 | -3 | -30 | -23 | -69 | -44 | 4 | 4 | 3 |
| 30% | 9 | 5 | 32 | 48 | -11 | -25 | -18 | -75 | -39 | 0 | -1 | -3 |
| 40% | 6 | 5 | 38 | 62 | -3 | -19 | -9 | -73 | -44 | -2 | -1 | -5 |
| 50% | 6 | -12 | 75 | 50 | -19 | -1 | 16 | -58 | -42 | -5 | 1 | -19 |
| 60% | -4 | -34 | 96 | 19 | -15 | -1 | 36 | -46 | -40 | -10 | -7 | -39 |
| 70% | -7 | -35 | 95 | 27 | -13 | 9 | 17 | -35 | -42 | -10 | -6 | -51 |
| 80% | 0 | -33 | 90 | 27 | 3 | 6 | 29 | 0 | -39 | -5 | 0 | -23 |
| 90% | -16 | -29 | 51 | 6 | -13 | 3 | 41 | 29 | -24 | -9 | -1 | -20 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | -9 | 49 | 49 | -8 | -11 | 3 | -42 | -36 | -2 | -1 | -16 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -20 | -31 | 101 | 13 | -1 | 6 | 32 | -11 | -20 | -2 | -4 | -60 |
| Above Normal (16%) | 19 | -32 | 102 | 52 | -9 | 7 | 24 | -50 | -40 | -7 | -3 | -5 |
| Below Normal (13%) | 3 | 13 | 5 | 88 | -1 | -5 | 0 | -75 | -55 | -7 | 7 | 15 |
| Dry (24%) | 8 | 14 | 2 | 81 | -14 | -23 | -9 | -51 | -50 | -5 | -4 | 5 |
| Critical (15%) | 4 | 4 | 0 | 37 | -17 | -53 | -58 | -56 | -24 | 10 | 8 | 6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 18-3. Victoria Canal, Monthly EC

### No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 548 | 578 | 693 | 721 | 662 | 582 | 565 | 482 | 423 | 373 | 434 | 467 |
| 20% | 521 | 532 | 621 | 680 | 611 | 556 | 506 | 464 | 393 | 354 | 363 | 449 |
| 30% | 511 | 504 | 578 | 591 | 575 | 527 | 475 | 447 | 373 | 330 | 351 | 439 |
| 40% | 490 | 474 | 517 | 557 | 551 | 500 | 454 | 430 | 365 | 312 | 327 | 423 |
| 50% | 461 | 432 | 405 | 534 | 528 | 471 | 415 | 390 | 360 | 300 | 305 | 419 |
| 60% | 381 | 362 | 363 | 501 | 505 | 434 | 335 | 364 | 355 | 290 | 301 | 409 |
| 70% | 369 | 351 | 344 | 477 | 479 | 397 | 305 | 348 | 347 | 284 | 289 | 395 |
| 80% | 350 | 345 | 318 | 444 | 425 | 346 | 272 | 305 | 337 | 274 | 270 | 359 |
| 90% | 336 | 337 | 292 | 417 | 359 | 308 | 224 | 193 | 311 | 263 | 257 | 341 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 439 | 436 | 461 | 548 | 521 | 459 | 393 | 377 | 362 | 314 | 326 | 409 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 357 | 336 | 311 | 477 | 426 | 349 | 260 | 277 | 325 | 312 | 282 | 386 |
| Above Normal (16%) | 342 | 357 | 371 | 538 | 526 | 438 | 357 | 370 | 358 | 288 | 270 | 351 |
| Below Normal (13%) | 494 | 470 | 530 | 535 | 538 | 497 | 446 | 435 | 375 | 283 | 307 | 418 |
| Dry (24%) | 506 | 498 | 542 | 597 | 565 | 515 | 470 | 422 | 367 | 301 | 371 | 430 |
| Critical (15%) | 561 | 604 | 682 | 642 | 634 | 589 | 541 | 475 | 429 | 399 | 424 | 479 |

### No Action Alternative 093019

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 545 | 541 | 608 | 634 | 632 | 582 | 552 | 477 | 407 | 372 | 407 | 457 |
| 20% | 513 | 501 | 577 | 596 | 584 | 553 | 504 | 459 | 394 | 354 | 363 | 443 |
| 30% | 499 | 477 | 506 | 574 | 570 | 520 | 475 | 448 | 373 | 330 | 339 | 430 |
| 40% | 480 | 453 | 463 | 534 | 537 | 494 | 451 | 431 | 365 | 310 | 323 | 420 |
| 50% | 453 | 416 | 402 | 521 | 522 | 465 | 415 | 389 | 360 | 296 | 305 | 410 |
| 60% | 382 | 362 | 363 | 499 | 496 | 434 | 335 | 364 | 354 | 291 | 300 | 402 |
| 70% | 365 | 352 | 343 | 477 | 477 | 397 | 304 | 348 | 348 | 283 | 290 | 394 |
| 80% | 349 | 345 | 318 | 442 | 425 | 346 | 272 | 305 | 337 | 273 | 270 | 358 |
| 90% | 336 | 334 | 291 | 414 | 359 | 308 | 224 | 193 | 311 | 264 | 257 | 341 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 433 | 421 | 434 | 521 | 507 | 454 | 391 | 376 | 359 | 313 | 323 | 405 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 356 | 336 | 311 | 473 | 426 | 349 | 260 | 277 | 325 | 311 | 282 | 386 |
| Above Normal (16%) | 342 | 358 | 369 | 528 | 526 | 438 | 357 | 371 | 359 | 289 | 270 | 351 |
| Below Normal (13%) | 487 | 446 | 476 | 514 | 532 | 497 | 446 | 435 | 371 | 282 | 304 | 412 |
| Dry (24%) | 494 | 474 | 507 | 547 | 543 | 511 | 470 | 421 | 363 | 300 | 361 | 420 |
| Critical (15%) | 546 | 564 | 613 | 583 | 577 | 560 | 530 | 469 | 415 | 393 | 424 | 469 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -3 | -37 | -85 | -87 | -30 | 0 | -12 | -5 | -16 | -1 | -27 | -10 |
| 20% | -9 | -31 | -44 | -84 | -27 | -3 | -2 | -5 | 1 | 0 | 0 | -6 |
| 30% | -12 | -28 | -72 | -18 | -5 | -6 | 0 | 1 | 0 | 0 | -12 | -9 |
| 40% | -11 | -21 | -54 | -23 | -14 | -6 | -3 | 1 | 0 | -2 | -4 | -4 |
| 50% | -9 | -16 | -3 | -13 | -6 | -6 | 0 | -1 | 0 | -3 | 0 | -9 |
| 60% | 0 | 0 | 0 | -2 | -8 | 0 | 0 | 0 | -1 | 1 | -1 | -7 |
| 70% | -4 | 1 | -1 | 0 | -2 | 0 | 0 | -1 | 1 | -1 | 0 | -1 |
| 80% | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | -1 |
| 90% | 0 | -4 | -1 | -2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -6 | -15 | -26 | -27 | -14 | -5 | -2 | -1 | -4 | -1 | -3 | -5 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -1 | -1 | 0 | -4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 1 | 1 | -2 | -9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -7 | -24 | -54 | -21 | -6 | -1 | 0 | 0 | -4 | -1 | -3 | -6 |
| Dry (24%) | -12 | -25 | -35 | -50 | -22 | -3 | 0 | 0 | -4 | -1 | -10 | -10 |
| Critical (15%) | -15 | -40 | -69 | -60 | -57 | -30 | -11 | -5 | -14 | -6 | 0 | -10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 18-4. Victoria Canal, Monthly EC

## Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 563 | 616 | 697 | 734 | 639 | 546 | 484 | 410 | 366 | 370 | 421 | 475 |
| 20% | 541 | 564 | 650 | 695 | 595 | 502 | 455 | 387 | 351 | 353 | 361 | 459 |
| 30% | 527 | 536 | 596 | 684 | 575 | 487 | 438 | 373 | 333 | 324 | 336 | 439 |
| 40% | 514 | 514 | 572 | 648 | 539 | 462 | 418 | 354 | 324 | 304 | 323 | 425 |
| 50% | 491 | 499 | 534 | 579 | 510 | 446 | 404 | 330 | 321 | 291 | 310 | 421 |
| 60% | 472 | 482 | 508 | 535 | 481 | 424 | 370 | 320 | 314 | 281 | 301 | 418 |
| 70% | 467 | 469 | 490 | 509 | 458 | 399 | 321 | 310 | 307 | 275 | 291 | 405 |
| 80% | 452 | 445 | 431 | 475 | 429 | 341 | 300 | 303 | 298 | 265 | 270 | 397 |
| 90% | 410 | 372 | 364 | 422 | 361 | 308 | 267 | 232 | 287 | 250 | 260 | 366 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 486 | 497 | 537 | 581 | 507 | 431 | 382 | 333 | 324 | 308 | 325 | 419 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 415 | 442 | 461 | 484 | 423 | 348 | 289 | 264 | 306 | 307 | 282 | 369 |
| Above Normal (16%) | 480 | 464 | 526 | 594 | 524 | 429 | 371 | 322 | 323 | 276 | 273 | 414 |
| Below Normal (13%) | 505 | 487 | 537 | 588 | 529 | 473 | 427 | 358 | 316 | 276 | 314 | 437 |
| Dry (24%) | 520 | 522 | 548 | 654 | 546 | 469 | 430 | 365 | 311 | 295 | 359 | 435 |
| Critical (15%) | 569 | 616 | 695 | 652 | 584 | 513 | 474 | 417 | 390 | 398 | 430 | 485 |

## Alternative 1 100419

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 546 | 552 | 617 | 772 | 618 | 549 | 505 | 411 | 372 | 383 | 400 | 460 |
| 20% | 516 | 530 | 582 | 682 | 582 | 523 | 481 | 390 | 349 | 358 | 367 | 447 |
| 30% | 508 | 481 | 538 | 621 | 560 | 495 | 457 | 372 | 334 | 330 | 338 | 427 |
| 40% | 486 | 458 | 502 | 596 | 534 | 475 | 442 | 358 | 321 | 308 | 323 | 415 |
| 50% | 459 | 404 | 477 | 572 | 502 | 463 | 431 | 331 | 318 | 292 | 306 | 391 |
| 60% | 378 | 329 | 459 | 518 | 482 | 433 | 371 | 318 | 314 | 282 | 293 | 364 |
| 70% | 358 | 317 | 438 | 504 | 463 | 406 | 322 | 312 | 306 | 274 | 284 | 343 |
| 80% | 350 | 311 | 408 | 469 | 428 | 352 | 301 | 305 | 298 | 268 | 270 | 336 |
| 90% | 320 | 304 | 342 | 421 | 345 | 311 | 265 | 221 | 287 | 255 | 256 | 321 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 432 | 412 | 484 | 571 | 499 | 443 | 394 | 334 | 323 | 310 | 323 | 389 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 335 | 305 | 411 | 486 | 425 | 356 | 293 | 266 | 305 | 309 | 278 | 327 |
| Above Normal (16%) | 362 | 326 | 471 | 581 | 518 | 445 | 380 | 320 | 318 | 281 | 267 | 346 |
| Below Normal (13%) | 490 | 458 | 481 | 601 | 530 | 492 | 446 | 360 | 316 | 275 | 311 | 427 |
| Dry (24%) | 502 | 488 | 509 | 628 | 529 | 489 | 461 | 370 | 313 | 295 | 357 | 425 |
| Critical (15%) | 550 | 568 | 613 | 619 | 560 | 507 | 472 | 413 | 391 | 403 | 432 | 475 |

## Alternative 1 100419 minus Alternative 1 011519

| | Monthly EC (UMHOS/CM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -17 | -64 | -80 | **37** | -21 | **2** | **22** | **0** | **7** | **13** | -21 | -15 |
| 20% | -24 | -34 | -68 | -13 | -13 | **21** | **26** | **3** | -1 | **5** | **6** | -13 |
| 30% | -19 | -55 | -58 | -63 | -15 | **8** | **19** | -1 | **2** | **6** | **2** | -12 |
| 40% | -28 | -56 | -71 | -51 | -6 | **13** | **24** | **4** | -3 | **4** | -1 | -11 |
| 50% | -33 | -95 | -57 | -7 | -7 | **17** | **26** | **1** | -2 | **1** | -4 | -30 |
| 60% | -95 | -153 | -49 | -17 | **0** | **9** | **1** | -2 | **0** | **0** | -8 | -54 |
| 70% | -108 | -152 | -53 | -5 | **5** | **7** | **1** | **2** | -1 | -2 | -7 | -62 |
| 80% | -102 | -134 | -24 | -6 | 0 | **11** | **2** | **2** | **0** | **2** | 0 | -62 |
| 90% | -90 | -68 | -22 | -2 | -16 | **2** | -2 | -11 | **0** | **4** | -4 | -45 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -53 | -85 | -53 | -11 | -8 | **11** | **12** | **1** | 0 | **2** | -3 | -30 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -80 | -138 | -49 | **1** | **2** | **7** | **3** | **2** | -1 | **2** | -5 | -43 |
| Above Normal (16%) | -119 | -138 | -55 | -13 | -6 | **16** | **9** | -2 | -5 | **5** | -5 | -68 |
| Below Normal (13%) | -16 | -28 | -56 | **14** | **2** | **19** | **19** | **2** | 0 | -1 | -3 | -10 |
| Dry (24%) | -18 | -34 | -39 | -26 | -18 | **20** | **31** | **6** | **2** | 0 | -2 | -10 |
| Critical (15%) | -20 | -47 | -82 | -32 | -24 | -6 | -2 | -4 | **1** | **5** | **2** | -10 |

a Based on the 82-year simulation period.

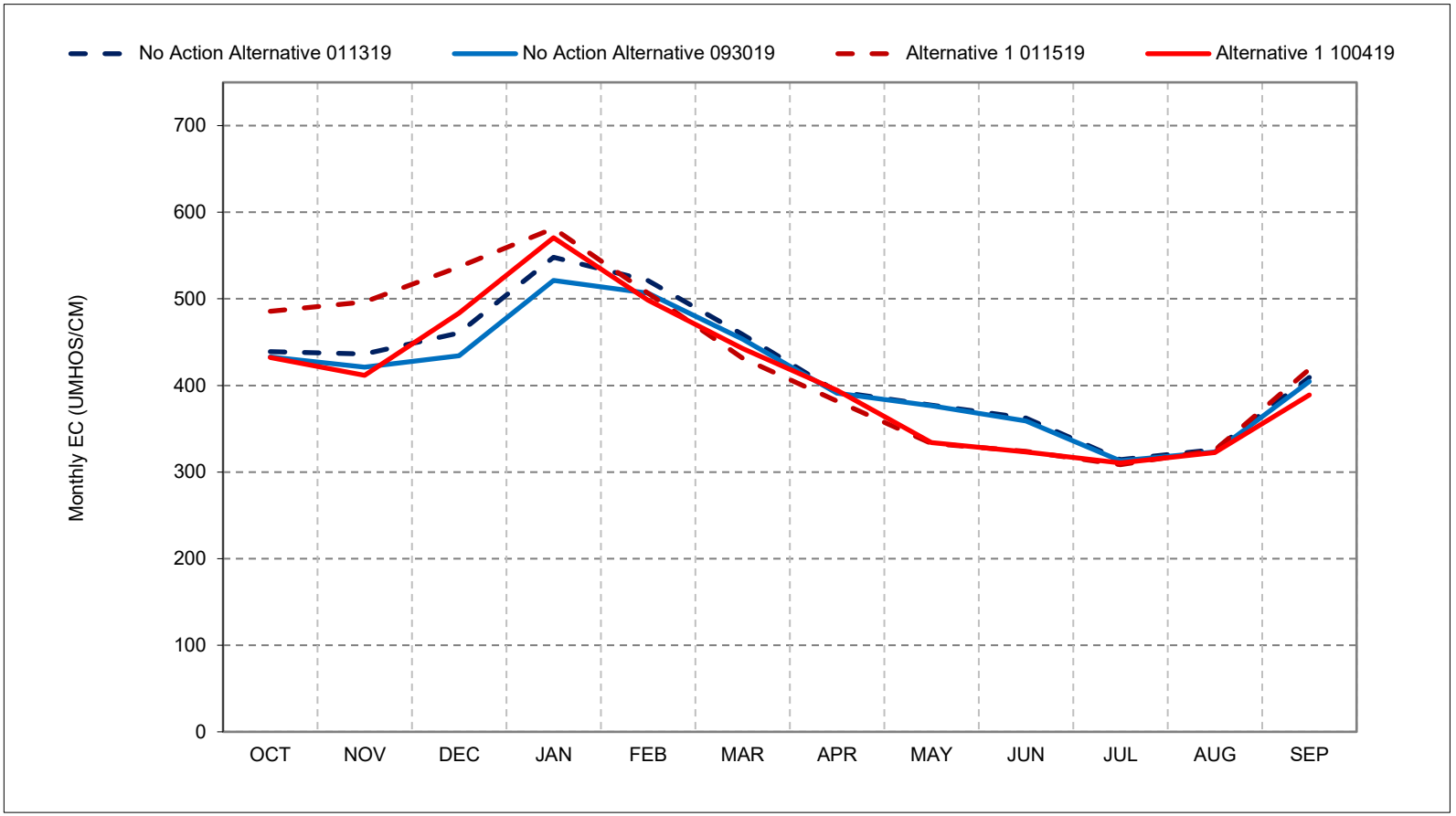
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-1. Victoria Canal, Long-Term Average EC

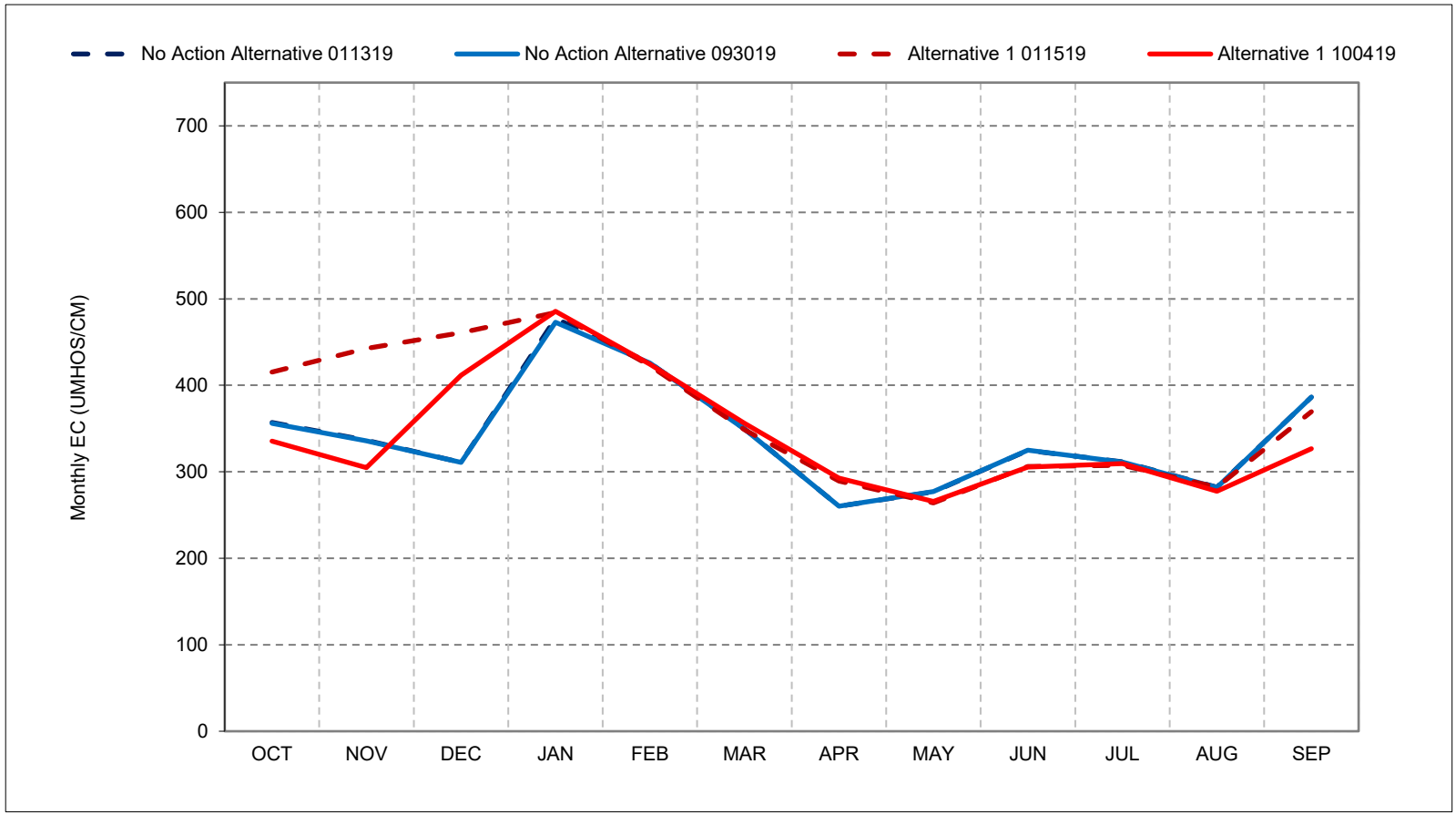



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-2. Victoria Canal, Wet Year Average EC

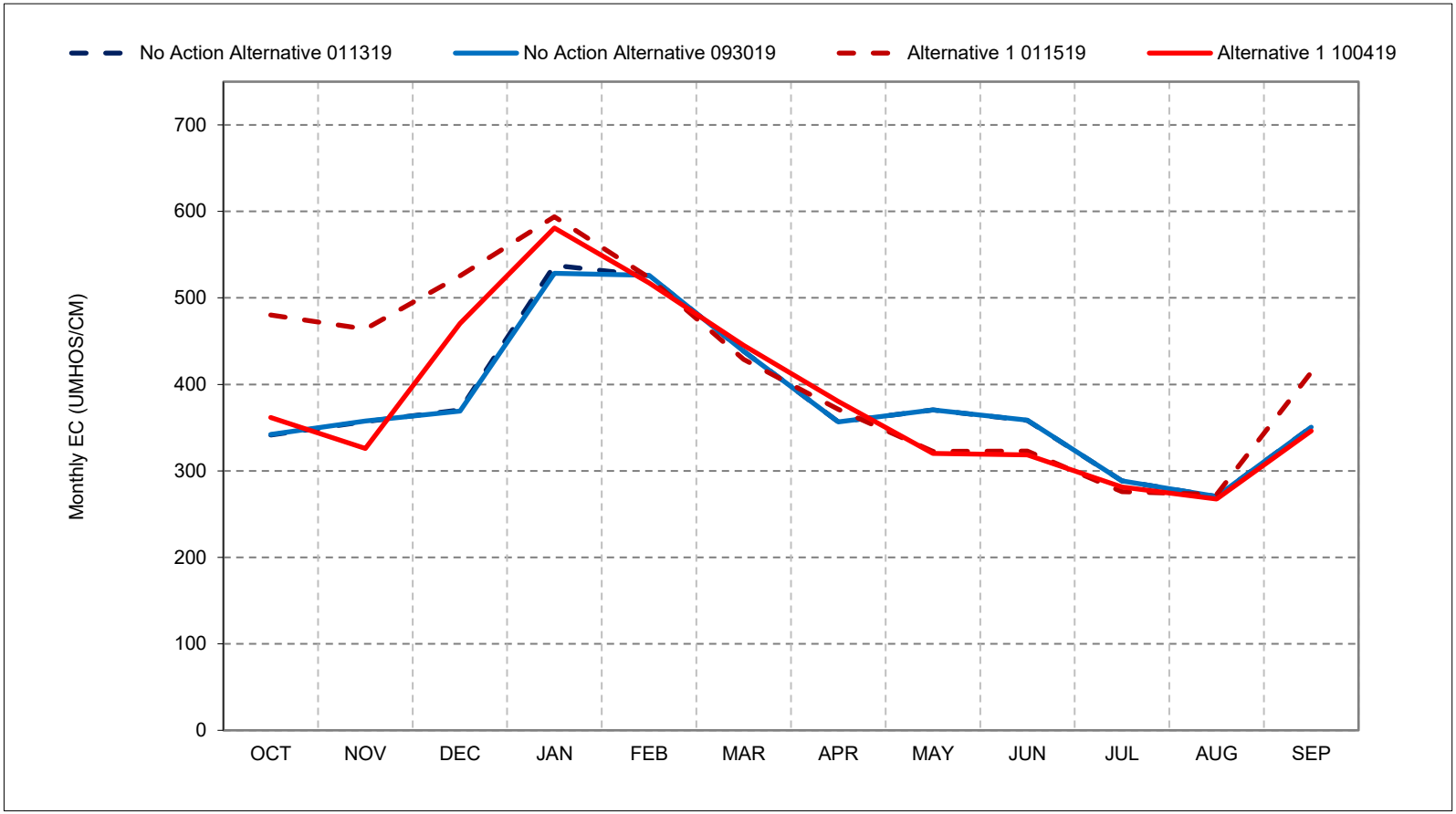



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-3. Victoria Canal, Above Normal Year Average EC

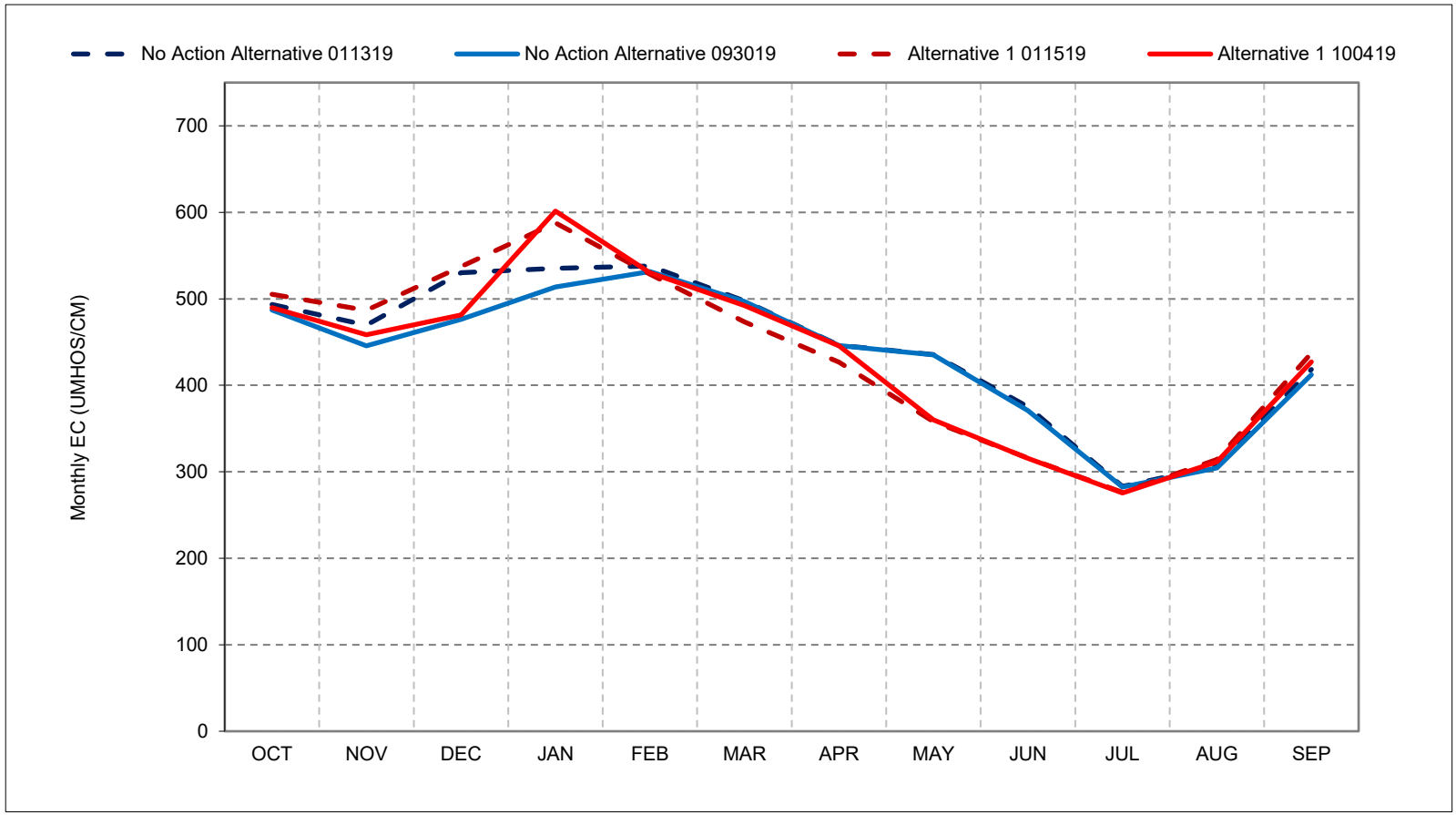



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-4. Victoria Canal, Below Normal Year Average EC

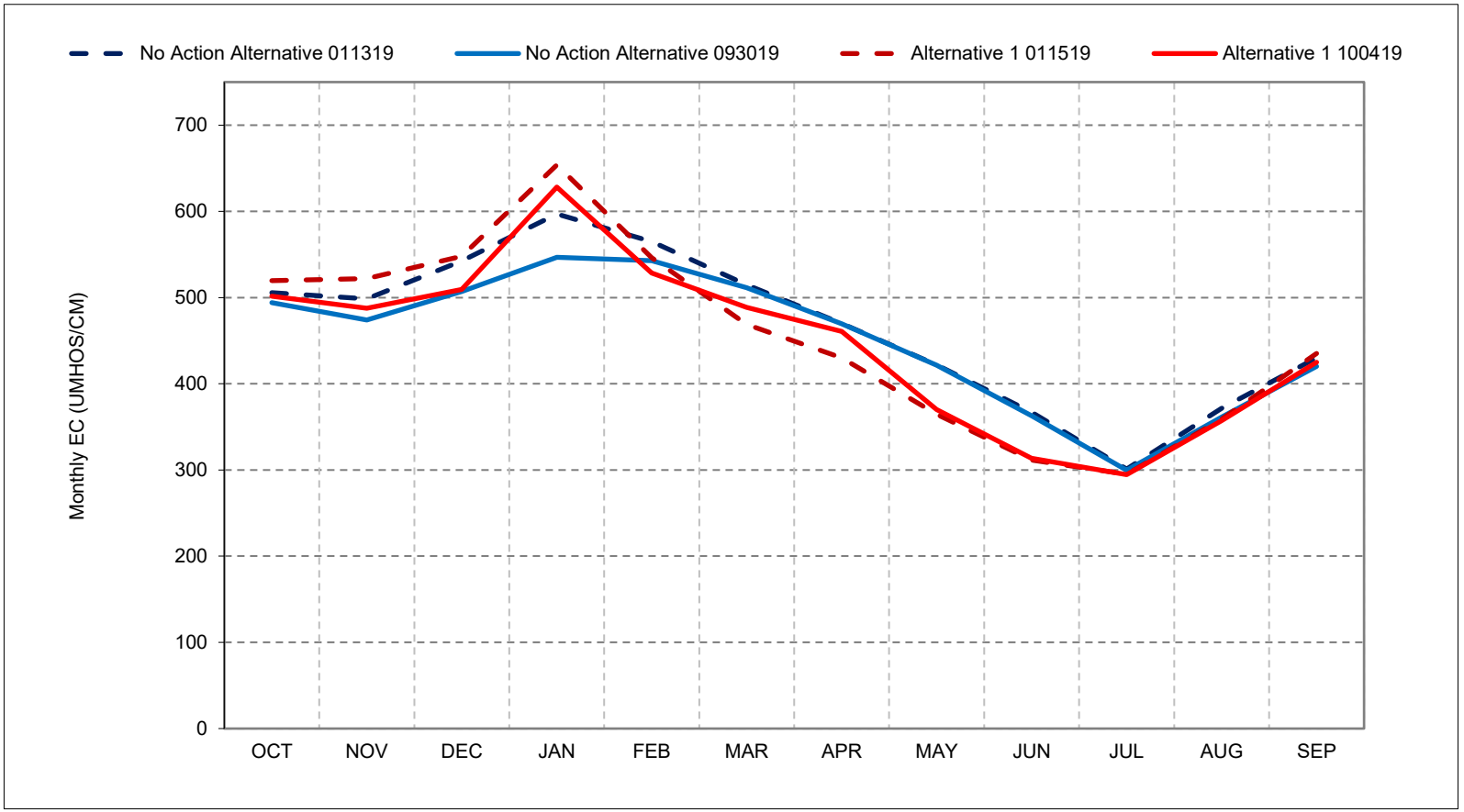



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-5. Victoria Canal, Dry Year Average EC

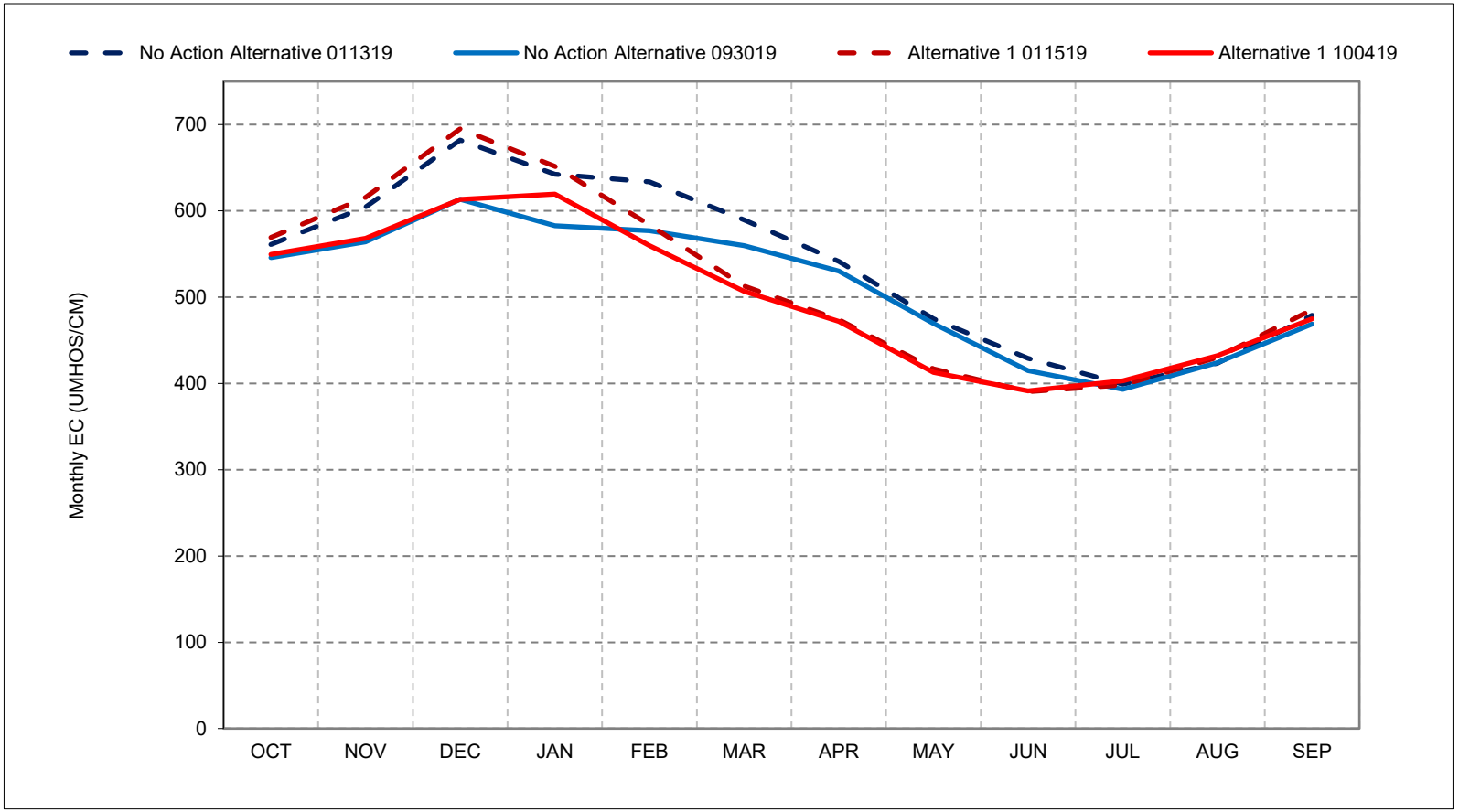



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 18-6. Victoria Canal, Critical Year Average EC

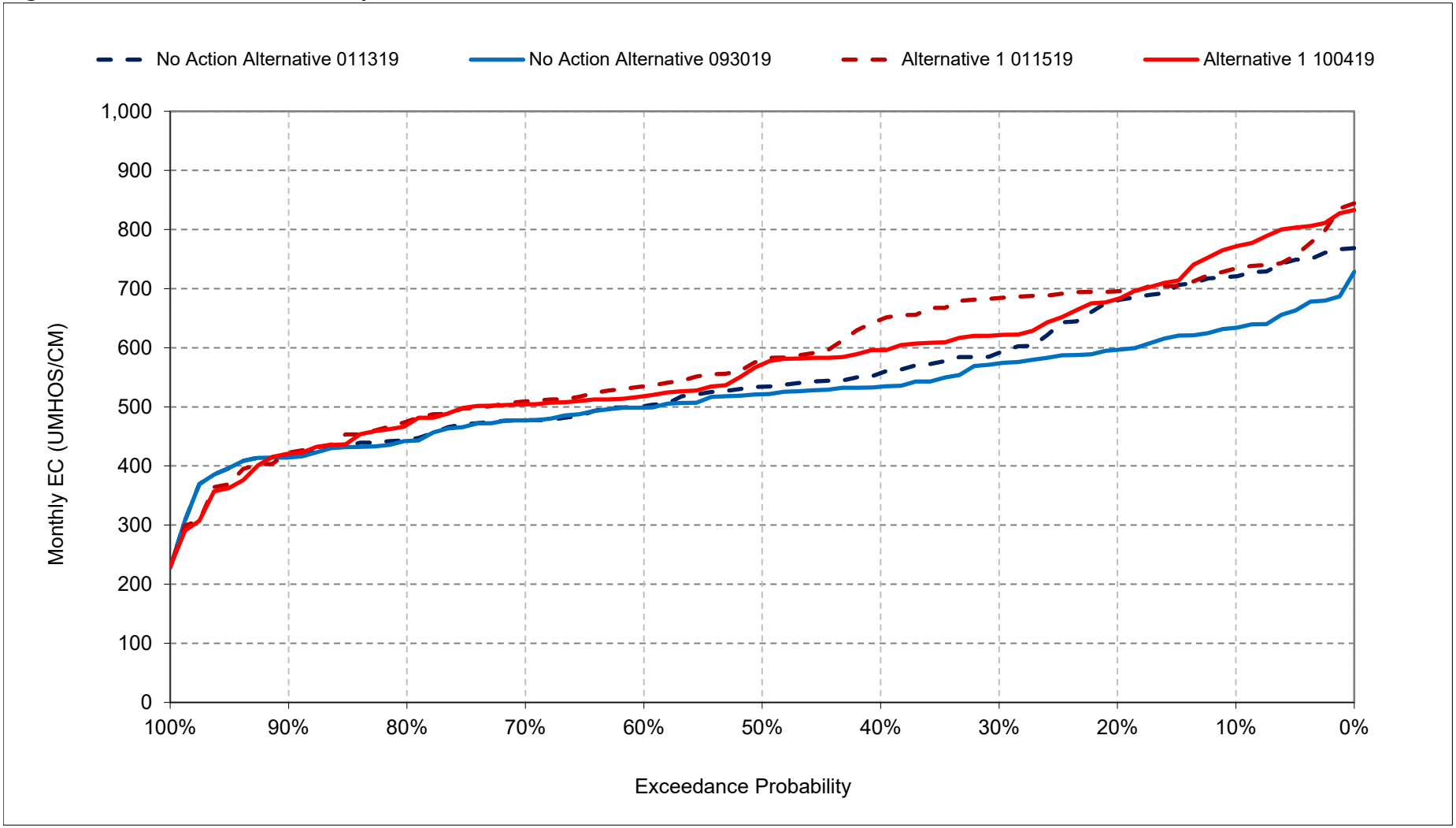



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

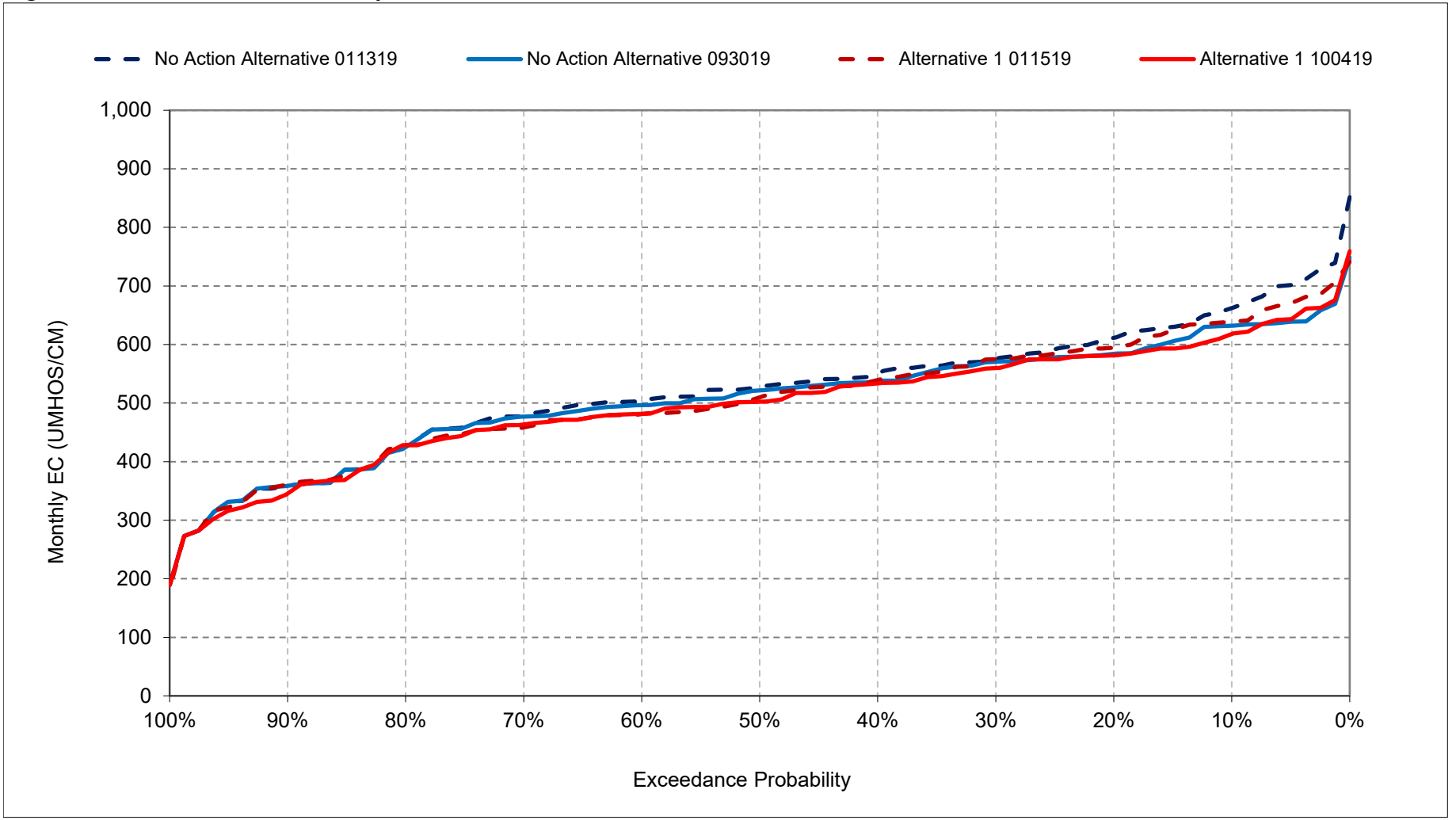
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-7. Victoria Canal, January EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-8. Victoria Canal, February EC**



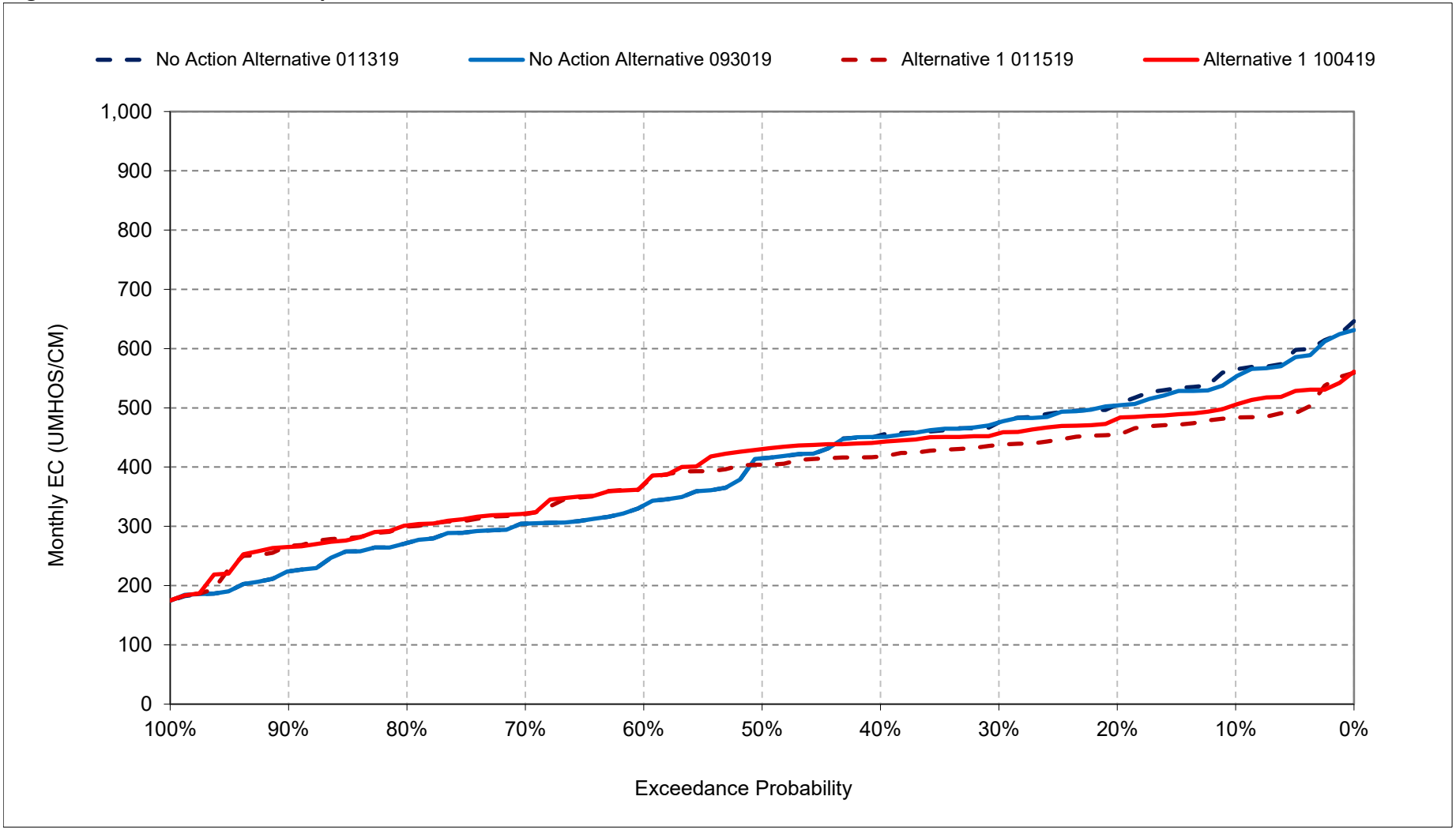

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-9. Victoria Canal, March EC**



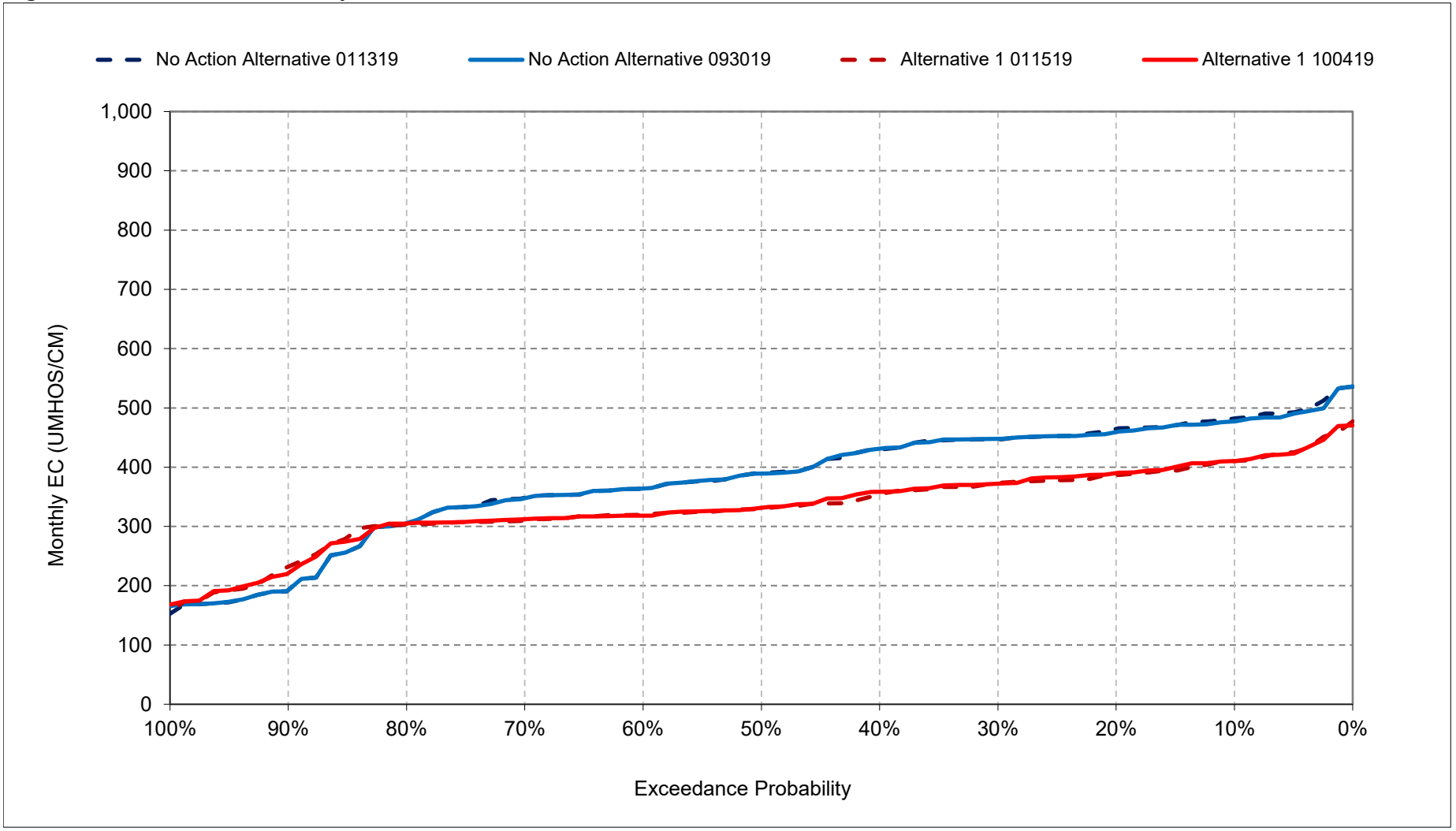

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-10. Victoria Canal, April EC**



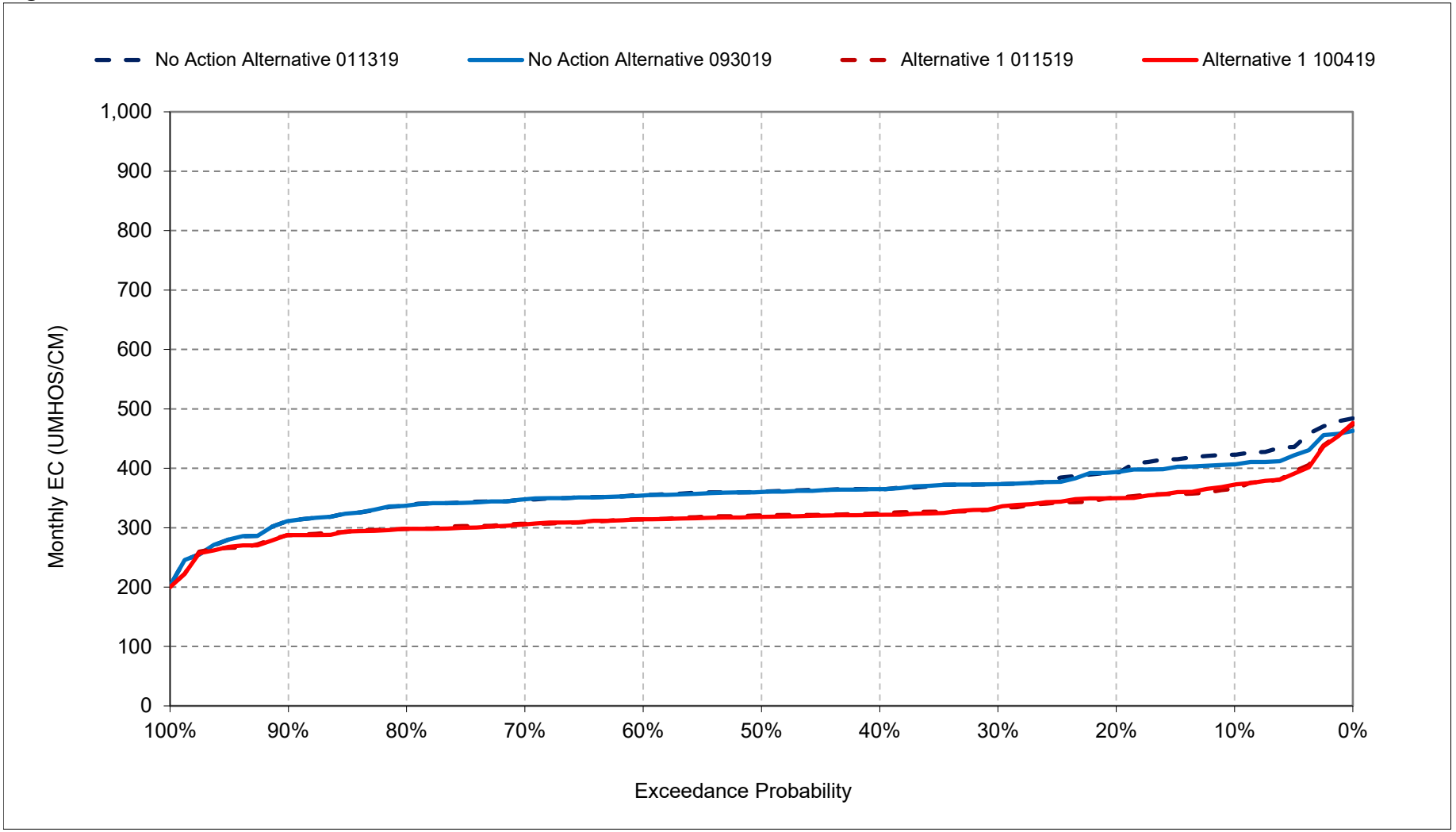

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-11. Victoria Canal, May EC**



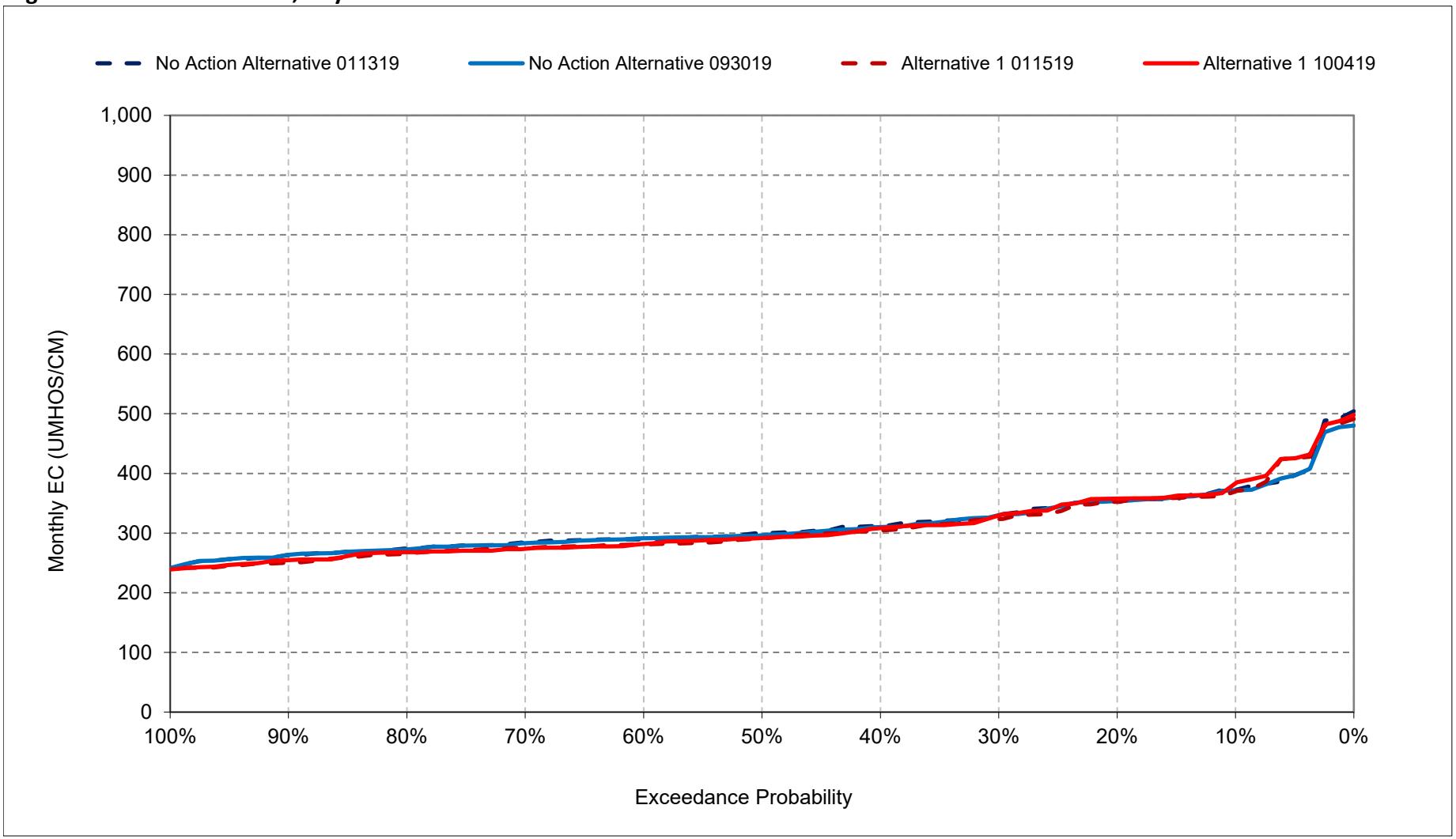

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-12. Victoria Canal, June EC**



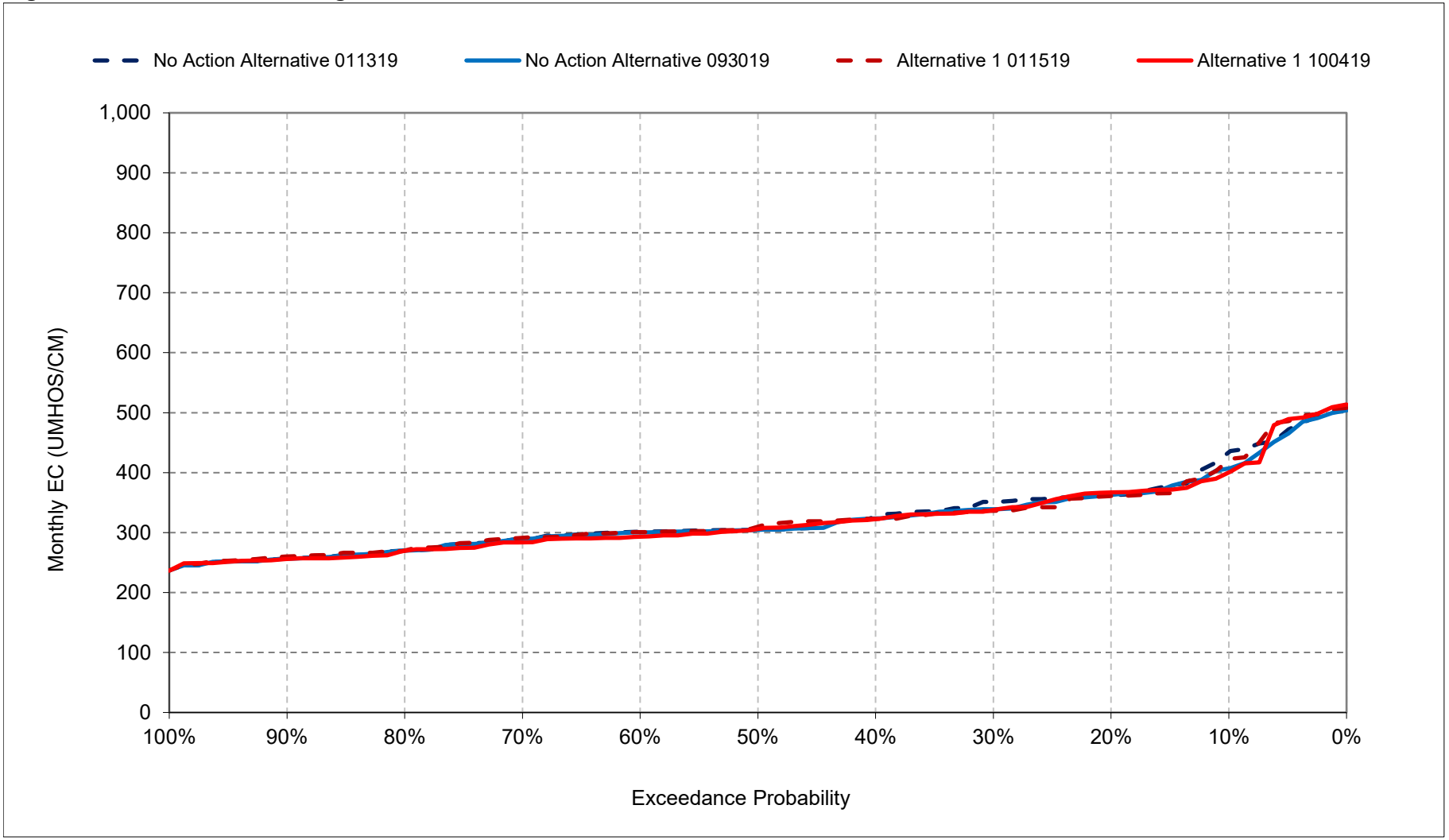

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-13. Victoria Canal, July EC**



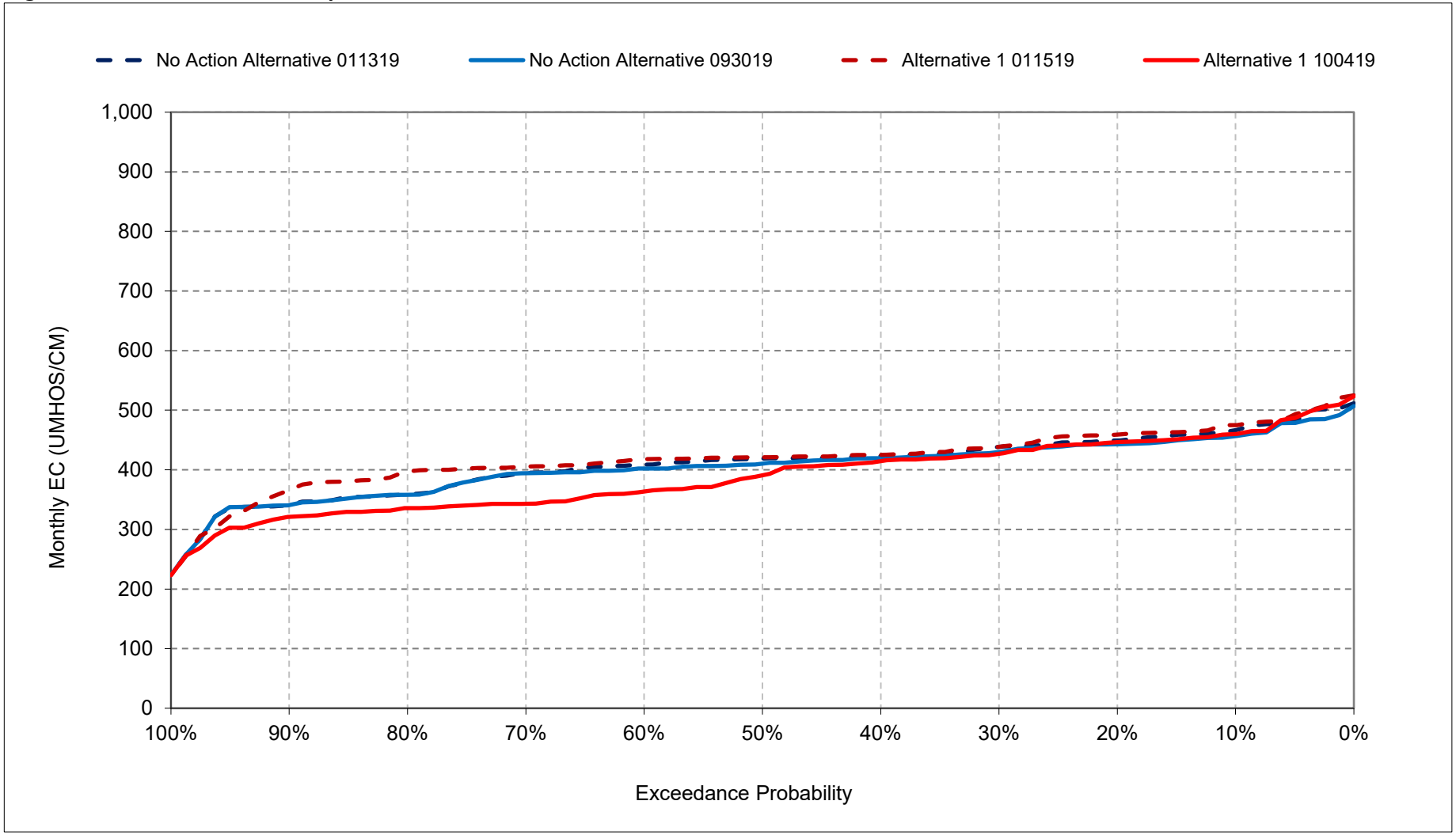

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-14. Victoria Canal, August EC**



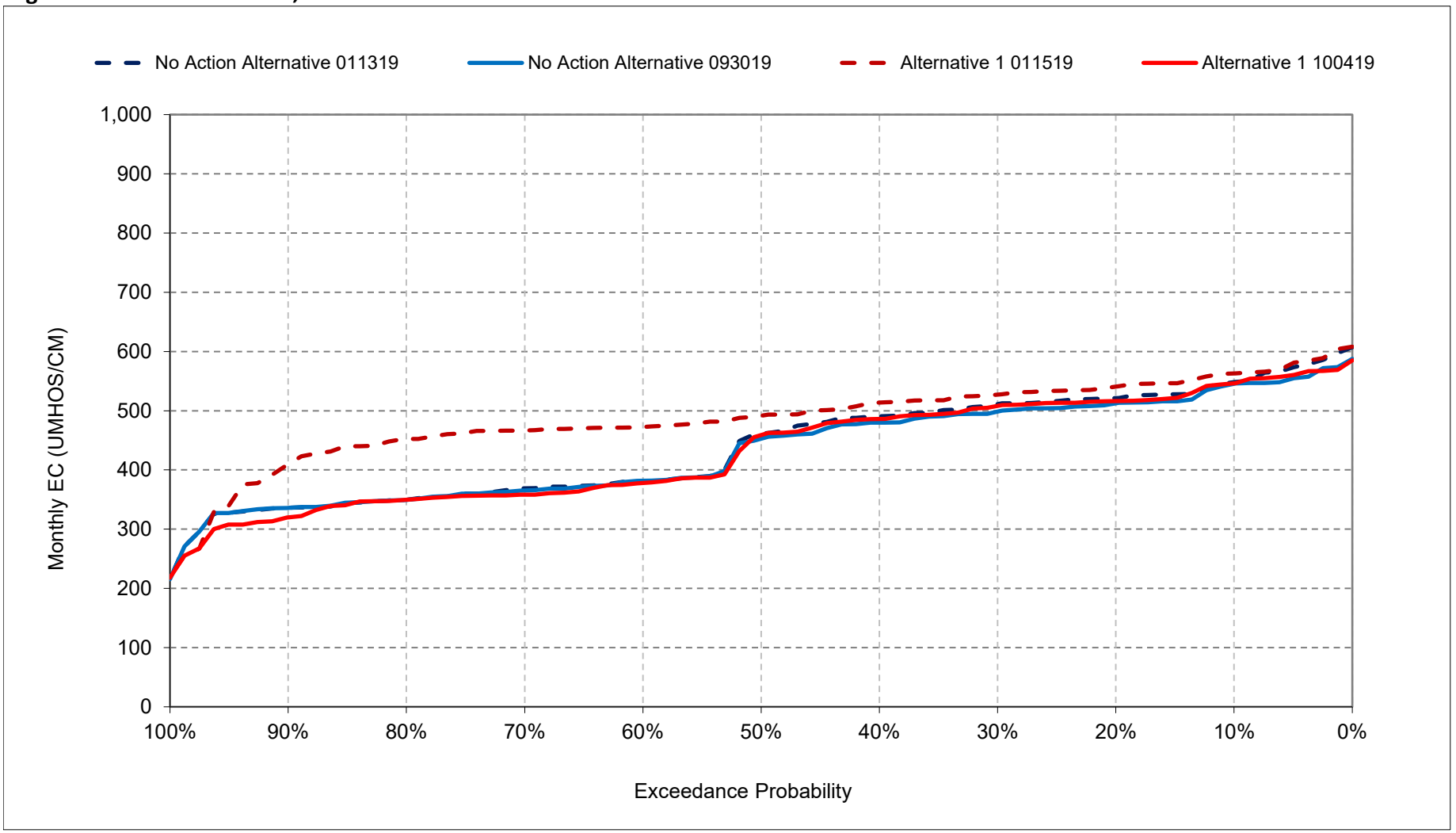

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-15. Victoria Canal, September EC**



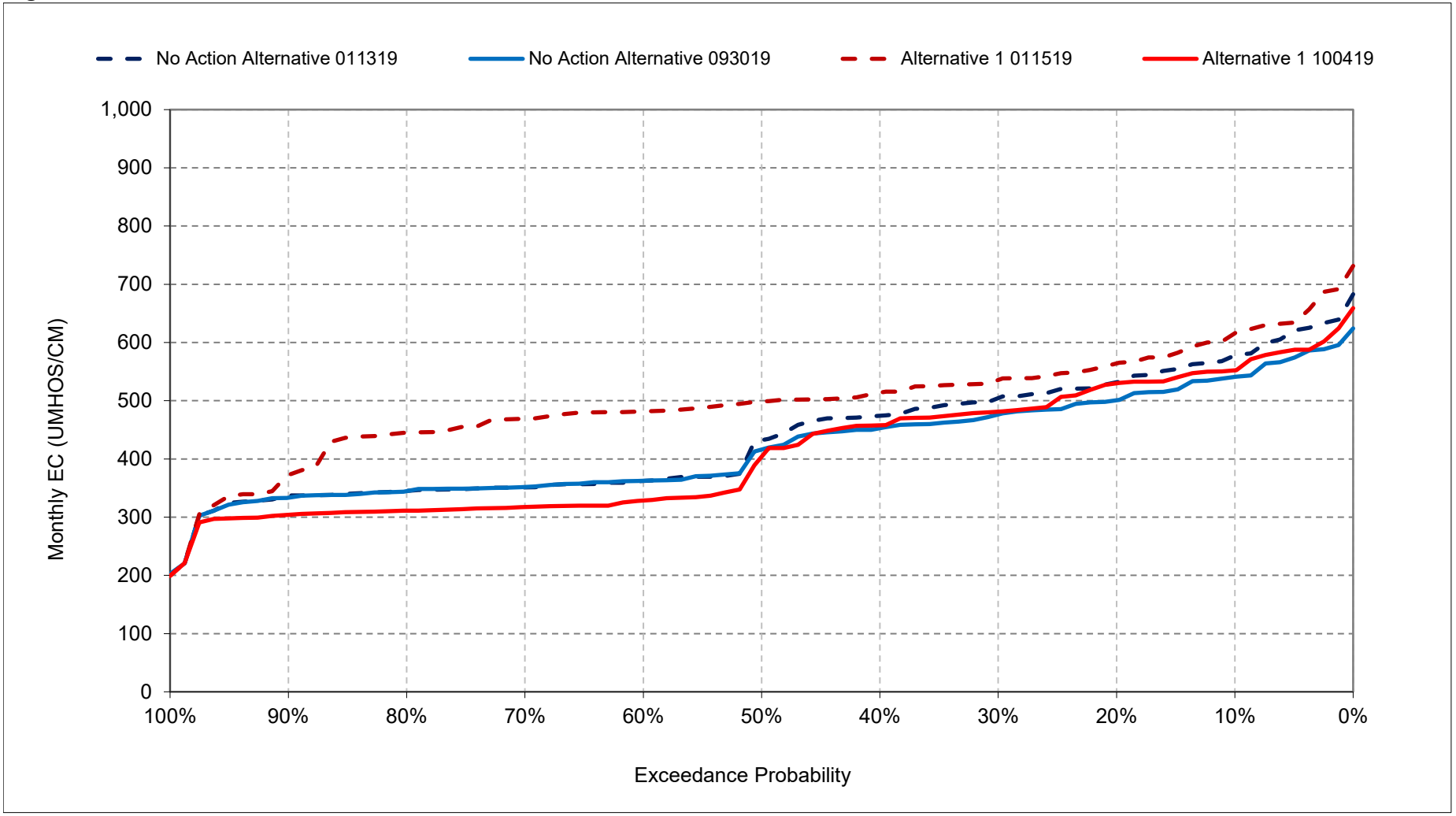

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-16. Victoria Canal, October EC**



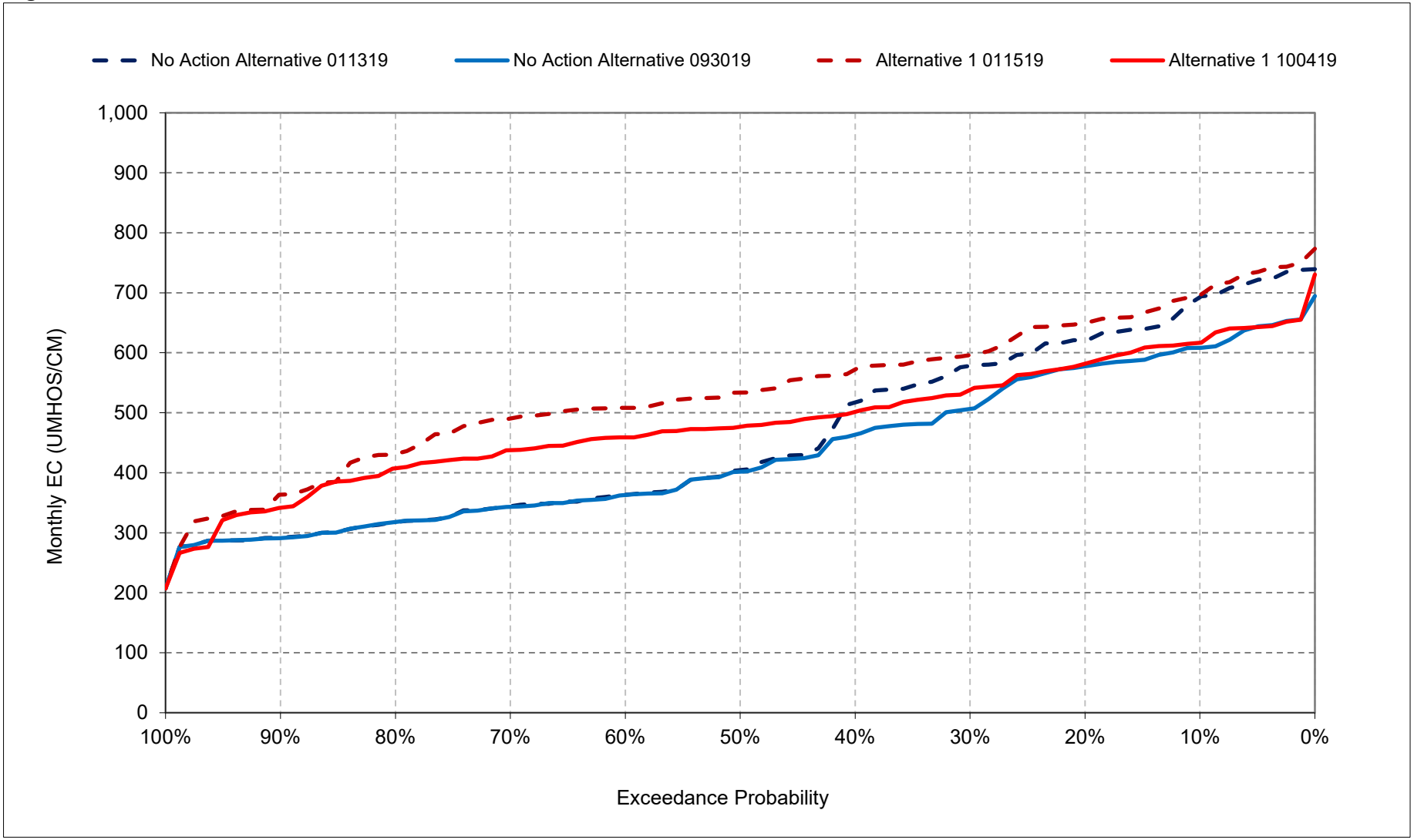

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-17. Victoria Canal, November EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 18-18. Victoria Canal, December EC**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.7 X2 Position Results (DSM2-QUAL)

The following results of the DSM2-QUAL model are included for Delta X2 conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| X2 | X2_PRV | 45-1 to 45-4 | 45-1 to 45-14 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 45-1. X2, Monthly Position

### No Action Alternative 011319

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 96.1 | 96.2 | 93.4 | 87.3 | 79.4 | 77.9 | 80.2 | 83.4 | 86.1 | 90.3 | 93.6 | 95.0 |
| 20% | 94.7 | 93.6 | 90.8 | 85.1 | 75.2 | 74.7 | 74.8 | 81.6 | 84.7 | 87.7 | 92.3 | 94.0 |
| 30% | 94.4 | 93.3 | 87.0 | 82.9 | 69.1 | 67.9 | 72.0 | 79.8 | 84.0 | 86.8 | 91.9 | 93.8 |
| 40% | 94.2 | 91.2 | 85.2 | 77.9 | 65.9 | 66.6 | 68.2 | 74.3 | 82.9 | 84.3 | 88.9 | 92.9 |
| 50% | 90.0 | 83.4 | 83.5 | 73.6 | 61.4 | 62.6 | 66.0 | 71.8 | 80.8 | 82.9 | 87.3 | 91.2 |
| 60% | 84.3 | 82.4 | 82.4 | 67.2 | 57.8 | 60.5 | 62.7 | 68.6 | 79.9 | 80.9 | 87.0 | 83.1 |
| 70% | 77.6 | 77.4 | 75.1 | 58.1 | 54.5 | 56.3 | 59.8 | 66.2 | 77.1 | 80.1 | 86.4 | 76.6 |
| 80% | 77.1 | 76.6 | 64.5 | 55.0 | 54.0 | 54.0 | 55.5 | 61.0 | 72.3 | 79.4 | 85.5 | 75.5 |
| 90% | 76.8 | 75.9 | 56.6 | 54.0 | 54.0 | 54.0 | 54.0 | 55.3 | 64.5 | 77.2 | 84.9 | 75.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 87.0 | 84.5 | 79.2 | 71.4 | 64.3 | 64.2 | 66.3 | 71.1 | 78.8 | 83.1 | 88.6 | 86.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 76.9 | 75.3 | 74.1 | 59.0 | 55.6 | 56.8 | 57.9 | 60.8 | 70.0 | 77.5 | 85.5 | 75.4 |
| Above Normal (16%) | 83.5 | 81.3 | 78.8 | 64.5 | 58.6 | 57.9 | 60.9 | 67.3 | 78.6 | 80.4 | 85.8 | 83.1 |
| Below Normal (13%) | 91.8 | 89.9 | 81.5 | 78.0 | 66.9 | 69.3 | 70.9 | 74.8 | 81.7 | 83.3 | 87.8 | 92.2 |
| Dry (24%) | 94.2 | 88.8 | 78.3 | 80.7 | 70.0 | 67.7 | 70.4 | 76.8 | 82.9 | 87.1 | 91.8 | 93.8 |
| Critical (15%) | 96.3 | 95.8 | 89.9 | 84.4 | 77.2 | 76.7 | 79.7 | 84.6 | 88.4 | 91.4 | 93.9 | 95.1 |

### Alternative 1 011519

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 96.2 | 96.2 | 93.5 | 88.4 | 80.5 | 80.0 | 81.5 | 83.6 | 86.0 | 90.0 | 93.8 | 95.0 |
| 20% | 94.8 | 94.0 | 92.6 | 86.3 | 75.2 | 75.1 | 77.2 | 82.1 | 84.7 | 87.9 | 92.4 | 94.1 |
| 30% | 94.5 | 93.5 | 89.9 | 82.9 | 70.2 | 68.1 | 73.6 | 81.0 | 84.1 | 87.4 | 91.9 | 93.9 |
| 40% | 94.1 | 93.0 | 88.0 | 77.7 | 66.9 | 67.0 | 71.0 | 77.5 | 82.9 | 84.1 | 88.5 | 92.9 |
| 50% | 93.1 | 92.4 | 86.2 | 73.4 | 61.3 | 62.6 | 67.8 | 75.0 | 81.8 | 82.9 | 87.3 | 91.1 |
| 60% | 92.5 | 91.6 | 83.3 | 67.6 | 56.8 | 60.2 | 64.7 | 72.5 | 80.7 | 81.2 | 86.9 | 90.7 |
| 70% | 91.7 | 88.7 | 74.9 | 57.1 | 54.4 | 56.0 | 61.2 | 68.4 | 77.7 | 80.3 | 86.3 | 90.3 |
| 80% | 90.8 | 86.1 | 65.5 | 54.9 | 54.0 | 54.0 | 56.2 | 62.6 | 72.5 | 79.6 | 85.7 | 90.2 |
| 90% | 86.8 | 77.9 | 56.7 | 54.0 | 54.0 | 54.0 | 54.0 | 56.5 | 64.6 | 77.1 | 85.3 | 89.3 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 91.9 | 89.1 | 80.3 | 71.4 | 64.5 | 64.4 | 67.6 | 73.0 | 79.1 | 83.2 | 88.6 | 91.5 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 88.4 | 85.6 | 76.7 | 58.7 | 55.5 | 56.7 | 58.9 | 62.8 | 70.3 | 77.6 | 85.4 | 88.5 |
| Above Normal (16%) | 91.1 | 88.7 | 80.8 | 64.1 | 58.3 | 57.5 | 62.4 | 70.2 | 79.0 | 80.6 | 85.9 | 90.4 |
| Below Normal (13%) | 91.8 | 90.4 | 81.5 | 77.8 | 66.5 | 69.2 | 72.5 | 77.2 | 82.3 | 83.2 | 87.5 | 91.8 |
| Dry (24%) | 94.4 | 89.1 | 78.2 | 81.1 | 70.7 | 68.2 | 71.8 | 78.3 | 83.0 | 87.3 | 91.9 | 93.8 |
| Critical (15%) | 96.3 | 95.9 | 90.0 | 84.6 | 78.5 | 78.0 | 80.7 | 85.5 | 88.6 | 91.6 | 94.1 | 95.2 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **0.0** | 0.0 | **0.1** | **1.1** | **1.0** | **2.1** | **1.4** | **0.1** | -0.1 | -0.3 | **0.3** | 0.0 |
| 20% | **0.0** | **0.3** | **1.9** | **1.1** | 0.0 | **0.4** | **2.4** | **0.5** | 0.0 | **0.2** | **0.1** | **0.0** |
| 30% | **0.0** | **0.2** | **2.9** | **0.0** | **1.1** | **0.2** | **1.6** | **1.2** | **0.2** | **0.6** | 0.0 | **0.1** |
| 40% | -0.1 | **1.7** | **2.7** | -0.2 | **0.9** | **0.4** | **2.8** | **3.2** | **0.0** | -0.2 | -0.3 | 0.0 |
| 50% | **3.1** | **9.0** | **2.7** | -0.2 | -0.1 | -0.1 | **1.9** | **3.2** | **1.0** | 0.0 | 0.0 | 0.0 |
| 60% | **8.2** | **9.3** | **1.0** | **0.5** | -1.0 | -0.4 | **2.0** | **3.9** | **0.8** | **0.3** | -0.2 | **7.5** |
| 70% | **14.1** | **11.3** | -0.2 | -1.0 | -0.1 | -0.4 | **1.3** | **2.2** | **0.6** | **0.2** | -0.1 | **13.7** |
| 80% | **13.7** | **9.5** | **1.0** | 0.0 | 0.0 | 0.0 | **0.6** | **1.6** | **0.3** | **0.2** | **0.2** | **14.7** |
| 90% | **10.0** | **2.0** | **0.2** | 0.0 | 0.0 | 0.0 | 0.0 | **1.2** | **0.1** | -0.1 | **0.4** | **14.3** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **4.9** | **4.6** | **1.2** | -0.1 | **0.2** | **0.2** | **1.3** | **1.9** | **0.3** | **0.1** | 0.0 | **5.3** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet | **11.5** | **10.3** | **2.7** | -0.3 | -0.1 | -0.1 | **1.0** | **2.0** | **0.3** | **0.1** | -0.1 | **13.2** |
| Above Normal | **7.6** | **7.4** | **2.0** | -0.4 | -0.3 | -0.4 | **1.5** | **2.9** | **0.4** | **0.1** | **0.1** | **7.3** |
| Below Normal | **0.0** | **0.5** | 0.0 | -0.2 | -0.3 | -0.1 | **1.6** | **2.3** | **0.5** | -0.1 | -0.3 | -0.4 |
| Dry | **0.2** | **0.3** | -0.1 | **0.4** | **0.6** | **0.5** | **1.4** | **1.6** | **0.2** | **0.2** | **0.1** | **0.0** |
| Critical | **0.0** | **0.1** | **0.1** | **0.2** | **1.3** | **1.3** | **1.0** | **0.9** | **0.1** | **0.2** | **0.2** | **0.0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e Results are monthly averaged from DSM2.

## Table 45-2. X2, Monthly Position

### No Action Alternative 093019

| | Monthly Position (KM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 95.4 | 95.0 | 92.1 | 87.3 | 78.8 | 77.7 | 80.2 | 83.9 | 86.0 | 90.4 | 93.5 | 94.8 |
| 20% | 94.1 | 92.8 | 89.8 | 84.9 | 75.2 | 74.7 | 75.0 | 82.2 | 84.9 | 87.9 | 92.2 | 93.9 |
| 30% | 93.9 | 92.4 | 86.7 | 82.6 | 69.2 | 68.0 | 72.0 | 79.9 | 84.0 | 87.1 | 91.8 | 93.7 |
| 40% | 93.7 | 90.4 | 84.7 | 77.2 | 66.0 | 66.6 | 68.2 | 74.3 | 82.9 | 84.3 | 88.8 | 92.9 |
| 50% | 90.9 | 83.4 | 83.5 | 72.9 | 61.4 | 62.6 | 66.0 | 71.8 | 80.7 | 82.8 | 87.4 | 90.8 |
| 60% | 84.1 | 82.4 | 81.4 | 66.8 | 57.8 | 60.5 | 62.7 | 68.6 | 79.9 | 80.9 | 87.0 | 83.1 |
| 70% | 77.1 | 76.9 | 74.9 | 58.0 | 54.5 | 56.4 | 59.8 | 66.2 | 77.1 | 80.1 | 86.4 | 76.6 |
| 80% | 76.7 | 76.0 | 64.5 | 55.0 | 54.0 | 54.0 | 55.6 | 61.0 | 72.3 | 79.2 | 85.5 | 75.5 |
| 90% | 76.4 | 75.5 | 56.6 | 54.0 | 54.0 | 54.0 | 54.0 | 55.3 | 64.5 | 77.2 | 84.9 | 75.0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 86.6 | 84.0 | 78.7 | 71.1 | 64.1 | 64.3 | 66.4 | 71.2 | 78.8 | 83.2 | 88.6 | 86.2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 76.5 | 74.8 | 74.0 | 59.0 | 55.6 | 56.8 | 57.9 | 60.8 | 70.0 | 77.5 | 85.5 | 75.4 |
| Above Normal (16%) | 83.4 | 81.3 | 78.9 | 64.4 | 58.6 | 58.0 | 60.9 | 67.3 | 78.6 | 80.4 | 85.8 | 83.1 |
| Below Normal (13%) | 91.4 | 89.1 | 80.8 | 77.8 | 66.8 | 69.4 | 71.0 | 74.8 | 81.8 | 83.3 | 87.8 | 92.2 |
| Dry (24%) | 93.8 | 88.2 | 77.7 | 80.2 | 69.9 | 67.8 | 70.4 | 77.0 | 82.9 | 87.3 | 91.7 | 93.6 |
| Critical (15%) | 95.7 | 94.9 | 88.6 | 83.3 | 76.5 | 76.7 | 80.0 | 85.1 | 88.5 | 91.5 | 93.8 | 94.9 |

### Alternative 1 100419

| | Monthly Position (KM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 95.4 | 95.0 | 92.4 | 87.2 | 79.5 | 79.3 | 81.0 | 83.7 | 86.0 | 90.1 | 93.5 | 94.8 |
| 20% | 94.1 | 93.1 | 90.0 | 85.1 | 75.1 | 74.2 | 77.3 | 81.9 | 84.9 | 88.1 | 92.1 | 94.1 |
| 30% | 93.8 | 92.5 | 89.3 | 82.3 | 68.9 | 67.0 | 72.4 | 80.8 | 84.2 | 86.8 | 91.9 | 93.8 |
| 40% | 93.5 | 91.0 | 88.4 | 76.9 | 66.5 | 66.2 | 70.2 | 78.1 | 83.3 | 85.0 | 89.2 | 93.2 |
| 50% | 90.3 | 87.6 | 86.0 | 73.4 | 61.4 | 61.9 | 67.5 | 74.3 | 82.4 | 84.0 | 87.5 | 90.8 |
| 60% | 83.1 | 87.2 | 83.2 | 67.2 | 57.2 | 59.7 | 64.5 | 72.4 | 80.6 | 82.0 | 85.7 | 84.5 |
| 70% | 82.9 | 86.9 | 74.6 | 57.5 | 54.4 | 55.6 | 61.6 | 68.9 | 78.2 | 81.4 | 85.4 | 84.2 |
| 80% | 82.7 | 86.3 | 65.0 | 54.9 | 54.0 | 54.0 | 56.0 | 62.5 | 72.9 | 80.6 | 85.1 | 83.9 |
| 90% | 82.4 | 77.2 | 56.5 | 54.0 | 54.0 | 54.0 | 54.0 | 56.9 | 64.9 | 77.2 | 84.9 | 83.6 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 88.3 | 87.3 | 79.8 | 70.9 | 64.1 | 64.0 | 67.4 | 73.1 | 79.3 | 83.7 | 88.4 | 88.9 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 82.3 | 83.2 | 76.7 | 59.0 | 55.5 | 56.5 | 58.8 | 62.9 | 70.7 | 78.1 | 84.6 | 83.5 |
| Above Normal (16%) | 82.9 | 84.8 | 80.6 | 64.0 | 58.3 | 57.1 | 62.3 | 70.4 | 79.4 | 81.6 | 85.5 | 84.0 |
| Below Normal (13%) | 91.2 | 89.8 | 80.7 | 77.5 | 66.4 | 68.4 | 72.4 | 77.4 | 82.8 | 84.5 | 88.2 | 92.1 |
| Dry (24%) | 93.6 | 88.4 | 77.7 | 80.2 | 70.1 | 67.4 | 71.2 | 78.0 | 83.1 | 87.3 | 91.8 | 93.7 |
| Critical (15%) | 95.6 | 95.0 | 88.5 | 82.9 | 77.2 | 77.7 | 80.8 | 85.6 | 88.6 | 91.8 | 93.9 | 95.0 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Position (KM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0.0 | **0.0** | **0.3** | -0.1 | **0.7** | **1.6** | **0.8** | -0.3 | **0.1** | -0.2 | 0.0 | **0.0** |
| 20% | -0.1 | **0.3** | **0.2** | **0.2** | -0.1 | -0.5 | **2.2** | -0.3 | **0.0** | **0.2** | -0.1 | **0.2** |
| 30% | 0.0 | **0.1** | **2.6** | -0.3 | -0.3 | -1.1 | **0.4** | **0.9** | **0.2** | -0.2 | **0.1** | **0.1** |
| 40% | -0.2 | **0.6** | **3.7** | -0.3 | **0.5** | -0.4 | **2.0** | **3.8** | **0.4** | **0.7** | **0.4** | **0.3** |
| 50% | -0.7 | **4.2** | **2.6** | **0.5** | 0.0 | -0.8 | **1.5** | **2.5** | **1.7** | **1.1** | **0.1** | 0.0 |
| 60% | -1.0 | **4.8** | **1.8** | **0.4** | -0.6 | -0.8 | **1.8** | **3.9** | **0.8** | **1.1** | -1.3 | **1.4** |
| 70% | **5.8** | **10.0** | -0.3 | -0.5 | -0.1 | -0.8 | **1.7** | **2.6** | **1.1** | **1.3** | -1.0 | **7.6** |
| 80% | **6.0** | **10.3** | **0.5** | -0.1 | 0.0 | 0.0 | **0.5** | **1.6** | **0.6** | **1.3** | -0.4 | **8.4** |
| 90% | **6.1** | **1.7** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **1.6** | **0.4** | **0.0** | 0.0 | **8.5** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **1.7** | **3.4** | **1.1** | -0.2 | **0.0** | -0.3 | **1.0** | **1.8** | **0.5** | **0.6** | -0.2 | **2.7** |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet | **5.7** | **8.4** | **2.7** | 0.0 | -0.1 | -0.3 | **0.9** | **2.1** | **0.7** | **0.6** | -0.8 | **8.1** |
| Above Normal | -0.5 | **3.5** | **1.7** | -0.4 | -0.3 | -0.9 | **1.4** | **3.1** | **0.8** | **1.1** | -0.3 | **0.8** |
| Below Normal | -0.2 | **0.7** | -0.1 | -0.2 | -0.5 | -1.0 | **1.3** | **2.6** | **0.9** | **1.2** | **0.5** | 0.0 |
| Dry | -0.1 | **0.2** | **0.0** | 0.0 | **0.1** | -0.4 | **0.8** | **1.0** | **0.2** | **0.1** | **0.1** | **0.1** |
| Critical | -0.1 | **0.1** | -0.1 | -0.4 | **0.7** | **1.0** | **0.8** | **0.5** | **0.2** | **0.3** | **0.2** | **0.1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e Results are monthly averaged from DSM2.

## Table 45-3. X2, Monthly Position

### No Action Alternative 011319

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 96.1 | 96.2 | 93.4 | 87.3 | 79.4 | 77.9 | 80.2 | 83.4 | 86.1 | 90.3 | 93.6 | 95.0 |
| **20%** | 94.7 | 93.6 | 90.8 | 85.1 | 75.2 | 74.7 | 74.8 | 81.6 | 84.7 | 87.7 | 92.3 | 94.0 |
| **30%** | 94.4 | 93.3 | 87.0 | 82.9 | 69.1 | 67.9 | 72.0 | 79.8 | 84.0 | 86.8 | 91.9 | 93.8 |
| **40%** | 94.2 | 91.2 | 85.2 | 77.9 | 65.9 | 66.6 | 68.2 | 74.3 | 82.9 | 84.3 | 88.9 | 92.9 |
| **50%** | 90.0 | 83.4 | 83.5 | 73.6 | 61.4 | 62.6 | 66.0 | 71.8 | 80.8 | 82.9 | 87.3 | 91.2 |
| **60%** | 84.3 | 82.4 | 82.4 | 67.2 | 57.8 | 60.5 | 62.7 | 68.6 | 79.9 | 80.9 | 87.0 | 83.1 |
| **70%** | 77.6 | 77.4 | 75.1 | 58.1 | 54.5 | 56.3 | 59.8 | 66.2 | 77.1 | 80.1 | 86.4 | 76.6 |
| **80%** | 77.1 | 76.6 | 64.5 | 55.0 | 54.0 | 54.0 | 55.5 | 61.0 | 72.3 | 79.4 | 85.5 | 75.5 |
| **90%** | 76.8 | 75.9 | 56.6 | 54.0 | 54.0 | 54.0 | 54.0 | 55.3 | 64.5 | 77.2 | 84.9 | 75.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 87.0 | 84.5 | 79.2 | 71.4 | 64.3 | 64.2 | 66.3 | 71.1 | 78.8 | 83.1 | 88.6 | 86.2 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (32%)** | 76.9 | 75.3 | 74.1 | 59.0 | 55.6 | 56.8 | 57.9 | 60.8 | 70.0 | 77.5 | 85.5 | 75.4 |
| **Above Normal (16%)** | 83.5 | 81.3 | 78.8 | 64.5 | 58.6 | 57.9 | 60.9 | 67.3 | 78.6 | 80.4 | 85.8 | 83.1 |
| **Below Normal (13%)** | 91.8 | 89.9 | 81.5 | 78.0 | 66.9 | 69.3 | 70.9 | 74.8 | 81.7 | 83.3 | 87.8 | 92.2 |
| **Dry (24%)** | 94.2 | 88.8 | 78.3 | 80.7 | 70.0 | 67.7 | 70.4 | 76.8 | 82.9 | 87.1 | 91.8 | 93.8 |
| **Critical (15%)** | 96.3 | 95.8 | 89.9 | 84.4 | 77.2 | 76.7 | 79.7 | 84.6 | 88.4 | 91.4 | 93.9 | 95.1 |

### No Action Alternative 093019

| | Monthly Position (KM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 95.4 | 95.0 | 92.1 | 87.3 | 78.8 | 77.7 | 80.2 | 83.9 | 86.0 | 90.4 | 93.5 | 94.8 |
| **20%** | 94.1 | 92.8 | 89.8 | 84.9 | 75.2 | 74.7 | 75.0 | 82.2 | 84.9 | 87.9 | 92.2 | 93.9 |
| **30%** | 93.9 | 92.4 | 86.7 | 82.6 | 69.2 | 68.0 | 72.0 | 79.9 | 84.0 | 87.1 | 91.8 | 93.7 |
| **40%** | 93.7 | 90.4 | 84.7 | 77.2 | 66.0 | 66.6 | 68.2 | 74.3 | 82.9 | 84.3 | 88.8 | 92.9 |
| **50%** | 90.9 | 83.4 | 83.5 | 72.9 | 61.4 | 62.6 | 66.0 | 71.8 | 80.7 | 82.8 | 87.4 | 90.8 |
| **60%** | 84.1 | 82.4 | 81.4 | 66.8 | 57.8 | 60.5 | 62.7 | 68.6 | 79.9 | 80.9 | 87.0 | 83.1 |
| **70%** | 77.1 | 76.9 | 74.9 | 58.0 | 54.5 | 56.4 | 59.8 | 66.2 | 77.1 | 80.1 | 86.4 | 76.6 |
| **80%** | 76.7 | 76.0 | 64.5 | 55.0 | 54.0 | 54.0 | 55.6 | 61.0 | 72.3 | 79.2 | 85.5 | 75.5 |
| **90%** | 76.4 | 75.5 | 56.6 | 54.0 | 54.0 | 54.0 | 54.0 | 55.3 | 64.5 | 77.2 | 84.9 | 75.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 86.6 | 84.0 | 78.7 | 71.1 | 64.1 | 64.3 | 66.4 | 71.2 | 78.8 | 83.2 | 88.6 | 86.2 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet (32%)** | 76.5 | 74.8 | 74.0 | 59.0 | 55.6 | 56.8 | 57.9 | 60.8 | 70.0 | 77.5 | 85.5 | 75.4 |
| **Above Normal (16%)** | 83.4 | 81.3 | 78.9 | 64.4 | 58.6 | 58.0 | 60.9 | 67.3 | 78.6 | 80.4 | 85.8 | 83.1 |
| **Below Normal (13%)** | 91.4 | 89.1 | 80.8 | 77.8 | 66.8 | 69.4 | 71.0 | 74.8 | 81.8 | 83.3 | 87.8 | 92.2 |
| **Dry (24%)** | 93.8 | 88.2 | 77.7 | 80.2 | 69.9 | 67.8 | 70.4 | 77.0 | 82.9 | 87.3 | 91.7 | 93.6 |
| **Critical (15%)** | 95.7 | 94.9 | 88.6 | 83.3 | 76.5 | 76.7 | 80.0 | 85.1 | 88.5 | 91.5 | 93.8 | 94.9 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | -0.7 | -1.1 | -1.3 | -0.1 | -0.7 | -0.2 | **0.0** | **0.5** | -0.1 | **0.1** | 0.0 | -0.2 |
| **20%** | -0.6 | -0.8 | -0.9 | -0.2 | **0.1** | 0.0 | **0.2** | **0.7** | **0.2** | **0.2** | -0.1 | -0.1 |
| **30%** | -0.5 | -0.9 | -0.3 | -0.3 | **0.1** | **0.1** | **0.1** | **0.1** | 0.0 | **0.3** | -0.1 | -0.1 |
| **40%** | -0.5 | -0.9 | -0.5 | -0.7 | **0.1** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | -0.1 | -0.1 |
| **50%** | **0.9** | **0.0** | 0.0 | -0.7 | **0.1** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | **0.1** | -0.4 |
| **60%** | -0.1 | **0.0** | -1.0 | -0.4 | **0.0** | 0.0 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** |
| **70%** | -0.5 | -0.5 | -0.2 | -0.1 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** |
| **80%** | -0.4 | -0.6 | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | -0.2 | **0.0** | **0.0** |
| **90%** | -0.4 | -0.5 | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | **0.0** | 0.0 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | -0.4 | -0.5 | -0.4 | -0.3 | -0.1 | **0.0** | **0.1** | **0.1** | **0.0** | **0.0** | -0.1 | -0.1 |
| **Water Year Types**[b,c] | | | | | | | | | | | | |
| **Wet** | -0.4 | -0.5 | 0.0 | 0.0 | **0.0** | **0.0** | **0.0** | 0.0 | **0.0** | 0.0 | 0.0 | 0.0 |
| **Above Normal** | -0.1 | 0.0 | **0.0** | 0.0 | 0.0 | **0.1** | **0.0** | **0.0** | **0.0** | 0.0 | 0.0 | **0.0** |
| **Below Normal** | -0.4 | -0.8 | -0.7 | -0.2 | -0.1 | **0.0** | **0.1** | **0.0** | **0.1** | **0.0** | 0.0 | 0.0 |
| **Dry** | -0.4 | -0.6 | -0.6 | -0.5 | -0.1 | **0.1** | **0.1** | **0.2** | **0.0** | **0.1** | -0.1 | -0.1 |
| **Critical** | -0.6 | -0.9 | -1.3 | -1.1 | -0.7 | 0.0 | **0.3** | **0.6** | **0.0** | **0.1** | -0.2 | -0.2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e Results are monthly averaged from DSM2.

## Table 45-4. X2, Monthly Position

### Alternative 1 011519

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 96.2 | 96.2 | 93.5 | 88.4 | 80.5 | 80.0 | 81.5 | 83.6 | 86.0 | 90.0 | 93.8 | 95.0 |
| 20% | 94.8 | 94.0 | 92.6 | 86.3 | 75.2 | 75.1 | 77.2 | 82.1 | 84.7 | 87.9 | 92.4 | 94.1 |
| 30% | 94.5 | 93.5 | 89.9 | 82.9 | 70.2 | 68.1 | 73.6 | 81.0 | 84.1 | 87.4 | 91.9 | 93.9 |
| 40% | 94.1 | 93.0 | 88.0 | 77.7 | 66.9 | 67.0 | 71.0 | 77.5 | 82.9 | 84.1 | 88.5 | 92.9 |
| 50% | 93.1 | 92.4 | 86.2 | 73.4 | 61.3 | 62.6 | 67.8 | 75.0 | 81.8 | 82.9 | 87.3 | 91.1 |
| 60% | 92.5 | 91.6 | 83.3 | 67.6 | 56.8 | 60.2 | 64.7 | 72.5 | 80.7 | 81.2 | 86.9 | 90.7 |
| 70% | 91.7 | 88.7 | 74.9 | 57.1 | 54.4 | 56.0 | 61.2 | 68.4 | 77.7 | 80.3 | 86.3 | 90.3 |
| 80% | 90.8 | 86.1 | 65.5 | 54.9 | 54.0 | 54.0 | 56.2 | 62.6 | 72.5 | 79.6 | 85.7 | 90.2 |
| 90% | 86.8 | 77.9 | 56.7 | 54.0 | 54.0 | 54.0 | 54.0 | 56.5 | 64.6 | 77.1 | 85.3 | 89.3 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 91.9 | 89.1 | 80.3 | 71.4 | 64.5 | 64.4 | 67.6 | 73.0 | 79.1 | 83.2 | 88.6 | 91.5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 88.4 | 85.6 | 76.7 | 58.7 | 55.5 | 56.7 | 58.9 | 62.8 | 70.3 | 77.6 | 85.4 | 88.5 |
| Above Normal (16%) | 91.1 | 88.7 | 80.8 | 64.1 | 58.3 | 57.5 | 62.4 | 70.2 | 79.0 | 80.6 | 85.9 | 90.4 |
| Below Normal (13%) | 91.8 | 90.4 | 81.5 | 77.8 | 66.5 | 69.2 | 72.5 | 77.2 | 82.3 | 83.2 | 87.5 | 91.8 |
| Dry (24%) | 94.4 | 89.1 | 78.2 | 81.1 | 70.7 | 68.2 | 71.8 | 78.3 | 83.0 | 87.3 | 91.9 | 93.8 |
| Critical (15%) | 96.3 | 95.9 | 90.0 | 84.6 | 78.5 | 78.0 | 80.7 | 85.5 | 88.6 | 91.6 | 94.1 | 95.2 |

### Alternative 1 100419

| | Monthly Position (KM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 95.4 | 95.0 | 92.4 | 87.2 | 79.5 | 79.3 | 81.0 | 83.7 | 86.0 | 90.1 | 93.5 | 94.8 |
| 20% | 94.1 | 93.1 | 90.0 | 85.1 | 75.1 | 74.2 | 77.3 | 81.9 | 84.9 | 88.1 | 92.1 | 94.1 |
| 30% | 93.8 | 92.5 | 89.3 | 82.3 | 68.9 | 67.0 | 72.4 | 80.8 | 84.2 | 86.8 | 91.9 | 93.8 |
| 40% | 93.5 | 91.0 | 88.4 | 76.9 | 66.5 | 66.2 | 70.2 | 78.1 | 83.3 | 85.0 | 89.2 | 93.2 |
| 50% | 90.3 | 87.6 | 86.0 | 73.4 | 61.4 | 61.9 | 67.5 | 74.3 | 82.4 | 84.0 | 87.5 | 90.8 |
| 60% | 83.1 | 87.2 | 83.2 | 67.2 | 57.2 | 59.7 | 64.5 | 72.4 | 80.6 | 82.0 | 85.7 | 84.5 |
| 70% | 82.9 | 86.9 | 74.6 | 57.5 | 54.4 | 55.6 | 61.6 | 68.9 | 78.2 | 81.4 | 85.4 | 84.2 |
| 80% | 82.7 | 86.3 | 65.0 | 54.9 | 54.0 | 54.0 | 56.0 | 62.5 | 72.9 | 80.6 | 85.1 | 83.9 |
| 90% | 82.4 | 77.2 | 56.5 | 54.0 | 54.0 | 54.0 | 54.0 | 56.9 | 64.9 | 77.2 | 84.9 | 83.6 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 88.3 | 87.3 | 79.8 | 70.9 | 64.1 | 64.0 | 67.4 | 73.1 | 79.3 | 83.7 | 88.4 | 88.9 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 82.3 | 83.2 | 76.7 | 59.0 | 55.5 | 56.5 | 58.8 | 62.9 | 70.7 | 78.1 | 84.6 | 83.5 |
| Above Normal (16%) | 82.9 | 84.8 | 80.6 | 64.0 | 58.3 | 57.1 | 62.3 | 70.4 | 79.4 | 81.6 | 85.5 | 84.0 |
| Below Normal (13%) | 91.2 | 89.8 | 80.7 | 77.5 | 66.4 | 68.4 | 72.4 | 77.4 | 82.8 | 84.5 | 88.2 | 92.1 |
| Dry (24%) | 93.6 | 88.4 | 77.7 | 80.2 | 70.1 | 67.4 | 71.2 | 78.0 | 83.1 | 87.3 | 91.8 | 93.7 |
| Critical (15%) | 95.6 | 95.0 | 88.5 | 82.9 | 77.2 | 77.7 | 80.8 | 85.6 | 88.6 | 91.8 | 93.9 | 95.0 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Position (0) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -0.8 | -1.1 | -1.1 | -1.2 | -1.0 | -0.8 | -0.5 | **0.1** | **0.0** | **0.2** | -0.3 | -0.1 |
| 20% | -0.7 | -0.9 | -2.6 | -1.1 | 0.0 | -0.9 | **0.1** | -0.2 | **0.2** | **0.2** | -0.3 | **0.0** |
| 30% | -0.6 | -1.0 | -0.6 | -0.6 | -1.4 | -1.1 | -1.2 | -0.2 | **0.1** | -0.6 | 0.0 | -0.1 |
| 40% | -0.6 | -2.0 | **0.4** | -0.7 | -0.3 | -0.8 | -0.8 | **0.6** | **0.4** | **0.9** | **0.7** | **0.3** |
| 50% | -2.8 | -4.8 | -0.1 | **0.1** | **0.1** | -0.7 | -0.4 | -0.7 | **0.6** | **1.1** | **0.3** | -0.4 |
| 60% | -9.3 | -4.4 | -0.1 | -0.4 | **0.4** | -0.5 | -0.2 | 0.0 | -0.1 | **0.8** | -1.1 | -6.1 |
| 70% | -8.8 | -1.8 | -0.3 | **0.4** | **0.0** | -0.4 | **0.4** | **0.5** | **0.5** | **1.1** | -0.9 | -6.1 |
| 80% | -8.0 | **0.2** | -0.5 | 0.0 | **0.0** | 0.0 | -0.1 | 0.0 | **0.3** | **1.0** | -0.6 | -6.3 |
| 90% | -4.3 | -0.8 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | **0.4** | **0.3** | **0.2** | -0.4 | -5.8 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -3.6 | -1.8 | -0.5 | -0.4 | -0.4 | -0.5 | -0.2 | **0.0** | **0.2** | **0.5** | -0.2 | -2.6 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet | -6.1 | -2.4 | 0.0 | **0.3** | **0.0** | -0.2 | -0.1 | **0.1** | **0.3** | **0.5** | -0.7 | -5.1 |
| Above Normal | -8.2 | -3.9 | -0.2 | -0.1 | 0.0 | -0.4 | -0.1 | **0.2** | **0.4** | **1.0** | -0.4 | -6.4 |
| Below Normal | -0.6 | -0.6 | -0.8 | -0.3 | -0.2 | -0.8 | -0.2 | **0.2** | **0.5** | **1.2** | **0.7** | **0.3** |
| Dry | -0.8 | -0.7 | -0.5 | -0.9 | -0.6 | -0.8 | -0.5 | -0.3 | **0.0** | **0.1** | -0.1 | -0.1 |
| Critical | -0.7 | -0.9 | -1.5 | -1.7 | -1.3 | -0.3 | **0.1** | **0.1** | **0.1** | **0.1** | -0.1 | -0.1 |

a Based on the 82-year simulation period.

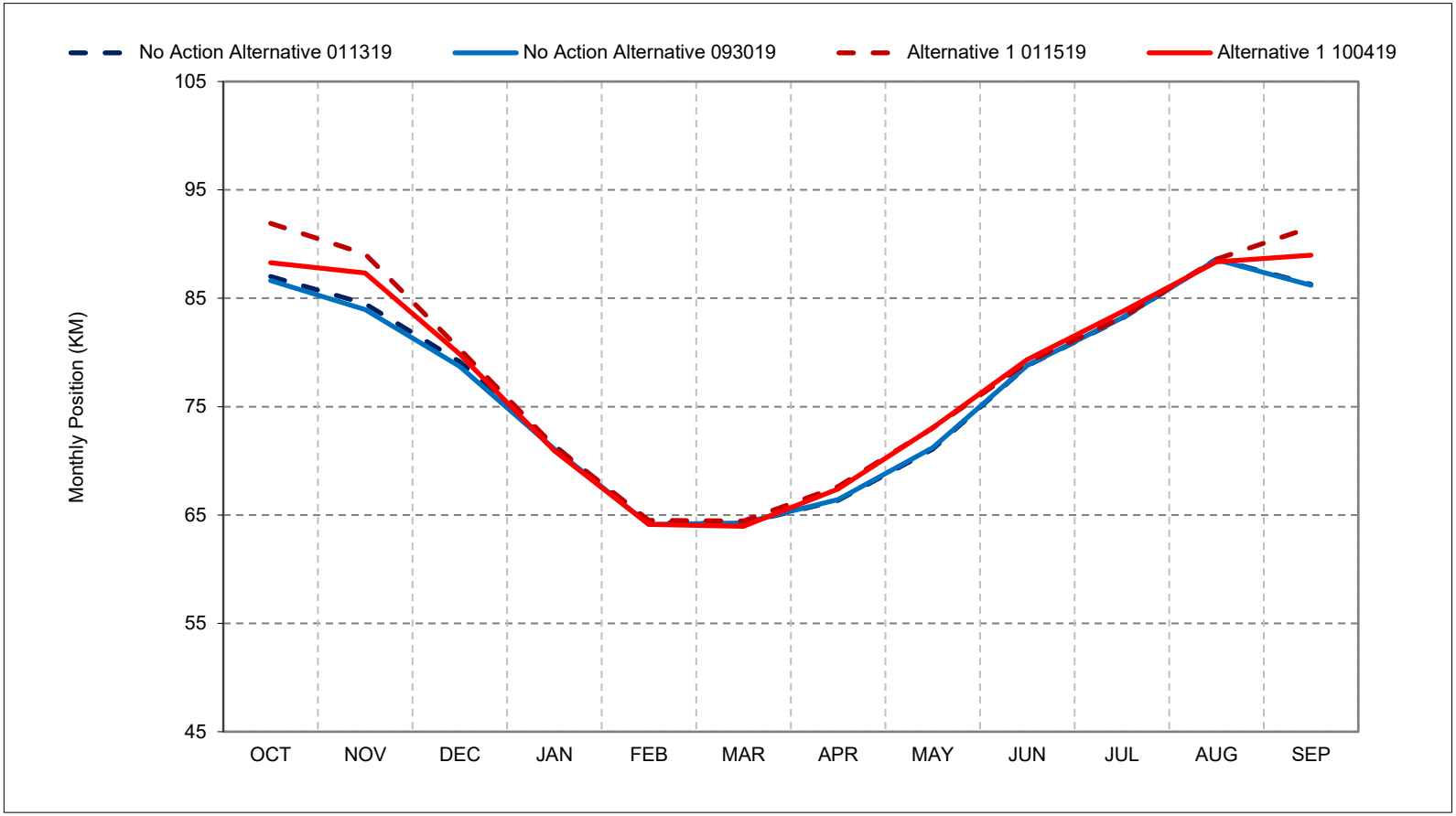
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e Results are monthly averaged from DSM2.

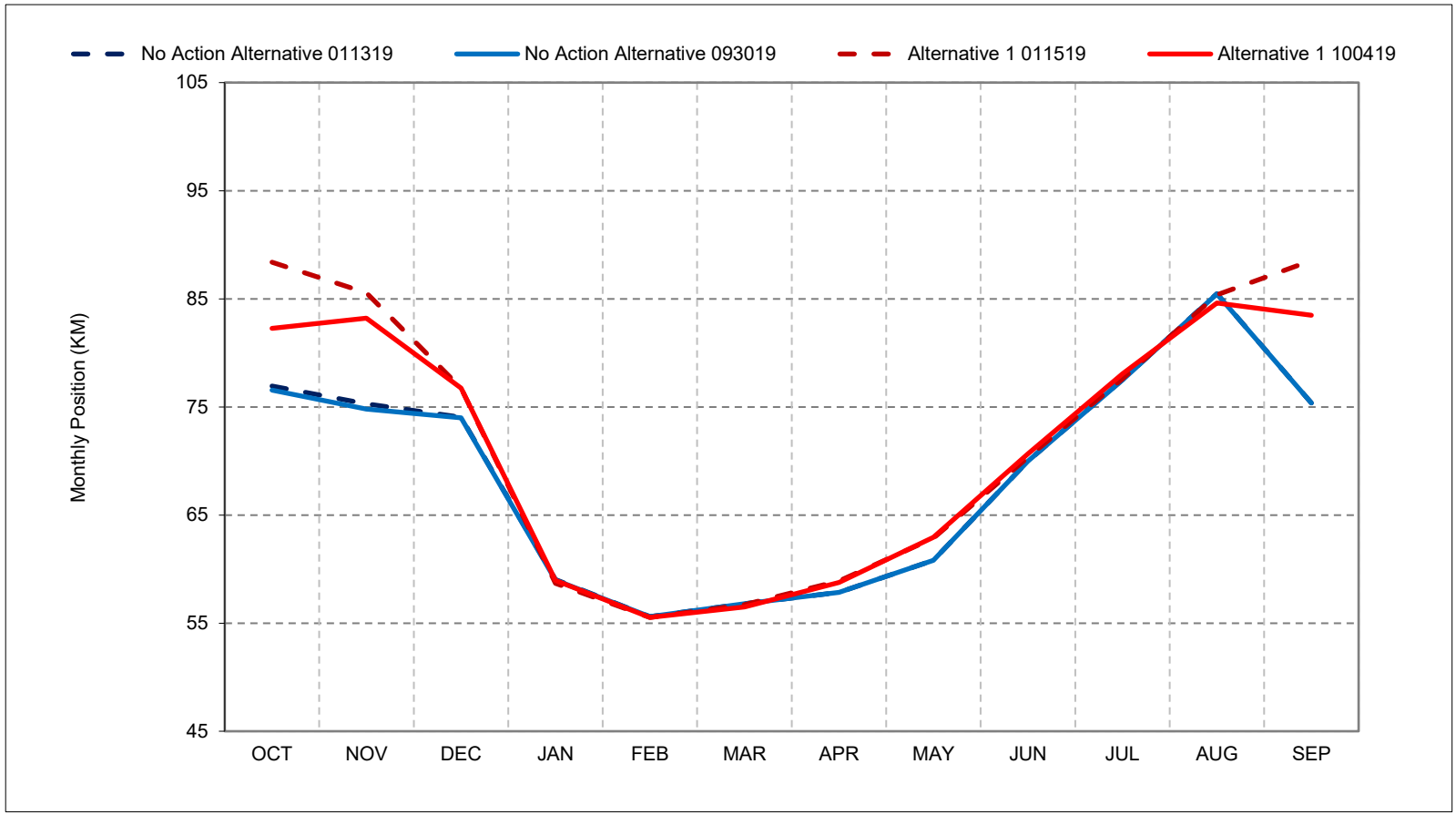
## Figure 45-1. X2, Long-Term Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

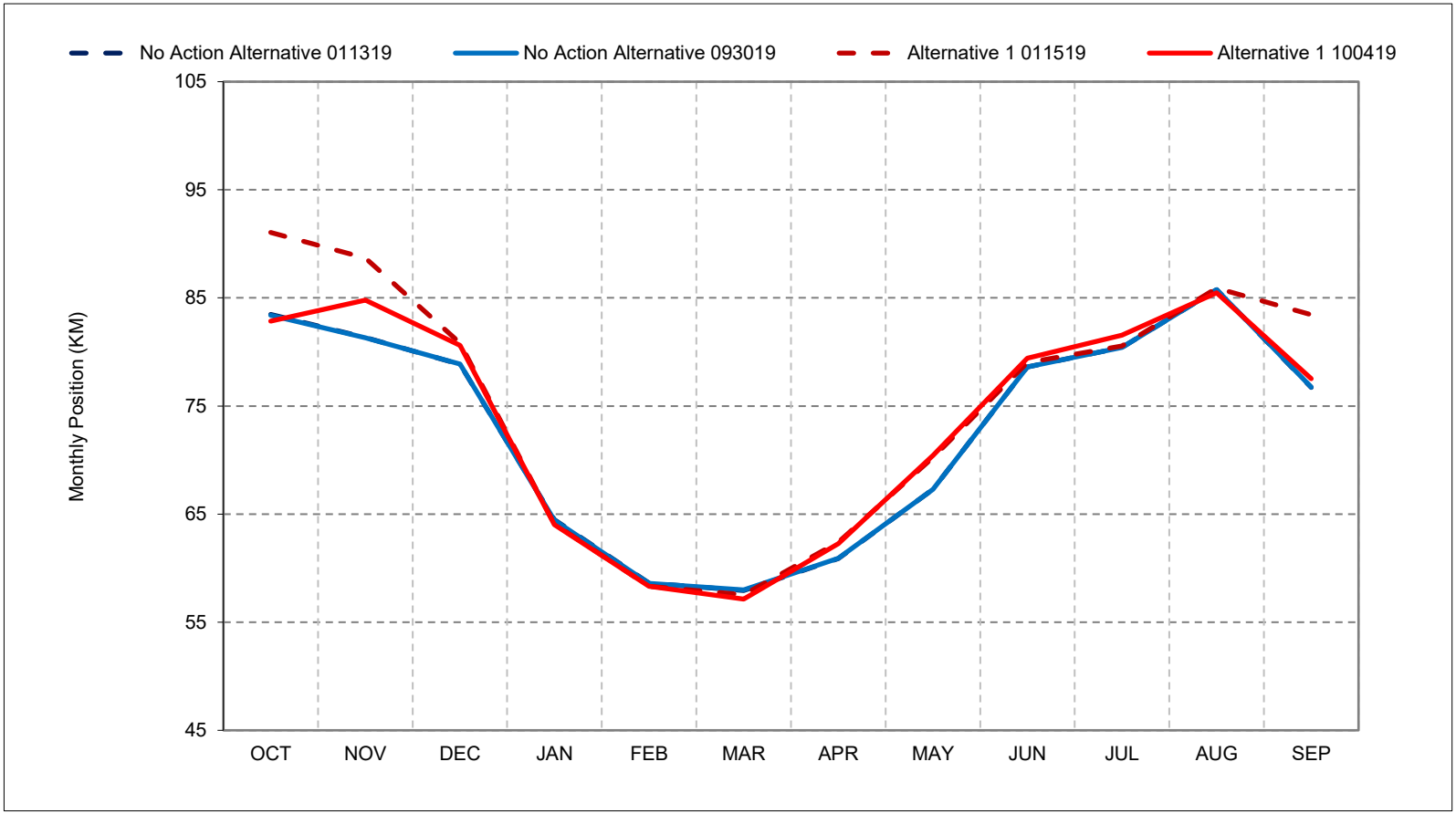
## Figure 45-2. X2, Wet Year Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

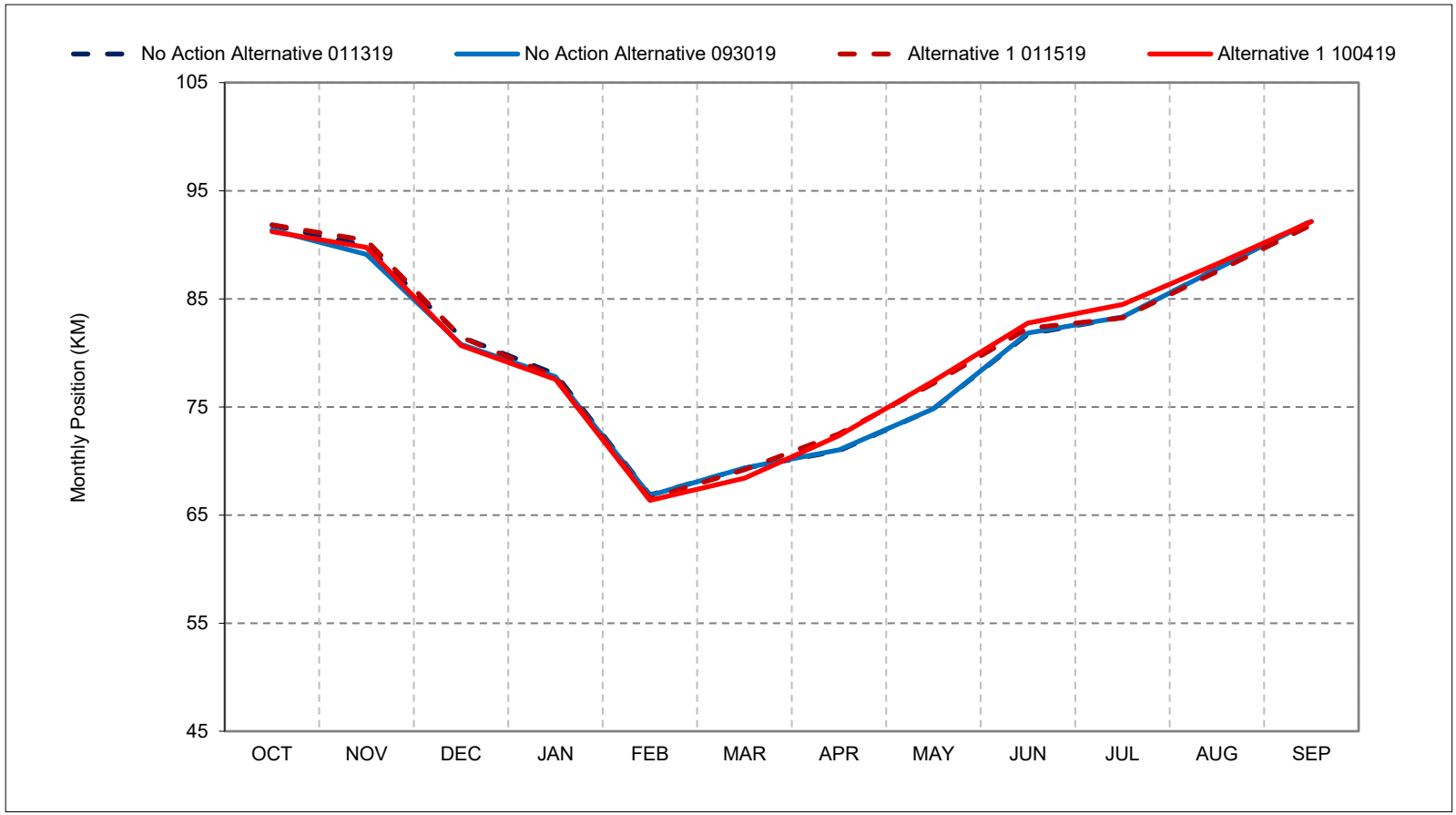
## Figure 45-3. X2, Above Normal Year Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

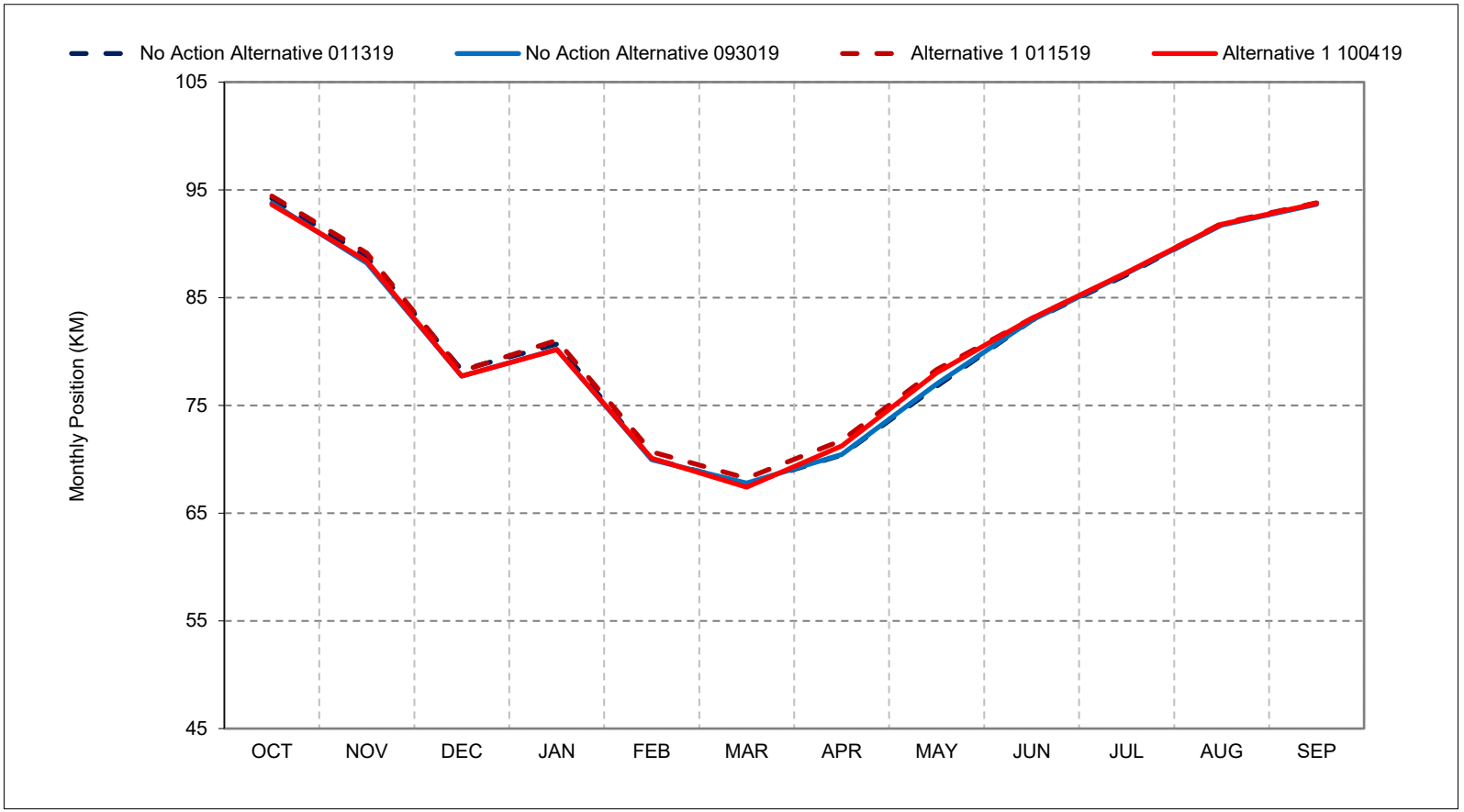
## Figure 45-4. X2, Below Normal Year Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

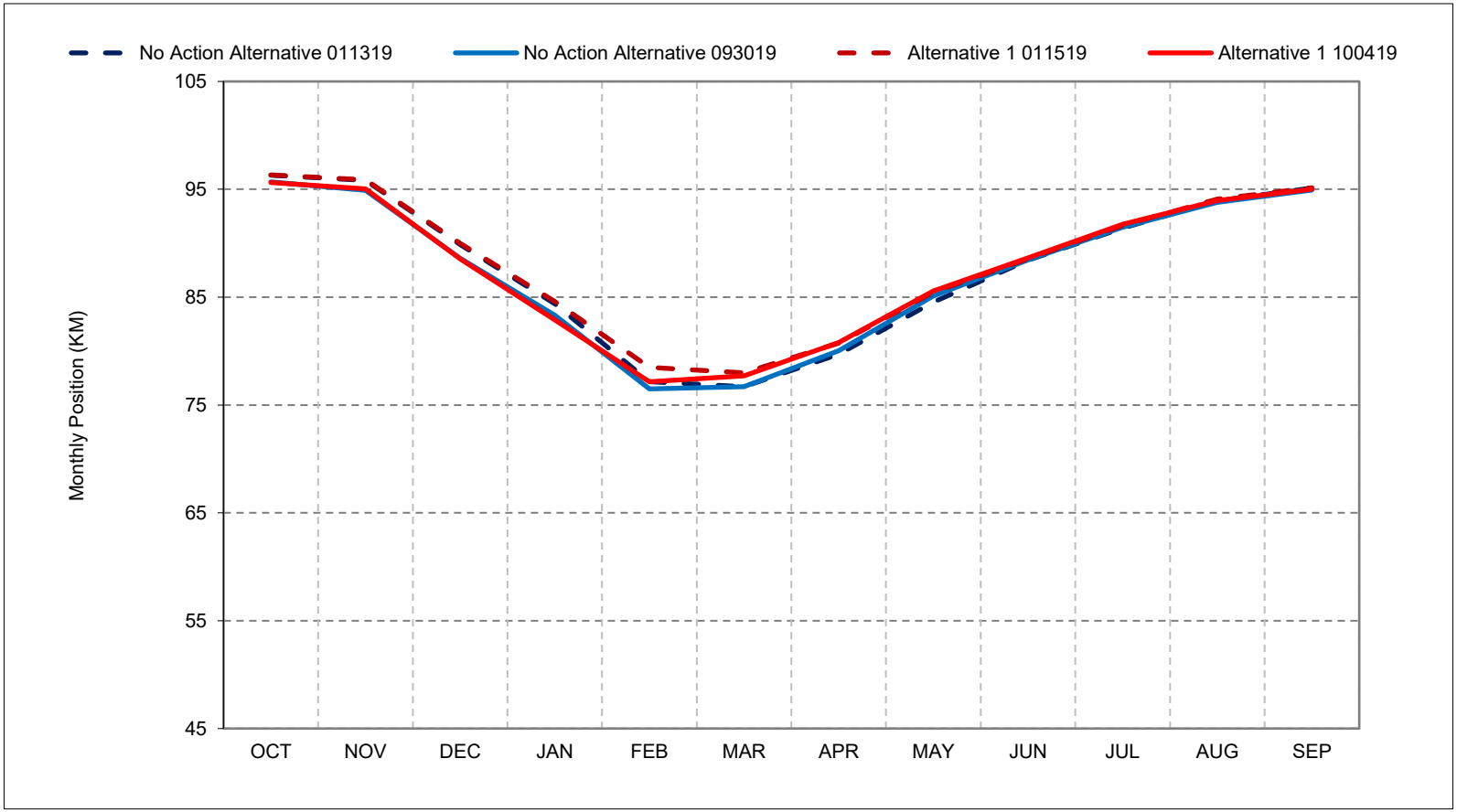
## Figure 45-5. X2, Dry Year Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

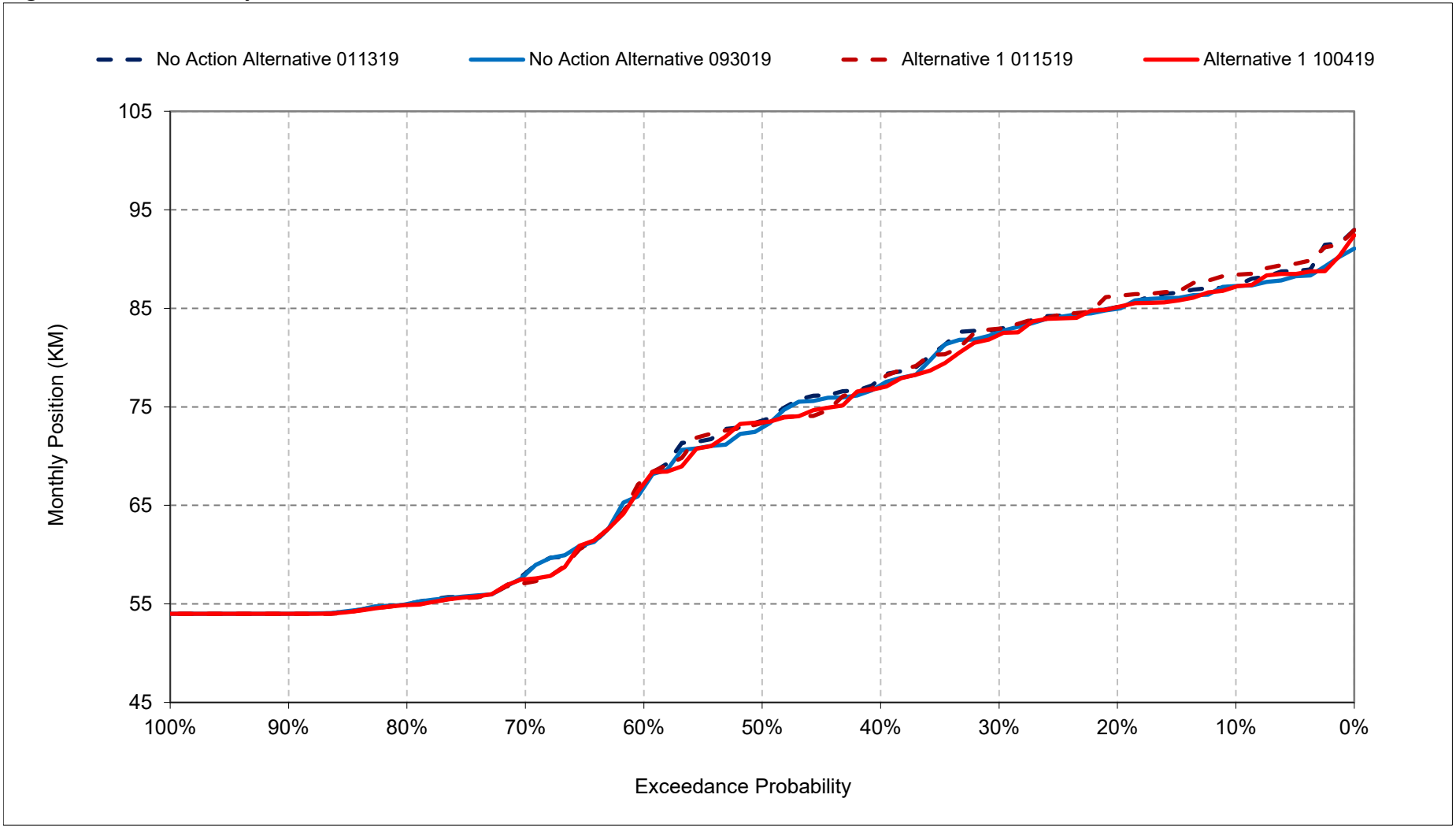
## Figure 45-6. X2, Critical Year Average Position




*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

* Results are monthly averaged from DSM2.

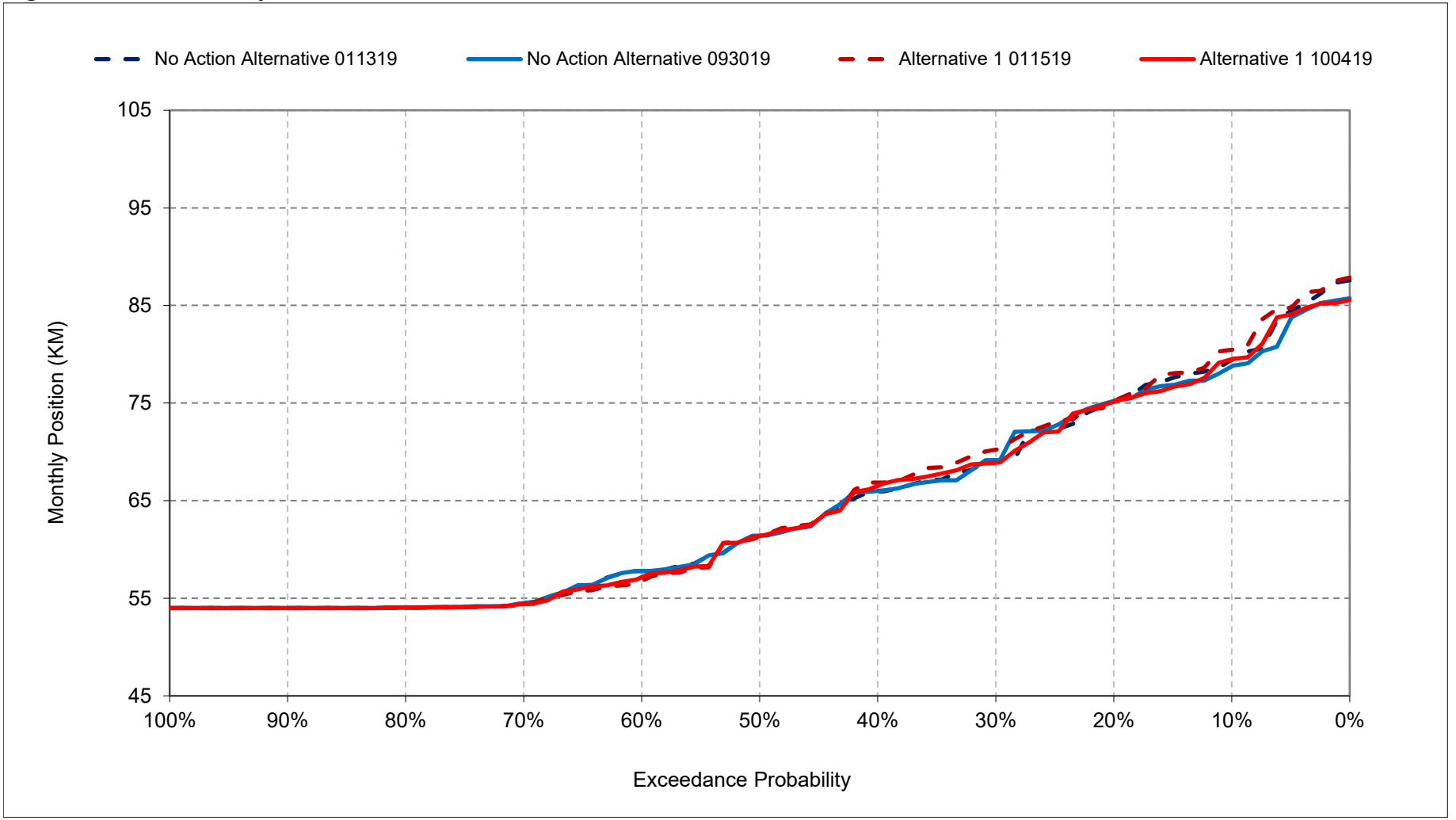
**Figure 45-7. X2, January Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

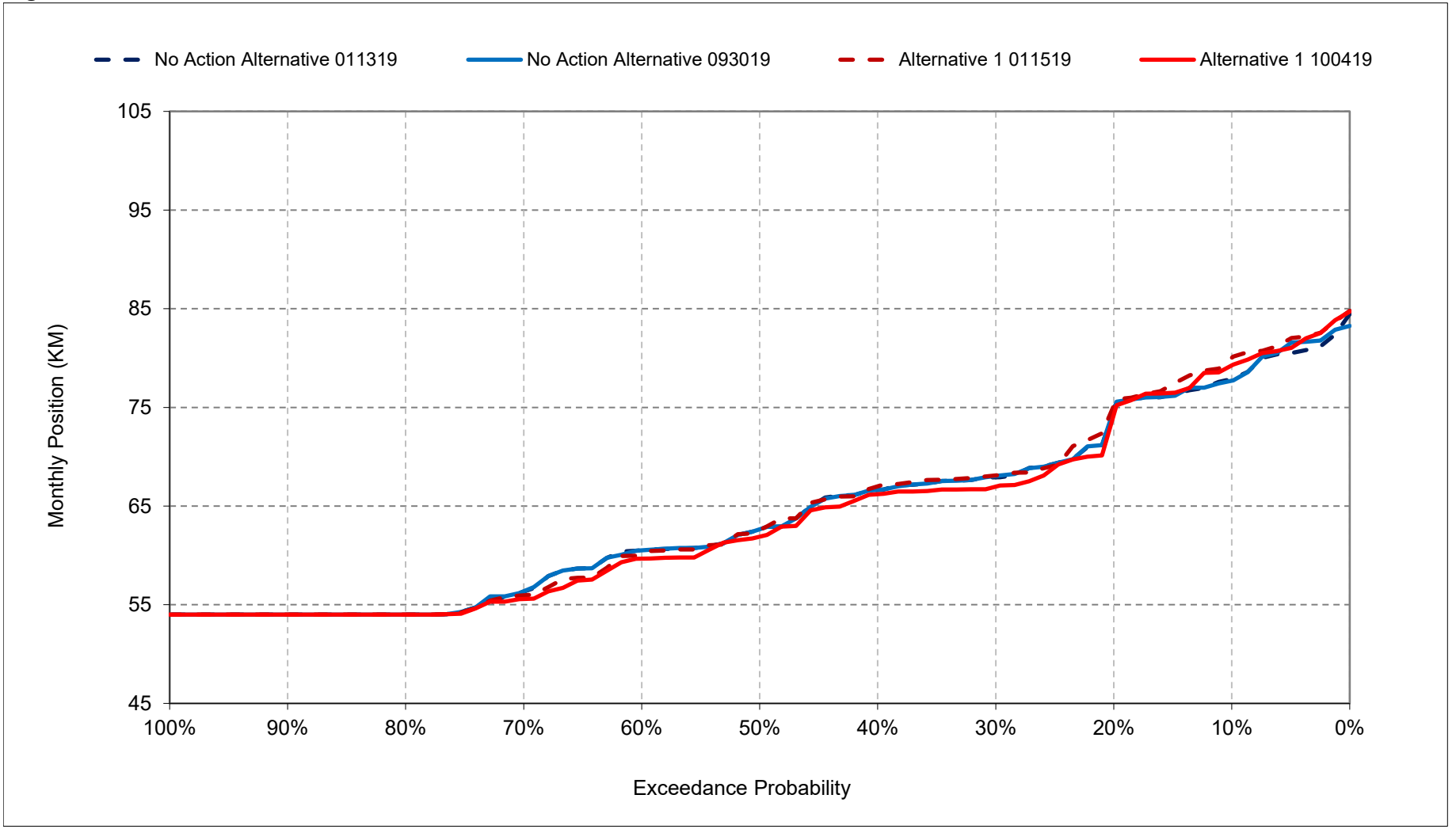
**Figure 45-8. X2, February Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

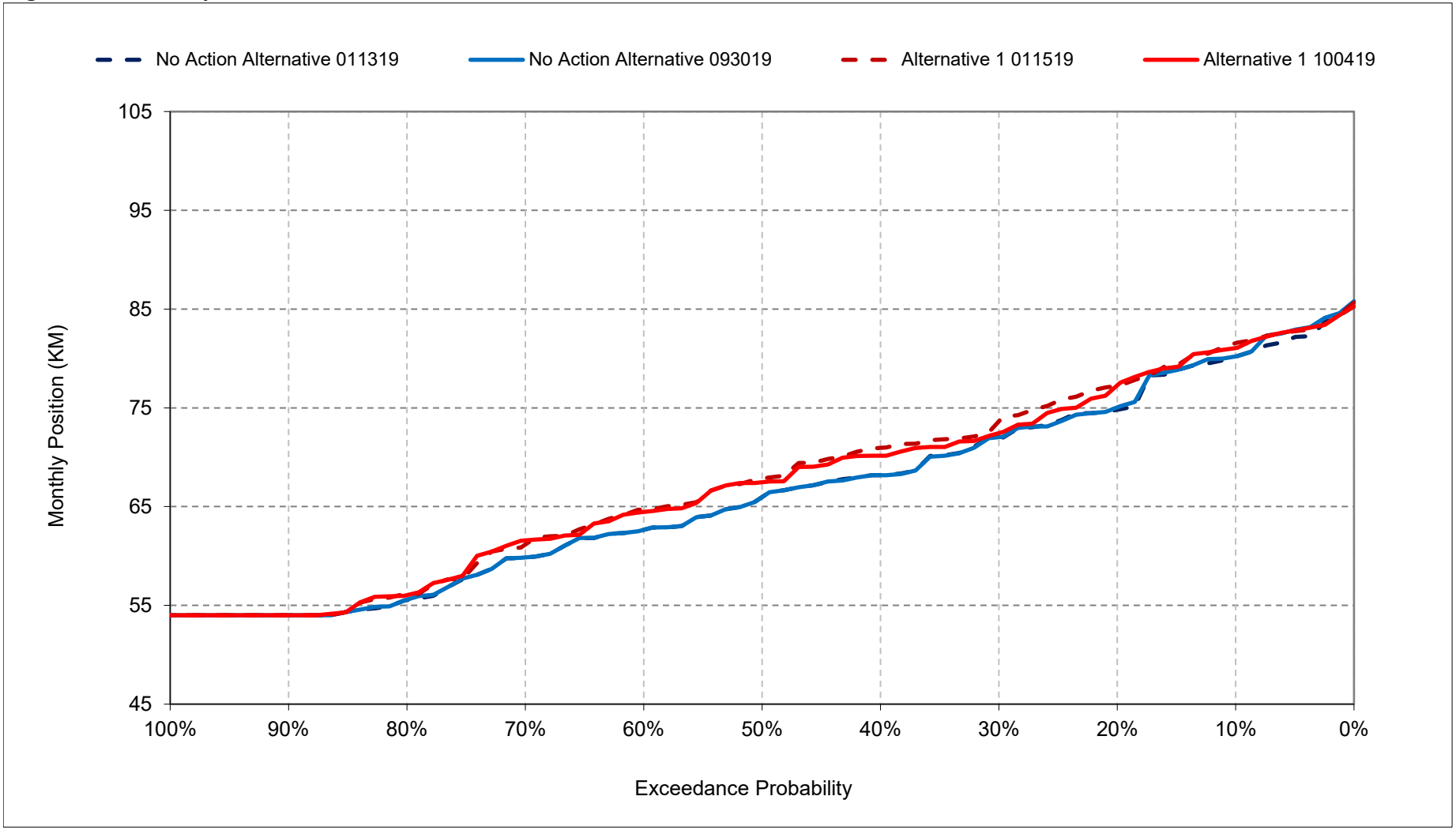
**Figure 45-9. X2, March Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

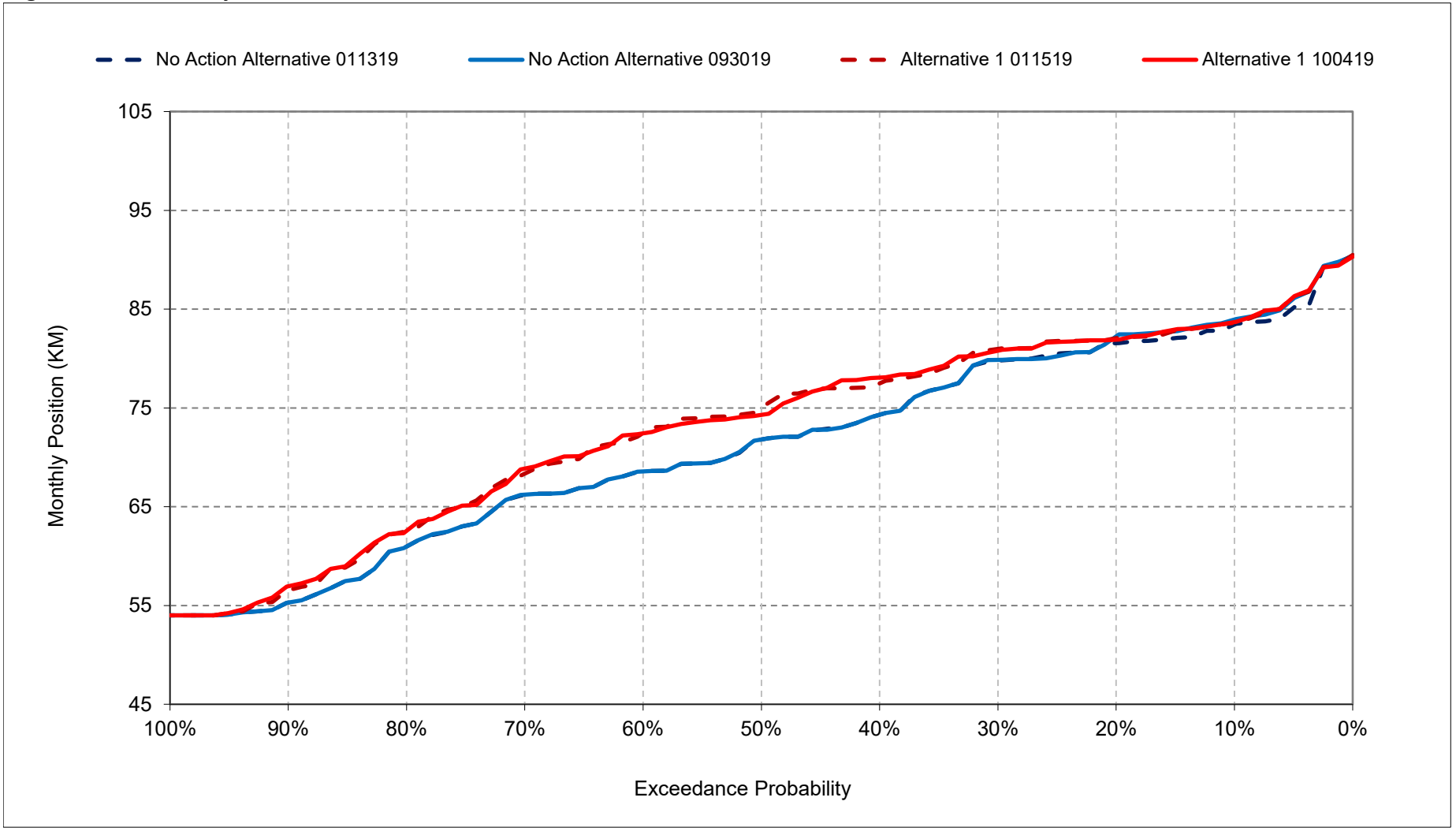
**Figure 45-10. X2, April Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

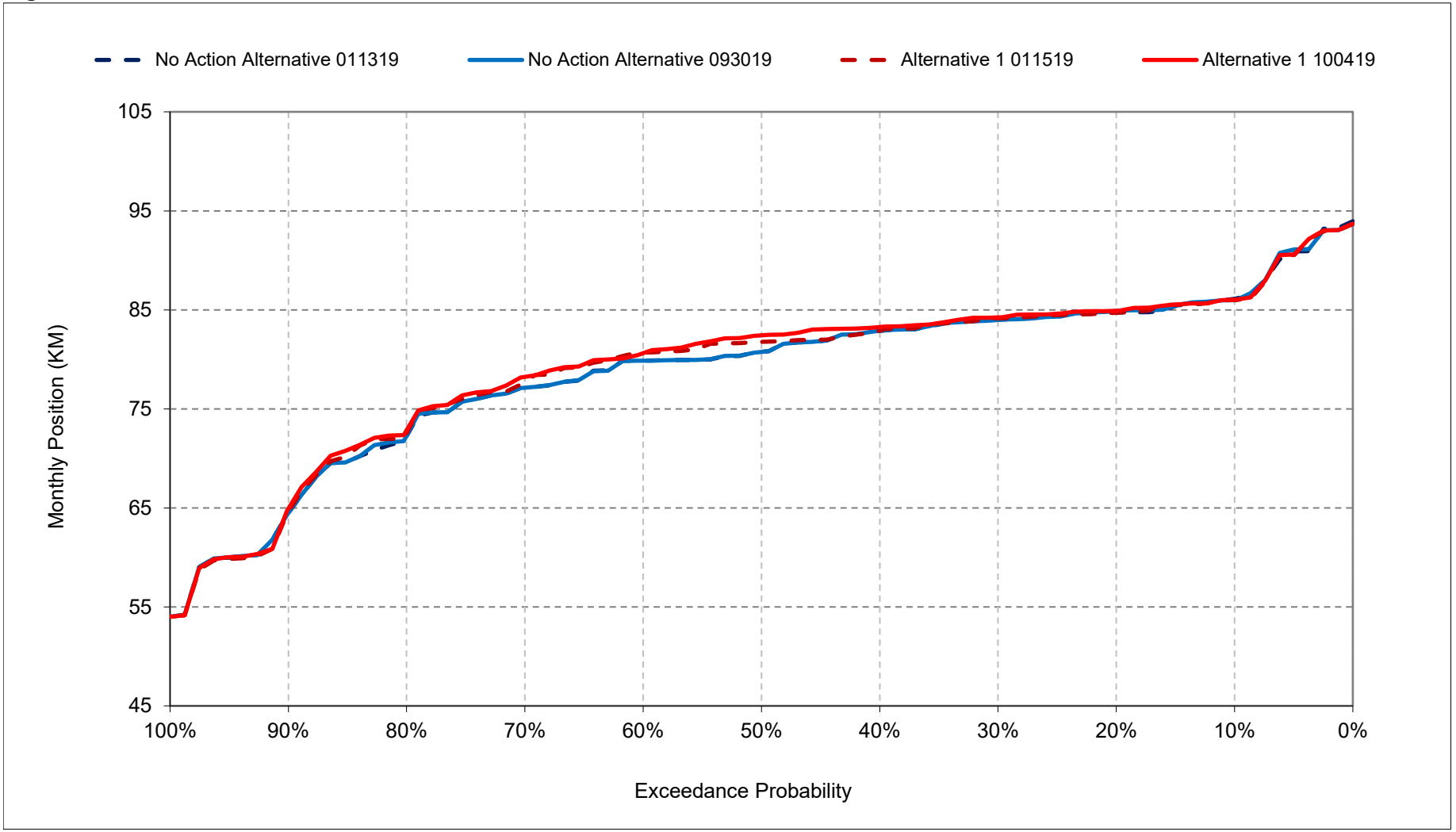
**Figure 45-11. X2, May Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

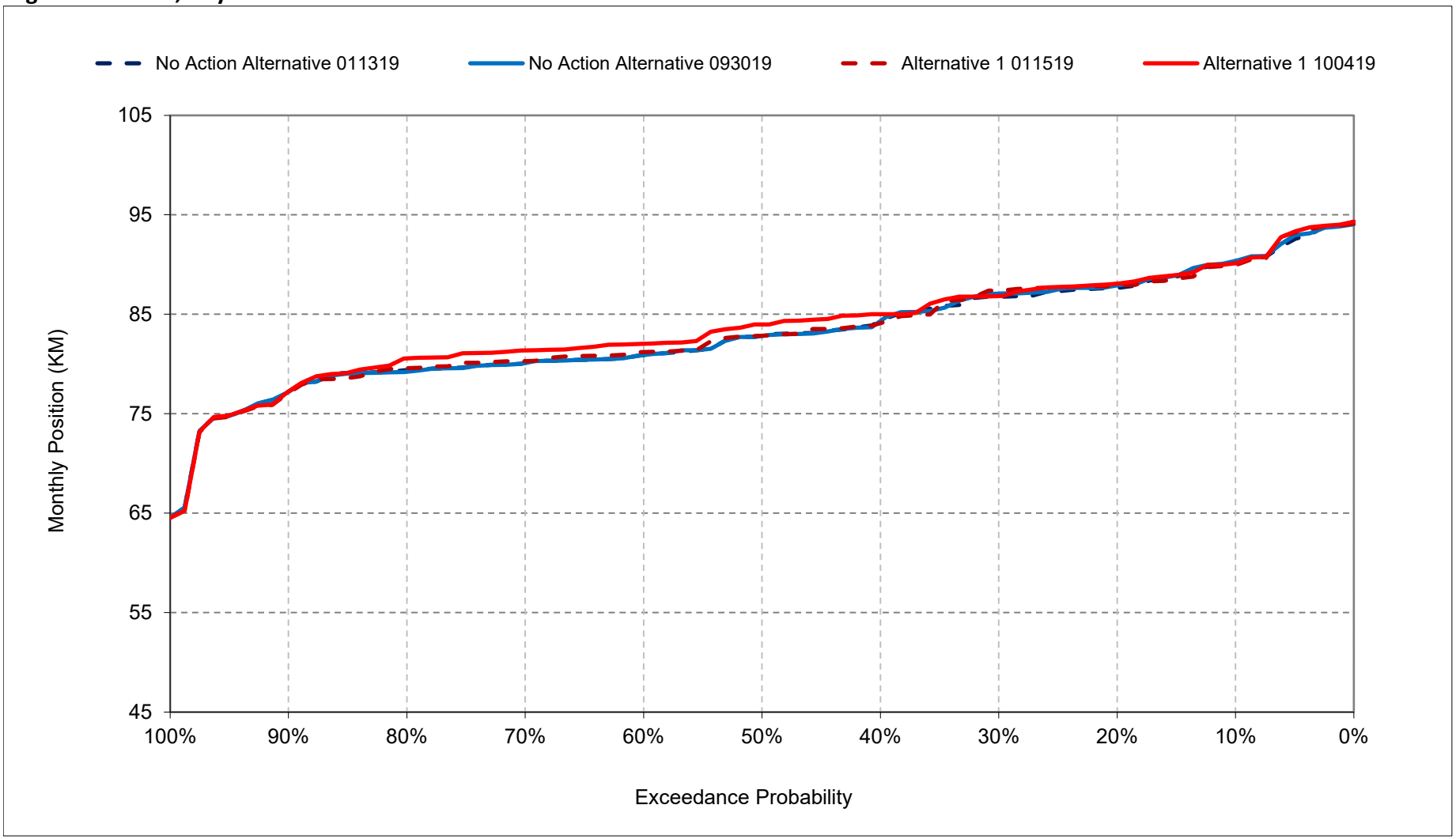
**Figure 45-12. X2, June Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

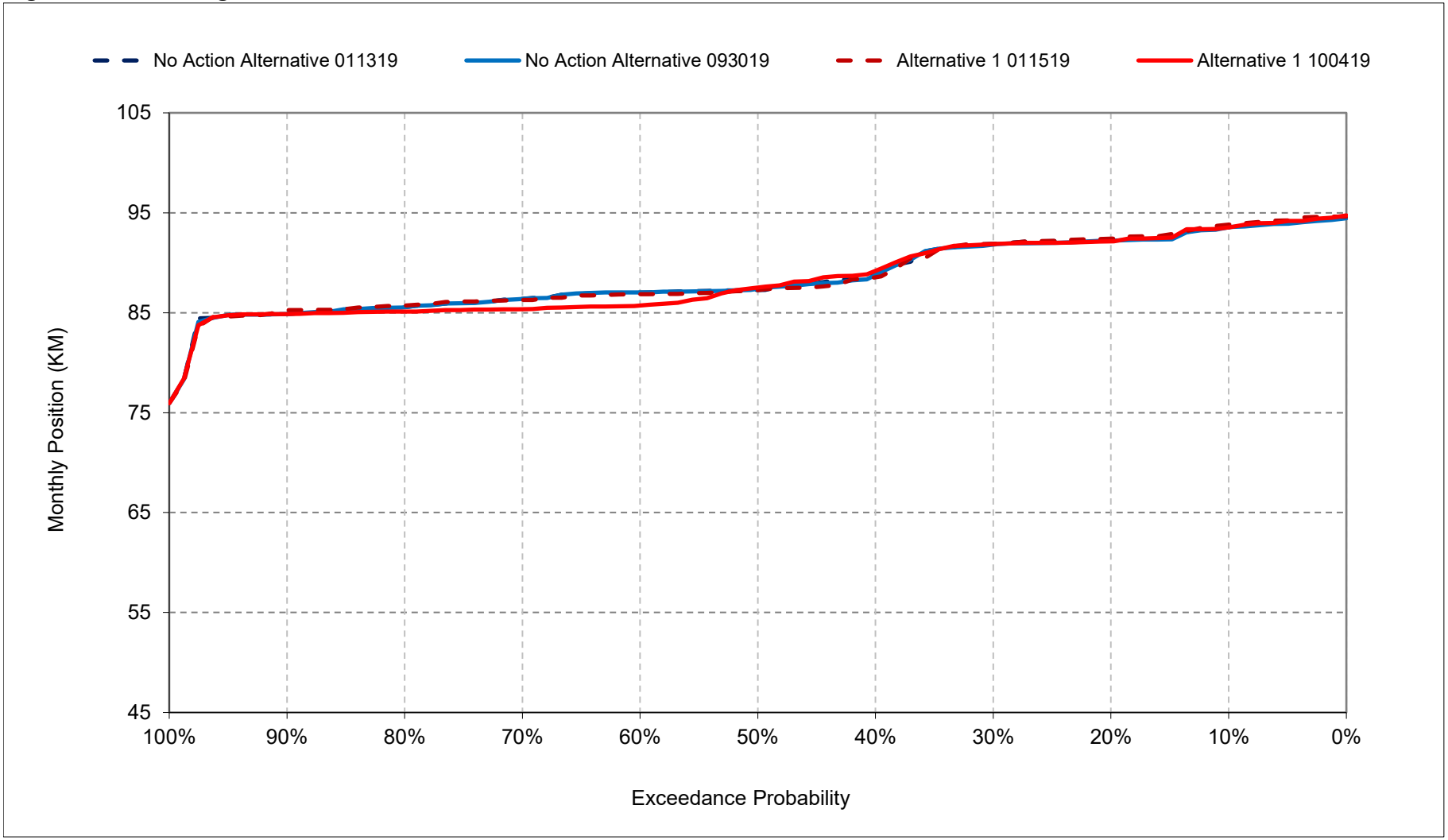
**Figure 45-13. X2, July Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

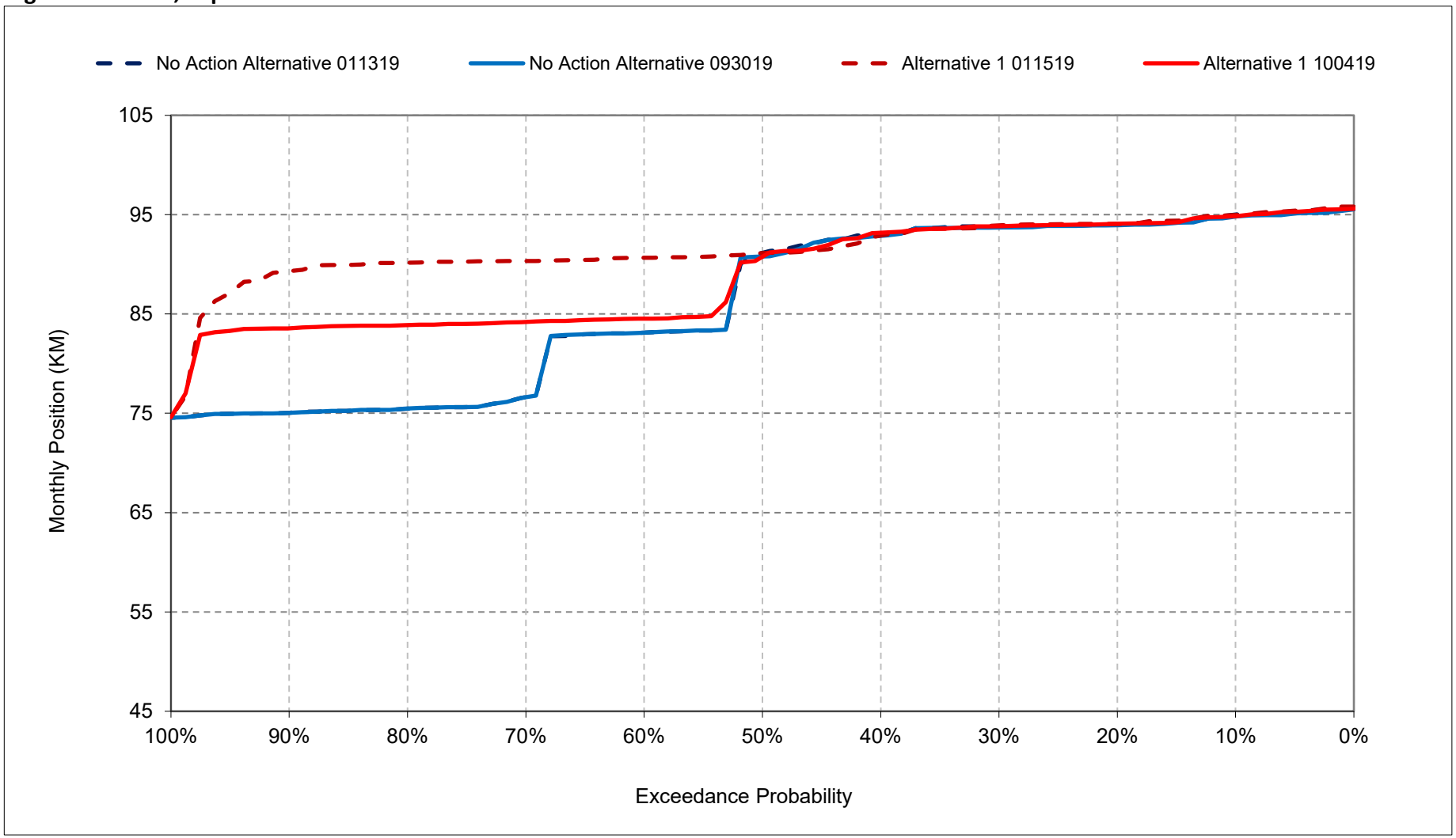
**Figure 45-14. X2, August Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

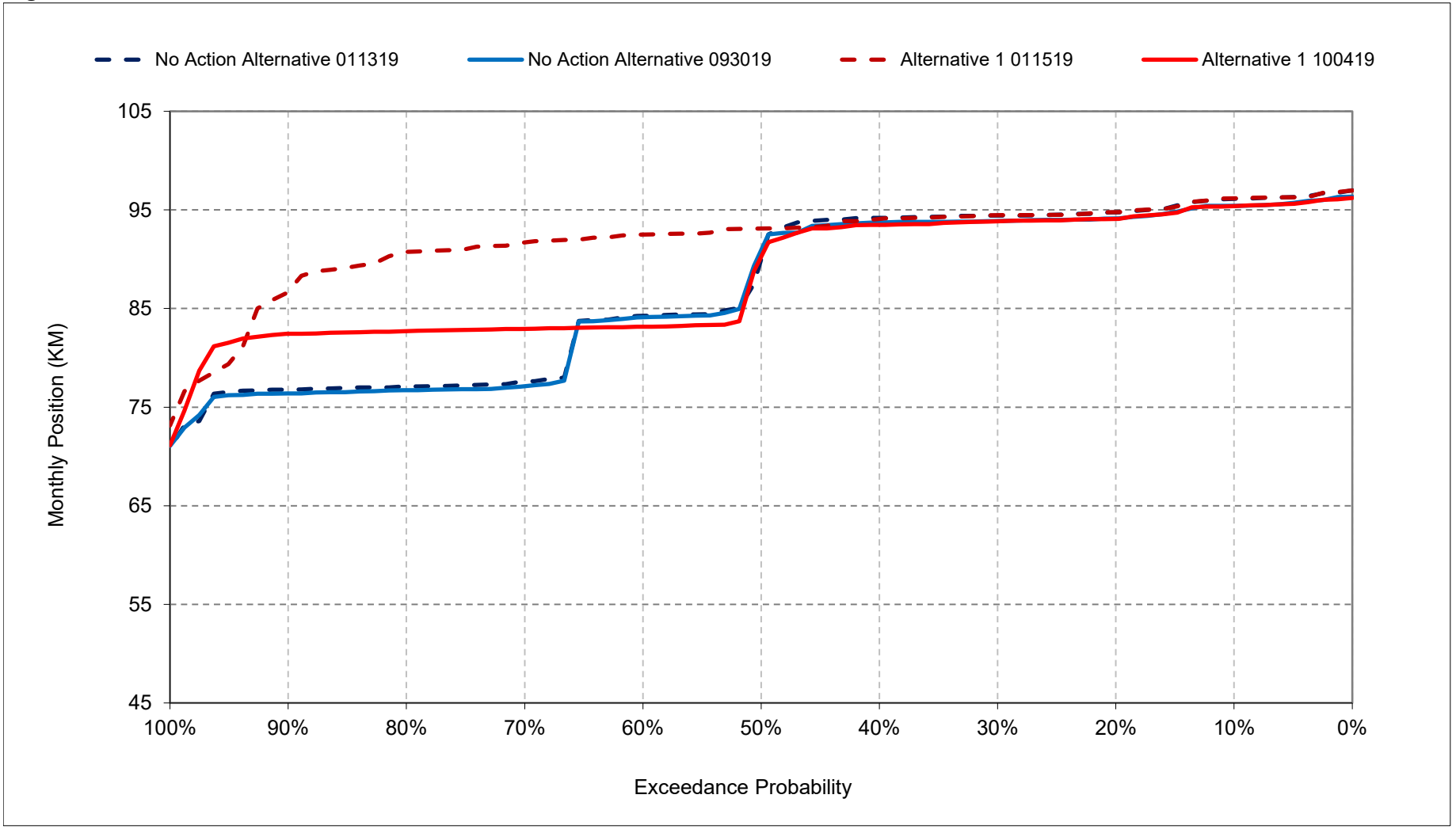
**Figure 45-15. X2, September Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

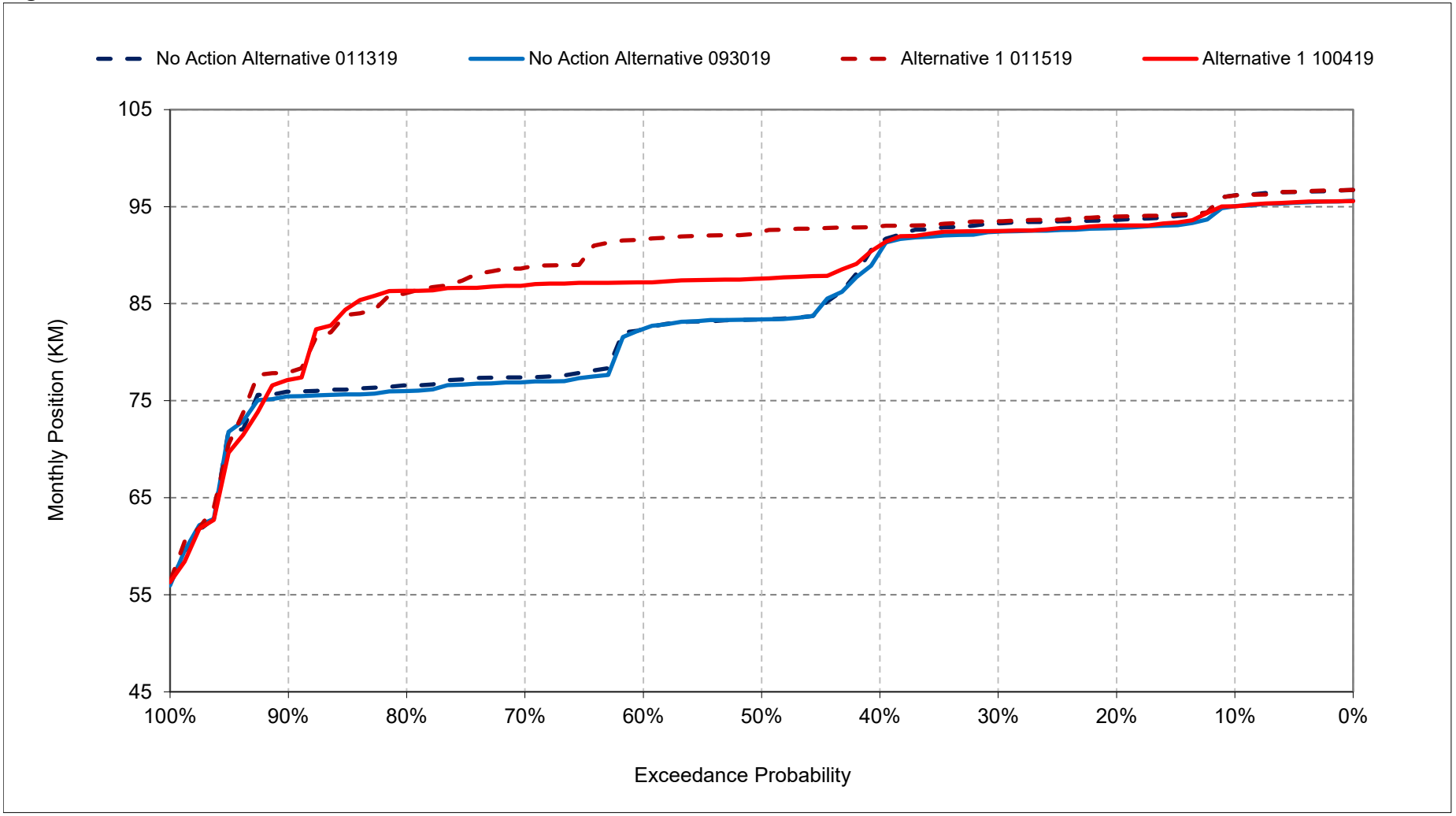
**Figure 45-16. X2, October Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

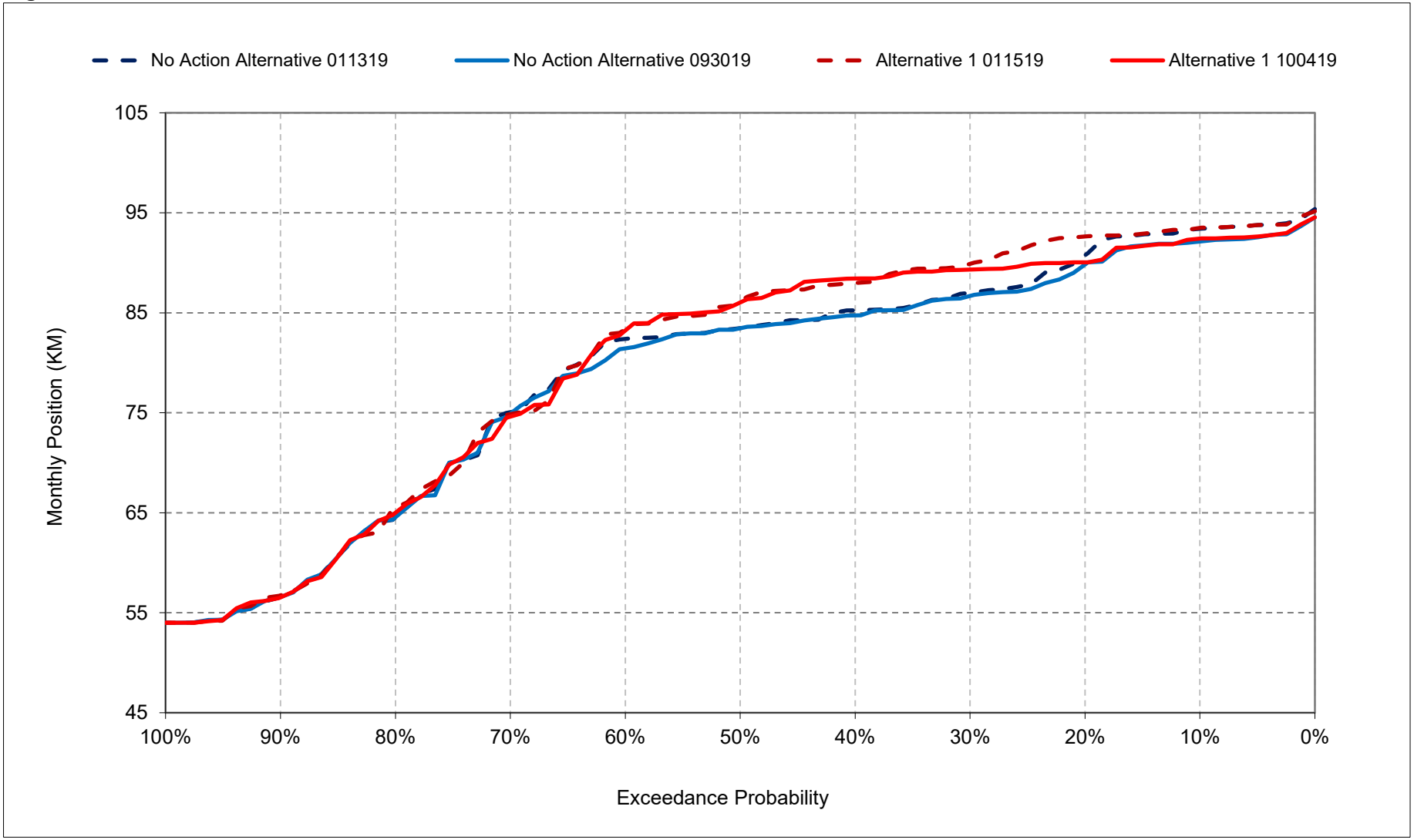
**Figure 45-17. X2, November Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

**Figure 45-18. X2, December Position**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*Results are monthly averaged from DSM2.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.8 Winter Run Chinook Temperature Dependent Egg Mortality Results (Martin and Anderson Models)

The following results of the Martin and Anderson models are included for winter run Chinook Salmon temperature-dependent egg mortality for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Upper Sacramento Winter Run Chinook Salmon, Martin Model | NA | 1-1 to 1-4 | 1-1 to 1-6 |
| Upper Sacramento Winter Run Chinook Salmon, Anderson Model | NA | 1-1 to 1-4 | 2-1 to 2-6 |

Report formats

- Tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Exceedance charts including all scenarios

## Table 1-1. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

### NAA 011319

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.67 | 0.83 |
| 20% | 0.50 | 0.63 |
| 30% | 0.31 | 0.32 |
| 40% | 0.08 | 0.06 |
| 50% | 0.06 | 0.03 |
| 60% | 0.04 | 0.02 |
| 70% | 0.04 | 0.02 |
| 80% | 0.03 | 0.01 |
| 90% | 0.02 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.23 | 0.24 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.03 |
| Above Normal (16%) | 0.03 | 0.01 |
| Below Normal (13%) | 0.17 | 0.18 |
| Dry (24%) | 0.28 | 0.32 |
| Critical (15%) | 0.75 | 0.83 |

### Alternative 1 011519

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.46 | 0.46 |
| 20% | 0.28 | 0.16 |
| 30% | 0.11 | 0.08 |
| 40% | 0.06 | 0.06 |
| 50% | 0.03 | 0.03 |
| 60% | 0.02 | 0.02 |
| 70% | 0.01 | 0.01 |
| 80% | 0.01 | 0.01 |
| 90% | 0.01 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.15 | 0.13 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.04 |
| Above Normal (16%) | 0.04 | 0.03 |
| Below Normal (13%) | 0.11 | 0.06 |
| Dry (24%) | 0.10 | 0.09 |
| Critical (15%) | 0.61 | 0.57 |

### Alternative 1 011519 minus NAA 011319

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance[a]** | | |
| 10% | -0.22 | -0.37 |
| 20% | -0.23 | -0.47 |
| 30% | -0.20 | -0.24 |
| 40% | -0.02 | **0.00** |
| 50% | -0.03 | **0.00** |
| 60% | -0.02 | 0.00 |
| 70% | -0.02 | 0.00 |
| 80% | -0.02 | 0.00 |
| 90% | -0.02 | **0.00** |
| **Long Term** | | |
| Full Simulation Period[a] | -0.07 | -0.10 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.00 | **0.01** |
| Above Normal (16%) | **0.00** | **0.01** |
| Below Normal (13%) | -0.06 | -0.11 |
| Dry (24%) | -0.18 | -0.23 |
| Critical (15%) | -0.15 | -0.26 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-2. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

### NAA 093019

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.70 | 0.81 |
| 20% | 0.49 | 0.62 |
| 30% | 0.32 | 0.35 |
| 40% | 0.09 | 0.06 |
| 50% | 0.05 | 0.03 |
| 60% | 0.04 | 0.02 |
| 70% | 0.04 | 0.02 |
| 80% | 0.03 | 0.01 |
| 90% | 0.02 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.23 | 0.24 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.03 |
| Above Normal (16%) | 0.03 | 0.01 |
| Below Normal (13%) | 0.17 | 0.17 |
| Dry (24%) | 0.28 | 0.33 |
| Critical (15%) | 0.77 | 0.85 |

### Alternative 1 100419

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.51 | 0.47 |
| 20% | 0.24 | 0.17 |
| 30% | 0.12 | 0.10 |
| 40% | 0.06 | 0.05 |
| 50% | 0.03 | 0.03 |
| 60% | 0.02 | 0.02 |
| 70% | 0.01 | 0.01 |
| 80% | 0.01 | 0.01 |
| 90% | 0.01 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.15 | 0.14 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.04 |
| Above Normal (16%) | 0.02 | 0.01 |
| Below Normal (13%) | 0.11 | 0.07 |
| Dry (24%) | 0.11 | 0.10 |
| Critical (15%) | 0.62 | 0.59 |

### Alternative 1 100419 minus NAA 093019

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance[a]** | | |
| 10% | -0.18 | -0.33 |
| 20% | -0.25 | -0.45 |
| 30% | -0.20 | -0.25 |
| 40% | -0.03 | -0.02 |
| 50% | -0.03 | **0.00** |
| 60% | -0.02 | 0.00 |
| 70% | -0.02 | 0.00 |
| 80% | -0.02 | 0.00 |
| 90% | -0.02 | 0.00 |
| **Long Term** | | |
| Full Simulation Period[a] | -0.08 | -0.11 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.00 | **0.01** |
| Above Normal (16%) | -0.01 | **0.00** |
| Below Normal (13%) | -0.06 | -0.11 |
| Dry (24%) | -0.18 | -0.23 |
| Critical (15%) | -0.15 | -0.26 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-3. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

### NAA 011319

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.67 | 0.83 |
| 20% | 0.50 | 0.63 |
| 30% | 0.31 | 0.32 |
| 40% | 0.08 | 0.06 |
| 50% | 0.06 | 0.03 |
| 60% | 0.04 | 0.02 |
| 70% | 0.04 | 0.02 |
| 80% | 0.03 | 0.01 |
| 90% | 0.02 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.23 | 0.24 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.03 |
| Above Normal (16%) | 0.03 | 0.01 |
| Below Normal (13%) | 0.17 | 0.18 |
| Dry (24%) | 0.28 | 0.32 |
| Critical (15%) | 0.75 | 0.83 |

### NAA 093019

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.70 | 0.81 |
| 20% | 0.49 | 0.62 |
| 30% | 0.32 | 0.35 |
| 40% | 0.09 | 0.06 |
| 50% | 0.05 | 0.03 |
| 60% | 0.04 | 0.02 |
| 70% | 0.04 | 0.02 |
| 80% | 0.03 | 0.01 |
| 90% | 0.02 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.23 | 0.24 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.03 |
| Above Normal (16%) | 0.03 | 0.01 |
| Below Normal (13%) | 0.17 | 0.17 |
| Dry (24%) | 0.28 | 0.33 |
| Critical (15%) | 0.77 | 0.85 |

### NAA 093019 minus NAA 011319

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance[a]** | | |
| 10% | **0.03** | -0.02 |
| 20% | -0.01 | -0.01 |
| 30% | **0.01** | **0.03** |
| 40% | **0.01** | **0.01** |
| 50% | 0.00 | 0.00 |
| 60% | **0.00** | **0.00** |
| 70% | **0.00** | **0.00** |
| 80% | 0.00 | 0.00 |
| 90% | 0.00 | 0.00 |
| **Long Term** | | |
| Full Simulation Period[a] | **0.00** | **0.00** |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.00 | 0.00 |
| Above Normal (16%) | 0.00 | **0.00** |
| Below Normal (13%) | **0.00** | 0.00 |
| Dry (24%) | **0.00** | **0.01** |
| Critical (15%) | **0.02** | **0.02** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 1-4. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

### Alternative 1 011519

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.46 | 0.46 |
| 20% | 0.28 | 0.16 |
| 30% | 0.11 | 0.08 |
| 40% | 0.06 | 0.06 |
| 50% | 0.03 | 0.03 |
| 60% | 0.02 | 0.02 |
| 70% | 0.01 | 0.01 |
| 80% | 0.01 | 0.01 |
| 90% | 0.01 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.15 | 0.13 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.04 |
| Above Normal (16%) | 0.04 | 0.03 |
| Below Normal (13%) | 0.11 | 0.06 |
| Dry (24%) | 0.10 | 0.09 |
| Critical (15%) | 0.61 | 0.57 |

### Alternative 1 100419

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance** | | |
| 10% | 0.51 | 0.47 |
| 20% | 0.24 | 0.17 |
| 30% | 0.12 | 0.10 |
| 40% | 0.06 | 0.05 |
| 50% | 0.03 | 0.03 |
| 60% | 0.02 | 0.02 |
| 70% | 0.01 | 0.01 |
| 80% | 0.01 | 0.01 |
| 90% | 0.01 | 0.01 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.15 | 0.14 |
| **Water Year Types[b,c]** | | |
| Wet (32%) | 0.05 | 0.04 |
| Above Normal (16%) | 0.02 | 0.01 |
| Below Normal (13%) | 0.11 | 0.07 |
| Dry (24%) | 0.11 | 0.10 |
| Critical (15%) | 0.62 | 0.59 |

### Alternative 1 100419 minus Alternative 1 011519

| | Annual Mortality | |
|---|---|---|
| Statistic | Martin | Anderson |
| **Probability of Exceedance[a]** | | |
| 10% | **0.06** | **0.02** |
| 20% | -0.04 | **0.02** |
| 30% | **0.01** | **0.02** |
| 40% | 0.00 | -0.01 |
| 50% | **0.00** | 0.00 |
| 60% | 0.00 | 0.00 |
| 70% | 0.00 | **0.00** |
| 80% | 0.00 | **0.00** |
| 90% | **0.00** | 0.00 |
| **Long Term** | | |
| Full Simulation Period[a] | 0.00 | **0.00** |
| **Water Year Types[b,c]** | | |
| Wet (32%) | **0.00** | 0.00 |
| Above Normal (16%) | -0.02 | -0.01 |
| Below Normal (13%) | 0.00 | **0.00** |
| Dry (24%) | **0.00** | **0.01** |
| Critical (15%) | **0.01** | **0.03** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

Figure 1-1. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Long-Term Average

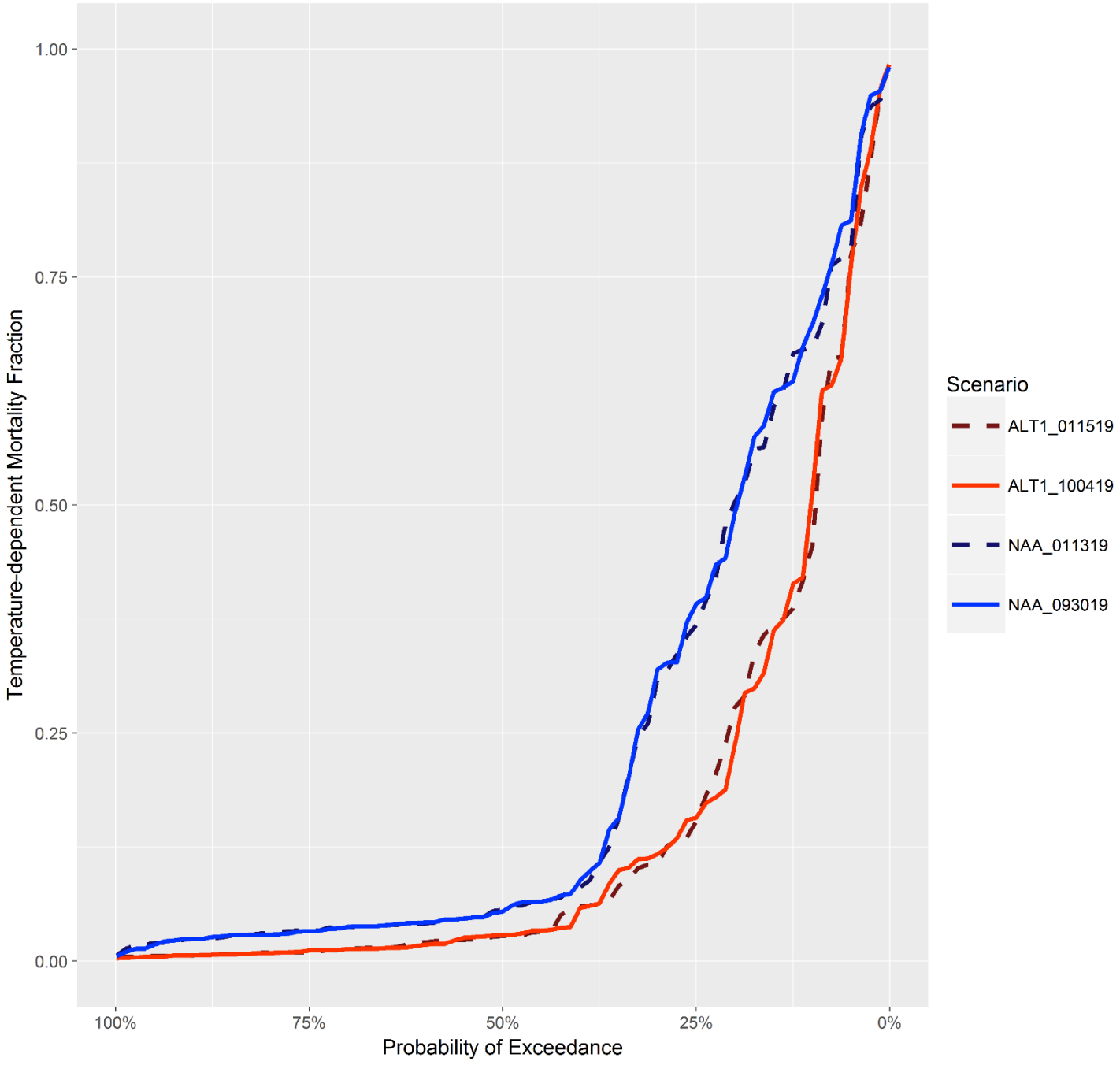


Figure 1-2. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Wet Year Average

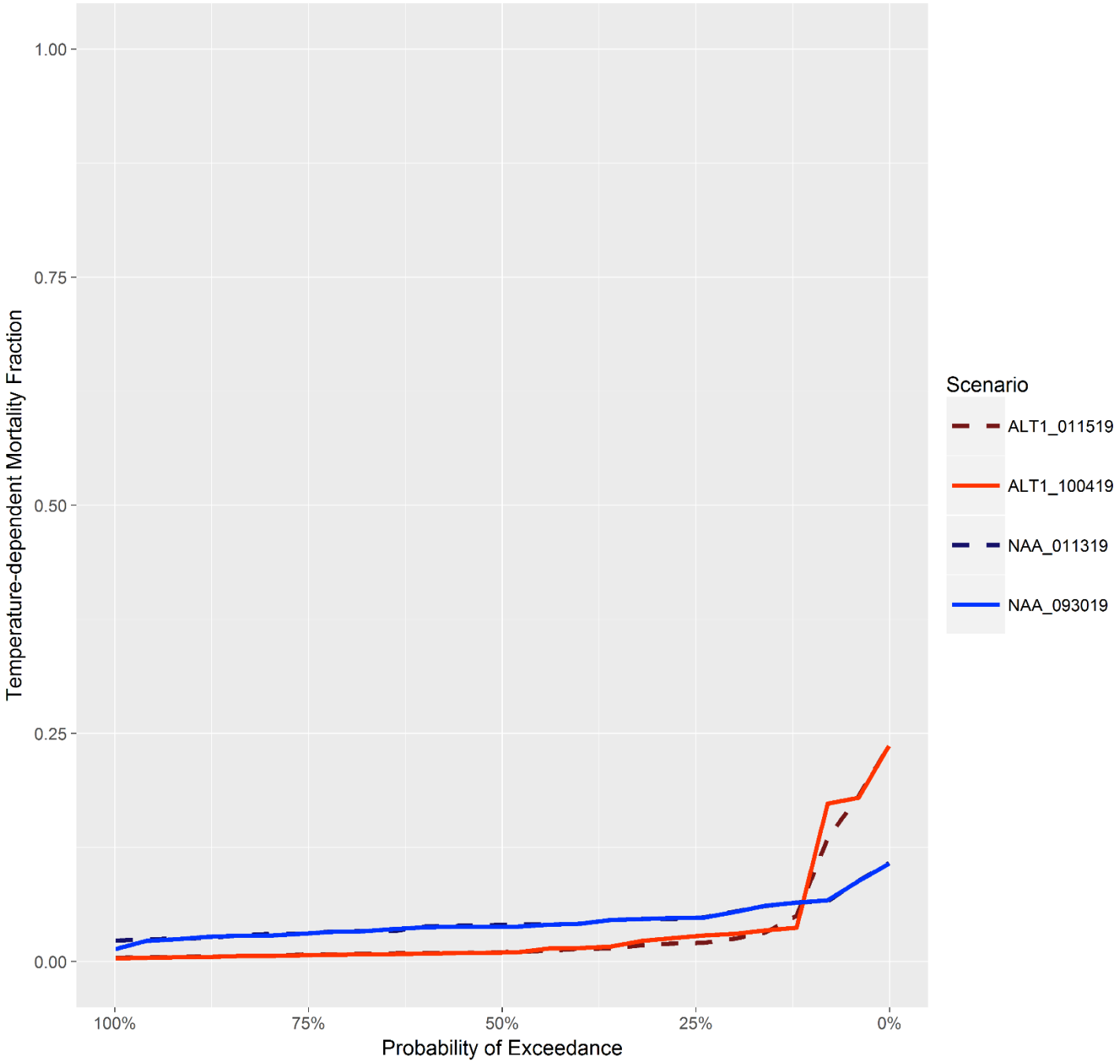


Figure 1-3. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Above Normal Year Average

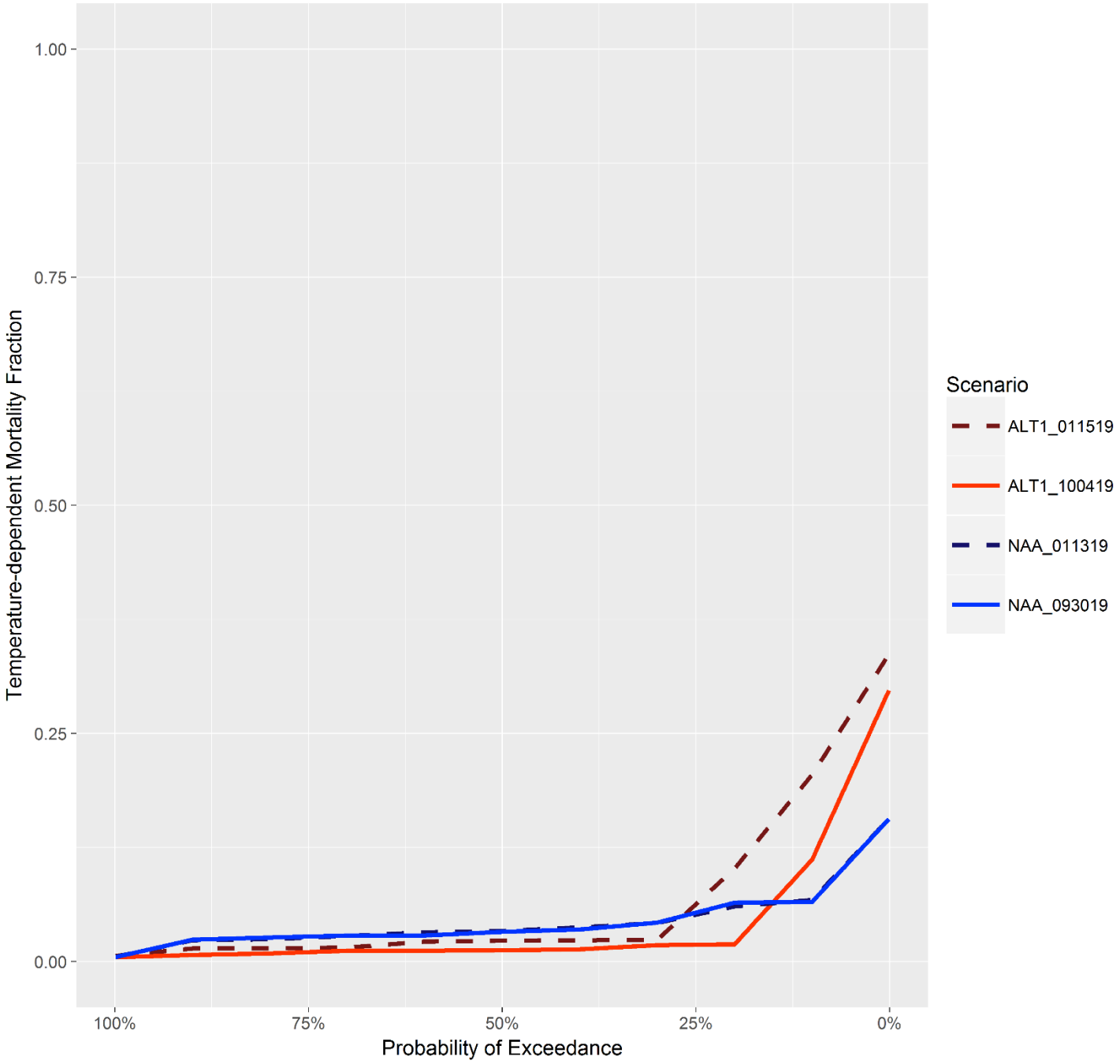


Figure 1-4. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Below Normal Year Average

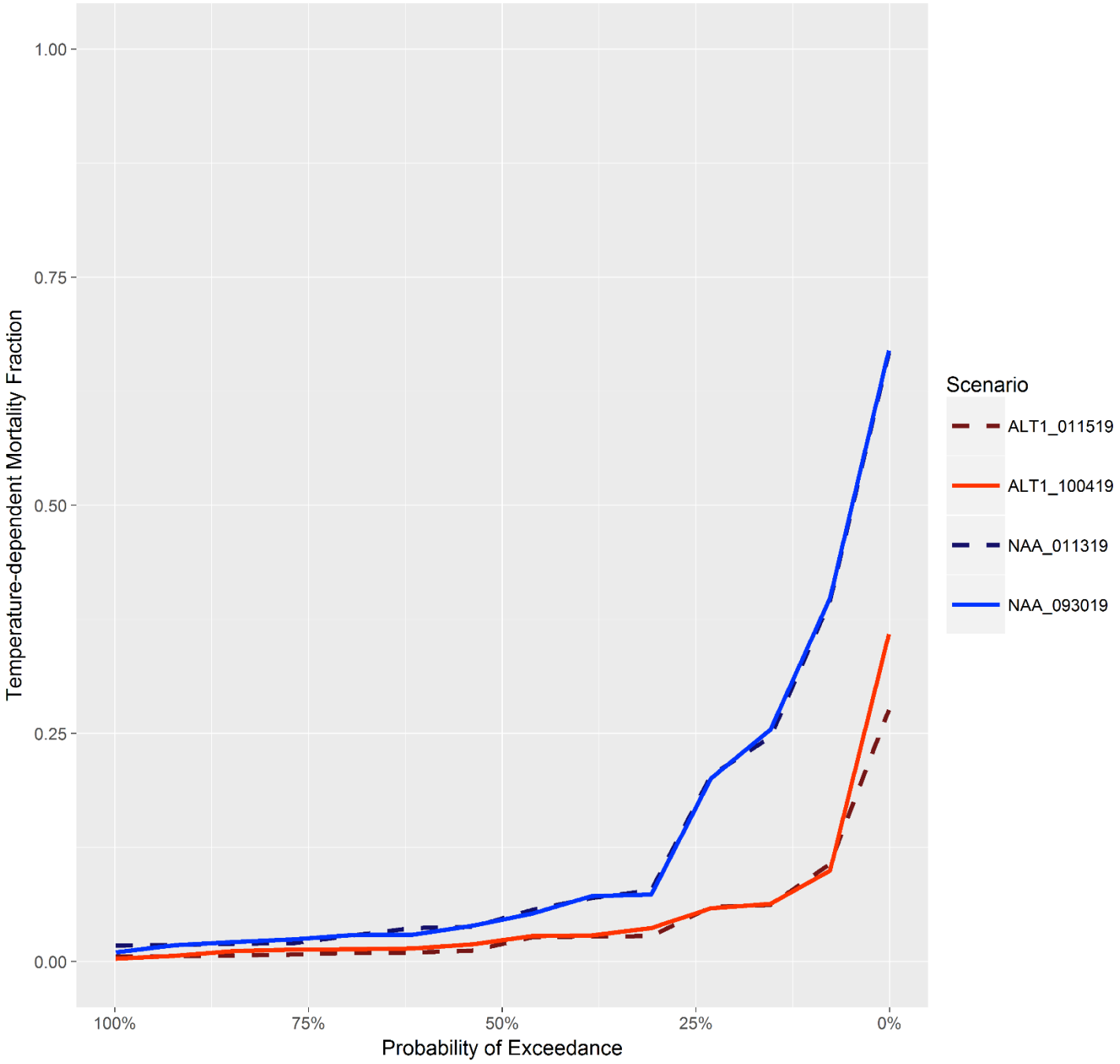


Figure 1-5. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Dry Year Average

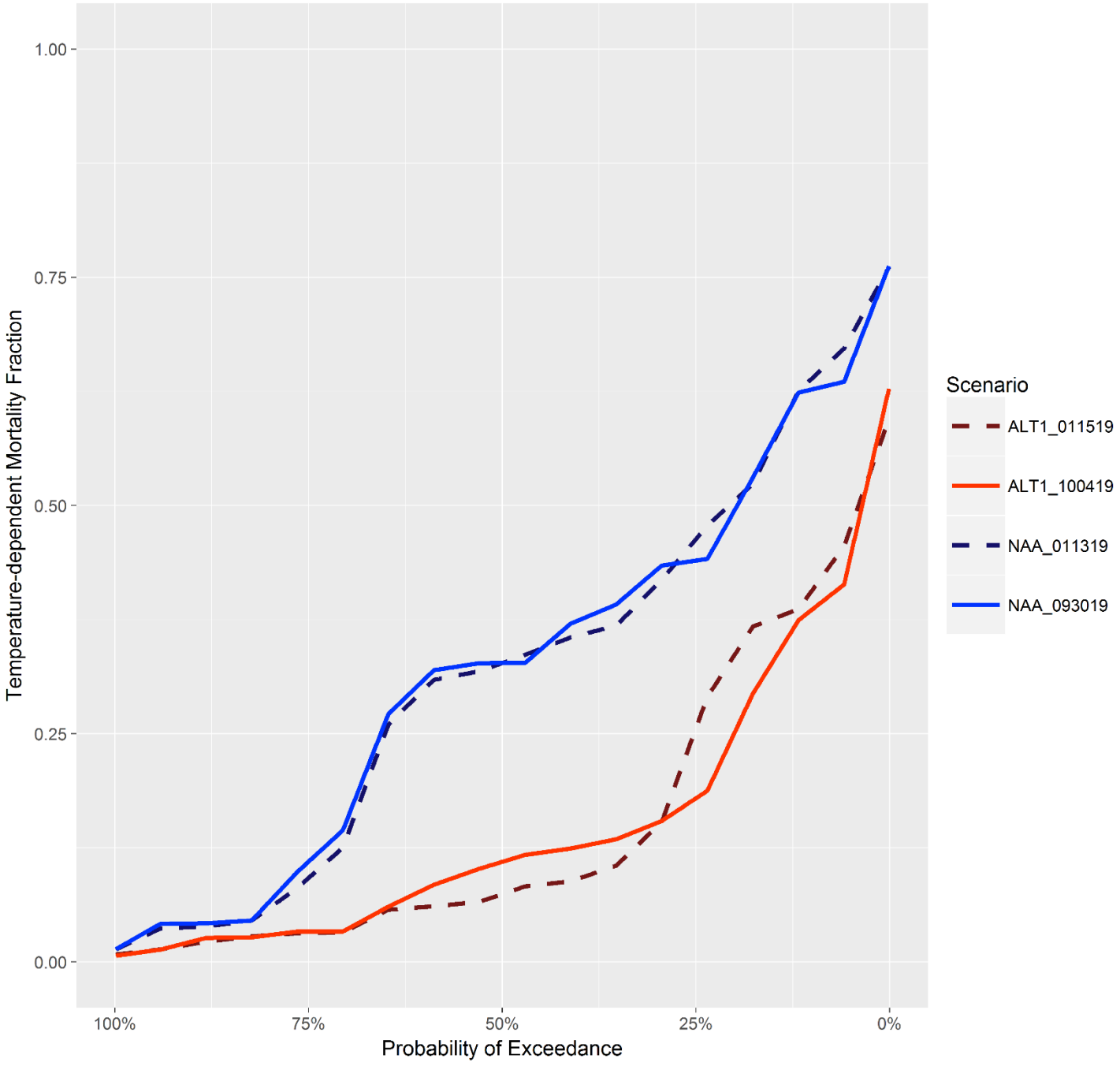


Figure 1-6. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Martin Model, Critical Year Average

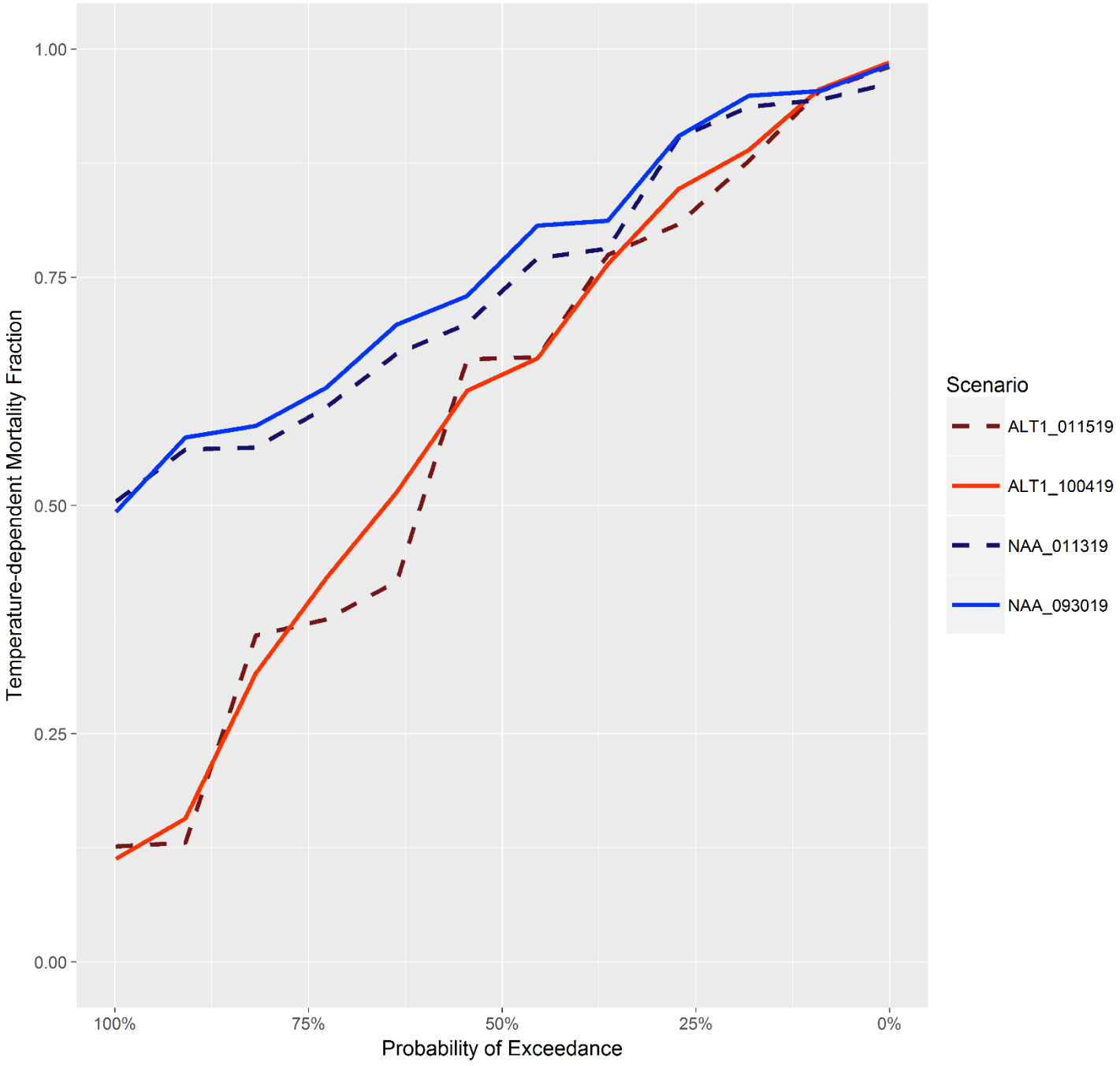


Figure 2-1. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Long-Term Average

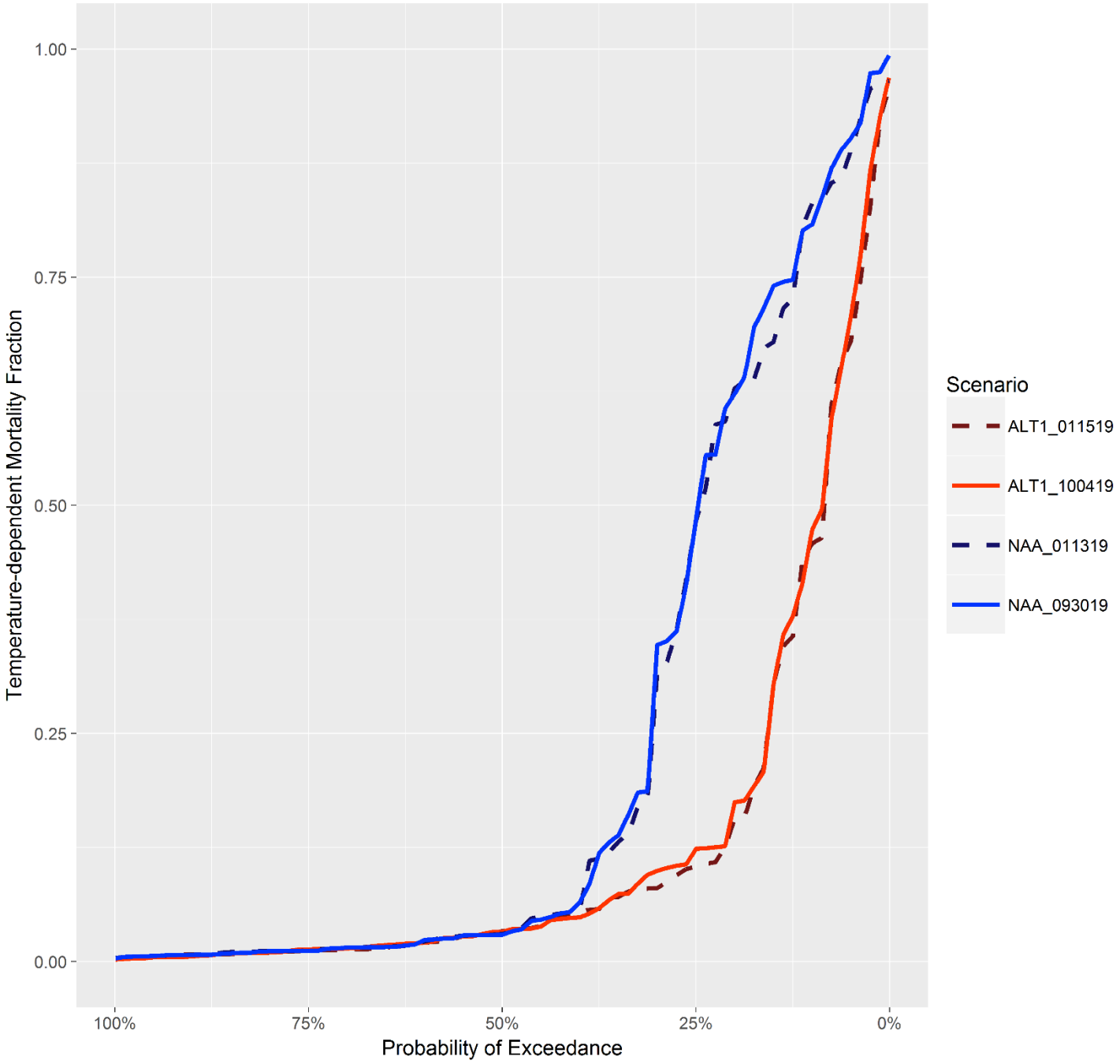


Figure 2-2. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Wet Year Average

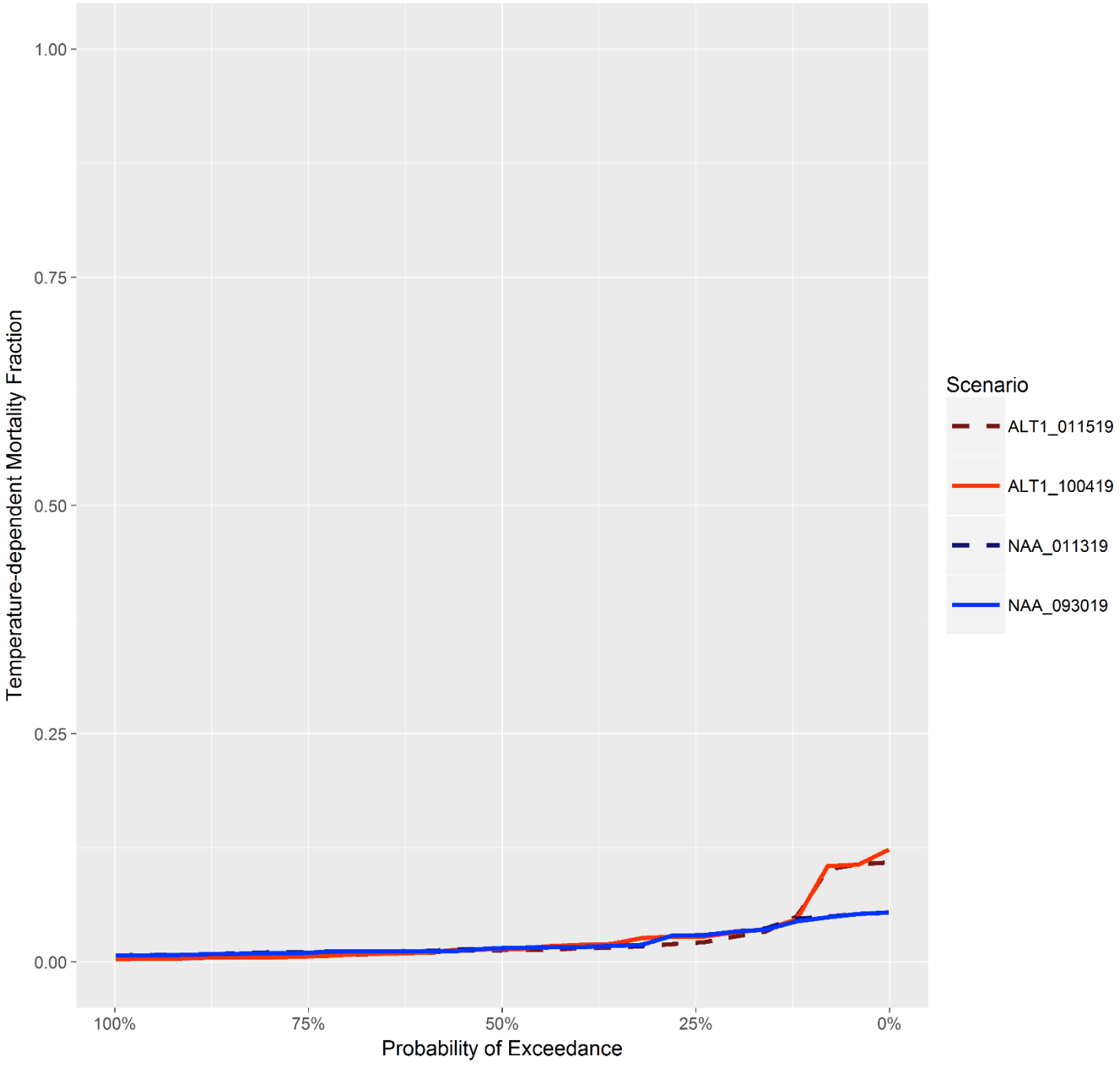


Figure 2-3. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Above Normal Year Average

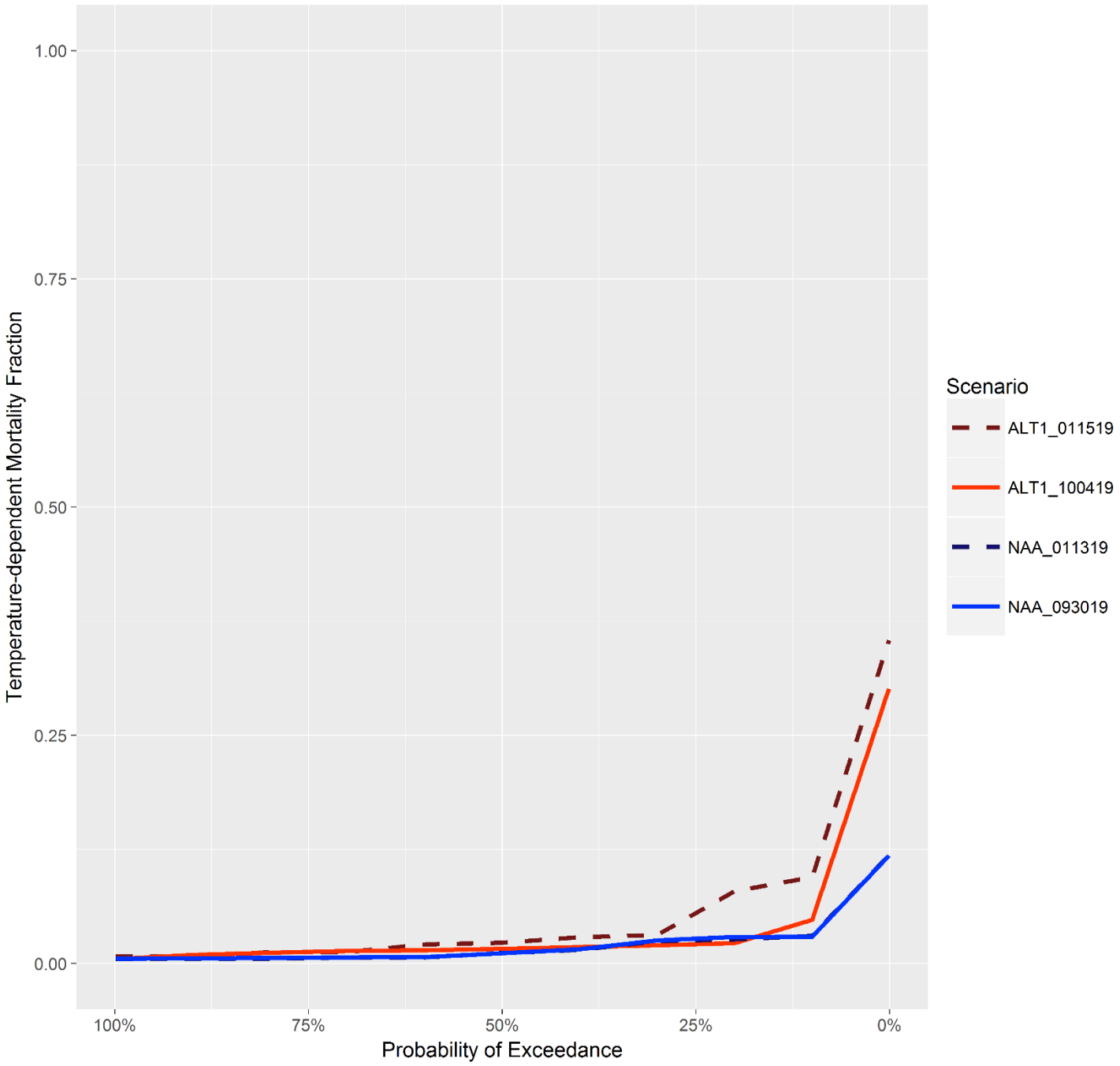


Figure 2-4. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Below Normal Year Average

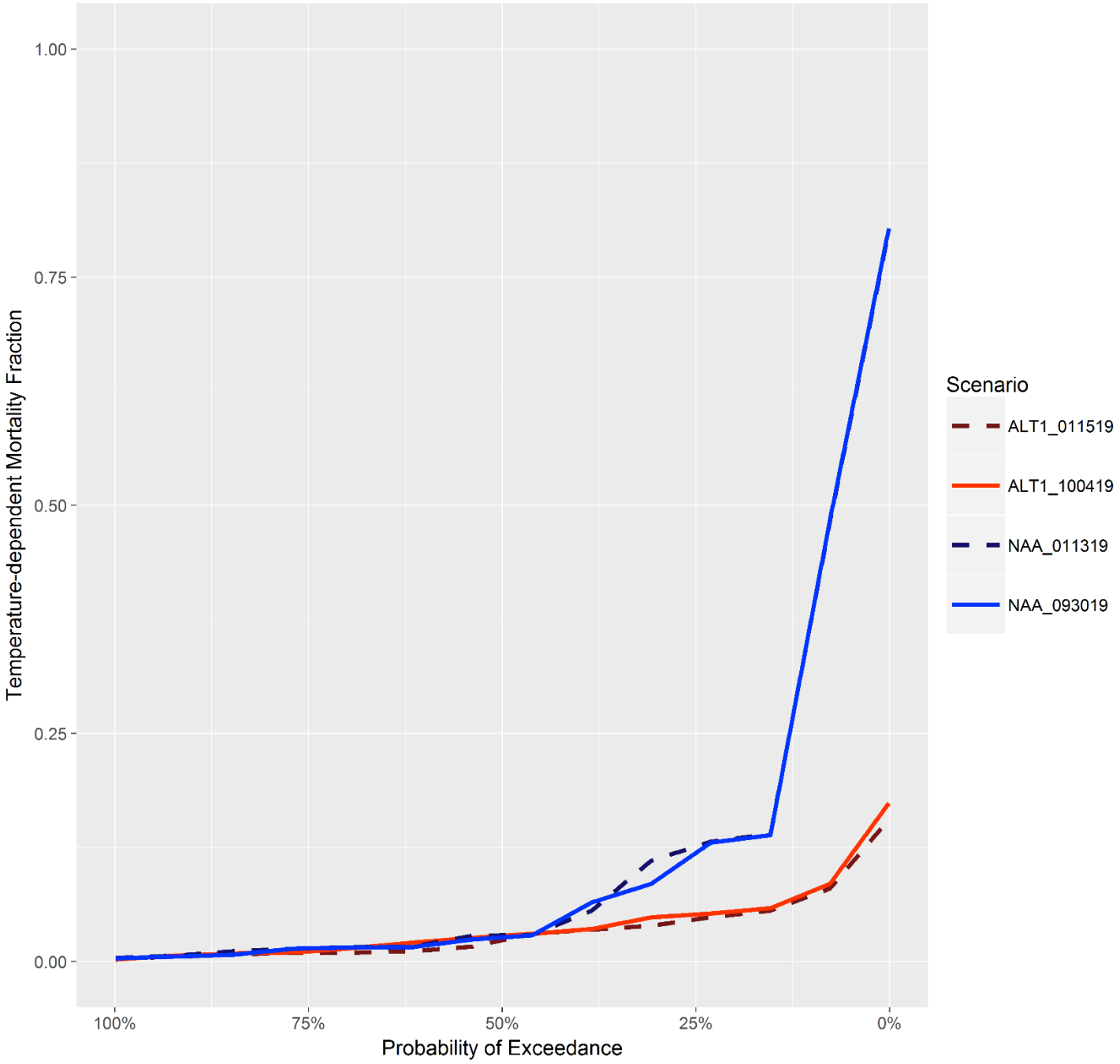


Figure 2-5. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Dry Year Average

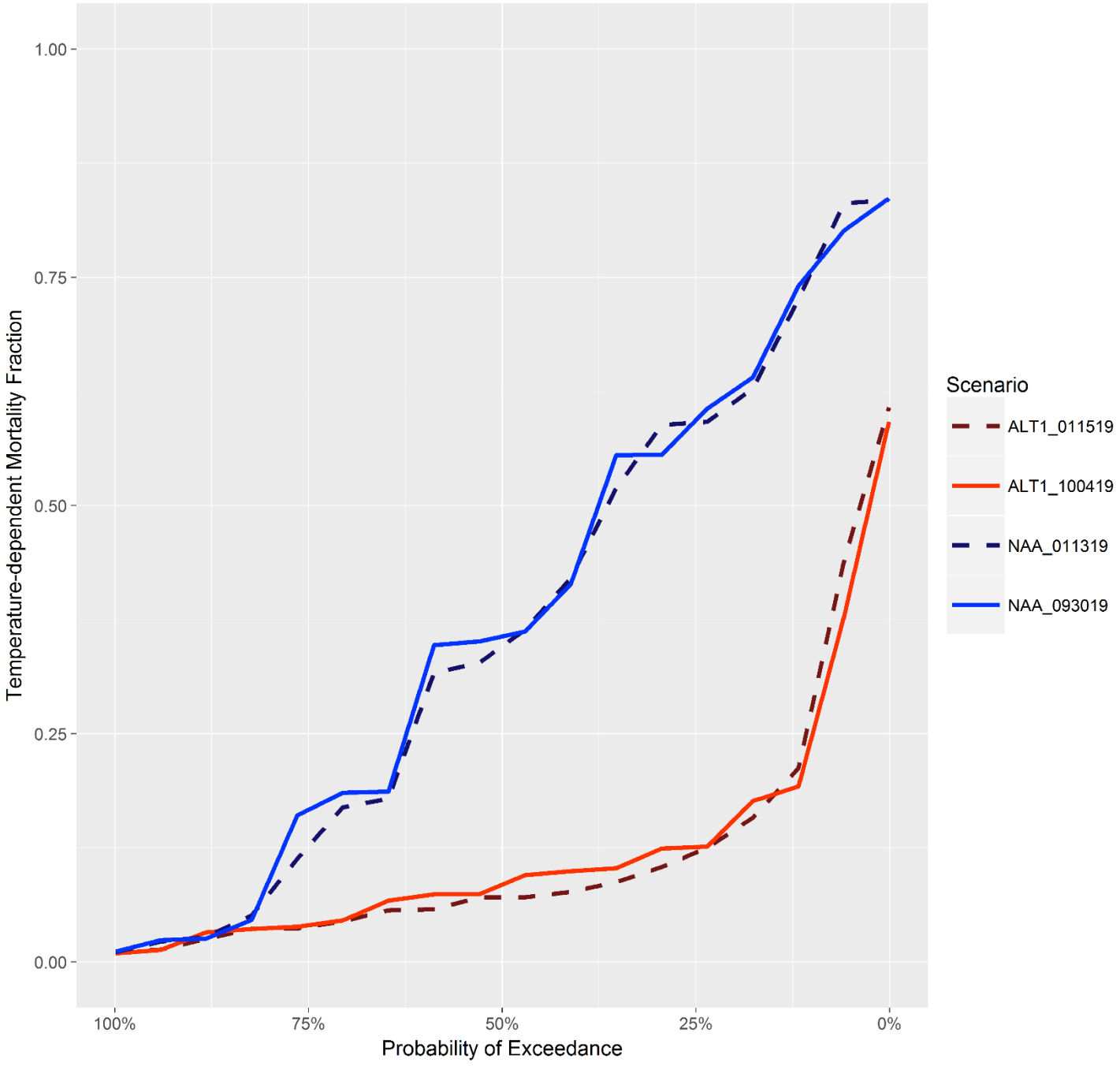
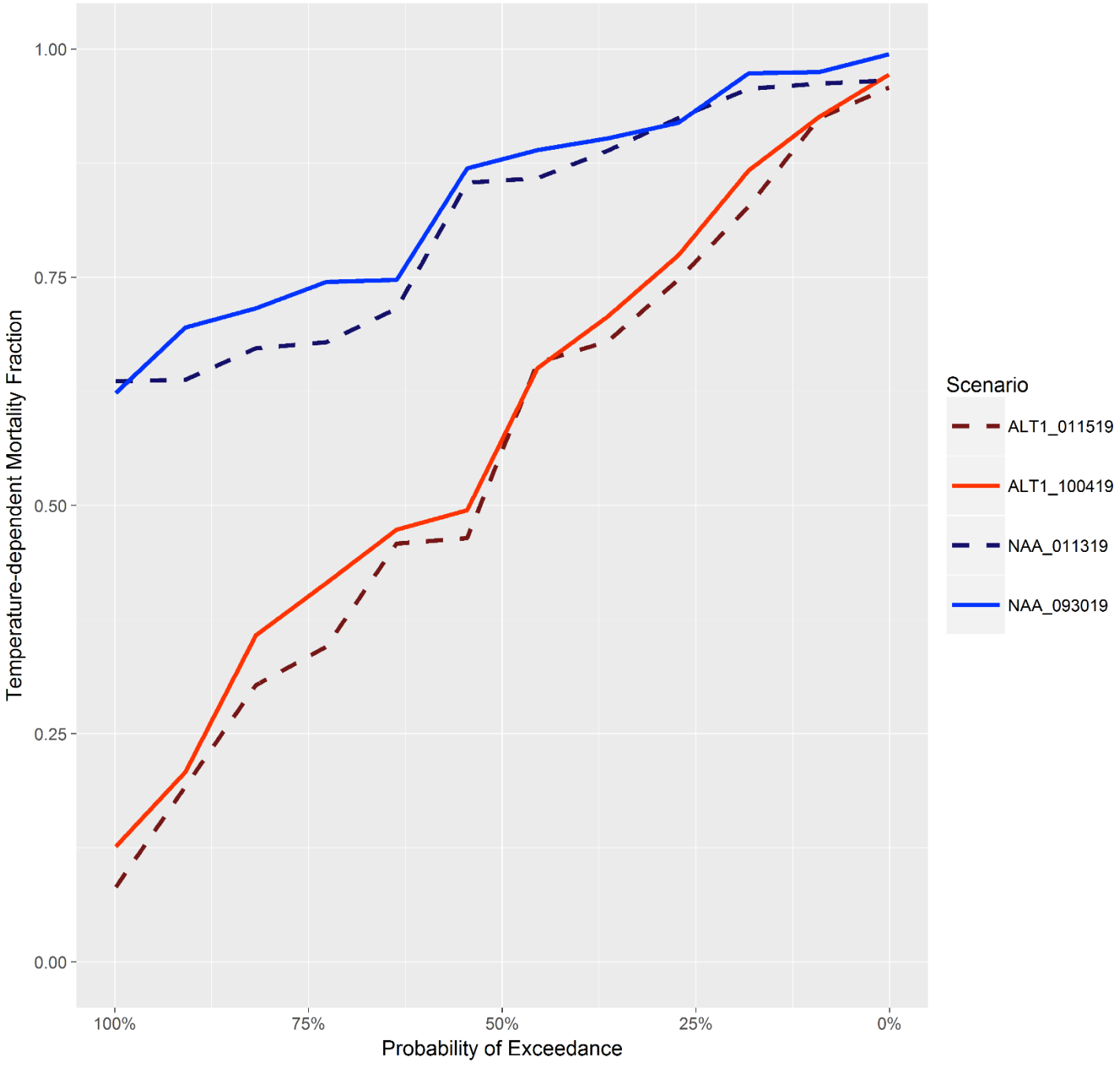


Figure 2-6. Upper Sacramento Winter Run Chinook Salmon
Temperature-dependent Egg Mortality, Anderson Model, Critical Year Average



# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.9 Water Supply Results (CalSim II)

The following results of the CalSim II model are included for diversions at key project locations for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| CalSim II Water Supply Summary Report | NA | 1-1 to 1-8 | 1-1 to 1-9 |
| Total Delta Exports | TOTAL_EXP | | 2-1 |

Report formats

- Tables comparing water supply of two scenarios (water supply by region and type, and water supply by type)
- Annual exceedance charts including all scenarios

**Table 1-1. CALSIM II Water Summary Report, by Region and Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 011519 | No Action Alternative 011319 | Alternative 1 011519 minus No Action Alternative 011319 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **Sacramento River Hydrologic Region** | | | | | | |
| CVP Settlement | Contract Delivery (annual average) | (TAF/year) | Long Term | 1,599 | 1,609 | -10 |
| | | | Dry and Critical | 1,581 | 1,590 | -10 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 162 | 157 | 4 |
| | | | Dry and Critical | 144 | 143 | 1 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 223 | 217 | 6 |
| | | | Dry and Critical | 193 | 189 | 4 |
| CVP Ag | Contract Delivery (annual average - does not include Settlement contractors) | (TAF/year) | Long Term | 255 | 230 | 24 |
| | | | Dry and Critical | 152 | 127 | 26 |
| SWP FRSA | Contract Delivery (annual average) | (TAF/year) | Long Term | 937 | 937 | 0 |
| | | | Dry and Critical | 874 | 873 | 1 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 30 | 29 | 1 |
| | | | Dry and Critical | 21 | 20 | 1 |
| **San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users)** | | | | | | |
| CVP Exchange | Contract Delivery (annual average) | (TAF/year) | Long Term | 852 | 852 | 0 |
| | | | Dry and Critical | 825 | 825 | 0 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 259 | 260 | -1 |
| | | | Dry and Critical | 251 | 250 | 0 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 17 | 16 | 1 |
| | | | Dry and Critical | 15 | 14 | 1 |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 387 | 314 | 73 |
| | | | Dry and Critical | 213 | 162 | 52 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 4 | 3 | 1 |
| | | | Dry and Critical | 2 | 2 | 0 |
| **San Francisco Bay Hydrologic Region** | | | | | | |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 282 | 275 | 8 |
| | | | Dry and Critical | 292 | 285 | 8 |
| CVP Ag | Contract Delivery (annual average) | (TAF/year) | Long Term | 47 | 38 | 9 |
| | | | Dry and Critical | 26 | 20 | 6 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 223 | 198 | 25 |
| | | | Dry and Critical | 132 | 125 | 8 |
| **Central Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 44 | 39 | 4 |
| | | | Dry and Critical | 25 | 23 | 2 |
| **Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)** | | | | | | |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 12 | 12 | 0 |
| | | | Dry and Critical | 11 | 11 | 0 |
| CVP Ag | Contract Delivery (annual average - includes Cross Valley Canal) | (TAF/year) | Long Term | 783 | 644 | 139 |
| | | | Dry and Critical | 446 | 339 | 108 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 85 | 75 | 9 |
| | | | Dry and Critical | 48 | 43 | 5 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 669 | 572 | 97 |
| | | | Dry and Critical | 356 | 320 | 36 |
| **South Lahontan Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 280 | 247 | 34 |
| | | | Dry and Critical | 163 | 149 | 14 |
| **South Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,405 | 1,212 | 192 |
| | | | Dry and Critical | 817 | 747 | 70 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 8 | 7 | 1 |
| | | | Dry and Critical | 5 | 4 | 0 |
| **Total For All Regions** | | | | | | |
| Total Supplies | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 8,564 | 7,947 | 617 |
| | | | Dry and Critical | 6,591 | 6,259 | 332 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.

