Appendix D – Modeling

Attachment 3-4 – Temperature Results (HEC5Q)

The following results of the HEC5Q model are included for river temperature conditions:

Title	Model Parameter	Table Numbers	Figure Numbers
Trinity River below Lewiston Dam	BLW LEWISTON	1-1 to 1-3	1-1 to 1-18
Clear Creek below Whiskeytown	WHISKEYTOWN	2-1 to 2-3	2-1 to 2-18
Clear Creek at Igo	IGO	3-1 to 3-3	3-1 to 3-18
Clear Creek at Mouth	ABV SACRAMENTO	4-1 to 4-3	4-1 to 4-18
Sacramento River below Keswick	BLW KESWICK	5-1 to 5-3	5-1 to 5-18
Sacramento River at Clear Creek	BLW CLEAR CREEK	6-1 to 6-3	6-1 to 6-18
Sacramento River at Balls Ferry	BALLS FERRY	7-1 to 7-3	7-1 to 7-18
Sacramento River at Jellys Ferry	JELLYS FERRY	8-1 to 8-3	8-1 to 8-18
Sacramento River at Bend Bridge	BEND BRIDGE	9-1 to 9-3	9-1 to 9-18
Sacramento River at Red Bluff	RED BLUFF DAM	10-1 to 10-3	10-1 to 10-18
Sacramento River below Red Bluff	BELOW_RBDD_TEHAMA	11-1 to 11-3	11-1 to 11-18
Sacramento River below Hamilton City	HAMILTON CITY	12-1 to 12-3	12-1 to 12-18
Sacramento River at Delevan	MOULTIN WEIR	13-1 to 13-3	13-1 to 13-18
Sacramento River at Knights Landing	KNIGHTS LDG	14-1 to 14-3	14-1 to 14-18
American River below Nimbus Dam	BLW NIMBUS(HAZEL AVE)	15-1 to 15-3	15-1 to 15-18
American River at Watt Avenue	WATT AVE	16-1 to 16-3	16-1 to 16-18
American River at the Mouth	ABV CONFLUENCE	17-1 to 17-3	17-1 to 17-18
Trinity River at Douglas City	DOUGLAS_CITY	18-1 to 18-3	18-1 to 18-18
Trinity River at North Fork	AT_N_FORK	19-1 to 19-3	19-1 to 19-18
Stanislaus River below New Melones Reservoir	BLW NEW MELONES	20-1 to 10-3	20-1 to 20-18
Stanislaus River below Tulloch Reservoir	BLW TULLOCH	21-1 to 21-3	21-1 to 21-18
Stanislaus River below Goodwin Dam	BLW GOODWIN	22-1 to 22-3	22-1 to 22-18
Stanislaus River at Orange Blossom Bridge	BLW ORBL BR	23-1 to 23-3	23-1 to 23-18
Stanislaus River at Mouth	ABV CONFLUENCE	24-1 to 24-3	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

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63.7	52.8	42.6	40.6	42.5	45.8	49.1	54.4	65.4	77.1	79.2	74.2
20%	62.6	50.9	41.1	40.0	41.9	45.4	48.5	53.3	61.9	75.3	78.4	73.4
30%	62.2	49.8	40.6	39.7	41.5	44.5	48.1	52.4	60.8	74.6	77.8	72.8
40%	61.7	48.5	40.4	39.3	41.1	44.2	47.7	52.2	59.9	73.6	77.3	72.3
50%	61.3	46.7	39.6	39.1	40.9	43.9	47.4	51.6	58.8	72.9	77.1	72.1
60%	60.8	46.0	39.3	38.8	40.7	43.7	46.8	51.2	58.1	71.8	76.2	71.4
70%	59.2	44.6	39.0	38.7	40.5	43.5	46.5	50.7	57.2	70.0	75.2	71.0
80%	58.5	43.8	38.8	38.5	40.3	43.2	46.3	50.4	56.4	68.4	74.0	70.2
90%	55.6	43.2	38.5	38.2	40.1	43.0	45.8	50.0	55.5	65.8	72.3	69.1
Long Term												
Full Simulation Period[a]	60.5	47.5	40.1	39.2	41.2	44.2	47.4	52.0	59.7	72.1	76.3	71.7
Water Year Types[b,c]												
Wet (32%)	60.5	46.9	39.8	39.0	40.6	43.6	46.6	50.9	57.1	68.6	74.5	71.1
Above Normal (16%)	59.9	46.5	39.9	39.2	40.6	43.6	46.8	51.3	58.5	70.8	75.6	70.2
Below Normal (13%)	59.2	47.8	40.3	38.8	41.0	44.5	47.6	51.9	60.3	73.9	76.5	71.7
Dry (24%)	60.0	47.2	40.1	39.3	41.4	44.3	47.6	52.3	61.0	73.9	77.2	72.3
Critical (15%)	62.9	49.8	40.7	40.0	42.9	45.9	49.6	54.5	63.6	76.2	79.0	73.5

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-7.8	**0.2**	**8.9**	**9.2**	**7.9**	**6.5**	**3.7**	-3.4	-9.8	-22.6	-24.6	-19.6
20%	-8.2	**1.0**	**9.3**	**9.2**	**7.7**	**6.5**	**3.7**	-3.8	-9.6	-22.3	-25.2	-19.6
30%	-9.0	**1.6**	**9.3**	**8.7**	**7.0**	**6.4**	**3.9**	-4.6	-9.2	-22.5	-25.4	-20.3
40%	-9.2	**2.4**	**9.1**	**8.6**	**6.7**	**5.6**	**3.9**	-5.2	-9.0	-21.8	-25.3	-20.4
50%	-9.5	**3.9**	**9.4**	**8.5**	**6.4**	**5.6**	**3.9**	-5.3	-8.8	-21.4	-25.7	-20.8
60%	-9.7	**4.4**	**9.0**	**8.3**	**6.0**	**5.2**	**4.0**	-5.4	-9.0	-20.7	-25.2	-20.8
70%	-8.8	**4.9**	**8.7**	**7.6**	**5.8**	**4.8**	**3.5**	-5.4	-8.7	-19.1	-24.6	-20.9
80%	-8.6	**5.5**	**7.6**	**6.6**	**5.0**	**4.4**	**2.5**	-5.4	-9.4	-18.2	-23.7	-20.6
90%	-6.4	**5.5**	**7.1**	**5.8**	**4.4**	**3.3**	**2.0**	-5.4	-9.9	-16.2	-22.6	-19.9
Long Term												
Full Simulation Period[a]	-8.5	**3.0**	**8.6**	**8.1**	**6.2**	**5.2**	**3.2**	-4.9	-9.5	-20.2	-24.5	-20.0
Water Year Types[b,c]												
Wet (32%)	-10.6	**2.9**	**9.2**	**7.0**	**5.4**	**4.0**	**2.5**	-5.1	-9.5	-17.6	-23.7	-21.2
Above Normal (16%)	-9.4	**3.6**	**9.1**	**7.4**	**6.1**	**5.4**	**3.5**	-6.1	-10.7	-20.2	-25.5	-20.2
Below Normal (13%)	-6.5	**2.8**	**8.0**	**9.3**	**6.3**	**5.2**	**4.0**	-4.9	-9.8	-22.3	-24.9	-19.8
Dry (24%)	-6.4	**3.9**	**7.7**	**8.8**	**7.2**	**6.5**	**4.1**	-4.4	-9.5	-22.0	-24.9	-19.5
Critical (15%)	-8.4	**1.6**	**9.1**	**9.0**	**6.4**	**5.6**	**2.2**	-4.2	-8.3	-20.7	-24.1	-17.8

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 1-2. Trinity River below Lewiston Dam, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63.7	52.8	42.6	40.6	42.5	45.8	49.1	54.4	65.4	77.1	79.2	74.2
20%	62.6	50.9	41.1	40.0	41.9	45.4	48.5	53.3	61.9	75.3	78.4	73.4
30%	62.2	49.8	40.6	39.7	41.5	44.5	48.1	52.4	60.8	74.6	77.8	72.8
40%	61.7	48.5	40.4	39.3	41.1	44.2	47.7	52.2	59.9	73.6	77.3	72.3
50%	61.3	46.7	39.6	39.1	40.9	43.9	47.4	51.6	58.8	72.9	77.1	72.1
60%	60.8	46.0	39.3	38.8	40.7	43.7	46.8	51.2	58.1	71.8	76.2	71.4
70%	59.2	44.6	39.0	38.7	40.5	43.5	46.5	50.7	57.2	70.0	75.2	71.0
80%	58.5	43.8	38.8	38.5	40.3	43.2	46.3	50.4	56.4	68.4	74.0	70.2
90%	55.6	43.2	38.5	38.2	40.1	43.0	45.8	50.0	55.5	65.8	72.3	69.1
Long Term												
Full Simulation Period[a]	60.5	47.5	40.1	39.2	41.2	44.2	47.4	52.0	59.7	72.1	76.3	71.7
Water Year Types[b,c]												
Wet (32%)	60.5	46.9	39.8	39.0	40.6	43.6	46.6	50.9	57.1	68.6	74.5	71.1
Above Normal (16%)	59.9	46.5	39.9	39.2	40.6	43.6	46.8	51.3	58.5	70.8	75.6	70.2
Below Normal (13%)	59.2	47.8	40.3	38.8	41.0	44.5	47.6	51.9	60.3	73.9	76.5	71.7
Dry (24%)	60.0	47.2	40.1	39.3	41.4	44.3	47.6	52.3	61.0	73.9	77.2	72.3
Critical (15%)	62.9	49.8	40.7	40.0	42.9	45.9	49.6	54.5	63.6	76.2	79.0	73.5

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-8.6	**0.0**	**8.4**	**9.0**	**7.9**	**6.4**	**3.3**	-3.6	-10.0	-23.2	-24.4	-19.5
20%	-8.2	**1.1**	**9.2**	**8.8**	**7.4**	**6.5**	**3.7**	-3.9	-9.1	-22.6	-25.7	-20.2
30%	-8.9	**1.6**	**9.0**	**8.4**	**7.0**	**6.5**	**3.8**	-4.7	-9.2	-22.5	-25.8	-20.5
40%	-9.4	**2.4**	**8.6**	**8.4**	**6.8**	**5.7**	**3.8**	-5.2	-9.2	-21.8	-25.7	-20.2
50%	-9.6	**4.0**	**8.8**	**8.4**	**6.3**	**5.5**	**3.8**	-5.3	-8.7	-21.5	-25.8	-20.6
60%	-9.7	**4.5**	**8.6**	**8.2**	**6.0**	**5.1**	**3.9**	-5.3	-8.9	-20.7	-25.2	-20.4
70%	-8.8	**4.8**	**8.2**	**7.6**	**5.6**	**4.8**	**3.6**	-5.4	-8.5	-19.4	-24.5	-20.6
80%	-8.9	**5.3**	**7.5**	**6.5**	**5.0**	**4.4**	**2.6**	-5.4	-9.3	-18.2	-23.7	-20.3
90%	-6.6	**4.8**	**7.0**	**5.9**	**4.3**	**3.3**	**2.1**	-5.4	-9.9	-16.3	-22.7	-19.8
Long Term												
Full Simulation Period[a]	-8.9	**3.0**	**8.4**	**7.9**	**6.1**	**5.2**	**3.2**	-4.9	-9.5	-20.5	-24.5	-19.9
Water Year Types[b,c]												
Wet (32%)	-10.6	**2.7**	**8.2**	**7.0**	**5.2**	**4.1**	**2.7**	-5.1	-9.4	-17.7	-23.7	-20.8
Above Normal (16%)	-9.1	**2.9**	**8.0**	**6.9**	**5.7**	**4.8**	**3.5**	-6.1	-10.6	-20.4	-25.4	-20.0
Below Normal (13%)	-6.8	**2.6**	**8.5**	**8.4**	**6.2**	**5.2**	**4.1**	-5.0	-10.0	-22.3	-25.1	-19.8
Dry (24%)	-6.5	**3.9**	**8.1**	**8.7**	**7.2**	**6.3**	**3.8**	-4.4	-9.2	-22.3	-25.1	-19.8
Critical (15%)	-10.8	**3.0**	**9.4**	**9.3**	**6.7**	**5.9**	**2.0**	-4.3	-8.6	-22.1	-23.7	-17.8

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 1-3. Trinity River below Lewiston Dam, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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.

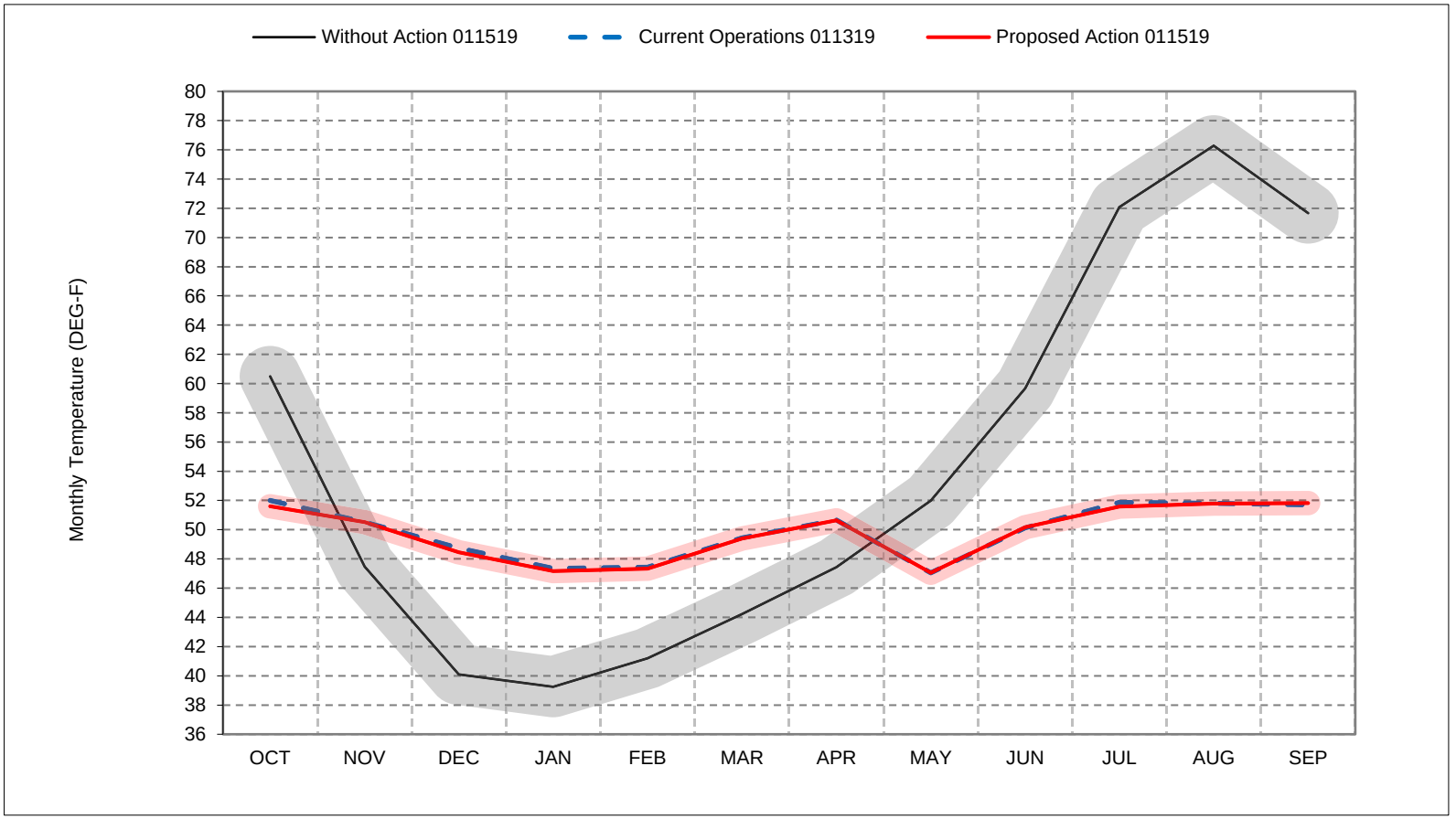
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

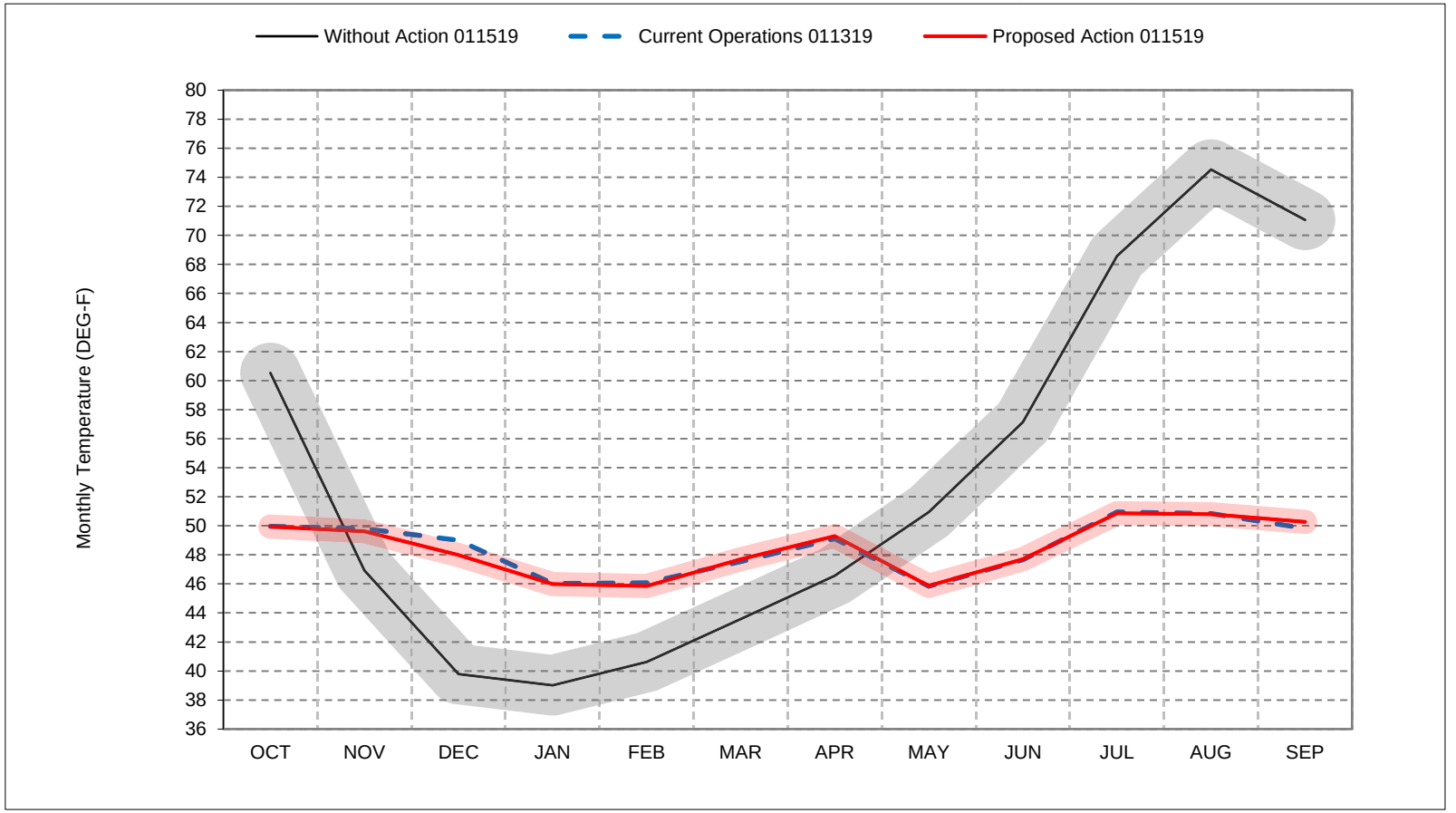
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-1. Trinity River below Lewiston Dam, Long-Term Average Temperature



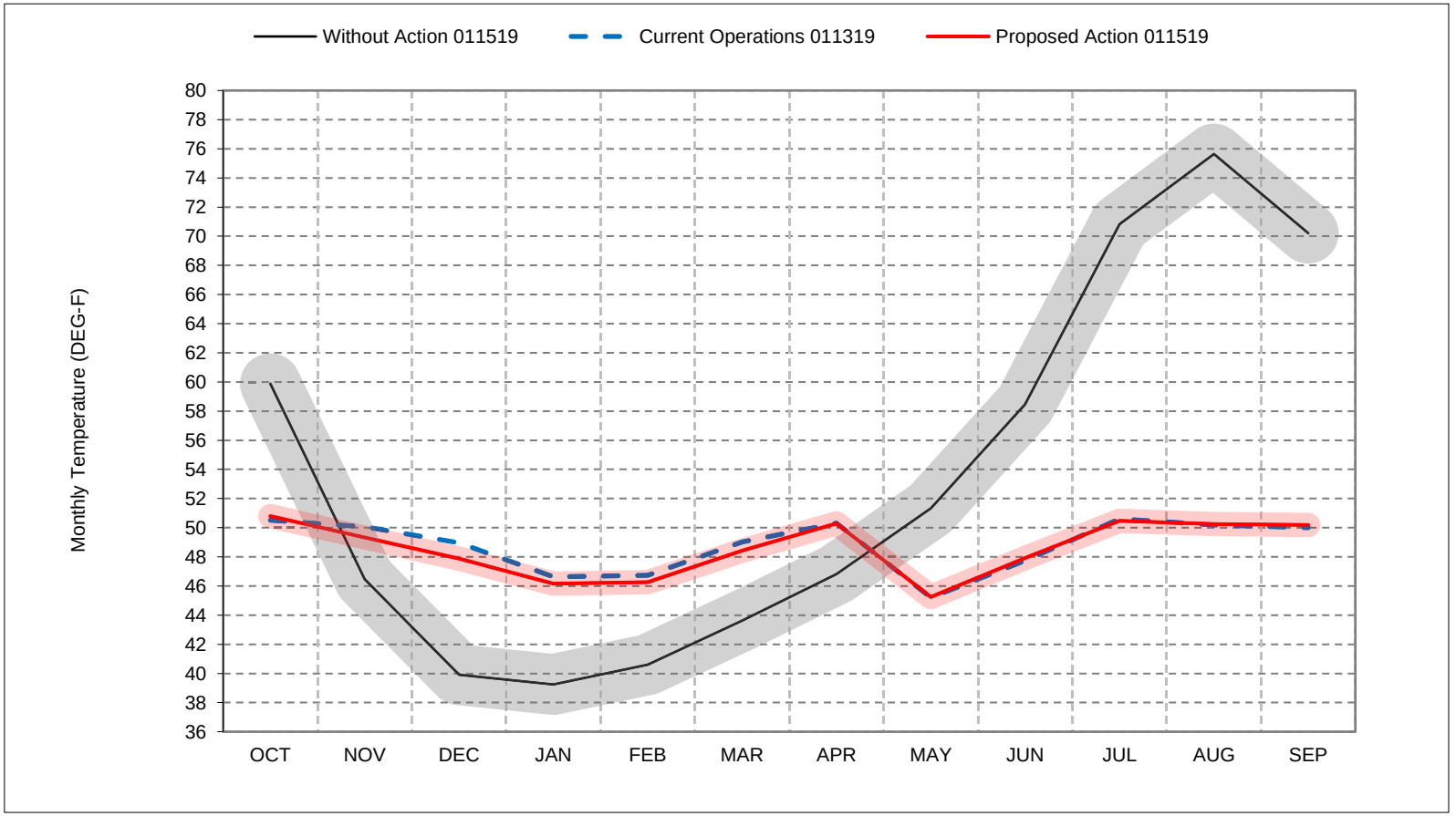
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-2. Trinity River below Lewiston Dam, Wet Year Average Temperature



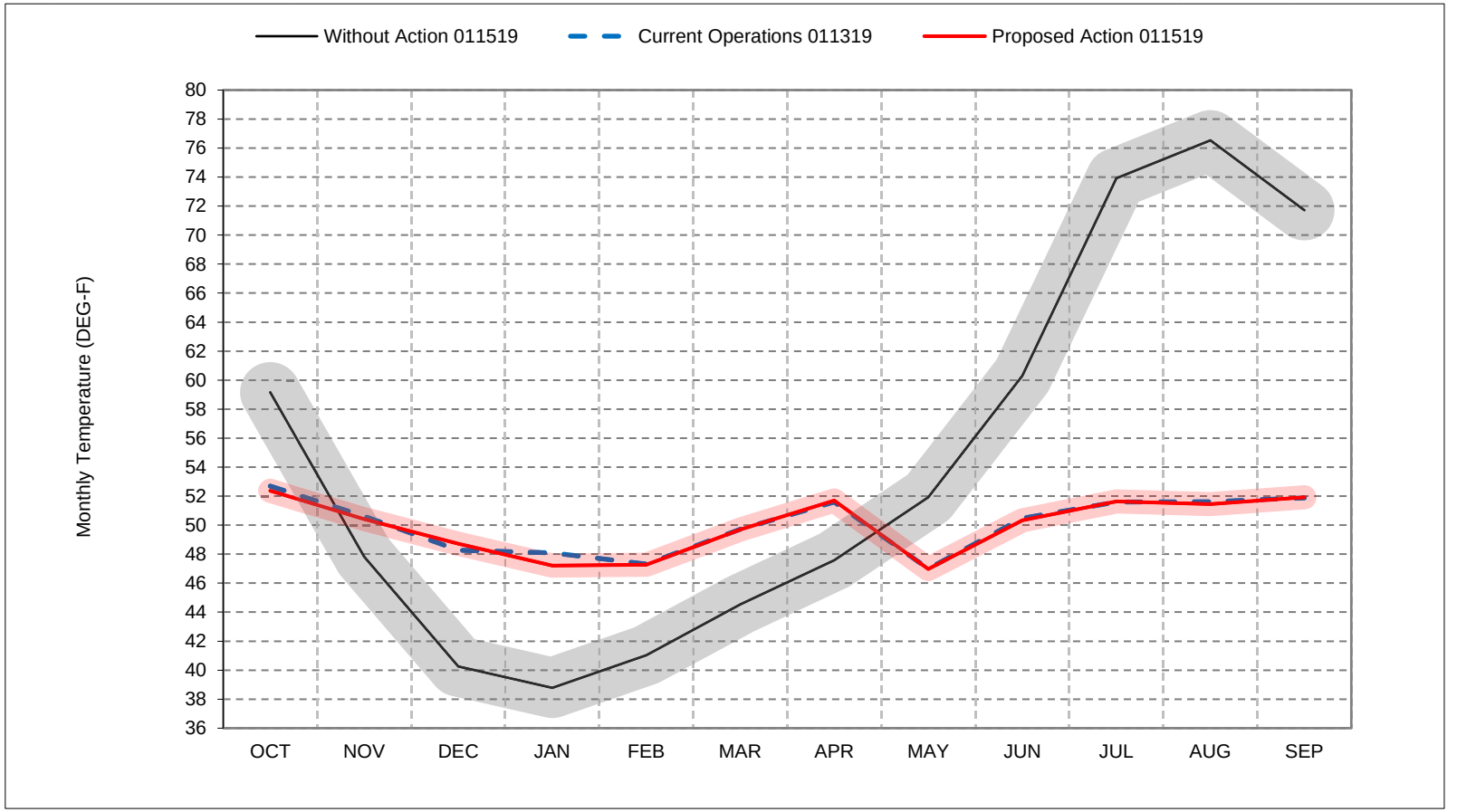
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-3. Trinity River below Lewiston Dam, Above Normal Year Average Temperature



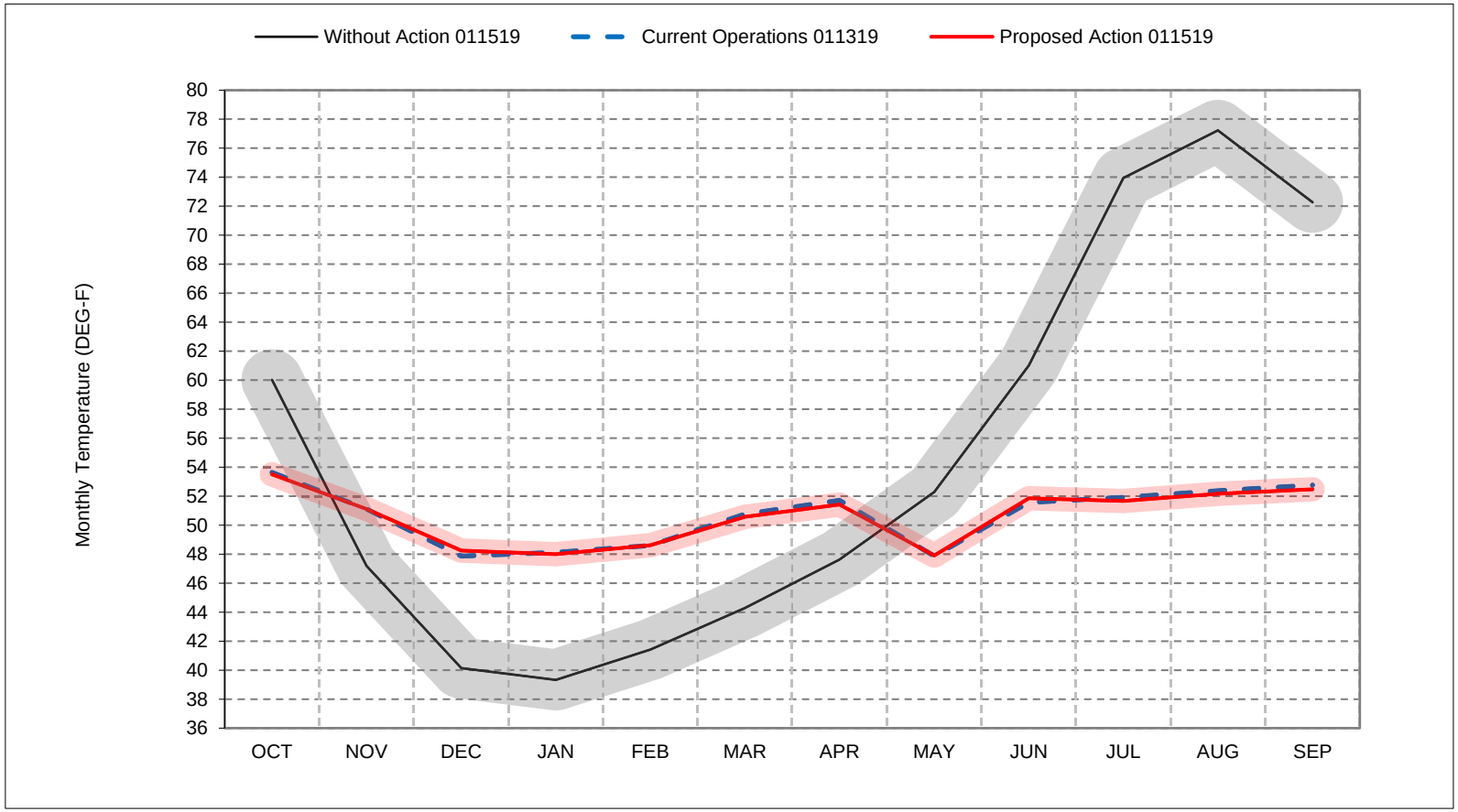
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-4. Trinity River below Lewiston Dam, Below Normal Year Average Temperature



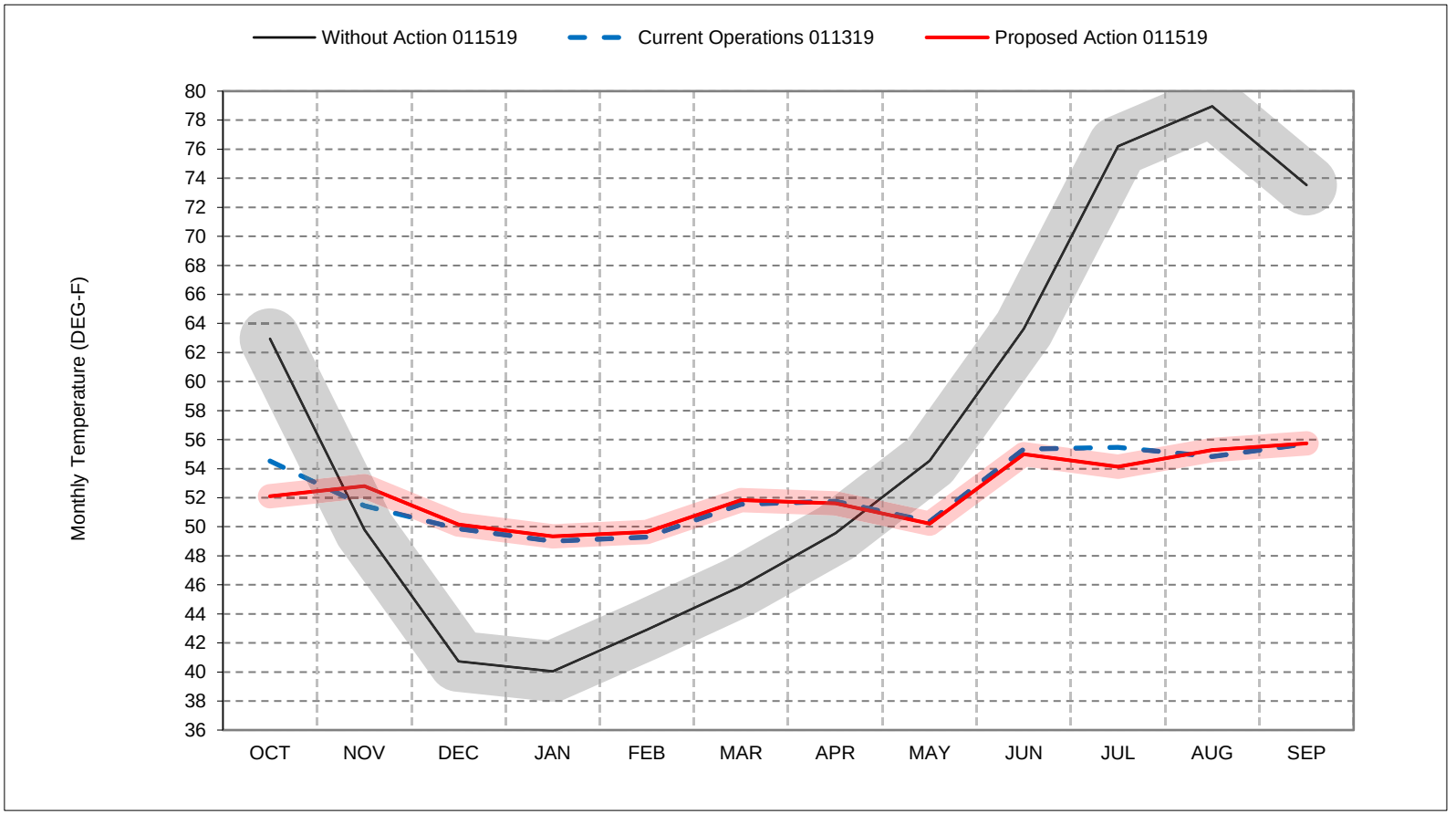
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-5. Trinity River below Lewiston Dam, Dry Year Average Temperature



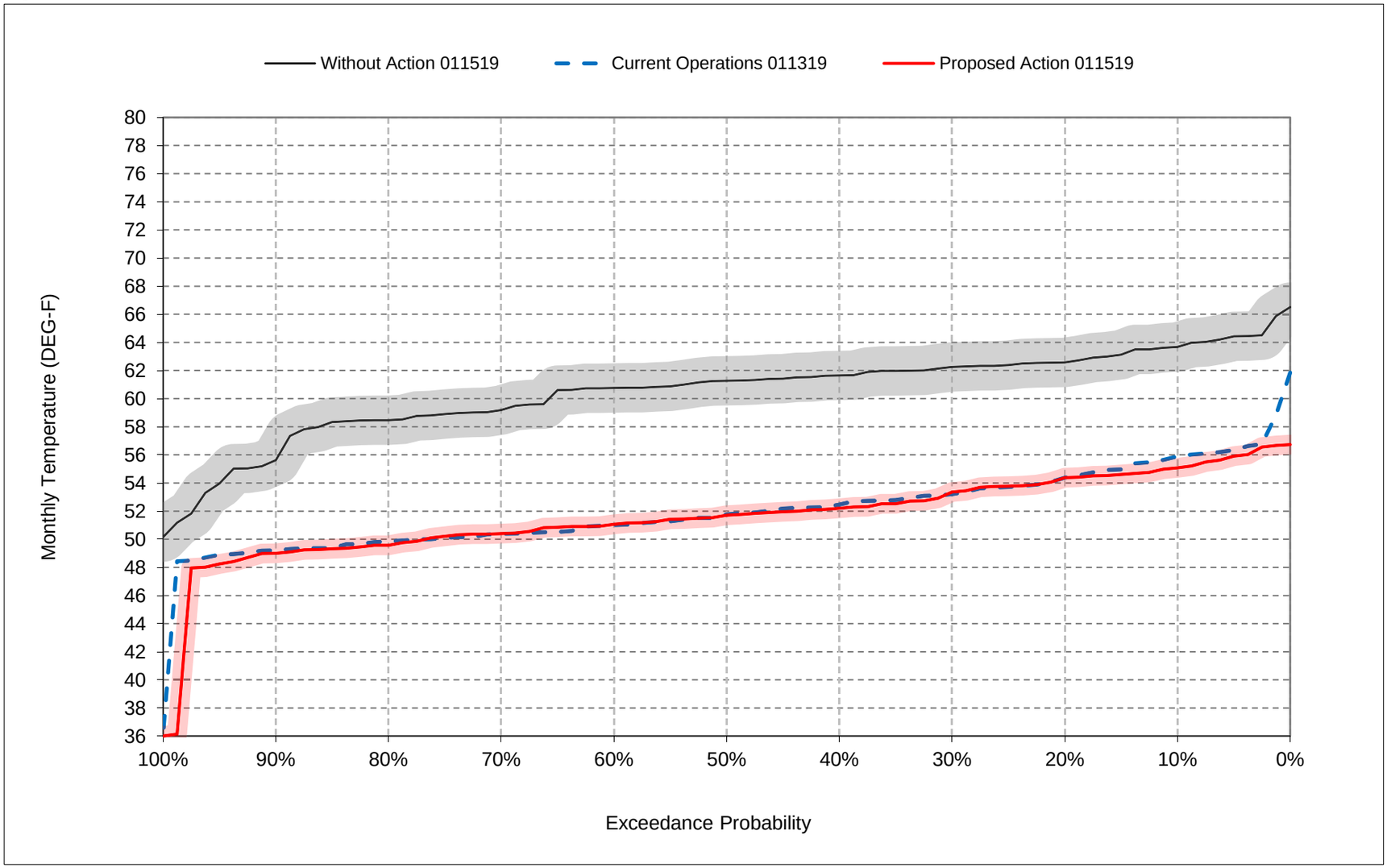
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

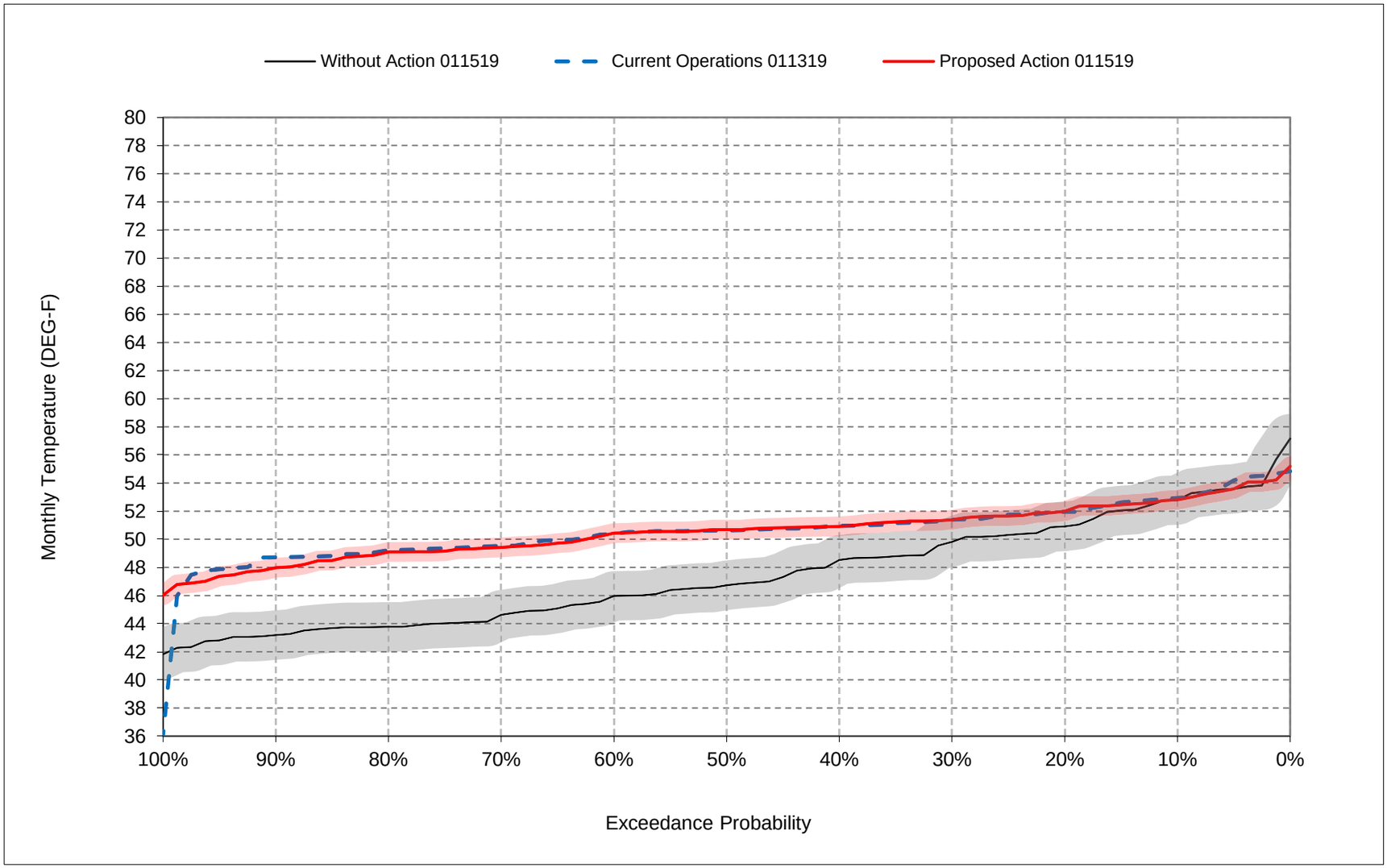
Figure 1-7. Trinity River below Lewiston Dam, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

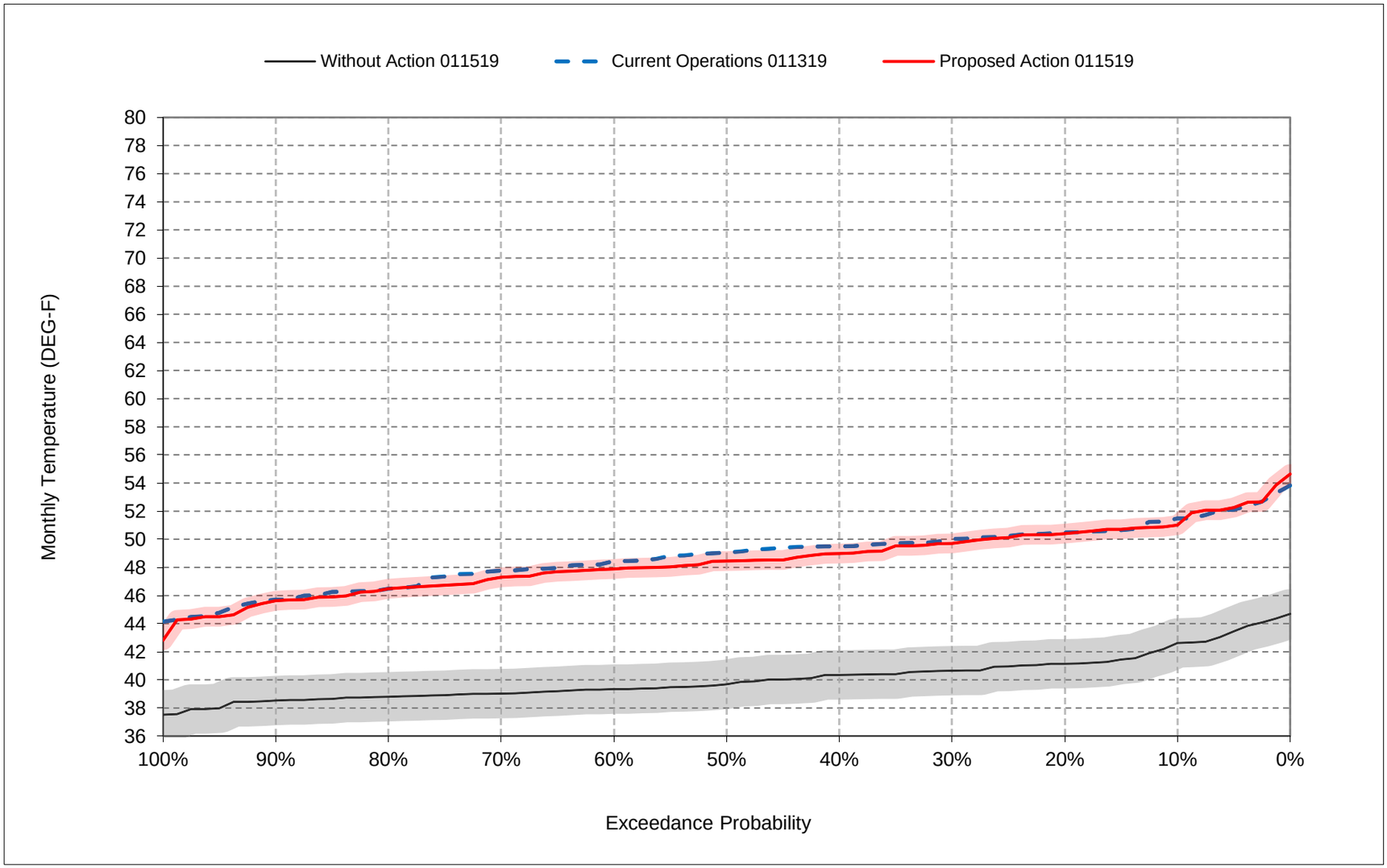
Figure 1-8. Trinity River below Lewiston Dam, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

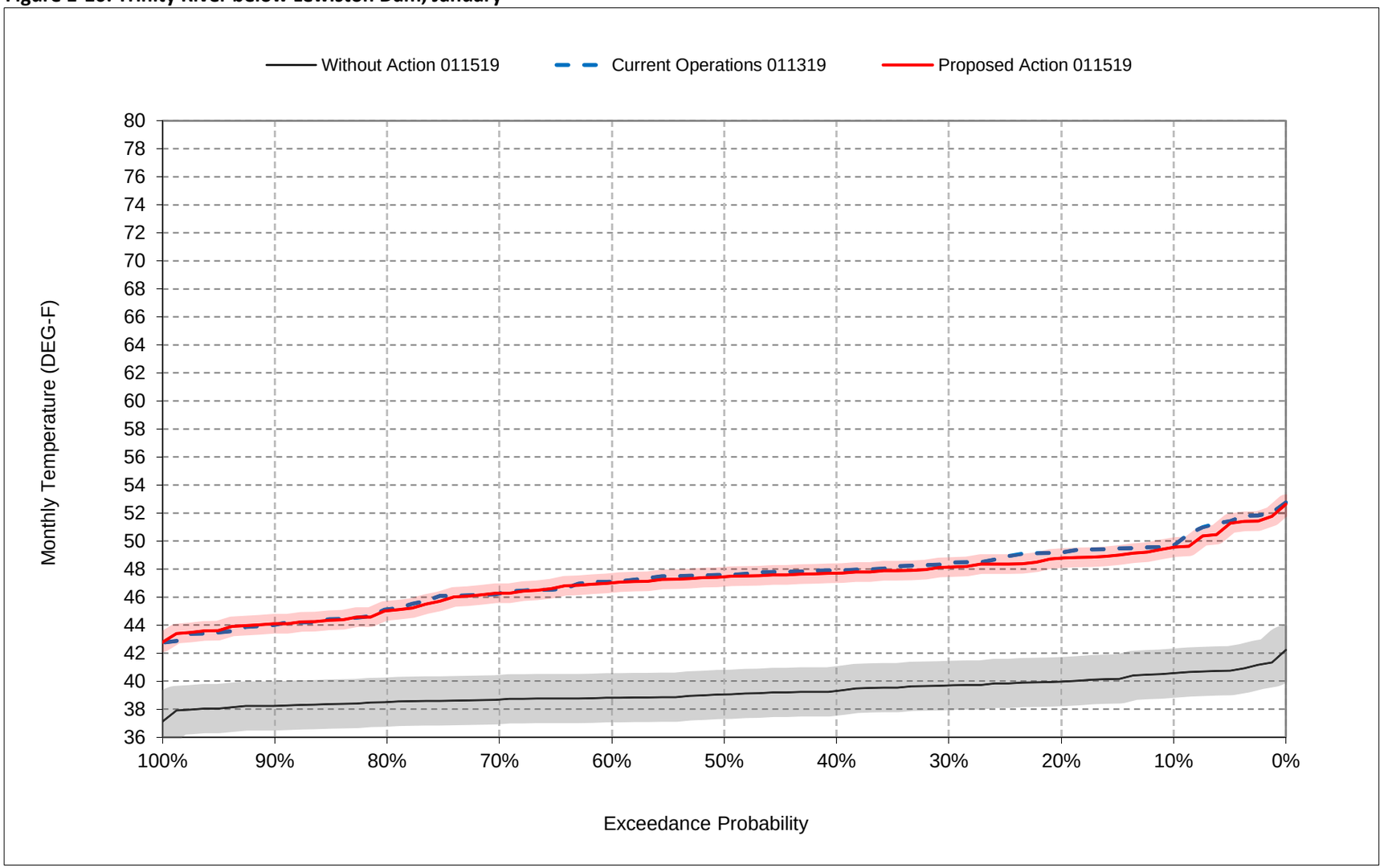
Figure 1-9. Trinity River below Lewiston Dam, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

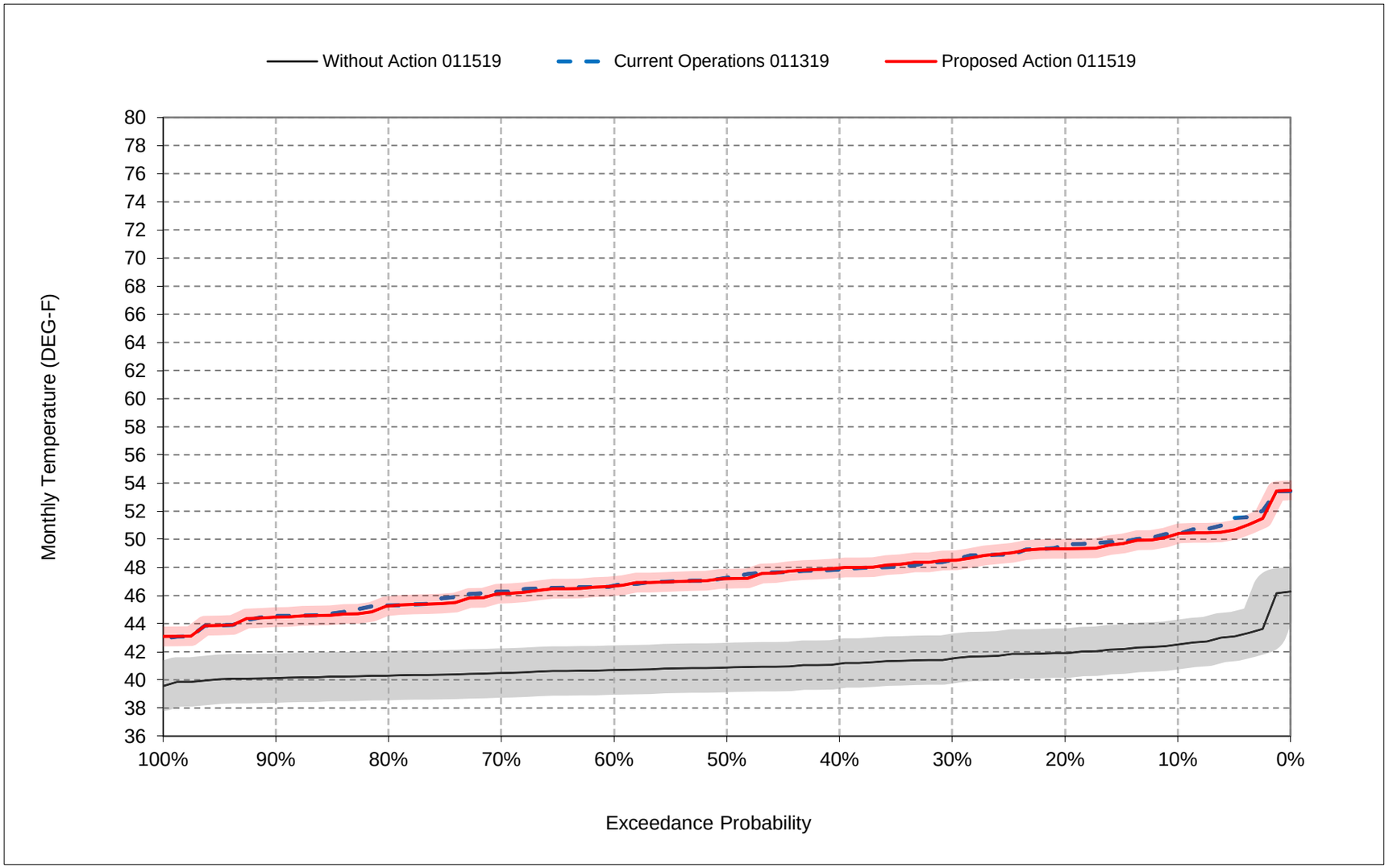
Figure 1-10. Trinity River below Lewiston Dam, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

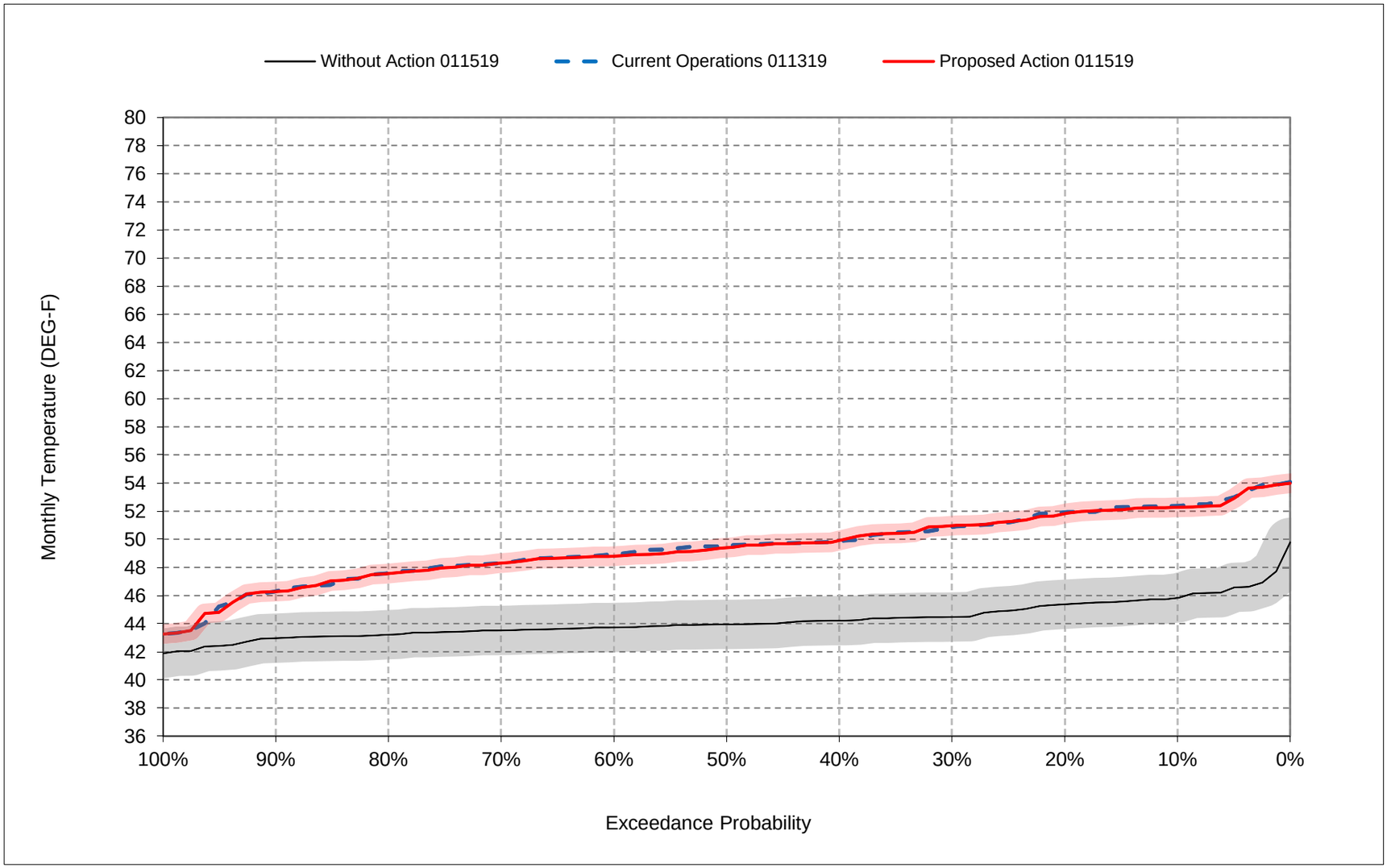
Figure 1-11. Trinity River below Lewiston Dam, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

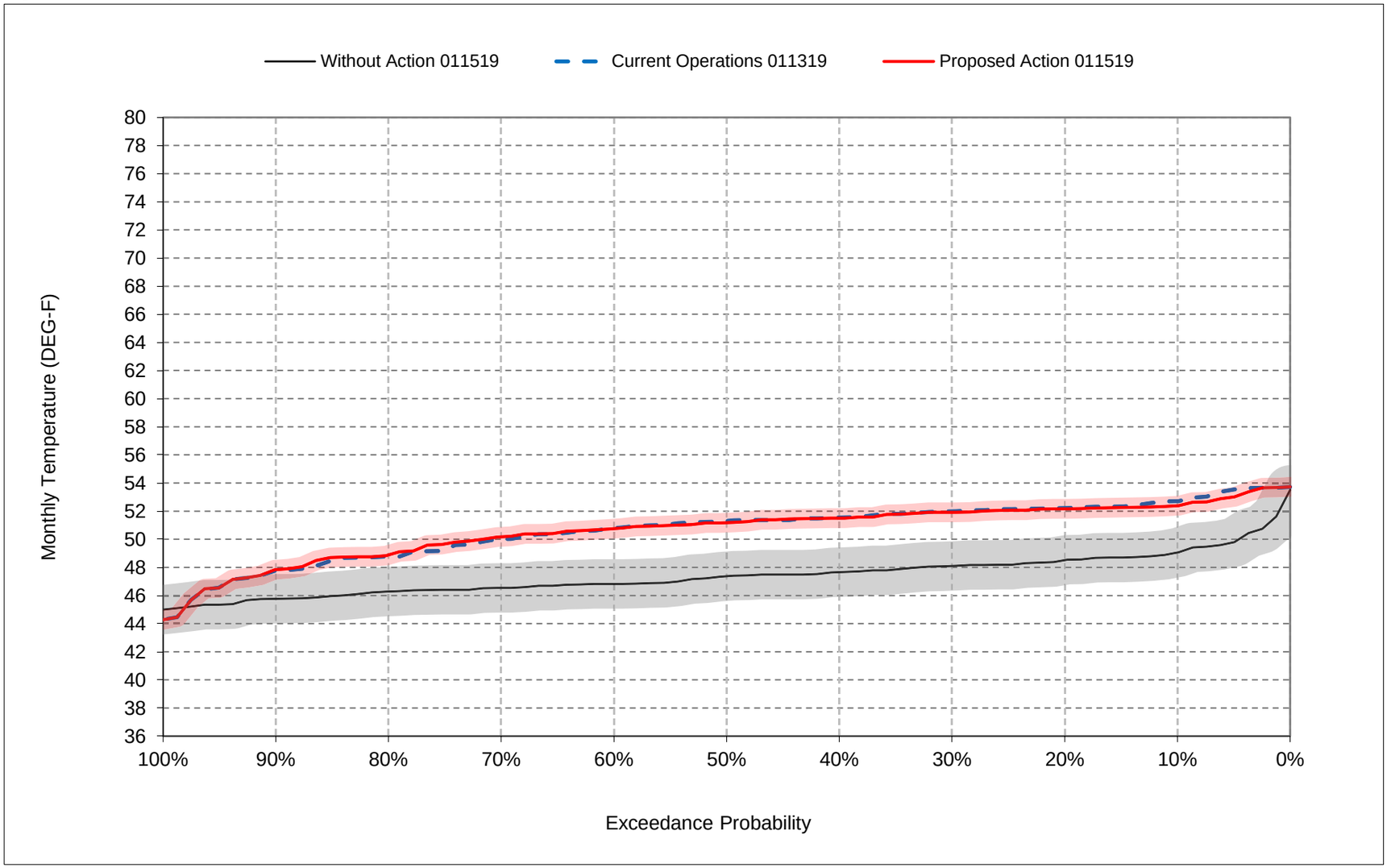
Figure 1-12. Trinity River below Lewiston Dam, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

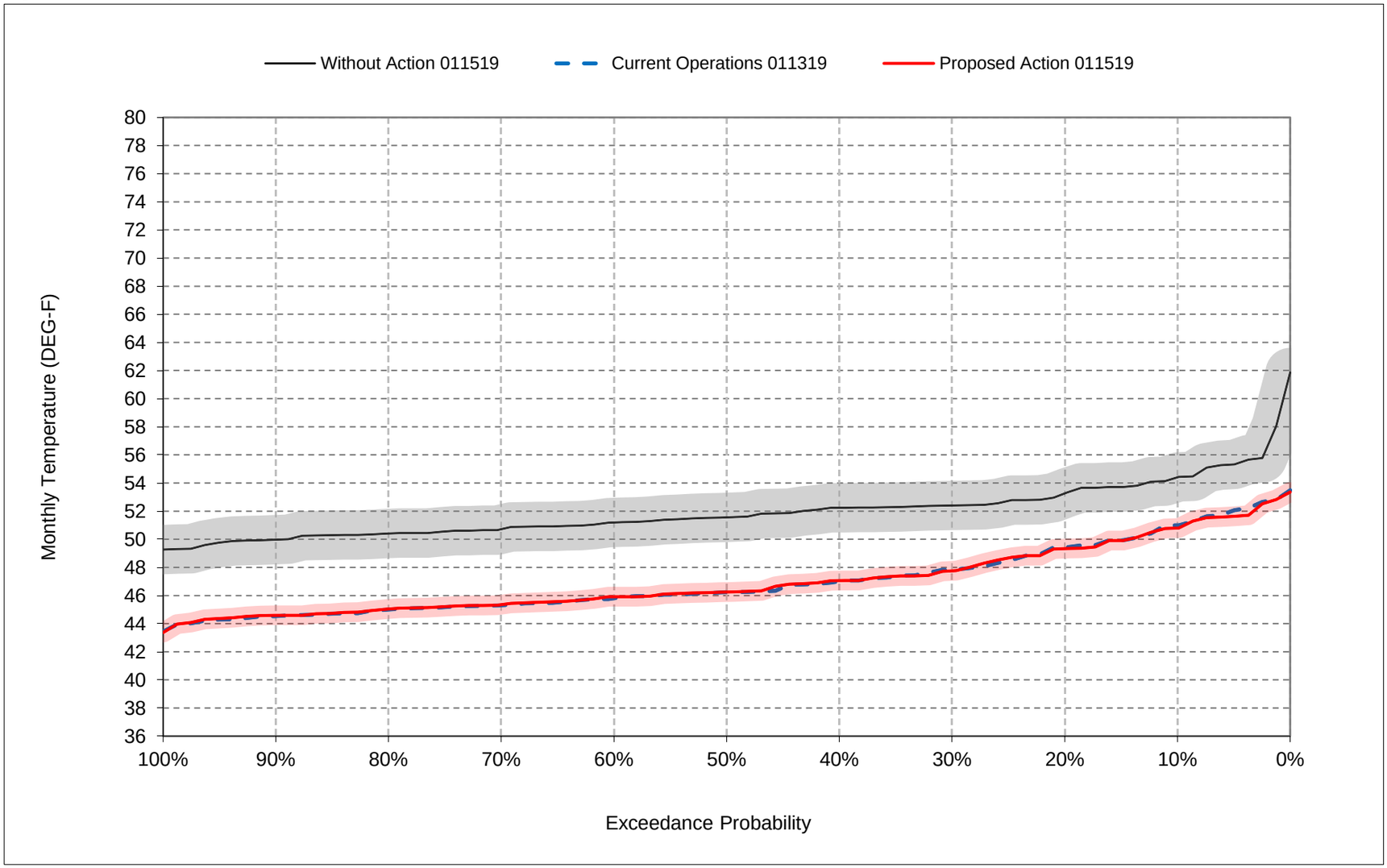
Figure 1-13. Trinity River below Lewiston Dam, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

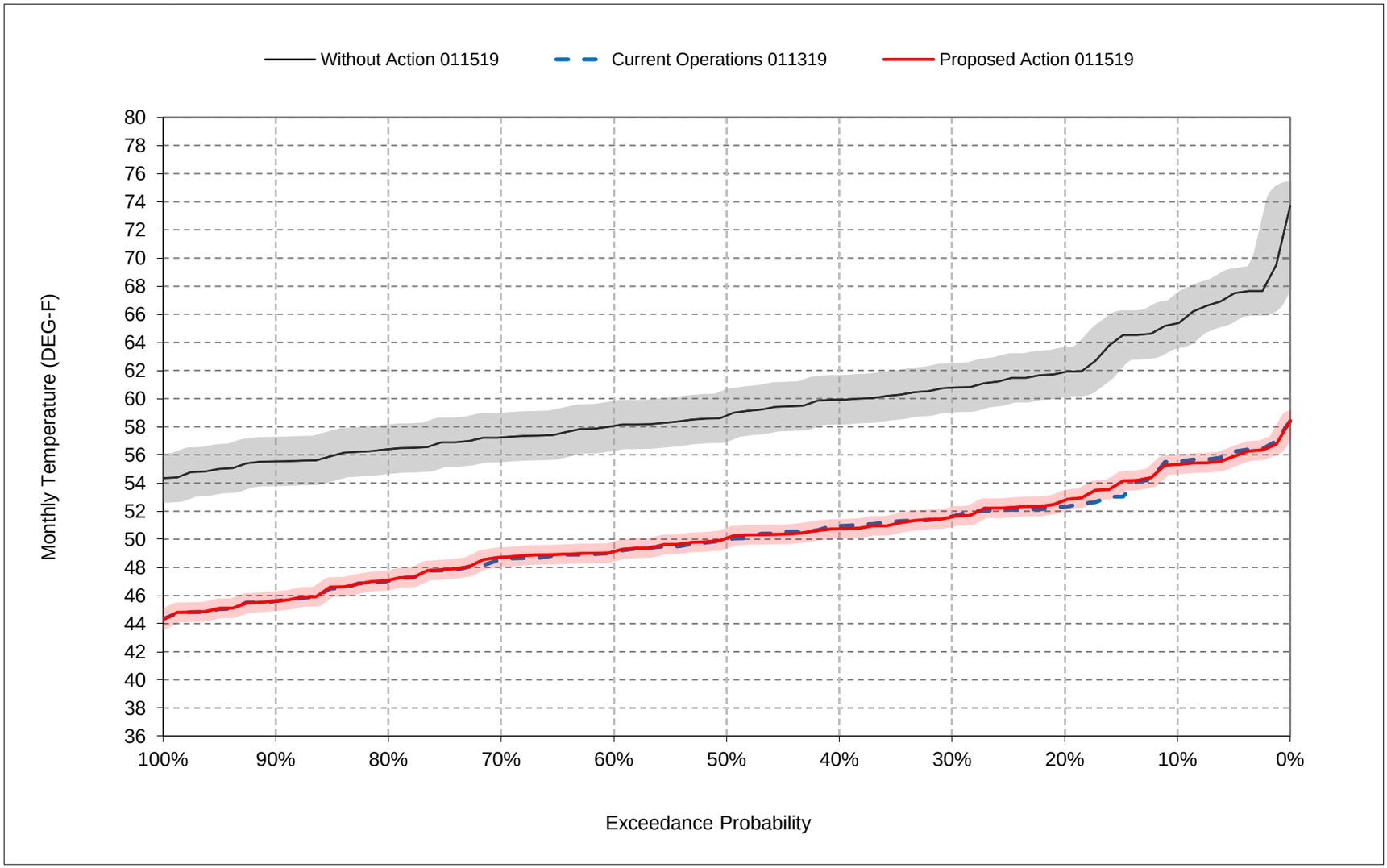
Figure 1-14. Trinity River below Lewiston Dam, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

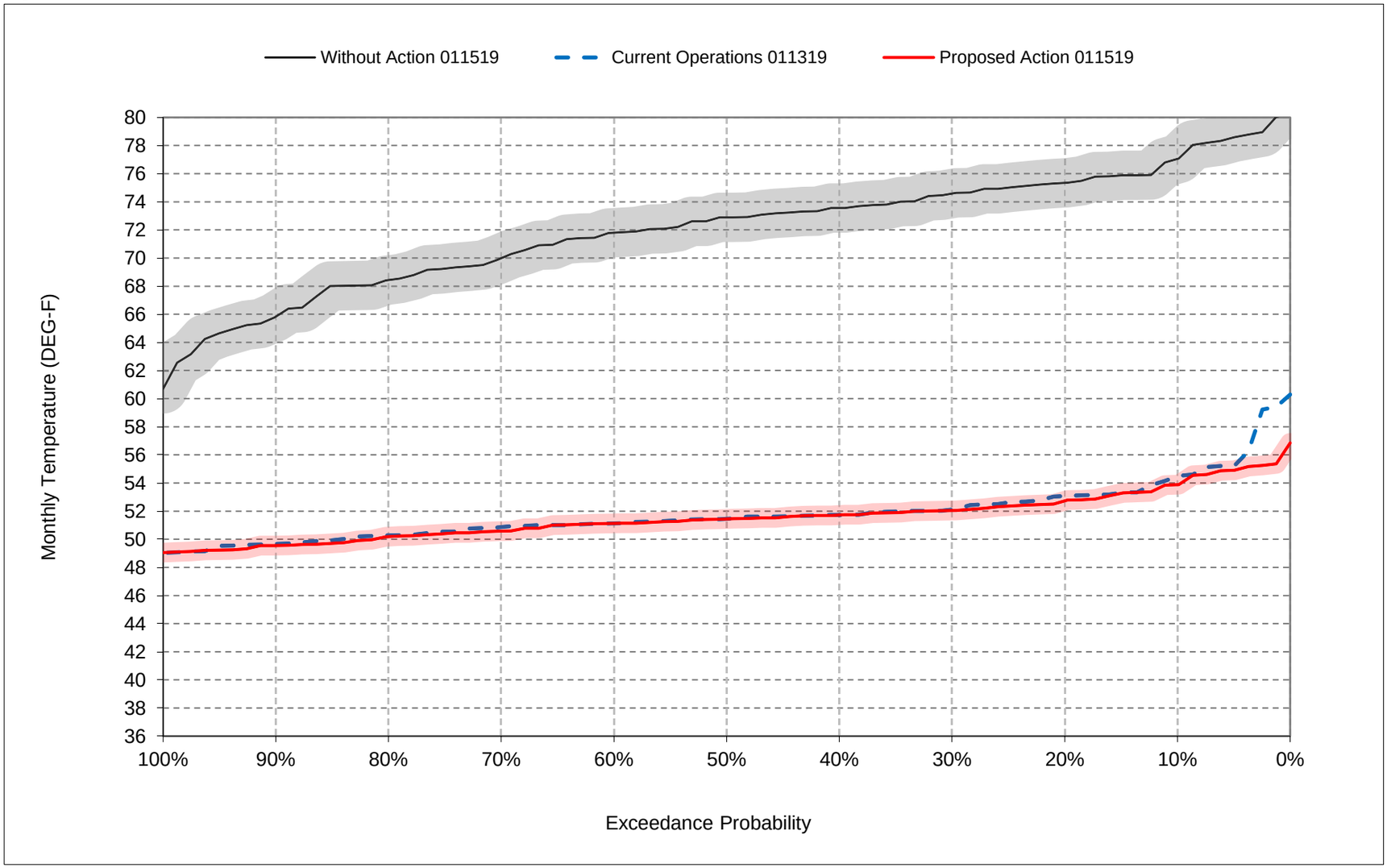
Figure 1-15. Trinity River below Lewiston Dam, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

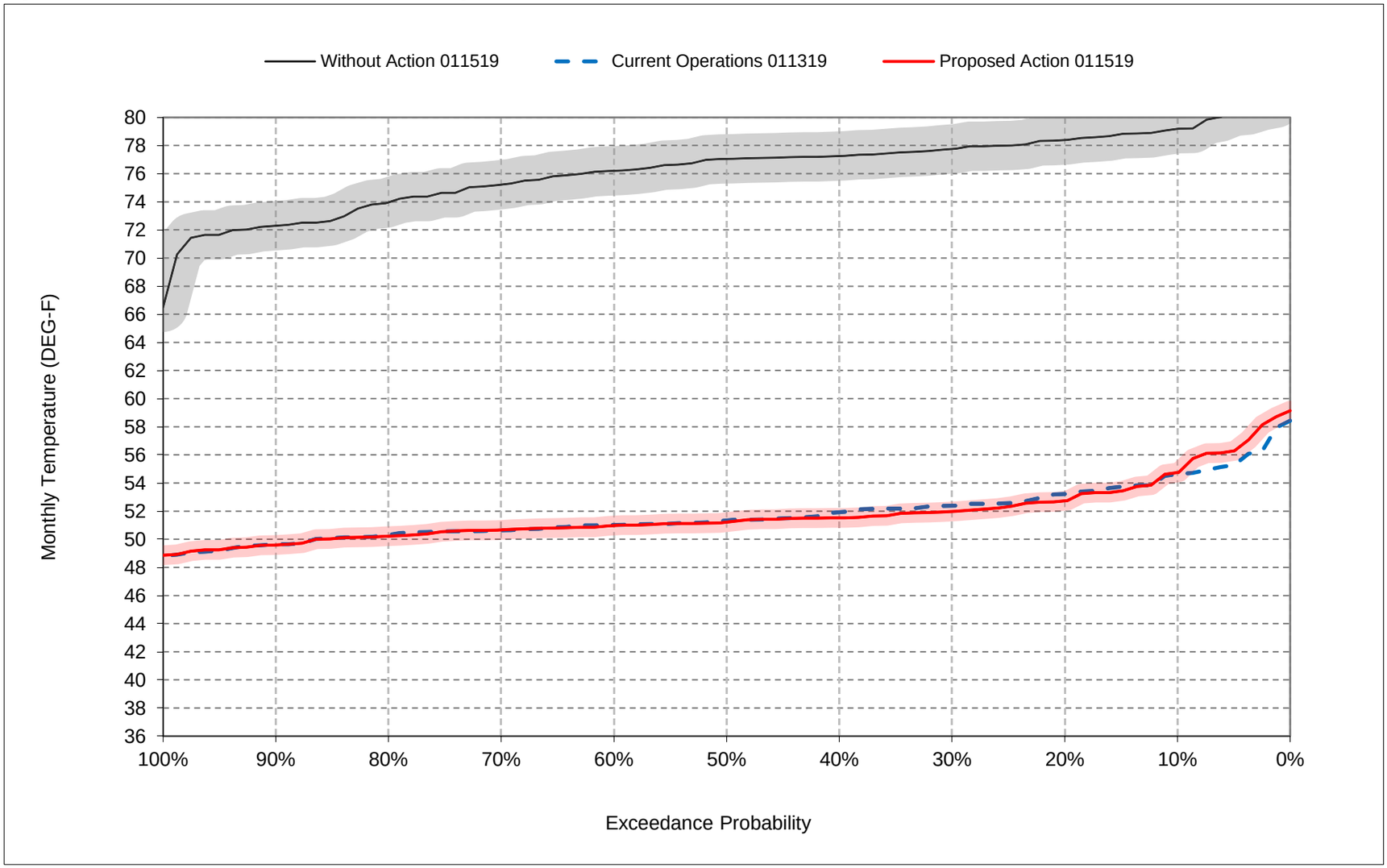
Figure 1-16. Trinity River below Lewiston Dam, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

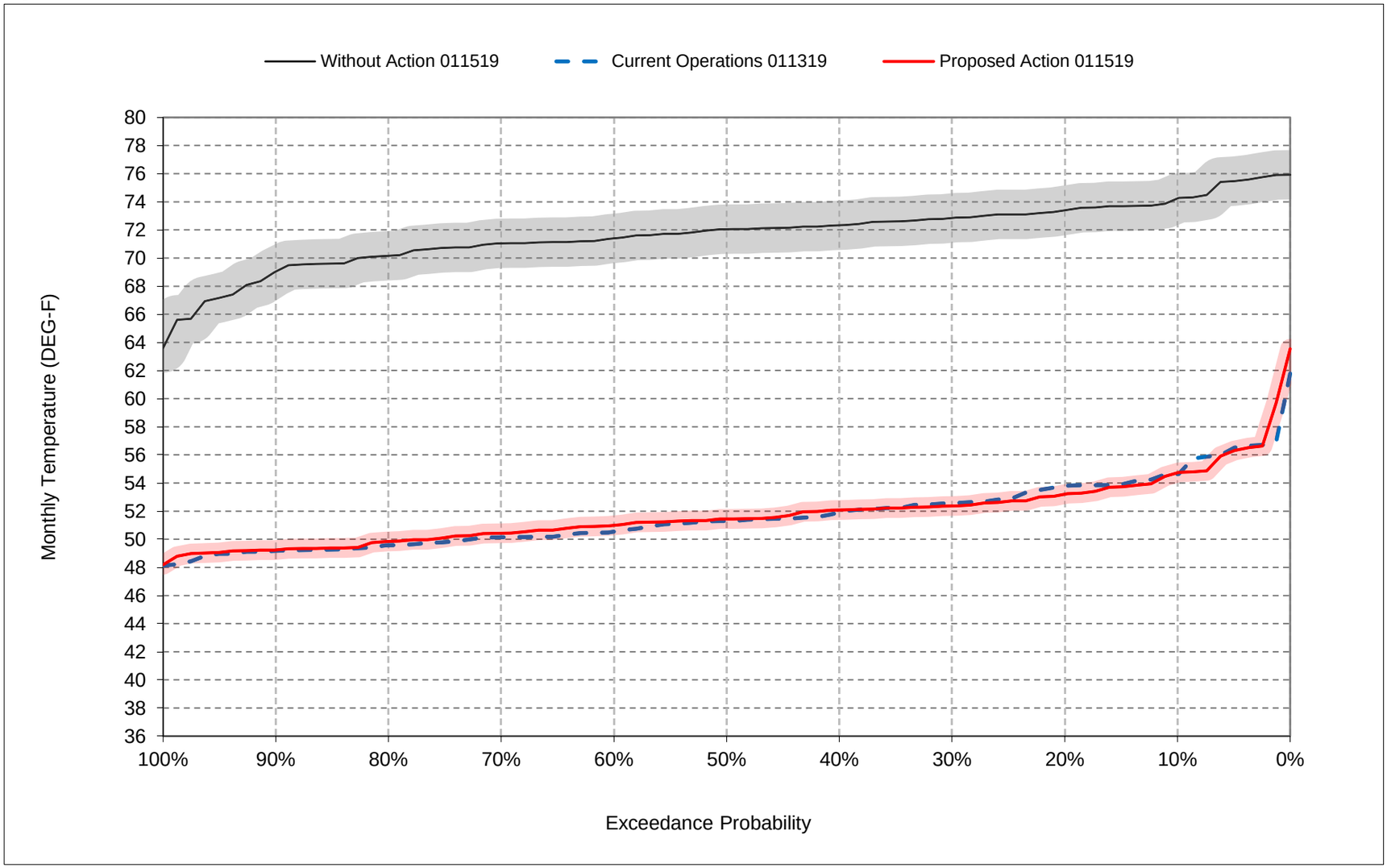
Figure 1-17. Trinity River below Lewiston Dam, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 2-1. Clear Creek below Whiskeytown, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	57.5	49.5	43.1	42.2	44.3	48.6	52.5	57.9	62.7	67.4	68.7	64.8
20%	57.1	48.7	42.6	41.9	43.9	47.9	52.0	57.6	62.4	67.1	68.3	64.7
30%	56.7	48.4	42.4	41.6	43.7	47.5	51.7	57.4	62.0	66.9	68.1	64.4
40%	56.6	48.1	42.2	41.3	43.5	47.2	51.4	57.2	61.9	66.7	67.9	64.3
50%	56.3	47.6	42.0	41.2	43.4	47.0	51.1	57.0	61.7	66.6	67.8	64.1
60%	55.9	47.4	41.9	41.0	43.2	46.8	50.8	56.8	61.5	66.4	67.7	63.8
70%	55.6	47.1	41.7	40.8	43.0	46.7	50.6	56.5	61.3	66.2	67.6	63.6
80%	55.5	46.8	41.4	40.6	42.8	46.6	50.3	56.2	60.9	66.0	67.4	63.5
90%	55.0	46.5	41.2	40.1	42.5	46.0	50.0	55.8	60.4	65.9	67.1	63.2
Long Term												
Full Simulation Period[a]	56.3	47.8	42.1	41.2	43.4	47.2	51.2	56.9	61.7	66.6	67.8	64.0
Water Year Types[b,c]												
Wet (32%)	56.2	47.8	42.1	41.4	43.4	47.0	50.6	56.7	61.4	66.5	67.8	63.9
Above Normal (16%)	56.2	47.2	41.9	41.6	43.5	47.2	51.0	57.0	61.9	66.6	67.6	63.5
Below Normal (13%)	55.9	47.8	42.0	40.9	43.0	47.2	51.8	57.0	61.6	66.6	67.8	64.2
Dry (24%)	56.3	47.9	42.2	40.9	43.3	47.1	51.4	57.1	61.8	66.6	68.0	64.2
Critical (15%)	56.9	48.3	42.2	41.3	43.7	47.7	51.8	57.0	61.8	66.7	68.1	64.5

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.7	2.7	5.5	3.8	1.5	-1.9	-4.5	-8.7	-11.8	-14.5	-15.0	-10.2
20%	-3.2	3.1	5.4	3.4	1.3	-1.9	-4.5	-8.9	-12.0	-14.9	-15.2	-11.1
30%	-3.3	2.5	4.6	3.4	1.1	-1.9	-4.5	-9.0	-12.1	-15.3	-15.3	-11.2
40%	-3.7	2.6	4.5	3.4	1.0	-1.9	-4.5	-9.1	-12.2	-15.3	-15.6	-11.9
50%	-4.0	2.8	4.4	3.1	0.9	-1.8	-4.5	-9.1	-12.3	-15.4	-15.7	-12.0
60%	-4.3	2.8	4.3	3.2	0.9	-1.7	-4.4	-9.2	-12.3	-15.5	-15.9	-12.2
70%	-4.5	2.8	4.4	3.1	0.9	-1.8	-4.4	-9.1	-12.3	-15.5	-16.0	-12.4
80%	-4.9	2.8	4.4	3.1	0.8	-1.9	-4.4	-9.2	-12.4	-15.7	-16.3	-12.6
90%	-4.7	2.7	4.3	3.3	0.7	-1.9	-4.6	-9.5	-12.6	-16.1	-16.3	-12.8
Long Term												
Full Simulation Period[a]	-3.8	2.8	4.7	3.4	1.1	-1.9	-4.5	-9.1	-12.2	-15.4	-15.7	-11.8
Water Year Types[b,c]												
Wet (32%)	-5.3	2.0	4.4	2.9	0.7	-2.1	-4.3	-9.1	-12.1	-15.4	-16.0	-12.7
Above Normal (16%)	-5.0	2.6	4.3	2.8	0.6	-2.3	-4.7	-9.5	-12.7	-15.7	-16.0	-12.3
Below Normal (13%)	-3.4	3.1	4.8	3.2	1.2	-1.9	-5.2	-9.5	-12.5	-15.5	-15.7	-12.0
Dry (24%)	-2.9	3.1	5.0	3.9	1.4	-1.5	-4.5	-9.2	-12.4	-15.2	-15.2	-11.2
Critical (15%)	-1.2	3.8	5.2	4.3	1.8	-1.3	-4.0	-8.2	-11.5	-15.1	-15.3	-10.1

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 2-2. Clear Creek below Whiskeytown, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	57.5	49.5	43.1	42.2	44.3	48.6	52.5	57.9	62.7	67.4	68.7	64.8
20%	57.1	48.7	42.6	41.9	43.9	47.9	52.0	57.6	62.4	67.1	68.3	64.7
30%	56.7	48.4	42.4	41.6	43.7	47.5	51.7	57.4	62.0	66.9	68.1	64.4
40%	56.6	48.1	42.2	41.3	43.5	47.2	51.4	57.2	61.9	66.7	67.9	64.3
50%	56.3	47.6	42.0	41.2	43.4	47.0	51.1	57.0	61.7	66.6	67.8	64.1
60%	55.9	47.4	41.9	41.0	43.2	46.8	50.8	56.8	61.5	66.4	67.7	63.8
70%	55.6	47.1	41.7	40.8	43.0	46.7	50.6	56.5	61.3	66.2	67.6	63.6
80%	55.5	46.8	41.4	40.6	42.8	46.6	50.3	56.2	60.9	66.0	67.4	63.5
90%	55.0	46.5	41.2	40.1	42.5	46.0	50.0	55.8	60.4	65.9	67.1	63.2
Long Term												
Full Simulation Period[a]	56.3	47.8	42.1	41.2	43.4	47.2	51.2	56.9	61.7	66.6	67.8	64.0
Water Year Types[b,c]												
Wet (32%)	56.2	47.8	42.1	41.4	43.4	47.0	50.6	56.7	61.4	66.5	67.8	63.9
Above Normal (16%)	56.2	47.2	41.9	41.6	43.5	47.2	51.0	57.0	61.9	66.6	67.6	63.5
Below Normal (13%)	55.9	47.8	42.0	40.9	43.0	47.2	51.8	57.0	61.6	66.6	67.8	64.2
Dry (24%)	56.3	47.9	42.2	40.9	43.3	47.1	51.4	57.1	61.8	66.6	68.0	64.2
Critical (15%)	56.9	48.3	42.2	41.3	43.7	47.7	51.8	57.0	61.8	66.7	68.1	64.5

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.1	**2.6**	**5.5**	**3.8**	**1.5**	-2.0	-4.6	-8.7	-11.8	-14.5	-15.1	-10.5
20%	-3.5	**3.0**	**5.4**	**3.4**	**1.4**	-1.8	-4.4	-8.9	-11.9	-14.8	-15.2	-11.2
30%	-3.5	**2.5**	**4.6**	**3.4**	**1.1**	-1.9	-4.5	-9.0	-12.1	-15.2	-15.5	-11.5
40%	-3.7	**2.7**	**4.5**	**3.4**	**1.0**	-1.9	-4.5	-9.1	-12.3	-15.3	-15.5	-11.8
50%	-4.0	**2.9**	**4.3**	**3.1**	**0.9**	-1.8	-4.5	-9.1	-12.3	-15.4	-15.6	-12.0
60%	-4.0	**2.8**	**4.3**	**3.2**	**0.9**	-1.7	-4.4	-9.2	-12.2	-15.4	-15.8	-12.1
70%	-4.4	**2.8**	**4.3**	**3.1**	**0.8**	-1.8	-4.4	-9.1	-12.3	-15.4	-15.9	-12.2
80%	-4.9	**2.7**	**4.4**	**3.1**	**0.8**	-1.9	-4.4	-9.2	-12.3	-15.5	-16.1	-12.5
90%	-4.9	**2.7**	**4.2**	**3.3**	**0.8**	-1.9	-4.6	-9.4	-12.6	-16.1	-16.2	-12.5
Long Term												
Full Simulation Period[a]	-3.9	**2.8**	**4.7**	**3.4**	**1.1**	-1.9	-4.5	-9.1	-12.2	-15.3	-15.6	-11.7
Water Year Types[b,c]												
Wet (32%)	-5.3	**2.1**	**4.3**	**2.9**	**0.7**	-2.1	-4.4	-9.1	-12.1	-15.4	-16.0	-12.5
Above Normal (16%)	-4.8	**2.7**	**4.4**	**2.8**	**0.6**	-2.2	-4.6	-9.3	-12.6	-15.5	-15.9	-12.2
Below Normal (13%)	-3.3	**3.1**	**4.8**	**3.1**	**1.1**	-2.0	-5.2	-9.5	-12.4	-15.3	-15.7	-12.0
Dry (24%)	-3.2	**3.0**	**4.9**	**3.9**	**1.4**	-1.5	-4.5	-9.2	-12.4	-15.2	-15.3	-11.4
Critical (15%)	-1.4	**3.7**	**5.2**	**4.3**	**1.8**	-1.3	-4.0	-8.1	-11.4	-15.0	-14.8	-9.3

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 2-3. Clear Creek below Whiskeytown, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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	-0.1	**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.

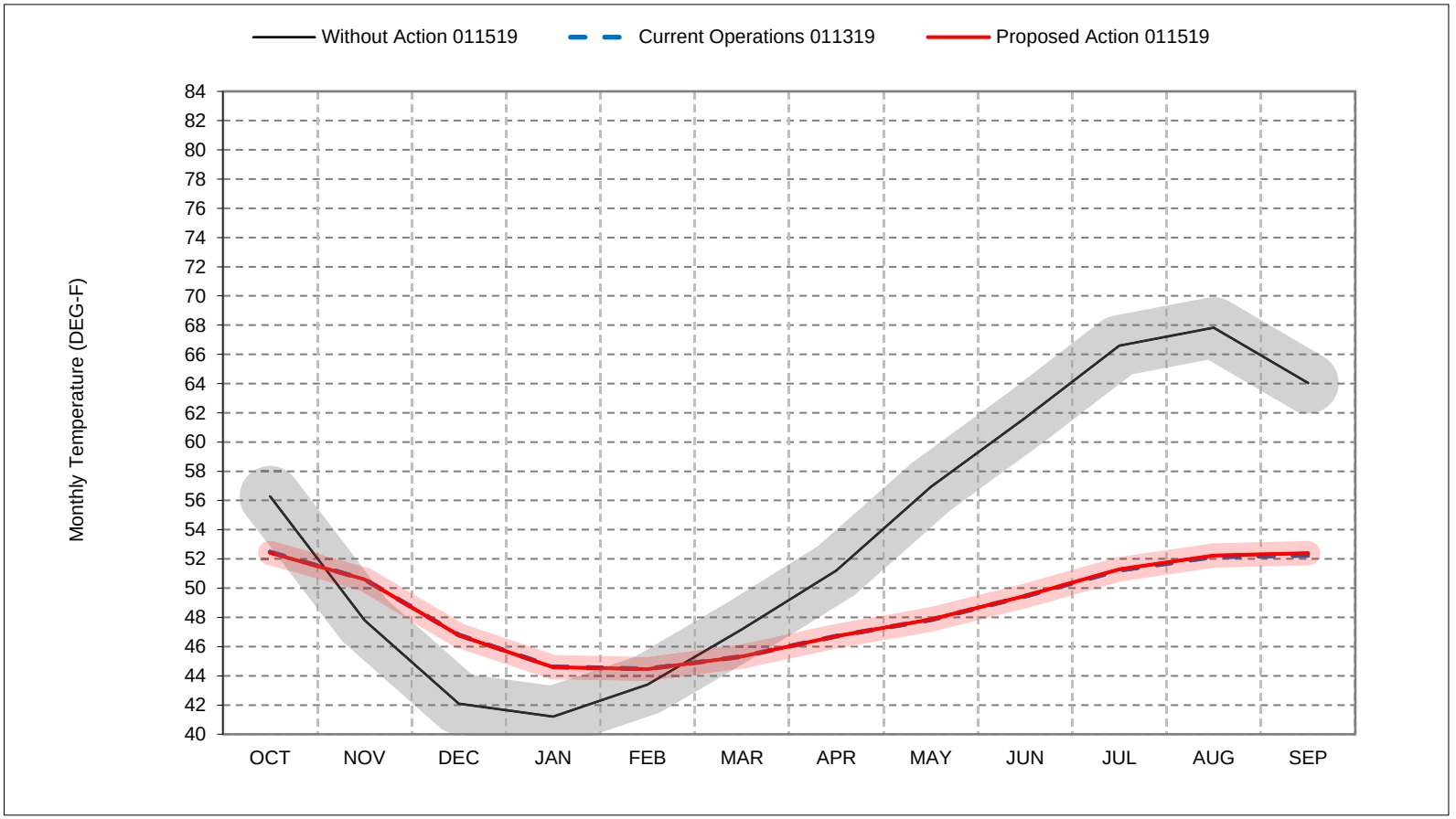
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

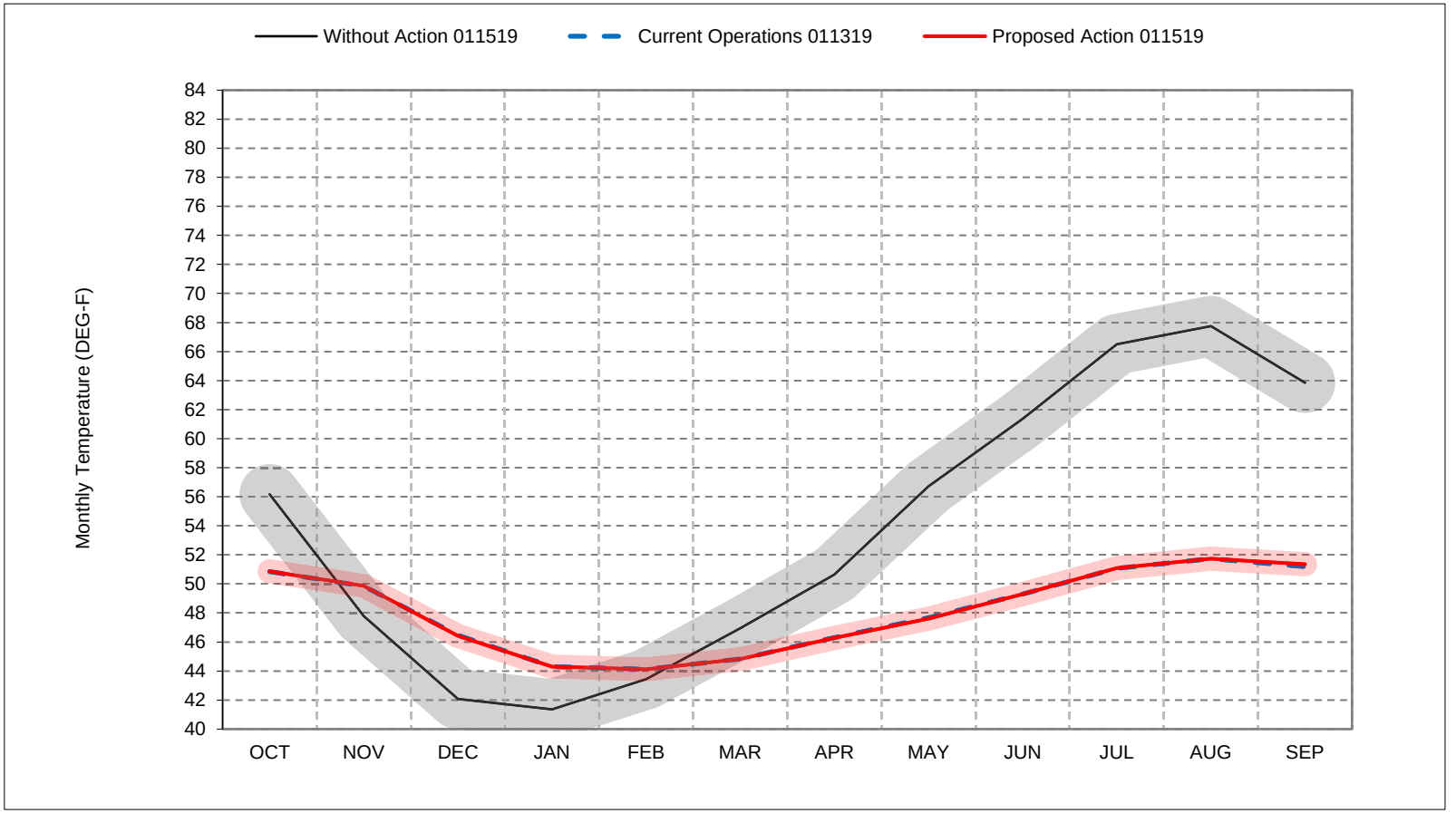
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-1. Clear Creek below Whiskeytown, Long-Term Average Temperature



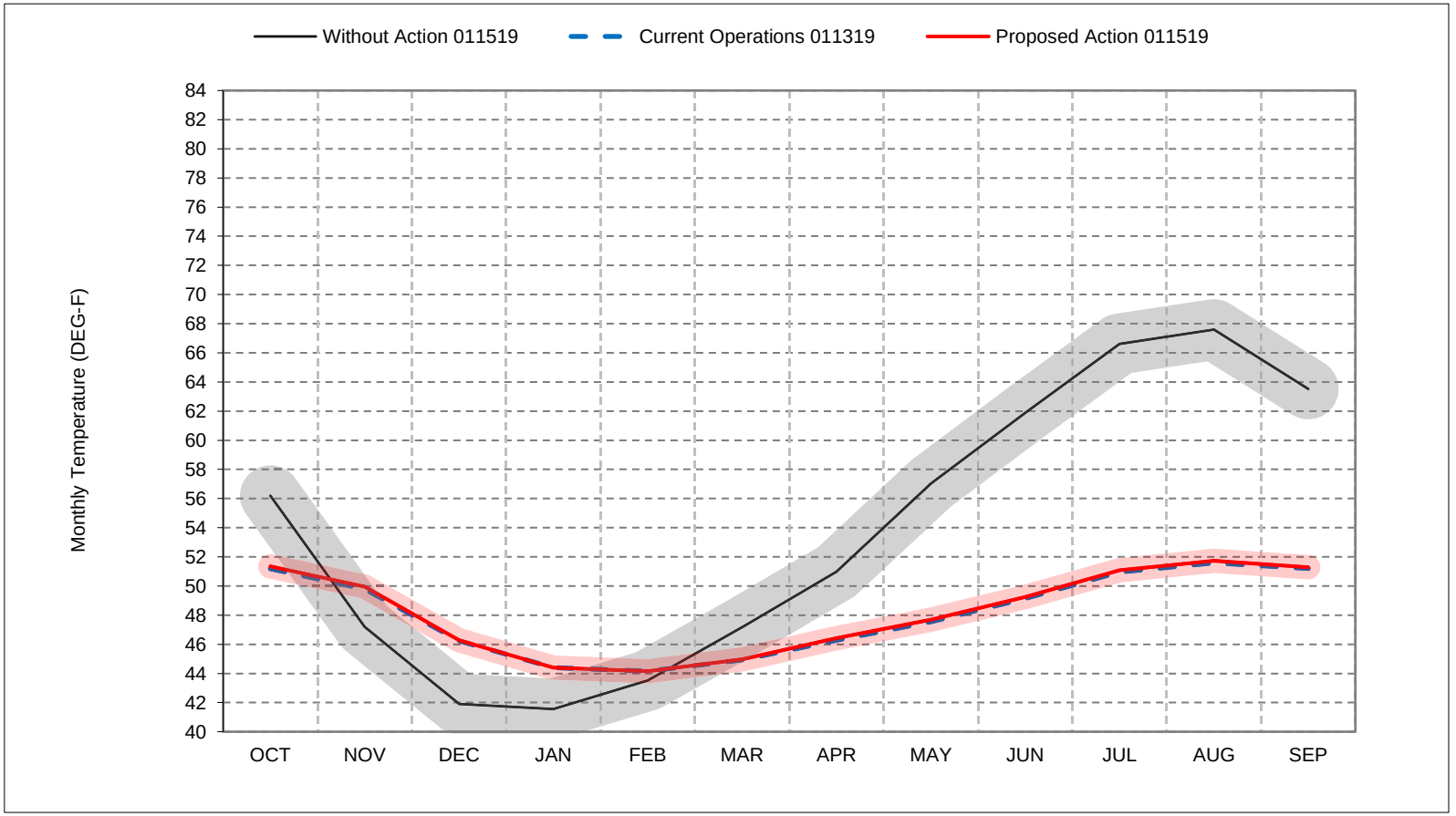
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-2. Clear Creek below Whiskeytown, Wet Year Average Temperature



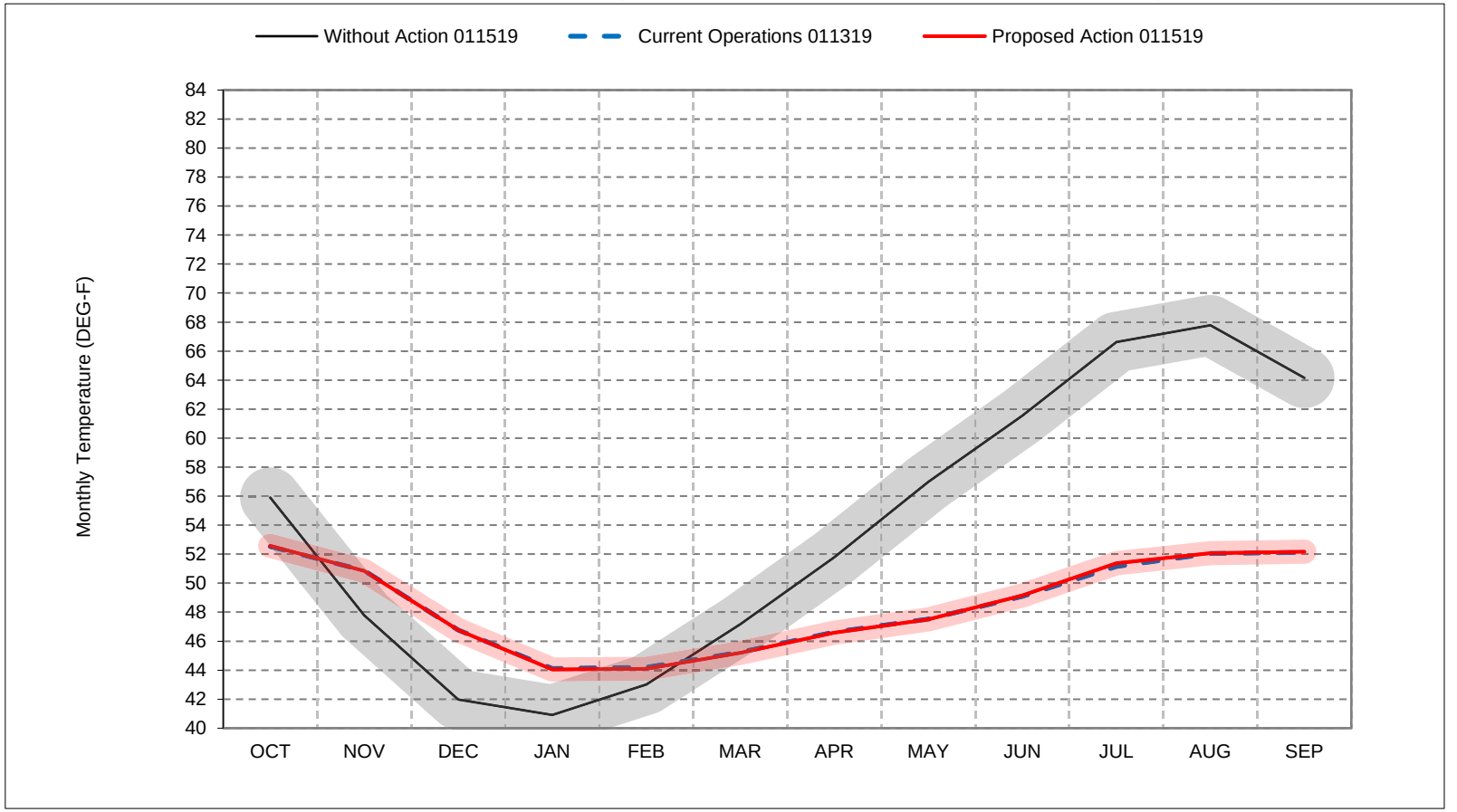
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-3. Clear Creek below Whiskeytown, Above Normal Year Average Temperature



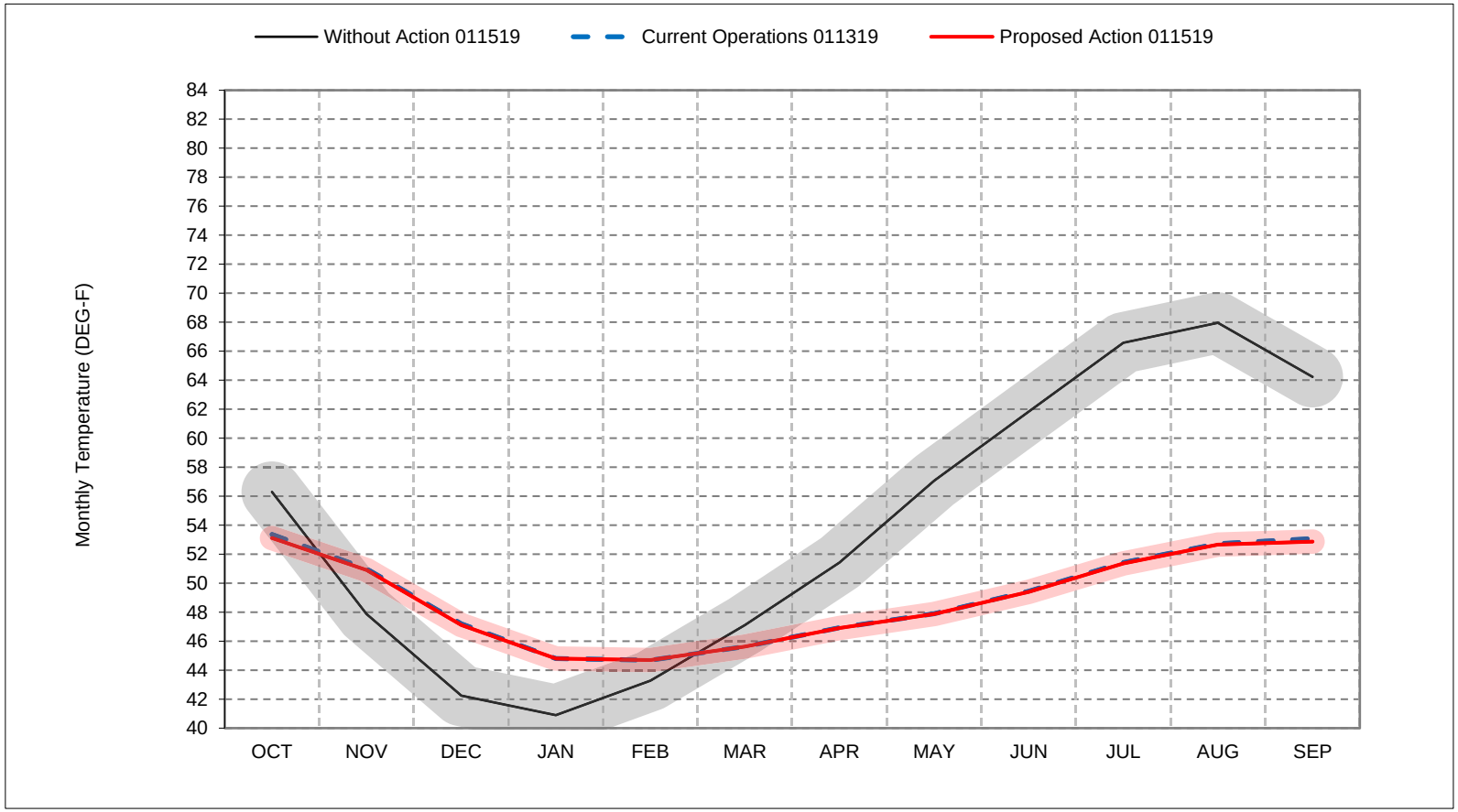
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-4. Clear Creek below Whiskeytown, Below Normal Year Average Temperature



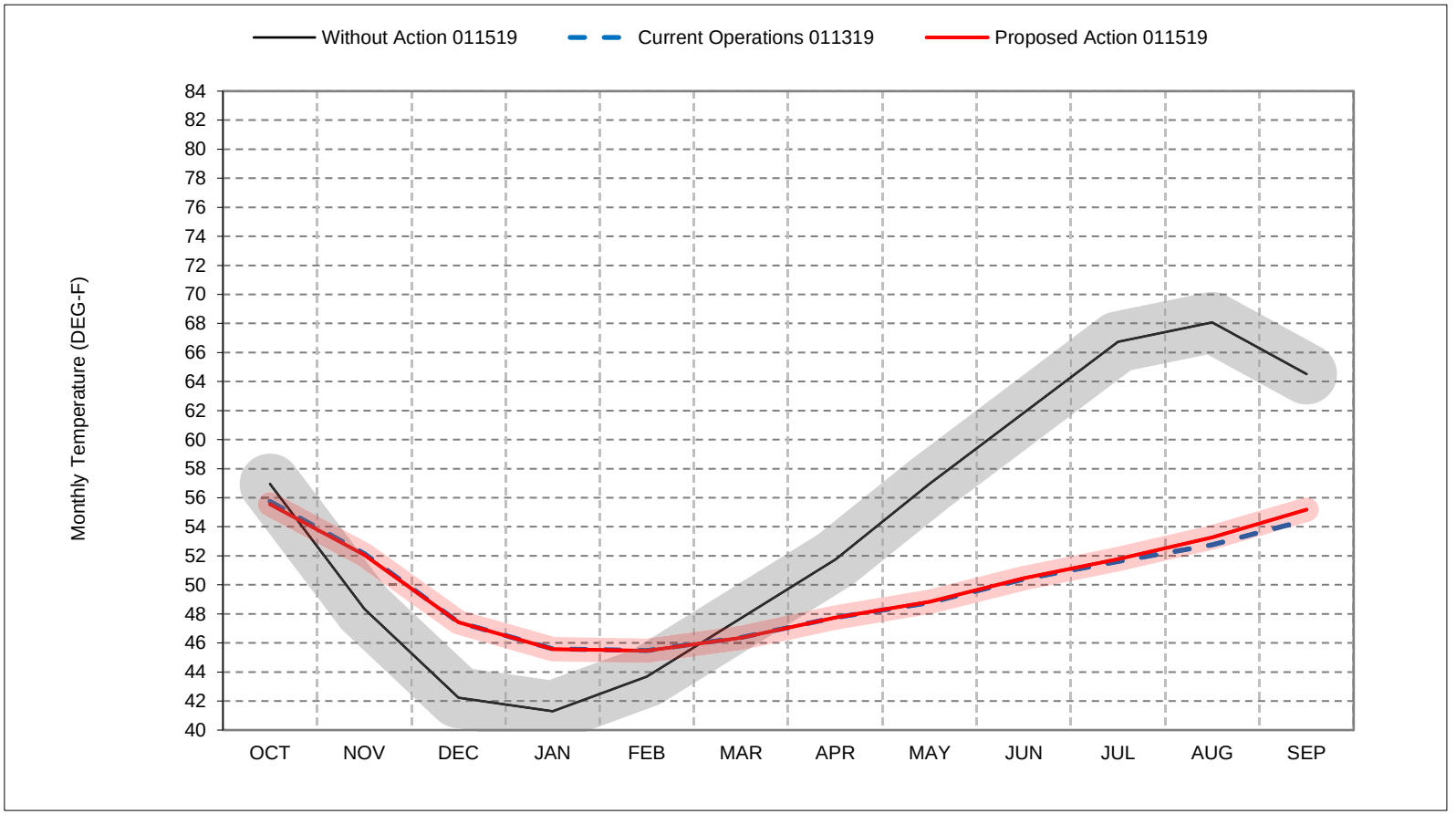
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-5. Clear Creek below Whiskeytown, Dry Year Average Temperature



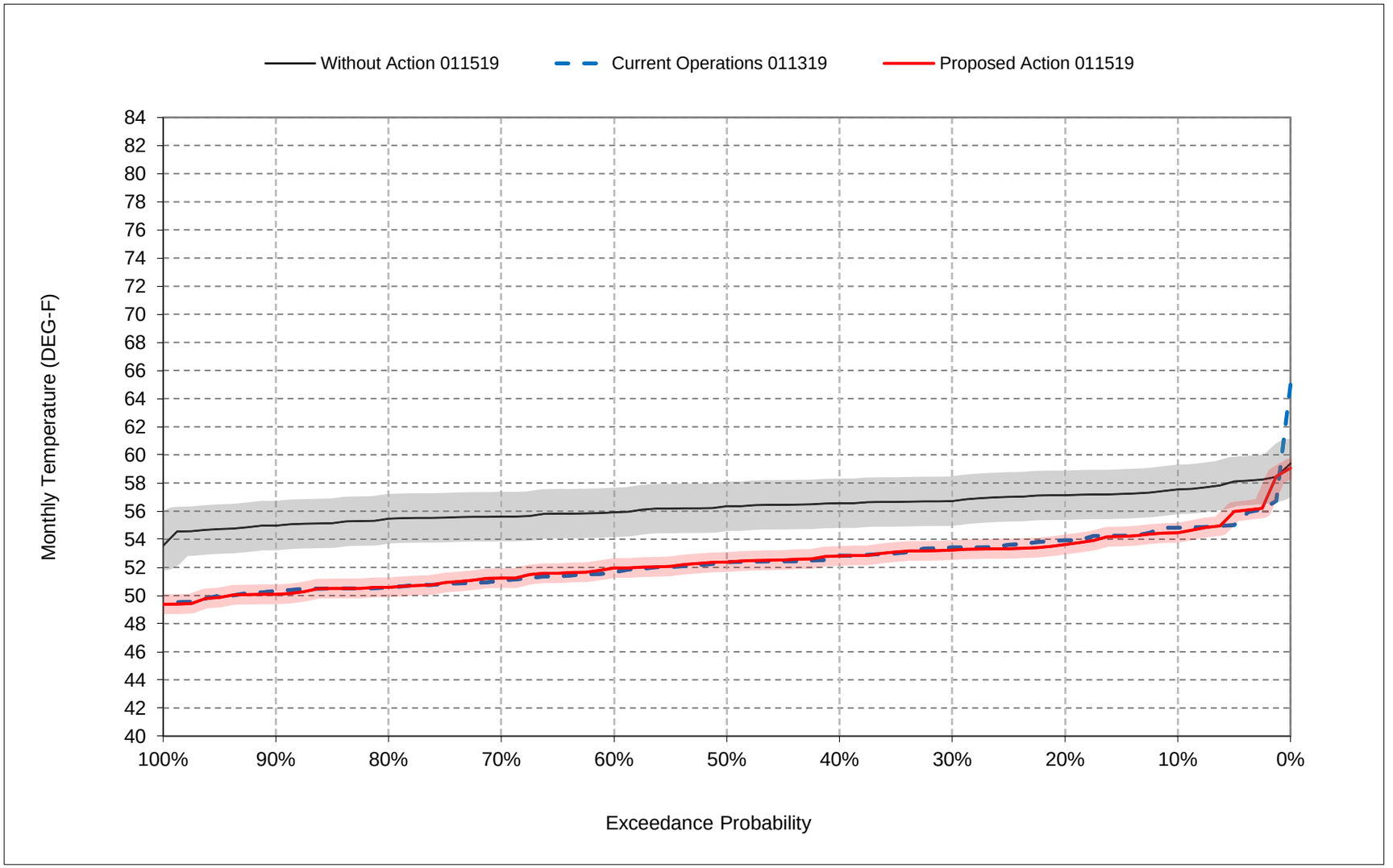
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

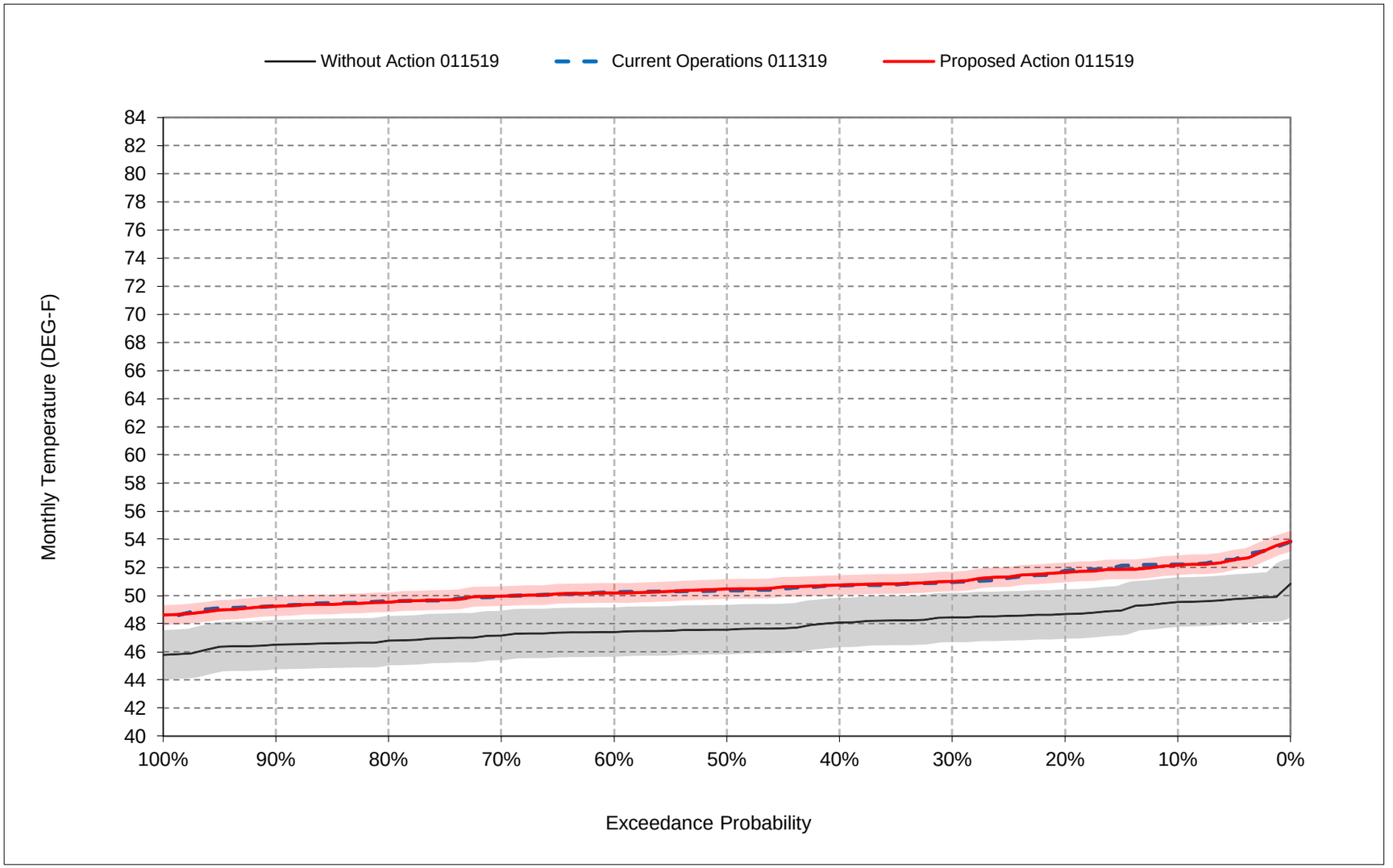
Figure 2-7. Clear Creek below Whiskeytown, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

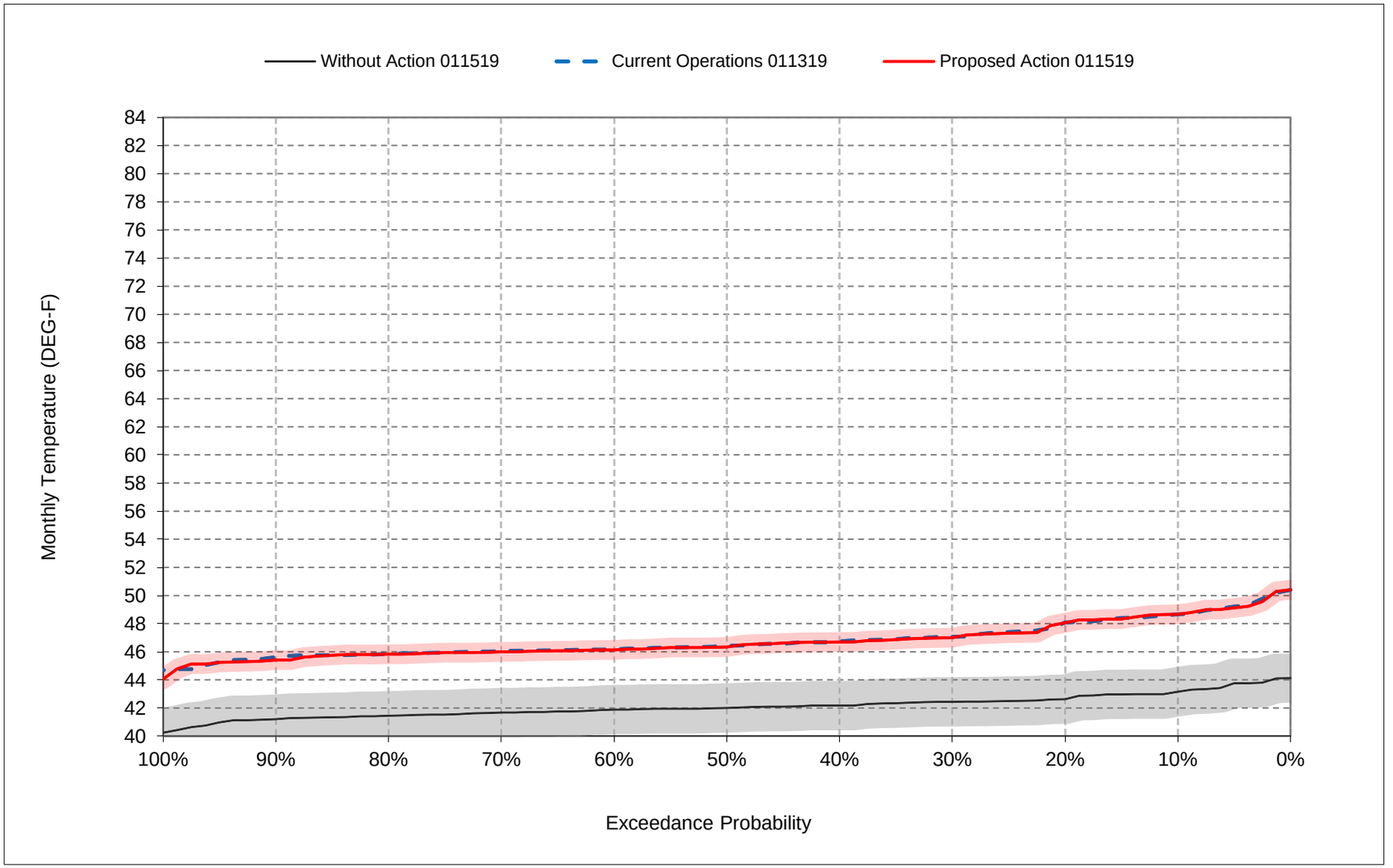
Figure 2-8. Clear Creek below Whiskeytown, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

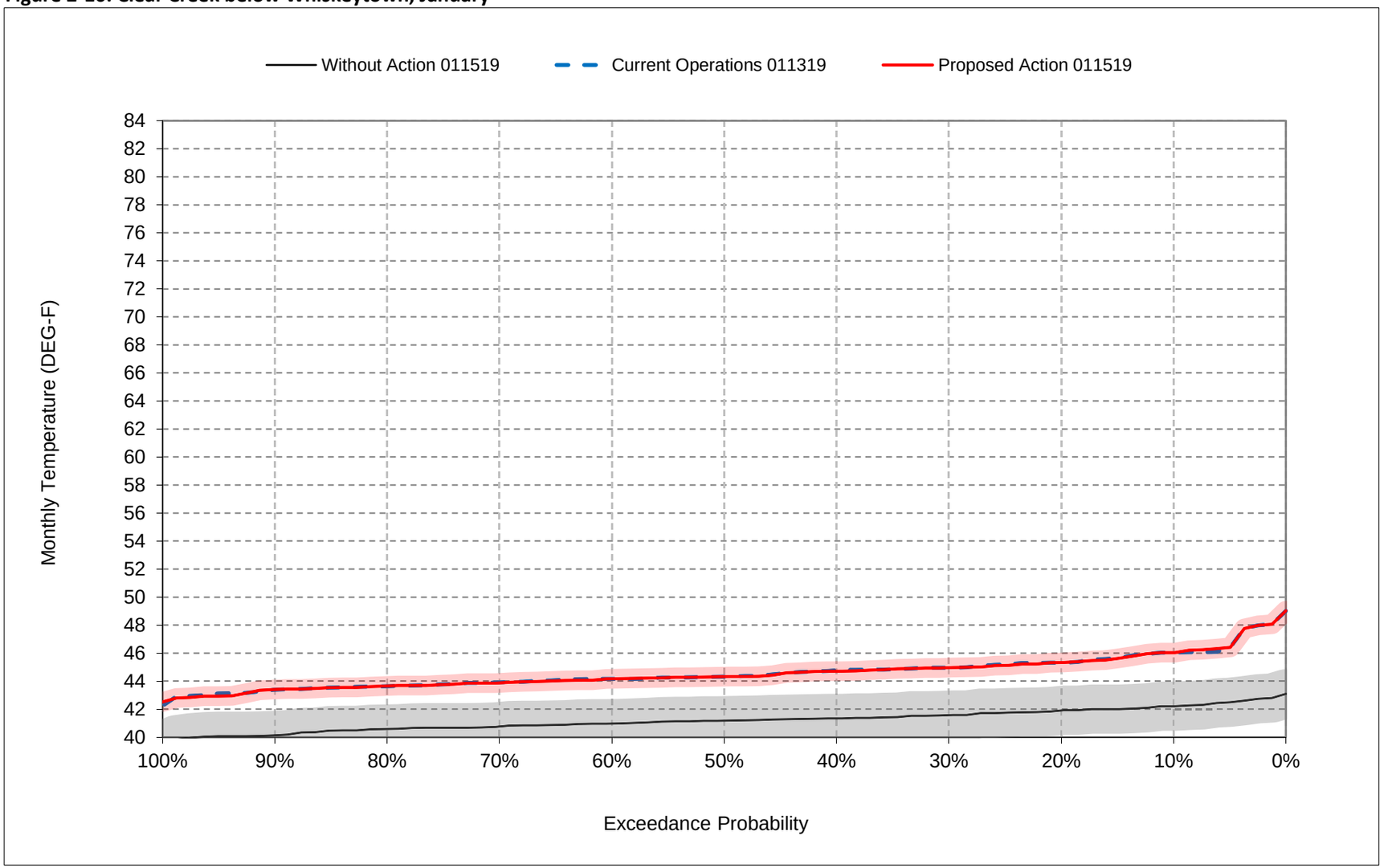
Figure 2-9. Clear Creek below Whiskeytown, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

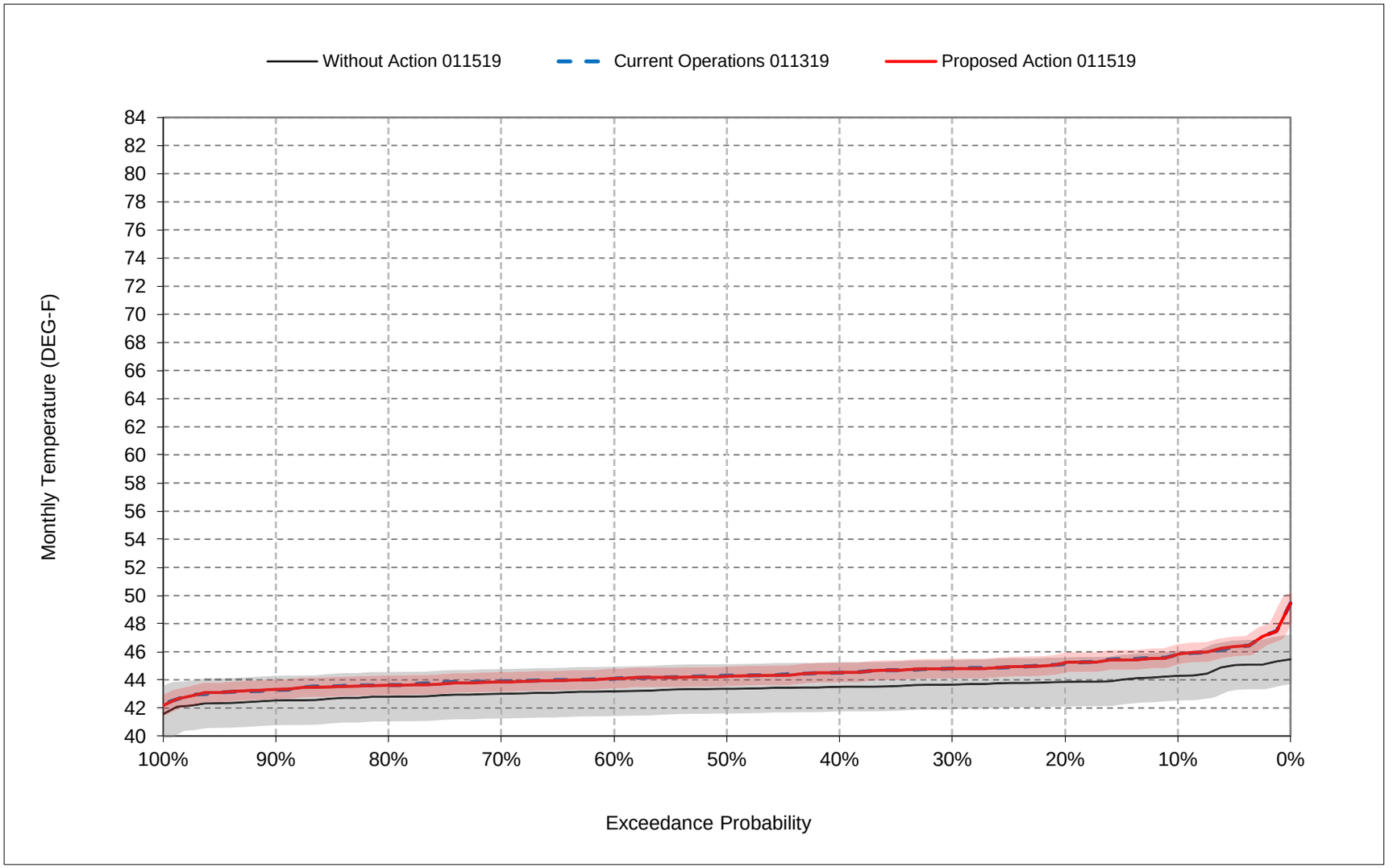
Figure 2-10. Clear Creek below Whiskeytown, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

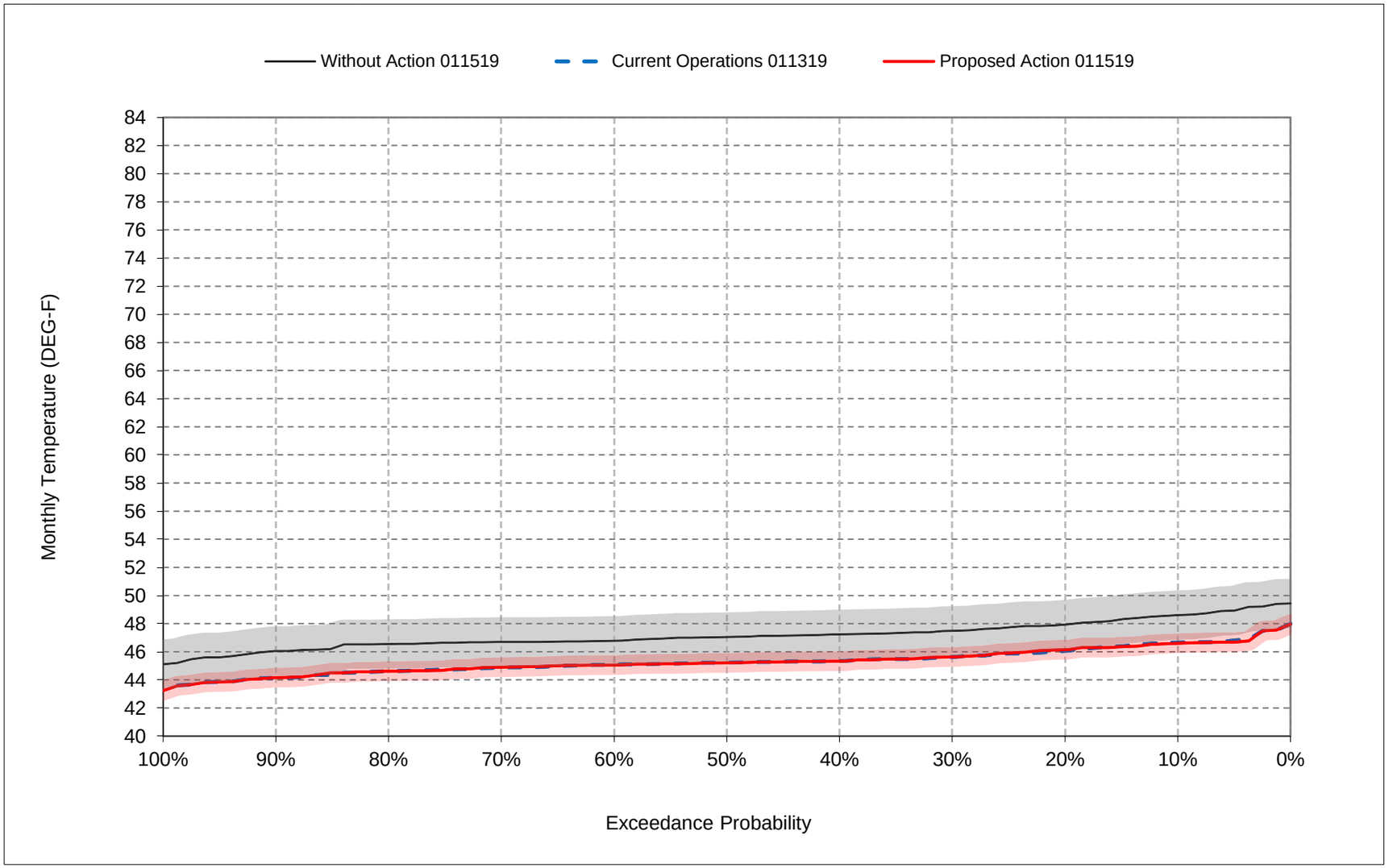
Figure 2-11. Clear Creek below Whiskeytown, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

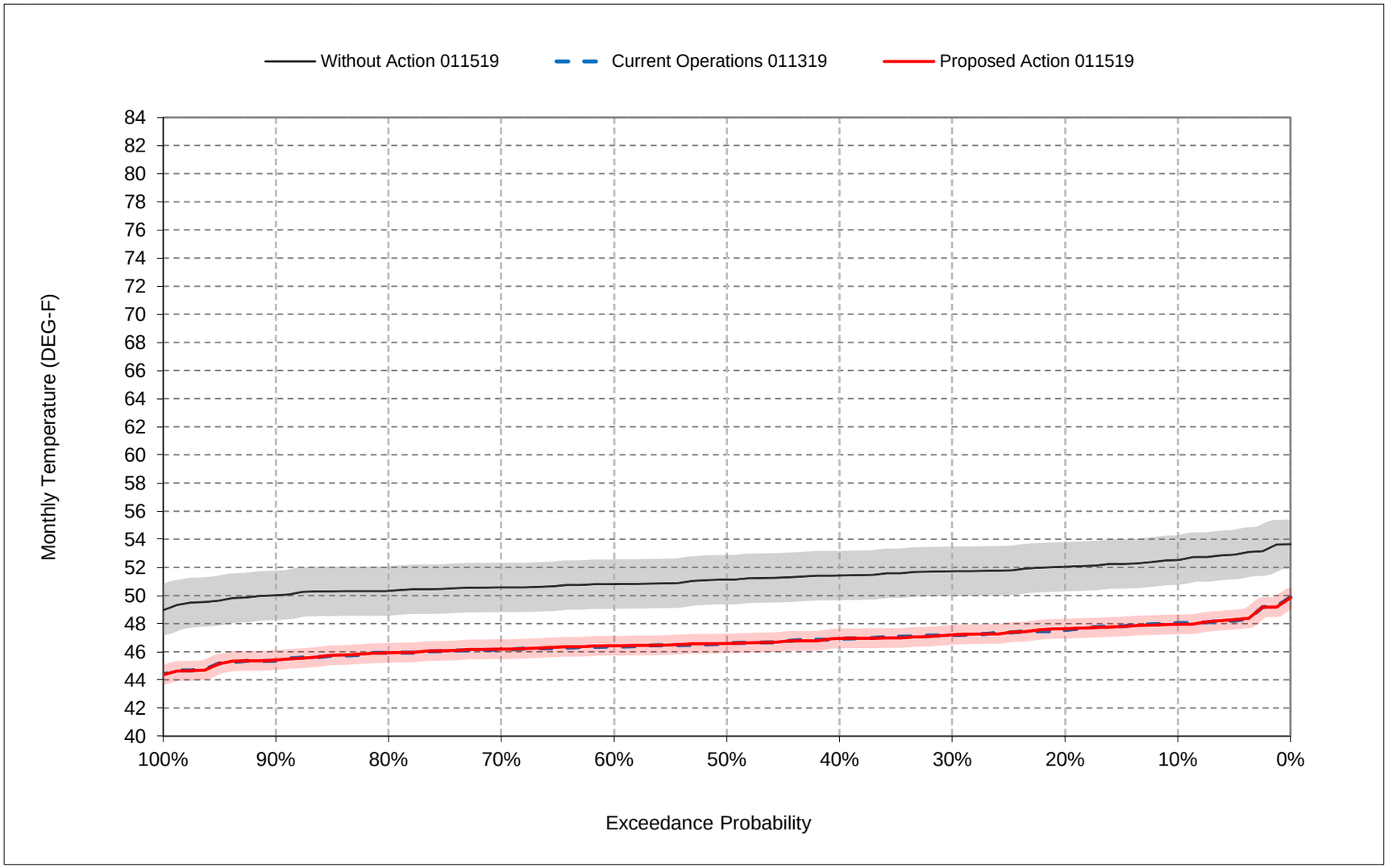
Figure 2-12. Clear Creek below Whiskeytown, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

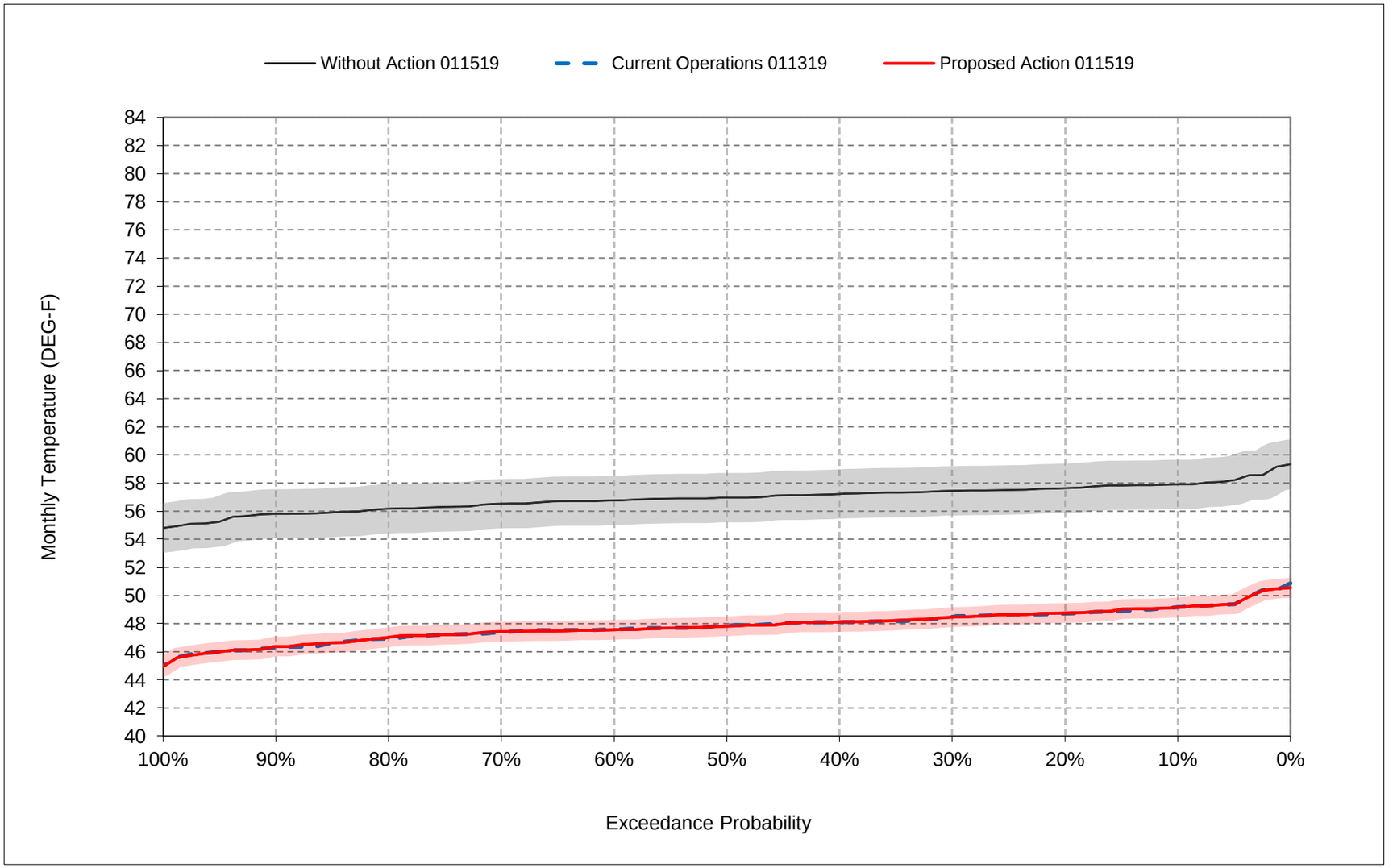
Figure 2-13. Clear Creek below Whiskeytown, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

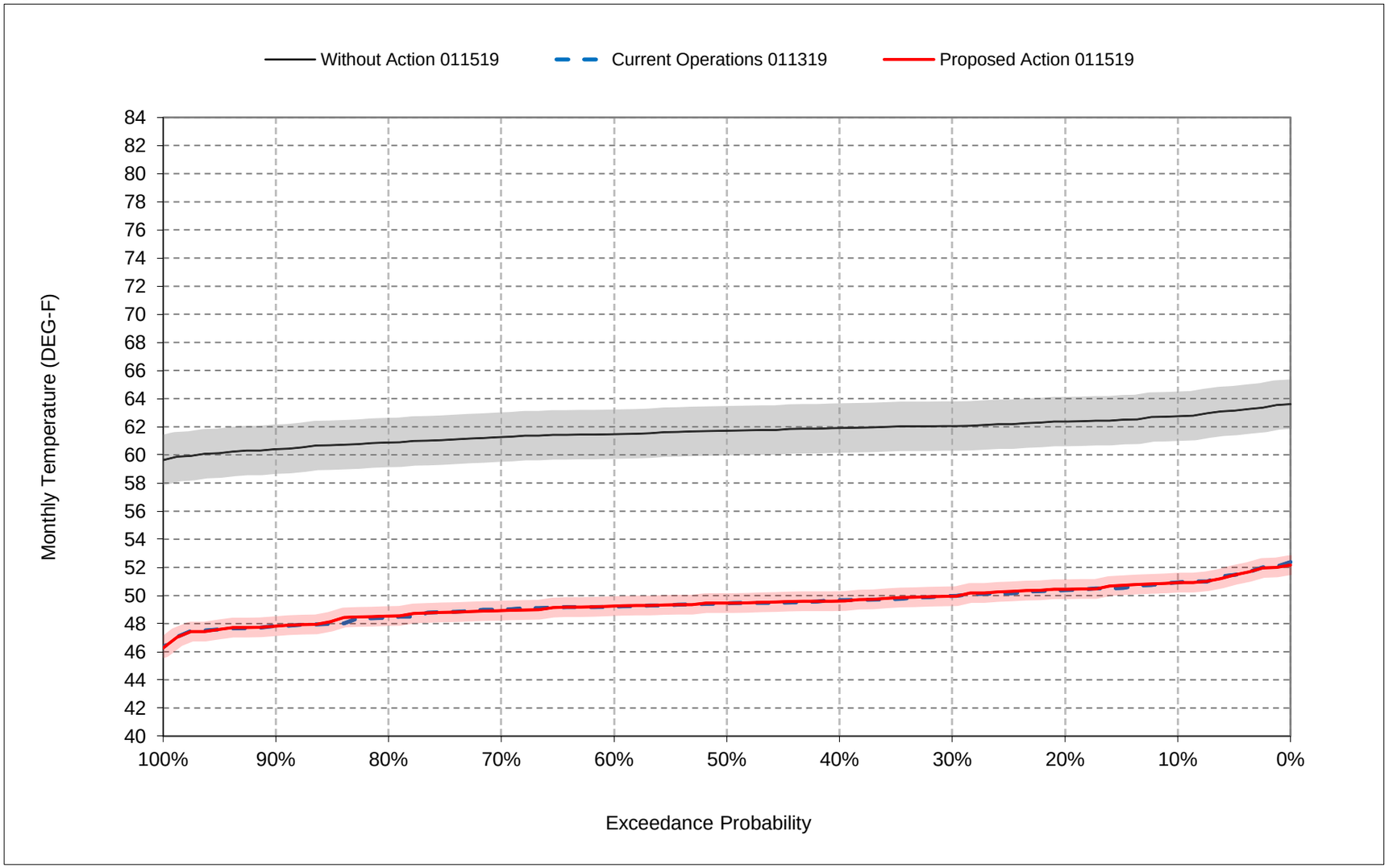
Figure 2-14. Clear Creek below Whiskeytown, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

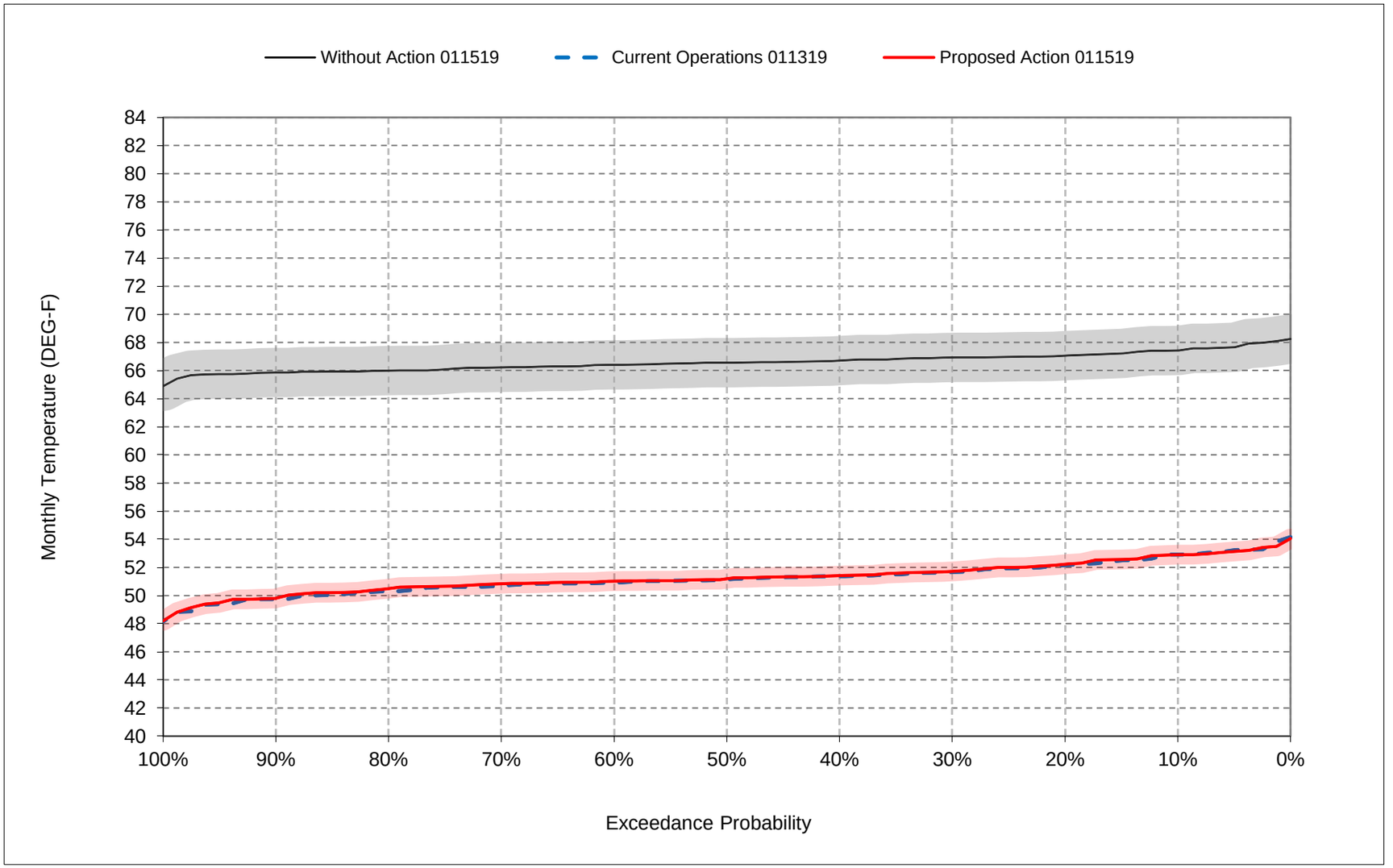
Figure 2-15. Clear Creek below Whiskeytown, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

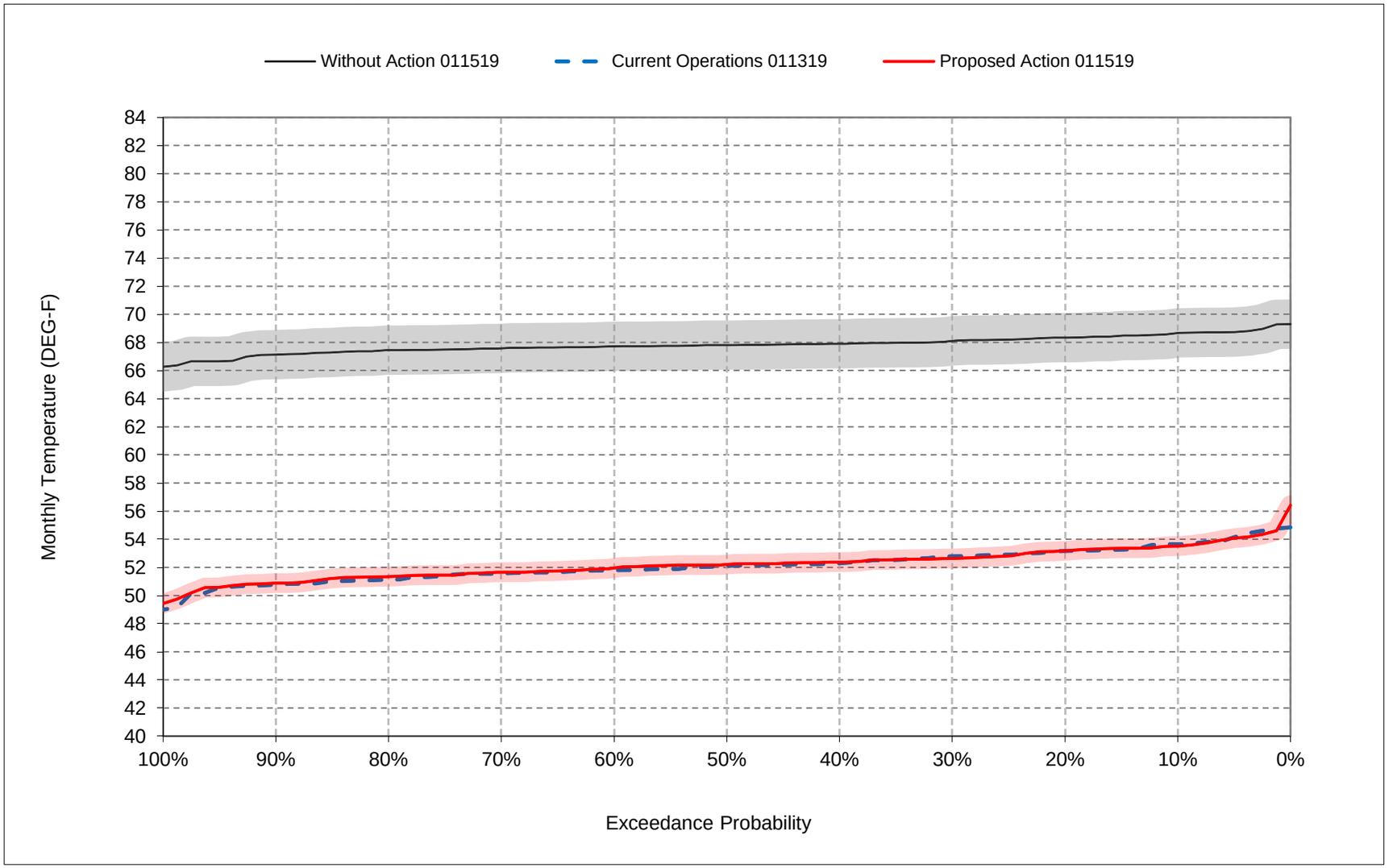
Figure 2-16. Clear Creek below Whiskeytown, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

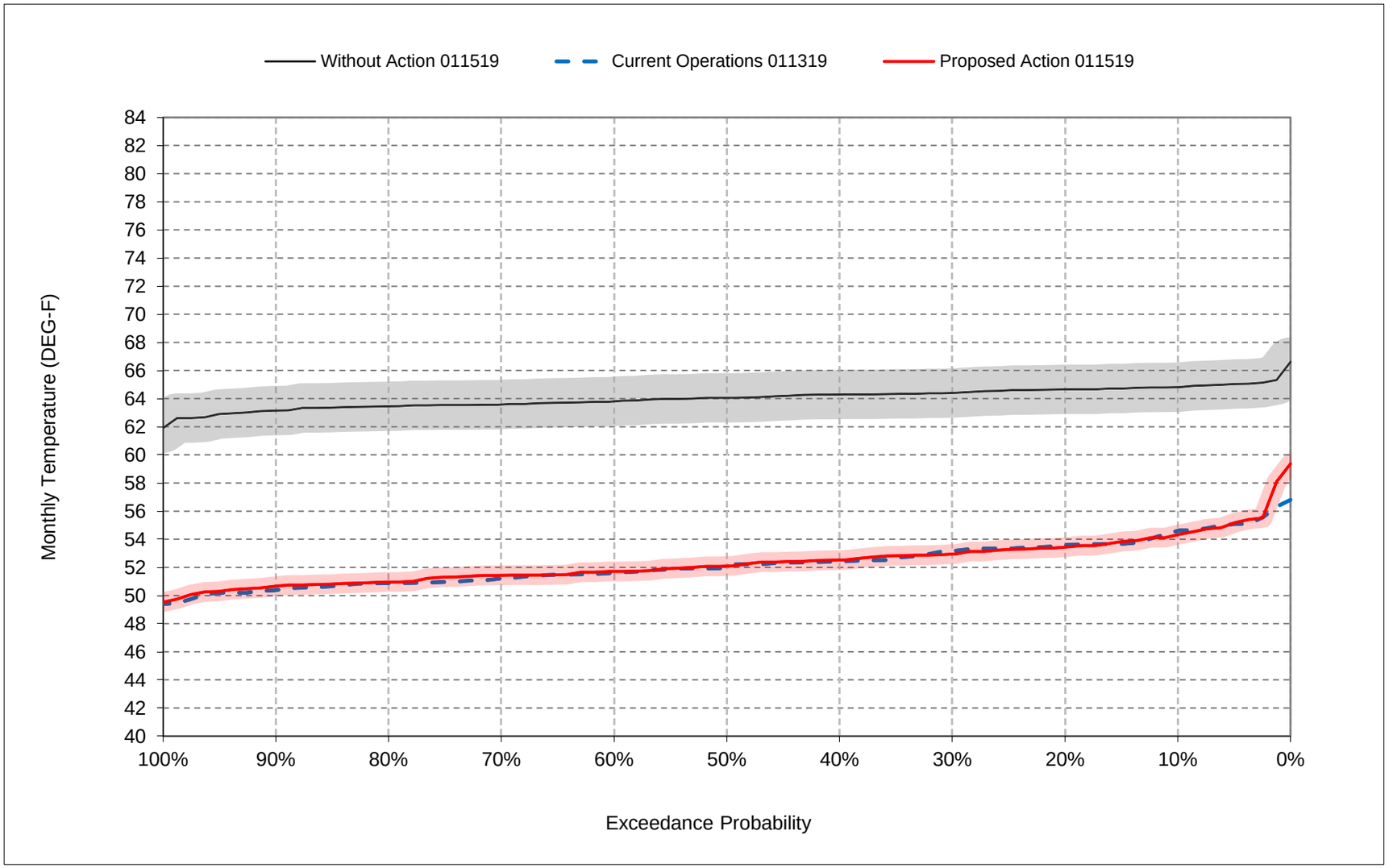
Figure 2-17. Clear Creek below Whiskeytown, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 3-1. Clear Creek at Igo, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.1	50.3	43.6	42.5	44.7	48.9	53.5	59.4	65.3	70.9	71.6	67.1
20%	58.6	49.3	43.1	42.0	44.0	48.2	52.7	59.0	65.1	70.5	71.2	66.8
30%	58.1	49.1	42.7	41.8	43.8	47.8	52.3	58.5	64.4	70.1	70.9	66.6
40%	57.9	48.7	42.4	41.6	43.7	47.5	51.8	58.1	63.7	69.8	70.7	66.2
50%	57.5	48.0	42.2	41.4	43.6	47.3	51.5	57.8	63.2	69.5	70.5	65.9
60%	57.1	47.7	42.0	41.1	43.4	47.1	51.3	57.5	62.8	69.0	70.1	65.7
70%	56.5	47.4	41.8	40.9	43.2	46.9	50.8	57.1	62.5	68.3	69.4	65.2
80%	56.0	47.0	41.6	40.7	43.0	46.8	50.6	56.7	62.1	67.9	69.0	64.7
90%	55.6	46.7	41.3	40.3	42.7	46.2	50.2	56.3	61.5	67.3	68.5	64.1
Long Term												
Full Simulation Period[a]	57.4	48.3	42.3	41.4	43.6	47.4	51.7	57.8	63.4	69.3	70.2	65.8
Water Year Types[b,c]												
Wet (32%)	57.3	48.2	42.3	41.4	43.5	47.1	50.9	57.3	62.6	68.5	69.8	65.4
Above Normal (16%)	57.3	47.6	42.1	41.7	43.6	47.4	51.2	57.6	63.2	69.2	69.6	65.0
Below Normal (13%)	57.0	48.3	42.2	41.1	43.3	47.5	52.3	58.1	63.7	69.6	70.2	66.1
Dry (24%)	57.4	48.4	42.5	41.1	43.6	47.4	51.9	58.2	64.1	69.6	70.5	66.2
Critical (15%)	58.2	49.0	42.5	41.7	44.3	48.3	52.8	58.5	64.3	70.0	70.8	66.7

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.7	**2.1**	**5.2**	**3.7**	**1.5**	-1.6	-4.3	-9.1	-12.3	-14.5	-15.0	-11.3
20%	-4.1	**2.6**	**4.9**	**3.6**	**1.6**	-1.4	-4.1	-9.2	-12.6	-14.5	-14.9	-12.0
30%	-4.2	**1.9**	**4.5**	**3.4**	**1.4**	-1.4	-4.1	-9.1	-12.5	-14.8	-15.1	-12.2
40%	-4.6	**2.1**	**4.4**	**3.4**	**1.4**	-1.3	-3.8	-9.0	-12.2	-14.7	-15.2	-12.4
50%	-4.6	**2.6**	**4.4**	**3.2**	**1.2**	-1.4	-3.9	-8.8	-12.0	-14.5	-15.3	-12.5
60%	-5.0	**2.7**	**4.3**	**3.3**	**1.1**	-1.3	-3.9	-8.9	-11.8	-14.4	-15.1	-12.7
70%	-4.9	**2.8**	**4.4**	**3.2**	**1.1**	-1.3	-3.6	-8.7	-11.8	-13.9	-14.6	-12.6
80%	-4.9	**2.8**	**4.4**	**3.1**	**1.1**	-1.5	-3.7	-8.7	-12.0	-13.8	-14.7	-12.4
90%	-4.8	**2.8**	**4.3**	**3.3**	**1.0**	-1.4	-3.8	-8.9	-11.9	-13.6	-14.5	-12.3
Long Term												
Full Simulation Period[a]	-4.3	**2.5**	**4.6**	**3.4**	**1.3**	-1.4	-3.9	-8.9	-12.1	-14.3	-14.9	-12.2
Water Year Types[b,c]												
Wet (32%)	-5.9	**1.9**	**4.3**	**3.1**	**1.0**	-1.6	-3.7	-8.6	-11.6	-13.7	-14.8	-12.8
Above Normal (16%)	-5.6	**2.3**	**4.3**	**3.0**	**1.0**	-1.7	-4.0	-9.0	-12.4	-14.5	-14.9	-12.5
Below Normal (13%)	-4.0	**2.7**	**4.6**	**3.2**	**1.3**	-1.6	-4.6	-9.5	-12.8	-14.7	-15.1	-12.7
Dry (24%)	-3.5	**2.8**	**4.8**	**3.8**	**1.6**	-1.0	-3.9	-9.2	-12.8	-14.5	-14.7	-11.8
Critical (15%)	-1.5	**3.5**	**5.0**	**4.0**	**1.6**	-1.1	-3.9	-8.4	-10.9	-14.7	-14.9	-10.6

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 3-2. Clear Creek at Igo, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.1	50.3	43.6	42.5	44.7	48.9	53.5	59.4	65.3	70.9	71.6	67.1
20%	58.6	49.3	43.1	42.0	44.0	48.2	52.7	59.0	65.1	70.5	71.2	66.8
30%	58.1	49.1	42.7	41.8	43.8	47.8	52.3	58.5	64.4	70.1	70.9	66.6
40%	57.9	48.7	42.4	41.6	43.7	47.5	51.8	58.1	63.7	69.8	70.7	66.2
50%	57.5	48.0	42.2	41.4	43.6	47.3	51.5	57.8	63.2	69.5	70.5	65.9
60%	57.1	47.7	42.0	41.1	43.4	47.1	51.3	57.5	62.8	69.0	70.1	65.7
70%	56.5	47.4	41.8	40.9	43.2	46.9	50.8	57.1	62.5	68.3	69.4	65.2
80%	56.0	47.0	41.6	40.7	43.0	46.8	50.6	56.7	62.1	67.9	69.0	64.7
90%	55.6	46.7	41.3	40.3	42.7	46.2	50.2	56.3	61.5	67.3	68.5	64.1
Long Term												
Full Simulation Period[a]	57.4	48.3	42.3	41.4	43.6	47.4	51.7	57.8	63.4	69.3	70.2	65.8
Water Year Types[b,c]												
Wet (32%)	57.3	48.2	42.3	41.4	43.5	47.1	50.9	57.3	62.6	68.5	69.8	65.4
Above Normal (16%)	57.3	47.6	42.1	41.7	43.6	47.4	51.2	57.6	63.2	69.2	69.6	65.0
Below Normal (13%)	57.0	48.3	42.2	41.1	43.3	47.5	52.3	58.1	63.7	69.6	70.2	66.1
Dry (24%)	57.4	48.4	42.5	41.1	43.6	47.4	51.9	58.2	64.1	69.6	70.5	66.2
Critical (15%)	58.2	49.0	42.5	41.7	44.3	48.3	52.8	58.5	64.3	70.0	70.8	66.7

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.1	**1.9**	**5.1**	**3.8**	**1.4**	-1.6	-4.4	-9.1	-12.3	-14.3	-15.0	-11.5
20%	-4.5	**2.5**	**5.1**	**3.5**	**1.6**	-1.3	-4.1	-9.1	-12.5	-14.5	-15.0	-12.1
30%	-4.3	**2.0**	**4.4**	**3.4**	**1.4**	-1.3	-4.1	-9.1	-12.5	-14.7	-15.1	-12.3
40%	-4.5	**2.1**	**4.4**	**3.3**	**1.4**	-1.4	-3.9	-8.9	-12.1	-14.6	-15.1	-12.2
50%	-4.6	**2.7**	**4.3**	**3.2**	**1.2**	-1.4	-3.9	-8.8	-12.0	-14.5	-15.2	-12.4
60%	-4.7	**2.7**	**4.2**	**3.2**	**1.1**	-1.4	-3.8	-8.9	-11.9	-14.3	-15.0	-12.6
70%	-4.8	**2.7**	**4.3**	**3.2**	**1.0**	-1.3	-3.7	-8.7	-11.8	-13.8	-14.5	-12.3
80%	-4.8	**2.7**	**4.4**	**3.1**	**1.0**	-1.5	-3.7	-8.7	-11.8	-13.7	-14.5	-12.3
90%	-4.9	**2.7**	**4.2**	**3.3**	**1.1**	-1.4	-3.7	-8.9	-11.9	-13.5	-14.5	-12.0
Long Term												
Full Simulation Period[a]	-4.4	**2.5**	**4.5**	**3.4**	**1.3**	-1.4	-3.9	-8.9	-12.1	-14.2	-14.8	-12.0
Water Year Types[b,c]												
Wet (32%)	-5.8	**1.9**	**4.3**	**3.1**	**1.0**	-1.6	-3.7	-8.6	-11.6	-13.7	-14.8	-12.6
Above Normal (16%)	-5.4	**2.5**	**4.3**	**3.0**	**1.0**	-1.7	-3.9	-8.9	-12.3	-14.4	-14.8	-12.4
Below Normal (13%)	-3.9	**2.7**	**4.6**	**3.1**	**1.2**	-1.6	-4.7	-9.6	-12.8	-14.5	-15.1	-12.7
Dry (24%)	-3.7	**2.7**	**4.7**	**3.8**	**1.6**	-1.0	-3.9	-9.3	-12.8	-14.6	-14.8	-12.0
Critical (15%)	-1.9	**3.3**	**5.0**	**4.0**	**1.6**	-1.1	-3.9	-8.4	-10.9	-14.5	-14.6	-10.0

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 3-3. Clear Creek at Igo, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 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	-0.2	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.

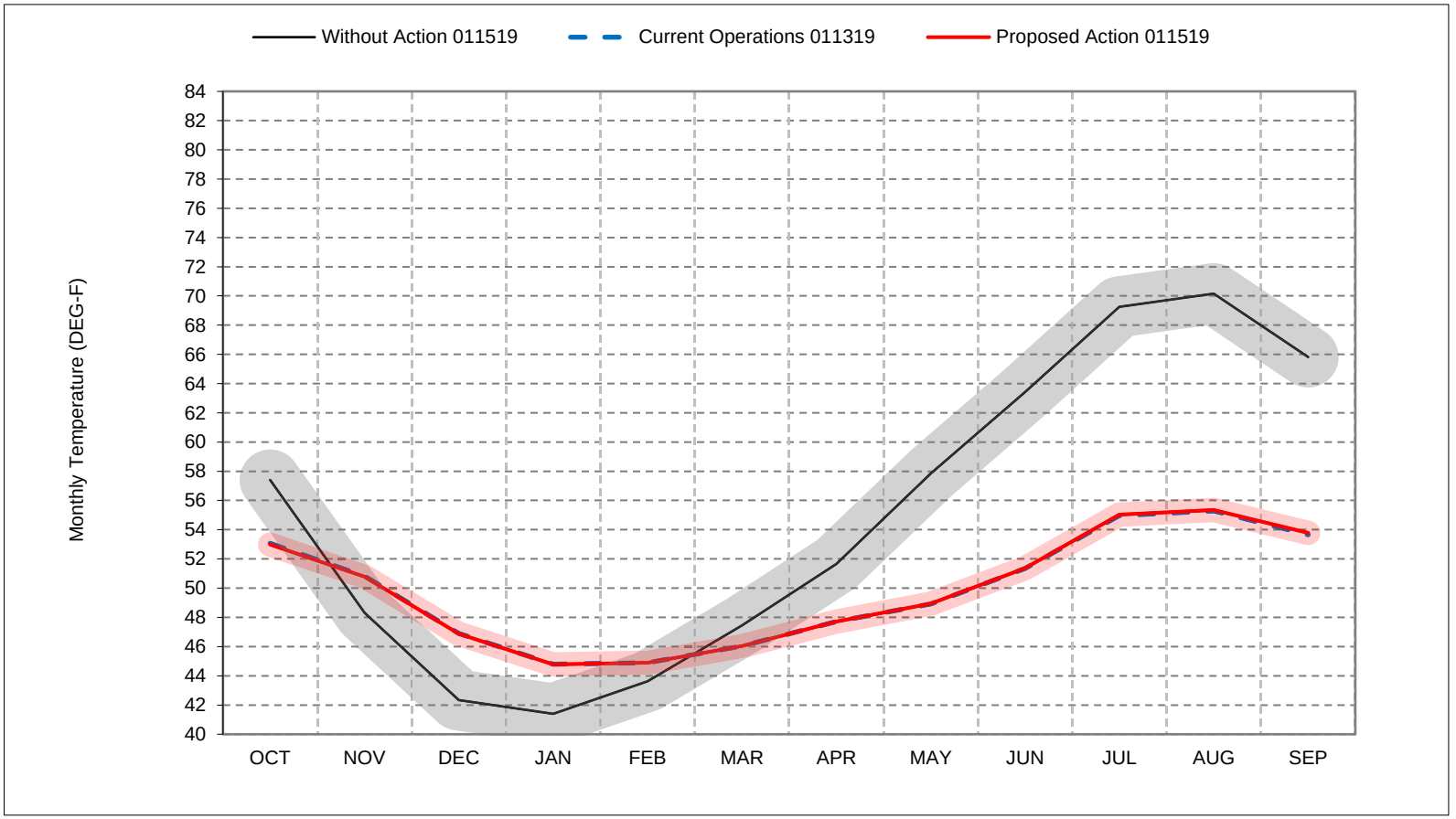
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

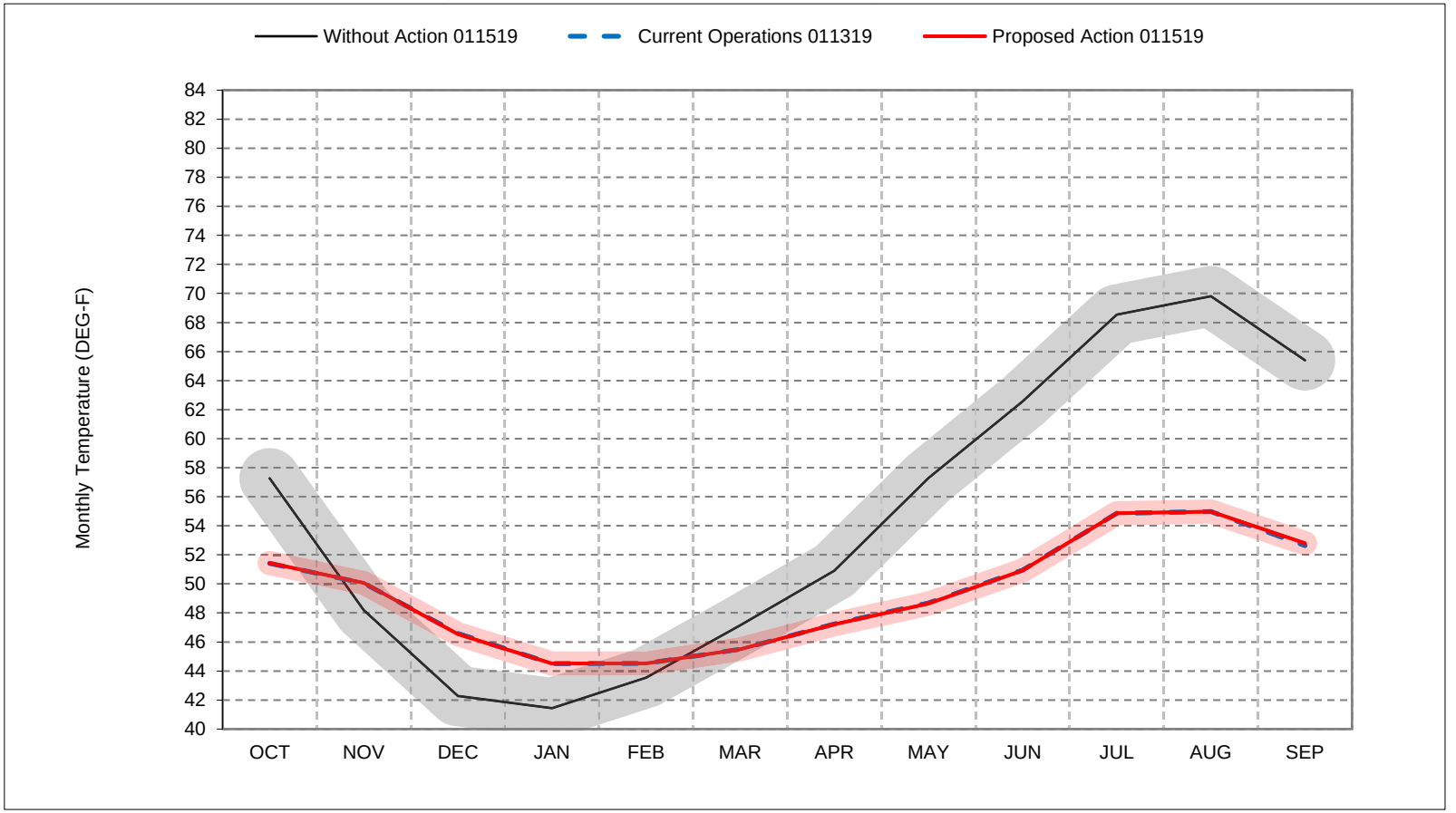
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-1. Clear Creek at Igo, Long-Term Average Temperature



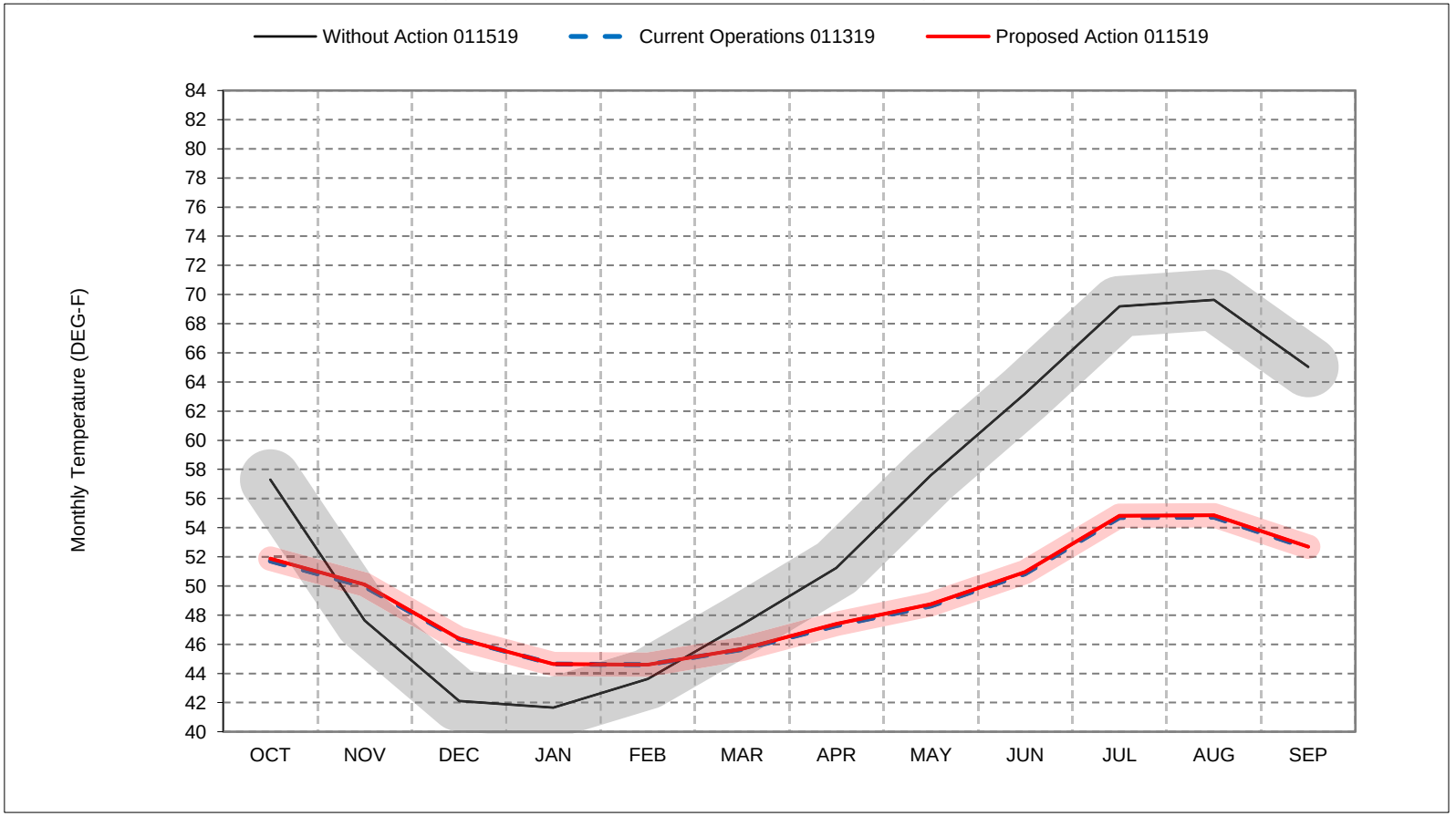
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-2. Clear Creek at Igo, Wet Year Average Temperature



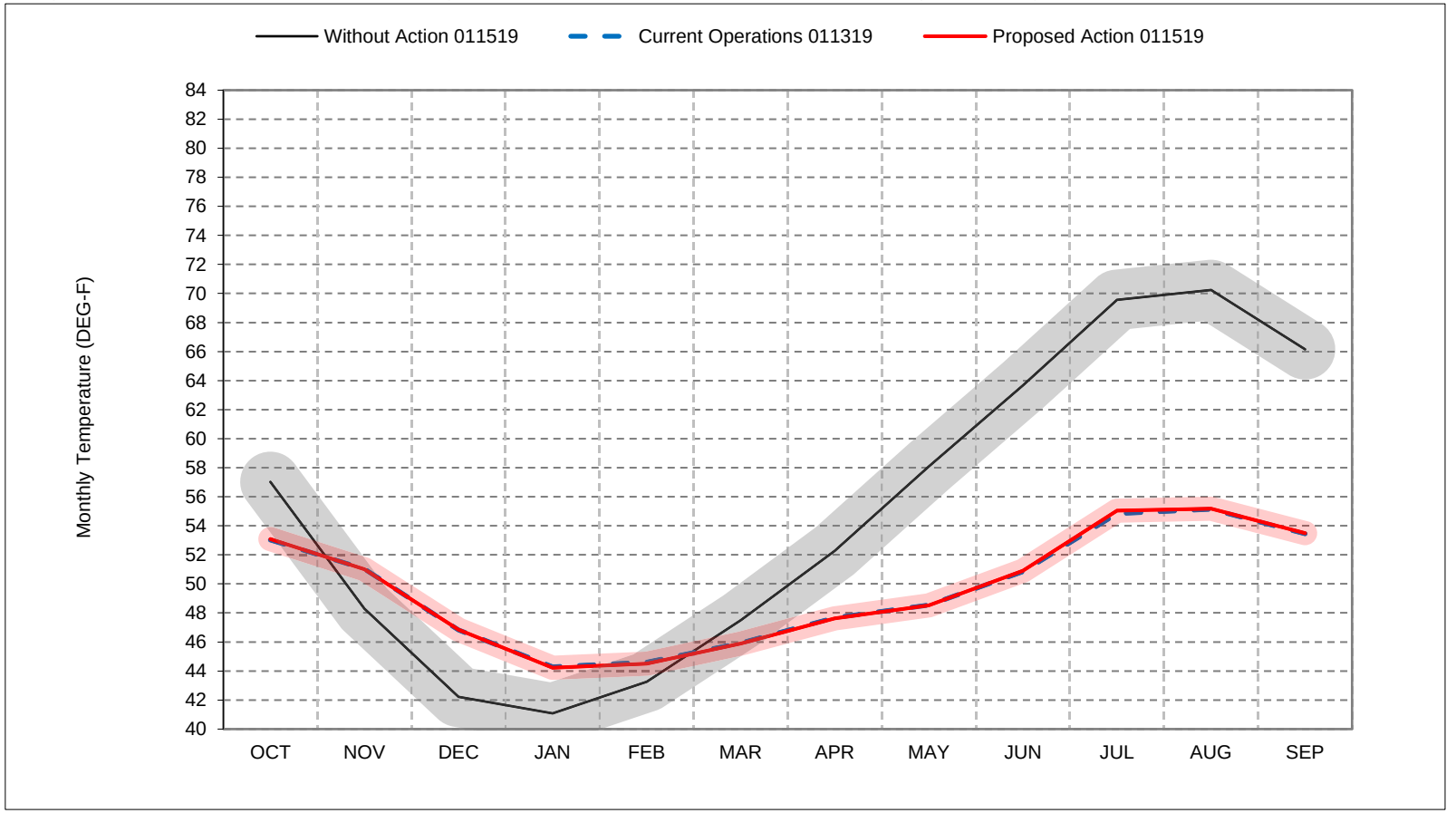
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-3. Clear Creek at Igo, Above Normal Year Average Temperature



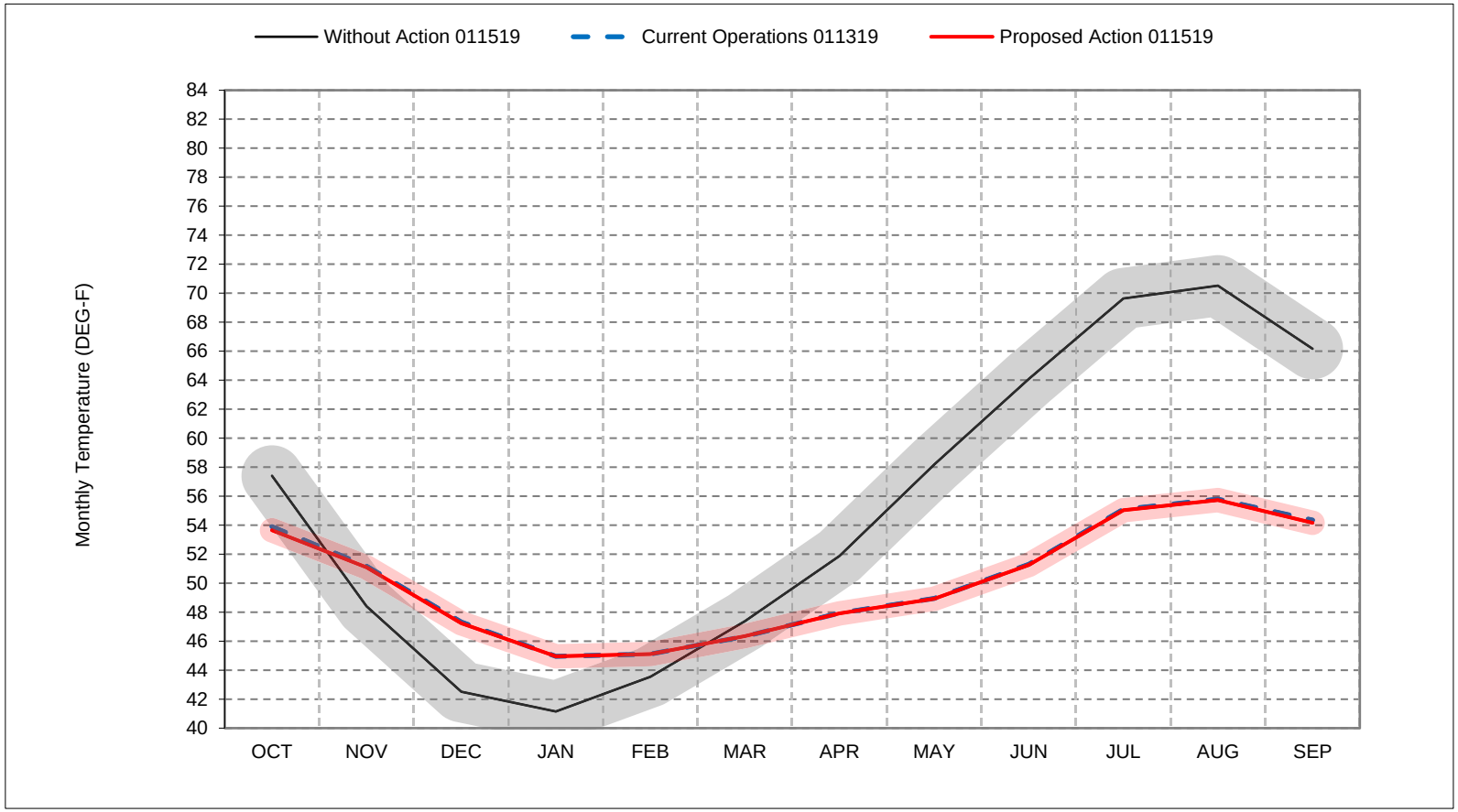
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-4. Clear Creek at Igo, Below Normal Year Average Temperature



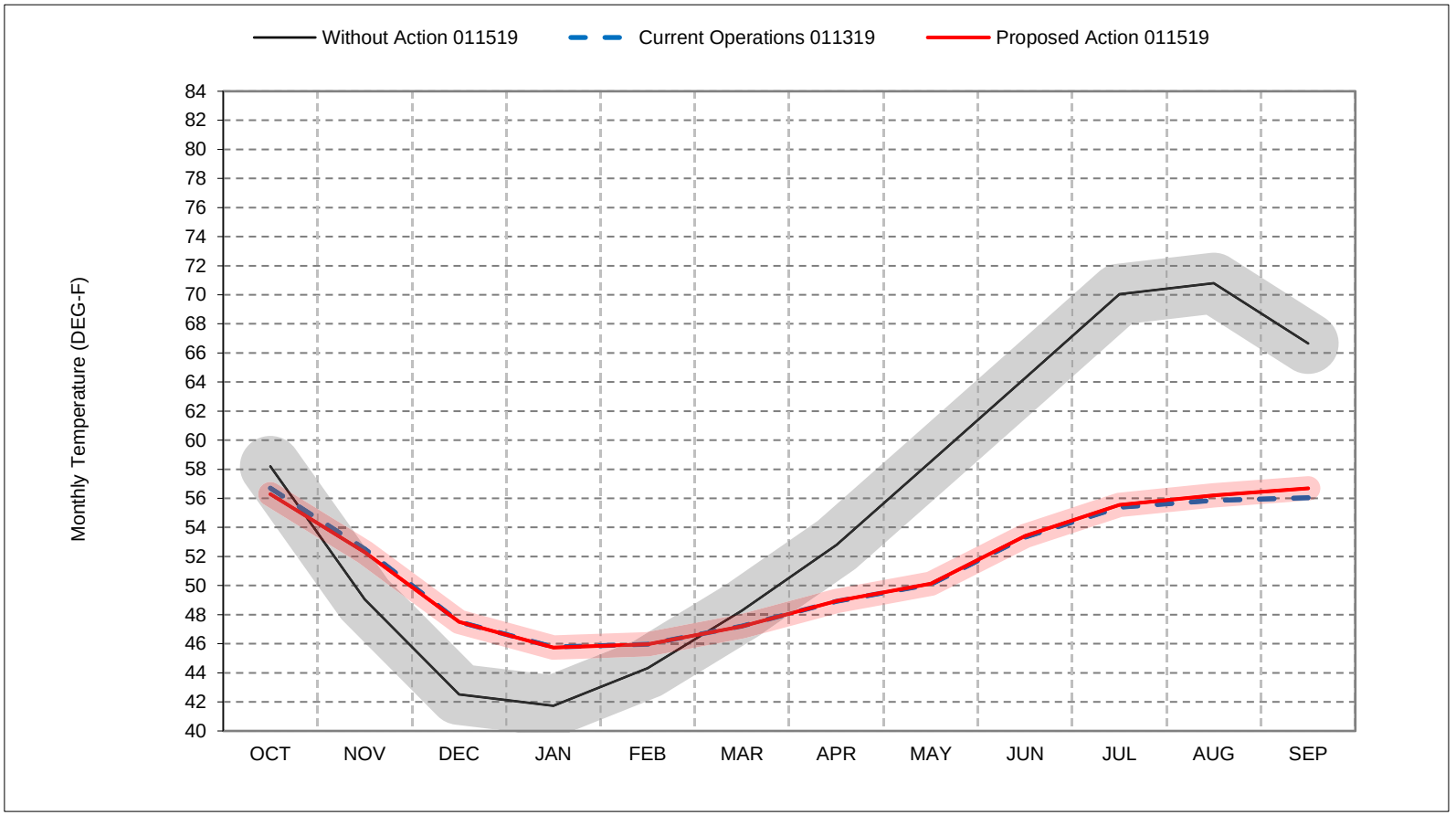
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-5. Clear Creek at Igo, Dry Year Average Temperature



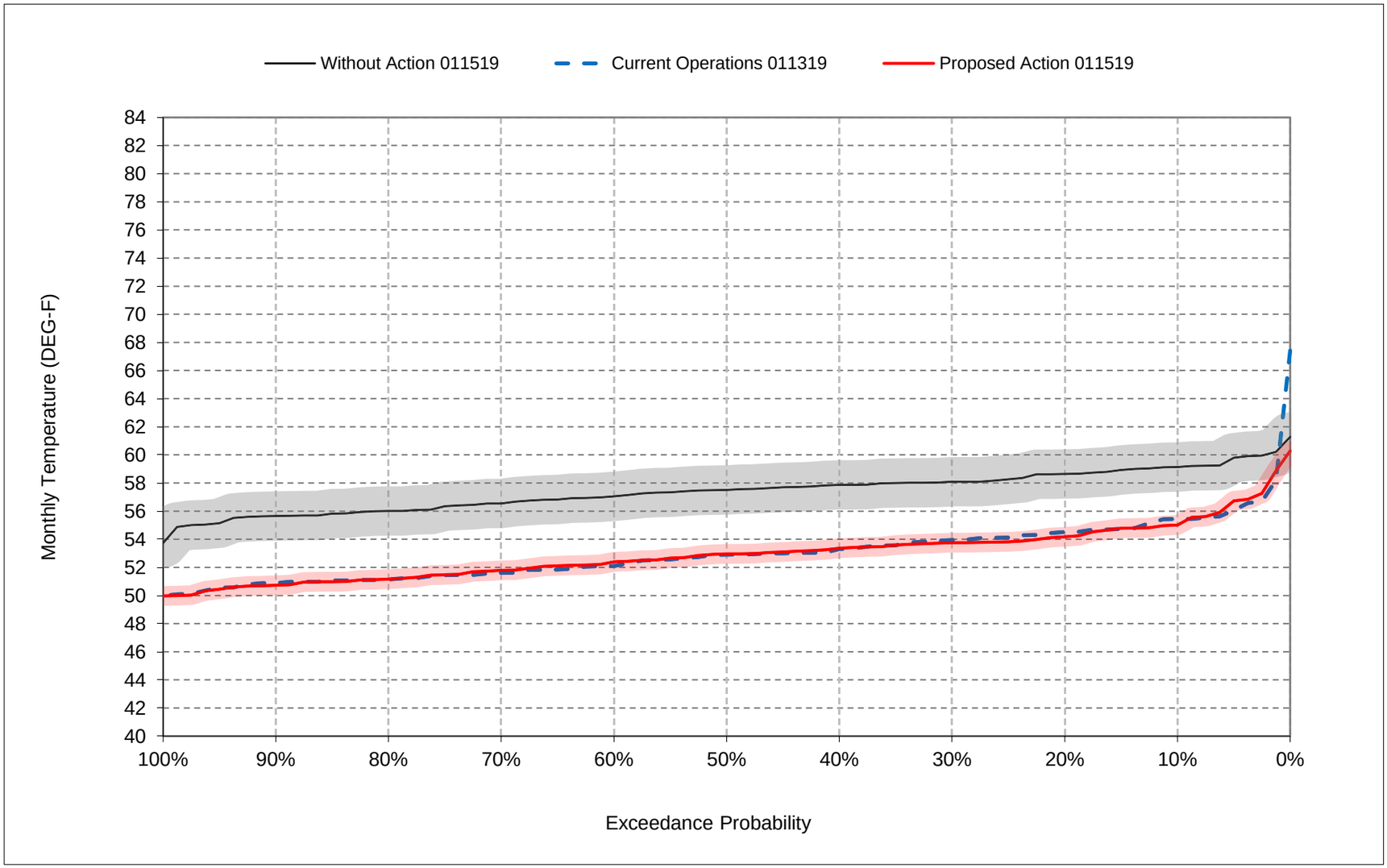
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

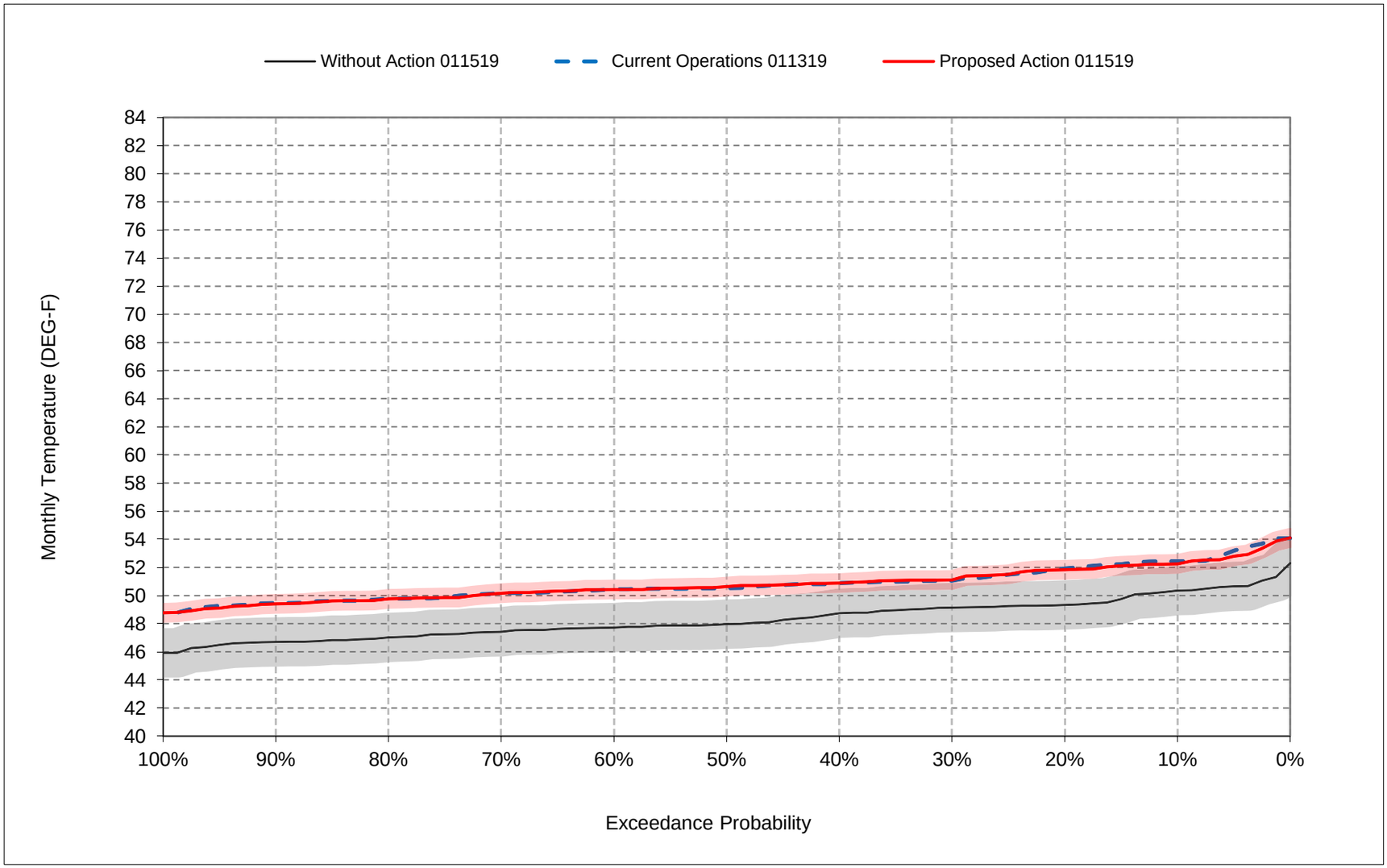
Figure 3-7. Clear Creek at Igo, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

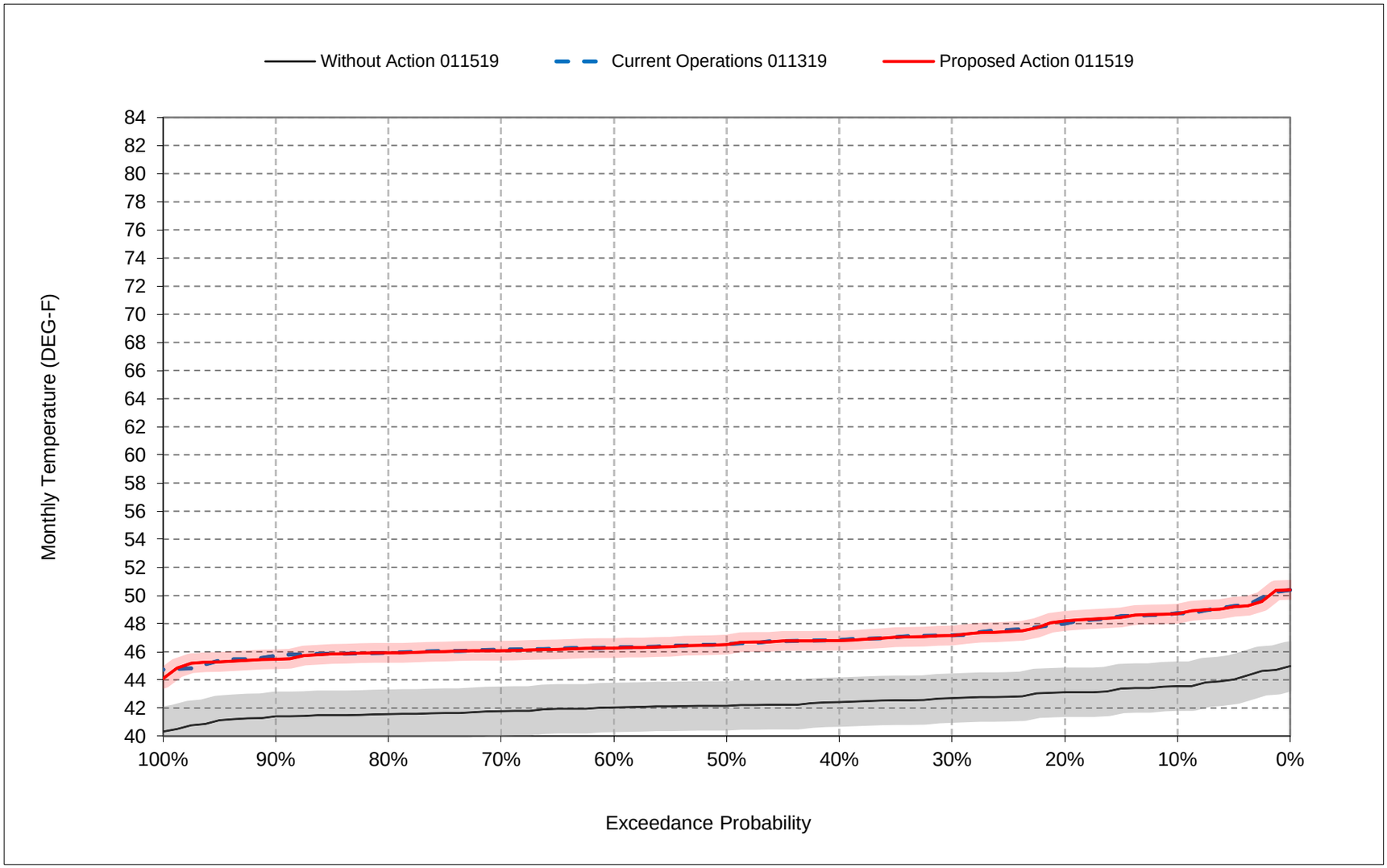
Figure 3-8. Clear Creek at Igo, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

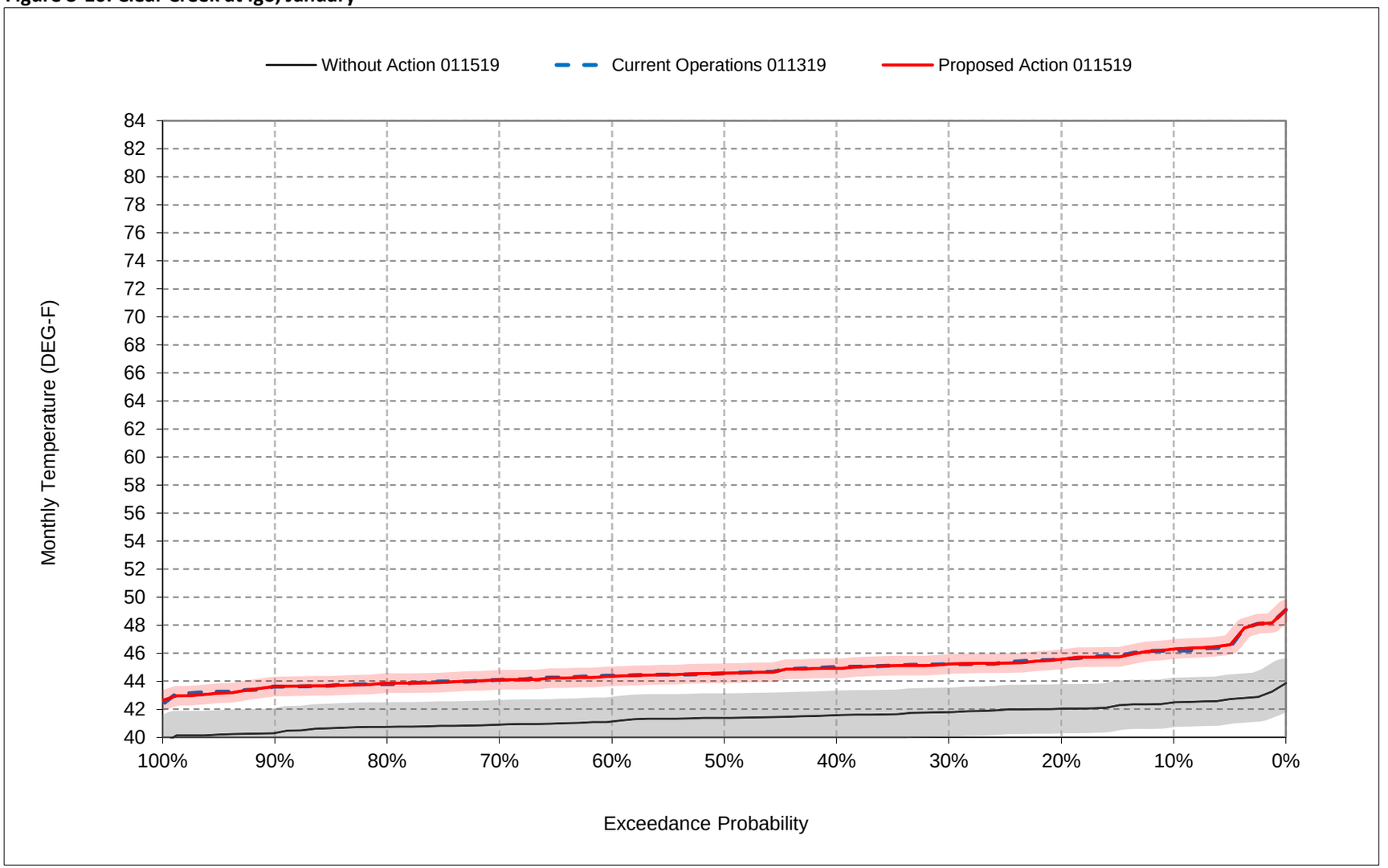
Figure 3-9. Clear Creek at Igo, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

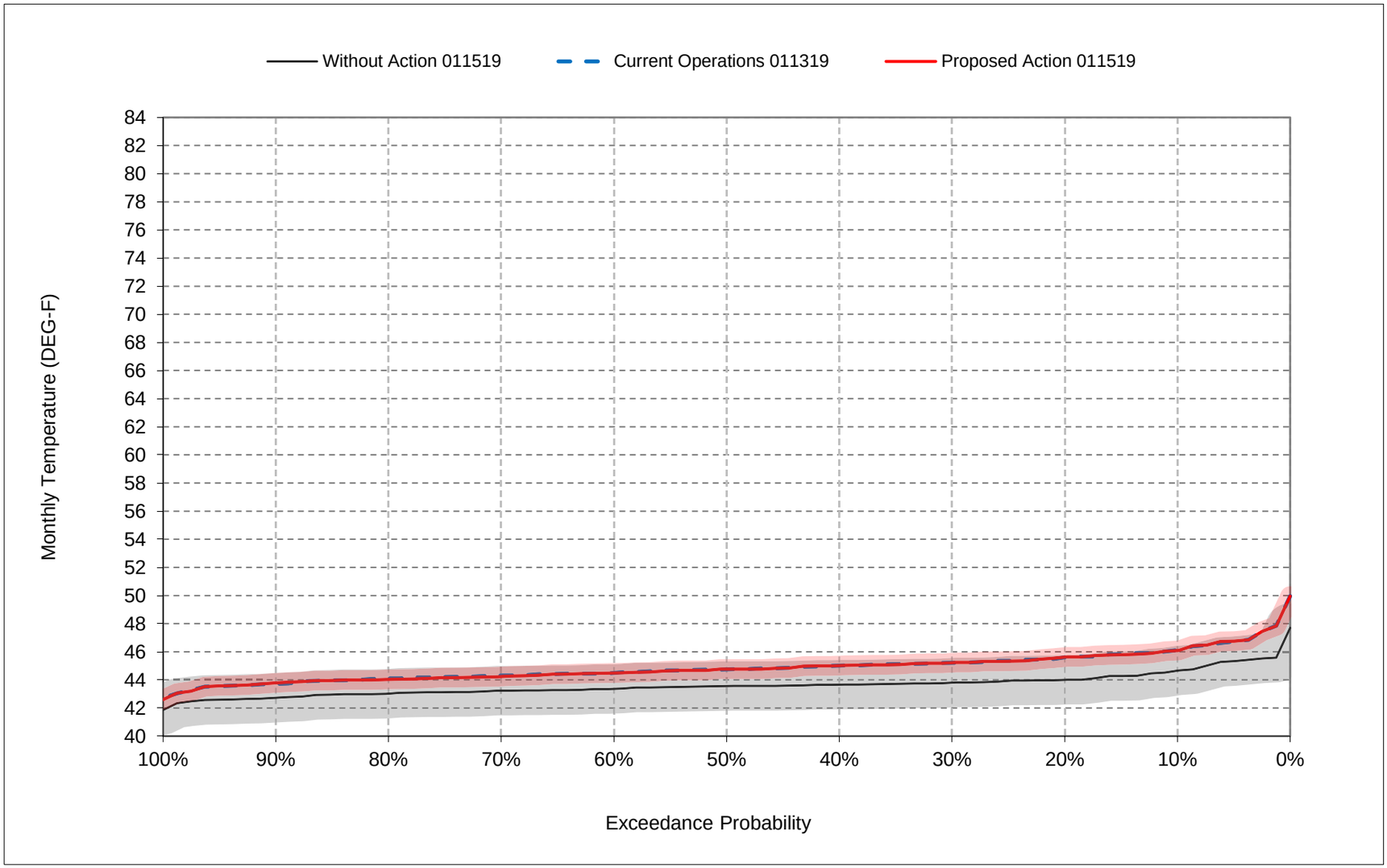
Figure 3-10. Clear Creek at Igo, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

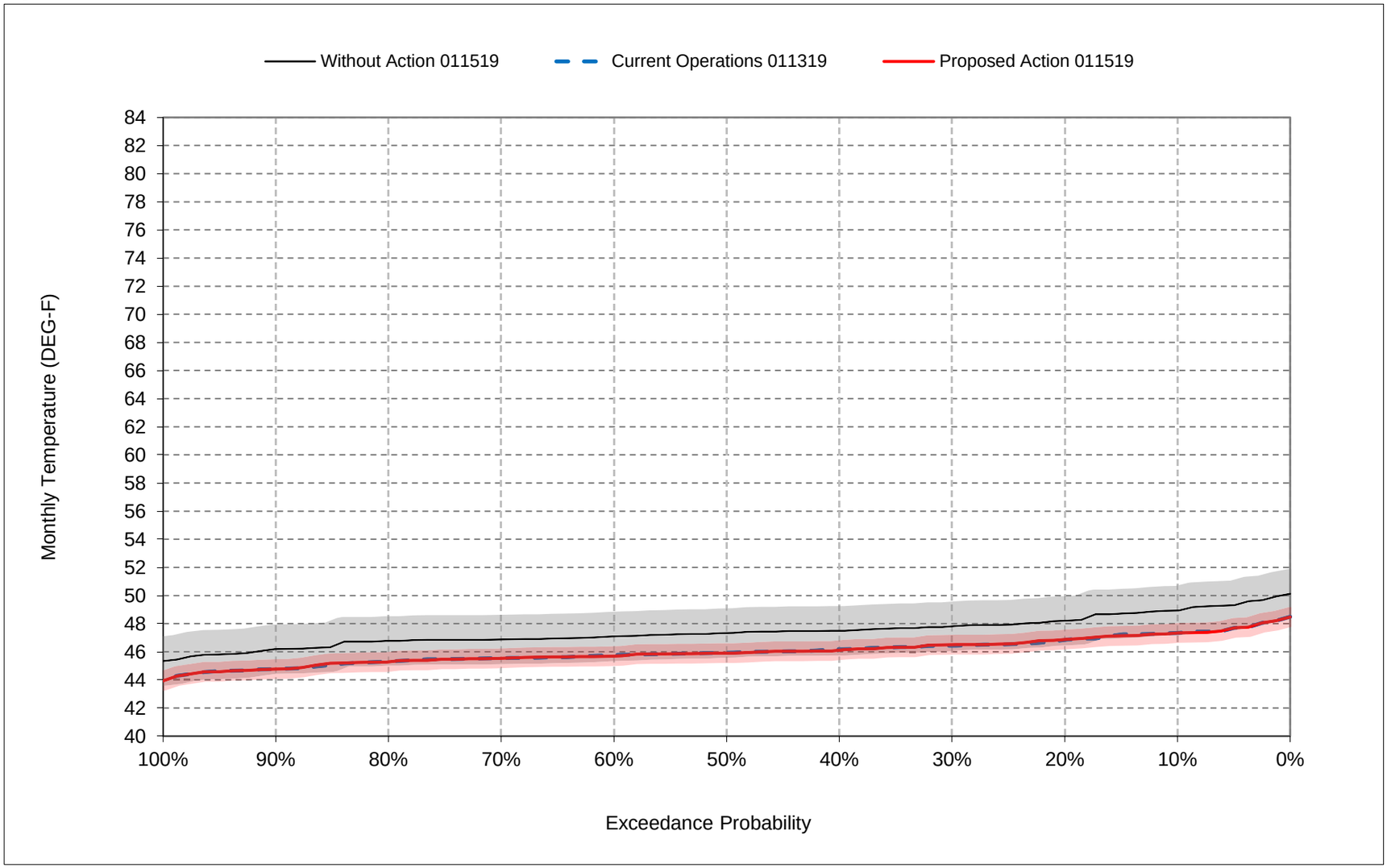
Figure 3-11. Clear Creek at Igo, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

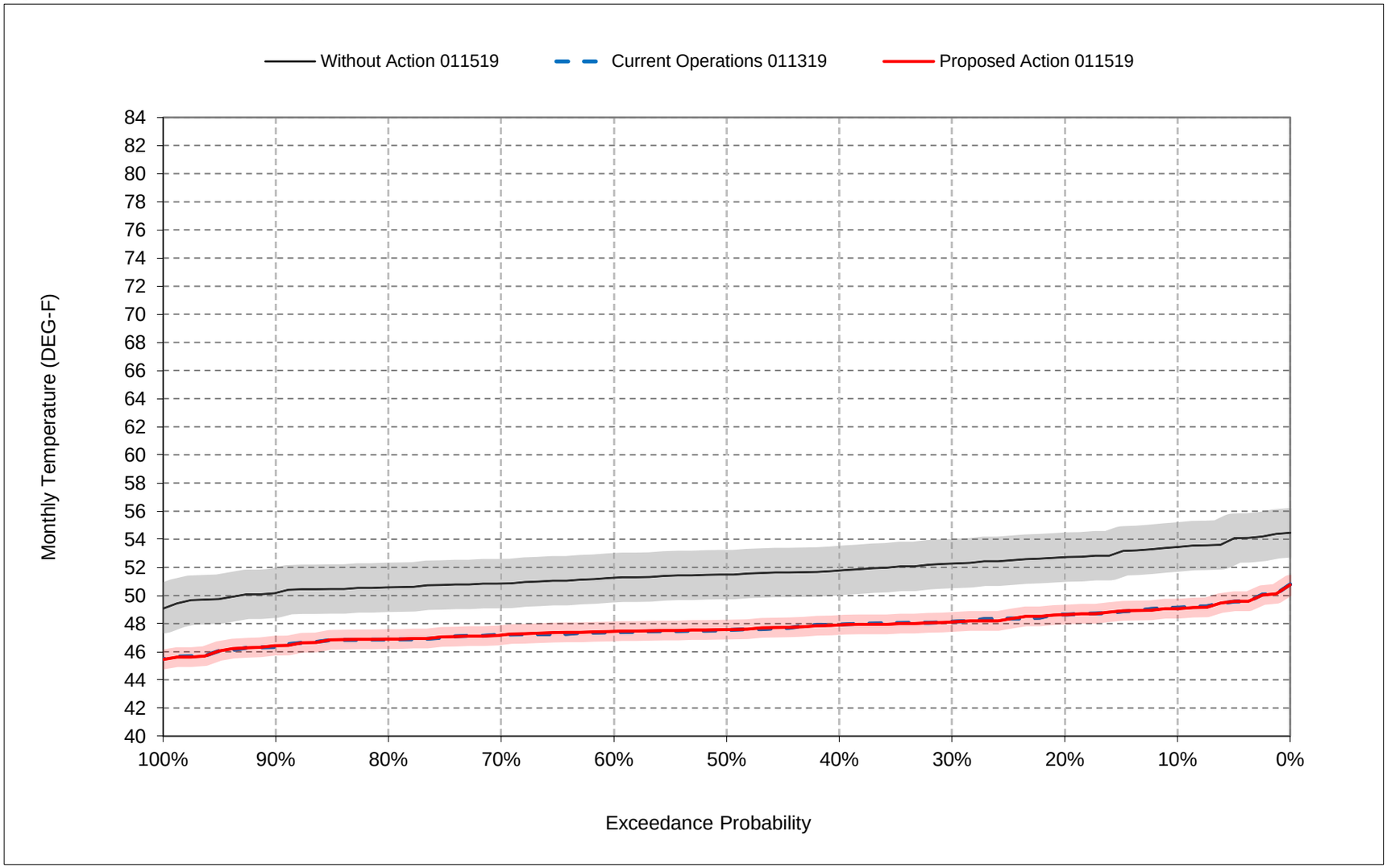
Figure 3-12. Clear Creek at Igo, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

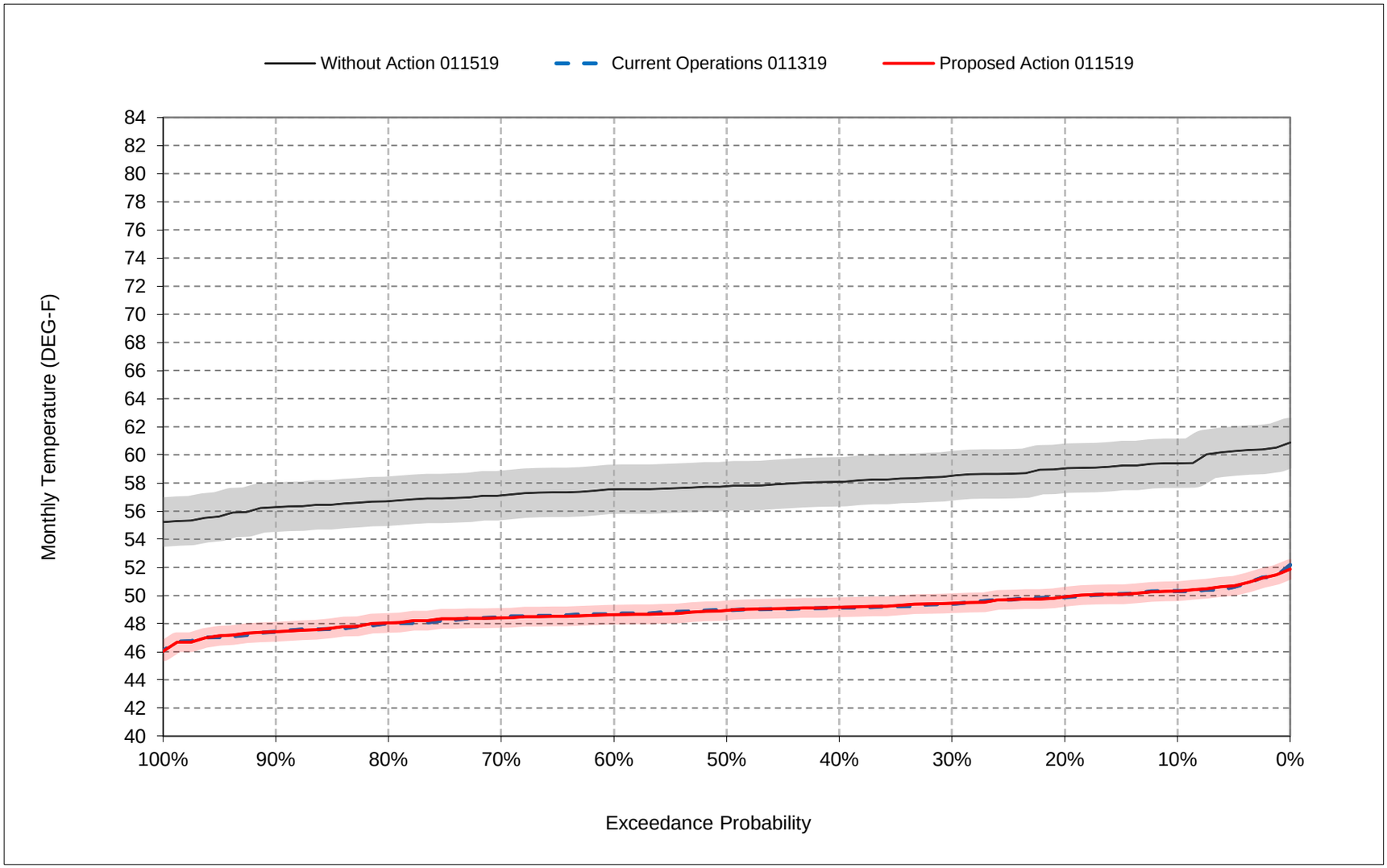
Figure 3-13. Clear Creek at Igo, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

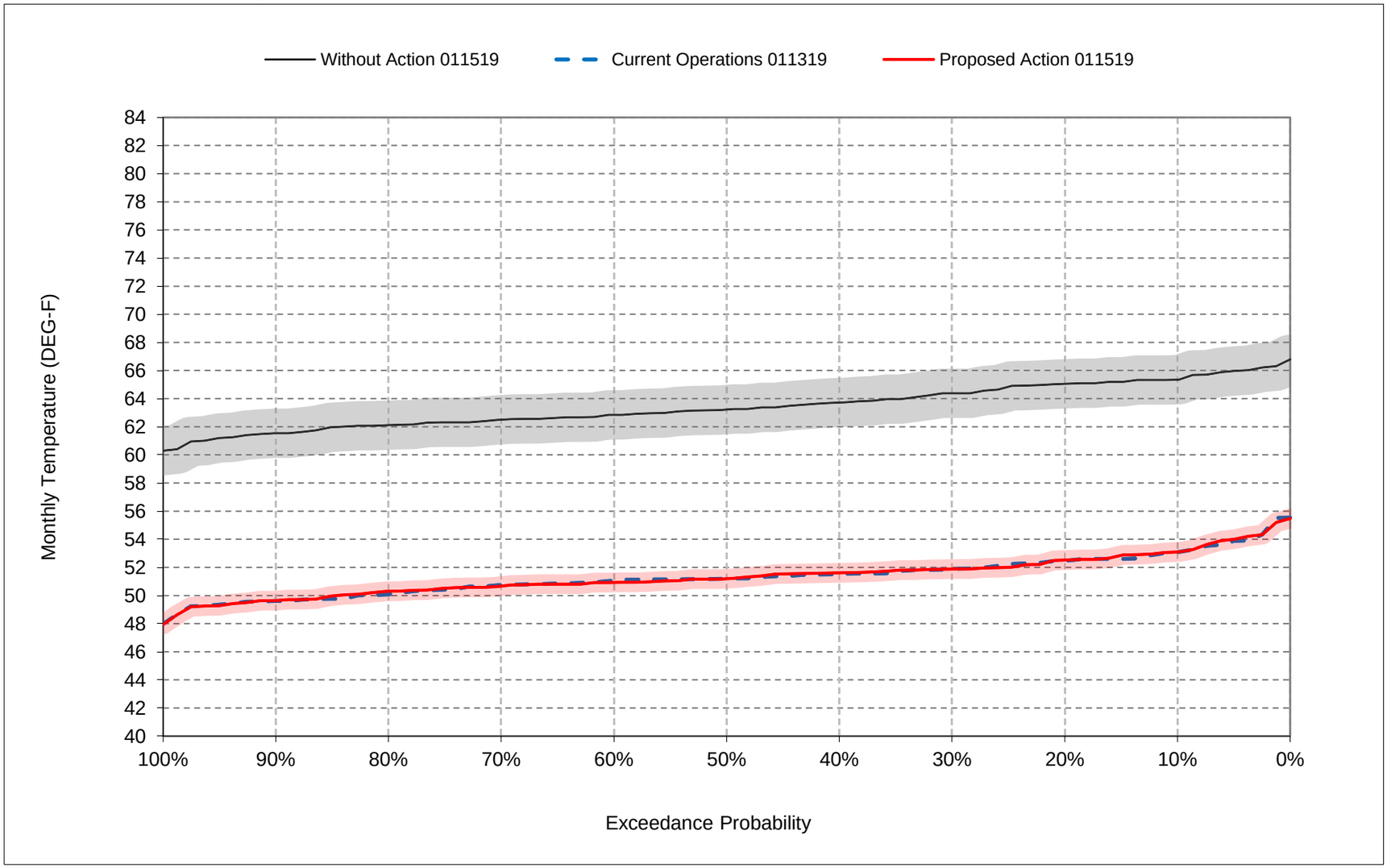
Figure 3-14. Clear Creek at Igo, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

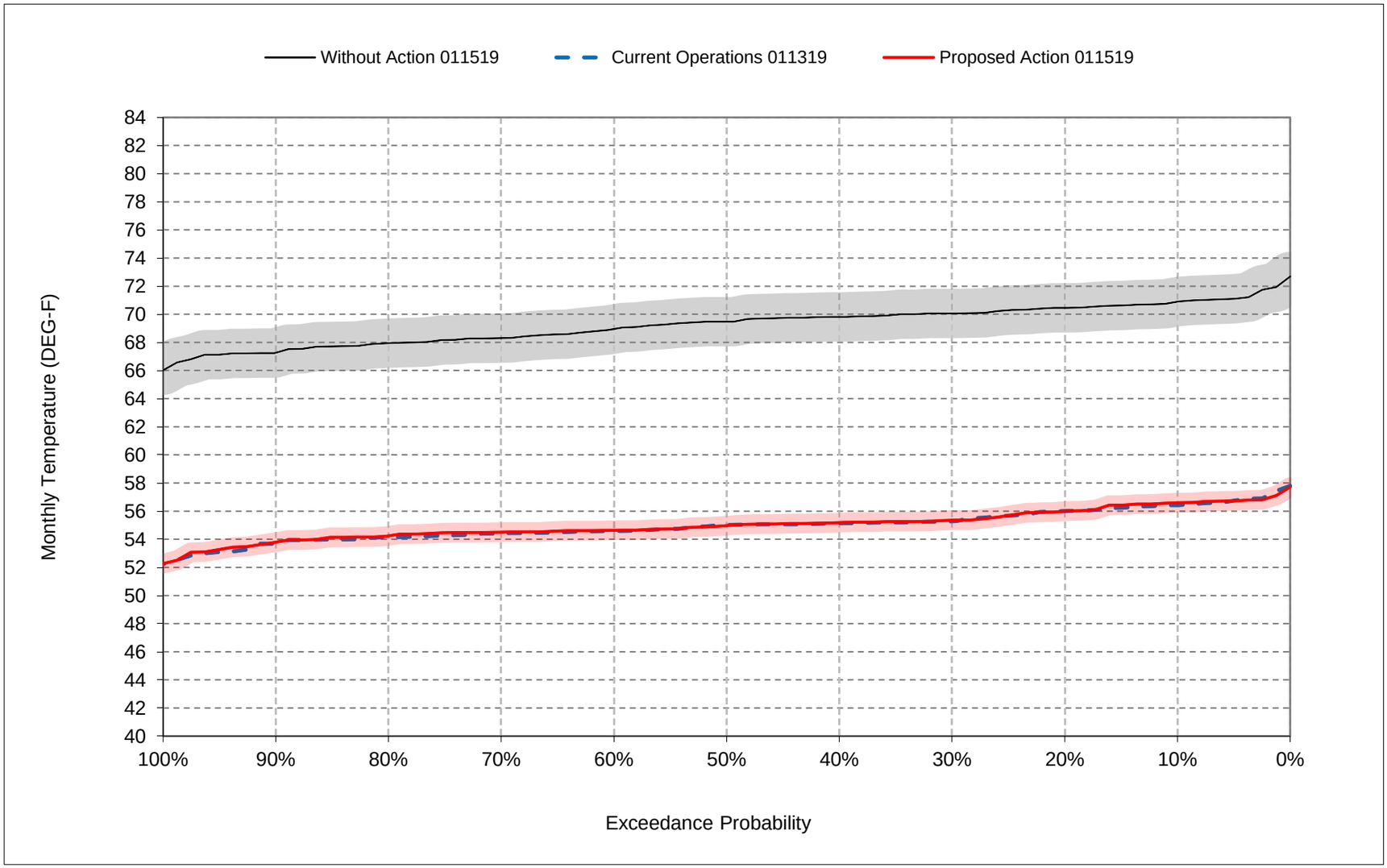
Figure 3-15. Clear Creek at Igo, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

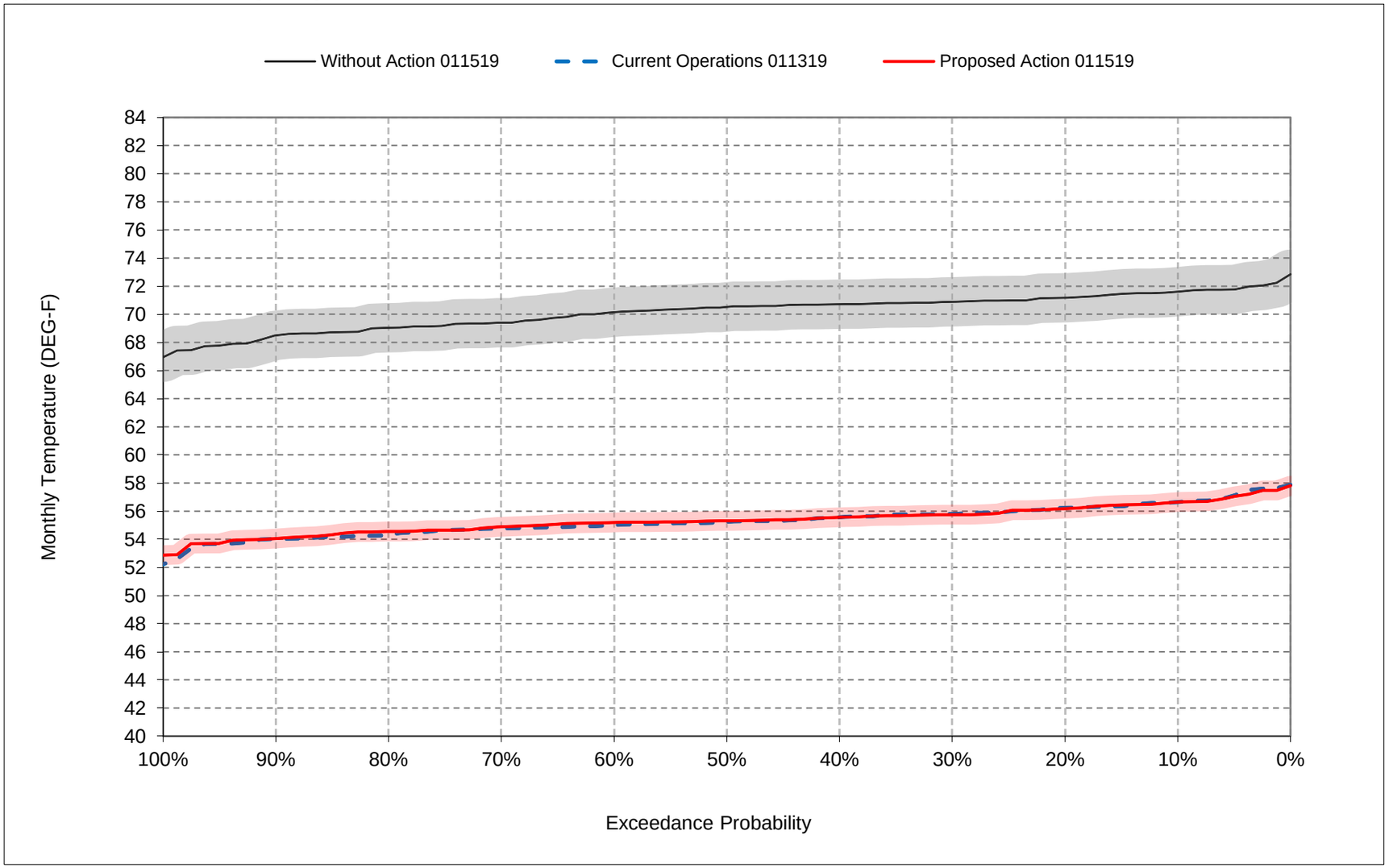
Figure 3-16. Clear Creek at Igo, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

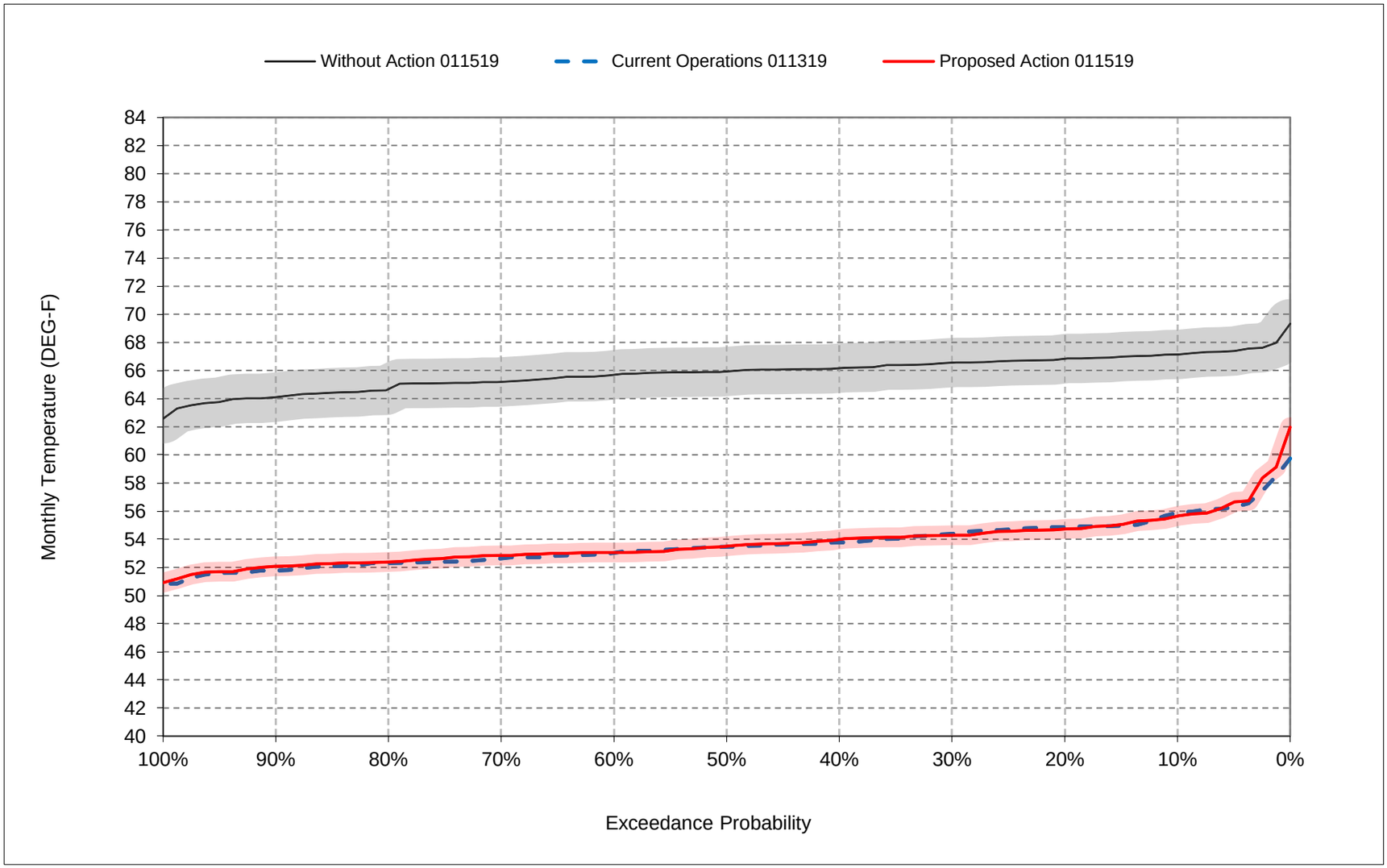
Figure 3-17. Clear Creek at Igo, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 4-1. Clear Creek at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.4	51.4	44.1	42.8	45.2	49.9	55.1	62.4	70.3	76.0	75.8	70.7
20%	60.8	50.6	43.5	42.4	44.5	48.8	53.6	60.8	69.0	75.4	75.3	70.2
30%	60.2	50.1	43.2	42.1	44.1	48.3	53.1	60.2	66.9	74.9	74.9	69.6
40%	59.7	49.4	42.6	41.9	43.9	48.0	52.6	59.8	66.4	74.5	74.7	69.2
50%	59.2	48.7	42.5	41.6	43.8	47.8	52.1	58.8	65.7	73.7	74.4	68.9
60%	58.9	48.2	42.2	41.3	43.7	47.5	51.8	58.4	65.1	72.1	73.7	68.3
70%	58.1	47.8	42.0	41.1	43.5	47.2	51.3	58.1	64.4	71.0	72.1	67.8
80%	57.0	47.4	41.8	40.9	43.3	47.0	50.9	57.5	63.7	70.2	71.1	66.6
90%	56.7	47.0	41.5	40.6	43.1	46.3	50.5	56.8	63.0	69.4	70.4	65.6
Long Term												
Full Simulation Period[a]	59.1	49.1	42.7	41.7	44.0	47.9	52.4	59.3	66.0	73.0	73.5	68.5
Water Year Types[b,c]												
Wet (32%)	58.9	48.9	42.6	41.6	43.7	47.5	51.4	58.3	64.4	71.5	72.8	67.8
Above Normal (16%)	58.9	48.3	42.4	41.8	43.8	47.6	51.7	58.6	65.3	72.8	72.6	67.4
Below Normal (13%)	58.7	49.1	42.6	41.4	43.7	48.0	53.1	59.8	66.7	73.6	73.7	69.1
Dry (24%)	59.0	49.2	42.9	41.6	44.0	47.8	52.6	60.0	67.3	73.8	74.2	69.0
Critical (15%)	60.1	50.1	43.0	42.4	45.3	49.2	54.5	60.8	67.6	74.5	74.6	69.8

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5.0	**1.4**	**4.8**	**3.6**	**1.4**	-1.5	-4.1	-10.1	-13.4	-13.8	-14.4	-12.8
20%	-5.3	**1.7**	**4.7**	**3.4**	**1.8**	-0.6	-3.3	-9.1	-13.7	-13.8	-14.3	-13.1
30%	-5.3	**1.3**	**4.2**	**3.5**	**1.8**	-0.5	-3.3	-8.9	-12.0	-13.8	-14.2	-13.0
40%	-5.6	**1.7**	**4.4**	**3.5**	**1.9**	-0.6	-3.0	-8.8	-11.8	-13.6	-14.2	-13.1
50%	-5.4	**2.2**	**4.3**	**3.3**	**1.7**	-0.7	-3.0	-8.1	-11.6	-13.1	-14.2	-13.1
60%	-5.8	**2.4**	**4.3**	**3.4**	**1.5**	-0.6	-2.8	-7.9	-11.3	-11.9	-13.7	-13.0
70%	-5.5	**2.6**	**4.3**	**3.3**	**1.5**	-0.5	-2.5	-7.9	-11.1	-11.0	-12.4	-12.8
80%	-4.8	**2.6**	**4.3**	**3.2**	**1.4**	-0.7	-2.4	-7.7	-10.6	-10.3	-11.8	-11.9
90%	-4.9	**2.8**	**4.2**	**3.2**	**1.4**	-0.4	-2.4	-7.6	-10.5	-9.8	-11.4	-11.5
Long Term												
Full Simulation Period[a]	-5.0	**2.1**	**4.4**	**3.4**	**1.6**	-0.7	-3.0	-8.5	-11.6	-12.4	-13.3	-12.5
Water Year Types[b,c]												
Wet (32%)	-6.5	**1.6**	**4.2**	**3.3**	**1.5**	-0.8	-2.6	-7.8	-10.8	-10.9	-12.8	-12.7
Above Normal (16%)	-6.3	**2.0**	**4.1**	**3.2**	**1.5**	-0.8	-2.8	-8.1	-11.6	-12.4	-13.0	-12.5
Below Normal (13%)	-4.8	**2.2**	**4.3**	**3.2**	**1.6**	-1.0	-3.7	-9.5	-13.0	-13.1	-13.7	-13.4
Dry (24%)	-4.3	**2.3**	**4.6**	**3.7**	**1.8**	-0.3	-3.0	-9.2	-12.9	-13.1	-13.5	-12.5
Critical (15%)	-2.2	**2.8**	**4.7**	**3.7**	**1.5**	-0.6	-3.6	-8.6	-9.8	-13.3	-13.9	-11.2

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 4-2. Clear Creek at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.4	51.4	44.1	42.8	45.2	49.9	55.1	62.4	70.3	76.0	75.8	70.7
20%	60.8	50.6	43.5	42.4	44.5	48.8	53.6	60.8	69.0	75.4	75.3	70.2
30%	60.2	50.1	43.2	42.1	44.1	48.3	53.1	60.2	66.9	74.9	74.9	69.6
40%	59.7	49.4	42.6	41.9	43.9	48.0	52.6	59.8	66.4	74.5	74.7	69.2
50%	59.2	48.7	42.5	41.6	43.8	47.8	52.1	58.8	65.7	73.7	74.4	68.9
60%	58.9	48.2	42.2	41.3	43.7	47.5	51.8	58.4	65.1	72.1	73.7	68.3
70%	58.1	47.8	42.0	41.1	43.5	47.2	51.3	58.1	64.4	71.0	72.1	67.8
80%	57.0	47.4	41.8	40.9	43.3	47.0	50.9	57.5	63.7	70.2	71.1	66.6
90%	56.7	47.0	41.5	40.6	43.1	46.3	50.5	56.8	63.0	69.4	70.4	65.6
Long Term												
Full Simulation Period[a]	59.1	49.1	42.7	41.7	44.0	47.9	52.4	59.3	66.0	73.0	73.5	68.5
Water Year Types[b,c]												
Wet (32%)	58.9	48.9	42.6	41.6	43.7	47.5	51.4	58.3	64.4	71.5	72.8	67.8
Above Normal (16%)	58.9	48.3	42.4	41.8	43.8	47.6	51.7	58.6	65.3	72.8	72.6	67.4
Below Normal (13%)	58.7	49.1	42.6	41.4	43.7	48.0	53.1	59.8	66.7	73.6	73.7	69.1
Dry (24%)	59.0	49.2	42.9	41.6	44.0	47.8	52.6	60.0	67.3	73.8	74.2	69.0
Critical (15%)	60.1	50.1	43.0	42.4	45.3	49.2	54.5	60.8	67.6	74.5	74.6	69.8

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5.4	**1.2**	**4.8**	**3.8**	**1.4**	-1.5	-4.2	-10.2	-13.3	-13.8	-14.4	-13.0
20%	-5.7	**1.6**	**4.8**	**3.5**	**1.8**	-0.6	-3.3	-9.0	-13.6	-13.7	-14.4	-13.2
30%	-5.6	**1.4**	**4.2**	**3.5**	**1.8**	-0.4	-3.3	-8.9	-12.0	-13.8	-14.2	-13.0
40%	-5.5	**1.8**	**4.4**	**3.4**	**1.9**	-0.6	-3.0	-8.8	-11.8	-13.7	-14.2	-12.9
50%	-5.4	**2.3**	**4.3**	**3.3**	**1.7**	-0.8	-2.9	-8.1	-11.6	-13.1	-14.1	-13.0
60%	-5.7	**2.5**	**4.3**	**3.4**	**1.5**	-0.6	-2.7	-7.9	-11.3	-11.8	-13.6	-12.9
70%	-5.4	**2.7**	**4.3**	**3.2**	**1.5**	-0.6	-2.5	-7.9	-11.0	-10.9	-12.3	-12.5
80%	-4.8	**2.6**	**4.3**	**3.2**	**1.4**	-0.7	-2.4	-7.6	-10.6	-10.2	-11.7	-11.7
90%	-4.9	**2.6**	**4.1**	**3.3**	**1.4**	-0.4	-2.4	-7.7	-10.5	-9.9	-11.3	-11.2
Long Term												
Full Simulation Period[a]	-5.1	**2.0**	**4.3**	**3.4**	**1.6**	-0.7	-3.0	-8.5	-11.6	-12.3	-13.3	-12.4
Water Year Types[b,c]												
Wet (32%)	-6.5	**1.6**	**4.1**	**3.3**	**1.5**	-0.8	-2.6	-7.8	-10.8	-10.9	-12.8	-12.6
Above Normal (16%)	-6.1	**2.1**	**4.2**	**3.2**	**1.5**	-0.8	-2.7	-8.0	-11.5	-12.3	-12.9	-12.3
Below Normal (13%)	-4.7	**2.2**	**4.4**	**3.1**	**1.5**	-1.0	-3.7	-9.6	-12.9	-13.0	-13.7	-13.3
Dry (24%)	-4.5	**2.2**	**4.5**	**3.7**	**1.8**	-0.3	-3.0	-9.2	-13.0	-13.2	-13.6	-12.6
Critical (15%)	-2.6	**2.6**	**4.7**	**3.6**	**1.5**	-0.7	-3.6	-8.6	-9.7	-13.2	-13.8	-10.7

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 4-3. Clear Creek at Mouth, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 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	-0.2	**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.