**Table 1-2. CALSIM II Water Supply Summary Report, by Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 011519 | No Action Alternative 011319 | Alternative 1 011519 minus No Action Alternative 011319 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **North of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 255 | 230 | 24 |
| | | | Dry and Critical | 152 | 127 | 26 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 396 | 390 | 7 |
| | | | Dry and Critical | 391 | 385 | 6 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 0 | 0 | 0 |
| | | | Dry and Critical | 0 | 0 | 0 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 101 | 100 | 1 |
| | | | Dry and Critical | 68 | 68 | 0 |
| **Total CVP North of Delta** | | | | | | |
| Total CVP Ag and M&I NOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 651 | 620 | 31 |
| | | | Dry and Critical | 544 | 512 | 32 |
| **Total SWP North of Delta** | | | | | | |
| Total SWP Ag and M&I NOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 101 | 100 | 1 |
| | | | Dry and Critical | 68 | 68 | 0 |
| **Total North of Delta** | | | | | | |
| Total North of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 752 | 720 | 32 |
| | | | Dry and Critical | 612 | 580 | 32 |
| **South of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 1,218 | 997 | 221 |
| | | | Dry and Critical | 686 | 521 | 166 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 126 | 119 | 8 |
| | | | Dry and Critical | 108 | 102 | 7 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 680 | 582 | 98 |
| | | | Dry and Critical | 362 | 326 | 36 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,966 | 1,702 | 264 |
| | | | Dry and Critical | 1,138 | 1,039 | 99 |
| **Total CVP South of Delta** | | | | | | |
| Total CVP Ag and M&I SOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 1,344 | 1,115 | 229 |
| | | | Dry and Critical | 794 | 622 | 172 |
| **Total SWP South of Delta** | | | | | | |
| Total SWP Ag and M&I SOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 2,646 | 2,284 | 362 |
| | | | Dry and Critical | 1,500 | 1,364 | 135 |
| **Total South of Delta** | | | | | | |
| Total South of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 3,990 | 3,399 | 591 |
| | | | Dry and Critical | 2,294 | 1,987 | 307 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.

**Table 1-3. CALSIM II Water Summary Report, by Region and Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 100419 | No Action Alternative 093019 | Alternative 1 100419 minus No Action Alternative 093019 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **Sacramento River Hydrologic Region** | | | | | | |
| CVP Settlement | Contract Delivery (annual average) | (TAF/year) | Long Term | 1,608 | 1,608 | 0 |
| | | | Dry and Critical | 1,589 | 1,587 | 1 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 161 | 156 | 4 |
| | | | Dry and Critical | 144 | 140 | 3 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 222 | 218 | 4 |
| | | | Dry and Critical | 192 | 189 | 3 |
| CVP Ag | Contract Delivery (annual average - does not include Settlement contractors) | (TAF/year) | Long Term | 256 | 239 | 17 |
| | | | Dry and Critical | 146 | 126 | 20 |
| SWP FRSA | Contract Delivery (annual average) | (TAF/year) | Long Term | 937 | 936 | 1 |
| | | | Dry and Critical | 873 | 870 | 3 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 30 | 29 | 1 |
| | | | Dry and Critical | 20 | 19 | 1 |
| **San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users)** | | | | | | |
| CVP Exchange | Contract Delivery (annual average) | (TAF/year) | Long Term | 852 | 852 | 0 |
| | | | Dry and Critical | 825 | 825 | 0 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 256 | 260 | -4 |
| | | | Dry and Critical | 252 | 250 | 2 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 17 | 16 | 0 |
| | | | Dry and Critical | 14 | 14 | 0 |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 343 | 315 | 28 |
| | | | Dry and Critical | 176 | 160 | 16 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 3 | 3 | 0 |
| | | | Dry and Critical | 2 | 2 | 0 |
| **San Francisco Bay Hydrologic Region** | | | | | | |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 283 | 281 | 2 |
| | | | Dry and Critical | 301 | 299 | 3 |
| CVP Ag | Contract Delivery (annual average) | (TAF/year) | Long Term | 42 | 39 | 3 |
| | | | Dry and Critical | 22 | 20 | 2 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 207 | 197 | 10 |
| | | | Dry and Critical | 128 | 121 | 7 |
| **Central Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 42 | 39 | 3 |
| | | | Dry and Critical | 24 | 22 | 2 |
| **Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)** | | | | | | |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 12 | 12 | 0 |
| | | | Dry and Critical | 12 | 11 | 0 |
| CVP Ag | Contract Delivery (annual average - includes Cross Valley Canal) | (TAF/year) | Long Term | 696 | 641 | 55 |
| | | | Dry and Critical | 370 | 336 | 34 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 80 | 75 | 6 |
| | | | Dry and Critical | 45 | 42 | 3 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 623 | 568 | 55 |
| | | | Dry and Critical | 353 | 308 | 45 |
| **South Lahontan Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 270 | 251 | 19 |
| | | | Dry and Critical | 162 | 146 | 15 |
| **South Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,282 | 1,196 | 87 |
| | | | Dry and Critical | 794 | 715 | 78 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 8 | 7 | 1 |
| | | | Dry and Critical | 4 | 4 | 0 |
| **Total For All Regions** | | | | | | |
| Total Supplies | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 8,230 | 7,938 | 292 |
| | | | Dry and Critical | 6,446 | 6,207 | 239 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Table 1-4. CALSIM II Water Supply Summary Report, by Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 100419 | No Action Alternative 093019 | Alternative 1 100419 minus No Action Alternative 093019 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **North of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term<br>Dry and Critical | 256<br>146 | 239<br>126 | 17<br>20 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 401<br>403 | 397<br>400 | 4<br>3 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 0<br>0 | 0<br>0 | 0<br>0 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 100<br>67 | 99<br>67 | 1<br>1 |
| **Total CVP North of Delta** | | | | | | |
| Total CVP Ag and M&I NOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 657<br>549 | 635<br>526 | 21<br>23 |
| **Total SWP North of Delta** | | | | | | |
| Total SWP Ag and M&I NOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 100<br>67 | 99<br>67 | 1<br>1 |
| **Total North of Delta** | | | | | | |
| Total North of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 757<br>616 | 734<br>592 | 22<br>24 |
| **South of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term<br>Dry and Critical | 1,081<br>568 | 995<br>516 | 86<br>52 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 122<br>105 | 119<br>102 | 3<br>3 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 634<br>359 | 579<br>314 | 55<br>45 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 1,811<br>1,105 | 1,687<br>999 | 124<br>106 |
| **Total CVP South of Delta** | | | | | | |
| Total CVP Ag and M&I SOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 1,203<br>673 | 1,114<br>618 | 88<br>55 |
| **Total SWP South of Delta** | | | | | | |
| Total SWP Ag and M&I SOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 2,445<br>1,464 | 2,265<br>1,313 | 180<br>151 |
| **Total South of Delta** | | | | | | |
| Total South of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term<br>Dry and Critical | 3,648<br>2,136 | 3,379<br>1,931 | 268<br>206 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Table 1-5. CALSIM II Water Summary Report, by Region and Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | No Action Alternative 093019 | No Action Alternative 011319 | No Action Alternative 093019 minus No Action Alternative |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **Sacramento River Hydrologic Region** | | | | | | |
| CVP Settlement | Contract Delivery (annual average) | (TAF/year) | Long Term | 1,608 | 1,609 | -2 |
| | | | Dry and Critical | 1,587 | 1,590 | -3 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 156 | 157 | -1 |
| | | | Dry and Critical | 140 | 143 | -2 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 218 | 217 | 1 |
| | | | Dry and Critical | 189 | 189 | 1 |
| CVP Ag | Contract Delivery (annual average - does not include Settlement contractors) | (TAF/year) | Long Term | 239 | 230 | 8 |
| | | | Dry and Critical | 126 | 127 | -1 |
| SWP FRSA | Contract Delivery (annual average) | (TAF/year) | Long Term | 936 | 937 | -1 |
| | | | Dry and Critical | 870 | 873 | -3 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 29 | 29 | 0 |
| | | | Dry and Critical | 19 | 20 | -1 |
| **San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users)** | | | | | | |
| CVP Exchange | Contract Delivery (annual average) | (TAF/year) | Long Term | 852 | 852 | 0 |
| | | | Dry and Critical | 825 | 825 | 0 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 260 | 260 | 0 |
| | | | Dry and Critical | 250 | 250 | -1 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 16 | 16 | 0 |
| | | | Dry and Critical | 14 | 14 | 0 |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 315 | 314 | 1 |
| | | | Dry and Critical | 160 | 162 | -1 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 3 | 3 | 0 |
| | | | Dry and Critical | 2 | 2 | 0 |
| **San Francisco Bay Hydrologic Region** | | | | | | |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 281 | 275 | 6 |
| | | | Dry and Critical | 299 | 285 | 14 |
| CVP Ag | Contract Delivery (annual average) | (TAF/year) | Long Term | 39 | 38 | 1 |
| | | | Dry and Critical | 20 | 20 | 0 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 197 | 198 | -2 |
| | | | Dry and Critical | 121 | 125 | -3 |
| **Central Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 39 | 39 | 0 |
| | | | Dry and Critical | 22 | 23 | -1 |
| **Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)** | | | | | | |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 12 | 12 | 0 |
| | | | Dry and Critical | 11 | 11 | 0 |
| CVP Ag | Contract Delivery (annual average - includes Cross Valley Canal) | (TAF/year) | Long Term | 641 | 644 | -3 |
| | | | Dry and Critical | 336 | 339 | -3 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 75 | 75 | -1 |
| | | | Dry and Critical | 42 | 43 | -1 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 568 | 572 | -3 |
| | | | Dry and Critical | 308 | 320 | -12 |
| **South Lahontan Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 251 | 247 | 4 |
| | | | Dry and Critical | 146 | 149 | -3 |
| **South Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,196 | 1,212 | -17 |
| | | | Dry and Critical | 715 | 747 | -31 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 7 | 7 | 0 |
| | | | Dry and Critical | 4 | 4 | 0 |
| **Total For All Regions** | | | | | | |
| Total Supplies | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 7,938 | 7,947 | -9 |
| | | | Dry and Critical | 6,207 | 6,259 | -52 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Table 1-6. CALSIM II Water Supply Summary Report, by Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | No Action Alternative 093019 | No Action Alternative 011319 | No Action Alternative 093019 minus No Action Alternative |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **North of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 239 | 230 | 8 |
| | | | Dry and Critical | 126 | 127 | -1 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 397 | 390 | 7 |
| | | | Dry and Critical | 400 | 385 | 15 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 0 | 0 | 0 |
| | | | Dry and Critical | 0 | 0 | 0 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 99 | 100 | 0 |
| | | | Dry and Critical | 67 | 68 | -1 |
| **Total CVP North of Delta** | | | | | | |
| Total CVP Ag and M&I NOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 635 | 620 | 15 |
| | | | Dry and Critical | 526 | 512 | 14 |
| **Total SWP North of Delta** | | | | | | |
| Total SWP Ag and M&I NOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 99 | 100 | 0 |
| | | | Dry and Critical | 67 | 68 | -1 |
| **Total North of Delta** | | | | | | |
| Total North of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 734 | 720 | 15 |
| | | | Dry and Critical | 592 | 580 | 13 |
| **South of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 995 | 997 | -2 |
| | | | Dry and Critical | 516 | 521 | -4 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 119 | 119 | 0 |
| | | | Dry and Critical | 102 | 102 | 0 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 579 | 582 | -4 |
| | | | Dry and Critical | 314 | 326 | -12 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,687 | 1,702 | -15 |
| | | | Dry and Critical | 999 | 1,039 | -39 |
| **Total CVP South of Delta** | | | | | | |
| Total CVP Ag and M&I SOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 1,114 | 1,115 | -1 |
| | | | Dry and Critical | 618 | 622 | -4 |
| **Total SWP South of Delta** | | | | | | |
| Total SWP Ag and M&I SOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 2,265 | 2,284 | -19 |
| | | | Dry and Critical | 1,313 | 1,364 | -52 |
| **Total South of Delta** | | | | | | |
| Total South of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 3,379 | 3,399 | -20 |
| | | | Dry and Critical | 1,931 | 1,987 | -56 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Table 1-7. CALSIM II Water Summary Report, by Region and Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 100419 | Alternative 1 011519 | Alternative 1 100419 minus Alternative 1 011519 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **Sacramento River Hydrologic Region** | | | | | | |
| CVP Settlement | Contract Delivery (annual average) | (TAF/year) | Long Term | 1,608 | 1,599 | 9 |
| | | | Dry and Critical | 1,589 | 1,581 | 8 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 161 | 162 | -1 |
| | | | Dry and Critical | 144 | 144 | 0 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 222 | 223 | 0 |
| | | | Dry and Critical | 192 | 193 | 0 |
| CVP Ag | Contract Delivery (annual average - does not include Settlement contractors) | (TAF/year) | Long Term | 256 | 255 | 1 |
| | | | Dry and Critical | 146 | 152 | -7 |
| SWP FRSA | Contract Delivery (annual average) | (TAF/year) | Long Term | 937 | 937 | 0 |
| | | | Dry and Critical | 873 | 874 | -1 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 30 | 30 | 0 |
| | | | Dry and Critical | 20 | 21 | 0 |
| **San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users)** | | | | | | |
| CVP Exchange | Contract Delivery (annual average) | (TAF/year) | Long Term | 852 | 852 | 0 |
| | | | Dry and Critical | 825 | 825 | 0 |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 256 | 259 | -3 |
| | | | Dry and Critical | 252 | 251 | 1 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 17 | 17 | -1 |
| | | | Dry and Critical | 14 | 15 | -1 |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 343 | 387 | -45 |
| | | | Dry and Critical | 176 | 213 | -37 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 3 | 4 | 0 |
| | | | Dry and Critical | 2 | 2 | 0 |
| **San Francisco Bay Hydrologic Region** | | | | | | |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 283 | 282 | 1 |
| | | | Dry and Critical | 301 | 292 | 9 |
| CVP Ag | Contract Delivery (annual average) | (TAF/year) | Long Term | 42 | 47 | -5 |
| | | | Dry and Critical | 22 | 26 | -4 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 207 | 223 | -16 |
| | | | Dry and Critical | 128 | 132 | -4 |
| **Central Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 42 | 44 | -2 |
| | | | Dry and Critical | 24 | 25 | -1 |
| **Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)** | | | | | | |
| CVP Refuge Level 2 | Contract Delivery (annual average) | (TAF/year) | Long Term | 12 | 12 | 0 |
| | | | Dry and Critical | 12 | 11 | 0 |
| CVP Ag | Contract Delivery (annual average - includes Cross Valley Canal) | (TAF/year) | Long Term | 696 | 783 | -87 |
| | | | Dry and Critical | 370 | 446 | -77 |
| SWP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 80 | 85 | -4 |
| | | | Dry and Critical | 45 | 48 | -3 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 623 | 669 | -46 |
| | | | Dry and Critical | 353 | 356 | -3 |
| **South Lahontan Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 270 | 280 | -11 |
| | | | Dry and Critical | 162 | 163 | -1 |
| **South Coast Hydrologic Region** | | | | | | |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,282 | 1,405 | -122 |
| | | | Dry and Critical | 794 | 817 | -24 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 8 | 8 | 0 |
| | | | Dry and Critical | 4 | 5 | 0 |
| **Total For All Regions** | | | | | | |
| Total Supplies | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 8,230 | 8,564 | -334 |
| | | | Dry and Critical | 6,446 | 6,591 | -145 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Table 1-8. CALSIM II Water Supply Summary Report, by Type, Long-Term Average and Dry and Critical Year Averages**

| | | | | Alternative 1 100419 | Alternative 1 011519 | Alternative 1 100419 minus Alternative 1 011519 |
|---|---|---|---|---|---|---|
| **Water Supply Reliability** | | | | | | |
| **North of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 256 | 255 | 1 |
| | | | Dry and Critical | 146 | 152 | -7 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 401 | 396 | 4 |
| | | | Dry and Critical | 403 | 391 | 12 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 0 | 0 | 0 |
| | | | Dry and Critical | 0 | 0 | 0 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 100 | 101 | -1 |
| | | | Dry and Critical | 67 | 68 | -1 |
| **Total CVP North of Delta** | | | | | | |
| Total CVP Ag and M&I NOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 657 | 651 | 6 |
| | | | Dry and Critical | 549 | 544 | 5 |
| **Total SWP North of Delta** | | | | | | |
| Total SWP Ag and M&I NOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 100 | 101 | -1 |
| | | | Dry and Critical | 67 | 68 | -1 |
| **Total North of Delta** | | | | | | |
| Total North of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 757 | 752 | 5 |
| | | | Dry and Critical | 616 | 612 | 4 |
| **South of Delta** | | | | | | |
| CVP Ag | Contract Delivery (annual average; does not include Exchange contractors) | (TAF/year) | Long Term | 1,081 | 1,218 | -137 |
| | | | Dry and Critical | 568 | 686 | -118 |
| CVP M&I | Contract Delivery (annual average) | (TAF/year) | Long Term | 122 | 126 | -5 |
| | | | Dry and Critical | 105 | 108 | -4 |
| SWP Ag | Contract Delivery (including Article 21) (annual average) | (TAF/year) | Long Term | 634 | 680 | -46 |
| | | | Dry and Critical | 359 | 362 | -3 |
| SWP M&I | Contract Delivery (including Article 21, includes transfers to SWP contractors) (annual average) | (TAF/year) | Long Term | 1,811 | 1,966 | -155 |
| | | | Dry and Critical | 1,105 | 1,138 | -33 |
| **Total CVP South of Delta** | | | | | | |
| Total CVP Ag and M&I SOD | Contract Delivery (CVP) (annual average) | (TAF/year) | Long Term | 1,203 | 1,344 | -141 |
| | | | Dry and Critical | 673 | 794 | -122 |
| **Total SWP South of Delta** | | | | | | |
| Total SWP Ag and M&I SOD | Contract Delivery (SWP) (annual average) | (TAF/year) | Long Term | 2,445 | 2,646 | -201 |
| | | | Dry and Critical | 1,464 | 1,500 | -36 |
| **Total South of Delta** | | | | | | |
| Total South of Delta Ag and M&I Deliveries | Contract Delivery (CVP, SWP and other) (annual average) | (TAF/year) | Long Term | 3,648 | 3,990 | -342 |
| | | | Dry and Critical | 2,136 | 2,294 | -158 |

Notes:

1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.
2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 - Sep 2003.
3. All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 1-1. CVP North of Delta Agricultural Water Service Contract Deliveries, Annual (Mar-Feb)**

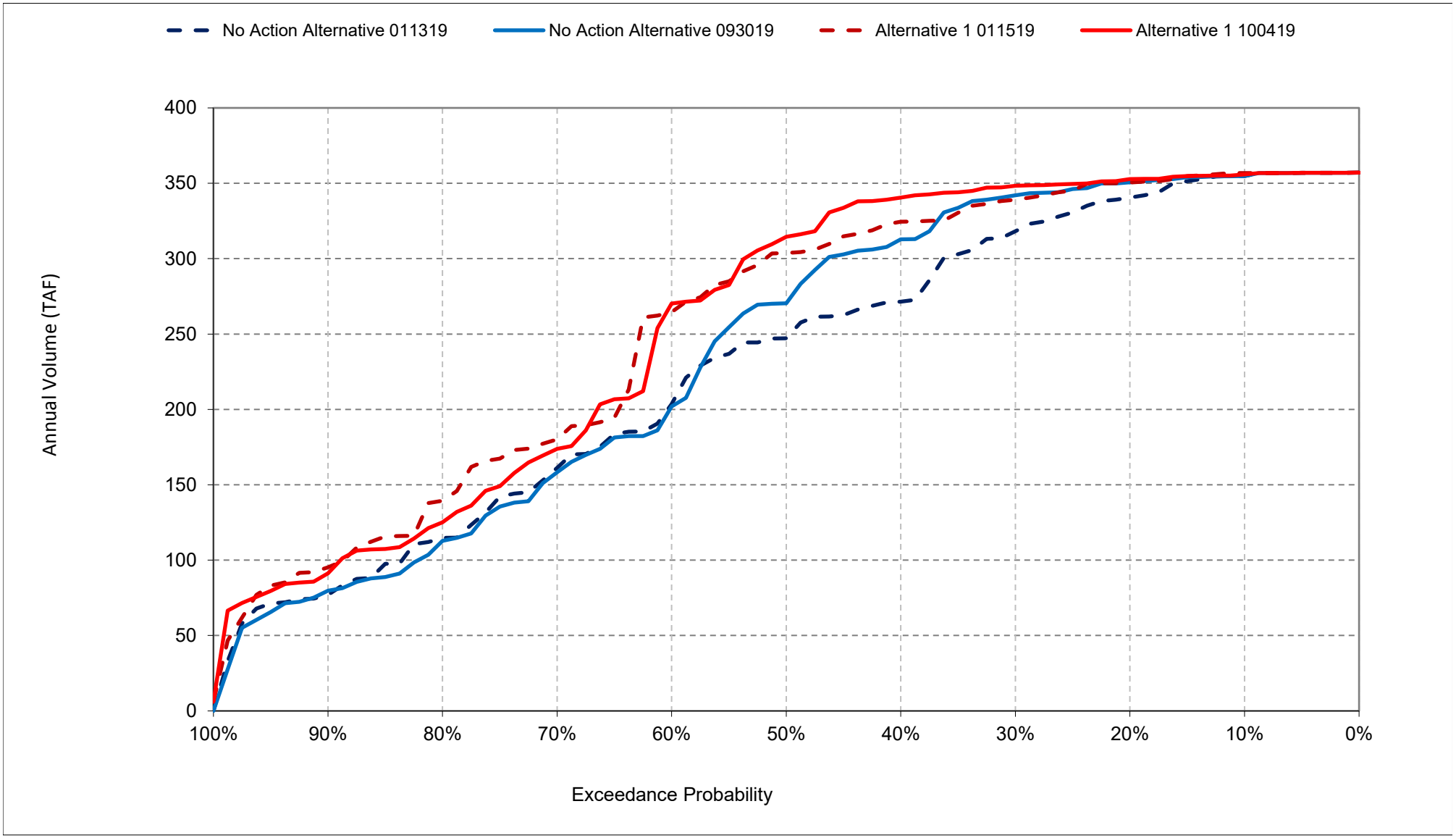


**Figure 1-2. CVP South of Delta Agricultural Water Service Contract Deliveries, Annual (Mar-Feb)**

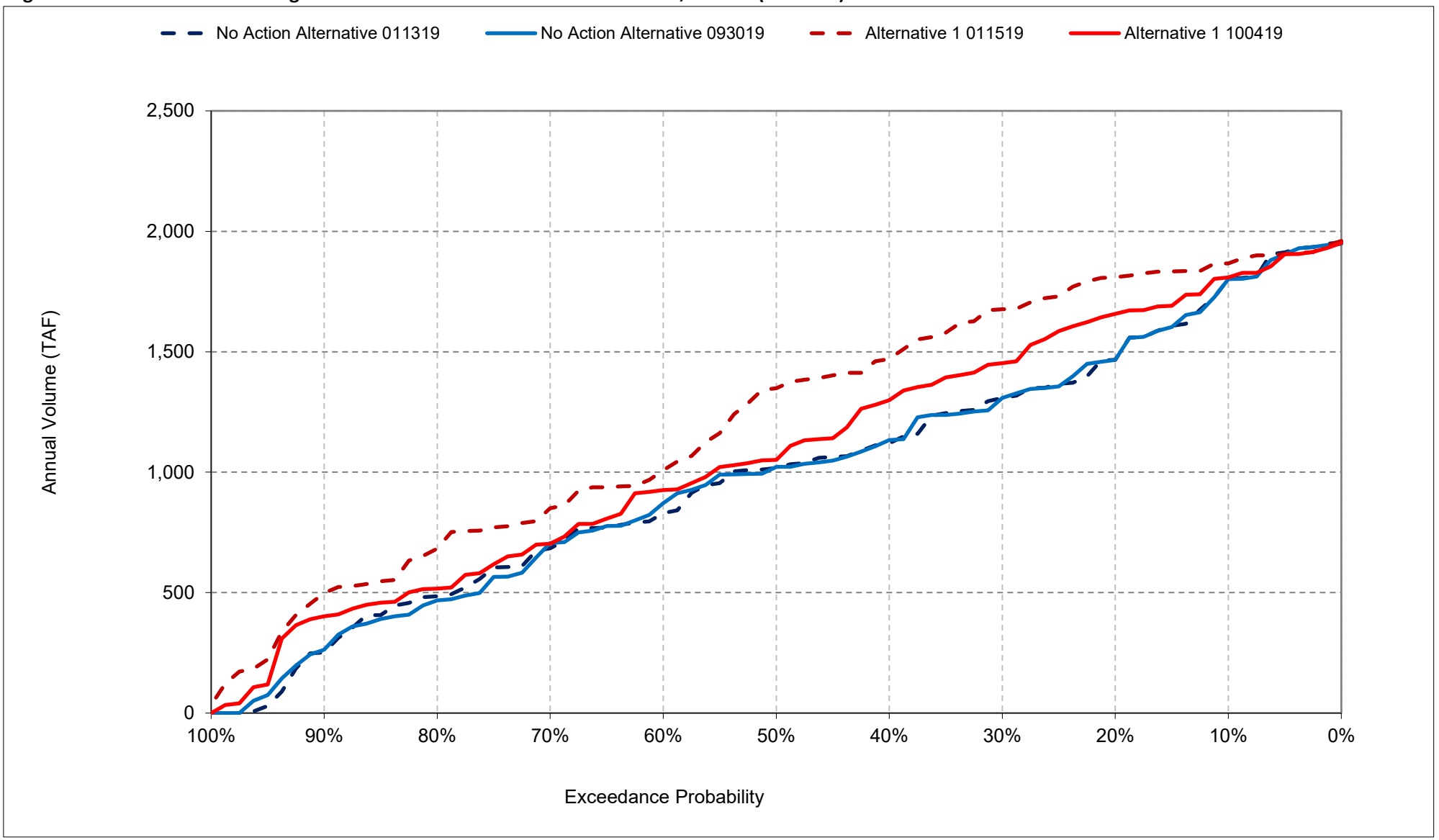


**Figure 1-3. CVP North of Delta M&I Water Service Contract Deliveries, Annual (Mar-Feb)**

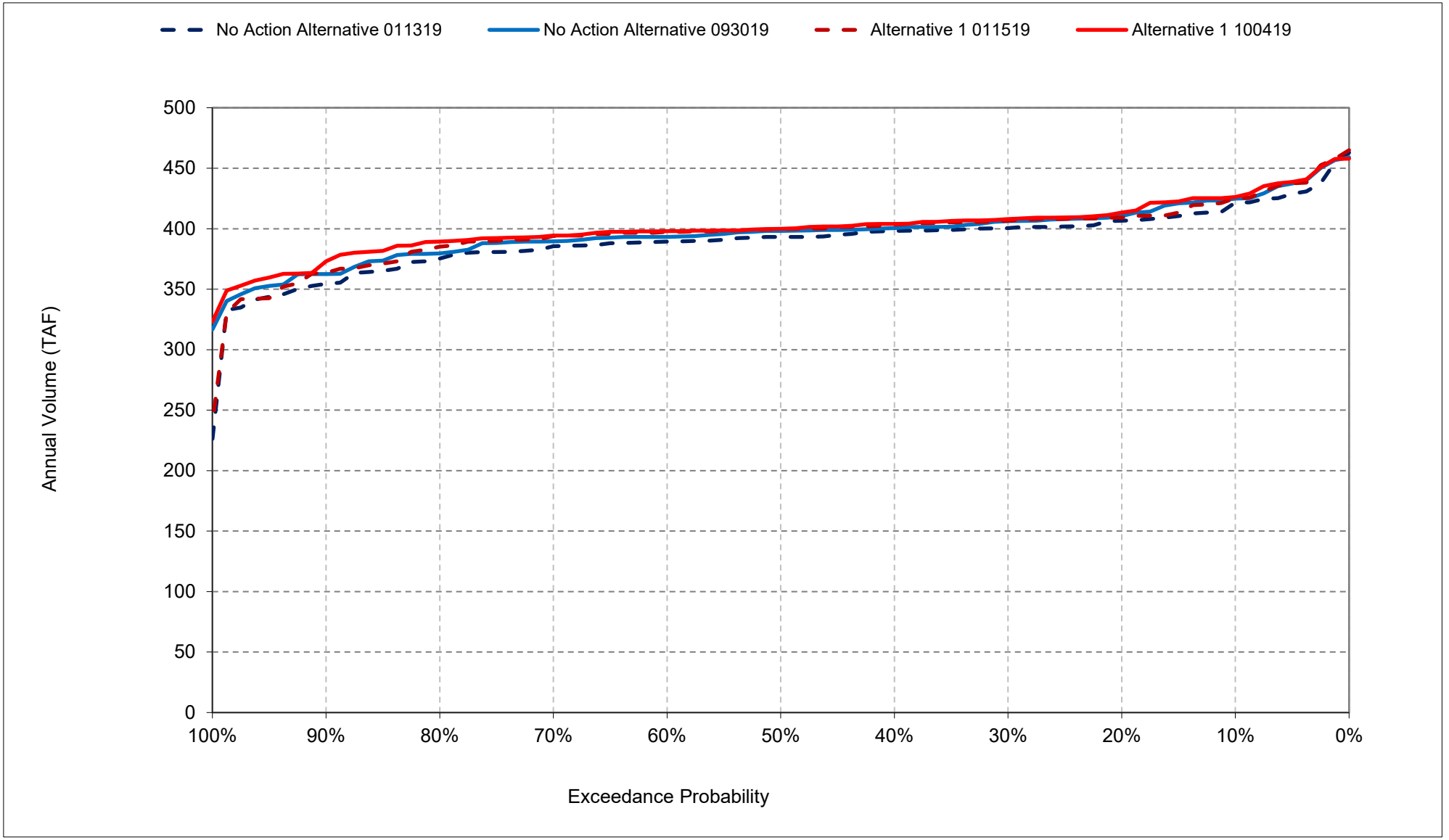


**Figure 1-4. CVP South of Delta M&I Water Service Contract Deliveries, Annual (Mar-Feb)**

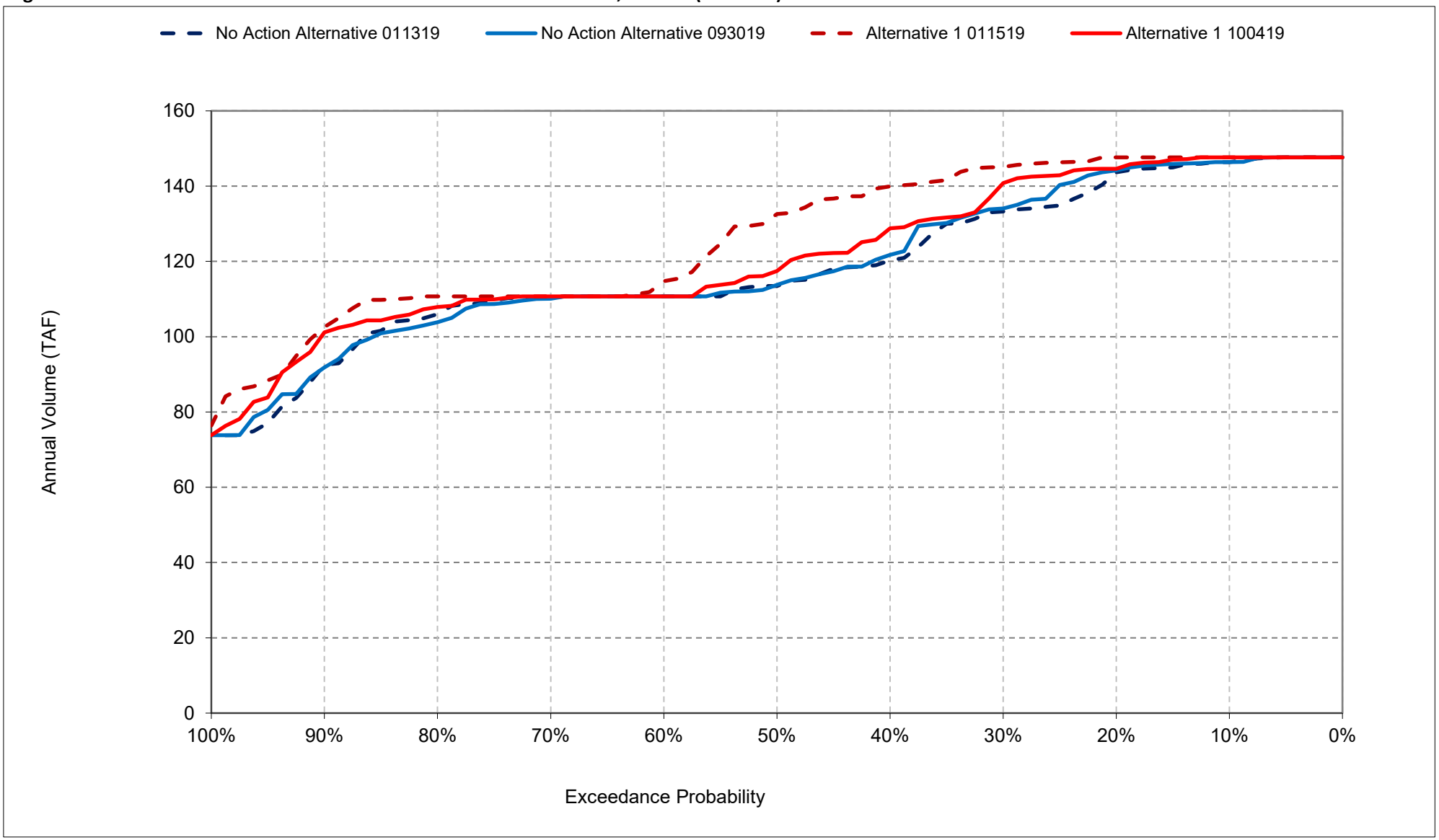


**Figure 1-5. Total SWP Deliveries, Annual (Jan-Dec)**

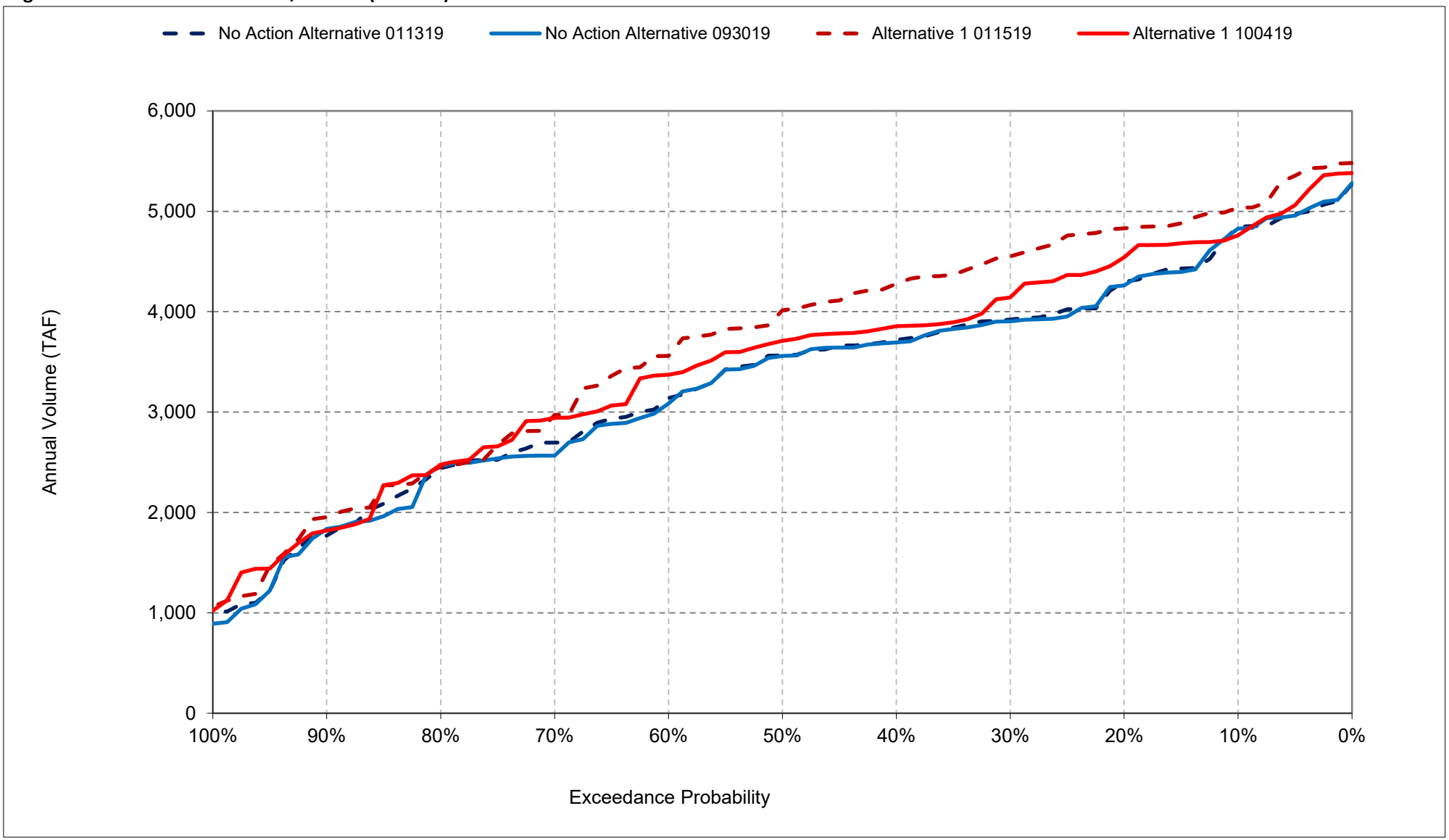


**Figure 1-6. Total SWP South of Delta Deliveries including Article 21 and 56, Annual (Jan-Dec)**

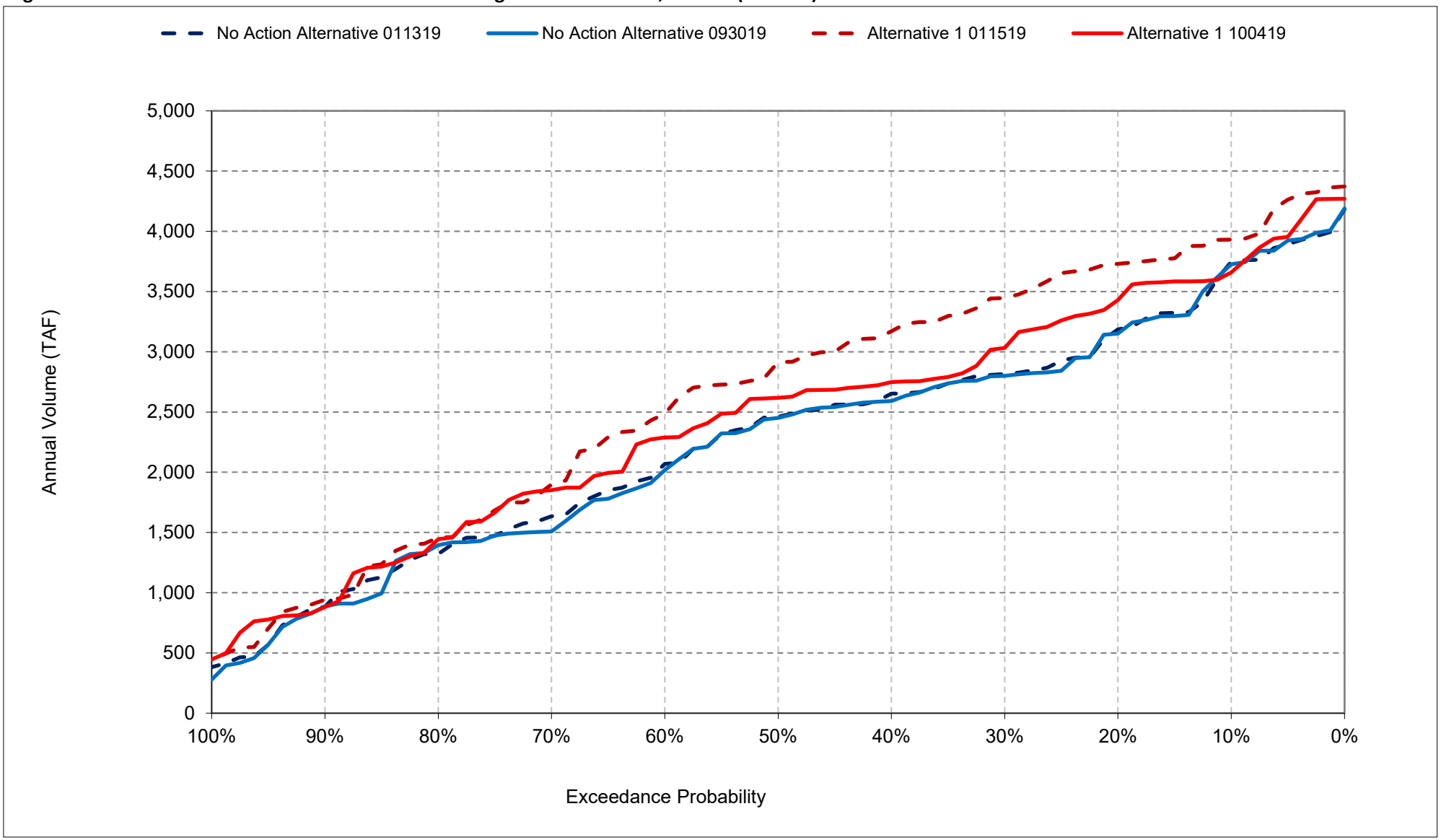


**Figure 1-7. SWP Table A Deliveries with Article 56, Annual (Jan-Dec)**

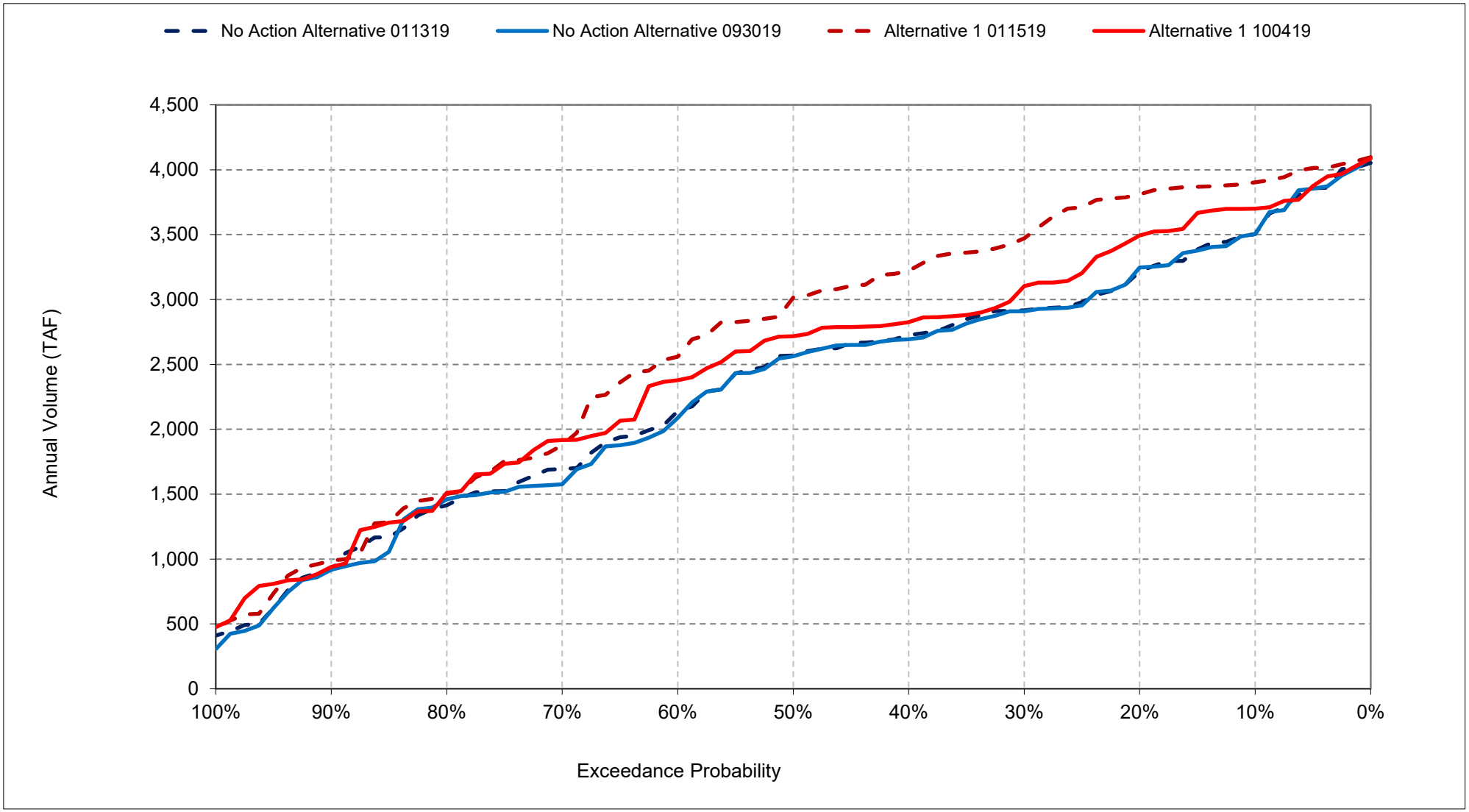


**Figure 1-8. SWP South of Delta Table A Deliveries with Article 56, Annual (Jan-Dec)**

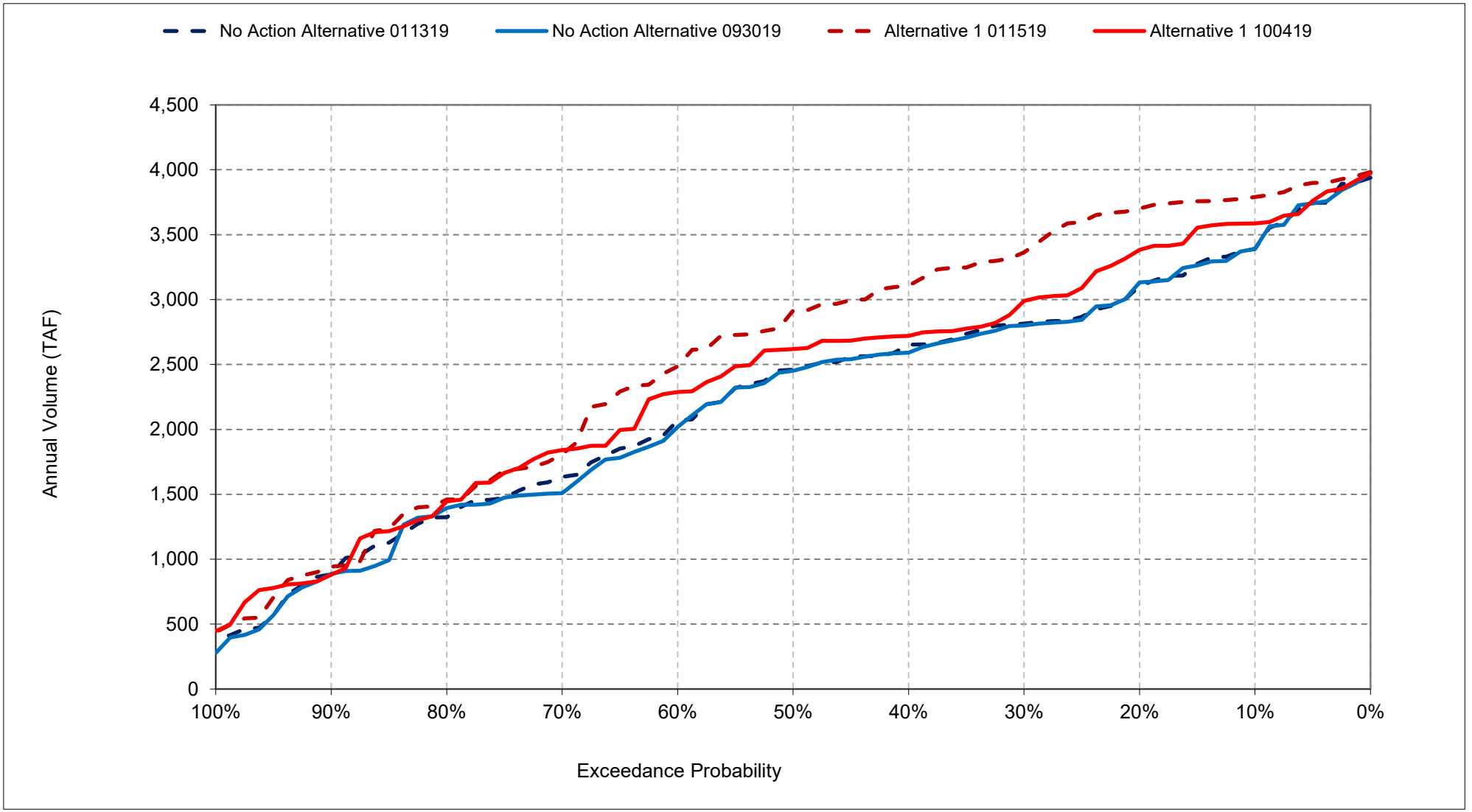


**Figure 1-9. SWP Article 21 Deliveries, Annual (Jan-Dec)**

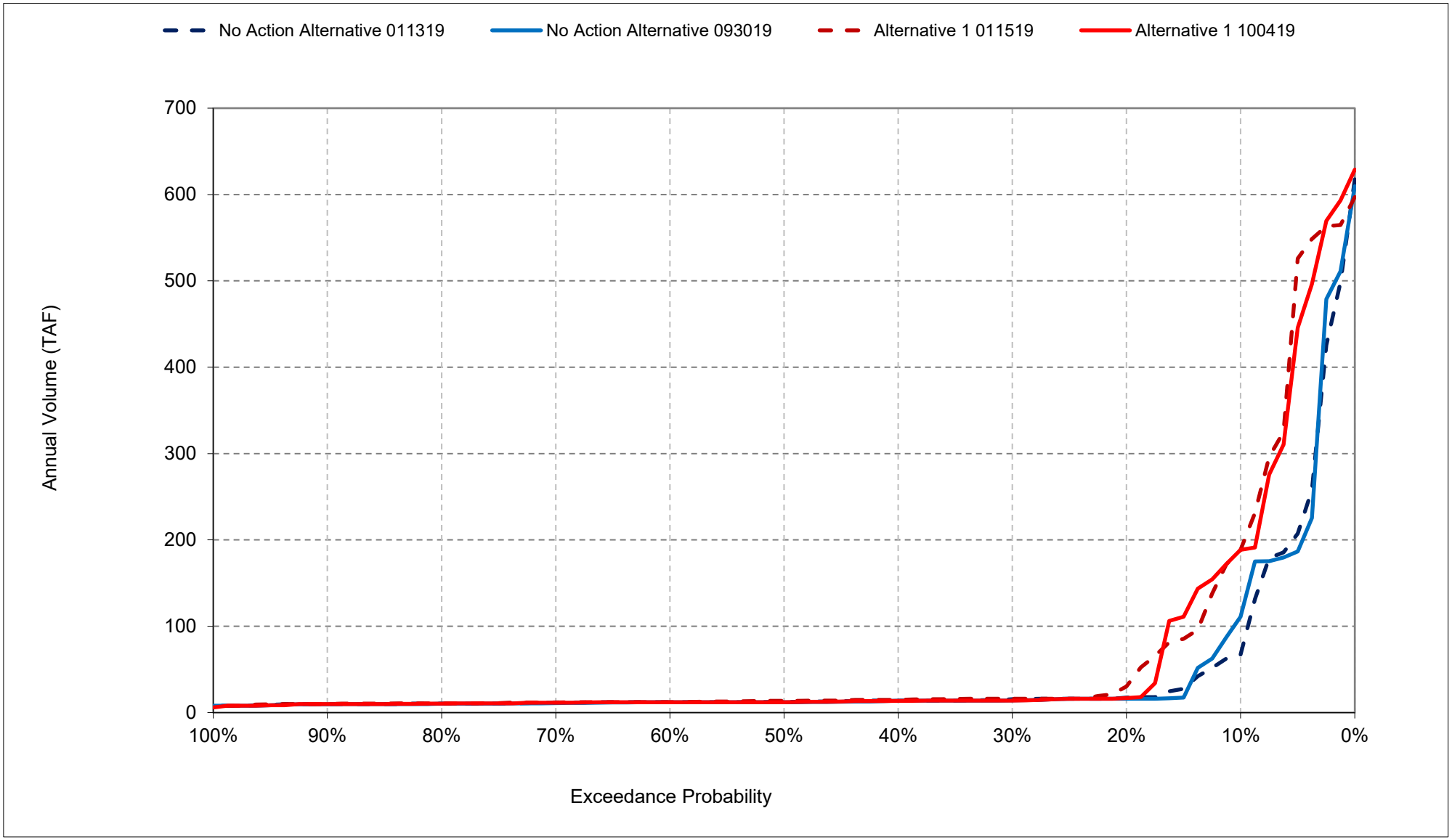
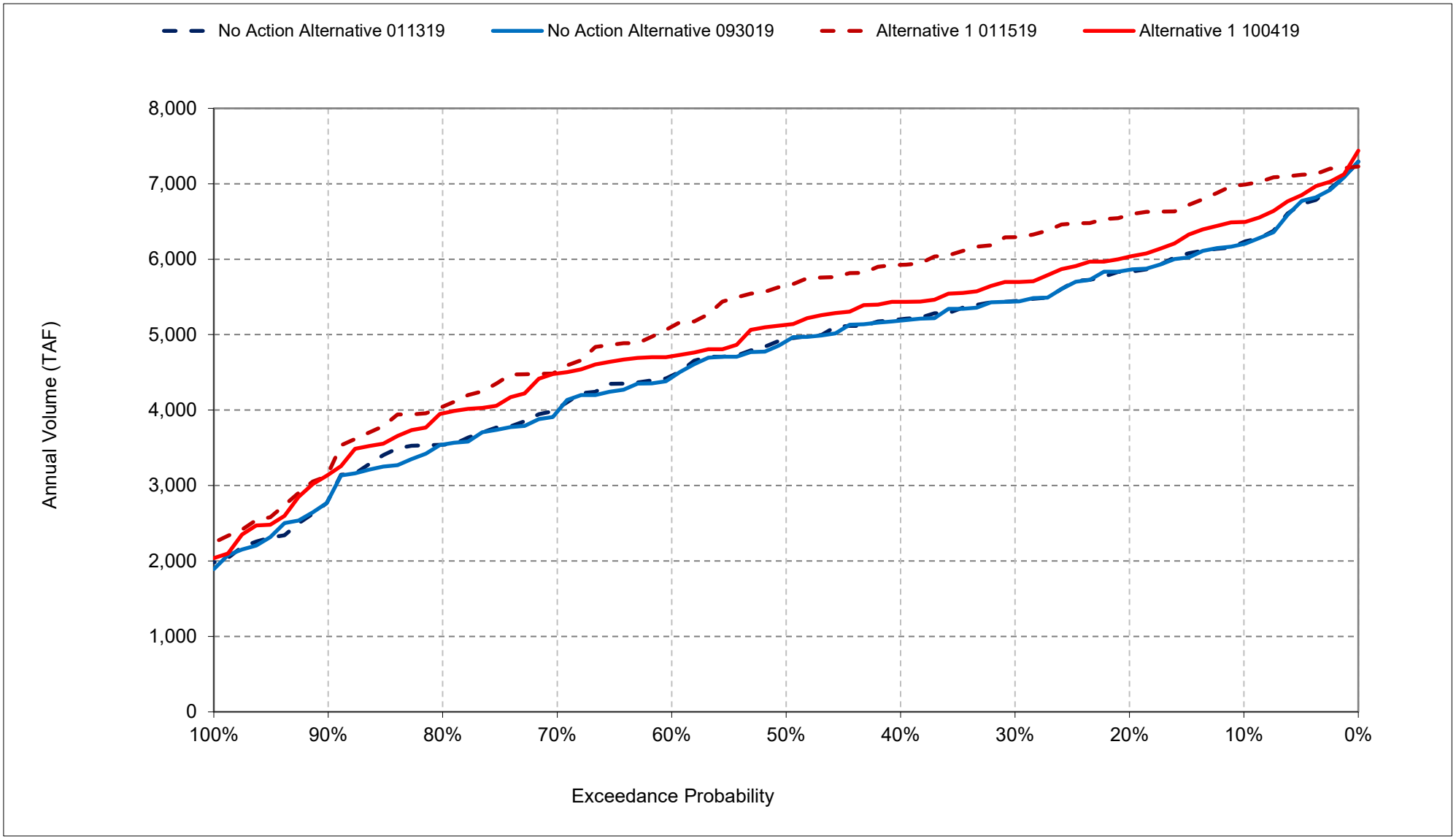


**Figure 2-1. Total Delta Exports, Annual (Oct-Sep)**



# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.2.10 Chloride Results (DSM2-QUAL)

The following results of the DSM2-QUAL model are included for Delta chloride conditions for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| Contra Costa Pumping Plant Chloride | ROLD024 | 19-1 to 19-4 | 19-1 to 19-18 |
| San Joaquin River at Antioch Chloride | RSAN007 | 20-1 to 20-4 | 20-1 to 20-18 |
| Banks Pumping Plant South Delta Exports Chloride | CLIFTON_COURT | 21-1 to 21-4 | 21-1 to 21-18 |
| Jones Pumping Plant South Delta Exports Chloride | CHDMC006 | 22-1 to 22-4 | 22-1 to 22-18 |
| North Bay Aqueduct Chloride | SLBAR002 | 23-1 to 23-4 | 23-1 to 23-18 |

Report formats

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all scenarios
- Monthly exceedance charts (all months) including all scenarios

## Table 19-1. Contra Costa Pumping Plant #1 Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 241 | 255 | 252 | 207 | 107 | 59 | 61 | 58 | 38 | 82 | 139 | 190 |
| 20% | 219 | 219 | 231 | 163 | 84 | 44 | 53 | 52 | 32 | 50 | 105 | 181 |
| 30% | 207 | 190 | 206 | 127 | 69 | 39 | 47 | 50 | 29 | 46 | 90 | 170 |
| 40% | 198 | 171 | 135 | 103 | 59 | 35 | 45 | 46 | 28 | 37 | 81 | 157 |
| 50% | 174 | 119 | 67 | 89 | 51 | 32 | 41 | 43 | 27 | 28 | 73 | 135 |
| 60% | 33 | 31 | 45 | 77 | 45 | 30 | 39 | 40 | 26 | 26 | 65 | 124 |
| 70% | 31 | 25 | 35 | 48 | 35 | 27 | 35 | 35 | 25 | 25 | 54 | 112 |
| 80% | 29 | 23 | 29 | 39 | 31 | 25 | 29 | 29 | 24 | 23 | 47 | 95 |
| 90% | 28 | 21 | 24 | 30 | 27 | 23 | 26 | 20 | 23 | 22 | 40 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 127 | 121 | 117 | 102 | 60 | 37 | 42 | 42 | 31 | 43 | 79 | 137 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 29 | 23 | 30 | 51 | 44 | 31 | 33 | 34 | 25 | 23 | 48 | 103 |
| Above Normal (16%) | 33 | 44 | 65 | 82 | 52 | 31 | 47 | 50 | 26 | 25 | 54 | 89 |
| Below Normal (13%) | 200 | 166 | 162 | 105 | 55 | 33 | 49 | 51 | 29 | 40 | 78 | 171 |
| Dry (24%) | 206 | 182 | 159 | 139 | 67 | 38 | 41 | 38 | 28 | 54 | 107 | 164 |
| Critical (15%) | 244 | 272 | 253 | 166 | 100 | 57 | 52 | 47 | 57 | 86 | 129 | 186 |

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 247 | 274 | 259 | 227 | 105 | 53 | 45 | 32 | 34 | 87 | 141 | 197 |
| 20% | 231 | 250 | 240 | 199 | 76 | 39 | 33 | 28 | 29 | 52 | 106 | 186 |
| 30% | 220 | 231 | 228 | 175 | 64 | 34 | 30 | 27 | 26 | 46 | 91 | 180 |
| 40% | 211 | 216 | 207 | 107 | 59 | 31 | 29 | 25 | 25 | 37 | 84 | 174 |
| 50% | 206 | 200 | 190 | 92 | 49 | 29 | 27 | 24 | 23 | 28 | 77 | 169 |
| 60% | 203 | 189 | 166 | 71 | 40 | 27 | 26 | 24 | 23 | 26 | 63 | 166 |
| 70% | 191 | 177 | 130 | 49 | 34 | 26 | 25 | 23 | 22 | 24 | 54 | 162 |
| 80% | 175 | 153 | 87 | 41 | 30 | 24 | 24 | 22 | 21 | 23 | 49 | 151 |
| 90% | 125 | 62 | 41 | 29 | 28 | 22 | 23 | 21 | 20 | 22 | 41 | 123 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 197 | 193 | 170 | 115 | 58 | 34 | 30 | 26 | 29 | 44 | 80 | 163 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 150 | 164 | 141 | 54 | 42 | 34 | 28 | 22 | 22 | 23 | 47 | 134 |
| Above Normal (16%) | 199 | 183 | 172 | 103 | 51 | 31 | 29 | 24 | 22 | 25 | 56 | 169 |
| Below Normal (13%) | 204 | 178 | 162 | 126 | 56 | 31 | 30 | 26 | 25 | 44 | 87 | 182 |
| Dry (24%) | 220 | 197 | 160 | 166 | 67 | 32 | 30 | 26 | 26 | 54 | 103 | 172 |
| Critical (15%) | 249 | 278 | 256 | 164 | 88 | 45 | 39 | 38 | 62 | 93 | 130 | 190 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 6 | 19 | 7 | 20 | -2 | -6 | -16 | -26 | -4 | 4 | 2 | 7 |
| 20% | 11 | 31 | 9 | 36 | -8 | -5 | -20 | -24 | -2 | 2 | 1 | 5 |
| 30% | 13 | 40 | 22 | 48 | -5 | -5 | -17 | -23 | -2 | 1 | 1 | 9 |
| 40% | 13 | 45 | 73 | 5 | 0 | -4 | -16 | -21 | -4 | 0 | 3 | 17 |
| 50% | 31 | 81 | 123 | 3 | -2 | -3 | -14 | -19 | -4 | -1 | 3 | 34 |
| 60% | 169 | 158 | 121 | -6 | -6 | -3 | -12 | -16 | -4 | -1 | -2 | 42 |
| 70% | 160 | 152 | 95 | 1 | -1 | -1 | -9 | -12 | -3 | 0 | 1 | 50 |
| 80% | 146 | 130 | 58 | 2 | -1 | -1 | -5 | -6 | -3 | 0 | 2 | 56 |
| 90% | 97 | 41 | 18 | -1 | 1 | -1 | -3 | 2 | -2 | 0 | 1 | 38 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 70 | 73 | 53 | 13 | -2 | -3 | -12 | -15 | -2 | 1 | 0 | 26 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 121 | 141 | 111 | 3 | -2 | 2 | -5 | -12 | -2 | 0 | -1 | 31 |
| Above Normal (16%) | 167 | 139 | 107 | 21 | -1 | -1 | -18 | -26 | -4 | 0 | 2 | 80 |
| Below Normal (13%) | 4 | 12 | 0 | 22 | 1 | -2 | -20 | -25 | -4 | 4 | 9 | 11 |
| Dry (24%) | 14 | 15 | 1 | 26 | 0 | -6 | -11 | -12 | -2 | -1 | -5 | 8 |
| Critical (15%) | 4 | 6 | 3 | -1 | -12 | -12 | -12 | -9 | 4 | 7 | 1 | 4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-2. Contra Costa Pumping Plant #1 Chloride, Monthly Cl

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 219 | 207 | 198 | 153 | 90 | 58 | 60 | 57 | 35 | 73 | 132 | 181 |
| 20% | 203 | 188 | 178 | 141 | 79 | 42 | 52 | 52 | 31 | 50 | 96 | 173 |
| 30% | 192 | 154 | 155 | 111 | 64 | 39 | 46 | 49 | 29 | 44 | 84 | 163 |
| 40% | 181 | 135 | 109 | 94 | 56 | 34 | 44 | 46 | 28 | 36 | 78 | 151 |
| 50% | 165 | 102 | 63 | 79 | 49 | 31 | 40 | 43 | 27 | 28 | 70 | 130 |
| 60% | 33 | 30 | 43 | 63 | 41 | 30 | 38 | 39 | 26 | 26 | 64 | 123 |
| 70% | 30 | 25 | 33 | 47 | 34 | 27 | 35 | 35 | 25 | 25 | 53 | 112 |
| 80% | 29 | 23 | 28 | 39 | 31 | 25 | 29 | 29 | 24 | 23 | 47 | 94 |
| 90% | 28 | 21 | 24 | 30 | 27 | 22 | 26 | 20 | 23 | 22 | 40 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 101 | 96 | 86 | 55 | 36 | 42 | 41 | 31 | 42 | 76 | 133 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 29 | 23 | 30 | 49 | 44 | 31 | 33 | 34 | 25 | 23 | 48 | 103 |
| Above Normal (16%) | 32 | 42 | 63 | 78 | 52 | 31 | 47 | 49 | 26 | 25 | 54 | 89 |
| Below Normal (13%) | 187 | 131 | 121 | 94 | 53 | 33 | 49 | 51 | 28 | 40 | 75 | 167 |
| Dry (24%) | 191 | 153 | 132 | 110 | 60 | 37 | 40 | 38 | 28 | 51 | 99 | 155 |
| Critical (15%) | 222 | 221 | 196 | 129 | 75 | 49 | 49 | 45 | 56 | 87 | 124 | 174 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 227 | 223 | 215 | 223 | 81 | 52 | 37 | 31 | 35 | 79 | 128 | 182 |
| 20% | 205 | 200 | 198 | 175 | 69 | 41 | 32 | 28 | 29 | 49 | 101 | 177 |
| 30% | 198 | 163 | 188 | 156 | 61 | 35 | 31 | 26 | 27 | 45 | 87 | 167 |
| 40% | 187 | 143 | 172 | 113 | 56 | 33 | 29 | 25 | 24 | 39 | 81 | 150 |
| 50% | 161 | 116 | 155 | 83 | 50 | 30 | 29 | 24 | 23 | 27 | 67 | 136 |
| 60% | 27 | 55 | 145 | 66 | 38 | 29 | 27 | 24 | 22 | 26 | 45 | 73 |
| 70% | 25 | 46 | 110 | 46 | 34 | 27 | 27 | 23 | 22 | 24 | 41 | 62 |
| 80% | 24 | 41 | 79 | 40 | 29 | 26 | 25 | 22 | 21 | 23 | 37 | 51 |
| 90% | 23 | 29 | 38 | 29 | 27 | 24 | 25 | 21 | 20 | 22 | 30 | 42 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 115 | 142 | 107 | 52 | 35 | 30 | 26 | 29 | 43 | 72 | 115 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 24 | 45 | 125 | 57 | 43 | 34 | 27 | 21 | 22 | 23 | 36 | 53 |
| Above Normal (16%) | 26 | 51 | 155 | 96 | 48 | 34 | 29 | 24 | 22 | 24 | 41 | 60 |
| Below Normal (13%) | 187 | 146 | 124 | 131 | 54 | 34 | 31 | 26 | 25 | 40 | 85 | 173 |
| Dry (24%) | 198 | 163 | 132 | 146 | 56 | 32 | 30 | 26 | 26 | 53 | 98 | 161 |
| Critical (15%) | 225 | 225 | 197 | 143 | 71 | 41 | 37 | 38 | 61 | 92 | 124 | 176 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **8** | **15** | **17** | **70** | -10 | -6 | -23 | -26 | 0 | **6** | -4 | **1** |
| 20% | **2** | **12** | **20** | **34** | -10 | -2 | -19 | -24 | -2 | -1 | **4** | **5** |
| 30% | **6** | **9** | **33** | **45** | -3 | -4 | -15 | -23 | -2 | **1** | **2** | **4** |
| 40% | **6** | **8** | **63** | **20** | 0 | -1 | -14 | -21 | -4 | **3** | **3** | -1 |
| 50% | -4 | **14** | **92** | **5** | **1** | -1 | -12 | -19 | -4 | 0 | -2 | **6** |
| 60% | -6 | **25** | **101** | **2** | -2 | -1 | -11 | -15 | -4 | 0 | -19 | -49 |
| 70% | -5 | **21** | **76** | -1 | 0 | **0** | -8 | -12 | -3 | 0 | -12 | -50 |
| 80% | -5 | **17** | **50** | **1** | -1 | **1** | -4 | -7 | -3 | 0 | -10 | -43 |
| 90% | -6 | **8** | **14** | -1 | **0** | **1** | -1 | **1** | -3 | **0** | -9 | -43 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | **13** | **45** | **21** | -2 | -1 | -12 | -16 | -2 | **1** | -4 | -18 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -4 | **22** | **95** | **8** | 0 | **2** | -6 | -13 | -3 | **0** | -12 | -50 |
| Above Normal (16%) | -6 | **9** | **91** | **18** | -4 | **3** | -18 | -26 | -4 | -1 | -13 | -29 |
| Below Normal (13%) | 0 | **14** | **3** | **37** | **1** | **1** | -19 | -25 | -4 | **0** | **10** | **6** |
| Dry (24%) | **7** | **10** | **1** | **36** | -4 | -5 | -11 | -12 | -1 | **3** | -1 | **6** |
| Critical (15%) | **3** | **4** | **1** | **14** | -5 | -8 | -13 | -8 | **6** | **5** | **1** | **1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-3. Contra Costa Pumping Plant #1 Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 241 | 255 | 252 | 207 | 107 | 59 | 61 | 58 | 38 | 82 | 139 | 190 |
| 20% | 219 | 219 | 231 | 163 | 84 | 44 | 53 | 52 | 32 | 50 | 105 | 181 |
| 30% | 207 | 190 | 206 | 127 | 69 | 39 | 47 | 50 | 29 | 46 | 90 | 170 |
| 40% | 198 | 171 | 135 | 103 | 59 | 35 | 45 | 46 | 28 | 37 | 81 | 157 |
| 50% | 174 | 119 | 67 | 89 | 51 | 32 | 41 | 43 | 27 | 28 | 73 | 135 |
| 60% | 33 | 31 | 45 | 77 | 45 | 30 | 39 | 40 | 26 | 26 | 65 | 124 |
| 70% | 31 | 25 | 35 | 48 | 35 | 27 | 35 | 35 | 25 | 25 | 54 | 112 |
| 80% | 29 | 23 | 29 | 39 | 31 | 25 | 29 | 29 | 24 | 23 | 47 | 95 |
| 90% | 28 | 21 | 24 | 30 | 27 | 23 | 26 | 20 | 23 | 22 | 40 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 127 | 121 | 117 | 102 | 60 | 37 | 42 | 42 | 31 | 43 | 79 | 137 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 29 | 23 | 30 | 51 | 44 | 31 | 33 | 34 | 25 | 23 | 48 | 103 |
| Above Normal (16%) | 33 | 44 | 65 | 82 | 52 | 31 | 47 | 50 | 26 | 25 | 54 | 89 |
| Below Normal (13%) | 200 | 166 | 162 | 105 | 55 | 33 | 49 | 51 | 29 | 40 | 78 | 171 |
| Dry (24%) | 206 | 182 | 159 | 139 | 67 | 38 | 41 | 38 | 28 | 54 | 107 | 164 |
| Critical (15%) | 244 | 272 | 253 | 166 | 100 | 57 | 52 | 47 | 57 | 86 | 129 | 186 |

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 219 | 207 | 198 | 153 | 90 | 58 | 60 | 57 | 35 | 73 | 132 | 181 |
| 20% | 203 | 188 | 178 | 141 | 79 | 42 | 52 | 52 | 31 | 50 | 96 | 173 |
| 30% | 192 | 154 | 155 | 111 | 64 | 39 | 46 | 49 | 29 | 44 | 84 | 163 |
| 40% | 181 | 135 | 109 | 94 | 56 | 34 | 44 | 46 | 28 | 36 | 78 | 151 |
| 50% | 165 | 102 | 63 | 79 | 49 | 31 | 40 | 43 | 27 | 28 | 70 | 130 |
| 60% | 33 | 30 | 43 | 63 | 41 | 30 | 38 | 39 | 26 | 26 | 64 | 123 |
| 70% | 30 | 25 | 33 | 47 | 34 | 27 | 35 | 35 | 25 | 25 | 53 | 112 |
| 80% | 29 | 23 | 28 | 39 | 31 | 25 | 29 | 29 | 24 | 23 | 47 | 94 |
| 90% | 28 | 21 | 24 | 30 | 27 | 22 | 26 | 20 | 23 | 22 | 40 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 101 | 96 | 86 | 55 | 36 | 42 | 41 | 31 | 42 | 76 | 133 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 29 | 23 | 30 | 49 | 44 | 31 | 33 | 34 | 25 | 23 | 48 | 103 |
| Above Normal (16%) | 32 | 42 | 63 | 78 | 52 | 31 | 47 | 49 | 26 | 25 | 54 | 89 |
| Below Normal (13%) | 187 | 131 | 121 | 94 | 53 | 33 | 49 | 51 | 28 | 40 | 75 | 167 |
| Dry (24%) | 191 | 153 | 132 | 110 | 60 | 37 | 40 | 38 | 28 | 51 | 99 | 155 |
| Critical (15%) | 222 | 221 | 196 | 129 | 75 | 49 | 49 | 45 | 56 | 87 | 124 | 174 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -22 | -48 | -54 | -54 | -17 | -1 | -1 | -1 | -3 | -9 | -7 | -9 |
| 20% | -17 | -31 | -53 | -22 | -5 | -2 | -2 | 0 | -1 | -1 | -9 | -9 |
| 30% | -15 | -37 | -51 | -16 | -4 | 0 | -1 | 0 | 0 | -2 | -5 | -7 |
| 40% | -18 | -36 | -25 | -9 | -3 | -1 | -1 | 0 | 0 | -1 | -3 | -6 |
| 50% | -9 | -18 | -4 | -10 | -2 | -1 | -1 | 0 | 0 | -1 | -4 | -5 |
| 60% | 0 | -1 | -1 | -14 | -5 | 0 | 0 | -1 | 0 | 0 | -1 | -2 |
| 70% | 0 | 0 | -2 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -9 | -19 | -21 | -15 | -6 | -1 | -1 | 0 | 0 | -1 | -3 | -4 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | -1 | -2 | -2 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -13 | -35 | -41 | -10 | -2 | 0 | 0 | 0 | -1 | 0 | -3 | -4 |
| Dry (24%) | -15 | -29 | -28 | -30 | -7 | -1 | -1 | 0 | 0 | -4 | -9 | -9 |
| Critical (15%) | -22 | -50 | -57 | -37 | -25 | -8 | -3 | -2 | -2 | 1 | -5 | -12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 19-4. Contra Costa Pumping Plant #1 Chloride, Monthly Cl

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 247 | 274 | 259 | 227 | 105 | 53 | 45 | 32 | 34 | 87 | 141 | 197 |
| 20% | 231 | 250 | 240 | 199 | 76 | 39 | 33 | 28 | 29 | 52 | 106 | 186 |
| 30% | 220 | 231 | 228 | 175 | 64 | 34 | 30 | 27 | 26 | 46 | 91 | 180 |
| 40% | 211 | 216 | 207 | 107 | 59 | 31 | 29 | 25 | 25 | 37 | 84 | 174 |
| 50% | 206 | 200 | 190 | 92 | 49 | 29 | 27 | 24 | 23 | 28 | 77 | 169 |
| 60% | 203 | 189 | 166 | 71 | 40 | 27 | 26 | 24 | 23 | 26 | 63 | 166 |
| 70% | 191 | 177 | 130 | 49 | 34 | 26 | 25 | 23 | 22 | 24 | 54 | 162 |
| 80% | 175 | 153 | 87 | 41 | 30 | 24 | 24 | 22 | 21 | 23 | 49 | 151 |
| 90% | 125 | 62 | 41 | 29 | 28 | 22 | 23 | 21 | 20 | 22 | 41 | 123 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 197 | 193 | 170 | 115 | 58 | 34 | 30 | 26 | 29 | 44 | 80 | 163 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 150 | 164 | 141 | 54 | 42 | 34 | 28 | 22 | 22 | 23 | 47 | 134 |
| Above Normal (16%) | 199 | 183 | 172 | 103 | 51 | 31 | 29 | 24 | 22 | 25 | 56 | 169 |
| Below Normal (13%) | 204 | 178 | 162 | 126 | 56 | 31 | 30 | 26 | 25 | 44 | 87 | 182 |
| Dry (24%) | 220 | 197 | 160 | 166 | 67 | 32 | 30 | 26 | 26 | 54 | 103 | 172 |
| Critical (15%) | 249 | 278 | 256 | 164 | 88 | 45 | 39 | 38 | 62 | 93 | 130 | 190 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 227 | 223 | 215 | 223 | 81 | 52 | 37 | 31 | 35 | 79 | 128 | 182 |
| 20% | 205 | 200 | 198 | 175 | 69 | 41 | 32 | 28 | 29 | 49 | 101 | 177 |
| 30% | 198 | 163 | 188 | 156 | 61 | 35 | 31 | 26 | 27 | 45 | 87 | 167 |
| 40% | 187 | 143 | 172 | 113 | 56 | 33 | 29 | 25 | 24 | 39 | 81 | 150 |
| 50% | 161 | 116 | 155 | 83 | 50 | 30 | 29 | 24 | 23 | 27 | 67 | 136 |
| 60% | 27 | 55 | 145 | 66 | 38 | 29 | 27 | 24 | 22 | 26 | 45 | 73 |
| 70% | 25 | 46 | 110 | 46 | 34 | 27 | 27 | 23 | 22 | 24 | 41 | 62 |
| 80% | 24 | 41 | 79 | 40 | 29 | 26 | 25 | 22 | 21 | 23 | 37 | 51 |
| 90% | 23 | 29 | 38 | 29 | 27 | 24 | 25 | 21 | 20 | 22 | 30 | 42 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 118 | 115 | 142 | 107 | 52 | 35 | 30 | 26 | 29 | 43 | 72 | 115 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 24 | 45 | 125 | 57 | 43 | 34 | 27 | 21 | 22 | 23 | 36 | 53 |
| Above Normal (16%) | 26 | 51 | 155 | 96 | 48 | 34 | 29 | 24 | 22 | 24 | 41 | 60 |
| Below Normal (13%) | 187 | 146 | 124 | 131 | 54 | 34 | 31 | 26 | 25 | 40 | 85 | 173 |
| Dry (24%) | 198 | 163 | 132 | 146 | 56 | 32 | 30 | 26 | 26 | 53 | 98 | 161 |
| Critical (15%) | 225 | 225 | 197 | 143 | 71 | 41 | 37 | 38 | 61 | 92 | 124 | 176 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -20 | -51 | -44 | -4 | -24 | -1 | -8 | -1 | 1 | -8 | -13 | -15 |
| 20% | -26 | -51 | -41 | -24 | -7 | 1 | 0 | 0 | 0 | -4 | -5 | -9 |
| 30% | -22 | -68 | -39 | -19 | -3 | 1 | 0 | -1 | 0 | -2 | -4 | -13 |
| 40% | -25 | -73 | -35 | 6 | -3 | 2 | 0 | 0 | 0 | 2 | -4 | -23 |
| 50% | -45 | -85 | -35 | -9 | 1 | 1 | 1 | -1 | 0 | 0 | -9 | -33 |
| 60% | -176 | -133 | -21 | -6 | -1 | 1 | 1 | 0 | 0 | 0 | -18 | -93 |
| 70% | -166 | -131 | -21 | -2 | -1 | 2 | 1 | 0 | 0 | 0 | -13 | -99 |
| 80% | -151 | -113 | -9 | -1 | -1 | 1 | 1 | 0 | 0 | 0 | -12 | -100 |
| 90% | -103 | -33 | -3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | -11 | -81 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -78 | -79 | -29 | -7 | -6 | 0 | -1 | 0 | 0 | -1 | -8 | -49 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -126 | -119 | -16 | 3 | 1 | 0 | -1 | 0 | 0 | 0 | -11 | -80 |
| Above Normal (16%) | -174 | -132 | -18 | -7 | -3 | 4 | 0 | 0 | 0 | 0 | -15 | -109 |
| Below Normal (13%) | -17 | -32 | -38 | 5 | -2 | 2 | 1 | 0 | 0 | -4 | -2 | -9 |
| Dry (24%) | -22 | -34 | -28 | -20 | -11 | 0 | 0 | 0 | 0 | 0 | -4 | -11 |
| Critical (15%) | -23 | -53 | -59 | -21 | -18 | -4 | -3 | -1 | 0 | -1 | -6 | -15 |

a Based on the 82-year simulation period.

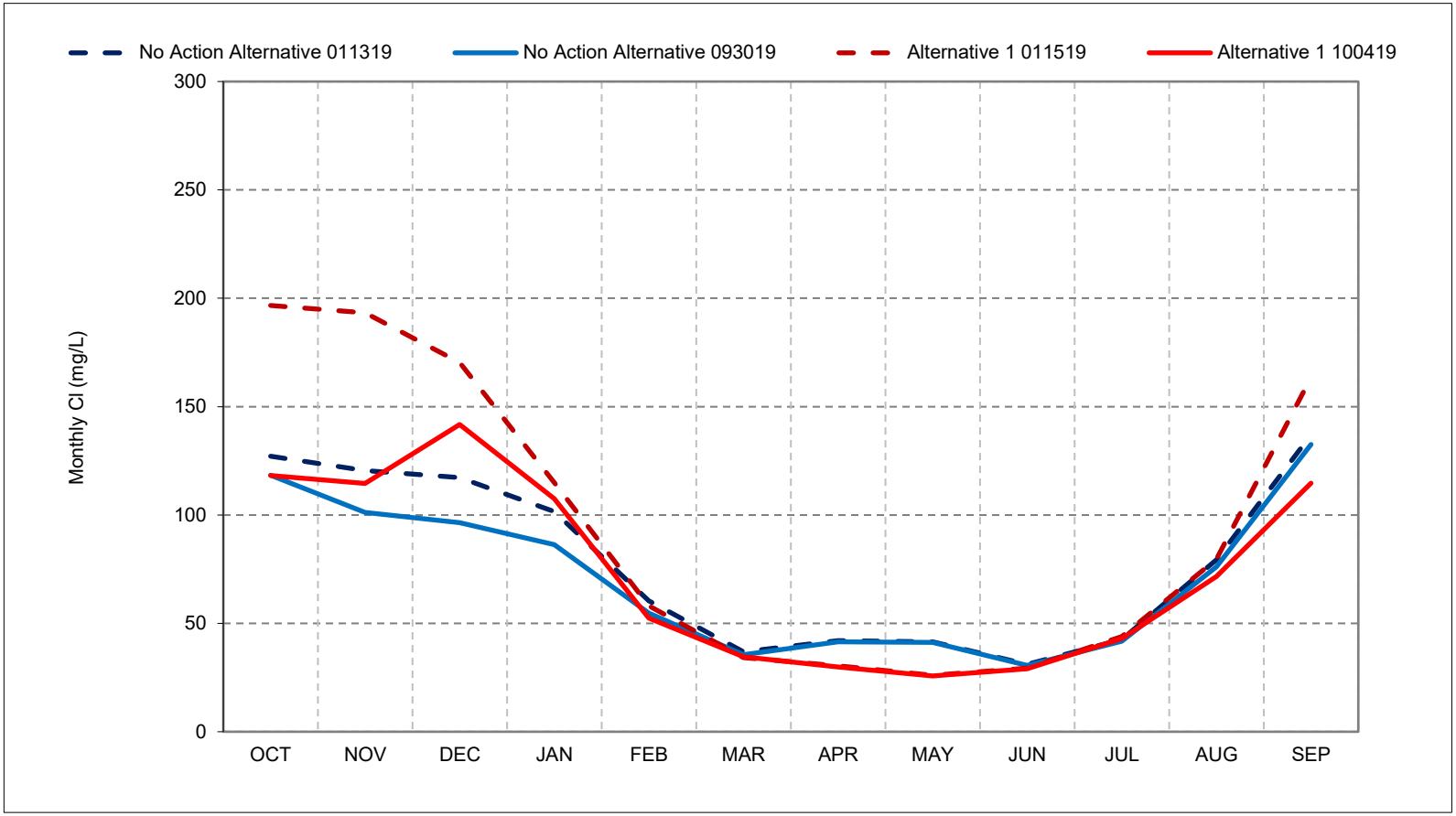
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-1. Contra Costa Pumping Plant #1 Chloride, Long-Term Average Cl

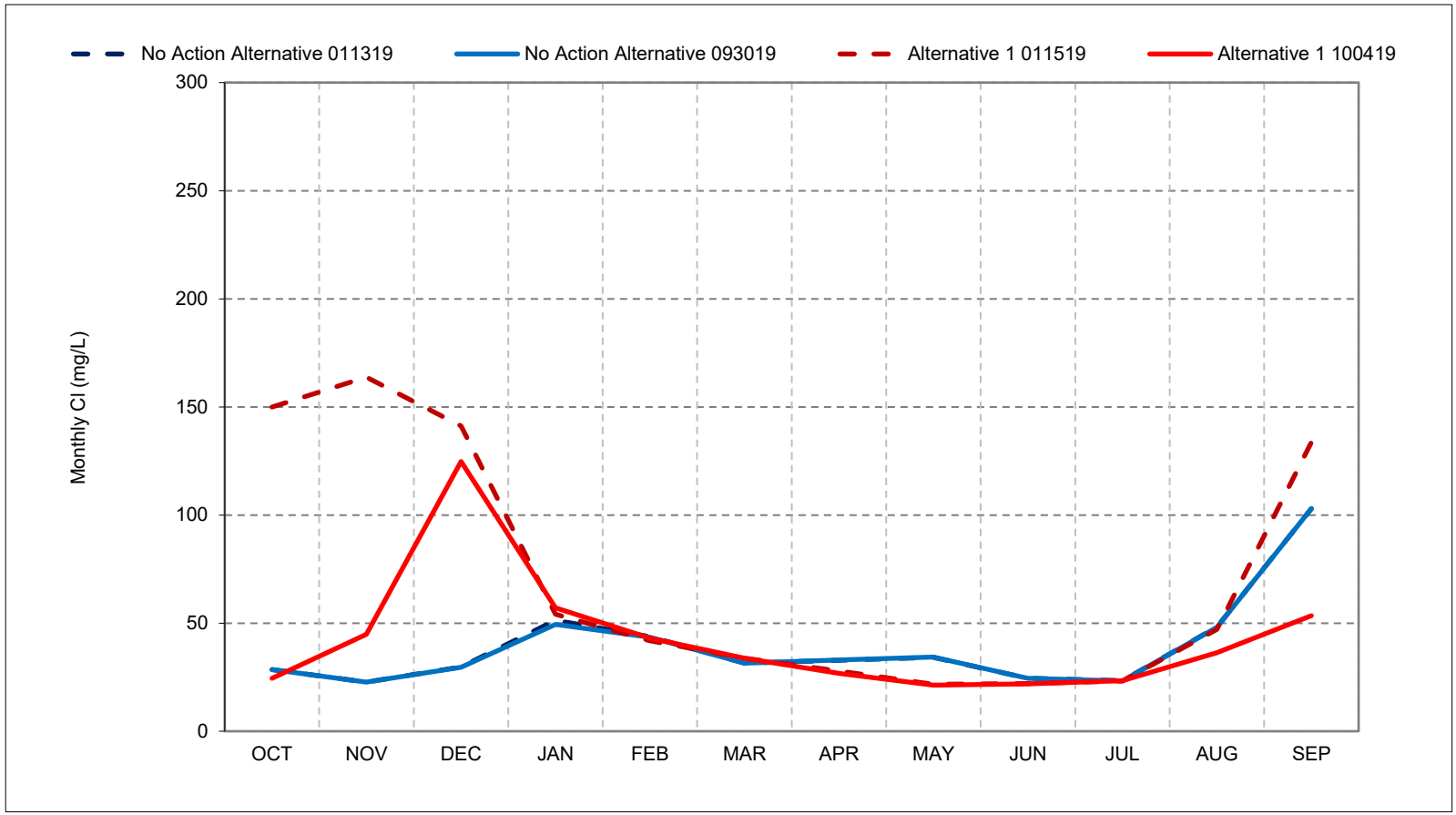



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-2. Contra Costa Pumping Plant #1 Chloride, Wet Year Average Cl

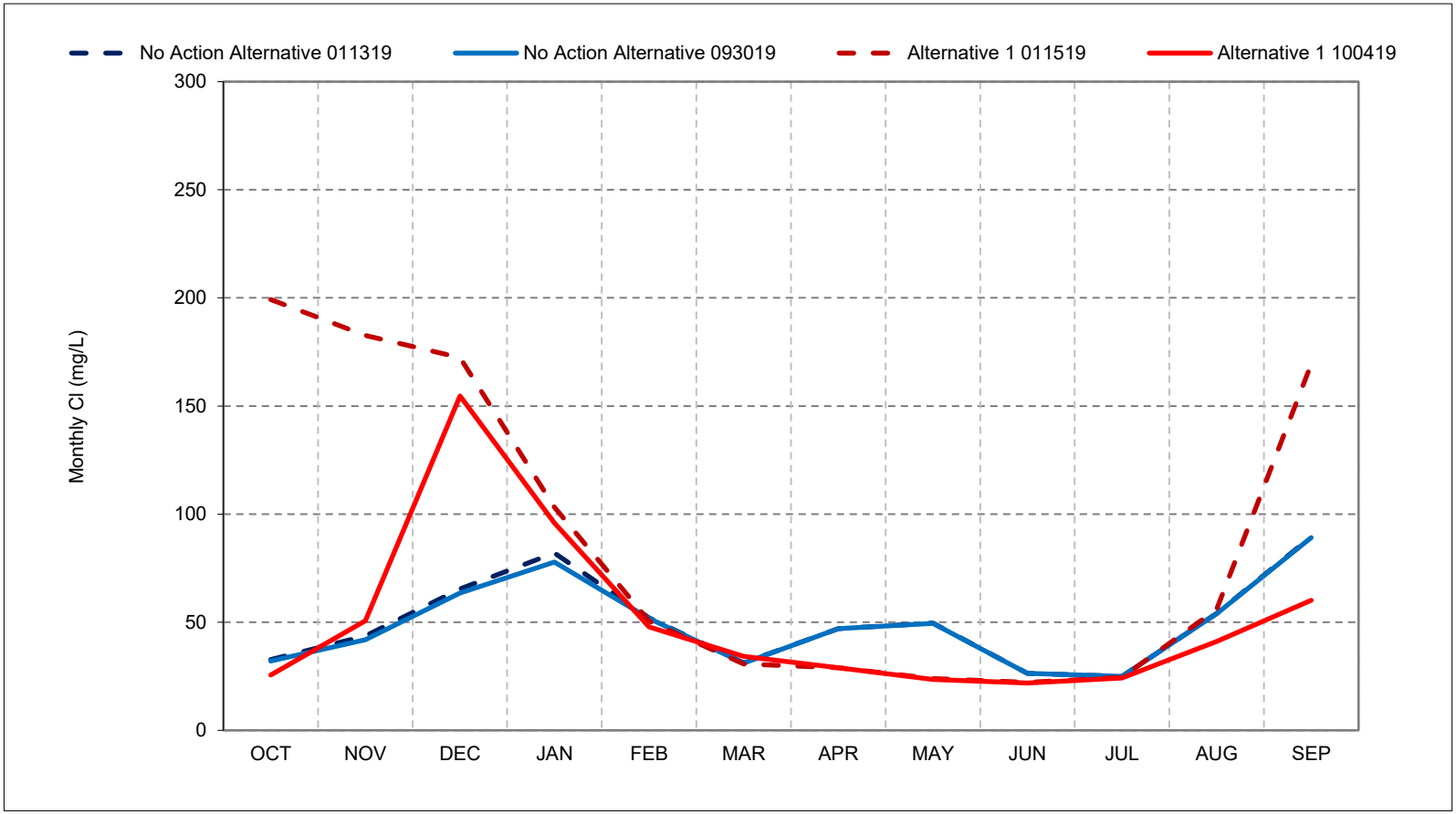



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-3. Contra Costa Pumping Plant #1 Chloride, Above Normal Year Average Cl

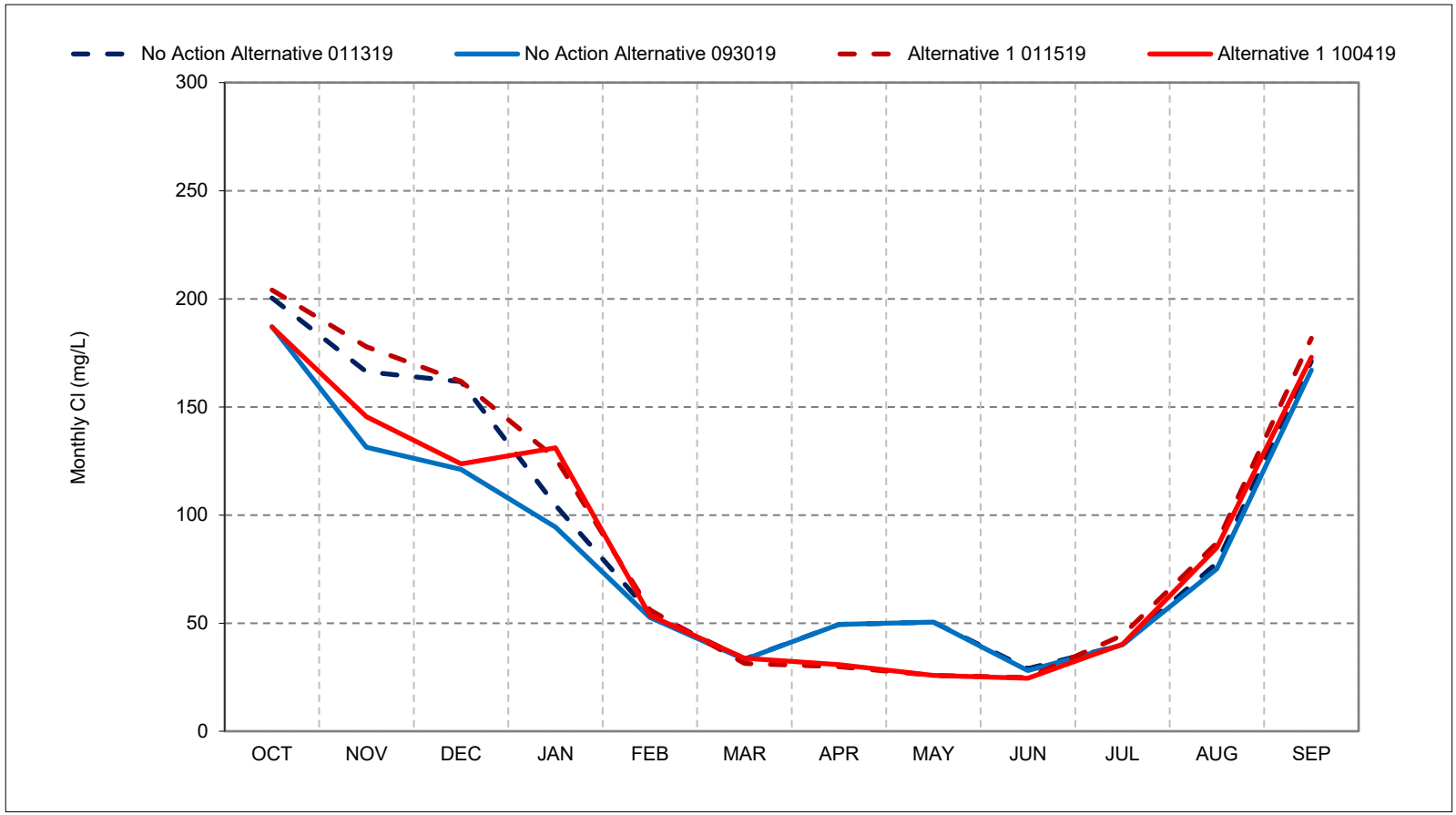



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-4. Contra Costa Pumping Plant #1 Chloride, Below Normal Year Average Cl

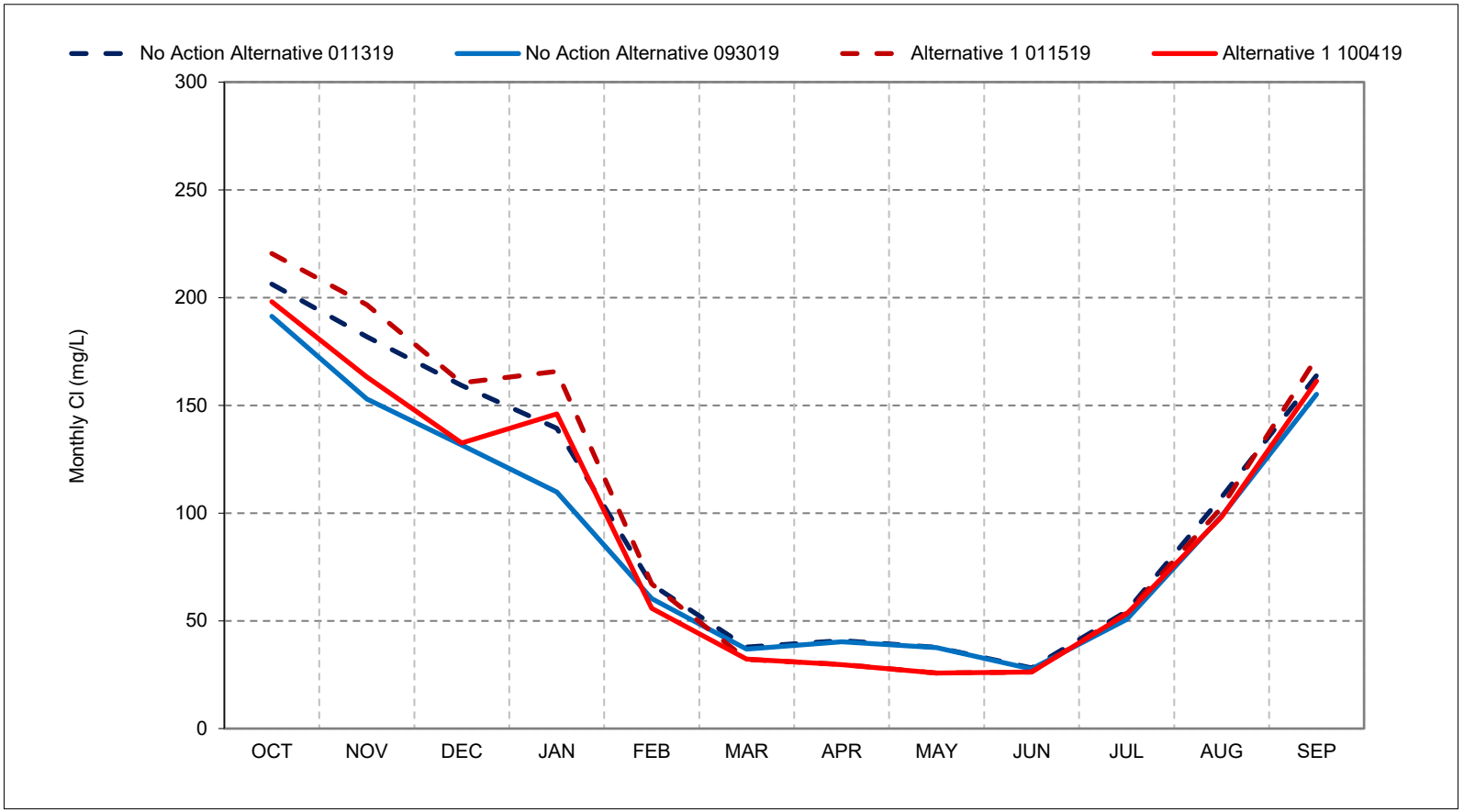



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-5. Contra Costa Pumping Plant #1 Chloride, Dry Year Average Cl

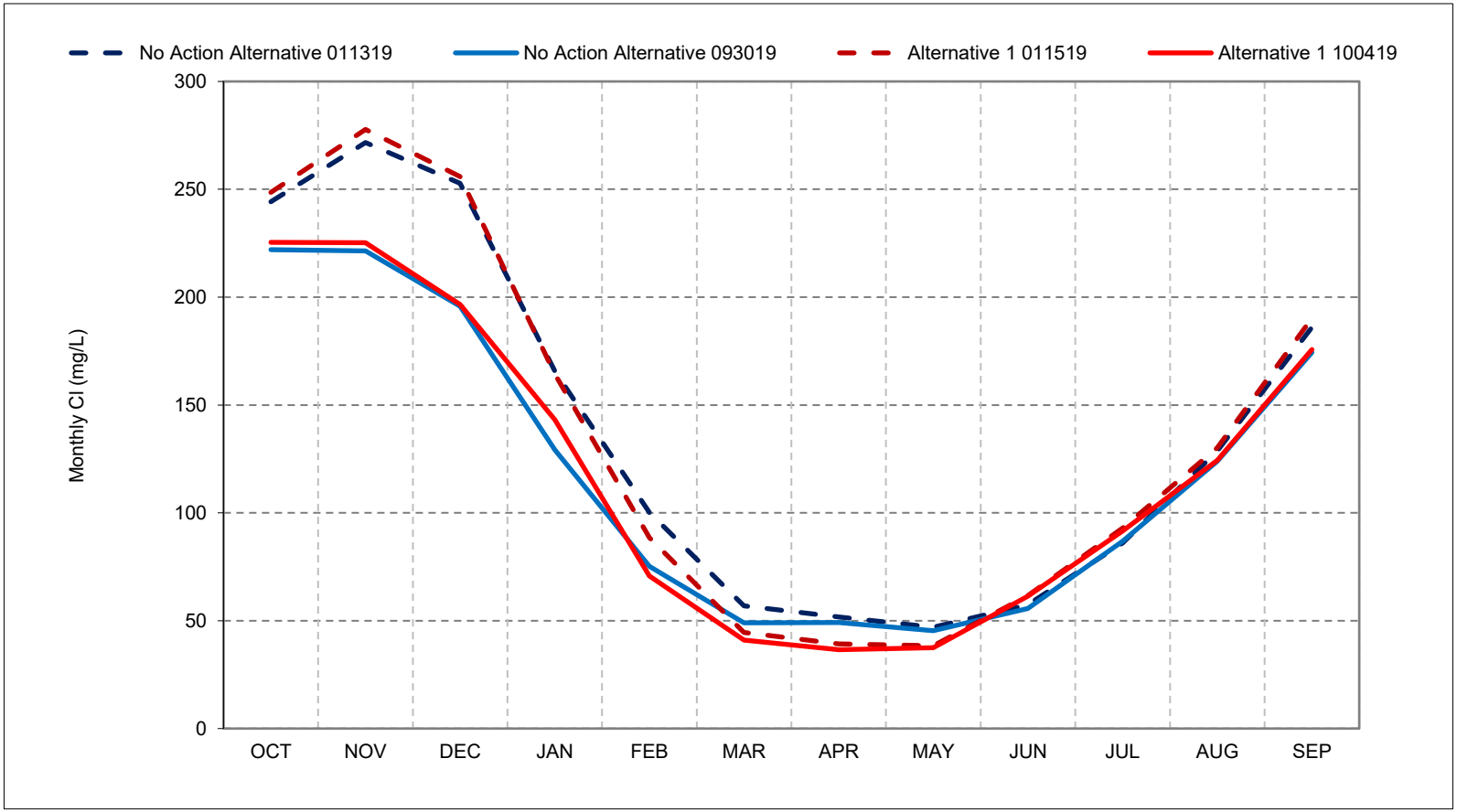



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 19-6. Contra Costa Pumping Plant #1 Chloride, Critical Year Average Cl

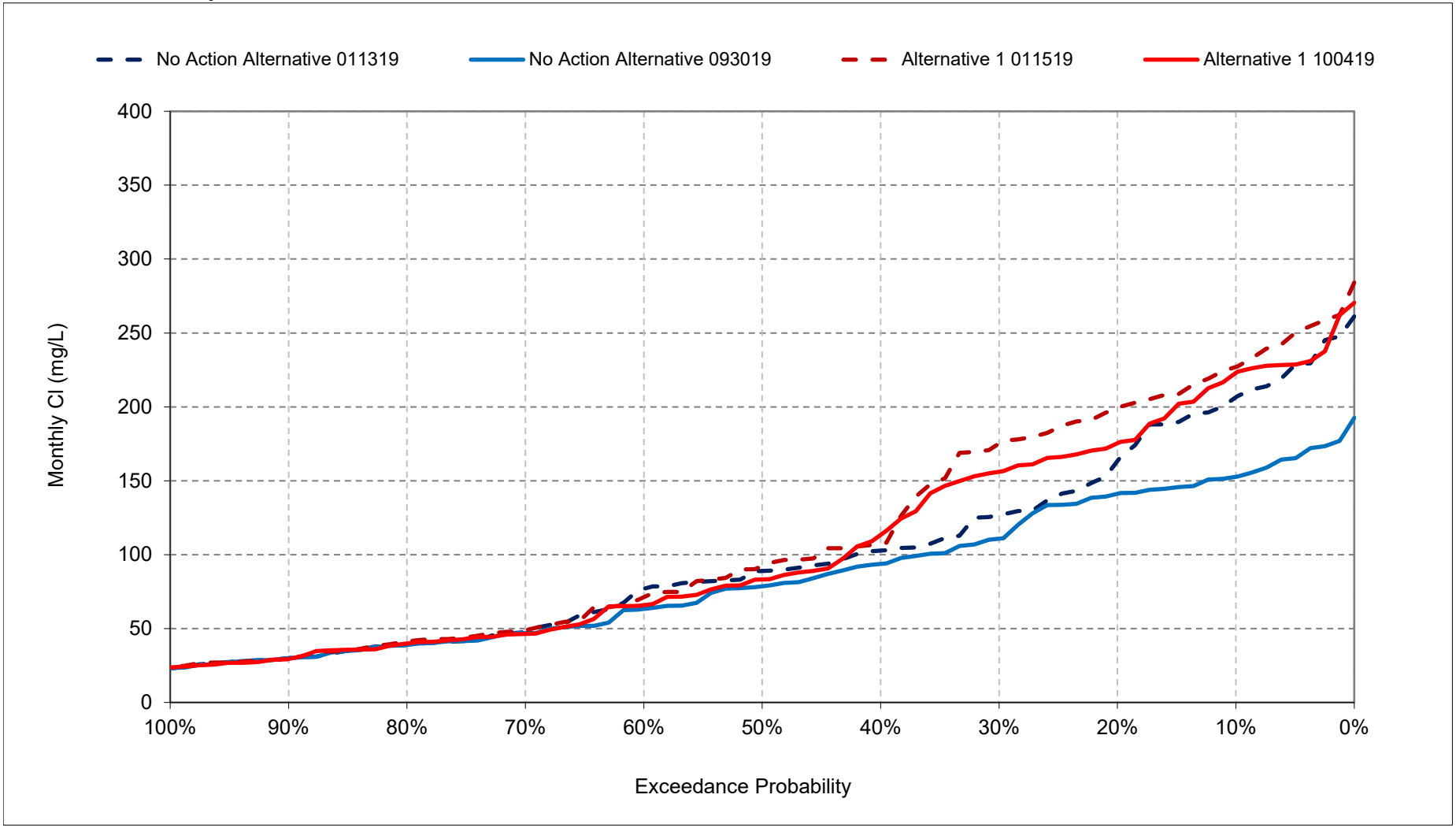



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

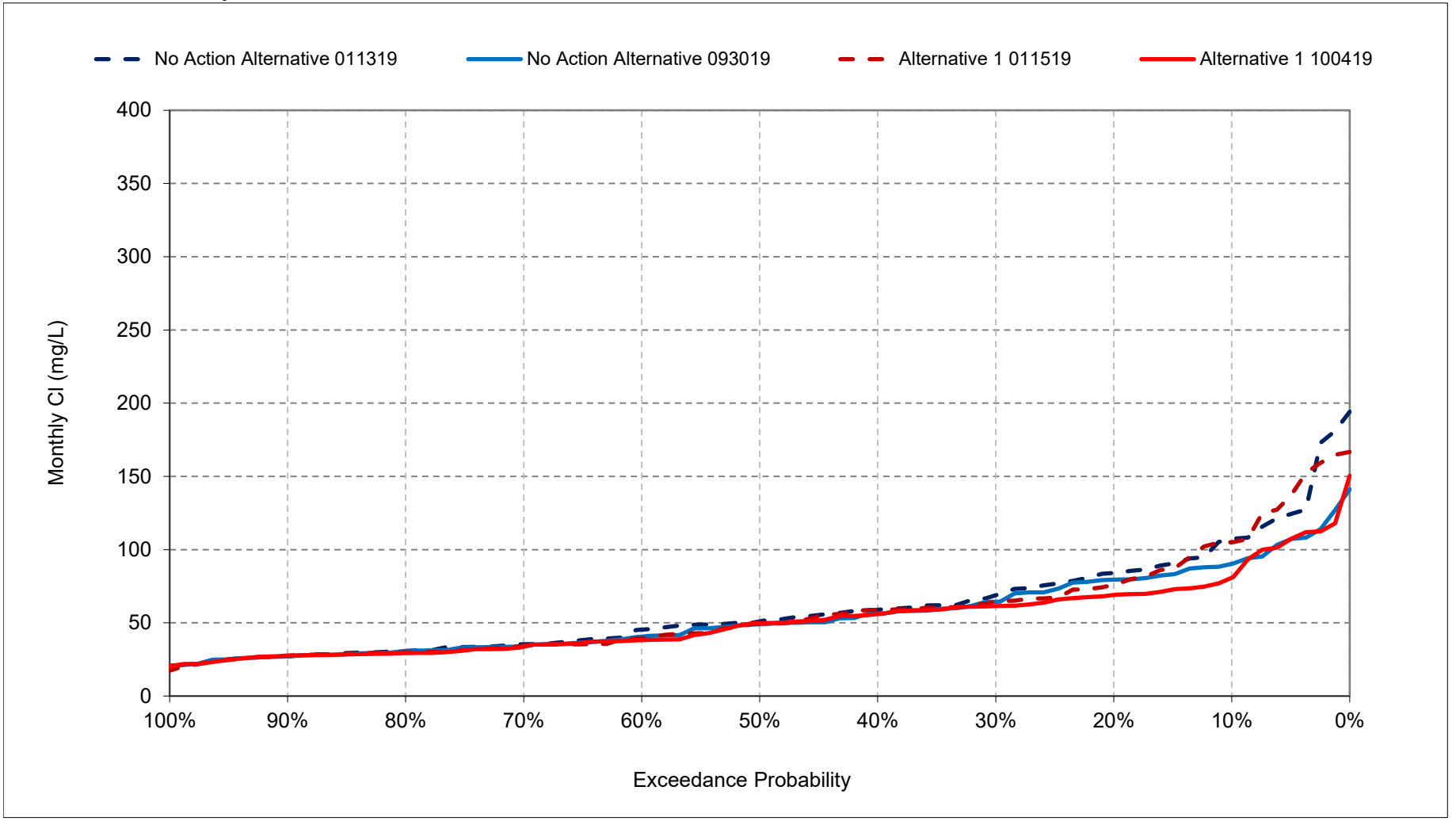
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-7. Contra Costa Pumping Plant**
**#1 Chloride, January Cl**



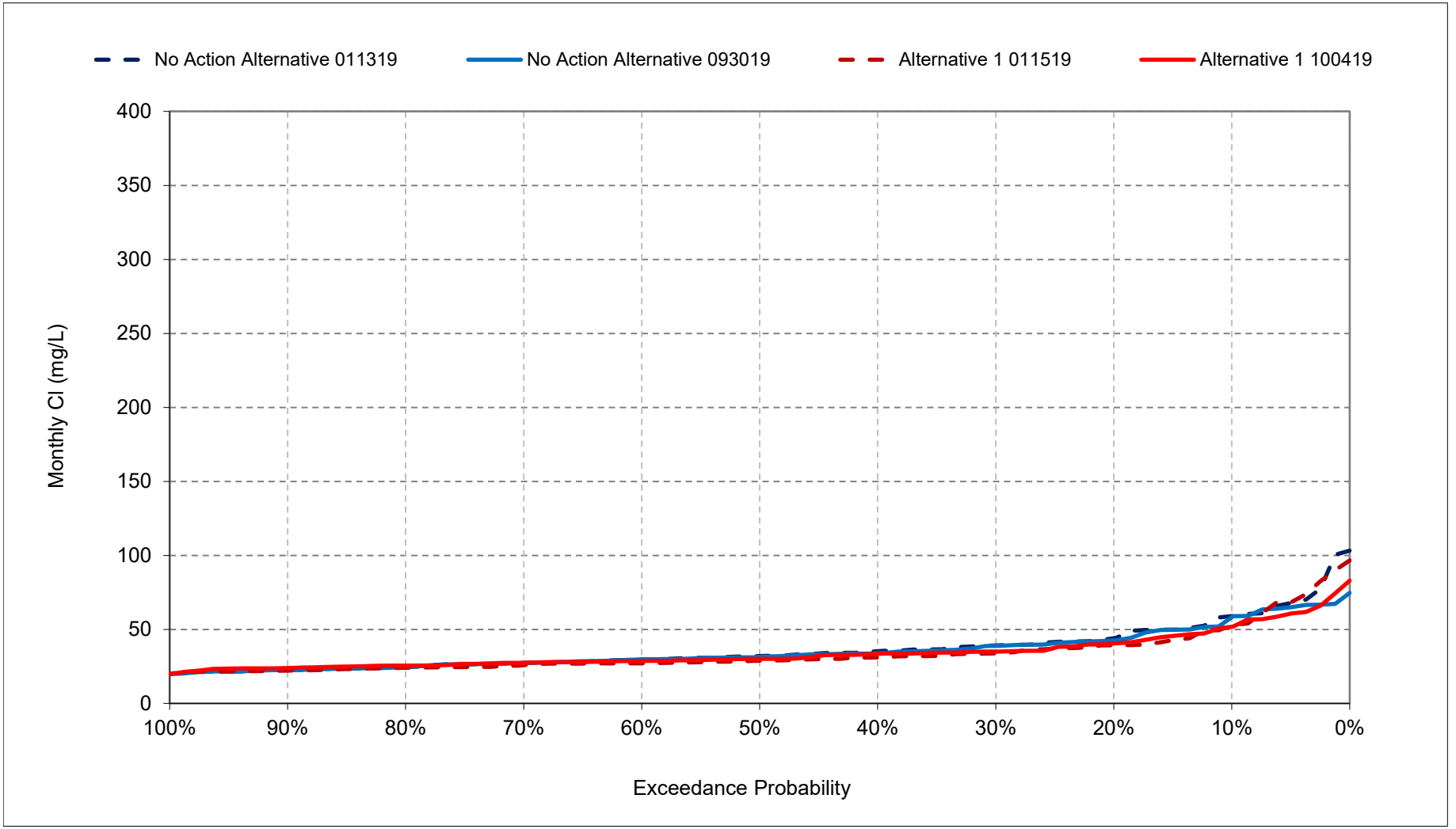

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-8. Contra Costa Pumping Plant**
**#1 Chloride, February Cl**



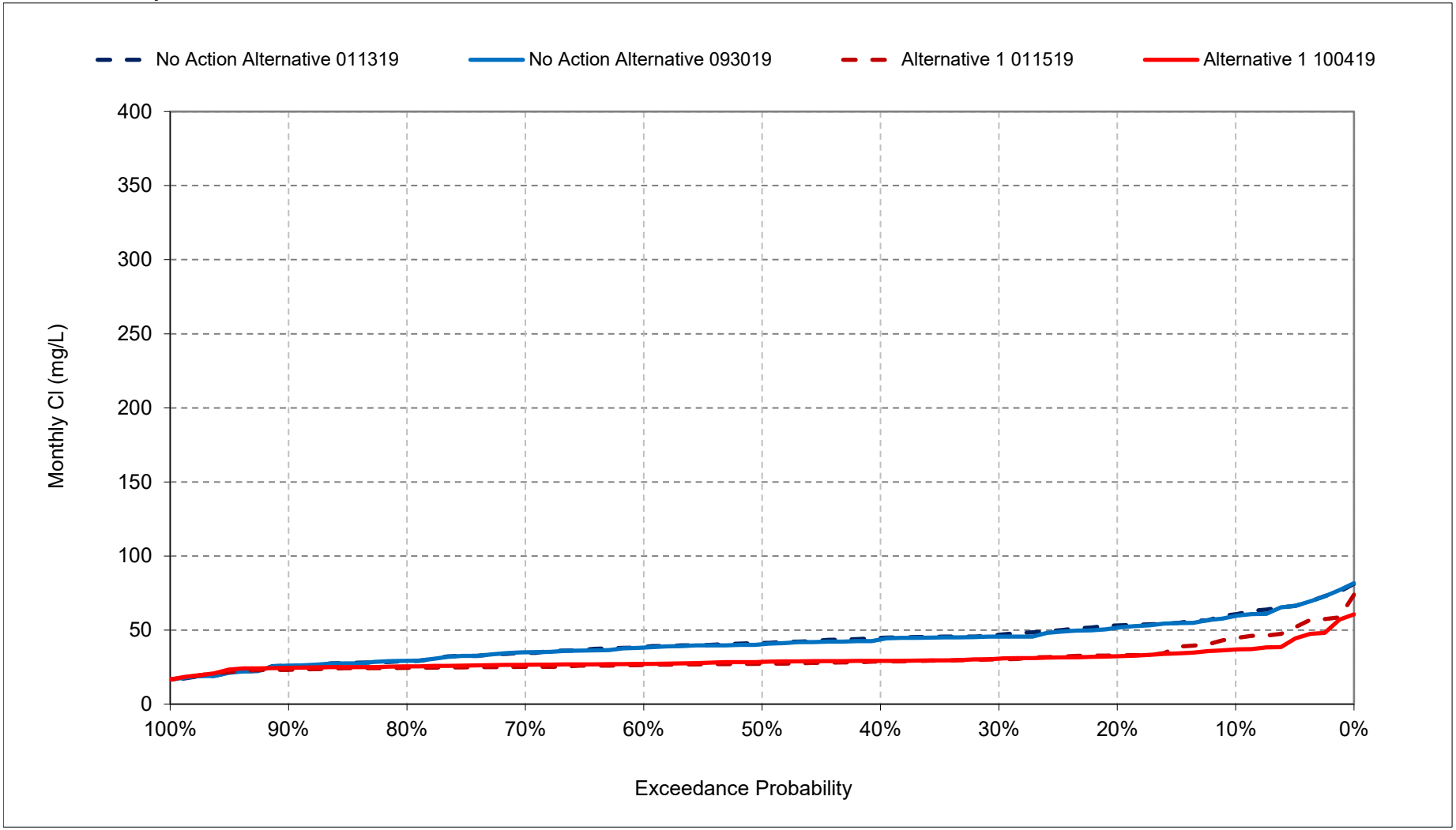

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-9. Contra Costa Pumping Plant**
**#1 Chloride, March Cl**



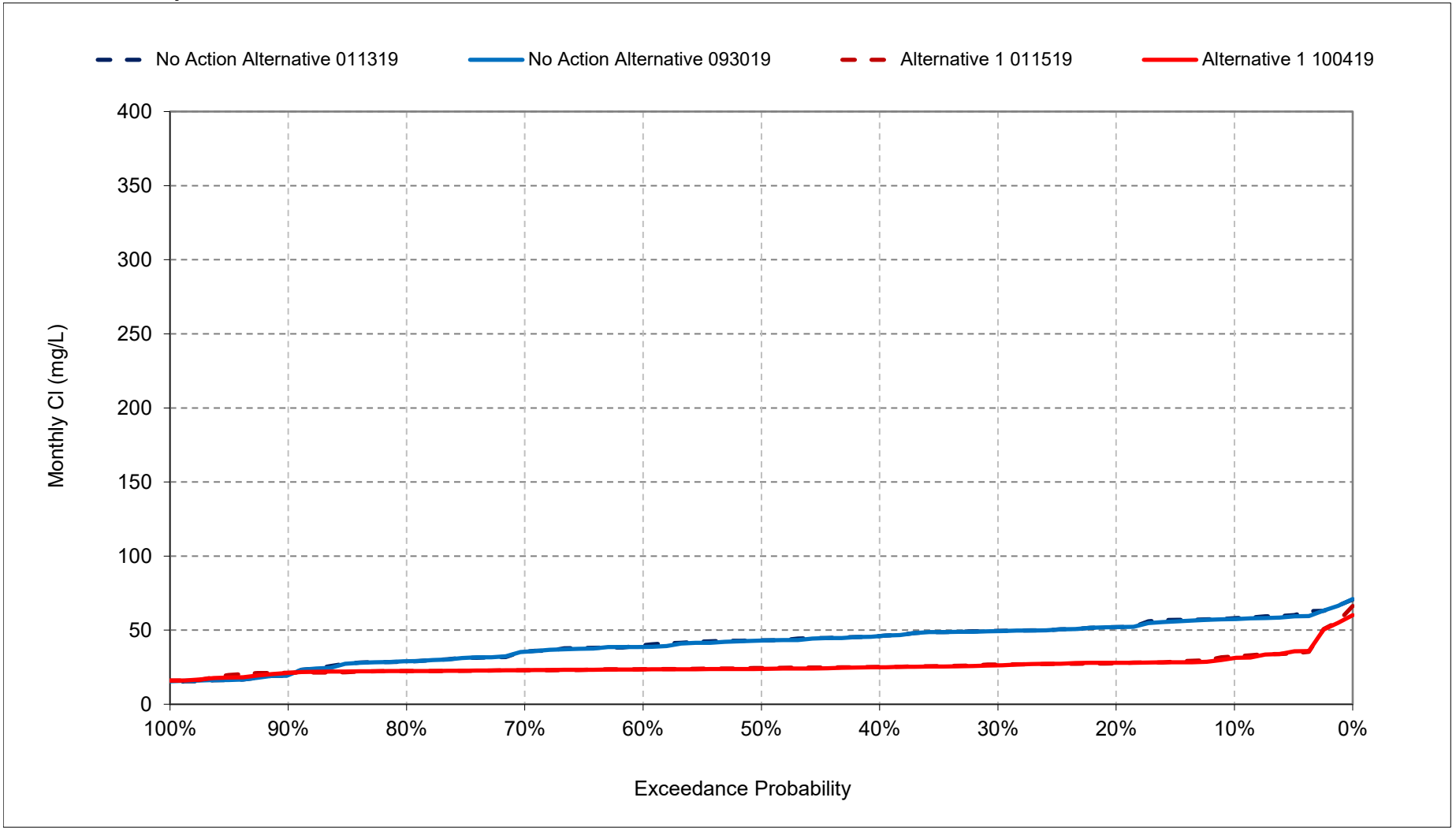

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-10. Contra Costa Pumping Plant**
**#1 Chloride, April Cl**



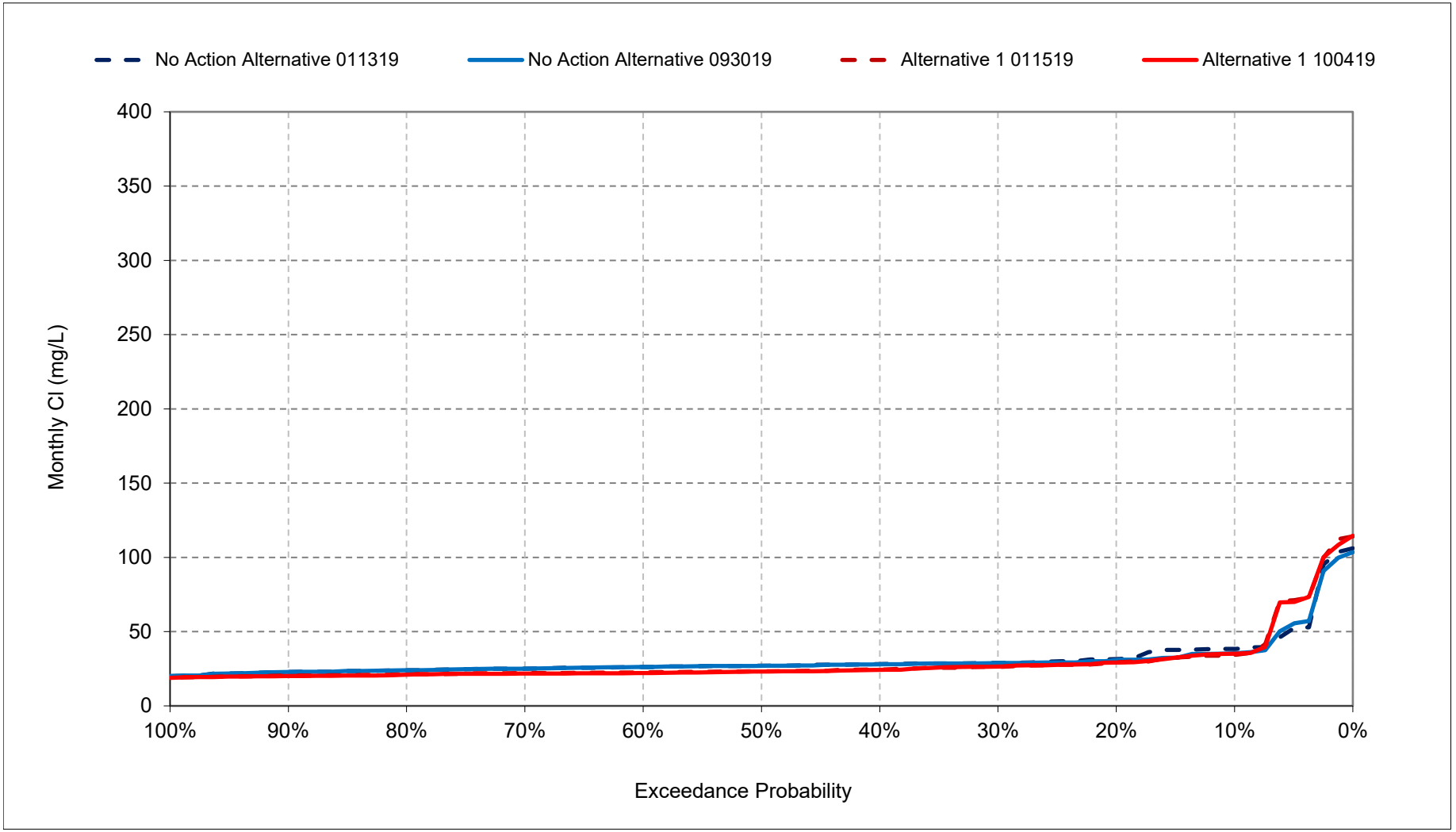

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-11. Contra Costa Pumping Plant**
**#1 Chloride, May Cl**



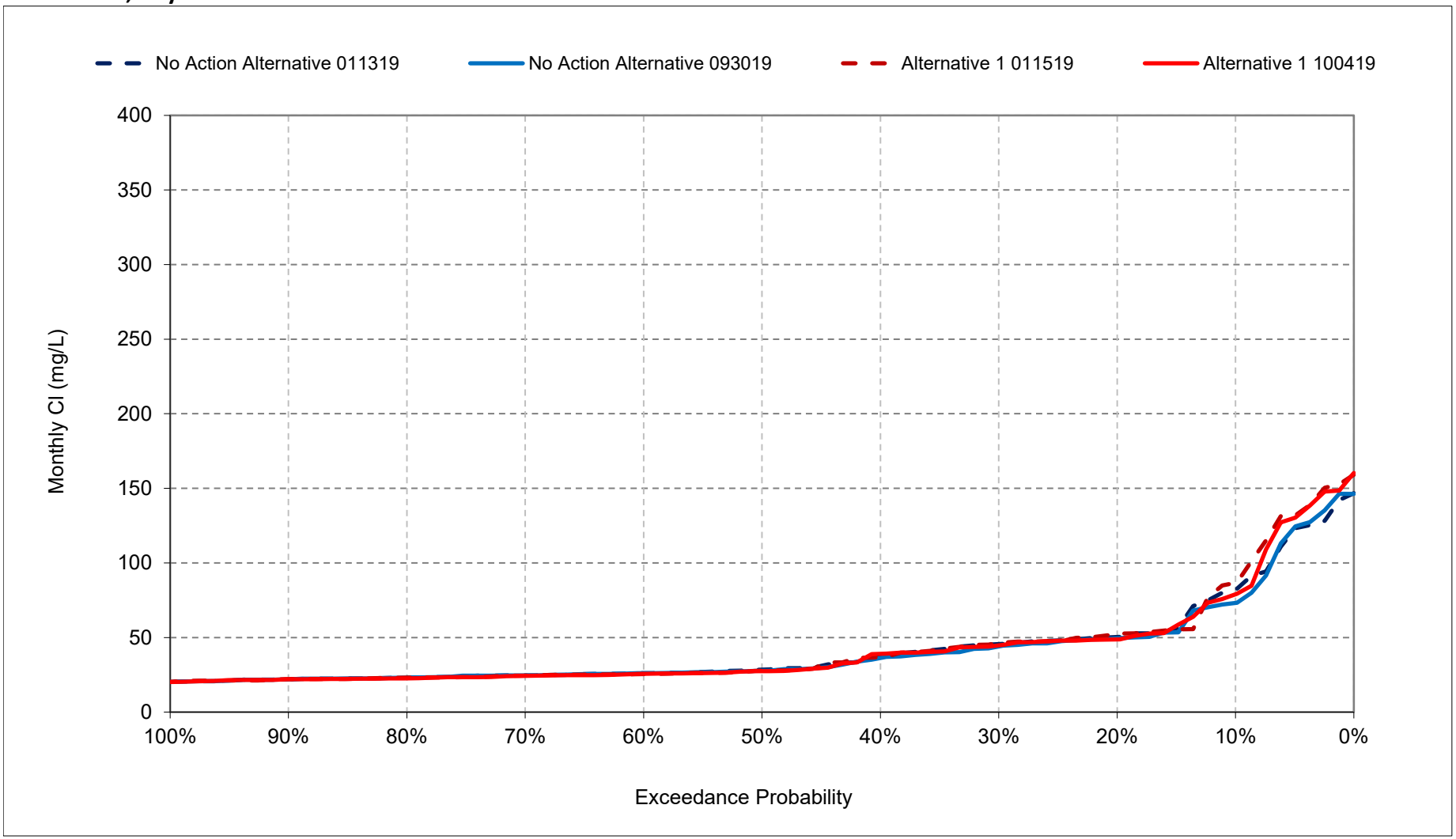

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-12. Contra Costa Pumping Plant**
**#1 Chloride, June Cl**



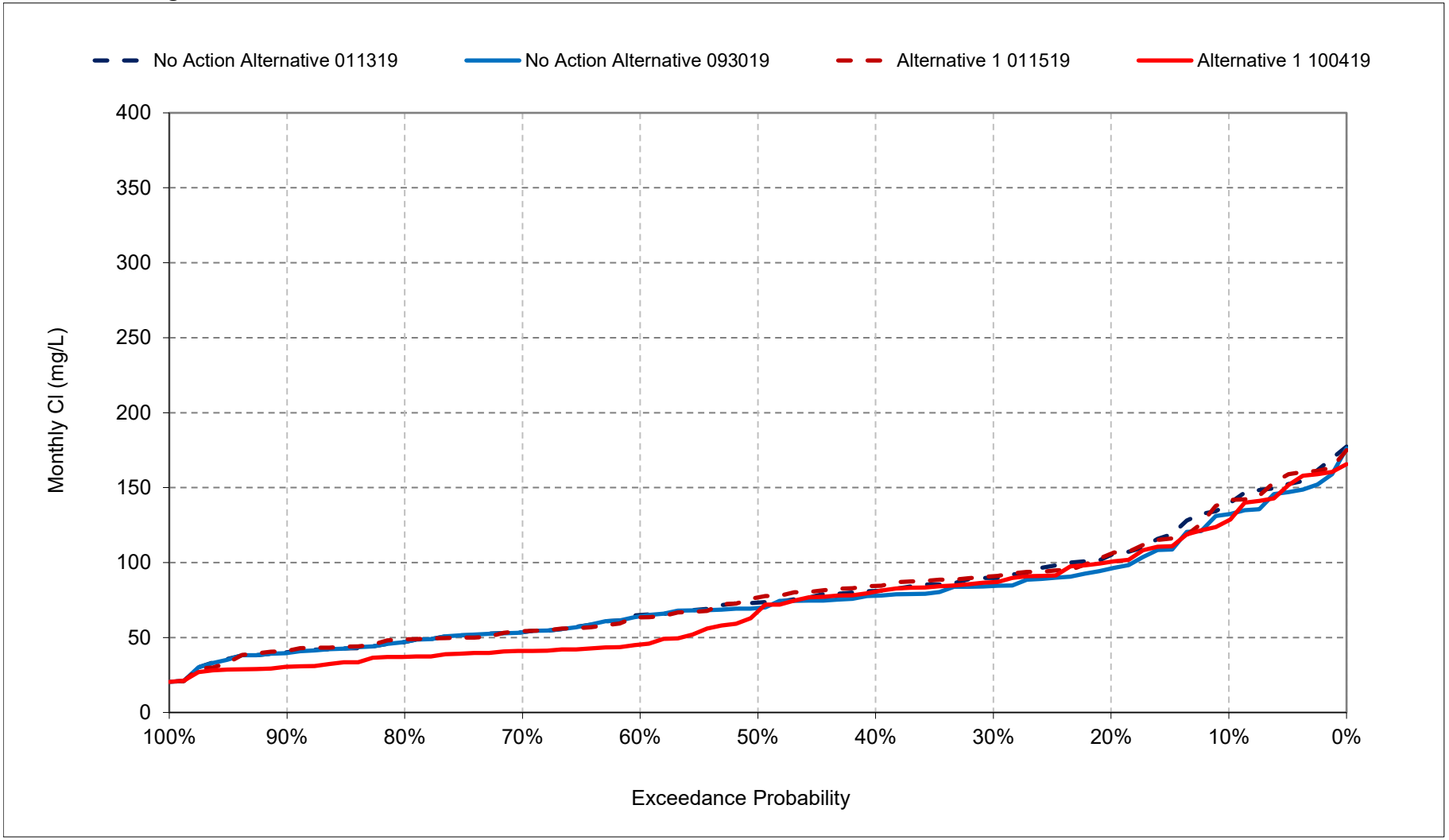

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-13. Contra Costa Pumping Plant**
**#1 Chloride, July Cl**



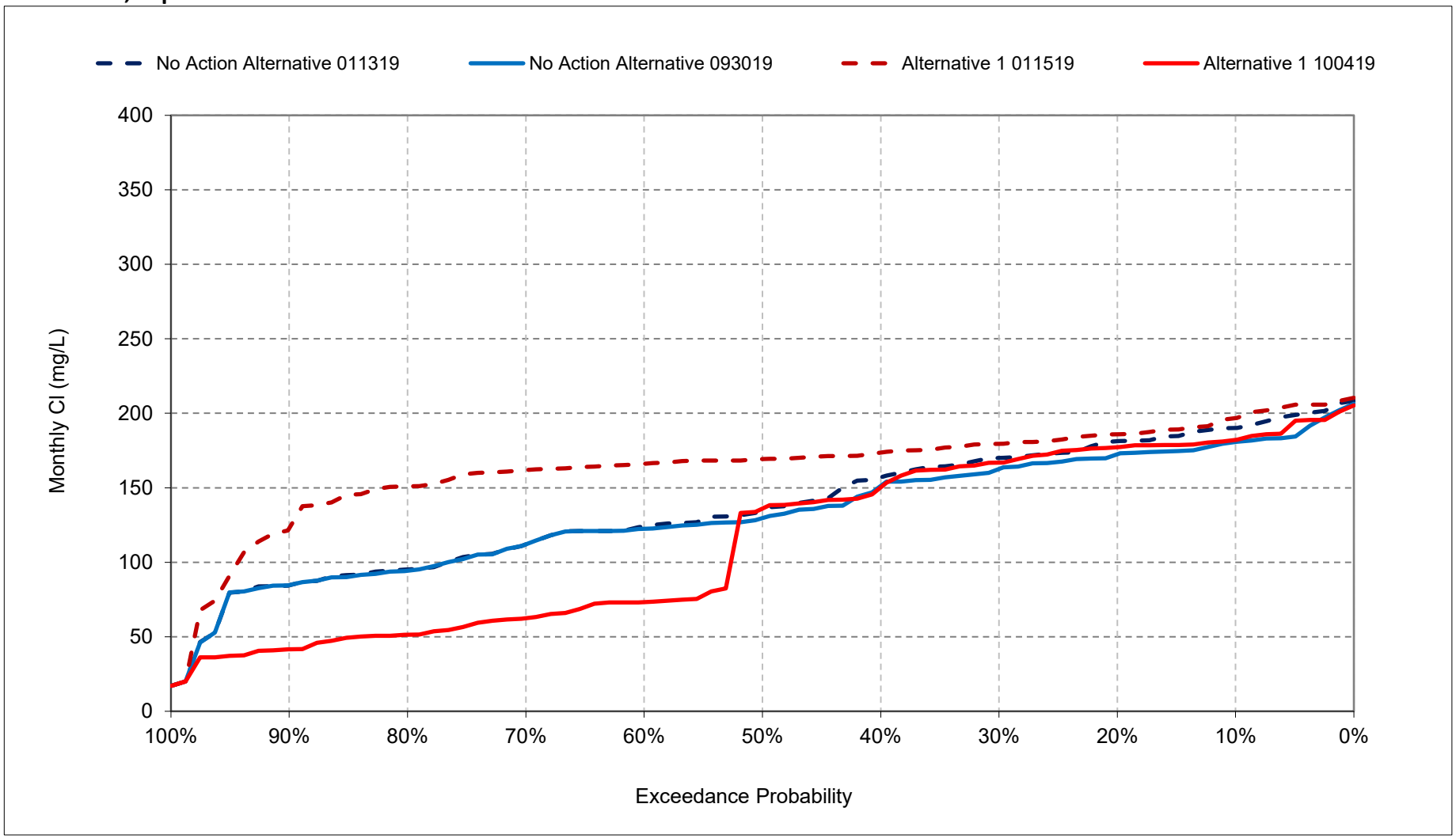

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-14. Contra Costa Pumping Plant**
**#1 Chloride, August Cl**



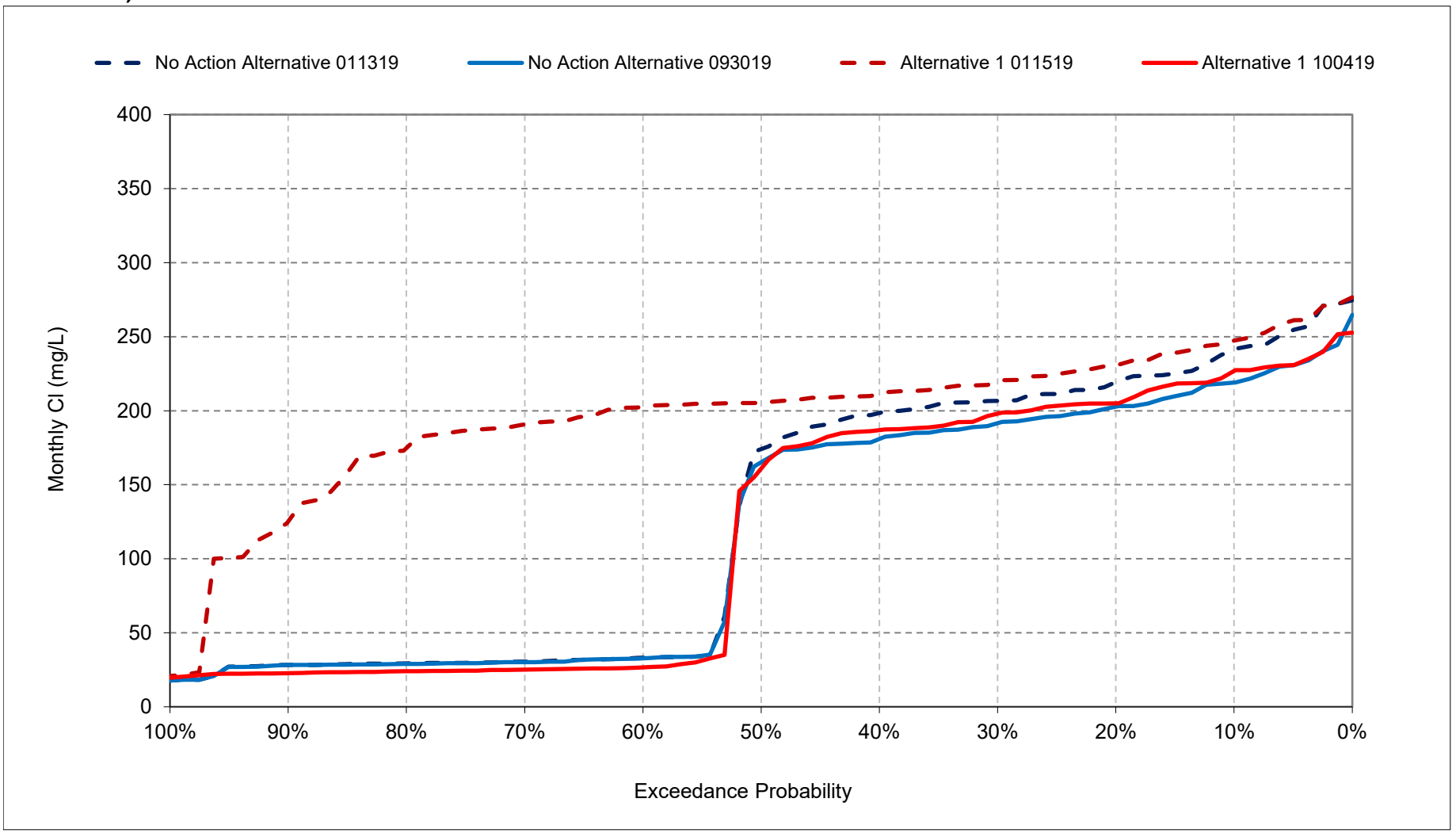

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-15. Contra Costa Pumping Plant**
**#1 Chloride, September Cl**



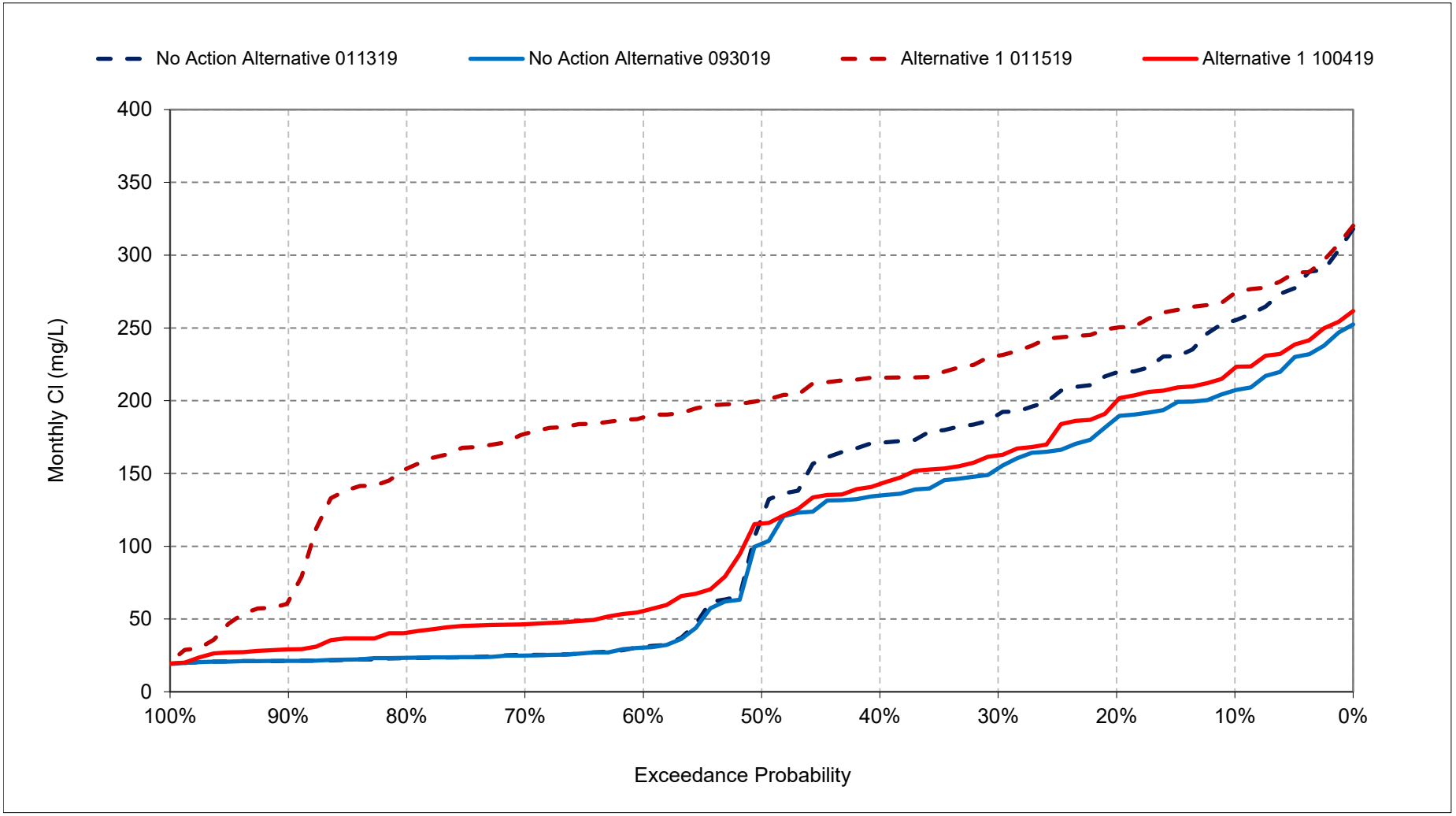

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-16. Contra Costa Pumping Plant**
**#1 Chloride, October Cl**



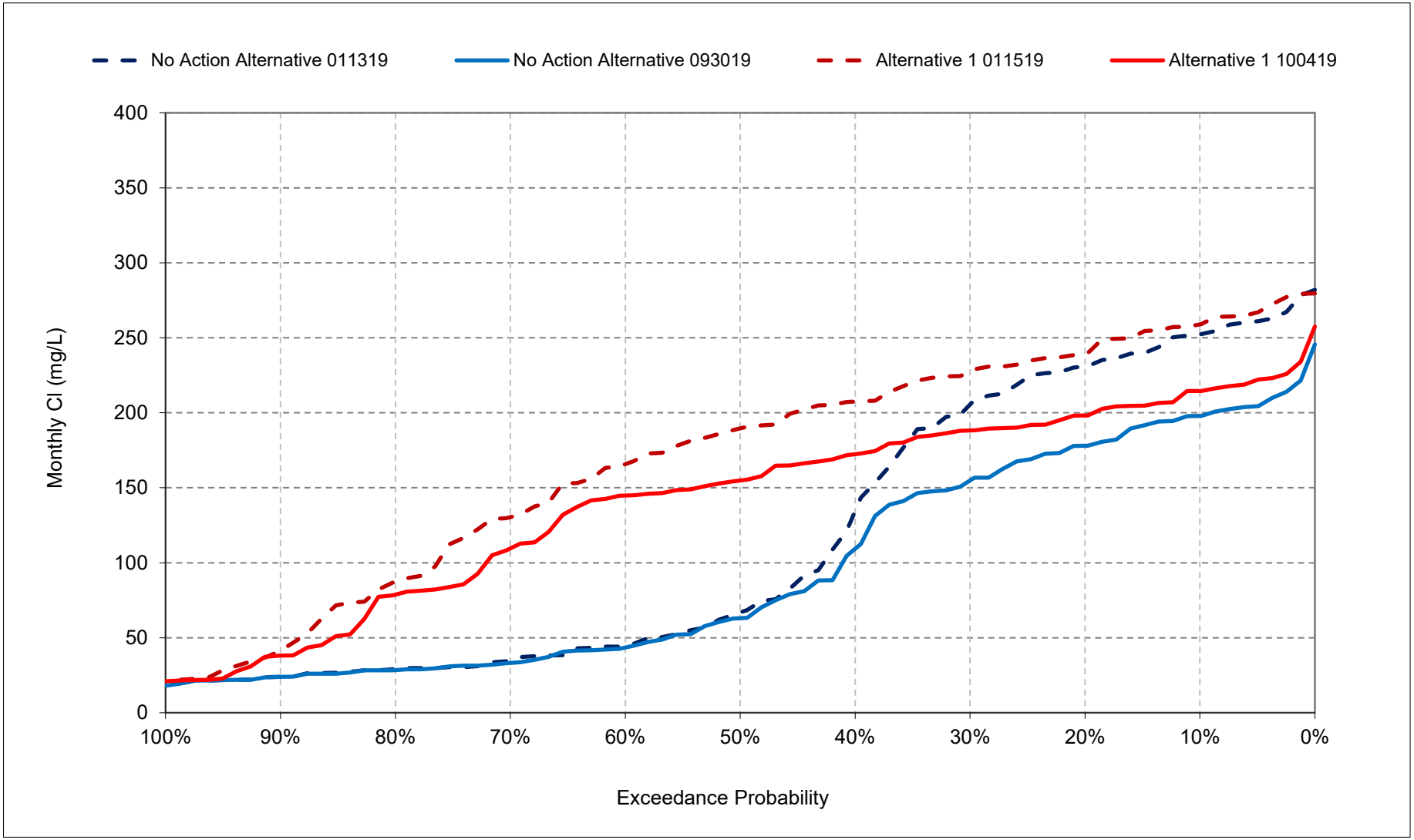

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-17. Contra Costa Pumping Plant**
**#1 Chloride, November Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 19-18. Contra Costa Pumping Plant**
**#1 Chloride, December Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 20-1. San Joaquin River at Antioch Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,266 | 2,369 | 1,871 | 958 | 274 | 164 | 208 | 419 | 573 | 1,087 | 1,607 | 1,974 |
| 20% | 2,072 | 1,971 | 1,513 | 748 | 160 | 94 | 83 | 297 | 513 | 910 | 1,389 | 1,891 |
| 30% | 2,008 | 1,902 | 897 | 535 | 79 | 38 | 51 | 205 | 448 | 809 | 1,339 | 1,832 |
| 40% | 1,933 | 1,697 | 787 | 331 | 51 | 28 | 30 | 82 | 377 | 578 | 1,093 | 1,721 |
| 50% | 1,272 | 532 | 573 | 257 | 32 | 25 | 25 | 47 | 288 | 485 | 929 | 1,486 |
| 60% | 496 | 471 | 466 | 77 | 27 | 23 | 22 | 29 | 228 | 317 | 880 | 589 |
| 70% | 178 | 164 | 189 | 27 | 24 | 21 | 21 | 24 | 143 | 271 | 816 | 354 |
| 80% | 158 | 142 | 59 | 23 | 22 | 20 | 21 | 21 | 69 | 249 | 729 | 325 |
| 90% | 141 | 123 | 23 | 20 | 20 | 18 | 20 | 18 | 19 | 183 | 676 | 295 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,180 | 1,039 | 747 | 378 | 117 | 64 | 78 | 157 | 349 | 580 | 1,055 | 1,149 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 149 | 131 | 302 | 64 | 25 | 21 | 21 | 27 | 111 | 212 | 745 | 301 |
| Above Normal (16%) | 484 | 459 | 548 | 172 | 36 | 22 | 23 | 37 | 234 | 299 | 763 | 592 |
| Below Normal (13%) | 1,762 | 1,506 | 991 | 424 | 121 | 67 | 71 | 134 | 357 | 515 | 951 | 1,609 |
| Dry (24%) | 1,970 | 1,557 | 898 | 590 | 172 | 72 | 77 | 183 | 411 | 849 | 1,341 | 1,842 |
| Critical (15%) | 2,318 | 2,345 | 1,450 | 884 | 308 | 187 | 270 | 548 | 877 | 1,294 | 1,661 | 2,014 |

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,287 | 2,378 | 1,890 | 1,111 | 306 | 242 | 322 | 450 | 617 | 1,064 | 1,647 | 2,000 |
| 20% | 2,082 | 2,015 | 1,773 | 796 | 180 | 108 | 137 | 347 | 545 | 915 | 1,421 | 1,927 |
| 30% | 2,012 | 1,915 | 1,439 | 522 | 99 | 41 | 70 | 272 | 501 | 817 | 1,372 | 1,856 |
| 40% | 1,927 | 1,862 | 1,123 | 328 | 54 | 28 | 44 | 147 | 397 | 563 | 1,063 | 1,721 |
| 50% | 1,823 | 1,795 | 912 | 229 | 30 | 24 | 28 | 93 | 306 | 490 | 916 | 1,472 |
| 60% | 1,705 | 1,623 | 627 | 79 | 27 | 23 | 22 | 62 | 245 | 327 | 874 | 1,423 |
| 70% | 1,635 | 1,170 | 290 | 28 | 24 | 21 | 20 | 28 | 160 | 293 | 785 | 1,363 |
| 80% | 1,521 | 855 | 183 | 24 | 21 | 20 | 19 | 18 | 70 | 243 | 755 | 1,339 |
| 90% | 832 | 439 | 65 | 21 | 20 | 18 | 19 | 17 | 18 | 188 | 696 | 1,201 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,709 | 1,528 | 930 | 398 | 134 | 77 | 93 | 195 | 372 | 584 | 1,062 | 1,551 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 1,221 | 1,105 | 694 | 55 | 24 | 21 | 22 | 41 | 114 | 215 | 729 | 1,170 |
| Above Normal (16%) | 1,601 | 1,494 | 909 | 200 | 38 | 23 | 26 | 60 | 229 | 302 | 772 | 1,371 |
| Below Normal (13%) | 1,728 | 1,539 | 994 | 474 | 144 | 84 | 93 | 201 | 408 | 516 | 944 | 1,567 |
| Dry (24%) | 2,032 | 1,596 | 907 | 643 | 196 | 80 | 98 | 228 | 444 | 842 | 1,374 | 1,865 |
| Critical (15%) | 2,324 | 2,361 | 1,445 | 880 | 364 | 243 | 312 | 611 | 937 | 1,320 | 1,685 | 2,032 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **20** | **9** | **19** | **152** | **32** | **78** | **115** | **31** | **45** | -23 | **40** | **26** |
| 20% | **10** | **43** | **260** | **48** | **20** | **14** | **54** | **50** | **32** | **4** | **32** | **37** |
| 30% | **4** | **13** | **542** | -13 | **20** | **4** | **20** | **68** | **53** | **8** | **33** | **24** |
| 40% | -6 | **165** | **336** | -3 | **3** | 0 | **14** | **66** | **21** | -15 | -30 | **0** |
| 50% | **551** | **1,263** | **340** | -28 | -1 | -1 | **3** | **46** | **17** | **5** | -13 | -14 |
| 60% | **1,209** | **1,152** | **161** | **2** | **0** | 0 | 0 | **33** | **18** | **10** | -7 | **835** |
| 70% | **1,457** | **1,006** | **101** | **0** | 0 | 0 | -1 | **4** | **17** | **23** | -31 | **1,009** |
| 80% | **1,363** | **713** | **124** | **1** | -1 | **0** | -1 | -3 | **1** | -6 | **26** | **1,014** |
| 90% | **690** | **316** | **43** | **1** | **0** | **0** | -1 | -1 | -1 | **6** | **19** | **906** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **528** | **489** | **184** | **20** | **17** | **13** | **15** | **37** | **24** | **4** | **7** | **402** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **1,072** | **974** | **393** | -9 | -2 | **0** | **1** | **14** | **3** | **3** | -16 | **869** |
| Above Normal (16%) | **1,117** | **1,035** | **360** | **28** | **2** | **1** | **4** | **23** | -6 | **3** | **10** | **780** |
| Below Normal (13%) | -35 | **33** | **3** | **50** | **23** | **18** | **23** | **67** | **50** | **2** | -7 | -42 |
| Dry (24%) | **62** | **39** | **10** | **53** | **24** | **8** | **22** | **45** | **33** | -6 | **33** | **23** |
| Critical (15%) | **6** | **16** | -4 | -4 | **55** | **57** | **42** | **63** | **60** | **26** | **24** | **17** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 20-2. San Joaquin River at Antioch Chloride, Monthly Cl

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,109 | 2,107 | 1,580 | 886 | 265 | 160 | 214 | 455 | 597 | 1,072 | 1,564 | 1,938 |
| 20% | 1,953 | 1,782 | 1,264 | 708 | 151 | 88 | 92 | 338 | 523 | 902 | 1,371 | 1,864 |
| 30% | 1,879 | 1,704 | 864 | 502 | 88 | 37 | 49 | 205 | 451 | 794 | 1,296 | 1,799 |
| 40% | 1,824 | 1,445 | 712 | 309 | 54 | 28 | 29 | 82 | 384 | 576 | 1,070 | 1,726 |
| 50% | 1,370 | 533 | 573 | 237 | 30 | 24 | 25 | 47 | 289 | 485 | 928 | 1,437 |
| 60% | 489 | 455 | 425 | 57 | 27 | 23 | 22 | 29 | 227 | 315 | 879 | 589 |
| 70% | 169 | 152 | 175 | 27 | 24 | 21 | 21 | 24 | 144 | 271 | 816 | 354 |
| 80% | 148 | 132 | 62 | 23 | 22 | 20 | 21 | 21 | 69 | 244 | 726 | 326 |
| 90% | 134 | 112 | 22 | 20 | 20 | 18 | 20 | 18 | 19 | 183 | 676 | 295 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,113 | 942 | 665 | 340 | 106 | 63 | 82 | 168 | 355 | 578 | 1,039 | 1,133 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 142 | 122 | 302 | 63 | 25 | 21 | 21 | 27 | 111 | 212 | 744 | 301 |
| Above Normal (16%) | 476 | 455 | 547 | 169 | 36 | 22 | 23 | 37 | 234 | 299 | 763 | 592 |
| Below Normal (13%) | 1,651 | 1,324 | 843 | 405 | 120 | 67 | 72 | 135 | 362 | 514 | 945 | 1,600 |
| Dry (24%) | 1,864 | 1,407 | 781 | 536 | 169 | 75 | 80 | 194 | 416 | 844 | 1,313 | 1,811 |
| Critical (15%) | 2,162 | 2,118 | 1,221 | 743 | 239 | 178 | 290 | 602 | 901 | 1,291 | 1,610 | 1,962 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 2,119 | 2,123 | 1,625 | 967 | 238 | 227 | 274 | 463 | 616 | 1,051 | 1,588 | 1,949 |
| 20% | 1,956 | 1,829 | 1,386 | 718 | 151 | 84 | 128 | 352 | 556 | 915 | 1,399 | 1,888 |
| 30% | 1,886 | 1,699 | 1,292 | 492 | 92 | 30 | 61 | 270 | 504 | 828 | 1,321 | 1,805 |
| 40% | 1,820 | 1,523 | 1,147 | 339 | 50 | 26 | 39 | 159 | 414 | 646 | 1,112 | 1,721 |
| 50% | 1,298 | 954 | 855 | 208 | 31 | 24 | 27 | 86 | 339 | 571 | 962 | 1,427 |
| 60% | 404 | 905 | 588 | 72 | 27 | 22 | 22 | 59 | 249 | 378 | 745 | 539 |
| 70% | 390 | 876 | 279 | 27 | 25 | 21 | 20 | 30 | 176 | 331 | 713 | 512 |
| 80% | 365 | 824 | 163 | 23 | 21 | 21 | 19 | 18 | 72 | 280 | 682 | 493 |
| 90% | 341 | 331 | 54 | 20 | 20 | 18 | 18 | 17 | 18 | 192 | 647 | 477 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,166 | 1,200 | 832 | 350 | 110 | 69 | 91 | 195 | 384 | 610 | 1,021 | 1,180 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 362 | 710 | 674 | 77 | 26 | 21 | 21 | 43 | 126 | 237 | 652 | 479 |
| Above Normal (16%) | 365 | 809 | 818 | 189 | 37 | 22 | 26 | 64 | 250 | 346 | 713 | 500 |
| Below Normal (13%) | 1,634 | 1,383 | 862 | 448 | 129 | 75 | 91 | 204 | 438 | 613 | 1,011 | 1,588 |
| Dry (24%) | 1,870 | 1,430 | 801 | 535 | 153 | 66 | 90 | 221 | 445 | 843 | 1,341 | 1,834 |
| Critical (15%) | 2,171 | 2,135 | 1,215 | 718 | 279 | 223 | 313 | 617 | 935 | 1,314 | 1,629 | 1,974 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 10 | 15 | 45 | 81 | -27 | 67 | 60 | 8 | 19 | -21 | 24 | 12 |
| 20% | 3 | 46 | 123 | 10 | -1 | -5 | 36 | 14 | 34 | 13 | 28 | 25 |
| 30% | 8 | -4 | 428 | -9 | 4 | -7 | 12 | 64 | 53 | 34 | 26 | 6 |
| 40% | -5 | 78 | 435 | 30 | -4 | -1 | 10 | 76 | 30 | 70 | 42 | -5 |
| 50% | -71 | 421 | 282 | -29 | 0 | -1 | 2 | 39 | 49 | 86 | 34 | -10 |
| 60% | -85 | 450 | 163 | 15 | 0 | -1 | -1 | 30 | 22 | 63 | -134 | -50 |
| 70% | 221 | 724 | 104 | 0 | 1 | 0 | -1 | 6 | 32 | 61 | -103 | 158 |
| 80% | 217 | 691 | 102 | 0 | -1 | 0 | -1 | -3 | 3 | 36 | -45 | 167 |
| 90% | 207 | 219 | 32 | 0 | 0 | 0 | -2 | -1 | -1 | 9 | -29 | 182 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 53 | 259 | 168 | 9 | 4 | 5 | 9 | 27 | 29 | 32 | -18 | 48 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 221 | 588 | 373 | 14 | 1 | 0 | 0 | 16 | 15 | 25 | -92 | 178 |
| Above Normal (16%) | -111 | 355 | 271 | 21 | 1 | 0 | 3 | 27 | 15 | 47 | -49 | -92 |
| Below Normal (13%) | -17 | 59 | 20 | 43 | 9 | 8 | 19 | 69 | 76 | 99 | 65 | -11 |
| Dry (24%) | 7 | 23 | 20 | -2 | -16 | -9 | 10 | 27 | 28 | 0 | 28 | 23 |
| Critical (15%) | 8 | 17 | -6 | -25 | 40 | 45 | 24 | 15 | 34 | 23 | 19 | 12 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 20-3. San Joaquin River at Antioch Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 2,266 | 2,369 | 1,871 | 958 | 274 | 164 | 208 | 419 | 573 | 1,087 | 1,607 | 1,974 |
| **20%** | 2,072 | 1,971 | 1,513 | 748 | 160 | 94 | 83 | 297 | 513 | 910 | 1,389 | 1,891 |
| **30%** | 2,008 | 1,902 | 897 | 535 | 79 | 38 | 51 | 205 | 448 | 809 | 1,339 | 1,832 |
| **40%** | 1,933 | 1,697 | 787 | 331 | 51 | 28 | 30 | 82 | 377 | 578 | 1,093 | 1,721 |
| **50%** | 1,272 | 532 | 573 | 257 | 32 | 25 | 25 | 47 | 288 | 485 | 929 | 1,486 |
| **60%** | 496 | 471 | 466 | 77 | 27 | 23 | 22 | 29 | 228 | 317 | 880 | 589 |
| **70%** | 178 | 164 | 189 | 27 | 24 | 21 | 21 | 24 | 143 | 271 | 816 | 354 |
| **80%** | 158 | 142 | 59 | 23 | 22 | 20 | 21 | 21 | 69 | 249 | 729 | 325 |
| **90%** | 141 | 123 | 23 | 20 | 20 | 18 | 20 | 18 | 19 | 183 | 676 | 295 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,180 | 1,039 | 747 | 378 | 117 | 64 | 78 | 157 | 349 | 580 | 1,055 | 1,149 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 149 | 131 | 302 | 64 | 25 | 21 | 21 | 27 | 111 | 212 | 745 | 301 |
| **Above Normal (16%)** | 484 | 459 | 548 | 172 | 36 | 22 | 23 | 37 | 234 | 299 | 763 | 592 |
| **Below Normal (13%)** | 1,762 | 1,506 | 991 | 424 | 121 | 67 | 71 | 134 | 357 | 515 | 951 | 1,609 |
| **Dry (24%)** | 1,970 | 1,557 | 898 | 590 | 172 | 72 | 77 | 183 | 411 | 849 | 1,341 | 1,842 |
| **Critical (15%)** | 2,318 | 2,345 | 1,450 | 884 | 308 | 187 | 270 | 548 | 877 | 1,294 | 1,661 | 2,014 |

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | 2,109 | 2,107 | 1,580 | 886 | 265 | 160 | 214 | 455 | 597 | 1,072 | 1,564 | 1,938 |
| **20%** | 1,953 | 1,782 | 1,264 | 708 | 151 | 88 | 92 | 338 | 523 | 902 | 1,371 | 1,864 |
| **30%** | 1,879 | 1,704 | 864 | 502 | 88 | 37 | 49 | 205 | 451 | 794 | 1,296 | 1,799 |
| **40%** | 1,824 | 1,445 | 712 | 309 | 54 | 28 | 29 | 82 | 384 | 576 | 1,070 | 1,726 |
| **50%** | 1,370 | 533 | 573 | 237 | 30 | 24 | 25 | 47 | 289 | 485 | 928 | 1,437 |
| **60%** | 489 | 455 | 425 | 57 | 27 | 23 | 22 | 29 | 227 | 315 | 879 | 589 |
| **70%** | 169 | 152 | 175 | 27 | 24 | 21 | 21 | 24 | 144 | 271 | 816 | 354 |
| **80%** | 148 | 132 | 62 | 23 | 22 | 20 | 21 | 21 | 69 | 244 | 726 | 326 |
| **90%** | 134 | 112 | 22 | 20 | 20 | 18 | 20 | 18 | 19 | 183 | 676 | 295 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | 1,113 | 942 | 665 | 340 | 106 | 63 | 82 | 168 | 355 | 578 | 1,039 | 1,133 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | 142 | 122 | 302 | 63 | 25 | 21 | 21 | 27 | 111 | 212 | 744 | 301 |
| **Above Normal (16%)** | 476 | 455 | 547 | 169 | 36 | 22 | 23 | 37 | 234 | 299 | 763 | 592 |
| **Below Normal (13%)** | 1,651 | 1,324 | 843 | 405 | 120 | 67 | 72 | 135 | 362 | 514 | 945 | 1,600 |
| **Dry (24%)** | 1,864 | 1,407 | 781 | 536 | 169 | 75 | 80 | 194 | 416 | 844 | 1,313 | 1,811 |
| **Critical (15%)** | 2,162 | 2,118 | 1,221 | 743 | 239 | 178 | 290 | 602 | 901 | 1,291 | 1,610 | 1,962 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Statistic** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| **Probability of Exceedance** | | | | | | | | | | | | |
| **10%** | -157 | -262 | -292 | -73 | -9 | -4 | **6** | **36** | **25** | -14 | -43 | -37 |
| **20%** | -119 | -189 | -249 | -40 | -9 | -6 | **9** | **41** | **9** | -8 | -18 | -27 |
| **30%** | -130 | -198 | -32 | -33 | **9** | -1 | -1 | **0** | **3** | -15 | -43 | -33 |
| **40%** | -109 | -252 | -75 | -22 | **3** | 0 | 0 | **0** | **7** | -2 | -23 | **5** |
| **50%** | **98** | **1** | 0 | -20 | -1 | 0 | **0** | **0** | **1** | **1** | -2 | -49 |
| **60%** | -7 | -16 | -41 | -20 | 0 | 0 | 0 | **0** | 0 | -2 | -1 | **1** |
| **70%** | -9 | -12 | -14 | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | 0 |
| **80%** | -9 | -10 | **3** | 0 | 0 | 0 | 0 | **0** | **0** | -5 | -3 | **0** |
| **90%** | -7 | -11 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | **0** | 0 | -1 |
| **Long Term** | | | | | | | | | | | | |
| **Full Simulation Period**[a] | -67 | -98 | -82 | -37 | -11 | 0 | **4** | **11** | **6** | -2 | -16 | -17 |
| **Water Year Types**[b] | | | | | | | | | | | | |
| **Wet (32%)** | -8 | -9 | **0** | -2 | **0** | 0 | 0 | **0** | **0** | -1 | -1 | 0 |
| **Above Normal (16%)** | -9 | -4 | -1 | -3 | **0** | **0** | **0** | **0** | **0** | 0 | 0 | **0** |
| **Below Normal (13%)** | -111 | -182 | -148 | -19 | -1 | **0** | **1** | **1** | **5** | 0 | -6 | -10 |
| **Dry (24%)** | -106 | -149 | -117 | -54 | -3 | **3** | **3** | **11** | **6** | -5 | -28 | -31 |
| **Critical (15%)** | -156 | -227 | -229 | -141 | -70 | -9 | **19** | **54** | **24** | -3 | -51 | -52 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 20-4. San Joaquin River at Antioch Chloride, Monthly Cl

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,287 | 2,378 | 1,890 | 1,111 | 306 | 242 | 322 | 450 | 617 | 1,064 | 1,647 | 2,000 |
| 20% | 2,082 | 2,015 | 1,773 | 796 | 180 | 108 | 137 | 347 | 545 | 915 | 1,421 | 1,927 |
| 30% | 2,012 | 1,915 | 1,439 | 522 | 99 | 41 | 70 | 272 | 501 | 817 | 1,372 | 1,856 |
| 40% | 1,927 | 1,862 | 1,123 | 328 | 54 | 28 | 44 | 147 | 397 | 563 | 1,063 | 1,721 |
| 50% | 1,823 | 1,795 | 912 | 229 | 30 | 24 | 28 | 93 | 306 | 490 | 916 | 1,472 |
| 60% | 1,705 | 1,623 | 627 | 79 | 27 | 23 | 22 | 62 | 245 | 327 | 874 | 1,423 |
| 70% | 1,635 | 1,170 | 290 | 28 | 24 | 21 | 20 | 28 | 160 | 293 | 785 | 1,363 |
| 80% | 1,521 | 855 | 183 | 24 | 21 | 20 | 19 | 18 | 70 | 243 | 755 | 1,339 |
| 90% | 832 | 439 | 65 | 21 | 20 | 18 | 19 | 17 | 18 | 188 | 696 | 1,201 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,709 | 1,528 | 930 | 398 | 134 | 77 | 93 | 195 | 372 | 584 | 1,062 | 1,551 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 1,221 | 1,105 | 694 | 55 | 24 | 21 | 22 | 41 | 114 | 215 | 729 | 1,170 |
| Above Normal (16%) | 1,601 | 1,494 | 909 | 200 | 38 | 23 | 26 | 60 | 229 | 302 | 772 | 1,371 |
| Below Normal (13%) | 1,728 | 1,539 | 994 | 474 | 144 | 84 | 93 | 201 | 408 | 516 | 944 | 1,567 |
| Dry (24%) | 2,032 | 1,596 | 907 | 643 | 196 | 80 | 98 | 228 | 444 | 842 | 1,374 | 1,865 |
| Critical (15%) | 2,324 | 2,361 | 1,445 | 880 | 364 | 243 | 312 | 611 | 937 | 1,320 | 1,685 | 2,032 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2,119 | 2,123 | 1,625 | 967 | 238 | 227 | 274 | 463 | 616 | 1,051 | 1,588 | 1,949 |
| 20% | 1,956 | 1,829 | 1,386 | 718 | 151 | 84 | 128 | 352 | 556 | 915 | 1,399 | 1,888 |
| 30% | 1,886 | 1,699 | 1,292 | 492 | 92 | 30 | 61 | 270 | 504 | 828 | 1,321 | 1,805 |
| 40% | 1,820 | 1,523 | 1,147 | 339 | 50 | 26 | 39 | 159 | 414 | 646 | 1,112 | 1,721 |
| 50% | 1,298 | 954 | 855 | 208 | 31 | 24 | 27 | 86 | 339 | 571 | 962 | 1,427 |
| 60% | 404 | 905 | 588 | 72 | 27 | 22 | 22 | 59 | 249 | 378 | 745 | 539 |
| 70% | 390 | 876 | 279 | 27 | 25 | 21 | 20 | 30 | 176 | 331 | 713 | 512 |
| 80% | 365 | 824 | 163 | 23 | 21 | 21 | 19 | 18 | 72 | 280 | 682 | 493 |
| 90% | 341 | 331 | 54 | 20 | 20 | 18 | 18 | 17 | 18 | 192 | 647 | 477 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,166 | 1,200 | 832 | 350 | 110 | 69 | 91 | 195 | 384 | 610 | 1,021 | 1,180 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | 362 | 710 | 674 | 77 | 26 | 21 | 21 | 43 | 126 | 237 | 652 | 479 |
| Above Normal (16%) | 365 | 809 | 818 | 189 | 37 | 22 | 26 | 64 | 250 | 346 | 713 | 500 |
| Below Normal (13%) | 1,634 | 1,383 | 862 | 448 | 129 | 75 | 91 | 204 | 438 | 613 | 1,011 | 1,588 |
| Dry (24%) | 1,870 | 1,430 | 801 | 535 | 153 | 66 | 90 | 221 | 445 | 843 | 1,341 | 1,834 |
| Critical (15%) | 2,171 | 2,135 | 1,215 | 718 | 279 | 223 | 313 | 617 | 935 | 1,314 | 1,629 | 1,974 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -167 | -255 | -266 | -144 | -68 | -15 | -48 | 13 | -1 | -13 | -59 | -51 |
| 20% | -125 | -186 | -386 | -78 | -30 | -25 | -9 | 5 | 12 | 0 | -23 | -39 |
| 30% | -126 | -215 | -146 | -30 | -7 | -11 | -9 | -3 | 4 | 11 | -50 | -51 |
| 40% | -108 | -339 | 24 | 11 | -5 | -1 | -5 | 11 | 16 | 83 | 49 | 0 |
| 50% | -525 | -841 | -58 | -21 | 1 | 0 | -1 | -7 | 33 | 81 | 46 | -45 |
| 60% | -1,301 | -719 | -39 | -7 | 0 | -1 | 0 | -3 | 4 | 52 | -129 | -884 |
| 70% | -1,246 | -294 | -11 | 0 | 1 | 0 | 0 | 2 | 16 | 38 | -72 | -852 |
| 80% | -1,156 | -32 | -19 | -1 | 0 | 0 | 0 | 0 | 2 | 37 | -73 | -847 |
| 90% | -491 | -108 | -12 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | -48 | -724 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -543 | -328 | -98 | -48 | -24 | -8 | -3 | 1 | 11 | 26 | -41 | -370 |
| **Water Year Types[b]** | | | | | | | | | | | | |
| Wet (32%) | -859 | -395 | -20 | 22 | 2 | 0 | -1 | 2 | 12 | 21 | -77 | -690 |
| Above Normal (16%) | -1,236 | -685 | -90 | -10 | 0 | -1 | -1 | 4 | 21 | 44 | -59 | -871 |
| Below Normal (13%) | -93 | -155 | -132 | -26 | -15 | -9 | -2 | 4 | 31 | 97 | 67 | 21 |
| Dry (24%) | -162 | -166 | -107 | -108 | -43 | -14 | -9 | -7 | 1 | 1 | -33 | -31 |
| Critical (15%) | -153 | -226 | -230 | -162 | -85 | -20 | 1 | 5 | -2 | -6 | -56 | -58 |

a Based on the 82-year simulation period.

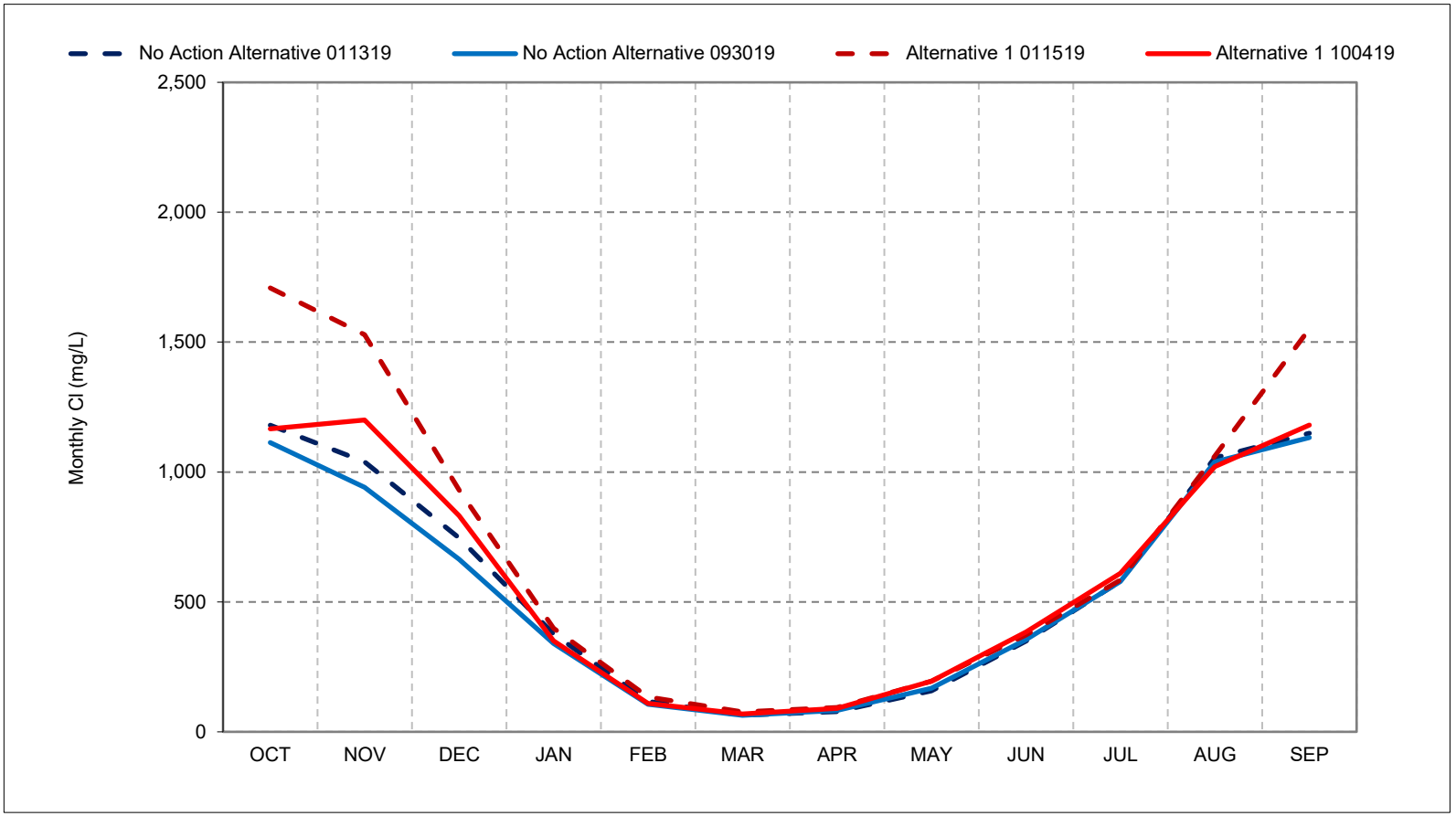
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-1. San Joaquin River at Antioch Chloride, Long-Term Average Cl

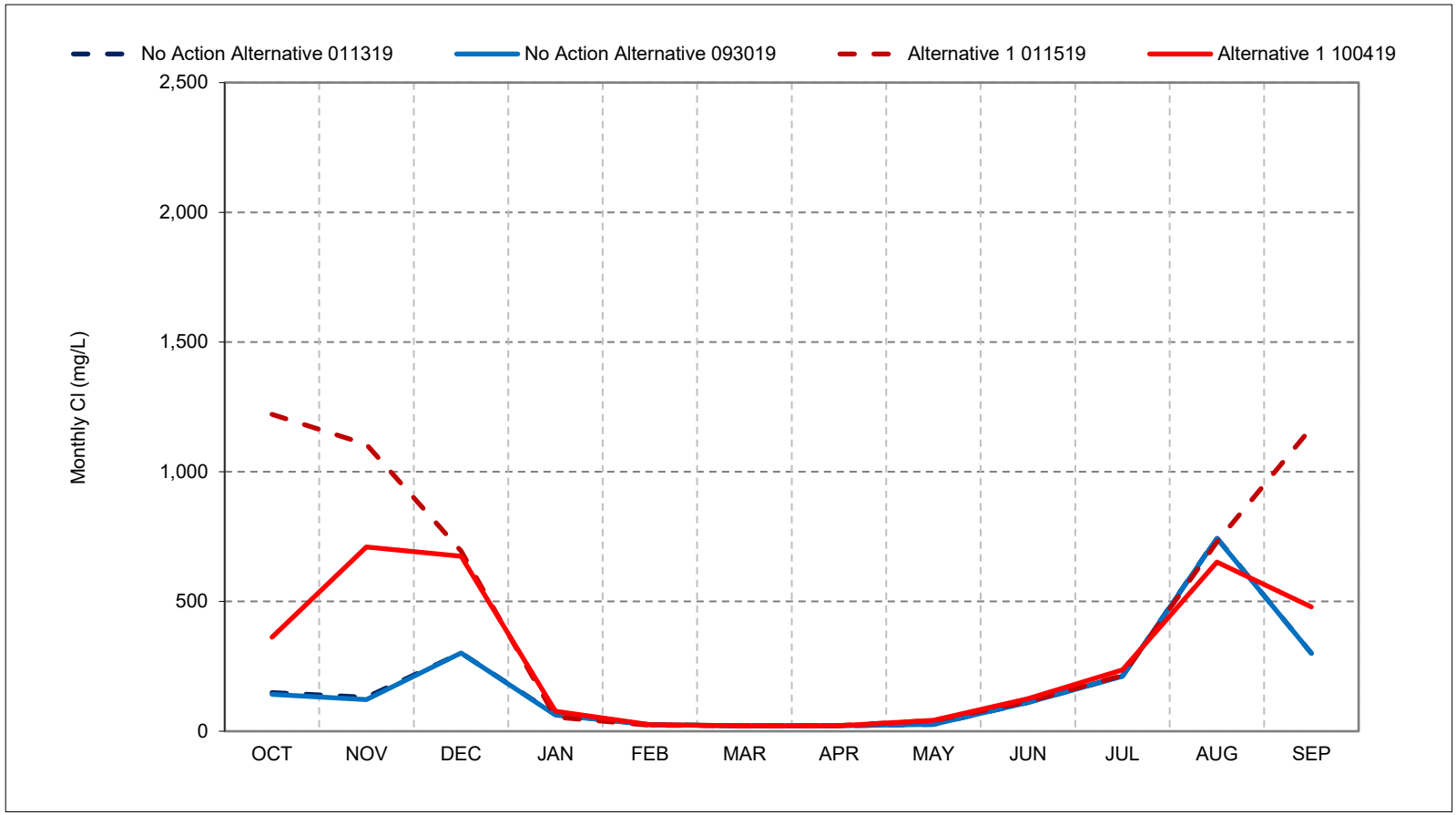



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-2. San Joaquin River at Antioch Chloride, Wet Year Average Cl

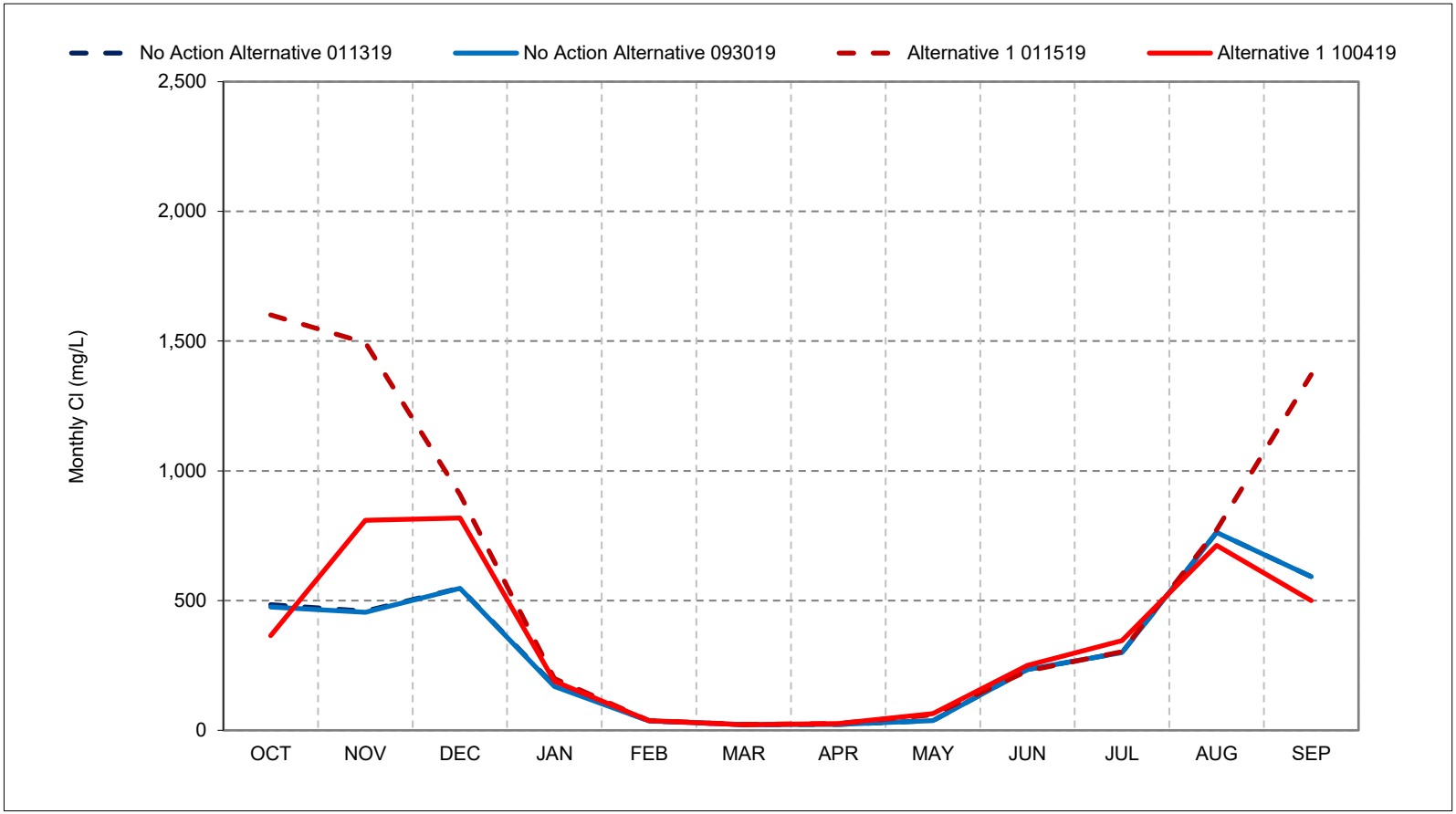



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-3. San Joaquin River at Antioch Chloride, Above Normal Year Average Cl

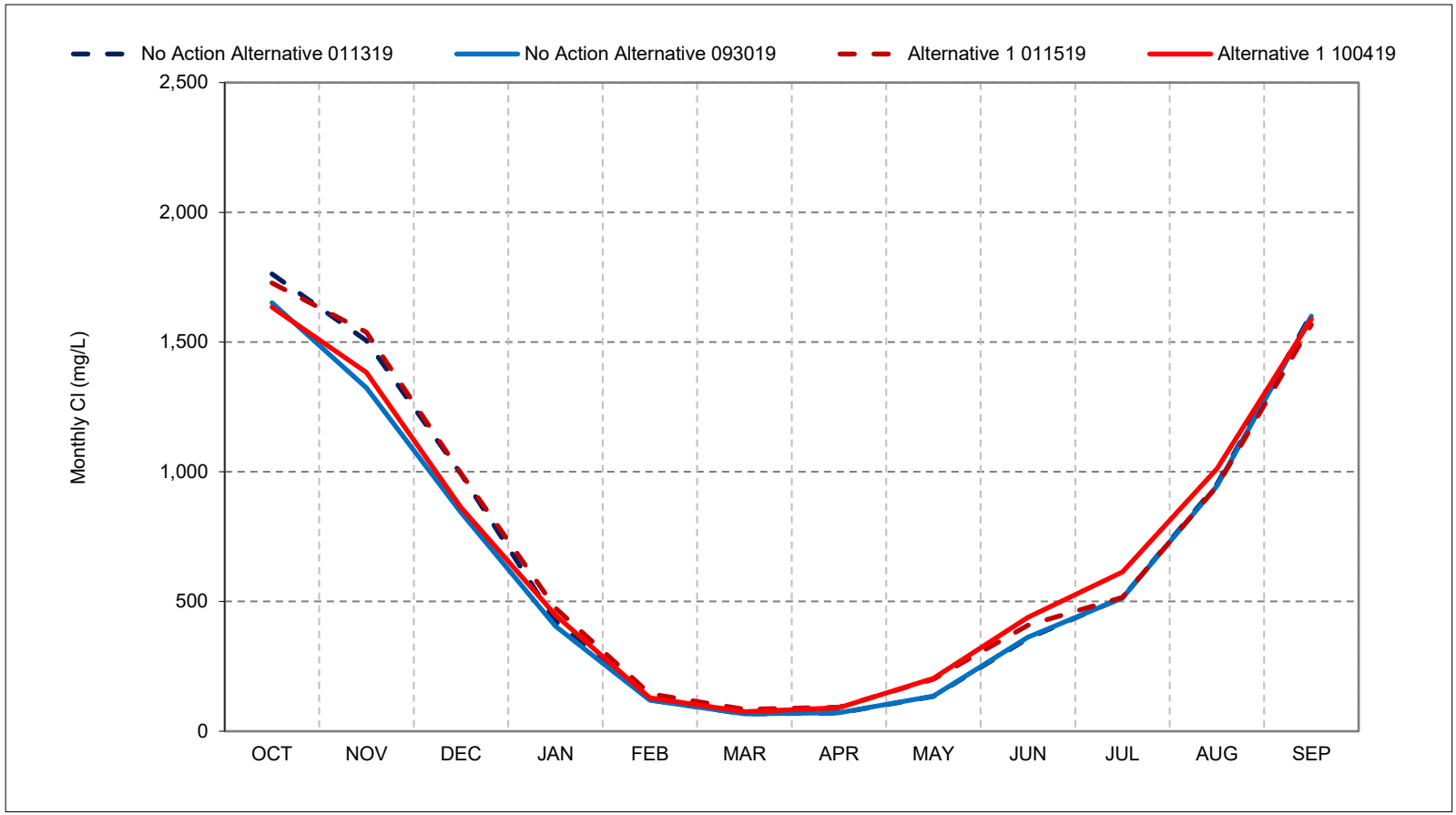



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-4. San Joaquin River at Antioch Chloride, Below Normal Year Average Cl

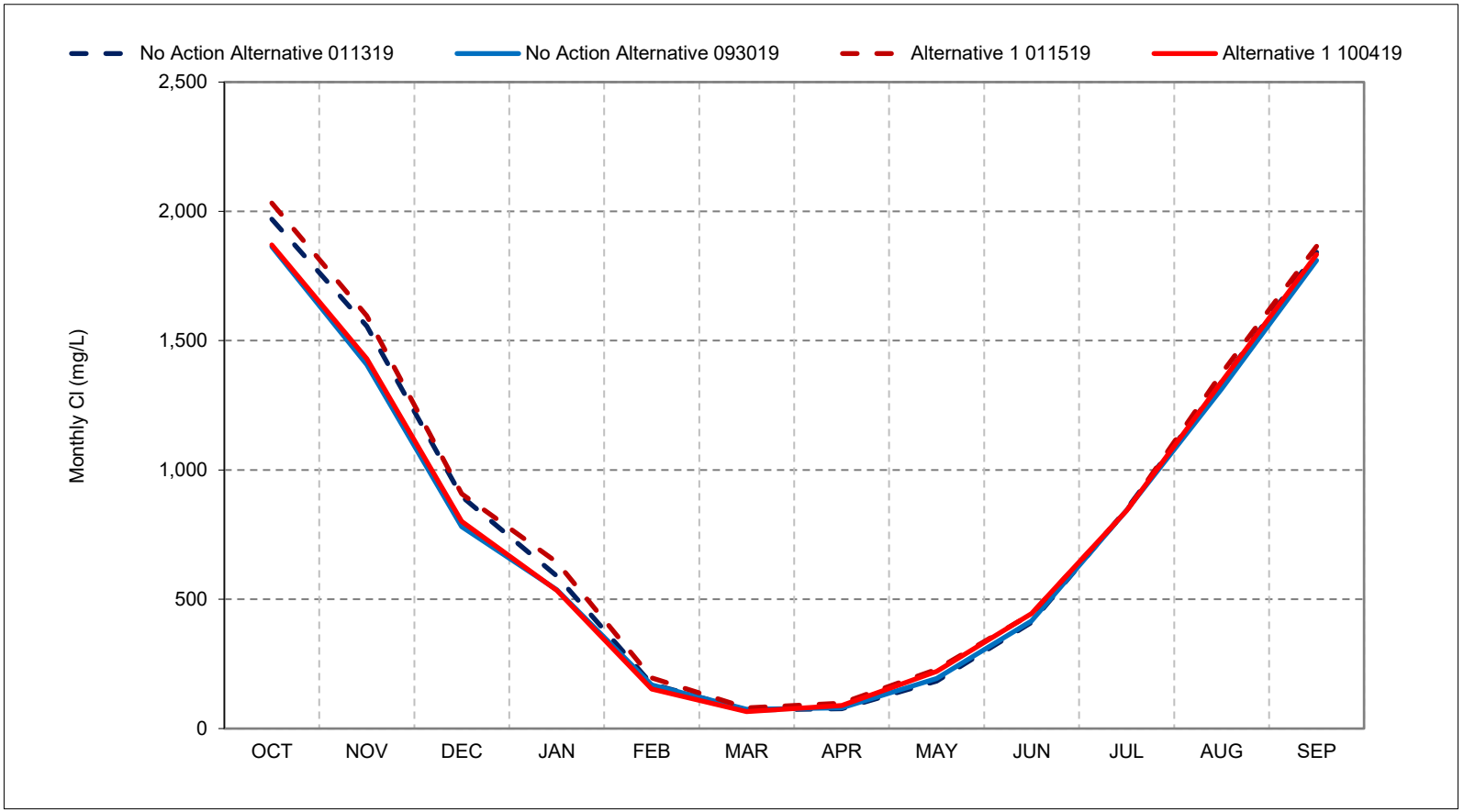



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-5. San Joaquin River at Antioch Chloride, Dry Year Average Cl

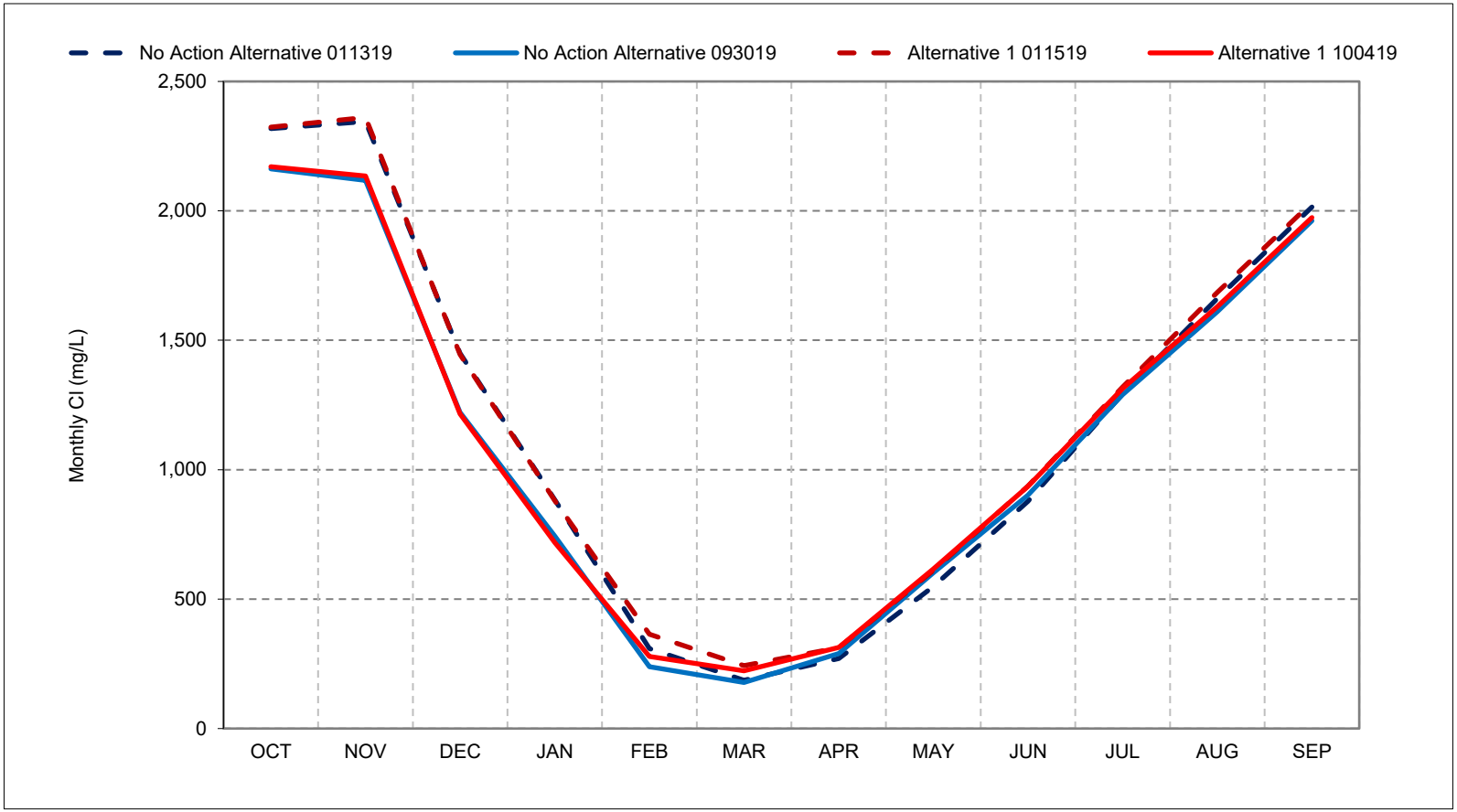



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 20-6. San Joaquin River at Antioch Chloride, Critical Year Average Cl

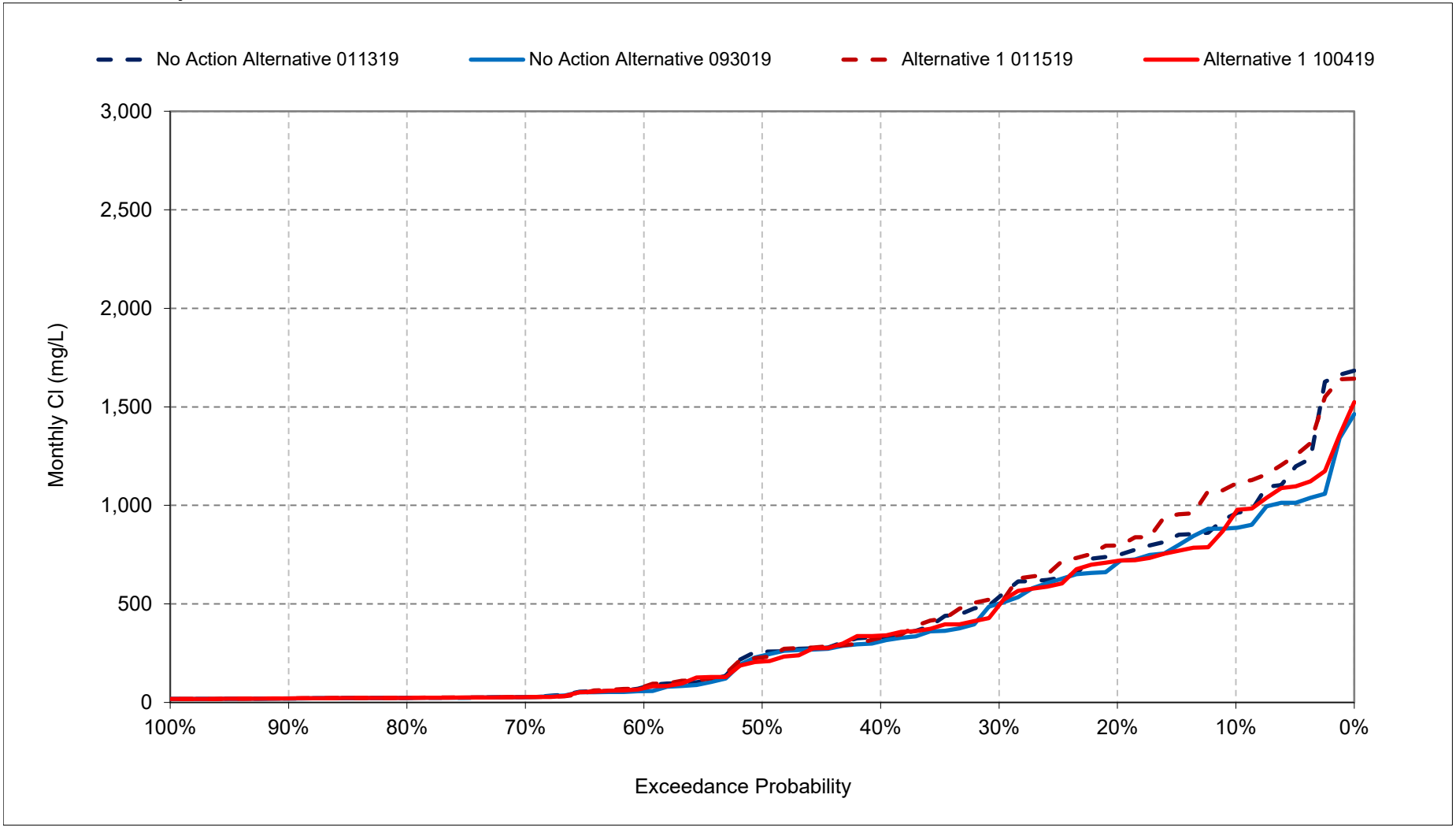



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

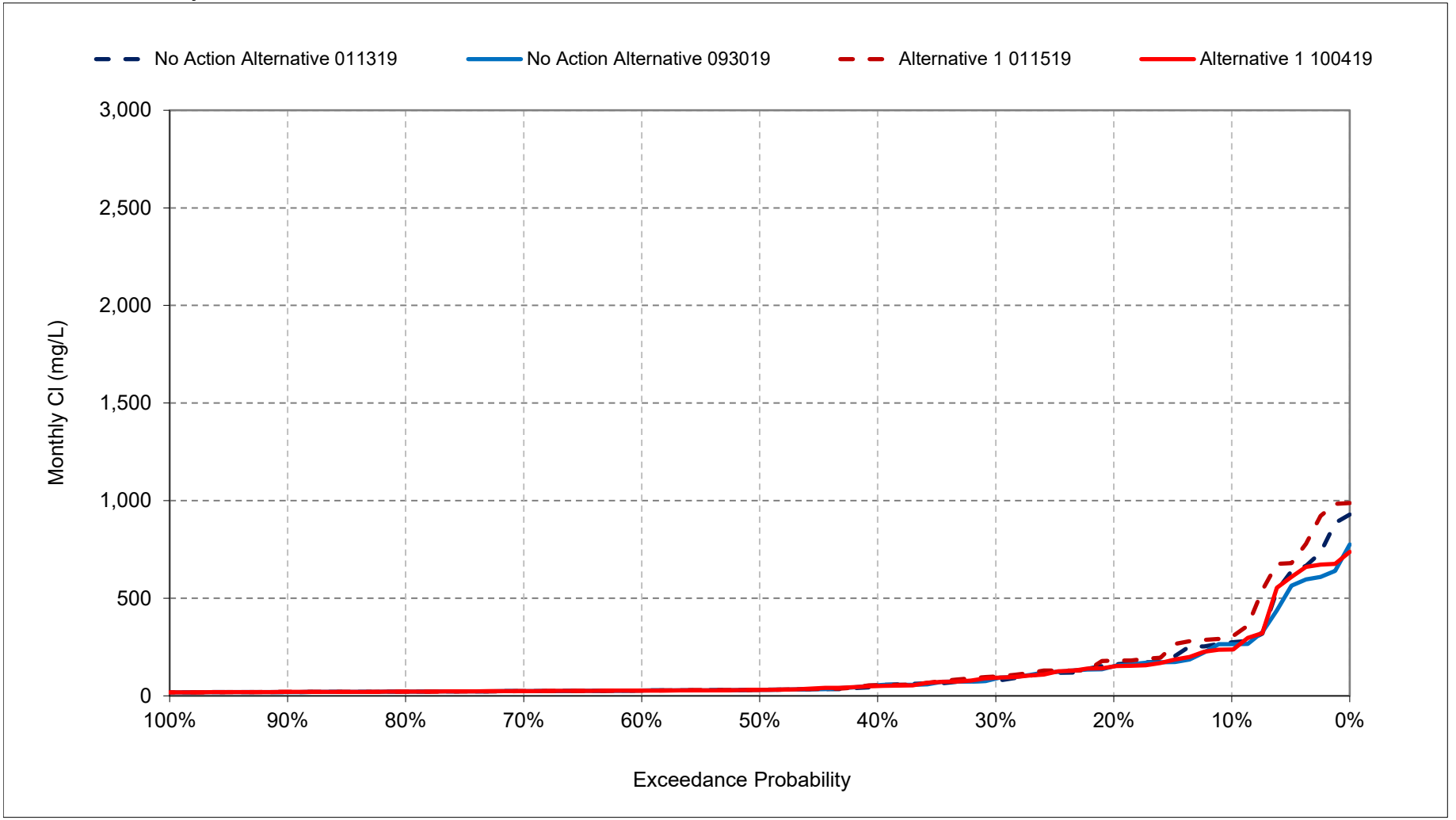
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-7. San Joaquin River at Antioch**
**Chloride, January Cl**



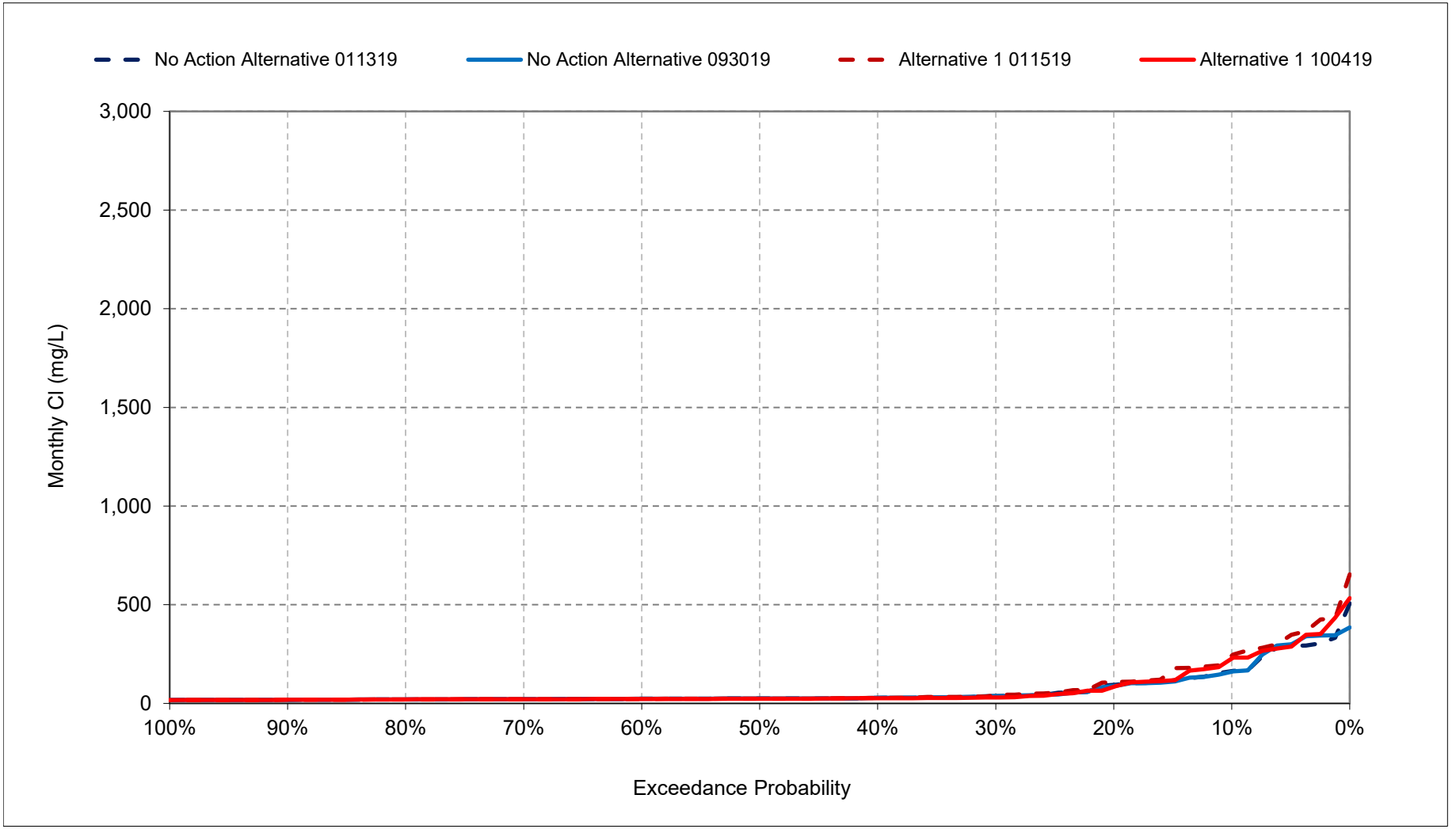

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-8. San Joaquin River at Antioch**
**Chloride, February Cl**



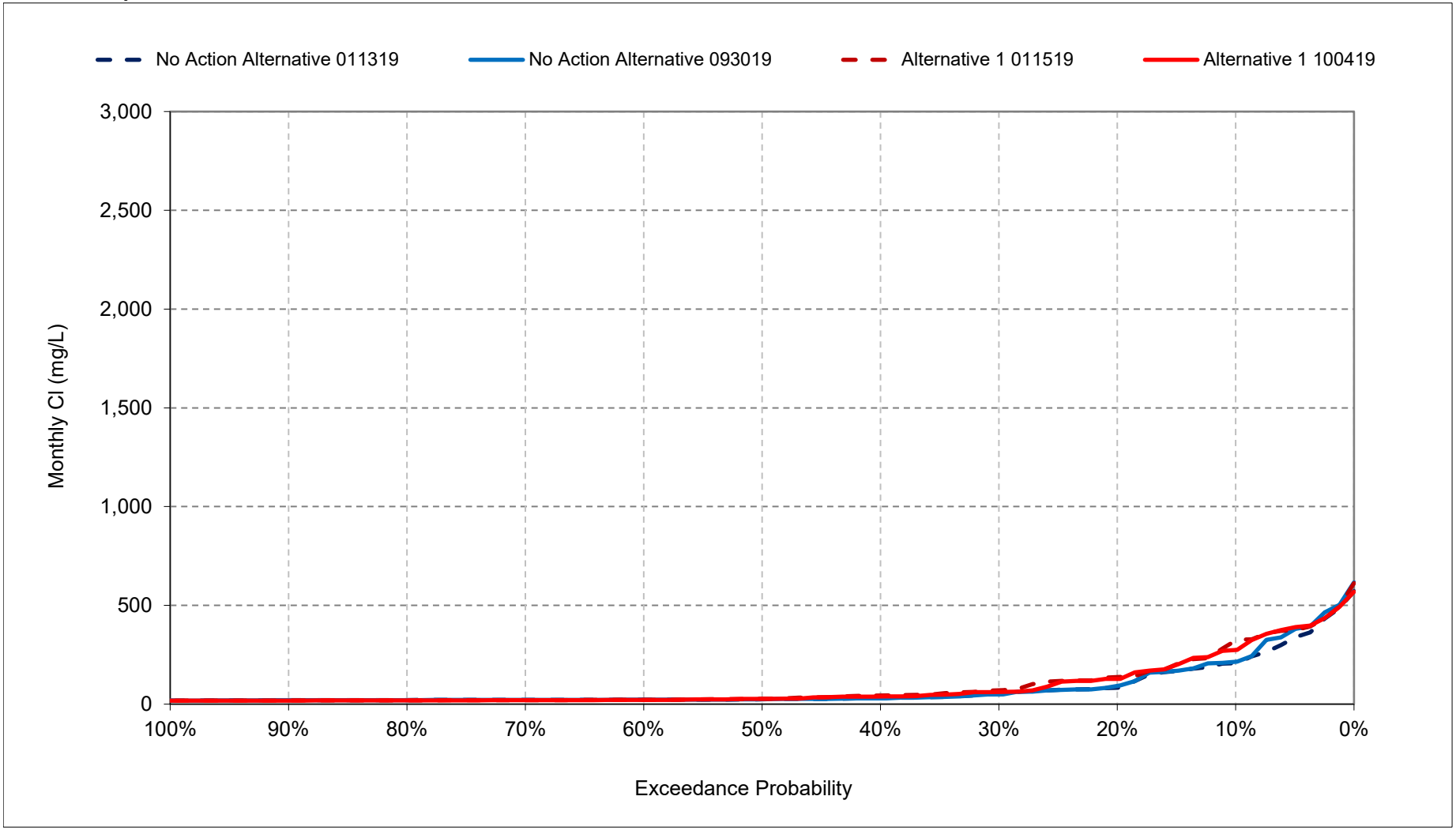

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-9. San Joaquin River at Antioch**
**Chloride, March Cl**



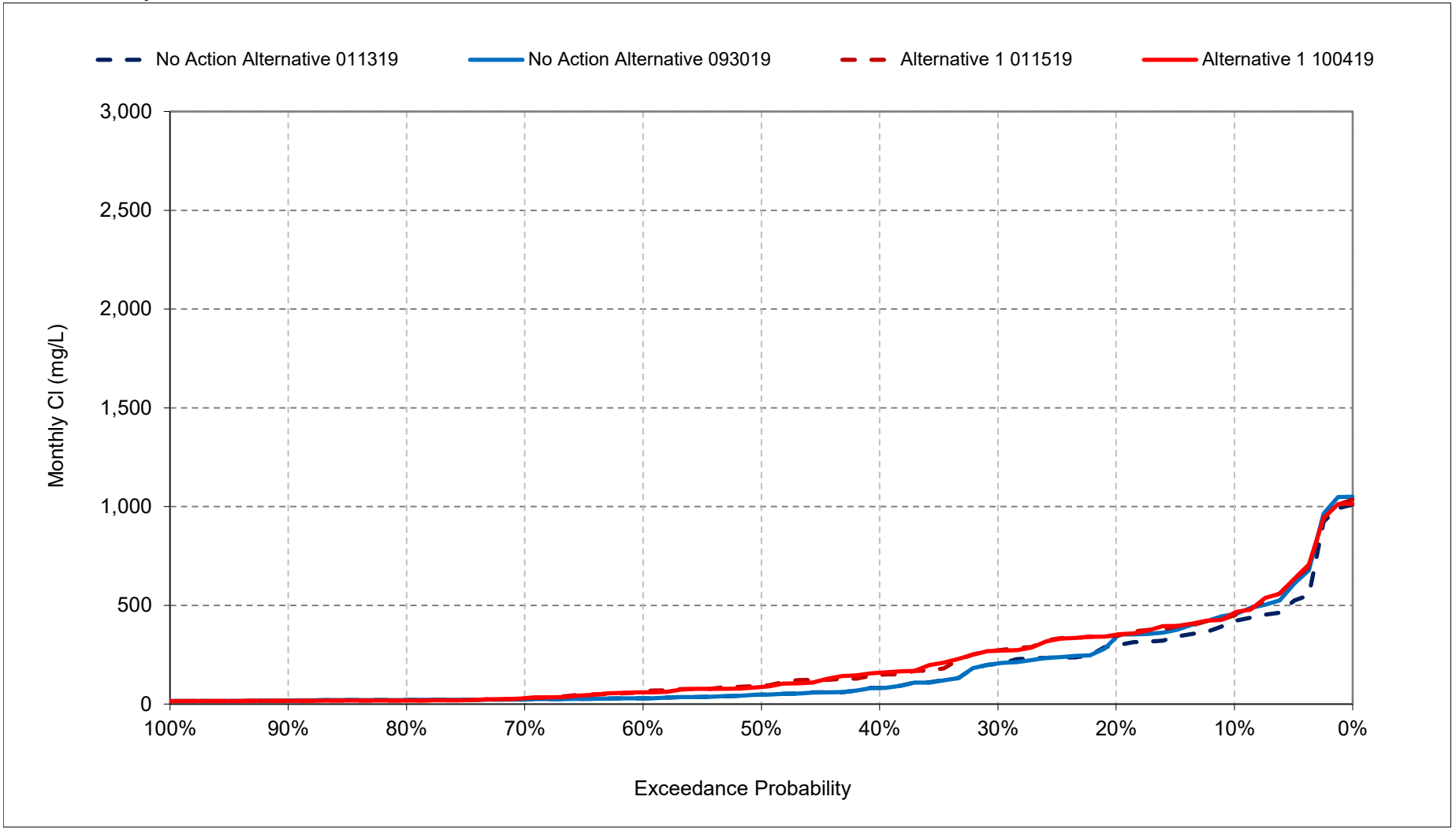

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-10. San Joaquin River at Antioch**
**Chloride, April Cl**



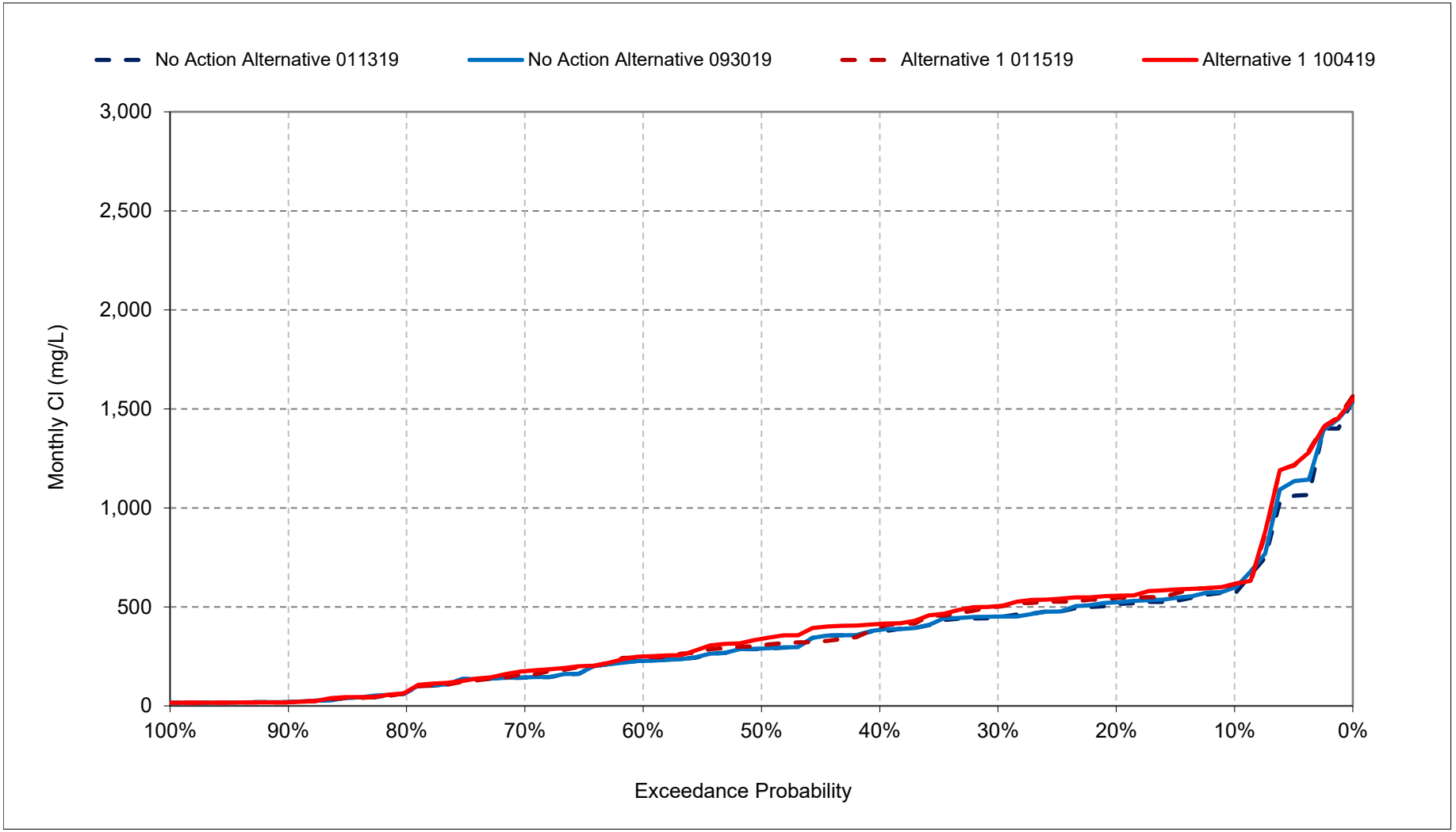

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-11. San Joaquin River at Antioch**
**Chloride, May Cl**



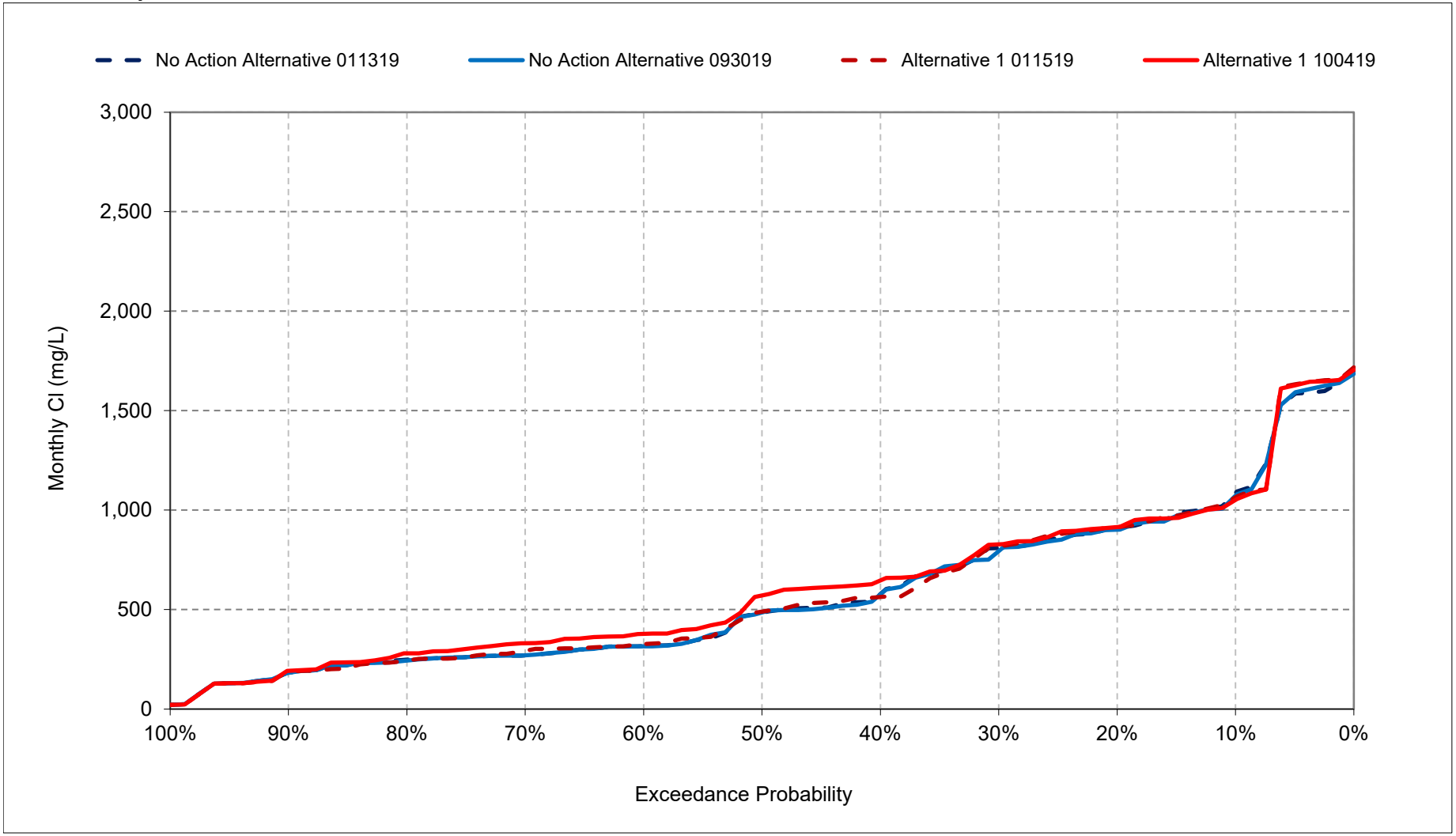

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-12. San Joaquin River at Antioch**
**Chloride, June Cl**



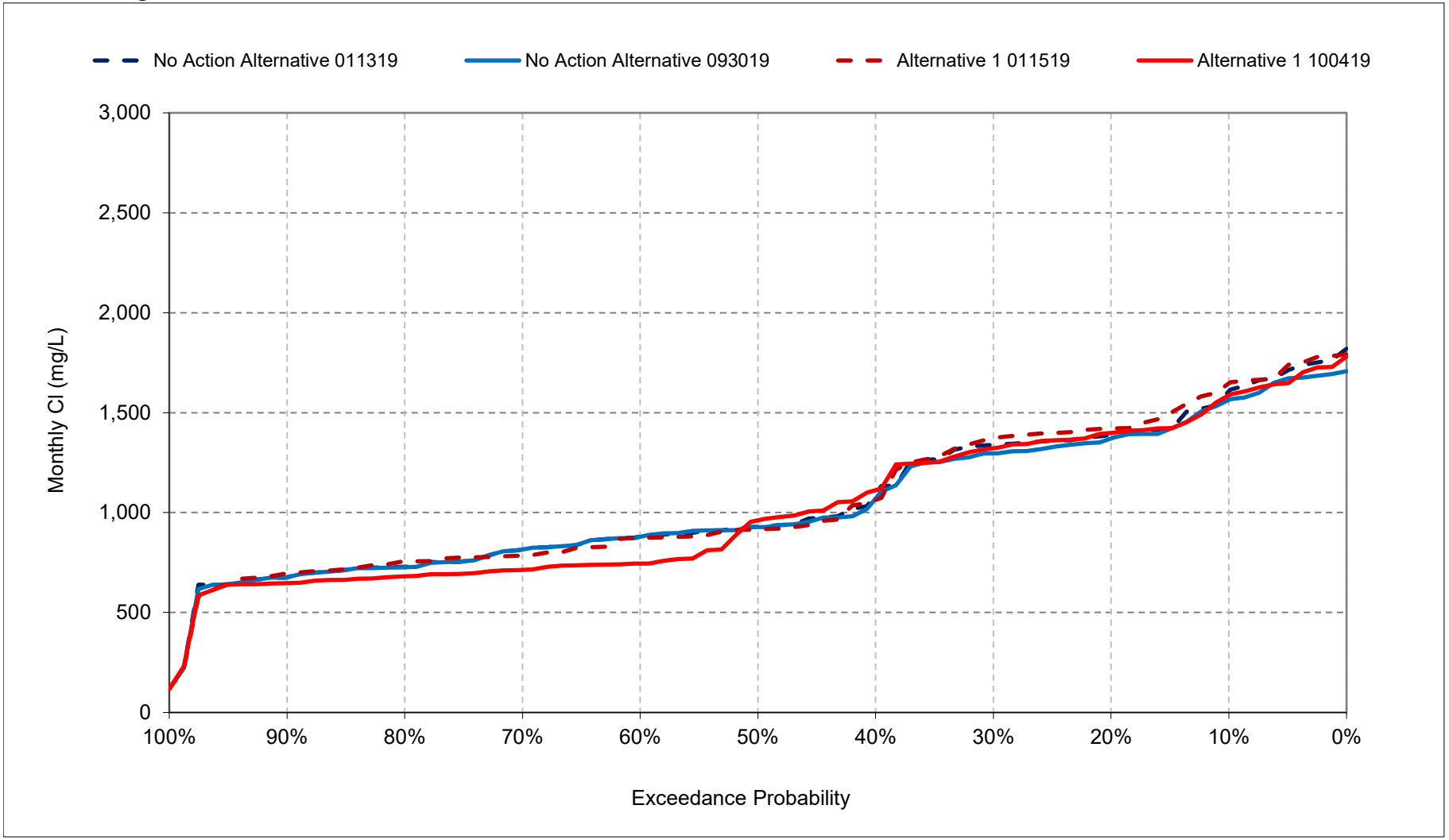

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-13. San Joaquin River at Antioch**
**Chloride, July Cl**



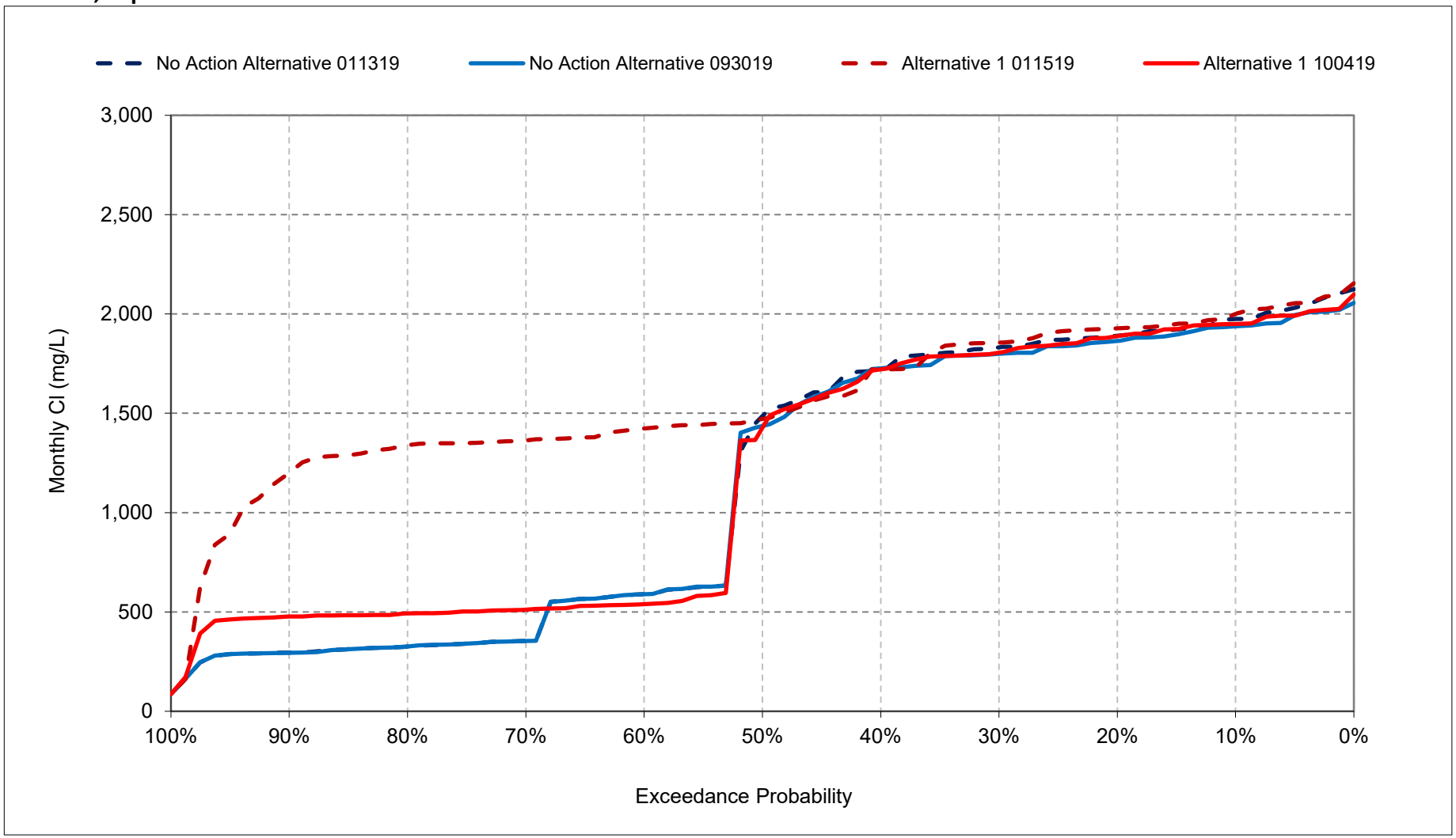

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-14. San Joaquin River at Antioch**
**Chloride, August Cl**



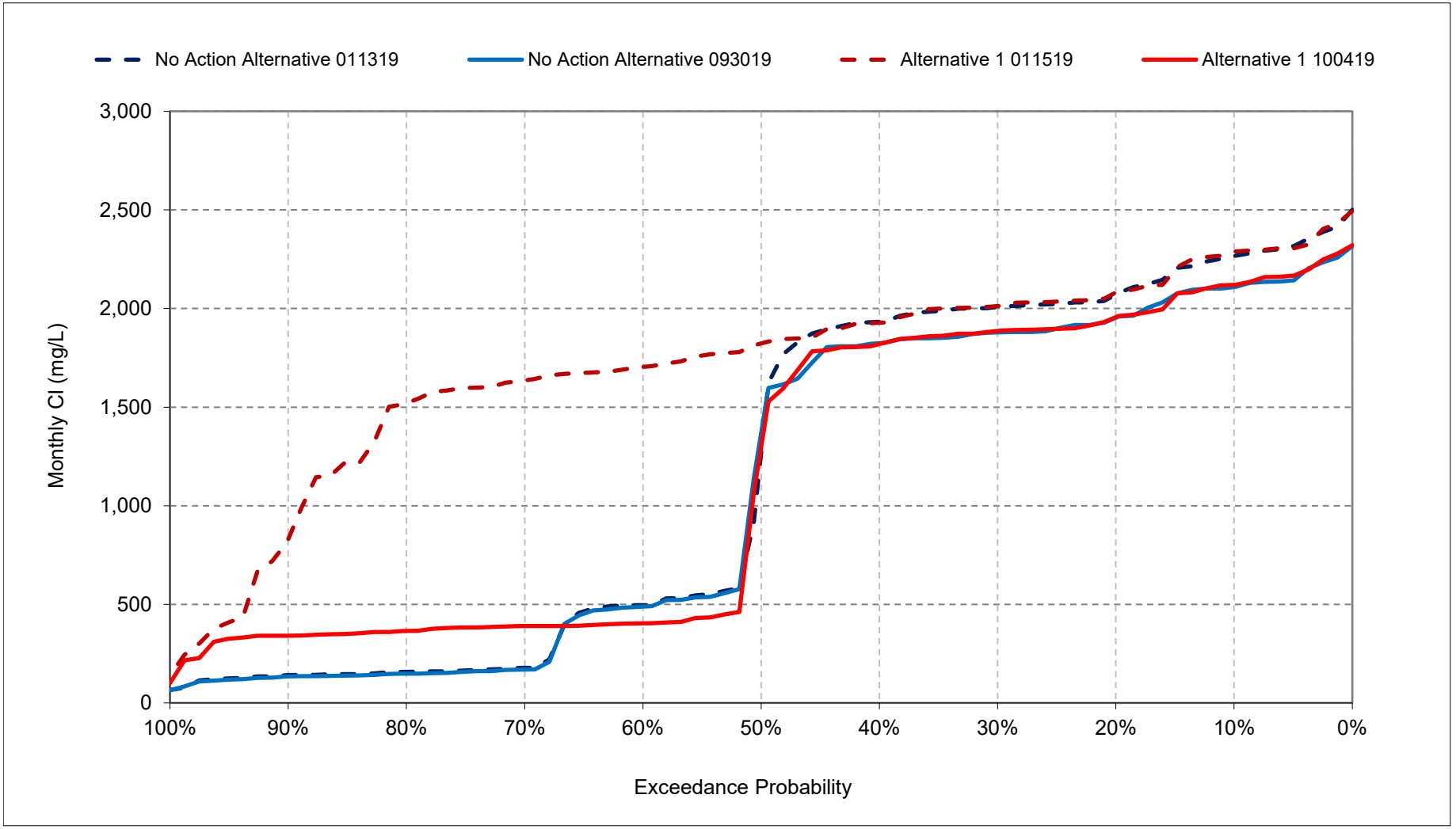

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-15. San Joaquin River at Antioch**
**Chloride, September Cl**



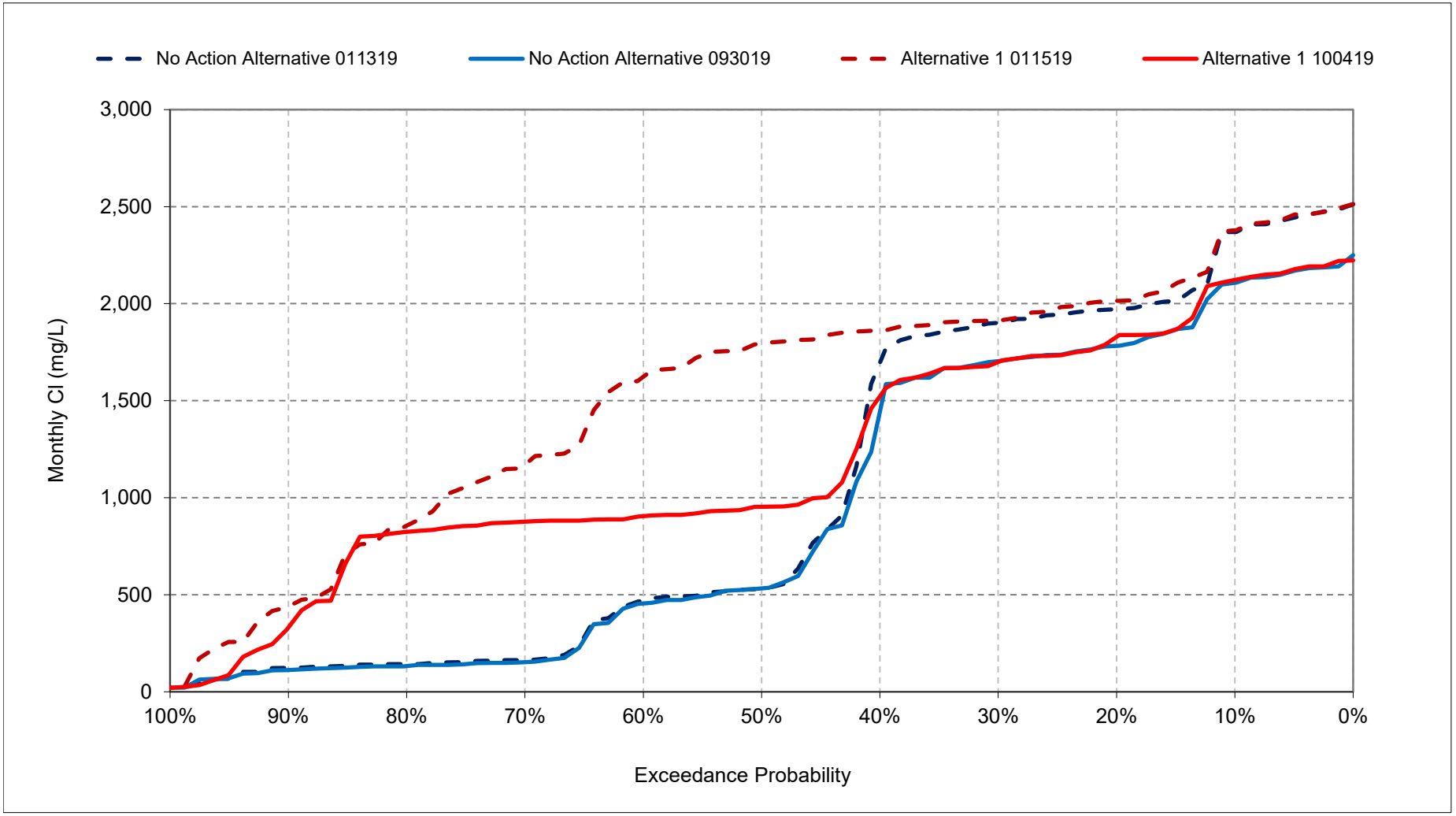

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-16. San Joaquin River at Antioch**
**Chloride, October Cl**



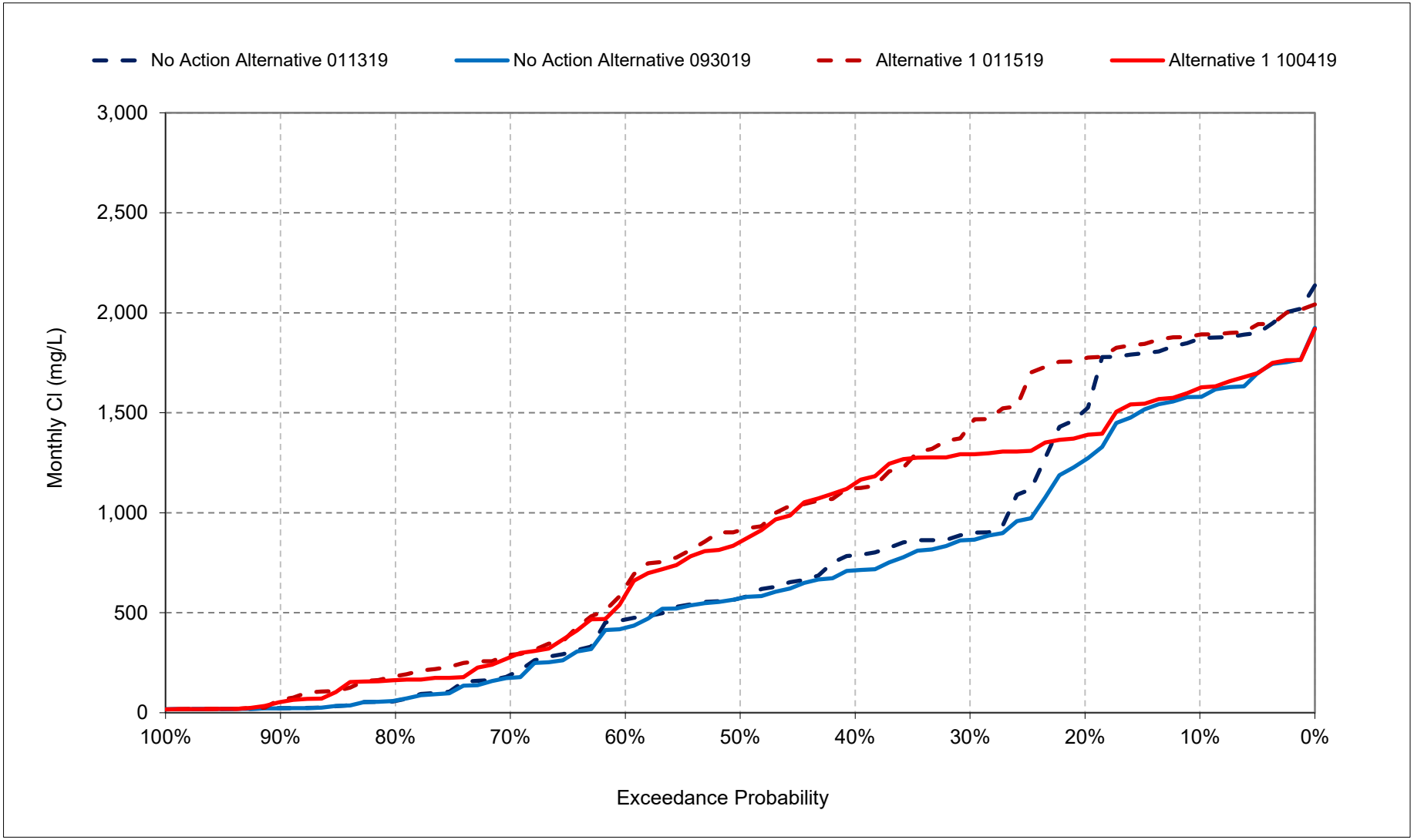

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-17. San Joaquin River at Antioch**
**Chloride, November Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 20-18. San Joaquin River at Antioch**
**Chloride, December Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-1. Banks Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 157 | 169 | 195 | 182 | 144 | 119 | 109 | 101 | 89 | 71 | 100 | 121 |
| 20% | 149 | 151 | 170 | 167 | 121 | 101 | 90 | 84 | 77 | 57 | 67 | 114 |
| 30% | 142 | 136 | 153 | 130 | 109 | 89 | 77 | 78 | 63 | 44 | 61 | 108 |
| 40% | 134 | 128 | 137 | 117 | 102 | 78 | 67 | 70 | 58 | 42 | 54 | 101 |
| 50% | 123 | 98 | 70 | 102 | 91 | 67 | 61 | 57 | 53 | 39 | 53 | 95 |
| 60% | 57 | 46 | 55 | 93 | 86 | 62 | 49 | 50 | 50 | 35 | 45 | 92 |
| 70% | 52 | 42 | 43 | 77 | 73 | 52 | 39 | 44 | 48 | 34 | 39 | 84 |
| 80% | 47 | 37 | 36 | 68 | 55 | 44 | 33 | 37 | 42 | 30 | 35 | 76 |
| 90% | 42 | 35 | 34 | 59 | 48 | 35 | 25 | 18 | 30 | 28 | 30 | 68 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 99 | 95 | 100 | 112 | 94 | 74 | 63 | 61 | 58 | 45 | 56 | 94 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 49 | 36 | 36 | 75 | 62 | 44 | 32 | 32 | 39 | 34 | 37 | 82 |
| Above Normal (16%) | 45 | 48 | 61 | 104 | 91 | 65 | 53 | 52 | 51 | 32 | 37 | 73 |
| Below Normal (13%) | 142 | 124 | 133 | 111 | 97 | 78 | 69 | 70 | 64 | 39 | 54 | 108 |
| Dry (24%) | 142 | 134 | 134 | 137 | 110 | 85 | 78 | 74 | 62 | 47 | 74 | 105 |
| Critical (15%) | 153 | 179 | 195 | 157 | 136 | 124 | 114 | 104 | 94 | 85 | 89 | 114 |

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 161 | 178 | 195 | 196 | 143 | 97 | 83 | 70 | 61 | 63 | 98 | 125 |
| 20% | 156 | 167 | 182 | 183 | 124 | 86 | 71 | 62 | 45 | 49 | 64 | 118 |
| 30% | 148 | 157 | 167 | 176 | 104 | 75 | 65 | 58 | 42 | 42 | 61 | 113 |
| 40% | 145 | 148 | 157 | 149 | 98 | 67 | 61 | 51 | 40 | 40 | 55 | 111 |
| 50% | 141 | 139 | 147 | 119 | 88 | 63 | 54 | 42 | 39 | 38 | 51 | 106 |
| 60% | 137 | 135 | 137 | 103 | 74 | 58 | 48 | 39 | 37 | 34 | 45 | 104 |
| 70% | 132 | 132 | 121 | 89 | 71 | 53 | 38 | 36 | 35 | 32 | 38 | 100 |
| 80% | 126 | 119 | 87 | 73 | 56 | 41 | 31 | 33 | 32 | 29 | 35 | 94 |
| 90% | 97 | 64 | 57 | 60 | 42 | 36 | 26 | 21 | 29 | 27 | 31 | 81 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 134 | 137 | 138 | 127 | 91 | 65 | 54 | 47 | 42 | 42 | 55 | 104 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 106 | 118 | 112 | 82 | 60 | 44 | 32 | 28 | 32 | 34 | 37 | 88 |
| Above Normal (16%) | 139 | 129 | 137 | 128 | 90 | 63 | 49 | 40 | 37 | 30 | 38 | 109 |
| Below Normal (13%) | 145 | 130 | 136 | 134 | 97 | 72 | 63 | 52 | 39 | 37 | 59 | 116 |
| Dry (24%) | 149 | 144 | 137 | 160 | 107 | 71 | 62 | 54 | 40 | 43 | 68 | 107 |
| Critical (15%) | 156 | 182 | 198 | 160 | 124 | 97 | 87 | 80 | 73 | 78 | 89 | 115 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **4** | **9** | 0 | **13** | -2 | -22 | -26 | -31 | -27 | -8 | -2 | **5** |
| 20% | **7** | **16** | **12** | **16** | **3** | -15 | -19 | -22 | -32 | -8 | -3 | **3** |
| 30% | **6** | **21** | **14** | **46** | -4 | -14 | -12 | -20 | -21 | -2 | -1 | **5** |
| 40% | **11** | **20** | **19** | **33** | -5 | -10 | -7 | -19 | -18 | -2 | **0** | **10** |
| 50% | **17** | **40** | **77** | **18** | -3 | -4 | -8 | -16 | -14 | -1 | -2 | **11** |
| 60% | **81** | **90** | **82** | **10** | -12 | -4 | -1 | -11 | -14 | -1 | **0** | **12** |
| 70% | **80** | **91** | **78** | **11** | -1 | **1** | -1 | -8 | -13 | -2 | -1 | **15** |
| 80% | **80** | **82** | **51** | **5** | **0** | -3 | -2 | -4 | -9 | -1 | **0** | **18** |
| 90% | **55** | **29** | **23** | **0** | -6 | **1** | **1** | **3** | -1 | -1 | **2** | **14** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **35** | **42** | **38** | **15** | -3 | -9 | -9 | -14 | -16 | -3 | -1 | **10** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **57** | **82** | **76** | **7** | -2 | -1 | 0 | -4 | -7 | -1 | 0 | **6** |
| Above Normal (16%) | **94** | **81** | **76** | **24** | -1 | -2 | -4 | -12 | -14 | -2 | **1** | **37** |
| Below Normal (13%) | **4** | **5** | **3** | **24** | 0 | -6 | -6 | -18 | -24 | -2 | **5** | **9** |
| Dry (24%) | **7** | **10** | **2** | **23** | -3 | -15 | -15 | -20 | -22 | -3 | -5 | **2** |
| Critical (15%) | **3** | **3** | **4** | **3** | -13 | -28 | -27 | -24 | -21 | -7 | 0 | **1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-2. Banks Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 149 | 161 | 148 | 128 | 114 | 108 | 97 | 81 | 67 | 93 | 115 |
| 20% | 144 | 132 | 148 | 141 | 114 | 100 | 88 | 84 | 73 | 52 | 67 | 110 |
| 30% | 135 | 119 | 126 | 118 | 106 | 87 | 76 | 78 | 63 | 44 | 56 | 103 |
| 40% | 126 | 111 | 103 | 106 | 97 | 77 | 68 | 71 | 58 | 42 | 53 | 100 |
| 50% | 119 | 88 | 68 | 99 | 88 | 69 | 61 | 57 | 53 | 39 | 51 | 94 |
| 60% | 57 | 46 | 54 | 89 | 84 | 62 | 49 | 50 | 50 | 35 | 45 | 87 |
| 70% | 51 | 42 | 43 | 75 | 73 | 52 | 39 | 44 | 48 | 33 | 39 | 83 |
| 80% | 47 | 37 | 36 | 68 | 55 | 44 | 33 | 37 | 42 | 30 | 35 | 76 |
| 90% | 43 | 35 | 34 | 59 | 47 | 35 | 25 | 18 | 30 | 28 | 30 | 68 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 95 | 85 | 88 | 100 | 88 | 71 | 62 | 60 | 56 | 44 | 54 | 92 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 49 | 36 | 36 | 73 | 62 | 44 | 32 | 32 | 39 | 34 | 37 | 82 |
| Above Normal (16%) | 45 | 47 | 60 | 99 | 91 | 65 | 53 | 52 | 51 | 32 | 37 | 73 |
| Below Normal (13%) | 136 | 107 | 107 | 102 | 94 | 78 | 69 | 70 | 62 | 39 | 53 | 105 |
| Dry (24%) | 136 | 119 | 117 | 116 | 100 | 83 | 77 | 74 | 60 | 45 | 68 | 99 |
| Critical (15%) | 145 | 157 | 164 | 132 | 117 | 111 | 108 | 100 | 87 | 80 | 88 | 110 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 149 | 150 | 166 | 205 | 128 | 100 | 86 | 72 | 63 | 64 | 90 | 119 |
| 20% | 145 | 144 | 154 | 162 | 116 | 87 | 78 | 64 | 46 | 50 | 68 | 113 |
| 30% | 140 | 124 | 136 | 147 | 108 | 80 | 73 | 61 | 41 | 42 | 61 | 103 |
| 40% | 130 | 117 | 128 | 138 | 97 | 72 | 68 | 51 | 40 | 40 | 55 | 92 |
| 50% | 123 | 88 | 119 | 105 | 88 | 68 | 61 | 42 | 38 | 38 | 46 | 83 |
| 60% | 52 | 44 | 114 | 99 | 74 | 64 | 48 | 38 | 36 | 35 | 36 | 66 |
| 70% | 48 | 40 | 105 | 86 | 69 | 56 | 39 | 37 | 35 | 32 | 33 | 59 |
| 80% | 43 | 38 | 78 | 72 | 55 | 45 | 33 | 34 | 32 | 29 | 31 | 52 |
| 90% | 36 | 37 | 46 | 62 | 42 | 37 | 26 | 21 | 29 | 27 | 30 | 45 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 94 | 88 | 115 | 122 | 87 | 68 | 58 | 48 | 42 | 43 | 53 | 81 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 41 | 39 | 90 | 83 | 60 | 47 | 33 | 29 | 33 | 34 | 33 | 51 |
| Above Normal (16%) | 47 | 43 | 113 | 121 | 91 | 69 | 52 | 39 | 36 | 31 | 33 | 59 |
| Below Normal (13%) | 136 | 113 | 111 | 138 | 97 | 78 | 68 | 53 | 39 | 36 | 57 | 111 |
| Dry (24%) | 139 | 125 | 119 | 149 | 99 | 75 | 71 | 57 | 41 | 43 | 68 | 102 |
| Critical (15%) | 146 | 158 | 165 | 146 | 111 | 91 | 84 | 79 | 73 | 78 | 89 | 109 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -2 | **0** | **4** | **57** | 0 | -14 | -22 | -25 | -18 | -3 | -3 | **4** |
| 20% | **1** | **12** | **6** | **22** | **2** | -13 | -10 | -20 | -27 | -2 | **1** | **3** |
| 30% | **5** | **5** | **11** | **29** | **2** | -7 | -4 | -17 | -22 | -2 | **5** | 0 |
| 40% | **4** | **6** | **25** | **32** | **1** | -5 | **1** | -19 | -18 | -2 | **2** | -8 |
| 50% | **4** | **1** | **51** | **6** | -1 | -1 | 0 | -15 | -15 | -1 | -4 | -11 |
| 60% | -4 | -2 | **59** | **10** | -10 | **2** | -1 | -12 | -14 | **0** | -8 | -22 |
| 70% | -4 | -2 | **62** | **10** | -4 | **4** | **0** | -7 | -13 | -2 | -6 | -25 |
| 80% | -4 | **1** | **42** | **5** | 0 | **0** | -1 | -3 | -10 | -1 | -4 | -23 |
| 90% | -7 | **2** | **12** | **2** | -5 | **2** | **1** | **3** | -1 | -1 | **0** | -23 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | **3** | **27** | **21** | -1 | -4 | -5 | -13 | -14 | -1 | -2 | -11 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -8 | **2** | **55** | **9** | -1 | **2** | **1** | -4 | -6 | **0** | -4 | -31 |
| Above Normal (16%) | **3** | -4 | **53** | **22** | -1 | **4** | -1 | -13 | -15 | -1 | -4 | -14 |
| Below Normal (13%) | 0 | **6** | **4** | **36** | **3** | **0** | -1 | -18 | -23 | -3 | **4** | **6** |
| Dry (24%) | **3** | **7** | **2** | **33** | -2 | -8 | -6 | -17 | -20 | -2 | -1 | **2** |
| Critical (15%) | **1** | **1** | **1** | **15** | -6 | -20 | -24 | -22 | -13 | -1 | **1** | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-3. Banks Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 157 | 169 | 195 | 182 | 144 | 119 | 109 | 101 | 89 | 71 | 100 | 121 |
| 20% | 149 | 151 | 170 | 167 | 121 | 101 | 90 | 84 | 77 | 57 | 67 | 114 |
| 30% | 142 | 136 | 153 | 130 | 109 | 89 | 77 | 78 | 63 | 44 | 61 | 108 |
| 40% | 134 | 128 | 137 | 117 | 102 | 78 | 67 | 70 | 58 | 42 | 54 | 101 |
| 50% | 123 | 98 | 70 | 102 | 91 | 67 | 61 | 57 | 53 | 39 | 53 | 95 |
| 60% | 57 | 46 | 55 | 93 | 86 | 62 | 49 | 50 | 50 | 35 | 45 | 92 |
| 70% | 52 | 42 | 43 | 77 | 73 | 52 | 39 | 44 | 48 | 34 | 39 | 84 |
| 80% | 47 | 37 | 36 | 68 | 55 | 44 | 33 | 37 | 42 | 30 | 35 | 76 |
| 90% | 42 | 35 | 34 | 59 | 48 | 35 | 25 | 18 | 30 | 28 | 30 | 68 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 99 | 95 | 100 | 112 | 94 | 74 | 63 | 61 | 58 | 45 | 56 | 94 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 49 | 36 | 36 | 75 | 62 | 44 | 32 | 32 | 39 | 34 | 37 | 82 |
| Above Normal (16%) | 45 | 48 | 61 | 104 | 91 | 65 | 53 | 52 | 51 | 32 | 37 | 73 |
| Below Normal (13%) | 142 | 124 | 133 | 111 | 97 | 78 | 69 | 70 | 64 | 39 | 54 | 108 |
| Dry (24%) | 142 | 134 | 134 | 137 | 110 | 85 | 78 | 74 | 62 | 47 | 74 | 105 |
| Critical (15%) | 153 | 179 | 195 | 157 | 136 | 124 | 114 | 104 | 94 | 85 | 89 | 114 |

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 149 | 161 | 148 | 128 | 114 | 108 | 97 | 81 | 67 | 93 | 115 |
| 20% | 144 | 132 | 148 | 141 | 114 | 100 | 88 | 84 | 73 | 52 | 67 | 110 |
| 30% | 135 | 119 | 126 | 118 | 106 | 87 | 76 | 78 | 63 | 44 | 56 | 103 |
| 40% | 126 | 111 | 103 | 106 | 97 | 77 | 68 | 71 | 58 | 42 | 53 | 100 |
| 50% | 119 | 88 | 68 | 99 | 88 | 69 | 61 | 57 | 53 | 39 | 51 | 94 |
| 60% | 57 | 46 | 54 | 89 | 84 | 62 | 49 | 50 | 50 | 35 | 45 | 87 |
| 70% | 51 | 42 | 43 | 75 | 73 | 52 | 39 | 44 | 48 | 33 | 39 | 83 |
| 80% | 47 | 37 | 36 | 68 | 55 | 44 | 33 | 37 | 42 | 30 | 35 | 76 |
| 90% | 43 | 35 | 34 | 59 | 47 | 35 | 25 | 18 | 30 | 28 | 30 | 68 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 95 | 85 | 88 | 100 | 88 | 71 | 62 | 60 | 56 | 44 | 54 | 92 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 49 | 36 | 36 | 73 | 62 | 44 | 32 | 32 | 39 | 34 | 37 | 82 |
| Above Normal (16%) | 45 | 47 | 60 | 99 | 91 | 65 | 53 | 52 | 51 | 32 | 37 | 73 |
| Below Normal (13%) | 136 | 107 | 107 | 102 | 94 | 78 | 69 | 70 | 62 | 39 | 53 | 105 |
| Dry (24%) | 136 | 119 | 117 | 116 | 100 | 83 | 77 | 74 | 60 | 45 | 68 | 99 |
| Critical (15%) | 145 | 157 | 164 | 132 | 117 | 111 | 108 | 100 | 87 | 80 | 88 | 110 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -7 | -19 | -34 | -34 | -17 | -5 | -2 | -4 | -8 | -4 | -8 | -6 |
| 20% | -5 | -19 | -21 | -26 | -7 | -2 | -2 | 0 | -4 | -6 | 0 | -4 |
| 30% | -7 | -17 | -28 | -13 | -2 | -2 | -1 | 0 | 0 | 0 | -5 | -5 |
| 40% | -8 | -17 | -35 | -11 | -6 | -1 | 0 | 1 | 0 | 0 | -1 | -1 |
| 50% | -4 | -11 | -3 | -3 | -3 | 2 | 0 | 0 | 0 | 0 | -2 | -1 |
| 60% | 0 | 0 | -1 | -4 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | -4 |
| 70% | -1 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -9 | -12 | -12 | -6 | -3 | -1 | -1 | -2 | -1 | -2 | -2 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | -1 | -1 | -5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | -5 | -18 | -26 | -9 | -3 | 0 | 0 | 0 | -2 | 0 | -1 | -3 |
| Dry (24%) | -7 | -15 | -17 | -22 | -10 | -2 | 0 | 0 | -1 | -1 | -5 | -5 |
| Critical (15%) | -8 | -22 | -31 | -25 | -19 | -13 | -6 | -4 | -7 | -5 | -1 | -4 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 21-4. Banks Pumping Plant South Delta Exports Chloride, Monthly Cl

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 161 | 178 | 195 | 196 | 143 | 97 | 83 | 70 | 61 | 63 | 98 | 125 |
| 20% | 156 | 167 | 182 | 183 | 124 | 86 | 71 | 62 | 45 | 49 | 64 | 118 |
| 30% | 148 | 157 | 167 | 176 | 104 | 75 | 65 | 58 | 42 | 42 | 61 | 113 |
| 40% | 145 | 148 | 157 | 149 | 98 | 67 | 61 | 51 | 40 | 40 | 55 | 111 |
| 50% | 141 | 139 | 147 | 119 | 88 | 63 | 54 | 42 | 39 | 38 | 51 | 106 |
| 60% | 137 | 135 | 137 | 103 | 74 | 58 | 48 | 39 | 37 | 34 | 45 | 104 |
| 70% | 132 | 132 | 121 | 89 | 71 | 53 | 38 | 36 | 35 | 32 | 38 | 100 |
| 80% | 126 | 119 | 87 | 73 | 56 | 41 | 31 | 33 | 32 | 29 | 35 | 94 |
| 90% | 97 | 64 | 57 | 60 | 42 | 36 | 26 | 21 | 29 | 27 | 31 | 81 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 134 | 137 | 138 | 127 | 91 | 65 | 54 | 47 | 42 | 42 | 55 | 104 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 106 | 118 | 112 | 82 | 60 | 44 | 32 | 28 | 32 | 34 | 37 | 88 |
| Above Normal (16%) | 139 | 129 | 137 | 128 | 90 | 63 | 49 | 40 | 37 | 30 | 38 | 109 |
| Below Normal (13%) | 145 | 130 | 136 | 134 | 97 | 72 | 63 | 52 | 39 | 37 | 59 | 116 |
| Dry (24%) | 149 | 144 | 137 | 160 | 107 | 71 | 62 | 54 | 40 | 43 | 68 | 107 |
| Critical (15%) | 156 | 182 | 198 | 160 | 124 | 97 | 87 | 80 | 73 | 78 | 89 | 115 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 149 | 150 | 166 | 205 | 128 | 100 | 86 | 72 | 63 | 64 | 90 | 119 |
| 20% | 145 | 144 | 154 | 162 | 116 | 87 | 78 | 64 | 46 | 50 | 68 | 113 |
| 30% | 140 | 124 | 136 | 147 | 108 | 80 | 73 | 61 | 41 | 42 | 61 | 103 |
| 40% | 130 | 117 | 128 | 138 | 97 | 72 | 68 | 51 | 40 | 40 | 55 | 92 |
| 50% | 123 | 88 | 119 | 105 | 88 | 68 | 61 | 42 | 38 | 38 | 46 | 83 |
| 60% | 52 | 44 | 114 | 99 | 74 | 64 | 48 | 38 | 36 | 35 | 36 | 66 |
| 70% | 48 | 40 | 105 | 86 | 69 | 56 | 39 | 37 | 35 | 32 | 33 | 59 |
| 80% | 43 | 38 | 78 | 72 | 55 | 45 | 33 | 34 | 32 | 29 | 31 | 52 |
| 90% | 36 | 37 | 46 | 62 | 42 | 37 | 26 | 21 | 29 | 27 | 30 | 45 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 94 | 88 | 115 | 122 | 87 | 68 | 58 | 48 | 42 | 43 | 53 | 81 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 41 | 39 | 90 | 83 | 60 | 47 | 33 | 29 | 33 | 34 | 33 | 51 |
| Above Normal (16%) | 47 | 43 | 113 | 121 | 91 | 69 | 52 | 39 | 36 | 31 | 33 | 59 |
| Below Normal (13%) | 136 | 113 | 111 | 138 | 97 | 78 | 68 | 53 | 39 | 36 | 57 | 111 |
| Dry (24%) | 139 | 125 | 119 | 149 | 99 | 75 | 71 | 57 | 41 | 43 | 68 | 102 |
| Critical (15%) | 146 | 158 | 165 | 146 | 111 | 91 | 84 | 79 | 73 | 78 | 89 | 109 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -12 | -28 | -29 | 9 | -15 | 3 | 3 | 2 | 1 | 1 | -8 | -6 |
| 20% | -11 | -22 | -28 | -21 | -8 | 1 | 7 | 2 | 0 | 0 | 3 | -5 |
| 30% | -9 | -33 | -31 | -29 | 4 | 4 | 8 | 3 | -1 | 0 | 0 | -10 |
| 40% | -15 | -31 | -29 | -12 | 0 | 5 | 8 | 0 | -1 | 0 | 0 | -19 |
| 50% | -18 | -51 | -28 | -14 | -1 | 5 | 7 | 0 | -1 | 0 | -4 | -23 |
| 60% | -85 | -92 | -23 | -4 | 0 | 6 | 0 | 0 | 0 | 1 | -8 | -38 |
| 70% | -85 | -93 | -16 | -3 | -2 | 3 | 1 | 1 | 0 | 0 | -5 | -41 |
| 80% | -83 | -81 | -9 | 0 | 0 | 3 | 1 | 1 | -1 | 0 | -4 | -42 |
| 90% | -61 | -27 | -11 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | -1 | -37 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -40 | -49 | -23 | -5 | -4 | 3 | 3 | 1 | 0 | 0 | -3 | -23 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -65 | -79 | -22 | 0 | 1 | 3 | 1 | 1 | 0 | 1 | -4 | -37 |
| Above Normal (16%) | -92 | -85 | -24 | -7 | 0 | 6 | 3 | -1 | -2 | 1 | -5 | -50 |
| Below Normal (13%) | -9 | -17 | -25 | 4 | 0 | 6 | 5 | 1 | 0 | -2 | -2 | -6 |
| Dry (24%) | -10 | -19 | -18 | -11 | -9 | 5 | 9 | 3 | 0 | 0 | -1 | -6 |
| Critical (15%) | -10 | -24 | -33 | -14 | -12 | -6 | -3 | -1 | 0 | 1 | 0 | -6 |

a Based on the 82-year simulation period.

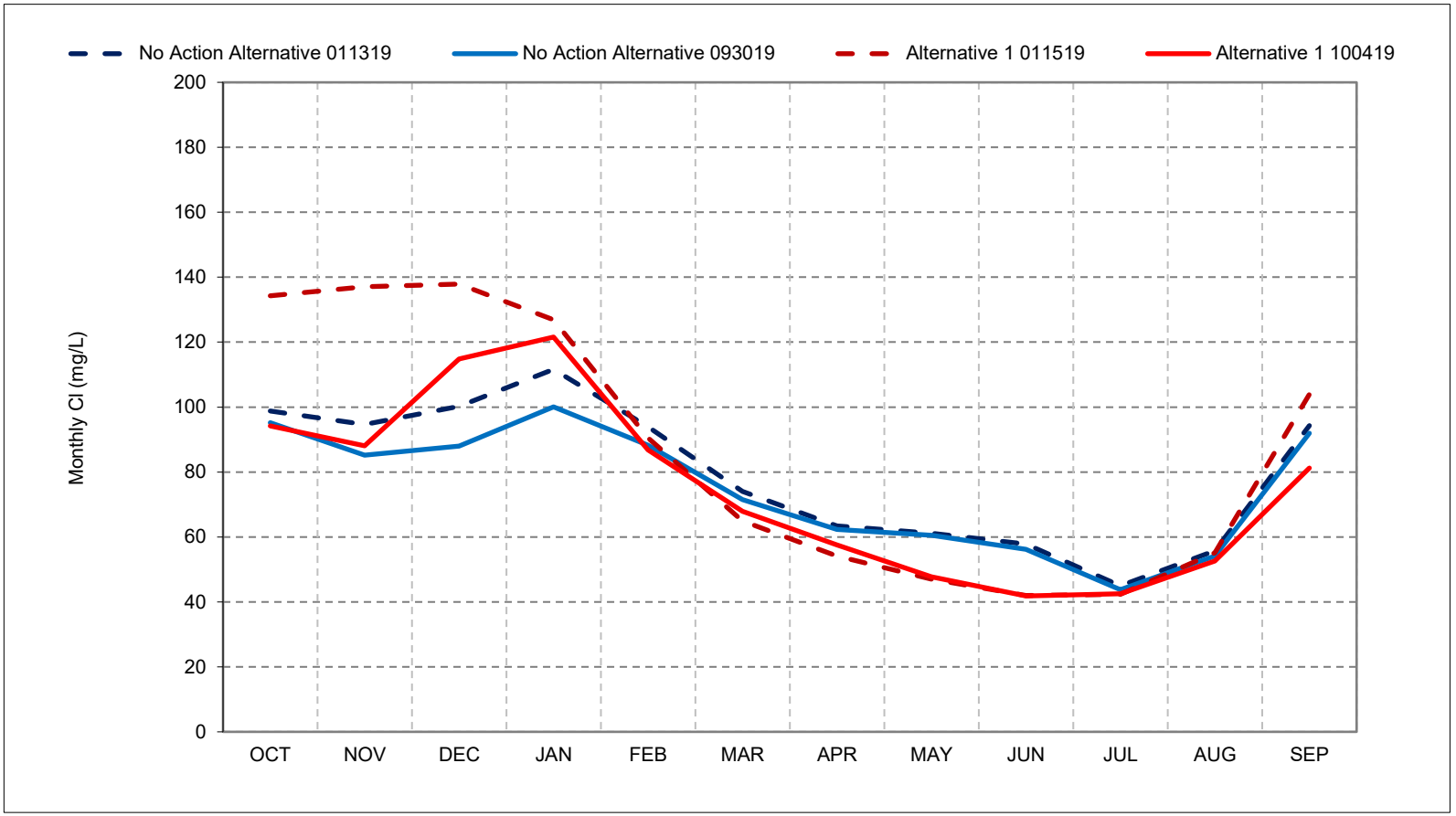
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-1. Banks Pumping Plant South Delta Exports Chloride, Long-Term Average Cl

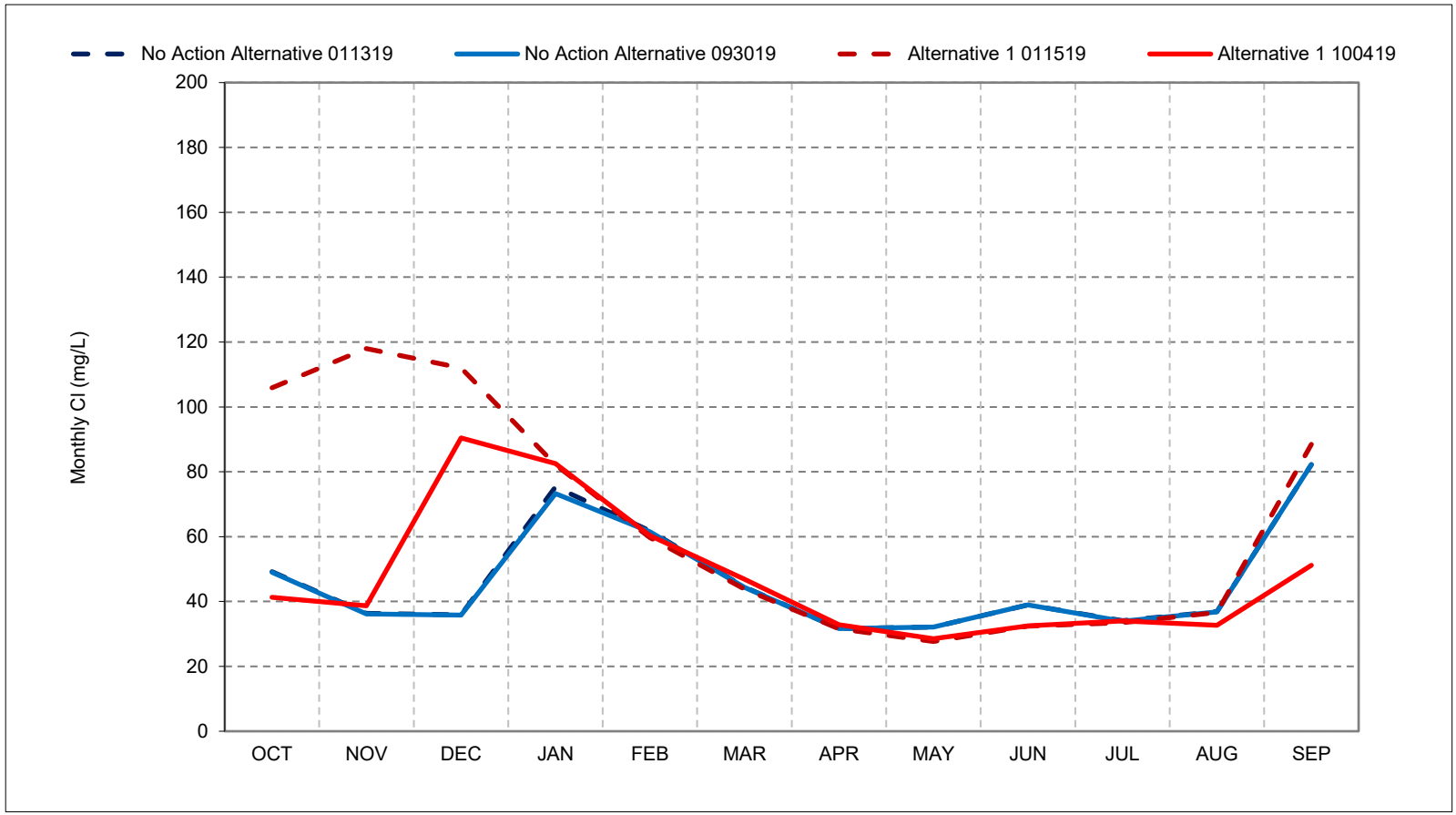



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-2. Banks Pumping Plant South Delta Exports Chloride, Wet Year Average Cl

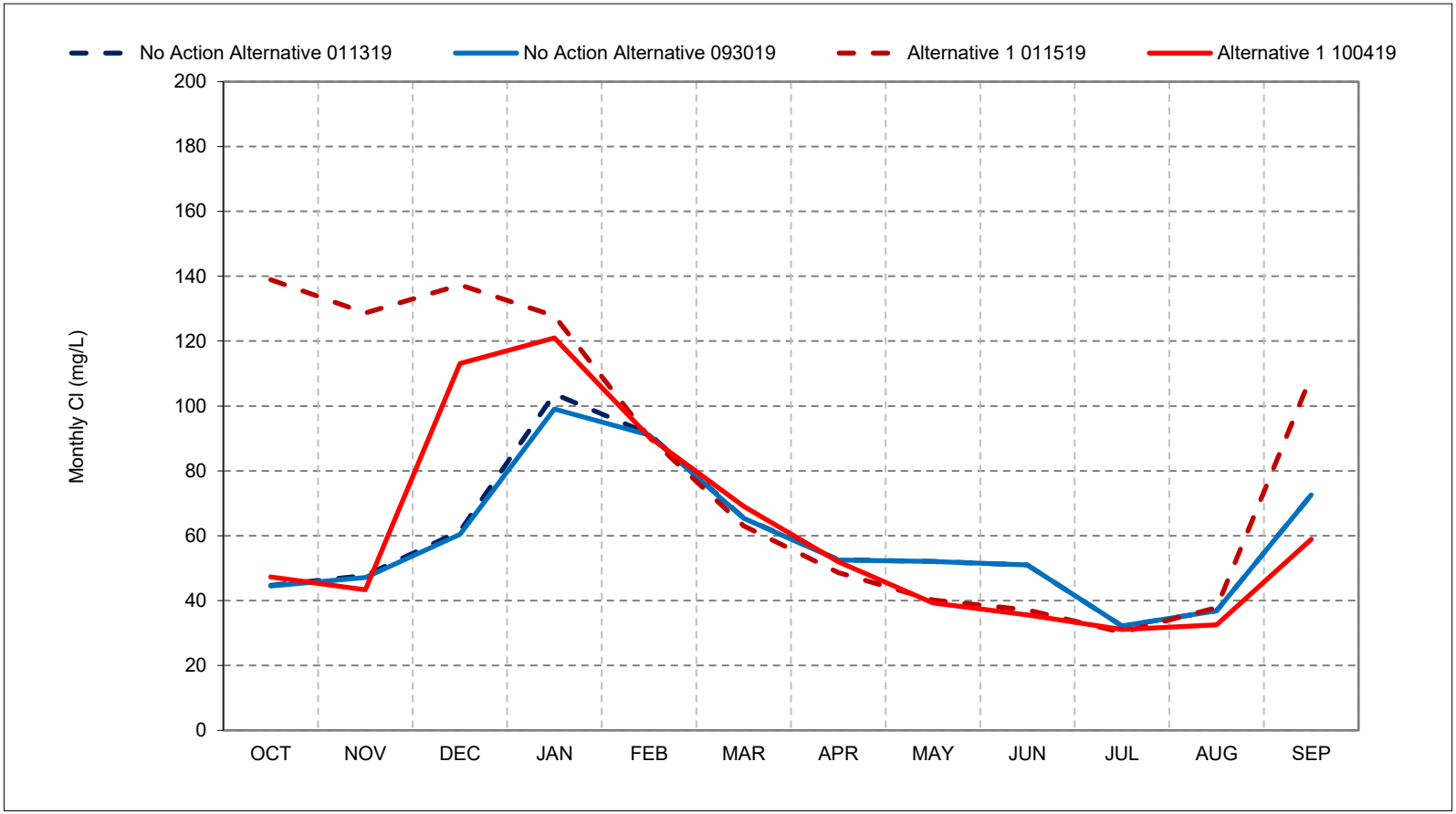



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-3. Banks Pumping Plant South Delta Exports Chloride, Above Normal Year Average Cl

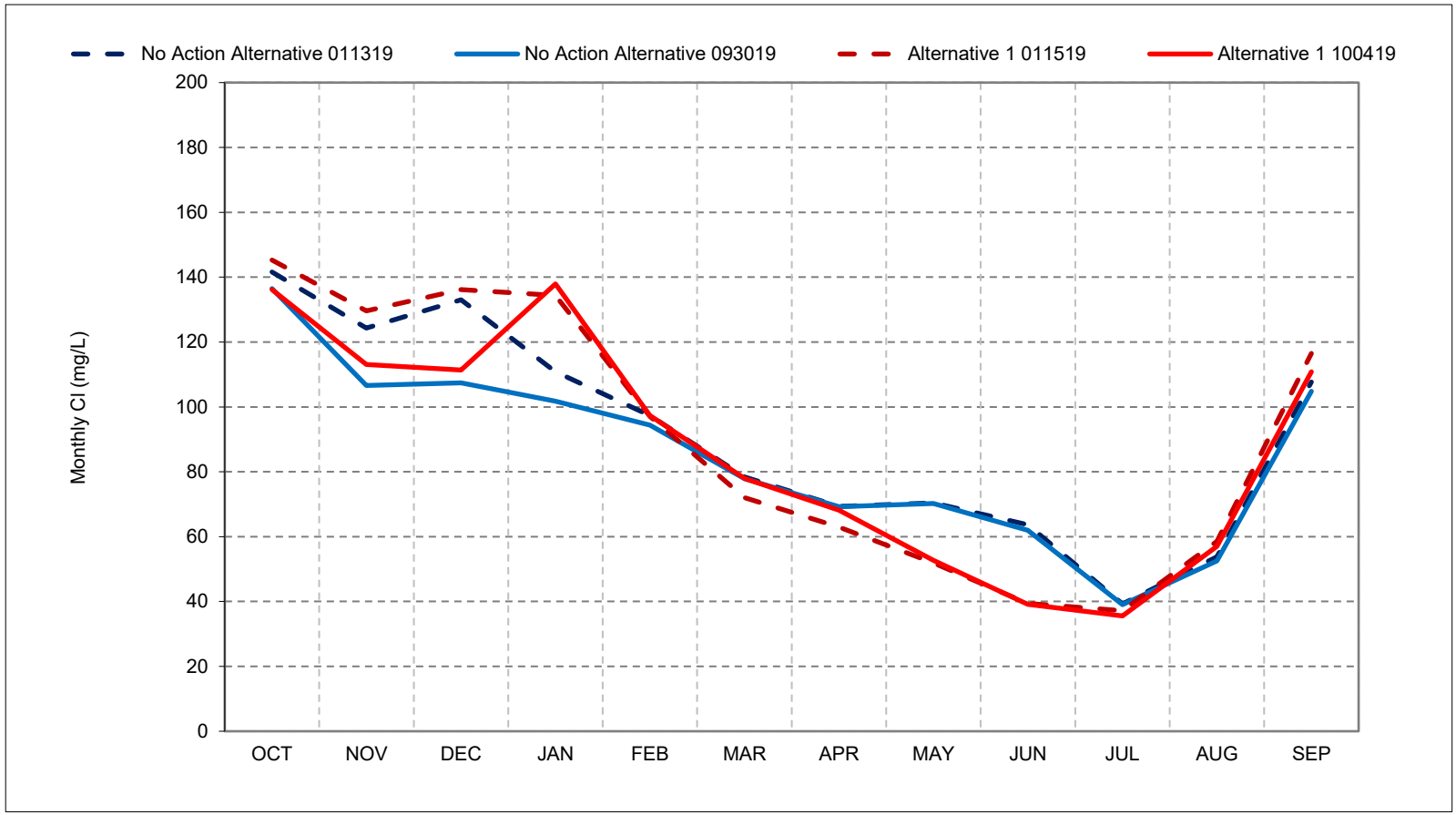



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-4. Banks Pumping Plant South Delta Exports Chloride, Below Normal Year Average Cl

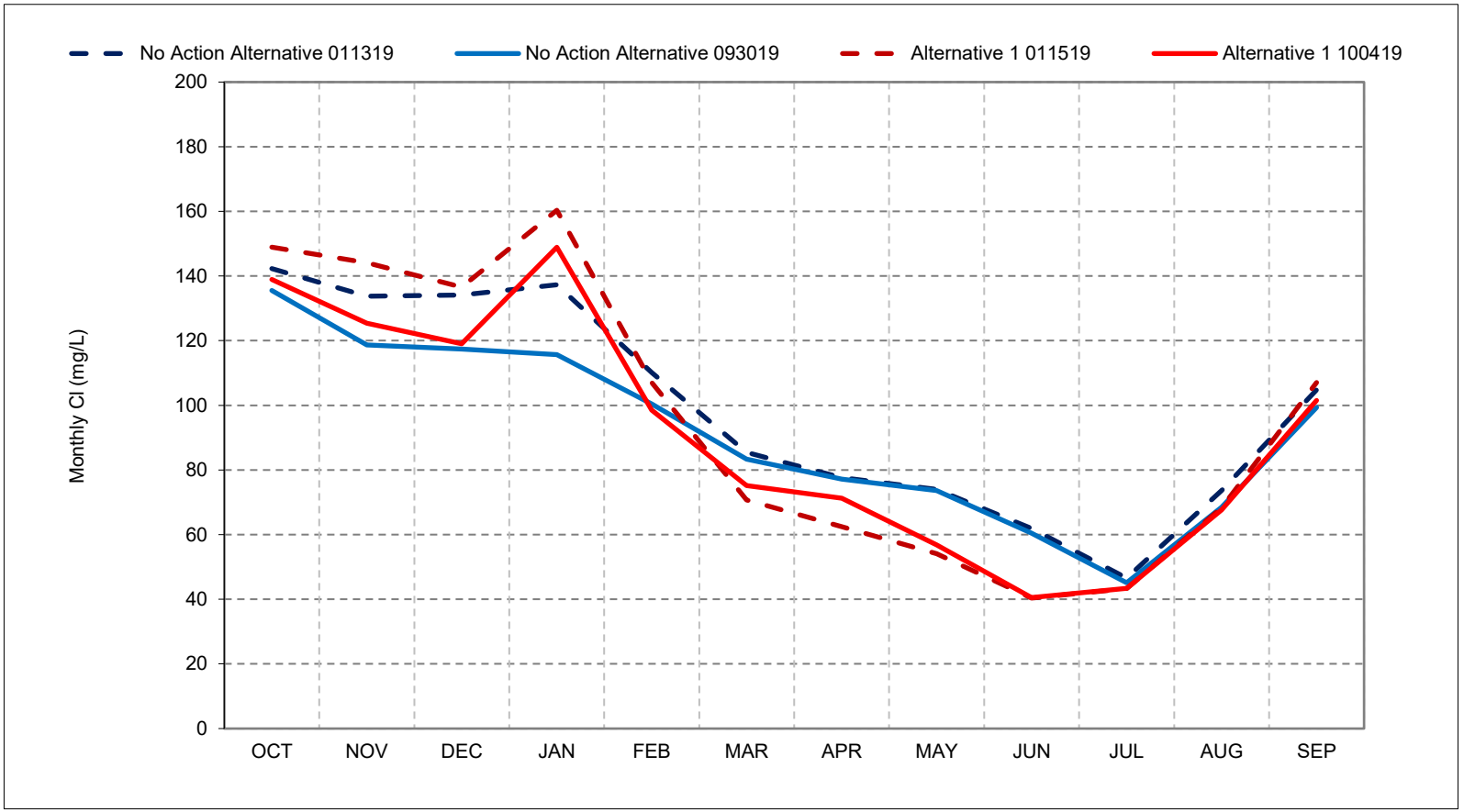



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-5. Banks Pumping Plant South Delta Exports Chloride, Dry Year Average Cl

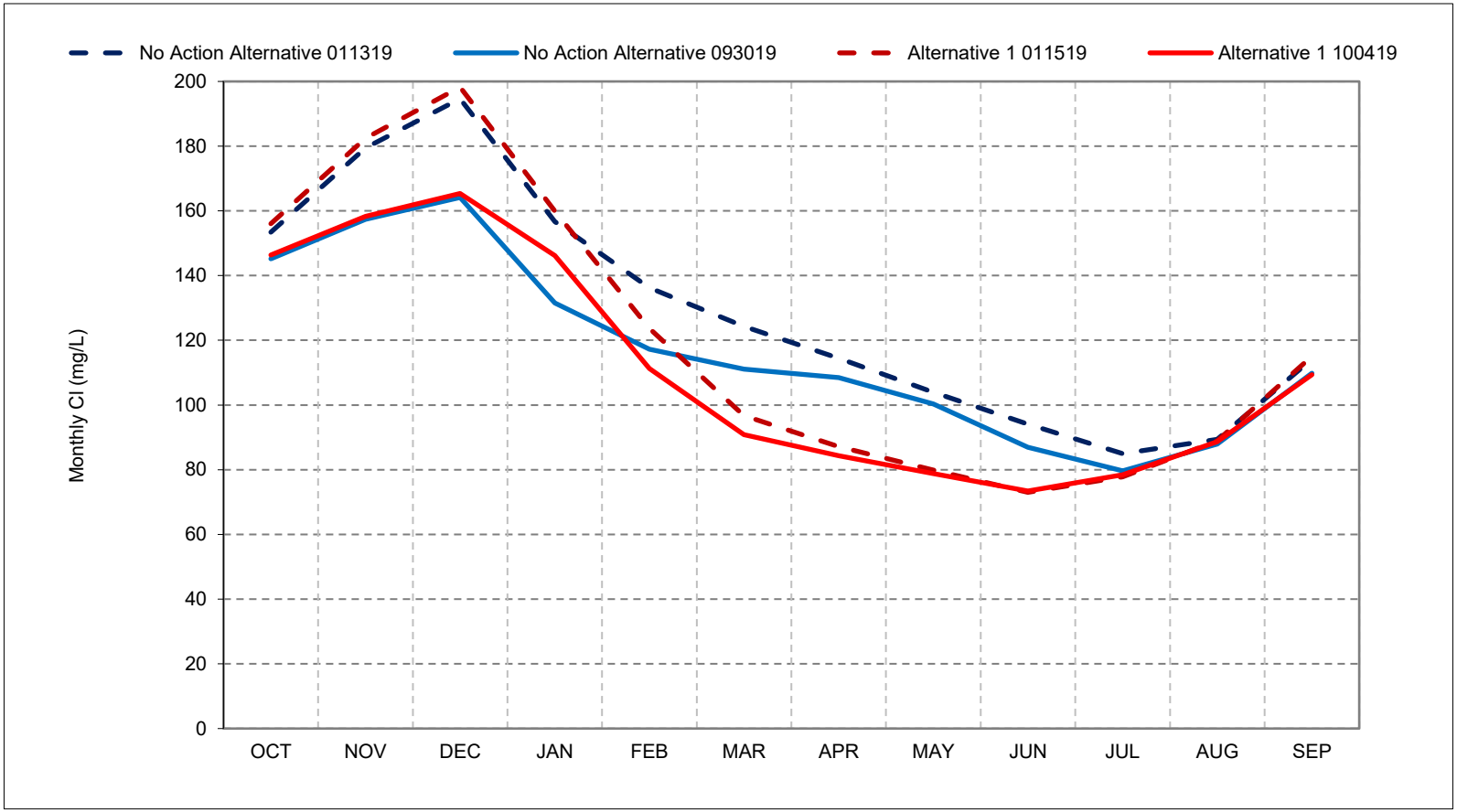



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 21-6. Banks Pumping Plant South Delta Exports Chloride, Critical Year Average Cl

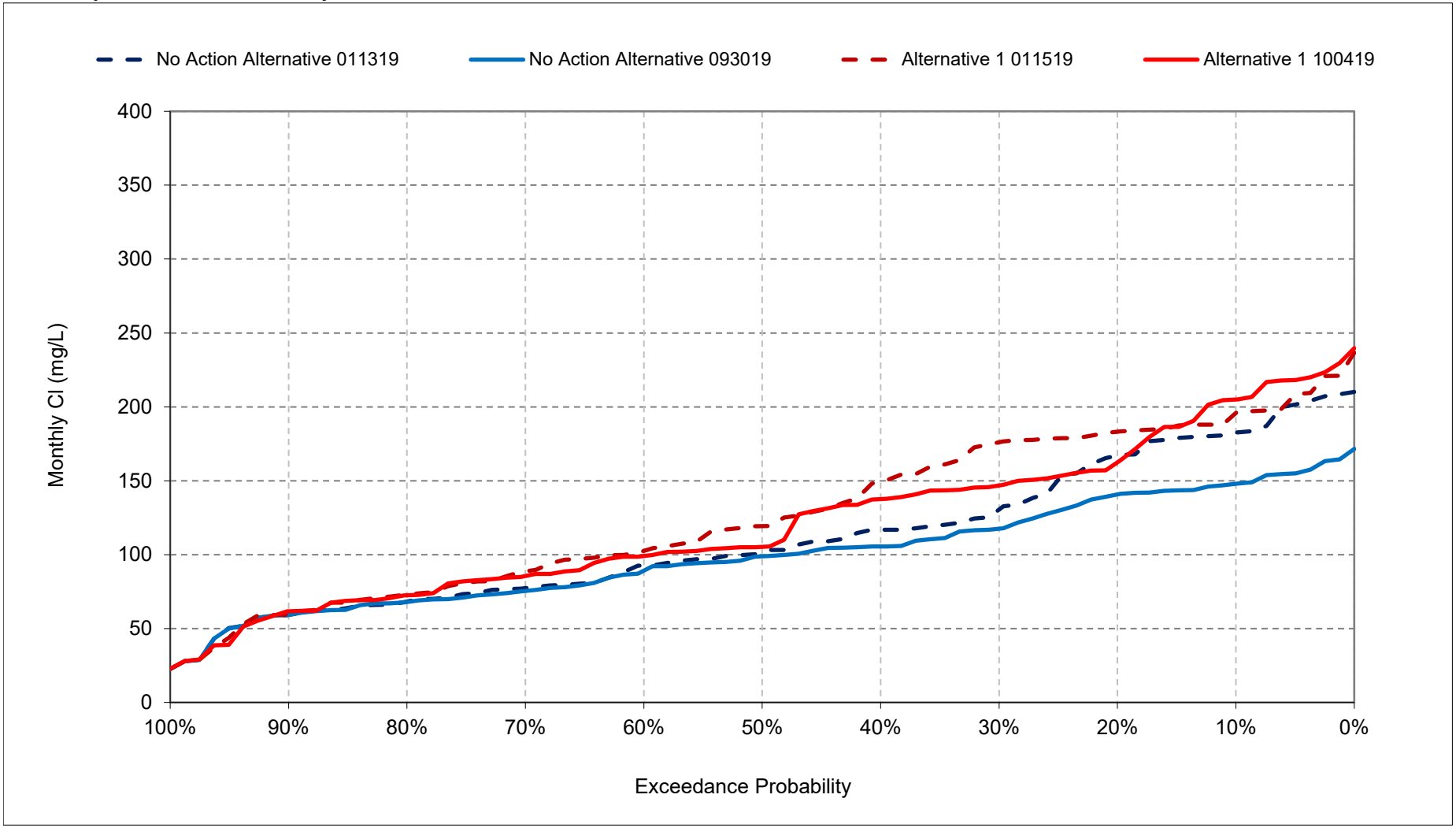



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

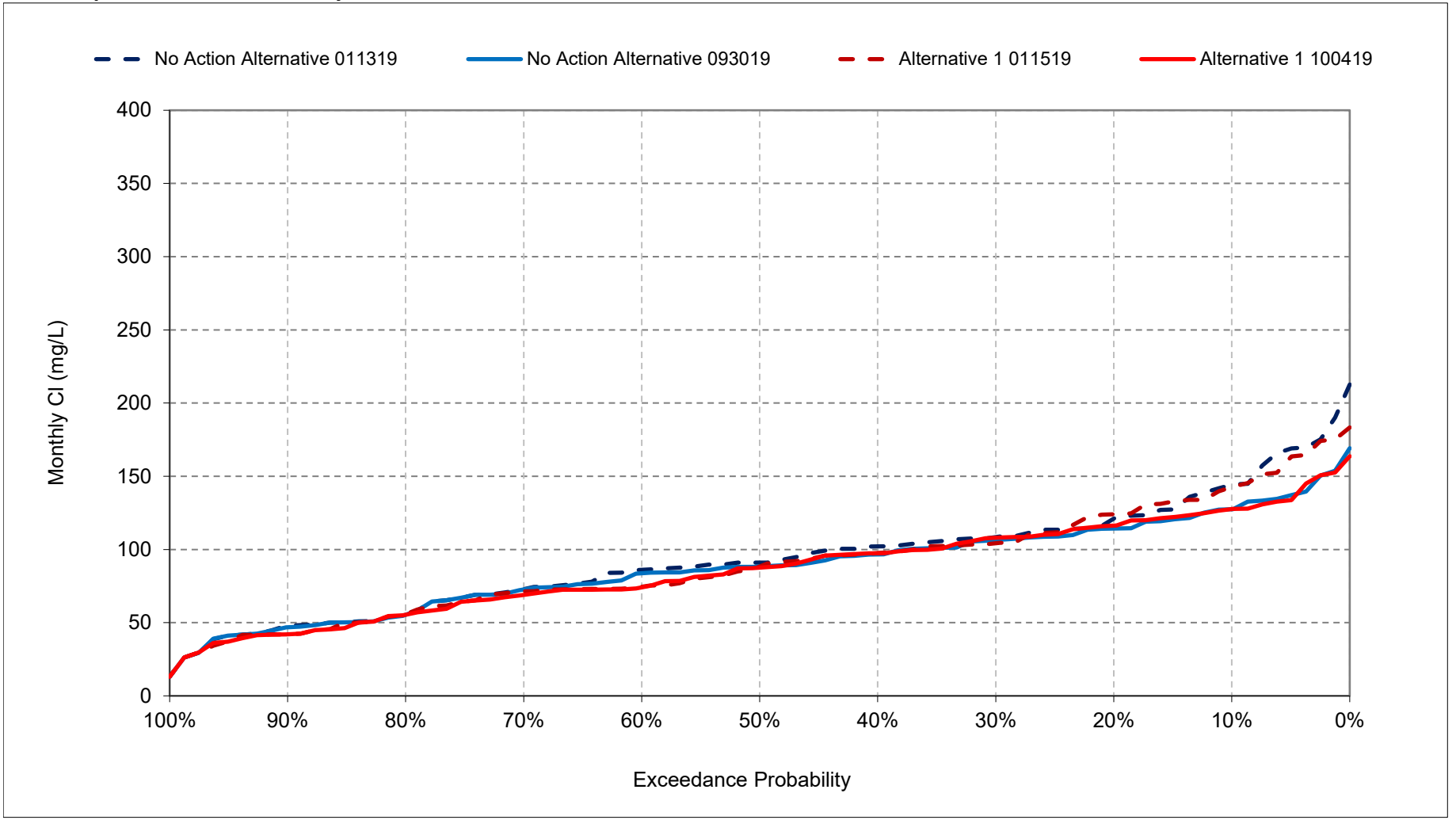
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-7. Banks Pumping Plant South**
**Delta Exports Chloride, January Cl**



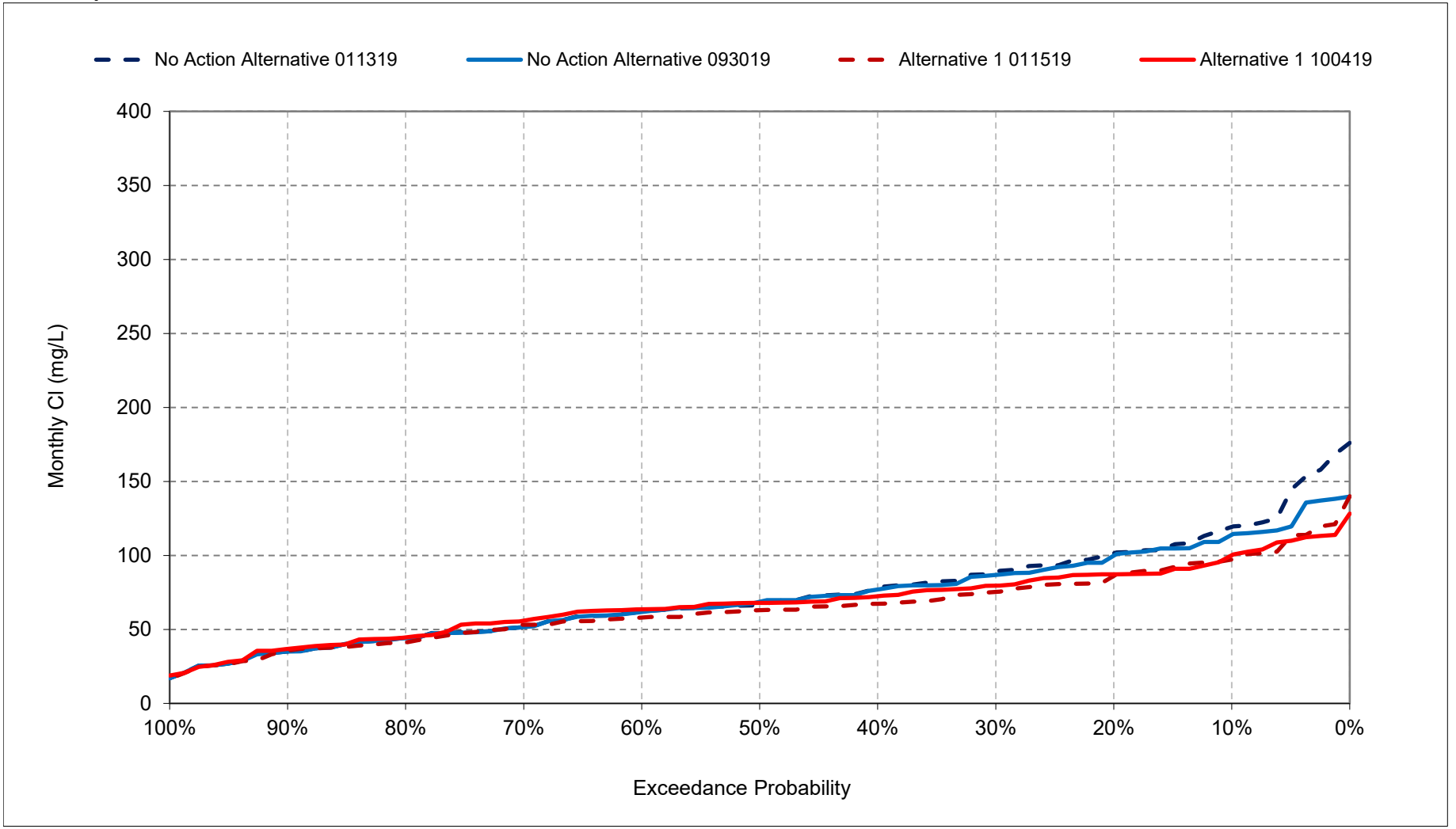

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-8. Banks Pumping Plant South**
**Delta Exports Chloride, February Cl**



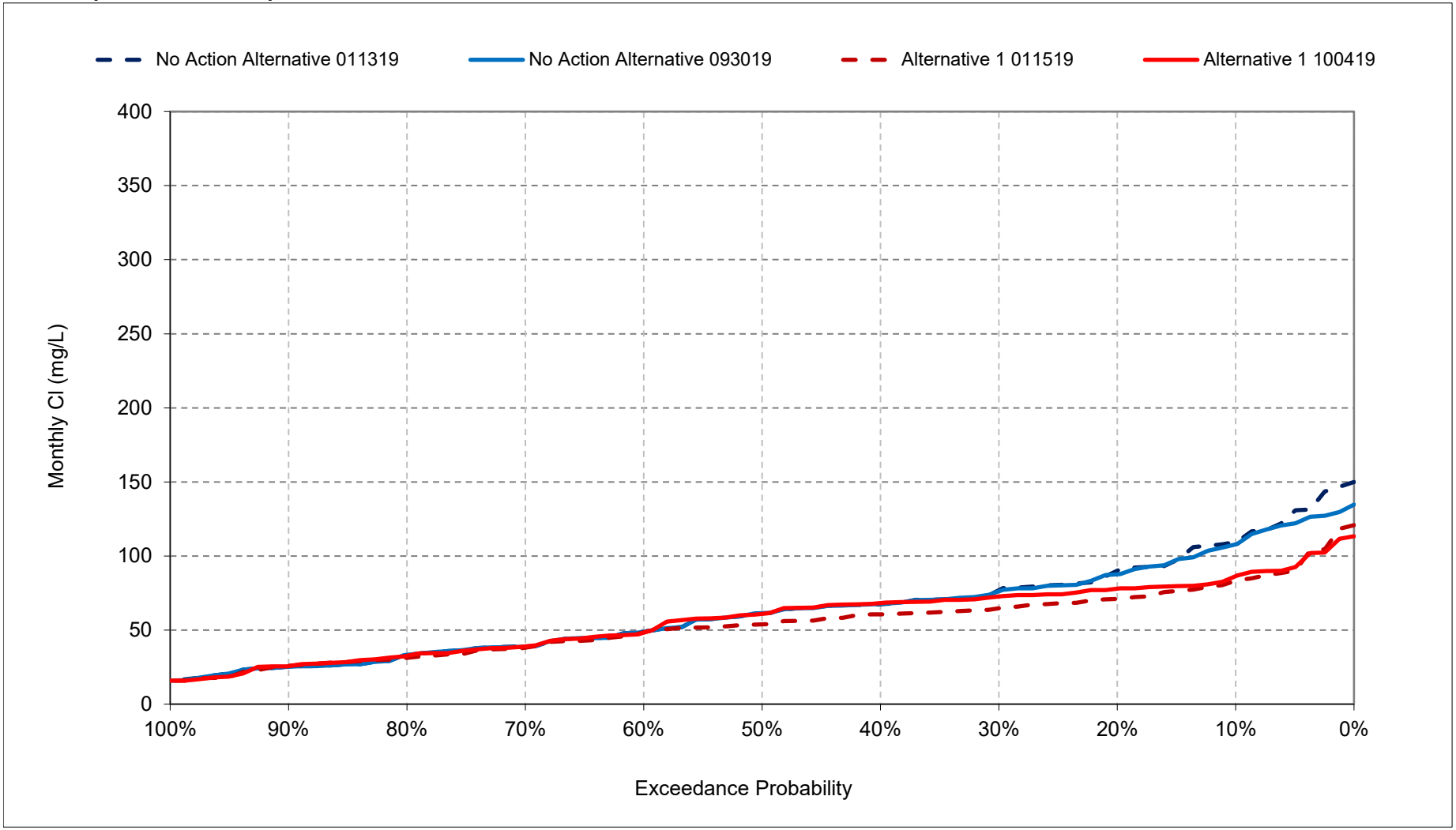

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-9. Banks Pumping Plant South**
**Delta Exports Chloride, March Cl**



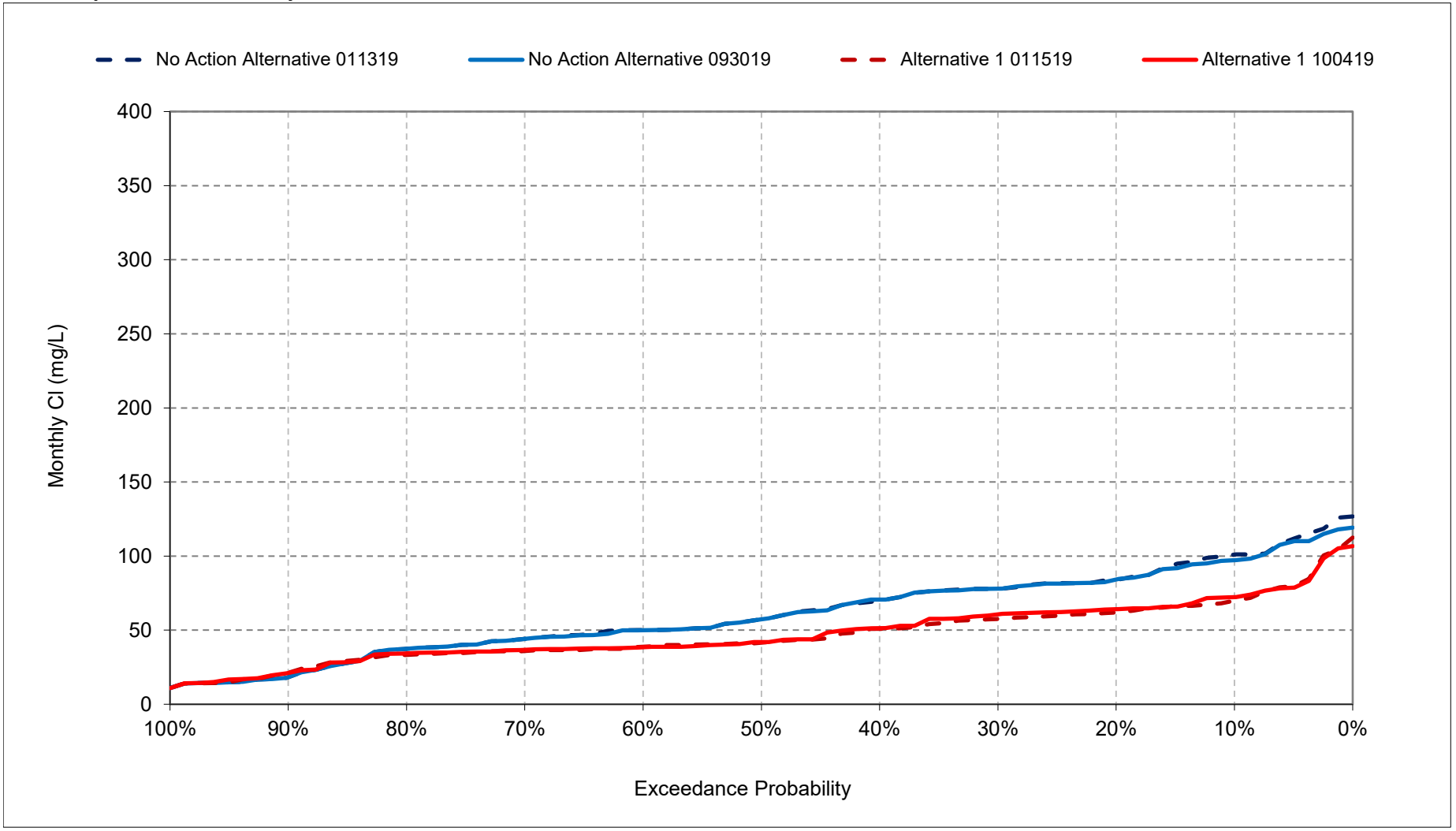

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-10. Banks Pumping Plant South Delta Exports Chloride, April Cl**



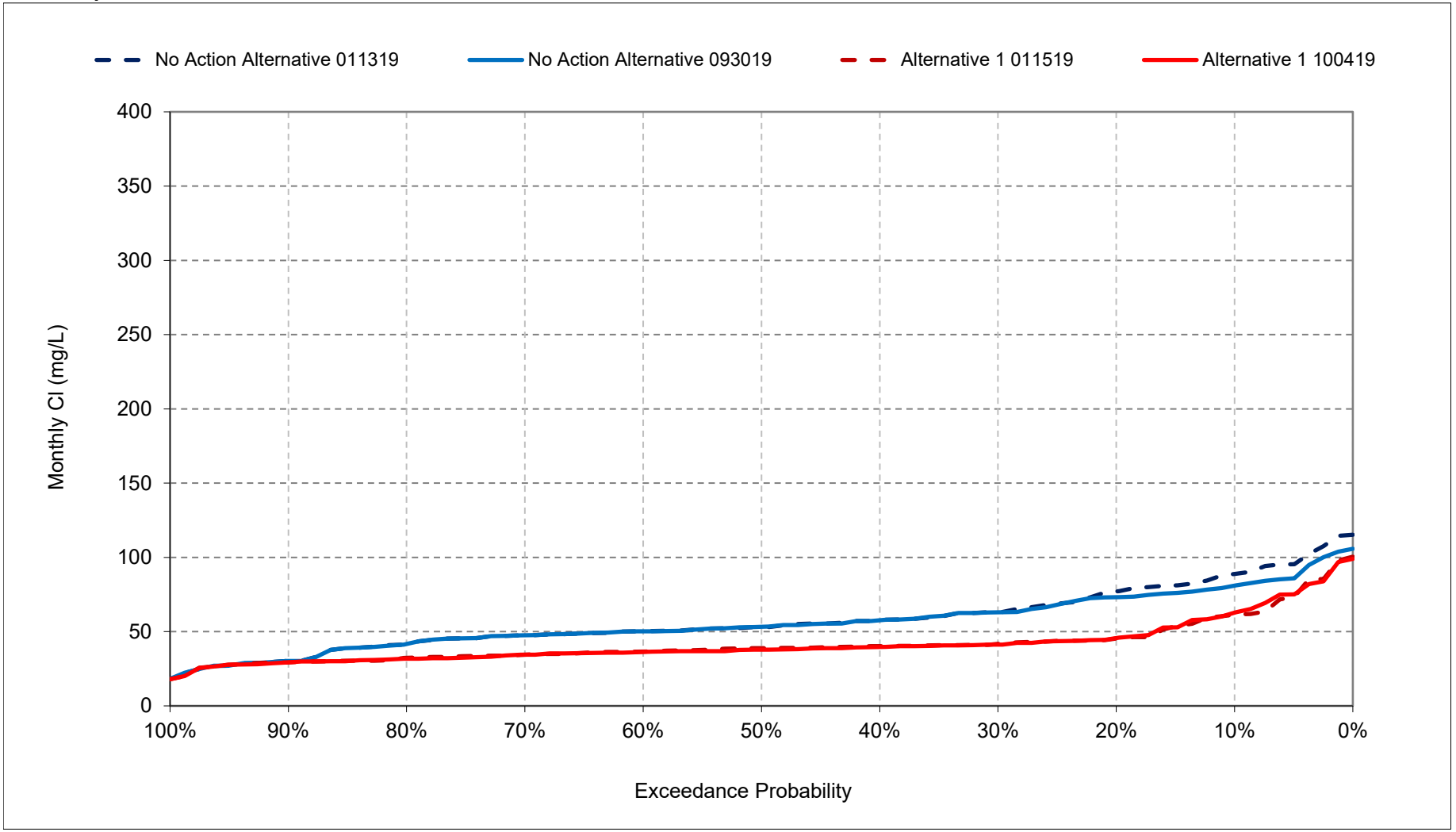

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-11. Banks Pumping Plant South Delta Exports Chloride, May Cl**



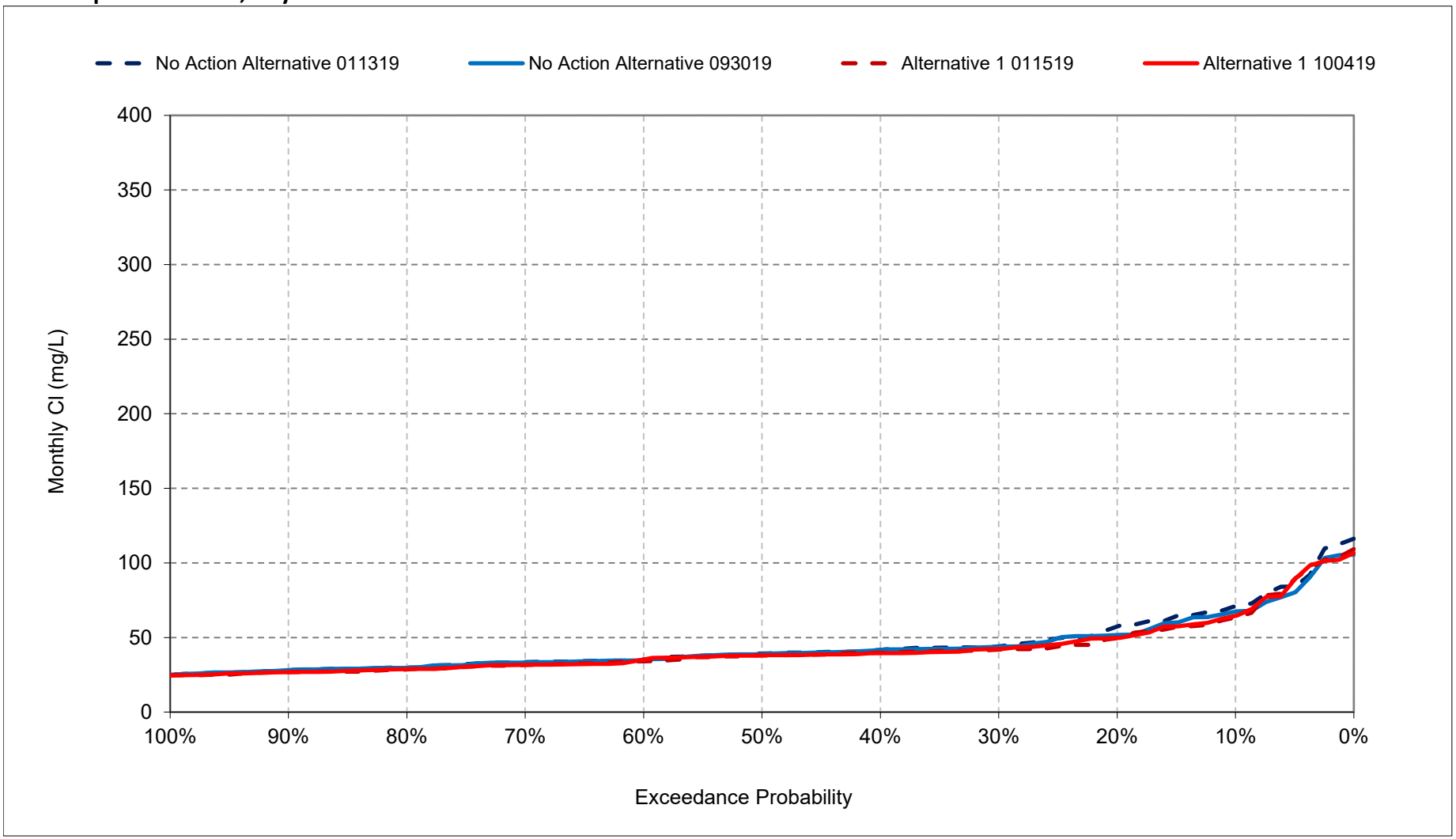

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-12. Banks Pumping Plant South Delta Exports Chloride, June Cl**



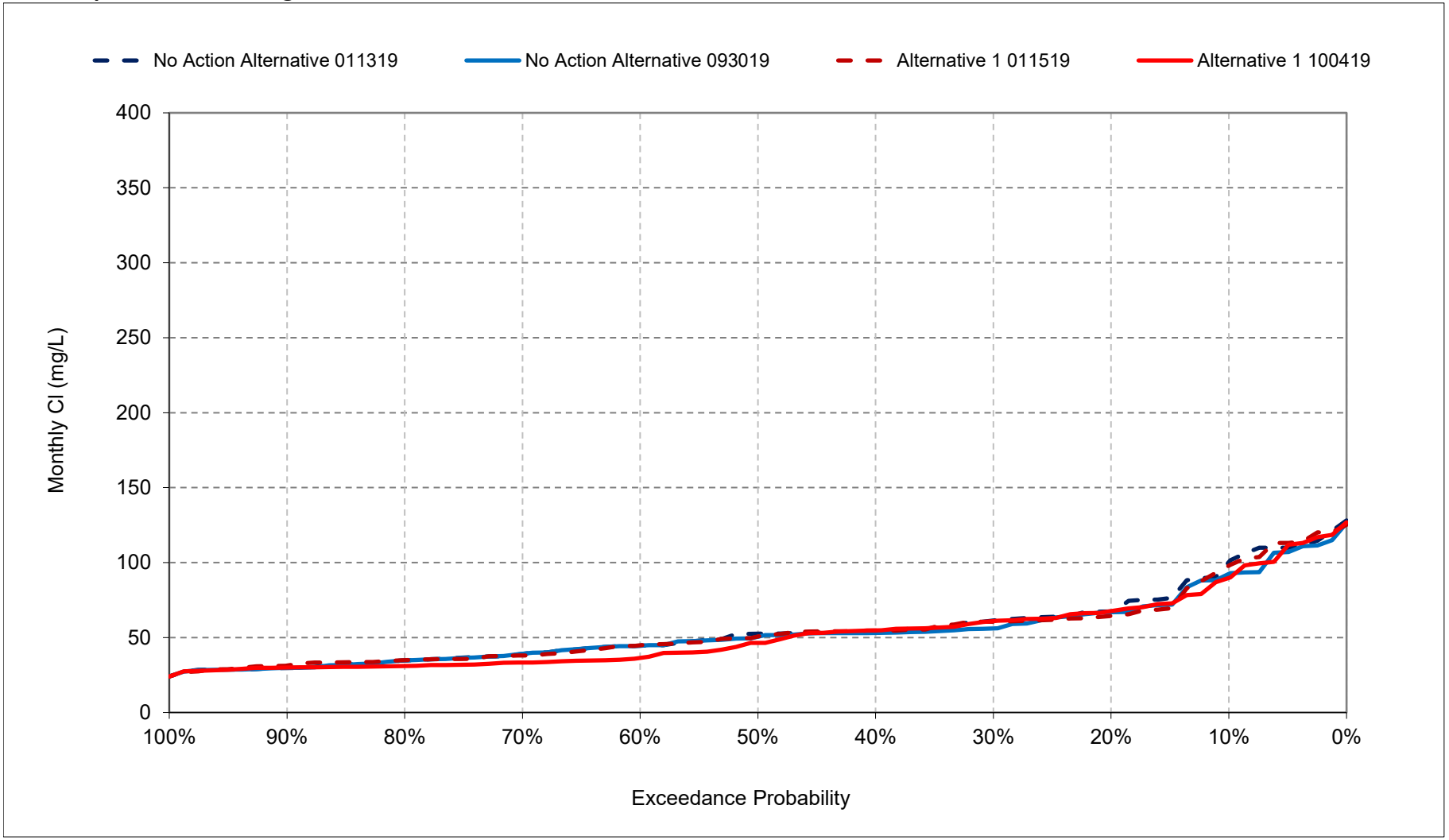

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-13. Banks Pumping Plant South**
**Delta Exports Chloride, July Cl**



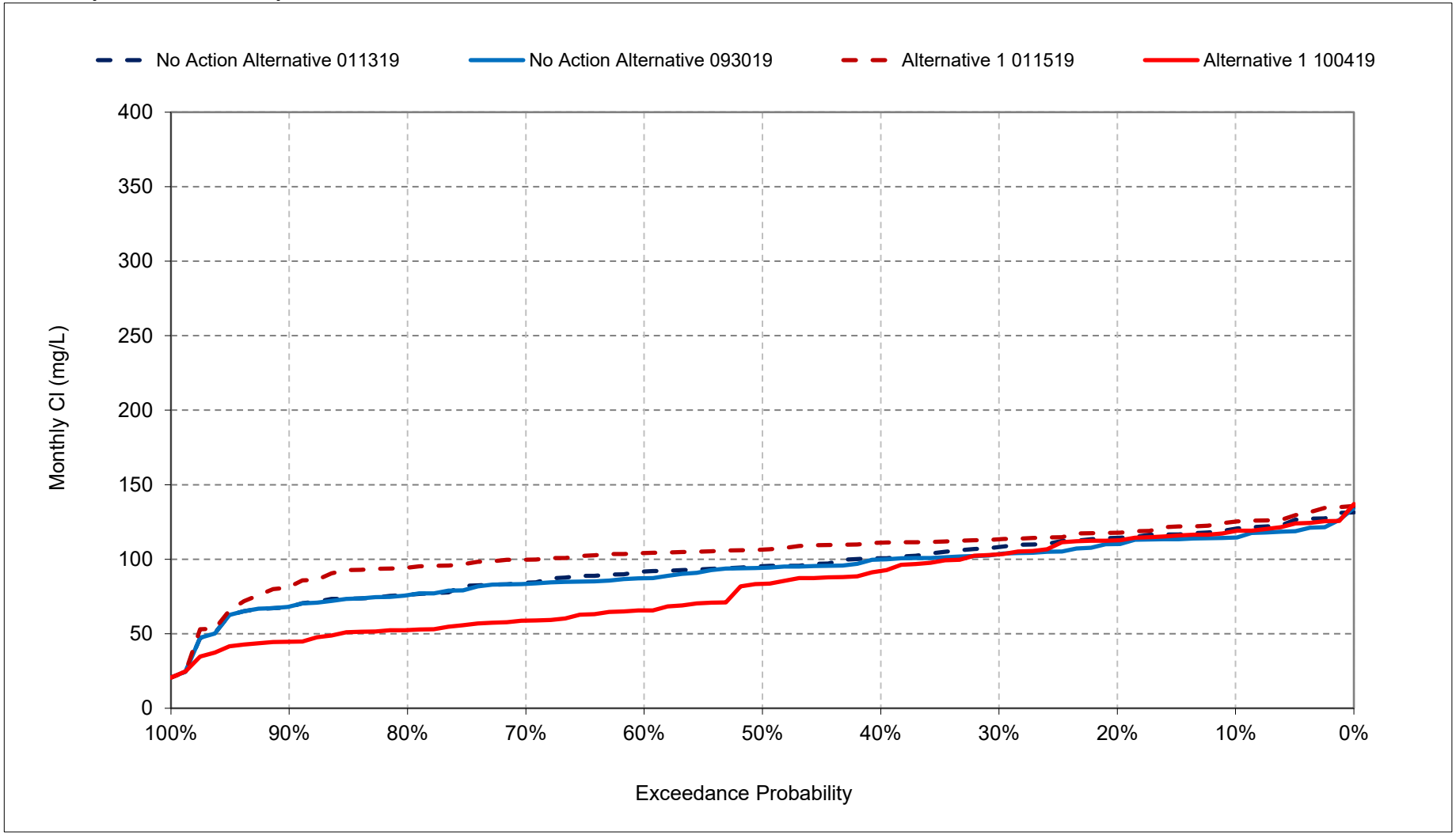

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-14. Banks Pumping Plant South Delta Exports Chloride, August Cl**



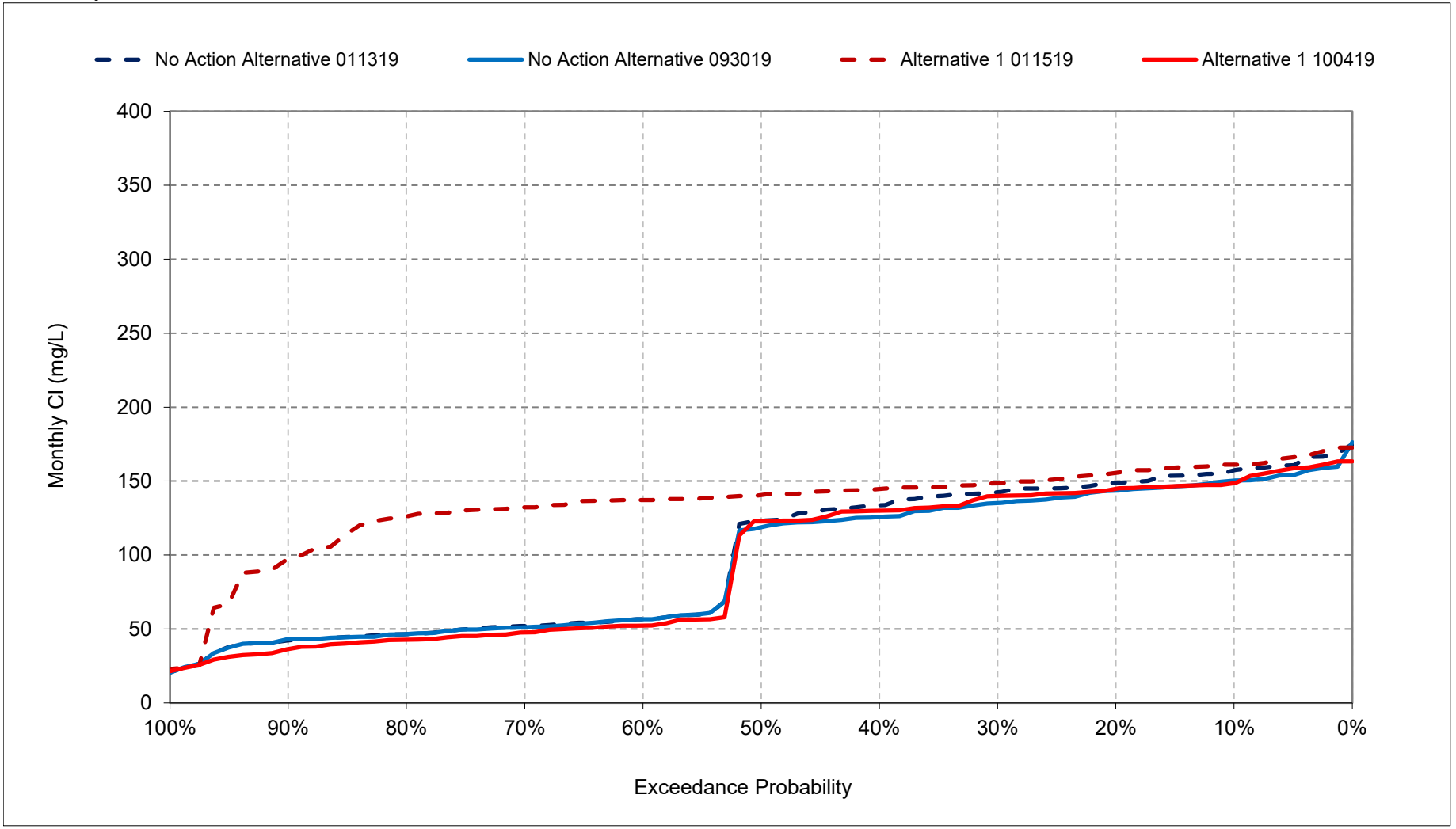

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-15. Banks Pumping Plant South**
**Delta Exports Chloride, September Cl**



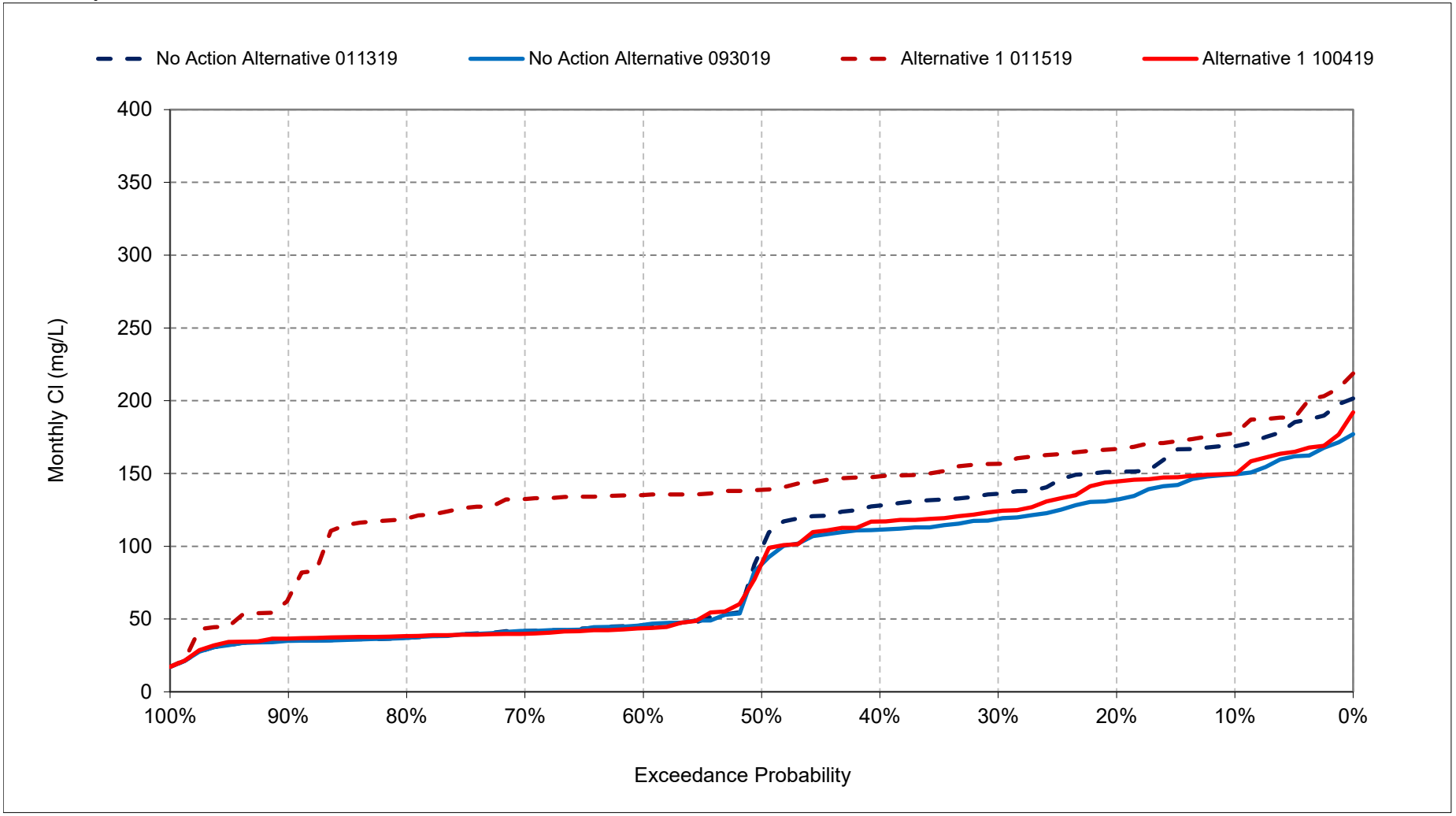

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-16. Banks Pumping Plant South Delta Exports Chloride, October Cl**



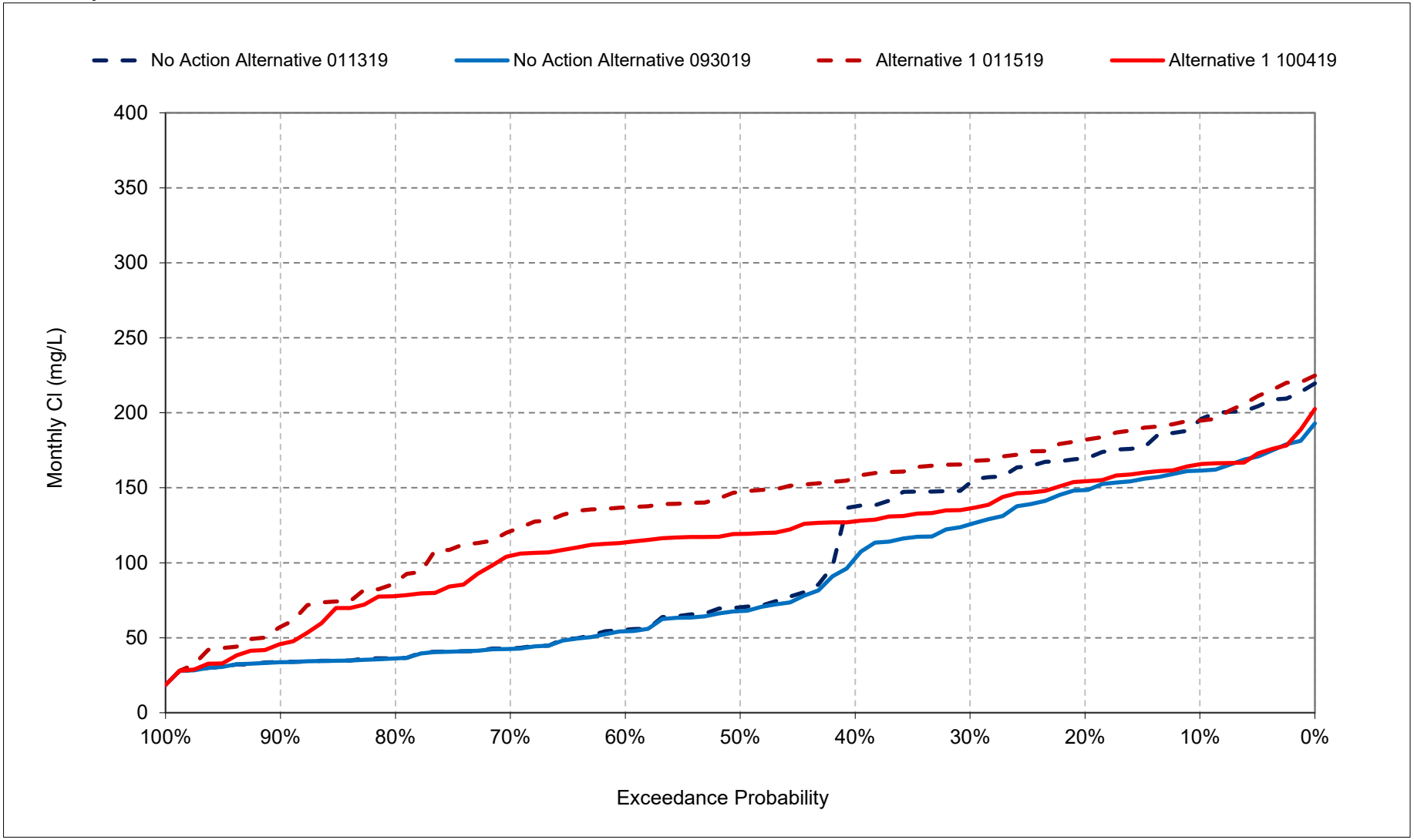

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-17. Banks Pumping Plant South Delta Exports Chloride, November Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 21-18. Banks Pumping Plant South Delta Exports Chloride, December Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-1. Jones Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 161 | 181 | 178 | 175 | 167 | 124 | 104 | 84 | 72 | 108 | 126 |
| 20% | 142 | 147 | 167 | 168 | 150 | 133 | 103 | 99 | 72 | 64 | 79 | 120 |
| 30% | 139 | 134 | 156 | 144 | 142 | 117 | 83 | 91 | 64 | 60 | 73 | 114 |
| 40% | 131 | 124 | 147 | 136 | 133 | 107 | 74 | 77 | 61 | 57 | 68 | 106 |
| 50% | 116 | 98 | 97 | 129 | 120 | 100 | 55 | 63 | 58 | 52 | 64 | 101 |
| 60% | 62 | 63 | 88 | 120 | 103 | 74 | 44 | 57 | 58 | 50 | 55 | 95 |
| 70% | 58 | 52 | 77 | 111 | 88 | 54 | 38 | 53 | 54 | 47 | 49 | 87 |
| 80% | 55 | 48 | 72 | 97 | 66 | 40 | 30 | 40 | 51 | 45 | 47 | 79 |
| 90% | 52 | 44 | 69 | 78 | 40 | 32 | 22 | 18 | 46 | 39 | 42 | 73 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 100 | 97 | 117 | 127 | 114 | 94 | 65 | 67 | 61 | 56 | 66 | 98 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 47 | 68 | 96 | 67 | 47 | 30 | 37 | 50 | 50 | 47 | 82 |
| Above Normal (16%) | 55 | 60 | 93 | 124 | 110 | 78 | 50 | 57 | 58 | 50 | 50 | 76 |
| Below Normal (13%) | 132 | 120 | 141 | 128 | 123 | 99 | 65 | 73 | 64 | 49 | 66 | 112 |
| Dry (24%) | 136 | 130 | 141 | 147 | 139 | 118 | 86 | 84 | 62 | 56 | 84 | 111 |
| Critical (15%) | 155 | 171 | 185 | 163 | 169 | 168 | 126 | 107 | 82 | 80 | 97 | 125 |

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 167 | 184 | 180 | 160 | 131 | 117 | 94 | 69 | 77 | 104 | 130 |
| 20% | 143 | 153 | 172 | 175 | 144 | 116 | 100 | 83 | 61 | 65 | 78 | 123 |
| 30% | 139 | 144 | 164 | 169 | 133 | 105 | 86 | 75 | 55 | 60 | 72 | 116 |
| 40% | 133 | 137 | 159 | 154 | 123 | 102 | 65 | 62 | 50 | 55 | 69 | 114 |
| 50% | 128 | 131 | 152 | 136 | 113 | 97 | 49 | 50 | 48 | 52 | 64 | 111 |
| 60% | 123 | 127 | 145 | 124 | 102 | 82 | 42 | 46 | 47 | 50 | 55 | 108 |
| 70% | 118 | 122 | 127 | 112 | 85 | 52 | 36 | 44 | 45 | 46 | 50 | 106 |
| 80% | 108 | 110 | 107 | 97 | 64 | 40 | 28 | 36 | 40 | 44 | 48 | 99 |
| 90% | 88 | 73 | 86 | 79 | 39 | 31 | 22 | 18 | 35 | 37 | 43 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 123 | 127 | 141 | 134 | 107 | 85 | 63 | 57 | 51 | 56 | 66 | 108 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 96 | 108 | 119 | 97 | 66 | 47 | 28 | 31 | 46 | 50 | 47 | 88 |
| Above Normal (16%) | 123 | 121 | 143 | 134 | 106 | 77 | 45 | 46 | 49 | 48 | 51 | 110 |
| Below Normal (13%) | 129 | 123 | 143 | 140 | 117 | 93 | 67 | 64 | 46 | 50 | 70 | 118 |
| Dry (24%) | 138 | 134 | 142 | 158 | 129 | 103 | 83 | 70 | 48 | 56 | 80 | 114 |
| Critical (15%) | 150 | 167 | 186 | 164 | 150 | 143 | 118 | 97 | 72 | 83 | 98 | 127 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 6 | 3 | 2 | -15 | -37 | -8 | -10 | -15 | 5 | -4 | 4 |
| 20% | 1 | 7 | 5 | 7 | -7 | -18 | -3 | -17 | -11 | 1 | -1 | 3 |
| 30% | 0 | 10 | 8 | 25 | -9 | -13 | 3 | -16 | -10 | 0 | -1 | 2 |
| 40% | 3 | 13 | 12 | 18 | -10 | -6 | -9 | -14 | -11 | -2 | 1 | 8 |
| 50% | 13 | 33 | 55 | 7 | -8 | -2 | -6 | -13 | -10 | -1 | 1 | 10 |
| 60% | 60 | 64 | 57 | 4 | -1 | 7 | -2 | -11 | -11 | 0 | 0 | 13 |
| 70% | 59 | 70 | 50 | 2 | -3 | -1 | -2 | -9 | -9 | -1 | 0 | 19 |
| 80% | 54 | 62 | 35 | 1 | -2 | 0 | -2 | -4 | -11 | -1 | 1 | 20 |
| 90% | 37 | 29 | 16 | 0 | -2 | -1 | 0 | 0 | -11 | -2 | 1 | 13 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 23 | 30 | 25 | 6 | -7 | -8 | -3 | -9 | -10 | 0 | 0 | 9 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 42 | 61 | 50 | 1 | -1 | 0 | -1 | -5 | -4 | 1 | 0 | 7 |
| Above Normal (16%) | 68 | 61 | 50 | 11 | -5 | -2 | -6 | -11 | -9 | -1 | 1 | 34 |
| Below Normal (13%) | -3 | 3 | 2 | 12 | -6 | -6 | 3 | -9 | -18 | 1 | 4 | 6 |
| Dry (24%) | 1 | 4 | 1 | 11 | -11 | -15 | -3 | -14 | -14 | -1 | -4 | 3 |
| Critical (15%) | -4 | -4 | 1 | 1 | -18 | -26 | -7 | -9 | -10 | 2 | 2 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-2. Jones Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 142 | 142 | 167 | 157 | 169 | 168 | 124 | 104 | 77 | 71 | 98 | 122 |
| 20% | 139 | 131 | 156 | 150 | 148 | 135 | 102 | 99 | 68 | 62 | 76 | 116 |
| 30% | 131 | 116 | 141 | 139 | 140 | 118 | 83 | 91 | 64 | 59 | 69 | 110 |
| 40% | 124 | 110 | 123 | 132 | 132 | 107 | 74 | 77 | 60 | 57 | 67 | 103 |
| 50% | 110 | 91 | 96 | 127 | 119 | 99 | 55 | 63 | 58 | 53 | 63 | 96 |
| 60% | 62 | 62 | 87 | 116 | 103 | 74 | 44 | 57 | 57 | 49 | 55 | 94 |
| 70% | 58 | 52 | 77 | 109 | 88 | 54 | 38 | 53 | 54 | 46 | 49 | 87 |
| 80% | 54 | 48 | 72 | 97 | 65 | 40 | 30 | 40 | 51 | 44 | 47 | 78 |
| 90% | 51 | 44 | 69 | 78 | 40 | 32 | 22 | 18 | 46 | 39 | 42 | 73 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 89 | 109 | 120 | 111 | 94 | 65 | 66 | 59 | 55 | 65 | 96 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 47 | 68 | 95 | 67 | 47 | 30 | 37 | 50 | 50 | 47 | 82 |
| Above Normal (16%) | 55 | 59 | 93 | 122 | 110 | 78 | 50 | 57 | 58 | 50 | 50 | 76 |
| Below Normal (13%) | 127 | 106 | 125 | 123 | 122 | 98 | 65 | 73 | 62 | 49 | 64 | 110 |
| Dry (24%) | 130 | 117 | 130 | 134 | 137 | 118 | 86 | 84 | 60 | 54 | 80 | 107 |
| Critical (15%) | 146 | 152 | 167 | 147 | 154 | 168 | 125 | 105 | 77 | 79 | 96 | 120 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 143 | 145 | 166 | 186 | 147 | 133 | 113 | 94 | 67 | 78 | 96 | 123 |
| 20% | 133 | 136 | 158 | 165 | 139 | 122 | 101 | 84 | 60 | 65 | 80 | 119 |
| 30% | 130 | 119 | 146 | 157 | 134 | 117 | 91 | 75 | 54 | 61 | 72 | 111 |
| 40% | 123 | 113 | 142 | 148 | 123 | 113 | 68 | 62 | 50 | 57 | 69 | 103 |
| 50% | 109 | 94 | 137 | 131 | 114 | 108 | 52 | 51 | 48 | 53 | 60 | 96 |
| 60% | 68 | 61 | 130 | 118 | 101 | 84 | 43 | 47 | 46 | 51 | 52 | 82 |
| 70% | 64 | 58 | 121 | 111 | 86 | 53 | 37 | 45 | 45 | 50 | 47 | 76 |
| 80% | 59 | 56 | 96 | 97 | 66 | 40 | 28 | 36 | 38 | 45 | 45 | 64 |
| 90% | 49 | 53 | 83 | 79 | 42 | 31 | 22 | 18 | 34 | 37 | 42 | 56 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 93 | 128 | 131 | 105 | 91 | 64 | 58 | 50 | 57 | 64 | 91 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 54 | 108 | 98 | 66 | 49 | 29 | 32 | 44 | 51 | 44 | 62 |
| Above Normal (16%) | 67 | 61 | 131 | 131 | 106 | 83 | 46 | 46 | 47 | 52 | 48 | 76 |
| Below Normal (13%) | 122 | 111 | 128 | 143 | 117 | 101 | 70 | 64 | 46 | 53 | 70 | 113 |
| Dry (24%) | 129 | 121 | 130 | 152 | 124 | 114 | 85 | 73 | 49 | 56 | 79 | 109 |
| Critical (15%) | 142 | 149 | 167 | 155 | 144 | 145 | 118 | 96 | 72 | 82 | 97 | 121 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **1** | **2** | -1 | **29** | -22 | -35 | -11 | -9 | -10 | **7** | -2 | **2** |
| 20% | -5 | **5** | **3** | **15** | -9 | -12 | -2 | -15 | -9 | **2** | **5** | **3** |
| 30% | -1 | **3** | **5** | **17** | -6 | -1 | **8** | -16 | -10 | **2** | **3** | **1** |
| 40% | -1 | **3** | **20** | **16** | -9 | **5** | -6 | -15 | -10 | 0 | **2** | -1 |
| 50% | -1 | **3** | **41** | **5** | -5 | **8** | -3 | -13 | -11 | **0** | -2 | 0 |
| 60% | **6** | -1 | **42** | **2** | -2 | **10** | -1 | -10 | -11 | **1** | -4 | -12 |
| 70% | **6** | **6** | **43** | **2** | -3 | 0 | -1 | -8 | -9 | **3** | -2 | -11 |
| 80% | **6** | **8** | **24** | **0** | **1** | 0 | -2 | -3 | -13 | **0** | -1 | -15 |
| 90% | -2 | **9** | **14** | **1** | **2** | 0 | 0 | 0 | -12 | -1 | 0 | -17 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **4** | **19** | **10** | -6 | -3 | -1 | -8 | -9 | **2** | 0 | -5 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **0** | **7** | **40** | **2** | -1 | **2** | -1 | -4 | -5 | **1** | -3 | -20 |
| Above Normal (16%) | **12** | **2** | **38** | **8** | -5 | **4** | -4 | -11 | -11 | **2** | -1 | 0 |
| Below Normal (13%) | -5 | **6** | **3** | **20** | -6 | **3** | **5** | -9 | -15 | **4** | **6** | **3** |
| Dry (24%) | -1 | **4** | **0** | **18** | -13 | -4 | -1 | -11 | -11 | **2** | -1 | **3** |
| Critical (15%) | -5 | -3 | **0** | **8** | -10 | -23 | -7 | -9 | -4 | **3** | **2** | **1** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-3. Jones Pumping Plant South Delta Exports Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 161 | 181 | 178 | 175 | 167 | 124 | 104 | 84 | 72 | 108 | 126 |
| 20% | 142 | 147 | 167 | 168 | 150 | 133 | 103 | 99 | 72 | 64 | 79 | 120 |
| 30% | 139 | 134 | 156 | 144 | 142 | 117 | 83 | 91 | 64 | 60 | 73 | 114 |
| 40% | 131 | 124 | 147 | 136 | 133 | 107 | 74 | 77 | 61 | 57 | 68 | 106 |
| 50% | 116 | 98 | 97 | 129 | 120 | 100 | 55 | 63 | 58 | 52 | 64 | 101 |
| 60% | 62 | 63 | 88 | 120 | 103 | 74 | 44 | 57 | 58 | 50 | 55 | 95 |
| 70% | 58 | 52 | 77 | 111 | 88 | 54 | 38 | 53 | 54 | 47 | 49 | 87 |
| 80% | 55 | 48 | 72 | 97 | 66 | 40 | 30 | 40 | 51 | 45 | 47 | 79 |
| 90% | 52 | 44 | 69 | 78 | 40 | 32 | 22 | 18 | 46 | 39 | 42 | 73 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 100 | 97 | 117 | 127 | 114 | 94 | 65 | 67 | 61 | 56 | 66 | 98 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 47 | 68 | 96 | 67 | 47 | 30 | 37 | 50 | 50 | 47 | 82 |
| Above Normal (16%) | 55 | 60 | 93 | 124 | 110 | 78 | 50 | 57 | 58 | 50 | 50 | 76 |
| Below Normal (13%) | 132 | 120 | 141 | 128 | 123 | 99 | 65 | 73 | 64 | 49 | 66 | 112 |
| Dry (24%) | 136 | 130 | 141 | 147 | 139 | 118 | 86 | 84 | 62 | 56 | 84 | 111 |
| Critical (15%) | 155 | 171 | 185 | 163 | 169 | 168 | 126 | 107 | 82 | 80 | 97 | 125 |

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 142 | 142 | 167 | 157 | 169 | 168 | 124 | 104 | 77 | 71 | 98 | 122 |
| 20% | 139 | 131 | 156 | 150 | 148 | 135 | 102 | 99 | 68 | 62 | 76 | 116 |
| 30% | 131 | 116 | 141 | 139 | 140 | 118 | 83 | 91 | 64 | 59 | 69 | 110 |
| 40% | 124 | 110 | 123 | 132 | 132 | 107 | 74 | 77 | 60 | 57 | 67 | 103 |
| 50% | 110 | 91 | 96 | 127 | 119 | 99 | 55 | 63 | 58 | 53 | 63 | 96 |
| 60% | 62 | 62 | 87 | 116 | 103 | 74 | 44 | 57 | 57 | 49 | 55 | 94 |
| 70% | 58 | 52 | 77 | 109 | 88 | 54 | 38 | 53 | 54 | 46 | 49 | 87 |
| 80% | 54 | 48 | 72 | 97 | 65 | 40 | 30 | 40 | 51 | 44 | 47 | 78 |
| 90% | 51 | 44 | 69 | 78 | 40 | 32 | 22 | 18 | 46 | 39 | 42 | 73 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 89 | 109 | 120 | 111 | 94 | 65 | 66 | 59 | 55 | 65 | 96 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 47 | 68 | 95 | 67 | 47 | 30 | 37 | 50 | 50 | 47 | 82 |
| Above Normal (16%) | 55 | 59 | 93 | 122 | 110 | 78 | 50 | 57 | 58 | 50 | 50 | 76 |
| Below Normal (13%) | 127 | 106 | 125 | 123 | 122 | 98 | 65 | 73 | 62 | 49 | 64 | 110 |
| Dry (24%) | 130 | 117 | 130 | 134 | 137 | 118 | 86 | 84 | 60 | 54 | 80 | 107 |
| Critical (15%) | 146 | 152 | 167 | 147 | 154 | 168 | 125 | 105 | 77 | 79 | 96 | 120 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -8 | -18 | -14 | -21 | -6 | 0 | 0 | -1 | -7 | -2 | -10 | -4 |
| 20% | -4 | -16 | -12 | -17 | -2 | 1 | -1 | 0 | -4 | -1 | -3 | -5 |
| 30% | -8 | -18 | -16 | -4 | -2 | 1 | 0 | 0 | 0 | -1 | -4 | -3 |
| 40% | -7 | -15 | -24 | -4 | -1 | 0 | 0 | 0 | 0 | -1 | -1 | -3 |
| 50% | -6 | -7 | -1 | -3 | -1 | 0 | 0 | 0 | 0 | 0 | -1 | -4 |
| 60% | -1 | -1 | -1 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 |
| 70% | -1 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -8 | -7 | -7 | -3 | 0 | 0 | 0 | -2 | -1 | -1 | -2 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | -1 | -2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Below Normal (13%) | -5 | -14 | -16 | -5 | -1 | 0 | 0 | 0 | -2 | 0 | -1 | -2 |
| Dry (24%) | -6 | -13 | -10 | -13 | -3 | 0 | 0 | 0 | -2 | -2 | -4 | -4 |
| Critical (15%) | -9 | -19 | -18 | -16 | -14 | -1 | -1 | -1 | -6 | -1 | -1 | -5 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 22-4. Jones Pumping Plant South Delta Exports Chloride, Monthly Cl

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 150 | 167 | 184 | 180 | 160 | 131 | 117 | 94 | 69 | 77 | 104 | 130 |
| 20% | 143 | 153 | 172 | 175 | 144 | 116 | 100 | 83 | 61 | 65 | 78 | 123 |
| 30% | 139 | 144 | 164 | 169 | 133 | 105 | 86 | 75 | 55 | 60 | 72 | 116 |
| 40% | 133 | 137 | 159 | 154 | 123 | 102 | 65 | 62 | 50 | 55 | 69 | 114 |
| 50% | 128 | 131 | 152 | 136 | 113 | 97 | 49 | 50 | 48 | 52 | 64 | 111 |
| 60% | 123 | 127 | 145 | 124 | 102 | 82 | 42 | 46 | 47 | 50 | 55 | 108 |
| 70% | 118 | 122 | 127 | 112 | 85 | 52 | 36 | 44 | 45 | 46 | 50 | 106 |
| 80% | 108 | 110 | 107 | 97 | 64 | 40 | 28 | 36 | 40 | 44 | 48 | 99 |
| 90% | 88 | 73 | 86 | 79 | 39 | 31 | 22 | 18 | 35 | 37 | 43 | 85 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 123 | 127 | 141 | 134 | 107 | 85 | 63 | 57 | 51 | 56 | 66 | 108 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 96 | 108 | 119 | 97 | 66 | 47 | 28 | 31 | 46 | 50 | 47 | 88 |
| Above Normal (16%) | 123 | 121 | 143 | 134 | 106 | 77 | 45 | 46 | 49 | 48 | 51 | 110 |
| Below Normal (13%) | 129 | 123 | 143 | 140 | 117 | 93 | 67 | 64 | 46 | 50 | 70 | 118 |
| Dry (24%) | 138 | 134 | 142 | 158 | 129 | 103 | 83 | 70 | 48 | 56 | 80 | 114 |
| Critical (15%) | 150 | 167 | 186 | 164 | 150 | 143 | 118 | 97 | 72 | 83 | 98 | 127 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 143 | 145 | 166 | 186 | 147 | 133 | 113 | 94 | 67 | 78 | 96 | 123 |
| 20% | 133 | 136 | 158 | 165 | 139 | 122 | 101 | 84 | 60 | 65 | 80 | 119 |
| 30% | 130 | 119 | 146 | 157 | 134 | 117 | 91 | 75 | 54 | 61 | 72 | 111 |
| 40% | 123 | 113 | 142 | 148 | 123 | 113 | 68 | 62 | 50 | 57 | 69 | 103 |
| 50% | 109 | 94 | 137 | 131 | 114 | 108 | 52 | 51 | 48 | 53 | 60 | 96 |
| 60% | 68 | 61 | 130 | 118 | 101 | 84 | 43 | 47 | 46 | 51 | 52 | 82 |
| 70% | 64 | 58 | 121 | 111 | 86 | 53 | 37 | 45 | 45 | 50 | 47 | 76 |
| 80% | 59 | 56 | 96 | 97 | 66 | 40 | 28 | 36 | 38 | 45 | 45 | 64 |
| 90% | 49 | 53 | 83 | 79 | 42 | 31 | 22 | 18 | 34 | 37 | 42 | 56 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 93 | 128 | 131 | 105 | 91 | 64 | 58 | 50 | 57 | 64 | 91 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 54 | 54 | 108 | 98 | 66 | 49 | 29 | 32 | 44 | 51 | 44 | 62 |
| Above Normal (16%) | 67 | 61 | 131 | 131 | 106 | 83 | 46 | 46 | 47 | 52 | 48 | 76 |
| Below Normal (13%) | 122 | 111 | 128 | 143 | 117 | 101 | 70 | 64 | 46 | 53 | 70 | 113 |
| Dry (24%) | 129 | 121 | 130 | 152 | 124 | 114 | 85 | 73 | 49 | 56 | 79 | 109 |
| Critical (15%) | 142 | 149 | 167 | 155 | 144 | 145 | 118 | 96 | 72 | 82 | 97 | 121 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -6 | -22 | -18 | 6 | -12 | 2 | -4 | 0 | -2 | 1 | -8 | -7 |
| 20% | -10 | -18 | -14 | -9 | -4 | 7 | 0 | 1 | -2 | 0 | 2 | -4 |
| 30% | -9 | -25 | -19 | -12 | 1 | 13 | 5 | 0 | 0 | 1 | 0 | -5 |
| 40% | -10 | -24 | -17 | -6 | 0 | 11 | 3 | 0 | 1 | 1 | 0 | -11 |
| 50% | -20 | -37 | -15 | -5 | 2 | 10 | 3 | 1 | 0 | 2 | -4 | -15 |
| 60% | -55 | -66 | -16 | -6 | -1 | 3 | 1 | 1 | 0 | 1 | -4 | -26 |
| 70% | -54 | -64 | -7 | -1 | 0 | 1 | 1 | 1 | -1 | 4 | -3 | -29 |
| 80% | -49 | -55 | -11 | 0 | 2 | 0 | 0 | 0 | -2 | 1 | -2 | -35 |
| 90% | -39 | -20 | -3 | 0 | 4 | 0 | 0 | 0 | -1 | 0 | -1 | -29 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -26 | -34 | -13 | -3 | -2 | 6 | 1 | 1 | -1 | 1 | -2 | -17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | -42 | -55 | -11 | 1 | 0 | 2 | 1 | 1 | -1 | 0 | -3 | -26 |
| Above Normal (16%) | -56 | -60 | -13 | -4 | 0 | 6 | 1 | 0 | -3 | 4 | -3 | -35 |
| Below Normal (13%) | -7 | -11 | -15 | 2 | 0 | 9 | 3 | 0 | 0 | 2 | 0 | -5 |
| Dry (24%) | -8 | -13 | -12 | -7 | -5 | 11 | 2 | 3 | 1 | 1 | -1 | -5 |
| Critical (15%) | -9 | -18 | -19 | -9 | -6 | 2 | -1 | -1 | 0 | 0 | -1 | -6 |

a Based on the 82-year simulation period.

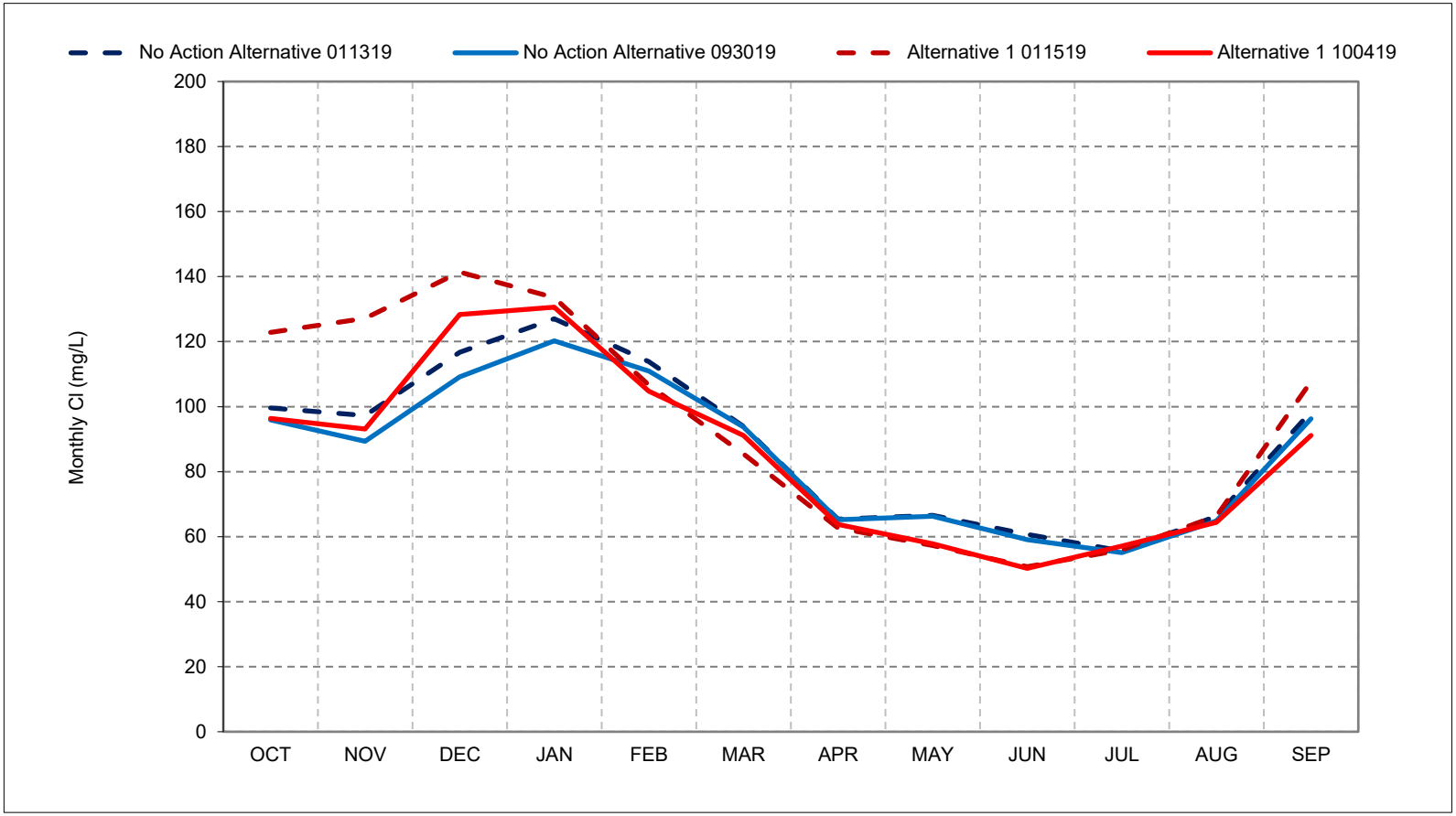
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-1. Jones Pumping Plant South Delta Exports Chloride, Long-Term Average Cl

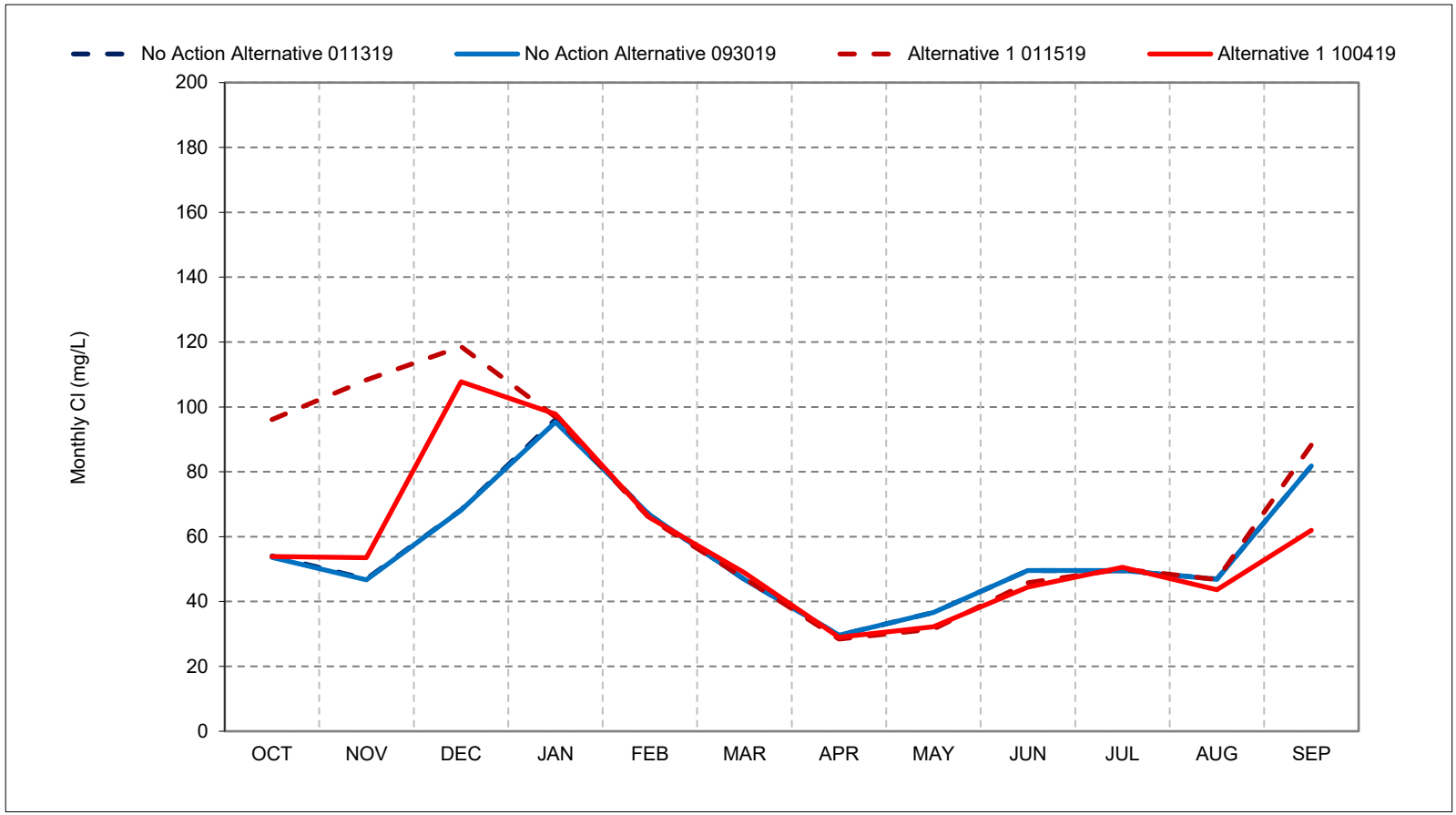



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-2. Jones Pumping Plant South Delta Exports Chloride, Wet Year Average Cl

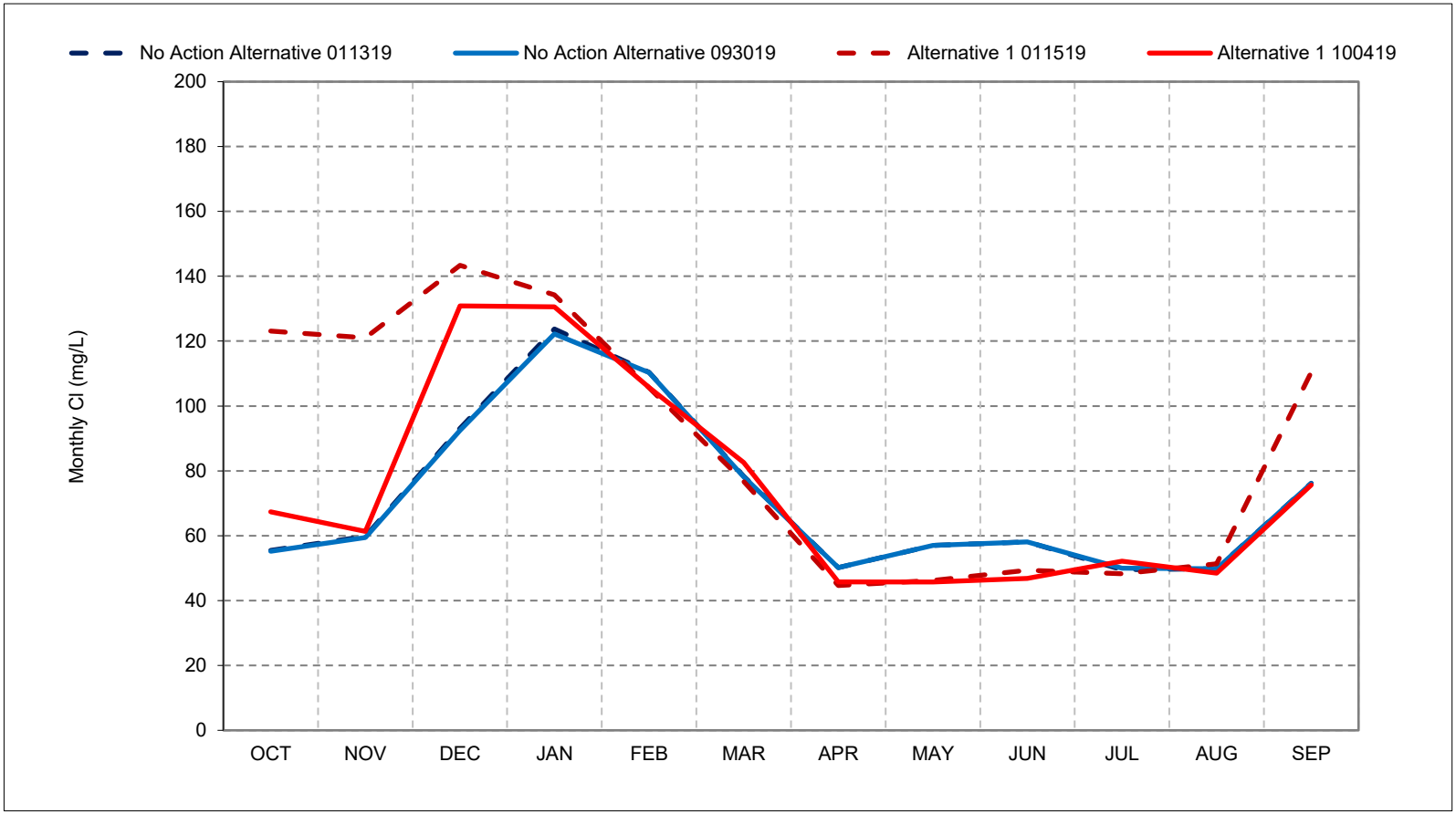



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-3. Jones Pumping Plant South Delta Exports Chloride, Above Normal Year Average Cl

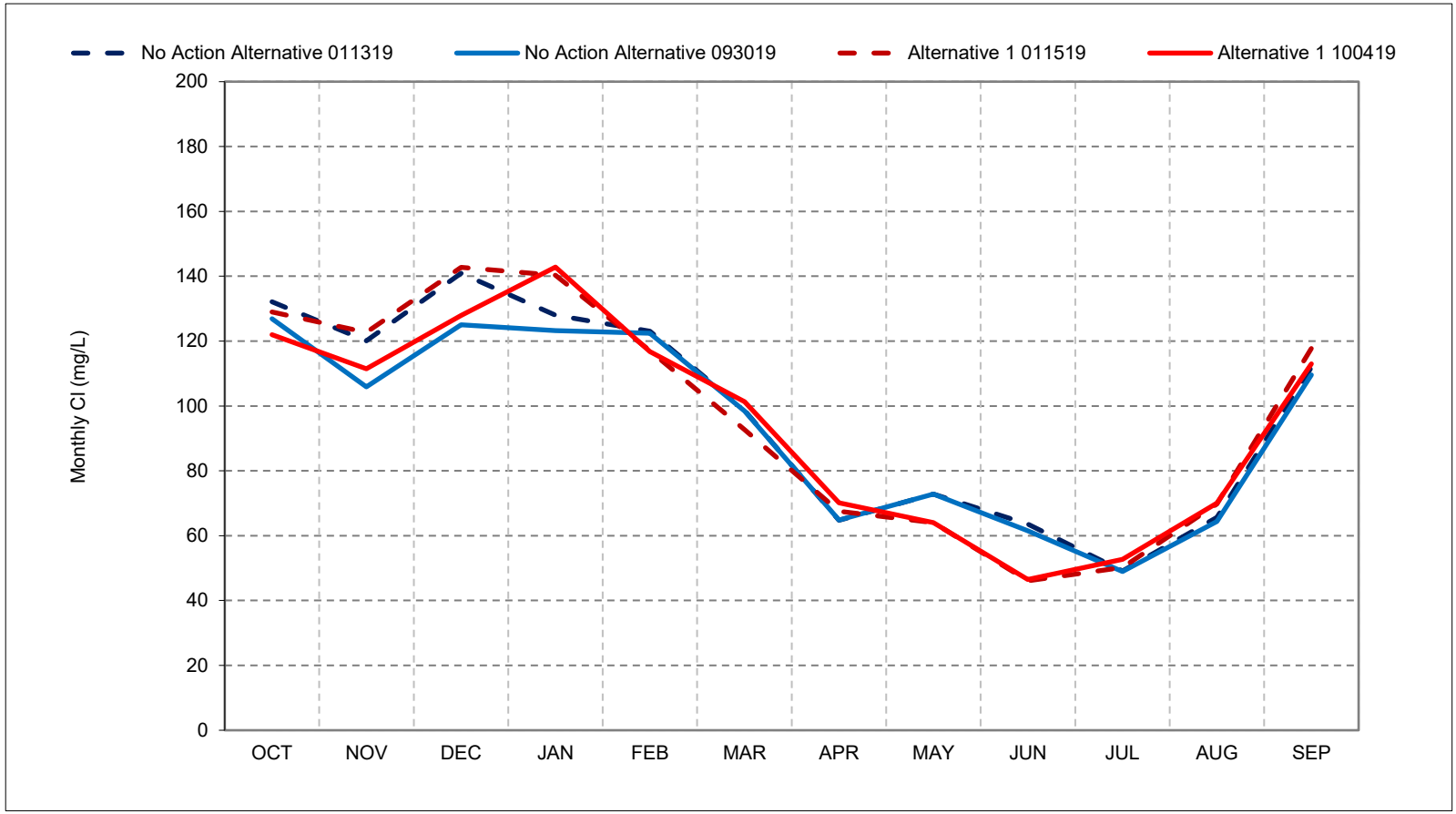



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-4. Jones Pumping Plant South Delta Exports Chloride, Below Normal Year Average Cl

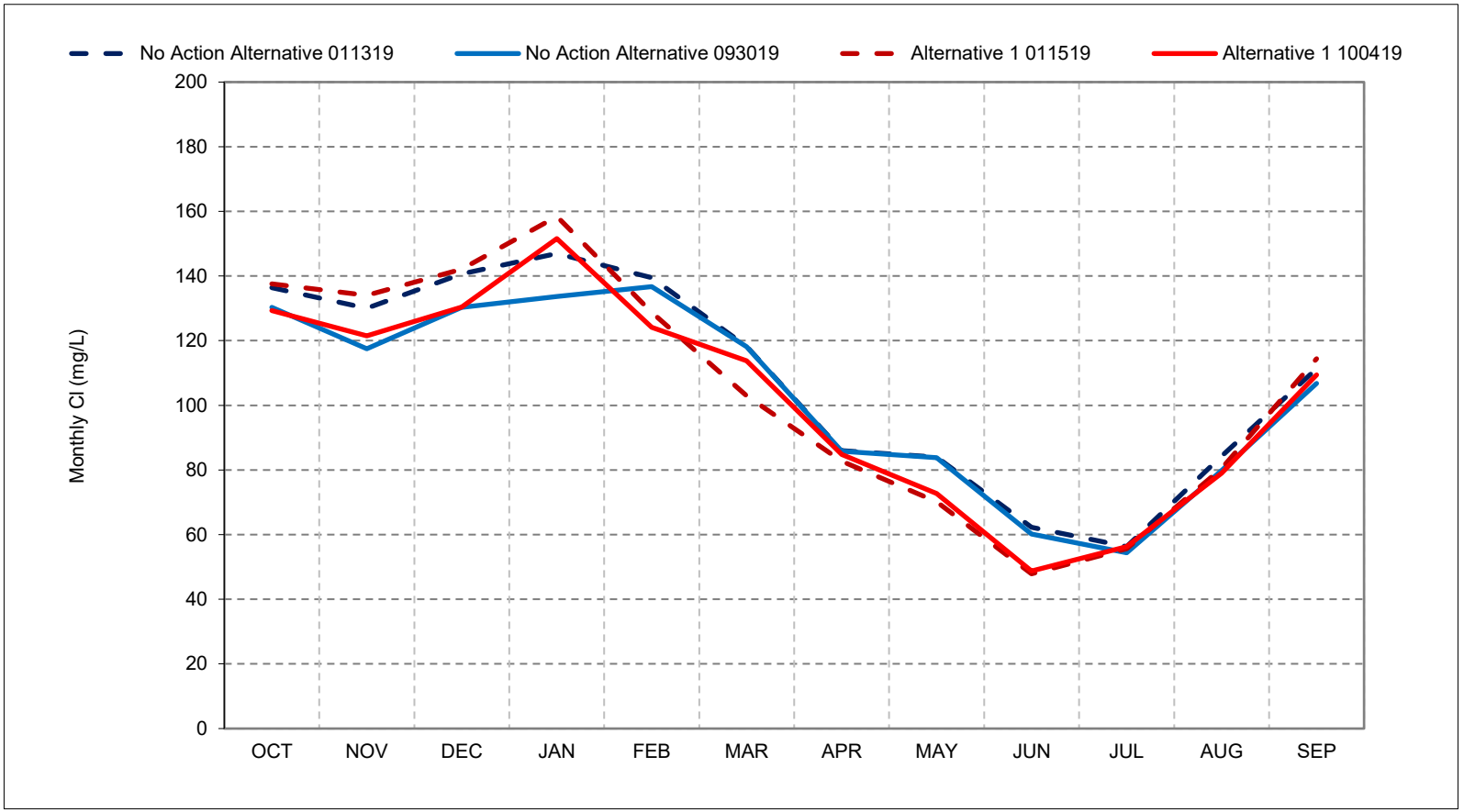



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-5. Jones Pumping Plant South Delta Exports Chloride, Dry Year Average Cl

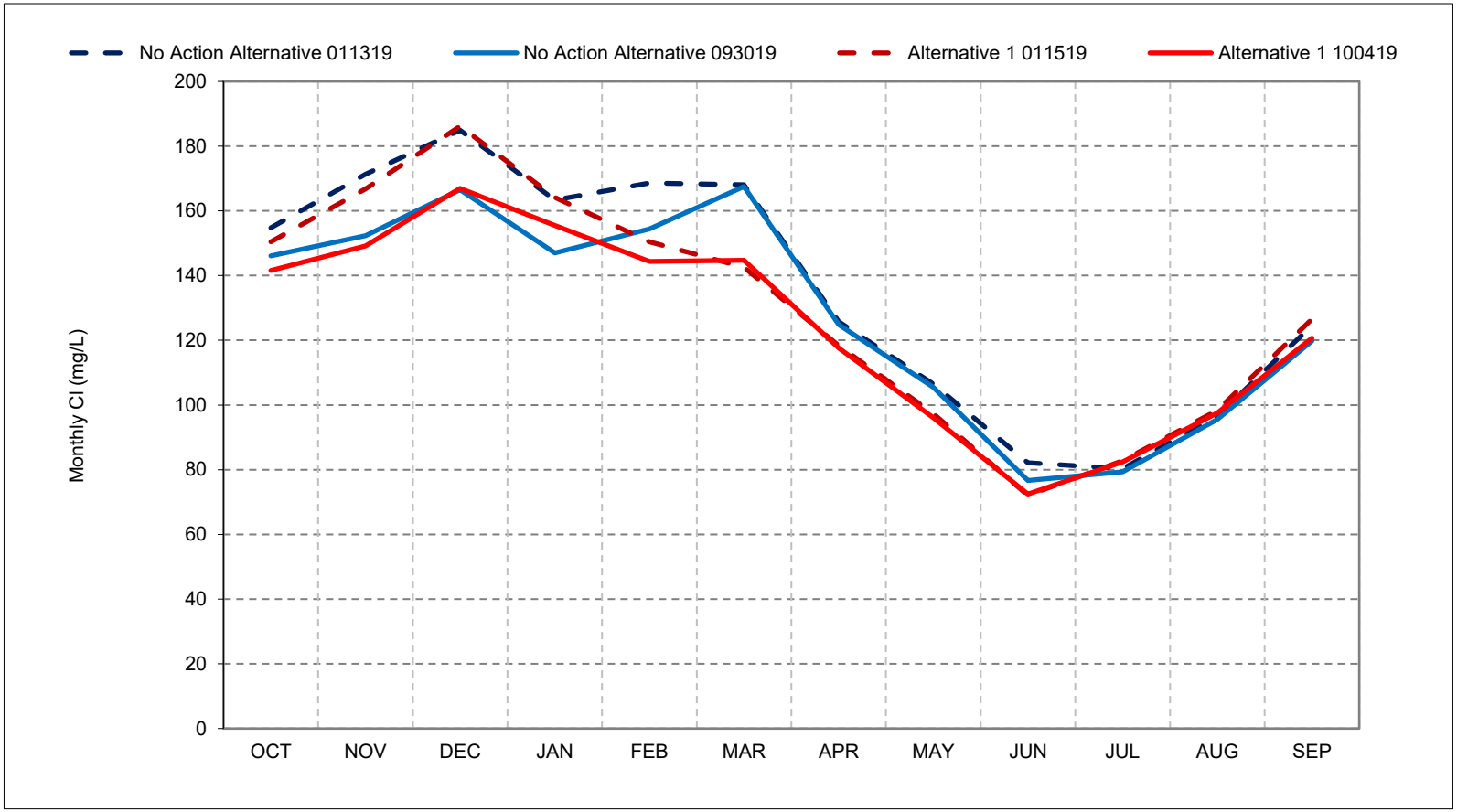



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 22-6. Jones Pumping Plant South Delta Exports Chloride, Critical Year Average Cl

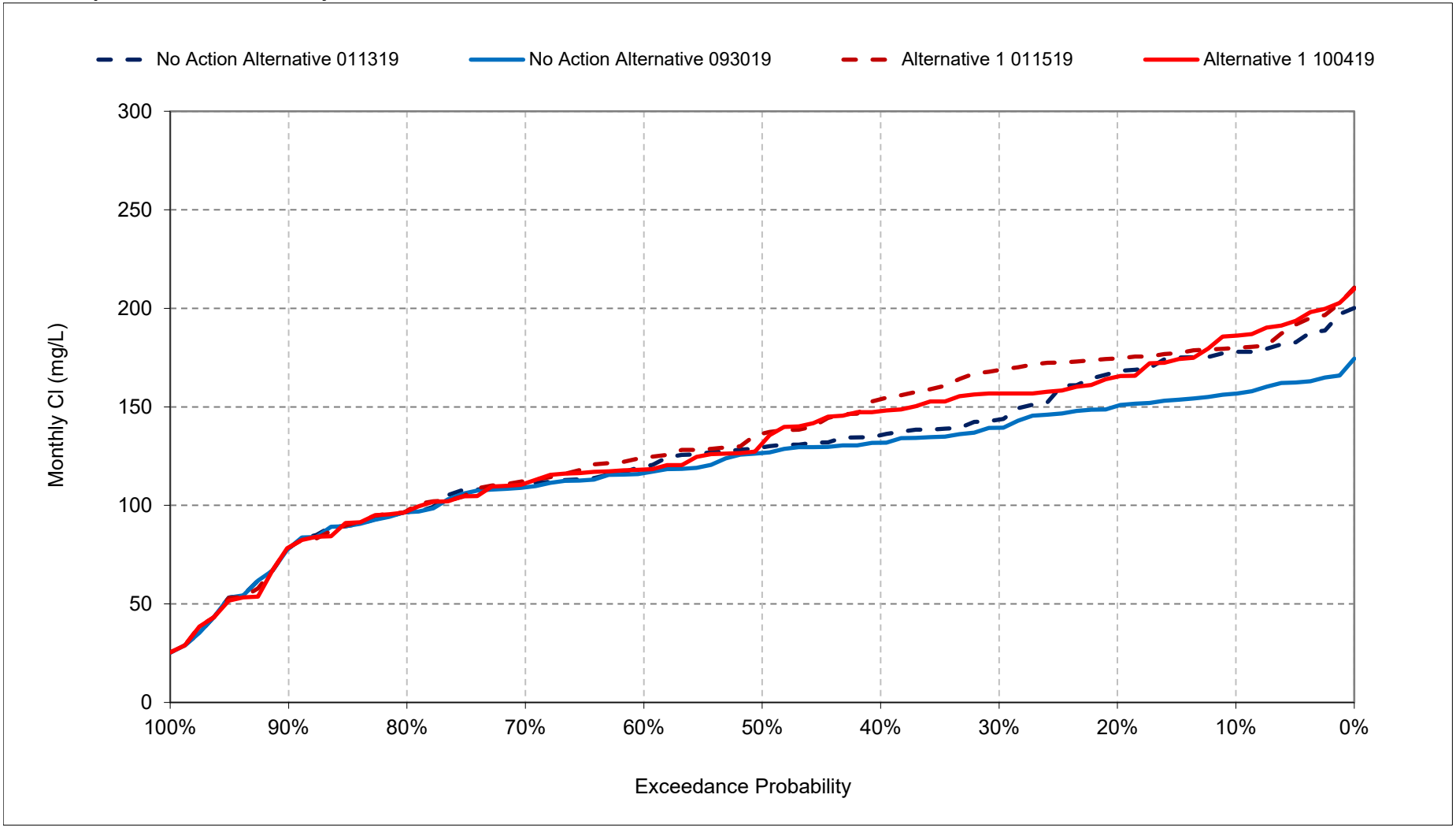



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

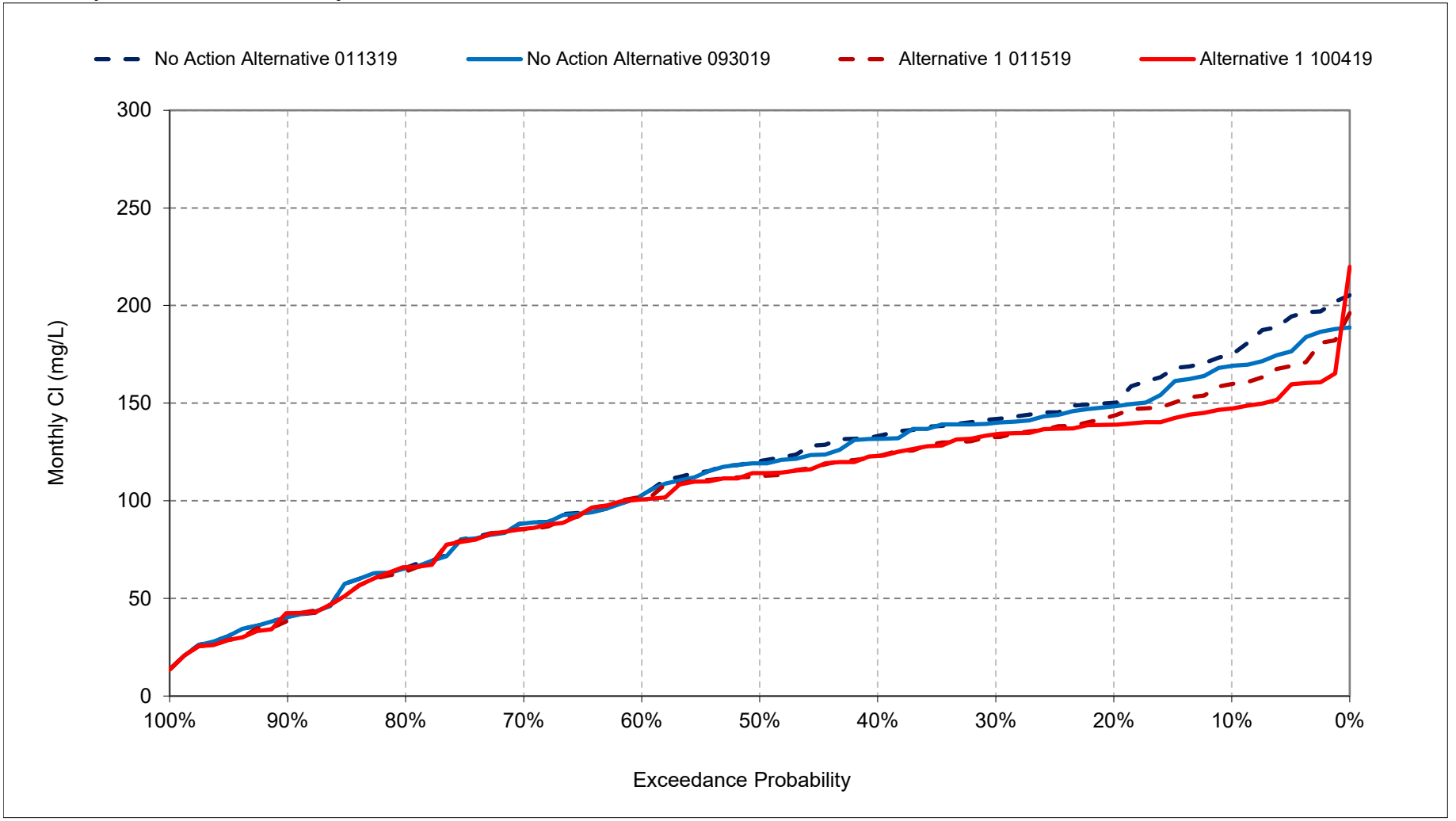
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-7. Jones Pumping Plant South**
**Delta Exports Chloride, January Cl**



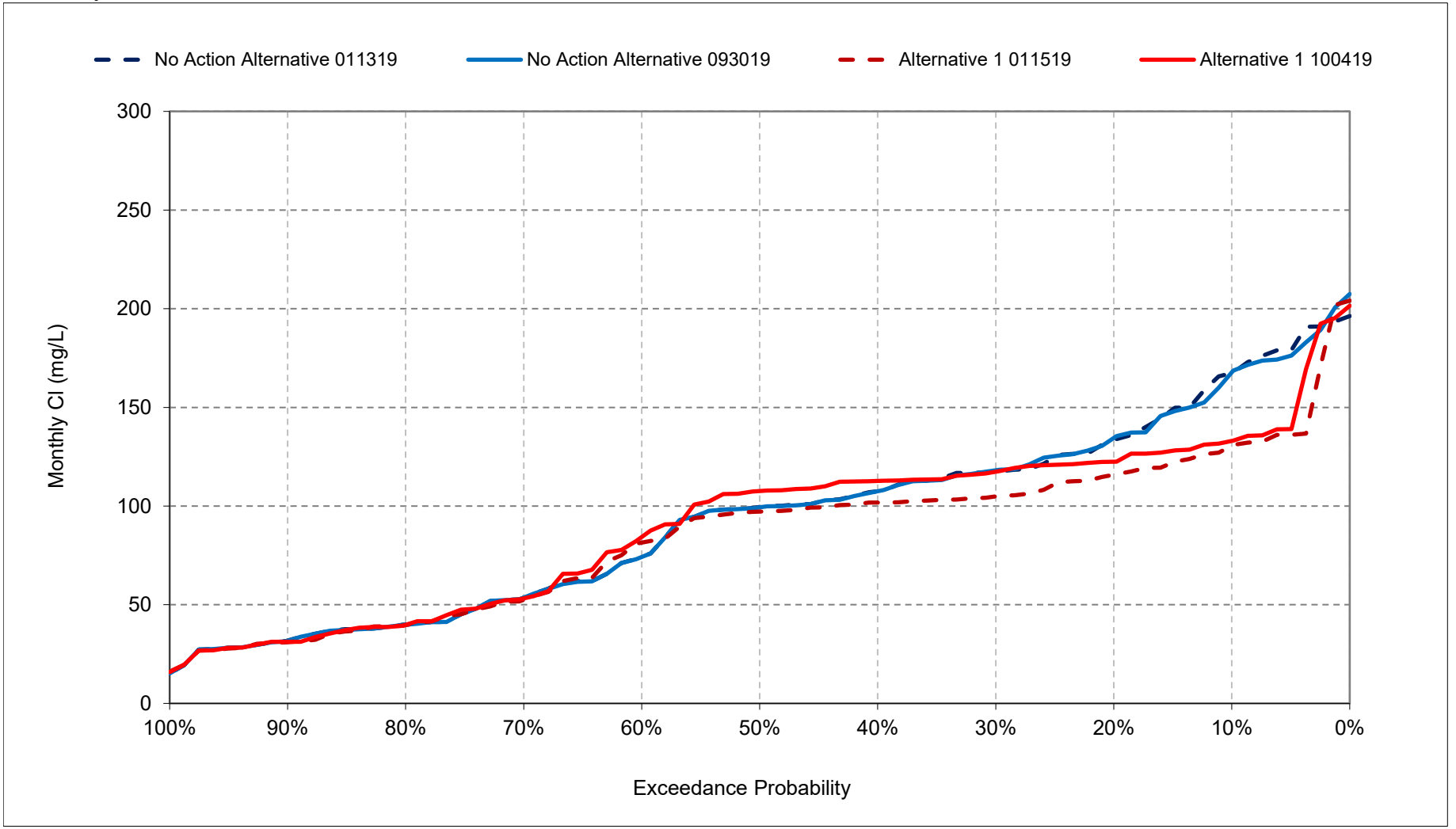

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-8. Jones Pumping Plant South Delta Exports Chloride, February Cl**



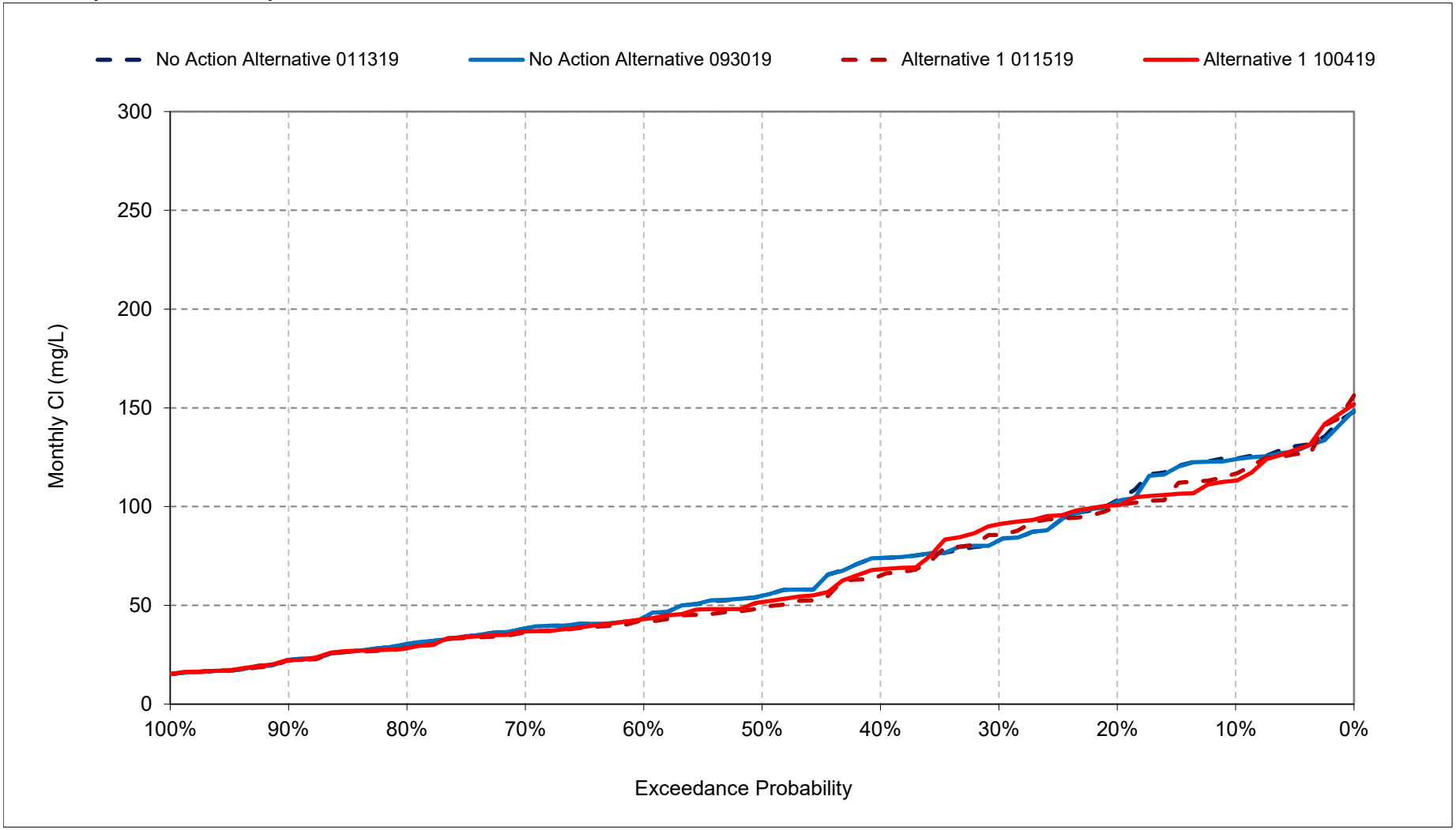

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-9. Jones Pumping Plant South Delta Exports Chloride, March Cl**



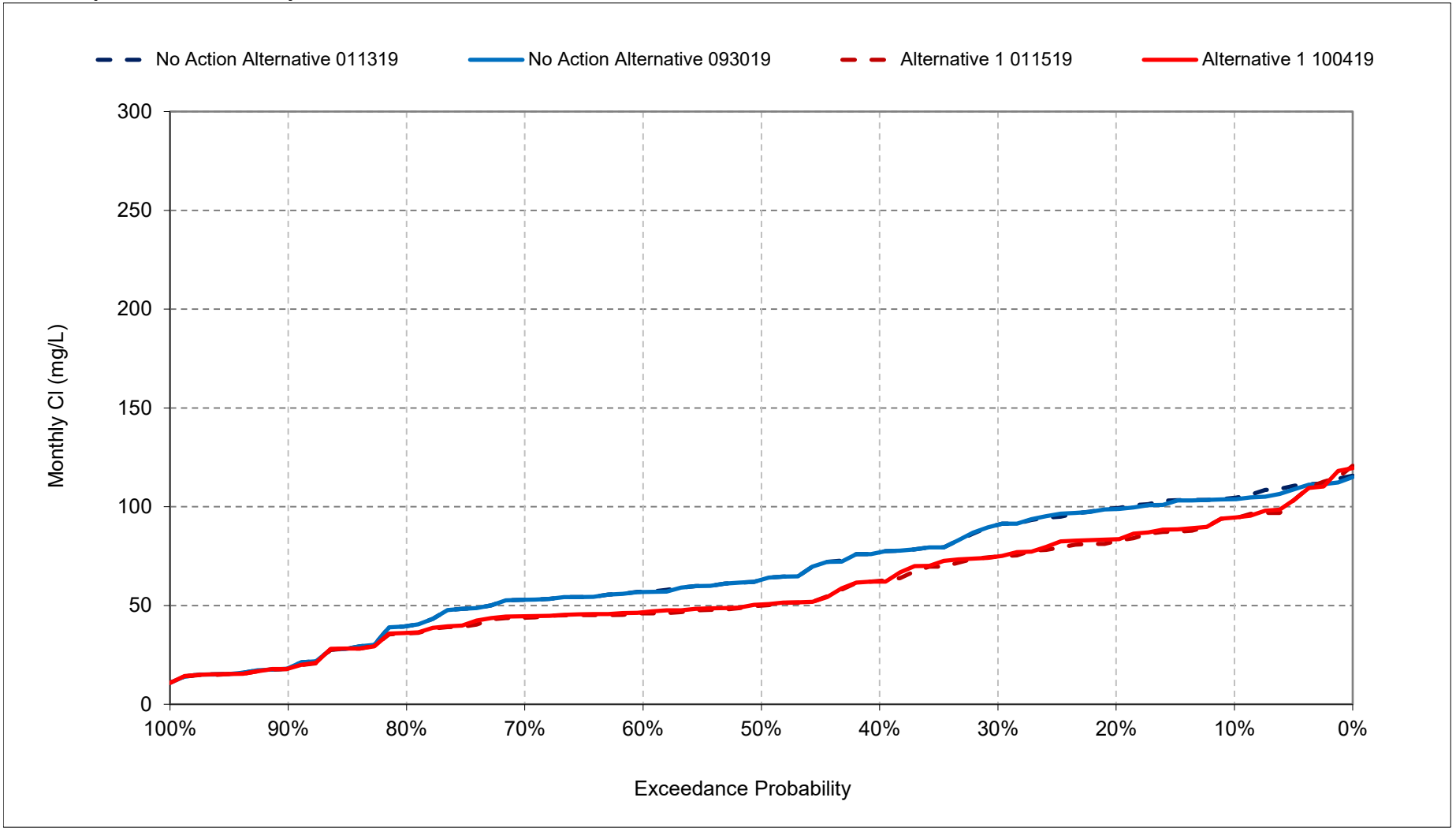

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-10. Jones Pumping Plant South Delta Exports Chloride, April Cl**



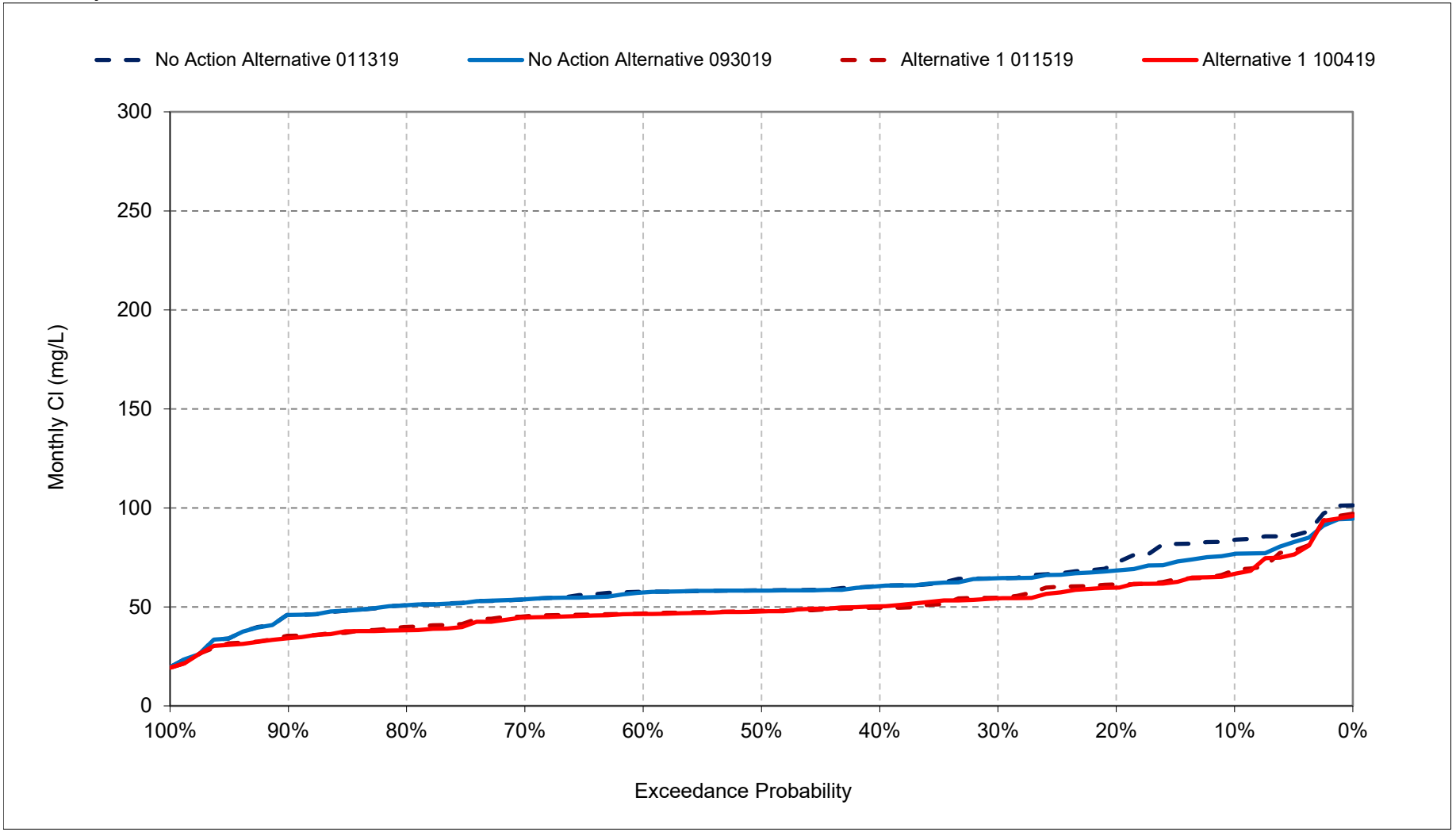

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-11. Jones Pumping Plant South Delta Exports Chloride, May Cl**



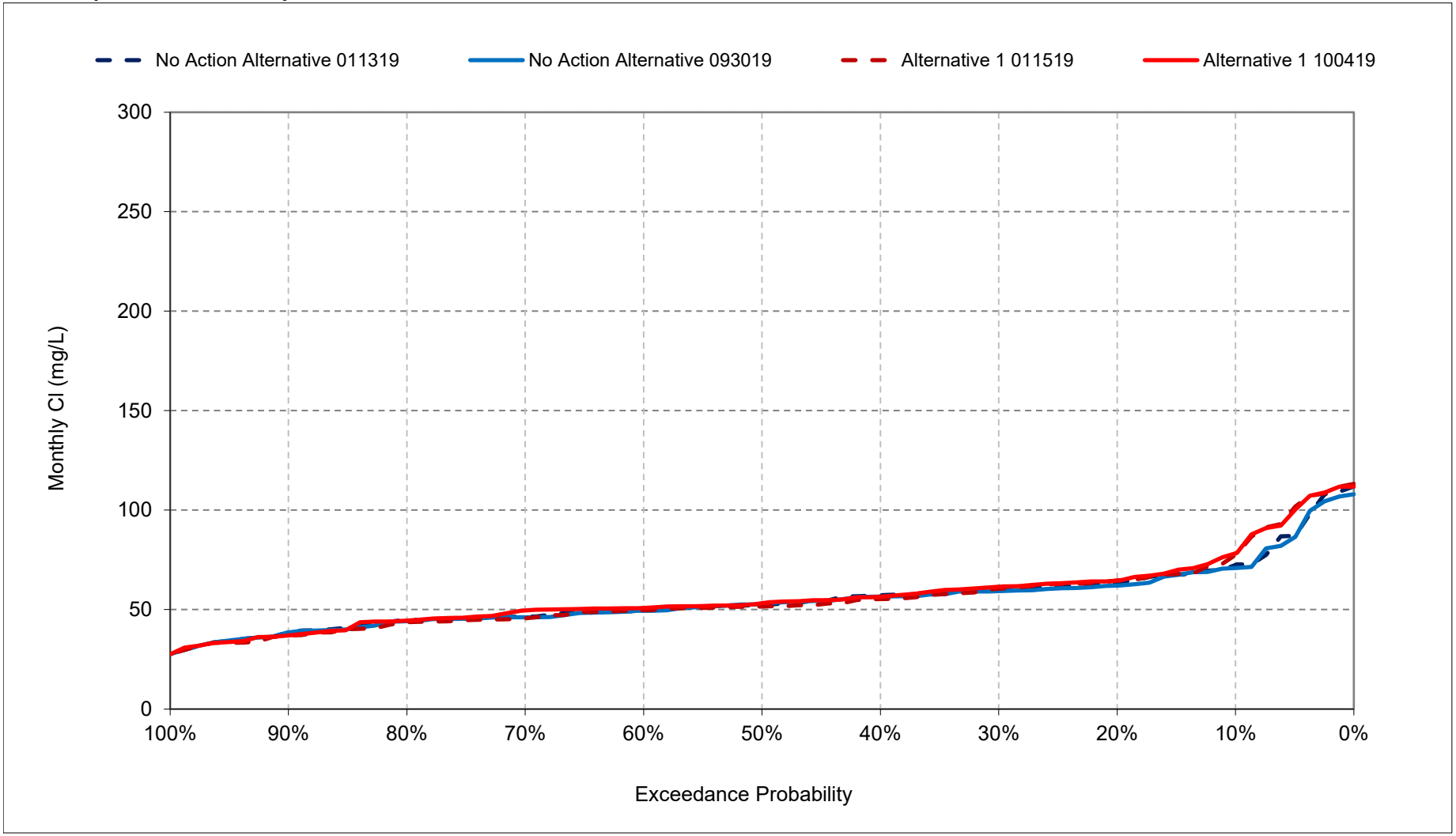

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-12. Jones Pumping Plant South Delta Exports Chloride, June Cl**



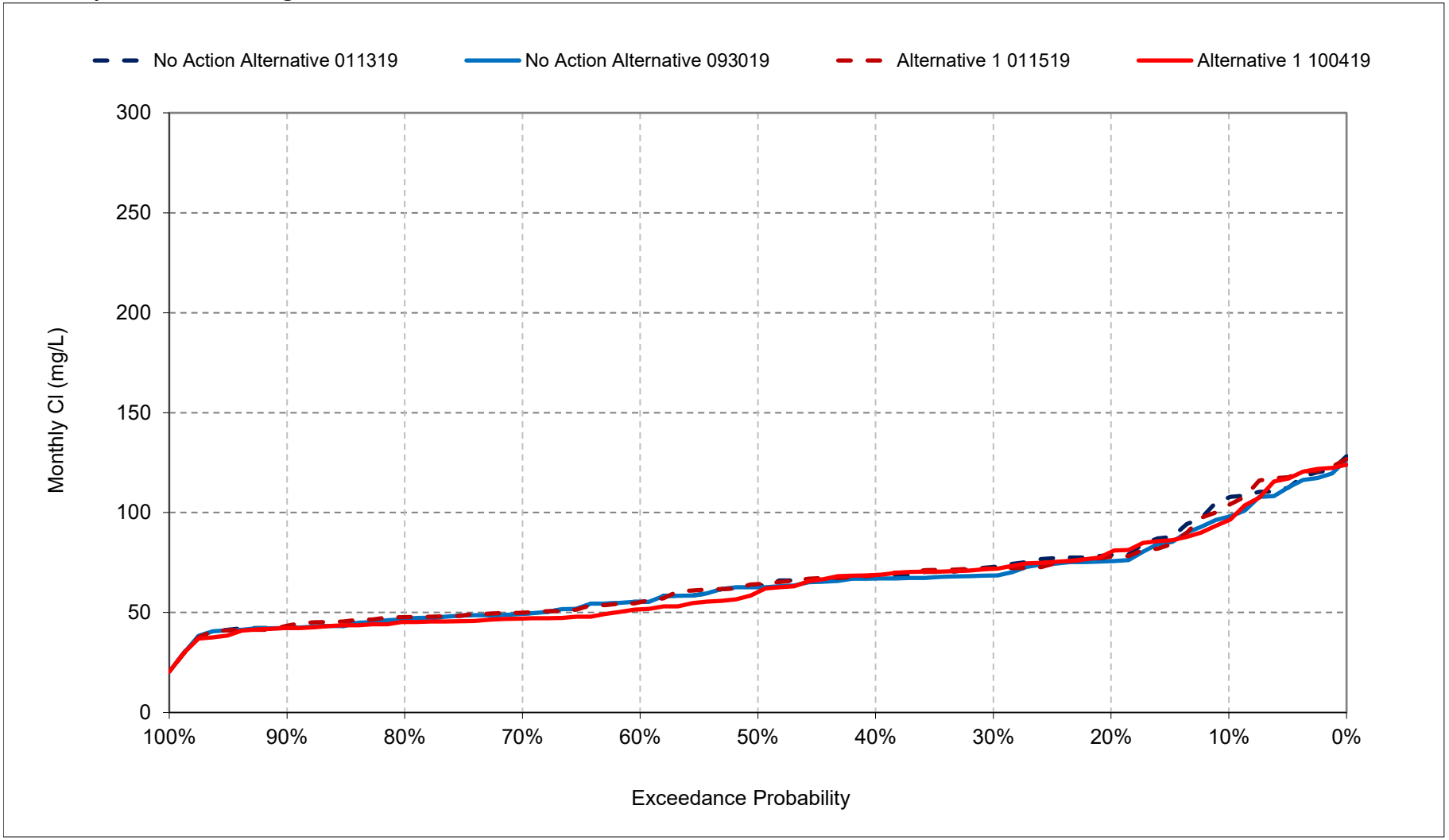

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-13. Jones Pumping Plant South Delta Exports Chloride, July Cl**



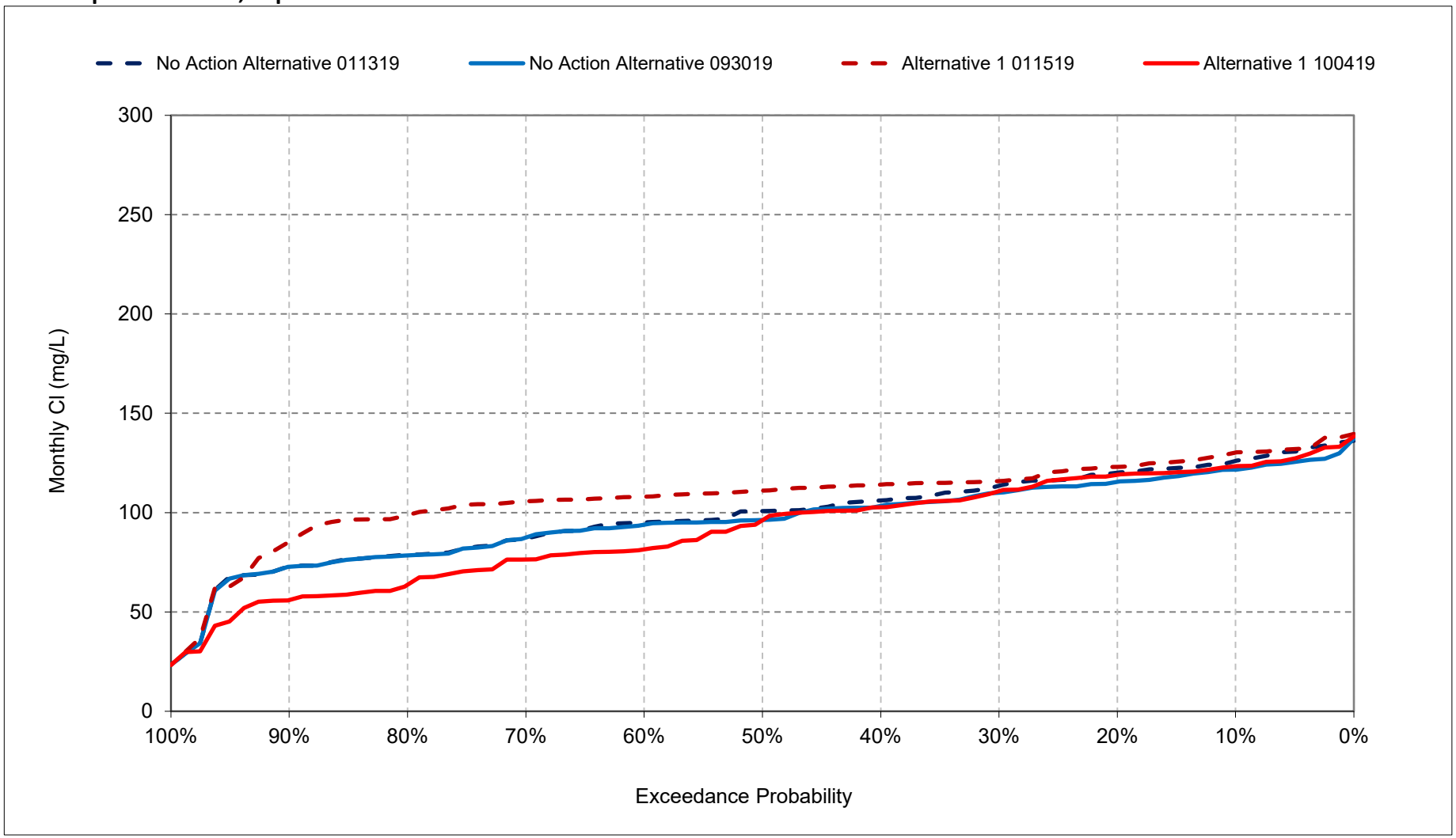

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-14. Jones Pumping Plant South Delta Exports Chloride, August Cl**



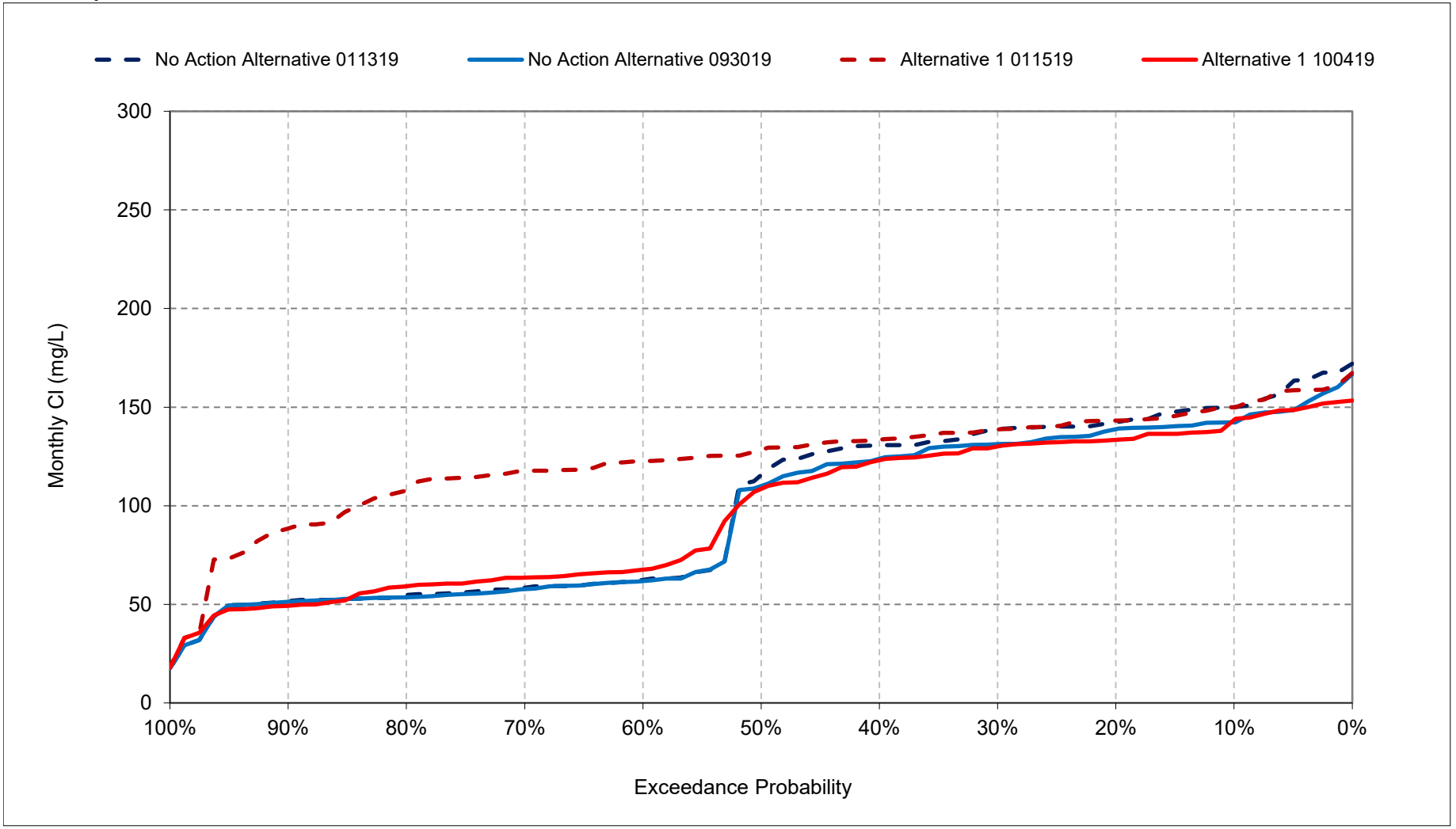

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-15. Jones Pumping Plant South Delta Exports Chloride, September Cl**



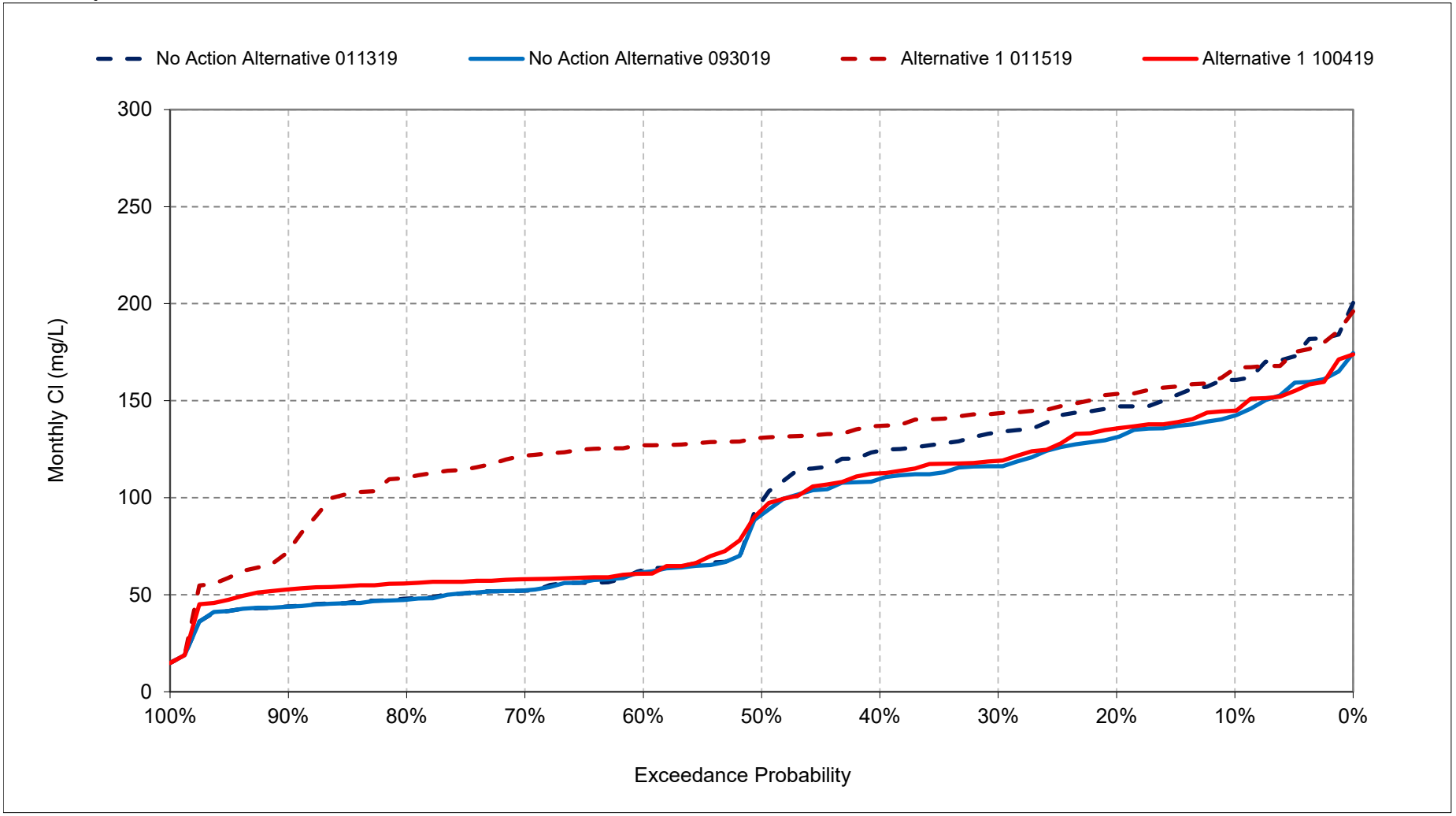

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-16. Jones Pumping Plant South Delta Exports Chloride, October Cl**



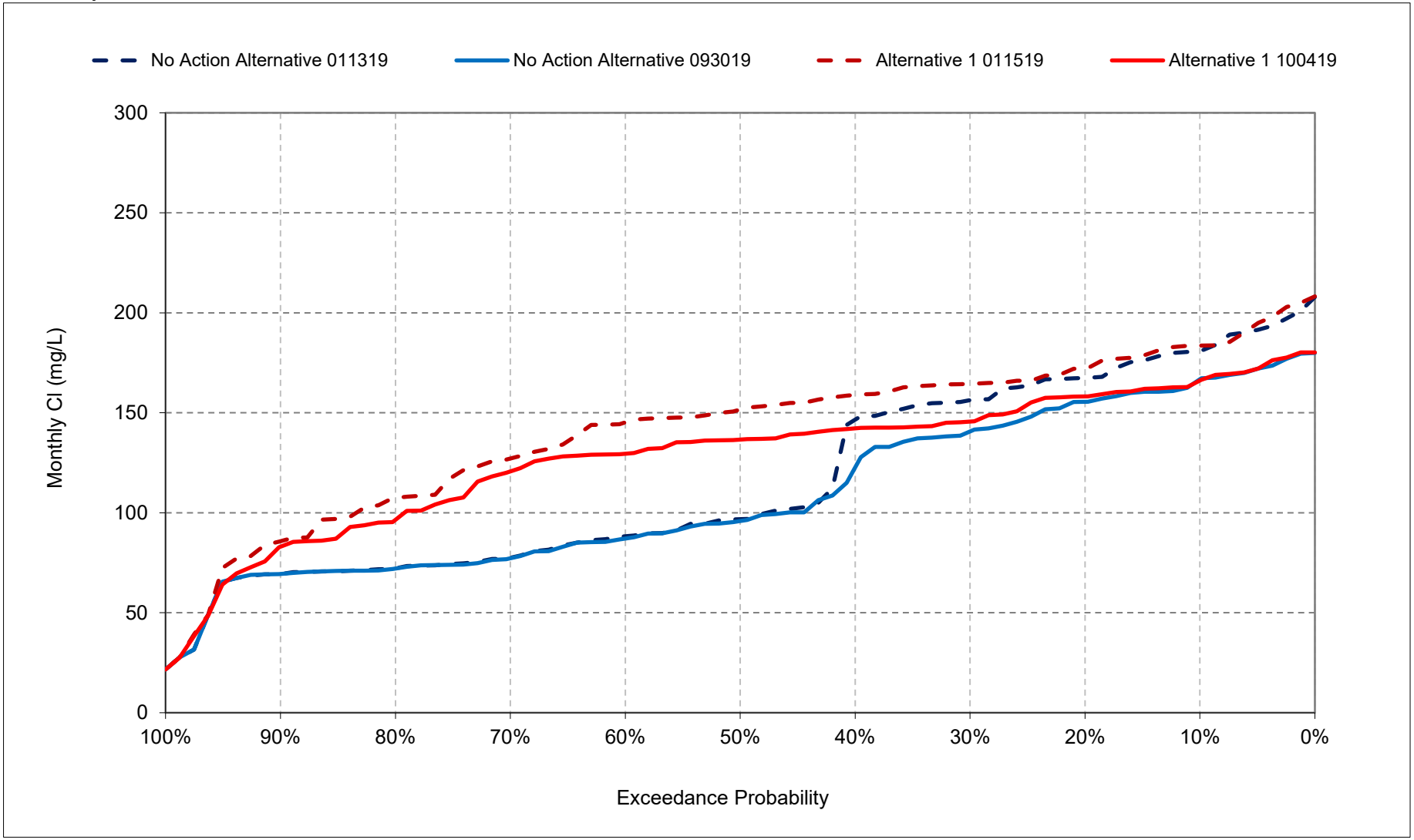

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-17. Jones Pumping Plant South Delta Exports Chloride, November Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 22-18. Jones Pumping Plant South Delta Exports Chloride, December Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 23-1. Barker Slough at NBA Intake Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 20 | 23 | 25 | 23 | 21 | 19 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 17 | 18 | 19 | 18 | 17 | 17 | 17 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 17 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 16 | 16 | 17 |
| 50% | 17 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 21 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 20 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 23-2. Barker Slough at NBA Intake Chloride, Monthly Cl

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 17 | 18 | 19 | 18 | 17 | 17 | 17 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 16 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 21 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 18 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 19 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 21 | 18 | 18 | 18 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | **0** | **0** | **0** |
| 20% | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 | **0** | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | 0 |
| 40% | **0** | 0 | 0 | 0 | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 |
| 50% | **0** | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | 0 | **0** |
| 60% | **0** | 0 | **0** | 0 | 0 | **0** | **0** | 0 | 0 | 0 | 0 | **0** |
| 70% | **0** | **0** | 0 | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 | **0** |
| 80% | **0** | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** |
| 90% | **0** | **0** | 0 | 0 | **0** | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 | 0 | **0** |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **0** | 0 | 0 | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** |
| Above Normal (16%) | **0** | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** |
| Below Normal (13%) | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | **0** | **0** | 0 | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 |
| Critical (15%) | **0** | 0 | **0** | **0** | 0 | 0 | 0 | **0** | **0** | **0** | **0** | **0** |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 23-3. Barker Slough at NBA Intake Chloride, Monthly Cl

### No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 20 | 23 | 25 | 23 | 21 | 19 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 17 | 18 | 19 | 18 | 17 | 17 | 17 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### No Action Alternative 093019

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 17 | 18 | 19 | 18 | 17 | 17 | 17 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 20% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Above Normal (16%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dry (24%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical (15%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 23-4. Barker Slough at NBA Intake Chloride, Monthly Cl

### Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 17 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 16 | 16 | 17 |
| 50% | 17 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 21 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 20 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 17 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 18 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 20 | 18 | 18 | 18 |

### Alternative 1 100419

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 18 | 18 | 19 | 23 | 25 | 23 | 21 | 20 | 18 | 18 | 18 | 18 |
| 20% | 18 | 18 | 18 | 22 | 24 | 22 | 20 | 18 | 17 | 17 | 17 | 17 |
| 30% | 17 | 18 | 18 | 21 | 23 | 21 | 19 | 18 | 17 | 17 | 16 | 17 |
| 40% | 17 | 17 | 18 | 20 | 22 | 20 | 19 | 18 | 17 | 16 | 16 | 16 |
| 50% | 16 | 17 | 18 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| 60% | 16 | 17 | 17 | 19 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 70% | 16 | 16 | 17 | 18 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 |
| 80% | 16 | 16 | 16 | 18 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| 90% | 16 | 16 | 16 | 18 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 17 | 17 | 18 | 20 | 21 | 20 | 19 | 18 | 17 | 17 | 17 | 17 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | 16 | 17 | 17 | 20 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Above Normal (16%) | 16 | 16 | 17 | 21 | 22 | 20 | 18 | 17 | 17 | 16 | 16 | 16 |
| Below Normal (13%) | 17 | 17 | 17 | 19 | 21 | 20 | 19 | 17 | 17 | 16 | 16 | 16 |
| Dry (24%) | 17 | 18 | 18 | 20 | 22 | 21 | 20 | 18 | 17 | 17 | 16 | 17 |
| Critical (15%) | 19 | 18 | 19 | 20 | 21 | 21 | 21 | 21 | 21 | 18 | 18 | 18 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Cl (mg/L) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | **0** | **0** | **0** | 0 | **0** | **0** | 0 | 0 | **0** | **0** | **0** | **0** |
| 20% | **0** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | 0 | 0 |
| 30% | 0 | 0 | 0 | 0 | **0** | **0** | 0 | **0** | **0** | 0 | 0 | 0 |
| 40% | 0 | **0** | 0 | 0 | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 |
| 50% | 0 | 0 | 0 | 0 | 0 | **0** | 0 | 0 | **0** | 0 | **0** | 0 |
| 60% | **0** | **0** | 0 | 0 | **0** | 0 | **0** | **0** | 0 | 0 | **0** | 0 |
| 70% | **0** | 0 | 0 | 0 | 0 | **0** | **0** | 0 | **0** | 0 | 0 | 0 |
| 80% | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 0 | **0** | **0** |
| 90% | 0 | **0** | **0** | 0 | **0** | **0** | 0 | 0 | 0 | 0 | **0** | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | **0** | **0** | 0 | 0 | **0** | **0** | **0** | 0 | **0** | **0** | 0 | 0 |
| Water Year Types[b] | | | | | | | | | | | | |
| Wet (32%) | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 |
| Above Normal (16%) | **0** | **0** | 0 | **0** | **0** | 0 | 0 | 0 | **0** | 0 | **0** | 0 |
| Below Normal (13%) | 0 | 0 | 0 | 0 | **0** | **0** | **0** | 0 | 0 | 0 | **0** | 0 |
| Dry (24%) | 0 | **0** | **0** | 0 | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 |
| Critical (15%) | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** | **0** | **0** |

a Based on the 82-year simulation period.