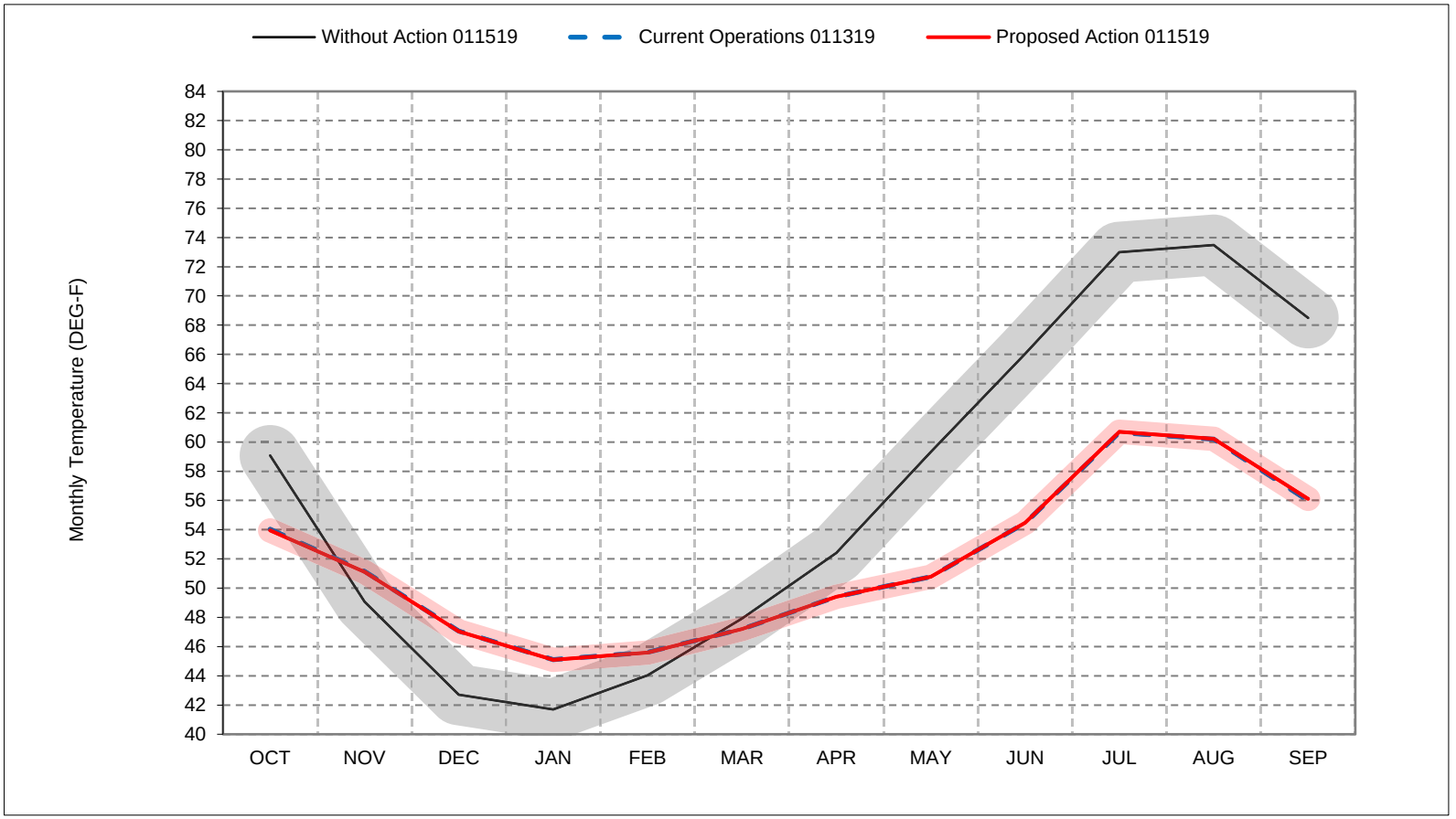
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

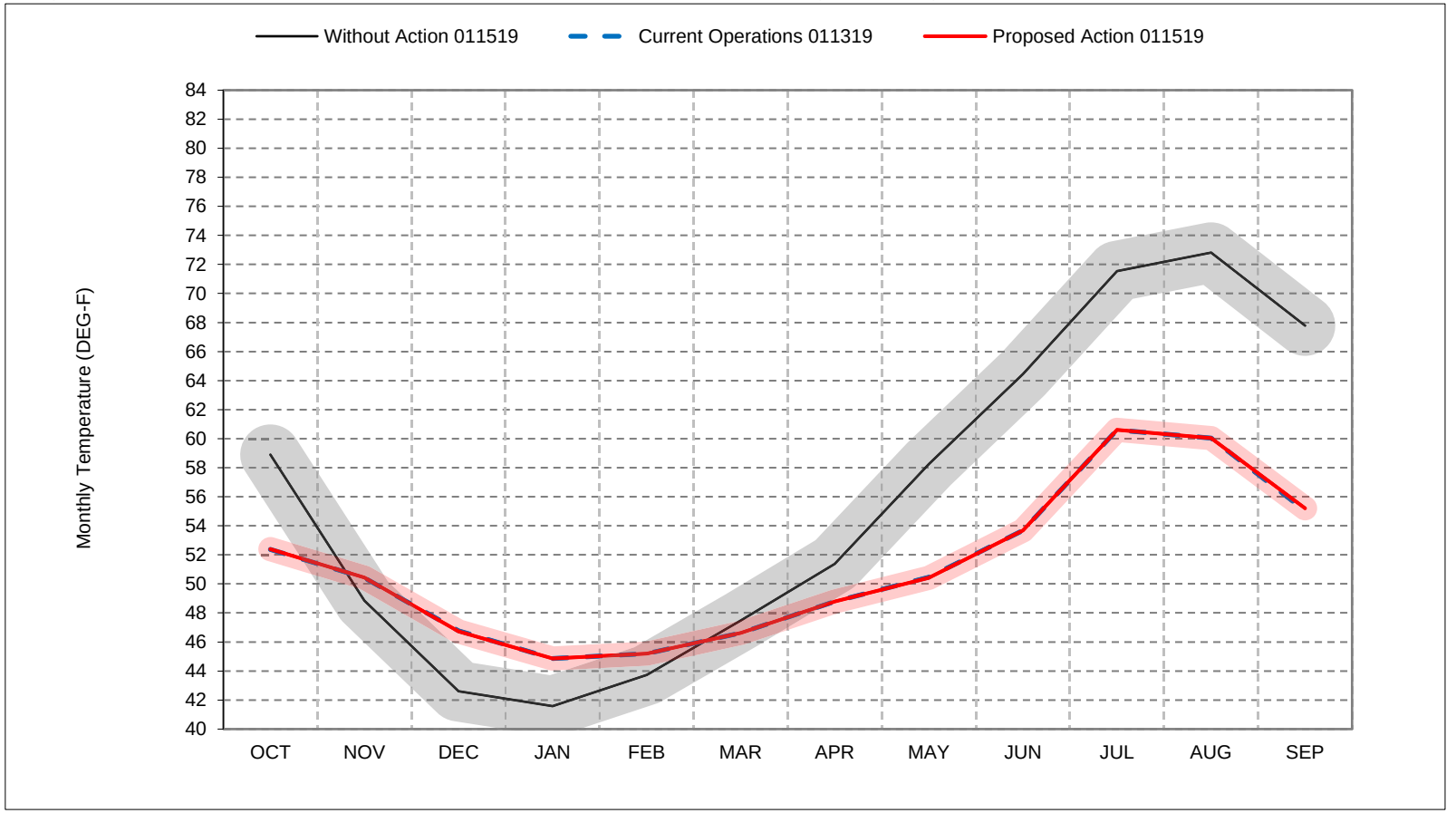
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-1. Clear Creek at Mouth, Long-Term Average Temperature



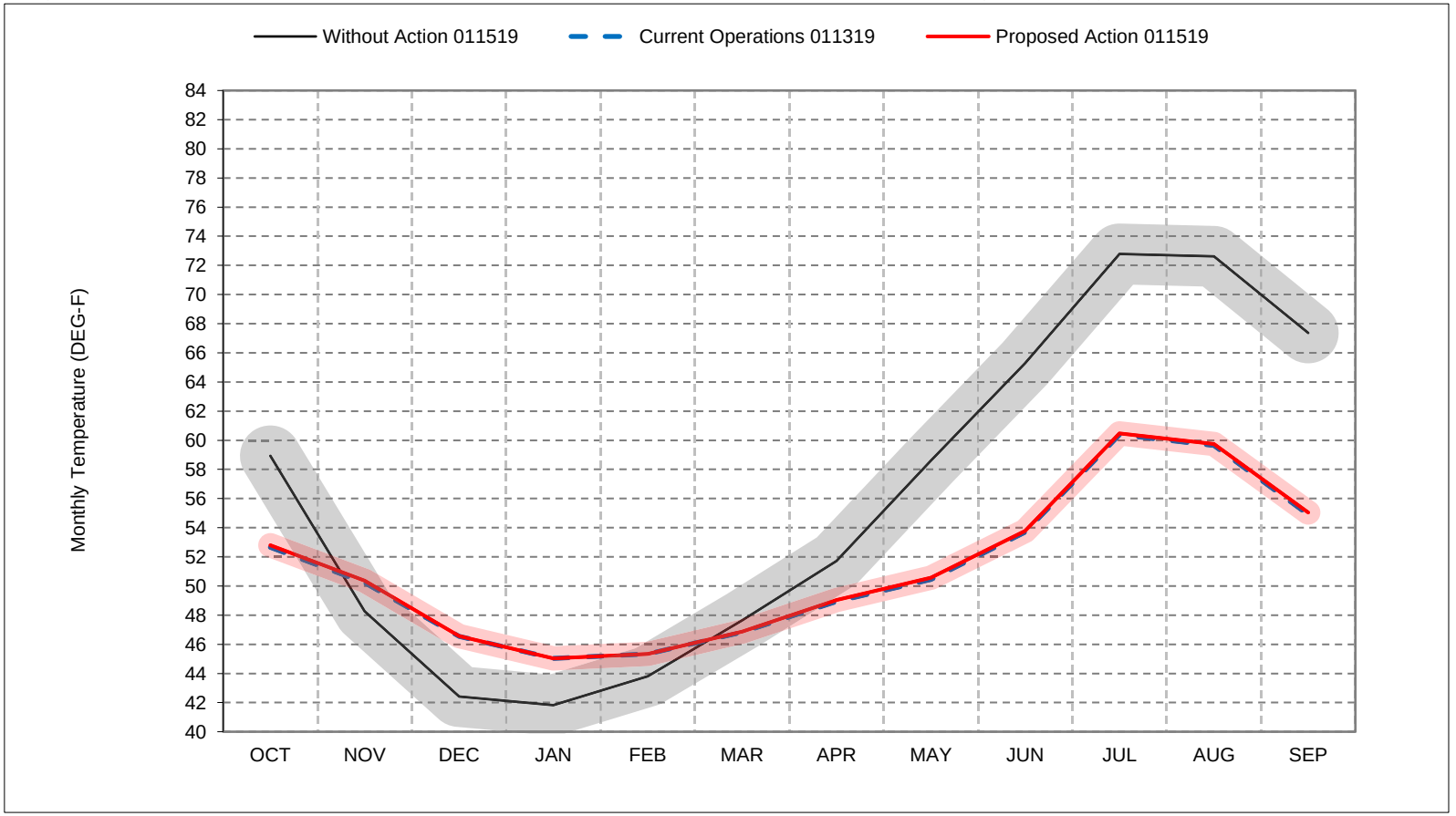
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-2. Clear Creek at Mouth, Wet Year Average Temperature



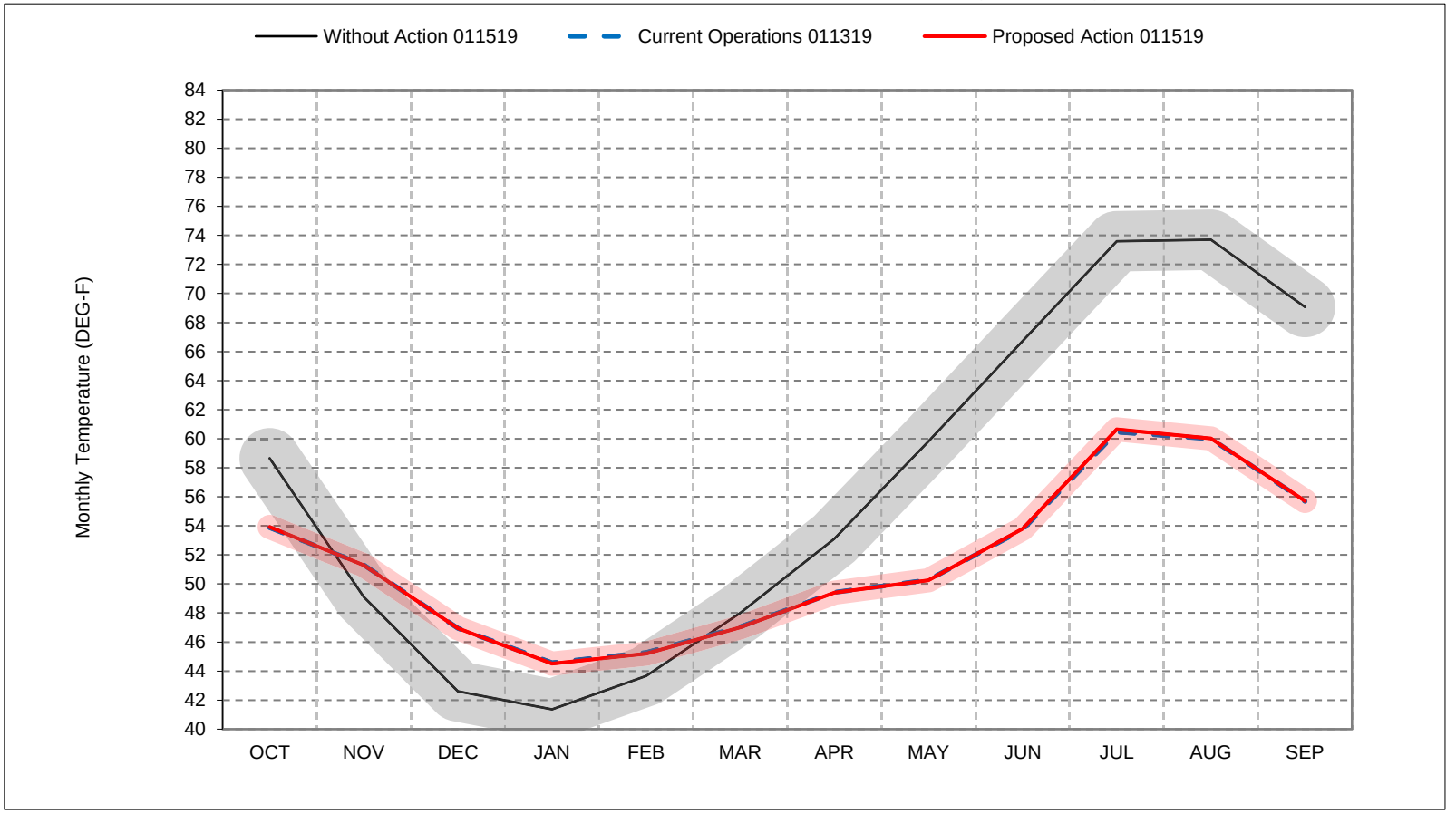
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-3. Clear Creek at Mouth, Above Normal Year Average Temperature



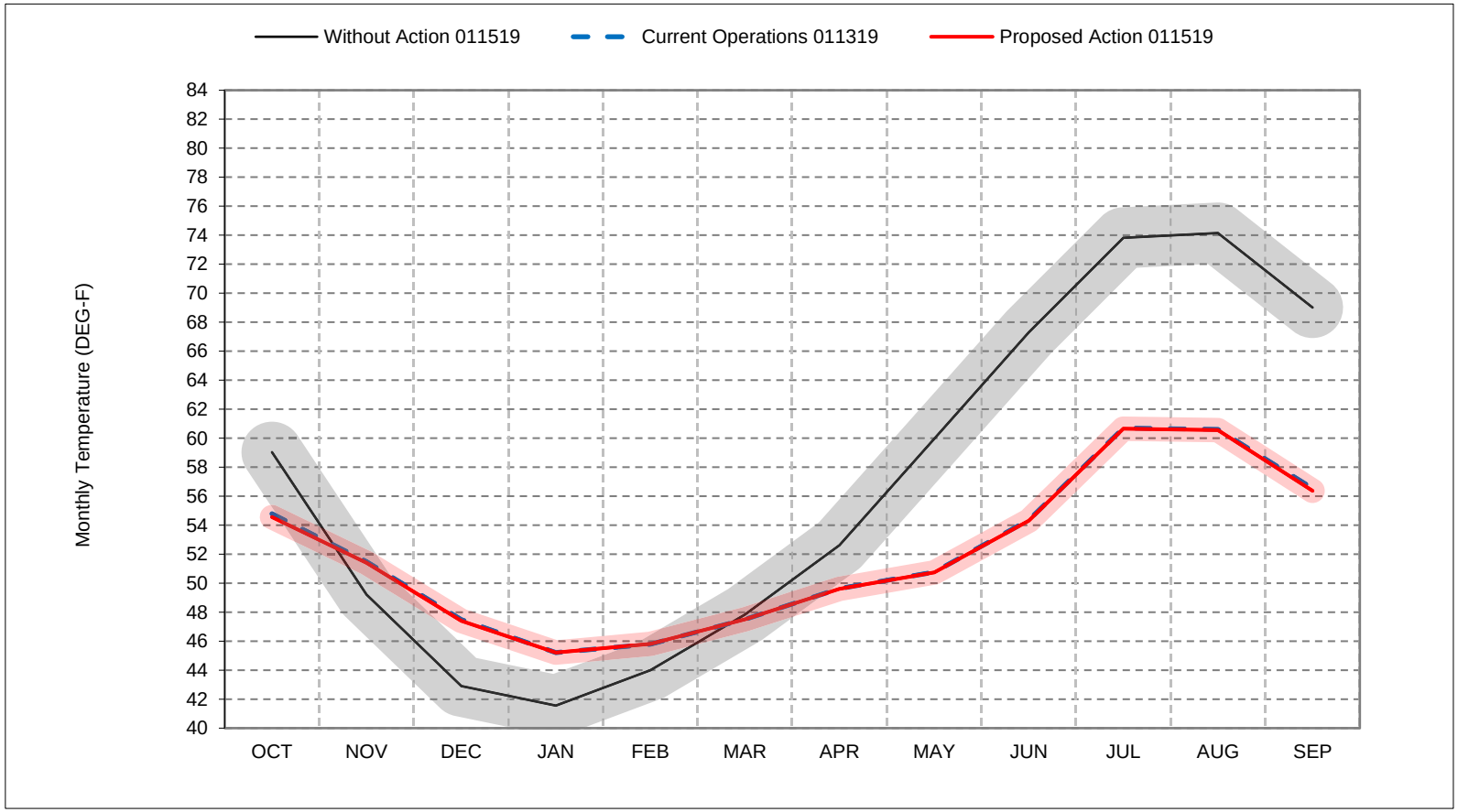
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-4. Clear Creek at Mouth, Below Normal Year Average Temperature



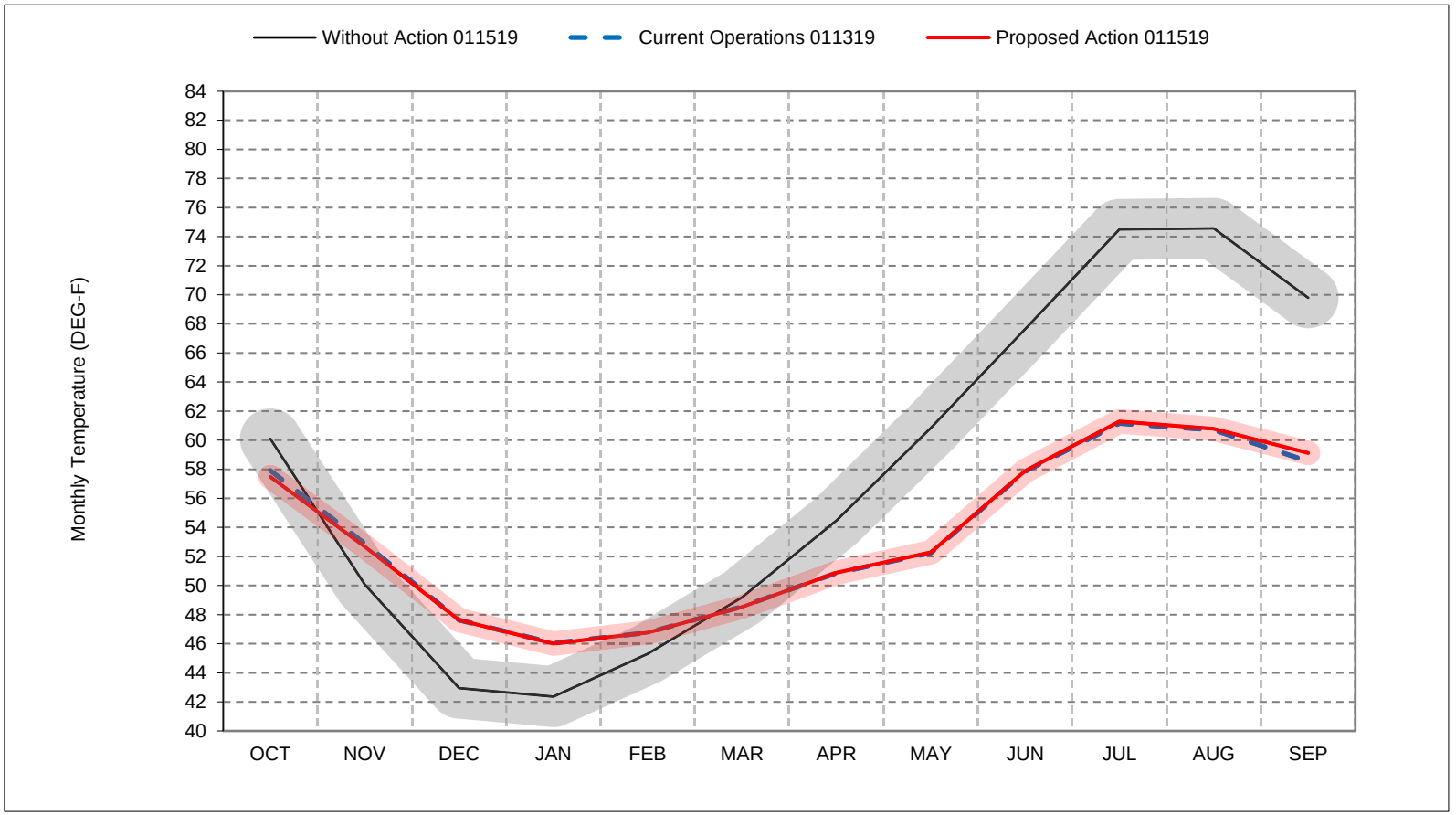
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-5. Clear Creek at Mouth, Dry Year Average Temperature



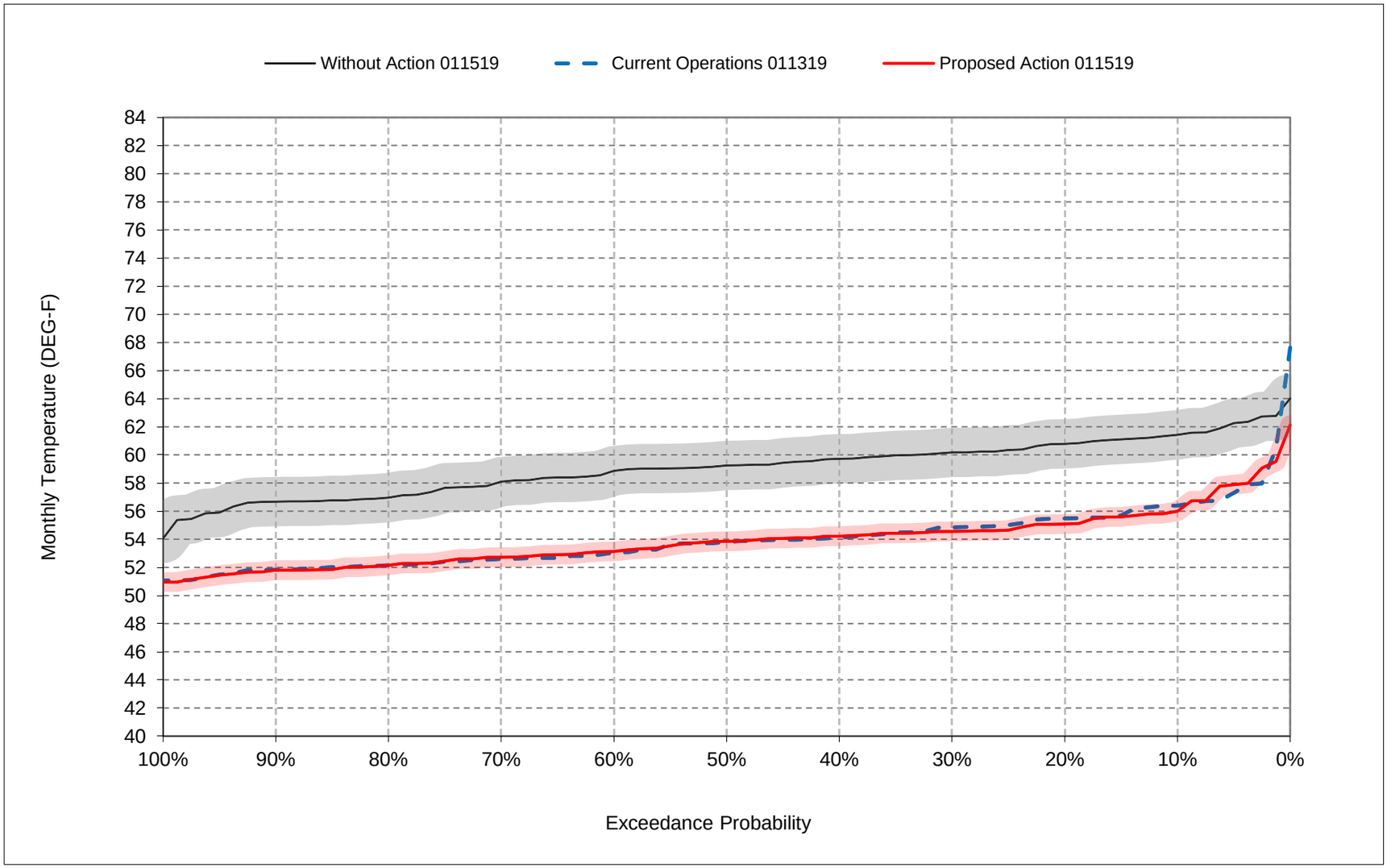
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

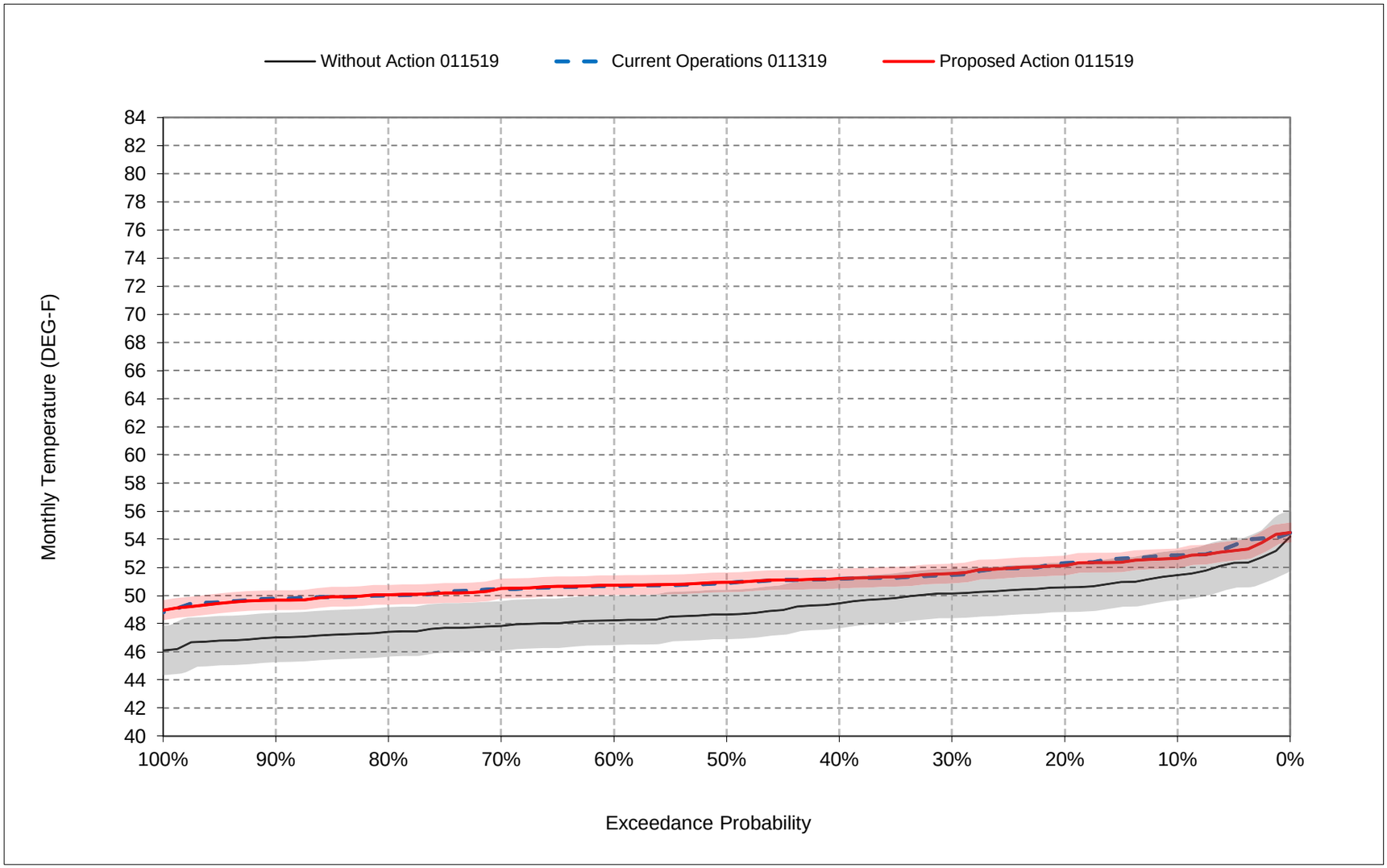
Figure 4-7. Clear Creek at Mouth, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

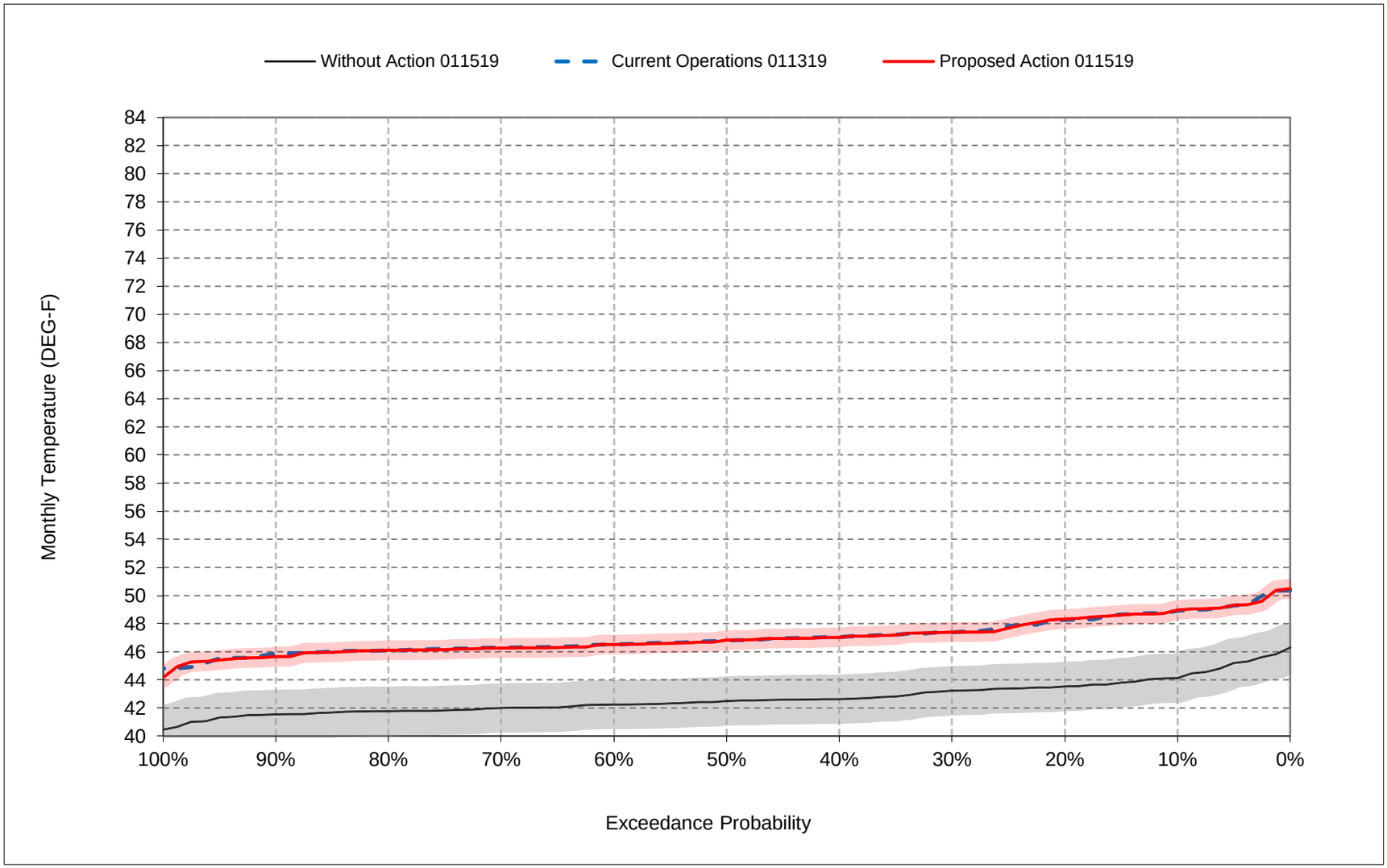
Figure 4-8. Clear Creek at Mouth, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

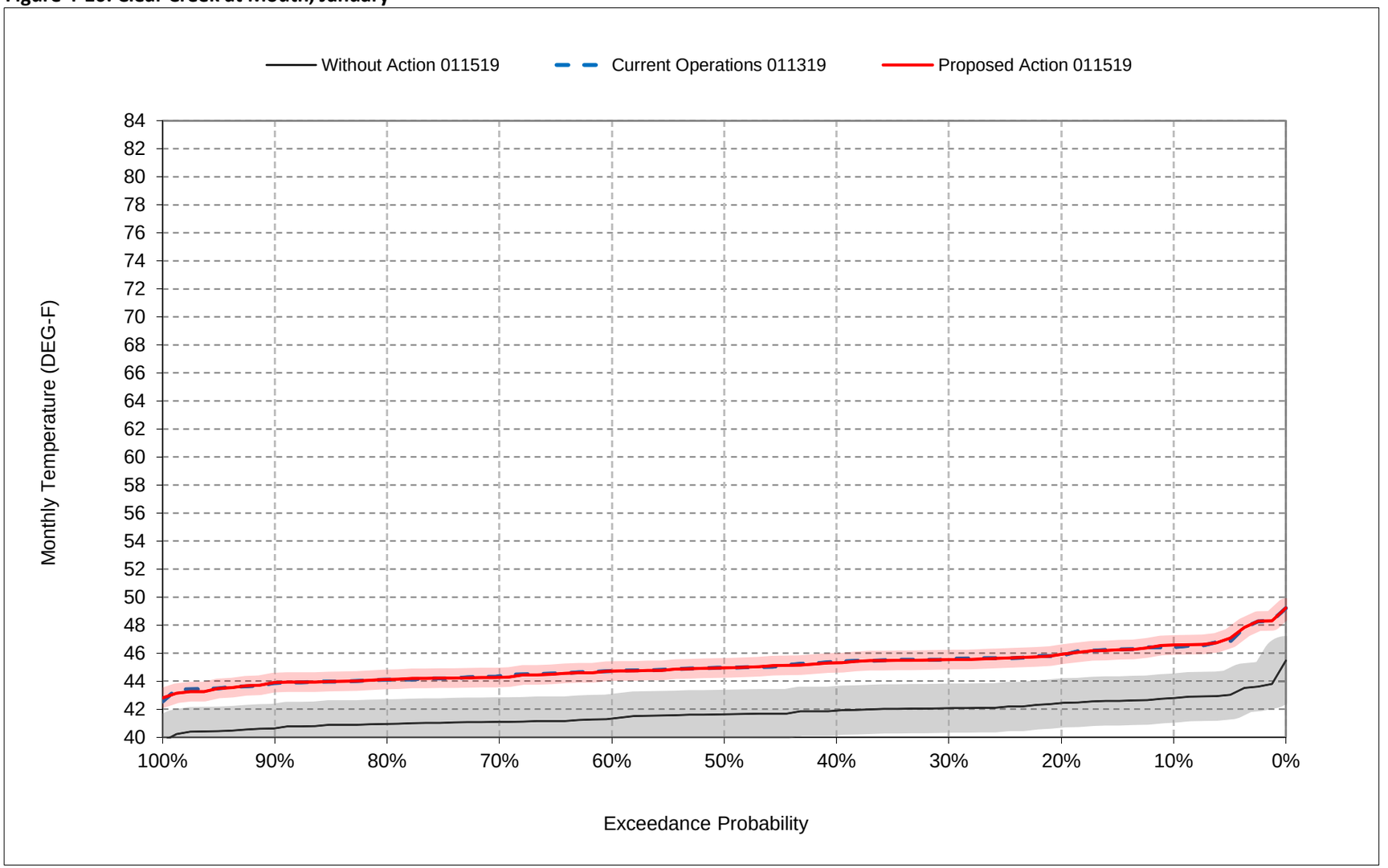
Figure 4-9. Clear Creek at Mouth, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

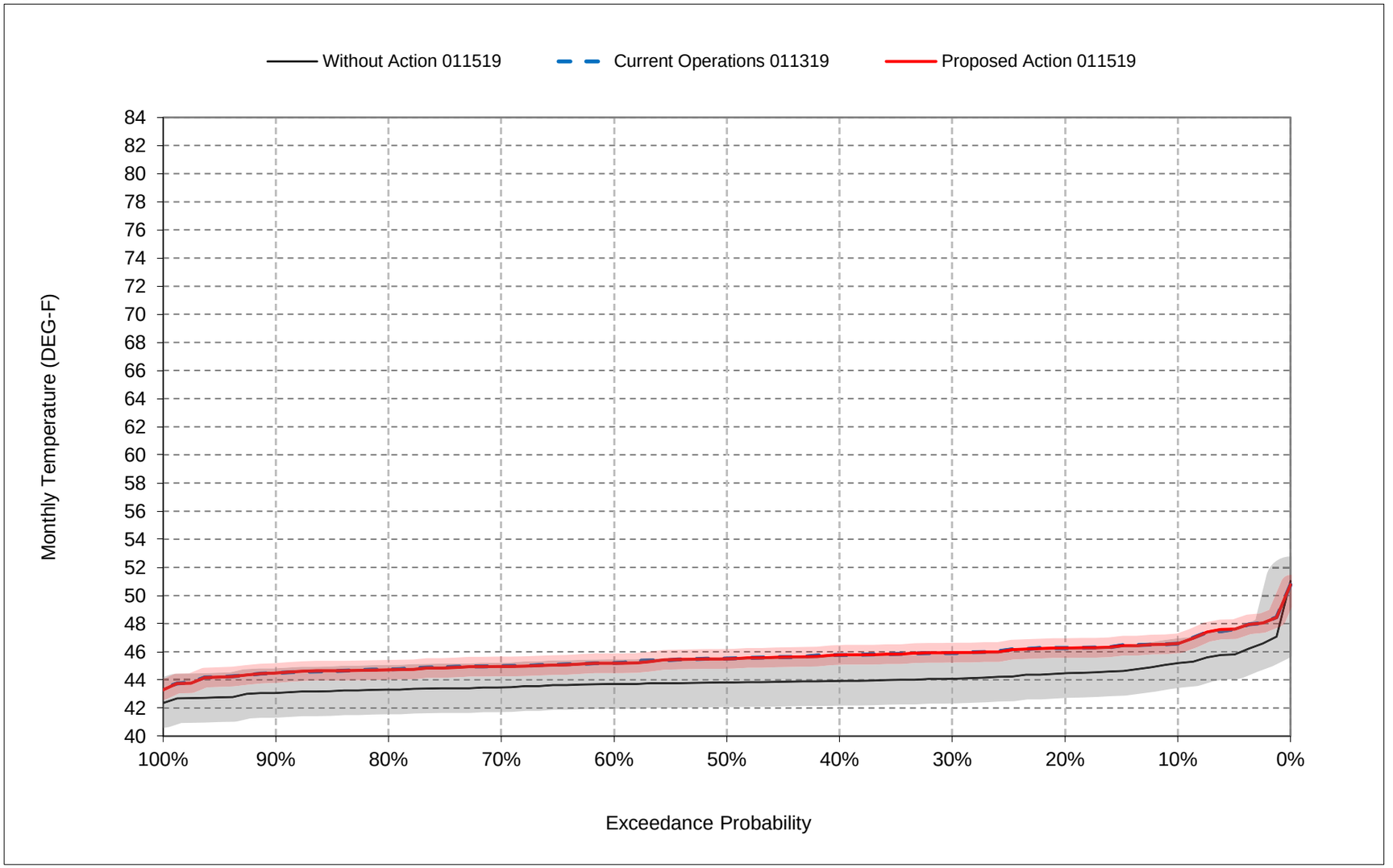
Figure 4-10. Clear Creek at Mouth, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

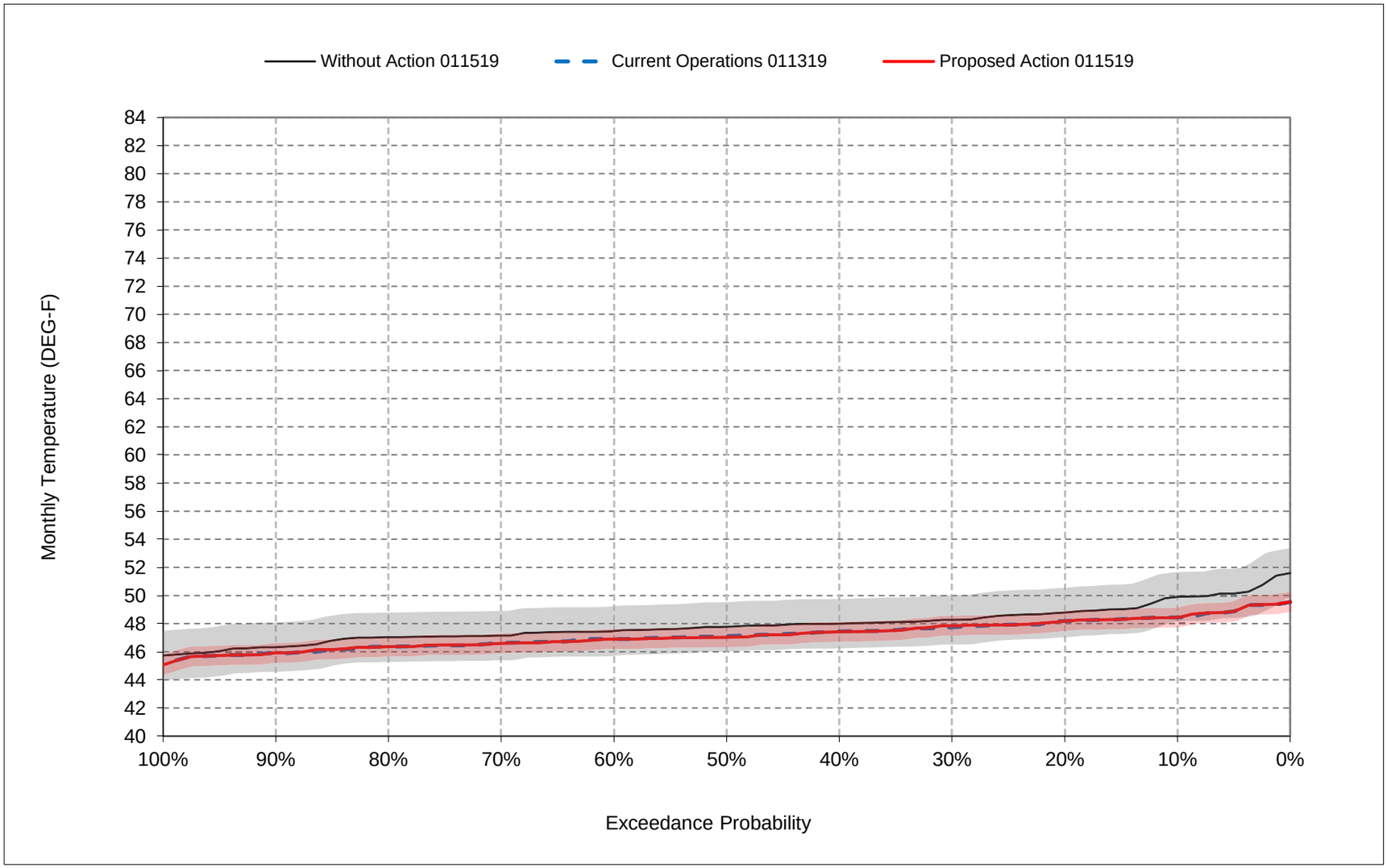
Figure 4-11. Clear Creek at Mouth, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

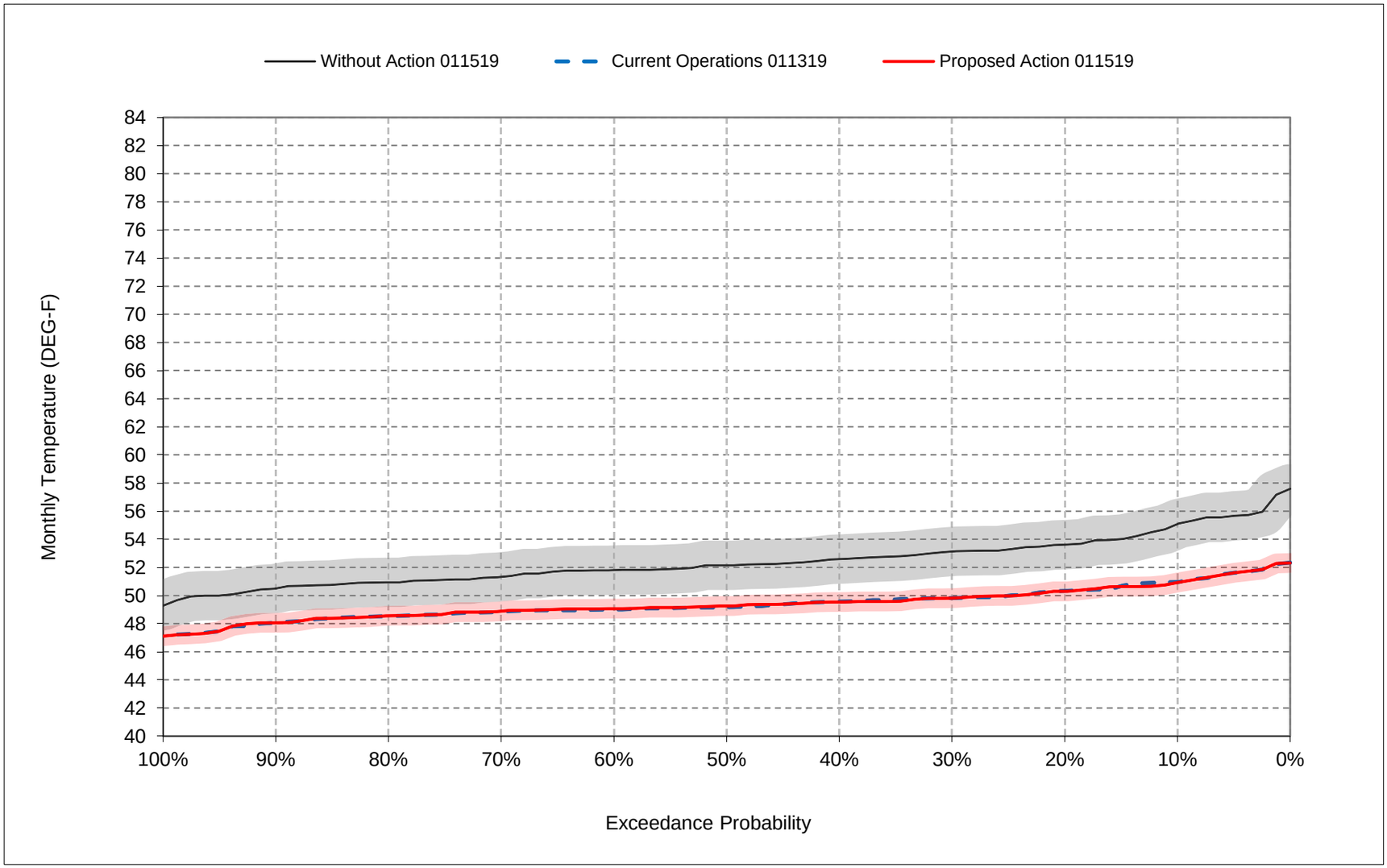
Figure 4-12. Clear Creek at Mouth, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

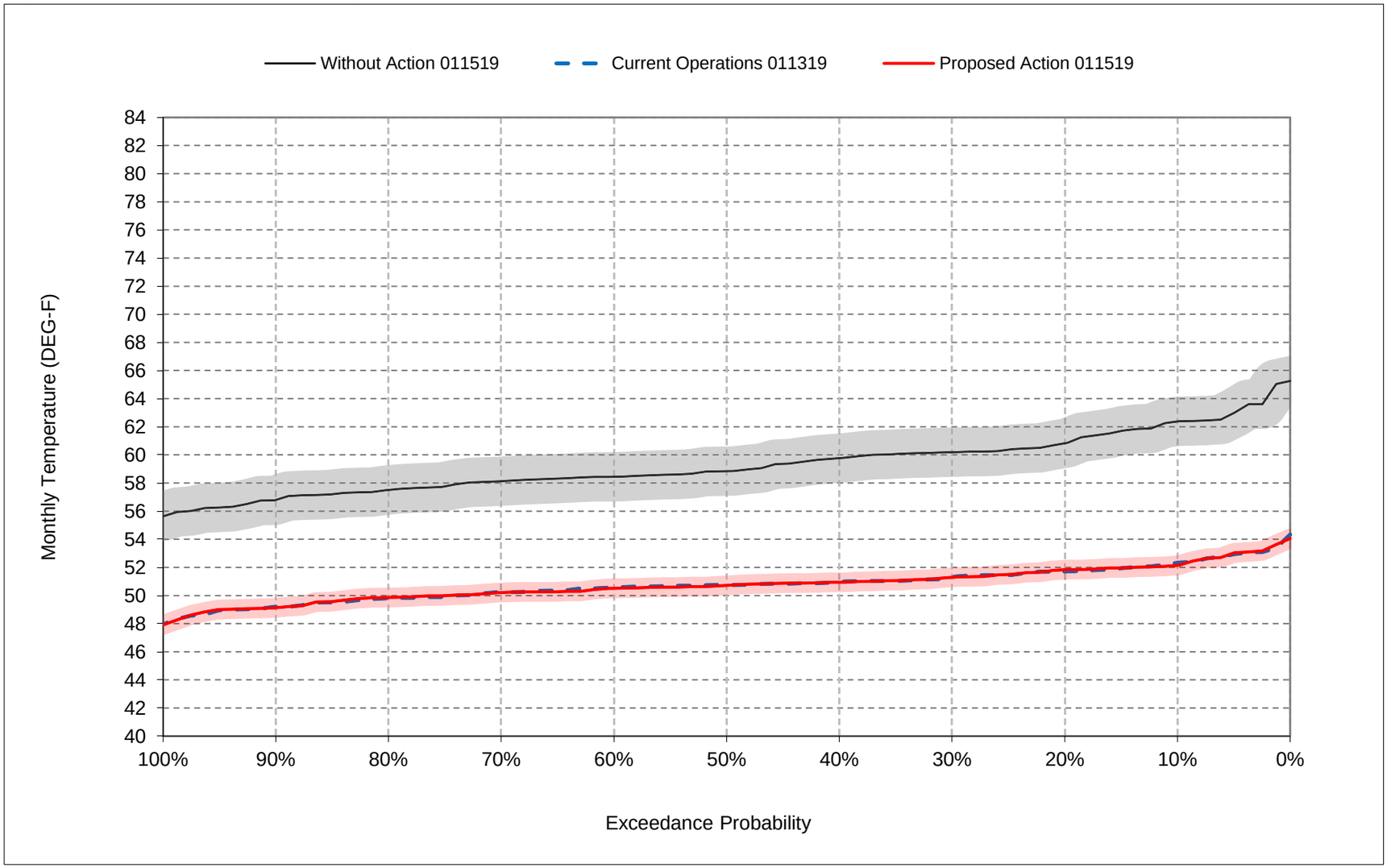
Figure 4-13. Clear Creek at Mouth, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

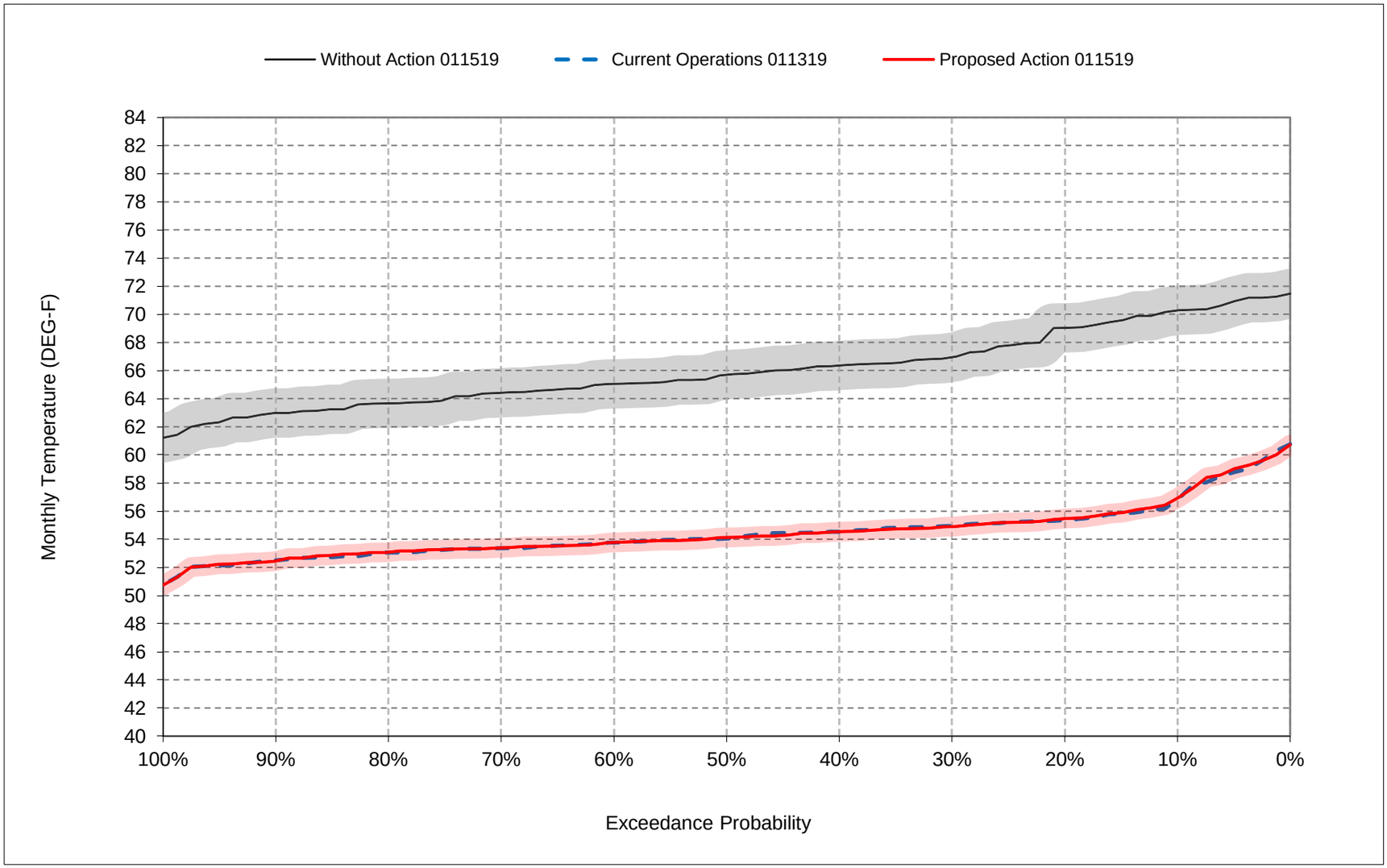
Figure 4-14. Clear Creek at Mouth, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

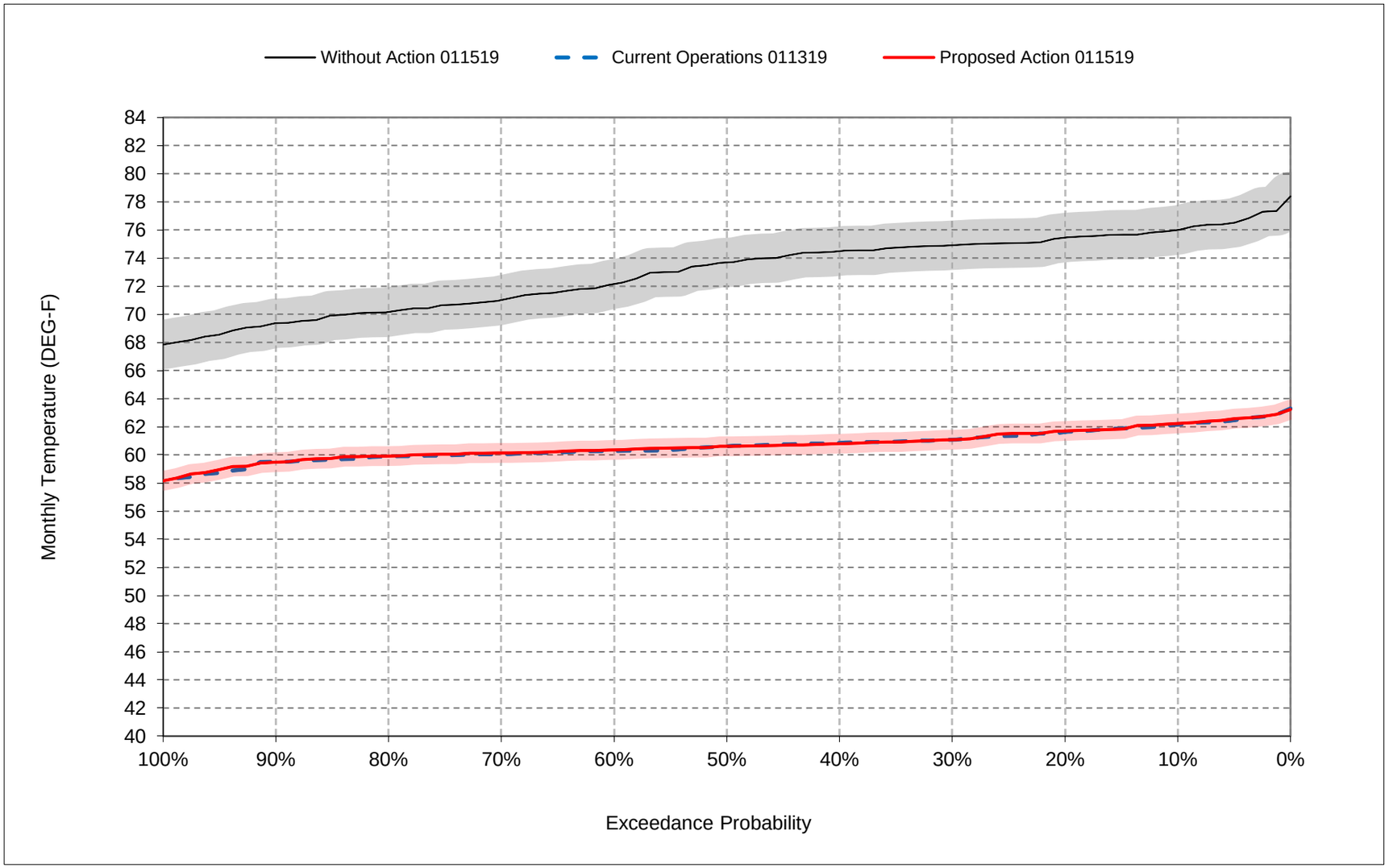
Figure 4-15. Clear Creek at Mouth, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

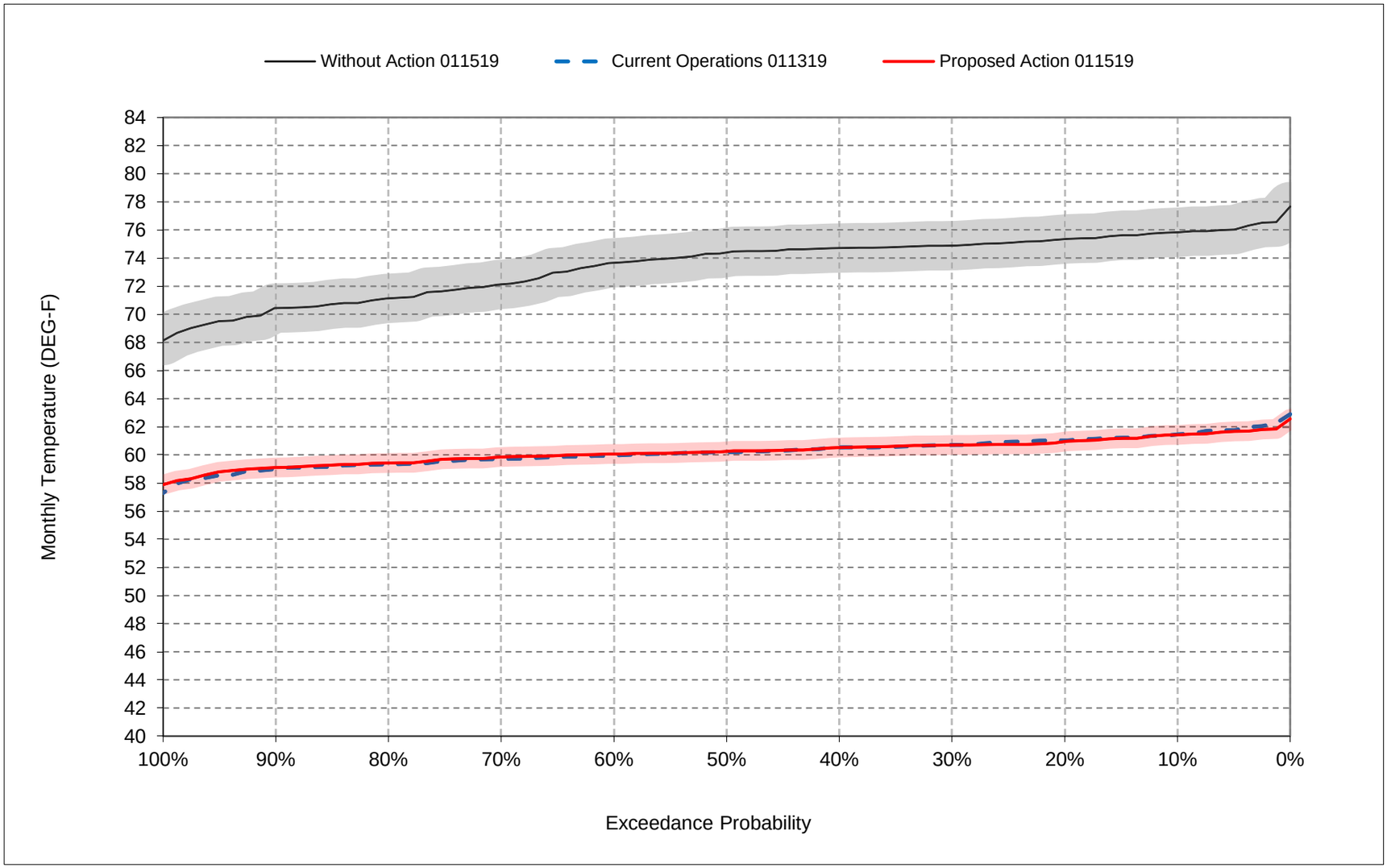
Figure 4-16. Clear Creek at Mouth, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

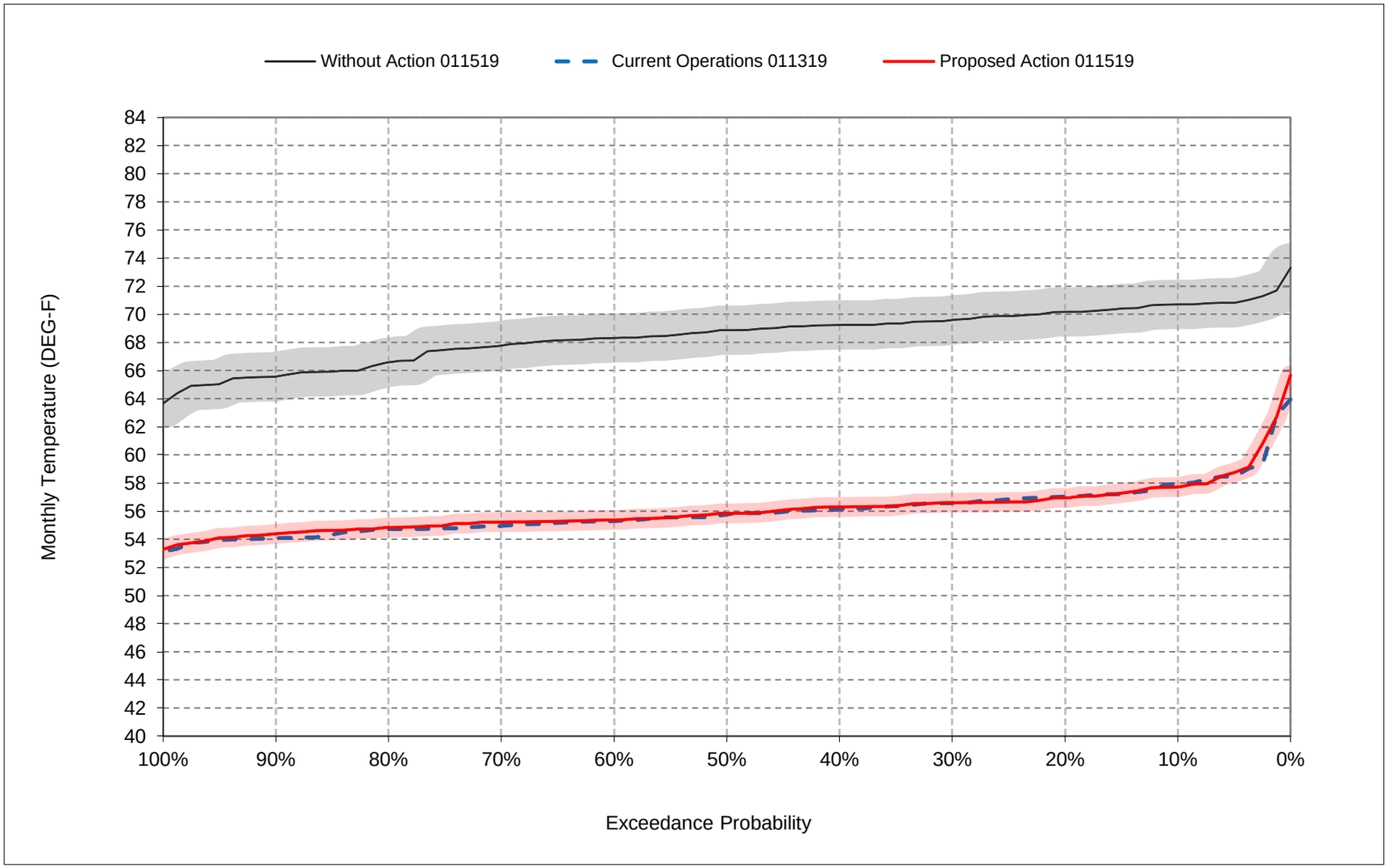
Figure 4-17. Clear Creek at Mouth, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 5-1. Sacramento River below Keswick, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	58.4	50.0	43.0	41.4	43.5	48.9	53.8	59.5	65.2	69.9	70.0	65.6
20%	57.9	49.5	42.6	41.1	43.1	47.8	53.2	59.2	64.7	69.5	69.7	65.4
30%	57.6	48.8	42.4	40.7	42.9	47.6	52.7	58.9	64.3	69.1	69.6	65.0
40%	57.3	48.4	42.2	40.5	42.7	47.2	52.4	58.5	63.9	68.8	69.3	64.8
50%	57.1	48.1	42.1	40.3	42.6	47.0	51.8	57.9	63.6	68.6	69.1	64.5
60%	56.7	47.7	41.8	40.2	42.5	46.8	51.3	57.6	63.1	68.4	68.8	64.3
70%	56.3	47.5	41.6	40.0	42.3	46.6	51.0	57.3	62.8	68.0	68.7	64.1
80%	56.0	47.2	41.3	39.7	42.1	46.3	50.6	56.9	62.0	67.7	68.5	63.9
90%	55.7	46.8	41.1	39.2	41.7	45.8	49.9	56.2	61.5	67.3	68.2	63.7
Long Term												
Full Simulation Period[a]	57.0	48.3	42.0	40.4	42.6	47.2	51.9	58.0	63.4	68.6	69.1	64.6
Water Year Types[b,c]												
Wet (32%)	56.7	48.1	41.9	41.0	42.6	46.7	50.8	57.1	62.6	68.1	68.7	64.3
Above Normal (16%)	57.1	47.7	41.9	40.7	42.7	46.9	51.4	58.1	63.7	68.4	68.9	64.1
Below Normal (13%)	56.5	48.2	41.9	39.9	42.4	47.3	52.4	58.3	63.4	68.9	69.0	64.5
Dry (24%)	57.1	48.2	42.1	39.8	42.6	47.3	52.3	58.5	63.9	68.8	69.3	64.9
Critical (15%)	58.0	49.3	42.0	40.1	43.0	48.0	53.3	58.8	64.2	69.6	69.8	65.4

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.4	**6.1**	**10.6**	**8.7**	**4.7**	**0.1**	-3.5	-9.0	-13.2	-16.0	-15.5	-10.9
20%	-2.4	**6.4**	**9.9**	**8.1**	**4.7**	**0.6**	-3.5	-9.0	-13.7	-17.1	-15.5	-11.4
30%	-2.4	**6.9**	**9.7**	**7.9**	**4.4**	**0.5**	-3.3	-9.2	-13.8	-17.1	-16.5	-11.3
40%	-2.6	**7.0**	**9.7**	**7.6**	**4.4**	**0.3**	-3.2	-9.1	-13.7	-17.7	-17.0	-12.1
50%	-2.7	**7.0**	**9.4**	**7.5**	**4.2**	**0.1**	-3.0	-8.8	-13.7	-17.8	-17.1	-12.6
60%	-2.7	**7.2**	**9.0**	**7.2**	**3.6**	-0.1	-3.1	-8.7	-13.5	-17.9	-17.3	-12.7
70%	-2.3	**7.1**	**9.1**	**7.1**	**3.5**	-0.2	-3.1	-8.6	-13.4	-17.8	-17.4	-13.1
80%	-2.3	**7.0**	**8.9**	**7.1**	**3.3**	-0.5	-3.0	-8.6	-12.9	-18.0	-17.4	-13.1
90%	-2.2	**6.6**	**8.3**	**6.9**	**2.9**	-0.4	-3.2	-8.4	-12.9	-18.0	-17.4	-13.3
Long Term												
Full Simulation Period[a]	-2.1	**6.8**	**9.4**	**7.5**	**3.9**	**0.0**	-3.3	-8.8	-13.4	-17.5	-16.5	-11.7
Water Year Types[b,c]												
Wet (32%)	-2.4	**7.2**	**10.0**	**6.4**	**3.3**	-0.3	-3.0	-8.4	-13.0	-17.6	-17.3	-13.3
Above Normal (16%)	-3.1	**7.1**	**9.4**	**6.9**	**3.3**	-0.4	-3.3	-9.5	-14.4	-18.4	-17.8	-13.1
Below Normal (13%)	-2.3	**6.1**	**9.4**	**8.3**	**4.5**	**0.4**	-3.3	-8.9	-13.7	-18.1	-16.9	-11.6
Dry (24%)	-2.6	**6.3**	**8.7**	**8.6**	**4.7**	**0.5**	-3.2	-9.1	-13.8	-17.5	-16.3	-11.7
Critical (15%)	**0.9**	**7.0**	**9.5**	**8.1**	**4.1**	**0.0**	-3.8	-8.1	-12.0	-15.6	-13.6	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 5-2. Sacramento River below Keswick, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	58.4	50.0	43.0	41.4	43.5	48.9	53.8	59.5	65.2	69.9	70.0	65.6
20%	57.9	49.5	42.6	41.1	43.1	47.8	53.2	59.2	64.7	69.5	69.7	65.4
30%	57.6	48.8	42.4	40.7	42.9	47.6	52.7	58.9	64.3	69.1	69.6	65.0
40%	57.3	48.4	42.2	40.5	42.7	47.2	52.4	58.5	63.9	68.8	69.3	64.8
50%	57.1	48.1	42.1	40.3	42.6	47.0	51.8	57.9	63.6	68.6	69.1	64.5
60%	56.7	47.7	41.8	40.2	42.5	46.8	51.3	57.6	63.1	68.4	68.8	64.3
70%	56.3	47.5	41.6	40.0	42.3	46.6	51.0	57.3	62.8	68.0	68.7	64.1
80%	56.0	47.2	41.3	39.7	42.1	46.3	50.6	56.9	62.0	67.7	68.5	63.9
90%	55.7	46.8	41.1	39.2	41.7	45.8	49.9	56.2	61.5	67.3	68.2	63.7
Long Term												
Full Simulation Period[a]	57.0	48.3	42.0	40.4	42.6	47.2	51.9	58.0	63.4	68.6	69.1	64.6
Water Year Types[b,c]												
Wet (32%)	56.7	48.1	41.9	41.0	42.6	46.7	50.8	57.1	62.6	68.1	68.7	64.3
Above Normal (16%)	57.1	47.7	41.9	40.7	42.7	46.9	51.4	58.1	63.7	68.4	68.9	64.1
Below Normal (13%)	56.5	48.2	41.9	39.9	42.4	47.3	52.4	58.3	63.4	68.9	69.0	64.5
Dry (24%)	57.1	48.2	42.1	39.8	42.6	47.3	52.3	58.5	63.9	68.8	69.3	64.9
Critical (15%)	58.0	49.3	42.0	40.1	43.0	48.0	53.3	58.8	64.2	69.6	69.8	65.4

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1.8	**6.5**	**10.5**	**8.7**	**5.0**	**0.2**	-3.5	-9.0	-13.6	-17.5	-16.4	-9.6
20%	-3.3	**6.5**	**10.3**	**8.3**	**5.0**	**0.7**	-3.4	-9.0	-13.7	-17.6	-17.3	-11.0
30%	-4.1	**6.8**	**9.8**	**8.2**	**4.6**	**0.5**	-3.2	-9.2	-13.9	-17.4	-17.6	-11.8
40%	-4.5	**6.8**	**9.6**	**7.8**	**4.5**	**0.2**	-3.2	-9.0	-13.7	-17.6	-17.5	-12.1
50%	-4.4	**6.8**	**9.3**	**7.6**	**4.3**	**0.2**	-2.9	-8.8	-13.8	-17.6	-17.4	-12.5
60%	-4.2	**6.8**	**9.2**	**7.5**	**3.7**	**0.1**	-3.1	-8.7	-13.5	-17.7	-17.3	-12.7
70%	-3.8	**6.7**	**9.2**	**7.3**	**3.6**	-0.1	-3.0	-8.5	-13.3	-17.7	-17.3	-12.8
80%	-3.6	**6.6**	**9.2**	**7.1**	**3.4**	-0.5	-2.9	-8.7	-12.9	-17.7	-17.3	-12.9
90%	-3.5	**6.7**	**8.4**	**6.8**	**2.9**	-0.3	-3.1	-8.5	-12.9	-17.7	-17.3	-13.0
Long Term												
Full Simulation Period[a]	-3.2	**6.6**	**9.6**	**7.7**	**4.0**	**0.1**	-3.2	-8.8	-13.4	-17.6	-16.9	-11.5
Water Year Types[b,c]												
Wet (32%)	-3.9	**6.5**	**9.8**	**6.5**	**3.4**	-0.3	-3.0	-8.5	-12.9	-17.6	-17.3	-12.8
Above Normal (16%)	-4.6	**6.4**	**9.2**	**7.0**	**3.3**	-0.3	-3.2	-9.5	-14.4	-18.3	-17.5	-12.2
Below Normal (13%)	-2.8	**6.6**	**10.0**	**8.4**	**4.6**	**0.6**	-3.1	-9.1	-13.6	-18.1	-17.4	-11.9
Dry (24%)	-3.9	**6.6**	**9.3**	**8.7**	**4.9**	**0.6**	-3.1	-9.1	-13.9	-17.6	-17.4	-12.3
Critical (15%)	**1.0**	**7.2**	**9.7**	**8.6**	**4.4**	**0.3**	-3.6	-8.3	-12.5	-16.2	-14.0	-6.2

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 5-3. Sacramento River below Keswick, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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.

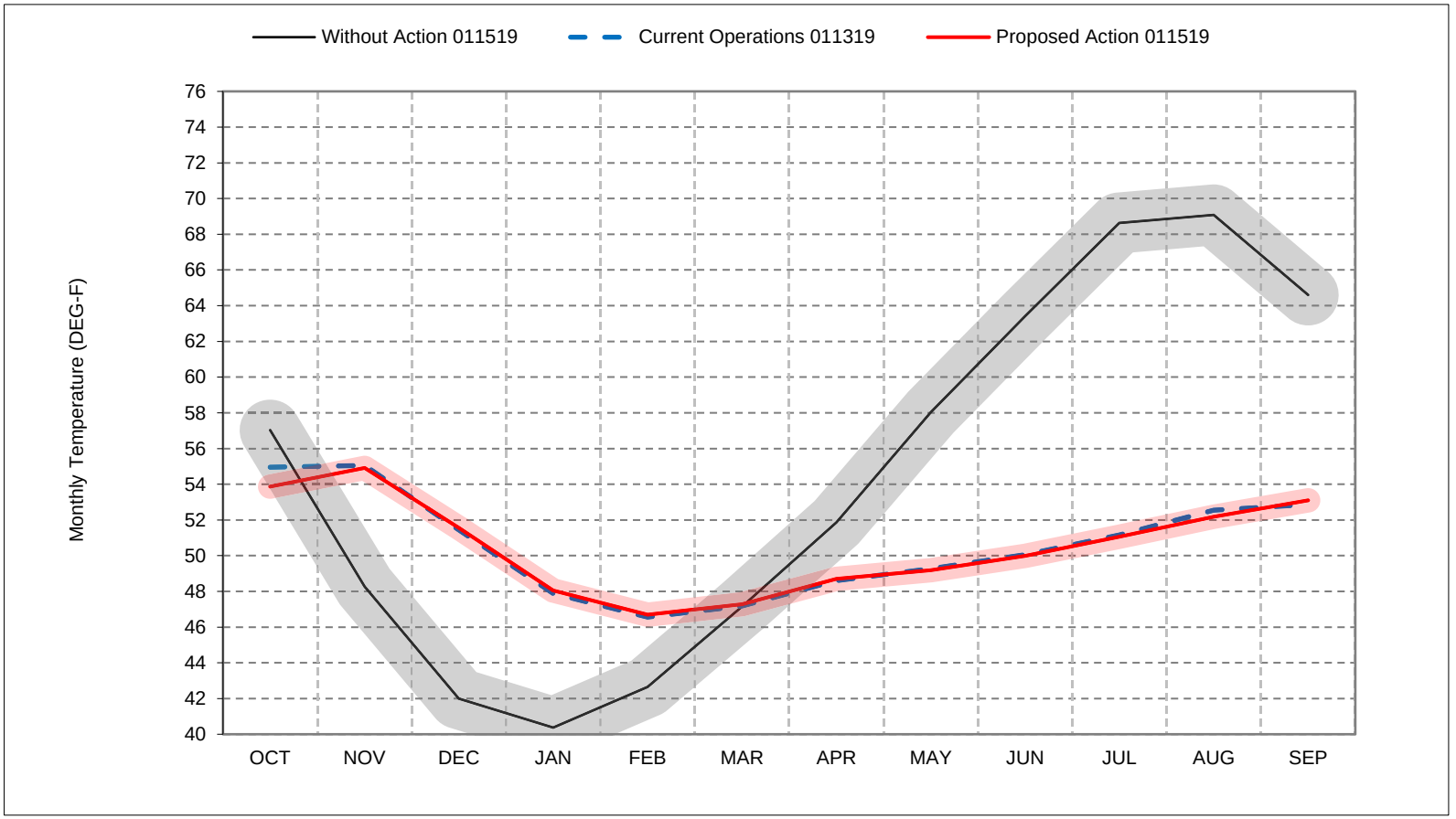
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

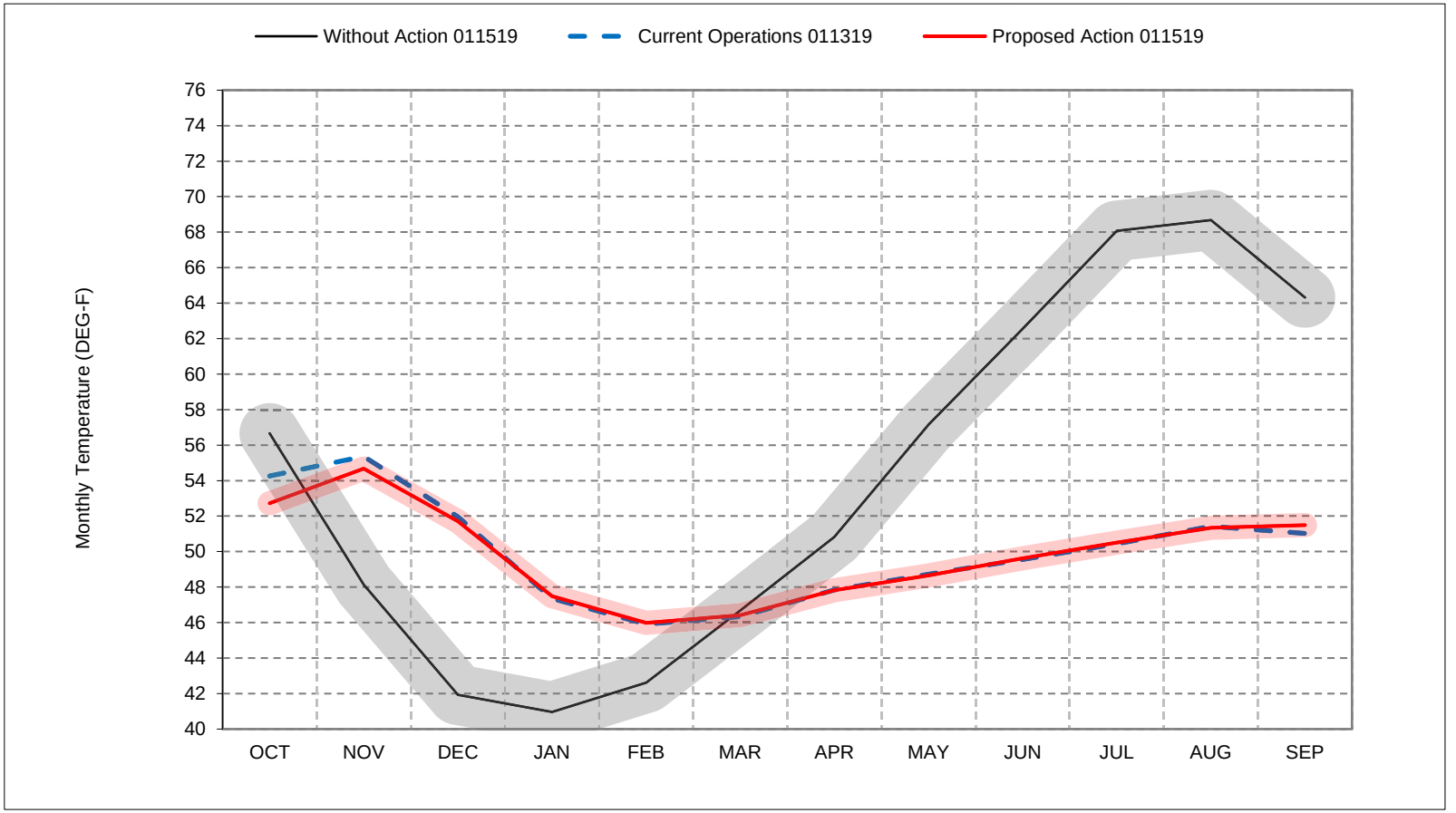
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-1. Sacramento River below Keswick, Long-Term Average Temperature



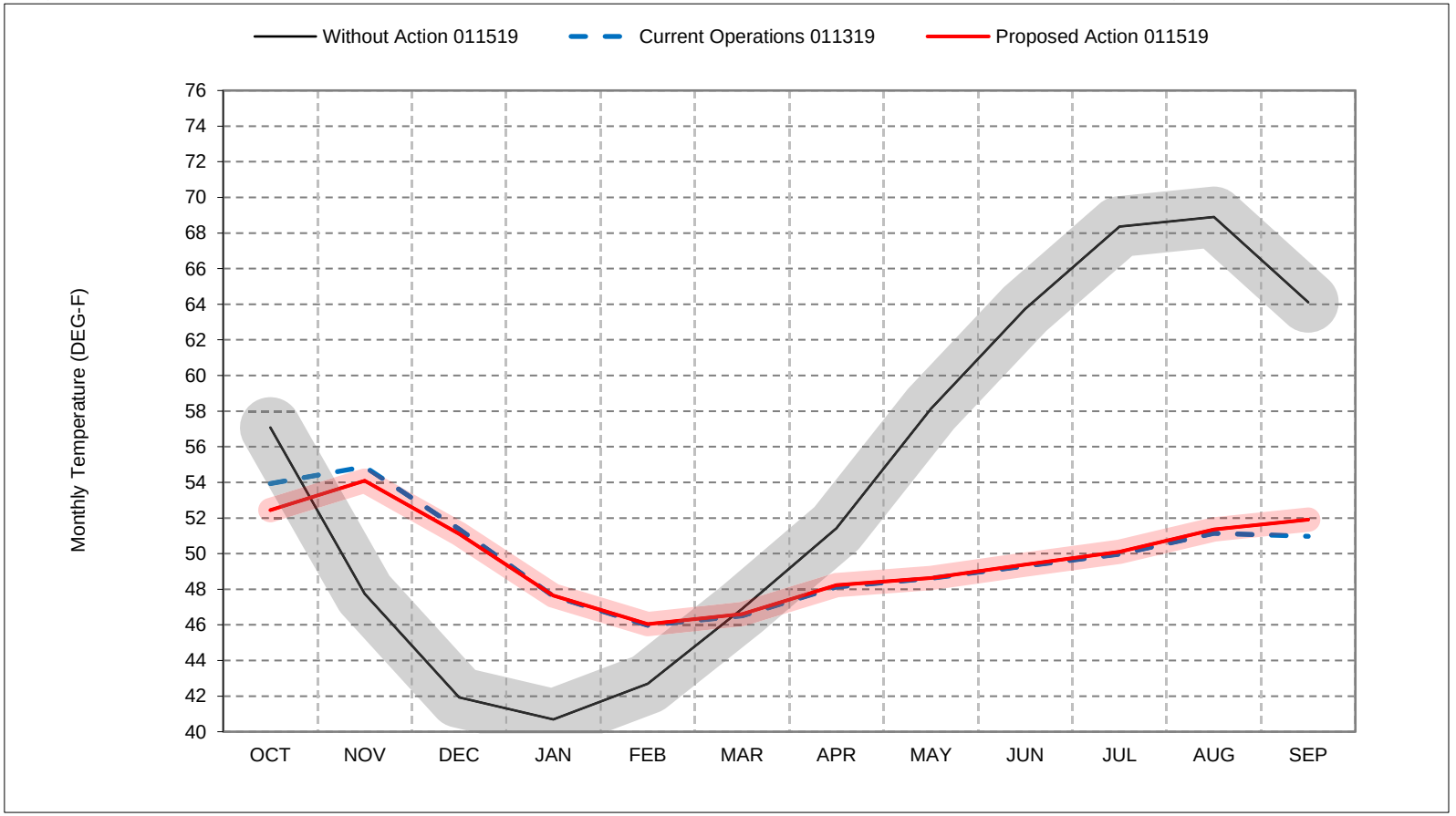
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-2. Sacramento River below Keswick, Wet Year Average Temperature



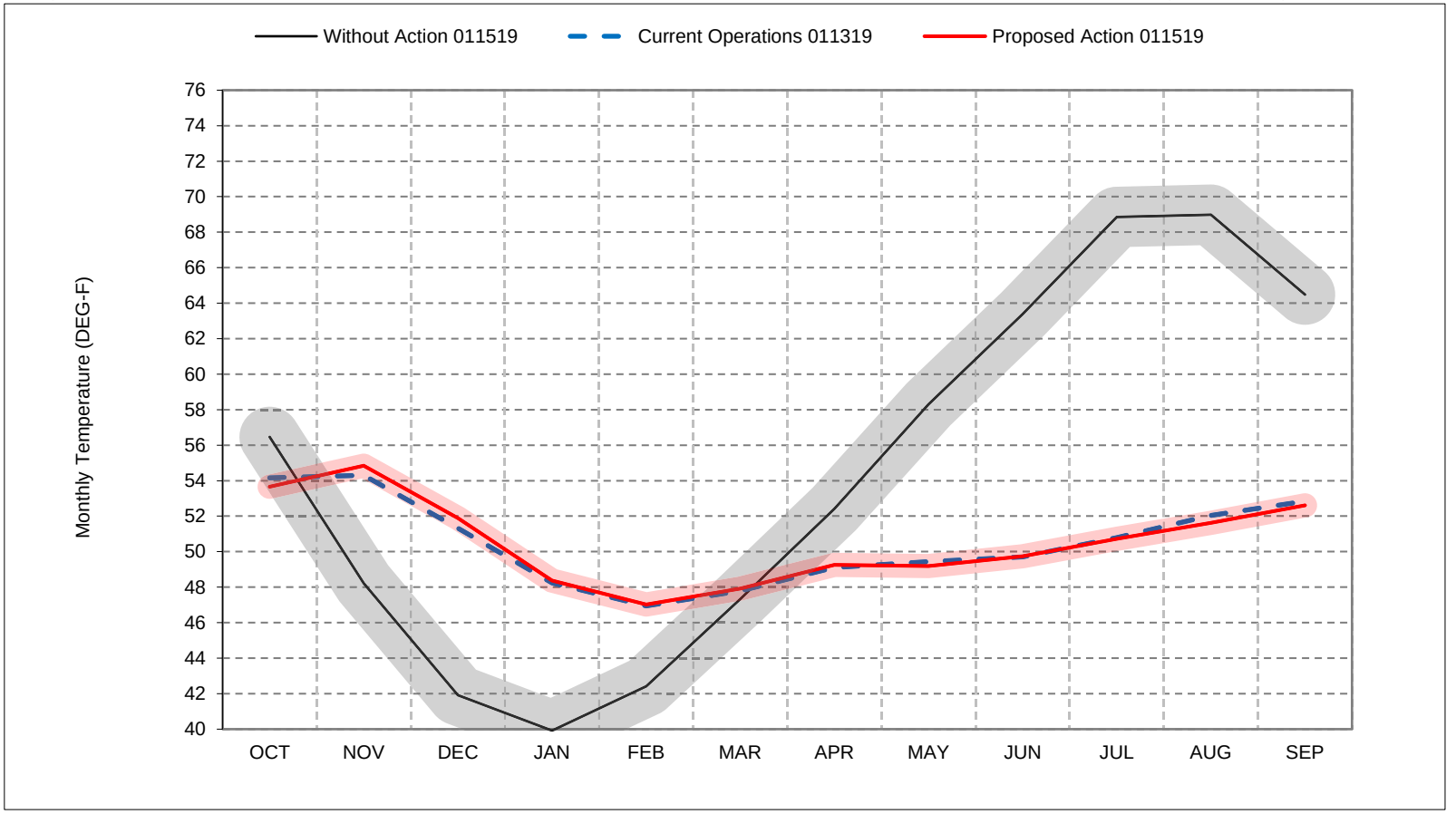
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-3. Sacramento River below Keswick, Above Normal Year Average Temperature



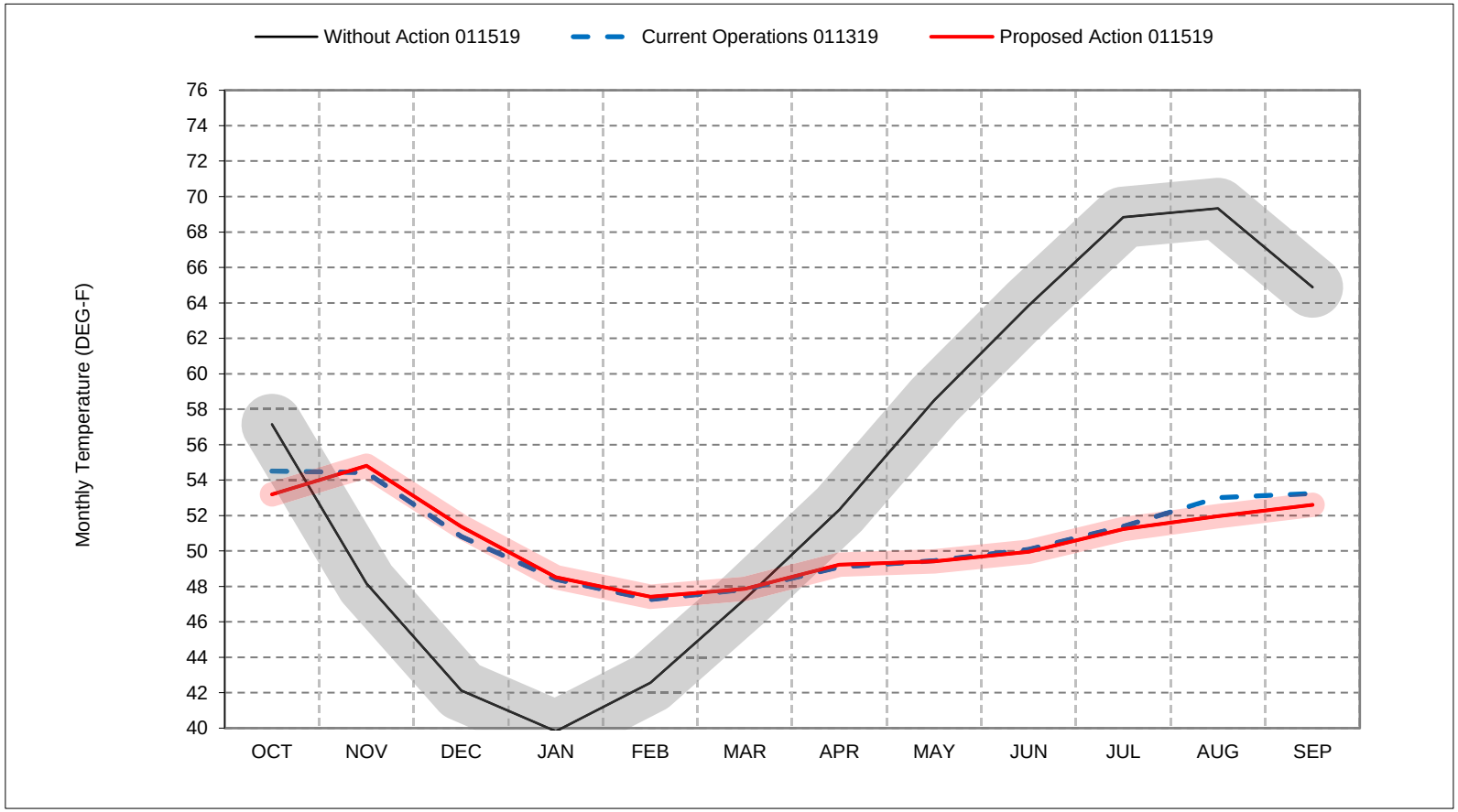
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-4. Sacramento River below Keswick, Below Normal Year Average Temperature



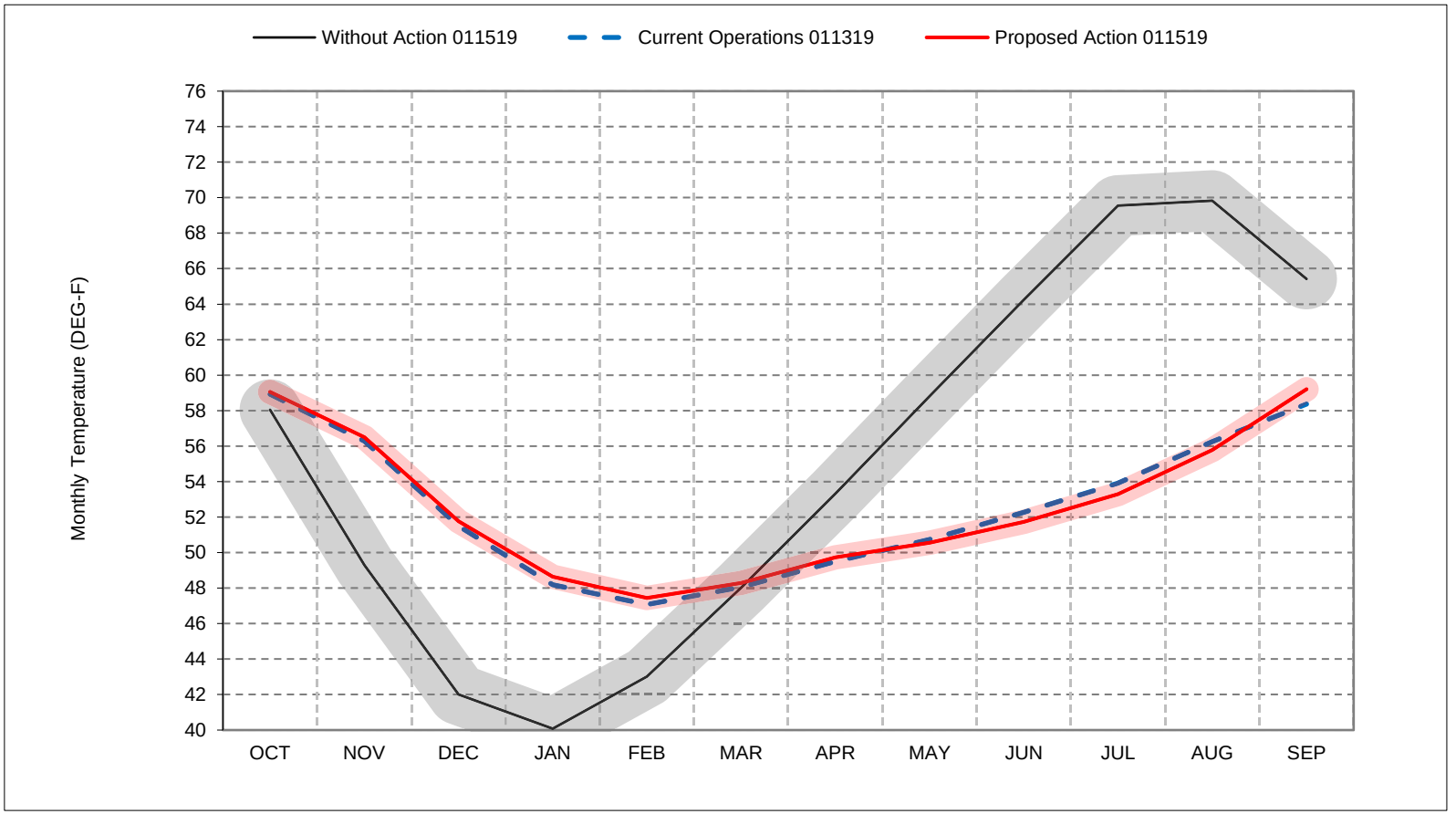
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-5. Sacramento River below Keswick, Dry Year Average Temperature



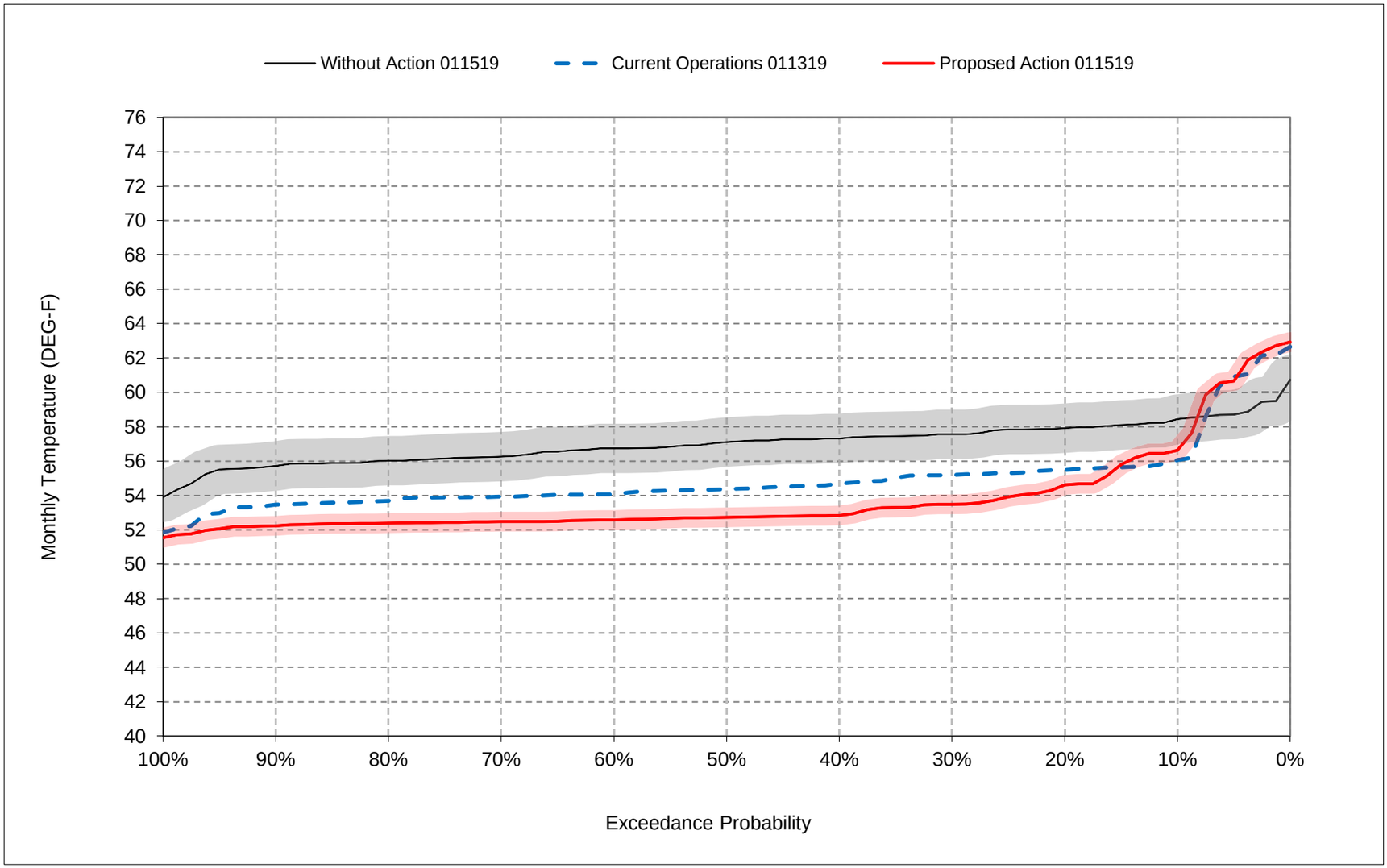
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

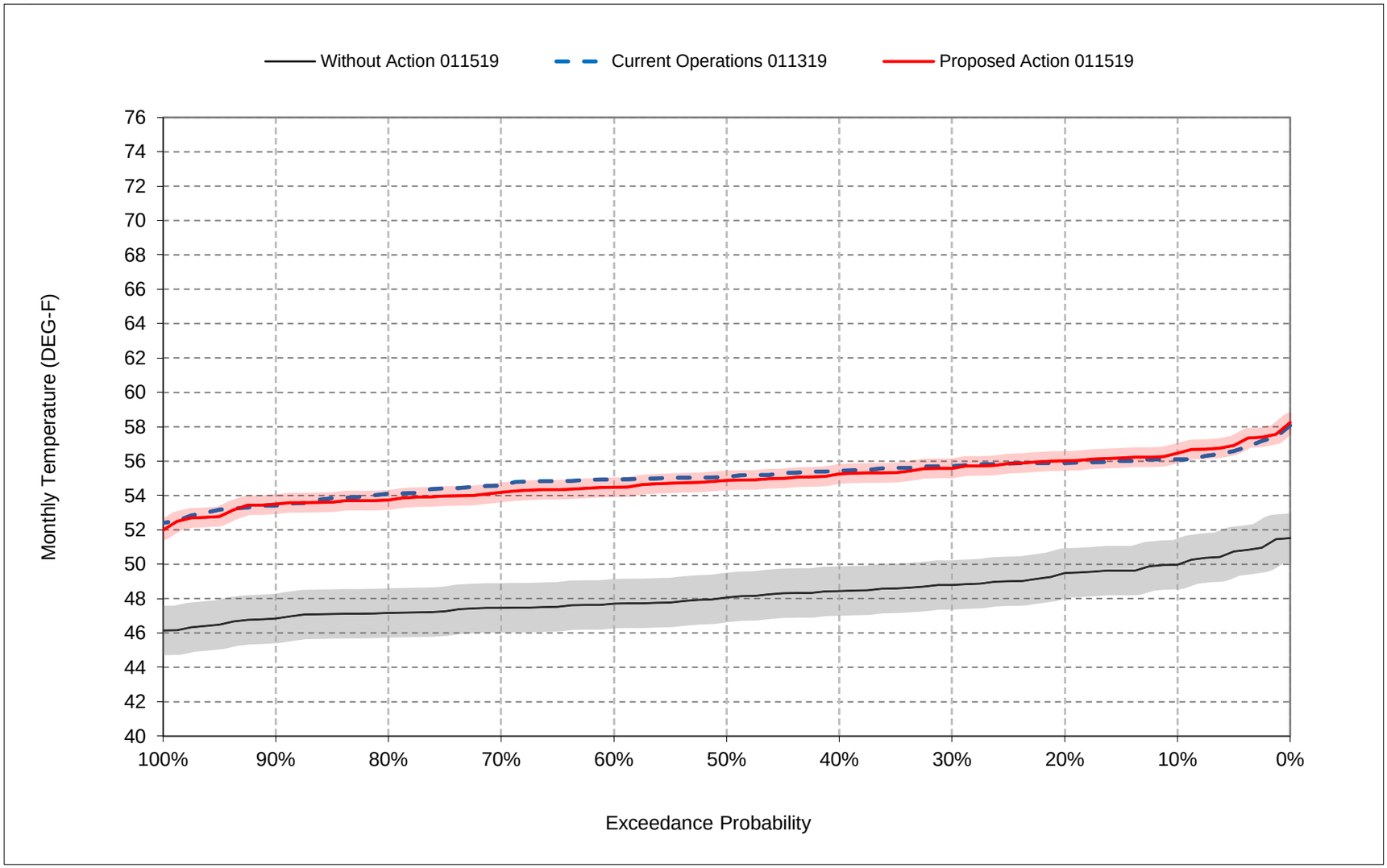
Figure 5-7. Sacramento River below Keswick, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

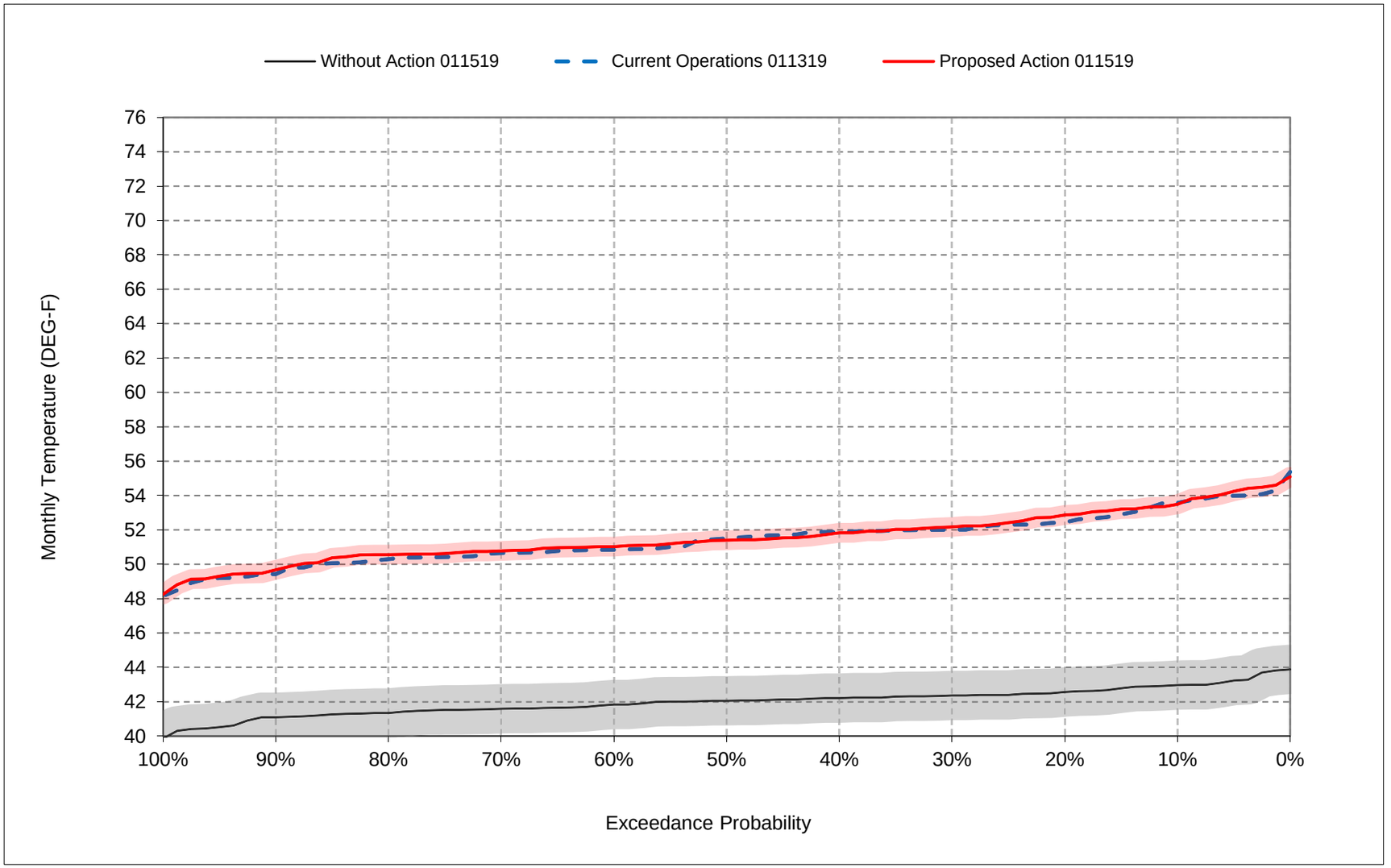
Figure 5-8. Sacramento River below Keswick, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

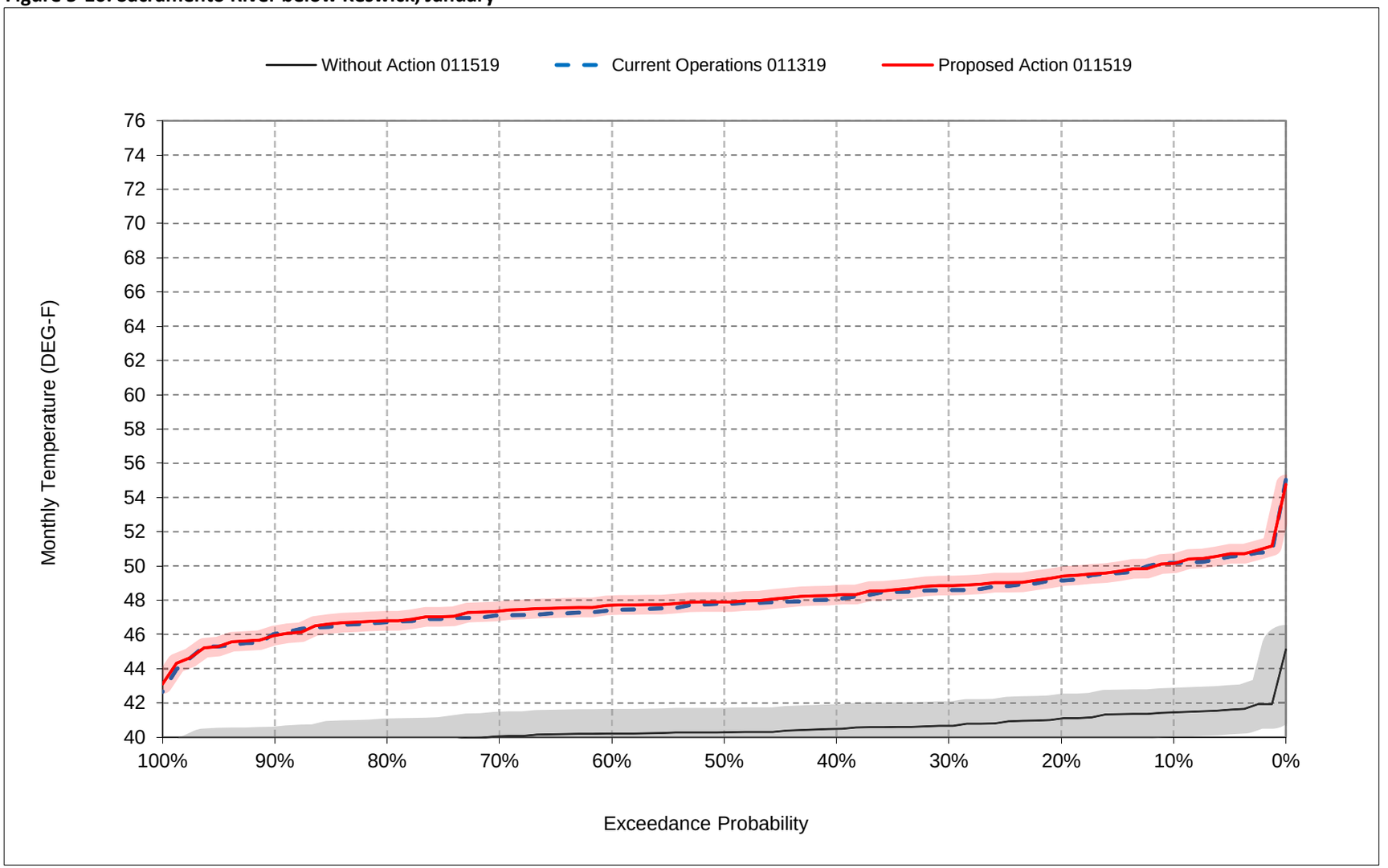
Figure 5-9. Sacramento River below Keswick, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

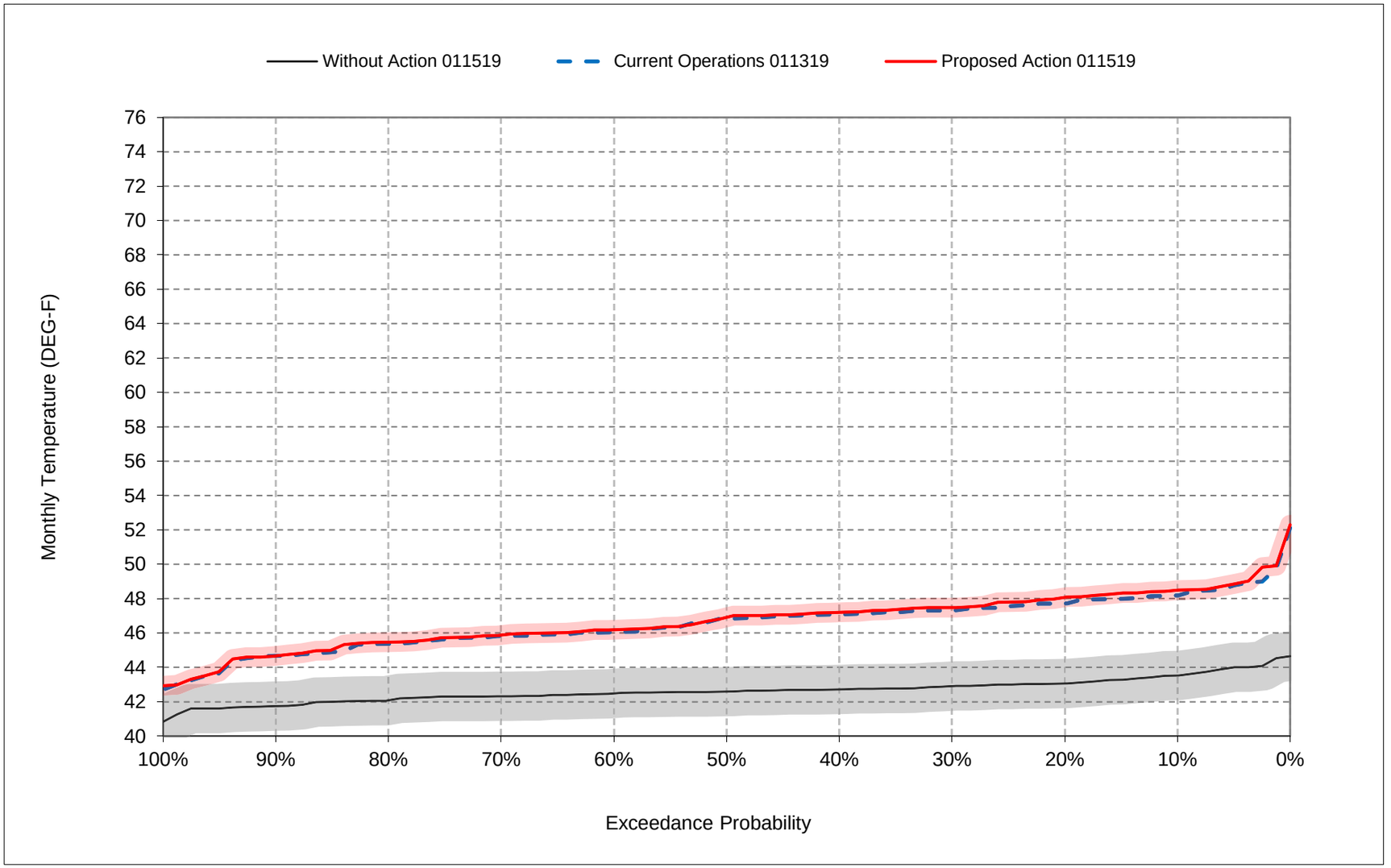
Figure 5-10. Sacramento River below Keswick, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

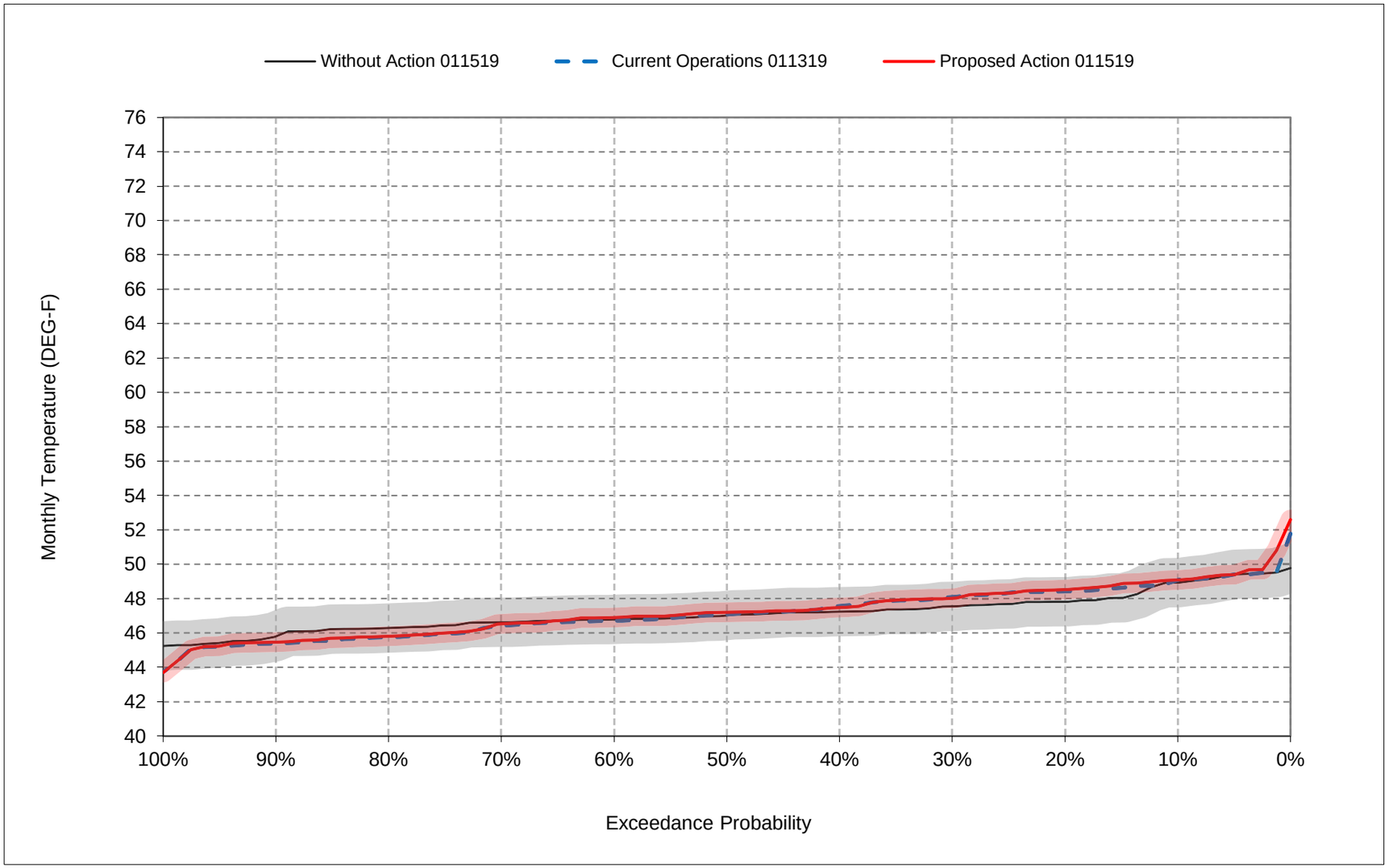
Figure 5-11. Sacramento River below Keswick, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

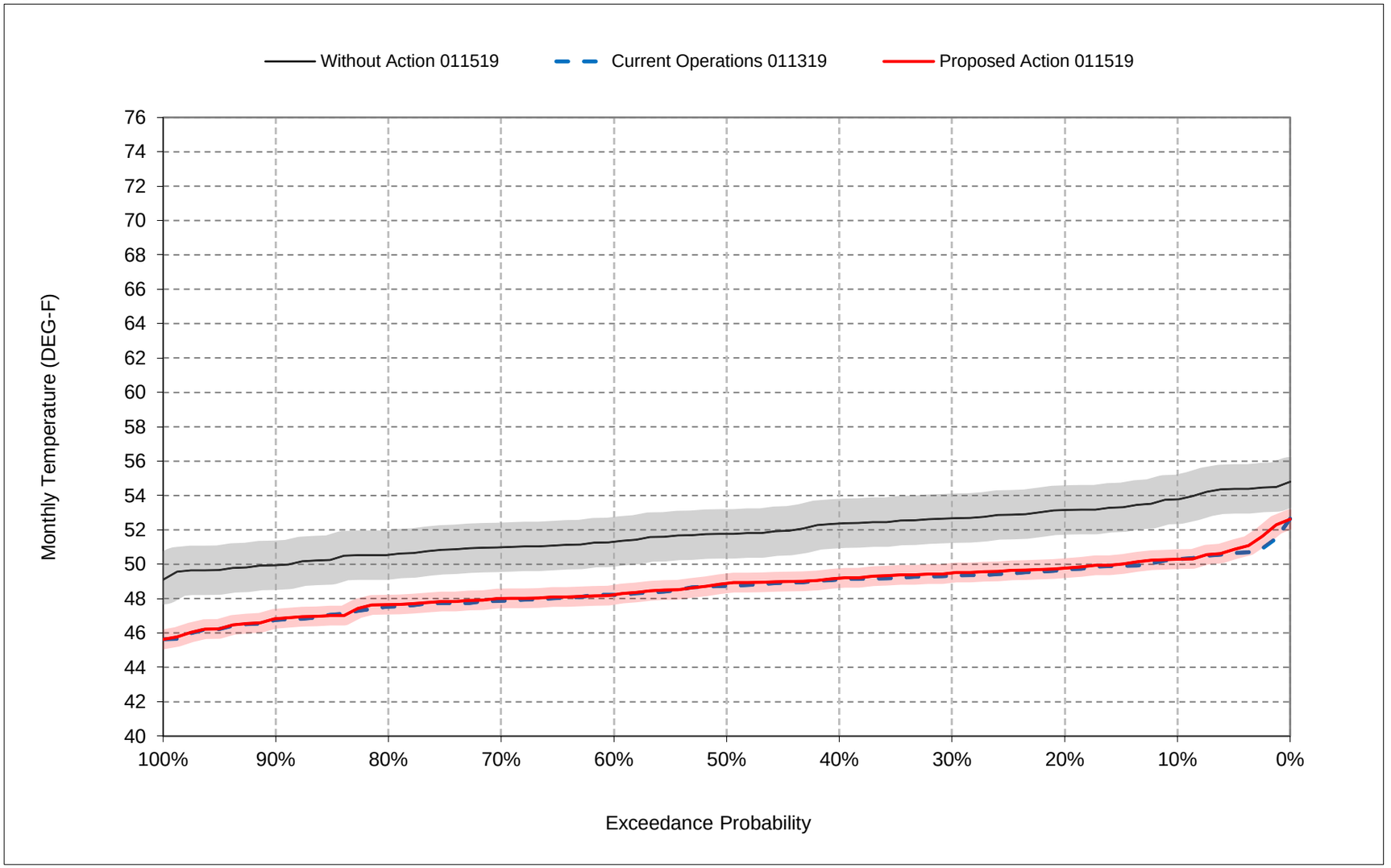
Figure 5-12. Sacramento River below Keswick, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

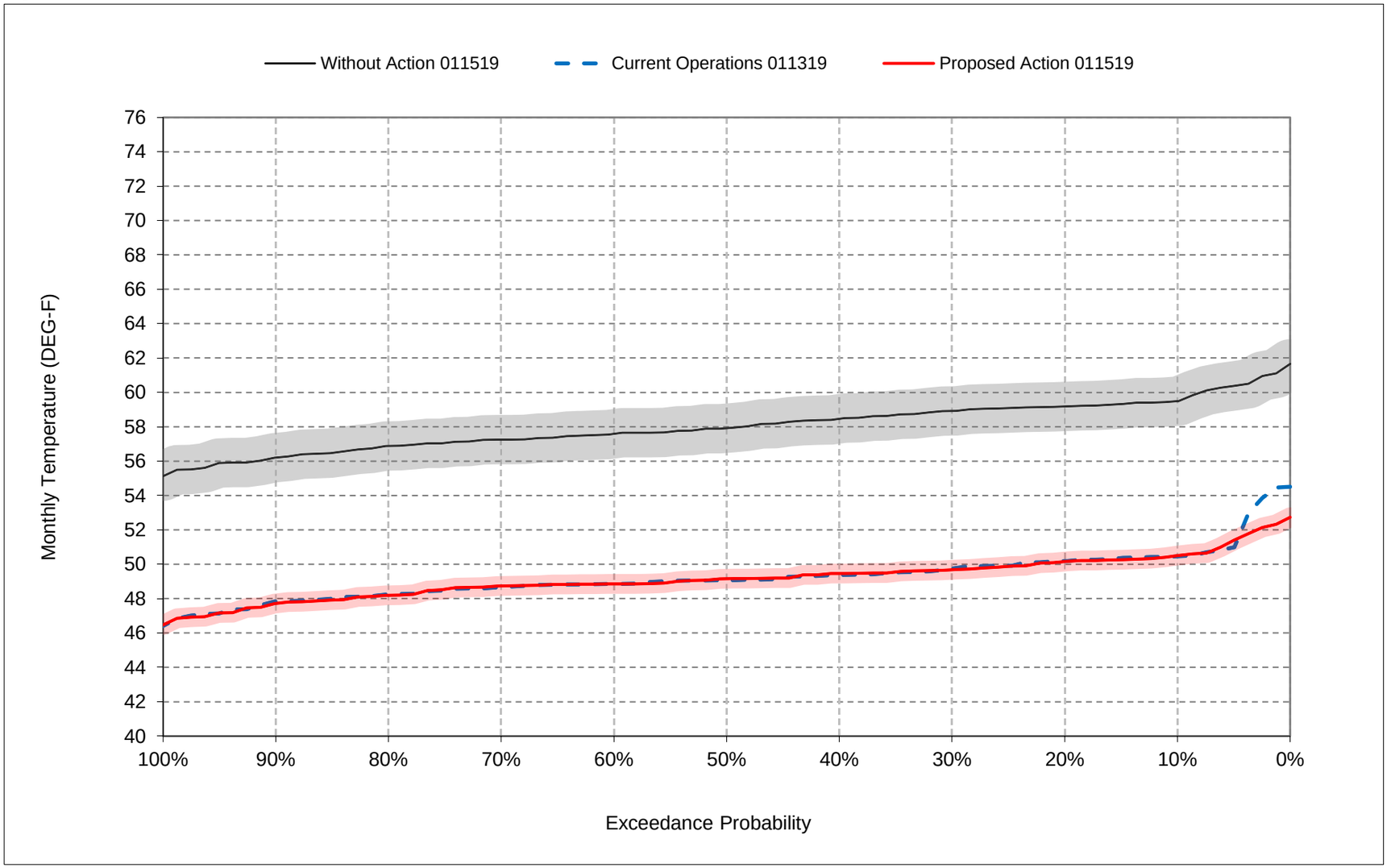
Figure 5-13. Sacramento River below Keswick, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

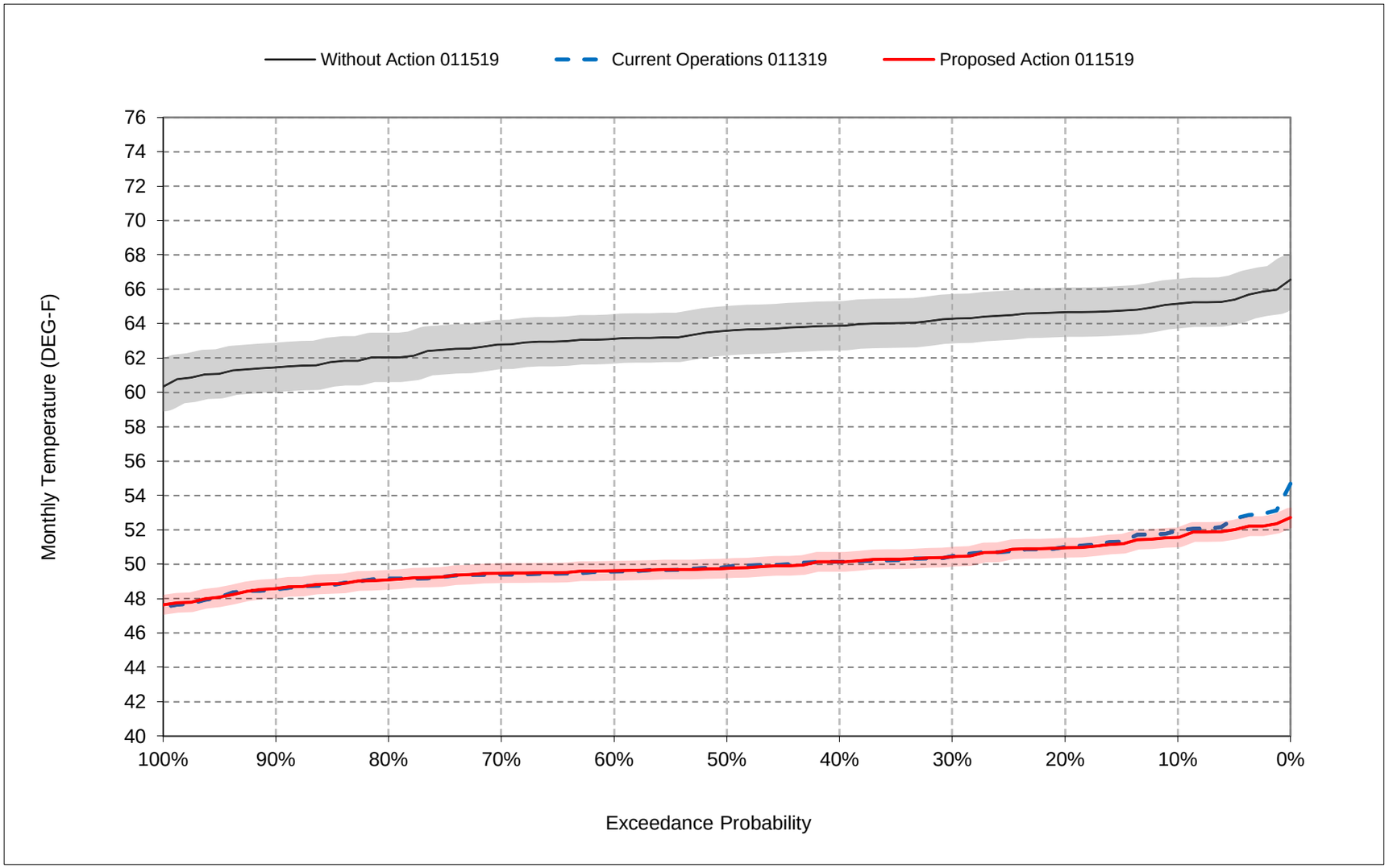
Figure 5-14. Sacramento River below Keswick, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

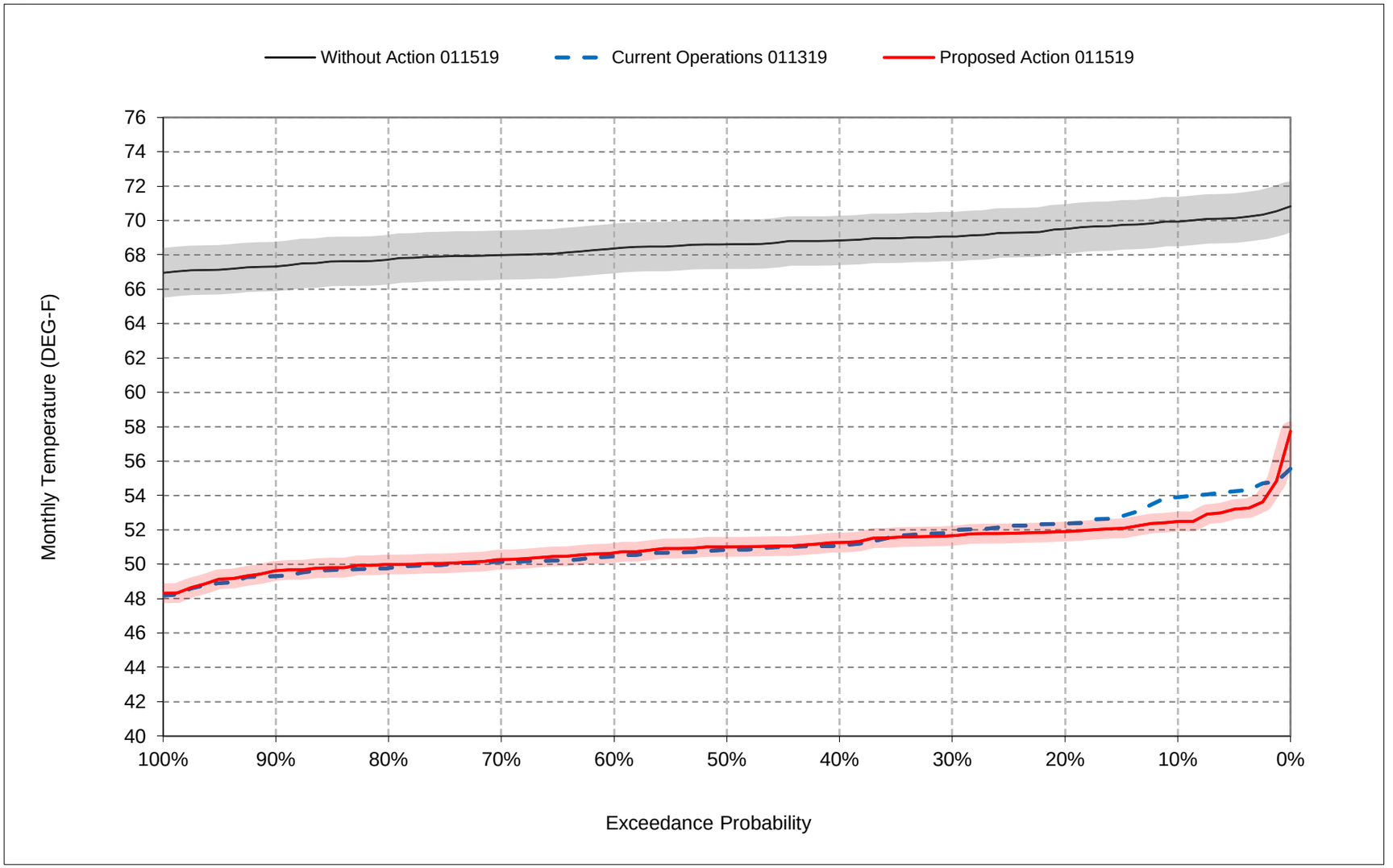
Figure 5-15. Sacramento River below Keswick, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

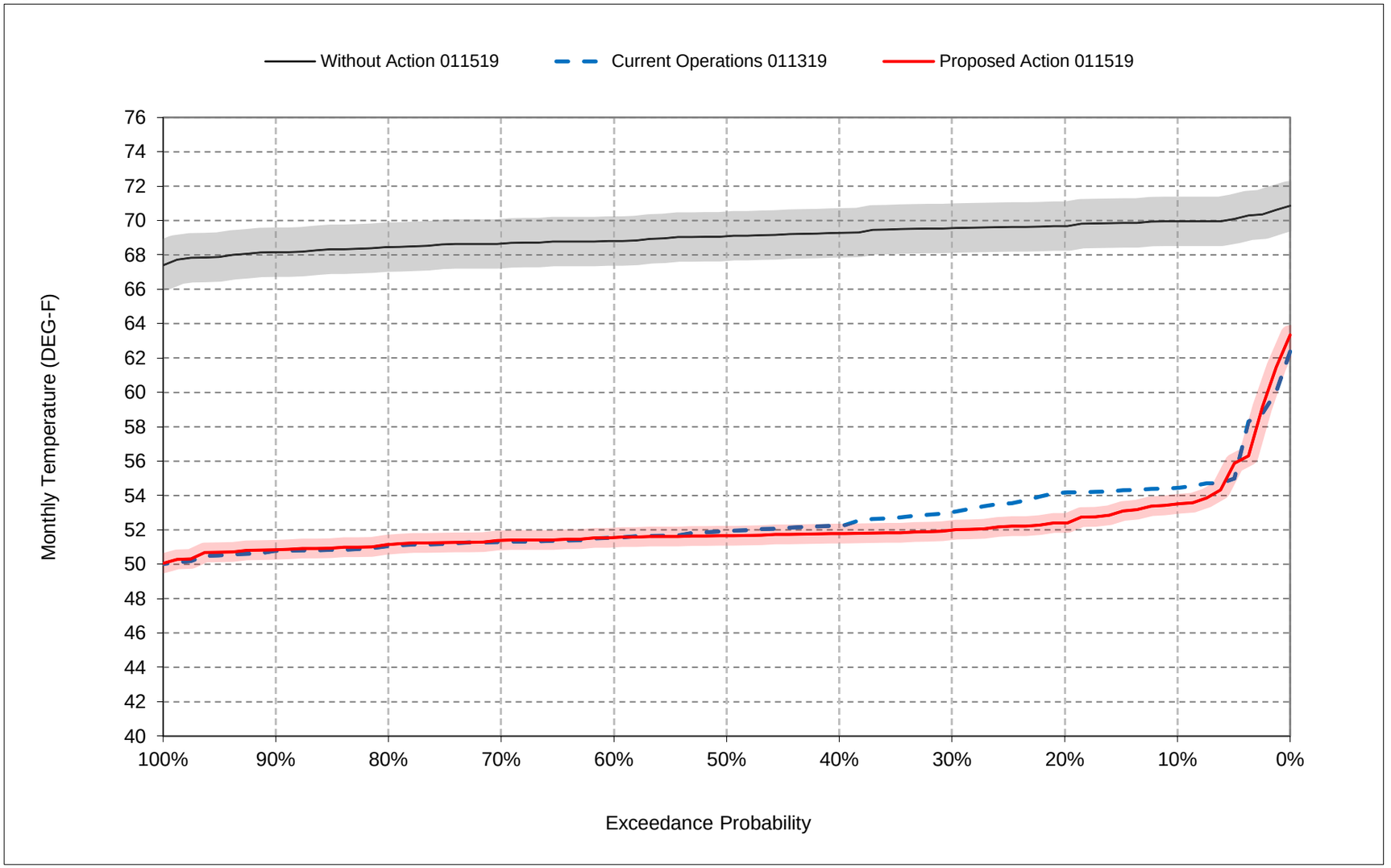
Figure 5-16. Sacramento River below Keswick, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

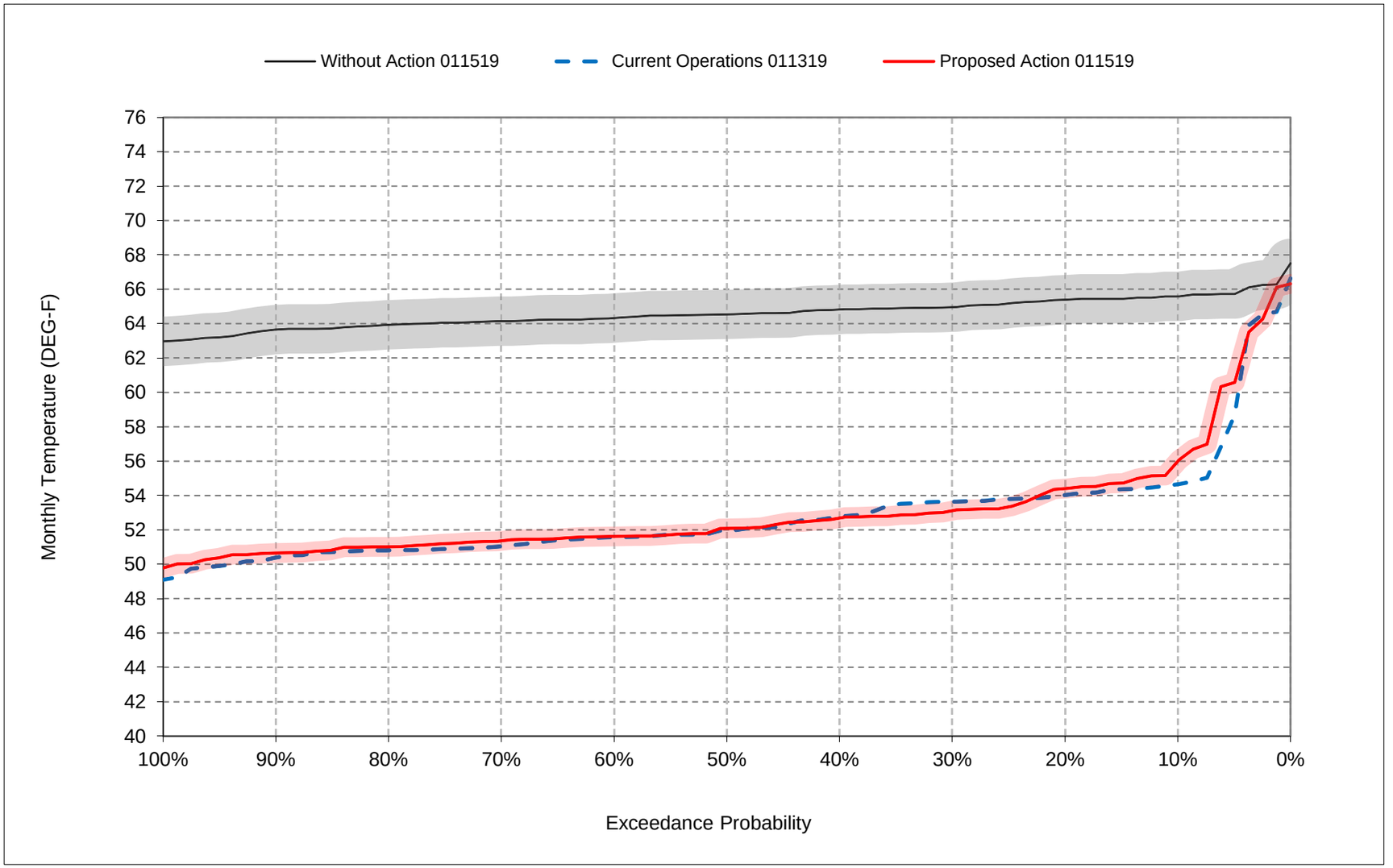
Figure 5-17. Sacramento River below Keswick, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 6-1. Sacramento River at Clear Creek, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.4	50.6	43.3	41.7	44.2	49.6	54.8	61.2	67.4	72.4	72.0	67.2
20%	59.0	50.1	42.9	41.4	43.6	48.6	54.1	60.7	66.6	72.0	71.7	66.9
30%	58.5	49.3	42.7	41.0	43.3	48.1	53.6	60.3	66.2	71.4	71.5	66.6
40%	58.2	48.9	42.5	40.9	43.1	47.7	53.1	59.7	65.9	71.0	71.2	66.3
50%	57.9	48.6	42.3	40.8	42.9	47.5	52.5	59.4	65.5	70.7	70.9	66.1
60%	57.5	48.1	42.1	40.5	42.8	47.2	52.0	58.6	64.7	70.2	70.7	65.7
70%	57.0	47.8	41.8	40.4	42.7	47.0	51.6	58.1	64.4	70.1	70.5	65.5
80%	56.8	47.5	41.6	40.1	42.5	46.7	51.1	57.7	63.6	69.8	70.2	65.3
90%	56.4	47.2	41.3	39.6	42.4	46.2	50.3	57.0	62.7	69.2	69.8	64.8
Long Term												
Full Simulation Period[a]	57.9	48.7	42.3	40.7	43.1	47.7	52.6	59.2	65.2	70.8	70.9	66.1
Water Year Types[b,c]												
Wet (32%)	57.5	48.6	42.2	41.2	42.9	47.1	51.3	58.0	64.0	70.0	70.4	65.7
Above Normal (16%)	57.9	48.1	42.2	41.0	43.0	47.3	52.0	59.2	65.5	70.4	70.7	65.5
Below Normal (13%)	57.3	48.7	42.2	40.3	42.9	47.9	53.2	59.6	65.3	71.0	70.8	65.9
Dry (24%)	58.0	48.6	42.4	40.3	43.1	47.8	53.1	59.9	65.9	71.1	71.3	66.4
Critical (15%)	59.0	49.8	42.4	40.6	43.8	48.8	54.6	60.4	66.4	72.1	71.9	67.1

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.7	**5.5**	**9.7**	**8.4**	**4.6**	**0.7**	-2.3	-8.7	-13.6	-17.0	-15.7	-10.8
20%	-2.9	**5.8**	**9.2**	**7.6**	**4.6**	**1.1**	-2.3	-8.8	-13.8	-18.1	-16.1	-11.1
30%	-2.8	**6.3**	**9.0**	**7.6**	**4.8**	**1.2**	-2.3	-8.8	-14.1	-18.0	-17.0	-11.3
40%	-3.0	**6.4**	**8.9**	**7.1**	**4.6**	**1.1**	-2.1	-8.7	-14.0	-18.4	-17.2	-12.0
50%	-3.1	**6.4**	**8.7**	**7.0**	**4.3**	**0.7**	-1.8	-8.5	-13.9	-18.4	-17.5	-12.5
60%	-2.9	**6.7**	**8.5**	**6.9**	**3.8**	**0.6**	-2.0	-8.0	-13.3	-18.4	-17.6	-13.0
70%	-2.6	**6.6**	**8.5**	**6.7**	**3.5**	**0.1**	-1.7	-7.9	-13.3	-18.6	-17.6	-13.4
80%	-2.6	**6.5**	**8.4**	**6.6**	**3.0**	-0.2	-2.2	-7.8	-12.8	-18.5	-17.6	-13.7
90%	-2.4	**6.2**	**8.1**	**6.5**	**2.7**	-0.2	-2.9	-7.9	-12.3	-18.3	-17.7	-13.4
Long Term												
Full Simulation Period[a]	-2.4	**6.2**	**8.8**	**7.1**	**4.0**	**0.5**	-2.3	-8.3	-13.4	-18.2	-16.9	-11.9
Water Year Types[b,c]												
Wet (32%)	-2.8	**6.7**	**9.4**	**6.2**	**3.3**	-0.1	-2.1	-7.7	-12.5	-18.1	-17.5	-13.8
Above Normal (16%)	-3.4	**6.6**	**8.8**	**6.7**	**3.3**	**0.1**	-2.2	-8.9	-14.5	-19.2	-18.1	-13.5
Below Normal (13%)	-2.5	**5.5**	**8.8**	**7.9**	**4.5**	**1.1**	-2.2	-8.6	-14.0	-18.9	-17.4	-11.4
Dry (24%)	-2.8	**5.7**	**8.2**	**8.0**	**4.8**	**1.2**	-2.1	-8.6	-14.1	-18.3	-16.6	-11.4
Critical (15%)	**0.4**	**6.3**	**8.8**	**7.6**	**4.1**	**0.6**	-3.1	-8.0	-12.5	-16.6	-14.1	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 6-2. Sacramento River at Clear Creek, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.4	50.6	43.3	41.7	44.2	49.6	54.8	61.2	67.4	72.4	72.0	67.2
20%	59.0	50.1	42.9	41.4	43.6	48.6	54.1	60.7	66.6	72.0	71.7	66.9
30%	58.5	49.3	42.7	41.0	43.3	48.1	53.6	60.3	66.2	71.4	71.5	66.6
40%	58.2	48.9	42.5	40.9	43.1	47.7	53.1	59.7	65.9	71.0	71.2	66.3
50%	57.9	48.6	42.3	40.8	42.9	47.5	52.5	59.4	65.5	70.7	70.9	66.1
60%	57.5	48.1	42.1	40.5	42.8	47.2	52.0	58.6	64.7	70.2	70.7	65.7
70%	57.0	47.8	41.8	40.4	42.7	47.0	51.6	58.1	64.4	70.1	70.5	65.5
80%	56.8	47.5	41.6	40.1	42.5	46.7	51.1	57.7	63.6	69.8	70.2	65.3
90%	56.4	47.2	41.3	39.6	42.4	46.2	50.3	57.0	62.7	69.2	69.8	64.8
Long Term												
Full Simulation Period[a]	57.9	48.7	42.3	40.7	43.1	47.7	52.6	59.2	65.2	70.8	70.9	66.1
Water Year Types[b,c]												
Wet (32%)	57.5	48.6	42.2	41.2	42.9	47.1	51.3	58.0	64.0	70.0	70.4	65.7
Above Normal (16%)	57.9	48.1	42.2	41.0	43.0	47.3	52.0	59.2	65.5	70.4	70.7	65.5
Below Normal (13%)	57.3	48.7	42.2	40.3	42.9	47.9	53.2	59.6	65.3	71.0	70.8	65.9
Dry (24%)	58.0	48.6	42.4	40.3	43.1	47.8	53.1	59.9	65.9	71.1	71.3	66.4
Critical (15%)	59.0	49.8	42.4	40.6	43.8	48.8	54.6	60.4	66.4	72.1	71.9	67.1

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.4	**5.9**	**9.9**	**8.5**	**4.8**	**0.9**	-2.5	-8.6	-14.1	-18.3	-16.6	-9.2
20%	-3.7	**5.8**	**9.4**	**7.8**	**4.8**	**1.2**	-2.4	-9.0	-13.9	-18.6	-17.7	-11.0
30%	-4.4	**6.1**	**9.1**	**7.7**	**4.8**	**1.0**	-2.2	-8.9	-14.1	-18.3	-17.9	-11.6
40%	-4.6	**6.0**	**8.9**	**7.4**	**4.5**	**1.0**	-2.0	-8.6	-14.2	-18.4	-17.8	-11.8
50%	-4.5	**6.1**	**8.7**	**7.1**	**4.3**	**0.6**	-1.8	-8.5	-14.0	-18.2	-17.8	-12.4
60%	-4.2	**6.3**	**8.7**	**7.1**	**3.8**	**0.7**	-1.8	-8.2	-13.5	-18.1	-17.7	-12.2
70%	-3.8	**6.2**	**8.7**	**7.0**	**3.5**	**0.2**	-1.8	-7.9	-13.3	-18.6	-17.6	-12.6
80%	-3.9	**6.1**	**8.6**	**6.7**	**3.1**	-0.1	-2.1	-8.0	-12.8	-18.5	-17.5	-12.7
90%	-3.7	**6.2**	**8.1**	**6.4**	**2.8**	-0.2	-2.9	-8.0	-12.3	-18.2	-17.6	-12.9
Long Term												
Full Simulation Period[a]	-3.4	**6.0**	**9.0**	**7.3**	**4.1**	**0.6**	-2.2	-8.5	-13.6	-18.3	-17.2	-11.4
Water Year Types[b,c]												
Wet (32%)	-4.2	**6.0**	**9.2**	**6.3**	**3.4**	0.0	-2.1	-7.8	-12.5	-18.0	-17.6	-12.8
Above Normal (16%)	-4.8	**5.8**	**8.6**	**6.7**	**3.4**	**0.1**	-2.1	-8.9	-14.5	-19.1	-17.9	-11.8
Below Normal (13%)	-3.0	**6.0**	**9.3**	**8.0**	**4.5**	**1.1**	-2.1	-9.0	-14.1	-19.0	-17.8	-11.8
Dry (24%)	-4.0	**6.0**	**8.7**	**8.1**	**4.9**	**1.2**	-2.0	-8.8	-14.4	-18.4	-17.7	-12.0
Critical (15%)	**0.5**	**6.5**	**9.0**	**8.0**	**4.4**	**0.8**	-2.9	-8.2	-13.1	-17.1	-14.5	-6.5

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 6-3. Sacramento River at Clear Creek, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.3**	**0.4**	**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.

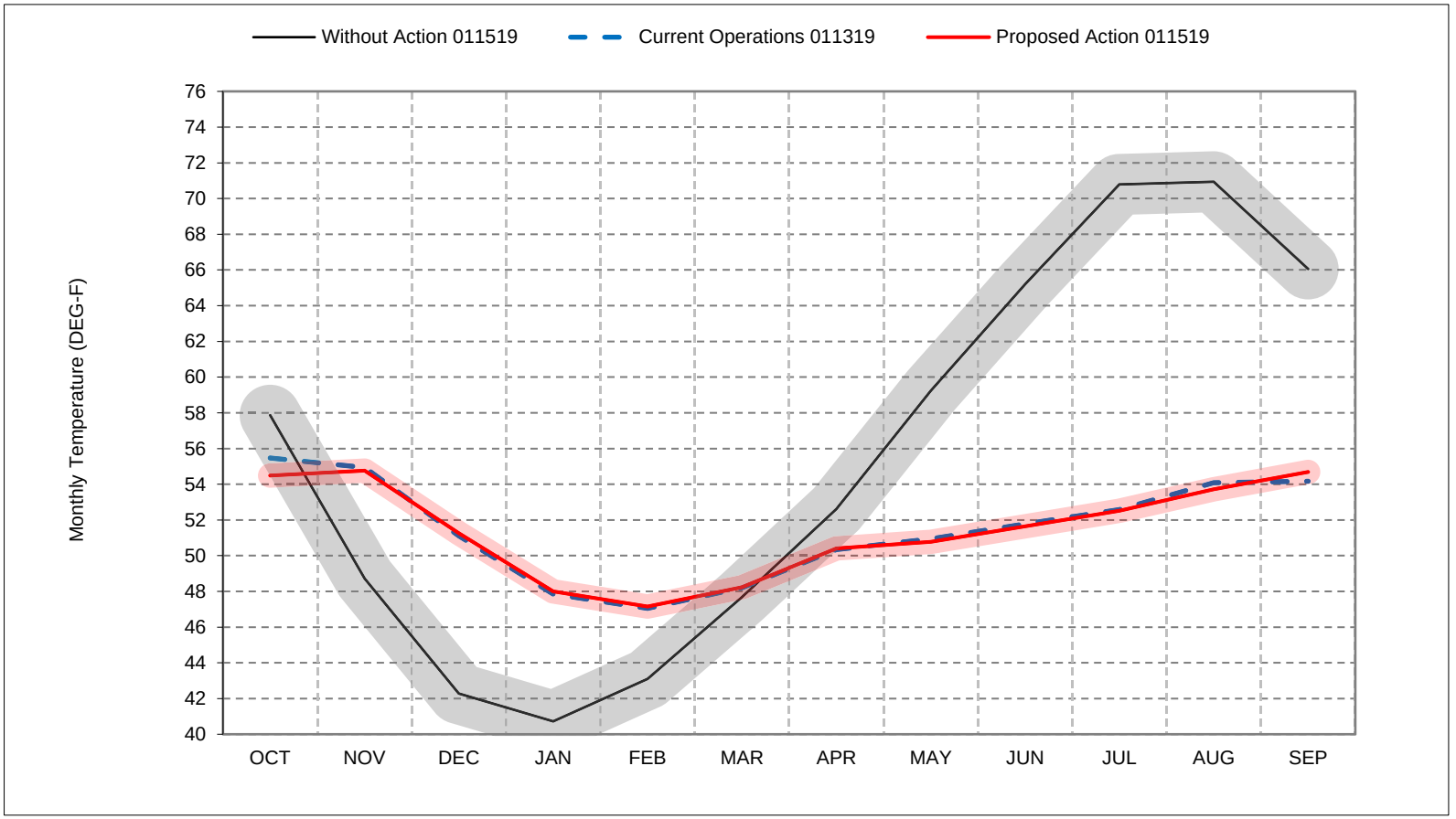
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

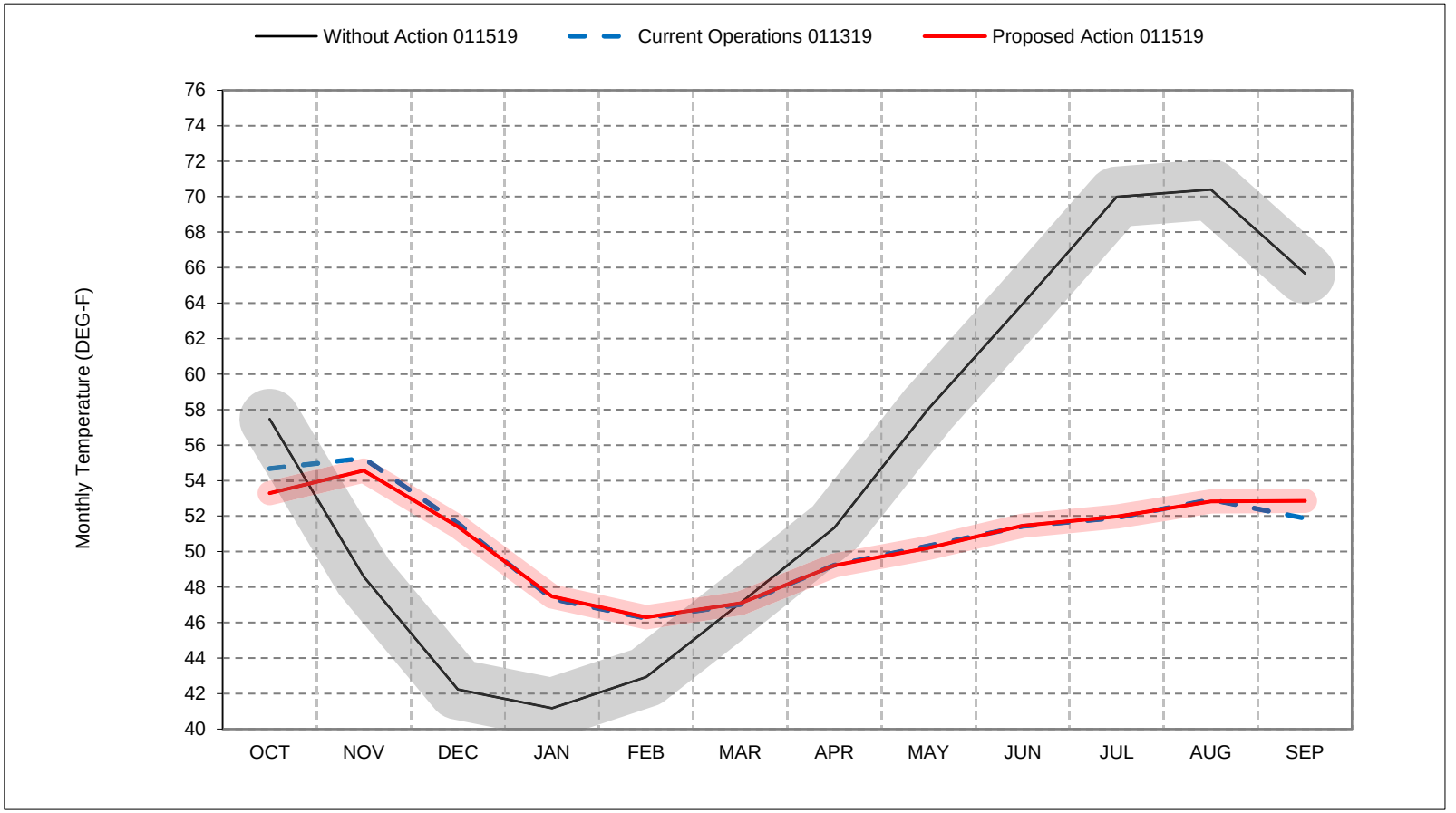
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-1. Sacramento River at Clear Creek, Long-Term Average Temperature



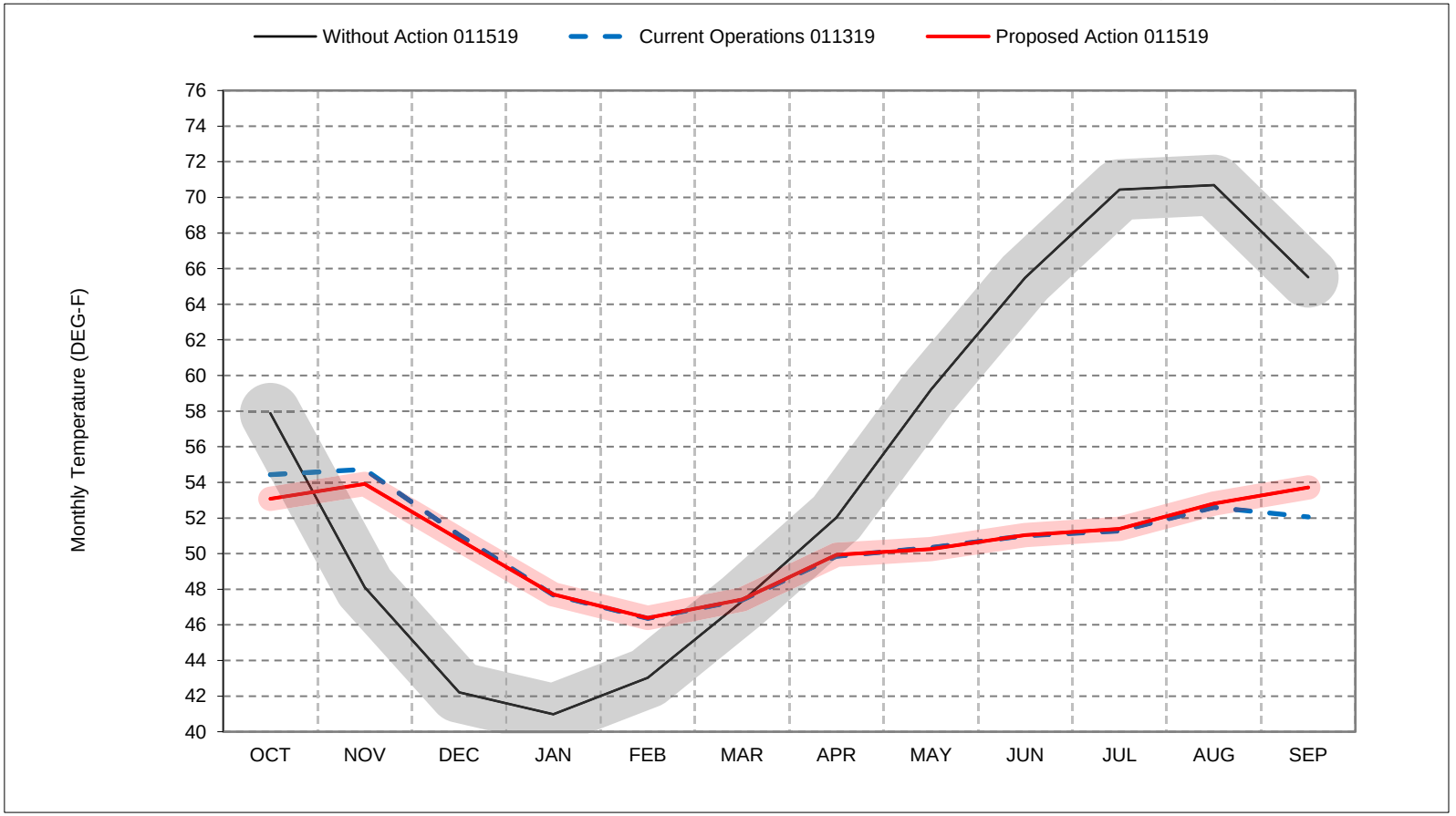
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-2. Sacramento River at Clear Creek, Wet Year Average Temperature



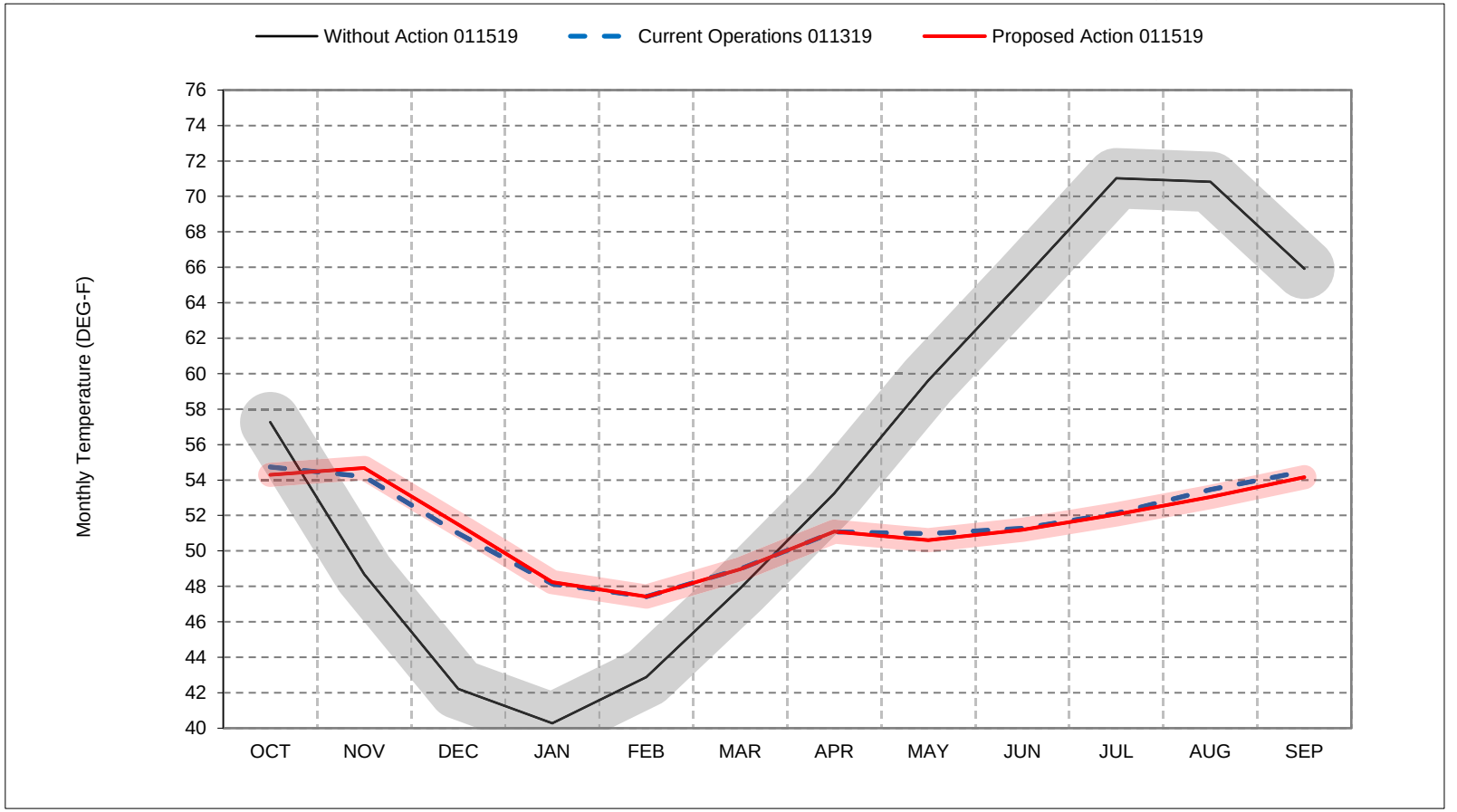
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-3. Sacramento River at Clear Creek, Above Normal Year Average Temperature



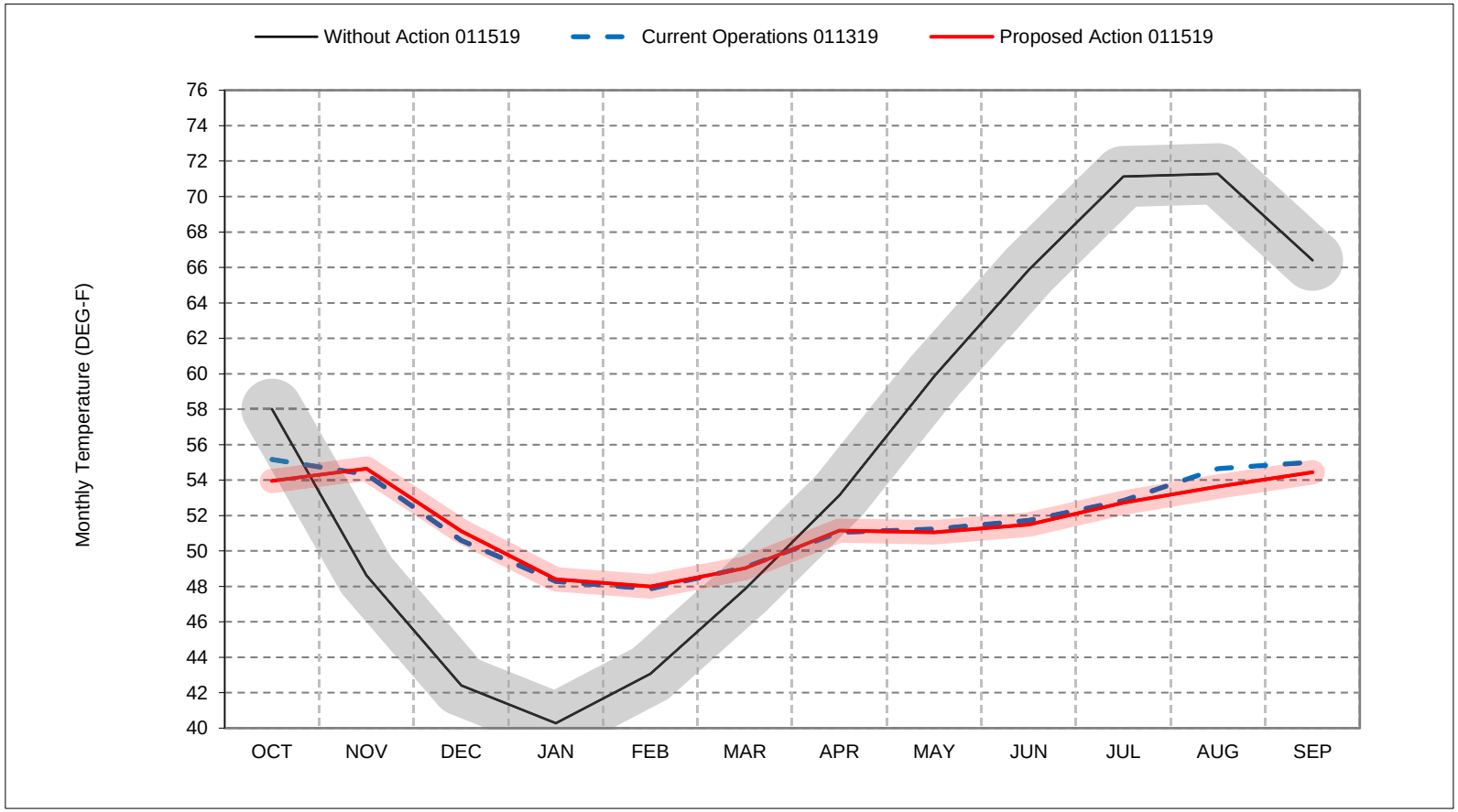
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-4. Sacramento River at Clear Creek, Below Normal Year Average Temperature



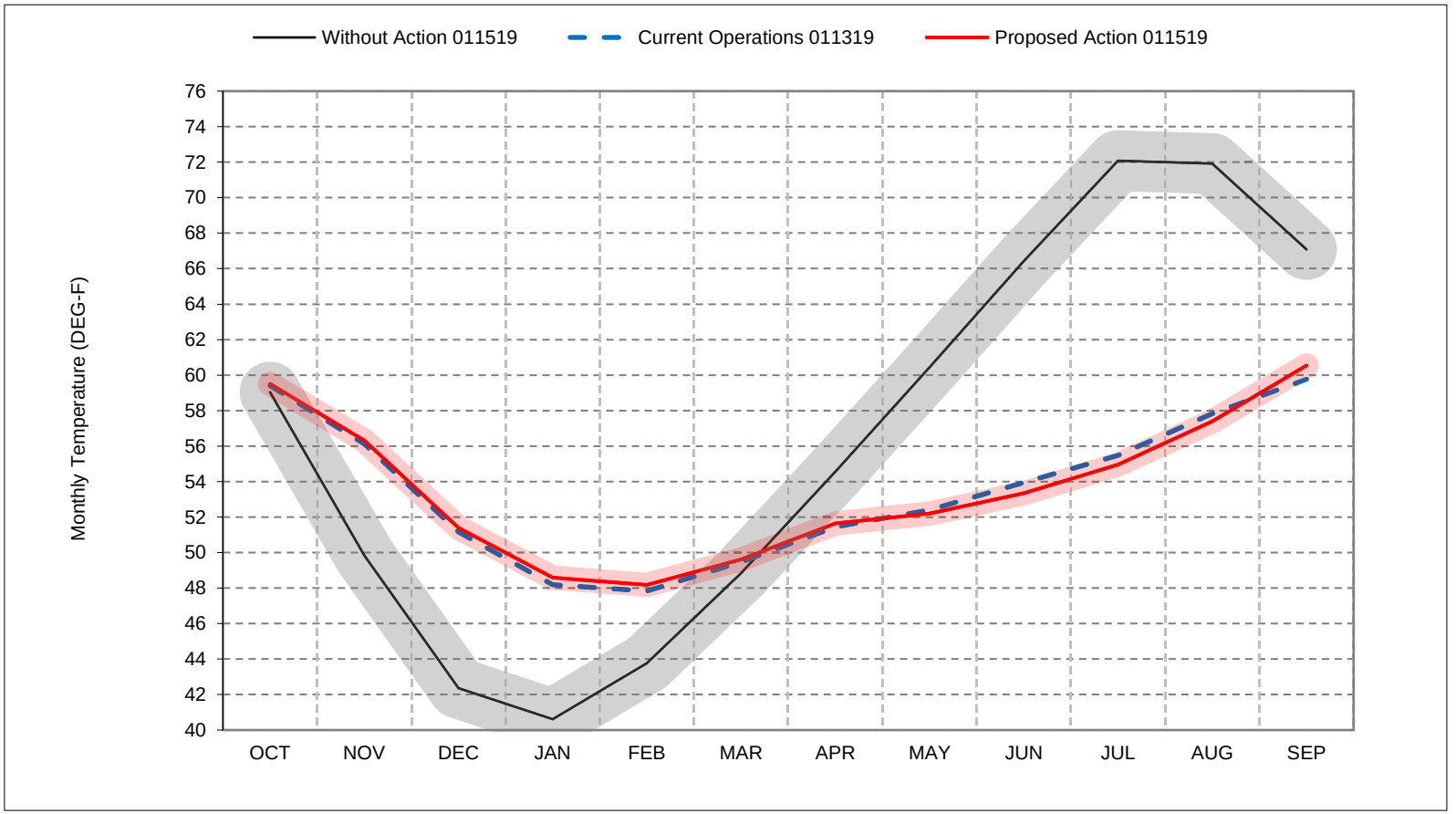
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-5. Sacramento River at Clear Creek, Dry Year Average Temperature



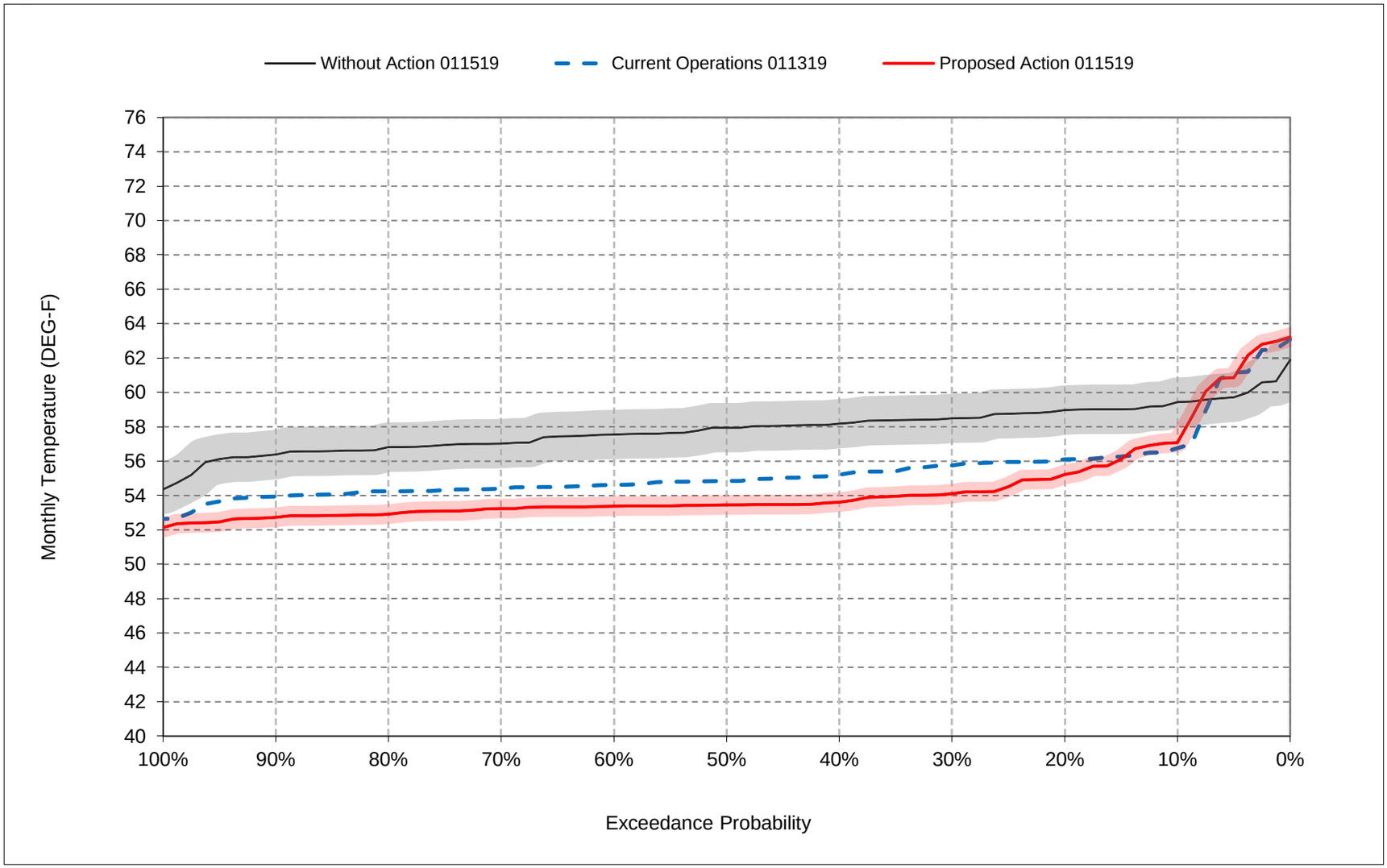
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

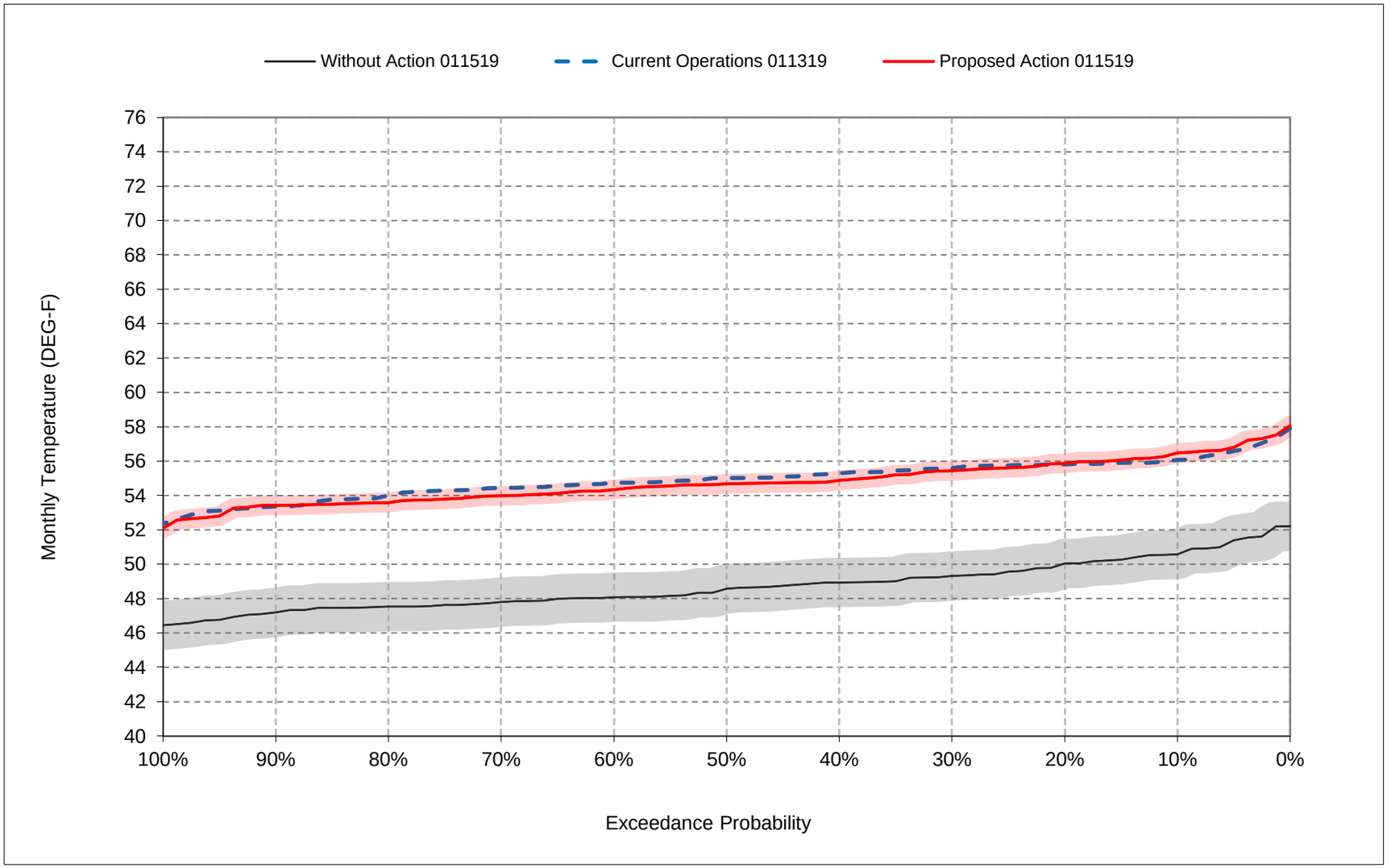
Figure 6-7. Sacramento River at Clear Creek, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

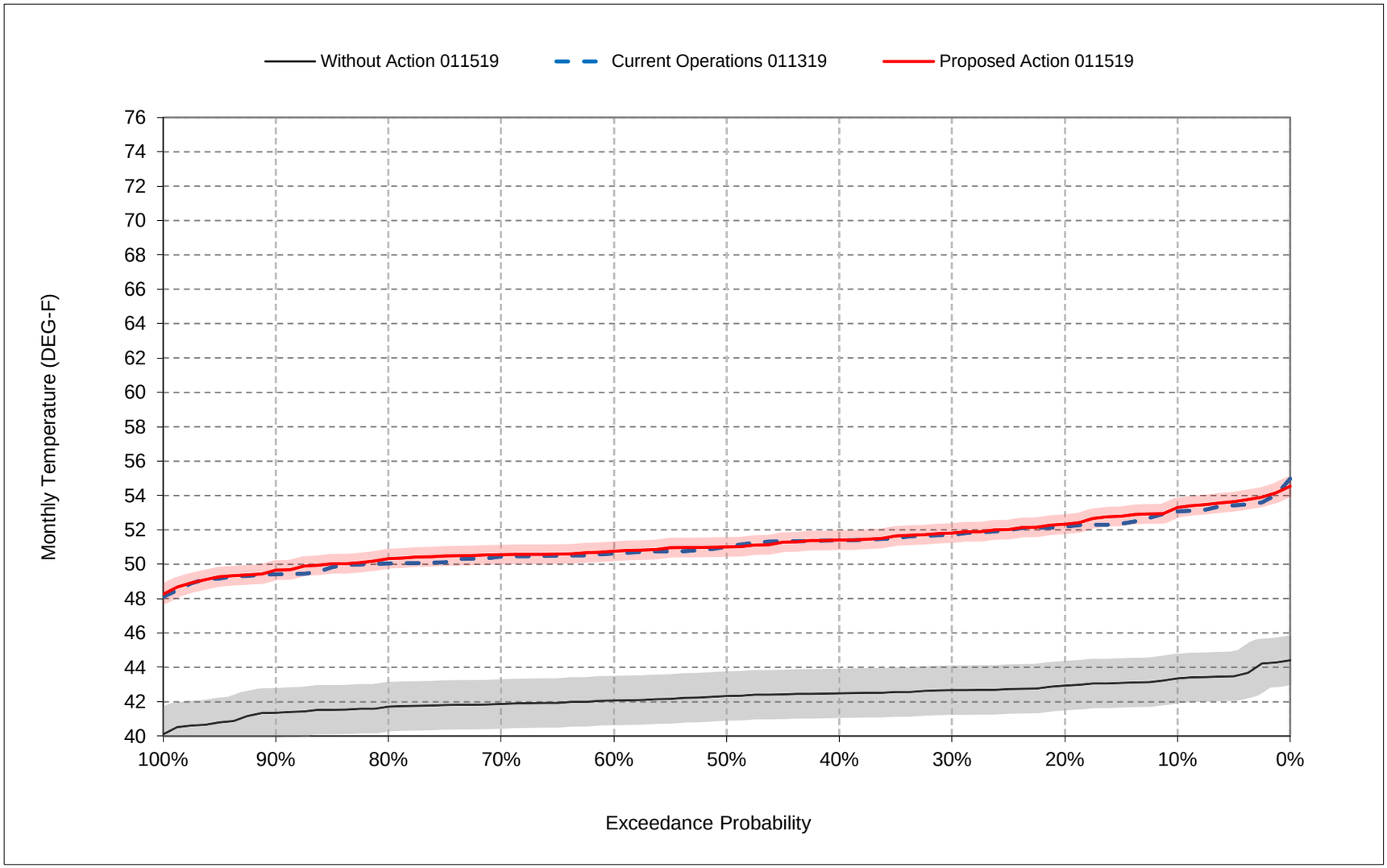
Figure 6-8. Sacramento River at Clear Creek, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

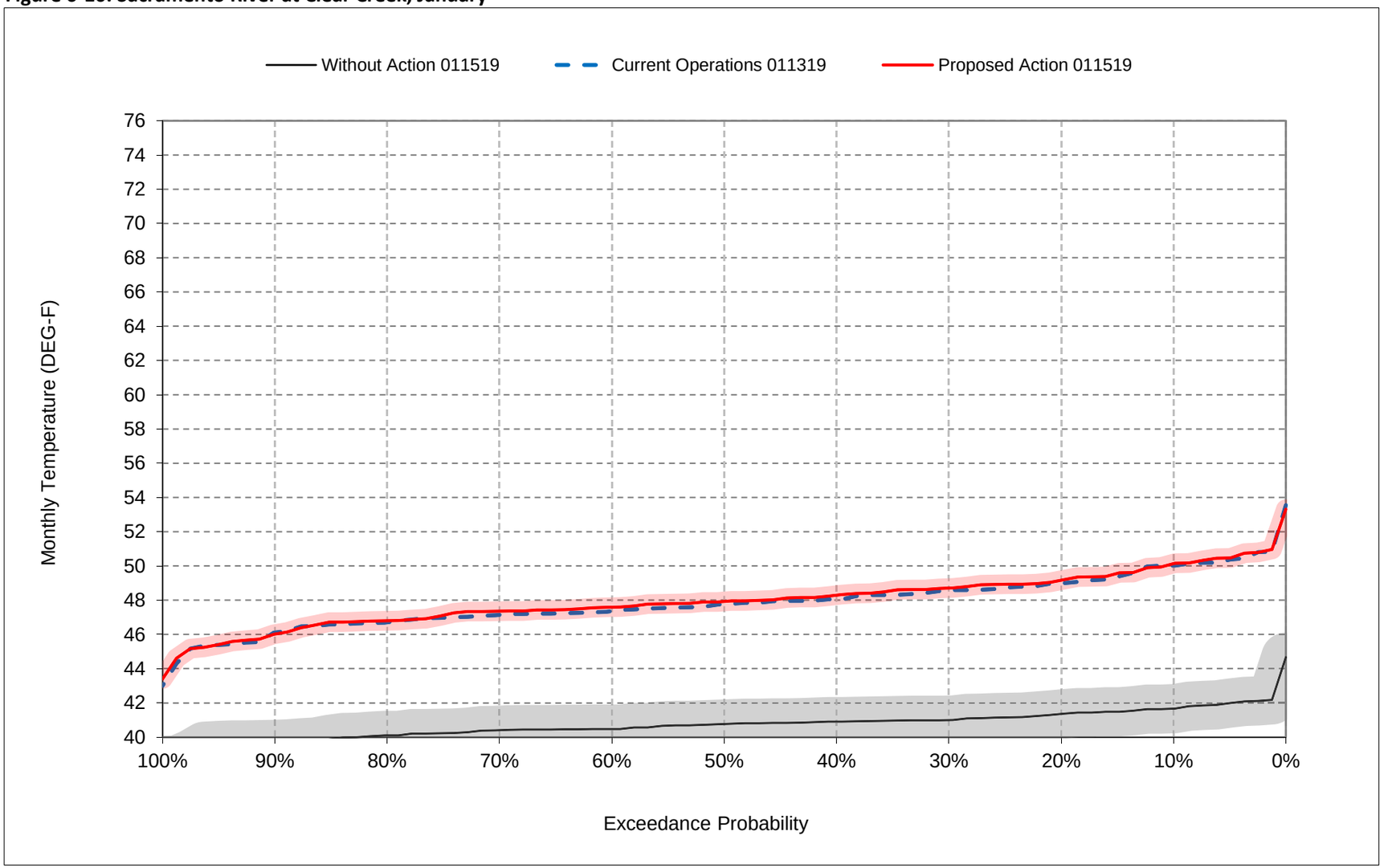
Figure 6-9. Sacramento River at Clear Creek, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

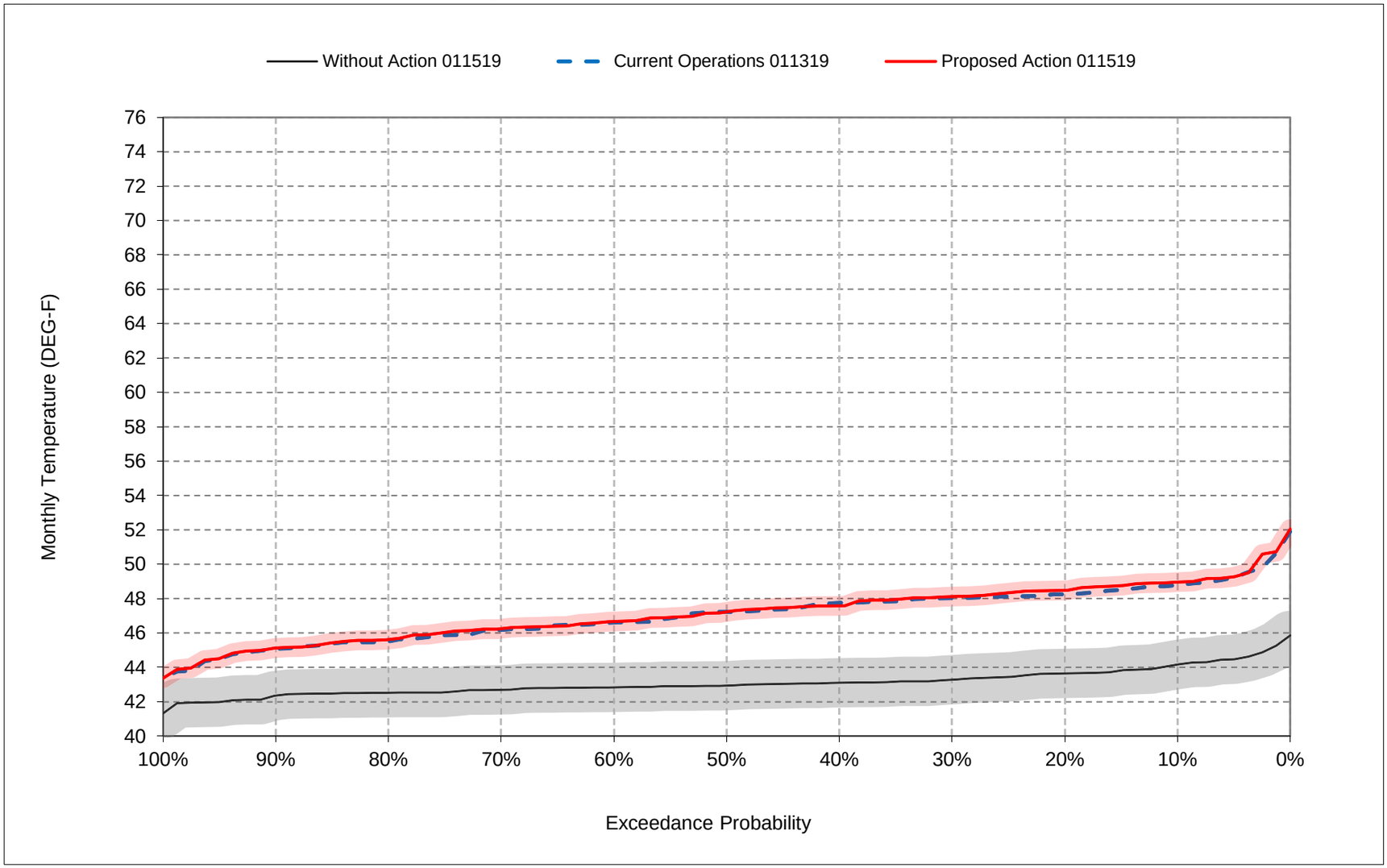
Figure 6-10. Sacramento River at Clear Creek, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

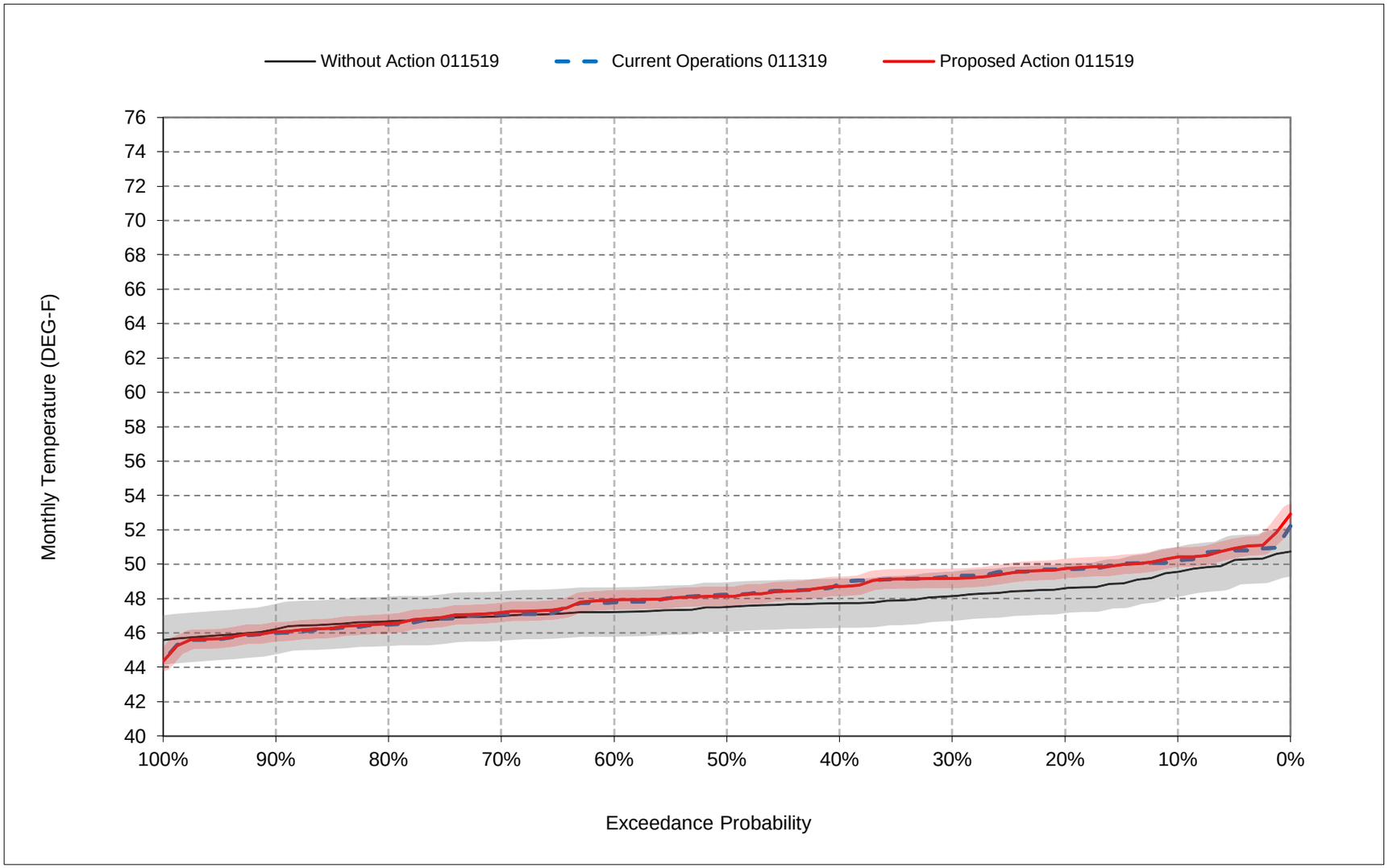
Figure 6-11. Sacramento River at Clear Creek, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

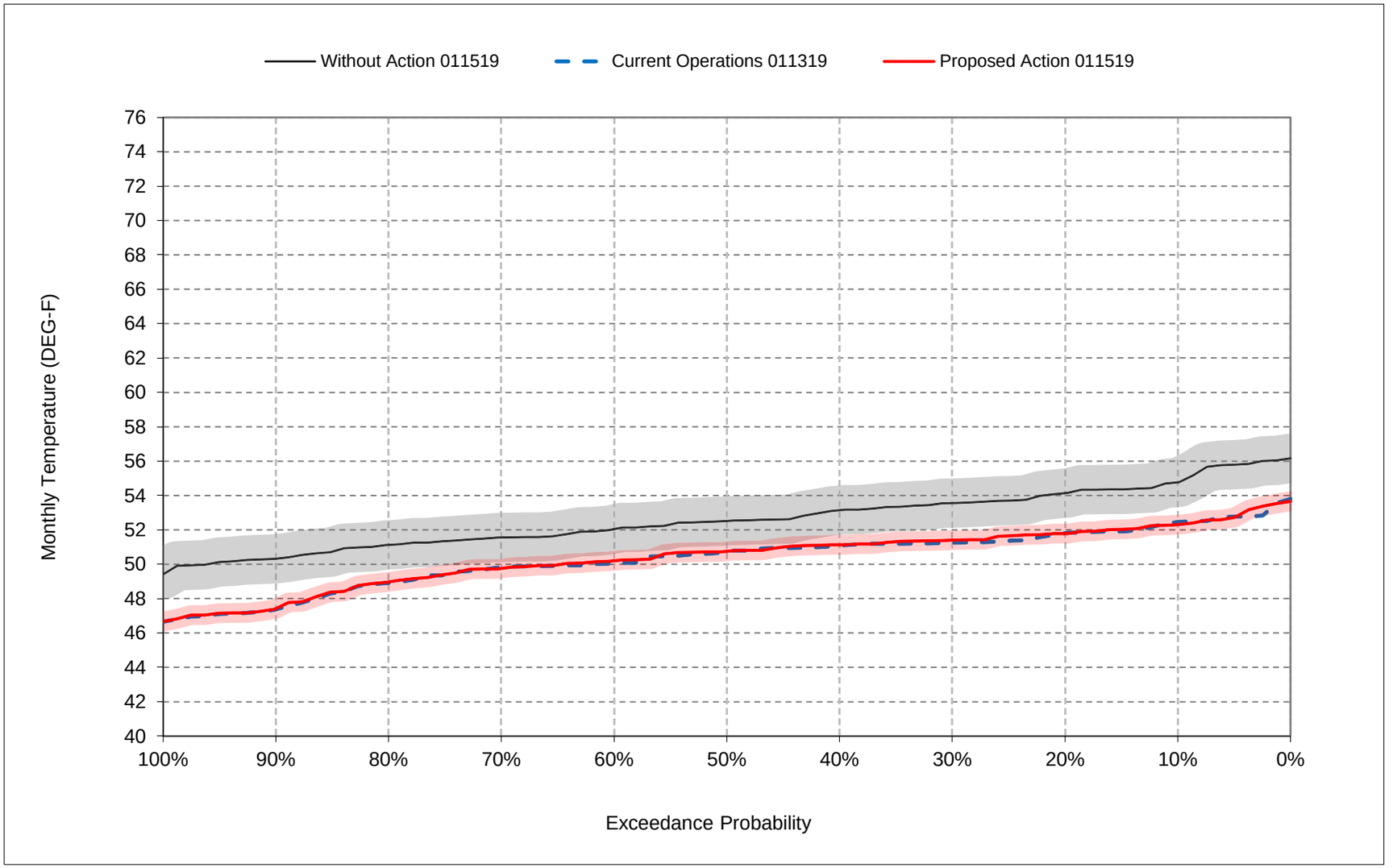
Figure 6-12. Sacramento River at Clear Creek, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

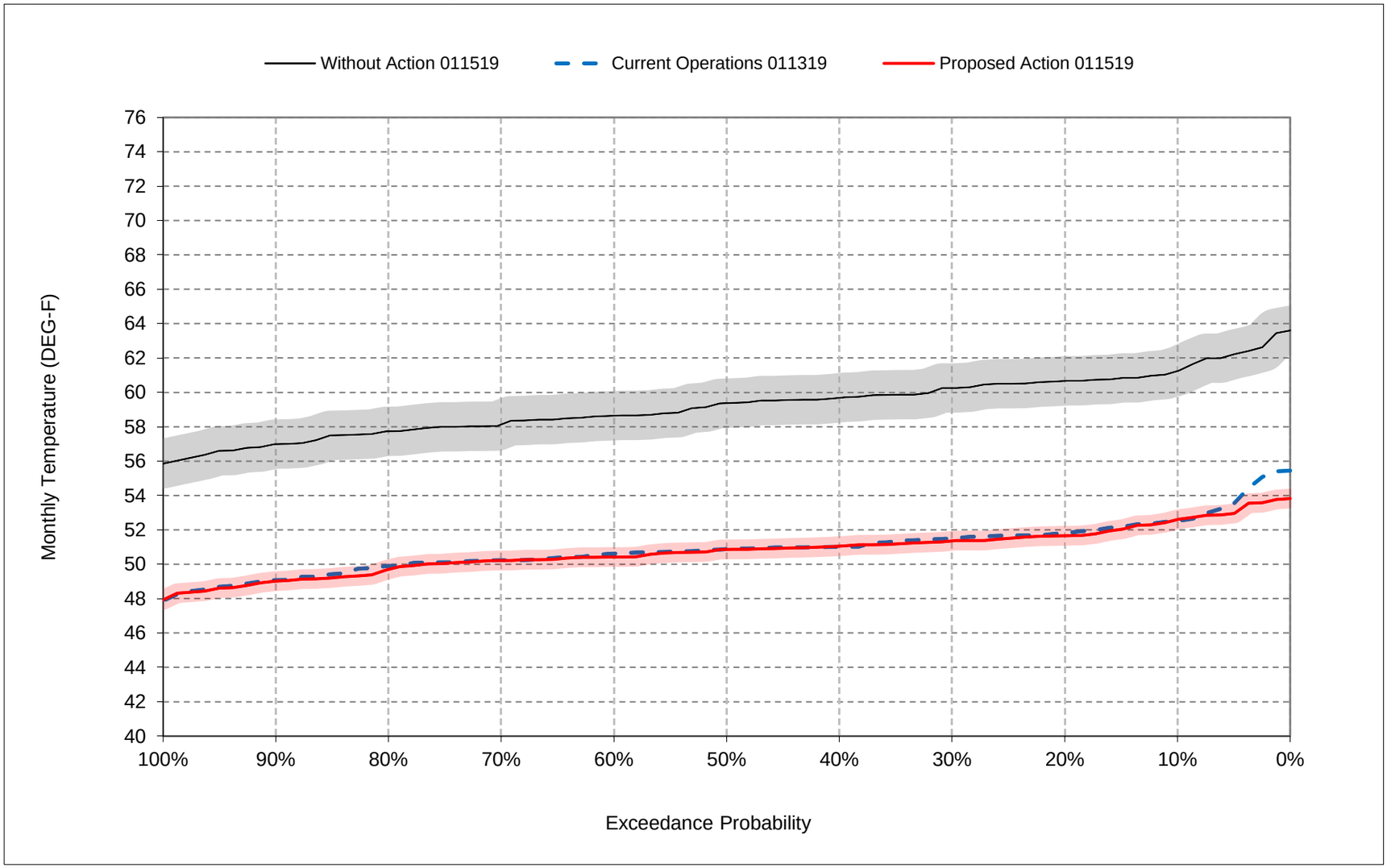
Figure 6-13. Sacramento River at Clear Creek, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

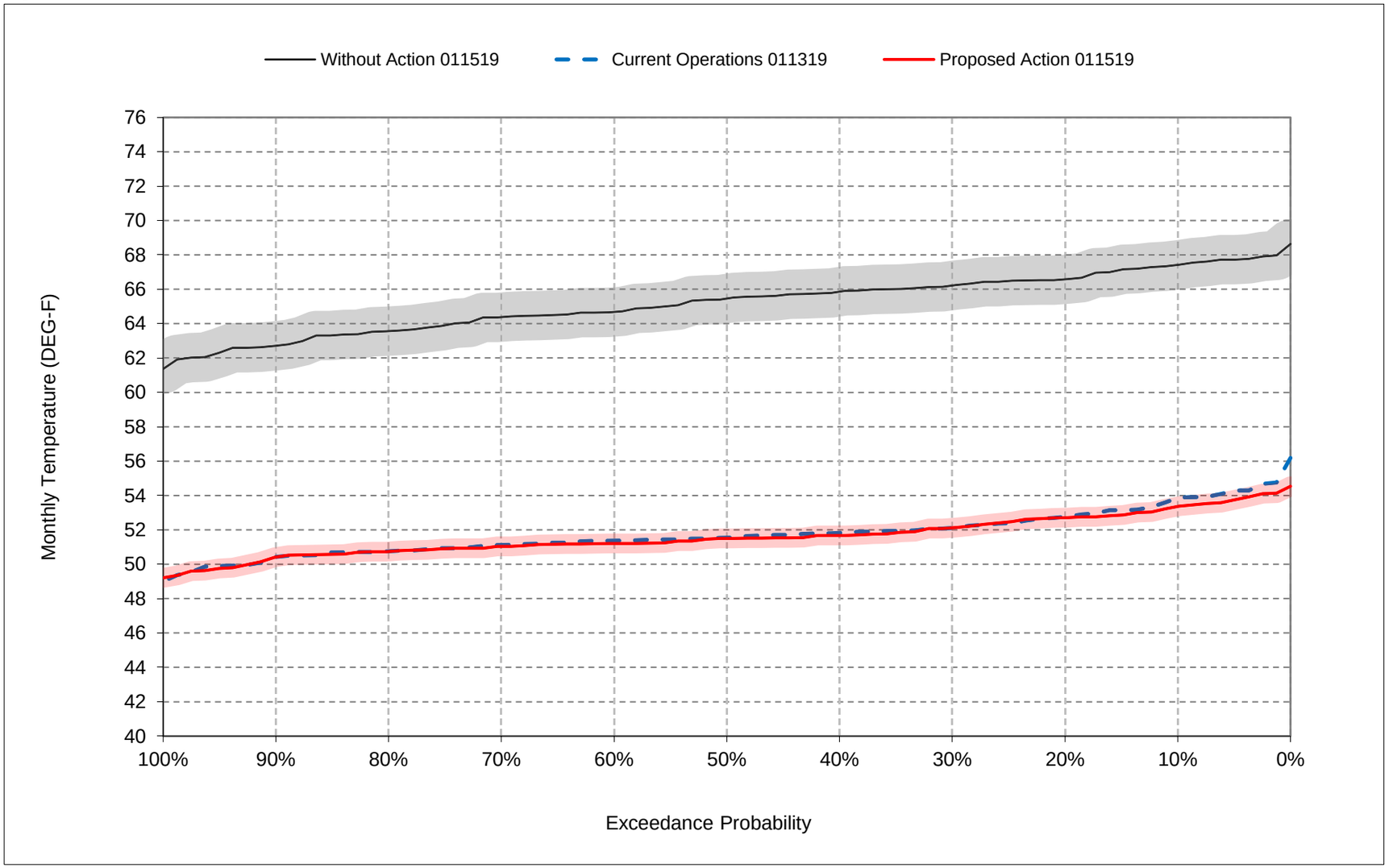
Figure 6-14. Sacramento River at Clear Creek, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

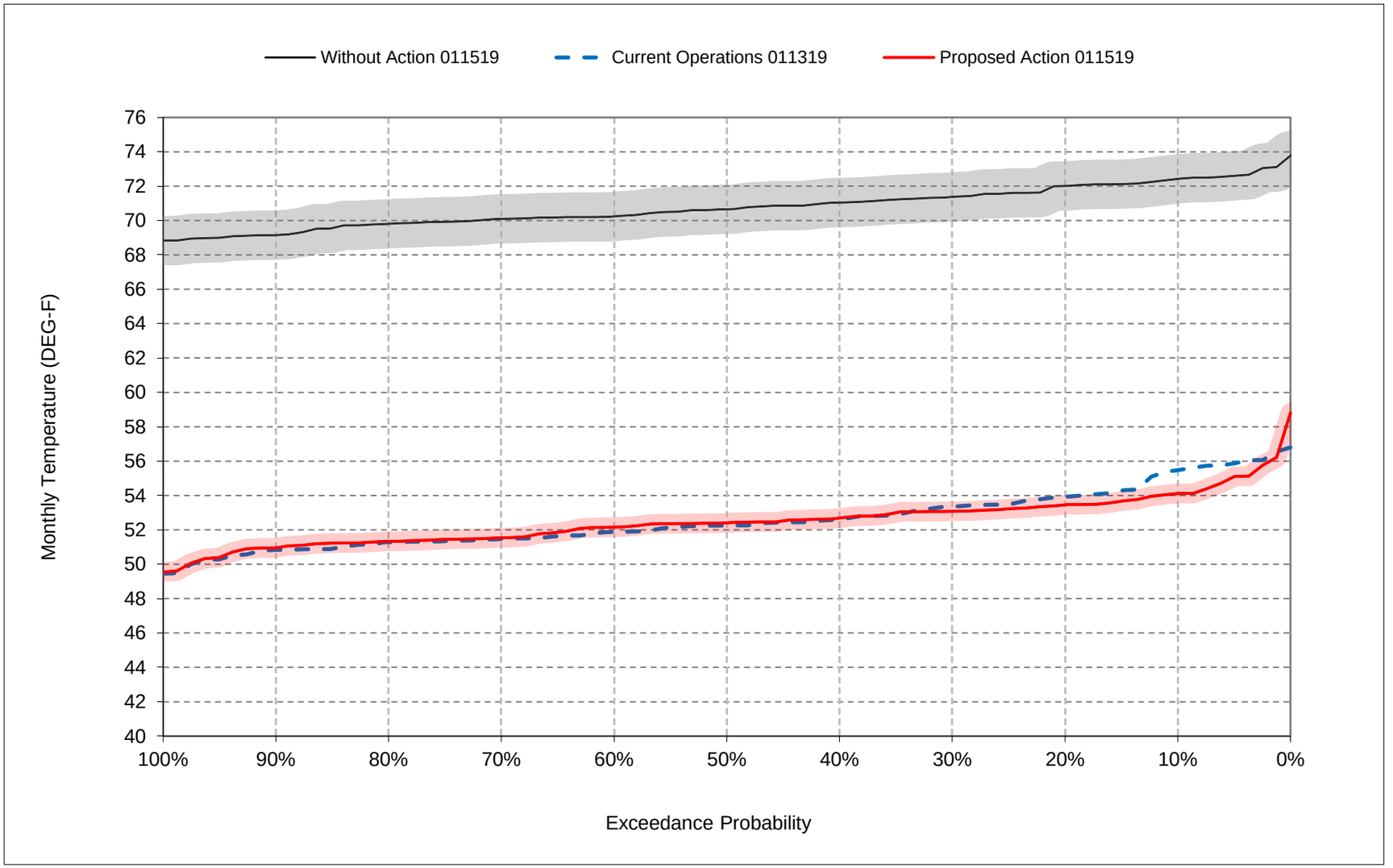
Figure 6-15. Sacramento River at Clear Creek, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

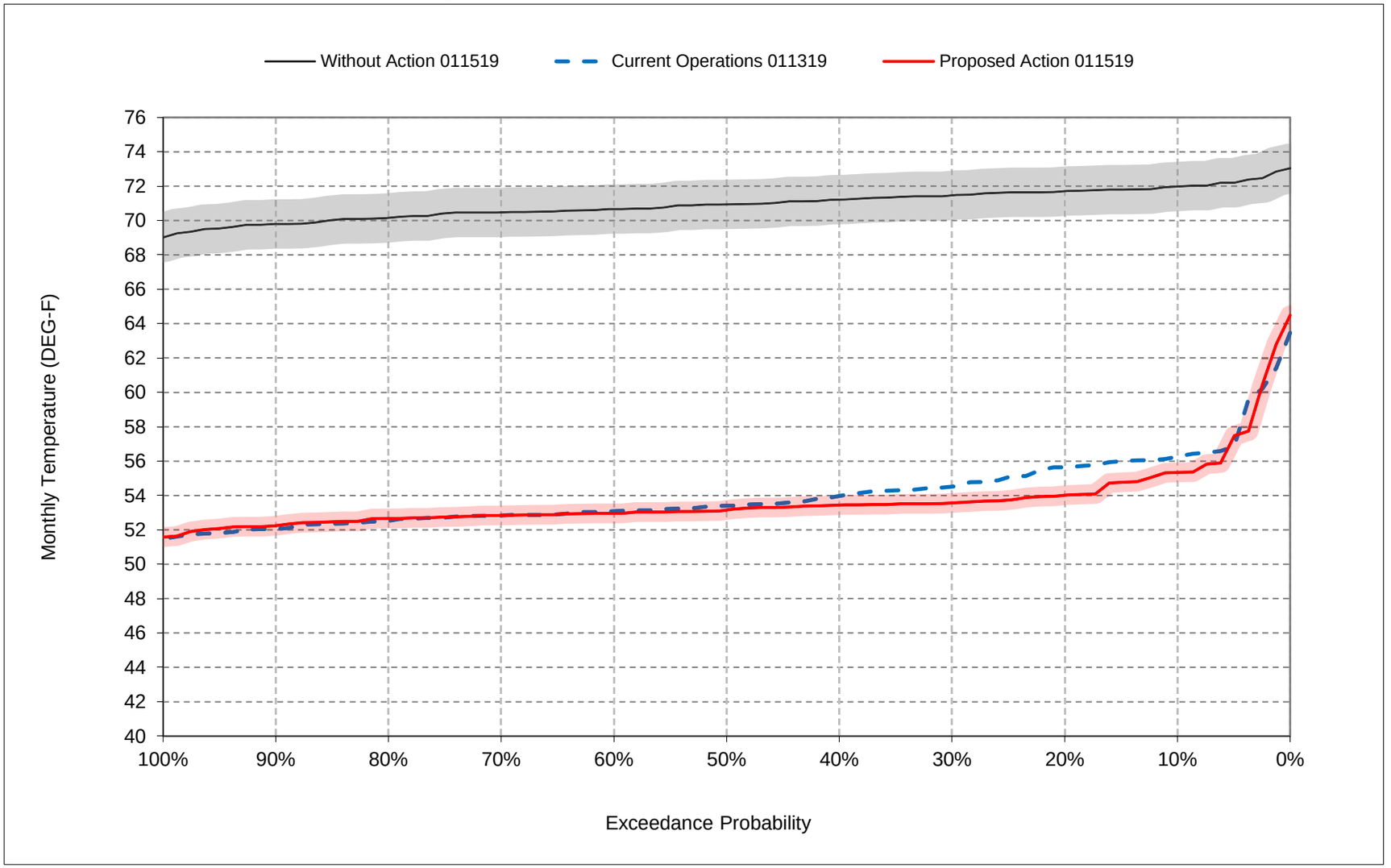
Figure 6-16. Sacramento River at Clear Creek, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

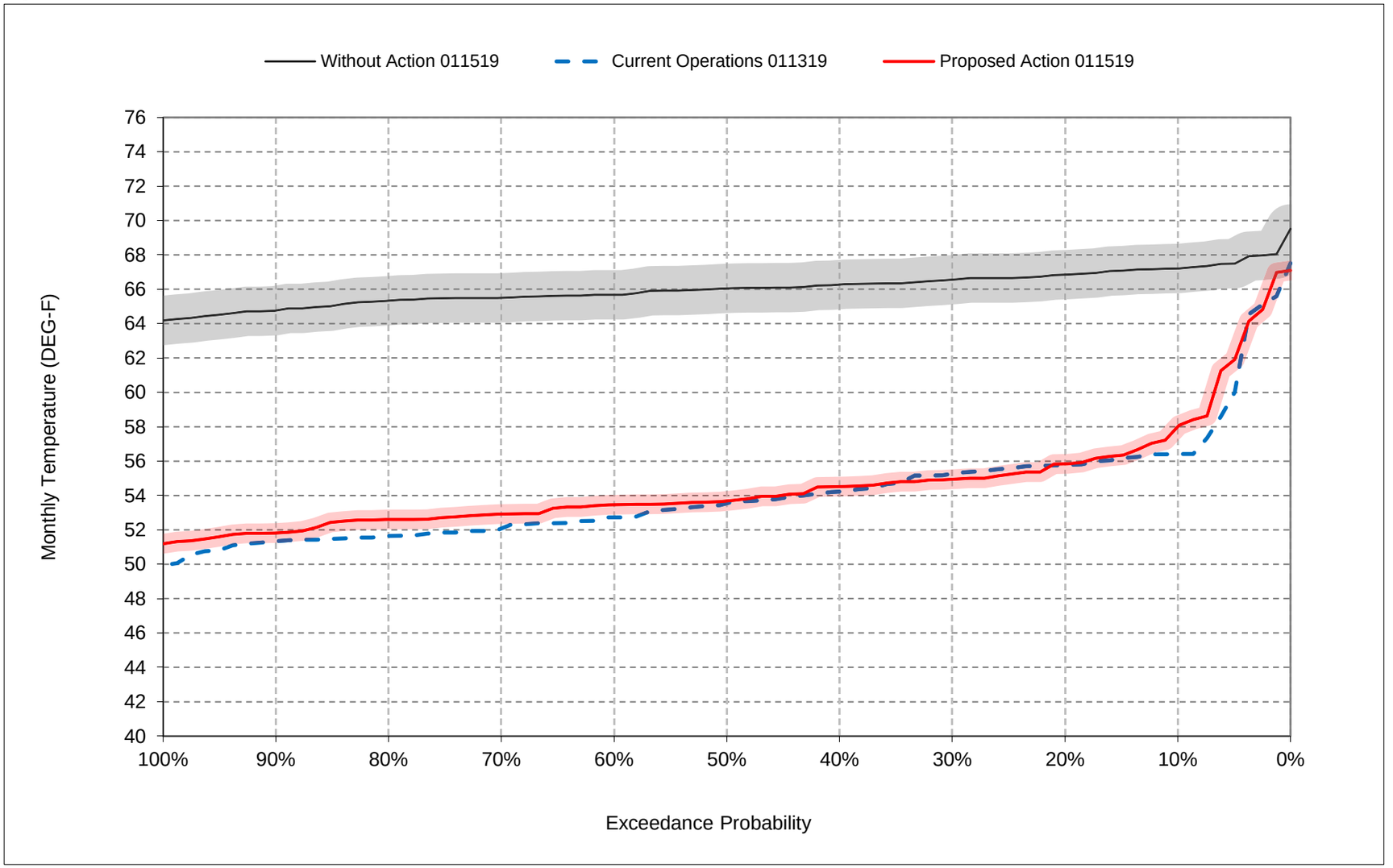
Figure 6-17. Sacramento River at Clear Creek, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 7-1. Sacramento River at Balls Ferry, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.1	51.0	43.7	42.3	44.7	50.0	55.5	62.4	68.8	73.9	73.2	68.2
20%	59.5	50.3	43.2	41.9	44.2	49.3	54.9	61.7	68.0	73.4	72.9	67.8
30%	59.1	49.5	43.0	41.6	43.9	48.7	54.3	61.3	67.6	72.8	72.6	67.5
40%	58.8	49.2	42.8	41.5	43.5	48.2	53.8	60.7	67.2	72.3	72.4	67.2
50%	58.5	48.8	42.7	41.4	43.5	48.0	53.2	60.4	66.9	71.9	72.1	67.0
60%	58.1	48.4	42.5	41.1	43.3	47.7	52.7	59.5	66.1	71.6	71.8	66.6
70%	57.5	48.1	42.2	41.0	43.2	47.4	52.1	59.1	65.6	71.4	71.6	66.5
80%	57.3	47.8	42.0	40.7	43.0	47.1	51.7	58.5	64.9	71.2	71.3	66.3
90%	57.0	47.6	41.7	40.2	42.9	46.7	50.9	57.8	64.0	70.5	70.8	65.7
Long Term												
Full Simulation Period[a]	58.4	49.0	42.7	41.3	43.6	48.2	53.3	60.2	66.5	72.1	72.1	67.0
Water Year Types[b,c]												
Wet (32%)	58.0	48.9	42.6	41.7	43.4	47.5	51.9	58.9	65.3	71.4	71.5	66.6
Above Normal (16%)	58.4	48.4	42.6	41.5	43.5	47.7	52.6	60.1	66.8	71.7	71.8	66.4
Below Normal (13%)	57.8	49.0	42.6	40.8	43.4	48.4	54.0	60.6	66.6	72.4	71.9	66.9
Dry (24%)	58.6	48.9	42.8	40.9	43.6	48.3	53.8	60.9	67.2	72.5	72.4	67.4
Critical (15%)	59.7	50.2	42.8	41.2	44.4	49.5	55.5	61.6	67.8	73.5	73.1	68.1

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.9	**4.9**	**8.8**	**6.9**	**4.2**	**1.1**	-1.2	-7.6	-13.4	-17.2	-15.5	-10.4
20%	-2.9	**5.4**	**8.1**	**6.7**	**4.2**	**1.1**	-1.5	-8.0	-13.4	-18.2	-16.0	-10.6
30%	-2.9	**5.7**	**7.8**	**6.3**	**4.2**	**1.4**	-1.1	-7.9	-13.5	-18.4	-16.8	-11.0
40%	-3.1	**5.8**	**7.6**	**6.0**	**4.2**	**1.3**	-0.9	-7.7	-13.5	-18.2	-17.1	-11.7
50%	-3.2	**5.8**	**7.5**	**5.8**	**3.9**	**1.3**	-0.9	-7.8	-13.6	-18.4	-17.4	-12.3
60%	-3.0	**5.8**	**7.2**	**5.7**	**3.5**	**0.9**	-0.8	-7.1	-13.0	-18.5	-17.4	-13.0
70%	-2.6	**5.7**	**7.1**	**5.6**	**3.1**	**0.6**	-0.5	-7.1	-12.8	-18.6	-17.4	-13.5
80%	-2.7	**5.6**	**6.9**	**5.7**	**2.9**	**0.1**	-1.1	-6.8	-12.3	-18.8	-17.5	-13.9
90%	-2.6	**5.2**	**6.7**	**5.6**	**2.5**	-0.1	-2.1	-6.8	-12.0	-18.6	-17.7	-13.5
Long Term												
Full Simulation Period[a]	-2.5	**5.5**	**7.6**	**6.1**	**3.6**	**0.8**	-1.3	-7.4	-13.0	-18.3	-16.7	-11.8
Water Year Types[b,c]												
Wet (32%)	-2.9	**6.0**	**8.1**	**5.2**	**3.0**	**0.2**	-1.1	-6.4	-11.6	-18.0	-17.3	-14.0
Above Normal (16%)	-3.5	**6.0**	**7.6**	**5.5**	**3.1**	**0.4**	-1.0	-7.9	-14.1	-19.3	-18.0	-13.5
Below Normal (13%)	-2.6	**4.8**	**7.6**	**6.6**	**4.2**	**1.4**	-1.1	-8.0	-13.8	-19.1	-17.3	-11.1
Dry (24%)	-2.9	**4.9**	**7.0**	**6.9**	**4.3**	**1.5**	-1.0	-7.9	-14.0	-18.4	-16.5	-11.0
Critical (15%)	**0.1**	**5.6**	**7.3**	**6.7**	**3.7**	**0.9**	-2.5	-7.6	-12.4	-16.8	-14.0	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 7-2. Sacramento River at Balls Ferry, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.1	51.0	43.7	42.3	44.7	50.0	55.5	62.4	68.8	73.9	73.2	68.2
20%	59.5	50.3	43.2	41.9	44.2	49.3	54.9	61.7	68.0	73.4	72.9	67.8
30%	59.1	49.5	43.0	41.6	43.9	48.7	54.3	61.3	67.6	72.8	72.6	67.5
40%	58.8	49.2	42.8	41.5	43.5	48.2	53.8	60.7	67.2	72.3	72.4	67.2
50%	58.5	48.8	42.7	41.4	43.5	48.0	53.2	60.4	66.9	71.9	72.1	67.0
60%	58.1	48.4	42.5	41.1	43.3	47.7	52.7	59.5	66.1	71.6	71.8	66.6
70%	57.5	48.1	42.2	41.0	43.2	47.4	52.1	59.1	65.6	71.4	71.6	66.5
80%	57.3	47.8	42.0	40.7	43.0	47.1	51.7	58.5	64.9	71.2	71.3	66.3
90%	57.0	47.6	41.7	40.2	42.9	46.7	50.9	57.8	64.0	70.5	70.8	65.7
Long Term												
Full Simulation Period[a]	58.4	49.0	42.7	41.3	43.6	48.2	53.3	60.2	66.5	72.1	72.1	67.0
Water Year Types[b,c]												
Wet (32%)	58.0	48.9	42.6	41.7	43.4	47.5	51.9	58.9	65.3	71.4	71.5	66.6
Above Normal (16%)	58.4	48.4	42.6	41.5	43.5	47.7	52.6	60.1	66.8	71.7	71.8	66.4
Below Normal (13%)	57.8	49.0	42.6	40.8	43.4	48.4	54.0	60.6	66.6	72.4	71.9	66.9
Dry (24%)	58.6	48.9	42.8	40.9	43.6	48.3	53.8	60.9	67.2	72.5	72.4	67.4
Critical (15%)	59.7	50.2	42.8	41.2	44.4	49.5	55.5	61.6	67.8	73.5	73.1	68.1

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.5	**5.4**	**8.9**	**7.2**	**4.5**	**1.2**	-1.4	-7.7	-14.0	-18.5	-16.4	-9.1
20%	-3.6	**5.2**	**8.3**	**6.8**	**4.3**	**1.2**	-1.4	-8.1	-13.5	-18.6	-17.6	-10.8
30%	-4.4	**5.3**	**7.8**	**6.5**	**4.4**	**1.4**	-1.0	-8.1	-13.6	-18.5	-17.7	-11.2
40%	-4.4	**5.2**	**7.6**	**6.3**	**4.2**	**1.3**	-0.9	-7.9	-13.4	-18.2	-17.7	-11.3
50%	-4.4	**5.4**	**7.6**	**6.1**	**3.9**	**1.2**	-0.7	-7.9	-13.7	-18.2	-17.7	-11.9
60%	-4.1	**5.4**	**7.5**	**5.9**	**3.6**	**1.0**	-0.7	-7.3	-13.3	-18.4	-17.6	-11.8
70%	-3.8	**5.4**	**7.5**	**5.8**	**3.2**	**0.5**	-0.5	-7.2	-13.1	-18.5	-17.5	-12.2
80%	-3.9	**5.3**	**7.2**	**5.8**	**2.9**	**0.2**	-1.0	-7.2	-12.6	-18.6	-17.4	-12.5
90%	-3.8	**5.2**	**6.9**	**5.5**	**2.5**	0.0	-2.0	-6.9	-12.2	-18.4	-17.3	-12.7
Long Term												
Full Simulation Period[a]	-3.4	**5.3**	**7.8**	**6.2**	**3.7**	**0.8**	-1.2	-7.6	-13.2	-18.4	-17.1	-11.1
Water Year Types[b,c]												
Wet (32%)	-4.2	**5.3**	**8.1**	**5.4**	**3.1**	**0.2**	-1.1	-6.6	-11.6	-18.0	-17.4	-12.6
Above Normal (16%)	-4.8	**5.1**	**7.5**	**5.6**	**3.1**	**0.5**	-0.9	-8.0	-14.1	-19.2	-17.8	-11.3
Below Normal (13%)	-2.9	**5.3**	**8.1**	**6.8**	**4.2**	**1.3**	-1.2	-8.5	-14.0	-19.2	-17.7	-11.5
Dry (24%)	-4.0	**5.1**	**7.5**	**7.0**	**4.4**	**1.4**	-1.0	-8.2	-14.3	-18.5	-17.5	-11.5
Critical (15%)	**0.2**	**5.8**	**7.5**	**7.1**	**4.1**	**1.0**	-2.3	-7.9	-13.1	-17.2	-14.5	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 7-3. Sacramento River at Balls Ferry, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.3**	**0.6**	**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.

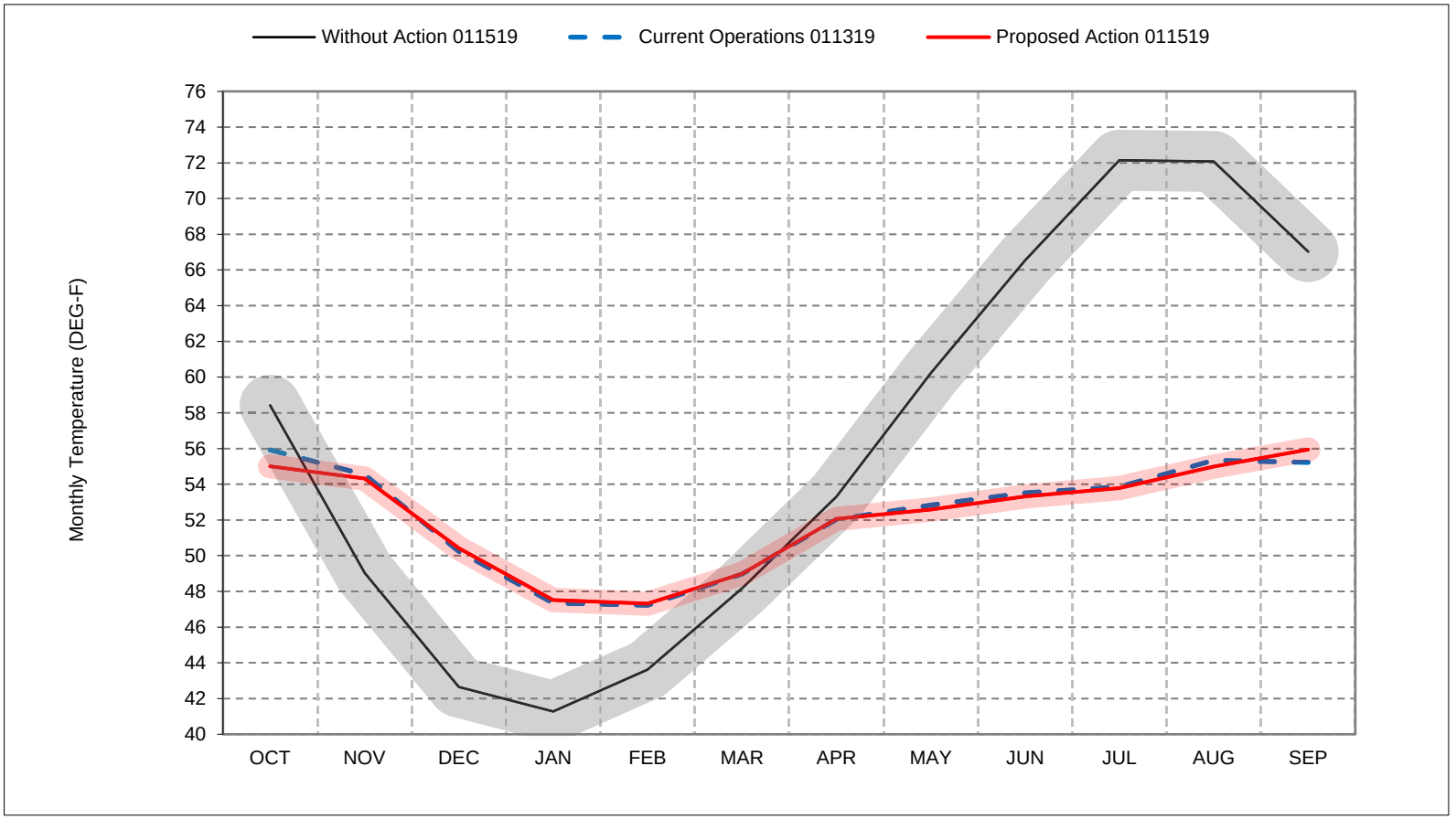
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

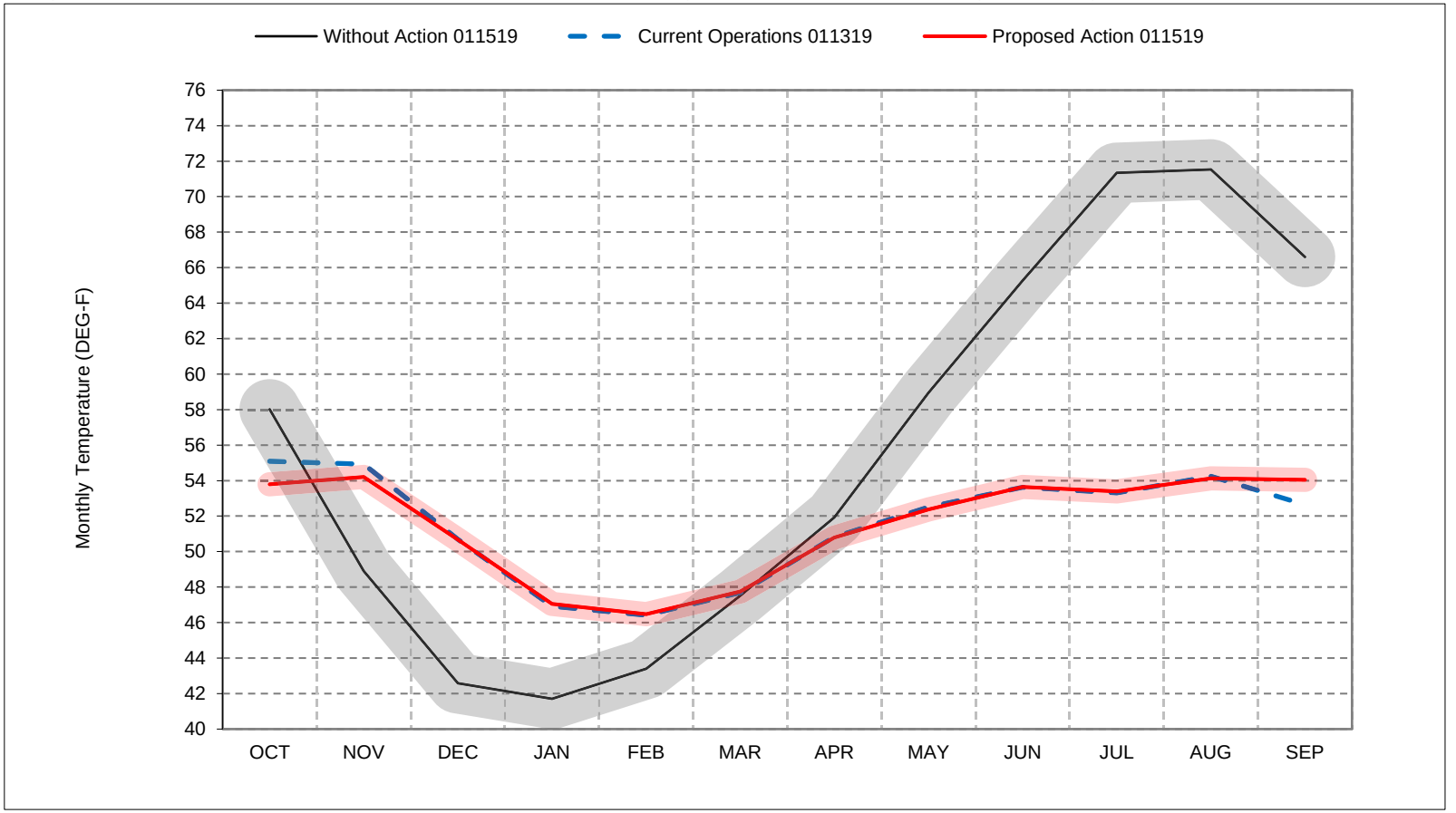
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-1. Sacramento River at Balls Ferry, Long-Term Average Temperature



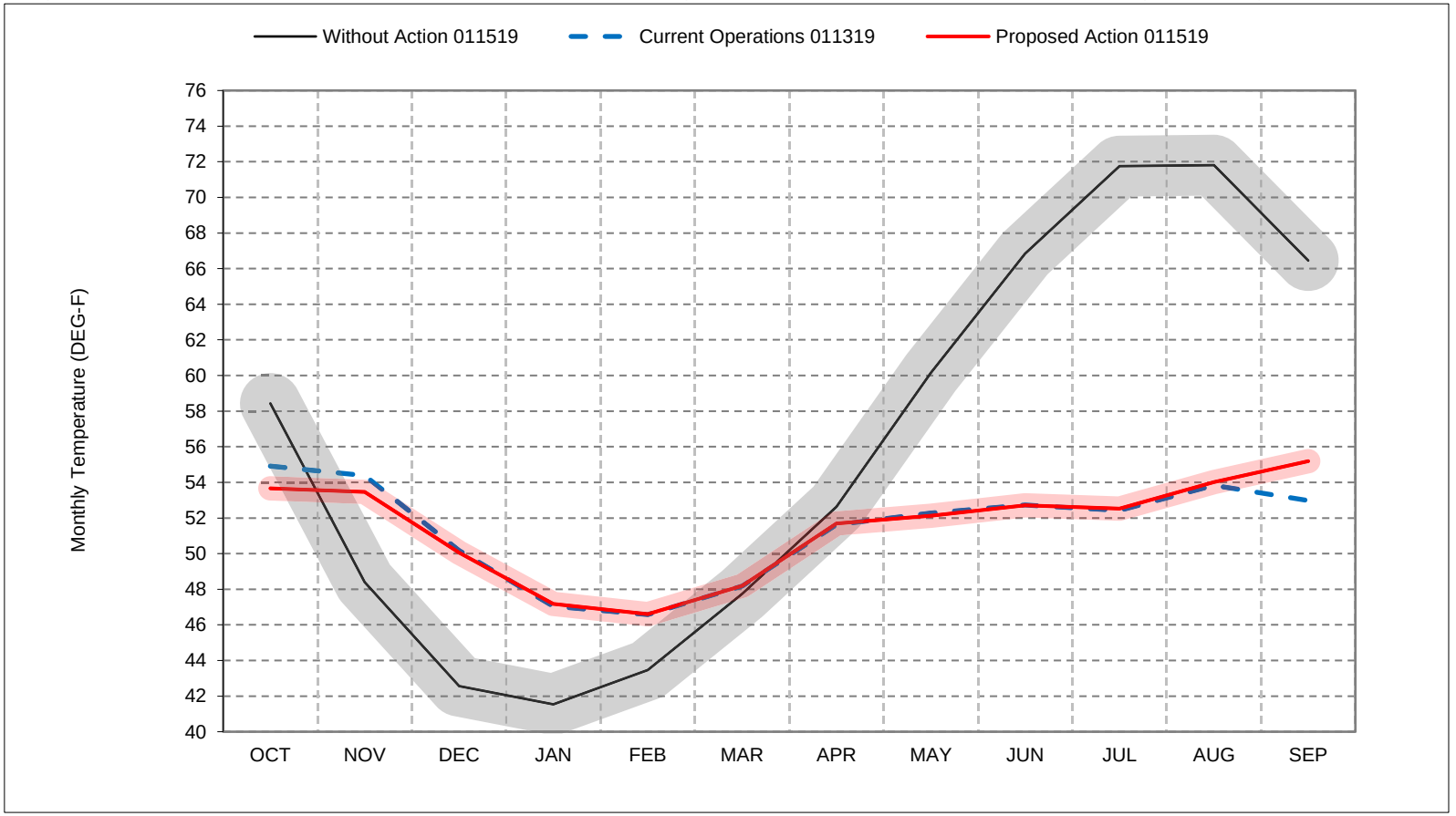
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-2. Sacramento River at Balls Ferry, Wet Year Average Temperature



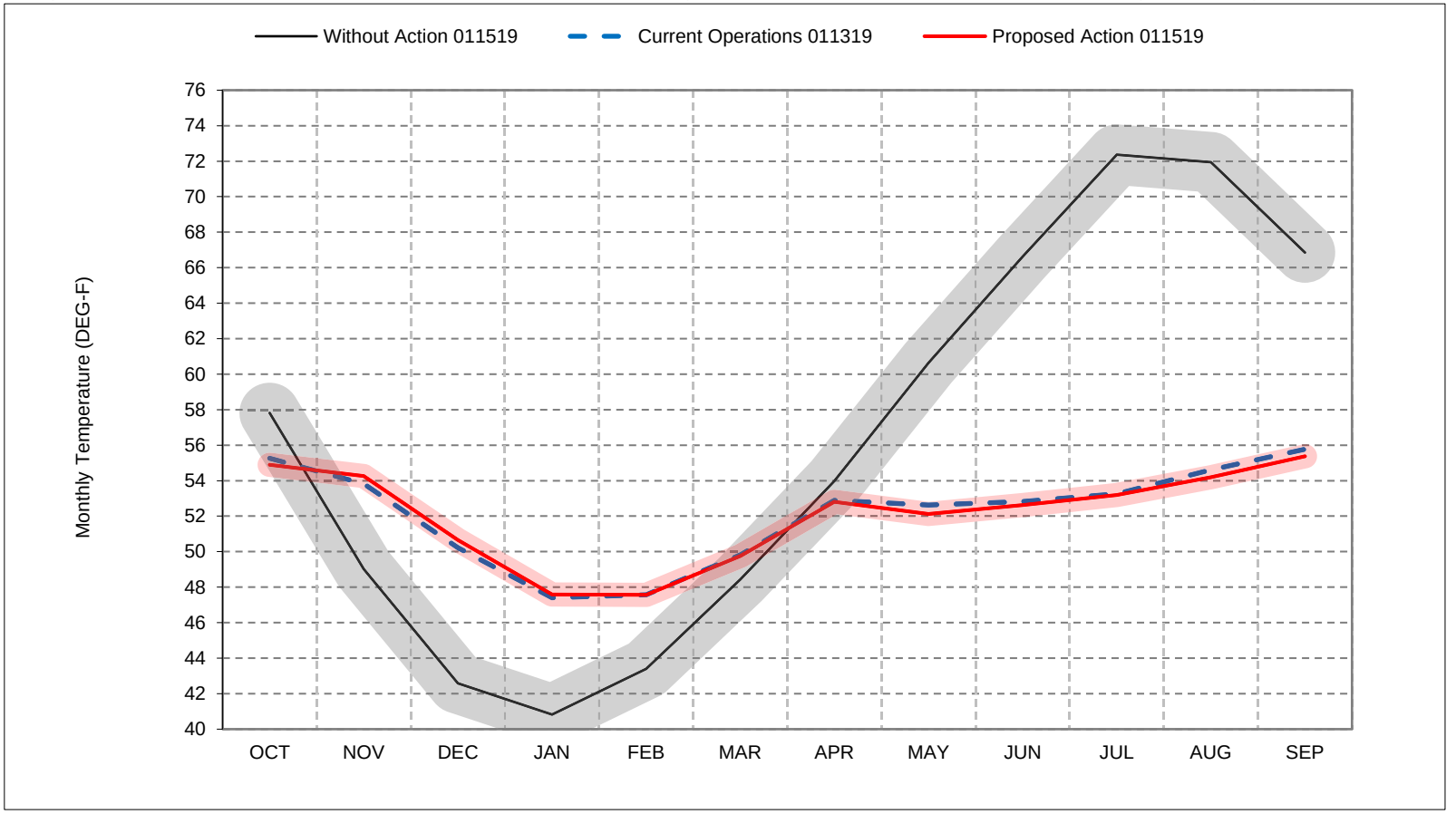
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-3. Sacramento River at Balls Ferry, Above Normal Year Average Temperature



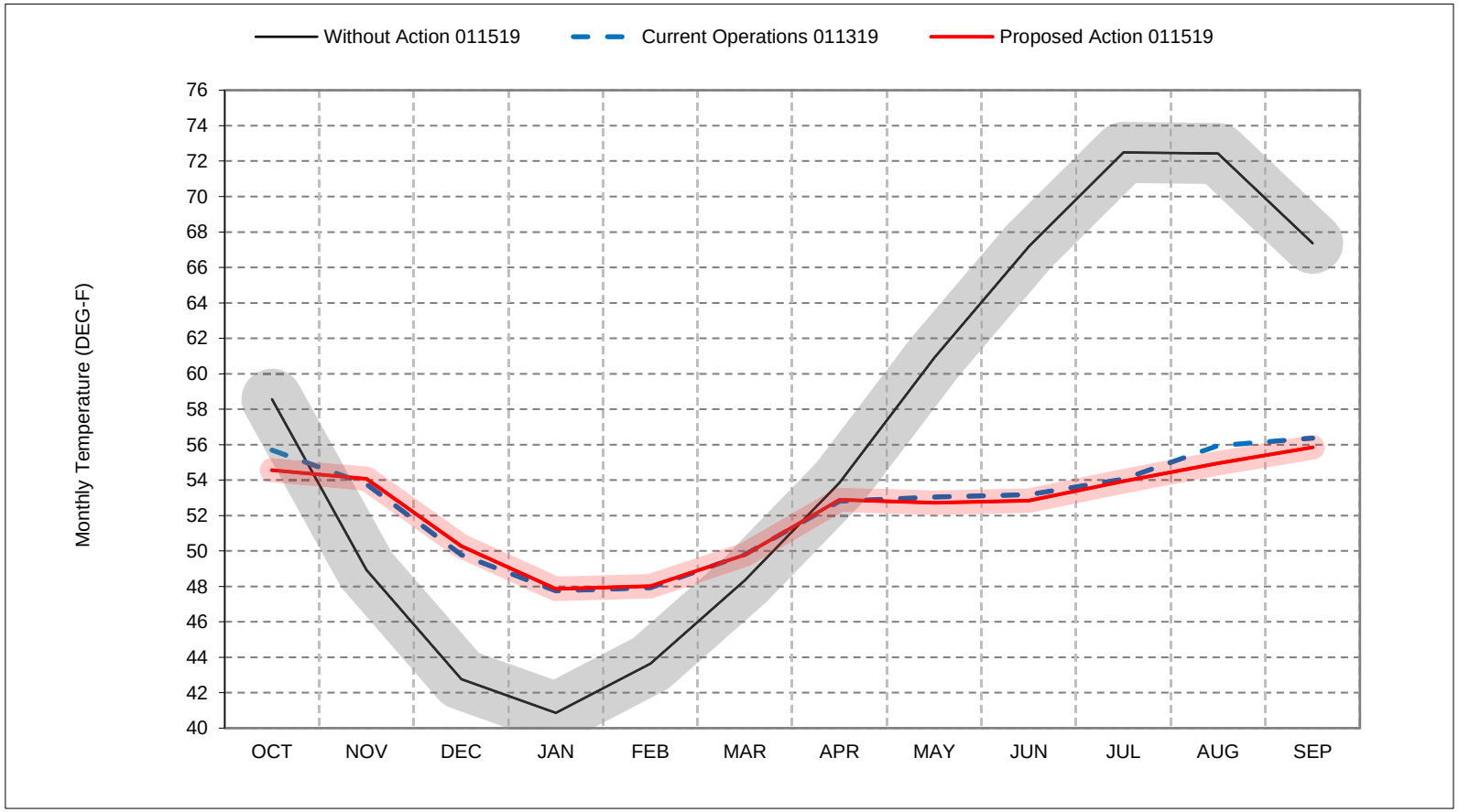
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-4. Sacramento River at Balls Ferry, Below Normal Year Average Temperature



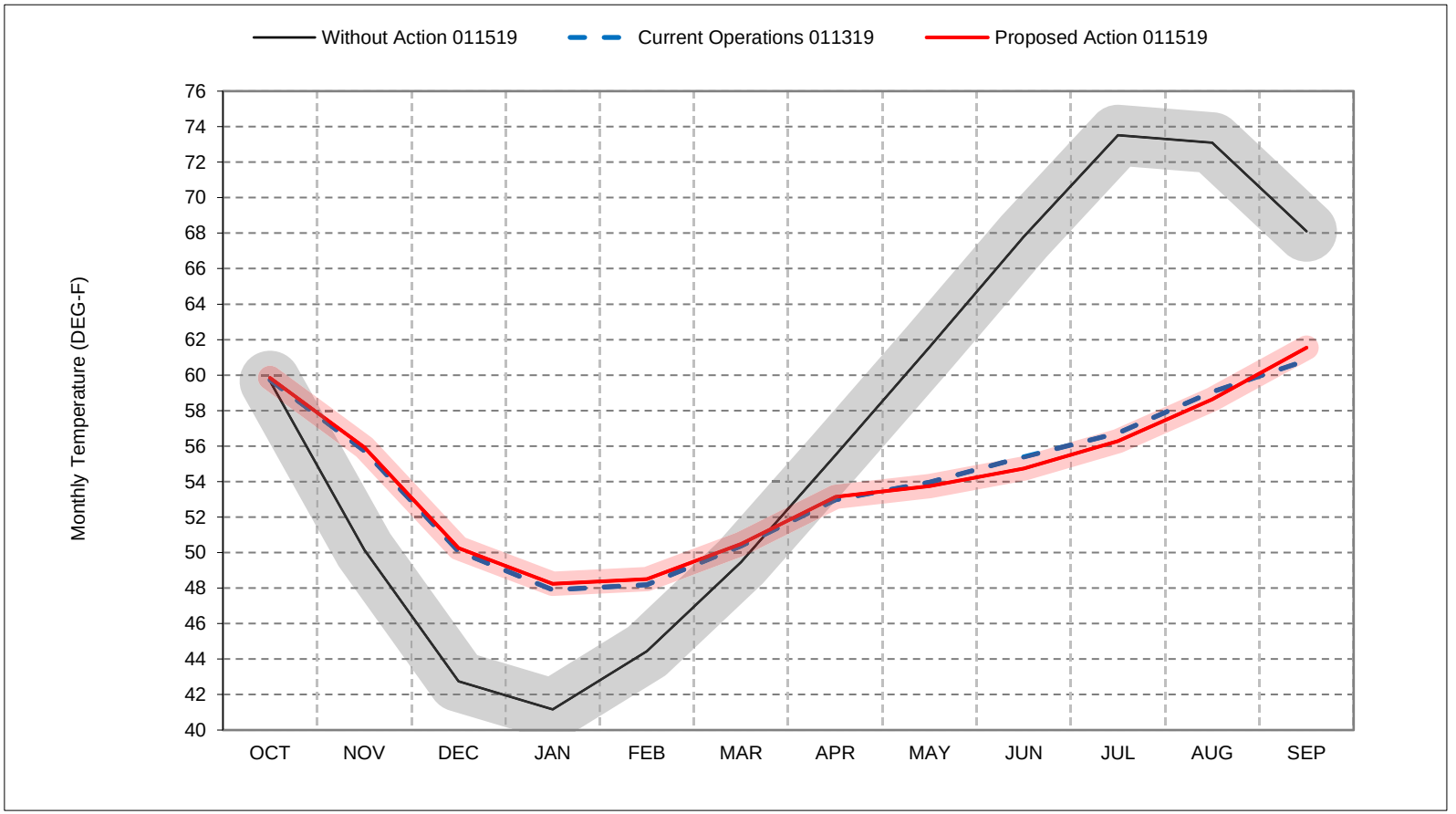
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-5. Sacramento River at Balls Ferry, Dry Year Average Temperature



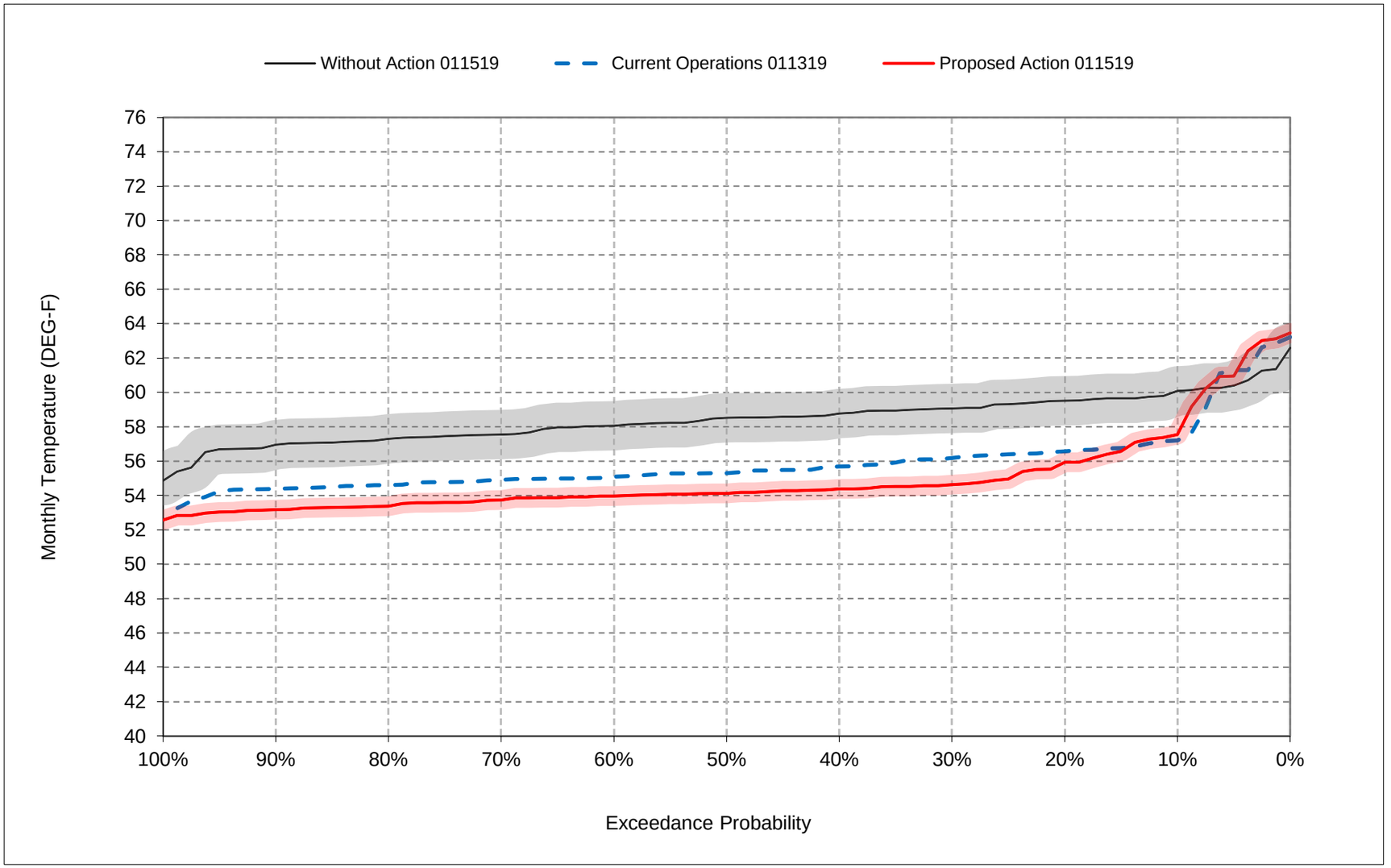
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

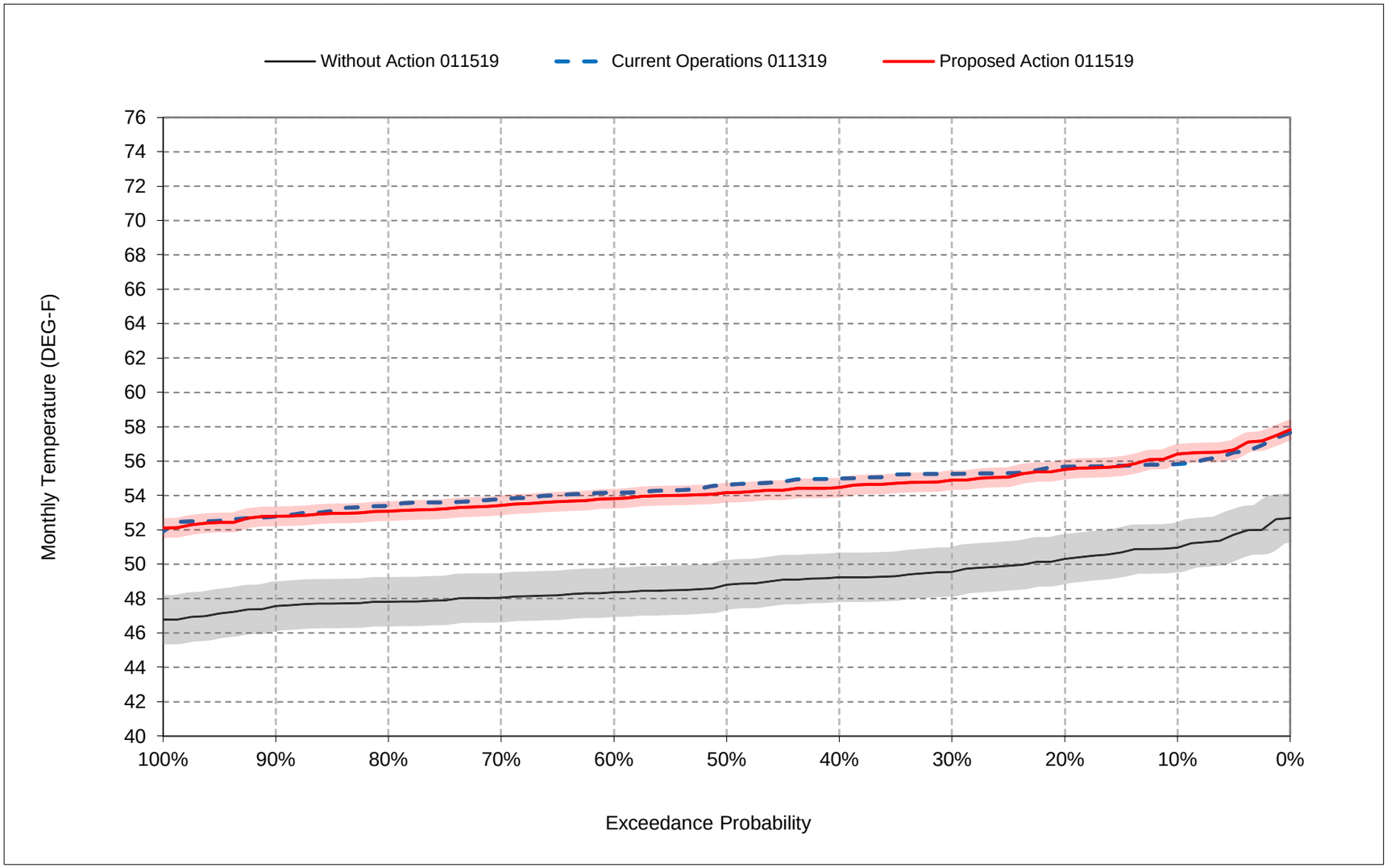
Figure 7-7. Sacramento River at Balls Ferry, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

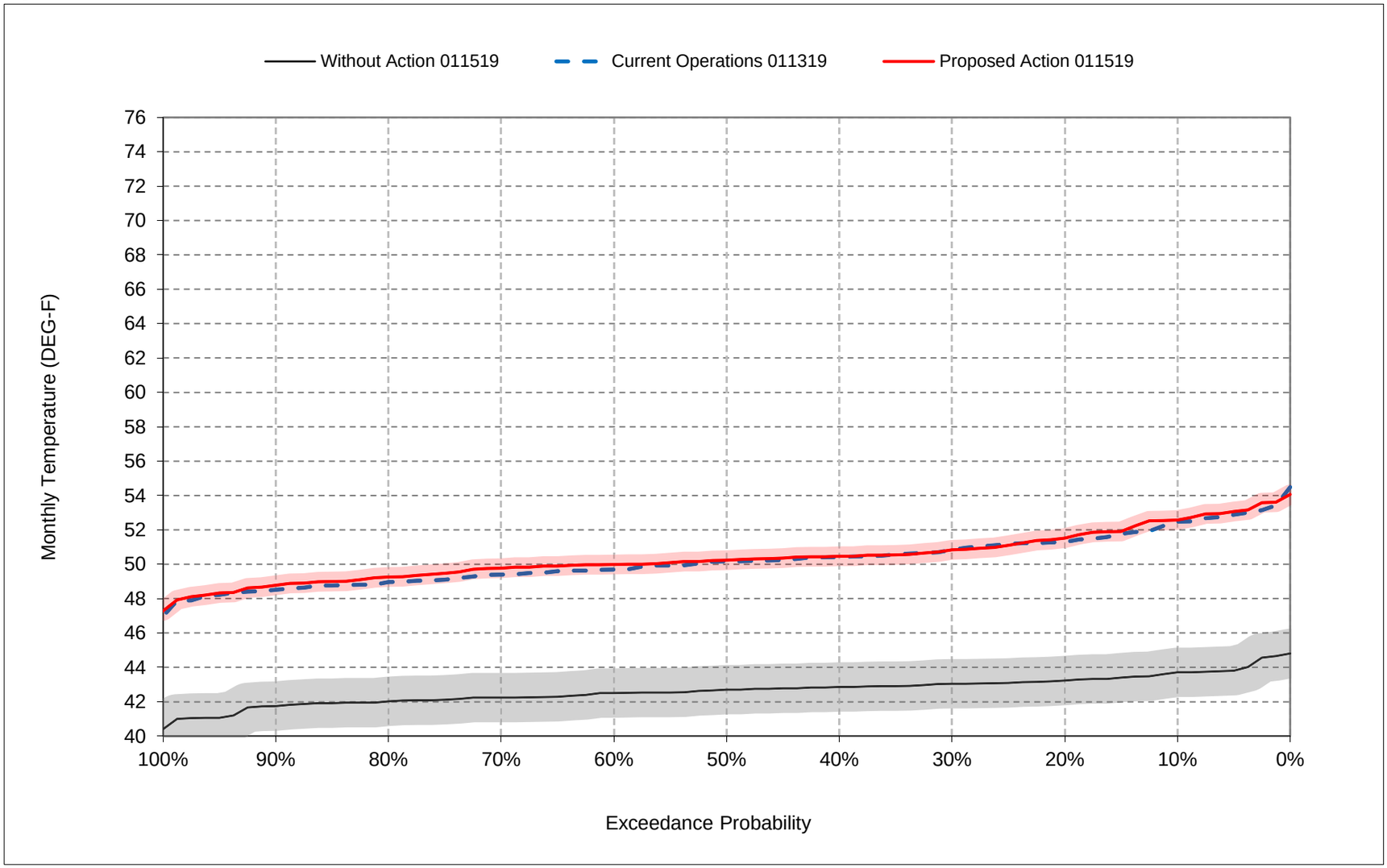
Figure 7-8. Sacramento River at Balls Ferry, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

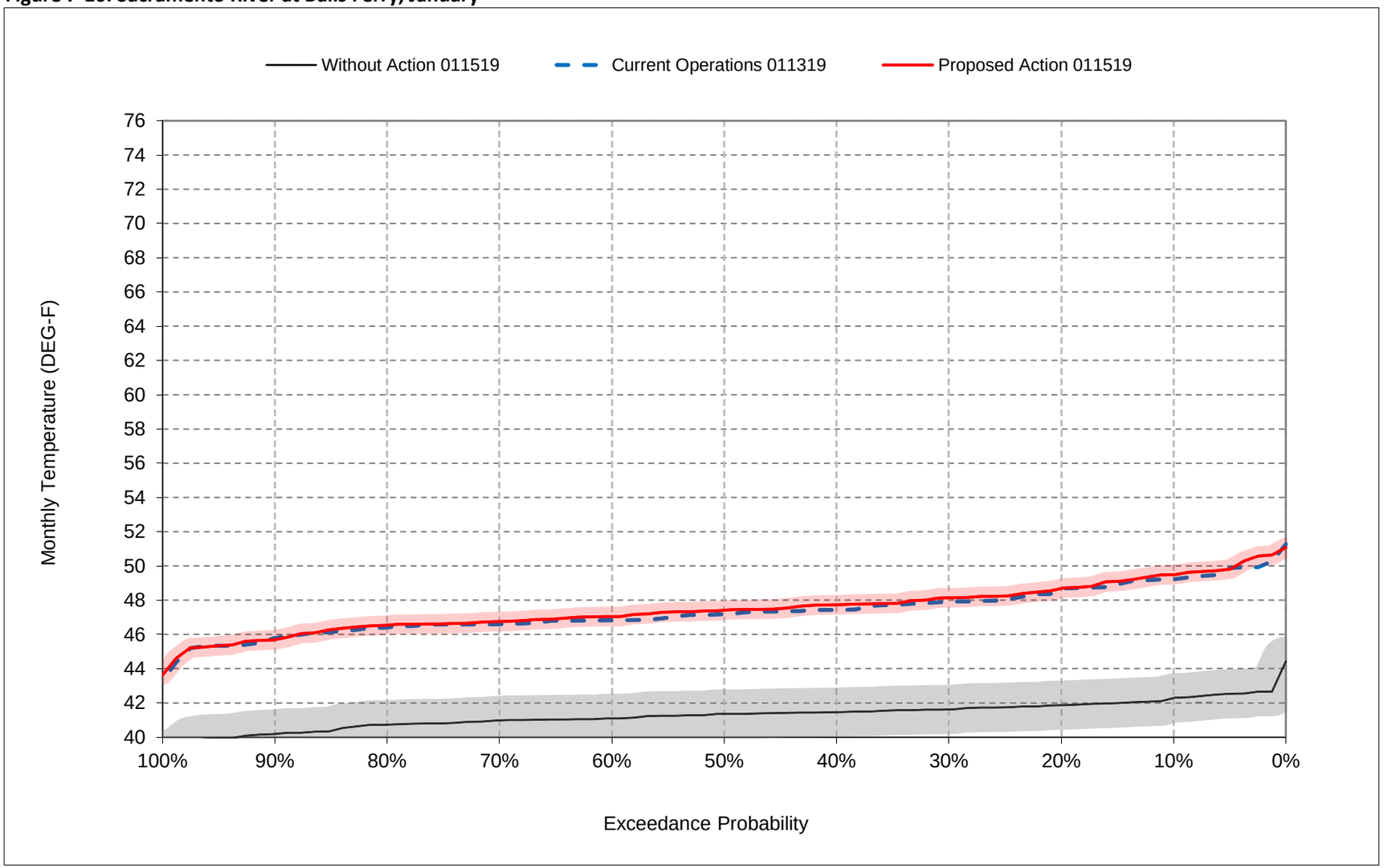
Figure 7-9. Sacramento River at Balls Ferry, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

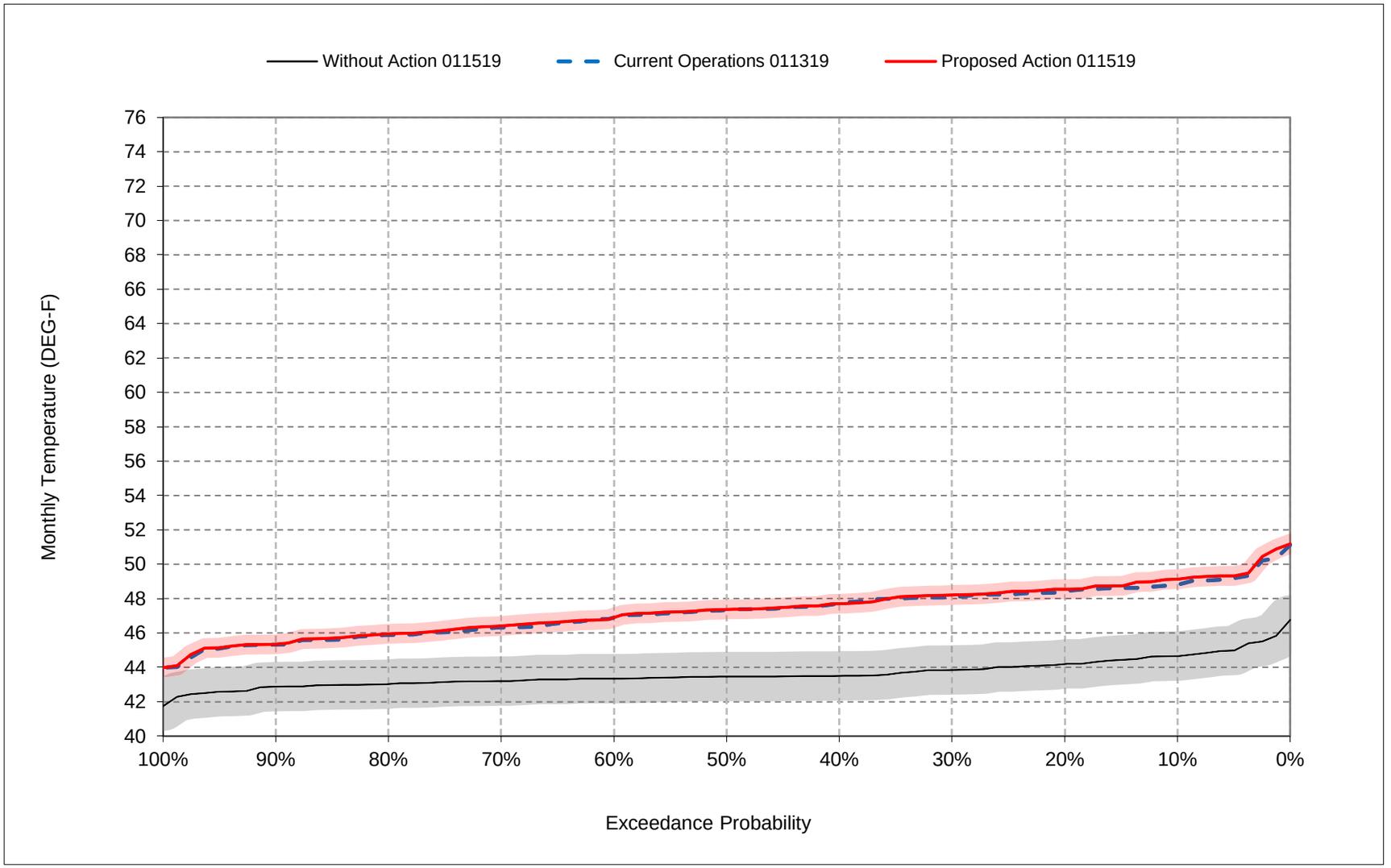
Figure 7-10. Sacramento River at Balls Ferry, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

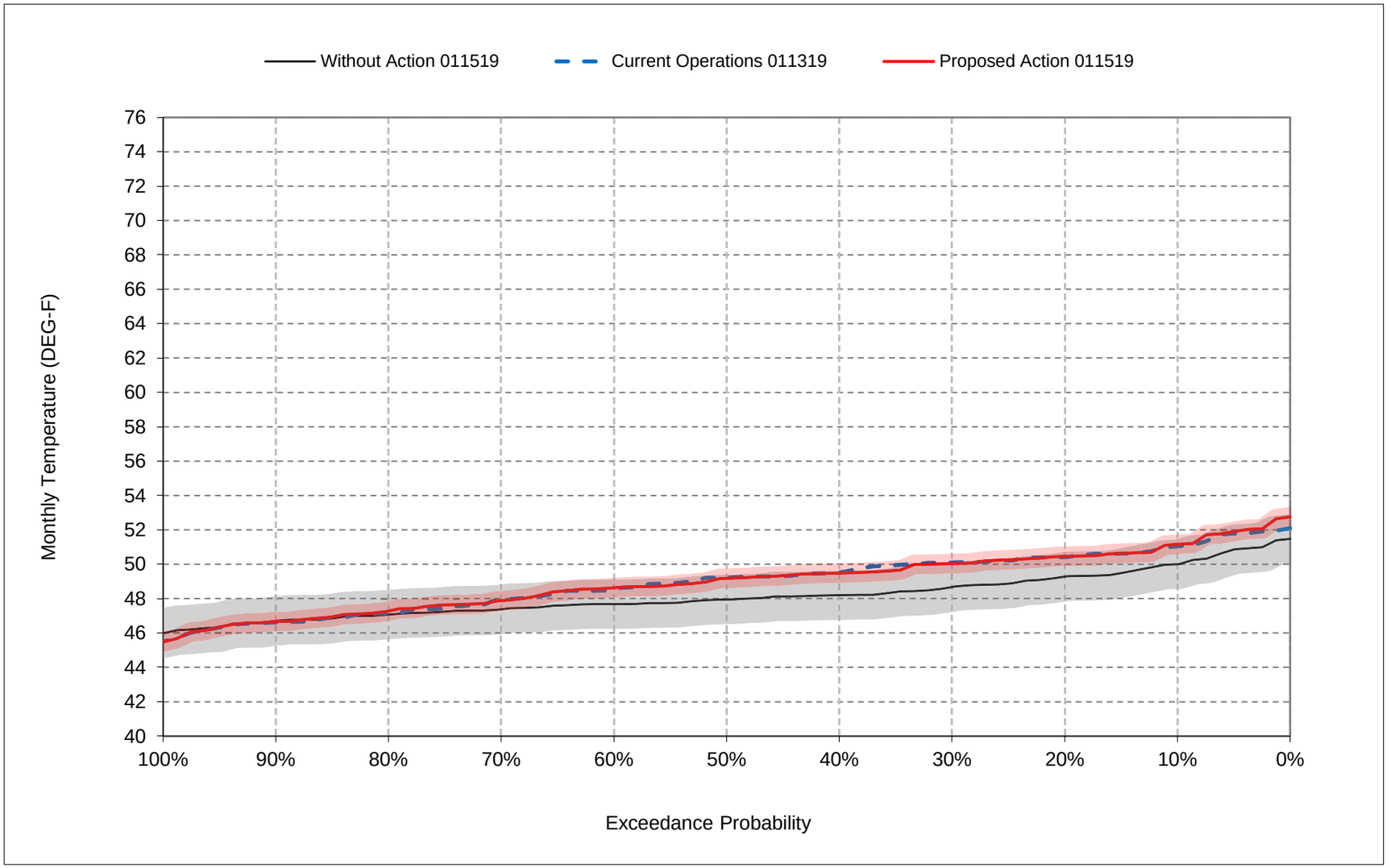
Figure 7-11. Sacramento River at Balls Ferry, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

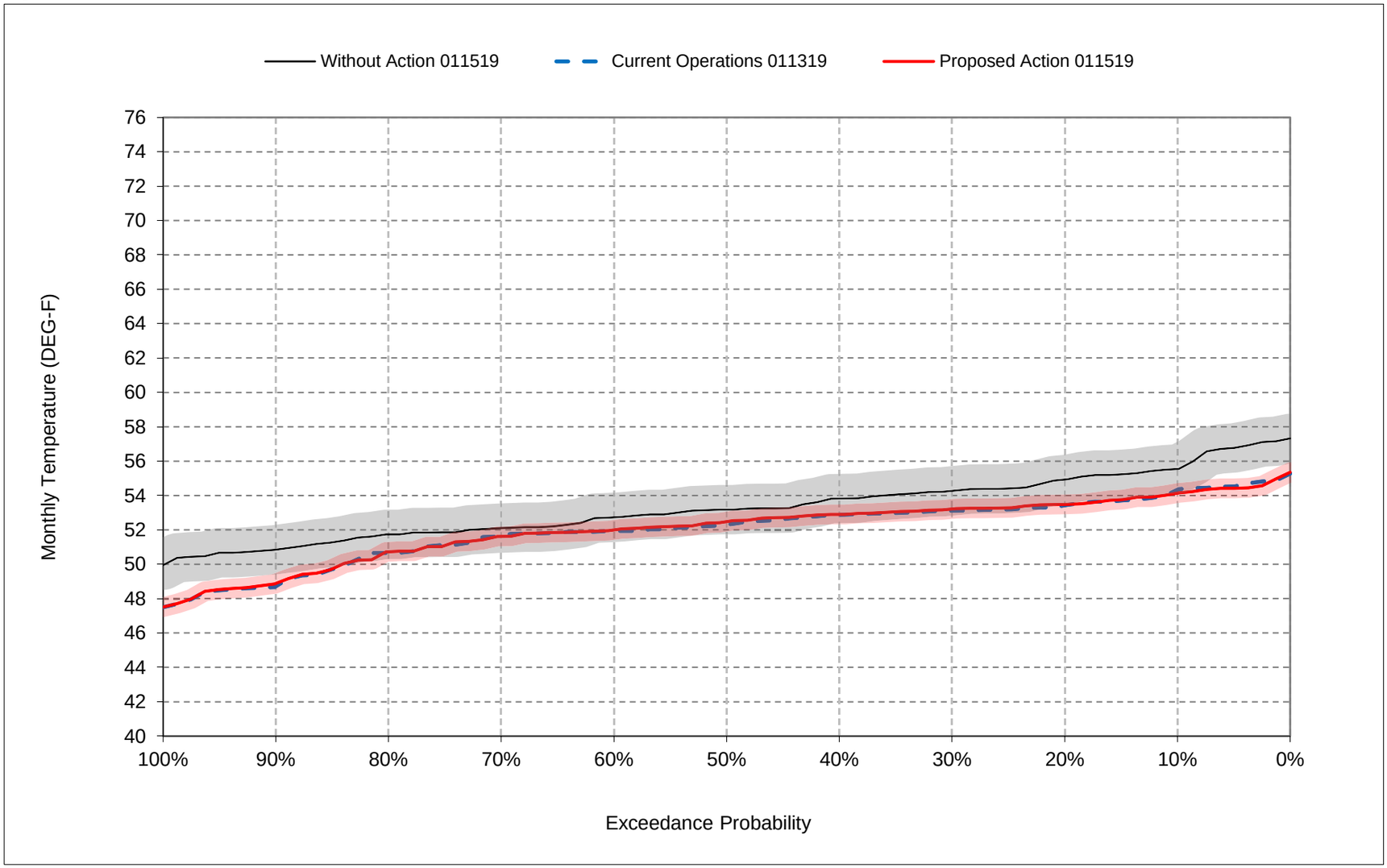
Figure 7-12. Sacramento River at Balls Ferry, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

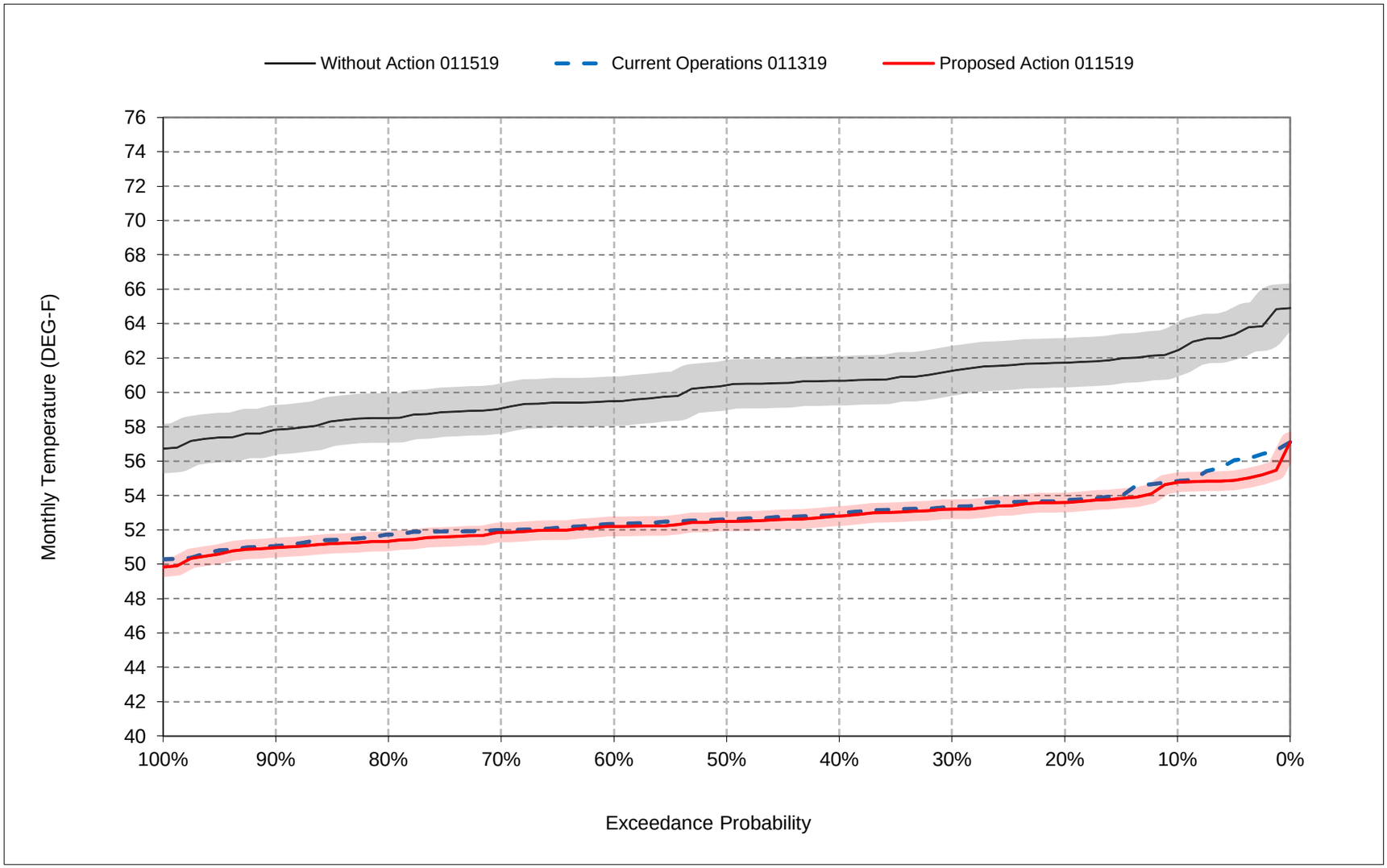
Figure 7-13. Sacramento River at Balls Ferry, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

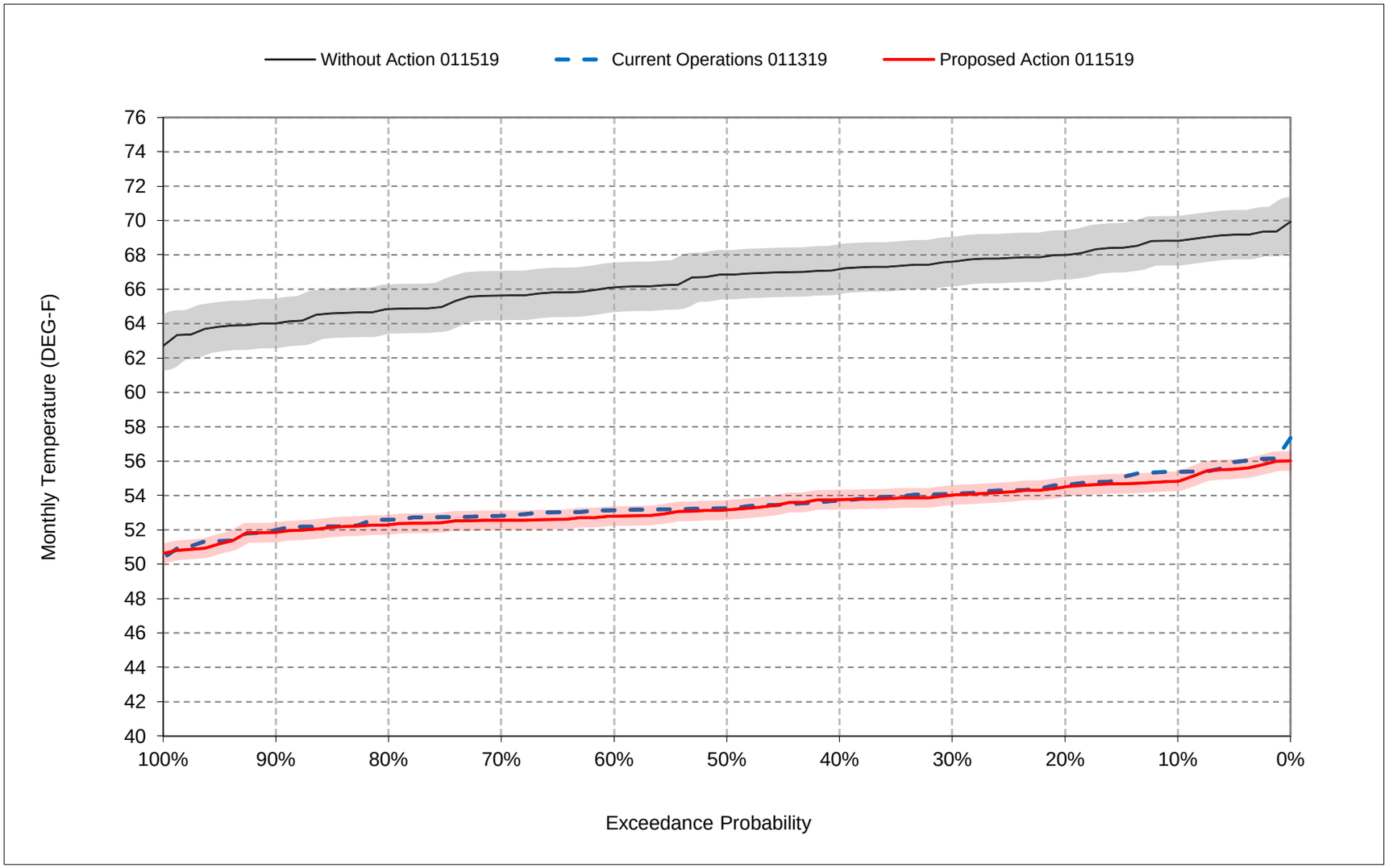
Figure 7-14. Sacramento River at Balls Ferry, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

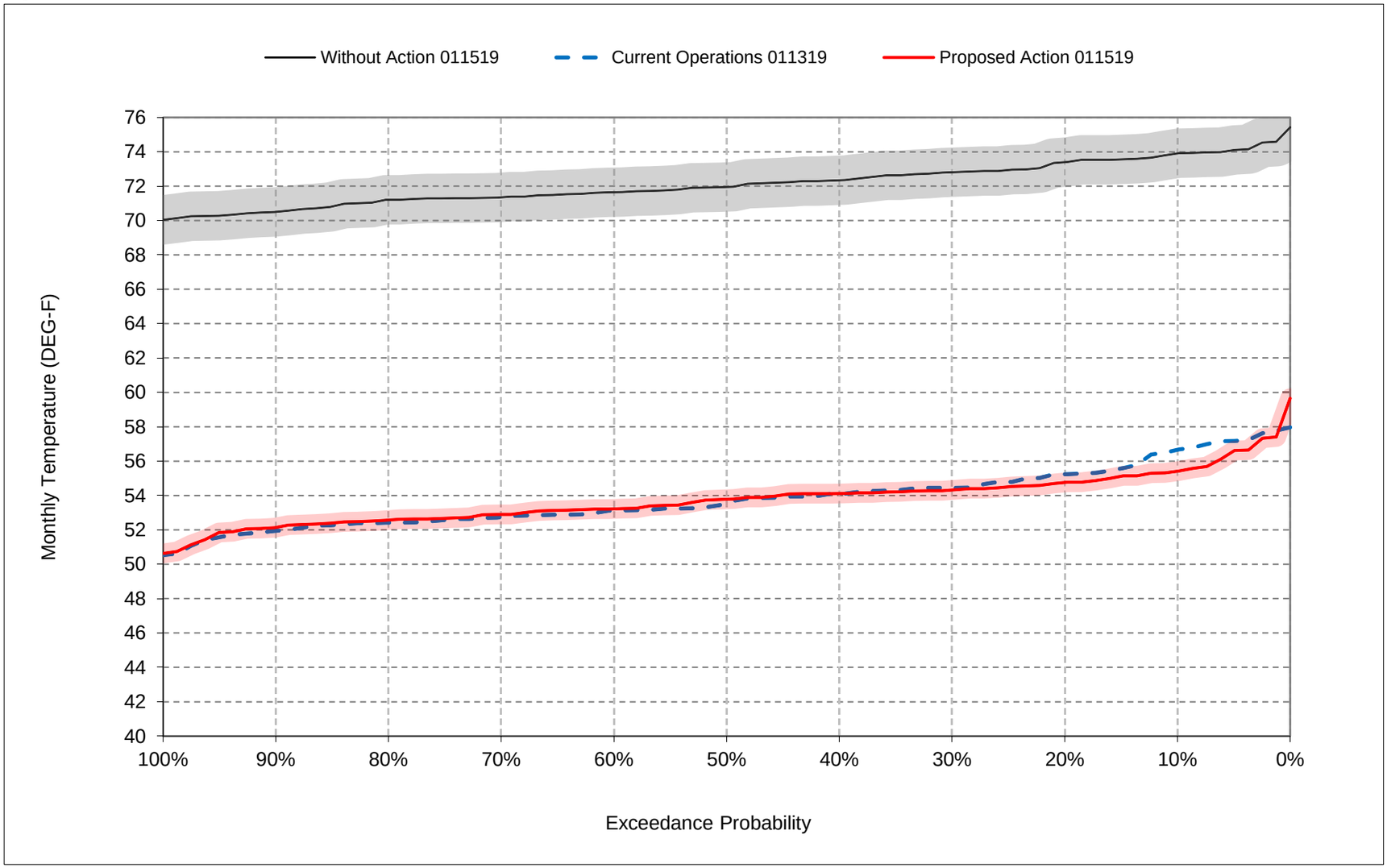
Figure 7-15. Sacramento River at Balls Ferry, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

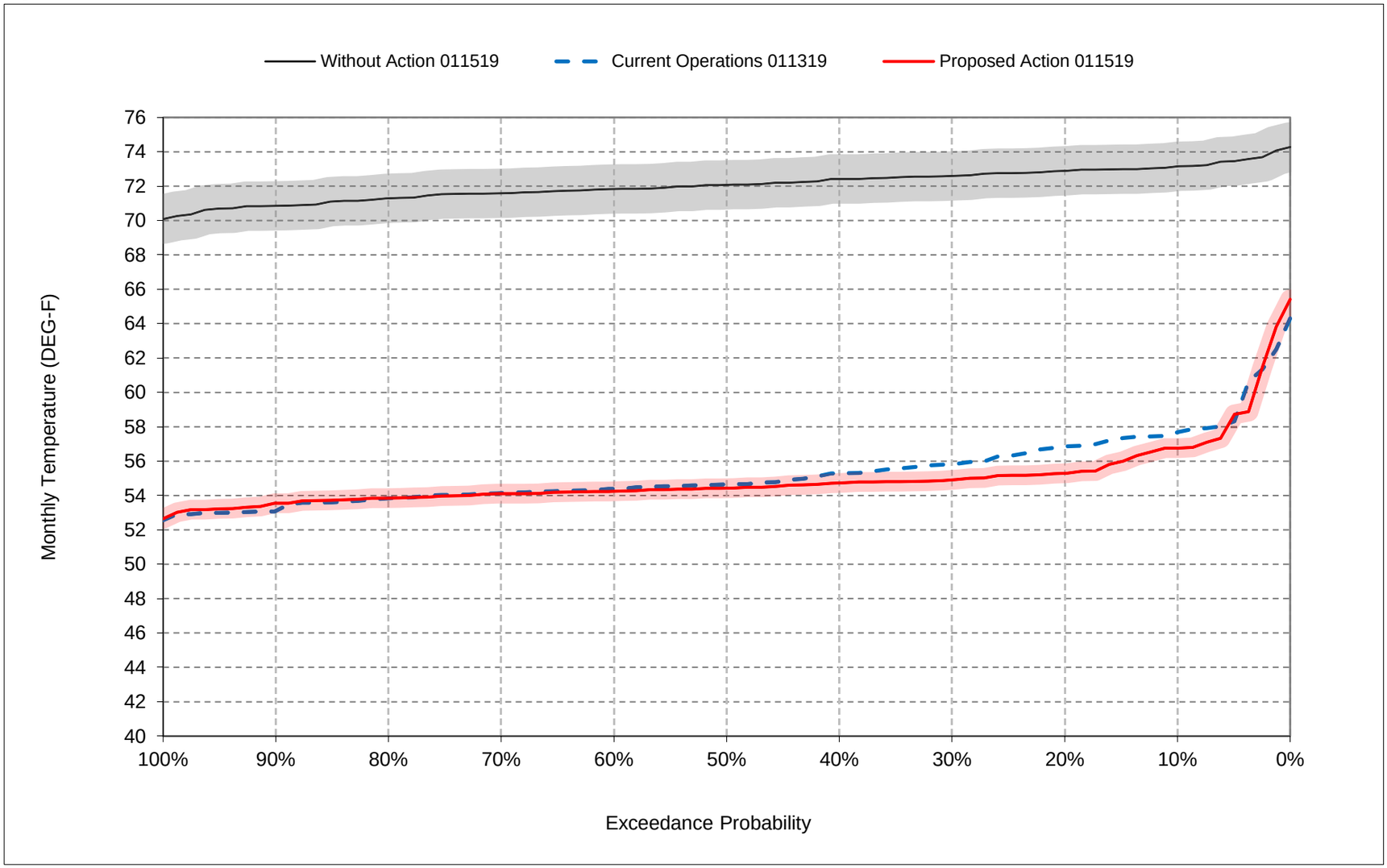
Figure 7-16. Sacramento River at Balls Ferry, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

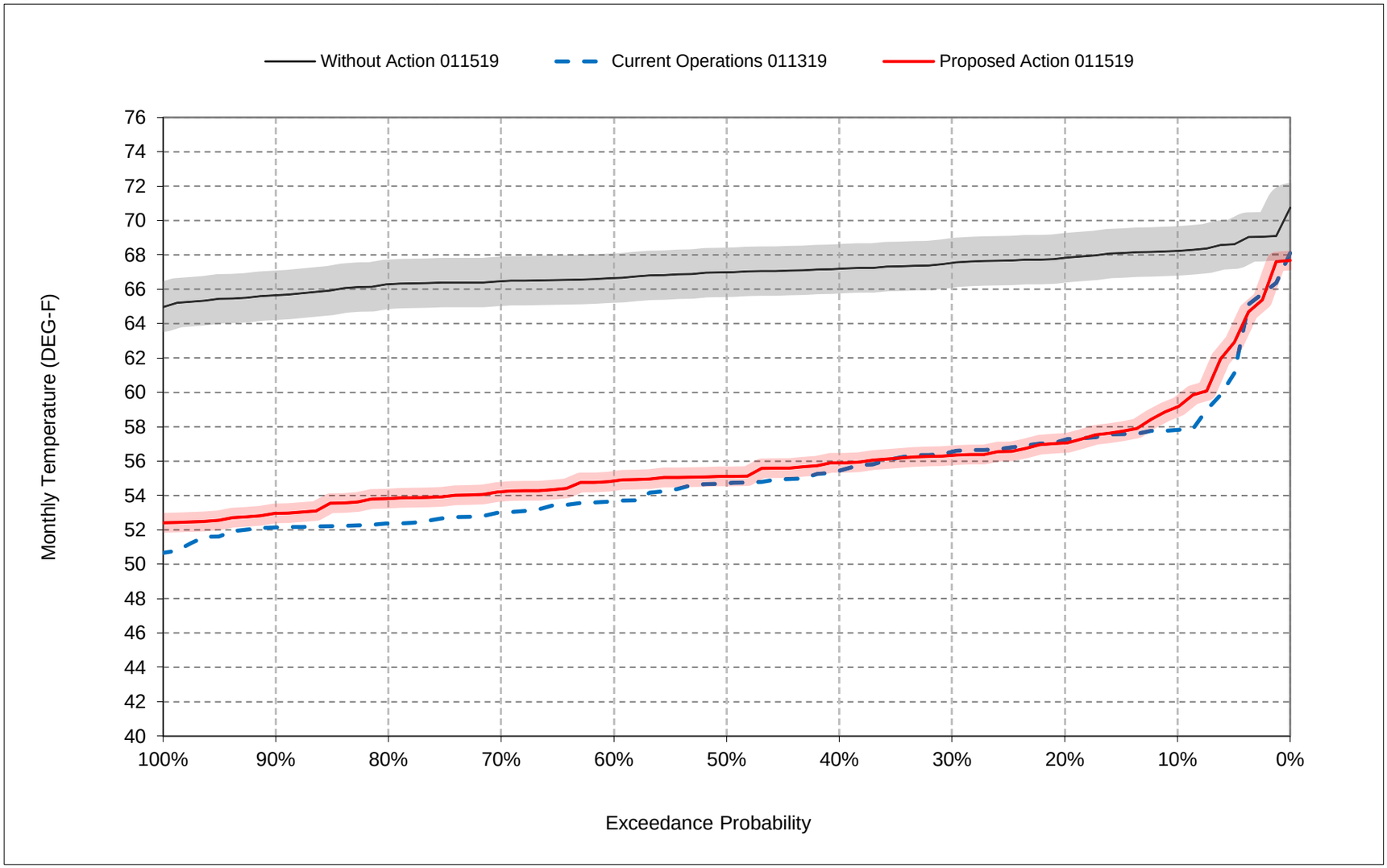
Figure 7-17. Sacramento River at Balls Ferry, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 8-1. Sacramento River at Jellys Ferry, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.5	51.3	44.1	42.8	45.4	50.5	56.4	63.5	70.0	74.9	73.9	68.9
20%	59.9	50.5	43.6	42.5	44.9	49.9	55.7	62.7	69.0	74.3	73.6	68.5
30%	59.5	49.8	43.5	42.3	44.5	49.2	55.0	62.1	68.7	73.8	73.4	68.2
40%	59.1	49.5	43.3	42.1	44.2	48.7	54.5	61.6	68.2	73.3	73.2	67.8
50%	58.9	49.0	43.1	42.0	44.0	48.5	53.9	61.3	67.9	72.8	72.8	67.7
60%	58.5	48.7	42.9	41.9	44.0	48.2	53.5	60.3	67.1	72.5	72.6	67.4
70%	58.0	48.4	42.7	41.7	43.9	47.8	52.8	60.0	66.6	72.4	72.4	67.1
80%	57.7	48.1	42.5	41.4	43.7	47.6	52.4	59.4	65.9	72.1	72.0	67.0
90%	57.4	47.9	42.1	40.8	43.4	47.2	51.5	58.7	65.1	71.5	71.6	66.3
Long Term												
Full Simulation Period[a]	58.8	49.3	43.1	41.9	44.3	48.7	54.0	61.1	67.6	73.1	72.8	67.7
Water Year Types[b,c]												
Wet (32%)	58.4	49.2	43.0	42.3	44.0	48.1	52.6	59.8	66.3	72.3	72.3	67.3
Above Normal (16%)	58.8	48.7	43.0	42.2	44.1	48.3	53.3	61.0	67.9	72.7	72.6	67.1
Below Normal (13%)	58.2	49.3	43.0	41.5	44.0	49.0	54.7	61.5	67.7	73.3	72.7	67.5
Dry (24%)	59.0	49.2	43.2	41.5	44.3	48.9	54.6	61.8	68.2	73.5	73.2	68.0
Critical (15%)	60.1	50.4	43.2	41.9	45.2	50.1	56.4	62.6	68.9	74.5	73.9	68.8

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.9	**4.4**	**7.2**	**5.8**	**3.5**	**1.3**	-0.8	-6.5	-12.4	-16.9	-14.6	-9.4
20%	-2.8	**4.9**	**6.9**	**5.2**	**3.6**	**1.3**	-0.6	-6.6	-12.2	-17.6	-15.4	-9.7
30%	-2.9	**5.0**	**6.5**	**5.1**	**3.5**	**1.5**	-0.4	-6.8	-12.1	-17.6	-16.0	-10.3
40%	-2.9	**5.1**	**6.2**	**4.8**	**3.5**	**1.5**	-0.1	-6.6	-12.2	-17.6	-16.4	-10.8
50%	-3.0	**5.2**	**6.1**	**4.6**	**3.3**	**1.5**	0.0	-6.6	-12.5	-17.7	-16.7	-11.6
60%	-2.9	**5.0**	**5.8**	**4.7**	**3.2**	**1.1**	**0.0**	-5.9	-12.2	-18.1	-16.7	-12.4
70%	-2.6	**4.9**	**5.7**	**4.6**	**2.6**	**0.9**	**0.3**	-6.0	-12.0	-18.2	-16.7	-13.3
80%	-2.7	**4.9**	**5.7**	**4.6**	**2.5**	**0.3**	-0.2	-5.8	-11.5	-18.3	-16.6	-13.7
90%	-2.6	**4.6**	**5.6**	**4.7**	**2.4**	**0.1**	-1.1	-5.6	-11.4	-18.2	-16.9	-13.3
Long Term												
Full Simulation Period[a]	-2.5	**4.8**	**6.3**	**4.9**	**3.1**	**1.0**	-0.5	-6.2	-12.0	-17.8	-16.0	-11.2
Water Year Types[b,c]												
Wet (32%)	-2.9	**5.3**	**6.7**	**4.2**	**2.6**	**0.3**	-0.3	-5.0	-10.1	-17.2	-16.4	-13.7
Above Normal (16%)	-3.4	**5.4**	**6.3**	**4.4**	**2.6**	**0.7**	-0.1	-6.5	-13.1	-18.9	-17.3	-13.0
Below Normal (13%)	-2.4	**4.1**	**6.5**	**5.3**	**3.6**	**1.5**	-0.2	-7.1	-13.1	-18.7	-16.8	-10.3
Dry (24%)	-2.8	**4.1**	**5.8**	**5.7**	**3.6**	**1.5**	-0.2	-6.8	-13.3	-18.0	-15.8	-10.1
Critical (15%)	-0.1	**4.8**	**6.0**	**5.6**	**3.3**	**1.1**	-1.9	-6.9	-11.8	-16.4	-13.4	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 8-2. Sacramento River at Jellys Ferry, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.5	51.3	44.1	42.8	45.4	50.5	56.4	63.5	70.0	74.9	73.9	68.9
20%	59.9	50.5	43.6	42.5	44.9	49.9	55.7	62.7	69.0	74.3	73.6	68.5
30%	59.5	49.8	43.5	42.3	44.5	49.2	55.0	62.1	68.7	73.8	73.4	68.2
40%	59.1	49.5	43.3	42.1	44.2	48.7	54.5	61.6	68.2	73.3	73.2	67.8
50%	58.9	49.0	43.1	42.0	44.0	48.5	53.9	61.3	67.9	72.8	72.8	67.7
60%	58.5	48.7	42.9	41.9	44.0	48.2	53.5	60.3	67.1	72.5	72.6	67.4
70%	58.0	48.4	42.7	41.7	43.9	47.8	52.8	60.0	66.6	72.4	72.4	67.1
80%	57.7	48.1	42.5	41.4	43.7	47.6	52.4	59.4	65.9	72.1	72.0	67.0
90%	57.4	47.9	42.1	40.8	43.4	47.2	51.5	58.7	65.1	71.5	71.6	66.3
Long Term												
Full Simulation Period[a]	58.8	49.3	43.1	41.9	44.3	48.7	54.0	61.1	67.6	73.1	72.8	67.7
Water Year Types[b,c]												
Wet (32%)	58.4	49.2	43.0	42.3	44.0	48.1	52.6	59.8	66.3	72.3	72.3	67.3
Above Normal (16%)	58.8	48.7	43.0	42.2	44.1	48.3	53.3	61.0	67.9	72.7	72.6	67.1
Below Normal (13%)	58.2	49.3	43.0	41.5	44.0	49.0	54.7	61.5	67.7	73.3	72.7	67.5
Dry (24%)	59.0	49.2	43.2	41.5	44.3	48.9	54.6	61.8	68.2	73.5	73.2	68.0
Critical (15%)	60.1	50.4	43.2	41.9	45.2	50.1	56.4	62.6	68.9	74.5	73.9	68.8

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.5	**4.8**	**7.8**	**5.8**	**3.8**	**1.3**	-0.9	-7.0	-12.6	-17.7	-15.4	-8.2
20%	-3.5	**4.5**	**7.1**	**5.5**	**3.8**	**1.2**	-0.6	-7.0	-12.2	-17.8	-16.7	-9.7
30%	-4.2	**4.5**	**6.5**	**5.4**	**3.6**	**1.5**	-0.3	-6.9	-12.5	-17.8	-16.8	-10.3
40%	-4.0	**4.5**	**6.4**	**5.0**	**3.5**	**1.4**	-0.1	-6.8	-12.3	-17.6	-16.9	-10.4
50%	-4.0	**4.7**	**6.2**	**4.8**	**3.4**	**1.5**	**0.0**	-6.8	-12.6	-17.6	-16.9	-10.8
60%	-3.9	**4.7**	**6.1**	**4.7**	**3.2**	**1.1**	**0.1**	-6.3	-12.6	-17.8	-16.8	-10.9
70%	-3.6	**4.6**	**6.2**	**4.7**	**2.7**	**1.0**	**0.4**	-6.3	-12.5	-17.9	-16.8	-11.4
80%	-3.7	**4.4**	**5.9**	**4.7**	**2.5**	**0.3**	-0.2	-6.3	-12.0	-18.0	-16.8	-11.7
90%	-3.7	**4.3**	**5.9**	**4.8**	**2.4**	**0.1**	-1.0	-5.9	-11.5	-18.0	-16.7	-12.0
Long Term												
Full Simulation Period[a]	-3.3	**4.5**	**6.5**	**5.1**	**3.2**	**0.9**	-0.5	-6.6	-12.3	-17.8	-16.4	-10.3
Water Year Types[b,c]												
Wet (32%)	-4.0	**4.6**	**6.8**	**4.3**	**2.6**	**0.4**	-0.3	-5.2	-10.1	-17.1	-16.5	-11.8
Above Normal (16%)	-4.5	**4.4**	**6.2**	**4.5**	**2.7**	**0.7**	-0.1	-6.7	-13.2	-18.8	-17.1	-10.3
Below Normal (13%)	-2.8	**4.5**	**6.8**	**5.5**	**3.6**	**1.4**	-0.4	-7.7	-13.4	-18.8	-17.2	-10.7
Dry (24%)	-3.8	**4.4**	**6.2**	**5.8**	**3.7**	**1.5**	-0.2	-7.2	-13.8	-18.1	-16.7	-10.6
Critical (15%)	0.0	**5.0**	**6.2**	**5.9**	**3.5**	**1.1**	-1.7	-7.2	-12.5	-16.7	-13.8	-6.2

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 8-3. Sacramento River at Jellys Ferry, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 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**	**0.4**	**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.

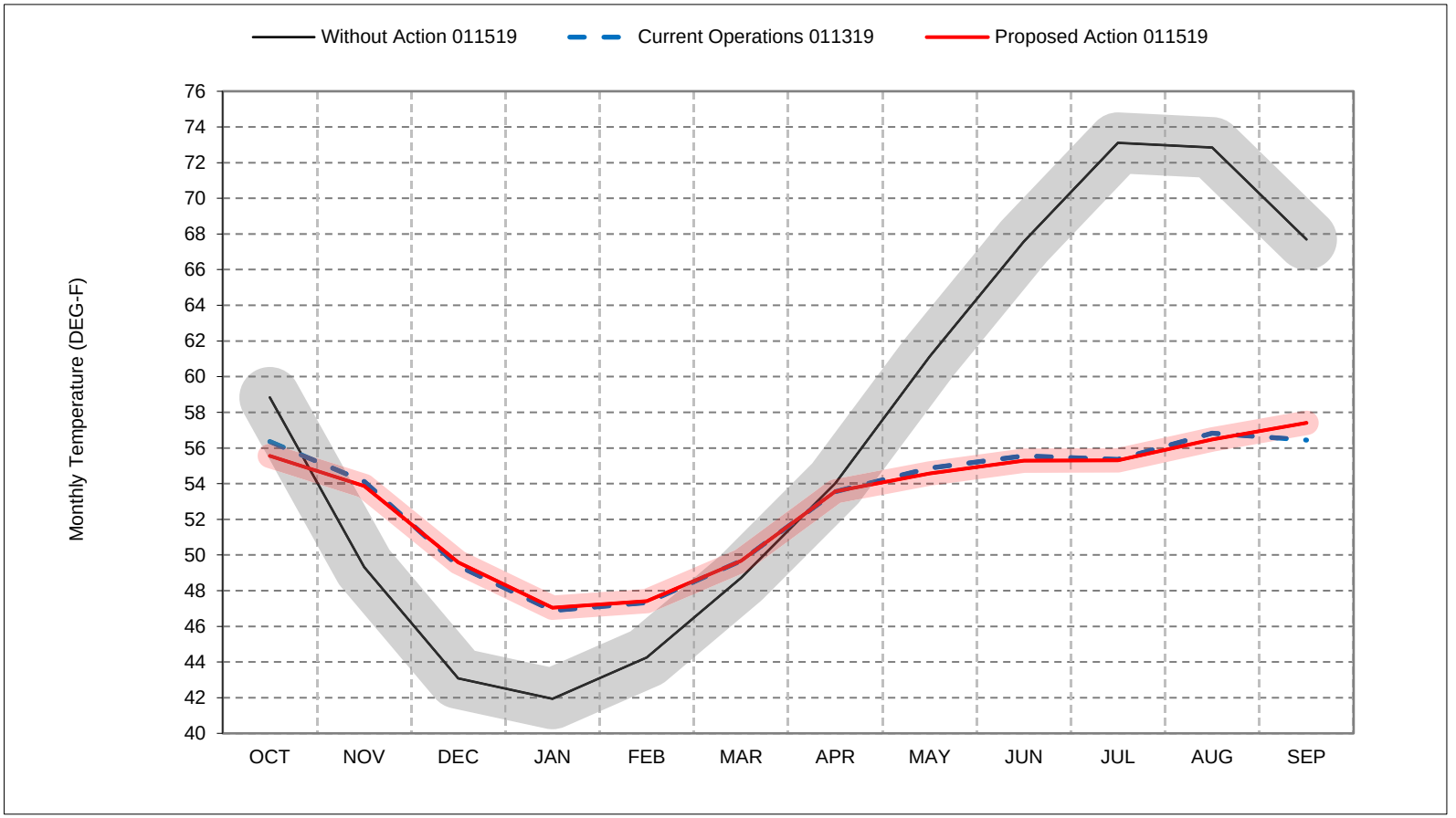
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

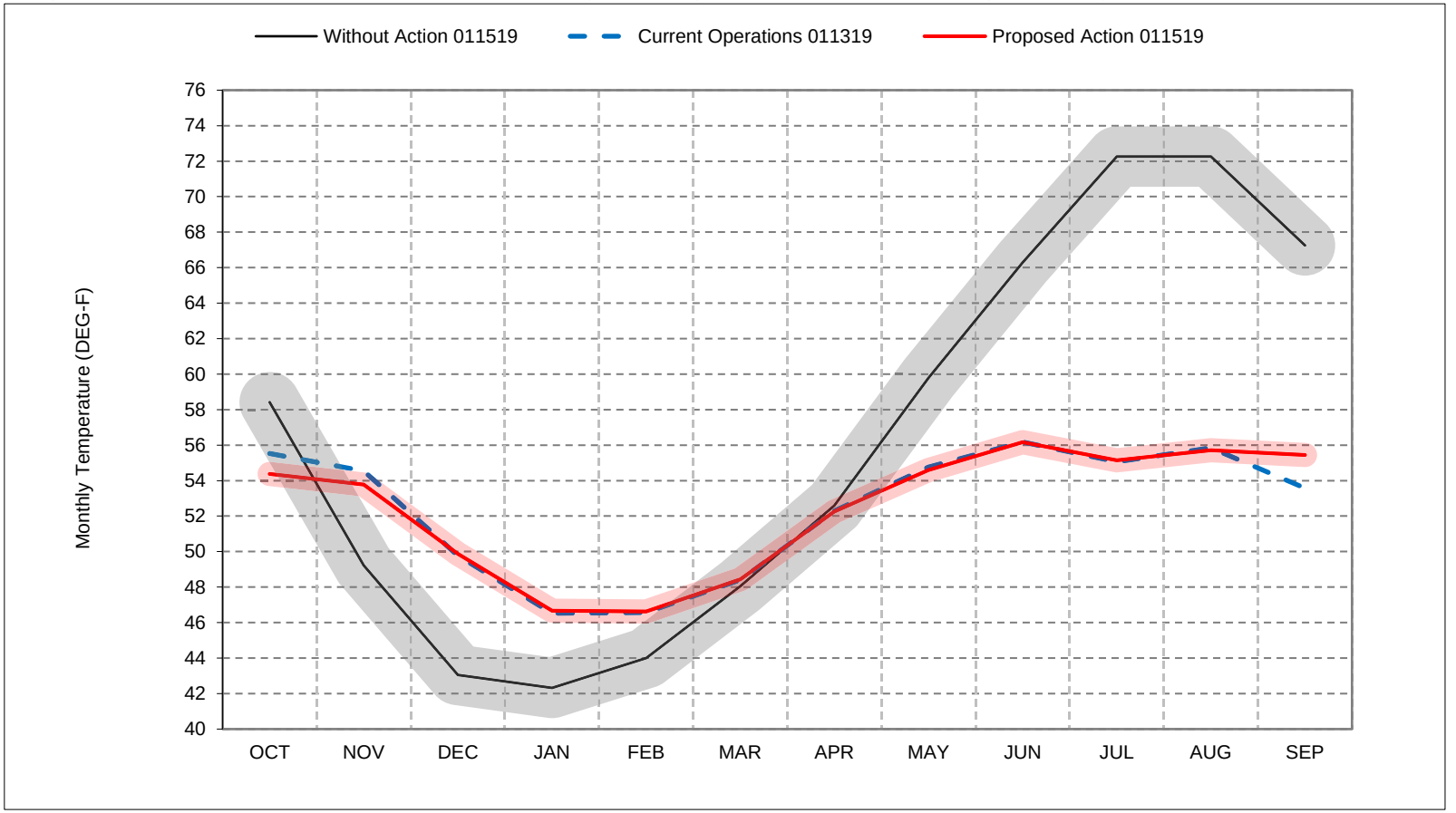
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-1. Sacramento River at Jellys Ferry, Long-Term Average Temperature



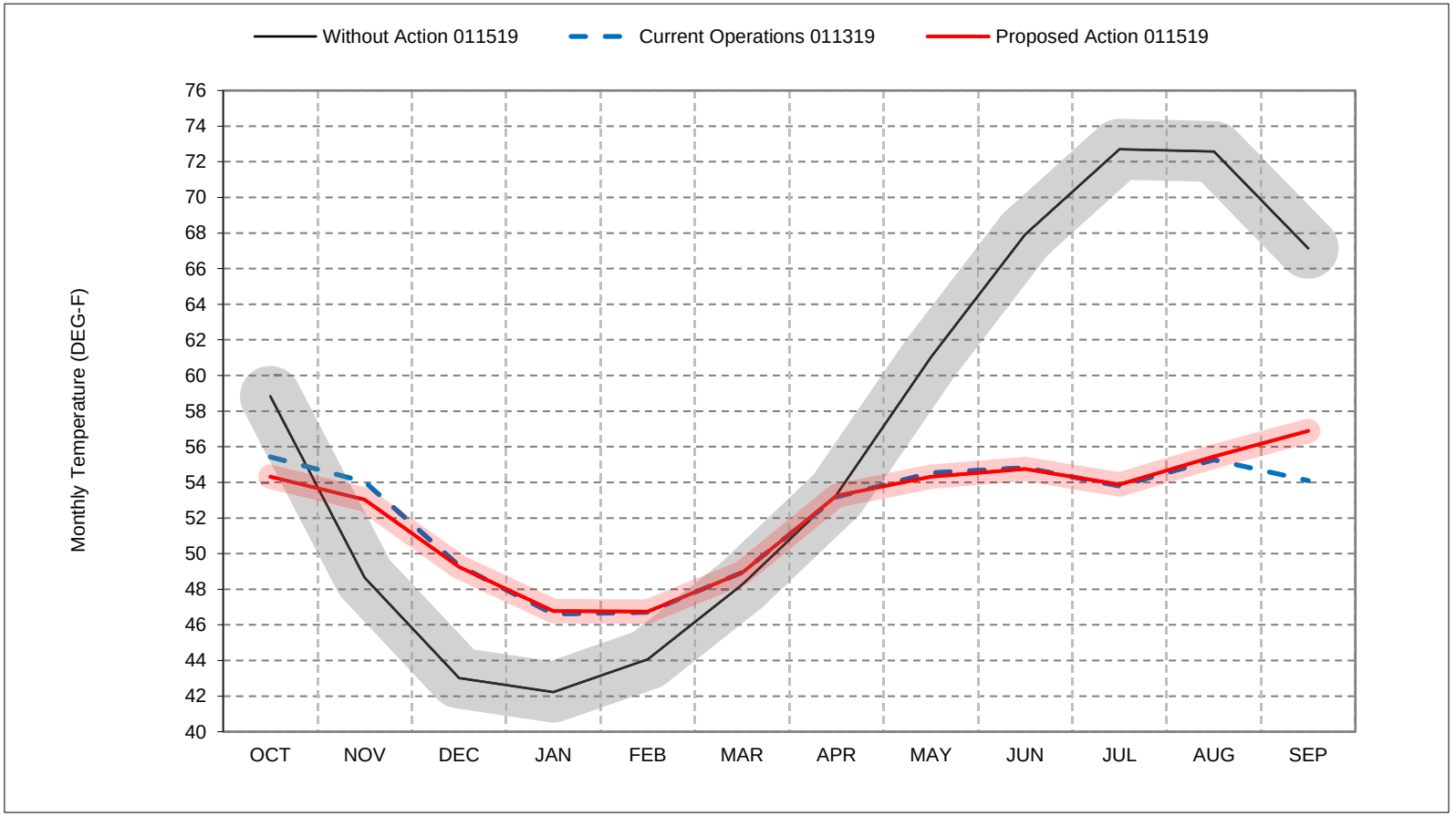
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-2. Sacramento River at Jellys Ferry, Wet Year Average Temperature



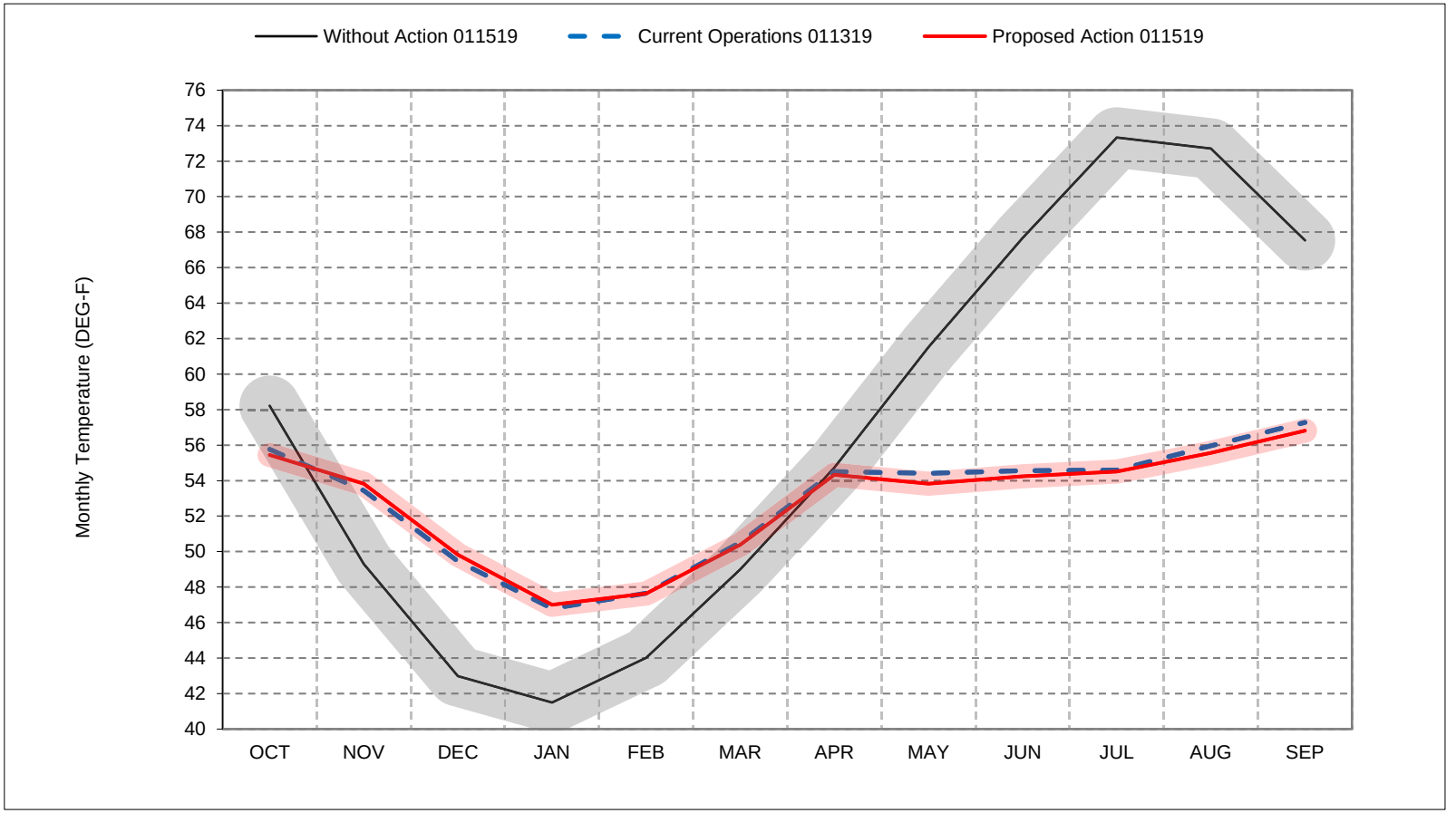
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-3. Sacramento River at Jellys Ferry, Above Normal Year Average Temperature



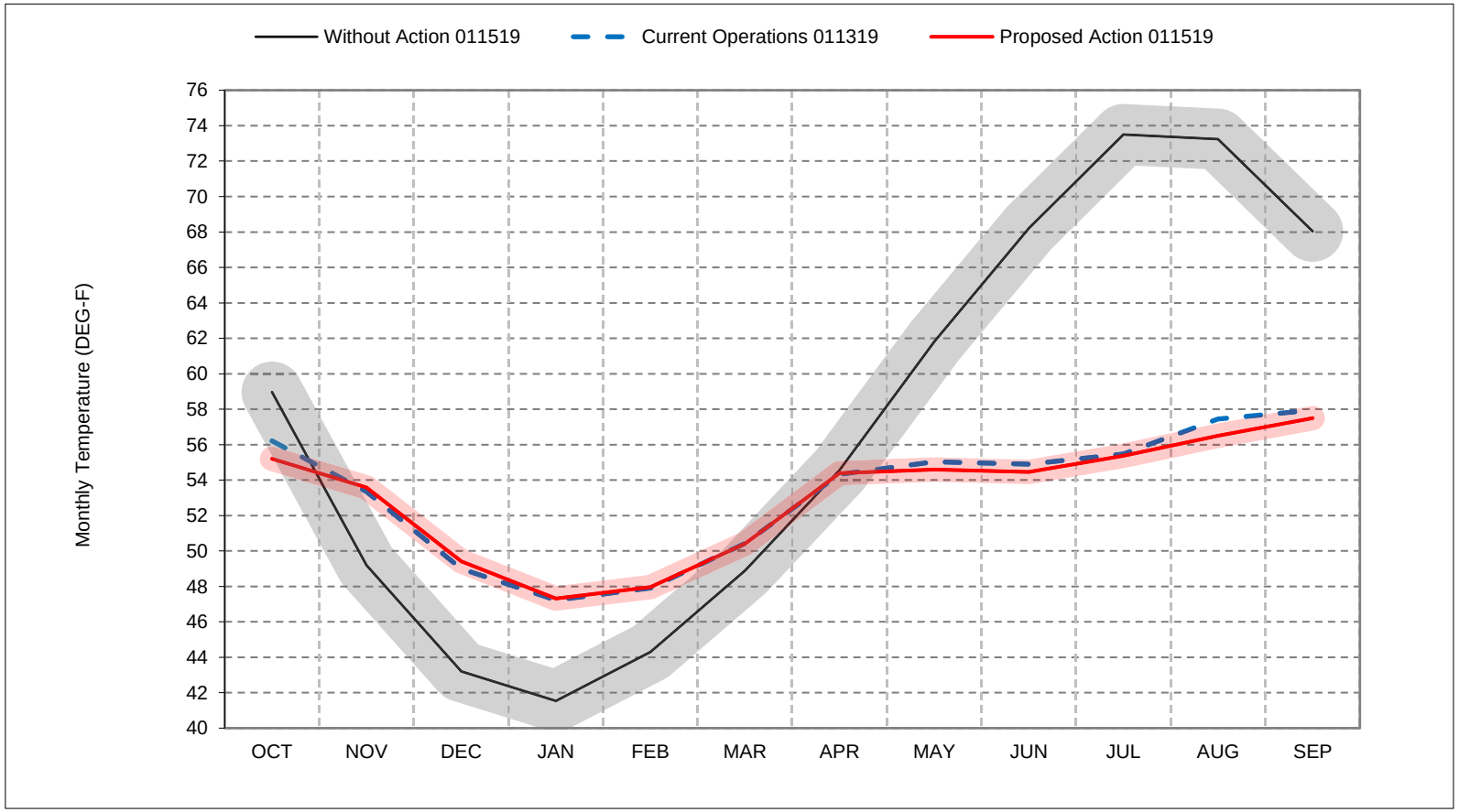
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-4. Sacramento River at Jellys Ferry, Below Normal Year Average Temperature



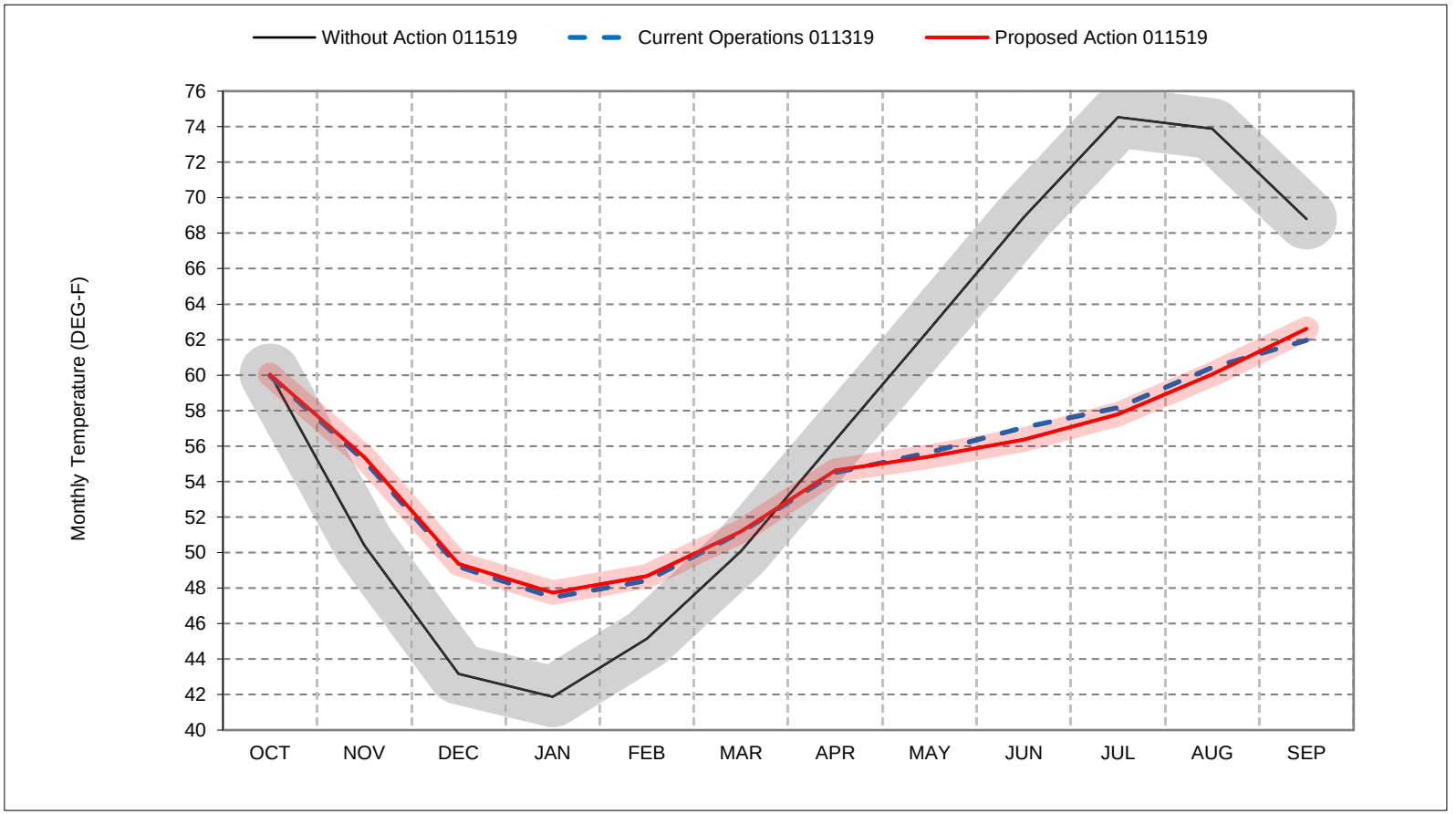
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-5. Sacramento River at Jellys Ferry, Dry Year Average Temperature



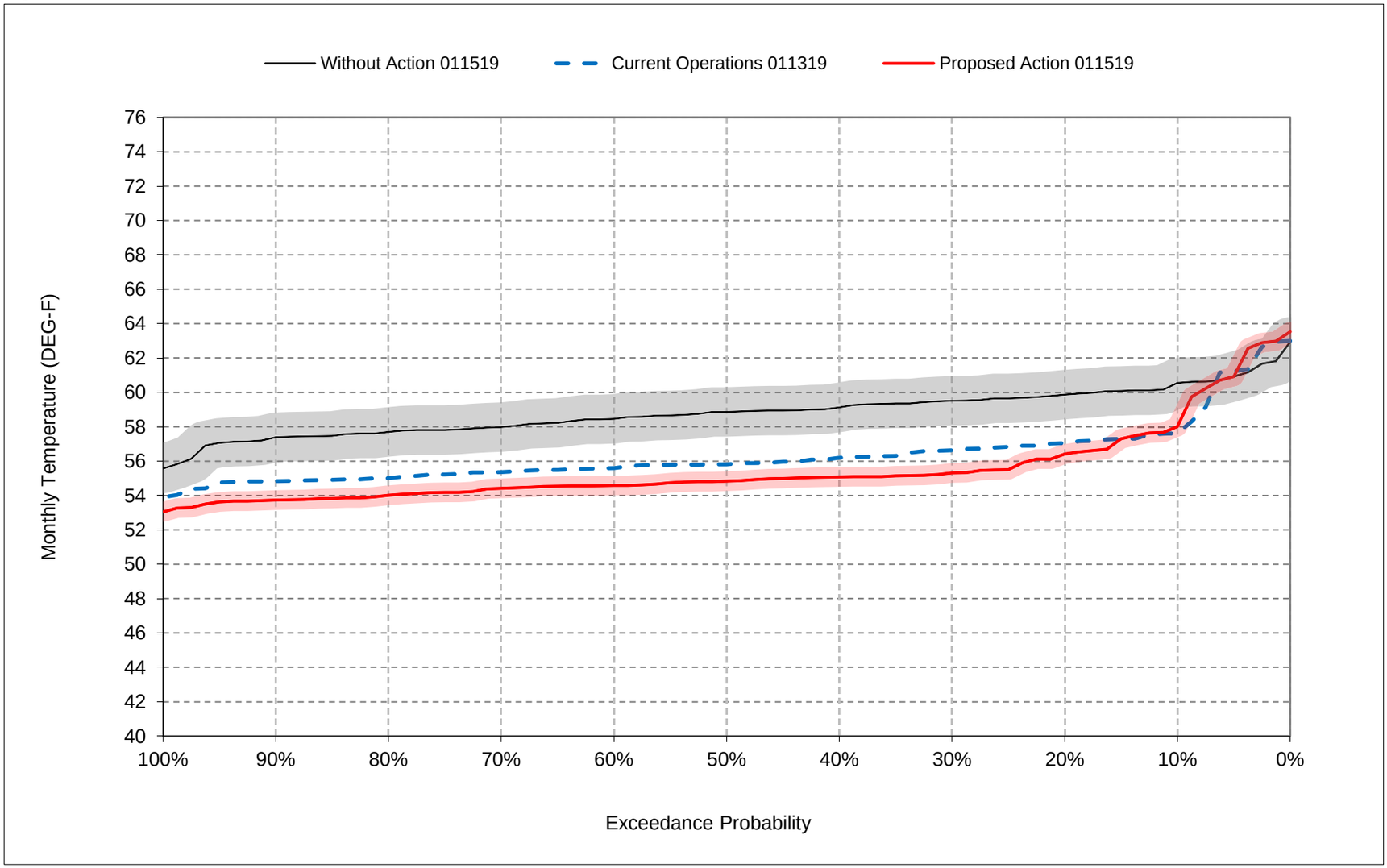
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

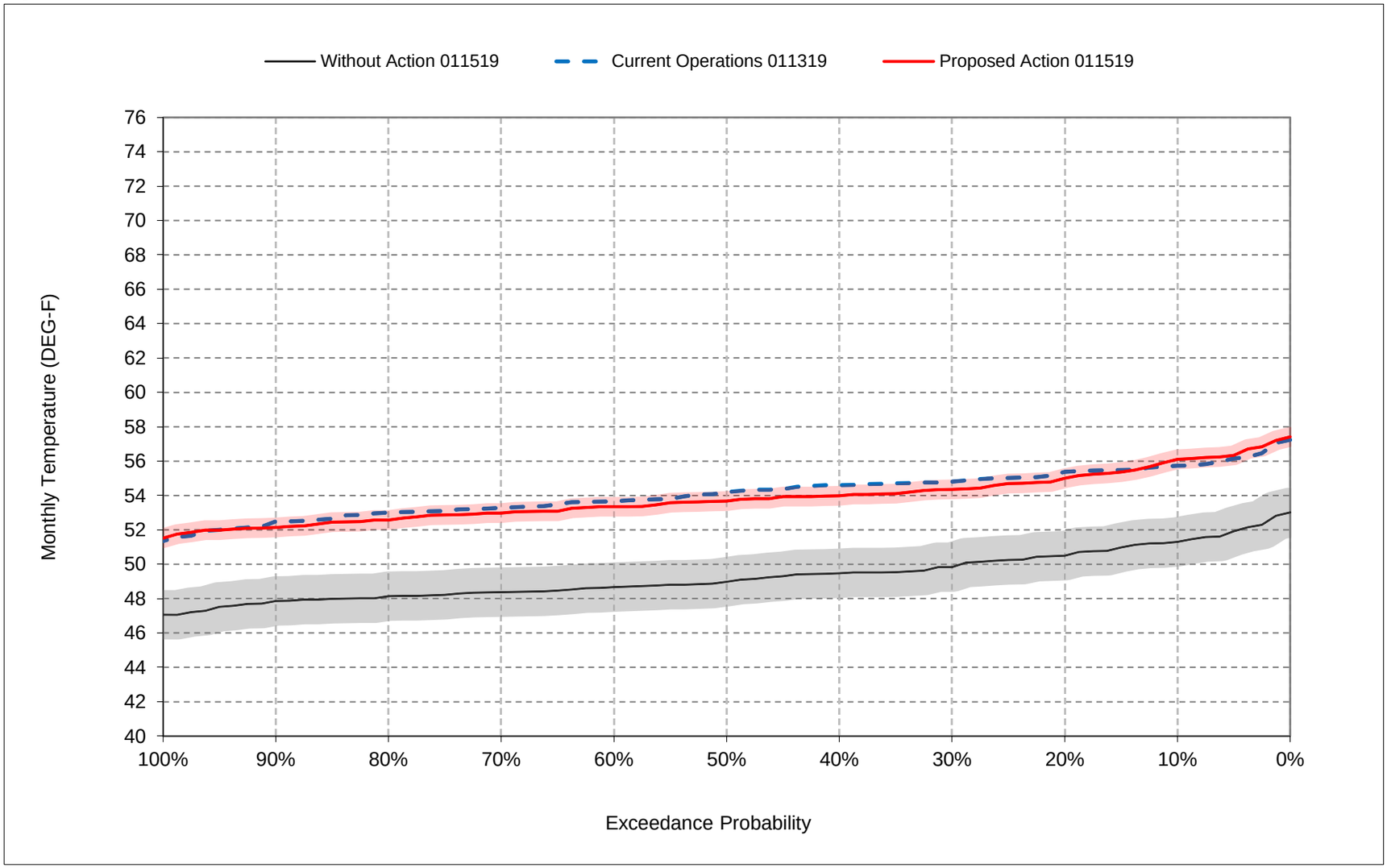
Figure 8-7. Sacramento River at Jellys Ferry, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

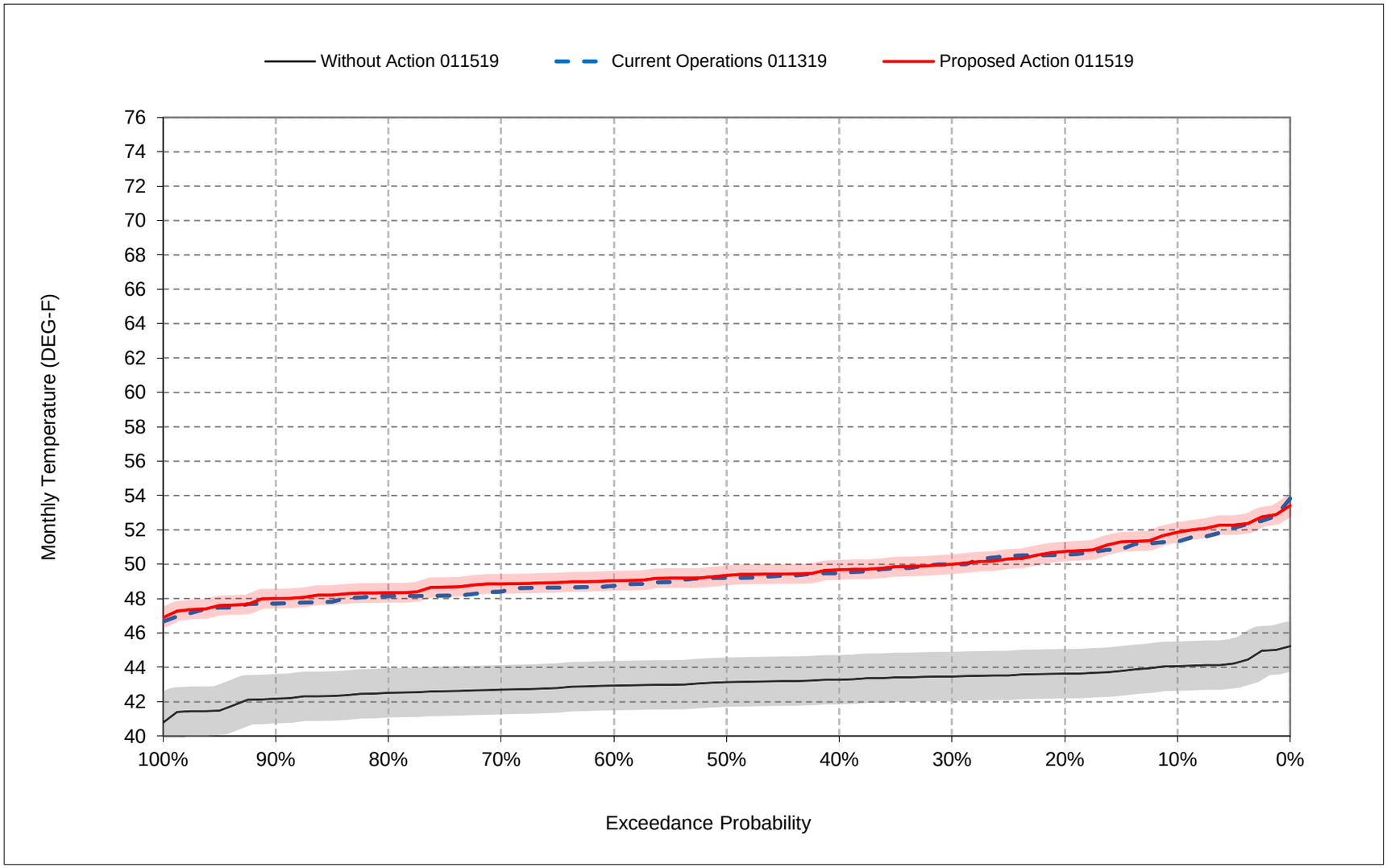
Figure 8-8. Sacramento River at Jellys Ferry, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

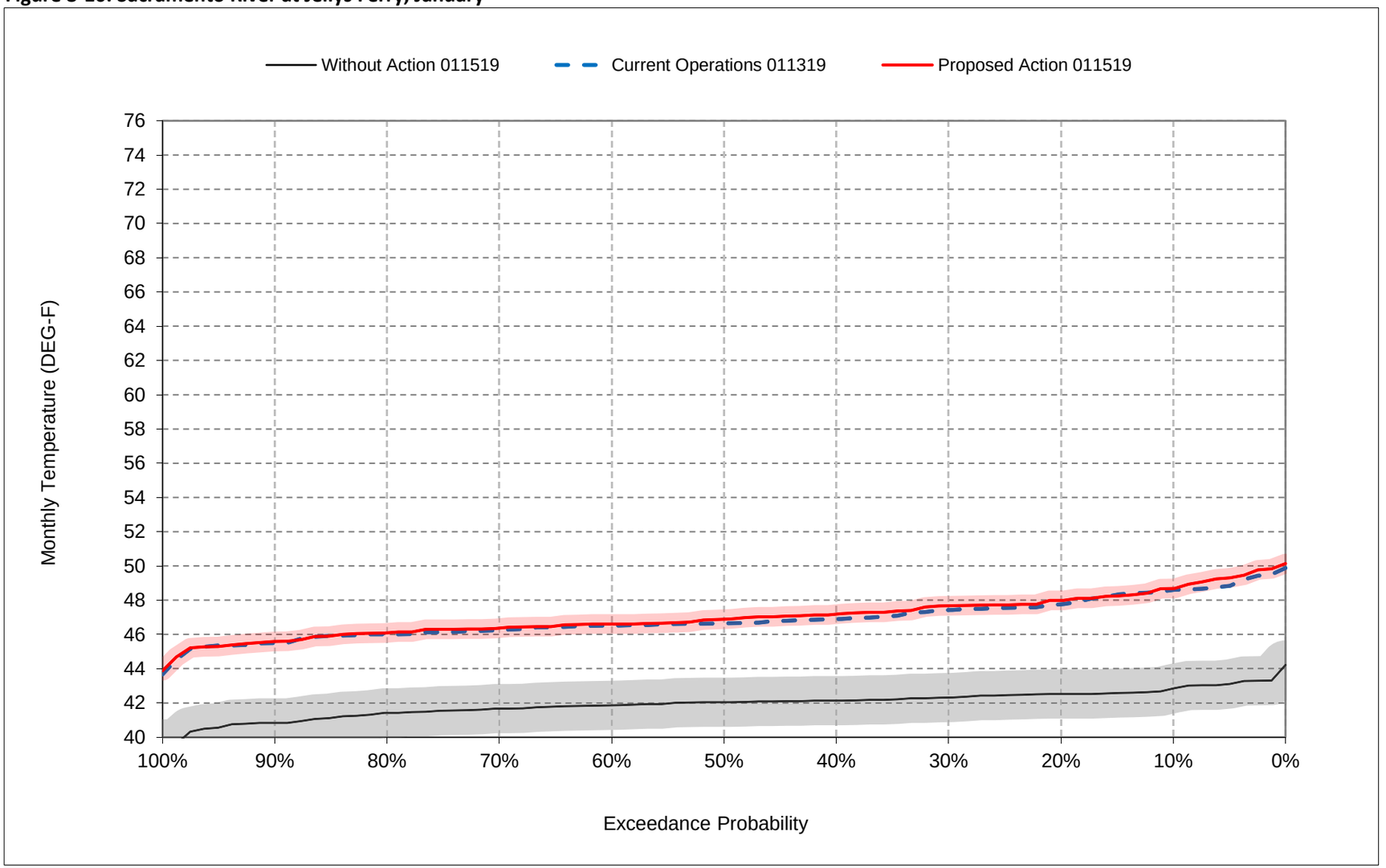
Figure 8-9. Sacramento River at Jellys Ferry, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

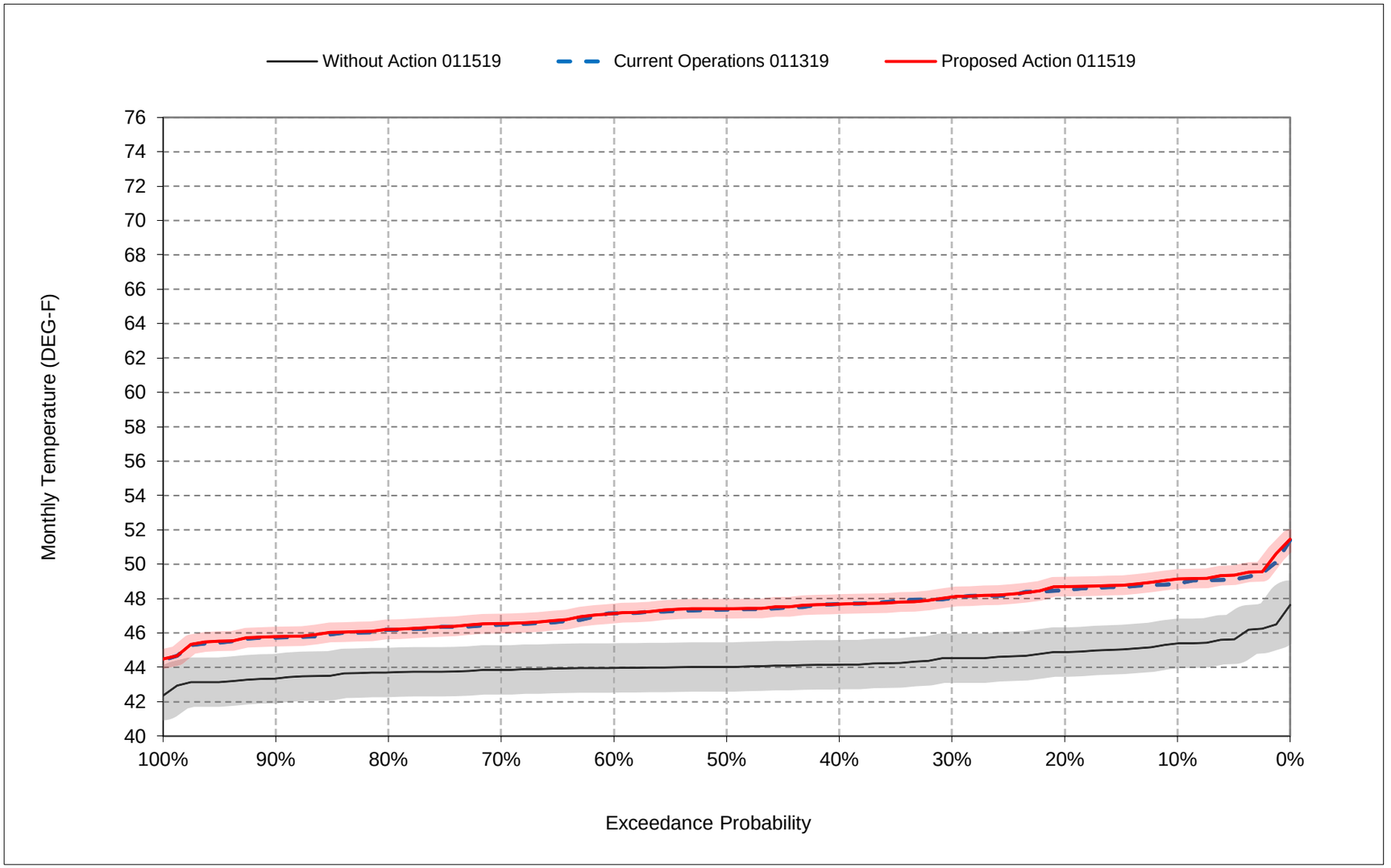
Figure 8-10. Sacramento River at Jellys Ferry, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

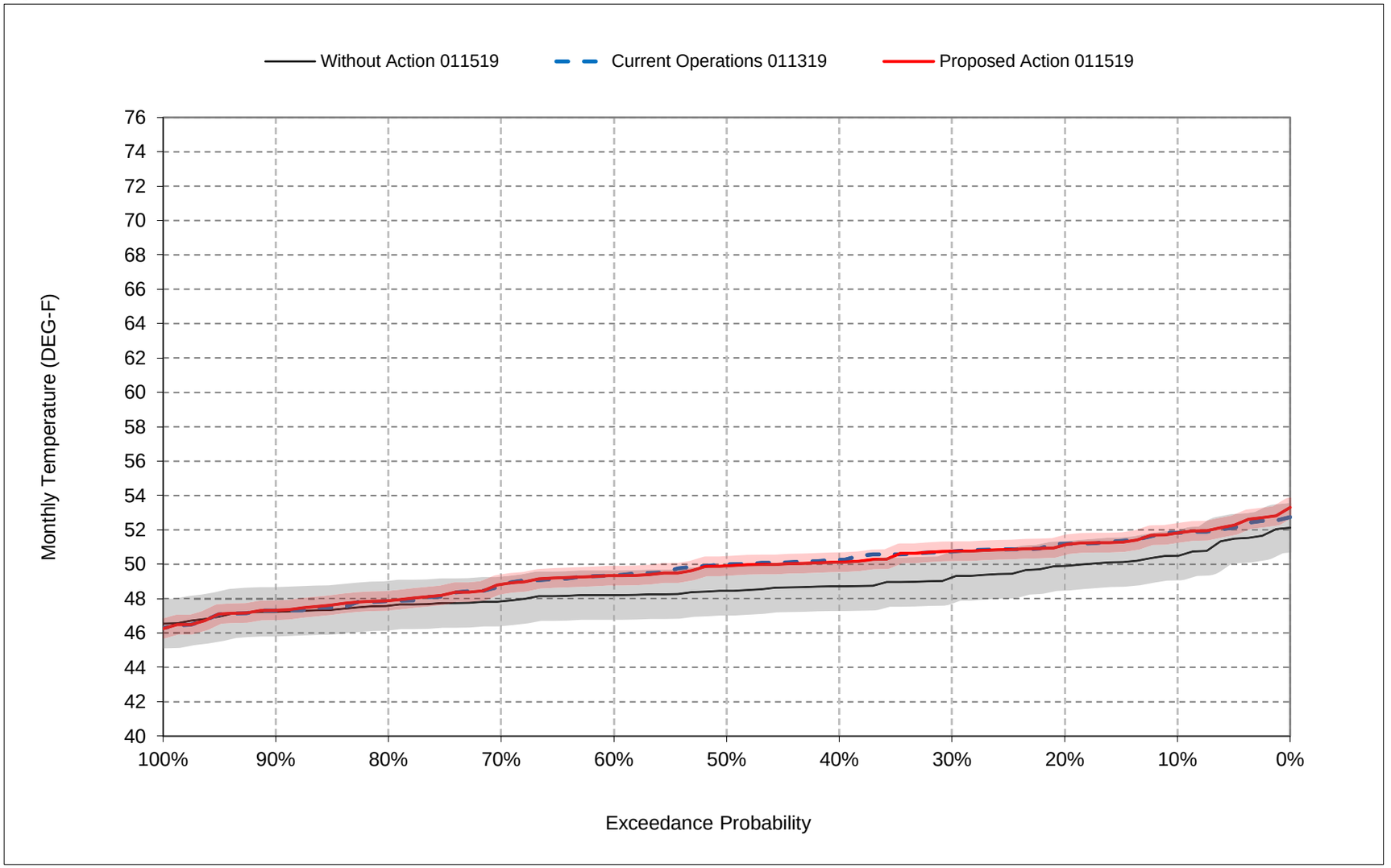
Figure 8-11. Sacramento River at Jellys Ferry, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

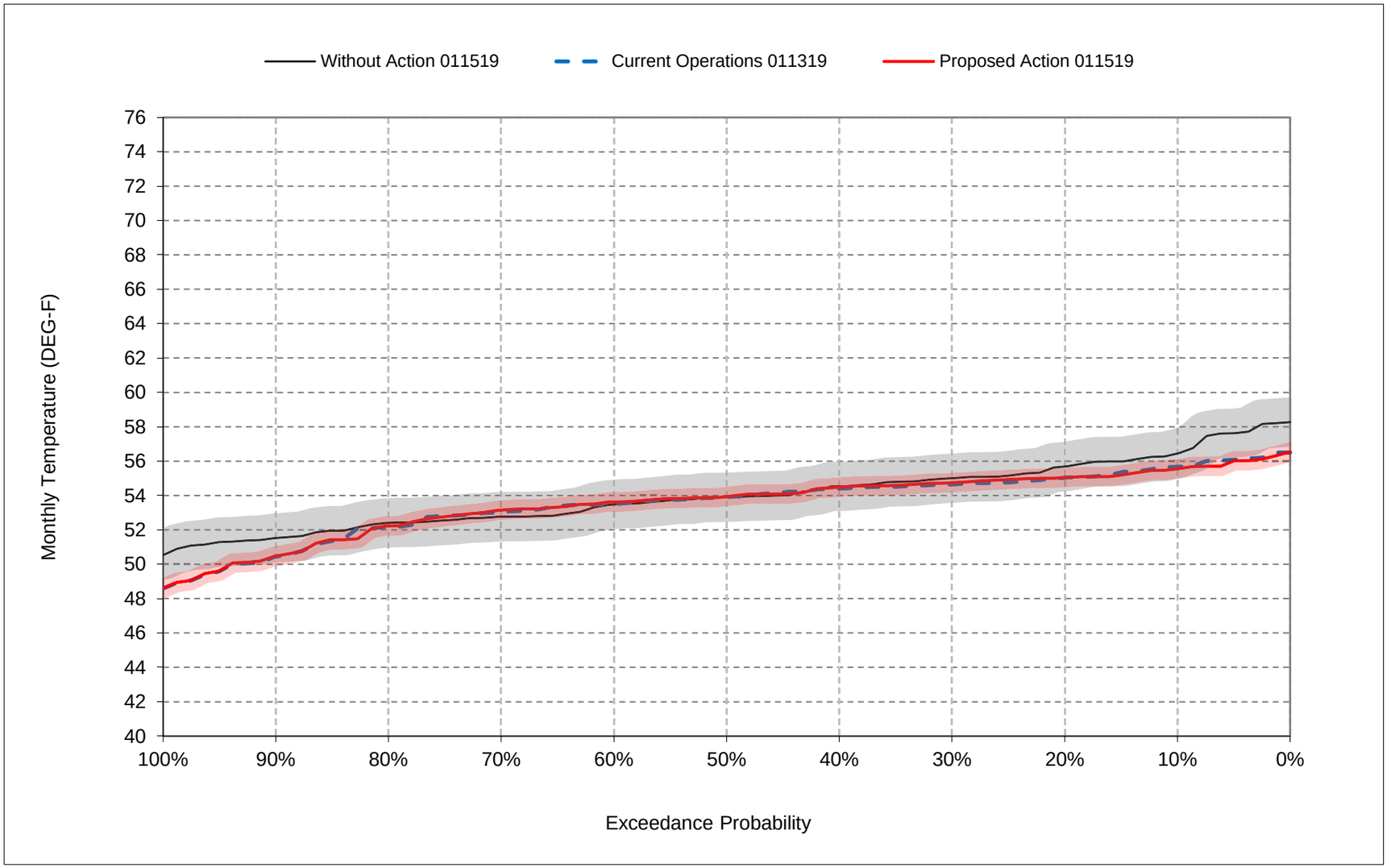
Figure 8-12. Sacramento River at Jellys Ferry, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

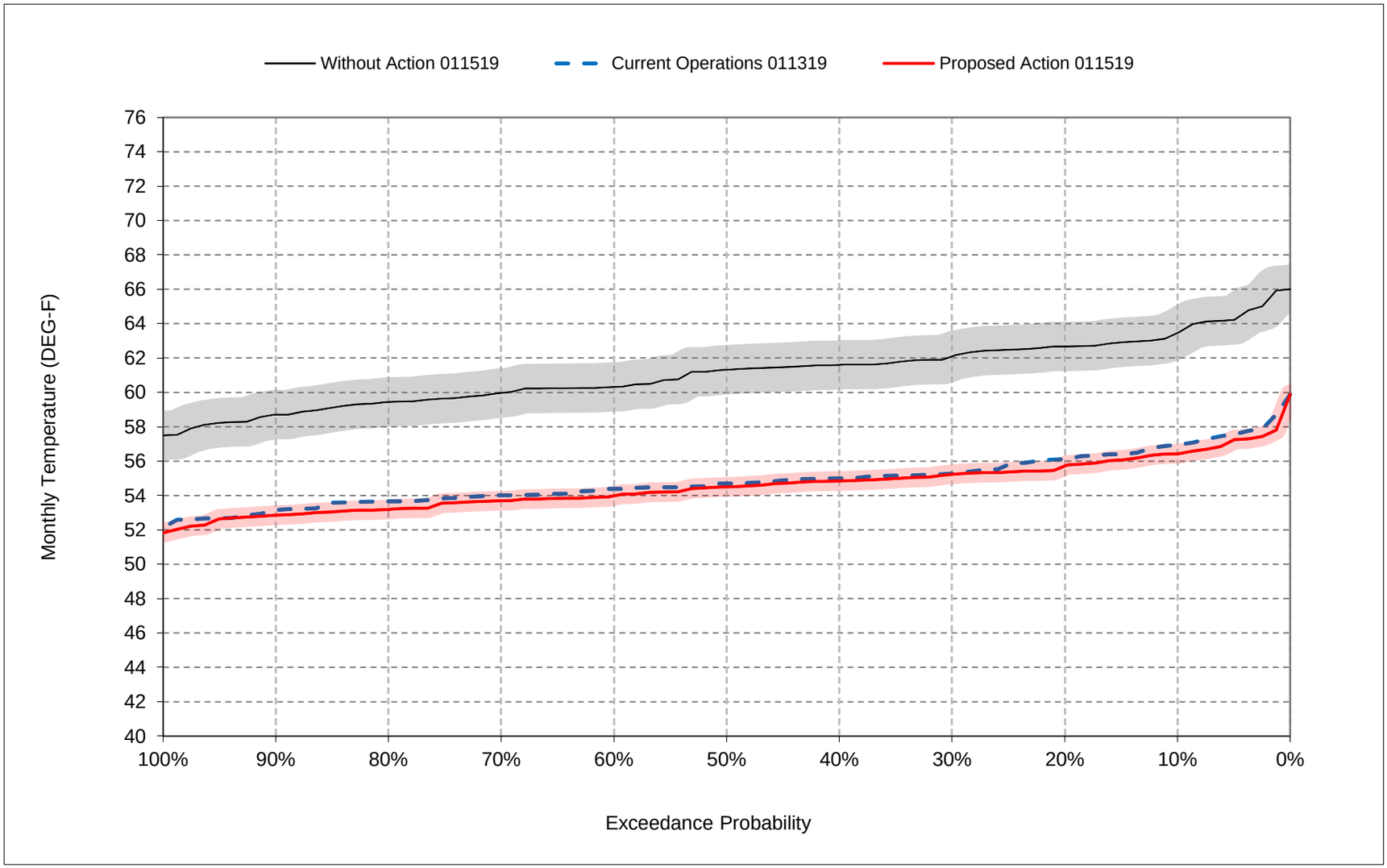
Figure 8-13. Sacramento River at Jellys Ferry, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

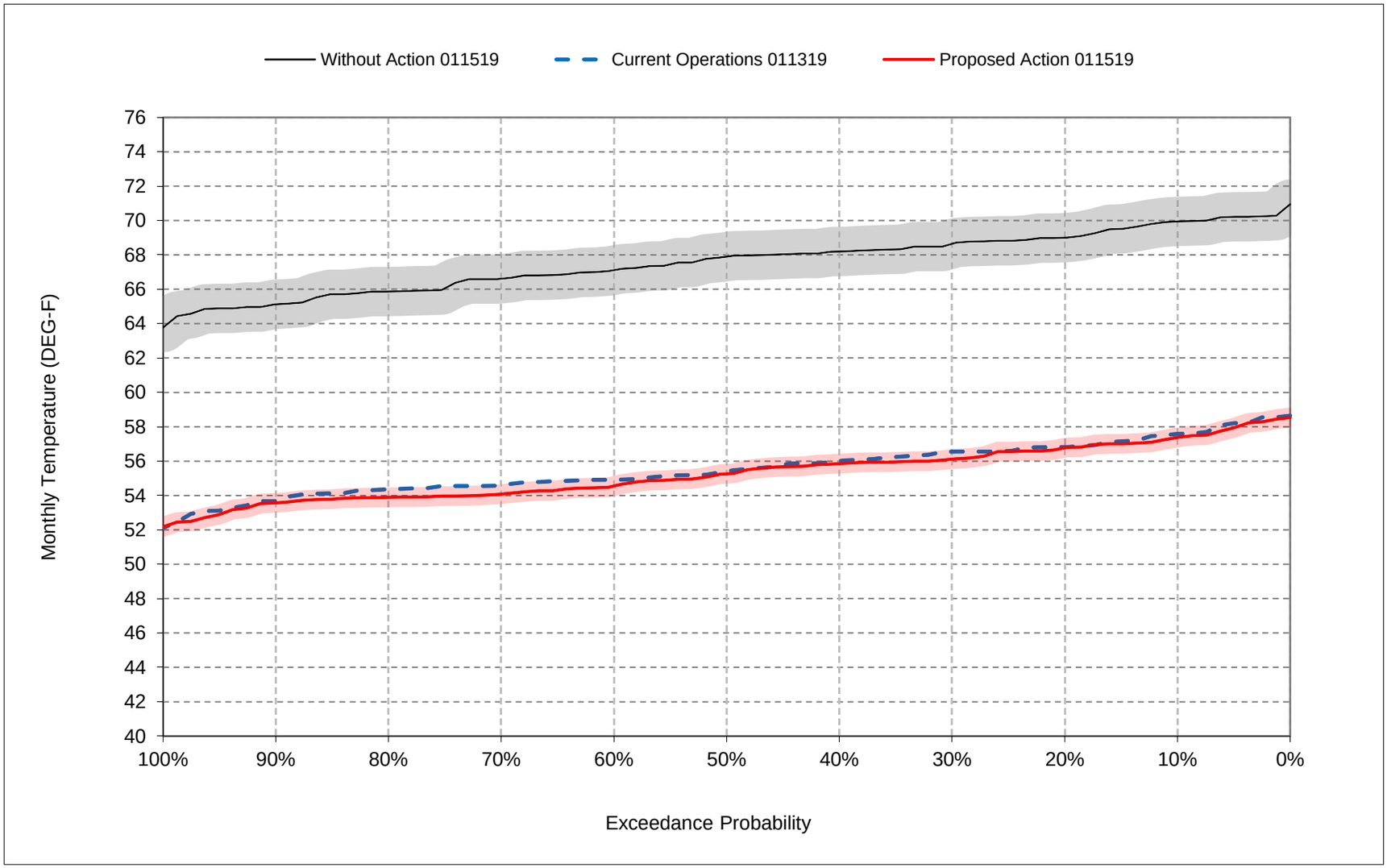
Figure 8-14. Sacramento River at Jellys Ferry, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

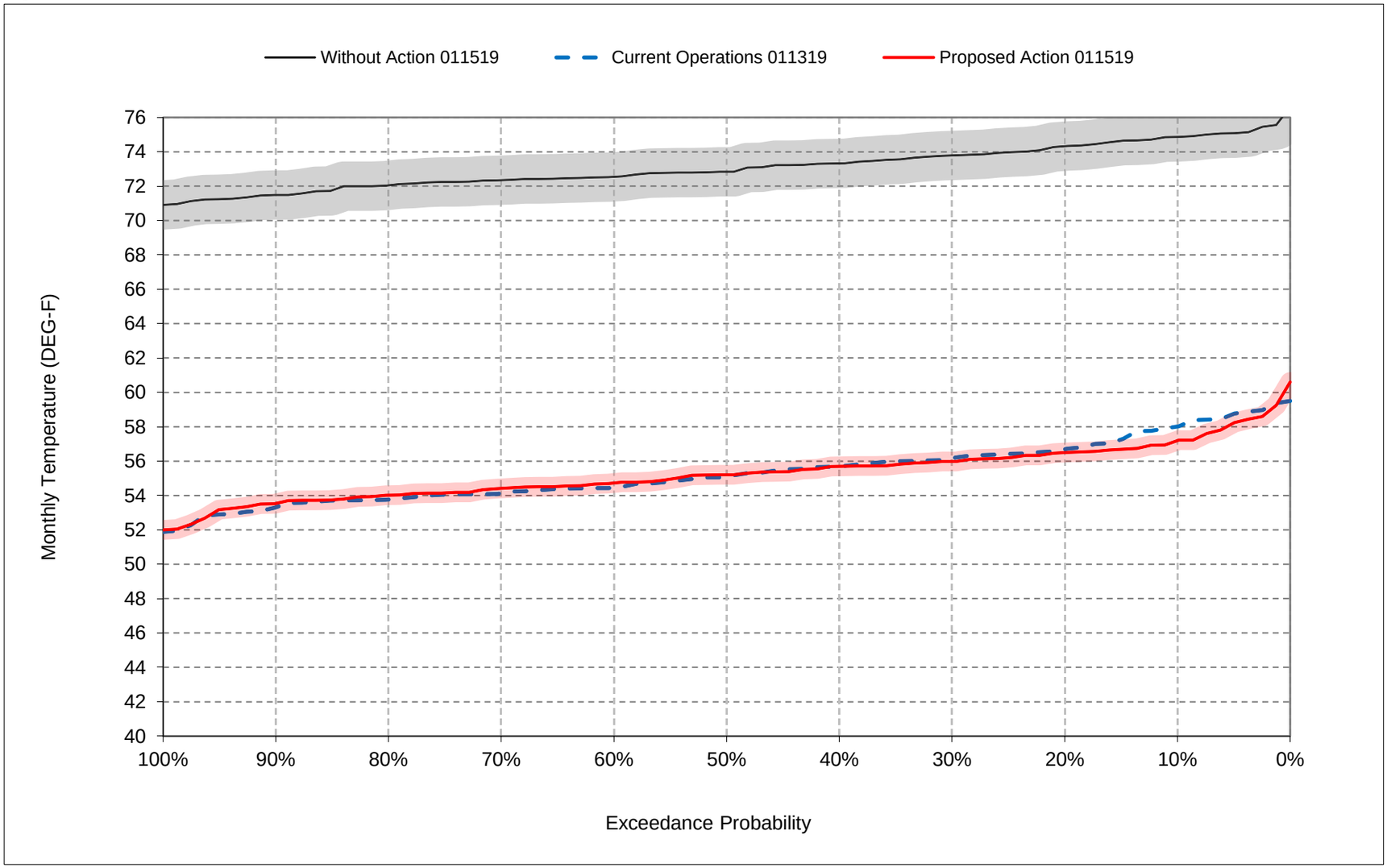
Figure 8-15. Sacramento River at Jellys Ferry, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

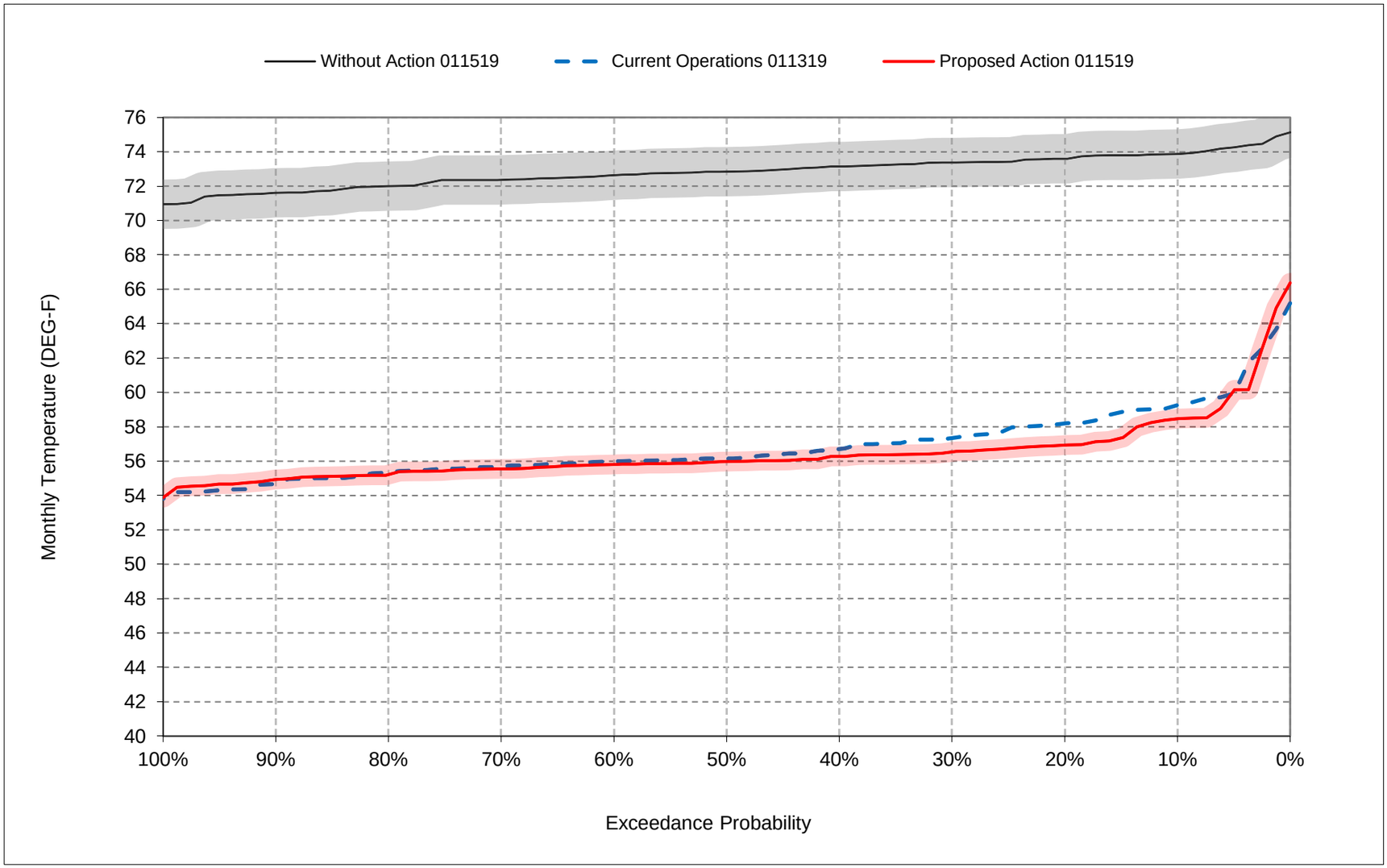
Figure 8-16. Sacramento River at Jellys Ferry, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

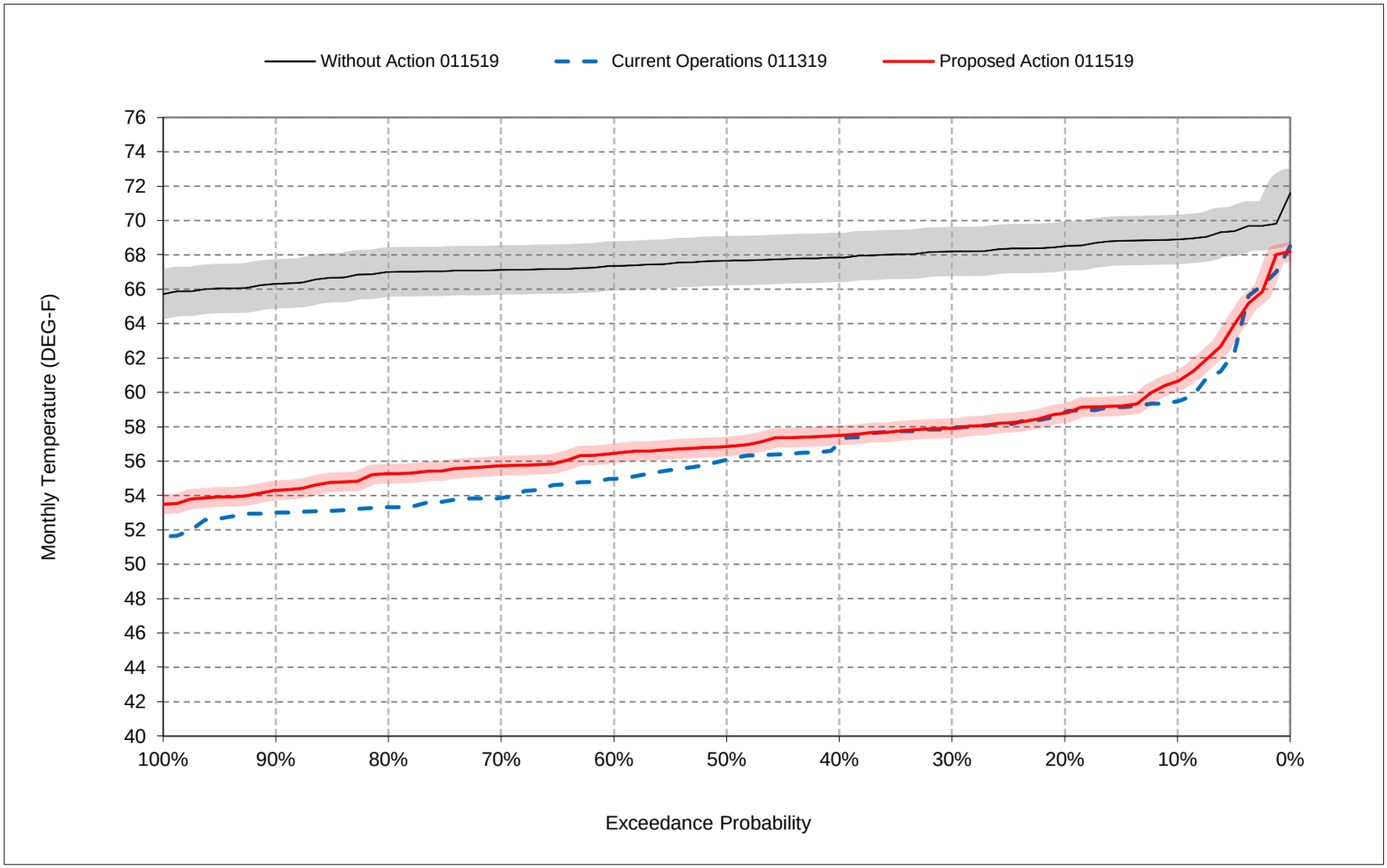
Figure 8-17. Sacramento River at Jellys Ferry, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 9-1. Sacramento River at Bend Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.8	51.6	44.3	43.3	45.7	50.9	57.1	63.7	70.4	75.2	74.1	69.2
20%	60.0	50.7	44.0	42.9	45.3	50.3	56.1	63.2	69.4	74.5	73.8	68.7
30%	59.7	50.0	43.8	42.9	45.0	49.6	55.4	62.5	69.1	74.1	73.6	68.4
40%	59.3	49.6	43.7	42.6	44.7	49.2	54.9	62.1	68.7	73.7	73.3	68.2
50%	59.2	49.1	43.5	42.5	44.5	48.9	54.3	61.8	68.3	73.3	73.1	68.0
60%	58.8	48.9	43.3	42.4	44.4	48.7	53.9	60.8	67.6	73.0	72.9	67.6
70%	58.2	48.6	43.2	42.2	44.2	48.5	53.2	60.4	67.0	72.7	72.7	67.4
80%	57.9	48.4	42.9	41.9	44.2	48.1	52.8	59.8	66.3	72.5	72.4	67.2
90%	57.6	48.0	42.4	41.3	43.9	47.7	52.0	59.1	65.5	71.9	71.9	66.7
Long Term												
Full Simulation Period[a]	59.1	49.5	43.5	42.4	44.7	49.2	54.5	61.6	68.0	73.5	73.1	68.0
Water Year Types[b,c]												
Wet (32%)	58.7	49.5	43.4	42.7	44.4	48.5	53.0	60.2	66.7	72.7	72.6	67.5
Above Normal (16%)	59.1	48.8	43.4	42.7	44.5	48.7	53.8	61.4	68.4	73.1	72.8	67.4
Below Normal (13%)	58.5	49.5	43.4	41.9	44.5	49.4	55.2	62.0	68.2	73.7	73.0	67.8
Dry (24%)	59.2	49.4	43.6	42.1	44.8	49.4	55.0	62.3	68.7	73.8	73.4	68.3
Critical (15%)	60.3	50.5	43.6	42.4	45.7	50.5	56.9	63.1	69.4	74.8	74.1	69.1

Current Operations 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.9	**4.0**	**6.7**	**4.9**	**3.2**	**1.4**	-0.7	-5.7	-11.6	-15.9	-13.5	-8.5
20%	-2.6	**4.5**	**6.2**	**4.7**	**3.2**	**1.3**	-0.3	-6.1	-11.3	-16.5	-14.4	-9.0
30%	-2.8	**4.6**	**5.5**	**4.2**	**3.2**	**1.7**	**0.1**	-6.0	-11.6	-16.8	-14.7	-9.3
40%	-2.8	**4.6**	**5.2**	**4.2**	**3.0**	**1.7**	**0.2**	-6.1	-11.6	-16.8	-15.3	-10.0
50%	-3.0	**4.7**	**5.2**	**4.1**	**3.0**	**1.6**	**0.3**	-6.2	-11.8	-16.9	-15.7	-10.7
60%	-2.8	**4.3**	**5.1**	**4.0**	**2.8**	**1.3**	**0.4**	-5.3	-11.5	-17.2	-15.8	-11.7
70%	-2.5	**4.4**	**4.7**	**4.0**	**2.4**	**0.9**	**0.7**	-5.3	-11.2	-17.4	-15.7	-12.7
80%	-2.6	**4.1**	**4.8**	**4.0**	**2.2**	**0.4**	**0.1**	-5.2	-10.8	-17.6	-15.9	-13.1
90%	-2.5	**3.9**	**4.9**	**4.3**	**2.1**	**0.2**	-0.7	-5.2	-10.6	-17.5	-15.9	-13.1
Long Term												
Full Simulation Period[a]	-2.4	**4.2**	**5.5**	**4.3**	**2.7**	**1.0**	-0.1	-5.7	-11.3	-17.0	-15.1	-10.6
Water Year Types[b,c]												
Wet (32%)	-2.9	**4.8**	**5.9**	**3.7**	**2.3**	**0.5**	**0.0**	-4.6	-9.4	-16.5	-15.5	-13.2
Above Normal (16%)	-3.3	**4.9**	**5.5**	**3.9**	**2.4**	**0.8**	**0.3**	-5.9	-12.4	-18.3	-16.3	-12.4
Below Normal (13%)	-2.4	**3.7**	**5.6**	**4.8**	**3.3**	**1.6**	**0.1**	-6.6	-12.5	-18.1	-15.9	-9.5
Dry (24%)	-2.6	**3.6**	**5.0**	**4.8**	**3.1**	**1.6**	**0.1**	-6.2	-12.6	-17.2	-14.7	-9.2
Critical (15%)	-0.2	**4.1**	**5.1**	**4.8**	**2.8**	**1.1**	-1.5	-6.5	-11.2	-15.5	-12.7	-6.3

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 9-2. Sacramento River at Bend Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	60.8	51.6	44.3	43.3	45.7	50.9	57.1	63.7	70.4	75.2	74.1	69.2
20%	60.0	50.7	44.0	42.9	45.3	50.3	56.1	63.2	69.4	74.5	73.8	68.7
30%	59.7	50.0	43.8	42.9	45.0	49.6	55.4	62.5	69.1	74.1	73.6	68.4
40%	59.3	49.6	43.7	42.6	44.7	49.2	54.9	62.1	68.7	73.7	73.3	68.2
50%	59.2	49.1	43.5	42.5	44.5	48.9	54.3	61.8	68.3	73.3	73.1	68.0
60%	58.8	48.9	43.3	42.4	44.4	48.7	53.9	60.8	67.6	73.0	72.9	67.6
70%	58.2	48.6	43.2	42.2	44.2	48.5	53.2	60.4	67.0	72.7	72.7	67.4
80%	57.9	48.4	42.9	41.9	44.2	48.1	52.8	59.8	66.3	72.5	72.4	67.2
90%	57.6	48.0	42.4	41.3	43.9	47.7	52.0	59.1	65.5	71.9	71.9	66.7
Long Term												
Full Simulation Period[a]	59.1	49.5	43.5	42.4	44.7	49.2	54.5	61.6	68.0	73.5	73.1	68.0
Water Year Types[b,c]												
Wet (32%)	58.7	49.5	43.4	42.7	44.4	48.5	53.0	60.2	66.7	72.7	72.6	67.5
Above Normal (16%)	59.1	48.8	43.4	42.7	44.5	48.7	53.8	61.4	68.4	73.1	72.8	67.4
Below Normal (13%)	58.5	49.5	43.4	41.9	44.5	49.4	55.2	62.0	68.2	73.7	73.0	67.8
Dry (24%)	59.2	49.4	43.6	42.1	44.8	49.4	55.0	62.3	68.7	73.8	73.4	68.3
Critical (15%)	60.3	50.5	43.6	42.4	45.7	50.5	56.9	63.1	69.4	74.8	74.1	69.1

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.5	**4.3**	**6.9**	**4.9**	**3.3**	**1.5**	-0.8	-6.4	-11.9	-16.8	-14.6	-7.7
20%	-3.3	**4.0**	**6.1**	**4.8**	**3.3**	**1.4**	-0.3	-6.5	-11.5	-16.8	-15.3	-8.8
30%	-3.9	**3.9**	**5.7**	**4.5**	**3.2**	**1.7**	**0.3**	-6.3	-11.9	-16.9	-15.6	-9.2
40%	-3.8	**3.9**	**5.5**	**4.4**	**3.0**	**1.6**	**0.2**	-6.3	-11.8	-16.9	-15.8	-9.5
50%	-3.8	**4.2**	**5.4**	**4.2**	**3.0**	**1.5**	**0.4**	-6.3	-12.1	-17.0	-15.9	-9.8
60%	-3.8	**4.0**	**5.2**	**4.1**	**2.8**	**1.2**	**0.4**	-5.6	-11.8	-17.0	-15.9	-10.1
70%	-3.4	**4.1**	**5.0**	**4.1**	**2.5**	**1.0**	**0.8**	-5.8	-11.8	-17.3	-15.9	-10.5
80%	-3.6	**3.9**	**5.2**	**4.1**	**2.3**	**0.4**	**0.2**	-5.7	-11.4	-17.4	-16.0	-10.9
90%	-3.5	**3.7**	**5.1**	**4.3**	**2.2**	**0.3**	-0.6	-5.4	-10.9	-17.4	-15.8	-11.5
Long Term												
Full Simulation Period[a]	-3.2	**4.0**	**5.6**	**4.5**	**2.8**	**1.0**	-0.1	-6.1	-11.6	-17.0	-15.4	-9.5
Water Year Types[b,c]												
Wet (32%)	-3.9	**4.0**	**6.0**	**3.9**	**2.4**	**0.5**	0.0	-4.8	-9.4	-16.4	-15.7	-11.1
Above Normal (16%)	-4.4	**3.8**	**5.4**	**4.0**	**2.4**	**0.8**	**0.3**	-6.1	-12.5	-18.2	-16.1	-9.3
Below Normal (13%)	-2.7	**4.0**	**5.9**	**5.0**	**3.3**	**1.4**	-0.1	-7.2	-12.9	-18.2	-16.3	-10.0
Dry (24%)	-3.6	**3.8**	**5.3**	**4.9**	**3.2**	**1.6**	**0.2**	-6.6	-13.1	-17.3	-15.6	-9.5
Critical (15%)	-0.1	**4.3**	**5.3**	**5.0**	**3.1**	**1.2**	-1.4	-6.7	-11.9	-15.8	-13.0	-5.7

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 9-3. Sacramento River at Bend Bridge, Monthly Temperature

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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.