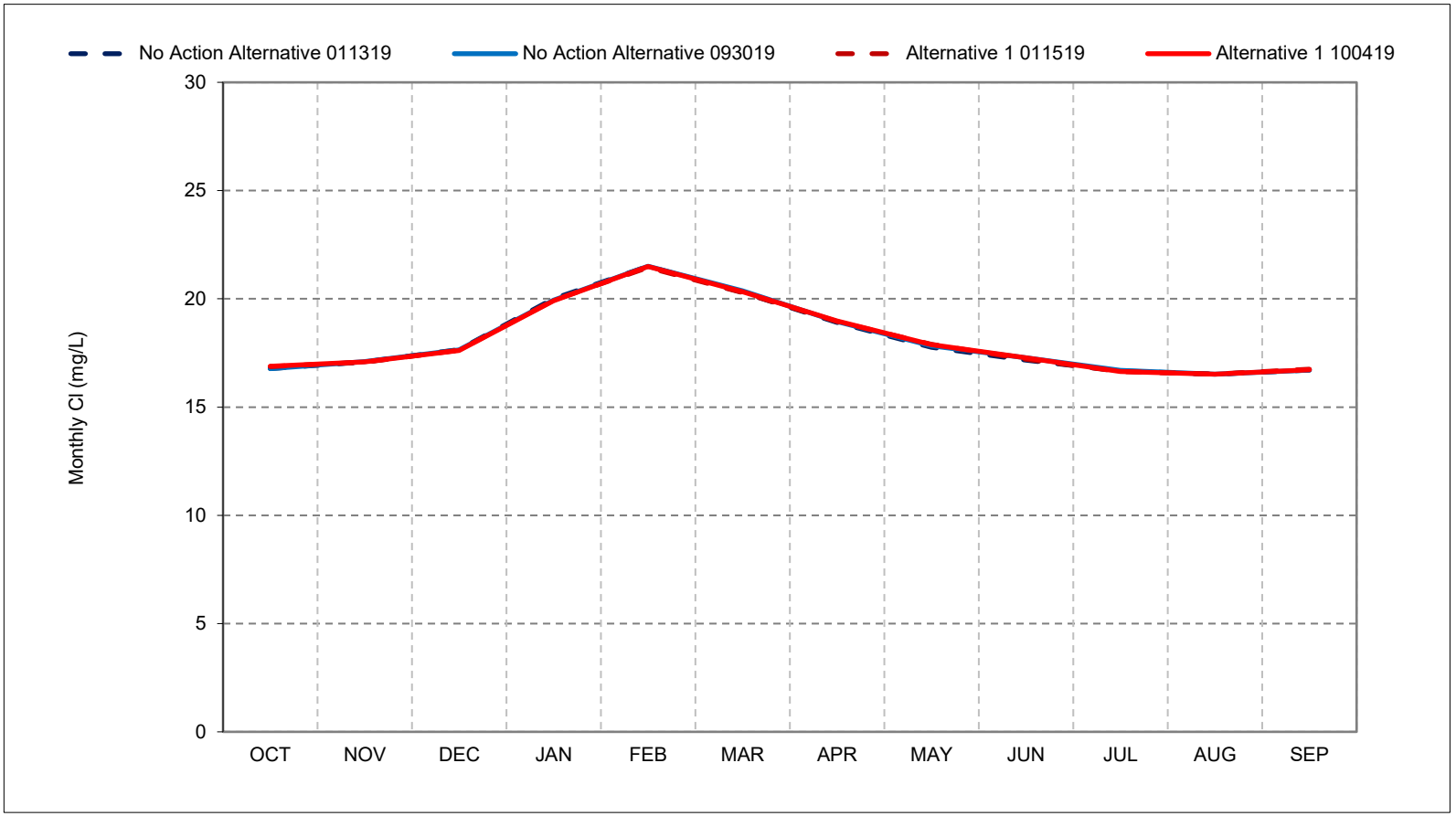
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d Positive differences are highted in red color which indicate increase in Salinity (EC).

e All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-1. Barker Slough at NBA Intake Chloride, Long-Term Average Cl

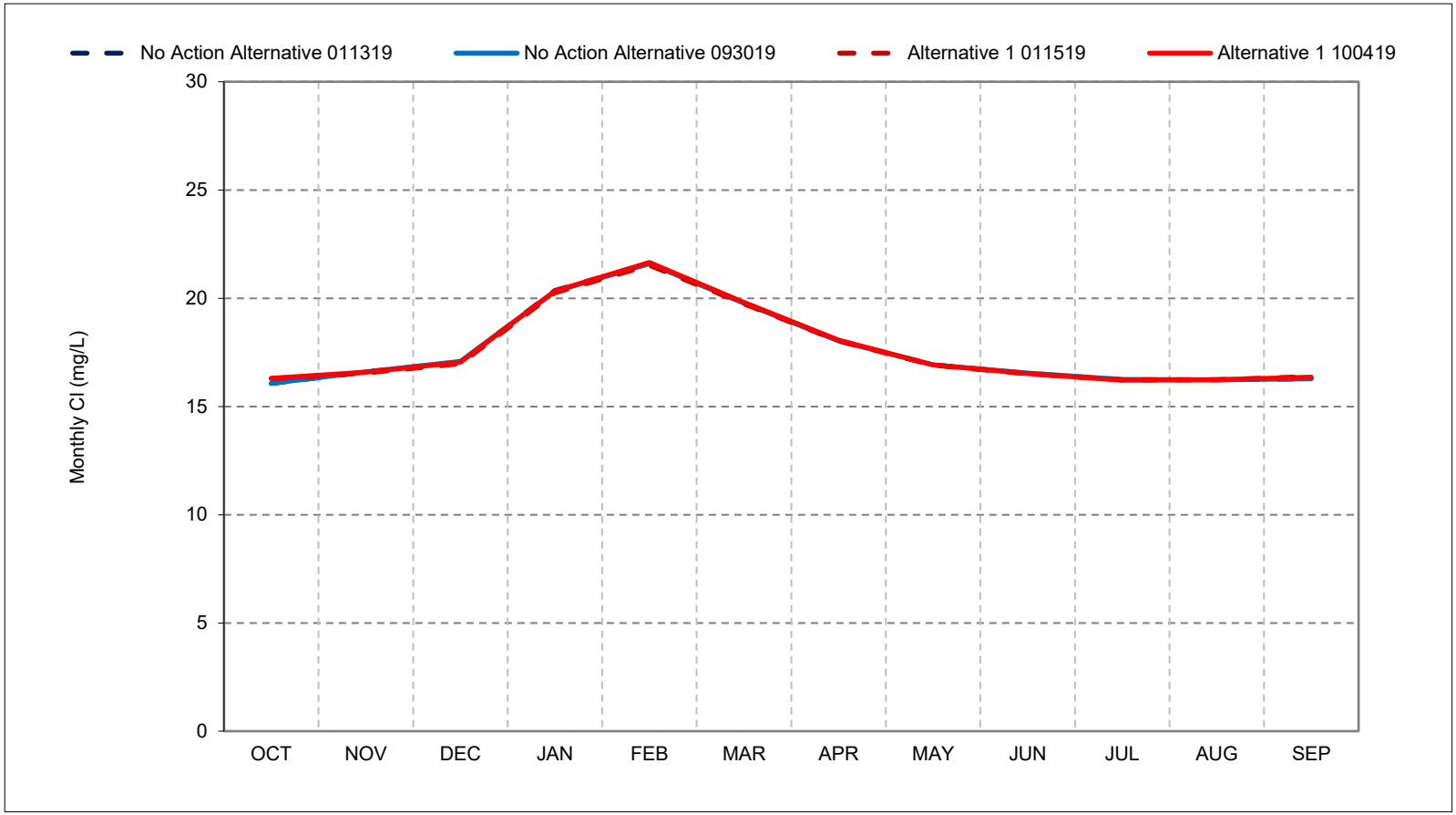



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-2. Barker Slough at NBA Intake Chloride, Wet Year Average Cl

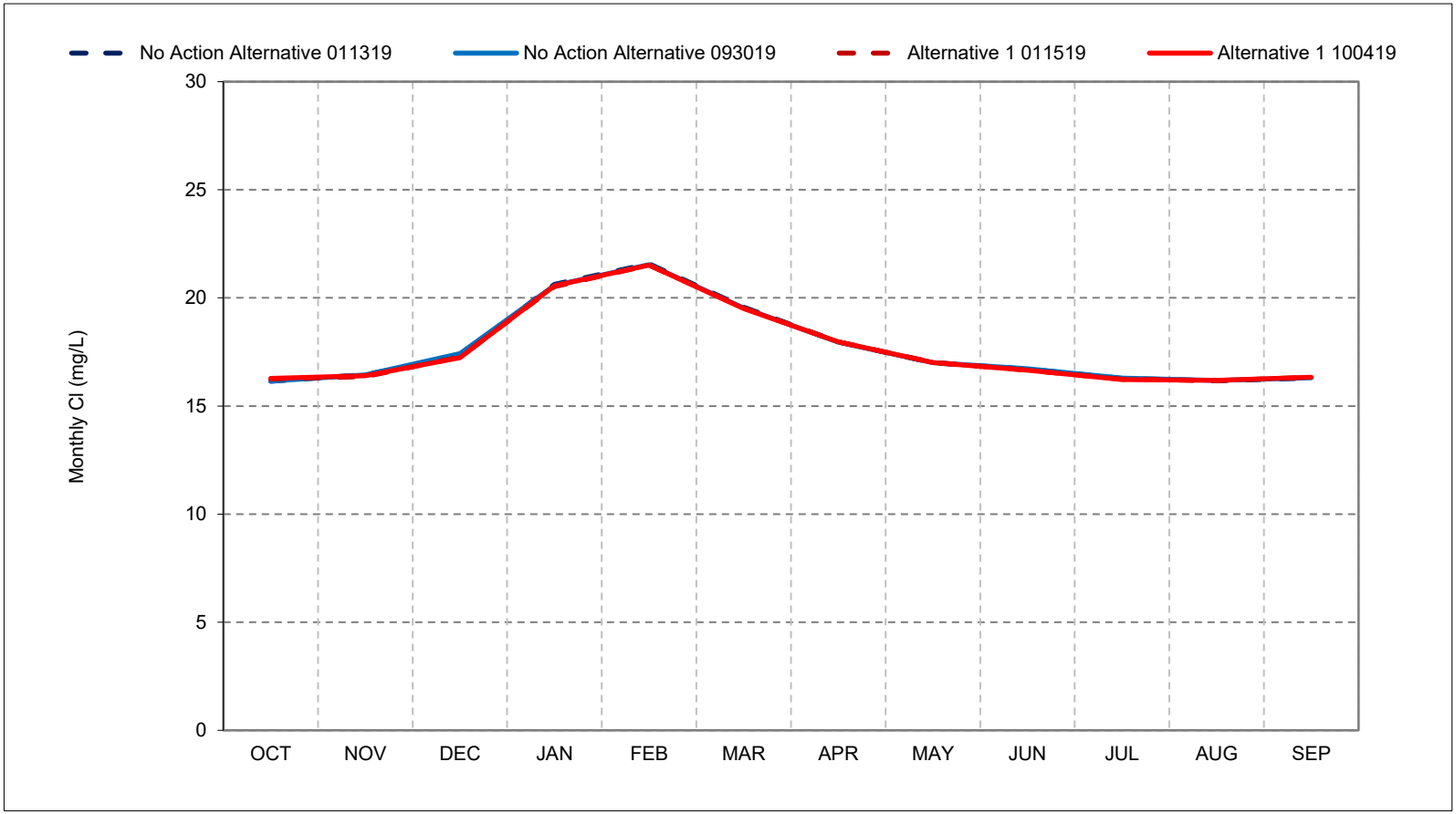



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-3. Barker Slough at NBA Intake Chloride, Above Normal Year Average Cl

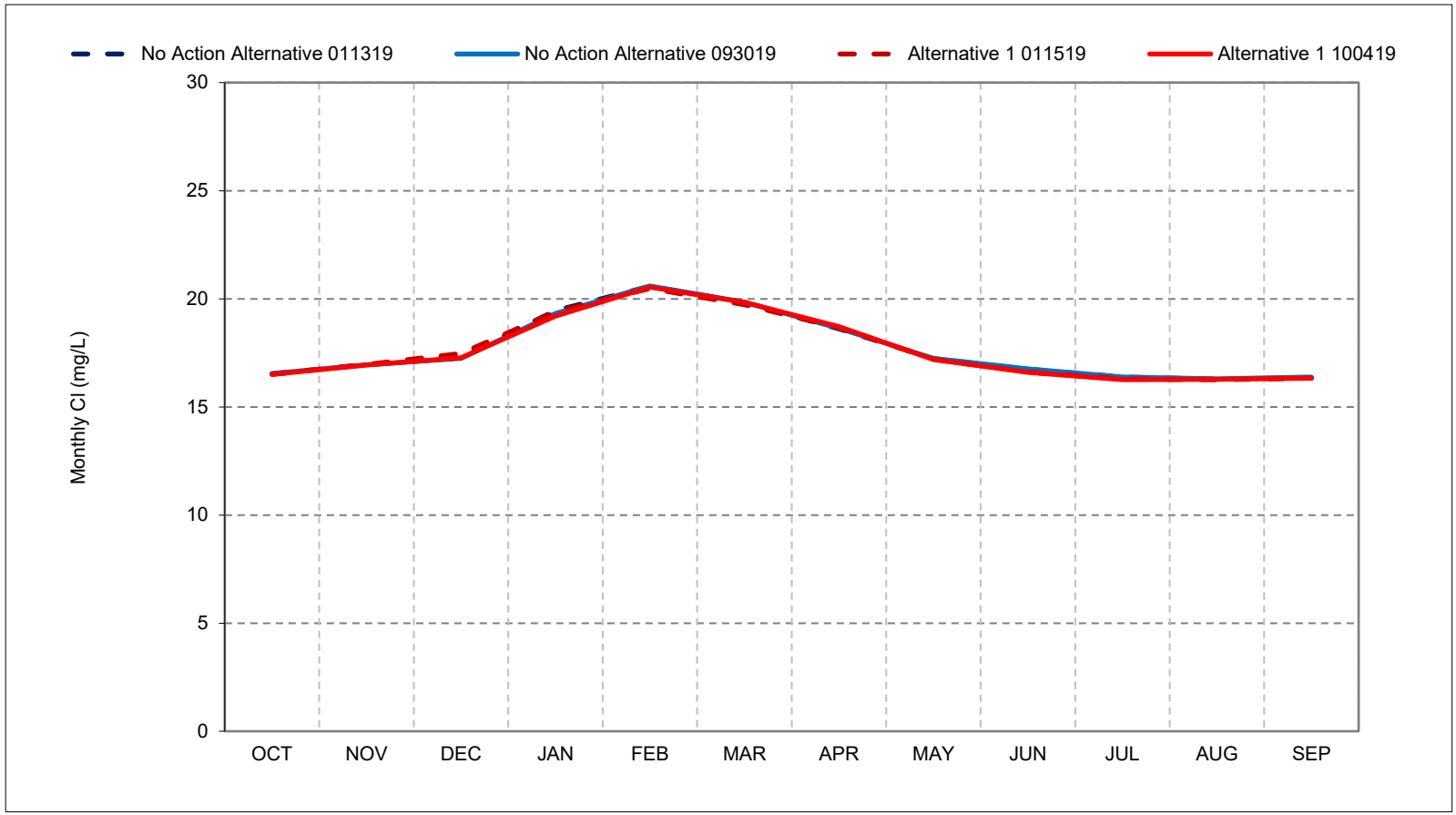



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-4. Barker Slough at NBA Intake Chloride, Below Normal Year Average Cl

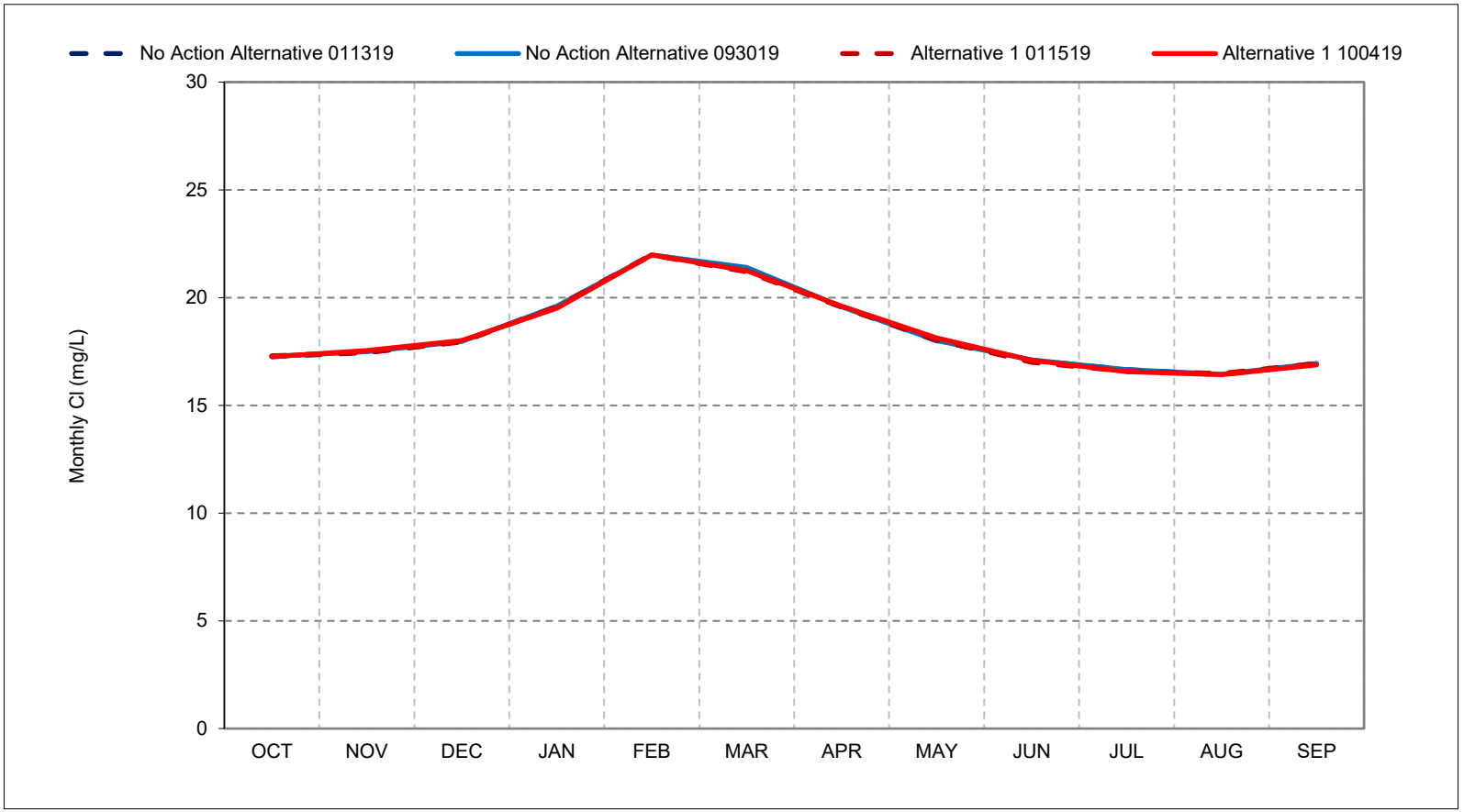



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-5. Barker Slough at NBA Intake Chloride, Dry Year Average Cl

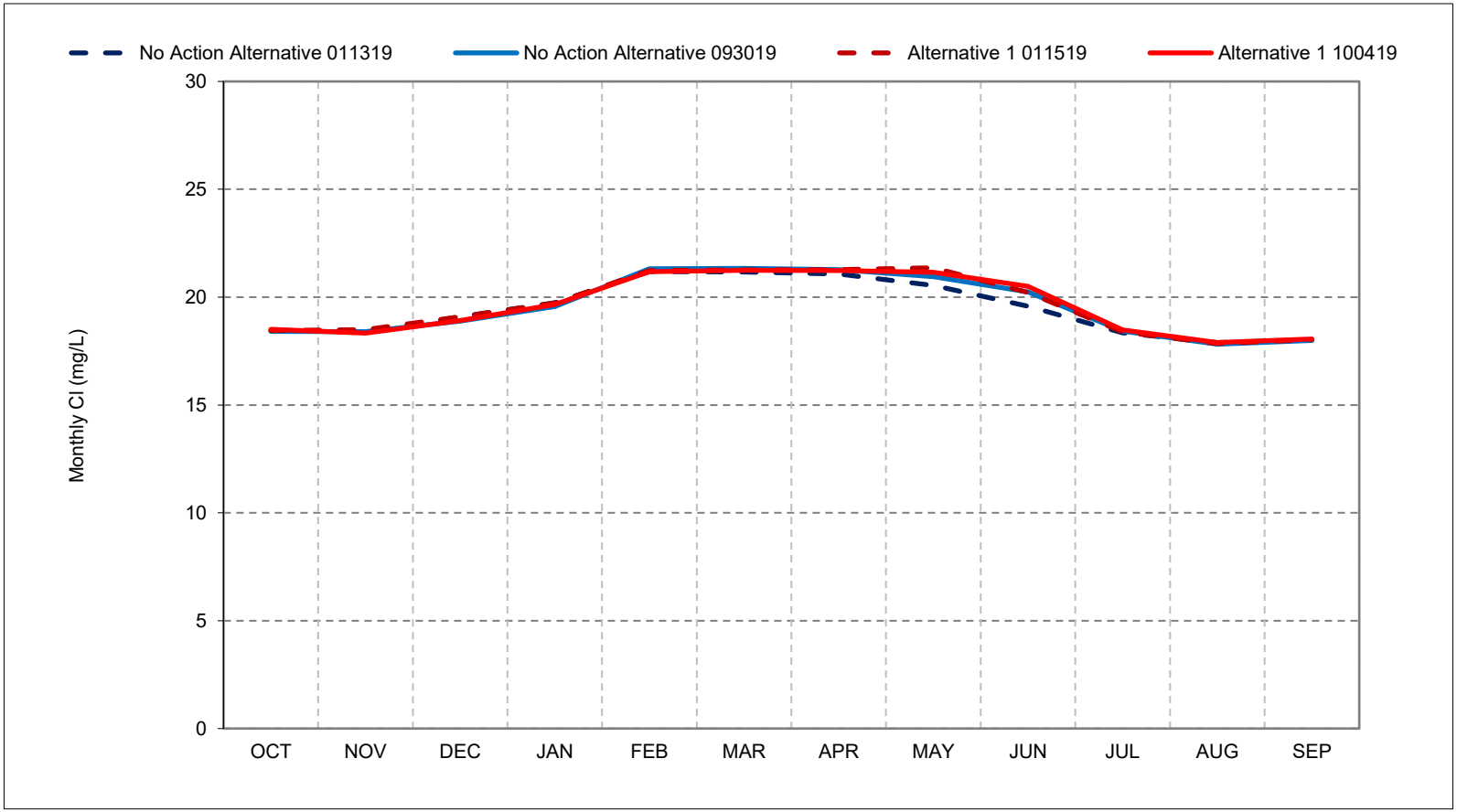



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 23-6. Barker Slough at NBA Intake Chloride, Critical Year Average Cl

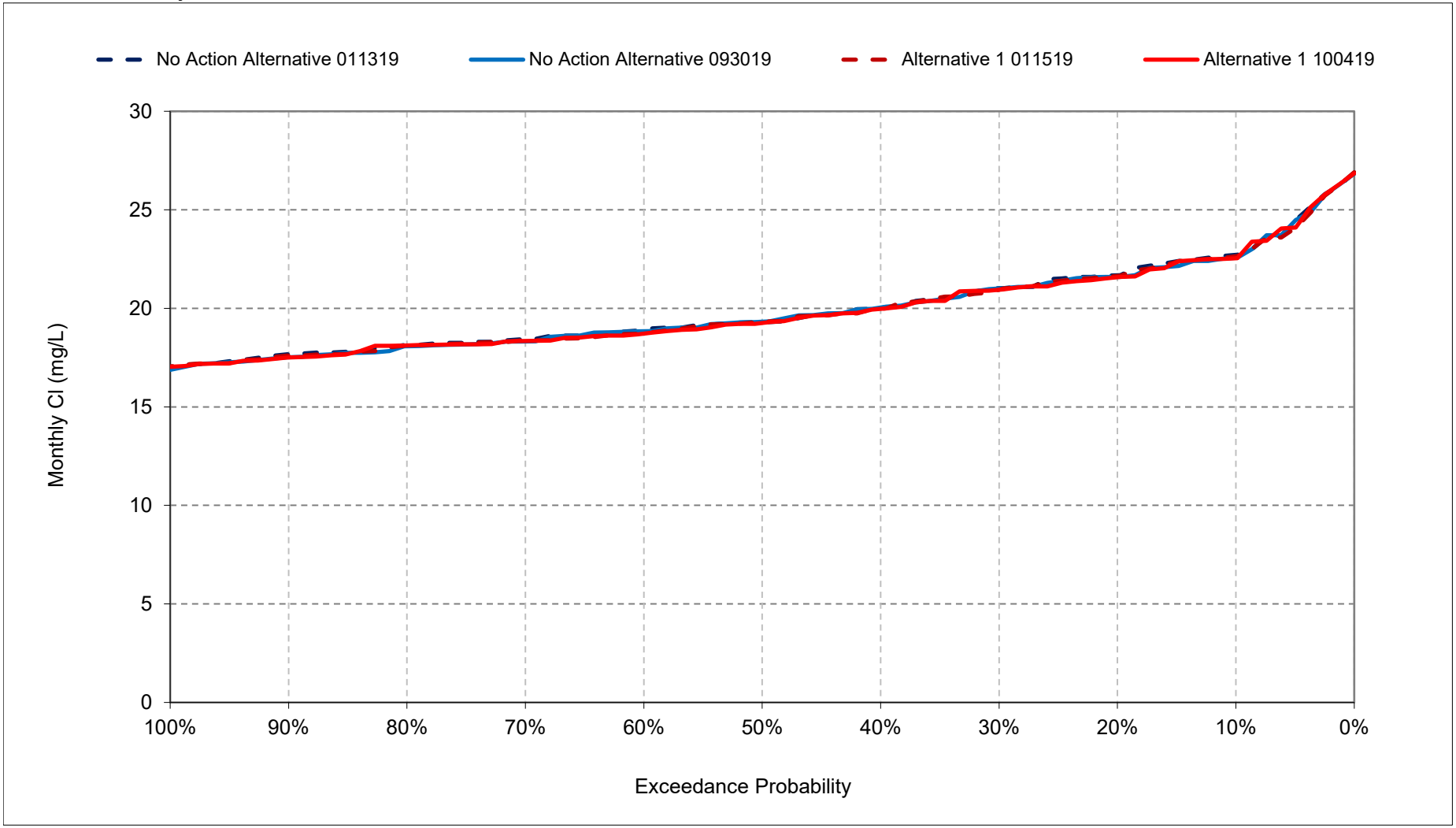



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

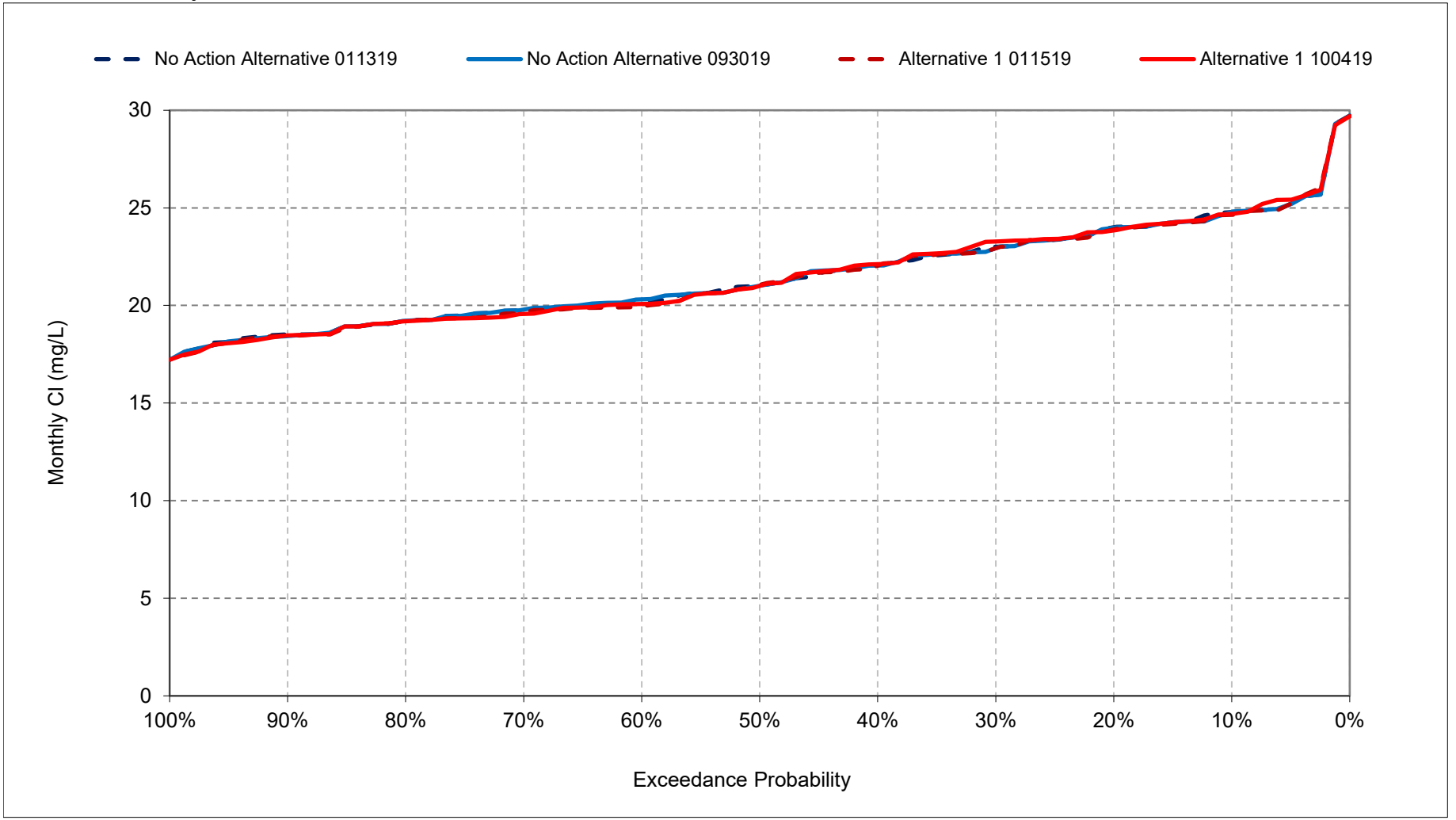
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-7. Barker Slough at NBA Intake**
**Chloride, January Cl**



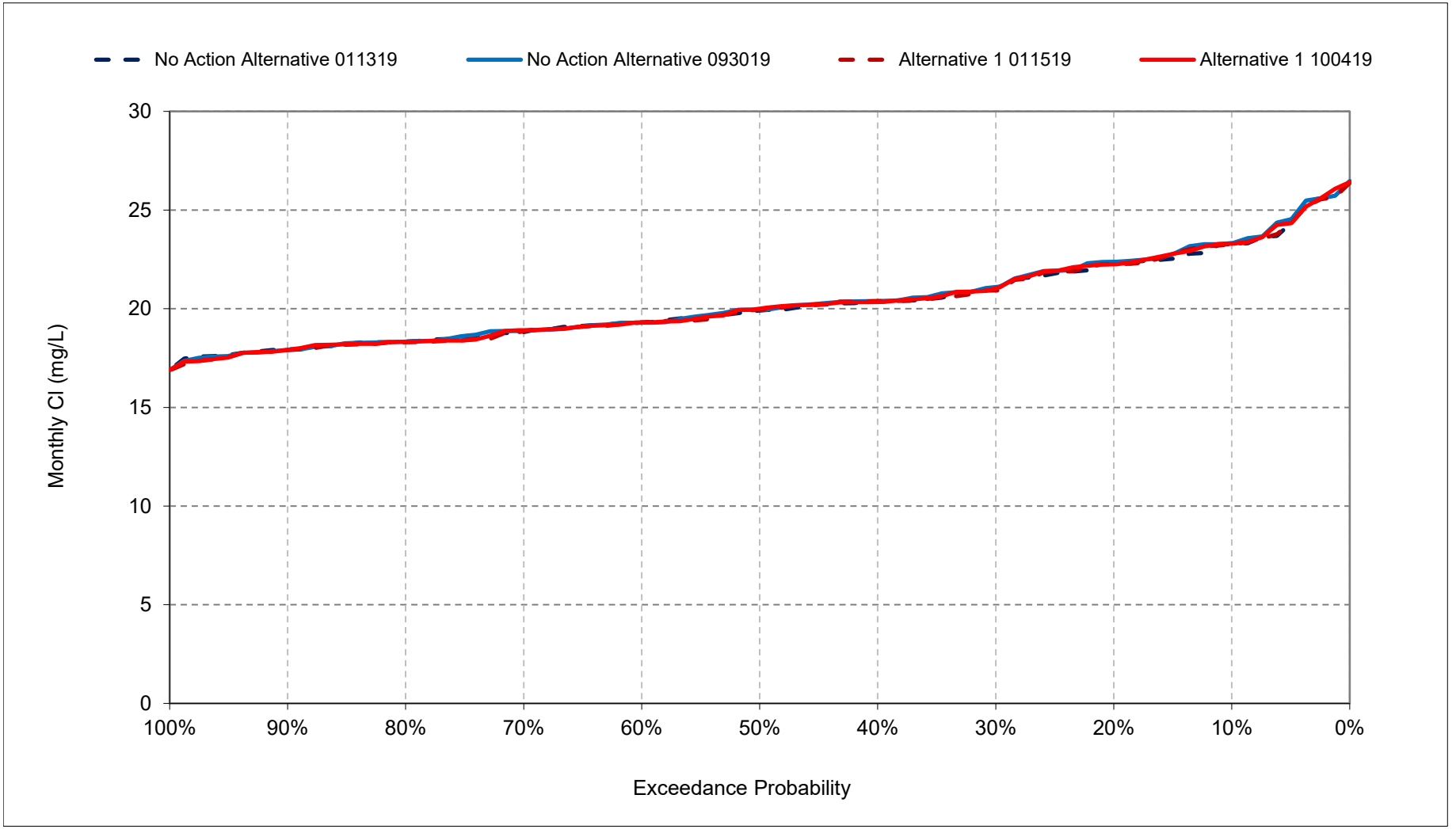

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-8. Barker Slough at NBA Intake**
**Chloride, February Cl**



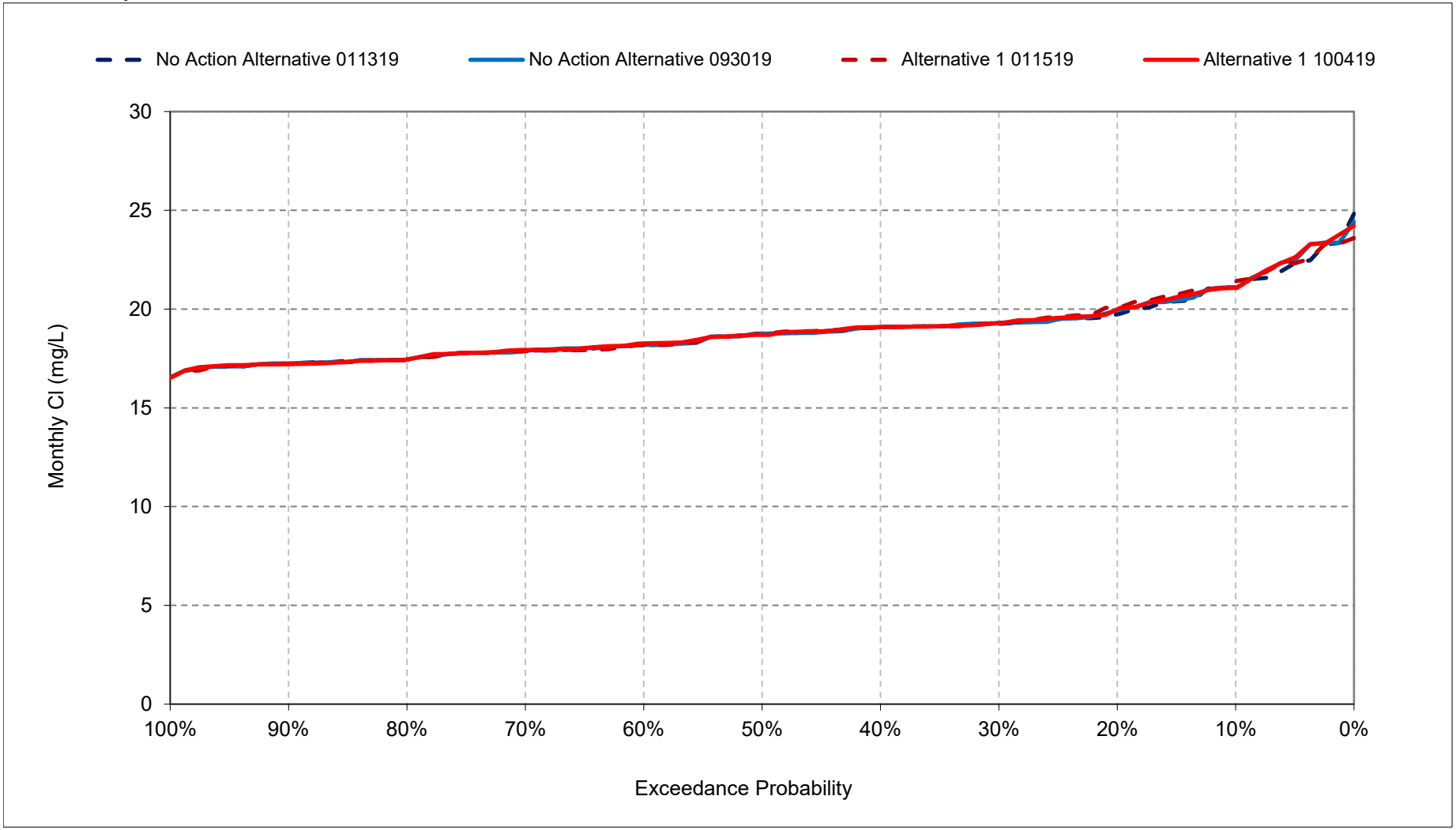

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-9. Barker Slough at NBA Intake**
**Chloride, March Cl**



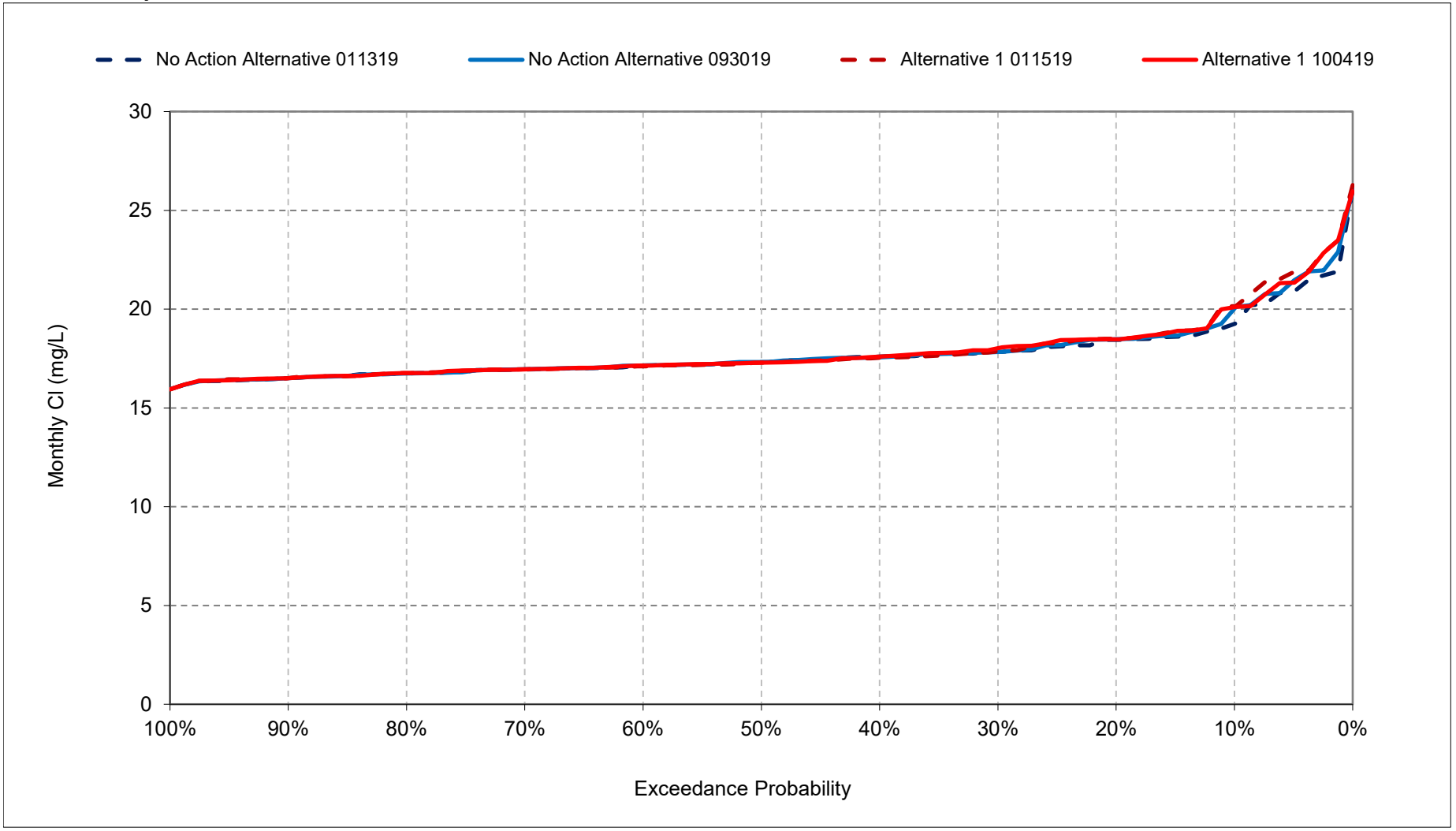

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-10. Barker Slough at NBA Intake**
**Chloride, April Cl**



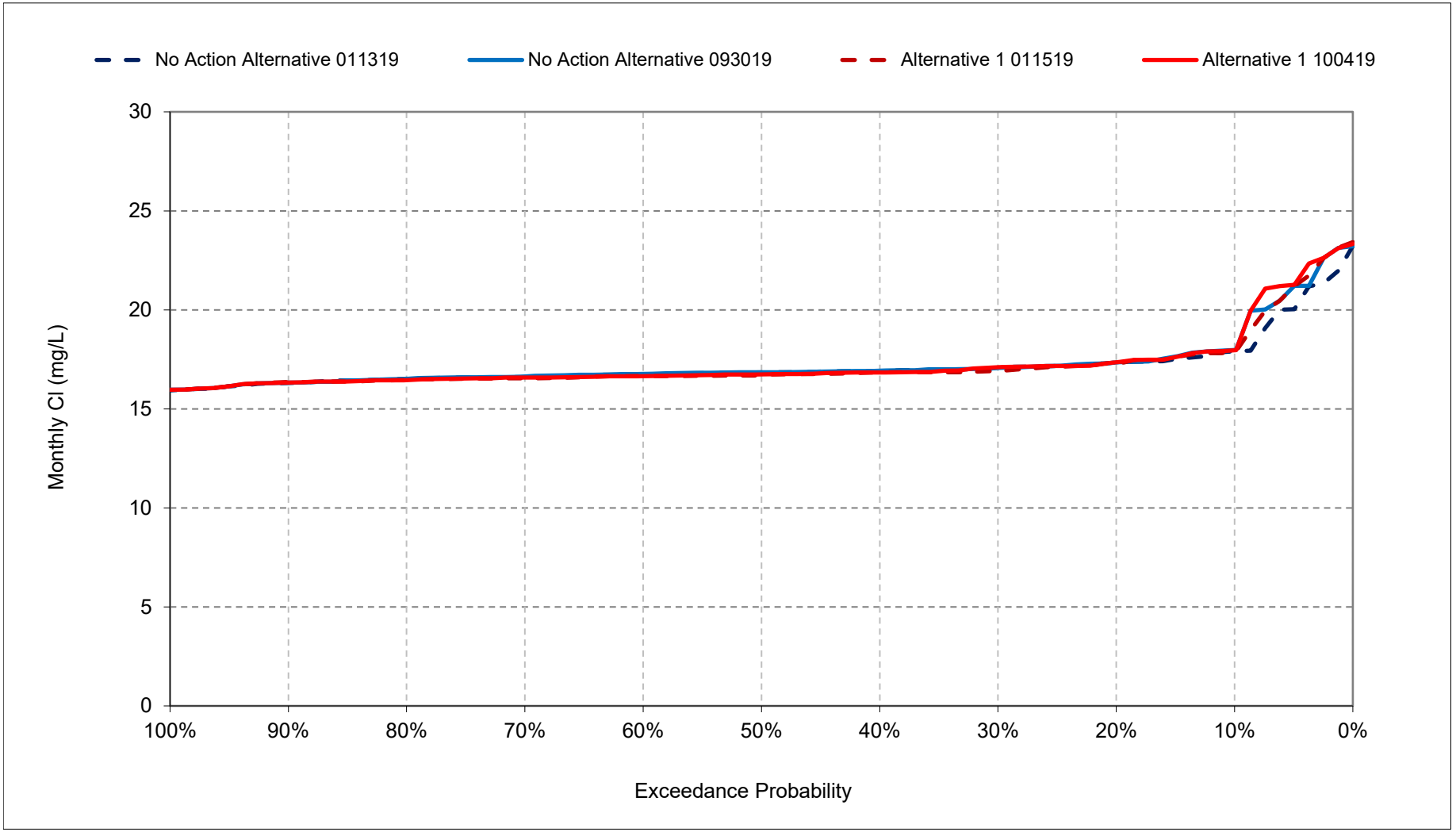

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-11. Barker Slough at NBA Intake**
**Chloride, May Cl**



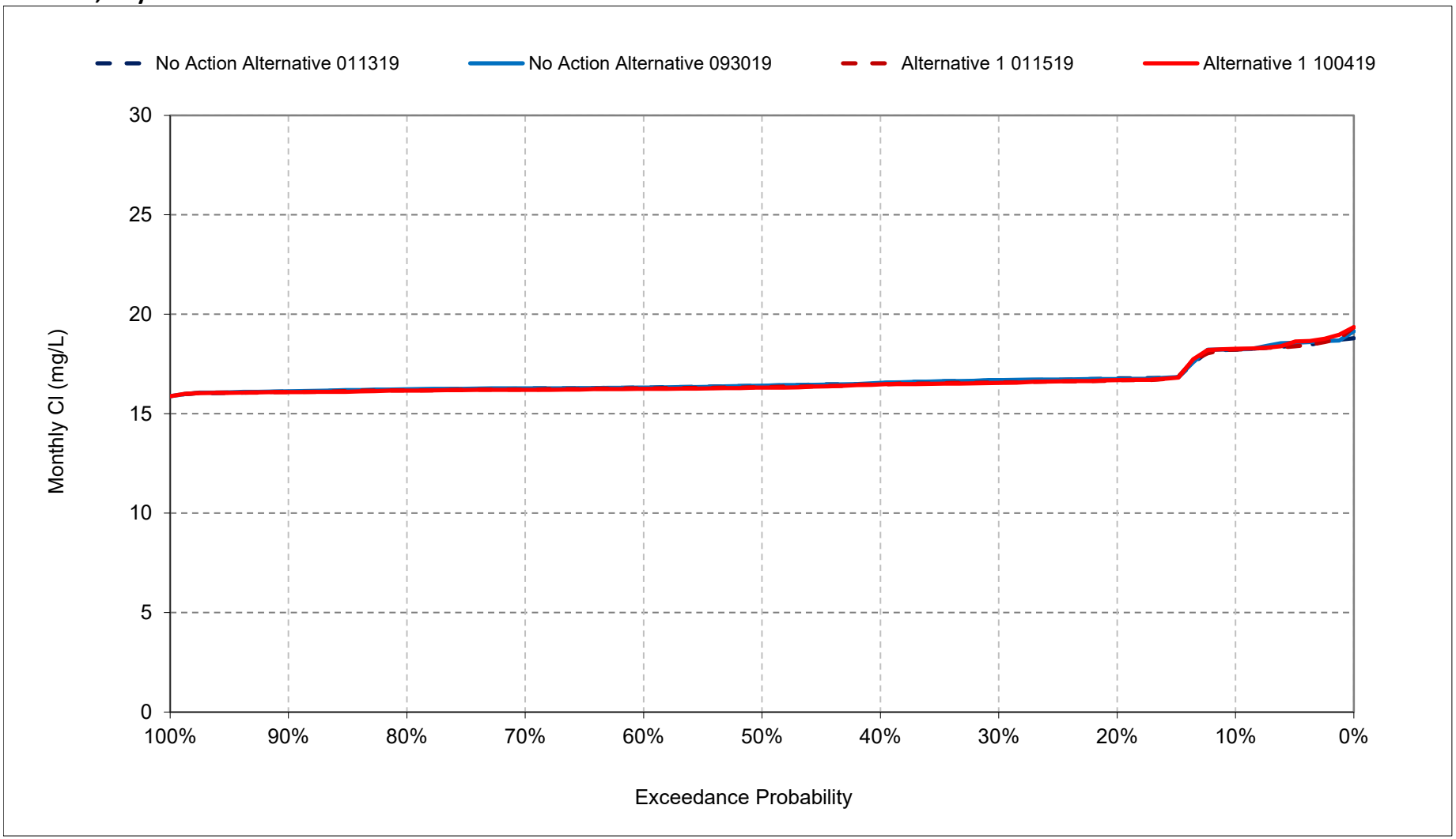

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-12. Barker Slough at NBA Intake**
**Chloride, June Cl**



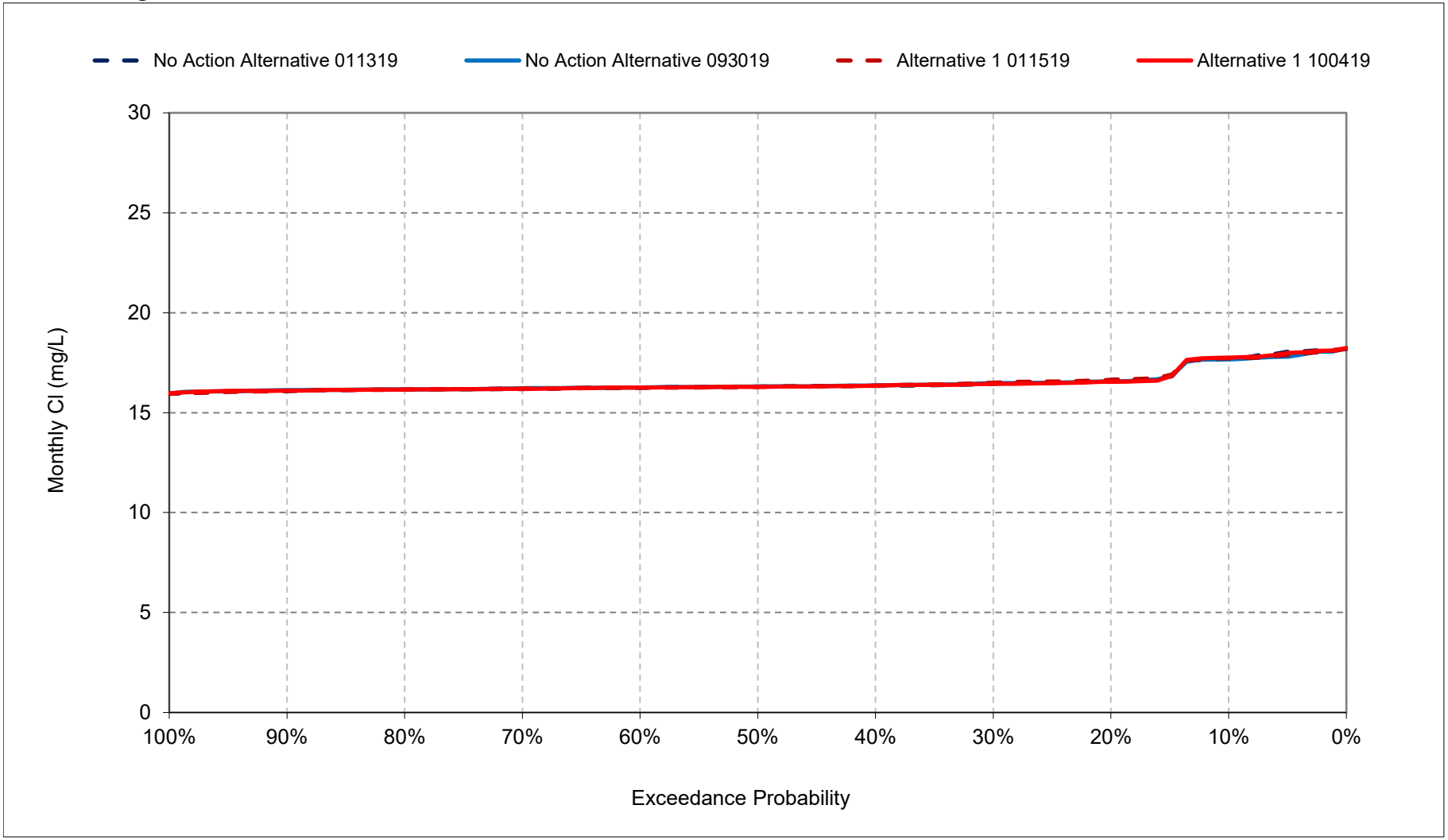

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-13. Barker Slough at NBA Intake**
**Chloride, July Cl**



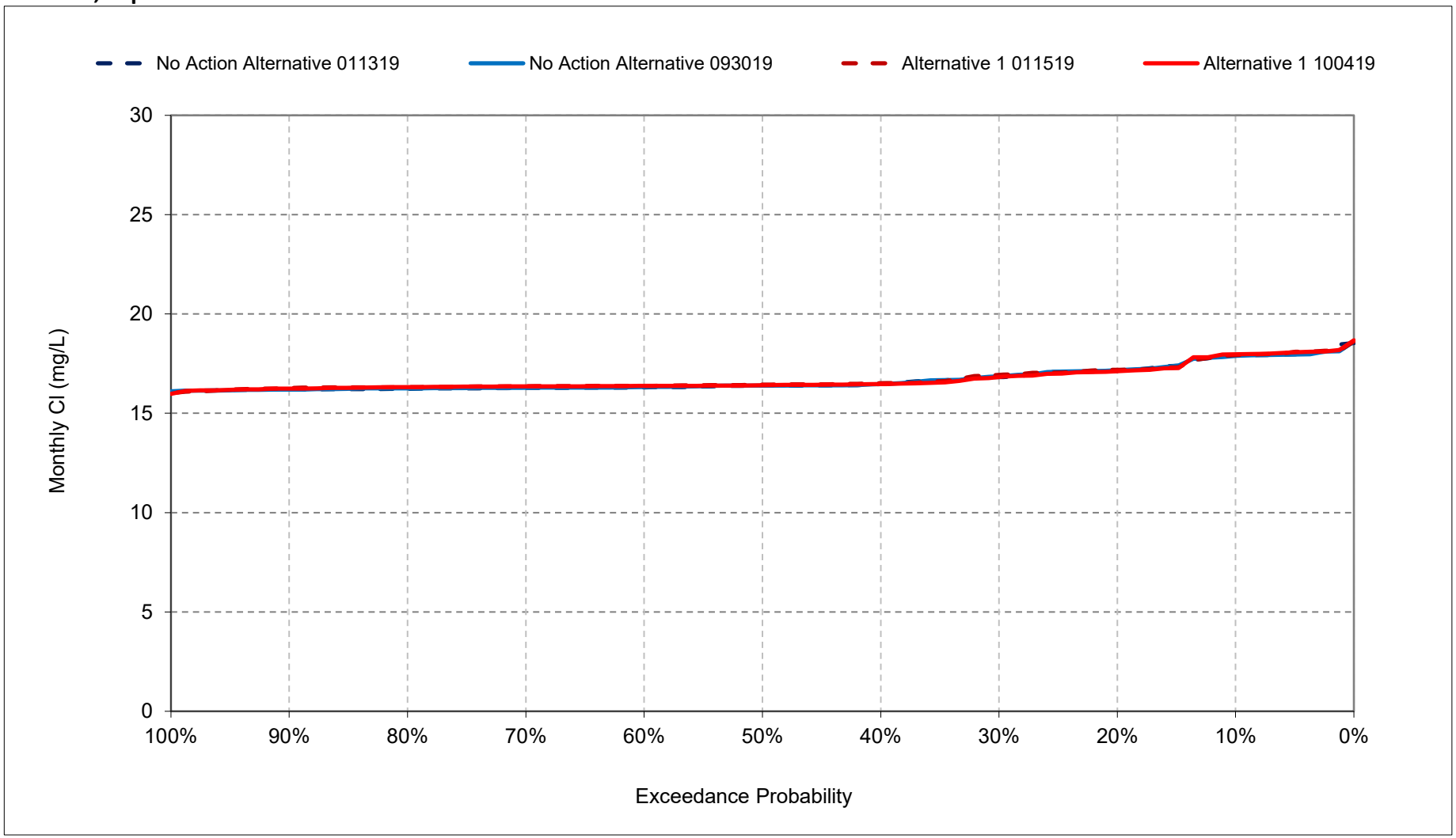

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-14. Barker Slough at NBA Intake**
**Chloride, August Cl**



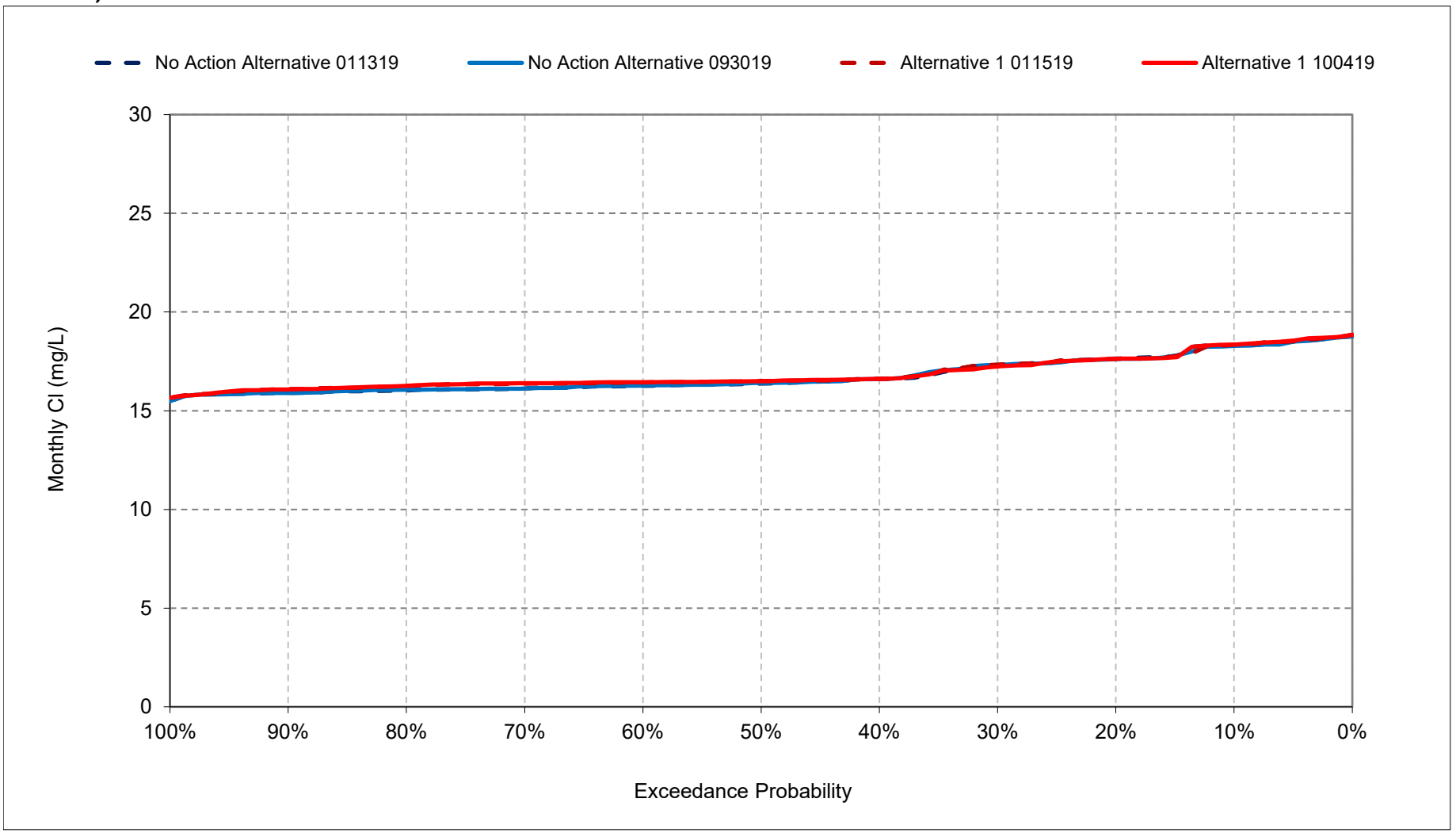

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-15. Barker Slough at NBA Intake**
**Chloride, September Cl**



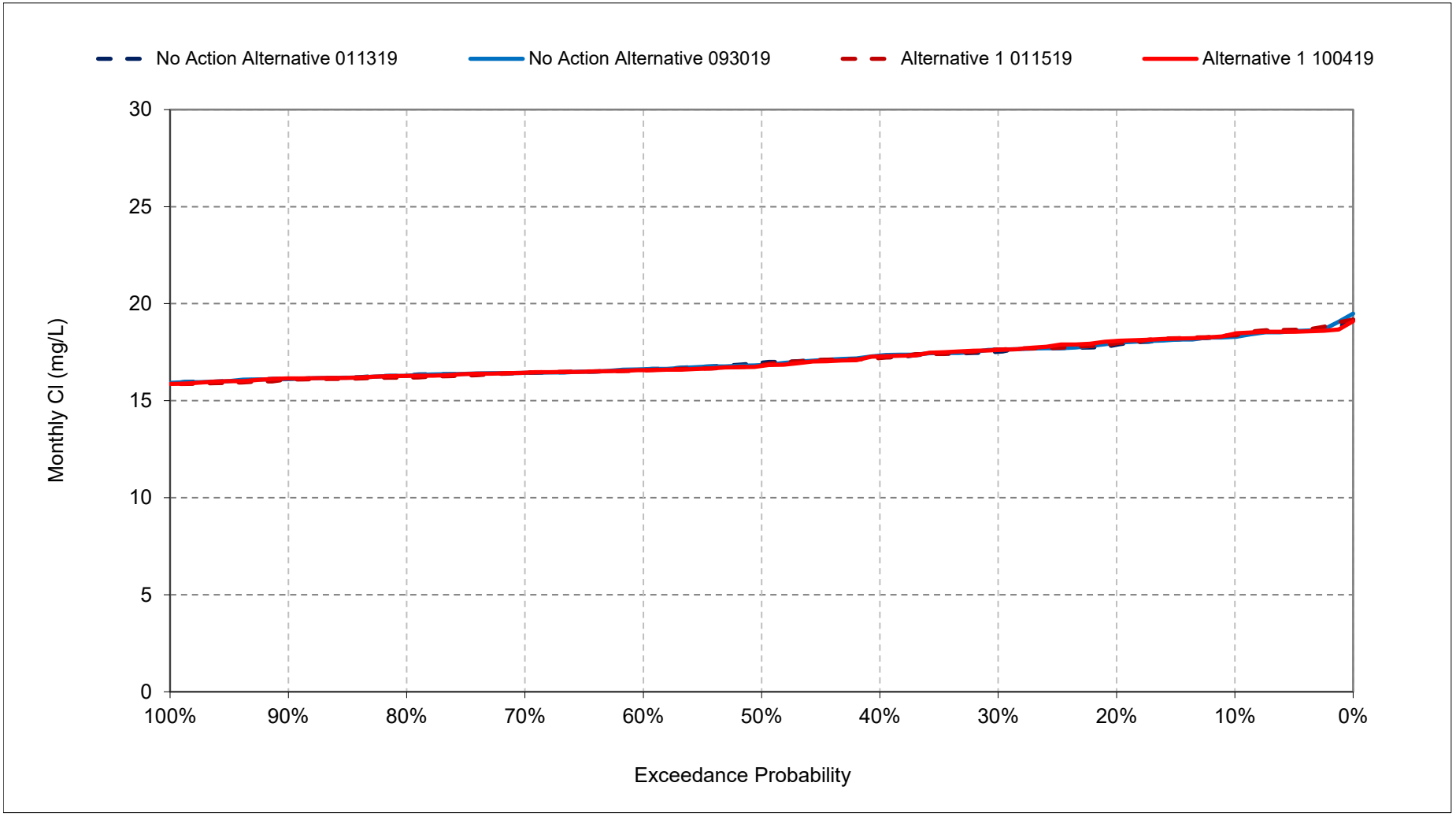

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-16. Barker Slough at NBA Intake**
**Chloride, October Cl**



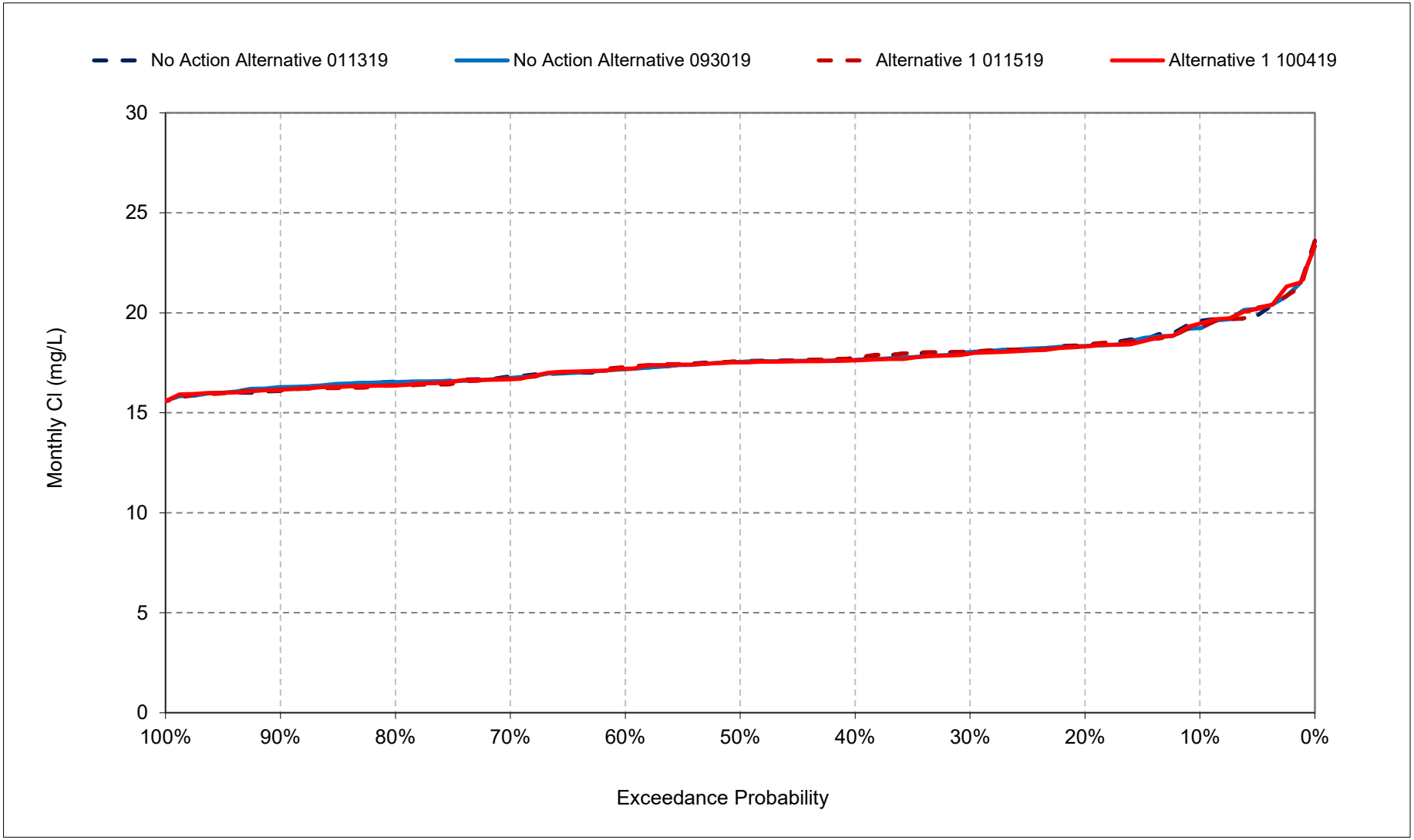

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-17. Barker Slough at NBA Intake**
**Chloride, November Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 23-18. Barker Slough at NBA Intake**
**Chloride, December Cl**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

### F1.1.2.11 *Groundwater Modeling Results*

The revised No Action Alternative and Alternative 1 were simulated for purposes of the sensitivity analysis in the CVHM groundwater flow model over a 42-year simulation in the same manner as described in Appendix I, Groundwater Technical Appendix. The results of the two sensitivity simulations were compared to the results for the No Action Alternative and Alternative 1 as presented in Appendix I.

Table 24-1 presents the simulated groundwater pumping in these sensitivity simulations. Figure 24-1 shows these pumping results graphically. Appendix I, Figures I.2-50 through I.2-54 present the simulated change in groundwater level across the Central Valley for five different water year types (wet, above normal, below normal, dry, and critical dry). Figures 24-2 through 24-6 present the same representative figures, the average simulated change in groundwater level, for the revised No Action Alternative and Alternative 1 simulations for the five different water year types.

**Table 24-1. Simulated Groundwater Pumping in Sensitivity Simulations**

| Simulated Model Year | Sacramento Valley Water Year Type* | San Joaquin Valley Water Year Type* | Groundwater Pumping in No Action Alternative (thousand ac-ft) | Groundwater Pumping in Alternative 1 (thousand ac-ft) | Change in Groundwater Pumping between Alternative 1 and No Action Alternative (thousand ac-ft) | Change in Groundwater Pumping between Alternative 1 and No Action Alternative (percent) |
|---|---|---|---|---|---|---|
| 1 | BN | BN | 8,823 | 8,447 | -375 | -4.3% |
| 2 | W | AN | 6,818 | 6,601 | -216 | -3.2% |
| 3 | D | C | 9,559 | 9,418 | -140 | -1.5% |
| 4 | W | AN | 6,938 | 6,877 | -61 | -0.9% |
| 5 | BN | D | 9,448 | 9,476 | 28 | 0.3% |
| 6 | W | W | 6,465 | 6,407 | -58 | -0.9% |
| 7 | BN | D | 8,465 | 8,117 | -348 | -4.1% |
| 8 | W | W | 4,672 | 4,674 | 2 | 0.0% |
| 9 | W | AN | 6,779 | 6,567 | -212 | -3.1% |
| 10 | W | BN | 7,287 | 7,244 | -43 | -0.6% |
| 11 | BN | C | 9,560 | 9,547 | -14 | -0.1% |
| 12 | AN | AN | 5,822 | 5,650 | -173 | -3.0% |
| 13 | W | AN | 5,693 | 5,620 | -73 | -1.3% |
| 14 | W | AN | 5,779 | 5,646 | -133 | -2.3% |
| 15 | C | C | 8,527 | 8,386 | -141 | -1.7% |
| 16 | C | C | 12,037 | 11,943 | -93 | -0.8% |
| 17 | AN | W | 4,895 | 4,675 | -220 | -4.5% |
| 18 | BN | AN | 6,383 | 6,269 | -114 | -1.8% |
| 19 | AN | W | 4,888 | 4,830 | -57 | -1.2% |
| 20 | D | D | 7,760 | 7,777 | 17 | 0.2% |
| 21 | W | W | 3,900 | 3,965 | 65 | 1.7% |
| 22 | W | W | 3,146 | 3,138 | -8 | -0.2% |
| 23 | W | W | 5,897 | 5,715 | -182 | -3.1% |

| Simulated Model Year | Sacramento Valley Water Year Type* | San Joaquin Valley Water Year Type* | Groundwater Pumping in No Action Alternative (thousand ac-ft) | Groundwater Pumping in Alternative 1 (thousand ac-ft) | Change in Groundwater Pumping between Alternative 1 and No Action Alternative (thousand ac-ft) | Change in Groundwater Pumping between Alternative 1 and No Action Alternative (percent) |
|---|---|---|---|---|---|---|
| 24 | D | D | 6,706 | 6,878 | 173 | 2.6% |
| 25 | W | W | 5,179 | 5,130 | -49 | -0.9% |
| 26 | D | C | 8,258 | 7,927 | -332 | -4.0% |
| 27 | C | C | 9,561 | 9,547 | -14 | -0.1% |
| 28 | D | C | 9,302 | 9,104 | -198 | -2.1% |
| 29 | C | C | 10,676 | 10,506 | -170 | -1.6% |
| 30 | C | C | 10,818 | 10,616 | -202 | -1.9% |
| 31 | C | C | 10,440 | 10,008 | -432 | -4.1% |
| 32 | AN | AN | 5,518 | 5,371 | -148 | -2.7% |
| 33 | C | C | 8,395 | 8,365 | -29 | -0.3% |
| 34 | W | W | 4,387 | 4,368 | -19 | -0.4% |
| 35 | W | W | 5,685 | 5,448 | -237 | -4.2% |
| 36 | W | W | 5,941 | 5,737 | -204 | -3.4% |
| 37 | W | W | 3,323 | 3,319 | -4 | -0.1% |
| 38 | W | AN | 5,725 | 5,437 | -288 | -5.0% |
| 39 | AN | AN | 6,353 | 6,092 | -261 | -4.1% |
| 40 | D | C | 7,667 | 7,669 | 2 | 0.0% |
| 41 | D | C | 8,185 | 8,319 | 134 | 1.6% |
| 42 | AN | BN | 7,107 | 7,072 | -36 | -0.5% |
| Annual Average | | | 7,114 | 6,998 | -116 | -1.6% |

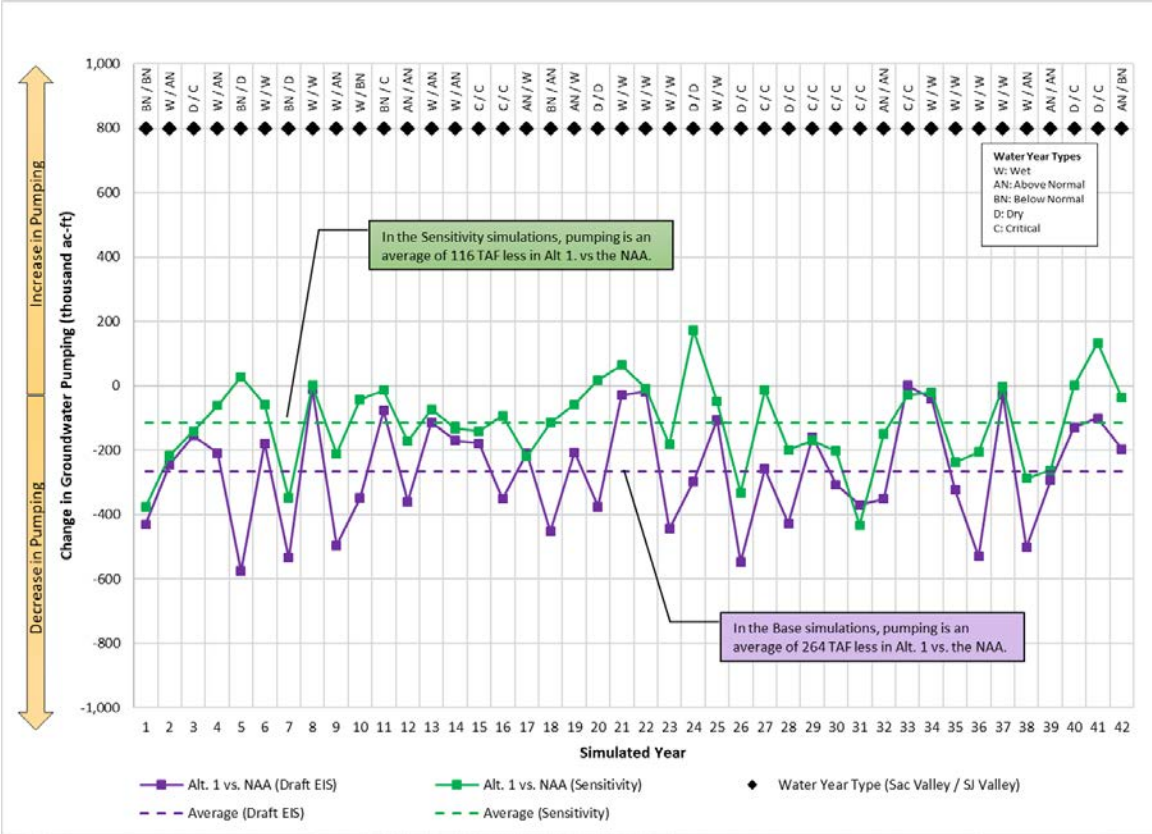



**Figure 24-1. Simulated Change in Groundwater Pumping, Appendix I and Sensitivity Simulations**

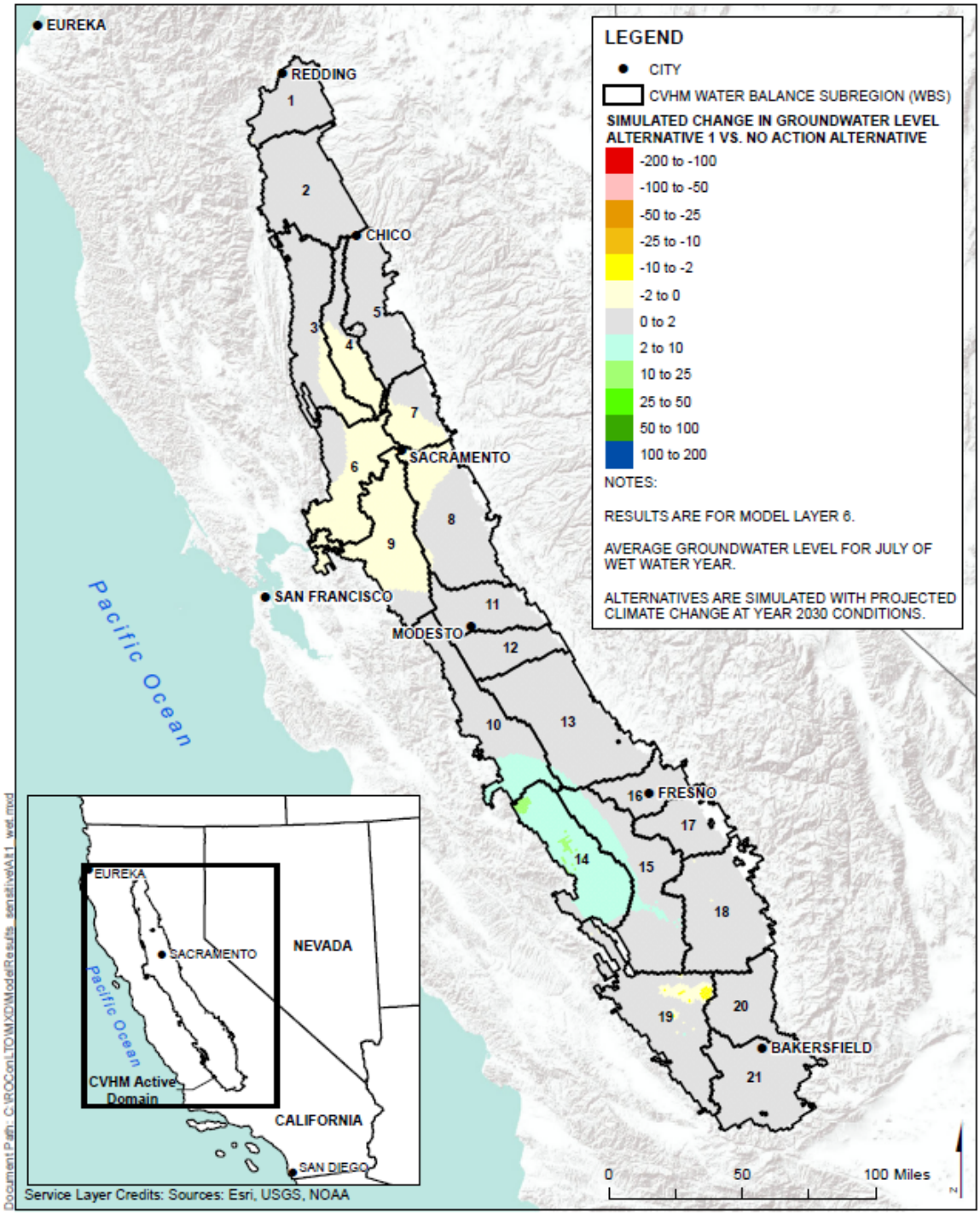



**Figure 24-2. Simulated Change in Groundwater Level, July of Wet Years, Alternative 1 versus No Action Alternative, Sensitivity Simulations**

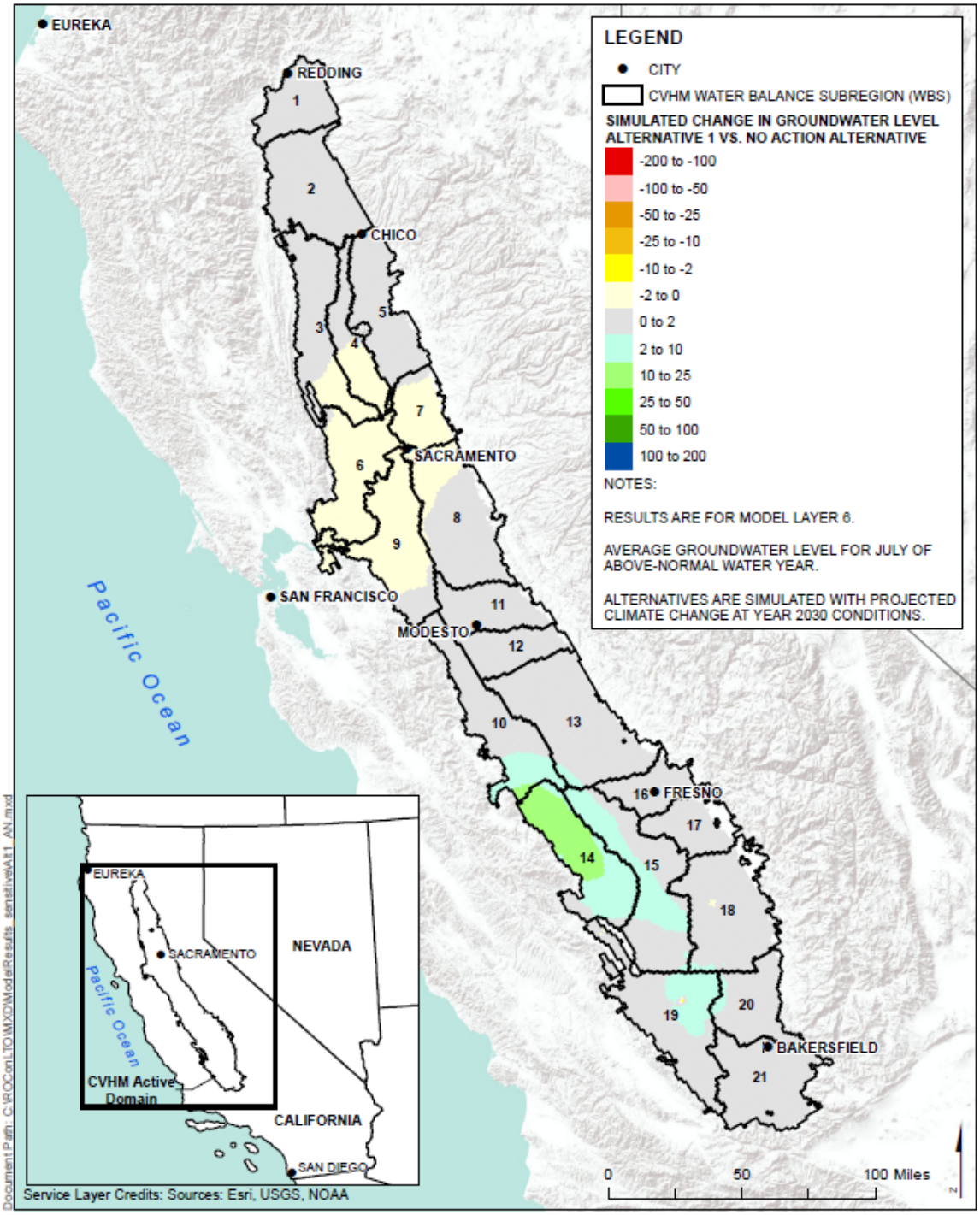



**Figure 24-3. Simulated Change in Groundwater Level, July of Above Normal Years, Alternative 1 versus No Action Alternative, Sensitivity Simulations**

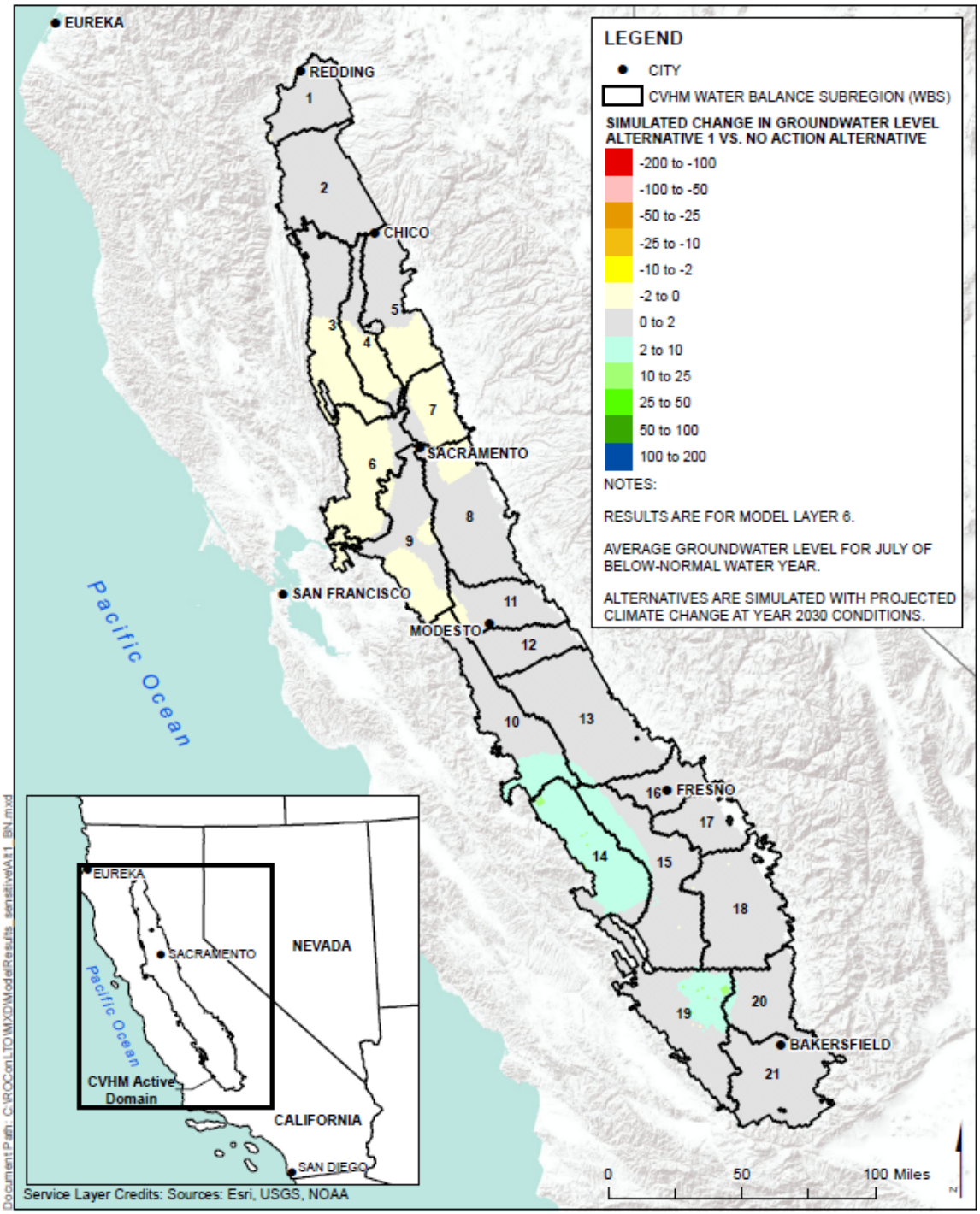



**Figure 24-4. Simulated Change in Groundwater Level, July of Below Normal Years, Alternative 1 versus No Action Alternative, Sensitivity Simulations**

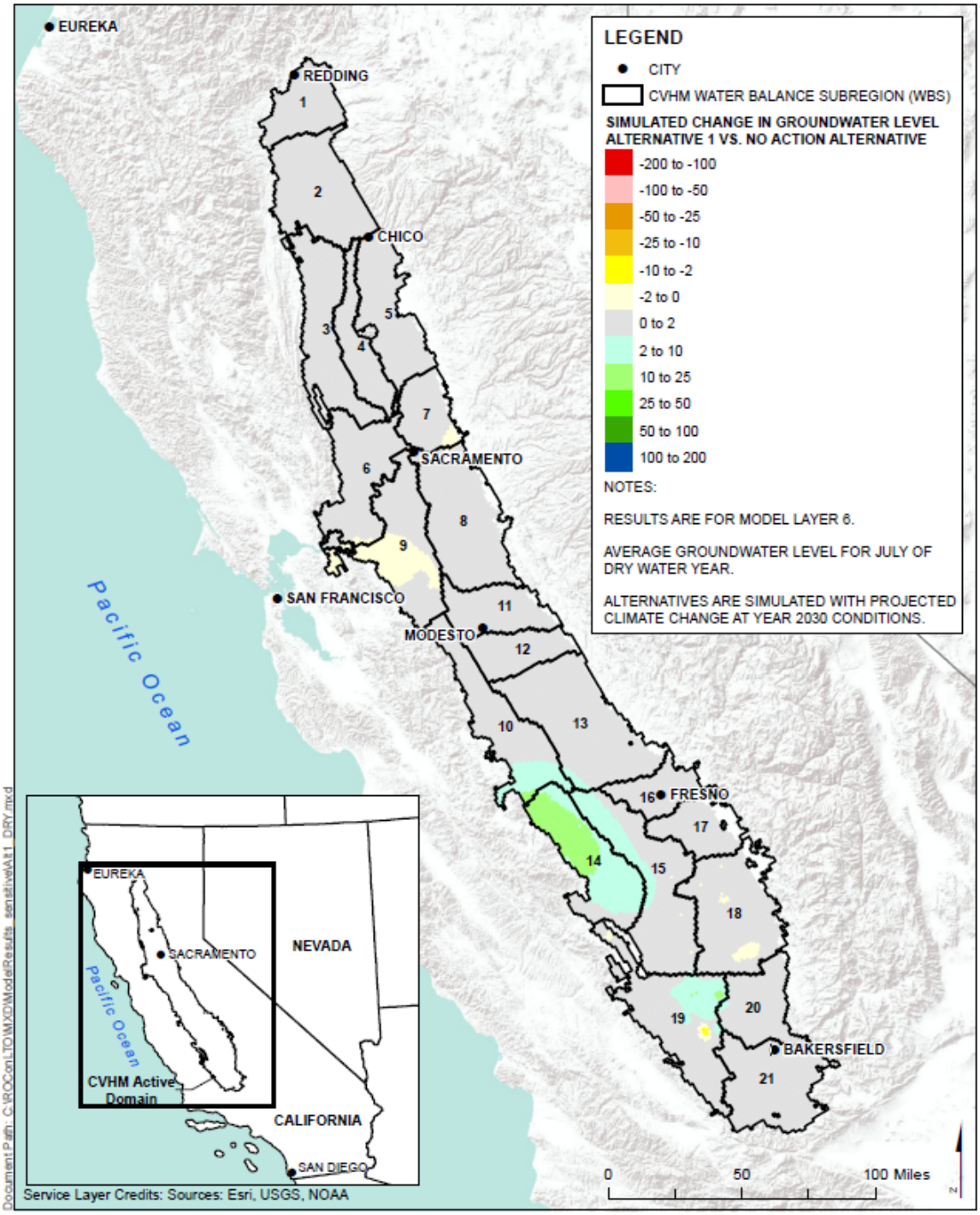



**Figure 24-5. Simulated Change in Groundwater Level, July of Dry Years, Alternative 1 versus No Action Alternative, Sensitivity Simulations**

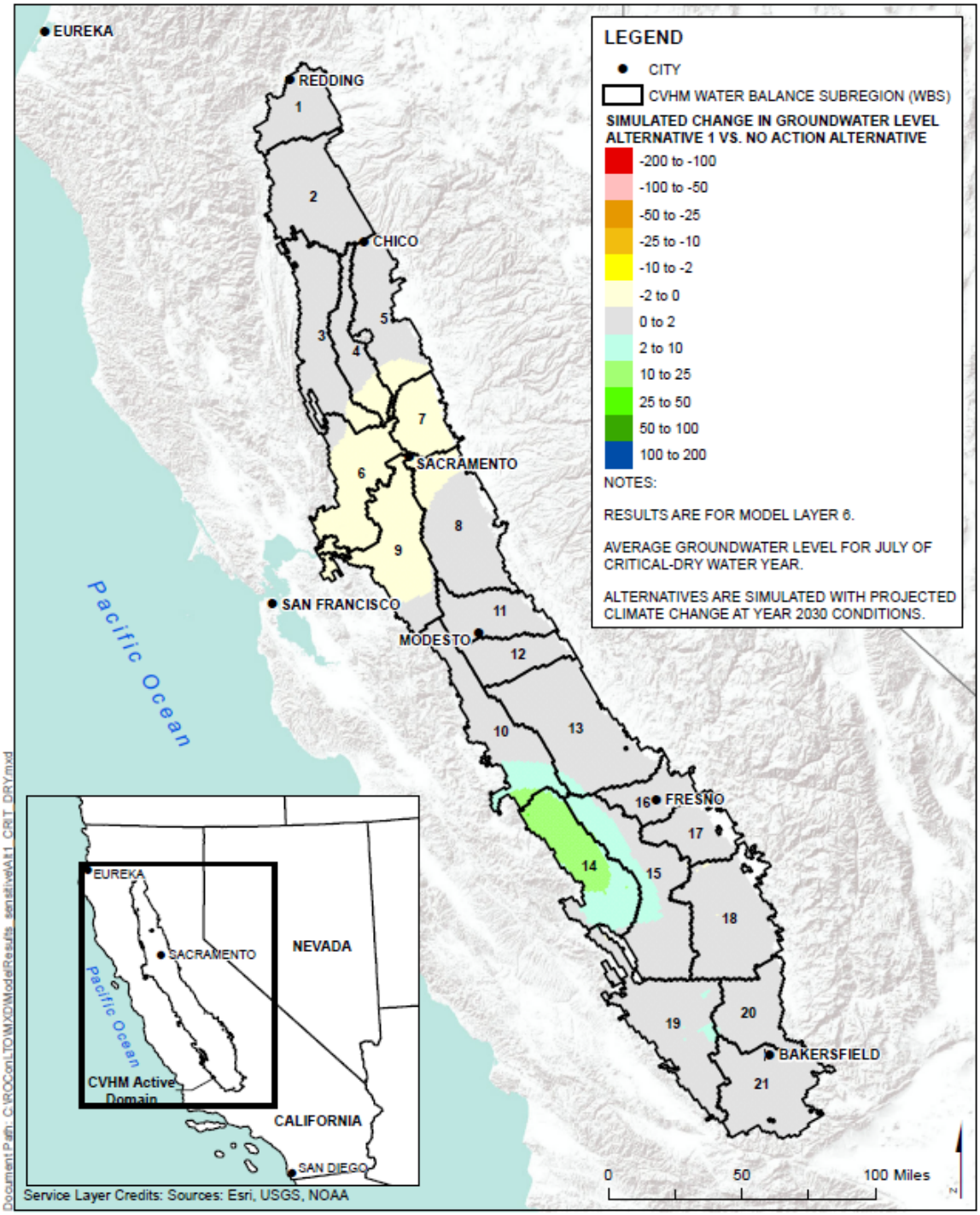



**Figure 24-6. Simulated Change in Groundwater Level, July of Critical Dry Years, Alternative 1 versus No Action Alternative, Sensitivity Simulations**

### F1.1.2.12 *Economics Modeling Results*

#### F1.1.2.12.1 CWest

The revised No Action Alternative and Alternative 1 were simulated for purposes of the sensitivity analysis in the California Water Economics Spreadsheet Tool (CWEST) model to consider the economic costs to municipal and industrial (M&I) water users including the cost of CVP and SWP water supplies, regional surface water supplies (including recycled water), conveyance costs, shortage costs, and changes in groundwater pumping costs. This was conducted in the same manner as described in Appendix Q, Regional Economics Technical Appendix. The results of the two sensitivity simulations were compared to the results for the No Action Alternative and Alternative 1 as presented in Appendix Q.

Tables 25-1 through 25-6 summarize the average annual water supply costs over the 81-year hydrologic period for M&I water supplies, by region.

**Table 25-1. Sacramento River Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | 2 | 2 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $42 | $34 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | 0 | 0 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | $0 | $0 |
| Water Storage Costs (thousand dollars)[5] | $0 | $0 |
| Lost Water Sales Revenues (thousand dollars)[6] | $0 | -$4 |
| Transfer Costs (thousand dollars)[7] | -$108 | -$143 |
| Shortage Costs (thousand dollars)[8] | $0 | $0 |
| Groundwater Pumping Costs (thousand dollars)[9] | -$34 | -$23 |
| Excess Water Costs (thousand dollars)[10] | -$27 | -$20 |
| Average Annual Changes in Water Supply Costs (thousand dollars) | -$127 | -$157 |

All costs in 2018 dollars

[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors

[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates

[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.

[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.

[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.

[6] Loss of revenue from retail water sales.

[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable

[8] Estimated consumer surplus loss to water shortages

[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.

[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

**Table 25-2. San Joaquin River Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | 21 | 12 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $1,976 | $1,113 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | -1 | 0 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | -$267 | -$37 |
| Water Storage Costs (thousand dollars)[5] | $0 | $0 |
| Lost Water Sales Revenues (thousand dollars)[6] | -$4 | -$10 |
| Transfer Costs (thousand dollars)[7] | -$307 | -$988 |
| Shortage Costs (thousand dollars)[8] | -$3 | -$3 |
| Groundwater Pumping Costs (thousand dollars)[9] | -$74 | -$363 |
| Excess Water Costs (thousand dollars)[10] | -$1,812 | -$719 |
| Average Annual Changes in Water Supply Costs (thousand dollars) | -$490 | -$1,007 |

All costs in 2018 dollars

[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors

[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates

[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.

[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.

[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.

[6] Loss of revenue from retail water sales.

[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable

[8] Estimated consumer surplus loss to water shortages

[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.

[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

**Table 25-3. Bay-Delta Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | <1 | <1 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $29 | -$19 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | 0 | 0 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | $0 | $0 |
| Water Storage Costs (thousand dollars)[5] | $321 | $321 |
| Lost Water Sales Revenues (thousand dollars)[6] | -$92 | -$92 |
| Transfer Costs (thousand dollars)[7] | -$1,001 | -$829 |
| Shortage Costs (thousand dollars)[8] | -$31 | -$31 |
| Groundwater Pumping Costs (thousand dollars)[9] | $1 | $8 |
| Excess Water Costs (thousand dollars)[10] | $18 | $46 |
| Average Annual Changes in Water Supply Costs (thousand dollars) | -$755 | -$596 |

All costs in 2018 dollars

[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors

[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates

[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.

[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.

[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.

[6] Loss of revenue from retail water sales.

[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable

[8] Estimated consumer surplus loss to water shortages

[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.

[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

**Table 25-4. San Francisco Bay Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | 32 | 0 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $1,156 | -$2 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | 7 | 0 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | $4,251 | $0 |
| Water Storage Costs (thousand dollars)[5] | $1,026 | $0 |
| Lost Water Sales Revenues (thousand dollars)[6] | -$2,339 | $0 |
| Transfer Costs (thousand dollars)[7] | -$5,793 | $0 |
| Shortage Costs (thousand dollars)[8] | -$841 | $0 |
| Groundwater Pumping Costs (thousand dollars)[9] | -$570 | $0 |
| Excess Water Costs (thousand dollars)[10] | -$89 | $2 |
| **Average Annual Changes in Water Supply Costs (thousand dollars)** | **-$3,199** | $0 |

All costs in 2018 dollars

[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors

[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates

[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.

[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.

[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.

[6] Loss of revenue from retail water sales.

[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable

[8] Estimated consumer surplus loss to water shortages

[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.

[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

**Table 25-5. Central Coast Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | 3 | 3 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $535 | $502 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | 0 | 0 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | $0 | $0 |
| Water Storage Costs (thousand dollars)[5] | $0 | $0 |
| Lost Water Sales Revenues (thousand dollars)[6] | $0 | $0 |
| Transfer Costs (thousand dollars)[7] | $25 | $0 |
| Shortage Costs (thousand dollars)[8] | $0 | $0 |
| Groundwater Pumping Costs (thousand dollars)[9] | $40 | -$254 |
| Excess Water Costs (thousand dollars)[10] | -$562 | -$368 |
| **Average Annual Changes in Water Supply Costs (thousand dollars)** | **$37** | -$120 |

All costs in 2018 dollars

[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors

[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates

[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.

[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.

[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.

[6] Loss of revenue from retail water sales.

[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable

[8] Estimated consumer surplus loss to water shortages

[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.

[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

**Table 25-6. Southern California Region M&I Water Supply Costs under Alternative 1**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| Average Annual CVP/SWP Deliveries (TAF)[1] | 263 | 113 |
| Delivery Cost for CVP/SWP Deliveries (thousand dollars)[2] | $38,019 | $16,645 |
| Alternate Water Supply Deliveries (assumed new supply) (TAF)[3] | -58 | -19 |
| Annualized Alternate Supply Costs (thousand dollars)[4] | -$21,299 | -$10,116 |
| Water Storage Costs (thousand dollars)[5] | -$393 | -$1,141 |
| Lost Water Sales Revenues (thousand dollars)[6] | -$7,825 | -$4,940 |
| Transfer Costs (thousand dollars)[7] | -$4,088 | -$2,691 |
| Shortage Costs (thousand dollars)[8] | -$8,984 | -$5,496 |
| Groundwater Pumping Costs (thousand dollars)[9] | -$19,126 | -$9,181 |
| Excess Water Costs (thousand dollars)[10] | -$1,886 | -$740 |
| **Average Annual Changes in Water Supply Costs (thousand dollars)** | **-$25,583** | -$17,660 |

All costs in 2018 dollars
[1] CalSim II simulated CVP/SWP deliveries for North of Delta and South of Delta M&I contractors
[2] Cost to deliver CVP and SWP deliveries (line items 1 in table above) based on Reclamation CVP M&I rates and Bulletin 132-10 rates
[3] Alternate water supply deliveries including desalination, new groundwater development and some types of conservation, water transfer and/or imported water. See Table Q2.2-6 in Appendix Q2 for summary of alternate water supply source by M&I contractor.
[4] Cost to develop alternate water supplies. This cost typically only includes development cost and other marginal costs (such as delivery costs etc.) are not included in this cost.
[5] Storage Costs include costs to store water in local groundwater banks and storage reservoirs. Costs include put and take costs.
[6] Loss of revenue from retail water sales.
[7] Cost to purchase and deliver transfer water purchases on annual spot market, or other annual options if applicable
[8] Estimated consumer surplus loss to water shortages
[9] Cost savings from reduction in groundwater pumping between the action alternatives and the No Action Alternative. Negative refers to savings and positive refers to costs.
[10] Cost savings from contract water not used to meet demand or reduce groundwater pumping. Negative refers to savings and positive refers to costs.

### F1.1.2.12.2 SWAP

The revised No Action Alternative and Alternative 1 were simulated for purposes of the sensitivity

analysis in the Statewide Agricultural Production (SWAP) model to evaluate the regional economic effects from changes to agricultural water supply. This analysis was conducted in the same manner as described in Appendix Q, Regional Economics Technical Appendix. The results of the two sensitivity simulations were compared to the results for the No Action Alternative and Alternative 1 as presented in Appendix Q.

Tables 26-1 through 26-6 summarize the change to agricultural water supply costs under the revised Alternative 1 compared to the revised No Action Alternative.

**Table 26-1. Sacramento River Region Agricultural Water Supply Costs**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| **Average Conditions[1]** | | |
| Average Annual CVP/SWP Deliveries (TAF) | 25 | 17 |
| Annual Groundwater Pumping (TAF) | 0 | 0 |
| Groundwater Pumping Cost (million dollars) | $0 | $0 |
| Irrigated Acreage (thousand acres) | 0 | <1 |
| Agricultural Revenue (million dollars) | $0 | $0 |
| **Dry Conditions[2]** | | |
| Average Annual CVP/SWP Deliveries (TAF) | 26 | 20 |
| Annual Groundwater Pumping (TAF) | -21 | -17 |
| Groundwater Pumping Cost (million dollars) | -$2 | -$2 |
| Irrigated Acreage (thousand acres) | 0 | <1 |
| Agricultural Revenue (million dollars) | $0 | $0 |

All costs in 2018 dollars
[1] Average Conditions refers to an average of all year types in the 81-year simulation period.
[2] Dry Conditions refer to an average of dry years only, using Sacramento River Index.

**Table 26-2. San Joaquin River Region Agricultural Water Supply Costs**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | Alternative 1 (NEW) compared to No Action Alternative (NEW) |
|---|---|---|
| **Average Conditions[1]** | | |
| Average Annual CVP/SWP Deliveries (TAF) | 309 | 138 |
| Annual Groundwater Pumping (TAF) | -231 | -396 |
| Groundwater Pumping Cost (million dollars) | -$50 | -$22 |
| Irrigated Acreage (thousand acres) | 3 | 2 |
| Agricultural Revenue (million dollars) | $10 | $8 |
| **Dry Conditions[2]** | | |
| Average Annual CVP/SWP Deliveries (TAF) | 195 | 95 |
| Annual Groundwater Pumping (TAF) | -111 | -393 |
| Groundwater Pumping Cost (million dollars) | -$30 | -$11 |
| Irrigated Acreage (thousand acres) | 24 | 21 |
| Agricultural Revenue (million dollars) | $50 | $45 |

All costs in 2018 dollars
Note: Average Conditions refers to an average of all year types in the 81-year simulation period. Dry Conditions refer to an average of dry years only, using Sacramento River Index.

### F1.1.2.12.3 IMPLAN

Using the revised results from the CWEST and SWAP models, the Impact Planning and Analysis (IMPLAN) model then estimates effects of various economic measures, including employment, labor income, and total value output. Tables 27-1 through 27-8 present the updated IMPLAN results.

**Table 27-1. Sacramento River Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | 0 | $71 | $193 | 0 | $87 | $239 |
| Mining | 0 | $12 | $87 | 0 | $14 | $108 |
| Construction | 0 | $918 | $2,301 | 0 | $1,134 | $2,843 |
| Manufacturing | 0 | $141 | $1,210 | 0 | $174 | $1,495 |
| TIPU | 0 | $1,478 | $6,015 | 0 | $1,827 | $7,433 |
| Trade | <1 | $4,440 | $12,786 | <1 | $5,487 | $15,802 |
| Service | <1 | $13,238 | $50,083 | <1 | $16,360 | $61,896 |
| Government | <1 | $8,532 | $10,889 | <1 | $10,545 | $13,457 |
| Total | <1 | $28,828 | $83,564 | <1 | $35,628 | $103,274 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-2. San Joaquin River Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | 0 | $764 | $2,199 | 0 | $1,574 | $4,532 |
| Mining | 0 | $138 | $477 | 0 | $285 | $983 |
| Construction | 0 | $1,969 | $5,440 | 0 | $4,058 | $11,211 |
| Manufacturing | 0 | $1,214 | $11,651 | 0 | $2,502 | $24,010 |
| TIPU | <1 | $6,293 | $21,722 | 0 | $12,968 | $44,764 |
| Trade | <1 | $17,926 | $49,731 | <1 | $36,941 | $102,485 |
| Service | 1 | $41,916 | $167,096 | 2 | $86,381 | $344,351 |
| Government | <1 | $19,578 | $26,531 | <1 | $40,346 | $54,675 |
| Total | **2** | **$89,798** | **$284,848** | 4 | $185,055 | $587,012 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-3. Bay-Delta Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW | | |
|---|---|---|---|---|---|---|
| | **Employment (in jobs)** | **Labor Income (in dollars)** | **Output (in dollars)** | **Employment (in jobs)** | **Labor Income (in dollars)** | **Output (in dollars)** |
| Agriculture | 0 | $443 | $1,171 | 0 | $346 | $914 |
| Mining | 0 | $33 | $143 | 0 | $25 | $112 |
| Construction | <1 | $3,876 | $9,712 | 0 | $3,026 | $7,582 |
| Manufacturing | 0 | $2,206 | $21,075 | 0 | $1,722 | $16,453 |
| TIPU | <1 | $10,399 | $43,154 | 0 | $8,118 | $33,689 |
| Trade | <1 | $25,465 | $68,783 | <1 | $19,880 | $53,696 |
| Service | 2 | $83,665 | $305,881 | 1 | $65,314 | $238,791 |
| Government | <1 | $49,067 | $60,676 | <1 | $38,305 | $47,368 |
| Total | **3** | **$175,153** | **$510,596** | 2 | $136,736 | $398,605 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-4. San Francisco Bay Area Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW | | |
|---|---|---|---|---|---|---|
| | **Employment (in jobs)** | **Labor Income (in dollars)** | **Output (in dollars)** | **Employment (in jobs)** | **Labor Income (in dollars)** | **Output (in dollars)** |
| Agriculture | 0 | $1,141 | $2,263 | 0 | $0 | $0 |
| Mining | 0 | $137 | $874 | 0 | $0 | $0 |
| Construction | <1 | $21,610 | $49,684 | 0 | $0 | $0 |
| Manufacturing | <1 | $12,308 | $67,179 | 0 | $0 | $0 |
| TIPU | <1 | $51,566 | $169,664 | 0 | $0 | $0 |
| Trade | 2 | $108,524 | $255,558 | 0 | $0 | $0 |
| Service | 6 | $333,997 | $1,052,677 | 0 | $0 | $0 |
| Government | 2 | $256,545 | $289,800 | 0 | $0 | $0 |
| Total | **10** | **$785,828** | **$1,887,698** | 0 | $0 | $0 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-5. Central Coast Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | 0 | -$31 | -$69 | 0 | $98 | $221 |
| Mining | 0 | -$28 | -$102 | 0 | $88 | $327 |
| Construction | 0 | -$262 | -$666 | 0 | $839 | $2,129 |
| Manufacturing | 0 | (-$32 | -$381 | 0 | $104 | $1,218 |
| TIPU | 0 | -$477 | -$1,877 | 0 | $1,526 | $6,003 |
| Trade | 0 | -$1,546 | -$3,966 | <1 | $4,947 | $12,689 |
| Service | <1 job lost | -$4,906 | -$17,257 | <1 | $15,695 | $55,208 |
| Government | 0 | -$2,958 | -$3,655 | <1 | $9,462 | $11,694 |
| Total | <1 job lost | -$10,240 | -$27,973 | <1 | $32,759 | $89,489 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-6. Southern California Region M&I Water Supply related Regional Economic Effects**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW) | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | <1 | $14,522 | $38,948 | <1 | $10,642 | $28,543 |
| Mining | <1 | $6,801 | $25,630 | <1 | $4,984 | $18,783 |
| Construction | 2 | $126,021 | $331,500 | 1 | $92,354 | $242,938 |
| Manufacturing | 2 | $173,348 | $1,198,642 | 2 | $127,037 | $878,419 |
| TIPU | 6 | $490,815 | $1,865,251 | 5 | $359,691 | $1,366,940 |
| Trade | 18 | $863,324 | $2,297,933 | 13 | $632,683 | $1,684,029 |
| Service | 64 | $3,182,368 | $10,179,839 | 47 | $2,332,182 | $7,460,244 |
| Government | 12 | $1,375,786 | $1,721,235 | 9 | $1,008,238 | $1,261,398 |
| Total | 104 | $6,232,986 | $17,658,979 | 76 | $4,567,812 | $12,941,293 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-7. San Joaquin River Region Agricultural Water Supply Related Regional Economic Effects under Average Conditions**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW) | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | 105 | $4,511,2 | $11,620,5 | 88 | $3,753,9 | $9,448,5 |
| Mining | <1 | $10,6 | $44,7 | <1 | $8,4 | $35,3 |
| Construction | 1 | $59,6 | $162,4 | <1 | $47,4 | $129,1 |
| Manufacturing | <1 | $45,2 | $483,6 | <1 | $36,0 | $386,1 |
| TIPU | 2 | $151,6 | $431,6 | 2 | $122,3 | $349,2 |
| Trade | 6 | $262,2 | $787,8 | 5 | $213,2 | $638,7 |
| Service | 21 | $895,9 | $2,924,6 | 17 | $733,9 | $2,389,0 |
| Government | <1 | $64,0 | $184,6 | <1 | $52,3 | $150,8 |
| Total | 136 | $6,000,7 | $16,640,3 | 113 | $4,967,6 | $13,527,1 |

All costs in 2018 dollars
TIPU = Transportation, Information, Power, and Utilities

**Table 27-8. San Joaquin River Region Agricultural Water Supply Related Regional Economic Effects under Dry Conditions**

| | Alternative 1 (OLD) compared to No Action Alternative (OLD) | | | Alternative 1 (NEW) compared to No Action Alternative (NEW) | | |
|---|---|---|---|---|---|---|
| | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) | Employment (in jobs) | Labor Income (in dollars) | Output (in dollars) |
| Agriculture | 330 | $17,494,773 | $57,553,572 | 389 | $17,191,122 | $53,076,379 |
| Mining | <1 | $80,465 | $351,341 | <1 | $69,252 | $300,934 |
| Construction | 5 | $298,805 | $813,170 | 5 | $287,007 | $780,938 |
| Manufacturing | 3 | $267,379 | $2,973,589 | 3 | $239,286 | $2,642,845 |
| TIPU | 12 | $834,642 | $2,319,951 | 11 | $754,637 | $2,111,338 |
| Trade | 29 | $1,342,282 | $4,159,685 | 27 | $1,226,761 | $3,771,852 |
| Service | 98 | $4,195,798 | $14,121,972 | 92 | $3,975,051 | $13,314,374 |
| Government | 4 | $334,992 | $964,803 | 3 | $302,370 | $868,987 |
| Total | 482 | $24,849,136 | $83,258,083 | 531 | $24,045,485 | $76,867,646 |

All costs in 2018 dollars

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.2.13 Power Modeling Results (LTGen & SWP Power)

The following results of the LTGen and SWP Power models are included for energy capacity, energy generation, and energy use at key project locations for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| CVP Total Capacity | CVP_TOTAL | 28-1 to 28-4 | 28-1 to 28-18 |
| CVP Total Generation | CVP_TOTAL | 29-1 to 29-4 | 29-1 to 29-18 |
| CVP Total Energy Use | CVP_TOTAL | 30-1 to 30-4 | 30-1 to 30-18 |
| CVP Net Generation | CVP_TOTAL | 31-1 to 31-4 | 31-1 to 31-18 |
| SWP Total Capacity | SWP_TOTAL | 32-1 to 32-4 | 32-1 to 32-18 |
| SWP Total Generation | SWP_TOTAL | 33-1 to 33-4 | 33-1 to 33-18 |
| SWP Total Energy Use | SWP_TOTAL | 34-1 to 34-4 | 34-1 to 34-18 |
| SWP Net Generation | SWP_TOTAL | 35-1 to 35-4 | 35-1 to 35-18 |
| CVP and SWP Net Generation | CVP_SWP_TOTAL | 36-1 to 36-4 | 36-1 to 36-18 |

Report formats

- Exceedance tables comparing power modeling results of two scenarios
- Monthly pattern charts including all scenarios
- Monthly exceedance charts including all scenarios

# Table 28-1. CVP Total Capacity, Monthly Capacity

## No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,683 | 1,741 | 1,814 | 1,858 | 1,881 | 1,908 | 1,869 | 1,853 | 1,794 | 1,758 | 1,677 | 1,654 |
| 20% | 1,635 | 1,713 | 1,777 | 1,828 | 1,858 | 1,881 | 1,839 | 1,816 | 1,730 | 1,700 | 1,633 | 1,616 |
| 30% | 1,597 | 1,674 | 1,735 | 1,798 | 1,836 | 1,843 | 1,820 | 1,783 | 1,668 | 1,628 | 1,571 | 1,590 |
| 40% | 1,575 | 1,629 | 1,706 | 1,773 | 1,810 | 1,814 | 1,793 | 1,744 | 1,631 | 1,580 | 1,540 | 1,563 |
| 50% | 1,549 | 1,601 | 1,676 | 1,737 | 1,781 | 1,792 | 1,759 | 1,710 | 1,609 | 1,554 | 1,516 | 1,519 |
| 60% | 1,517 | 1,555 | 1,639 | 1,713 | 1,751 | 1,761 | 1,730 | 1,666 | 1,563 | 1,494 | 1,473 | 1,470 |
| 70% | 1,450 | 1,507 | 1,591 | 1,670 | 1,724 | 1,730 | 1,695 | 1,633 | 1,521 | 1,448 | 1,427 | 1,428 |
| 80% | 1,389 | 1,436 | 1,525 | 1,599 | 1,654 | 1,663 | 1,652 | 1,587 | 1,450 | 1,364 | 1,348 | 1,358 |
| 90% | 1,168 | 1,268 | 1,390 | 1,483 | 1,512 | 1,511 | 1,468 | 1,426 | 1,259 | 1,128 | 1,107 | 1,148 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,482 | 1,543 | 1,619 | 1,690 | 1,729 | 1,744 | 1,711 | 1,660 | 1,554 | 1,485 | 1,445 | 1,444 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,627 | 1,677 | 1,738 | 1,828 | 1,864 | 1,884 | 1,858 | 1,838 | 1,757 | 1,721 | 1,644 | 1,629 |
| Above Normal (16%) | 1,560 | 1,605 | 1,668 | 1,767 | 1,811 | 1,818 | 1,794 | 1,745 | 1,630 | 1,588 | 1,541 | 1,540 |
| Below Normal (13%) | 1,519 | 1,571 | 1,651 | 1,717 | 1,755 | 1,768 | 1,733 | 1,669 | 1,563 | 1,494 | 1,481 | 1,483 |
| Dry (24%) | 1,486 | 1,548 | 1,632 | 1,641 | 1,690 | 1,716 | 1,687 | 1,618 | 1,510 | 1,434 | 1,420 | 1,434 |
| Critical (15%) | 1,043 | 1,148 | 1,257 | 1,365 | 1,388 | 1,382 | 1,324 | 1,244 | 1,098 | 937 | 918 | 923 |

## Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,719 | 1,785 | 1,831 | 1,862 | 1,899 | 1,929 | 1,915 | 1,876 | 1,801 | 1,748 | 1,723 | 1,709 |
| 20% | 1,702 | 1,750 | 1,806 | 1,841 | 1,879 | 1,909 | 1,896 | 1,846 | 1,739 | 1,684 | 1,672 | 1,676 |
| 30% | 1,665 | 1,726 | 1,766 | 1,820 | 1,854 | 1,886 | 1,862 | 1,807 | 1,696 | 1,645 | 1,619 | 1,639 |
| 40% | 1,638 | 1,706 | 1,747 | 1,801 | 1,837 | 1,861 | 1,836 | 1,778 | 1,652 | 1,594 | 1,595 | 1,597 |
| 50% | 1,612 | 1,653 | 1,711 | 1,785 | 1,824 | 1,833 | 1,806 | 1,738 | 1,624 | 1,554 | 1,537 | 1,550 |
| 60% | 1,580 | 1,615 | 1,672 | 1,745 | 1,791 | 1,813 | 1,788 | 1,714 | 1,597 | 1,526 | 1,499 | 1,518 |
| 70% | 1,506 | 1,541 | 1,642 | 1,705 | 1,751 | 1,773 | 1,739 | 1,684 | 1,573 | 1,494 | 1,469 | 1,485 |
| 80% | 1,455 | 1,488 | 1,563 | 1,657 | 1,700 | 1,720 | 1,689 | 1,622 | 1,513 | 1,435 | 1,411 | 1,423 |
| 90% | 1,166 | 1,326 | 1,434 | 1,569 | 1,549 | 1,541 | 1,543 | 1,479 | 1,282 | 1,146 | 1,147 | 1,141 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,544 | 1,599 | 1,664 | 1,727 | 1,767 | 1,791 | 1,762 | 1,702 | 1,586 | 1,512 | 1,494 | 1,501 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,709 | 1,752 | 1,782 | 1,829 | 1,869 | 1,904 | 1,890 | 1,854 | 1,763 | 1,708 | 1,686 | 1,684 |
| Above Normal (16%) | 1,609 | 1,641 | 1,692 | 1,789 | 1,827 | 1,846 | 1,829 | 1,771 | 1,644 | 1,580 | 1,572 | 1,571 |
| Below Normal (13%) | 1,534 | 1,578 | 1,660 | 1,766 | 1,803 | 1,818 | 1,775 | 1,713 | 1,599 | 1,526 | 1,495 | 1,499 |
| Dry (24%) | 1,542 | 1,597 | 1,675 | 1,694 | 1,744 | 1,779 | 1,752 | 1,675 | 1,568 | 1,483 | 1,468 | 1,485 |
| Critical (15%) | 1,131 | 1,243 | 1,367 | 1,456 | 1,490 | 1,483 | 1,420 | 1,329 | 1,159 | 1,052 | 1,036 | 1,058 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 36 | 43 | 17 | 4 | 17 | 21 | 46 | 22 | 7 | -11 | 46 | 55 |
| 20% | 67 | 37 | 29 | 13 | 21 | 28 | 57 | 30 | 9 | -15 | 40 | 60 |
| 30% | 68 | 52 | 31 | 22 | 19 | 43 | 42 | 25 | 28 | 17 | 47 | 48 |
| 40% | 63 | 77 | 42 | 29 | 27 | 47 | 43 | 33 | 21 | 14 | 55 | 33 |
| 50% | 63 | 52 | 35 | 48 | 44 | 40 | 47 | 28 | 15 | -1 | 21 | 32 |
| 60% | 62 | 60 | 33 | 32 | 40 | 52 | 58 | 47 | 34 | 31 | 26 | 48 |
| 70% | 56 | 34 | 51 | 35 | 27 | 42 | 44 | 51 | 53 | 46 | 41 | 56 |
| 80% | 66 | 53 | 37 | 58 | 47 | 58 | 37 | 35 | 63 | 71 | 63 | 65 |
| 90% | -2 | 58 | 44 | 86 | 36 | 30 | 76 | 53 | 24 | 17 | 40 | -7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 62 | 56 | 46 | 36 | 39 | 48 | 51 | 41 | 32 | 27 | 49 | 57 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 82 | 75 | 44 | 1 | 5 | 20 | 32 | 16 | 6 | -13 | 42 | 55 |
| Above Normal (16%) | 49 | 35 | 24 | 22 | 16 | 29 | 34 | 26 | 15 | -8 | 31 | 30 |
| Below Normal (13%) | 15 | 7 | 9 | 49 | 48 | 51 | 42 | 44 | 35 | 32 | 14 | 15 |
| Dry (24%) | 55 | 49 | 43 | 53 | 54 | 63 | 66 | 57 | 57 | 49 | 47 | 51 |
| Critical (15%) | 88 | 95 | 110 | 91 | 101 | 100 | 95 | 85 | 61 | 114 | 118 | 135 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-2. CVP Total Capacity, Monthly Capacity

### No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,681 | 1,742 | 1,812 | 1,858 | 1,881 | 1,908 | 1,868 | 1,853 | 1,794 | 1,757 | 1,673 | 1,655 |
| 20% | 1,636 | 1,717 | 1,777 | 1,827 | 1,858 | 1,881 | 1,839 | 1,809 | 1,730 | 1,699 | 1,633 | 1,610 |
| 30% | 1,595 | 1,678 | 1,733 | 1,798 | 1,836 | 1,841 | 1,819 | 1,782 | 1,661 | 1,629 | 1,566 | 1,586 |
| 40% | 1,569 | 1,624 | 1,709 | 1,766 | 1,806 | 1,813 | 1,791 | 1,744 | 1,627 | 1,578 | 1,537 | 1,551 |
| 50% | 1,551 | 1,596 | 1,669 | 1,740 | 1,781 | 1,793 | 1,761 | 1,707 | 1,606 | 1,553 | 1,506 | 1,513 |
| 60% | 1,511 | 1,541 | 1,633 | 1,712 | 1,747 | 1,760 | 1,727 | 1,667 | 1,564 | 1,496 | 1,470 | 1,463 |
| 70% | 1,452 | 1,496 | 1,585 | 1,661 | 1,707 | 1,719 | 1,678 | 1,626 | 1,519 | 1,443 | 1,417 | 1,418 |
| 80% | 1,387 | 1,436 | 1,514 | 1,589 | 1,645 | 1,670 | 1,641 | 1,582 | 1,451 | 1,357 | 1,343 | 1,354 |
| 90% | 1,178 | 1,249 | 1,392 | 1,481 | 1,511 | 1,511 | 1,468 | 1,422 | 1,253 | 1,131 | 1,110 | 1,129 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,478 | 1,538 | 1,613 | 1,686 | 1,725 | 1,741 | 1,708 | 1,655 | 1,547 | 1,485 | 1,440 | 1,440 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,627 | 1,674 | 1,736 | 1,828 | 1,863 | 1,884 | 1,858 | 1,838 | 1,756 | 1,720 | 1,642 | 1,627 |
| Above Normal (16%) | 1,554 | 1,604 | 1,664 | 1,764 | 1,809 | 1,816 | 1,794 | 1,744 | 1,629 | 1,587 | 1,539 | 1,535 |
| Below Normal (13%) | 1,513 | 1,570 | 1,643 | 1,715 | 1,753 | 1,767 | 1,728 | 1,669 | 1,563 | 1,491 | 1,475 | 1,476 |
| Dry (24%) | 1,486 | 1,545 | 1,629 | 1,633 | 1,682 | 1,711 | 1,681 | 1,609 | 1,505 | 1,429 | 1,412 | 1,429 |
| Critical (15%) | 1,027 | 1,132 | 1,241 | 1,356 | 1,379 | 1,373 | 1,314 | 1,226 | 1,058 | 953 | 912 | 915 |

### Alternative 1 100419

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,719 | 1,773 | 1,828 | 1,866 | 1,905 | 1,933 | 1,922 | 1,899 | 1,825 | 1,751 | 1,704 | 1,684 |
| 20% | 1,677 | 1,735 | 1,794 | 1,845 | 1,864 | 1,914 | 1,906 | 1,859 | 1,764 | 1,696 | 1,649 | 1,650 |
| 30% | 1,653 | 1,712 | 1,768 | 1,822 | 1,853 | 1,886 | 1,867 | 1,819 | 1,701 | 1,643 | 1,607 | 1,620 |
| 40% | 1,635 | 1,688 | 1,736 | 1,797 | 1,832 | 1,861 | 1,848 | 1,776 | 1,681 | 1,602 | 1,580 | 1,586 |
| 50% | 1,591 | 1,657 | 1,698 | 1,767 | 1,813 | 1,832 | 1,801 | 1,749 | 1,634 | 1,567 | 1,528 | 1,537 |
| 60% | 1,566 | 1,599 | 1,675 | 1,740 | 1,775 | 1,805 | 1,765 | 1,718 | 1,605 | 1,533 | 1,497 | 1,510 |
| 70% | 1,512 | 1,561 | 1,645 | 1,699 | 1,747 | 1,775 | 1,740 | 1,665 | 1,581 | 1,502 | 1,464 | 1,475 |
| 80% | 1,461 | 1,487 | 1,554 | 1,631 | 1,704 | 1,732 | 1,697 | 1,616 | 1,519 | 1,439 | 1,412 | 1,430 |
| 90% | 1,142 | 1,337 | 1,419 | 1,529 | 1,546 | 1,537 | 1,500 | 1,430 | 1,292 | 1,148 | 1,148 | 1,139 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,535 | 1,591 | 1,659 | 1,720 | 1,763 | 1,791 | 1,762 | 1,705 | 1,599 | 1,520 | 1,485 | 1,490 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,691 | 1,728 | 1,772 | 1,829 | 1,872 | 1,910 | 1,901 | 1,868 | 1,780 | 1,717 | 1,666 | 1,663 |
| Above Normal (16%) | 1,586 | 1,624 | 1,670 | 1,789 | 1,832 | 1,860 | 1,838 | 1,782 | 1,671 | 1,591 | 1,527 | 1,536 |
| Below Normal (13%) | 1,545 | 1,597 | 1,675 | 1,757 | 1,794 | 1,815 | 1,775 | 1,719 | 1,614 | 1,537 | 1,516 | 1,518 |
| Dry (24%) | 1,541 | 1,602 | 1,678 | 1,679 | 1,729 | 1,765 | 1,739 | 1,667 | 1,571 | 1,489 | 1,475 | 1,488 |
| Critical (15%) | 1,121 | 1,236 | 1,356 | 1,446 | 1,481 | 1,475 | 1,405 | 1,318 | 1,162 | 1,052 | 1,036 | 1,040 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 37 | 31 | 15 | 8 | 24 | 25 | 55 | 46 | 30 | -6 | 31 | 29 |
| 20% | 41 | 18 | 17 | 18 | 6 | 33 | 67 | 50 | 34 | -3 | 16 | 40 |
| 30% | 57 | 35 | 36 | 24 | 17 | 45 | 49 | 37 | 40 | 14 | 42 | 35 |
| 40% | 65 | 63 | 27 | 31 | 26 | 48 | 56 | 32 | 54 | 24 | 43 | 35 |
| 50% | 40 | 62 | 29 | 27 | 32 | 39 | 40 | 43 | 28 | 14 | 22 | 24 |
| 60% | 54 | 59 | 42 | 29 | 28 | 45 | 38 | 51 | 41 | 37 | 26 | 46 |
| 70% | 60 | 65 | 60 | 38 | 40 | 56 | 61 | 39 | 62 | 59 | 46 | 56 |
| 80% | 74 | 51 | 40 | 41 | 59 | 62 | 56 | 34 | 68 | 83 | 70 | 76 |
| 90% | -37 | 88 | 28 | 48 | 35 | 26 | 32 | 8 | 40 | 17 | 38 | 10 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 57 | 53 | 46 | 34 | 38 | 50 | 55 | 50 | 52 | 35 | 45 | 50 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 64 | 54 | 36 | 1 | 8 | 26 | 43 | 30 | 24 | -4 | 24 | 36 |
| Above Normal (16%) | 32 | 21 | 5 | 25 | 22 | 43 | 45 | 38 | 41 | 5 | -12 | 1 |
| Below Normal (13%) | 32 | 27 | 33 | 42 | 41 | 48 | 47 | 50 | 51 | 47 | 41 | 42 |
| Dry (24%) | 55 | 57 | 50 | 46 | 46 | 54 | 58 | 58 | 66 | 60 | 63 | 58 |
| Critical (15%) | 94 | 104 | 115 | 89 | 102 | 102 | 91 | 92 | 104 | 99 | 124 | 125 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-3. CVP Total Capacity, Monthly Capacity

### No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,683 | 1,741 | 1,814 | 1,858 | 1,881 | 1,908 | 1,869 | 1,853 | 1,794 | 1,758 | 1,677 | 1,654 |
| 20% | 1,635 | 1,713 | 1,777 | 1,828 | 1,858 | 1,881 | 1,839 | 1,816 | 1,730 | 1,700 | 1,633 | 1,616 |
| 30% | 1,597 | 1,674 | 1,735 | 1,798 | 1,836 | 1,843 | 1,820 | 1,783 | 1,668 | 1,628 | 1,571 | 1,590 |
| 40% | 1,575 | 1,629 | 1,706 | 1,773 | 1,810 | 1,814 | 1,793 | 1,744 | 1,631 | 1,580 | 1,540 | 1,563 |
| 50% | 1,549 | 1,601 | 1,676 | 1,737 | 1,781 | 1,792 | 1,759 | 1,710 | 1,609 | 1,554 | 1,516 | 1,519 |
| 60% | 1,517 | 1,555 | 1,639 | 1,713 | 1,751 | 1,761 | 1,730 | 1,666 | 1,563 | 1,494 | 1,473 | 1,470 |
| 70% | 1,450 | 1,507 | 1,591 | 1,670 | 1,724 | 1,730 | 1,695 | 1,633 | 1,521 | 1,448 | 1,427 | 1,428 |
| 80% | 1,389 | 1,436 | 1,525 | 1,599 | 1,654 | 1,663 | 1,652 | 1,587 | 1,450 | 1,364 | 1,348 | 1,358 |
| 90% | 1,168 | 1,268 | 1,390 | 1,483 | 1,512 | 1,511 | 1,468 | 1,426 | 1,259 | 1,128 | 1,107 | 1,148 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,482 | 1,543 | 1,619 | 1,690 | 1,729 | 1,744 | 1,711 | 1,660 | 1,554 | 1,485 | 1,445 | 1,444 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,627 | 1,677 | 1,738 | 1,828 | 1,864 | 1,884 | 1,858 | 1,838 | 1,757 | 1,721 | 1,644 | 1,629 |
| Above Normal (16%) | 1,560 | 1,605 | 1,668 | 1,767 | 1,811 | 1,818 | 1,794 | 1,745 | 1,630 | 1,588 | 1,541 | 1,540 |
| Below Normal (13%) | 1,519 | 1,571 | 1,651 | 1,717 | 1,755 | 1,768 | 1,733 | 1,669 | 1,563 | 1,494 | 1,481 | 1,483 |
| Dry (24%) | 1,486 | 1,548 | 1,632 | 1,641 | 1,690 | 1,716 | 1,687 | 1,618 | 1,510 | 1,434 | 1,420 | 1,434 |
| Critical (15%) | 1,043 | 1,148 | 1,257 | 1,365 | 1,388 | 1,382 | 1,324 | 1,244 | 1,098 | 937 | 918 | 923 |

### No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,681 | 1,742 | 1,812 | 1,858 | 1,881 | 1,908 | 1,868 | 1,853 | 1,794 | 1,757 | 1,673 | 1,655 |
| 20% | 1,636 | 1,717 | 1,777 | 1,827 | 1,858 | 1,881 | 1,839 | 1,809 | 1,730 | 1,699 | 1,633 | 1,610 |
| 30% | 1,595 | 1,678 | 1,733 | 1,798 | 1,836 | 1,841 | 1,819 | 1,782 | 1,661 | 1,629 | 1,566 | 1,586 |
| 40% | 1,569 | 1,624 | 1,709 | 1,766 | 1,806 | 1,813 | 1,791 | 1,744 | 1,627 | 1,578 | 1,537 | 1,551 |
| 50% | 1,551 | 1,596 | 1,669 | 1,740 | 1,781 | 1,793 | 1,761 | 1,707 | 1,606 | 1,553 | 1,506 | 1,513 |
| 60% | 1,511 | 1,541 | 1,633 | 1,712 | 1,747 | 1,760 | 1,727 | 1,667 | 1,564 | 1,496 | 1,470 | 1,463 |
| 70% | 1,452 | 1,496 | 1,585 | 1,661 | 1,707 | 1,719 | 1,678 | 1,626 | 1,519 | 1,443 | 1,417 | 1,418 |
| 80% | 1,387 | 1,436 | 1,514 | 1,589 | 1,645 | 1,670 | 1,641 | 1,582 | 1,451 | 1,357 | 1,343 | 1,354 |
| 90% | 1,178 | 1,249 | 1,392 | 1,481 | 1,511 | 1,511 | 1,468 | 1,422 | 1,253 | 1,131 | 1,110 | 1,129 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,478 | 1,538 | 1,613 | 1,686 | 1,725 | 1,741 | 1,708 | 1,655 | 1,547 | 1,485 | 1,440 | 1,440 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,627 | 1,674 | 1,736 | 1,828 | 1,863 | 1,884 | 1,858 | 1,838 | 1,756 | 1,720 | 1,642 | 1,627 |
| Above Normal (16%) | 1,554 | 1,604 | 1,664 | 1,764 | 1,809 | 1,816 | 1,794 | 1,744 | 1,629 | 1,587 | 1,539 | 1,535 |
| Below Normal (13%) | 1,513 | 1,570 | 1,643 | 1,715 | 1,753 | 1,767 | 1,728 | 1,669 | 1,563 | 1,491 | 1,475 | 1,476 |
| Dry (24%) | 1,486 | 1,545 | 1,629 | 1,633 | 1,682 | 1,711 | 1,681 | 1,609 | 1,505 | 1,429 | 1,412 | 1,429 |
| Critical (15%) | 1,027 | 1,132 | 1,241 | 1,356 | 1,379 | 1,373 | 1,314 | 1,226 | 1,058 | 953 | 912 | 915 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -2 | 1 | -1 | 0 | 0 | 0 | -1 | -1 | 0 | -2 | -5 | 1 |
| 20% | 1 | 3 | 1 | -1 | 0 | 0 | 0 | -8 | 0 | -1 | 0 | -6 |
| 30% | -2 | 4 | -2 | 0 | 0 | -2 | -1 | -1 | -6 | 1 | -6 | -5 |
| 40% | -6 | -5 | 3 | -7 | -4 | -1 | -2 | 0 | -4 | -1 | -3 | -13 |
| 50% | 2 | -5 | -7 | 3 | 0 | 0 | 2 | -3 | -4 | -1 | -10 | -6 |
| 60% | -6 | -14 | -6 | -2 | -4 | -1 | -2 | 1 | 1 | 1 | -3 | -7 |
| 70% | 2 | -11 | -7 | -10 | -18 | -11 | -17 | -7 | -1 | -5 | -10 | -10 |
| 80% | -2 | 0 | -11 | -10 | -9 | 8 | -11 | -6 | 1 | -7 | -5 | -4 |
| 90% | 11 | -18 | 2 | -2 | -2 | 0 | 0 | -4 | -6 | 2 | 3 | -19 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | -5 | -5 | -4 | -4 | -3 | -4 | -5 | -8 | 0 | -5 | -5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 0 | -3 | -1 | -1 | -1 | 0 | 0 | -1 | -1 | -1 | -3 | -1 |
| Above Normal (16%) | -6 | -2 | -4 | -3 | -1 | -1 | -1 | -1 | 0 | -1 | -2 | -5 |
| Below Normal (13%) | -6 | -1 | -8 | -2 | -2 | -1 | -5 | 0 | -1 | -3 | -6 | -8 |
| Dry (24%) | -1 | -3 | -3 | -8 | -8 | -5 | -6 | -9 | -6 | -5 | -8 | -5 |
| Critical (15%) | -17 | -17 | -16 | -9 | -9 | -10 | -10 | -18 | -40 | 16 | -6 | -8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 28-4. CVP Total Capacity, Monthly Capacity

### Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,719 | 1,785 | 1,831 | 1,862 | 1,899 | 1,929 | 1,915 | 1,876 | 1,801 | 1,748 | 1,723 | 1,709 |
| 20% | 1,702 | 1,750 | 1,806 | 1,841 | 1,879 | 1,909 | 1,896 | 1,846 | 1,739 | 1,684 | 1,672 | 1,676 |
| 30% | 1,665 | 1,726 | 1,766 | 1,820 | 1,854 | 1,886 | 1,862 | 1,807 | 1,696 | 1,645 | 1,619 | 1,639 |
| 40% | 1,638 | 1,706 | 1,747 | 1,801 | 1,837 | 1,861 | 1,836 | 1,778 | 1,652 | 1,594 | 1,595 | 1,597 |
| 50% | 1,612 | 1,653 | 1,711 | 1,785 | 1,824 | 1,833 | 1,806 | 1,738 | 1,624 | 1,554 | 1,537 | 1,550 |
| 60% | 1,580 | 1,615 | 1,672 | 1,745 | 1,791 | 1,813 | 1,788 | 1,714 | 1,597 | 1,526 | 1,499 | 1,518 |
| 70% | 1,506 | 1,541 | 1,642 | 1,705 | 1,751 | 1,773 | 1,739 | 1,684 | 1,573 | 1,494 | 1,469 | 1,485 |
| 80% | 1,455 | 1,488 | 1,563 | 1,657 | 1,700 | 1,720 | 1,689 | 1,622 | 1,513 | 1,435 | 1,411 | 1,423 |
| 90% | 1,166 | 1,326 | 1,434 | 1,569 | 1,549 | 1,541 | 1,543 | 1,479 | 1,282 | 1,146 | 1,147 | 1,141 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,544 | 1,599 | 1,664 | 1,727 | 1,767 | 1,791 | 1,762 | 1,702 | 1,586 | 1,512 | 1,494 | 1,501 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,709 | 1,752 | 1,782 | 1,829 | 1,869 | 1,904 | 1,890 | 1,854 | 1,763 | 1,708 | 1,686 | 1,684 |
| Above Normal (16%) | 1,609 | 1,641 | 1,692 | 1,789 | 1,827 | 1,846 | 1,829 | 1,771 | 1,644 | 1,580 | 1,572 | 1,571 |
| Below Normal (13%) | 1,534 | 1,578 | 1,660 | 1,766 | 1,803 | 1,818 | 1,775 | 1,713 | 1,599 | 1,526 | 1,495 | 1,499 |
| Dry (24%) | 1,542 | 1,597 | 1,675 | 1,694 | 1,744 | 1,779 | 1,752 | 1,675 | 1,568 | 1,483 | 1,468 | 1,485 |
| Critical (15%) | 1,131 | 1,243 | 1,367 | 1,456 | 1,490 | 1,483 | 1,420 | 1,329 | 1,159 | 1,052 | 1,036 | 1,058 |

### Alternative 1 100419

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,719 | 1,773 | 1,828 | 1,866 | 1,905 | 1,933 | 1,922 | 1,899 | 1,825 | 1,751 | 1,704 | 1,684 |
| 20% | 1,677 | 1,735 | 1,794 | 1,845 | 1,864 | 1,914 | 1,906 | 1,859 | 1,764 | 1,696 | 1,649 | 1,650 |
| 30% | 1,653 | 1,712 | 1,768 | 1,822 | 1,853 | 1,886 | 1,867 | 1,819 | 1,701 | 1,643 | 1,607 | 1,620 |
| 40% | 1,635 | 1,688 | 1,736 | 1,797 | 1,832 | 1,861 | 1,848 | 1,776 | 1,681 | 1,602 | 1,580 | 1,586 |
| 50% | 1,591 | 1,657 | 1,698 | 1,767 | 1,813 | 1,832 | 1,801 | 1,749 | 1,634 | 1,567 | 1,528 | 1,537 |
| 60% | 1,566 | 1,599 | 1,675 | 1,740 | 1,775 | 1,805 | 1,765 | 1,718 | 1,605 | 1,533 | 1,497 | 1,510 |
| 70% | 1,512 | 1,561 | 1,645 | 1,699 | 1,747 | 1,775 | 1,740 | 1,665 | 1,581 | 1,502 | 1,464 | 1,475 |
| 80% | 1,461 | 1,487 | 1,554 | 1,631 | 1,704 | 1,732 | 1,697 | 1,616 | 1,519 | 1,439 | 1,412 | 1,430 |
| 90% | 1,142 | 1,337 | 1,419 | 1,529 | 1,546 | 1,537 | 1,500 | 1,430 | 1,292 | 1,148 | 1,148 | 1,139 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1,535 | 1,591 | 1,659 | 1,720 | 1,763 | 1,791 | 1,762 | 1,705 | 1,599 | 1,520 | 1,485 | 1,490 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,691 | 1,728 | 1,772 | 1,829 | 1,872 | 1,910 | 1,901 | 1,868 | 1,780 | 1,717 | 1,666 | 1,663 |
| Above Normal (16%) | 1,586 | 1,624 | 1,670 | 1,789 | 1,832 | 1,860 | 1,838 | 1,782 | 1,671 | 1,591 | 1,527 | 1,536 |
| Below Normal (13%) | 1,545 | 1,597 | 1,675 | 1,757 | 1,794 | 1,815 | 1,775 | 1,719 | 1,614 | 1,537 | 1,516 | 1,518 |
| Dry (24%) | 1,541 | 1,602 | 1,678 | 1,679 | 1,729 | 1,765 | 1,739 | 1,667 | 1,571 | 1,489 | 1,475 | 1,488 |
| Critical (15%) | 1,121 | 1,236 | 1,356 | 1,446 | 1,481 | 1,475 | 1,405 | 1,318 | 1,162 | 1,052 | 1,036 | 1,040 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 0 | -12 | -3 | 4 | 6 | 5 | 8 | 23 | 23 | 3 | -20 | -25 |
| 20% | -25 | -15 | -12 | 4 | -15 | 5 | 10 | 13 | 25 | 12 | -24 | -26 |
| 30% | -12 | -13 | 2 | 2 | -1 | 0 | 5 | 12 | 5 | -2 | -11 | -19 |
| 40% | -3 | -18 | -11 | -4 | -6 | 0 | 12 | -2 | 29 | 8 | -15 | -11 |
| 50% | -20 | 4 | -13 | -18 | -12 | -1 | -5 | 11 | 10 | 14 | -9 | -13 |
| 60% | -14 | -16 | 3 | -5 | -17 | -8 | -23 | 5 | 8 | 7 | -3 | -8 |
| 70% | 6 | 19 | 2 | -6 | -4 | 3 | 0 | -19 | 8 | 7 | -5 | -10 |
| 80% | 6 | -2 | -8 | -26 | 4 | 12 | 8 | -6 | 5 | 4 | 2 | 7 |
| 90% | -24 | 11 | -15 | -40 | -3 | -3 | -43 | -49 | 10 | 2 | 1 | -2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -9 | -8 | -5 | -6 | -5 | -1 | 0 | 3 | 13 | 8 | -9 | -11 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -18 | -24 | -10 | 0 | 3 | 6 | 12 | 13 | 17 | 9 | -20 | -20 |
| Above Normal (16%) | -23 | -16 | -23 | 1 | 5 | 13 | 10 | 11 | 26 | 11 | -45 | -34 |
| Below Normal (13%) | 11 | 19 | 16 | -9 | -9 | -3 | 0 | 6 | 15 | 11 | 20 | 19 |
| Dry (24%) | -1 | 5 | 4 | -15 | -15 | -14 | -13 | -8 | 3 | 6 | 7 | 2 |
| Critical (15%) | -10 | -7 | -11 | -11 | -9 | -8 | -15 | -11 | 3 | 1 | 0 | -18 |

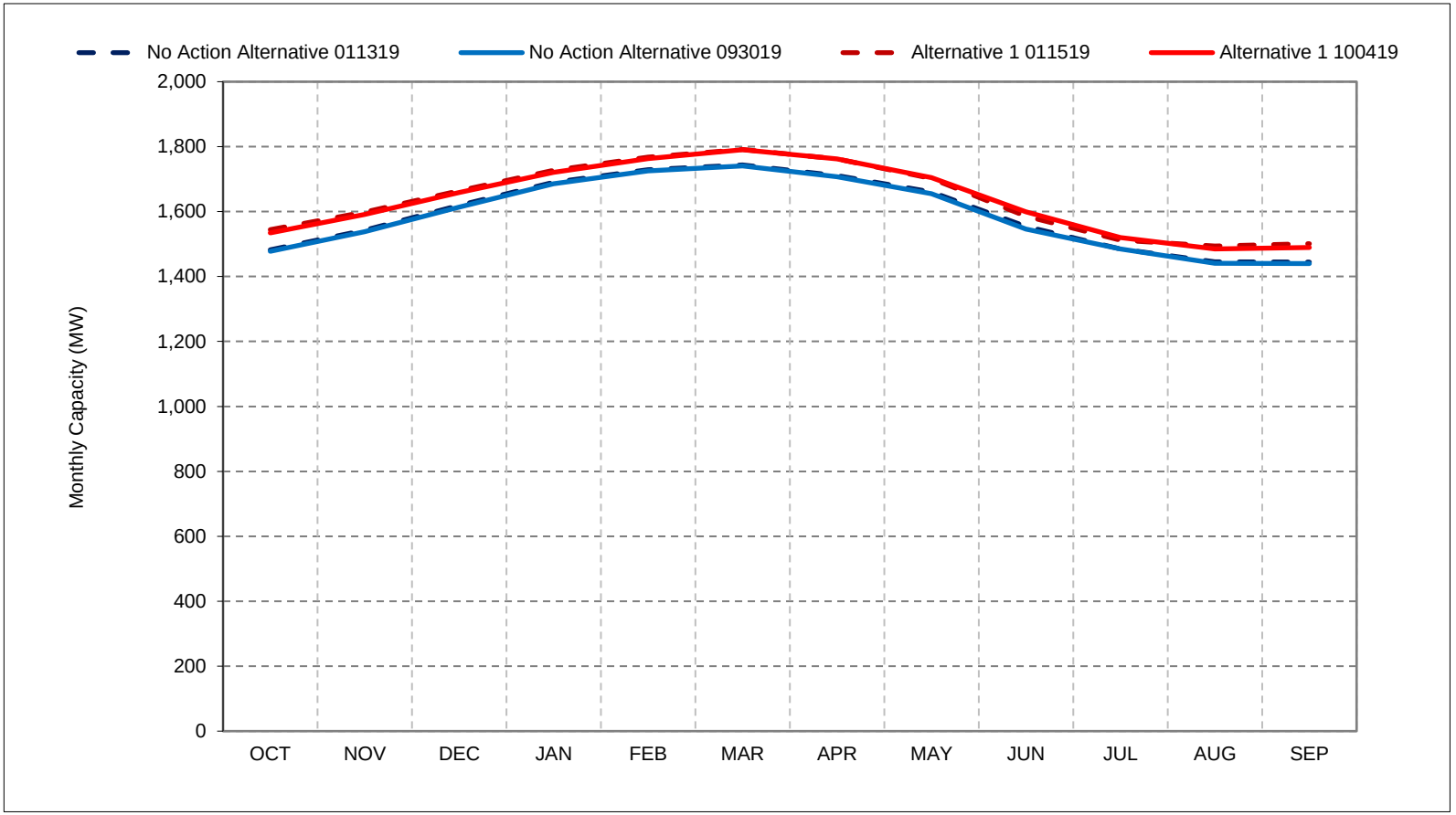
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-1. CVP Total Capacity, Long-Term Average Capacity

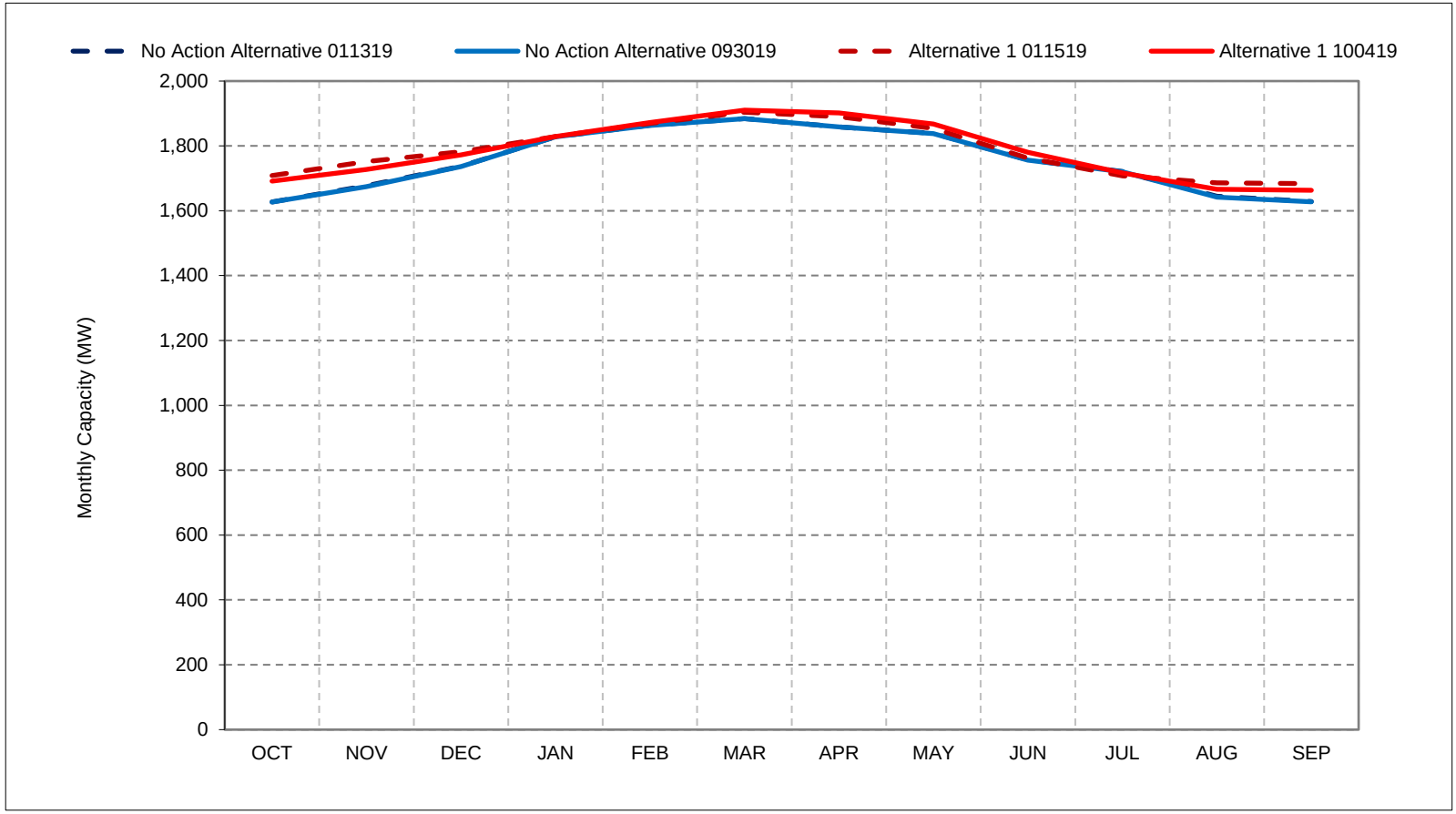



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-2. CVP Total Capacity, Wet Year Average Capacity

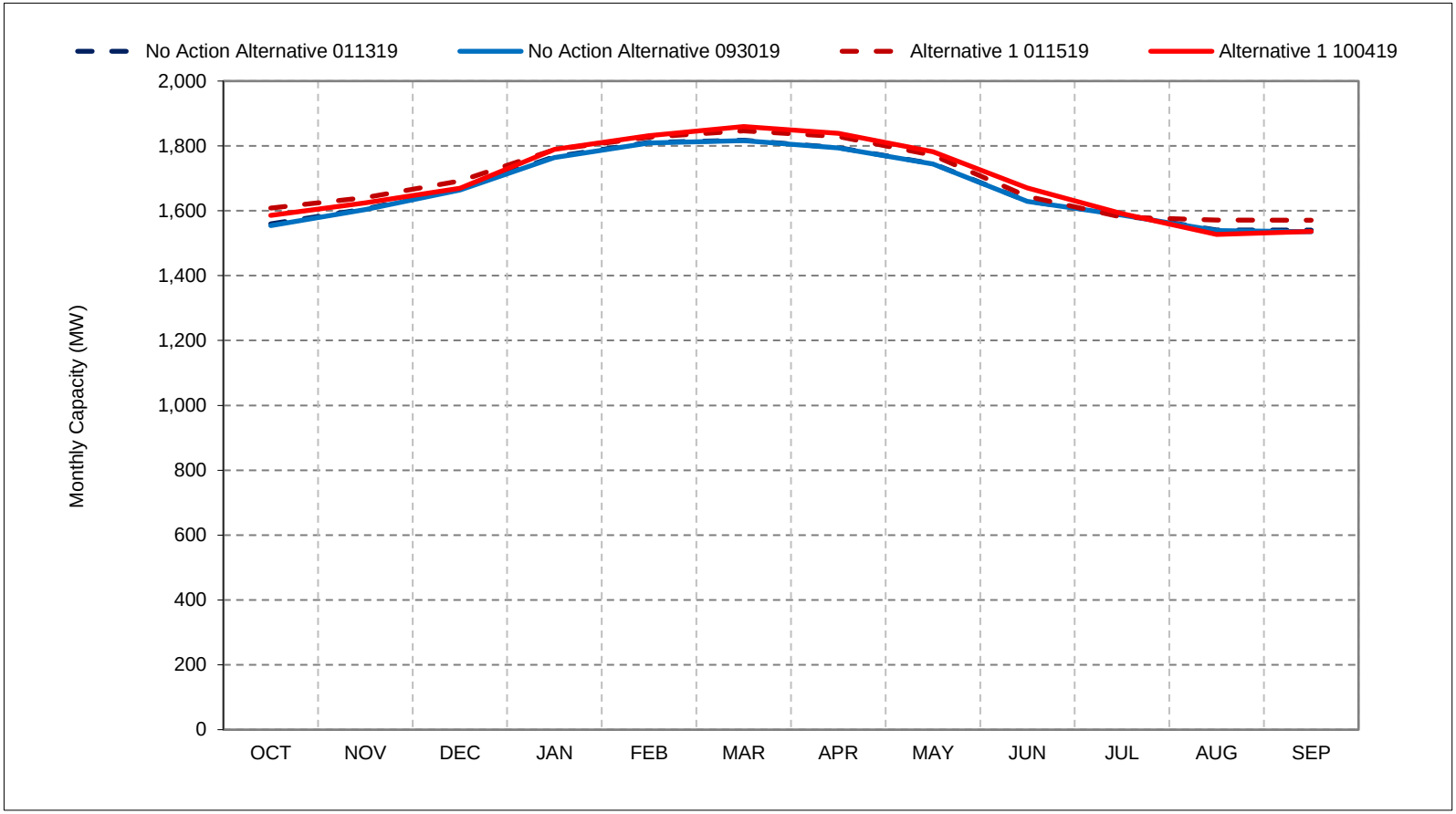



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-3. CVP Total Capacity, Above Normal Year Average Capacity

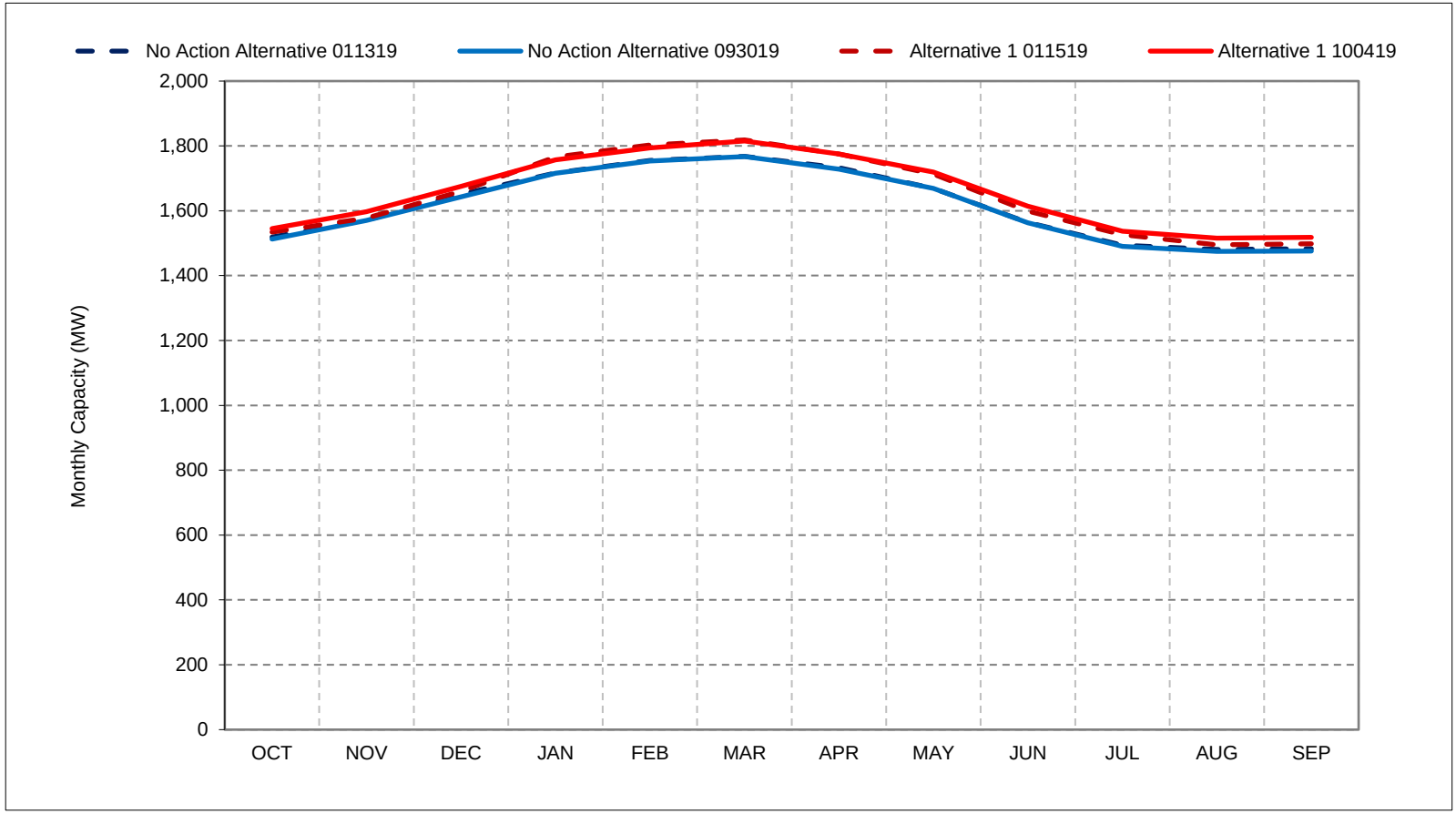



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-4. CVP Total Capacity, Below Normal Year Average Capacity

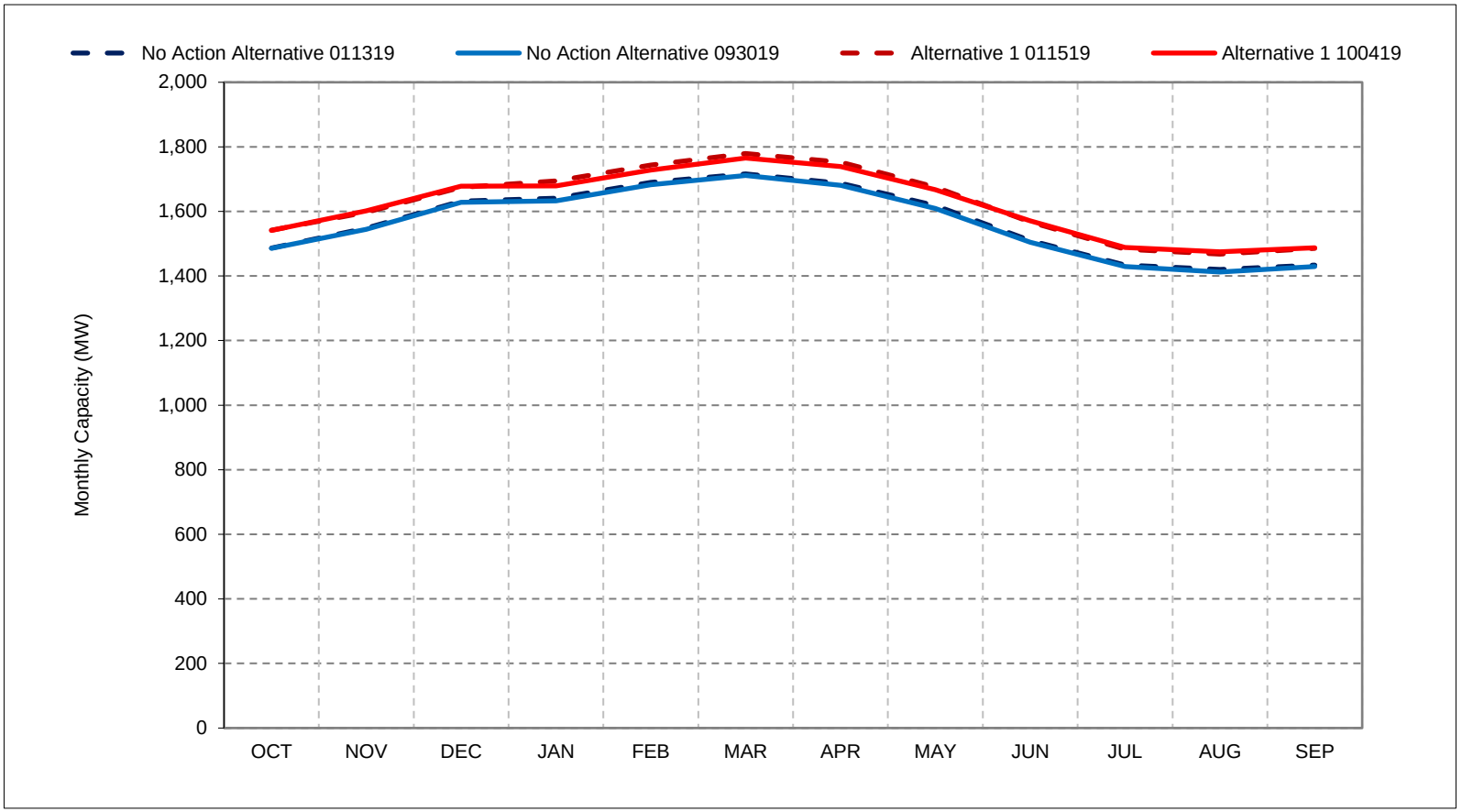



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-5. CVP Total Capacity, Dry Year Average Capacity

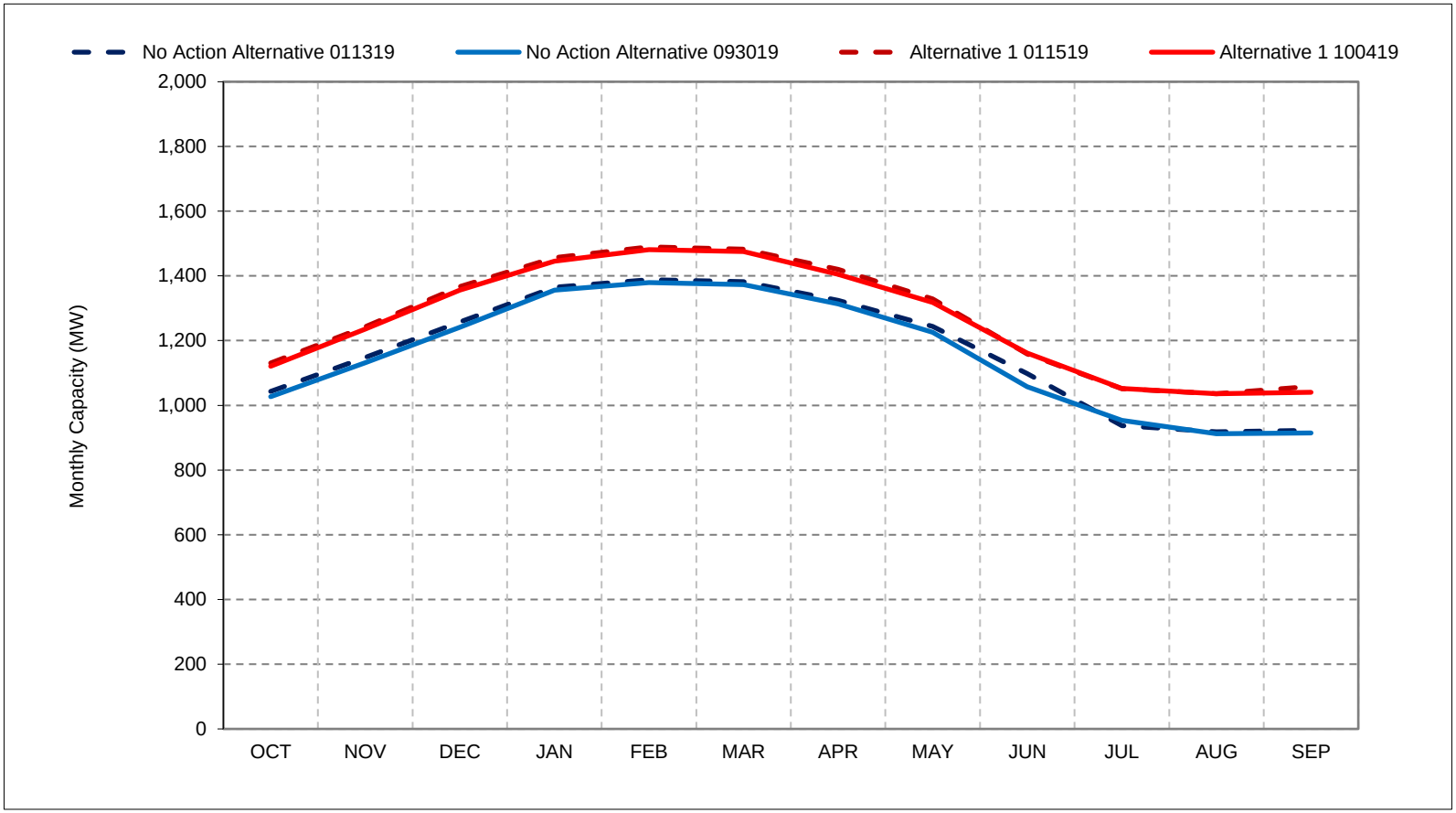



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 28-6. CVP Total Capacity, Critical Year Average Capacity

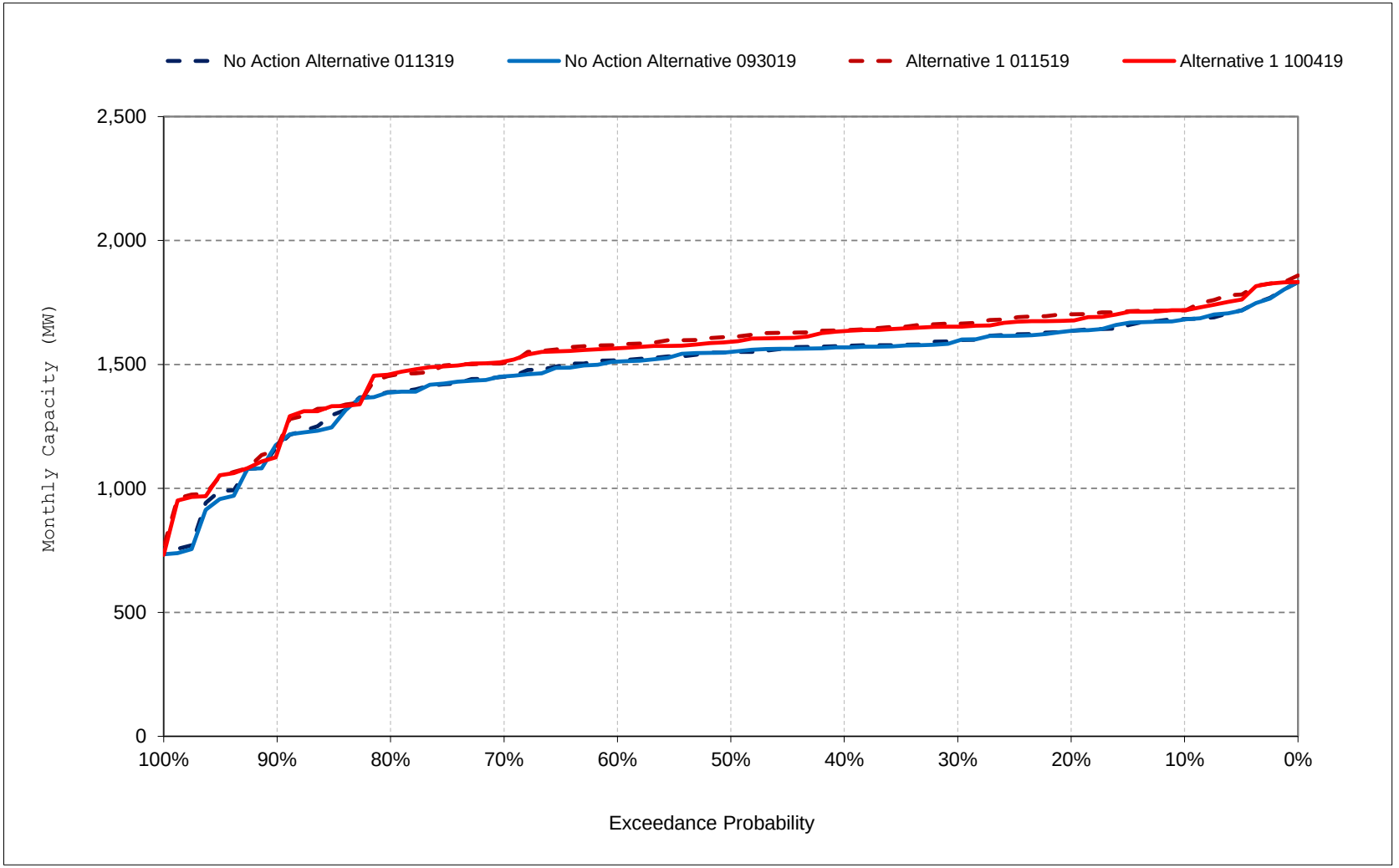



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

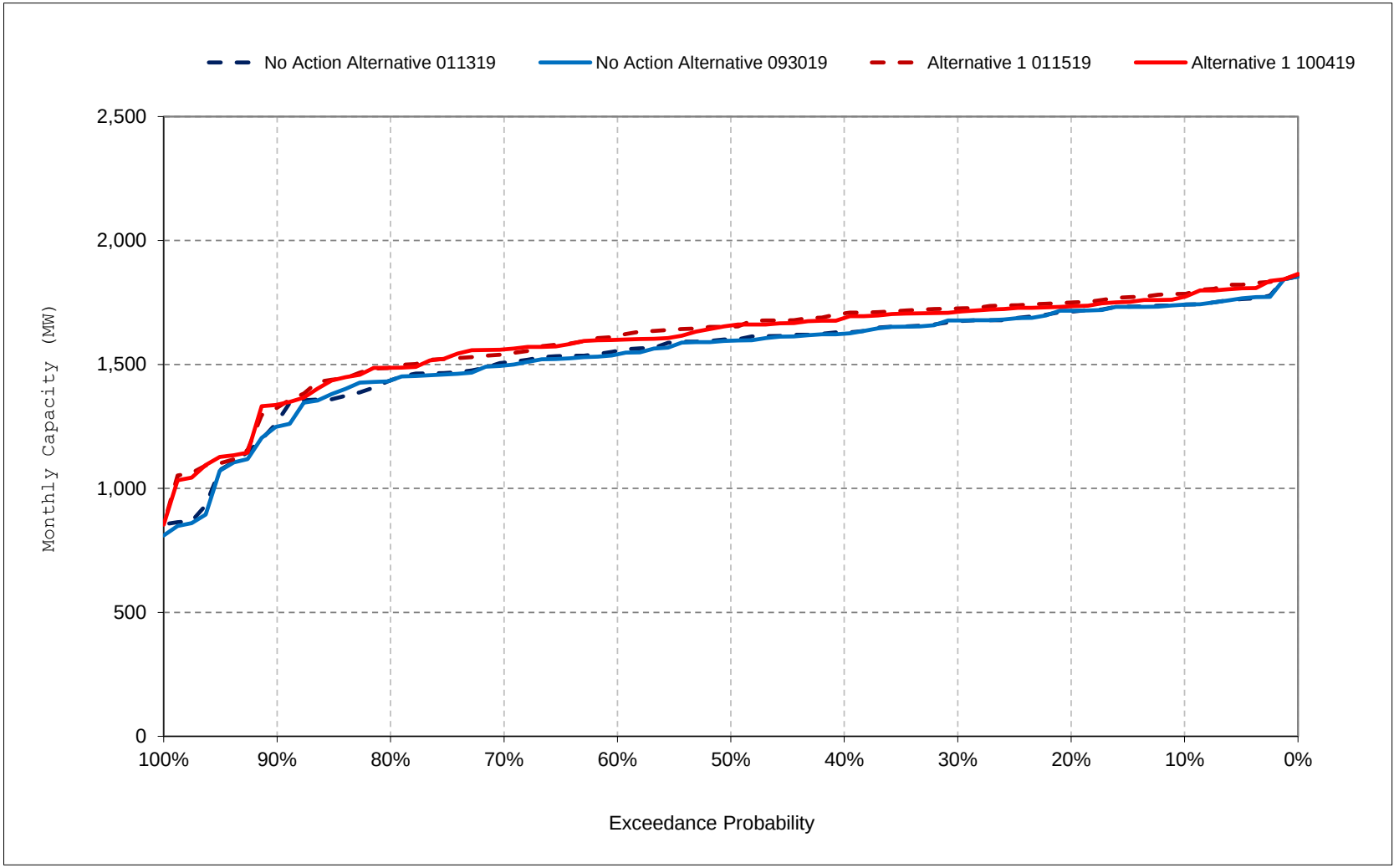
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-7. CVP Total Capacity, October**



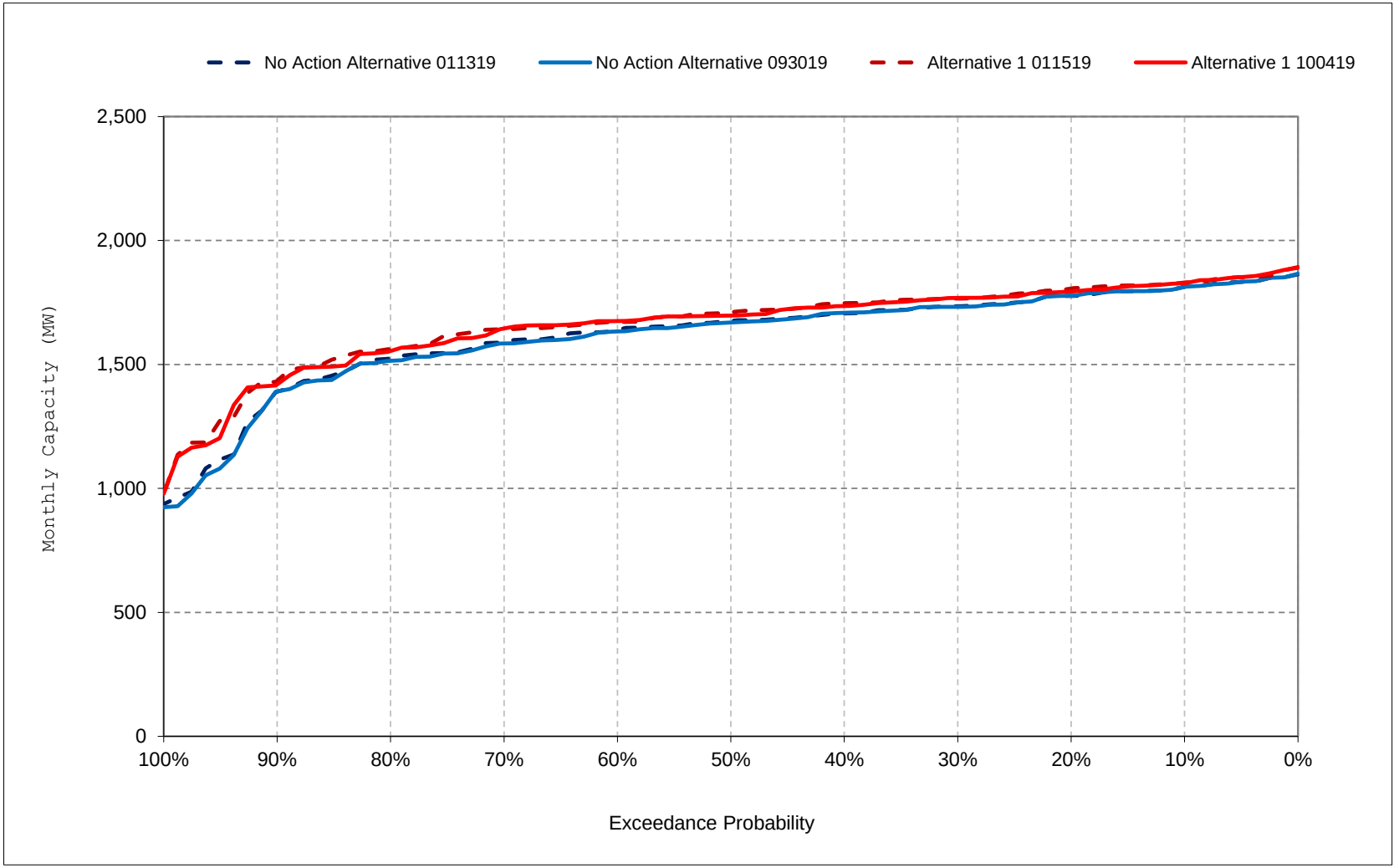

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-8. CVP Total Capacity, November**



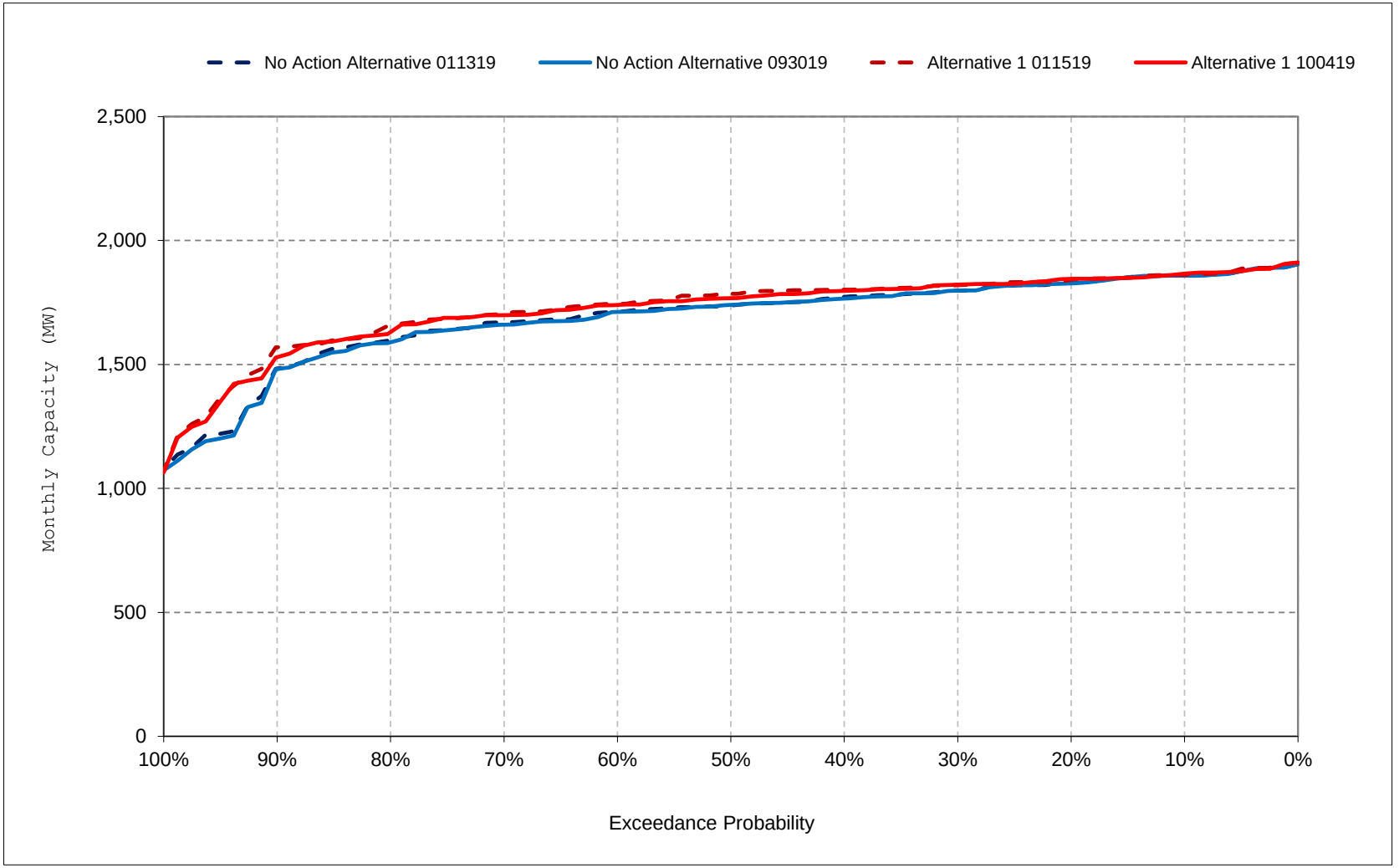

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-9. CVP Total Capacity, December**



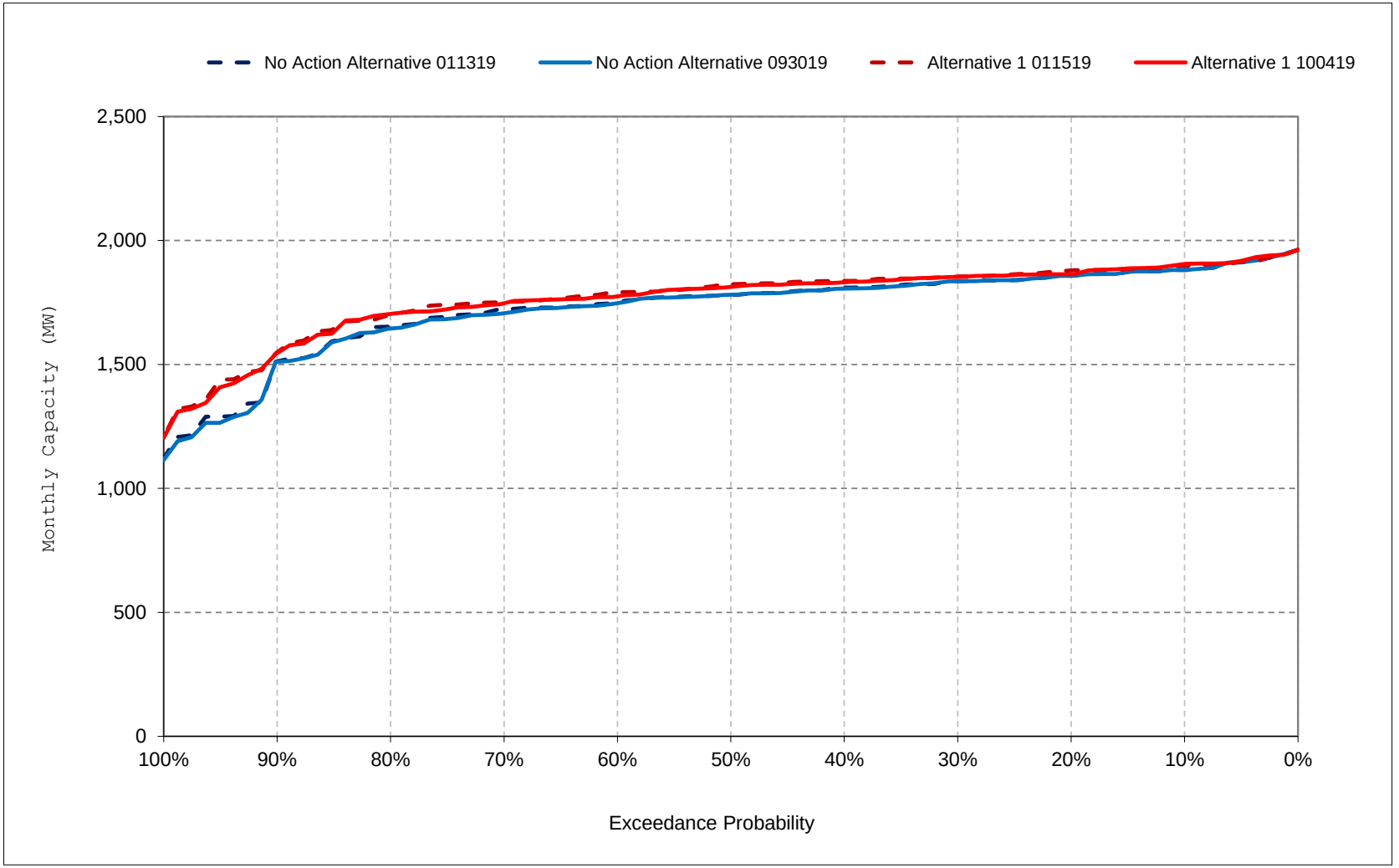

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-10. CVP Total Capacity, January**



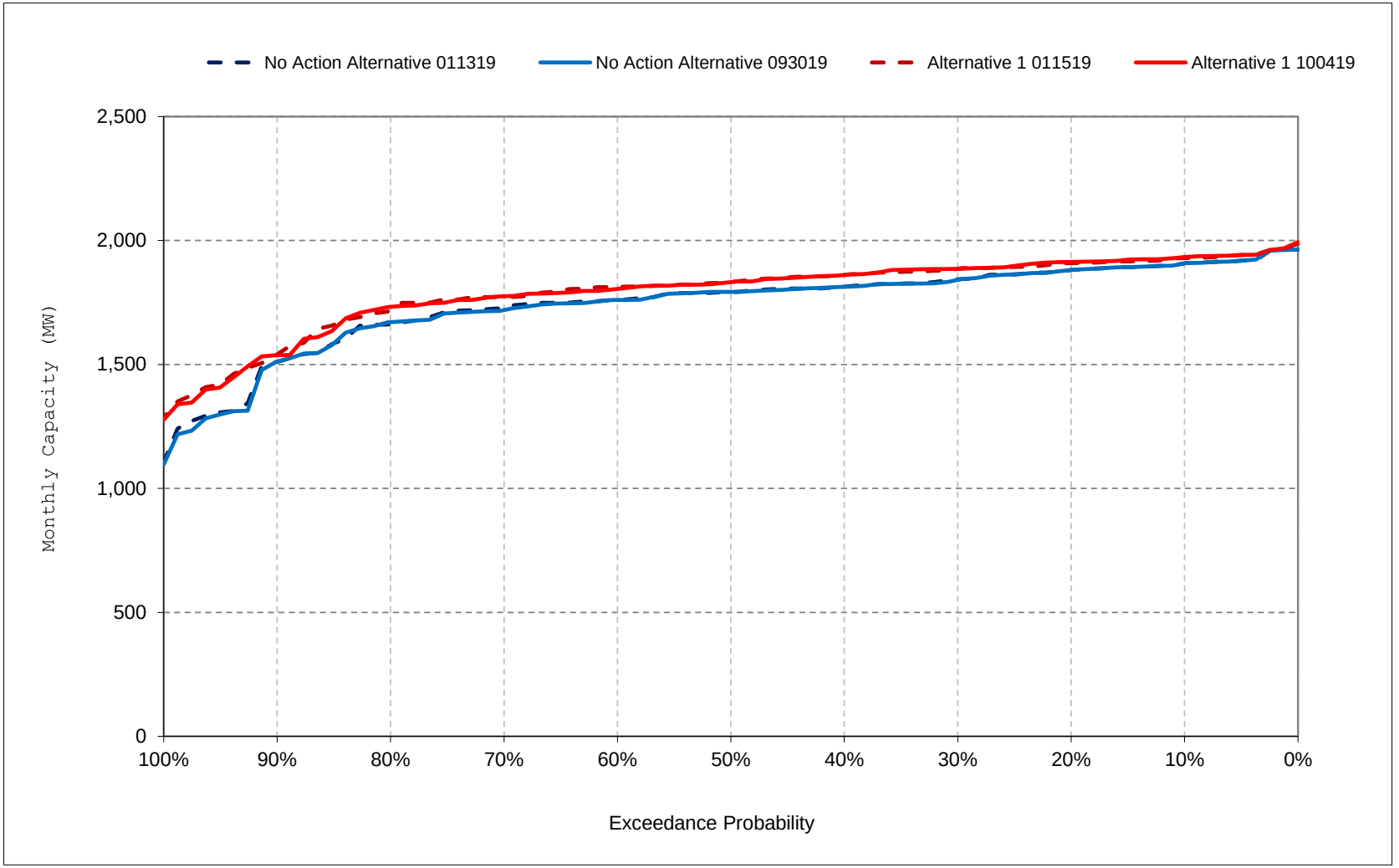

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-11. CVP Total Capacity, February**



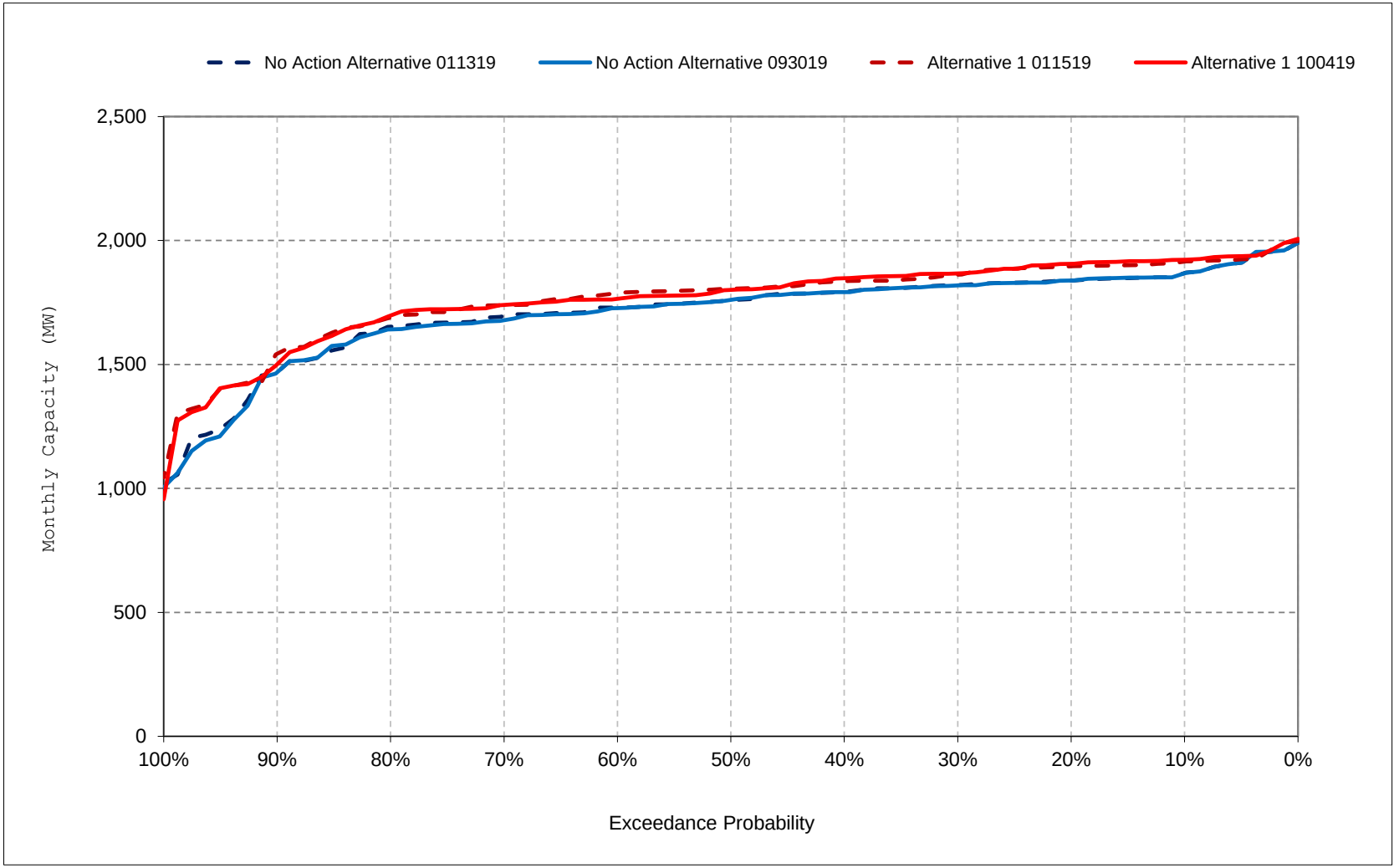

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-12. CVP Total Capacity, March**



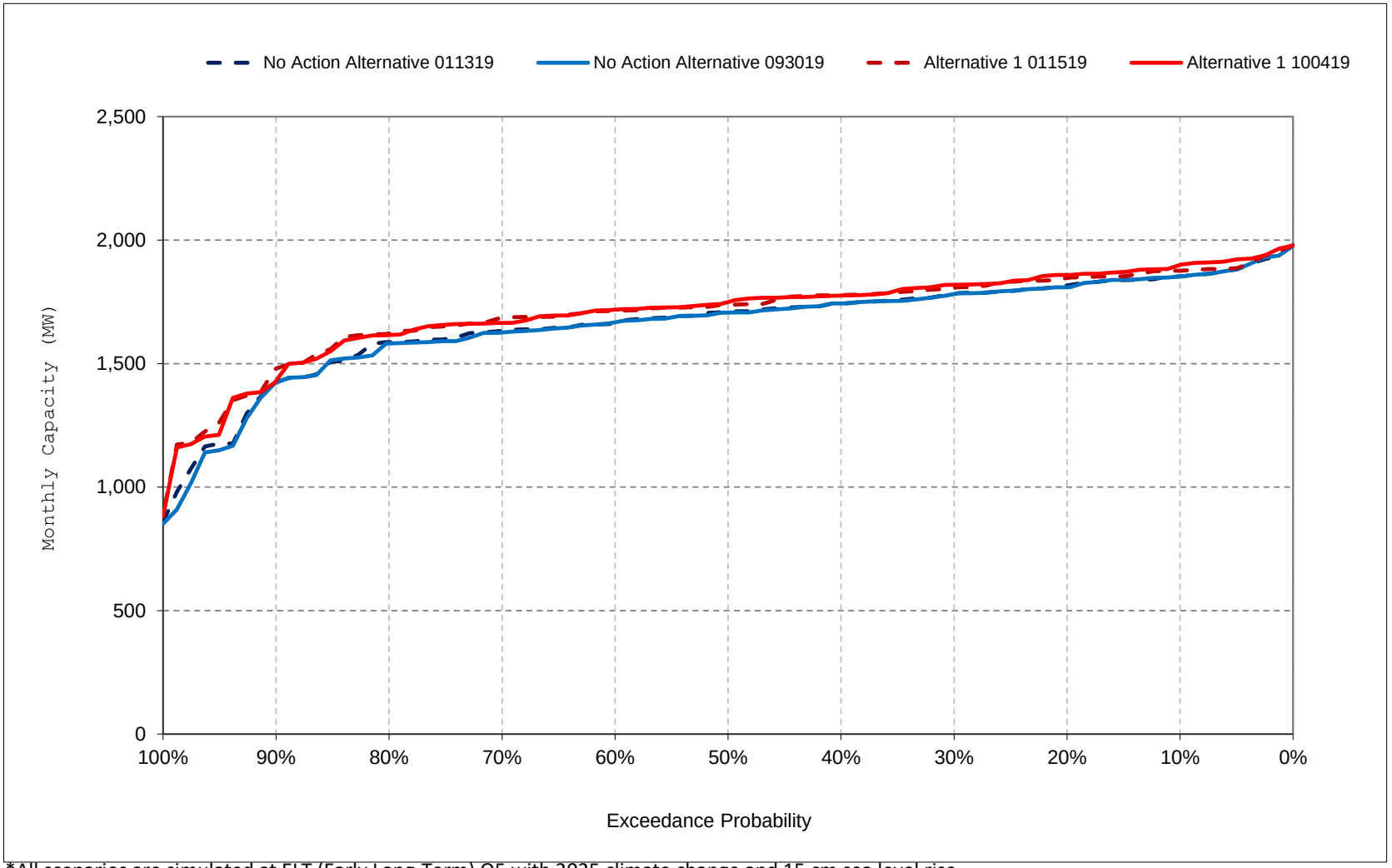

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-13. CVP Total Capacity, April**