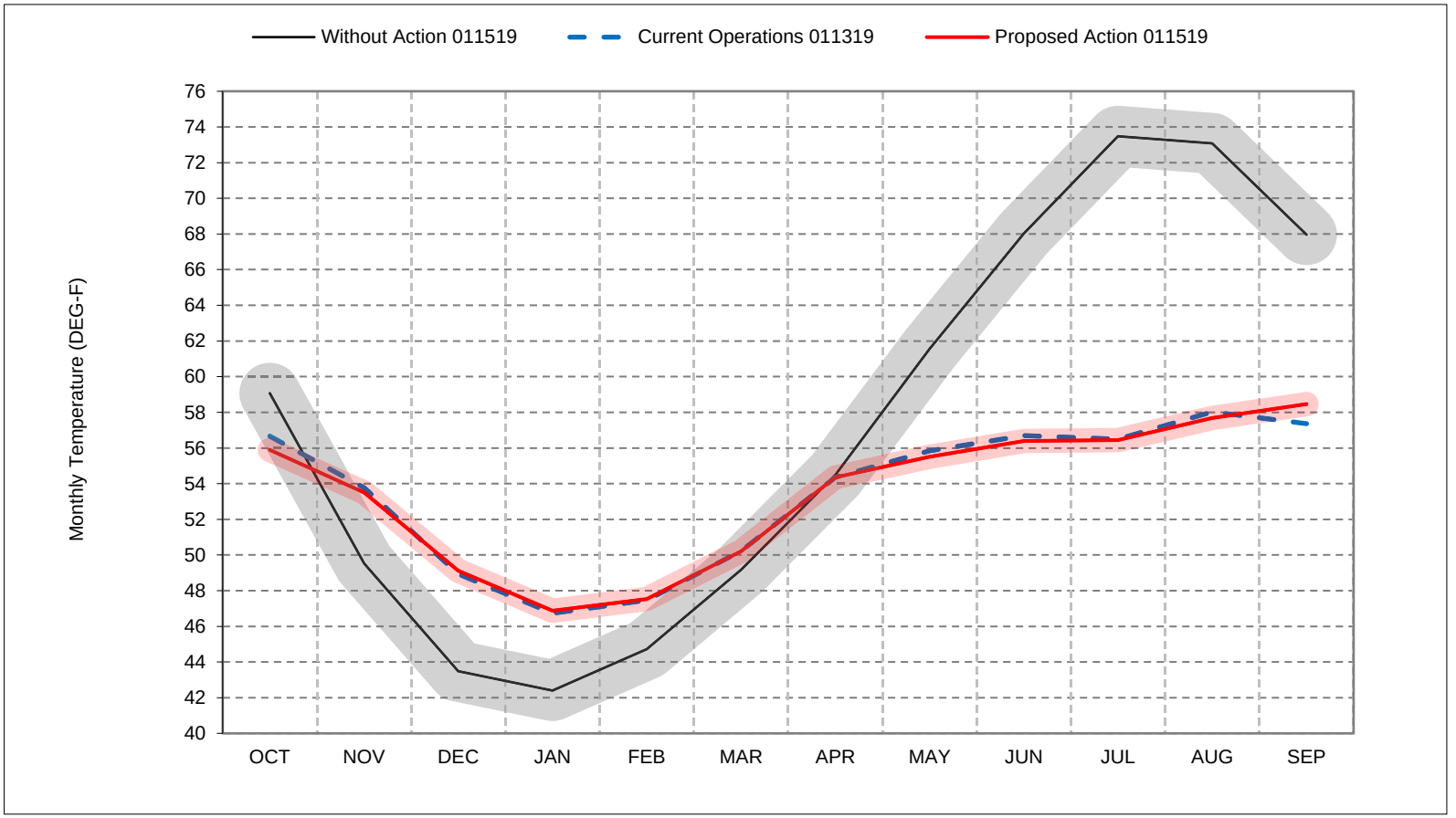
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

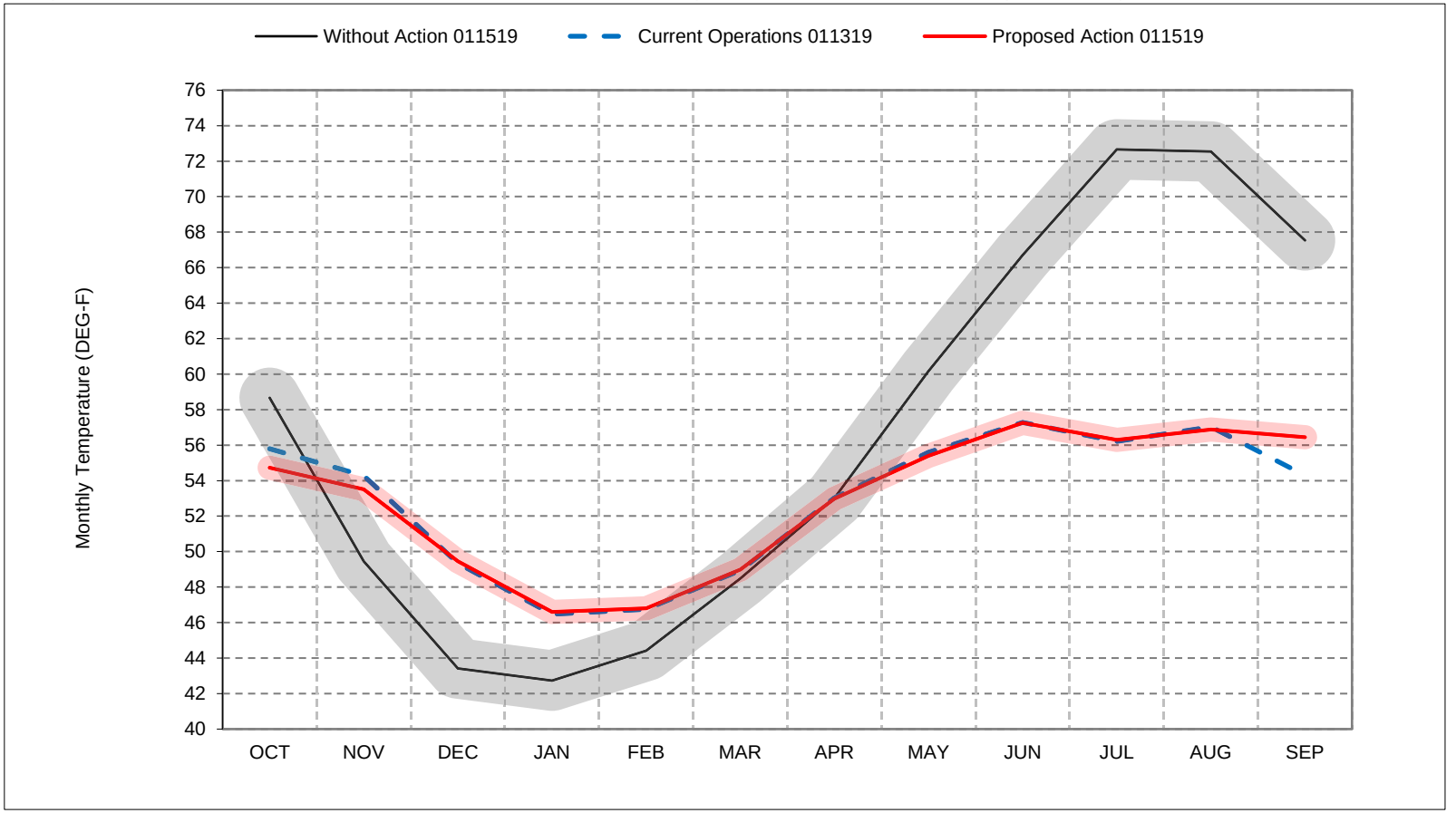
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-1. Sacramento River at Bend Bridge, Long-Term Average Temperature



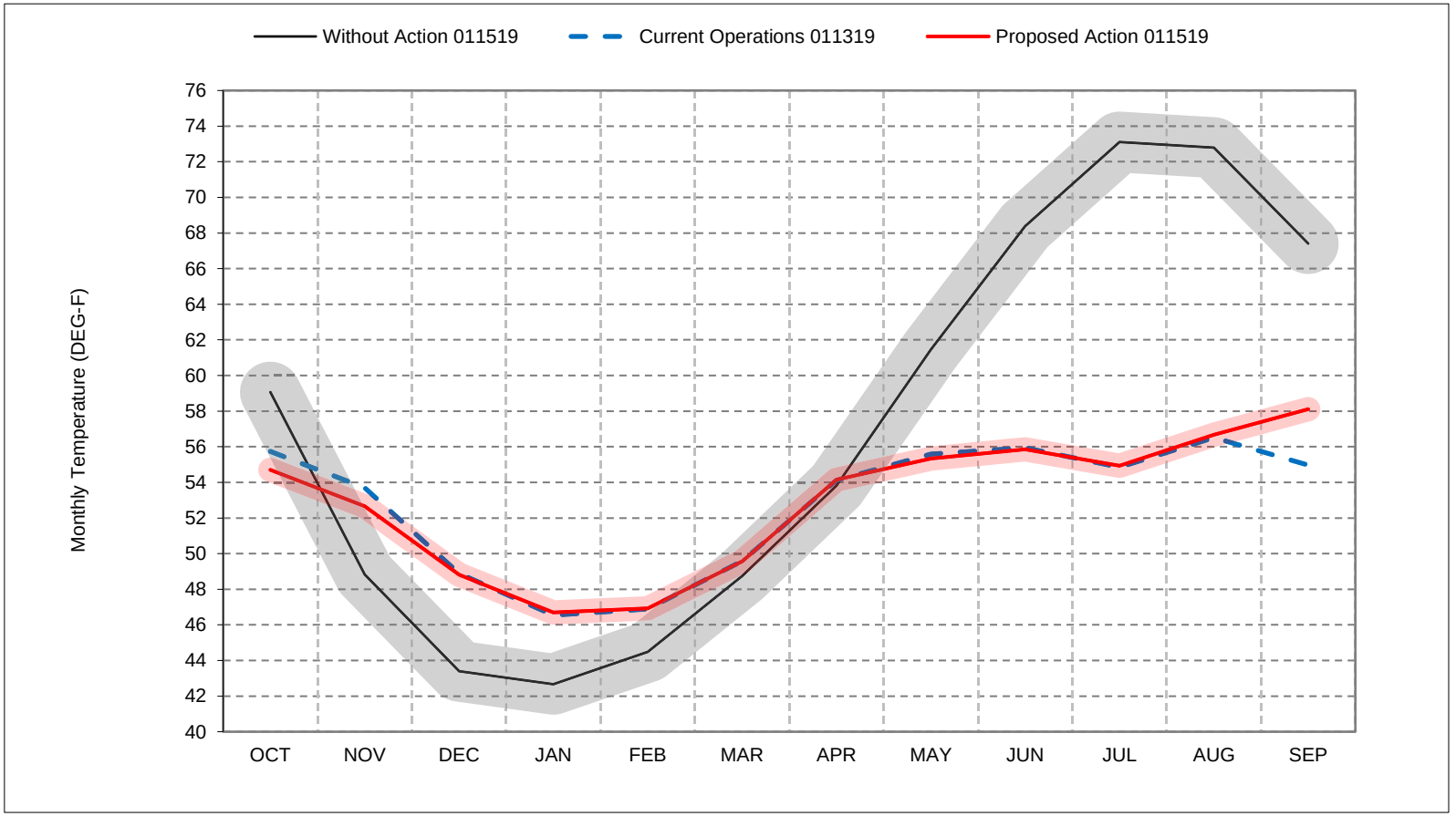
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-2. Sacramento River at Bend Bridge, Wet Year Average Temperature



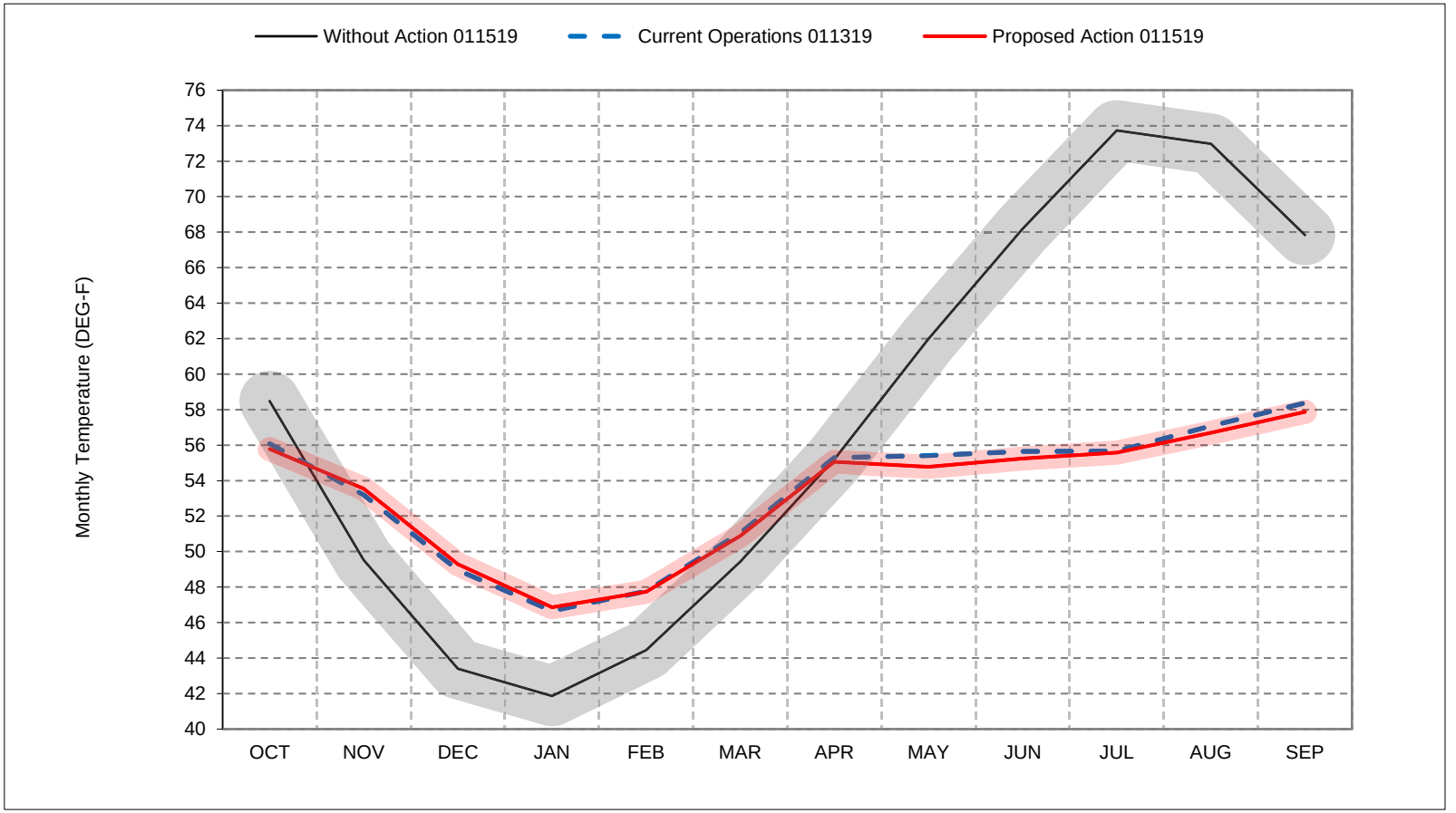
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-3. Sacramento River at Bend Bridge, Above Normal Year Average Temperature



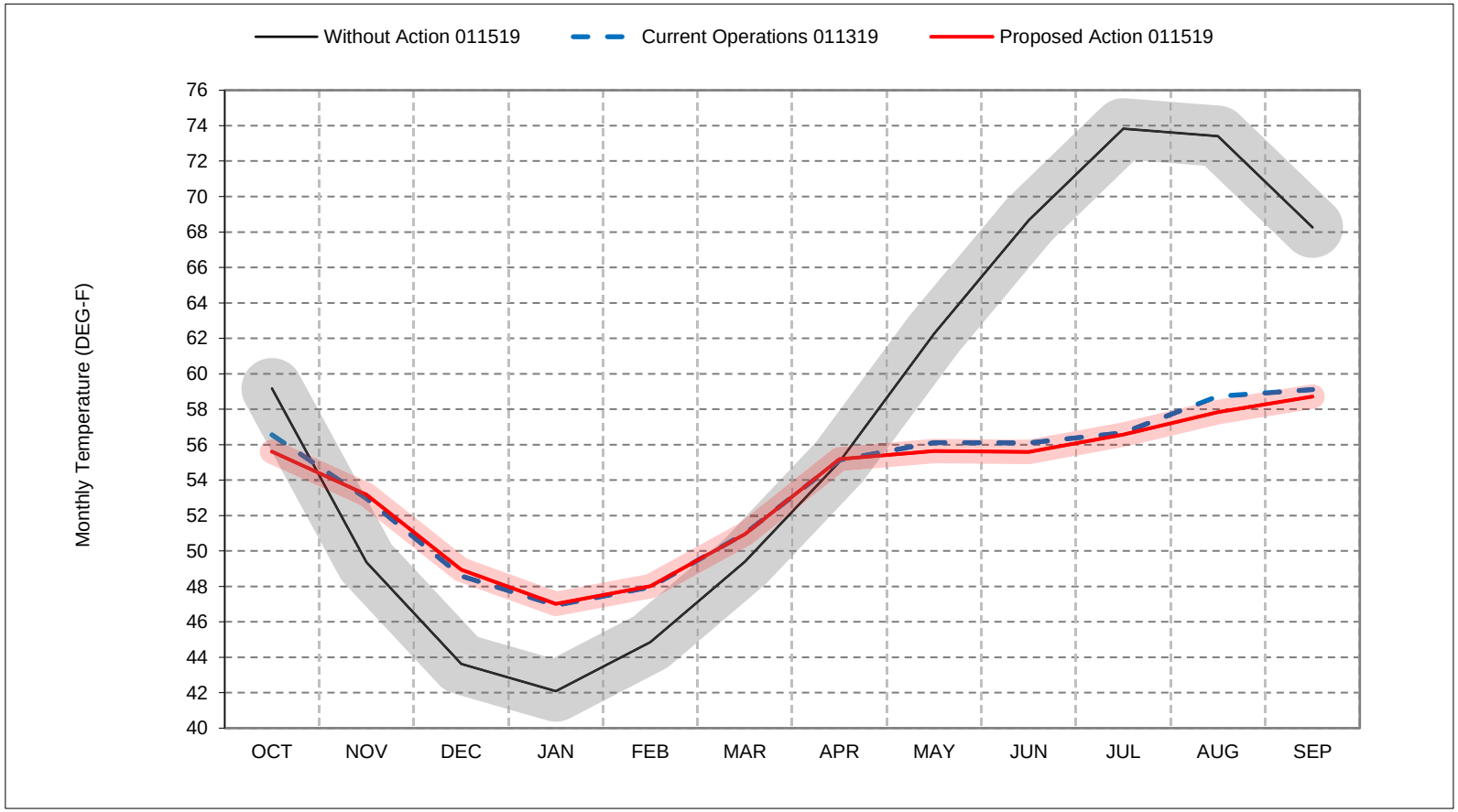
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-4. Sacramento River at Bend Bridge, Below Normal Year Average Temperature



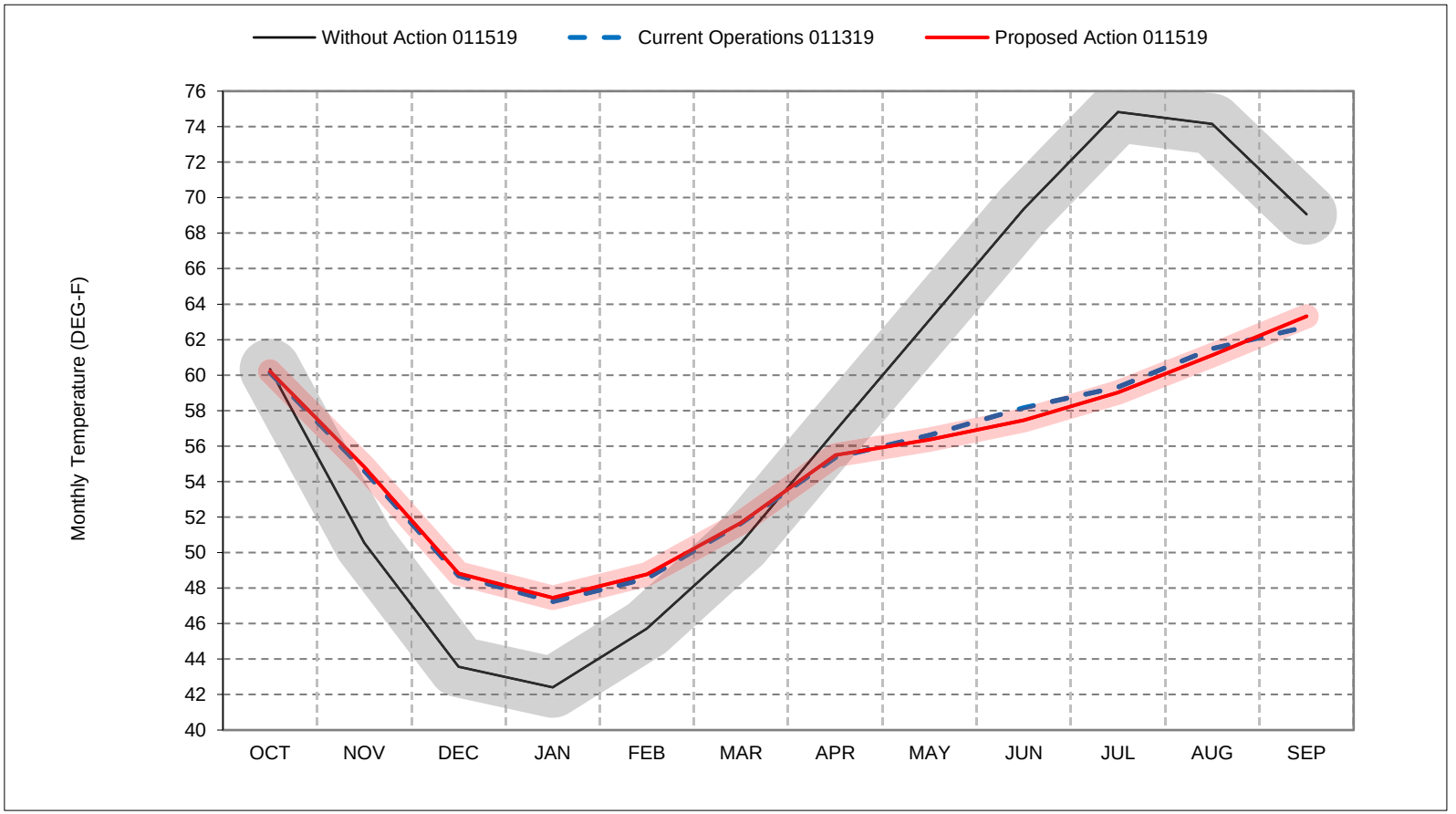
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-5. Sacramento River at Bend Bridge, Dry Year Average Temperature



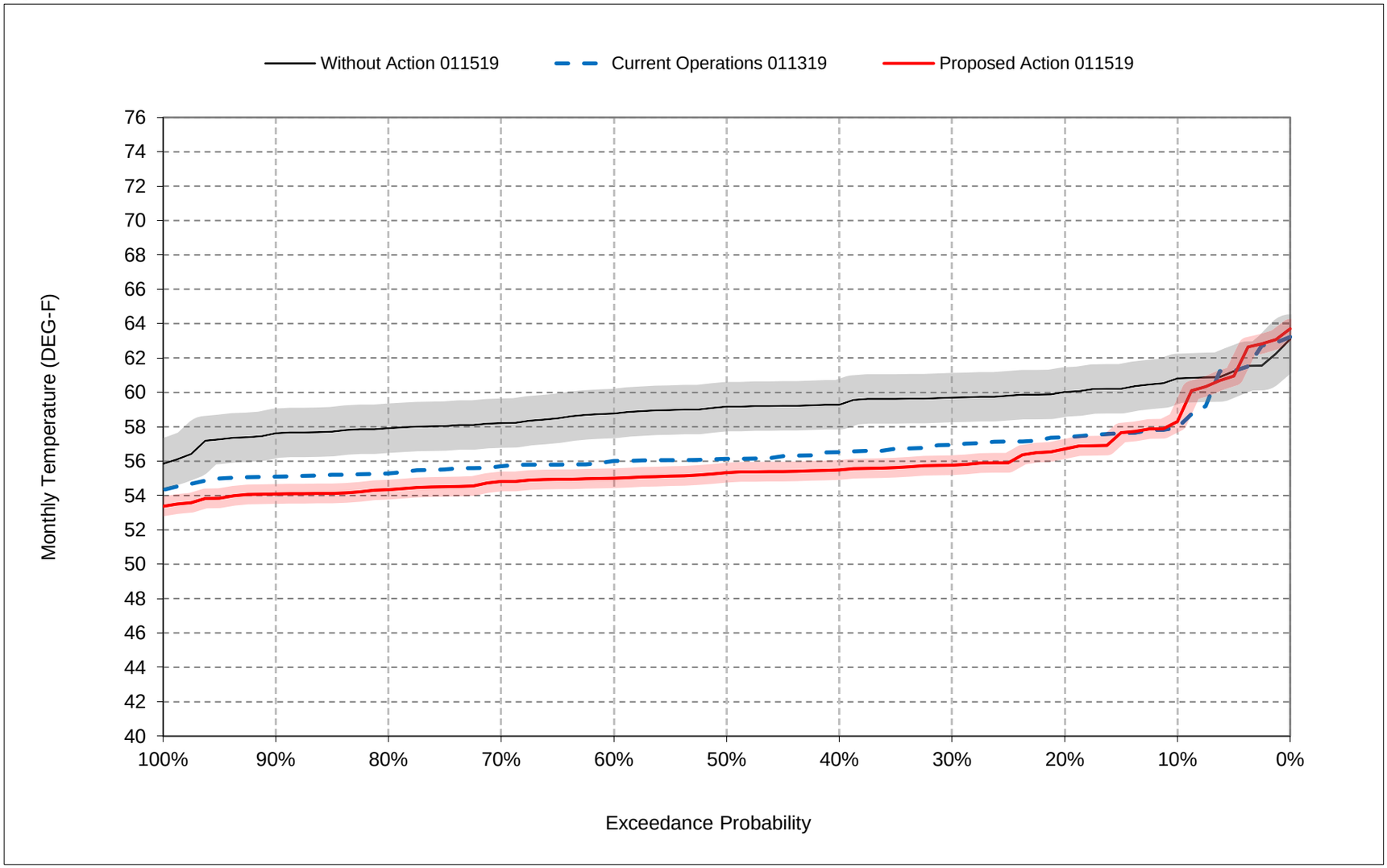
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

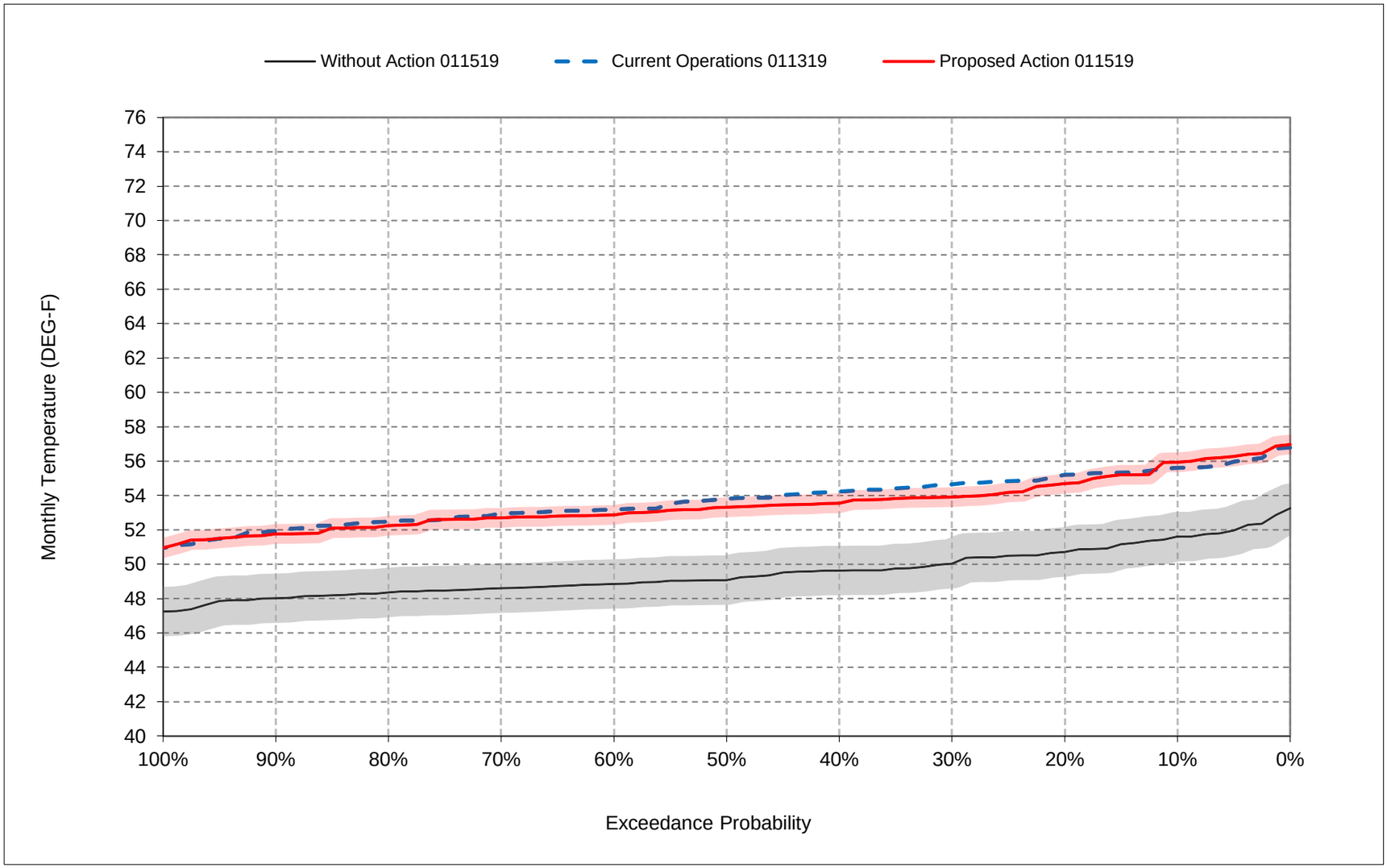
Figure 9-7. Sacramento River at Bend Bridge, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

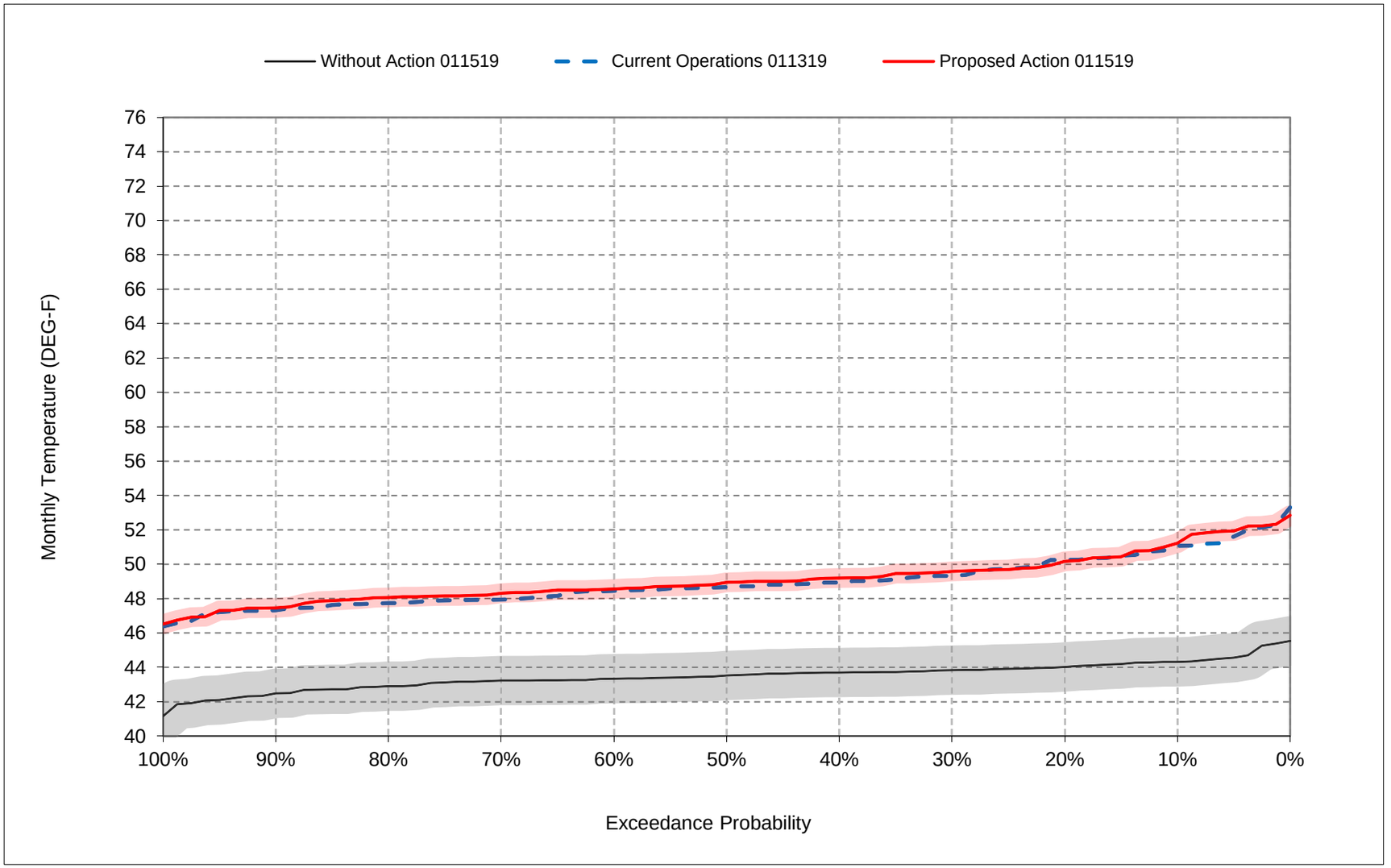
Figure 9-8. Sacramento River at Bend Bridge, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

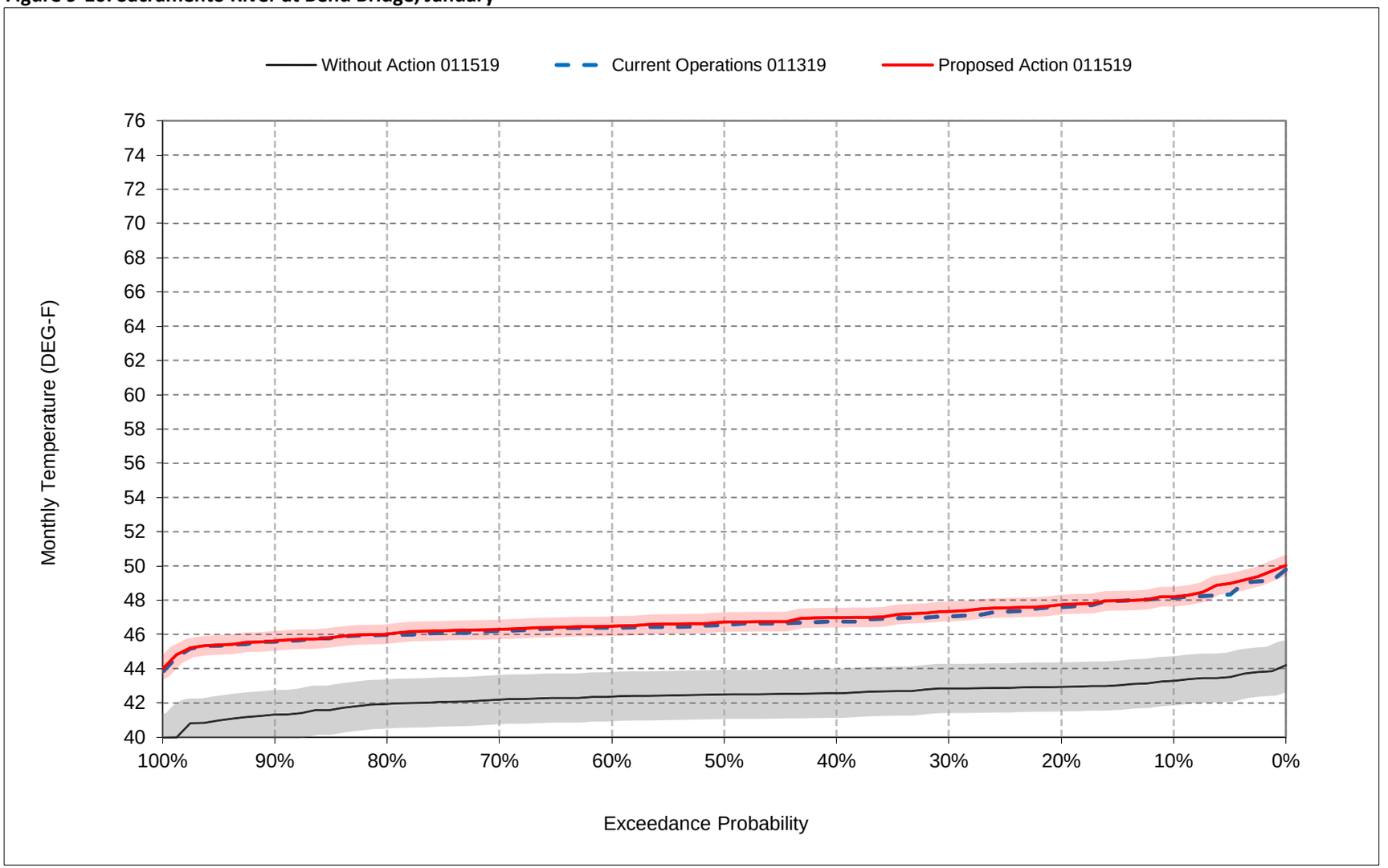
Figure 9-9. Sacramento River at Bend Bridge, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

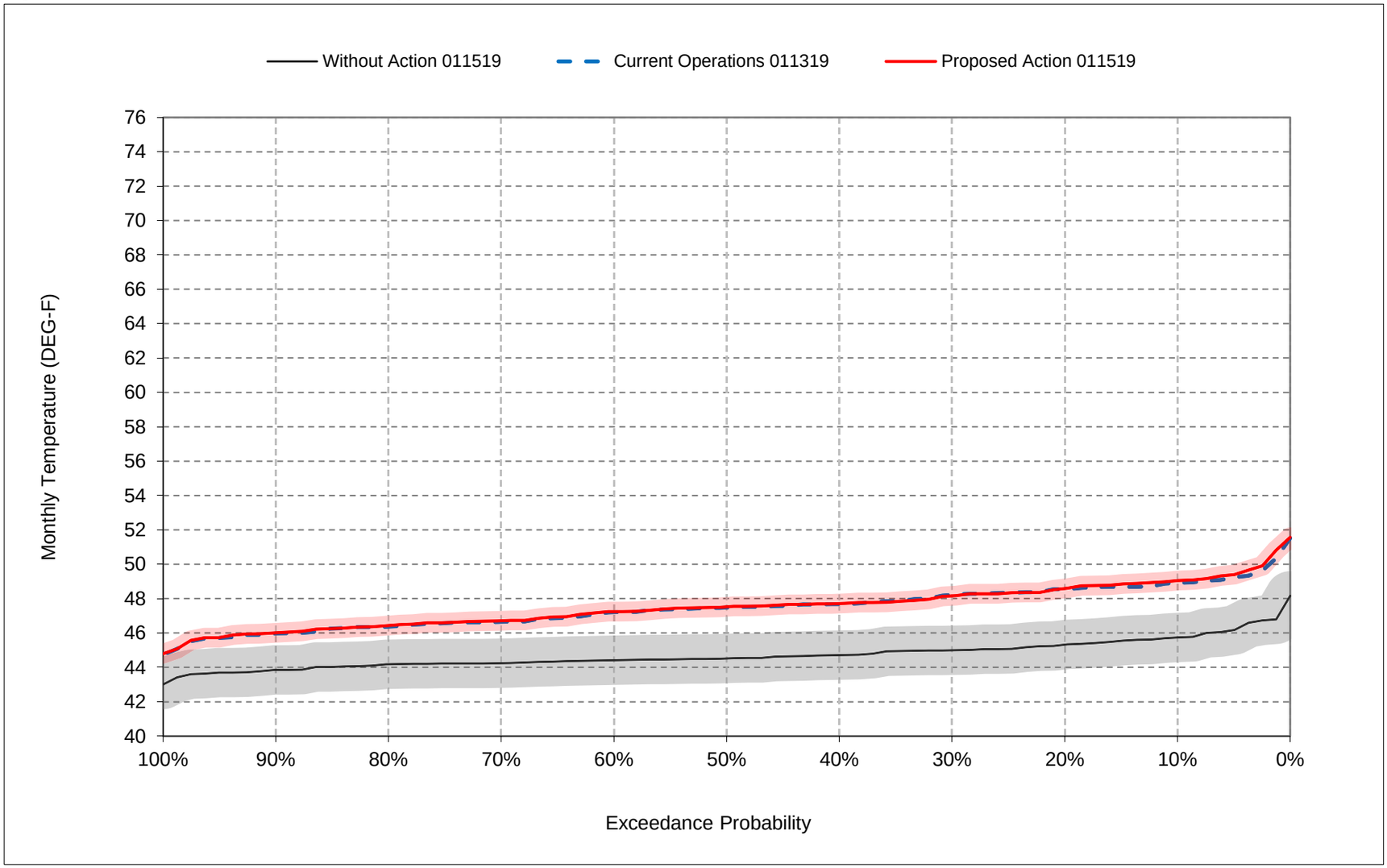
Figure 9-10. Sacramento River at Bend Bridge, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

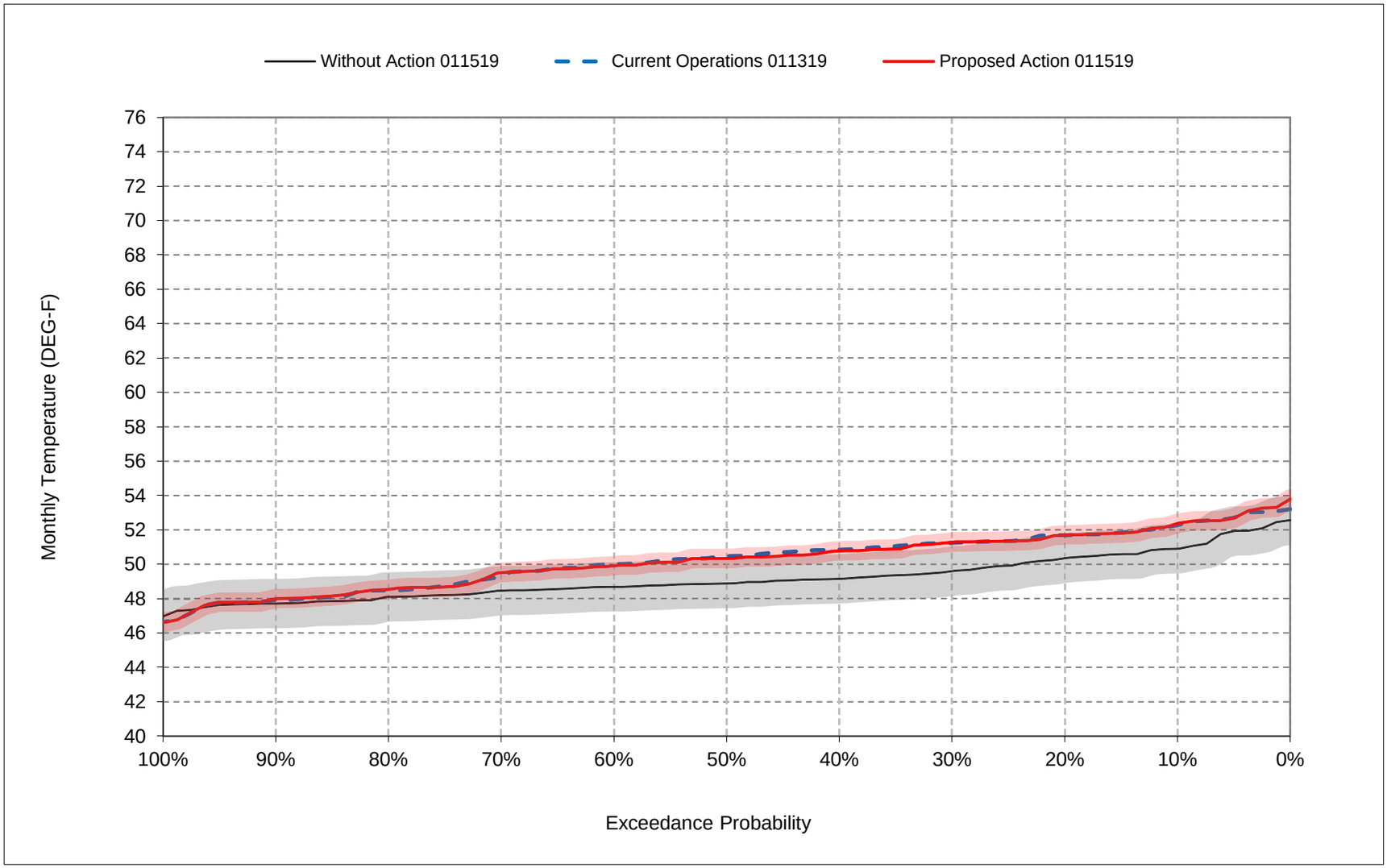
Figure 9-11. Sacramento River at Bend Bridge, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

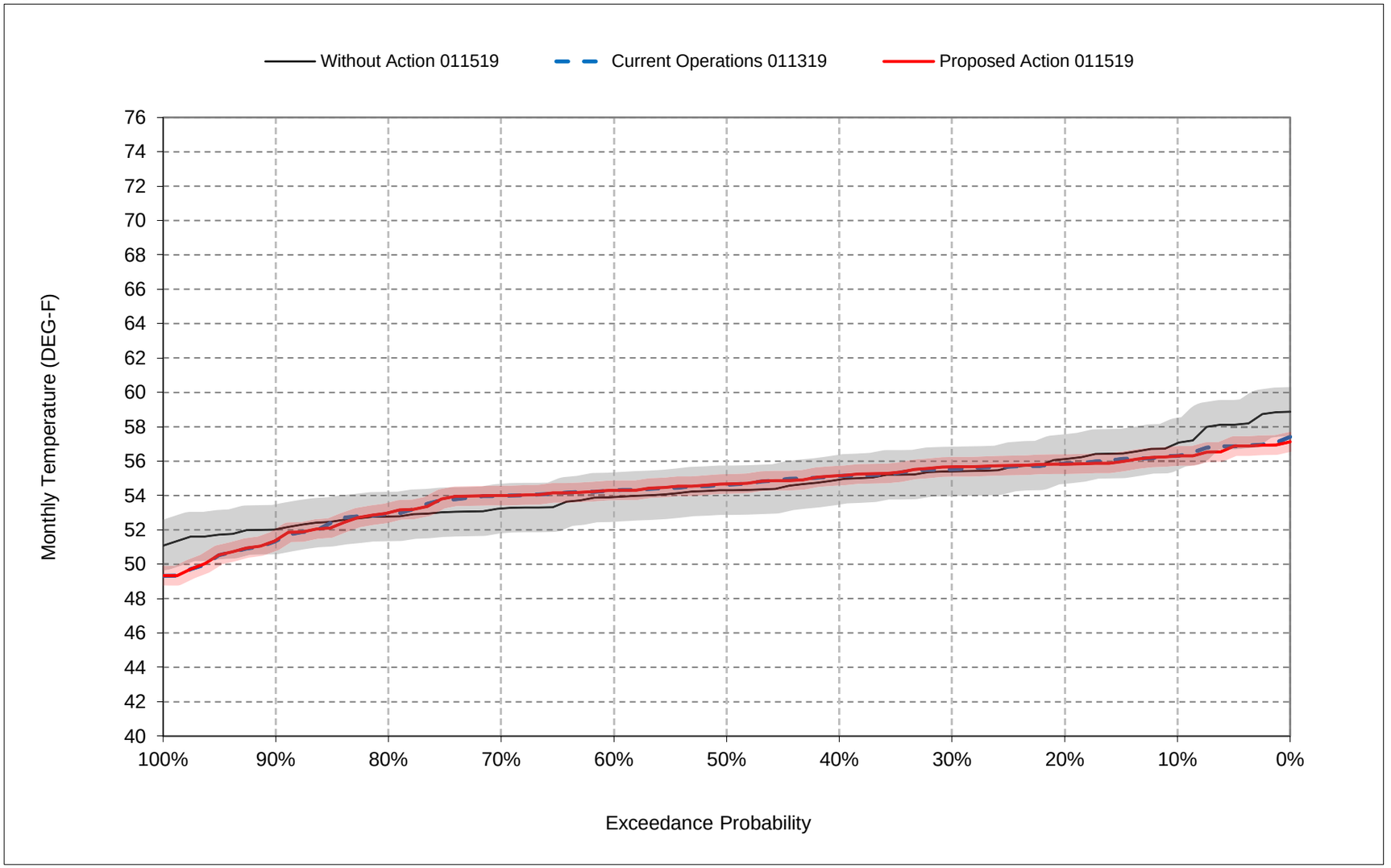
Figure 9-12. Sacramento River at Bend Bridge, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

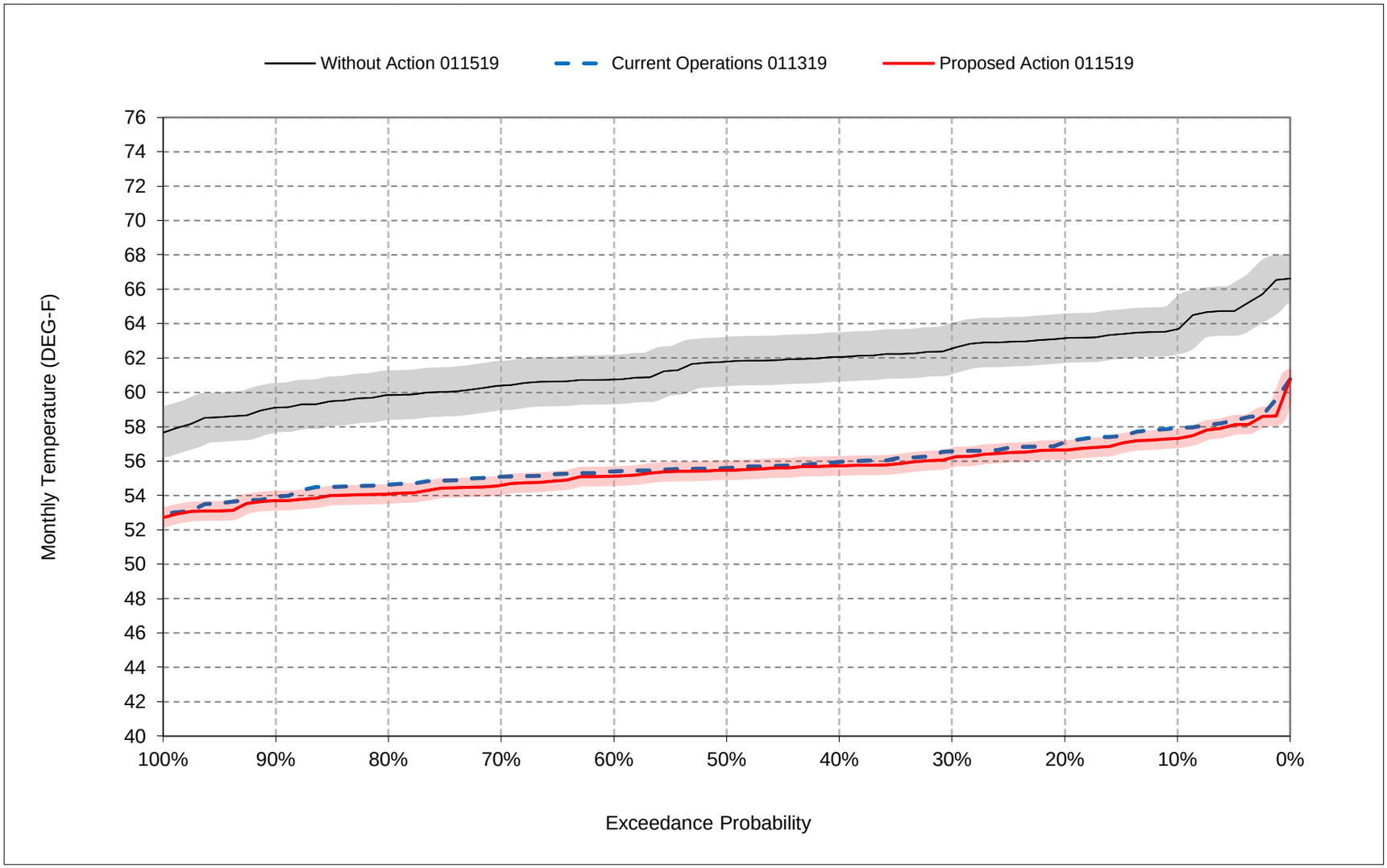
Figure 9-13. Sacramento River at Bend Bridge, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

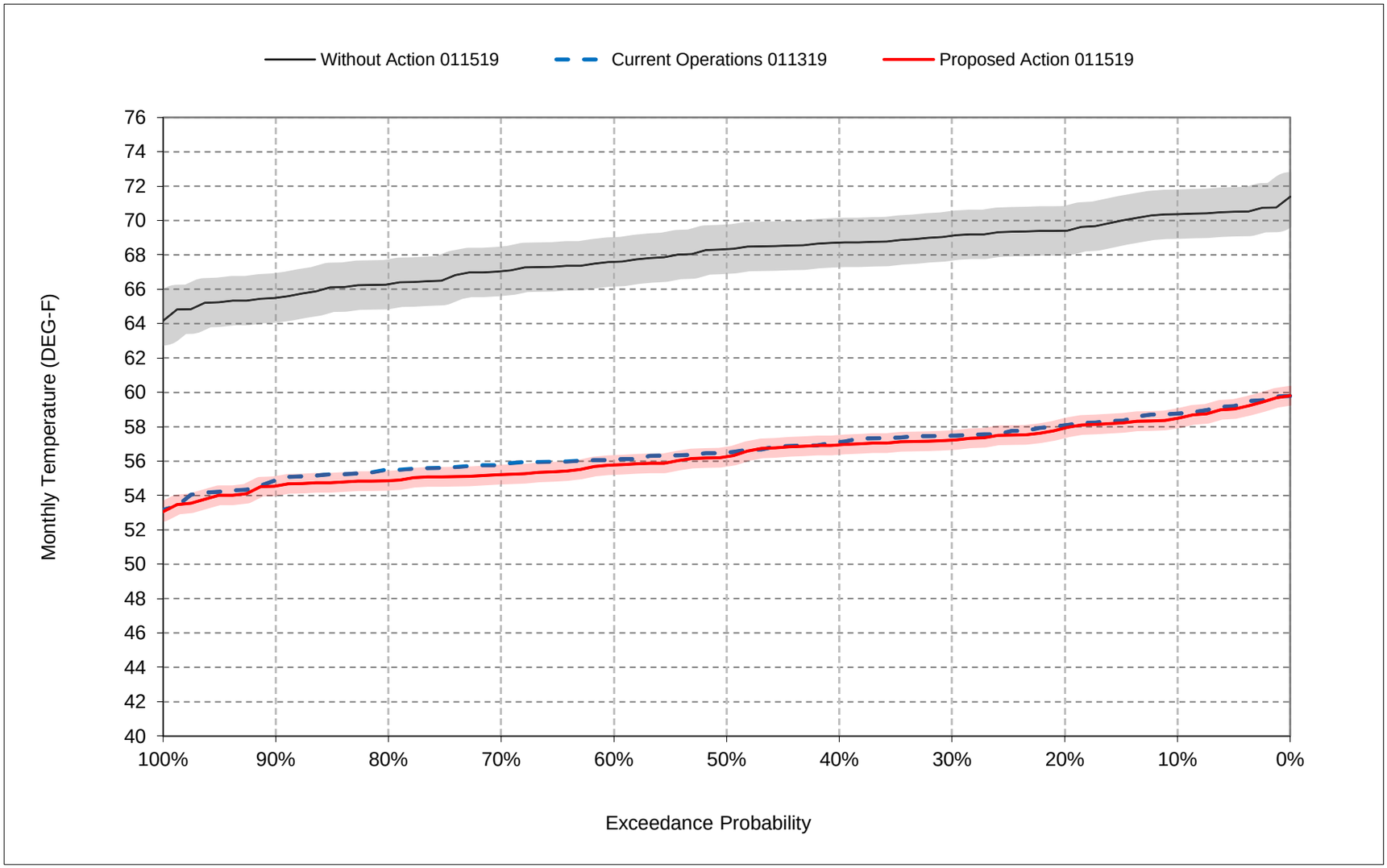
Figure 9-14. Sacramento River at Bend Bridge, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

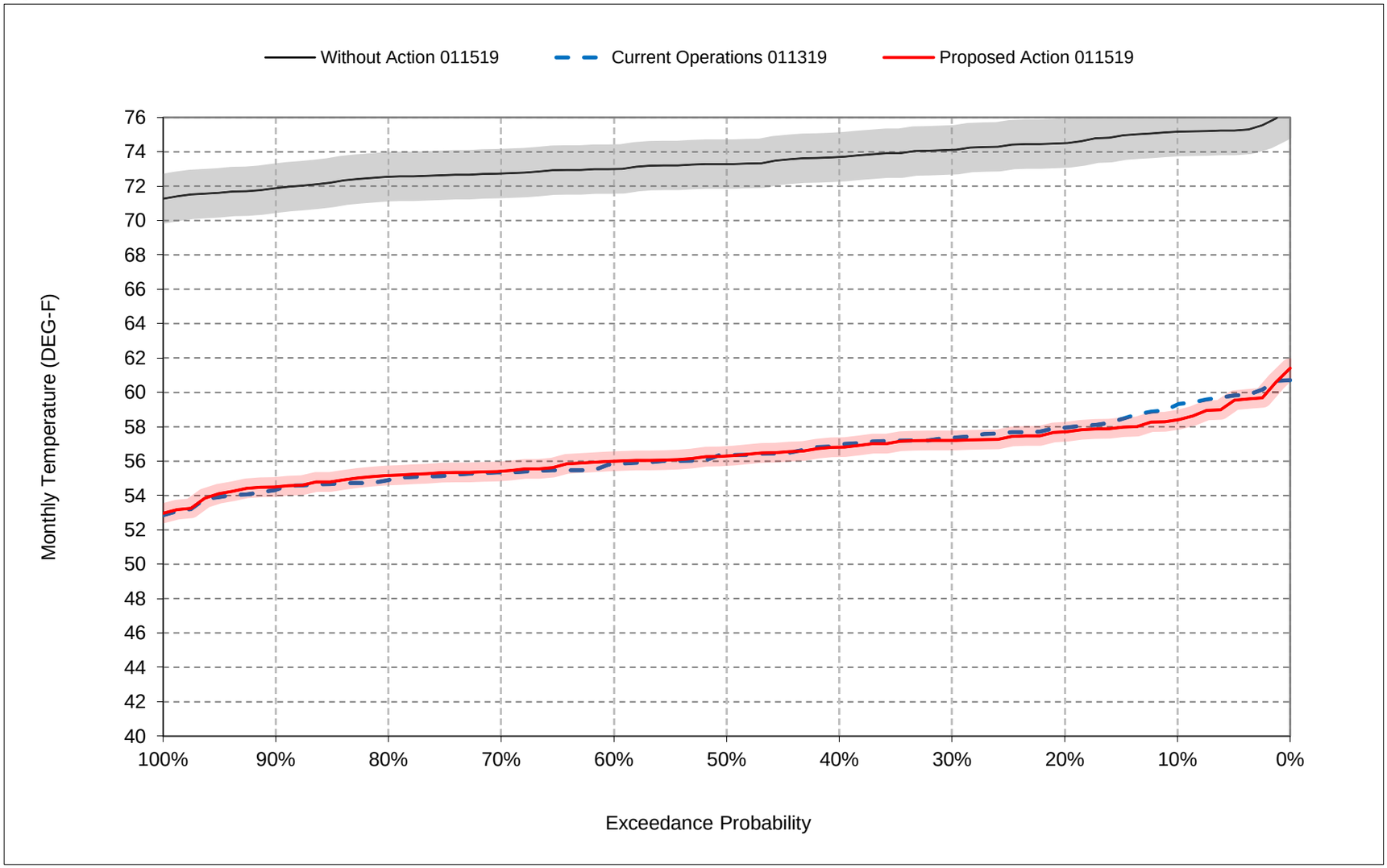
Figure 9-15. Sacramento River at Bend Bridge, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

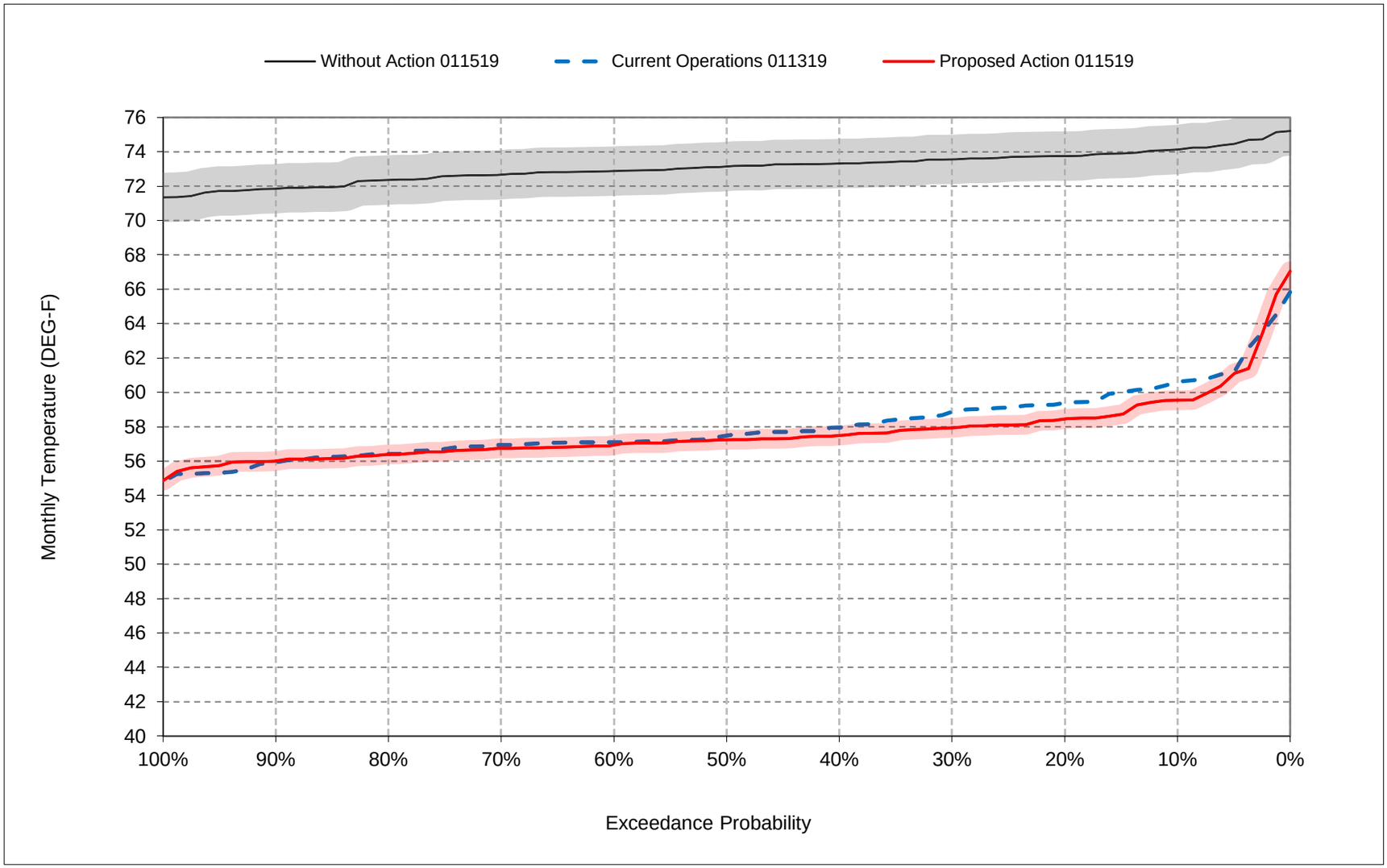
Figure 9-16. Sacramento River at Bend Bridge, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

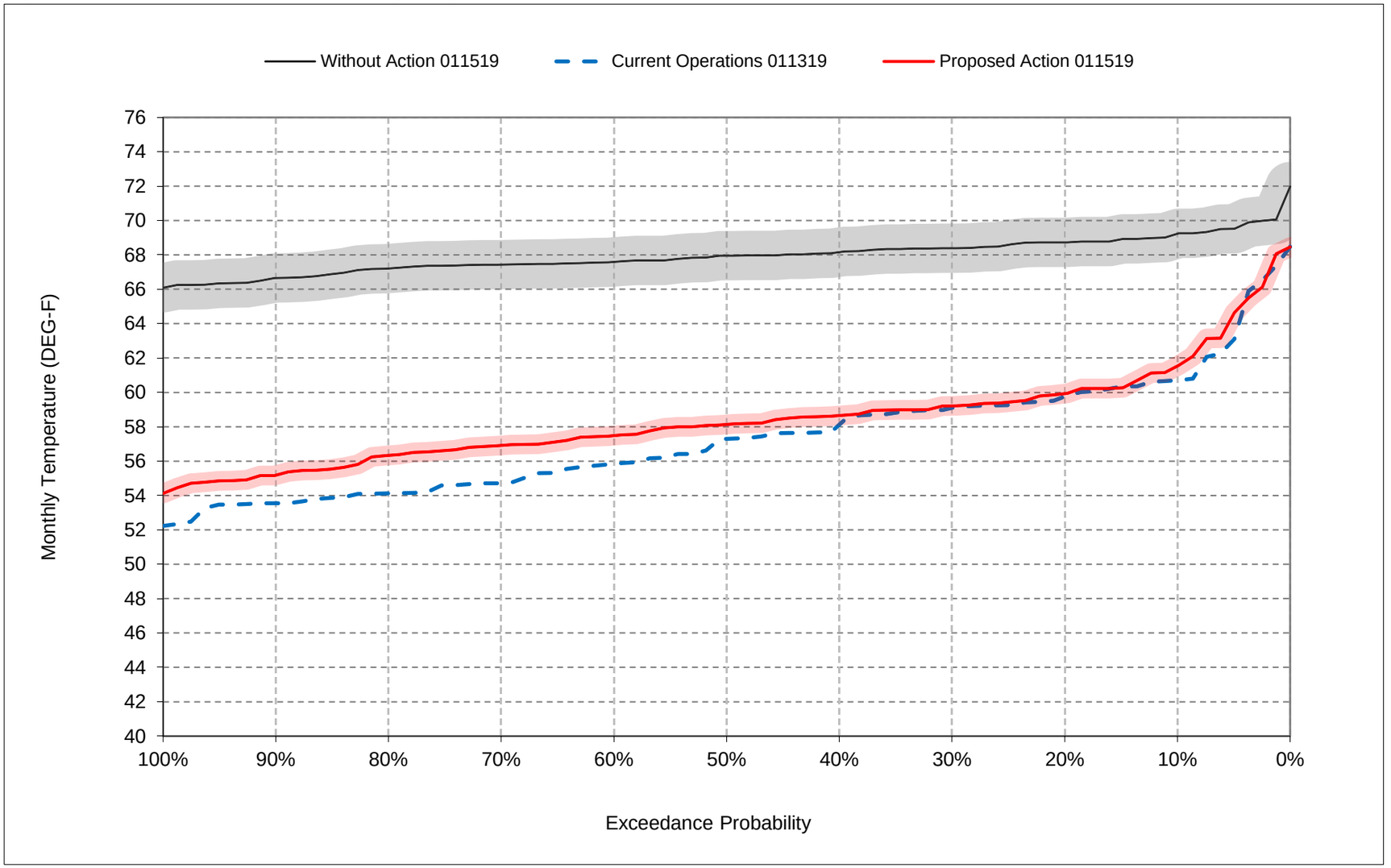
Figure 9-17. Sacramento River at Bend Bridge, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 10-1. Sacramento River at Red Bluff, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.6	52.1	44.6	43.5	46.1	51.6	57.9	64.7	71.7	76.9	76.0	70.9
20%	60.8	51.3	44.3	43.1	45.7	50.9	56.8	64.1	70.9	76.2	75.6	70.3
30%	60.4	50.5	44.0	43.0	45.3	50.0	56.0	63.4	70.5	75.8	75.3	70.1
40%	60.0	50.0	43.9	42.9	45.0	49.5	55.5	63.0	70.0	75.3	75.1	69.8
50%	59.9	49.4	43.7	42.7	44.8	49.2	54.9	62.7	69.6	74.9	74.9	69.3
60%	59.5	49.2	43.5	42.6	44.6	49.0	54.4	61.5	68.7	74.6	74.6	69.1
70%	58.8	49.0	43.4	42.4	44.5	48.7	53.7	61.1	68.1	74.2	74.3	68.9
80%	58.5	48.7	43.1	42.2	44.4	48.3	53.2	60.4	67.4	74.0	74.0	68.6
90%	58.2	48.3	42.6	41.5	44.0	47.9	52.4	59.6	66.4	73.3	73.4	67.8
Long Term												
Full Simulation Period[a]	59.8	49.9	43.7	42.6	45.0	49.6	55.1	62.4	69.2	75.1	74.8	69.5
Water Year Types[b,c]												
Wet (32%)	59.3	49.9	43.6	42.9	44.6	48.8	53.4	60.8	67.7	74.1	74.2	69.0
Above Normal (16%)	59.8	49.2	43.6	42.9	44.7	49.0	54.3	62.2	69.6	74.7	74.5	68.8
Below Normal (13%)	59.1	49.9	43.6	42.1	44.8	49.9	55.8	62.9	69.4	75.4	74.7	69.4
Dry (24%)	59.9	49.8	43.8	42.4	45.2	49.8	55.6	63.2	70.0	75.5	75.2	69.9
Critical (15%)	61.1	51.0	43.8	42.7	46.2	51.1	57.7	64.1	70.7	76.5	76.0	70.8

Current Operations 011319

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	50.7	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.9	**3.5**	**6.1**	**4.7**	**3.2**	**1.5**	-0.5	-5.4	-11.3	-15.8	-13.6	-8.3
20%	-2.7	**4.0**	**5.7**	**4.3**	**3.2**	**1.5**	**0.1**	-5.5	-11.0	-16.4	-14.3	-8.8
30%	-2.9	**4.2**	**5.3**	**4.1**	**3.3**	**1.9**	**0.5**	-5.5	-11.2	-16.3	-14.5	-9.2
40%	-3.0	**4.2**	**5.0**	**3.9**	**3.0**	**1.9**	**0.6**	-5.8	-11.1	-16.6	-15.3	-9.9
50%	-3.2	**4.4**	**4.9**	**3.8**	**3.0**	**1.7**	**0.7**	-5.8	-11.2	-16.8	-15.5	-10.5
60%	-3.2	**4.0**	**4.9**	**3.9**	**2.7**	**1.5**	**0.8**	-4.8	-10.8	-17.2	-15.7	-12.1
70%	-2.6	**4.1**	**4.5**	**3.8**	**2.4**	**1.1**	**1.0**	-4.7	-10.5	-17.2	-15.7	-12.9
80%	-2.7	**3.8**	**4.6**	**3.9**	**2.2**	**0.5**	**0.7**	-4.6	-10.1	-17.4	-15.9	-13.4
90%	-2.7	**3.8**	**4.7**	**4.1**	**2.1**	**0.2**	-0.4	-4.5	-9.7	-17.3	-15.5	-13.2
Long Term												
Full Simulation Period[a]	-2.6	**3.9**	**5.2**	**4.1**	**2.7**	**1.2**	**0.2**	-5.3	-10.7	-16.8	-15.0	-10.7
Water Year Types[b,c]												
Wet (32%)	-3.1	**4.4**	**5.6**	**3.6**	**2.3**	**0.6**	**0.3**	-4.1	-8.6	-16.1	-15.3	-13.6
Above Normal (16%)	-3.5	**4.5**	**5.2**	**3.8**	**2.4**	**1.0**	**0.6**	-5.3	-11.8	-18.1	-16.2	-12.6
Below Normal (13%)	-2.5	**3.3**	**5.2**	**4.6**	**3.3**	**1.8**	**0.6**	-6.2	-12.1	-18.0	-15.9	-9.3
Dry (24%)	-2.7	**3.3**	**4.7**	**4.6**	**3.1**	**1.8**	**0.5**	-5.7	-12.1	-17.0	-14.5	-8.9
Critical (15%)	-0.5	**3.6**	**4.8**	**4.6**	**2.8**	**1.3**	-1.2	-6.2	-10.8	-15.3	-12.7	-6.5

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 10-2. Sacramento River at Red Bluff, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.6	52.1	44.6	43.5	46.1	51.6	57.9	64.7	71.7	76.9	76.0	70.9
20%	60.8	51.3	44.3	43.1	45.7	50.9	56.8	64.1	70.9	76.2	75.6	70.3
30%	60.4	50.5	44.0	43.0	45.3	50.0	56.0	63.4	70.5	75.8	75.3	70.1
40%	60.0	50.0	43.9	42.9	45.0	49.5	55.5	63.0	70.0	75.3	75.1	69.8
50%	59.9	49.4	43.7	42.7	44.8	49.2	54.9	62.7	69.6	74.9	74.9	69.3
60%	59.5	49.2	43.5	42.6	44.6	49.0	54.4	61.5	68.7	74.6	74.6	69.1
70%	58.8	49.0	43.4	42.4	44.5	48.7	53.7	61.1	68.1	74.2	74.3	68.9
80%	58.5	48.7	43.1	42.2	44.4	48.3	53.2	60.4	67.4	74.0	74.0	68.6
90%	58.2	48.3	42.6	41.5	44.0	47.9	52.4	59.6	66.4	73.3	73.4	67.8
Long Term												
Full Simulation Period[a]	59.8	49.9	43.7	42.6	45.0	49.6	55.1	62.4	69.2	75.1	74.8	69.5
Water Year Types[b,c]												
Wet (32%)	59.3	49.9	43.6	42.9	44.6	48.8	53.4	60.8	67.7	74.1	74.2	69.0
Above Normal (16%)	59.8	49.2	43.6	42.9	44.7	49.0	54.3	62.2	69.6	74.7	74.5	68.8
Below Normal (13%)	59.1	49.9	43.6	42.1	44.8	49.9	55.8	62.9	69.4	75.4	74.7	69.4
Dry (24%)	59.9	49.8	43.8	42.4	45.2	49.8	55.6	63.2	70.0	75.5	75.2	69.9
Critical (15%)	61.1	51.0	43.8	42.7	46.2	51.1	57.7	64.1	70.7	76.5	76.0	70.8

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.7	**3.9**	**6.6**	**4.7**	**3.3**	**1.4**	-0.5	-5.9	-11.4	-16.4	-14.4	-7.7
20%	-3.5	**3.5**	**5.7**	**4.6**	**3.2**	**1.4**	**0.2**	-6.1	-11.2	-16.6	-15.2	-8.6
30%	-4.0	**3.5**	**5.3**	**4.4**	**3.1**	**1.8**	**0.4**	-6.0	-11.5	-16.7	-15.4	-9.1
40%	-3.8	**3.5**	**5.3**	**4.1**	**3.0**	**1.9**	**0.5**	-6.0	-11.2	-16.6	-15.6	-9.2
50%	-4.0	**3.9**	**5.1**	**4.0**	**3.0**	**1.6**	**0.7**	-6.0	-11.6	-16.8	-15.8	-9.4
60%	-3.9	**3.8**	**5.0**	**3.9**	**2.8**	**1.4**	**0.9**	-5.1	-11.2	-16.9	-15.7	-9.9
70%	-3.4	**3.8**	**4.8**	**3.9**	**2.4**	**1.2**	**1.1**	-5.3	-11.1	-17.1	-16.0	-10.1
80%	-3.6	**3.6**	**4.8**	**3.9**	**2.2**	**0.5**	**0.5**	-5.1	-10.8	-17.2	-15.8	-10.8
90%	-3.6	**3.5**	**4.8**	**4.2**	**2.1**	**0.3**	-0.4	-4.8	-10.2	-17.1	-15.7	-11.3
Long Term												
Full Simulation Period[a]	-3.3	**3.6**	**5.3**	**4.3**	**2.8**	**1.2**	**0.2**	-5.6	-11.1	-16.8	-15.3	-9.4
Water Year Types[b,c]												
Wet (32%)	-4.0	**3.7**	**5.7**	**3.7**	**2.4**	**0.6**	**0.2**	-4.3	-8.7	-16.0	-15.5	-11.0
Above Normal (16%)	-4.4	**3.5**	**5.1**	**3.9**	**2.4**	**0.9**	**0.7**	-5.6	-11.9	-18.1	-16.0	-8.9
Below Normal (13%)	-2.8	**3.6**	**5.6**	**4.8**	**3.2**	**1.6**	**0.3**	-6.9	-12.6	-18.1	-16.3	-9.8
Dry (24%)	-3.6	**3.5**	**5.0**	**4.7**	**3.1**	**1.7**	**0.5**	-6.2	-12.7	-17.1	-15.4	-9.3
Critical (15%)	-0.4	**3.8**	**4.9**	**4.8**	**3.0**	**1.3**	-1.1	-6.4	-11.5	-15.5	-13.0	-6.0

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 10-3. Sacramento River at Red Bluff, Monthly Temperature

Current Operations 011319

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	50.7	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.3**	**0.3**	**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.

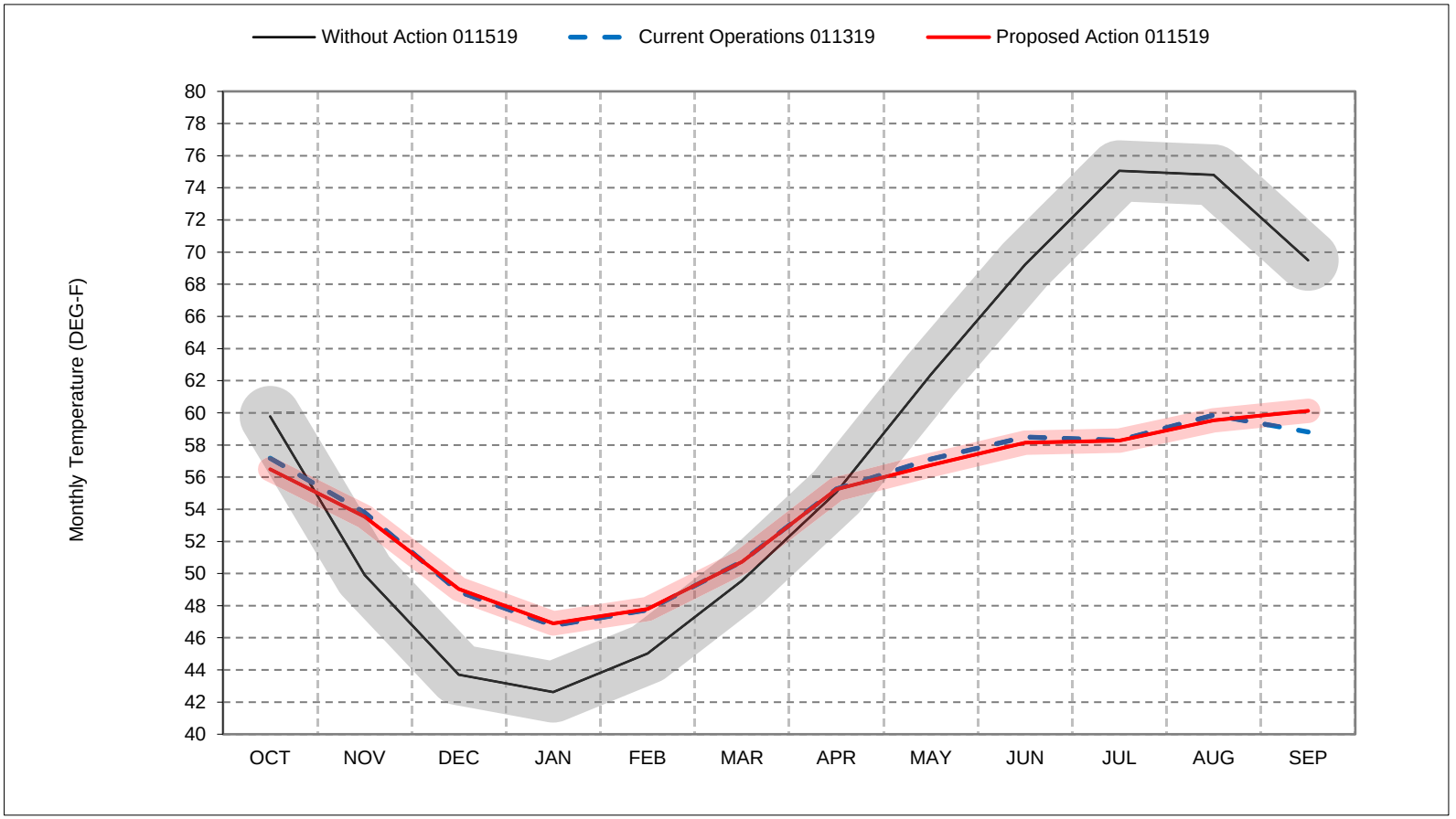
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

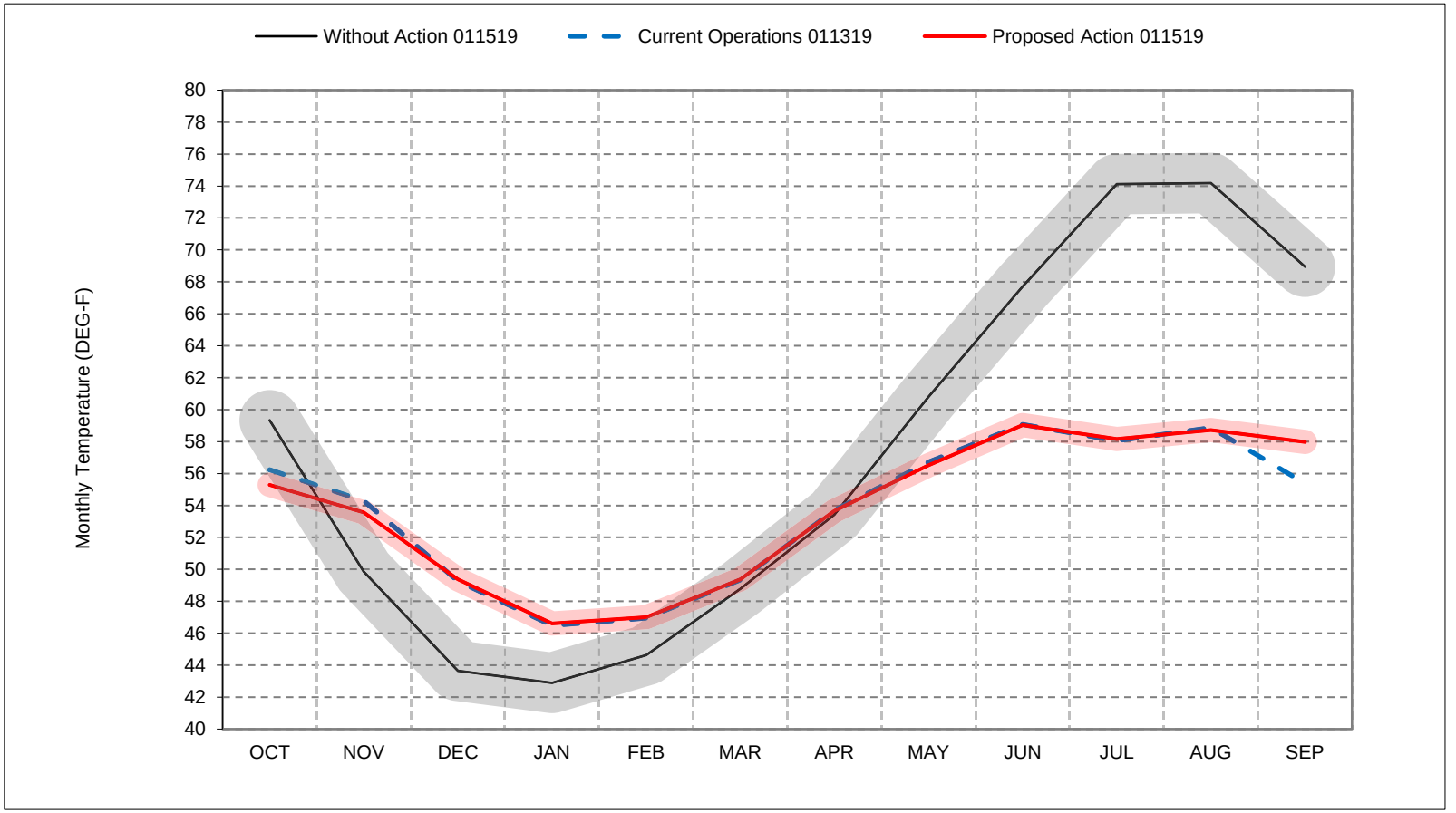
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-1. Sacramento River at Red Bluff, Long-Term Average Temperature



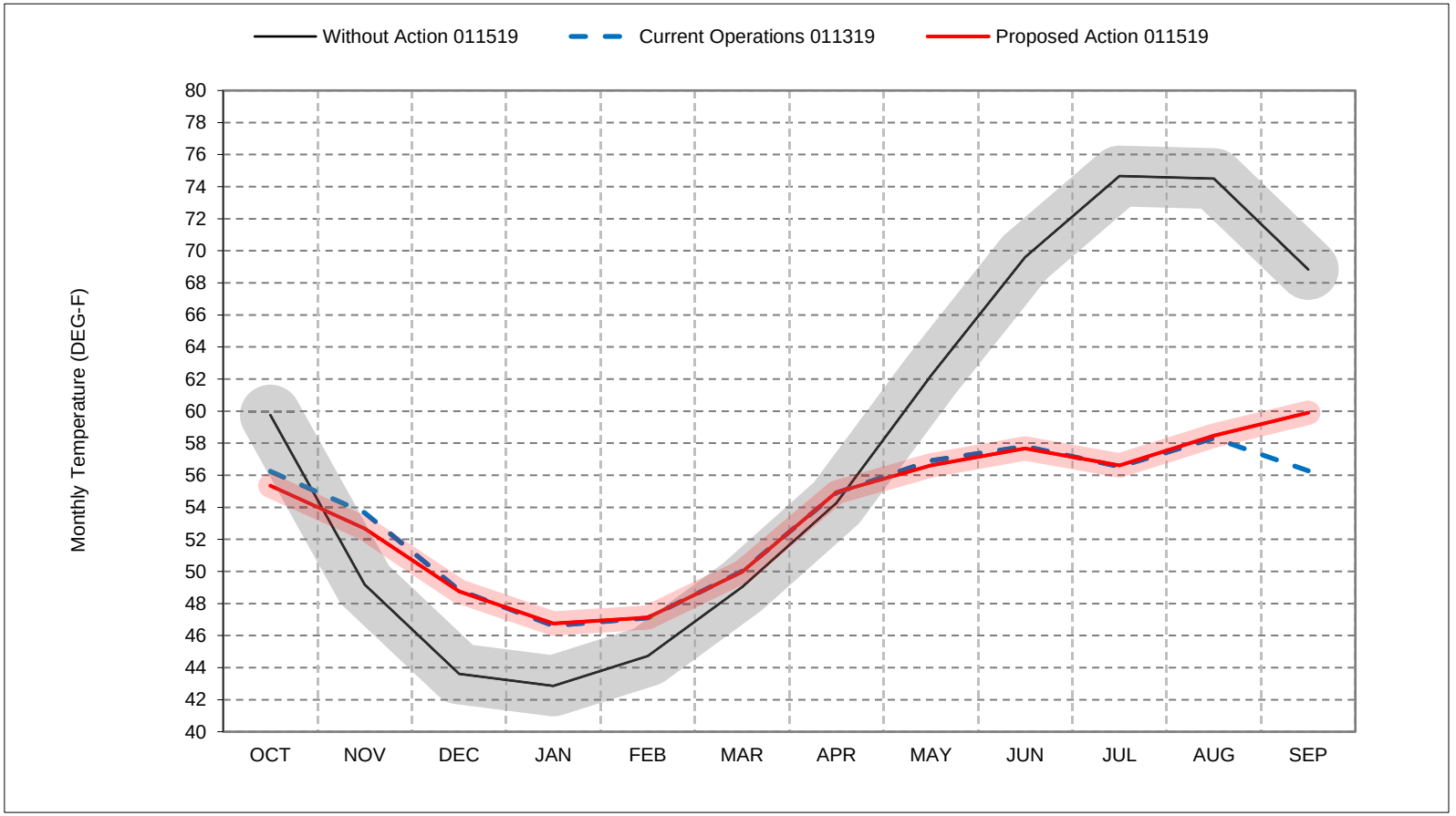
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-2. Sacramento River at Red Bluff, Wet Year Average Temperature



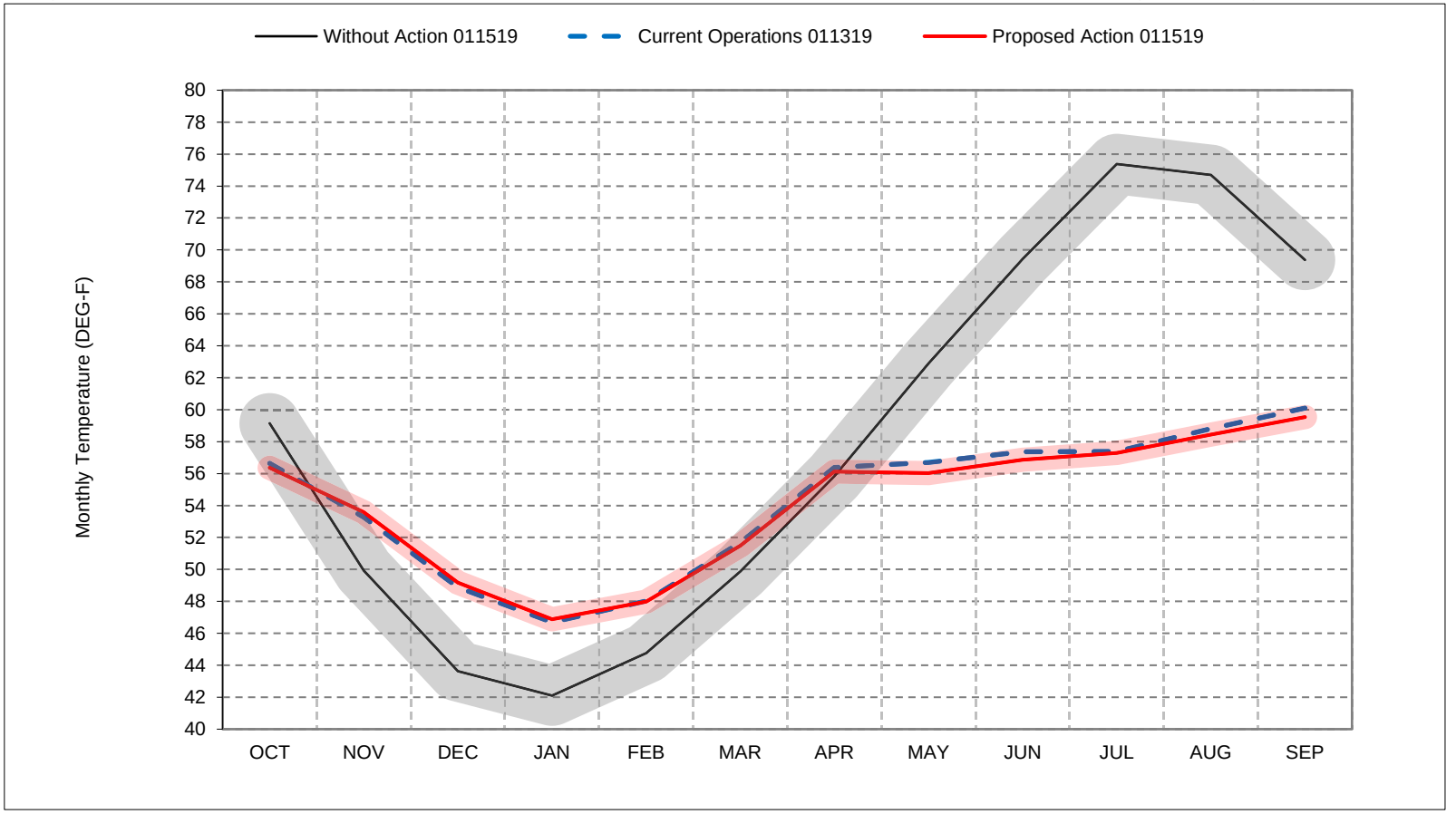
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-3. Sacramento River at Red Bluff, Above Normal Year Average Temperature



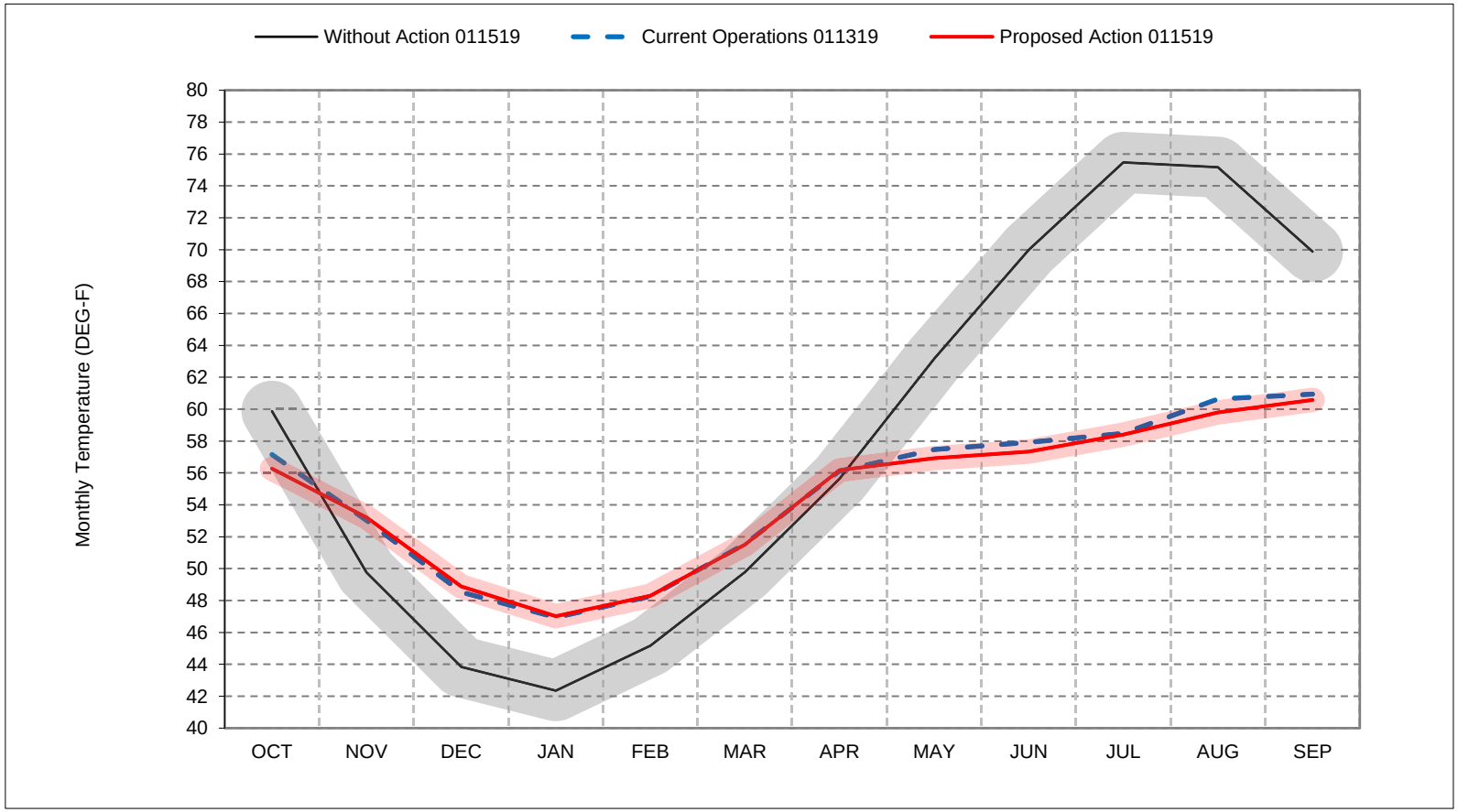
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-4. Sacramento River at Red Bluff, Below Normal Year Average Temperature



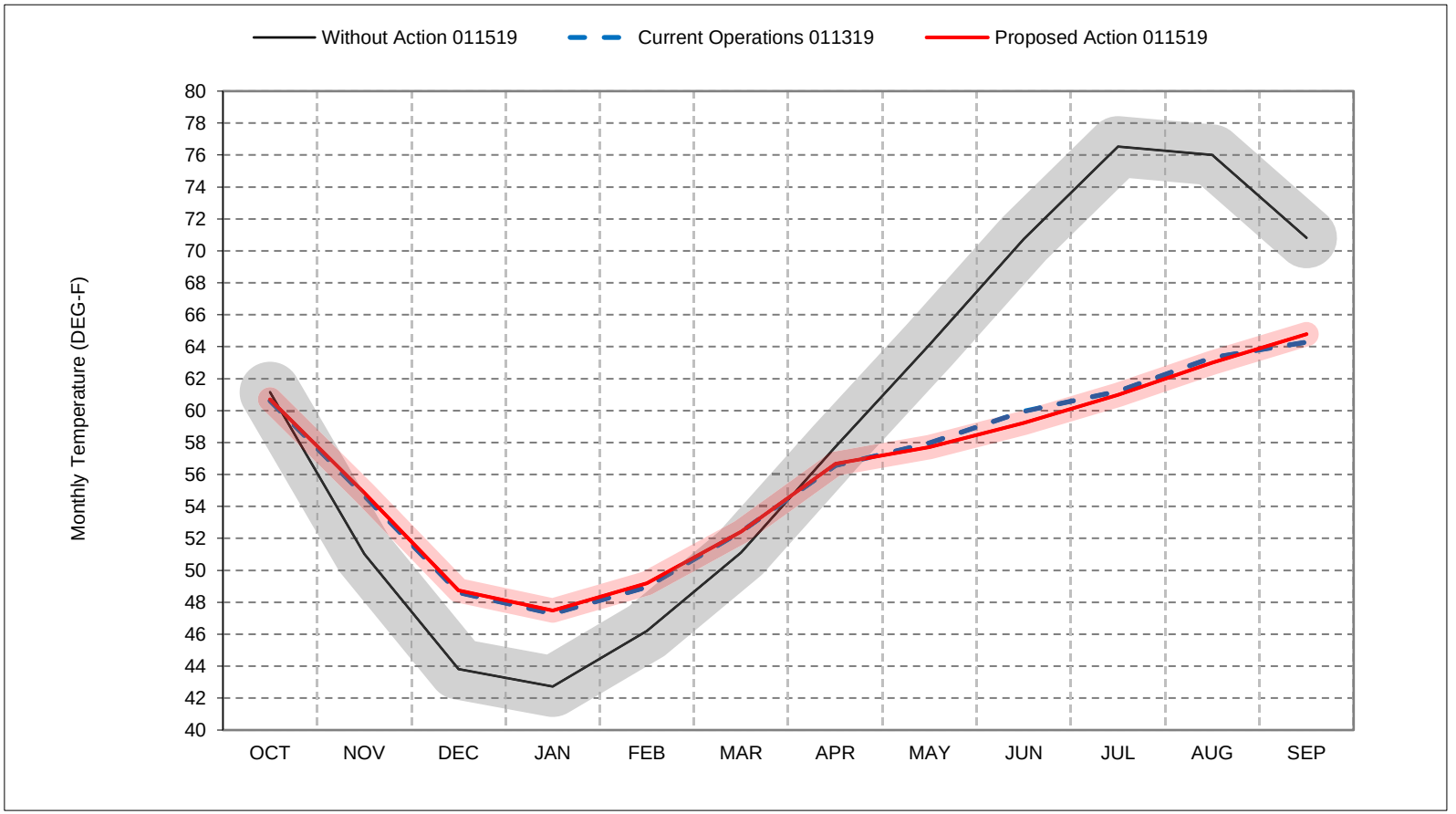
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-5. Sacramento River at Red Bluff, Dry Year Average Temperature



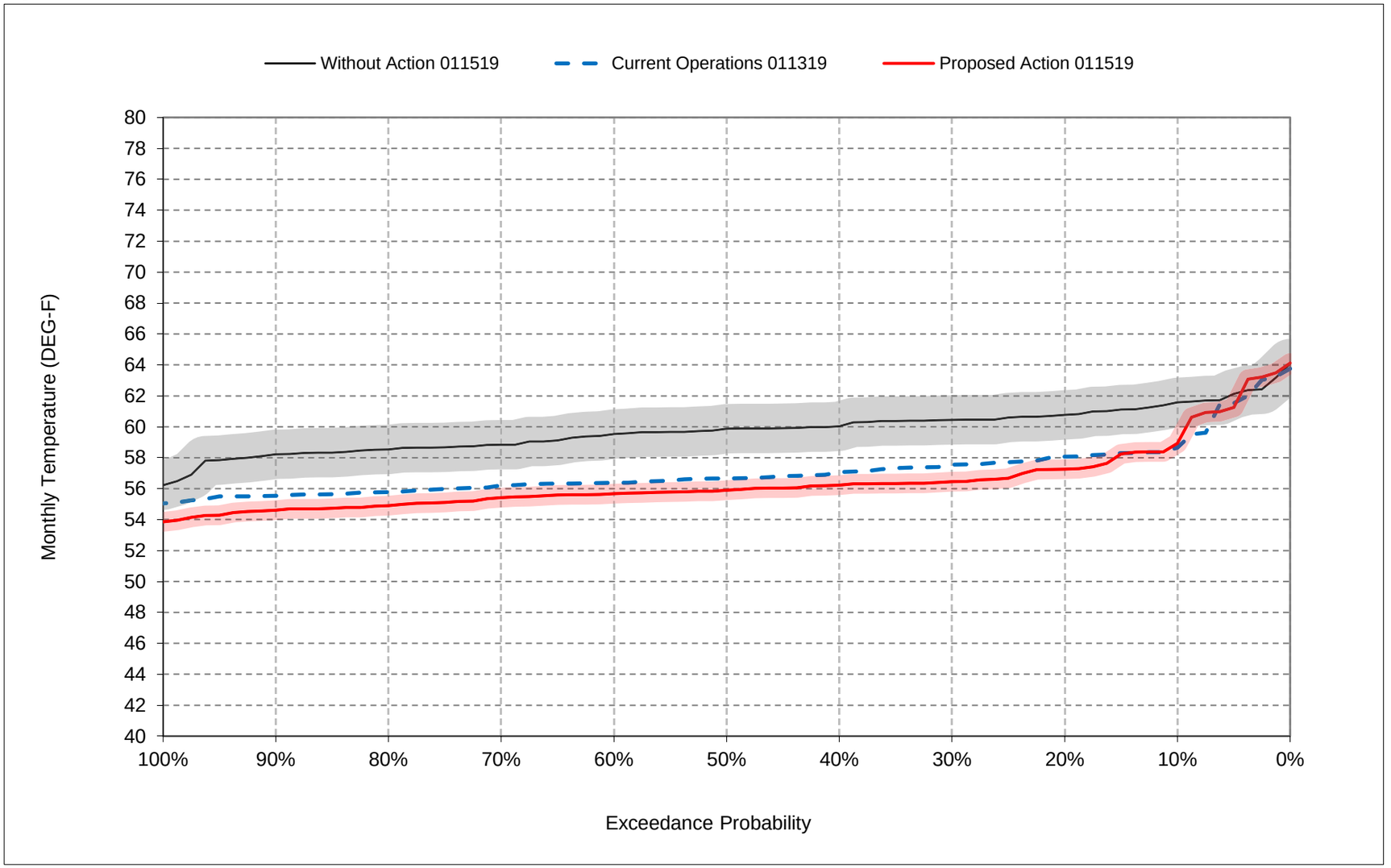
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

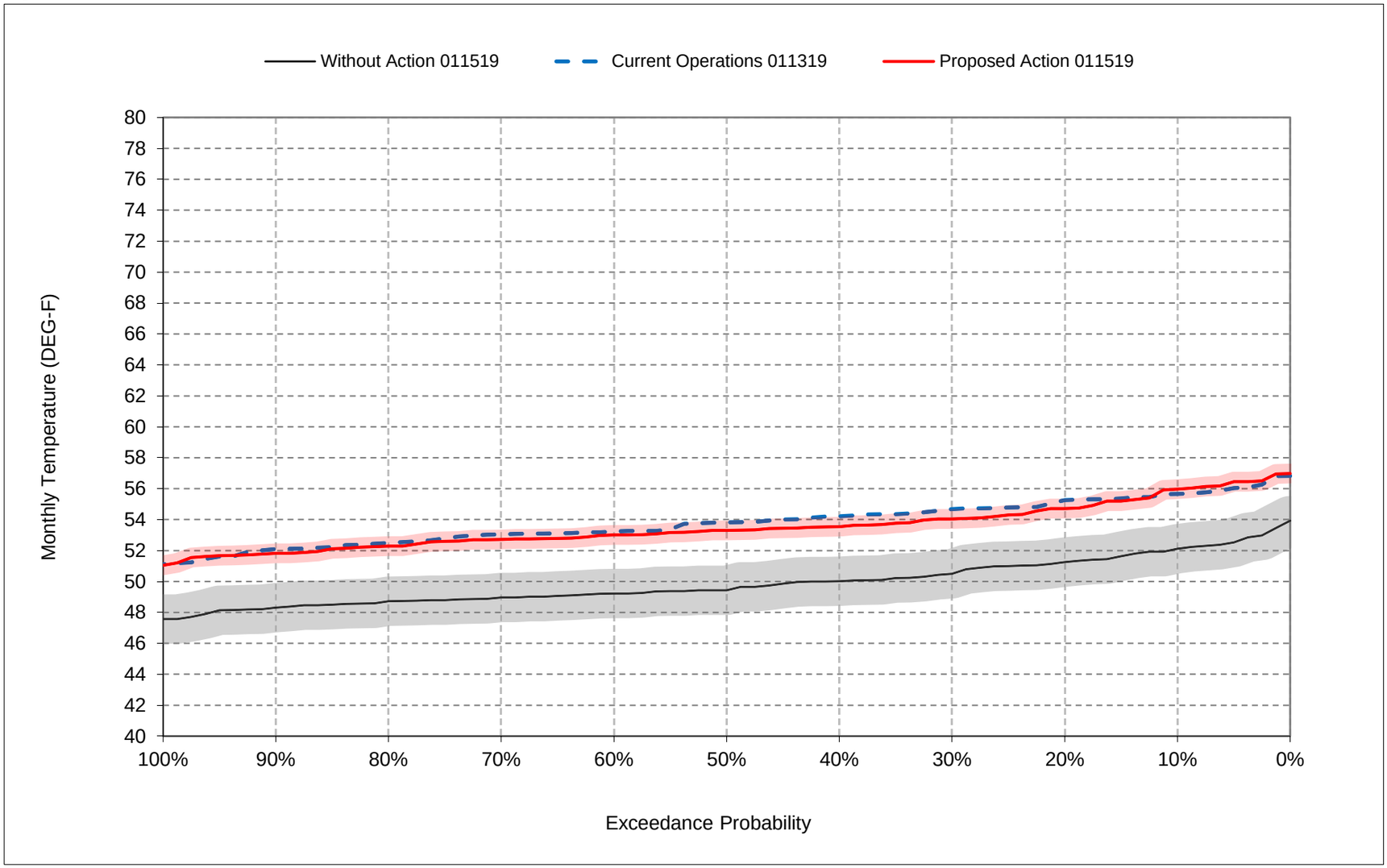
Figure 10-7. Sacramento River at Red Bluff, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

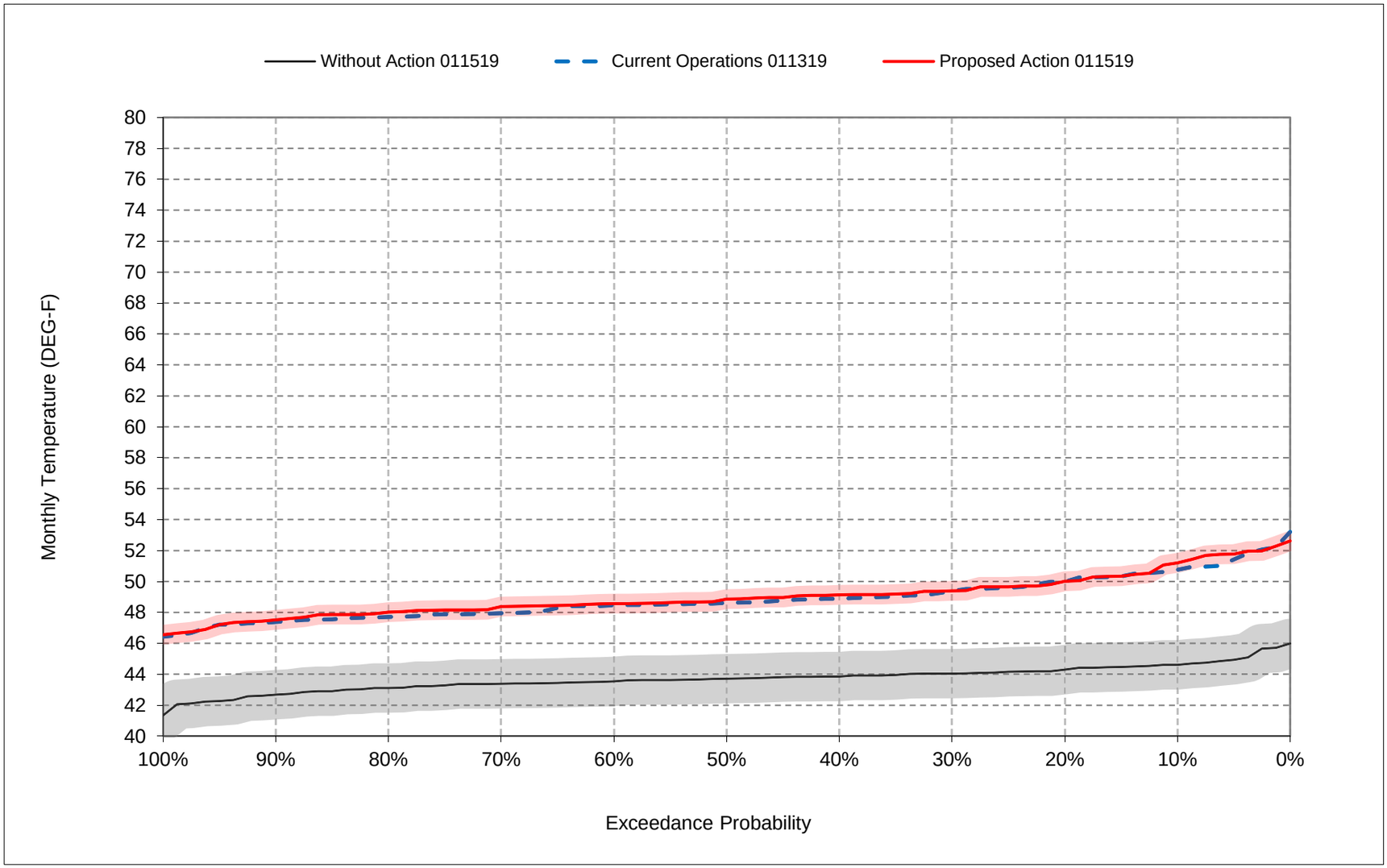
Figure 10-8. Sacramento River at Red Bluff, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

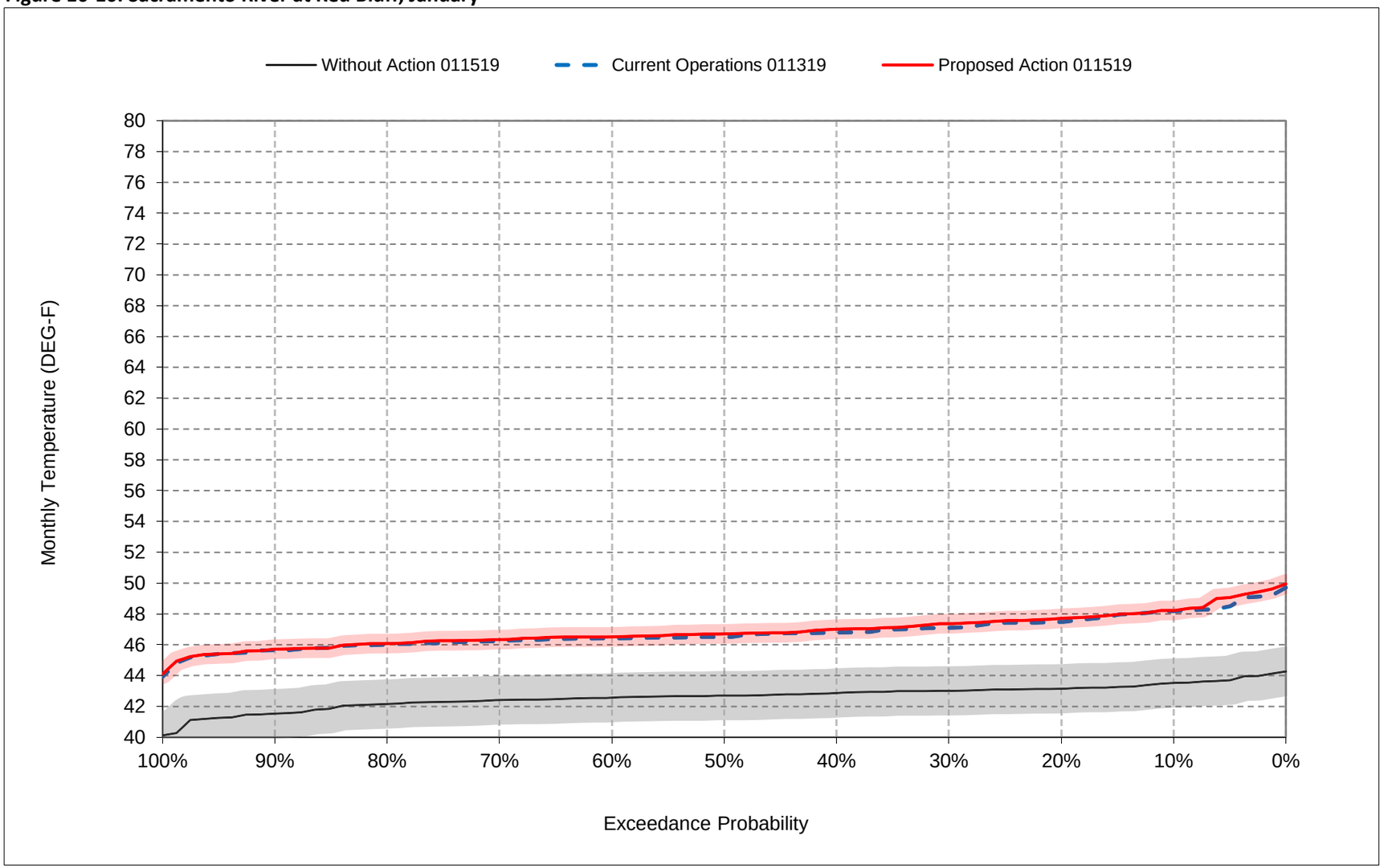
Figure 10-9. Sacramento River at Red Bluff, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

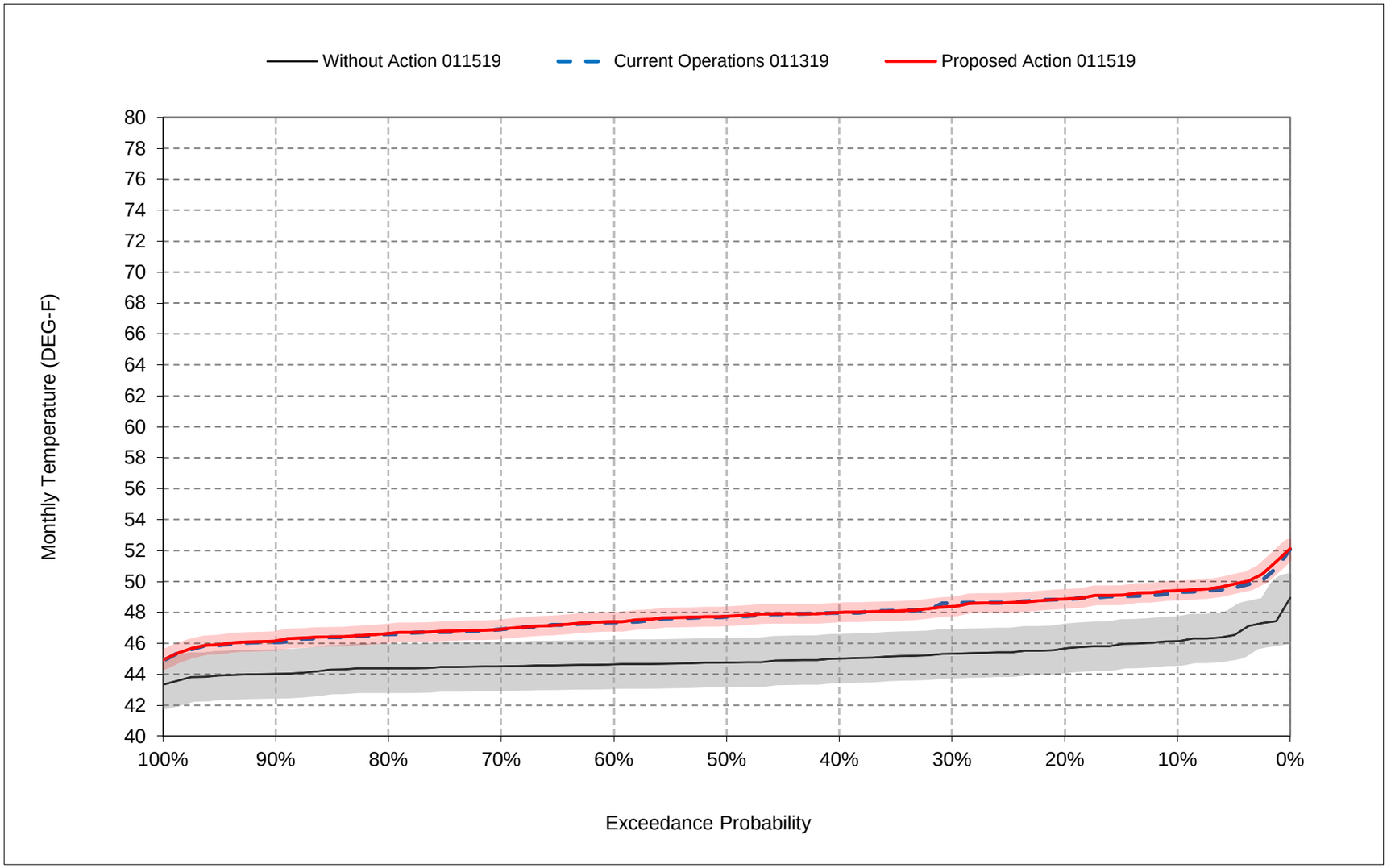
Figure 10-10. Sacramento River at Red Bluff, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

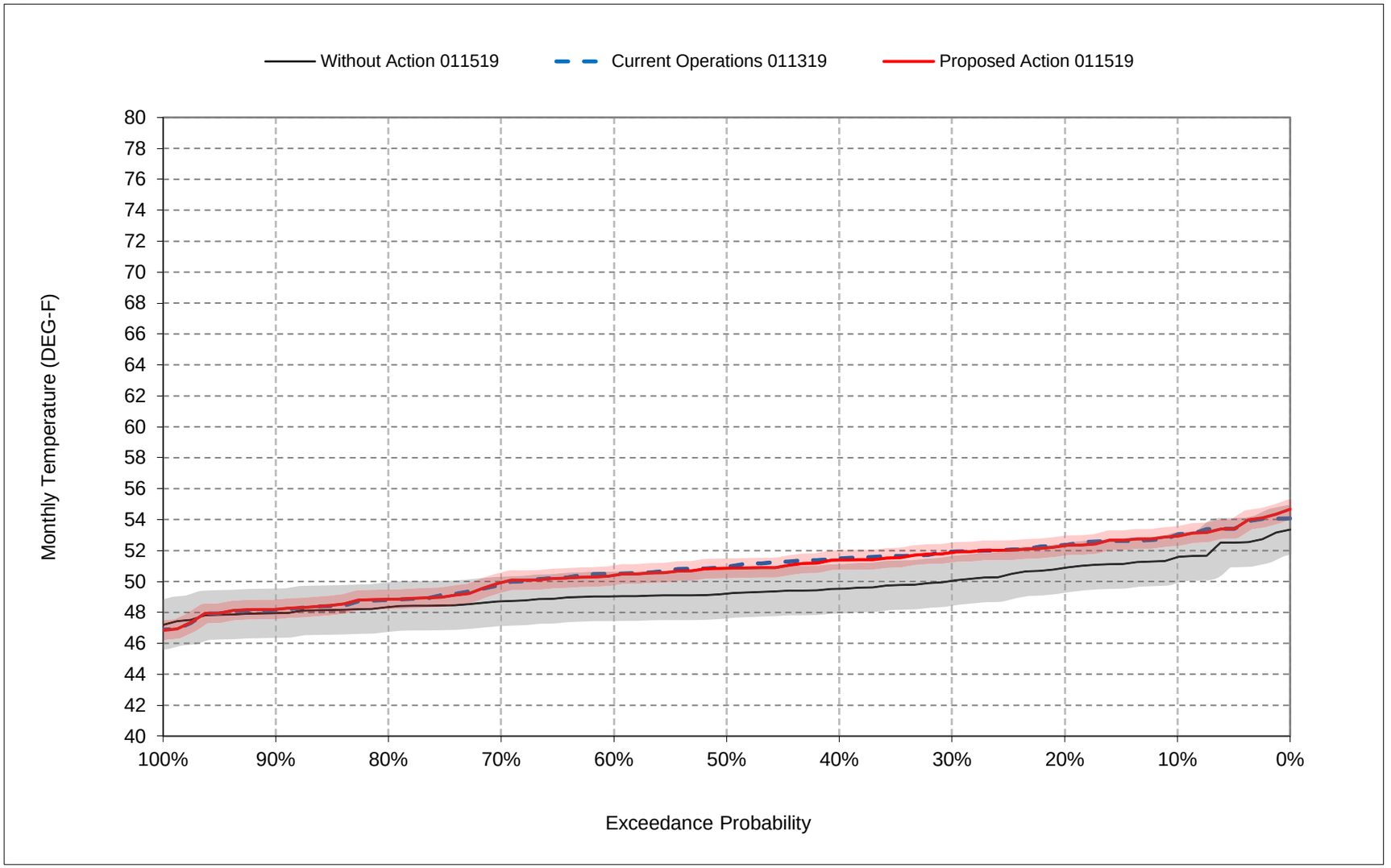
Figure 10-11. Sacramento River at Red Bluff, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

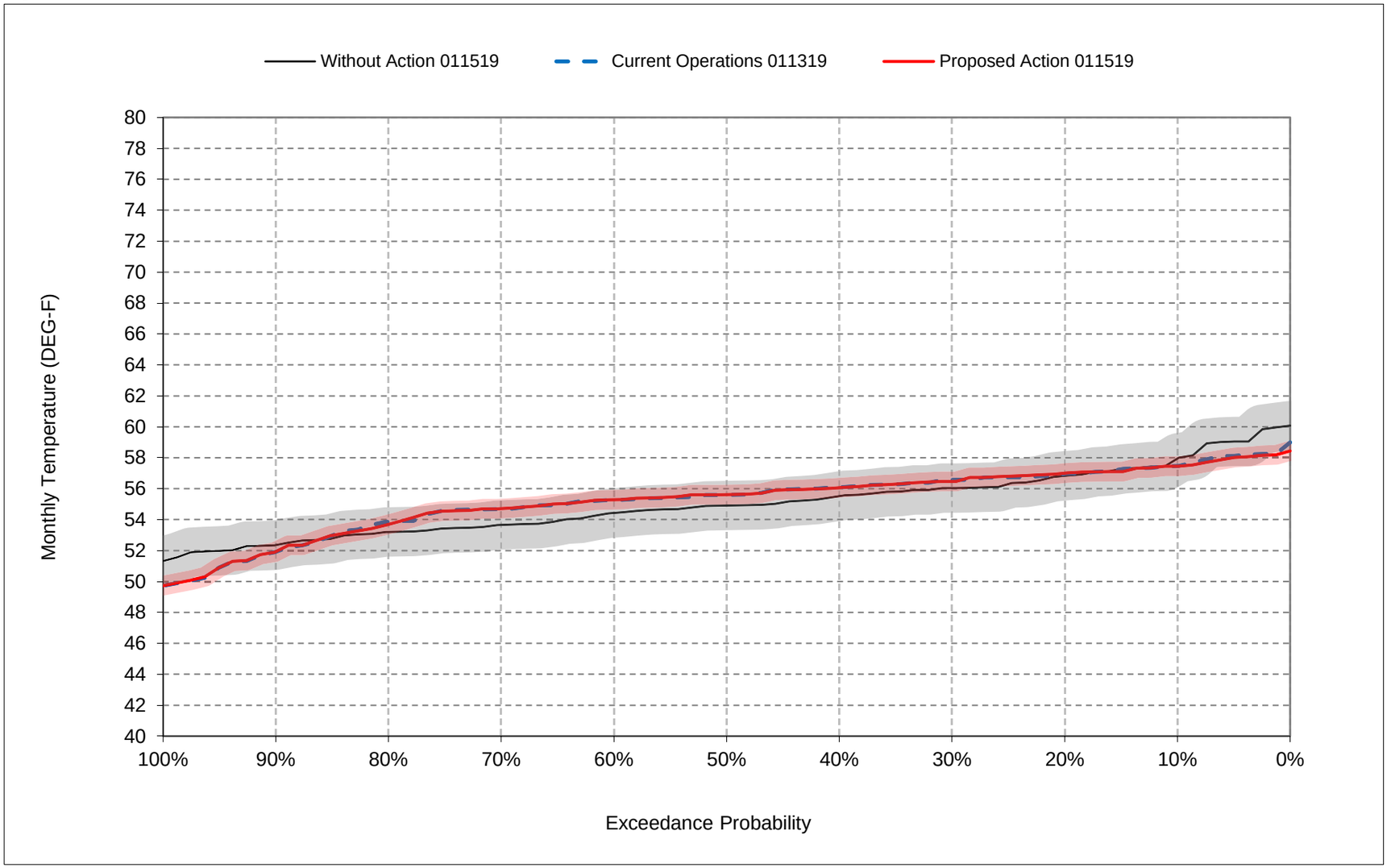
Figure 10-12. Sacramento River at Red Bluff, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

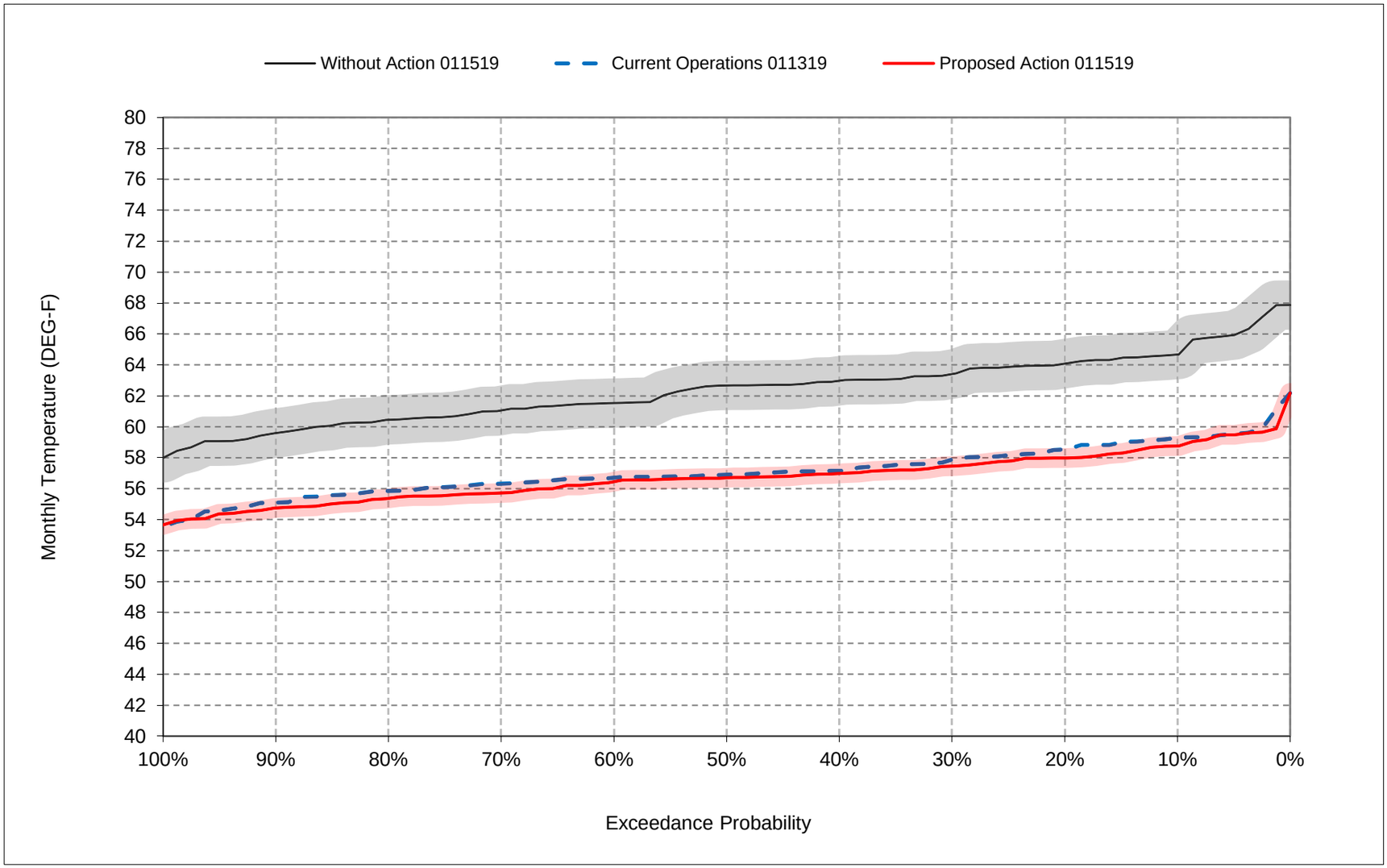
Figure 10-13. Sacramento River at Red Bluff, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

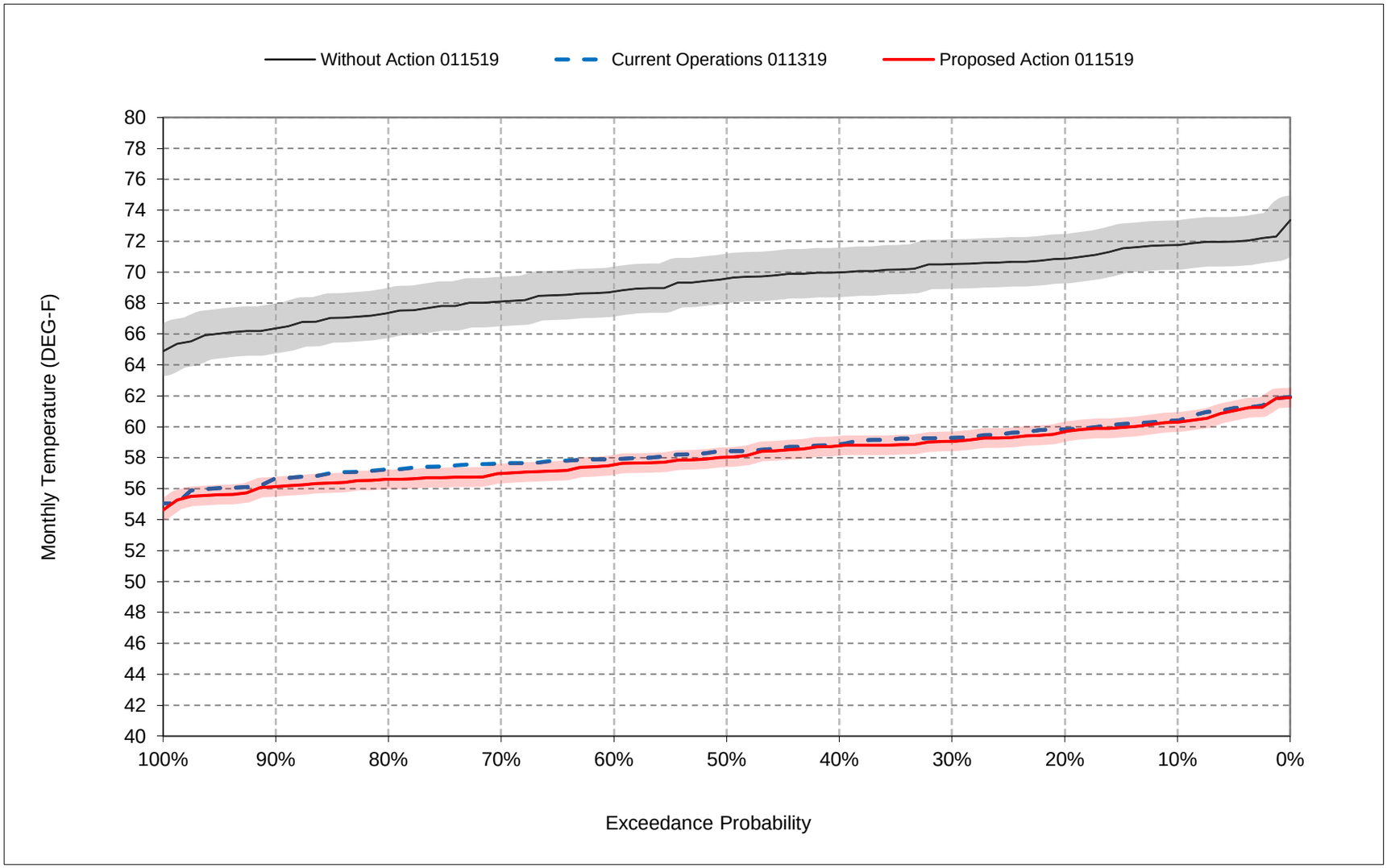
Figure 10-14. Sacramento River at Red Bluff, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

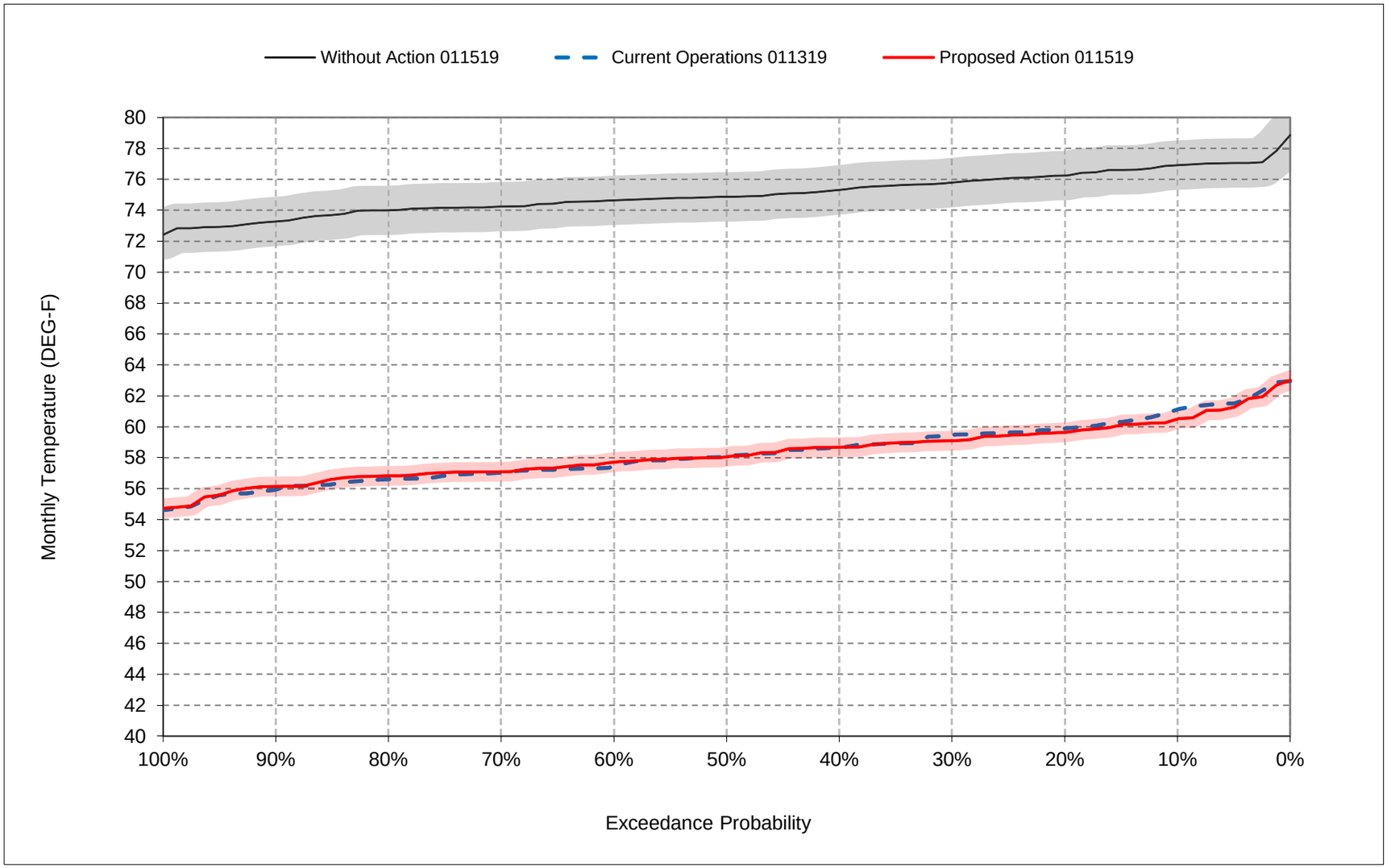
Figure 10-15. Sacramento River at Red Bluff, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

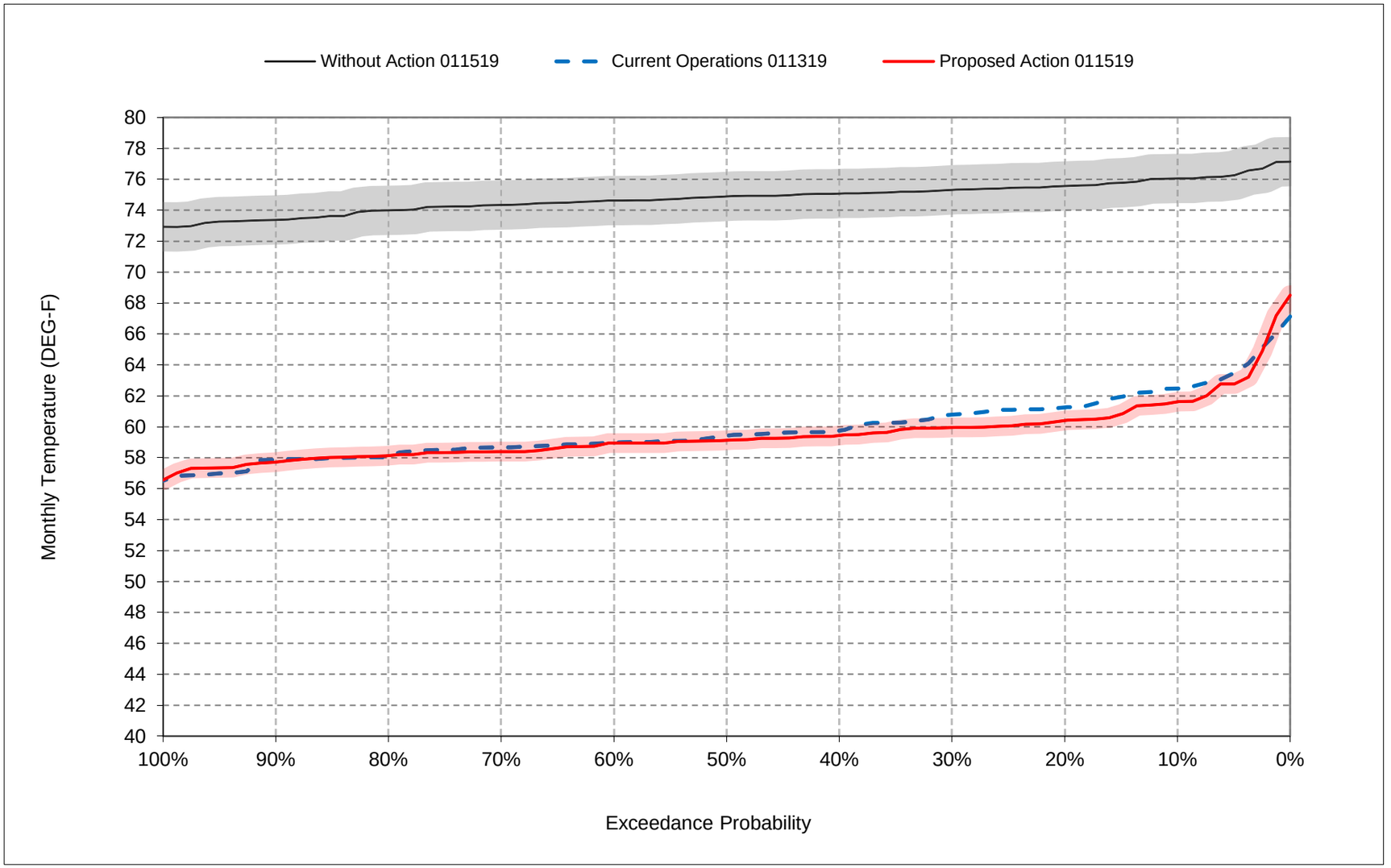
Figure 10-16. Sacramento River at Red Bluff, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

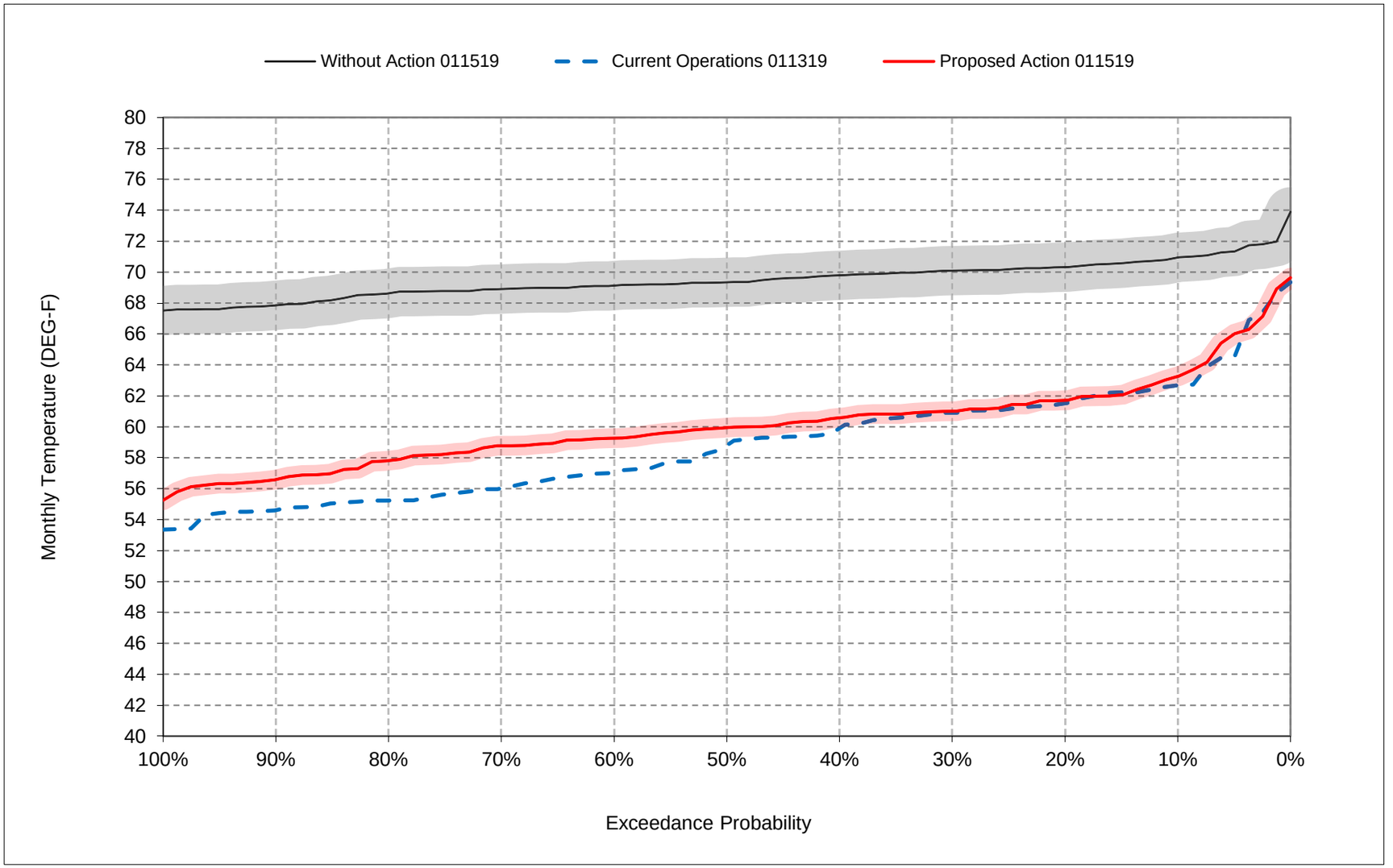
Figure 10-17. Sacramento River at Red Bluff, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 12-1. Sacramento River below Hamilton City, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63.7	53.4	45.5	44.3	47.2	53.1	60.1	67.9	75.3	80.7	79.5	73.9
20%	62.9	52.6	45.1	44.0	46.8	52.2	58.7	66.9	74.5	80.0	78.9	73.3
30%	62.5	51.8	44.7	43.8	46.2	51.3	57.7	66.2	73.9	79.6	78.7	72.9
40%	62.1	51.1	44.4	43.5	45.9	50.6	57.2	65.5	73.4	79.0	78.4	72.5
50%	61.7	50.6	44.3	43.3	45.6	50.2	56.5	65.0	73.0	78.5	78.2	72.1
60%	61.6	50.2	44.2	43.2	45.4	49.9	55.9	63.8	72.1	78.3	78.1	71.9
70%	60.6	50.0	43.9	43.1	45.2	49.5	54.8	62.9	71.0	77.9	77.6	71.6
80%	60.3	49.6	43.7	42.9	45.0	49.2	54.2	62.2	70.5	77.6	77.2	71.3
90%	59.8	49.3	43.3	42.3	44.7	48.7	53.5	61.0	69.2	76.9	76.6	70.3
Long Term												
Full Simulation Period[a]	61.7	51.1	44.4	43.3	45.9	50.7	56.6	64.7	72.4	78.7	78.1	72.3
Water Year Types[b,c]												
Wet (32%)	61.2	51.0	44.4	43.4	45.3	49.7	54.6	62.6	70.5	77.7	77.5	71.7
Above Normal (16%)	61.7	50.2	44.3	43.5	45.4	49.9	55.6	64.4	72.9	78.2	77.8	71.6
Below Normal (13%)	61.0	51.1	44.3	42.9	45.7	51.2	57.6	65.5	72.8	79.1	78.0	72.1
Dry (24%)	61.8	50.9	44.5	43.2	46.1	50.9	57.3	65.8	73.4	79.1	78.5	72.7
Critical (15%)	63.3	52.3	44.5	43.7	47.6	52.7	60.1	67.2	74.2	80.2	79.3	73.7

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.2	**2.5**	**4.6**	**4.0**	**3.1**	**1.8**	**0.0**	-4.7	-9.8	-15.1	-12.2	-6.8
20%	-2.8	**2.5**	**4.5**	**3.7**	**2.8**	**1.7**	**0.9**	-4.3	-9.7	-15.0	-12.7	-7.6
30%	-3.0	**2.9**	**4.2**	**3.4**	**2.9**	**2.0**	**1.3**	-4.0	-9.6	-15.2	-13.1	-7.9
40%	-3.2	**3.1**	**4.1**	**3.4**	**2.6**	**2.1**	**1.2**	-4.1	-9.4	-15.6	-13.6	-8.6
50%	-3.3	**3.2**	**4.1**	**3.2**	**2.7**	**2.0**	**1.4**	-4.0	-9.8	-15.5	-14.0	-9.6
60%	-3.4	**3.2**	**4.0**	**3.2**	**2.6**	**1.6**	**1.7**	-3.2	-9.1	-16.1	-14.4	-11.5
70%	-2.9	**3.2**	**3.8**	**3.1**	**2.4**	**1.4**	**1.8**	-2.8	-8.6	-16.5	-14.4	-12.5
80%	-2.9	**3.1**	**3.9**	**3.1**	**2.0**	**0.4**	**1.0**	-2.5	-8.5	-16.7	-14.4	-13.2
90%	-2.7	**2.8**	**3.9**	**3.4**	**1.7**	**0.4**	**0.2**	-2.7	-8.2	-16.7	-14.5	-12.8
Long Term												
Full Simulation Period[a]	-2.8	**2.8**	**4.1**	**3.4**	**2.4**	**1.3**	**0.8**	-3.7	-9.1	-15.7	-13.6	-9.9
Water Year Types[b,c]												
Wet (32%)	-3.4	**3.3**	**4.5**	**3.1**	**2.1**	**0.7**	**0.8**	-2.4	-6.4	-14.7	-13.9	-13.4
Above Normal (16%)	-3.7	**3.4**	**4.3**	**3.2**	**2.2**	**1.2**	**1.2**	-3.4	-10.1	-17.3	-14.9	-12.0
Below Normal (13%)	-2.5	**2.4**	**4.2**	**3.8**	**2.9**	**2.0**	**1.4**	-4.8	-10.8	-17.3	-14.8	-8.0
Dry (24%)	-2.7	**2.4**	**3.8**	**3.7**	**2.8**	**1.9**	**1.2**	-4.3	-10.7	-16.0	-13.2	-7.6
Critical (15%)	-1.1	**2.5**	**3.7**	**3.6**	**2.4**	**1.5**	-0.5	-5.1	-9.7	-14.3	-11.4	-5.9

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 12-2. Sacramento River below Hamilton City, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63.7	53.4	45.5	44.3	47.2	53.1	60.1	67.9	75.3	80.7	79.5	73.9
20%	62.9	52.6	45.1	44.0	46.8	52.2	58.7	66.9	74.5	80.0	78.9	73.3
30%	62.5	51.8	44.7	43.8	46.2	51.3	57.7	66.2	73.9	79.6	78.7	72.9
40%	62.1	51.1	44.4	43.5	45.9	50.6	57.2	65.5	73.4	79.0	78.4	72.5
50%	61.7	50.6	44.3	43.3	45.6	50.2	56.5	65.0	73.0	78.5	78.2	72.1
60%	61.6	50.2	44.2	43.2	45.4	49.9	55.9	63.8	72.1	78.3	78.1	71.9
70%	60.6	50.0	43.9	43.1	45.2	49.5	54.8	62.9	71.0	77.9	77.6	71.6
80%	60.3	49.6	43.7	42.9	45.0	49.2	54.2	62.2	70.5	77.6	77.2	71.3
90%	59.8	49.3	43.3	42.3	44.7	48.7	53.5	61.0	69.2	76.9	76.6	70.3
Long Term												
Full Simulation Period[a]	61.7	51.1	44.4	43.3	45.9	50.7	56.6	64.7	72.4	78.7	78.1	72.3
Water Year Types[b,c]												
Wet (32%)	61.2	51.0	44.4	43.4	45.3	49.7	54.6	62.6	70.5	77.7	77.5	71.7
Above Normal (16%)	61.7	50.2	44.3	43.5	45.4	49.9	55.6	64.4	72.9	78.2	77.8	71.6
Below Normal (13%)	61.0	51.1	44.3	42.9	45.7	51.2	57.6	65.5	72.8	79.1	78.0	72.1
Dry (24%)	61.8	50.9	44.5	43.2	46.1	50.9	57.3	65.8	73.4	79.1	78.5	72.7
Critical (15%)	63.3	52.3	44.5	43.7	47.6	52.7	60.1	67.2	74.2	80.2	79.3	73.7

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.8	**2.7**	**5.2**	**4.0**	**3.1**	**1.7**	**0.1**	-5.0	-10.1	-15.0	-12.7	-6.5
20%	-3.7	**2.2**	**4.4**	**3.8**	**2.8**	**1.6**	**0.8**	-4.8	-9.8	-15.0	-13.5	-7.2
30%	-3.7	**2.6**	**4.2**	**3.6**	**2.6**	**2.0**	**1.3**	-4.8	-9.8	-15.4	-13.8	-7.5
40%	-3.7	**2.5**	**4.3**	**3.5**	**2.7**	**2.1**	**1.3**	-4.5	-9.8	-15.4	-14.0	-7.6
50%	-3.8	**2.8**	**4.2**	**3.4**	**2.7**	**1.7**	**1.4**	-4.4	-10.0	-15.4	-14.3	-8.0
60%	-3.8	**2.9**	**4.1**	**3.3**	**2.6**	**1.5**	**1.6**	-3.7	-10.0	-16.1	-14.4	-8.3
70%	-3.2	**2.8**	**4.1**	**3.2**	**2.4**	**1.4**	**1.6**	-3.3	-9.4	-16.3	-14.6	-8.8
80%	-3.4	**2.8**	**4.1**	**3.1**	**2.0**	**0.5**	**1.1**	-3.1	-9.4	-16.5	-14.5	-9.7
90%	-3.6	**2.8**	**4.1**	**3.4**	**1.8**	**0.4**	**0.2**	-2.7	-8.8	-16.6	-14.5	-10.0
Long Term												
Full Simulation Period[a]	-3.3	**2.6**	**4.3**	**3.5**	**2.5**	**1.3**	**0.8**	-4.2	-9.5	-15.7	-13.9	-8.2
Water Year Types[b,c]												
Wet (32%)	-4.0	**2.7**	**4.6**	**3.2**	**2.1**	**0.7**	**0.7**	-2.7	-6.4	-14.6	-14.0	-9.9
Above Normal (16%)	-4.3	**2.6**	**4.2**	**3.3**	**2.2**	**1.1**	**1.2**	-3.8	-10.3	-17.2	-14.8	-7.4
Below Normal (13%)	-2.7	**2.6**	**4.4**	**3.9**	**2.8**	**1.7**	**1.0**	-5.5	-11.5	-17.3	-15.1	-8.6
Dry (24%)	-3.4	**2.5**	**4.1**	**3.8**	**2.8**	**1.8**	**1.2**	-4.9	-11.5	-16.0	-13.9	-7.8
Critical (15%)	-1.1	**2.7**	**3.8**	**3.8**	**2.6**	**1.4**	-0.4	-5.4	-10.4	-14.3	-11.6	-5.5

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 12-3. Sacramento River below Hamilton City, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.3**	**0.3**	**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.

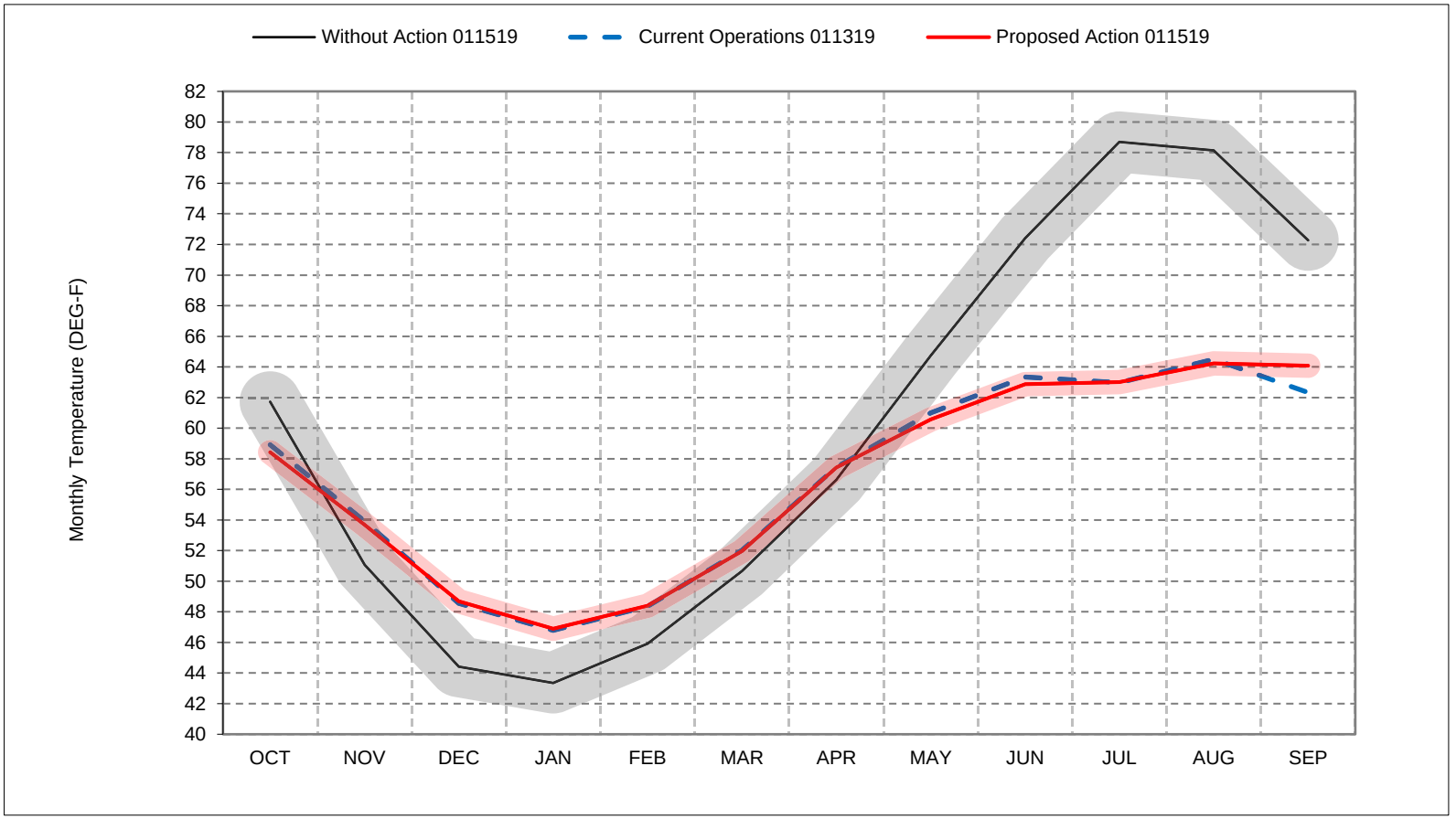
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

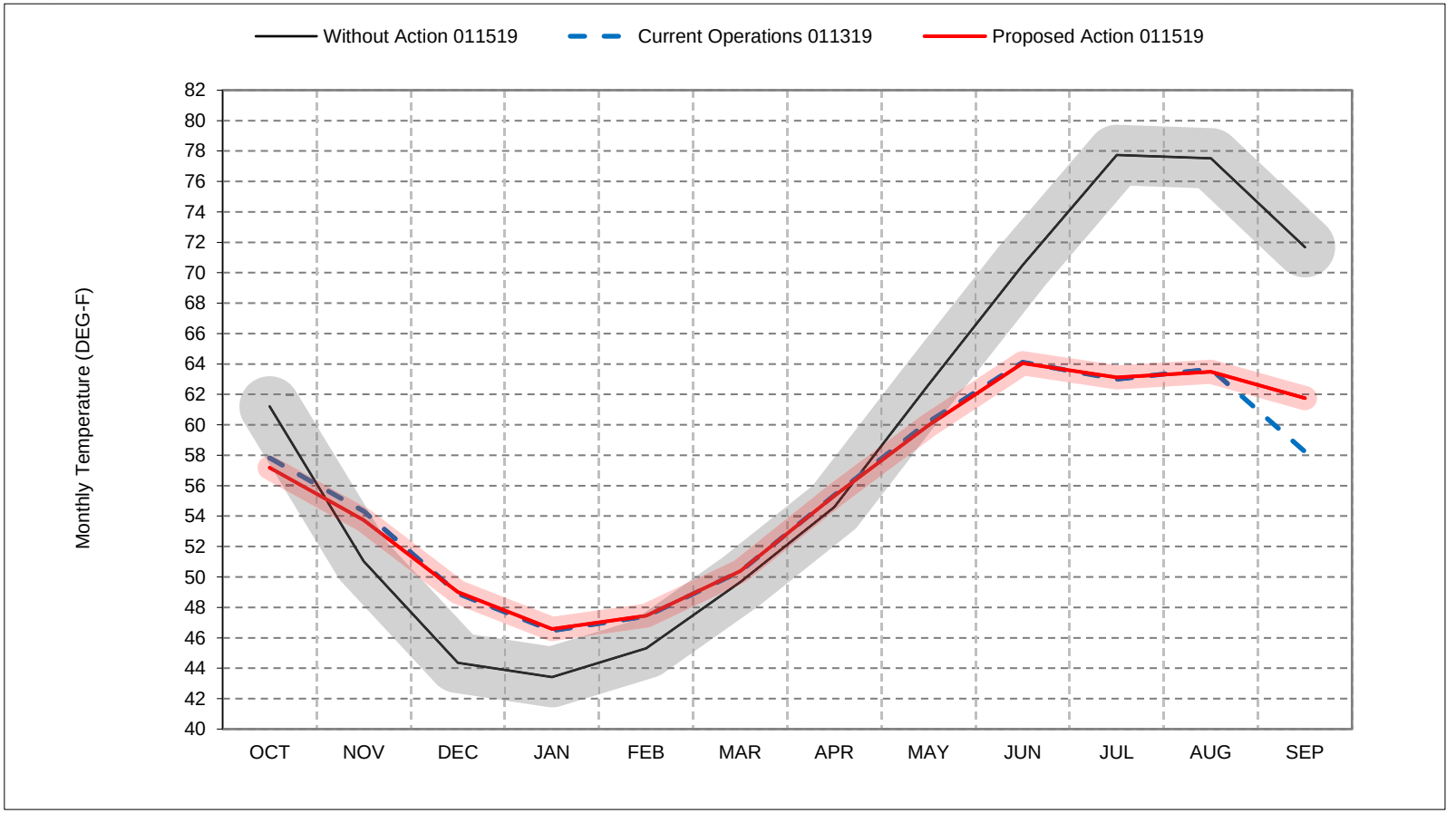
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-1. Sacramento River below Hamilton City, Long-Term Average Temperature



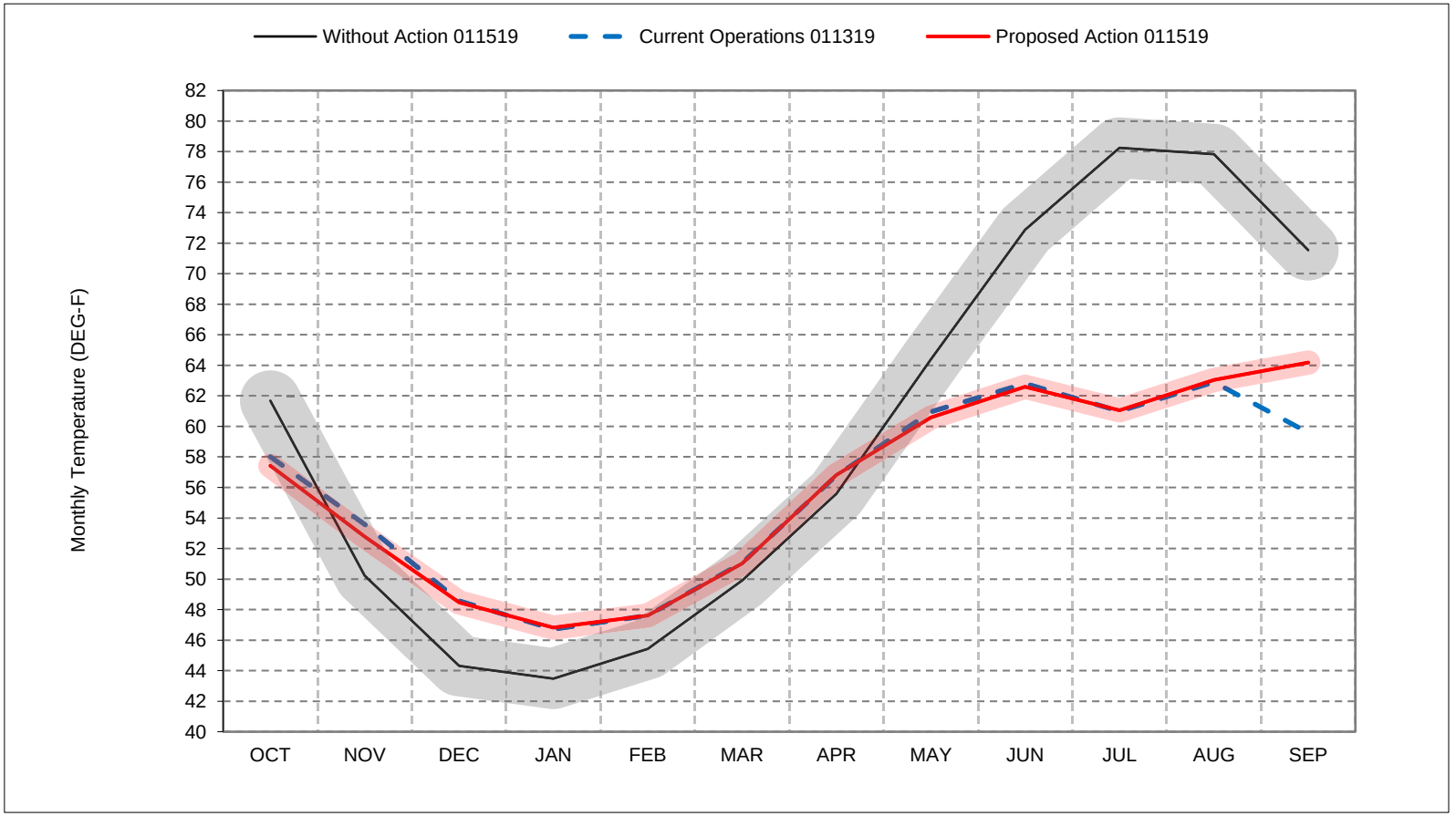
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-2. Sacramento River below Hamilton City, Wet Year Average Temperature



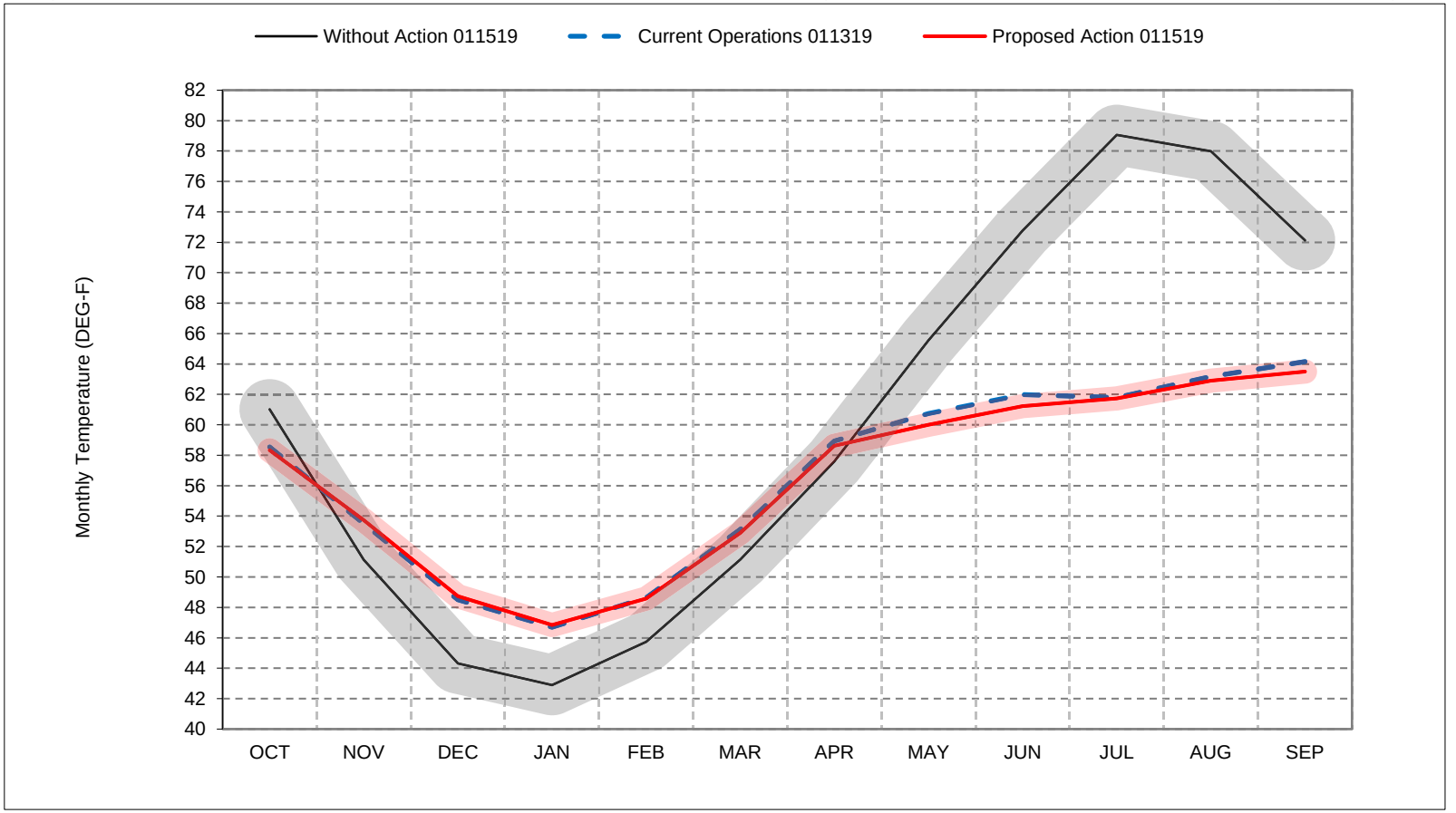
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-3. Sacramento River below Hamilton City, Above Normal Year Average Temperature



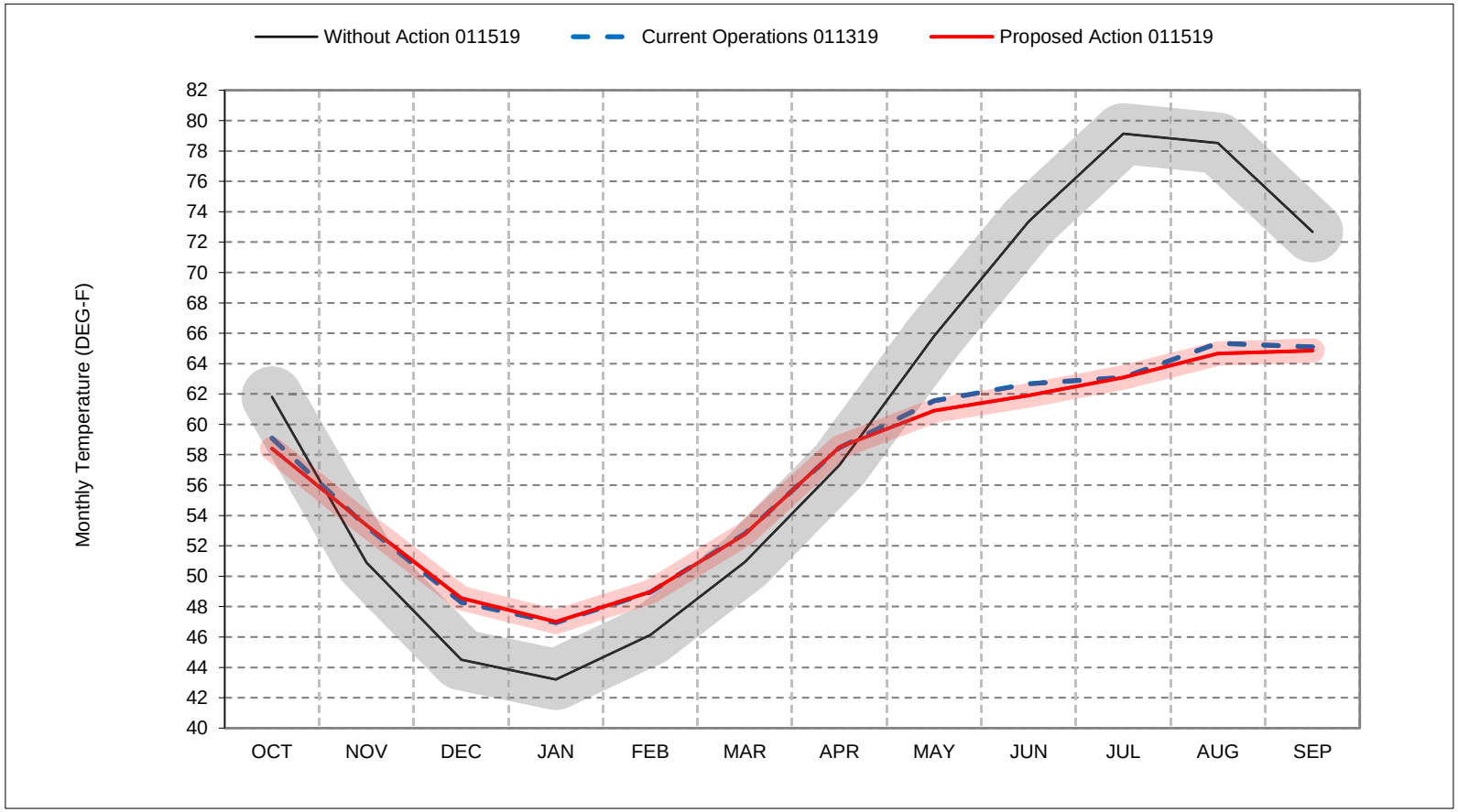
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-4. Sacramento River below Hamilton City, Below Normal Year Average Temperature



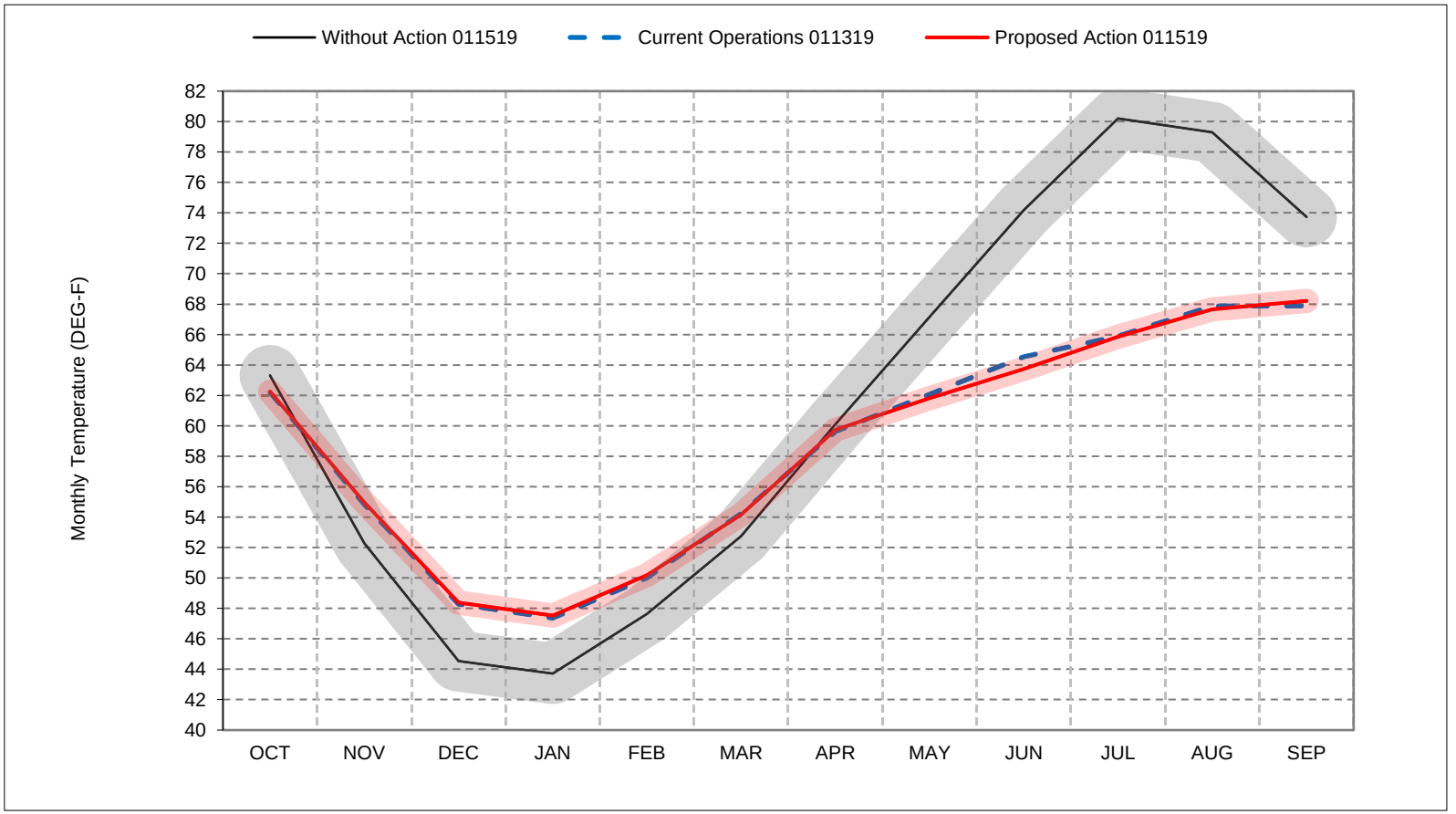
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-5. Sacramento River below Hamilton City, Dry Year Average Temperature



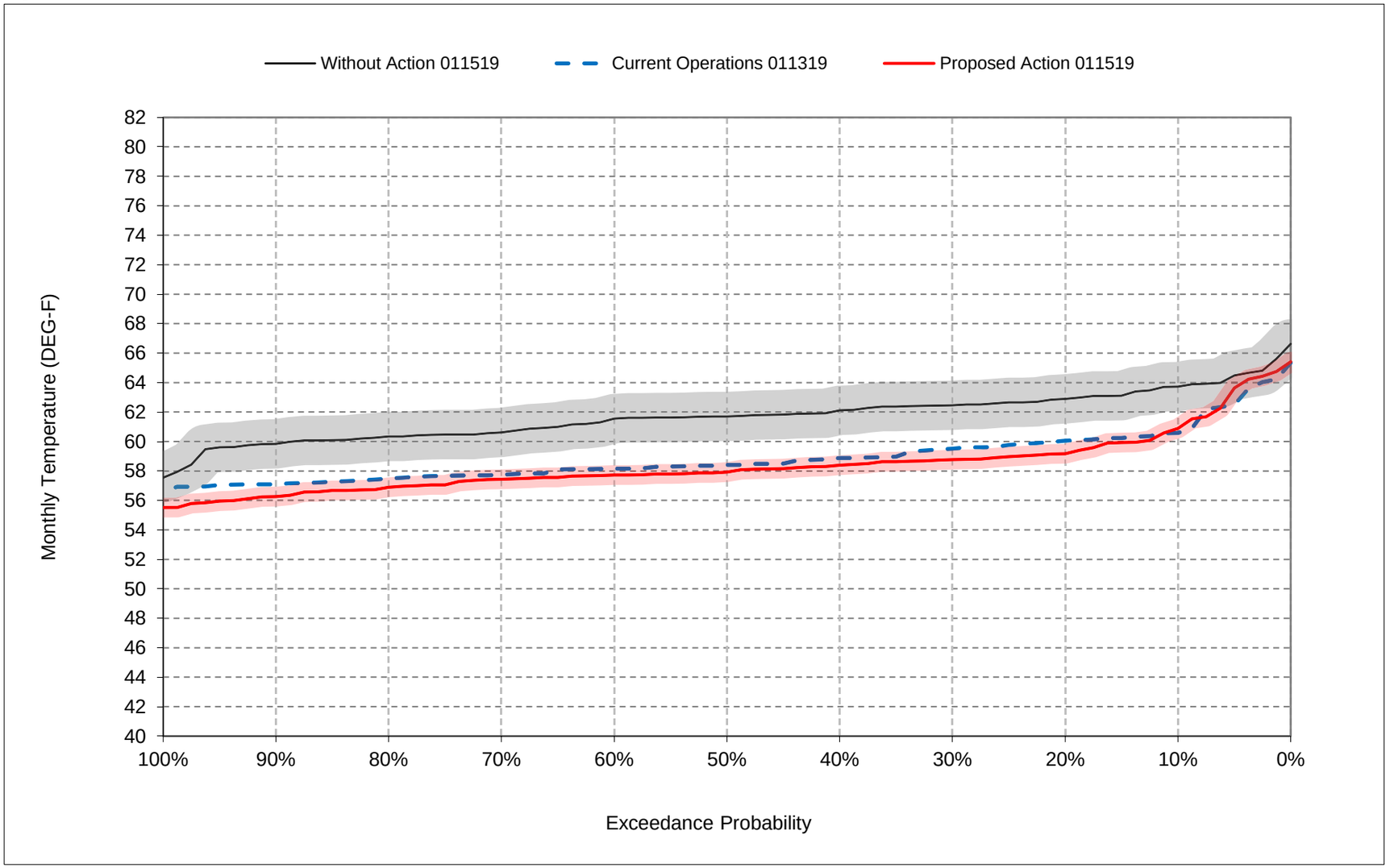
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

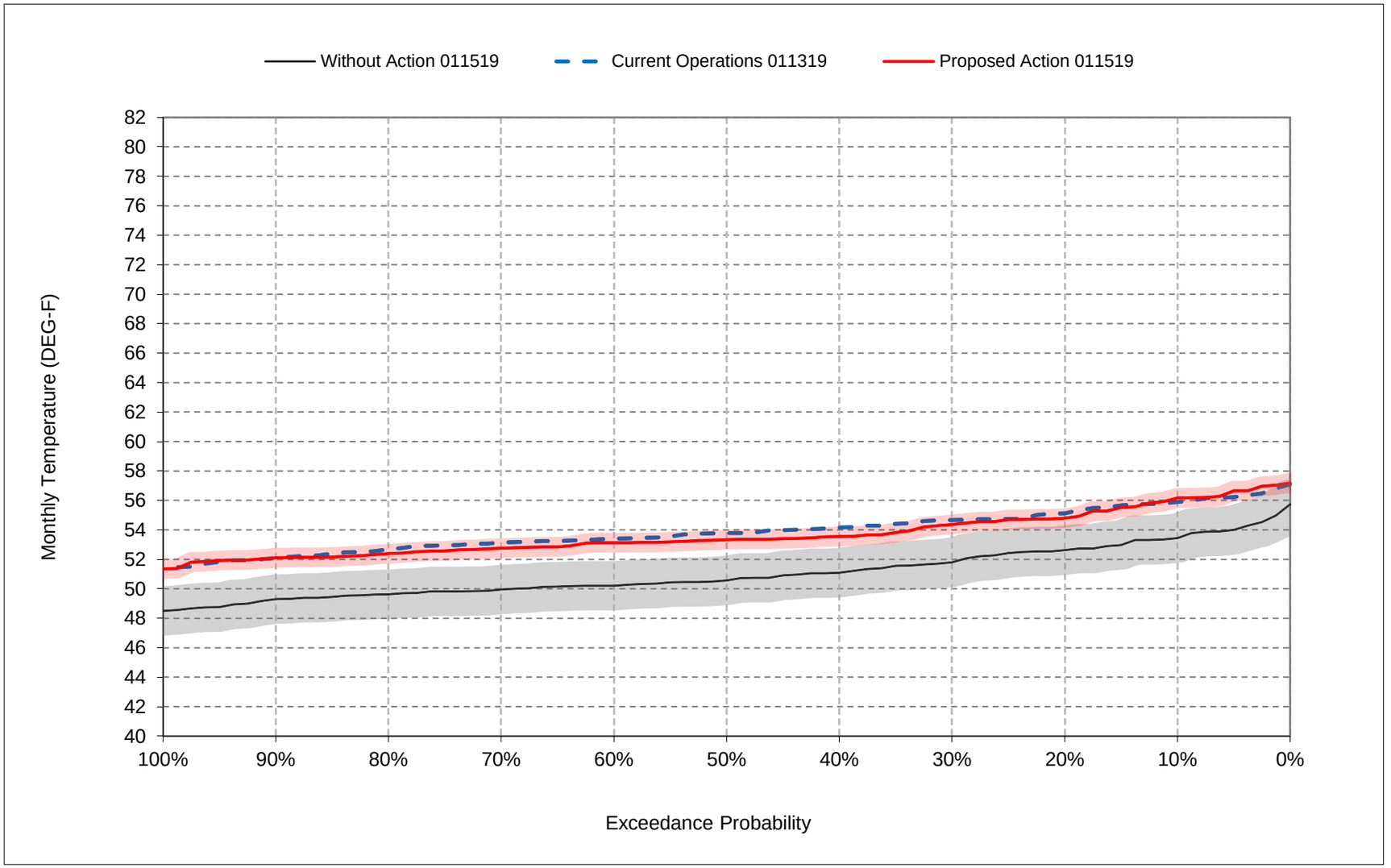
Figure 12-7. Sacramento River below Hamilton City, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

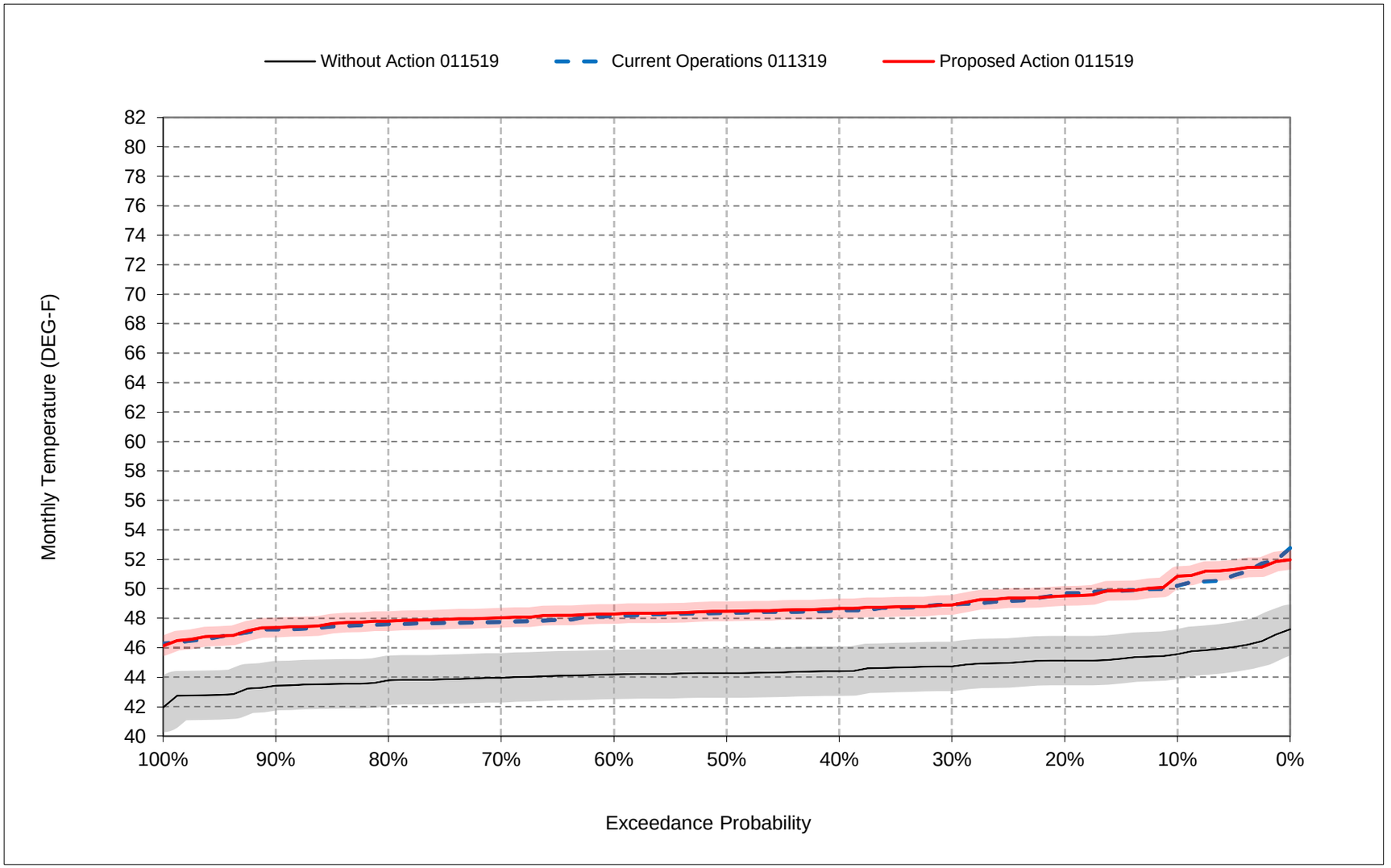
Figure 12-8. Sacramento River below Hamilton City, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

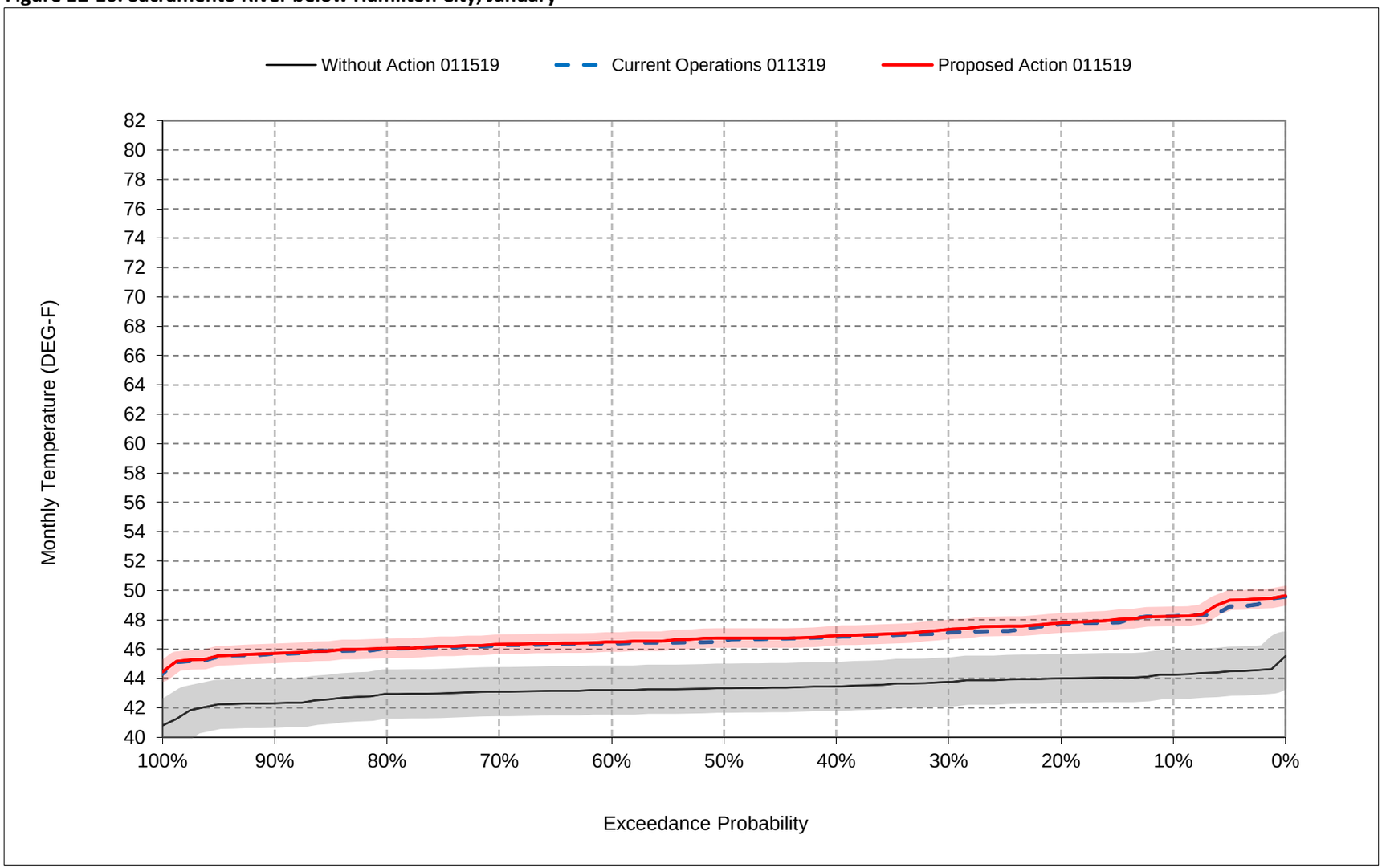
Figure 12-9. Sacramento River below Hamilton City, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

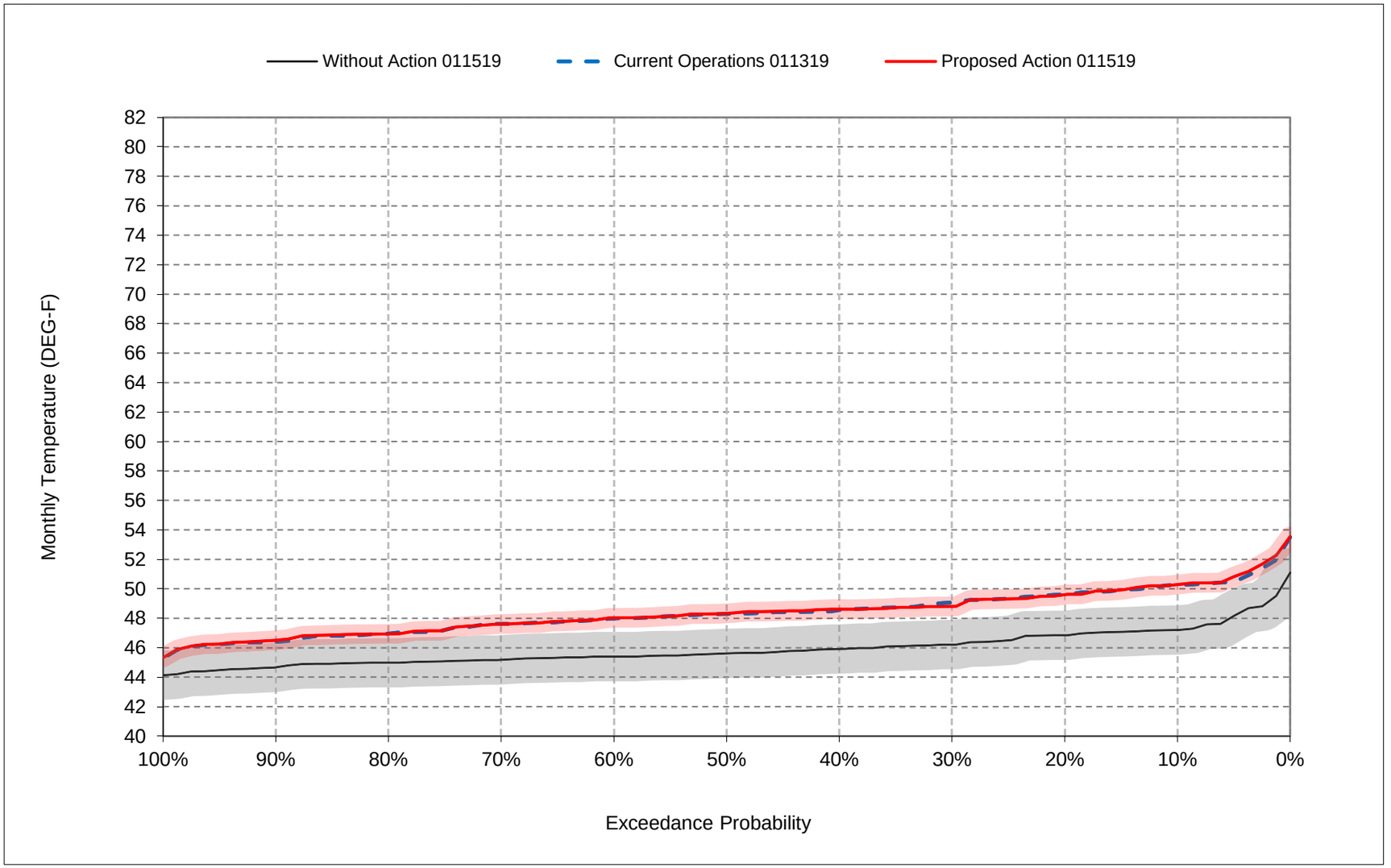
Figure 12-10. Sacramento River below Hamilton City, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

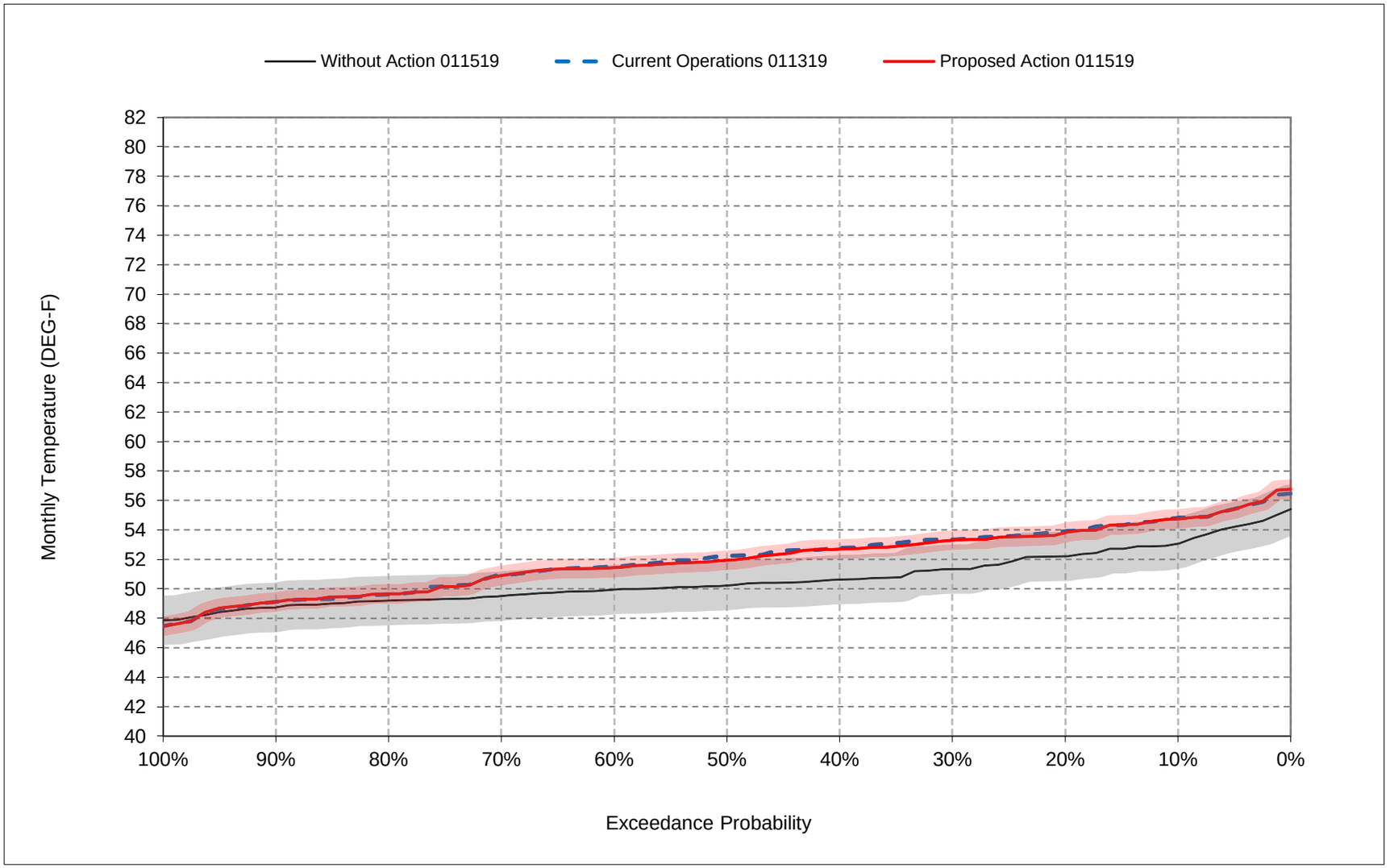
Figure 12-11. Sacramento River below Hamilton City, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

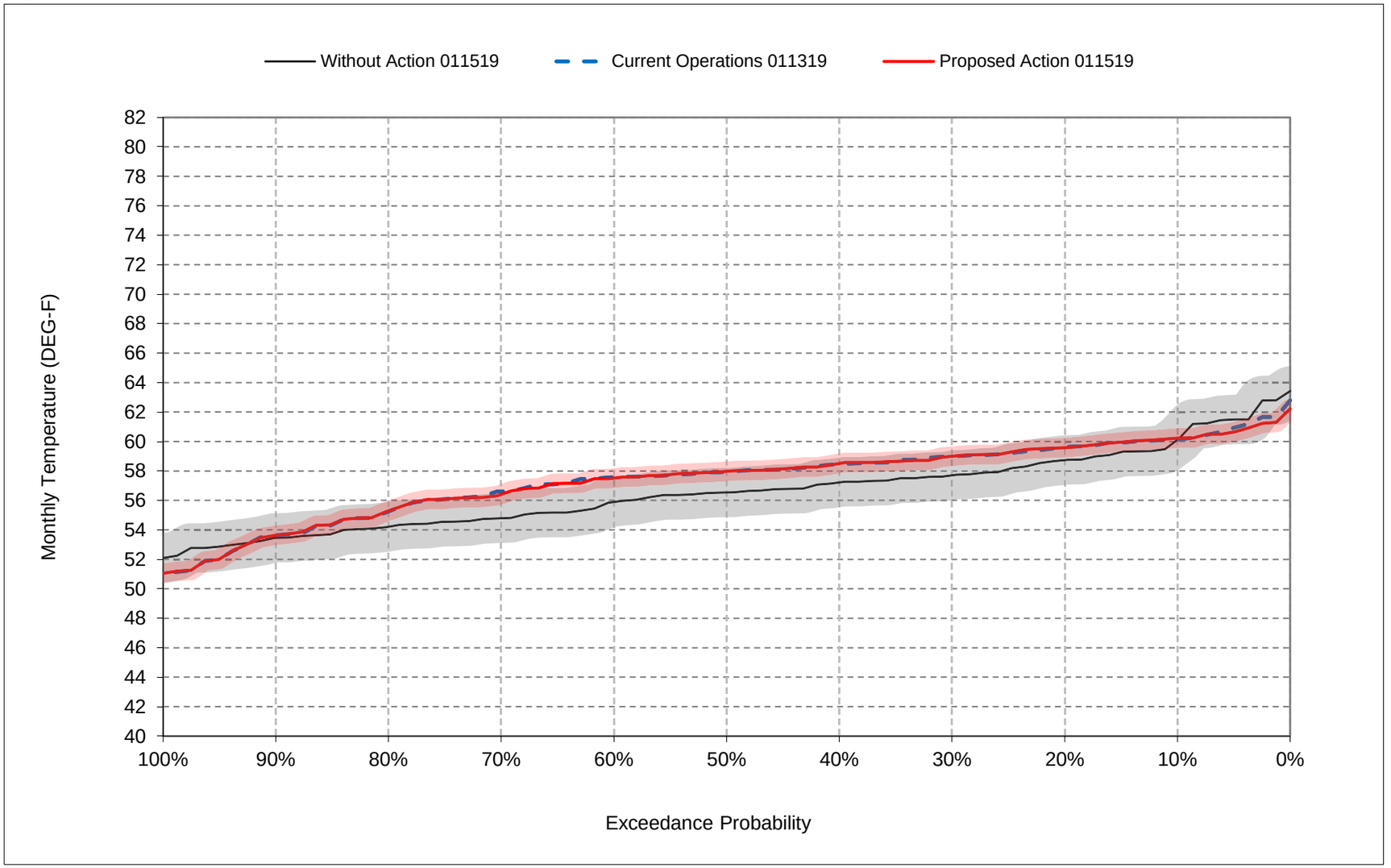
Figure 12-12. Sacramento River below Hamilton City, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

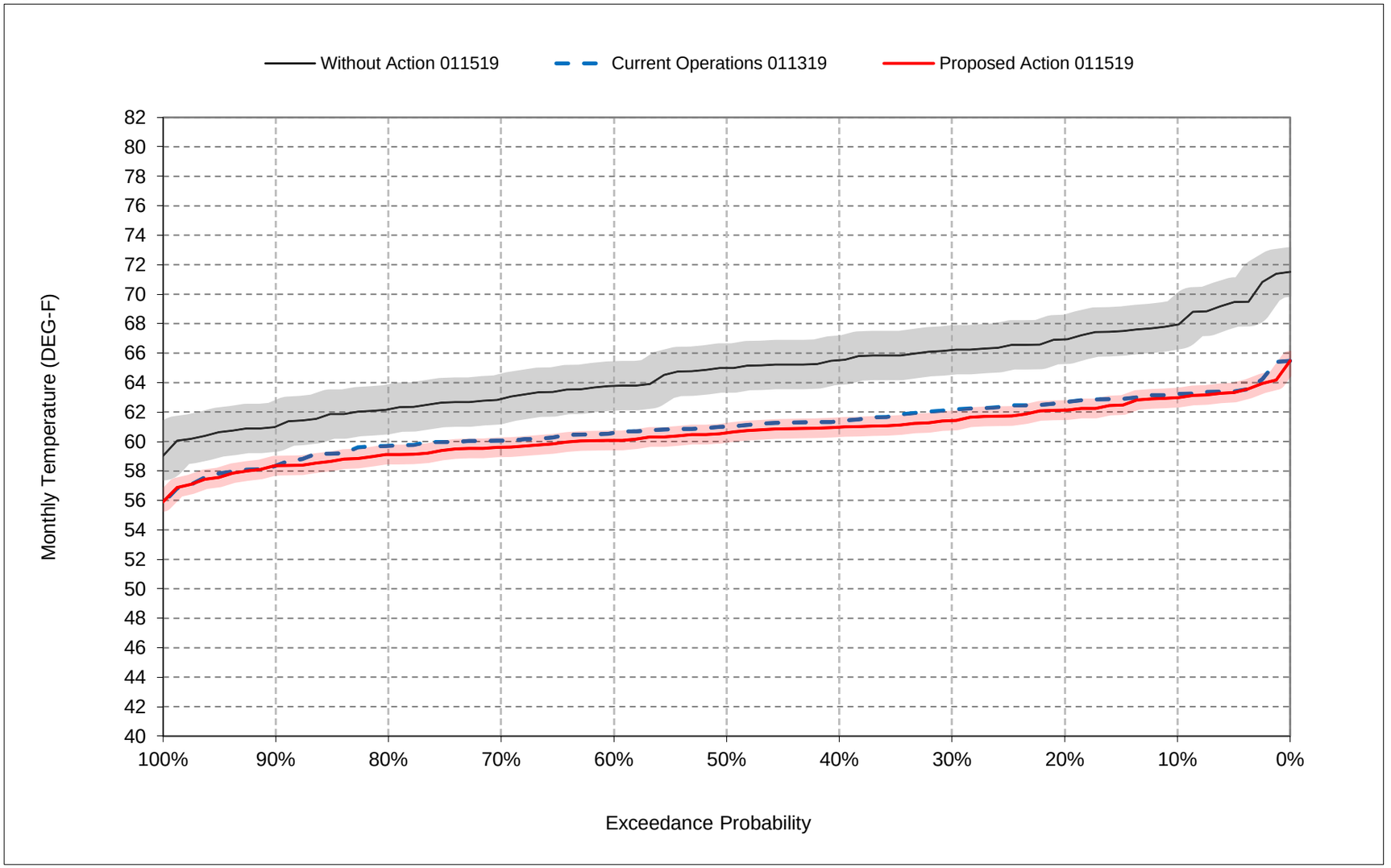
Figure 12-13. Sacramento River below Hamilton City, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

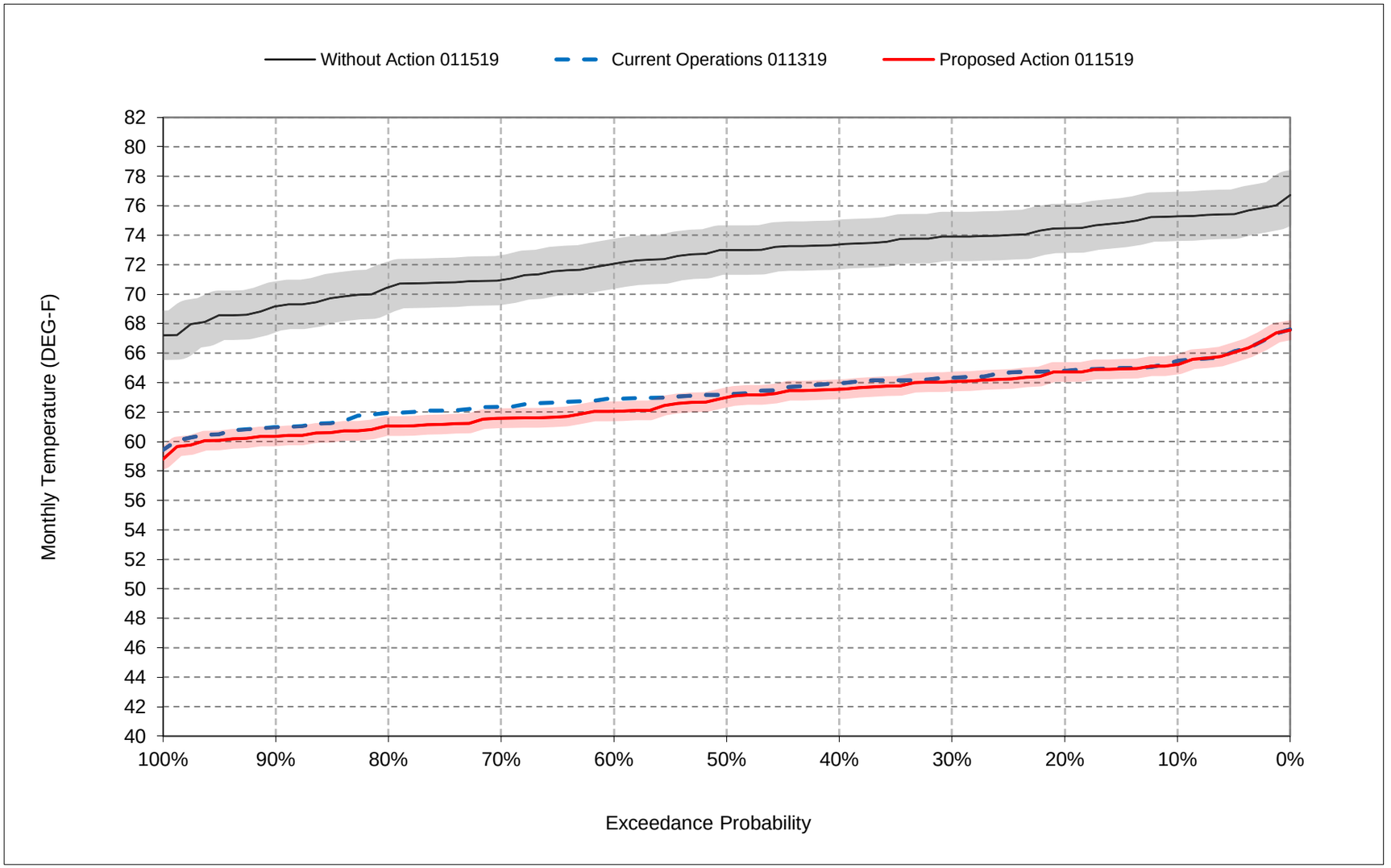
Figure 12-14. Sacramento River below Hamilton City, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

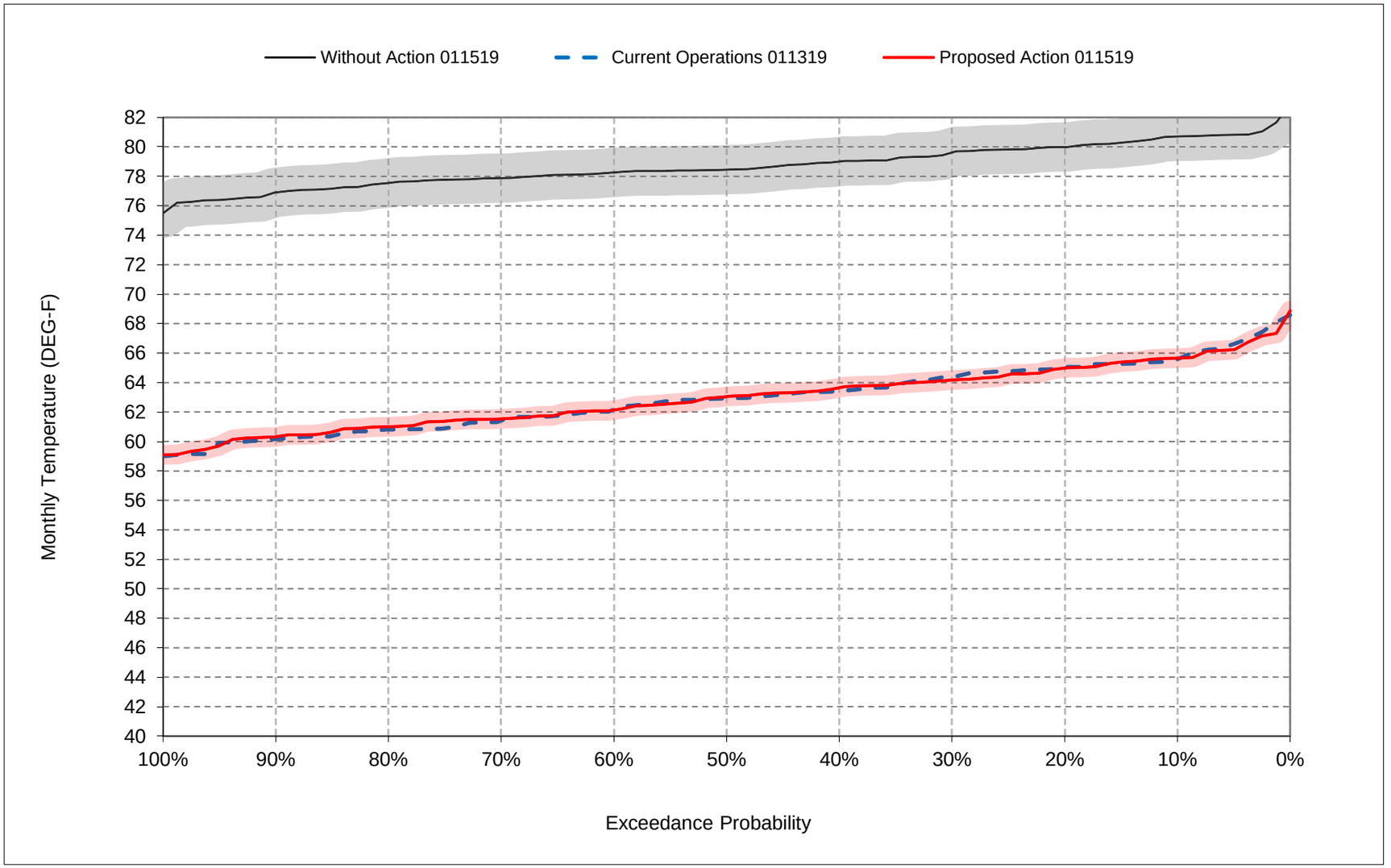
Figure 12-15. Sacramento River below Hamilton City, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

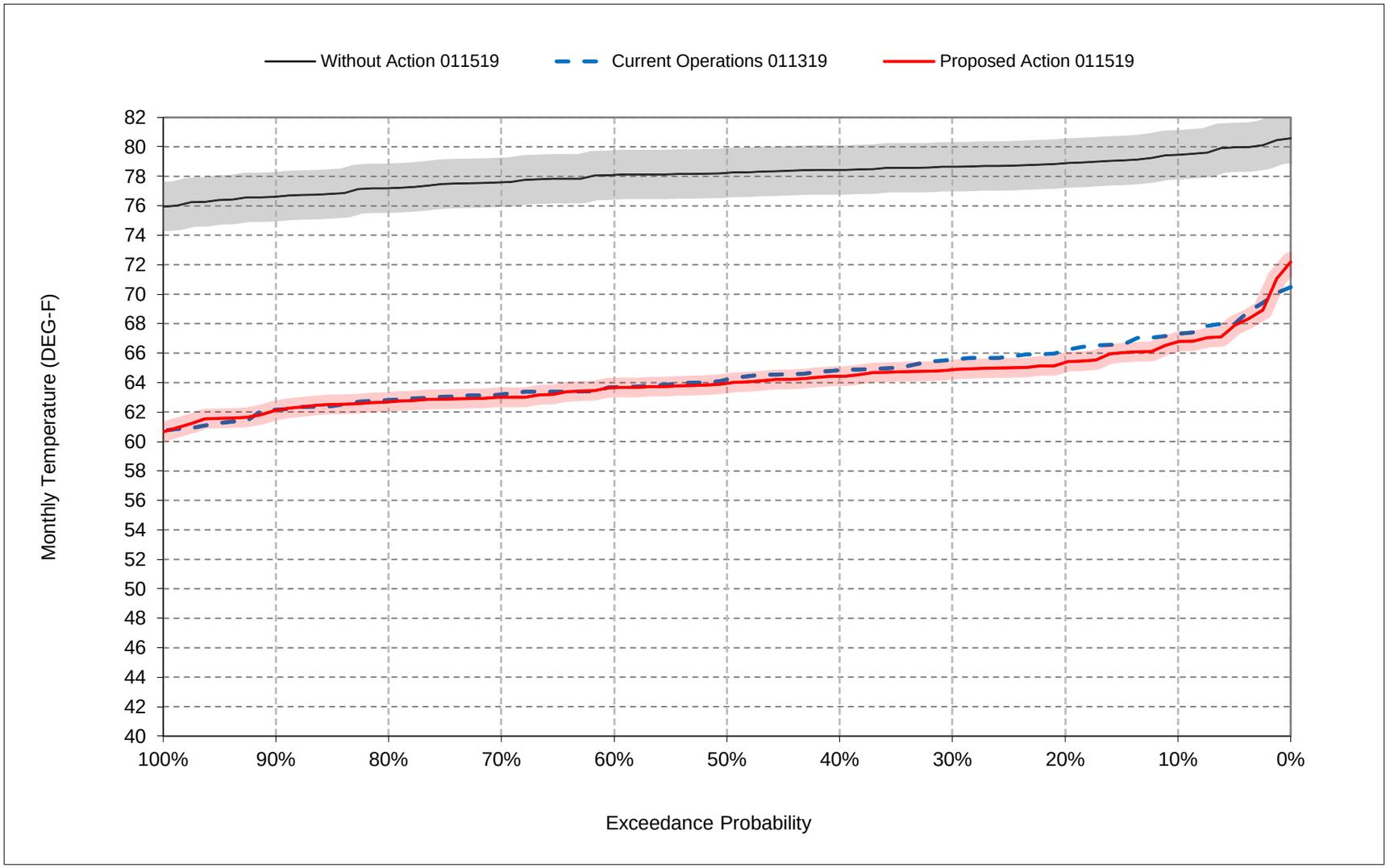
Figure 12-16. Sacramento River below Hamilton City, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

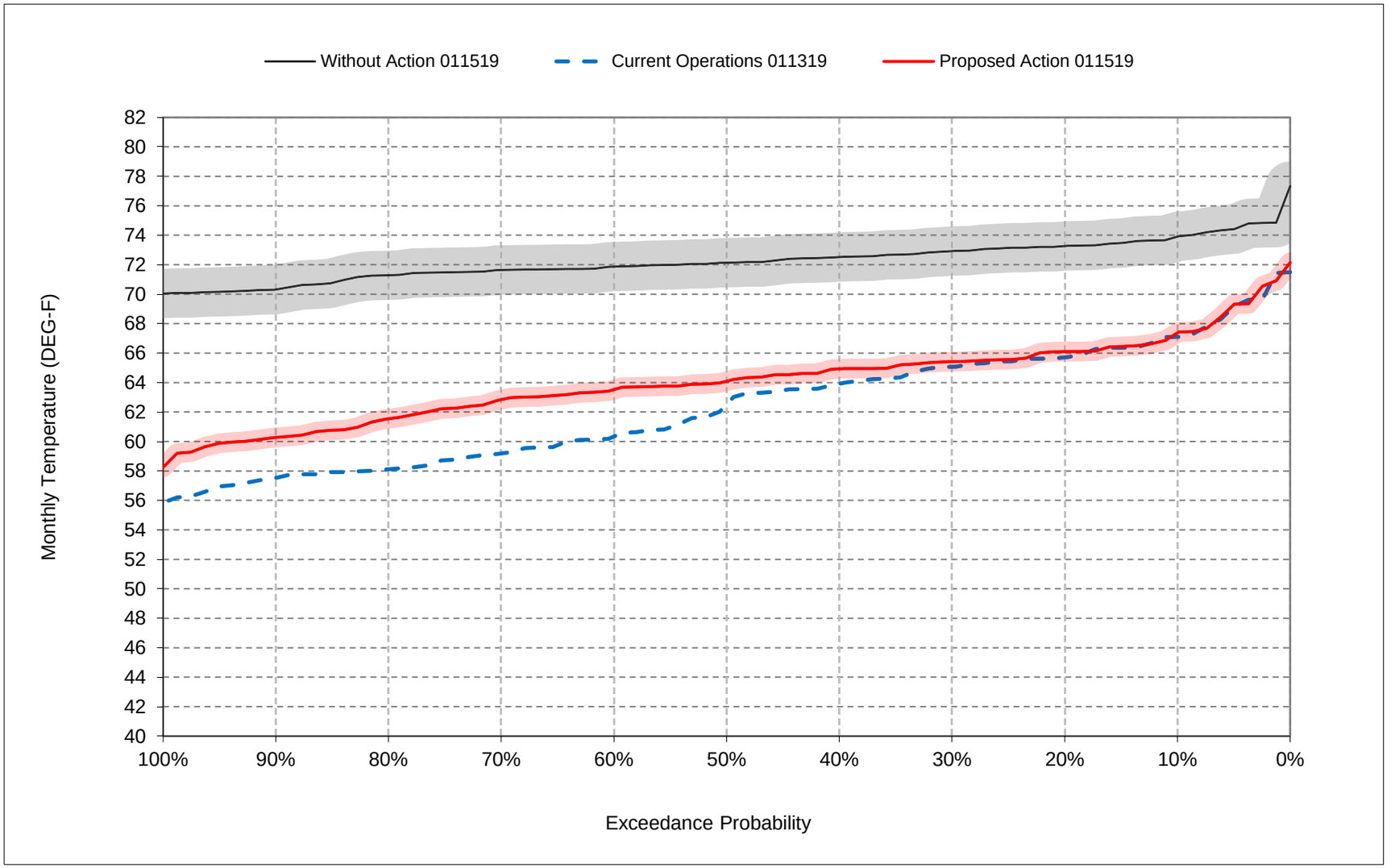
Figure 12-17. Sacramento River below Hamilton City, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 14-1. Sacramento River at Knights Landing, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.9	57.7	47.7	45.4	48.7	55.5	63.2	72.1	79.0	82.7	82.4	77.7
20%	68.2	56.6	46.7	45.1	48.3	54.3	61.3	70.3	77.9	82.2	82.0	77.2
30%	67.6	55.3	46.3	44.9	47.7	53.3	60.0	69.8	77.4	81.6	81.5	76.8
40%	66.9	54.9	45.8	44.4	47.3	52.3	59.5	69.3	76.5	81.2	81.2	76.5
50%	66.5	53.7	45.6	44.3	46.7	51.8	58.9	68.2	75.9	80.8	80.9	75.9
60%	65.8	53.2	45.2	44.1	46.6	51.3	58.4	67.3	75.2	80.3	80.6	75.6
70%	64.9	52.8	44.8	43.9	46.3	51.0	56.7	66.1	74.5	79.9	80.4	75.1
80%	64.6	52.2	44.7	43.7	46.0	50.6	56.0	65.1	73.7	79.6	80.0	74.7
90%	63.7	51.7	44.2	43.5	45.9	50.1	54.7	63.7	72.0	79.2	79.2	74.2
Long Term												
Full Simulation Period[a]	66.3	54.3	45.7	44.4	47.2	52.4	58.8	68.0	75.7	80.8	80.9	76.0
Water Year Types[b,c]												
Wet (32%)	65.7	54.0	45.6	44.2	46.4	51.2	56.4	65.5	73.7	80.3	80.7	75.5
Above Normal (16%)	66.2	53.3	45.5	44.5	46.6	51.3	57.6	67.5	76.2	80.8	81.2	75.1
Below Normal (13%)	65.5	54.4	45.7	44.0	47.0	53.1	60.1	68.9	76.1	81.1	80.9	76.0
Dry (24%)	66.2	54.0	45.8	44.3	47.5	52.6	59.6	69.7	77.0	80.8	80.8	76.5
Critical (15%)	68.4	56.1	46.1	45.0	49.3	55.0	62.9	70.6	76.8	81.7	81.1	77.2

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	65.1	57.4	50.2	48.3	51.1	57.2	63.7	69.5	73.2	74.9	75.2	73.3
20%	64.2	56.7	49.6	47.8	50.4	56.4	62.7	69.0	72.7	74.2	74.6	72.2
30%	63.6	56.0	49.1	47.2	49.8	55.5	61.9	68.2	72.0	73.1	73.8	71.4
40%	62.9	55.3	48.6	47.0	49.2	54.5	61.6	67.9	71.5	72.4	73.6	70.7
50%	62.6	54.9	48.4	46.7	48.7	53.7	60.7	67.3	71.0	71.8	73.0	69.0
60%	61.7	54.6	48.2	46.5	48.5	52.8	60.1	66.7	70.6	70.9	72.4	66.4
70%	61.3	54.3	47.8	46.3	48.0	52.3	58.6	66.2	70.1	69.8	72.0	65.3
80%	60.6	54.1	47.5	46.1	47.6	51.1	56.9	64.6	69.5	69.1	71.2	63.9
90%	60.0	53.5	46.9	45.5	47.2	50.6	55.6	62.8	68.9	68.6	70.1	63.2
Long Term												
Full Simulation Period[a]	62.6	55.2	48.6	46.9	49.1	53.8	60.0	66.8	71.0	71.7	72.9	68.4
Water Year Types[b,c]												
Wet (32%)	61.0	55.1	48.8	46.5	48.0	51.9	57.4	65.0	70.9	71.8	72.4	63.9
Above Normal (16%)	61.6	54.3	48.5	47.0	48.3	52.5	59.1	66.6	70.8	69.7	71.6	65.8
Below Normal (13%)	62.7	55.1	48.4	46.9	49.2	55.1	62.0	67.1	69.9	70.5	71.4	70.5
Dry (24%)	63.2	54.9	48.4	46.9	49.7	54.5	61.1	68.0	71.3	71.9	73.6	71.7
Critical (15%)	65.9	56.9	48.5	47.5	51.1	56.5	63.2	68.6	72.4	74.3	75.5	73.3

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.8	-0.2	**2.5**	**2.9**	**2.4**	**1.7**	**0.5**	-2.6	-5.8	-7.8	-7.2	-4.4
20%	-4.0	**0.1**	**2.9**	**2.8**	**2.1**	**2.0**	**1.4**	-1.3	-5.3	-8.0	-7.4	-5.0
30%	-4.0	**0.6**	**2.8**	**2.3**	**2.1**	**2.3**	**1.9**	-1.6	-5.4	-8.6	-7.7	-5.4
40%	-4.0	**0.4**	**2.8**	**2.6**	**1.9**	**2.3**	**2.1**	-1.4	-5.0	-8.7	-7.7	-5.8
50%	-3.8	**1.2**	**2.8**	**2.4**	**2.0**	**1.8**	**1.8**	-1.0	-4.9	-9.0	-7.9	-6.8
60%	-4.1	**1.4**	**2.9**	**2.4**	**2.0**	**1.4**	**1.7**	-0.6	-4.6	-9.4	-8.2	-9.2
70%	-3.6	**1.5**	**3.0**	**2.3**	**1.7**	**1.3**	**1.9**	**0.0**	-4.4	-10.1	-8.4	-9.8
80%	-4.0	**2.0**	**2.8**	**2.4**	**1.6**	**0.4**	**0.9**	-0.5	-4.1	-10.6	-8.7	-10.8
90%	-3.7	**1.9**	**2.7**	**2.0**	**1.3**	**0.5**	**0.9**	-1.0	-3.0	-10.6	-9.2	-11.0
Long Term												
Full Simulation Period[a]	-3.7	**0.9**	**2.8**	**2.5**	**1.9**	**1.4**	**1.2**	-1.2	-4.6	-9.1	-8.0	-7.6
Water Year Types[b,c]												
Wet (32%)	-4.7	**1.1**	**3.2**	**2.3**	**1.6**	**0.8**	**1.0**	-0.5	-2.9	-8.5	-8.4	-11.5
Above Normal (16%)	-4.7	**1.0**	**3.1**	**2.5**	**1.7**	**1.2**	**1.5**	-0.9	-5.5	-11.1	-9.7	-9.4
Below Normal (13%)	-2.8	**0.7**	**2.7**	**2.9**	**2.2**	**2.0**	**1.9**	-1.8	-6.1	-10.7	-9.5	-5.5
Dry (24%)	-3.0	**0.9**	**2.6**	**2.6**	**2.2**	**1.9**	**1.5**	-1.6	-5.8	-8.9	-7.2	-4.8
Critical (15%)	-2.5	**0.7**	**2.5**	**2.4**	**1.8**	**1.5**	**0.3**	-2.0	-4.5	-7.3	-5.7	-3.9

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 14-2. Sacramento River at Knights Landing, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.9	57.7	47.7	45.4	48.7	55.5	63.2	72.1	79.0	82.7	82.4	77.7
20%	68.2	56.6	46.7	45.1	48.3	54.3	61.3	70.3	77.9	82.2	82.0	77.2
30%	67.6	55.3	46.3	44.9	47.7	53.3	60.0	69.8	77.4	81.6	81.5	76.8
40%	66.9	54.9	45.8	44.4	47.3	52.3	59.5	69.3	76.5	81.2	81.2	76.5
50%	66.5	53.7	45.6	44.3	46.7	51.8	58.9	68.2	75.9	80.8	80.9	75.9
60%	65.8	53.2	45.2	44.1	46.6	51.3	58.4	67.3	75.2	80.3	80.6	75.6
70%	64.9	52.8	44.8	43.9	46.3	51.0	56.7	66.1	74.5	79.9	80.4	75.1
80%	64.6	52.2	44.7	43.7	46.0	50.6	56.0	65.1	73.7	79.6	80.0	74.7
90%	63.7	51.7	44.2	43.5	45.9	50.1	54.7	63.7	72.0	79.2	79.2	74.2
Long Term												
Full Simulation Period[a]	66.3	54.3	45.7	44.4	47.2	52.4	58.8	68.0	75.7	80.8	80.9	76.0
Water Year Types[b,c]												
Wet (32%)	65.7	54.0	45.6	44.2	46.4	51.2	56.4	65.5	73.7	80.3	80.7	75.5
Above Normal (16%)	66.2	53.3	45.5	44.5	46.6	51.3	57.6	67.5	76.2	80.8	81.2	75.1
Below Normal (13%)	65.5	54.4	45.7	44.0	47.0	53.1	60.1	68.9	76.1	81.1	80.9	76.0
Dry (24%)	66.2	54.0	45.8	44.3	47.5	52.6	59.6	69.7	77.0	80.8	80.8	76.5
Critical (15%)	68.4	56.1	46.1	45.0	49.3	55.0	62.9	70.6	76.8	81.7	81.1	77.2

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	64.7	57.3	50.4	48.4	51.2	57.1	63.6	69.2	72.9	74.8	75.2	73.0
20%	64.0	56.7	49.6	47.9	50.4	55.8	62.8	68.4	72.4	74.1	74.0	72.2
30%	63.4	55.8	49.1	47.4	49.8	55.1	61.8	67.7	71.5	73.1	73.7	71.8
40%	63.0	55.2	48.7	47.0	49.3	54.4	61.5	67.3	70.8	72.6	73.3	71.1
50%	62.4	54.6	48.5	46.8	48.8	53.6	60.7	66.7	70.3	71.9	72.8	70.6
60%	61.9	54.4	48.1	46.6	48.5	52.8	60.1	66.2	69.9	70.8	72.3	70.3
70%	61.5	54.1	47.9	46.3	48.0	52.3	58.6	65.4	69.1	70.0	71.8	69.6
80%	61.0	53.9	47.6	46.1	47.7	51.1	57.0	64.5	68.6	69.4	71.2	68.4
90%	60.1	53.3	47.0	45.6	47.3	50.6	55.6	62.8	68.4	68.6	70.1	66.9
Long Term												
Full Simulation Period[a]	62.6	55.1	48.6	46.9	49.1	53.7	60.0	66.4	70.4	71.8	72.8	70.4
Water Year Types[b,c]												
Wet (32%)	61.2	55.0	48.8	46.6	48.0	51.9	57.4	64.7	70.8	71.9	72.2	68.2
Above Normal (16%)	61.8	54.1	48.4	47.0	48.3	52.5	59.1	66.2	70.4	69.7	71.7	70.4
Below Normal (13%)	62.5	55.1	48.6	47.0	49.2	54.8	61.7	66.4	68.8	70.5	71.3	69.9
Dry (24%)	62.8	54.9	48.6	47.0	49.8	54.5	61.1	67.4	70.2	72.0	73.3	71.6
Critical (15%)	66.0	56.8	48.6	47.6	51.2	56.4	63.3	68.4	71.6	74.6	75.5	73.4

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.2	-0.4	**2.6**	**3.0**	**2.5**	**1.6**	**0.5**	-3.0	-6.1	-7.9	-7.2	-4.6
20%	-4.3	**0.1**	**2.8**	**2.8**	**2.1**	**1.5**	**1.4**	-1.9	-5.5	-8.0	-7.9	-4.9
30%	-4.2	**0.5**	**2.8**	**2.5**	**2.1**	**1.9**	**1.8**	-2.1	-5.9	-8.5	-7.8	-5.0
40%	-4.0	**0.3**	**2.9**	**2.6**	**2.0**	**2.2**	**2.0**	-1.9	-5.7	-8.5	-7.9	-5.4
50%	-4.1	**0.9**	**2.9**	**2.5**	**2.1**	**1.8**	**1.8**	-1.6	-5.6	-8.9	-8.1	-5.2
60%	-3.9	**1.2**	**2.9**	**2.5**	**2.0**	**1.5**	**1.7**	-1.1	-5.3	-9.5	-8.3	-5.3
70%	-3.5	**1.3**	**3.1**	**2.4**	**1.7**	**1.3**	**1.9**	-0.7	-5.4	-9.9	-8.6	-5.5
80%	-3.6	**1.7**	**3.0**	**2.5**	**1.6**	**0.5**	**1.0**	-0.6	-5.1	-10.2	-8.8	-6.3
90%	-3.7	**1.6**	**2.8**	**2.1**	**1.4**	**0.5**	**0.9**	-1.0	-3.5	-10.6	-9.1	-7.3
Long Term												
Full Simulation Period[a]	-3.7	**0.9**	**2.9**	**2.6**	**1.9**	**1.3**	**1.2**	-1.7	-5.2	-9.0	-8.2	-5.6
Water Year Types[b,c]												
Wet (32%)	-4.6	**1.0**	**3.2**	**2.4**	**1.6**	**0.8**	**1.0**	-0.8	-3.0	-8.4	-8.5	-7.3
Above Normal (16%)	-4.4	**0.9**	**2.9**	**2.5**	**1.7**	**1.1**	**1.5**	-1.3	-5.8	-11.1	-9.6	-4.7
Below Normal (13%)	-3.0	**0.8**	**2.9**	**3.0**	**2.2**	**1.7**	**1.7**	-2.5	-7.2	-10.7	-9.6	-6.1
Dry (24%)	-3.4	**0.8**	**2.8**	**2.6**	**2.2**	**1.8**	**1.5**	-2.3	-6.8	-8.8	-7.5	-4.9
Critical (15%)	-2.5	**0.7**	**2.5**	**2.6**	**1.9**	**1.4**	**0.4**	-2.2	-5.2	-7.1	-5.7	-3.8

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 14-3. Sacramento River at Knights Landing, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	65.1	57.4	50.2	48.3	51.1	57.2	63.7	69.5	73.2	74.9	75.2	73.3
20%	64.2	56.7	49.6	47.8	50.4	56.4	62.7	69.0	72.7	74.2	74.6	72.2
30%	63.6	56.0	49.1	47.2	49.8	55.5	61.9	68.2	72.0	73.1	73.8	71.4
40%	62.9	55.3	48.6	47.0	49.2	54.5	61.6	67.9	71.5	72.4	73.6	70.7
50%	62.6	54.9	48.4	46.7	48.7	53.7	60.7	67.3	71.0	71.8	73.0	69.0
60%	61.7	54.6	48.2	46.5	48.5	52.8	60.1	66.7	70.6	70.9	72.4	66.4
70%	61.3	54.3	47.8	46.3	48.0	52.3	58.6	66.2	70.1	69.8	72.0	65.3
80%	60.6	54.1	47.5	46.1	47.6	51.1	56.9	64.6	69.5	69.1	71.2	63.9
90%	60.0	53.5	46.9	45.5	47.2	50.6	55.6	62.8	68.9	68.6	70.1	63.2
Long Term												
Full Simulation Period[a]	62.6	55.2	48.6	46.9	49.1	53.8	60.0	66.8	71.0	71.7	72.9	68.4
Water Year Types[b,c]												
Wet (32%)	61.0	55.1	48.8	46.5	48.0	51.9	57.4	65.0	70.9	71.8	72.4	63.9
Above Normal (16%)	61.6	54.3	48.5	47.0	48.3	52.5	59.1	66.6	70.8	69.7	71.6	65.8
Below Normal (13%)	62.7	55.1	48.4	46.9	49.2	55.1	62.0	67.1	69.9	70.5	71.4	70.5
Dry (24%)	63.2	54.9	48.4	46.9	49.7	54.5	61.1	68.0	71.3	71.9	73.6	71.7
Critical (15%)	65.9	56.9	48.5	47.5	51.1	56.5	63.2	68.6	72.4	74.3	75.5	73.3

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	64.7	57.3	50.4	48.4	51.2	57.1	63.6	69.2	72.9	74.8	75.2	73.0
20%	64.0	56.7	49.6	47.9	50.4	55.8	62.8	68.4	72.4	74.1	74.0	72.2
30%	63.4	55.8	49.1	47.4	49.8	55.1	61.8	67.7	71.5	73.1	73.7	71.8
40%	63.0	55.2	48.7	47.0	49.3	54.4	61.5	67.3	70.8	72.6	73.3	71.1
50%	62.4	54.6	48.5	46.8	48.8	53.6	60.7	66.7	70.3	71.9	72.8	70.6
60%	61.9	54.4	48.1	46.6	48.5	52.8	60.1	66.2	69.9	70.8	72.3	70.3
70%	61.5	54.1	47.9	46.3	48.0	52.3	58.6	65.4	69.1	70.0	71.8	69.6
80%	61.0	53.9	47.6	46.1	47.7	51.1	57.0	64.5	68.6	69.4	71.2	68.4
90%	60.1	53.3	47.0	45.6	47.3	50.6	55.6	62.8	68.4	68.6	70.1	66.9
Long Term												
Full Simulation Period[a]	62.6	55.1	48.6	46.9	49.1	53.7	60.0	66.4	70.4	71.8	72.8	70.4
Water Year Types[b,c]												
Wet (32%)	61.2	55.0	48.8	46.6	48.0	51.9	57.4	64.7	70.8	71.9	72.2	68.2
Above Normal (16%)	61.8	54.1	48.4	47.0	48.3	52.5	59.1	66.2	70.4	69.7	71.7	70.4
Below Normal (13%)	62.5	55.1	48.6	47.0	49.2	54.8	61.7	66.4	68.8	70.5	71.3	69.9
Dry (24%)	62.8	54.9	48.6	47.0	49.8	54.5	61.1	67.4	70.2	72.0	73.3	71.6
Critical (15%)	66.0	56.8	48.6	47.6	51.2	56.4	63.3	68.4	71.6	74.6	75.5	73.4

Proposed Action 011519 minus Current Operations 011319

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	**0.2**	**0.1**	**0.1**	-0.1	-0.1	-0.3	-0.3	0.0	**0.0**	-0.3
20%	-0.2	**0.0**	-0.1	**0.1**	**0.0**	-0.5	**0.0**	-0.6	-0.3	0.0	-0.6	**0.0**
30%	-0.2	-0.1	0.0	**0.2**	-0.1	-0.4	-0.1	-0.6	-0.5	**0.1**	-0.1	**0.4**
40%	**0.1**	-0.1	**0.1**	**0.0**	**0.1**	-0.1	-0.1	-0.6	-0.7	**0.2**	-0.3	**0.4**
50%	-0.3	-0.3	**0.1**	**0.1**	**0.1**	-0.1	0.0	-0.6	-0.7	**0.1**	-0.2	**1.6**
60%	**0.2**	-0.2	-0.1	**0.1**	0.0	**0.0**	**0.0**	-0.5	-0.7	-0.1	-0.2	**3.9**
70%	**0.1**	-0.2	**0.1**	**0.0**	-0.1	**0.0**	**0.0**	-0.8	-1.0	**0.2**	-0.2	**4.3**
80%	**0.4**	-0.3	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	-0.1	-0.9	**0.3**	0.0	**4.5**
90%	**0.0**	-0.3	**0.1**	**0.1**	**0.1**	0.0	0.0	**0.0**	-0.5	0.0	**0.0**	**3.7**
Long Term												
Full Simulation Period[a]	0.0	-0.1	**0.1**	**0.1**	**0.0**	-0.1	0.0	-0.4	-0.6	**0.1**	-0.1	**2.0**
Water Year Types[b,c]												
Wet (32%)	**0.2**	-0.1	**0.0**	**0.1**	**0.0**	**0.0**	0.0	-0.2	-0.1	**0.1**	-0.1	**4.3**
Above Normal (16%)	**0.3**	-0.2	-0.1	**0.0**	0.0	-0.1	**0.0**	-0.4	-0.3	**0.0**	**0.1**	**4.6**
Below Normal (13%)	-0.2	**0.1**	**0.2**	**0.1**	-0.1	-0.3	-0.3	-0.7	-1.1	0.0	-0.1	-0.6
Dry (24%)	-0.4	-0.1	**0.2**	**0.0**	**0.0**	0.0	**0.0**	-0.7	-1.0	**0.1**	-0.3	-0.1
Critical (15%)	**0.1**	0.0	**0.1**	**0.1**	**0.1**	-0.1	**0.1**	-0.2	-0.8	**0.2**	0.0	**0.0**

a Based on the 82-year simulation period.