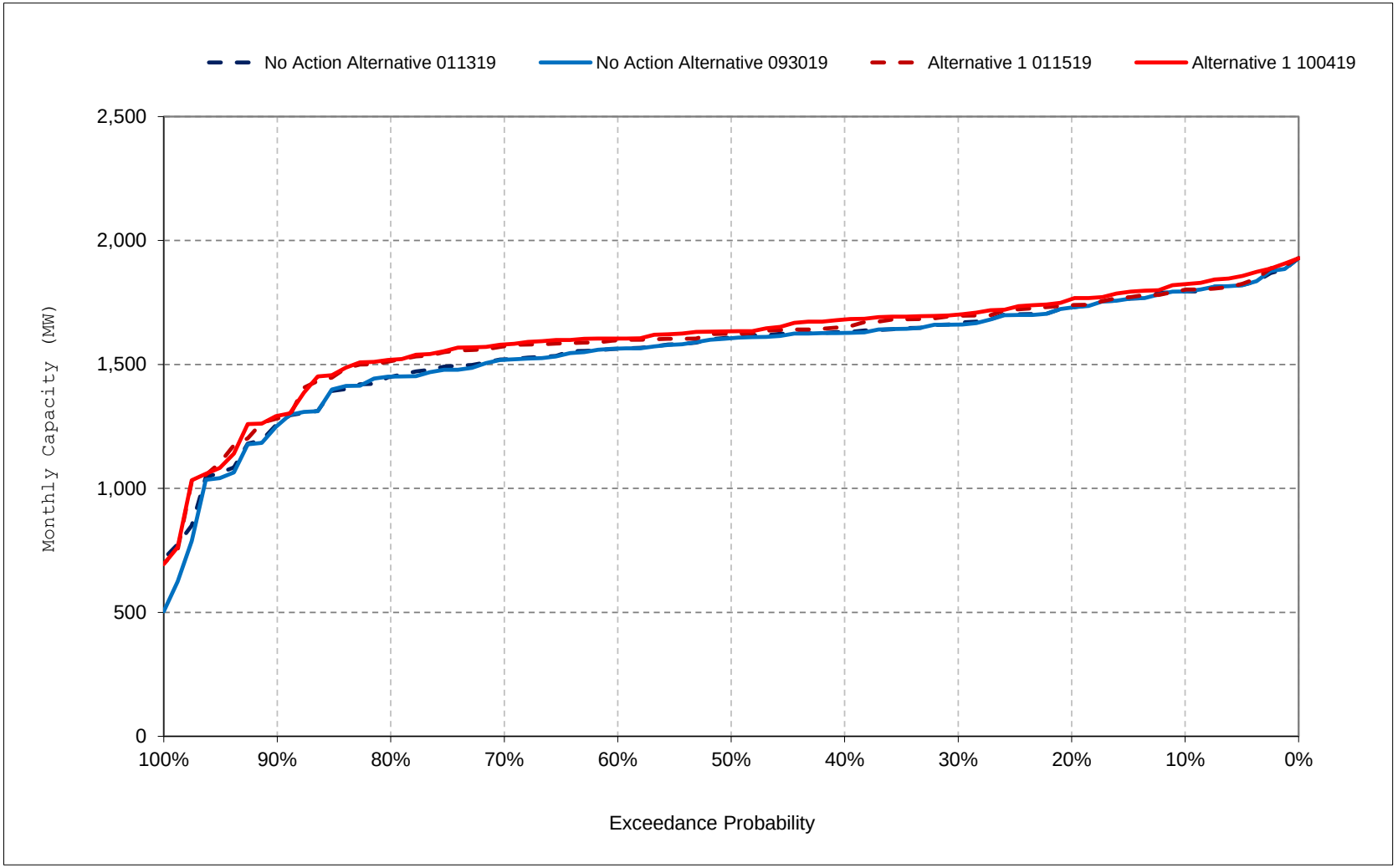

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-14. CVP Total Capacity, May**



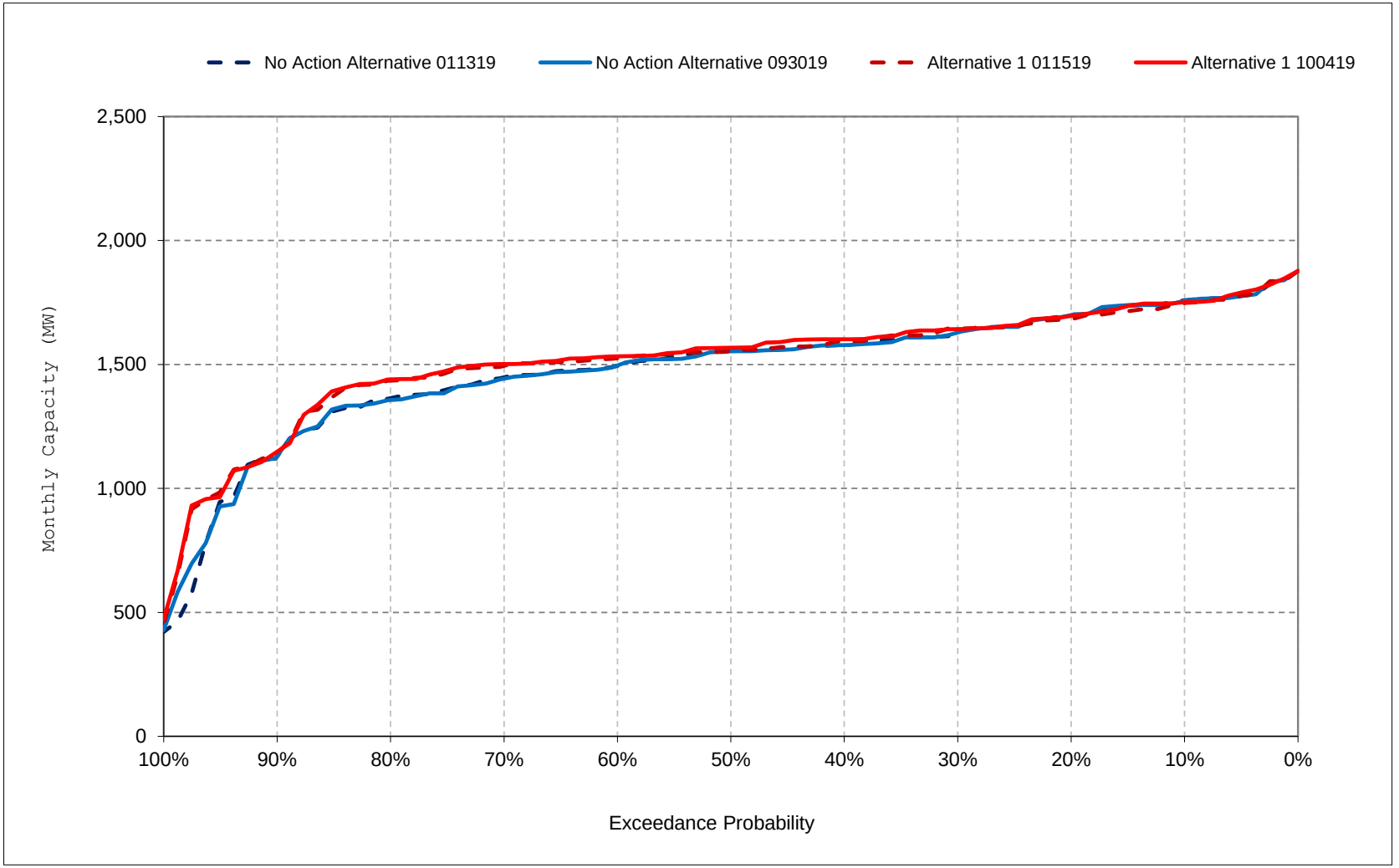

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-15. CVP Total Capacity, June**



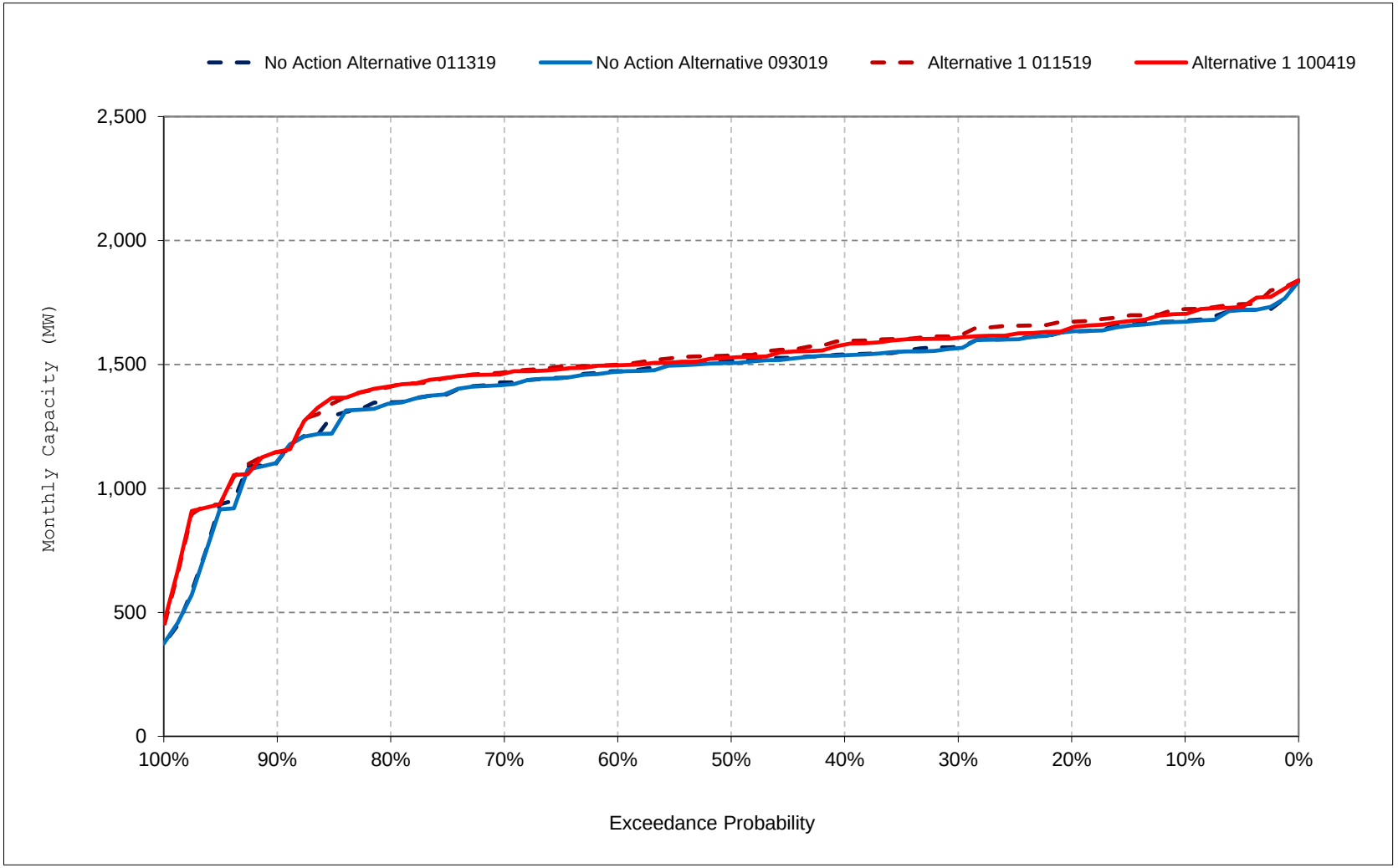

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-16. CVP Total Capacity, July**



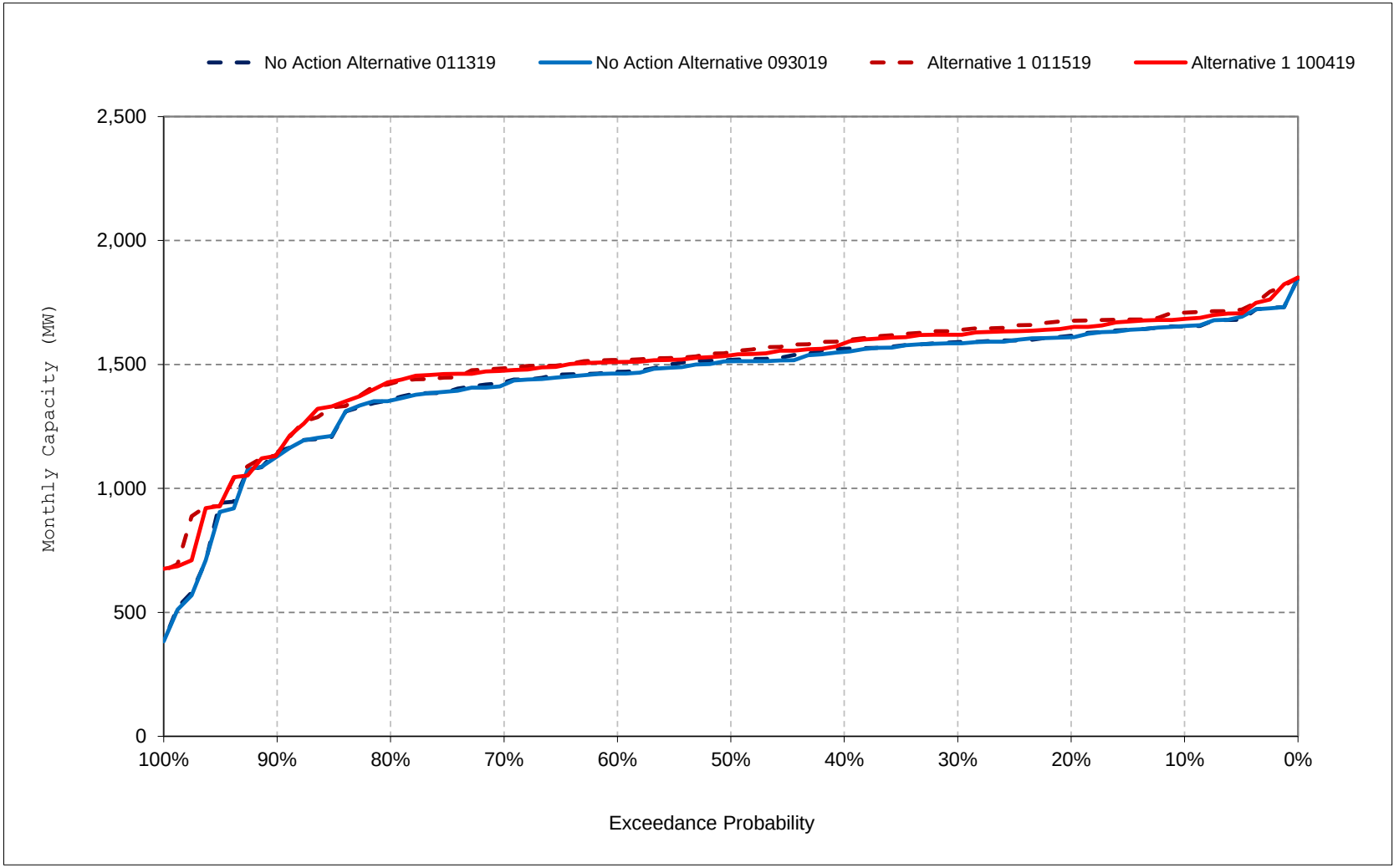

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-17. CVP Total Capacity, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 28-18. CVP Total Capacity, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-1. CVP Total Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 445 | 661 | 706 | 677 | 696 | 491 | 643 | 572 | 782 | 597 | 657 |
| 20% | 376 | 381 | 358 | 558 | 623 | 579 | 342 | 582 | 558 | 758 | 555 | 607 |
| 30% | 341 | 337 | 229 | 389 | 475 | 377 | 300 | 524 | 532 | 716 | 525 | 527 |
| 40% | 319 | 287 | 184 | 217 | 238 | 257 | 282 | 488 | 510 | 660 | 501 | 450 |
| 50% | 283 | 252 | 165 | 193 | 186 | 219 | 264 | 472 | 486 | 641 | 483 | 344 |
| 60% | 263 | 193 | 152 | 152 | 153 | 184 | 255 | 454 | 469 | 622 | 463 | 279 |
| 70% | 228 | 154 | 144 | 148 | 135 | 165 | 243 | 421 | 453 | 557 | 443 | 265 |
| 80% | 190 | 129 | 123 | 134 | 125 | 150 | 209 | 347 | 429 | 508 | 392 | 232 |
| 90% | 159 | 118 | 110 | 119 | 112 | 137 | 186 | 289 | 340 | 443 | 332 | 187 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 287 | 266 | 258 | 313 | 316 | 329 | 308 | 474 | 489 | 622 | 476 | 396 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 388 | 390 | 323 | 567 | 502 | 555 | 431 | 595 | 536 | 678 | 547 | 623 |
| Above Normal (16%) | 328 | 351 | 255 | 312 | 444 | 385 | 330 | 503 | 518 | 727 | 525 | 457 |
| Below Normal (13%) | 255 | 194 | 242 | 168 | 257 | 197 | 261 | 476 | 523 | 673 | 518 | 306 |
| Dry (24%) | 227 | 190 | 283 | 168 | 144 | 186 | 229 | 410 | 488 | 593 | 431 | 251 |
| Critical (15%) | 150 | 96 | 98 | 137 | 113 | 138 | 193 | 285 | 330 | 389 | 304 | 160 |

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 298 | 667 | 719 | 706 | 710 | 487 | 614 | 628 | 790 | 588 | 478 |
| 20% | 391 | 271 | 472 | 595 | 653 | 591 | 346 | 572 | 589 | 761 | 565 | 386 |
| 30% | 334 | 249 | 291 | 450 | 494 | 396 | 290 | 537 | 567 | 742 | 545 | 348 |
| 40% | 287 | 215 | 192 | 270 | 289 | 261 | 265 | 488 | 529 | 682 | 508 | 329 |
| 50% | 262 | 204 | 176 | 209 | 203 | 234 | 249 | 471 | 509 | 655 | 501 | 304 |
| 60% | 233 | 174 | 156 | 152 | 164 | 192 | 238 | 444 | 497 | 640 | 488 | 274 |
| 70% | 215 | 156 | 147 | 144 | 147 | 173 | 226 | 412 | 485 | 570 | 470 | 267 |
| 80% | 198 | 139 | 125 | 138 | 128 | 161 | 214 | 380 | 437 | 524 | 402 | 225 |
| 90% | 158 | 125 | 113 | 121 | 121 | 138 | 195 | 303 | 370 | 469 | 345 | 192 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 281 | 218 | 282 | 337 | 333 | 347 | 303 | 474 | 517 | 641 | 490 | 316 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 378 | 282 | 371 | 591 | 520 | 558 | 415 | 576 | 559 | 689 | 560 | 424 |
| Above Normal (16%) | 311 | 239 | 292 | 367 | 474 | 419 | 319 | 498 | 550 | 740 | 534 | 326 |
| Below Normal (13%) | 255 | 195 | 242 | 216 | 305 | 237 | 263 | 492 | 573 | 694 | 542 | 309 |
| Dry (24%) | 228 | 196 | 291 | 169 | 146 | 198 | 225 | 422 | 505 | 610 | 447 | 255 |
| Critical (15%) | 148 | 113 | 99 | 141 | 116 | 157 | 207 | 301 | 360 | 431 | 315 | 182 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 19 | **-147** | 6 | 13 | 28 | 14 | **-5** | **-29** | 56 | 7 | **-9** | **-179** |
| 20% | 14 | **-110** | 114 | 37 | 29 | 11 | 4 | **-10** | 32 | 3 | 10 | **-221** |
| 30% | **-7** | **-88** | 61 | 61 | 19 | 19 | **-9** | 14 | 34 | 25 | 20 | **-179** |
| 40% | **-32** | **-72** | 8 | 53 | 51 | 4 | **-18** | **0** | 19 | 21 | 7 | **-121** |
| 50% | **-21** | **-48** | 11 | 16 | 16 | 15 | **-15** | **-1** | 24 | 14 | 18 | **-40** |
| 60% | **-30** | **-20** | 4 | **0** | 12 | 7 | **-17** | **-9** | 28 | 18 | 26 | **-4** |
| 70% | **-14** | 3 | 4 | **-4** | 12 | 8 | **-17** | **-9** | 32 | 13 | 27 | 2 |
| 80% | 8 | 9 | 1 | 4 | 3 | 11 | 6 | 33 | 7 | 16 | 10 | **-8** |
| 90% | **-2** | 7 | 3 | 2 | 9 | 0 | 9 | 13 | 30 | 27 | 13 | 5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-6** | **-48** | 24 | 24 | 18 | 18 | **-6** | 0 | 28 | 18 | 14 | **-79** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-9** | **-108** | 49 | 24 | 18 | 4 | **-16** | **-19** | 23 | 11 | 13 | **-198** |
| Above Normal (16%) | **-18** | **-112** | 37 | 55 | 30 | 34 | **-11** | **-5** | 32 | 12 | 9 | **-131** |
| Below Normal (13%) | **-1** | 1 | 0 | 48 | 48 | 41 | 2 | 15 | 50 | 21 | 24 | 3 |
| Dry (24%) | 0 | 6 | 9 | 1 | 2 | 13 | **-5** | 12 | 17 | 17 | 16 | 4 |
| Critical (15%) | **-1** | 17 | 1 | 4 | 3 | 19 | 14 | 17 | 31 | 42 | 12 | 22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-2. CVP Total Generation, Monthly Generation

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 423 | 447 | 661 | 697 | 675 | 696 | 491 | 643 | 574 | 790 | 597 | 656 |
| 20% | 382 | 379 | 344 | 558 | 623 | 579 | 342 | 582 | 559 | 759 | 557 | 607 |
| 30% | 354 | 335 | 215 | 389 | 455 | 370 | 302 | 522 | 533 | 720 | 528 | 506 |
| 40% | 317 | 285 | 184 | 213 | 245 | 255 | 280 | 488 | 512 | 655 | 500 | 452 |
| 50% | 282 | 256 | 165 | 191 | 184 | 217 | 267 | 472 | 486 | 635 | 476 | 342 |
| 60% | 261 | 200 | 152 | 152 | 151 | 187 | 255 | 454 | 469 | 613 | 457 | 280 |
| 70% | 224 | 151 | 141 | 148 | 134 | 164 | 244 | 421 | 457 | 545 | 438 | 259 |
| 80% | 192 | 136 | 127 | 134 | 125 | 149 | 209 | 358 | 428 | 509 | 386 | 232 |
| 90% | 155 | 123 | 111 | 126 | 113 | 136 | 186 | 289 | 346 | 441 | 309 | 186 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 289 | 267 | 258 | 312 | 314 | 327 | 309 | 474 | 490 | 621 | 473 | 394 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 392 | 393 | 323 | 565 | 500 | 554 | 431 | 595 | 538 | 680 | 547 | 622 |
| Above Normal (16%) | 343 | 354 | 249 | 307 | 443 | 379 | 330 | 502 | 519 | 726 | 531 | 452 |
| Below Normal (13%) | 253 | 195 | 240 | 164 | 255 | 193 | 259 | 476 | 522 | 677 | 520 | 309 |
| Dry (24%) | 229 | 191 | 283 | 169 | 142 | 186 | 229 | 409 | 488 | 584 | 421 | 249 |
| Critical (15%) | 139 | 97 | 99 | 143 | 116 | 140 | 199 | 287 | 332 | 391 | 295 | 158 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 429 | 323 | 663 | 696 | 705 | 710 | 486 | 621 | 629 | 786 | 602 | 475 |
| 20% | 360 | 284 | 428 | 595 | 648 | 600 | 341 | 545 | 598 | 766 | 578 | 407 |
| 30% | 316 | 263 | 277 | 446 | 472 | 383 | 306 | 523 | 559 | 714 | 543 | 377 |
| 40% | 298 | 242 | 193 | 311 | 280 | 273 | 278 | 483 | 527 | 671 | 520 | 357 |
| 50% | 275 | 215 | 181 | 206 | 205 | 232 | 263 | 462 | 508 | 634 | 503 | 302 |
| 60% | 257 | 192 | 163 | 168 | 162 | 189 | 242 | 442 | 495 | 590 | 482 | 274 |
| 70% | 229 | 174 | 148 | 148 | 143 | 169 | 231 | 414 | 477 | 556 | 447 | 253 |
| 80% | 195 | 153 | 130 | 138 | 129 | 160 | 207 | 371 | 432 | 518 | 419 | 225 |
| 90% | 172 | 133 | 113 | 119 | 124 | 139 | 194 | 298 | 365 | 442 | 321 | 183 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 282 | 232 | 280 | 338 | 332 | 345 | 305 | 466 | 512 | 625 | 489 | 322 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 376 | 294 | 367 | 586 | 518 | 562 | 421 | 565 | 560 | 691 | 567 | 431 |
| Above Normal (16%) | 312 | 278 | 278 | 356 | 466 | 419 | 323 | 491 | 553 | 736 | 556 | 391 |
| Below Normal (13%) | 256 | 210 | 249 | 209 | 299 | 236 | 258 | 478 | 561 | 684 | 518 | 285 |
| Dry (24%) | 232 | 202 | 288 | 172 | 147 | 190 | 226 | 416 | 498 | 569 | 439 | 250 |
| Critical (15%) | 152 | 121 | 105 | 177 | 119 | 149 | 207 | 299 | 344 | 402 | 304 | 165 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 6 | **-124** | 2 | **-1** | 31 | 14 | **-6** | **-22** | 56 | **-4** | 5 | **-181** |
| 20% | **-22** | **-95** | 84 | 37 | 25 | 20 | **-1** | **-37** | 39 | 7 | 22 | **-201** |
| 30% | **-38** | **-72** | 61 | 57 | 17 | 13 | 4 | 1 | 26 | **-6** | 15 | **-128** |
| 40% | **-20** | **-43** | 8 | 98 | 34 | 18 | **-1** | **-5** | 14 | 16 | 20 | **-95** |
| 50% | **-7** | **-42** | 16 | 15 | 21 | 15 | **-4** | **-11** | 23 | **0** | 27 | **-40** |
| 60% | **-4** | **-8** | 11 | 17 | 10 | 2 | **-13** | **-13** | 27 | **-23** | 25 | **-5** |
| 70% | 5 | 23 | 7 | **-1** | 9 | 5 | **-12** | **-7** | 20 | 12 | 9 | **-6** |
| 80% | 3 | 17 | 3 | 4 | 4 | 10 | **-1** | 12 | 4 | 9 | 33 | **-7** |
| 90% | 16 | 10 | 2 | **-6** | 11 | 2 | 8 | 9 | 19 | 1 | 12 | **-3** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-7** | **-35** | 22 | 26 | 17 | 17 | **-4** | **-8** | 22 | 3 | 16 | **-72** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-17** | **-99** | 44 | 20 | 18 | 8 | **-10** | **-29** | 22 | 11 | 21 | **-191** |
| Above Normal (16%) | **-31** | **-76** | 29 | 49 | 23 | 40 | **-6** | **-11** | 34 | 9 | 26 | **-61** |
| Below Normal (13%) | 3 | 16 | 8 | 45 | 44 | 43 | **-1** | 2 | 39 | 6 | **-3** | **-24** |
| Dry (24%) | 4 | 12 | 6 | 3 | 6 | 5 | **-3** | 7 | 9 | **-16** | 18 | 1 |
| Critical (15%) | 13 | 24 | 6 | 33 | 3 | 10 | 9 | 12 | 12 | 11 | 9 | 7 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-3. CVP Total Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 422 | 445 | 661 | 706 | 677 | 696 | 491 | 643 | 572 | 782 | 597 | 657 |
| 20% | 376 | 381 | 358 | 558 | 623 | 579 | 342 | 582 | 558 | 758 | 555 | 607 |
| 30% | 341 | 337 | 229 | 389 | 475 | 377 | 300 | 524 | 532 | 716 | 525 | 527 |
| 40% | 319 | 287 | 184 | 217 | 238 | 257 | 282 | 488 | 510 | 660 | 501 | 450 |
| 50% | 283 | 252 | 165 | 193 | 186 | 219 | 264 | 472 | 486 | 641 | 483 | 344 |
| 60% | 263 | 193 | 152 | 152 | 153 | 184 | 255 | 454 | 469 | 622 | 463 | 279 |
| 70% | 228 | 154 | 144 | 148 | 135 | 165 | 243 | 421 | 453 | 557 | 443 | 265 |
| 80% | 190 | 129 | 123 | 134 | 125 | 150 | 209 | 347 | 429 | 508 | 392 | 232 |
| 90% | 159 | 118 | 110 | 119 | 112 | 137 | 186 | 289 | 340 | 443 | 332 | 187 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 287 | 266 | 258 | 313 | 316 | 329 | 308 | 474 | 489 | 622 | 476 | 396 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 388 | 390 | 323 | 567 | 502 | 555 | 431 | 595 | 536 | 678 | 547 | 623 |
| Above Normal (16%) | 328 | 351 | 255 | 312 | 444 | 385 | 330 | 503 | 518 | 727 | 525 | 457 |
| Below Normal (13%) | 255 | 194 | 242 | 168 | 257 | 197 | 261 | 476 | 523 | 673 | 518 | 306 |
| Dry (24%) | 227 | 190 | 283 | 168 | 144 | 186 | 229 | 410 | 488 | 593 | 431 | 251 |
| Critical (15%) | 150 | 96 | 98 | 137 | 113 | 138 | 193 | 285 | 330 | 389 | 304 | 160 |

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 423 | 447 | 661 | 697 | 675 | 696 | 491 | 643 | 574 | 790 | 597 | 656 |
| 20% | 382 | 379 | 344 | 558 | 623 | 579 | 342 | 582 | 559 | 759 | 557 | 607 |
| 30% | 354 | 335 | 215 | 389 | 455 | 370 | 302 | 522 | 533 | 720 | 528 | 506 |
| 40% | 317 | 285 | 184 | 213 | 245 | 255 | 280 | 488 | 512 | 655 | 500 | 452 |
| 50% | 282 | 256 | 165 | 191 | 184 | 217 | 267 | 472 | 486 | 635 | 476 | 342 |
| 60% | 261 | 200 | 152 | 152 | 151 | 187 | 255 | 454 | 469 | 613 | 457 | 280 |
| 70% | 224 | 151 | 141 | 148 | 134 | 164 | 244 | 421 | 457 | 545 | 438 | 259 |
| 80% | 192 | 136 | 127 | 134 | 125 | 149 | 209 | 358 | 428 | 509 | 386 | 232 |
| 90% | 155 | 123 | 111 | 126 | 113 | 136 | 186 | 289 | 346 | 441 | 309 | 186 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 289 | 267 | 258 | 312 | 314 | 327 | 309 | 474 | 490 | 621 | 473 | 394 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 392 | 393 | 323 | 565 | 500 | 554 | 431 | 595 | 538 | 680 | 547 | 622 |
| Above Normal (16%) | 343 | 354 | 249 | 307 | 443 | 379 | 330 | 502 | 519 | 726 | 531 | 452 |
| Below Normal (13%) | 253 | 195 | 240 | 164 | 255 | 193 | 259 | 476 | 522 | 677 | 520 | 309 |
| Dry (24%) | 229 | 191 | 283 | 169 | 142 | 186 | 229 | 409 | 488 | 584 | 421 | 249 |
| Critical (15%) | 139 | 97 | 99 | 143 | 116 | 140 | 199 | 287 | 332 | 391 | 295 | 158 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | 2 | -1 | -9 | -3 | 0 | 0 | 0 | 2 | 8 | 0 | -1 |
| 20% | 6 | -1 | -15 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 |
| 30% | 14 | -2 | -14 | 0 | -21 | -7 | 2 | -2 | 1 | 3 | 3 | -21 |
| 40% | -1 | -1 | 1 | -4 | 8 | -2 | -3 | 0 | 2 | -5 | -1 | 2 |
| 50% | -1 | 4 | 0 | -2 | -2 | -2 | 3 | 0 | 0 | -6 | -7 | -2 |
| 60% | -2 | 7 | 1 | 0 | -2 | 3 | 0 | 0 | 0 | -9 | -5 | 1 |
| 70% | -4 | -2 | -2 | 0 | -1 | 0 | 1 | 0 | 4 | -12 | -5 | -6 |
| 80% | 2 | 7 | 4 | -1 | 0 | -1 | 0 | 12 | -1 | 1 | -6 | -1 |
| 90% | -4 | 5 | 1 | 6 | 1 | -1 | 0 | 0 | 6 | -2 | -23 | -1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | 1 | -1 | -1 | -1 | -1 | 0 | 0 | 1 | -1 | -2 | -1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 4 | 2 | 0 | -1 | -2 | -1 | 0 | 0 | 1 | 2 | 0 | -1 |
| Above Normal (16%) | 14 | 3 | -6 | -5 | -1 | -6 | 0 | -1 | 2 | -1 | 5 | -5 |
| Below Normal (13%) | -3 | 0 | -1 | -4 | -3 | -4 | -2 | 0 | -1 | 4 | 2 | 3 |
| Dry (24%) | 1 | 0 | 0 | 0 | -2 | 0 | 0 | -1 | 0 | -9 | -10 | -2 |
| Critical (15%) | -11 | 1 | 1 | 7 | 3 | 2 | 6 | 2 | 2 | 2 | -8 | -2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 29-4. CVP Total Generation, Monthly Generation

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 440 | 298 | 667 | 719 | 706 | 710 | 487 | 614 | 628 | 790 | 588 | 478 |
| 20% | 391 | 271 | 472 | 595 | 653 | 591 | 346 | 572 | 589 | 761 | 565 | 386 |
| 30% | 334 | 249 | 291 | 450 | 494 | 396 | 290 | 537 | 567 | 742 | 545 | 348 |
| 40% | 287 | 215 | 192 | 270 | 289 | 261 | 265 | 488 | 529 | 682 | 508 | 329 |
| 50% | 262 | 204 | 176 | 209 | 203 | 234 | 249 | 471 | 509 | 655 | 501 | 304 |
| 60% | 233 | 174 | 156 | 152 | 164 | 192 | 238 | 444 | 497 | 640 | 488 | 274 |
| 70% | 215 | 156 | 147 | 144 | 147 | 173 | 226 | 412 | 485 | 570 | 470 | 267 |
| 80% | 198 | 139 | 125 | 138 | 128 | 161 | 214 | 380 | 437 | 524 | 402 | 225 |
| 90% | 158 | 125 | 113 | 121 | 121 | 138 | 195 | 303 | 370 | 469 | 345 | 192 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 281 | 218 | 282 | 337 | 333 | 347 | 303 | 474 | 517 | 641 | 490 | 316 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 378 | 282 | 371 | 591 | 520 | 558 | 415 | 576 | 559 | 689 | 560 | 424 |
| Above Normal (16%) | 311 | 239 | 292 | 367 | 474 | 419 | 319 | 498 | 550 | 740 | 534 | 326 |
| Below Normal (13%) | 255 | 195 | 242 | 216 | 305 | 237 | 263 | 492 | 573 | 694 | 542 | 309 |
| Dry (24%) | 228 | 196 | 291 | 169 | 146 | 198 | 225 | 422 | 505 | 610 | 447 | 255 |
| Critical (15%) | 148 | 113 | 99 | 141 | 116 | 157 | 207 | 301 | 360 | 431 | 315 | 182 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 429 | 323 | 663 | 696 | 705 | 710 | 486 | 621 | 629 | 786 | 602 | 475 |
| 20% | 360 | 284 | 428 | 595 | 648 | 600 | 341 | 545 | 598 | 766 | 578 | 407 |
| 30% | 316 | 263 | 277 | 446 | 472 | 383 | 306 | 523 | 559 | 714 | 543 | 377 |
| 40% | 298 | 242 | 193 | 311 | 280 | 273 | 278 | 483 | 527 | 671 | 520 | 357 |
| 50% | 275 | 215 | 181 | 206 | 205 | 232 | 263 | 462 | 508 | 634 | 503 | 302 |
| 60% | 257 | 192 | 163 | 168 | 162 | 189 | 242 | 442 | 495 | 590 | 482 | 274 |
| 70% | 229 | 174 | 148 | 148 | 143 | 169 | 231 | 414 | 477 | 556 | 447 | 253 |
| 80% | 195 | 153 | 130 | 138 | 129 | 160 | 207 | 371 | 432 | 518 | 419 | 225 |
| 90% | 172 | 133 | 113 | 119 | 124 | 139 | 194 | 298 | 365 | 442 | 321 | 183 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 282 | 232 | 280 | 338 | 332 | 345 | 305 | 466 | 512 | 625 | 489 | 322 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 376 | 294 | 367 | 586 | 518 | 562 | 421 | 565 | 560 | 691 | 567 | 431 |
| Above Normal (16%) | 312 | 278 | 278 | 356 | 466 | 419 | 323 | 491 | 553 | 736 | 556 | 391 |
| Below Normal (13%) | 256 | 210 | 249 | 209 | 299 | 236 | 258 | 478 | 561 | 684 | 518 | 285 |
| Dry (24%) | 232 | 202 | 288 | 172 | 147 | 190 | 226 | 416 | 498 | 569 | 439 | 250 |
| Critical (15%) | 152 | 121 | 105 | 177 | 119 | 149 | 207 | 299 | 344 | 402 | 304 | 165 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -11 | 24 | -4 | -23 | 0 | -1 | -1 | 7 | 1 | -4 | 15 | -3 |
| 20% | -31 | 13 | -44 | 0 | -5 | 9 | -6 | -27 | 9 | 6 | 13 | 20 |
| 30% | -18 | 14 | -14 | -4 | -22 | -12 | 16 | -14 | -7 | -28 | -2 | 29 |
| 40% | 11 | 27 | 1 | 41 | -9 | 12 | 14 | -5 | -2 | -10 | 13 | 29 |
| 50% | 14 | 10 | 4 | -4 | 3 | -2 | 14 | -9 | -1 | -21 | 2 | -2 |
| 60% | 24 | 19 | 7 | 17 | -3 | -3 | 5 | -3 | -2 | -50 | -6 | 0 |
| 70% | 14 | 17 | 1 | 3 | -4 | -4 | 6 | 2 | -8 | -13 | -23 | -14 |
| 80% | -3 | 14 | 5 | -1 | 1 | -1 | -7 | -10 | -5 | -6 | 17 | 0 |
| 90% | 14 | 8 | 0 | -2 | 3 | 1 | -1 | -4 | -5 | -28 | -24 | -9 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 1 | 15 | -2 | 1 | -2 | -2 | 2 | -8 | -5 | -16 | -1 | 5 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -3 | 12 | -4 | -6 | -1 | 4 | 6 | -10 | 1 | 2 | 7 | 6 |
| Above Normal (16%) | 1 | 39 | -14 | -12 | -8 | 1 | 5 | -7 | 3 | -4 | 22 | 65 |
| Below Normal (13%) | 1 | 15 | 7 | -7 | -6 | -1 | -5 | -13 | -12 | -11 | -25 | -24 |
| Dry (24%) | 5 | 6 | -3 | 3 | 1 | -8 | 1 | -6 | -8 | -42 | -8 | -5 |
| Critical (15%) | 4 | 8 | 6 | 36 | 3 | -7 | 1 | -2 | -16 | -29 | -11 | -17 |

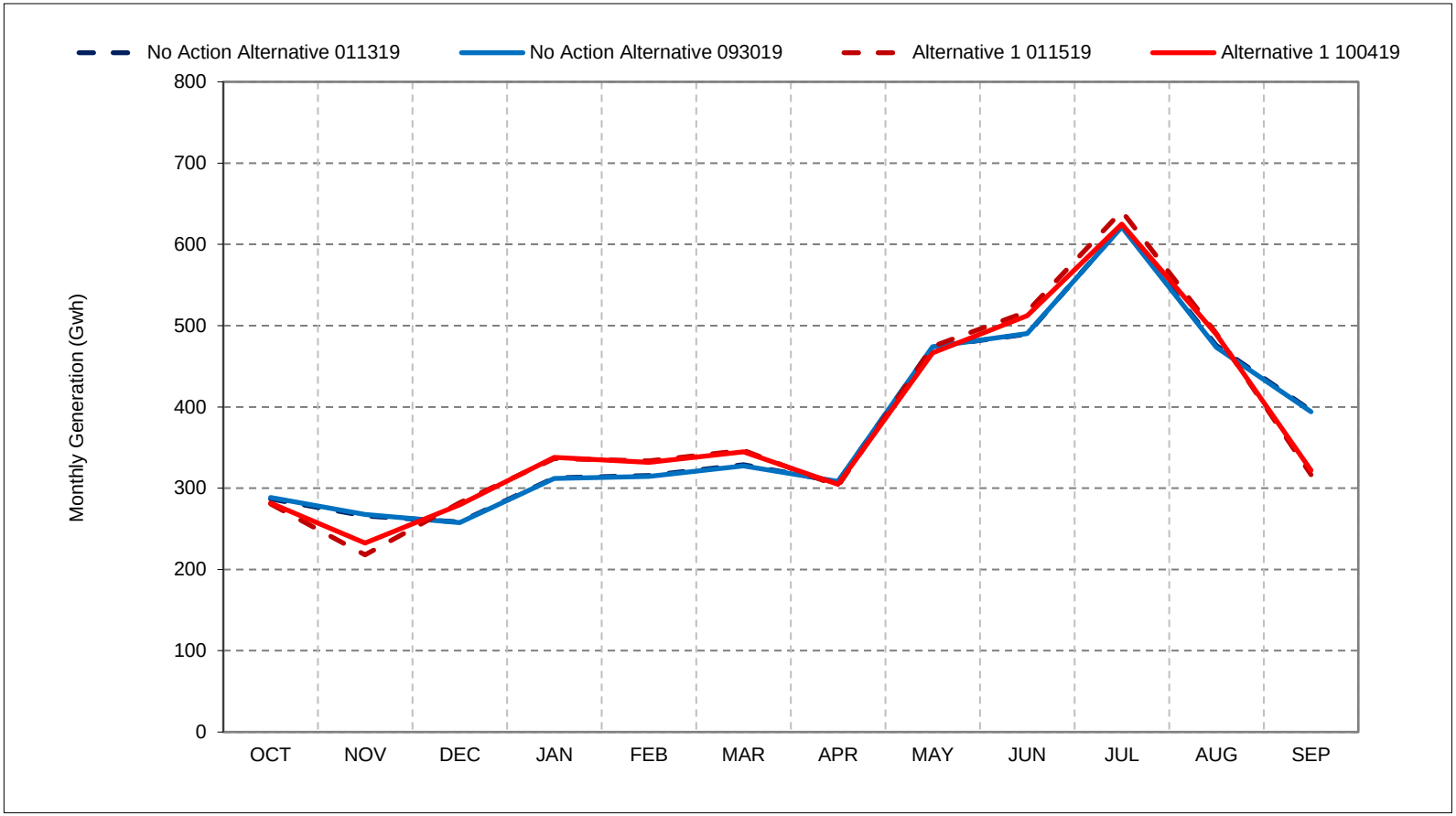
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-1. CVP Total Generation, Long-Term Average Generation

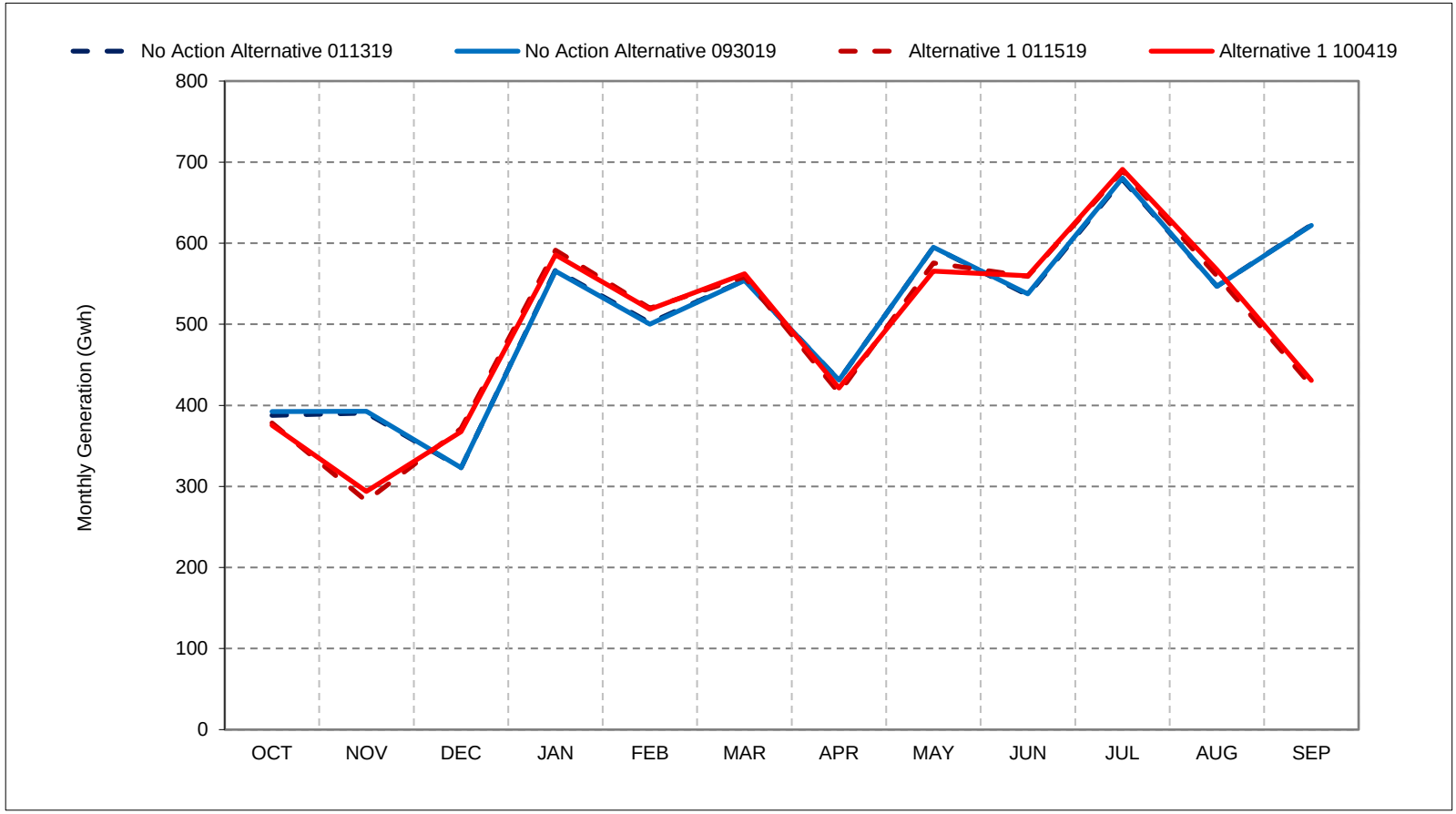



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-2. CVP Total Generation, Wet Year Average Generation

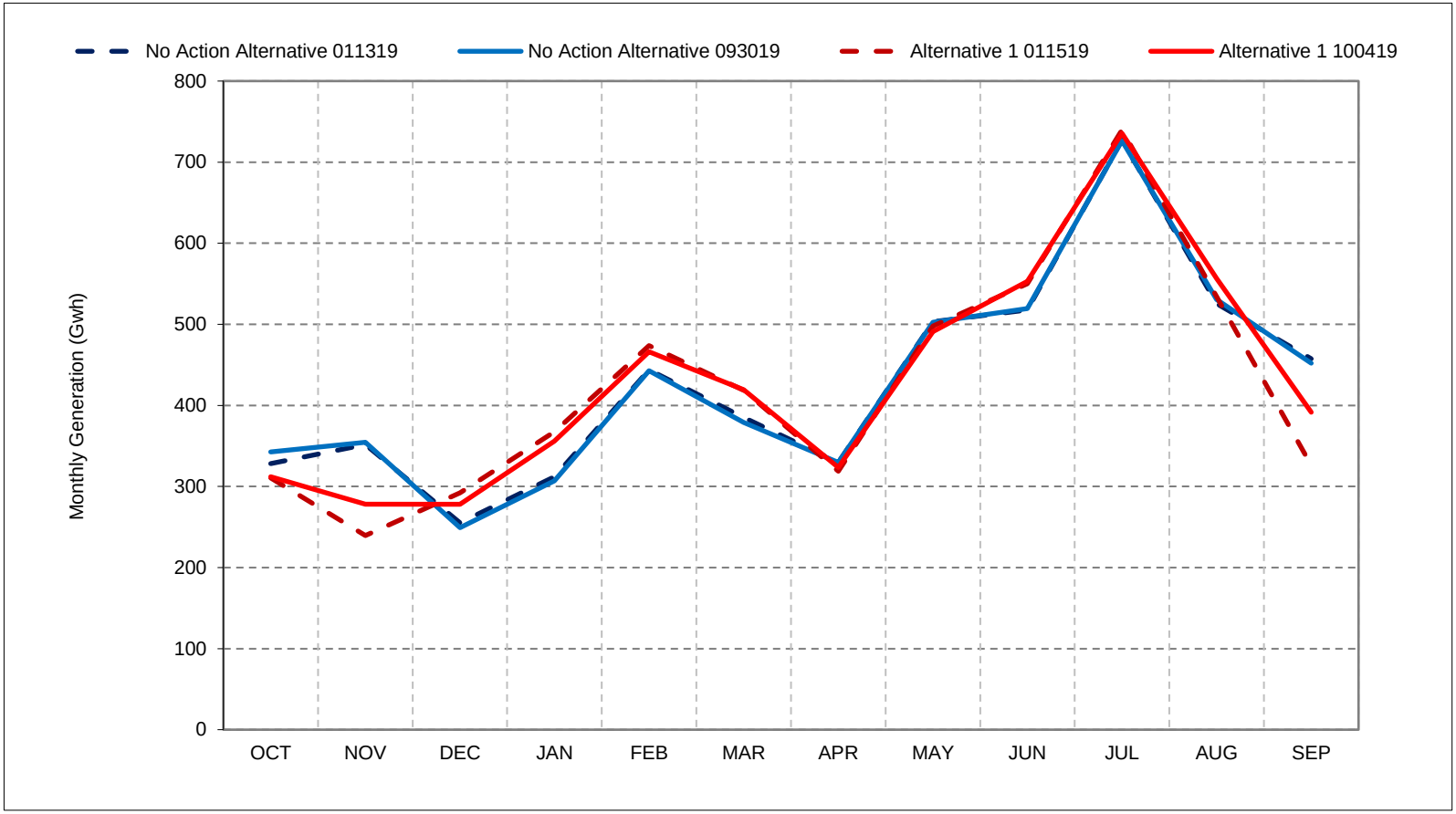



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-3. CVP Total Generation, Above Normal Year Average Generation

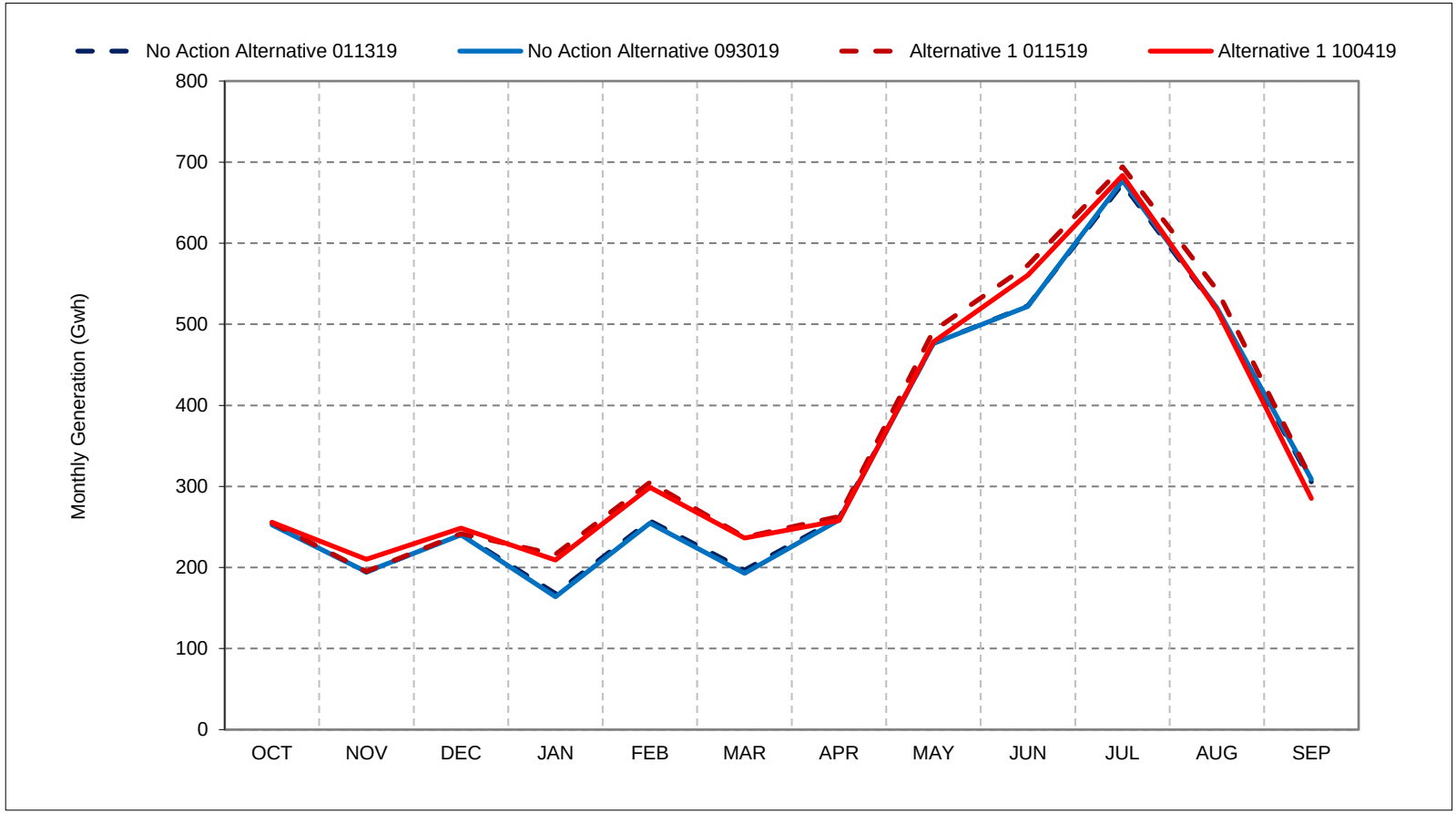



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-4. CVP Total Generation, Below Normal Year Average Generation

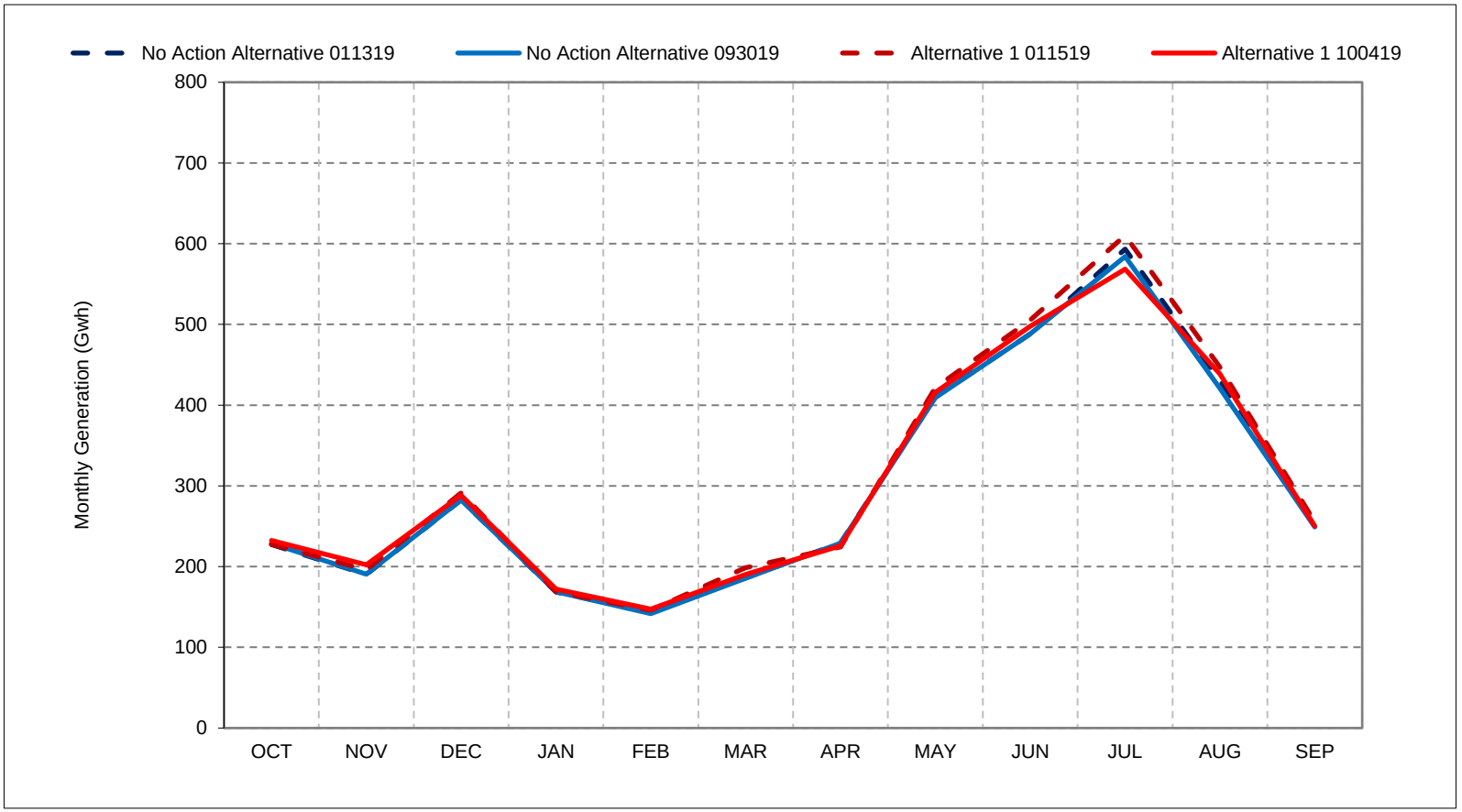



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-5. CVP Total Generation, Dry Year Average Generation

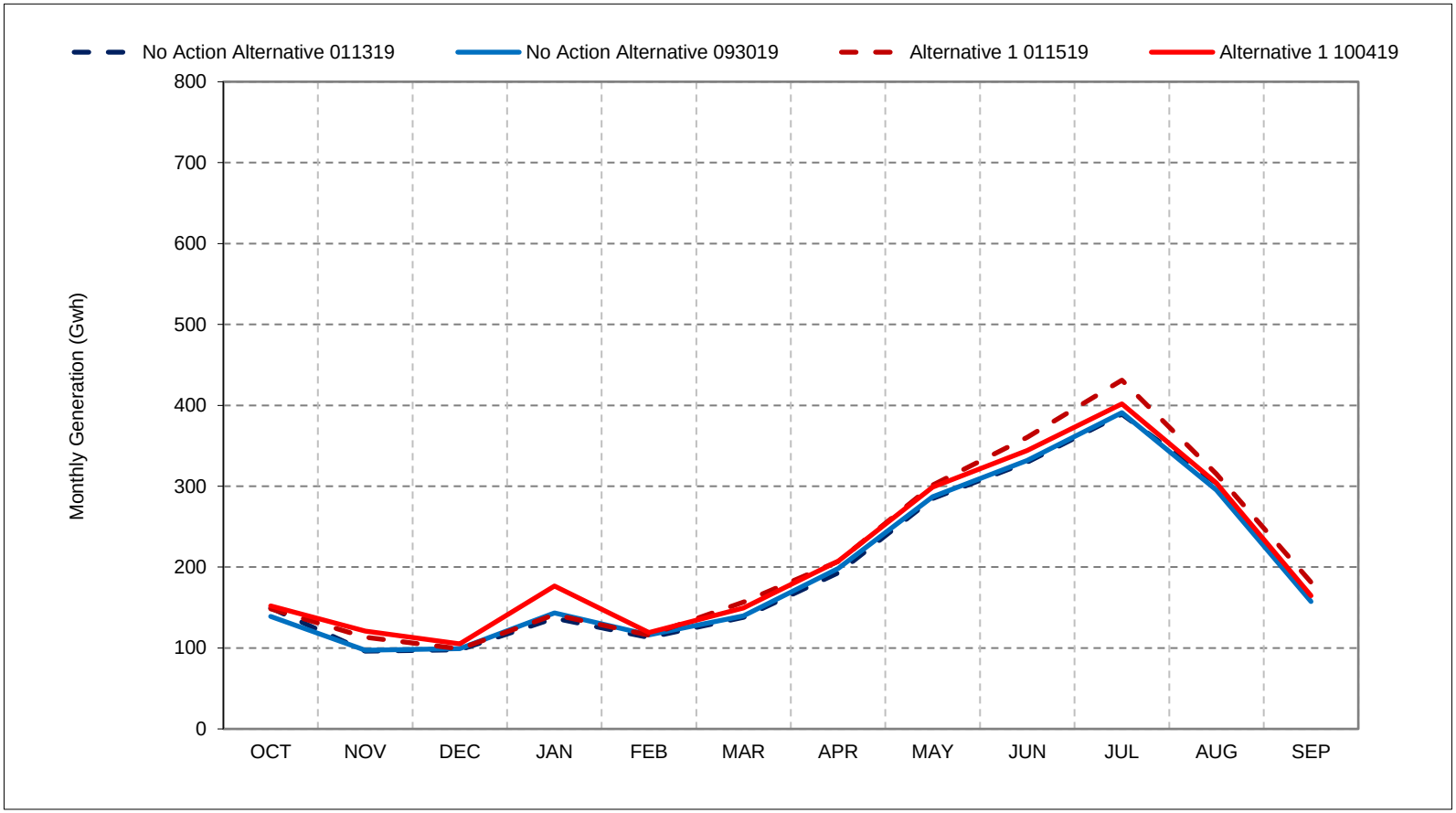



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 29-6. CVP Total Generation, Critical Year Average Generation

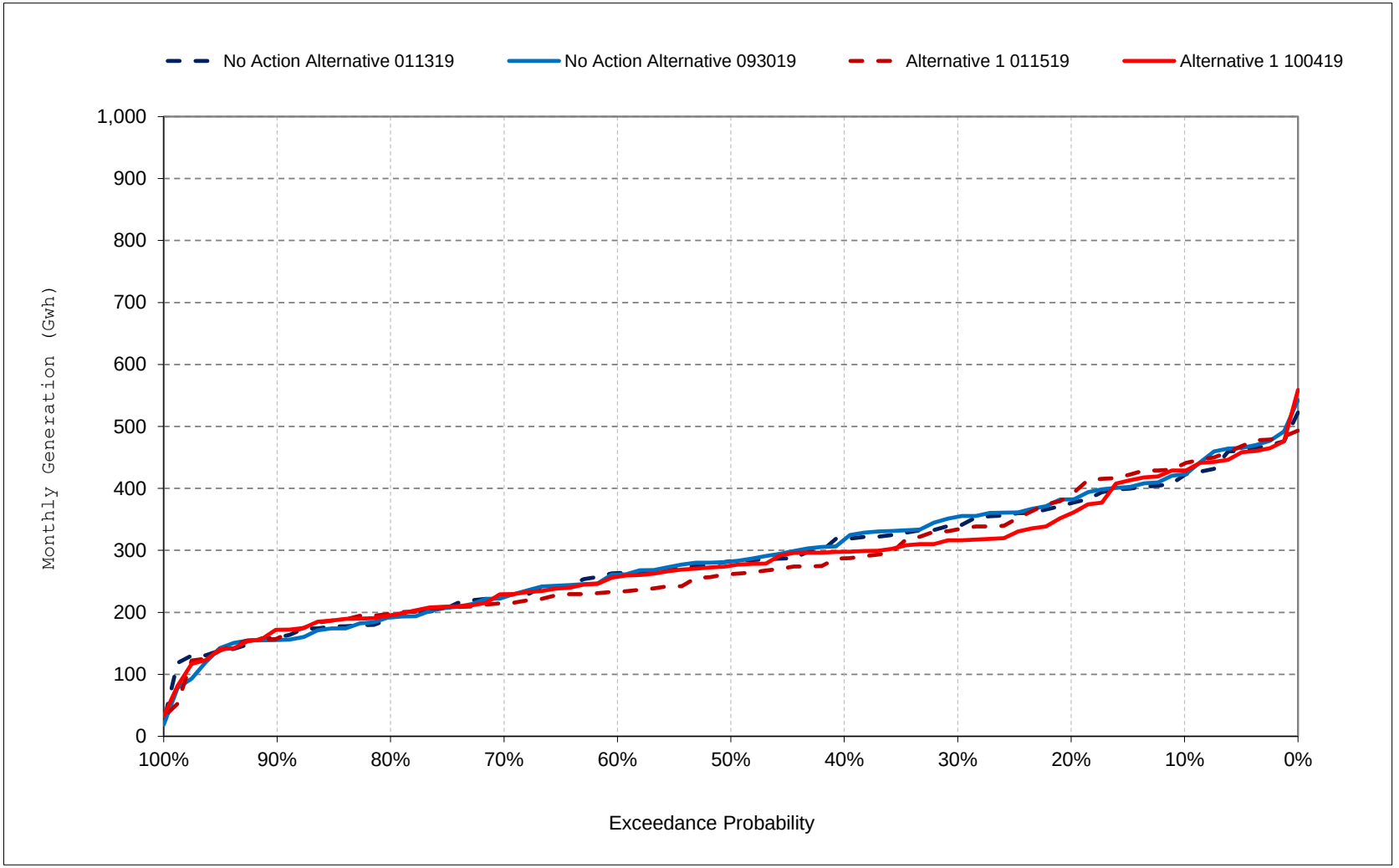



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-7. CVP Total Generation, October**



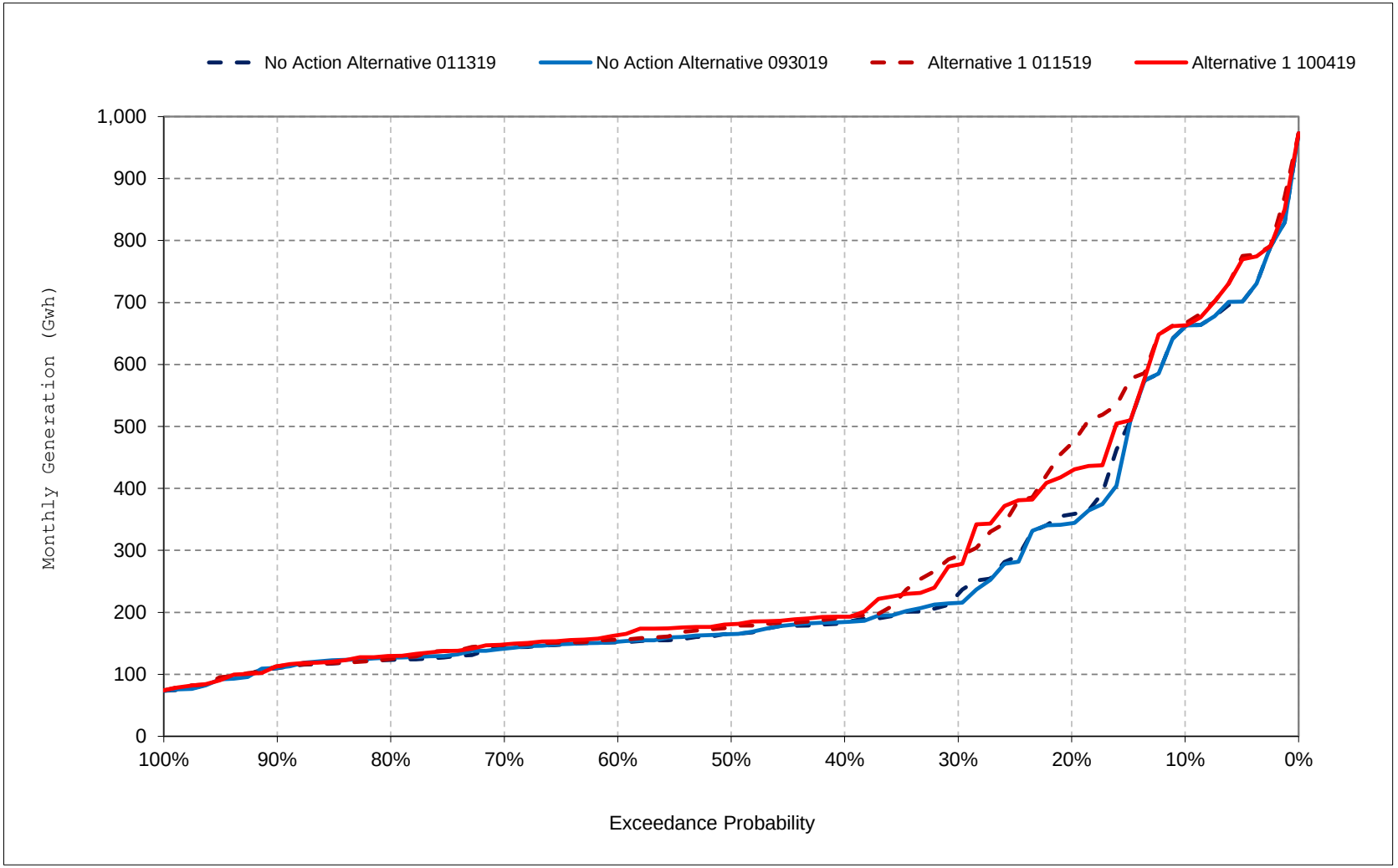

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-8. CVP Total Generation, November**



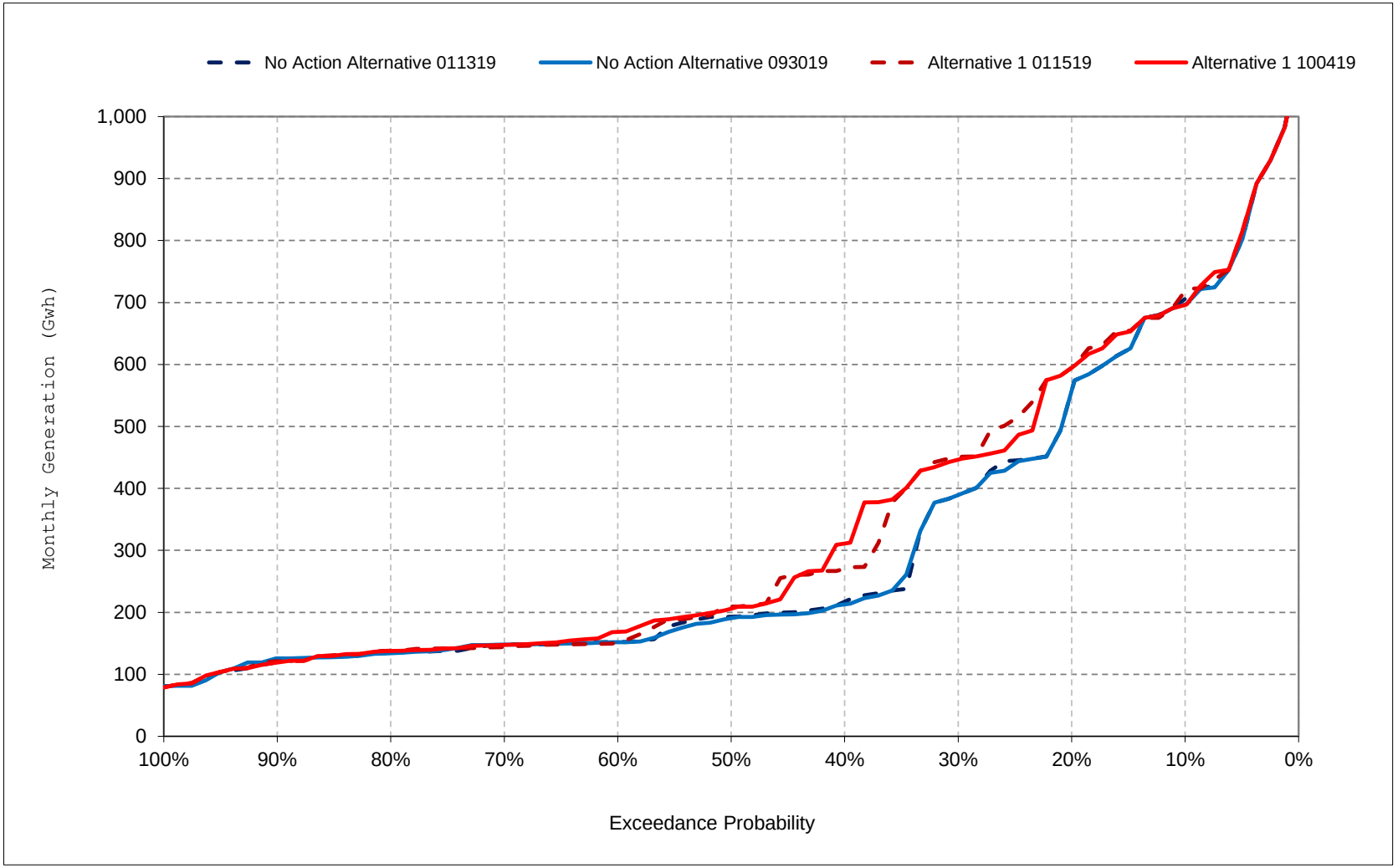

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-9. CVP Total Generation, December**



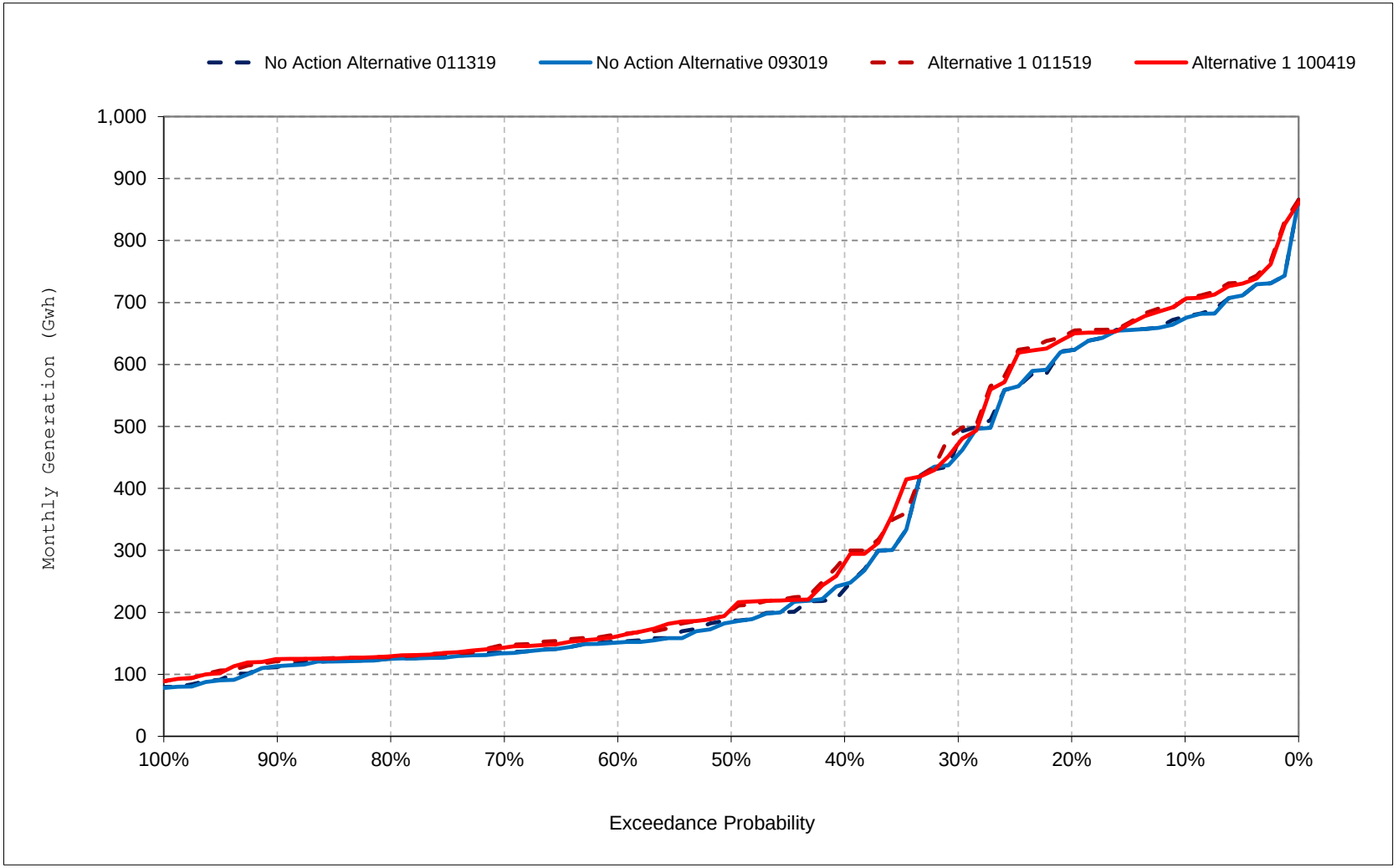

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-10. CVP Total Generation, January**



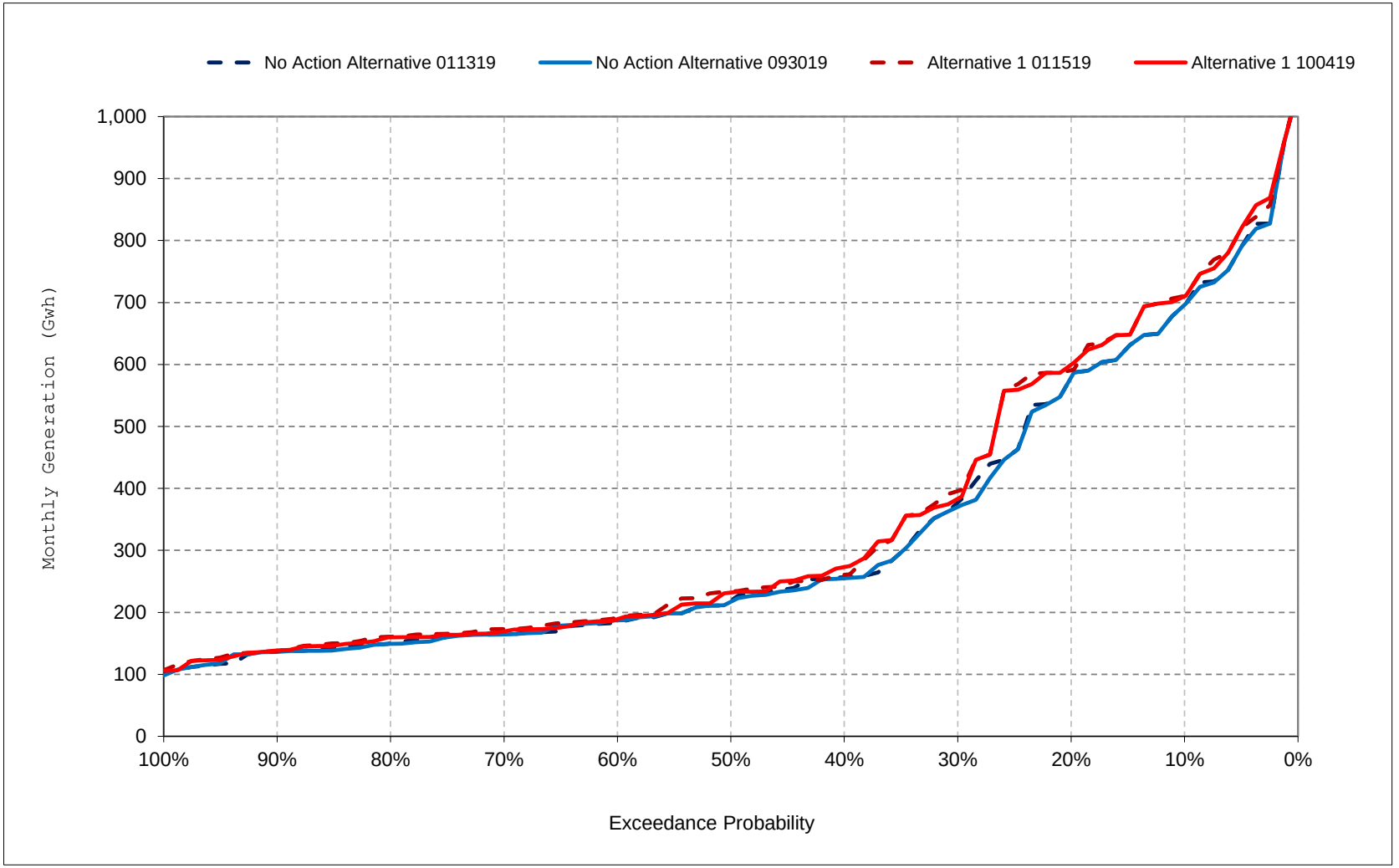

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-11. CVP Total Generation, February**



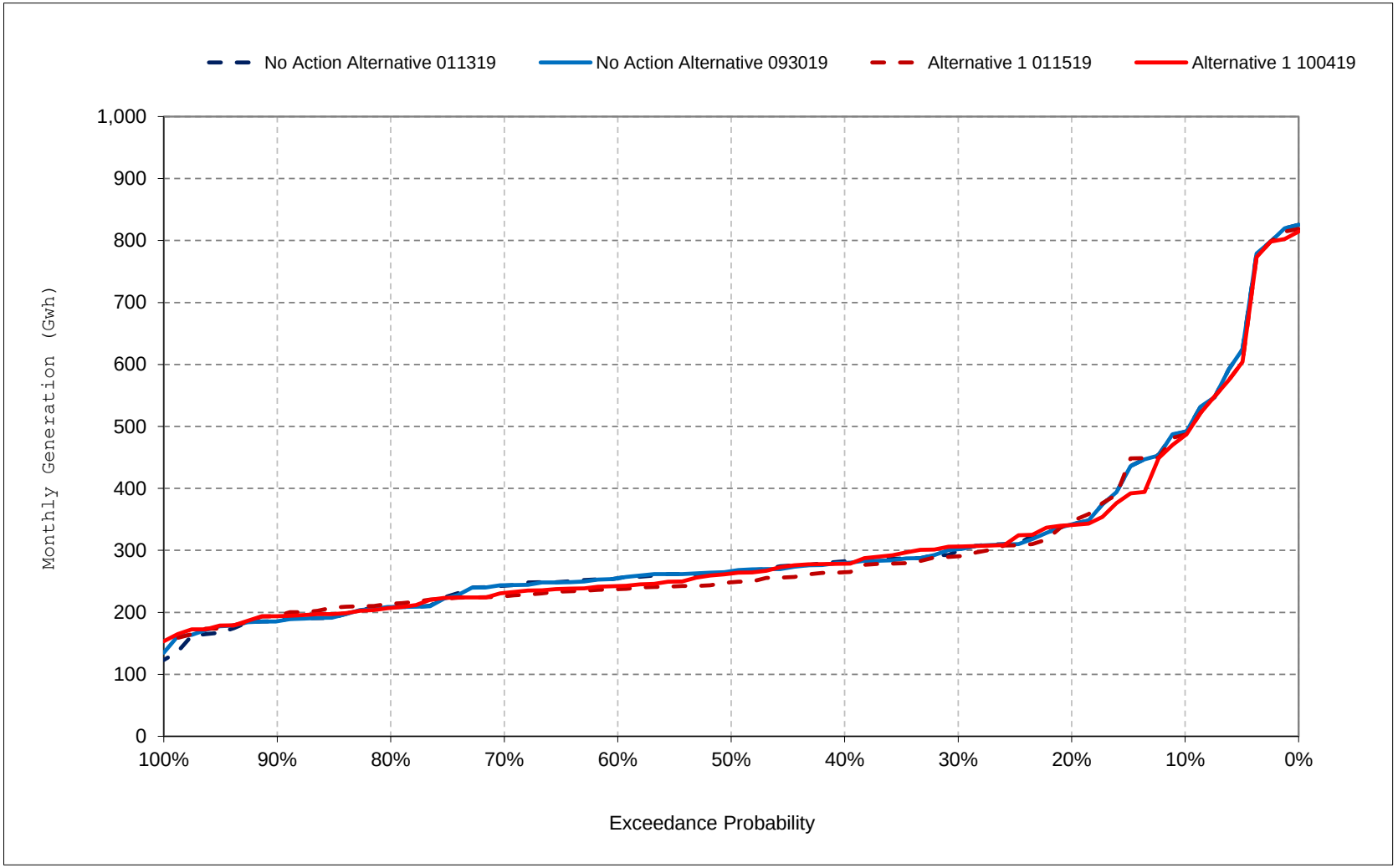

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-12. CVP Total Generation, March**



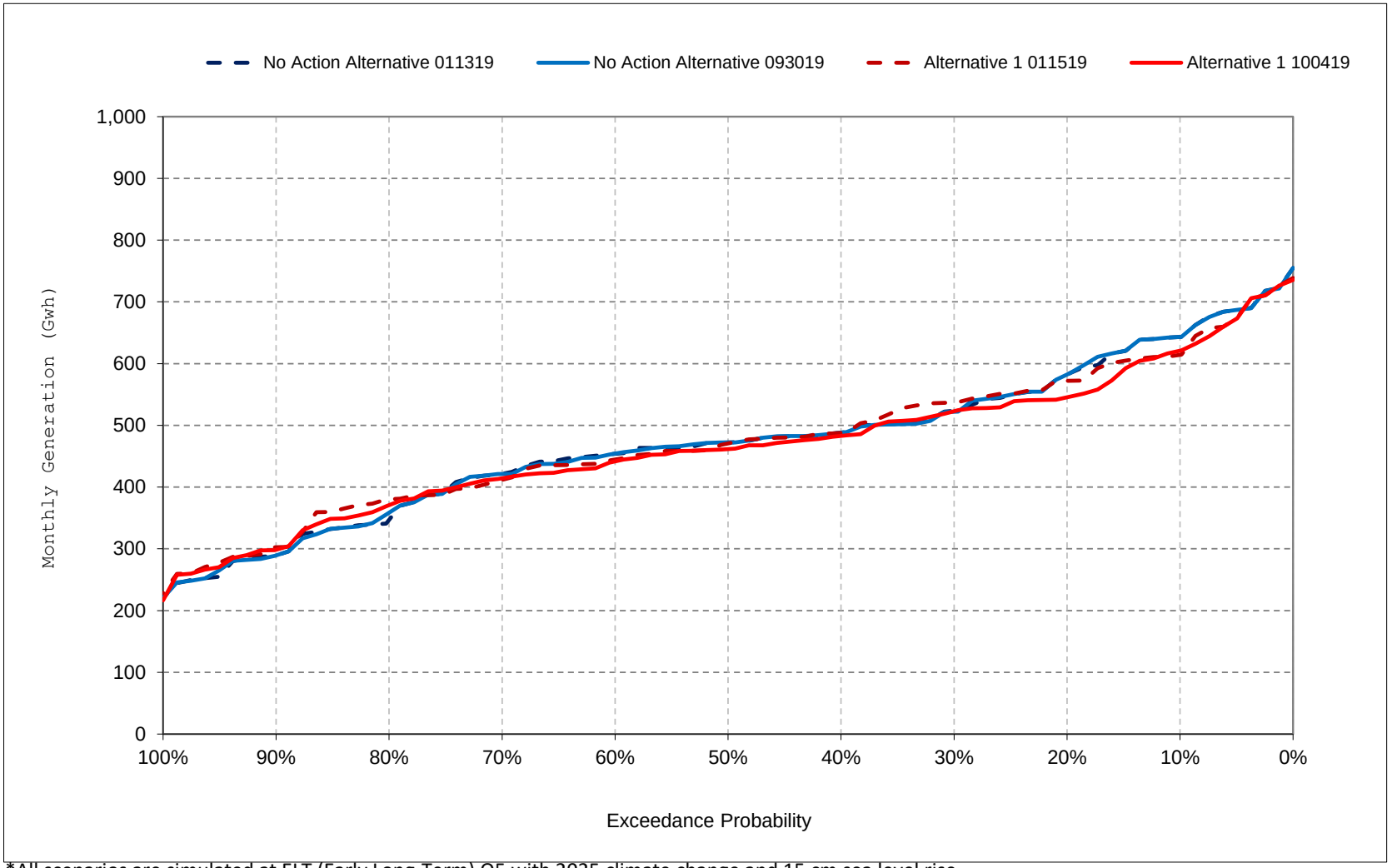

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-13. CVP Total Generation, April**



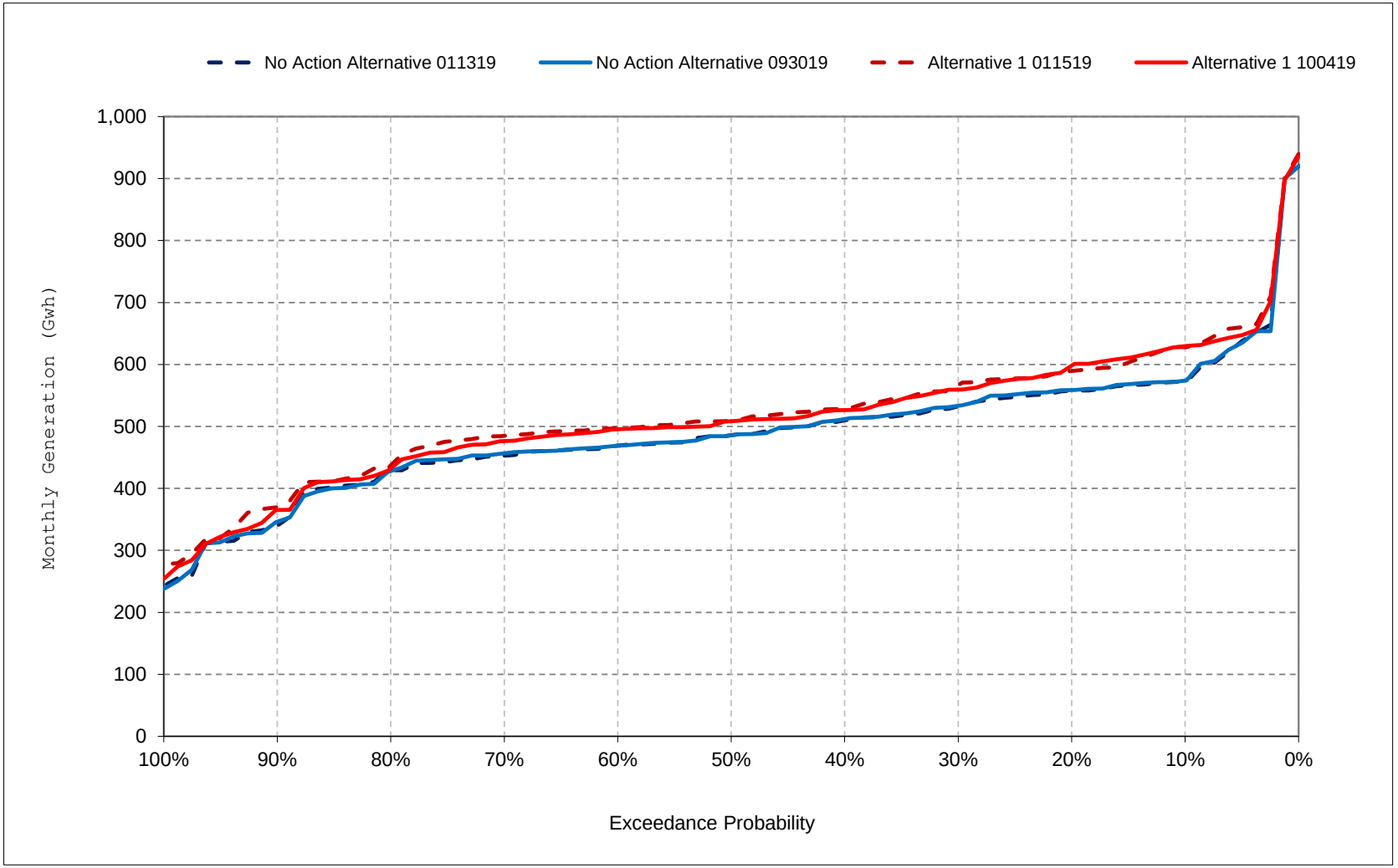

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-14. CVP Total Generation, May**



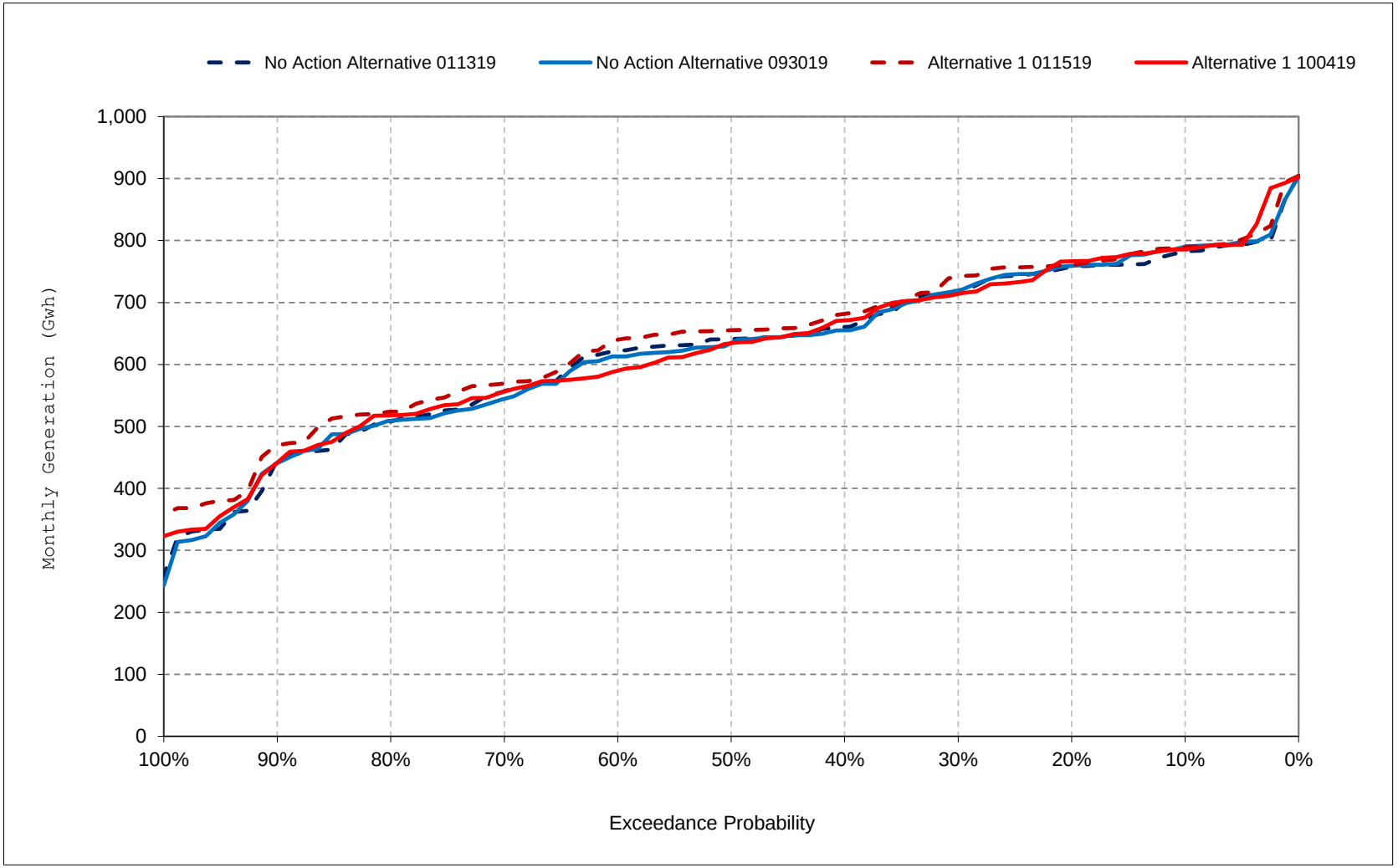

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-15. CVP Total Generation, June**



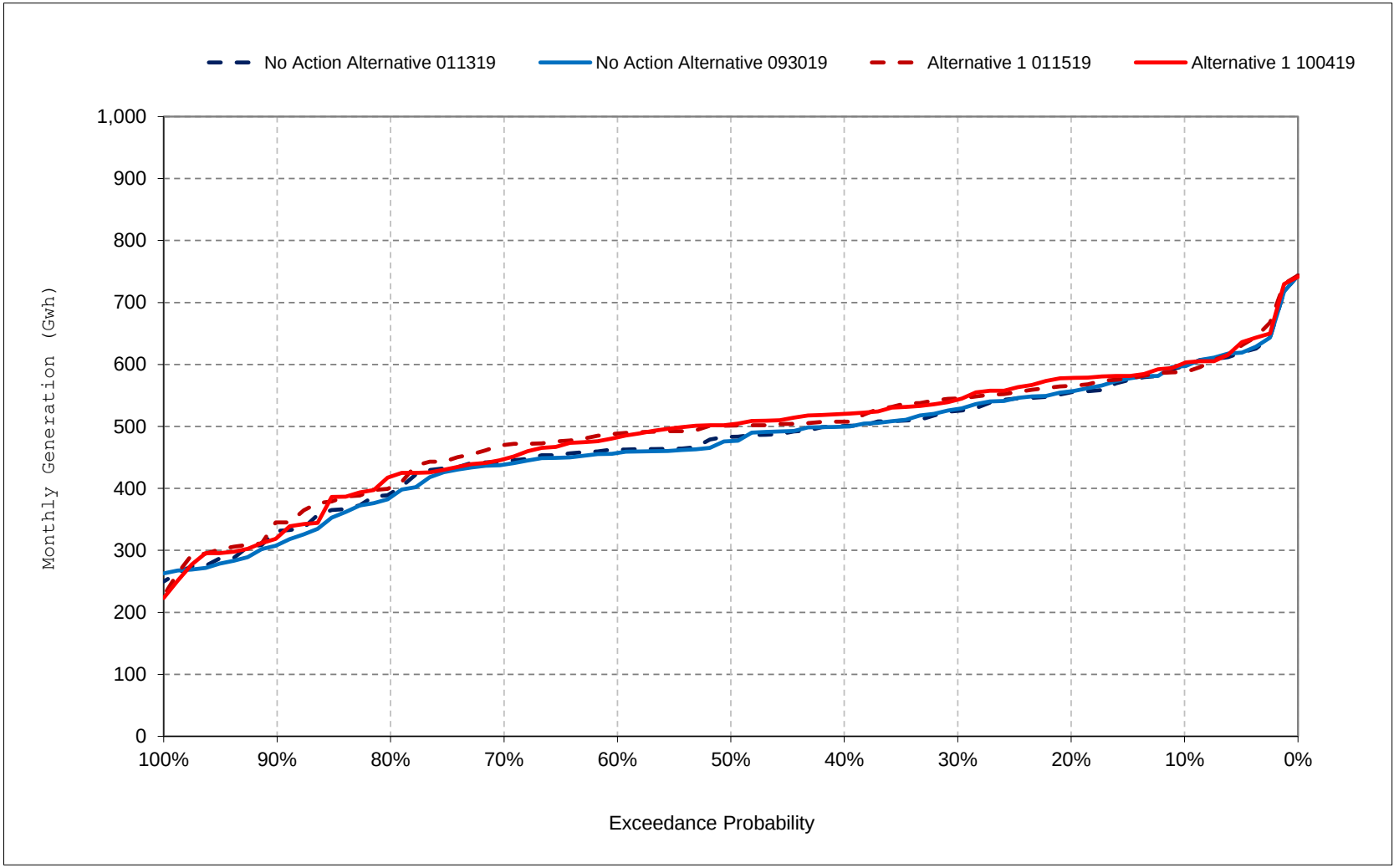

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-16. CVP Total Generation, July**



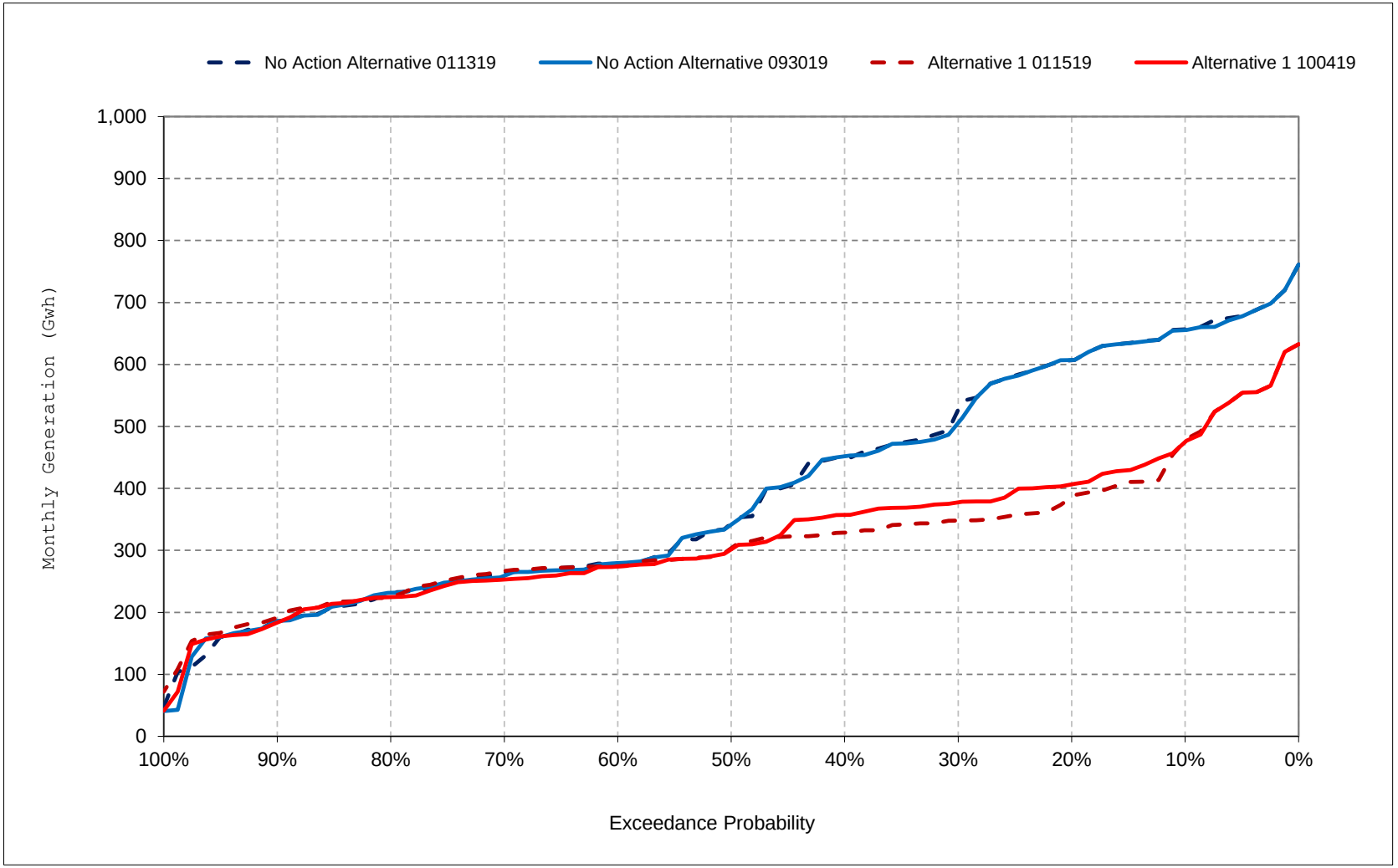

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-17. CVP Total Generation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29-18. CVP Total Generation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 30-1. CVP Total Energy Use, Monthly Energy Use

## No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 117 | 176 | 159 | 165 | 155 | 153 | 71 | 77 | 151 | 172 | 158 | 112 |
| 20% | 106 | 152 | 157 | 160 | 150 | 143 | 50 | 56 | 129 | 161 | 151 | 111 |
| 30% | 87 | 142 | 152 | 145 | 143 | 134 | 44 | 52 | 116 | 153 | 145 | 111 |
| 40% | 83 | 131 | 148 | 140 | 135 | 130 | 42 | 49 | 97 | 139 | 139 | 110 |
| 50% | 80 | 113 | 143 | 137 | 122 | 118 | 41 | 47 | 92 | 130 | 126 | 108 |
| 60% | 75 | 98 | 135 | 133 | 112 | 98 | 39 | 44 | 79 | 117 | 119 | 101 |
| 70% | 68 | 83 | 123 | 123 | 92 | 88 | 36 | 42 | 70 | 109 | 102 | 87 |
| 80% | 62 | 68 | 97 | 109 | 75 | 71 | 33 | 38 | 54 | 87 | 92 | 76 |
| 90% | 55 | 48 | 68 | 91 | 56 | 46 | 27 | 32 | 43 | 66 | 74 | 68 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 82 | 112 | 127 | 132 | 115 | 109 | 44 | 52 | 93 | 125 | 121 | 96 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 94 | 146 | 145 | 145 | 139 | 127 | 57 | 72 | 134 | 155 | 147 | 108 |
| Above Normal (16%) | 82 | 141 | 150 | 129 | 129 | 128 | 43 | 50 | 109 | 118 | 135 | 109 |
| Below Normal (13%) | 88 | 94 | 117 | 129 | 111 | 113 | 38 | 42 | 79 | 125 | 128 | 104 |
| Dry (24%) | 71 | 89 | 119 | 131 | 99 | 105 | 41 | 44 | 67 | 122 | 104 | 87 |
| Critical (15%) | 67 | 65 | 86 | 113 | 76 | 51 | 26 | 34 | 40 | 70 | 72 | 66 |

## Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 158 | 151 | 163 | 164 | 152 | 149 | 131 | 122 | 151 | 173 | 159 | 127 |
| 20% | 127 | 142 | 150 | 158 | 147 | 144 | 107 | 119 | 125 | 168 | 158 | 114 |
| 30% | 120 | 134 | 143 | 151 | 138 | 136 | 91 | 101 | 117 | 158 | 155 | 112 |
| 40% | 110 | 126 | 140 | 146 | 132 | 132 | 84 | 94 | 112 | 150 | 149 | 111 |
| 50% | 87 | 115 | 131 | 138 | 127 | 125 | 79 | 84 | 106 | 134 | 136 | 111 |
| 60% | 78 | 88 | 114 | 134 | 122 | 118 | 64 | 74 | 94 | 119 | 128 | 109 |
| 70% | 74 | 73 | 101 | 130 | 116 | 96 | 50 | 64 | 86 | 104 | 107 | 100 |
| 80% | 65 | 61 | 83 | 118 | 109 | 79 | 40 | 55 | 75 | 86 | 96 | 80 |
| 90% | 53 | 43 | 61 | 95 | 82 | 67 | 31 | 47 | 53 | 73 | 77 | 69 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 103 | 119 | 135 | 125 | 116 | 77 | 85 | 102 | 128 | 130 | 105 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 113 | 139 | 143 | 145 | 130 | 123 | 106 | 115 | 135 | 159 | 157 | 122 |
| Above Normal (16%) | 127 | 109 | 117 | 138 | 130 | 124 | 101 | 96 | 111 | 128 | 139 | 111 |
| Below Normal (13%) | 90 | 84 | 109 | 140 | 127 | 116 | 67 | 77 | 106 | 134 | 146 | 122 |
| Dry (24%) | 78 | 84 | 118 | 131 | 126 | 122 | 56 | 67 | 83 | 119 | 113 | 90 |
| Critical (15%) | 65 | 65 | 80 | 113 | 108 | 82 | 32 | 43 | 53 | 71 | 73 | 68 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 41 | -25 | 4 | -1 | -4 | -4 | 60 | 45 | 0 | 1 | 1 | 14 |
| 20% | 21 | -10 | -7 | -1 | -3 | 1 | 57 | 63 | -4 | 7 | 7 | 3 |
| 30% | 33 | -8 | -9 | 6 | -5 | 2 | 47 | 49 | 1 | 5 | 9 | 1 |
| 40% | 27 | -5 | -9 | 5 | -3 | 2 | 42 | 45 | 15 | 11 | 9 | 1 |
| 50% | 8 | 2 | -12 | 1 | 5 | 6 | 38 | 37 | 14 | 4 | 9 | 2 |
| 60% | 3 | -11 | -21 | 1 | 10 | 19 | 25 | 30 | 15 | 2 | 9 | 8 |
| 70% | 6 | -10 | -22 | 7 | 23 | 8 | 14 | 22 | 16 | -4 | 6 | 13 |
| 80% | 4 | -8 | -13 | 10 | 34 | 9 | 8 | 17 | 21 | -1 | 4 | 4 |
| 90% | -2 | -5 | -7 | 4 | 26 | 22 | 4 | 15 | 10 | 7 | 4 | 1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 15 | -10 | -8 | 3 | 11 | 7 | 33 | 33 | 10 | 3 | 9 | 8 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 18 | -7 | -2 | 0 | -9 | -4 | 49 | 44 | 1 | 4 | 10 | 14 |
| Above Normal (16%) | 45 | -32 | -33 | 9 | 2 | -4 | 58 | 46 | 2 | 10 | 3 | 3 |
| Below Normal (13%) | 2 | -10 | -7 | 11 | 16 | 3 | 29 | 35 | 26 | 9 | 18 | 18 |
| Dry (24%) | 7 | -5 | 0 | 0 | 27 | 17 | 16 | 23 | 15 | -3 | 9 | 4 |
| Critical (15%) | -2 | 1 | -6 | 0 | 32 | 31 | 6 | 10 | 13 | 1 | 2 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 30-2. CVP Total Energy Use, Monthly Energy Use

### No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 119 | 175 | 159 | 165 | 154 | 153 | 72 | 75 | 151 | 170 | 158 | 112 |
| 20% | 109 | 152 | 157 | 160 | 150 | 143 | 51 | 56 | 129 | 159 | 152 | 112 |
| 30% | 92 | 141 | 151 | 145 | 142 | 135 | 44 | 52 | 118 | 151 | 146 | 111 |
| 40% | 83 | 132 | 147 | 140 | 133 | 131 | 42 | 49 | 100 | 139 | 135 | 111 |
| 50% | 80 | 110 | 143 | 136 | 122 | 122 | 41 | 47 | 92 | 128 | 126 | 108 |
| 60% | 72 | 95 | 130 | 128 | 113 | 98 | 39 | 44 | 79 | 115 | 117 | 103 |
| 70% | 65 | 79 | 109 | 121 | 95 | 86 | 36 | 42 | 69 | 103 | 100 | 89 |
| 80% | 60 | 65 | 86 | 111 | 80 | 71 | 32 | 38 | 57 | 84 | 85 | 75 |
| 90% | 51 | 53 | 51 | 91 | 56 | 43 | 28 | 33 | 46 | 68 | 74 | 67 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 81 | 112 | 123 | 133 | 116 | 109 | 45 | 52 | 94 | 124 | 121 | 97 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 98 | 147 | 145 | 144 | 140 | 128 | 57 | 72 | 134 | 156 | 146 | 108 |
| Above Normal (16%) | 82 | 140 | 149 | 129 | 125 | 129 | 43 | 49 | 109 | 116 | 134 | 109 |
| Below Normal (13%) | 81 | 87 | 110 | 129 | 111 | 114 | 38 | 42 | 81 | 124 | 131 | 108 |
| Dry (24%) | 72 | 90 | 114 | 134 | 99 | 103 | 44 | 44 | 69 | 121 | 103 | 86 |
| Critical (15%) | 61 | 65 | 73 | 113 | 85 | 49 | 27 | 34 | 44 | 71 | 71 | 67 |

### Alternative 1 100419

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 118 | 179 | 164 | 163 | 152 | 167 | 132 | 119 | 151 | 164 | 158 | 112 |
| 20% | 97 | 153 | 155 | 157 | 141 | 146 | 114 | 106 | 128 | 153 | 154 | 111 |
| 30% | 85 | 141 | 146 | 150 | 138 | 111 | 91 | 92 | 120 | 140 | 149 | 104 |
| 40% | 78 | 128 | 143 | 143 | 132 | 102 | 85 | 87 | 106 | 125 | 139 | 90 |
| 50% | 75 | 124 | 139 | 140 | 127 | 96 | 82 | 80 | 100 | 113 | 121 | 74 |
| 60% | 69 | 96 | 131 | 134 | 122 | 90 | 63 | 70 | 88 | 103 | 117 | 69 |
| 70% | 64 | 78 | 108 | 126 | 115 | 83 | 51 | 58 | 79 | 91 | 102 | 64 |
| 80% | 57 | 71 | 88 | 109 | 110 | 75 | 41 | 53 | 65 | 83 | 93 | 55 |
| 90% | 49 | 57 | 62 | 83 | 82 | 62 | 29 | 45 | 50 | 67 | 76 | 43 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 78 | 113 | 125 | 132 | 123 | 105 | 78 | 80 | 99 | 116 | 123 | 80 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 95 | 152 | 154 | 141 | 126 | 130 | 106 | 108 | 136 | 155 | 153 | 83 |
| Above Normal (16%) | 62 | 147 | 141 | 141 | 125 | 107 | 103 | 91 | 111 | 114 | 134 | 54 |
| Below Normal (13%) | 83 | 87 | 108 | 127 | 126 | 98 | 64 | 72 | 95 | 107 | 126 | 104 |
| Dry (24%) | 73 | 85 | 116 | 130 | 125 | 94 | 60 | 62 | 75 | 100 | 107 | 87 |
| Critical (15%) | 61 | 66 | 74 | 111 | 109 | 77 | 34 | 43 | 49 | 66 | 70 | 66 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -1 | 4 | 5 | -2 | -2 | 14 | 60 | 44 | 1 | -6 | 0 | 0 |
| 20% | -12 | 1 | -2 | -3 | -9 | 2 | 64 | 50 | -1 | -6 | 3 | -1 |
| 30% | -7 | 0 | -4 | 4 | -3 | -23 | 46 | 40 | 3 | -12 | 4 | -7 |
| 40% | -5 | -4 | -4 | 3 | -1 | -29 | 43 | 37 | 7 | -14 | 4 | -21 |
| 50% | -5 | 14 | -4 | 3 | 5 | -26 | 41 | 33 | 8 | -15 | -6 | -34 |
| 60% | -2 | 1 | 1 | 6 | 9 | -8 | 24 | 26 | 9 | -12 | -1 | -34 |
| 70% | -1 | -1 | 0 | 5 | 20 | -3 | 16 | 16 | 10 | -12 | 2 | -24 |
| 80% | -3 | 6 | 2 | -1 | 30 | 5 | 9 | 16 | 8 | -1 | 8 | -20 |
| 90% | -3 | 4 | 11 | -8 | 27 | 19 | 2 | 12 | 4 | 0 | 2 | -23 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -4 | 2 | 2 | -1 | 7 | -3 | 33 | 28 | 5 | -9 | 2 | -17 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -3 | 5 | 9 | -3 | -14 | 2 | 49 | 36 | 1 | -1 | 7 | -26 |
| Above Normal (16%) | -20 | 7 | -8 | 12 | 0 | -22 | 60 | 41 | 2 | -2 | 0 | -55 |
| Below Normal (13%) | 2 | -1 | -2 | -1 | 15 | -16 | 26 | 29 | 14 | -17 | -6 | -4 |
| Dry (24%) | 2 | -4 | 2 | -4 | 26 | -9 | 16 | 18 | 6 | -21 | 4 | 1 |
| Critical (15%) | 0 | 0 | 1 | -2 | 24 | 27 | 7 | 9 | 4 | -4 | -1 | 0 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 30-3. CVP Total Energy Use, Monthly Energy Use

### No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 117 | 176 | 159 | 165 | 155 | 153 | 71 | 77 | 151 | 172 | 158 | 112 |
| 20% | 106 | 152 | 157 | 160 | 150 | 143 | 50 | 56 | 129 | 161 | 151 | 111 |
| 30% | 87 | 142 | 152 | 145 | 143 | 134 | 44 | 52 | 116 | 153 | 145 | 111 |
| 40% | 83 | 131 | 148 | 140 | 135 | 130 | 42 | 49 | 97 | 139 | 139 | 110 |
| 50% | 80 | 113 | 143 | 137 | 122 | 118 | 41 | 47 | 92 | 130 | 126 | 108 |
| 60% | 75 | 98 | 135 | 133 | 112 | 98 | 39 | 44 | 79 | 117 | 119 | 101 |
| 70% | 68 | 83 | 123 | 123 | 92 | 88 | 36 | 42 | 70 | 109 | 102 | 87 |
| 80% | 62 | 68 | 97 | 109 | 75 | 71 | 33 | 38 | 54 | 87 | 92 | 76 |
| 90% | 55 | 48 | 68 | 91 | 56 | 46 | 27 | 32 | 43 | 66 | 74 | 68 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 82 | 112 | 127 | 132 | 115 | 109 | 44 | 52 | 93 | 125 | 121 | 96 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 94 | 146 | 145 | 145 | 139 | 127 | 57 | 72 | 134 | 155 | 147 | 108 |
| Above Normal (16%) | 82 | 141 | 150 | 129 | 129 | 128 | 43 | 50 | 109 | 118 | 135 | 109 |
| Below Normal (13%) | 88 | 94 | 117 | 129 | 111 | 113 | 38 | 42 | 79 | 125 | 128 | 104 |
| Dry (24%) | 71 | 89 | 119 | 131 | 99 | 105 | 41 | 44 | 67 | 122 | 104 | 87 |
| Critical (15%) | 67 | 65 | 86 | 113 | 76 | 51 | 26 | 34 | 40 | 70 | 72 | 66 |

### No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 119 | 175 | 159 | 165 | 154 | 153 | 72 | 75 | 151 | 170 | 158 | 112 |
| 20% | 109 | 152 | 157 | 160 | 150 | 143 | 51 | 56 | 129 | 159 | 152 | 112 |
| 30% | 92 | 141 | 151 | 145 | 142 | 135 | 44 | 52 | 118 | 151 | 146 | 111 |
| 40% | 83 | 132 | 147 | 140 | 133 | 131 | 42 | 49 | 100 | 139 | 135 | 111 |
| 50% | 80 | 110 | 143 | 136 | 122 | 122 | 41 | 47 | 92 | 128 | 126 | 108 |
| 60% | 72 | 95 | 130 | 128 | 113 | 98 | 39 | 44 | 79 | 115 | 117 | 103 |
| 70% | 65 | 79 | 109 | 121 | 95 | 86 | 36 | 42 | 69 | 103 | 100 | 89 |
| 80% | 60 | 65 | 86 | 111 | 80 | 71 | 32 | 38 | 57 | 84 | 85 | 75 |
| 90% | 51 | 53 | 51 | 91 | 56 | 43 | 28 | 33 | 46 | 68 | 74 | 67 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 81 | 112 | 123 | 133 | 116 | 109 | 45 | 52 | 94 | 124 | 121 | 97 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 98 | 147 | 145 | 144 | 140 | 128 | 57 | 72 | 134 | 156 | 146 | 108 |
| Above Normal (16%) | 82 | 140 | 149 | 129 | 125 | 129 | 43 | 49 | 109 | 116 | 134 | 109 |
| Below Normal (13%) | 81 | 87 | 110 | 129 | 111 | 114 | 38 | 42 | 81 | 124 | 131 | 108 |
| Dry (24%) | 72 | 90 | 114 | 134 | 99 | 103 | 44 | 44 | 69 | 121 | 103 | 86 |
| Critical (15%) | 61 | 65 | 73 | 113 | 85 | 49 | 27 | 34 | 44 | 71 | 71 | 67 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2 | -1 | 0 | 0 | -1 | 0 | 1 | -2 | 0 | -1 | 0 | 0 |
| 20% | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | -3 | 1 | 0 |
| 30% | 5 | -1 | -1 | 0 | -2 | 1 | 0 | 0 | 2 | -2 | 0 | 0 |
| 40% | 0 | 1 | -1 | 0 | -3 | 1 | 0 | 0 | 2 | 0 | -4 | 0 |
| 50% | 0 | -3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | -2 | 0 | 0 |
| 60% | -3 | -3 | -5 | -4 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 2 |
| 70% | -3 | -4 | -15 | -2 | 3 | -2 | 0 | 1 | -1 | -6 | -1 | 2 |
| 80% | -2 | -3 | -11 | 2 | 5 | 0 | 0 | 0 | 3 | -3 | -7 | -1 |
| 90% | -4 | 5 | -16 | 0 | 0 | -3 | 0 | 0 | 2 | 2 | 1 | -1 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -1 | 0 | -4 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 1 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | -1 | 0 |
| Above Normal (16%) | 0 | -1 | -1 | 0 | -3 | 1 | 0 | 0 | 0 | -1 | -1 | 1 |
| Below Normal (13%) | -7 | -7 | -7 | 0 | 0 | 1 | 0 | 0 | 1 | -1 | 3 | 4 |
| Dry (24%) | 0 | 1 | -5 | 3 | 0 | -2 | 3 | 0 | 1 | -1 | -1 | 0 |
| Critical (15%) | -6 | 1 | -13 | 0 | 10 | -2 | 0 | 0 | 5 | 0 | 0 | 1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 30-4. CVP Total Energy Use, Monthly Energy Use

### Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 158 | 151 | 163 | 164 | 152 | 149 | 131 | 122 | 151 | 173 | 159 | 127 |
| 20% | 127 | 142 | 150 | 158 | 147 | 144 | 107 | 119 | 125 | 168 | 158 | 114 |
| 30% | 120 | 134 | 143 | 151 | 138 | 136 | 91 | 101 | 117 | 158 | 155 | 112 |
| 40% | 110 | 126 | 140 | 146 | 132 | 132 | 84 | 94 | 112 | 150 | 149 | 111 |
| 50% | 87 | 115 | 131 | 138 | 127 | 125 | 79 | 84 | 106 | 134 | 136 | 111 |
| 60% | 78 | 88 | 114 | 134 | 122 | 118 | 64 | 74 | 94 | 119 | 128 | 109 |
| 70% | 74 | 73 | 101 | 130 | 116 | 96 | 50 | 64 | 86 | 104 | 107 | 100 |
| 80% | 65 | 61 | 83 | 118 | 109 | 79 | 40 | 55 | 75 | 86 | 96 | 80 |
| 90% | 53 | 43 | 61 | 95 | 82 | 67 | 31 | 47 | 53 | 73 | 77 | 69 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 96 | 103 | 119 | 135 | 125 | 116 | 77 | 85 | 102 | 128 | 130 | 105 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 113 | 139 | 143 | 145 | 130 | 123 | 106 | 115 | 135 | 159 | 157 | 122 |
| Above Normal (16%) | 127 | 109 | 117 | 138 | 130 | 124 | 101 | 96 | 111 | 128 | 139 | 111 |
| Below Normal (13%) | 90 | 84 | 109 | 140 | 127 | 116 | 67 | 77 | 106 | 134 | 146 | 122 |
| Dry (24%) | 78 | 84 | 118 | 131 | 126 | 122 | 56 | 67 | 83 | 119 | 113 | 90 |
| Critical (15%) | 65 | 65 | 80 | 113 | 108 | 82 | 32 | 43 | 53 | 71 | 73 | 68 |

### Alternative 1 100419

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 118 | 179 | 164 | 163 | 152 | 167 | 132 | 119 | 151 | 164 | 158 | 112 |
| 20% | 97 | 153 | 155 | 157 | 141 | 146 | 114 | 106 | 128 | 153 | 154 | 111 |
| 30% | 85 | 141 | 146 | 150 | 138 | 111 | 91 | 92 | 120 | 140 | 149 | 104 |
| 40% | 78 | 128 | 143 | 143 | 132 | 102 | 85 | 87 | 106 | 125 | 139 | 90 |
| 50% | 75 | 124 | 139 | 140 | 127 | 96 | 82 | 80 | 100 | 113 | 121 | 74 |
| 60% | 69 | 96 | 131 | 134 | 122 | 90 | 63 | 70 | 88 | 103 | 117 | 69 |
| 70% | 64 | 78 | 108 | 126 | 115 | 83 | 51 | 58 | 79 | 91 | 102 | 64 |
| 80% | 57 | 71 | 88 | 109 | 110 | 75 | 41 | 53 | 65 | 83 | 93 | 55 |
| 90% | 49 | 57 | 62 | 83 | 82 | 62 | 29 | 45 | 50 | 67 | 76 | 43 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 78 | 113 | 125 | 132 | 123 | 105 | 78 | 80 | 99 | 116 | 123 | 80 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 95 | 152 | 154 | 141 | 126 | 130 | 106 | 108 | 136 | 155 | 153 | 83 |
| Above Normal (16%) | 62 | 147 | 141 | 141 | 125 | 107 | 103 | 91 | 111 | 114 | 134 | 54 |
| Below Normal (13%) | 83 | 87 | 108 | 127 | 126 | 98 | 64 | 72 | 95 | 107 | 126 | 104 |
| Dry (24%) | 73 | 85 | 116 | 130 | 125 | 94 | 60 | 62 | 75 | 100 | 107 | 87 |
| Critical (15%) | 61 | 66 | 74 | 111 | 109 | 77 | 34 | 43 | 49 | 66 | 70 | 66 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -40 | 28 | 1 | -1 | 0 | 18 | 1 | -3 | 0 | -8 | -1 | -15 |
| 20% | -30 | 11 | 5 | -2 | -5 | 2 | 8 | -13 | 3 | -15 | -4 | -3 |
| 30% | -35 | 7 | 3 | -1 | 0 | -25 | -1 | -9 | 3 | -19 | -6 | -8 |
| 40% | -31 | 2 | 3 | -2 | -1 | -30 | 1 | -8 | -6 | -25 | -10 | -22 |
| 50% | -12 | 9 | 8 | 2 | 0 | -28 | 3 | -3 | -6 | -20 | -15 | -36 |
| 60% | -9 | 8 | 17 | 1 | -1 | -28 | -1 | -4 | -5 | -15 | -11 | -40 |
| 70% | -10 | 5 | 7 | -5 | -1 | -13 | 1 | -5 | -7 | -14 | -5 | -35 |
| 80% | -9 | 11 | 5 | -9 | 2 | -4 | 1 | -1 | -10 | -3 | -4 | -24 |
| 90% | -4 | 14 | 1 | -12 | 0 | -5 | -2 | -3 | -3 | -6 | -1 | -25 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -19 | 11 | 5 | -3 | -2 | -11 | 1 | -5 | -3 | -12 | -7 | -25 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -18 | 13 | 10 | -4 | -4 | 6 | 0 | -7 | 1 | -5 | -4 | -40 |
| Above Normal (16%) | -64 | 38 | 24 | 3 | -5 | -17 | 2 | -5 | 0 | -14 | -4 | -57 |
| Below Normal (13%) | -7 | 2 | -1 | -13 | -1 | -17 | -3 | -6 | -11 | -27 | -20 | -17 |
| Dry (24%) | -5 | 1 | -3 | -1 | -2 | -28 | 3 | -5 | -8 | -19 | -6 | -3 |
| Critical (15%) | -4 | 1 | -6 | -2 | 1 | -6 | 2 | 0 | -4 | -5 | -3 | -2 |

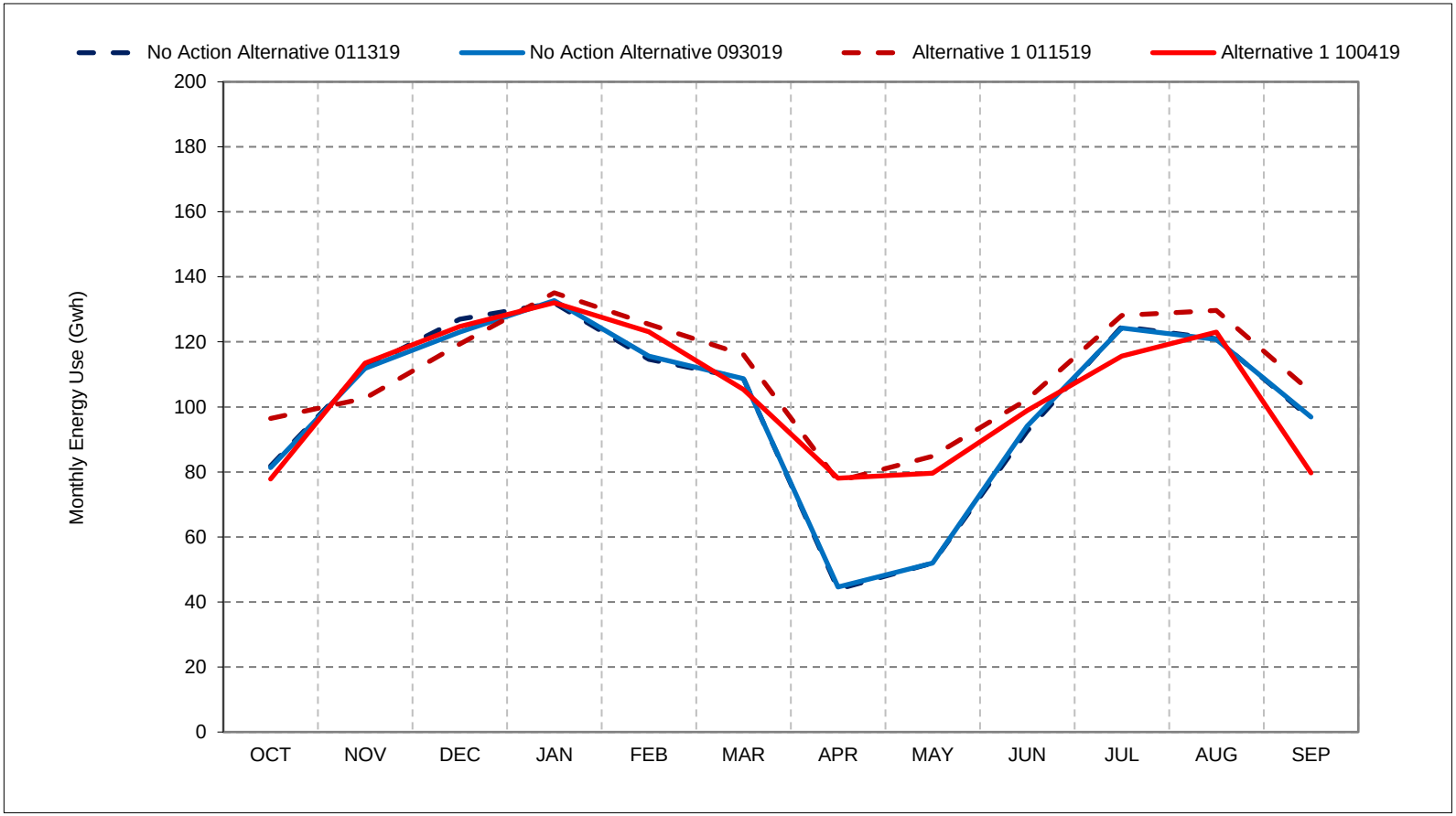
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-1. CVP Total Energy Use, Long-Term Average Energy Use

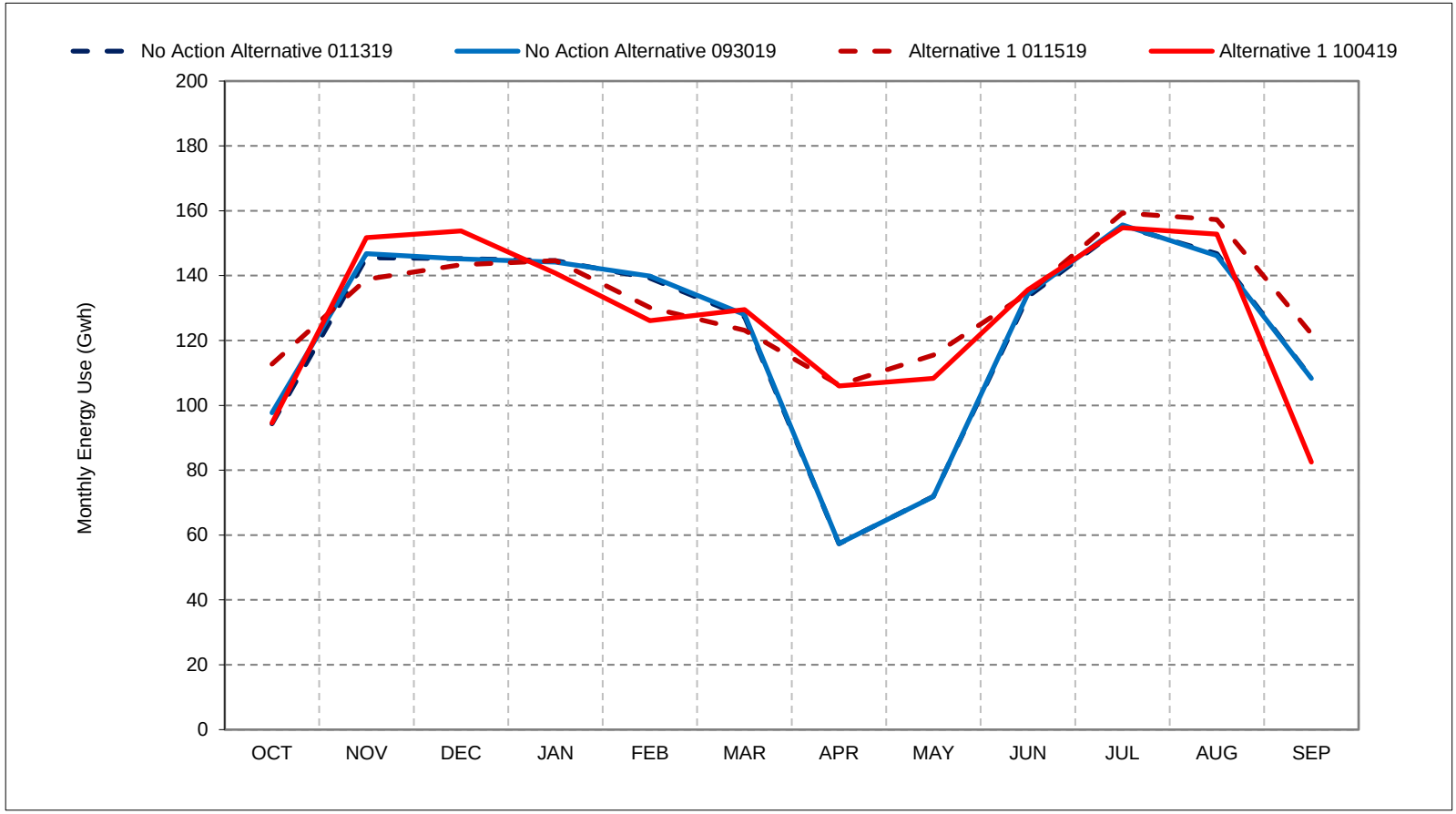



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-2. CVP Total Energy Use, Wet Year Average Energy Use

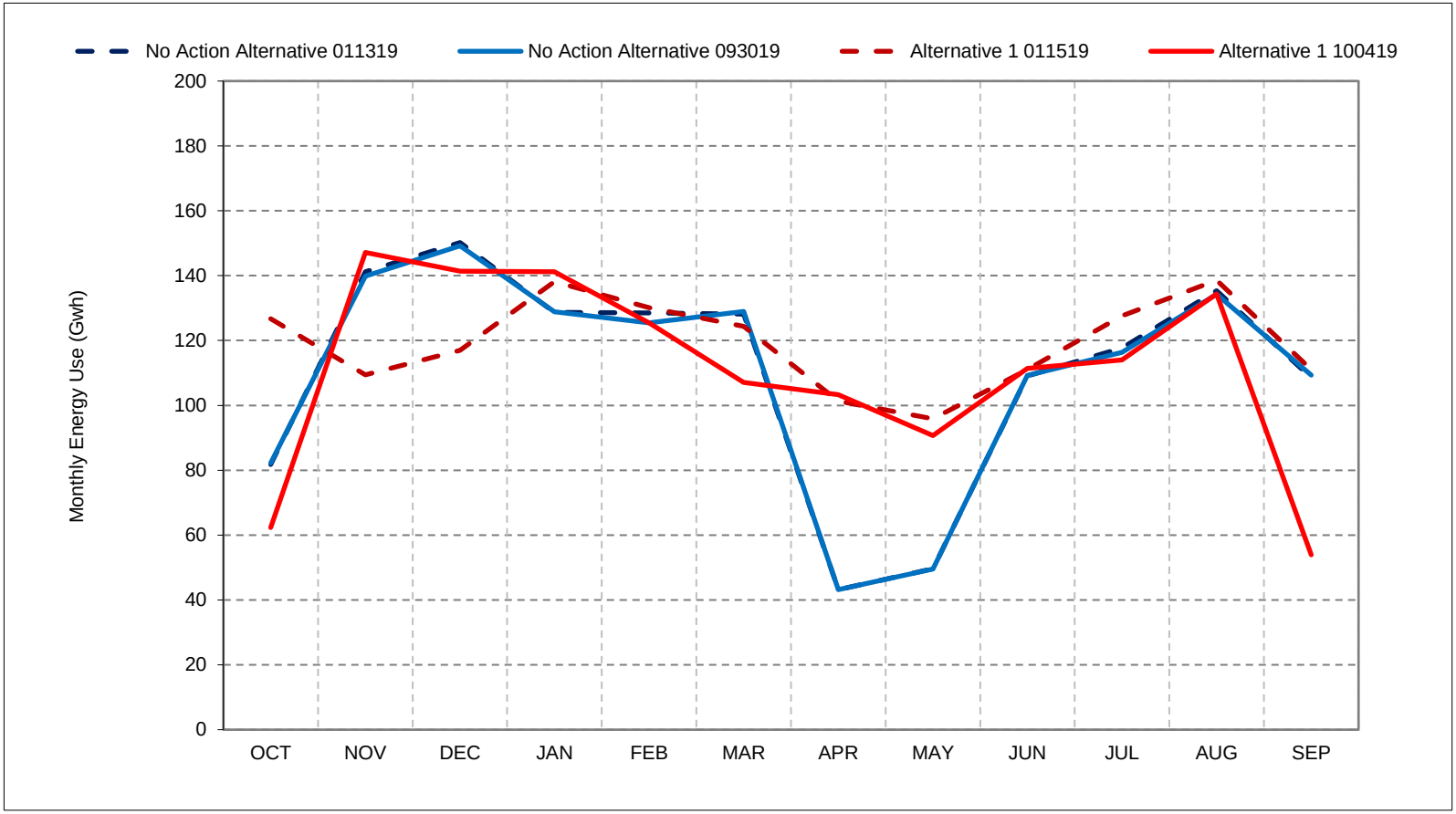



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-3. CVP Total Energy Use, Above Normal Year Average Energy Use

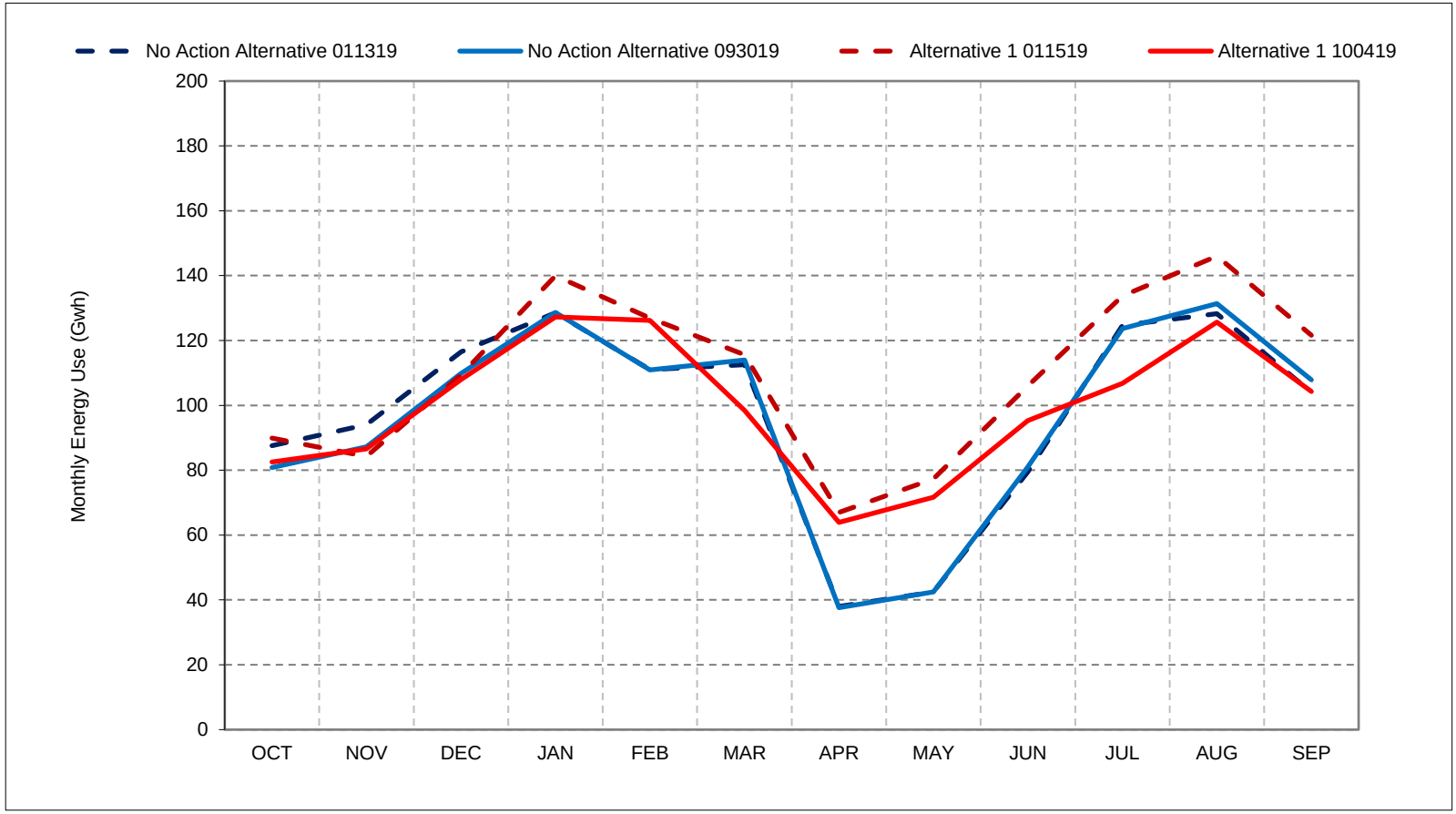



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-4. CVP Total Energy Use, Below Normal Year Average Energy Use

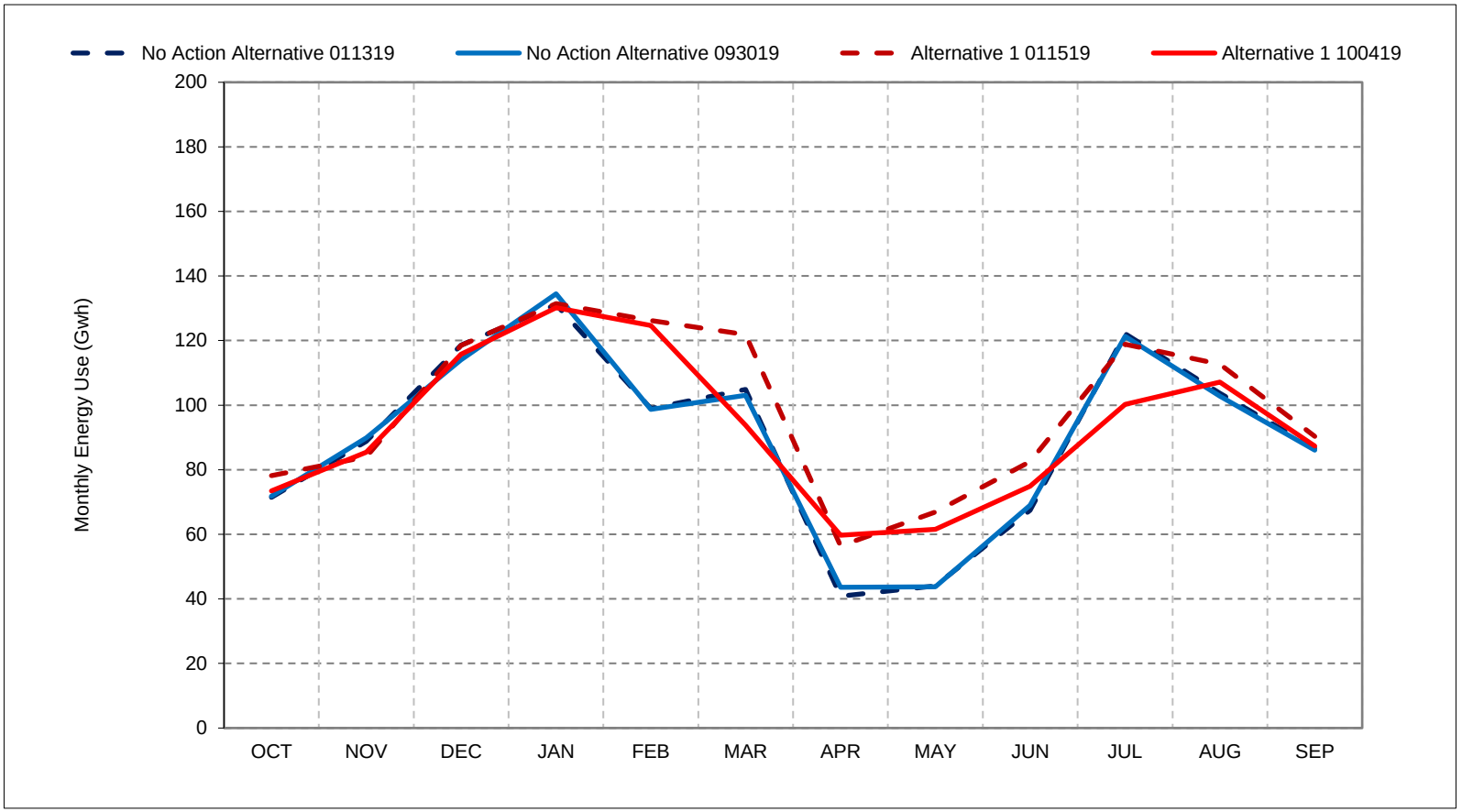



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-5. CVP Total Energy Use, Dry Year Average Energy Use

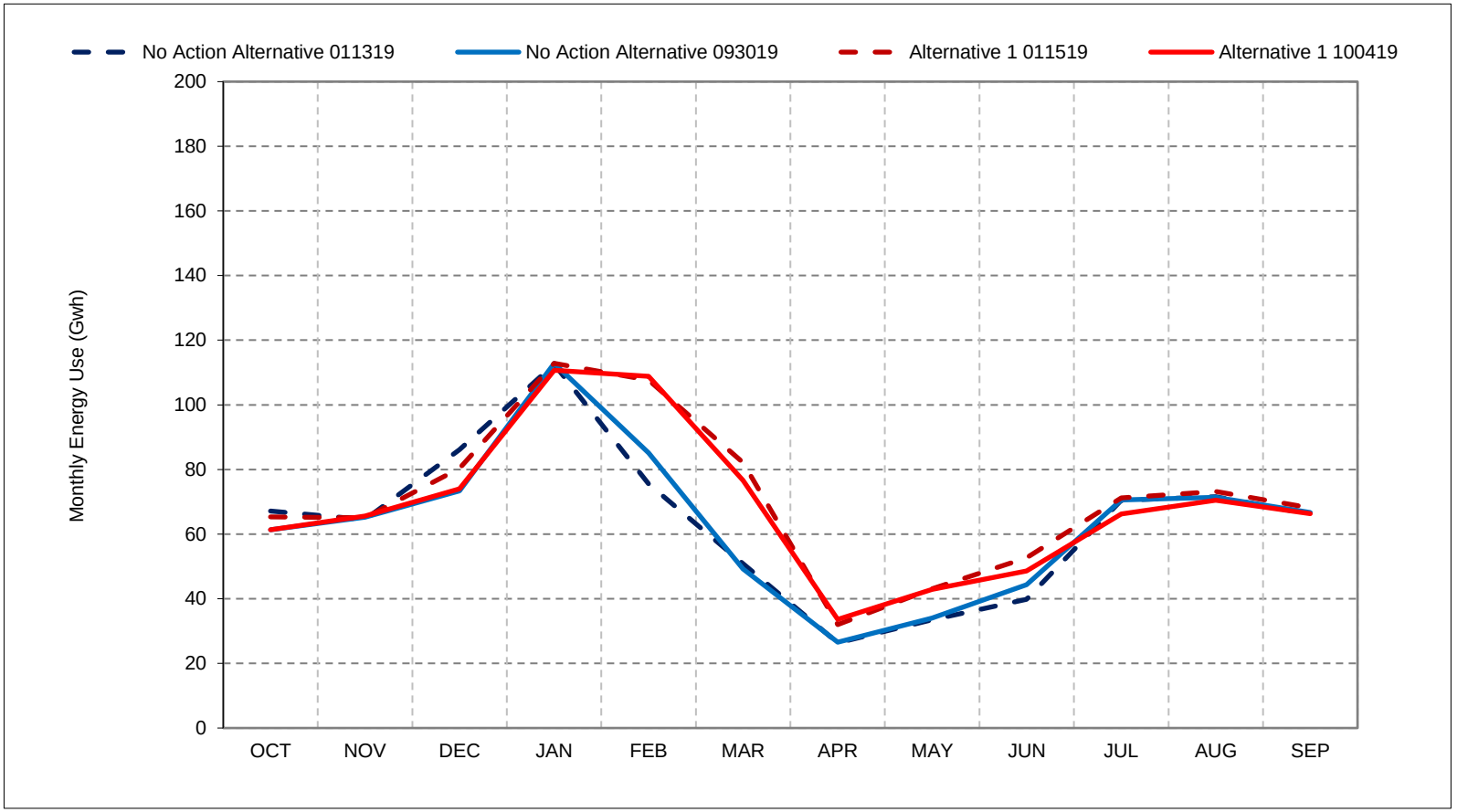



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 30-6. CVP Total Energy Use, Critical Year Average Energy Use

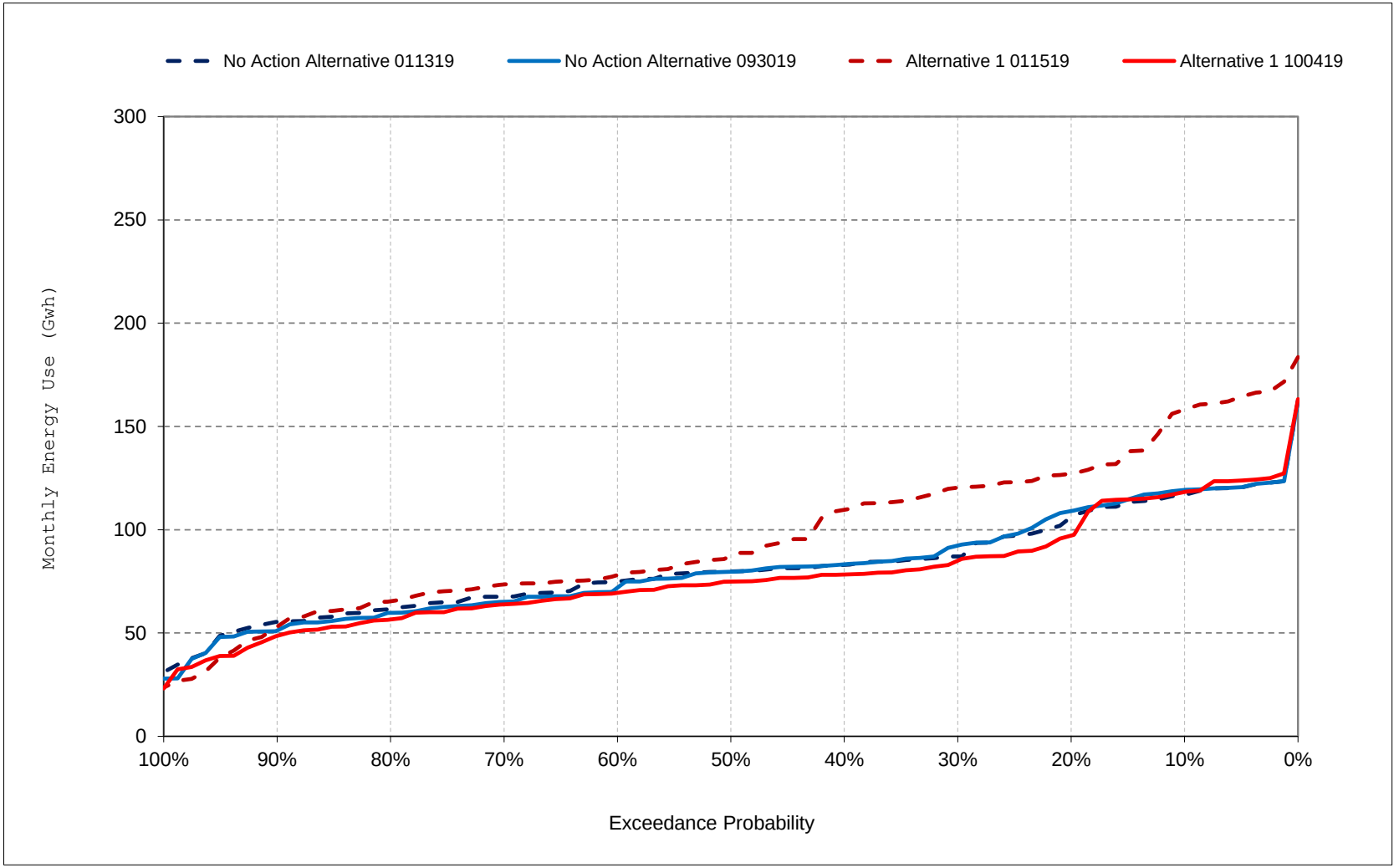



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

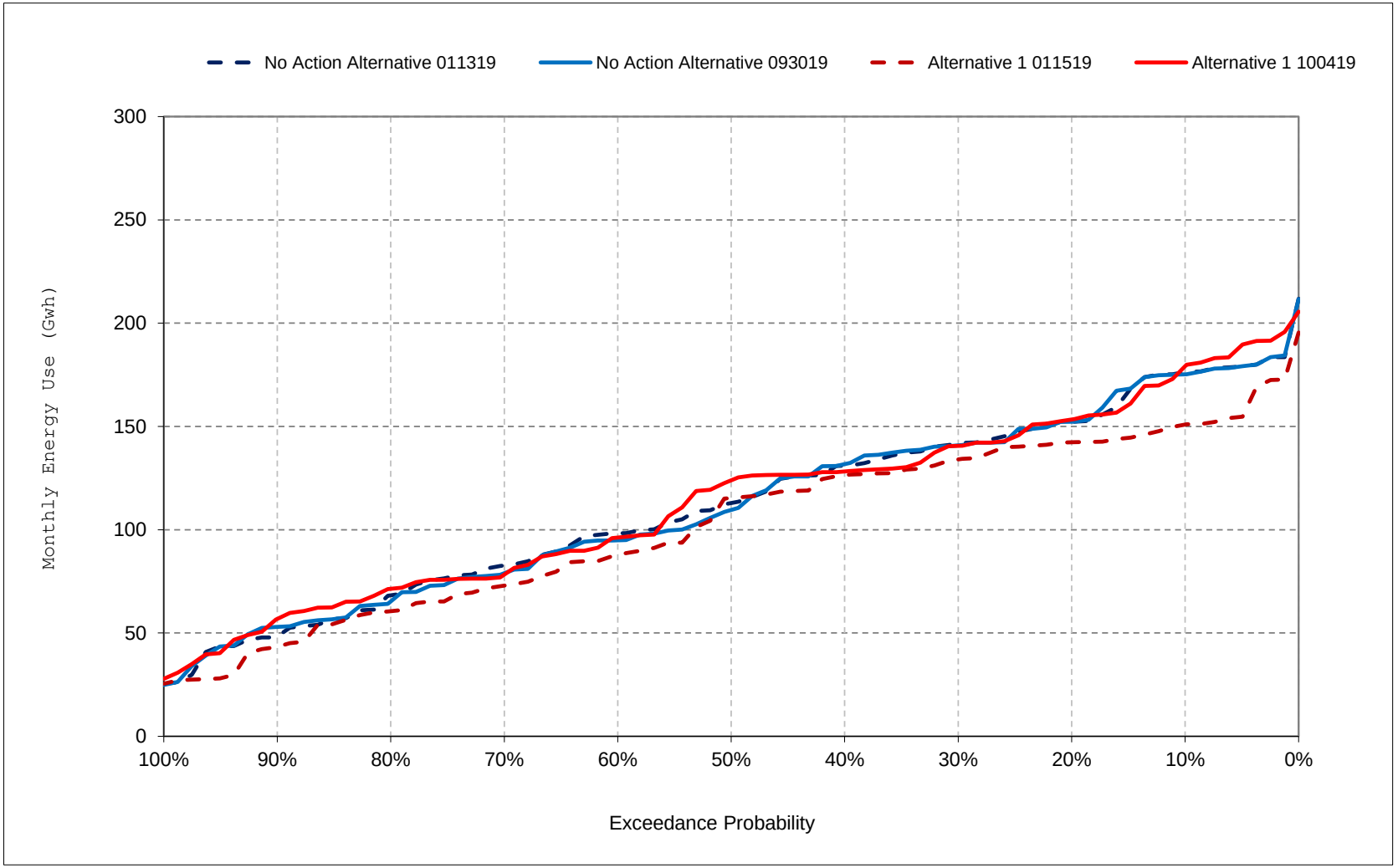
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-7. CVP Total Energy Use, October**



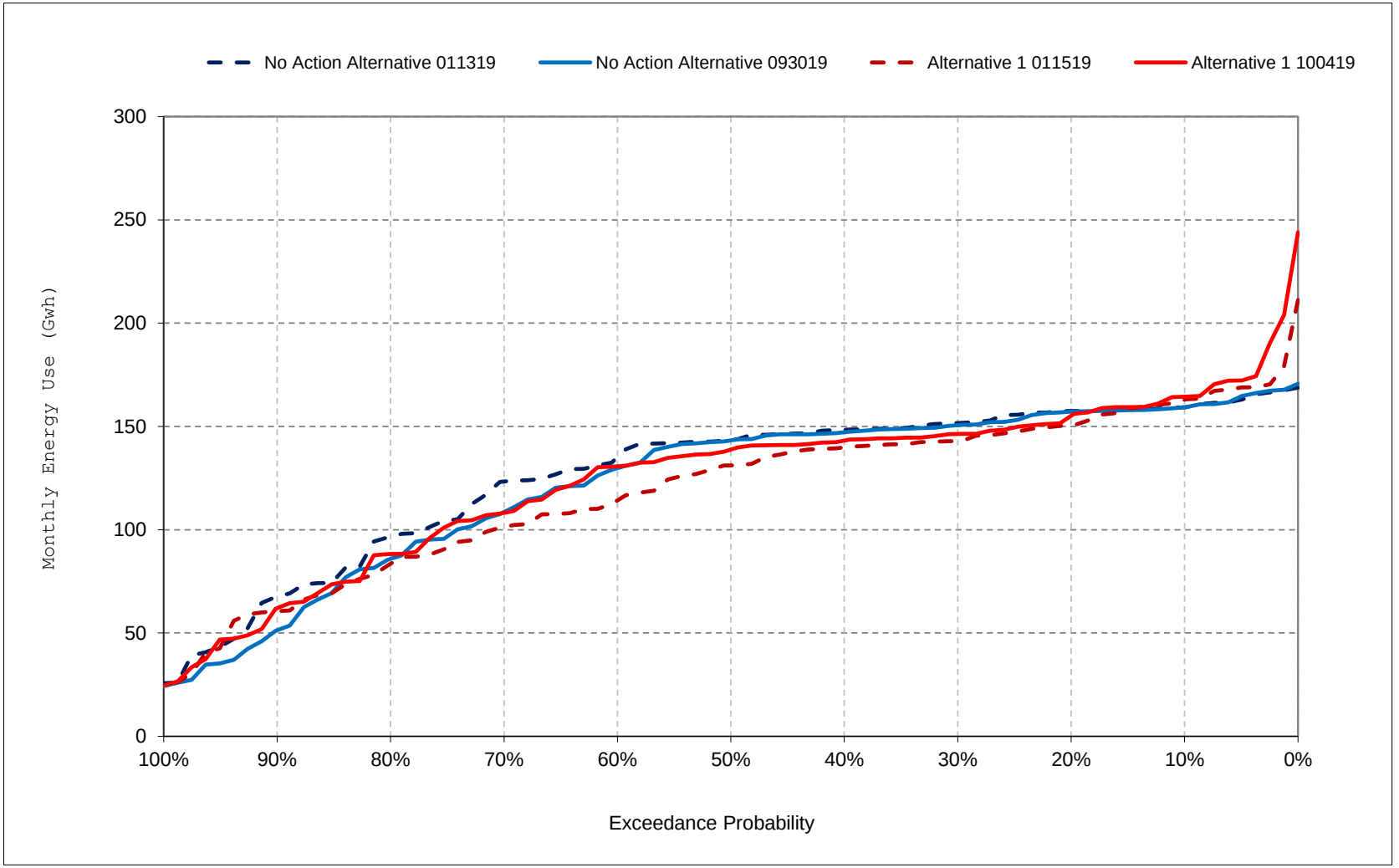

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-8. CVP Total Energy Use, November**



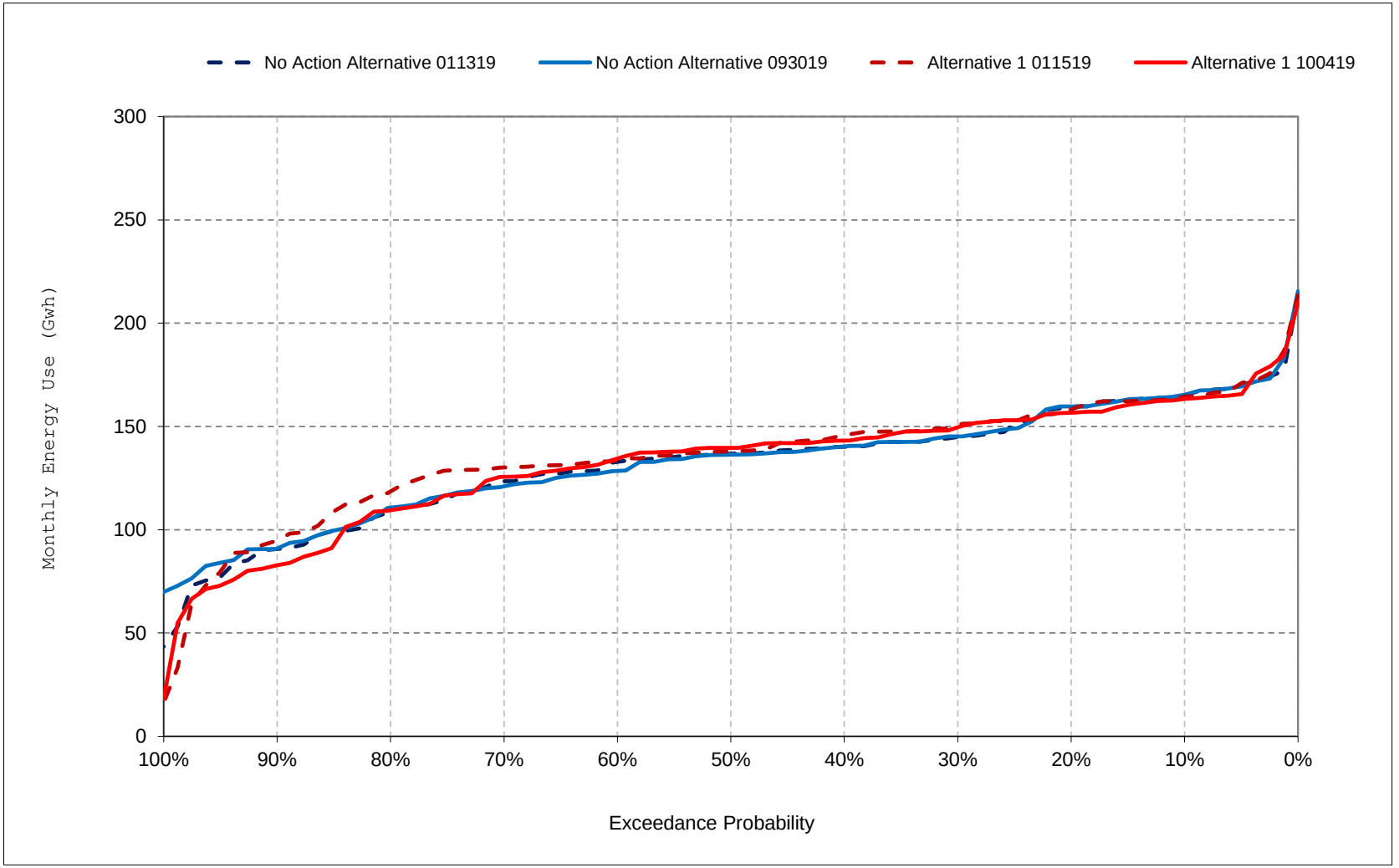

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-9. CVP Total Energy Use, December**



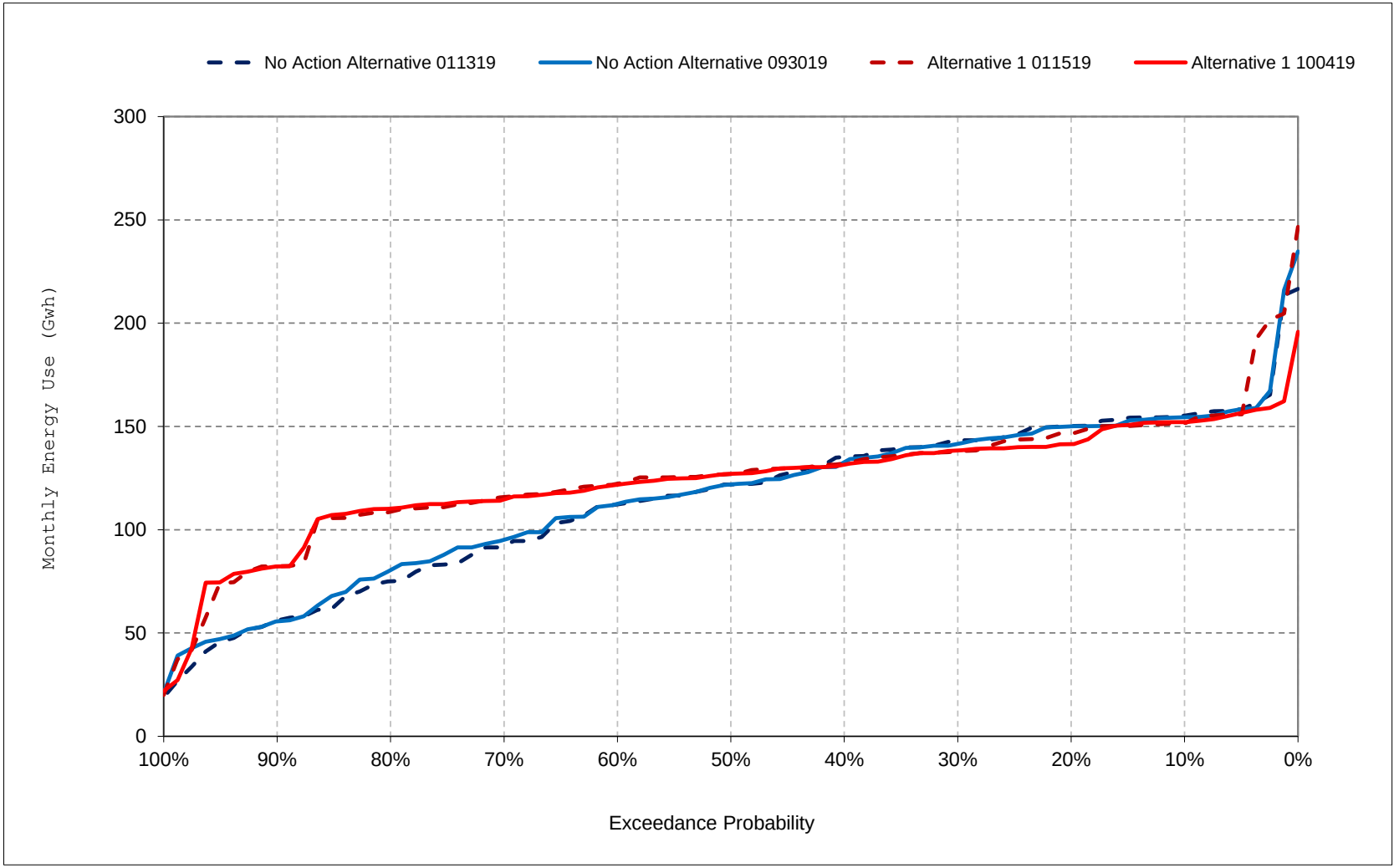

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-10. CVP Total Energy Use, January**



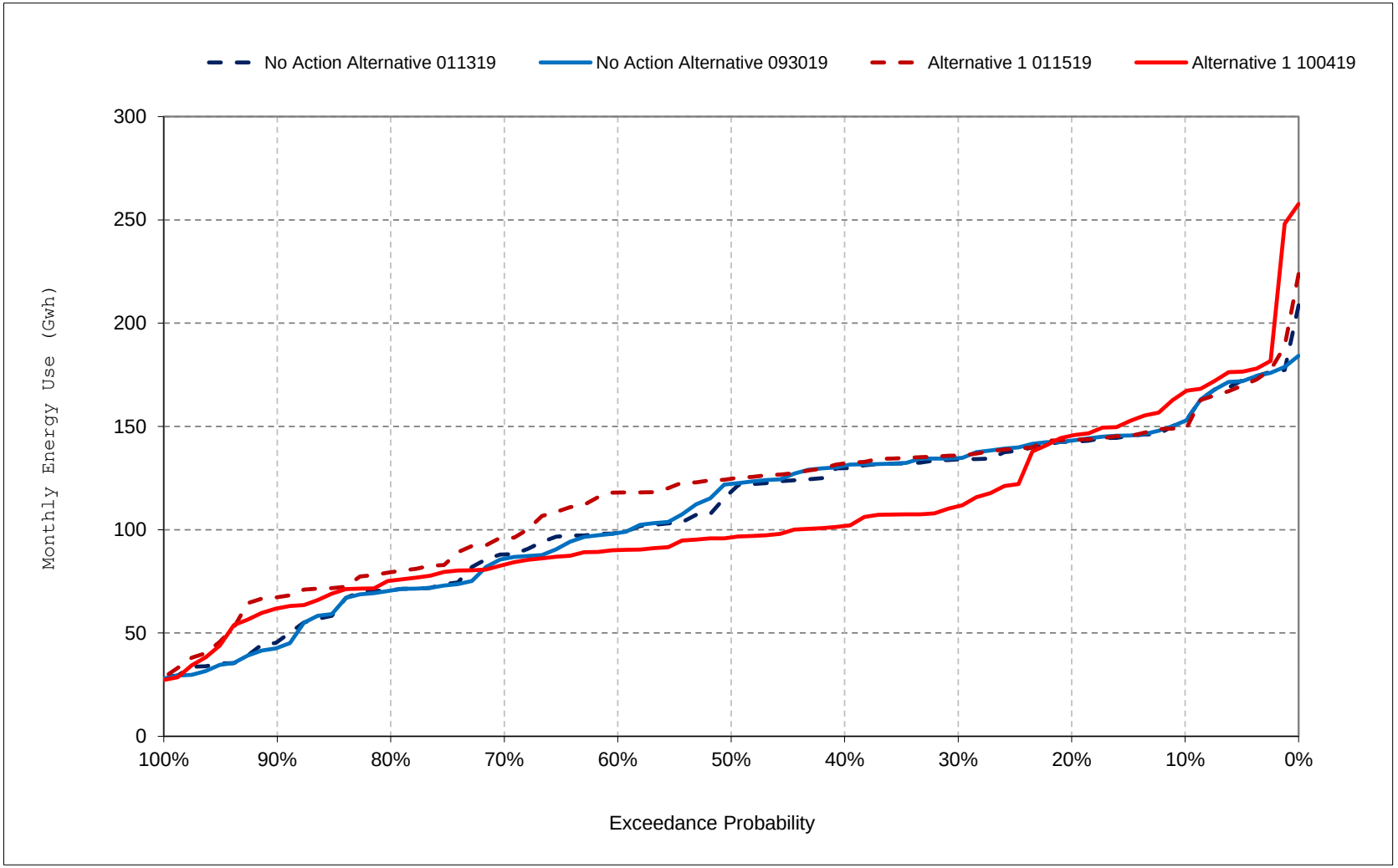

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-11. CVP Total Energy Use, February**



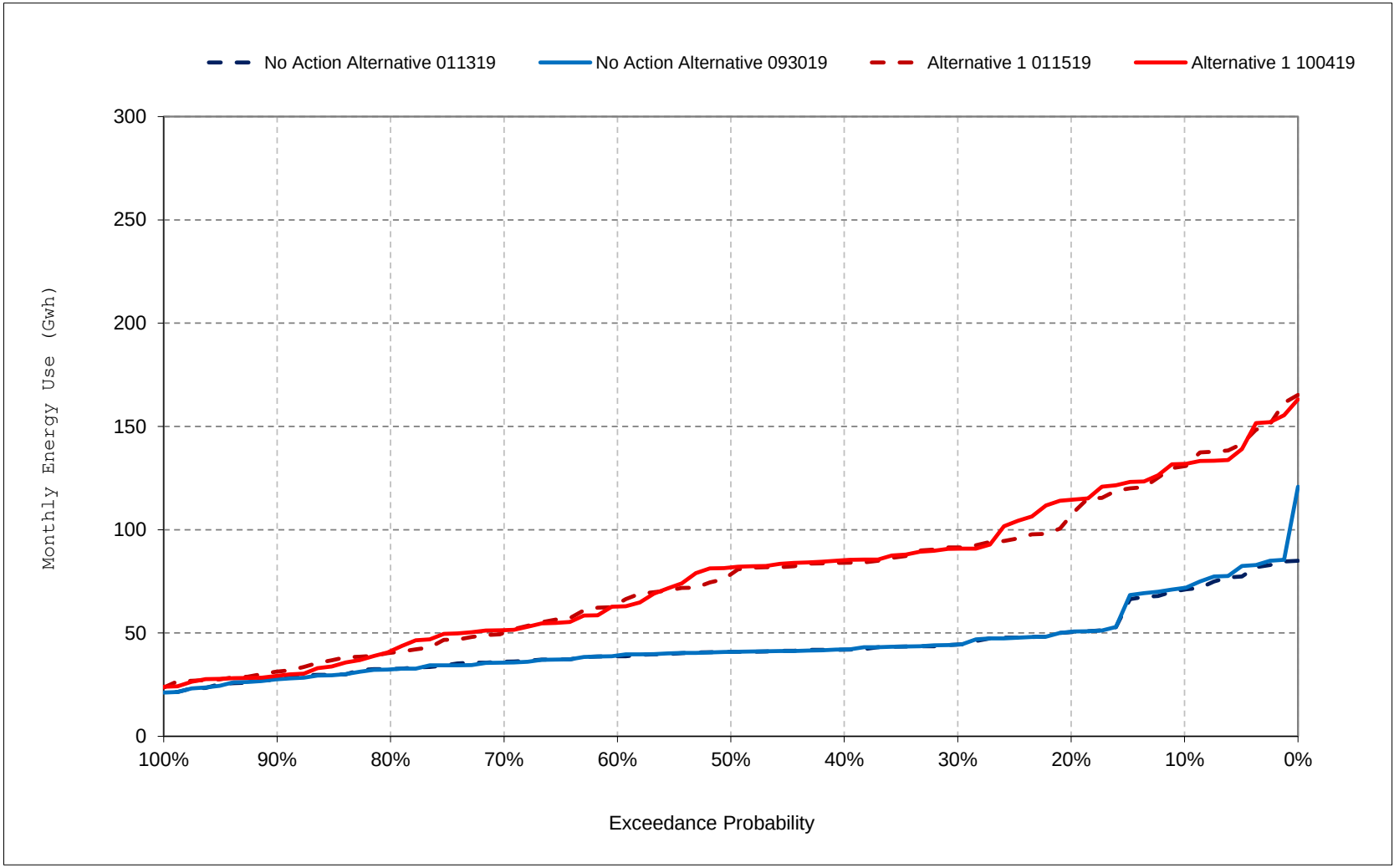

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-12. CVP Total Energy Use, March**



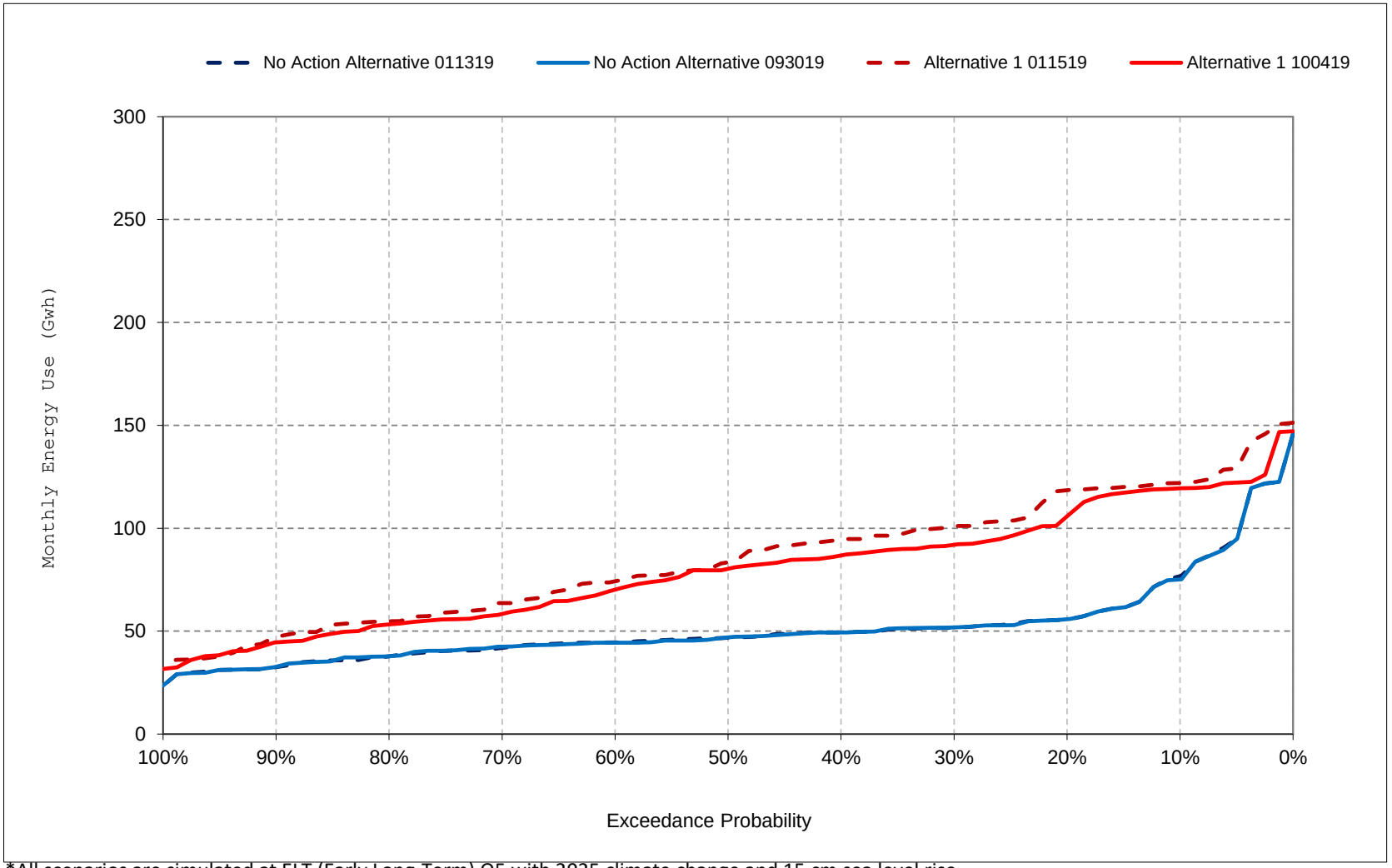

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-13. CVP Total Energy Use, April**



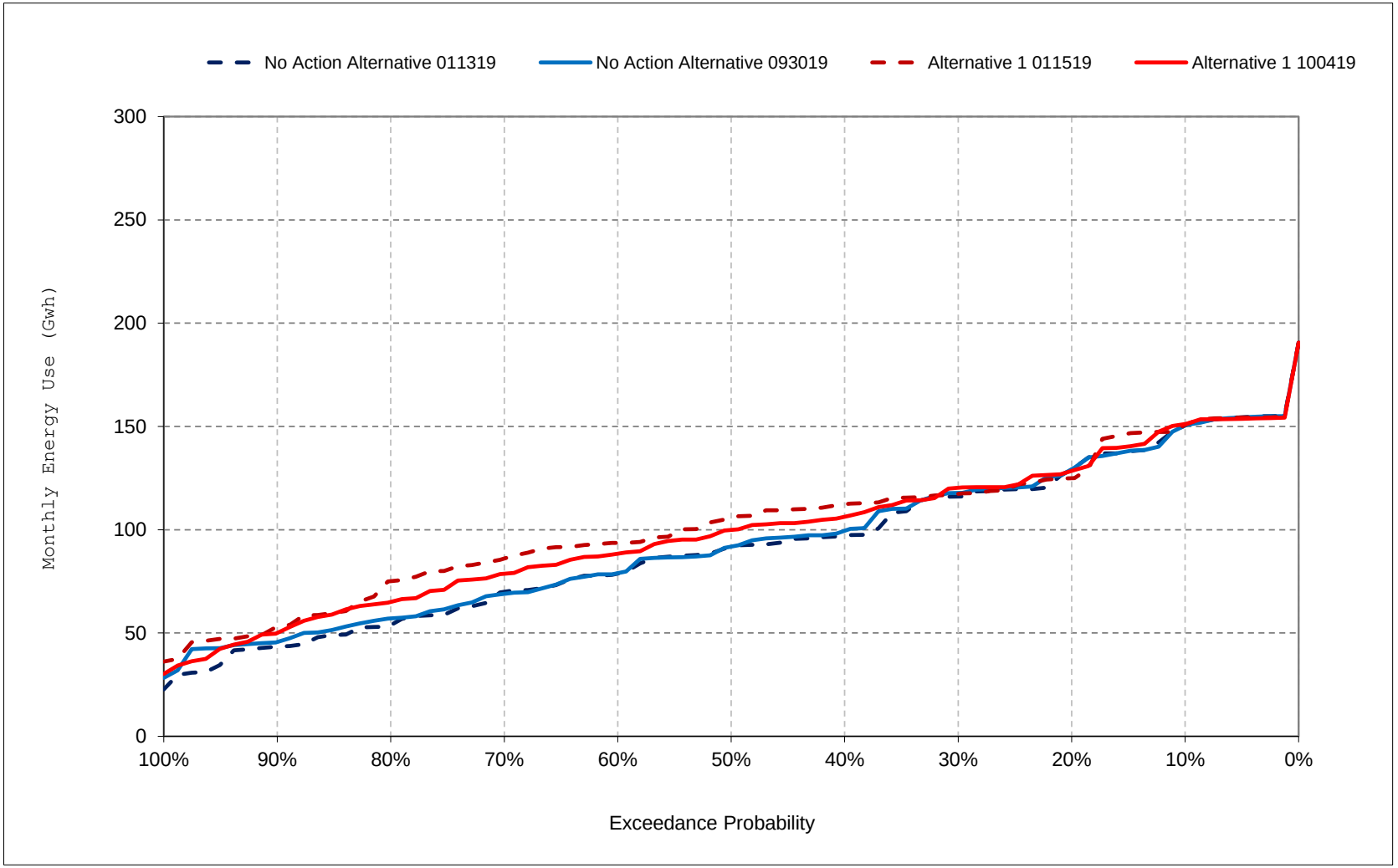

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-14. CVP Total Energy Use, May**



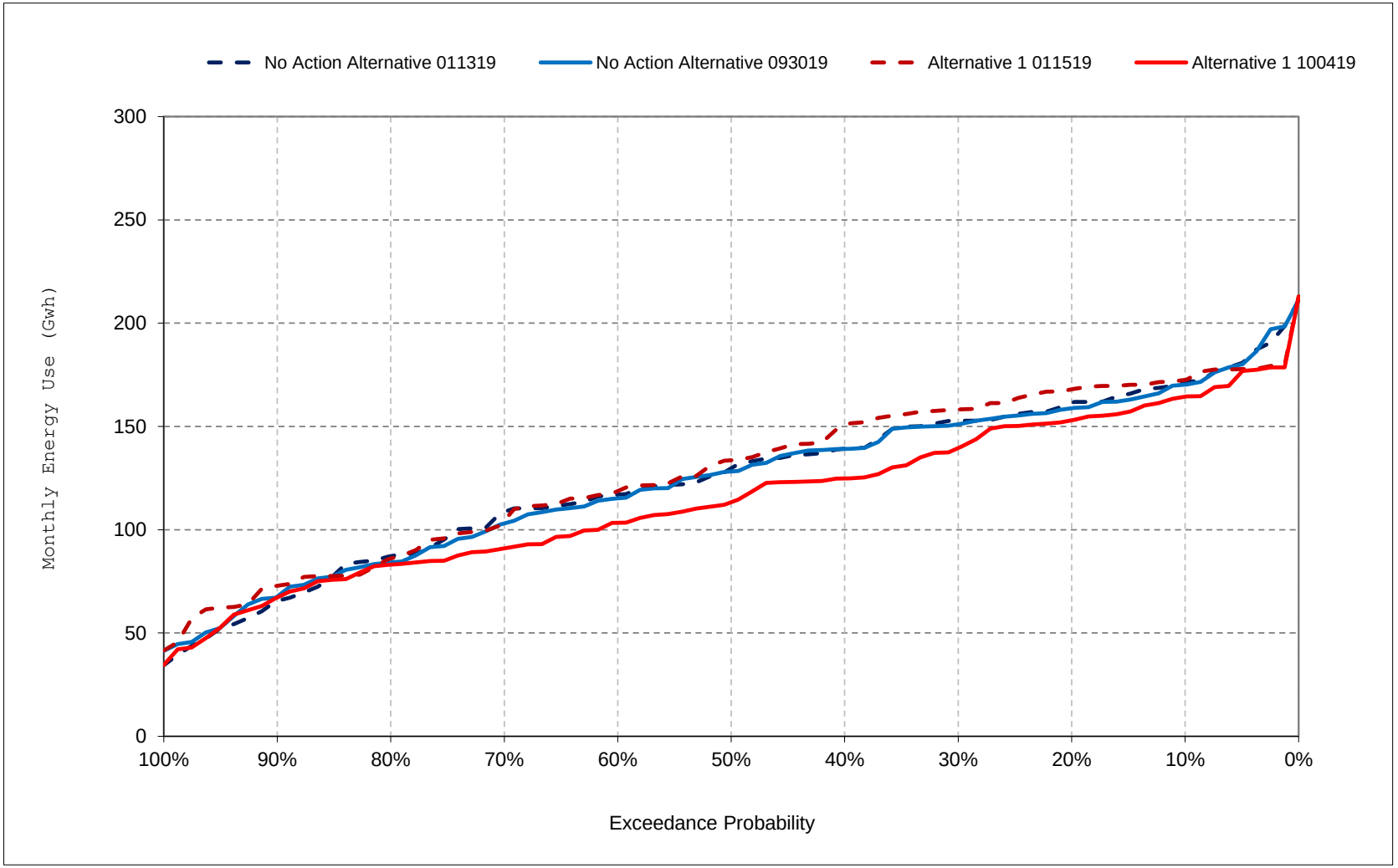

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-15. CVP Total Energy Use, June**



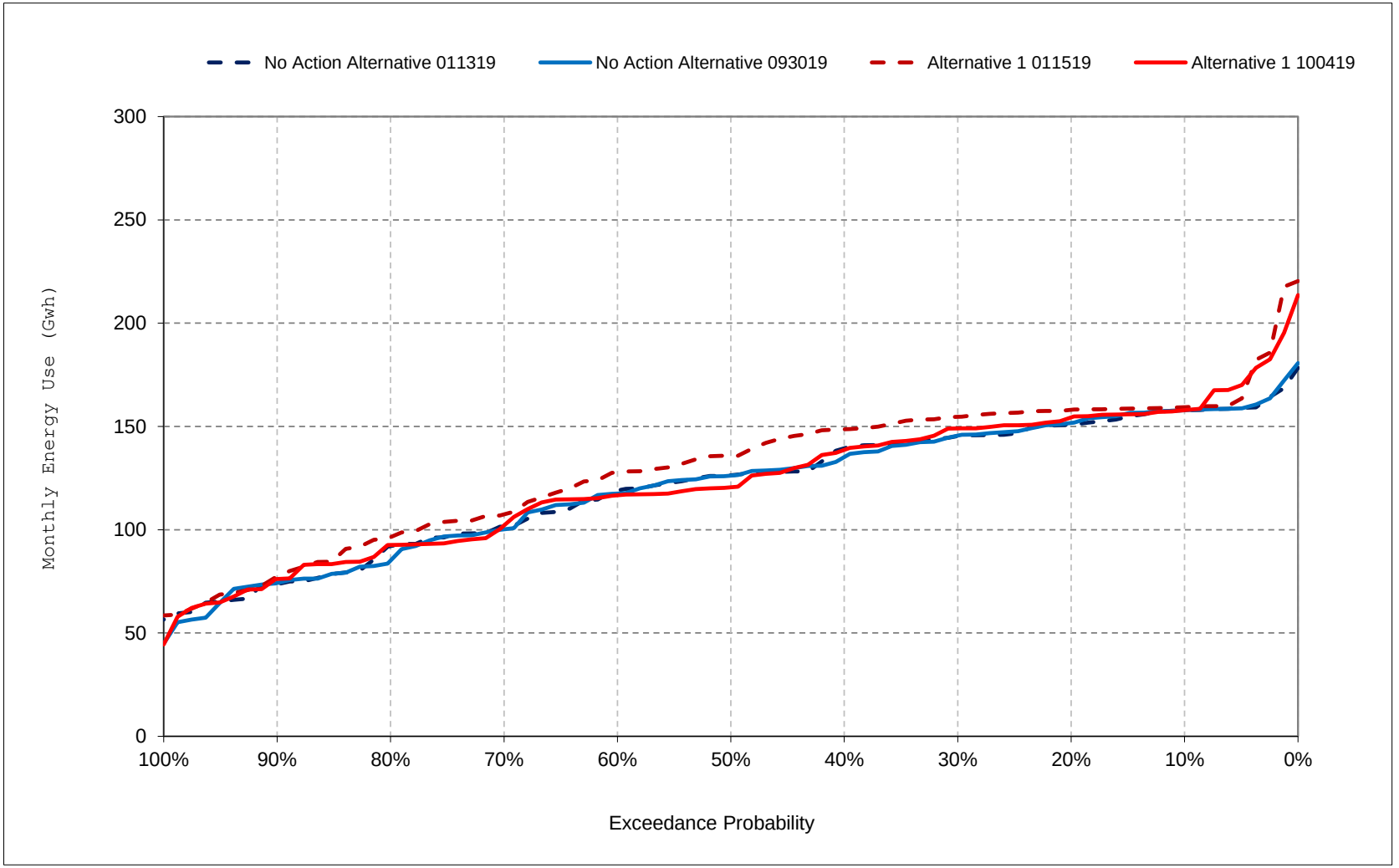

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-16. CVP Total Energy Use, July**



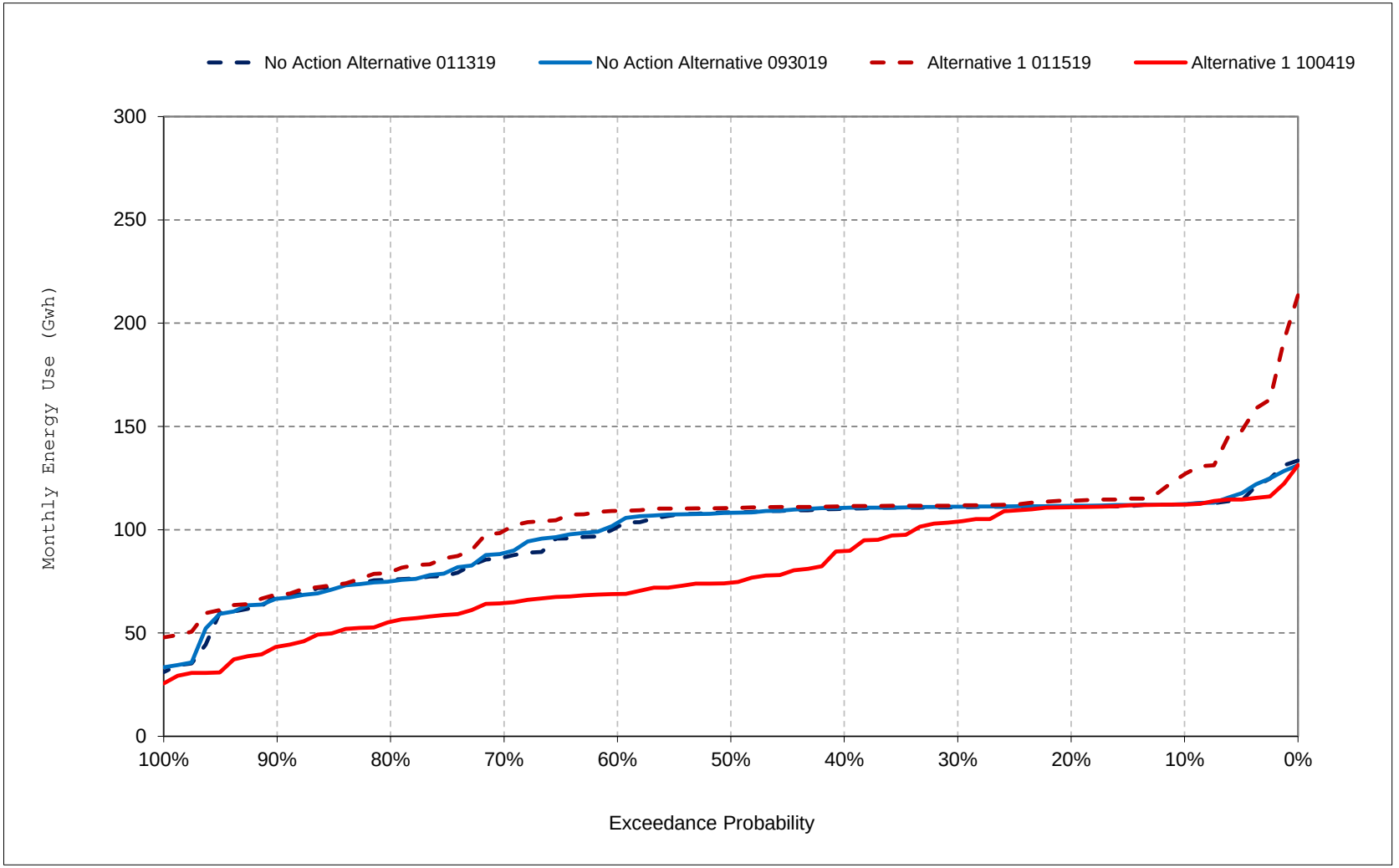

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-17. CVP Total Energy Use, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30-18. CVP Total Energy Use, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 31-1. CVP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 324 | 294 | 501 | 553 | 535 | 552 | 442 | 584 | 504 | 654 | 449 | 545 |
| 20% | 289 | 227 | 210 | 424 | 474 | 416 | 287 | 511 | 453 | 617 | 416 | 498 |
| 30% | 248 | 192 | 94 | 221 | 348 | 301 | 257 | 482 | 420 | 584 | 394 | 416 |
| 40% | 225 | 163 | 66 | 100 | 153 | 151 | 239 | 440 | 408 | 541 | 372 | 350 |
| 50% | 207 | 140 | 55 | 61 | 73 | 116 | 229 | 421 | 391 | 500 | 354 | 249 |
| 60% | 178 | 105 | 34 | 48 | 57 | 88 | 215 | 407 | 367 | 472 | 338 | 184 |
| 70% | 144 | 79 | 17 | 18 | 43 | 70 | 201 | 380 | 350 | 420 | 323 | 170 |
| 80% | 113 | 59 | 1 | 6 | 27 | 52 | 175 | 311 | 335 | 391 | 305 | 148 |
| 90% | 92 | 36 | -6 | -15 | 7 | 34 | 155 | 256 | 295 | 331 | 245 | 97 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 205 | 154 | 131 | 181 | 201 | 220 | 264 | 422 | 397 | 498 | 355 | 299 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 293 | 245 | 178 | 422 | 363 | 427 | 374 | 523 | 403 | 523 | 400 | 514 |
| Above Normal (16%) | 247 | 210 | 105 | 183 | 315 | 257 | 287 | 453 | 409 | 610 | 390 | 349 |
| Below Normal (13%) | 168 | 100 | 125 | 39 | 146 | 84 | 223 | 434 | 443 | 549 | 390 | 202 |
| Dry (24%) | 156 | 102 | 164 | 37 | 45 | 81 | 189 | 366 | 421 | 471 | 327 | 164 |
| Critical (15%) | 82 | 32 | 12 | 24 | 37 | 87 | 166 | 251 | 290 | 319 | 232 | 94 |

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 312 | 209 | 510 | 551 | 568 | 582 | 399 | 524 | 509 | 656 | 447 | 362 |
| 20% | 293 | 137 | 326 | 466 | 498 | 495 | 257 | 481 | 478 | 627 | 420 | 247 |
| 30% | 207 | 122 | 130 | 329 | 356 | 271 | 225 | 440 | 448 | 603 | 395 | 232 |
| 40% | 177 | 104 | 87 | 137 | 150 | 153 | 191 | 418 | 427 | 550 | 376 | 214 |
| 50% | 160 | 94 | 70 | 84 | 74 | 125 | 178 | 385 | 405 | 504 | 362 | 197 |
| 60% | 140 | 82 | 58 | 45 | 49 | 104 | 167 | 358 | 386 | 483 | 349 | 184 |
| 70% | 127 | 64 | 45 | 9 | 25 | 70 | 153 | 331 | 366 | 456 | 334 | 170 |
| 80% | 109 | 61 | 27 | 1 | 8 | 48 | 146 | 300 | 352 | 404 | 304 | 143 |
| 90% | 92 | 36 | 12 | -8 | -6 | 27 | 138 | 256 | 316 | 349 | 254 | 108 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 115 | 163 | 201 | 208 | 231 | 225 | 390 | 415 | 513 | 361 | 212 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 266 | 143 | 228 | 447 | 390 | 435 | 309 | 460 | 424 | 530 | 403 | 302 |
| Above Normal (16%) | 184 | 130 | 175 | 229 | 343 | 294 | 217 | 402 | 439 | 612 | 396 | 215 |
| Below Normal (13%) | 165 | 111 | 132 | 76 | 178 | 122 | 196 | 414 | 467 | 560 | 396 | 187 |
| Dry (24%) | 150 | 112 | 173 | 37 | 20 | 77 | 168 | 355 | 423 | 491 | 334 | 165 |
| Critical (15%) | 83 | 48 | 19 | 28 | 8 | 75 | 175 | 258 | 308 | 360 | 242 | 113 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -12 | -84 | 9 | -2 | 34 | 30 | -43 | -61 | 6 | 2 | -2 | -183 |
| 20% | 4 | -90 | 116 | 43 | 24 | 79 | -31 | -30 | 25 | 10 | 3 | -251 |
| 30% | -41 | -70 | 37 | 108 | 8 | -30 | -32 | -41 | 28 | 19 | 0 | -184 |
| 40% | -48 | -59 | 21 | 37 | -3 | 3 | -48 | -22 | 20 | 10 | 3 | -136 |
| 50% | -46 | -47 | 15 | 23 | 1 | 9 | -50 | -36 | 15 | 4 | 8 | -52 |
| 60% | -38 | -23 | 23 | -3 | -8 | 16 | -49 | -49 | 19 | 11 | 11 | 0 |
| 70% | -17 | -15 | 27 | -9 | -19 | 0 | -49 | -49 | 16 | 36 | 11 | -1 |
| 80% | -5 | 2 | 26 | -5 | -18 | -4 | -29 | -10 | 17 | 13 | -1 | -5 |
| 90% | 0 | 0 | 18 | 7 | -13 | -7 | -16 | 0 | 20 | 18 | 10 | 10 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -21 | -38 | 31 | 21 | 7 | 11 | -39 | -32 | 18 | 15 | 6 | -87 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -28 | -102 | 51 | 24 | 27 | 8 | -65 | -63 | 22 | 7 | 3 | -212 |
| Above Normal (16%) | -63 | -80 | 70 | 46 | 28 | 37 | -69 | -52 | 30 | 3 | 6 | -134 |
| Below Normal (13%) | -3 | 11 | 7 | 37 | 32 | 38 | -27 | -19 | 24 | 12 | 7 | -14 |
| Dry (24%) | -6 | 11 | 9 | 0 | -25 | -4 | -20 | -11 | 2 | 20 | 7 | 1 |
| Critical (15%) | 1 | 17 | 7 | 4 | -29 | -12 | 8 | 7 | 18 | 41 | 10 | 20 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 31-2. CVP Net Generation, Monthly Generation

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 340 | 301 | 499 | 553 | 532 | 554 | 442 | 584 | 506 | 659 | 451 | 544 |
| 20% | 290 | 226 | 201 | 423 | 475 | 413 | 287 | 511 | 453 | 628 | 423 | 498 |
| 30% | 253 | 195 | 108 | 221 | 342 | 269 | 256 | 478 | 419 | 589 | 395 | 394 |
| 40% | 231 | 170 | 75 | 99 | 153 | 155 | 239 | 440 | 407 | 524 | 368 | 347 |
| 50% | 216 | 134 | 60 | 69 | 73 | 110 | 228 | 424 | 387 | 495 | 348 | 251 |
| 60% | 176 | 109 | 38 | 38 | 56 | 90 | 215 | 407 | 368 | 467 | 338 | 185 |
| 70% | 149 | 88 | 23 | 12 | 39 | 71 | 202 | 382 | 352 | 422 | 320 | 171 |
| 80% | 121 | 64 | 4 | 6 | 22 | 55 | 174 | 318 | 330 | 386 | 301 | 145 |
| 90% | 89 | 33 | -3 | -10 | 7 | 35 | 157 | 252 | 296 | 322 | 238 | 93 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 207 | 156 | 135 | 179 | 199 | 219 | 264 | 422 | 396 | 497 | 352 | 297 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 294 | 246 | 178 | 421 | 360 | 426 | 374 | 523 | 403 | 525 | 401 | 514 |
| Above Normal (16%) | 261 | 215 | 100 | 178 | 317 | 250 | 286 | 453 | 410 | 610 | 396 | 343 |
| Below Normal (13%) | 172 | 107 | 131 | 35 | 144 | 79 | 221 | 434 | 441 | 554 | 389 | 201 |
| Dry (24%) | 157 | 101 | 169 | 34 | 43 | 82 | 186 | 365 | 419 | 463 | 318 | 163 |
| Critical (15%) | 78 | 32 | 26 | 31 | 31 | 90 | 172 | 253 | 288 | 320 | 224 | 91 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 319 | 215 | 512 | 553 | 576 | 603 | 396 | 506 | 520 | 666 | 449 | 393 |
| 20% | 292 | 142 | 280 | 468 | 514 | 477 | 243 | 454 | 483 | 635 | 428 | 351 |
| 30% | 248 | 117 | 121 | 305 | 320 | 304 | 224 | 435 | 448 | 611 | 407 | 331 |
| 40% | 228 | 109 | 84 | 189 | 158 | 172 | 201 | 409 | 417 | 548 | 392 | 270 |
| 50% | 206 | 98 | 65 | 84 | 74 | 131 | 183 | 389 | 400 | 500 | 370 | 208 |
| 60% | 182 | 92 | 47 | 53 | 40 | 96 | 171 | 355 | 383 | 482 | 352 | 185 |
| 70% | 147 | 76 | 31 | 27 | 25 | 78 | 162 | 337 | 372 | 428 | 333 | 167 |
| 80% | 124 | 66 | 18 | 3 | 9 | 56 | 149 | 299 | 351 | 404 | 311 | 148 |
| 90% | 93 | 54 | 6 | -13 | 0 | 42 | 127 | 258 | 307 | 335 | 240 | 93 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 204 | 119 | 155 | 206 | 209 | 239 | 227 | 387 | 413 | 509 | 366 | 242 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 281 | 142 | 214 | 445 | 392 | 433 | 315 | 457 | 424 | 536 | 415 | 348 |
| Above Normal (16%) | 249 | 131 | 137 | 215 | 341 | 312 | 220 | 400 | 441 | 622 | 422 | 337 |
| Below Normal (13%) | 173 | 124 | 141 | 82 | 173 | 138 | 194 | 407 | 465 | 577 | 392 | 181 |
| Dry (24%) | 159 | 117 | 173 | 42 | 23 | 96 | 166 | 354 | 423 | 468 | 332 | 163 |
| Critical (15%) | 91 | 55 | 31 | 66 | 10 | 73 | 174 | 256 | 296 | 336 | 233 | 98 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | -21 | -86 | 13 | 0 | 44 | 49 | -47 | -78 | 14 | 7 | -1 | -151 |
| 20% | 3 | -84 | 79 | 45 | 39 | 63 | -44 | -57 | 29 | 7 | 5 | -148 |
| 30% | -4 | -78 | 13 | 84 | -22 | 35 | -33 | -42 | 29 | 22 | 12 | -63 |
| 40% | -3 | -61 | 9 | 90 | 5 | 17 | -38 | -30 | 11 | 23 | 24 | -77 |
| 50% | -9 | -37 | 6 | 16 | 1 | 20 | -44 | -34 | 13 | 6 | 23 | -44 |
| 60% | 6 | -17 | 9 | 15 | -16 | 6 | -44 | -52 | 15 | 15 | 14 | -1 |
| 70% | -2 | -12 | 8 | 15 | -13 | 7 | -40 | -45 | 20 | 5 | 13 | -4 |
| 80% | 2 | 2 | 15 | -2 | -13 | 1 | -25 | -19 | 22 | 18 | 10 | 3 |
| 90% | 5 | 21 | 9 | -3 | -7 | 7 | -30 | 6 | 11 | 13 | 3 | 0 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | -3 | -37 | 20 | 27 | 10 | 21 | -37 | -35 | 17 | 12 | 14 | -55 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | -13 | -104 | 36 | 24 | 32 | 7 | -58 | -66 | 21 | 12 | 14 | -165 |
| Above Normal (16%) | -11 | -84 | 37 | 37 | 23 | 62 | -66 | -53 | 31 | 12 | 26 | -5 |
| Below Normal (13%) | 2 | 16 | 10 | 47 | 29 | 59 | -27 | -27 | 24 | 23 | 3 | -20 |
| Dry (24%) | 2 | 16 | 4 | 8 | -20 | 14 | -19 | -11 | 3 | 6 | 14 | 0 |
| Critical (15%) | 13 | 23 | 5 | 35 | -21 | -18 | 2 | 3 | 8 | 15 | 9 | 8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 31-3. CVP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 324 | 294 | 501 | 553 | 535 | 552 | 442 | 584 | 504 | 654 | 449 | 545 |
| 20% | 289 | 227 | 210 | 424 | 474 | 416 | 287 | 511 | 453 | 617 | 416 | 498 |
| 30% | 248 | 192 | 94 | 221 | 348 | 301 | 257 | 482 | 420 | 584 | 394 | 416 |
| 40% | 225 | 163 | 66 | 100 | 153 | 151 | 239 | 440 | 408 | 541 | 372 | 350 |
| 50% | 207 | 140 | 55 | 61 | 73 | 116 | 229 | 421 | 391 | 500 | 354 | 249 |
| 60% | 178 | 105 | 34 | 48 | 57 | 88 | 215 | 407 | 367 | 472 | 338 | 184 |
| 70% | 144 | 79 | 17 | 18 | 43 | 70 | 201 | 380 | 350 | 420 | 323 | 170 |
| 80% | 113 | 59 | 1 | 6 | 27 | 52 | 175 | 311 | 335 | 391 | 305 | 148 |
| 90% | 92 | 36 | -6 | -15 | 7 | 34 | 155 | 256 | 295 | 331 | 245 | 97 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 205 | 154 | 131 | 181 | 201 | 220 | 264 | 422 | 397 | 498 | 355 | 299 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 293 | 245 | 178 | 422 | 363 | 427 | 374 | 523 | 403 | 523 | 400 | 514 |
| Above Normal (16%) | 247 | 210 | 105 | 183 | 315 | 257 | 287 | 453 | 409 | 610 | 390 | 349 |
| Below Normal (13%) | 168 | 100 | 125 | 39 | 146 | 84 | 223 | 434 | 443 | 549 | 390 | 202 |
| Dry (24%) | 156 | 102 | 164 | 37 | 45 | 81 | 189 | 366 | 421 | 471 | 327 | 164 |
| Critical (15%) | 82 | 32 | 12 | 24 | 37 | 87 | 166 | 251 | 290 | 319 | 232 | 94 |

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 340 | 301 | 499 | 553 | 532 | 554 | 442 | 584 | 506 | 659 | 451 | 544 |
| 20% | 290 | 226 | 201 | 423 | 475 | 413 | 287 | 511 | 453 | 628 | 423 | 498 |
| 30% | 253 | 195 | 108 | 221 | 342 | 269 | 256 | 478 | 419 | 589 | 395 | 394 |
| 40% | 231 | 170 | 75 | 99 | 153 | 155 | 239 | 440 | 407 | 524 | 368 | 347 |
| 50% | 216 | 134 | 60 | 69 | 73 | 110 | 228 | 424 | 387 | 495 | 348 | 251 |
| 60% | 176 | 109 | 38 | 38 | 56 | 90 | 215 | 407 | 368 | 467 | 338 | 185 |
| 70% | 149 | 88 | 23 | 12 | 39 | 71 | 202 | 382 | 352 | 422 | 320 | 171 |
| 80% | 121 | 64 | 4 | 6 | 22 | 55 | 174 | 318 | 330 | 386 | 301 | 145 |
| 90% | 89 | 33 | -3 | -10 | 7 | 35 | 157 | 252 | 296 | 322 | 238 | 93 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 207 | 156 | 135 | 179 | 199 | 219 | 264 | 422 | 396 | 497 | 352 | 297 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 294 | 246 | 178 | 421 | 360 | 426 | 374 | 523 | 403 | 525 | 401 | 514 |
| Above Normal (16%) | 261 | 215 | 100 | 178 | 317 | 250 | 286 | 453 | 410 | 610 | 396 | 343 |
| Below Normal (13%) | 172 | 107 | 131 | 35 | 144 | 79 | 221 | 434 | 441 | 554 | 389 | 201 |
| Dry (24%) | 157 | 101 | 169 | 34 | 43 | 82 | 186 | 365 | 419 | 463 | 318 | 163 |
| Critical (15%) | 78 | 32 | 26 | 31 | 31 | 90 | 172 | 253 | 288 | 320 | 224 | 91 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 16 | 7 | -2 | 0 | -3 | 1 | 0 | 0 | 2 | 5 | 2 | -1 |
| 20% | 1 | -1 | -8 | 0 | 2 | -2 | 0 | 0 | 1 | 11 | 6 | 0 |
| 30% | 5 | 3 | 14 | 0 | -6 | -33 | -1 | -4 | -1 | 4 | 1 | -22 |
| 40% | 6 | 7 | 9 | -1 | 0 | 5 | 0 | 0 | -1 | -17 | -5 | -3 |
| 50% | 9 | -6 | 5 | 8 | 0 | -6 | -1 | 3 | -4 | -5 | -7 | 2 |
| 60% | -2 | 4 | 4 | -10 | -1 | 2 | 0 | 0 | 1 | -5 | -1 | 1 |
| 70% | 6 | 9 | 5 | -6 | -5 | 1 | 1 | 1 | 2 | 3 | -3 | 0 |
| 80% | 8 | 5 | 3 | 0 | -5 | 3 | -1 | 7 | -5 | -5 | -5 | -4 |
| 90% | -4 | -3 | 2 | 5 | 0 | 1 | 3 | -4 | 0 | -9 | -7 | -4 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 3 | 2 | 3 | -1 | -2 | -1 | 0 | 0 | -1 | -1 | -2 | -2 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 1 | 1 | 0 | -1 | -3 | -1 | 0 | 0 | 1 | 1 | 1 | -1 |
| Above Normal (16%) | 14 | 4 | -5 | -5 | 2 | -7 | 0 | 0 | 2 | 0 | 6 | -6 |
| Below Normal (13%) | 4 | 7 | 6 | -4 | -3 | -5 | -2 | 0 | -2 | 5 | -1 | -1 |
| Dry (24%) | 1 | -1 | 5 | -3 | -2 | 1 | -3 | -1 | -2 | -8 | -9 | -1 |
| Critical (15%) | -5 | 0 | 14 | 6 | -6 | 3 | 5 | 2 | -2 | 2 | -8 | -3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 31-4. CVP Net Generation, Monthly Generation

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 312 | 209 | 510 | 551 | 568 | 582 | 399 | 524 | 509 | 656 | 447 | 362 |
| 20% | 293 | 137 | 326 | 466 | 498 | 495 | 257 | 481 | 478 | 627 | 420 | 247 |
| 30% | 207 | 122 | 130 | 329 | 356 | 271 | 225 | 440 | 448 | 603 | 395 | 232 |
| 40% | 177 | 104 | 87 | 137 | 150 | 153 | 191 | 418 | 427 | 550 | 376 | 214 |
| 50% | 160 | 94 | 70 | 84 | 74 | 125 | 178 | 385 | 405 | 504 | 362 | 197 |
| 60% | 140 | 82 | 58 | 45 | 49 | 104 | 167 | 358 | 386 | 483 | 349 | 184 |
| 70% | 127 | 64 | 45 | 9 | 25 | 70 | 153 | 331 | 366 | 456 | 334 | 170 |
| 80% | 109 | 61 | 27 | 1 | 8 | 48 | 146 | 300 | 352 | 404 | 304 | 143 |
| 90% | 92 | 36 | 12 | -8 | -6 | 27 | 138 | 256 | 316 | 349 | 254 | 108 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 184 | 115 | 163 | 201 | 208 | 231 | 225 | 390 | 415 | 513 | 361 | 212 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 266 | 143 | 228 | 447 | 390 | 435 | 309 | 460 | 424 | 530 | 403 | 302 |
| Above Normal (16%) | 184 | 130 | 175 | 229 | 343 | 294 | 217 | 402 | 439 | 612 | 396 | 215 |
| Below Normal (13%) | 165 | 111 | 132 | 76 | 178 | 122 | 196 | 414 | 467 | 560 | 396 | 187 |
| Dry (24%) | 150 | 112 | 173 | 37 | 20 | 77 | 168 | 355 | 423 | 491 | 334 | 165 |
| Critical (15%) | 83 | 48 | 19 | 28 | 8 | 75 | 175 | 258 | 308 | 360 | 242 | 113 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 319 | 215 | 512 | 553 | 576 | 603 | 396 | 506 | 520 | 666 | 449 | 393 |
| 20% | 292 | 142 | 280 | 468 | 514 | 477 | 243 | 454 | 483 | 635 | 428 | 351 |
| 30% | 248 | 117 | 121 | 305 | 320 | 304 | 224 | 435 | 448 | 611 | 407 | 331 |
| 40% | 228 | 109 | 84 | 189 | 158 | 172 | 201 | 409 | 417 | 548 | 392 | 270 |
| 50% | 206 | 98 | 65 | 84 | 74 | 131 | 183 | 389 | 400 | 500 | 370 | 208 |
| 60% | 182 | 92 | 47 | 53 | 40 | 96 | 171 | 355 | 383 | 482 | 352 | 185 |
| 70% | 147 | 76 | 31 | 27 | 25 | 78 | 162 | 337 | 372 | 428 | 333 | 167 |
| 80% | 124 | 66 | 18 | 3 | 9 | 56 | 149 | 299 | 351 | 404 | 311 | 148 |
| 90% | 93 | 54 | 6 | -13 | 0 | 42 | 127 | 258 | 307 | 335 | 240 | 93 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 204 | 119 | 155 | 206 | 209 | 239 | 227 | 387 | 413 | 509 | 366 | 242 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 281 | 142 | 214 | 445 | 392 | 433 | 315 | 457 | 424 | 536 | 415 | 348 |
| Above Normal (16%) | 249 | 131 | 137 | 215 | 341 | 312 | 220 | 400 | 441 | 622 | 422 | 337 |
| Below Normal (13%) | 173 | 124 | 141 | 82 | 173 | 138 | 194 | 407 | 465 | 577 | 392 | 181 |
| Dry (24%) | 159 | 117 | 173 | 42 | 23 | 96 | 166 | 354 | 423 | 468 | 332 | 163 |
| Critical (15%) | 91 | 55 | 31 | 66 | 10 | 73 | 174 | 256 | 296 | 336 | 233 | 98 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Probability of Exceedance | | | | | | | | | | | | |
| 10% | 7 | 5 | 2 | 2 | 8 | 21 | -3 | -18 | 11 | 11 | 3 | 31 |
| 20% | -1 | 5 | -46 | 2 | 16 | -18 | -14 | -27 | 5 | 8 | 8 | 103 |
| 30% | 42 | -4 | -9 | -24 | -36 | 32 | -1 | -5 | -1 | 8 | 13 | 99 |
| 40% | 51 | 5 | -4 | 52 | 7 | 19 | 10 | -8 | -10 | -3 | 16 | 55 |
| 50% | 46 | 4 | -4 | 1 | 0 | 6 | 5 | 4 | -6 | -4 | 8 | 11 |
| 60% | 42 | 10 | -11 | 8 | -9 | -8 | 4 | -2 | -3 | -1 | 3 | 0 |
| 70% | 20 | 12 | -14 | 18 | 0 | 8 | 10 | 5 | 6 | -28 | -1 | -3 |
| 80% | 15 | 6 | -8 | 2 | 1 | 8 | 3 | -1 | -1 | 0 | 6 | 5 |
| 90% | 1 | 18 | -6 | -5 | 6 | 15 | -11 | 2 | -9 | -13 | -14 | -15 |
| Long Term | | | | | | | | | | | | |
| Full Simulation Period[a] | 20 | 4 | -8 | 5 | 1 | 9 | 1 | -3 | -2 | -3 | 5 | 30 |
| Water Year Types[b,c] | | | | | | | | | | | | |
| Wet (32%) | 15 | -1 | -14 | -2 | 3 | -2 | 6 | -3 | 0 | 7 | 12 | 46 |
| Above Normal (16%) | 65 | 1 | -39 | -15 | -3 | 18 | 3 | -1 | 3 | 9 | 26 | 122 |
| Below Normal (13%) | 8 | 13 | 8 | 6 | -6 | 16 | -2 | -8 | -2 | 16 | -4 | -6 |
| Dry (24%) | 9 | 5 | 0 | 4 | 3 | 20 | -2 | -1 | 0 | -23 | -3 | -2 |
| Critical (15%) | 8 | 7 | 12 | 38 | 2 | -2 | -1 | -2 | -12 | -24 | -9 | -15 |

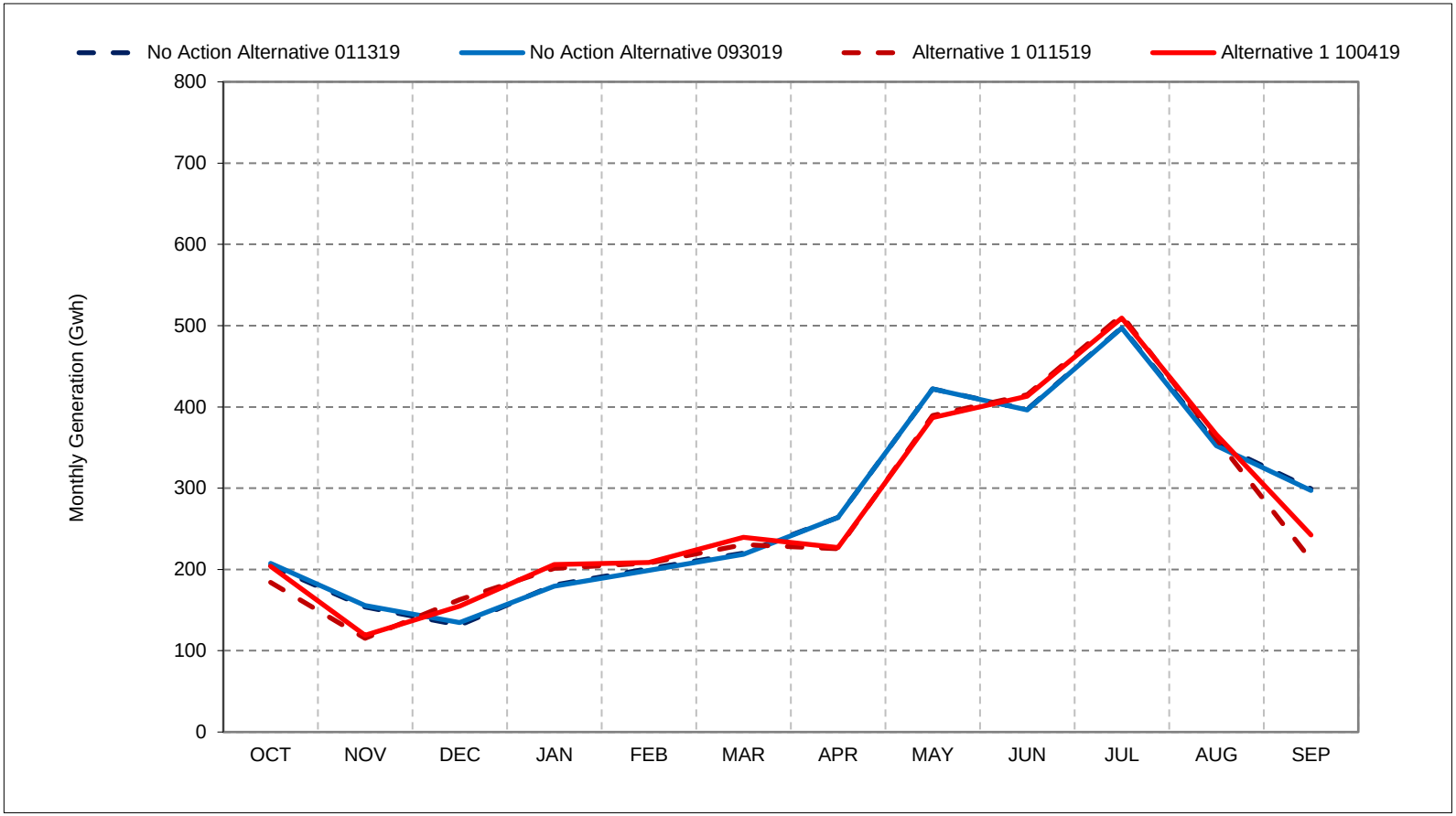
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-1. CVP Net Generation, Long-Term Average Generation

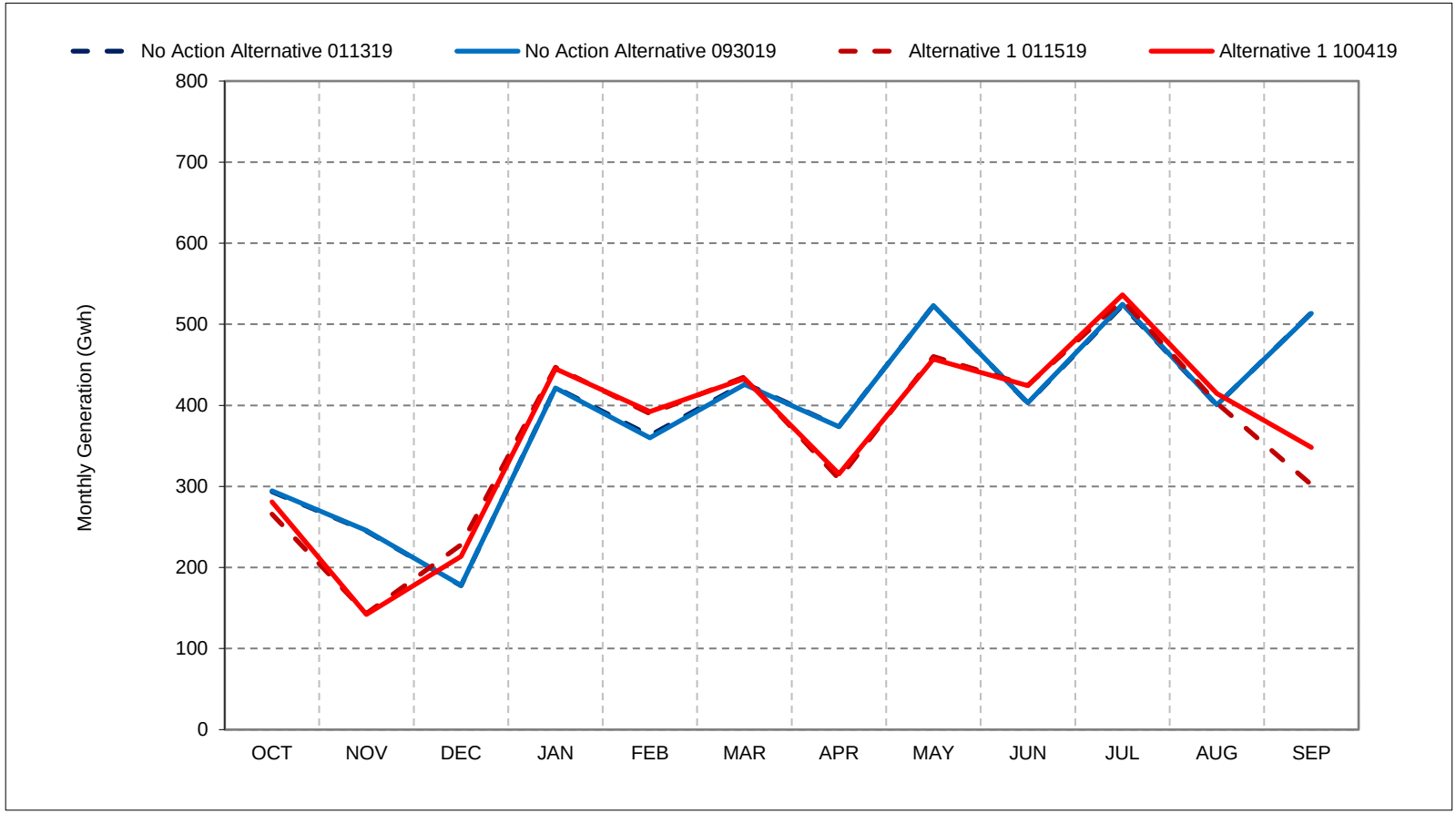



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-2. CVP Net Generation, Wet Year Average Generation

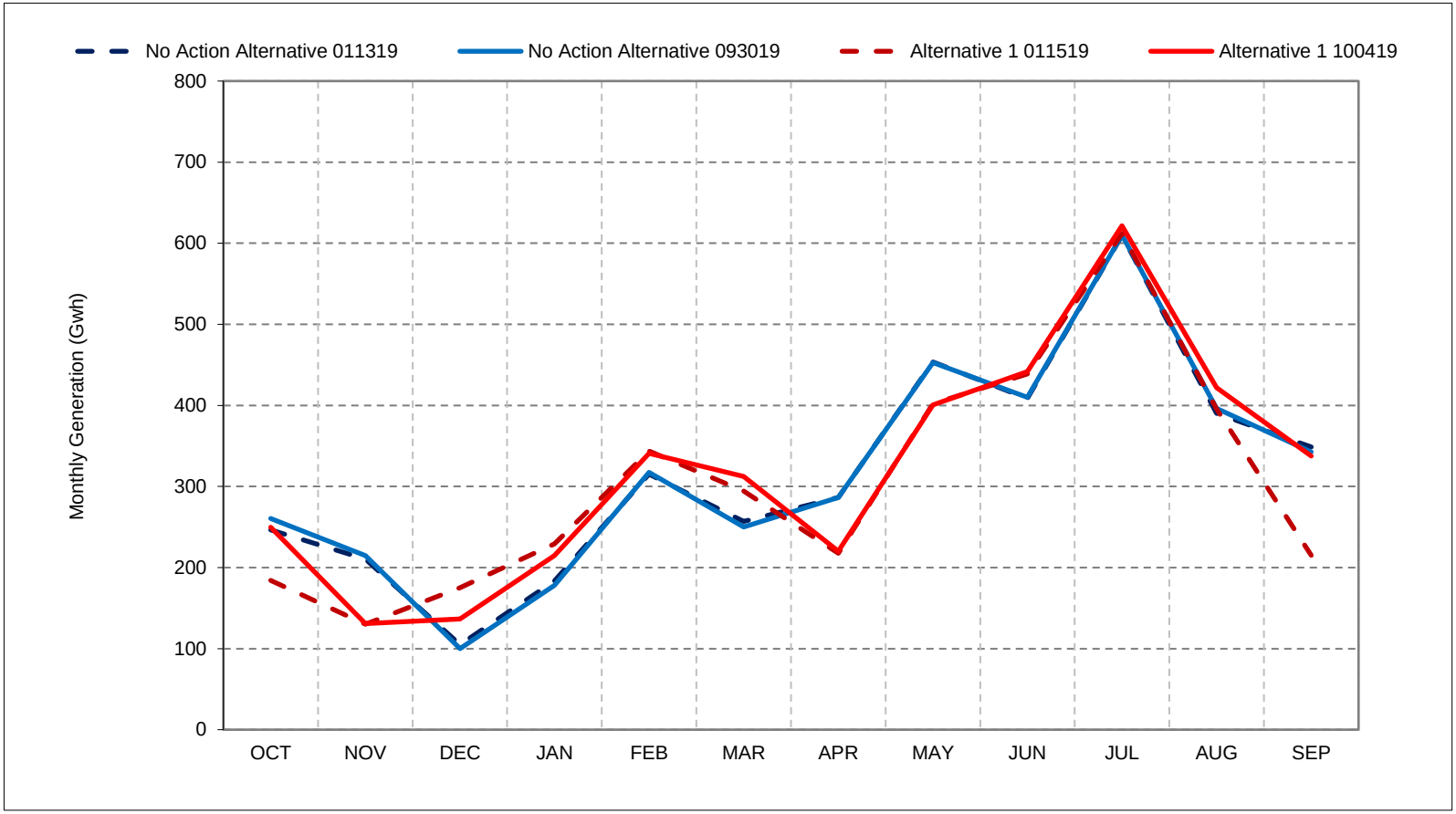



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-3. CVP Net Generation, Above Normal Year Average Generation

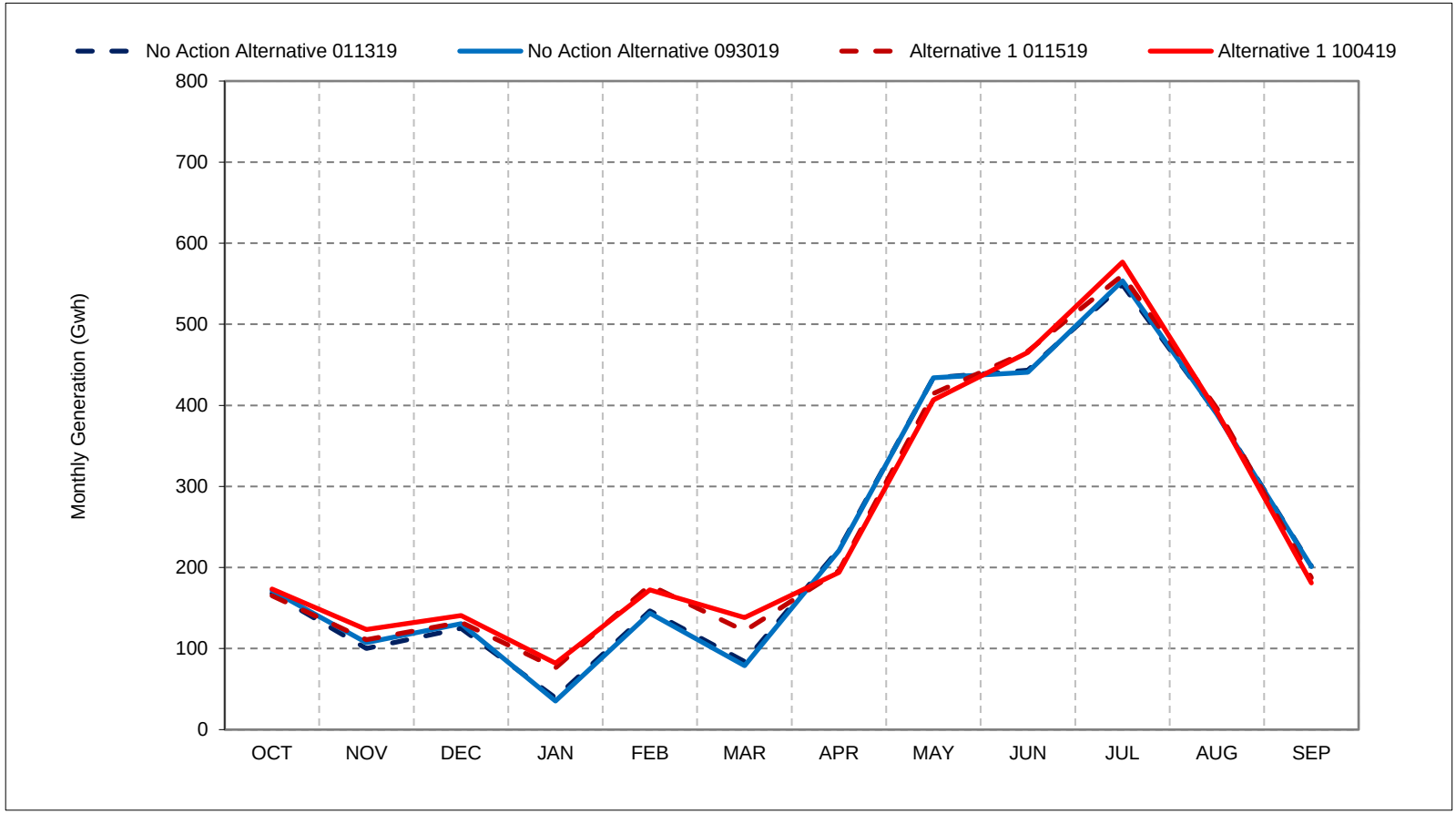



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-4. CVP Net Generation, Below Normal Year Average Generation

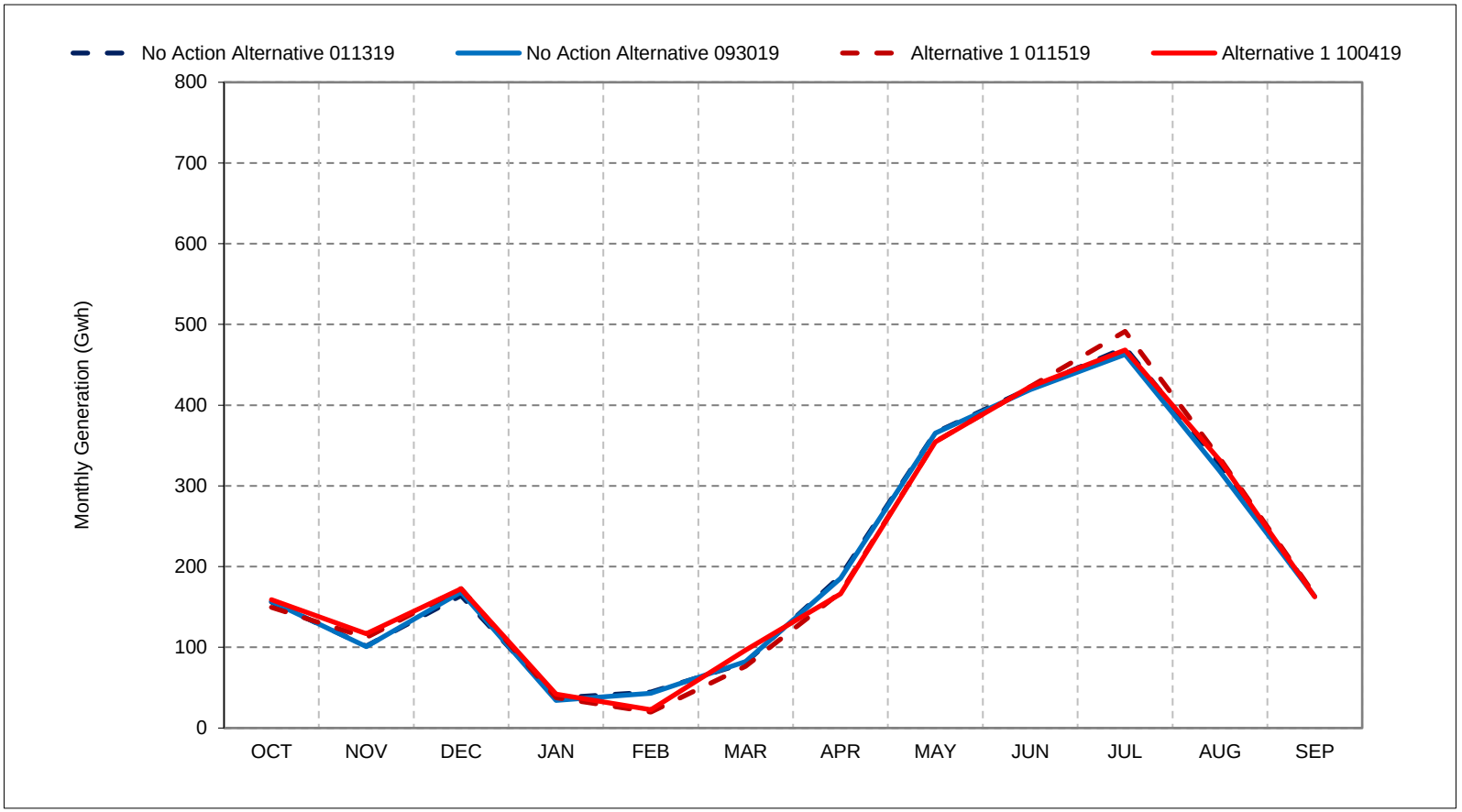



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-5. CVP Net Generation, Dry Year Average Generation

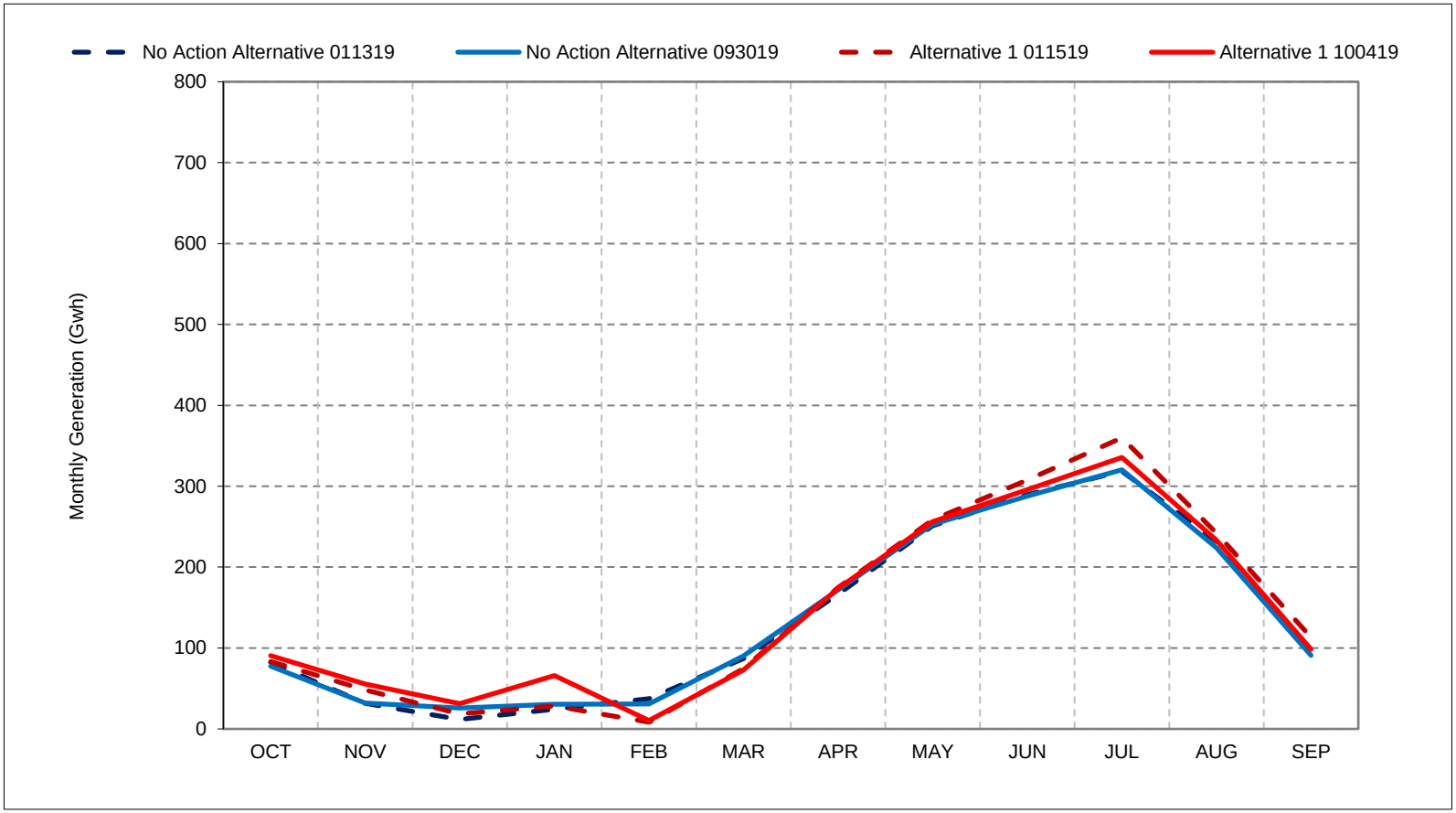



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 31-6. CVP Net Generation, Critical Year Average Generation

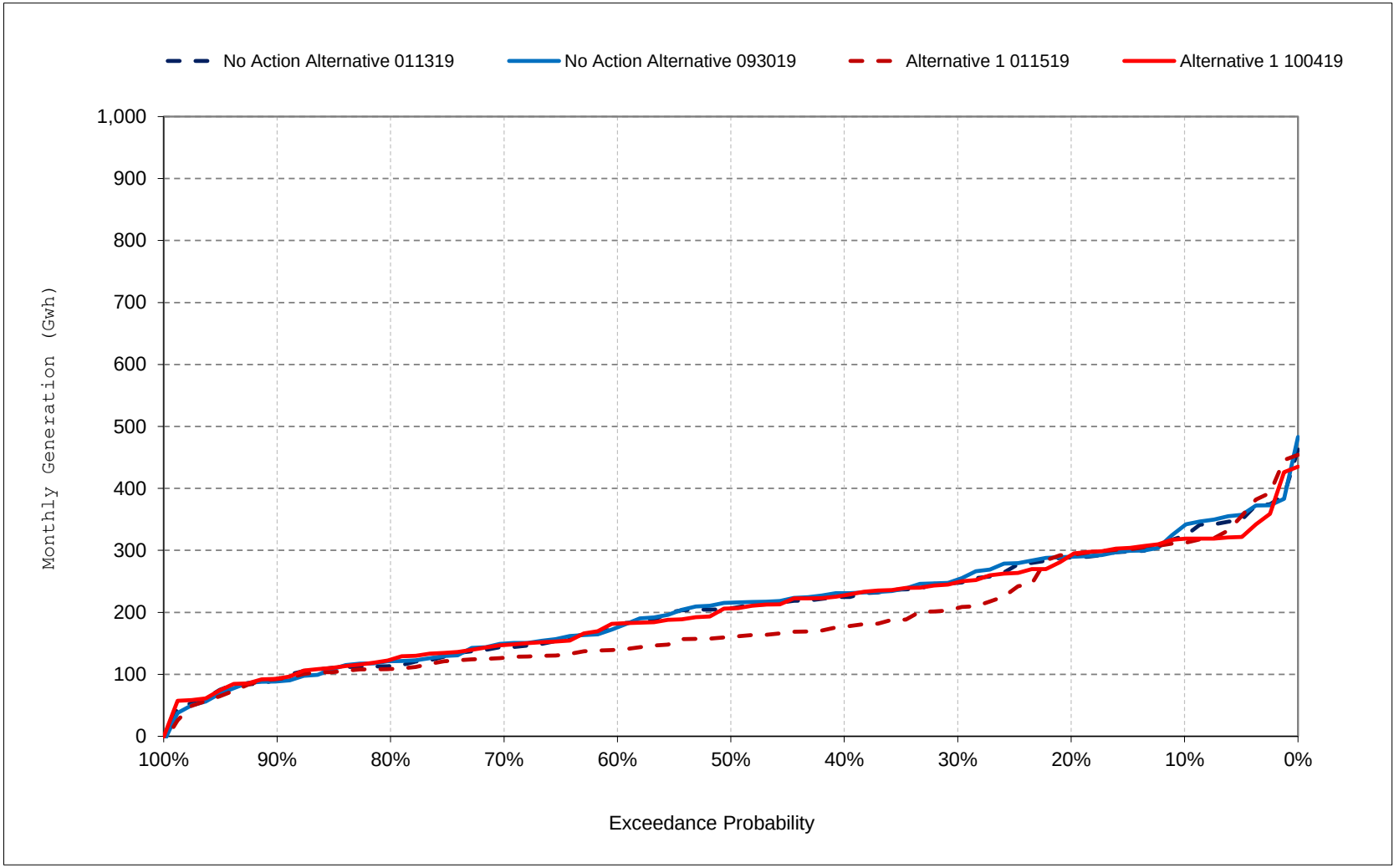



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

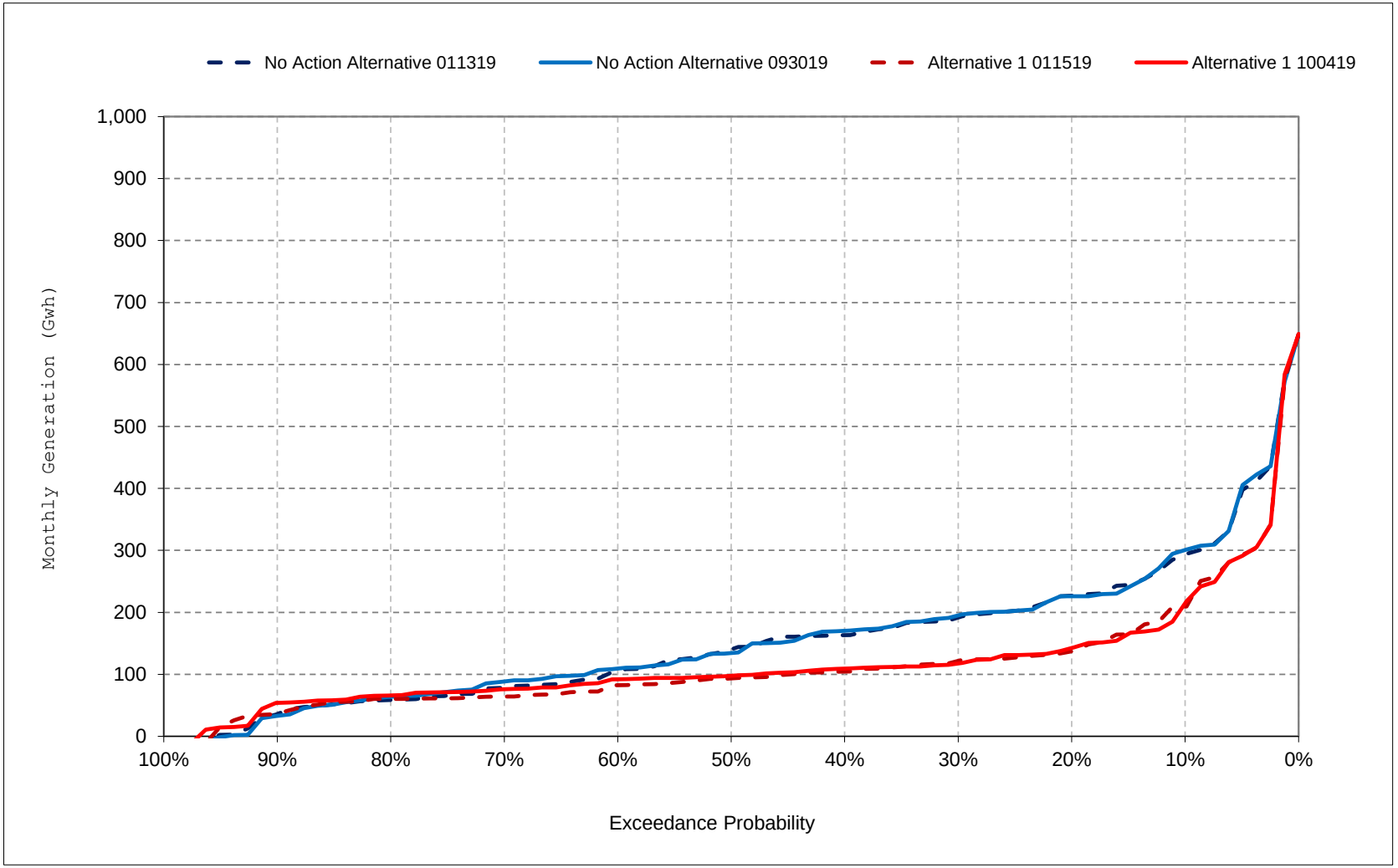
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-7. CVP Net Generation, October**



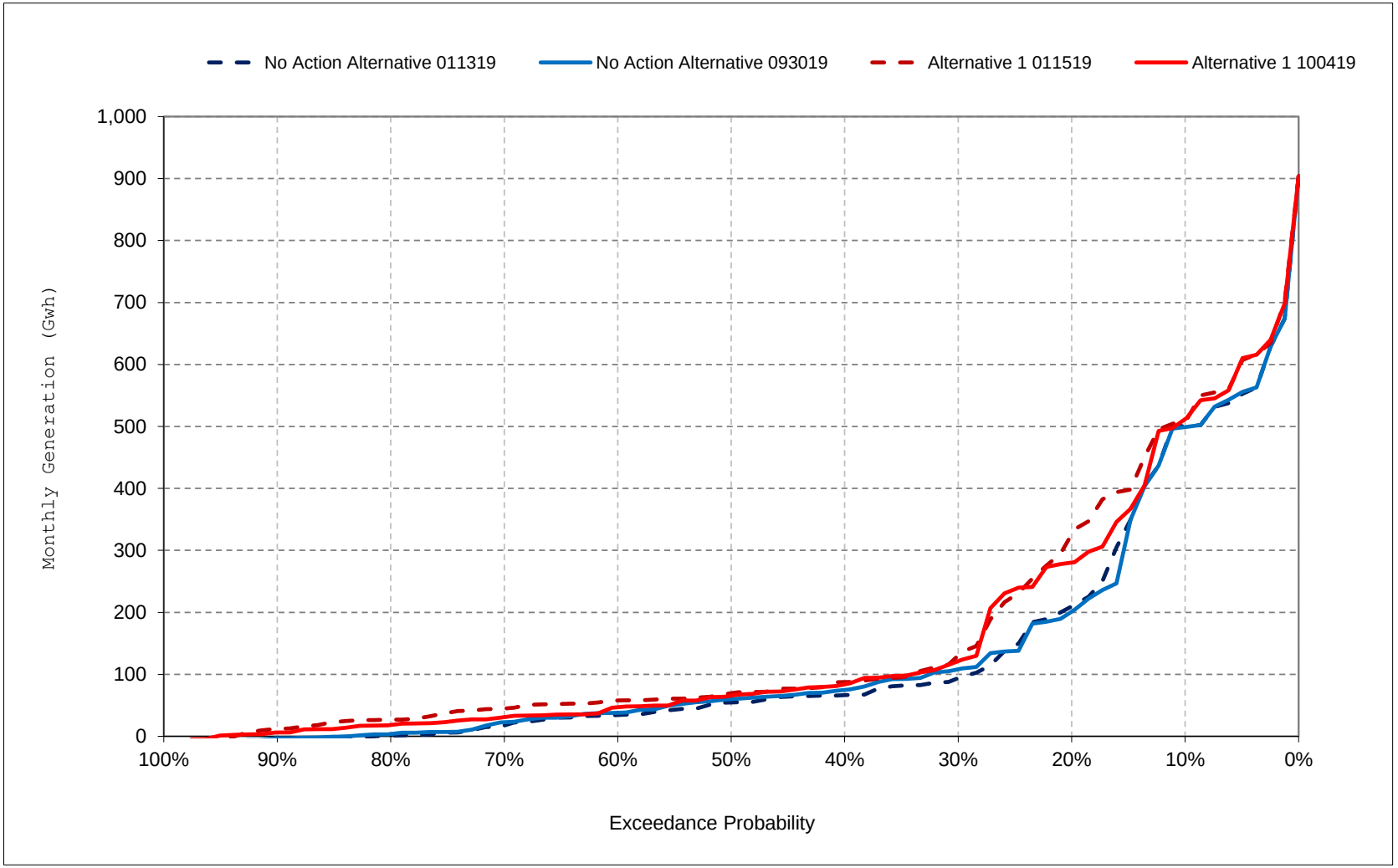

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-8. CVP Net Generation, November**



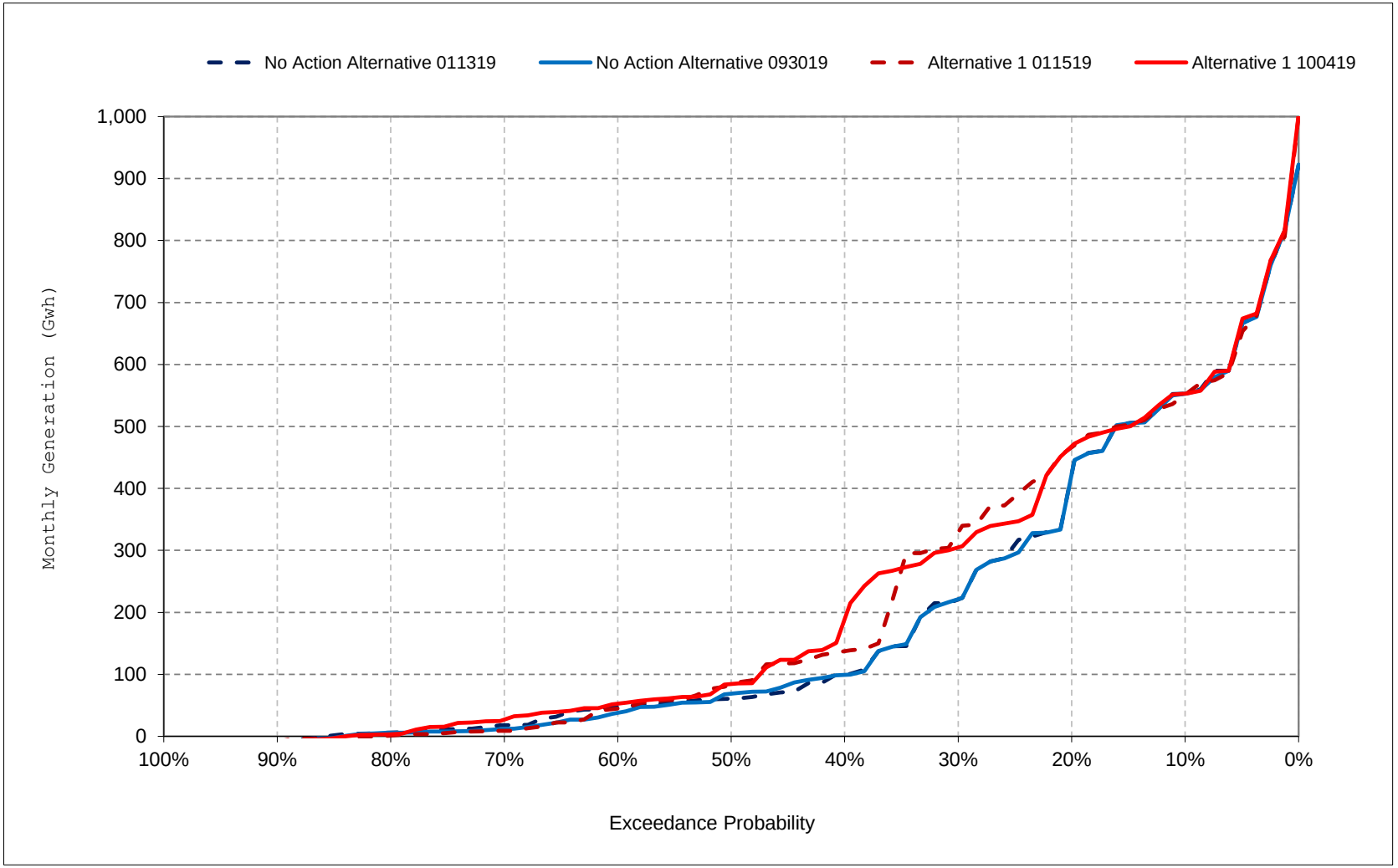

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-9. CVP Net Generation, December**



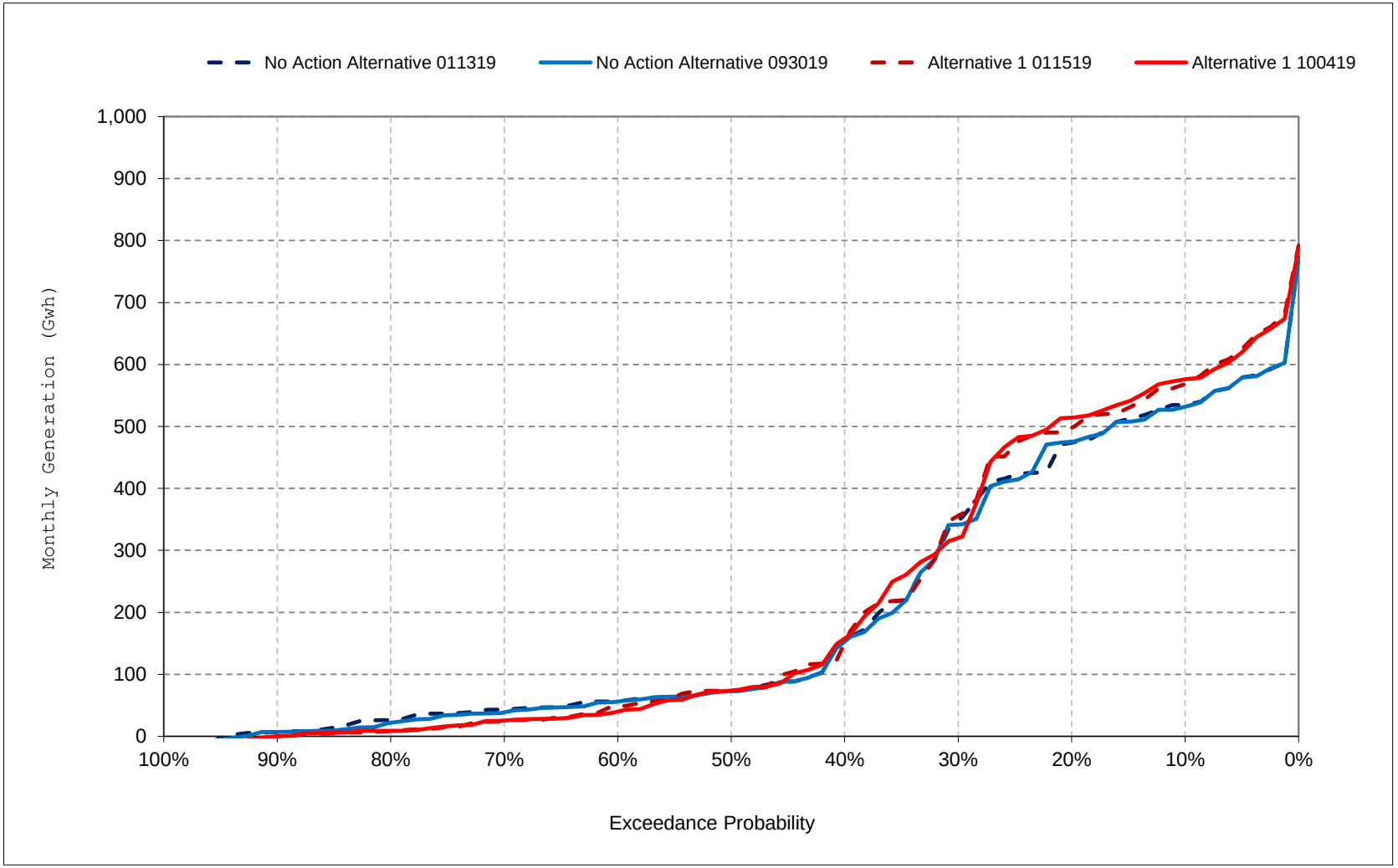

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-10. CVP Net Generation, January**



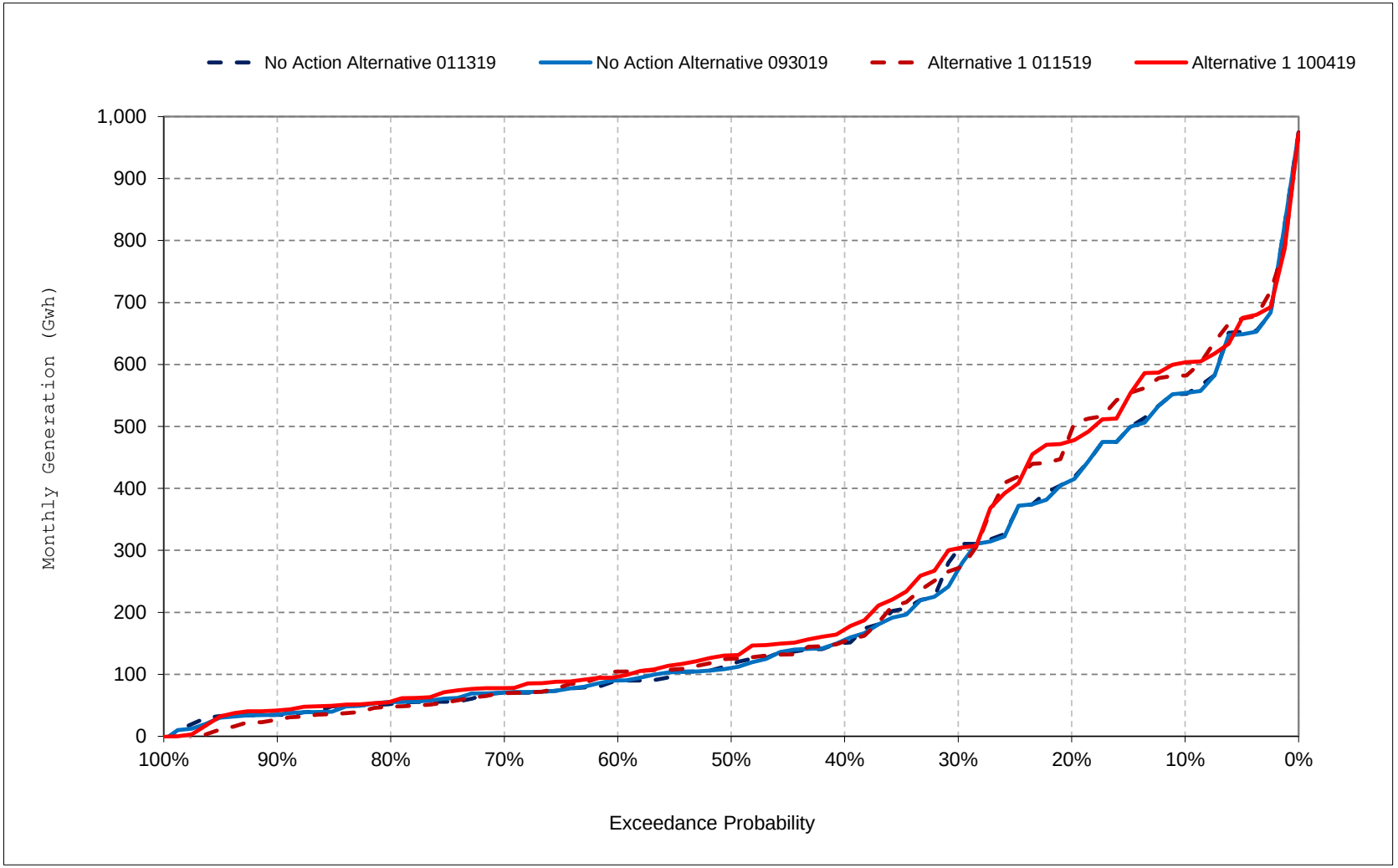

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-11. CVP Net Generation, February**



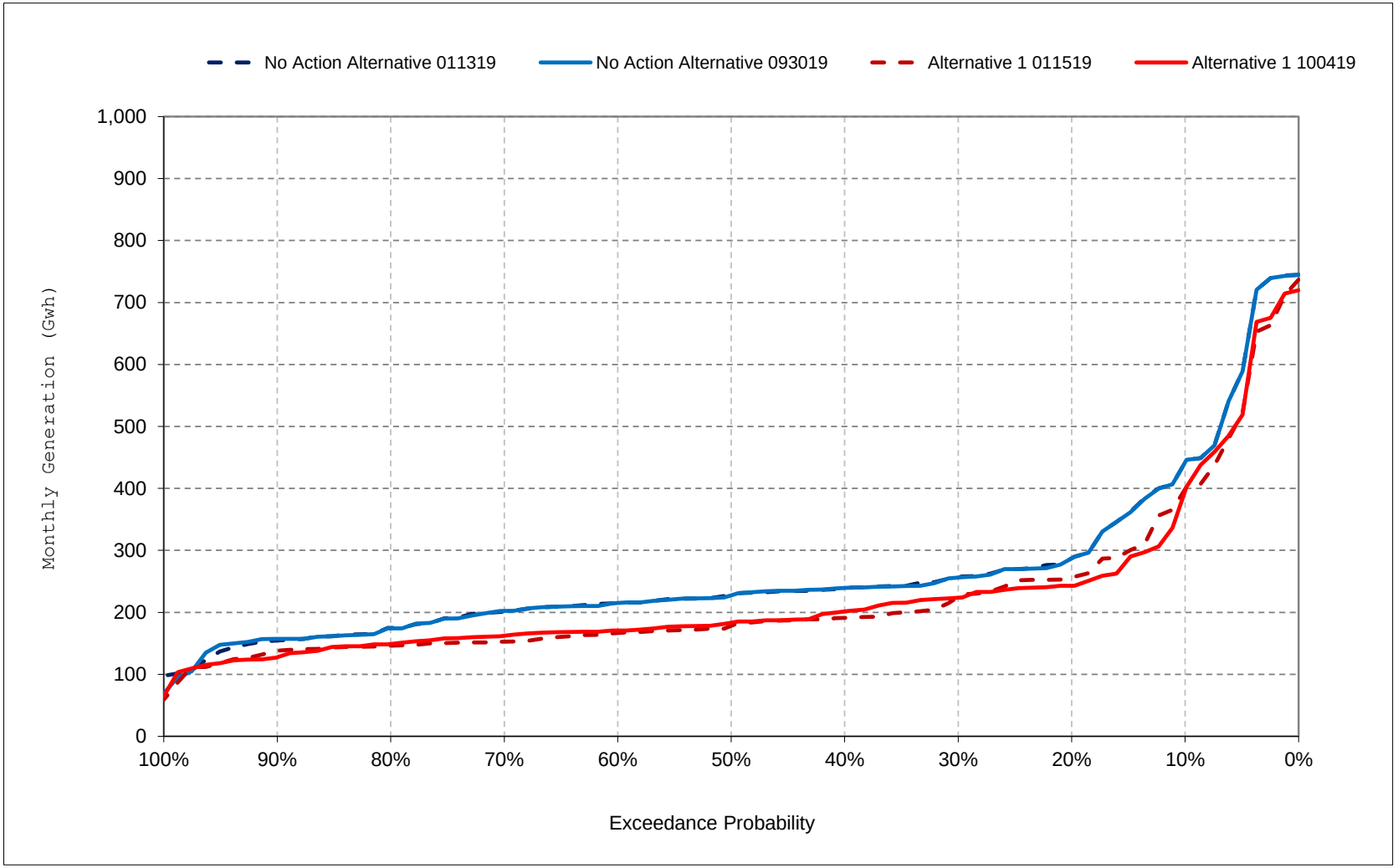

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-12. CVP Net Generation, March**



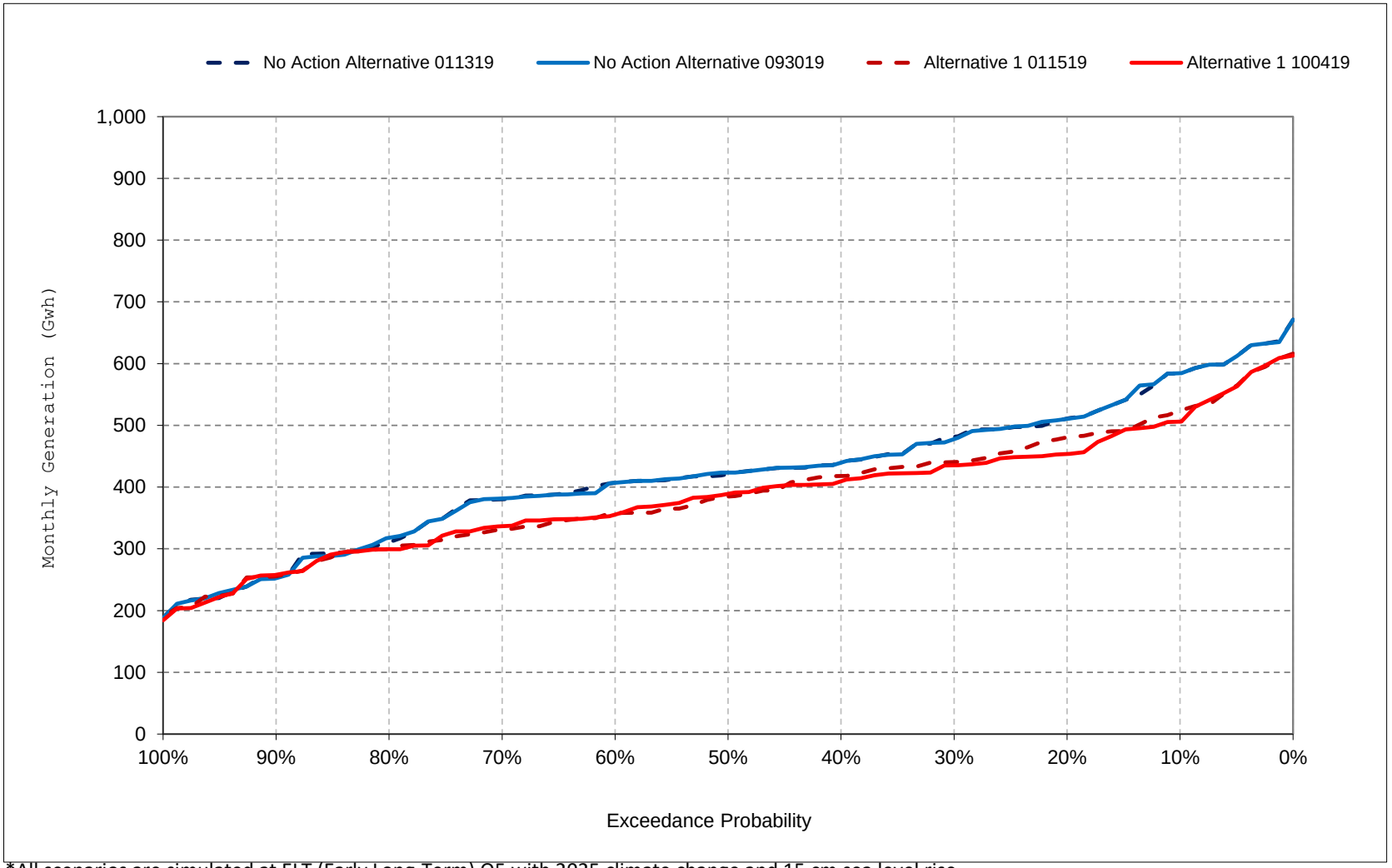

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-13. CVP Net Generation, April**



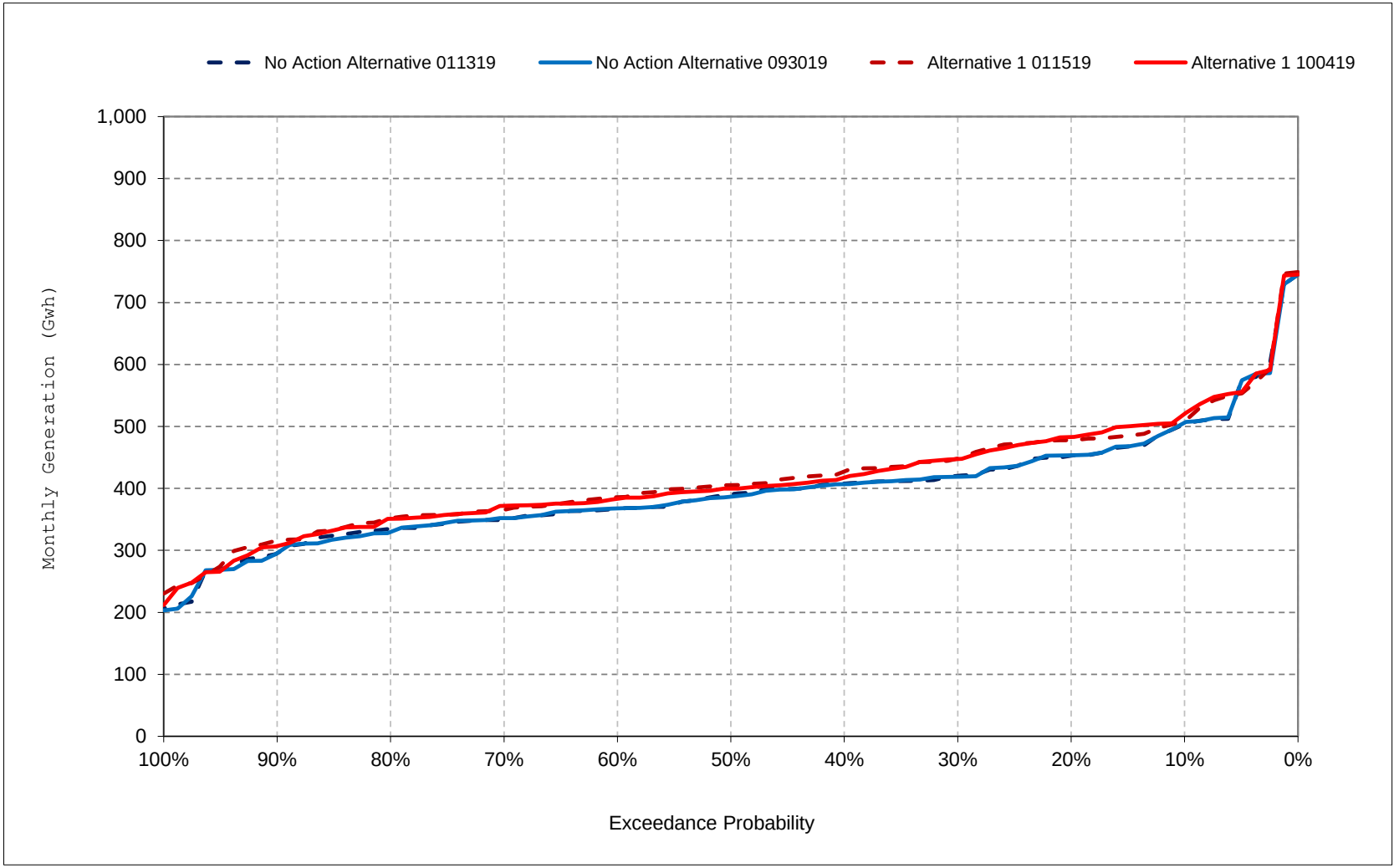

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-14. CVP Net Generation, May**



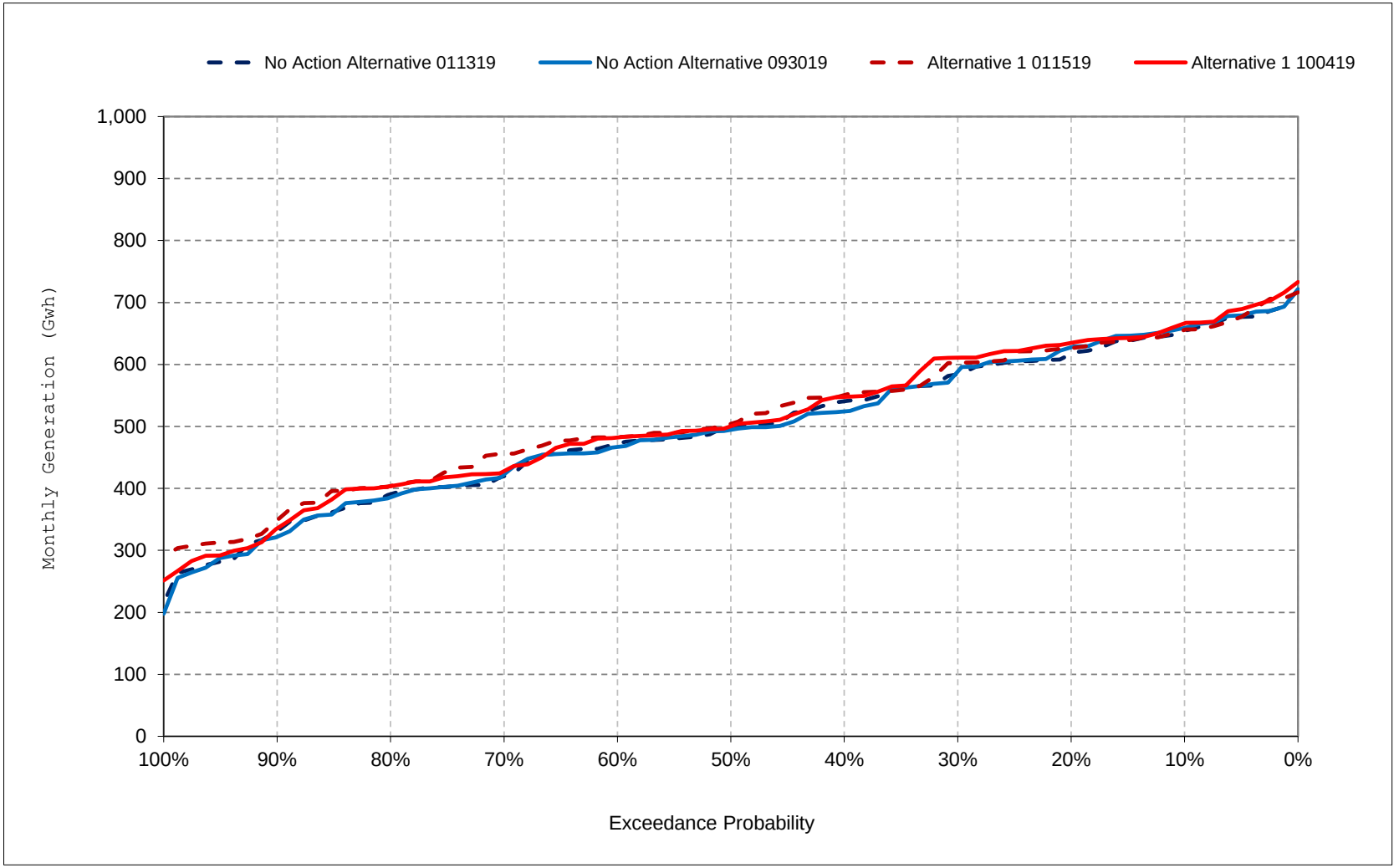

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-15. CVP Net Generation, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-16. CVP Net Generation, July**



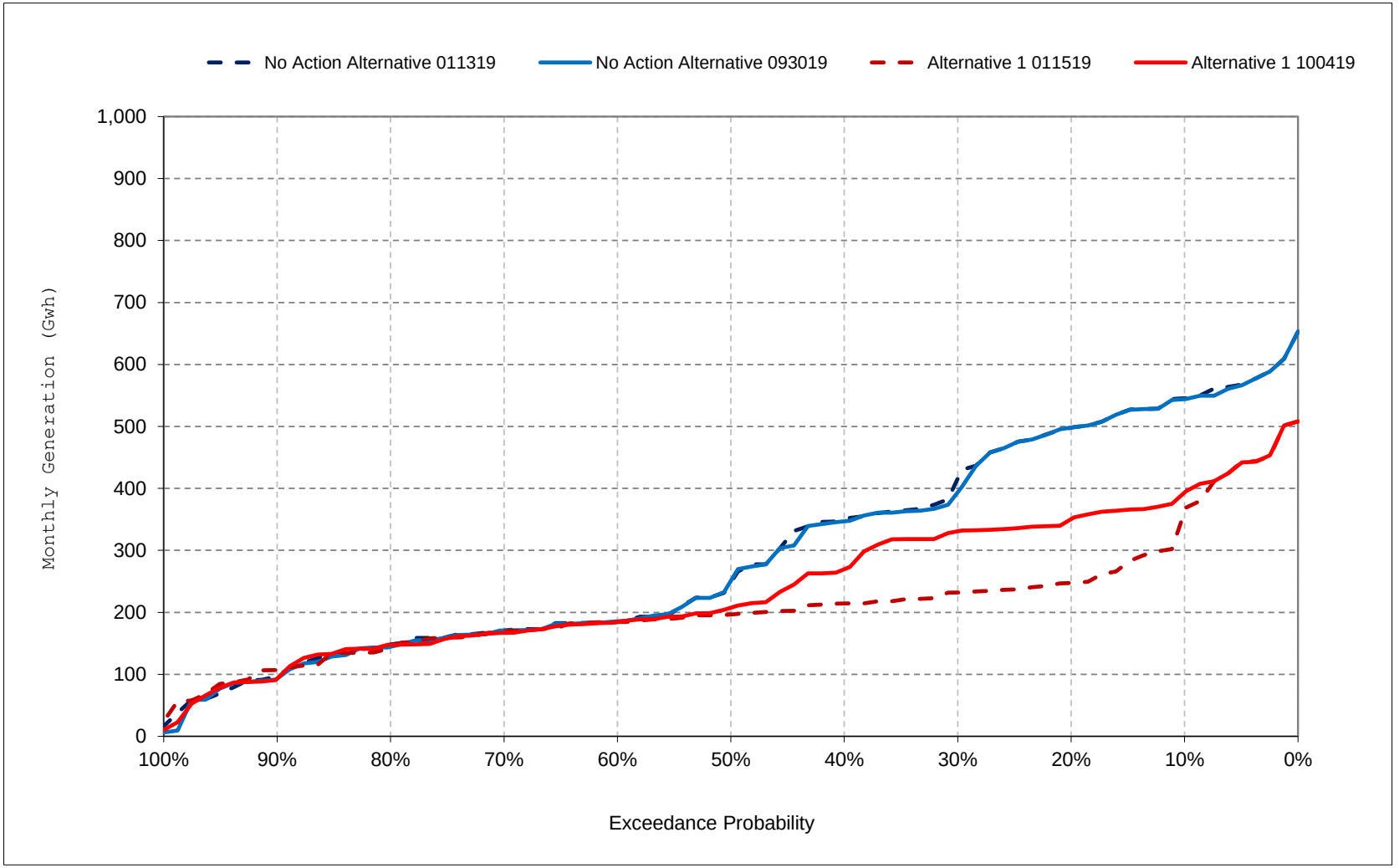

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-17. CVP Net Generation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31-18. CVP Net Generation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 32-1. SWP Total Capacity, Monthly Capacity

## No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,210 | 1,101 | 1,189 | 1,182 | 1,344 | 1,450 | 1,347 | 1,359 | 1,312 | 1,312 | 1,297 | 1,306 |
| 20% | 1,082 | 1,023 | 1,037 | 1,010 | 1,181 | 1,277 | 1,294 | 1,309 | 1,232 | 1,269 | 1,277 | 1,233 |
| 30% | 1,032 | 988 | 995 | 944 | 1,053 | 1,184 | 1,253 | 1,259 | 1,184 | 1,256 | 1,248 | 1,197 |
| 40% | 994 | 939 | 966 | 833 | 994 | 1,037 | 1,213 | 1,202 | 1,165 | 1,247 | 1,225 | 1,137 |
| 50% | 946 | 903 | 910 | 787 | 909 | 982 | 1,119 | 1,104 | 1,151 | 1,233 | 1,154 | 1,079 |
| 60% | 878 | 822 | 843 | 679 | 793 | 935 | 1,071 | 1,066 | 1,131 | 1,167 | 1,032 | 972 |
| 70% | 748 | 613 | 558 | 615 | 762 | 844 | 937 | 1,014 | 1,053 | 1,052 | 868 | 848 |
| 80% | 453 | 409 | 376 | 323 | 674 | 769 | 864 | 976 | 1,003 | 907 | 753 | 796 |
| 90% | 195 | 207 | 275 | 205 | 332 | 708 | 745 | 824 | 786 | 636 | 403 | 312 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 827 | 766 | 791 | 732 | 889 | 1,000 | 1,076 | 1,106 | 1,090 | 1,083 | 997 | 959 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,129 | 1,045 | 1,094 | 1,067 | 1,210 | 1,297 | 1,313 | 1,316 | 1,246 | 1,290 | 1,279 | 1,258 |
| Above Normal (16%) | 1,024 | 973 | 944 | 737 | 981 | 1,130 | 1,199 | 1,185 | 1,182 | 1,258 | 1,235 | 1,164 |
| Below Normal (13%) | 866 | 823 | 726 | 709 | 890 | 943 | 1,076 | 1,097 | 1,126 | 1,171 | 1,038 | 990 |
| Dry (24%) | 648 | 573 | 650 | 543 | 684 | 811 | 958 | 1,037 | 1,060 | 1,004 | 837 | 818 |
| Critical (15%) | 221 | 204 | 261 | 337 | 433 | 586 | 627 | 690 | 668 | 497 | 359 | 298 |

## Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,263 | 1,279 | 1,299 | 1,402 | 1,465 | 1,446 | 1,396 | 1,430 | 1,347 | 1,354 | 1,313 | 1,273 |
| 20% | 1,190 | 1,204 | 1,208 | 1,149 | 1,269 | 1,348 | 1,363 | 1,379 | 1,319 | 1,331 | 1,283 | 1,229 |
| 30% | 1,104 | 1,111 | 1,109 | 1,032 | 1,174 | 1,299 | 1,337 | 1,359 | 1,293 | 1,310 | 1,256 | 1,188 |
| 40% | 1,039 | 1,041 | 1,054 | 952 | 1,104 | 1,243 | 1,302 | 1,313 | 1,245 | 1,294 | 1,205 | 1,135 |
| 50% | 981 | 978 | 962 | 850 | 945 | 1,092 | 1,265 | 1,264 | 1,193 | 1,276 | 1,165 | 1,076 |
| 60% | 913 | 883 | 846 | 694 | 820 | 947 | 1,169 | 1,160 | 1,150 | 1,217 | 1,113 | 1,010 |
| 70% | 787 | 658 | 662 | 618 | 732 | 855 | 1,028 | 1,073 | 1,114 | 1,089 | 945 | 916 |
| 80% | 457 | 395 | 465 | 311 | 671 | 805 | 881 | 1,004 | 1,018 | 944 | 819 | 762 |
| 90% | 312 | 243 | 310 | 246 | 407 | 704 | 753 | 857 | 845 | 761 | 473 | 392 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 867 | 852 | 866 | 789 | 942 | 1,062 | 1,142 | 1,176 | 1,135 | 1,128 | 1,035 | 962 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,191 | 1,219 | 1,220 | 1,137 | 1,279 | 1,352 | 1,363 | 1,376 | 1,295 | 1,325 | 1,281 | 1,241 |
| Above Normal (16%) | 1,094 | 1,059 | 1,013 | 810 | 1,062 | 1,275 | 1,301 | 1,285 | 1,232 | 1,312 | 1,247 | 1,165 |
| Below Normal (13%) | 902 | 888 | 796 | 812 | 989 | 1,048 | 1,195 | 1,240 | 1,209 | 1,247 | 1,129 | 1,006 |
| Dry (24%) | 664 | 606 | 700 | 575 | 718 | 833 | 1,010 | 1,088 | 1,108 | 1,042 | 911 | 840 |
| Critical (15%) | 225 | 210 | 283 | 352 | 413 | 598 | 659 | 715 | 660 | 537 | 395 | 301 |

## Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 53 | 178 | 109 | 219 | 121 | -3 | 49 | 71 | 35 | 42 | 17 | -33 |
| 20% | 108 | 181 | 171 | 138 | 88 | 71 | 69 | 70 | 87 | 63 | 7 | -4 |
| 30% | 72 | 123 | 114 | 88 | 121 | 115 | 84 | 100 | 108 | 54 | 7 | -9 |
| 40% | 45 | 102 | 88 | 119 | 110 | 206 | 89 | 111 | 80 | 47 | -20 | -2 |
| 50% | 35 | 75 | 52 | 63 | 36 | 109 | 146 | 159 | 42 | 44 | 11 | -3 |
| 60% | 35 | 61 | 3 | 15 | 27 | 12 | 99 | 95 | 19 | 50 | 81 | 37 |
| 70% | 40 | 45 | 103 | 3 | -29 | 11 | 91 | 59 | 60 | 38 | 76 | 68 |
| 80% | 4 | -14 | 90 | -12 | -3 | 36 | 17 | 28 | 15 | 37 | 66 | -34 |
| 90% | 117 | 36 | 35 | 41 | 76 | -5 | 8 | 33 | 60 | 126 | 71 | 80 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 40 | 87 | 76 | 57 | 53 | 62 | 65 | 70 | 45 | 45 | 38 | 3 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 62 | 174 | 126 | 69 | 69 | 55 | 50 | 60 | 49 | 35 | 2 | -17 |
| Above Normal (16%) | 69 | 86 | 68 | 73 | 81 | 145 | 103 | 101 | 50 | 54 | 12 | 1 |
| Below Normal (13%) | 36 | 65 | 70 | 103 | 100 | 105 | 119 | 143 | 84 | 76 | 91 | 16 |
| Dry (24%) | 16 | 33 | 50 | 32 | 34 | 22 | 52 | 51 | 48 | 37 | 74 | 22 |
| Critical (15%) | 4 | 6 | 22 | 15 | -20 | 12 | 32 | 25 | -8 | 40 | 36 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-2. SWP Total Capacity, Monthly Capacity

### No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,213 | 1,103 | 1,174 | 1,174 | 1,329 | 1,450 | 1,342 | 1,359 | 1,282 | 1,313 | 1,294 | 1,304 |
| 20% | 1,083 | 1,021 | 1,038 | 986 | 1,180 | 1,286 | 1,295 | 1,301 | 1,232 | 1,266 | 1,271 | 1,228 |
| 30% | 1,029 | 963 | 989 | 942 | 1,030 | 1,181 | 1,257 | 1,252 | 1,185 | 1,256 | 1,245 | 1,193 |
| 40% | 992 | 931 | 966 | 845 | 995 | 1,034 | 1,217 | 1,191 | 1,162 | 1,246 | 1,226 | 1,136 |
| 50% | 945 | 872 | 918 | 774 | 891 | 982 | 1,110 | 1,092 | 1,150 | 1,229 | 1,147 | 1,074 |
| 60% | 856 | 756 | 836 | 678 | 789 | 925 | 1,065 | 1,060 | 1,128 | 1,167 | 1,033 | 956 |
| 70% | 667 | 531 | 523 | 605 | 713 | 841 | 910 | 1,013 | 1,055 | 1,037 | 852 | 837 |
| 80% | 417 | 385 | 368 | 295 | 661 | 767 | 844 | 972 | 982 | 894 | 678 | 780 |
| 90% | 217 | 198 | 262 | 239 | 294 | 679 | 725 | 817 | 780 | 523 | 344 | 283 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 812 | 747 | 779 | 722 | 874 | 985 | 1,066 | 1,098 | 1,076 | 1,072 | 990 | 949 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,132 | 1,044 | 1,096 | 1,058 | 1,201 | 1,295 | 1,314 | 1,315 | 1,245 | 1,289 | 1,275 | 1,256 |
| Above Normal (16%) | 1,020 | 966 | 945 | 731 | 983 | 1,129 | 1,194 | 1,184 | 1,181 | 1,257 | 1,232 | 1,161 |
| Below Normal (13%) | 857 | 798 | 696 | 701 | 890 | 938 | 1,078 | 1,099 | 1,127 | 1,168 | 1,040 | 965 |
| Dry (24%) | 611 | 529 | 635 | 527 | 663 | 793 | 938 | 1,024 | 1,047 | 981 | 819 | 808 |
| Critical (15%) | 186 | 184 | 228 | 326 | 381 | 518 | 594 | 656 | 599 | 468 | 351 | 274 |

### Alternative 1 100419

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,269 | 1,266 | 1,279 | 1,303 | 1,420 | 1,417 | 1,357 | 1,434 | 1,364 | 1,372 | 1,348 | 1,282 |
| 20% | 1,134 | 1,155 | 1,165 | 1,085 | 1,226 | 1,307 | 1,324 | 1,339 | 1,301 | 1,314 | 1,286 | 1,222 |
| 30% | 1,024 | 1,097 | 1,120 | 1,000 | 1,147 | 1,234 | 1,270 | 1,304 | 1,264 | 1,281 | 1,274 | 1,160 |
| 40% | 989 | 1,051 | 1,056 | 927 | 1,026 | 1,147 | 1,206 | 1,244 | 1,205 | 1,266 | 1,229 | 1,095 |
| 50% | 896 | 981 | 1,001 | 840 | 950 | 1,042 | 1,128 | 1,182 | 1,181 | 1,242 | 1,183 | 1,041 |
| 60% | 839 | 897 | 895 | 747 | 860 | 985 | 1,090 | 1,100 | 1,148 | 1,219 | 1,111 | 945 |
| 70% | 764 | 569 | 564 | 630 | 784 | 877 | 1,035 | 1,068 | 1,122 | 1,089 | 925 | 867 |
| 80% | 512 | 416 | 391 | 325 | 667 | 788 | 888 | 1,017 | 1,052 | 968 | 860 | 744 |
| 90% | 270 | 240 | 281 | 213 | 412 | 723 | 759 | 844 | 836 | 743 | 445 | 375 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 838 | 839 | 855 | 783 | 933 | 1,038 | 1,100 | 1,148 | 1,133 | 1,123 | 1,041 | 938 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,146 | 1,202 | 1,208 | 1,115 | 1,243 | 1,311 | 1,315 | 1,349 | 1,297 | 1,325 | 1,303 | 1,227 |
| Above Normal (16%) | 950 | 1,071 | 1,089 | 800 | 1,048 | 1,191 | 1,212 | 1,226 | 1,223 | 1,281 | 1,260 | 1,080 |
| Below Normal (13%) | 926 | 869 | 737 | 780 | 970 | 1,042 | 1,141 | 1,194 | 1,183 | 1,227 | 1,118 | 1,001 |
| Dry (24%) | 682 | 585 | 661 | 581 | 716 | 843 | 988 | 1,069 | 1,108 | 1,051 | 911 | 819 |
| Critical (15%) | 228 | 195 | 267 | 383 | 462 | 605 | 658 | 713 | 673 | 536 | 379 | 301 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 56 | 163 | 105 | 130 | 91 | **-32** | 16 | 74 | 81 | 59 | 54 | **-22** |
| 20% | 51 | 134 | 127 | 99 | 46 | 22 | 29 | 39 | 69 | 49 | 15 | **-6** |
| 30% | **-6** | 134 | 131 | 58 | 116 | 53 | 13 | 52 | 78 | 24 | 29 | **-33** |
| 40% | **-3** | 119 | 90 | 82 | 31 | 113 | **-11** | 53 | 44 | 19 | 4 | **-41** |
| 50% | **-49** | 108 | 83 | 65 | 59 | 60 | 18 | 90 | 31 | 13 | 36 | **-33** |
| 60% | **-17** | 140 | 59 | 68 | 71 | 59 | 25 | 40 | 21 | 52 | 78 | **-11** |
| 70% | 97 | 38 | 41 | 25 | 71 | 36 | 125 | 56 | 66 | 52 | 73 | 31 |
| 80% | 95 | 31 | 22 | 30 | 6 | 21 | 44 | 46 | 71 | 75 | 182 | **-36** |
| 90% | 54 | 43 | 18 | **-26** | 118 | 45 | 34 | 27 | 55 | 220 | 101 | 92 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 26 | 91 | 76 | 61 | 59 | 53 | 33 | 50 | 56 | 50 | 50 | **-11** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 14 | 157 | 111 | 58 | 42 | 15 | 2 | 34 | 52 | 36 | 28 | **-29** |
| Above Normal (16%) | **-70** | 105 | 143 | 69 | 65 | 62 | 17 | 43 | 42 | 24 | 27 | **-81** |
| Below Normal (13%) | 69 | 71 | 41 | 79 | 81 | 104 | 64 | 96 | 55 | 59 | 78 | 36 |
| Dry (24%) | 71 | 56 | 26 | 54 | 53 | 50 | 50 | 45 | 61 | 70 | 92 | 11 |
| Critical (15%) | 42 | 10 | 39 | 57 | 81 | 86 | 64 | 57 | 75 | 68 | 28 | 27 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-3. SWP Total Capacity, Monthly Capacity

### No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,210 | 1,101 | 1,189 | 1,182 | 1,344 | 1,450 | 1,347 | 1,359 | 1,312 | 1,312 | 1,297 | 1,306 |
| 20% | 1,082 | 1,023 | 1,037 | 1,010 | 1,181 | 1,277 | 1,294 | 1,309 | 1,232 | 1,269 | 1,277 | 1,233 |
| 30% | 1,032 | 988 | 995 | 944 | 1,053 | 1,184 | 1,253 | 1,259 | 1,184 | 1,256 | 1,248 | 1,197 |
| 40% | 994 | 939 | 966 | 833 | 994 | 1,037 | 1,213 | 1,202 | 1,165 | 1,247 | 1,225 | 1,137 |
| 50% | 946 | 903 | 910 | 787 | 909 | 982 | 1,119 | 1,104 | 1,151 | 1,233 | 1,154 | 1,079 |
| 60% | 878 | 822 | 843 | 679 | 793 | 935 | 1,071 | 1,066 | 1,131 | 1,167 | 1,032 | 972 |
| 70% | 748 | 613 | 558 | 615 | 762 | 844 | 937 | 1,014 | 1,053 | 1,052 | 868 | 848 |
| 80% | 453 | 409 | 376 | 323 | 674 | 769 | 864 | 976 | 1,003 | 907 | 753 | 796 |
| 90% | 195 | 207 | 275 | 205 | 332 | 708 | 745 | 824 | 786 | 636 | 403 | 312 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 827 | 766 | 791 | 732 | 889 | 1,000 | 1,076 | 1,106 | 1,090 | 1,083 | 997 | 959 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,129 | 1,045 | 1,094 | 1,067 | 1,210 | 1,297 | 1,313 | 1,316 | 1,246 | 1,290 | 1,279 | 1,258 |
| Above Normal (16%) | 1,024 | 973 | 944 | 737 | 981 | 1,130 | 1,199 | 1,185 | 1,182 | 1,258 | 1,235 | 1,164 |
| Below Normal (13%) | 866 | 823 | 726 | 709 | 890 | 943 | 1,076 | 1,097 | 1,126 | 1,171 | 1,038 | 990 |
| Dry (24%) | 648 | 573 | 650 | 543 | 684 | 811 | 958 | 1,037 | 1,060 | 1,004 | 837 | 818 |
| Critical (15%) | 221 | 204 | 261 | 337 | 433 | 586 | 627 | 690 | 668 | 497 | 359 | 298 |

### No Action Alternative 093019

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,213 | 1,103 | 1,174 | 1,174 | 1,329 | 1,450 | 1,342 | 1,359 | 1,282 | 1,313 | 1,294 | 1,304 |
| 20% | 1,083 | 1,021 | 1,038 | 986 | 1,180 | 1,286 | 1,295 | 1,301 | 1,232 | 1,266 | 1,271 | 1,228 |
| 30% | 1,029 | 963 | 989 | 942 | 1,030 | 1,181 | 1,257 | 1,252 | 1,185 | 1,256 | 1,245 | 1,193 |
| 40% | 992 | 931 | 966 | 845 | 995 | 1,034 | 1,217 | 1,191 | 1,162 | 1,246 | 1,226 | 1,136 |
| 50% | 945 | 872 | 918 | 774 | 891 | 982 | 1,110 | 1,092 | 1,150 | 1,229 | 1,147 | 1,074 |
| 60% | 856 | 756 | 836 | 678 | 789 | 925 | 1,065 | 1,060 | 1,128 | 1,167 | 1,033 | 956 |
| 70% | 667 | 531 | 523 | 605 | 713 | 841 | 910 | 1,013 | 1,055 | 1,037 | 852 | 837 |
| 80% | 417 | 385 | 368 | 295 | 661 | 767 | 844 | 972 | 982 | 894 | 678 | 780 |
| 90% | 217 | 198 | 262 | 239 | 294 | 679 | 725 | 817 | 780 | 523 | 344 | 283 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 812 | 747 | 779 | 722 | 874 | 985 | 1,066 | 1,098 | 1,076 | 1,072 | 990 | 949 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,132 | 1,044 | 1,096 | 1,058 | 1,201 | 1,295 | 1,314 | 1,315 | 1,245 | 1,289 | 1,275 | 1,256 |
| Above Normal (16%) | 1,020 | 966 | 945 | 731 | 983 | 1,129 | 1,194 | 1,184 | 1,181 | 1,257 | 1,232 | 1,161 |
| Below Normal (13%) | 857 | 798 | 696 | 701 | 890 | 938 | 1,078 | 1,099 | 1,127 | 1,168 | 1,040 | 965 |
| Dry (24%) | 611 | 529 | 635 | 527 | 663 | 793 | 938 | 1,024 | 1,047 | 981 | 819 | 808 |
| Critical (15%) | 186 | 184 | 228 | 326 | 381 | 518 | 594 | 656 | 599 | 468 | 351 | 274 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 2 | 3 | -15 | -9 | -15 | 0 | -6 | 0 | -30 | 1 | -3 | -2 |
| 20% | 1 | -2 | 1 | -24 | -1 | 9 | 1 | -8 | 0 | -3 | -6 | -5 |
| 30% | -2 | -25 | -6 | -1 | -23 | -2 | 4 | -7 | 1 | 0 | -3 | -5 |
| 40% | -2 | -8 | 0 | 12 | 1 | -3 | 5 | -11 | -3 | -1 | 1 | -1 |
| 50% | -2 | -31 | 8 | -13 | -18 | 0 | -9 | -13 | -1 | -4 | -8 | -5 |
| 60% | -23 | -65 | -7 | 0 | -4 | -10 | -6 | -6 | -4 | 0 | 1 | -17 |
| 70% | -80 | -82 | -35 | -10 | -49 | -4 | -27 | -2 | 2 | -15 | -16 | -11 |
| 80% | -35 | -24 | -7 | -28 | -13 | -2 | -21 | -5 | -22 | -14 | -75 | -17 |
| 90% | 22 | -9 | -13 | 34 | -38 | -30 | -20 | -7 | -5 | -113 | -59 | -29 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -15 | -18 | -12 | -10 | -15 | -15 | -10 | -8 | -13 | -11 | -7 | -10 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3 | -1 | 2 | -10 | -8 | -2 | 1 | -1 | -1 | -1 | -3 | -2 |
| Above Normal (16%) | -4 | -7 | 1 | -6 | 2 | -1 | -4 | -1 | -1 | -1 | -3 | -2 |
| Below Normal (13%) | -9 | -25 | -30 | -8 | 0 | -5 | 2 | 2 | 2 | -3 | 2 | -25 |
| Dry (24%) | -37 | -44 | -15 | -15 | -21 | -18 | -20 | -13 | -13 | -24 | -19 | -10 |
| Critical (15%) | -35 | -20 | -33 | -11 | -51 | -67 | -33 | -35 | -69 | -29 | -8 | -24 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 32-4. SWP Total Capacity, Monthly Capacity

### Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,263 | 1,279 | 1,299 | 1,402 | 1,465 | 1,446 | 1,396 | 1,430 | 1,347 | 1,354 | 1,313 | 1,273 |
| 20% | 1,190 | 1,204 | 1,208 | 1,149 | 1,269 | 1,348 | 1,363 | 1,379 | 1,319 | 1,331 | 1,283 | 1,229 |
| 30% | 1,104 | 1,111 | 1,109 | 1,032 | 1,174 | 1,299 | 1,337 | 1,359 | 1,293 | 1,310 | 1,256 | 1,188 |
| 40% | 1,039 | 1,041 | 1,054 | 952 | 1,104 | 1,243 | 1,302 | 1,313 | 1,245 | 1,294 | 1,205 | 1,135 |
| 50% | 981 | 978 | 962 | 850 | 945 | 1,092 | 1,265 | 1,264 | 1,193 | 1,276 | 1,165 | 1,076 |
| 60% | 913 | 883 | 846 | 694 | 820 | 947 | 1,169 | 1,160 | 1,150 | 1,217 | 1,113 | 1,010 |
| 70% | 787 | 658 | 662 | 618 | 732 | 855 | 1,028 | 1,073 | 1,114 | 1,089 | 945 | 916 |
| 80% | 457 | 395 | 465 | 311 | 671 | 805 | 881 | 1,004 | 1,018 | 944 | 819 | 762 |
| 90% | 312 | 243 | 310 | 246 | 407 | 704 | 753 | 857 | 845 | 761 | 473 | 392 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 867 | 852 | 866 | 789 | 942 | 1,062 | 1,142 | 1,176 | 1,135 | 1,128 | 1,035 | 962 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,191 | 1,219 | 1,220 | 1,137 | 1,279 | 1,352 | 1,363 | 1,376 | 1,295 | 1,325 | 1,281 | 1,241 |
| Above Normal (16%) | 1,094 | 1,059 | 1,013 | 810 | 1,062 | 1,275 | 1,301 | 1,285 | 1,232 | 1,312 | 1,247 | 1,165 |
| Below Normal (13%) | 902 | 888 | 796 | 812 | 989 | 1,048 | 1,195 | 1,240 | 1,209 | 1,247 | 1,129 | 1,006 |
| Dry (24%) | 664 | 606 | 700 | 575 | 718 | 833 | 1,010 | 1,088 | 1,108 | 1,042 | 911 | 840 |
| Critical (15%) | 225 | 210 | 283 | 352 | 413 | 598 | 659 | 715 | 660 | 537 | 395 | 301 |

### Alternative 1 100419

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,269 | 1,266 | 1,279 | 1,303 | 1,420 | 1,417 | 1,357 | 1,434 | 1,364 | 1,372 | 1,348 | 1,282 |
| 20% | 1,134 | 1,155 | 1,165 | 1,085 | 1,226 | 1,307 | 1,324 | 1,339 | 1,301 | 1,314 | 1,286 | 1,222 |
| 30% | 1,024 | 1,097 | 1,120 | 1,000 | 1,147 | 1,234 | 1,270 | 1,304 | 1,264 | 1,281 | 1,274 | 1,160 |
| 40% | 989 | 1,051 | 1,056 | 927 | 1,026 | 1,147 | 1,206 | 1,244 | 1,205 | 1,266 | 1,229 | 1,095 |
| 50% | 896 | 981 | 1,001 | 840 | 950 | 1,042 | 1,128 | 1,182 | 1,181 | 1,242 | 1,183 | 1,041 |
| 60% | 839 | 897 | 895 | 747 | 860 | 985 | 1,090 | 1,100 | 1,148 | 1,219 | 1,111 | 945 |
| 70% | 764 | 569 | 564 | 630 | 784 | 877 | 1,035 | 1,068 | 1,122 | 1,089 | 925 | 867 |
| 80% | 512 | 416 | 391 | 325 | 667 | 788 | 888 | 1,017 | 1,052 | 968 | 860 | 744 |
| 90% | 270 | 240 | 281 | 213 | 412 | 723 | 759 | 844 | 836 | 743 | 445 | 375 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 838 | 839 | 855 | 783 | 933 | 1,038 | 1,100 | 1,148 | 1,133 | 1,123 | 1,041 | 938 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 1,146 | 1,202 | 1,208 | 1,115 | 1,243 | 1,311 | 1,315 | 1,349 | 1,297 | 1,325 | 1,303 | 1,227 |
| Above Normal (16%) | 950 | 1,071 | 1,089 | 800 | 1,048 | 1,191 | 1,212 | 1,226 | 1,223 | 1,281 | 1,260 | 1,080 |
| Below Normal (13%) | 926 | 869 | 737 | 780 | 970 | 1,042 | 1,141 | 1,194 | 1,183 | 1,227 | 1,118 | 1,001 |
| Dry (24%) | 682 | 585 | 661 | 581 | 716 | 843 | 988 | 1,069 | 1,108 | 1,051 | 911 | 819 |
| Critical (15%) | 228 | 195 | 267 | 383 | 462 | 605 | 658 | 713 | 673 | 536 | 379 | 301 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Capacity (MW) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 6 | -12 | -20 | -98 | -45 | -29 | -39 | 3 | 16 | 18 | 35 | 9 |
| 20% | -56 | -49 | -43 | -64 | -44 | -41 | -40 | -40 | -18 | -17 | 3 | -7 |
| 30% | -80 | -14 | 11 | -32 | -28 | -64 | -67 | -55 | -29 | -30 | 18 | -28 |
| 40% | -49 | 9 | 1 | -25 | -78 | -96 | -95 | -69 | -39 | -28 | 24 | -40 |
| 50% | -85 | 2 | 39 | -11 | 4 | -50 | -138 | -82 | -12 | -35 | 18 | -35 |
| 60% | -74 | 14 | 49 | 53 | 40 | 38 | -79 | -61 | -2 | 2 | -2 | -65 |
| 70% | -23 | -89 | -98 | 12 | 51 | 22 | 7 | -5 | 8 | 0 | -20 | -49 |
| 80% | 55 | 21 | -75 | 14 | -4 | -17 | 7 | 13 | 34 | 25 | 40 | -18 |
| 90% | -41 | -3 | -29 | -33 | 5 | 20 | 6 | -14 | -10 | -19 | -28 | -17 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -29 | -14 | -12 | -6 | -9 | -24 | -42 | -29 | -2 | -5 | 5 | -23 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -45 | -18 | -13 | -21 | -36 | -42 | -48 | -27 | 2 | 0 | 22 | -14 |
| Above Normal (16%) | -144 | 11 | 76 | -10 | -14 | -84 | -89 | -59 | -9 | -31 | 13 | -85 |
| Below Normal (13%) | 24 | -19 | -59 | -32 | -19 | -6 | -53 | -45 | -26 | -20 | -10 | -5 |
| Dry (24%) | 18 | -21 | -39 | 7 | -1 | 11 | -21 | -19 | 0 | 9 | 0 | -21 |
| Critical (15%) | 3 | -16 | -16 | 31 | 50 | 7 | -1 | -3 | 13 | -1 | -16 | 1 |

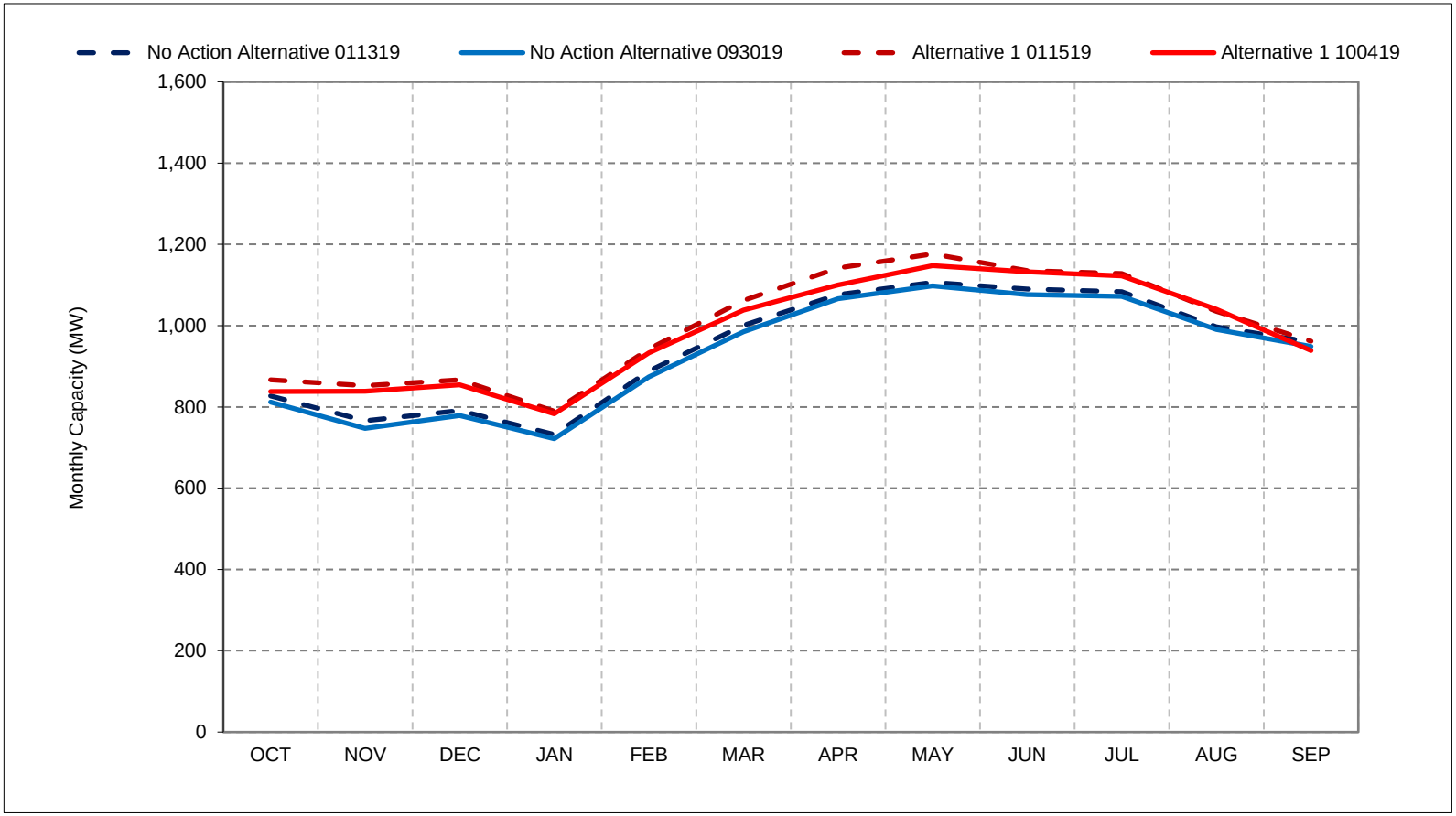
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-1. SWP Total Capacity, Long-Term Average Capacity

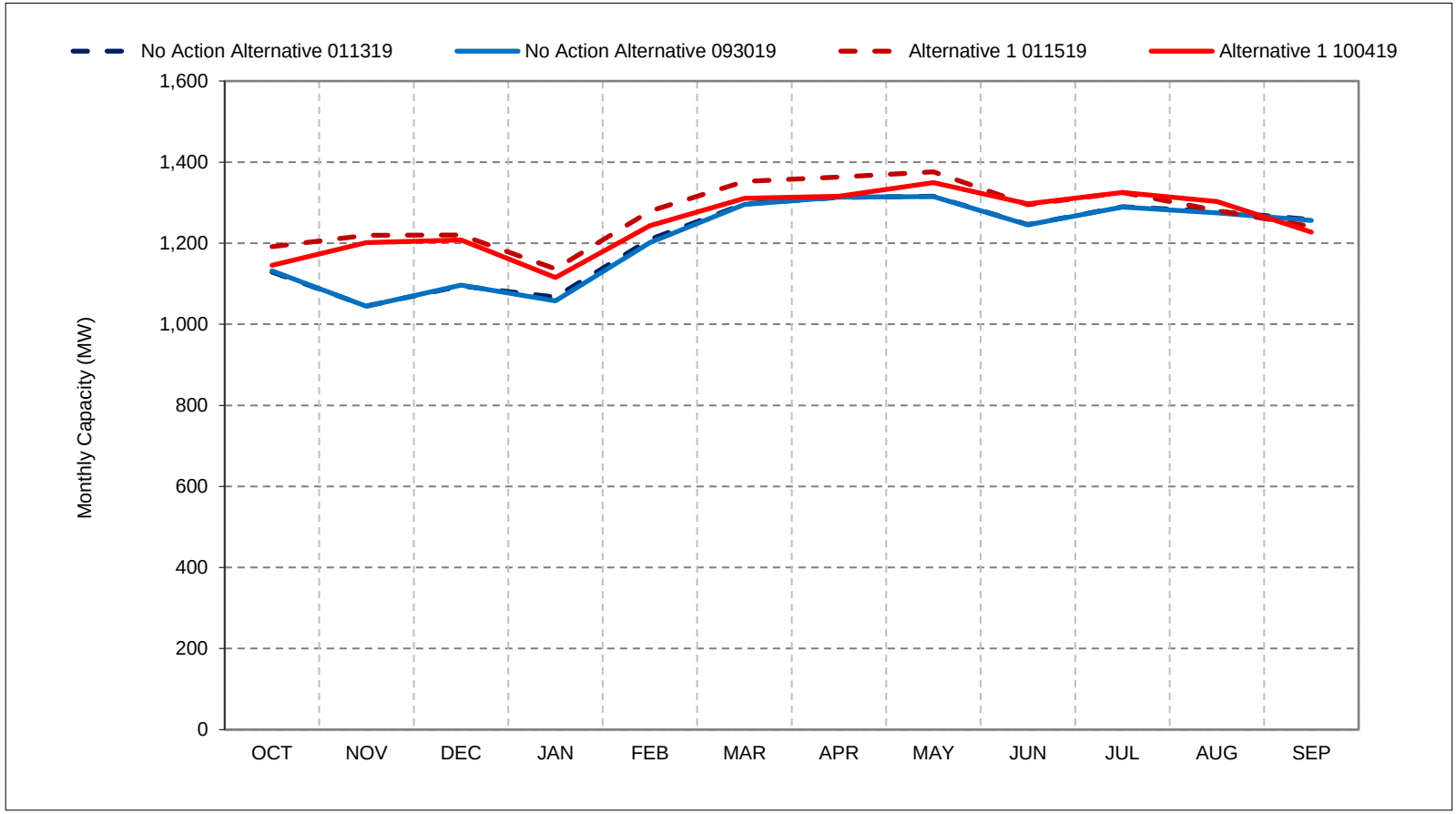



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-2. SWP Total Capacity, Wet Year Average Capacity

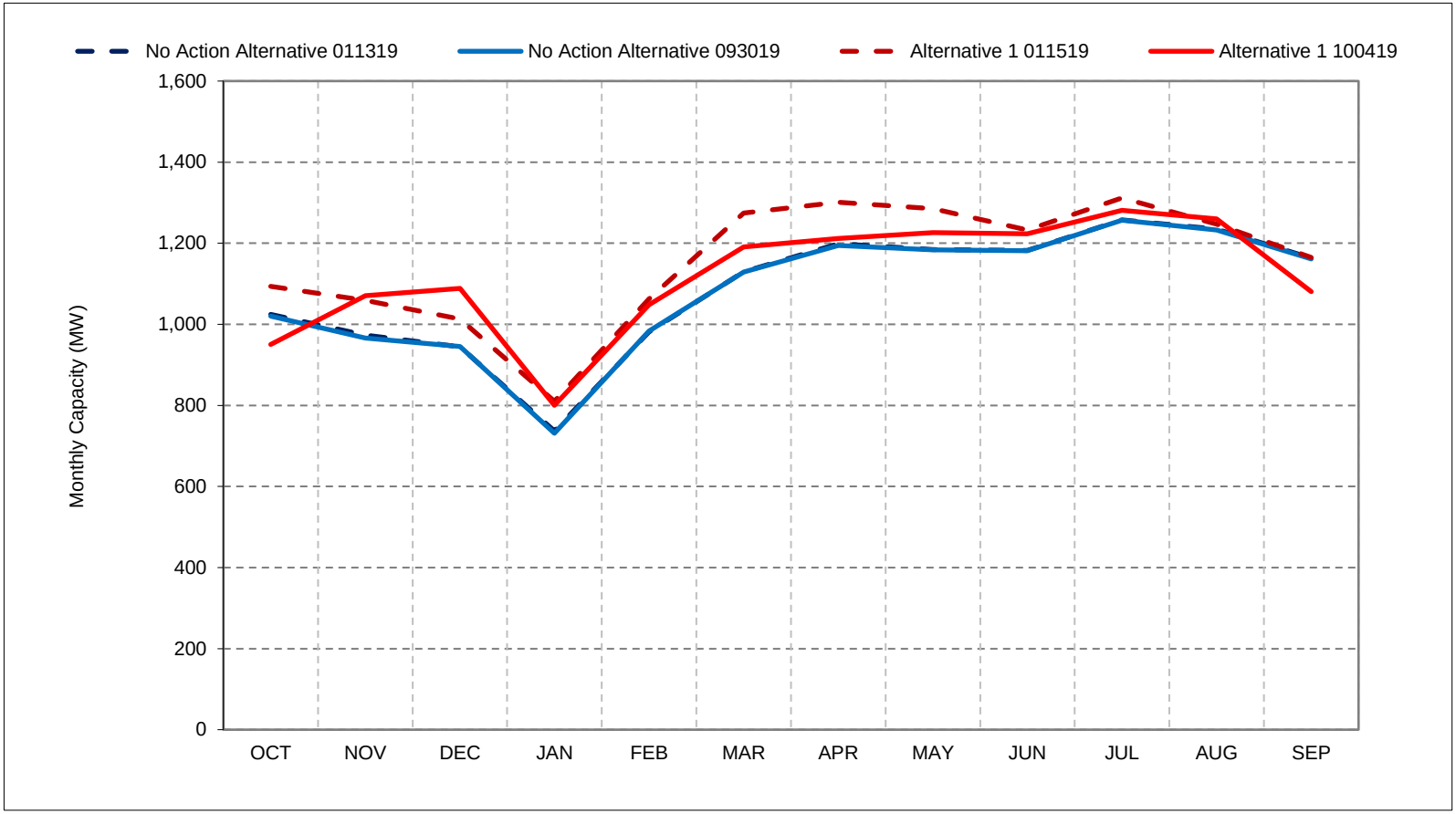



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-3. SWP Total Capacity, Above Normal Year Average Capacity

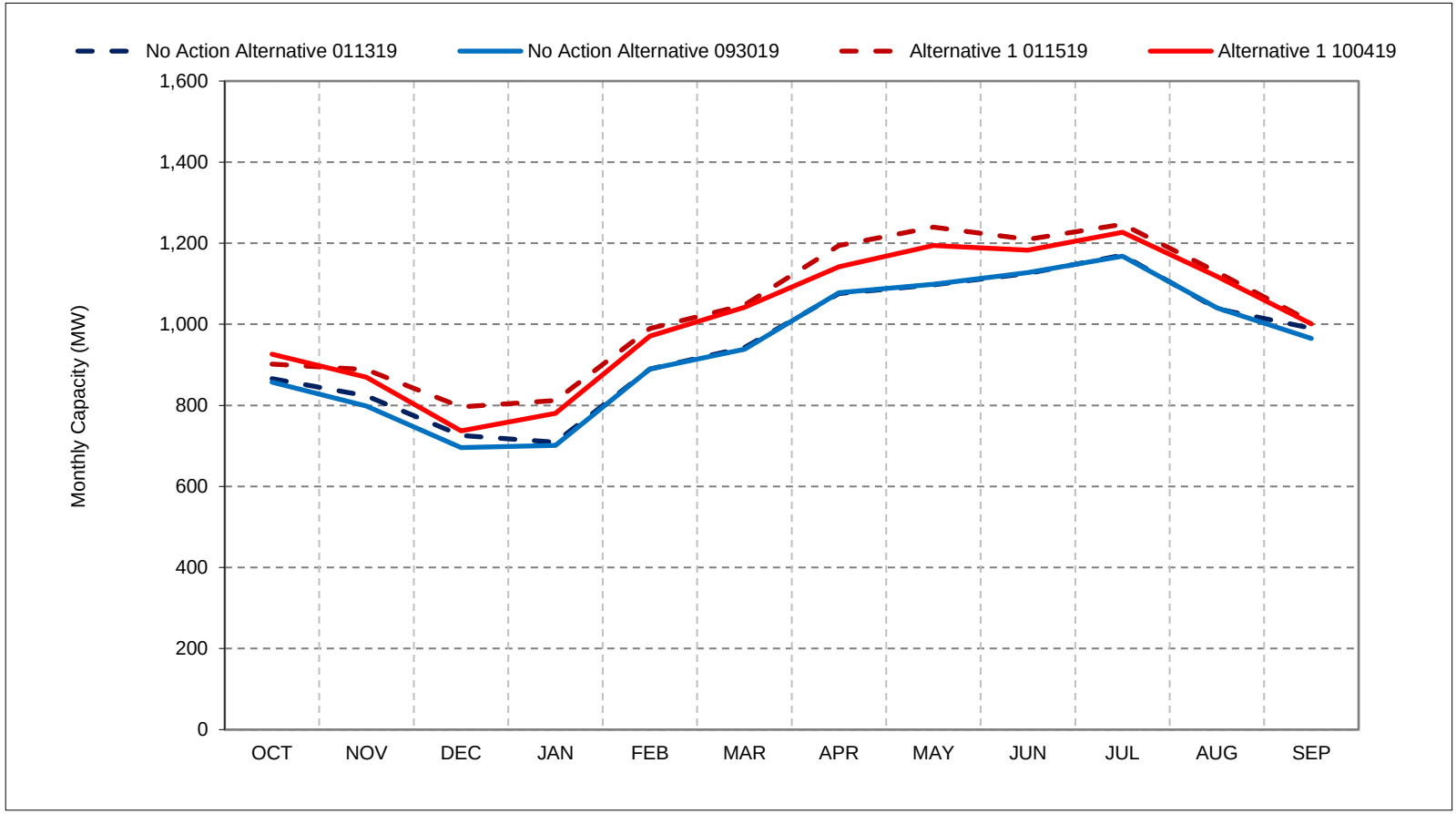



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-4. SWP Total Capacity, Below Normal Year Average Capacity

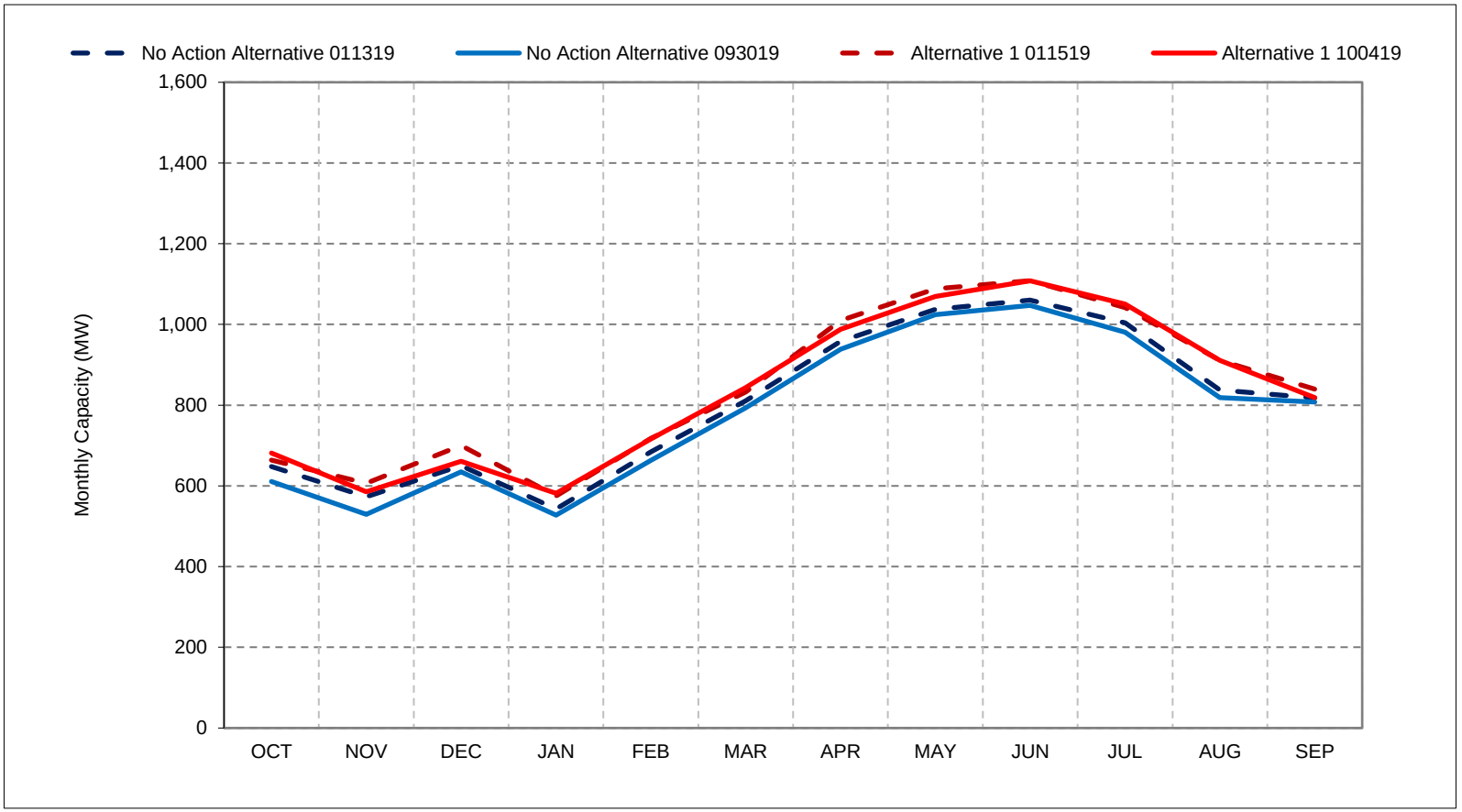



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-5. SWP Total Capacity, Dry Year Average Capacity

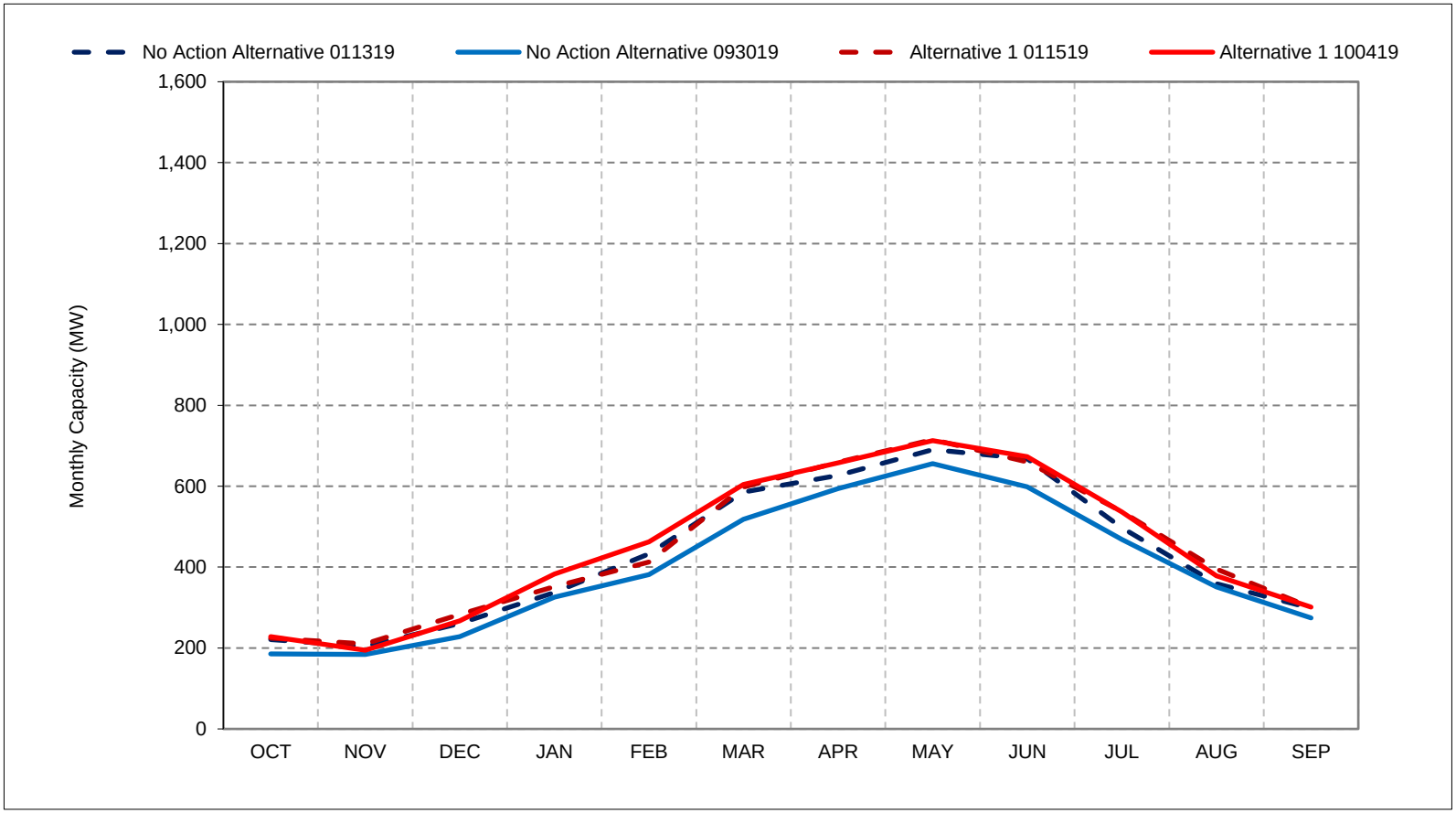



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 32-6. SWP Total Capacity, Critical Year Average Capacity

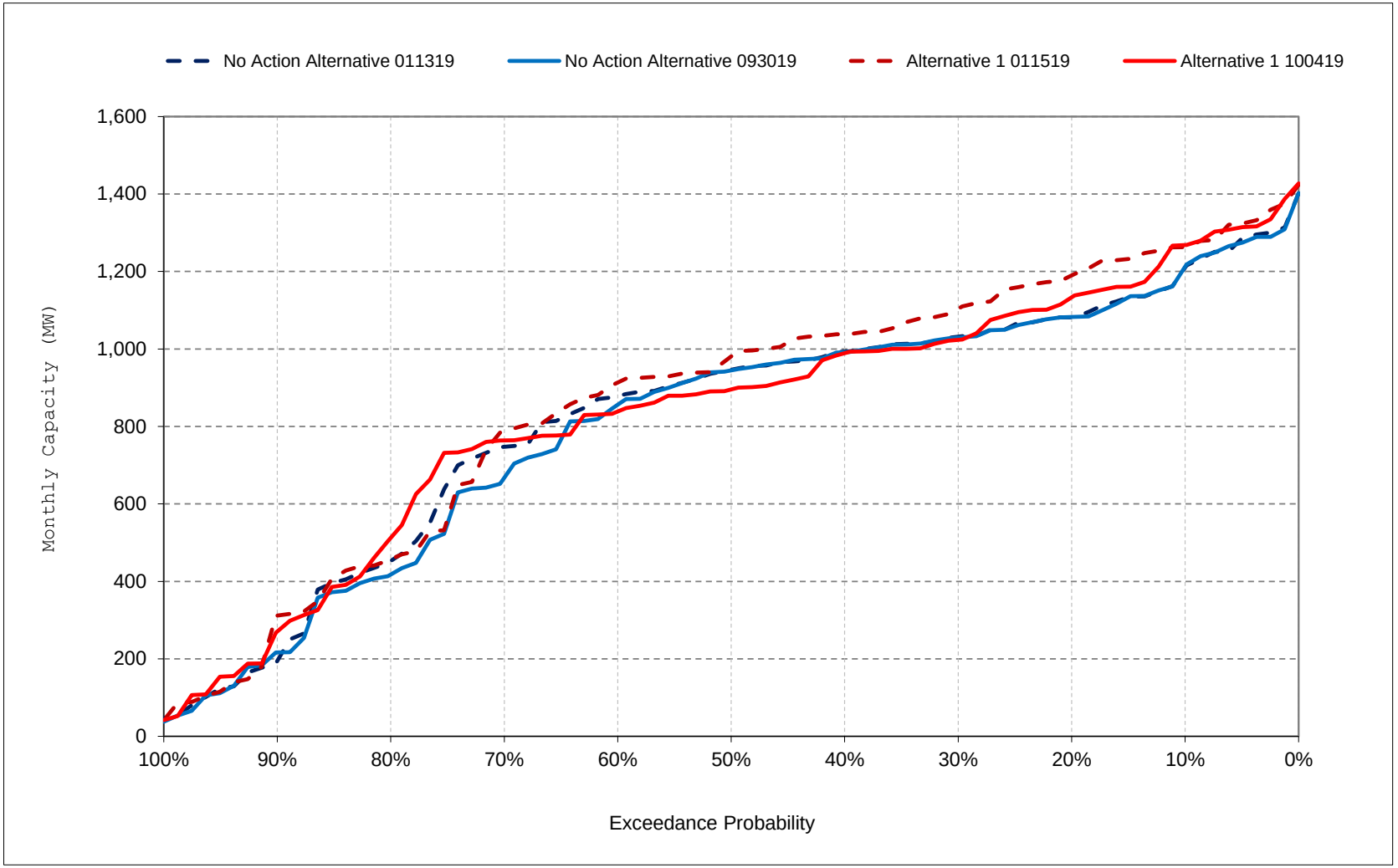



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

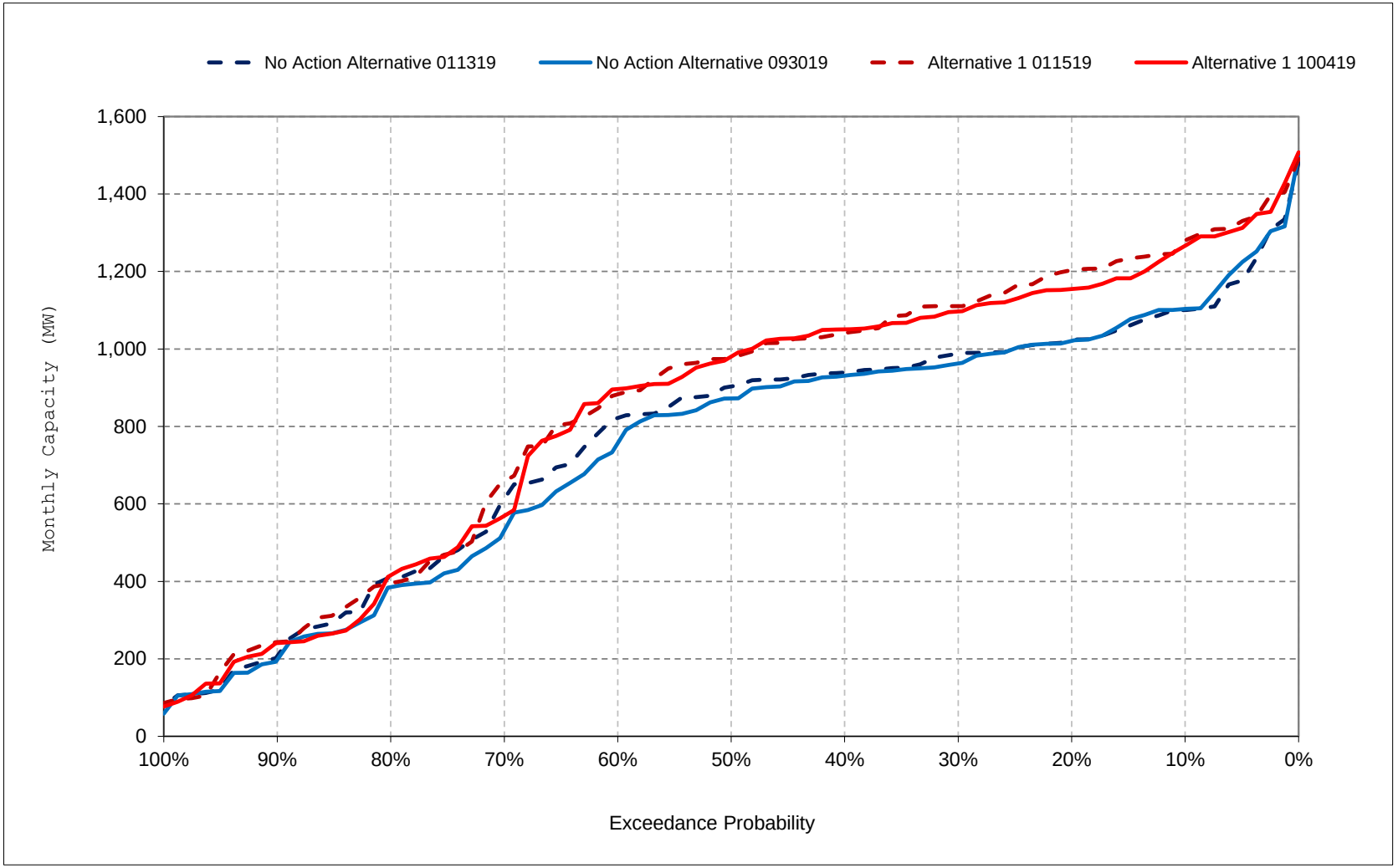
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-7. SWP Total Capacity, October**



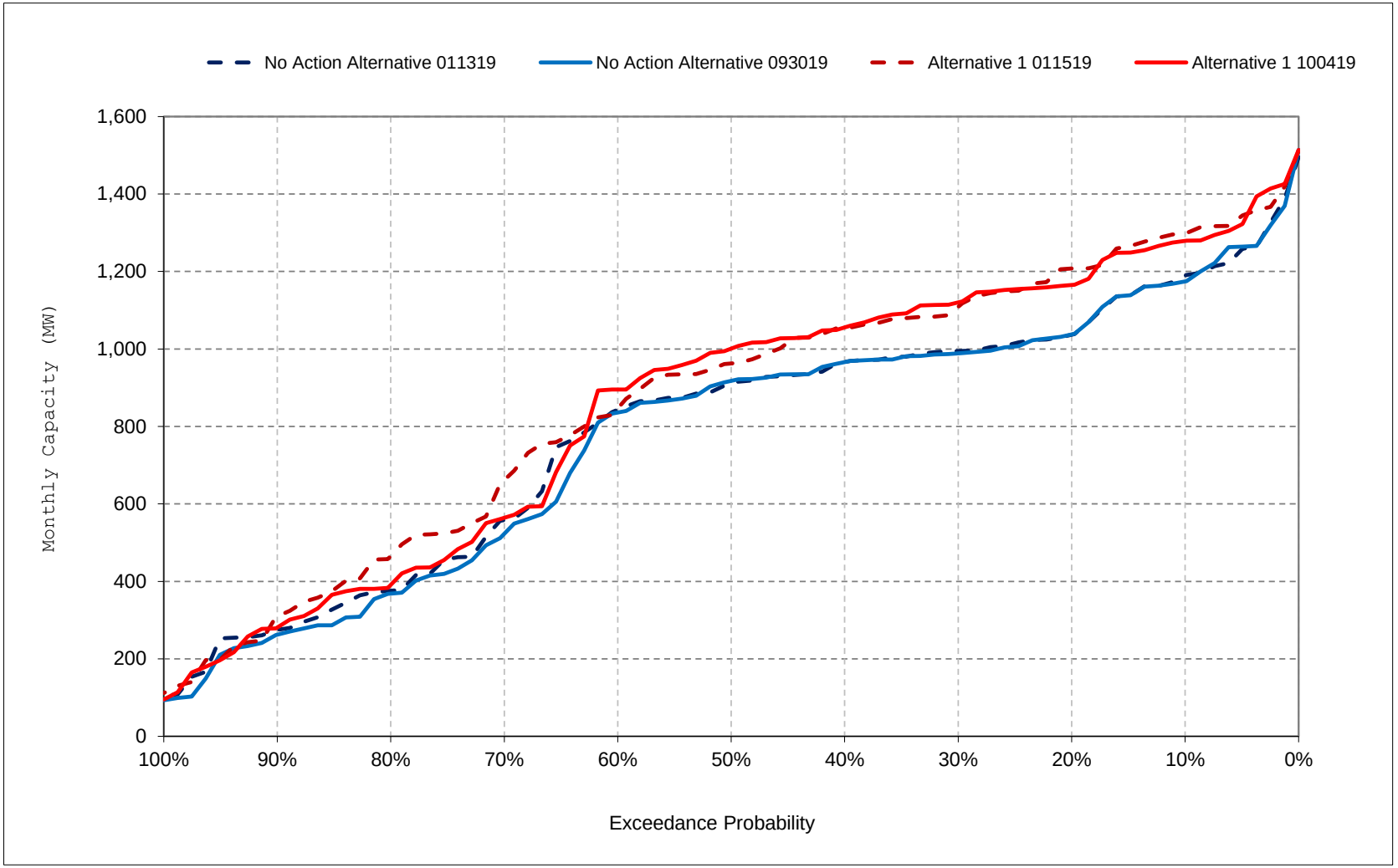

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-8. SWP Total Capacity, November**



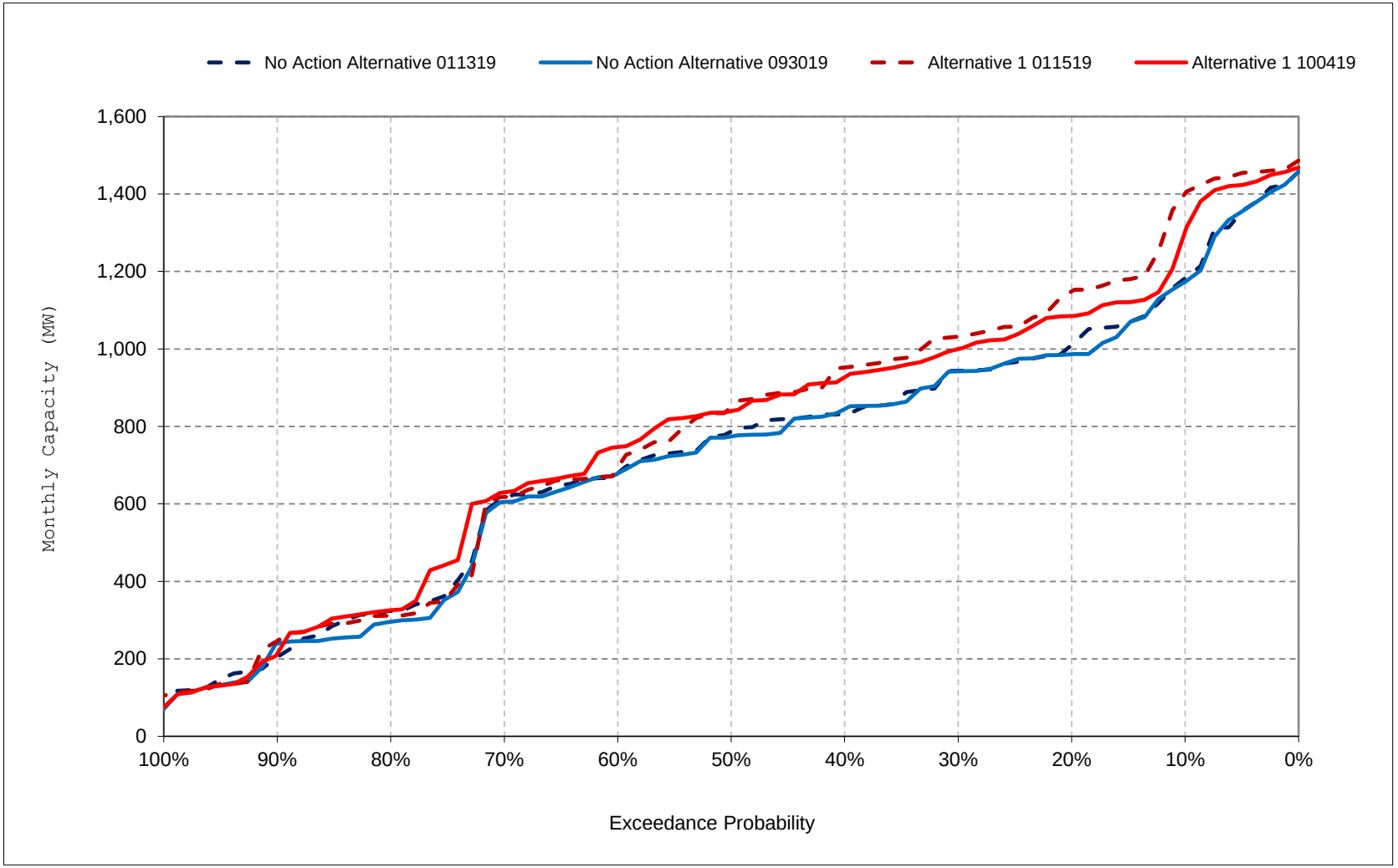

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-9. SWP Total Capacity, December**



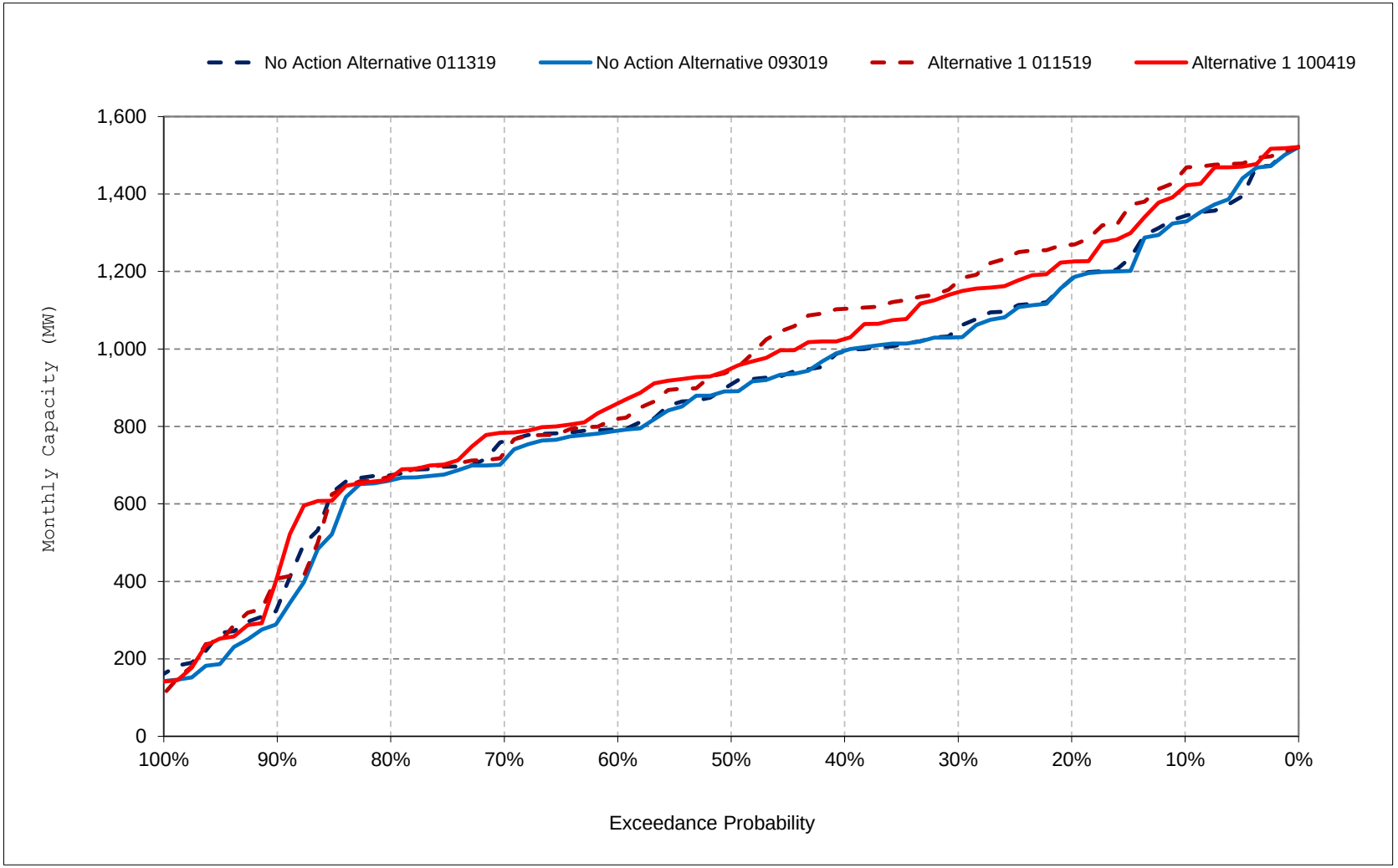

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-10. SWP Total Capacity, January**



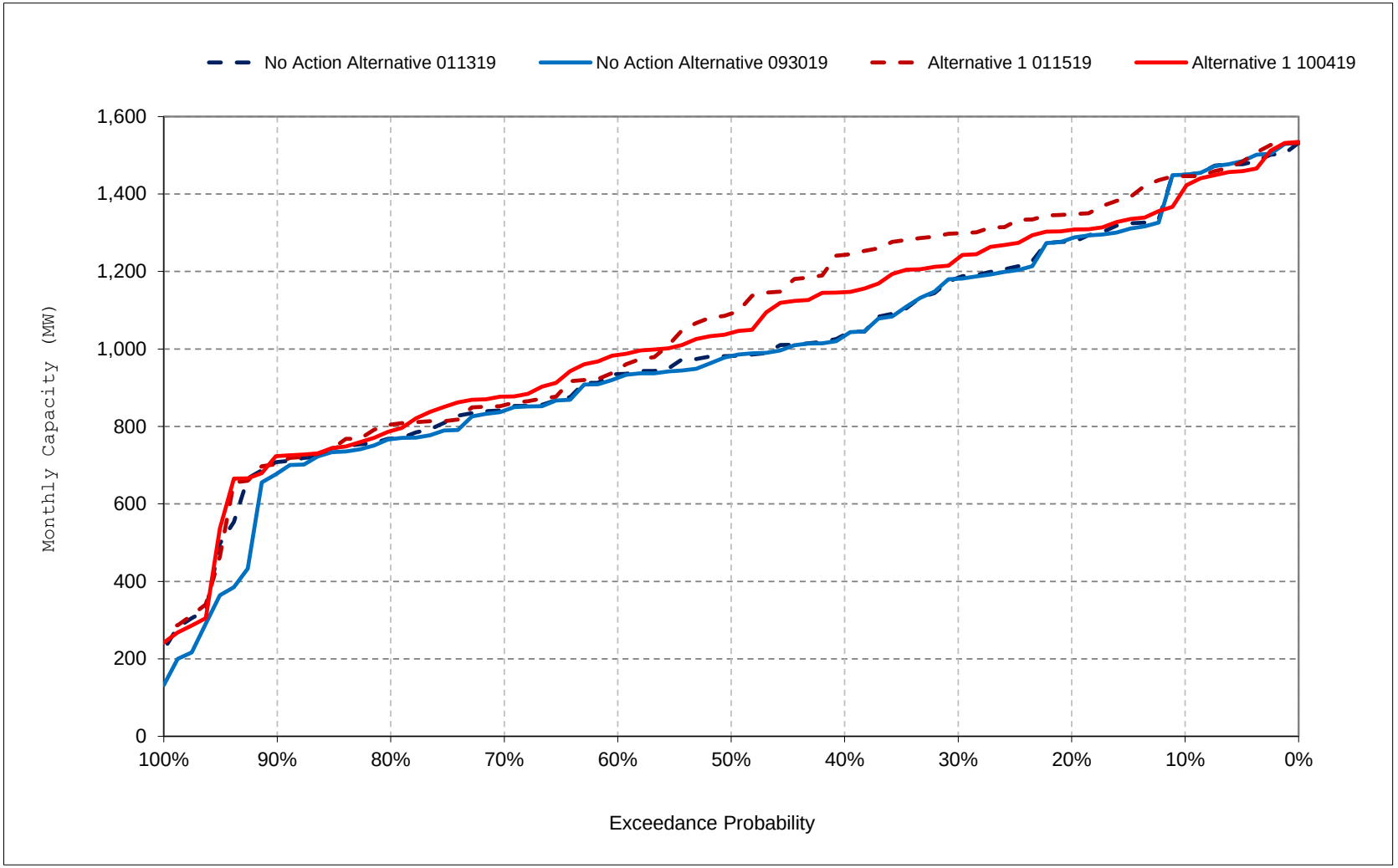

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-11. SWP Total Capacity, February**



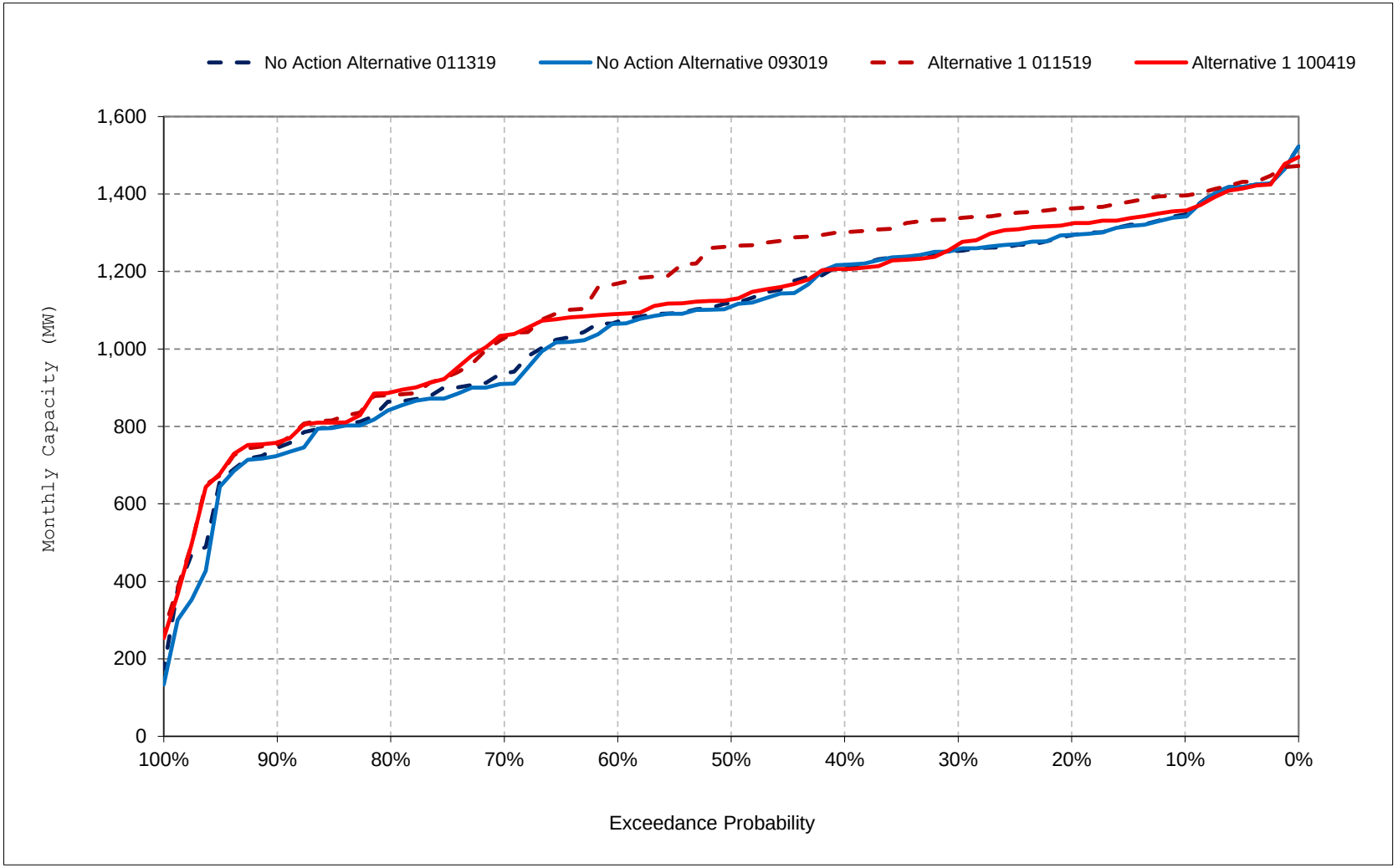

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-12. SWP Total Capacity, March**



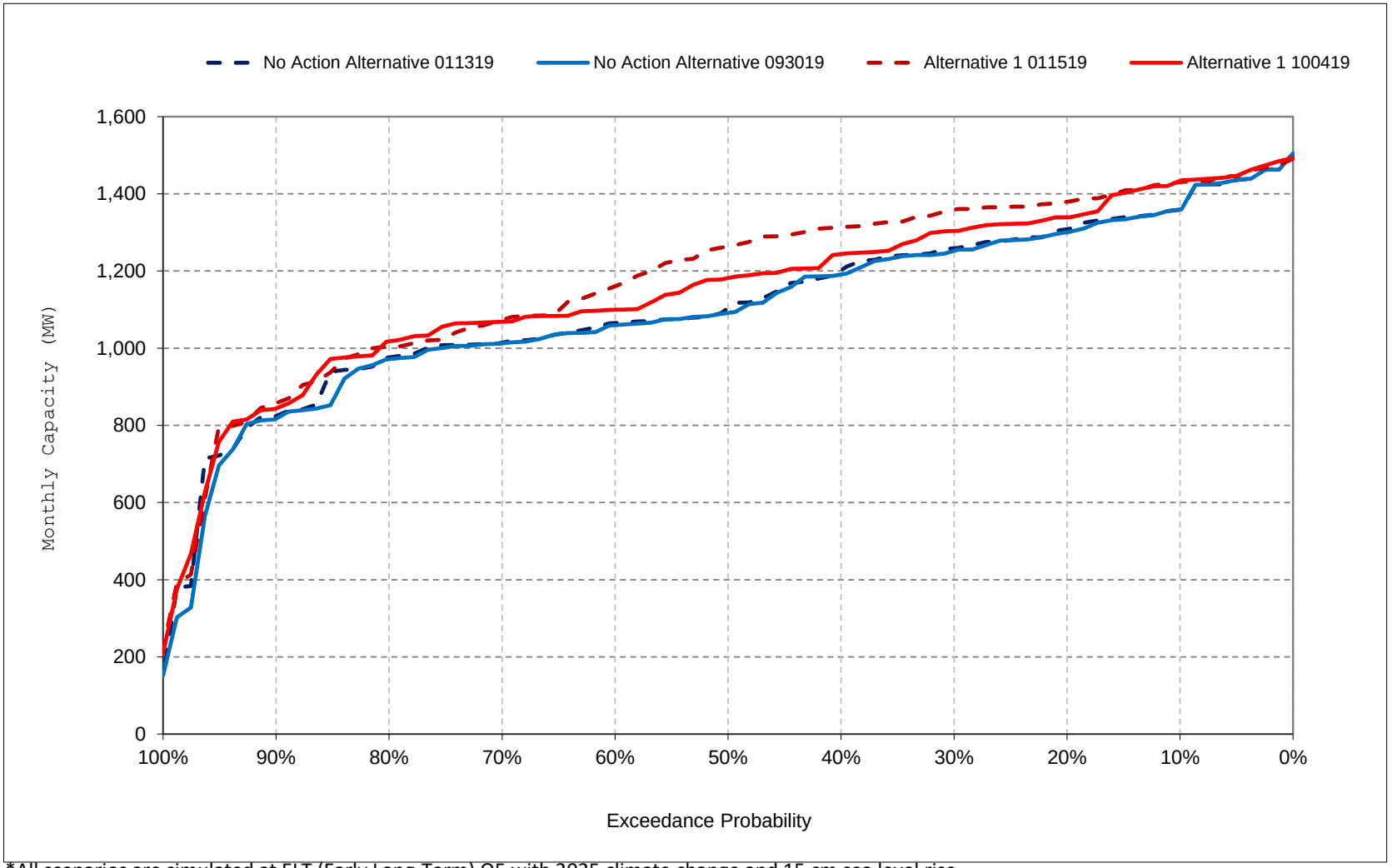

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-13. SWP Total Capacity, April**



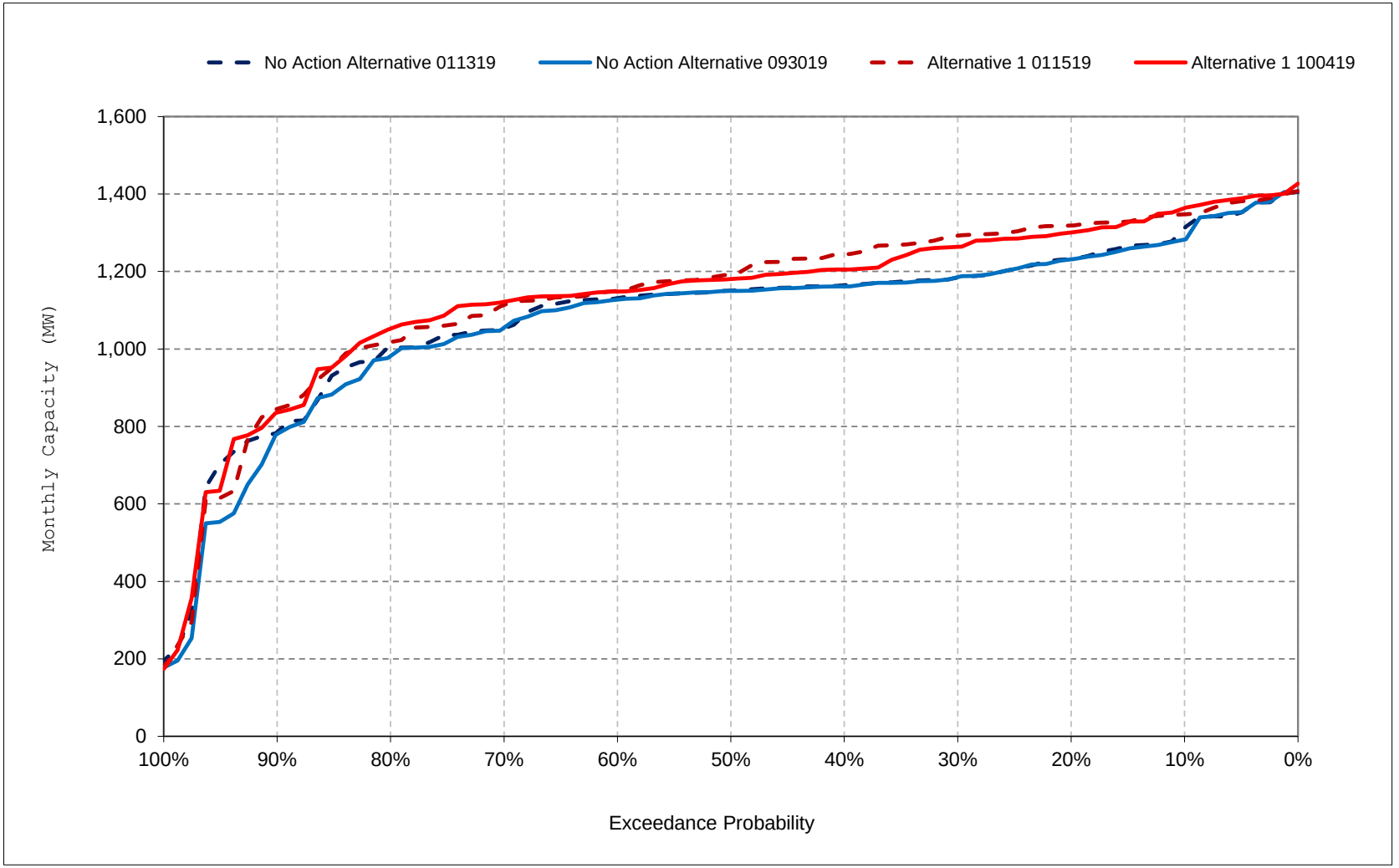

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-14. SWP Total Capacity, May**



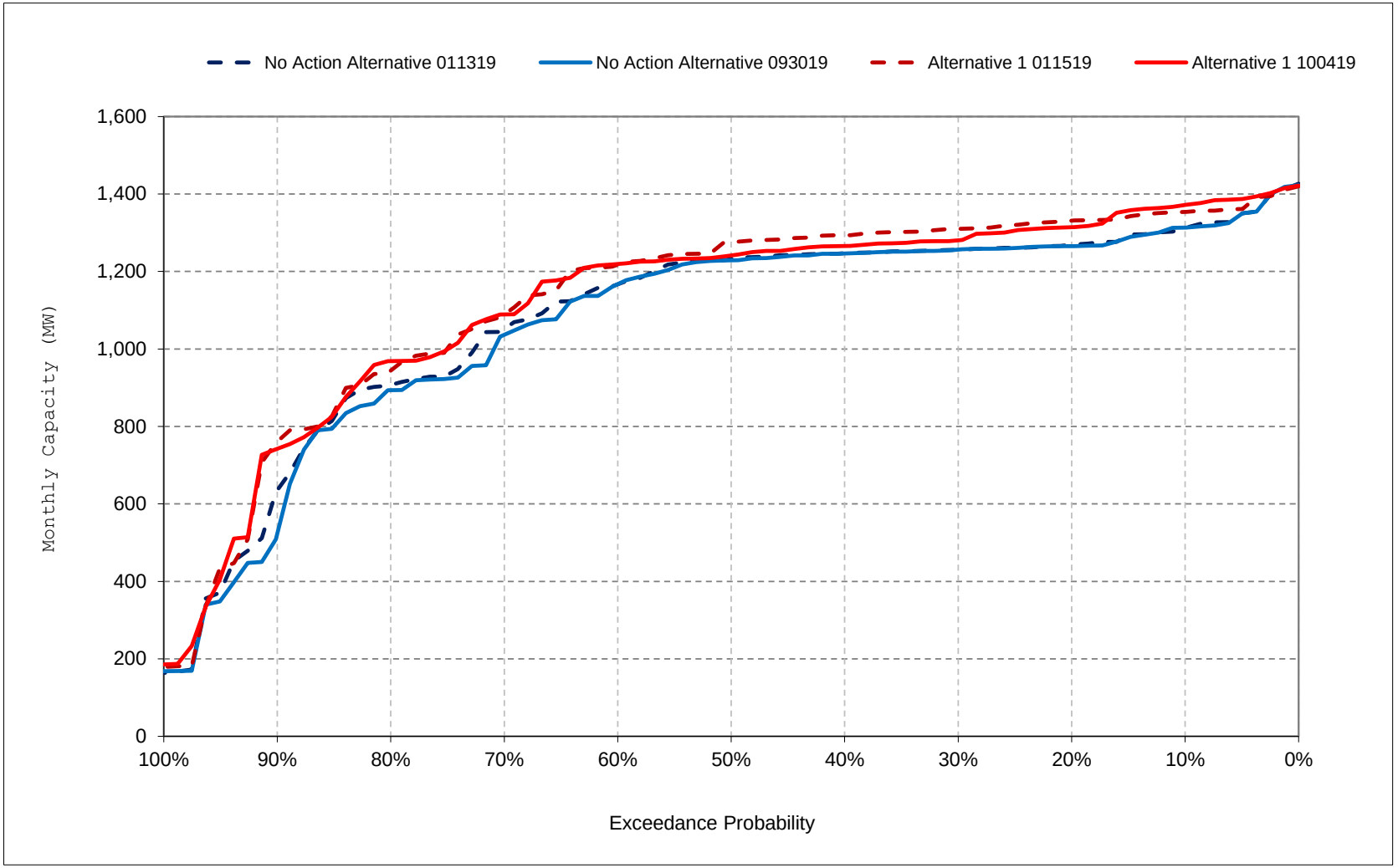

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-15. SWP Total Capacity, June**



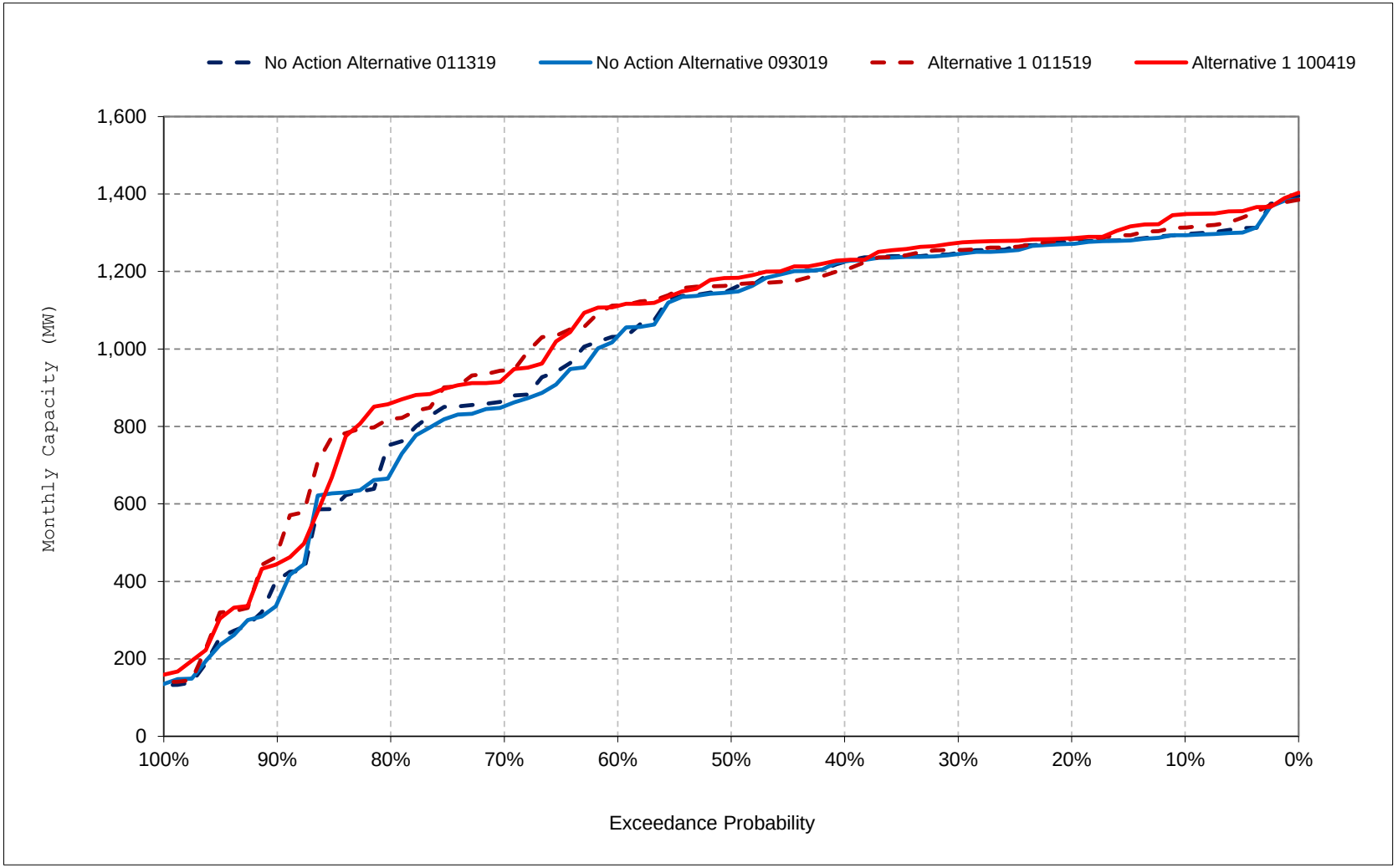

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-16. SWP Total Capacity, July**



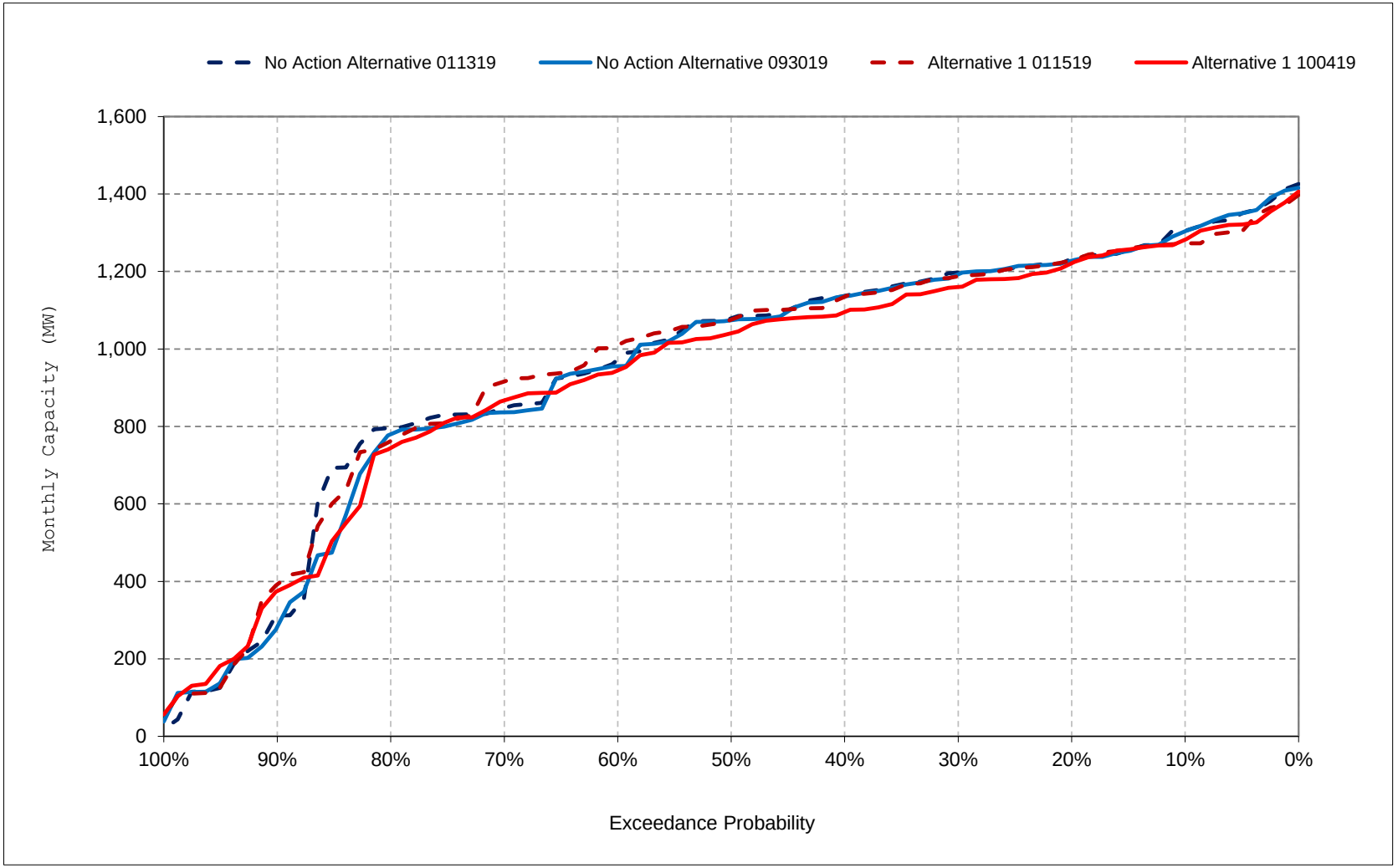

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-17. SWP Total Capacity, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 32-18. SWP Total Capacity, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-1. SWP Total Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 488 | 393 | 452 | 663 | 683 | 688 | 599 | 719 | 538 | 697 | 619 | 656 |
| 20% | 422 | 344 | 355 | 242 | 552 | 560 | 418 | 495 | 469 | 680 | 605 | 611 |
| 30% | 396 | 323 | 302 | 183 | 214 | 378 | 352 | 427 | 437 | 658 | 576 | 577 |
| 40% | 368 | 310 | 277 | 142 | 165 | 273 | 335 | 396 | 428 | 649 | 548 | 524 |
| 50% | 338 | 283 | 263 | 102 | 121 | 134 | 281 | 355 | 415 | 632 | 506 | 458 |
| 60% | 283 | 254 | 249 | 75 | 75 | 96 | 232 | 286 | 401 | 576 | 417 | 347 |
| 70% | 235 | 208 | 211 | 57 | 59 | 84 | 175 | 263 | 368 | 469 | 313 | 285 |
| 80% | 193 | 156 | 170 | 47 | 48 | 59 | 121 | 237 | 352 | 359 | 227 | 234 |
| 90% | 97 | 93 | 123 | 36 | 32 | 48 | 93 | 214 | 266 | 264 | 153 | 146 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 312 | 268 | 278 | 198 | 235 | 284 | 306 | 396 | 407 | 537 | 433 | 419 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 441 | 365 | 386 | 416 | 511 | 591 | 521 | 620 | 487 | 624 | 552 | 617 |
| Above Normal (16%) | 392 | 326 | 297 | 149 | 208 | 329 | 328 | 383 | 413 | 668 | 607 | 557 |
| Below Normal (13%) | 298 | 271 | 245 | 117 | 112 | 116 | 242 | 317 | 390 | 625 | 479 | 366 |
| Dry (24%) | 230 | 210 | 237 | 81 | 76 | 76 | 170 | 284 | 405 | 473 | 304 | 274 |
| Critical (15%) | 97 | 92 | 121 | 51 | 44 | 69 | 106 | 184 | 243 | 232 | 157 | 133 |

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 486 | 420 | 493 | 758 | 731 | 769 | 617 | 714 | 582 | 719 | 632 | 514 |
| 20% | 441 | 399 | 400 | 275 | 609 | 607 | 460 | 576 | 525 | 699 | 612 | 481 |
| 30% | 421 | 386 | 363 | 224 | 386 | 511 | 379 | 504 | 500 | 693 | 597 | 437 |
| 40% | 373 | 359 | 330 | 180 | 192 | 344 | 353 | 440 | 481 | 667 | 559 | 395 |
| 50% | 334 | 326 | 311 | 95 | 160 | 254 | 323 | 413 | 464 | 648 | 502 | 379 |
| 60% | 295 | 290 | 271 | 78 | 77 | 118 | 266 | 356 | 433 | 568 | 453 | 353 |
| 70% | 243 | 220 | 239 | 65 | 63 | 90 | 186 | 307 | 418 | 471 | 355 | 289 |
| 80% | 193 | 181 | 183 | 48 | 47 | 60 | 130 | 253 | 370 | 379 | 281 | 250 |
| 90% | 108 | 121 | 116 | 36 | 31 | 47 | 102 | 203 | 288 | 282 | 215 | 168 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 318 | 300 | 320 | 227 | 274 | 332 | 330 | 431 | 447 | 558 | 457 | 356 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 419 | 415 | 462 | 472 | 562 | 647 | 526 | 632 | 516 | 642 | 554 | 420 |
| Above Normal (16%) | 438 | 371 | 348 | 177 | 270 | 469 | 390 | 450 | 455 | 712 | 623 | 510 |
| Below Normal (13%) | 314 | 308 | 290 | 143 | 199 | 170 | 300 | 418 | 466 | 665 | 550 | 366 |
| Dry (24%) | 238 | 221 | 246 | 90 | 83 | 76 | 184 | 303 | 447 | 481 | 339 | 291 |
| Critical (15%) | 105 | 99 | 132 | 54 | 44 | 78 | 109 | 197 | 269 | 238 | 178 | 147 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -2 | 27 | 41 | 95 | 49 | 81 | 17 | -5 | 44 | 23 | 14 | -142 |
| 20% | 19 | 55 | 46 | 33 | 57 | 47 | 42 | 81 | 56 | 19 | 7 | -130 |
| 30% | 25 | 63 | 60 | 41 | 172 | 132 | 28 | 77 | 62 | 35 | 21 | -140 |
| 40% | 5 | 48 | 53 | 38 | 27 | 71 | 18 | 44 | 53 | 18 | 11 | -129 |
| 50% | -3 | 43 | 48 | -7 | 39 | 121 | 41 | 58 | 49 | 16 | -4 | -79 |
| 60% | 12 | 35 | 21 | 3 | 2 | 23 | 35 | 70 | 32 | -8 | 35 | 7 |
| 70% | 8 | 13 | 29 | 8 | 4 | 5 | 11 | 45 | 50 | 2 | 42 | 4 |
| 80% | -1 | 25 | 13 | 1 | -1 | 1 | 9 | 16 | 18 | 20 | 54 | 17 |
| 90% | 11 | 28 | -6 | 0 | -1 | -1 | 9 | -11 | 22 | 18 | 62 | 22 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6 | 32 | 42 | 28 | 39 | 49 | 23 | 34 | 40 | 21 | 24 | -64 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -22 | 51 | 76 | 56 | 52 | 57 | 5 | 12 | 30 | 18 | 2 | -198 |
| Above Normal (16%) | 46 | 45 | 51 | 28 | 62 | 140 | 62 | 67 | 42 | 44 | 16 | -47 |
| Below Normal (13%) | 17 | 37 | 45 | 26 | 87 | 54 | 58 | 101 | 75 | 40 | 71 | 0 |
| Dry (24%) | 7 | 10 | 9 | 9 | 6 | 0 | 15 | 18 | 42 | 8 | 36 | 17 |
| Critical (15%) | 8 | 7 | 11 | 2 | 0 | 9 | 3 | 13 | 26 | 6 | 21 | 13 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-2. SWP Total Generation, Monthly Generation

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 492 | 397 | 451 | 672 | 680 | 688 | 599 | 718 | 537 | 697 | 620 | 655 |
| 20% | 419 | 347 | 354 | 234 | 492 | 561 | 418 | 494 | 462 | 681 | 603 | 612 |
| 30% | 398 | 323 | 303 | 180 | 216 | 380 | 354 | 426 | 436 | 661 | 579 | 578 |
| 40% | 381 | 300 | 282 | 140 | 154 | 269 | 331 | 394 | 426 | 651 | 544 | 527 |
| 50% | 336 | 280 | 262 | 97 | 116 | 134 | 276 | 343 | 415 | 609 | 496 | 448 |
| 60% | 285 | 245 | 246 | 75 | 74 | 92 | 228 | 299 | 398 | 579 | 414 | 340 |
| 70% | 235 | 201 | 214 | 57 | 61 | 83 | 156 | 260 | 371 | 451 | 305 | 278 |
| 80% | 191 | 155 | 167 | 46 | 51 | 58 | 118 | 244 | 351 | 342 | 215 | 227 |
| 90% | 95 | 93 | 113 | 36 | 30 | 47 | 92 | 205 | 286 | 241 | 155 | 138 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 313 | 266 | 276 | 195 | 233 | 281 | 303 | 395 | 405 | 530 | 429 | 417 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 444 | 365 | 388 | 409 | 504 | 590 | 522 | 619 | 487 | 624 | 550 | 617 |
| Above Normal (16%) | 390 | 322 | 301 | 149 | 212 | 326 | 322 | 383 | 413 | 672 | 607 | 553 |
| Below Normal (13%) | 299 | 272 | 245 | 119 | 114 | 114 | 244 | 322 | 395 | 626 | 477 | 364 |
| Dry (24%) | 230 | 207 | 231 | 77 | 75 | 73 | 162 | 279 | 400 | 455 | 293 | 271 |
| Critical (15%) | 94 | 85 | 108 | 51 | 44 | 65 | 102 | 182 | 234 | 211 | 154 | 132 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 459 | 425 | 541 | 730 | 678 | 734 | 584 | 681 | 538 | 693 | 640 | 450 |
| 20% | 405 | 397 | 394 | 310 | 586 | 596 | 386 | 478 | 499 | 685 | 622 | 430 |
| 30% | 365 | 371 | 358 | 190 | 342 | 489 | 332 | 420 | 480 | 664 | 600 | 416 |
| 40% | 321 | 345 | 327 | 159 | 189 | 367 | 316 | 383 | 466 | 650 | 572 | 387 |
| 50% | 305 | 311 | 292 | 130 | 133 | 221 | 279 | 366 | 451 | 642 | 528 | 355 |
| 60% | 266 | 286 | 263 | 82 | 97 | 134 | 233 | 340 | 439 | 580 | 449 | 306 |
| 70% | 225 | 224 | 242 | 66 | 67 | 86 | 197 | 294 | 418 | 525 | 353 | 267 |
| 80% | 196 | 172 | 175 | 44 | 54 | 64 | 132 | 245 | 383 | 390 | 290 | 227 |
| 90% | 144 | 113 | 137 | 36 | 31 | 48 | 101 | 219 | 288 | 276 | 211 | 161 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 295 | 295 | 315 | 223 | 262 | 320 | 298 | 400 | 439 | 548 | 464 | 325 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 397 | 412 | 447 | 467 | 541 | 625 | 489 | 596 | 509 | 626 | 589 | 405 |
| Above Normal (16%) | 322 | 376 | 380 | 161 | 259 | 421 | 314 | 385 | 450 | 668 | 615 | 371 |
| Below Normal (13%) | 314 | 291 | 262 | 135 | 160 | 175 | 260 | 377 | 452 | 642 | 530 | 361 |
| Dry (24%) | 248 | 219 | 245 | 94 | 84 | 82 | 172 | 292 | 442 | 505 | 338 | 279 |
| Critical (15%) | 107 | 88 | 124 | 57 | 49 | 80 | 109 | 192 | 260 | 236 | 181 | 144 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -33 | 28 | 90 | 58 | -3 | 46 | -15 | -37 | 1 | -5 | 20 | -205 |
| 20% | -14 | 50 | 40 | 76 | 94 | 36 | -33 | -16 | 37 | 4 | 19 | -182 |
| 30% | -33 | 48 | 54 | 11 | 126 | 109 | -23 | -6 | 43 | 3 | 21 | -162 |
| 40% | -60 | 46 | 45 | 19 | 36 | 98 | -15 | -11 | 40 | -1 | 28 | -140 |
| 50% | -31 | 31 | 30 | 33 | 17 | 87 | 2 | 23 | 36 | 33 | 33 | -92 |
| 60% | -20 | 40 | 17 | 7 | 23 | 42 | 5 | 41 | 40 | 1 | 35 | -35 |
| 70% | -9 | 22 | 29 | 9 | 6 | 2 | 41 | 34 | 47 | 74 | 48 | -11 |
| 80% | 5 | 17 | 7 | -2 | 3 | 6 | 14 | 1 | 31 | 48 | 75 | 0 |
| 90% | 50 | 19 | 23 | 0 | 1 | 1 | 8 | 14 | 2 | 35 | 56 | 23 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -17 | 29 | 39 | 28 | 28 | 39 | -6 | 5 | 34 | 18 | 35 | -93 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -47 | 46 | 59 | 58 | 37 | 35 | -32 | -23 | 22 | 2 | 38 | -211 |
| Above Normal (16%) | -68 | 54 | 80 | 12 | 47 | 95 | -8 | 2 | 36 | -5 | 8 | -182 |
| Below Normal (13%) | 15 | 19 | 18 | 15 | 46 | 62 | 16 | 56 | 57 | 17 | 52 | -3 |
| Dry (24%) | 18 | 12 | 14 | 18 | 9 | 10 | 10 | 14 | 41 | 50 | 45 | 8 |
| Critical (15%) | 13 | 3 | 16 | 7 | 5 | 15 | 7 | 11 | 26 | 25 | 27 | 11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-3. SWP Total Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 488 | 393 | 452 | 663 | 683 | 688 | 599 | 719 | 538 | 697 | 619 | 656 |
| 20% | 422 | 344 | 355 | 242 | 552 | 560 | 418 | 495 | 469 | 680 | 605 | 611 |
| 30% | 396 | 323 | 302 | 183 | 214 | 378 | 352 | 427 | 437 | 658 | 576 | 577 |
| 40% | 368 | 310 | 277 | 142 | 165 | 273 | 335 | 396 | 428 | 649 | 548 | 524 |
| 50% | 338 | 283 | 263 | 102 | 121 | 134 | 281 | 355 | 415 | 632 | 506 | 458 |
| 60% | 283 | 254 | 249 | 75 | 75 | 96 | 232 | 286 | 401 | 576 | 417 | 347 |
| 70% | 235 | 208 | 211 | 57 | 59 | 84 | 175 | 263 | 368 | 469 | 313 | 285 |
| 80% | 193 | 156 | 170 | 47 | 48 | 59 | 121 | 237 | 352 | 359 | 227 | 234 |
| 90% | 97 | 93 | 123 | 36 | 32 | 48 | 93 | 214 | 266 | 264 | 153 | 146 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 312 | 268 | 278 | 198 | 235 | 284 | 306 | 396 | 407 | 537 | 433 | 419 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 441 | 365 | 386 | 416 | 511 | 591 | 521 | 620 | 487 | 624 | 552 | 617 |
| Above Normal (16%) | 392 | 326 | 297 | 149 | 208 | 329 | 328 | 383 | 413 | 668 | 607 | 557 |
| Below Normal (13%) | 298 | 271 | 245 | 117 | 112 | 116 | 242 | 317 | 390 | 625 | 479 | 366 |
| Dry (24%) | 230 | 210 | 237 | 81 | 76 | 76 | 170 | 284 | 405 | 473 | 304 | 274 |
| Critical (15%) | 97 | 92 | 121 | 51 | 44 | 69 | 106 | 184 | 243 | 232 | 157 | 133 |

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 492 | 397 | 451 | 672 | 680 | 688 | 599 | 718 | 537 | 697 | 620 | 655 |
| 20% | 419 | 347 | 354 | 234 | 492 | 561 | 418 | 494 | 462 | 681 | 603 | 612 |
| 30% | 398 | 323 | 303 | 180 | 216 | 380 | 354 | 426 | 436 | 661 | 579 | 578 |
| 40% | 381 | 300 | 282 | 140 | 154 | 269 | 331 | 394 | 426 | 651 | 544 | 527 |
| 50% | 336 | 280 | 262 | 97 | 116 | 134 | 276 | 343 | 415 | 609 | 496 | 448 |
| 60% | 285 | 245 | 246 | 75 | 74 | 92 | 228 | 299 | 398 | 579 | 414 | 340 |
| 70% | 235 | 201 | 214 | 57 | 61 | 83 | 156 | 260 | 371 | 451 | 305 | 278 |
| 80% | 191 | 155 | 167 | 46 | 51 | 58 | 118 | 244 | 351 | 342 | 215 | 227 |
| 90% | 95 | 93 | 113 | 36 | 30 | 47 | 92 | 205 | 286 | 241 | 155 | 138 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 313 | 266 | 276 | 195 | 233 | 281 | 303 | 395 | 405 | 530 | 429 | 417 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 444 | 365 | 388 | 409 | 504 | 590 | 522 | 619 | 487 | 624 | 550 | 617 |
| Above Normal (16%) | 390 | 322 | 301 | 149 | 212 | 326 | 322 | 383 | 413 | 672 | 607 | 553 |
| Below Normal (13%) | 299 | 272 | 245 | 119 | 114 | 114 | 244 | 322 | 395 | 626 | 477 | 364 |
| Dry (24%) | 230 | 207 | 231 | 77 | 75 | 73 | 162 | 279 | 400 | 455 | 293 | 271 |
| Critical (15%) | 94 | 85 | 108 | 51 | 44 | 65 | 102 | 182 | 234 | 211 | 154 | 132 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 4 | 4 | -1 | 9 | -2 | 0 | 0 | -1 | 0 | 1 | 1 | -1 |
| 20% | -3 | 3 | -1 | -8 | -60 | 0 | 0 | -1 | -7 | 0 | -1 | 1 |
| 30% | 2 | 0 | 1 | -3 | 3 | 1 | 3 | -2 | -1 | 3 | 3 | 1 |
| 40% | 13 | -11 | 5 | -2 | -12 | -4 | -4 | -1 | -2 | 2 | -4 | 3 |
| 50% | -1 | -3 | -1 | -5 | -4 | 0 | -5 | -11 | 0 | -23 | -11 | -10 |
| 60% | 3 | -9 | -3 | 0 | -2 | -4 | -3 | 13 | -3 | 3 | -3 | -6 |
| 70% | -1 | -6 | 3 | -1 | 2 | -1 | -19 | -3 | 3 | -18 | -7 | -7 |
| 80% | -2 | -1 | -3 | -1 | 3 | -1 | -4 | 6 | -1 | -17 | -12 | -7 |
| 90% | -2 | 0 | -9 | 0 | -2 | -1 | -1 | -9 | 20 | -23 | 2 | -7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 0 | -2 | -2 | -3 | -2 | -2 | -3 | -2 | -2 | -7 | -4 | -2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 3 | 1 | 2 | -7 | -7 | -1 | 1 | -1 | 0 | 0 | -1 | -1 |
| Above Normal (16%) | -2 | -4 | 4 | -1 | 3 | -3 | -6 | 0 | 1 | 4 | 0 | -4 |
| Below Normal (13%) | 1 | 0 | 0 | 2 | 2 | -2 | 2 | 5 | 5 | 0 | -2 | -2 |
| Dry (24%) | 0 | -4 | -5 | -4 | -2 | -3 | -8 | -6 | -5 | -18 | -11 | -3 |
| Critical (15%) | -3 | -7 | -14 | -1 | -1 | -4 | -5 | -2 | -9 | -21 | -3 | -1 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 33-4. SWP Total Generation, Monthly Generation

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 486 | 420 | 493 | 758 | 731 | 769 | 617 | 714 | 582 | 719 | 632 | 514 |
| 20% | 441 | 399 | 400 | 275 | 609 | 607 | 460 | 576 | 525 | 699 | 612 | 481 |
| 30% | 421 | 386 | 363 | 224 | 386 | 511 | 379 | 504 | 500 | 693 | 597 | 437 |
| 40% | 373 | 359 | 330 | 180 | 192 | 344 | 353 | 440 | 481 | 667 | 559 | 395 |
| 50% | 334 | 326 | 311 | 95 | 160 | 254 | 323 | 413 | 464 | 648 | 502 | 379 |
| 60% | 295 | 290 | 271 | 78 | 77 | 118 | 266 | 356 | 433 | 568 | 453 | 353 |
| 70% | 243 | 220 | 239 | 65 | 63 | 90 | 186 | 307 | 418 | 471 | 355 | 289 |
| 80% | 193 | 181 | 183 | 48 | 47 | 60 | 130 | 253 | 370 | 379 | 281 | 250 |
| 90% | 108 | 121 | 116 | 36 | 31 | 47 | 102 | 203 | 288 | 282 | 215 | 168 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 318 | 300 | 320 | 227 | 274 | 332 | 330 | 431 | 447 | 558 | 457 | 356 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 419 | 415 | 462 | 472 | 562 | 647 | 526 | 632 | 516 | 642 | 554 | 420 |
| Above Normal (16%) | 438 | 371 | 348 | 177 | 270 | 469 | 390 | 450 | 455 | 712 | 623 | 510 |
| Below Normal (13%) | 314 | 308 | 290 | 143 | 199 | 170 | 300 | 418 | 466 | 665 | 550 | 366 |
| Dry (24%) | 238 | 221 | 246 | 90 | 83 | 76 | 184 | 303 | 447 | 481 | 339 | 291 |
| Critical (15%) | 105 | 99 | 132 | 54 | 44 | 78 | 109 | 197 | 269 | 238 | 178 | 147 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 459 | 425 | 541 | 730 | 678 | 734 | 584 | 681 | 538 | 693 | 640 | 450 |
| 20% | 405 | 397 | 394 | 310 | 586 | 596 | 386 | 478 | 499 | 685 | 622 | 430 |
| 30% | 365 | 371 | 358 | 190 | 342 | 489 | 332 | 420 | 480 | 664 | 600 | 416 |
| 40% | 321 | 345 | 327 | 159 | 189 | 367 | 316 | 383 | 466 | 650 | 572 | 387 |
| 50% | 305 | 311 | 292 | 130 | 133 | 221 | 279 | 366 | 451 | 642 | 528 | 355 |
| 60% | 266 | 286 | 263 | 82 | 97 | 134 | 233 | 340 | 439 | 580 | 449 | 306 |
| 70% | 225 | 224 | 242 | 66 | 67 | 86 | 197 | 294 | 418 | 525 | 353 | 267 |
| 80% | 196 | 172 | 175 | 44 | 54 | 64 | 132 | 245 | 383 | 390 | 290 | 227 |
| 90% | 144 | 113 | 137 | 36 | 31 | 48 | 101 | 219 | 288 | 276 | 211 | 161 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 295 | 295 | 315 | 223 | 262 | 320 | 298 | 400 | 439 | 548 | 464 | 325 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 397 | 412 | 447 | 467 | 541 | 625 | 489 | 596 | 509 | 626 | 589 | 405 |
| Above Normal (16%) | 322 | 376 | 380 | 161 | 259 | 421 | 314 | 385 | 450 | 668 | 615 | 371 |
| Below Normal (13%) | 314 | 291 | 262 | 135 | 160 | 175 | 260 | 377 | 452 | 642 | 530 | 361 |
| Dry (24%) | 248 | 219 | 245 | 94 | 84 | 82 | 172 | 292 | 442 | 505 | 338 | 279 |
| Critical (15%) | 107 | 88 | 124 | 57 | 49 | 80 | 109 | 192 | 260 | 236 | 181 | 144 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -27 | 5 | 48 | -27 | -54 | -36 | -32 | -33 | -43 | -27 | 8 | -64 |
| 20% | -36 | -2 | -6 | 35 | -23 | -11 | -75 | -98 | -26 | -15 | 11 | -51 |
| 30% | -56 | -15 | -5 | -34 | -44 | -22 | -48 | -84 | -20 | -29 | 3 | -21 |
| 40% | -53 | -13 | -3 | -21 | -3 | 22 | -37 | -57 | -14 | -18 | 13 | -8 |
| 50% | -29 | -15 | -19 | 36 | -27 | -34 | -44 | -47 | -13 | -6 | 27 | -24 |
| 60% | -29 | -4 | -8 | 4 | 20 | 16 | -33 | -16 | 5 | 12 | -4 | -48 |
| 70% | -18 | 4 | 3 | 0 | 5 | -4 | 11 | -13 | 0 | 54 | -2 | -22 |
| 80% | 4 | -9 | -9 | -4 | 7 | 4 | 2 | -8 | 12 | 11 | 9 | -23 |
| 90% | 36 | -8 | 21 | 0 | 1 | 1 | -2 | 16 | 0 | -6 | -4 | -7 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -23 | -5 | -5 | -4 | -13 | -12 | -32 | -31 | -8 | -10 | 7 | -31 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -22 | -4 | -15 | -5 | -21 | -23 | -37 | -37 | -8 | -16 | 35 | -15 |
| Above Normal (16%) | -116 | 5 | 33 | -16 | -11 | -49 | -76 | -65 | -5 | -45 | -9 | -139 |
| Below Normal (13%) | 0 | -17 | -28 | -9 | -39 | 5 | -40 | -40 | -14 | -23 | -21 | -6 |
| Dry (24%) | 11 | -2 | -1 | 5 | 1 | 6 | -12 | -10 | -5 | 24 | -1 | -12 |
| Critical (15%) | 2 | -10 | -8 | 4 | 5 | 2 | 0 | -5 | -10 | -2 | 3 | -3 |

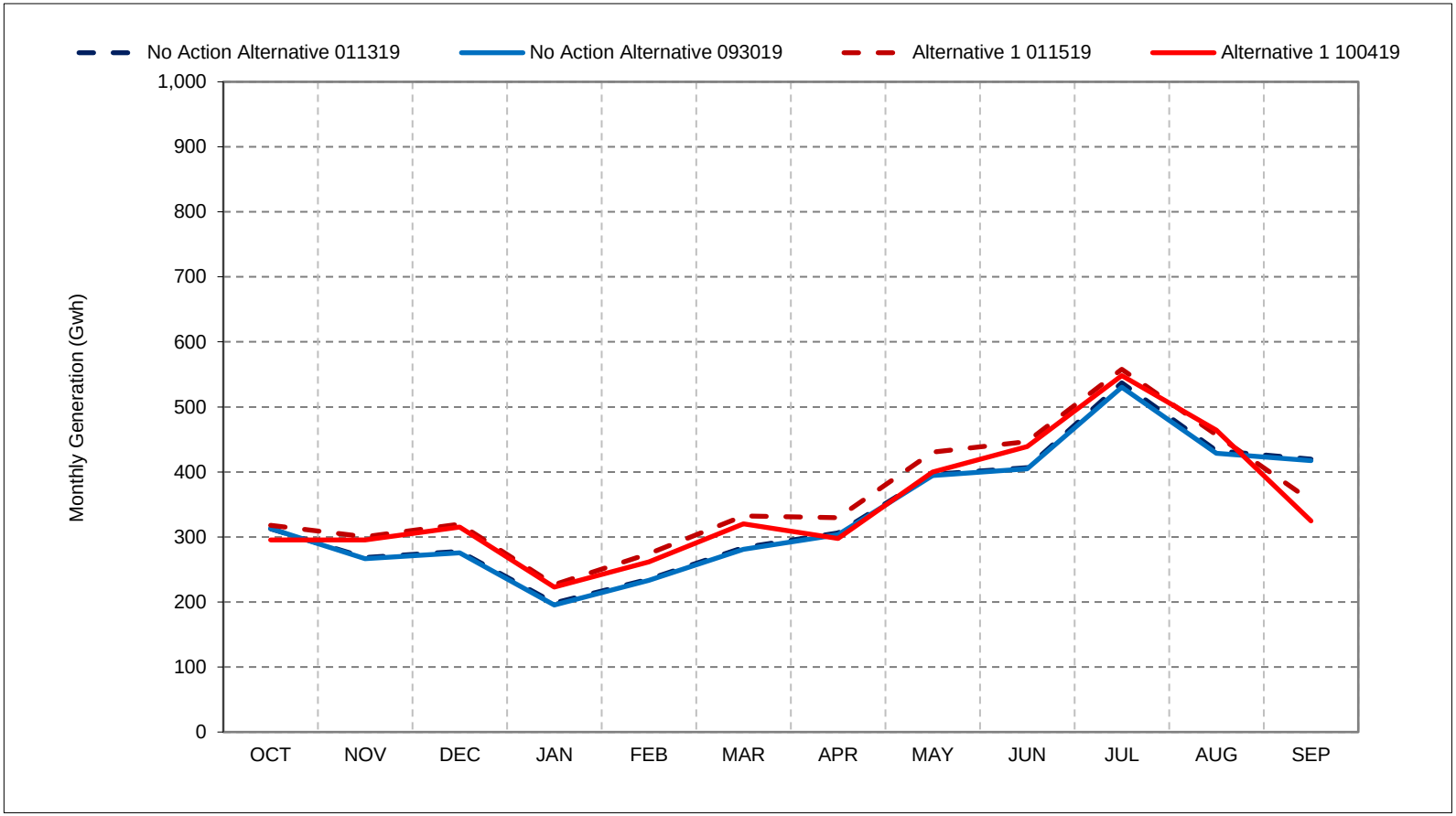
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-1. SWP Total Generation, Long-Term Average Generation

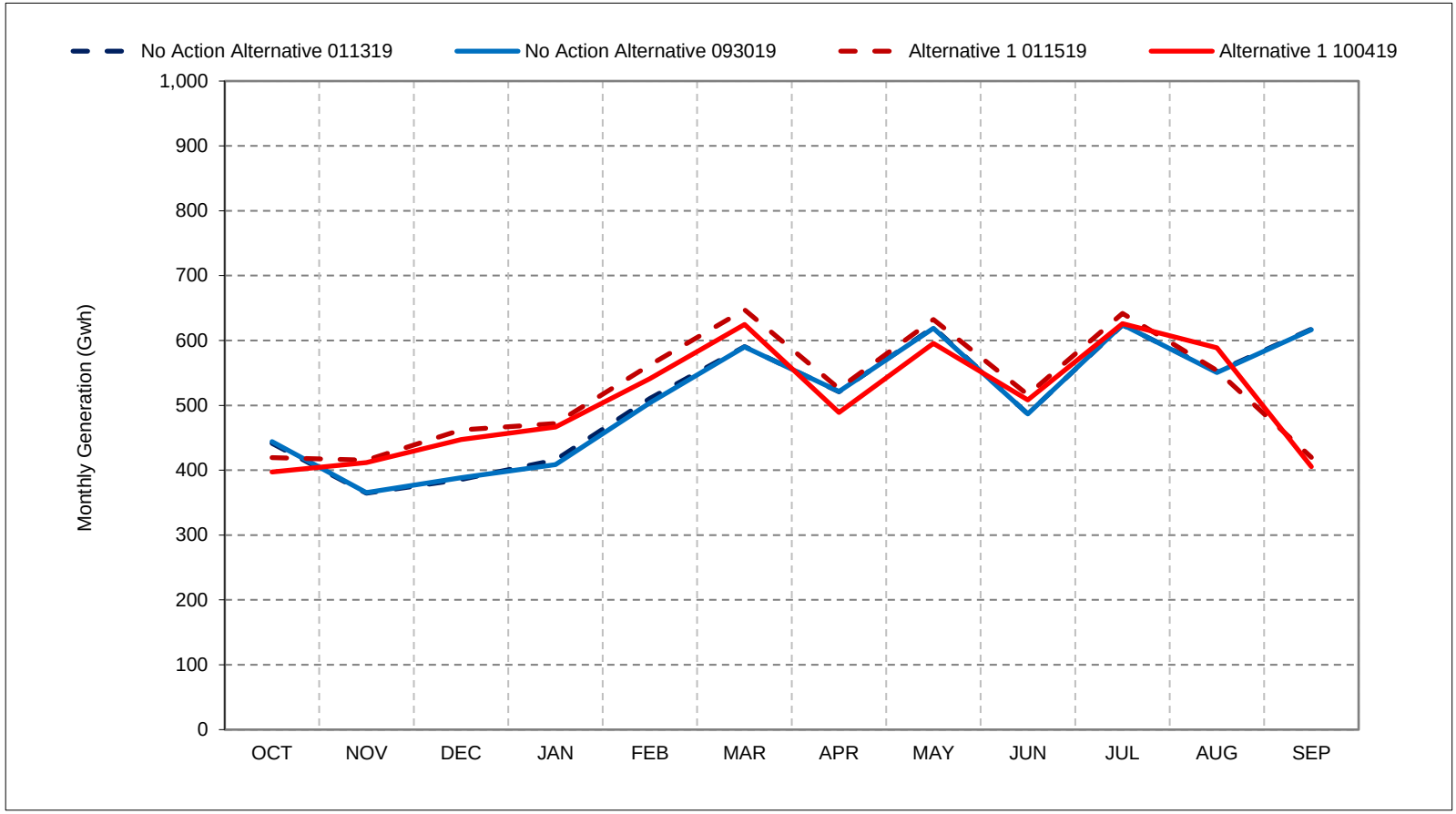



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-2. SWP Total Generation, Wet Year Average Generation

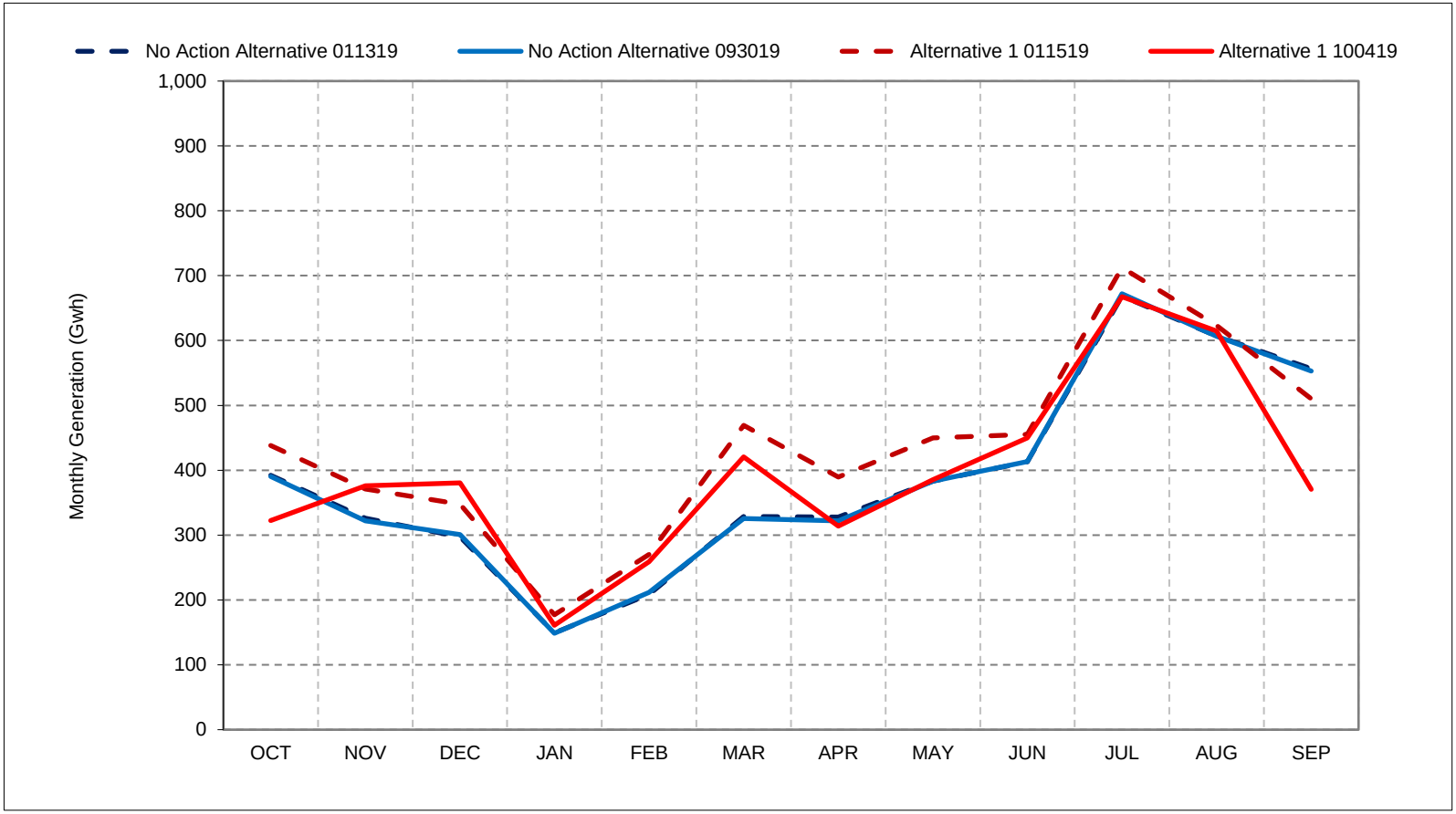



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-3. SWP Total Generation, Above Normal Year Average Generation

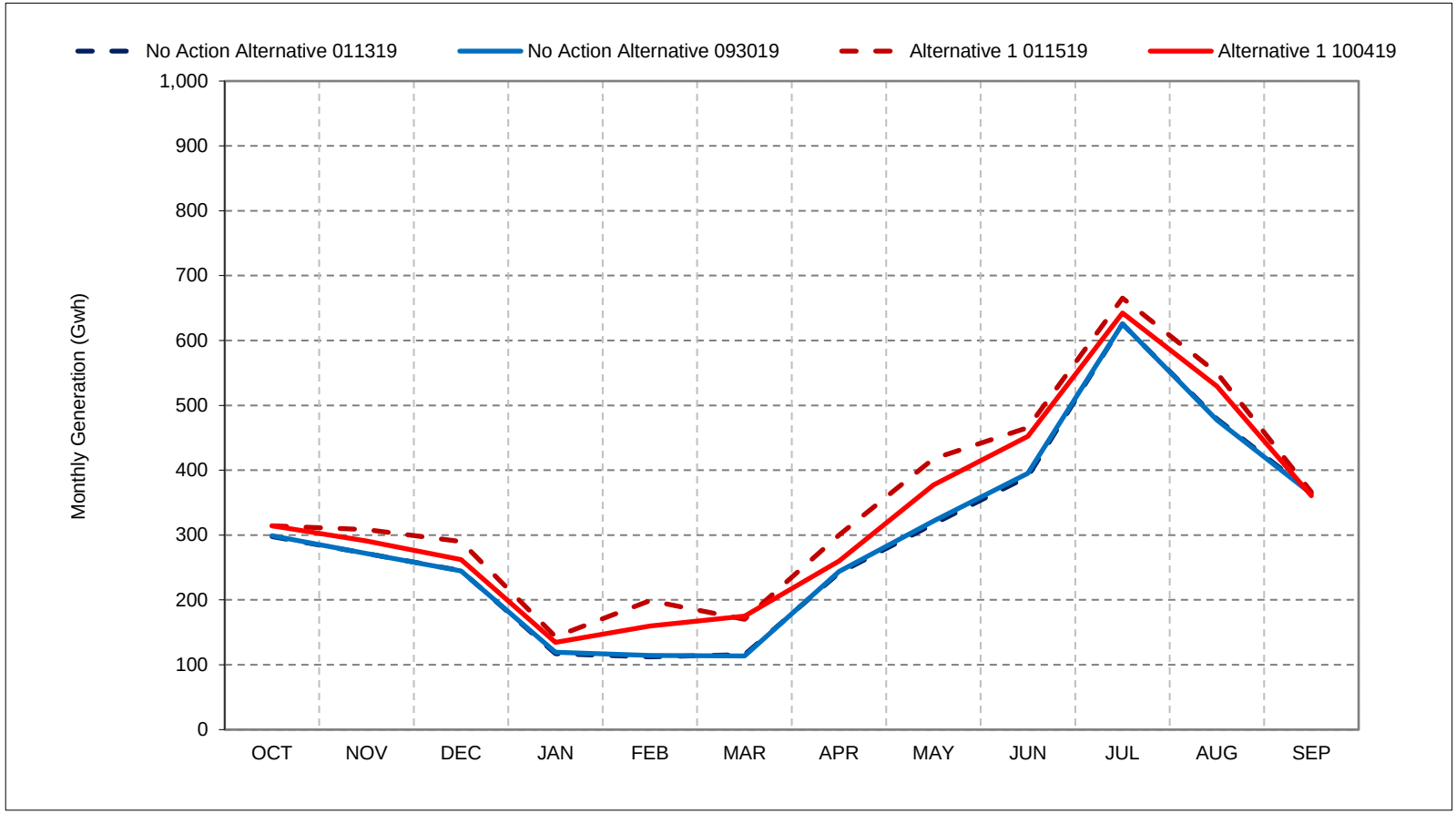



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-4. SWP Total Generation, Below Normal Year Average Generation

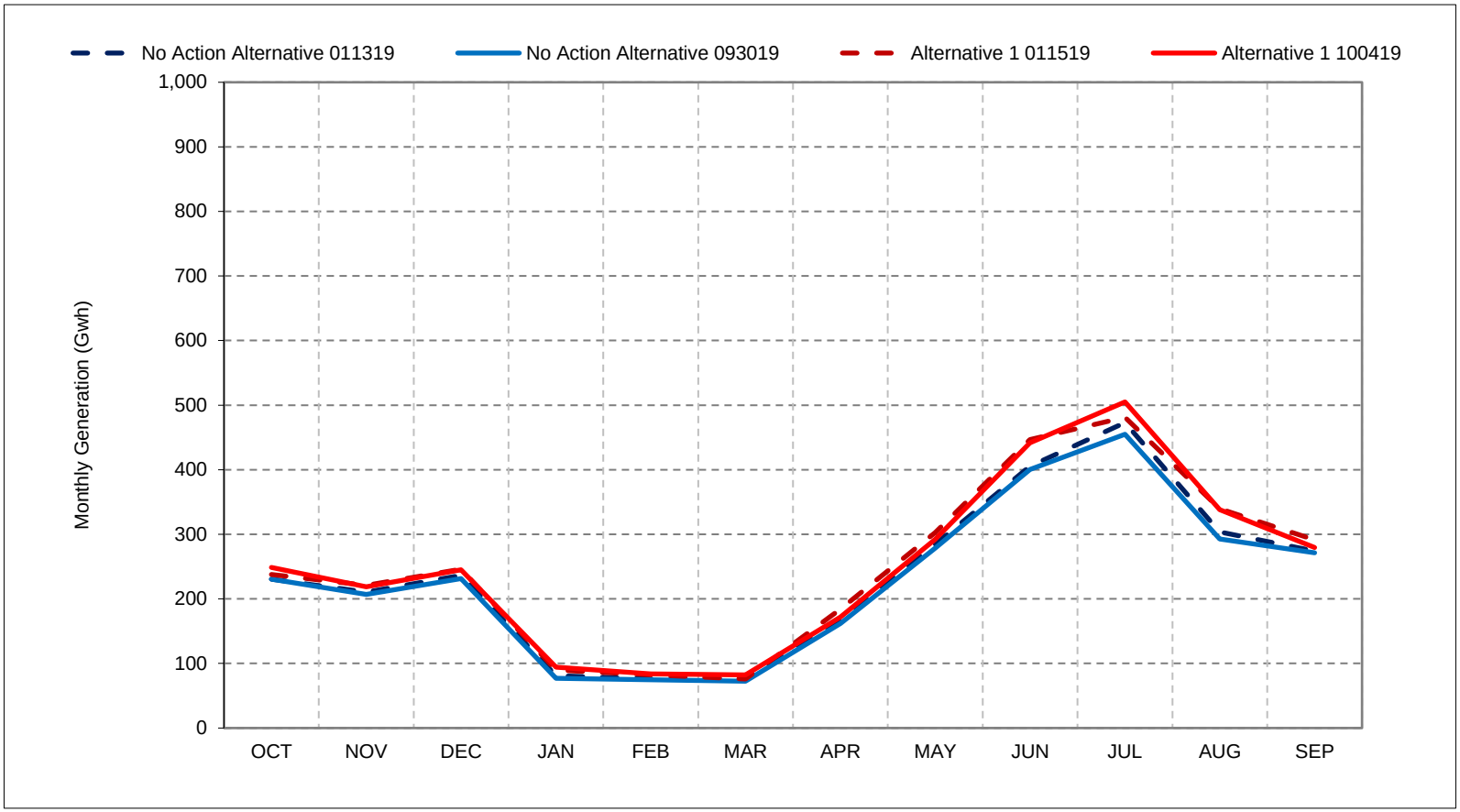



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-5. SWP Total Generation, Dry Year Average Generation

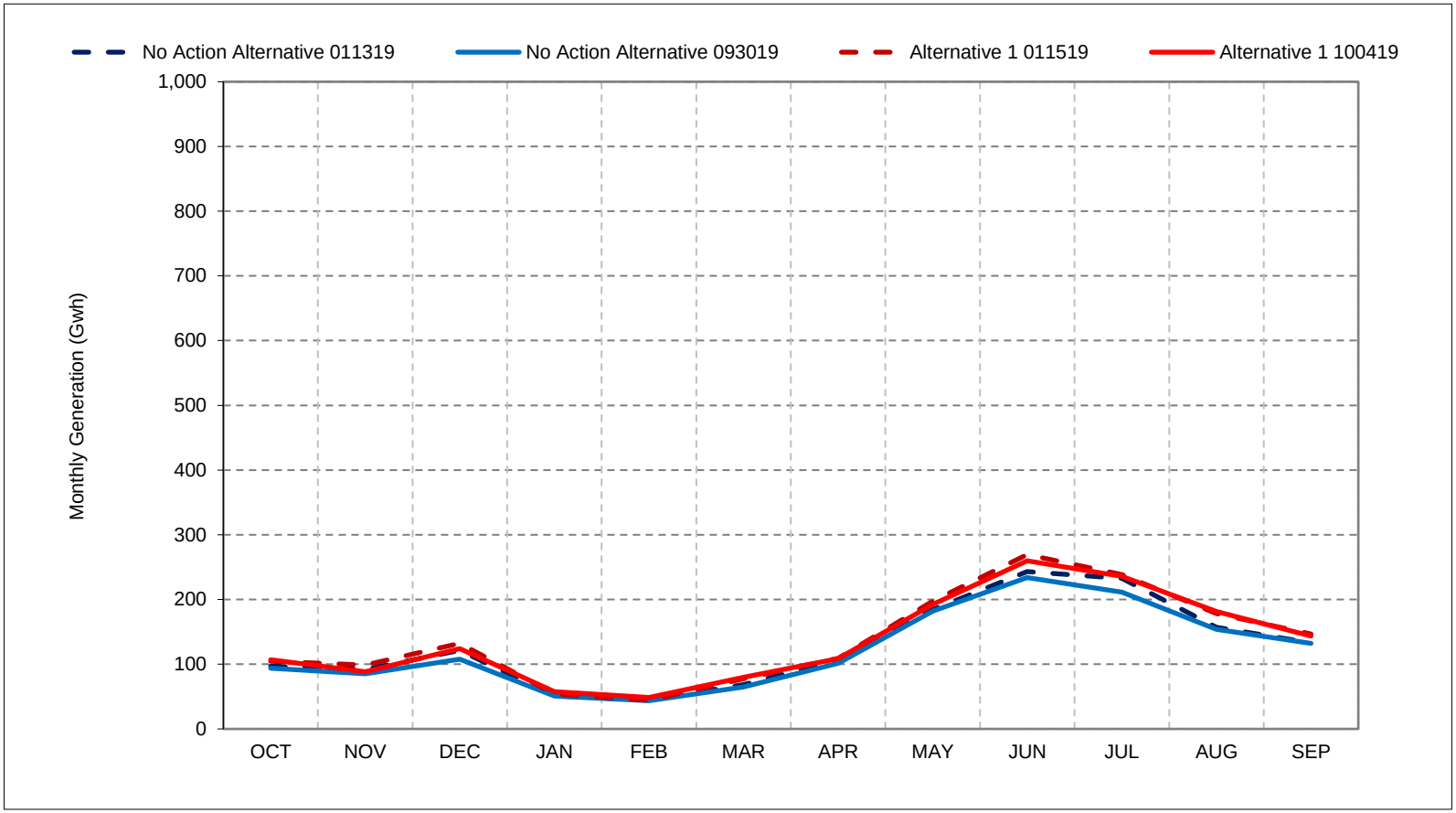



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 33-6. SWP Total Generation, Critical Year Average Generation

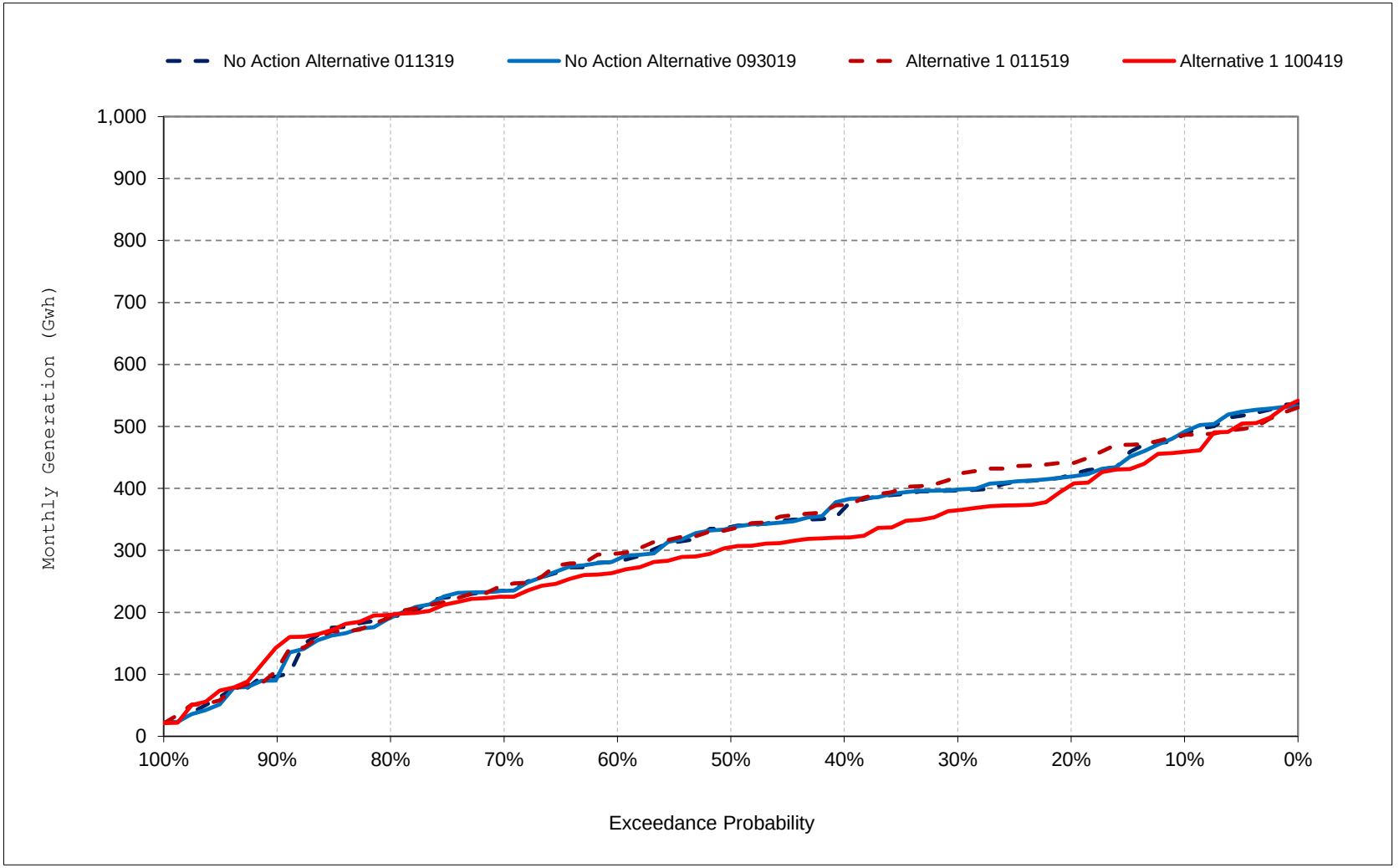



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

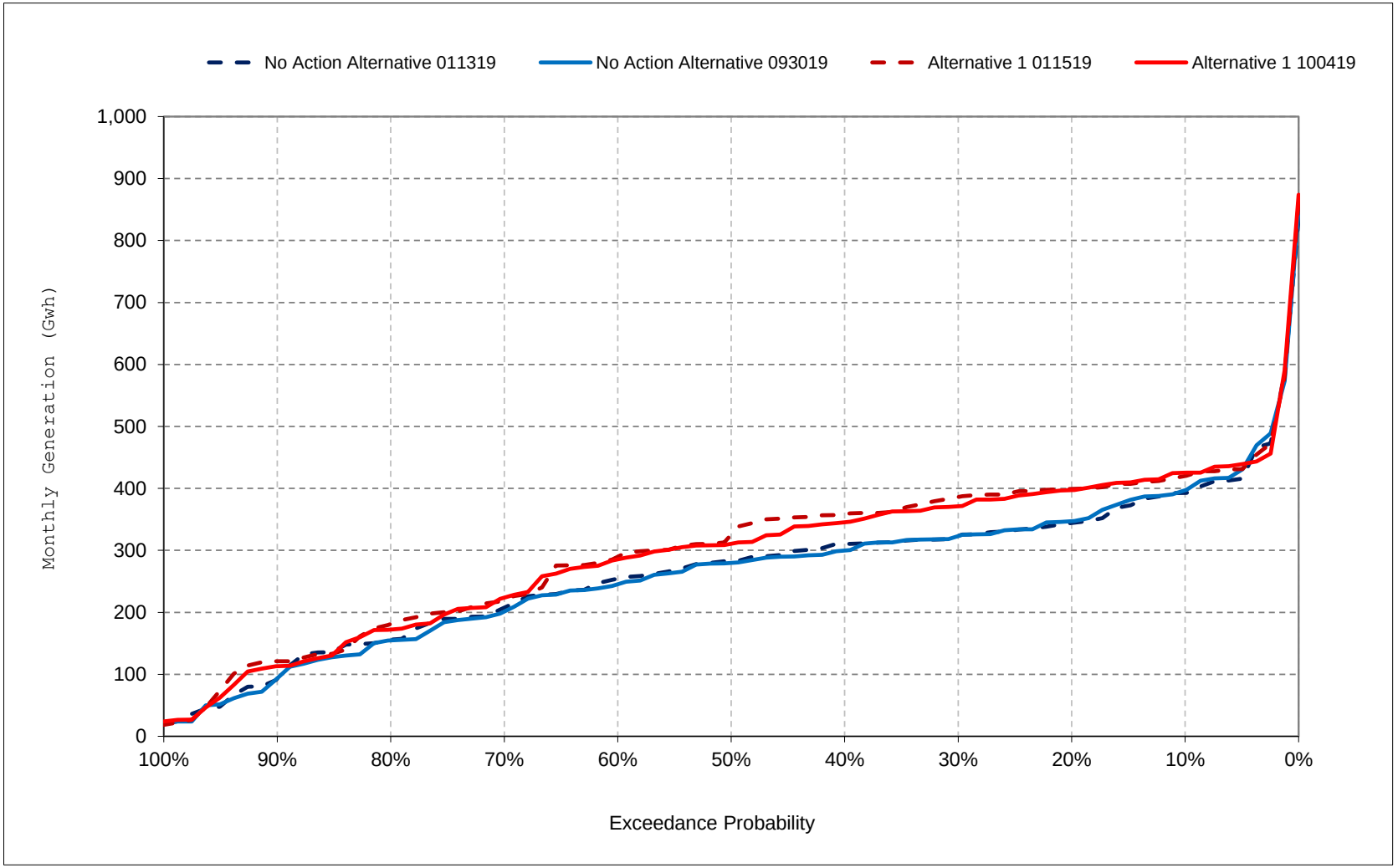
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-7. SWP Total Generation, October**



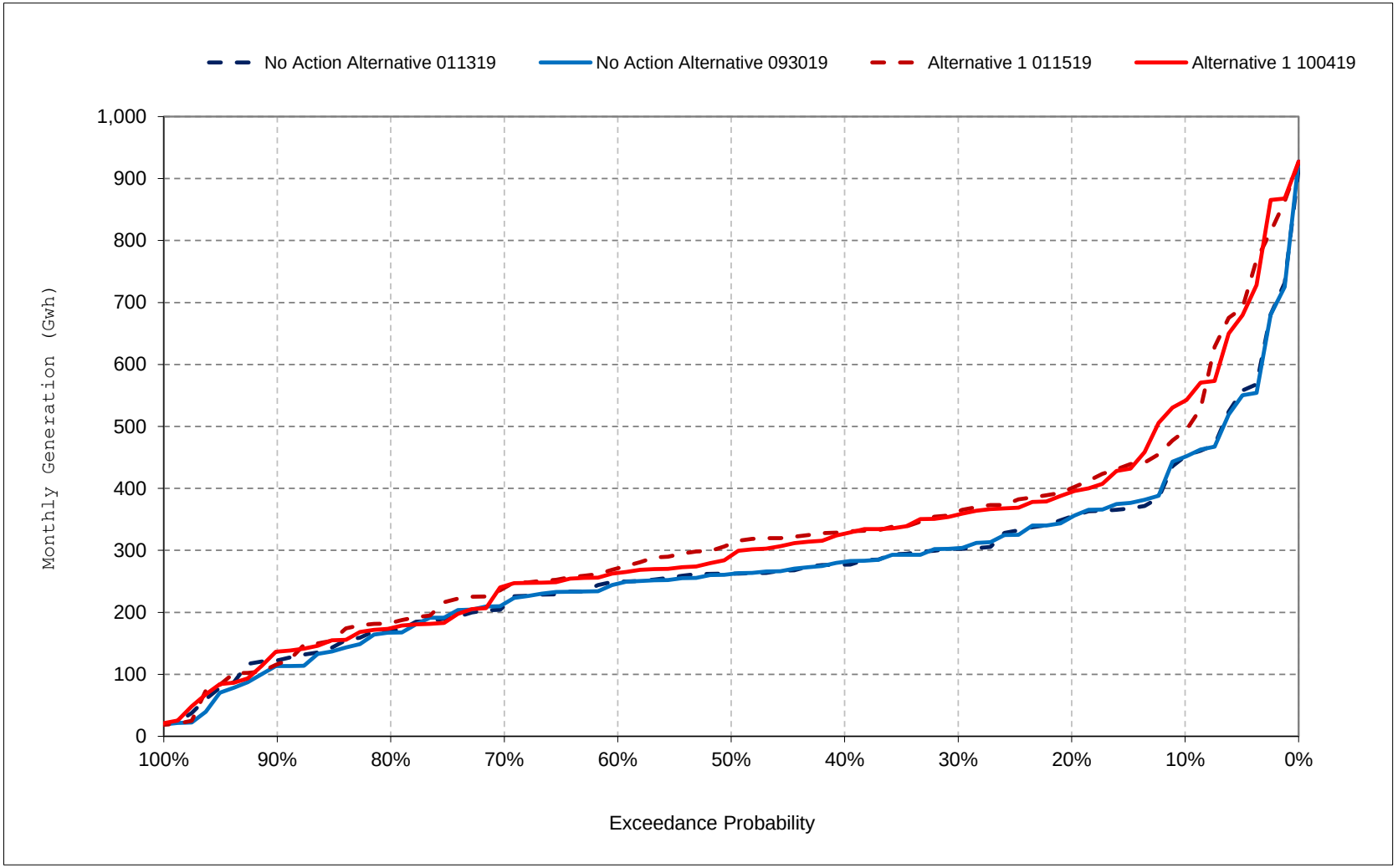

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-8. SWP Total Generation, November**