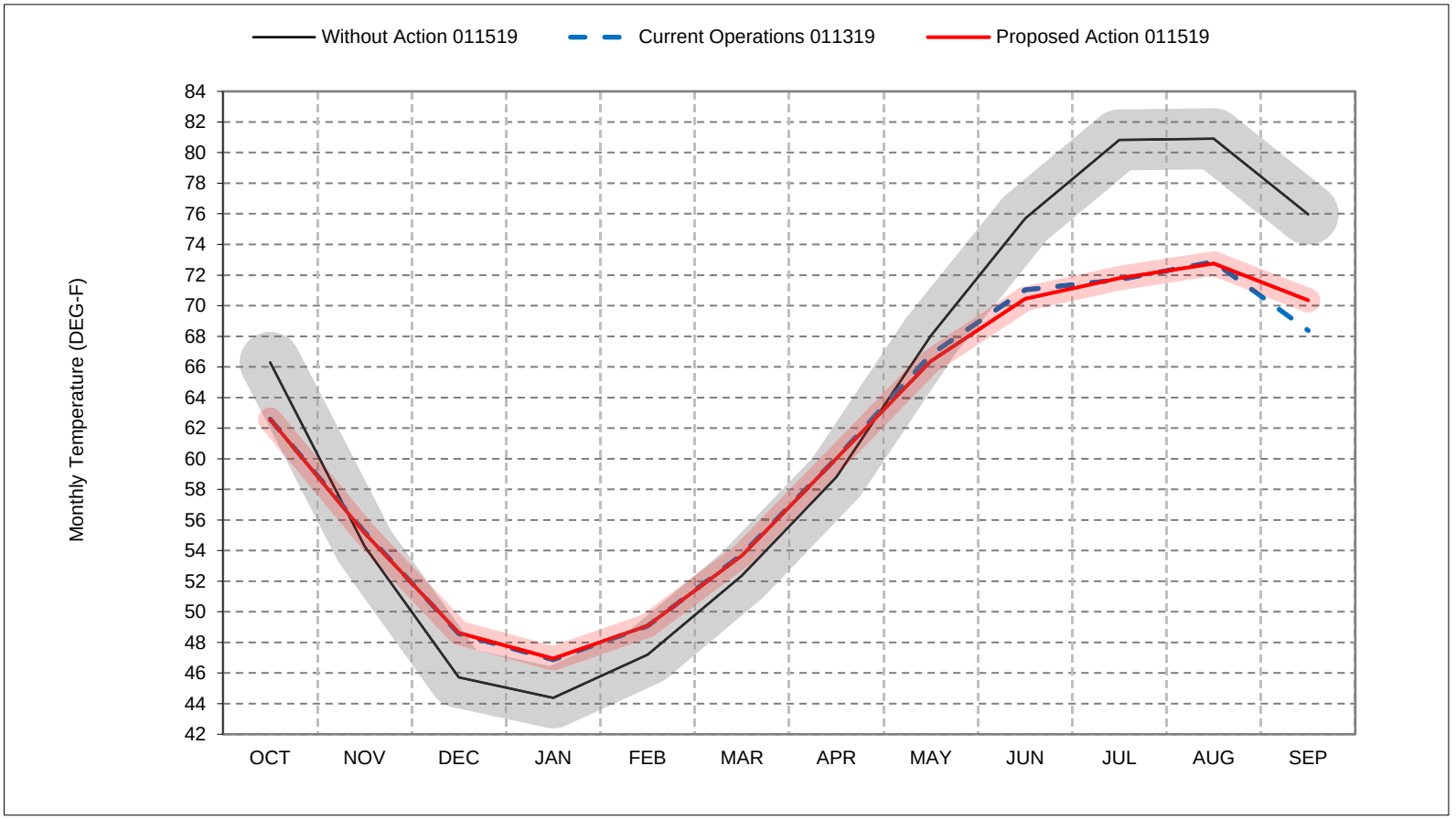
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

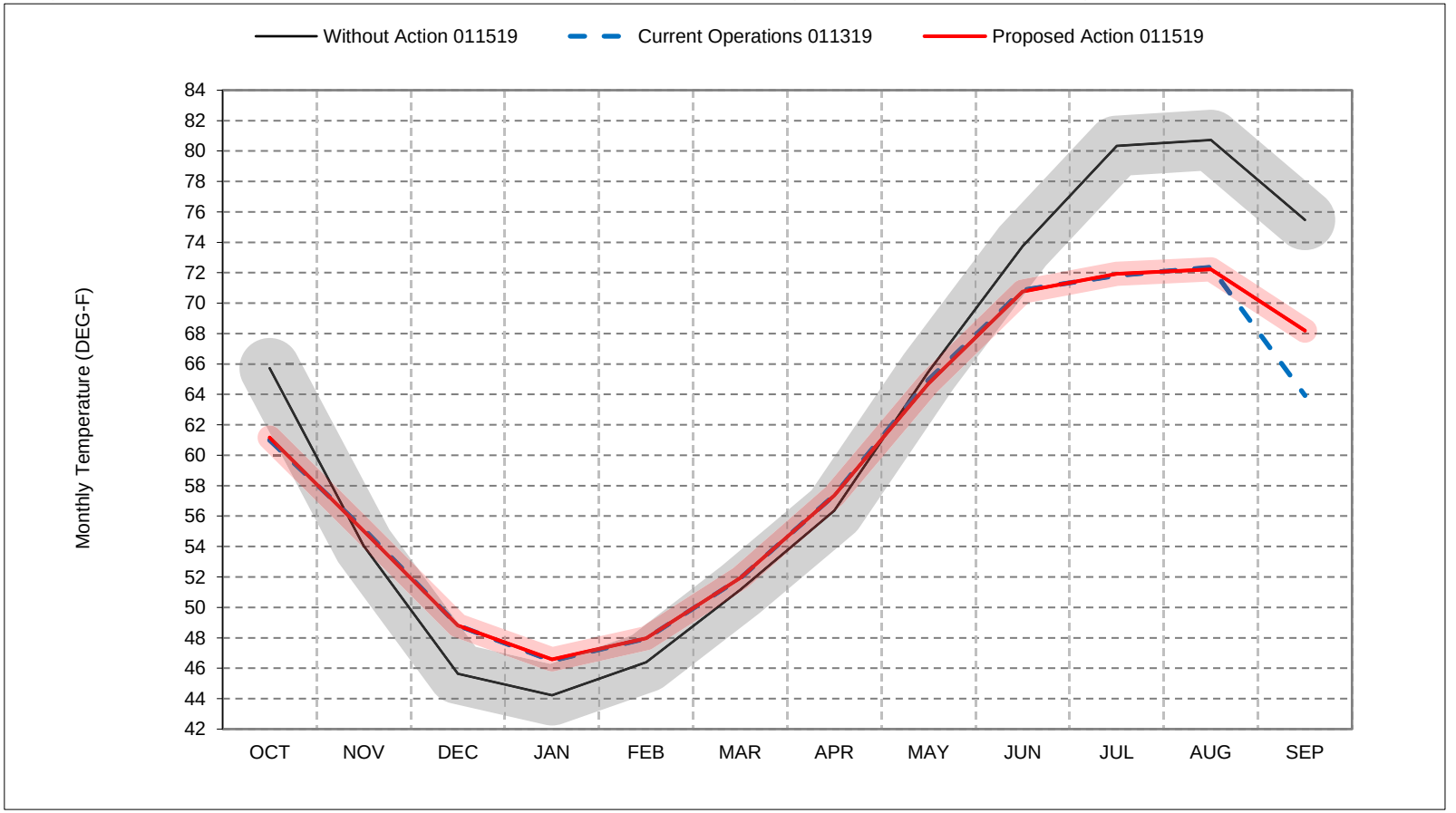
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-1. Sacramento River at Knights Landing, Long-Term Average Temperature



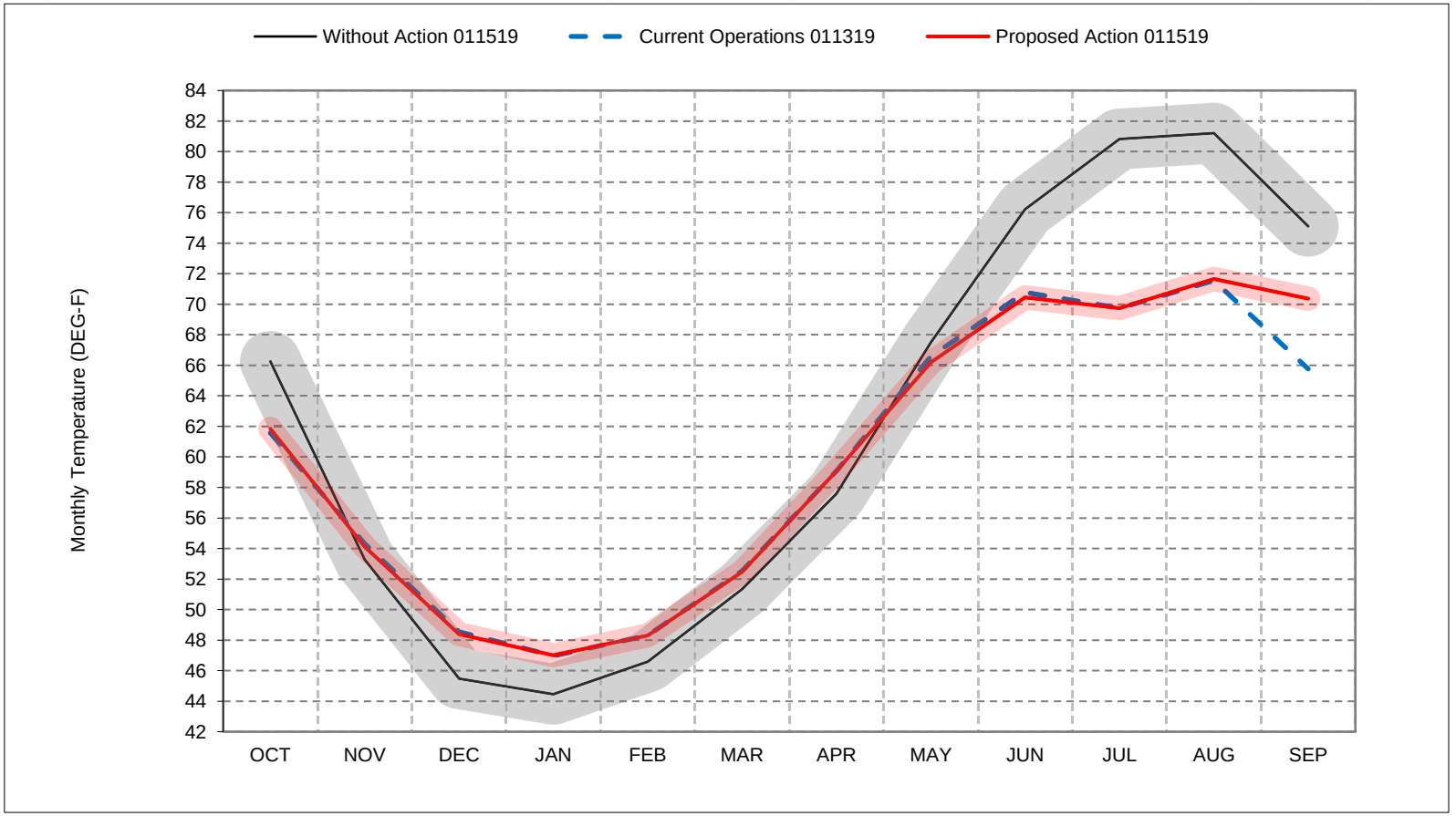
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-2. Sacramento River at Knights Landing, Wet Year Average Temperature



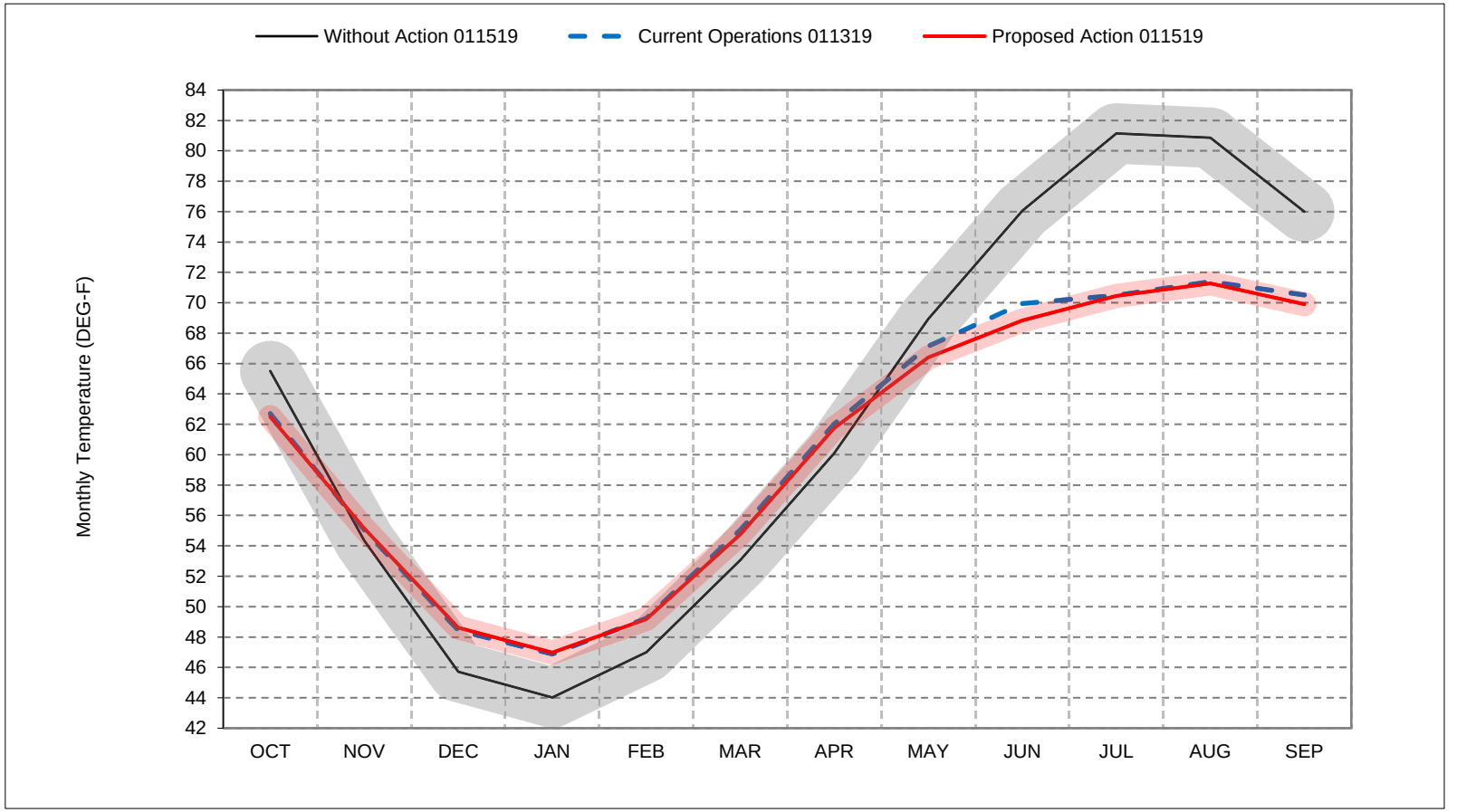
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-3. Sacramento River at Knights Landing, Above Normal Year Average Temperature



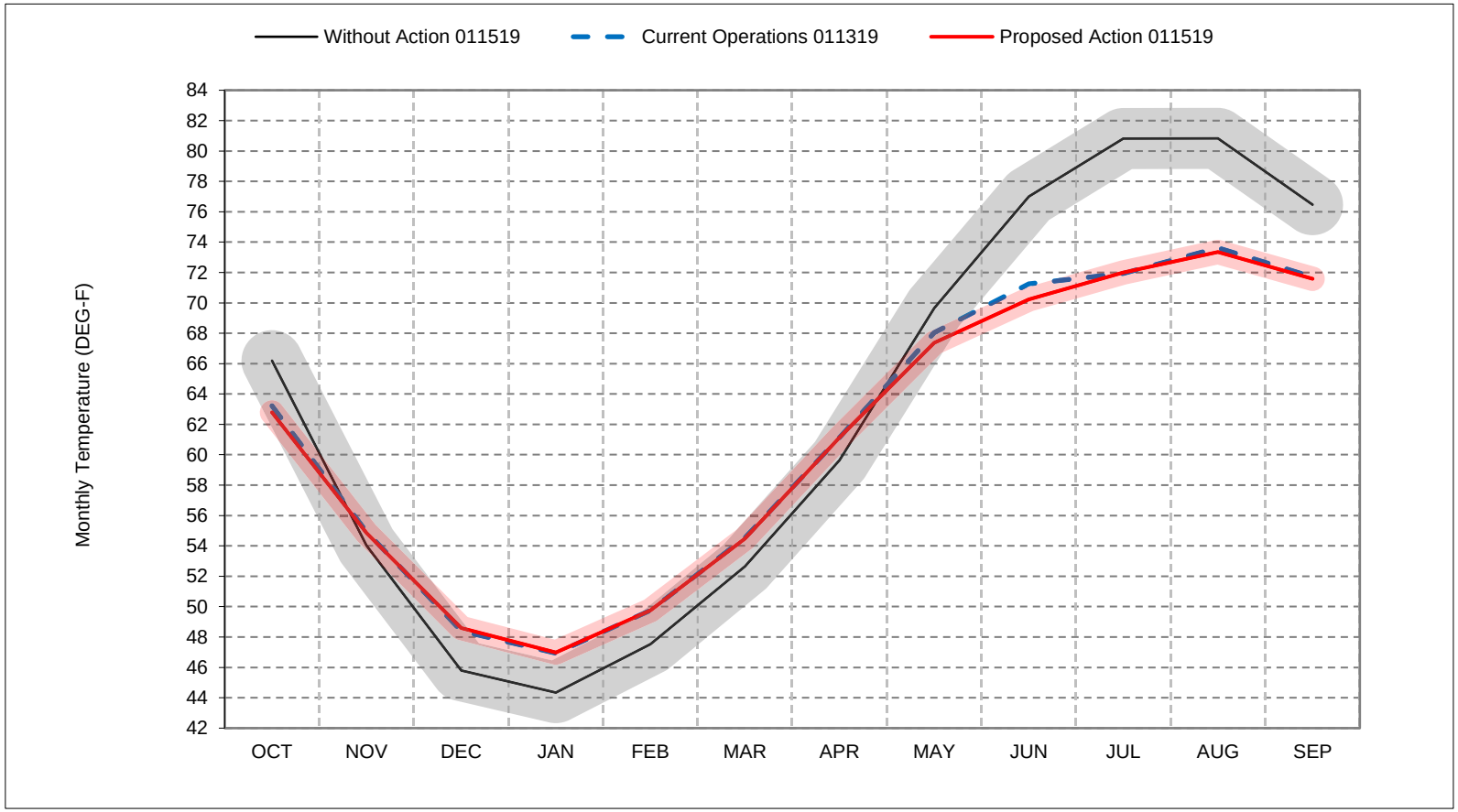
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-4. Sacramento River at Knights Landing, Below Normal Year Average Temperature



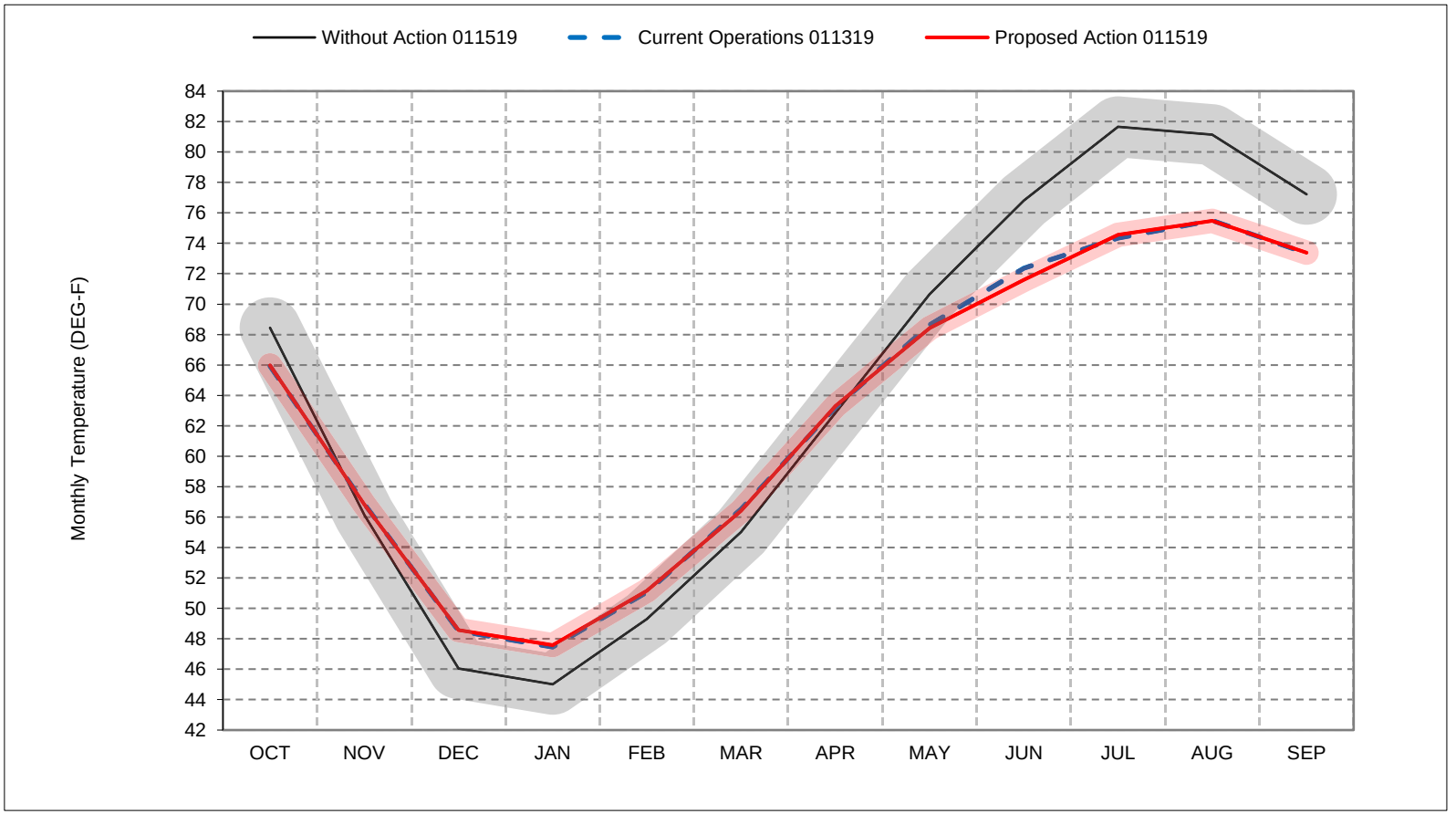
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-5. Sacramento River at Knights Landing, Dry Year Average Temperature



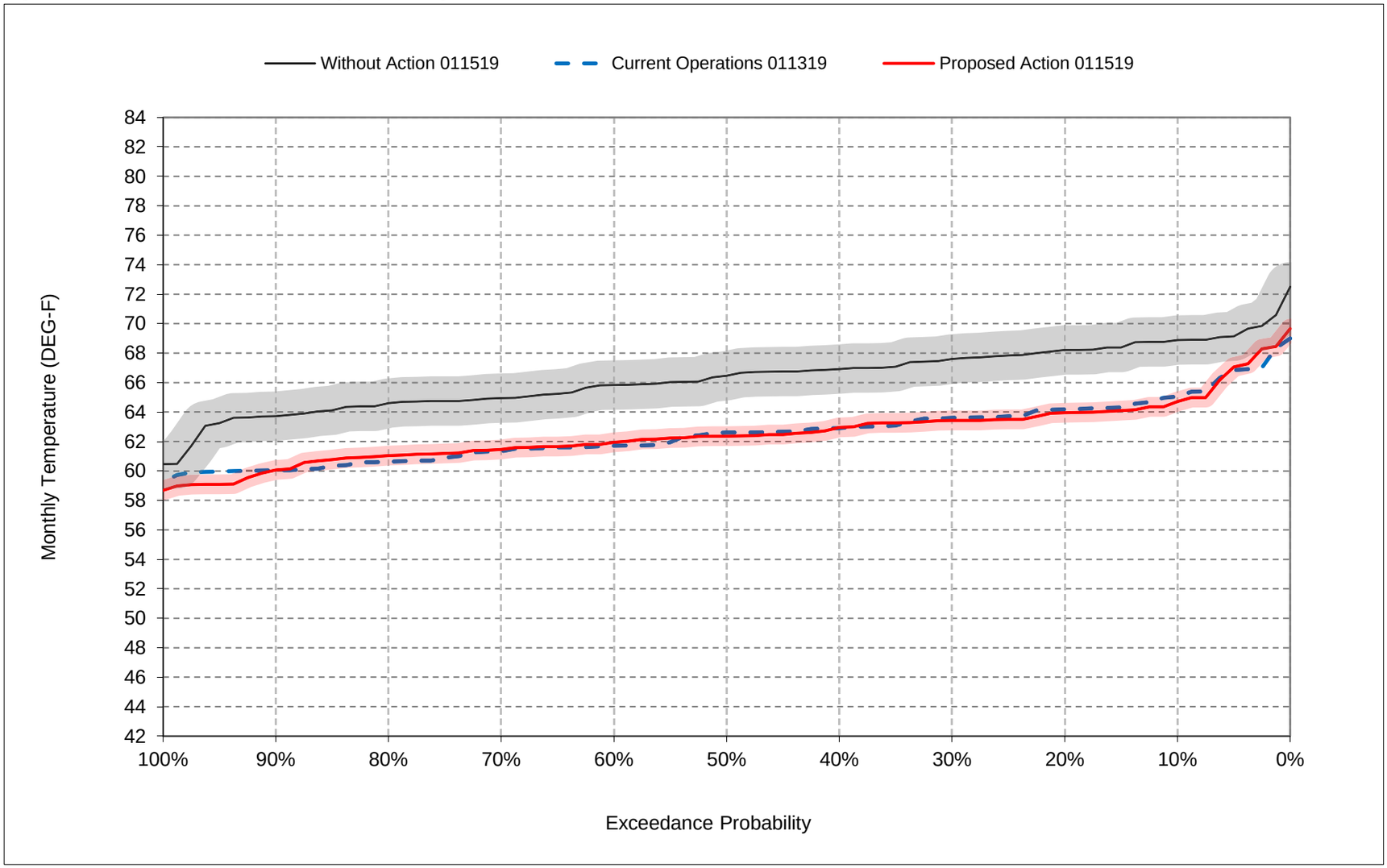
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-6. Sacramento River at Knights Landing, 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.
*These are draft results meant for qualitative analysis and are subject to revision.

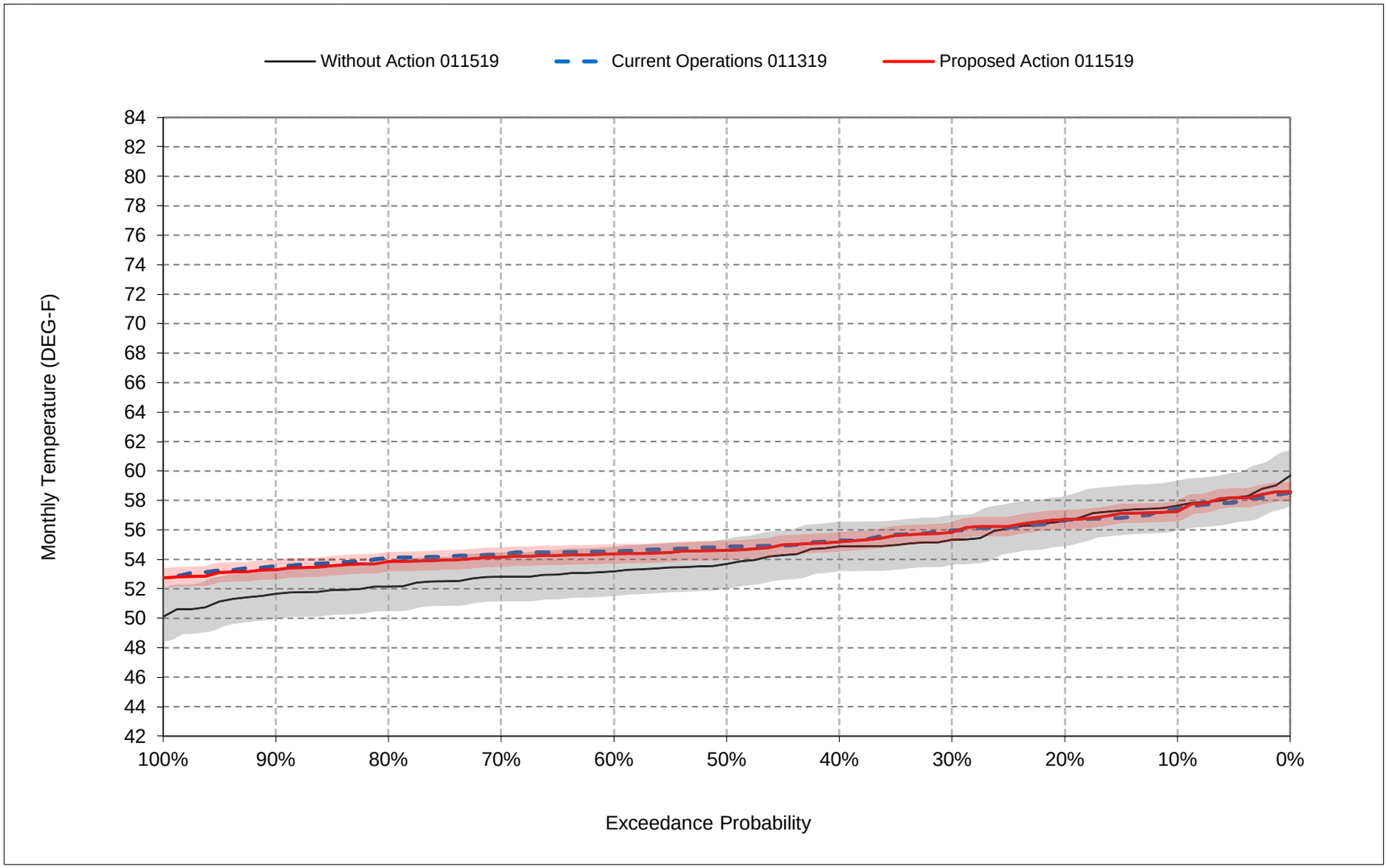
Figure 14-7. Sacramento River at Knights Landing, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

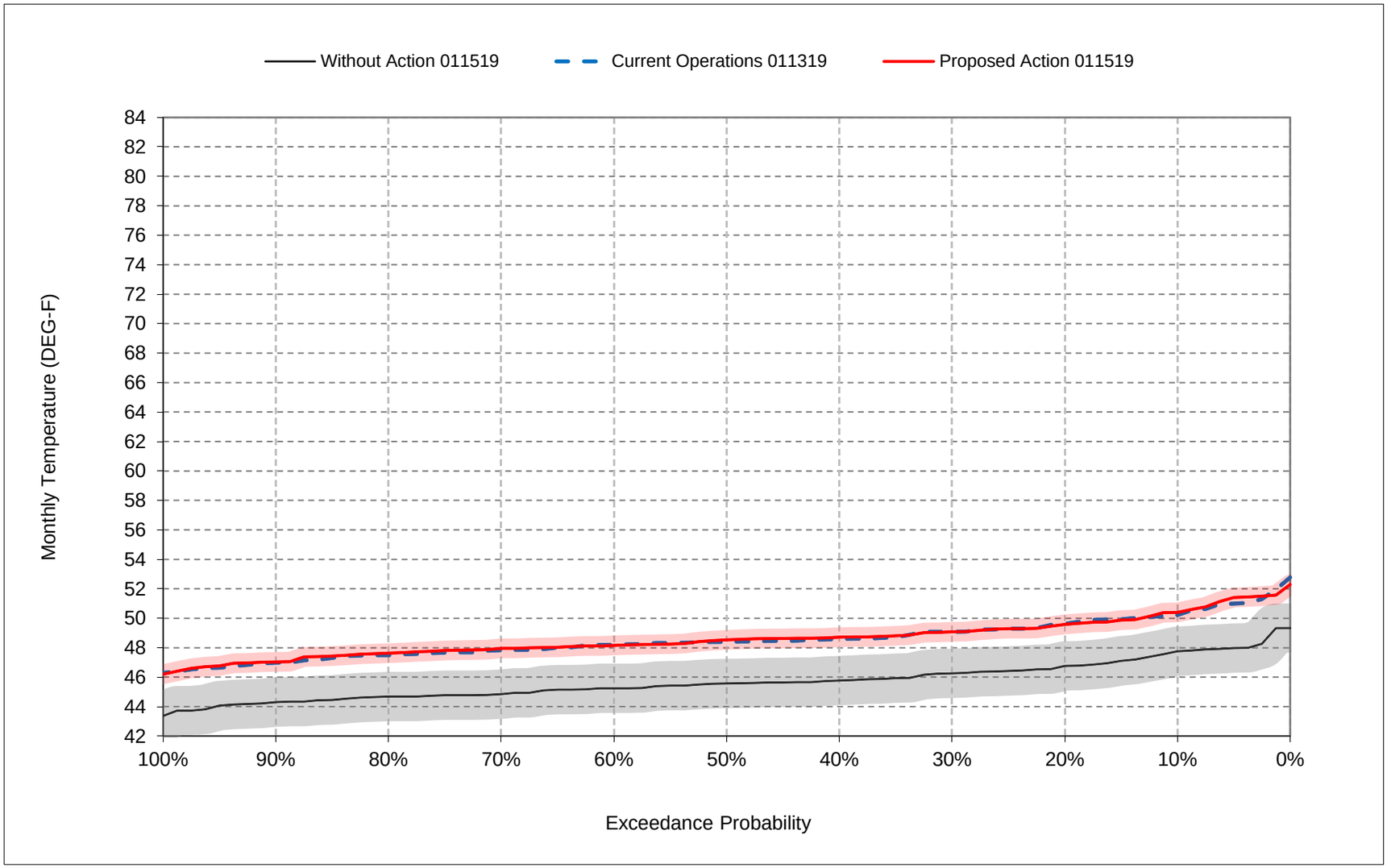
Figure 14-8. Sacramento River at Knights Landing, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

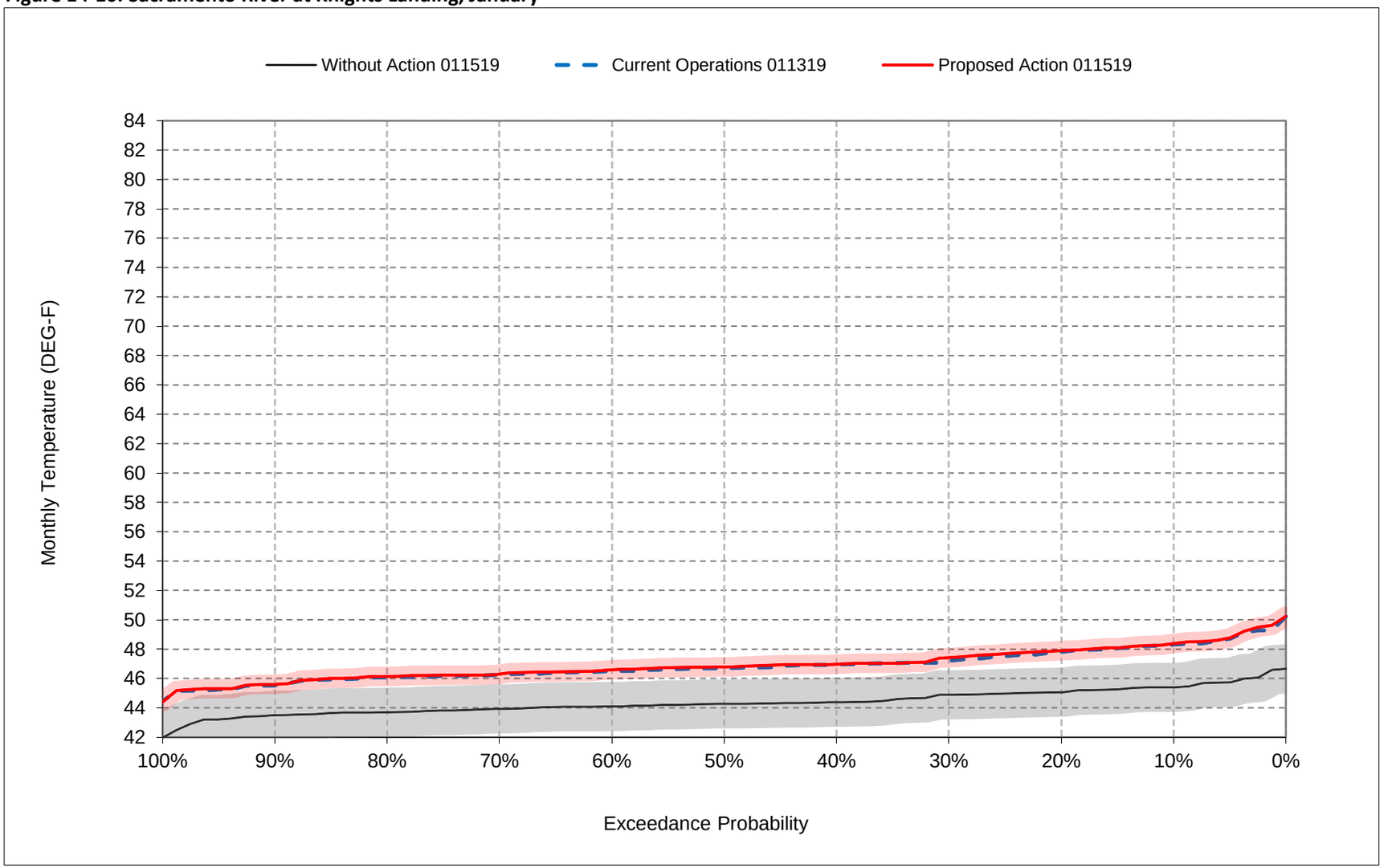
Figure 14-9. Sacramento River at Knights Landing, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

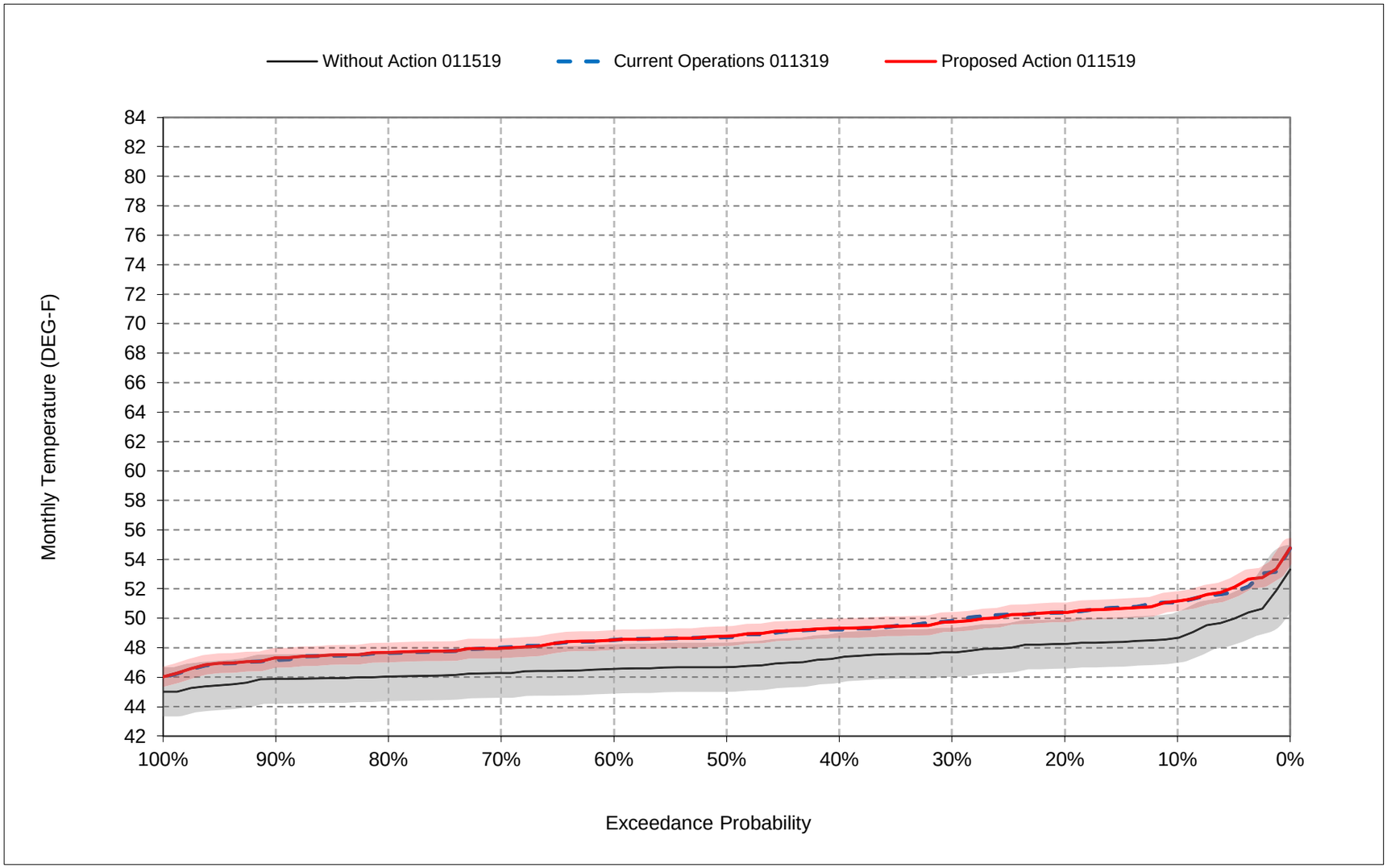
Figure 14-10. Sacramento River at Knights Landing, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

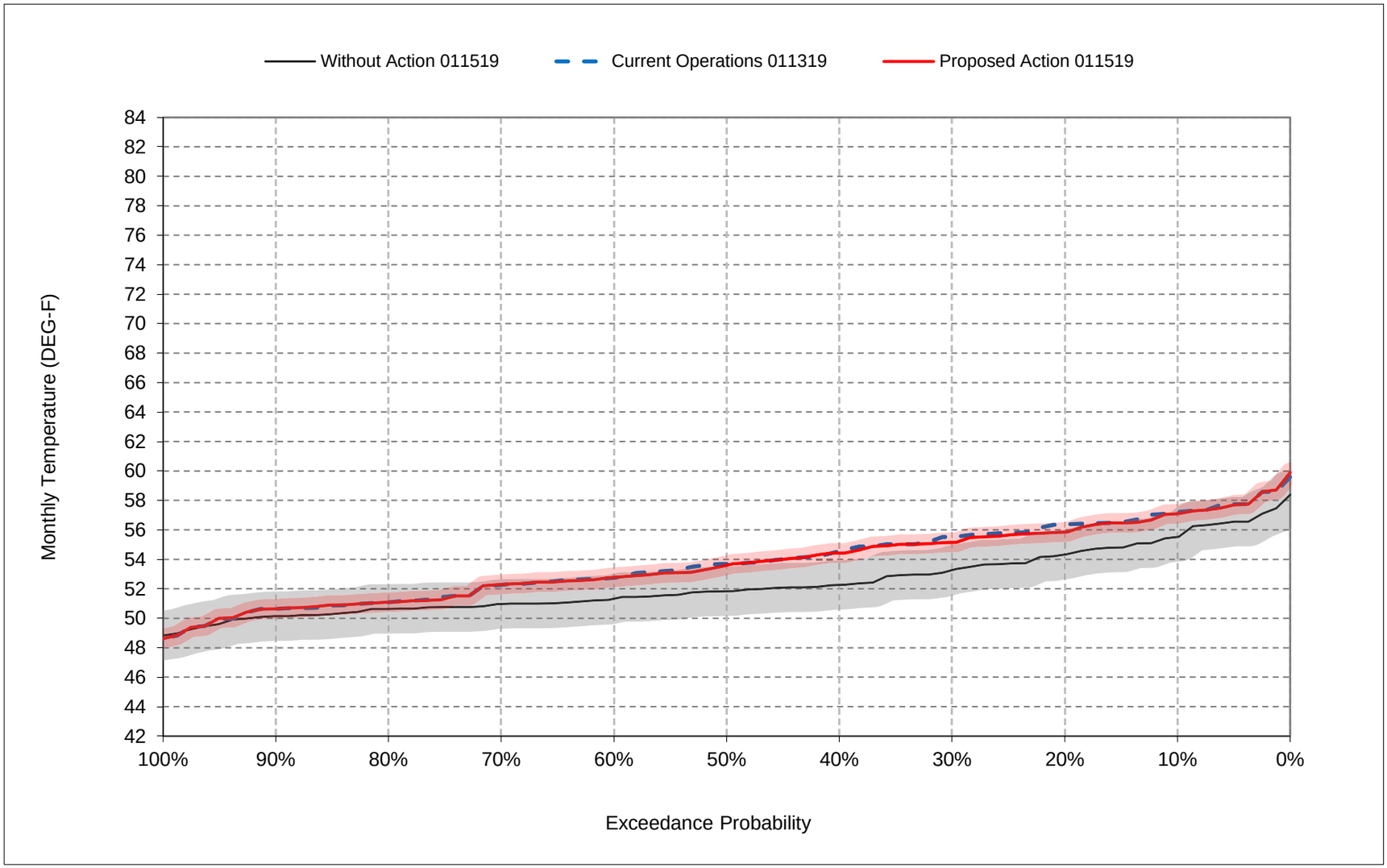
Figure 14-11. Sacramento River at Knights Landing, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

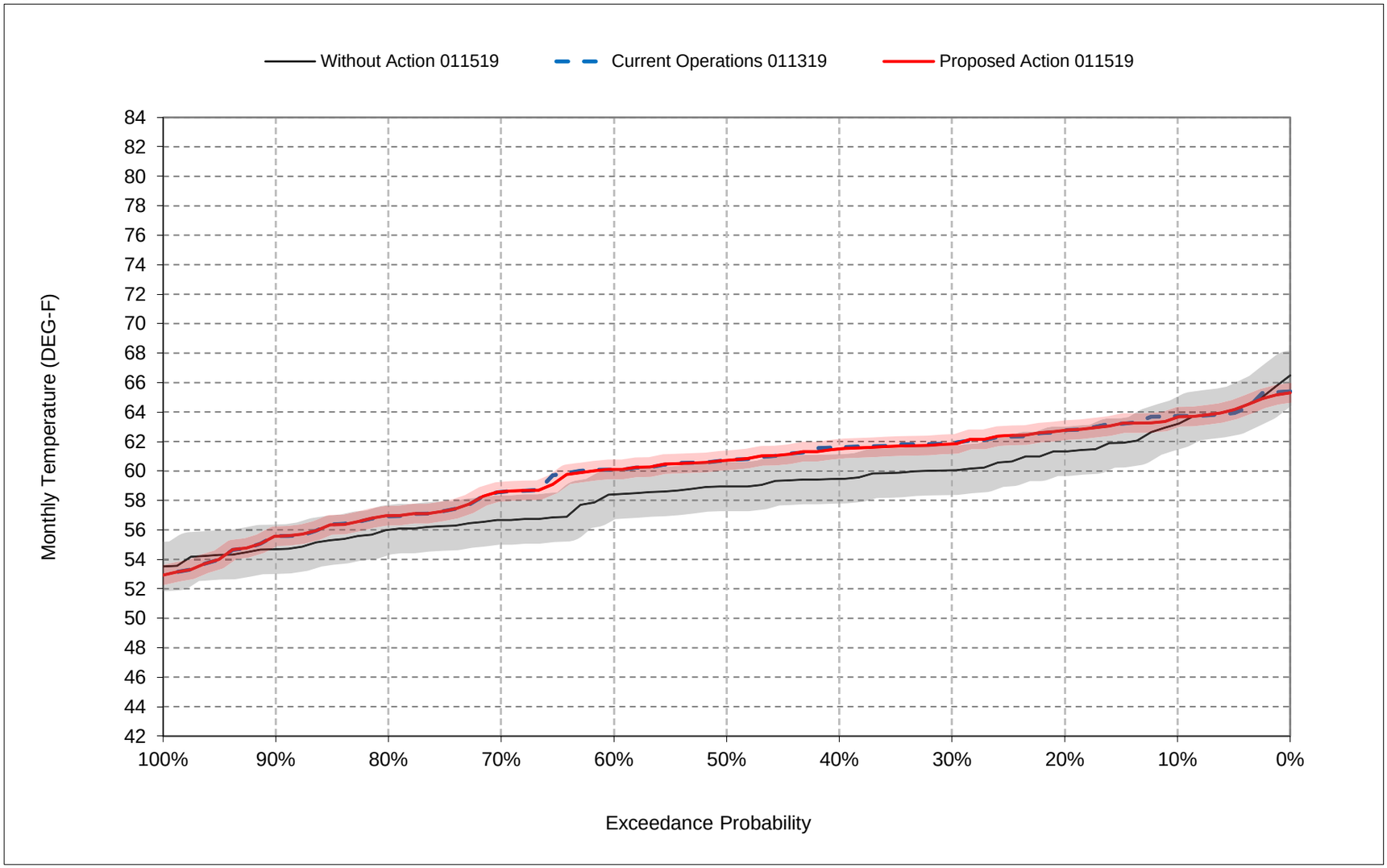
Figure 14-12. Sacramento River at Knights Landing, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

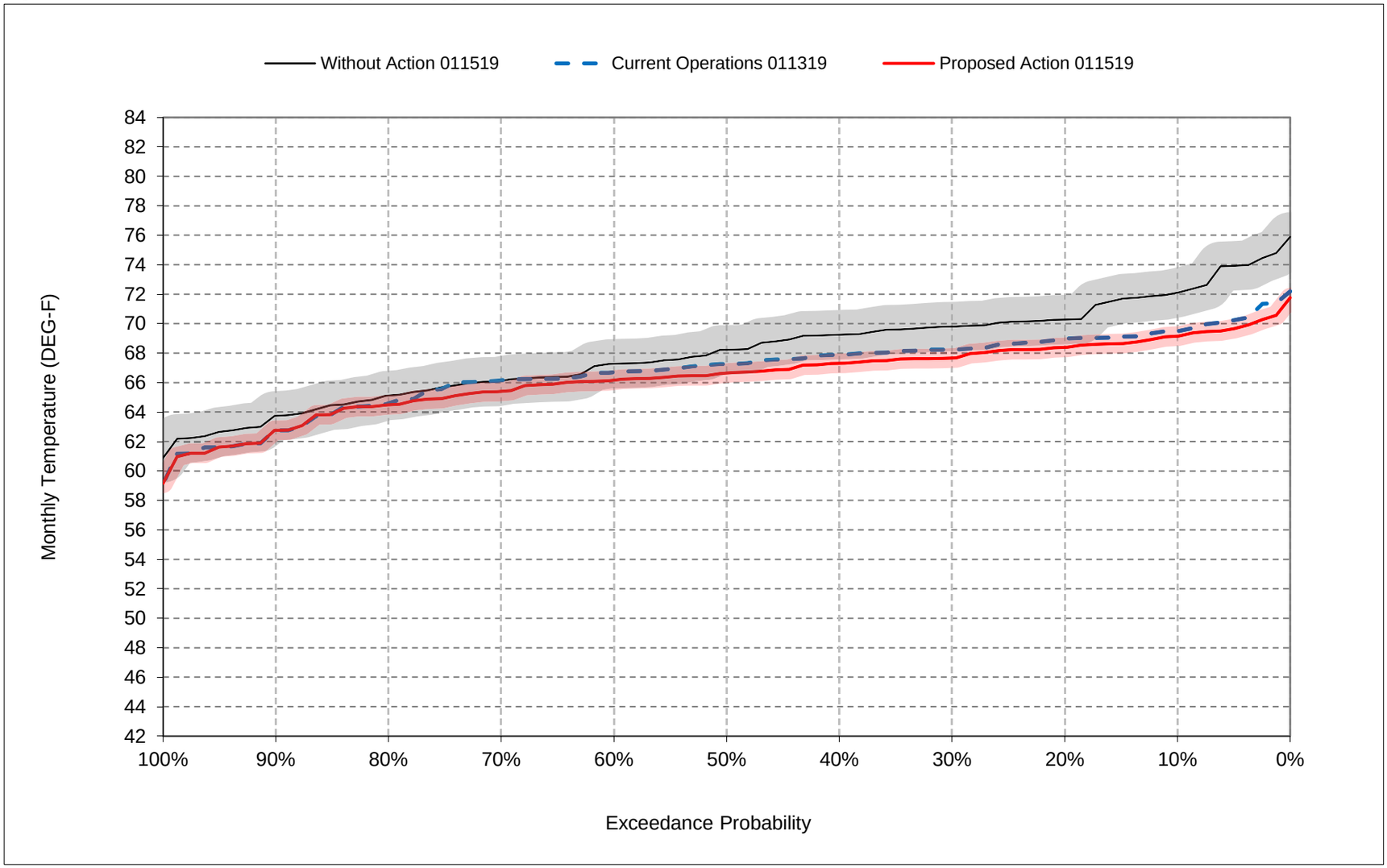
Figure 14-13. Sacramento River at Knights Landing, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

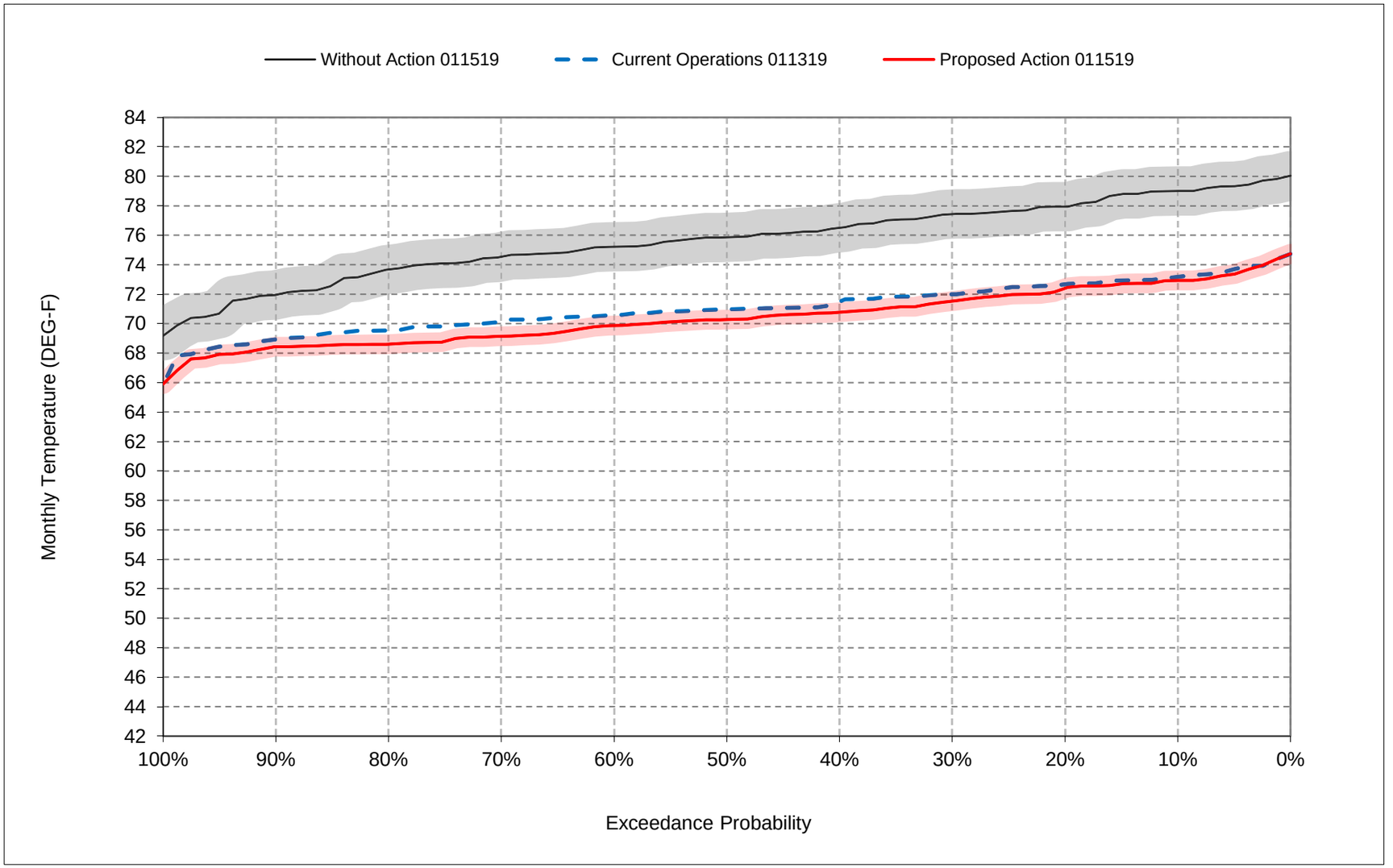
Figure 14-14. Sacramento River at Knights Landing, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

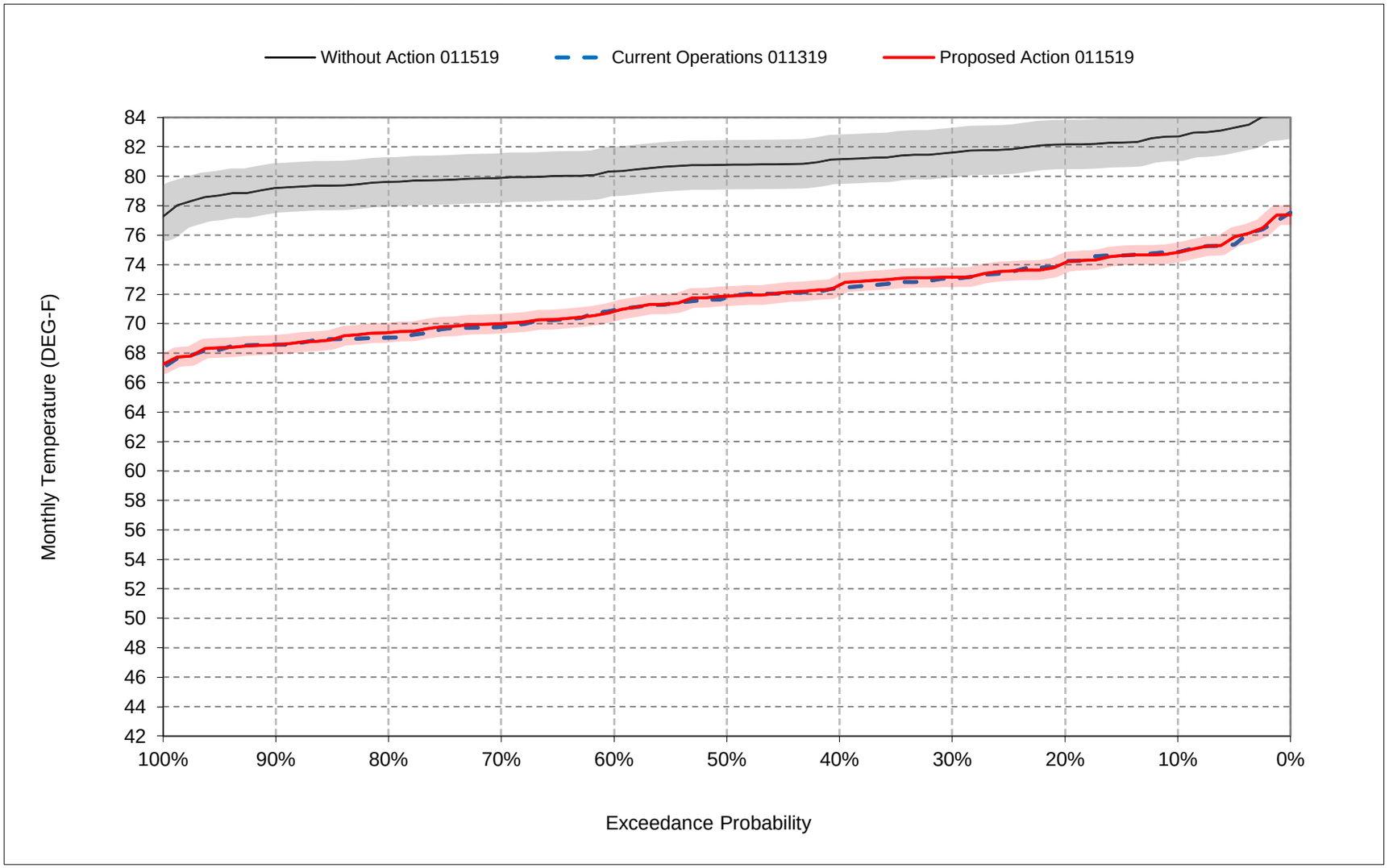
Figure 14-15. Sacramento River at Knights Landing, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

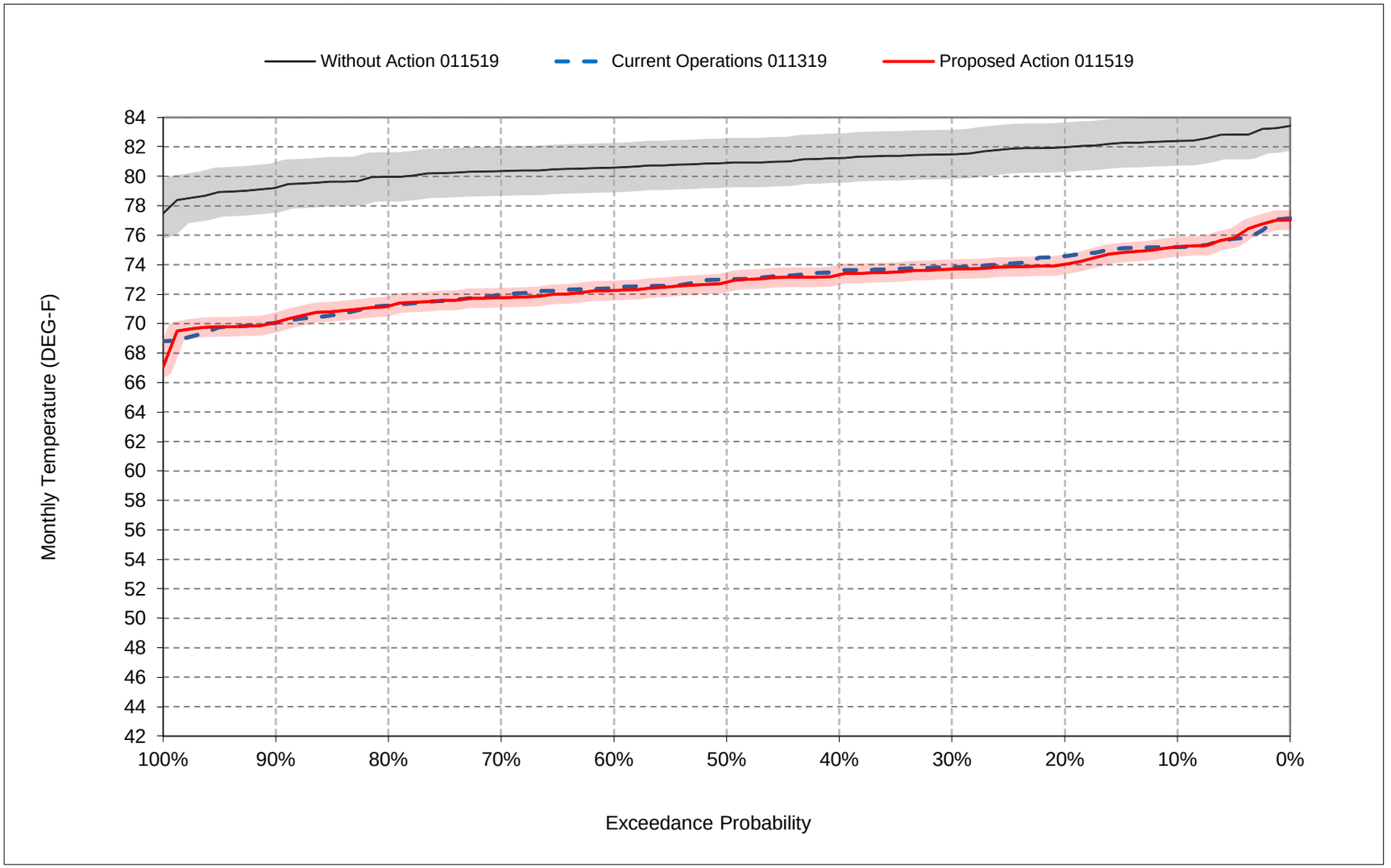
Figure 14-16. Sacramento River at Knights Landing, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

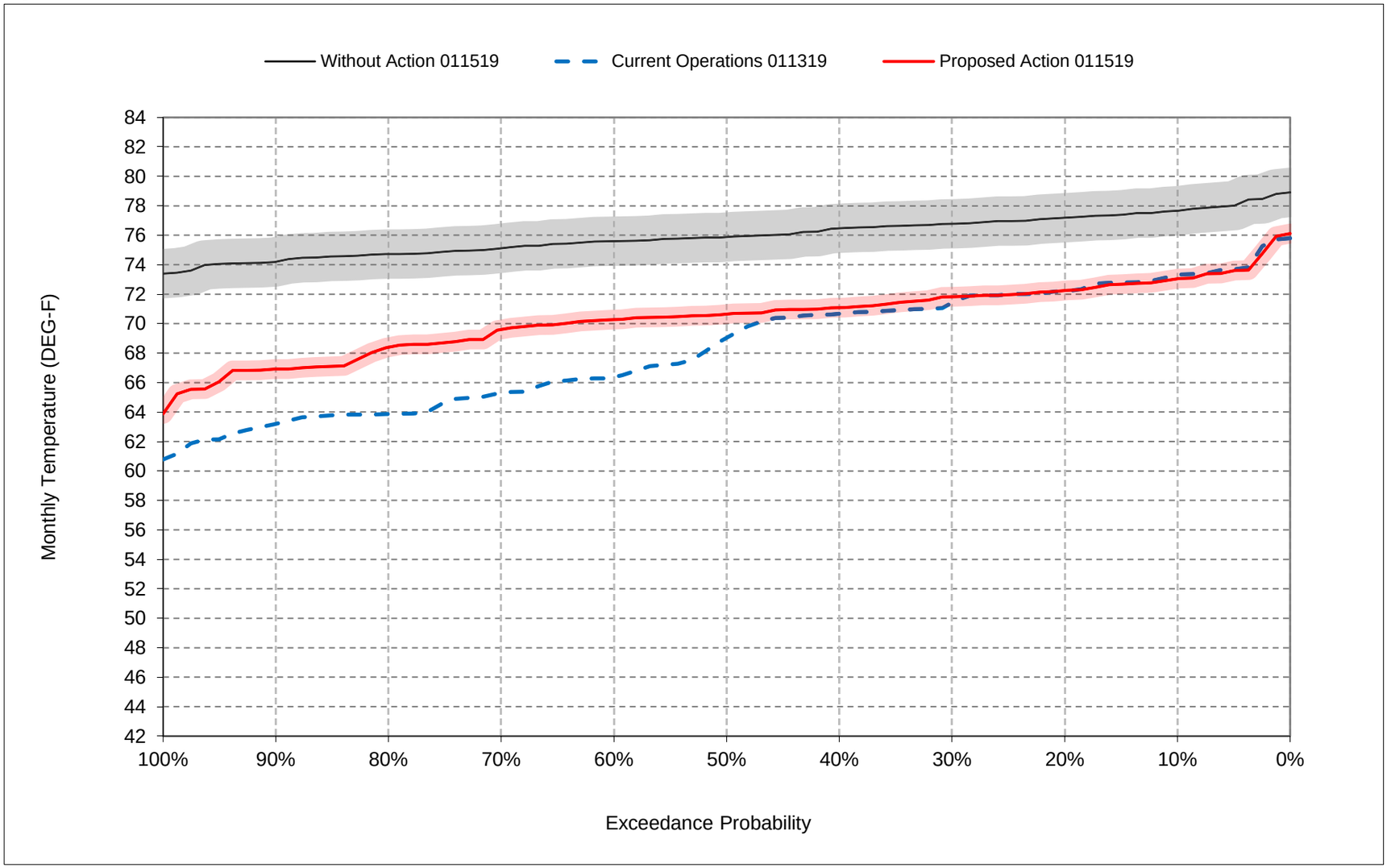
Figure 14-17. Sacramento River at Knights Landing, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-18. Sacramento River at Knights Landing, September



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

*These are draft results meant for qualitative analysis and are subject to revision.

Table 15-1. American River below Nimbus Dam, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.4	56.4	47.2	45.0	47.6	51.8	57.1	64.2	69.3	70.9	71.4	69.7
20%	65.9	55.5	46.5	44.7	47.0	51.3	55.6	61.7	68.4	69.9	71.0	69.5
30%	65.2	54.8	46.0	44.4	46.3	50.3	53.9	59.8	67.3	69.5	70.6	69.3
40%	64.7	54.2	45.5	44.2	46.1	49.5	53.1	58.5	66.5	68.9	70.4	69.0
50%	64.3	53.4	45.0	44.0	45.8	48.9	52.1	57.1	65.7	68.5	70.2	68.9
60%	63.9	52.6	44.8	43.9	45.6	48.4	51.7	56.1	63.9	68.3	69.9	68.6
70%	63.4	52.2	44.6	43.8	45.4	48.1	50.9	55.4	62.5	67.6	69.6	68.5
80%	63.1	51.3	44.3	43.6	45.2	47.8	50.4	55.0	61.3	67.4	69.2	68.4
90%	62.7	50.2	44.1	43.4	44.9	47.2	49.9	54.0	59.5	66.6	68.8	68.1
Long Term												
Full Simulation Period[a]	64.2	53.3	45.4	44.1	46.1	49.3	52.9	58.2	64.8	68.6	70.1	68.9
Water Year Types[b,c]												
Wet (32%)	63.5	52.5	45.1	44.1	45.4	47.9	50.7	55.2	61.3	67.2	69.7	68.6
Above Normal (16%)	64.0	52.9	45.1	44.4	45.8	48.3	51.7	56.9	65.0	68.5	70.7	68.6
Below Normal (13%)	63.7	53.3	45.5	43.9	45.9	50.0	53.6	59.2	65.8	69.2	70.0	69.1
Dry (24%)	64.5	53.2	45.4	44.0	46.5	50.0	53.8	59.9	66.9	69.3	70.2	69.2
Critical (15%)	66.1	56.0	46.3	44.4	47.5	51.6	56.8	62.6	67.5	70.0	70.0	69.1

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.2**	**2.0**	**5.8**	**2.8**	**0.9**	**0.4**	**0.9**	-1.1	-1.1	-1.4	-4.1	-1.6
20%	-0.3	**2.5**	**5.2**	**2.6**	**0.7**	**0.3**	**1.4**	**0.3**	-2.5	-2.4	-4.0	-1.9
30%	-0.5	**2.9**	**5.2**	**2.5**	**1.0**	**0.5**	**2.1**	**0.8**	-2.5	-3.8	-5.1	-2.9
40%	-1.1	**3.3**	**5.2**	**2.6**	**0.8**	**0.4**	**2.1**	**0.9**	-3.4	-3.8	-5.4	-3.2
50%	-1.0	**3.8**	**5.2**	**2.2**	**0.9**	**0.5**	**2.5**	**1.3**	-3.9	-3.9	-5.7	-3.6
60%	-0.8	**4.2**	**4.6**	**1.8**	**0.7**	**0.5**	**2.4**	**1.7**	-3.3	-3.8	-6.1	-3.9
70%	-0.6	**4.4**	**4.1**	**1.5**	**0.6**	**0.6**	**2.5**	**1.6**	-2.8	-3.4	-6.3	-4.3
80%	-0.5	**5.0**	**3.9**	**1.3**	**0.6**	**0.5**	**2.0**	**1.5**	-2.0	-3.9	-6.4	-4.4
90%	-3.4	**5.4**	**2.8**	**1.2**	**0.5**	**0.8**	**2.0**	**0.9**	-0.5	-3.5	-6.3	-4.9
Long Term												
Full Simulation Period[a]	-0.7	**3.8**	**4.7**	**2.1**	**0.7**	**0.6**	**1.9**	**0.8**	-2.1	-3.0	-5.4	-3.4
Water Year Types[b,c]												
Wet (32%)	-1.8	**4.5**	**5.6**	**1.5**	**0.7**	**0.7**	**2.1**	**1.4**	-1.4	-3.4	-6.9	-5.0
Above Normal (16%)	-0.8	**3.8**	**4.9**	**1.9**	**0.7**	**0.6**	**2.5**	**1.4**	-3.1	-4.2	-6.5	-3.7
Below Normal (13%)	**0.4**	**3.9**	**4.7**	**2.7**	**0.8**	**0.0**	**2.5**	**1.1**	-2.1	-4.2	-4.7	-3.3
Dry (24%)	**0.2**	**3.9**	**4.1**	**2.6**	**0.8**	**0.7**	**1.7**	**0.3**	-2.7	-3.2	-4.8	-2.7
Critical (15%)	-0.5	**1.6**	**3.3**	**2.3**	**0.5**	**0.5**	**0.5**	-0.8	-1.7	**0.4**	-2.8	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 15-2. American River below Nimbus Dam, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.4	56.4	47.2	45.0	47.6	51.8	57.1	64.2	69.3	70.9	71.4	69.7
20%	65.9	55.5	46.5	44.7	47.0	51.3	55.6	61.7	68.4	69.9	71.0	69.5
30%	65.2	54.8	46.0	44.4	46.3	50.3	53.9	59.8	67.3	69.5	70.6	69.3
40%	64.7	54.2	45.5	44.2	46.1	49.5	53.1	58.5	66.5	68.9	70.4	69.0
50%	64.3	53.4	45.0	44.0	45.8	48.9	52.1	57.1	65.7	68.5	70.2	68.9
60%	63.9	52.6	44.8	43.9	45.6	48.4	51.7	56.1	63.9	68.3	69.9	68.6
70%	63.4	52.2	44.6	43.8	45.4	48.1	50.9	55.4	62.5	67.6	69.6	68.5
80%	63.1	51.3	44.3	43.6	45.2	47.8	50.4	55.0	61.3	67.4	69.2	68.4
90%	62.7	50.2	44.1	43.4	44.9	47.2	49.9	54.0	59.5	66.6	68.8	68.1
Long Term												
Full Simulation Period[a]	64.2	53.3	45.4	44.1	46.1	49.3	52.9	58.2	64.8	68.6	70.1	68.9
Water Year Types[b,c]												
Wet (32%)	63.5	52.5	45.1	44.1	45.4	47.9	50.7	55.2	61.3	67.2	69.7	68.6
Above Normal (16%)	64.0	52.9	45.1	44.4	45.8	48.3	51.7	56.9	65.0	68.5	70.7	68.6
Below Normal (13%)	63.7	53.3	45.5	43.9	45.9	50.0	53.6	59.2	65.8	69.2	70.0	69.1
Dry (24%)	64.5	53.2	45.4	44.0	46.5	50.0	53.8	59.9	66.9	69.3	70.2	69.2
Critical (15%)	66.1	56.0	46.3	44.4	47.5	51.6	56.8	62.6	67.5	70.0	70.0	69.1

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 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	**2.4**	**5.9**	**3.2**	**1.0**	**0.3**	-0.1	-0.7	-2.3	-1.3	-3.8	-1.7
20%	-0.6	**2.5**	**5.5**	**3.1**	**0.9**	0.0	**1.0**	0.0	-2.6	-3.1	-5.0	-2.3
30%	-0.5	**3.0**	**5.7**	**2.8**	**1.2**	**0.3**	**2.0**	**0.5**	-2.3	-4.2	-5.1	-3.0
40%	-1.3	**3.4**	**5.6**	**2.7**	**1.0**	**0.4**	**2.1**	**0.8**	-3.3	-3.9	-5.6	-3.3
50%	-1.1	**3.9**	**5.6**	**2.3**	**1.0**	**0.5**	**2.5**	**1.4**	-3.4	-3.9	-5.8	-3.6
60%	-0.9	**4.3**	**5.0**	**2.1**	**0.7**	**0.5**	**2.5**	**1.7**	-2.9	-3.9	-5.9	-3.8
70%	-0.7	**4.5**	**4.6**	**1.8**	**0.7**	**0.7**	**2.5**	**1.6**	-2.7	-3.5	-6.3	-4.2
80%	-0.7	**5.1**	**4.3**	**1.5**	**0.7**	**0.5**	**2.0**	**1.5**	-1.9	-3.7	-6.2	-4.3
90%	-3.4	**5.5**	**3.1**	**1.2**	**0.6**	**0.9**	**2.0**	**0.9**	-0.5	-3.4	-6.3	-4.6
Long Term												
Full Simulation Period[a]	-0.9	**3.8**	**5.0**	**2.4**	**0.8**	**0.5**	**1.7**	**0.7**	-2.2	-3.2	-5.5	-3.4
Water Year Types[b,c]												
Wet (32%)	-1.9	**4.7**	**6.2**	**1.6**	**0.7**	**0.7**	**2.1**	**1.4**	-1.3	-3.4	-6.9	-4.7
Above Normal (16%)	-0.8	**3.9**	**5.1**	**2.2**	**0.8**	**0.7**	**2.5**	**1.4**	-3.0	-4.3	-6.5	-3.6
Below Normal (13%)	**0.1**	**3.7**	**4.6**	**3.3**	**1.1**	0.0	**2.1**	**1.1**	-2.5	-3.9	-5.4	-3.2
Dry (24%)	-0.2	**4.1**	**4.5**	**2.7**	**0.9**	**0.5**	**1.5**	**0.6**	-3.0	-3.5	-4.8	-2.9
Critical (15%)	-0.9	**1.6**	**3.6**	**2.8**	**0.8**	**0.3**	-0.2	-1.5	-1.8	-0.8	-2.7	-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 All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 15-3. American River below Nimbus Dam, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.3	**0.4**	**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.

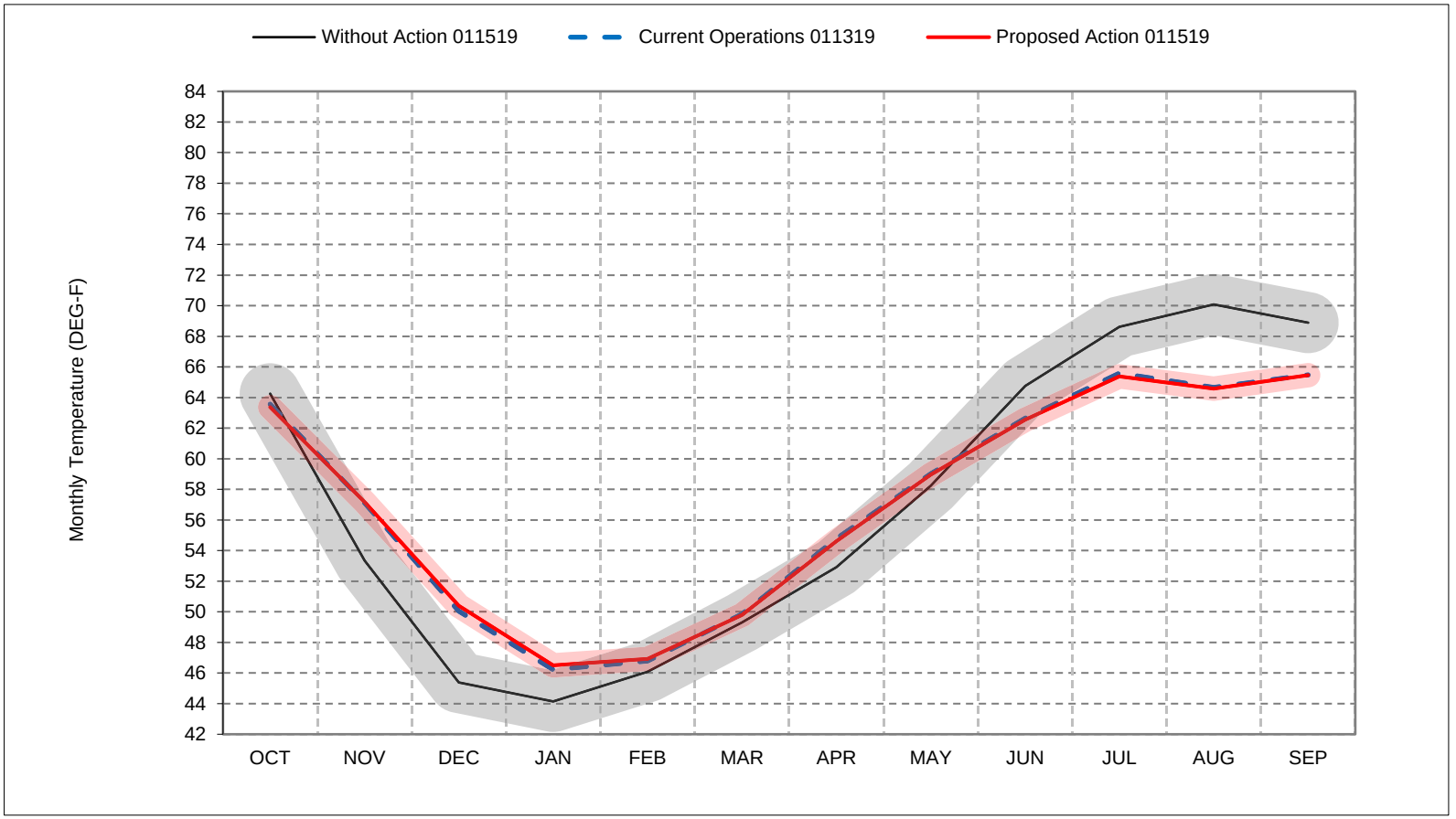
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

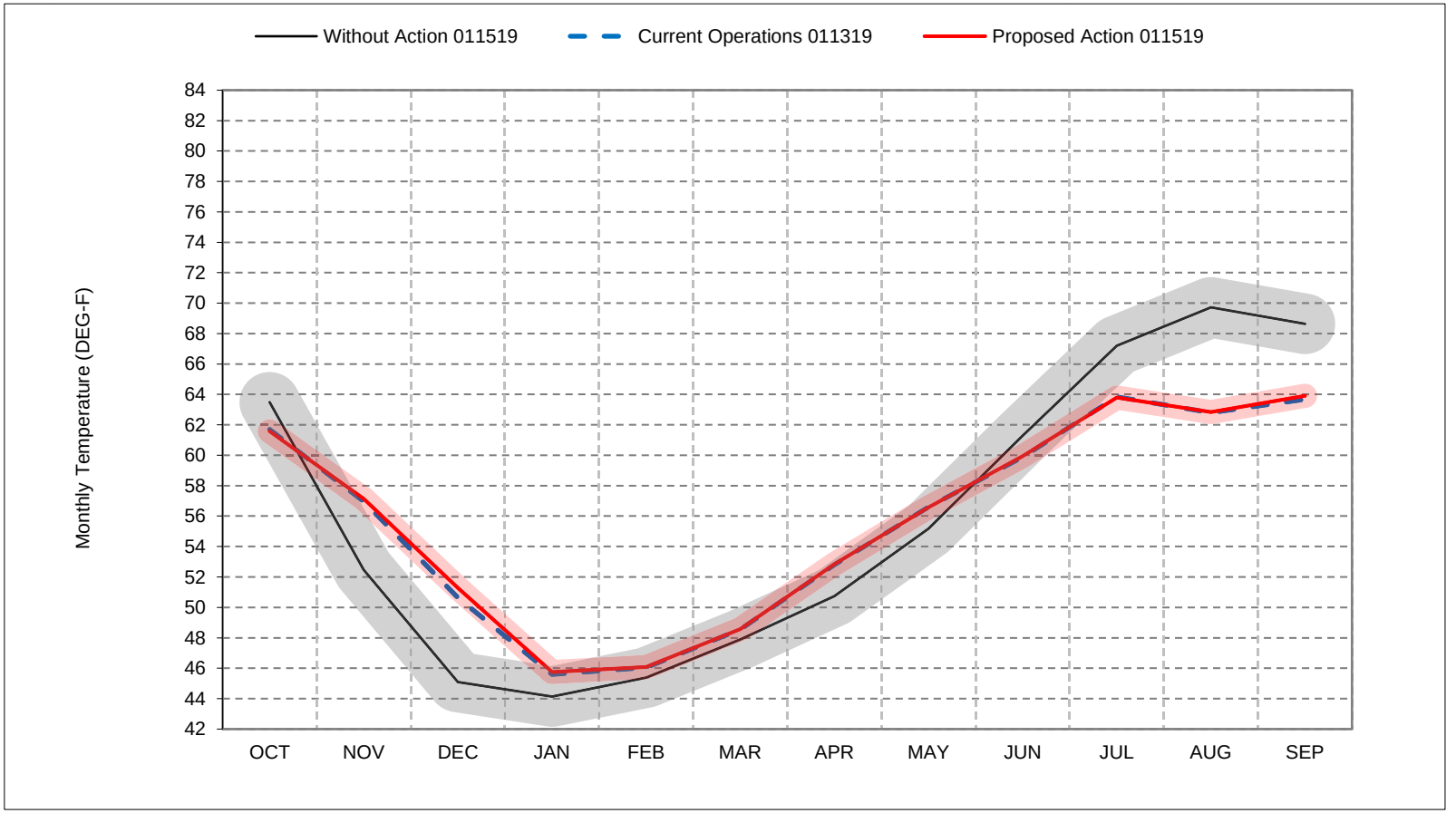
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-1. American River below Nimbus Dam, Long-Term Average Temperature



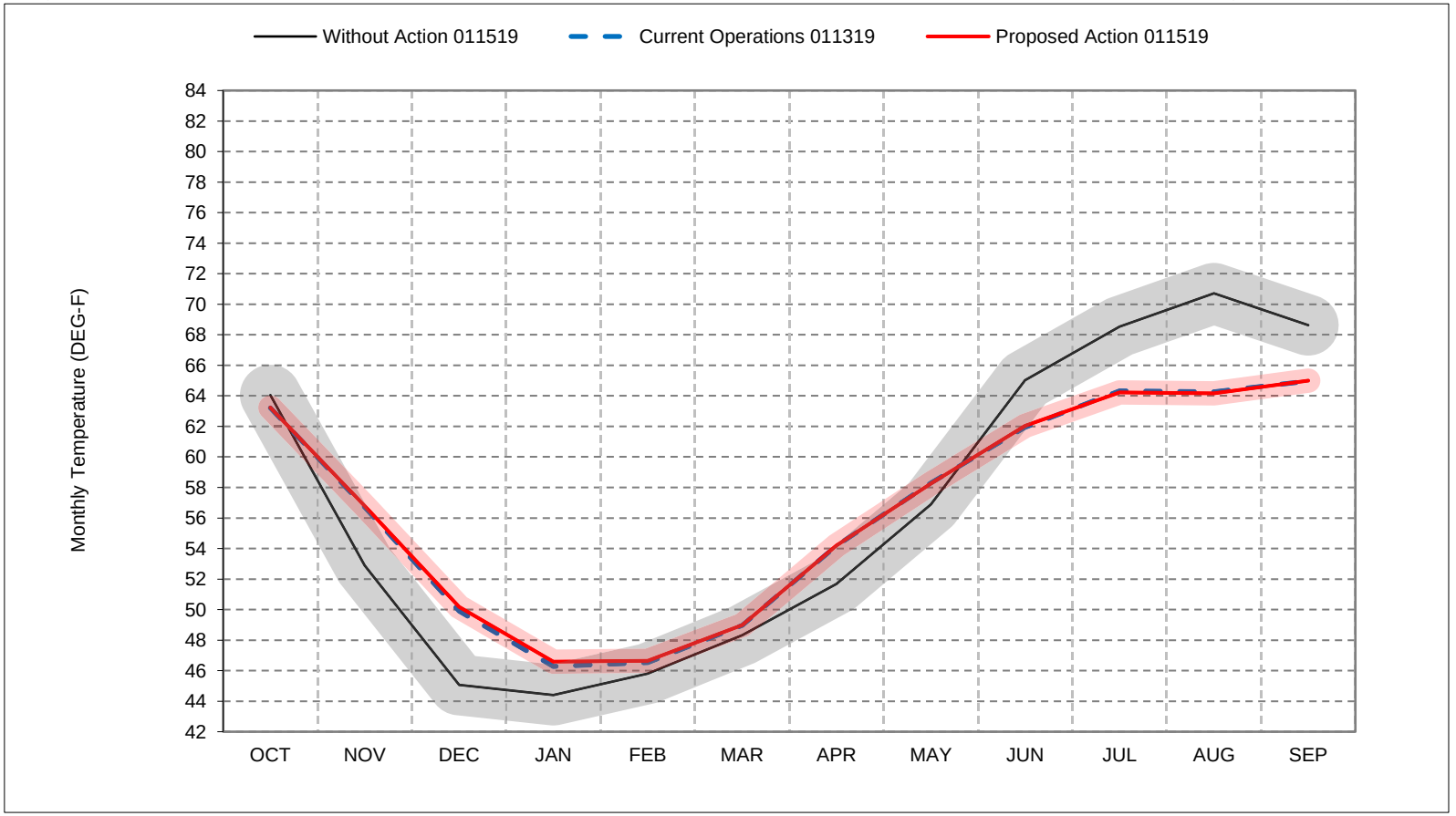
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-2. American River below Nimbus Dam, Wet Year Average Temperature



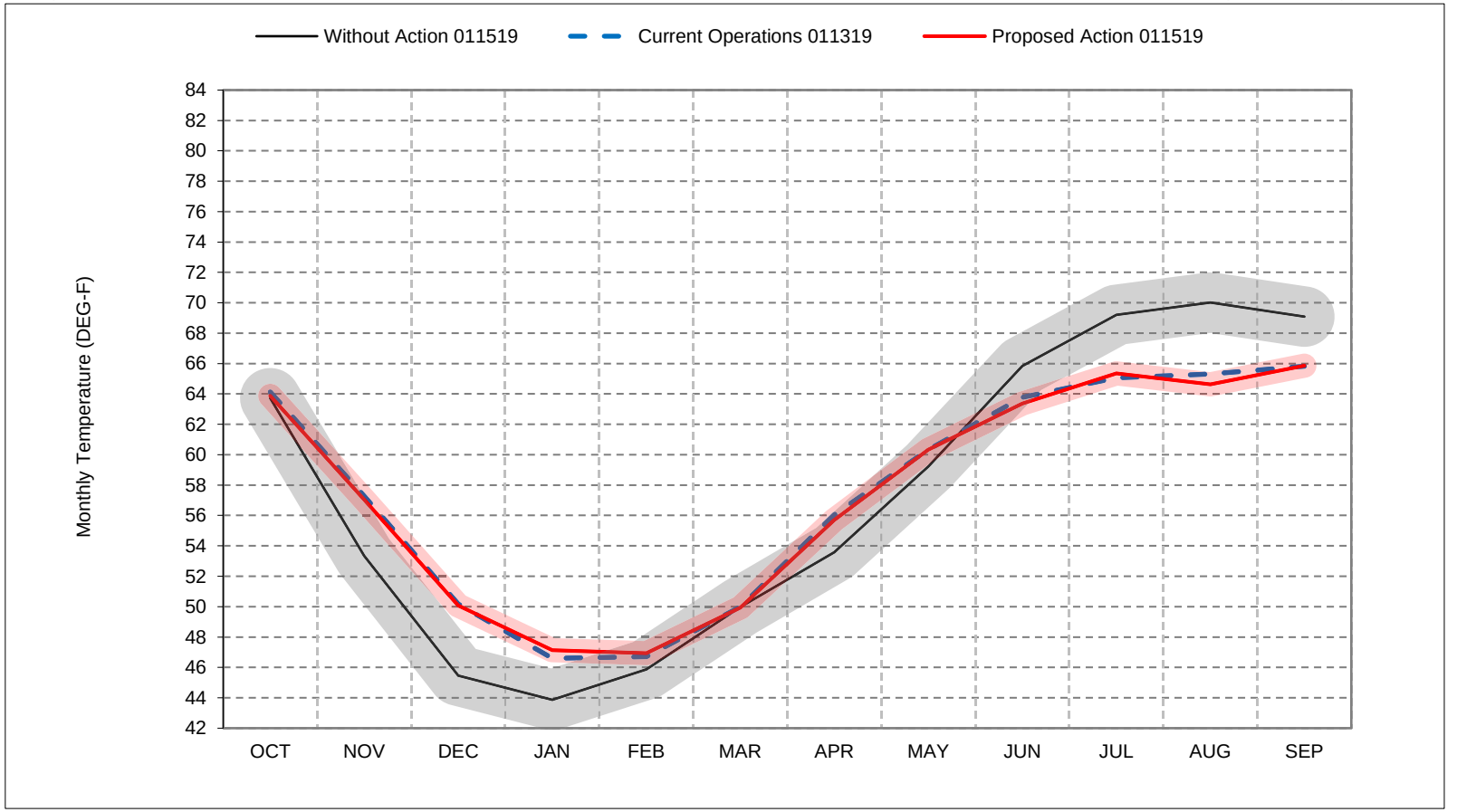
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-3. American River below Nimbus Dam, Above Normal Year Average Temperature



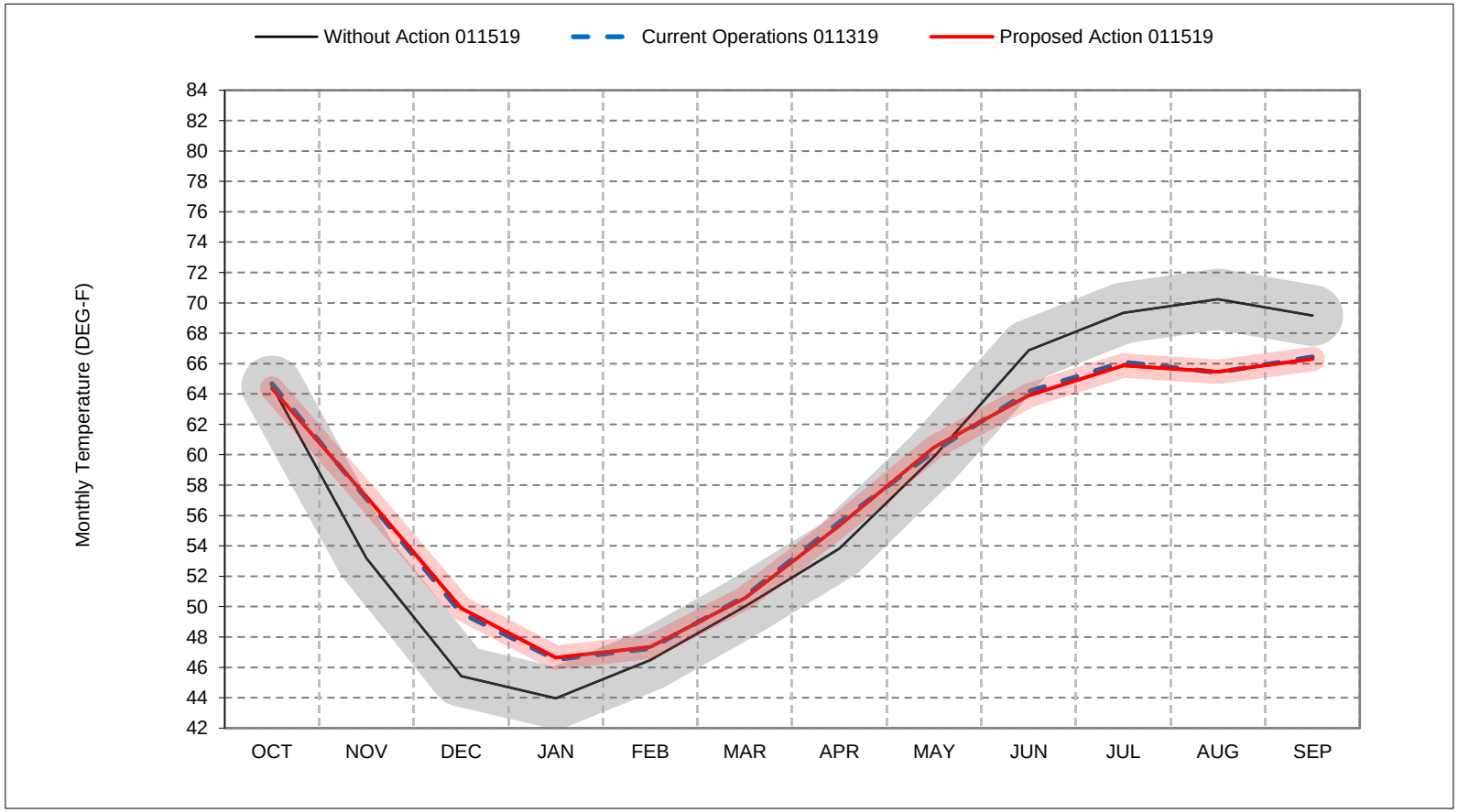
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-4. American River below Nimbus Dam, Below Normal Year Average Temperature



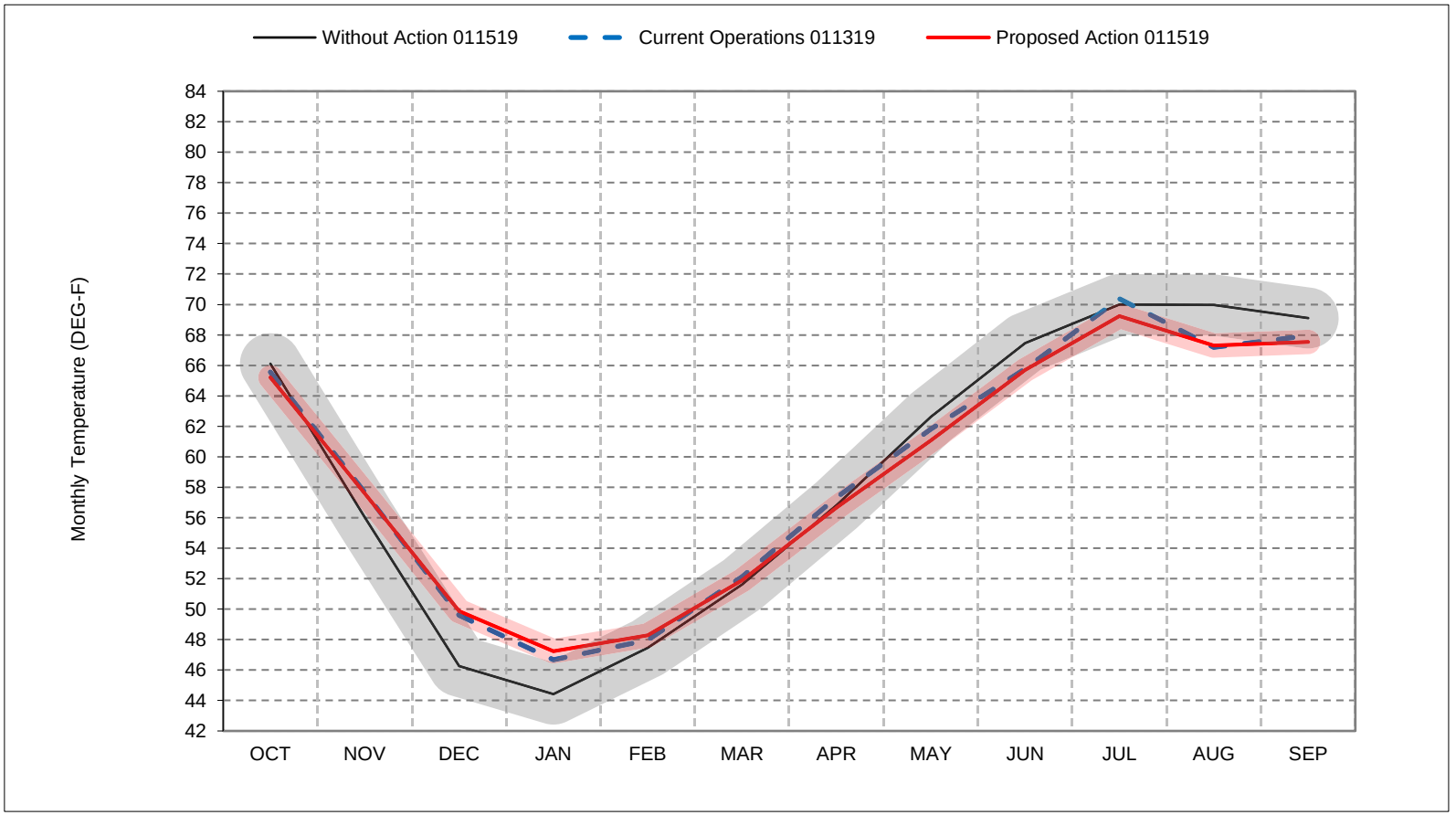
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-5. American River below Nimbus Dam, Dry Year Average Temperature



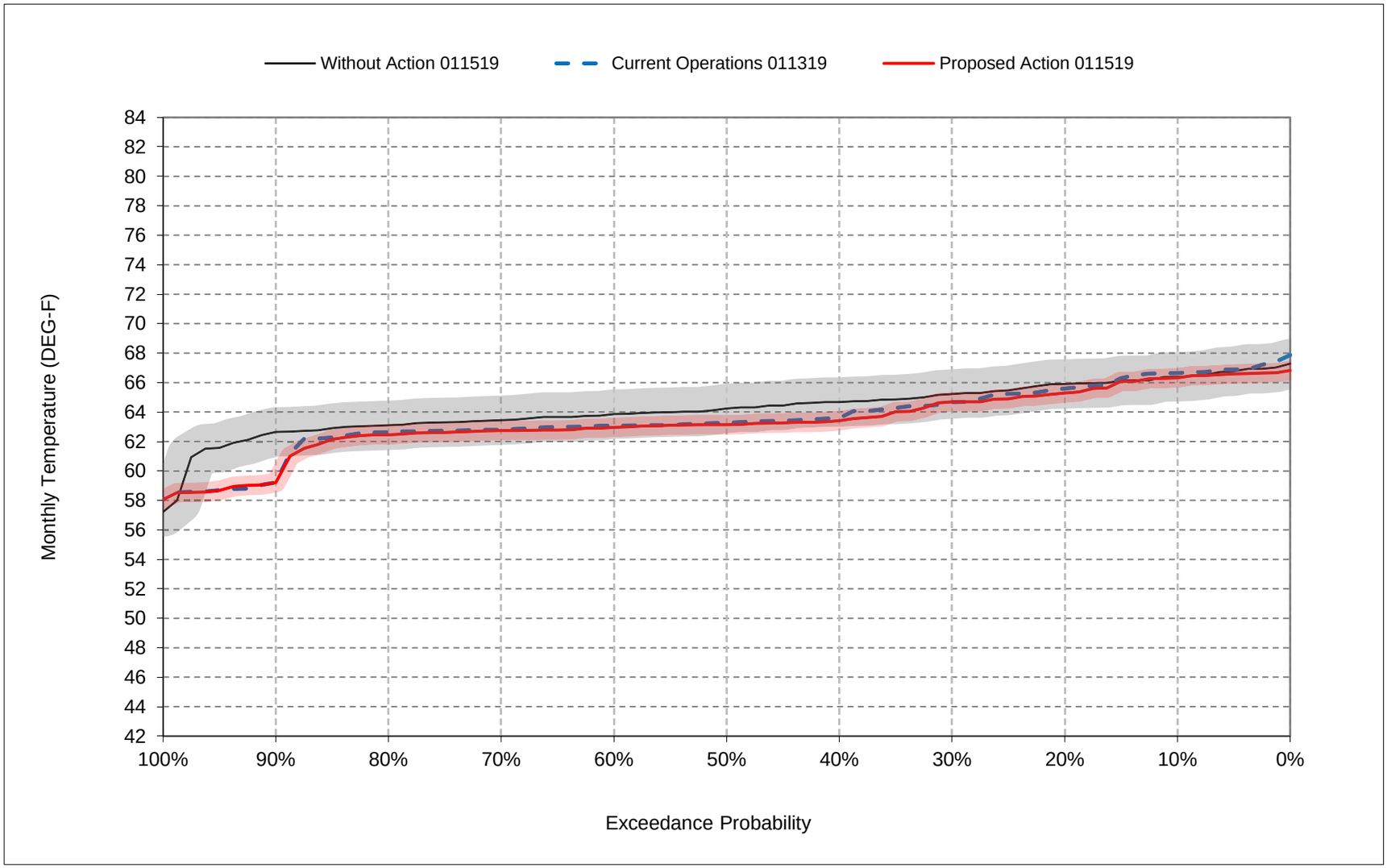
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

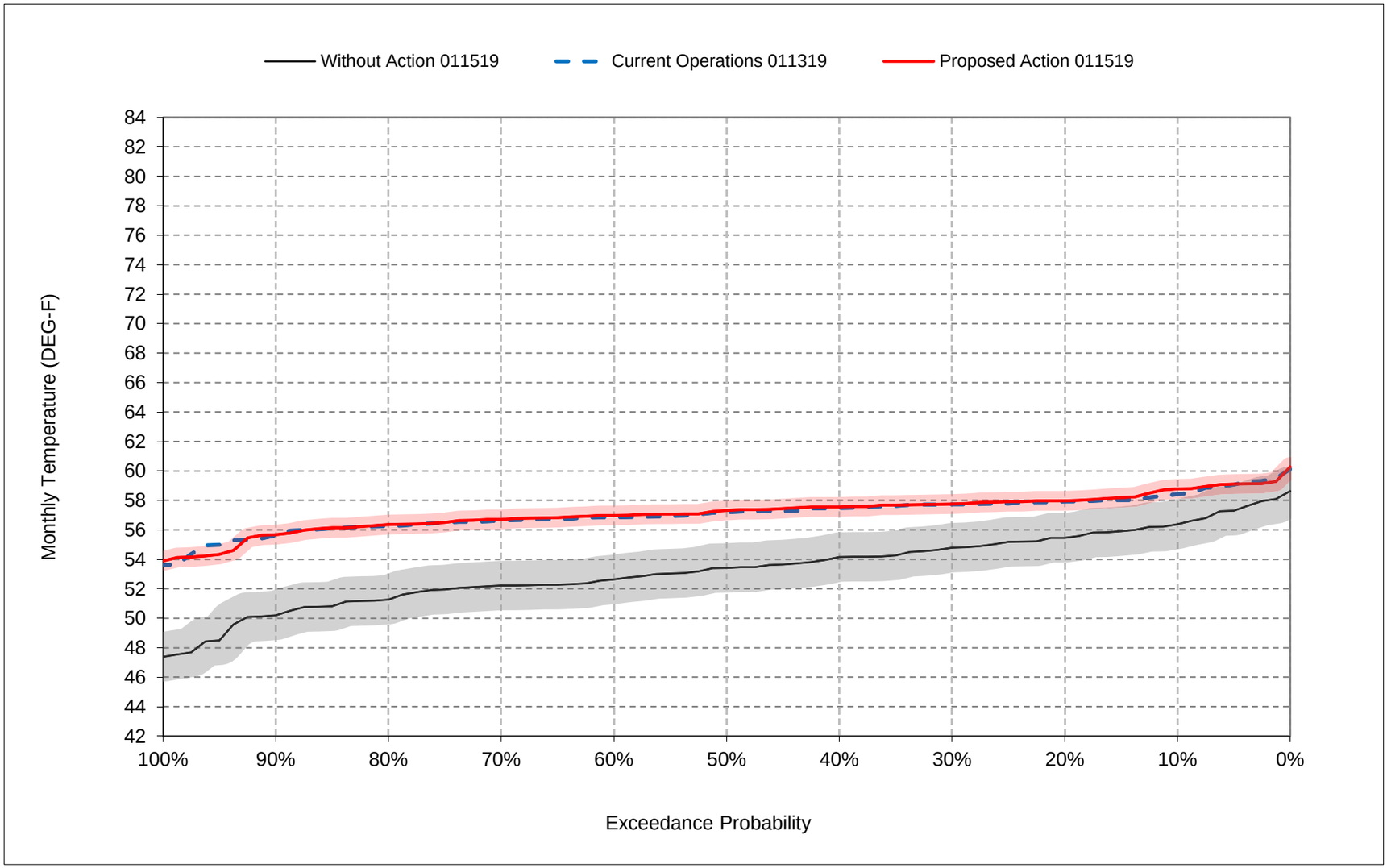
Figure 15-7. American River below Nimbus Dam, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

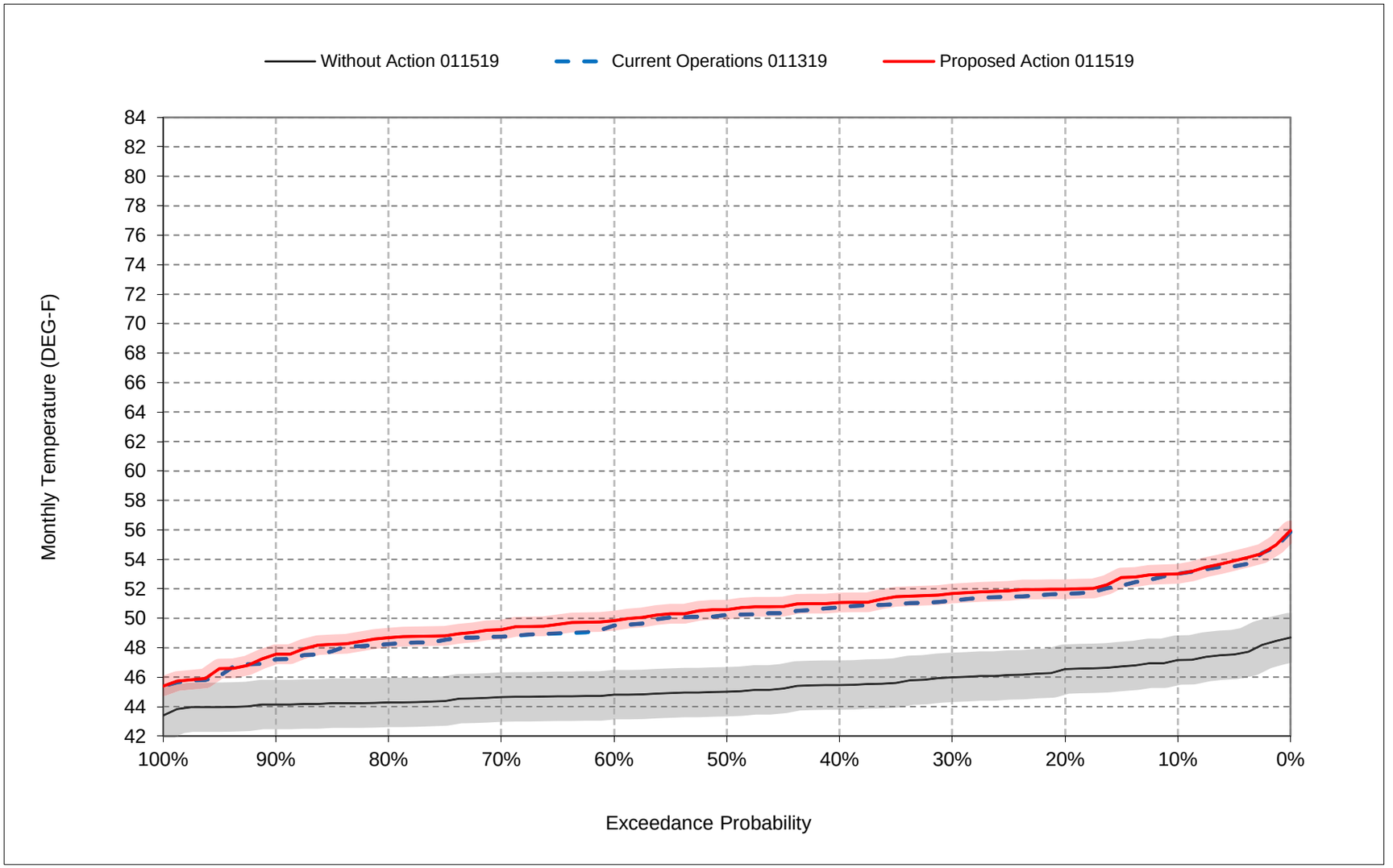
Figure 15-8. American River below Nimbus Dam, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

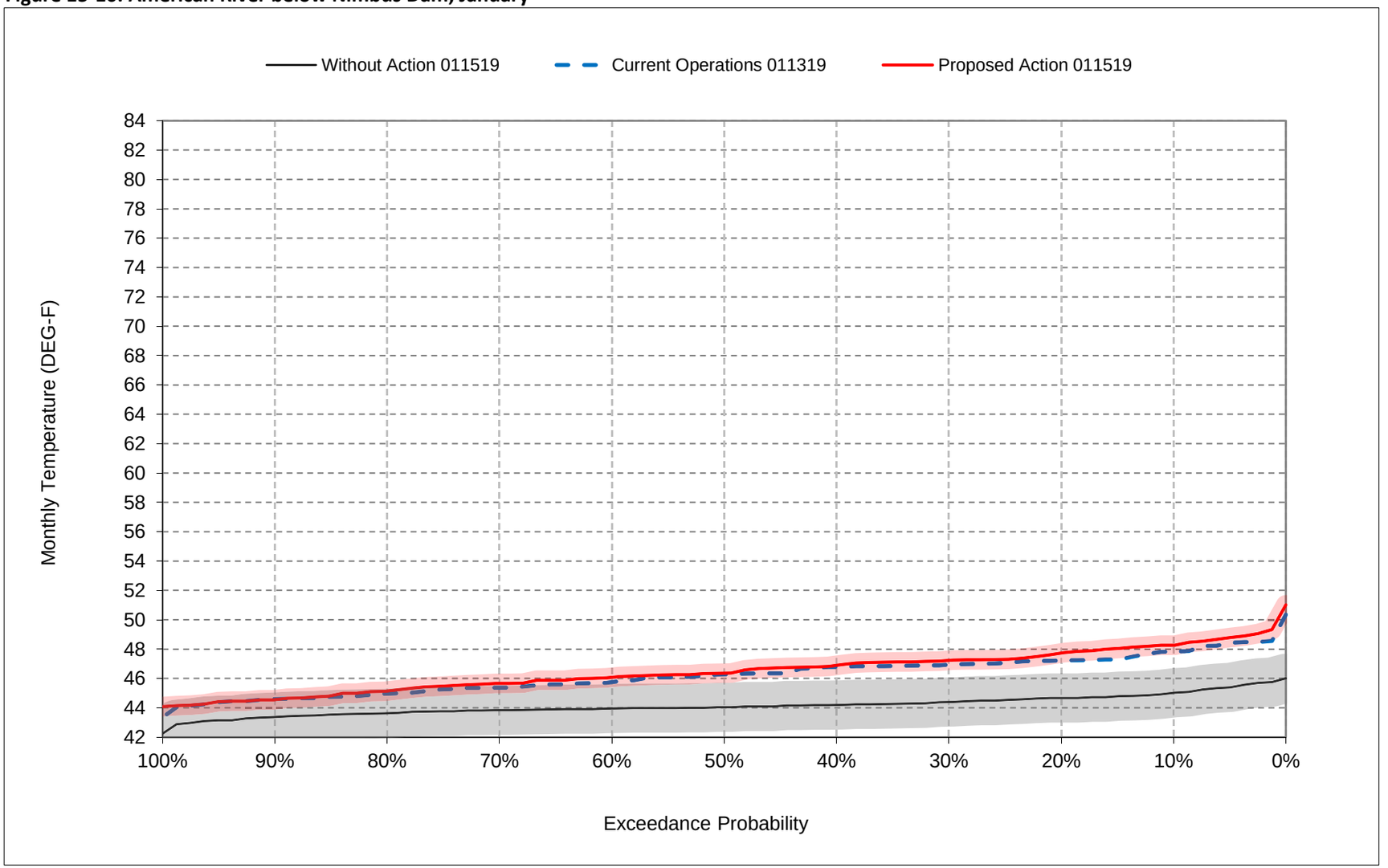
Figure 15-9. American River below Nimbus Dam, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

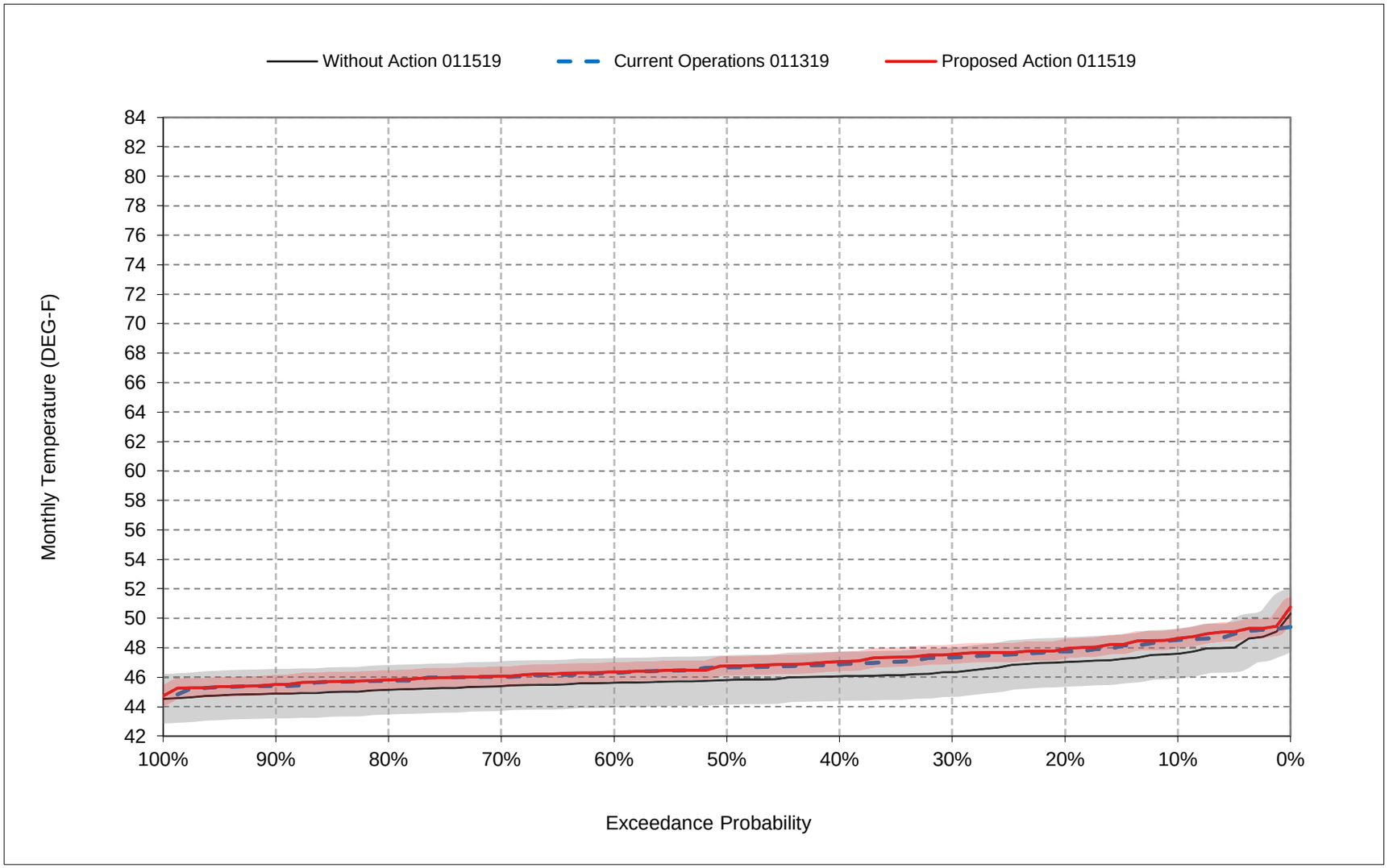
Figure 15-10. American River below Nimbus Dam, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

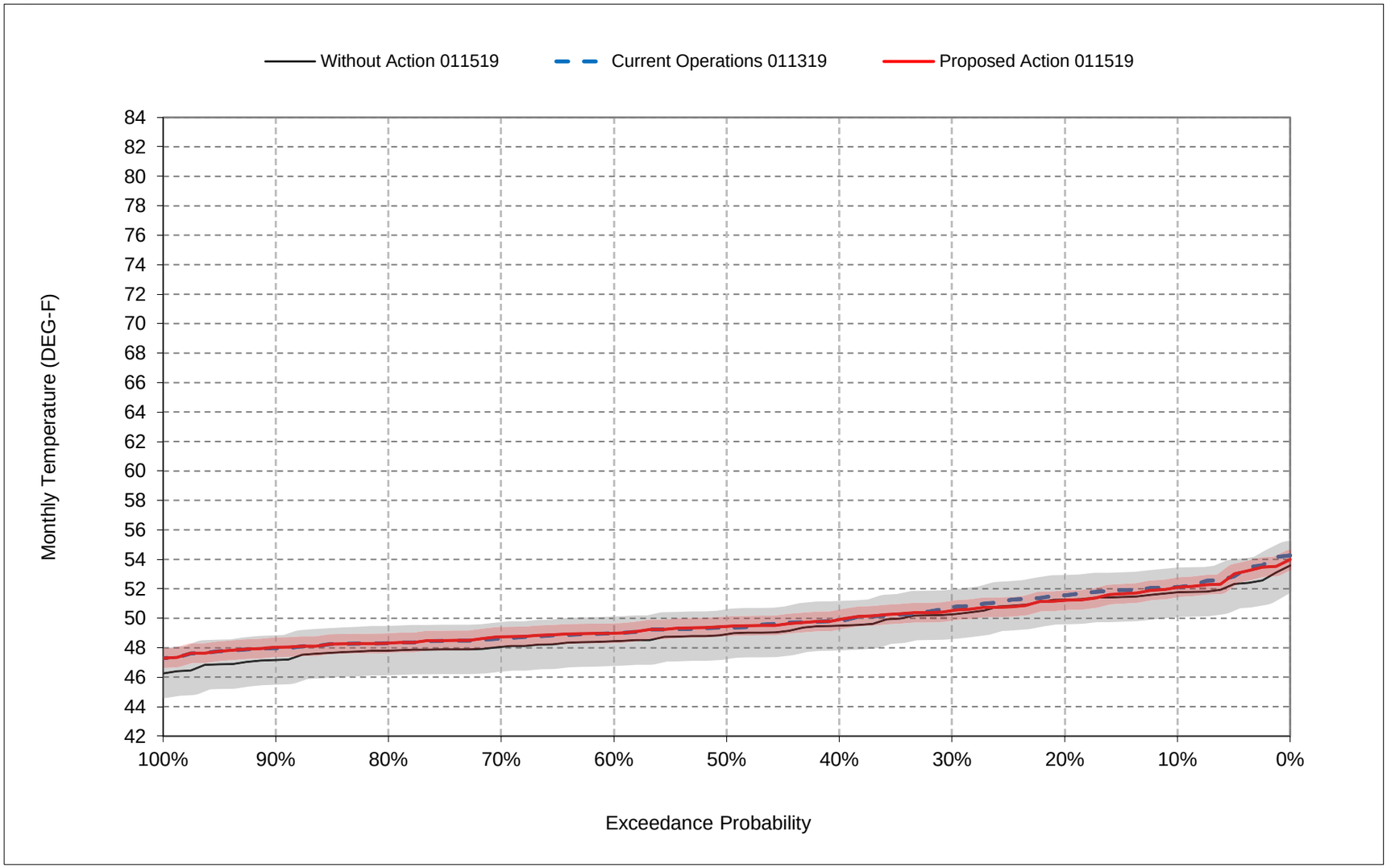
Figure 15-11. American River below Nimbus Dam, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

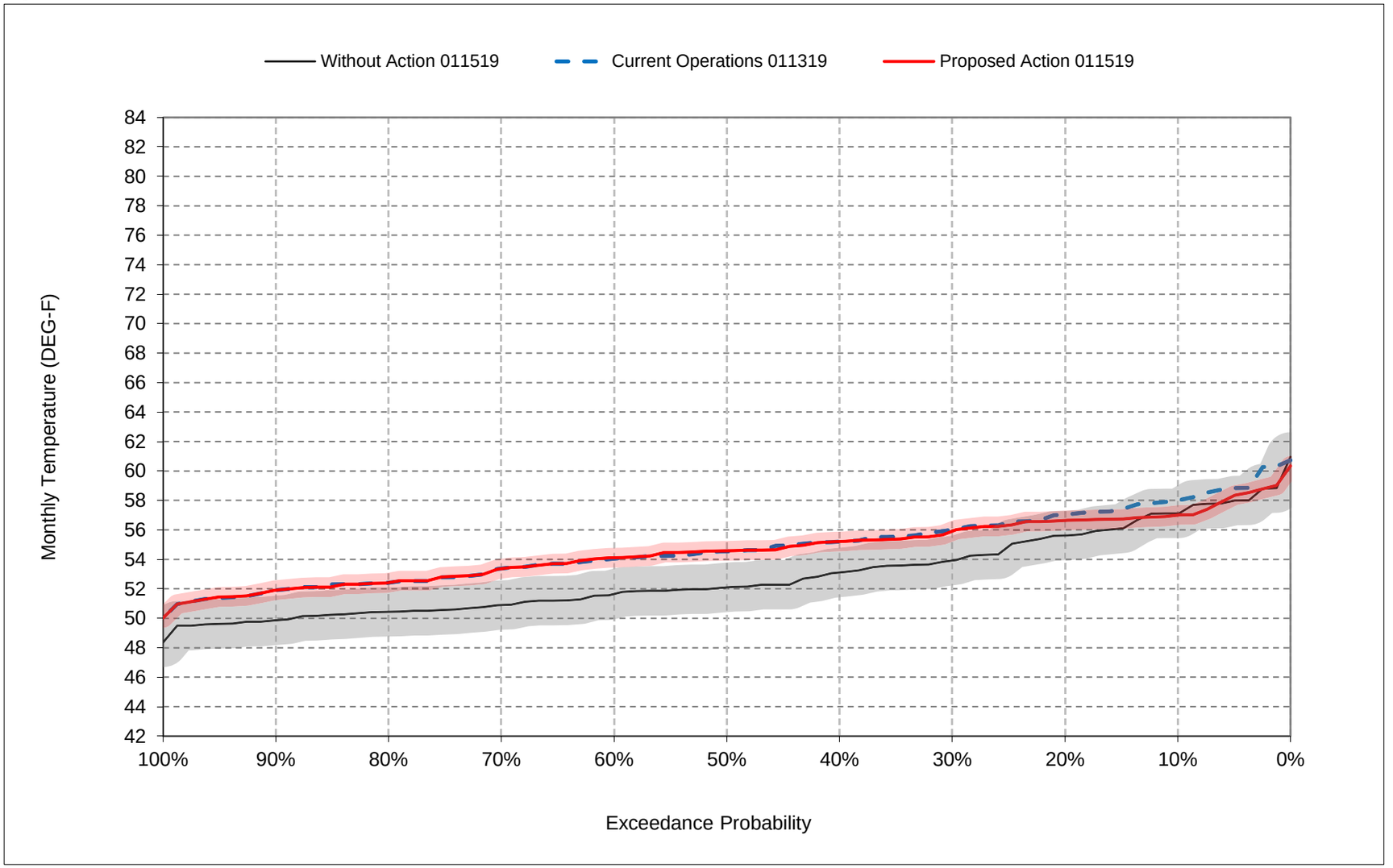
Figure 15-12. American River below Nimbus Dam, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

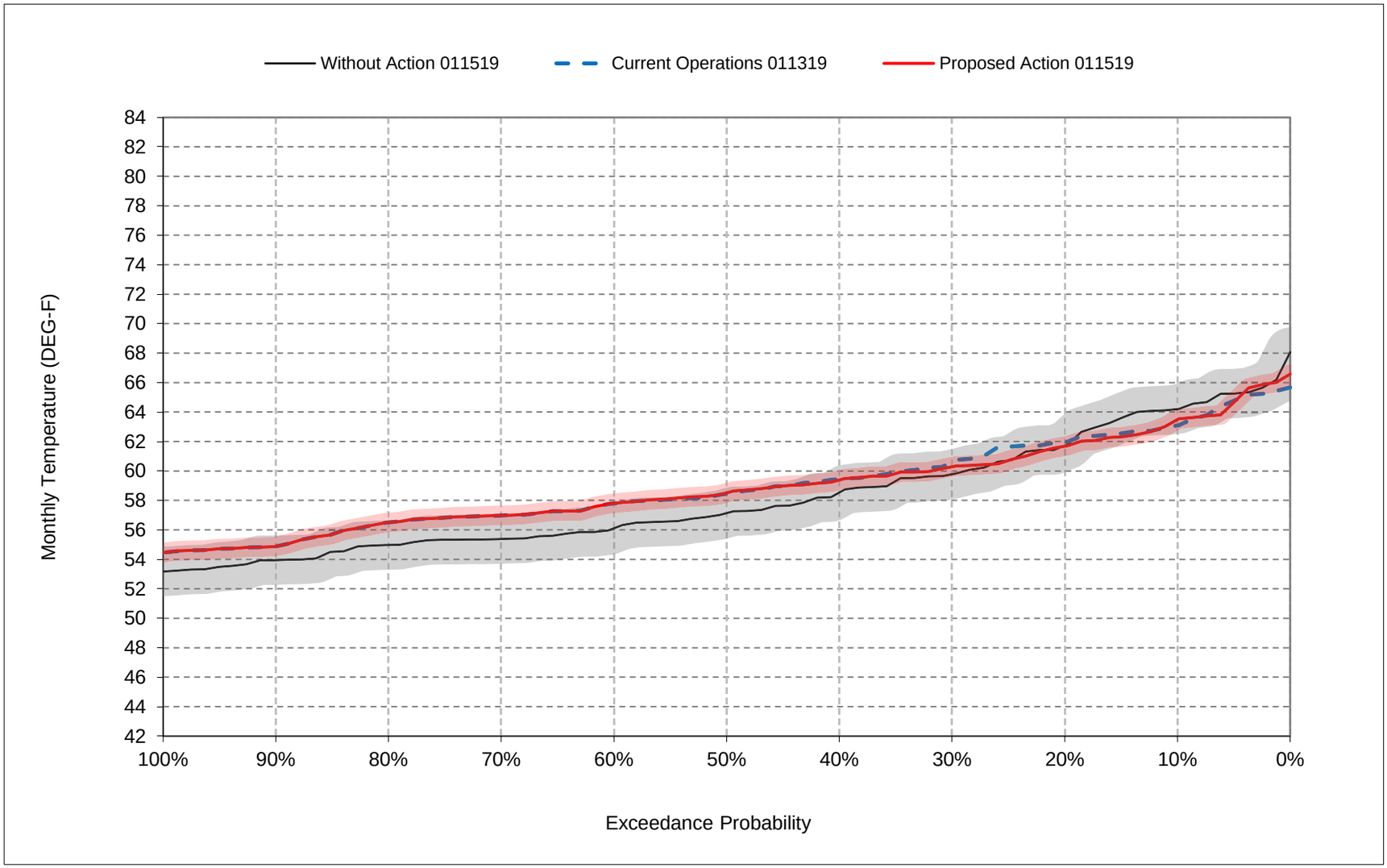
Figure 15-13. American River below Nimbus Dam, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

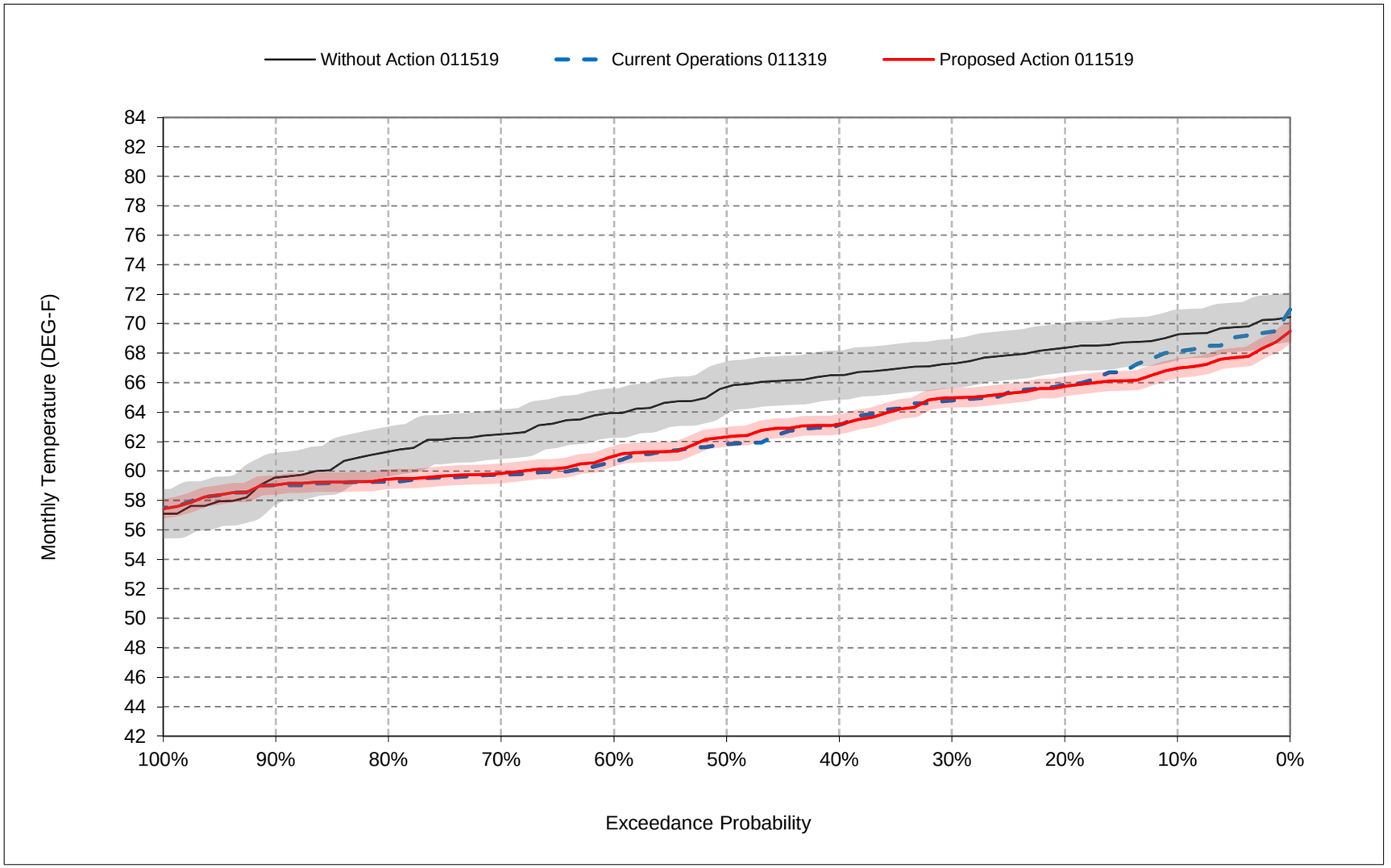
Figure 15-14. American River below Nimbus Dam, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

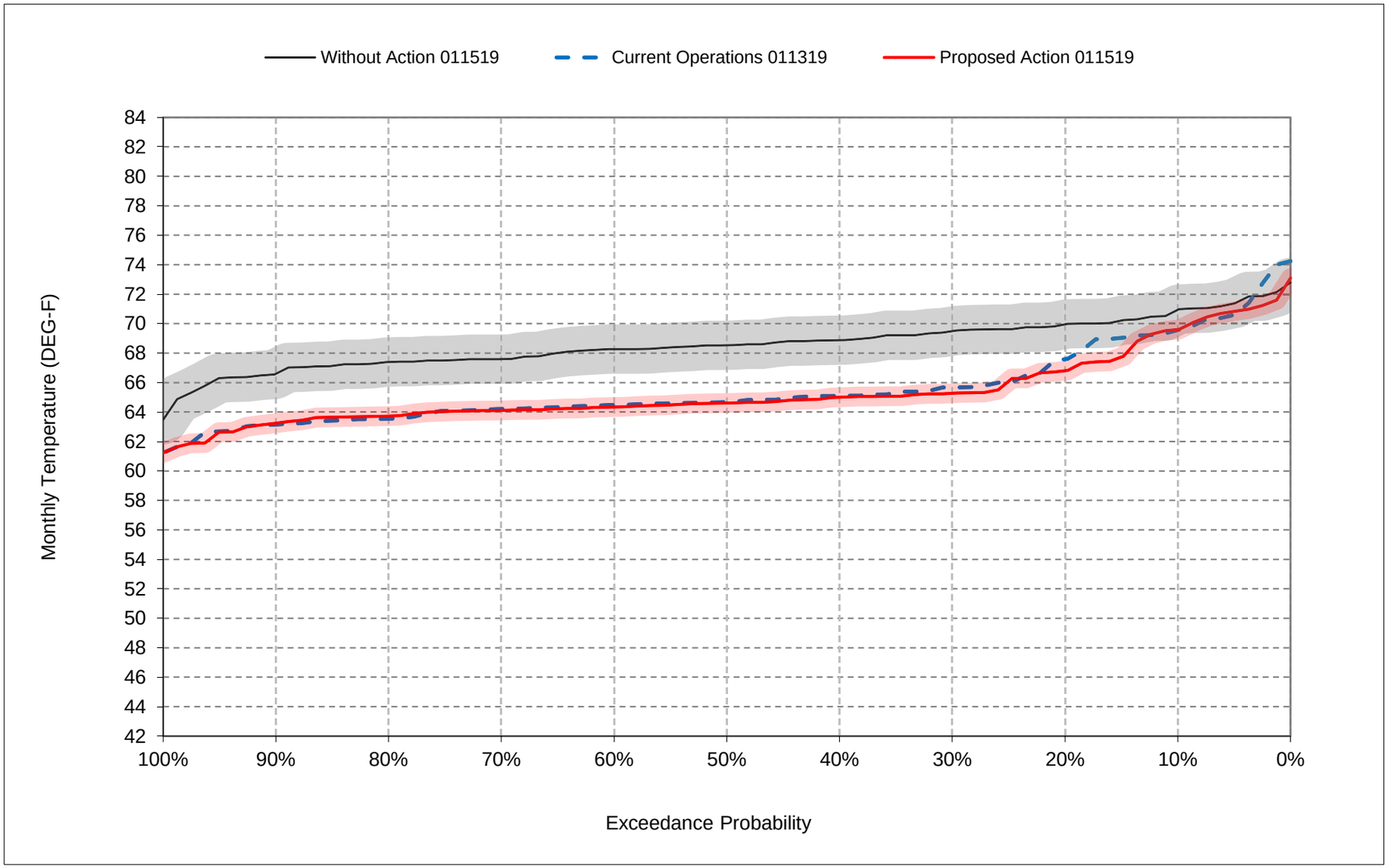
Figure 15-15. American River below Nimbus Dam, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

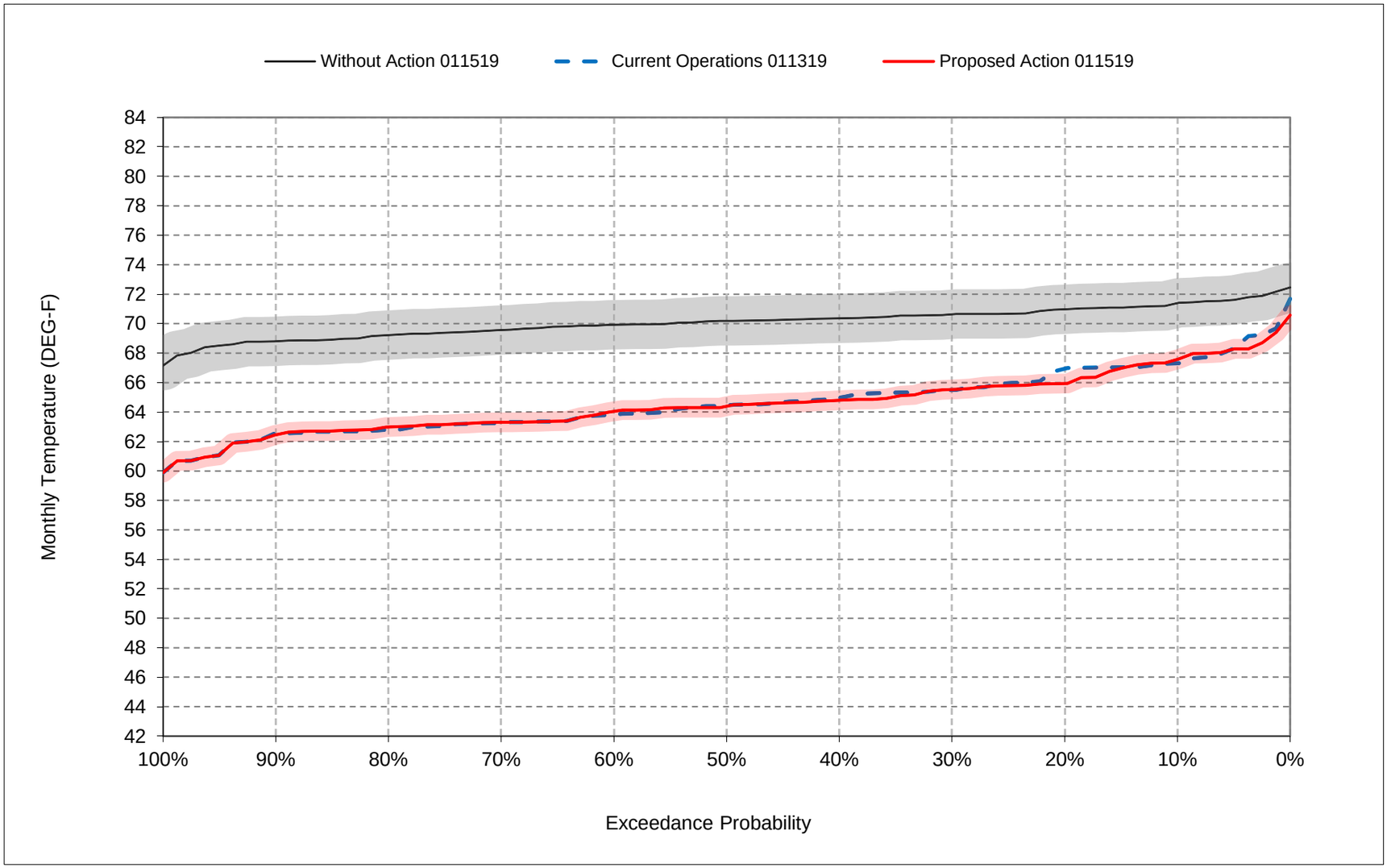
Figure 15-16. American River below Nimbus Dam, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

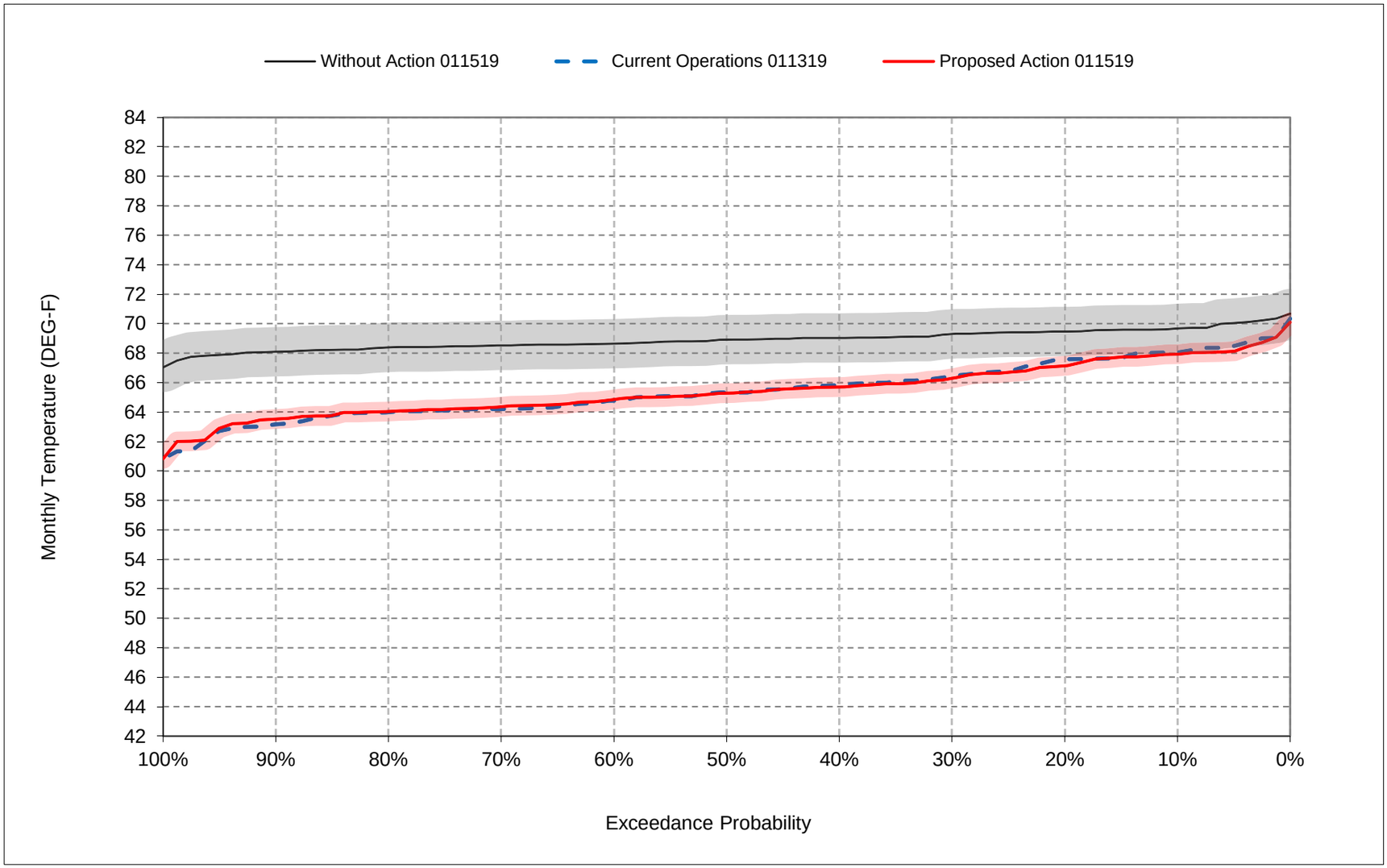
Figure 15-17. American River below Nimbus Dam, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 16-1. American River at Watt Avenue, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.4	56.9	47.5	45.8	49.2	53.8	59.6	68.0	75.7	78.7	75.7	72.5
20%	66.7	56.2	46.9	45.3	48.3	53.2	57.9	64.7	73.9	76.8	74.9	72.0
30%	65.9	55.3	46.3	45.1	47.5	51.8	55.9	62.6	72.3	75.6	74.4	71.6
40%	65.5	54.5	45.7	44.7	47.1	50.9	54.9	61.0	71.0	74.5	74.2	71.4
50%	65.1	54.0	45.3	44.6	46.7	50.2	53.9	59.5	69.4	73.7	73.8	71.1
60%	64.5	53.2	45.1	44.4	46.5	49.7	53.4	58.2	67.3	73.2	73.5	70.8
70%	64.1	52.7	44.9	44.2	46.2	49.2	52.5	57.5	65.4	71.9	73.2	70.6
80%	63.7	52.0	44.5	44.1	45.8	48.9	51.9	57.0	64.0	71.4	72.6	70.4
90%	63.2	50.8	44.3	43.9	45.5	48.1	51.2	55.7	62.1	70.4	72.3	70.0
Long Term												
Full Simulation Period[a]	65.0	53.9	45.7	44.7	47.1	50.8	54.8	60.8	68.9	74.1	73.9	71.1
Water Year Types[b,c]												
Wet (32%)	64.3	53.1	45.4	44.5	46.1	49.0	52.2	57.2	64.2	71.2	72.9	70.7
Above Normal (16%)	64.8	53.4	45.4	44.9	46.7	49.5	53.4	59.2	69.0	73.7	73.8	70.7
Below Normal (13%)	64.4	53.9	45.7	44.5	46.9	51.5	55.5	61.9	70.5	75.3	73.9	71.2
Dry (24%)	65.2	53.7	45.7	44.7	47.6	51.6	55.8	62.7	71.8	75.6	74.2	71.4
Critical (15%)	66.7	56.4	46.5	45.4	49.3	53.8	59.5	66.1	72.4	76.9	75.4	72.2

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 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	**1.6**	**4.6**	**2.6**	**0.7**	**2.4**	**3.0**	**0.1**	-1.8	-3.9	-2.5	-1.1
20%	-0.8	**1.8**	**4.6**	**2.4**	**1.1**	**1.8**	**2.7**	**2.1**	-3.3	-5.8	-2.9	-1.8
30%	-0.9	**2.3**	**4.5**	**2.2**	**1.0**	**1.7**	**3.2**	**2.7**	-3.4	-6.0	-4.7	-2.6
40%	-1.0	**2.8**	**4.7**	**2.4**	**1.2**	**1.0**	**2.9**	**2.8**	-3.9	-5.9	-5.0	-3.1
50%	-0.9	**3.1**	**4.8**	**2.2**	**1.1**	**1.1**	**3.2**	**2.9**	-3.4	-5.5	-5.1	-3.3
60%	-0.8	**3.6**	**4.2**	**2.0**	**0.8**	**0.7**	**3.1**	**2.9**	-2.8	-5.5	-5.6	-4.0
70%	-0.7	**3.8**	**3.8**	**1.6**	**0.7**	**0.8**	**2.5**	**2.3**	-1.7	-4.4	-5.9	-4.2
80%	-0.7	**4.2**	**3.5**	**1.3**	**0.7**	**0.7**	**2.3**	**2.1**	-0.9	-4.4	-5.8	-4.4
90%	-2.1	**5.0**	**3.0**	**1.0**	**0.7**	**1.1**	**2.2**	**1.4**	-0.1	-4.0	-6.4	-4.4
Long Term												
Full Simulation Period[a]	-0.8	**3.2**	**4.2**	**1.9**	**0.9**	**1.2**	**2.7**	**1.9**	-2.1	-4.6	-4.8	-3.1
Water Year Types[b,c]												
Wet (32%)	-1.9	**3.9**	**5.0**	**1.4**	**0.7**	**0.9**	**2.4**	**2.2**	-0.9	-3.7	-6.2	-4.9
Above Normal (16%)	-1.0	**3.3**	**4.4**	**1.8**	**0.8**	**0.9**	**3.0**	**2.8**	-3.0	-6.5	-5.4	-3.4
Below Normal (13%)	**0.1**	**3.4**	**4.2**	**2.5**	**1.0**	**1.1**	**3.7**	**2.2**	-2.3	-7.1	-4.0	-2.4
Dry (24%)	-0.1	**3.3**	**3.7**	**2.4**	**1.1**	**1.5**	**2.9**	**1.7**	-3.2	-5.4	-4.4	-2.2
Critical (15%)	-0.5	**1.3**	**3.0**	**1.9**	**1.1**	**1.9**	**1.8**	**0.6**	-1.4	-0.5	-2.7	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 16-2. American River at Watt Avenue, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.4	56.9	47.5	45.8	49.2	53.8	59.6	68.0	75.7	78.7	75.7	72.5
20%	66.7	56.2	46.9	45.3	48.3	53.2	57.9	64.7	73.9	76.8	74.9	72.0
30%	65.9	55.3	46.3	45.1	47.5	51.8	55.9	62.6	72.3	75.6	74.4	71.6
40%	65.5	54.5	45.7	44.7	47.1	50.9	54.9	61.0	71.0	74.5	74.2	71.4
50%	65.1	54.0	45.3	44.6	46.7	50.2	53.9	59.5	69.4	73.7	73.8	71.1
60%	64.5	53.2	45.1	44.4	46.5	49.7	53.4	58.2	67.3	73.2	73.5	70.8
70%	64.1	52.7	44.9	44.2	46.2	49.2	52.5	57.5	65.4	71.9	73.2	70.6
80%	63.7	52.0	44.5	44.1	45.8	48.9	51.9	57.0	64.0	71.4	72.6	70.4
90%	63.2	50.8	44.3	43.9	45.5	48.1	51.2	55.7	62.1	70.4	72.3	70.0
Long Term												
Full Simulation Period[a]	65.0	53.9	45.7	44.7	47.1	50.8	54.8	60.8	68.9	74.1	73.9	71.1
Water Year Types[b,c]												
Wet (32%)	64.3	53.1	45.4	44.5	46.1	49.0	52.2	57.2	64.2	71.2	72.9	70.7
Above Normal (16%)	64.8	53.4	45.4	44.9	46.7	49.5	53.4	59.2	69.0	73.7	73.8	70.7
Below Normal (13%)	64.4	53.9	45.7	44.5	46.9	51.5	55.5	61.9	70.5	75.3	73.9	71.2
Dry (24%)	65.2	53.7	45.7	44.7	47.6	51.6	55.8	62.7	71.8	75.6	74.2	71.4
Critical (15%)	66.7	56.4	46.5	45.4	49.3	53.8	59.5	66.1	72.4	76.9	75.4	72.2

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.2	**1.5**	**4.8**	**2.9**	**1.2**	**1.4**	**1.7**	-0.4	-2.9	-4.1	-2.5	-1.5
20%	-0.9	**1.8**	**5.0**	**2.7**	**1.1**	**0.8**	**2.2**	**1.6**	-2.6	-6.3	-4.6	-2.6
30%	-0.9	**2.4**	**5.0**	**2.5**	**1.1**	**1.3**	**3.3**	**2.6**	-3.6	-6.0	-4.8	-2.9
40%	-0.9	**2.9**	**4.9**	**2.6**	**1.0**	**1.0**	**3.3**	**3.2**	-3.9	-5.9	-5.1	-3.2
50%	-1.1	**3.1**	**5.0**	**2.2**	**1.0**	**1.0**	**3.3**	**3.0**	-3.3	-5.4	-5.2	-3.5
60%	-0.9	**3.7**	**4.6**	**2.1**	**0.8**	**0.8**	**3.1**	**2.7**	-2.6	-5.3	-5.6	-3.5
70%	-0.8	**4.0**	**4.2**	**2.0**	**0.6**	**0.8**	**2.6**	**2.3**	-1.5	-4.3	-5.9	-3.7
80%	-0.9	**4.0**	**4.0**	**1.5**	**0.6**	**0.8**	**2.2**	**2.1**	-1.1	-4.2	-6.0	-3.9
90%	-2.1	**4.9**	**3.0**	**1.1**	**0.7**	**1.1**	**2.2**	**1.4**	-0.1	-3.9	-6.4	-4.0
Long Term												
Full Simulation Period[a]	-0.9	**3.2**	**4.5**	**2.2**	**0.9**	**1.0**	**2.5**	**1.9**	-2.2	-4.7	-5.0	-3.1
Water Year Types[b,c]												
Wet (32%)	-1.8	**4.0**	**5.6**	**1.5**	**0.7**	**0.9**	**2.5**	**2.2**	-0.9	-3.6	-6.2	-4.1
Above Normal (16%)	-1.0	**3.3**	**4.6**	**2.1**	**0.8**	**0.9**	**3.0**	**2.9**	-3.1	-6.5	-5.6	-3.3
Below Normal (13%)	**0.0**	**3.2**	**4.1**	**3.0**	**1.0**	**0.7**	**3.3**	**1.9**	-2.9	-6.8	-5.2	-2.9
Dry (24%)	-0.2	**3.4**	**3.9**	**2.5**	**1.1**	**1.2**	**2.7**	**1.9**	-3.3	-5.3	-4.4	-2.5
Critical (15%)	-0.7	**1.2**	**3.1**	**2.4**	**0.8**	**1.0**	**0.9**	-0.1	-1.6	-2.0	-2.5	-1.7

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 16-3. American River at Watt Avenue, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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	**0.2**	**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.

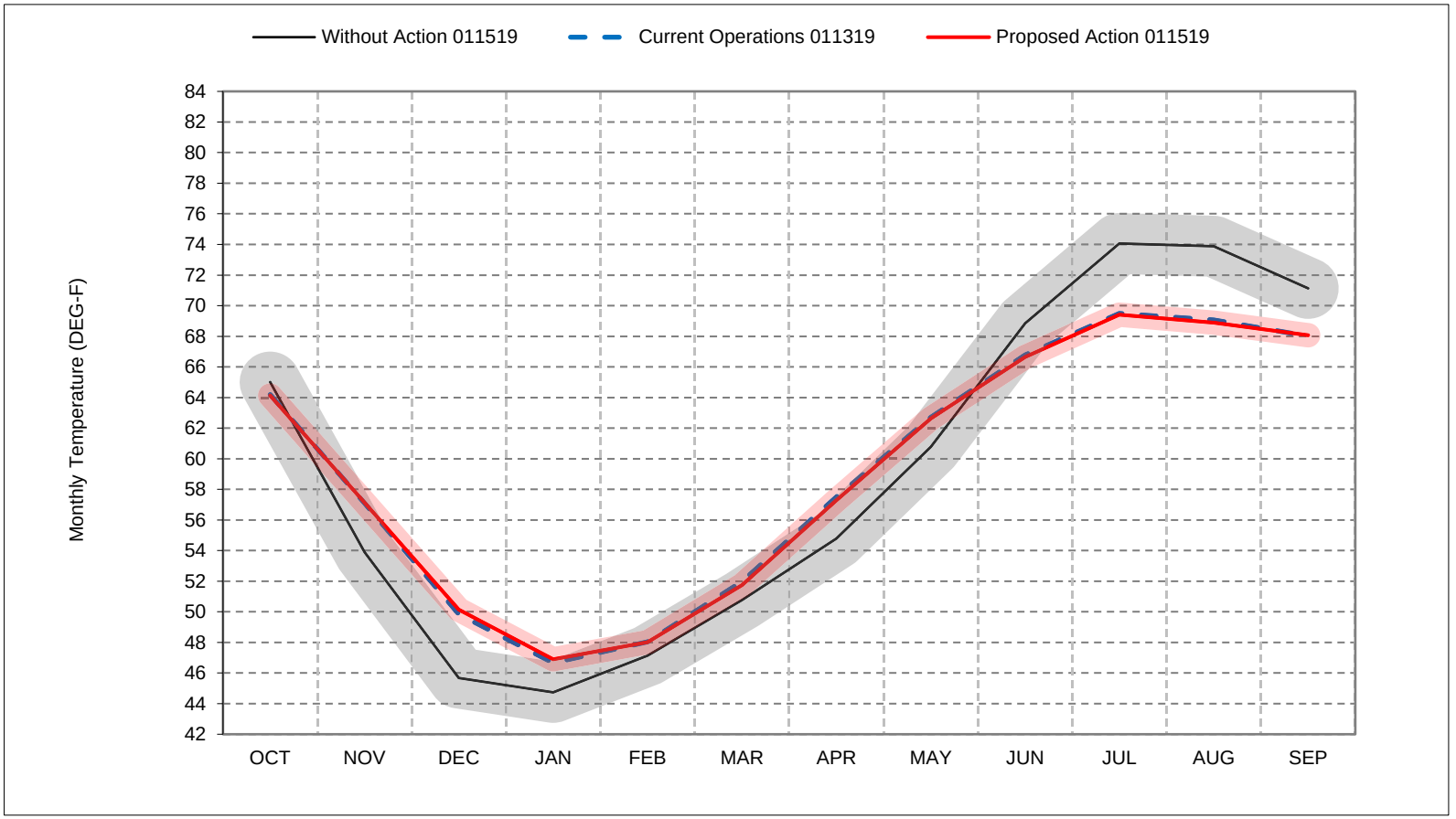
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

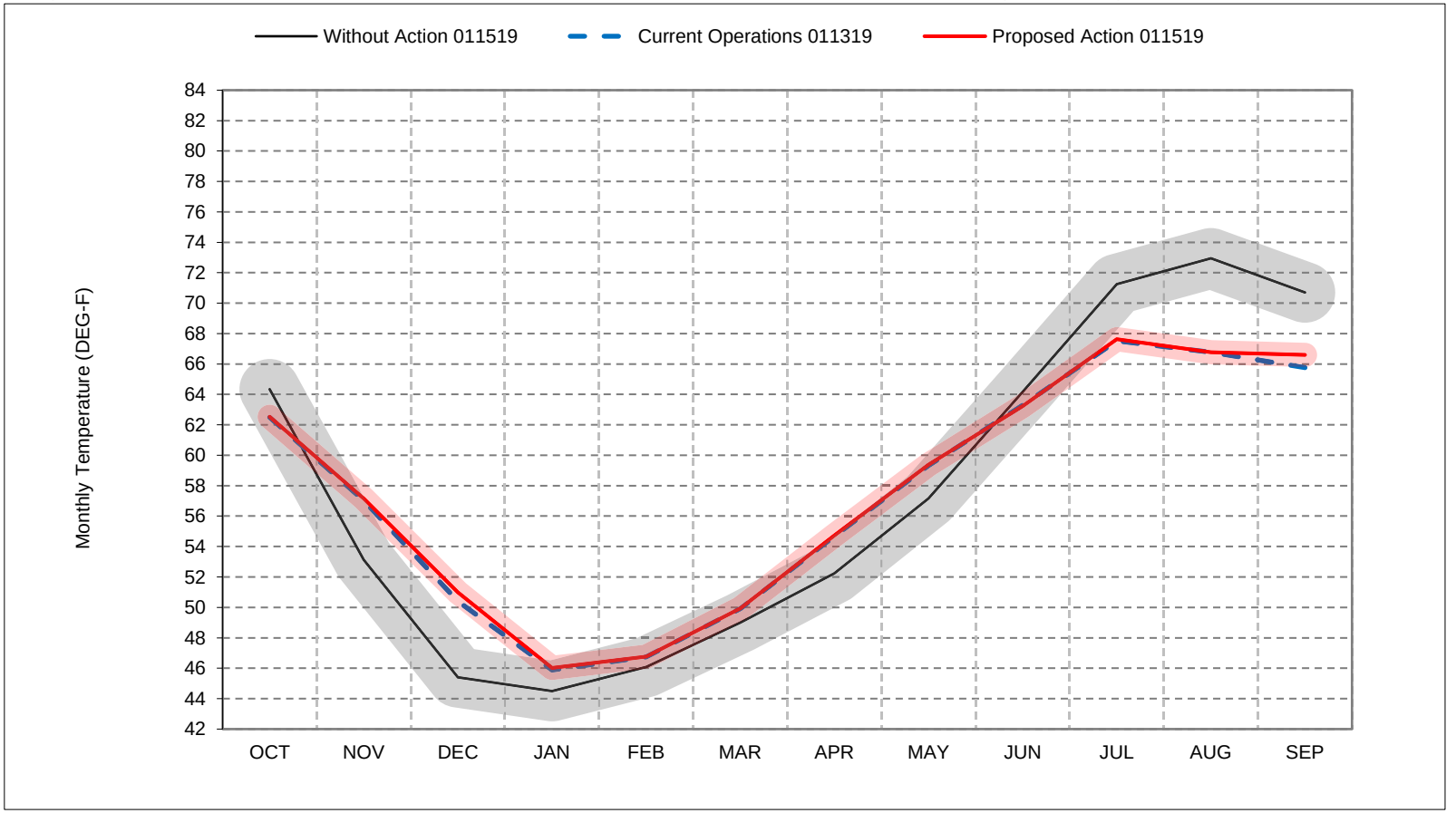
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-1. American River at Watt Avenue, Long-Term Average Temperature



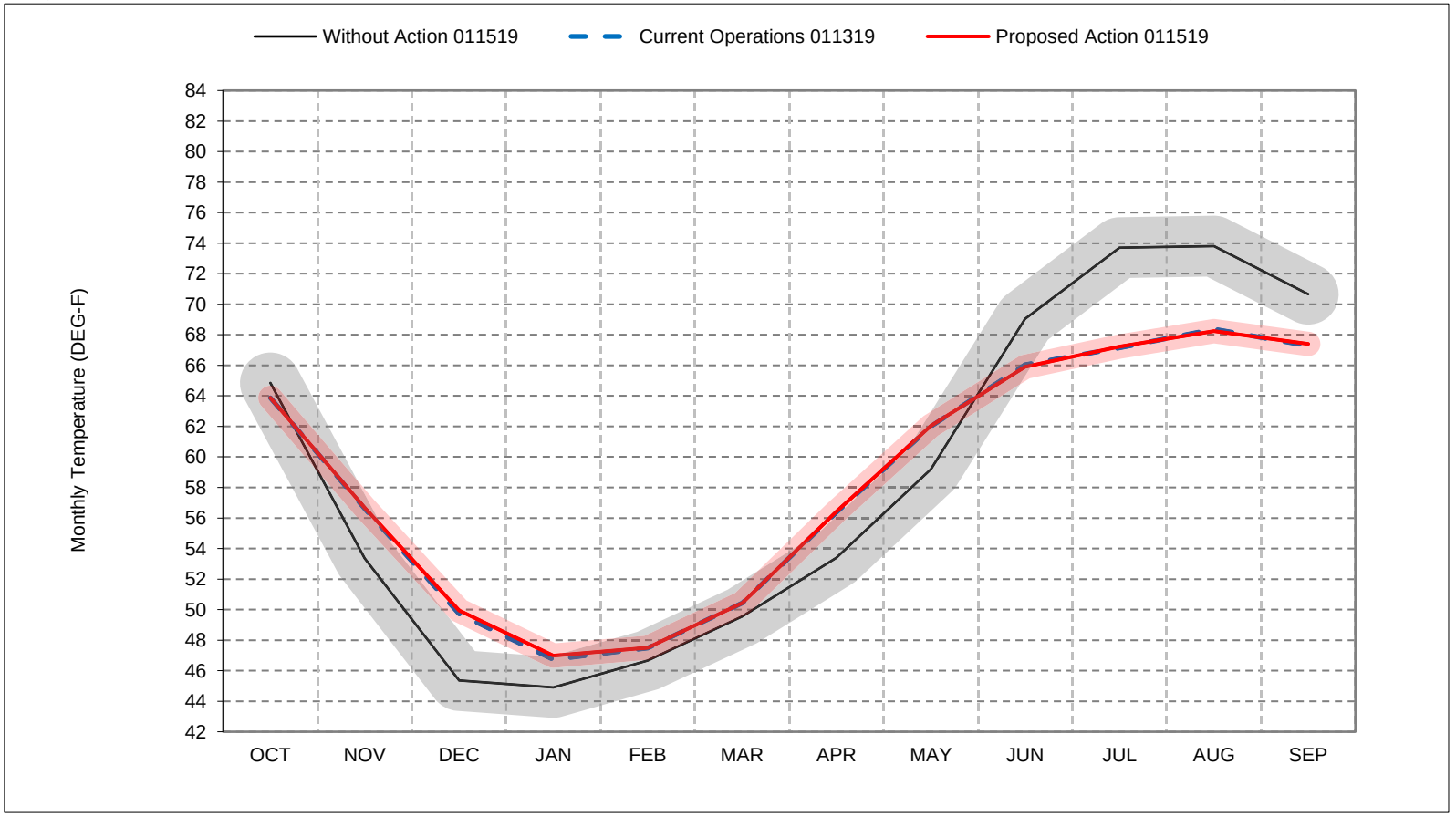
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-2. American River at Watt Avenue, Wet Year Average Temperature



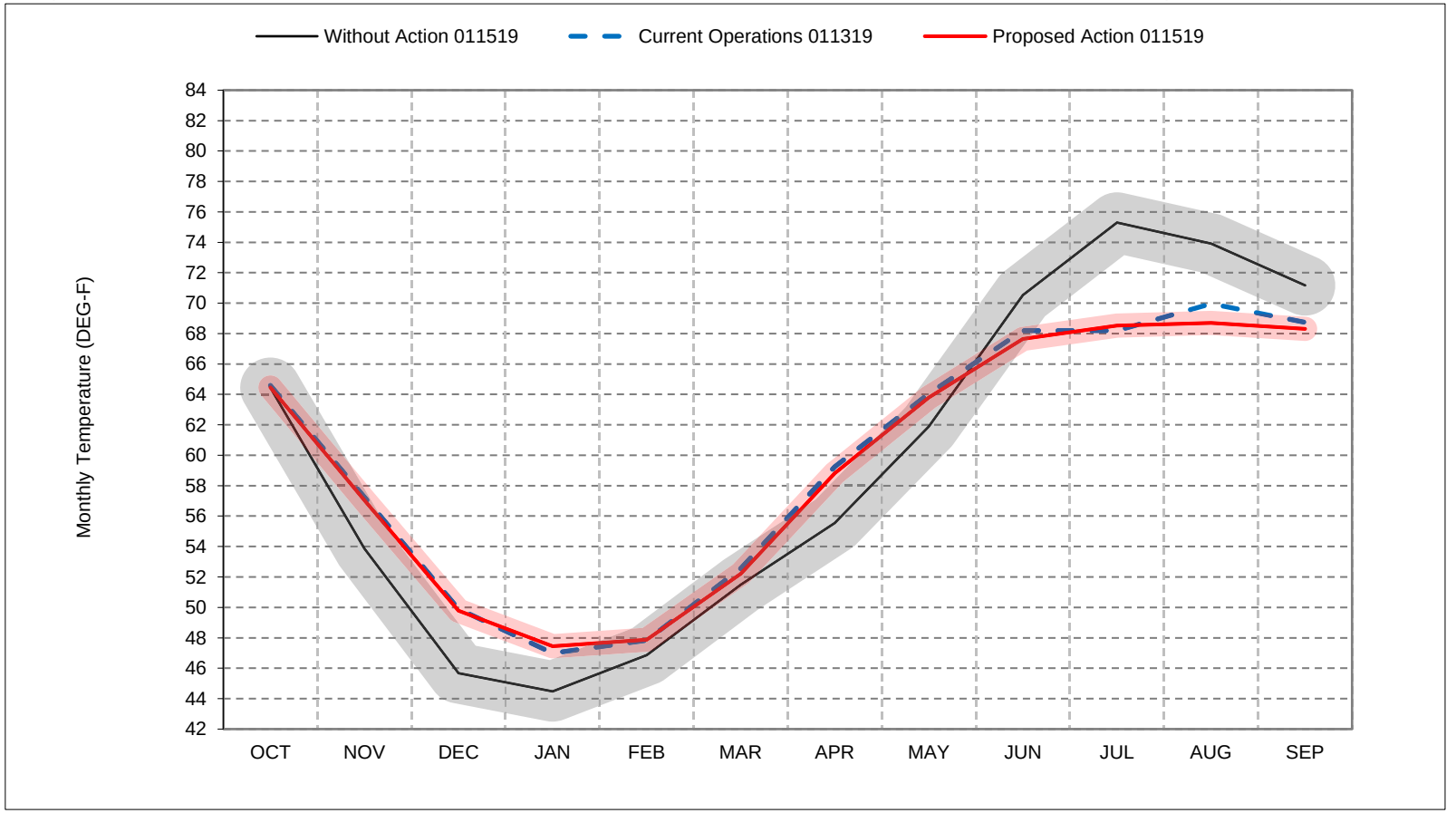
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-3. American River at Watt Avenue, Above Normal Year Average Temperature



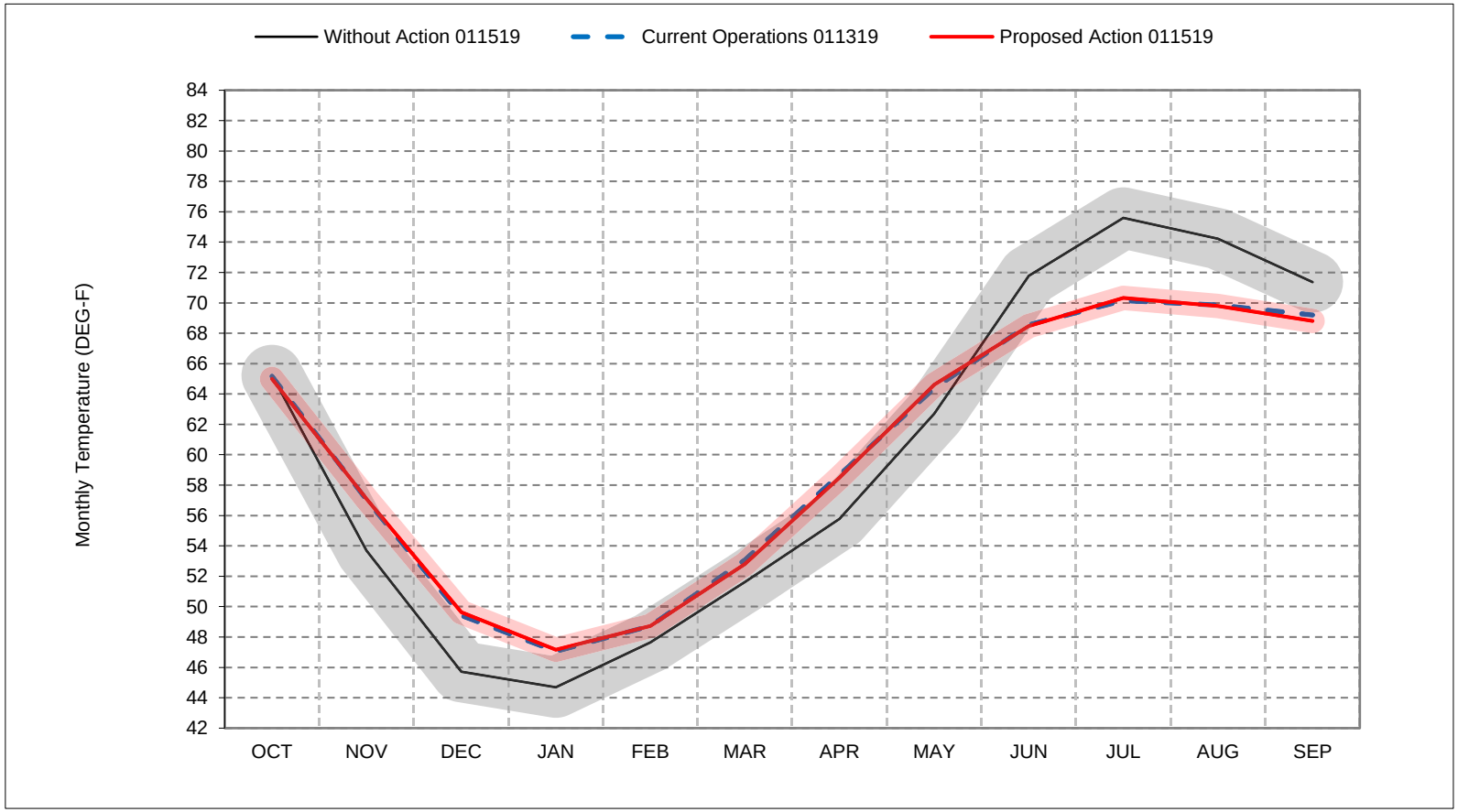
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-4. American River at Watt Avenue, Below Normal Year Average Temperature



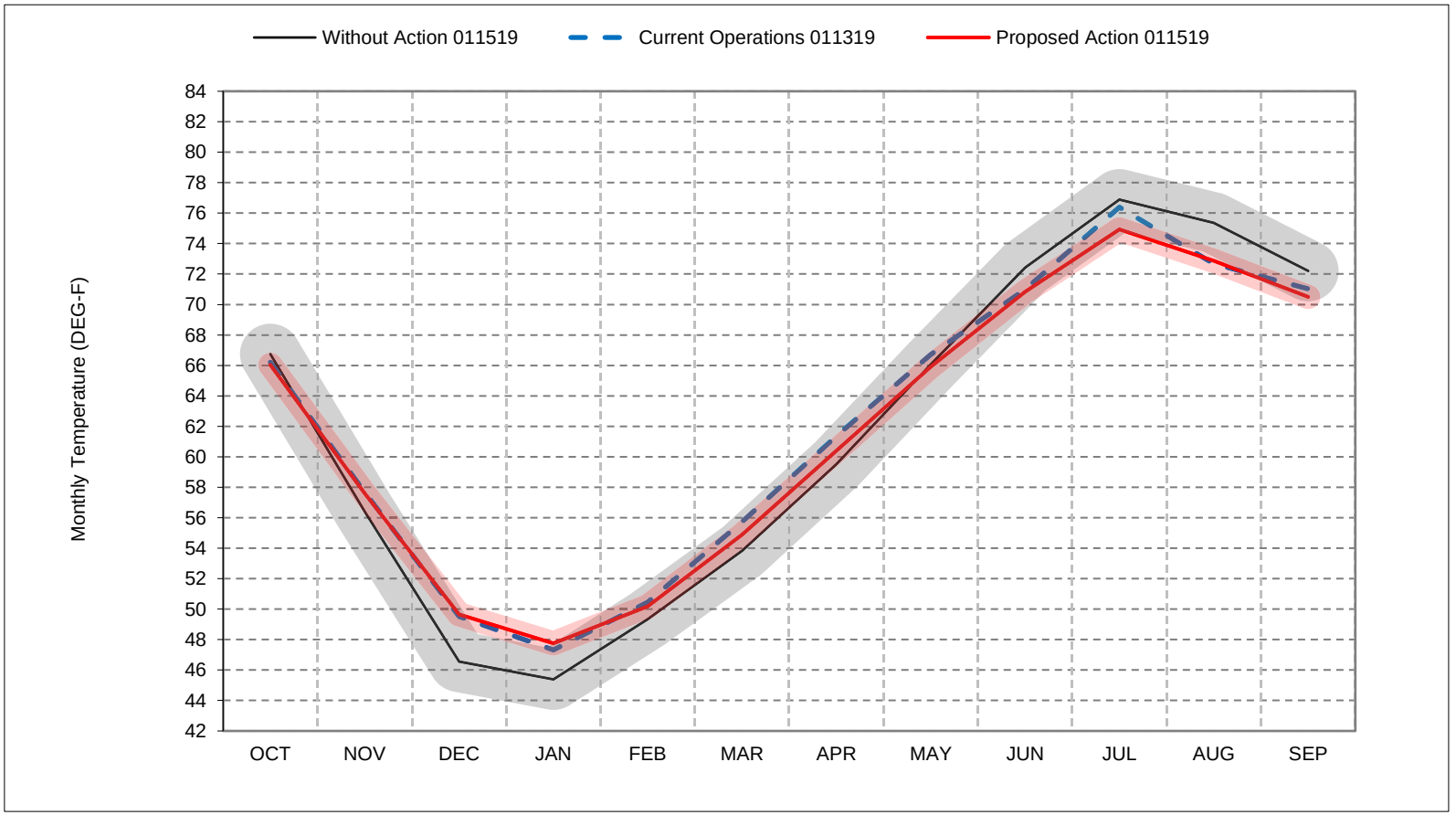
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-5. American River at Watt Avenue, Dry Year Average Temperature



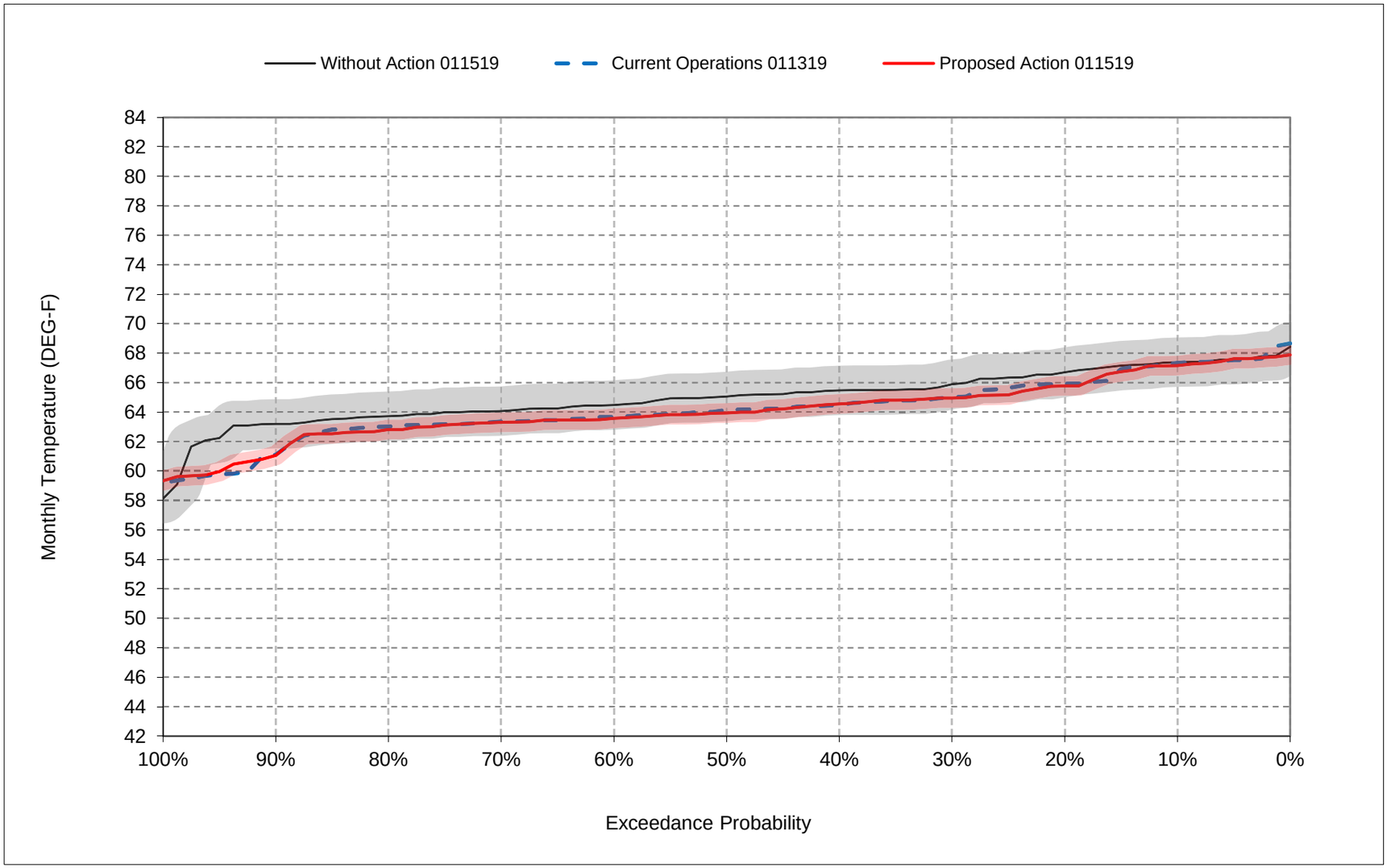
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

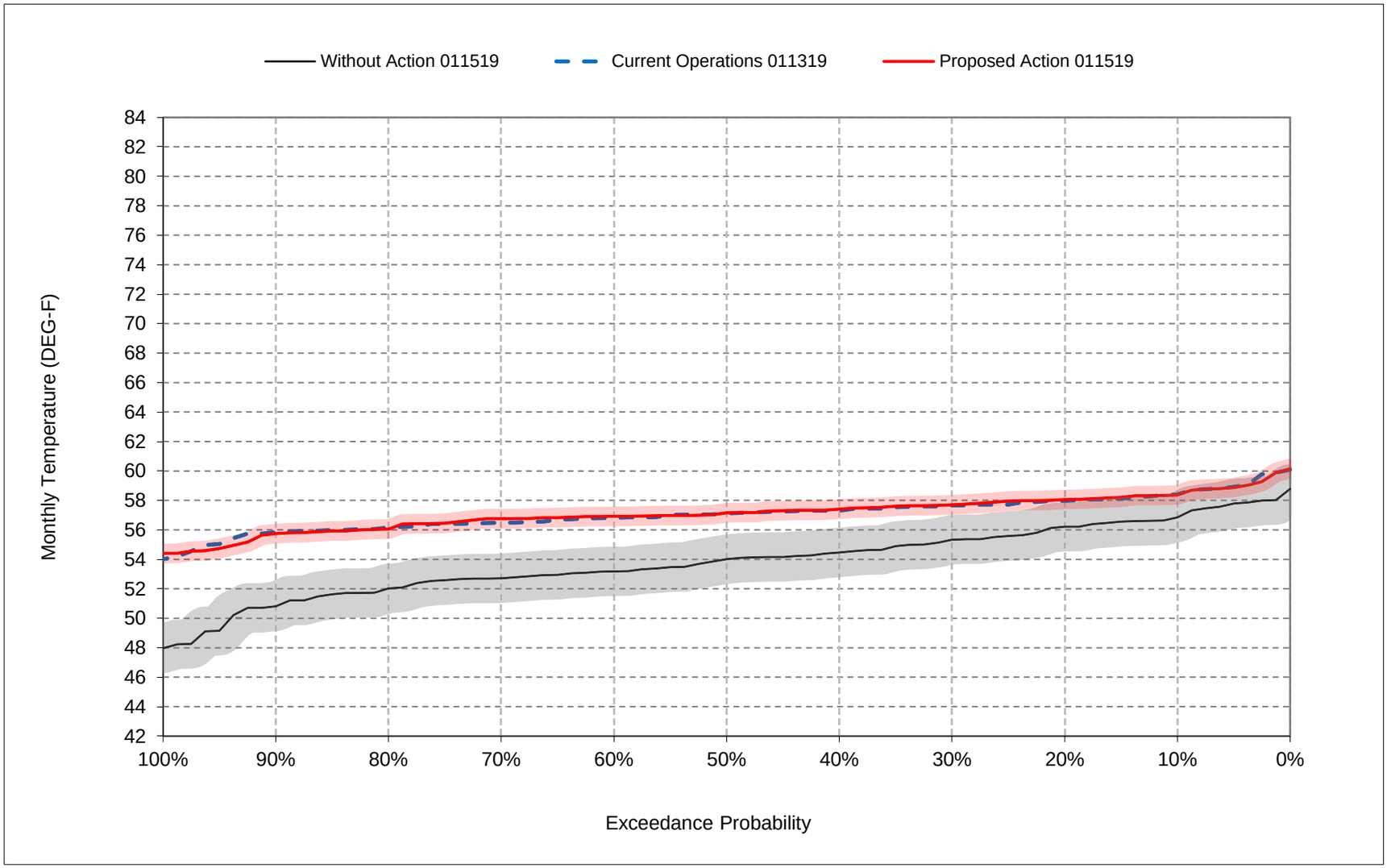
Figure 16-7. American River at Watt Avenue, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

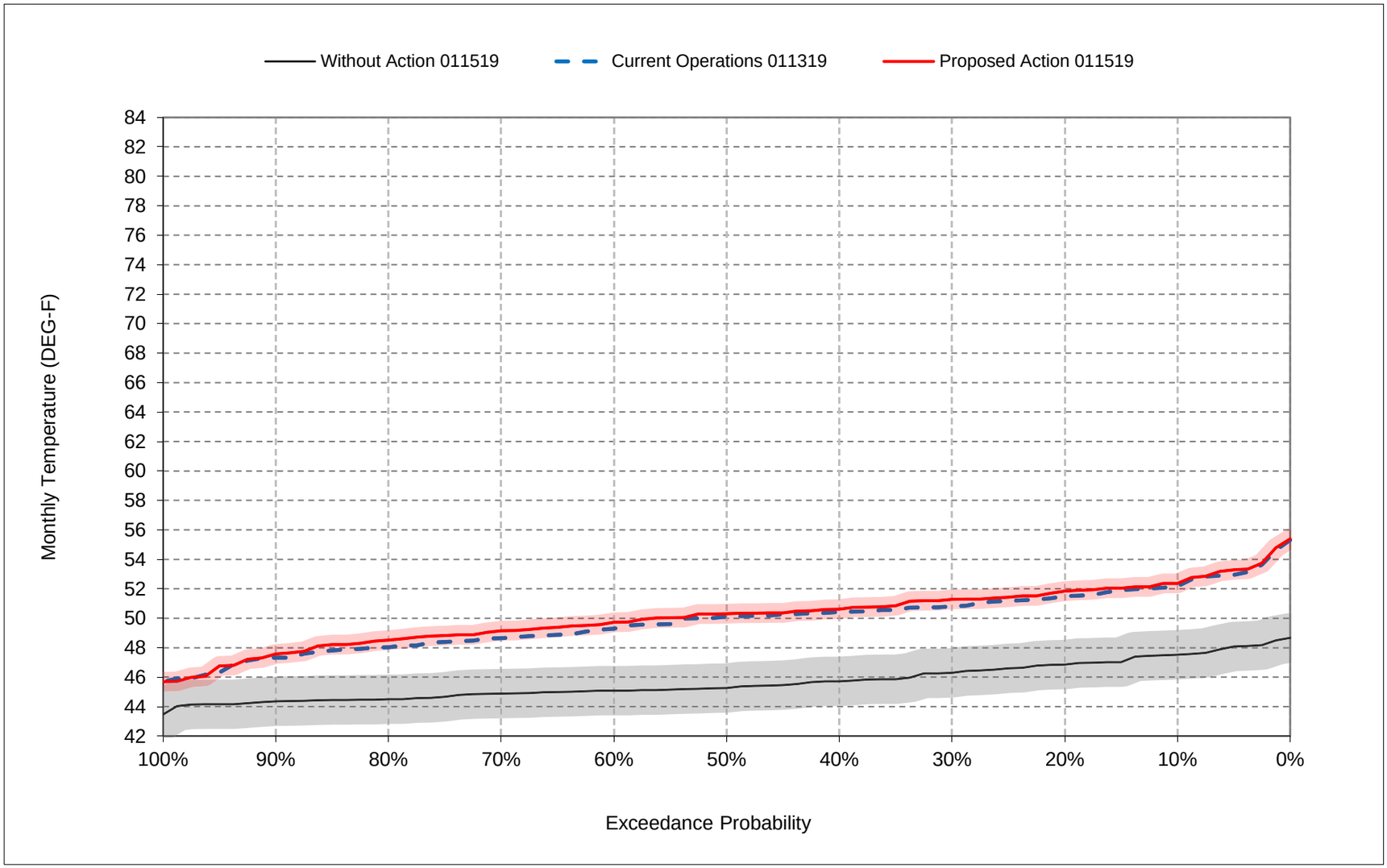
Figure 16-8. American River at Watt Avenue, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

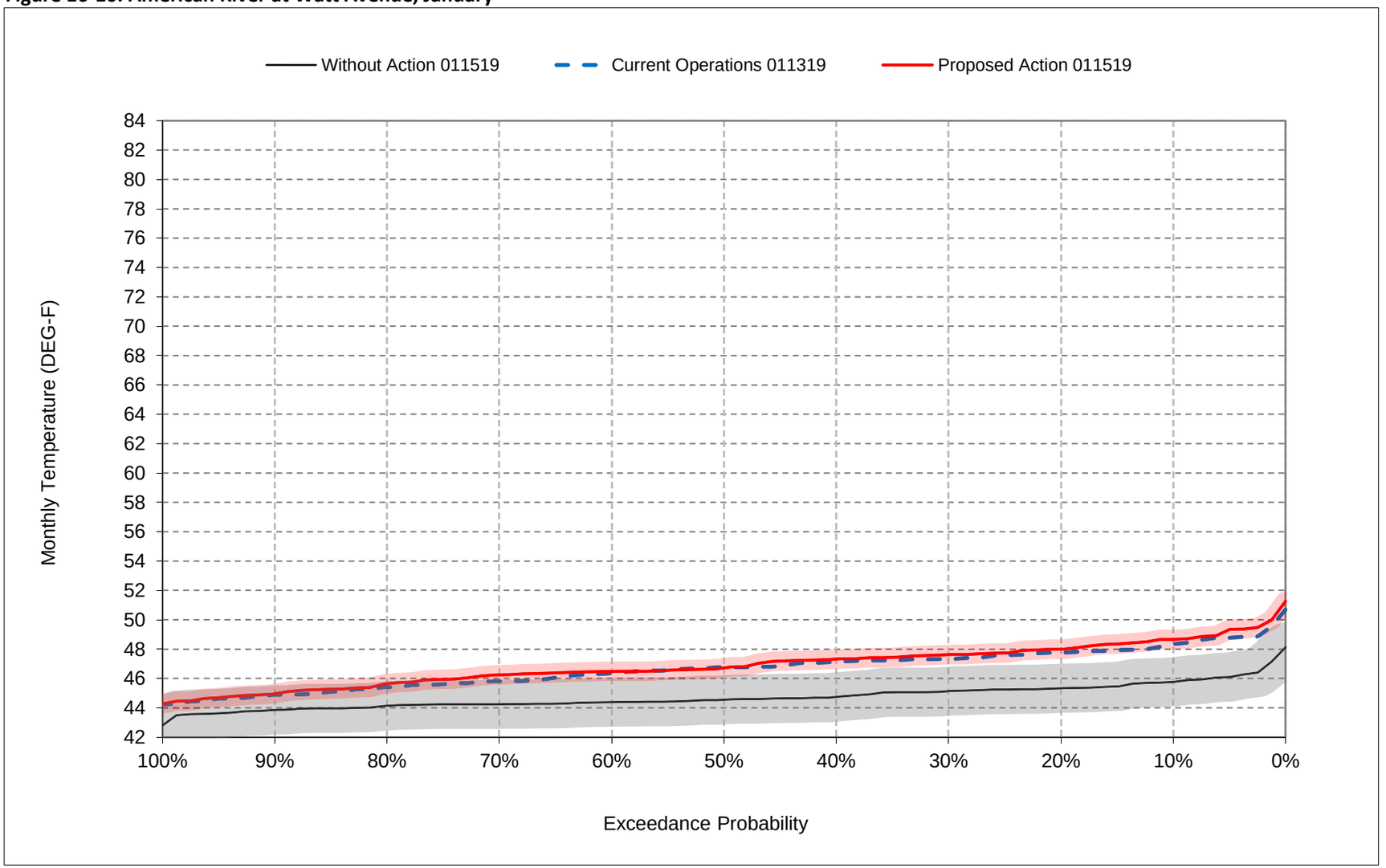
Figure 16-9. American River at Watt Avenue, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

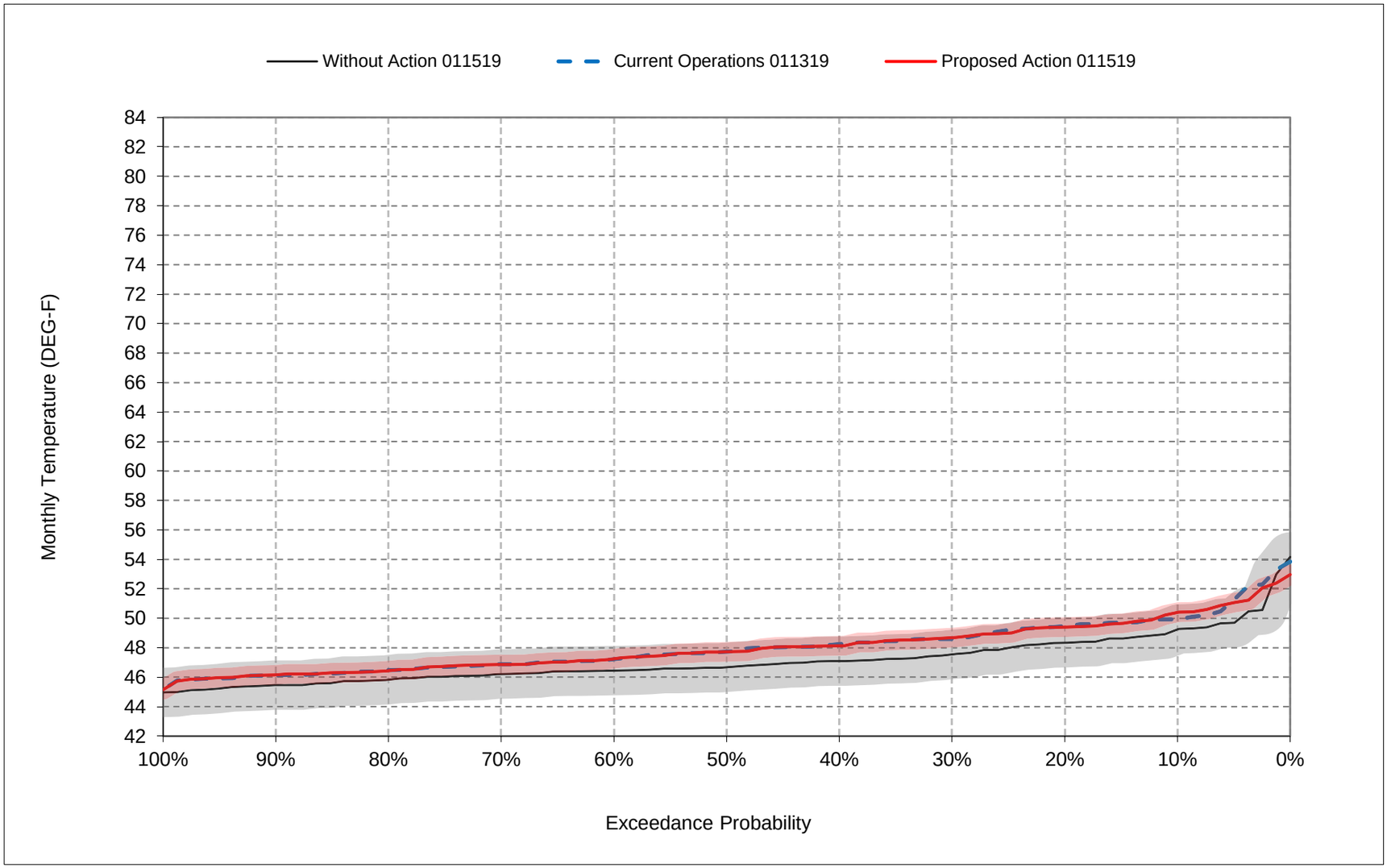
Figure 16-10. American River at Watt Avenue, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

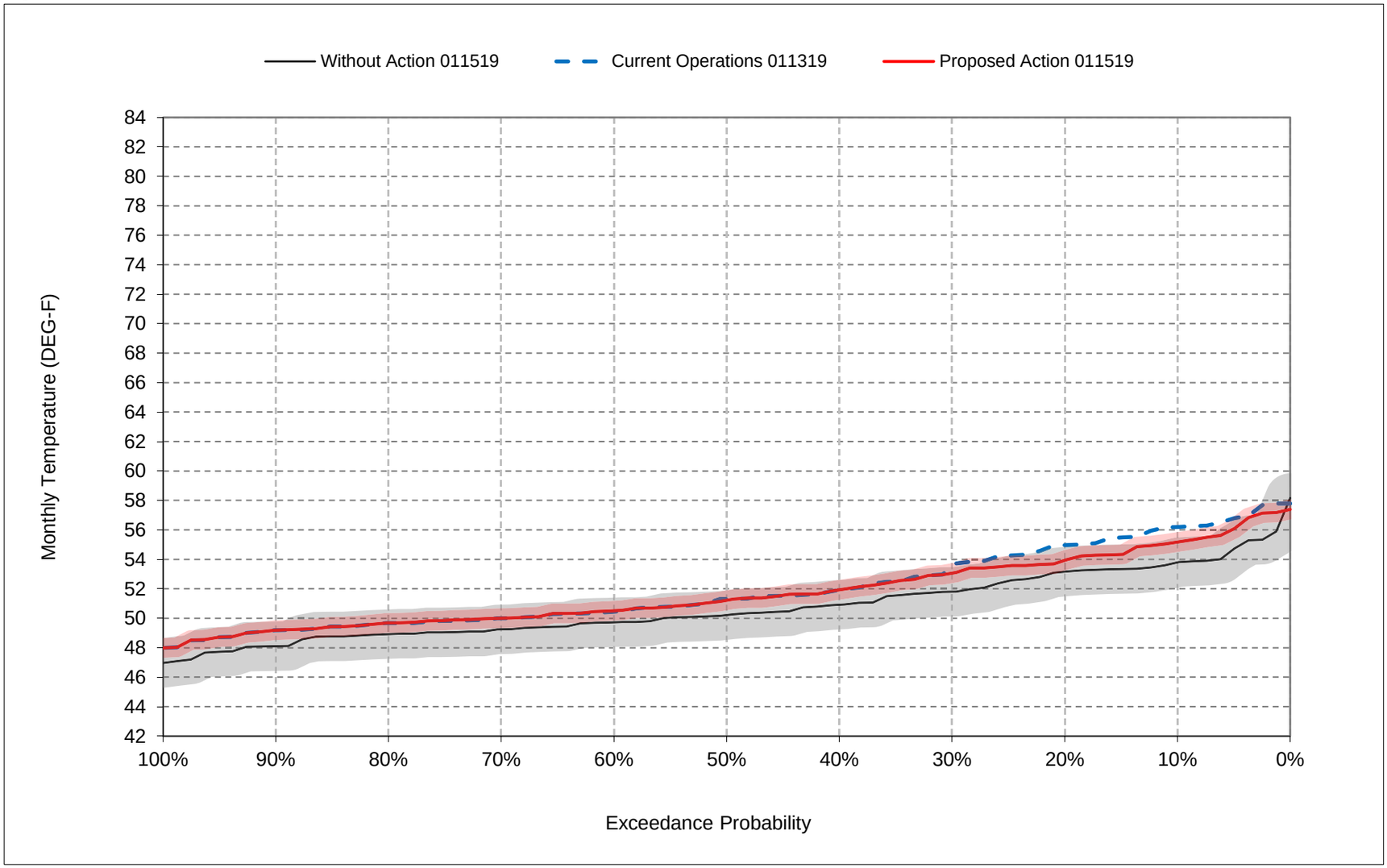
Figure 16-11. American River at Watt Avenue, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

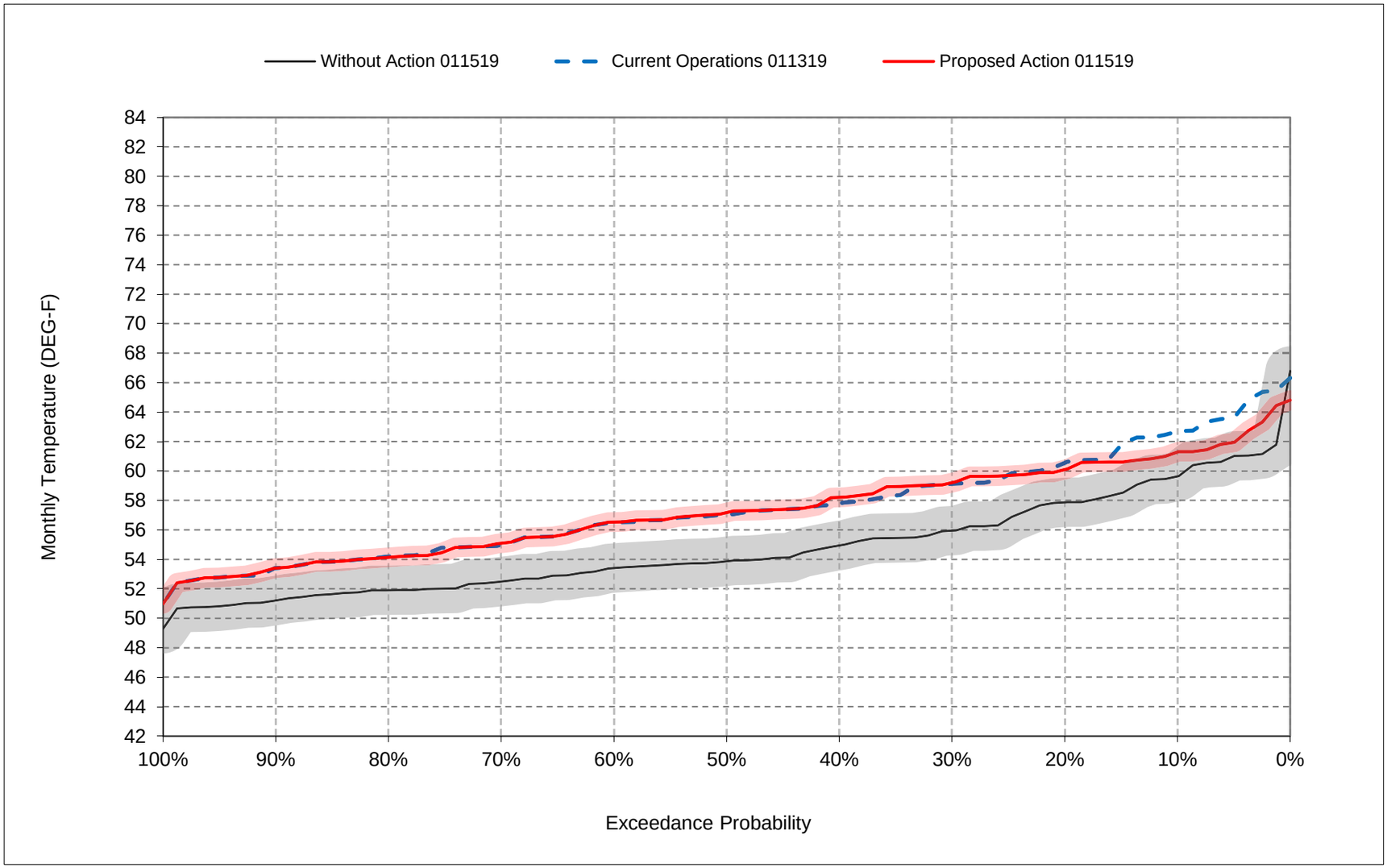
Figure 16-12. American River at Watt Avenue, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

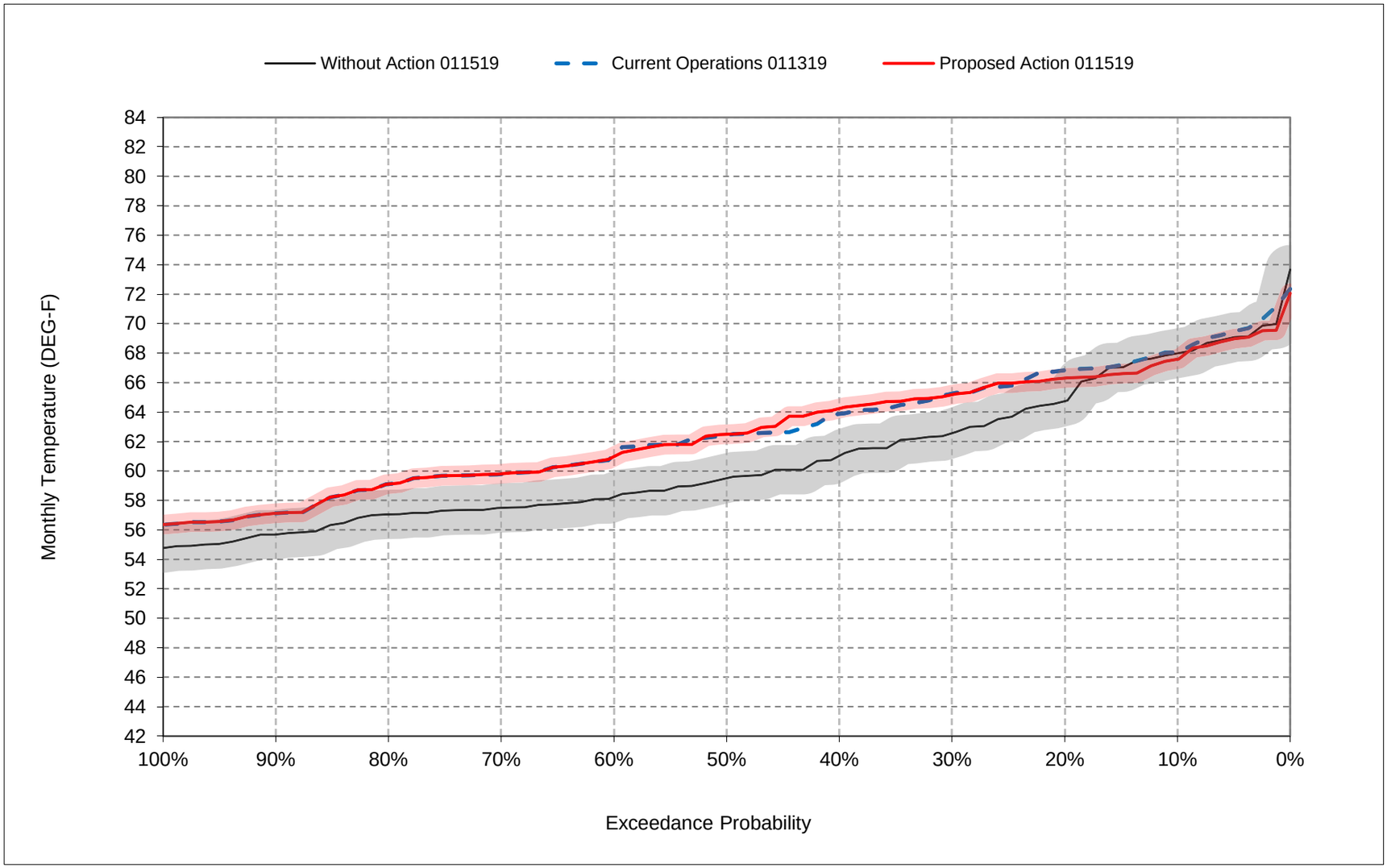
Figure 16-13. American River at Watt Avenue, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

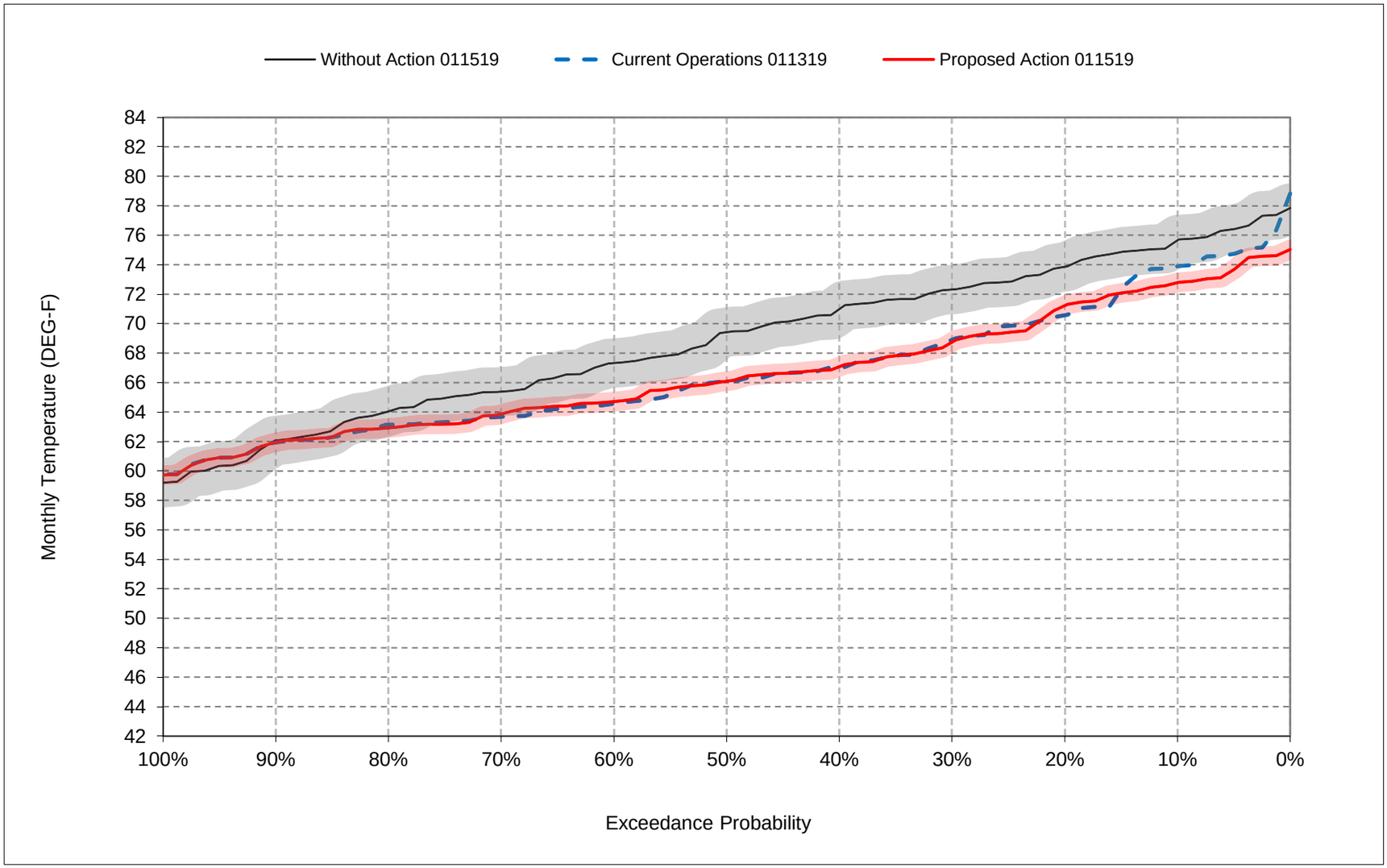
Figure 16-14. American River at Watt Avenue, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

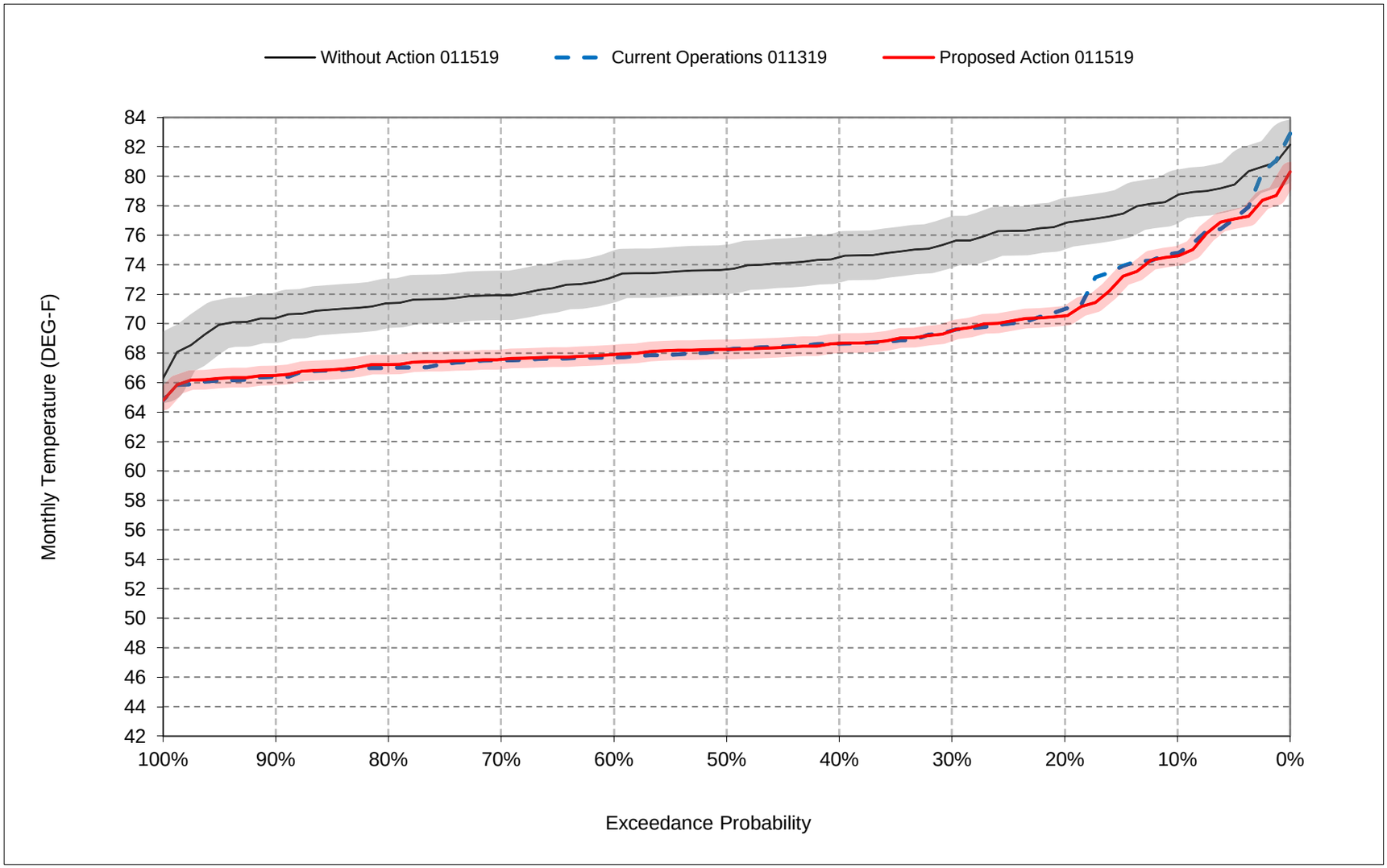
Figure 16-15. American River at Watt Avenue, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

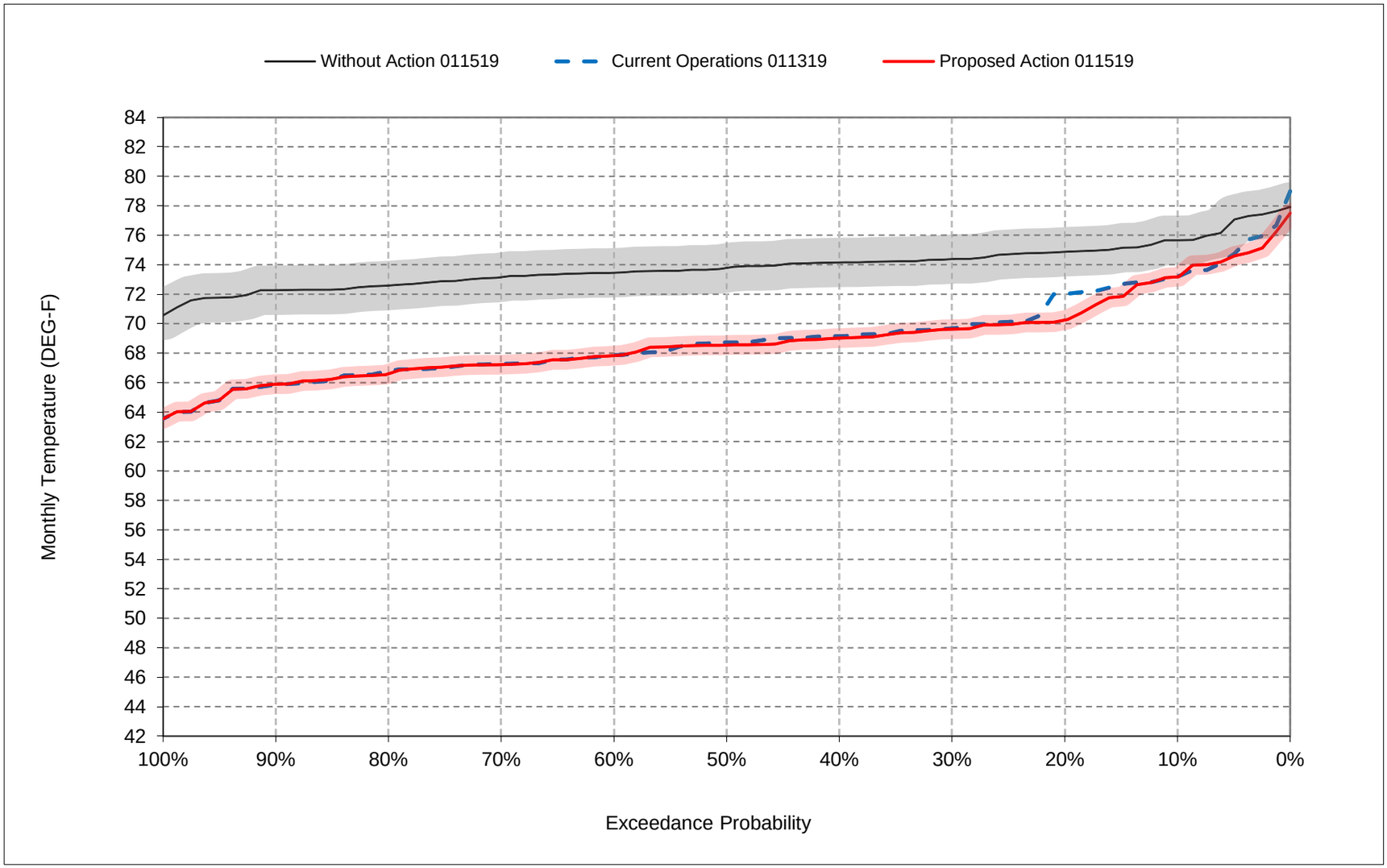
Figure 16-16. American River at Watt Avenue, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

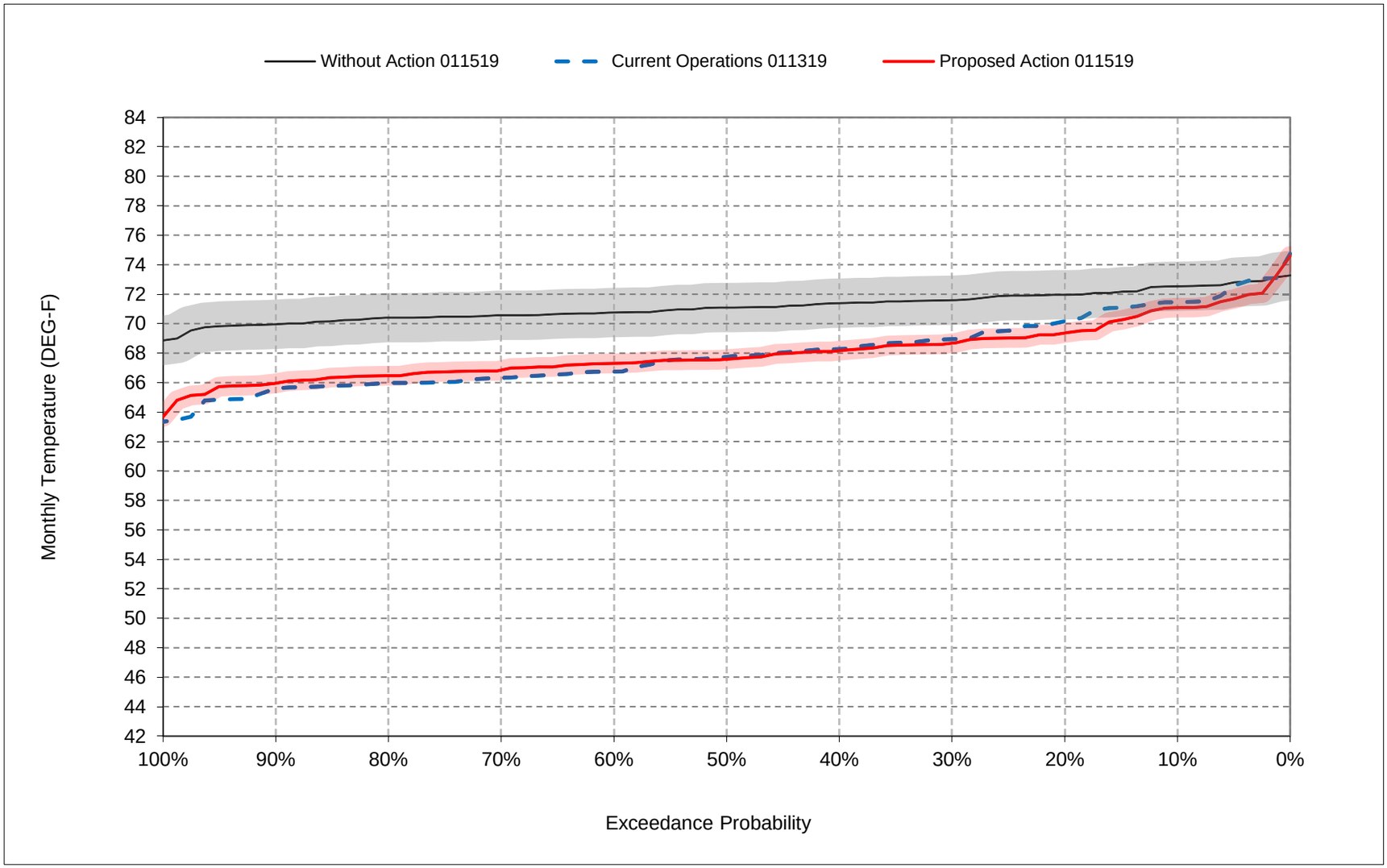
Figure 16-17. American River at Watt Avenue, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 17-1. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

Without Action 011519

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.3	57.3	47.8	46.4	50.2	55.2	61.4	70.7	79.5	83.1	79.2	74.5
20%	67.5	56.9	47.2	45.9	49.3	54.4	59.5	66.9	77.3	81.0	77.9	74.0
30%	66.6	55.7	46.5	45.6	48.4	52.9	57.4	64.5	75.7	79.6	77.1	73.6
40%	66.2	54.8	45.9	45.2	47.8	51.9	56.2	62.8	73.9	78.1	76.7	73.1
50%	65.8	54.5	45.5	44.8	47.2	51.1	55.1	61.0	71.8	77.2	76.4	72.7
60%	65.2	53.6	45.3	44.7	47.0	50.5	54.5	59.6	69.6	76.5	75.9	72.4
70%	64.7	53.3	45.1	44.5	46.7	49.9	53.5	58.8	67.4	75.0	75.6	72.2
80%	64.4	52.5	44.7	44.4	46.2	49.6	52.7	58.3	66.0	74.0	74.8	71.9
90%	63.7	51.4	44.4	44.1	45.8	48.6	52.0	56.7	63.7	73.1	74.5	71.4
Long Term												
Full Simulation Period[a]	65.7	54.4	45.9	45.2	47.8	51.7	56.0	62.4	71.5	77.6	76.6	72.9
Water Year Types[b,c]												
Wet (32%)	65.1	53.7	45.6	44.7	46.5	49.7	53.1	58.4	66.1	74.1	75.3	72.3
Above Normal (16%)	65.6	53.8	45.6	45.2	47.2	50.3	54.5	60.7	71.8	77.2	76.2	72.2
Below Normal (13%)	65.1	54.4	45.9	44.9	47.5	52.6	56.9	63.7	73.6	79.2	76.9	72.8
Dry (24%)	65.9	54.1	45.9	45.2	48.5	52.7	57.1	64.6	75.0	79.6	77.1	73.1
Critical (15%)	67.4	56.8	46.8	46.1	50.6	55.4	61.4	68.4	75.4	80.7	78.8	74.7

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.4	**1.3**	**4.3**	**2.3**	**1.3**	**3.7**	**4.6**	**1.2**	-1.6	-4.5	-1.9	-0.3
20%	-1.1	**1.2**	**4.0**	**2.2**	**1.4**	**2.9**	**3.2**	**3.4**	-3.5	-7.2	-2.2	-1.5
30%	-0.9	**2.0**	**4.1**	**2.0**	**1.4**	**2.4**	**3.6**	**3.5**	-4.0	-7.1	-4.3	-2.4
40%	-1.1	**2.6**	**4.3**	**2.1**	**1.4**	**1.3**	**3.9**	**4.1**	-3.9	-6.6	-4.5	-3.0
50%	-1.1	**2.5**	**4.4**	**2.3**	**1.2**	**1.5**	**3.7**	**3.9**	-3.2	-6.2	-4.6	-3.1
60%	-1.0	**3.2**	**3.8**	**1.9**	**1.0**	**1.0**	**3.7**	**3.8**	-2.1	-6.0	-4.9	-3.7
70%	-0.9	**3.2**	**3.6**	**1.5**	**0.6**	**1.0**	**3.0**	**3.0**	-1.0	-5.2	-5.4	-4.1
80%	-1.1	**3.7**	**3.4**	**1.2**	**0.7**	**0.9**	**2.5**	**2.5**	-0.5	-4.9	-5.2	-4.3
90%	-1.3	**4.5**	**2.9**	**0.9**	**0.7**	**1.1**	**2.2**	**1.7**	**0.3**	-4.6	-6.0	-4.5
Long Term												
Full Simulation Period[a]	-1.0	**2.8**	**3.8**	**1.8**	**1.0**	**1.7**	**3.4**	**2.8**	-1.9	-5.4	-4.3	-2.9
Water Year Types[b,c]												
Wet (32%)	-2.0	**3.4**	**4.6**	**1.3**	**0.7**	**1.2**	**2.8**	**2.8**	-0.5	-3.9	-5.6	-4.9
Above Normal (16%)	-1.2	**2.8**	**4.0**	**1.8**	**0.9**	**1.1**	**3.4**	**3.9**	-2.9	-8.1	-4.8	-3.2
Below Normal (13%)	-0.1	**2.9**	**3.8**	**2.3**	**1.1**	**1.9**	**4.7**	**3.0**	-2.3	-8.7	-3.6	-1.8
Dry (24%)	-0.3	**2.9**	**3.4**	**2.2**	**1.3**	**2.0**	**3.8**	**2.7**	-3.4	-6.5	-4.1	-1.7
Critical (15%)	-0.5	**1.0**	**2.7**	**1.7**	**1.5**	**2.8**	**2.8**	**1.5**	-1.2	-0.7	-2.4	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 17-2. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

Without Action 011519

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.3	57.3	47.8	46.4	50.2	55.2	61.4	70.7	79.5	83.1	79.2	74.5
20%	67.5	56.9	47.2	45.9	49.3	54.4	59.5	66.9	77.3	81.0	77.9	74.0
30%	66.6	55.7	46.5	45.6	48.4	52.9	57.4	64.5	75.7	79.6	77.1	73.6
40%	66.2	54.8	45.9	45.2	47.8	51.9	56.2	62.8	73.9	78.1	76.7	73.1
50%	65.8	54.5	45.5	44.8	47.2	51.1	55.1	61.0	71.8	77.2	76.4	72.7
60%	65.2	53.6	45.3	44.7	47.0	50.5	54.5	59.6	69.6	76.5	75.9	72.4
70%	64.7	53.3	45.1	44.5	46.7	49.9	53.5	58.8	67.4	75.0	75.6	72.2
80%	64.4	52.5	44.7	44.4	46.2	49.6	52.7	58.3	66.0	74.0	74.8	71.9
90%	63.7	51.4	44.4	44.1	45.8	48.6	52.0	56.7	63.7	73.1	74.5	71.4
Long Term												
Full Simulation Period[a]	65.7	54.4	45.9	45.2	47.8	51.7	56.0	62.4	71.5	77.6	76.6	72.9
Water Year Types[b,c]												
Wet (32%)	65.1	53.7	45.6	44.7	46.5	49.7	53.1	58.4	66.1	74.1	75.3	72.3
Above Normal (16%)	65.6	53.8	45.6	45.2	47.2	50.3	54.5	60.7	71.8	77.2	76.2	72.2
Below Normal (13%)	65.1	54.4	45.9	44.9	47.5	52.6	56.9	63.7	73.6	79.2	76.9	72.8
Dry (24%)	65.9	54.1	45.9	45.2	48.5	52.7	57.1	64.6	75.0	79.6	77.1	73.1
Critical (15%)	67.4	56.8	46.8	46.1	50.6	55.4	61.4	68.4	75.4	80.7	78.8	74.7

Proposed Action 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

Proposed Action 011519 minus Without Action 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	**1.4**	**4.4**	**2.6**	**1.5**	**2.3**	**2.8**	**0.3**	-2.4	-5.4	-1.9	-1.0
20%	-1.2	**1.3**	**4.2**	**2.5**	**1.2**	**1.5**	**3.4**	**2.6**	-3.2	-7.2	-4.4	-2.9
30%	-1.0	**2.1**	**4.3**	**2.2**	**1.3**	**2.1**	**4.3**	**4.1**	-4.0	-6.8	-4.4	-2.9
40%	-1.1	**2.6**	**4.5**	**2.4**	**1.2**	**1.5**	**4.3**	**4.5**	-4.0	-6.4	-4.6	-3.1
50%	-1.1	**2.6**	**4.5**	**2.4**	**1.2**	**1.4**	**3.7**	**4.3**	-3.4	-5.9	-4.8	-3.2
60%	-1.1	**3.2**	**4.2**	**2.0**	**0.8**	**0.9**	**3.8**	**3.6**	-1.8	-5.6	-4.9	-3.1
70%	-0.9	**3.3**	**4.0**	**1.9**	**0.6**	**1.0**	**2.9**	**3.1**	-0.8	-5.0	-5.5	-3.3
80%	-1.1	**3.7**	**3.6**	**1.5**	**0.7**	**0.9**	**2.5**	**2.5**	-0.7	-4.6	-5.3	-3.3
90%	-1.2	**4.4**	**3.0**	**1.0**	**0.7**	**1.1**	**2.3**	**1.7**	**0.3**	-4.5	-6.0	-3.5
Long Term												
Full Simulation Period[a]	-0.9	**2.8**	**4.0**	**2.0**	**0.9**	**1.4**	**3.1**	**2.7**	-2.1	-5.3	-4.6	-2.8
Water Year Types[b,c]												
Wet (32%)	-1.8	**3.5**	**5.1**	**1.5**	**0.7**	**1.2**	**2.8**	**2.8**	-0.6	-3.7	-5.6	-3.6
Above Normal (16%)	-1.1	**2.9**	**4.2**	**2.0**	**0.8**	**1.1**	**3.5**	**4.0**	-3.1	-7.9	-4.9	-3.0
Below Normal (13%)	-0.1	**2.8**	**3.7**	**2.7**	**1.0**	**1.3**	**4.2**	**2.6**	-3.0	-8.2	-5.2	-2.6
Dry (24%)	-0.3	**3.0**	**3.5**	**2.3**	**1.3**	**1.7**	**3.6**	**2.9**	-3.3	-6.1	-4.2	-2.3
Critical (15%)	-0.5	**1.0**	**2.7**	**2.0**	**0.9**	**1.6**	**1.7**	**0.8**	-1.1	-2.0	-2.1	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 17-3. American River at the Mouth, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 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**	**0.1**	**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.

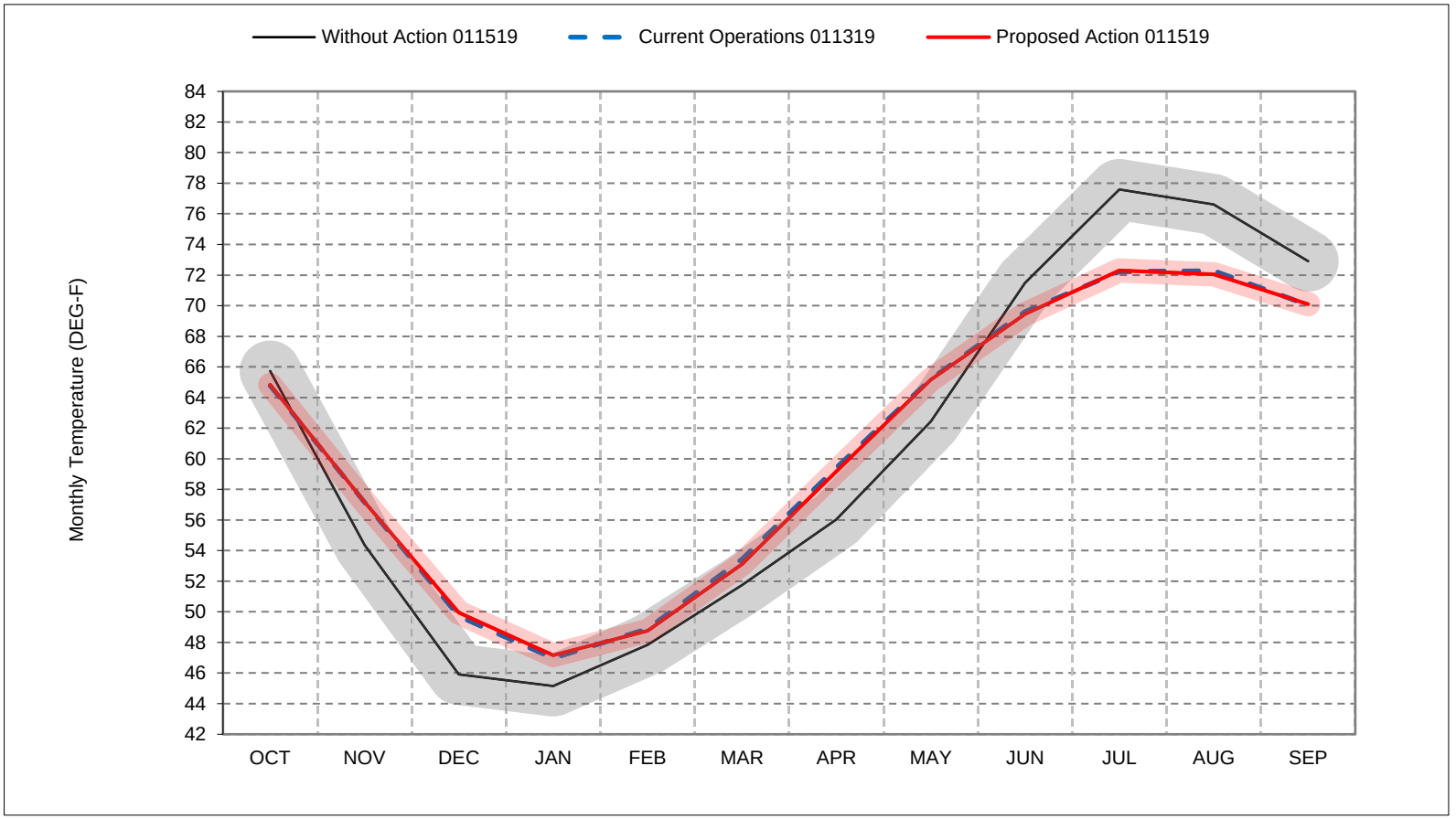
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

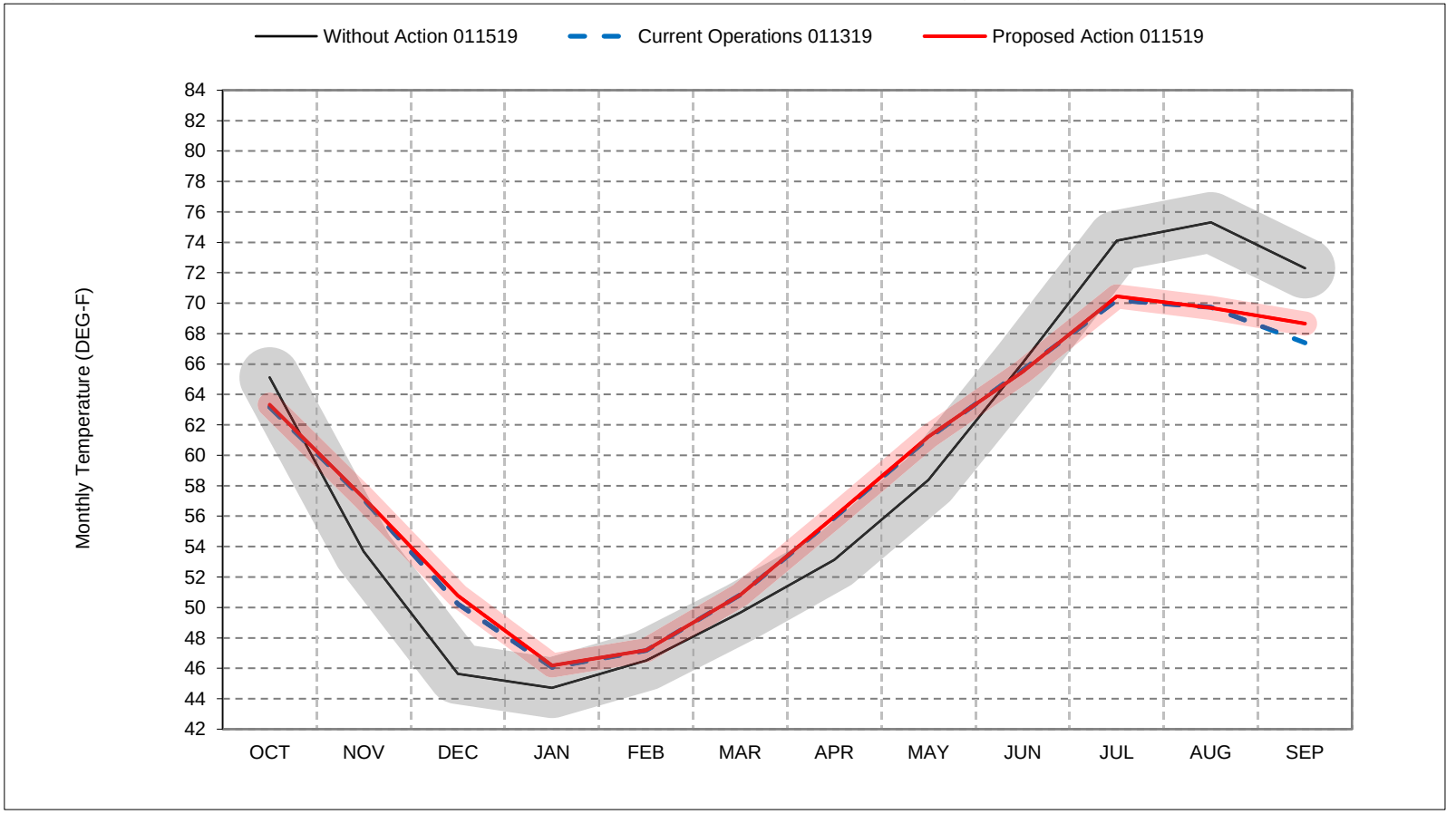
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-1. American River at the Mouth, Long-Term Average Temperature



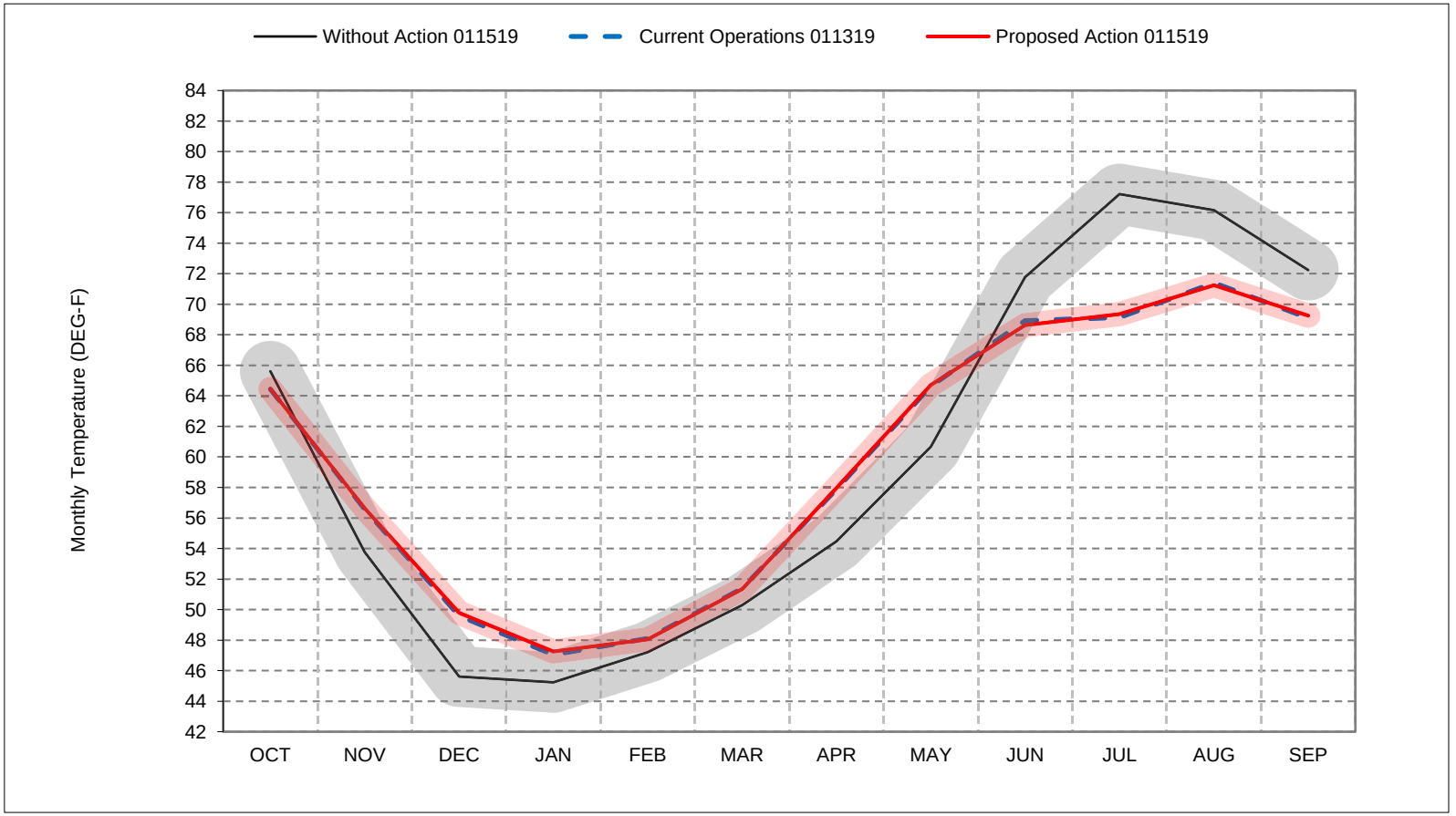
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-2. American River at the Mouth, Wet Year Average Temperature



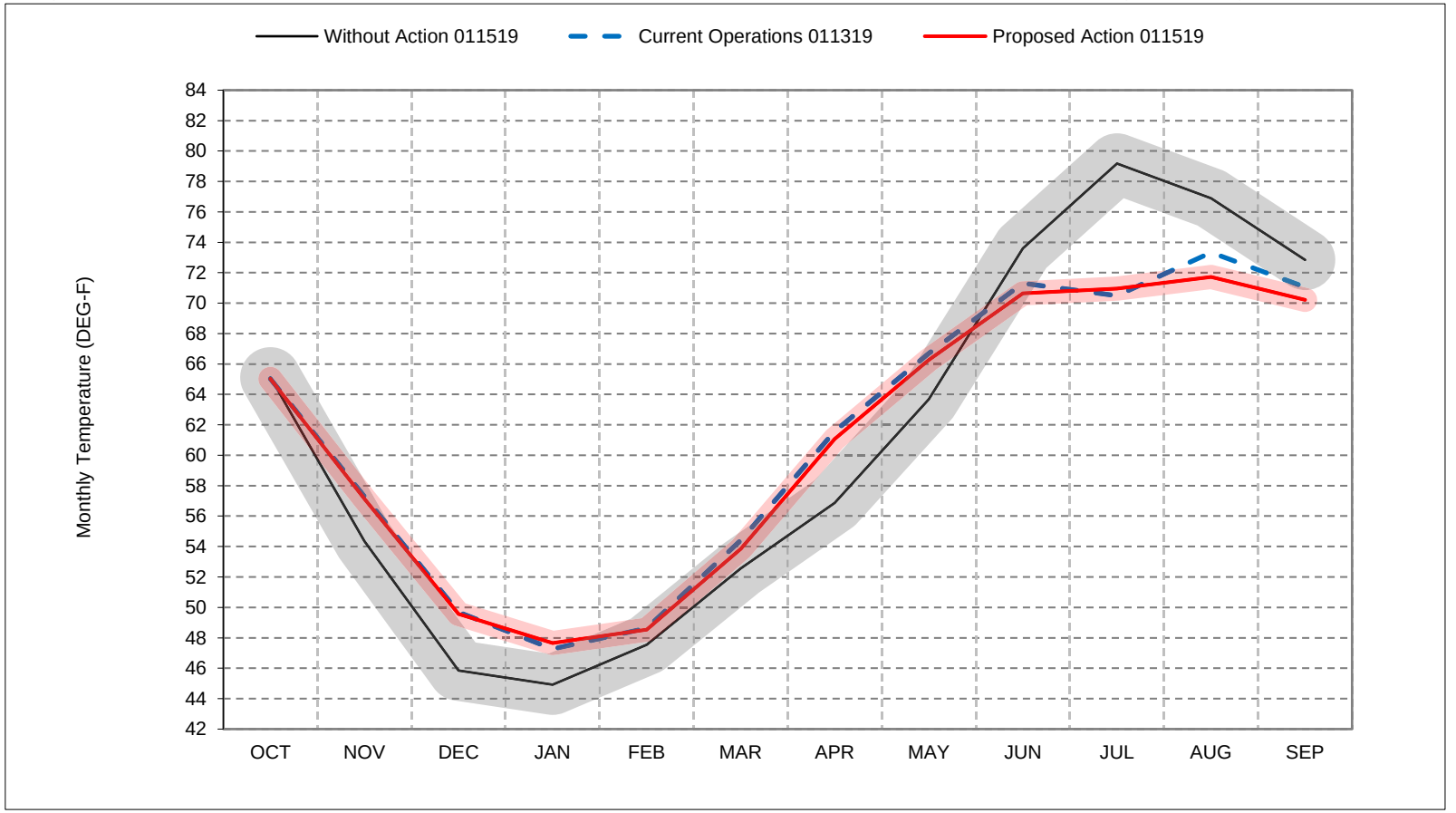
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-3. American River at the Mouth, Above Normal Year Average Temperature



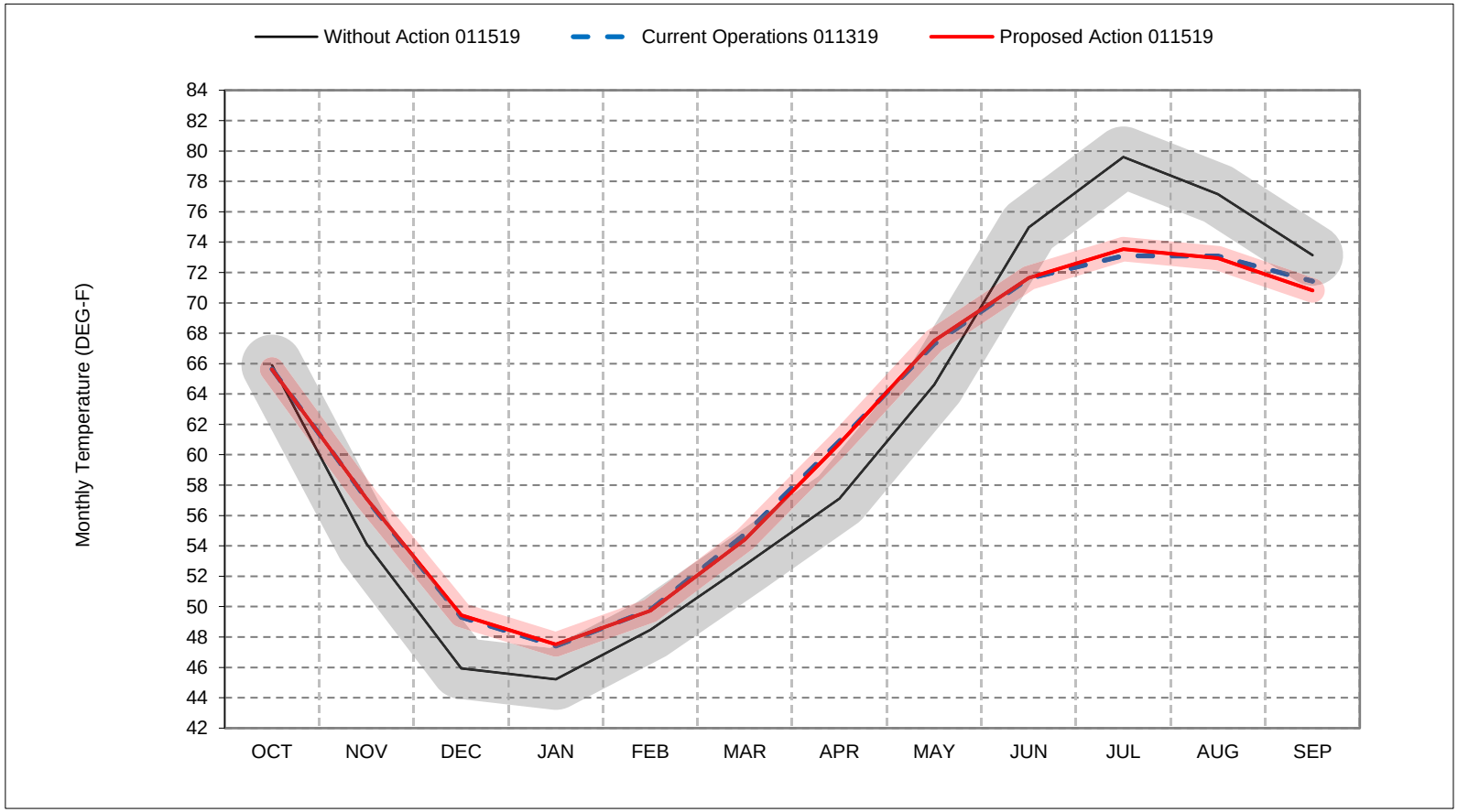
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-4. American River at the Mouth, Below Normal Year Average Temperature



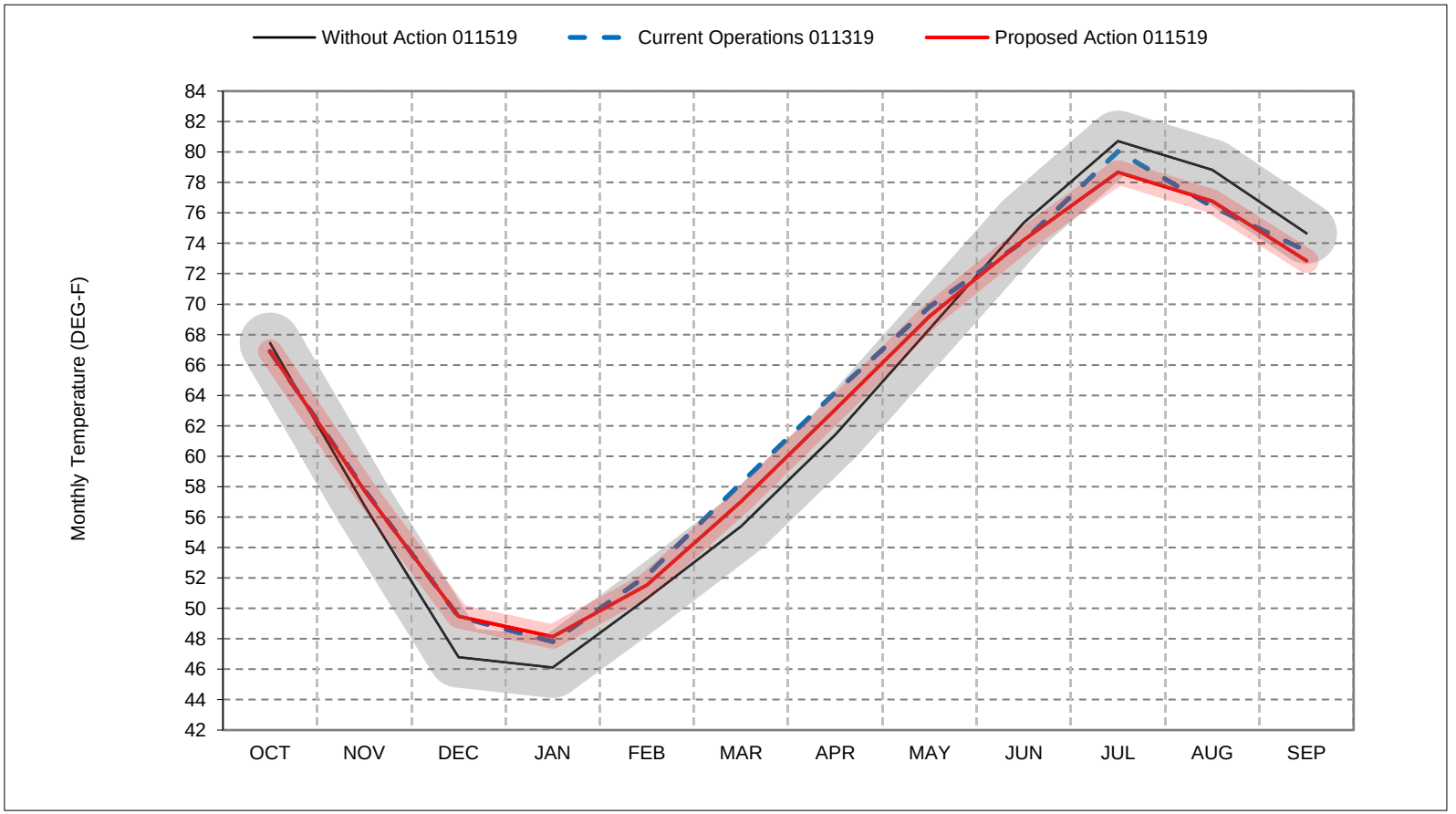
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-5. American River at the Mouth, Dry Year Average Temperature



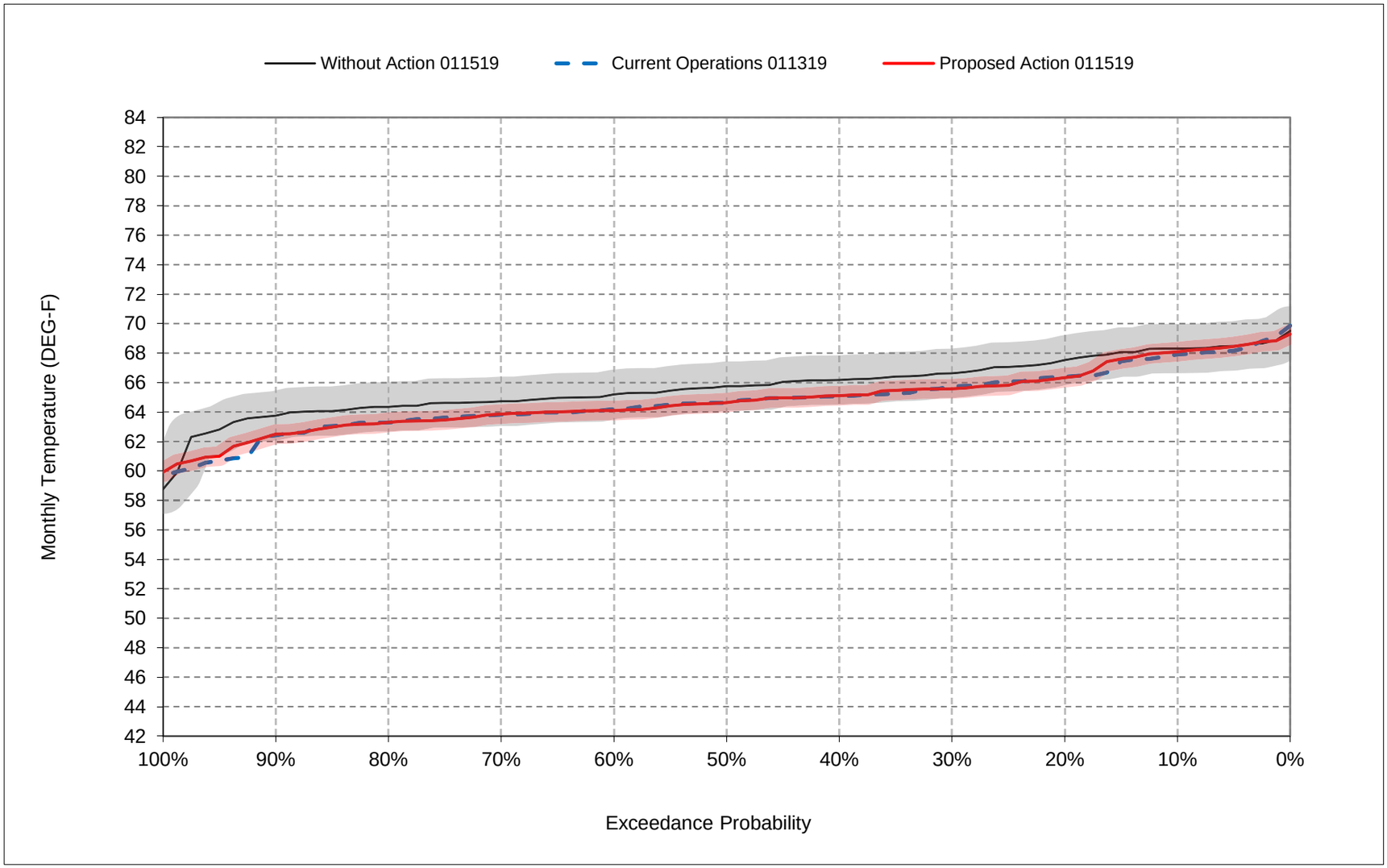
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

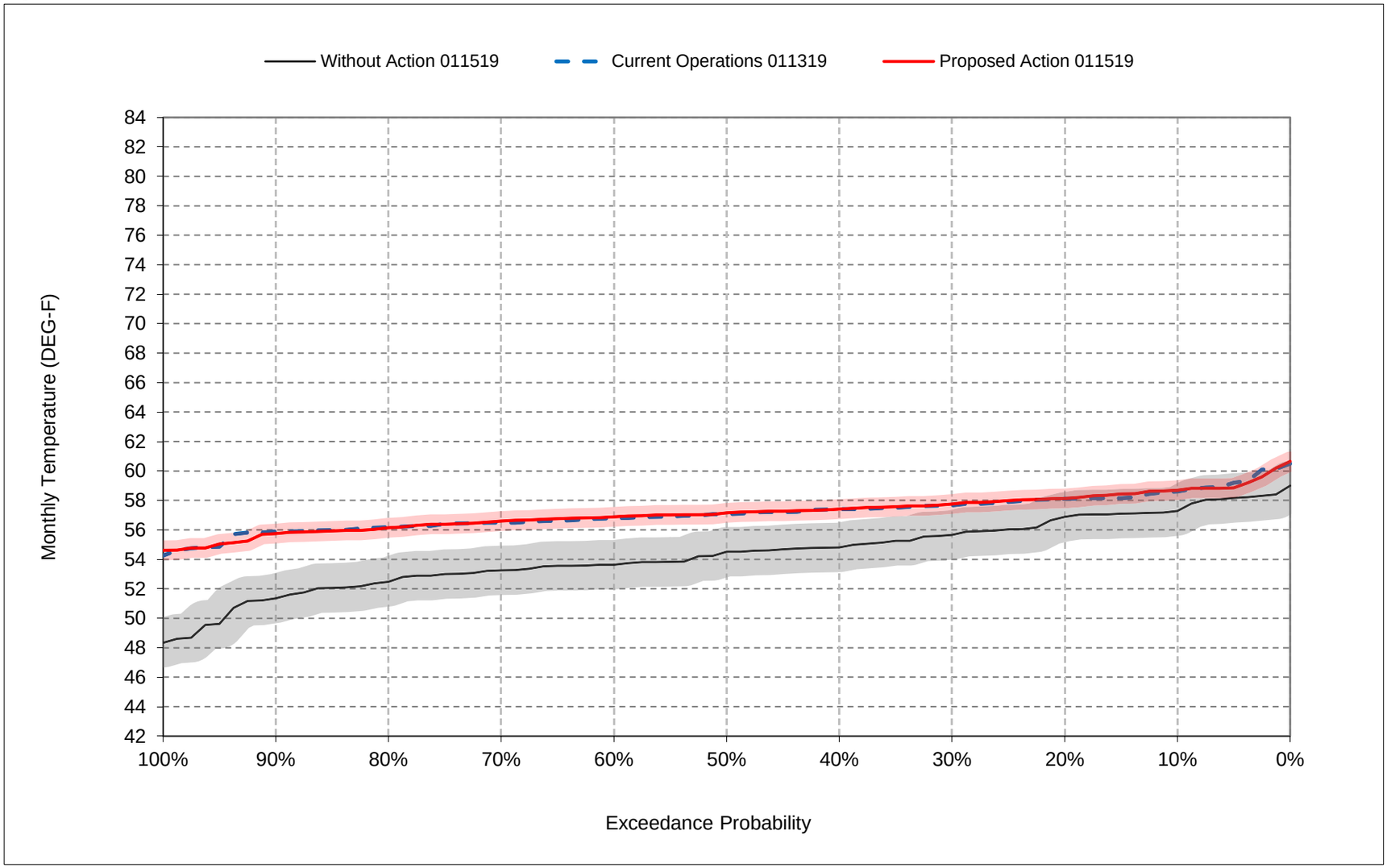
Figure 17-7. American River at the Mouth, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

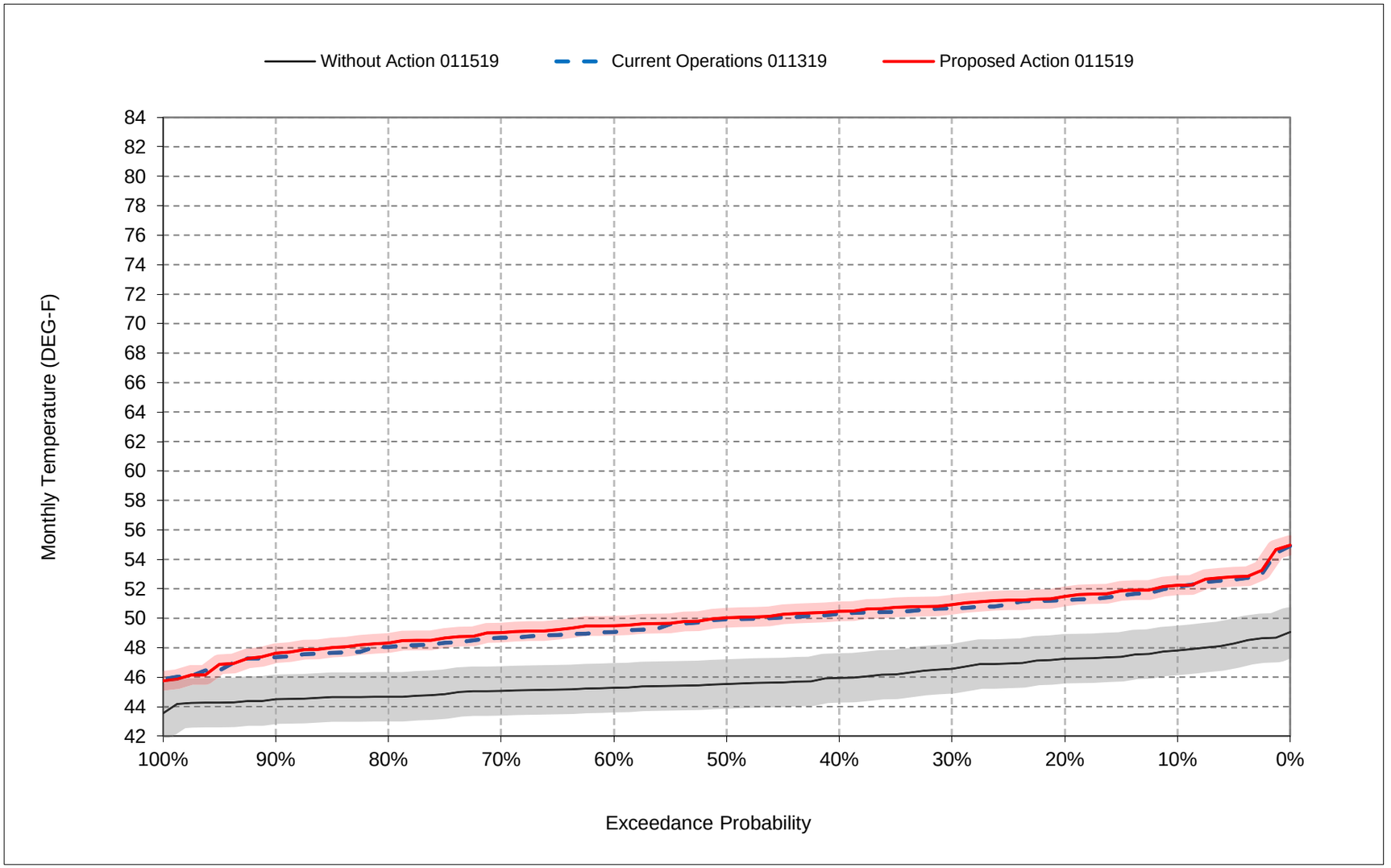
Figure 17-8. American River at the Mouth, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

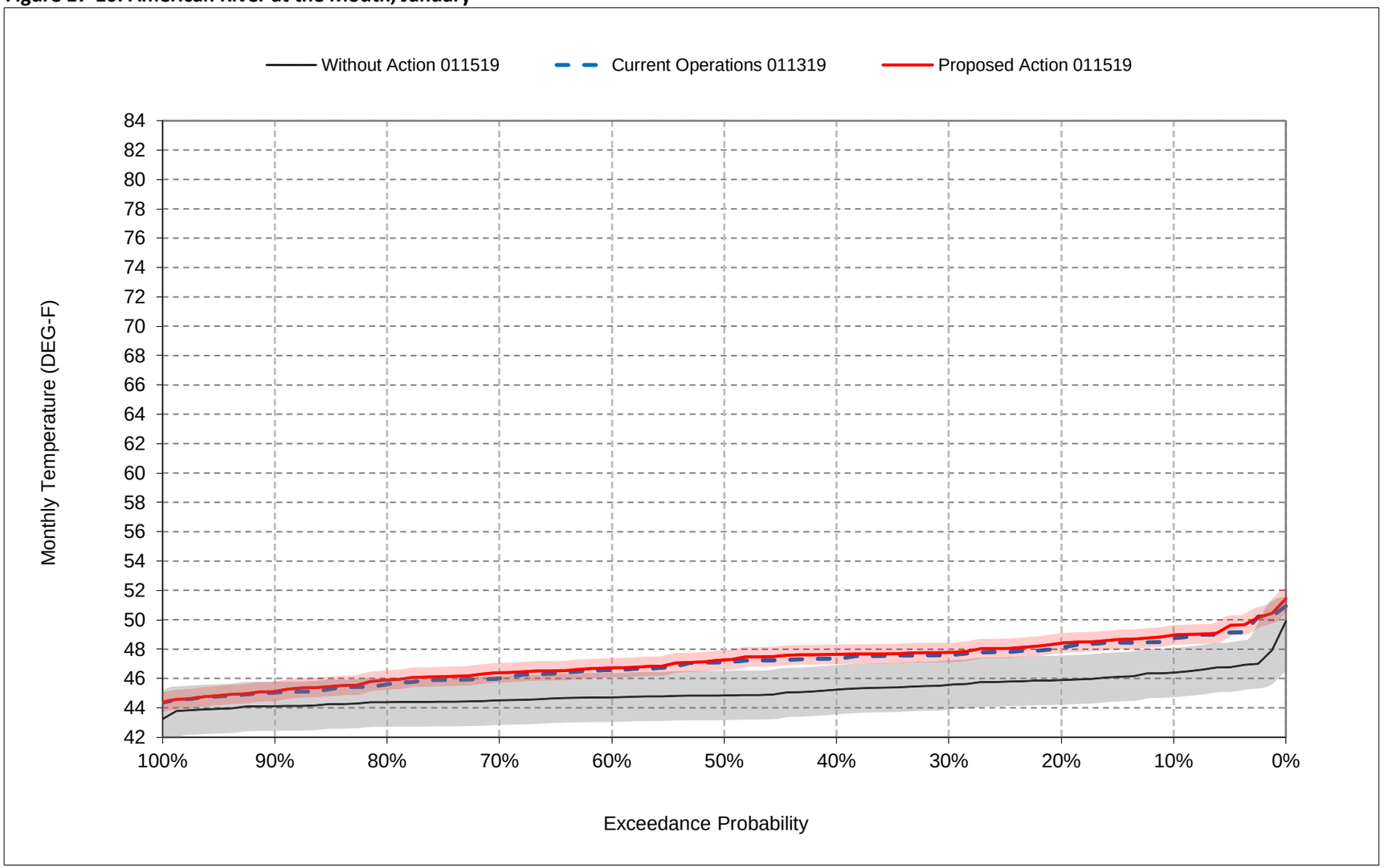
Figure 17-9. American River at the Mouth, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

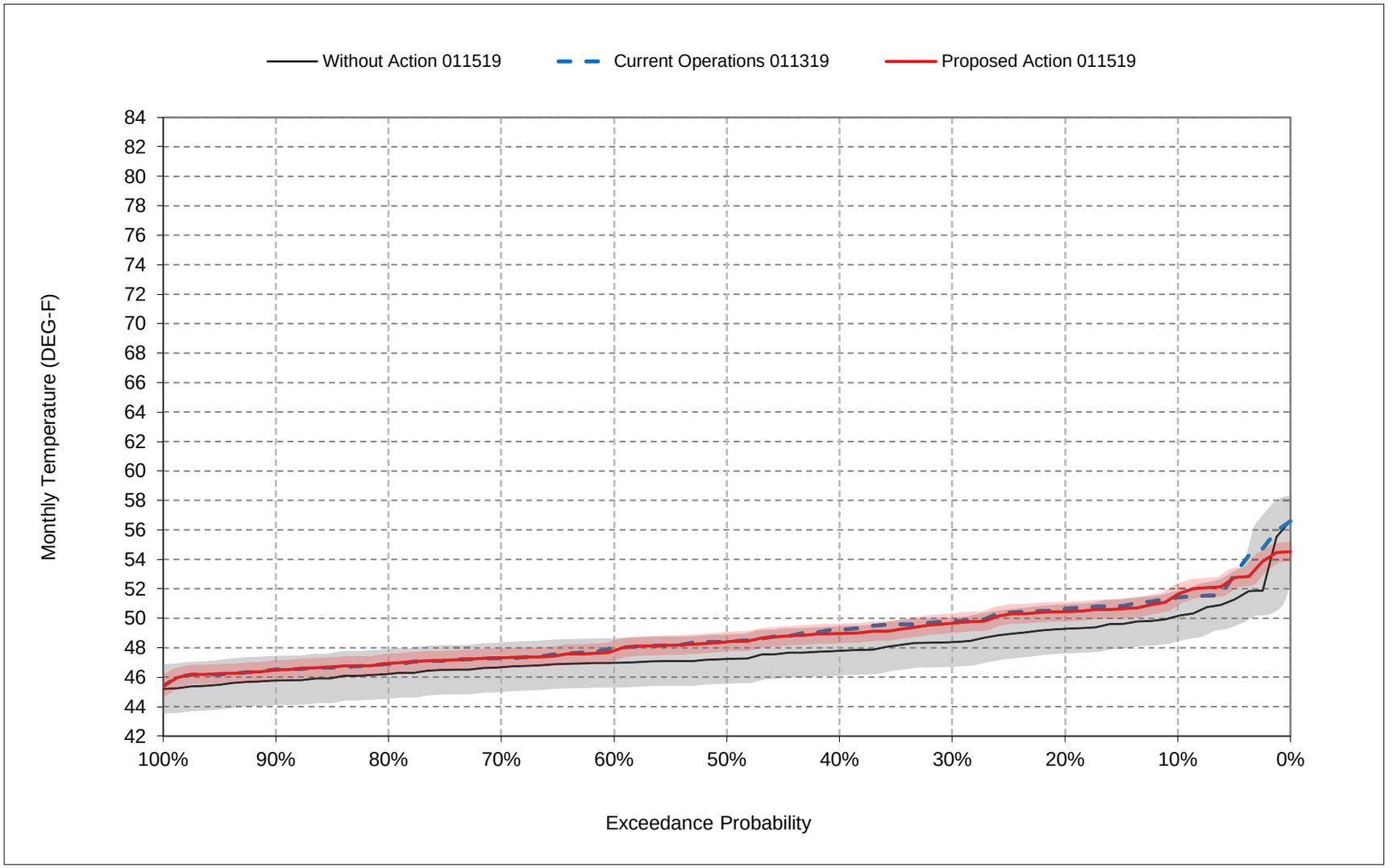
Figure 17-10. American River at the Mouth, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

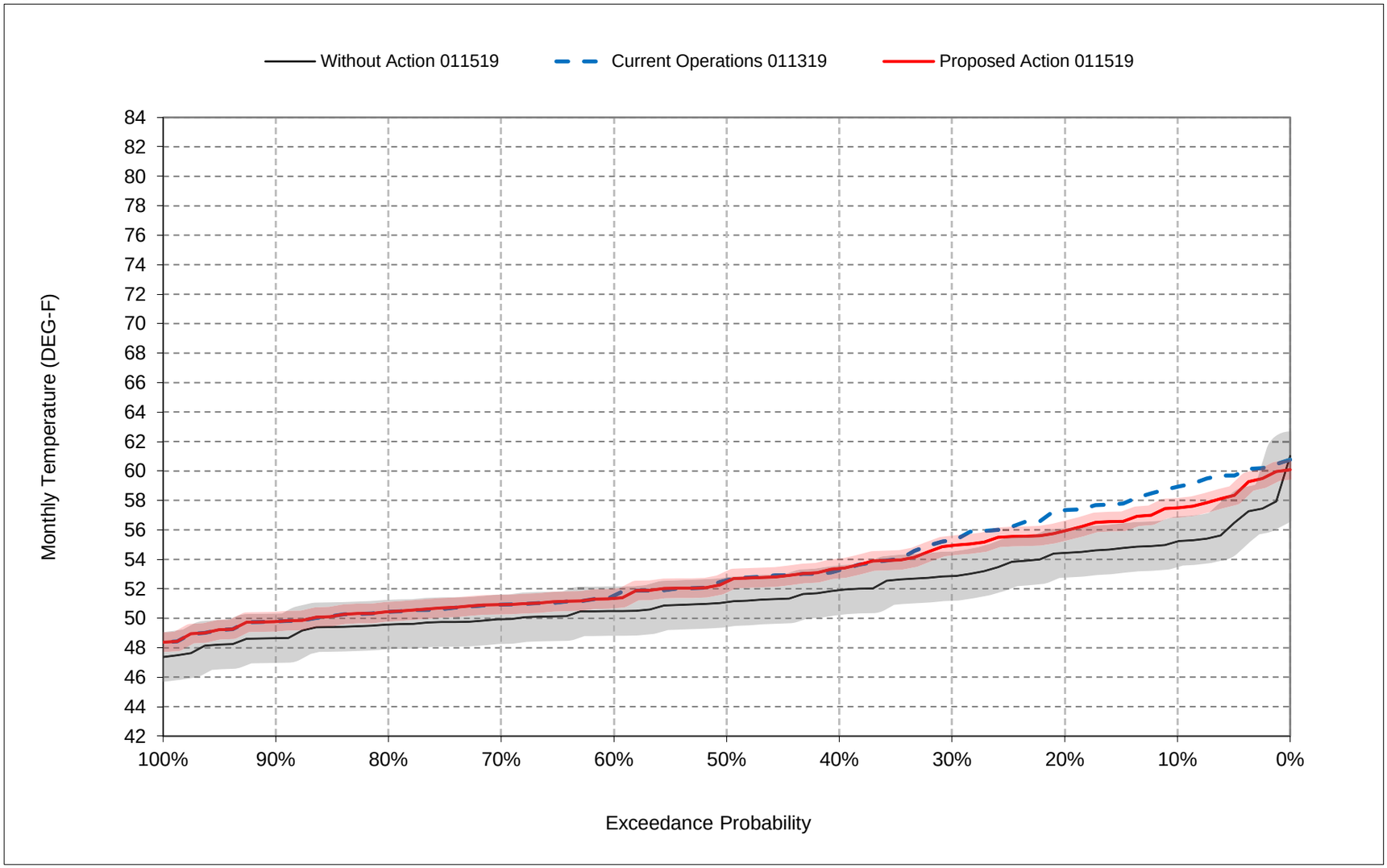
Figure 17-11. American River at the Mouth, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

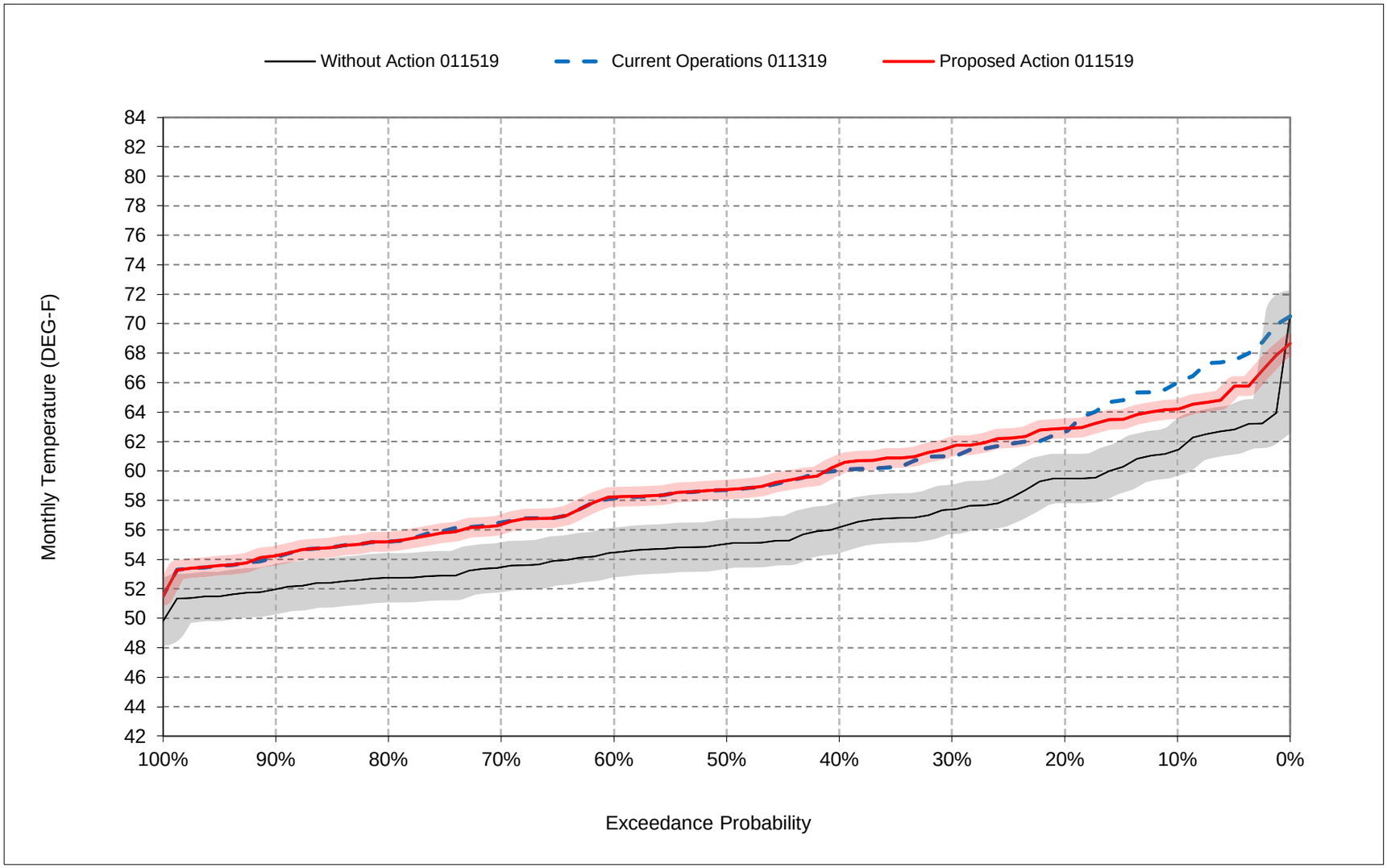
Figure 17-12. American River at the Mouth, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

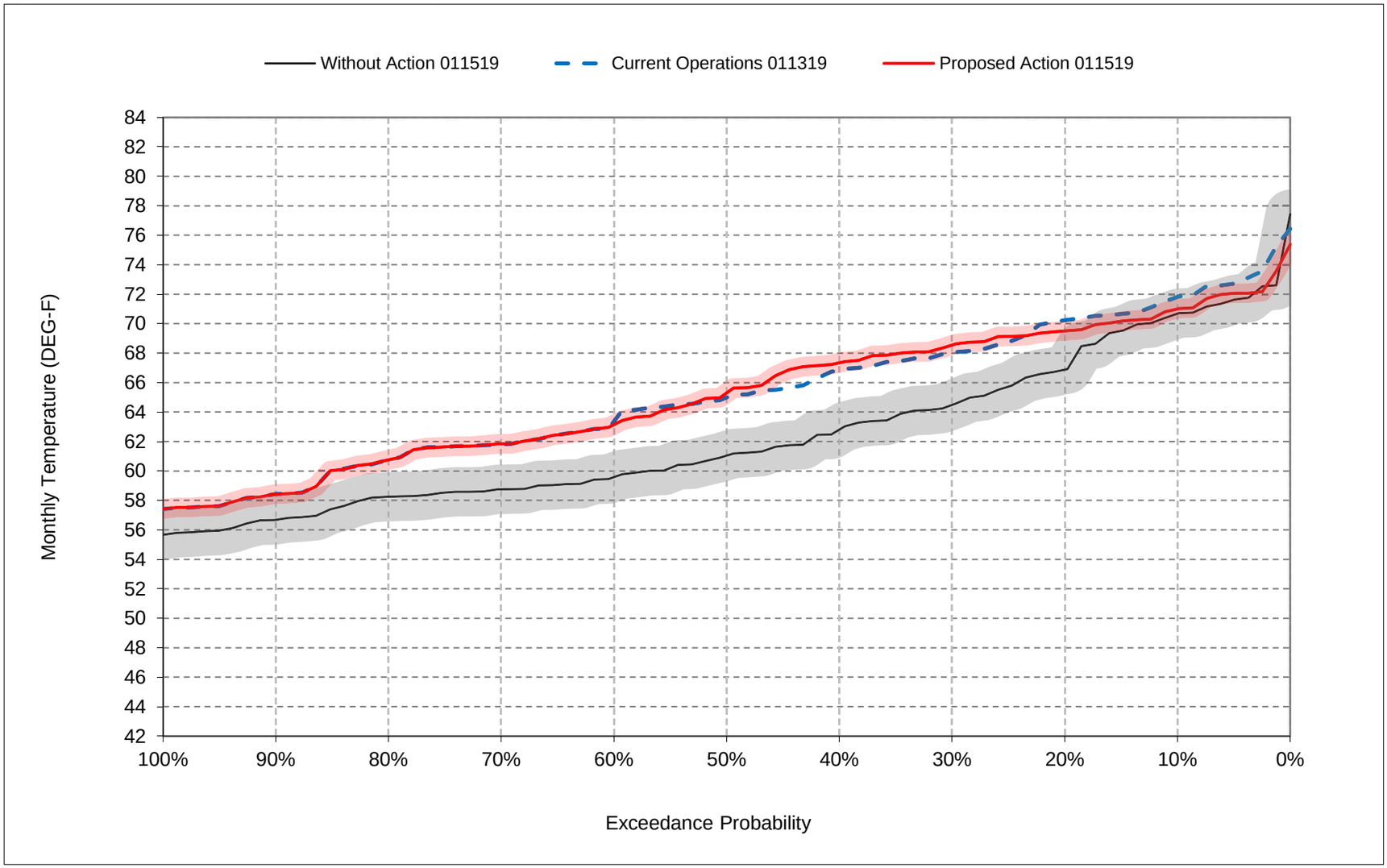
Figure 17-13. American River at the Mouth, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

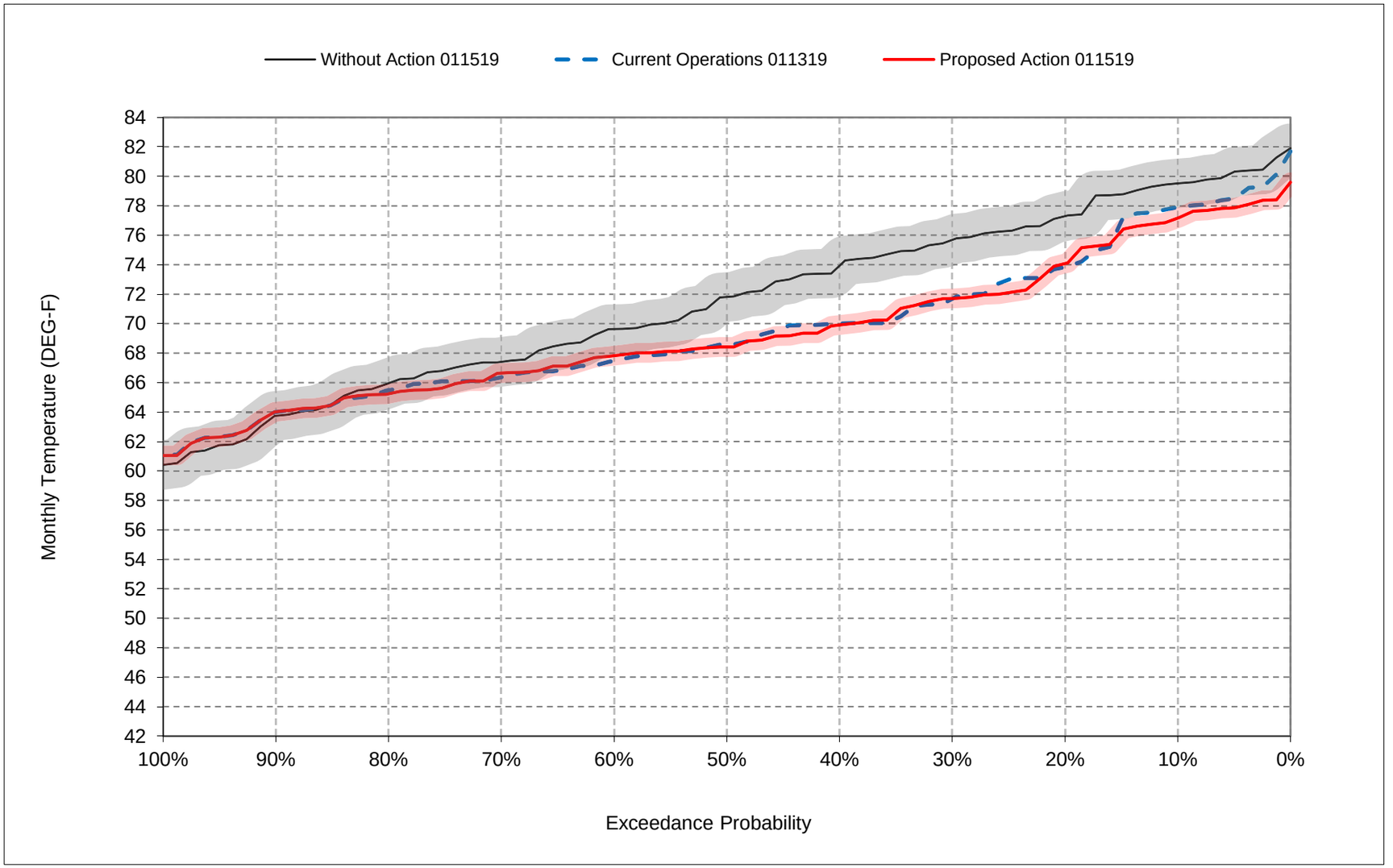
Figure 17-14. American River at the Mouth, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

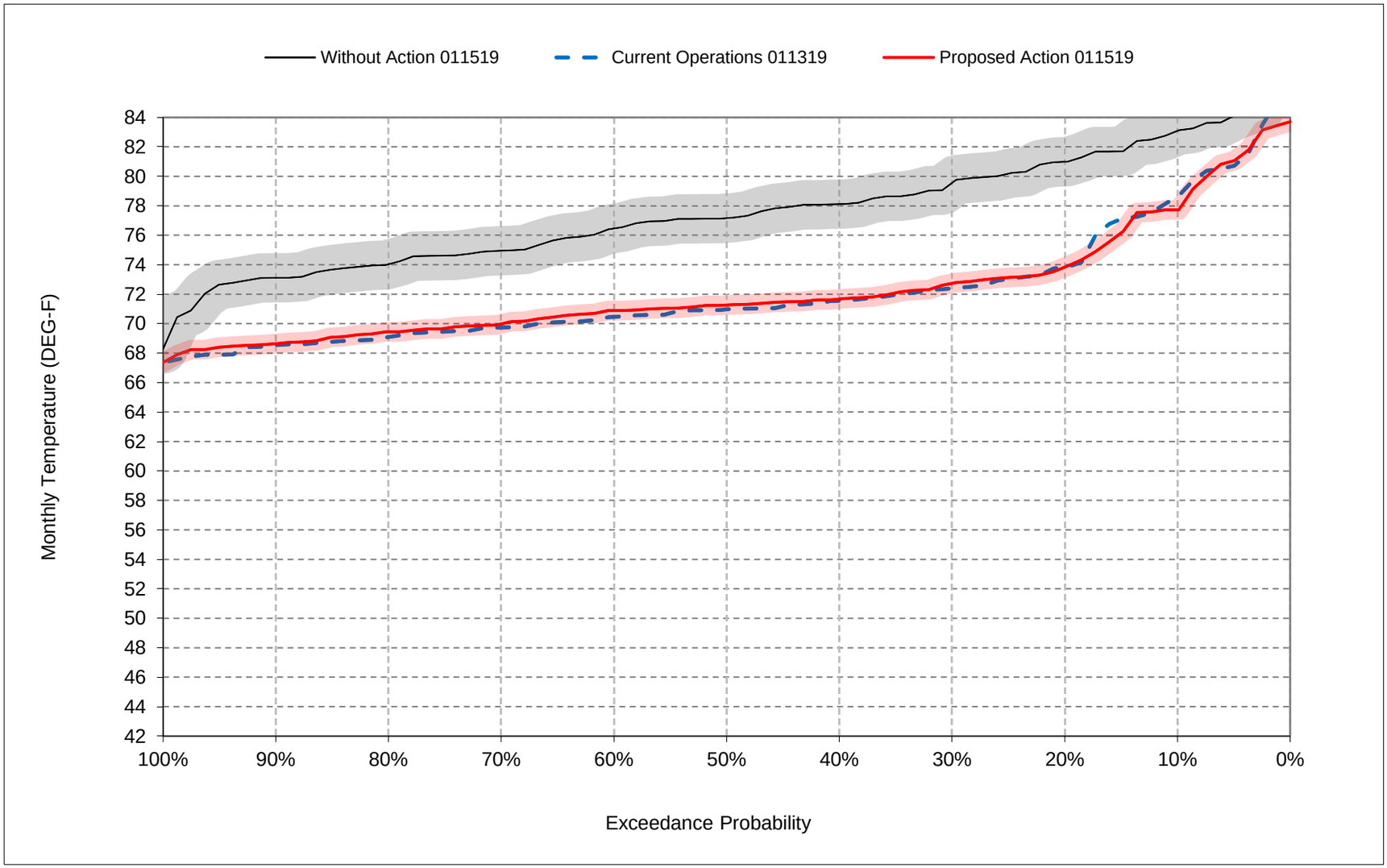
Figure 17-15. American River at the Mouth, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

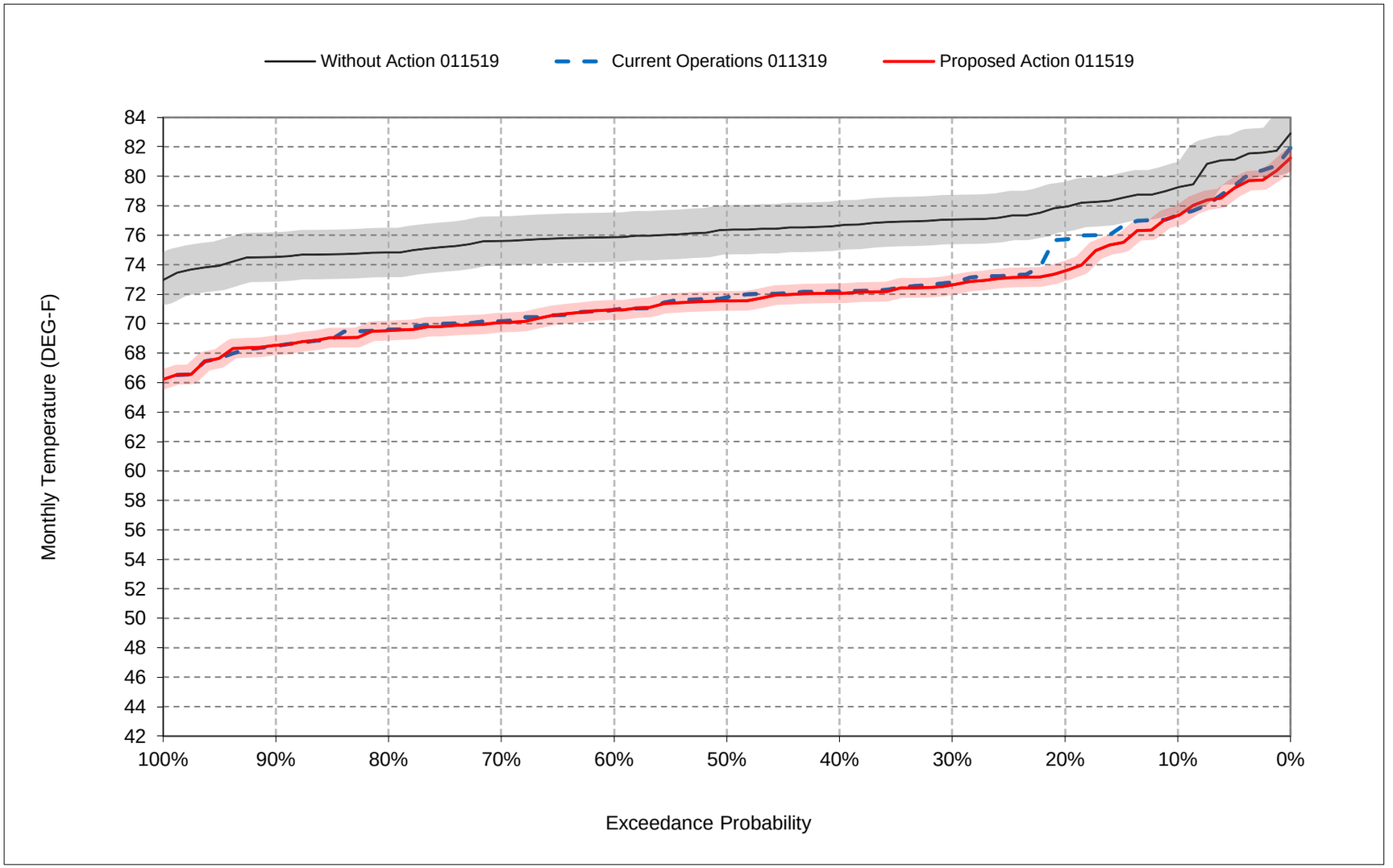
Figure 17-16. American River at the Mouth, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

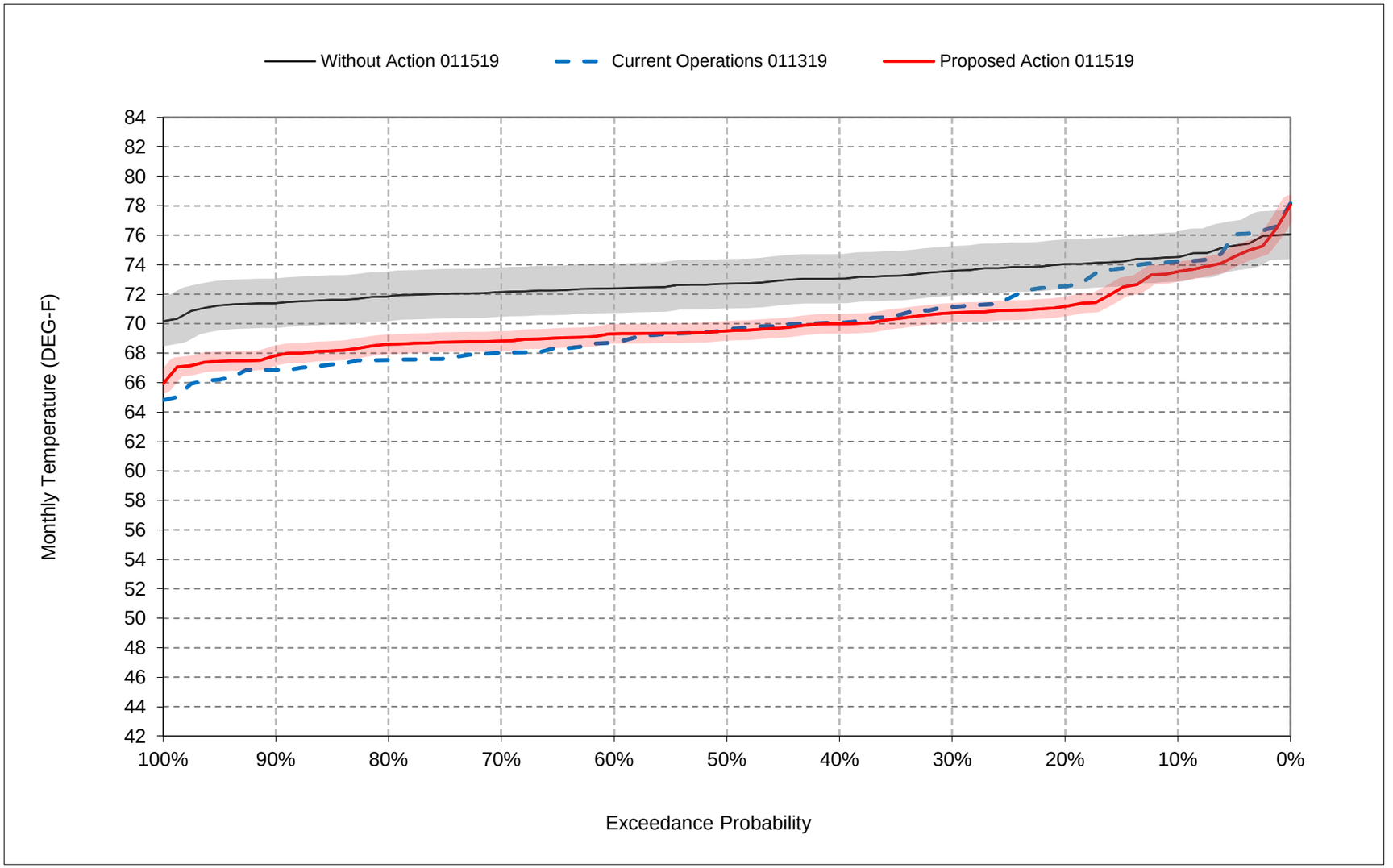
Figure 17-17. American River at the Mouth, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 20-1. Stanislaus River below New Melones Reservoir, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.1	54.6	49.0	45.9	45.8	48.0	51.4	55.7	60.4	64.2	64.6	64.3
20%	60.2	53.9	48.7	45.2	45.2	47.4	50.7	55.0	59.8	62.5	64.1	64.0
30%	59.6	53.7	48.3	44.8	44.8	47.1	50.3	54.5	59.2	61.5	63.6	63.6
40%	59.3	53.5	48.0	44.7	44.5	46.7	49.8	54.0	58.7	61.0	62.1	62.8
50%	59.1	53.2	47.8	44.5	44.4	46.3	49.5	53.6	58.2	60.5	55.7	62.3
60%	58.9	53.0	47.7	44.4	44.2	46.1	49.1	52.7	57.2	60.2	53.4	61.0
70%	58.7	52.7	47.6	44.1	43.9	45.8	48.8	52.2	56.6	59.7	52.1	59.9
80%	58.6	52.5	47.3	43.8	43.7	45.6	48.6	52.0	56.0	58.5	51.3	59.0
90%	58.3	52.3	46.9	43.3	43.4	45.3	48.3	51.7	55.4	55.7	50.3	56.8
Long Term												
Full Simulation Period[a]	59.4	53.4	47.9	44.5	44.5	46.5	49.6	53.6	57.9	60.1	57.4	61.2
Water Year Types[b,c]												
Wet (23%)	58.4	53.0	47.8	44.4	44.3	46.9	50.1	53.5	58.2	62.5	53.9	57.5
Above Normal (24%)	59.0	52.8	47.7	44.6	44.9	47.0	50.4	54.4	59.4	59.1	51.7	60.4
Below Normal (10%)	59.2	53.1	47.8	44.3	44.4	46.0	49.9	54.5	59.6	58.7	55.1	61.3
Dry (16%)	59.4	53.3	47.7	44.4	44.0	45.9	48.9	54.2	57.4	58.7	61.5	63.2
Critical (27%)	60.6	54.2	48.5	44.7	44.7	46.3	48.9	52.2	55.9	60.3	64.1	64.1

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.2	**1.4**	**4.6**	**6.3**	**5.3**	**2.7**	-0.4	-4.0	-7.8	-10.5	-9.4	-6.8
20%	-4.6	**0.7**	**4.0**	**6.3**	**5.2**	**2.5**	-0.5	-3.9	-8.0	-10.0	-11.1	-9.6
30%	-6.2	-0.4	**4.0**	**6.1**	**4.9**	**2.3**	-0.4	-4.0	-8.1	-9.7	-11.1	-10.6
40%	-6.3	-0.7	**3.8**	**6.0**	**5.0**	**2.5**	-0.1	-3.8	-7.8	-9.6	-10.2	-10.3
50%	-6.8	-0.7	**3.7**	**5.7**	**4.8**	**2.7**	-0.2	-3.8	-7.8	-9.4	-4.1	-10.3
60%	-6.9	-0.8	**3.6**	**5.6**	**4.7**	**2.6**	-0.2	-3.4	-7.5	-9.8	-2.5	-9.6
70%	-7.3	-1.2	**3.4**	**5.5**	**4.7**	**2.3**	-0.4	-3.3	-7.2	-9.6	-1.6	-8.9
80%	-7.5	-1.3	**2.9**	**5.4**	**4.3**	**2.0**	-0.6	-3.6	-7.1	-8.9	-1.2	-8.2
90%	-8.4	-2.3	**2.8**	**5.0**	**3.6**	**1.5**	-1.4	-4.5	-7.8	-7.2	-1.4	-7.5
Long Term												
Full Simulation Period[a]	-6.0	-0.6	**3.7**	**5.7**	**4.6**	**2.3**	-0.5	-3.7	-7.3	-8.8	-5.2	-8.1
Water Year Types[b,c]												
Wet (23%)	-8.1	-2.4	**2.8**	**5.0**	**3.8**	**1.0**	-2.3	-5.4	-9.7	-13.5	-4.4	-7.5
Above Normal (24%)	-6.3	-0.3	**4.0**	**4.9**	**3.3**	**1.1**	-2.0	-5.6	-9.9	-8.7	-0.3	-8.2
Below Normal (10%)	-6.7	-0.6	**4.0**	**5.9**	**4.9**	**2.7**	-0.8	-4.9	-9.4	-7.8	-3.6	-9.2
Dry (16%)	-5.1	**0.3**	**4.2**	**6.2**	**5.8**	**3.5**	**0.8**	-3.9	-6.4	-6.8	-8.6	-9.3
Critical (27%)	-4.2	**0.3**	**3.9**	**6.5**	**5.8**	**3.7**	**1.9**	-0.1	-2.7	-6.5	-9.1	-7.3

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 20-2. Stanislaus River below New Melones Reservoir, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61.1	54.6	49.0	45.9	45.8	48.0	51.4	55.7	60.4	64.2	64.6	64.3
20%	60.2	53.9	48.7	45.2	45.2	47.4	50.7	55.0	59.8	62.5	64.1	64.0
30%	59.6	53.7	48.3	44.8	44.8	47.1	50.3	54.5	59.2	61.5	63.6	63.6
40%	59.3	53.5	48.0	44.7	44.5	46.7	49.8	54.0	58.7	61.0	62.1	62.8
50%	59.1	53.2	47.8	44.5	44.4	46.3	49.5	53.6	58.2	60.5	55.7	62.3
60%	58.9	53.0	47.7	44.4	44.2	46.1	49.1	52.7	57.2	60.2	53.4	61.0
70%	58.7	52.7	47.6	44.1	43.9	45.8	48.8	52.2	56.6	59.7	52.1	59.9
80%	58.6	52.5	47.3	43.8	43.7	45.6	48.6	52.0	56.0	58.5	51.3	59.0
90%	58.3	52.3	46.9	43.3	43.4	45.3	48.3	51.7	55.4	55.7	50.3	56.8
Long Term												
Full Simulation Period[a]	59.4	53.4	47.9	44.5	44.5	46.5	49.6	53.6	57.9	60.1	57.4	61.2
Water Year Types[b,c]												
Wet (23%)	58.4	53.0	47.8	44.4	44.3	46.9	50.1	53.5	58.2	62.5	53.9	57.5
Above Normal (24%)	59.0	52.8	47.7	44.6	44.9	47.0	50.4	54.4	59.4	59.1	51.7	60.4
Below Normal (10%)	59.2	53.1	47.8	44.3	44.4	46.0	49.9	54.5	59.6	58.7	55.1	61.3
Dry (16%)	59.4	53.3	47.7	44.4	44.0	45.9	48.9	54.2	57.4	58.7	61.5	63.2
Critical (27%)	60.6	54.2	48.5	44.7	44.7	46.3	48.9	52.2	55.9	60.3	64.1	64.1

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5.2	**0.7**	**4.1**	**6.2**	**5.3**	**2.8**	-0.5	-4.2	-8.2	-11.6	-10.4	-8.6
20%	-7.1	-0.7	**3.8**	**6.2**	**5.2**	**2.7**	-0.4	-4.0	-8.3	-10.5	-11.5	-11.1
30%	-7.0	-1.2	**3.7**	**6.1**	**5.2**	**2.5**	-0.3	-4.1	-8.3	-10.0	-11.5	-11.2
40%	-7.2	-1.3	**3.6**	**6.1**	**5.1**	**2.6**	-0.2	-3.9	-8.0	-9.9	-10.6	-11.0
50%	-7.3	-1.2	**3.5**	**5.9**	**4.9**	**2.8**	-0.2	-3.9	-8.0	-9.8	-4.4	-10.7
60%	-7.5	-1.3	**3.5**	**5.8**	**4.9**	**2.7**	**0.0**	-3.3	-7.3	-9.7	-2.5	-9.8
70%	-7.5	-1.4	**3.4**	**5.5**	**4.8**	**2.8**	0.0	-3.1	-7.0	-9.6	-1.6	-9.0
80%	-7.8	-1.5	**3.0**	**5.5**	**4.2**	**2.1**	-0.6	-3.4	-6.9	-9.0	-1.3	-8.4
90%	-8.4	-2.2	**2.8**	**5.0**	**4.0**	**1.7**	-1.0	-4.1	-7.3	-7.2	-1.0	-7.1
Long Term												
Full Simulation Period[a]	-6.9	-1.0	**3.5**	**5.7**	**4.8**	**2.4**	-0.5	-3.8	-7.5	-9.0	-5.5	-8.8
Water Year Types[b,c]												
Wet (23%)	-7.9	-2.3	**2.9**	**4.9**	**3.8**	**0.9**	-2.2	-5.2	-9.5	-13.3	-4.2	-7.4
Above Normal (24%)	-6.2	-0.6	**3.7**	**5.1**	**3.6**	**1.1**	-1.9	-5.3	-9.7	-8.4	**0.1**	-7.8
Below Normal (10%)	-7.2	-1.0	**3.9**	**6.0**	**5.1**	**3.1**	-0.5	-4.7	-9.4	-8.0	-3.8	-9.7
Dry (16%)	-6.6	-0.7	**4.0**	**6.1**	**5.8**	**3.6**	**0.9**	-4.0	-6.7	-7.5	-9.6	-10.7
Critical (27%)	-6.6	-0.6	**3.5**	**6.7**	**6.0**	**3.9**	**1.7**	-0.8	-3.7	-7.1	-9.7	-9.7

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 20-3. Stanislaus River below New Melones Reservoir, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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).

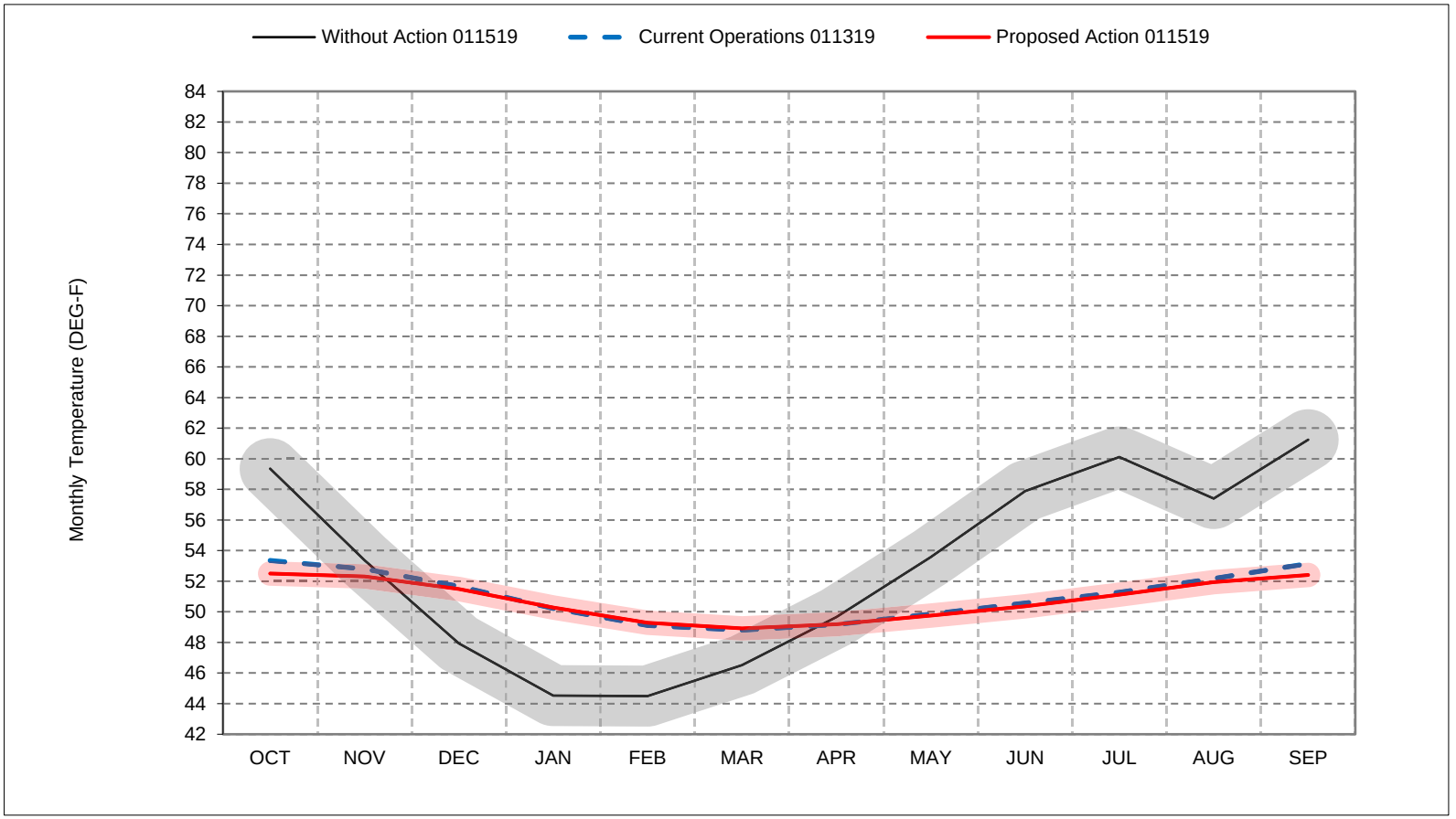
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

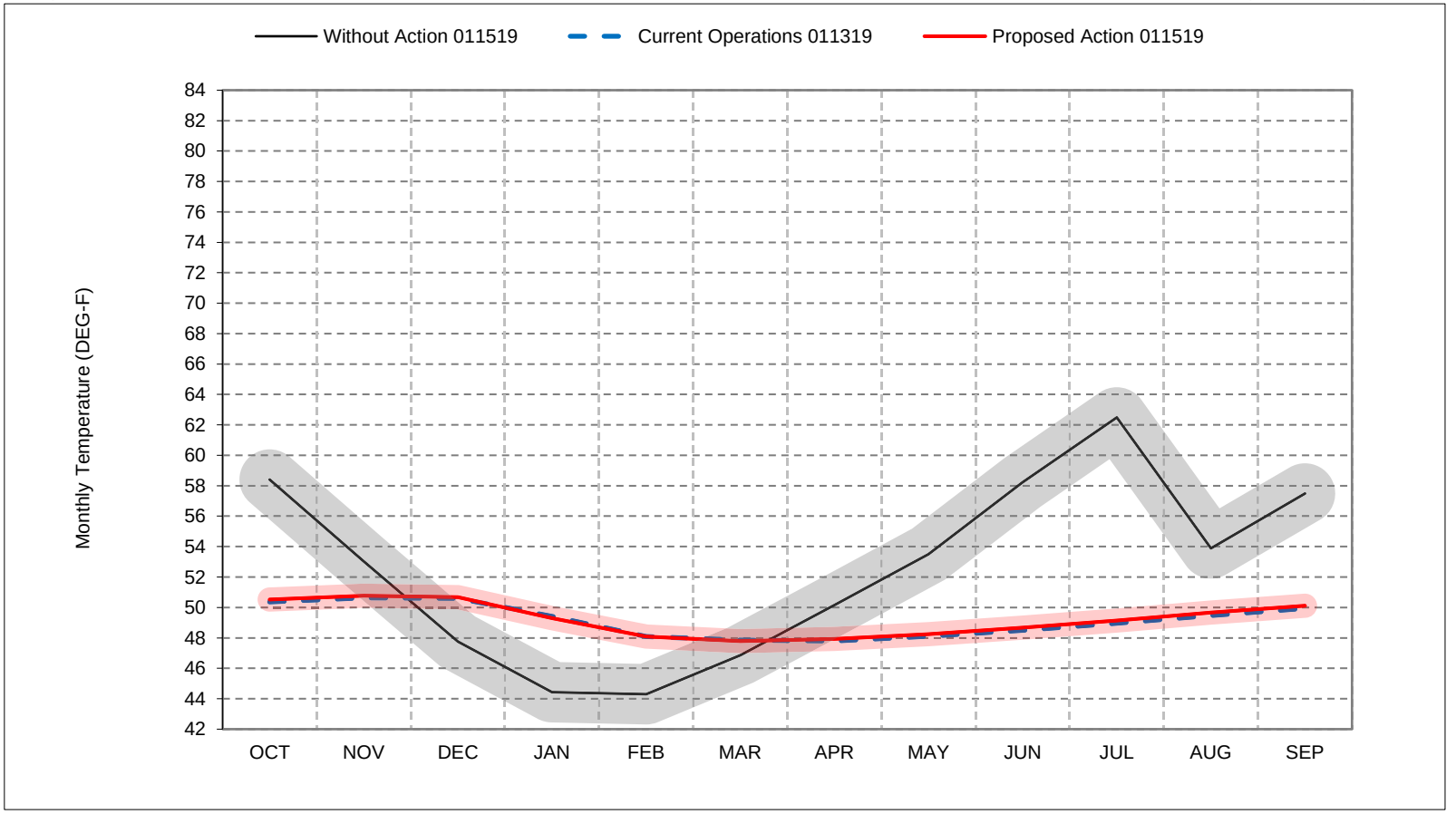
f New Melones forecasts are used as the basis of water operations.

Figure 20-1. Stanislaus River below New Melones Reservoir, Long-Term Average Temperature



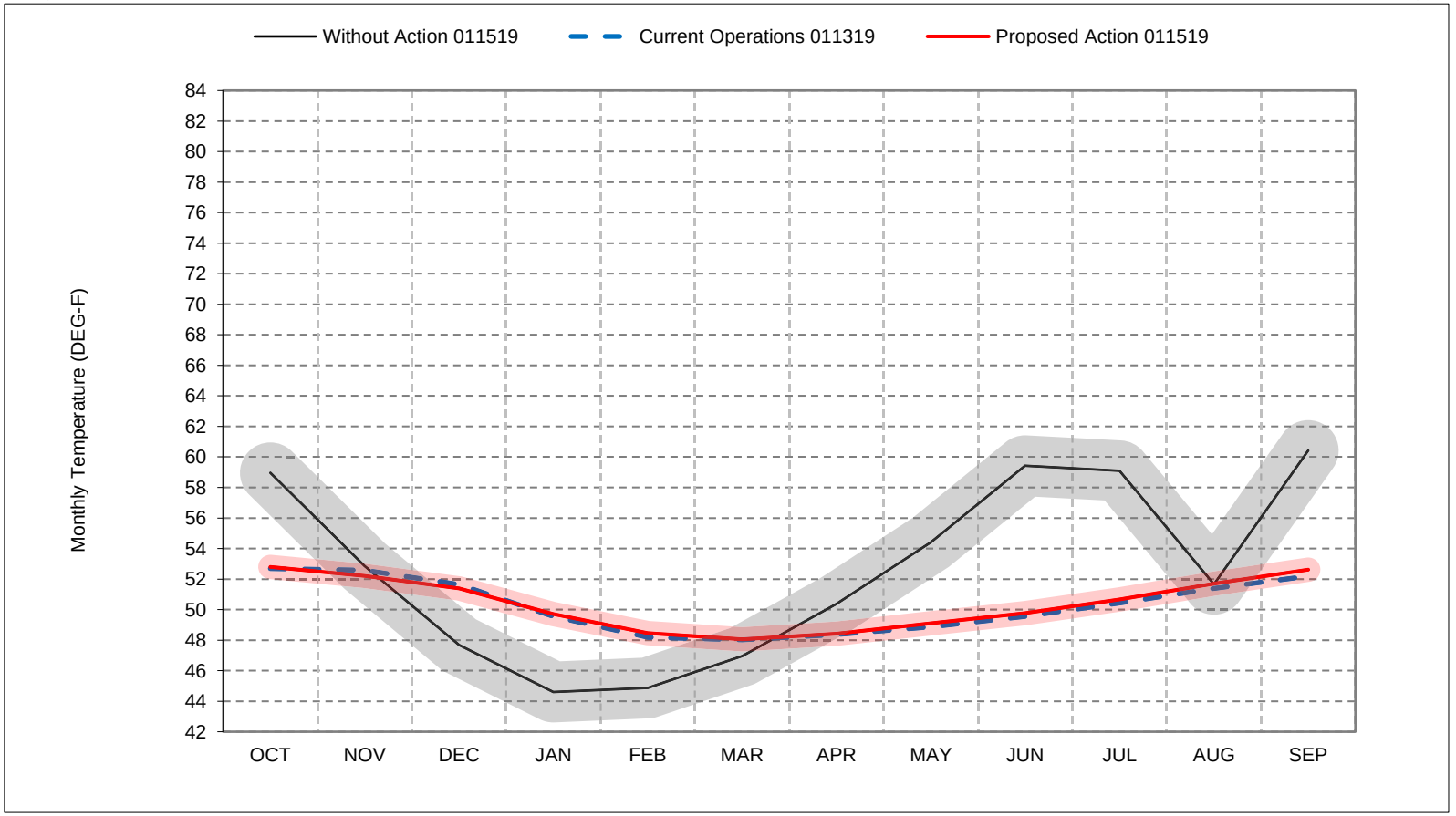
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 20-2. Stanislaus River below New Melones Reservoir, Wet Year Average Temperature



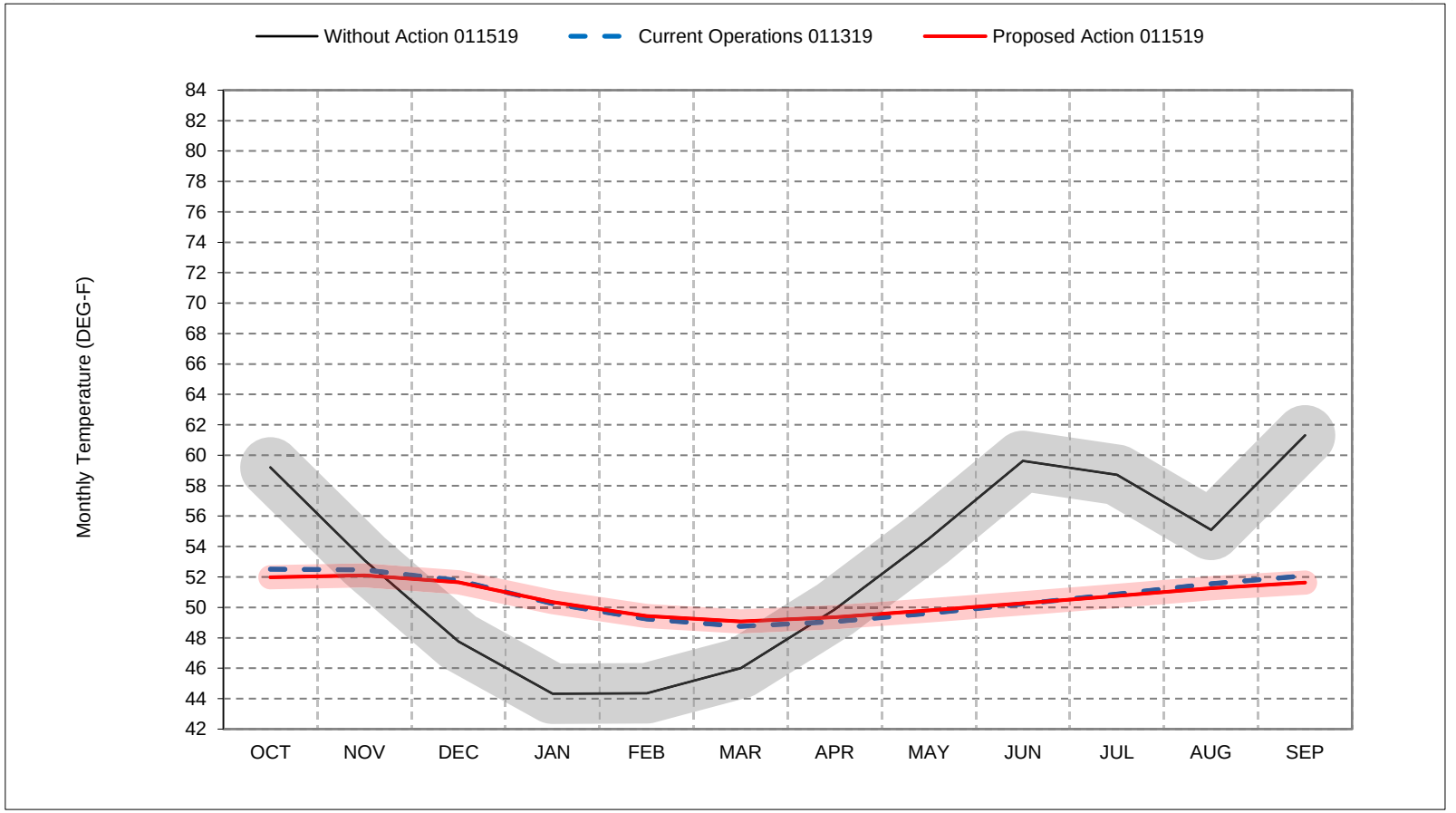
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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



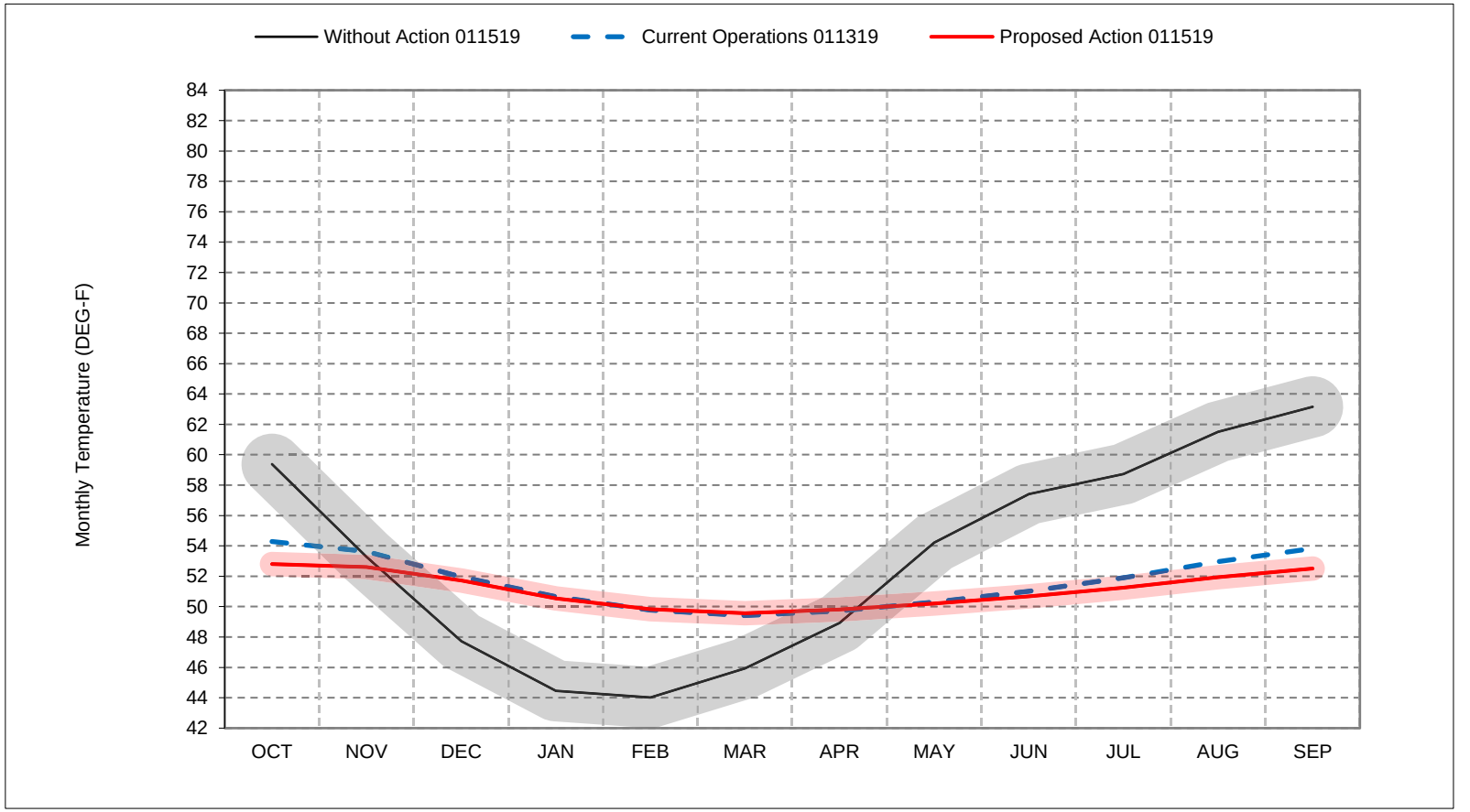
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 20-4. Stanislaus River below New Melones Reservoir, Below Normal Year Average Temper



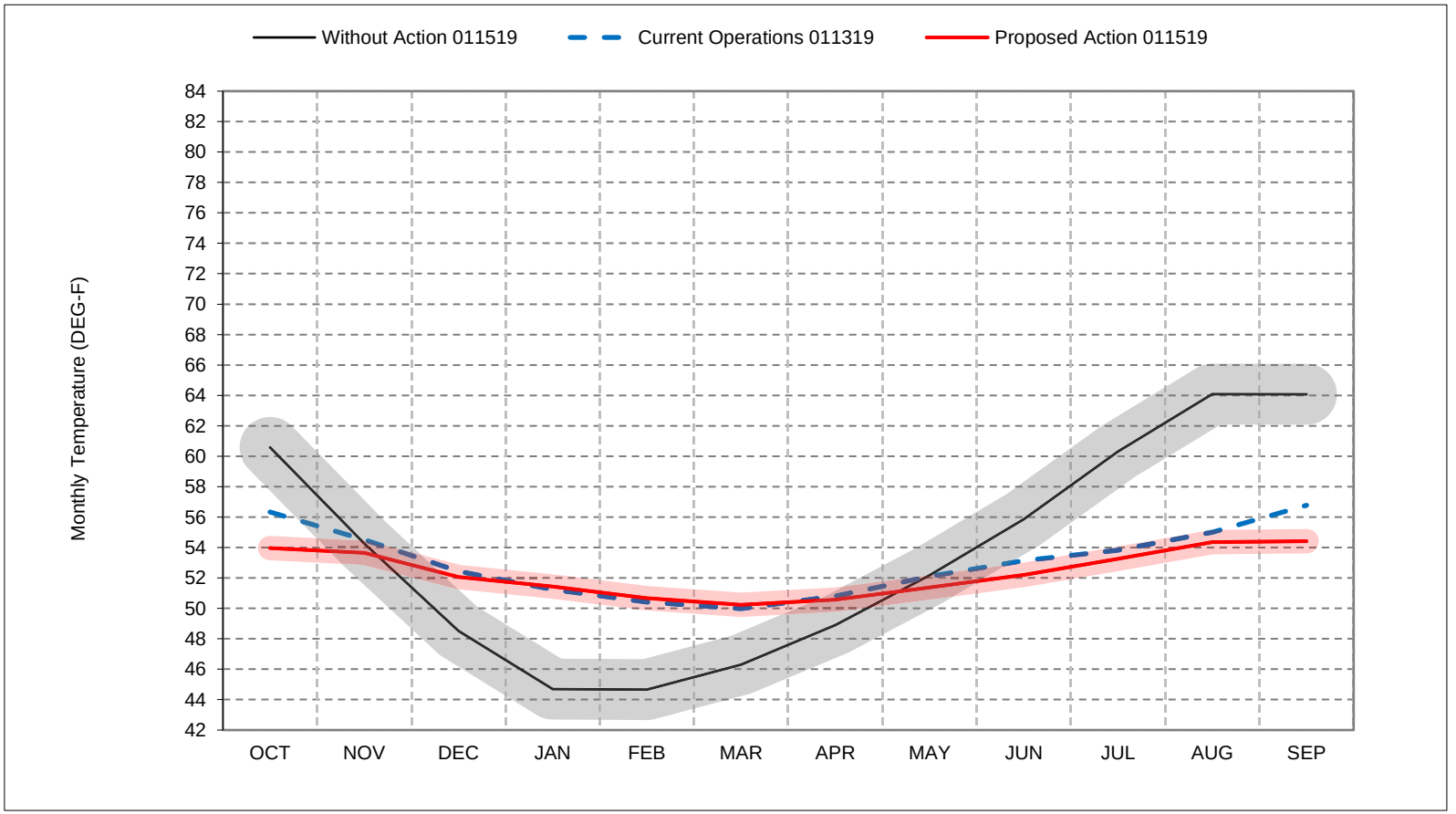
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 20-5. Stanislaus River below New Melones Reservoir, Dry Year Average Temperature



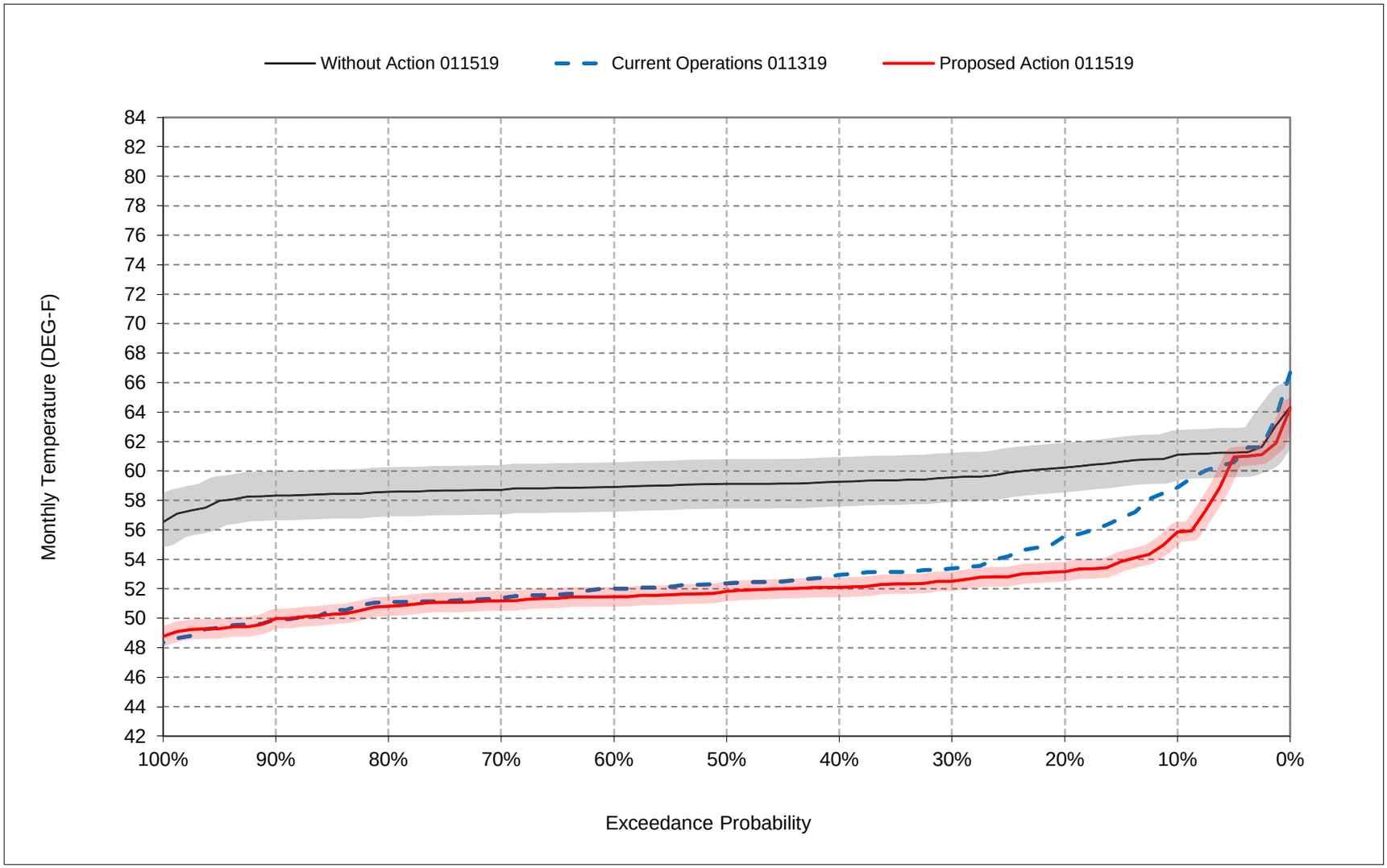
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 20-7. Stanislaus River below New Melones Reservoir, October

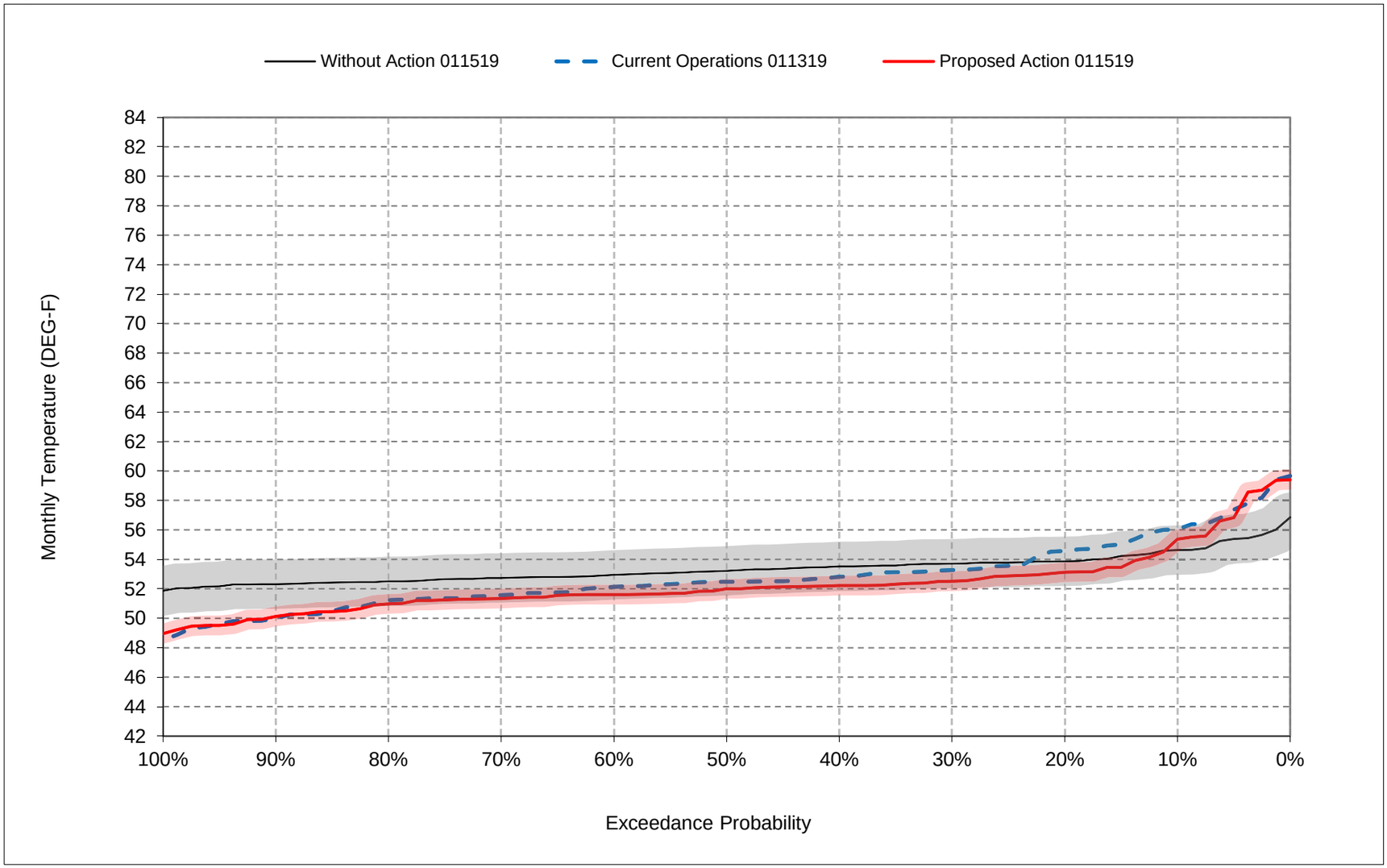


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-8. Stanislaus River below New Melones Reservoir, November

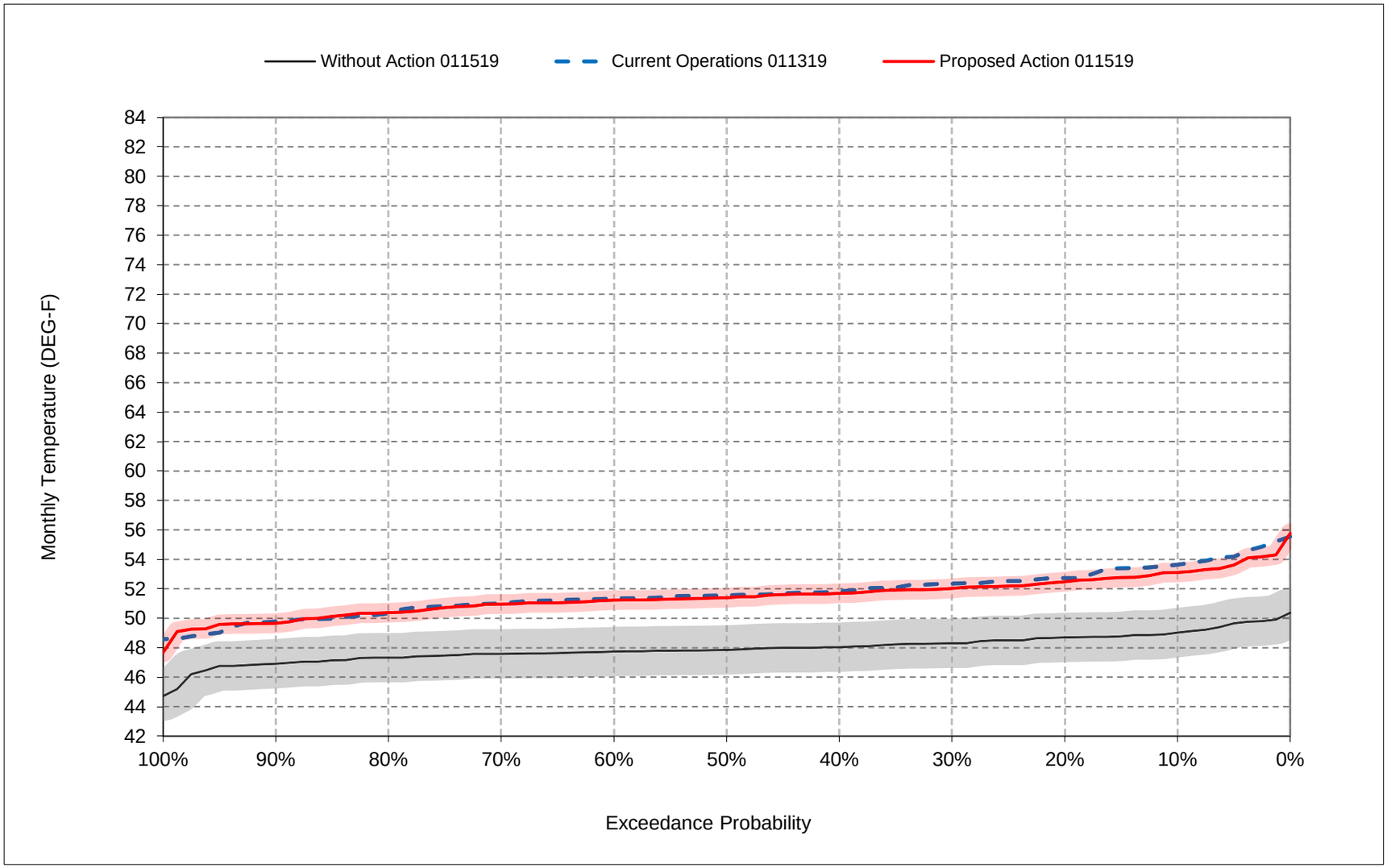


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-9. Stanislaus River below New Melones Reservoir, December

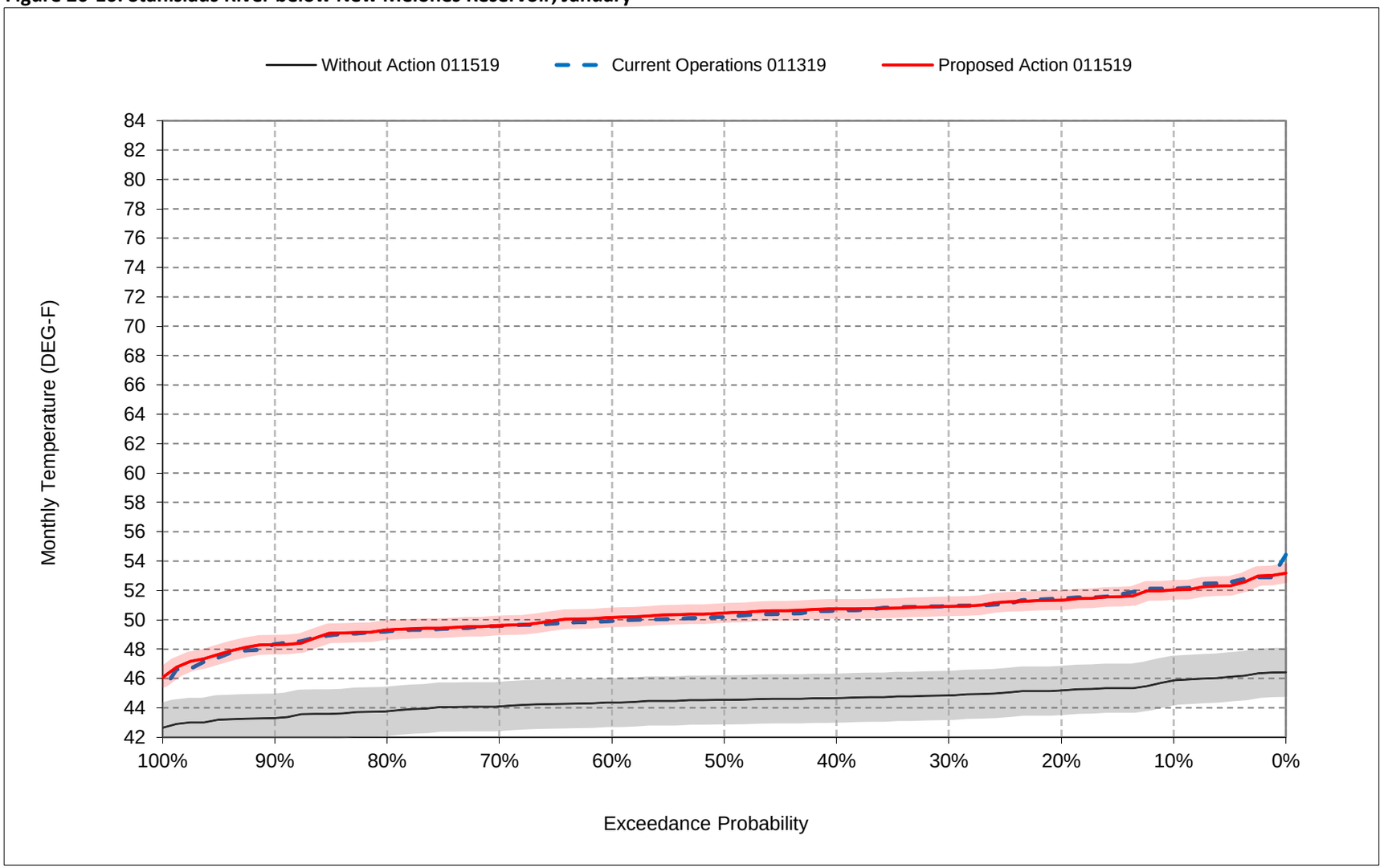


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-10. Stanislaus River below New Melones Reservoir, January

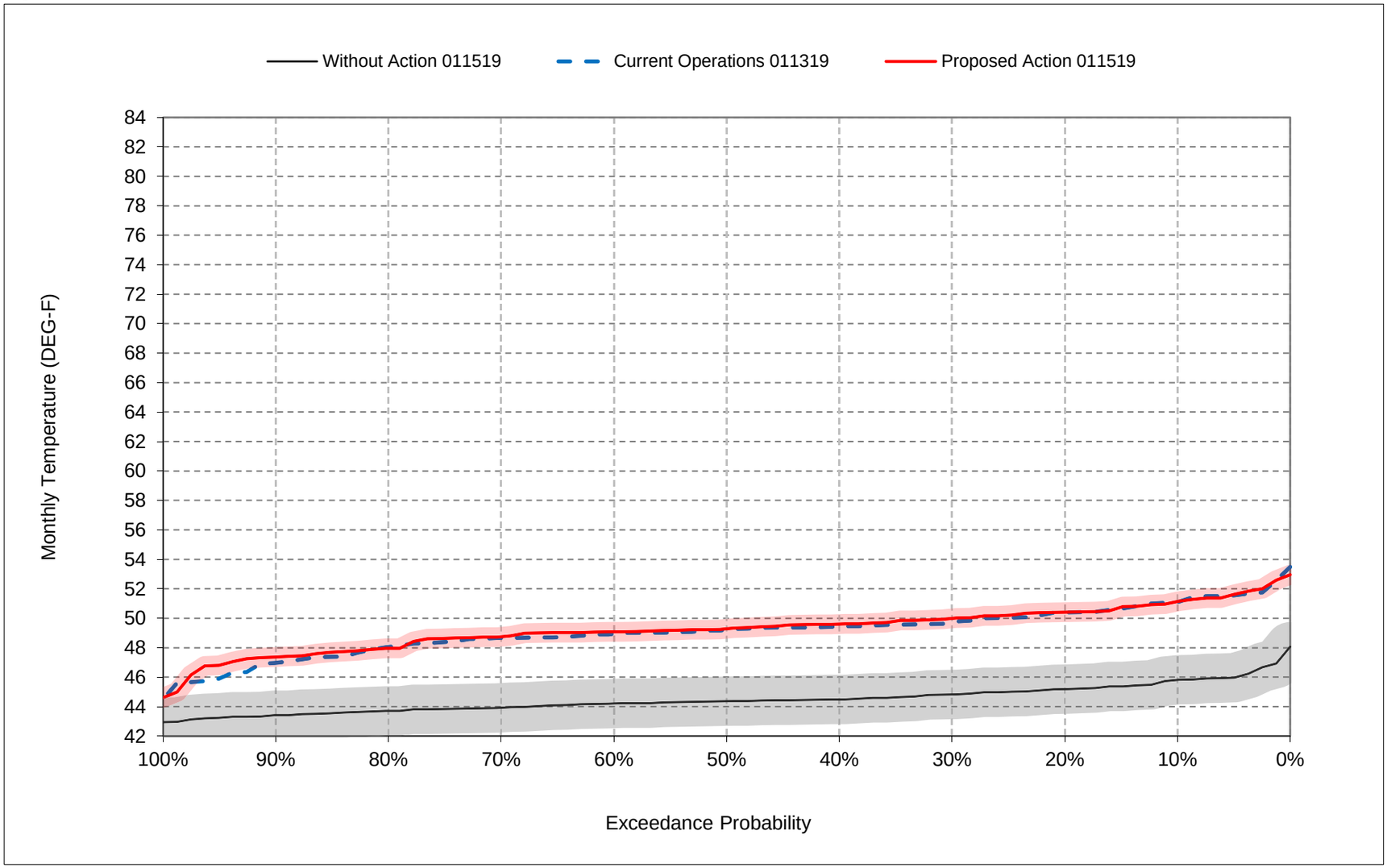


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-11. Stanislaus River below New Melones Reservoir, February

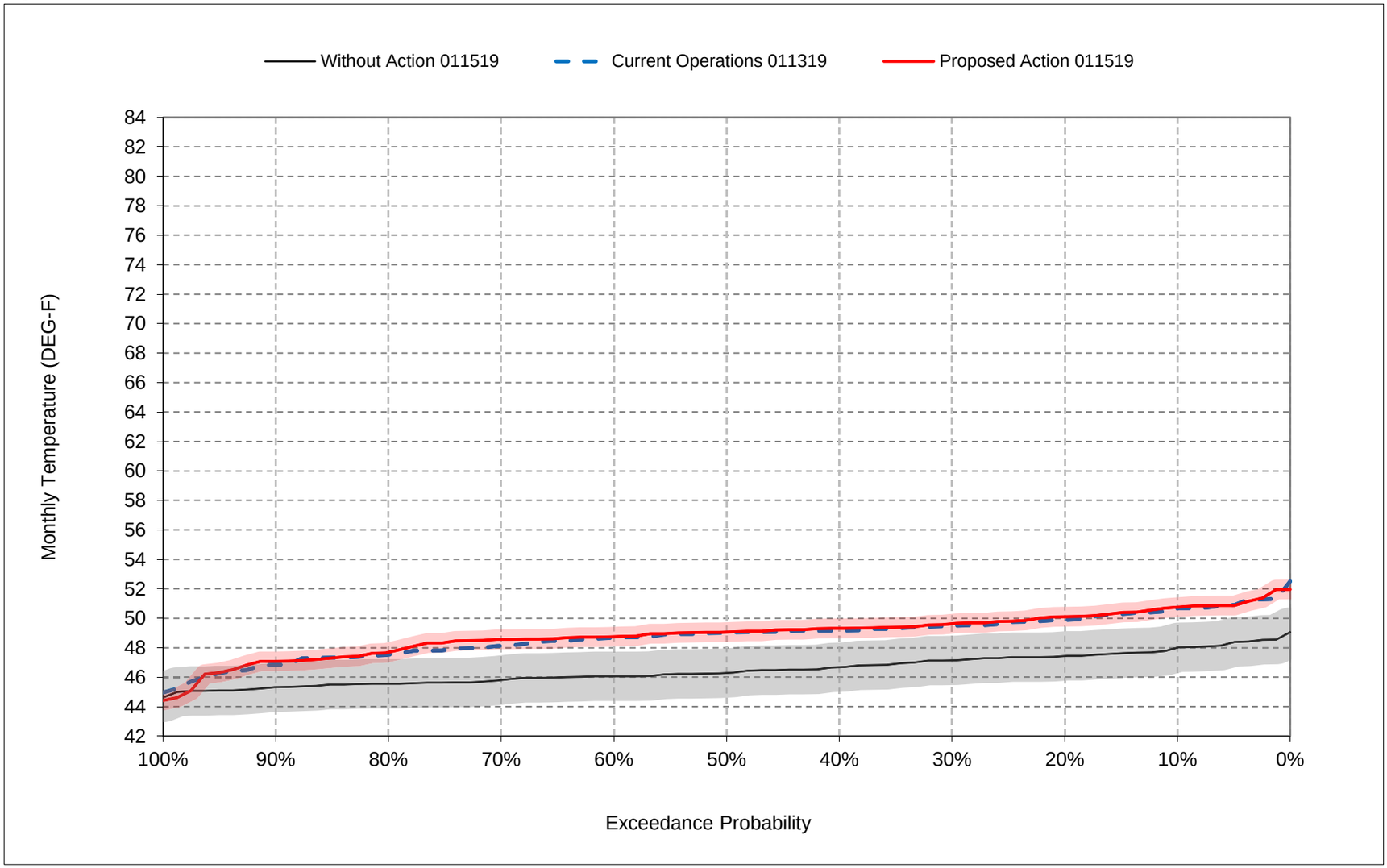


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-12. Stanislaus River below New Melones Reservoir, March

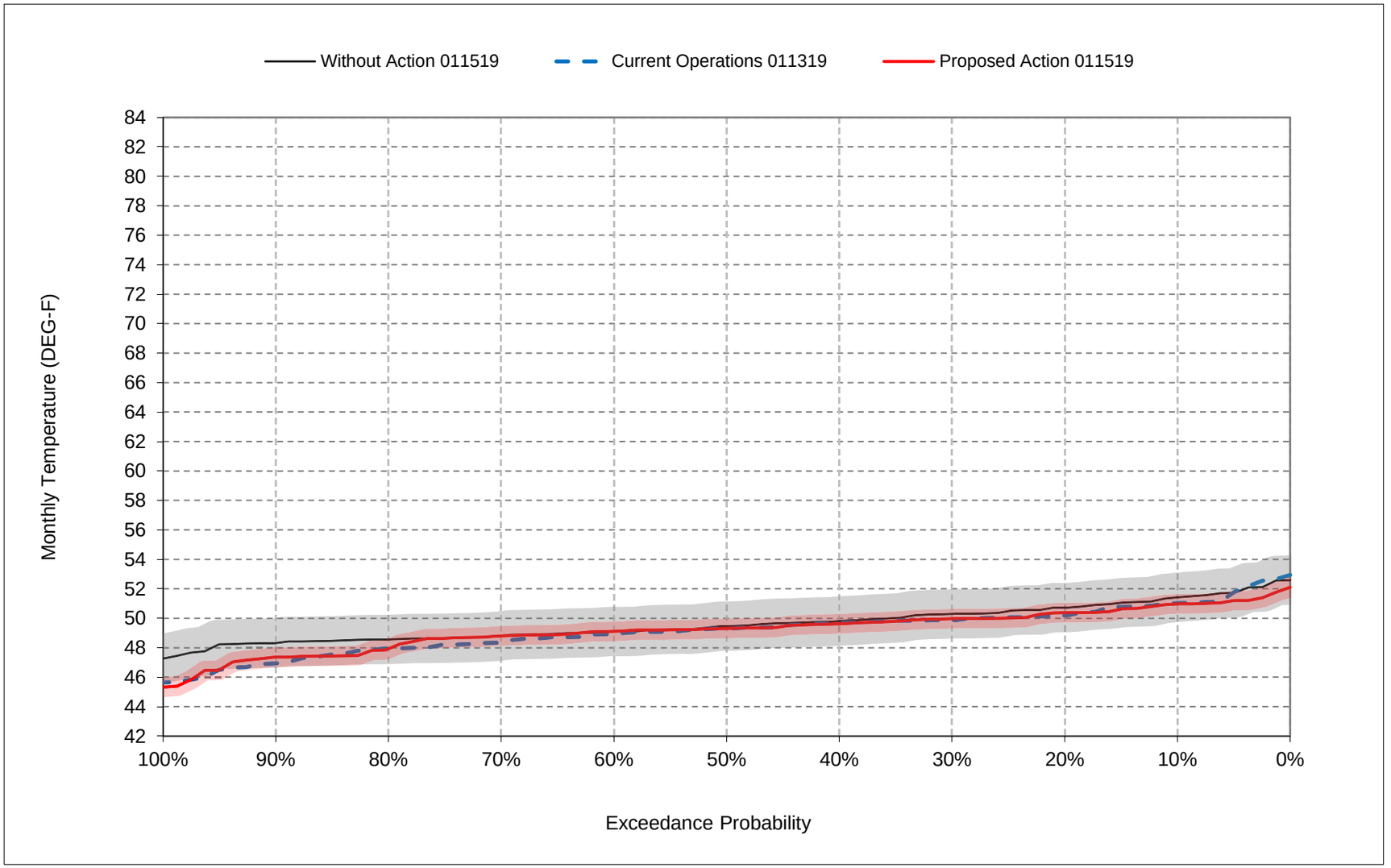


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-13. Stanislaus River below New Melones Reservoir, April

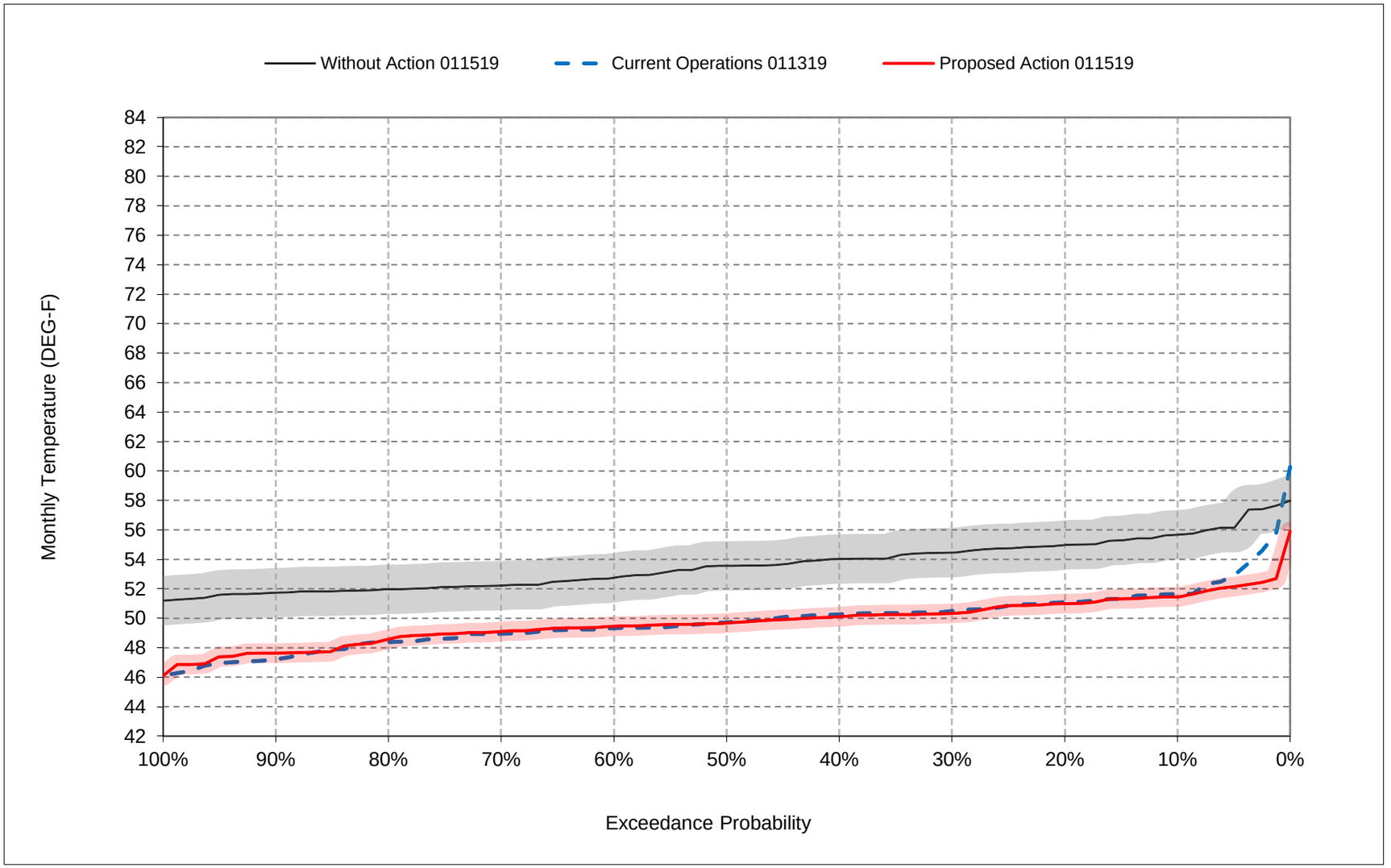


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-14. Stanislaus River below New Melones Reservoir, May

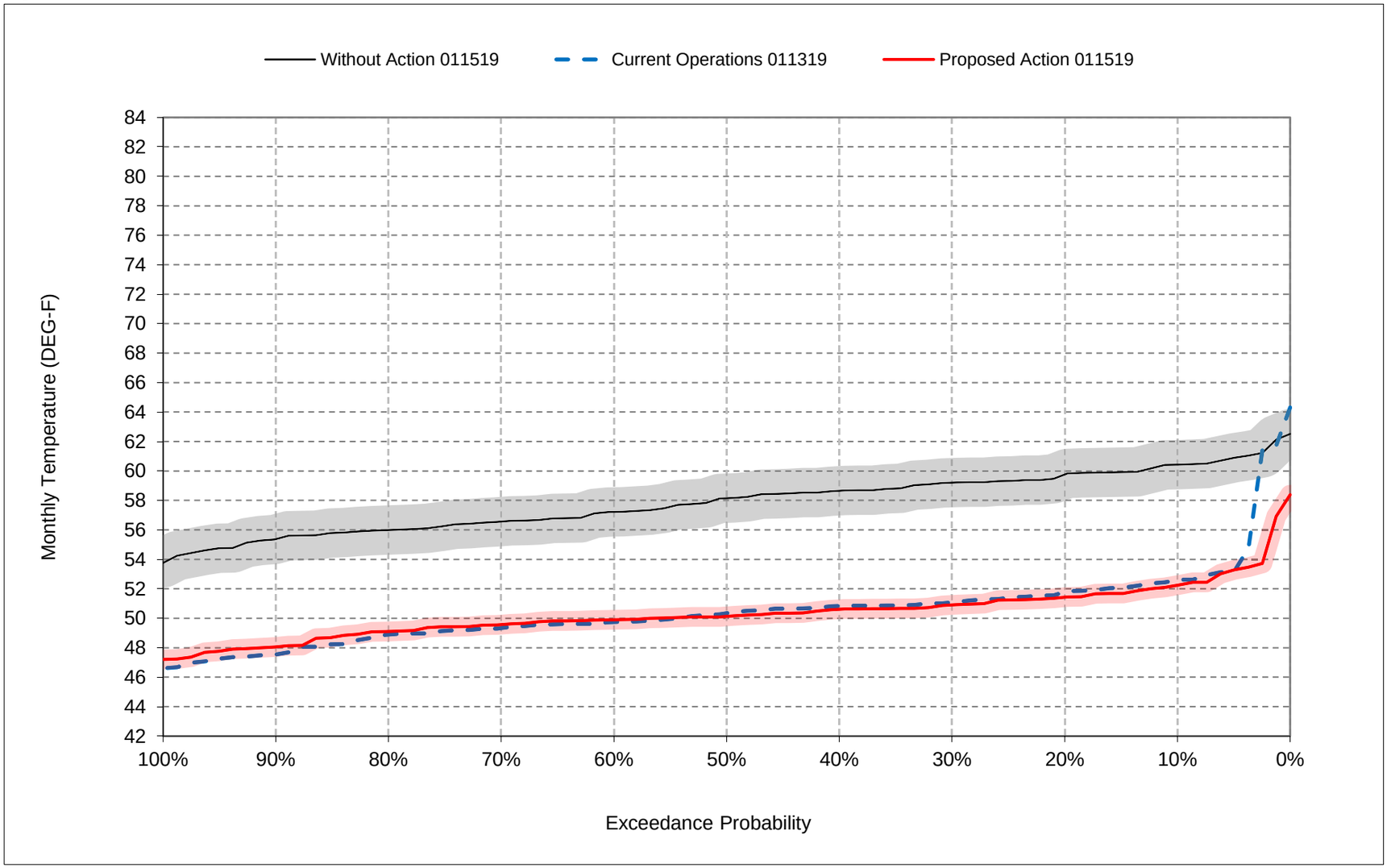


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-15. Stanislaus River below New Melones Reservoir, June

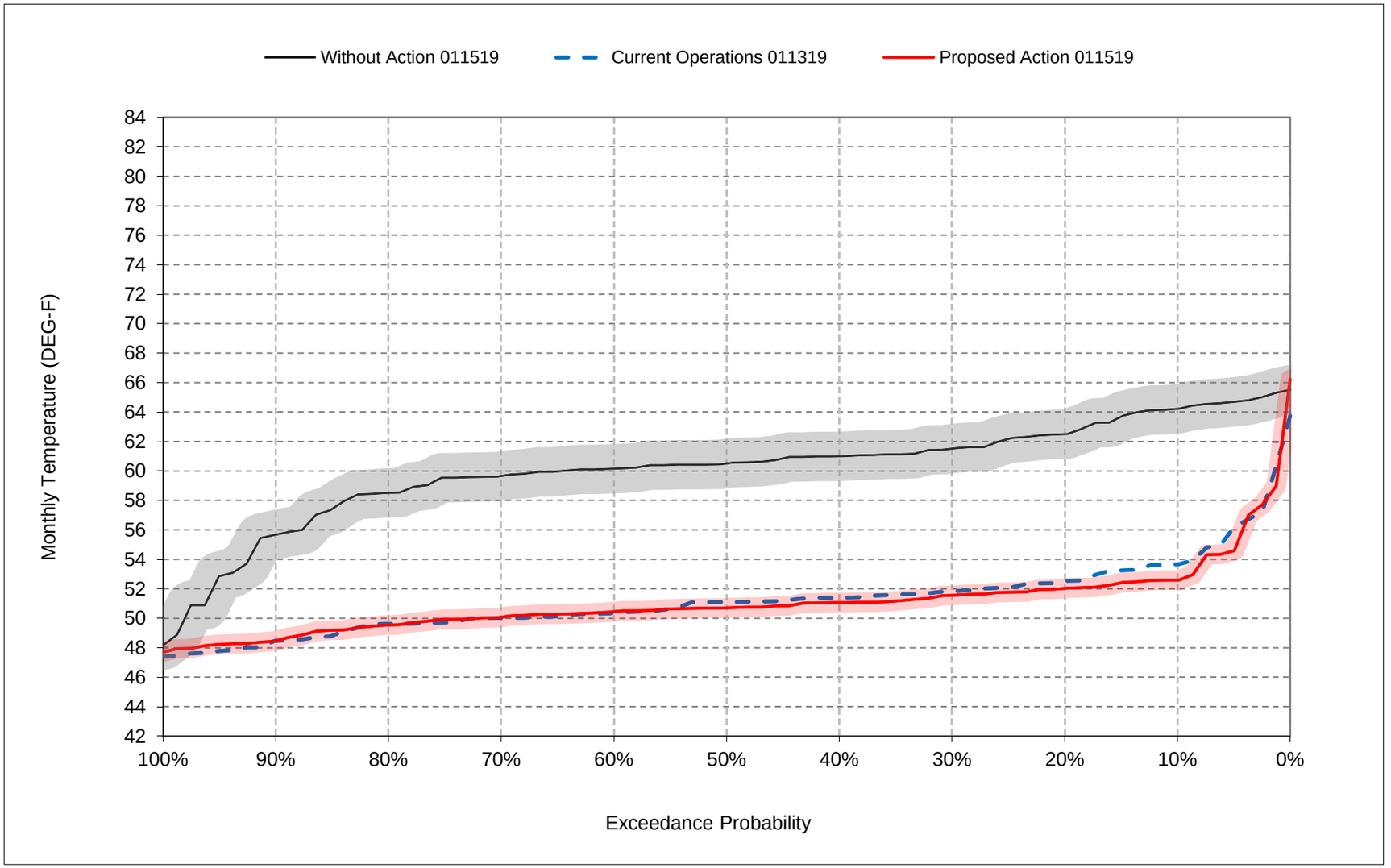


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-16. Stanislaus River below New Melones Reservoir, July

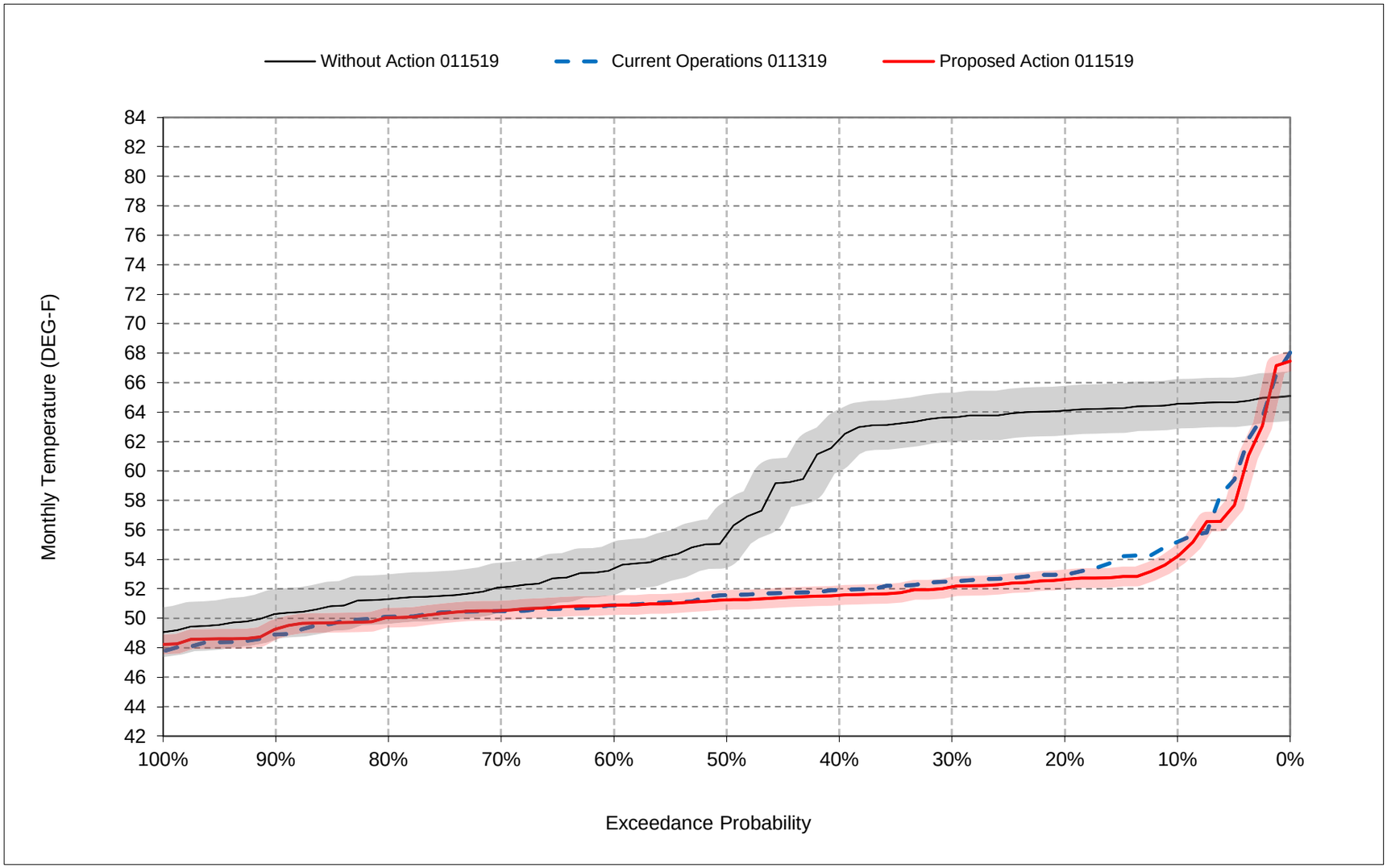


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 20-17. Stanislaus River below New Melones Reservoir, August

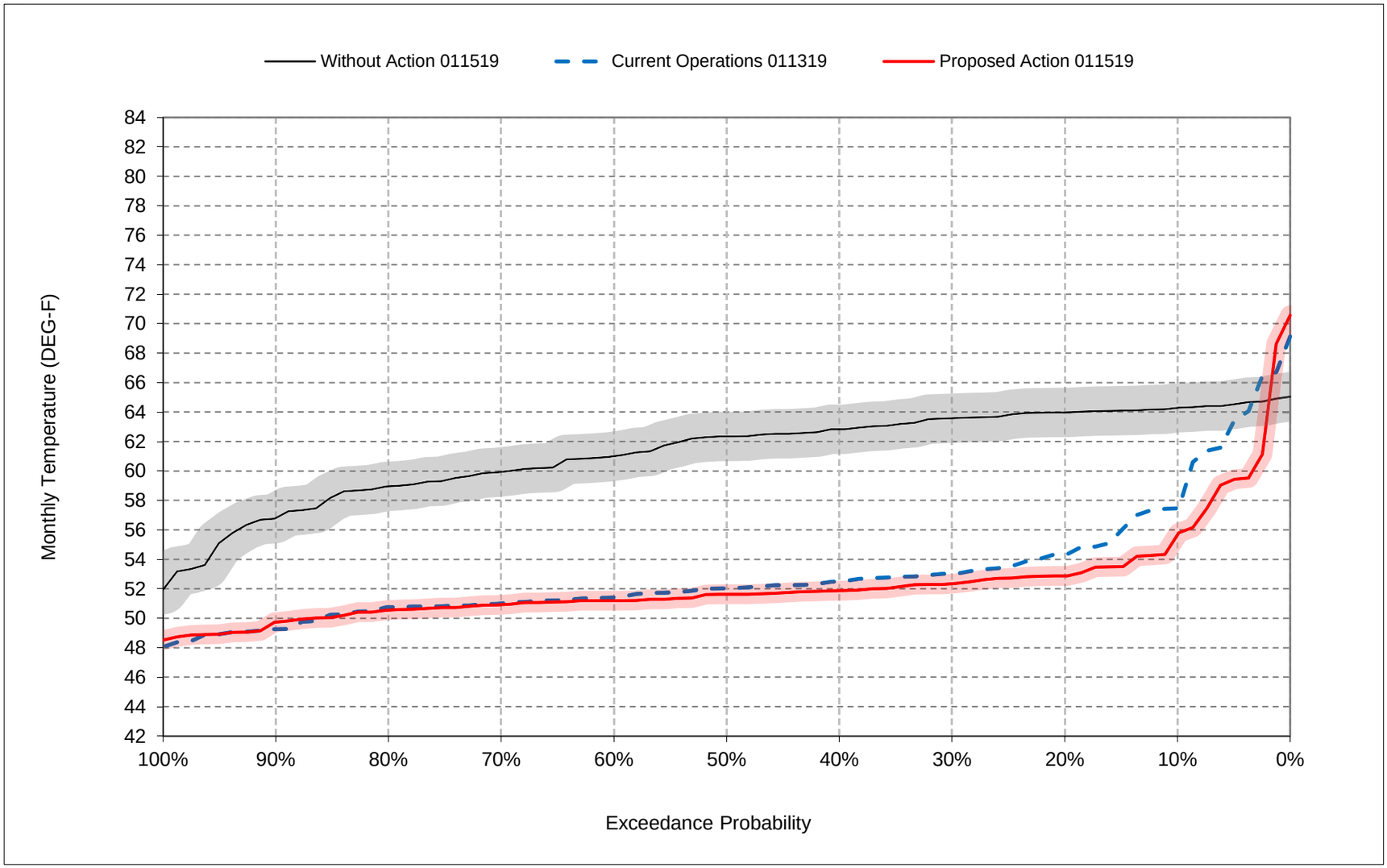


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*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.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Table 21-1. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	64.3	57.6	49.8	46.2	46.6	49.0	52.4	57.0	61.7	67.3	67.5	67.2
20%	63.3	56.2	49.4	45.7	46.2	48.6	52.0	56.6	60.9	66.8	67.0	66.8
30%	62.2	55.7	48.8	45.3	45.6	48.2	51.6	56.0	60.3	66.1	66.6	66.1
40%	61.7	55.4	48.6	45.0	45.4	48.0	51.4	55.7	59.9	65.6	65.9	65.0
50%	61.4	55.0	48.4	44.8	45.1	47.7	51.0	55.3	59.6	65.0	61.5	63.9
60%	61.1	54.5	48.2	44.6	44.8	47.5	50.6	54.9	59.5	64.4	59.6	62.3
70%	60.8	54.4	47.7	44.2	44.6	47.1	50.4	54.6	59.2	64.2	58.1	61.7
80%	60.6	54.1	47.4	43.8	44.3	46.8	50.1	54.2	59.0	63.8	57.0	60.5
90%	60.2	53.5	47.0	43.5	44.0	46.5	49.8	53.6	58.3	62.8	56.2	58.5
Long Term												
Full Simulation Period[a]	61.8	55.3	48.4	44.8	45.3	47.7	51.0	55.4	59.9	64.8	62.1	63.5
Water Year Types[b,c]												
Wet (23%)	60.3	54.5	48.2	44.6	44.8	47.6	51.2	54.7	59.1	65.5	61.4	59.7
Above Normal (24%)	61.0	54.4	48.0	44.7	45.3	47.9	51.3	55.7	60.3	66.0	57.1	62.0
Below Normal (10%)	61.4	54.9	48.1	44.6	45.0	47.1	50.9	55.5	60.8	64.7	59.8	63.4
Dry (16%)	62.0	55.1	48.2	44.8	45.0	47.3	50.3	55.7	60.5	63.4	64.2	65.5
Critical (27%)	63.8	56.9	49.3	45.2	45.9	48.3	51.1	55.4	59.6	64.0	67.0	66.9

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.9	**1.5**	**4.9**	**4.4**	**3.6**	**2.2**	**0.3**	-3.4	-7.0	-10.8	-10.1	-8.0
20%	-5.9	**0.3**	**3.9**	**4.6**	**3.3**	**1.9**	**0.1**	-3.7	-6.8	-11.8	-11.3	-10.1
30%	-6.6	-0.6	**3.9**	**4.2**	**3.2**	**2.0**	**0.1**	-3.5	-6.9	-11.8	-11.6	-10.5
40%	-6.6	-0.8	**3.3**	**4.0**	**3.1**	**1.8**	-0.1	-3.3	-7.0	-11.7	-11.4	-10.1
50%	-6.8	-1.0	**3.2**	**3.9**	**2.9**	**1.9**	0.0	-3.2	-7.1	-11.3	-7.3	-9.4
60%	-7.1	-0.7	**3.1**	**3.7**	**3.0**	**1.9**	0.0	-3.2	-7.3	-11.6	-6.1	-8.4
70%	-7.2	-1.1	**3.1**	**3.7**	**2.9**	**1.8**	-0.3	-3.3	-7.4	-11.8	-5.0	-8.2
80%	-7.4	-1.5	**3.0**	**3.2**	**2.4**	**1.6**	-0.5	-3.1	-7.6	-12.0	-4.2	-7.4
90%	-8.2	-1.7	**2.7**	**2.8**	**1.8**	**1.0**	-0.9	-3.4	-8.1	-12.0	-4.7	-6.8
Long Term												
Full Simulation Period[a]	-6.2	-0.6	**3.5**	**3.7**	**2.8**	**1.8**	-0.1	-3.3	-7.1	-11.1	-7.6	-8.1
Water Year Types[b,c]												
Wet (23%)	-7.8	-2.4	**2.5**	**2.9**	**2.3**	**1.2**	-1.6	-3.8	-8.1	-14.0	-9.3	-7.4
Above Normal (24%)	-6.2	-0.1	**3.7**	**3.4**	**2.1**	**0.8**	-1.1	-4.3	-8.3	-13.3	-3.4	-7.5
Below Normal (10%)	-6.9	-0.9	**3.5**	**3.6**	**3.1**	**2.3**	**0.1**	-3.9	-8.6	-11.4	-5.7	-8.9
Dry (16%)	-5.8	**0.2**	**4.0**	**4.2**	**3.6**	**2.7**	**1.2**	-3.5	-7.3	-9.1	-9.0	-9.5
Critical (27%)	-4.8	**0.2**	**3.7**	**4.5**	**3.3**	**2.5**	**1.2**	-1.7	-4.4	-7.6	-9.7	-8.1

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 21-2. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	64.3	57.6	49.8	46.2	46.6	49.0	52.4	57.0	61.7	67.3	67.5	67.2
20%	63.3	56.2	49.4	45.7	46.2	48.6	52.0	56.6	60.9	66.8	67.0	66.8
30%	62.2	55.7	48.8	45.3	45.6	48.2	51.6	56.0	60.3	66.1	66.6	66.1
40%	61.7	55.4	48.6	45.0	45.4	48.0	51.4	55.7	59.9	65.6	65.9	65.0
50%	61.4	55.0	48.4	44.8	45.1	47.7	51.0	55.3	59.6	65.0	61.5	63.9
60%	61.1	54.5	48.2	44.6	44.8	47.5	50.6	54.9	59.5	64.4	59.6	62.3
70%	60.8	54.4	47.7	44.2	44.6	47.1	50.4	54.6	59.2	64.2	58.1	61.7
80%	60.6	54.1	47.4	43.8	44.3	46.8	50.1	54.2	59.0	63.8	57.0	60.5
90%	60.2	53.5	47.0	43.5	44.0	46.5	49.8	53.6	58.3	62.8	56.2	58.5
Long Term												
Full Simulation Period[a]	61.8	55.3	48.4	44.8	45.3	47.7	51.0	55.4	59.9	64.8	62.1	63.5
Water Year Types[b,c]												
Wet (23%)	60.3	54.5	48.2	44.6	44.8	47.6	51.2	54.7	59.1	65.5	61.4	59.7
Above Normal (24%)	61.0	54.4	48.0	44.7	45.3	47.9	51.3	55.7	60.3	66.0	57.1	62.0
Below Normal (10%)	61.4	54.9	48.1	44.6	45.0	47.1	50.9	55.5	60.8	64.7	59.8	63.4
Dry (16%)	62.0	55.1	48.2	44.8	45.0	47.3	50.3	55.7	60.5	63.4	64.2	65.5
Critical (27%)	63.8	56.9	49.3	45.2	45.9	48.3	51.1	55.4	59.6	64.0	67.0	66.9

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5.7	-0.5	**3.9**	**4.3**	**3.5**	**2.3**	**0.3**	-3.4	-7.2	-11.5	-11.1	-9.7
20%	-7.3	-0.8	**3.7**	**4.3**	**3.3**	**2.0**	**0.2**	-3.6	-7.0	-12.1	-11.6	-11.0
30%	-7.1	-1.2	**3.8**	**4.0**	**3.3**	**1.9**	0.0	-3.5	-7.1	-11.8	-11.8	-10.9
40%	-7.2	-1.3	**3.3**	**3.9**	**3.2**	**1.9**	-0.1	-3.4	-7.1	-11.9	-11.8	-10.5
50%	-7.1	-1.3	**3.1**	**3.9**	**3.0**	**1.9**	**0.0**	-3.2	-7.1	-11.6	-7.5	-9.7
60%	-7.3	-1.1	**3.0**	**3.7**	**3.0**	**2.0**	**0.2**	-3.1	-7.3	-11.4	-6.1	-8.5
70%	-7.3	-1.3	**3.1**	**3.7**	**2.9**	**1.9**	**0.1**	-3.1	-7.5	-11.6	-5.0	-8.2
80%	-7.5	-1.5	**3.0**	**3.4**	**2.5**	**1.7**	-0.3	-3.2	-7.7	-11.7	-4.4	-7.5
90%	-8.3	-1.7	**2.4**	**3.1**	**2.3**	**1.3**	-0.8	-3.2	-7.8	-11.5	-4.2	-6.7
Long Term												
Full Simulation Period[a]	-6.9	-1.1	**3.3**	**3.7**	**2.9**	**1.9**	-0.1	-3.4	-7.3	-11.2	-7.7	-8.6
Water Year Types[b,c]												
Wet (23%)	-7.6	-2.2	**2.5**	**2.9**	**2.6**	**1.2**	-1.6	-3.7	-8.0	-13.8	-9.1	-7.2
Above Normal (24%)	-6.0	-0.3	**3.6**	**3.6**	**2.3**	**1.0**	-1.0	-4.2	-8.5	-12.9	-3.1	-7.1
Below Normal (10%)	-7.4	-1.3	**3.3**	**3.7**	**3.2**	**2.4**	**0.4**	-3.7	-8.5	-11.5	-6.0	-9.3
Dry (16%)	-6.9	-0.7	**3.7**	**4.1**	**3.5**	**2.7**	**1.2**	-3.5	-7.4	-9.5	-9.7	-10.5
Critical (27%)	-6.9	-0.8	**3.5**	**4.4**	**3.2**	**2.5**	**1.1**	-2.1	-5.0	-8.3	-10.1	-9.6

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 21-3. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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).

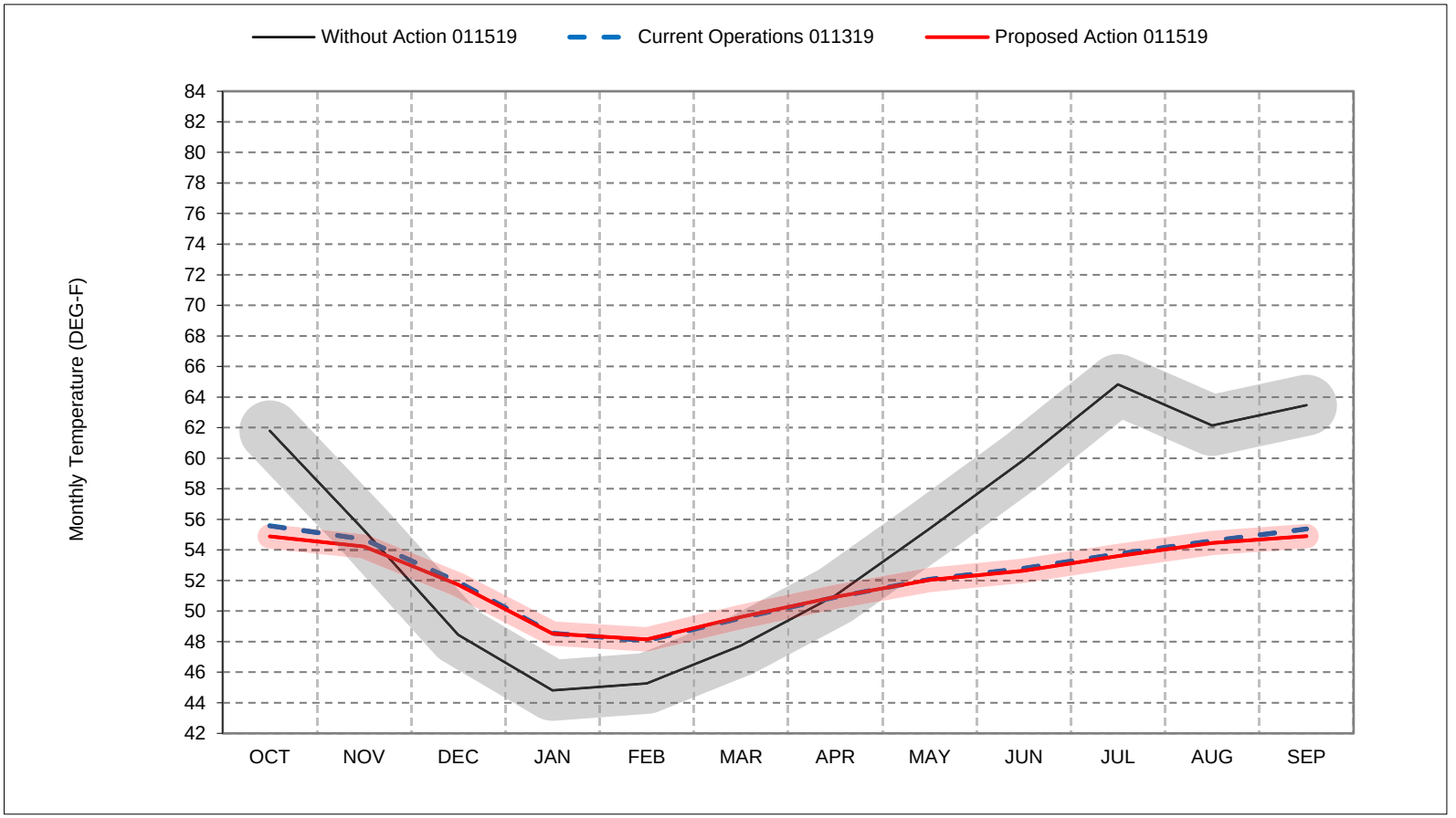
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

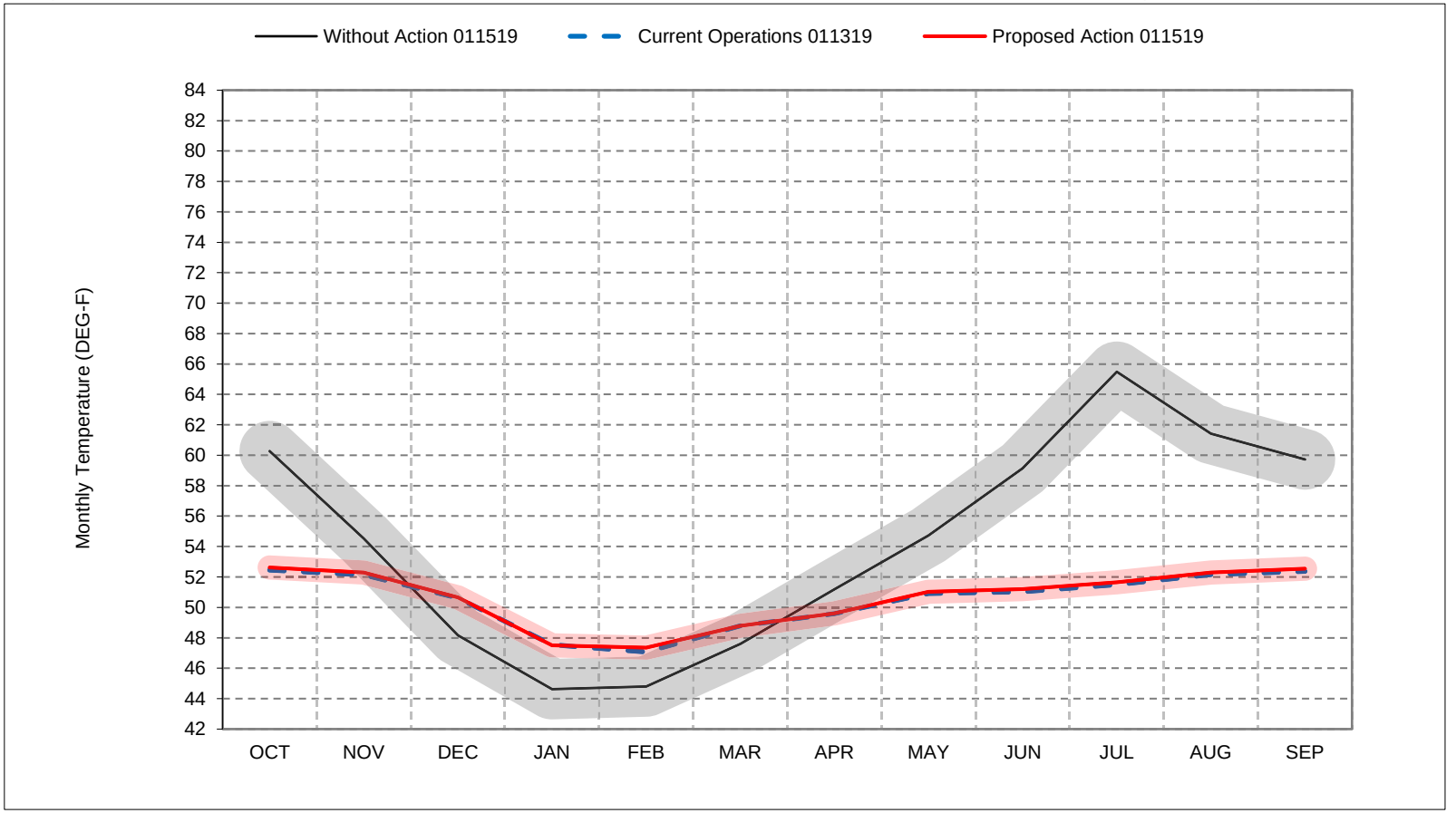
f New Melones forecasts are used as the basis of water operations.

Figure 21-1. Stanislaus River below Tulloch Reservoir, Long-Term Average Temperature



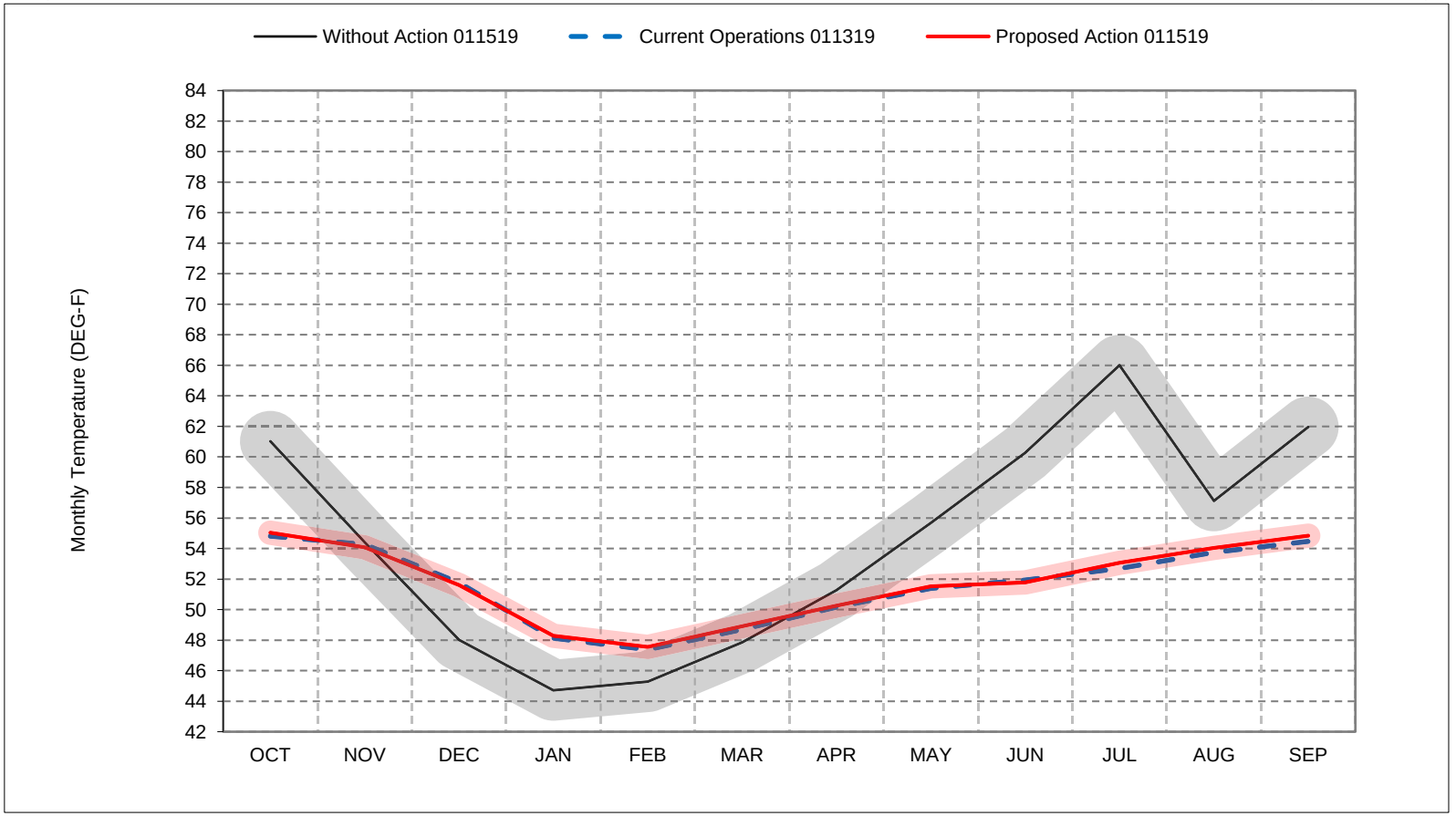
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 21-2. Stanislaus River below Tulloch Reservoir, Wet Year Average Temperature



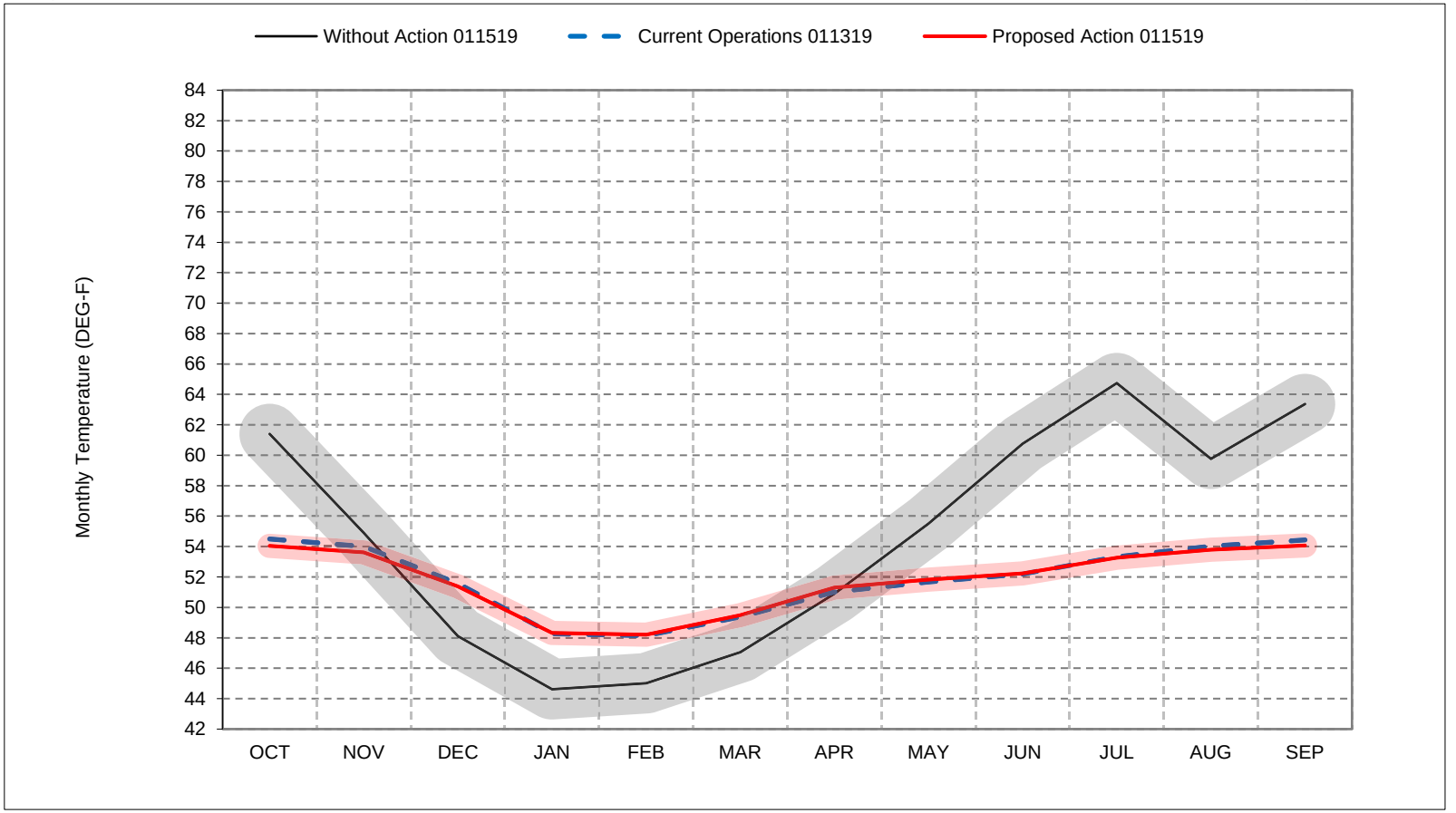
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 21-3. Stanislaus River below Tulloch Reservoir, Above Normal Year Average Temperature



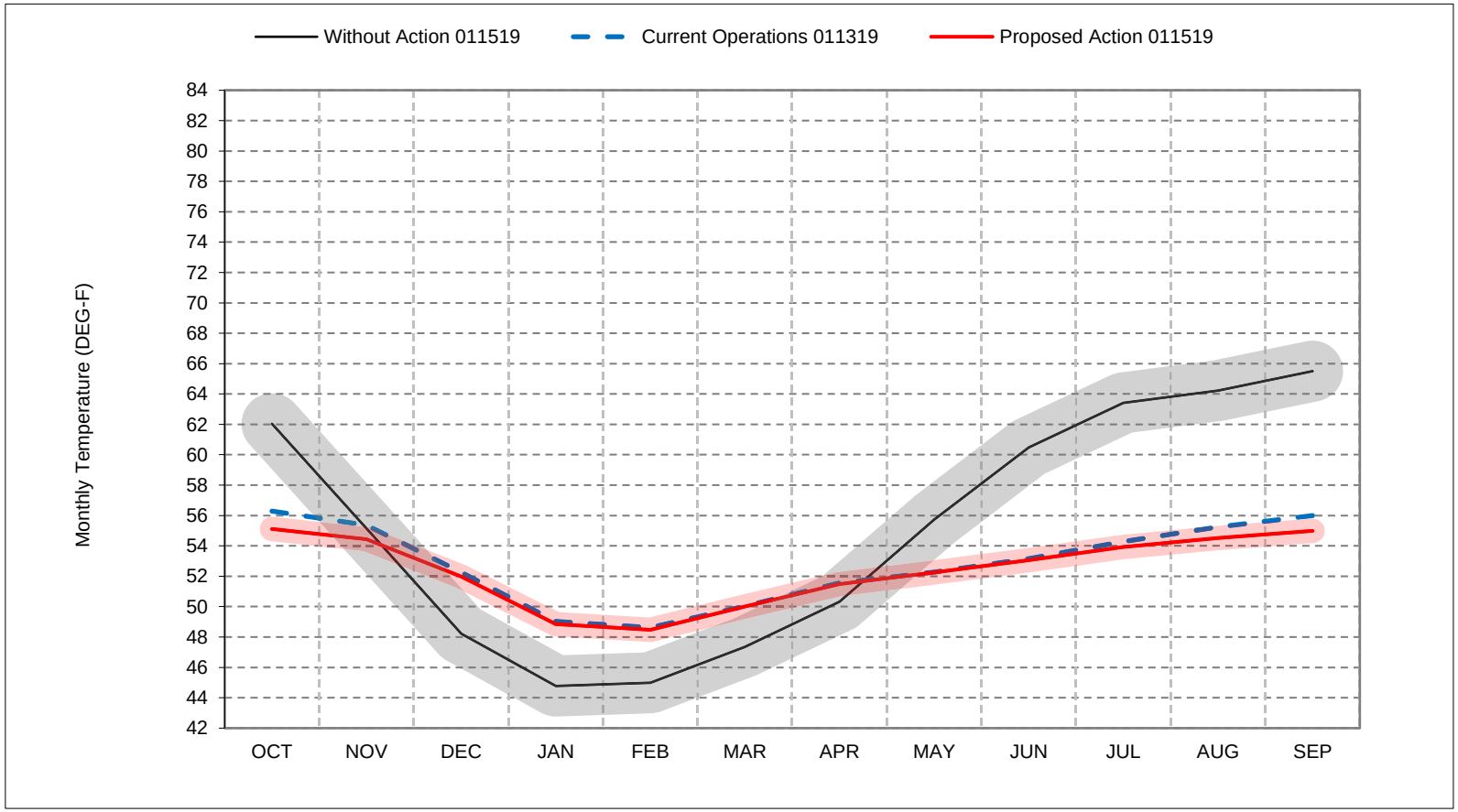
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 21-4. Stanislaus River below Tulloch Reservoir, Below Normal Year Average Temperature



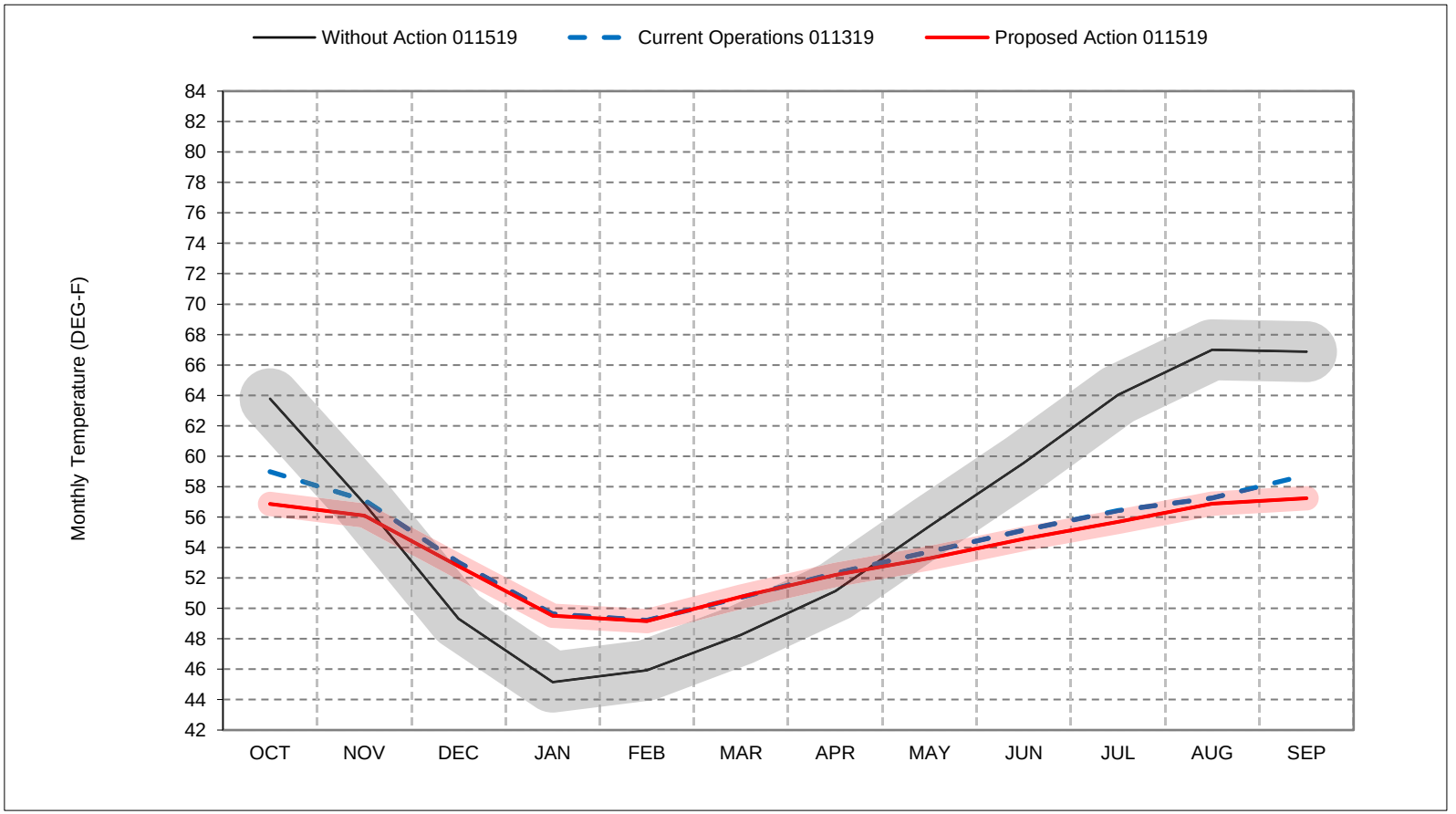
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 21-5. Stanislaus River below Tulloch Reservoir, Dry Year Average Temperature



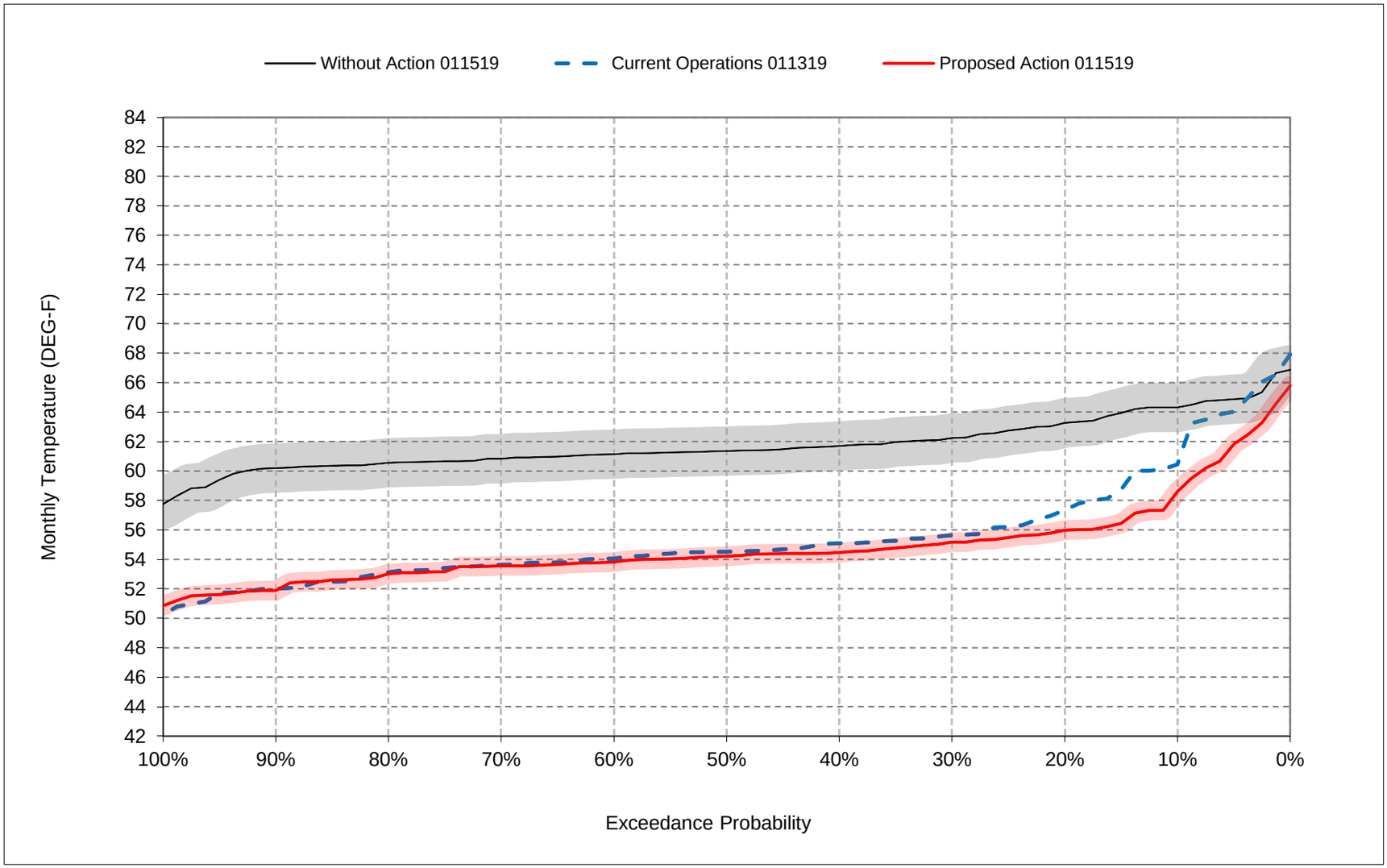
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 21-7. Stanislaus River below Tulloch Reservoir, October

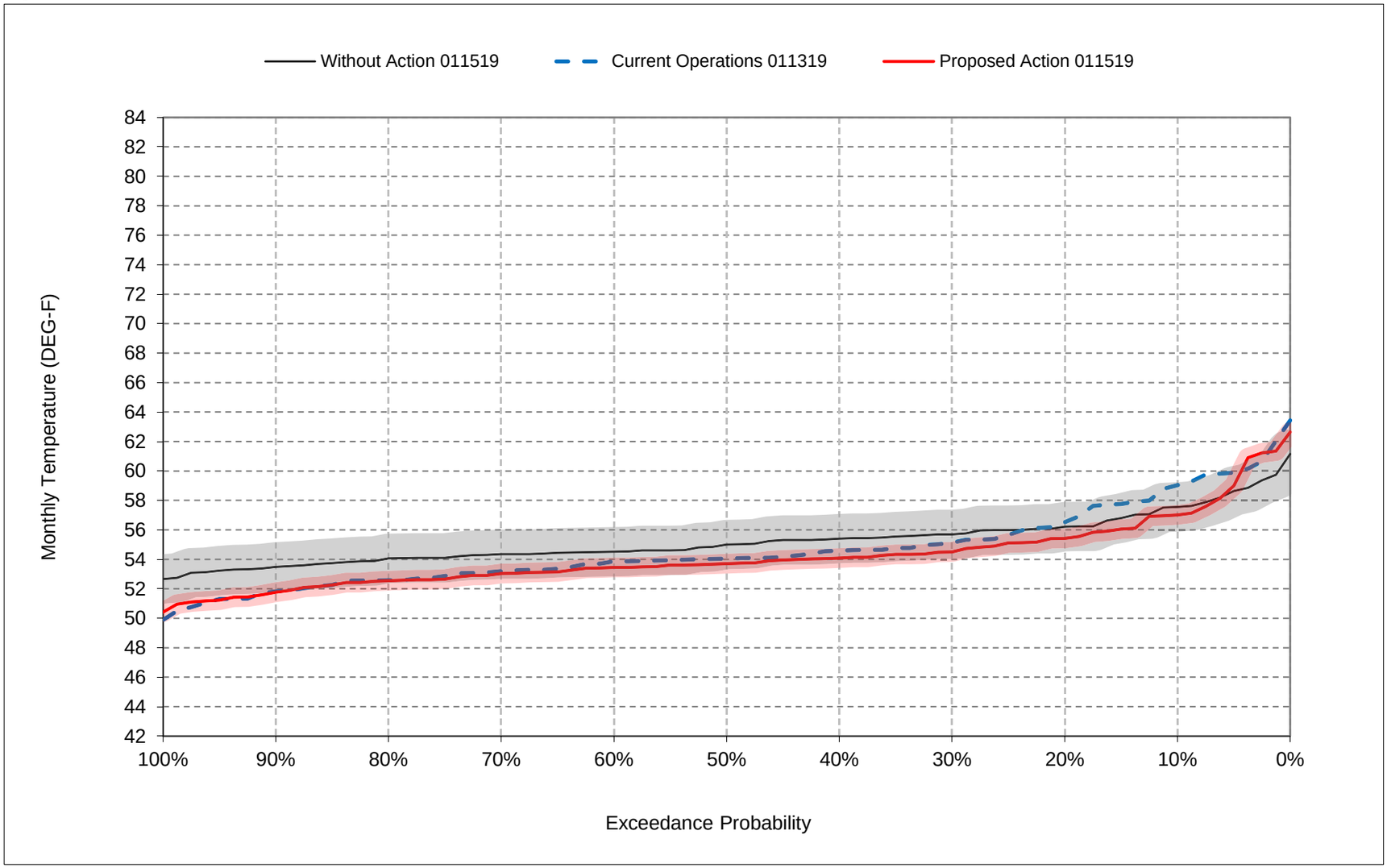


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-8. Stanislaus River below Tulloch Reservoir, November

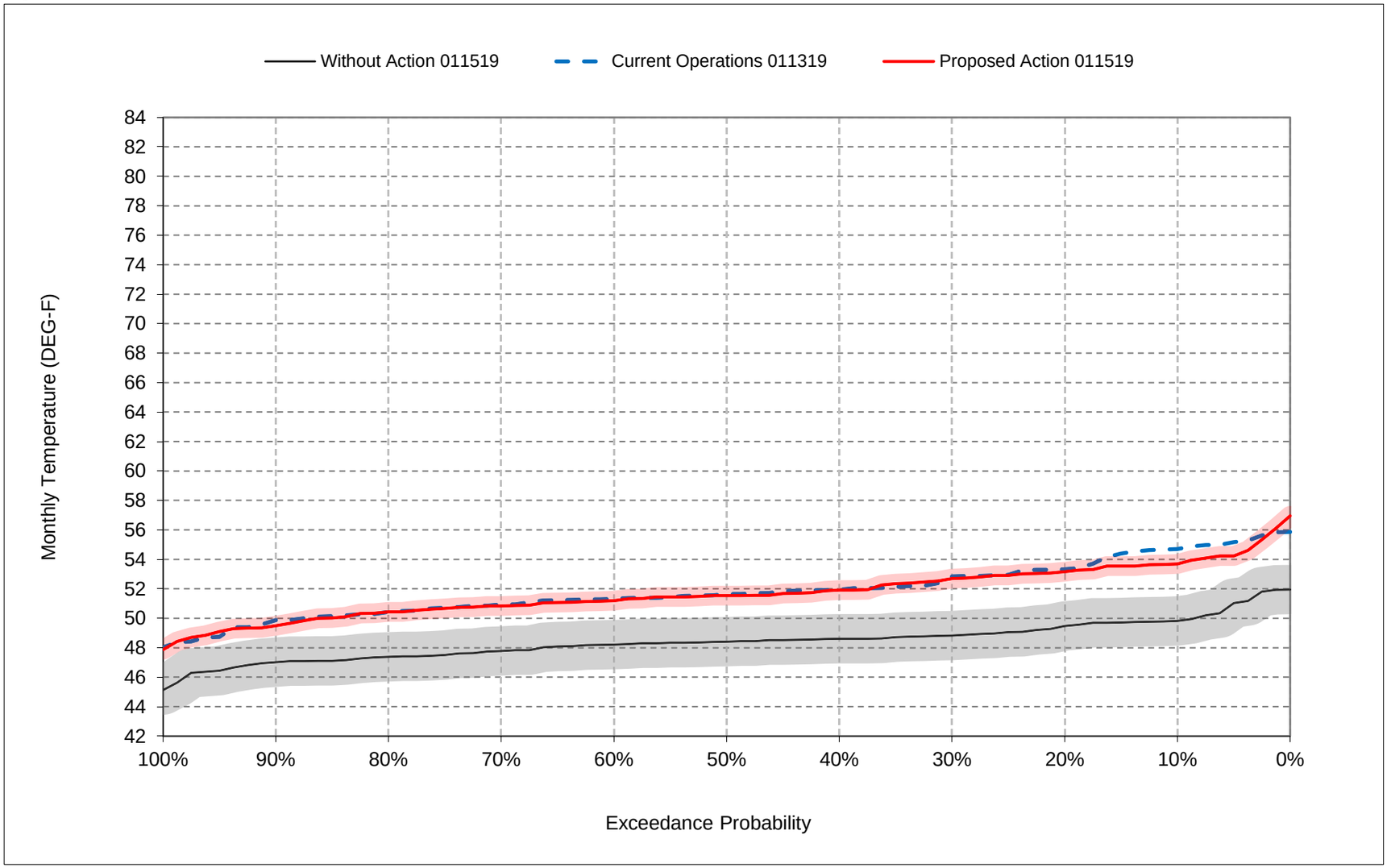


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-9. Stanislaus River below Tulloch Reservoir, December

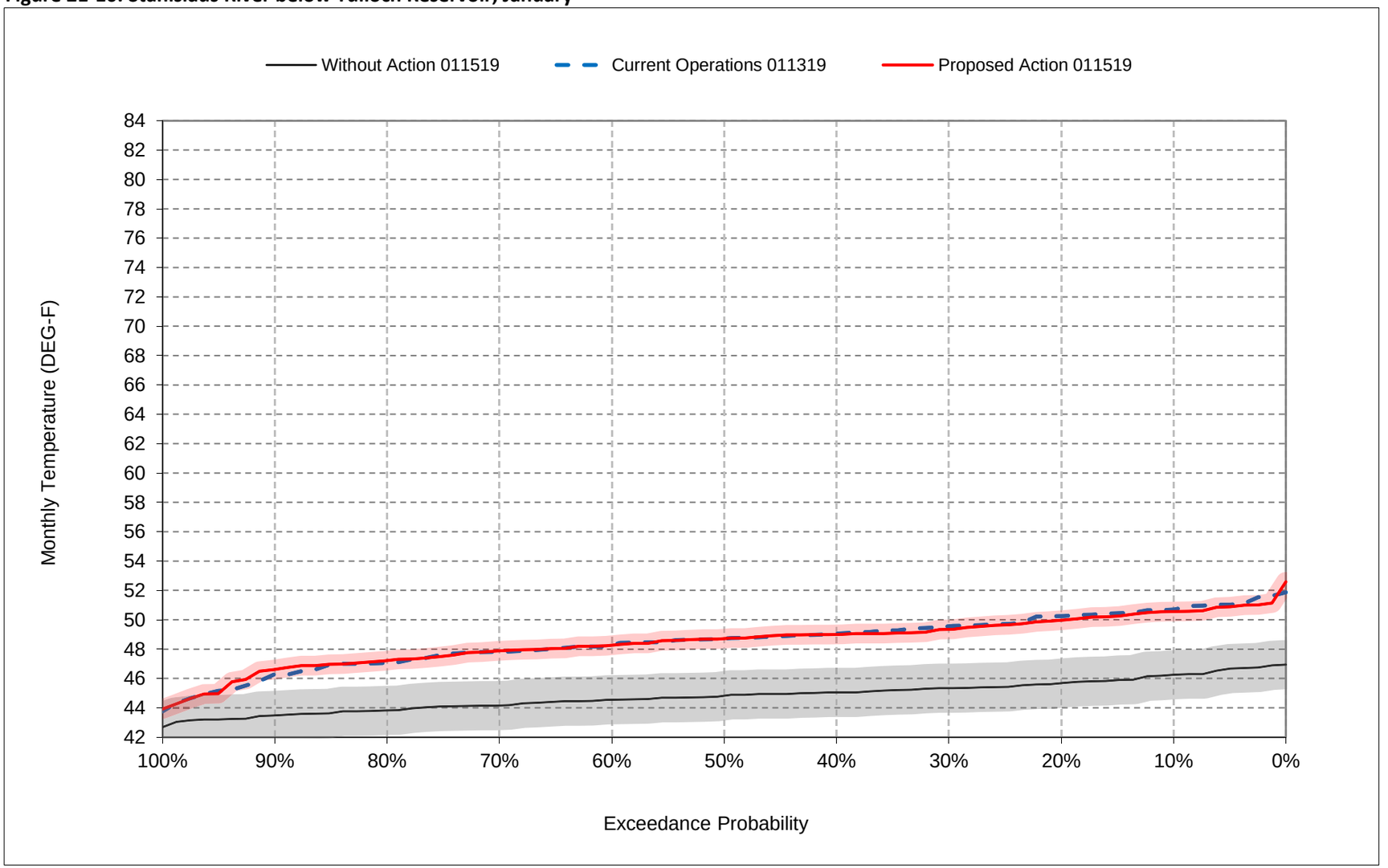


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-10. Stanislaus River below Tulloch Reservoir, January

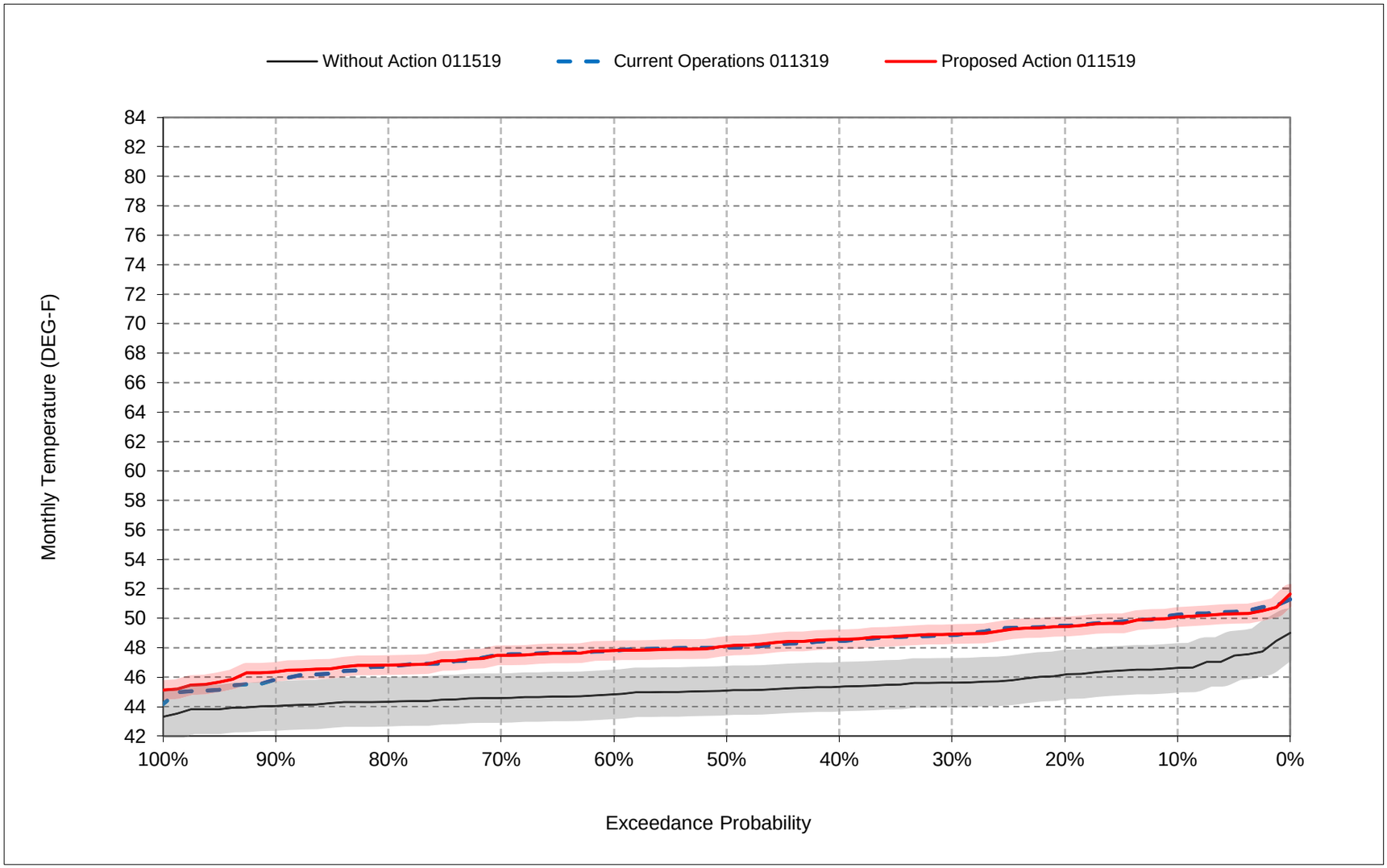


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-11. Stanislaus River below Tulloch Reservoir, February

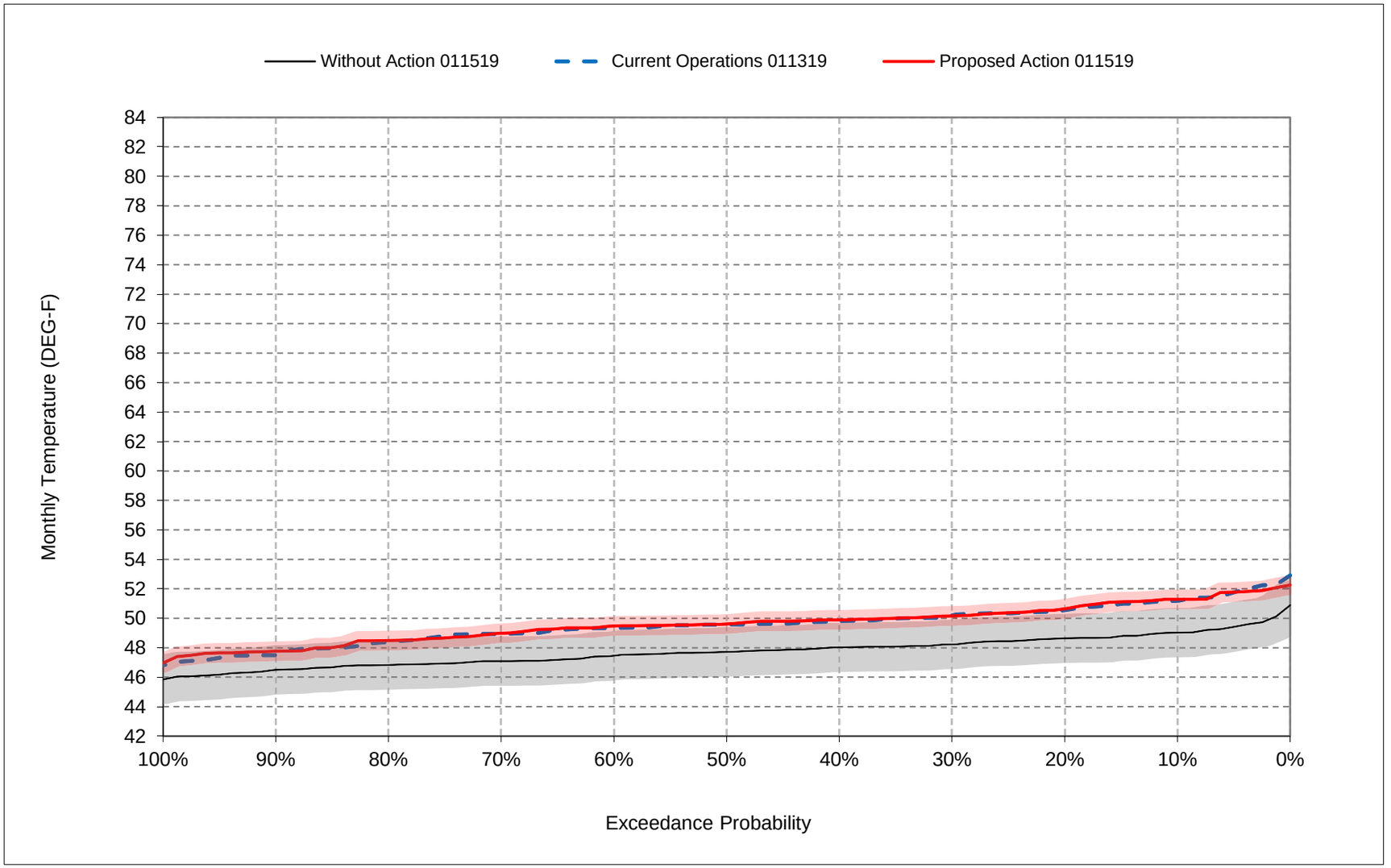


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-12. Stanislaus River below Tulloch Reservoir, March

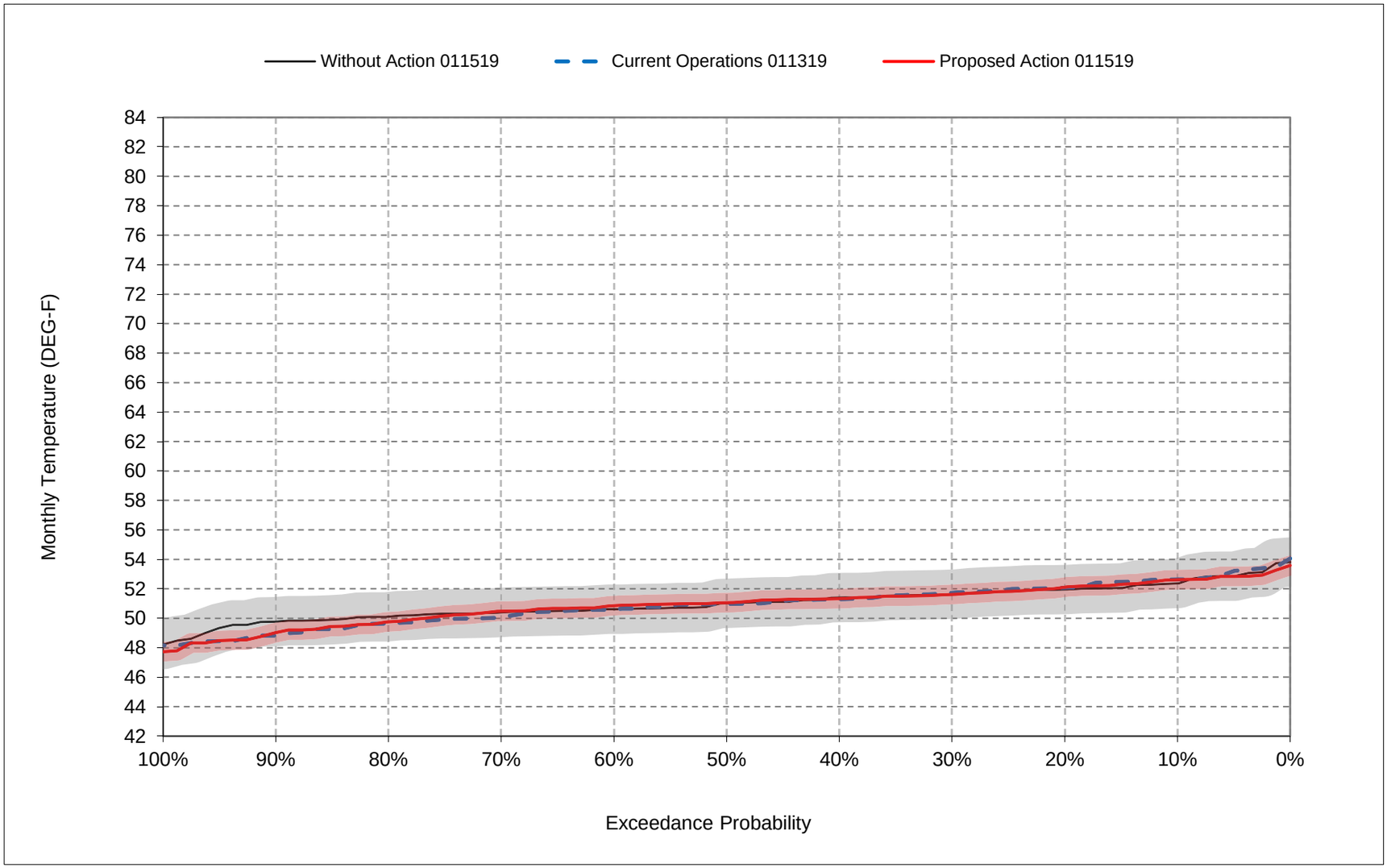


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-13. Stanislaus River below Tulloch Reservoir, April

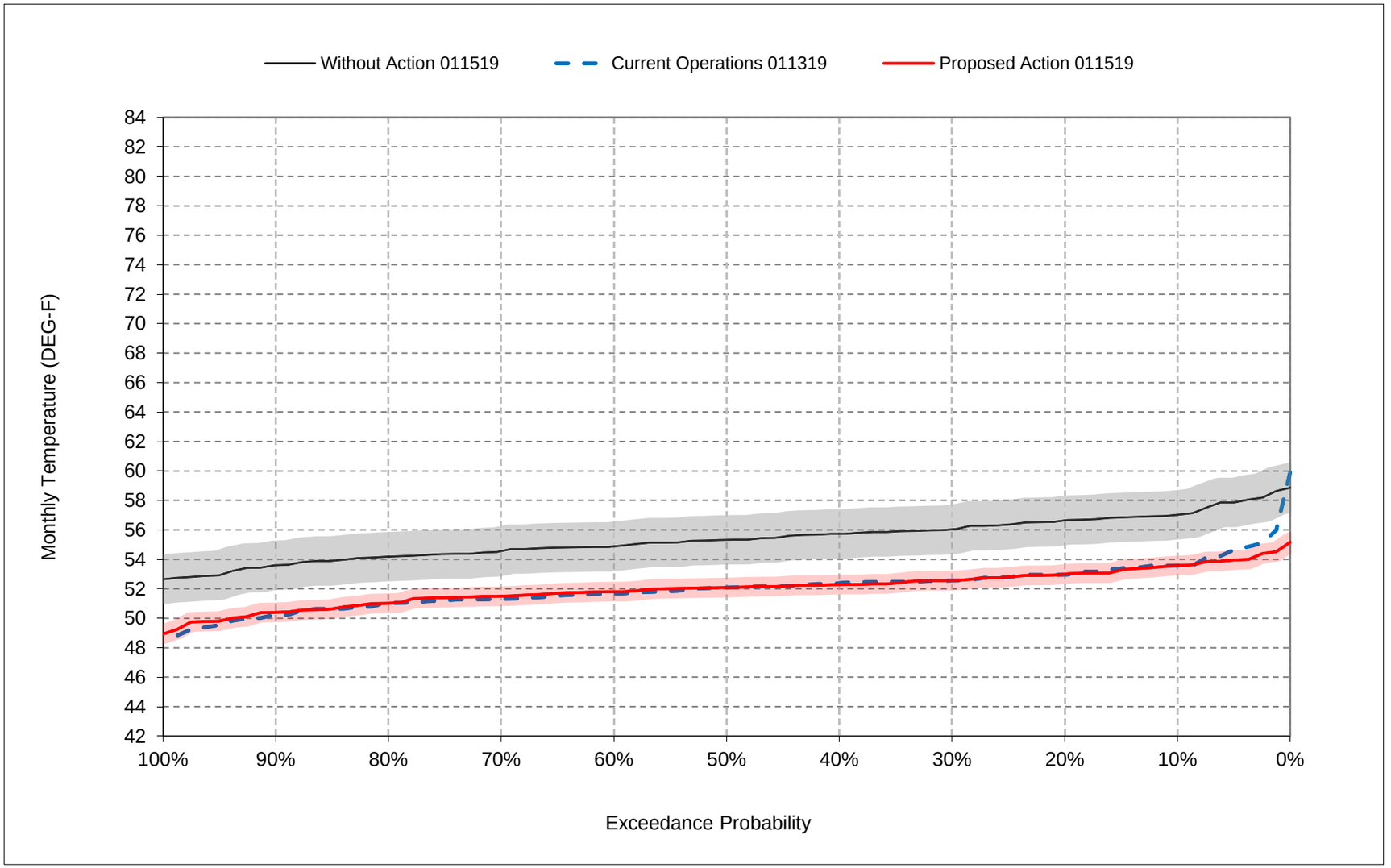


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-14. Stanislaus River below Tulloch Reservoir, May

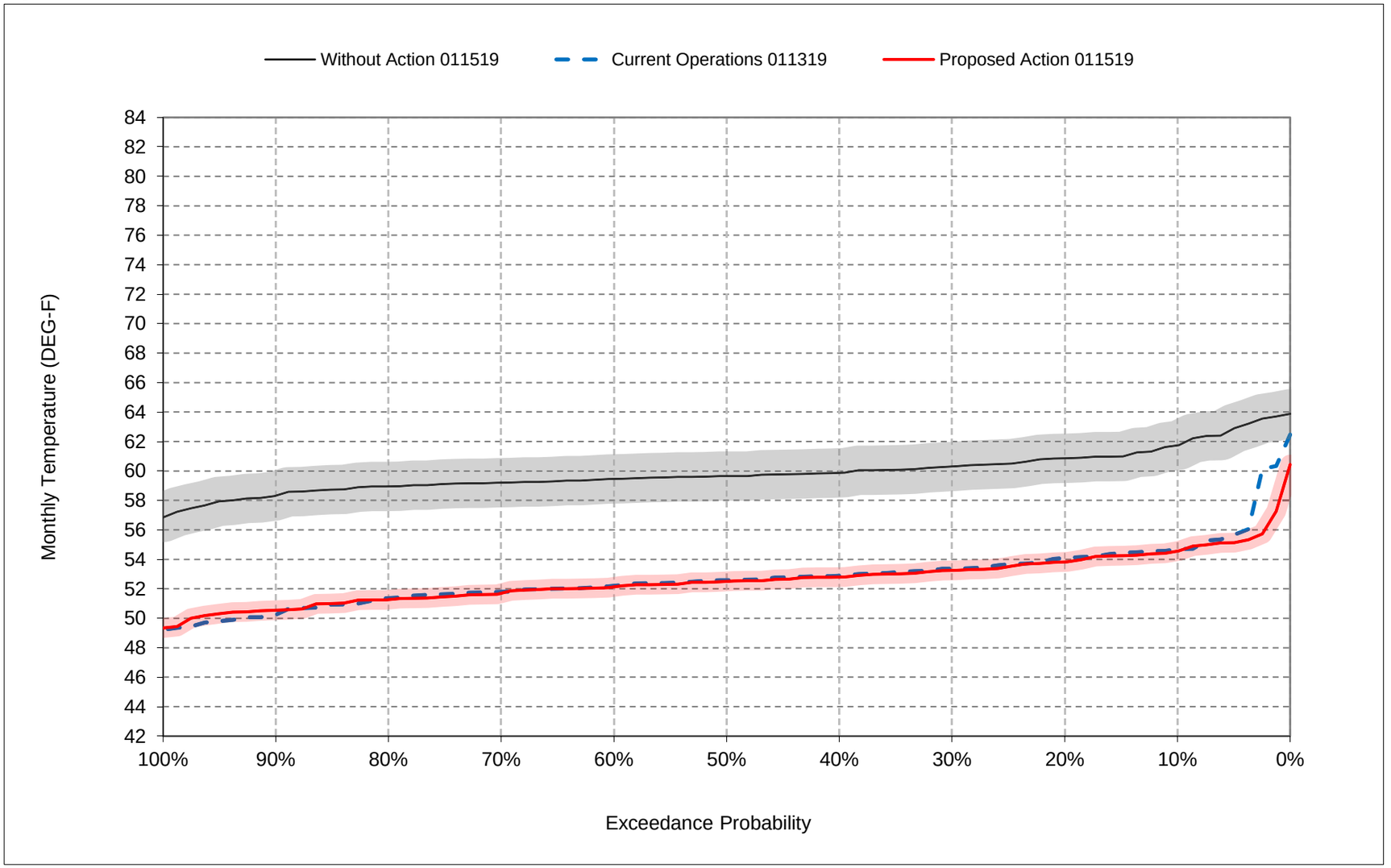


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-15. Stanislaus River below Tulloch Reservoir, June

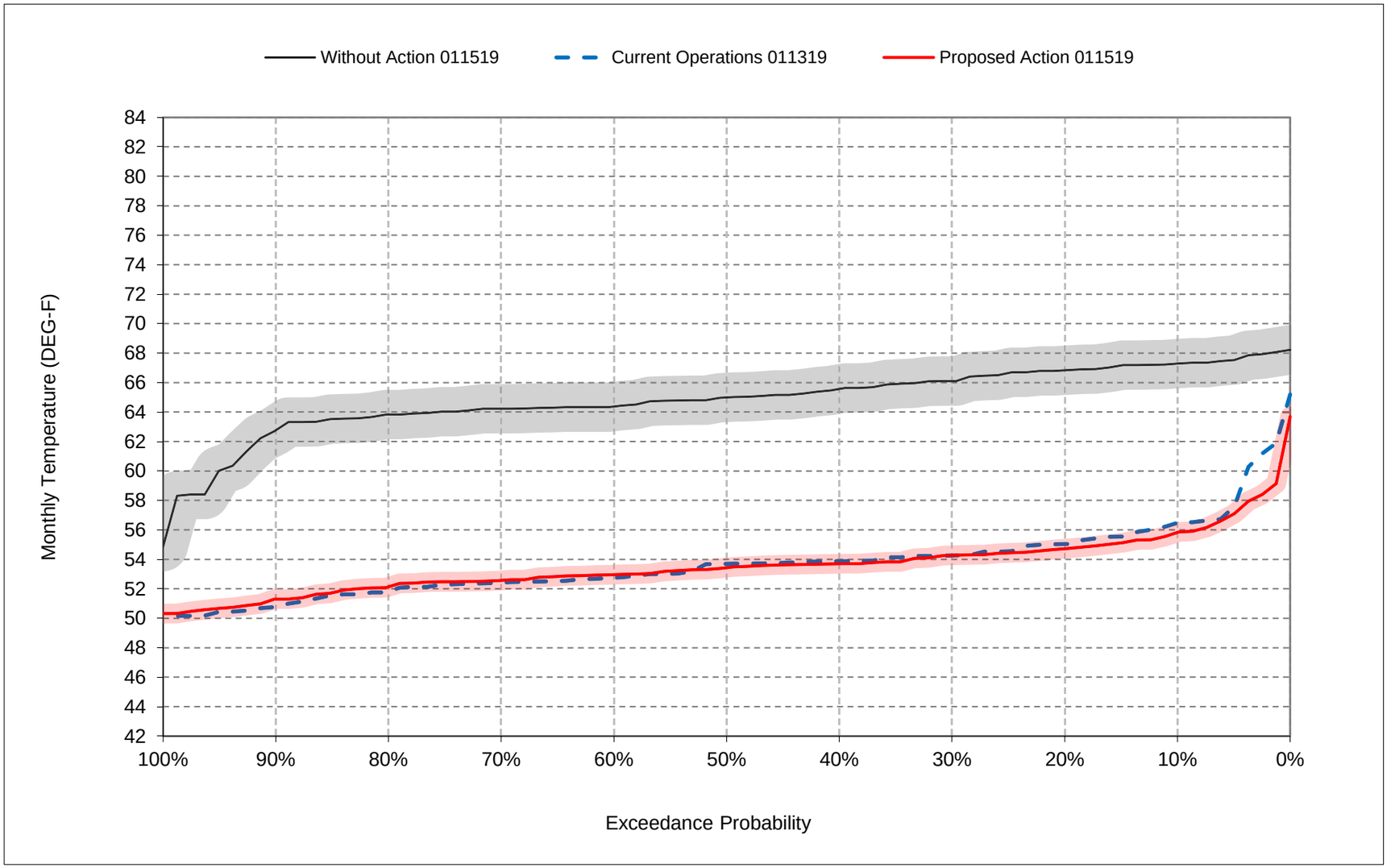


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-16. Stanislaus River below Tulloch Reservoir, July

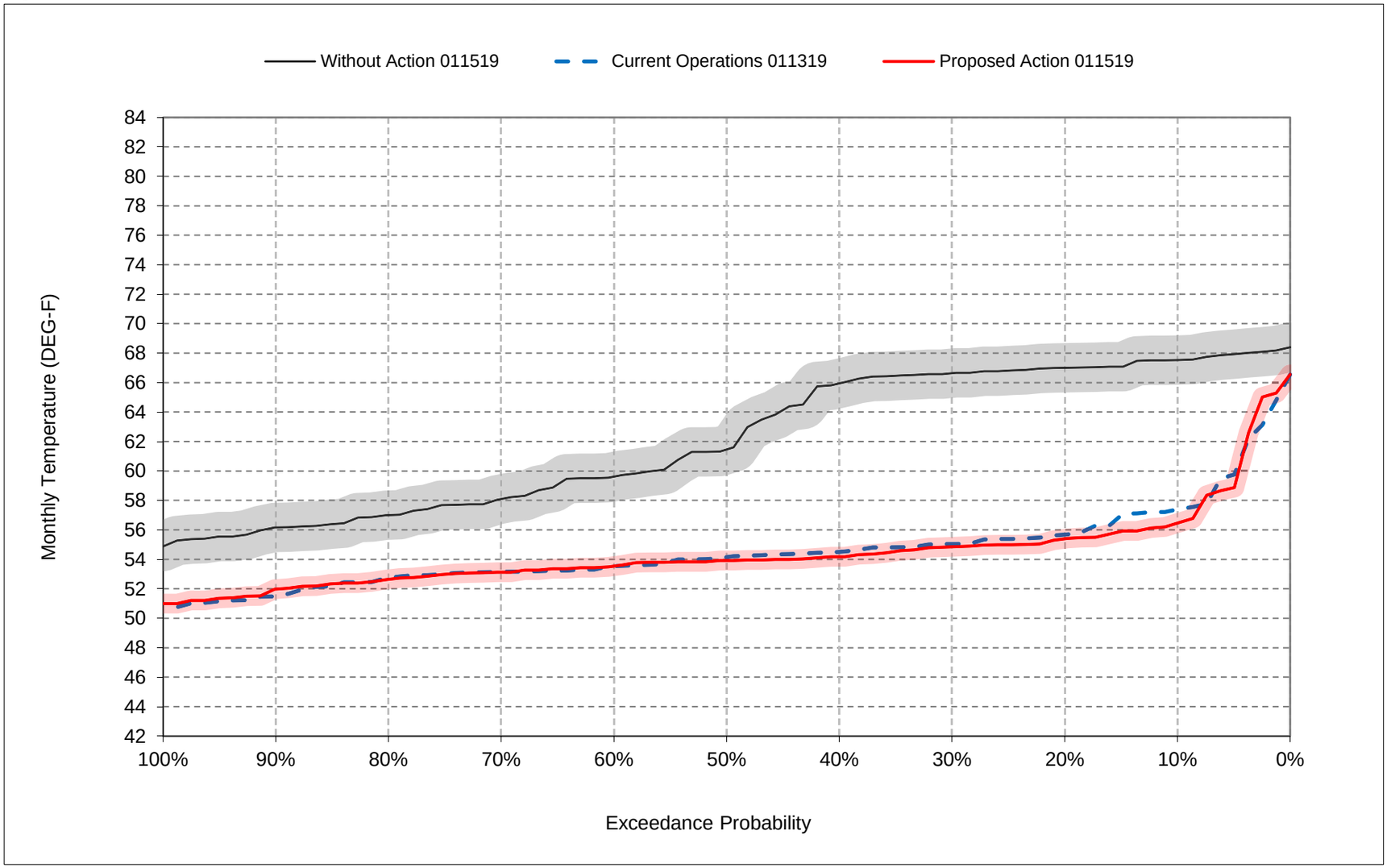


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 21-17. Stanislaus River below Tulloch Reservoir, August

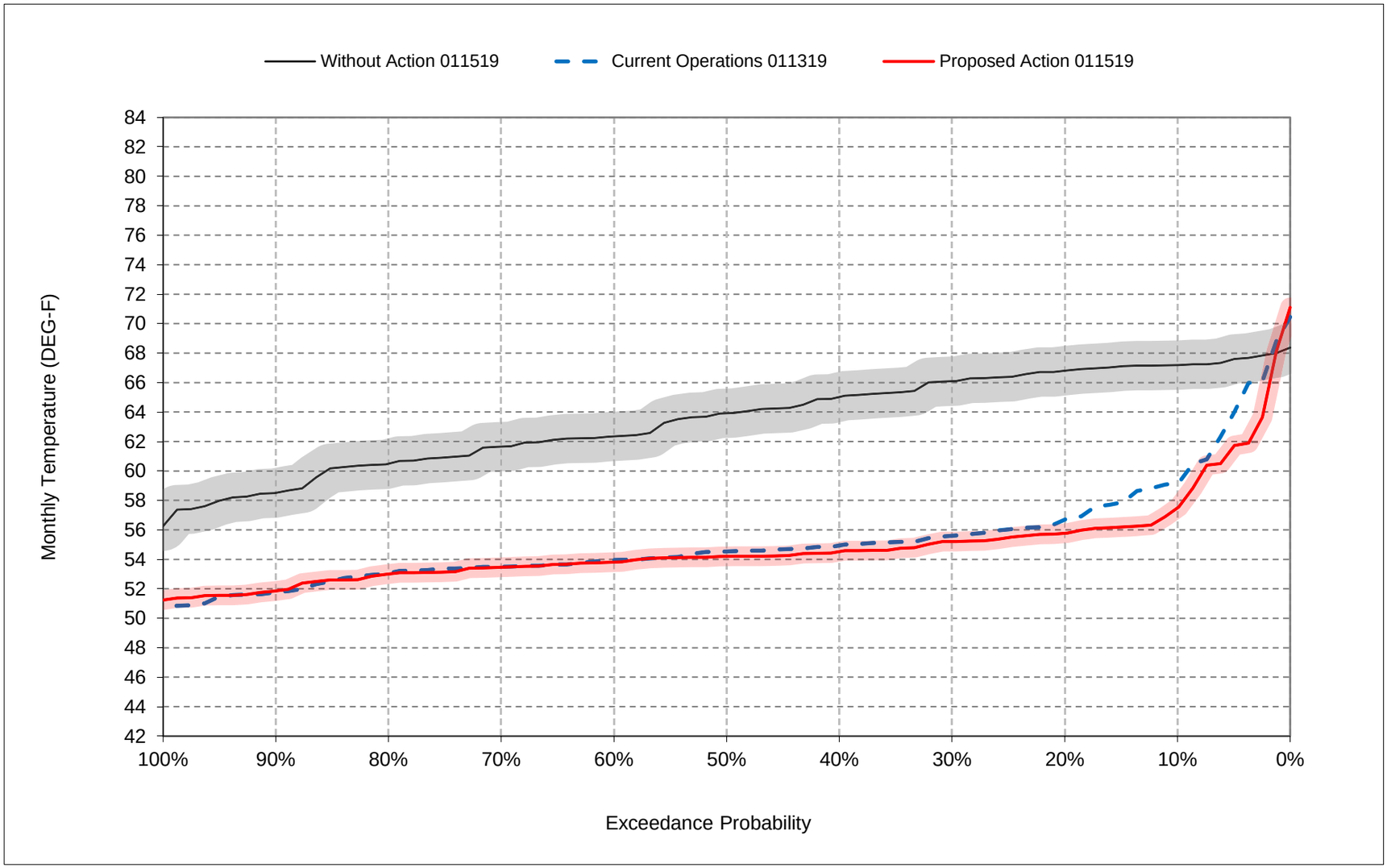


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*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.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Table 22-1. Stanislaus River below Goodwin Dam, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	65.3	58.0	50.0	46.4	47.2	49.7	53.5	59.0	65.1	72.0	71.2	69.1
20%	64.3	56.6	49.5	45.8	46.5	49.0	52.8	58.1	64.1	70.9	70.1	68.4
30%	63.3	56.2	49.0	45.6	46.1	48.7	52.5	57.1	62.9	70.4	69.7	68.0
40%	62.8	55.8	48.8	45.3	45.7	48.4	51.9	56.8	62.1	69.7	69.3	67.0
50%	62.2	55.4	48.6	45.1	45.4	48.2	51.7	56.2	61.3	69.2	68.8	65.8
60%	62.0	54.9	48.4	44.7	45.2	47.7	51.4	55.9	60.4	68.7	68.2	65.5
70%	61.5	54.6	47.9	44.3	44.8	47.6	51.0	55.5	59.9	68.1	67.4	64.5
80%	61.2	54.4	47.5	44.0	44.6	47.2	50.8	55.0	59.5	67.2	65.4	63.7
90%	60.8	53.8	47.1	43.6	44.3	46.7	50.2	54.3	59.0	66.3	63.6	62.7
Long Term												
Full Simulation Period[a]	62.6	55.6	48.6	45.0	45.6	48.2	51.8	56.6	61.7	69.1	68.2	65.9
Water Year Types[b,c]												
Wet (23%)	61.3	54.9	48.3	44.7	44.9	47.8	51.4	54.9	59.4	67.9	69.3	63.3
Above Normal (24%)	61.8	54.7	48.2	44.9	45.4	48.1	51.6	55.9	60.7	70.6	65.3	64.7
Below Normal (10%)	62.3	55.3	48.3	44.8	45.3	47.4	51.8	55.8	61.6	70.3	68.1	66.0
Dry (16%)	62.9	55.5	48.4	45.0	45.4	47.9	51.2	57.1	63.7	69.5	68.5	67.2
Critical (27%)	64.6	57.2	49.5	45.5	46.5	49.2	52.7	58.6	63.4	68.1	69.7	68.5

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.6	**1.1**	**4.6**	**4.7**	**3.6**	**2.3**	-0.4	-4.9	-9.5	-14.4	-12.9	-9.0
20%	-6.4	0.0	**3.7**	**4.4**	**3.7**	**2.4**	-0.4	-4.5	-9.2	-15.0	-13.6	-10.9
30%	-7.2	-0.6	**3.6**	**4.0**	**3.4**	**2.1**	-0.4	-4.1	-8.9	-15.2	-13.9	-11.7
40%	-7.3	-1.0	**3.1**	**4.0**	**3.3**	**2.2**	-0.2	-4.0	-8.4	-15.1	-14.0	-11.3
50%	-7.2	-1.1	**3.0**	**3.8**	**3.5**	**2.1**	-0.3	-3.7	-8.0	-14.7	-14.0	-10.6
60%	-7.5	-0.9	**2.9**	**3.7**	**3.2**	**2.3**	-0.3	-3.8	-7.7	-15.2	-14.0	-10.9
70%	-7.5	-1.1	**3.0**	**3.6**	**3.1**	**2.1**	-0.4	-3.7	-7.4	-14.9	-13.5	-10.3
80%	-7.7	-1.5	**2.9**	**3.3**	**2.9**	**1.8**	-0.7	-3.5	-7.5	-14.6	-12.1	-10.0
90%	-8.4	-1.7	**2.7**	**2.8**	**2.3**	**1.7**	-0.9	-3.7	-8.2	-14.7	-11.4	-10.2
Long Term												
Full Simulation Period[a]	-6.7	-0.7	**3.2**	**3.7**	**3.1**	**2.0**	-0.5	-4.0	-8.2	-14.5	-12.8	-9.8
Water Year Types[b,c]												
Wet (23%)	-8.4	-2.4	**2.3**	**3.1**	**2.7**	**1.4**	-1.5	-3.6	-7.8	-15.6	-16.4	-10.3
Above Normal (24%)	-6.6	-0.3	**3.5**	**3.5**	**2.6**	**1.4**	-1.0	-4.1	-8.2	-17.1	-10.9	-9.5
Below Normal (10%)	-7.5	-1.0	**3.2**	**3.6**	**3.4**	**2.6**	-0.5	-3.7	-8.7	-16.2	-13.4	-10.9
Dry (16%)	-6.2	**0.1**	**3.8**	**4.1**	**3.8**	**3.0**	**0.8**	-4.3	-9.8	-14.4	-12.6	-10.5
Critical (27%)	-5.2	**0.1**	**3.5**	**4.3**	**3.3**	**2.3**	0.0	-4.3	-7.4	-10.6	-11.5	-9.0

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 22-2. Stanislaus River below Goodwin Dam, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	65.3	58.0	50.0	46.4	47.2	49.7	53.5	59.0	65.1	72.0	71.2	69.1
20%	64.3	56.6	49.5	45.8	46.5	49.0	52.8	58.1	64.1	70.9	70.1	68.4
30%	63.3	56.2	49.0	45.6	46.1	48.7	52.5	57.1	62.9	70.4	69.7	68.0
40%	62.8	55.8	48.8	45.3	45.7	48.4	51.9	56.8	62.1	69.7	69.3	67.0
50%	62.2	55.4	48.6	45.1	45.4	48.2	51.7	56.2	61.3	69.2	68.8	65.8
60%	62.0	54.9	48.4	44.7	45.2	47.7	51.4	55.9	60.4	68.7	68.2	65.5
70%	61.5	54.6	47.9	44.3	44.8	47.6	51.0	55.5	59.9	68.1	67.4	64.5
80%	61.2	54.4	47.5	44.0	44.6	47.2	50.8	55.0	59.5	67.2	65.4	63.7
90%	60.8	53.8	47.1	43.6	44.3	46.7	50.2	54.3	59.0	66.3	63.6	62.7
Long Term												
Full Simulation Period[a]	62.6	55.6	48.6	45.0	45.6	48.2	51.8	56.6	61.7	69.1	68.2	65.9
Water Year Types[b,c]												
Wet (23%)	61.3	54.9	48.3	44.7	44.9	47.8	51.4	54.9	59.4	67.9	69.3	63.3
Above Normal (24%)	61.8	54.7	48.2	44.9	45.4	48.1	51.6	55.9	60.7	70.6	65.3	64.7
Below Normal (10%)	62.3	55.3	48.3	44.8	45.3	47.4	51.8	55.8	61.6	70.3	68.1	66.0
Dry (16%)	62.9	55.5	48.4	45.0	45.4	47.9	51.2	57.1	63.7	69.5	68.5	67.2
Critical (27%)	64.6	57.2	49.5	45.5	46.5	49.2	52.7	58.6	63.4	68.1	69.7	68.5

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6.5	-0.9	**3.7**	**4.3**	**3.4**	**2.3**	-0.5	-4.7	-9.4	-15.0	-13.8	-11.0
20%	-8.0	-0.9	**3.5**	**4.4**	**3.6**	**2.4**	-0.4	-4.6	-9.3	-15.2	-13.8	-11.7
30%	-7.7	-1.4	**3.6**	**3.9**	**3.3**	**2.2**	-0.4	-4.1	-8.8	-15.2	-14.2	-12.0
40%	-7.8	-1.5	**3.0**	**3.8**	**3.4**	**2.2**	-0.1	-4.0	-8.4	-15.1	-14.3	-11.7
50%	-7.6	-1.4	**2.9**	**3.9**	**3.4**	**2.1**	-0.3	-3.7	-8.2	-14.9	-14.1	-10.8
60%	-7.7	-1.2	**2.8**	**3.7**	**3.2**	**2.3**	-0.2	-3.6	-7.7	-15.0	-13.9	-10.9
70%	-7.6	-1.2	**2.9**	**3.7**	**3.0**	**2.2**	-0.2	-3.5	-7.5	-14.8	-13.6	-10.3
80%	-7.8	-1.6	**2.8**	**3.4**	**2.9**	**1.8**	-0.8	-3.5	-7.6	-14.3	-12.2	-10.0
90%	-8.5	-1.7	**2.5**	**3.3**	**2.7**	**1.8**	-0.8	-3.4	-7.9	-14.5	-11.1	-10.2
Long Term												
Full Simulation Period[a]	-7.3	-1.2	**3.1**	**3.7**	**3.2**	**2.0**	-0.5	-4.0	-8.3	-14.6	-13.0	-10.3
Water Year Types[b,c]												
Wet (23%)	-8.2	-2.3	**2.4**	**3.1**	**2.9**	**1.3**	-1.4	-3.5	-7.7	-15.5	-16.3	-10.1
Above Normal (24%)	-6.4	-0.5	**3.4**	**3.6**	**2.8**	**1.6**	-1.0	-4.0	-8.2	-16.8	-10.6	-9.2
Below Normal (10%)	-7.9	-1.4	**3.1**	**3.6**	**3.4**	**2.7**	-0.3	-3.6	-8.7	-16.2	-13.7	-11.2
Dry (16%)	-7.3	-0.7	**3.5**	**4.0**	**3.7**	**3.0**	**0.7**	-4.3	-9.8	-14.7	-13.3	-11.5
Critical (27%)	-7.3	-0.9	**3.2**	**4.1**	**3.3**	**2.3**	0.0	-4.6	-7.9	-11.3	-11.9	-10.4

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 22-3. Stanislaus River below Goodwin Dam, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 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	-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).