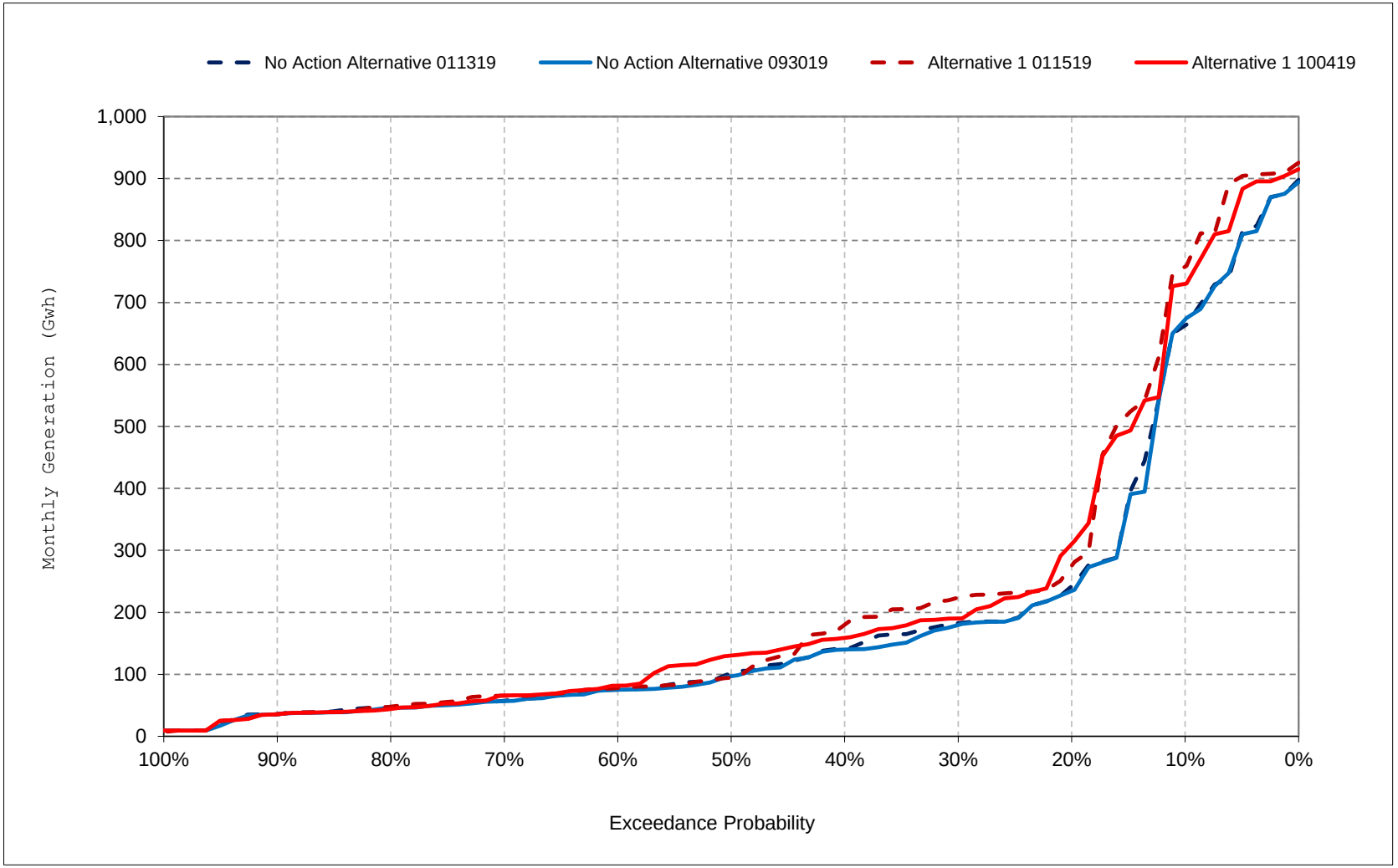

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-9. SWP Total Generation, December**



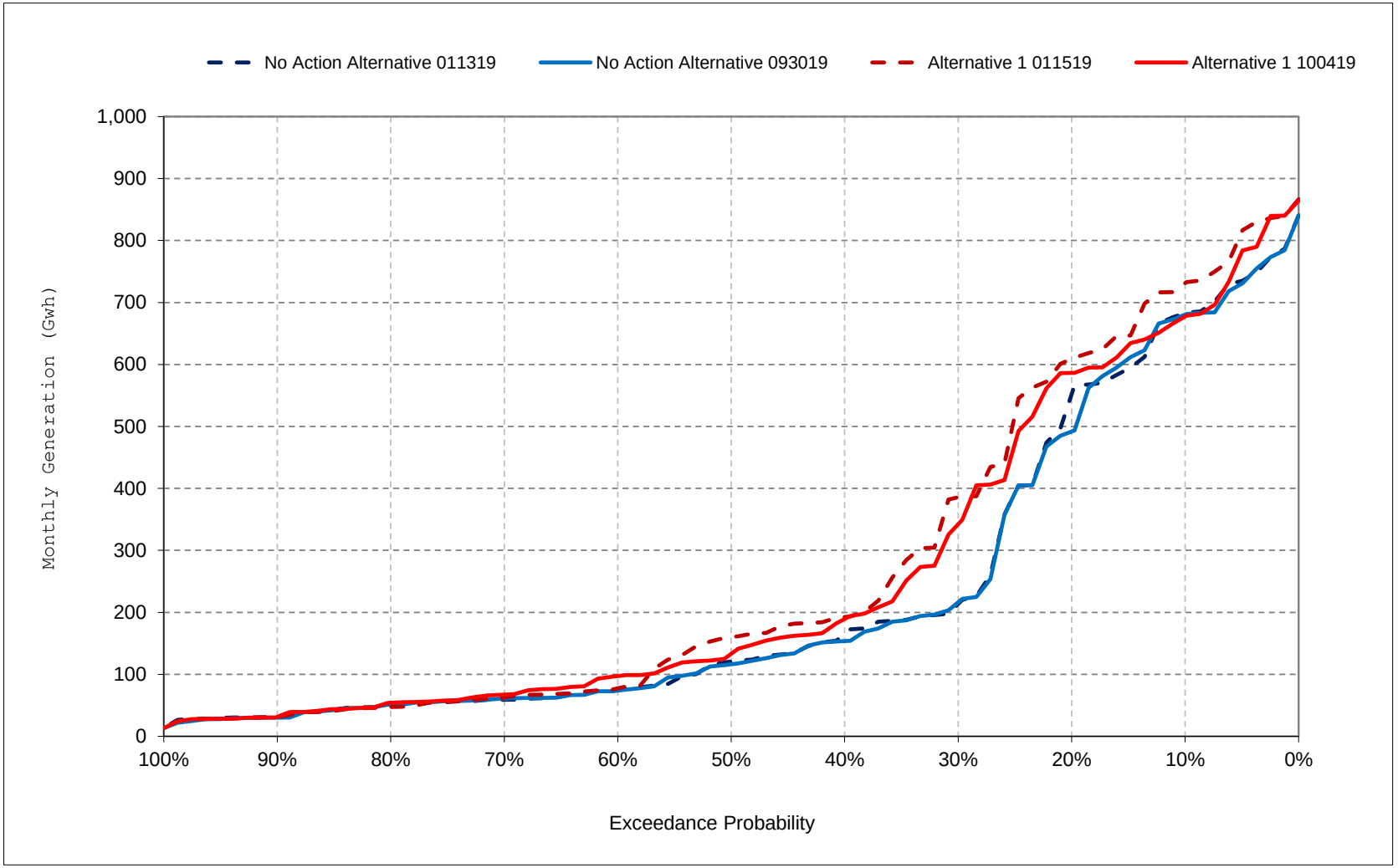

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-10. SWP Total Generation, January**



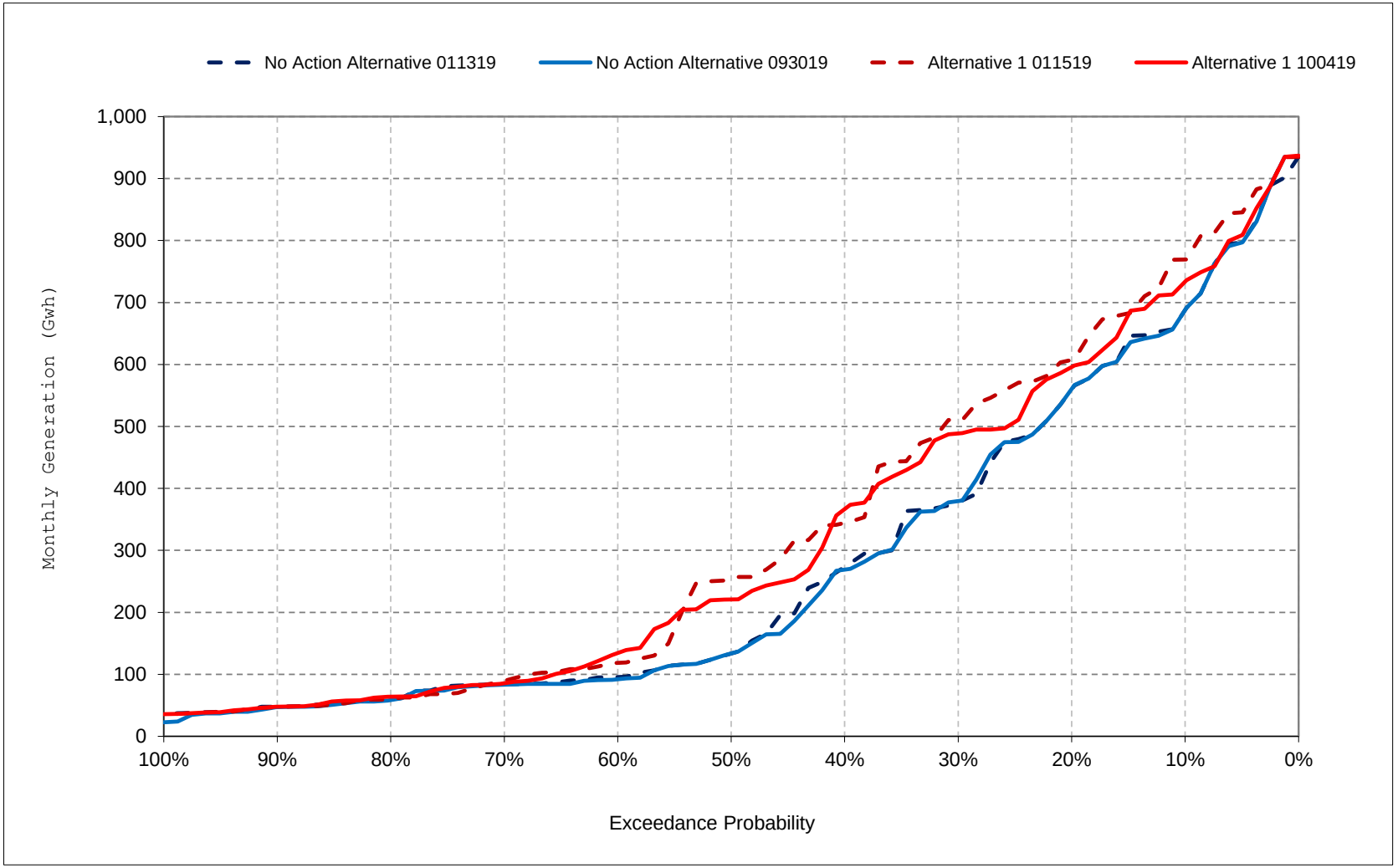

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-11. SWP Total Generation, February**



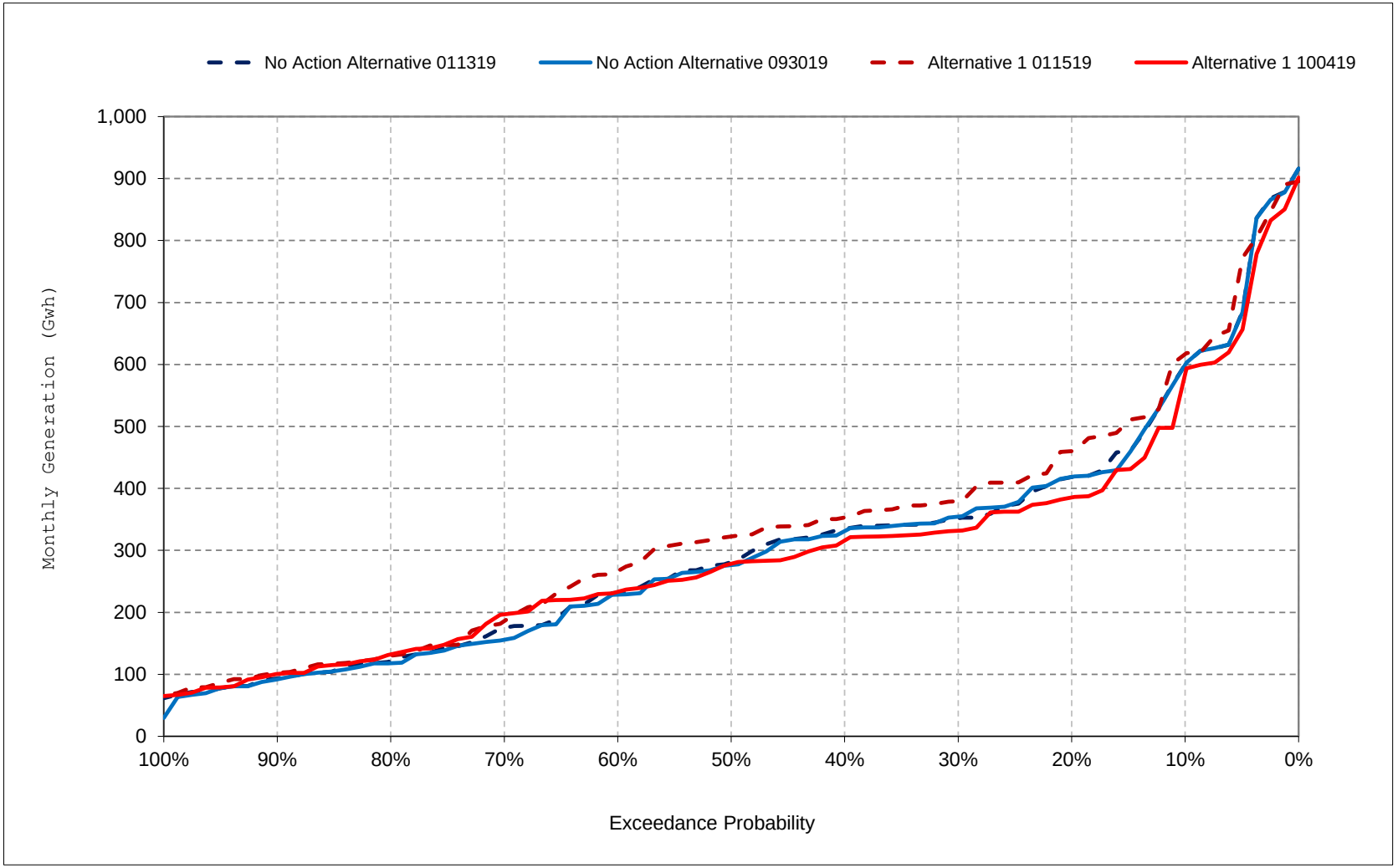

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-12. SWP Total Generation, March**



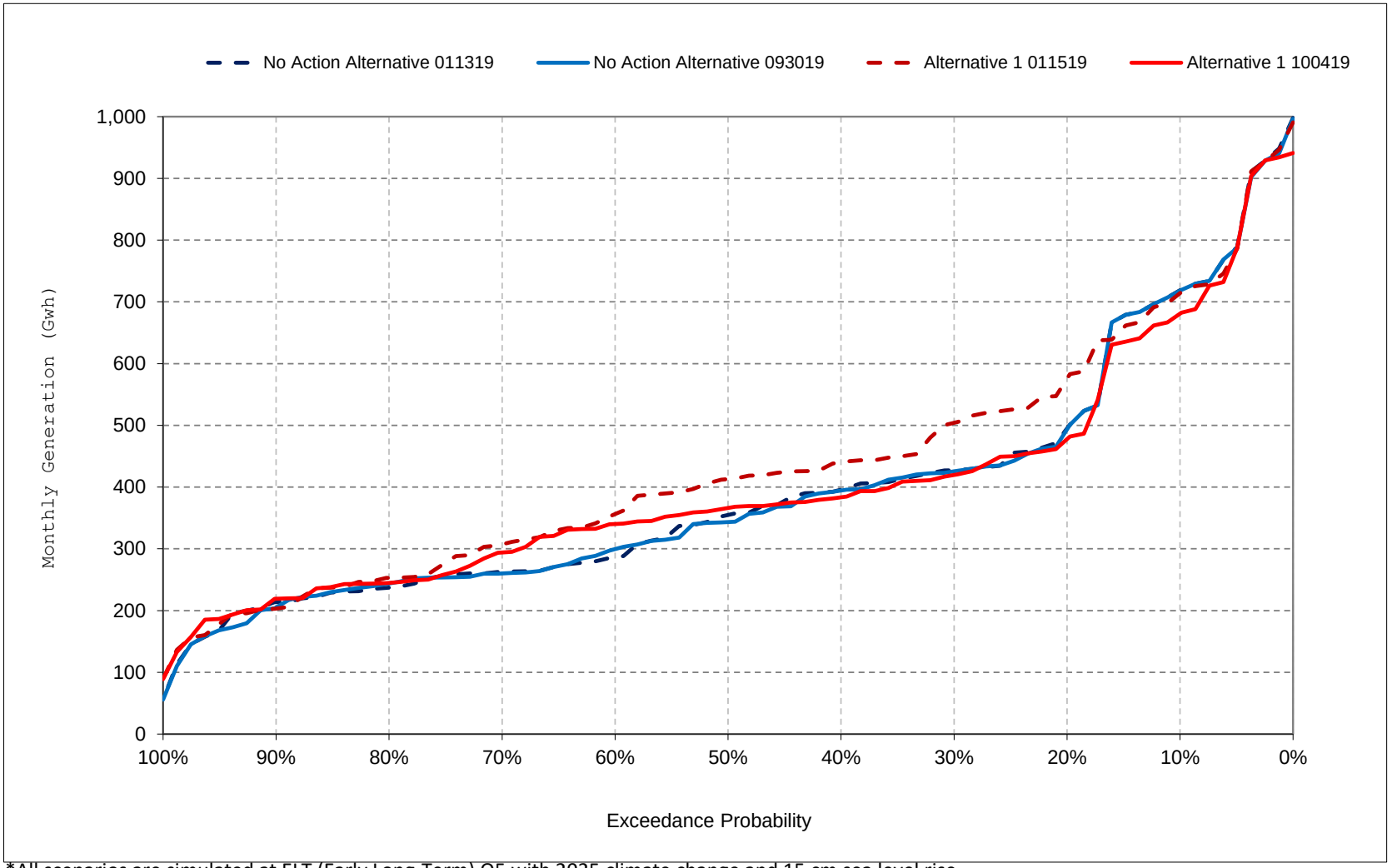

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-13. SWP Total Generation, April**



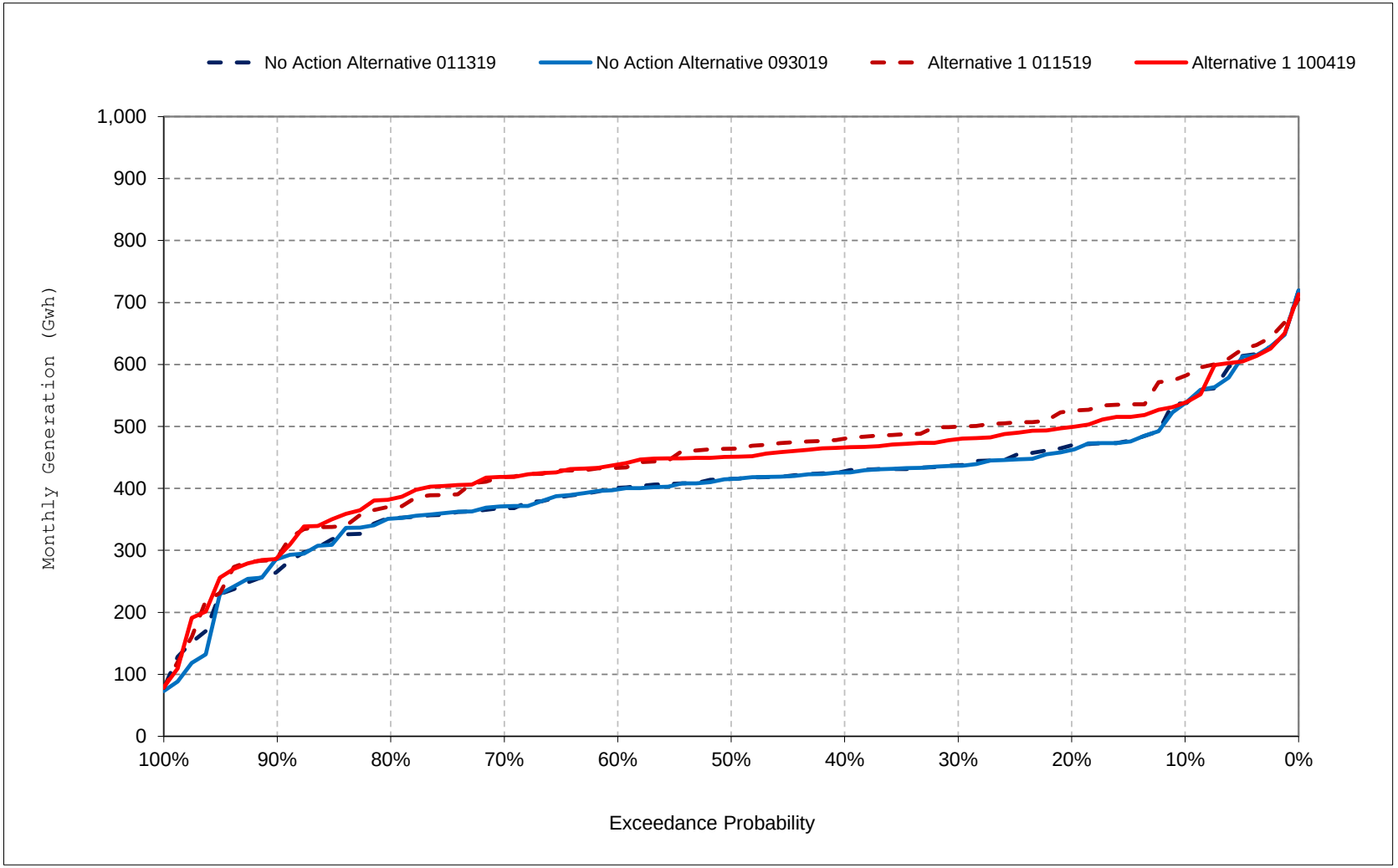

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-14. SWP Total Generation, May**



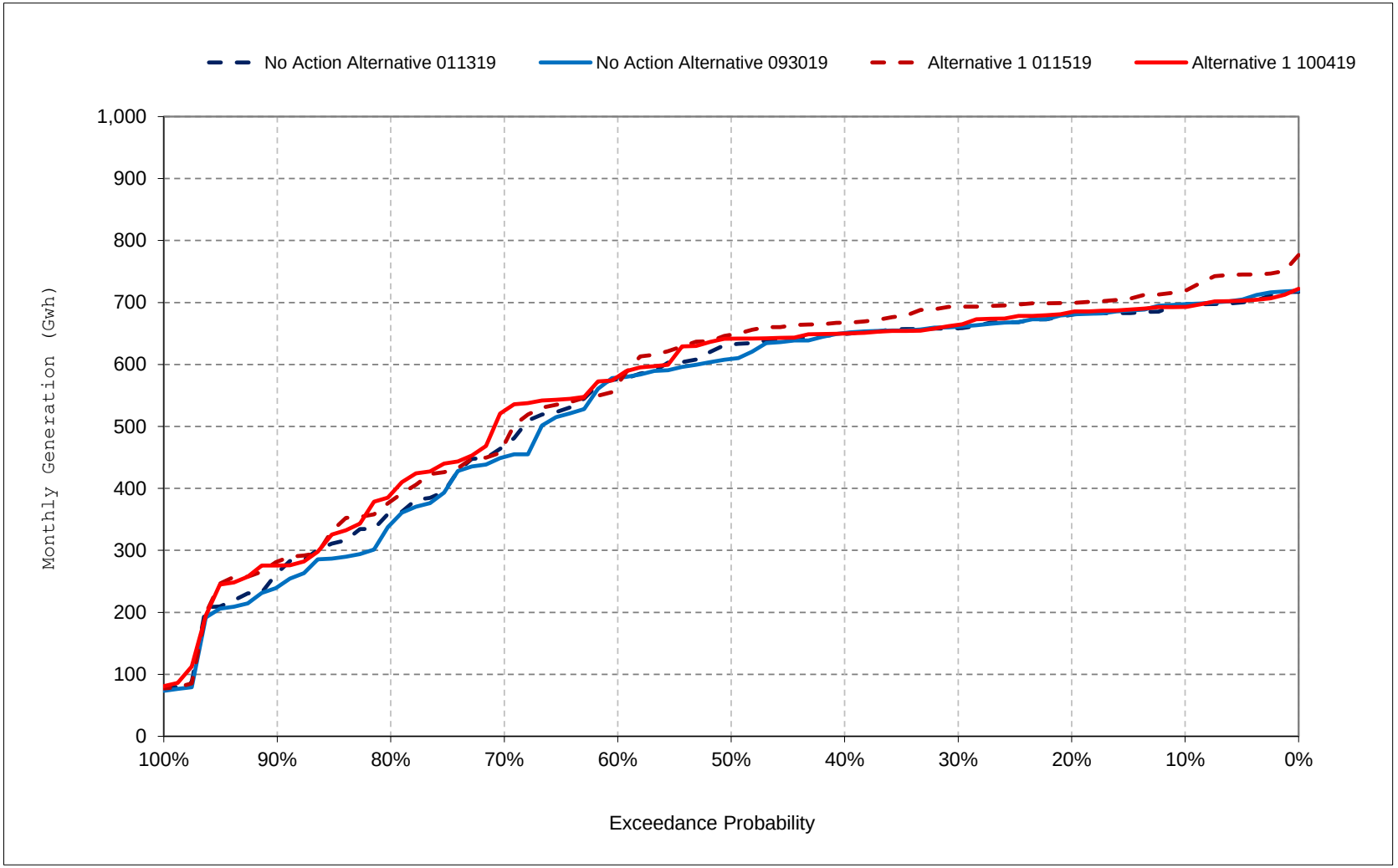

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-15. SWP Total Generation, June**



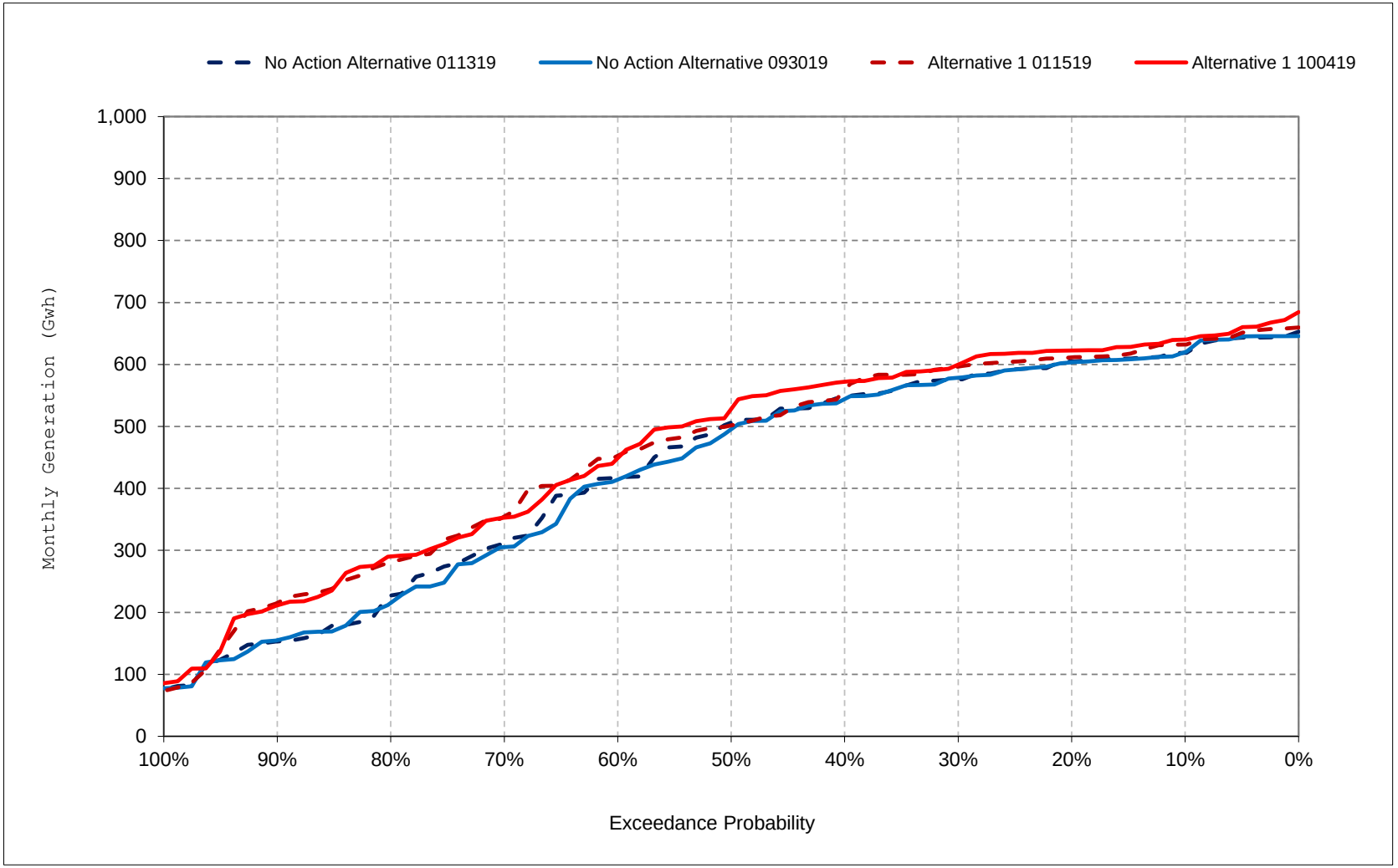

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-16. SWP Total Generation, July**



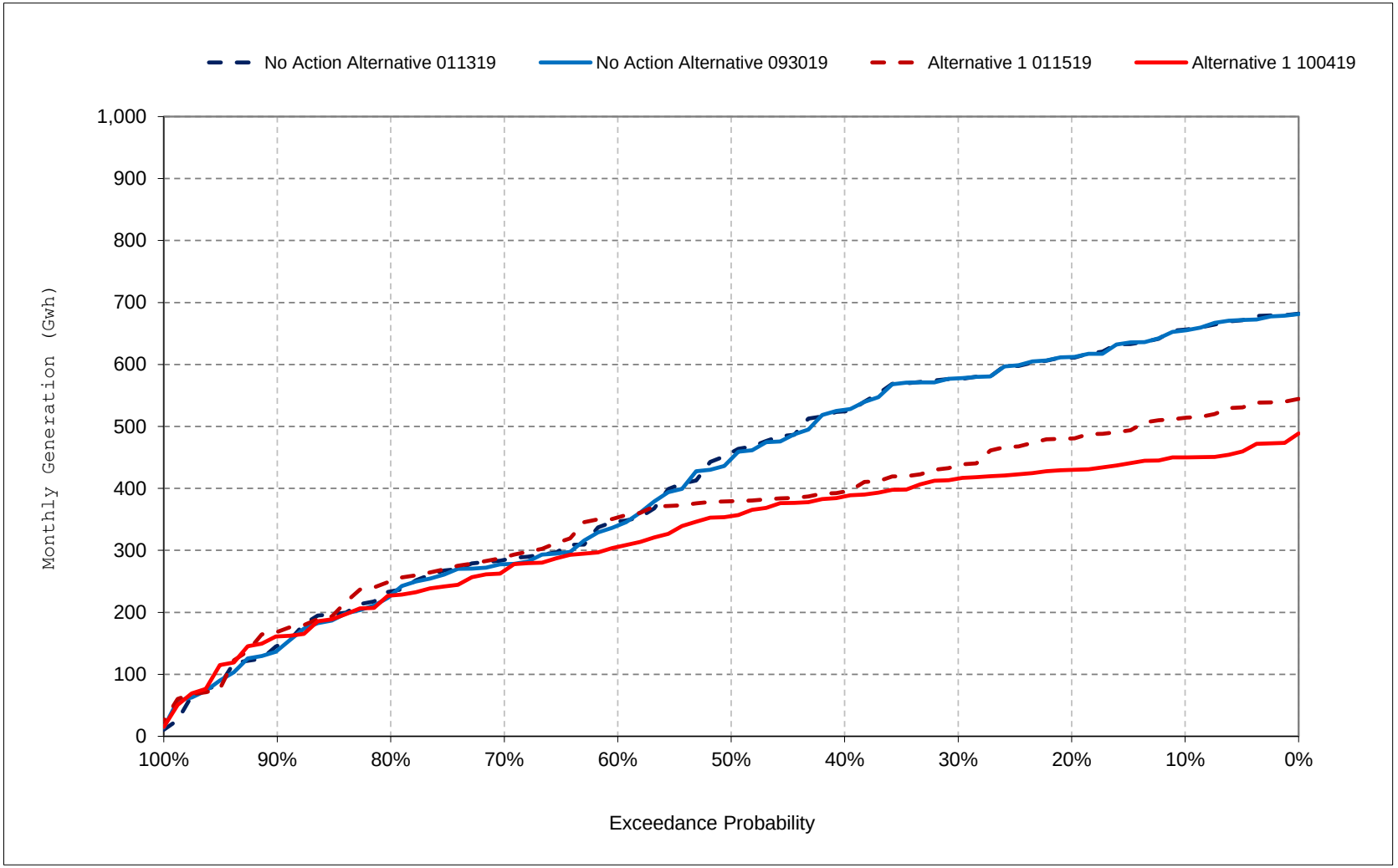

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-17. SWP Total Generation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33-18. SWP Total Generation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-1. SWP Total Energy Use, Monthly Energy Use

### No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,034 | 947 | 1,044 | 664 | 803 | 1,019 | 818 | 1,009 | 985 | 1,120 | 1,124 | 1,112 |
| 20% | 917 | 867 | 911 | 465 | 530 | 767 | 714 | 860 | 814 | 1,047 | 1,103 | 1,091 |
| 30% | 862 | 775 | 807 | 373 | 455 | 596 | 657 | 782 | 760 | 1,013 | 1,077 | 1,056 |
| 40% | 830 | 734 | 761 | 278 | 339 | 375 | 545 | 696 | 733 | 992 | 1,052 | 999 |
| 50% | 777 | 687 | 722 | 153 | 248 | 254 | 417 | 477 | 716 | 966 | 1,033 | 952 |
| 60% | 710 | 596 | 670 | 119 | 165 | 196 | 385 | 430 | 643 | 911 | 945 | 883 |
| 70% | 570 | 539 | 551 | 109 | 124 | 166 | 194 | 401 | 553 | 783 | 667 | 721 |
| 80% | 406 | 380 | 433 | 101 | 93 | 130 | 121 | 380 | 483 | 611 | 471 | 569 |
| 90% | 263 | 221 | 276 | 86 | 65 | 108 | 105 | 281 | 352 | 389 | 235 | 379 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 696 | 635 | 683 | 301 | 334 | 424 | 453 | 593 | 666 | 846 | 833 | 841 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 912 | 759 | 905 | 516 | 591 | 790 | 722 | 856 | 858 | 1,030 | 1,082 | 1,046 |
| Above Normal (16%) | 865 | 788 | 768 | 272 | 341 | 484 | 553 | 660 | 738 | 988 | 1,066 | 1,035 |
| Below Normal (13%) | 750 | 709 | 668 | 242 | 270 | 256 | 399 | 512 | 643 | 946 | 902 | 925 |
| Dry (24%) | 544 | 548 | 522 | 174 | 167 | 185 | 273 | 446 | 577 | 736 | 614 | 694 |
| Critical (15%) | 248 | 277 | 393 | 131 | 109 | 116 | 106 | 270 | 342 | 385 | 343 | 356 |

### Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,140 | 1,100 | 1,065 | 934 | 956 | 1,028 | 980 | 1,098 | 1,010 | 1,150 | 1,150 | 1,143 |
| 20% | 1,099 | 1,067 | 1,008 | 556 | 754 | 961 | 924 | 1,062 | 954 | 1,135 | 1,127 | 1,133 |
| 30% | 1,035 | 1,027 | 980 | 485 | 526 | 849 | 865 | 1,011 | 910 | 1,120 | 1,119 | 1,111 |
| 40% | 959 | 961 | 932 | 389 | 452 | 711 | 837 | 962 | 827 | 1,105 | 1,105 | 1,092 |
| 50% | 853 | 870 | 875 | 196 | 343 | 488 | 720 | 815 | 751 | 1,036 | 1,050 | 1,022 |
| 60% | 733 | 763 | 706 | 131 | 222 | 290 | 547 | 588 | 689 | 958 | 1,013 | 896 |
| 70% | 586 | 583 | 632 | 120 | 131 | 174 | 332 | 420 | 569 | 850 | 791 | 818 |
| 80% | 400 | 451 | 447 | 111 | 118 | 157 | 162 | 395 | 548 | 619 | 599 | 634 |
| 90% | 264 | 274 | 270 | 104 | 102 | 143 | 118 | 299 | 362 | 397 | 399 | 406 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 767 | 774 | 759 | 366 | 419 | 539 | 608 | 733 | 727 | 907 | 898 | 880 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 990 | 1,022 | 985 | 617 | 722 | 892 | 893 | 996 | 895 | 1,091 | 1,107 | 1,088 |
| Above Normal (16%) | 1,027 | 983 | 898 | 367 | 452 | 784 | 848 | 913 | 815 | 1,098 | 1,116 | 1,120 |
| Below Normal (13%) | 834 | 832 | 795 | 326 | 370 | 414 | 637 | 789 | 783 | 1,029 | 1,058 | 929 |
| Dry (24%) | 570 | 580 | 549 | 198 | 200 | 214 | 357 | 505 | 623 | 766 | 697 | 726 |
| Critical (15%) | 267 | 281 | 436 | 136 | 134 | 166 | 124 | 299 | 389 | 423 | 398 | 380 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 106 | 153 | 21 | 270 | 153 | 9 | 162 | 89 | 25 | 30 | 26 | 31 |
| 20% | 181 | 200 | 97 | 91 | 224 | 194 | 210 | 203 | 140 | 88 | 25 | 42 |
| 30% | 173 | 251 | 172 | 111 | 72 | 252 | 209 | 228 | 150 | 107 | 42 | 55 |
| 40% | 130 | 227 | 172 | 111 | 113 | 336 | 292 | 266 | 94 | 113 | 53 | 93 |
| 50% | 76 | 183 | 154 | 42 | 95 | 234 | 303 | 337 | 35 | 70 | 17 | 71 |
| 60% | 23 | 167 | 37 | 12 | 58 | 93 | 162 | 158 | 46 | 47 | 69 | 13 |
| 70% | 16 | 44 | 81 | 11 | 7 | 8 | 138 | 19 | 16 | 67 | 124 | 98 |
| 80% | -6 | 71 | 14 | 10 | 25 | 27 | 41 | 15 | 65 | 8 | 127 | 65 |
| 90% | 2 | 53 | -6 | 18 | 38 | 35 | 13 | 18 | 9 | 8 | 164 | 27 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 71 | 139 | 76 | 65 | 85 | 115 | 156 | 140 | 60 | 61 | 65 | 39 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 78 | 263 | 80 | 101 | 132 | 103 | 171 | 140 | 36 | 61 | 25 | 42 |
| Above Normal (16%) | 162 | 195 | 130 | 96 | 111 | 299 | 295 | 252 | 77 | 110 | 50 | 85 |
| Below Normal (13%) | 84 | 123 | 126 | 85 | 100 | 157 | 237 | 277 | 139 | 84 | 156 | 5 |
| Dry (24%) | 26 | 32 | 28 | 25 | 33 | 28 | 84 | 60 | 46 | 30 | 83 | 32 |
| Critical (15%) | 19 | 4 | 42 | 6 | 25 | 50 | 18 | 29 | 46 | 37 | 55 | 25 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-2. SWP Total Energy Use, Monthly Energy Use

### No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,039 | 946 | 1,058 | 654 | 825 | 1,019 | 827 | 978 | 982 | 1,113 | 1,124 | 1,115 |
| 20% | 917 | 852 | 888 | 435 | 522 | 749 | 713 | 859 | 810 | 1,044 | 1,102 | 1,085 |
| 30% | 860 | 778 | 805 | 362 | 439 | 576 | 656 | 777 | 760 | 1,012 | 1,076 | 1,051 |
| 40% | 834 | 731 | 761 | 266 | 323 | 347 | 543 | 673 | 730 | 980 | 1,053 | 999 |
| 50% | 783 | 666 | 711 | 147 | 239 | 253 | 408 | 475 | 702 | 958 | 1,031 | 951 |
| 60% | 705 | 580 | 669 | 117 | 166 | 198 | 379 | 419 | 621 | 910 | 894 | 878 |
| 70% | 558 | 520 | 524 | 105 | 114 | 164 | 192 | 403 | 553 | 758 | 635 | 678 |
| 80% | 390 | 360 | 417 | 97 | 92 | 130 | 128 | 380 | 511 | 578 | 433 | 618 |
| 90% | 250 | 203 | 233 | 83 | 66 | 103 | 106 | 270 | 368 | 362 | 230 | 397 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 693 | 627 | 673 | 291 | 332 | 419 | 449 | 588 | 664 | 838 | 828 | 837 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 923 | 760 | 906 | 498 | 580 | 785 | 726 | 858 | 857 | 1,030 | 1,083 | 1,046 |
| Above Normal (16%) | 859 | 778 | 776 | 272 | 354 | 487 | 548 | 660 | 741 | 988 | 1,064 | 1,031 |
| Below Normal (13%) | 750 | 706 | 661 | 248 | 275 | 250 | 407 | 515 | 658 | 946 | 914 | 923 |
| Dry (24%) | 532 | 532 | 507 | 163 | 158 | 177 | 254 | 428 | 563 | 711 | 586 | 680 |
| Critical (15%) | 234 | 261 | 347 | 119 | 110 | 112 | 108 | 260 | 338 | 372 | 347 | 358 |

### Alternative 1 100419

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,057 | 1,089 | 1,082 | 826 | 947 | 941 | 929 | 1,104 | 996 | 1,132 | 1,132 | 1,059 |
| 20% | 934 | 1,046 | 999 | 496 | 630 | 801 | 840 | 927 | 872 | 1,071 | 1,097 | 1,014 |
| 30% | 887 | 974 | 921 | 411 | 543 | 707 | 762 | 871 | 805 | 1,026 | 1,071 | 960 |
| 40% | 790 | 879 | 839 | 340 | 398 | 549 | 631 | 788 | 752 | 987 | 1,055 | 923 |
| 50% | 694 | 798 | 792 | 233 | 283 | 369 | 492 | 622 | 697 | 961 | 1,042 | 868 |
| 60% | 591 | 755 | 715 | 150 | 223 | 227 | 434 | 475 | 677 | 939 | 1,001 | 759 |
| 70% | 502 | 585 | 578 | 116 | 141 | 170 | 350 | 429 | 594 | 825 | 740 | 669 |
| 80% | 402 | 418 | 436 | 108 | 112 | 141 | 175 | 396 | 551 | 635 | 600 | 533 |
| 90% | 279 | 245 | 277 | 98 | 103 | 125 | 121 | 291 | 377 | 387 | 376 | 392 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 742 | 731 | 338 | 392 | 462 | 526 | 655 | 700 | 868 | 879 | 778 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 870 | 997 | 964 | 559 | 661 | 779 | 802 | 921 | 875 | 1,044 | 1,085 | 944 |
| Above Normal (16%) | 674 | 940 | 926 | 322 | 406 | 569 | 641 | 734 | 774 | 1,000 | 1,080 | 812 |
| Below Normal (13%) | 809 | 771 | 700 | 304 | 355 | 388 | 549 | 683 | 723 | 962 | 1,004 | 911 |
| Dry (24%) | 588 | 558 | 532 | 202 | 206 | 198 | 316 | 463 | 610 | 782 | 712 | 709 |
| Critical (15%) | 273 | 258 | 375 | 132 | 136 | 166 | 128 | 287 | 370 | 400 | 380 | 375 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 18 | 142 | 25 | 172 | 123 | -78 | 103 | 126 | 14 | 19 | 8 | -56 |
| 20% | 16 | 194 | 111 | 61 | 108 | 52 | 127 | 68 | 62 | 27 | -5 | -70 |
| 30% | 27 | 196 | 116 | 49 | 103 | 131 | 105 | 94 | 45 | 14 | -4 | -91 |
| 40% | -44 | 148 | 78 | 74 | 75 | 202 | 88 | 115 | 22 | 7 | 2 | -76 |
| 50% | -89 | 131 | 80 | 86 | 44 | 116 | 83 | 147 | -5 | 3 | 11 | -83 |
| 60% | -114 | 175 | 46 | 33 | 57 | 29 | 55 | 55 | 56 | 29 | 107 | -119 |
| 70% | -56 | 65 | 54 | 10 | 28 | 6 | 158 | 26 | 41 | 66 | 106 | -9 |
| 80% | 12 | 58 | 20 | 11 | 20 | 11 | 47 | 15 | 41 | 57 | 166 | -85 |
| 90% | 29 | 42 | 44 | 15 | 37 | 22 | 15 | 21 | 9 | 26 | 146 | -5 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -19 | 115 | 58 | 46 | 60 | 42 | 76 | 67 | 36 | 30 | 51 | -59 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -53 | 237 | 58 | 61 | 81 | -6 | 76 | 63 | 18 | 14 | 3 | -102 |
| Above Normal (16%) | -186 | 162 | 149 | 50 | 51 | 82 | 93 | 74 | 33 | 12 | 17 | -219 |
| Below Normal (13%) | 59 | 66 | 39 | 55 | 80 | 138 | 143 | 169 | 65 | 16 | 90 | -12 |
| Dry (24%) | 56 | 25 | 25 | 39 | 47 | 21 | 62 | 35 | 47 | 71 | 127 | 28 |
| Critical (15%) | 39 | -3 | 29 | 13 | 26 | 54 | 20 | 27 | 33 | 28 | 33 | 17 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-3. SWP Total Energy Use, Monthly Energy Use

### No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,034 | 947 | 1,044 | 664 | 803 | 1,019 | 818 | 1,009 | 985 | 1,120 | 1,124 | 1,112 |
| 20% | 917 | 867 | 911 | 465 | 530 | 767 | 714 | 860 | 814 | 1,047 | 1,103 | 1,091 |
| 30% | 862 | 775 | 807 | 373 | 455 | 596 | 657 | 782 | 760 | 1,013 | 1,077 | 1,056 |
| 40% | 830 | 734 | 761 | 278 | 339 | 375 | 545 | 696 | 733 | 992 | 1,052 | 999 |
| 50% | 777 | 687 | 722 | 153 | 248 | 254 | 417 | 477 | 716 | 966 | 1,033 | 952 |
| 60% | 710 | 596 | 670 | 119 | 165 | 196 | 385 | 430 | 643 | 911 | 945 | 883 |
| 70% | 570 | 539 | 551 | 109 | 124 | 166 | 194 | 401 | 553 | 783 | 667 | 721 |
| 80% | 406 | 380 | 433 | 101 | 93 | 130 | 121 | 380 | 483 | 611 | 471 | 569 |
| 90% | 263 | 221 | 276 | 86 | 65 | 108 | 105 | 281 | 352 | 389 | 235 | 379 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 696 | 635 | 683 | 301 | 334 | 424 | 453 | 593 | 666 | 846 | 833 | 841 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 912 | 759 | 905 | 516 | 591 | 790 | 722 | 856 | 858 | 1,030 | 1,082 | 1,046 |
| Above Normal (16%) | 865 | 788 | 768 | 272 | 341 | 484 | 553 | 660 | 738 | 988 | 1,066 | 1,035 |
| Below Normal (13%) | 750 | 709 | 668 | 242 | 270 | 256 | 399 | 512 | 643 | 946 | 902 | 925 |
| Dry (24%) | 544 | 548 | 522 | 174 | 167 | 185 | 273 | 446 | 577 | 736 | 614 | 694 |
| Critical (15%) | 248 | 277 | 393 | 131 | 109 | 116 | 106 | 270 | 342 | 385 | 343 | 356 |

### No Action Alternative 093019

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,039 | 946 | 1,058 | 654 | 825 | 1,019 | 827 | 978 | 982 | 1,113 | 1,124 | 1,115 |
| 20% | 917 | 852 | 888 | 435 | 522 | 749 | 713 | 859 | 810 | 1,044 | 1,102 | 1,085 |
| 30% | 860 | 778 | 805 | 362 | 439 | 576 | 656 | 777 | 760 | 1,012 | 1,076 | 1,051 |
| 40% | 834 | 731 | 761 | 266 | 323 | 347 | 543 | 673 | 730 | 980 | 1,053 | 999 |
| 50% | 783 | 666 | 711 | 147 | 239 | 253 | 408 | 475 | 702 | 958 | 1,031 | 951 |
| 60% | 705 | 580 | 669 | 117 | 166 | 198 | 379 | 419 | 621 | 910 | 894 | 878 |
| 70% | 558 | 520 | 524 | 105 | 114 | 164 | 192 | 403 | 553 | 758 | 635 | 678 |
| 80% | 390 | 360 | 417 | 97 | 92 | 130 | 128 | 380 | 511 | 578 | 433 | 618 |
| 90% | 250 | 203 | 233 | 83 | 66 | 103 | 106 | 270 | 368 | 362 | 230 | 397 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 693 | 627 | 673 | 291 | 332 | 419 | 449 | 588 | 664 | 838 | 828 | 837 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 923 | 760 | 906 | 498 | 580 | 785 | 726 | 858 | 857 | 1,030 | 1,083 | 1,046 |
| Above Normal (16%) | 859 | 778 | 776 | 272 | 354 | 487 | 548 | 660 | 741 | 988 | 1,064 | 1,031 |
| Below Normal (13%) | 750 | 706 | 661 | 248 | 275 | 250 | 407 | 515 | 658 | 946 | 914 | 923 |
| Dry (24%) | 532 | 532 | 507 | 163 | 158 | 177 | 254 | 428 | 563 | 711 | 586 | 680 |
| Critical (15%) | 234 | 261 | 347 | 119 | 110 | 112 | 108 | 260 | 338 | 372 | 347 | 358 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 5 | 0 | 14 | -9 | 22 | 0 | 8 | -31 | -3 | -7 | -1 | 3 |
| 20% | 0 | -15 | -23 | -30 | -8 | -18 | -1 | -1 | -4 | -3 | -1 | -6 |
| 30% | -2 | 3 | -2 | -11 | -15 | -20 | 0 | -5 | 0 | -2 | -1 | -5 |
| 40% | 4 | -3 | 1 | -12 | -16 | -28 | -2 | -22 | -3 | -12 | 0 | -1 |
| 50% | 6 | -20 | -10 | -6 | -9 | -1 | -9 | -3 | -14 | -9 | -1 | -1 |
| 60% | -4 | -15 | -1 | -1 | 1 | 1 | -6 | -11 | -22 | -1 | -51 | -5 |
| 70% | -12 | -19 | -27 | -3 | -11 | -2 | -2 | 2 | 0 | -24 | -32 | -42 |
| 80% | -16 | -20 | -16 | -4 | -1 | 0 | 7 | 1 | 28 | -33 | -38 | 49 |
| 90% | -12 | -18 | -43 | -4 | 1 | -6 | 1 | -11 | 16 | -27 | -5 | 18 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -3 | -8 | -10 | -9 | -2 | -4 | -3 | -5 | -2 | -8 | -5 | -4 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 11 | 2 | 1 | -18 | -10 | -4 | 4 | 2 | -1 | 0 | 0 | 0 |
| Above Normal (16%) | -6 | -10 | 9 | 0 | 13 | 3 | -5 | 0 | 3 | 0 | -2 | -4 |
| Below Normal (13%) | 0 | -3 | -8 | 7 | 6 | -6 | 7 | 2 | 15 | 0 | 12 | -2 |
| Dry (24%) | -13 | -15 | -15 | -10 | -8 | -8 | -20 | -18 | -14 | -25 | -29 | -14 |
| Critical (15%) | -15 | -16 | -47 | -12 | 1 | -3 | 1 | -10 | -5 | -14 | 4 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34-4. SWP Total Energy Use, Monthly Energy Use

### Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,140 | 1,100 | 1,065 | 934 | 956 | 1,028 | 980 | 1,098 | 1,010 | 1,150 | 1,150 | 1,143 |
| 20% | 1,099 | 1,067 | 1,008 | 556 | 754 | 961 | 924 | 1,062 | 954 | 1,135 | 1,127 | 1,133 |
| 30% | 1,035 | 1,027 | 980 | 485 | 526 | 849 | 865 | 1,011 | 910 | 1,120 | 1,119 | 1,111 |
| 40% | 959 | 961 | 932 | 389 | 452 | 711 | 837 | 962 | 827 | 1,105 | 1,105 | 1,092 |
| 50% | 853 | 870 | 875 | 196 | 343 | 488 | 720 | 815 | 751 | 1,036 | 1,050 | 1,022 |
| 60% | 733 | 763 | 706 | 131 | 222 | 290 | 547 | 588 | 689 | 958 | 1,013 | 896 |
| 70% | 586 | 583 | 632 | 120 | 131 | 174 | 332 | 420 | 569 | 850 | 791 | 818 |
| 80% | 400 | 451 | 447 | 111 | 118 | 157 | 162 | 395 | 548 | 619 | 599 | 634 |
| 90% | 264 | 274 | 270 | 104 | 102 | 143 | 118 | 299 | 362 | 397 | 399 | 406 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 767 | 774 | 759 | 366 | 419 | 539 | 608 | 733 | 727 | 907 | 898 | 880 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 990 | 1,022 | 985 | 617 | 722 | 892 | 893 | 996 | 895 | 1,091 | 1,107 | 1,088 |
| Above Normal (16%) | 1,027 | 983 | 898 | 367 | 452 | 784 | 848 | 913 | 815 | 1,098 | 1,116 | 1,120 |
| Below Normal (13%) | 834 | 832 | 795 | 326 | 370 | 414 | 637 | 789 | 783 | 1,029 | 1,058 | 929 |
| Dry (24%) | 570 | 580 | 549 | 198 | 200 | 214 | 357 | 505 | 623 | 766 | 697 | 726 |
| Critical (15%) | 267 | 281 | 436 | 136 | 134 | 166 | 124 | 299 | 389 | 423 | 398 | 380 |

### Alternative 1 100419

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1,057 | 1,089 | 1,082 | 826 | 947 | 941 | 929 | 1,104 | 996 | 1,132 | 1,132 | 1,059 |
| 20% | 934 | 1,046 | 999 | 496 | 630 | 801 | 840 | 927 | 872 | 1,071 | 1,097 | 1,014 |
| 30% | 887 | 974 | 921 | 411 | 543 | 707 | 762 | 871 | 805 | 1,026 | 1,071 | 960 |
| 40% | 790 | 879 | 839 | 340 | 398 | 549 | 631 | 788 | 752 | 987 | 1,055 | 923 |
| 50% | 694 | 798 | 792 | 233 | 283 | 369 | 492 | 622 | 697 | 961 | 1,042 | 868 |
| 60% | 591 | 755 | 715 | 150 | 223 | 227 | 434 | 475 | 677 | 939 | 1,001 | 759 |
| 70% | 502 | 585 | 578 | 116 | 141 | 170 | 350 | 429 | 594 | 825 | 740 | 669 |
| 80% | 402 | 418 | 436 | 108 | 112 | 141 | 175 | 396 | 551 | 635 | 600 | 533 |
| 90% | 279 | 245 | 277 | 98 | 103 | 125 | 121 | 291 | 377 | 387 | 376 | 392 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 675 | 742 | 731 | 338 | 392 | 462 | 526 | 655 | 700 | 868 | 879 | 778 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 870 | 997 | 964 | 559 | 661 | 779 | 802 | 921 | 875 | 1,044 | 1,085 | 944 |
| Above Normal (16%) | 674 | 940 | 926 | 322 | 406 | 569 | 641 | 734 | 774 | 1,000 | 1,080 | 812 |
| Below Normal (13%) | 809 | 771 | 700 | 304 | 355 | 388 | 549 | 683 | 723 | 962 | 1,004 | 911 |
| Dry (24%) | 588 | 558 | 532 | 202 | 206 | 198 | 316 | 463 | 610 | 782 | 712 | 709 |
| Critical (15%) | 273 | 258 | 375 | 132 | 136 | 166 | 128 | 287 | 370 | 400 | 380 | 375 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Energy Use (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -83 | -11 | 17 | -107 | -9 | -87 | -51 | 6 | -14 | -18 | -18 | -84 |
| 20% | -165 | -21 | -9 | -59 | -124 | -160 | -84 | -135 | -82 | -64 | -31 | -119 |
| 30% | -148 | -53 | -59 | -73 | 17 | -142 | -104 | -140 | -105 | -94 | -47 | -150 |
| 40% | -169 | -82 | -94 | -49 | -54 | -162 | -206 | -174 | -75 | -118 | -50 | -169 |
| 50% | -159 | -72 | -84 | 37 | -60 | -119 | -229 | -193 | -54 | -75 | -8 | -154 |
| 60% | -142 | -8 | 9 | 19 | 1 | -63 | -113 | -113 | -12 | -19 | -12 | -137 |
| 70% | -84 | 2 | -54 | -4 | 10 | -4 | 18 | 9 | 25 | -25 | -51 | -150 |
| 80% | 2 | -33 | -11 | -3 | -6 | -16 | 13 | 1 | 3 | 16 | 1 | -101 |
| 90% | 15 | -29 | 6 | -6 | 1 | -19 | 3 | -9 | 15 | -9 | -23 | -14 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -92 | -31 | -28 | -28 | -27 | -77 | -83 | -78 | -27 | -39 | -19 | -102 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -120 | -24 | -21 | -58 | -61 | -113 | -91 | -75 | -20 | -47 | -22 | -144 |
| Above Normal (16%) | -353 | -43 | 28 | -45 | -46 | -215 | -207 | -179 | -41 | -98 | -35 | -308 |
| Below Normal (13%) | -25 | -60 | -95 | -22 | -15 | -25 | -87 | -105 | -60 | -67 | -54 | -19 |
| Dry (24%) | 17 | -22 | -18 | 4 | 5 | -16 | -42 | -42 | -13 | 16 | 15 | -17 |
| Critical (15%) | 6 | -23 | -61 | -5 | 1 | 0 | 4 | -12 | -18 | -23 | -18 | -5 |

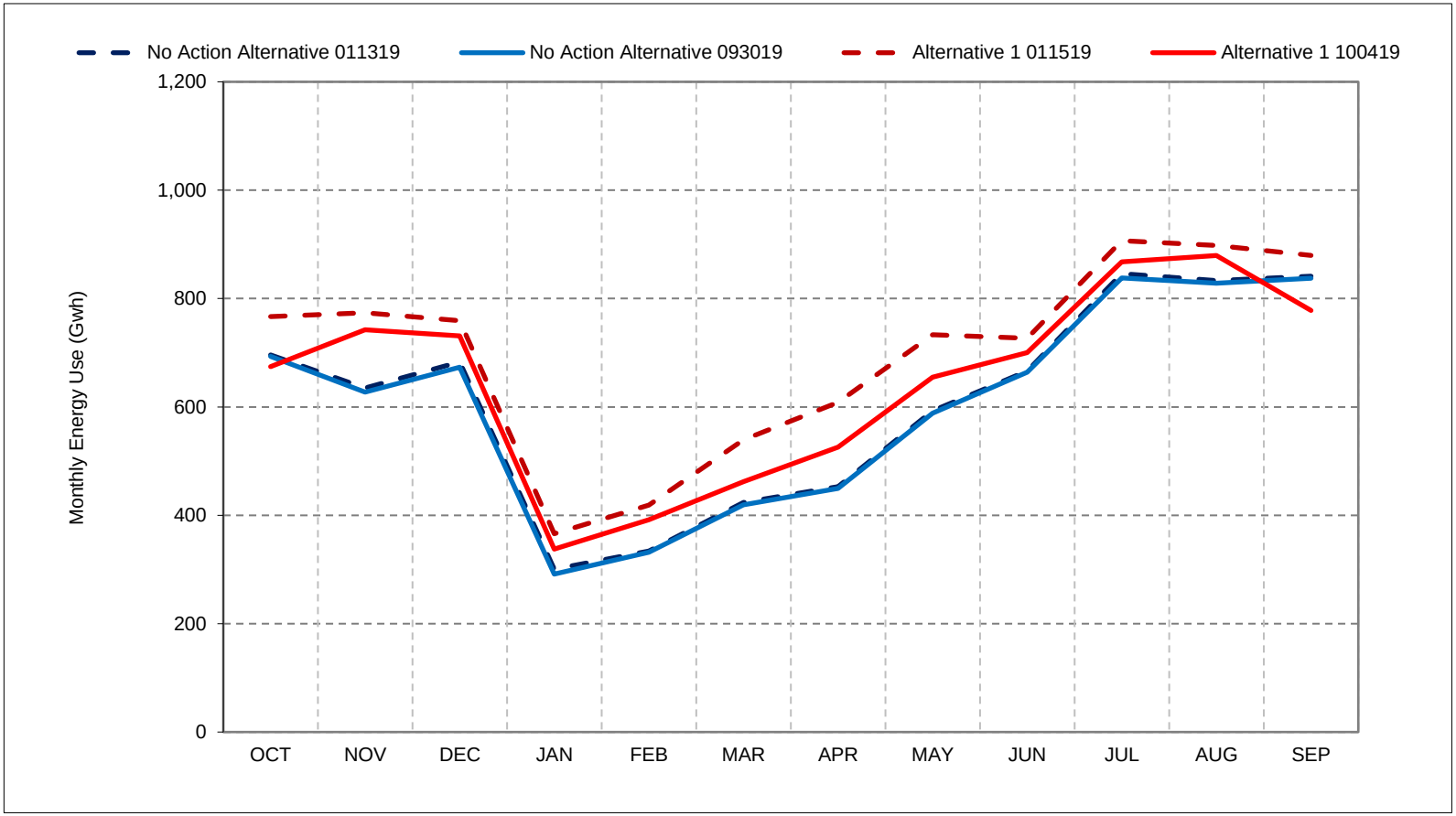
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-1. SWP Total Energy Use, Long-Term Average Energy Use

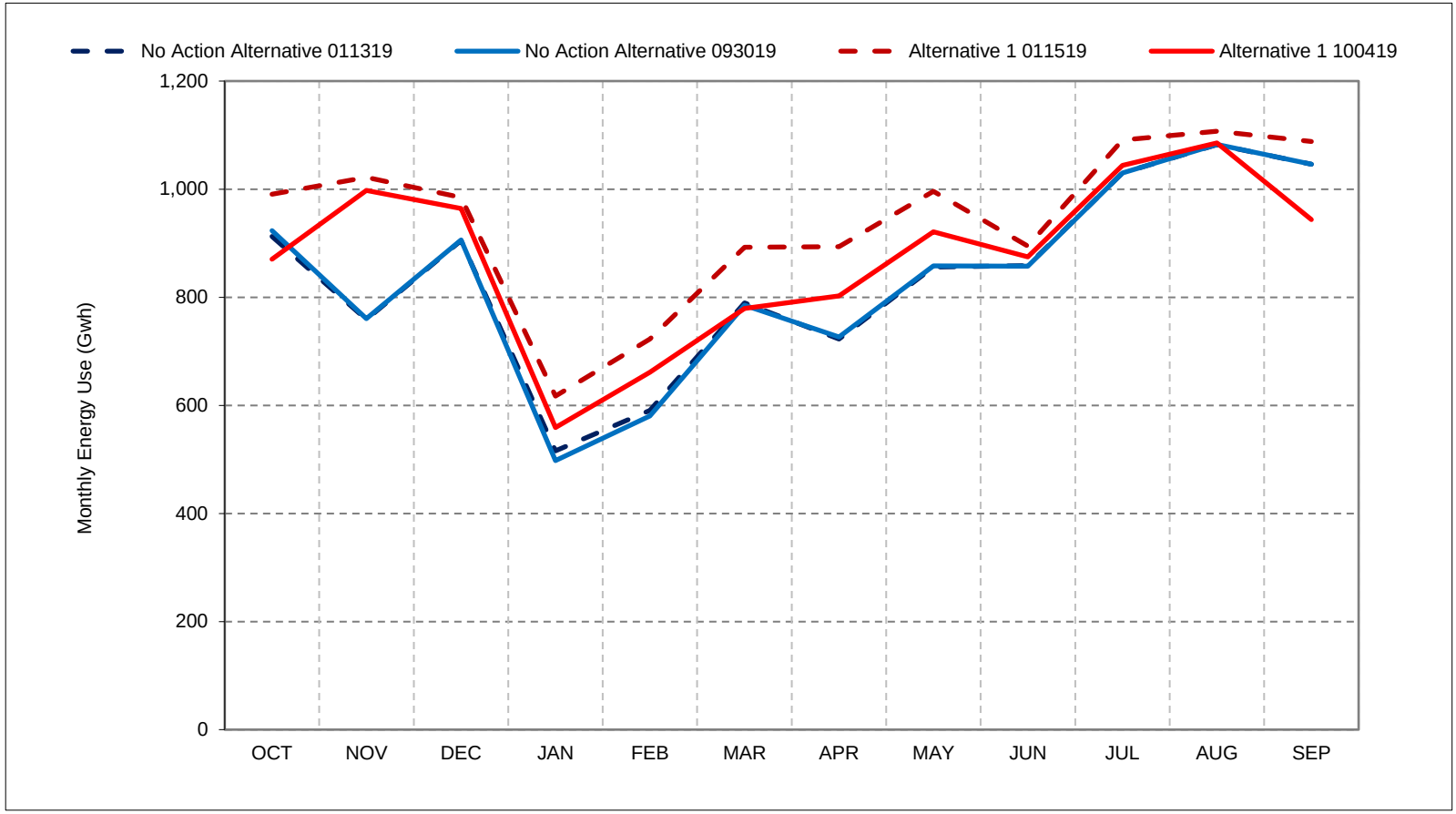



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-2. SWP Total Energy Use, Wet Year Average Energy Use

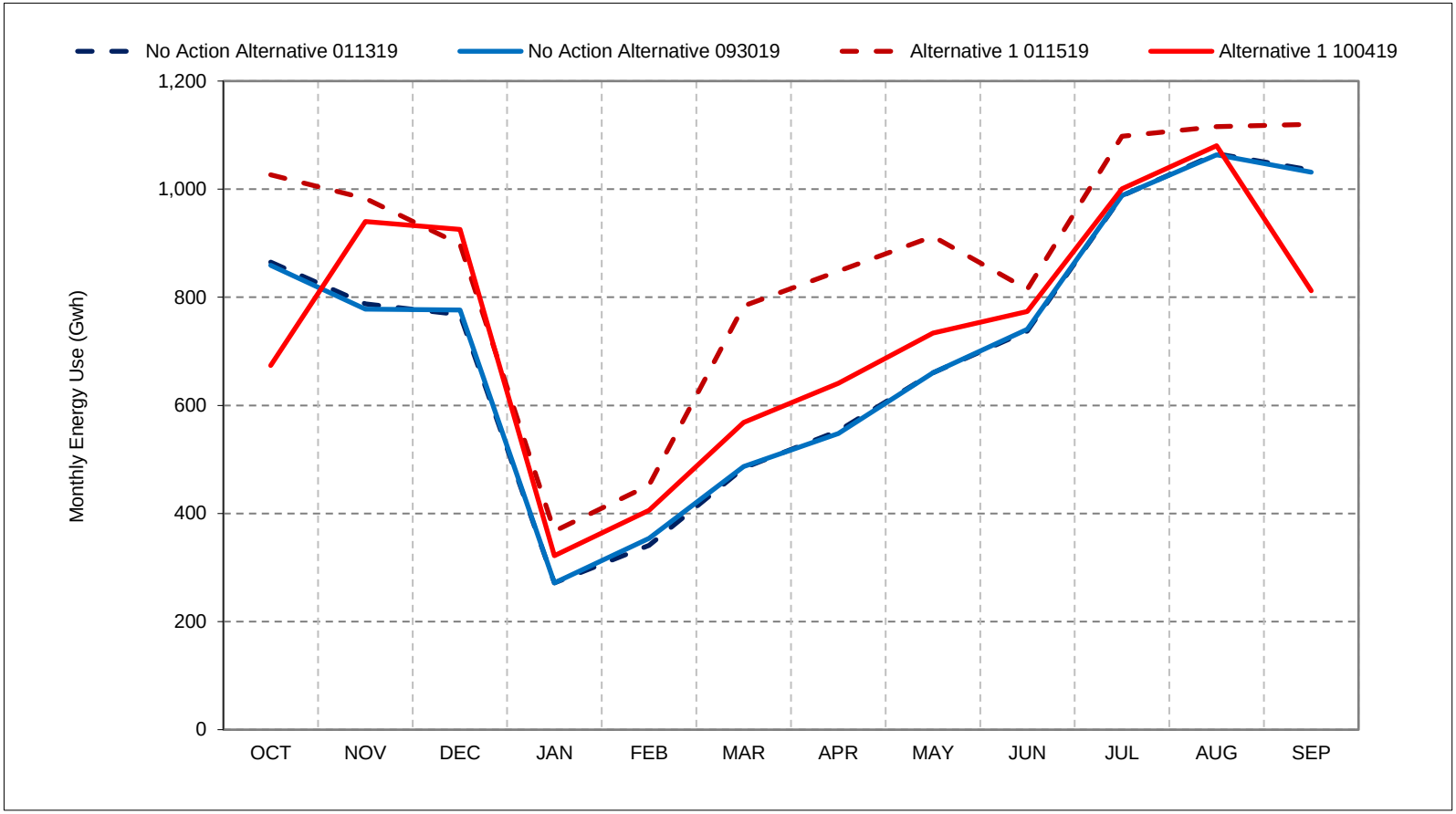



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-3. SWP Total Energy Use, Above Normal Year Average Energy Use

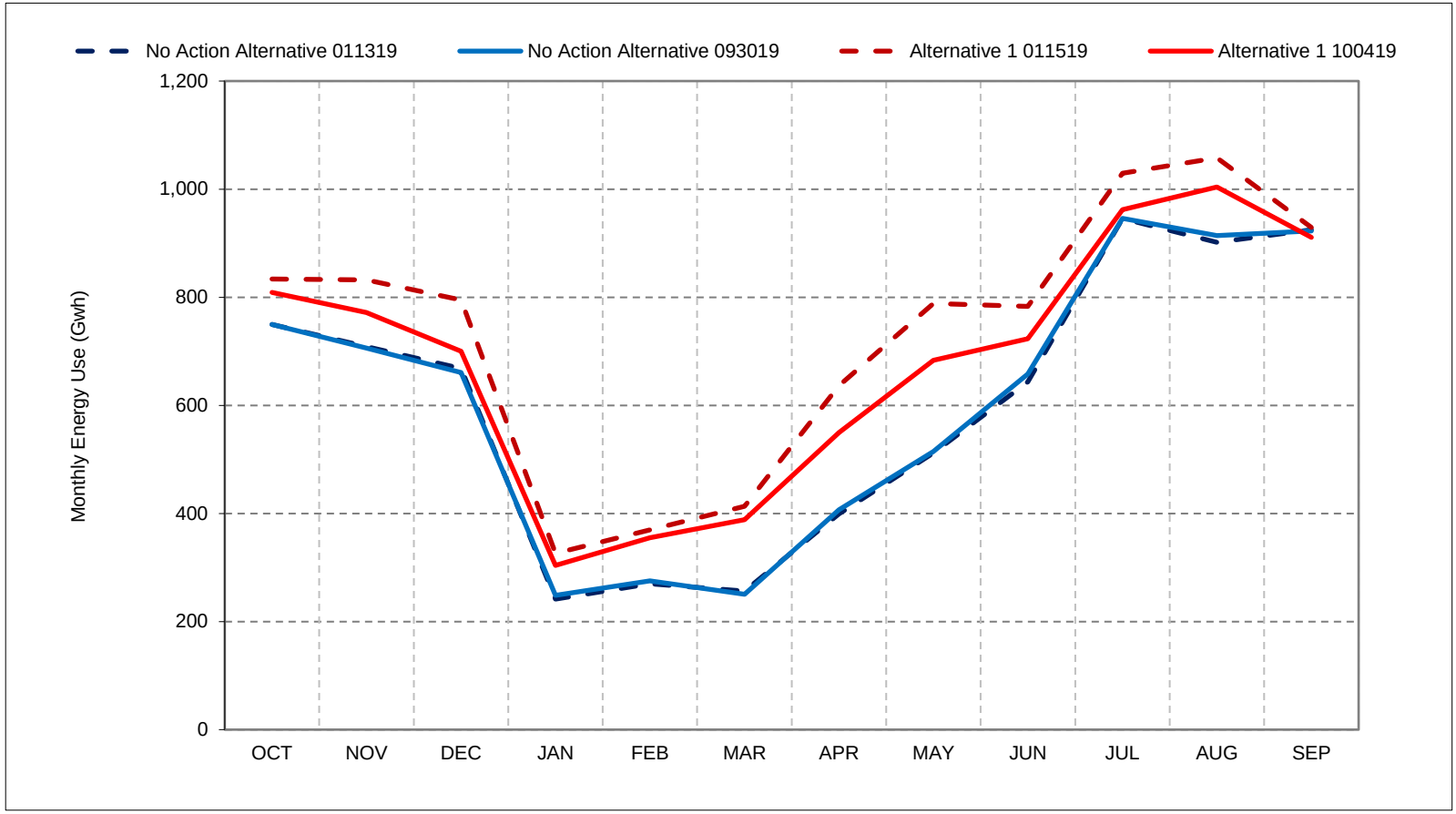



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-4. SWP Total Energy Use, Below Normal Year Average Energy Use

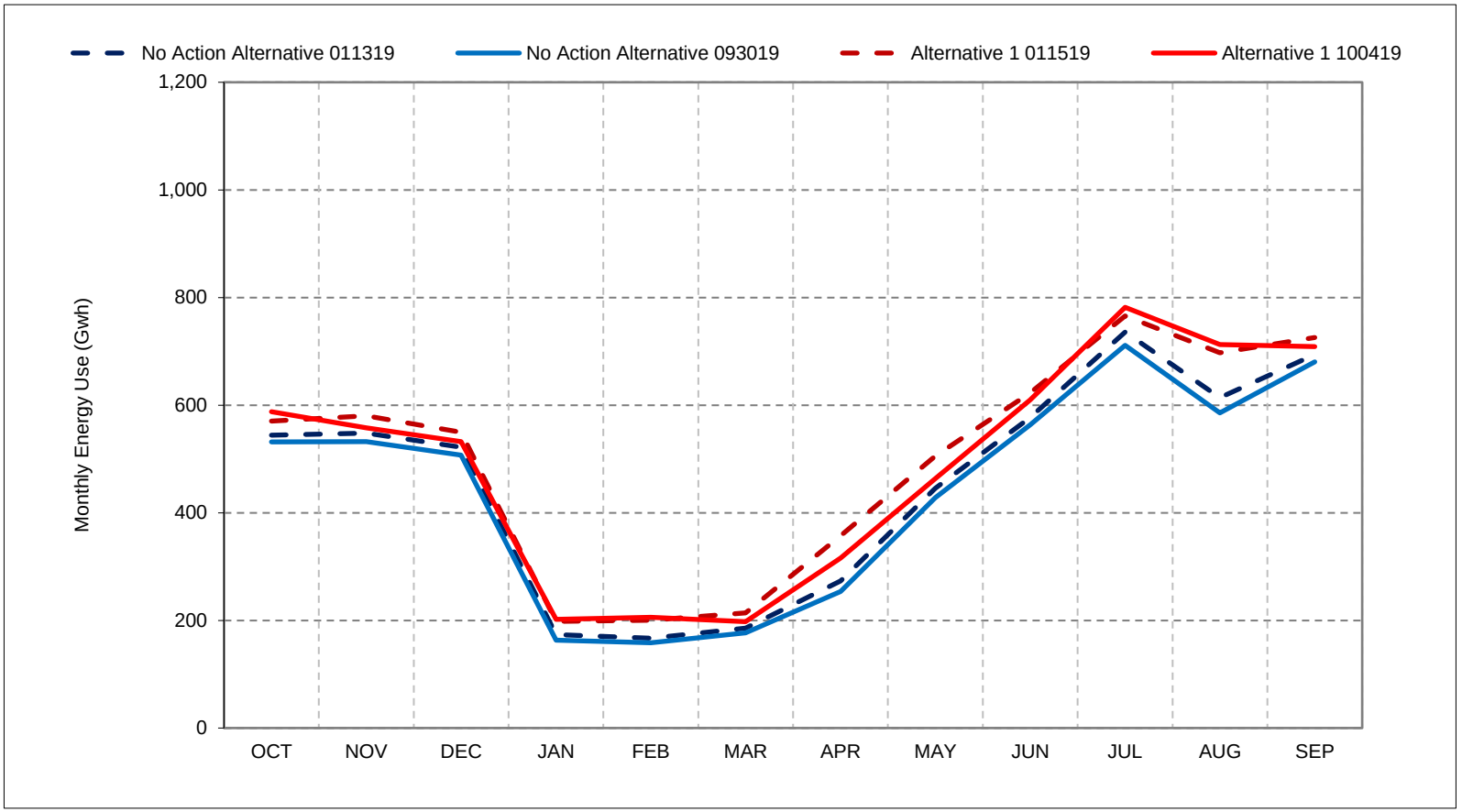



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-5. SWP Total Energy Use, Dry Year Average Energy Use

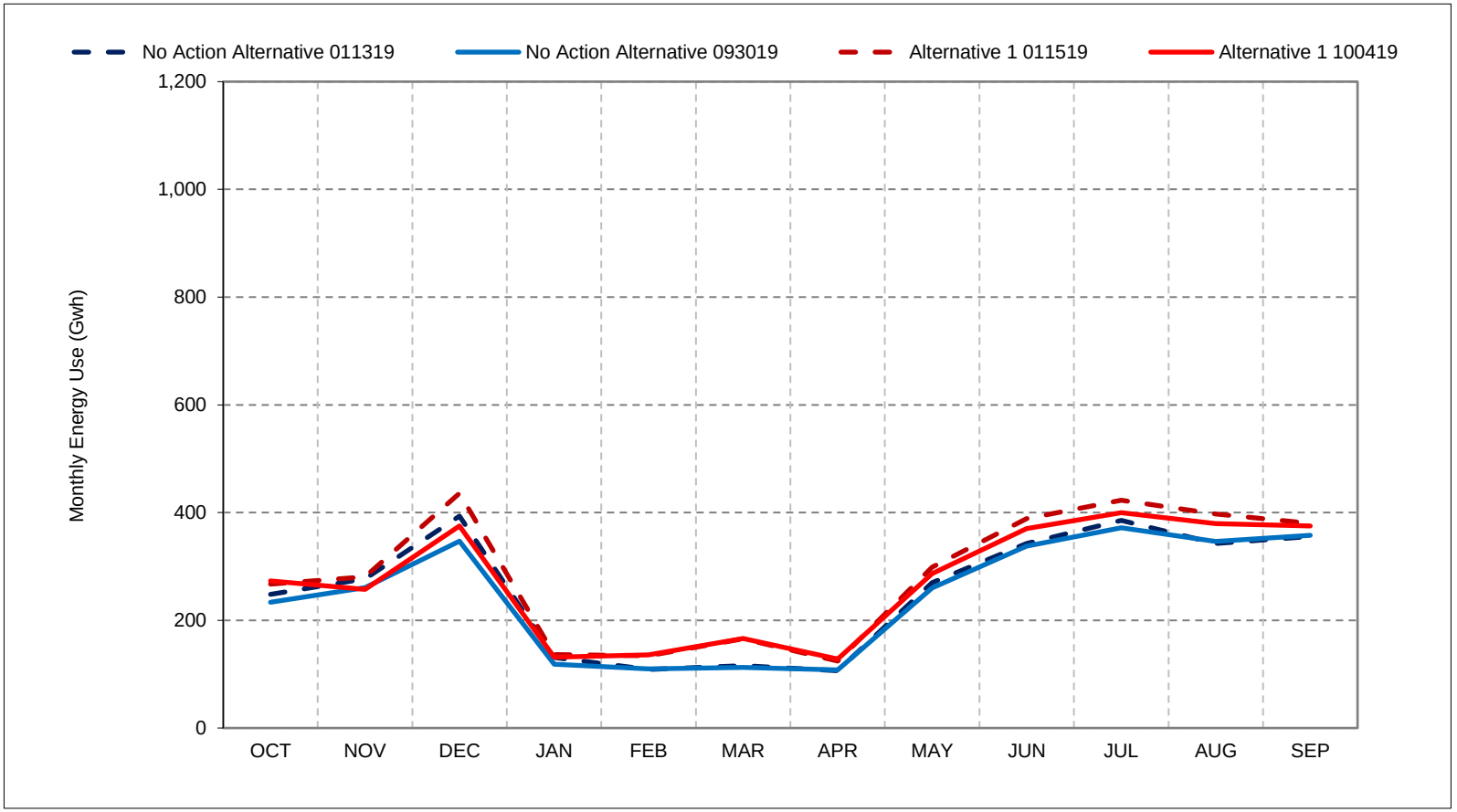



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 34-6. SWP Total Energy Use, Critical Year Average Energy Use

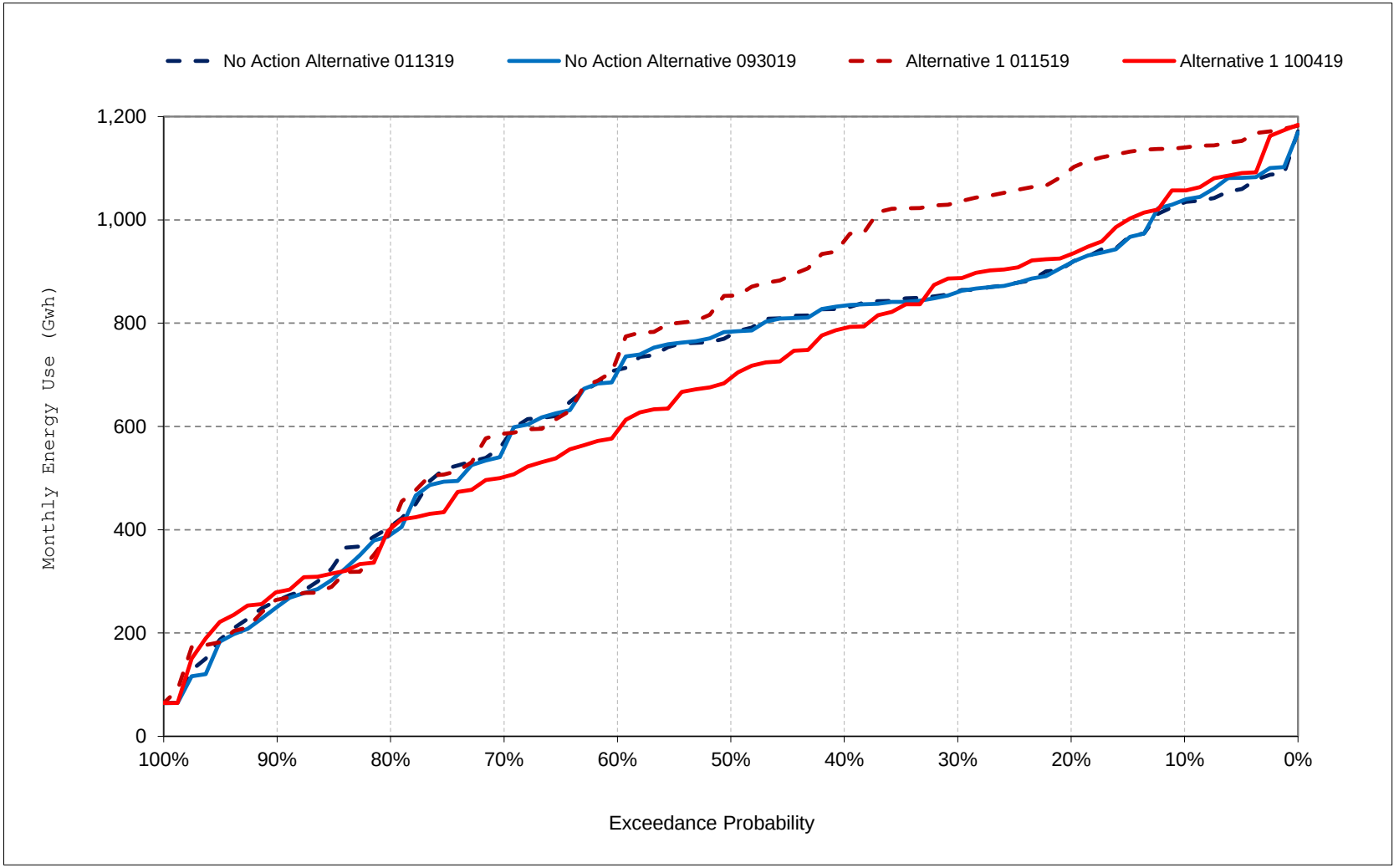



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

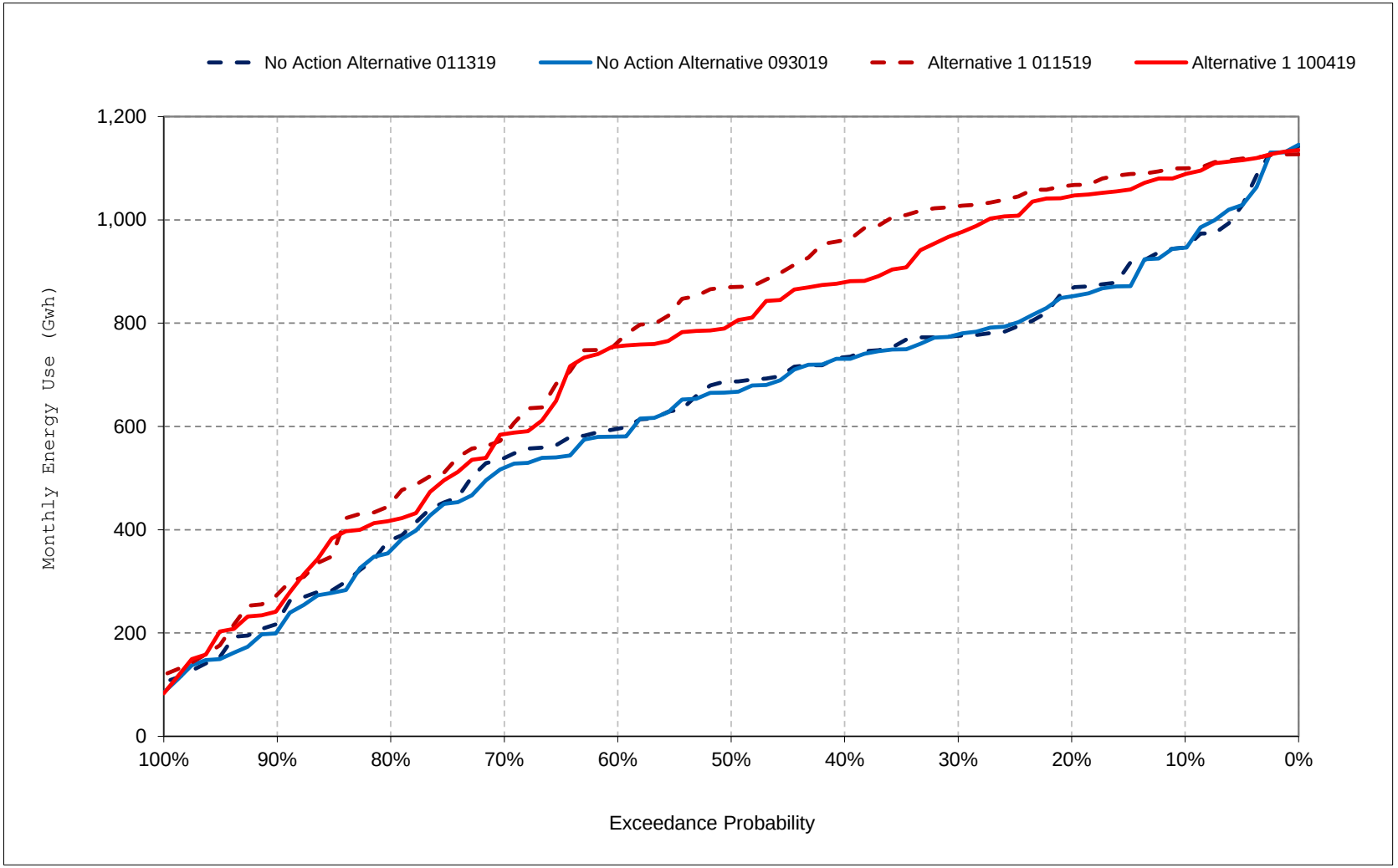
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-7. SWP Total Energy Use, October**



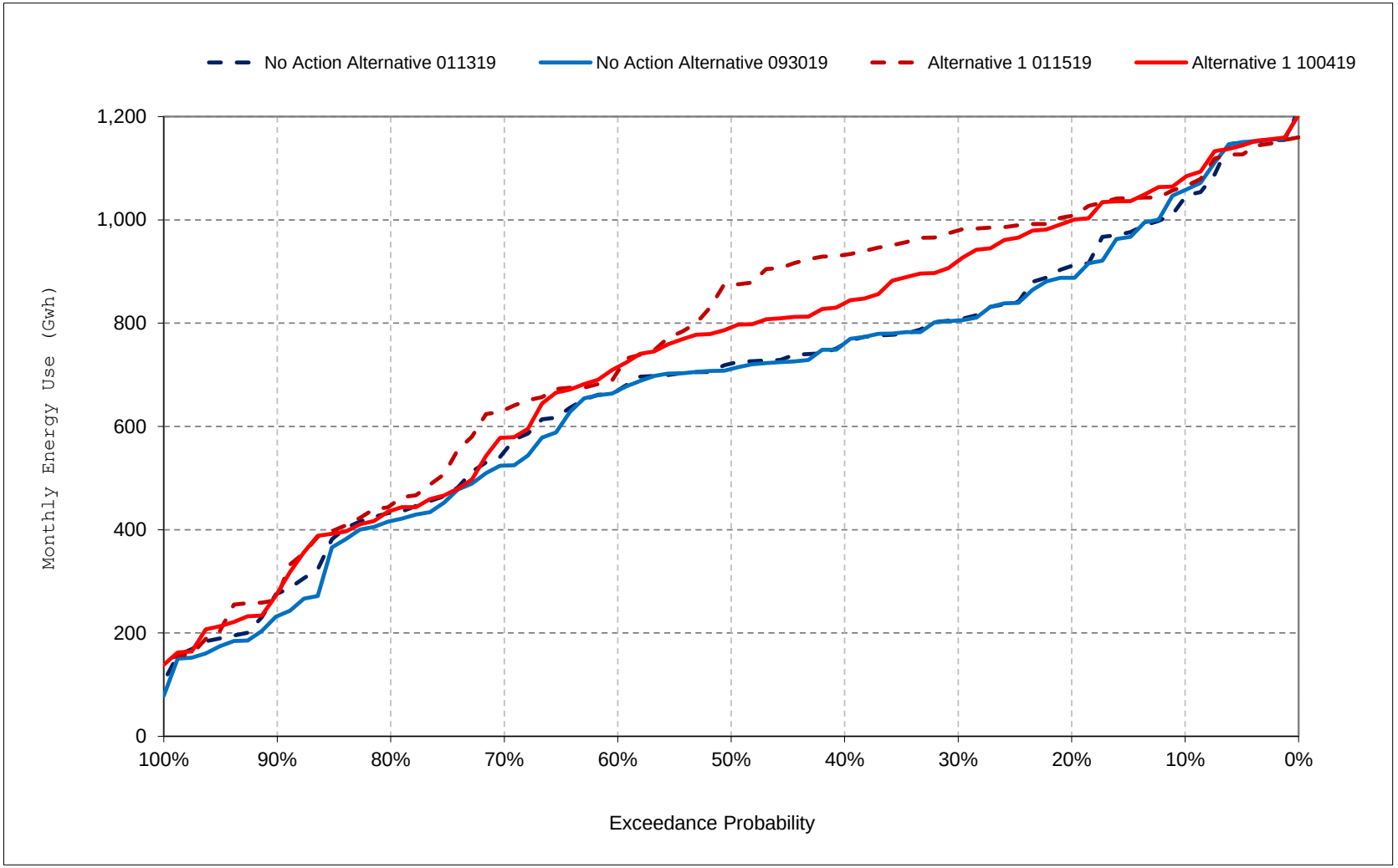

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-8. SWP Total Energy Use, November**



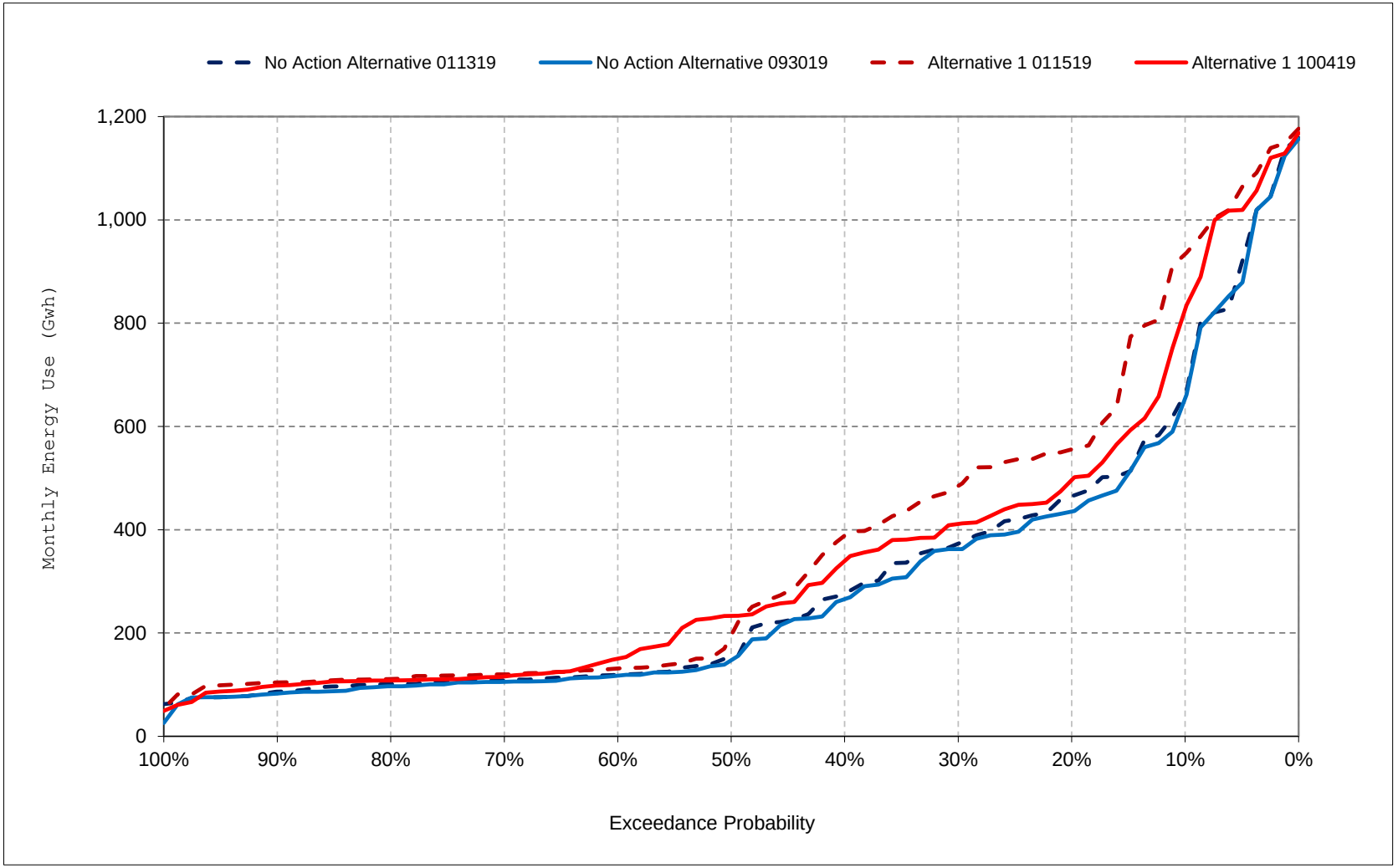

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-9. SWP Total Energy Use, December**



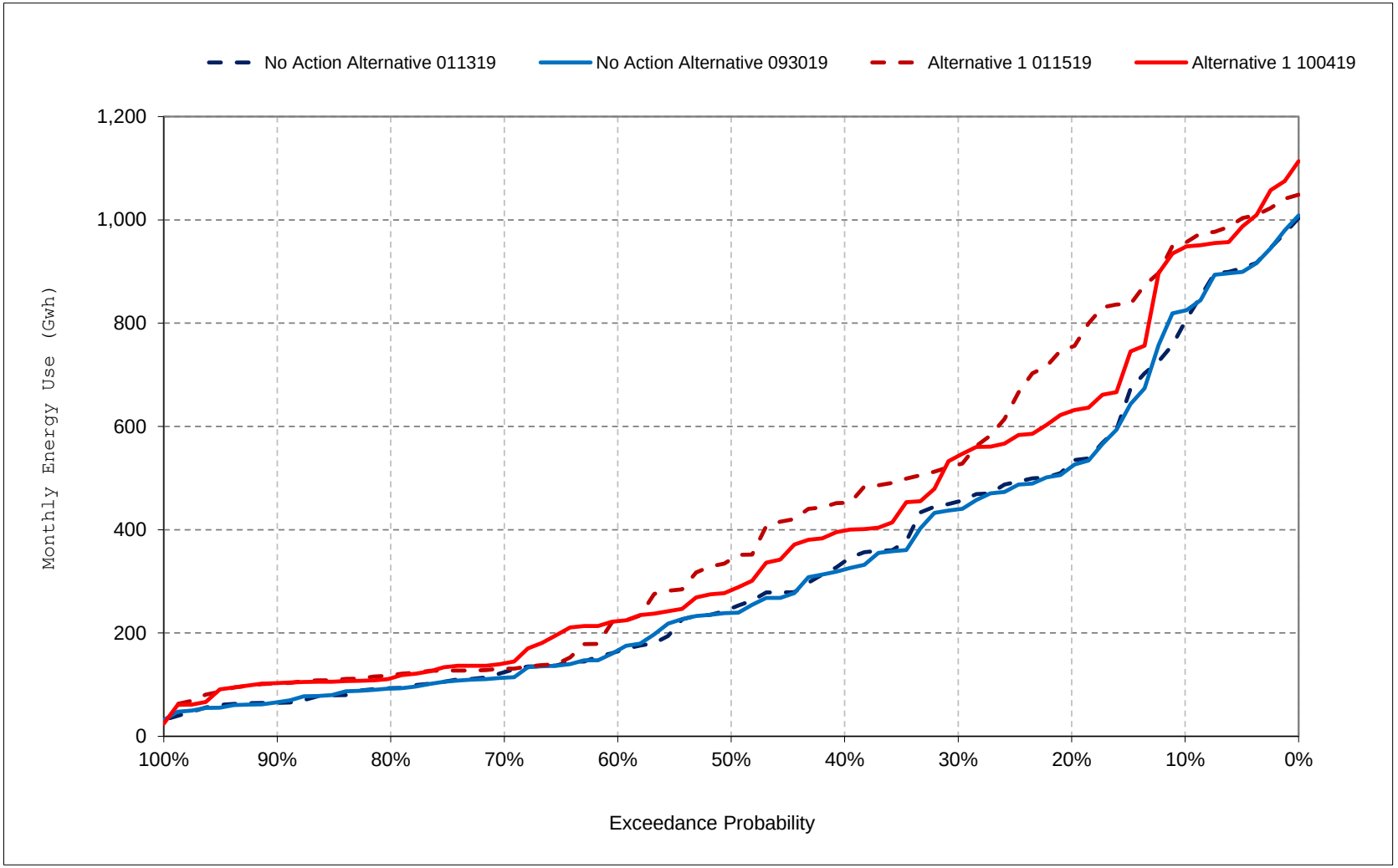

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-10. SWP Total Energy Use, January**



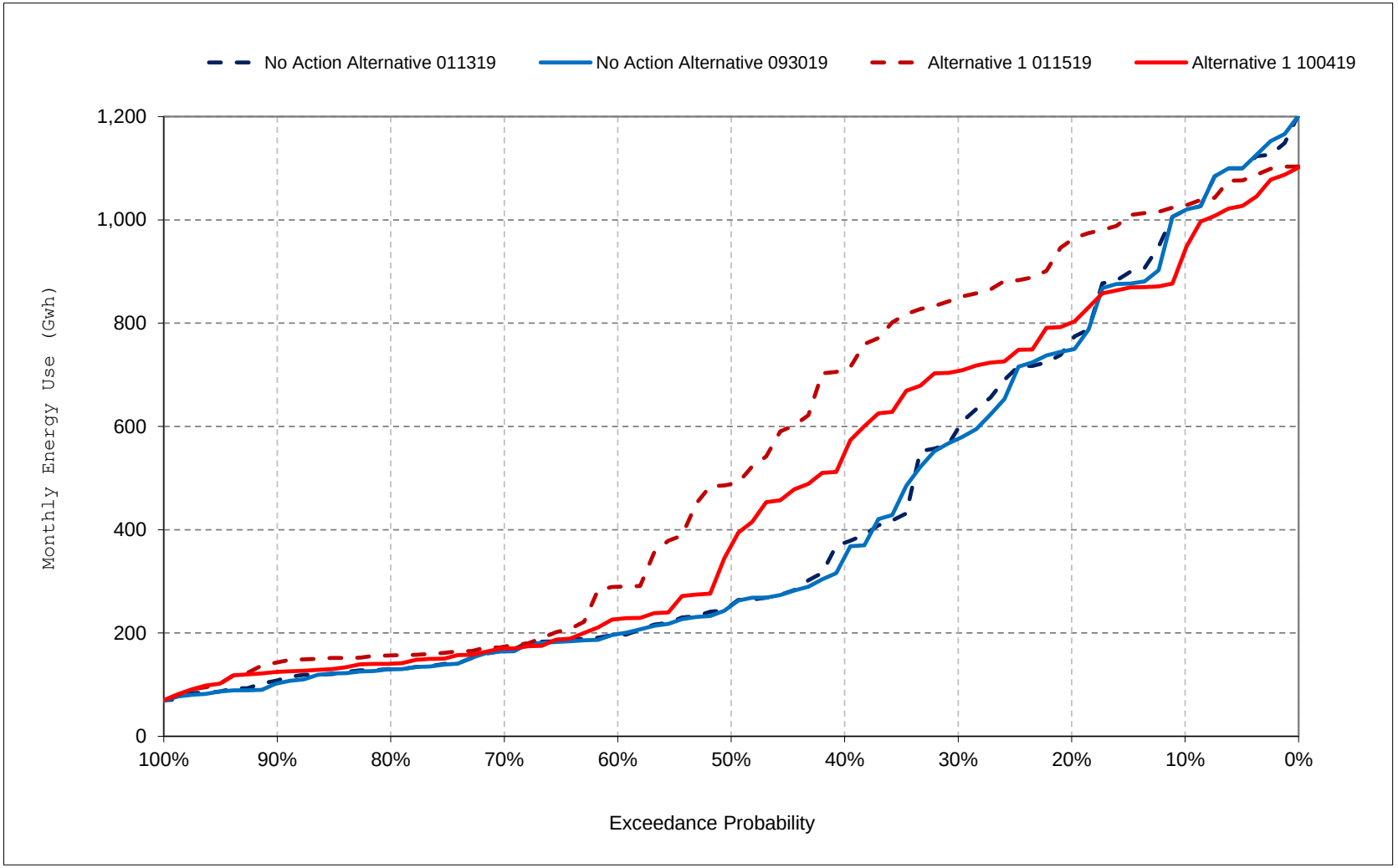

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-11. SWP Total Energy Use, February**



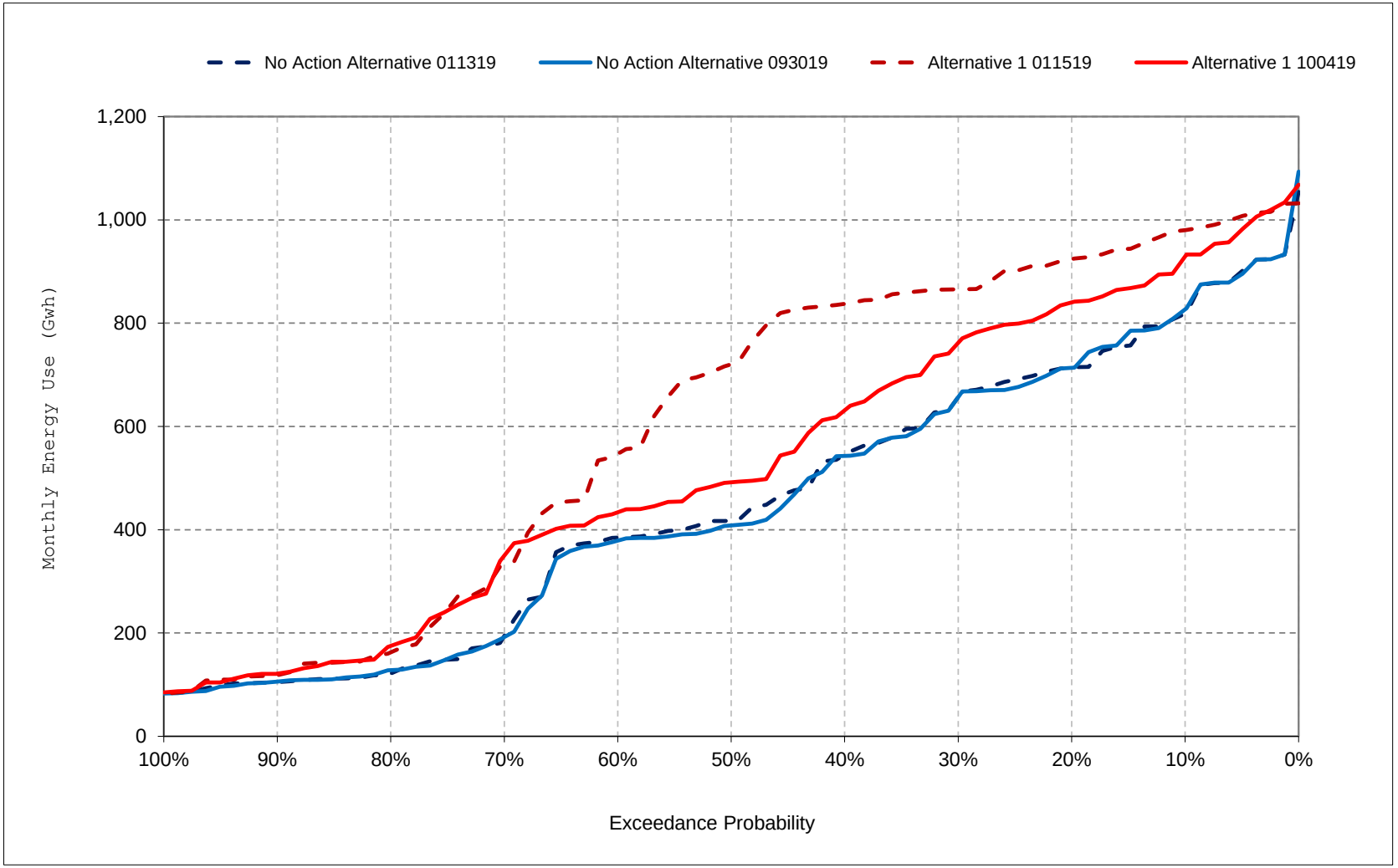

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-12. SWP Total Energy Use, March**



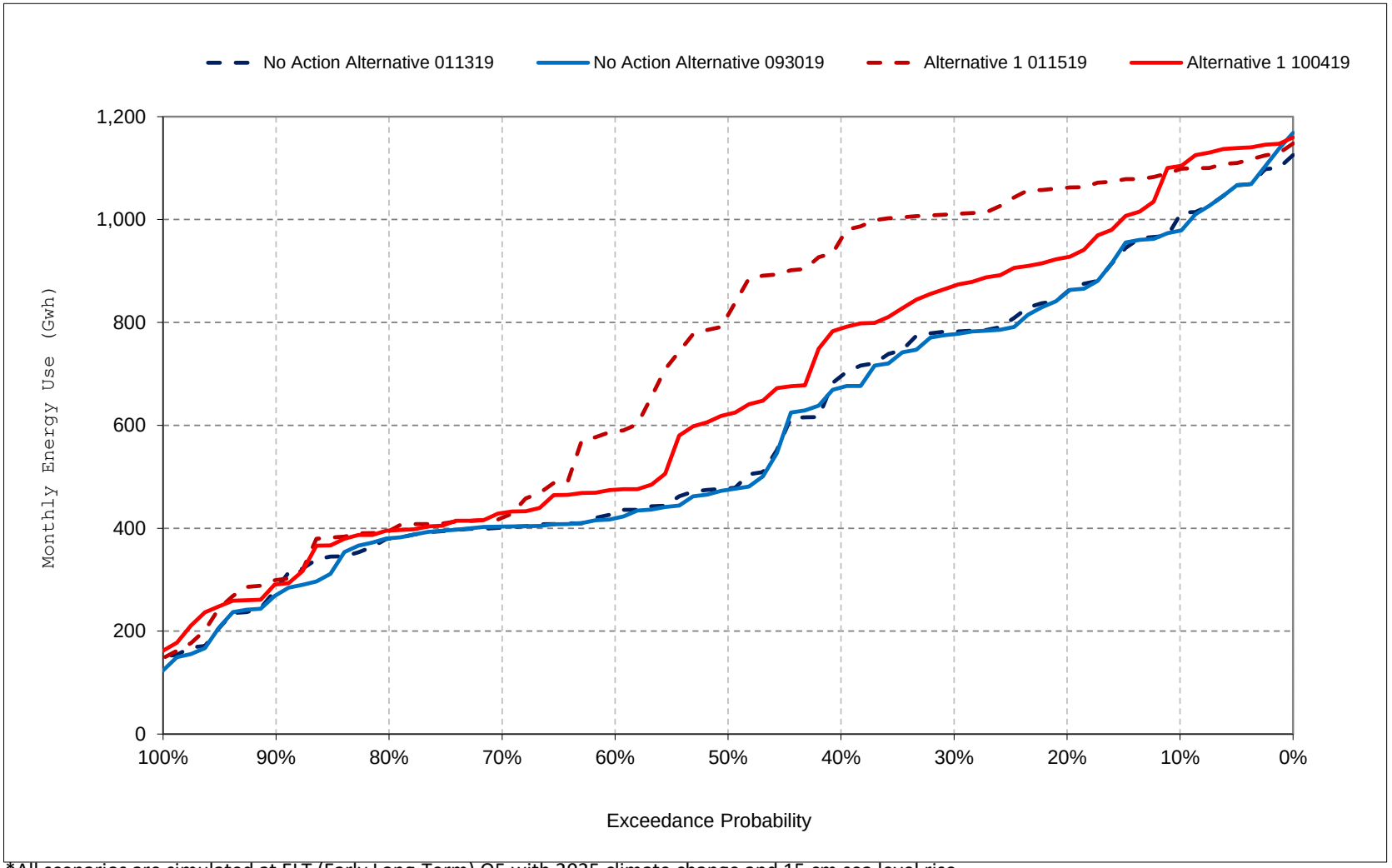

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-13. SWP Total Energy Use, April**



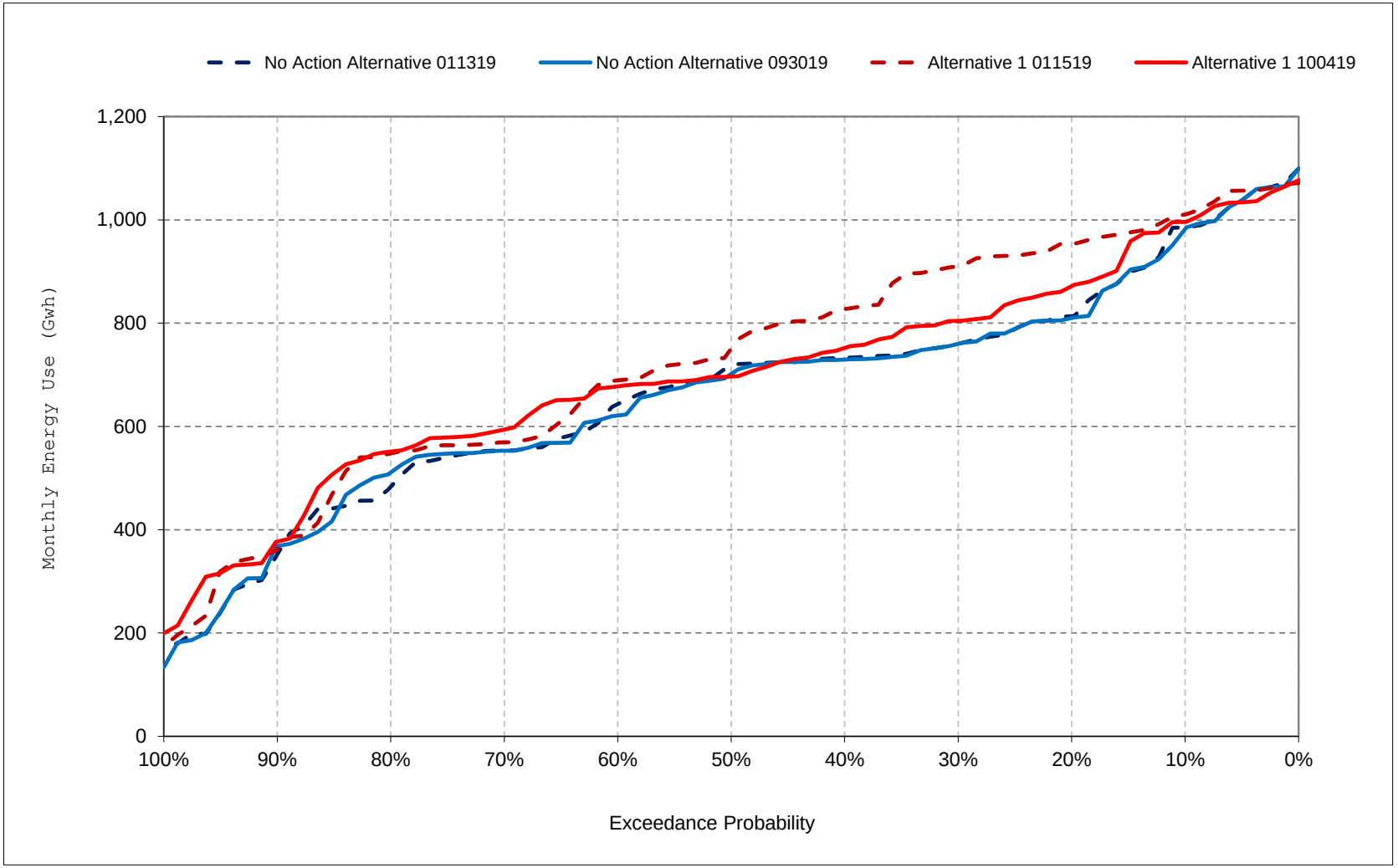

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-14. SWP Total Energy Use, May**



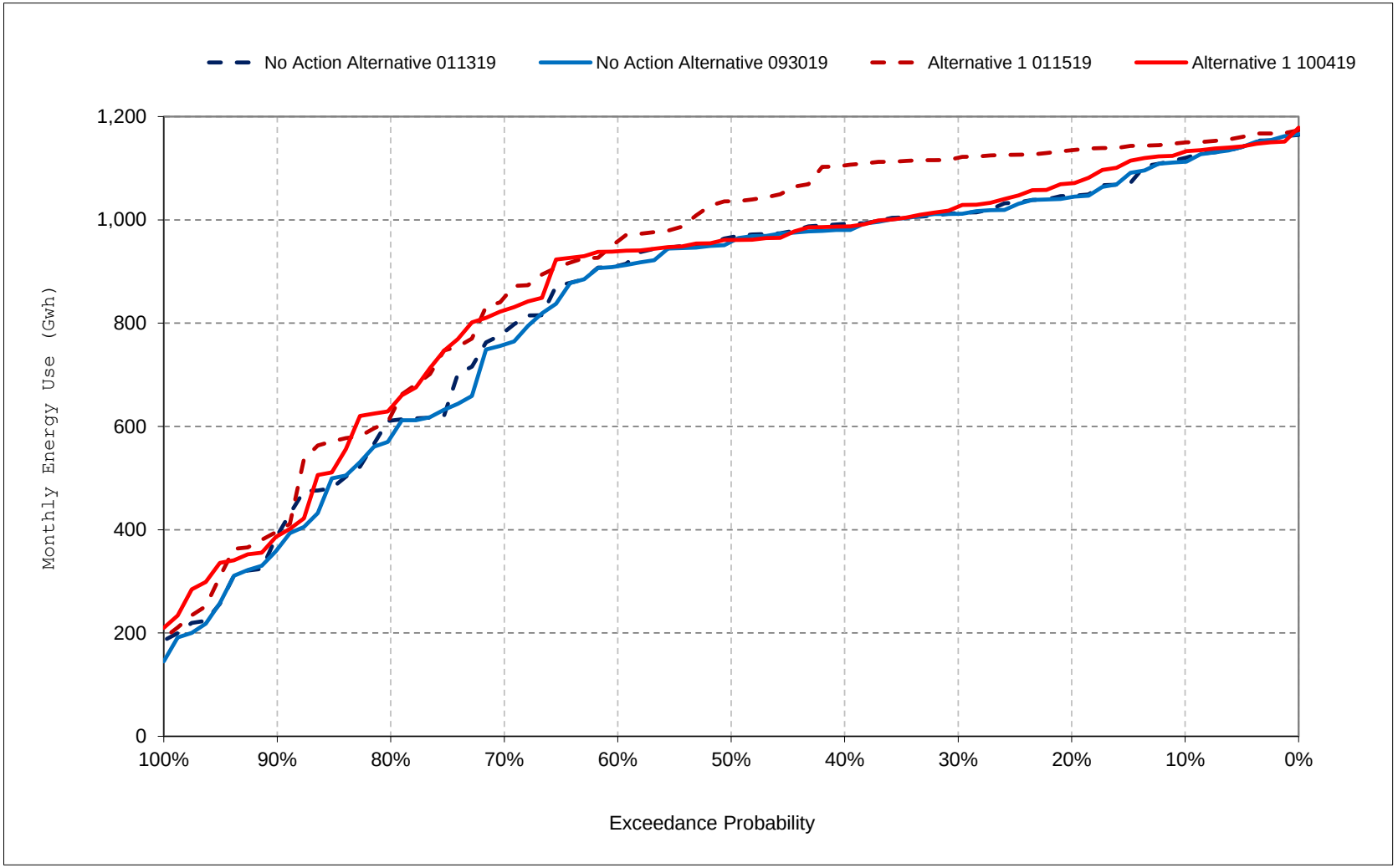

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-15. SWP Total Energy Use, June**



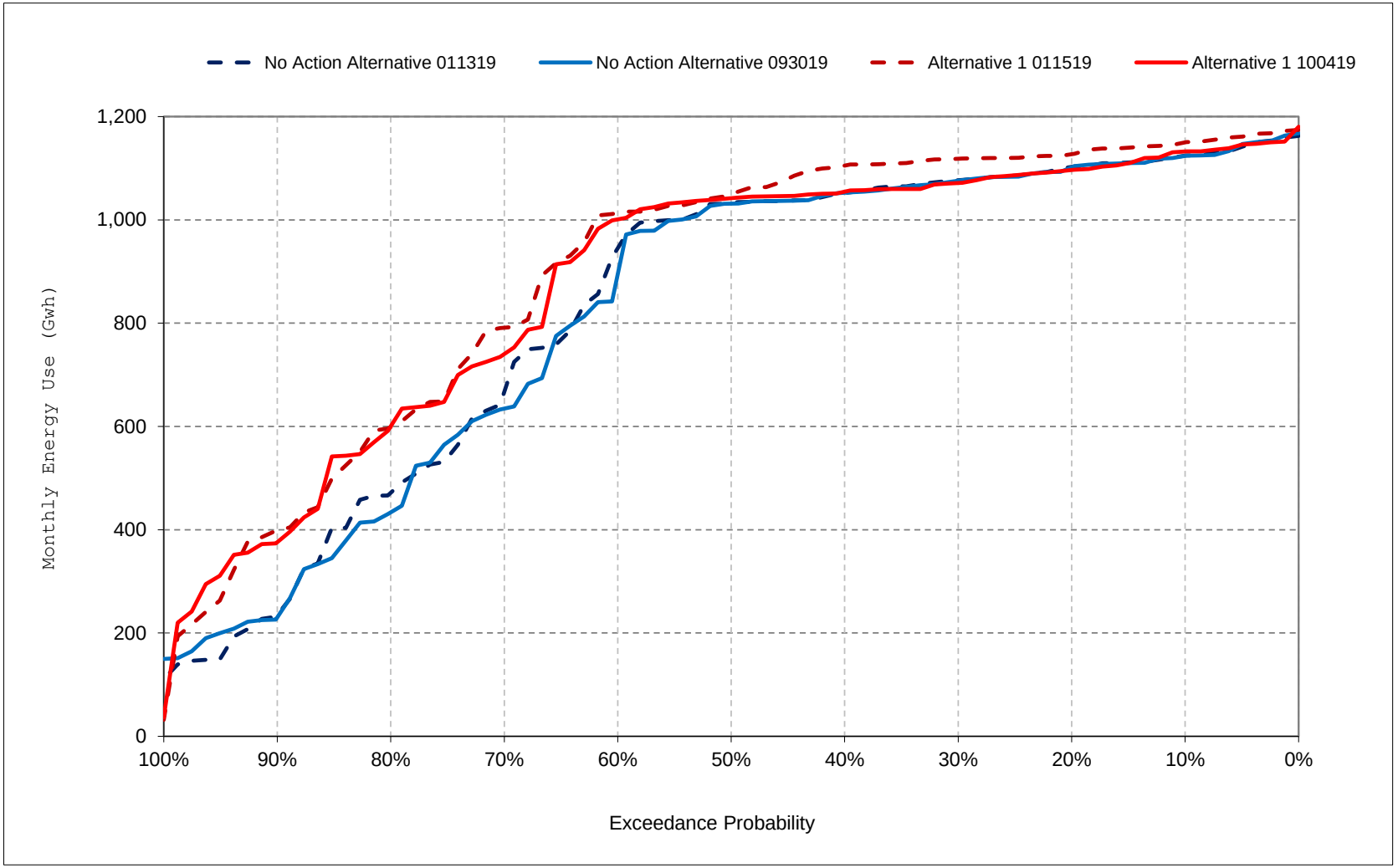

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-16. SWP Total Energy Use, July**



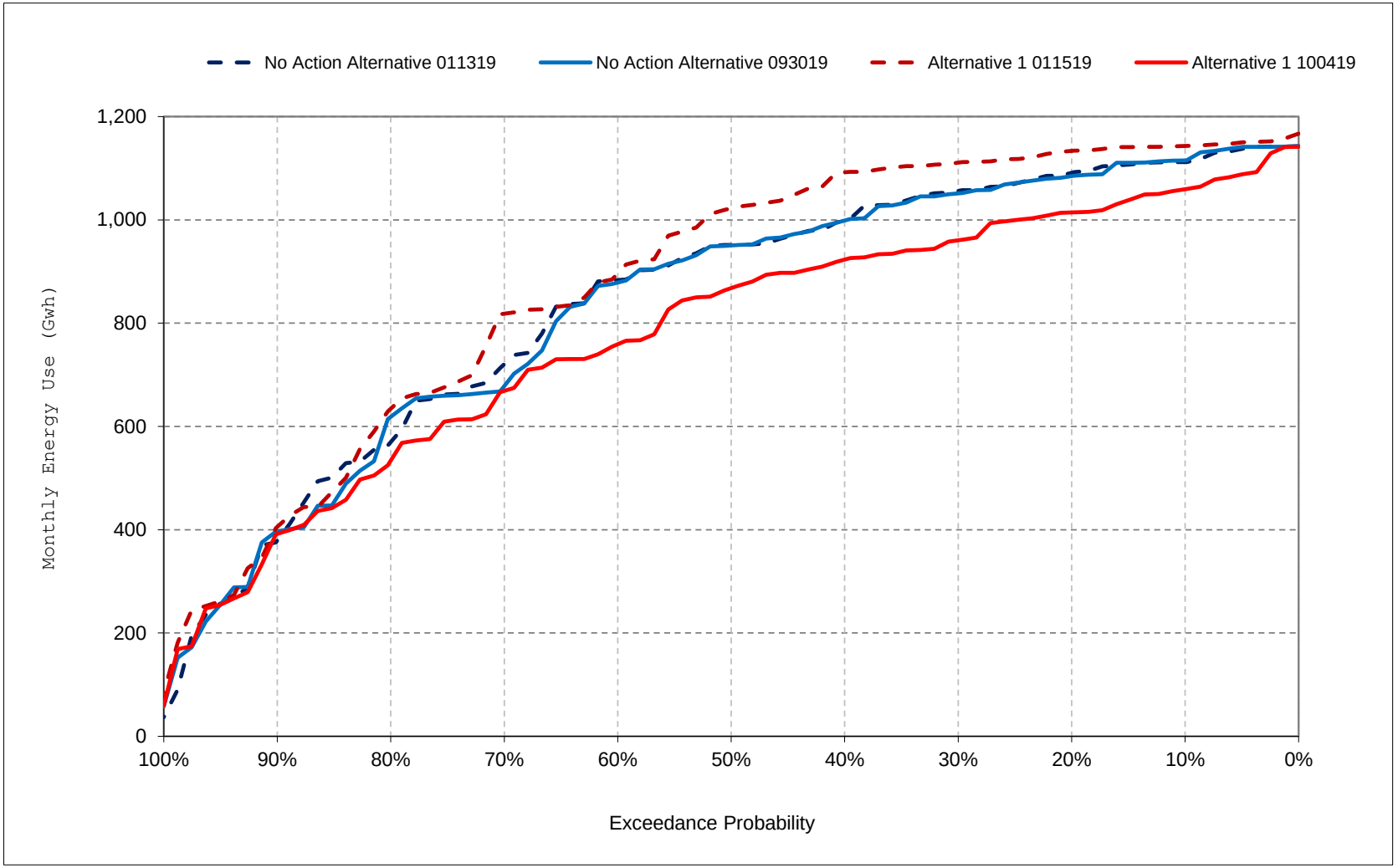

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-17. SWP Total Energy Use, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34-18. SWP Total Energy Use, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-1. SWP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -160 | -133 | -155 | -9 | 24 | 35 | 15 | -16 | -76 | -137 | -146 | -223 |
| 20% | -224 | -200 | -229 | -36 | -17 | -26 | -21 | -90 | -138 | -201 | -261 | -324 |
| 30% | -332 | -288 | -297 | -43 | -39 | -48 | -34 | -117 | -169 | -247 | -328 | -383 |
| 40% | -372 | -335 | -401 | -55 | -52 | -73 | -60 | -145 | -211 | -291 | -432 | -402 |
| 50% | -416 | -376 | -443 | -70 | -78 | -95 | -100 | -157 | -264 | -310 | -458 | -427 |
| 60% | -445 | -426 | -465 | -103 | -107 | -126 | -169 | -189 | -309 | -319 | -474 | -459 |
| 70% | -494 | -458 | -507 | -162 | -161 | -155 | -258 | -257 | -334 | -361 | -489 | -485 |
| 80% | -520 | -502 | -559 | -210 | -210 | -285 | -292 | -351 | -376 | -394 | -523 | -538 |
| 90% | -554 | -579 | -630 | -264 | -277 | -421 | -361 | -398 | -429 | -464 | -579 | -592 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -384 | -366 | -405 | -102 | -99 | -140 | -146 | -197 | -260 | -309 | -400 | -422 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -471 | -394 | -519 | -100 | -80 | -199 | -202 | -236 | -372 | -406 | -531 | -429 |
| Above Normal (16%) | -473 | -462 | -471 | -122 | -132 | -156 | -225 | -277 | -325 | -320 | -458 | -479 |
| Below Normal (13%) | -452 | -437 | -424 | -125 | -157 | -140 | -158 | -195 | -253 | -320 | -422 | -559 |
| Dry (24%) | -314 | -337 | -285 | -92 | -91 | -109 | -104 | -161 | -172 | -263 | -310 | -420 |
| Critical (15%) | -151 | -185 | -272 | -80 | -65 | -47 | 0 | -86 | -99 | -153 | -186 | -222 |

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -143 | -148 | -153 | -26 | -2 | -28 | -14 | -73 | -67 | -133 | -191 | -252 |
| 20% | -219 | -277 | -224 | -43 | -54 | -73 | -60 | -108 | -143 | -226 | -303 | -370 |
| 30% | -323 | -358 | -327 | -56 | -60 | -92 | -112 | -143 | -183 | -302 | -408 | -462 |
| 40% | -407 | -467 | -390 | -67 | -80 | -112 | -191 | -201 | -239 | -327 | -450 | -522 |
| 50% | -517 | -518 | -427 | -84 | -106 | -150 | -276 | -314 | -275 | -371 | -494 | -584 |
| 60% | -554 | -591 | -532 | -123 | -184 | -174 | -385 | -376 | -333 | -400 | -511 | -611 |
| 70% | -611 | -636 | -598 | -201 | -224 | -275 | -456 | -435 | -384 | -422 | -526 | -644 |
| 80% | -640 | -657 | -632 | -251 | -270 | -369 | -491 | -497 | -405 | -444 | -552 | -659 |
| 90% | -675 | -700 | -669 | -323 | -319 | -457 | -539 | -566 | -477 | -465 | -586 | -749 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -449 | -474 | -439 | -139 | -144 | -207 | -279 | -303 | -280 | -349 | -441 | -524 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -571 | -606 | -523 | -145 | -160 | -245 | -367 | -363 | -378 | -449 | -554 | -668 |
| Above Normal (16%) | -588 | -612 | -550 | -190 | -182 | -315 | -459 | -463 | -359 | -386 | -492 | -610 |
| Below Normal (13%) | -519 | -524 | -505 | -183 | -171 | -243 | -337 | -371 | -317 | -364 | -508 | -563 |
| Dry (24%) | -333 | -359 | -304 | -108 | -118 | -138 | -173 | -203 | -176 | -285 | -358 | -434 |
| Critical (15%) | -162 | -182 | -303 | -83 | -90 | -88 | -15 | -101 | -119 | -185 | -219 | -234 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 17 | -14 | 2 | -17 | -26 | -63 | -29 | -57 | 9 | 4 | -45 | -29 |
| 20% | 5 | -77 | 5 | -7 | -37 | -47 | -39 | -18 | -6 | -26 | -42 | -46 |
| 30% | 9 | -70 | -29 | -13 | -21 | -44 | -78 | -26 | -14 | -55 | -80 | -79 |
| 40% | -35 | -132 | 11 | -12 | -28 | -39 | -131 | -56 | -28 | -36 | -18 | -121 |
| 50% | -101 | -143 | 16 | -15 | -28 | -55 | -176 | -157 | -10 | -61 | -36 | -157 |
| 60% | -108 | -165 | -67 | -20 | -77 | -48 | -216 | -187 | -23 | -81 | -37 | -152 |
| 70% | -117 | -178 | -91 | -39 | -63 | -120 | -198 | -177 | -50 | -61 | -37 | -159 |
| 80% | -120 | -155 | -73 | -41 | -61 | -84 | -199 | -147 | -29 | -50 | -29 | -121 |
| 90% | -121 | -122 | -39 | -58 | -42 | -37 | -178 | -168 | -48 | -1 | -8 | -156 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -65 | -108 | -34 | -37 | -45 | -66 | -133 | -106 | -20 | -40 | -41 | -103 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -100 | -212 | -4 | -45 | -80 | -46 | -166 | -128 | -7 | -43 | -23 | -240 |
| Above Normal (16%) | -115 | -150 | -79 | -68 | -49 | -159 | -233 | -185 | -35 | -66 | -34 | -131 |
| Below Normal (13%) | -68 | -86 | -81 | -58 | -13 | -103 | -179 | -176 | -64 | -44 | -85 | -4 |
| Dry (24%) | -19 | -22 | -19 | -16 | -27 | -28 | -69 | -41 | -4 | -22 | -48 | -15 |
| Critical (15%) | -11 | 3 | -31 | -3 | -26 | -41 | -15 | -15 | -20 | -32 | -33 | -11 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-2. SWP Net Generation, Monthly Generation

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -148 | -127 | -133 | 19 | 43 | 33 | 9 | -13 | -80 | -124 | -130 | -221 |
| 20% | -215 | -199 | -221 | -35 | -18 | -25 | -24 | -85 | -146 | -205 | -245 | -315 |
| 30% | -315 | -292 | -289 | -42 | -42 | -48 | -40 | -98 | -181 | -250 | -340 | -379 |
| 40% | -376 | -340 | -393 | -52 | -54 | -72 | -58 | -142 | -216 | -286 | -427 | -406 |
| 50% | -414 | -359 | -434 | -68 | -74 | -94 | -101 | -158 | -264 | -308 | -448 | -423 |
| 60% | -443 | -417 | -466 | -96 | -111 | -121 | -170 | -206 | -305 | -314 | -473 | -460 |
| 70% | -489 | -458 | -510 | -153 | -173 | -154 | -264 | -260 | -332 | -352 | -494 | -487 |
| 80% | -521 | -500 | -541 | -204 | -219 | -285 | -292 | -346 | -372 | -395 | -525 | -540 |
| 90% | -559 | -577 | -633 | -255 | -270 | -416 | -352 | -394 | -427 | -464 | -566 | -603 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -381 | -361 | -398 | -96 | -99 | -138 | -146 | -194 | -260 | -308 | -399 | -420 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -479 | -395 | -518 | -89 | -76 | -195 | -205 | -239 | -371 | -406 | -532 | -430 |
| Above Normal (16%) | -469 | -456 | -476 | -123 | -142 | -161 | -226 | -277 | -327 | -316 | -457 | -478 |
| Below Normal (13%) | -451 | -434 | -416 | -129 | -161 | -137 | -163 | -193 | -263 | -320 | -437 | -559 |
| Dry (24%) | -301 | -325 | -276 | -86 | -84 | -105 | -92 | -150 | -163 | -256 | -293 | -409 |
| Critical (15%) | -140 | -175 | -239 | -68 | -66 | -48 | -6 | -78 | -104 | -161 | -193 | -225 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -156 | -163 | -148 | -10 | 13 | -4 | -10 | -49 | -93 | -147 | -187 | -212 |
| 20% | -225 | -254 | -222 | -42 | -47 | -38 | -40 | -97 | -143 | -215 | -299 | -310 |
| 30% | -269 | -326 | -285 | -56 | -60 | -68 | -96 | -131 | -177 | -265 | -389 | -390 |
| 40% | -301 | -437 | -385 | -66 | -79 | -82 | -162 | -150 | -221 | -291 | -431 | -455 |
| 50% | -377 | -491 | -453 | -86 | -118 | -96 | -188 | -223 | -245 | -314 | -450 | -491 |
| 60% | -470 | -506 | -496 | -106 | -149 | -124 | -249 | -273 | -277 | -341 | -464 | -512 |
| 70% | -505 | -585 | -549 | -177 | -205 | -171 | -330 | -377 | -336 | -372 | -483 | -548 |
| 80% | -545 | -640 | -597 | -221 | -250 | -283 | -434 | -461 | -362 | -416 | -506 | -592 |
| 90% | -600 | -673 | -635 | -285 | -340 | -417 | -502 | -515 | -455 | -461 | -562 | -637 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -379 | -447 | -416 | -115 | -130 | -142 | -228 | -255 | -261 | -320 | -415 | -453 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -473 | -586 | -517 | -92 | -120 | -155 | -313 | -326 | -366 | -418 | -497 | -539 |
| Above Normal (16%) | -351 | -564 | -545 | -161 | -147 | -148 | -327 | -348 | -324 | -333 | -466 | -442 |
| Below Normal (13%) | -495 | -481 | -438 | -169 | -195 | -213 | -290 | -306 | -271 | -320 | -474 | -550 |
| Dry (24%) | -339 | -339 | -287 | -108 | -122 | -115 | -144 | -171 | -168 | -277 | -374 | -429 |
| Critical (15%) | -166 | -169 | -251 | -74 | -87 | -86 | -19 | -94 | -111 | -164 | -198 | -231 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -7 | -36 | -15 | -29 | -30 | -37 | -19 | -35 | -13 | -23 | -57 | 9 |
| 20% | -9 | -55 | -1 | -7 | -29 | -13 | -16 | -12 | 3 | -10 | -54 | 5 |
| 30% | 46 | -34 | 4 | -14 | -18 | -20 | -57 | -32 | 4 | -15 | -49 | -11 |
| 40% | 75 | -97 | 8 | -13 | -25 | -9 | -103 | -8 | -5 | -4 | -4 | -49 |
| 50% | 36 | -133 | -19 | -19 | -45 | -2 | -87 | -66 | 19 | -6 | -2 | -68 |
| 60% | -27 | -89 | -30 | -10 | -38 | -3 | -79 | -67 | 28 | -27 | 8 | -52 |
| 70% | -16 | -127 | -38 | -24 | -32 | -17 | -66 | -117 | -4 | -19 | 11 | -61 |
| 80% | -24 | -139 | -57 | -17 | -32 | 2 | -143 | -115 | 10 | -21 | 19 | -52 |
| 90% | -40 | -96 | -2 | -31 | -69 | -1 | -150 | -120 | -28 | 3 | 4 | -34 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 2 | -86 | -18 | -19 | -32 | -4 | -82 | -61 | -1 | -12 | -16 | -33 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 6 | -191 | 1 | -3 | -44 | 41 | -109 | -86 | 4 | -12 | 36 | -109 |
| Above Normal (16%) | 117 | -108 | -69 | -38 | -4 | 13 | -101 | -71 | 4 | -17 | -9 | 37 |
| Below Normal (13%) | -44 | -47 | -21 | -40 | -34 | -77 | -127 | -113 | -8 | 0 | -38 | 9 |
| Dry (24%) | -38 | -13 | -11 | -21 | -38 | -11 | -52 | -21 | -5 | -21 | -82 | -20 |
| Critical (15%) | -26 | 6 | -12 | -6 | -21 | -39 | -13 | -16 | -7 | -3 | -6 | -6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-3. SWP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -160 | -133 | -155 | -9 | 24 | 35 | 15 | -16 | -76 | -137 | -146 | -223 |
| 20% | -224 | -200 | -229 | -36 | -17 | -26 | -21 | -90 | -138 | -201 | -261 | -324 |
| 30% | -332 | -288 | -297 | -43 | -39 | -48 | -34 | -117 | -169 | -247 | -328 | -383 |
| 40% | -372 | -335 | -401 | -55 | -52 | -73 | -60 | -145 | -211 | -291 | -432 | -402 |
| 50% | -416 | -376 | -443 | -70 | -78 | -95 | -100 | -157 | -264 | -310 | -458 | -427 |
| 60% | -445 | -426 | -465 | -103 | -107 | -126 | -169 | -189 | -309 | -319 | -474 | -459 |
| 70% | -494 | -458 | -507 | -162 | -161 | -155 | -258 | -257 | -334 | -361 | -489 | -485 |
| 80% | -520 | -502 | -559 | -210 | -210 | -285 | -292 | -351 | -376 | -394 | -523 | -538 |
| 90% | -554 | -579 | -630 | -264 | -277 | -421 | -361 | -398 | -429 | -464 | -579 | -592 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -384 | -366 | -405 | -102 | -99 | -140 | -146 | -197 | -260 | -309 | -400 | -422 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -471 | -394 | -519 | -100 | -80 | -199 | -202 | -236 | -372 | -406 | -531 | -429 |
| Above Normal (16%) | -473 | -462 | -471 | -122 | -132 | -156 | -225 | -277 | -325 | -320 | -458 | -479 |
| Below Normal (13%) | -452 | -437 | -424 | -125 | -157 | -140 | -158 | -195 | -253 | -320 | -422 | -559 |
| Dry (24%) | -314 | -337 | -285 | -92 | -91 | -109 | -104 | -161 | -172 | -263 | -310 | -420 |
| Critical (15%) | -151 | -185 | -272 | -80 | -65 | -47 | 0 | -86 | -99 | -153 | -186 | -222 |

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -148 | -127 | -133 | 19 | 43 | 33 | 9 | -13 | -80 | -124 | -130 | -221 |
| 20% | -215 | -199 | -221 | -35 | -18 | -25 | -24 | -85 | -146 | -205 | -245 | -315 |
| 30% | -315 | -292 | -289 | -42 | -42 | -48 | -40 | -98 | -181 | -250 | -340 | -379 |
| 40% | -376 | -340 | -393 | -52 | -54 | -72 | -58 | -142 | -216 | -286 | -427 | -406 |
| 50% | -414 | -359 | -434 | -68 | -74 | -94 | -101 | -158 | -264 | -308 | -448 | -423 |
| 60% | -443 | -417 | -466 | -96 | -111 | -121 | -170 | -206 | -305 | -314 | -473 | -460 |
| 70% | -489 | -458 | -510 | -153 | -173 | -154 | -264 | -260 | -332 | -352 | -494 | -487 |
| 80% | -521 | -500 | -541 | -204 | -219 | -285 | -292 | -346 | -372 | -395 | -525 | -540 |
| 90% | -559 | -577 | -633 | -255 | -270 | -416 | -352 | -394 | -427 | -464 | -566 | -603 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -381 | -361 | -398 | -96 | -99 | -138 | -146 | -194 | -260 | -308 | -399 | -420 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -479 | -395 | -518 | -89 | -76 | -195 | -205 | -239 | -371 | -406 | -532 | -430 |
| Above Normal (16%) | -469 | -456 | -476 | -123 | -142 | -161 | -226 | -277 | -327 | -316 | -457 | -478 |
| Below Normal (13%) | -451 | -434 | -416 | -129 | -161 | -137 | -163 | -193 | -263 | -320 | -437 | -559 |
| Dry (24%) | -301 | -325 | -276 | -86 | -84 | -105 | -92 | -150 | -163 | -256 | -293 | -409 |
| Critical (15%) | -140 | -175 | -239 | -68 | -66 | -48 | -6 | -78 | -104 | -161 | -193 | -225 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 12 | 6 | 21 | 28 | 19 | -3 | -6 | 3 | -4 | 13 | 16 | 2 |
| 20% | 8 | 1 | 8 | 1 | -1 | 1 | -3 | 5 | -8 | -4 | 16 | 9 |
| 30% | 16 | -4 | 9 | 1 | -3 | 0 | -6 | 19 | -12 | -3 | -11 | 4 |
| 40% | -4 | -5 | 8 | 2 | -3 | 0 | 2 | 2 | -5 | 5 | 4 | -5 |
| 50% | 2 | 17 | 8 | 2 | 4 | 1 | 0 | -1 | 0 | 2 | 10 | 4 |
| 60% | 3 | 8 | -1 | 7 | -4 | 5 | -1 | -17 | 4 | 5 | 2 | -1 |
| 70% | 5 | 1 | -3 | 9 | -12 | 1 | -6 | -2 | 3 | 9 | -5 | -2 |
| 80% | -1 | 1 | 18 | 6 | -9 | 0 | 0 | 4 | 5 | -1 | -2 | -2 |
| 90% | -5 | 1 | -3 | 10 | 6 | 5 | 8 | 4 | 2 | 1 | 12 | -10 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 3 | 5 | 8 | 6 | 1 | 2 | 0 | 3 | 0 | 1 | 1 | 2 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -8 | -1 | 1 | 11 | 4 | 4 | -3 | -3 | 1 | 0 | -2 | -1 |
| Above Normal (16%) | 4 | 6 | -5 | -1 | -10 | -6 | -1 | 0 | -2 | 3 | 2 | 0 |
| Below Normal (13%) | 1 | 3 | 7 | -5 | -4 | 4 | -5 | 2 | -10 | 0 | -14 | 0 |
| Dry (24%) | 13 | 12 | 10 | 6 | 7 | 5 | 12 | 12 | 9 | 7 | 18 | 11 |
| Critical (15%) | 11 | 9 | 33 | 12 | -2 | 0 | -6 | 7 | -5 | -8 | -7 | -3 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35-4. SWP Net Generation, Monthly Generation

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -143 | -148 | -153 | -26 | -2 | -28 | -14 | -73 | -67 | -133 | -191 | -252 |
| 20% | -219 | -277 | -224 | -43 | -54 | -73 | -60 | -108 | -143 | -226 | -303 | -370 |
| 30% | -323 | -358 | -327 | -56 | -60 | -92 | -112 | -143 | -183 | -302 | -408 | -462 |
| 40% | -407 | -467 | -390 | -67 | -80 | -112 | -191 | -201 | -239 | -327 | -450 | -522 |
| 50% | -517 | -518 | -427 | -84 | -106 | -150 | -276 | -314 | -275 | -371 | -494 | -584 |
| 60% | -554 | -591 | -532 | -123 | -184 | -174 | -385 | -376 | -333 | -400 | -511 | -611 |
| 70% | -611 | -636 | -598 | -201 | -224 | -275 | -456 | -435 | -384 | -422 | -526 | -644 |
| 80% | -640 | -657 | -632 | -251 | -270 | -369 | -491 | -497 | -405 | -444 | -552 | -659 |
| 90% | -675 | -700 | -669 | -323 | -319 | -457 | -539 | -566 | -477 | -465 | -586 | -749 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -449 | -474 | -439 | -139 | -144 | -207 | -279 | -303 | -280 | -349 | -441 | -524 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -571 | -606 | -523 | -145 | -160 | -245 | -367 | -363 | -378 | -449 | -554 | -668 |
| Above Normal (16%) | -588 | -612 | -550 | -190 | -182 | -315 | -459 | -463 | -359 | -386 | -492 | -610 |
| Below Normal (13%) | -519 | -524 | -505 | -183 | -171 | -243 | -337 | -371 | -317 | -364 | -508 | -563 |
| Dry (24%) | -333 | -359 | -304 | -108 | -118 | -138 | -173 | -203 | -176 | -285 | -358 | -434 |
| Critical (15%) | -162 | -182 | -303 | -83 | -90 | -88 | -15 | -101 | -119 | -185 | -219 | -234 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -156 | -163 | -148 | -10 | 13 | -4 | -10 | -49 | -93 | -147 | -187 | -212 |
| 20% | -225 | -254 | -222 | -42 | -47 | -38 | -40 | -97 | -143 | -215 | -299 | -310 |
| 30% | -269 | -326 | -285 | -56 | -60 | -68 | -96 | -131 | -177 | -265 | -389 | -390 |
| 40% | -301 | -437 | -385 | -66 | -79 | -82 | -162 | -150 | -221 | -291 | -431 | -455 |
| 50% | -377 | -491 | -453 | -86 | -118 | -96 | -188 | -223 | -245 | -314 | -450 | -491 |
| 60% | -470 | -506 | -496 | -106 | -149 | -124 | -249 | -273 | -277 | -341 | -464 | -512 |
| 70% | -505 | -585 | -549 | -177 | -205 | -171 | -330 | -377 | -336 | -372 | -483 | -548 |
| 80% | -545 | -640 | -597 | -221 | -250 | -283 | -434 | -461 | -362 | -416 | -506 | -592 |
| 90% | -600 | -673 | -635 | -285 | -340 | -417 | -502 | -515 | -455 | -461 | -562 | -637 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -379 | -447 | -416 | -115 | -130 | -142 | -228 | -255 | -261 | -320 | -415 | -453 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -473 | -586 | -517 | -92 | -120 | -155 | -313 | -326 | -366 | -418 | -497 | -539 |
| Above Normal (16%) | -351 | -564 | -545 | -161 | -147 | -148 | -327 | -348 | -324 | -333 | -466 | -442 |
| Below Normal (13%) | -495 | -481 | -438 | -169 | -195 | -213 | -290 | -306 | -271 | -320 | -474 | -550 |
| Dry (24%) | -339 | -339 | -287 | -108 | -122 | -115 | -144 | -171 | -168 | -277 | -374 | -429 |
| Critical (15%) | -166 | -169 | -251 | -74 | -87 | -86 | -19 | -94 | -111 | -164 | -198 | -231 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-13** | **-15** | 5 | 16 | 15 | 23 | 4 | 25 | **-27** | **-13** | 4 | 40 |
| 20% | **-6** | 23 | 2 | 1 | 7 | 35 | 20 | 11 | 0 | 12 | 4 | 60 |
| 30% | 53 | 32 | 42 | 1 | **0** | 24 | 16 | 12 | 6 | 37 | 19 | 72 |
| 40% | 106 | 30 | 5 | 1 | 0 | 30 | 29 | 51 | 18 | 37 | 18 | 67 |
| 50% | 140 | 27 | **-27** | **-2** | **-13** | 54 | 88 | 91 | 30 | 57 | 44 | 93 |
| 60% | 84 | 85 | 36 | 17 | 35 | 50 | 136 | 103 | 56 | 59 | 47 | 99 |
| 70% | 105 | 52 | 49 | 24 | 19 | 104 | 127 | 58 | 48 | 50 | 43 | 96 |
| 80% | 95 | 17 | 35 | 31 | 20 | 87 | 57 | 36 | 43 | 28 | 46 | 67 |
| 90% | 76 | 27 | 34 | 37 | **-21** | 41 | 36 | 52 | 22 | 4 | 24 | 112 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 70 | 27 | 23 | 25 | 14 | 65 | 51 | 47 | 19 | 29 | 26 | 71 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 98 | 21 | 6 | 53 | 40 | 90 | 54 | 38 | 12 | 32 | 57 | 130 |
| Above Normal (16%) | 237 | 48 | 5 | 29 | 35 | 166 | 132 | 114 | 36 | 53 | 27 | 168 |
| Below Normal (13%) | 25 | 43 | 67 | 14 | **-25** | 30 | 47 | 65 | 46 | 44 | 33 | 13 |
| Dry (24%) | **-7** | 21 | 17 | 1 | **-4** | 23 | 29 | 32 | 8 | 8 | **-16** | 5 |
| Critical (15%) | **-4** | 13 | 52 | 8 | 3 | 2 | **-4** | 7 | 8 | 21 | 21 | 2 |

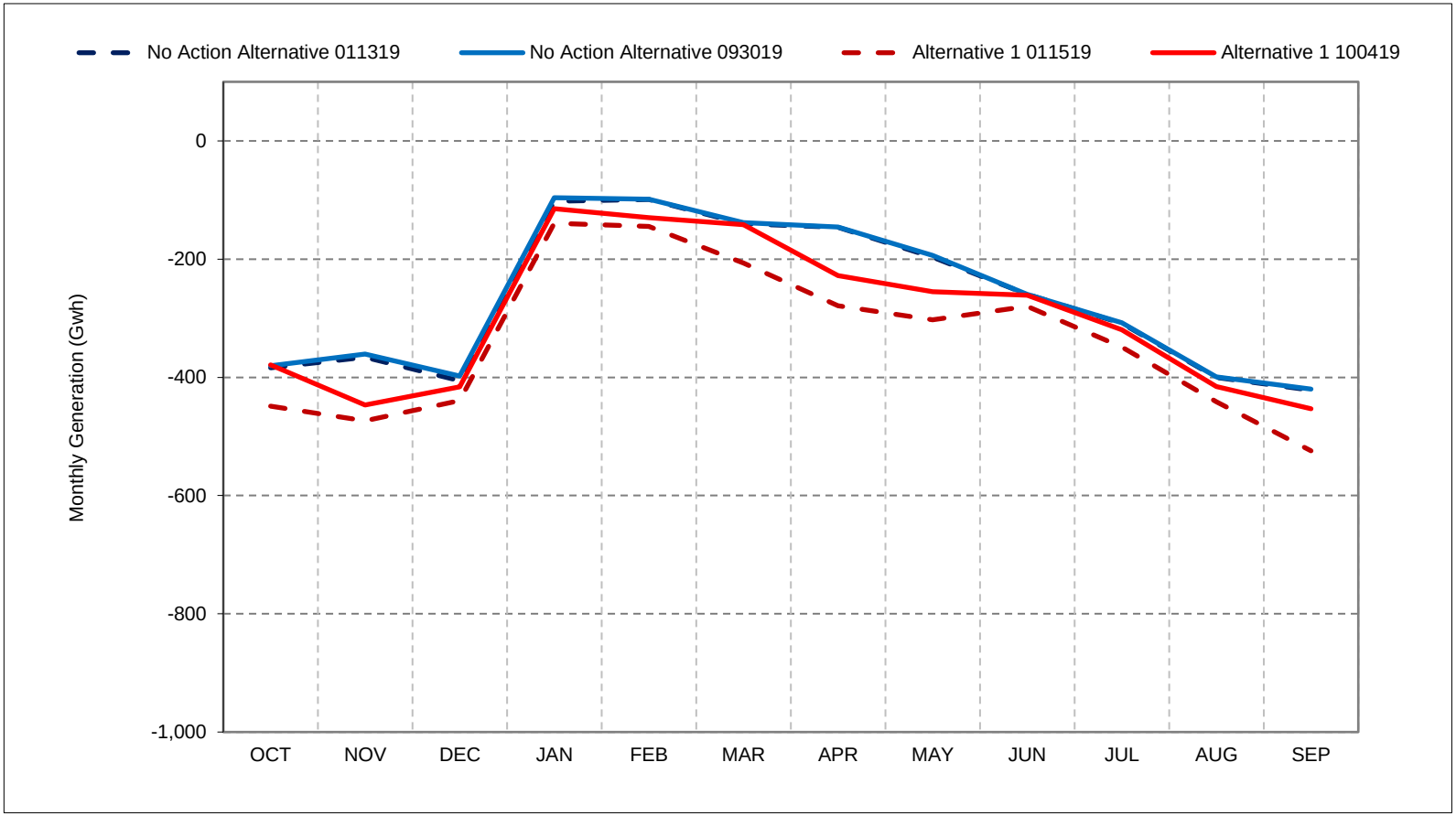
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-1. SWP Net Generation, Long-Term Average Generation

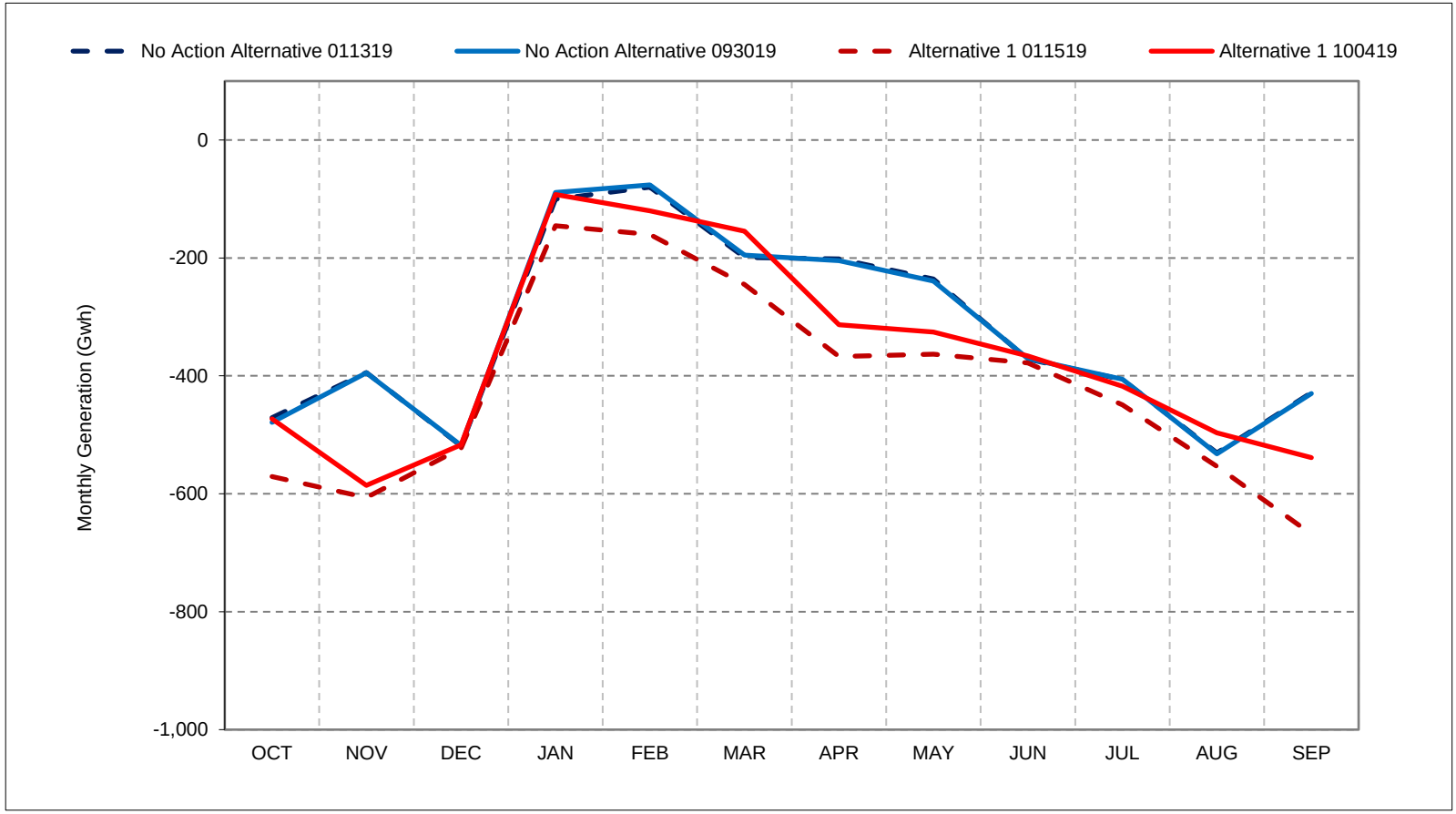



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-2. SWP Net Generation, Wet Year Average Generation

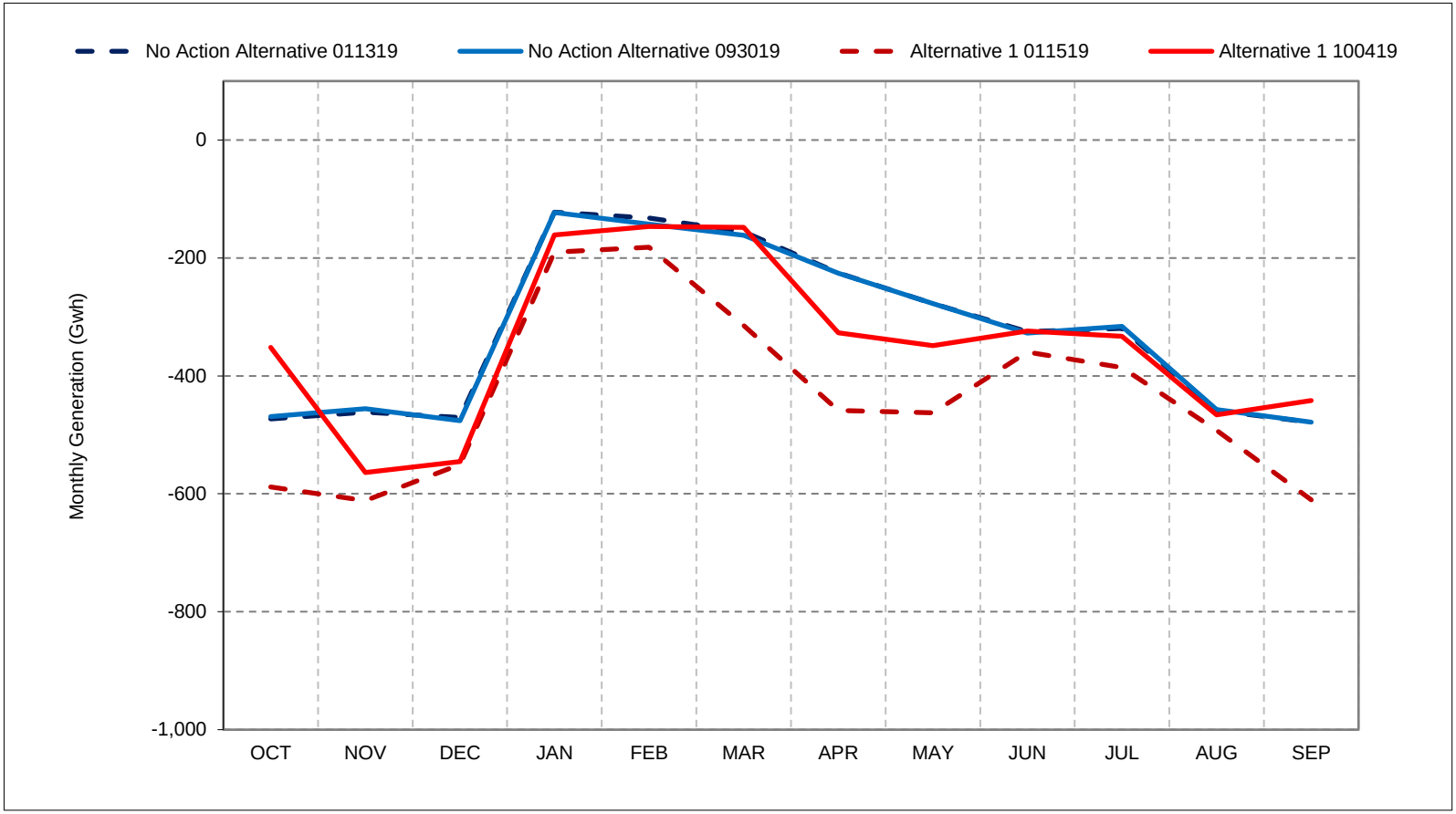



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-3. SWP Net Generation, Above Normal Year Average Generation

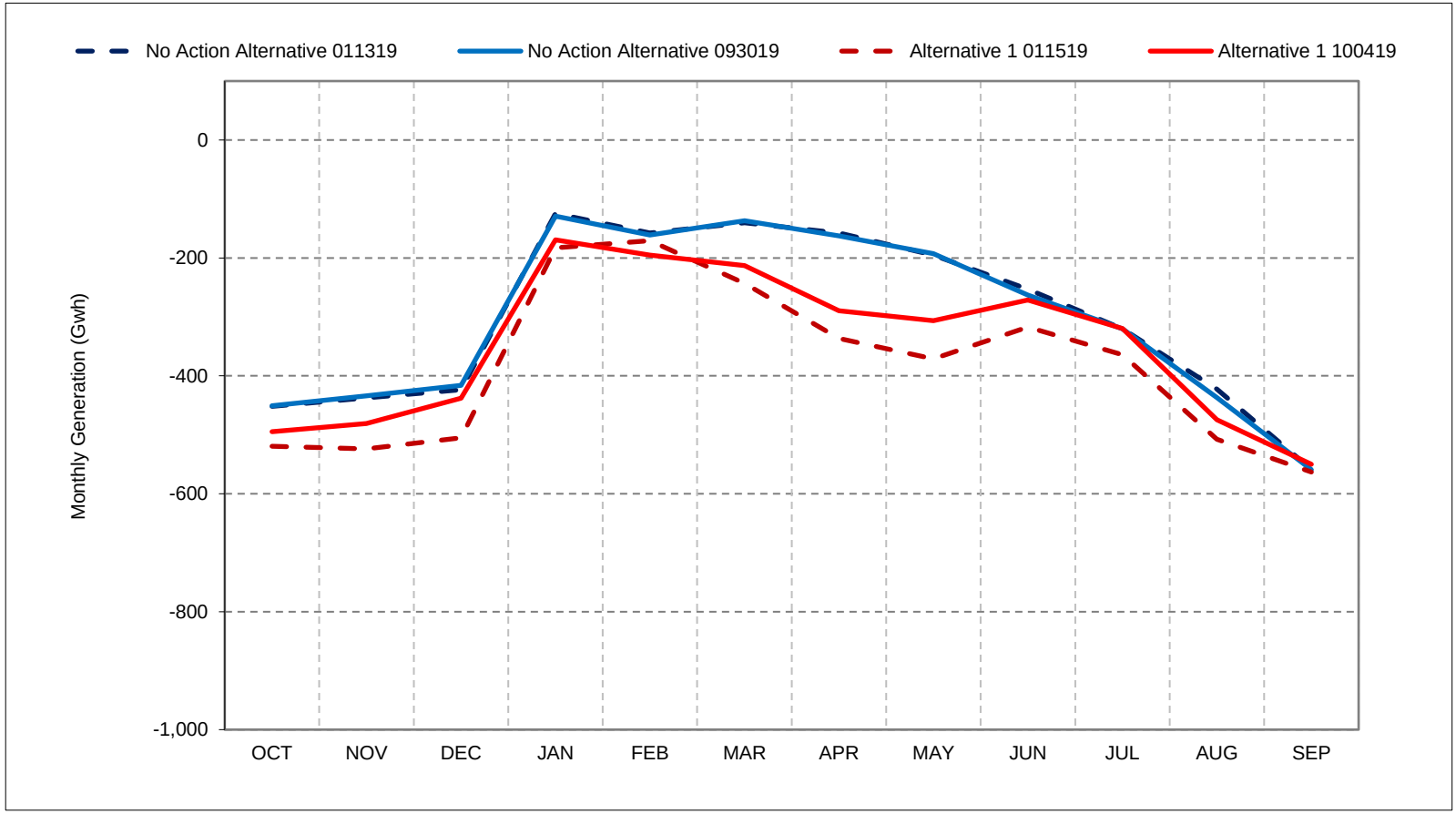



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-4. SWP Net Generation, Below Normal Year Average Generation

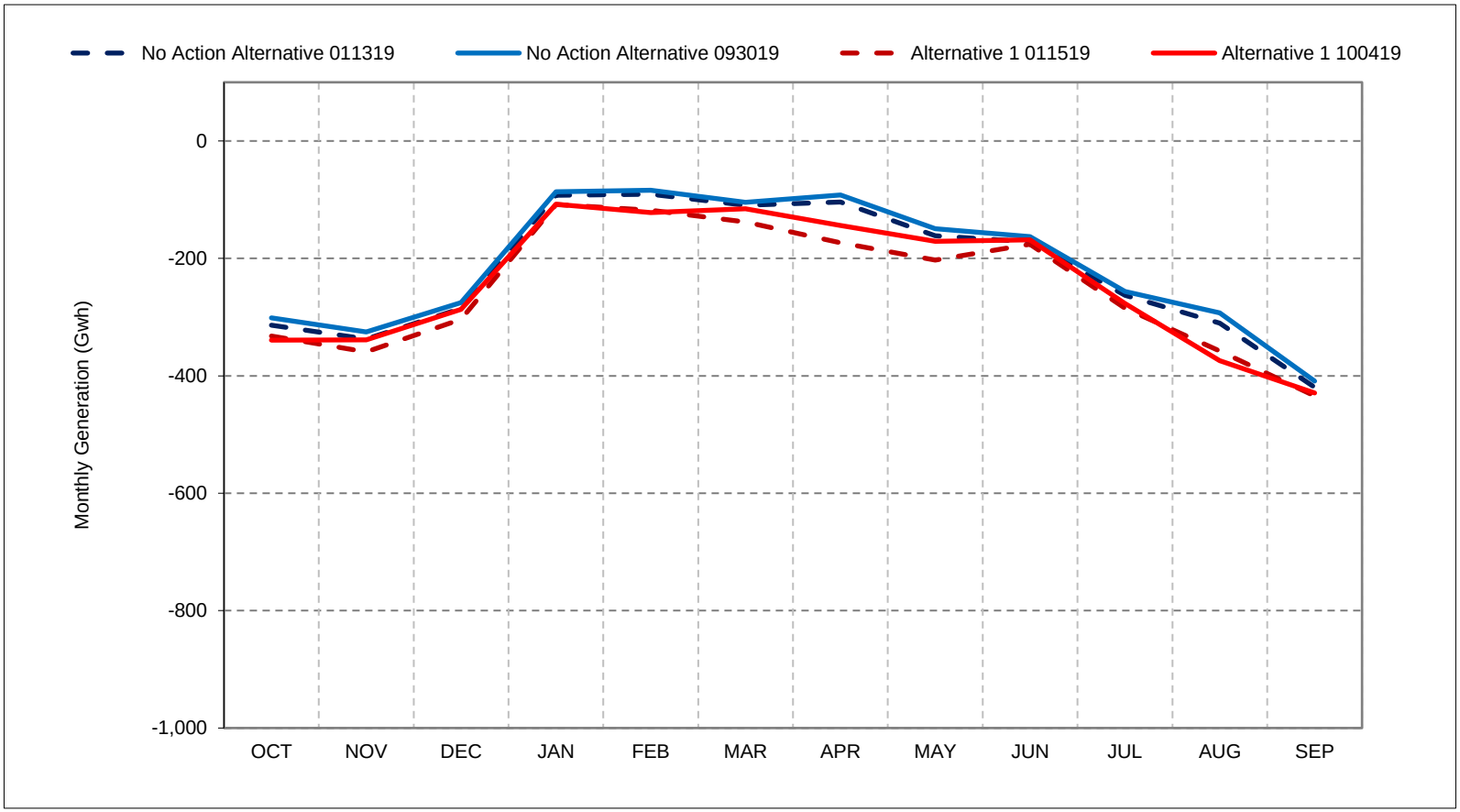



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-5. SWP Net Generation, Dry Year Average Generation

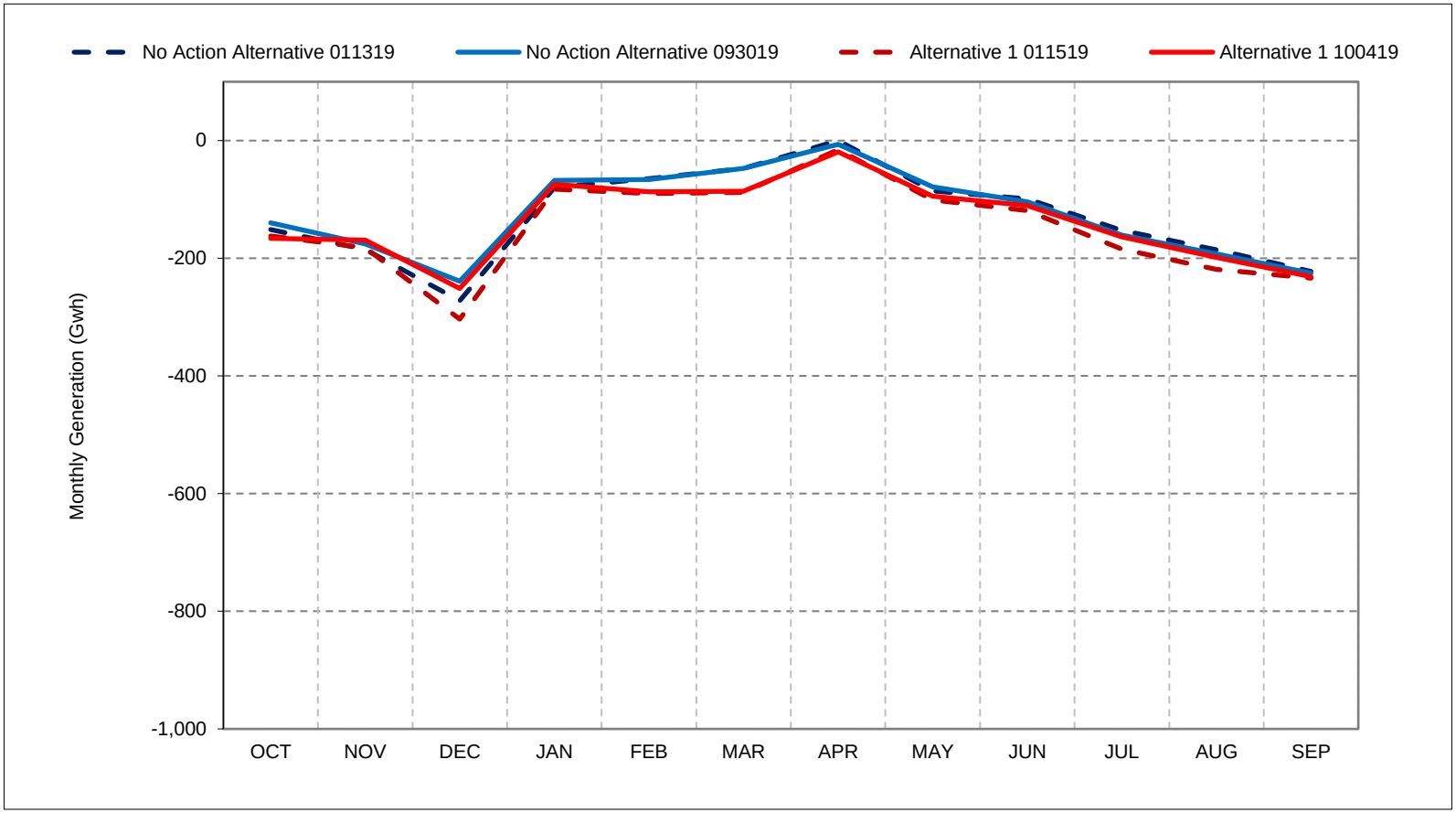



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 35-6. SWP Net Generation, Critical Year Average Generation

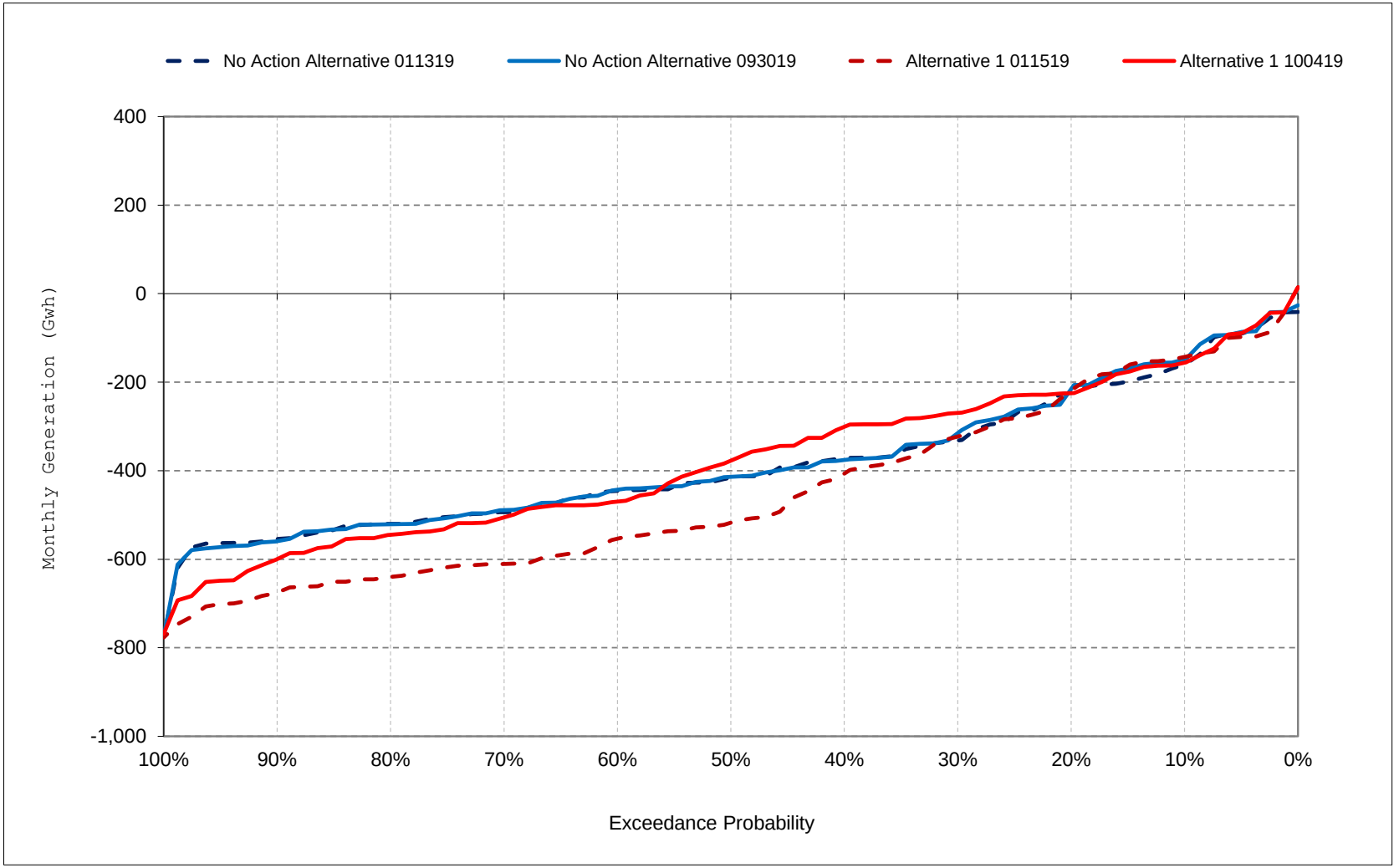



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

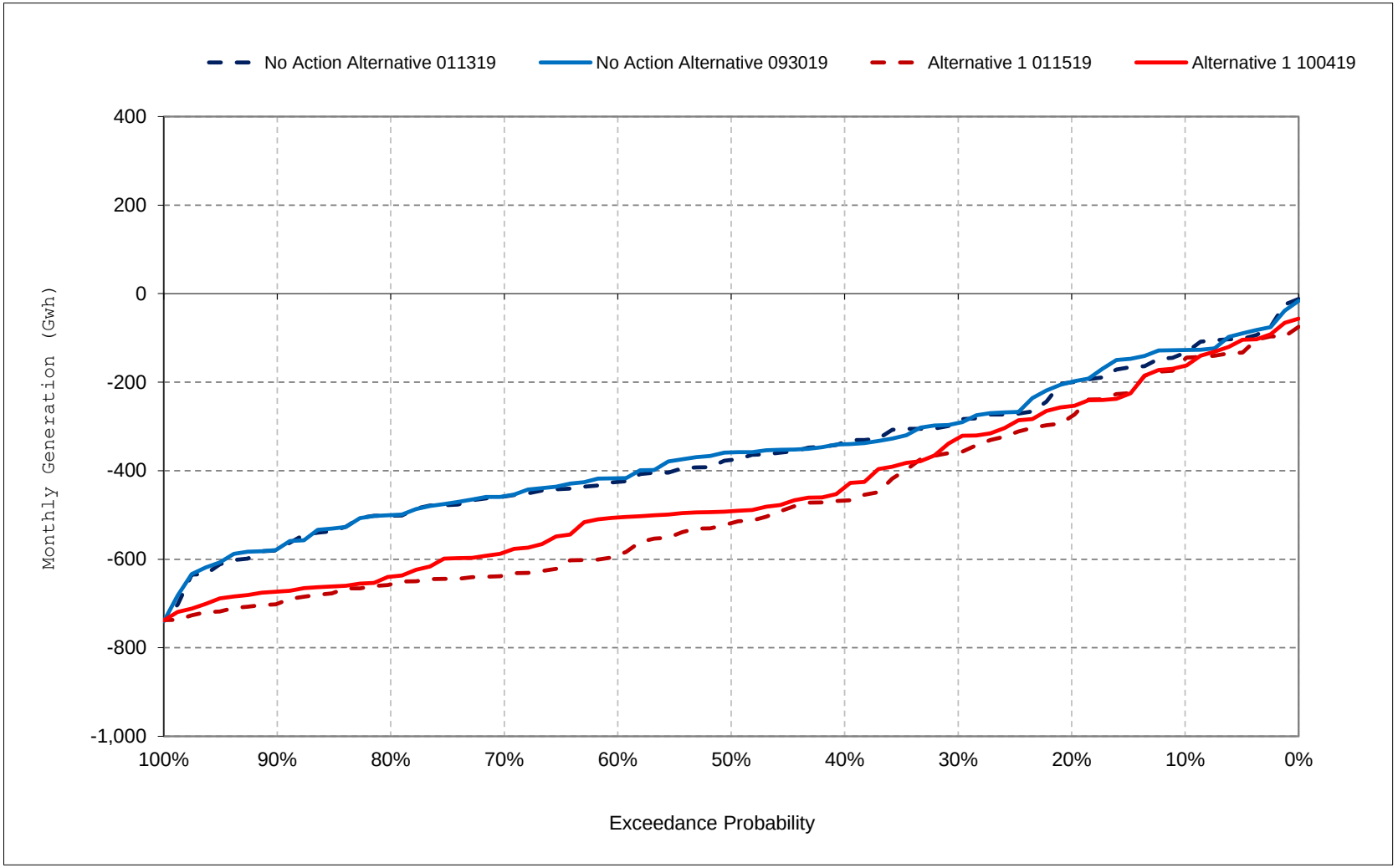
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-7. SWP Net Generation, October**



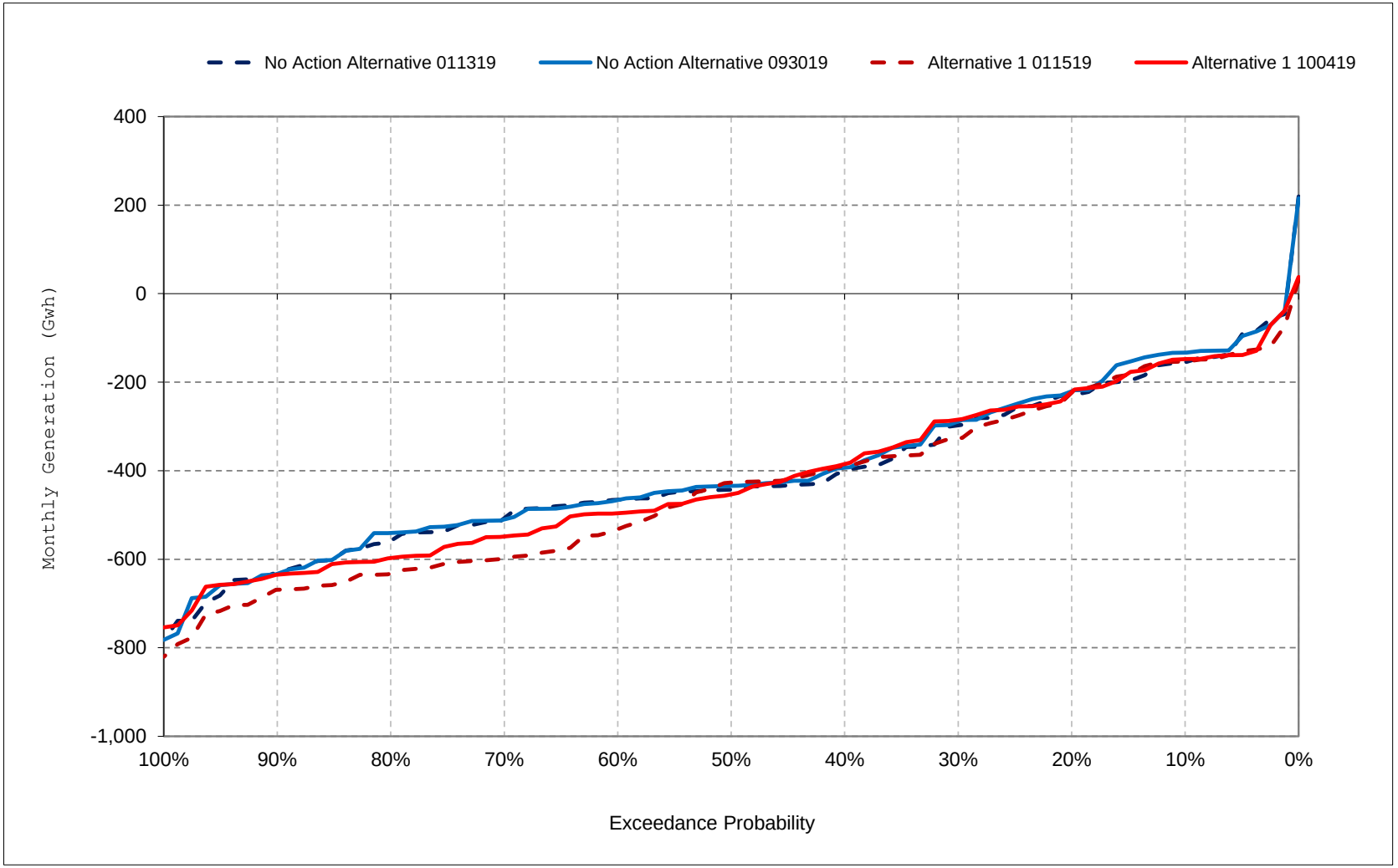

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-8. SWP Net Generation, November**



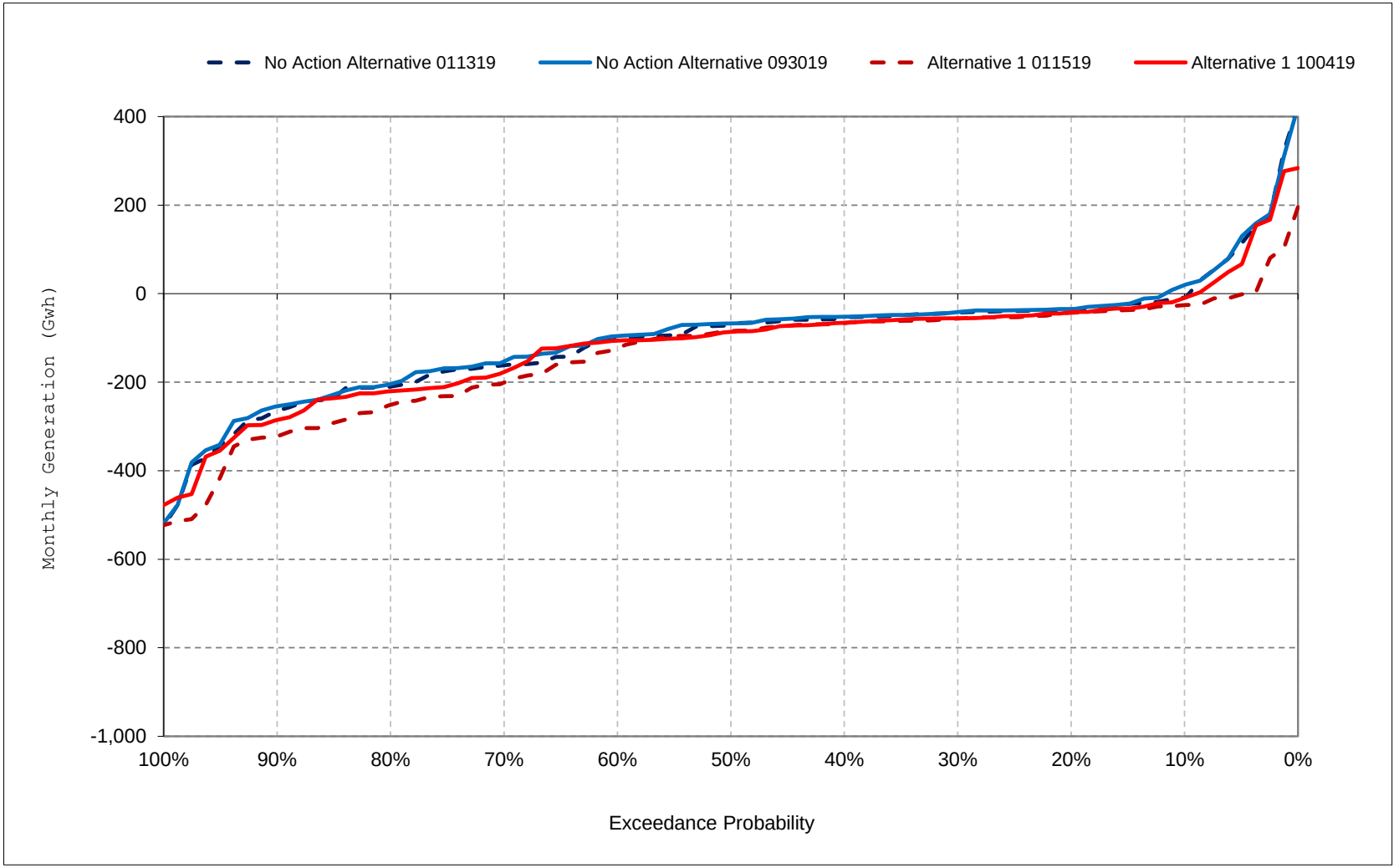

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-9. SWP Net Generation, December**



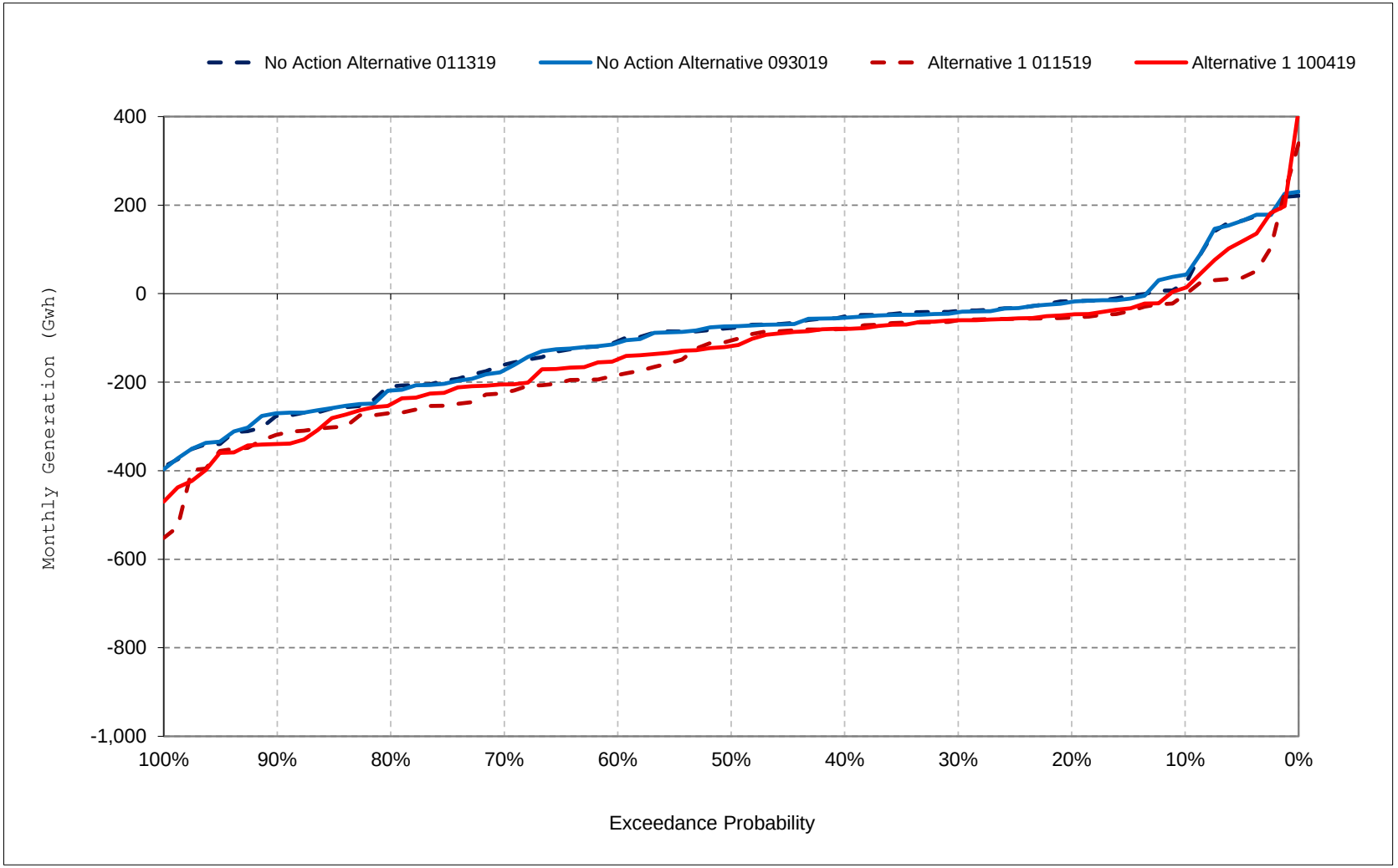

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-10. SWP Net Generation, January**



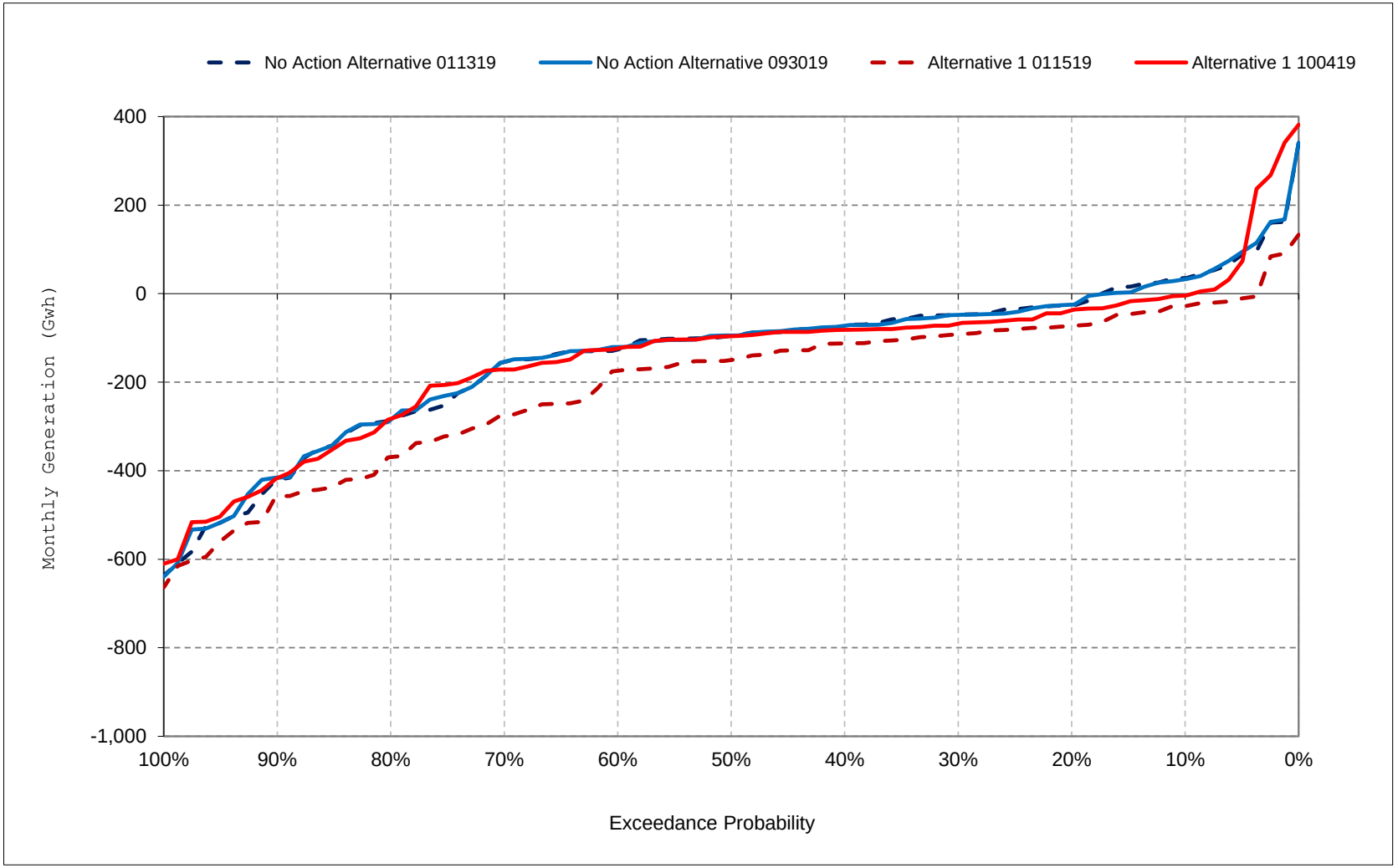

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-11. SWP Net Generation, February**



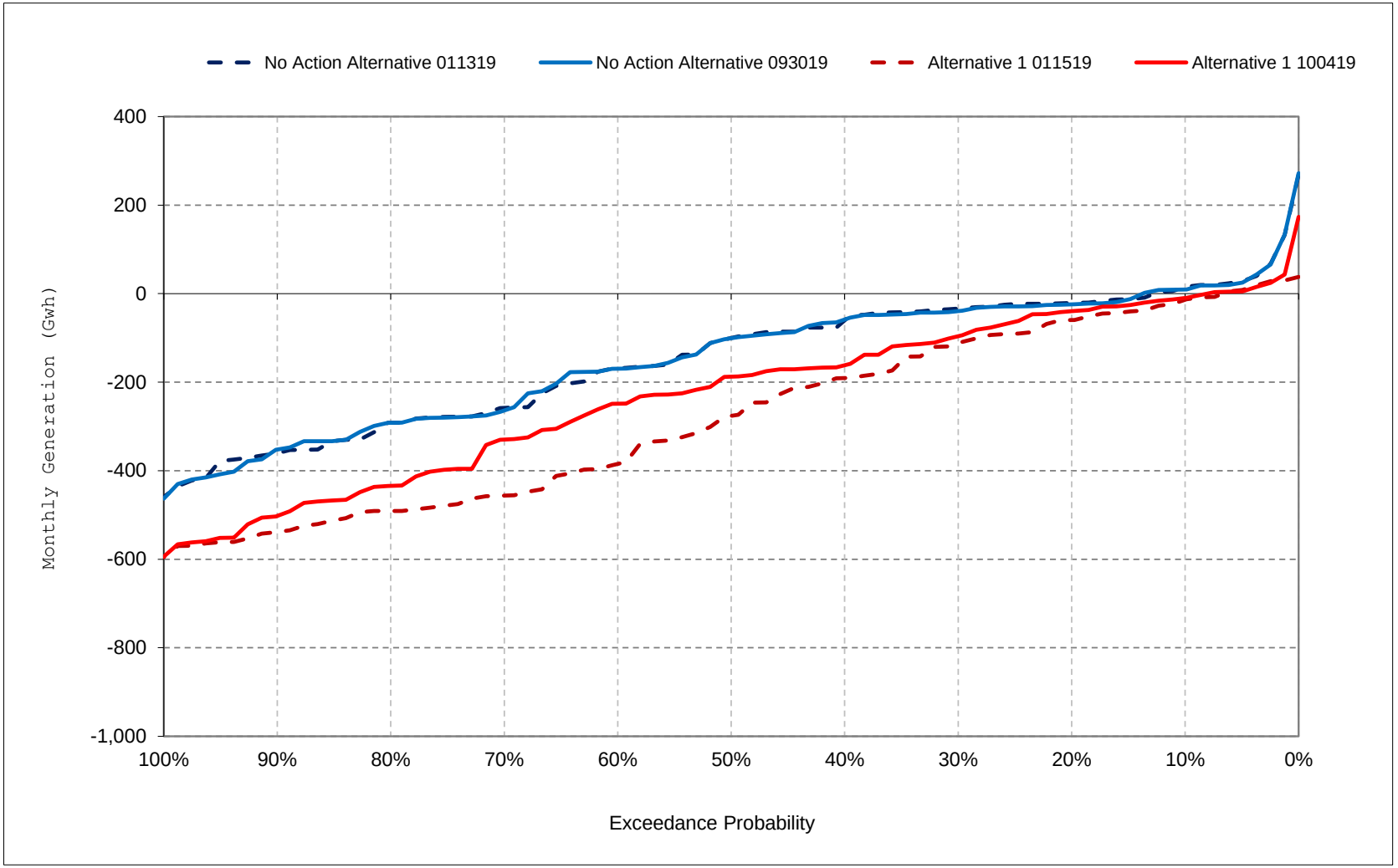

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-12. SWP Net Generation, March**



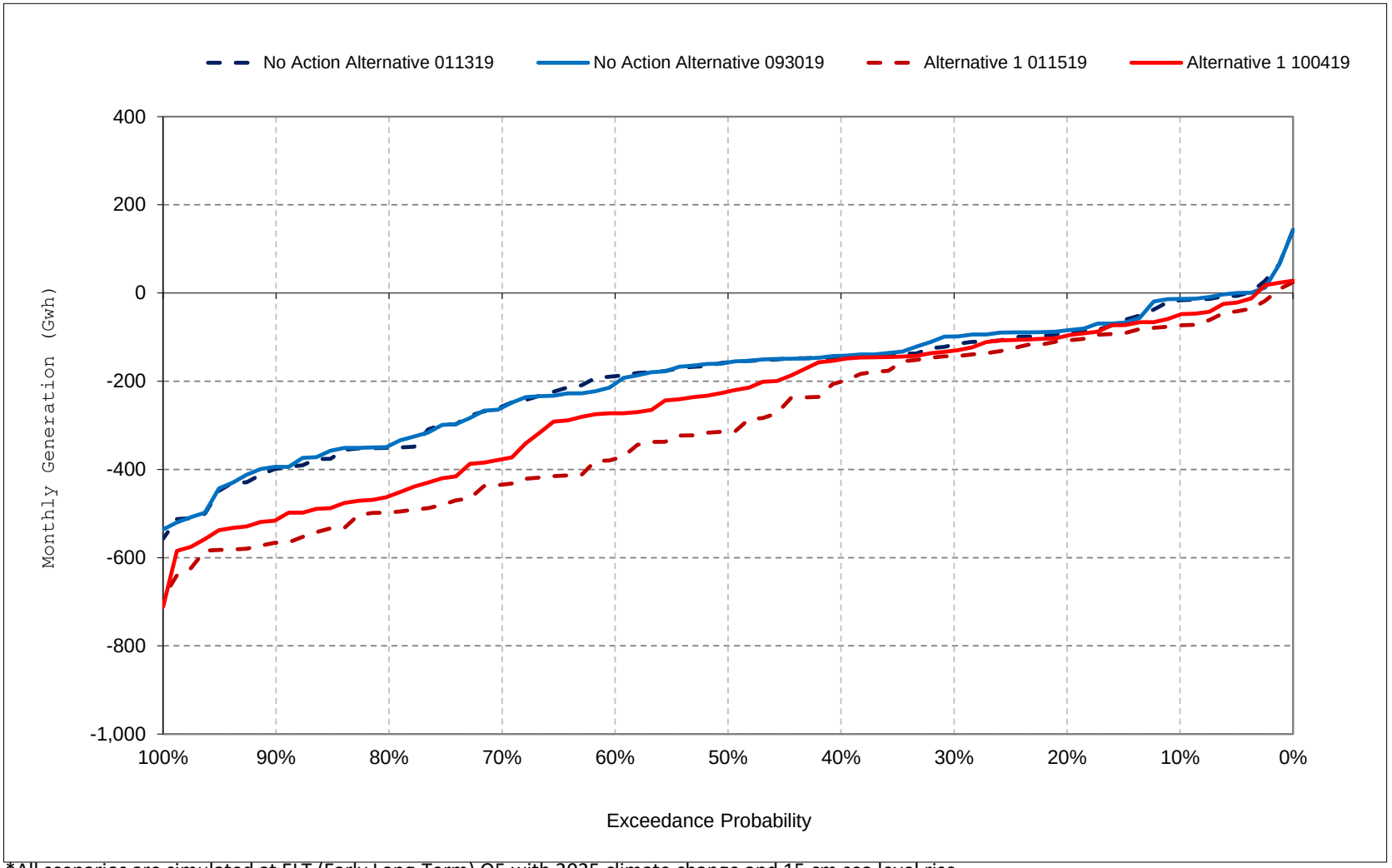

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-13. SWP Net Generation, April**



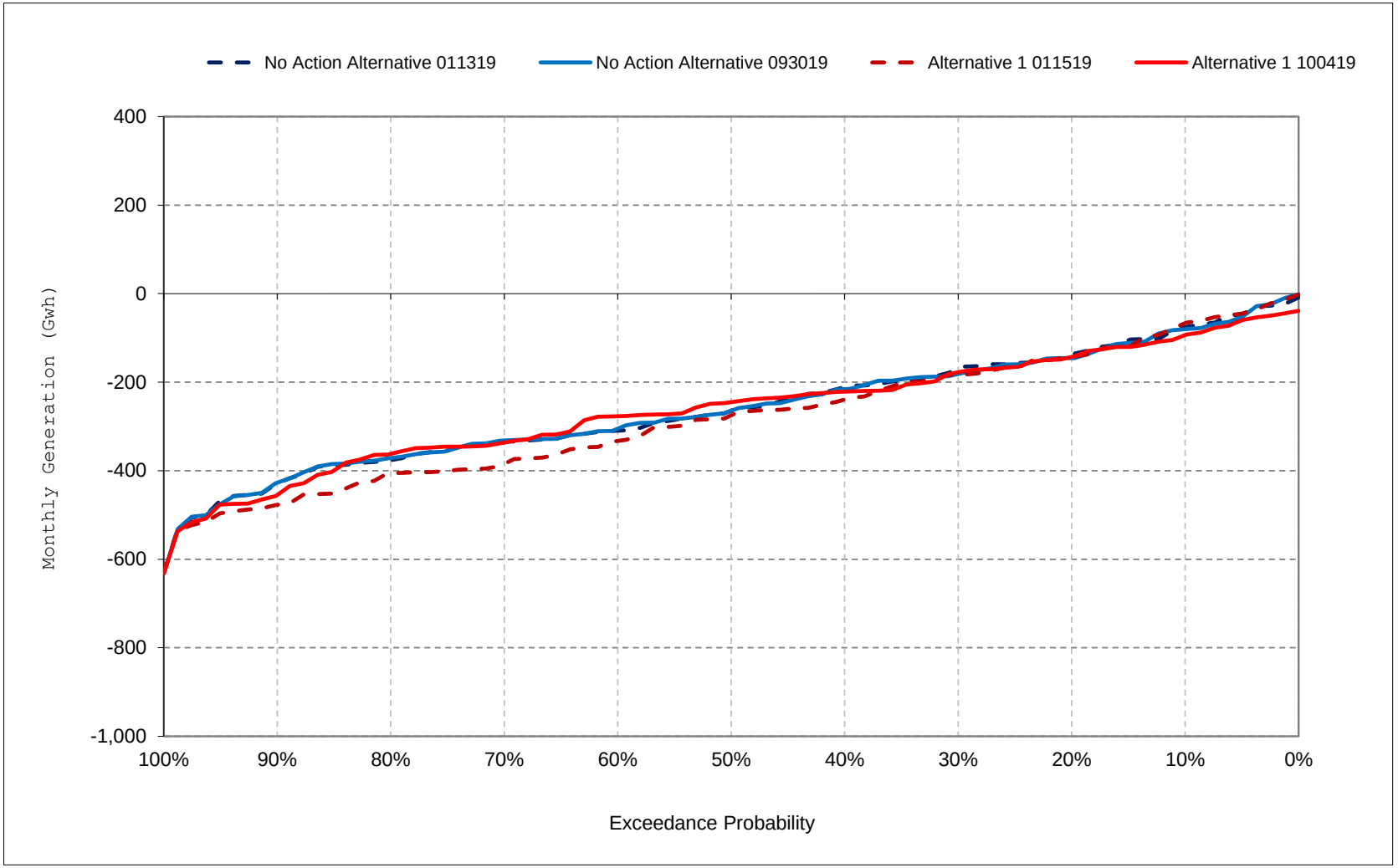

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-14. SWP Net Generation, May**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-15. SWP Net Generation, June**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-16. SWP Net Generation, July**



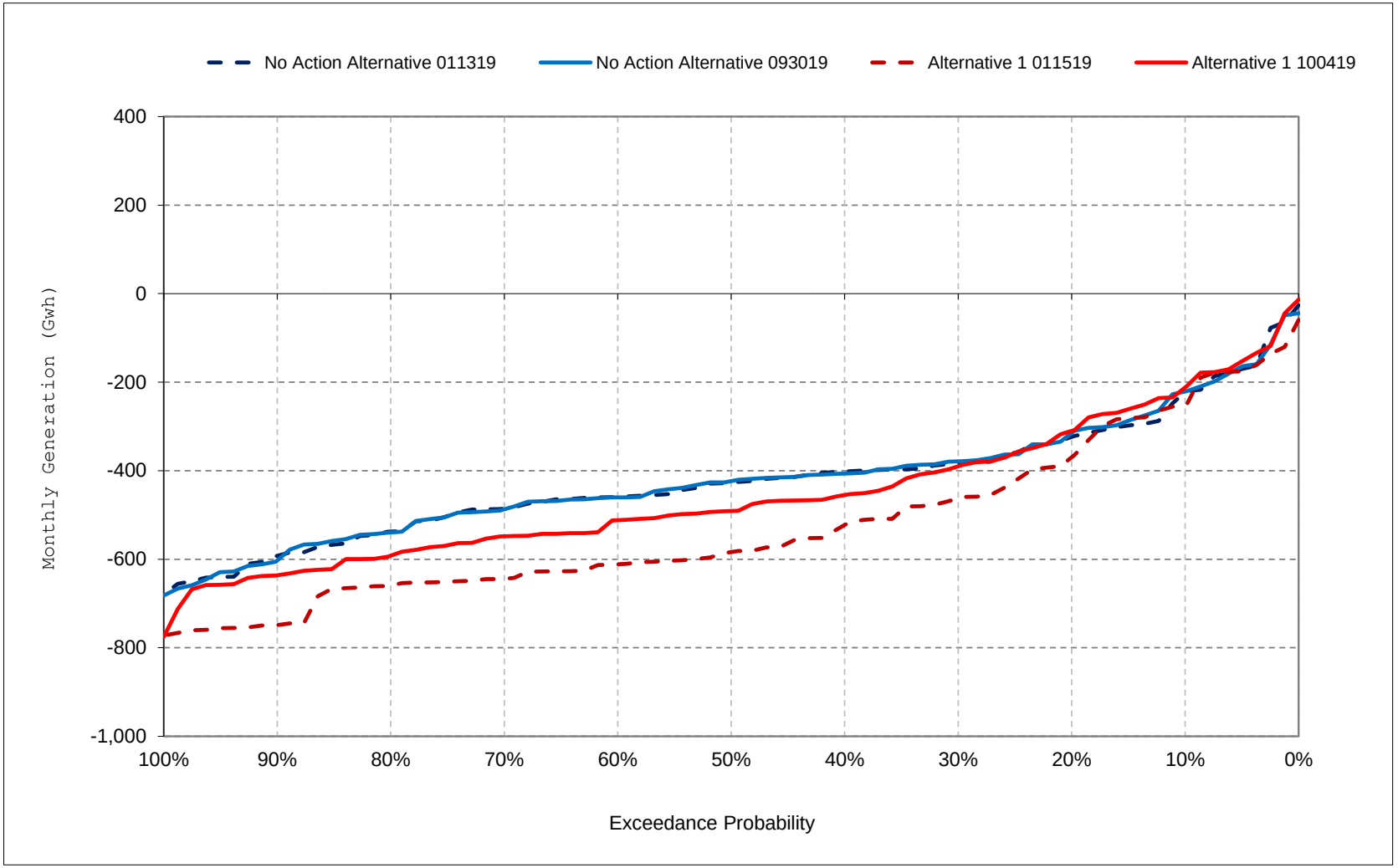

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-17. SWP Net Generation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35-18. SWP Net Generation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 36-1. CVP and SWP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 26 | -14 | 12 | 454 | 515 | 519 | 333 | 433 | 312 | 360 | 167 | 123 |
| 20% | -60 | -85 | -93 | 327 | 321 | 294 | 224 | 362 | 257 | 328 | 62 | 81 |
| 30% | -95 | -122 | -145 | 85 | 201 | 147 | 182 | 302 | 227 | 306 | 4 | 9 |
| 40% | -149 | -169 | -222 | 27 | 71 | 67 | 145 | 270 | 184 | 257 | -46 | -64 |
| 50% | -167 | -207 | -294 | -6 | 21 | 10 | 125 | 241 | 133 | 229 | -71 | -132 |
| 60% | -210 | -299 | -384 | -38 | -39 | -16 | 78 | 203 | 111 | 174 | -104 | -165 |
| 70% | -238 | -329 | -453 | -70 | -68 | -68 | 3 | 150 | 64 | 118 | -130 | -224 |
| 80% | -292 | -360 | -529 | -140 | -132 | -100 | -62 | 62 | -1 | 41 | -160 | -292 |
| 90% | -363 | -403 | -596 | -189 | -184 | -252 | -133 | 29 | -79 | -18 | -197 | -426 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -179 | -212 | -274 | 79 | 102 | 80 | 118 | 225 | 137 | 189 | -46 | -122 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -178 | -149 | -341 | 322 | 283 | 228 | 172 | 287 | 31 | 117 | -130 | 86 |
| Above Normal (16%) | -226 | -251 | -366 | 61 | 183 | 101 | 61 | 176 | 84 | 290 | -68 | -130 |
| Below Normal (13%) | -284 | -337 | -299 | -85 | -11 | -56 | 65 | 239 | 190 | 229 | -33 | -357 |
| Dry (24%) | -158 | -236 | -121 | -55 | -46 | -28 | 85 | 205 | 249 | 208 | 16 | -255 |
| Critical (15%) | -69 | -153 | -261 | -55 | -27 | 40 | 166 | 165 | 190 | 166 | 46 | -129 |

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | -71 | 177 | 494 | 476 | 509 | 228 | 315 | 337 | 353 | 117 | -80 |
| 20% | -83 | -167 | -83 | 250 | 307 | 261 | 140 | 283 | 274 | 319 | 10 | -161 |
| 30% | -163 | -238 | -136 | 115 | 193 | 97 | 93 | 216 | 249 | 269 | -47 | -247 |
| 40% | -227 | -309 | -228 | 32 | 46 | -2 | 63 | 163 | 201 | 232 | -83 | -315 |
| 50% | -321 | -411 | -335 | -22 | -35 | -34 | -60 | 115 | 127 | 190 | -109 | -346 |
| 60% | -352 | -454 | -358 | -47 | -61 | -89 | -124 | 61 | 77 | 137 | -125 | -378 |
| 70% | -385 | -517 | -476 | -66 | -113 | -139 | -242 | -4 | 40 | 73 | -150 | -411 |
| 80% | -444 | -561 | -588 | -85 | -174 | -205 | -300 | -106 | 2 | 22 | -181 | -431 |
| 90% | -485 | -589 | -635 | -223 | -263 | -305 | -367 | -201 | -72 | -28 | -222 | -464 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -265 | -358 | -276 | 62 | 63 | 24 | -53 | 87 | 135 | 164 | -81 | -312 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -305 | -463 | -295 | 301 | 229 | 190 | -58 | 97 | 46 | 80 | -151 | -366 |
| Above Normal (16%) | -404 | -481 | -375 | 39 | 162 | -20 | -241 | -61 | 79 | 226 | -97 | -395 |
| Below Normal (13%) | -354 | -413 | -372 | -107 | 7 | -121 | -141 | 43 | 150 | 196 | -111 | -376 |
| Dry (24%) | -183 | -247 | -131 | -71 | -98 | -61 | -5 | 152 | 247 | 207 | -24 | -269 |
| Critical (15%) | -79 | -134 | -285 | -54 | -82 | -14 | 160 | 157 | 189 | 175 | 23 | -120 |

### Alternative 1 011519 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | **-25** | **-57** | 165 | 40 | **-39** | **-10** | **-105** | **-118** | 25 | **-7** | **-50** | **-203** |
| 20% | **-23** | **-82** | 10 | **-78** | **-13** | **-33** | **-84** | **-79** | 17 | **-9** | **-52** | **-242** |
| 30% | **-68** | **-117** | 9 | 30 | **-9** | **-50** | **-90** | **-86** | 22 | **-37** | **-51** | **-256** |
| 40% | **-77** | **-140** | **-6** | 5 | **-25** | **-69** | **-83** | **-106** | 17 | **-24** | **-37** | **-251** |
| 50% | **-154** | **-205** | **-41** | **-16** | **-56** | **-45** | **-185** | **-125** | **-6** | **-39** | **-37** | **-214** |
| 60% | **-142** | **-155** | 25 | **-9** | **-22** | **-73** | **-202** | **-143** | **-34** | **-37** | **-21** | **-214** |
| 70% | **-147** | **-188** | **-23** | 4 | **-45** | **-71** | **-245** | **-153** | **-24** | **-45** | **-20** | **-188** |
| 80% | **-152** | **-201** | **-59** | 55 | **-42** | **-105** | **-238** | **-168** | 3 | **-18** | **-21** | **-139** |
| 90% | **-122** | **-186** | **-40** | **-34** | **-79** | **-53** | **-234** | **-230** | 7 | **-9** | **-25** | **-38** |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-86** | **-146** | **-3** | **-17** | **-38** | **-56** | **-171** | **-138** | **-2** | **-25** | **-35** | **-190** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-128** | **-314** | 47 | **-21** | **-53** | **-38** | **-230** | **-190** | 15 | **-37** | **-21** | **-452** |
| Above Normal (16%) | **-178** | **-230** | **-9** | **-22** | **-21** | **-121** | **-302** | **-237** | **-4** | **-64** | **-28** | **-265** |
| Below Normal (13%) | **-70** | **-76** | **-74** | **-21** | 19 | **-65** | **-206** | **-196** | **-40** | **-32** | **-79** | **-19** |
| Dry (24%) | **-25** | **-11** | **-10** | **-15** | **-52** | **-33** | **-90** | **-53** | **-2** | **-2** | **-40** | **-14** |
| Critical (15%) | **-10** | 20 | **-24** | 1 | **-55** | **-53** | **-7** | **-8** | **-2** | 10 | **-23** | 8 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 36-2. CVP and SWP Net Generation, Monthly Generation