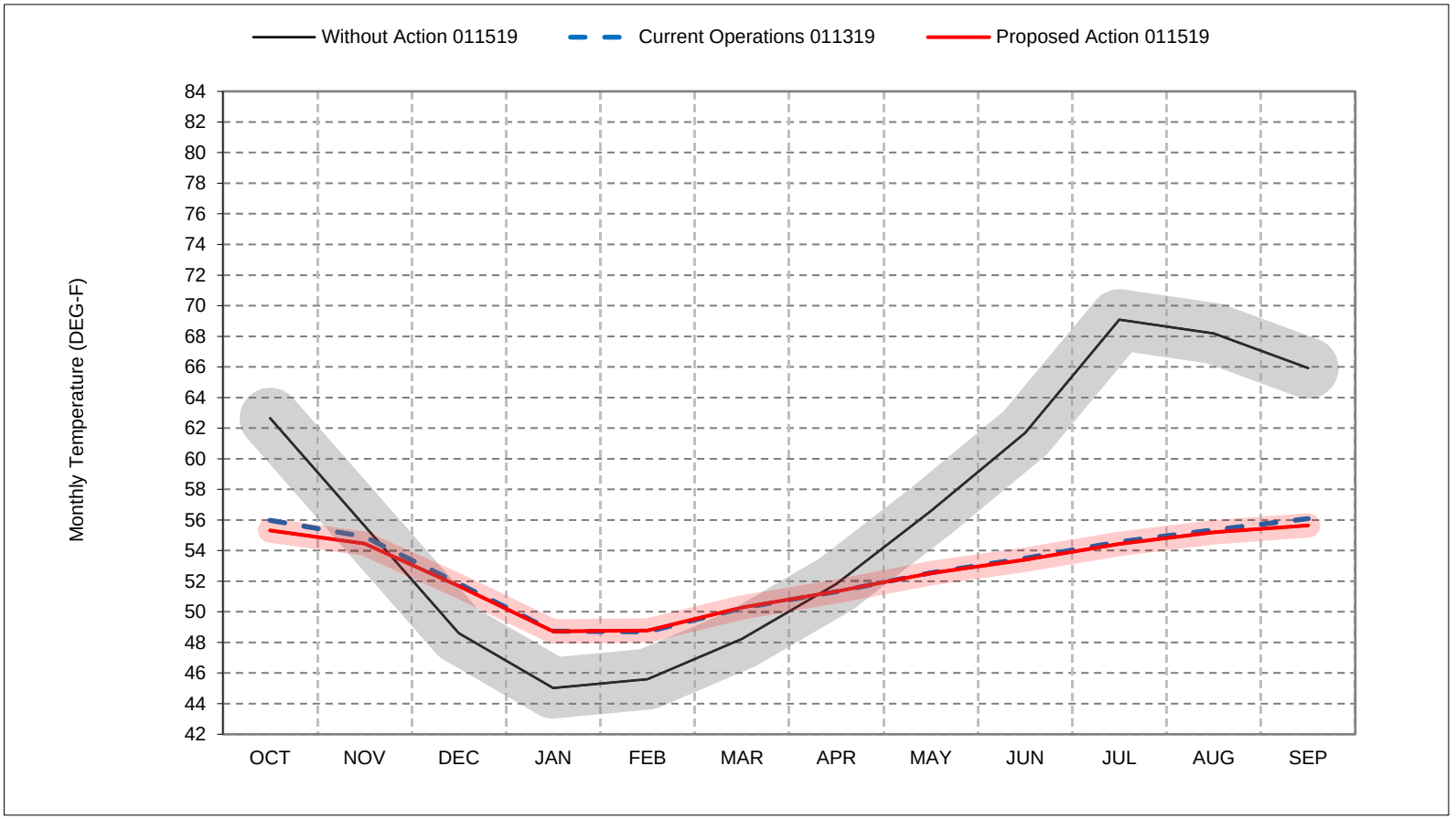
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

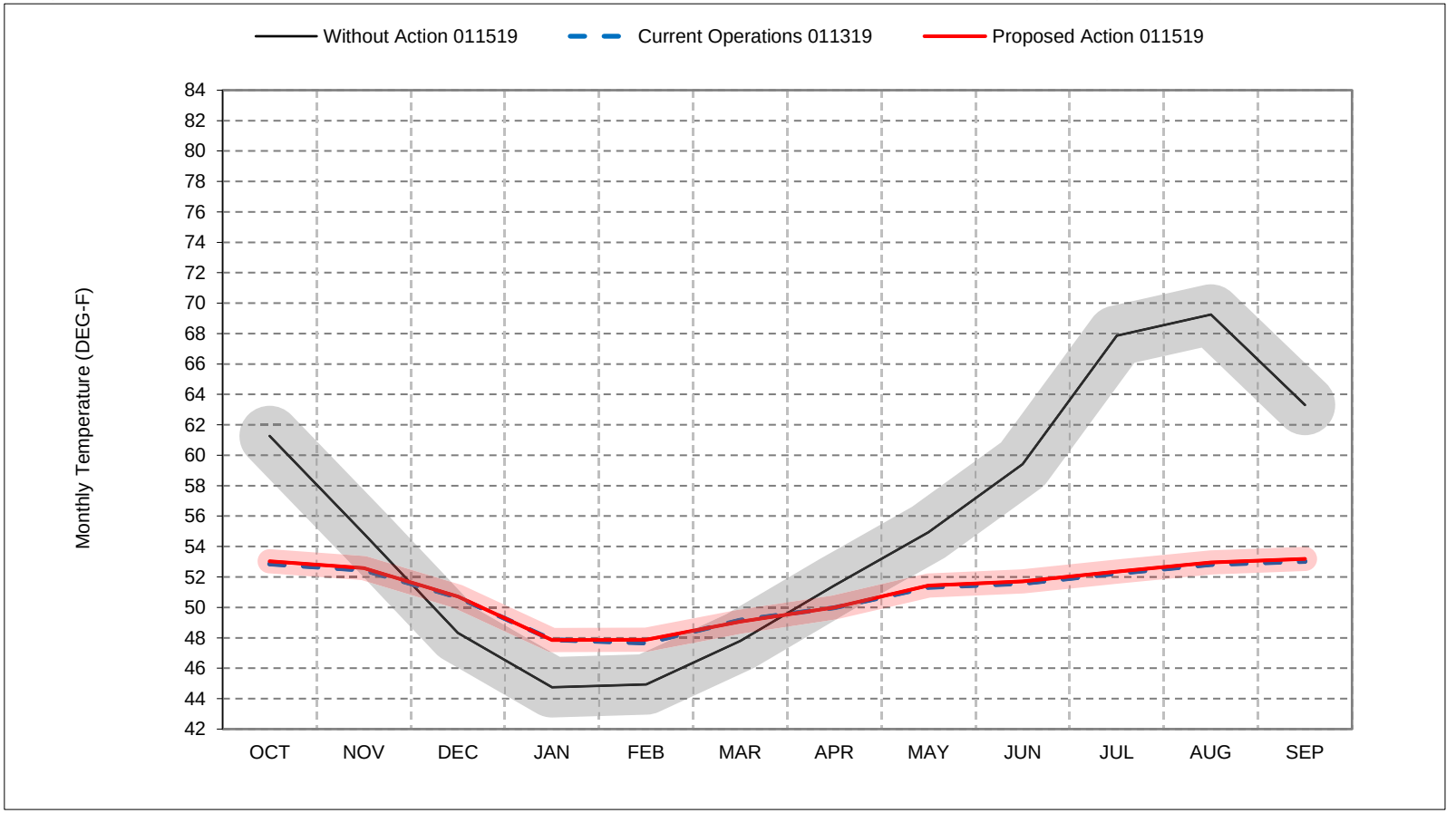
f New Melones forecasts are used as the basis of water operations.

Figure 22-1. Stanislaus River below Goodwin Dam, Long-Term Average Temperature



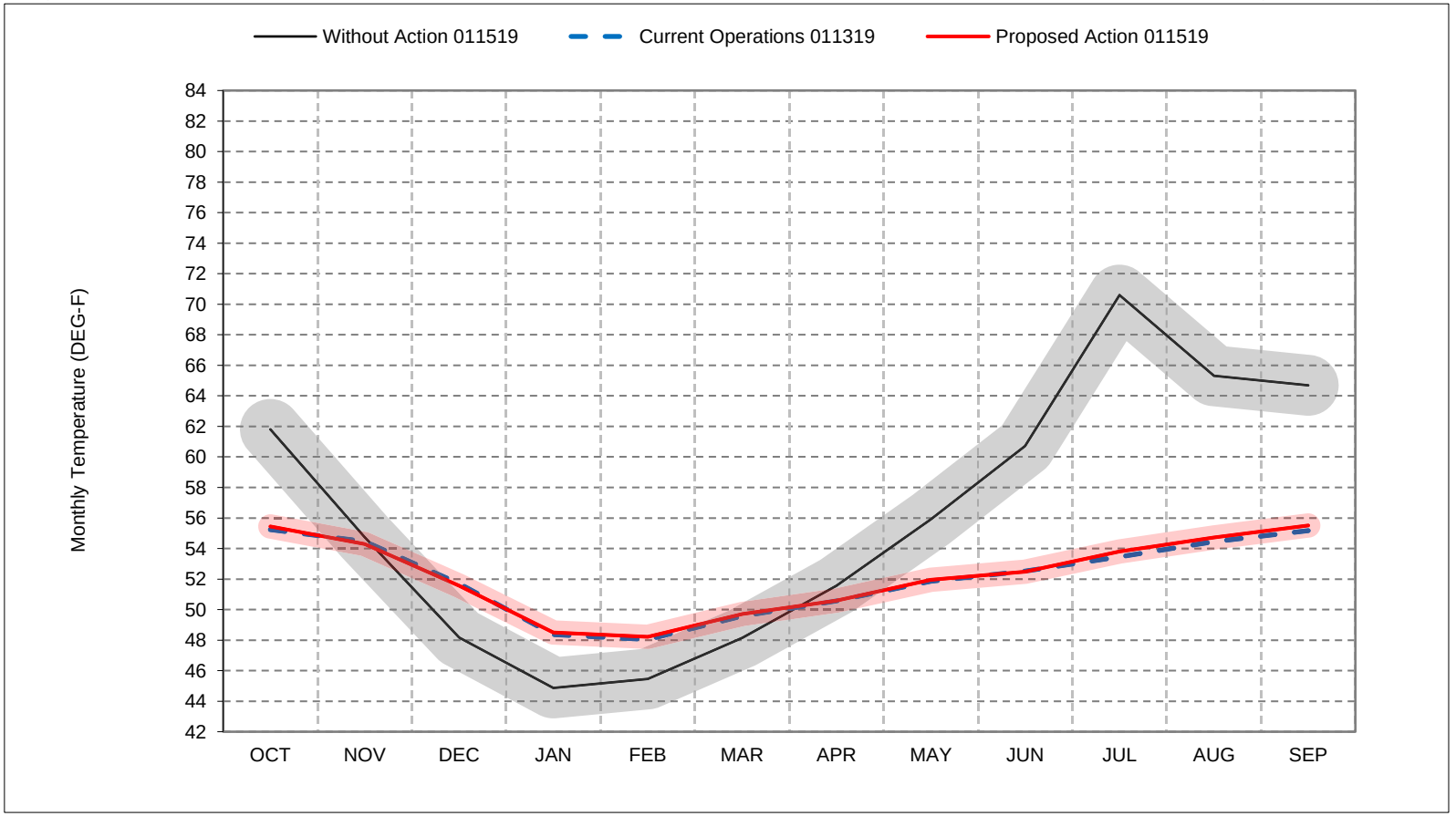
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 22-2. Stanislaus River below Goodwin Dam, Wet Year Average Temperature



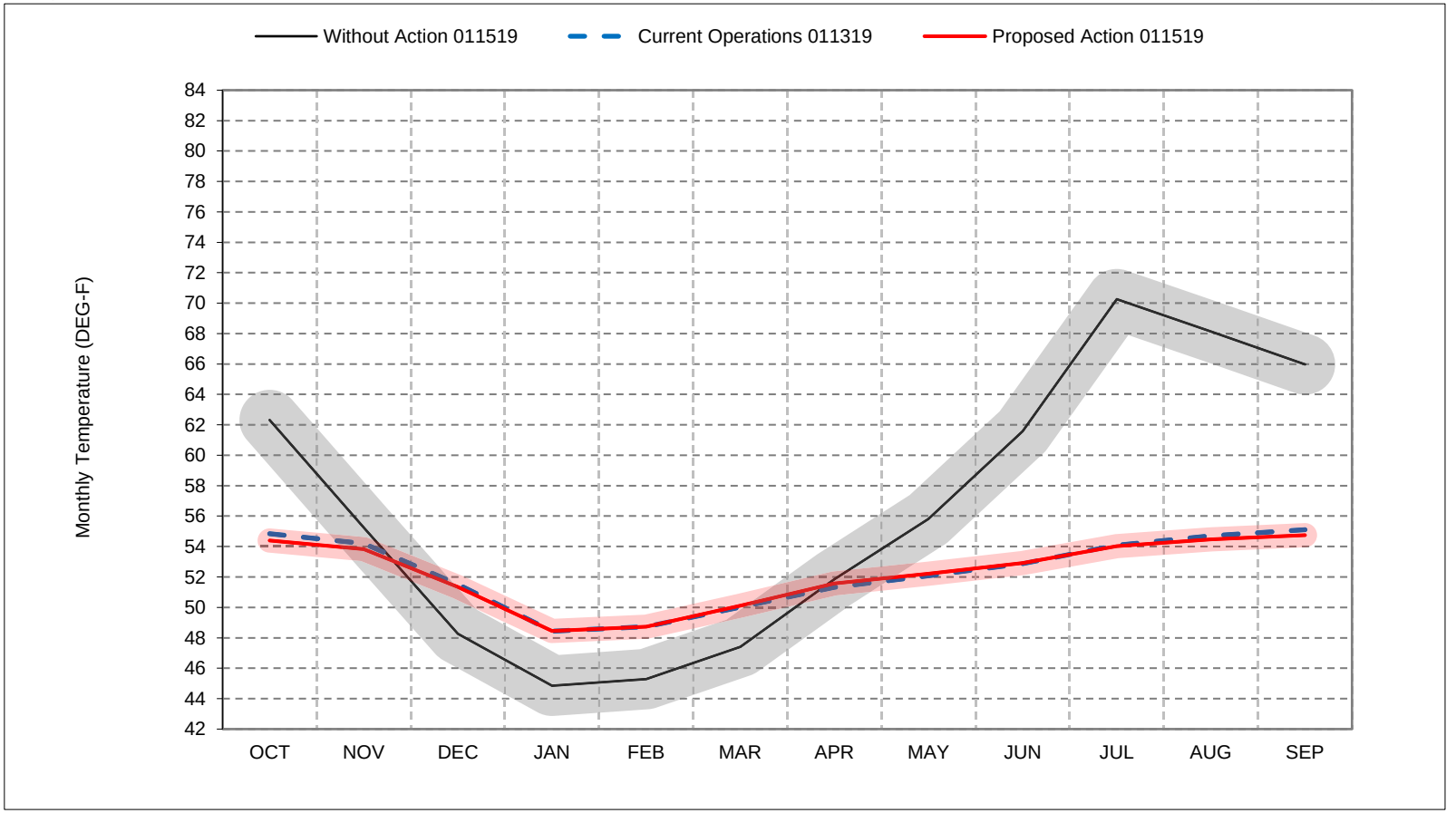
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 22-3. Stanislaus River below Goodwin Dam, Above Normal Year Average Temperature



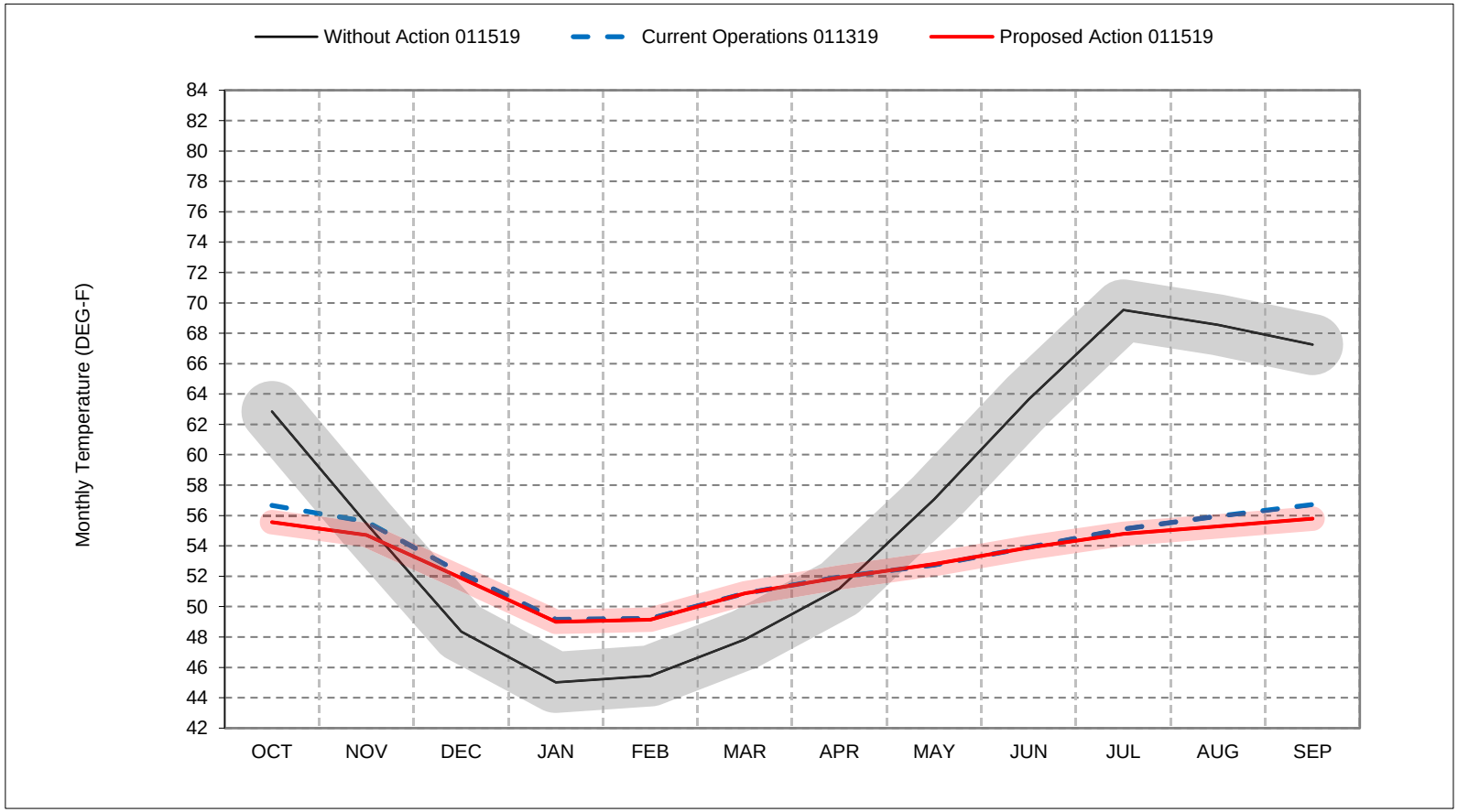
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 22-4. Stanislaus River below Goodwin Dam, Below Normal Year Average Temperature



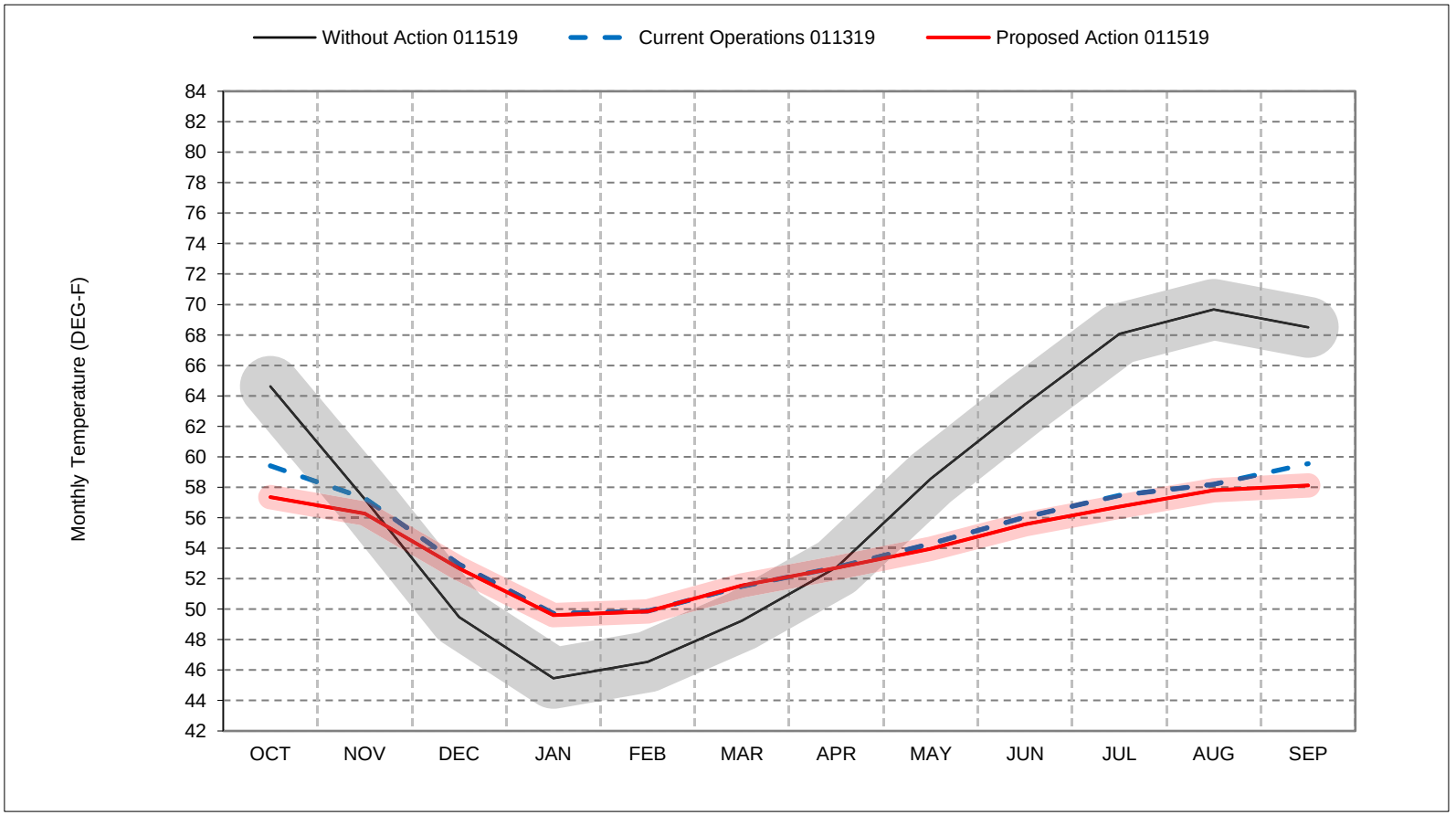
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 22-5. Stanislaus River below Goodwin Dam, Dry Year Average Temperature



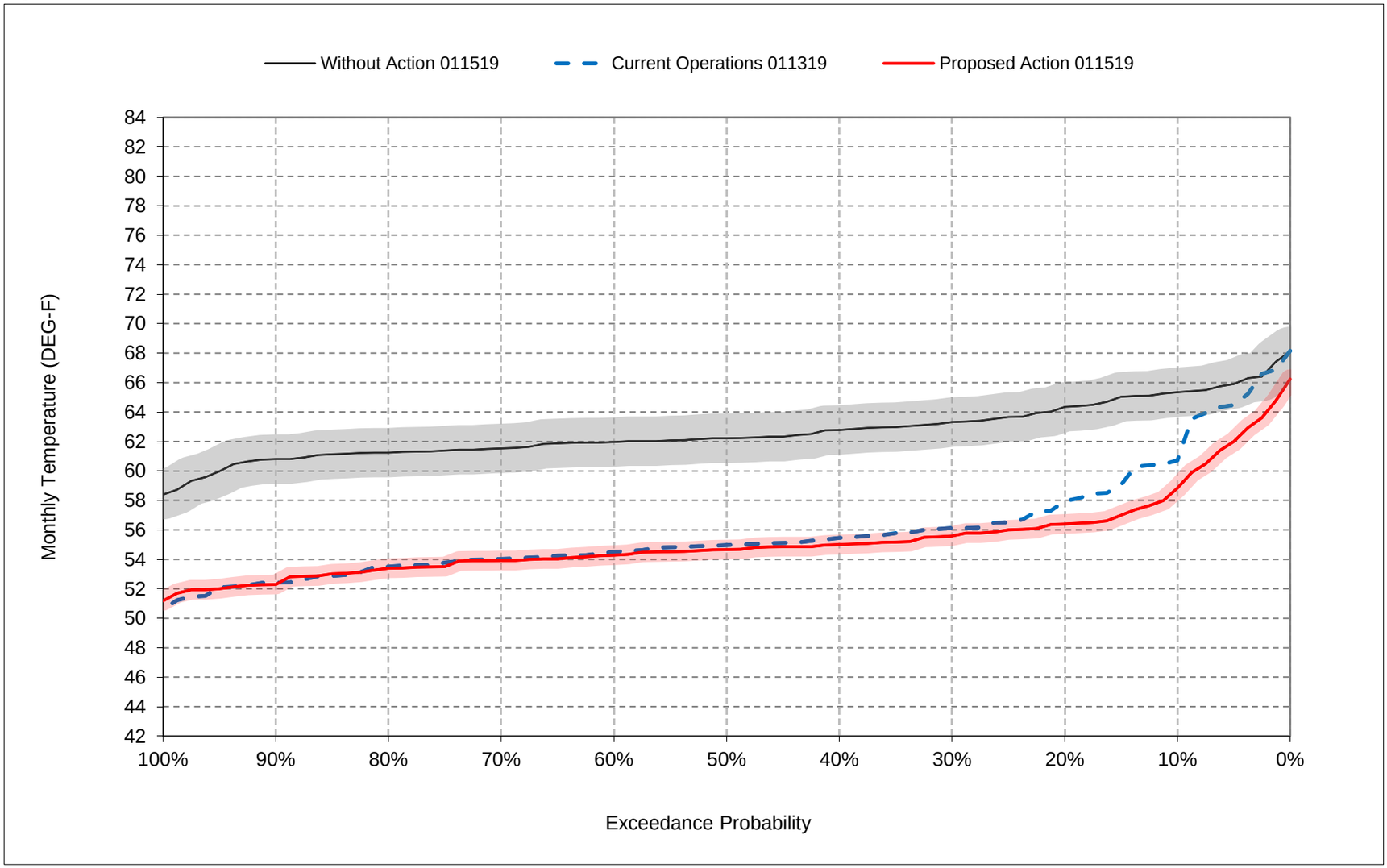
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 22-7. Stanislaus River below Goodwin Dam, October

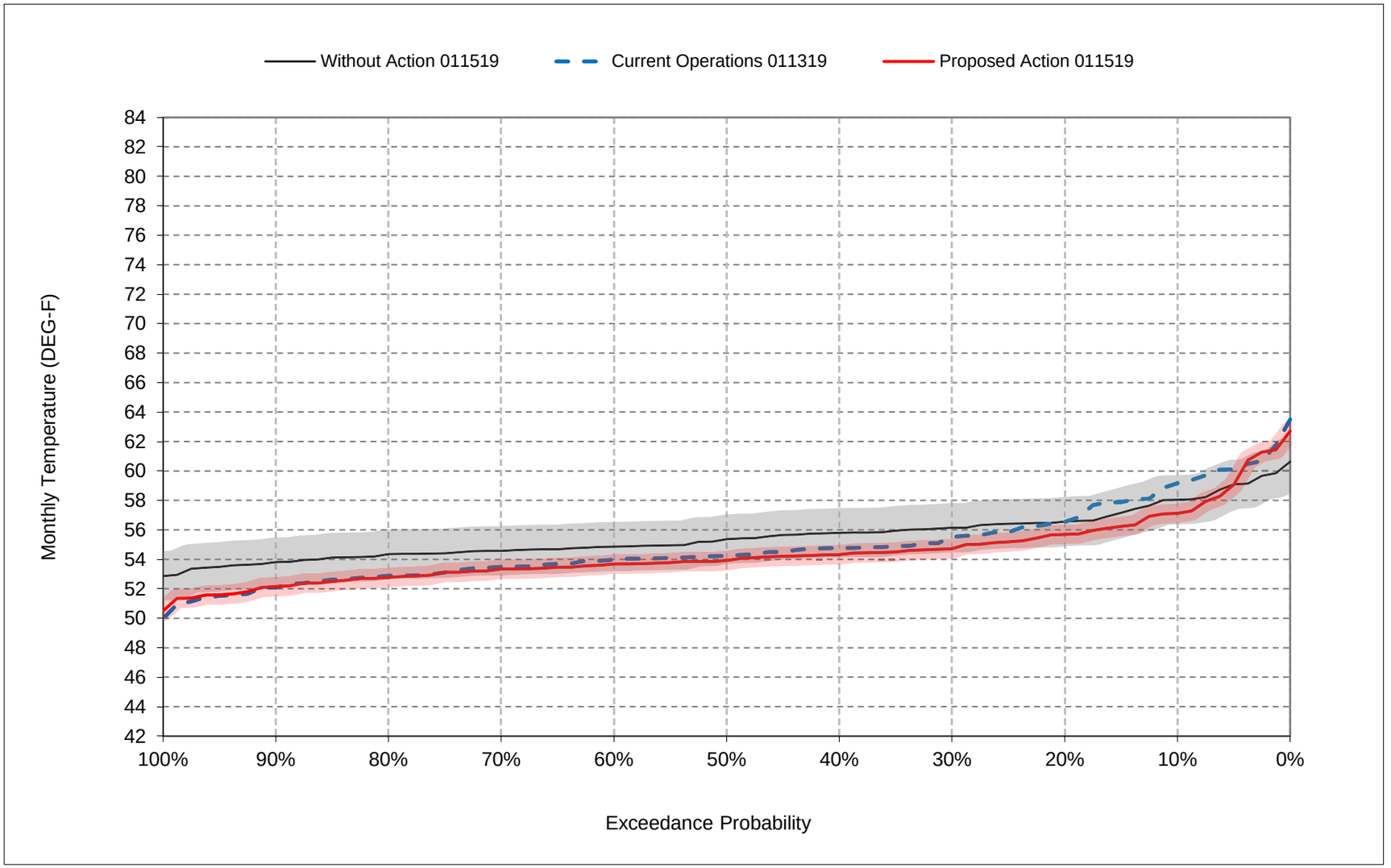


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-8. Stanislaus River below Goodwin Dam, November

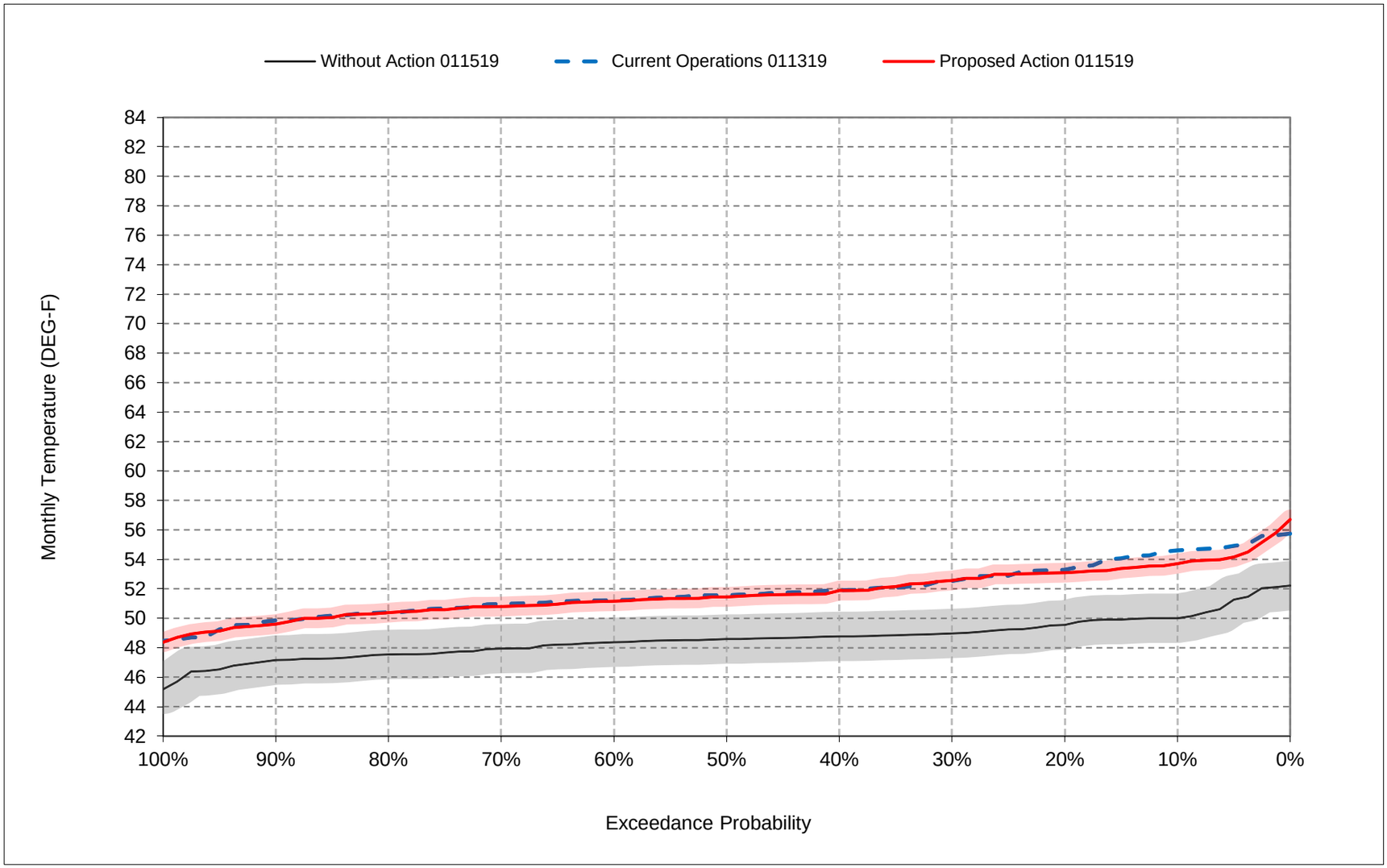


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-9. Stanislaus River below Goodwin Dam, December

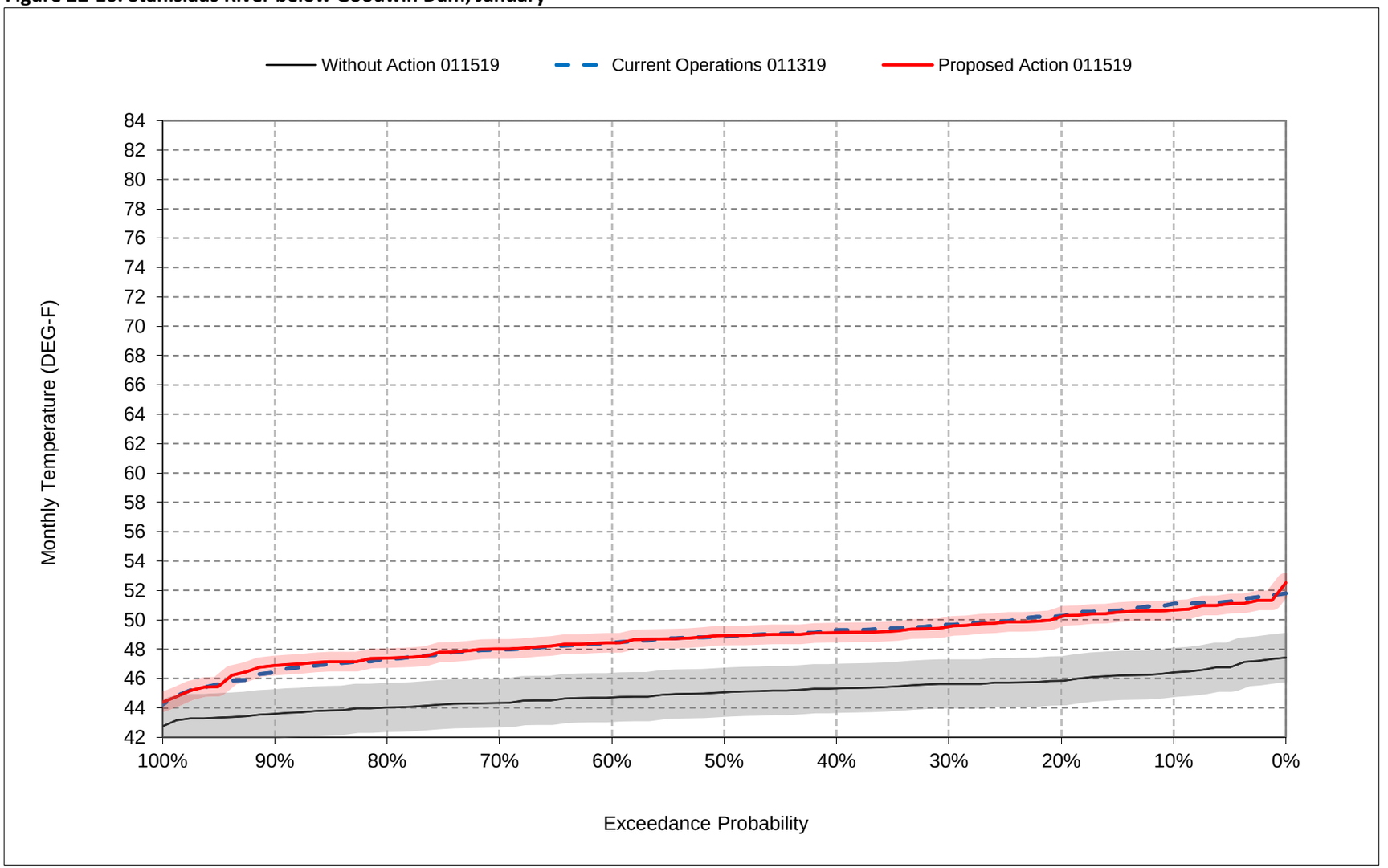


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-10. Stanislaus River below Goodwin Dam, January

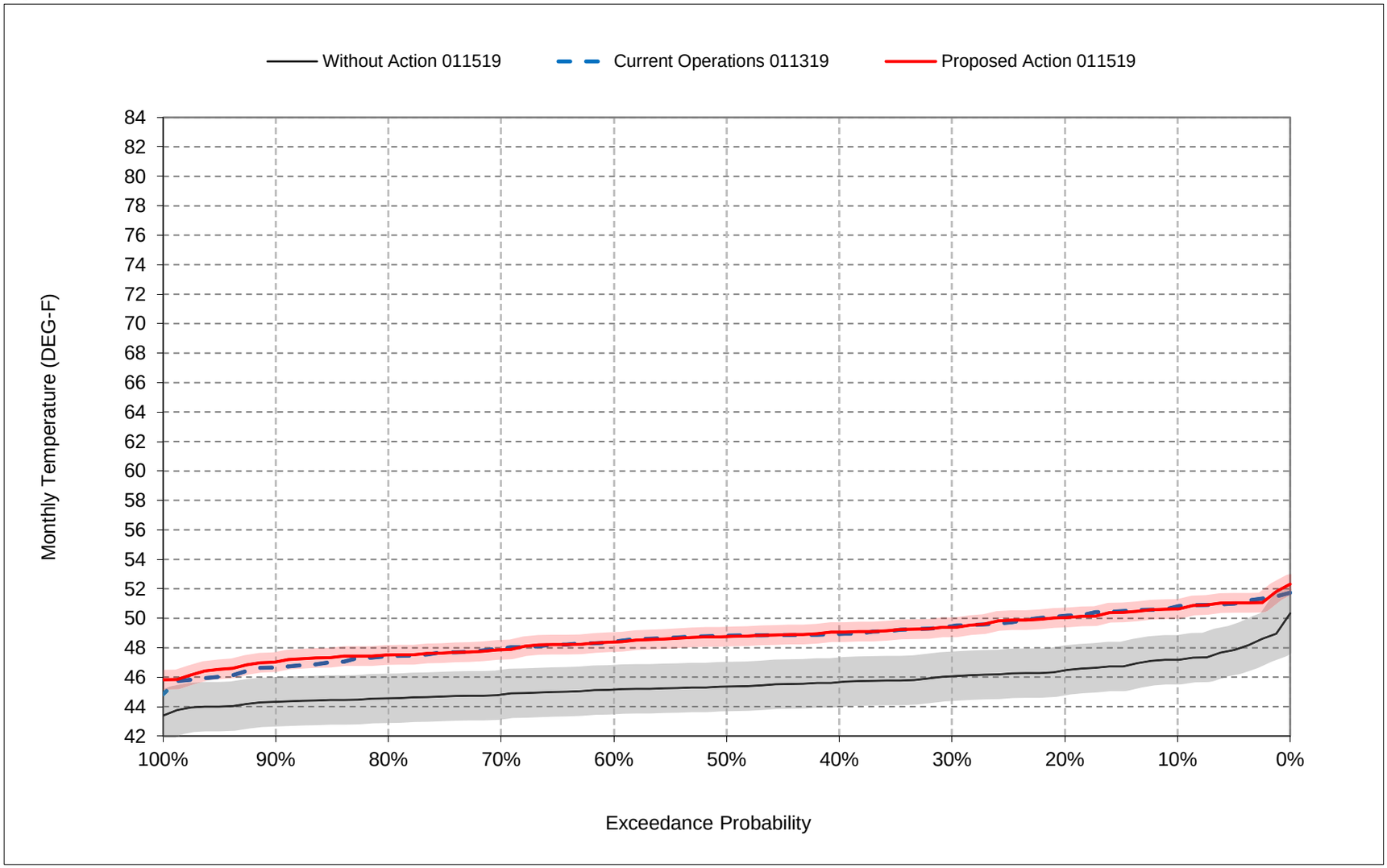


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-11. Stanislaus River below Goodwin Dam, February

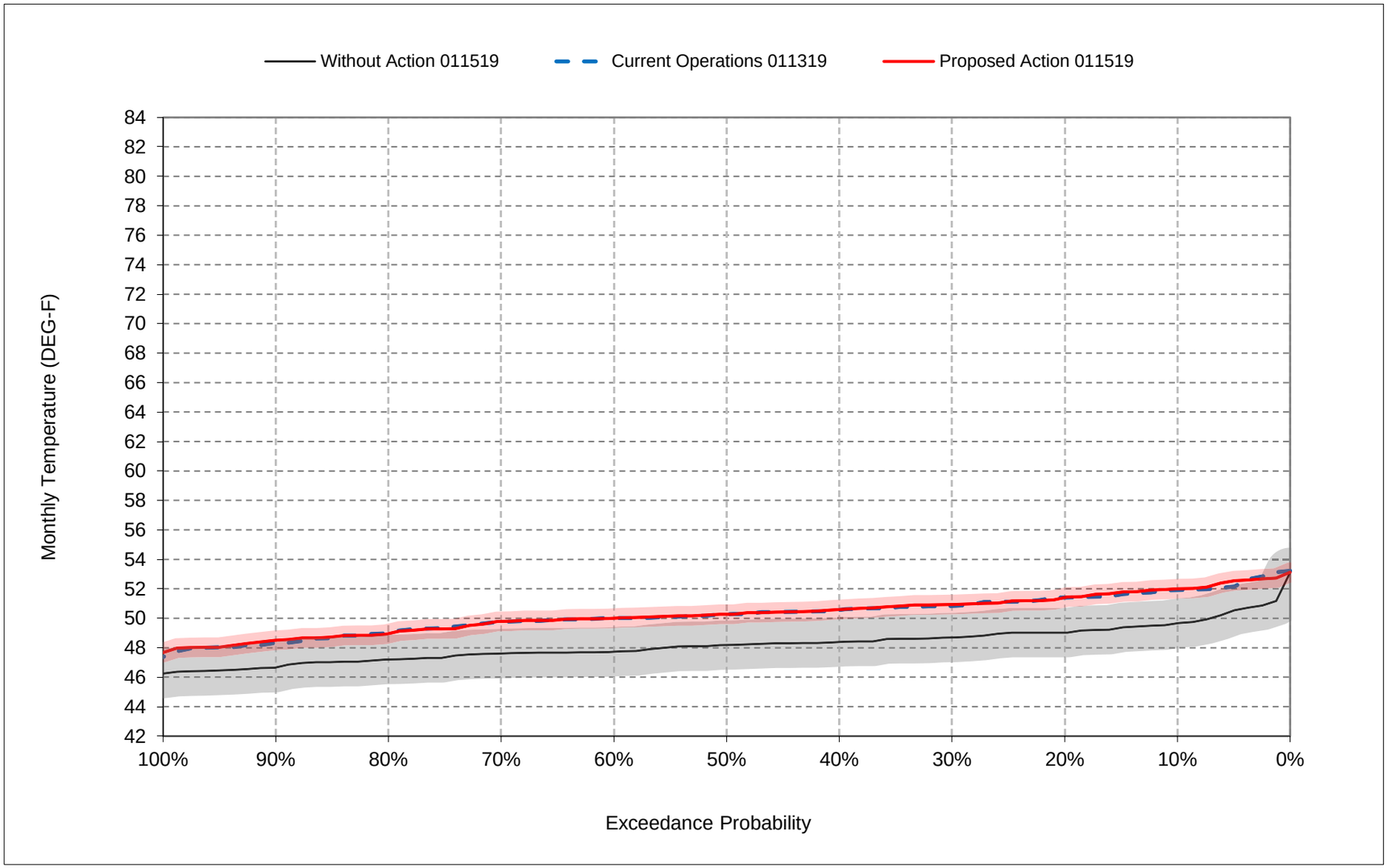


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-12. Stanislaus River below Goodwin Dam, March

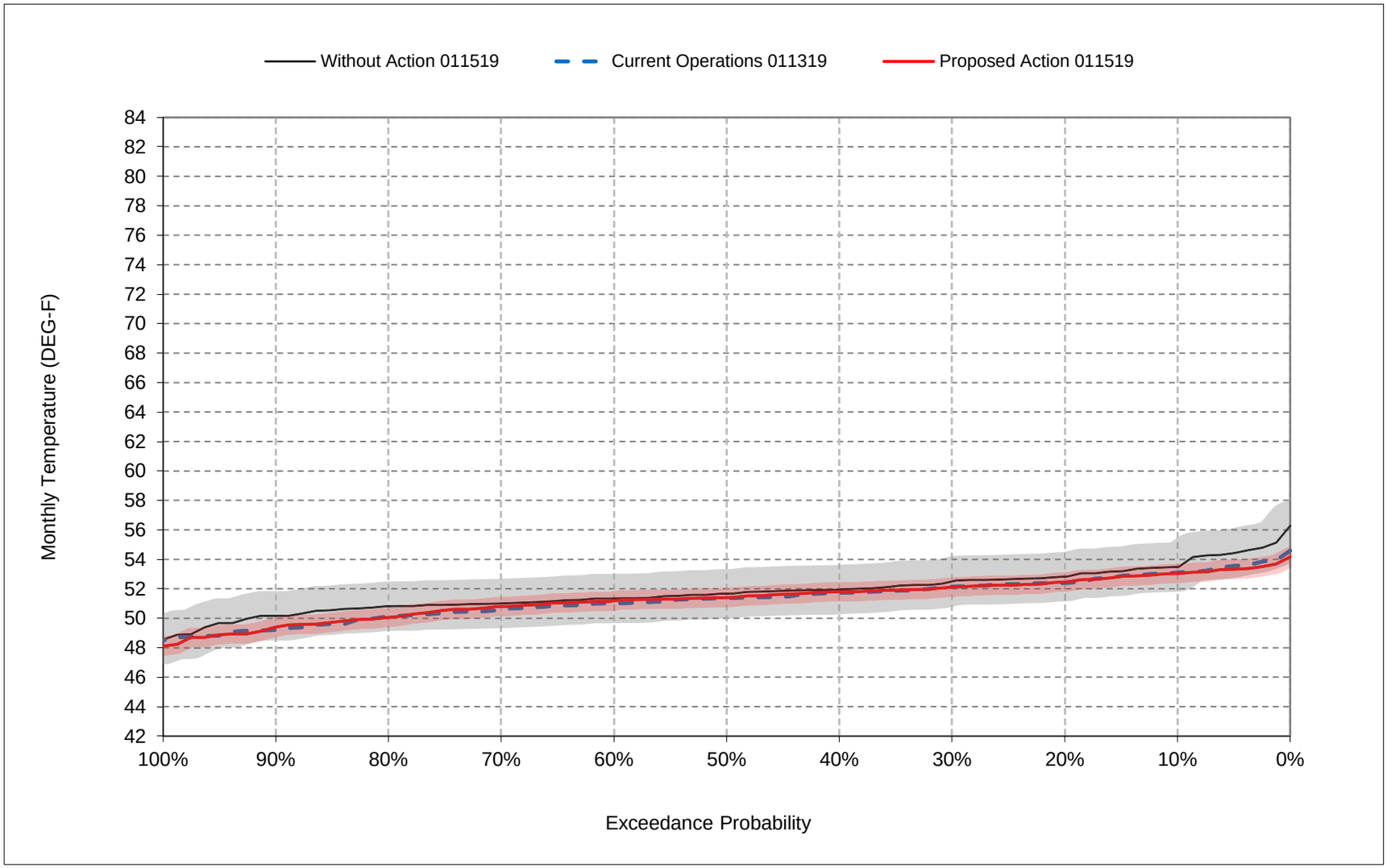


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-13. Stanislaus River below Goodwin Dam, April

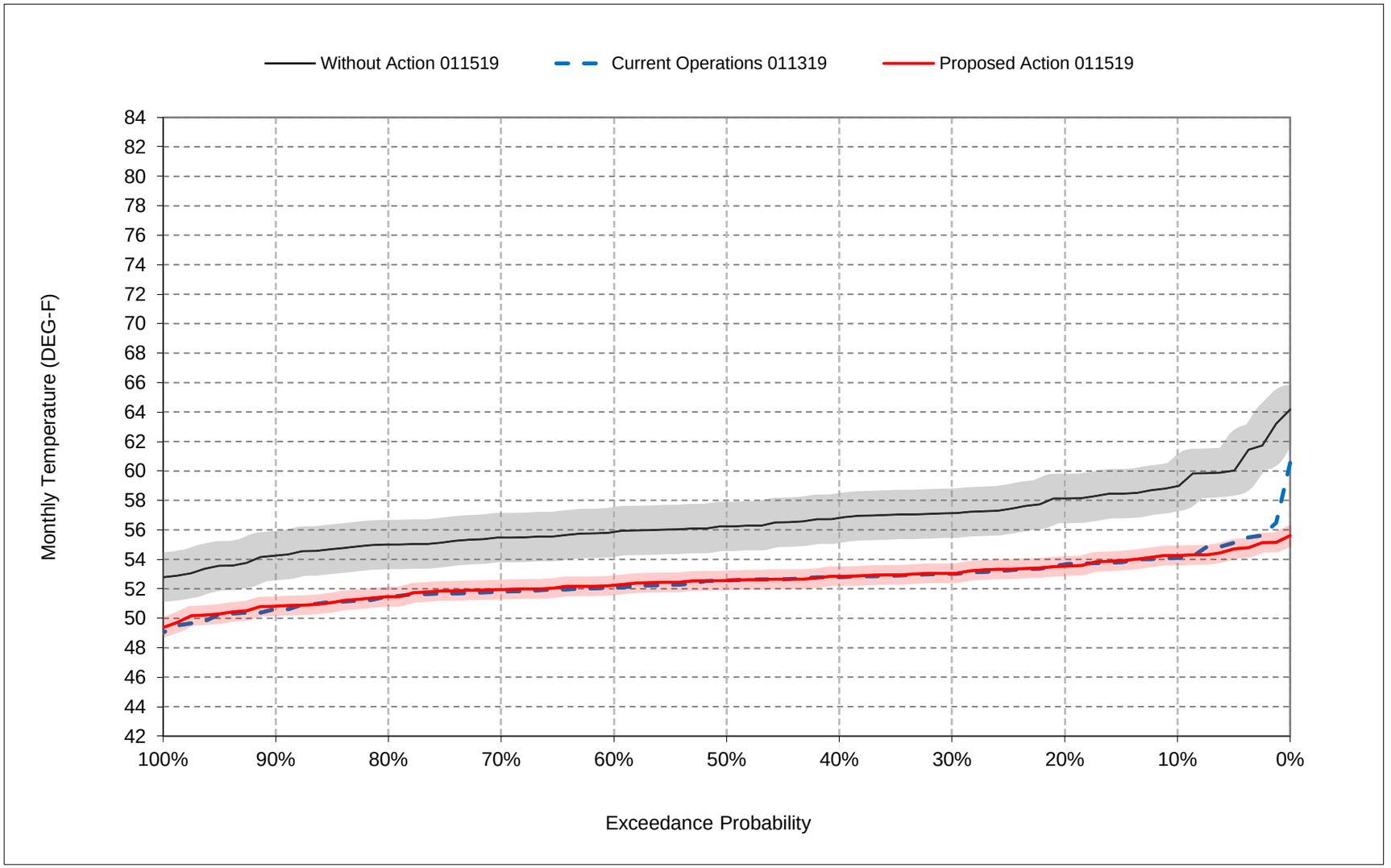


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-14. Stanislaus River below Goodwin Dam, May

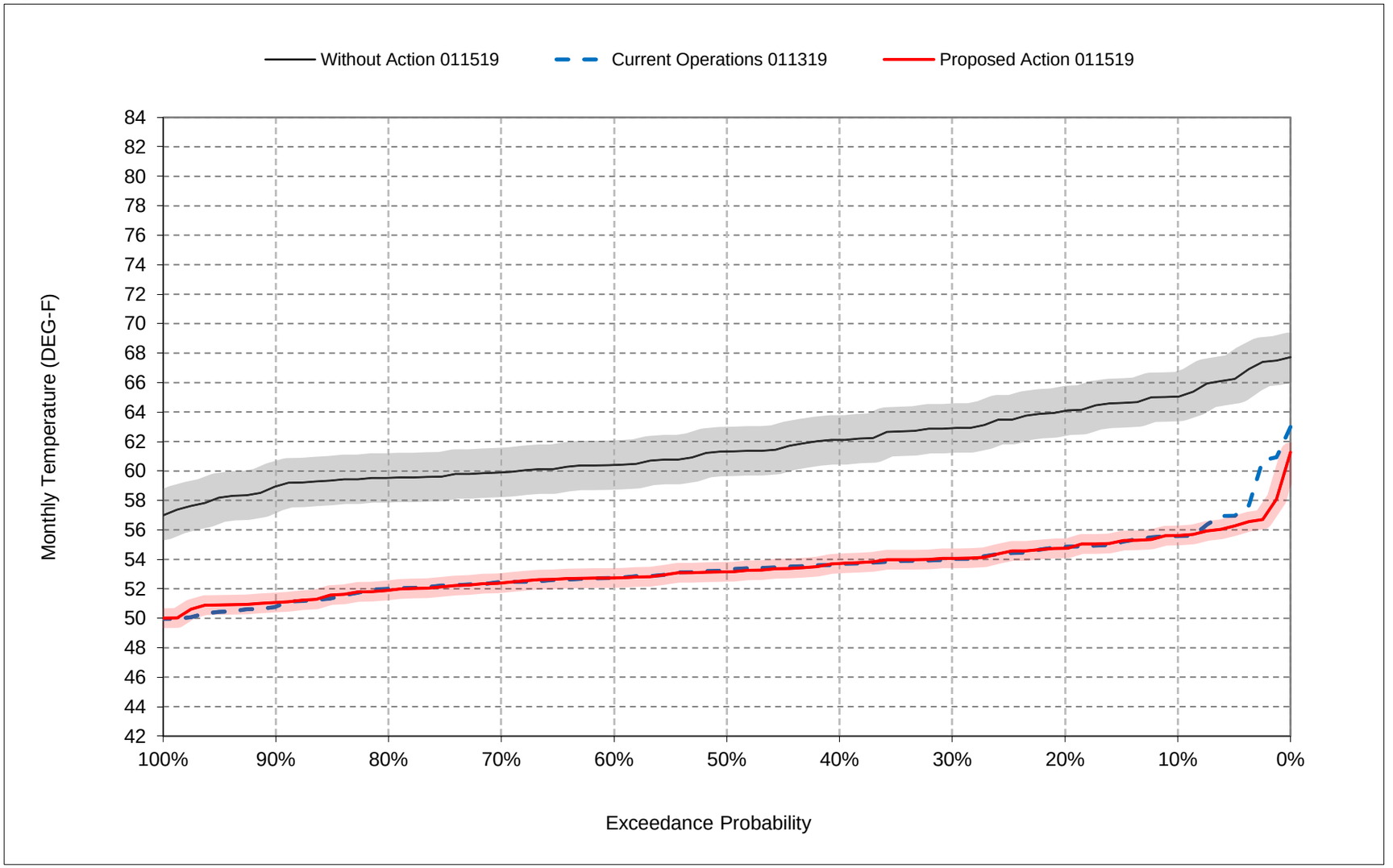


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-15. Stanislaus River below Goodwin Dam, June

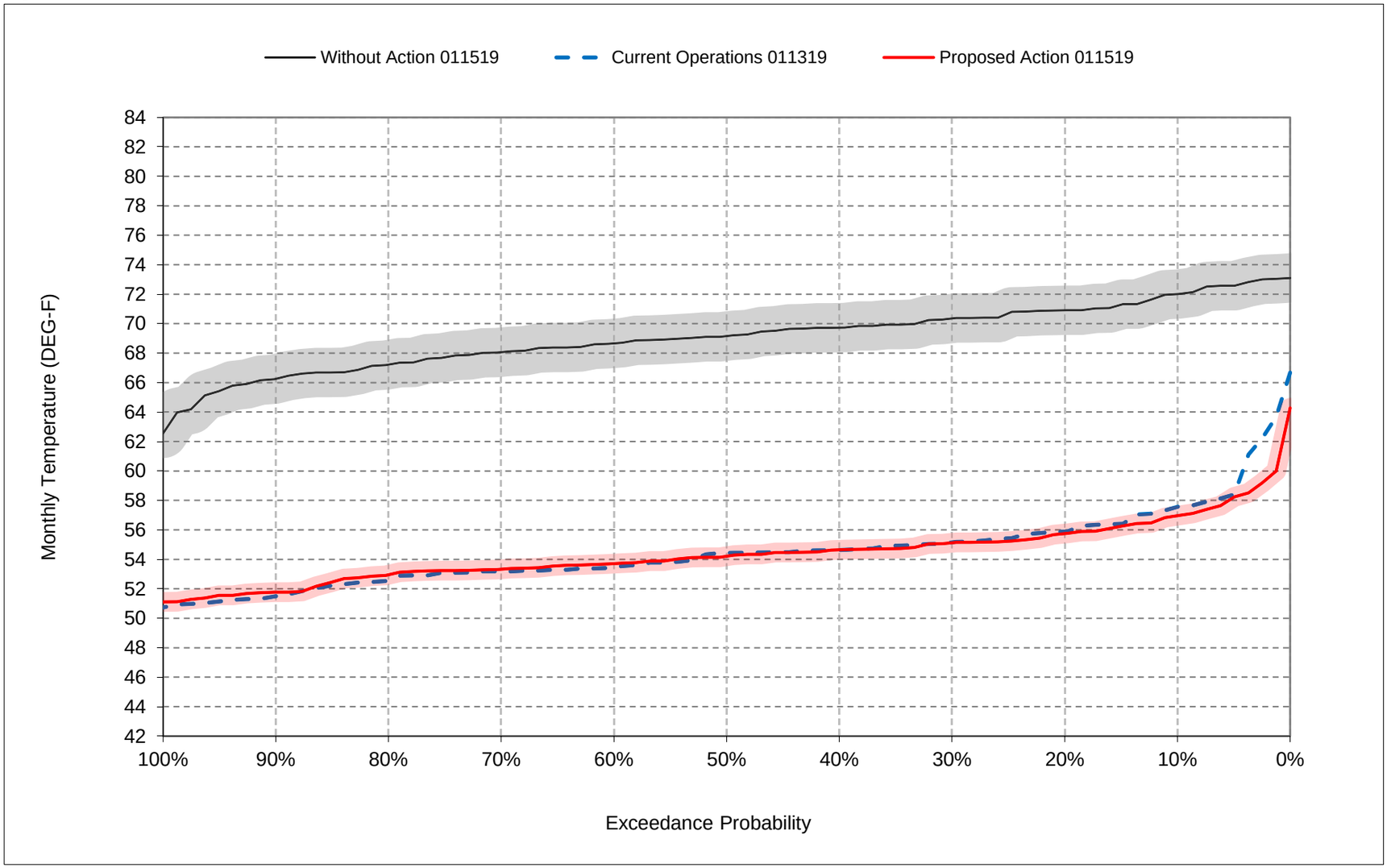


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-16. Stanislaus River below Goodwin Dam, July

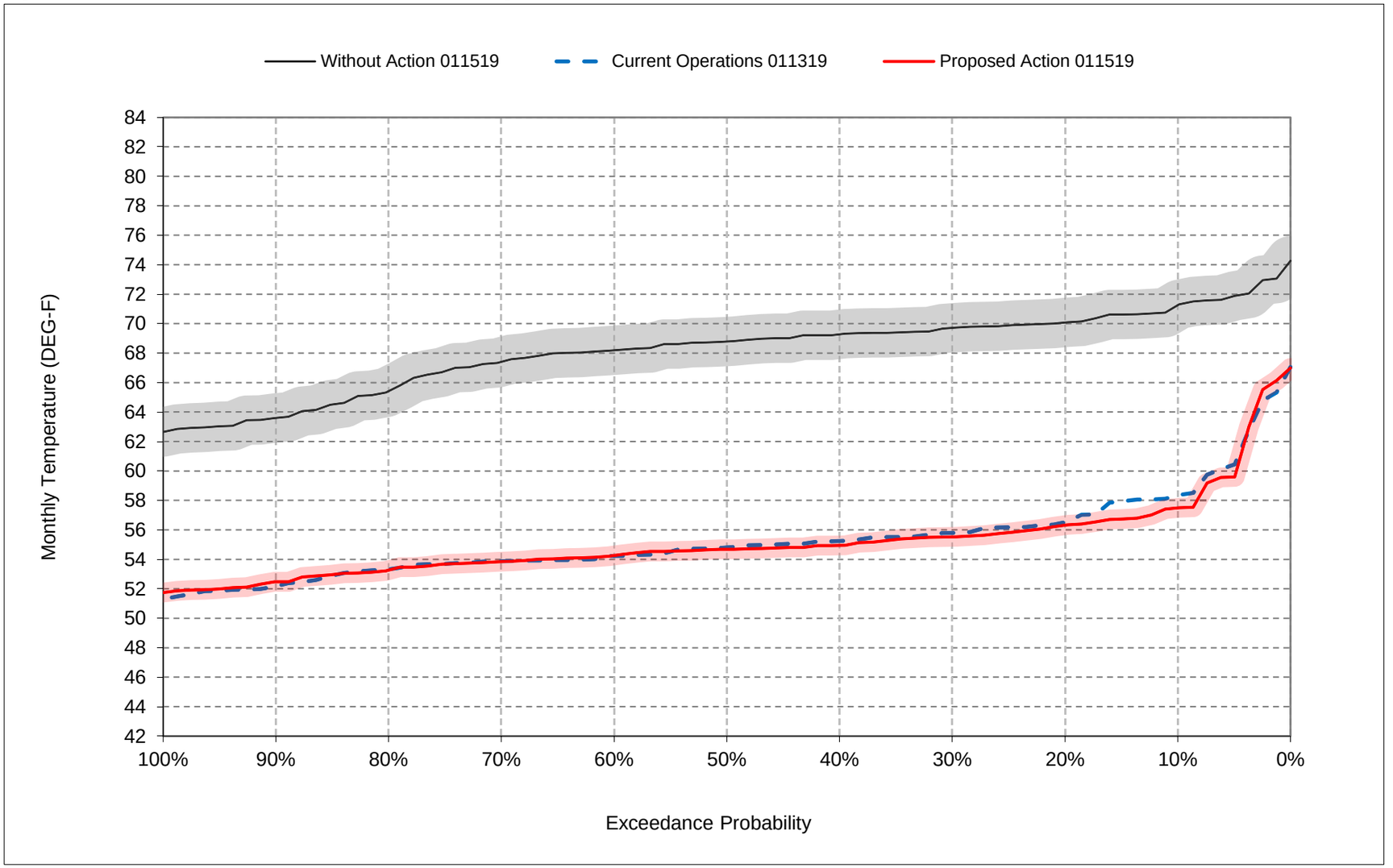


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 22-17. Stanislaus River below Goodwin Dam, August

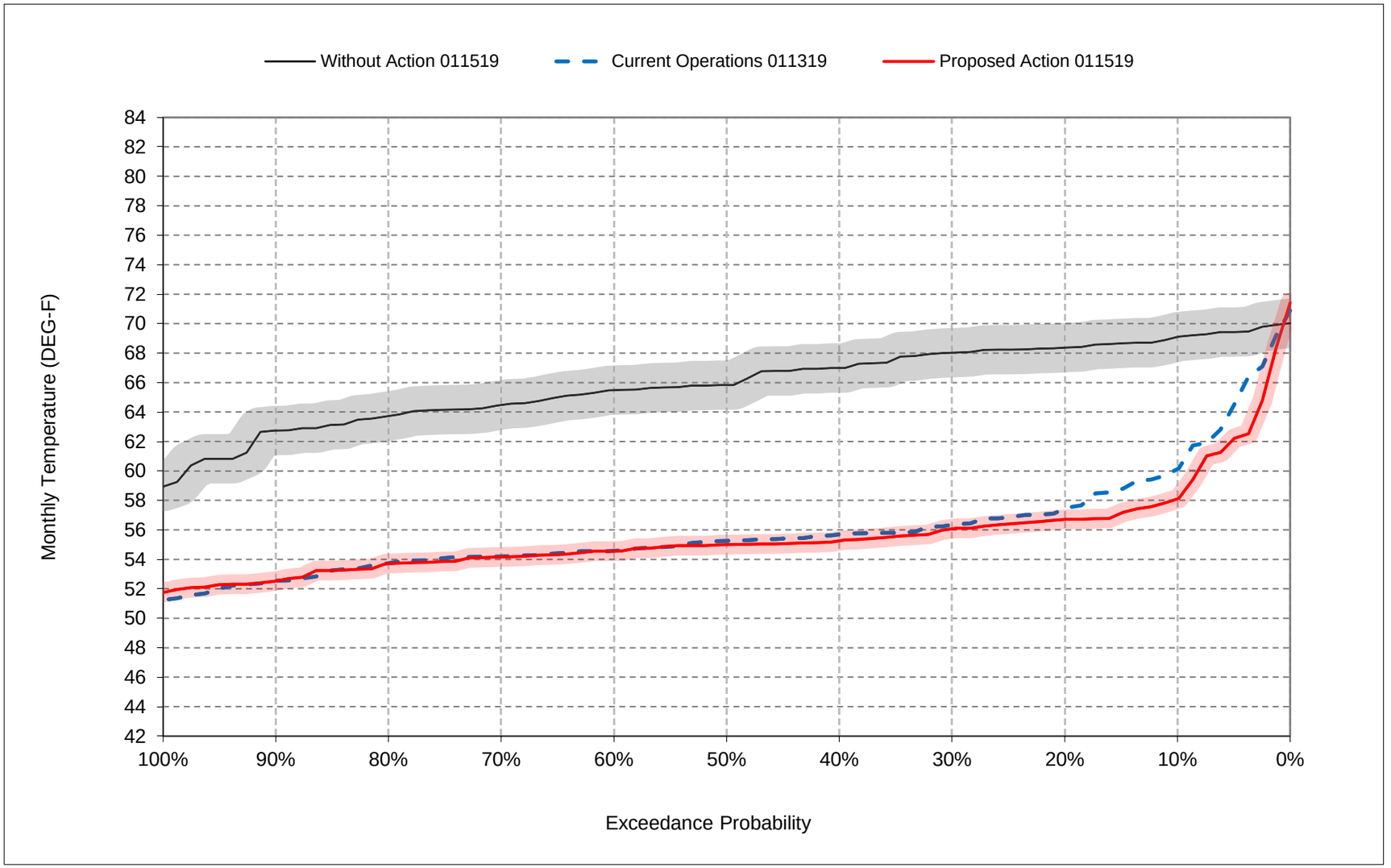


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*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.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Table 23-1. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	69.2	59.2	50.5	47.1	48.8	55.6	65.3	70.5	76.4	80.5	80.1	76.7
20%	68.4	58.0	49.8	46.5	47.6	50.9	61.4	68.3	74.5	79.7	79.7	76.3
30%	67.9	57.4	49.3	46.3	46.9	50.3	56.4	62.2	72.9	79.1	79.4	75.9
40%	67.0	57.0	49.0	46.0	46.6	49.7	54.5	58.7	67.7	78.7	79.2	75.6
50%	66.2	56.5	48.9	45.7	46.2	49.5	53.7	57.7	64.0	77.8	78.9	75.2
60%	64.6	55.7	48.6	45.2	46.0	49.1	52.8	57.4	62.2	77.2	78.5	74.6
70%	63.9	55.3	48.2	44.8	45.5	48.8	52.5	56.8	61.7	76.1	78.2	74.4
80%	63.3	54.8	47.7	44.5	45.2	48.1	52.1	56.1	60.8	75.2	77.8	74.0
90%	62.7	54.3	47.2	43.9	44.8	47.6	51.5	55.5	60.1	72.3	77.0	73.4
Long Term												
Full Simulation Period[a]	65.9	56.6	48.9	45.6	46.6	50.3	55.8	60.8	66.8	77.0	78.8	74.8
Water Year Types[b,c]												
Wet (23%)	65.1	55.9	48.6	45.0	45.4	48.4	52.4	55.8	60.6	72.8	78.5	74.2
Above Normal (24%)	65.1	55.8	48.5	45.3	46.0	49.0	52.7	56.9	62.7	76.7	78.8	75.4
Below Normal (10%)	65.7	56.2	48.6	45.5	46.1	48.7	55.0	57.5	64.5	77.4	78.4	74.4
Dry (16%)	66.1	56.7	48.7	45.7	46.7	49.9	56.9	62.4	71.2	79.3	78.6	74.4
Critical (27%)	67.3	58.0	49.8	46.4	48.4	53.9	61.3	68.8	74.2	79.3	79.1	75.0

Current Operations 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-7.6	-0.5	**2.9**	**4.2**	**3.8**	**0.1**	-10.0	-12.8	-12.7	-15.1	-14.7	-12.2
20%	-9.1	-1.1	**2.8**	**4.3**	**4.0**	**4.2**	-6.6	-11.5	-12.1	-15.1	-15.4	-13.0
30%	-10.3	-1.2	**2.9**	**3.8**	**4.3**	**4.3**	-2.3	-6.2	-11.2	-15.0	-16.0	-13.9
40%	-10.2	-1.9	**2.4**	**3.6**	**4.2**	**4.3**	-0.8	-3.4	-7.0	-15.0	-16.3	-13.9
50%	-9.8	-1.6	**2.2**	**3.4**	**4.2**	**4.3**	-0.6	-2.7	-4.7	-14.6	-16.4	-14.0
60%	-8.7	-1.2	**2.1**	**3.6**	**4.1**	**4.1**	-0.2	-3.0	-5.6	-14.6	-16.3	-13.9
70%	-8.7	-1.2	**2.3**	**3.6**	**4.1**	**3.3**	-0.3	-2.9	-5.8	-14.0	-16.4	-14.0
80%	-8.5	-1.1	**2.4**	**3.4**	**4.1**	**2.9**	-0.2	-2.5	-5.5	-13.6	-16.3	-14.1
90%	-8.7	-1.5	**2.5**	**3.2**	**3.6**	**2.0**	-0.7	-2.9	-5.7	-13.7	-17.2	-15.3
Long Term												
Full Simulation Period[a]	-8.7	-1.2	**2.5**	**3.6**	**3.8**	**2.9**	-2.6	-5.6	-7.9	-14.1	-16.1	-13.3
Water Year Types[b,c]												
Wet (23%)	-10.7	-2.5	**1.9**	**3.7**	**4.0**	**1.8**	-1.1	-2.6	-5.4	-13.3	-19.2	-16.4
Above Normal (24%)	-8.6	-0.9	**2.8**	**3.7**	**3.9**	**3.7**	-0.3	-2.3	-6.4	-14.8	-16.6	-14.3
Below Normal (10%)	-9.7	-1.5	**2.4**	**3.3**	**4.2**	**4.6**	-2.2	-3.3	-5.7	-14.1	-16.0	-13.3
Dry (16%)	-8.2	-0.7	**2.9**	**3.8**	**4.2**	**4.7**	-2.9	-7.0	-10.0	-15.1	-15.1	-12.1
Critical (27%)	-6.8	-0.7	**2.5**	**3.4**	**3.2**	**1.4**	-6.1	-11.3	-10.9	-13.4	-13.6	-10.4

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 23-2. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	69.2	59.2	50.5	47.1	48.8	55.6	65.3	70.5	76.4	80.5	80.1	76.7
20%	68.4	58.0	49.8	46.5	47.6	50.9	61.4	68.3	74.5	79.7	79.7	76.3
30%	67.9	57.4	49.3	46.3	46.9	50.3	56.4	62.2	72.9	79.1	79.4	75.9
40%	67.0	57.0	49.0	46.0	46.6	49.7	54.5	58.7	67.7	78.7	79.2	75.6
50%	66.2	56.5	48.9	45.7	46.2	49.5	53.7	57.7	64.0	77.8	78.9	75.2
60%	64.6	55.7	48.6	45.2	46.0	49.1	52.8	57.4	62.2	77.2	78.5	74.6
70%	63.9	55.3	48.2	44.8	45.5	48.8	52.5	56.8	61.7	76.1	78.2	74.4
80%	63.3	54.8	47.7	44.5	45.2	48.1	52.1	56.1	60.8	75.2	77.8	74.0
90%	62.7	54.3	47.2	43.9	44.8	47.6	51.5	55.5	60.1	72.3	77.0	73.4
Long Term												
Full Simulation Period[a]	65.9	56.6	48.9	45.6	46.6	50.3	55.8	60.8	66.8	77.0	78.8	74.8
Water Year Types[b,c]												
Wet (23%)	65.1	55.9	48.6	45.0	45.4	48.4	52.4	55.8	60.6	72.8	78.5	74.2
Above Normal (24%)	65.1	55.8	48.5	45.3	46.0	49.0	52.7	56.9	62.7	76.7	78.8	75.4
Below Normal (10%)	65.7	56.2	48.6	45.5	46.1	48.7	55.0	57.5	64.5	77.4	78.4	74.4
Dry (16%)	66.1	56.7	48.7	45.7	46.7	49.9	56.9	62.4	71.2	79.3	78.6	74.4
Critical (27%)	67.3	58.0	49.8	46.4	48.4	53.9	61.3	68.8	74.2	79.3	79.1	75.0

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-9.5	-2.2	**2.2**	**4.0**	**3.9**	**0.0**	-9.0	-11.9	-11.2	-12.7	-12.9	-12.2
20%	-10.4	-1.9	**2.7**	**4.0**	**4.2**	**4.2**	-5.9	-10.2	-9.9	-13.2	-14.1	-13.1
30%	-10.6	-1.8	**2.7**	**3.7**	**4.4**	**4.4**	-1.8	-5.5	-9.5	-13.7	-14.8	-13.3
40%	-10.4	-2.0	**2.4**	**3.5**	**4.3**	**4.6**	-0.7	-2.9	-5.8	-14.6	-16.1	-13.6
50%	-10.1	-1.8	**2.1**	**3.4**	**4.3**	**4.3**	-0.8	-2.9	-3.9	-14.3	-16.3	-14.0
60%	-8.8	-1.3	**2.1**	**3.7**	**4.1**	**4.0**	-0.3	-3.1	-2.9	-14.0	-16.4	-13.8
70%	-8.8	-1.4	**2.2**	**3.6**	**4.0**	**3.1**	-0.5	-2.9	-3.0	-13.3	-16.3	-14.3
80%	-8.6	-1.2	**2.2**	**3.5**	**4.1**	**2.5**	-0.6	-2.7	-4.6	-13.3	-16.2	-14.0
90%	-8.8	-1.1	**2.5**	**3.5**	**3.7**	**1.8**	-0.9	-2.8	-5.5	-11.4	-16.6	-15.2
Long Term												
Full Simulation Period[a]	-9.2	-1.6	**2.3**	**3.6**	**3.9**	**2.9**	-2.5	-5.3	-6.5	-13.2	-15.6	-13.3
Water Year Types[b,c]												
Wet (23%)	-10.6	-2.2	**2.0**	**3.6**	**4.0**	**1.4**	-1.0	-2.5	-5.8	-13.1	-18.9	-16.2
Above Normal (24%)	-8.4	-1.0	**2.7**	**3.8**	**4.1**	**3.9**	-0.8	-2.8	-3.4	-13.5	-16.2	-13.9
Below Normal (10%)	-10.1	-1.8	**2.3**	**3.2**	**4.1**	**4.7**	-2.2	-3.3	-5.1	-14.0	-16.1	-13.5
Dry (16%)	-9.1	-1.4	**2.6**	**3.7**	**4.4**	**4.7**	-2.6	-6.1	-8.6	-14.7	-15.3	-12.5
Critical (27%)	-8.5	-1.5	**2.2**	**3.3**	**3.4**	**1.5**	-5.4	-10.2	-9.2	-11.9	-12.2	-10.5

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 23-3. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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).

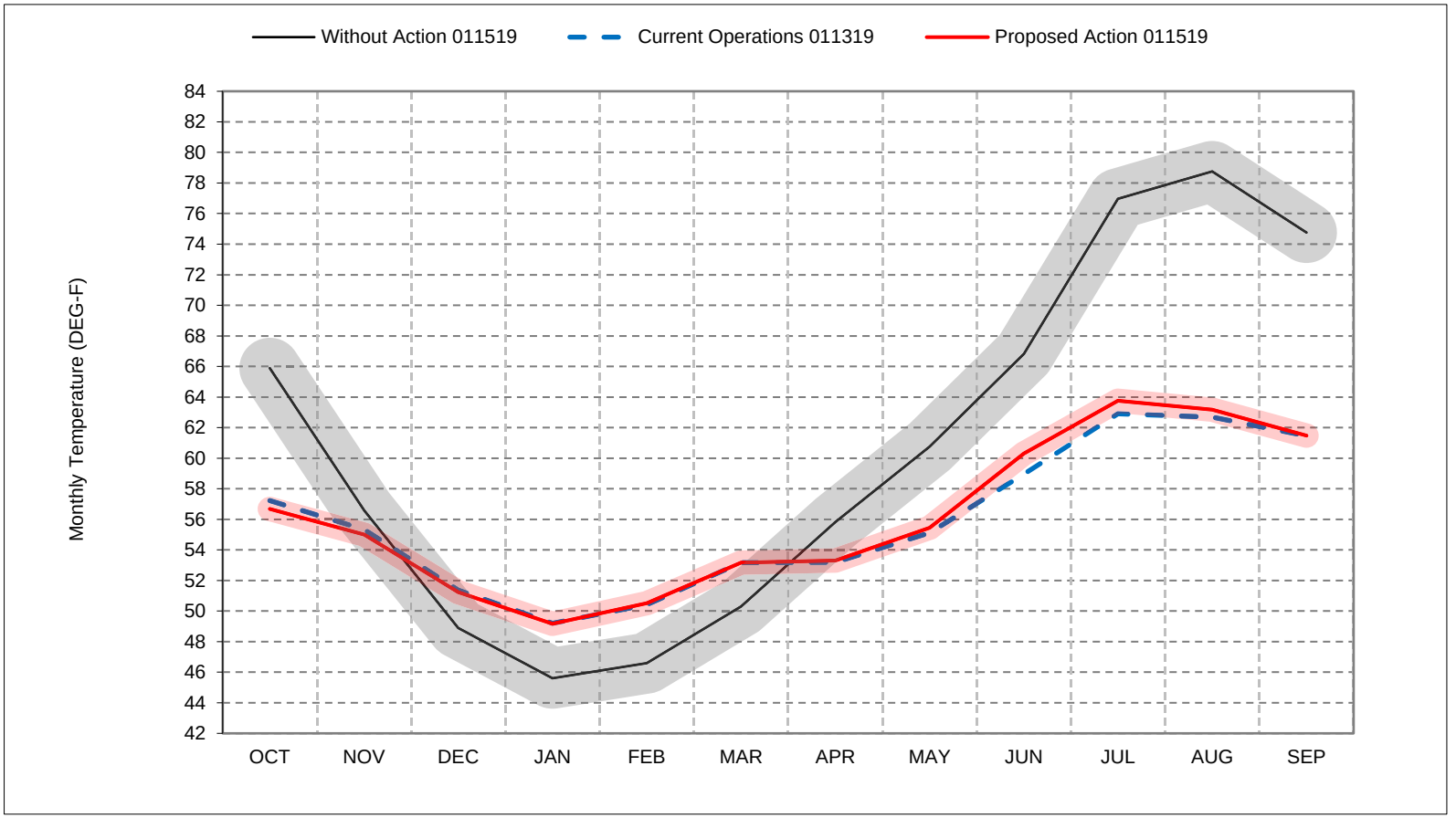
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

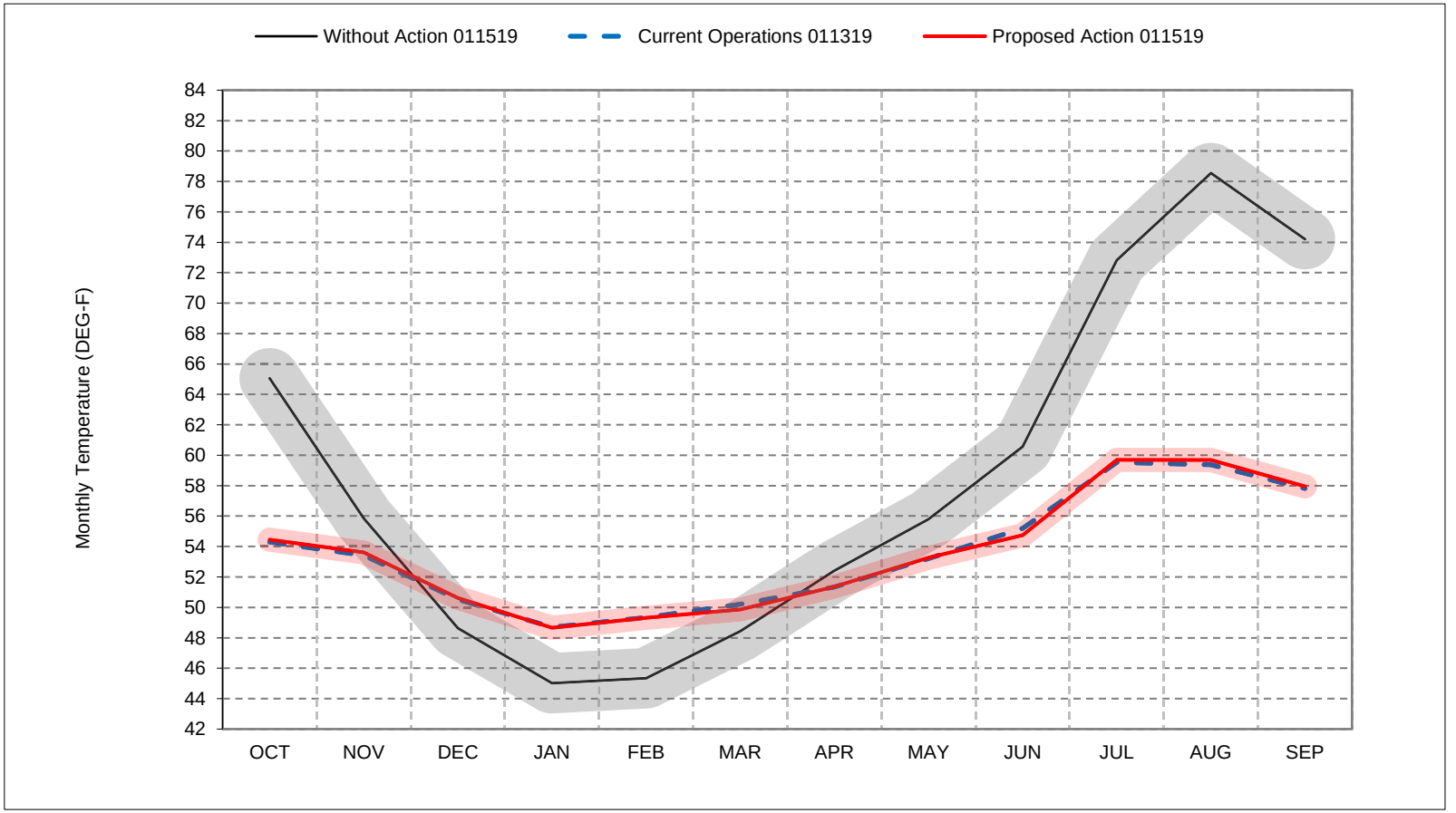
f New Melones forecasts are used as the basis of water operations.

Figure 23-1. Stanislaus River at Orange Blossom Bridge, Long-Term Average Temperature



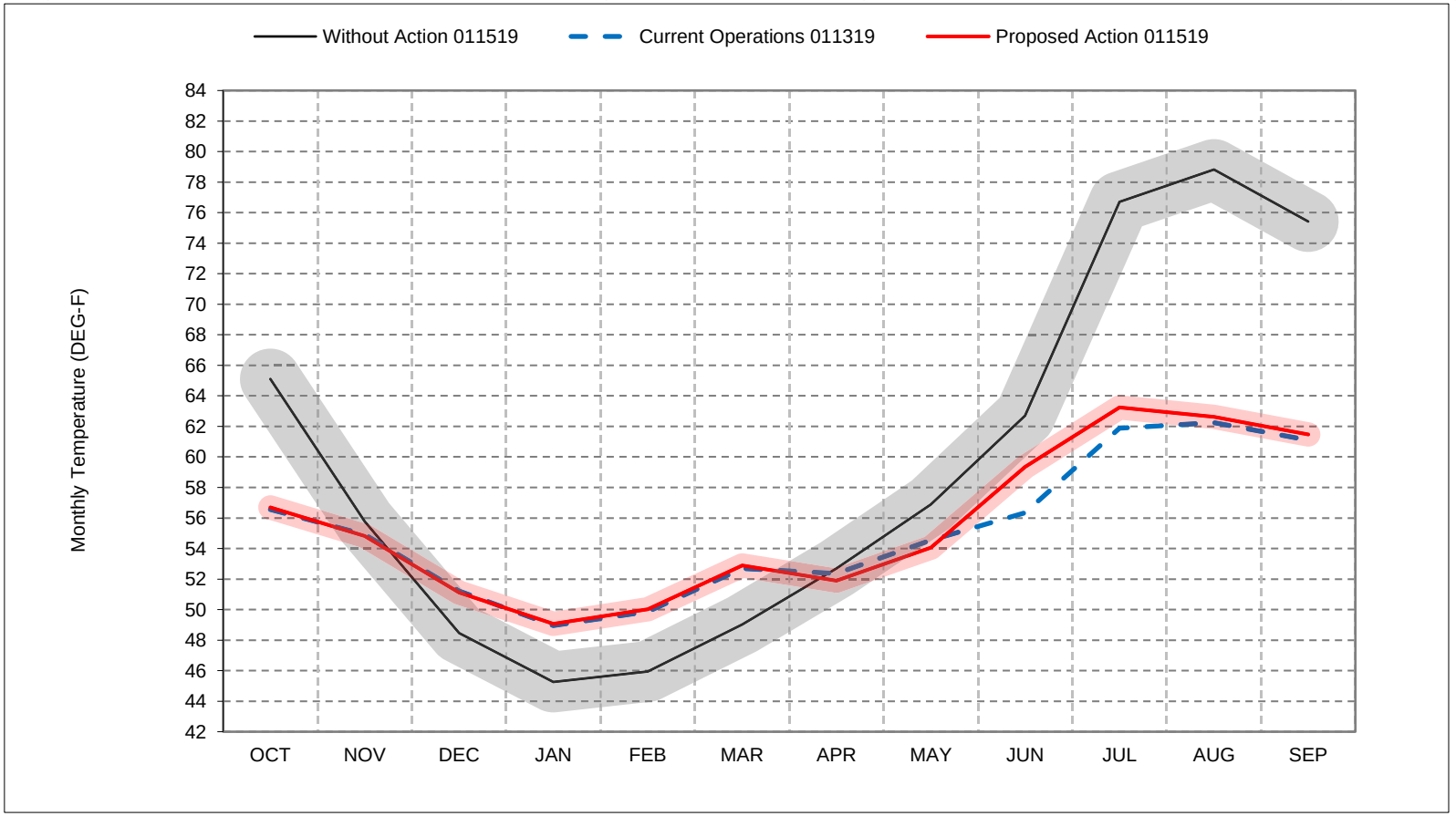
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 23-2. Stanislaus River at Orange Blossom Bridge, Wet Year Average Temperature



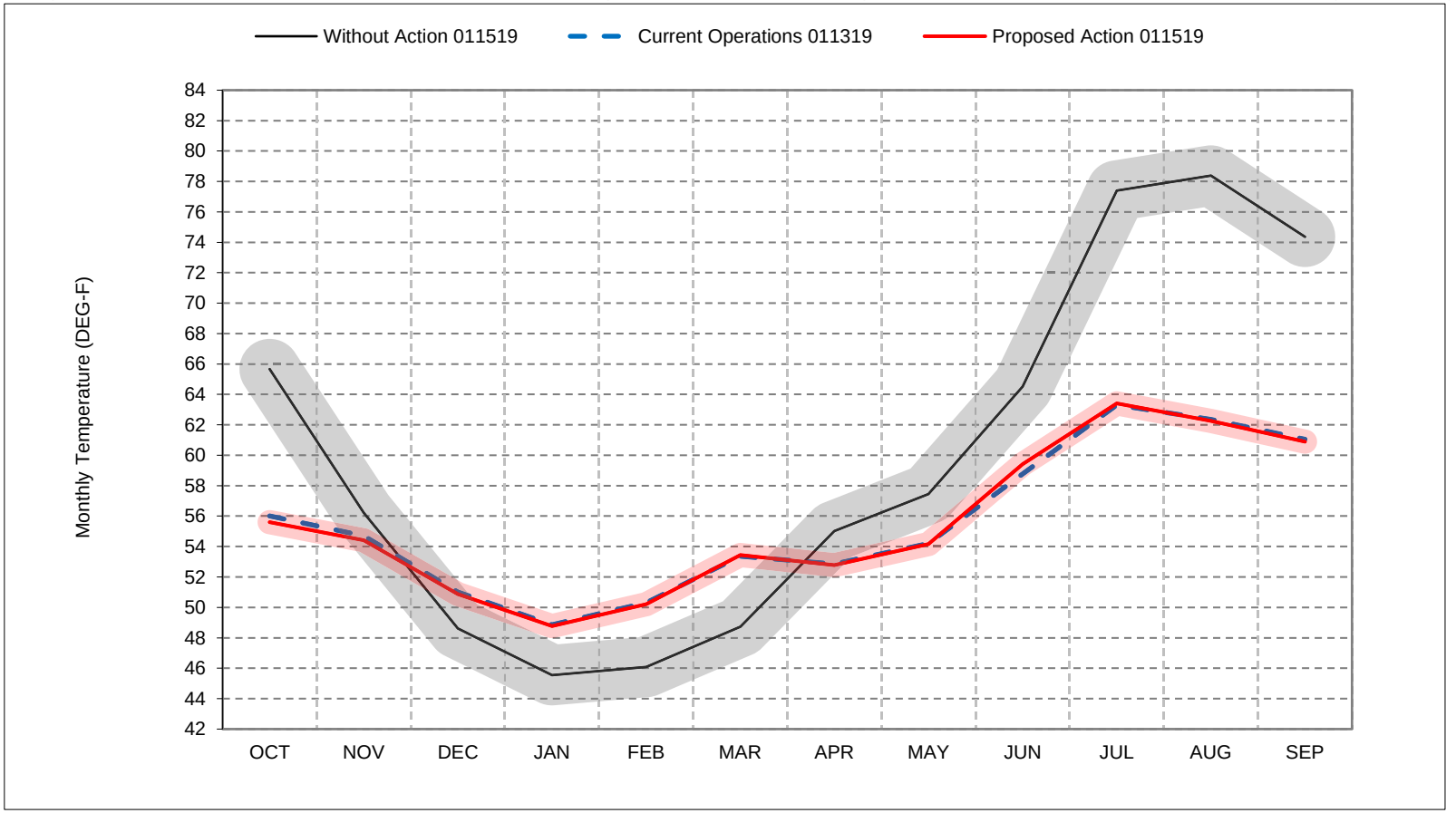
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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



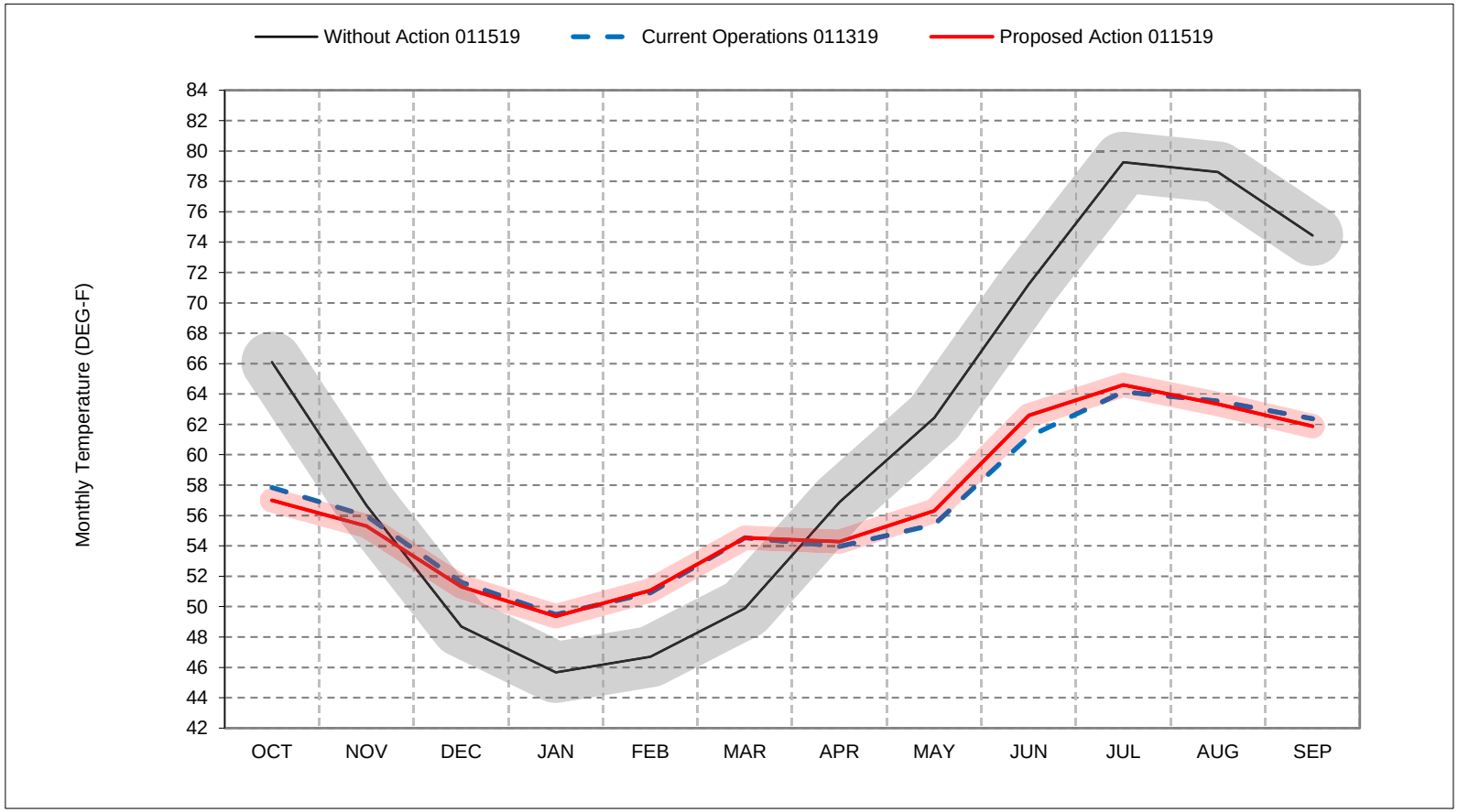
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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



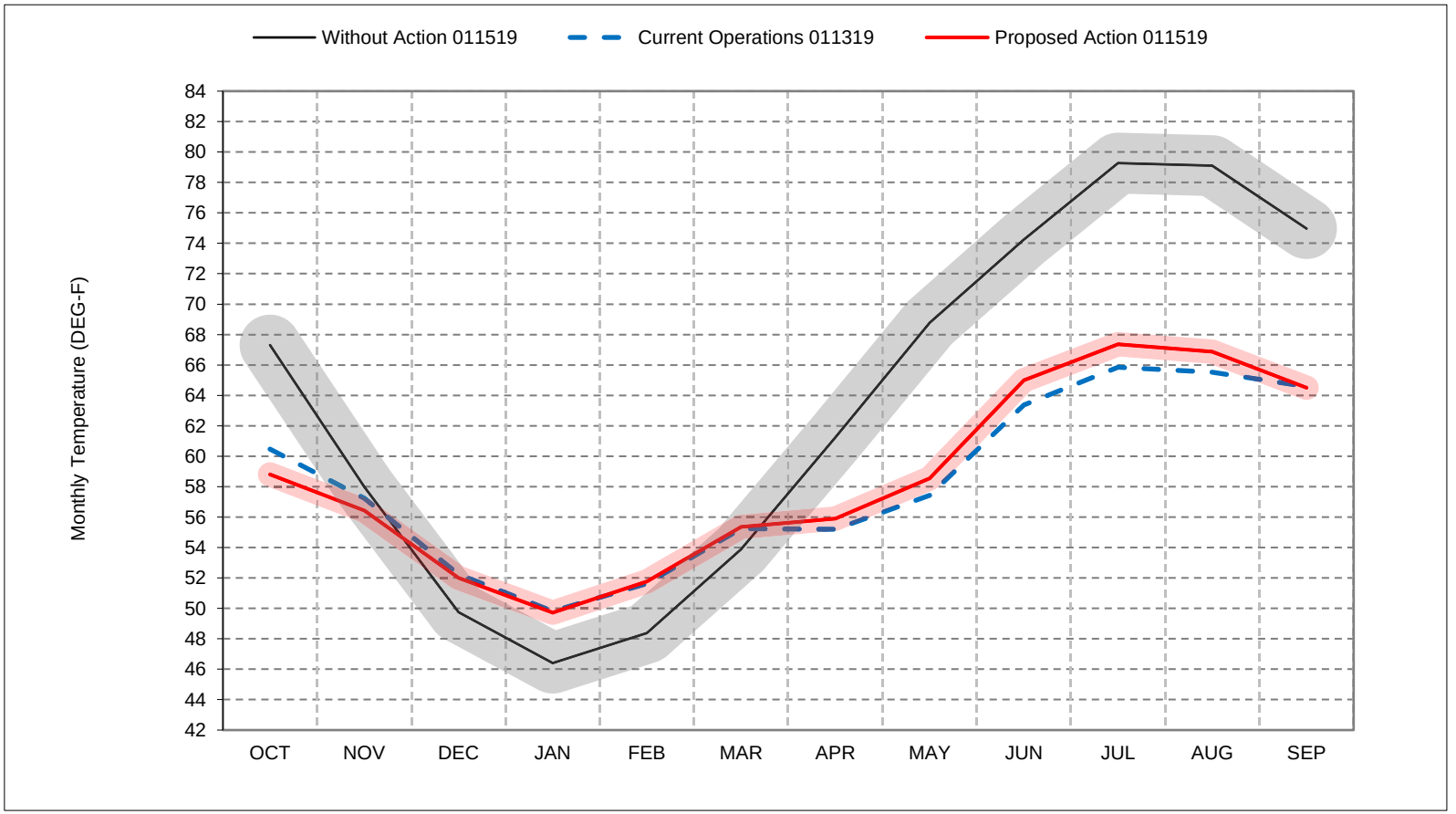
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 23-5. Stanislaus River at Orange Blossom Bridge, Dry Year Average Temperature



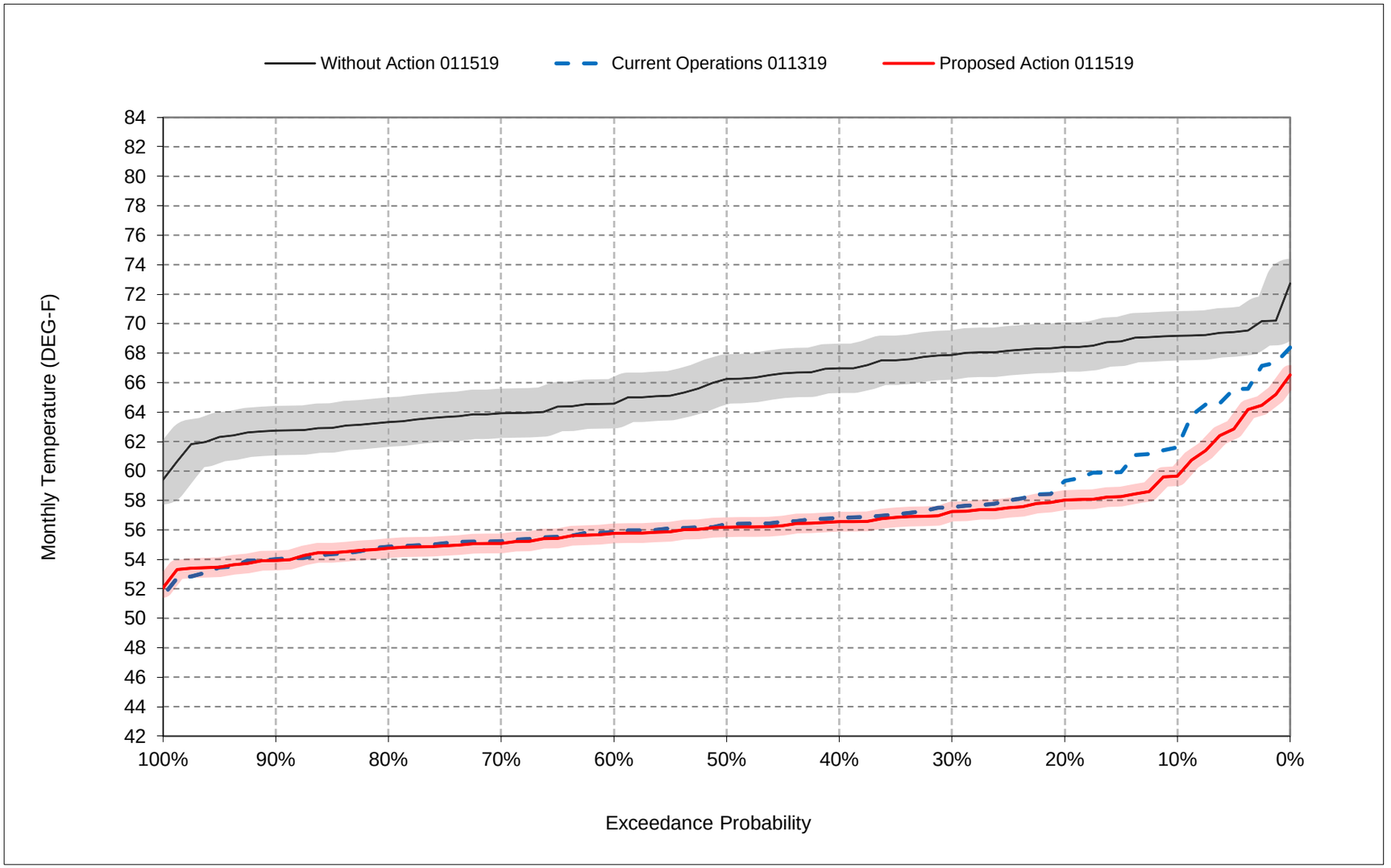
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 23-7. Stanislaus River at Orange Blossom Bridge, October

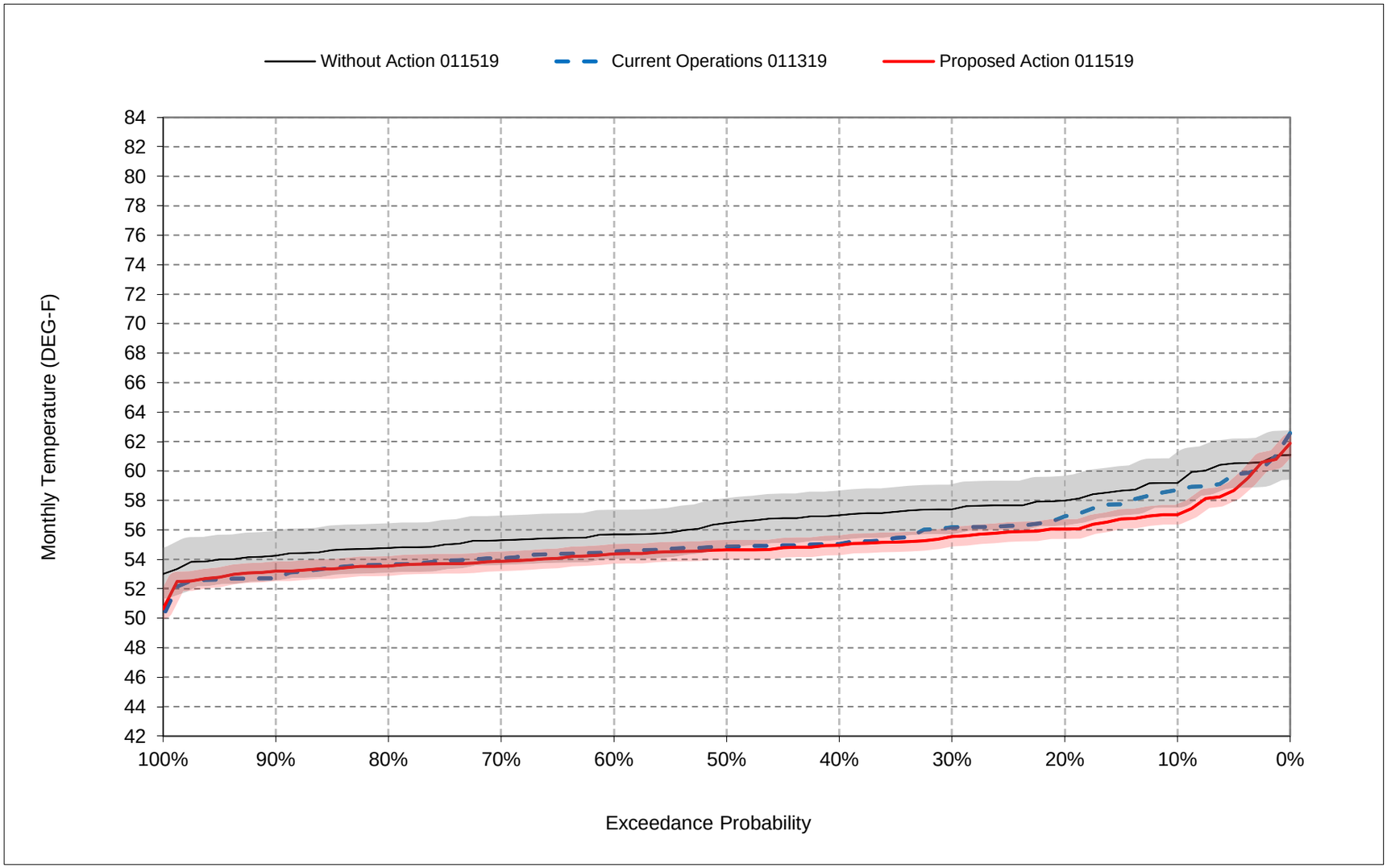


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-8. Stanislaus River at Orange Blossom Bridge, November

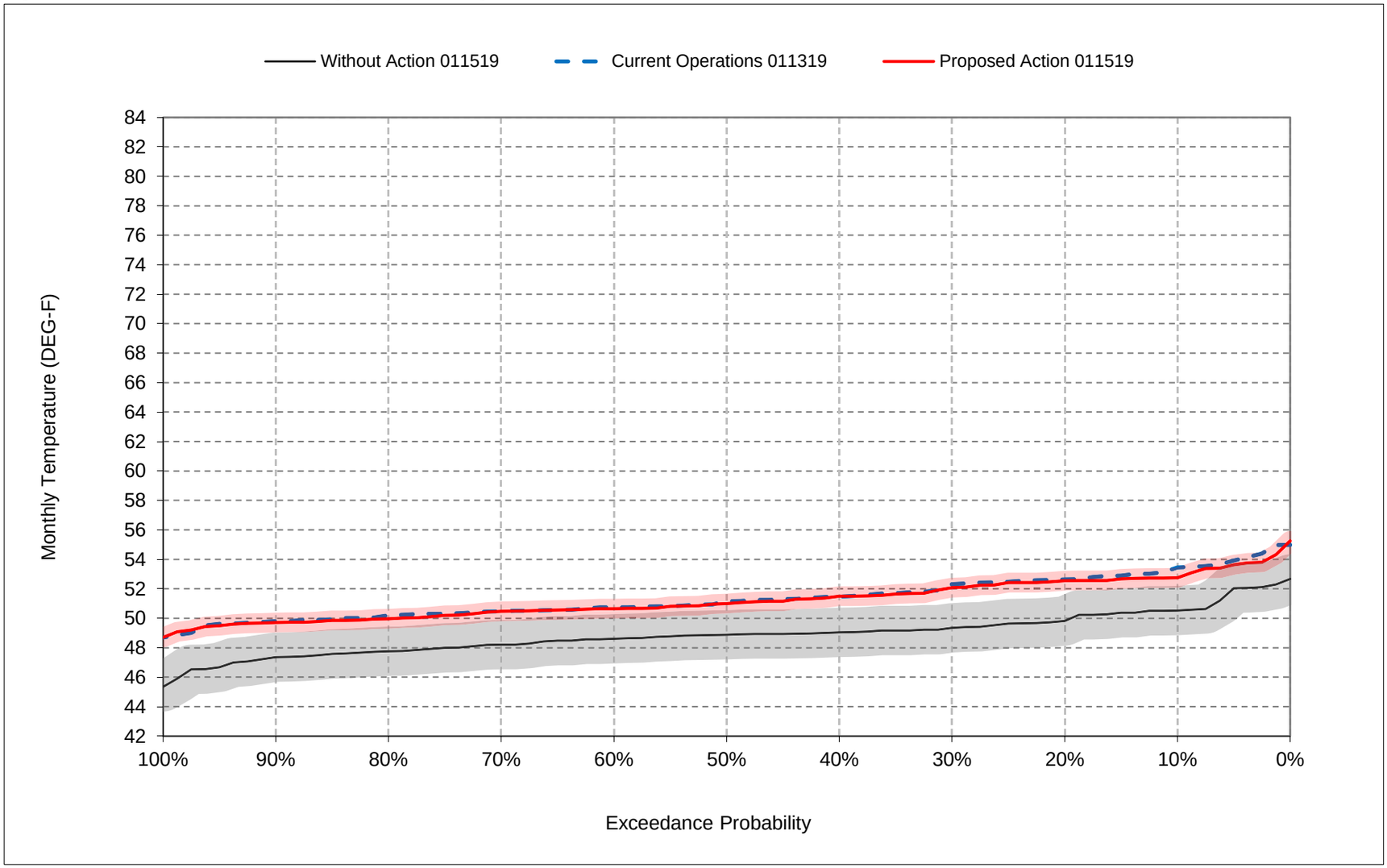


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-9. Stanislaus River at Orange Blossom Bridge, December

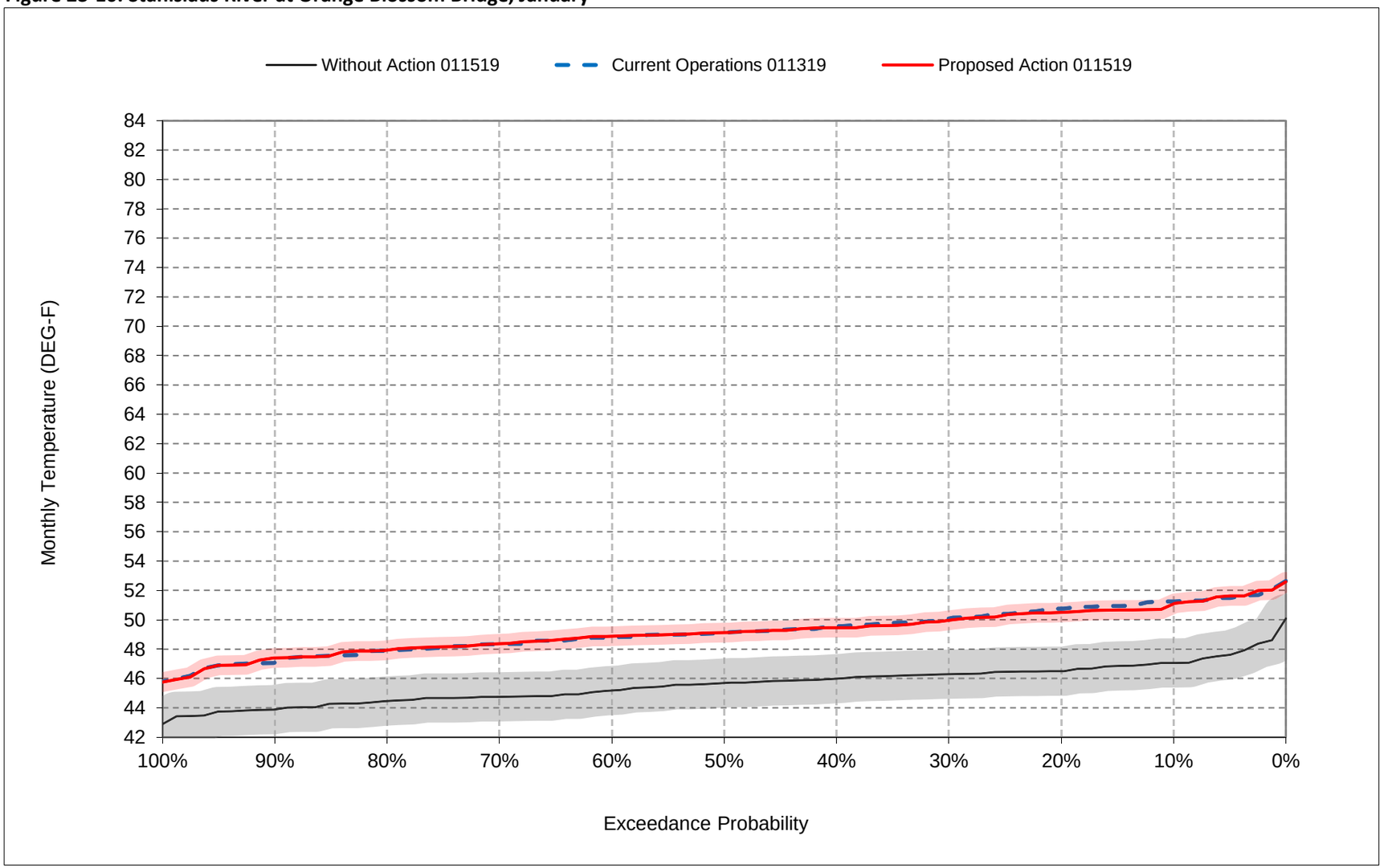


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-10. Stanislaus River at Orange Blossom Bridge, January

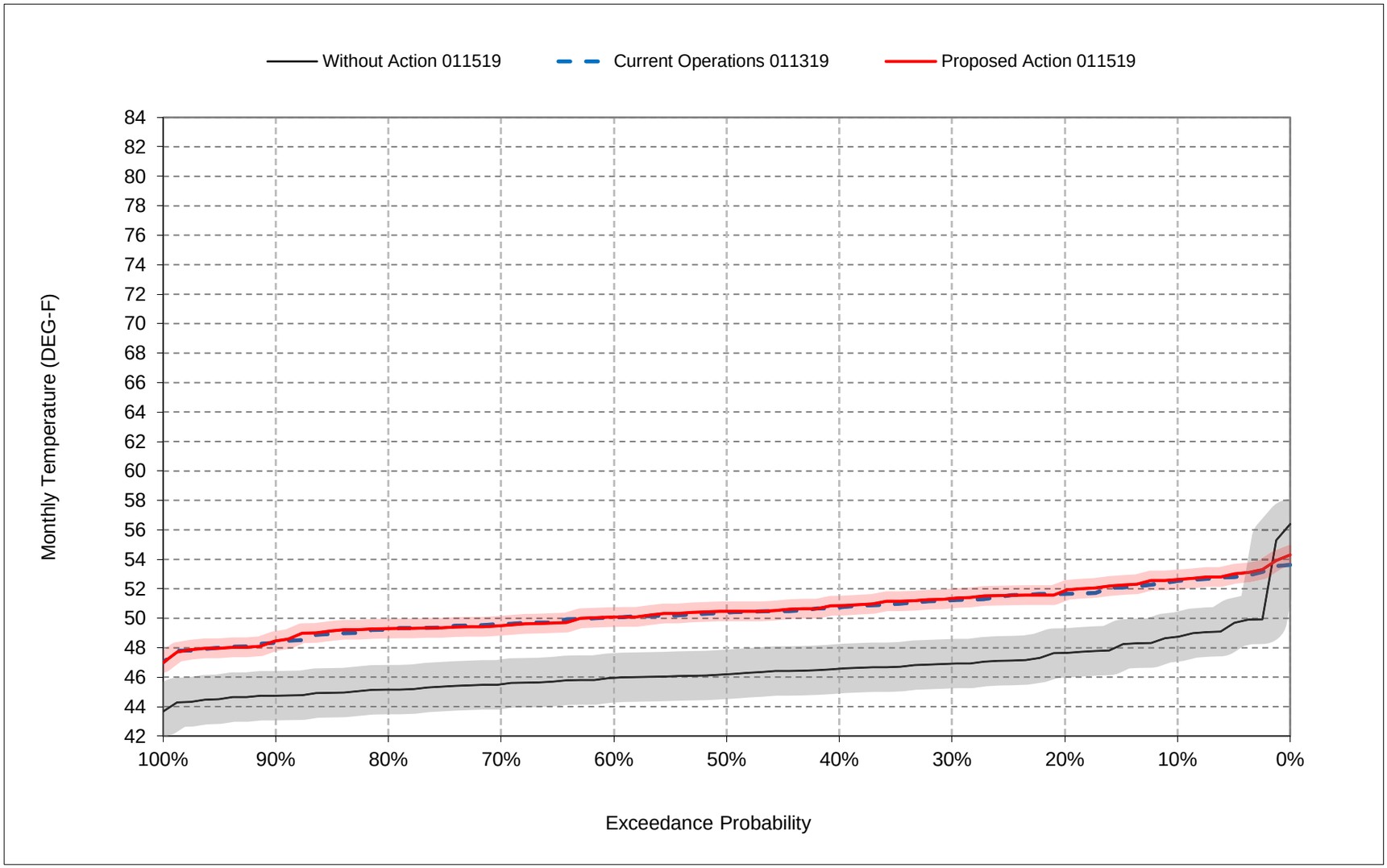


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-11. Stanislaus River at Orange Blossom Bridge, February

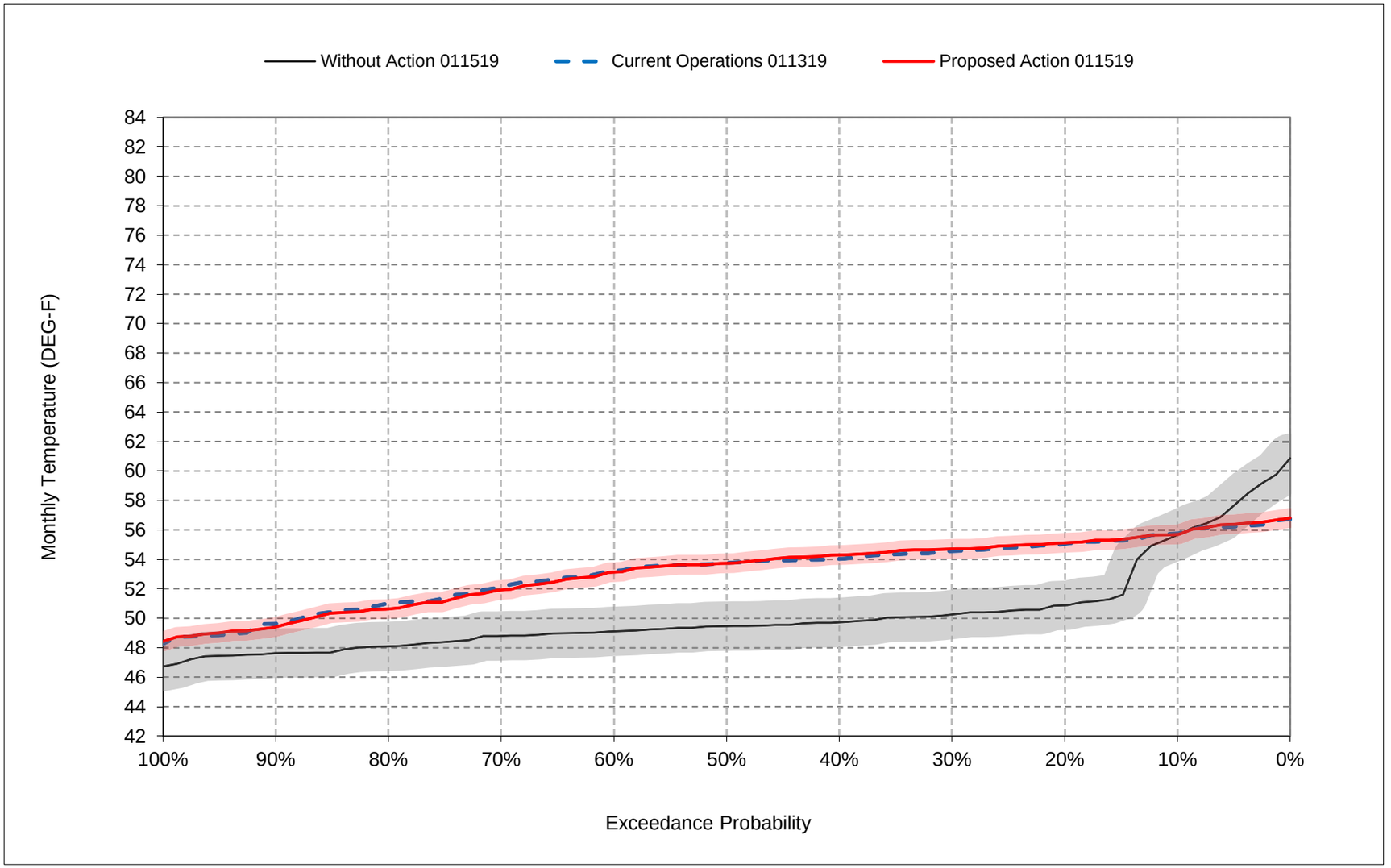


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-12. Stanislaus River at Orange Blossom Bridge, March

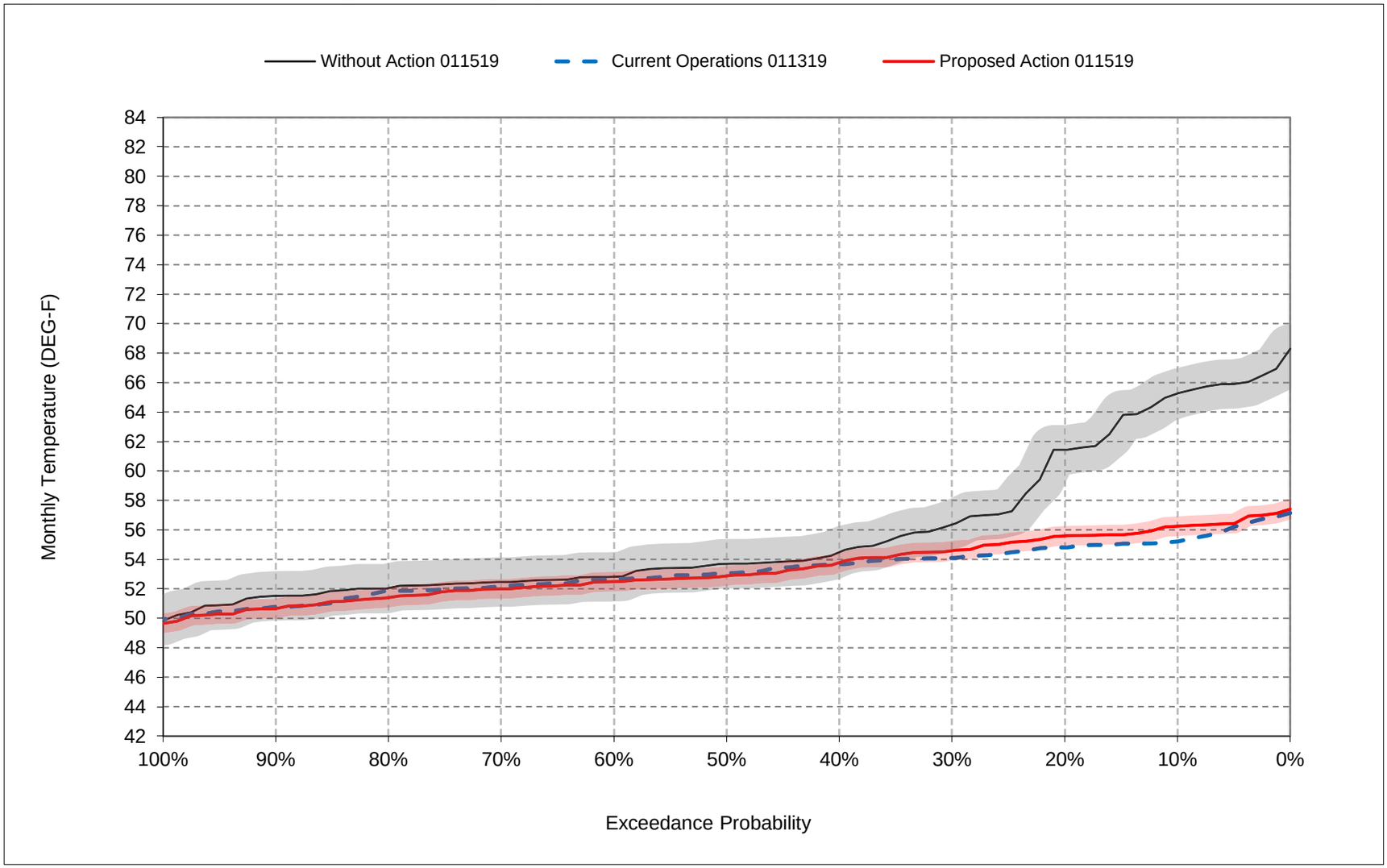


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-13. Stanislaus River at Orange Blossom Bridge, April

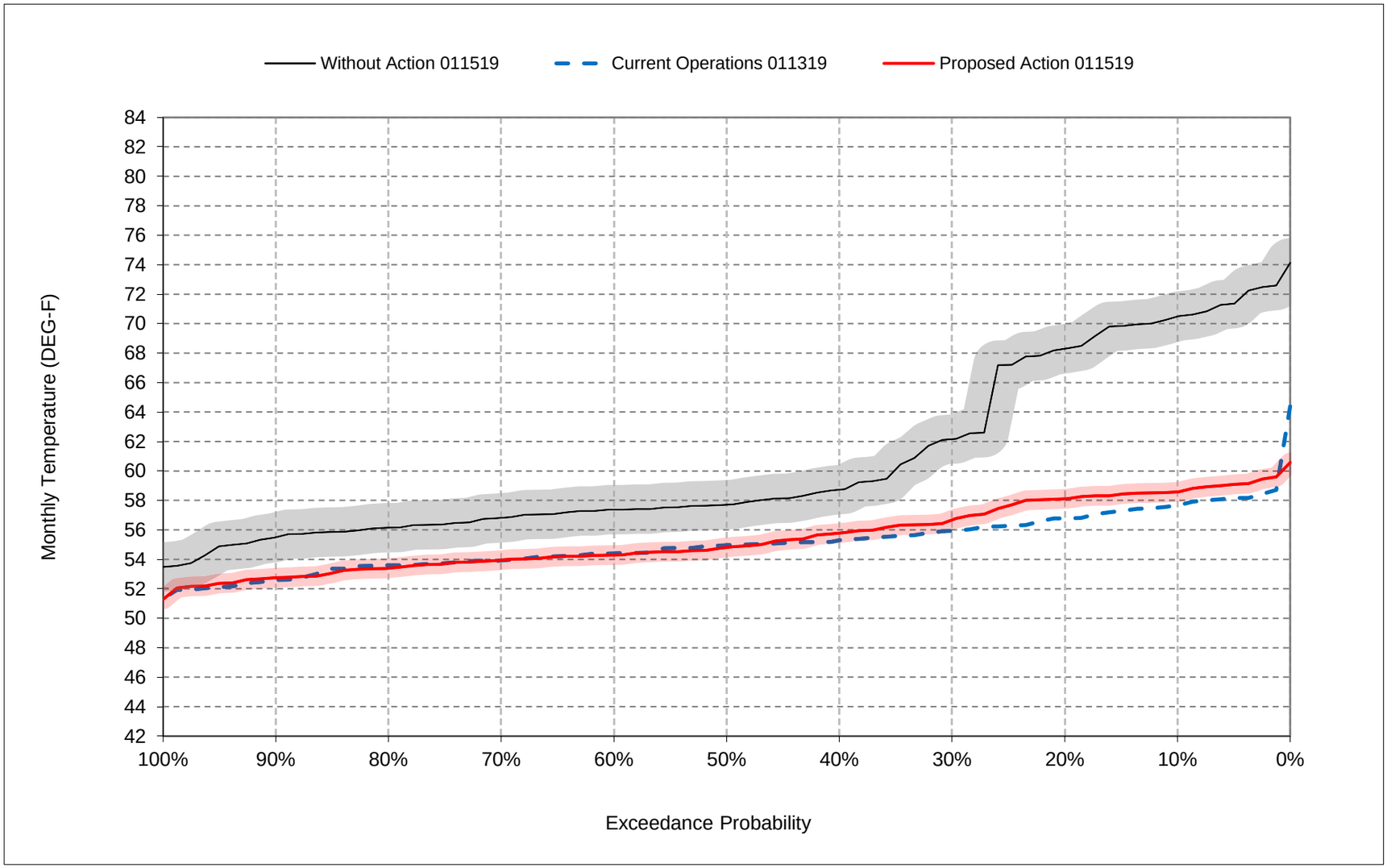


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-14. Stanislaus River at Orange Blossom Bridge, May

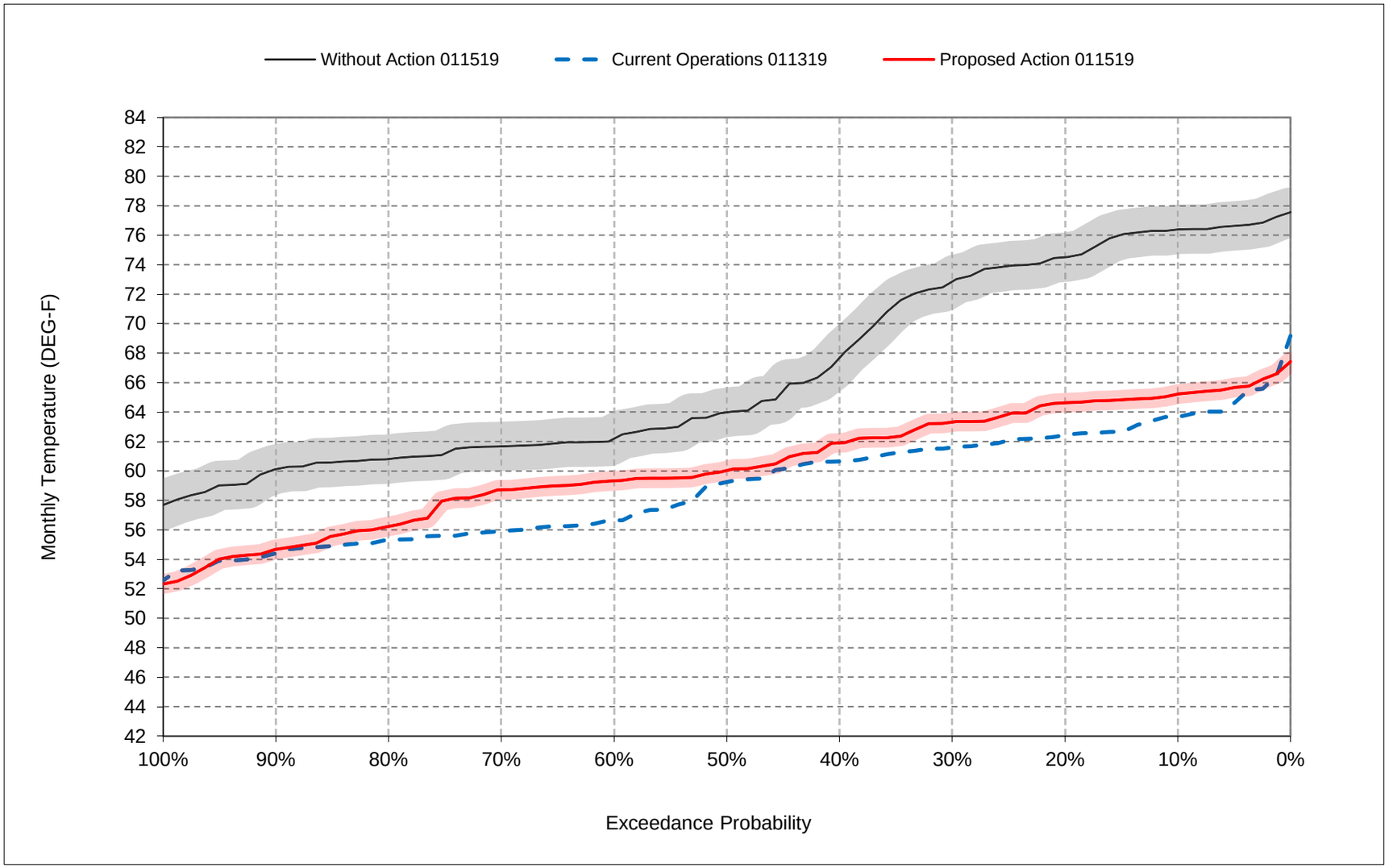


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-15. Stanislaus River at Orange Blossom Bridge, June

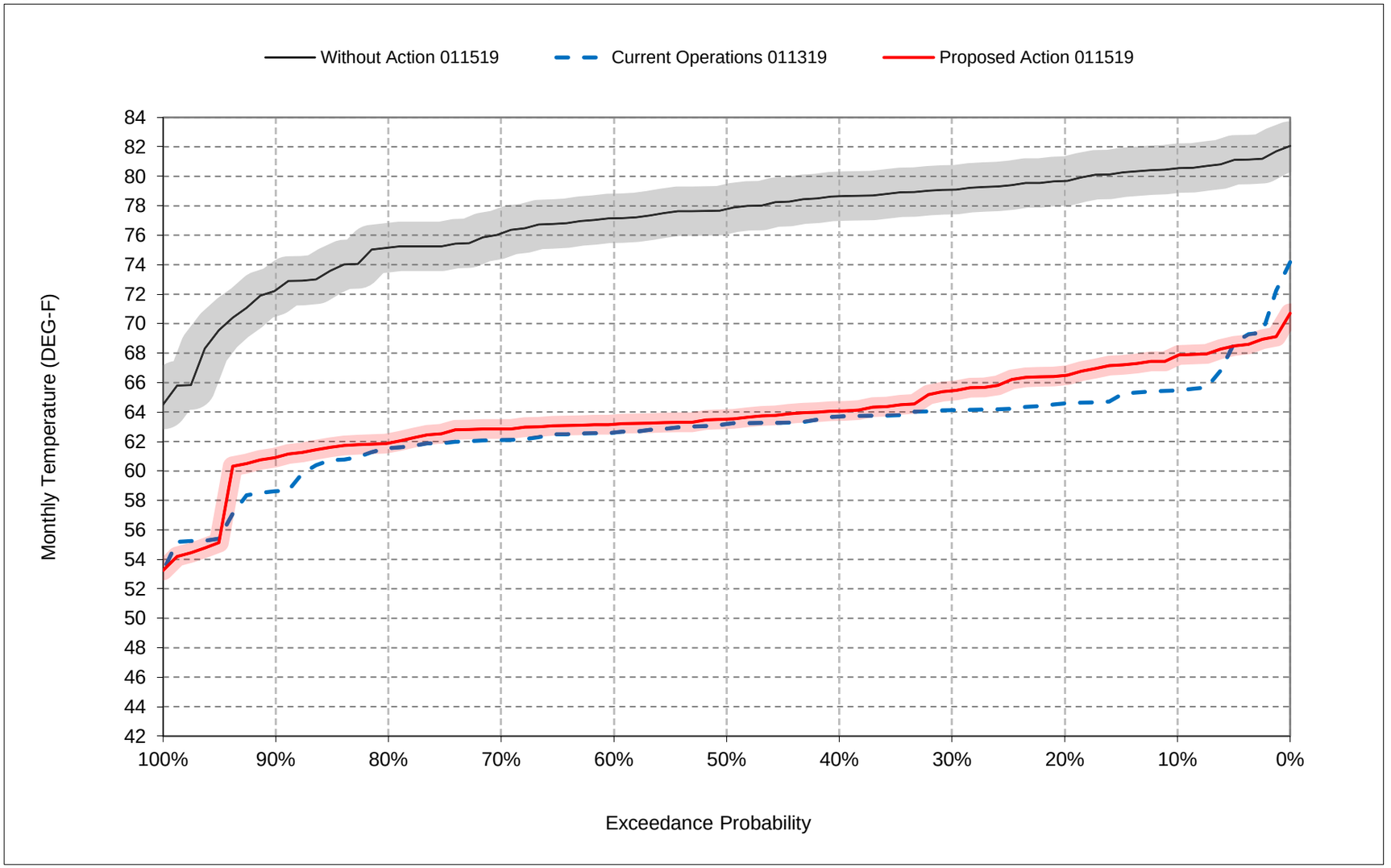


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-16. Stanislaus River at Orange Blossom Bridge, July

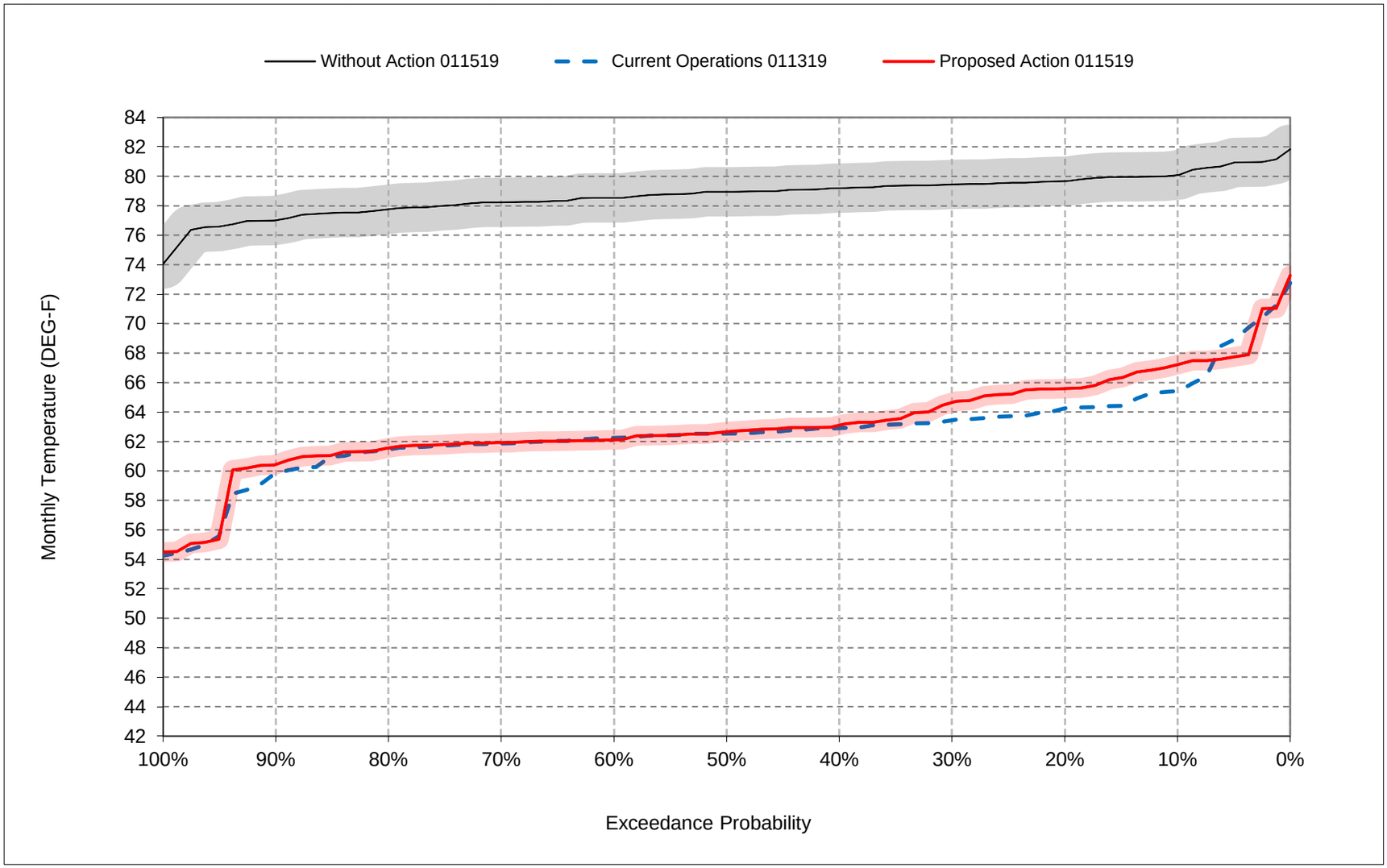


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 23-17. Stanislaus River at Orange Blossom Bridge, August

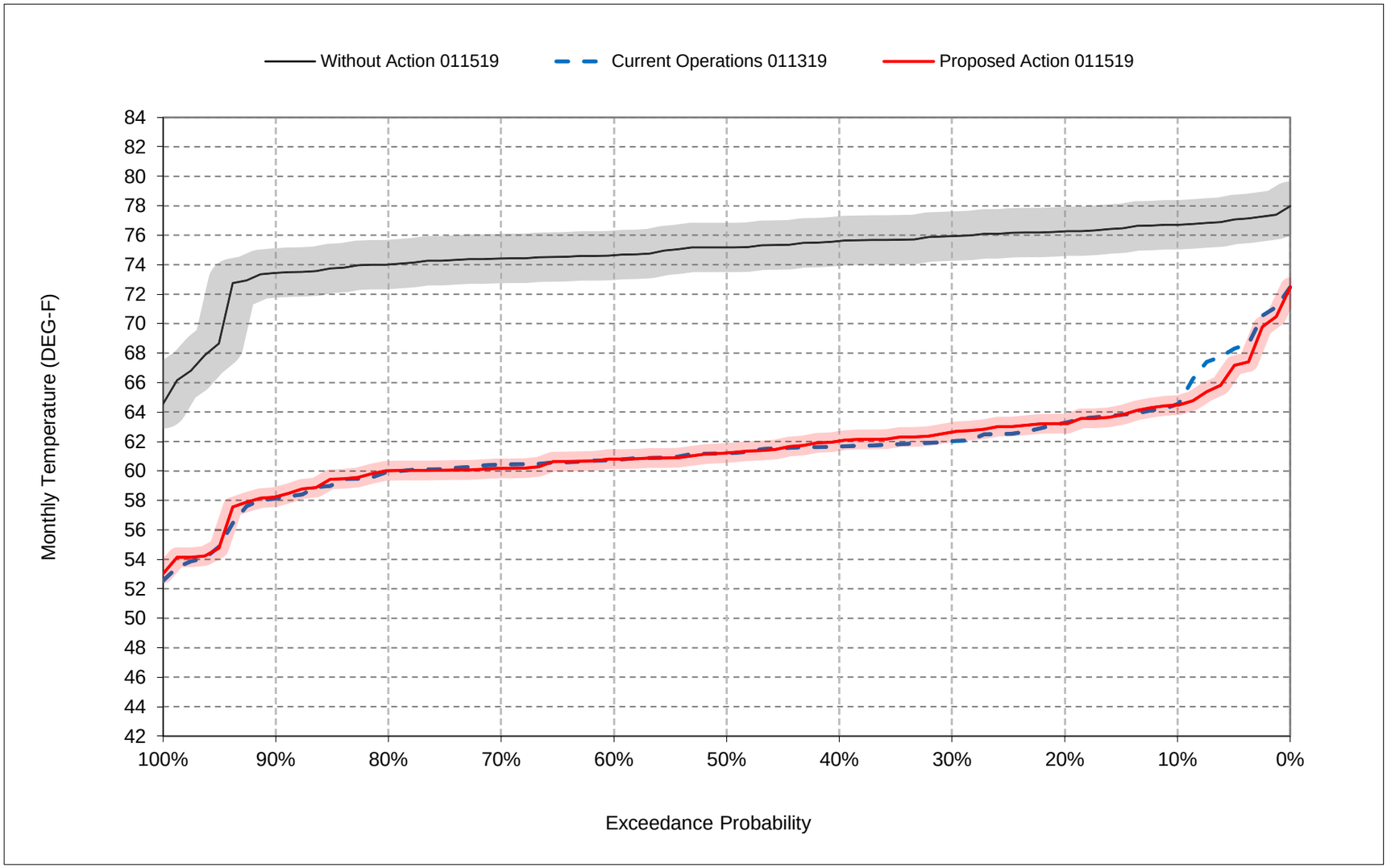


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*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.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Table 24-1. Stanislaus River at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.4	59.4	51.2	48.6	52.2	59.4	66.7	71.2	75.0	78.8	78.2	74.8
20%	67.5	58.7	50.3	48.1	50.6	56.1	64.8	69.8	74.6	78.2	77.8	74.5
30%	67.1	58.2	49.9	47.8	49.7	54.0	62.7	67.9	73.7	77.7	77.6	74.2
40%	66.7	57.8	49.5	47.4	49.3	53.3	59.8	63.4	71.9	77.3	77.2	73.8
50%	66.2	57.2	49.2	47.0	48.6	52.8	58.0	61.6	68.5	77.1	77.0	73.5
60%	65.5	56.3	48.7	46.4	47.8	51.9	57.0	60.5	66.3	76.6	76.9	73.2
70%	65.3	56.0	48.4	45.9	47.3	51.3	55.8	60.0	65.2	76.2	76.4	72.7
80%	64.8	55.5	48.2	45.3	46.8	50.8	55.1	58.7	64.1	75.6	76.2	72.5
90%	64.3	55.0	47.4	44.6	46.1	49.8	54.0	58.0	62.8	73.8	75.7	71.9
Long Term												
Full Simulation Period[a]	66.2	57.1	49.3	46.8	48.9	53.4	59.5	63.5	69.0	76.6	77.0	73.4
Water Year Types[b,c]												
Wet (23%)	66.0	56.9	49.2	45.9	46.8	50.5	55.3	58.5	63.6	74.2	77.5	73.5
Above Normal (24%)	66.1	56.5	48.9	46.4	47.6	51.7	56.2	59.9	66.3	76.6	77.1	73.7
Below Normal (10%)	65.2	57.0	49.1	47.0	48.4	52.3	59.0	61.6	67.8	76.9	76.5	72.8
Dry (16%)	66.3	57.2	49.0	47.2	49.8	53.9	62.1	66.3	72.6	77.7	76.6	73.1
Critical (27%)	67.0	57.9	49.9	47.9	51.5	57.6	64.7	70.2	74.4	77.7	77.0	73.6

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.1	-0.8	**0.7**	**2.8**	**2.9**	**1.0**	-4.6	-5.7	-2.7	-2.3	-2.9	-3.0
20%	-4.6	-1.3	**1.3**	**2.6**	**3.7**	**3.6**	-3.6	-5.2	-2.9	-2.7	-3.4	-3.7
30%	-5.4	-1.3	**1.1**	**2.3**	**4.2**	**5.1**	-2.5	-4.3	-3.0	-2.9	-3.8	-3.8
40%	-6.1	-1.3	**1.2**	**2.3**	**3.9**	**5.3**	-1.1	-1.2	-1.7	-3.0	-3.7	-4.0
50%	-6.1	-1.5	**1.0**	**2.4**	**4.4**	**5.2**	-0.2	-0.6	-0.7	-3.3	-4.0	-4.1
60%	-5.9	-1.1	**1.2**	**2.6**	**4.8**	**5.1**	**0.1**	**0.3**	-1.0	-3.4	-4.3	-4.2
70%	-6.3	-1.0	**1.2**	**2.9**	**4.8**	**4.4**	**0.5**	-0.2	-1.4	-3.3	-4.1	-4.0
80%	-6.2	-0.8	**1.1**	**3.2**	**4.8**	**2.8**	**0.5**	0.0	-1.4	-3.9	-4.3	-4.4
90%	-6.0	-0.7	**1.5**	**3.2**	**4.4**	**2.3**	**0.8**	0.0	-1.1	-4.5	-5.0	-5.0
Long Term												
Full Simulation Period[a]	-5.5	-1.1	**1.1**	**2.7**	**4.0**	**3.7**	-1.2	-1.9	-1.7	-3.4	-4.5	-4.4
Water Year Types[b,c]												
Wet (23%)	-7.6	-1.9	**1.1**	**3.7**	**5.0**	**2.5**	**0.1**	**0.4**	-0.5	-4.6	-8.0	-7.8
Above Normal (24%)	-5.8	-0.9	**1.2**	**3.2**	**4.9**	**5.1**	**1.0**	**1.3**	-2.1	-4.4	-4.5	-4.5
Below Normal (10%)	-5.8	-1.4	**1.0**	**2.2**	**4.1**	**4.9**	-1.6	-1.7	-0.2	-3.1	-3.9	-3.8
Dry (16%)	-5.0	-0.7	**1.5**	**2.5**	**3.6**	**4.6**	-2.4	-4.2	-2.4	-2.7	-3.2	-3.1
Critical (27%)	-3.6	-0.7	**0.9**	**1.7**	**2.6**	**2.3**	-3.4	-5.5	-2.4	-2.0	-2.4	-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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 24-2. Stanislaus River at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	68.4	59.4	51.2	48.6	52.2	59.4	66.7	71.2	75.0	78.8	78.2	74.8
20%	67.5	58.7	50.3	48.1	50.6	56.1	64.8	69.8	74.6	78.2	77.8	74.5
30%	67.1	58.2	49.9	47.8	49.7	54.0	62.7	67.9	73.7	77.7	77.6	74.2
40%	66.7	57.8	49.5	47.4	49.3	53.3	59.8	63.4	71.9	77.3	77.2	73.8
50%	66.2	57.2	49.2	47.0	48.6	52.8	58.0	61.6	68.5	77.1	77.0	73.5
60%	65.5	56.3	48.7	46.4	47.8	51.9	57.0	60.5	66.3	76.6	76.9	73.2
70%	65.3	56.0	48.4	45.9	47.3	51.3	55.8	60.0	65.2	76.2	76.4	72.7
80%	64.8	55.5	48.2	45.3	46.8	50.8	55.1	58.7	64.1	75.6	76.2	72.5
90%	64.3	55.0	47.4	44.6	46.1	49.8	54.0	58.0	62.8	73.8	75.7	71.9
Long Term												
Full Simulation Period[a]	66.2	57.1	49.3	46.8	48.9	53.4	59.5	63.5	69.0	76.6	77.0	73.4
Water Year Types[b,c]												
Wet (23%)	66.0	56.9	49.2	45.9	46.8	50.5	55.3	58.5	63.6	74.2	77.5	73.5
Above Normal (24%)	66.1	56.5	48.9	46.4	47.6	51.7	56.2	59.9	66.3	76.6	77.1	73.7
Below Normal (10%)	65.2	57.0	49.1	47.0	48.4	52.3	59.0	61.6	67.8	76.9	76.5	72.8
Dry (16%)	66.3	57.2	49.0	47.2	49.8	53.9	62.1	66.3	72.6	77.7	76.6	73.1
Critical (27%)	67.0	57.9	49.9	47.9	51.5	57.6	64.7	70.2	74.4	77.7	77.0	73.6

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.9	-1.5	**1.0**	**2.8**	**3.3**	**1.3**	-3.7	-3.9	-1.5	-1.6	-2.2	-2.7
20%	-5.4	-1.5	**1.1**	**2.6**	**3.8**	**3.6**	-2.5	-3.5	-1.5	-1.5	-2.5	-3.3
30%	-5.9	-1.3	**1.0**	**2.3**	**4.3**	**5.2**	-1.9	-3.7	-1.8	-1.9	-3.2	-3.5
40%	-6.0	-1.5	**1.1**	**2.3**	**4.0**	**5.4**	-1.0	-0.5	-0.7	-2.2	-3.4	-3.8
50%	-5.9	-1.6	**0.9**	**2.4**	**4.3**	**5.3**	-0.8	-0.7	**0.8**	-2.8	-3.6	-4.0
60%	-6.0	-1.1	**1.2**	**2.6**	**4.8**	**5.0**	-0.7	-0.2	**1.8**	-2.7	-4.1	-4.0
70%	-6.4	-1.1	**1.2**	**2.9**	**4.8**	**3.6**	**0.2**	-0.2	**1.9**	-2.7	-4.0	-3.9
80%	-6.2	-0.8	**1.1**	**3.2**	**4.7**	**2.8**	**0.3**	**0.2**	**0.2**	-2.8	-4.1	-4.3
90%	-6.0	-0.8	**1.5**	**3.3**	**4.4**	**2.5**	**0.8**	**0.6**	-0.3	-2.2	-4.2	-4.8
Long Term												
Full Simulation Period[a]	-5.7	-1.2	**1.1**	**2.7**	**4.0**	**3.7**	-1.0	-1.3	-0.2	-2.6	-4.0	-4.2
Water Year Types[b,c]												
Wet (23%)	-7.5	-1.8	**1.2**	**3.7**	**4.7**	**2.0**	**0.1**	**0.4**	-1.3	-4.9	-7.7	-7.7
Above Normal (24%)	-5.7	-0.9	**1.2**	**3.2**	**4.9**	**5.3**	-0.1	**0.2**	**2.2**	-2.6	-4.1	-4.3
Below Normal (10%)	-6.1	-1.6	**0.9**	**2.1**	**3.8**	**5.1**	-2.2	-2.0	**0.6**	-2.8	-3.9	-3.8
Dry (16%)	-5.4	-1.0	**1.4**	**2.5**	**3.8**	**4.7**	-1.6	-2.5	-0.9	-2.2	-3.1	-3.2
Critical (27%)	-4.3	-1.1	**0.8**	**1.7**	**2.8**	**2.4**	-2.0	-3.3	-1.2	-0.9	-1.3	-1.9

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 These are draft results meant for qualitative analysis and are subject to revision.

f New Melones forecasts are used as the basis of water operations.

Table 24-3. Stanislaus River at Mouth, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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).

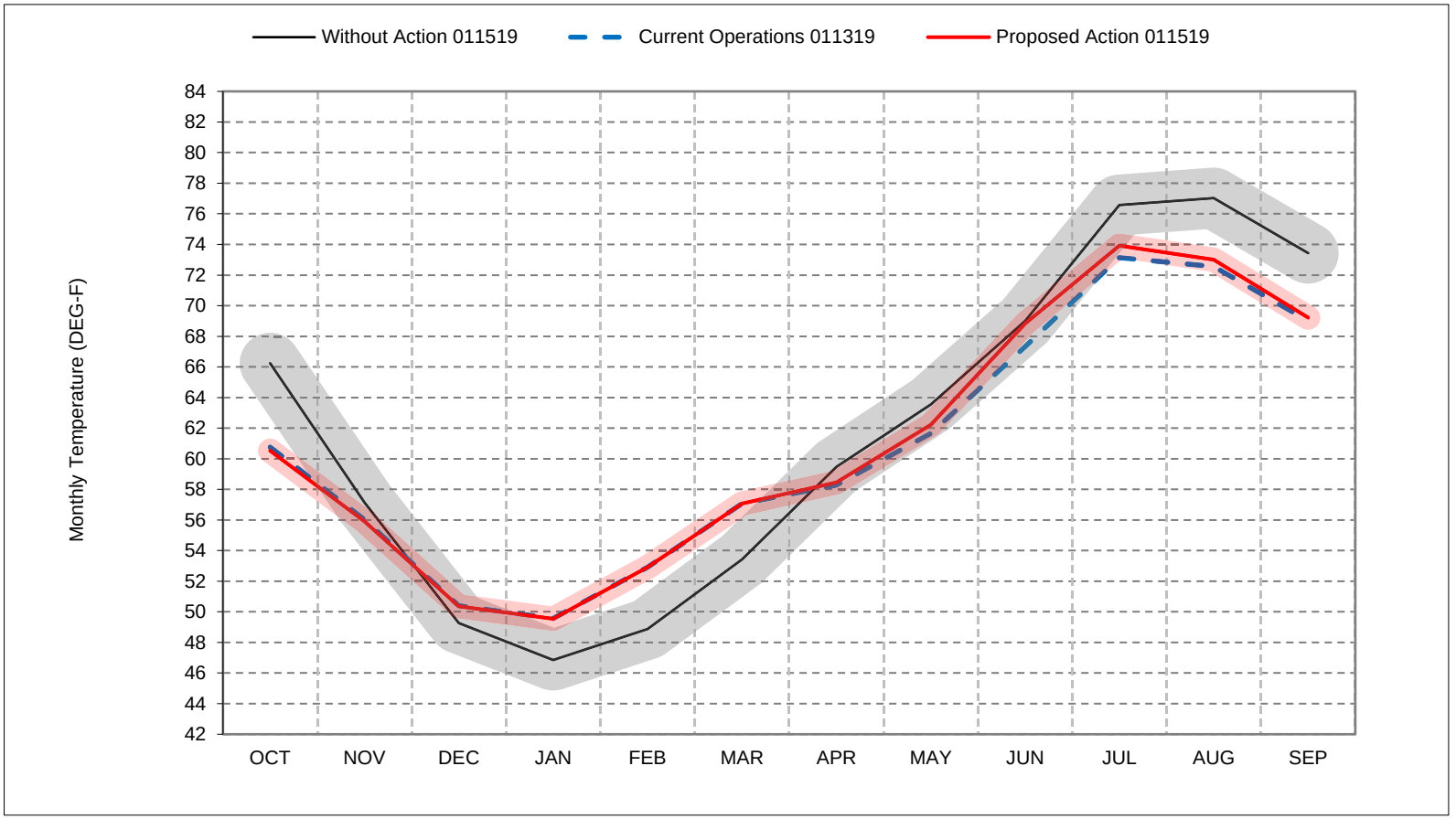
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

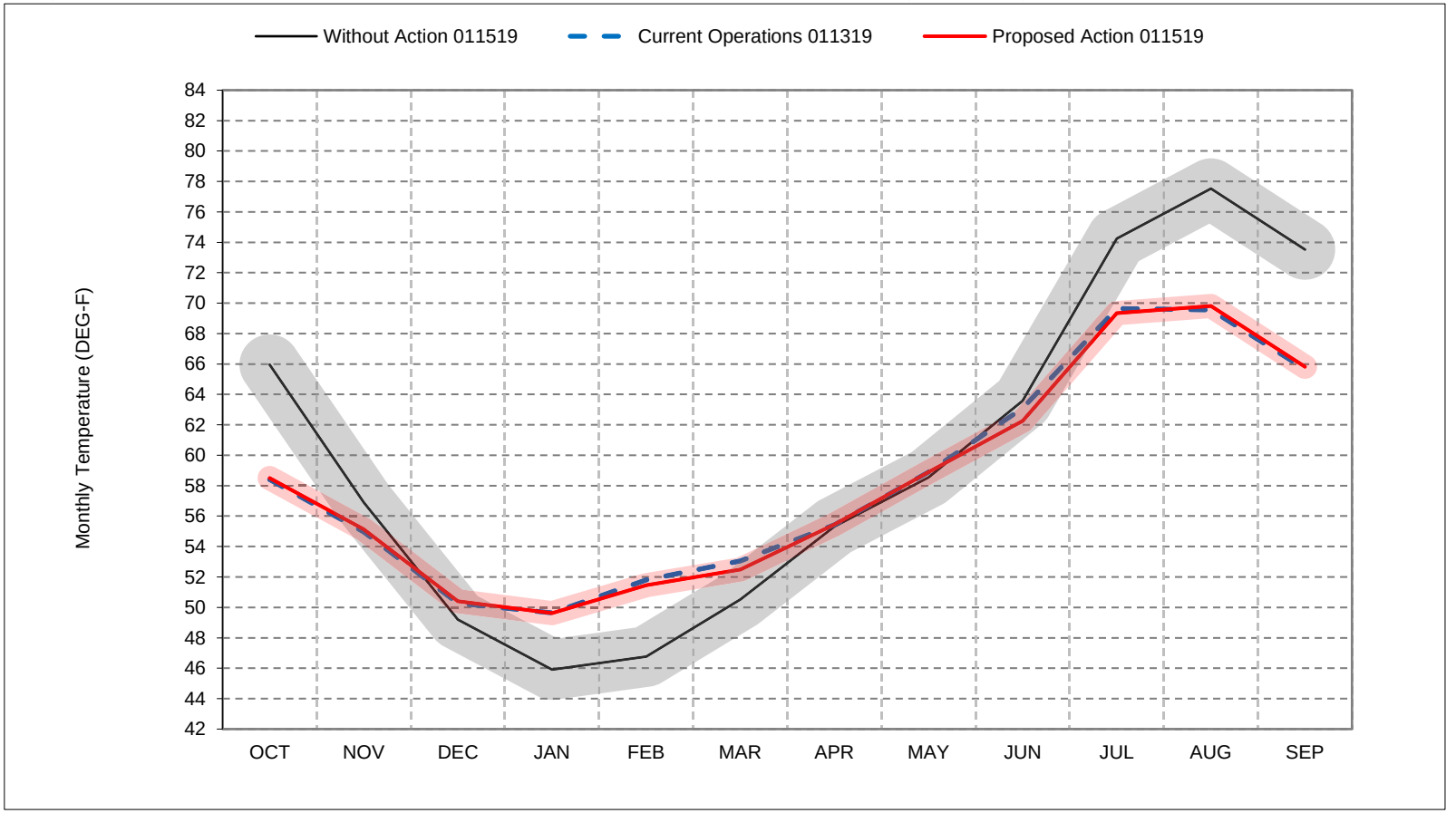
f New Melones forecasts are used as the basis of water operations.

Figure 24-1. Stanislaus River at Mouth, Long-Term Average Temperature



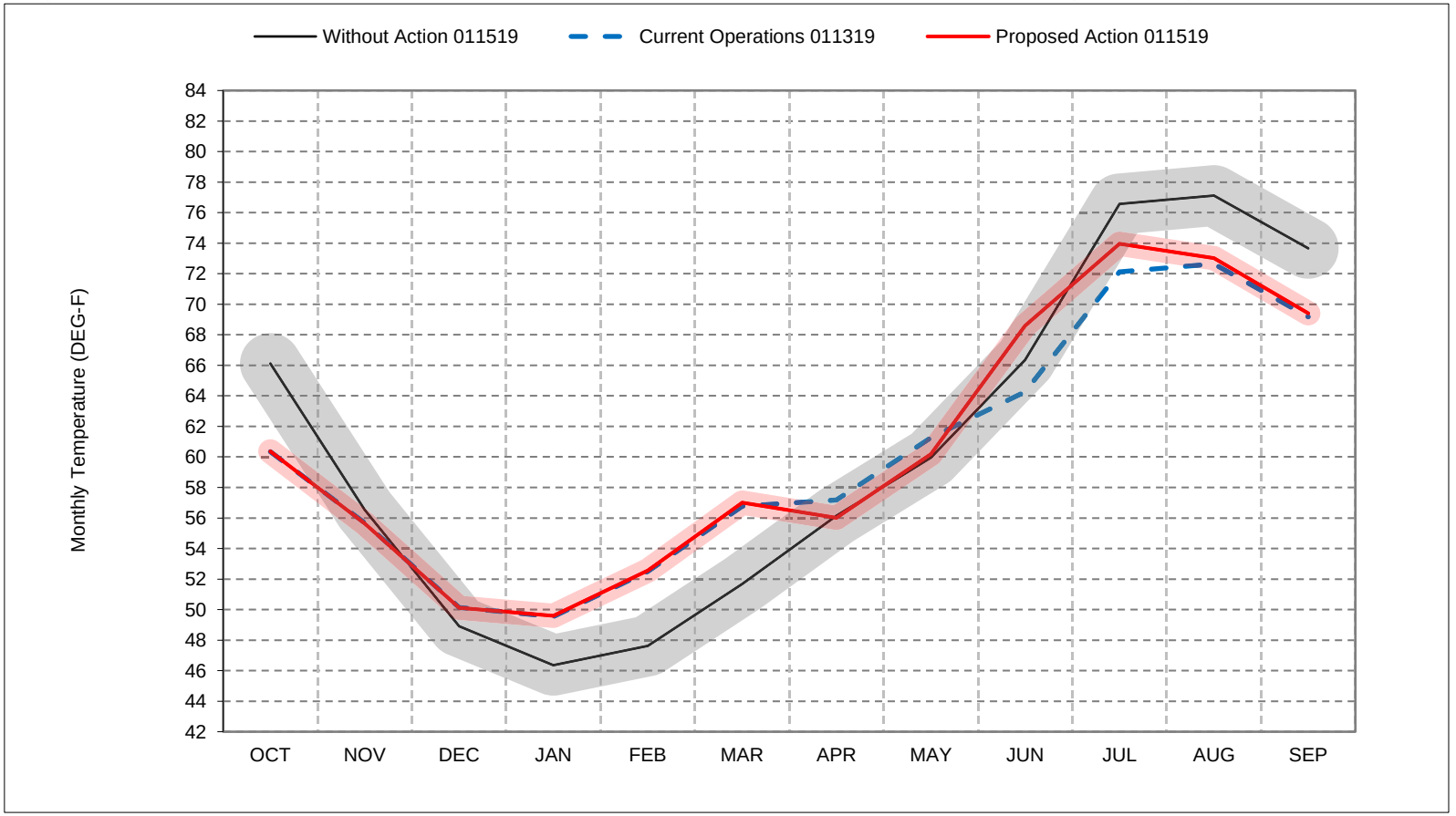
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 24-2. Stanislaus River at Mouth, Wet Year Average Temperature



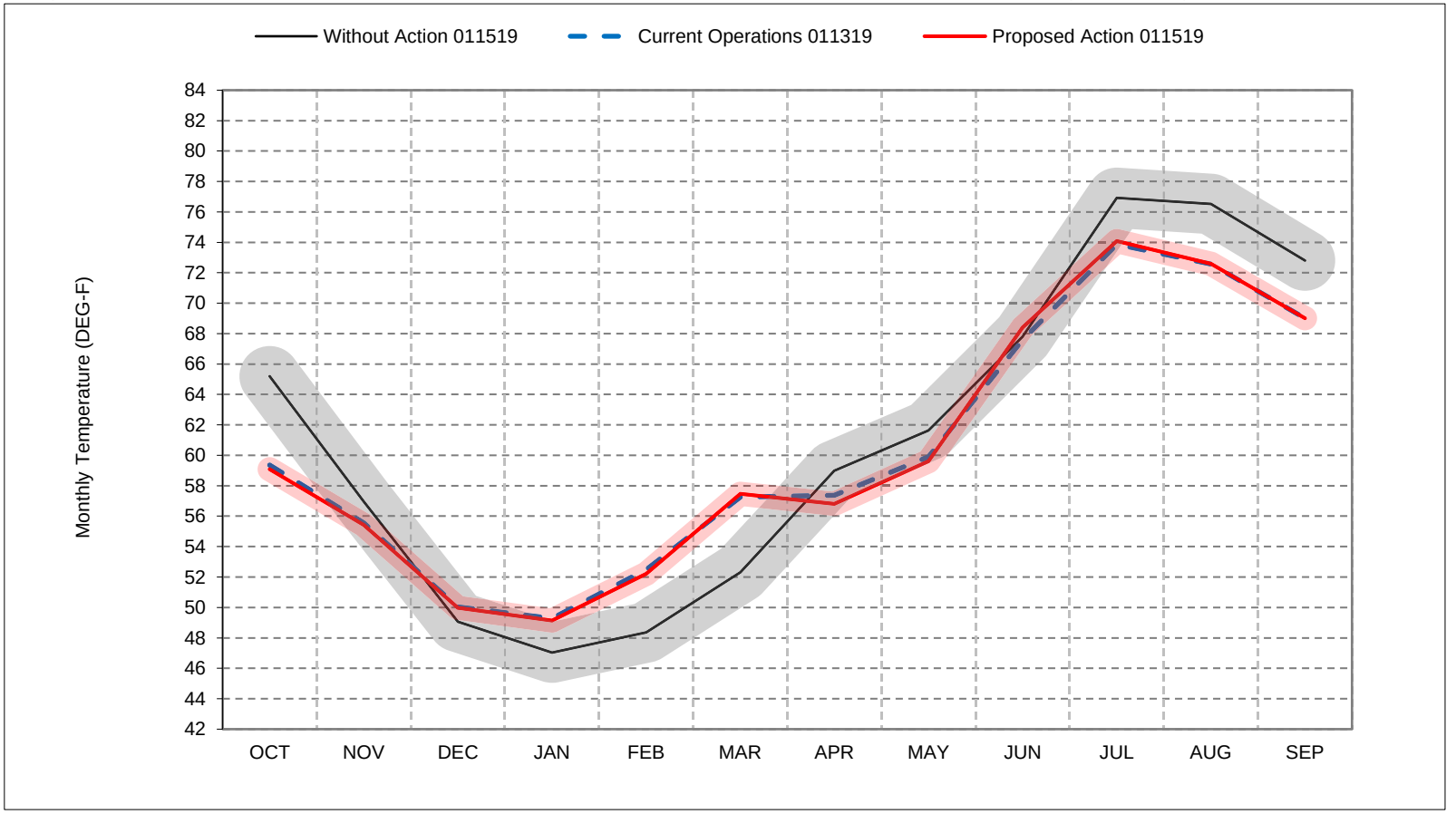
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 24-3. Stanislaus River at Mouth, Above Normal Year Average Temperature



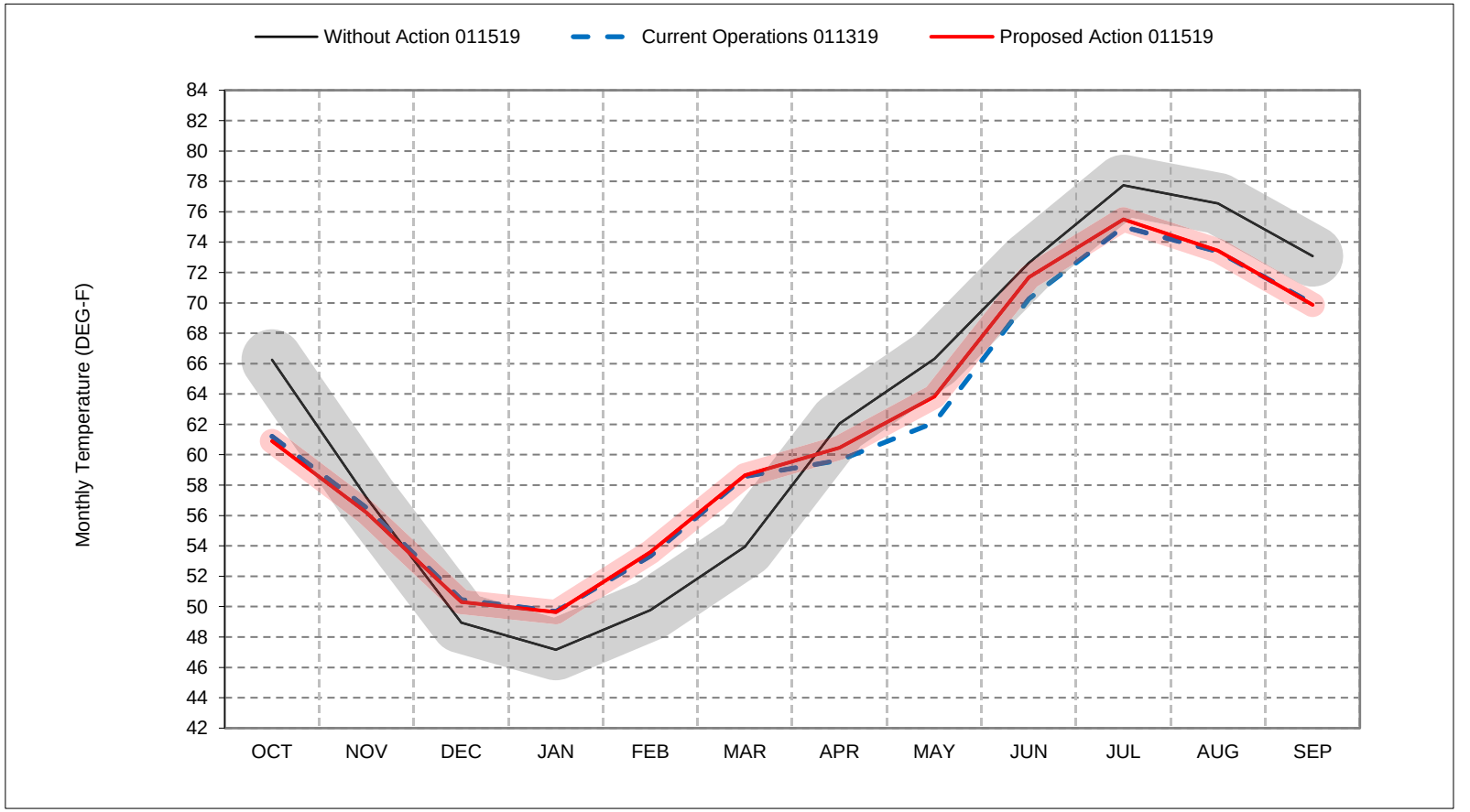
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 24-4. Stanislaus River at Mouth, Below Normal Year Average Temperature



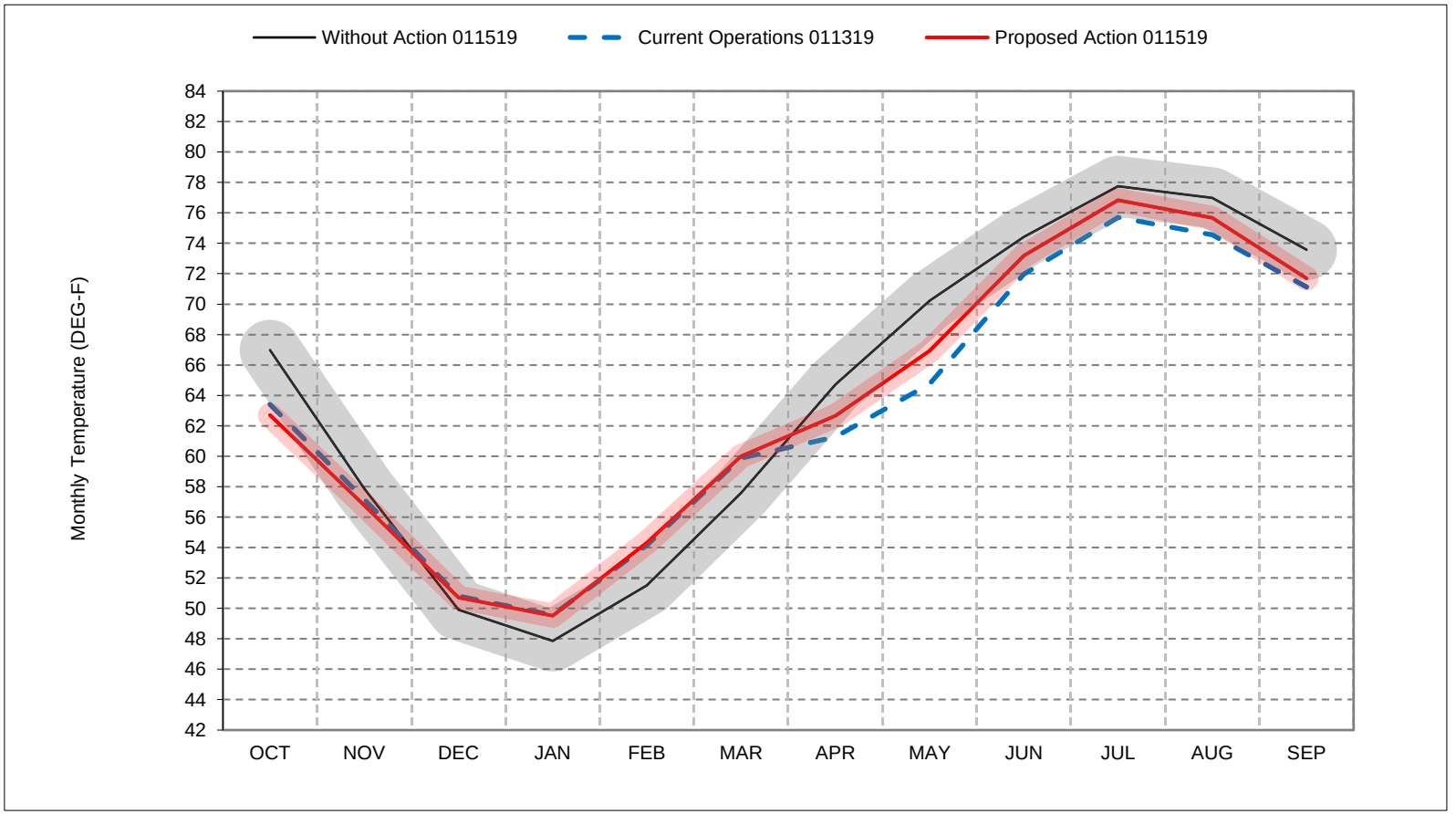
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 24-5. Stanislaus River at Mouth, Dry Year Average Temperature



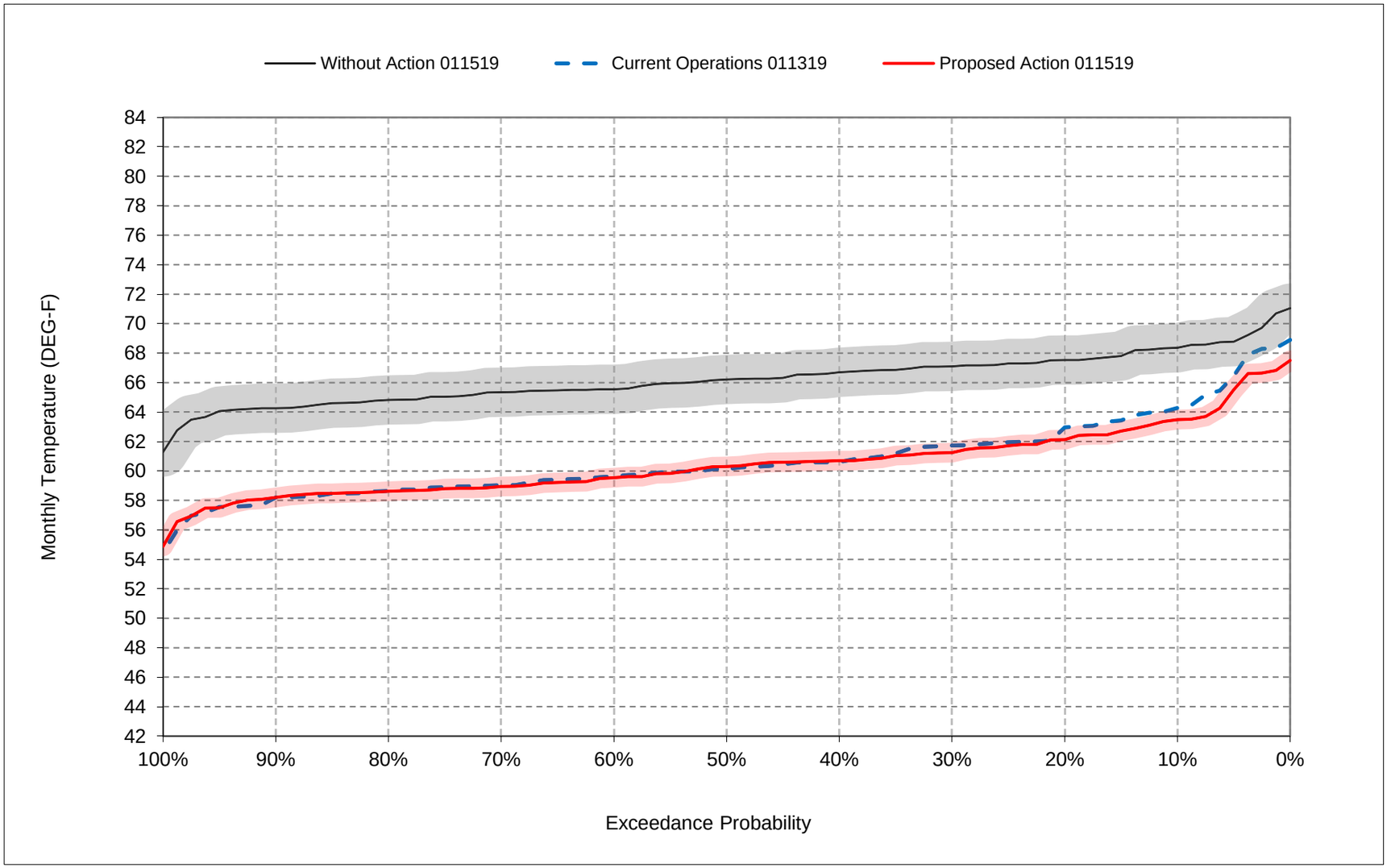
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*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.
*These are draft results meant for qualitative analysis and are subject to revision.
*New Melones forecasts are used as the basis of water operations.