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10 | 18 | 10 | 481 | 543 | 519 | 331 | 436 | 331 | 371 | 167 | 112 |
| 20% | -58 | -56 | -96 | 326 | 310 | 290 | 224 | 365 | 250 | 334 | 45 | 78 |
| 30% | -89 | -122 | -137 | 86 | 193 | 155 | 174 | 299 | 221 | 318 | 8 | -7 |
| 40% | -143 | -165 | -186 | 29 | 68 | 58 | 143 | 270 | 198 | 272 | -33 | -67 |
| 50% | -166 | -211 | -277 | -11 | 16 | 14 | 130 | 241 | 123 | 233 | -63 | -142 |
| 60% | -211 | -294 | -381 | -39 | -36 | -16 | 78 | 207 | 109 | 177 | -99 | -170 |
| 70% | -237 | -320 | -440 | -69 | -60 | -70 | 15 | 143 | 65 | 124 | -133 | -216 |
| 80% | -283 | -346 | -520 | -136 | -134 | -101 | -68 | 65 | 1 | 26 | -167 | -262 |
| 90% | -369 | -399 | -595 | -185 | -183 | -231 | -115 | 32 | -76 | -37 | -198 | -424 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -173 | -205 | -263 | 83 | 100 | 80 | 118 | 228 | 137 | 189 | -47 | -123 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -185 | -149 | -340 | 332 | 284 | 231 | 169 | 284 | 33 | 119 | -132 | 84 |
| Above Normal (16%) | -208 | -241 | -376 | 55 | 175 | 89 | 61 | 176 | 83 | 294 | -61 | -136 |
| Below Normal (13%) | -279 | -327 | -286 | -94 | -17 | -58 | 58 | 241 | 178 | 233 | -48 | -358 |
| Dry (24%) | -144 | -225 | -107 | -52 | -41 | -22 | 93 | 216 | 256 | 207 | 25 | -246 |
| Critical (15%) | -62 | -143 | -213 | -37 | -35 | 43 | 166 | 174 | 184 | 160 | 31 | -135 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 41 | -54 | 79 | 511 | 553 | 580 | 247 | 356 | 328 | 372 | 97 | -45 |
| 20% | -38 | -145 | -99 | 327 | 305 | 386 | 161 | 293 | 286 | 333 | 40 | -104 |
| 30% | -67 | -193 | -130 | 216 | 202 | 163 | 93 | 253 | 258 | 298 | 9 | -156 |
| 40% | -125 | -312 | -187 | 52 | 48 | 57 | 49 | 201 | 194 | 268 | -12 | -169 |
| 50% | -174 | -384 | -285 | -21 | -35 | -3 | 16 | 154 | 146 | 233 | -46 | -200 |
| 60% | -223 | -403 | -356 | -50 | -66 | -20 | -50 | 119 | 126 | 177 | -81 | -223 |
| 70% | -277 | -433 | -472 | -72 | -114 | -77 | -156 | 55 | 83 | 114 | -111 | -259 |
| 80% | -337 | -506 | -548 | -143 | -141 | -104 | -231 | -49 | 41 | 46 | -142 | -340 |
| 90% | -396 | -581 | -588 | -215 | -217 | -269 | -297 | -192 | -56 | -16 | -185 | -422 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -175 | -328 | -261 | 91 | 79 | 97 | -1 | 132 | 152 | 190 | -49 | -211 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -192 | -444 | -303 | 353 | 272 | 278 | 2 | 131 | 58 | 119 | -82 | -190 |
| Above Normal (16%) | -102 | -433 | -408 | 54 | 194 | 164 | -107 | 52 | 118 | 289 | -44 | -104 |
| Below Normal (13%) | -321 | -357 | -297 | -87 | -23 | -75 | -96 | 100 | 194 | 257 | -82 | -369 |
| Dry (24%) | -180 | -222 | -115 | -66 | -99 | -19 | 22 | 183 | 254 | 191 | -43 | -266 |
| Critical (15%) | -75 | -114 | -220 | -8 | -77 | -14 | 155 | 162 | 185 | 172 | 35 | -133 |

### Alternative 1 100419 minus No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 31 | **-73** | 69 | 30 | 9 | 61 | **-85** | **-80** | **-3** | 2 | **-70** | **-157** |
| 20% | 20 | **-89** | **-3** | 1 | **-5** | 96 | **-63** | **-72** | 36 | **0** | **-5** | **-182** |
| 30% | 21 | **-71** | 7 | 131 | 10 | 7 | **-81** | **-46** | 37 | **-20** | 1 | **-149** |
| 40% | 18 | **-148** | **-1** | 23 | **-20** | **-1** | **-94** | **-70** | **-4** | **-4** | 21 | **-102** |
| 50% | **-8** | **-173** | **-8** | **-11** | **-51** | **-18** | **-113** | **-87** | 23 | **0** | 16 | **-58** |
| 60% | **-12** | **-109** | 24 | **-11** | **-30** | **-4** | **-129** | **-87** | 17 | 0 | 19 | **-53** |
| 70% | **-40** | **-113** | **-32** | **-3** | **-54** | **-6** | **-171** | **-88** | 18 | **-10** | 23 | **-43** |
| 80% | **-54** | **-160** | **-27** | **-6** | **-7** | **-3** | **-163** | **-113** | 41 | 20 | 25 | **-78** |
| 90% | **-27** | **-182** | 6 | **-31** | **-33** | **-38** | **-181** | **-224** | 20 | 21 | 13 | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | **-2** | **-123** | 2 | 8 | **-22** | 17 | **-119** | **-97** | 15 | 0 | **-2** | **-88** |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | **-8** | **-295** | 36 | 20 | **-12** | 48 | **-167** | **-152** | 25 | **-1** | 49 | **-274** |
| Above Normal (16%) | 106 | **-192** | **-33** | **-1** | 19 | 75 | **-167** | **-124** | 35 | **-5** | 17 | 32 |
| Below Normal (13%) | **-42** | **-30** | **-11** | 6 | **-5** | **-18** | **-154** | **-141** | 16 | 24 | **-35** | **-11** |
| Dry (24%) | **-36** | 3 | **-7** | **-14** | **-58** | 3 | **-71** | **-33** | **-2** | **-15** | **-68** | **-20** |
| Critical (15%) | **-13** | 30 | **-7** | 29 | **-41** | **-56** | **-11** | **-13** | 1 | 12 | 4 | 2 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 36-3. CVP and SWP Net Generation, Monthly Generation

### No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 26 | -14 | 12 | 454 | 515 | 519 | 333 | 433 | 312 | 360 | 167 | 123 |
| 20% | -60 | -85 | -93 | 327 | 321 | 294 | 224 | 362 | 257 | 328 | 62 | 81 |
| 30% | -95 | -122 | -145 | 85 | 201 | 147 | 182 | 302 | 227 | 306 | 4 | 9 |
| 40% | -149 | -169 | -222 | 27 | 71 | 67 | 145 | 270 | 184 | 257 | -46 | -64 |
| 50% | -167 | -207 | -294 | -6 | 21 | 10 | 125 | 241 | 133 | 229 | -71 | -132 |
| 60% | -210 | -299 | -384 | -38 | -39 | -16 | 78 | 203 | 111 | 174 | -104 | -165 |
| 70% | -238 | -329 | -453 | -70 | -68 | -68 | 3 | 150 | 64 | 118 | -130 | -224 |
| 80% | -292 | -360 | -529 | -140 | -132 | -100 | -62 | 62 | -1 | 41 | -160 | -292 |
| 90% | -363 | -403 | -596 | -189 | -184 | -252 | -133 | 29 | -79 | -18 | -197 | -426 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -179 | -212 | -274 | 79 | 102 | 80 | 118 | 225 | 137 | 189 | -46 | -122 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -178 | -149 | -341 | 322 | 283 | 228 | 172 | 287 | 31 | 117 | -130 | 86 |
| Above Normal (16%) | -226 | -251 | -366 | 61 | 183 | 101 | 61 | 176 | 84 | 290 | -68 | -130 |
| Below Normal (13%) | -284 | -337 | -299 | -85 | -11 | -56 | 65 | 239 | 190 | 229 | -33 | -357 |
| Dry (24%) | -158 | -236 | -121 | -55 | -46 | -28 | 85 | 205 | 249 | 208 | 16 | -255 |
| Critical (15%) | -69 | -153 | -261 | -55 | -27 | 40 | 166 | 165 | 190 | 166 | 46 | -129 |

### No Action Alternative 093019

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 10 | 18 | 10 | 481 | 543 | 519 | 331 | 436 | 331 | 371 | 167 | 112 |
| 20% | -58 | -56 | -96 | 326 | 310 | 290 | 224 | 365 | 250 | 334 | 45 | 78 |
| 30% | -89 | -122 | -137 | 86 | 193 | 155 | 174 | 299 | 221 | 318 | 8 | -7 |
| 40% | -143 | -165 | -186 | 29 | 68 | 58 | 143 | 270 | 198 | 272 | -33 | -67 |
| 50% | -166 | -211 | -277 | -11 | 16 | 14 | 130 | 241 | 123 | 233 | -63 | -142 |
| 60% | -211 | -294 | -381 | -39 | -36 | -16 | 78 | 207 | 109 | 177 | -99 | -170 |
| 70% | -237 | -320 | -440 | -69 | -60 | -70 | 15 | 143 | 65 | 124 | -133 | -216 |
| 80% | -283 | -346 | -520 | -136 | -134 | -101 | -68 | 65 | 1 | 26 | -167 | -262 |
| 90% | -369 | -399 | -595 | -185 | -183 | -231 | -115 | 32 | -76 | -37 | -198 | -424 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -173 | -205 | -263 | 83 | 100 | 80 | 118 | 228 | 137 | 189 | -47 | -123 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -185 | -149 | -340 | 332 | 284 | 231 | 169 | 284 | 33 | 119 | -132 | 84 |
| Above Normal (16%) | -208 | -241 | -376 | 55 | 175 | 89 | 61 | 176 | 83 | 294 | -61 | -136 |
| Below Normal (13%) | -279 | -327 | -286 | -94 | -17 | -58 | 58 | 241 | 178 | 233 | -48 | -358 |
| Dry (24%) | -144 | -225 | -107 | -52 | -41 | -22 | 93 | 216 | 256 | 207 | 25 | -246 |
| Critical (15%) | -62 | -143 | -213 | -37 | -35 | 43 | 166 | 174 | 184 | 160 | 31 | -135 |

### No Action Alternative 093019 minus No Action Alternative 011319

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | -16 | 32 | -2 | 27 | 28 | 0 | -1 | 3 | 19 | 10 | 0 | -11 |
| 20% | 2 | 28 | -3 | -2 | -11 | -4 | 0 | 3 | -7 | 6 | -17 | -3 |
| 30% | 6 | -1 | 8 | 1 | -8 | 8 | -9 | -4 | -6 | 12 | 4 | -15 |
| 40% | 6 | 4 | 37 | 2 | -3 | -9 | -3 | 1 | 14 | 15 | 13 | -3 |
| 50% | 1 | -4 | 17 | -4 | -5 | 4 | 5 | 1 | -9 | 4 | 9 | -11 |
| 60% | 0 | 5 | 3 | -2 | 4 | 0 | 1 | 3 | -2 | 3 | 5 | -5 |
| 70% | 2 | 9 | 13 | 2 | 8 | -2 | 12 | -6 | 1 | 6 | -3 | 7 |
| 80% | 8 | 13 | 8 | 3 | -2 | -1 | -6 | 3 | 1 | -14 | -7 | 31 |
| 90% | -6 | 4 | 1 | 5 | 1 | 22 | 18 | 3 | 3 | -19 | -2 | 2 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 6 | 7 | 11 | 5 | -2 | 1 | 0 | 3 | -1 | 1 | -1 | 0 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -7 | 0 | 2 | 10 | 1 | 2 | -3 | -3 | 1 | 2 | -1 | -2 |
| Above Normal (16%) | 18 | 10 | -10 | -6 | -8 | -13 | -1 | -1 | -1 | 4 | 8 | -6 |
| Below Normal (13%) | 5 | 11 | 13 | -8 | -6 | -1 | -7 | 2 | -12 | 5 | -15 | -1 |
| Dry (24%) | 14 | 11 | 14 | 3 | 5 | 6 | 9 | 11 | 7 | -2 | 9 | 9 |
| Critical (15%) | 6 | 10 | 47 | 18 | -8 | 3 | -1 | 9 | -7 | -6 | -15 | -6 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 36-4. CVP and SWP Net Generation, Monthly Generation

### Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 1 | -71 | 177 | 494 | 476 | 509 | 228 | 315 | 337 | 353 | 117 | -80 |
| 20% | -83 | -167 | -83 | 250 | 307 | 261 | 140 | 283 | 274 | 319 | 10 | -161 |
| 30% | -163 | -238 | -136 | 115 | 193 | 97 | 93 | 216 | 249 | 269 | -47 | -247 |
| 40% | -227 | -309 | -228 | 32 | 46 | -2 | 63 | 163 | 201 | 232 | -83 | -315 |
| 50% | -321 | -411 | -335 | -22 | -35 | -34 | -60 | 115 | 127 | 190 | -109 | -346 |
| 60% | -352 | -454 | -358 | -47 | -61 | -89 | -124 | 61 | 77 | 137 | -125 | -378 |
| 70% | -385 | -517 | -476 | -66 | -113 | -139 | -242 | -4 | 40 | 73 | -150 | -411 |
| 80% | -444 | -561 | -588 | -85 | -174 | -205 | -300 | -106 | 2 | 22 | -181 | -431 |
| 90% | -485 | -589 | -635 | -223 | -263 | -305 | -367 | -201 | -72 | -28 | -222 | -464 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -265 | -358 | -276 | 62 | 63 | 24 | -53 | 87 | 135 | 164 | -81 | -312 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -305 | -463 | -295 | 301 | 229 | 190 | -58 | 97 | 46 | 80 | -151 | -366 |
| Above Normal (16%) | -404 | -481 | -375 | 39 | 162 | -20 | -241 | -61 | 79 | 226 | -97 | -395 |
| Below Normal (13%) | -354 | -413 | -372 | -107 | 7 | -121 | -141 | 43 | 150 | 196 | -111 | -376 |
| Dry (24%) | -183 | -247 | -131 | -71 | -98 | -61 | -5 | 152 | 247 | 207 | -24 | -269 |
| Critical (15%) | -79 | -134 | -285 | -54 | -82 | -14 | 160 | 157 | 189 | 175 | 23 | -120 |

### Alternative 1 100419

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 41 | -54 | 79 | 511 | 553 | 580 | 247 | 356 | 328 | 372 | 97 | -45 |
| 20% | -38 | -145 | -99 | 327 | 305 | 386 | 161 | 293 | 286 | 333 | 40 | -104 |
| 30% | -67 | -193 | -130 | 216 | 202 | 163 | 93 | 253 | 258 | 298 | 9 | -156 |
| 40% | -125 | -312 | -187 | 52 | 48 | 57 | 49 | 201 | 194 | 268 | -12 | -169 |
| 50% | -174 | -384 | -285 | -21 | -35 | -3 | 16 | 154 | 146 | 233 | -46 | -200 |
| 60% | -223 | -403 | -356 | -50 | -66 | -20 | -50 | 119 | 126 | 177 | -81 | -223 |
| 70% | -277 | -433 | -472 | -72 | -114 | -77 | -156 | 55 | 83 | 114 | -111 | -259 |
| 80% | -337 | -506 | -548 | -143 | -141 | -104 | -231 | -49 | 41 | 46 | -142 | -340 |
| 90% | -396 | -581 | -588 | -215 | -217 | -269 | -297 | -192 | -56 | -16 | -185 | -422 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | -175 | -328 | -261 | 91 | 79 | 97 | -1 | 132 | 152 | 190 | -49 | -211 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | -192 | -444 | -303 | 353 | 272 | 278 | 2 | 131 | 58 | 119 | -82 | -190 |
| Above Normal (16%) | -102 | -433 | -408 | 54 | 194 | 164 | -107 | 52 | 118 | 289 | -44 | -104 |
| Below Normal (13%) | -321 | -357 | -297 | -87 | -23 | -75 | -96 | 100 | 194 | 257 | -82 | -369 |
| Dry (24%) | -180 | -222 | -115 | -66 | -99 | -19 | 22 | 183 | 254 | 191 | -43 | -266 |
| Critical (15%) | -75 | -114 | -220 | -8 | -77 | -14 | 155 | 162 | 185 | 172 | 35 | -133 |

### Alternative 1 100419 minus Alternative 1 011519

| | Monthly Generation (GWh) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| **Probability of Exceedance** | | | | | | | | | | | | |
| 10% | 40 | 16 | -98 | 18 | 77 | 71 | 19 | 41 | -9 | 19 | -20 | 35 |
| 20% | 45 | 22 | -16 | 77 | -3 | 125 | 21 | 10 | 12 | 15 | 30 | 57 |
| 30% | 96 | 45 | 6 | 101 | 10 | 66 | 0 | 36 | 9 | 29 | 57 | 92 |
| 40% | 102 | -3 | 41 | 20 | 2 | 58 | -13 | 38 | -7 | 35 | 71 | 146 |
| 50% | 146 | 27 | 50 | 1 | -1 | 31 | 77 | 39 | 19 | 43 | 62 | 146 |
| 60% | 129 | 51 | 2 | -4 | -5 | 69 | 74 | 59 | 49 | 40 | 45 | 155 |
| 70% | 108 | 84 | 4 | -6 | -1 | 63 | 86 | 59 | 42 | 41 | 40 | 152 |
| 80% | 107 | 55 | 40 | -58 | 33 | 101 | 69 | 57 | 39 | 24 | 39 | 91 |
| 90% | 89 | 8 | 47 | 8 | 46 | 36 | 71 | 9 | 16 | 12 | 37 | 42 |
| **Long Term** | | | | | | | | | | | | |
| Full Simulation Period[a] | 89 | 30 | 16 | 29 | 15 | 74 | 52 | 45 | 17 | 26 | 31 | 102 |
| **Water Year Types[b,c]** | | | | | | | | | | | | |
| Wet (32%) | 113 | 19 | -9 | 51 | 43 | 88 | 60 | 35 | 12 | 38 | 69 | 176 |
| Above Normal (16%) | 303 | 48 | -34 | 14 | 32 | 184 | 134 | 113 | 38 | 62 | 53 | 291 |
| Below Normal (13%) | 33 | 56 | 76 | 19 | -30 | 46 | 45 | 57 | 45 | 61 | 29 | 7 |
| Dry (24%) | 3 | 25 | 17 | 5 | -1 | 42 | 27 | 31 | 8 | -15 | -19 | 3 |
| Critical (15%) | 4 | 20 | 65 | 46 | 5 | 0 | -5 | 5 | -4 | -4 | 12 | -13 |

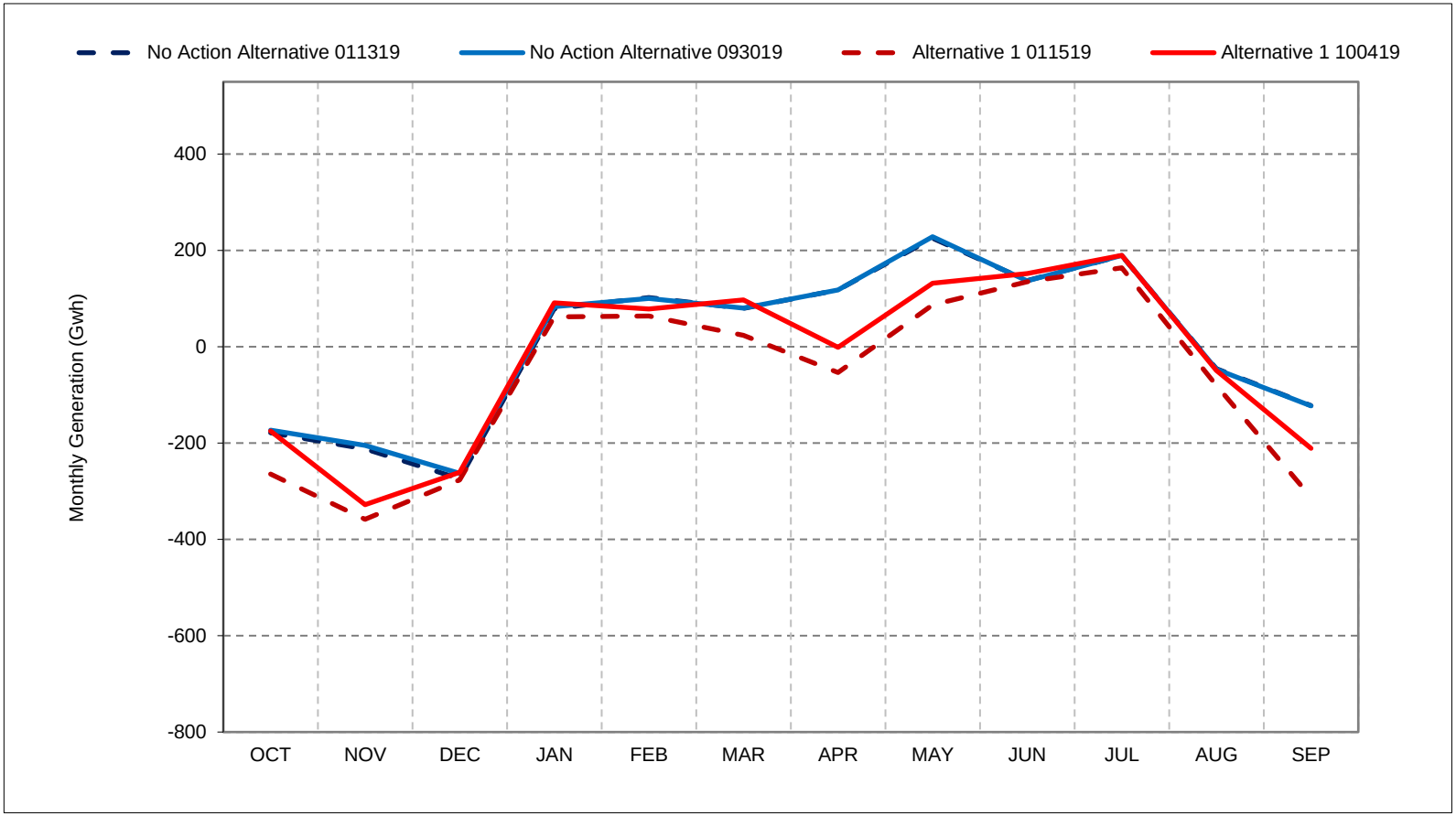
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-1. CVP and SWP Net Generation, Long-Term Average Generation

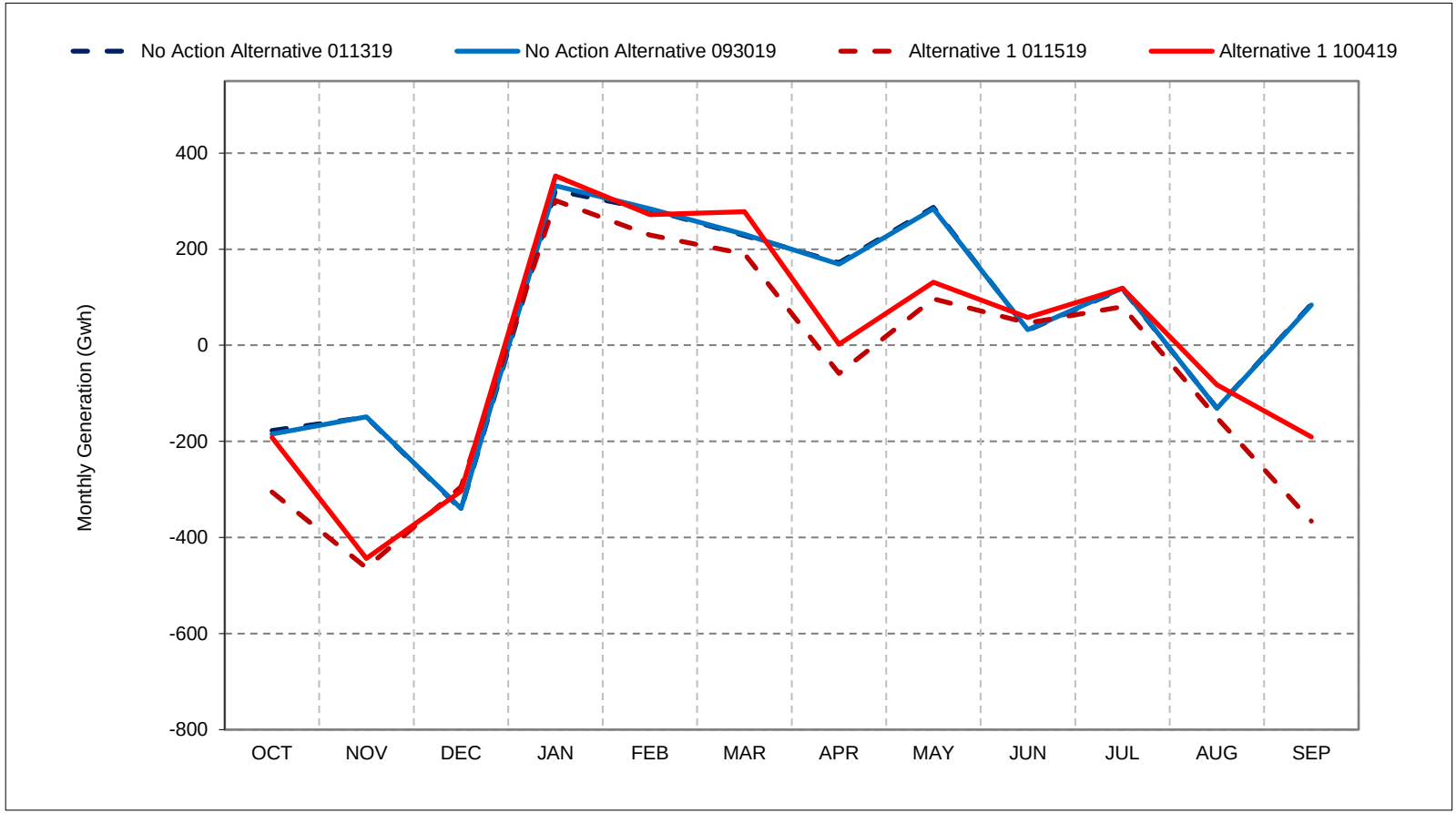



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-2. CVP and SWP Net Generation, Wet Year Average Generation

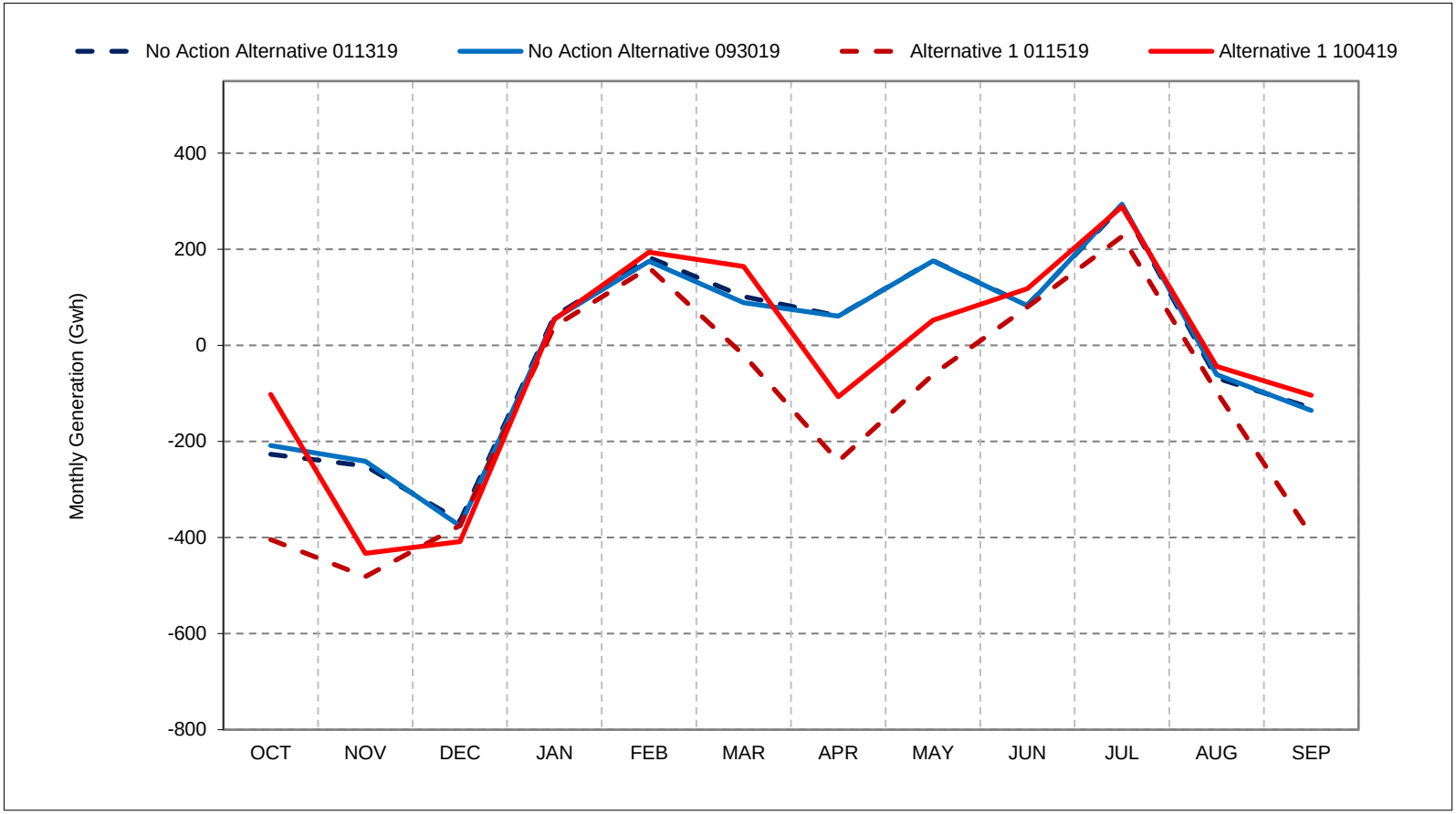



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-3. CVP and SWP Net Generation, Above Normal Year Average Generation

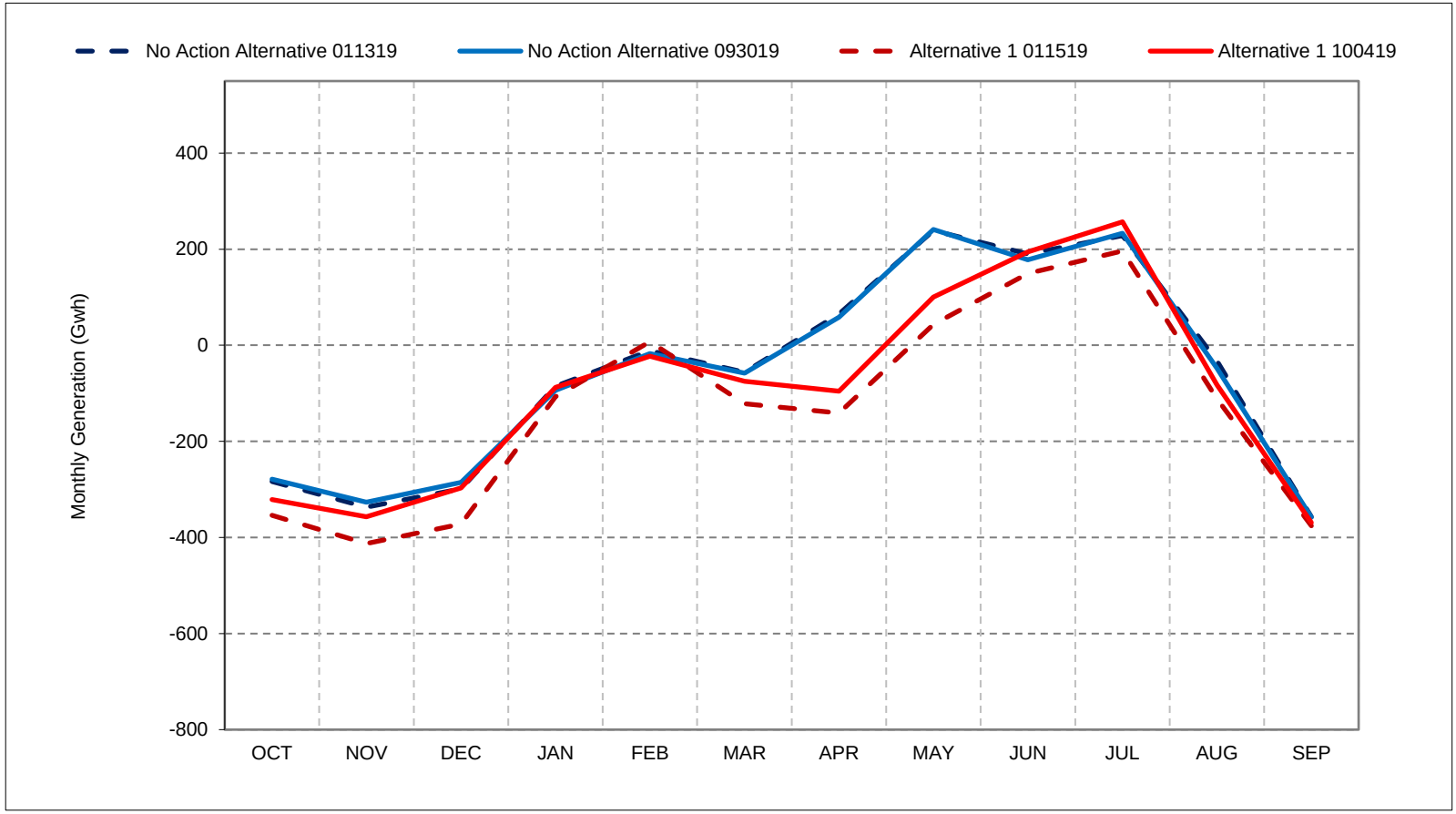



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-4. CVP and SWP Net Generation, Below Normal Year Average Generation

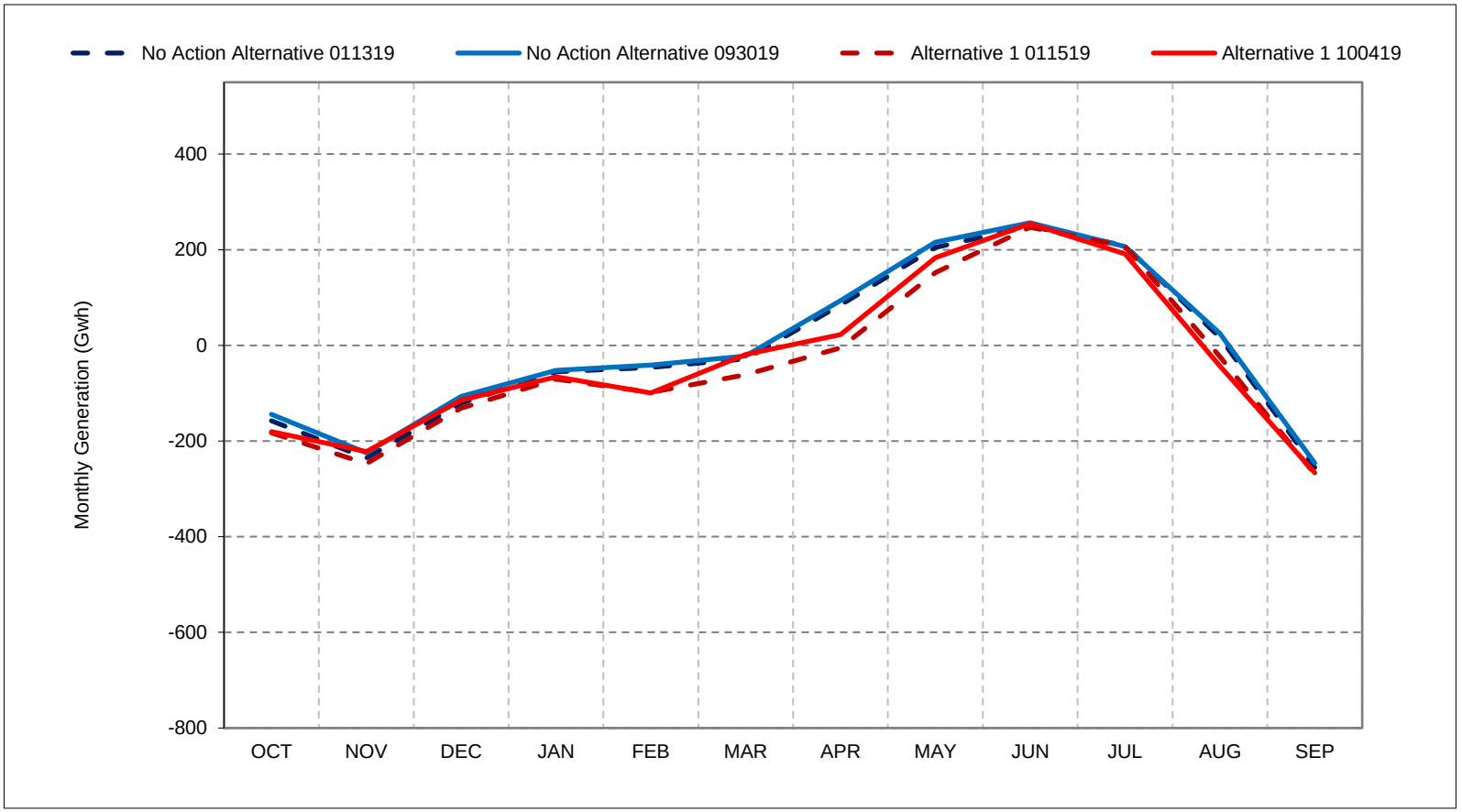



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-5. CVP and SWP Net Generation, Dry Year Average Generation

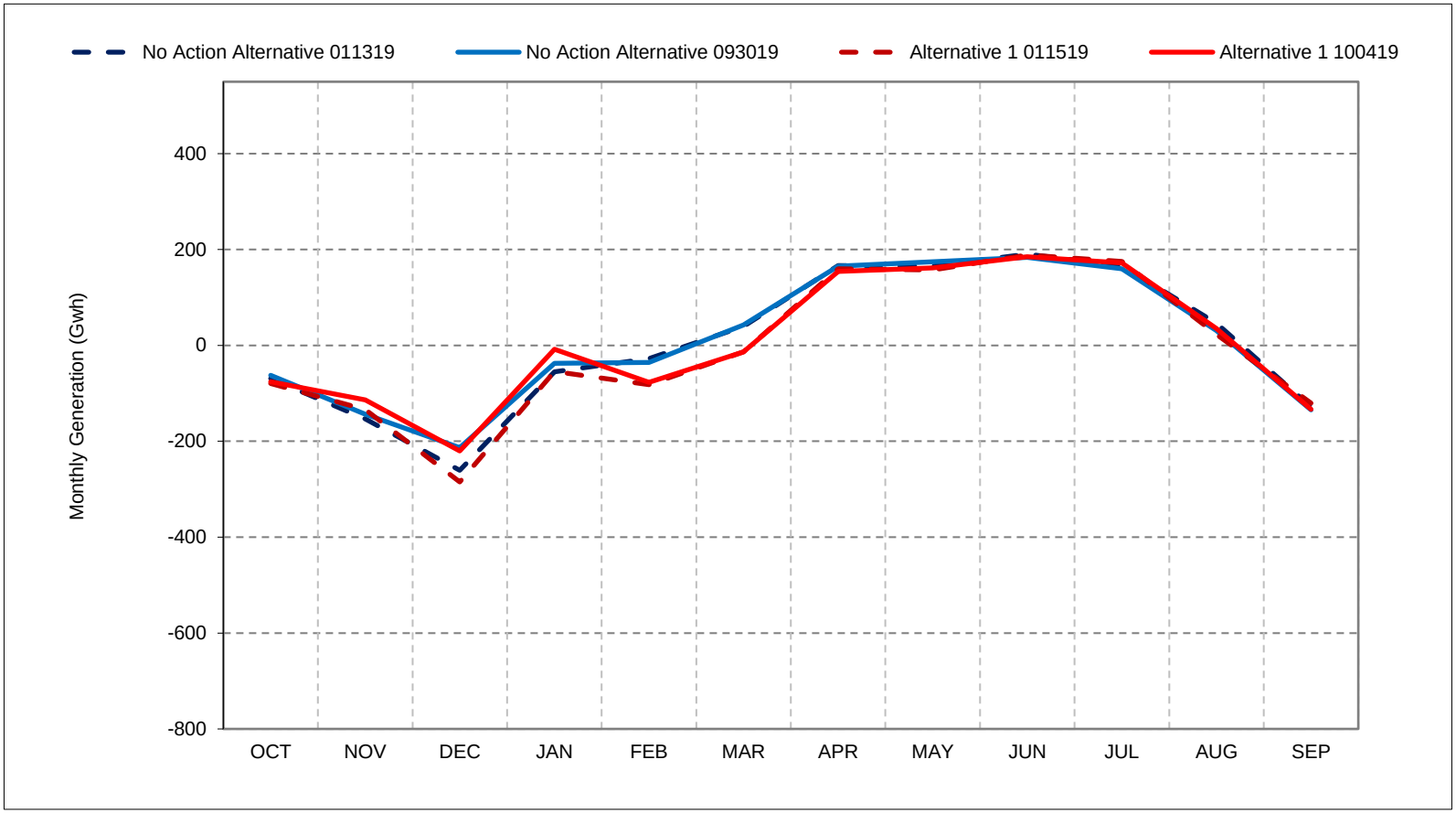



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Figure 36-6. CVP and SWP Net Generation, Critical Year Average Generation

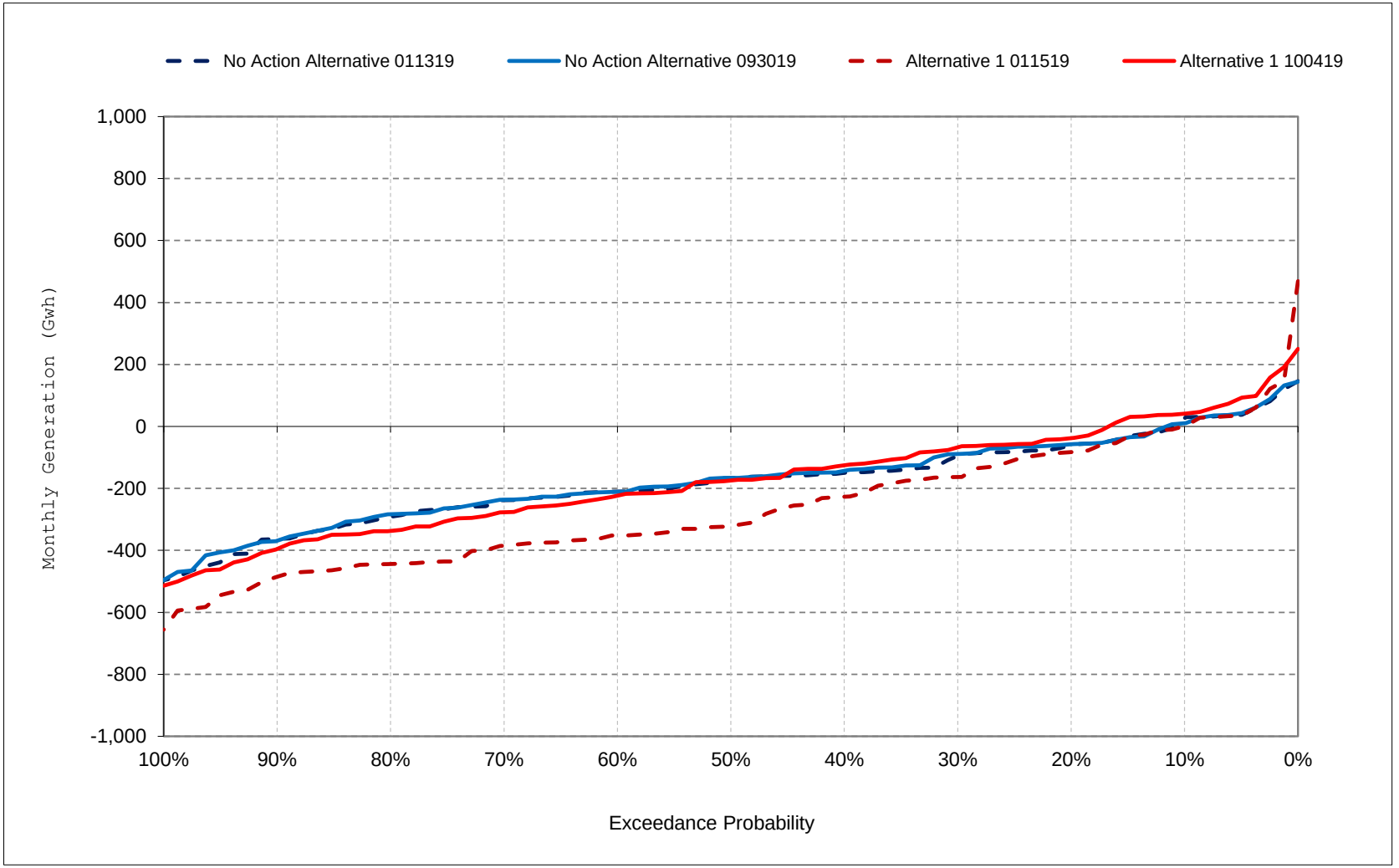



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

*These results are displayed with calendar year - year type sorting.

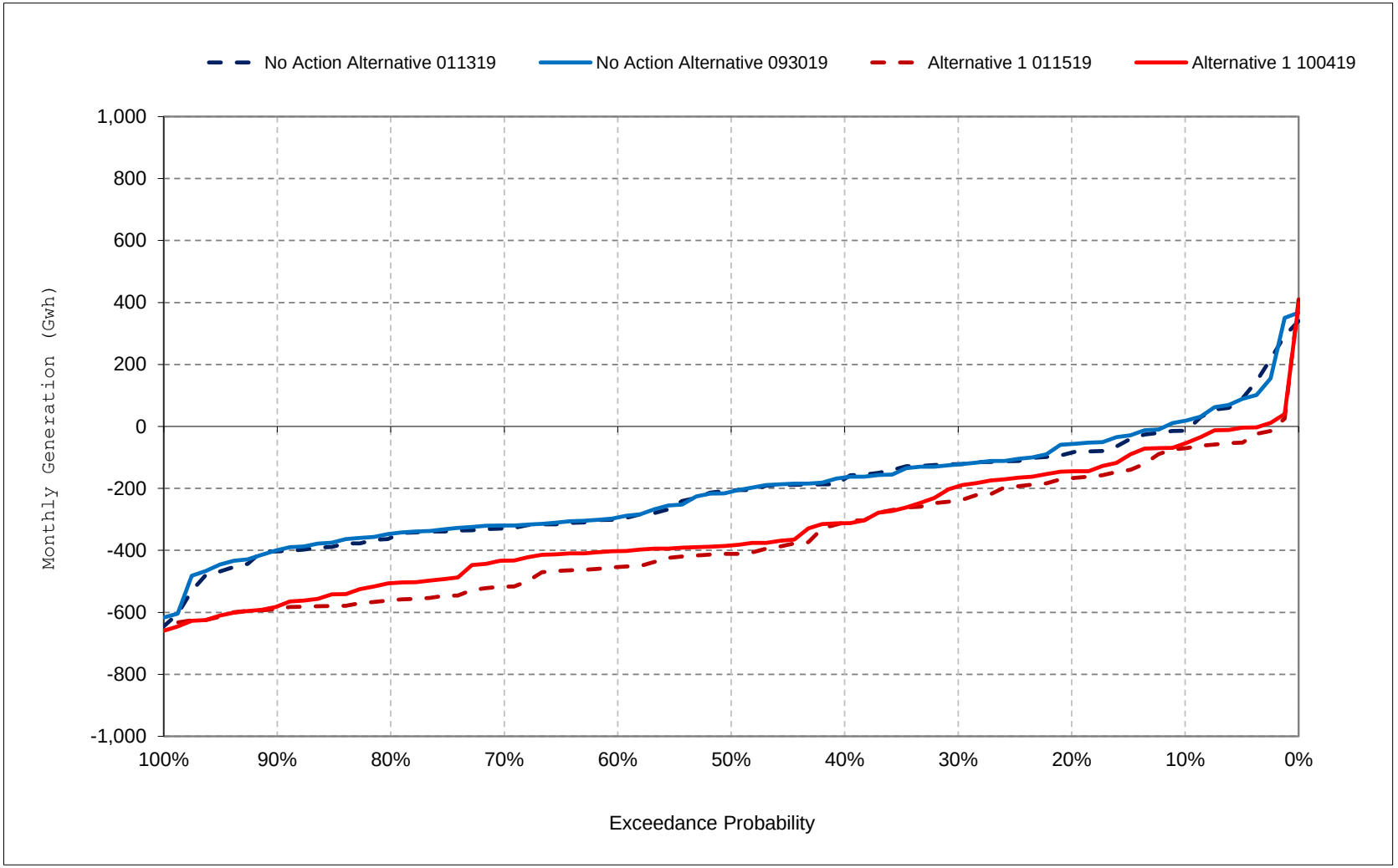
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-7. CVP and SWP Net Generation, October**



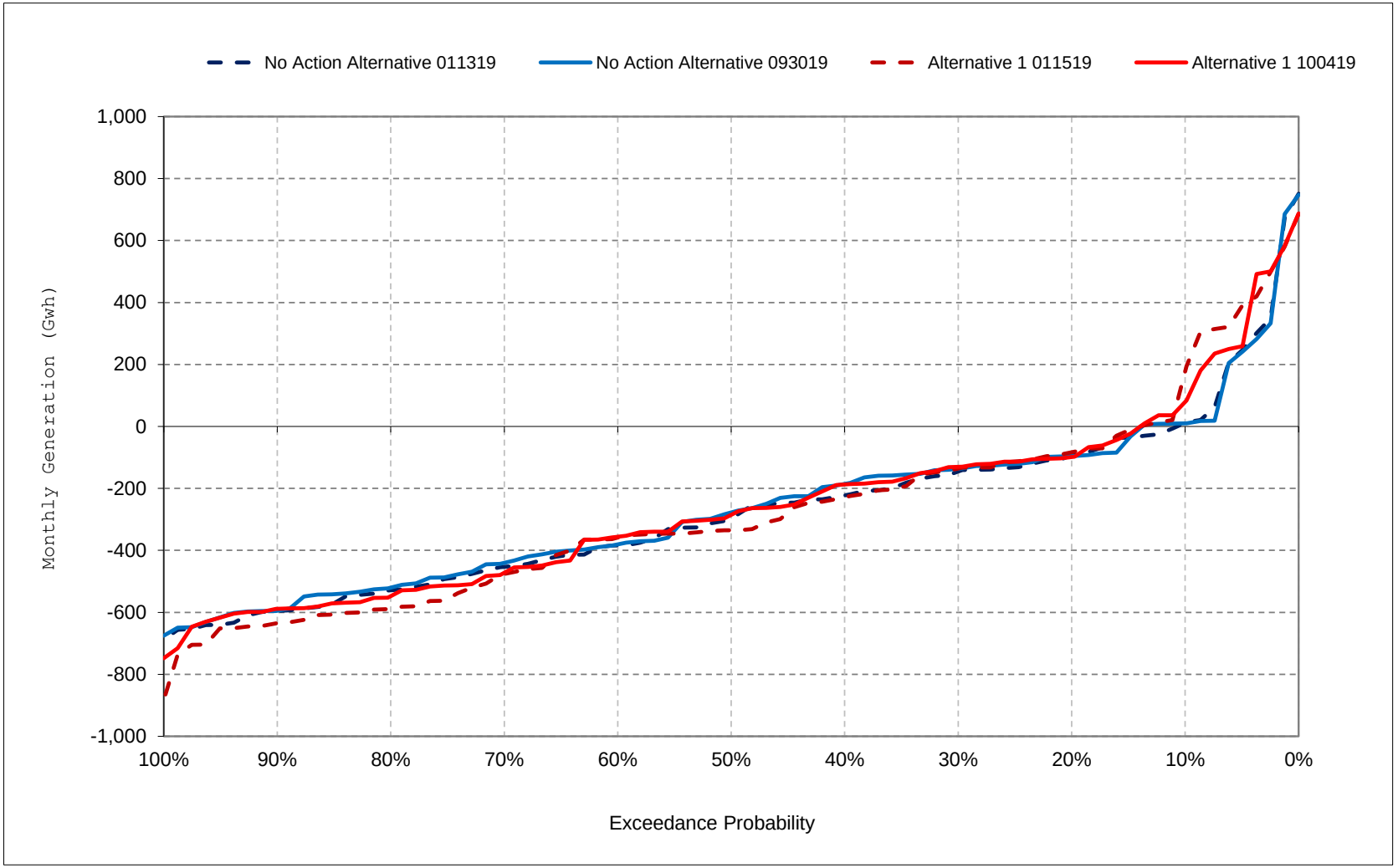

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-8. CVP and SWP Net Generation, November**



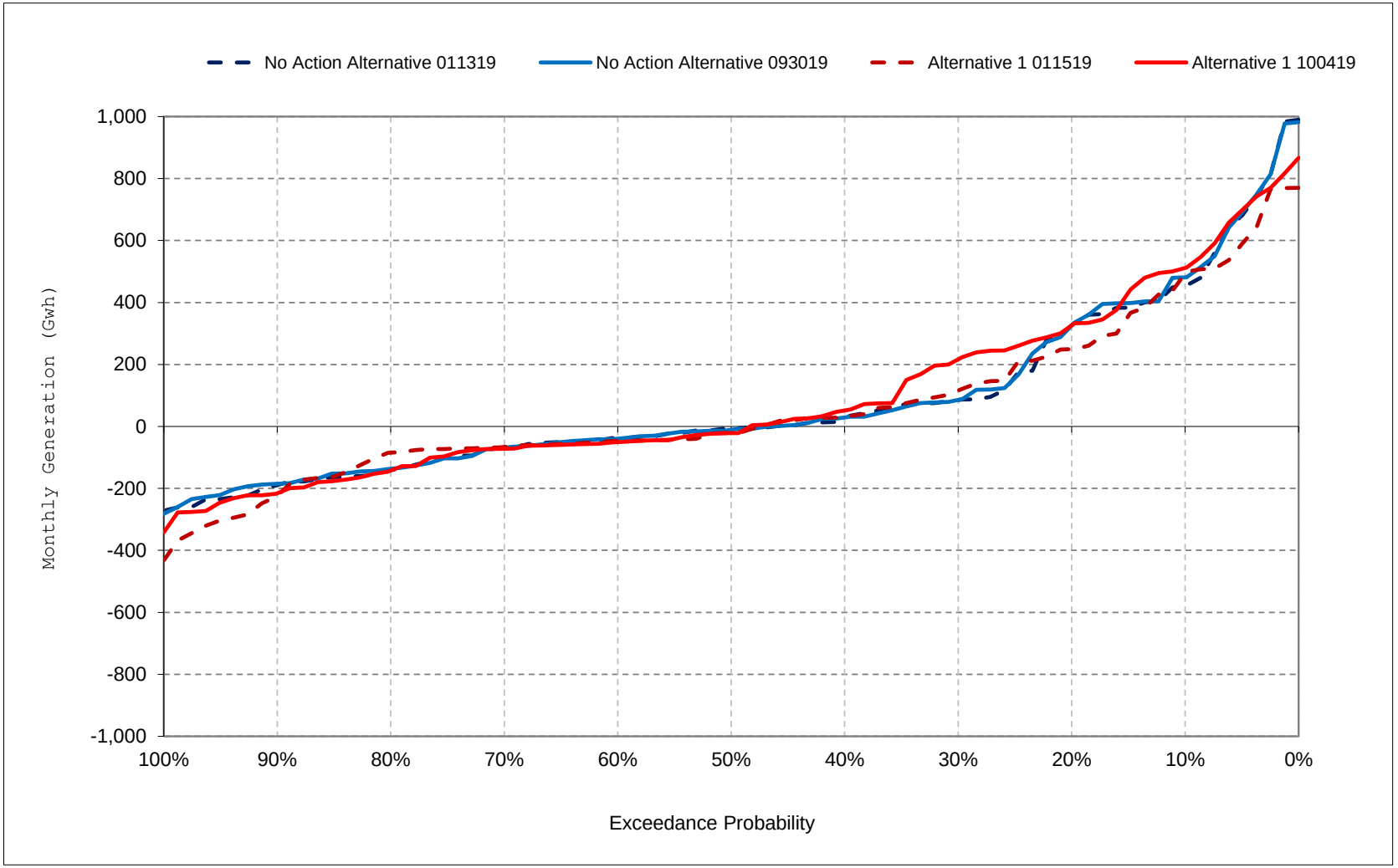

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-9. CVP and SWP Net Generation, December**



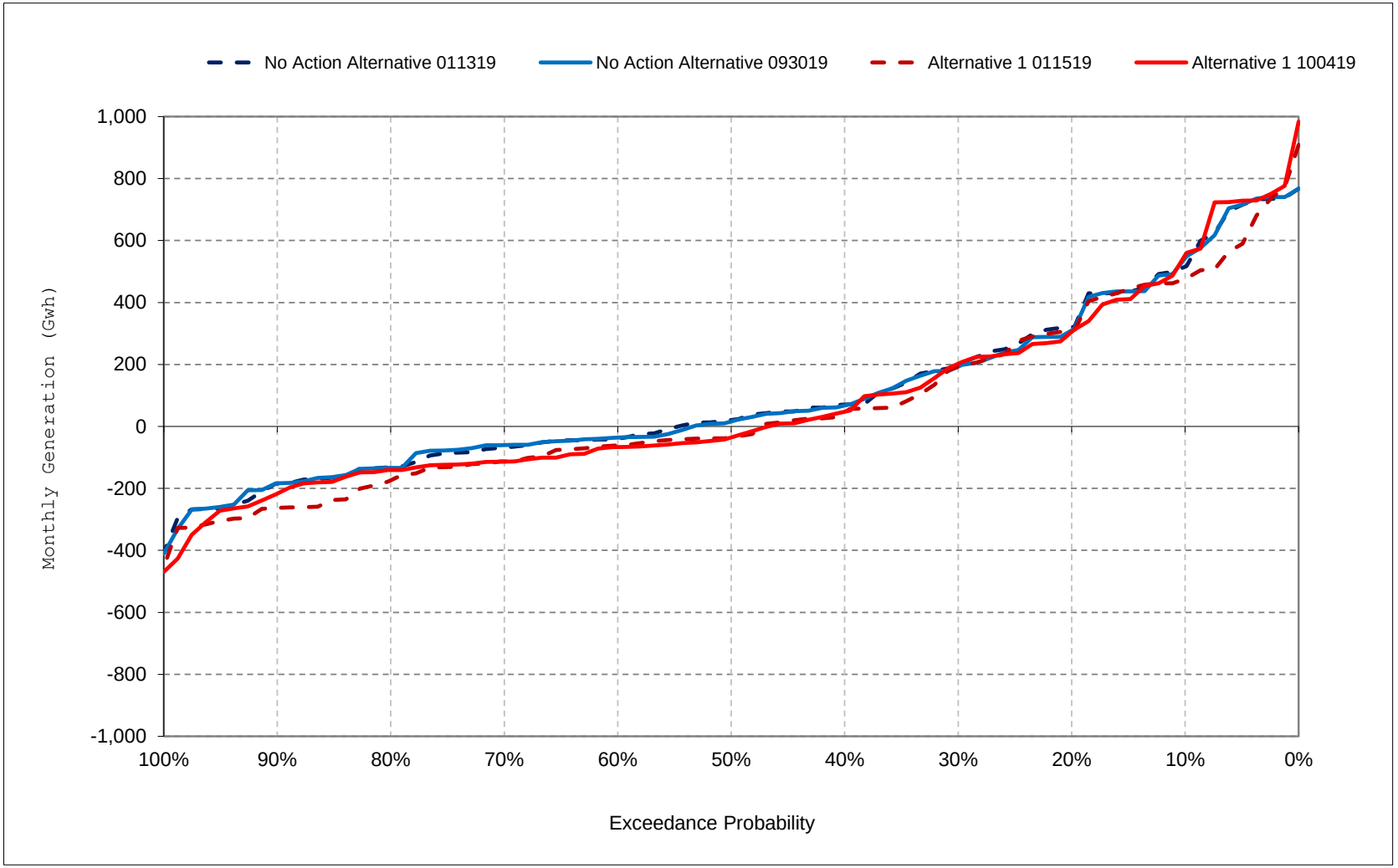

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-10. CVP and SWP Net Generation, January**



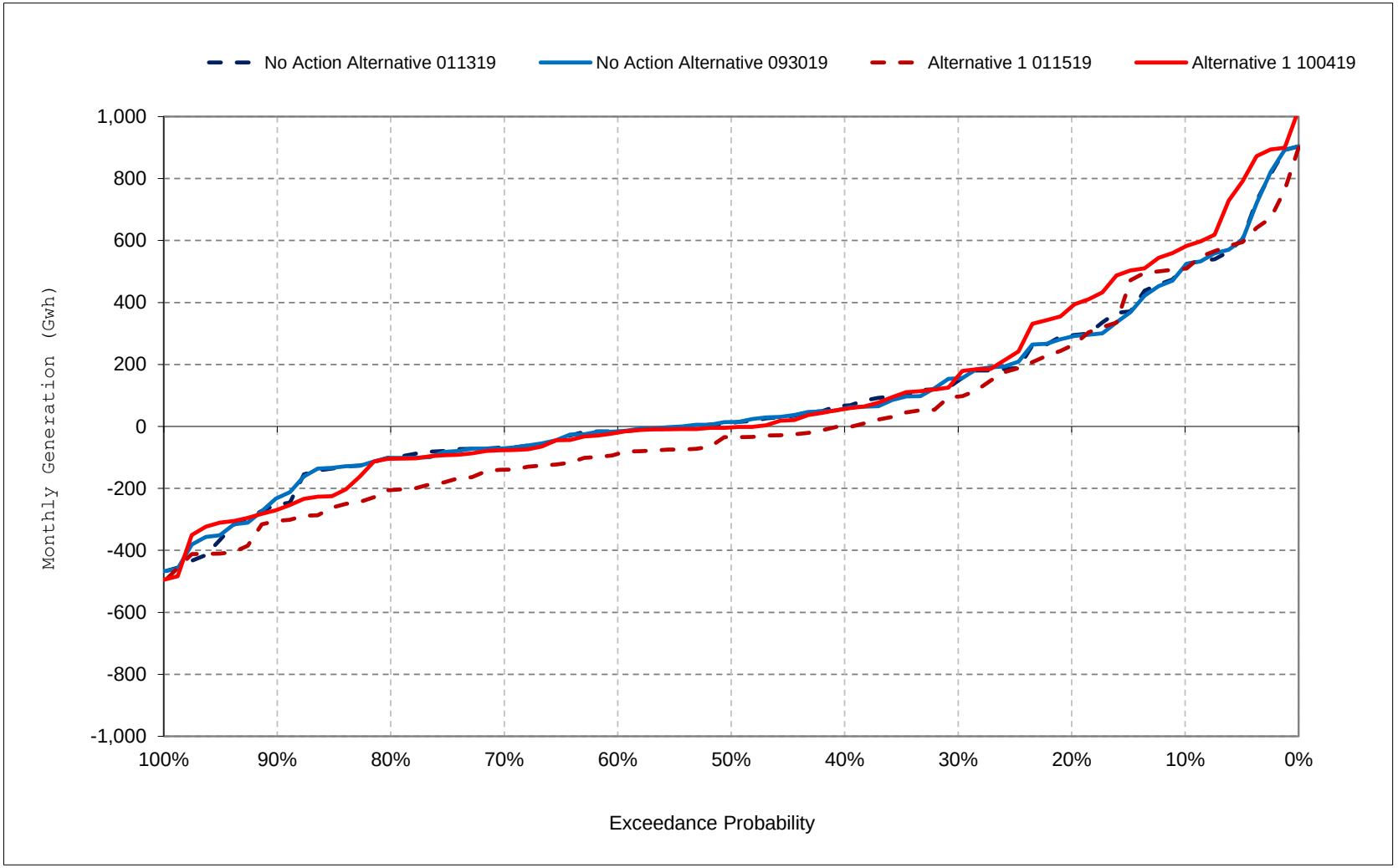

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-11. CVP and SWP Net Generation, February**



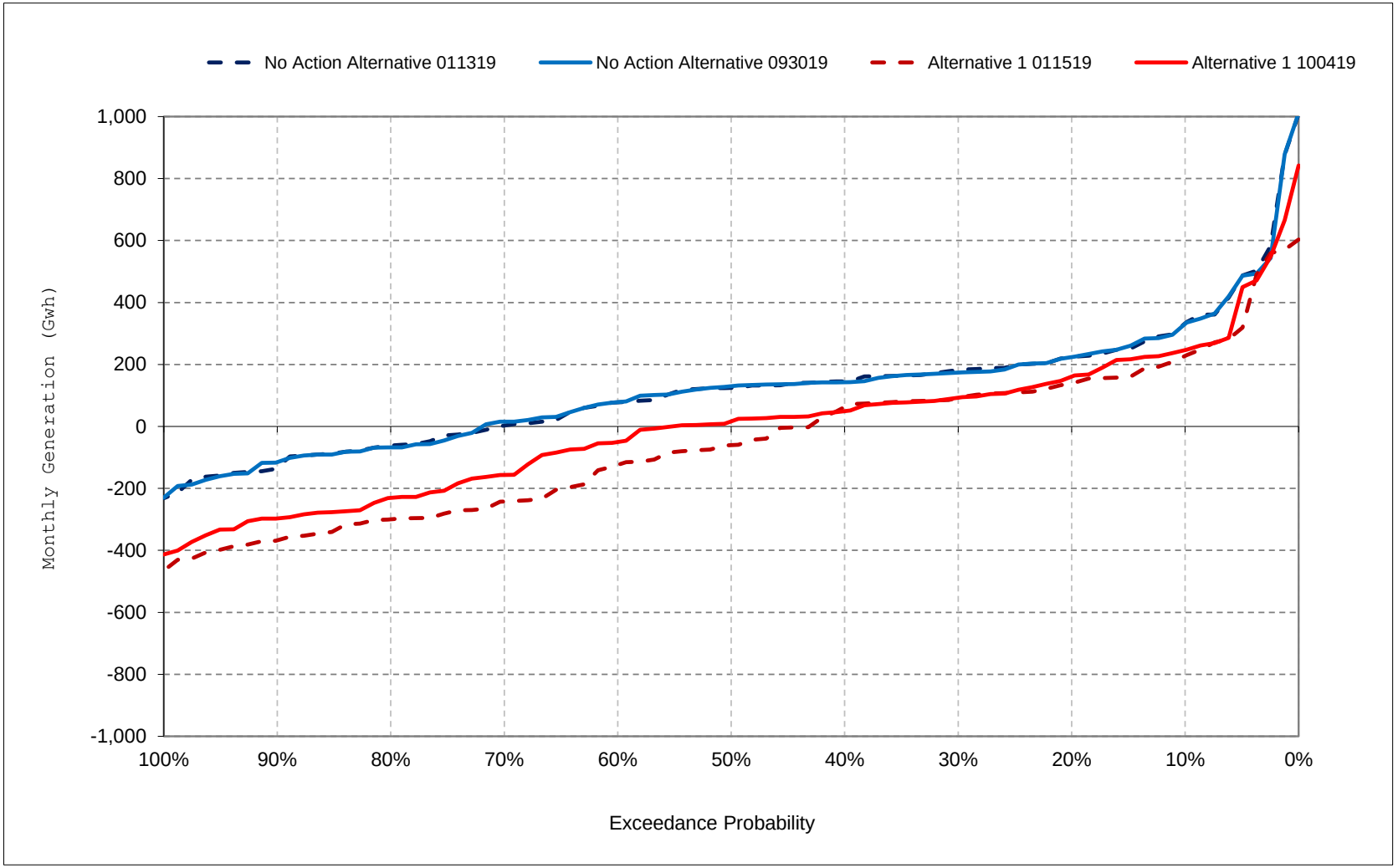

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-12. CVP and SWP Net Generation, March**



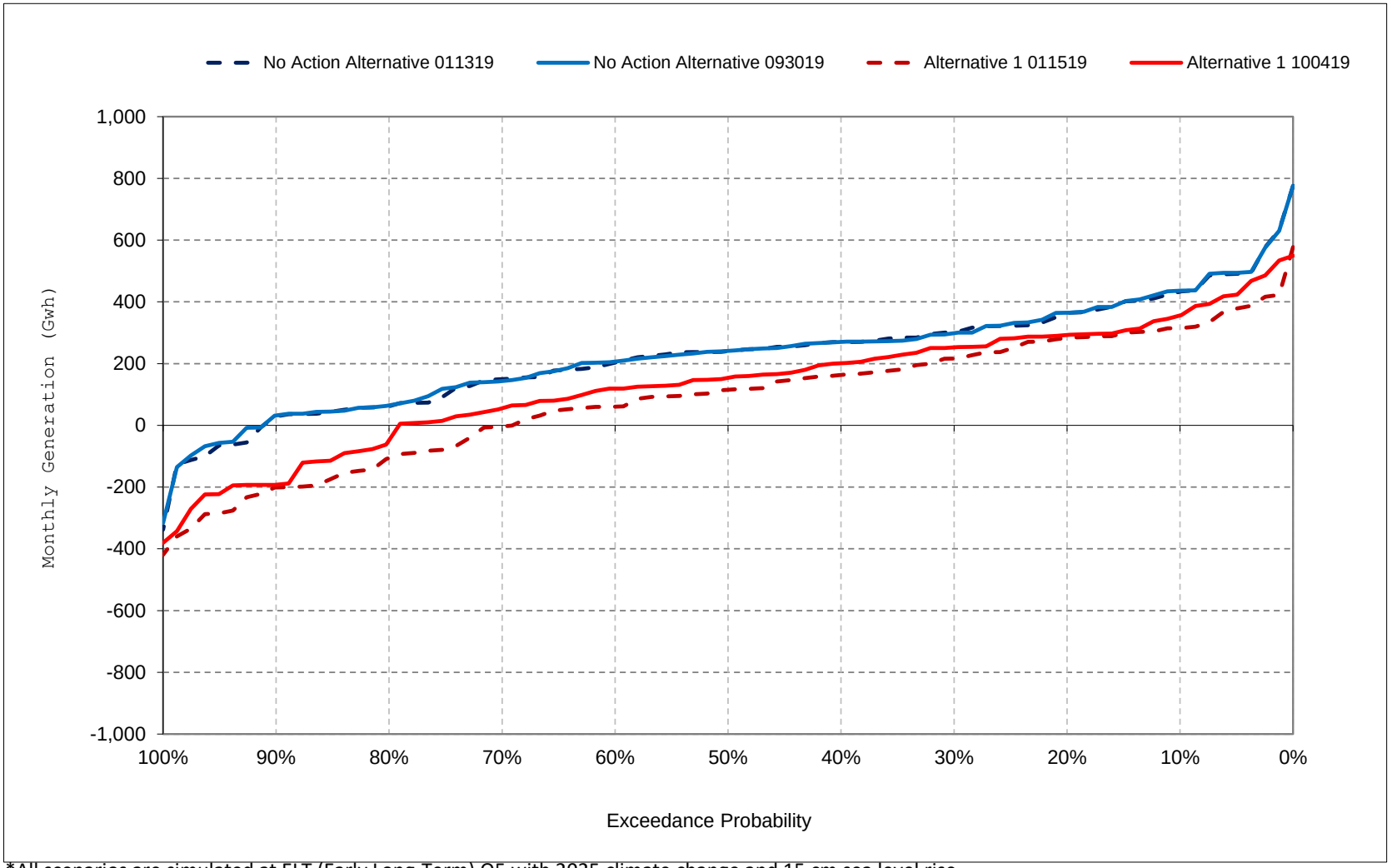

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-13. CVP and SWP Net Generation, April**



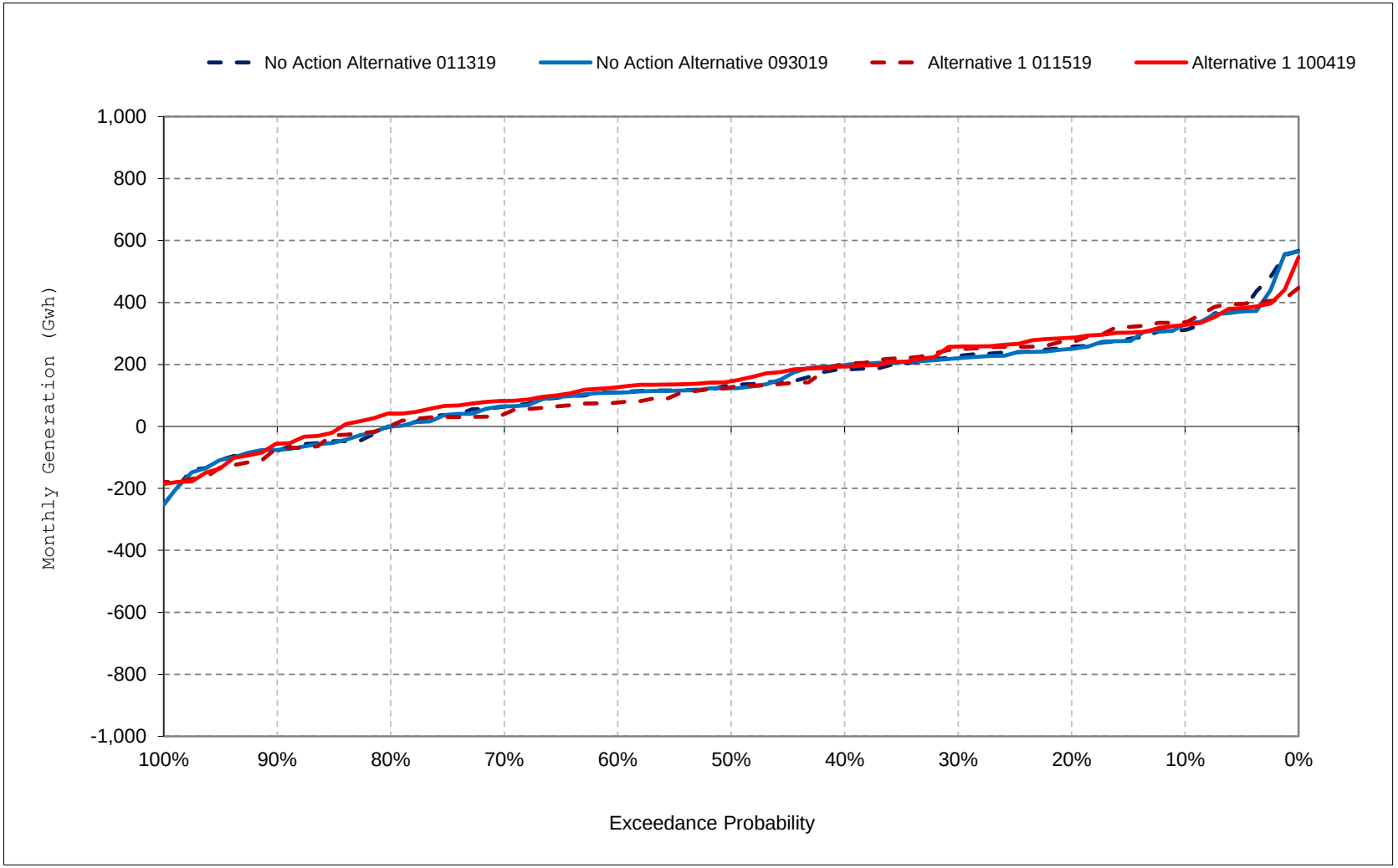

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-14. CVP and SWP Net Generation, May**



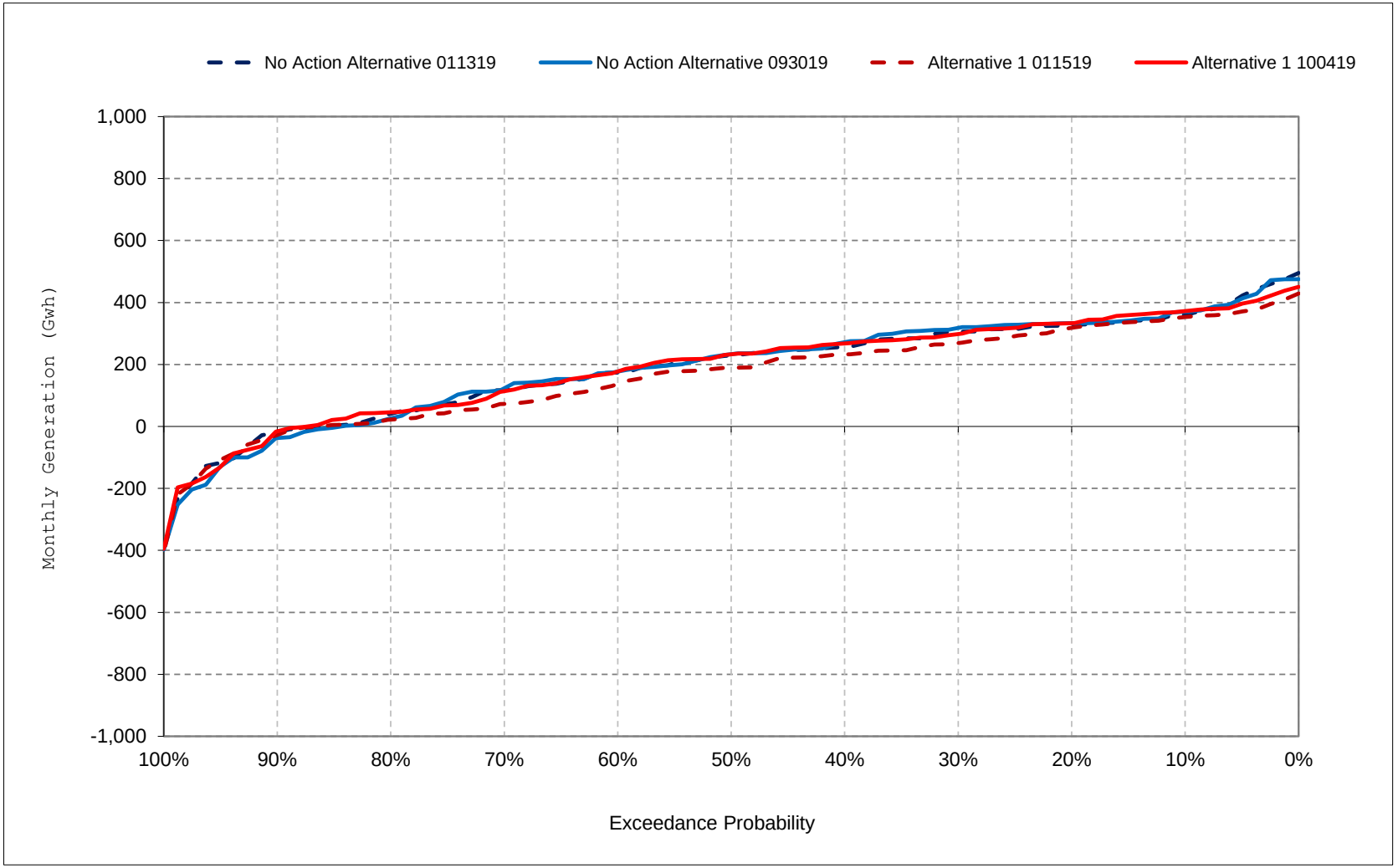

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-15. CVP and SWP Net Generation, June**



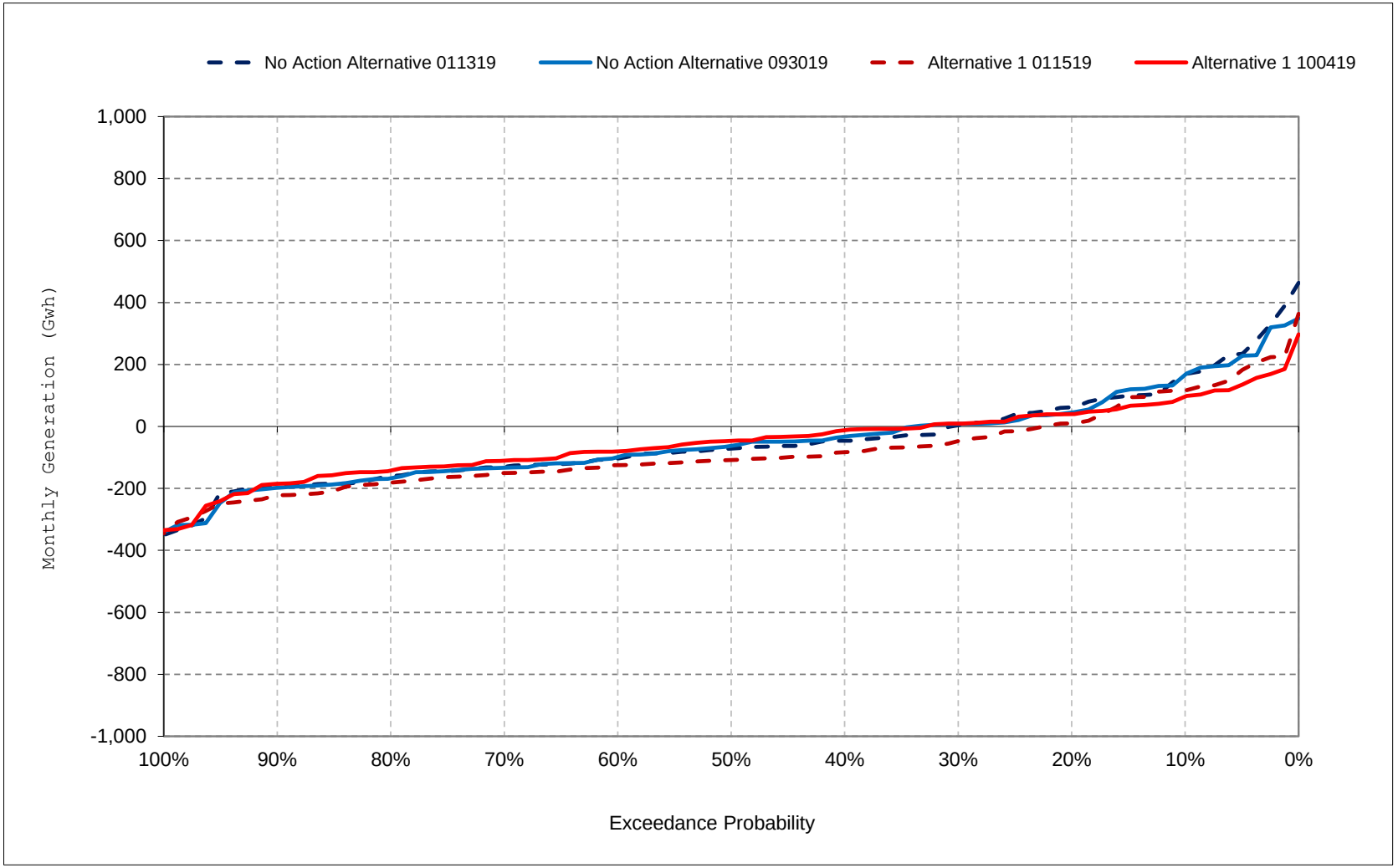

*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-16. CVP and SWP Net Generation, July**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-17. CVP and SWP Net Generation, August**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36-18. CVP and SWP Net Generation, September**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Appendix F1 Revised Alternative 1 Sensitivity Analysis

## Section F1.1.2.13.1 Annual Power Modeling Results (LTGen & SWP Power)

The following results of the LTGen and SWP Power models are included for energy use, energy generation at key project locations for the following alternatives:

- No Action Alternative 011319
- No Action Alternative 093019
- Alternative 1 011519
- Alternative 1 100419

| Title | Model Parameter | Table Numbers | Figure Numbers |
|---|---|---|---|
| CVP Total Generation | CVP_TOTAL | 29a-1 to 29a-4 | 29a-1 |
| CVP Total Energy Use | CVP_TOTAL | 30a-1 to 30a-4 | 30a-1 |
| CVP Net Generation | CVP_TOTAL | 31a-1 to 31a-4 | 31a-1 |
| SWP Total Generation | SWP_TOTAL | 33a-1 to 33a-4 | 33a-1 |
| SWP Total Energy Use | SWP_TOTAL | 34a-1 to 34a-4 | 34a-1 |
| SWP Net Generation | SWP_TOTAL | 35a-1 to 35a-4 | 35a-1 |
| CVP and SWP Net Generation | CVP_SWP_TOTAL | 36a-1 to 36a-4 | 36a-1 |

Report formats

- Exceedance tables comparing power modeling results of two scenarios
- Annual exceedance charts including all scenarios

# Table 29a-1. Annual CVP Total Generation

## No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,453.64 |
| 20% | 5,752.81 |
| 30% | 5,289.48 |
| 40% | 4,966.67 |
| 50% | 4,537.91 |
| 60% | 4,026.35 |
| 70% | 3,666.04 |
| 80% | 3,260.65 |
| 90% | 2,759.49 |
| **Long Term** | |
| Full Simulation Period[a] | 4,526.17 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,133.18 |
| Above Normal (16%) | 5,024.97 |
| Below Normal (13%) | 4,100.68 |
| Dry (24%) | 3,563.00 |
| Critical (15%) | 2,548.30 |

## Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,410.11 |
| 20% | 5,642.62 |
| 30% | 5,173.10 |
| 40% | 4,942.00 |
| 50% | 4,632.99 |
| 60% | 3,971.43 |
| 70% | 3,655.34 |
| 80% | 3,298.21 |
| 90% | 2,872.28 |
| **Long Term** | |
| Full Simulation Period[a] | 4,539.01 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 5,982.94 |
| Above Normal (16%) | 4,986.29 |
| Below Normal (13%) | 4,314.80 |
| Dry (24%) | 3,587.87 |
| Critical (15%) | 2,716.72 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -43.53 |
| 20% | -110.18 |
| 30% | -116.38 |
| 40% | -24.67 |
| 50% | 95.08 |
| 60% | -54.93 |
| 70% | -10.70 |
| 80% | 37.56 |
| 90% | 112.79 |
| **Long Term** | |
| Full Simulation Period[a] | 12.84 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -150.23 |
| Above Normal (16%) | -38.68 |
| Below Normal (13%) | 214.13 |
| Dry (24%) | 24.87 |
| Critical (15%) | 168.42 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 29a-2. Annual CVP Total Generation

## No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,467.00 |
| 20% | 5,763.05 |
| 30% | 5,297.07 |
| 40% | 4,955.23 |
| 50% | 4,521.52 |
| 60% | 3,989.61 |
| 70% | 3,661.76 |
| 80% | 3,274.59 |
| 90% | 2,778.53 |
| **Long Term** | |
| Full Simulation Period[a] | 4,529.22 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,126.73 |
| Above Normal (16%) | 4,998.17 |
| Below Normal (13%) | 4,107.03 |
| Dry (24%) | 3,553.36 |
| Critical (15%) | 2,573.38 |

## Alternative 1 100419

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,371.95 |
| 20% | 5,715.48 |
| 30% | 5,252.43 |
| 40% | 4,999.77 |
| 50% | 4,577.47 |
| 60% | 3,906.32 |
| 70% | 3,593.88 |
| 80% | 3,309.96 |
| 90% | 2,867.31 |
| **Long Term** | |
| Full Simulation Period[a] | 4,527.76 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 5,987.39 |
| Above Normal (16%) | 5,066.58 |
| Below Normal (13%) | 4,220.12 |
| Dry (24%) | 3,539.49 |
| Critical (15%) | 2,710.59 |

## Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -95.05 |
| 20% | -47.58 |
| 30% | -44.64 |
| 40% | 44.54 |
| 50% | 55.95 |
| 60% | -83.29 |
| 70% | -67.87 |
| 80% | 35.37 |
| 90% | 88.78 |
| **Long Term** | |
| Full Simulation Period[a] | -1.47 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -139.33 |
| Above Normal (16%) | 68.41 |
| Below Normal (13%) | 113.10 |
| Dry (24%) | -13.87 |
| Critical (15%) | 137.20 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 29a-3. Annual CVP Total Generation

## No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,453.64 |
| 20% | 5,752.81 |
| 30% | 5,289.48 |
| 40% | 4,966.67 |
| 50% | 4,537.91 |
| 60% | 4,026.35 |
| 70% | 3,666.04 |
| 80% | 3,260.65 |
| 90% | 2,759.49 |
| **Long Term** | |
| Full Simulation Period[a] | 4,526.17 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,133.18 |
| Above Normal (16%) | 5,024.97 |
| Below Normal (13%) | 4,100.68 |
| Dry (24%) | 3,563.00 |
| Critical (15%) | 2,548.30 |

## No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,467.00 |
| 20% | 5,763.05 |
| 30% | 5,297.07 |
| 40% | 4,955.23 |
| 50% | 4,521.52 |
| 60% | 3,989.61 |
| 70% | 3,661.76 |
| 80% | 3,274.59 |
| 90% | 2,778.53 |
| **Long Term** | |
| Full Simulation Period[a] | 4,529.22 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,126.73 |
| Above Normal (16%) | 4,998.17 |
| Below Normal (13%) | 4,107.03 |
| Dry (24%) | 3,553.36 |
| Critical (15%) | 2,573.38 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 13.36 |
| 20% | 10.25 |
| 30% | 7.59 |
| 40% | -11.43 |
| 50% | -16.39 |
| 60% | -36.75 |
| 70% | -4.28 |
| 80% | 13.94 |
| 90% | 19.04 |
| **Long Term** | |
| Full Simulation Period[a] | 3.05 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -6.45 |
| Above Normal (16%) | -26.79 |
| Below Normal (13%) | 6.35 |
| Dry (24%) | -9.64 |
| Critical (15%) | 25.09 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 29a-4. Annual CVP Total Generation

## Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,410.11 |
| 20% | 5,642.62 |
| 30% | 5,173.10 |
| 40% | 4,942.00 |
| 50% | 4,632.99 |
| 60% | 3,971.43 |
| 70% | 3,655.34 |
| 80% | 3,298.21 |
| 90% | 2,872.28 |
| **Long Term** | |
| Full Simulation Period[a] | 4,539.01 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 5,982.94 |
| Above Normal (16%) | 4,986.29 |
| Below Normal (13%) | 4,314.80 |
| Dry (24%) | 3,587.87 |
| Critical (15%) | 2,716.72 |

## Alternative 1 100419

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,371.95 |
| 20% | 5,715.48 |
| 30% | 5,252.43 |
| 40% | 4,999.77 |
| 50% | 4,577.47 |
| 60% | 3,906.32 |
| 70% | 3,593.88 |
| 80% | 3,309.96 |
| 90% | 2,867.31 |
| **Long Term** | |
| Full Simulation Period[a] | 4,527.76 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 5,987.39 |
| Above Normal (16%) | 5,066.58 |
| Below Normal (13%) | 4,220.12 |
| Dry (24%) | 3,539.49 |
| Critical (15%) | 2,710.59 |

## Alternative 1 100419 minus Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -38.16 |
| 20% | 72.85 |
| 30% | 79.33 |
| 40% | 57.77 |
| 50% | -55.51 |
| 60% | -65.11 |
| 70% | -61.45 |
| 80% | 11.76 |
| 90% | -4.97 |
| **Long Term** | |
| Full Simulation Period[a] | -11.26 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4.45 |
| Above Normal (16%) | 80.29 |
| Below Normal (13%) | -94.68 |
| Dry (24%) | -48.38 |
| Critical (15%) | -6.13 |

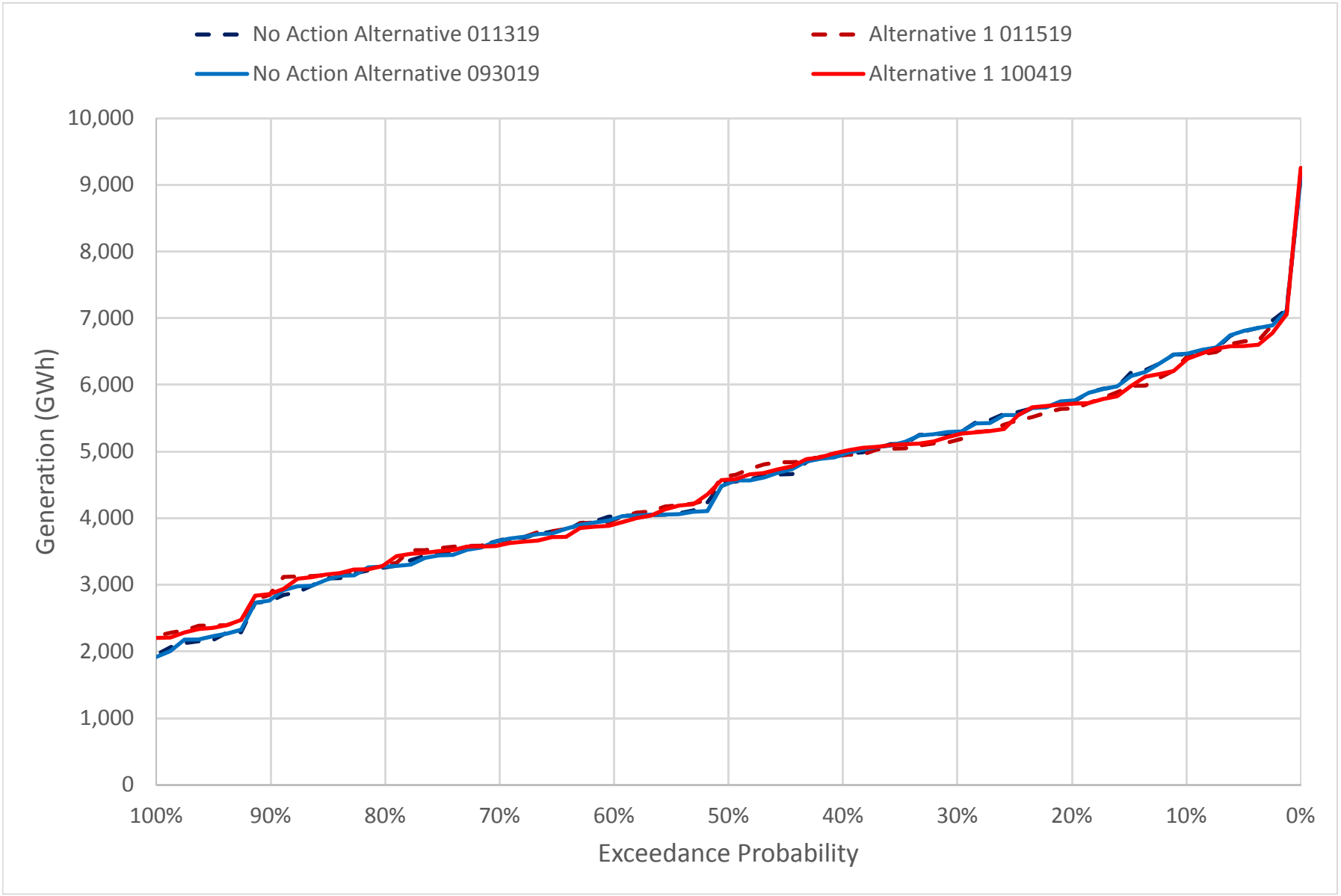
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 29a-1. October-September CVP Total Generation**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 30a-1. Annual CVP Total Energy Use

## No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,496.28 |
| 20% | 1,421.06 |
| 30% | 1,365.89 |
| 40% | 1,291.42 |
| 50% | 1,242.70 |
| 60% | 1,200.04 |
| 70% | 1,114.48 |
| 80% | 1,015.57 |
| 90% | 828.57 |
| **Long Term** | |
| Full Simulation Period[a] | 1,205.94 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,439.03 |
| Above Normal (16%) | 1,274.73 |
| Below Normal (13%) | 1,180.64 |
| Dry (24%) | 1,124.43 |
| Critical (15%) | 792.27 |

## Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,605.56 |
| 20% | 1,531.01 |
| 30% | 1,485.21 |
| 40% | 1,444.03 |
| 50% | 1,376.90 |
| 60% | 1,300.08 |
| 70% | 1,206.76 |
| 80% | 1,105.97 |
| 90% | 989.97 |
| **Long Term** | |
| Full Simulation Period[a] | 1,321.77 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,548.26 |
| Above Normal (16%) | 1,391.57 |
| Below Normal (13%) | 1,366.80 |
| Dry (24%) | 1,220.01 |
| Critical (15%) | 883.73 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 109.28 |
| 20% | 109.95 |
| 30% | 119.31 |
| 40% | 152.61 |
| 50% | 134.20 |
| 60% | 100.04 |
| 70% | 92.29 |
| 80% | 90.40 |
| 90% | 161.40 |
| **Long Term** | |
| Full Simulation Period[a] | 115.83 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 109.24 |
| Above Normal (16%) | 116.84 |
| Below Normal (13%) | 186.16 |
| Dry (24%) | 95.58 |
| Critical (15%) | 91.47 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 30a-2. Annual CVP Total Energy Use

### No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,506.61 |
| 20% | 1,421.49 |
| 30% | 1,368.41 |
| 40% | 1,287.46 |
| 50% | 1,232.22 |
| 60% | 1,178.96 |
| 70% | 1,120.10 |
| 80% | 1,004.66 |
| 90% | 838.07 |
| **Long Term** | |
| Full Simulation Period[a] | 1,205.86 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,438.59 |
| Above Normal (16%) | 1,266.45 |
| Below Normal (13%) | 1,189.35 |
| Dry (24%) | 1,116.01 |
| Critical (15%) | 800.86 |

### Alternative 1 100419

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,553.64 |
| 20% | 1,465.93 |
| 30% | 1,393.86 |
| 40% | 1,329.76 |
| 50% | 1,260.90 |
| 60% | 1,212.33 |
| 70% | 1,169.12 |
| 80% | 1,072.99 |
| 90% | 908.04 |
| **Long Term** | |
| Full Simulation Period[a] | 1,251.40 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,484.23 |
| Above Normal (16%) | 1,295.09 |
| Below Normal (13%) | 1,255.17 |
| Dry (24%) | 1,149.44 |
| Critical (15%) | 866.08 |

### Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 47.04 |
| 20% | 44.44 |
| 30% | 25.45 |
| 40% | 42.30 |
| 50% | 28.68 |
| 60% | 33.37 |
| 70% | 49.02 |
| 80% | 68.33 |
| 90% | 69.97 |
| **Long Term** | |
| Full Simulation Period[a] | 45.54 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 45.64 |
| Above Normal (16%) | 28.63 |
| Below Normal (13%) | 65.82 |
| Dry (24%) | 33.43 |
| Critical (15%) | 65.22 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 30a-3. Annual CVP Total Energy Use

## No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,496.28 |
| 20% | 1,421.06 |
| 30% | 1,365.89 |
| 40% | 1,291.42 |
| 50% | 1,242.70 |
| 60% | 1,200.04 |
| 70% | 1,114.48 |
| 80% | 1,015.57 |
| 90% | 828.57 |
| **Long Term** | |
| Full Simulation Period[a] | 1,205.94 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,439.03 |
| Above Normal (16%) | 1,274.73 |
| Below Normal (13%) | 1,180.64 |
| Dry (24%) | 1,124.43 |
| Critical (15%) | 792.27 |

## No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,506.61 |
| 20% | 1,421.49 |
| 30% | 1,368.41 |
| 40% | 1,287.46 |
| 50% | 1,232.22 |
| 60% | 1,178.96 |
| 70% | 1,120.10 |
| 80% | 1,004.66 |
| 90% | 838.07 |
| **Long Term** | |
| Full Simulation Period[a] | 1,205.86 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,438.59 |
| Above Normal (16%) | 1,266.45 |
| Below Normal (13%) | 1,189.35 |
| Dry (24%) | 1,116.01 |
| Critical (15%) | 800.86 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 10.32 |
| 20% | 0.43 |
| 30% | 2.52 |
| 40% | -3.96 |
| 50% | -10.48 |
| 60% | -21.08 |
| 70% | 5.62 |
| 80% | -10.91 |
| 90% | 9.50 |
| **Long Term** | |
| Full Simulation Period[a] | -0.08 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -0.44 |
| Above Normal (16%) | -8.27 |
| Below Normal (13%) | 8.72 |
| Dry (24%) | -8.42 |
| Critical (15%) | 8.59 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 30a-4. Annual CVP Total Energy Use

## Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,605.56 |
| 20% | 1,531.01 |
| 30% | 1,485.21 |
| 40% | 1,444.03 |
| 50% | 1,376.90 |
| 60% | 1,300.08 |
| 70% | 1,206.76 |
| 80% | 1,105.97 |
| 90% | 989.97 |
| **Long Term** | |
| Full Simulation Period[a] | 1,321.77 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,548.26 |
| Above Normal (16%) | 1,391.57 |
| Below Normal (13%) | 1,366.80 |
| Dry (24%) | 1,220.01 |
| Critical (15%) | 883.73 |

## Alternative 1 100419

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,553.64 |
| 20% | 1,465.93 |
| 30% | 1,393.86 |
| 40% | 1,329.76 |
| 50% | 1,260.90 |
| 60% | 1,212.33 |
| 70% | 1,169.12 |
| 80% | 1,072.99 |
| 90% | 908.04 |
| **Long Term** | |
| Full Simulation Period[a] | 1,251.40 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,484.23 |
| Above Normal (16%) | 1,295.09 |
| Below Normal (13%) | 1,255.17 |
| Dry (24%) | 1,149.44 |
| Critical (15%) | 866.08 |

## Alternative 1 100419 minus Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -51.92 |
| 20% | -65.08 |
| 30% | -91.34 |
| 40% | -114.26 |
| 50% | -116.00 |
| 60% | -87.75 |
| 70% | -37.65 |
| 80% | -32.98 |
| 90% | -81.93 |
| **Long Term** | |
| Full Simulation Period[a] | -70.37 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -64.03 |
| Above Normal (16%) | -96.49 |
| Below Normal (13%) | -111.62 |
| Dry (24%) | -70.57 |
| Critical (15%) | -17.66 |

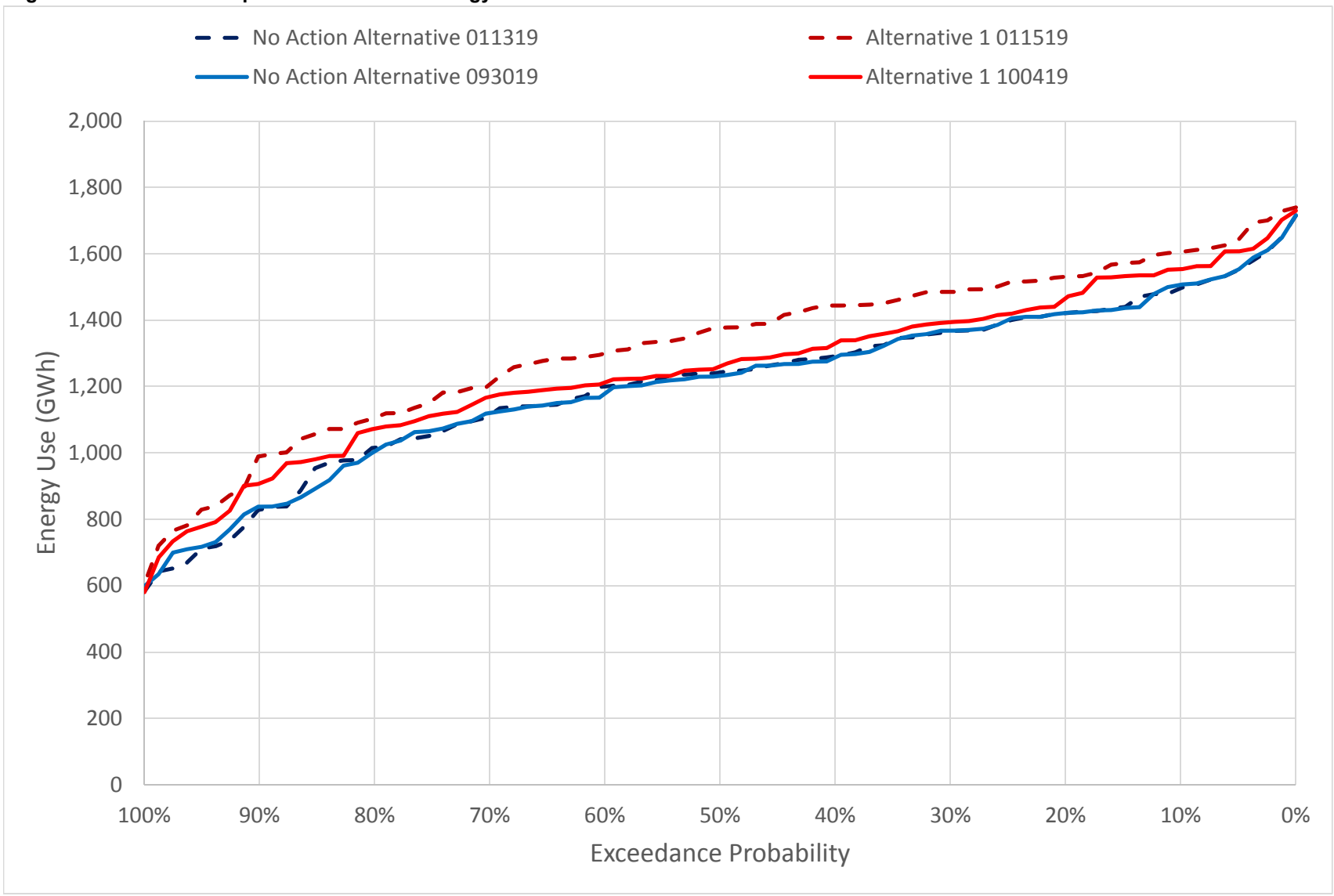
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 30a-1. October-September CVP Total Energy Use**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 31a-1. Annual CVP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 5,005.52 |
| 20% | 4,409.15 |
| 30% | 4,018.51 |
| 40% | 3,624.22 |
| 50% | 3,246.79 |
| 60% | 2,790.93 |
| 70% | 2,558.25 |
| 80% | 2,253.60 |
| 90% | 1,894.42 |
| **Long Term** | |
| Full Simulation Period[a] | 3,320.23 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,694.15 |
| Above Normal (16%) | 3,750.24 |
| Below Normal (13%) | 2,920.04 |
| Dry (24%) | 2,438.57 |
| Critical (15%) | 1,756.03 |

## Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 4,870.17 |
| 20% | 4,186.04 |
| 30% | 3,785.98 |
| 40% | 3,566.60 |
| 50% | 3,156.81 |
| 60% | 2,639.32 |
| 70% | 2,463.14 |
| 80% | 2,184.21 |
| 90% | 1,897.10 |
| **Long Term** | |
| Full Simulation Period[a] | 3,217.24 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,434.68 |
| Above Normal (16%) | 3,594.71 |
| Below Normal (13%) | 2,948.01 |
| Dry (24%) | 2,367.86 |
| Critical (15%) | 1,832.98 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -135.35 |
| 20% | -223.12 |
| 30% | -232.53 |
| 40% | -57.63 |
| 50% | -89.98 |
| 60% | -151.61 |
| 70% | -95.11 |
| 80% | -69.39 |
| 90% | 2.68 |
| **Long Term** | |
| Full Simulation Period[a] | -102.99 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -259.47 |
| Above Normal (16%) | -155.52 |
| Below Normal (13%) | 27.97 |
| Dry (24%) | -70.71 |
| Critical (15%) | 76.95 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 31a-2. Annual CVP Net Generation

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 5,019.01 |
| 20% | 4,409.92 |
| 30% | 4,003.96 |
| 40% | 3,656.05 |
| 50% | 3,236.78 |
| 60% | 2,754.05 |
| 70% | 2,562.57 |
| 80% | 2,249.24 |
| 90% | 1,894.71 |
| **Long Term** | |
| Full Simulation Period[a] | 3,323.36 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,688.13 |
| Above Normal (16%) | 3,731.72 |
| Below Normal (13%) | 2,917.67 |
| Dry (24%) | 2,437.35 |
| Critical (15%) | 1,772.53 |

## Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 4,852.13 |
| 20% | 4,270.28 |
| 30% | 3,837.50 |
| 40% | 3,701.82 |
| 50% | 3,170.42 |
| 60% | 2,692.55 |
| 70% | 2,454.12 |
| 80% | 2,208.10 |
| 90% | 1,917.88 |
| **Long Term** | |
| Full Simulation Period[a] | 3,276.36 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,503.16 |
| Above Normal (16%) | 3,771.49 |
| Below Normal (13%) | 2,964.95 |
| Dry (24%) | 2,390.05 |
| Critical (15%) | 1,844.51 |

## Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -166.88 |
| 20% | -139.65 |
| 30% | -166.47 |
| 40% | 45.77 |
| 50% | -66.35 |
| 60% | -61.50 |
| 70% | -108.45 |
| 80% | -41.14 |
| 90% | 23.17 |
| **Long Term** | |
| Full Simulation Period[a] | -47.00 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -184.97 |
| Above Normal (16%) | 39.77 |
| Below Normal (13%) | 47.28 |
| Dry (24%) | -47.30 |
| Critical (15%) | 71.98 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 31a-3. Annual CVP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 5,005.52 |
| 20% | 4,409.15 |
| 30% | 4,018.51 |
| 40% | 3,624.22 |
| 50% | 3,246.79 |
| 60% | 2,790.93 |
| 70% | 2,558.25 |
| 80% | 2,253.60 |
| 90% | 1,894.42 |
| **Long Term** | |
| Full Simulation Period[a] | 3,320.23 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 4,694.15 |
| Above Normal (16%) | 3,750.24 |
| Below Normal (13%) | 2,920.04 |
| Dry (24%) | 2,438.57 |
| Critical (15%) | 1,756.03 |

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 5,019.01 |
| 20% | 4,409.92 |
| 30% | 4,003.96 |
| 40% | 3,656.05 |
| 50% | 3,236.78 |
| 60% | 2,754.05 |
| 70% | 2,562.57 |
| 80% | 2,249.24 |
| 90% | 1,894.71 |
| **Long Term** | |
| Full Simulation Period[a] | 3,323.36 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 4,688.13 |
| Above Normal (16%) | 3,731.72 |
| Below Normal (13%) | 2,917.67 |
| Dry (24%) | 2,437.35 |
| Critical (15%) | 1,772.53 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | 13.49 |
| 20% | 0.77 |
| 30% | -14.55 |
| 40% | 31.83 |
| 50% | -10.01 |
| 60% | -36.89 |
| 70% | 4.32 |
| 80% | -4.36 |
| 90% | 0.29 |
| **Long Term** | |
| Full Simulation Period[a] | 3.13 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -6.01 |
| Above Normal (16%) | -18.52 |
| Below Normal (13%) | -2.36 |
| Dry (24%) | -1.22 |
| Critical (15%) | 16.49 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 31a-4. Annual CVP Net Generation

## Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 4,870.17 |
| 20% | 4,186.04 |
| 30% | 3,785.98 |
| 40% | 3,566.60 |
| 50% | 3,156.81 |
| 60% | 2,639.32 |
| 70% | 2,463.14 |
| 80% | 2,184.21 |
| 90% | 1,897.10 |
| **Long Term** | |
| Full Simulation Period[a] | 3,217.24 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,434.68 |
| Above Normal (16%) | 3,594.71 |
| Below Normal (13%) | 2,948.01 |
| Dry (24%) | 2,367.86 |
| Critical (15%) | 1,832.98 |

## Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 4,852.13 |
| 20% | 4,270.28 |
| 30% | 3,837.50 |
| 40% | 3,701.82 |
| 50% | 3,170.42 |
| 60% | 2,692.55 |
| 70% | 2,454.12 |
| 80% | 2,208.10 |
| 90% | 1,917.88 |
| **Long Term** | |
| Full Simulation Period[a] | 3,276.36 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4,503.16 |
| Above Normal (16%) | 3,771.49 |
| Below Normal (13%) | 2,964.95 |
| Dry (24%) | 2,390.05 |
| Critical (15%) | 1,844.51 |

## Alternative 1 100419 minus Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -18.04 |
| 20% | 84.24 |
| 30% | 51.52 |
| 40% | 135.23 |
| 50% | 13.61 |
| 60% | 53.23 |
| 70% | -9.02 |
| 80% | 23.88 |
| 90% | 20.78 |
| **Long Term** | |
| Full Simulation Period[a] | 59.11 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 68.48 |
| Above Normal (16%) | 176.78 |
| Below Normal (13%) | 16.95 |
| Dry (24%) | 22.19 |
| Critical (15%) | 11.53 |

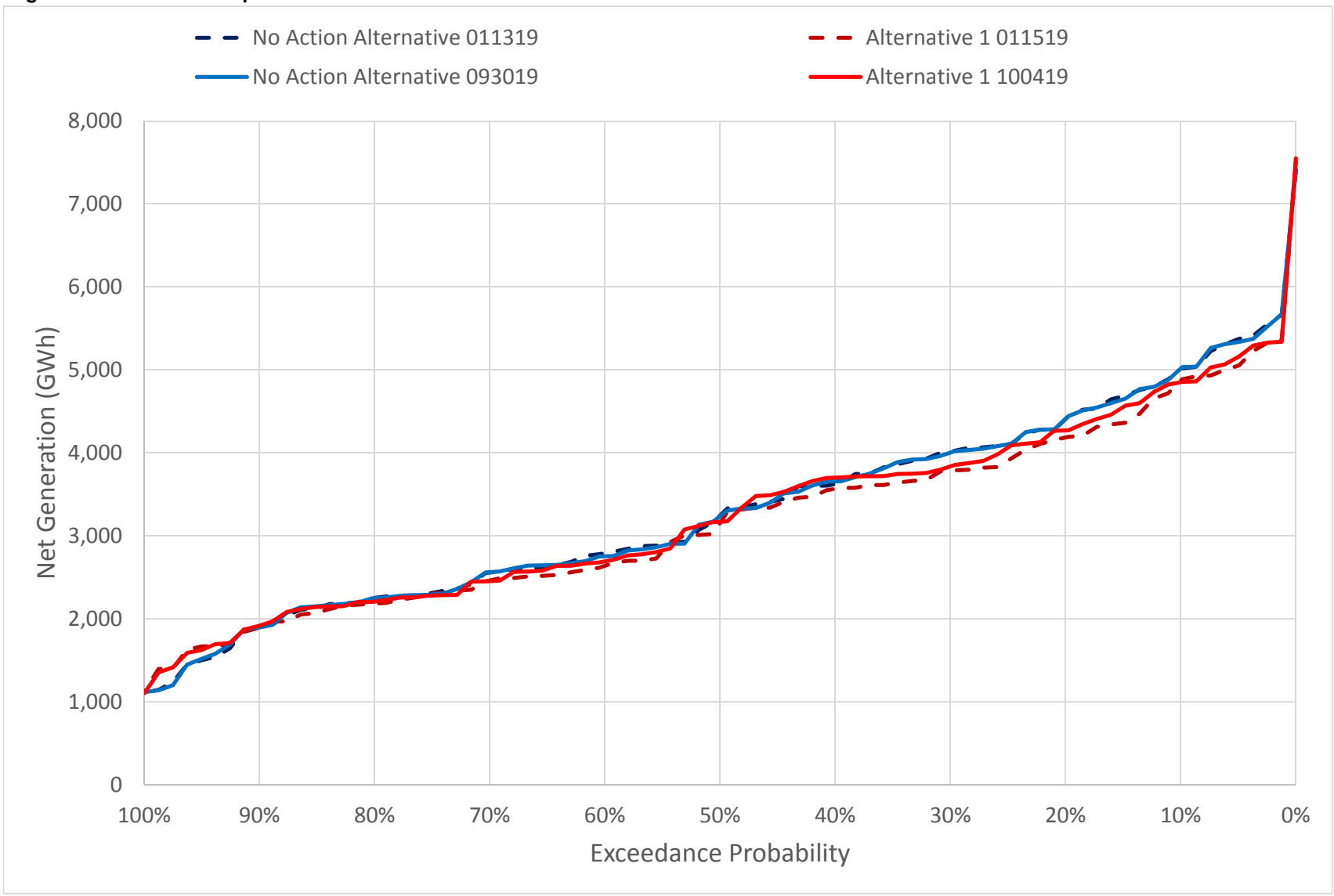
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 31a-1. October-September CVP Net Generation**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 33a-1. Annual SWP Total Generation

## No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,284.08 |
| 20% | 5,824.89 |
| 30% | 5,185.98 |
| 40% | 4,353.40 |
| 50% | 4,082.44 |
| 60% | 3,463.96 |
| 70% | 3,000.77 |
| 80% | 2,541.22 |
| 90% | 1,977.63 |
| **Long Term** | |
| Full Simulation Period[a] | 4,073.60 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,021.83 |
| Above Normal (16%) | 4,422.83 |
| Below Normal (13%) | 3,772.55 |
| Dry (24%) | 2,854.12 |
| Critical (15%) | 1,784.30 |

## Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,665.89 |
| 20% | 5,972.50 |
| 30% | 5,402.33 |
| 40% | 4,904.57 |
| 50% | 4,494.69 |
| 60% | 3,802.85 |
| 70% | 3,213.03 |
| 80% | 2,690.18 |
| 90% | 2,026.97 |
| **Long Term** | |
| Full Simulation Period[a] | 4,348.89 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,169.60 |
| Above Normal (16%) | 4,904.85 |
| Below Normal (13%) | 4,300.43 |
| Dry (24%) | 3,099.15 |
| Critical (15%) | 1,929.03 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 381.82 |
| 20% | 147.60 |
| 30% | 216.35 |
| 40% | 551.18 |
| 50% | 412.25 |
| 60% | 338.89 |
| 70% | 212.26 |
| 80% | 148.96 |
| 90% | 49.34 |
| **Long Term** | |
| Full Simulation Period[a] | 275.28 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 147.77 |
| Above Normal (16%) | 482.02 |
| Below Normal (13%) | 527.88 |
| Dry (24%) | 245.03 |
| Critical (15%) | 144.73 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 33a-2. Annual SWP Total Generation

## No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,265.43 |
| 20% | 5,780.71 |
| 30% | 5,136.08 |
| 40% | 4,342.96 |
| 50% | 4,065.71 |
| 60% | 3,491.72 |
| 70% | 2,941.83 |
| 80% | 2,462.39 |
| 90% | 1,843.69 |
| **Long Term** | |
| Full Simulation Period[a] | 4,043.77 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,006.76 |
| Above Normal (16%) | 4,407.38 |
| Below Normal (13%) | 3,777.03 |
| Dry (24%) | 2,793.86 |
| Critical (15%) | 1,724.42 |

## Alternative 1 100419

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,405.55 |
| 20% | 5,718.60 |
| 30% | 5,163.12 |
| 40% | 4,499.79 |
| 50% | 4,196.35 |
| 60% | 3,668.83 |
| 70% | 3,139.57 |
| 80% | 2,603.81 |
| 90% | 2,104.60 |
| **Long Term** | |
| Full Simulation Period[a] | 4,184.26 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,011.50 |
| Above Normal (16%) | 4,430.47 |
| Below Normal (13%) | 4,093.39 |
| Dry (24%) | 3,065.70 |
| Critical (15%) | 1,906.06 |

## Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 140.12 |
| 20% | -62.11 |
| 30% | 27.05 |
| 40% | 156.83 |
| 50% | 130.64 |
| 60% | 177.10 |
| 70% | 197.75 |
| 80% | 141.42 |
| 90% | 260.91 |
| **Long Term** | |
| Full Simulation Period[a] | 140.49 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 4.74 |
| Above Normal (16%) | 23.09 |
| Below Normal (13%) | 316.36 |
| Dry (24%) | 271.84 |
| Critical (15%) | 181.63 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 33a-3. Annual SWP Total Generation

## No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,284.08 |
| 20% | 5,824.89 |
| 30% | 5,185.98 |
| 40% | 4,353.40 |
| 50% | 4,082.44 |
| 60% | 3,463.96 |
| 70% | 3,000.77 |
| 80% | 2,541.22 |
| 90% | 1,977.63 |
| **Long Term** | |
| Full Simulation Period[a] | 4,073.60 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 6,021.83 |
| Above Normal (16%) | 4,422.83 |
| Below Normal (13%) | 3,772.55 |
| Dry (24%) | 2,854.12 |
| Critical (15%) | 1,784.30 |

## No Action Alternative 093019

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,265.43 |
| 20% | 5,780.71 |
| 30% | 5,136.08 |
| 40% | 4,342.96 |
| 50% | 4,065.71 |
| 60% | 3,491.72 |
| 70% | 2,941.83 |
| 80% | 2,462.39 |
| 90% | 1,843.69 |
| **Long Term** | |
| Full Simulation Period[a] | 4,043.77 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 6,006.76 |
| Above Normal (16%) | 4,407.38 |
| Below Normal (13%) | 3,777.03 |
| Dry (24%) | 2,793.86 |
| Critical (15%) | 1,724.42 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | -18.64 |
| 20% | -44.18 |
| 30% | -49.90 |
| 40% | -10.44 |
| 50% | -16.72 |
| 60% | 27.76 |
| 70% | -58.94 |
| 80% | -78.83 |
| 90% | -133.95 |
| **Long Term** | |
| Full Simulation Period[a] | -29.83 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -15.07 |
| Above Normal (16%) | -15.45 |
| Below Normal (13%) | 4.48 |
| Dry (24%) | -60.26 |
| Critical (15%) | -59.88 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 33a-4. Annual SWP Total Generation

## Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,665.89 |
| 20% | 5,972.50 |
| 30% | 5,402.33 |
| 40% | 4,904.57 |
| 50% | 4,494.69 |
| 60% | 3,802.85 |
| 70% | 3,213.03 |
| 80% | 2,690.18 |
| 90% | 2,026.97 |
| **Long Term** | |
| Full Simulation Period[a] | 4,348.89 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,169.60 |
| Above Normal (16%) | 4,904.85 |
| Below Normal (13%) | 4,300.43 |
| Dry (24%) | 3,099.15 |
| Critical (15%) | 1,929.03 |

## Alternative 1 100419

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 6,405.55 |
| 20% | 5,718.60 |
| 30% | 5,163.12 |
| 40% | 4,499.79 |
| 50% | 4,196.35 |
| 60% | 3,668.83 |
| 70% | 3,139.57 |
| 80% | 2,603.81 |
| 90% | 2,104.60 |
| **Long Term** | |
| Full Simulation Period[a] | 4,184.26 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 6,011.50 |
| Above Normal (16%) | 4,430.47 |
| Below Normal (13%) | 4,093.39 |
| Dry (24%) | 3,065.70 |
| Critical (15%) | 1,906.06 |

## Alternative 1 100419 minus Alternative 1 011519

| Statistic | Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -260.34 |
| 20% | -253.90 |
| 30% | -239.21 |
| 40% | -404.79 |
| 50% | -298.34 |
| 60% | -134.02 |
| 70% | -73.46 |
| 80% | -86.37 |
| 90% | 77.63 |
| **Long Term** | |
| Full Simulation Period[a] | -164.63 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -158.10 |
| Above Normal (16%) | -474.38 |
| Below Normal (13%) | -207.04 |
| Dry (24%) | -33.45 |
| Critical (15%) | -22.97 |

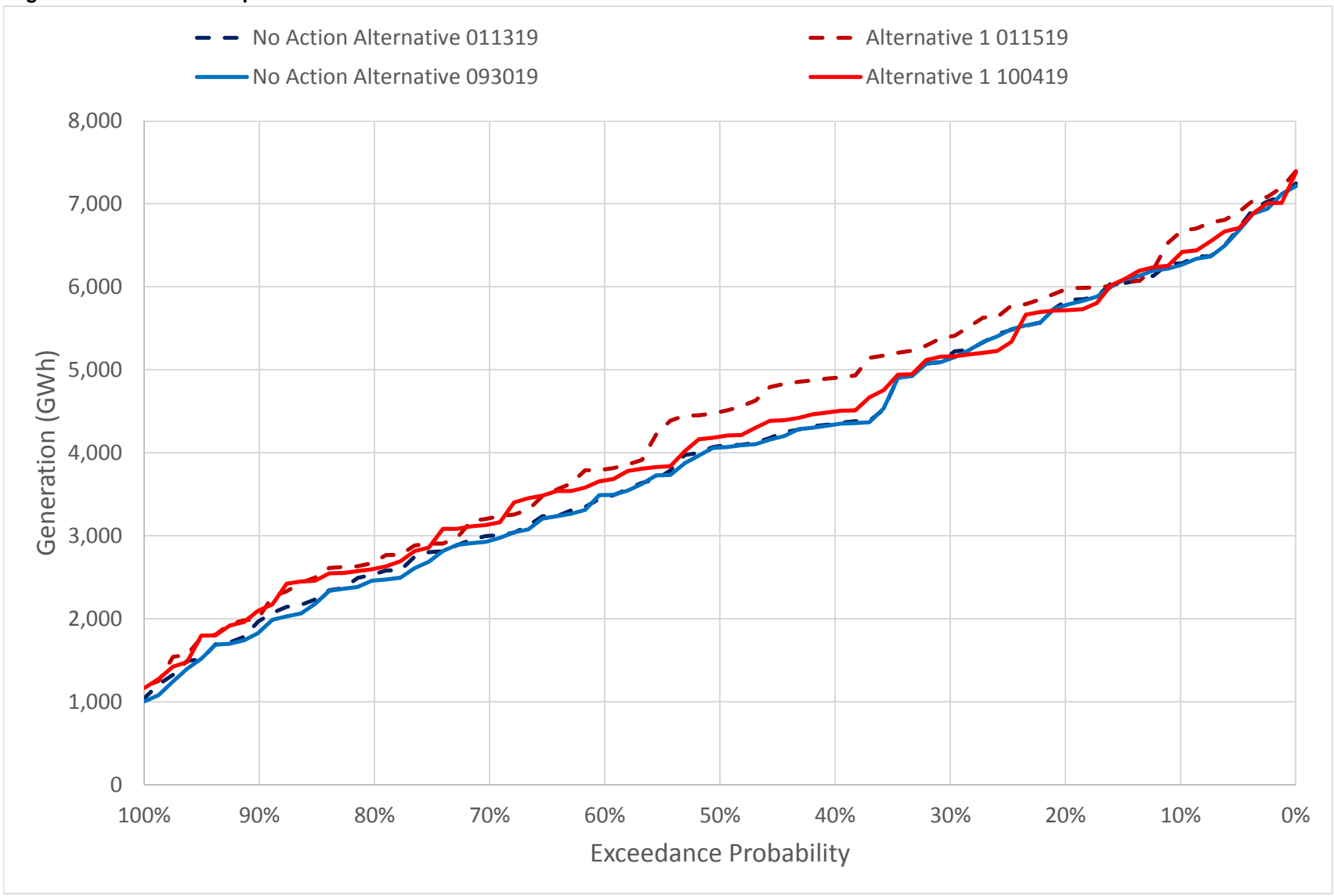
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 33a-1. October-September SWP Total Generation**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 34a-1. Annual SWP Total Energy Use

## No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,582.90 |
| 20% | 9,671.49 |
| 30% | 8,884.03 |
| 40% | 8,377.41 |
| 50% | 7,442.86 |
| 60% | 6,643.33 |
| 70% | 5,829.12 |
| 80% | 4,909.77 |
| 90% | 3,533.14 |
| **Long Term** | |
| Full Simulation Period[a] | 7,310.36 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 9,918.66 |
| Above Normal (16%) | 8,000.56 |
| Below Normal (13%) | 7,504.91 |
| Dry (24%) | 5,611.86 |
| Critical (15%) | 3,519.90 |

## Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 11,790.33 |
| 20% | 11,083.62 |
| 30% | 10,315.87 |
| 40% | 9,863.44 |
| 50% | 9,089.36 |
| 60% | 7,879.63 |
| 70% | 6,376.60 |
| 80% | 5,438.63 |
| 90% | 4,134.89 |
| **Long Term** | |
| Full Simulation Period[a] | 8,376.53 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 11,029.32 |
| Above Normal (16%) | 9,682.99 |
| Below Normal (13%) | 8,990.52 |
| Dry (24%) | 6,360.49 |
| Critical (15%) | 4,010.72 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 1,207.42 |
| 20% | 1,412.12 |
| 30% | 1,431.84 |
| 40% | 1,486.04 |
| 50% | 1,646.49 |
| 60% | 1,236.29 |
| 70% | 547.48 |
| 80% | 528.86 |
| 90% | 601.76 |
| **Long Term** | |
| Full Simulation Period[a] | 1,066.17 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 1,110.66 |
| Above Normal (16%) | 1,682.43 |
| Below Normal (13%) | 1,485.60 |
| Dry (24%) | 748.63 |
| Critical (15%) | 490.83 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 34a2. Annual SWP Total Energy Use

### No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,587.52 |
| 20% | 9,526.55 |
| 30% | 8,836.50 |
| 40% | 8,381.86 |
| 50% | 7,401.48 |
| 60% | 6,764.94 |
| 70% | 5,810.74 |
| 80% | 4,695.99 |
| 90% | 3,588.82 |
| **Long Term** | |
| Full Simulation Period[a] | 7,241.83 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 9,896.99 |
| Above Normal (16%) | 7,977.23 |
| Below Normal (13%) | 7,508.03 |
| Dry (24%) | 5,455.14 |
| Critical (15%) | 3,426.10 |

### Alternative 1 100419

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,993.80 |
| 20% | 10,143.95 |
| 30% | 9,410.18 |
| 40% | 8,919.68 |
| 50% | 7,883.95 |
| 60% | 7,070.89 |
| 70% | 6,334.09 |
| 80% | 5,135.50 |
| 90% | 4,237.51 |
| **Long Term** | |
| Full Simulation Period[a] | 7,745.02 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 10,279.89 |
| Above Normal (16%) | 8,299.24 |
| Below Normal (13%) | 8,359.98 |
| Dry (24%) | 6,097.04 |
| Critical (15%) | 3,835.32 |

### Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 406.28 |
| 20% | 617.40 |
| 30% | 573.68 |
| 40% | 537.82 |
| 50% | 482.46 |
| 60% | 305.95 |
| 70% | 523.34 |
| 80% | 439.50 |
| 90% | 648.69 |
| **Long Term** | |
| Full Simulation Period[a] | 503.19 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 382.90 |
| Above Normal (16%) | 322.02 |
| Below Normal (13%) | 851.95 |
| Dry (24%) | 641.90 |
| Critical (15%) | 409.23 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 34a-3. Annual SWP Total Energy Use

## No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,582.90 |
| 20% | 9,671.49 |
| 30% | 8,884.03 |
| 40% | 8,377.41 |
| 50% | 7,442.86 |
| 60% | 6,643.33 |
| 70% | 5,829.12 |
| 80% | 4,909.77 |
| 90% | 3,533.14 |
| **Long Term** | |
| Full Simulation Period[a] | 7,310.36 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 9,918.66 |
| Above Normal (16%) | 8,000.56 |
| Below Normal (13%) | 7,504.91 |
| Dry (24%) | 5,611.86 |
| Critical (15%) | 3,519.90 |

## No Action Alternative 093019

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,587.52 |
| 20% | 9,526.55 |
| 30% | 8,836.50 |
| 40% | 8,381.86 |
| 50% | 7,401.48 |
| 60% | 6,764.94 |
| 70% | 5,810.74 |
| 80% | 4,695.99 |
| 90% | 3,588.82 |
| **Long Term** | |
| Full Simulation Period[a] | 7,241.83 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 9,896.99 |
| Above Normal (16%) | 7,977.23 |
| Below Normal (13%) | 7,508.03 |
| Dry (24%) | 5,455.14 |
| Critical (15%) | 3,426.10 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 4.61 |
| 20% | -144.95 |
| 30% | -47.53 |
| 40% | 4.46 |
| 50% | -41.38 |
| 60% | 121.61 |
| 70% | -18.38 |
| 80% | -213.77 |
| 90% | 55.68 |
| **Long Term** | |
| Full Simulation Period[a] | -68.53 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -21.67 |
| Above Normal (16%) | -23.33 |
| Below Normal (13%) | 3.11 |
| Dry (24%) | -156.72 |
| Critical (15%) | -93.80 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 34a-4. Annual SWP Total Energy Use

## Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 11,790.33 |
| 20% | 11,083.62 |
| 30% | 10,315.87 |
| 40% | 9,863.44 |
| 50% | 9,089.36 |
| 60% | 7,879.63 |
| 70% | 6,376.60 |
| 80% | 5,438.63 |
| 90% | 4,134.89 |
| **Long Term** | |
| Full Simulation Period[a] | 8,376.53 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 11,029.32 |
| Above Normal (16%) | 9,682.99 |
| Below Normal (13%) | 8,990.52 |
| Dry (24%) | 6,360.49 |
| Critical (15%) | 4,010.72 |

## Alternative 1 100419

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 10,993.80 |
| 20% | 10,143.95 |
| 30% | 9,410.18 |
| 40% | 8,919.68 |
| 50% | 7,883.95 |
| 60% | 7,070.89 |
| 70% | 6,334.09 |
| 80% | 5,135.50 |
| 90% | 4,237.51 |
| **Long Term** | |
| Full Simulation Period[a] | 7,745.02 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 10,279.89 |
| Above Normal (16%) | 8,299.24 |
| Below Normal (13%) | 8,359.98 |
| Dry (24%) | 6,097.04 |
| Critical (15%) | 3,835.32 |

## Alternative 1 100419 minus Alternative 1 011519

| Statistic | Energy Use (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -796.53 |
| 20% | -939.67 |
| 30% | -905.69 |
| 40% | -943.76 |
| 50% | -1,205.41 |
| 60% | -808.73 |
| 70% | -42.51 |
| 80% | -303.13 |
| 90% | 102.62 |
| **Long Term** | |
| Full Simulation Period[a] | -631.51 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -749.42 |
| Above Normal (16%) | -1,383.75 |
| Below Normal (13%) | -630.54 |
| Dry (24%) | -263.45 |
| Critical (15%) | -175.40 |

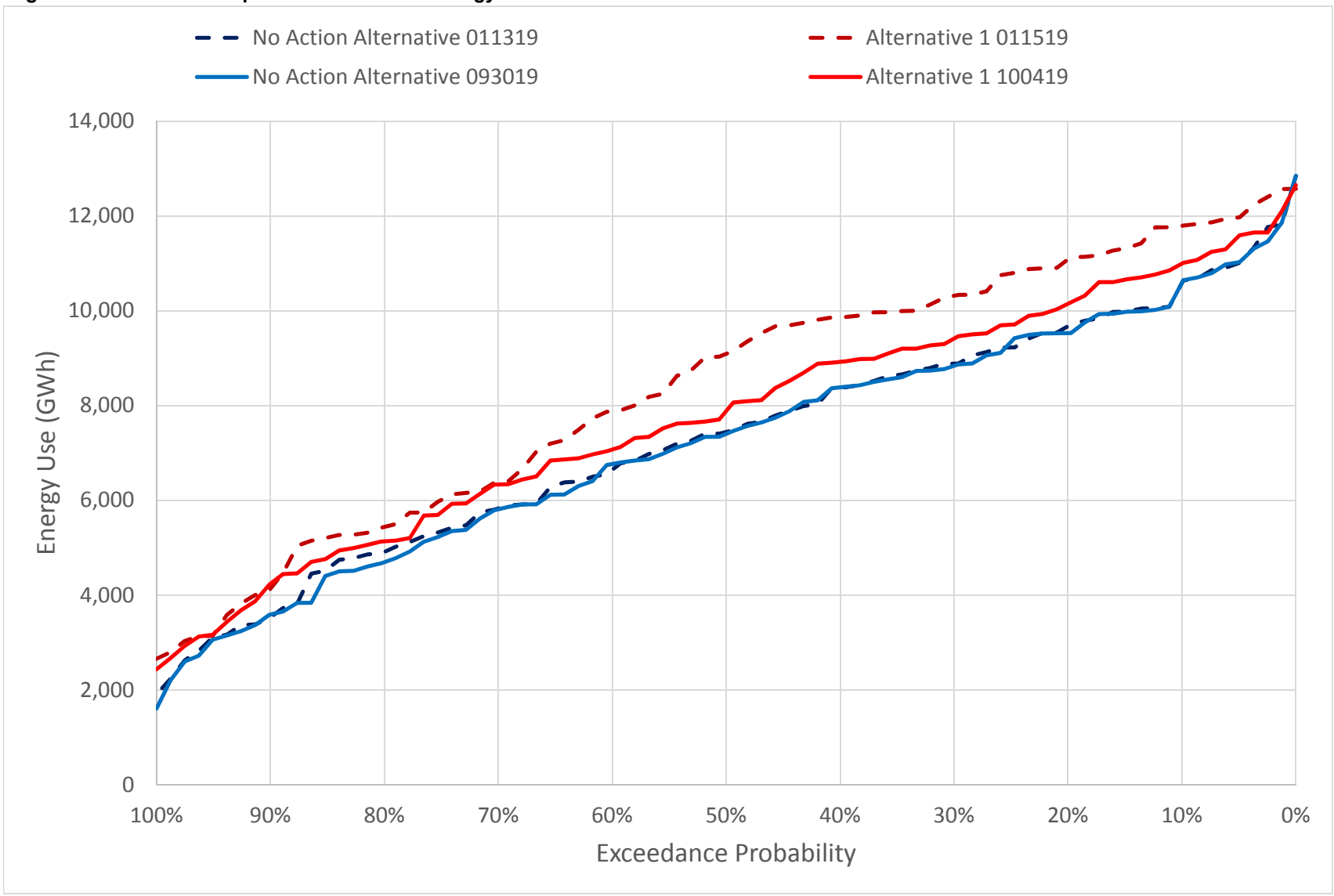
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 34a-1. October-September SWP Total Energy Use**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 35a-1. Annual SWP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -1,713.81 |
| 20% | -2,467.17 |
| 30% | -2,652.72 |
| 40% | -2,910.10 |
| 50% | -3,151.25 |
| 60% | -3,440.27 |
| 70% | -3,843.79 |
| 80% | -4,302.08 |
| 90% | -4,614.93 |
| **Long Term** | |
| Full Simulation Period[a] | -3,236.75 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -3,896.83 |
| Above Normal (16%) | -3,577.73 |
| Below Normal (13%) | -3,732.36 |
| Dry (24%) | -2,757.74 |
| Critical (15%) | -1,735.60 |

## Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -2,172.24 |
| 20% | -2,700.65 |
| 30% | -3,185.62 |
| 40% | -3,894.36 |
| 50% | -4,331.72 |
| 60% | -4,691.95 |
| 70% | -4,938.81 |
| 80% | -5,149.85 |
| 90% | -5,480.04 |
| **Long Term** | |
| Full Simulation Period[a] | -4,027.64 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -4,859.72 |
| Above Normal (16%) | -4,778.14 |
| Below Normal (13%) | -4,690.09 |
| Dry (24%) | -3,261.34 |
| Critical (15%) | -2,081.69 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -458.43 |
| 20% | -233.48 |
| 30% | -532.90 |
| 40% | -984.26 |
| 50% | -1,180.47 |
| 60% | -1,251.69 |
| 70% | -1,095.02 |
| 80% | -847.77 |
| 90% | -865.12 |
| **Long Term** | |
| Full Simulation Period[a] | -790.89 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -962.89 |
| Above Normal (16%) | -1,200.41 |
| Below Normal (13%) | -957.73 |
| Dry (24%) | -503.60 |
| Critical (15%) | -346.10 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 35a-2. Annual SWP Net Generation

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -1,700.26 |
| 20% | -2,290.54 |
| 30% | -2,579.20 |
| 40% | -2,904.12 |
| 50% | -3,167.81 |
| 60% | -3,414.14 |
| 70% | -3,863.83 |
| 80% | -4,292.94 |
| 90% | -4,564.26 |
| **Long Term** | |
| Full Simulation Period[a] | -3,198.06 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -3,890.23 |
| Above Normal (16%) | -3,569.85 |
| Below Normal (13%) | -3,731.00 |
| Dry (24%) | -2,661.28 |
| Critical (15%) | -1,701.67 |

## Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -2,025.08 |
| 20% | -2,558.65 |
| 30% | -2,825.79 |
| 40% | -3,250.60 |
| 50% | -3,611.28 |
| 60% | -3,992.39 |
| 70% | -4,283.07 |
| 80% | -4,707.35 |
| 90% | -5,003.12 |
| **Long Term** | |
| Full Simulation Period[a] | -3,560.77 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -4,268.39 |
| Above Normal (16%) | -3,868.77 |
| Below Normal (13%) | -4,266.59 |
| Dry (24%) | -3,031.34 |
| Critical (15%) | -1,929.27 |

## Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | -324.81 |
| 20% | -268.11 |
| 30% | -246.59 |
| 40% | -346.48 |
| 50% | -443.47 |
| 60% | -578.25 |
| 70% | -419.24 |
| 80% | -414.42 |
| 90% | -438.86 |
| **Long Term** | |
| Full Simulation Period[a] | -362.71 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -378.16 |
| Above Normal (16%) | -298.92 |
| Below Normal (13%) | -535.59 |
| Dry (24%) | -370.06 |
| Critical (15%) | -227.59 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 35a-3. Annual SWP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -1,713.81 |
| 20% | -2,467.17 |
| 30% | -2,652.72 |
| 40% | -2,910.10 |
| 50% | -3,151.25 |
| 60% | -3,440.27 |
| 70% | -3,843.79 |
| 80% | -4,302.08 |
| 90% | -4,614.93 |
| **Long Term** | |
| Full Simulation Period[a] | -3,236.75 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -3,896.83 |
| Above Normal (16%) | -3,577.73 |
| Below Normal (13%) | -3,732.36 |
| Dry (24%) | -2,757.74 |
| Critical (15%) | -1,735.60 |

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -1,700.26 |
| 20% | -2,290.54 |
| 30% | -2,579.20 |
| 40% | -2,904.12 |
| 50% | -3,167.81 |
| 60% | -3,414.14 |
| 70% | -3,863.83 |
| 80% | -4,292.94 |
| 90% | -4,564.26 |
| **Long Term** | |
| Full Simulation Period[a] | -3,198.06 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -3,890.23 |
| Above Normal (16%) | -3,569.85 |
| Below Normal (13%) | -3,731.00 |
| Dry (24%) | -2,661.28 |
| Critical (15%) | -1,701.67 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | 13.54 |
| 20% | 176.63 |
| 30% | 73.52 |
| 40% | 5.98 |
| 50% | -16.57 |
| 60% | 26.13 |
| 70% | -20.04 |
| 80% | 9.14 |
| 90% | 50.67 |
| **Long Term** | |
| Full Simulation Period[a] | 38.69 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 6.60 |
| Above Normal (16%) | 7.88 |
| Below Normal (13%) | 1.37 |
| Dry (24%) | 96.46 |
| Critical (15%) | 33.92 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 35a-4. Annual SWP Net Generation

### Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -2,172.24 |
| 20% | -2,700.65 |
| 30% | -3,185.62 |
| 40% | -3,894.36 |
| 50% | -4,331.72 |
| 60% | -4,691.95 |
| 70% | -4,938.81 |
| 80% | -5,149.85 |
| 90% | -5,480.04 |
| **Long Term** | |
| Full Simulation Period[a] | -4,027.64 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -4,859.72 |
| Above Normal (16%) | -4,778.14 |
| Below Normal (13%) | -4,690.09 |
| Dry (24%) | -3,261.34 |
| Critical (15%) | -2,081.69 |

### Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | -2,025.08 |
| 20% | -2,558.65 |
| 30% | -2,825.79 |
| 40% | -3,250.60 |
| 50% | -3,611.28 |
| 60% | -3,992.39 |
| 70% | -4,283.07 |
| 80% | -4,707.35 |
| 90% | -5,003.12 |
| **Long Term** | |
| Full Simulation Period[a] | -3,560.77 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -4,268.39 |
| Above Normal (16%) | -3,868.77 |
| Below Normal (13%) | -4,266.59 |
| Dry (24%) | -3,031.34 |
| Critical (15%) | -1,929.27 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | 147.16 |
| 20% | 142.00 |
| 30% | 359.84 |
| 40% | 643.76 |
| 50% | 720.44 |
| 60% | 699.56 |
| 70% | 655.74 |
| 80% | 442.49 |
| 90% | 476.92 |
| **Long Term** | |
| Full Simulation Period[a] | 466.88 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 591.33 |
| Above Normal (16%) | 909.37 |
| Below Normal (13%) | 423.50 |
| Dry (24%) | 230.00 |
| Critical (15%) | 152.43 |

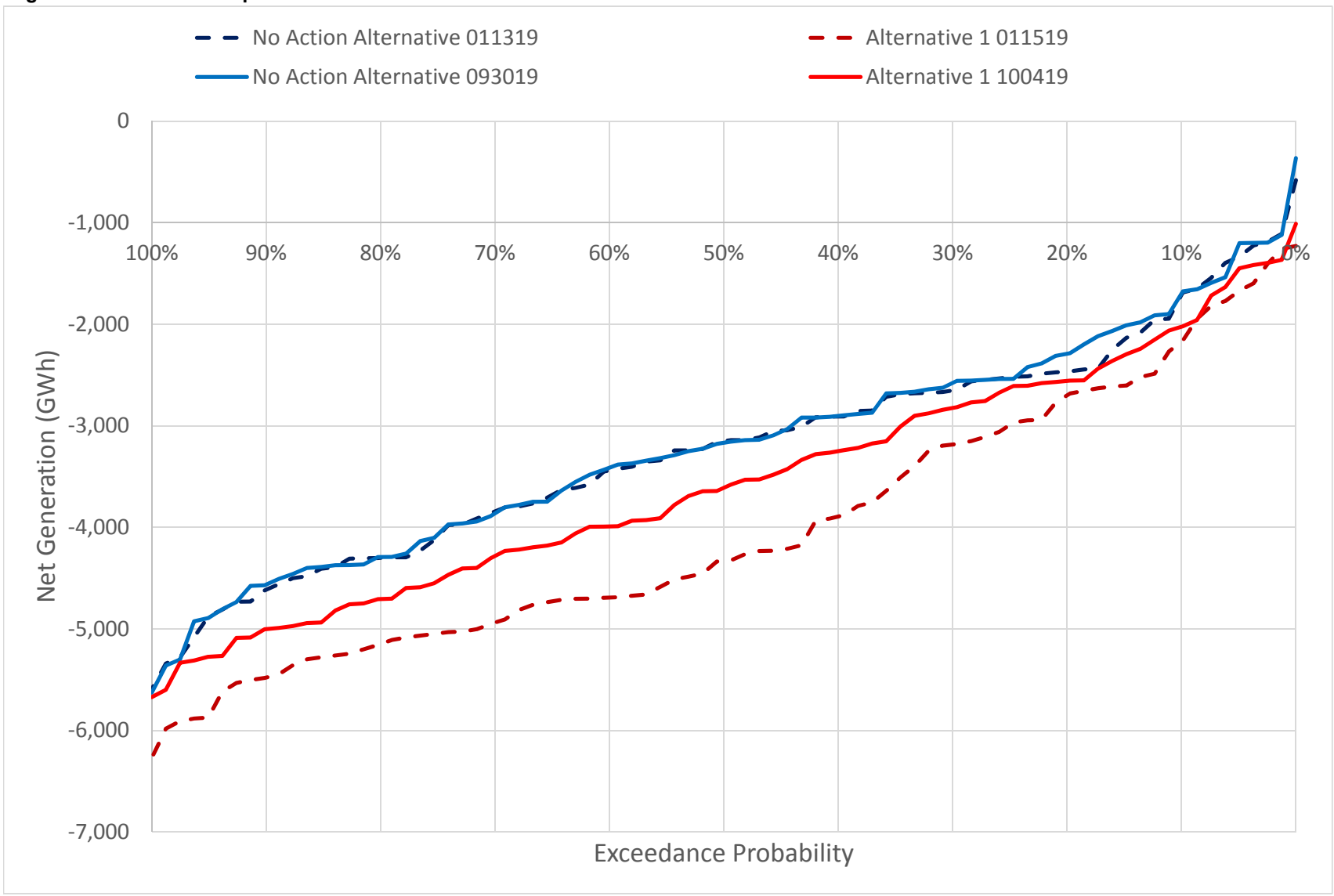
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 35a-1. October-September SWP Net Generation**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 36a-1. Annual CVP and SWP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,395.72 |
| 20% | 983.07 |
| 30% | 634.49 |
| 40% | 392.28 |
| 50% | 218.67 |
| 60% | 58.11 |
| 70% | -350.33 |
| 80% | -556.33 |
| 90% | -1,359.86 |
| **Long Term** | |
| Full Simulation Period[a] | 83.48 |
| **Water Year Types[b,c]** | |
| Wet (32%) | 797.32 |
| Above Normal (16%) | 172.51 |
| Below Normal (13%) | -812.32 |
| Dry (24%) | -319.17 |
| Critical (15%) | 20.43 |

## Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 306.00 |
| 20% | 54.68 |
| 30% | -266.97 |
| 40% | -544.14 |
| 50% | -723.73 |
| 60% | -887.79 |
| 70% | -1,189.16 |
| 80% | -1,645.84 |
| 90% | -2,109.97 |
| **Long Term** | |
| Full Simulation Period[a] | -810.40 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -425.04 |
| Above Normal (16%) | -1,183.43 |
| Below Normal (13%) | -1,742.08 |
| Dry (24%) | -893.48 |
| Critical (15%) | -248.71 |

## Alternative 1 011519 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance[a]** | |
| 10% | -1,089.72 |
| 20% | -928.39 |
| 30% | -901.46 |
| 40% | -936.42 |
| 50% | -942.40 |
| 60% | -945.90 |
| 70% | -838.84 |
| 80% | -1,089.51 |
| 90% | -750.11 |
| **Long Term** | |
| Full Simulation Period[a] | -893.88 |
| **Water Year Types[b,c]** | |
| Wet (32%) | -1,222.36 |
| Above Normal (16%) | -1,355.94 |
| Below Normal (13%) | -929.76 |
| Dry (24%) | -574.31 |
| Critical (15%) | -269.14 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 36a-2. Annual CVP and SWP Net Generation

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,391.68 |
| 20% | 1,052.54 |
| 30% | 654.44 |
| 40% | 380.72 |
| 50% | 284.39 |
| 60% | 112.96 |
| 70% | -246.65 |
| 80% | -570.99 |
| 90% | -1,289.56 |
| **Long Term** | |
| Full Simulation Period[a] | 125.30 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 797.90 |
| Above Normal (16%) | 161.87 |
| Below Normal (13%) | -813.32 |
| Dry (24%) | -223.93 |
| Critical (15%) | 70.85 |

## Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 806.89 |
| 20% | 443.46 |
| 30% | 213.86 |
| 40% | 92.18 |
| 50% | -63.55 |
| 60% | -325.04 |
| 70% | -637.49 |
| 80% | -949.24 |
| 90% | -1,696.90 |
| **Long Term** | |
| Full Simulation Period[a] | -284.41 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 234.77 |
| Above Normal (16%) | -97.28 |
| Below Normal (13%) | -1,301.64 |
| Dry (24%) | -641.29 |
| Critical (15%) | -84.76 |

## Alternative 1 100419 minus No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | -584.78 |
| 20% | -609.08 |
| 30% | -440.58 |
| 40% | -288.54 |
| 50% | -347.94 |
| 60% | -438.00 |
| 70% | -390.85 |
| 80% | -378.25 |
| 90% | -407.35 |
| **Long Term** | |
| Full Simulation Period[a] | -409.71 |
| **Water Year Types**[b,c] | |
| Wet (32%) | -563.13 |
| Above Normal (16%) | -259.15 |
| Below Normal (13%) | -488.32 |
| Dry (24%) | -417.36 |
| Critical (15%) | -155.61 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

# Table 36a-3. Annual CVP and SWP Net Generation

## No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,395.72 |
| 20% | 983.07 |
| 30% | 634.49 |
| 40% | 392.28 |
| 50% | 218.67 |
| 60% | 58.11 |
| 70% | -350.33 |
| 80% | -556.33 |
| 90% | -1,359.86 |
| **Long Term** | |
| Full Simulation Period[a] | 83.48 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 797.32 |
| Above Normal (16%) | 172.51 |
| Below Normal (13%) | -812.32 |
| Dry (24%) | -319.17 |
| Critical (15%) | 20.43 |

## No Action Alternative 093019

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| 10% | 1,391.68 |
| 20% | 1,052.54 |
| 30% | 654.44 |
| 40% | 380.72 |
| 50% | 284.39 |
| 60% | 112.96 |
| 70% | -246.65 |
| 80% | -570.99 |
| 90% | -1,289.56 |
| **Long Term** | |
| Full Simulation Period[a] | 125.30 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 797.90 |
| Above Normal (16%) | 161.87 |
| Below Normal (13%) | -813.32 |
| Dry (24%) | -223.93 |
| Critical (15%) | 70.85 |

## No Action Alternative 093019 minus No Action Alternative 011319

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| 10% | -4.05 |
| 20% | 69.47 |
| 30% | 19.95 |
| 40% | -11.56 |
| 50% | 65.72 |
| 60% | 54.85 |
| 70% | 103.68 |
| 80% | -14.66 |
| 90% | 70.30 |
| **Long Term** | |
| Full Simulation Period[a] | 41.83 |
| **Water Year Types**[b,c] | |
| Wet (32%) | 0.58 |
| Above Normal (16%) | -10.64 |
| Below Normal (13%) | -1.00 |
| Dry (24%) | 95.24 |
| Critical (15%) | 50.42 |

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

## Table 36a-4. Annual CVP and SWP Net Generation

### Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| **10%** | 306.00 |
| **20%** | 54.68 |
| **30%** | -266.97 |
| **40%** | -544.14 |
| **50%** | -723.73 |
| **60%** | -887.79 |
| **70%** | -1,189.16 |
| **80%** | -1,645.84 |
| **90%** | -2,109.97 |
| **Long Term** | |
| **Full Simulation Period**[a] | -810.40 |
| **Water Year Types**[b,c] | |
| **Wet (32%)** | -425.04 |
| **Above Normal (16%)** | -1,183.43 |
| **Below Normal (13%)** | -1,742.08 |
| **Dry (24%)** | -893.48 |
| **Critical (15%)** | -248.71 |

### Alternative 1 100419

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance** | |
| **10%** | 806.89 |
| **20%** | 443.46 |
| **30%** | 213.86 |
| **40%** | 92.18 |
| **50%** | -63.55 |
| **60%** | -325.04 |
| **70%** | -637.49 |
| **80%** | -949.24 |
| **90%** | -1,696.90 |
| **Long Term** | |
| **Full Simulation Period**[a] | -284.41 |
| **Water Year Types**[b,c] | |
| **Wet (32%)** | 234.77 |
| **Above Normal (16%)** | -97.28 |
| **Below Normal (13%)** | -1,301.64 |
| **Dry (24%)** | -641.29 |
| **Critical (15%)** | -84.76 |

### Alternative 1 100419 minus Alternative 1 011519

| Statistic | Net Generation (GWh) |
|---|---|
| **Probability of Exceedance**[a] | |
| **10%** | 500.90 |
| **20%** | 388.78 |
| **30%** | 480.83 |
| **40%** | 636.32 |
| **50%** | 660.18 |
| **60%** | 562.75 |
| **70%** | 551.67 |
| **80%** | 696.60 |
| **90%** | 413.07 |
| **Long Term** | |
| **Full Simulation Period**[a] | 525.99 |
| **Water Year Types**[b,c] | |
| **Wet (32%)** | 659.81 |
| **Above Normal (16%)** | 1,086.15 |
| **Below Normal (13%)** | 440.45 |
| **Dry (24%)** | 252.19 |
| **Critical (15%)** | 163.95 |

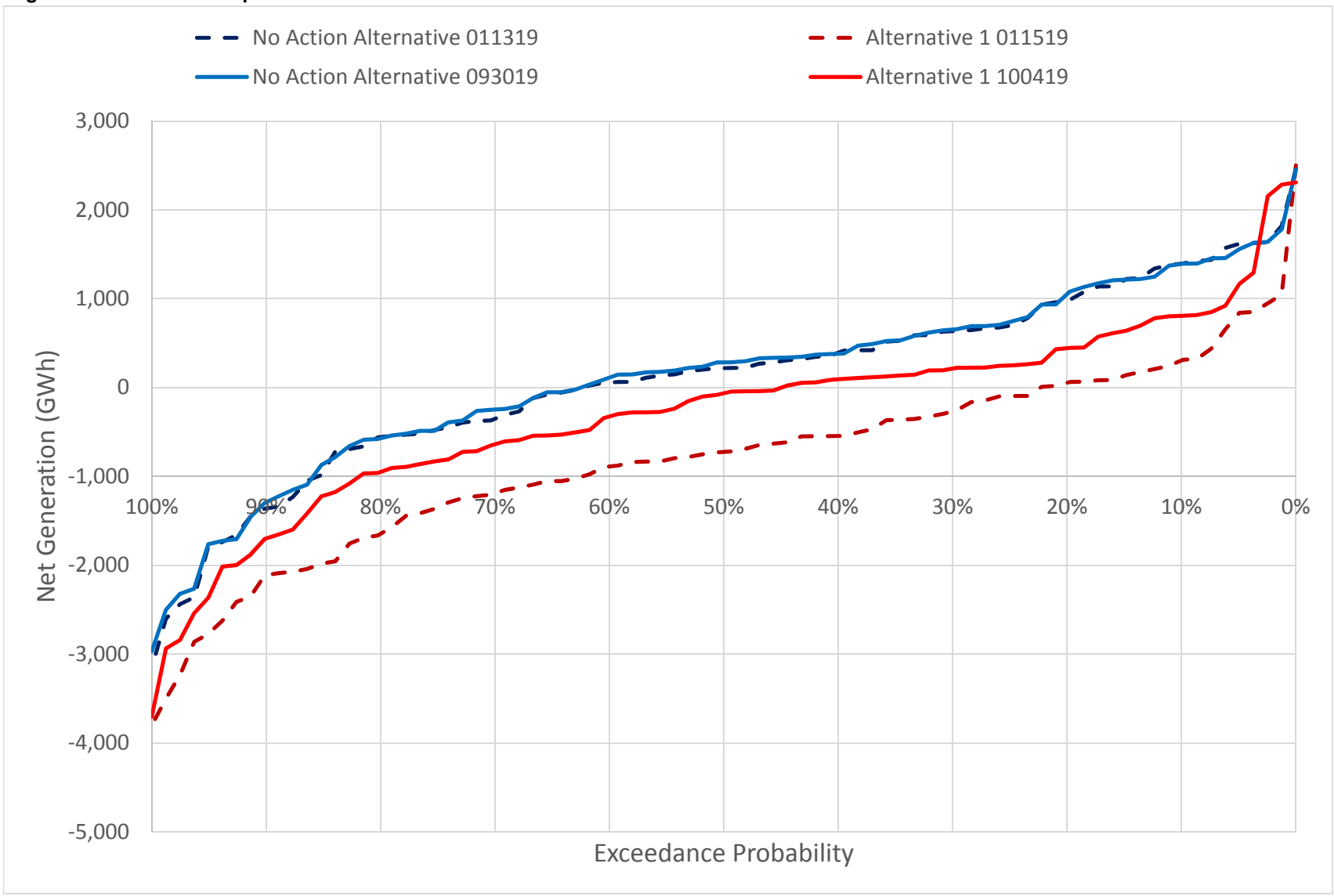
a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

d All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

**Figure 36a-1. October-September CVP and SWP Net Generation**




*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

### F1.1.2.14 *Discussion of Sensitivity Analysis*

#### F1.1.2.14.1 Introduction

As previously described in Section F1.1, revisions were made to the modeled alternatives, specifically the No Action Alternative and Alternative 1. These revisions were made since publication of the DEIS in July 2019 in consultation with NMFS and USFWS to address their concerns about adverse effects to ESA-listed fish species. The resulting modeled outputs were evaluated to determine if there were substantive differences in the results as compared to the modeled outputs used in the DEIS analysis. Consistent with the minor differences in modeled outputs, substantive differences in effects were not identified through this evaluation. The following descriptions of resource areas that are most sensitive to model revisions are utilized to demonstrate that there are not substantive differences in effects.

#### F1.1.2.14.2 Water Supply

Review and comparison of the water supply modeling results for the DEIS No Action Alternative and Alternative 1 to the revised modeling completed for those alternatives reveals some changes in forecasted deliveries. For most contract delivery types across all of the hydrologic regions, the revised modeling produces smaller water delivery increases than had been forecasted in the DEIS. These contractor types all would see increased deliveries with the implementation of the revised Alternative 1, when compared to the No Action Alternative, but at a lower level than had been forecasted in the DEIS. For the Sacramento River Settlement Contractors, the revised Alternative 1 indicates a shift from what was a less than 5% reduction in water supply deliveries in the DEIS to no change compared to the No Action Alternative. CVP Level 2 refuge deliveries in the San Joaquin River hydrologic region would see a slightly larger reduction in forecast water deliveries from what was reported in the DEIS, but both the DEIS and the revised Alternative 1 forecast a less than 5% change when compared to the No Action Alternative. SWP agricultural water supply deliveries in the San Joaquin River hydrologic region would shift from a small forecast increase in the DEIS to no change from the No Action Alternative under the revised Alternative 1 forecast.

#### F1.1.2.14.3 Groundwater

The revised No Action Alternative and Alternative 1 were simulated in the CVHM groundwater flow model in the same manner as described in Appendix I, Groundwater Technical Appendix. The results of the two revised simulations were compared to the result for the DEIS No Action Alternative and Alternative 1 as presented in Appendix I.

The results in Table I.2-2 showed that, on average through the 42-year CVHM simulation across the entire Central Valley, groundwater pumping decreased 264 thousand acre-feet (TAF) per year in Alternative 1 compared to the No Action Alternative. The annual decrease of 264 TAF represents 3.7% of the annual average pumping in Alternative 1 as presented in Appendix I. The annual change in pumping ranged from an increase of 1 TAF to a decrease of 575 TAF. In the revised simulations, the average annual decrease in groundwater pumping for Alternative 1 compared to the No Action Alternative was 116 TAF (a 1.6% change). The change in annual groundwater pumping ranged from an increase of 173 TAF to a decrease of 432 TAF. The revised simulations also increased the number of years in the 42-year simulation when groundwater pumping increased, from 1 year (2.4% of years) to 7 years (16.7% of years).

In general, the results of the revised simulations (as presented above in F1.2.11) are similar to the results in Appendix I with the inclusion of additional years where groundwater pumping is increased. The maximum annual increase in groundwater pumping (173 TAF) represents 2.5% of the annual average

pumping in the Central Valley. The changes in annual groundwater pumping can generally be explained by the pattern of hydrology and combined with other surface water management actions (e.g., the location of X2) which cause fluctuations in surface water storage. The fluctuations in storage will result in fluctuations in deliveries which, in turn, result in the changes in the amount of groundwater pumping.

Appendix I Figures I.2-50 through I.2-54 show the simulated change in groundwater level across the Central Valley for five different water year types (wet, above normal, below normal, dry, and critical dry). The results of the revised simulations were processed to develop the same representative figures. Figures 24-2 through 24-6 present the simulated change in groundwater level for the revised simulations for the same series of hydrologic periods.

There are mainly three geographic areas where the change in groundwater level differs between the results in Appendix I and the revised simulations.

- Greater Sacramento (Water Balance Subregions [WBS] 3 – 9): In general, the extent of the area where groundwater levels declined 0 – 2 feet was reduced in the revised simulations as compared to the results in Appendix I. As discussed in the Draft EIS, a groundwater level decrease of 0-2 feet is considered minimal.
- West Side of the San Joaquin Valley (WBS 10, 14, and 15): The magnitude of groundwater level increase in this area has been reduced in the revised simulations compared to the results in Appendix I.
- Tulare Region (WBS 18 – 20): The results in Appendix I showed generally increasing groundwater levels for Alternative 1 compared to the No Action Alternative. In the revised simulations, the magnitude and extent of the increase is less than in the Appendix I results. The revised simulations also show periods when the groundwater levels declined.

### F1.1.2.14.4 Aquatic Resources

Two key areas of the Aquatic Resources analysis, temperature effects in the Upper Sacramento River region and changes in flow and salinity in the Bay-Delta, are described below in order to demonstrate the types and magnitude of changes as a result of the revised modeling output.

*Upper Sacramento River Region*

*Winter-run Egg Mortality, Upstream Water Temperatures, and Clear Creek Flow*

Sacramento River Winter-run Chinook Salmon egg mortality modeling of the revised Alternative 1 found only minor differences in mortality between the original and revised alternative results or between the original and revised No Action Alternative results for either the Martin or the Anderson egg mortality model. The largest differences were found for critical water years with the Martin model, but these differences would not change the conclusion presented in the DEIS, which was that Alternative 1 would reduce temperature-related mortality of Winter-run salmon eggs relative to the No Action Alternative (p. O-218).

HEC-5Q temperature modeling of the revised Alternative 1 indicate that effects to aquatic resources in all but one of the Project area rivers would be generally consistent with the analyses presented in the DEIS. For all these rivers, almost all original and revised Alternative 1 results are very similar or identical, which is also true of the original and revised No Action Alternative results. The one exception is Clear Creek, for which the revised Alternative 1 results (labelled in plots below as ‘Alternative 1 100419)’) in two of the three modeled creek sections, “Clear Creek at Igo Gauge” and “Clear Creek at Mouth”, have substantially lower water temperatures during June through August than the original Alternative 1 results

(labelled in plots below as ‘Alternative 1 011519)’) (Figures 29-1, 29-2, 29-3, 29-4). The third modeled creek section, “Clear Creek below Whiskeytown Reservoir”, also has differences between the original and revised Alternative 1 results, but they are much smaller than those for the other two sections (Figure 29-5). This is because this section is immediately below Whiskeytown Reservoir, from which the flows are released, and therefore has received little atmospheric warming in comparison to the other two, more downstream, sections. Note that the flow released from Whiskeytown Reservoir for the revised Alternative 1 during June through August, as shown by CalSim modeling results (Figure 29-6), is much higher than that released for the other three alternatives, resulting in less downstream warming for this alternative.

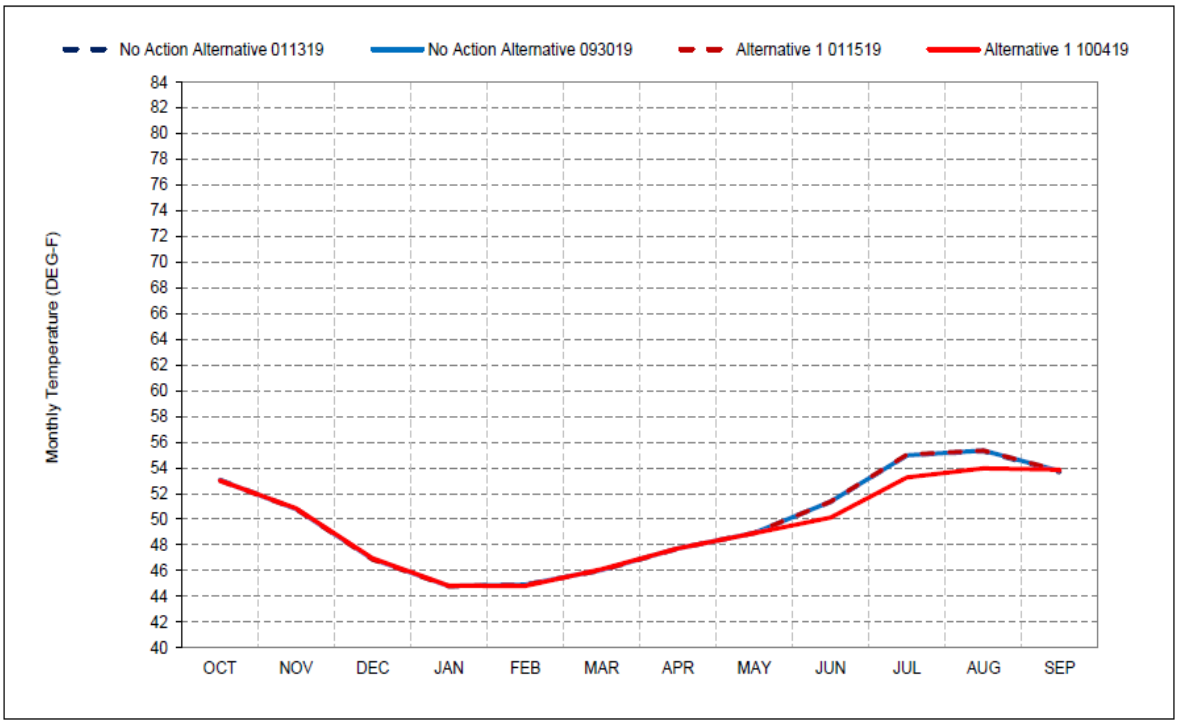



**Figure 29-1. Long-term Average Water Temperatures for Clear Creek at Igo Gauge**

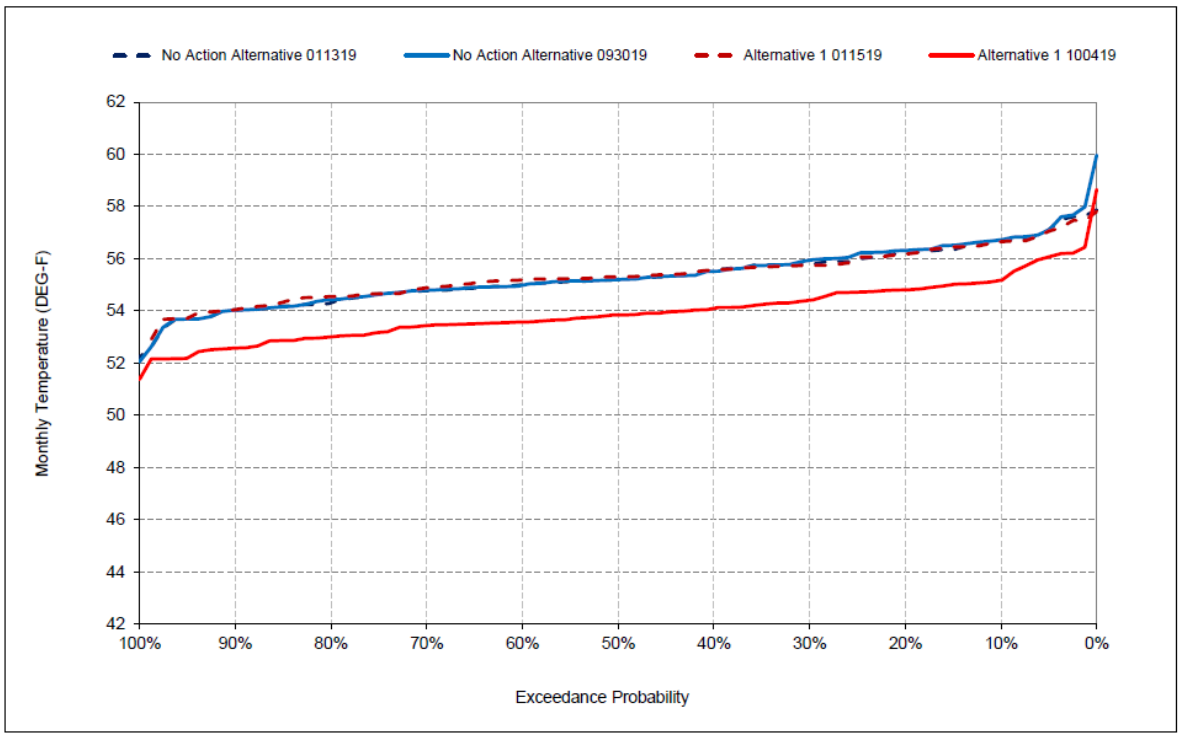



**Figure 29-2. Monthly Average Water Temperature Exceedances for Clear Creek at Igo Gauge, August**

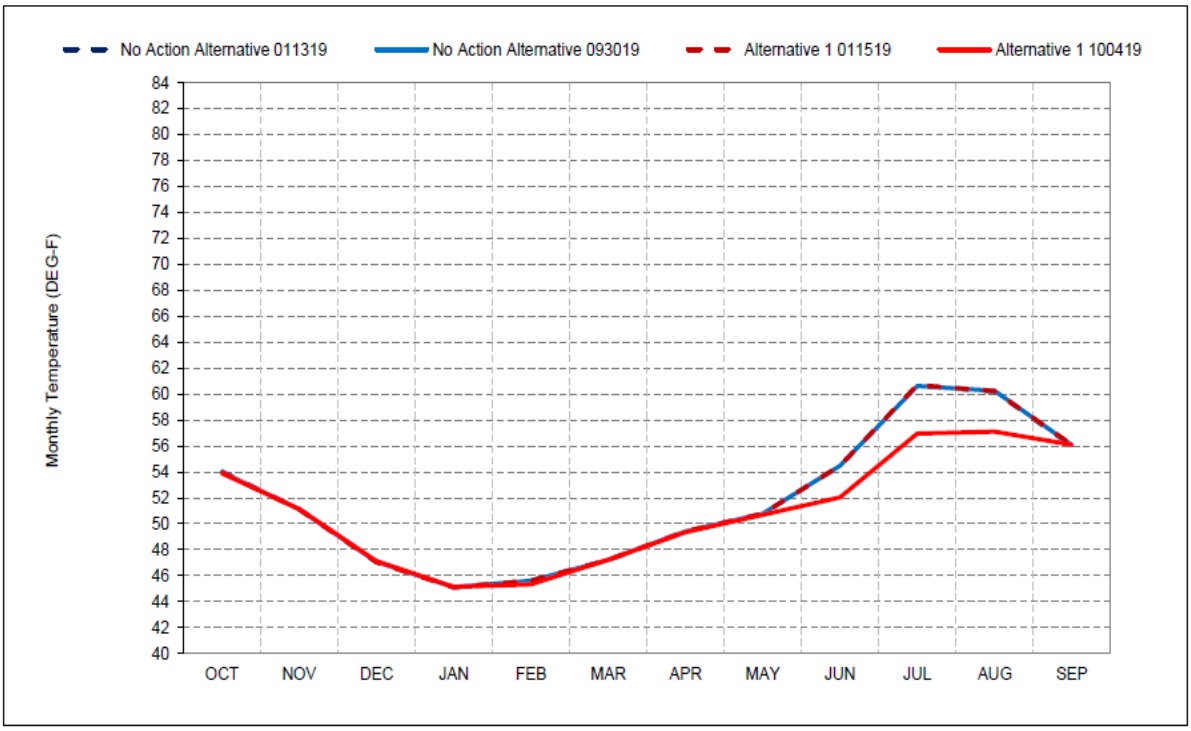



**Figure 29-3. Long-term Average Water Temperatures for Clear Creek at Mouth**

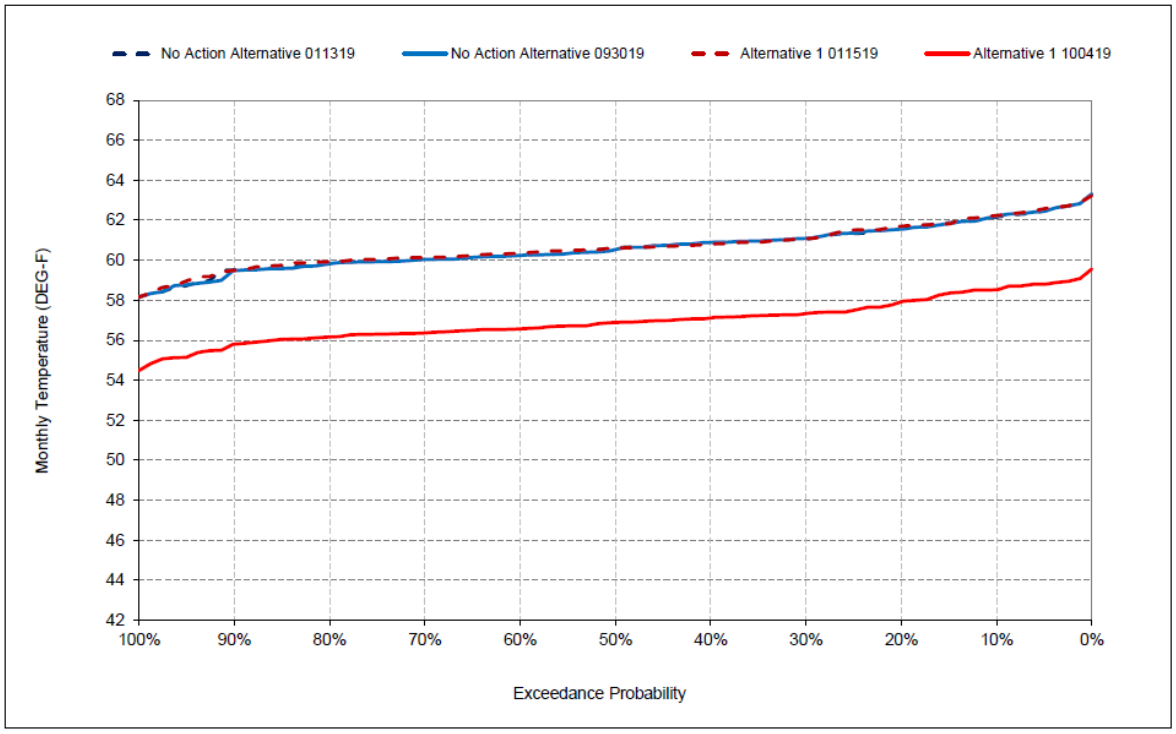



**Figure 29-4. Monthly Average Water Temperature Exceedances for Clear Creek at Mouth, July**

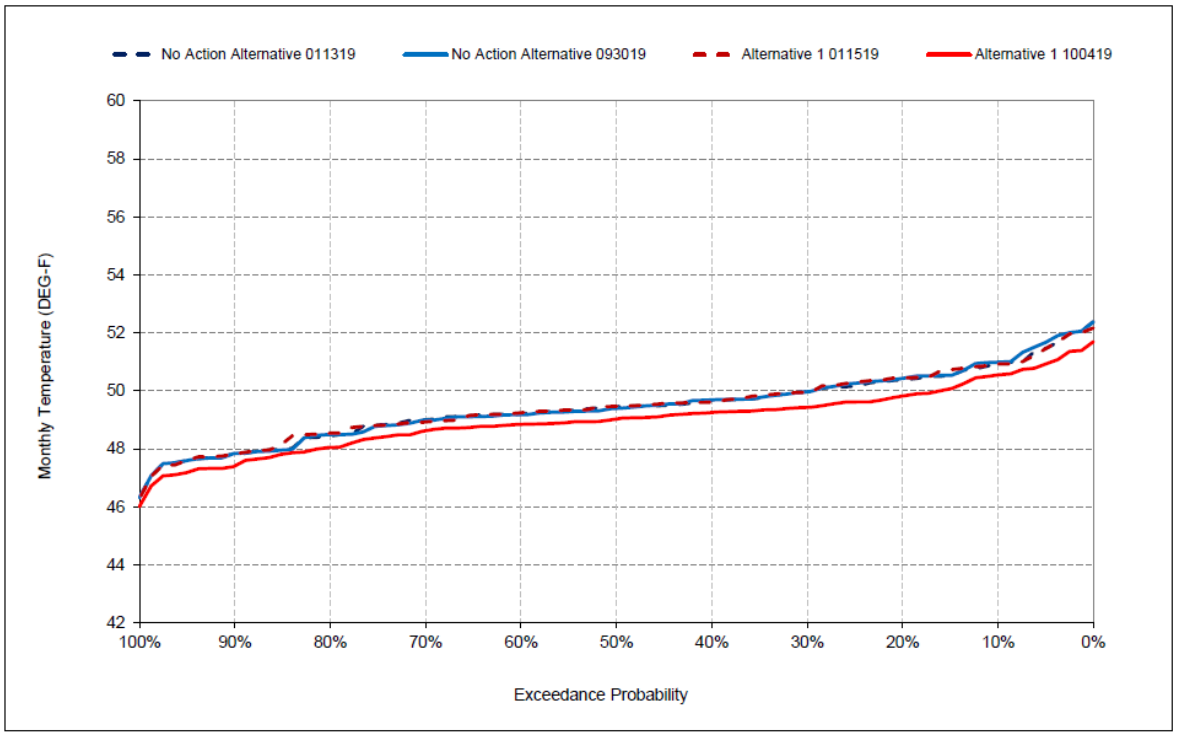



**Figure 29-5. Monthly Average Water Temperature Exceedances for Clear Creek below Whiskeytown Reservoir, June**

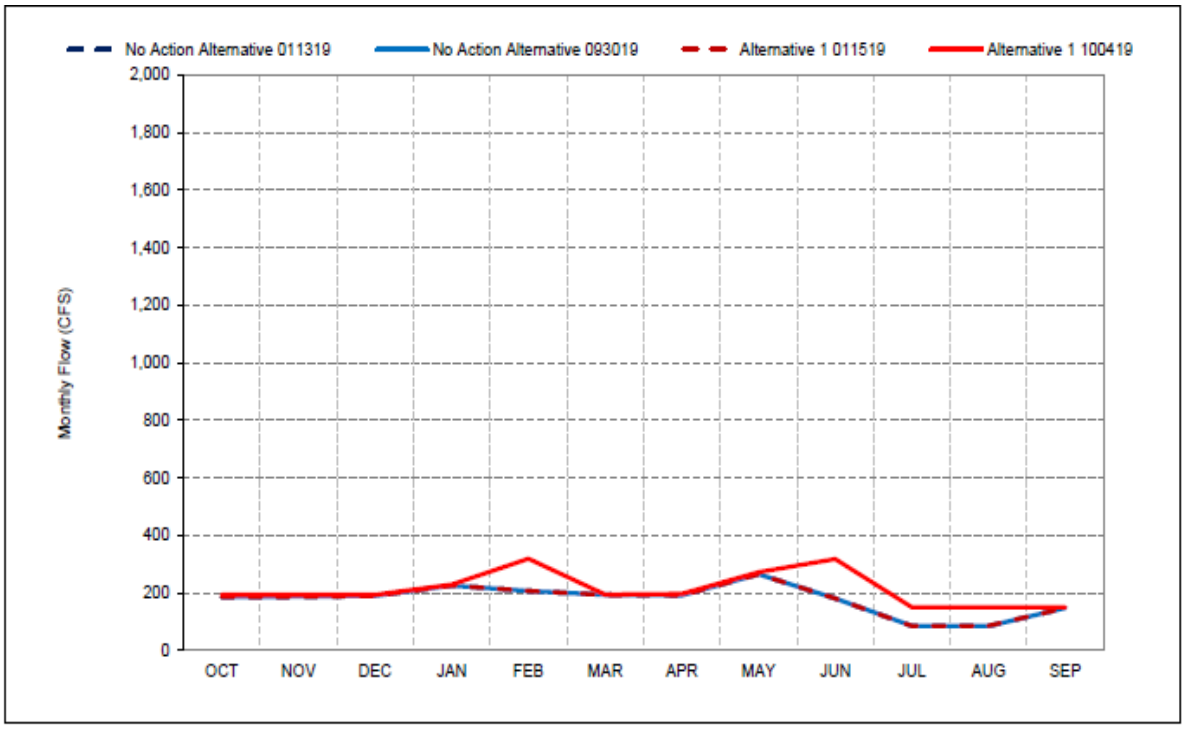



**Figure 29-6. Long-term Average Flows for Clear Creek below Whiskeytown Reservoir**

The reduced summer water temperatures of the revised Alternative 1 would potentially affect fish species with life stages present in Clear Creek during June through August. Four salmonid populations spawn in Clear Creek: Spring-run, Fall-run and Late Fall-run Chinook Salmon and Central Valley Steelhead. All of these salmonids spawn in the fall and early winter and therefore would not be affected by the June through August temperature differences. However, as noted in the DEIS (p. O-30), Spring-run adults begin their upstream migration in Clear Creek in early June. They hold in the more upstream sections of the creek and begin spawning in early September. USEPA's (2003) 7-day average daily maximum (7DADM) temperature threshold for holding Spring-run Chinook Salmon is 61°F. The June through August monthly average water temperatures at the Igo Gauge section of Clear Creek, which likely represents the downstream limit of Spring-run holding habitat, are below this threshold in all years for all the alternatives (Figure 29-2). Therefore, the reduction in water temperatures predicted for the revised Alternative 1 would be unlikely to affect holding Spring-run Chinook Salmon.

The other salmonid life stage potentially affected by the reduced June through August water temperatures of the revised Alternative 1 is the juvenile stage. Juvenile Spring-run and Fall-run emigrate from Clear Creek well before summer, but Late Fall-run Chinook Salmon juveniles rear in the creek through June or July and Central Valley Steelhead rear in the creek year-round (Schramel et al. 2012). Many juveniles of both species rear in the lower section of the Creek, where summer water temperatures are warmest. The USEPA (2003) 7DADM threshold for juvenile salmonid rearing and emigration is 61°F. This threshold is exceeded in 25% or 30% of years in July and August according to modeling results for the Clear Creek at mouth section under the DEIS Alternative 1 and both No Action Alternative alternatives, but the threshold is not exceeded in any years under the revised Alternative 1 (Figure 29-4). These results indicate that the revised Alternative 1 would have a potentially beneficial effect on juvenile Late Fall-run Chinook Salmon and Central Valley Steelhead.

As noted above, the reduction in water temperatures for the revised Alternative 1 would be realized by increasing flow releases from Whiskeytown Reservoir (Figure 29-6). However, in addition to the potential temperature benefit afforded to juvenile salmon and steelhead by these increased flows, the increased flows would potentially benefit available physical habitat of the juveniles. The flows are predicted to increase from 200 cfs or less to 300 cfs in June and from 85 cfs to 150 cfs in July and August (Figure 29-6). Results of instream flow studies conducted by USFWS show large increases in weighted usable area (WUA) of rearing habitat for juvenile Steelhead over this range of flow increases (Figure 29-7) (USFWS 2015). A similar increase is expected for WUA of Late Fall-run juvenile rearing habitat. These results show that increased July through August flow releases under the revised Alternative 1 would potentially benefit both water temperatures and physical habitat of rearing juvenile Steelhead and Late Fall-run in Clear Creek.

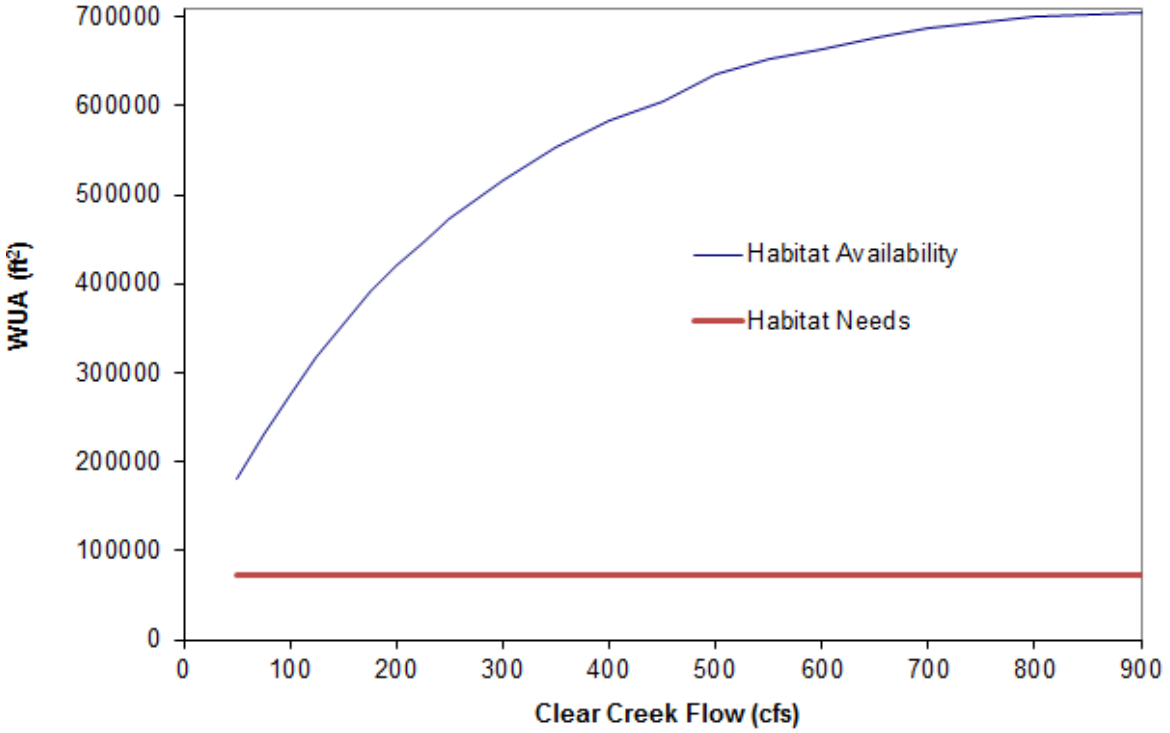



**Figure 29-7. Steelhead/rainbow trout juvenile rearing flow-habitat availability relationship and habitat needs.**

As noted at the beginning of this summary, except in Clear Creek, the water temperature modeling produced few results showing water temperatures differences for the rivers in the project area that would affect fish. However, one other limited but potentially important result that should be noted is for September water temperatures in the Sacramento River. As discussed in the DEIS (e.g., p. O-211), September Fall X2 releases from Shasta Reservoir are lower under Alternative 1 than under the No Action Alternative, which results in greater increases in downstream warming under Alternative 1. It was suggested in the DEIS (p. O225) that this increase could have adverse effects on Central Valley Spring-run Chinook Salmon spawning and egg incubation. In the new HEC-5Q modeling, the results for the revised Alternative 1 show a smaller increase than the DEIS Alternative 1 for some years, as seen below in Figure 29-8 for Balls Ferry. The reduction in the increase is small (< 1°F), but it mostly occurs near the critical upper temperature threshold of 53.5°F for survival of chinook salmon eggs in the Sacramento River (see p. O- 195), so it could be important. This result suggests a potential but uncertain benefit of the revised Alternative 1 to spawning Spring-run Chinook Salmon in the Sacramento River.

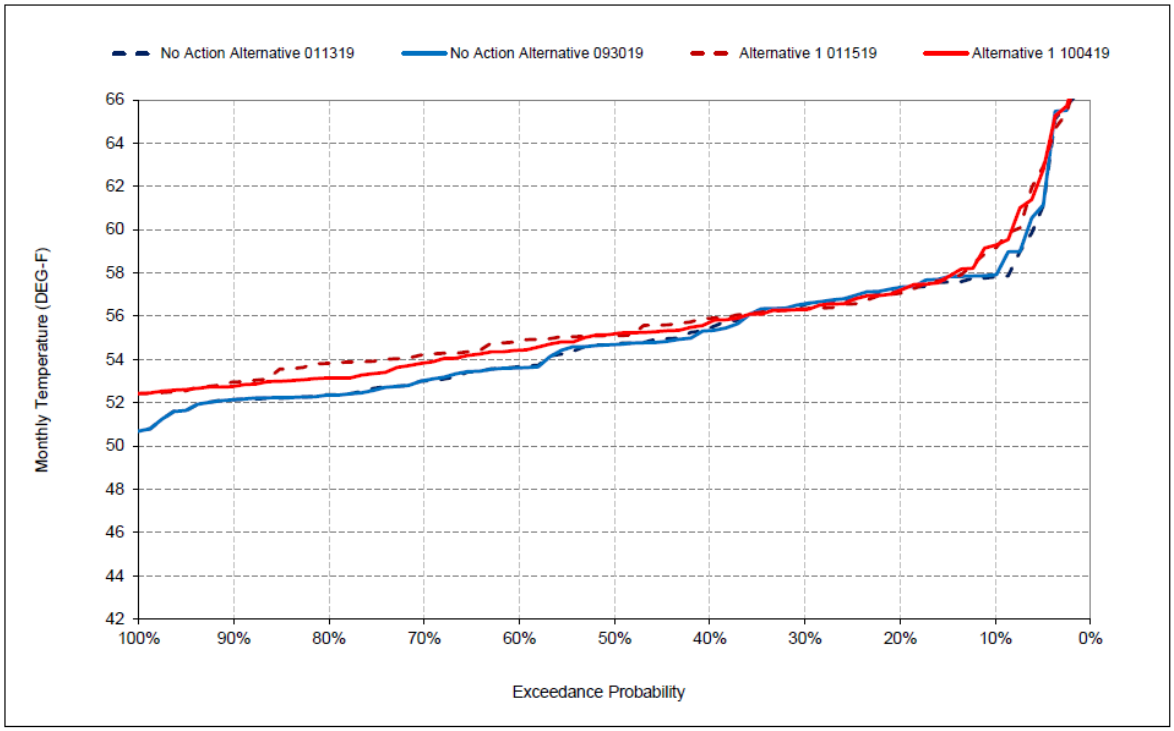
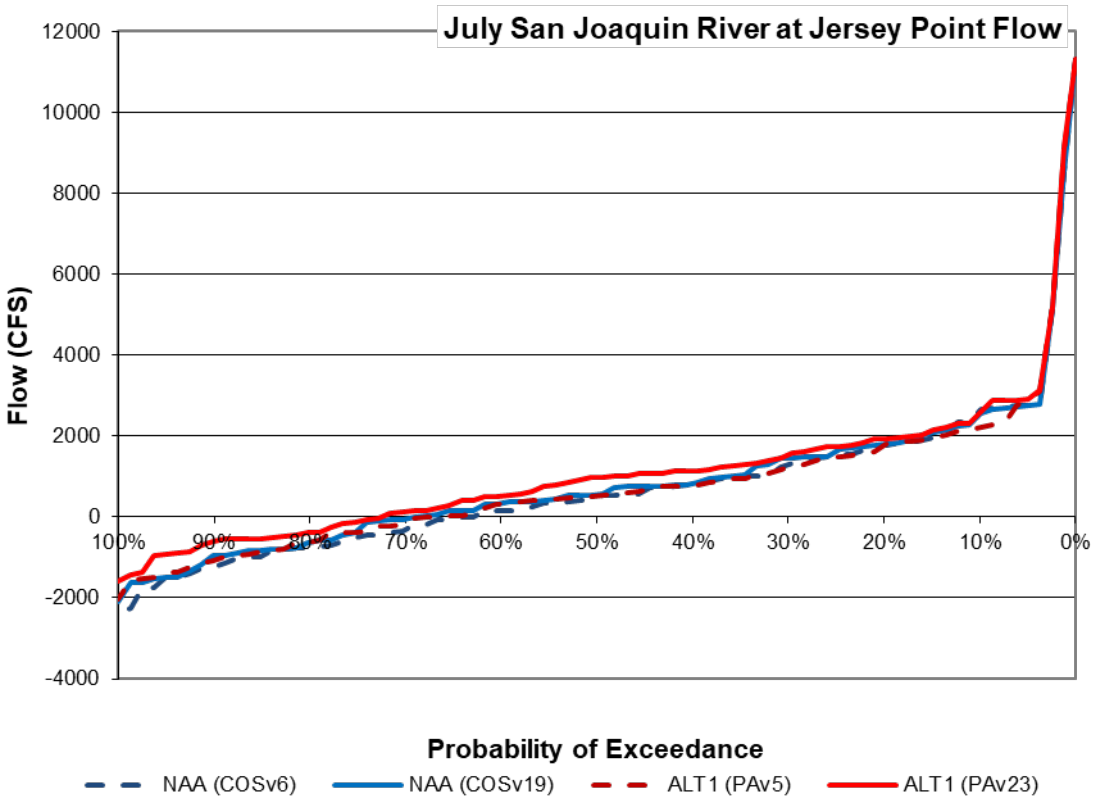



**Figure 29-8. Monthly Average Water Temperature Exceedances for Sacramento River at Balls Ferry, September**

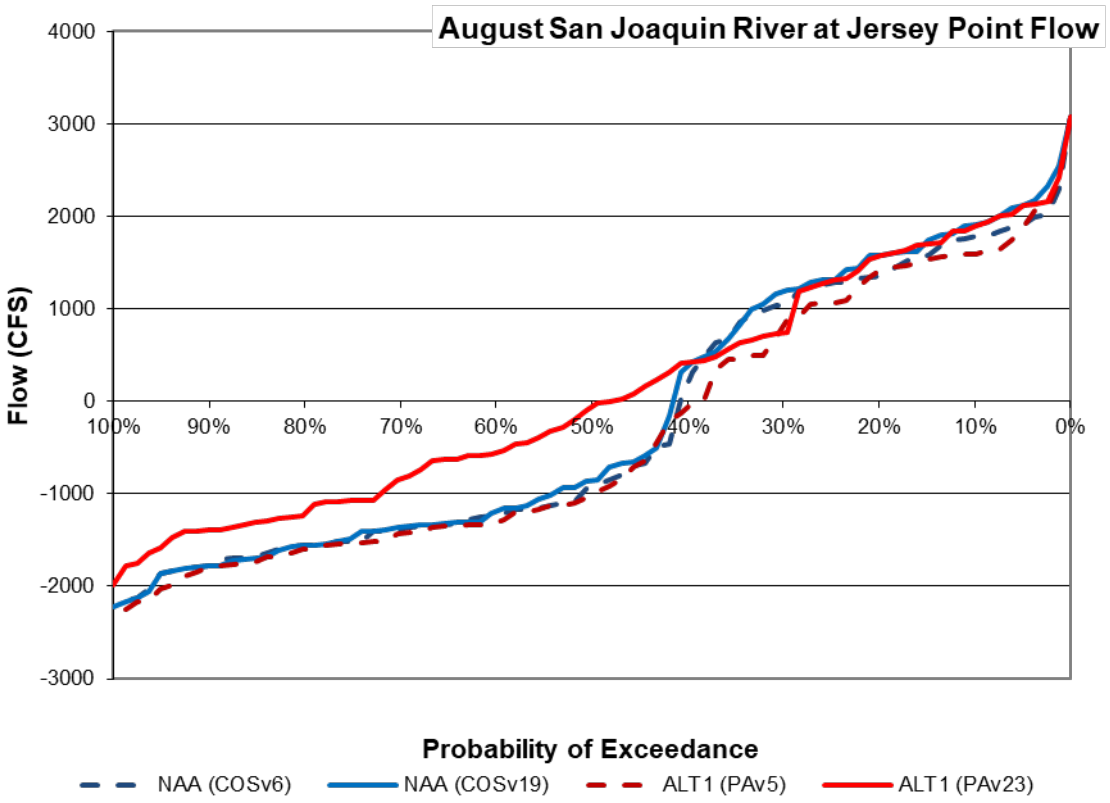
*Bay-Delta*

The revised Alternative 1 modeling indicate that effects to aquatic resources in the Bay-Delta generally would be consistent with the analyses presented in the DEIS, as shown by CalSim and DSM2 (see *Water Supply* section). Because the main period of difference reflected in the revised modeling pertains to the fall, it is most relevant to consider potential effects to Delta Smelt. As noted in the DEIS (p.O-290), for Delta Smelt juveniles in summer/early fall (July–September), there is a positive correlation between Delta outflow and the subsidy of the zooplankton prey *Pseudodiaptomus forbesi* to the low salinity zone, with flows in the lower San Joaquin River potentially being of importance given the higher density of *P. forbesi* there. The revised DSM2-HYDRO modeling suggests that the revised Alternative 1 (labelled below in plots as 'ALT1 (PAv23)') would have similar or greater frequency of positive San Joaquin River at Jersey Point flows than the No Action Alternative (labelled below in plots as 'NAA (COSv19)') (Figures 30-1, 30-2, 30-3). The differences from the original modeling in the DEIS reflect differences in modeling representation of the summer-fall habitat action for Delta Smelt, in particular operations to maintain September/October X2 at or below 80 km in wet and above normal years. This suggests that there would not be the potential for negative effects of the revised Alternative 1 to *P. forbesi* subsidy to the low salinity zone relative to No Action Alternative.



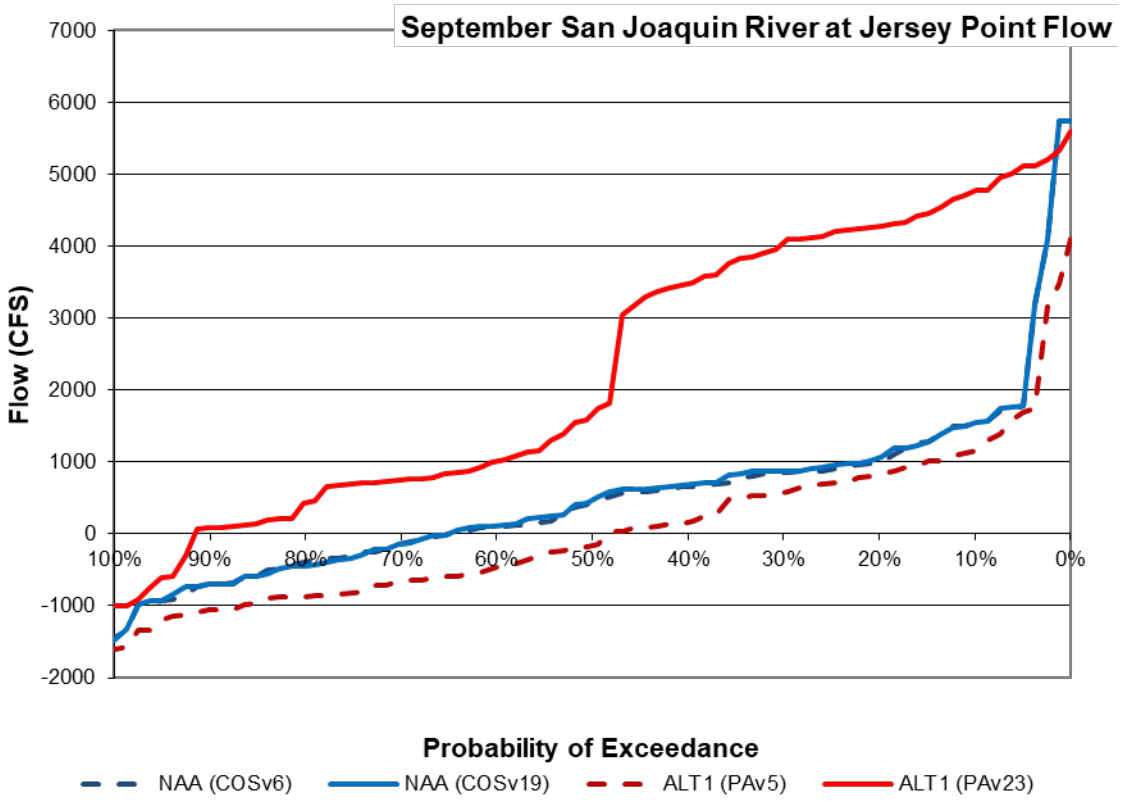

Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-1. Updated DSM2-HYDRO-Modeled Probability of Exceedance of San Joaquin River Flow at Jersey Point, July.**




Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-2. Updated DSM2-HYDRO-Modeled Probability of Exceedance of San Joaquin River Flow at Jersey Point, July.**

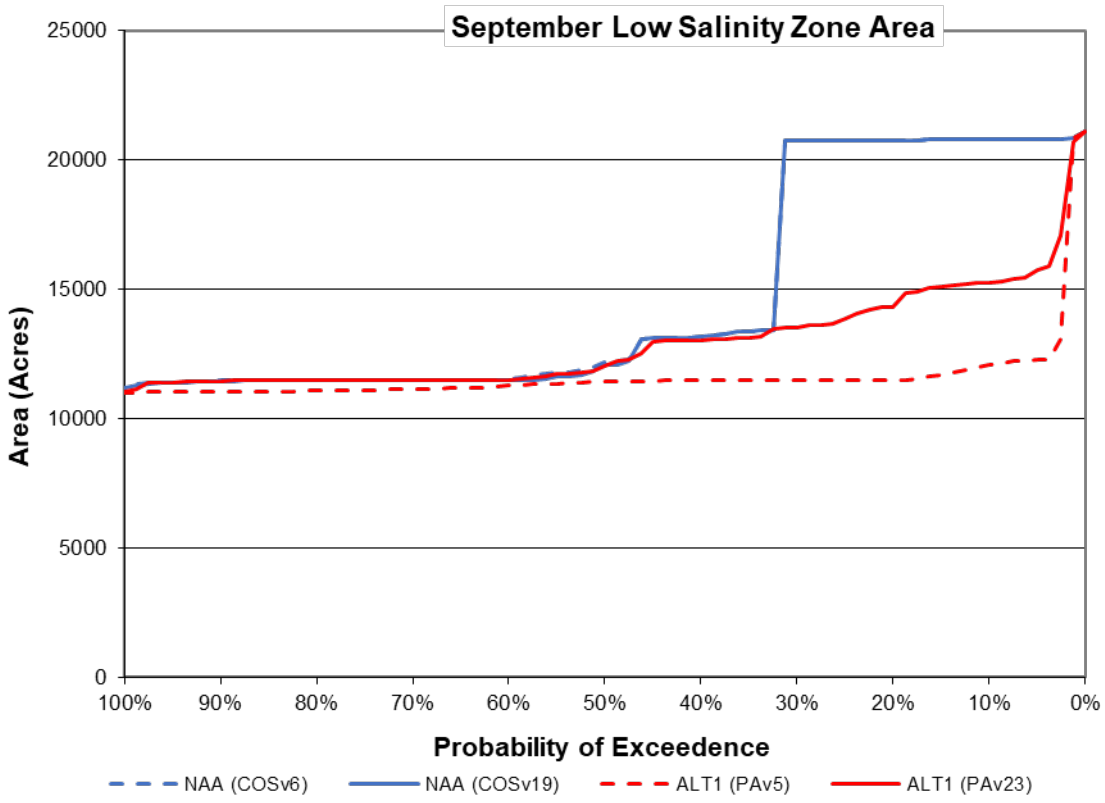



Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-3. Updated DSM2-HYDRO-Modeled Probability of Exceedance of San Joaquin River Flow at Jersey Point, September.**

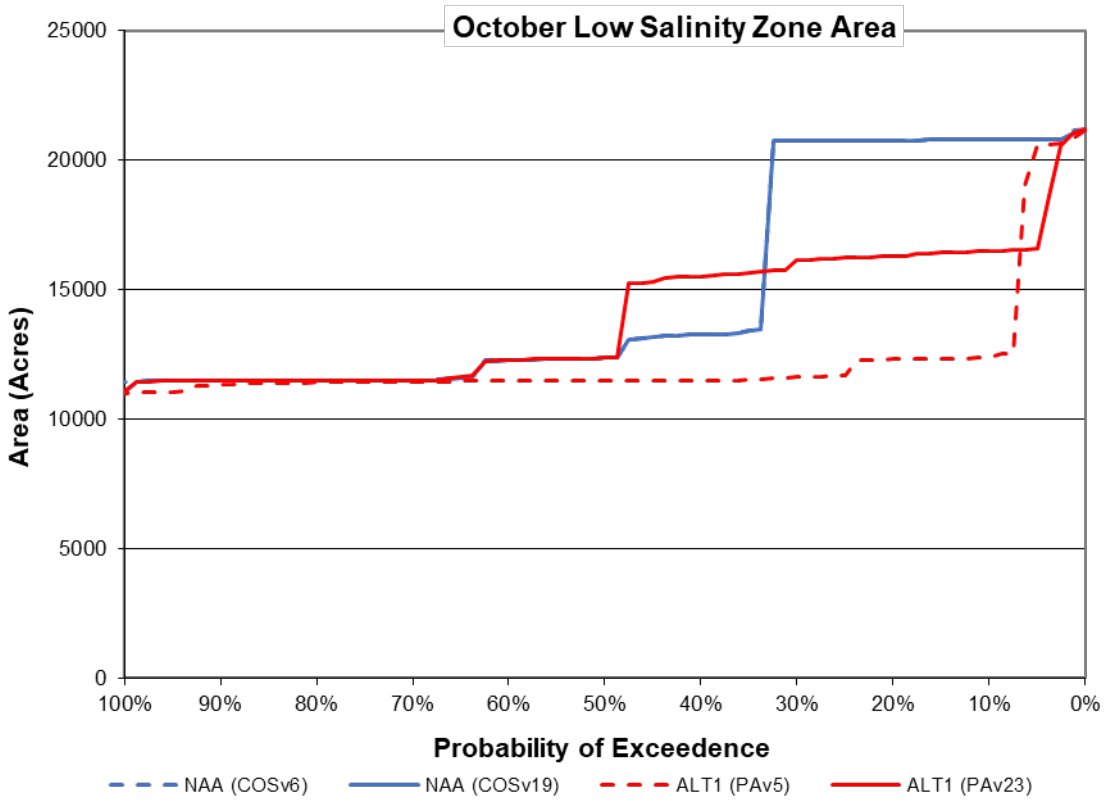
As noted in the DEIS (p. O-293), the size and location of the low salinity zone is hypothesized to affect subadult Delta Smelt abundance, survival, and growth, although evidence is mixed and additional investigations are thought to be needed to provide further support. On the basis of modeled X2, Alternative 1 would be expected to appreciably reduce the size of the low salinity zone in September–November of wet years compared to the No Action Alternative, as a result of Alternative 1 not including the USFWS (2008) BO RPA fall X2 action: applying the methods from the DEIS, the area of the low salinity zone would be expected to be similar under Alternative 1 and the No Action Alternative in ~50-70% of years in September–November, with potentially slightly greater extent under Alternative 1 in October of above normal years (~30-50% exceedance) (Figures 30-4, 30-5, and 30-6). In wet years (i.e., ~0-30% exceedance), there is the potential for considerably less low salinity zone area under Alternative 1 than the No Action Alternative. As discussed in the DEIS (p.O-293), the percentage of time that X2 is ≥ 85 km is an indicator of how often the low salinity zone rearing habitat is outside of Suisun Bay, important Delta Smelt rearing habitat. The revised modeling suggests that in June–October, there would be little difference between Alternative 1 and the No Action Alternative in the percentage of time that X2 is ≥ 85 km, whereas in November–December, X2 would be ≥ 85 km considerably more of the time under Alternative 1 than the No Action Alternative (Figure 30-7). Collectively, the revised modeling of the area of low salinity zone habitat and the percentage of years with X2 ≥ 85 km are consistent with the DEIS modeling in indicating the potential for negative effects to Delta Smelt juveniles/subadults under Alternative 1 relative to the No Action Alternative, based on the hypothesized importance of these

factors. However, as noted in the DEIS (p.O-294), the Delta Smelt summer-fall habitat action would aim to meet several environmental and biological goals for Delta Smelt. The modeling discussed herein does not account for potential beneficial effects of Suisun Marsh Salinity Control Gates operations lowering Suisun Marsh salinity and thereby potentially increasing the overlap of abiotic and biotic (food) habitat for Delta Smelt. In addition and as discussed in the DEIS (p.O-294), to the extent that tidal restoration (i.e., the completion of the remaining acreage as part of 8,000 acres of tidal habitat restoration) provides new low salinity zone habitat that is occupied by rearing Delta Smelt, this could provide some offsetting of potential reductions in the size and area of the low salinity zone resulting from operations.



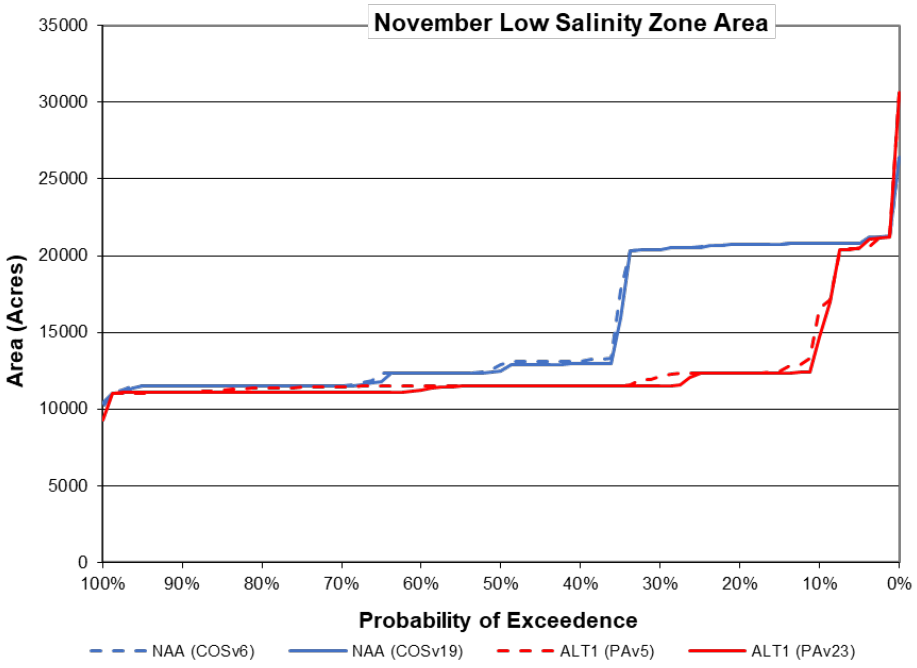

Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-4. Updated Low Salinity Zone Area Estimated from CalSim X2, September.**



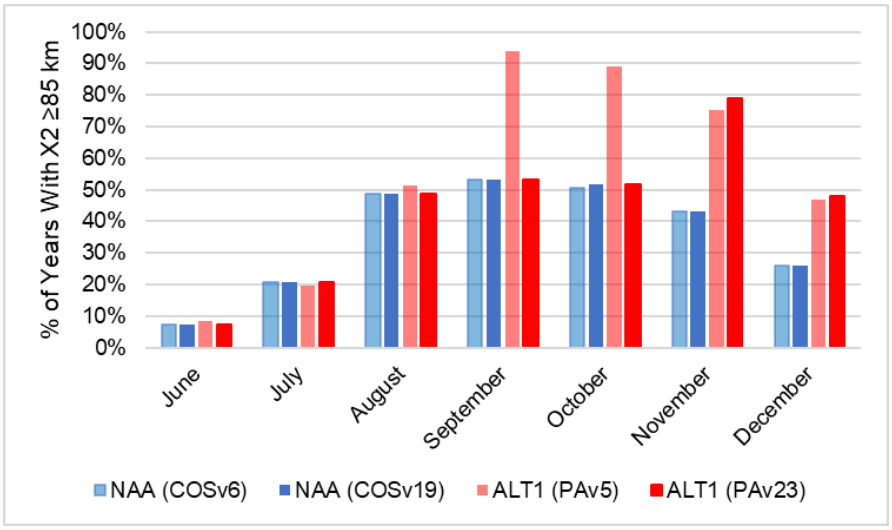

Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-5. Updated Low Salinity Zone Area Estimated from CalSim X2, October.**




Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-6. Updated Low Salinity Zone Area Estimated from CalSim X2, November.**




Note: 'NAA (COSv6)' = NAA as modeled in DEIS; 'NAA (COSv19)' = updated NAA for FEIS; 'ALT1 (PAv5)' = Alternative 1 as modeled in DEIS; 'ALT1 (PAv23)' = Alternative 1 as modeled in FEIS.

**Figure 30-7. Updated Low Salinity Zone Area Estimated from CalSim X2, November.**

### F1.1.2.14.5 Regional Economics

*Potential M&I water supply related changes to the regional economy*

Alternative 1 in the DEIS and revised Alternative 1 would both increase water supply deliveries to North of Delta and South of Delta M&I contractors in comparison to No Action Alternative. Water rates under both Alternative 1 scenarios could be lower than the No Action Alternative.

Table 31-1 summarizes the regional economic effects on employment, labor income, and revenue from decreased water supply costs to CVP and SWP M&I contractors for both scenarios. Impacts to the regional economy would be beneficial under both Alternative 1 scenarios, with impacts being less pronounced under the revised Alternative 1. Regional economic impacts decreased by approximately 30% under the revised Alternative 1 scenario. The ranking of alternatives does not change; Alternatives 2 and 3 would remain the best performing alternatives based on water supply-related regional economic impacts followed by Alternative 1 and Alternative 4, respectively.

**Table 31-1. Summary of Regional Economic Effects for for decreased water supply costs to CVP and SWP M&I Contractors**

| | Employment (number of jobs)[1] | Labor Income (million dollars) | Revenue (million dollars) |
|---|---|---|---|
| Alternative 1 (DEIS) compared to No Action Alternative (DEIS) | 120 | $7 | $20 |
| Alternative 1 (Revised) compared to No Action Alternative (Revised) | 84 | $5 | $14 |

*Potential agriculture-related changes to the regional economy*

Similar to M&I water supply deliveries, agricultural water supply deliveries under both Alternative 1 scenarios would increase, and irrigated acreage in the San Joaquin Valley is expected to increase under both scenarios. Under the revised Alternative 1, a small change in irrigated acreage is expected in the Sacramento Valley compared to the No Action Alternative. This increase would result in increased agricultural revenues for the growers that could affect businesses and individuals who support farming activities, such as farm workers, fertilizer and chemical dealers, wholesale and agricultural service providers, truck transport, and others involved in crop production and processing.

Table 31-2 summarizes the regional economic effects on employment, labor income, and revenue from increased agricultural revenue to agricultural contractors for both scenarios. Impacts to the regional economy would be beneficial under both Alternative 1 scenarios, with effects being less pronounced under the revised Alternative 1. Under average conditions, regional economic impacts decreased by approximately 15% for the revised Alternative 1 scenario compared to the DEIS scenario. Under dry conditions, labor income and revenue decrease by approximately 5% under the revised Alternative 1 scenario. Employment increased under the dry condition due to an increase in irrigated acreage in the fruit farming sector. The ranking of alternatives does not change; Alternatives 2 and 3 would remain the best performing alternatives based on water supply related regional economic impacts followed by Alternative 1 and Alternative 4, respectively.

**Table 31-2. Summary of Regional Economic Effects from Increased Agricultural Revenue**

| | Employment (number of jobs)[1] | Labor Income (million dollars) | Revenue (million dollars) |
|---|---|---|---|
| **Average Conditions** | | | |
| Alternative 1 (DEIS) compared to No Action Alternative (DEIS) | 136 | $6 | $17 |
| Alternative 1 (Revised) compared to No Action Alternative (Revised) | 115 | $5 | $14 |
| **Dry Conditions** | | | |
| Alternative 1 (DEIS) compared to No Action Alternative (DEIS) | 482 | $25 | $83 |
| Alternative 1 (Revised) compared to No Action Alternative (Revised) | 534 | $24 | $78 |

## F1.2 References

None.