Figure 24-7. Stanislaus River at Mouth, October

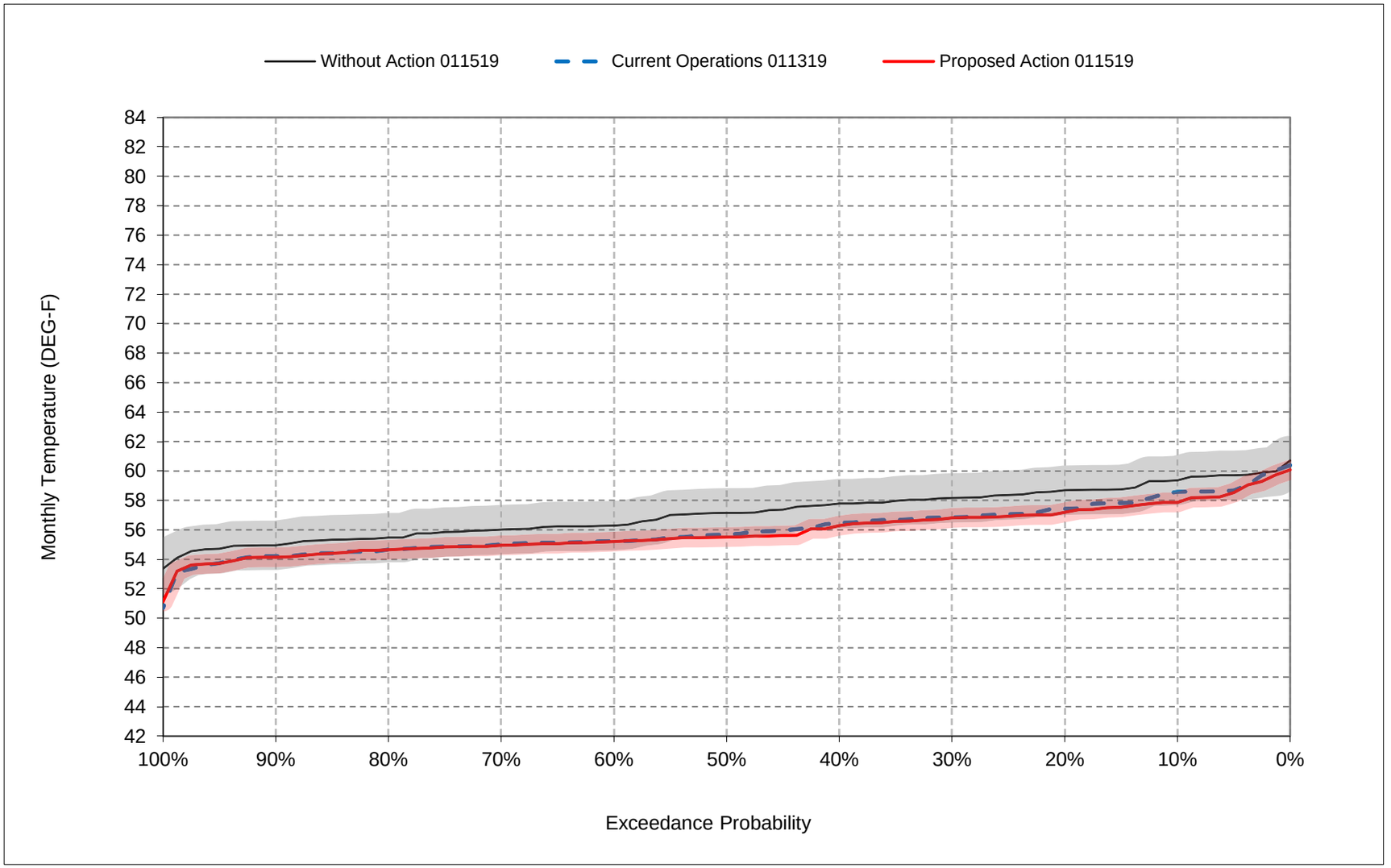


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-8. Stanislaus River at Mouth, November

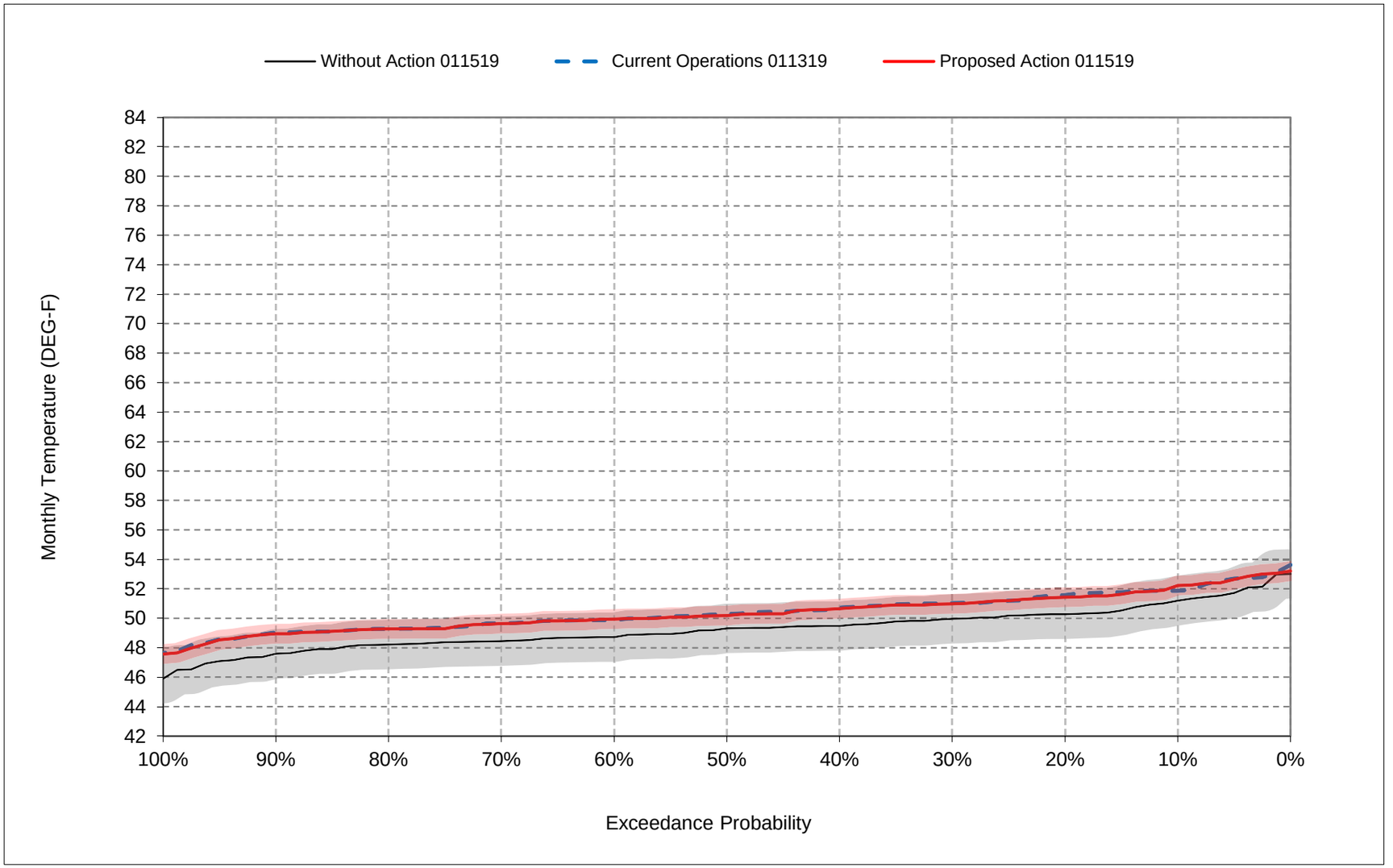


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-9. Stanislaus River at Mouth, December

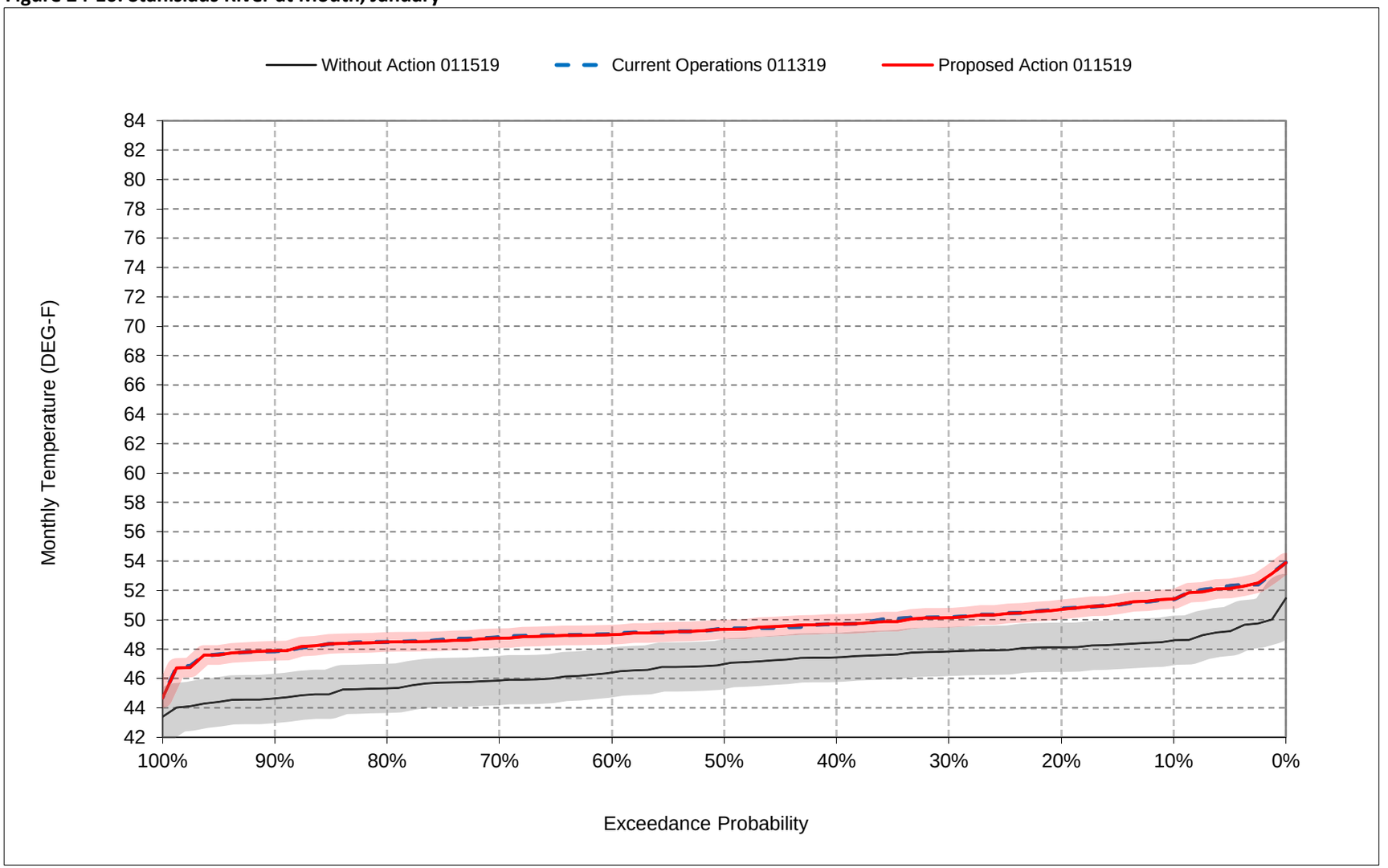


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-10. Stanislaus River at Mouth, January

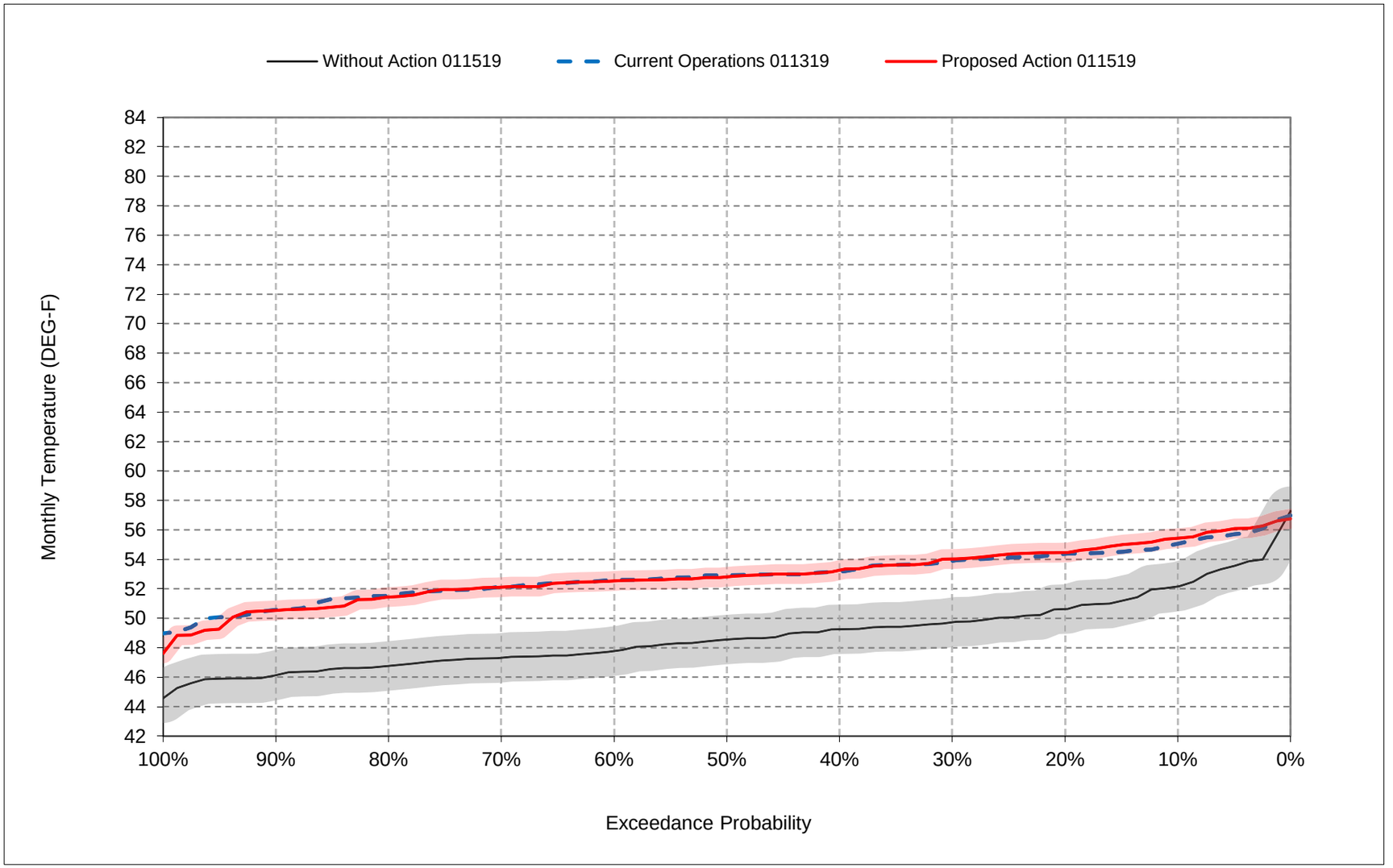


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-11. Stanislaus River at Mouth, February

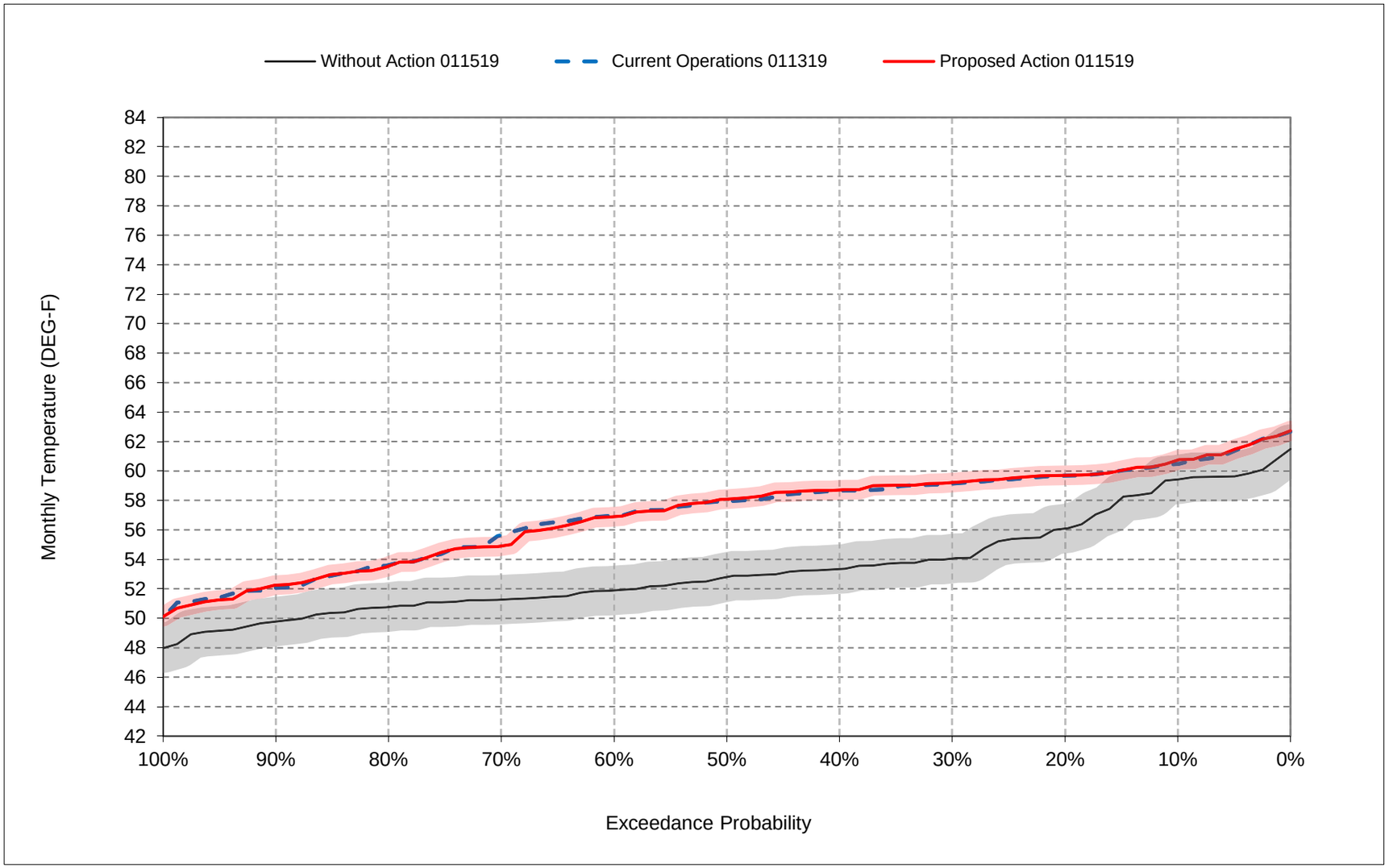


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-12. Stanislaus River at Mouth, March

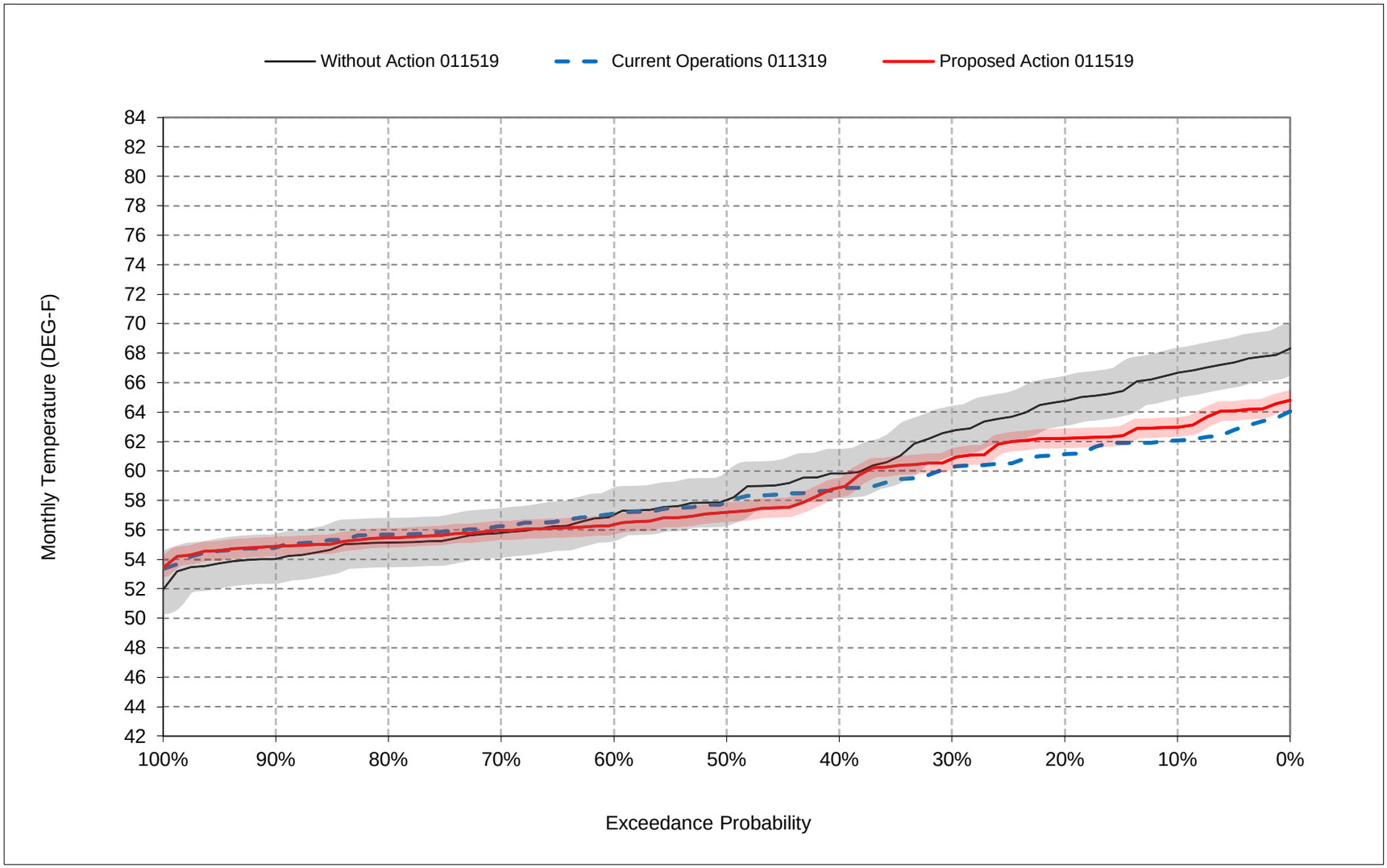


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-13. Stanislaus River at Mouth, April

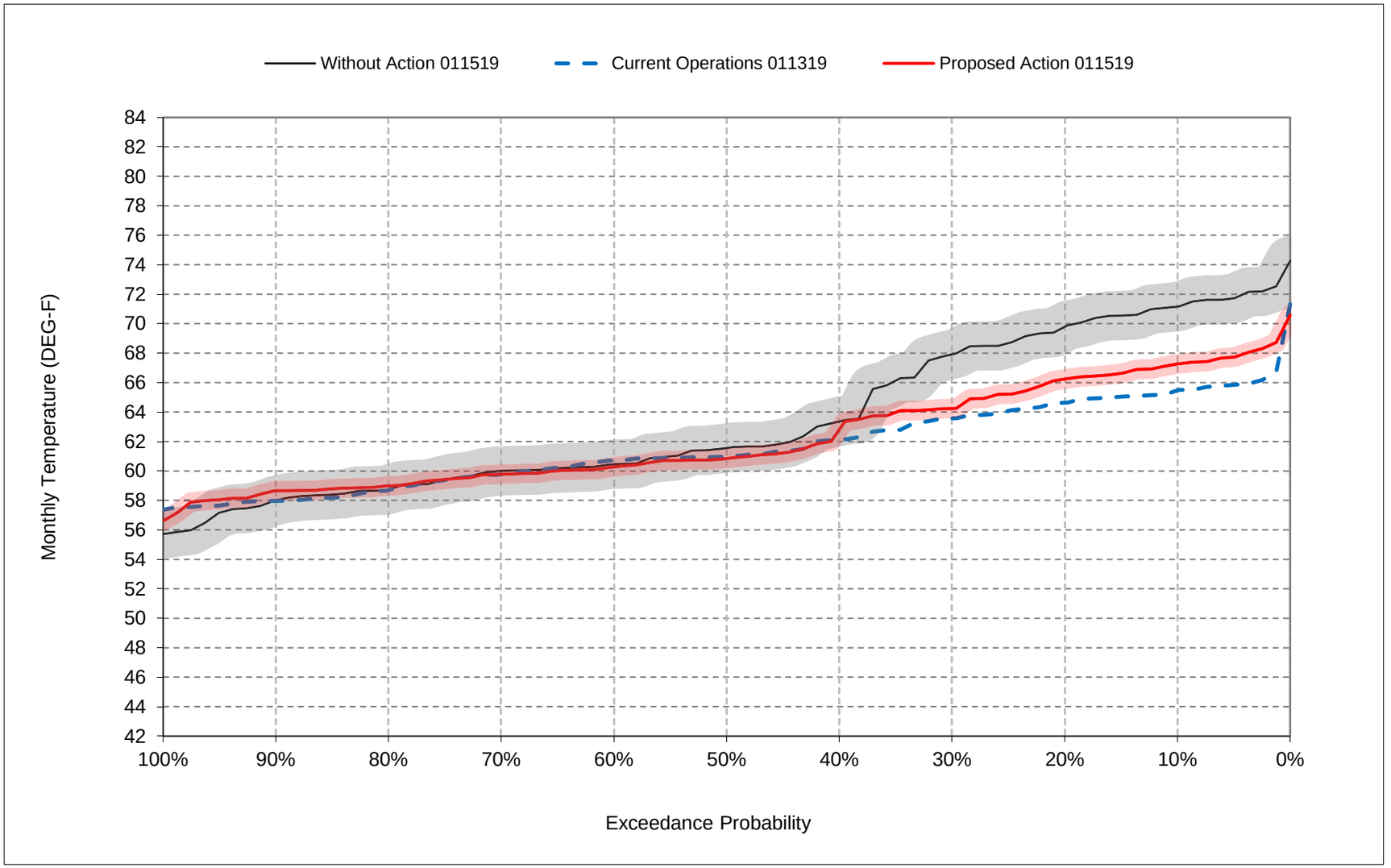


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-14. Stanislaus River at Mouth, May

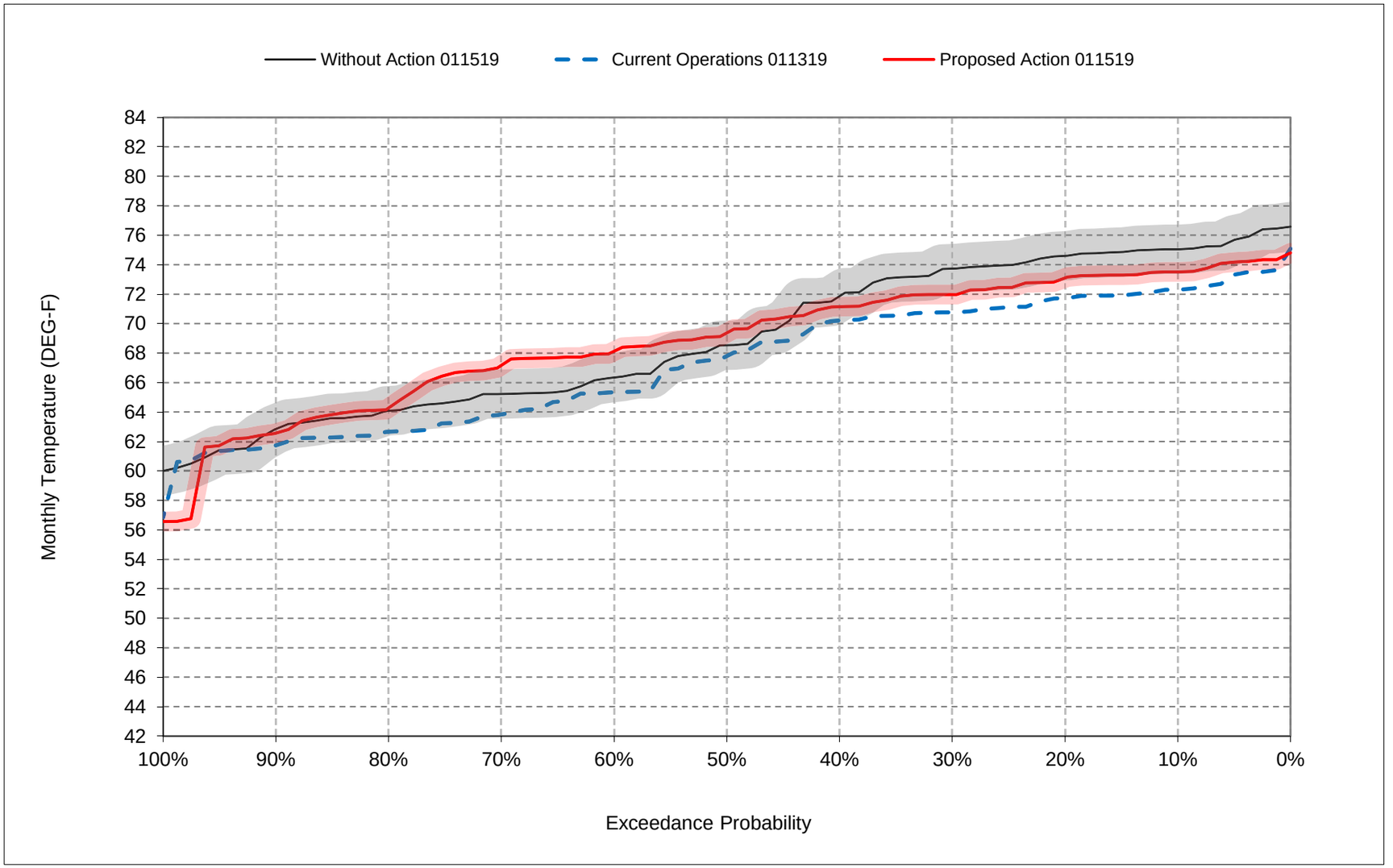


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-15. Stanislaus River at Mouth, June

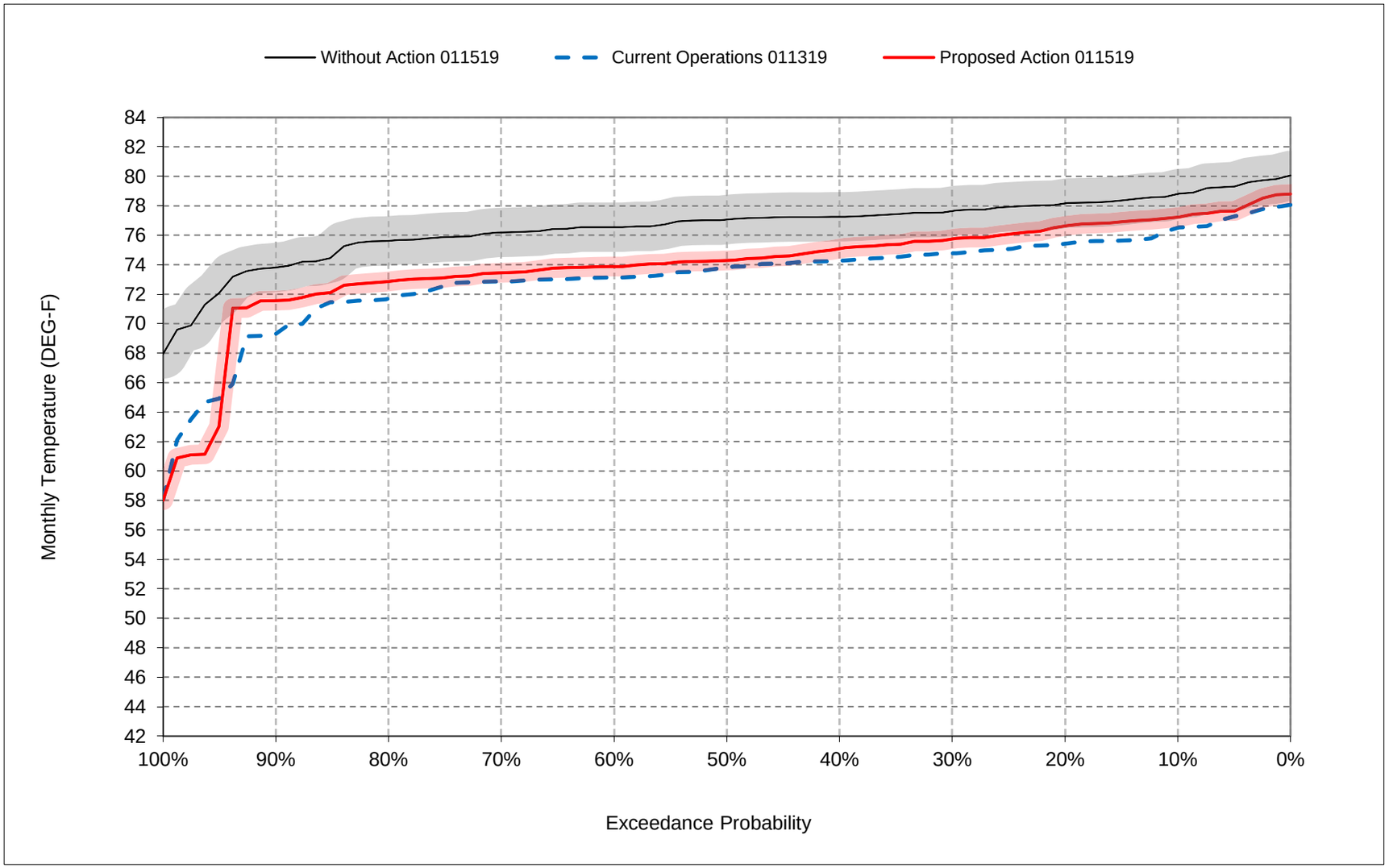


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-16. Stanislaus River at Mouth, July

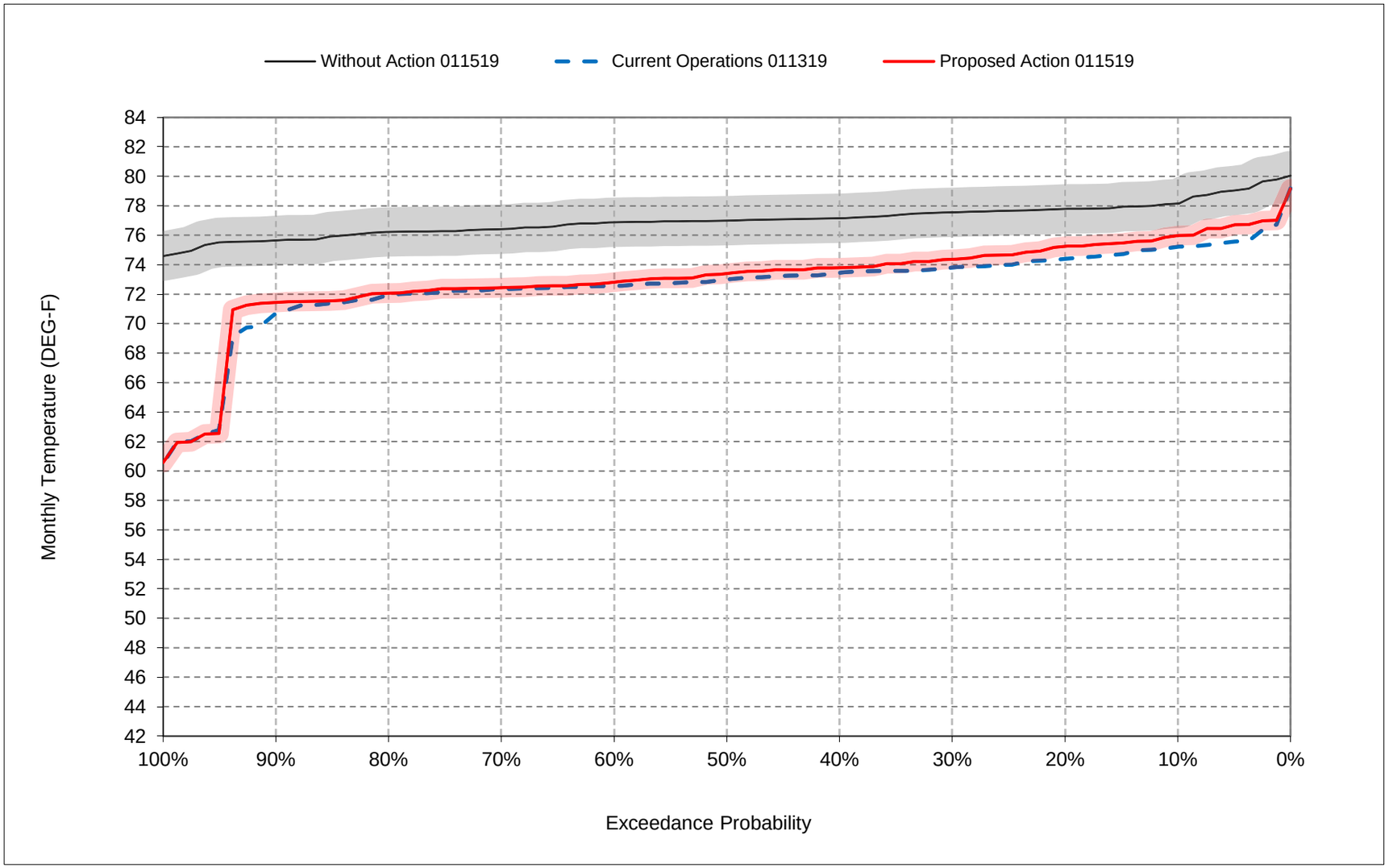


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Figure 24-17. Stanislaus River at Mouth, August

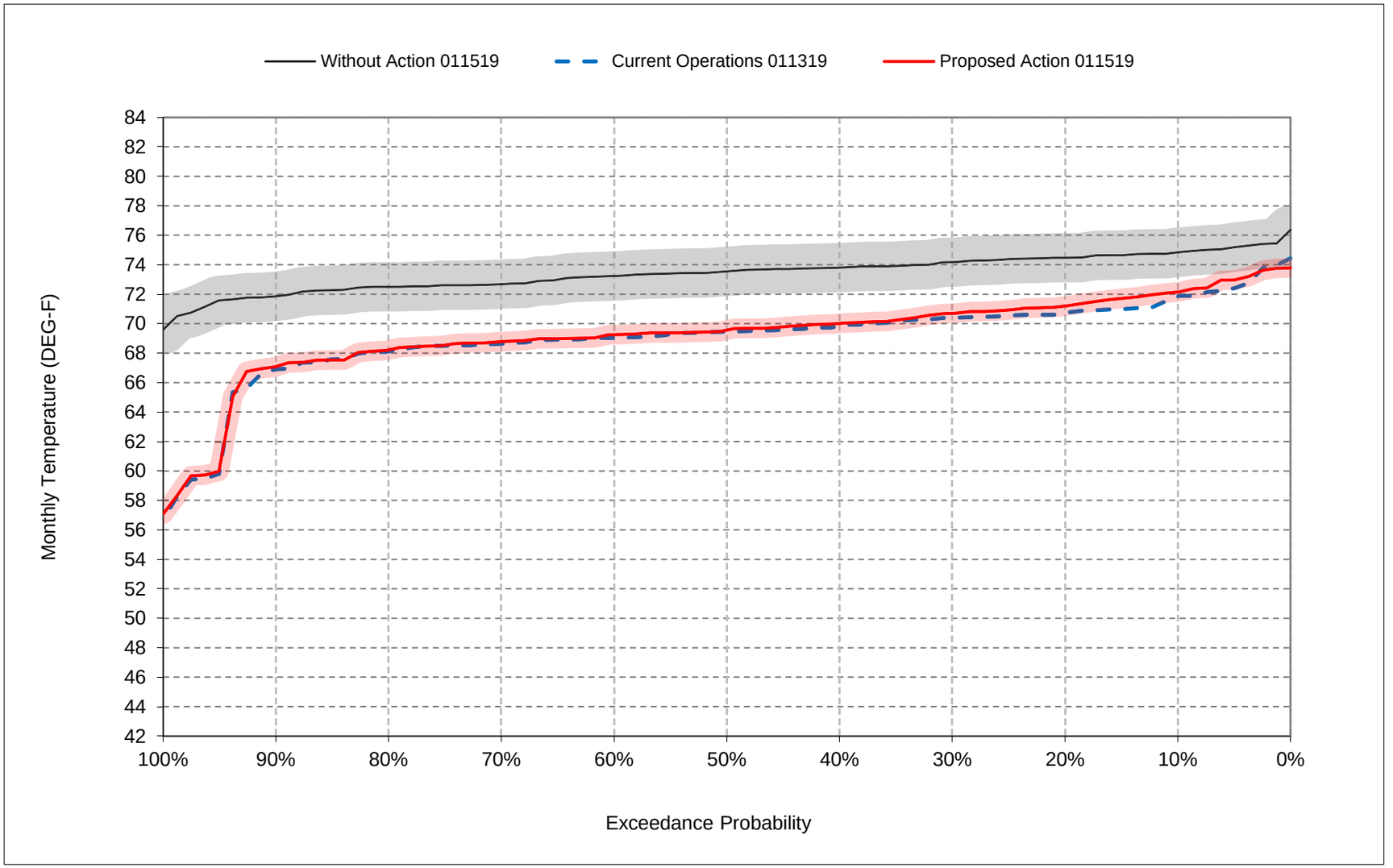


*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.

*These are draft results meant for qualitative analysis and are subject to revision.

*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.

*These are draft results meant for qualitative analysis and are subject to revision.

*New Melones forecasts are used as the basis of water operations.

Appendix D – Modeling

Attachment 3-5 – Temperature Results (Reclamation Temperature Model)

The following results of the Reclamation Temperature model are included for river temperature conditions:

Title	Model Parameter	Table Numbers	Figure Numbers
Feather River Low Flow Channel	FISH_DAM	1-1 to 1-3	1-1 to 1-18
Feather River at Robinson Riffle	ABV_THERMALITO_AB	2-1 to 2-3	2-1 to 2-18
Feather River at Gridley Bridge	GRIDLEY	3-1 to 3-3	3-1 to 3-18
Feather River at Mouth	FEATHER_AT_SACRIV	4-1 to 4-3	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

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.6	57.6	50.2	47.3	49.1	52.3	56.4	62.1	68.9	73.6	76.3	73.2
20%	66.0	56.7	49.5	47.0	48.5	51.4	55.5	61.2	66.5	72.7	75.4	72.9
30%	65.5	56.2	49.0	46.9	48.3	51.1	54.8	59.9	66.1	72.0	74.6	72.4
40%	64.5	55.8	48.4	46.6	47.8	51.0	54.4	59.4	65.4	71.3	74.3	71.8
50%	64.1	55.4	48.2	46.3	47.6	50.7	54.2	59.1	65.1	70.6	74.0	71.5
60%	63.6	55.2	47.7	45.8	47.4	50.4	53.9	58.8	64.7	70.4	73.7	71.3
70%	63.3	54.7	47.5	45.6	47.2	50.0	53.4	58.5	64.3	69.7	73.1	70.9
80%	62.4	54.2	47.1	45.1	47.1	49.7	53.2	58.2	63.7	69.3	72.9	70.3
90%	61.4	53.4	46.4	44.0	46.6	49.3	52.5	57.7	62.9	68.8	72.0	69.3
Long Term												
Full Simulation Period[a]	64.1	55.5	48.2	46.0	47.8	50.7	54.3	59.6	65.5	71.1	74.0	71.4
Water Year Types[b,c]												
Wet (32%)	64.7	56.2	49.1	46.6	47.5	50.0	53.4	58.9	64.3	70.3	73.3	71.8
Above Normal (16%)	63.9	55.1	48.0	46.4	47.7	50.4	54.6	59.0	65.1	70.2	73.7	71.4
Below Normal (15%)	64.1	55.2	47.2	45.9	47.6	50.8	54.7	59.3	65.5	71.3	74.5	72.0
Dry (24%)	63.8	55.2	48.5	45.3	47.8	51.1	54.4	60.0	65.7	70.8	74.5	71.0
Critical (15%)	63.3	55.3	47.1	45.6	48.8	51.9	55.7	61.1	67.9	74.3	74.5	70.7

Current Operations 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6.3	**0.6**	**4.2**	**4.1**	**2.7**	**1.3**	-2.9	-5.2	-10.1	-11.3	-13.8	-14.9
20%	-11.1	-0.5	**4.1**	**3.5**	**2.5**	**1.1**	-2.5	-4.6	-8.0	-10.7	-13.4	-15.9
30%	-11.2	-0.7	**3.8**	**3.0**	**2.2**	**0.8**	-2.3	-3.7	-7.7	-10.6	-13.2	-15.7
40%	-10.6	-0.9	**4.0**	**2.9**	**2.1**	**0.3**	-2.2	-3.4	-7.2	-10.0	-13.2	-15.6
50%	-10.5	-1.1	**3.7**	**2.9**	**1.9**	**0.0**	-2.2	-3.2	-7.1	-9.4	-13.3	-16.2
60%	-10.2	-1.8	**3.7**	**3.0**	**1.8**	-0.3	-2.1	-3.3	-6.8	-9.3	-13.4	-16.5
70%	-10.0	-1.8	**3.6**	**2.5**	**1.8**	-0.2	-2.0	-3.3	-6.7	-8.7	-13.0	-16.2
80%	-9.3	-1.7	**3.4**	**2.4**	**1.2**	-0.4	-2.6	-3.4	-6.2	-8.4	-13.0	-15.8
90%	-8.5	-1.3	**2.7**	**3.0**	**0.7**	-0.9	-2.3	-3.2	-5.7	-8.0	-12.2	-15.0
Long Term												
Full Simulation Period[a]	-9.2	-0.9	**3.8**	**3.1**	**1.8**	**0.2**	-2.4	-3.8	-7.5	-9.7	-12.9	-14.9
Water Year Types[b,c]												
Wet (32%)	-11.4	-1.9	**3.8**	**2.2**	**1.3**	-0.5	-2.4	-3.9	-6.5	-8.9	-12.8	-17.2
Above Normal (16%)	-10.6	-1.9	**3.4**	**2.9**	**1.8**	-0.2	-2.6	-2.7	-6.7	-9.2	-13.8	-16.8
Below Normal (15%)	-10.0	-1.1	**4.6**	**4.0**	**2.6**	**0.9**	-2.0	-3.5	-7.3	-10.2	-14.0	-15.7
Dry (24%)	-9.2	-0.5	**3.6**	**3.7**	**2.1**	**1.0**	-1.8	-4.0	-7.9	-9.4	-12.7	-14.2
Critical (15%)	-2.2	**2.1**	**3.8**	**3.6**	**1.6**	**0.5**	-3.4	-4.9	-9.9	-12.0	-11.1	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 1-2. Feather River Low Flow Channel, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.6	57.6	50.2	47.3	49.1	52.3	56.4	62.1	68.9	73.6	76.3	73.2
20%	66.0	56.7	49.5	47.0	48.5	51.4	55.5	61.2	66.5	72.7	75.4	72.9
30%	65.5	56.2	49.0	46.9	48.3	51.1	54.8	59.9	66.1	72.0	74.6	72.4
40%	64.5	55.8	48.4	46.6	47.8	51.0	54.4	59.4	65.4	71.3	74.3	71.8
50%	64.1	55.4	48.2	46.3	47.6	50.7	54.2	59.1	65.1	70.6	74.0	71.5
60%	63.6	55.2	47.7	45.8	47.4	50.4	53.9	58.8	64.7	70.4	73.7	71.3
70%	63.3	54.7	47.5	45.6	47.2	50.0	53.4	58.5	64.3	69.7	73.1	70.9
80%	62.4	54.2	47.1	45.1	47.1	49.7	53.2	58.2	63.7	69.3	72.9	70.3
90%	61.4	53.4	46.4	44.0	46.6	49.3	52.5	57.7	62.9	68.8	72.0	69.3
Long Term												
Full Simulation Period[a]	64.1	55.5	48.2	46.0	47.8	50.7	54.3	59.6	65.5	71.1	74.0	71.4
Water Year Types[b,c]												
Wet (32%)	64.7	56.2	49.1	46.6	47.5	50.0	53.4	58.9	64.3	70.3	73.3	71.8
Above Normal (16%)	63.9	55.1	48.0	46.4	47.7	50.4	54.6	59.0	65.1	70.2	73.7	71.4
Below Normal (15%)	64.1	55.2	47.2	45.9	47.6	50.8	54.7	59.3	65.5	71.3	74.5	72.0
Dry (24%)	63.8	55.2	48.5	45.3	47.8	51.1	54.4	60.0	65.7	70.8	74.5	71.0
Critical (15%)	63.3	55.3	47.1	45.6	48.8	51.9	55.7	61.1	67.9	74.3	74.5	70.7

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-8.3	-0.2	**3.3**	**4.3**	**2.6**	**1.3**	-2.9	-5.3	-10.4	-11.3	-13.9	-14.2
20%	-11.0	-0.8	**3.2**	**3.5**	**2.7**	**1.5**	-2.5	-4.8	-8.2	-10.7	-13.5	-15.4
30%	-11.3	-1.6	**3.2**	**3.2**	**2.3**	**0.8**	-2.3	-3.9	-8.0	-10.4	-13.2	-15.3
40%	-10.7	-2.1	**3.4**	**3.0**	**2.2**	**0.3**	-2.0	-3.5	-7.5	-10.0	-13.2	-15.0
50%	-10.5	-2.5	**3.2**	**2.9**	**2.0**	0.0	-2.2	-3.4	-7.3	-9.4	-13.5	-15.2
60%	-10.2	-2.6	**3.3**	**2.9**	**1.9**	-0.2	-2.1	-3.5	-7.1	-9.3	-13.4	-15.7
70%	-9.9	-2.3	**3.1**	**2.6**	**1.6**	-0.3	-2.0	-3.4	-6.9	-8.7	-13.0	-15.6
80%	-9.2	-2.0	**2.7**	**2.3**	**1.0**	-0.4	-2.6	-3.5	-6.4	-8.4	-13.0	-15.2
90%	-8.4	-1.3	**2.3**	**3.0**	**0.4**	-0.8	-2.2	-3.2	-5.8	-8.0	-12.2	-14.5
Long Term												
Full Simulation Period[a]	-9.3	-1.5	**3.1**	**3.1**	**1.8**	**0.3**	-2.3	-4.0	-7.7	-9.7	-12.9	-14.3
Water Year Types[b,c]												
Wet (32%)	-11.4	-3.6	**2.0**	**2.3**	**1.4**	-0.4	-2.4	-3.9	-6.6	-8.9	-12.8	-15.7
Above Normal (16%)	-10.6	-2.1	**3.0**	**2.9**	**1.8**	-0.2	-2.5	-2.9	-6.9	-9.2	-13.8	-16.5
Below Normal (15%)	-10.2	-1.5	**4.5**	**3.9**	**2.5**	**0.9**	-2.0	-3.6	-7.6	-10.3	-14.3	-15.6
Dry (24%)	-9.3	-0.6	**3.6**	**3.6**	**2.1**	**1.0**	-1.7	-4.2	-8.2	-9.3	-12.8	-14.2
Critical (15%)	-2.4	**2.2**	**3.7**	**3.5**	**1.6**	**0.5**	-3.3	-5.0	-9.9	-12.1	-11.0	-7.9

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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 1-3. Feather River Low Flow Channel, Monthly Temperature

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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.

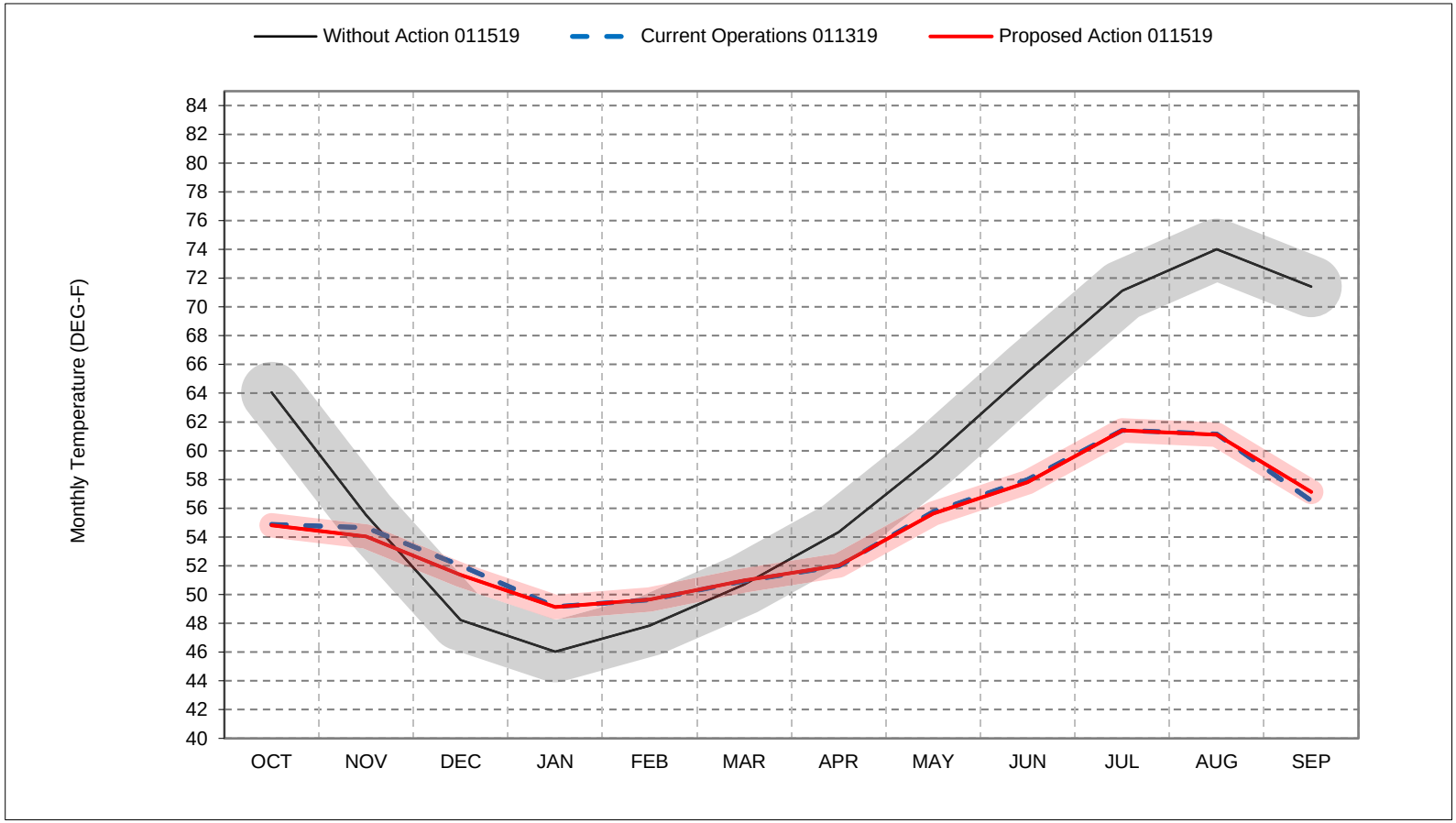
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

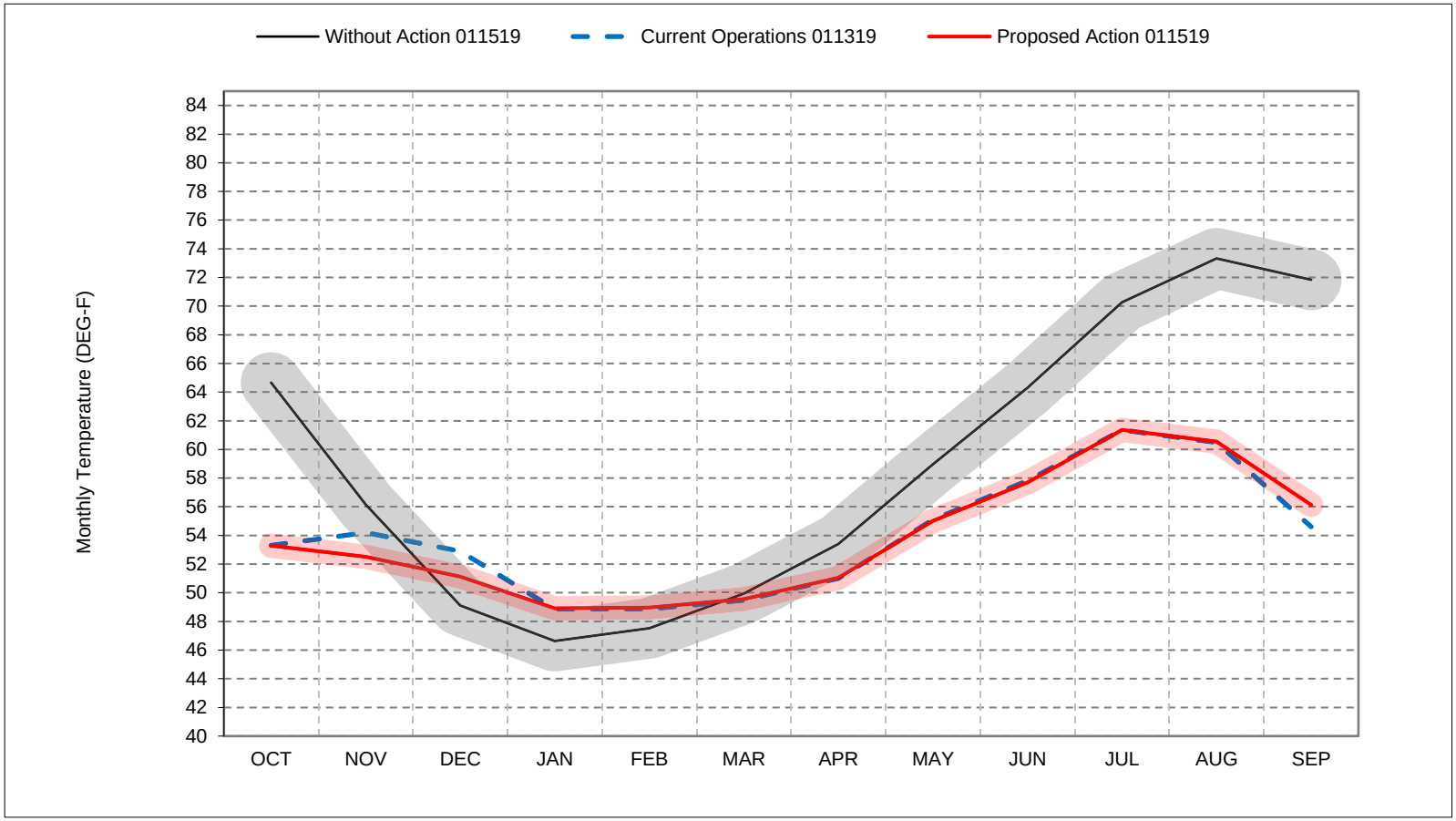
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-1. Feather River Low Flow Channel, Long-Term Average Temperature



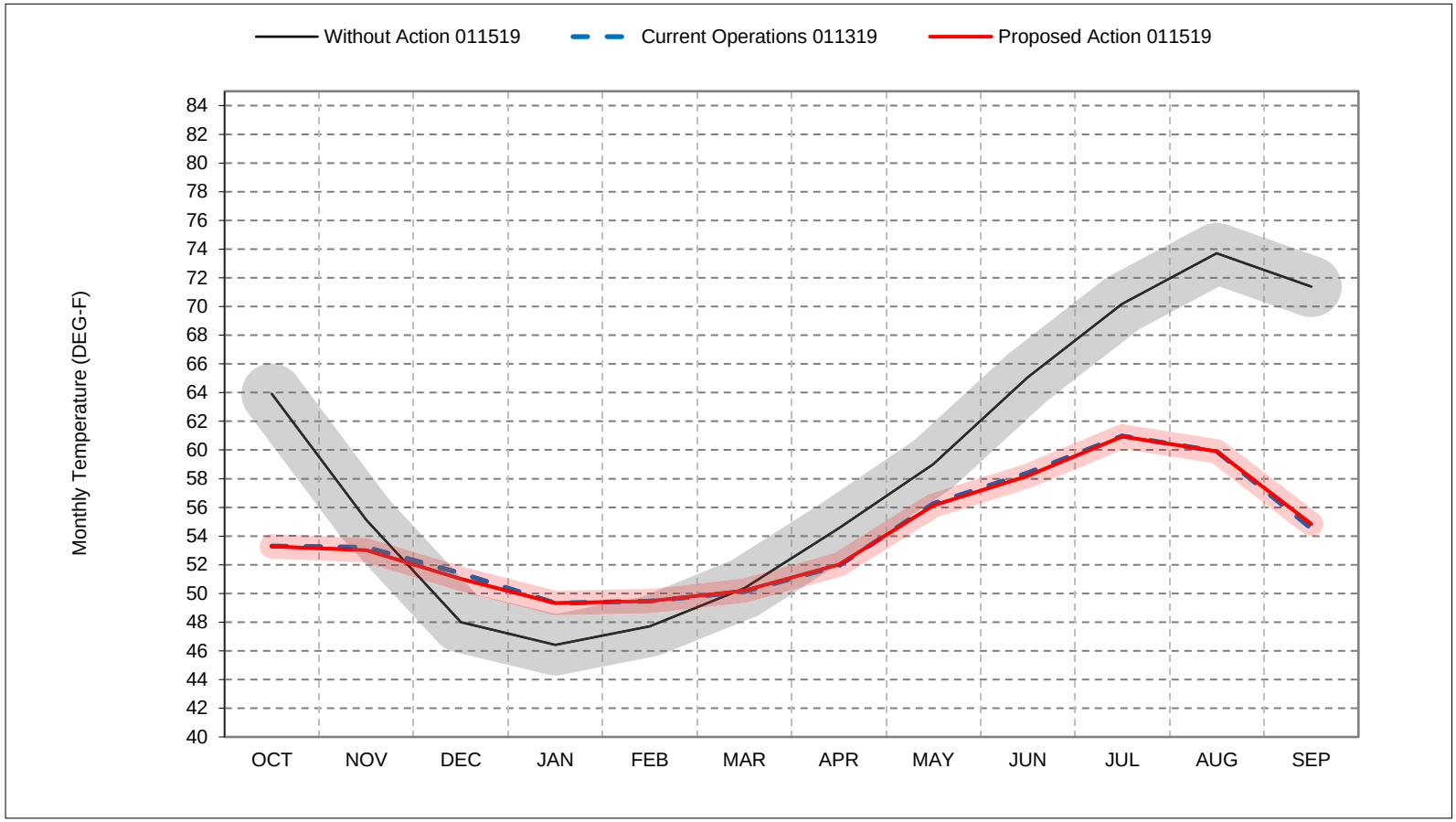
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-2. Feather River Low Flow Channel, Wet Year Average Temperature



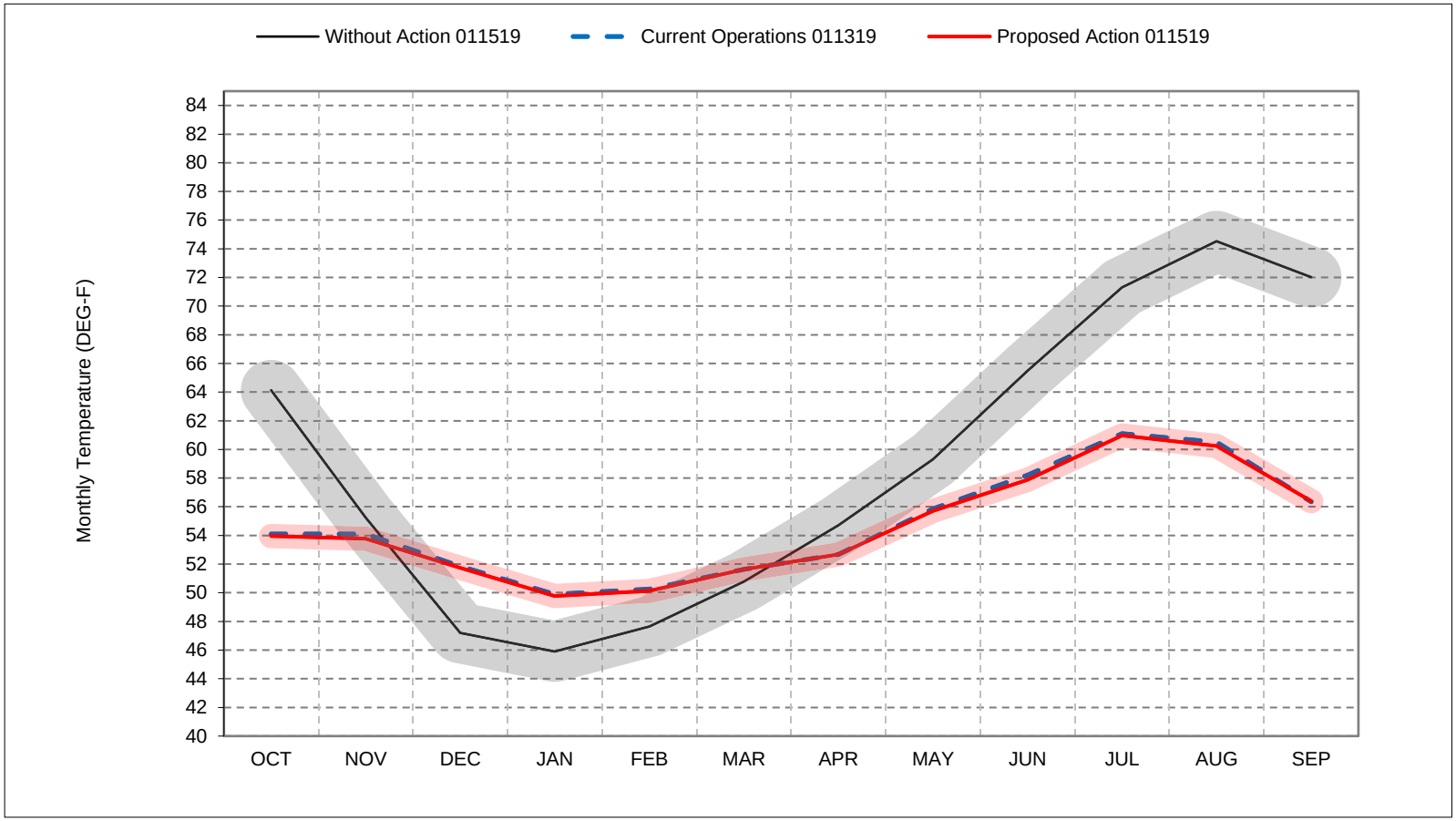
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-3. Feather River Low Flow Channel, Above Normal Year Average Temperature



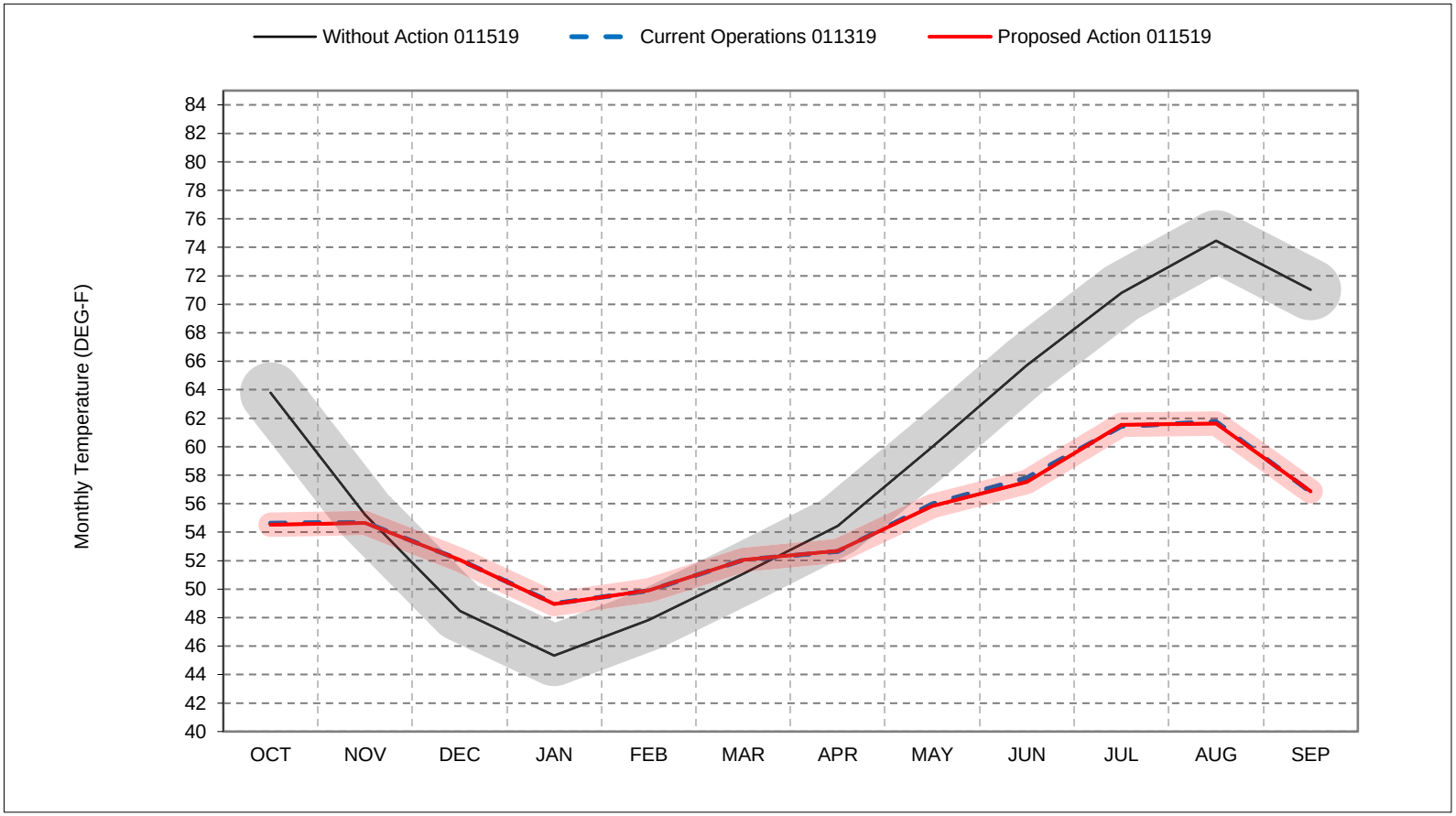
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-4. Feather River Low Flow Channel, Below Normal Year Average Temperature



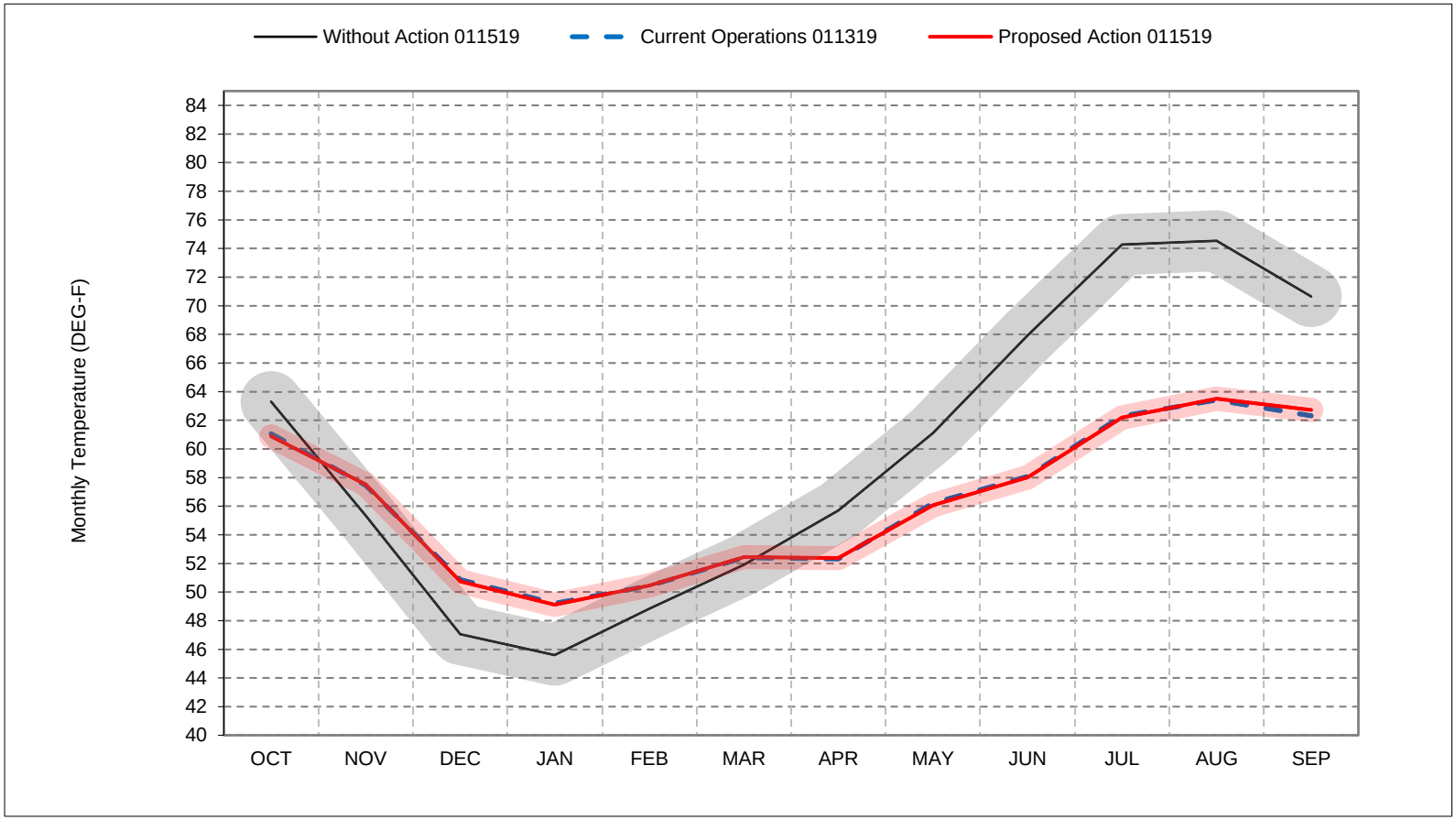
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-5. Feather River Low Flow Channel, Dry Year Average Temperature



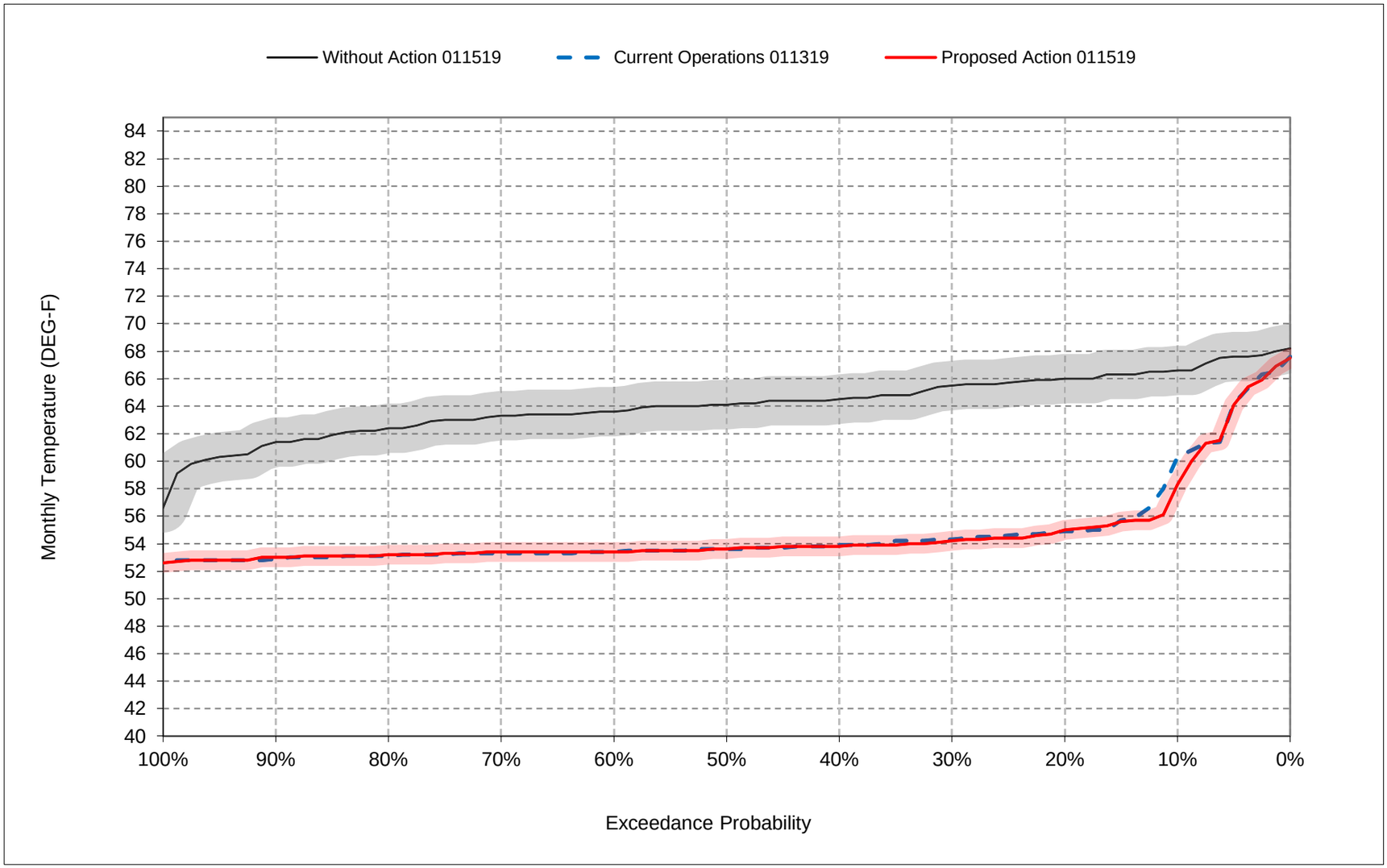
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

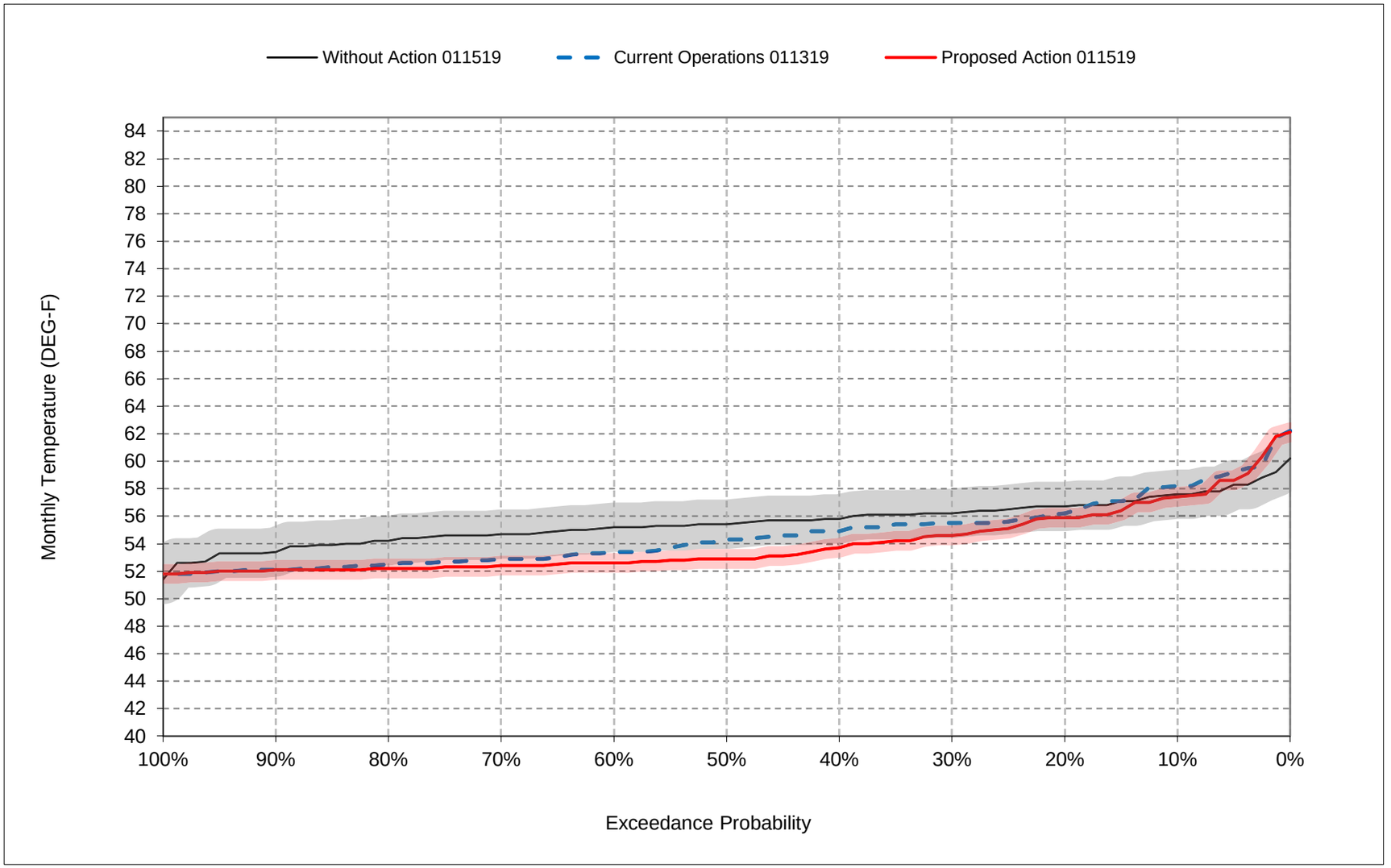
Figure 1-7. Feather River Low Flow Channel, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

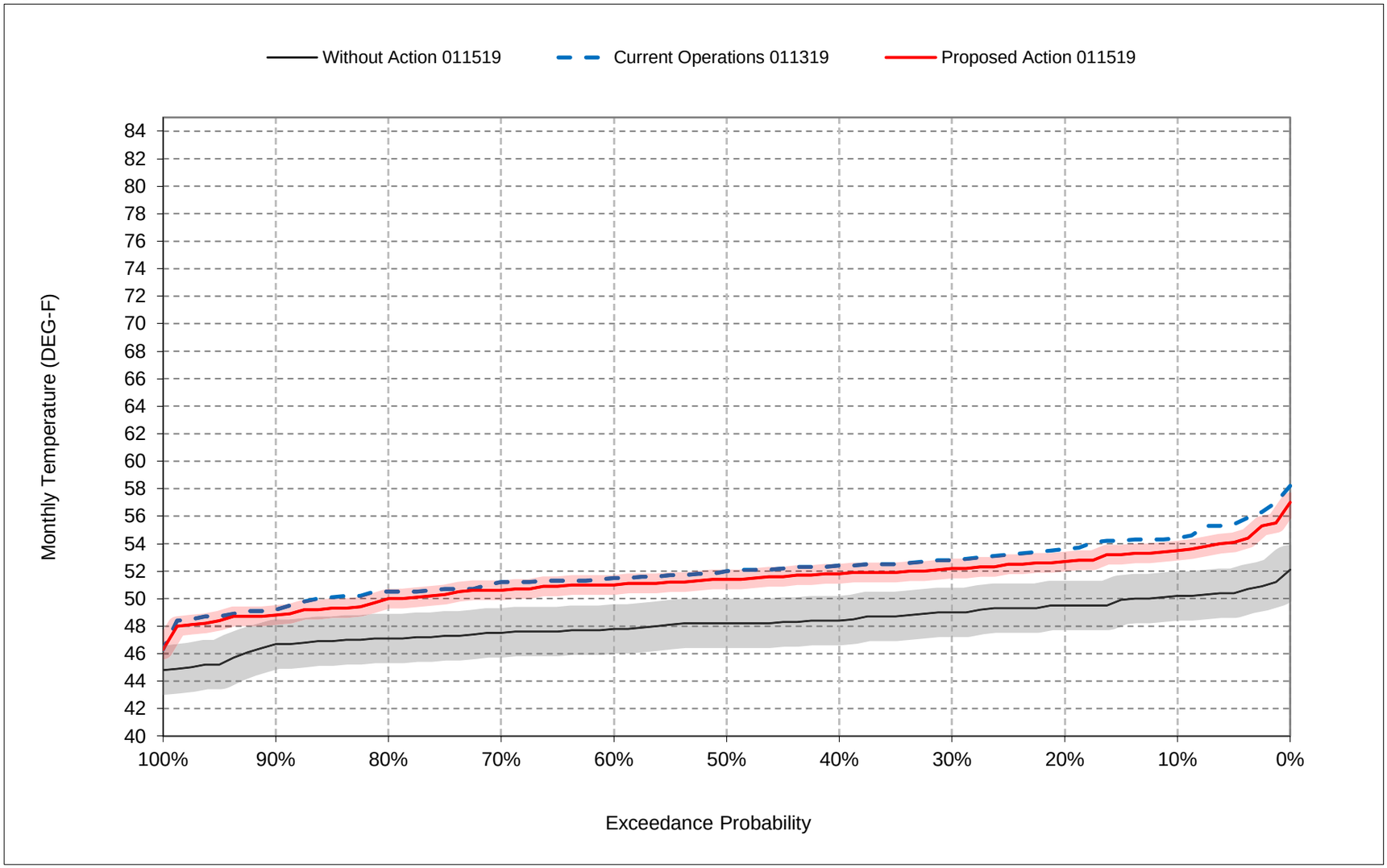
Figure 1-8. Feather River Low Flow Channel, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

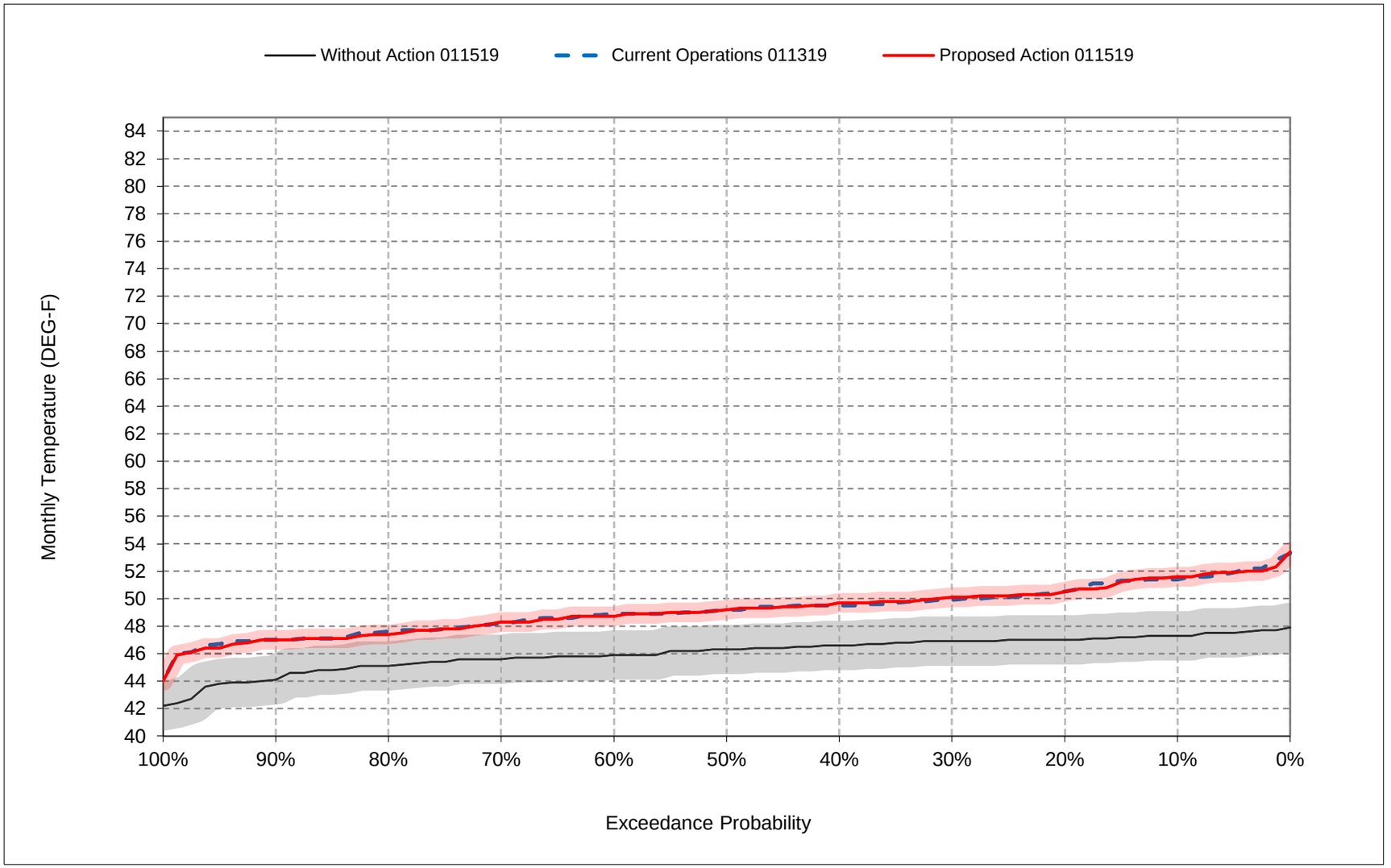
Figure 1-9. Feather River Low Flow Channel, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

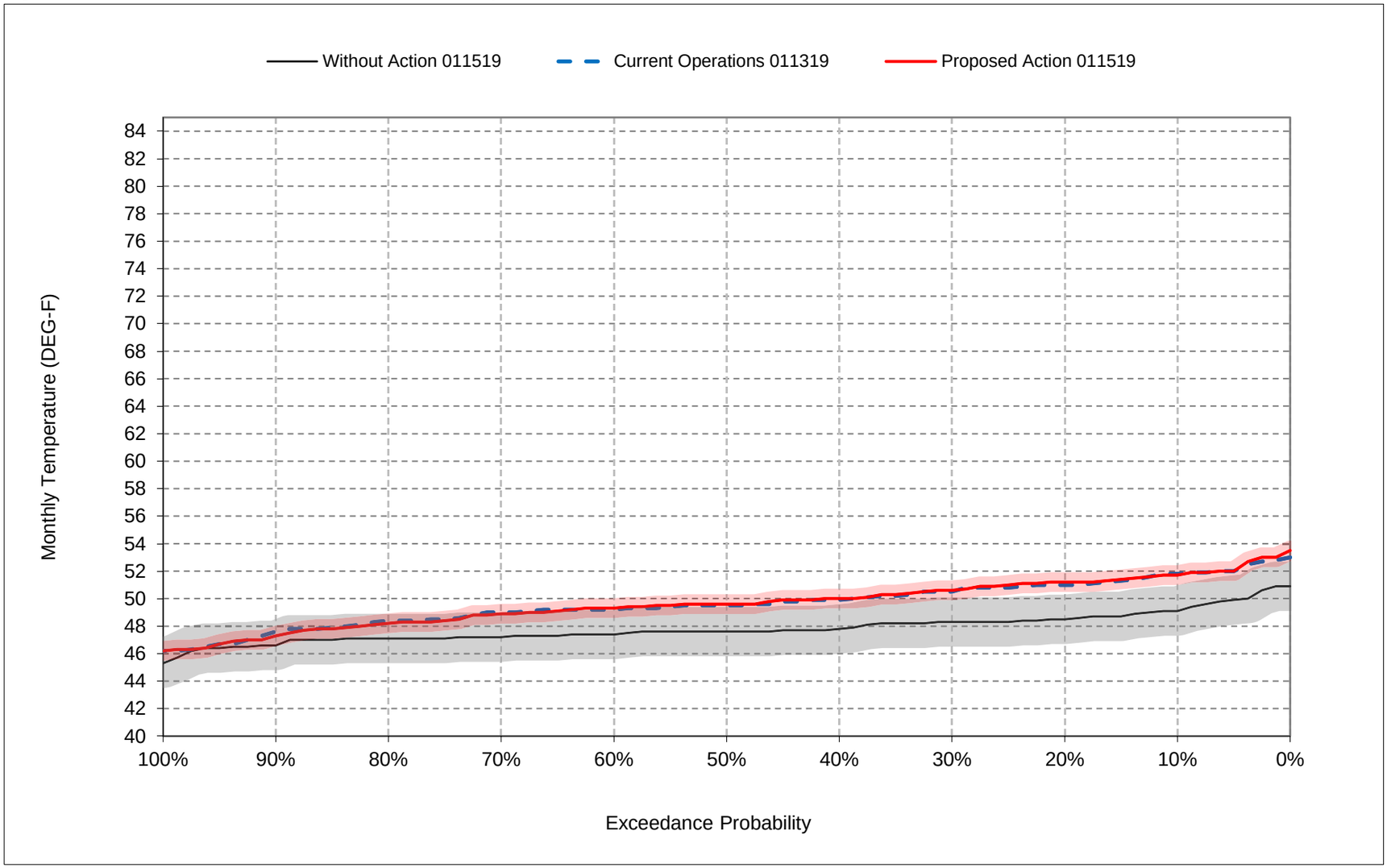
Figure 1-10. Feather River Low Flow Channel, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

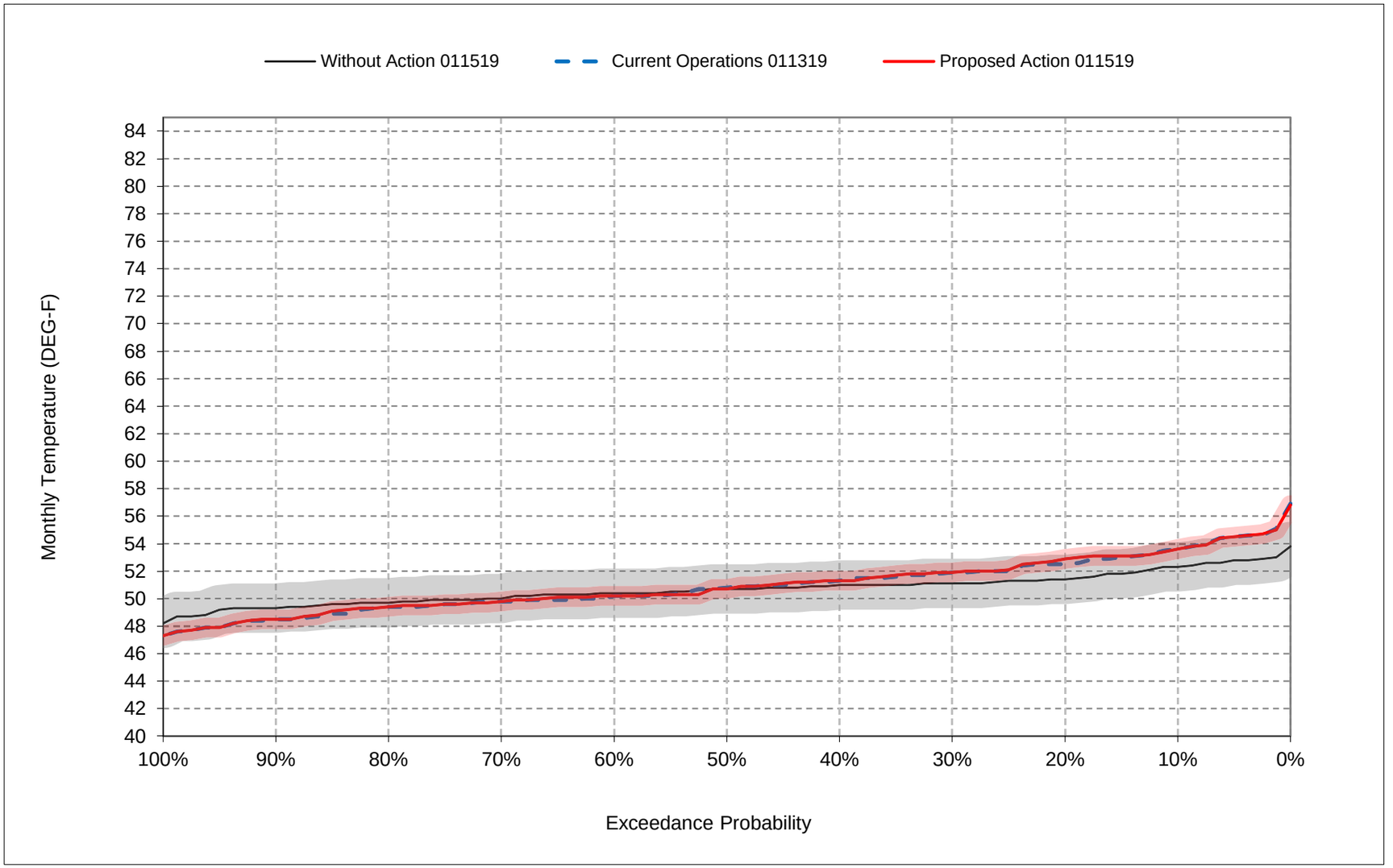
Figure 1-11. Feather River Low Flow Channel, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

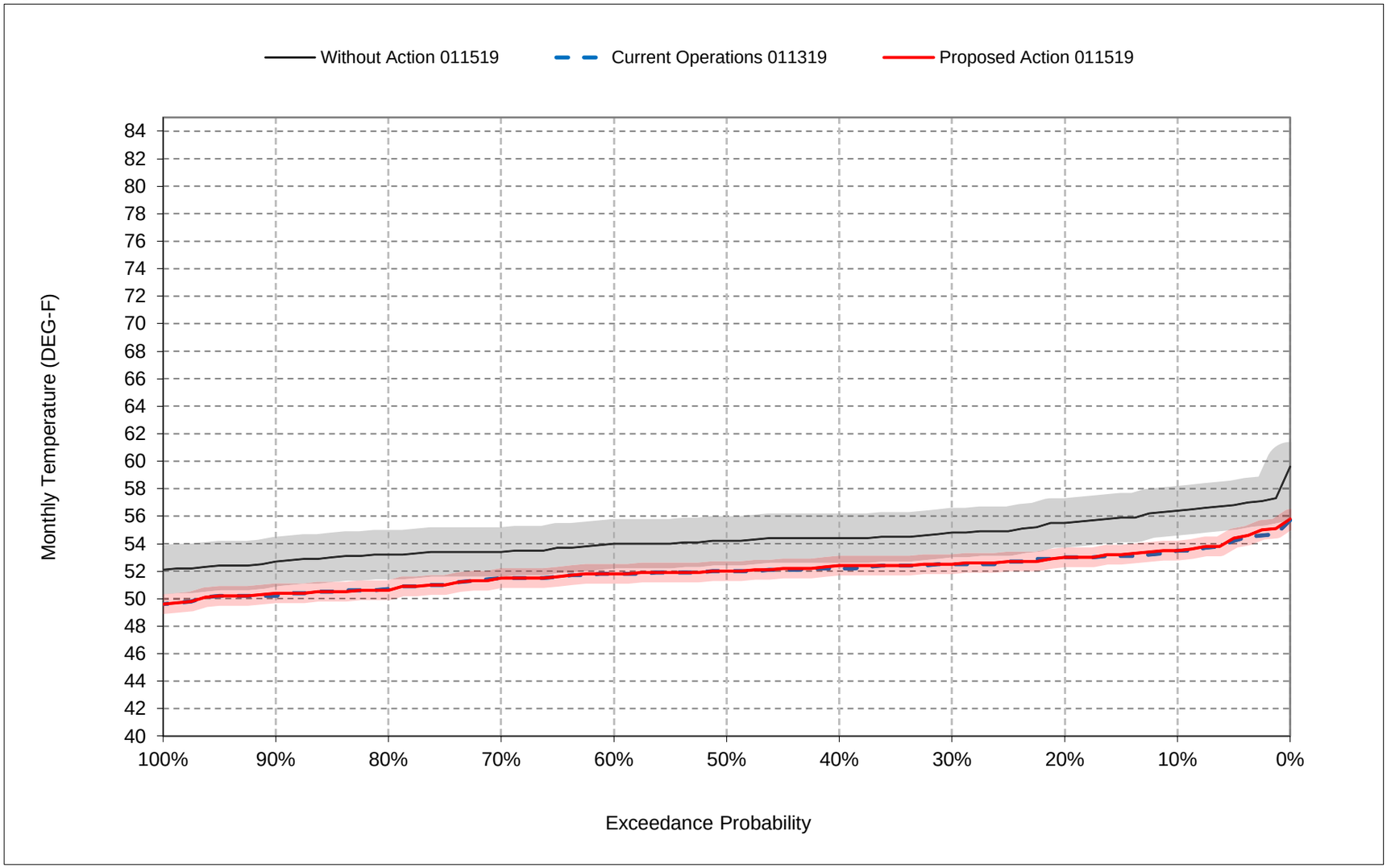
Figure 1-12. Feather River Low Flow Channel, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

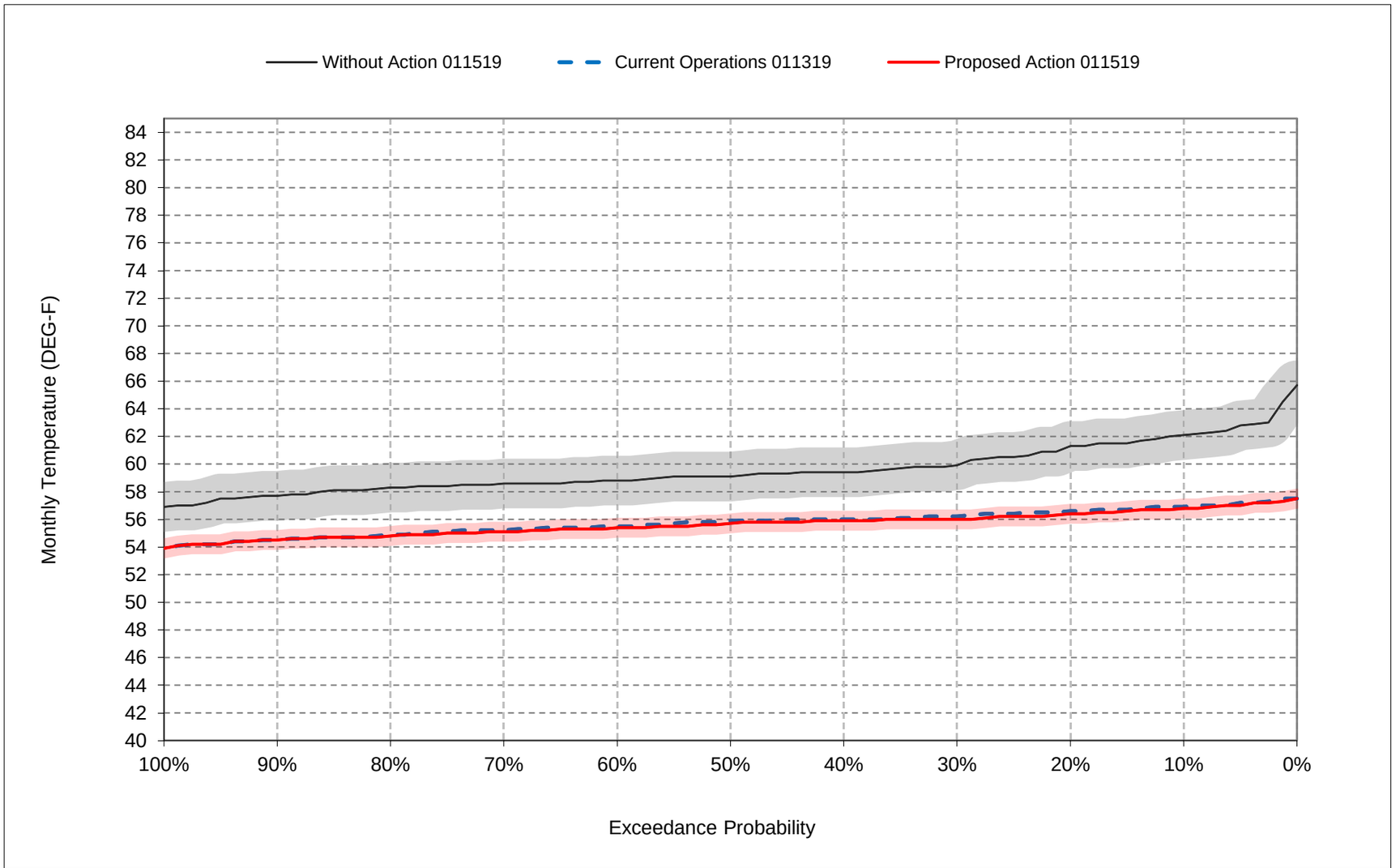
Figure 1-13. Feather River Low Flow Channel, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

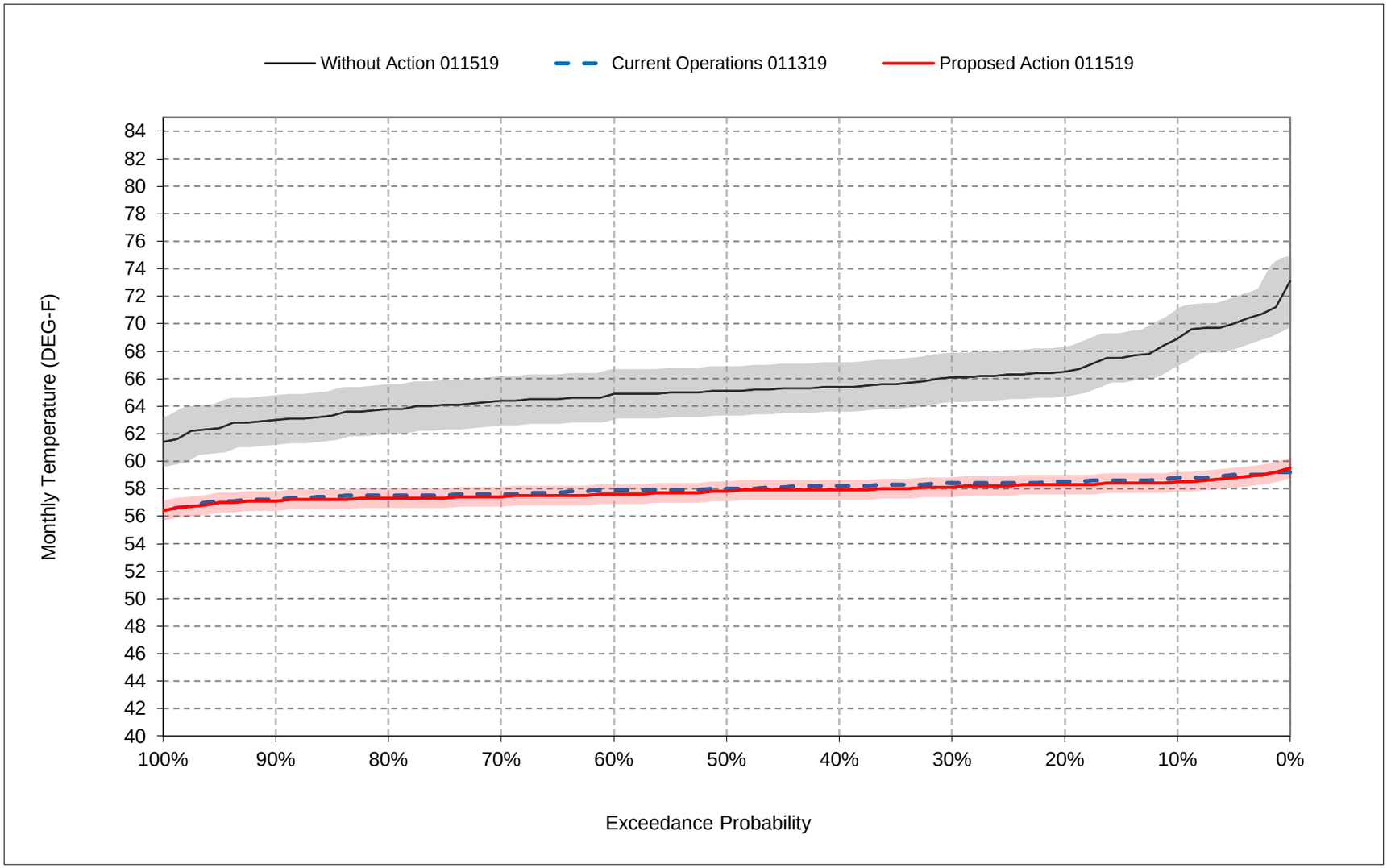
Figure 1-14. Feather River Low Flow Channel, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

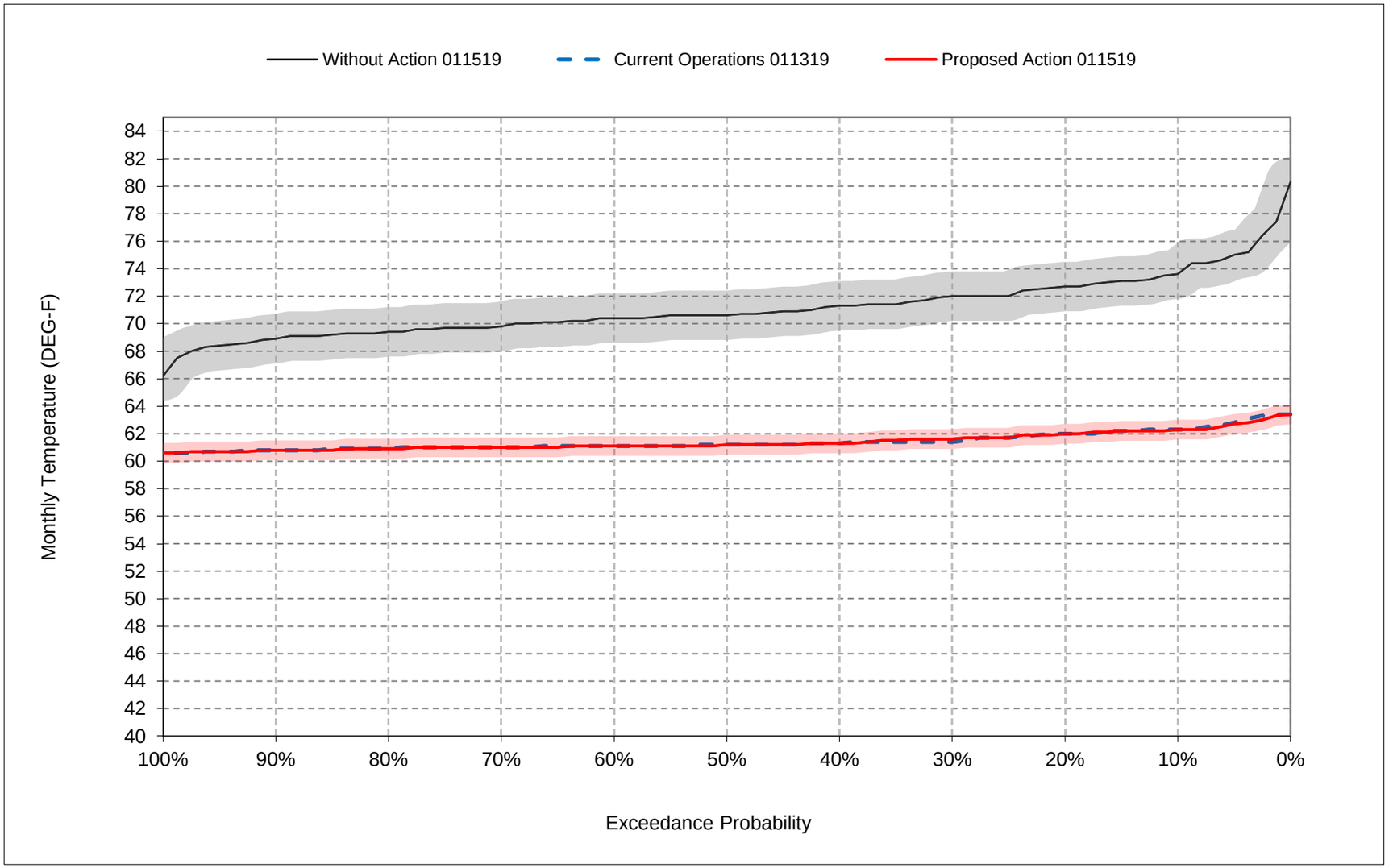
Figure 1-15. Feather River Low Flow Channel, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

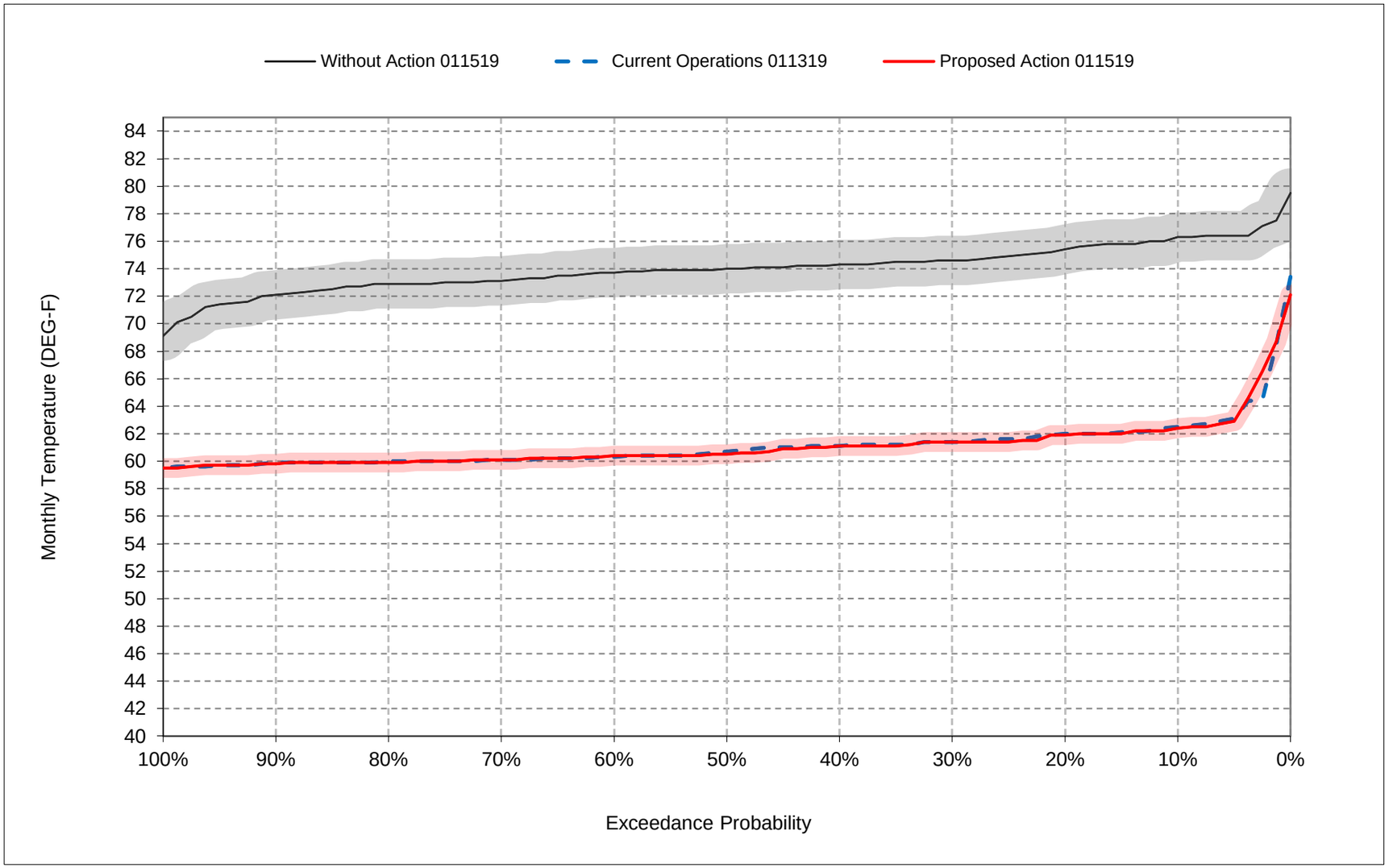
Figure 1-16. Feather River Low Flow Channel, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

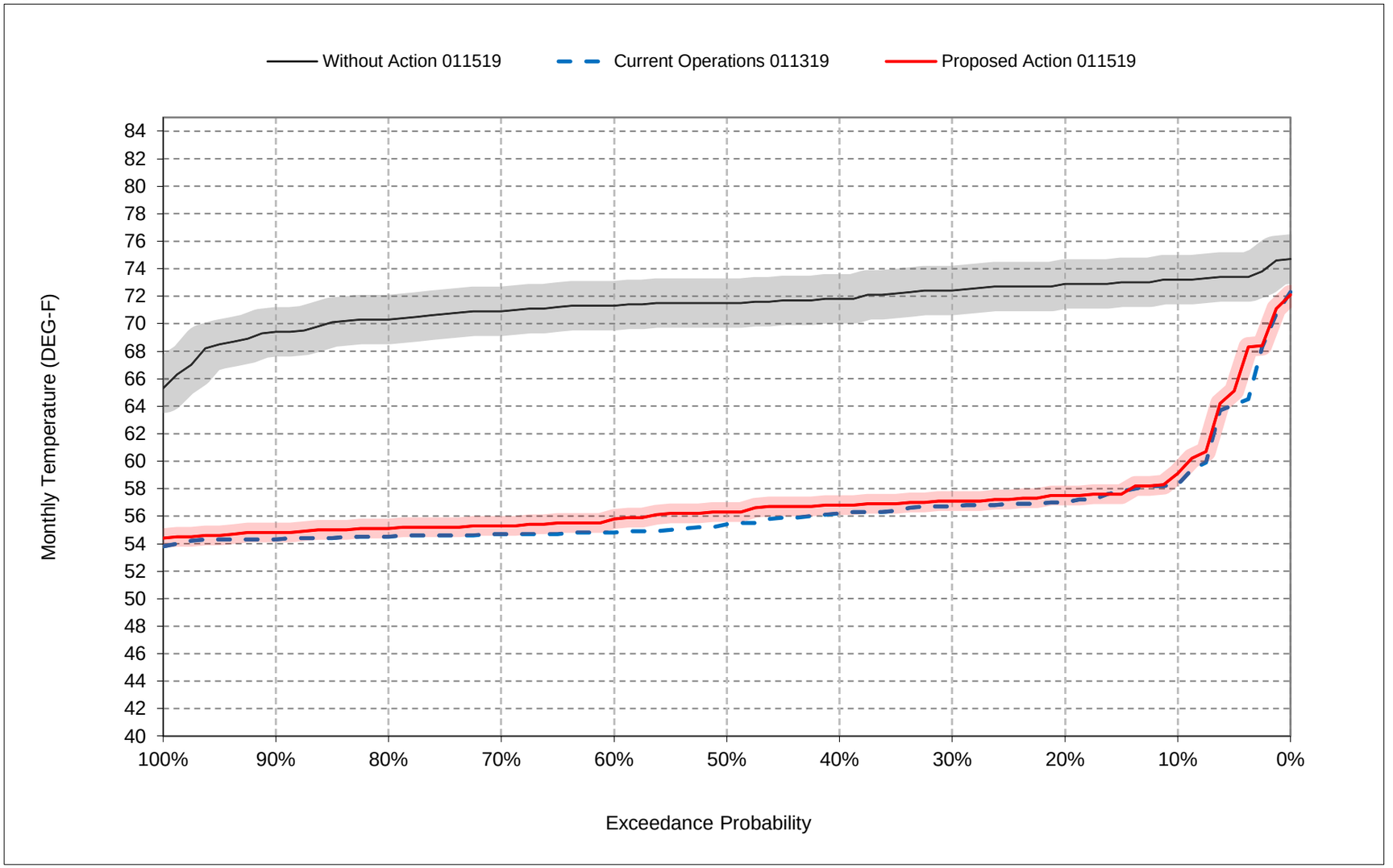
Figure 1-17. Feather River Low Flow Channel, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 2-1. Feather River at Robinson Riffle, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.7	58.0	49.3	49.5	54.8	60.0	66.6	73.3	78.8	82.2	80.6	75.5
20%	66.5	56.7	48.8	48.4	54.0	58.6	64.7	71.8	77.9	81.6	79.9	74.8
30%	65.7	56.1	48.2	47.9	53.4	58.2	63.9	71.3	77.2	81.0	79.1	74.5
40%	64.9	55.4	47.6	47.1	52.8	57.8	63.4	70.8	76.6	80.5	78.4	73.6
50%	64.5	54.6	46.9	46.6	52.2	57.0	62.6	70.4	75.5	80.1	78.1	73.2
60%	63.9	53.9	46.4	46.1	51.7	56.6	62.2	70.1	74.8	79.5	77.7	72.8
70%	63.6	53.5	45.7	45.5	51.0	55.9	61.7	69.5	74.5	79.0	77.0	72.3
80%	62.7	53.1	45.0	44.2	50.6	55.4	61.0	68.4	73.8	78.4	76.4	71.4
90%	62.2	52.0	42.9	42.5	49.3	53.5	60.3	66.6	72.1	77.7	75.5	70.4
Long Term												
Full Simulation Period[a]	64.5	54.8	46.7	46.3	52.2	57.0	63.0	70.4	75.7	80.1	78.2	73.1
Water Year Types[b,c]												
Wet (32%)	64.3	55.0	47.4	47.1	52.3	56.5	61.5	70.3	74.7	80.4	78.5	73.6
Above Normal (16%)	64.1	53.6	46.3	47.4	52.5	57.2	63.5	70.8	76.2	79.7	77.8	72.7
Below Normal (15%)	64.8	55.1	45.6	46.5	51.7	56.9	64.4	69.8	76.3	80.5	78.5	73.5
Dry (24%)	64.8	55.2	47.6	45.0	51.9	57.2	63.4	70.7	76.5	79.6	77.9	72.8
Critical (15%)	65.0	54.7	45.2	45.8	52.9	57.8	63.9	70.0	75.2	80.4	78.2	72.6

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6.9	-0.3	**3.9**	**1.1**	-2.3	-5.0	-9.2	-11.2	-12.7	-12.7	-11.9	-12.8
20%	-9.3	-0.6	**3.8**	**1.6**	-2.5	-4.6	-8.2	-10.2	-12.1	-12.5	-11.8	-13.1
30%	-9.1	-0.8	**3.7**	**1.8**	-2.4	-4.7	-8.0	-10.1	-11.9	-12.2	-11.5	-13.2
40%	-8.5	-0.4	**3.8**	**2.0**	-2.2	-4.9	-7.9	-10.0	-11.6	-12.0	-11.3	-12.7
50%	-8.3	-0.4	**4.1**	**2.2**	-1.9	-4.8	-7.6	-9.8	-11.0	-11.8	-11.5	-12.8
60%	-8.1	-0.2	**4.2**	**2.3**	-1.7	-4.8	-7.5	-9.9	-10.8	-11.4	-11.4	-12.7
70%	-8.0	-0.1	**4.6**	**2.3**	-1.3	-4.6	-7.3	-9.6	-10.8	-11.3	-10.9	-12.6
80%	-7.6	-0.1	**4.6**	**2.8**	-1.7	-4.5	-7.1	-8.6	-10.3	-11.1	-10.5	-12.0
90%	-7.4	**0.3**	**5.9**	**3.9**	-1.1	-3.4	-7.0	-7.6	-9.4	-10.8	-10.2	-11.5
Long Term												
Full Simulation Period[a]	-7.7	-0.1	**4.4**	**2.3**	-1.9	-4.5	-7.7	-9.7	-11.2	-11.8	-11.2	-12.1
Water Year Types[b,c]												
Wet (32%)	-8.7	-0.7	**4.6**	**1.5**	-2.6	-5.2	-7.4	-10.1	-10.8	-11.9	-11.8	-13.8
Above Normal (16%)	-8.6	-0.4	**4.2**	**1.6**	-2.3	-5.3	-8.1	-9.6	-11.2	-11.8	-11.7	-13.3
Below Normal (15%)	-8.4	-0.8	**5.2**	**2.8**	-1.0	-3.8	-8.1	-9.3	-11.4	-12.1	-11.7	-12.5
Dry (24%)	-8.1	-0.4	**3.6**	**3.3**	-1.5	-3.8	-7.5	-9.8	-11.7	-11.5	-10.6	-11.7
Critical (15%)	-3.0	**2.3**	**4.7**	**2.9**	-1.8	-4.0	-8.1	-9.2	-10.9	-11.4	-9.7	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 2-2. Feather River at Robinson Riffle, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.7	58.0	49.3	49.5	54.8	60.0	66.6	73.3	78.8	82.2	80.6	75.5
20%	66.5	56.7	48.8	48.4	54.0	58.6	64.7	71.8	77.9	81.6	79.9	74.8
30%	65.7	56.1	48.2	47.9	53.4	58.2	63.9	71.3	77.2	81.0	79.1	74.5
40%	64.9	55.4	47.6	47.1	52.8	57.8	63.4	70.8	76.6	80.5	78.4	73.6
50%	64.5	54.6	46.9	46.6	52.2	57.0	62.6	70.4	75.5	80.1	78.1	73.2
60%	63.9	53.9	46.4	46.1	51.7	56.6	62.2	70.1	74.8	79.5	77.7	72.8
70%	63.6	53.5	45.7	45.5	51.0	55.9	61.7	69.5	74.5	79.0	77.0	72.3
80%	62.7	53.1	45.0	44.2	50.6	55.4	61.0	68.4	73.8	78.4	76.4	71.4
90%	62.2	52.0	42.9	42.5	49.3	53.5	60.3	66.6	72.1	77.7	75.5	70.4
Long Term												
Full Simulation Period[a]	64.5	54.8	46.7	46.3	52.2	57.0	63.0	70.4	75.7	80.1	78.2	73.1
Water Year Types[b,c]												
Wet (32%)	64.3	55.0	47.4	47.1	52.3	56.5	61.5	70.3	74.7	80.4	78.5	73.6
Above Normal (16%)	64.1	53.6	46.3	47.4	52.5	57.2	63.5	70.8	76.2	79.7	77.8	72.7
Below Normal (15%)	64.8	55.1	45.6	46.5	51.7	56.9	64.4	69.8	76.3	80.5	78.5	73.5
Dry (24%)	64.8	55.2	47.6	45.0	51.9	57.2	63.4	70.7	76.5	79.6	77.9	72.8
Critical (15%)	65.0	54.7	45.2	45.8	52.9	57.8	63.9	70.0	75.2	80.4	78.2	72.6

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.7	57.3	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-8.0	-0.7	**3.1**	**1.3**	-2.4	-4.9	-9.1	-11.4	-12.8	-12.6	-12.0	-12.1
20%	-9.2	-1.2	**2.9**	**1.6**	-2.3	-4.5	-8.3	-10.2	-12.4	-12.5	-11.9	-12.5
30%	-9.0	-1.6	**3.1**	**1.8**	-2.3	-4.6	-7.9	-10.2	-12.1	-12.2	-11.6	-12.7
40%	-8.6	-1.6	**3.3**	**2.0**	-2.1	-4.9	-7.9	-10.0	-11.7	-12.0	-11.3	-12.3
50%	-8.5	-1.0	**3.7**	**2.1**	-1.8	-4.8	-7.5	-9.8	-11.0	-11.8	-11.5	-12.3
60%	-8.2	-0.8	**3.9**	**2.3**	-1.8	-4.8	-7.4	-9.9	-10.9	-11.4	-11.4	-12.3
70%	-8.2	-0.7	**4.1**	**2.3**	-1.5	-4.5	-7.3	-9.6	-10.9	-11.3	-10.9	-12.3
80%	-7.5	-0.5	**4.3**	**2.8**	-1.7	-4.5	-7.1	-8.7	-10.4	-11.1	-10.7	-11.8
90%	-7.4	**0.2**	**5.5**	**3.7**	-1.2	-3.4	-7.1	-7.6	-9.5	-10.7	-10.2	-11.1
Long Term												
Full Simulation Period[a]	-7.7	-0.6	**3.8**	**2.3**	-1.9	-4.5	-7.7	-9.8	-11.3	-11.8	-11.2	-11.6
Water Year Types[b,c]												
Wet (32%)	-8.8	-2.1	**3.1**	**1.5**	-2.5	-5.2	-7.4	-10.2	-10.8	-11.9	-11.7	-12.7
Above Normal (16%)	-8.6	-0.5	**3.9**	**1.6**	-2.3	-5.2	-8.1	-9.7	-11.3	-11.8	-11.7	-13.1
Below Normal (15%)	-8.6	-1.0	**5.1**	**2.7**	-1.2	-3.8	-8.1	-9.4	-11.6	-12.2	-11.9	-12.5
Dry (24%)	-8.1	-0.4	**3.6**	**3.3**	-1.5	-3.8	-7.5	-9.9	-11.9	-11.4	-10.7	-11.7
Critical (15%)	-3.2	**2.3**	**4.6**	**2.8**	-1.8	-4.0	-8.1	-9.3	-10.9	-11.4	-9.6	-7.2

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 These are draft results meant for qualitative analysis and are subject to revision.

Table 2-3. Feather River at Robinson Riffle, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.7	57.3	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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.

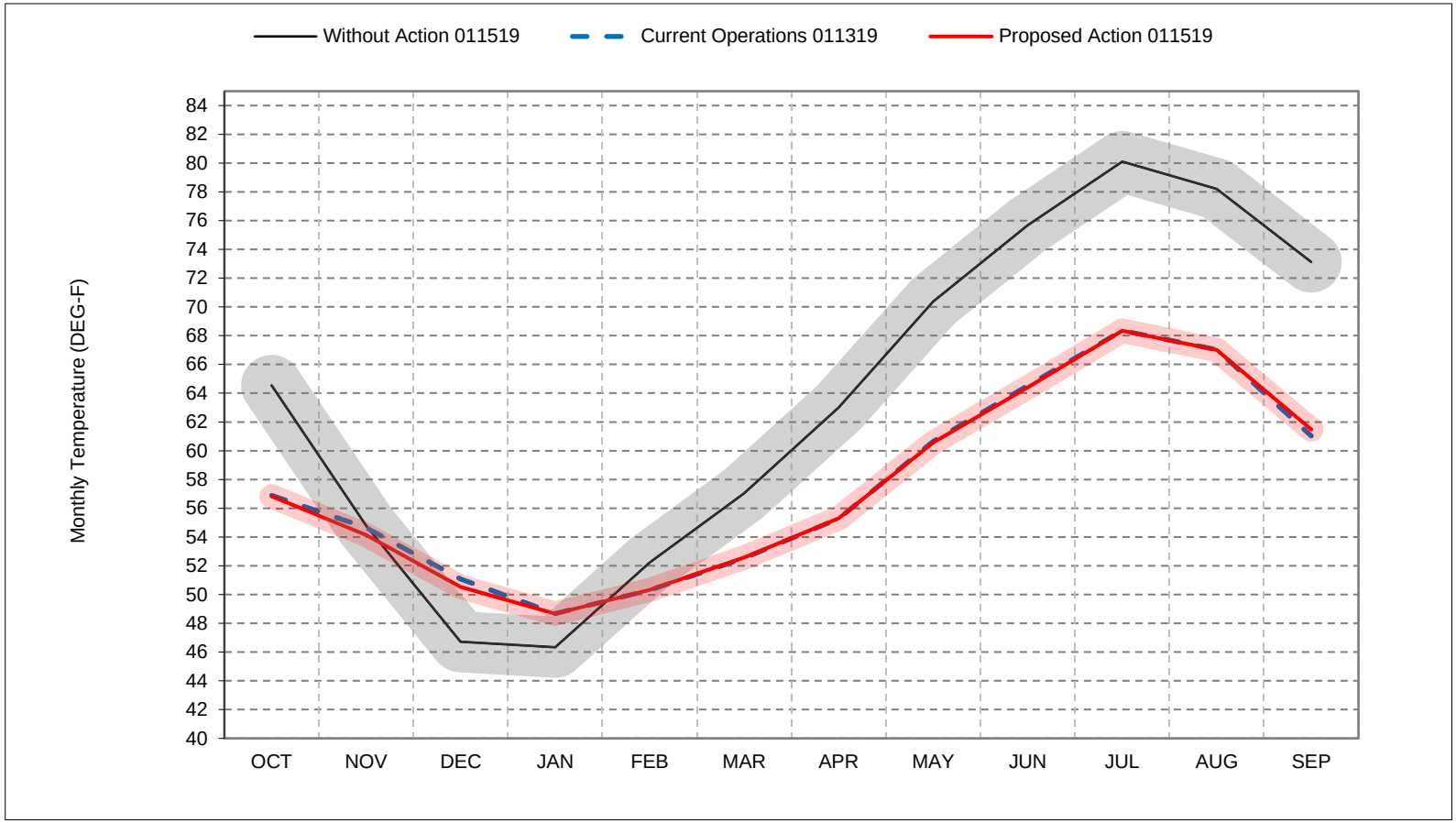
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

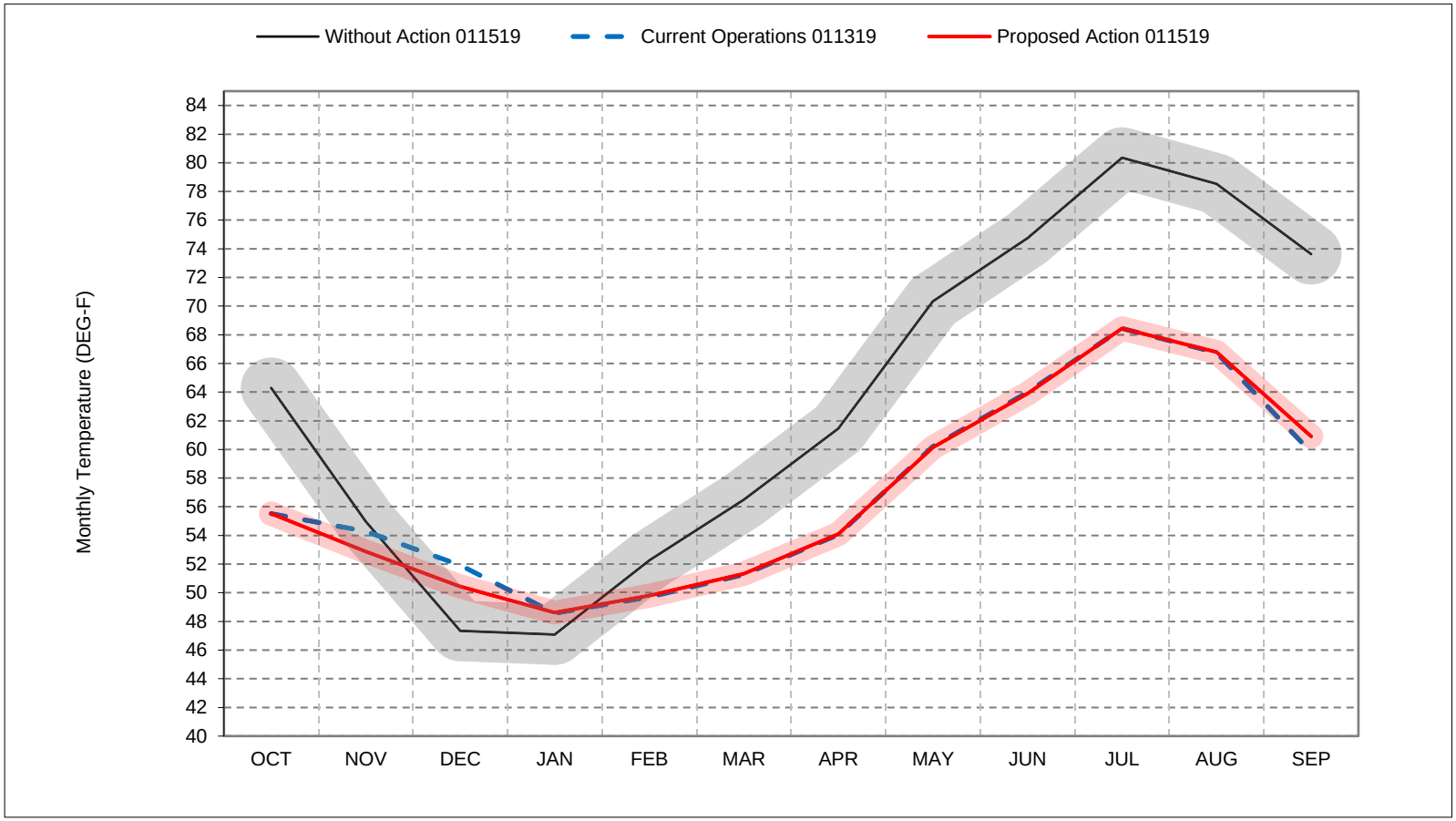
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-1. Feather River at Robinson Riffle, Long-Term Average Temperature



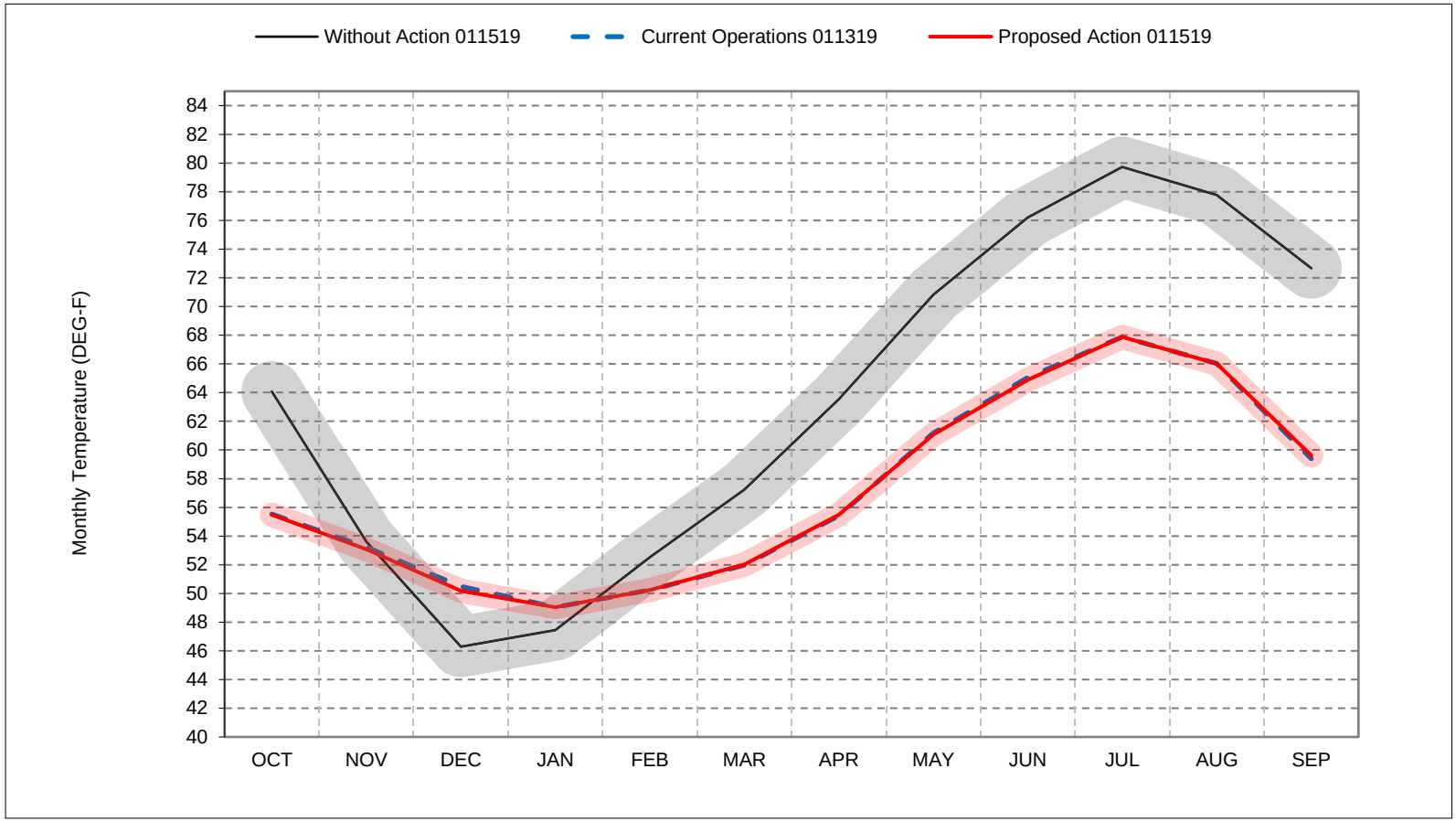
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-2. Feather River at Robinson Riffle, Wet Year Average Temperature



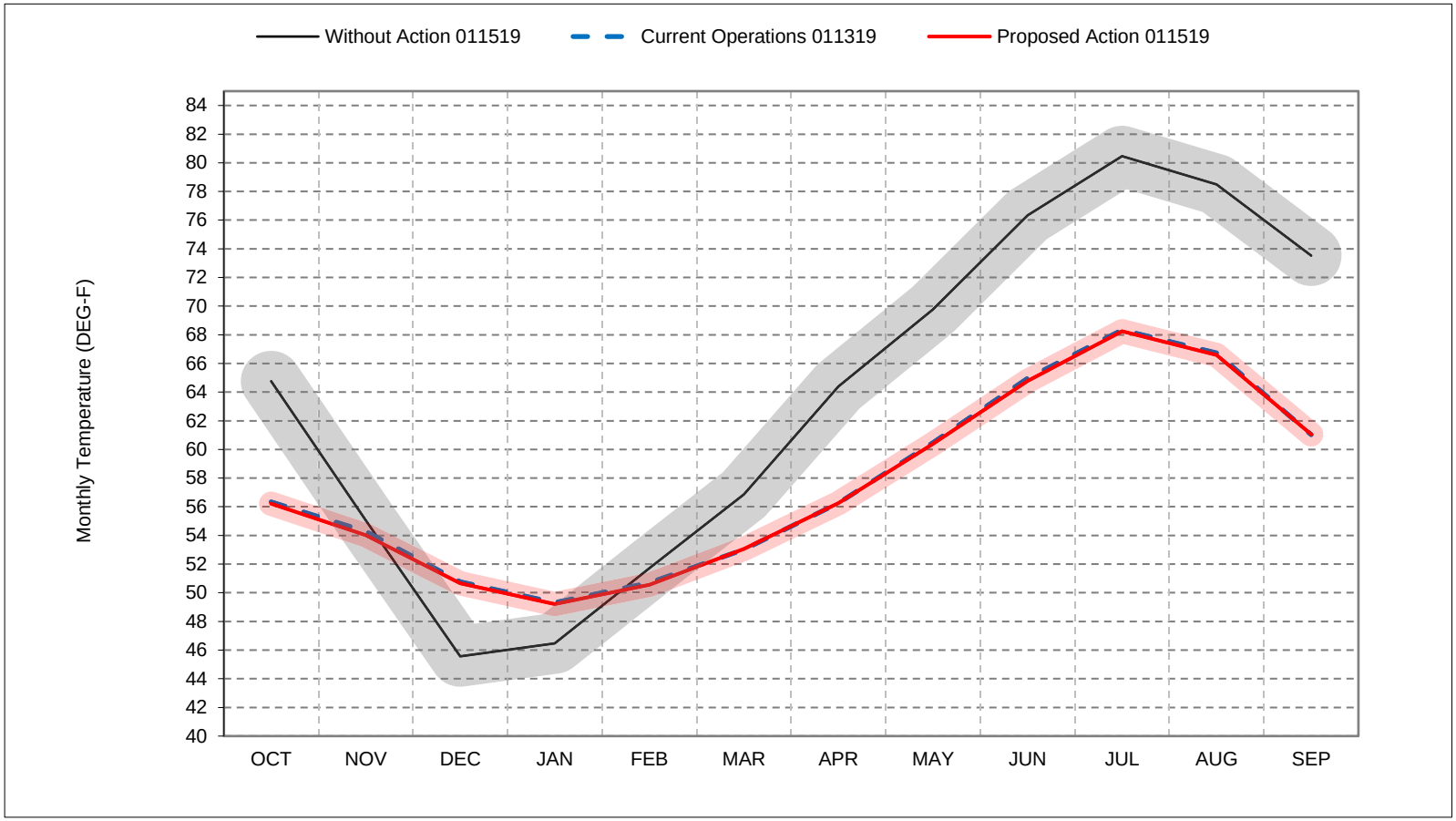
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-3. Feather River at Robinson Riffle, Above Normal Year Average Temperature



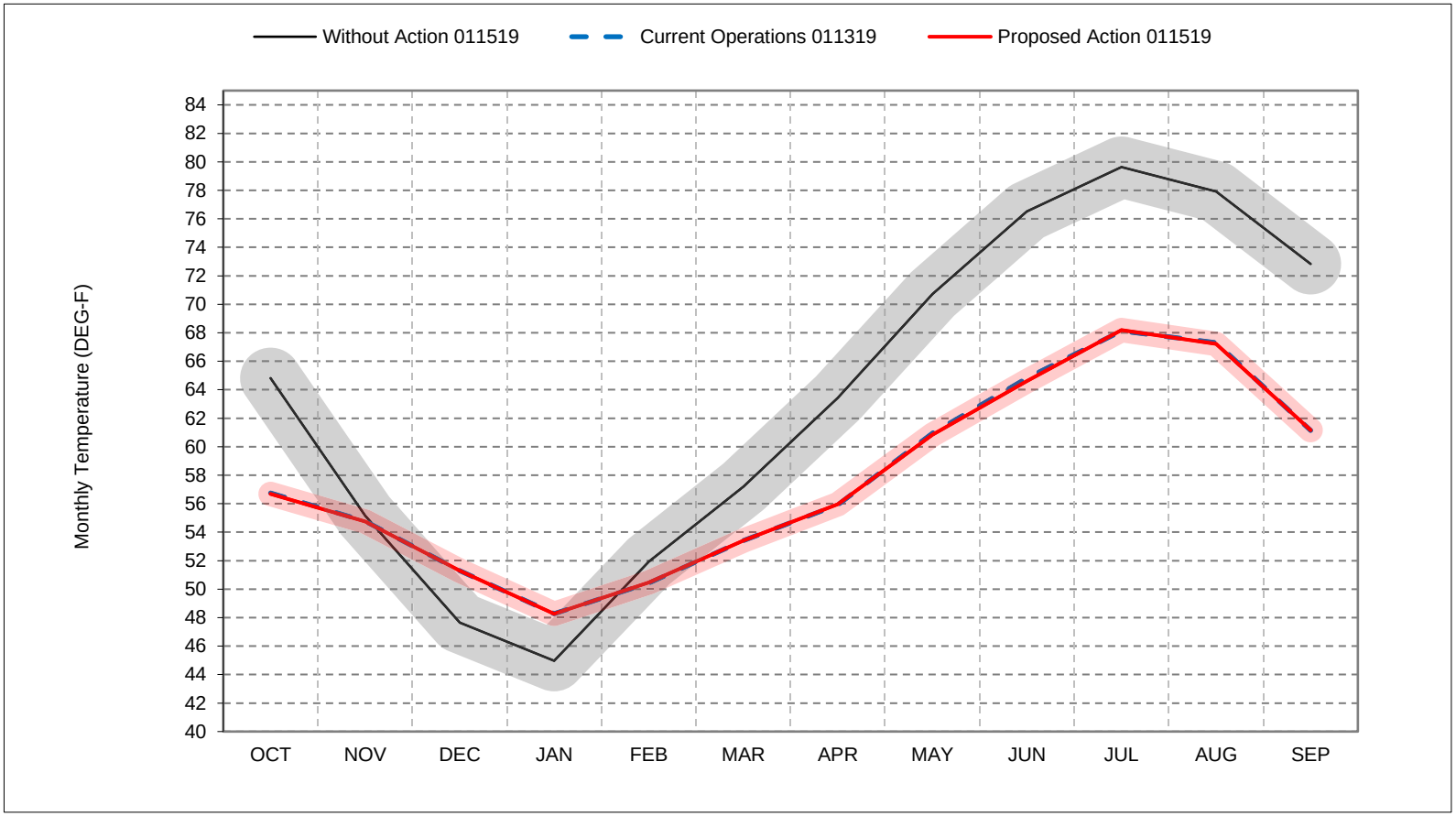
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-4. Feather River at Robinson Riffle, Below Normal Year Average Temperature



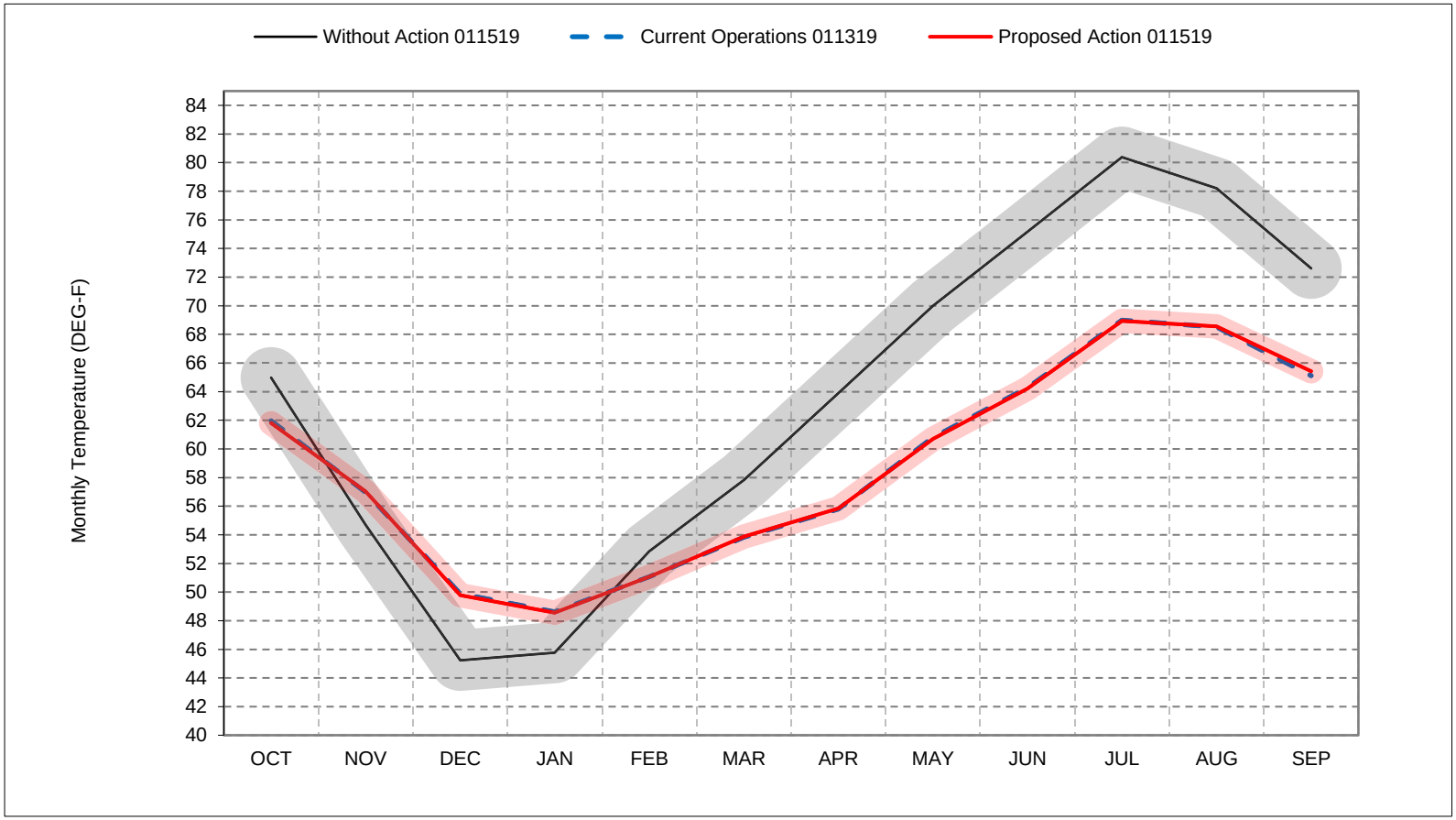
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 2-5. Feather River at Robinson Riffle, Dry Year Average Temperature



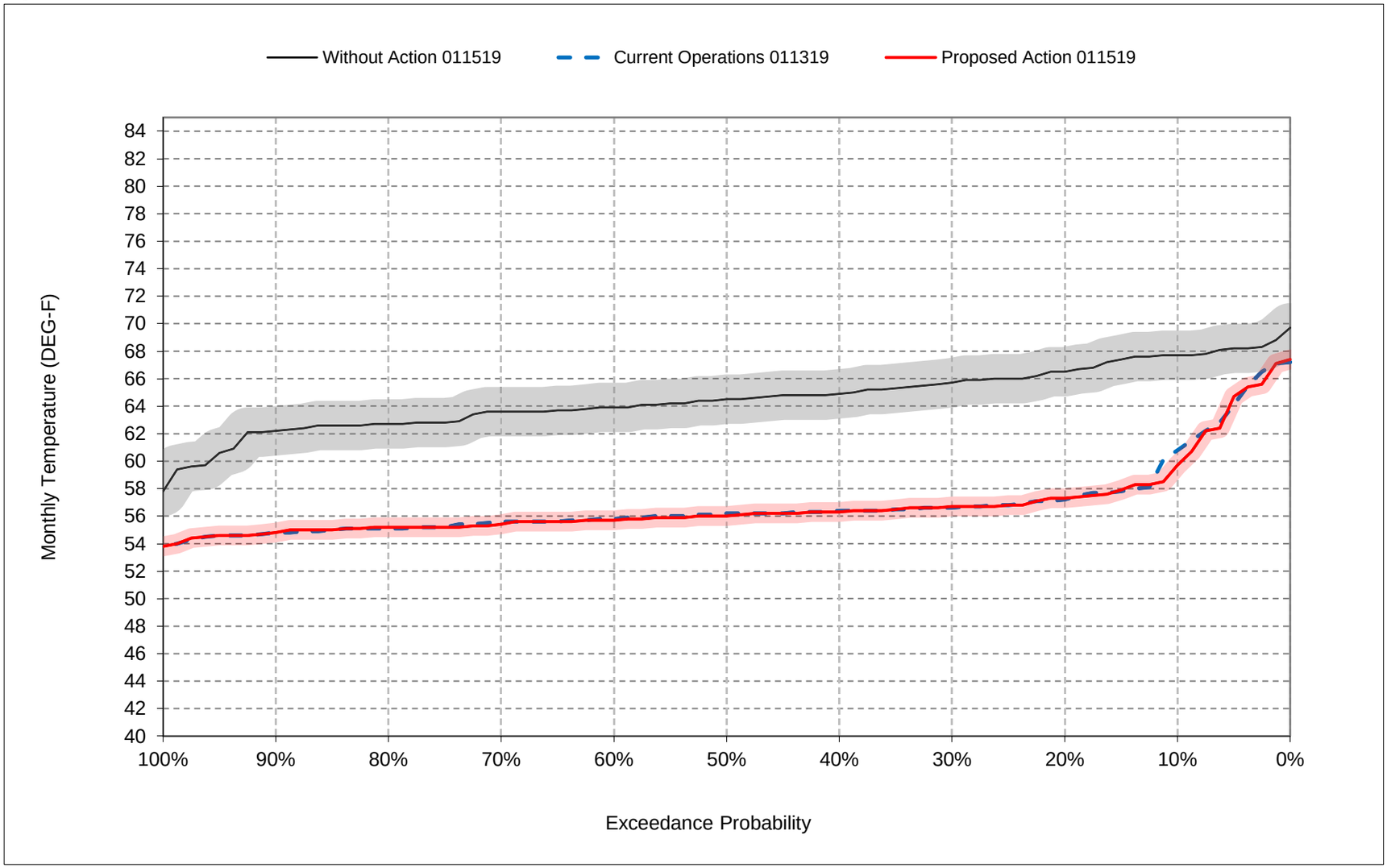
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

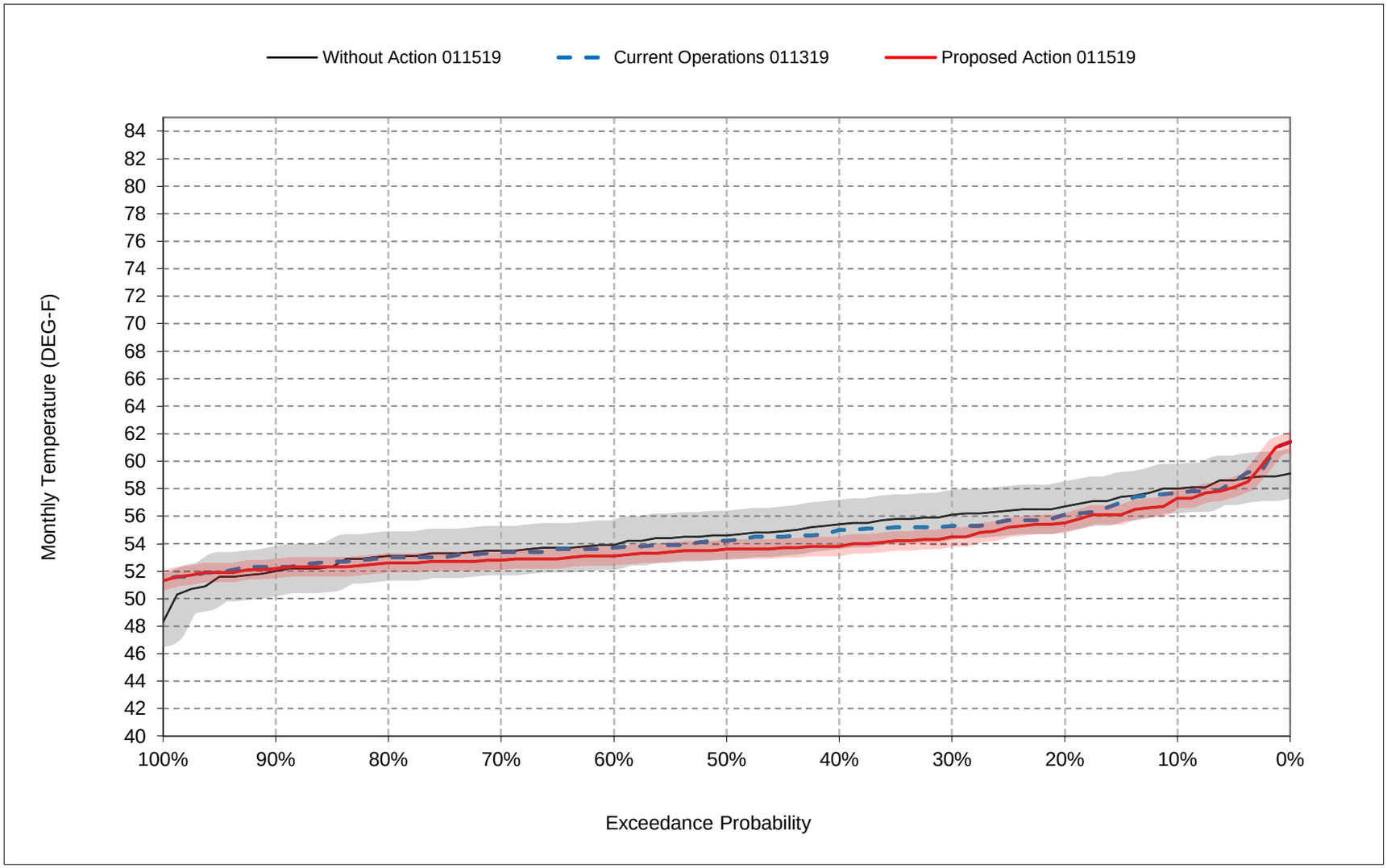
Figure 2-7. Feather River at Robinson Riffle, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

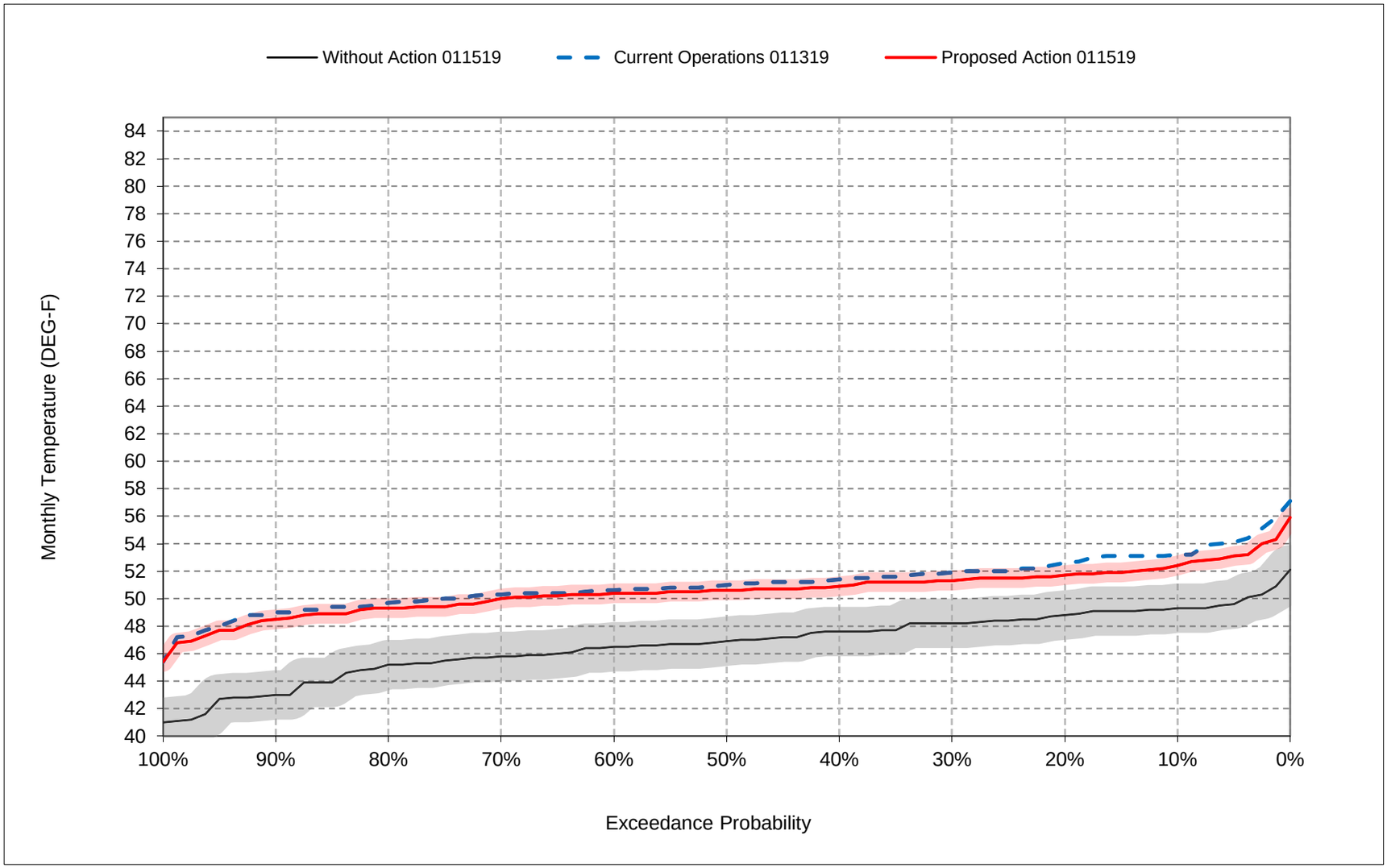
Figure 2-8. Feather River at Robinson Riffle, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

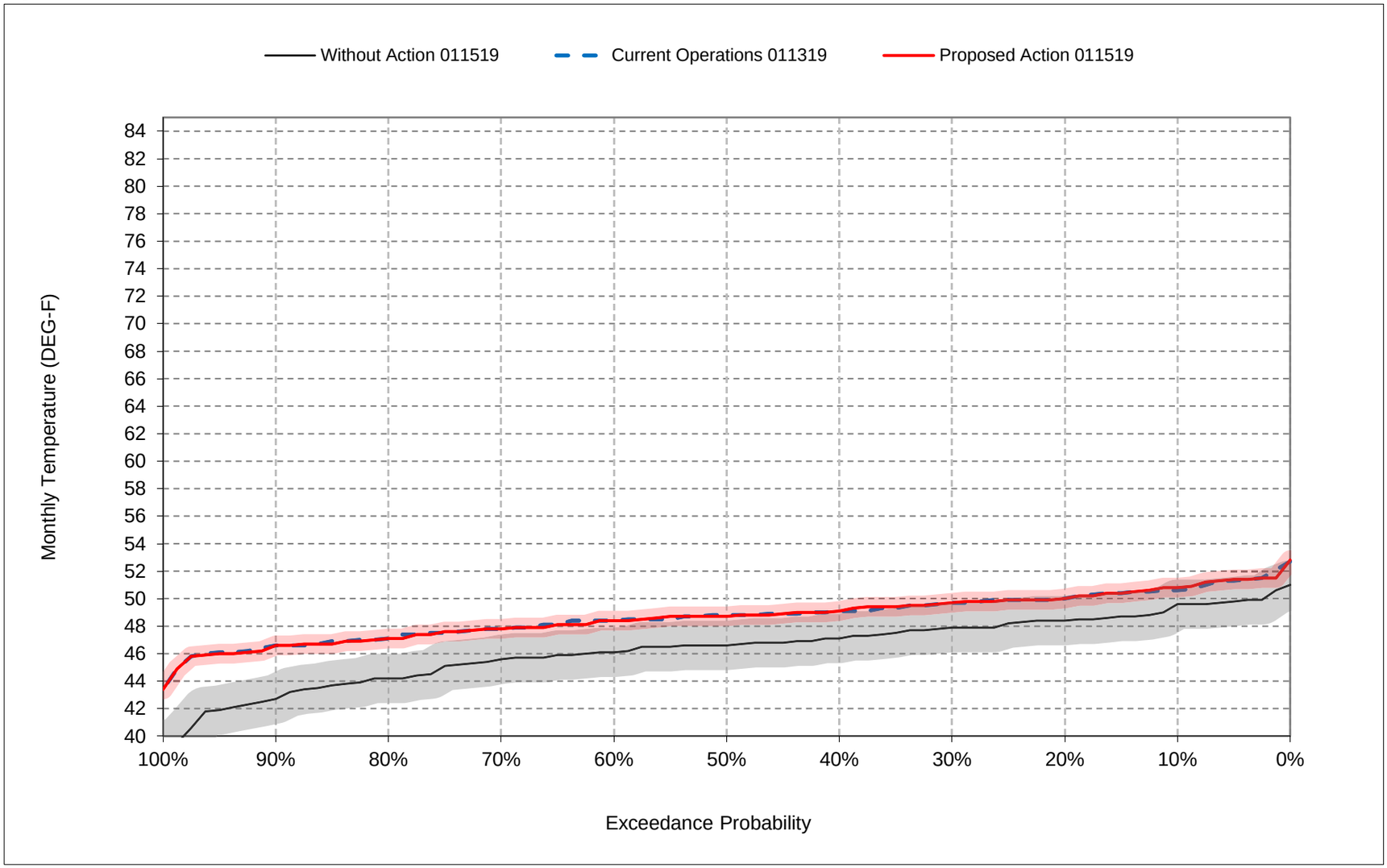
Figure 2-9. Feather River at Robinson Riffle, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

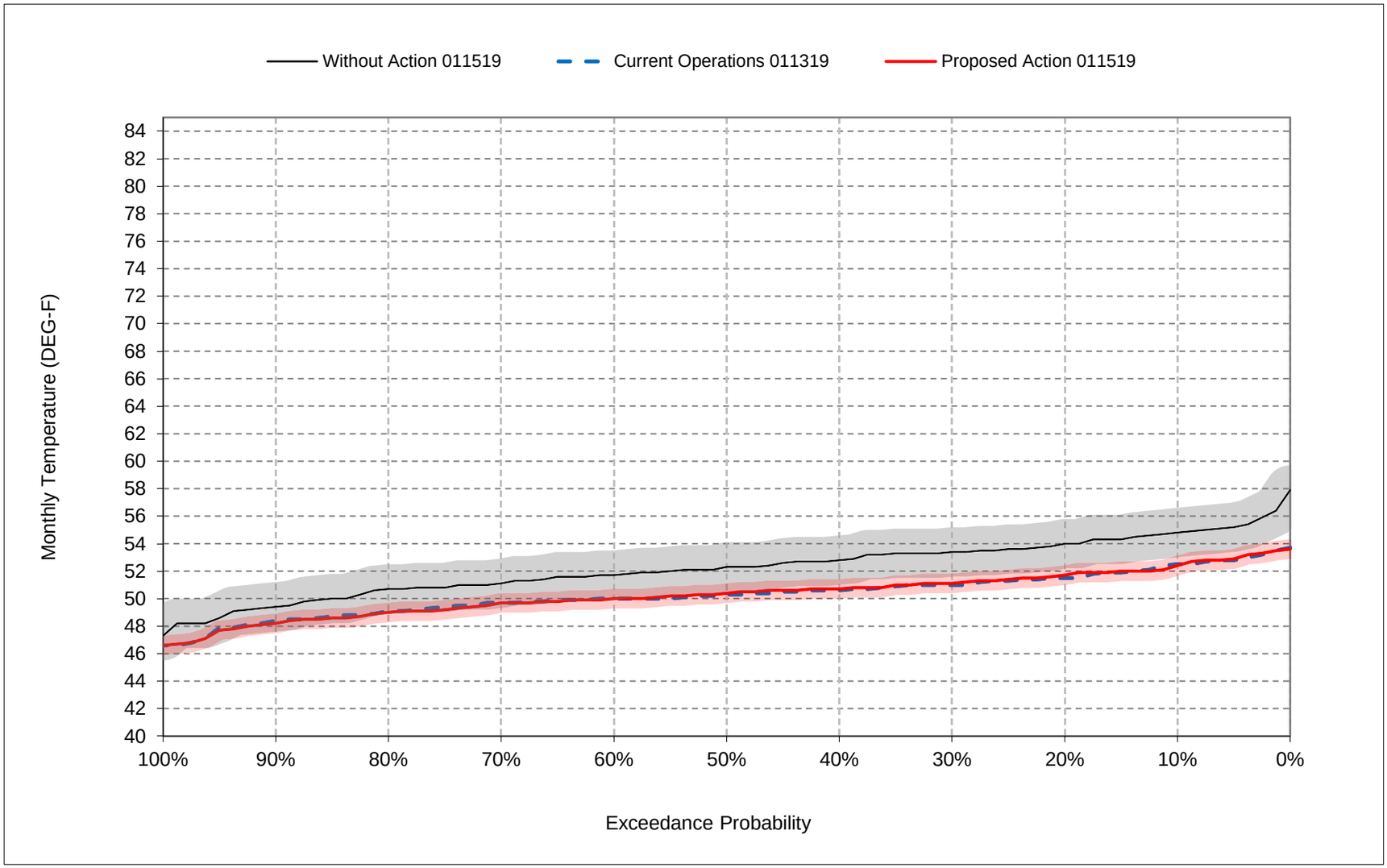
Figure 2-10. Feather River at Robinson Riffle, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

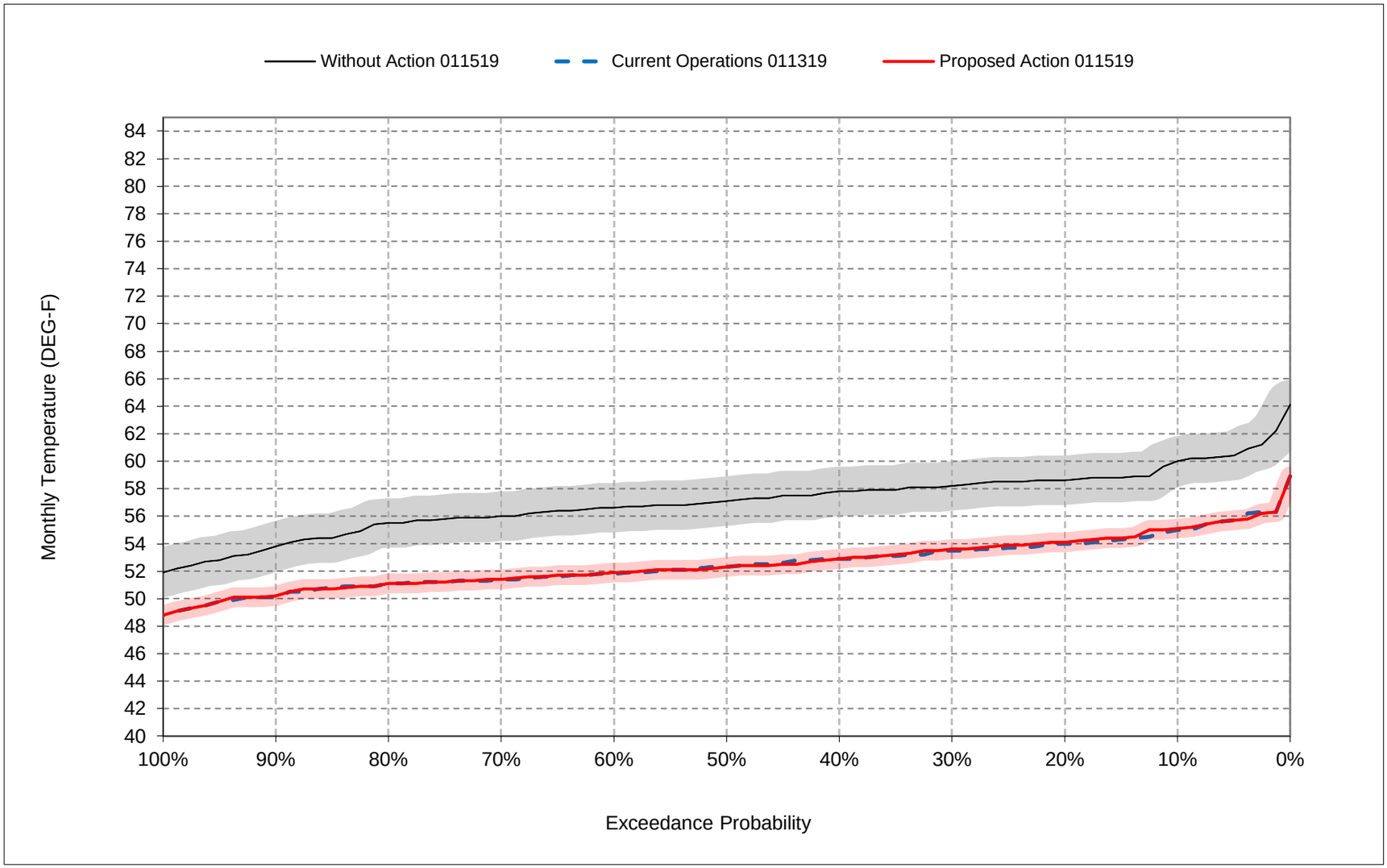
Figure 2-11. Feather River at Robinson Riffle, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

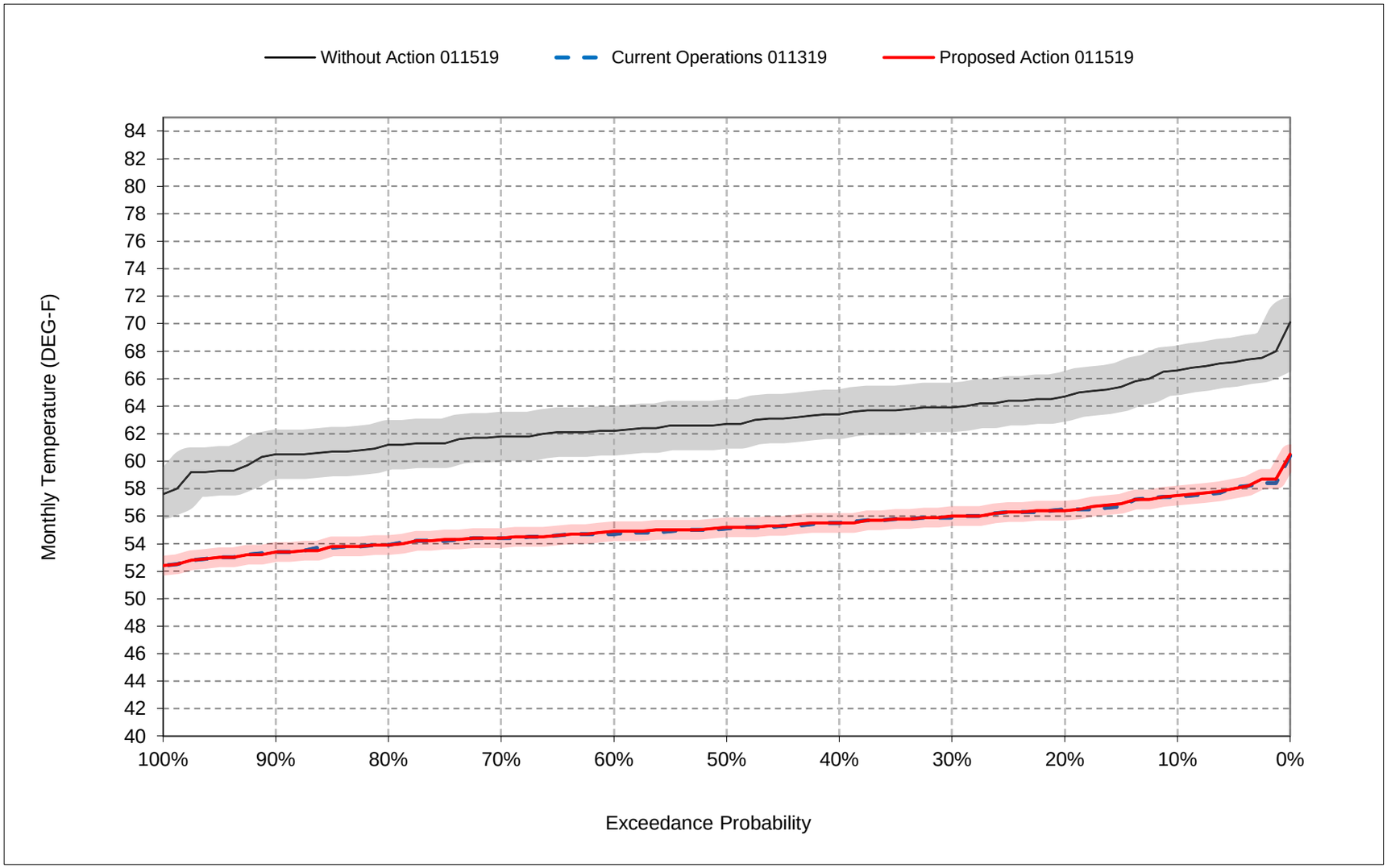
Figure 2-12. Feather River at Robinson Riffle, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

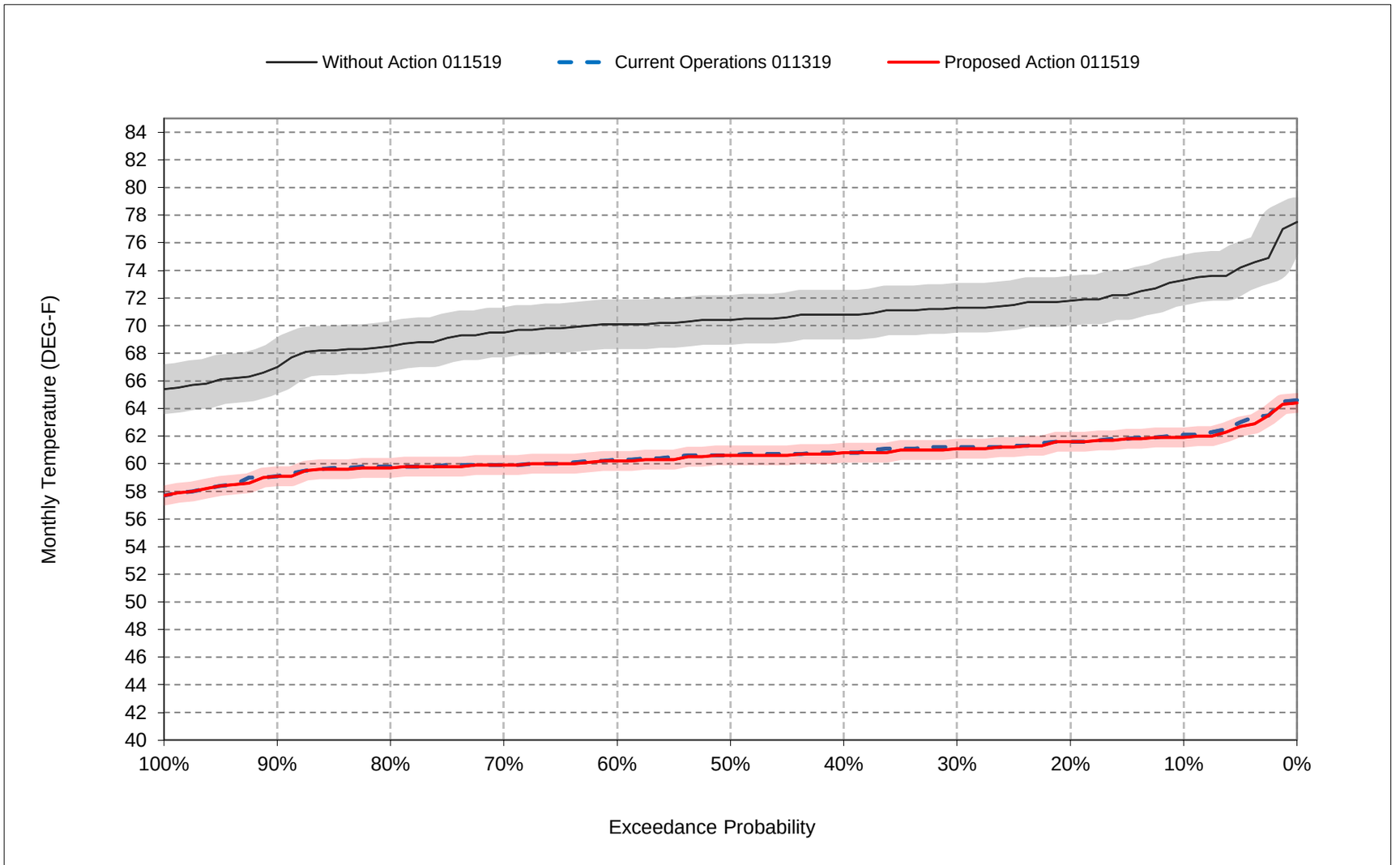
Figure 2-13. Feather River at Robinson Riffle, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

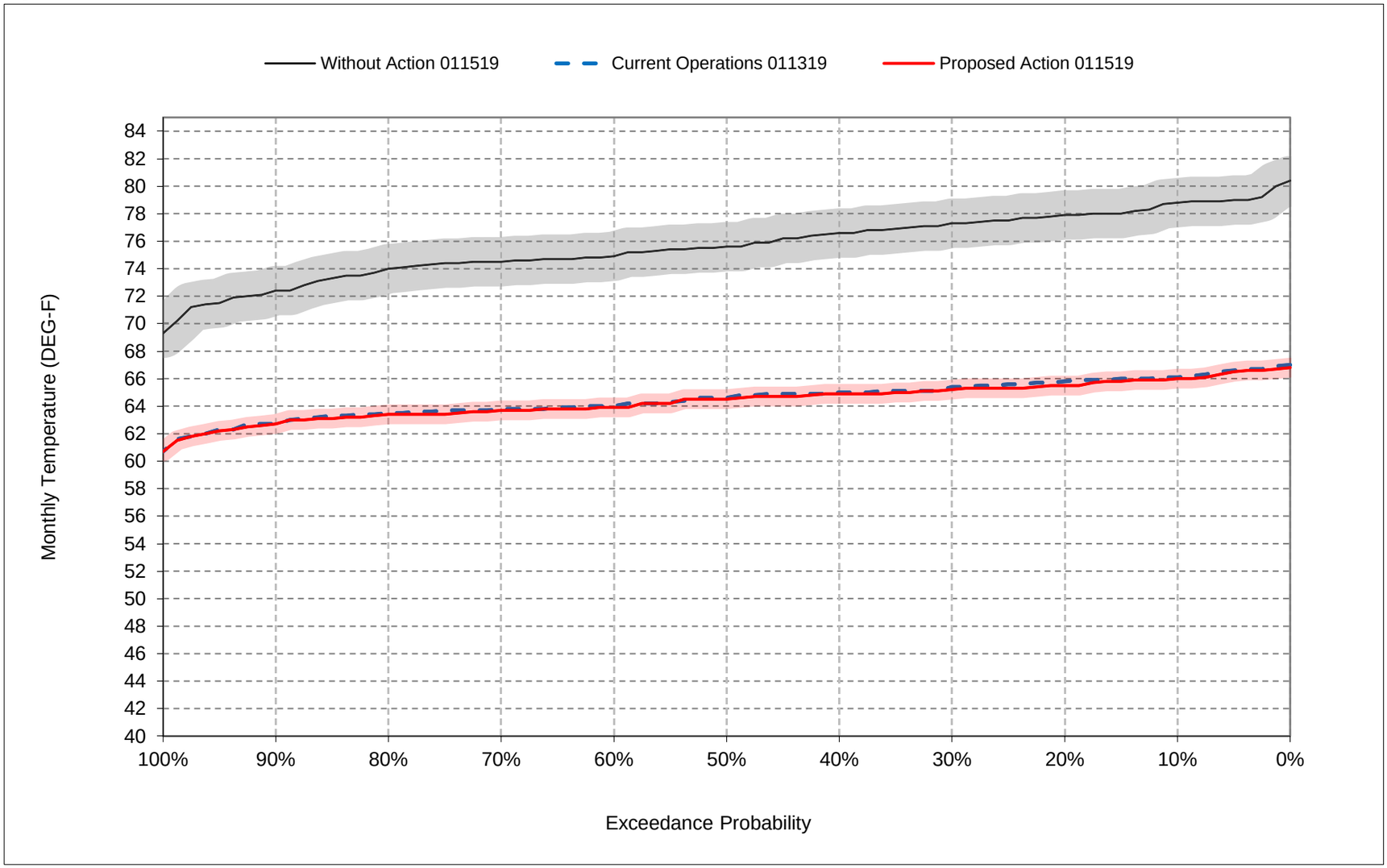
Figure 2-14. Feather River at Robinson Riffle, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

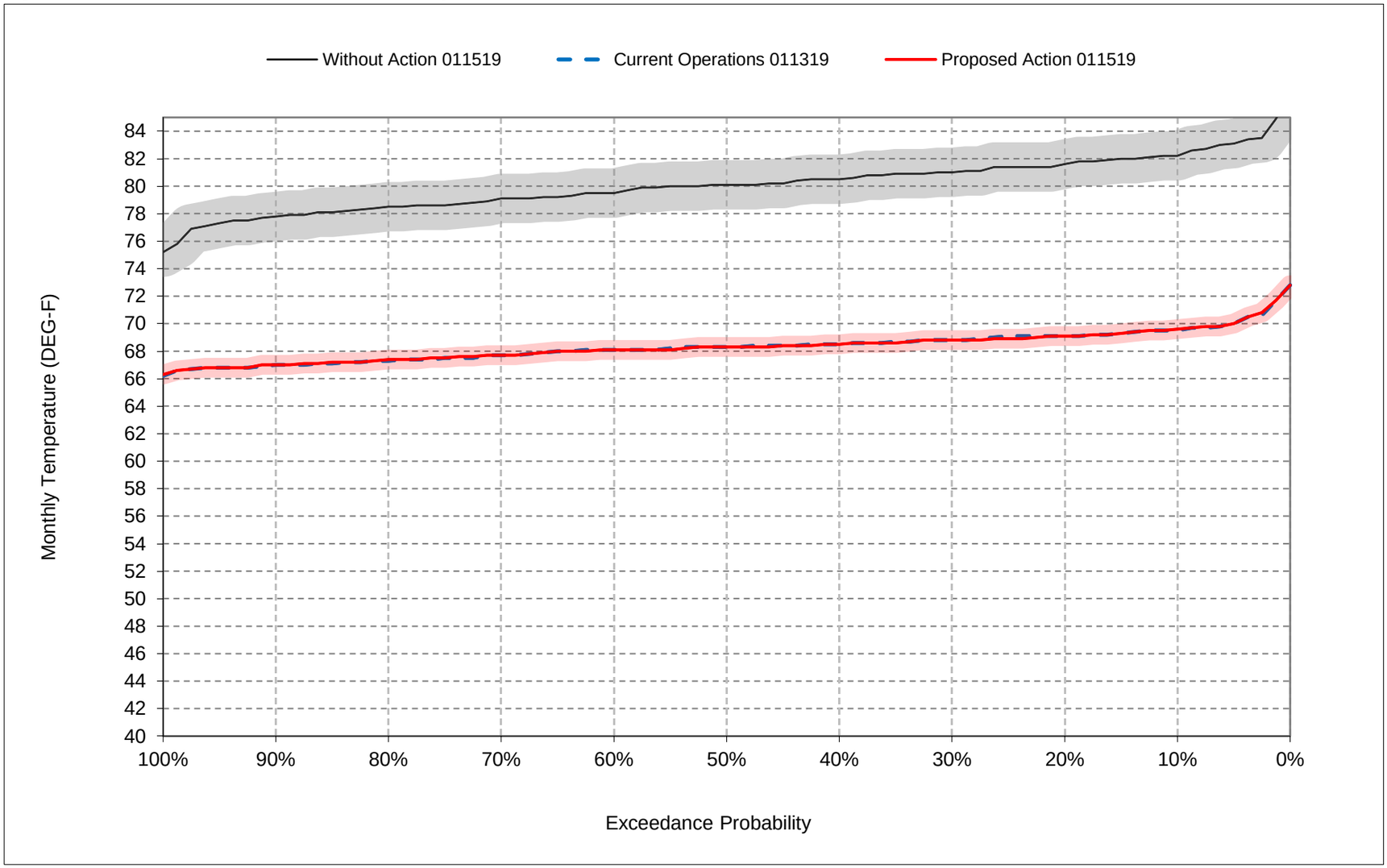
Figure 2-15. Feather River at Robinson Riffle, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

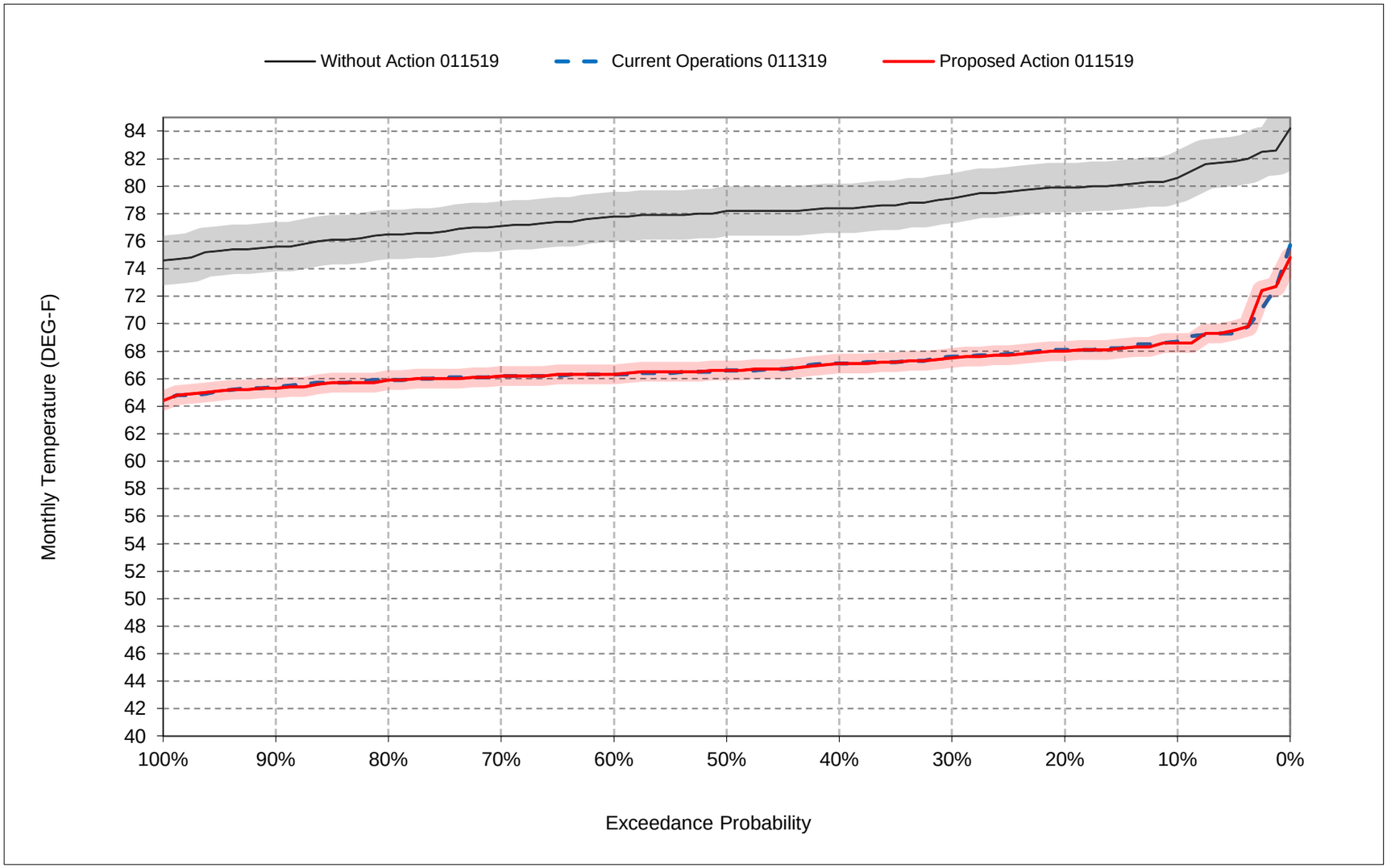
Figure 2-16. Feather River at Robinson Riffle, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

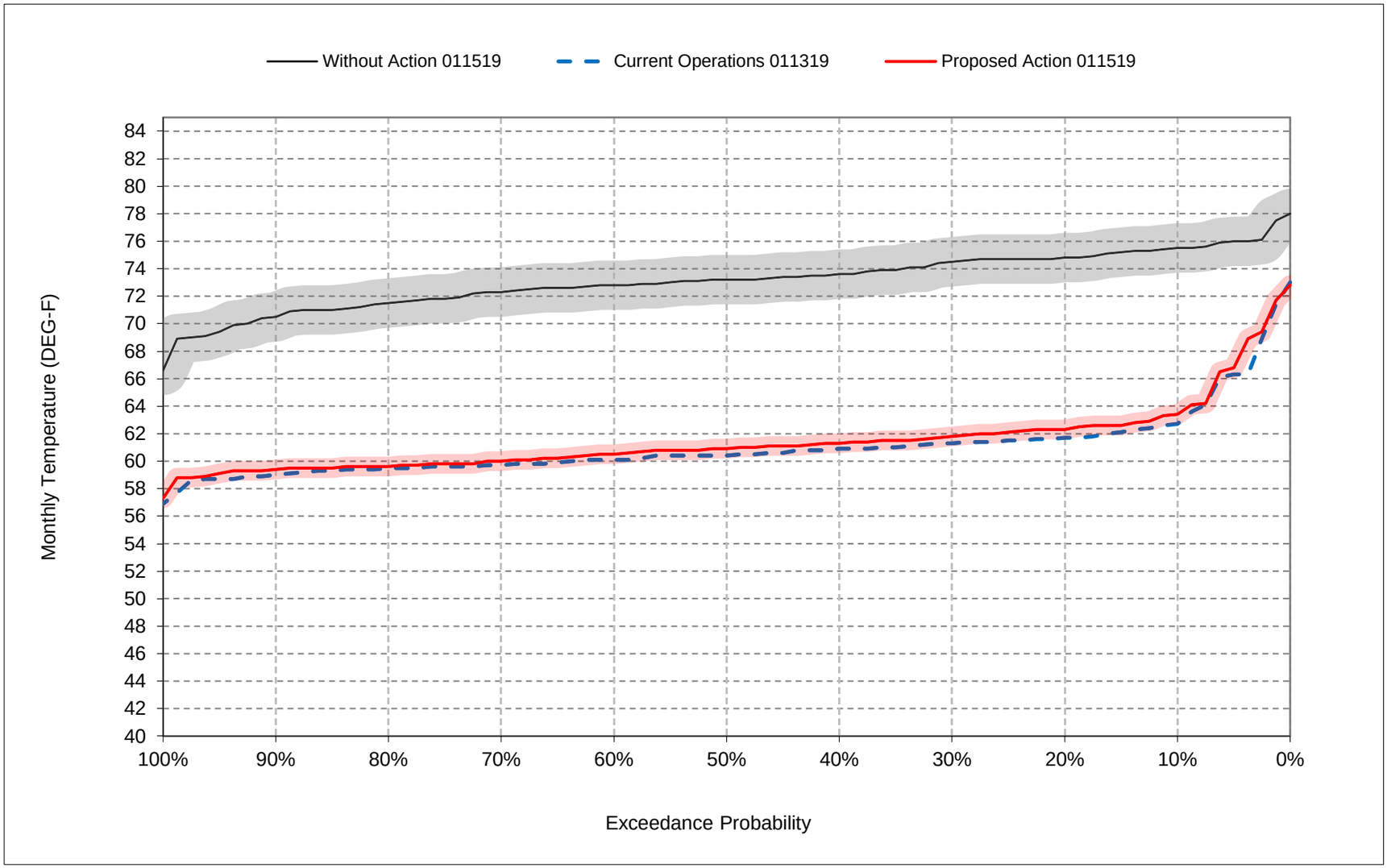
Figure 2-17. Feather River at Robinson Riffle, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 3-1. Feather River at Gridley Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.8	58.0	49.2	48.5	52.9	56.2	62.2	69.9	76.7	80.3	79.9	75.1
20%	66.5	56.7	49.0	48.0	51.6	55.4	60.7	67.7	75.5	79.7	79.1	74.5
30%	65.9	56.1	48.5	47.3	51.0	54.7	59.3	66.4	74.9	79.1	78.4	74.1
40%	65.2	55.4	48.0	47.0	50.3	53.7	58.1	65.5	74.0	78.7	77.6	73.4
50%	64.5	55.0	47.3	46.6	49.6	52.6	57.5	64.4	72.9	78.1	77.1	73.0
60%	63.9	54.4	46.7	46.1	48.9	52.2	56.6	63.4	71.9	77.7	76.8	72.6
70%	63.5	53.7	45.7	45.6	48.4	51.1	56.0	62.4	69.6	77.2	76.4	72.1
80%	63.0	53.2	45.1	44.9	47.7	50.6	55.4	61.4	67.8	76.5	75.8	71.4
90%	62.5	52.1	43.3	42.7	47.1	50.0	54.5	59.9	66.0	75.7	74.9	70.4
Long Term												
Full Simulation Period[a]	64.6	54.9	47.0	46.2	49.9	53.1	58.0	64.8	72.1	78.2	77.4	72.9
Water Year Types[b,c]												
Wet (32%)	64.4	55.4	48.0	46.9	48.4	51.1	55.2	62.2	68.2	77.8	77.4	73.1
Above Normal (16%)	64.1	53.8	46.6	47.3	49.3	51.7	56.7	63.5	73.5	77.6	76.8	72.4
Below Normal (15%)	64.8	55.2	45.8	46.5	50.0	53.4	59.6	65.4	73.7	78.6	77.7	73.3
Dry (24%)	64.8	55.1	47.6	45.0	50.7	54.6	59.1	66.6	74.2	77.9	77.4	72.8
Critical (15%)	65.1	54.6	45.1	45.6	52.3	56.4	61.8	68.0	74.2	79.8	78.1	72.6

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.9	-1.4	**2.3**	**1.5**	**0.6**	**0.9**	-0.9	-2.2	-4.2	-4.8	-5.0	-6.9
20%	-5.9	-0.5	**1.8**	**1.5**	**1.1**	**0.9**	-0.5	-1.4	-3.6	-5.9	-5.5	-7.5
30%	-5.6	-0.5	**2.0**	**1.6**	**1.2**	**1.1**	-0.2	-0.5	-4.0	-7.2	-5.5	-8.3
40%	-5.4	-0.3	**2.2**	**1.5**	**1.3**	**1.5**	**0.8**	-0.3	-3.6	-7.4	-6.0	-8.0
50%	-5.1	-0.5	**2.3**	**1.5**	**1.4**	**1.7**	**0.9**	**0.2**	-3.2	-7.3	-6.1	-9.1
60%	-5.0	-0.6	**2.5**	**1.3**	**1.5**	**1.5**	**1.5**	**1.0**	-2.9	-7.3	-6.4	-9.7
70%	-5.0	-0.2	**2.7**	**1.4**	**1.5**	**1.5**	**1.3**	**1.1**	-0.9	-7.1	-6.8	-9.5
80%	-5.2	0.0	**3.0**	**1.1**	**1.9**	**1.2**	**1.0**	**0.7**	**0.3**	-7.1	-7.0	-9.4
90%	-5.4	**0.4**	**3.2**	**2.5**	**1.8**	**0.5**	**0.5**	**1.2**	**0.5**	-7.2	-7.1	-9.4
Long Term												
Full Simulation Period[a]	-4.9	-0.3	**2.5**	**1.5**	**1.2**	**1.1**	**0.4**	-0.2	-2.4	-6.7	-6.1	-8.4
Water Year Types[b,c]												
Wet (32%)	-5.9	-0.9	**2.2**	**1.2**	**1.7**	**1.2**	**1.0**	**0.5**	**0.3**	-6.8	-6.9	-11.0
Above Normal (16%)	-5.2	-0.6	**2.0**	**1.2**	**2.1**	**2.4**	**2.3**	**1.9**	-2.9	-7.9	-8.3	-10.0
Below Normal (15%)	-4.9	-0.7	**2.8**	**1.5**	**1.6**	**2.1**	**0.3**	-0.4	-3.0	-8.2	-7.1	-7.1
Dry (24%)	-5.0	-0.3	**2.5**	**1.9**	**0.7**	**0.8**	**0.2**	-0.9	-4.4	-6.2	-4.5	-7.1
Critical (15%)	-2.2	**1.7**	**3.2**	**2.0**	-0.2	-0.7	-2.6	-2.5	-4.0	-4.8	-4.0	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 3-2. Feather River at Gridley Bridge, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	67.8	58.0	49.2	48.5	52.9	56.2	62.2	69.9	76.7	80.3	79.9	75.1
20%	66.5	56.7	49.0	48.0	51.6	55.4	60.7	67.7	75.5	79.7	79.1	74.5
30%	65.9	56.1	48.5	47.3	51.0	54.7	59.3	66.4	74.9	79.1	78.4	74.1
40%	65.2	55.4	48.0	47.0	50.3	53.7	58.1	65.5	74.0	78.7	77.6	73.4
50%	64.5	55.0	47.3	46.6	49.6	52.6	57.5	64.4	72.9	78.1	77.1	73.0
60%	63.9	54.4	46.7	46.1	48.9	52.2	56.6	63.4	71.9	77.7	76.8	72.6
70%	63.5	53.7	45.7	45.6	48.4	51.1	56.0	62.4	69.6	77.2	76.4	72.1
80%	63.0	53.2	45.1	44.9	47.7	50.6	55.4	61.4	67.8	76.5	75.8	71.4
90%	62.5	52.1	43.3	42.7	47.1	50.0	54.5	59.9	66.0	75.7	74.9	70.4
Long Term												
Full Simulation Period[a]	64.6	54.9	47.0	46.2	49.9	53.1	58.0	64.8	72.1	78.2	77.4	72.9
Water Year Types[b,c]												
Wet (32%)	64.4	55.4	48.0	46.9	48.4	51.1	55.2	62.2	68.2	77.8	77.4	73.1
Above Normal (16%)	64.1	53.8	46.6	47.3	49.3	51.7	56.7	63.5	73.5	77.6	76.8	72.4
Below Normal (15%)	64.8	55.2	45.8	46.5	50.0	53.4	59.6	65.4	73.7	78.6	77.7	73.3
Dry (24%)	64.8	55.1	47.6	45.0	50.7	54.6	59.1	66.6	74.2	77.9	77.4	72.8
Critical (15%)	65.1	54.6	45.1	45.6	52.3	56.4	61.8	68.0	74.2	79.8	78.1	72.6

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5.8	-1.3	**1.9**	**1.4**	**0.1**	**0.6**	-0.8	-2.7	-4.7	-5.4	-5.1	-6.9
20%	-5.4	-0.9	**1.5**	**1.5**	**1.1**	**1.0**	-0.5	-1.4	-4.4	-6.1	-5.8	-6.7
30%	-5.6	-0.9	**1.7**	**1.7**	**1.2**	**0.7**	-0.2	-0.6	-4.4	-6.7	-5.7	-7.1
40%	-5.3	-0.9	**1.9**	**1.5**	**1.3**	**1.5**	**0.9**	-0.4	-4.1	-7.4	-5.9	-7.0
50%	-5.1	-1.1	**2.1**	**1.4**	**1.3**	**1.7**	**0.9**	**0.2**	-3.5	-7.5	-6.0	-7.1
60%	-4.8	-1.1	**2.0**	**1.3**	**1.4**	**1.3**	**1.5**	**0.8**	-3.4	-7.4	-6.1	-7.0
70%	-4.9	-0.5	**2.6**	**1.4**	**1.5**	**1.3**	**1.4**	**1.0**	-1.6	-7.2	-6.8	-7.3
80%	-5.0	-0.4	**2.5**	**1.1**	**1.8**	**1.2**	**1.0**	**0.7**	-0.3	-7.1	-7.3	-7.5
90%	-5.3	**0.2**	**3.1**	**2.5**	**1.8**	**0.5**	**0.5**	**1.2**	**0.4**	-7.2	-7.1	-7.7
Long Term												
Full Simulation Period[a]	-4.8	-0.6	**2.1**	**1.5**	**1.2**	**1.1**	**0.4**	-0.3	-2.9	-6.7	-6.1	-6.9
Water Year Types[b,c]												
Wet (32%)	-5.6	-1.9	**1.3**	**1.3**	**1.7**	**1.2**	**1.0**	**0.5**	**0.2**	-6.8	-6.7	-7.2
Above Normal (16%)	-5.3	-0.7	**1.9**	**1.2**	**1.9**	**2.0**	**2.3**	**1.9**	-3.1	-8.1	-8.3	-8.4
Below Normal (15%)	-4.9	-0.9	**2.7**	**1.4**	**1.4**	**2.1**	**0.2**	-0.7	-3.8	-8.8	-7.8	-6.9
Dry (24%)	-5.0	-0.3	**2.4**	**1.9**	**0.7**	**0.8**	**0.2**	-1.0	-5.3	-5.9	-4.4	-7.3
Critical (15%)	-2.3	**1.8**	**3.2**	**2.0**	-0.3	-0.7	-2.6	-2.5	-4.5	-4.7	-3.9	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 3-3. Feather River at Gridley Bridge, Monthly Temperature

Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519

Statistic	Monthly Temperature (DEG-F)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Temperature (DEG-F)											
	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.

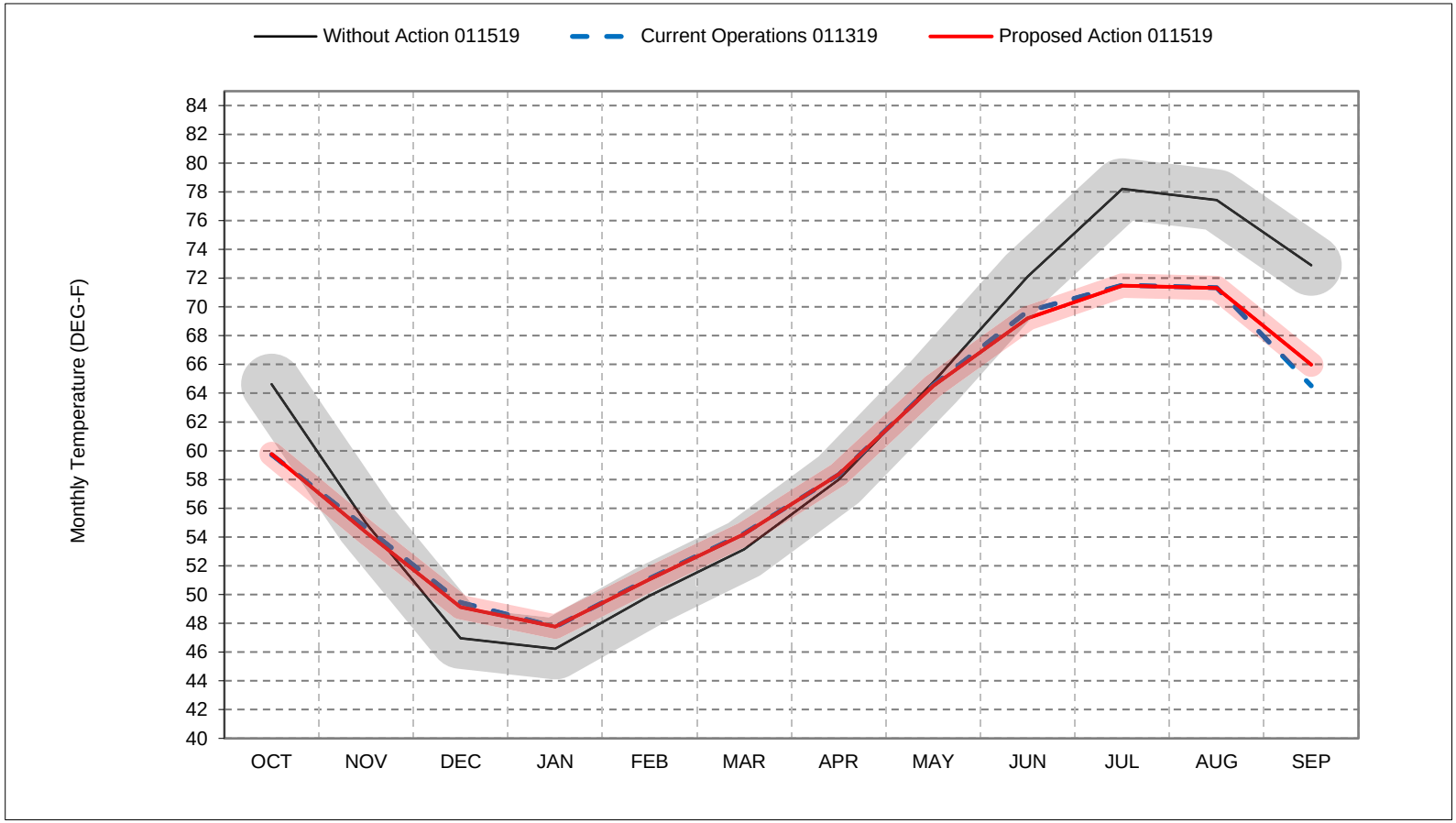
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

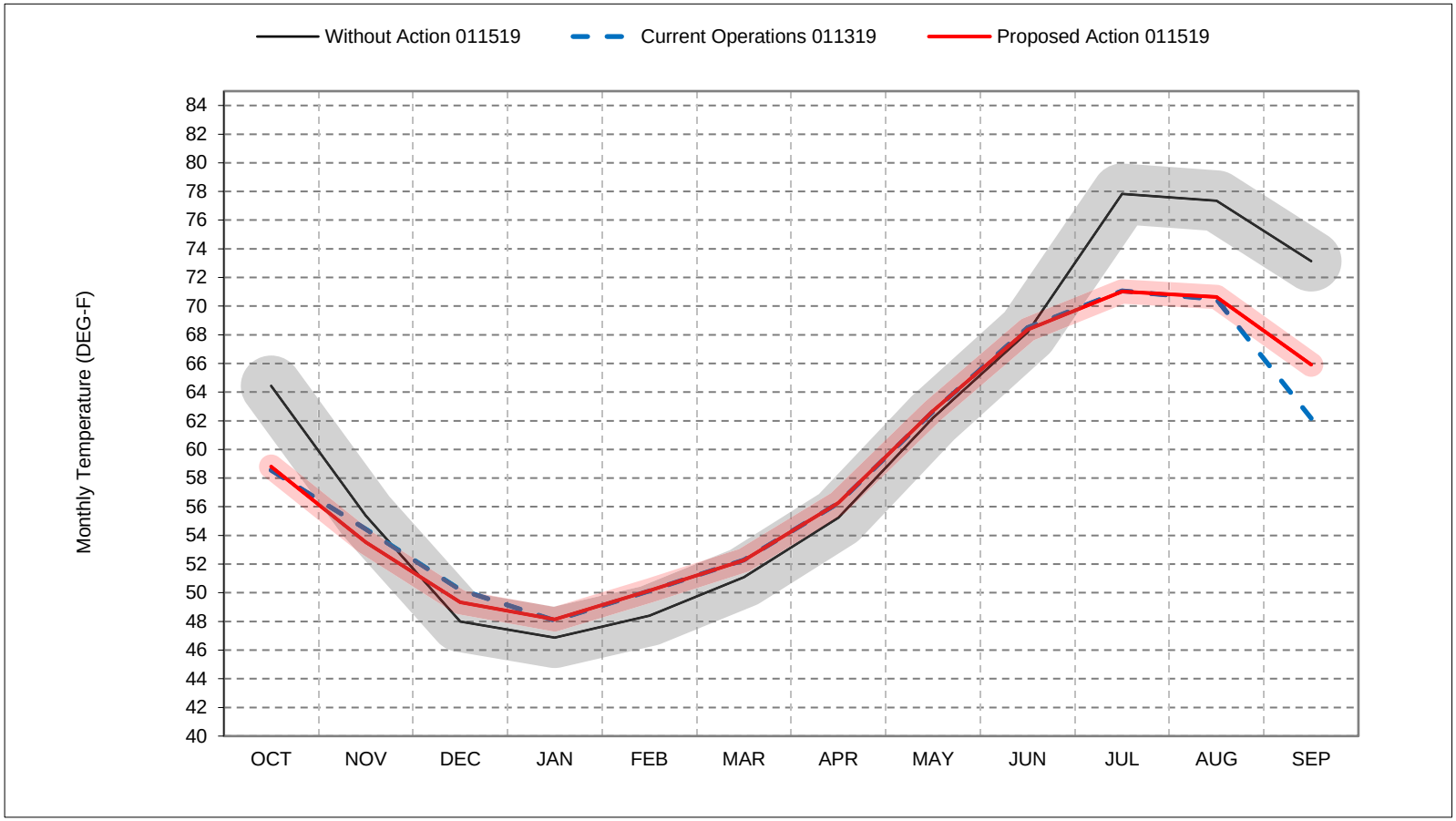
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-1. Feather River at Gridley Bridge, Long-Term Average Temperature



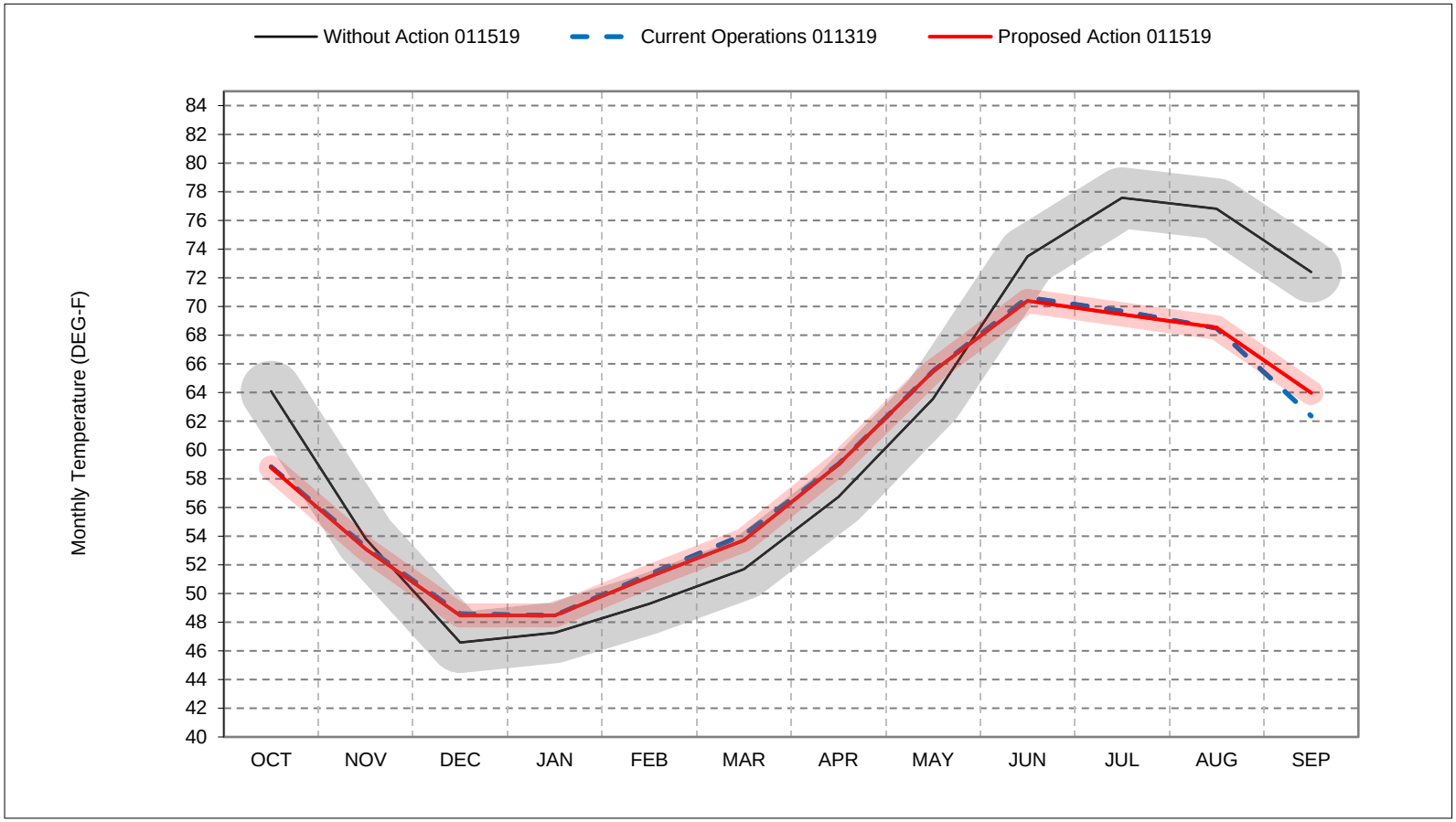
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-2. Feather River at Gridley Bridge, Wet Year Average Temperature



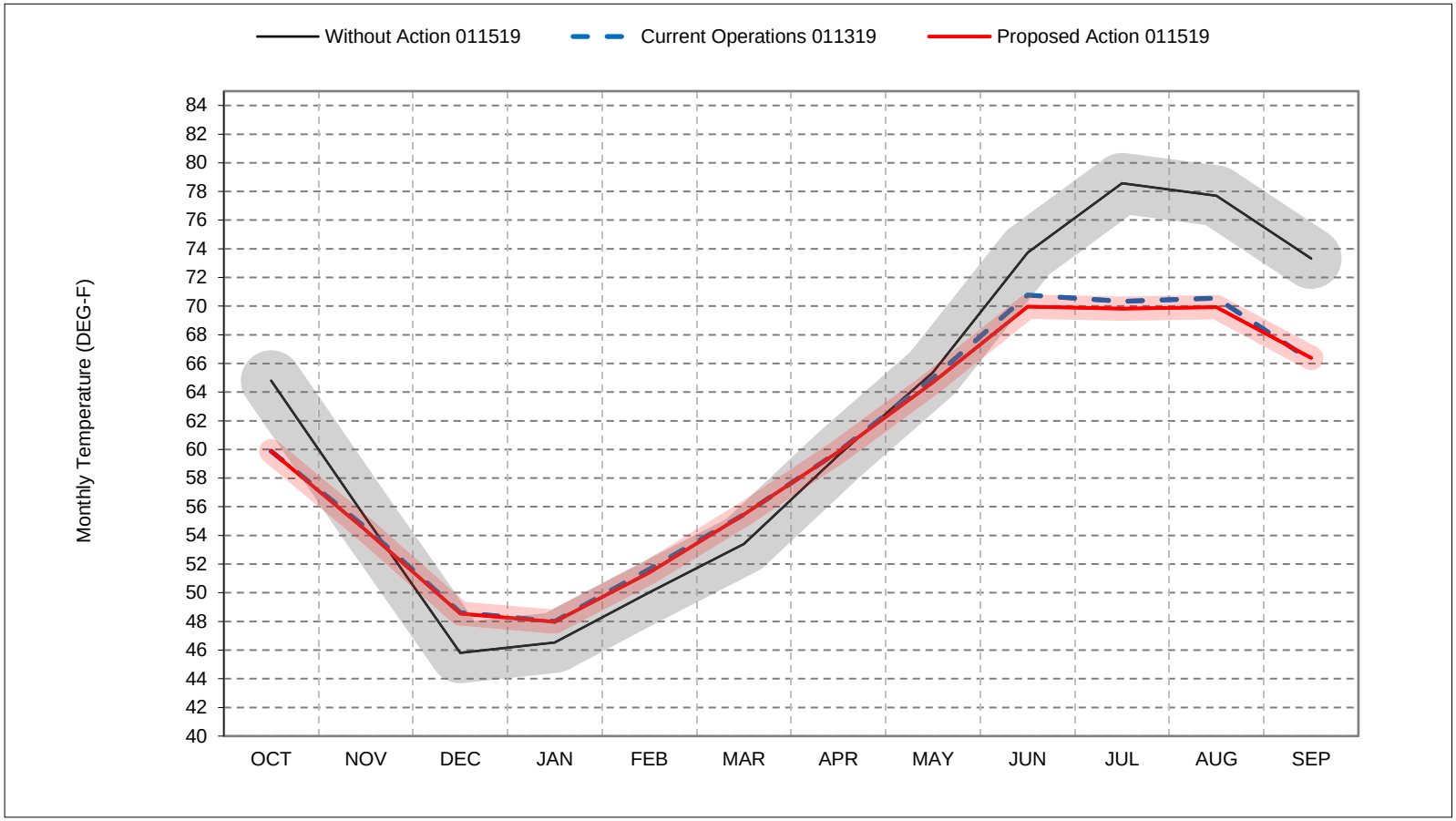
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-3. Feather River at Gridley Bridge, Above Normal Year Average Temperature



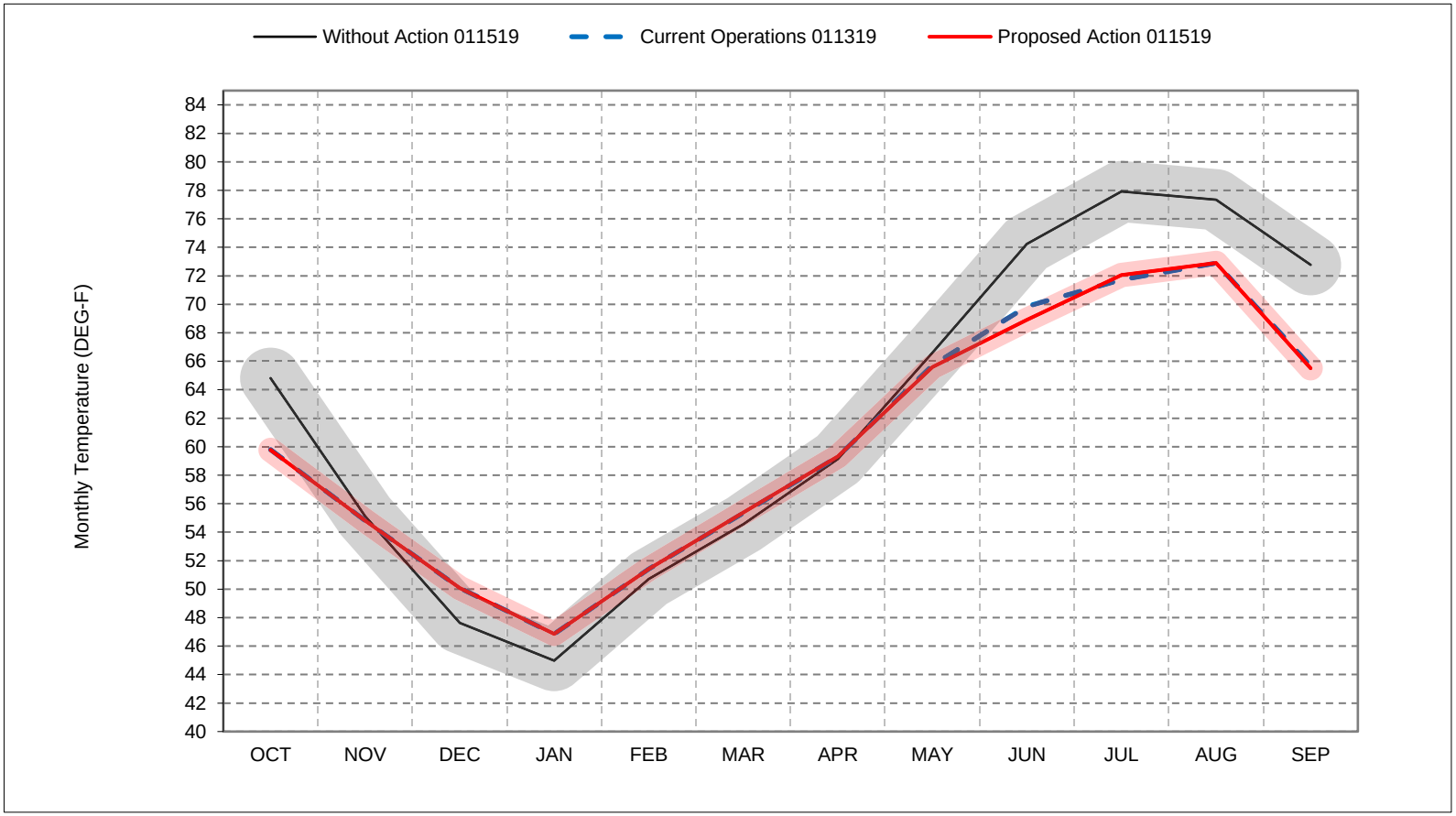
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-4. Feather River at Gridley Bridge, Below Normal Year Average Temperature



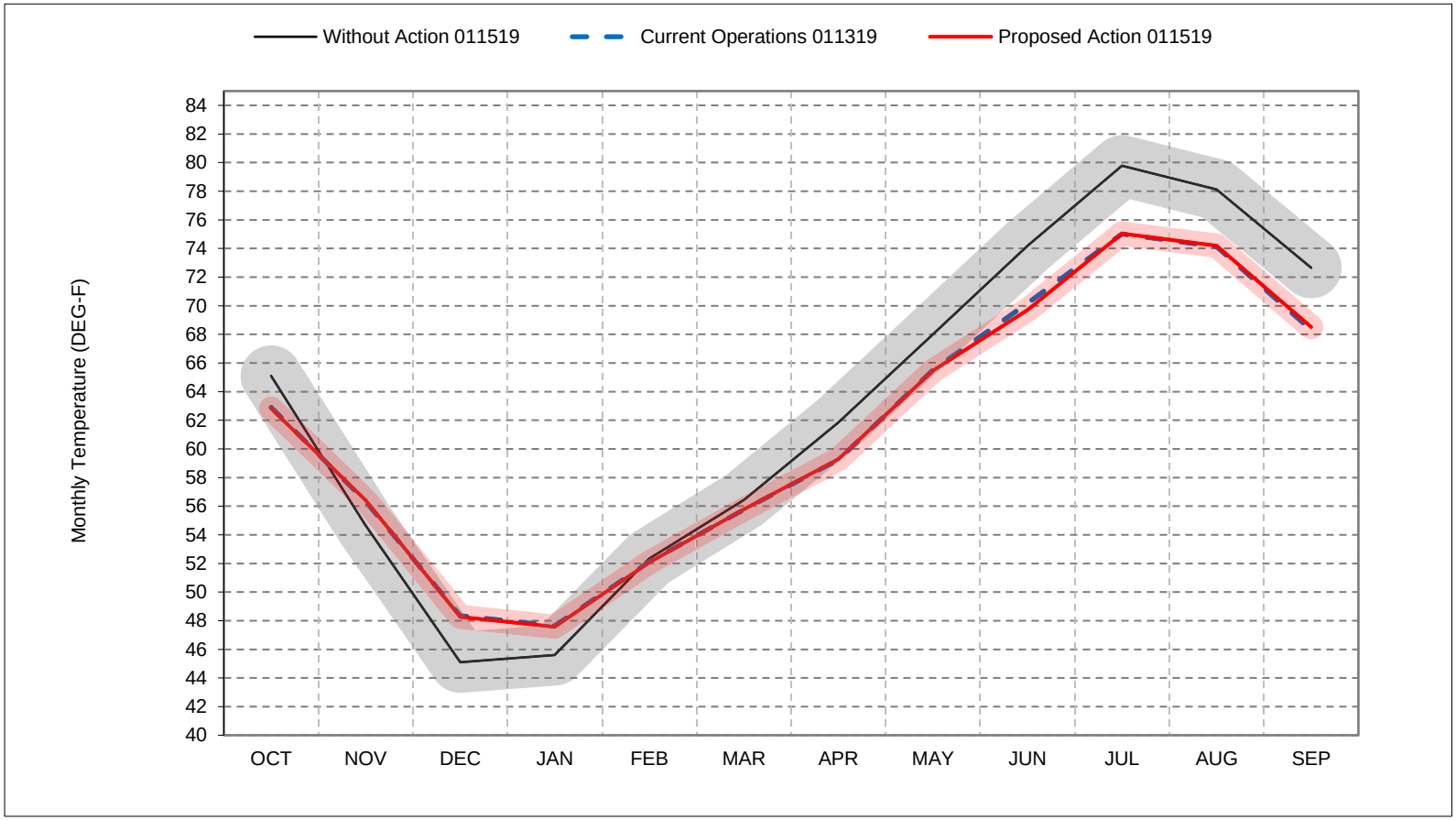
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 3-5. Feather River at Gridley Bridge, Dry Year Average Temperature



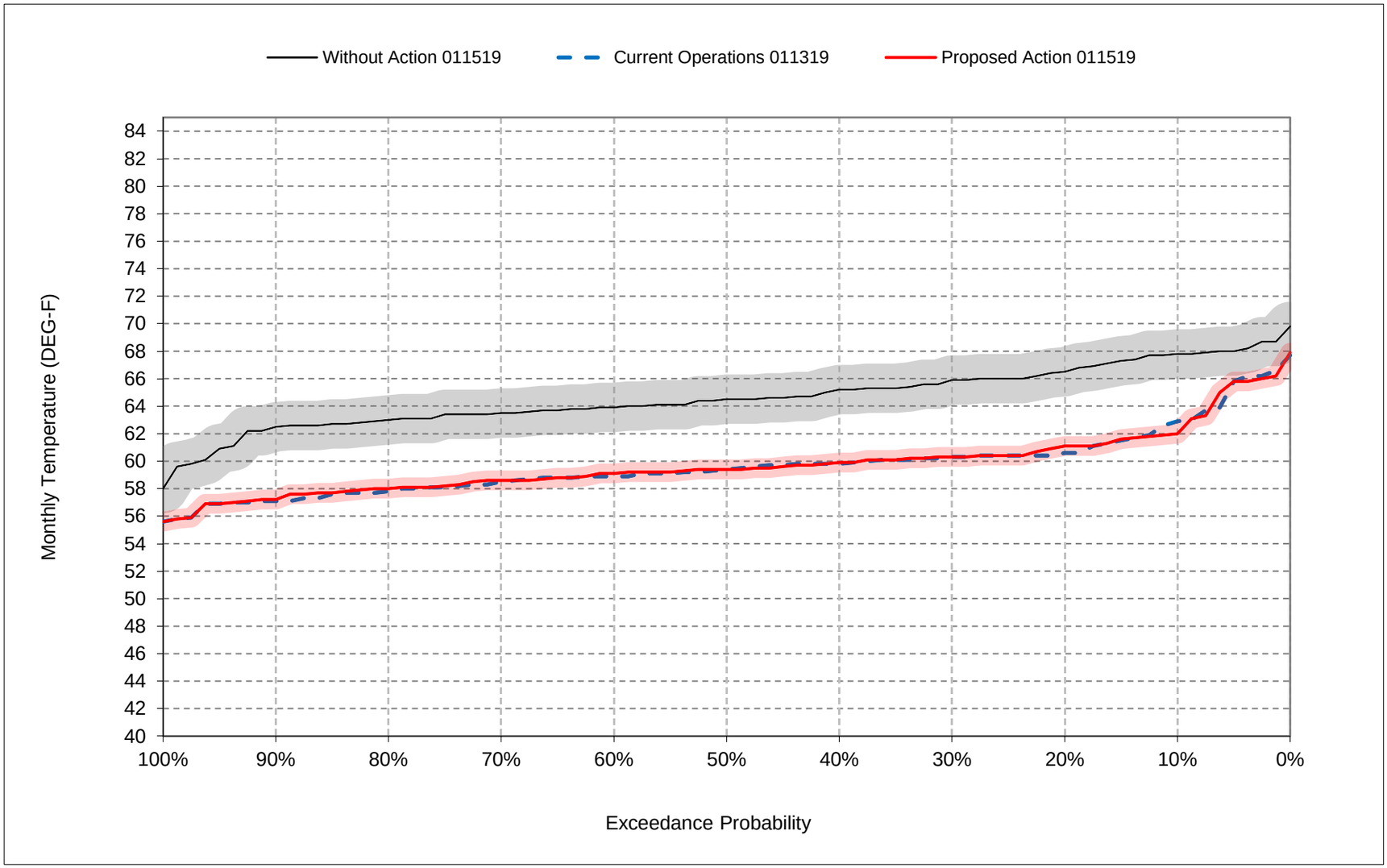
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

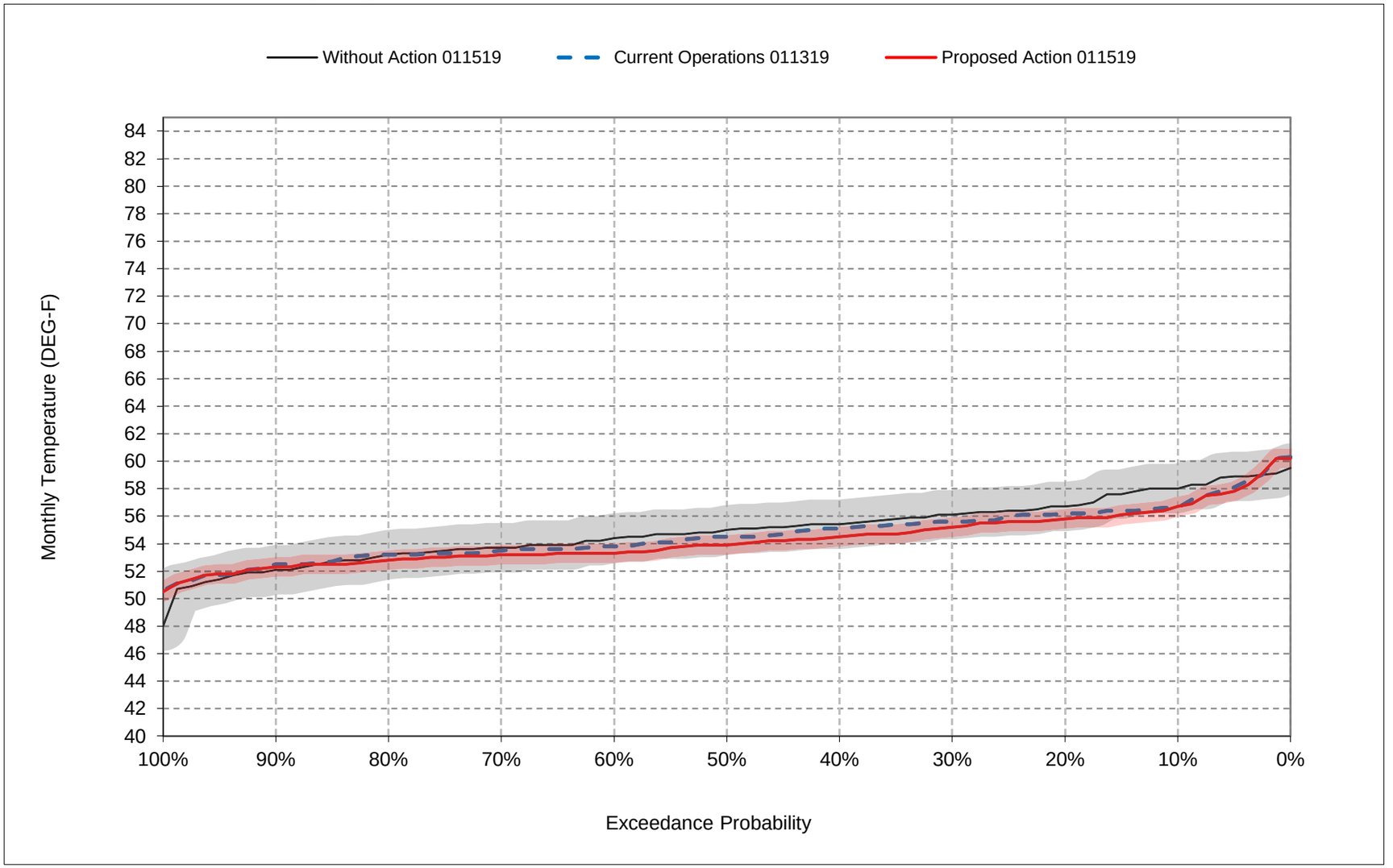
Figure 3-7. Feather River at Gridley Bridge, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

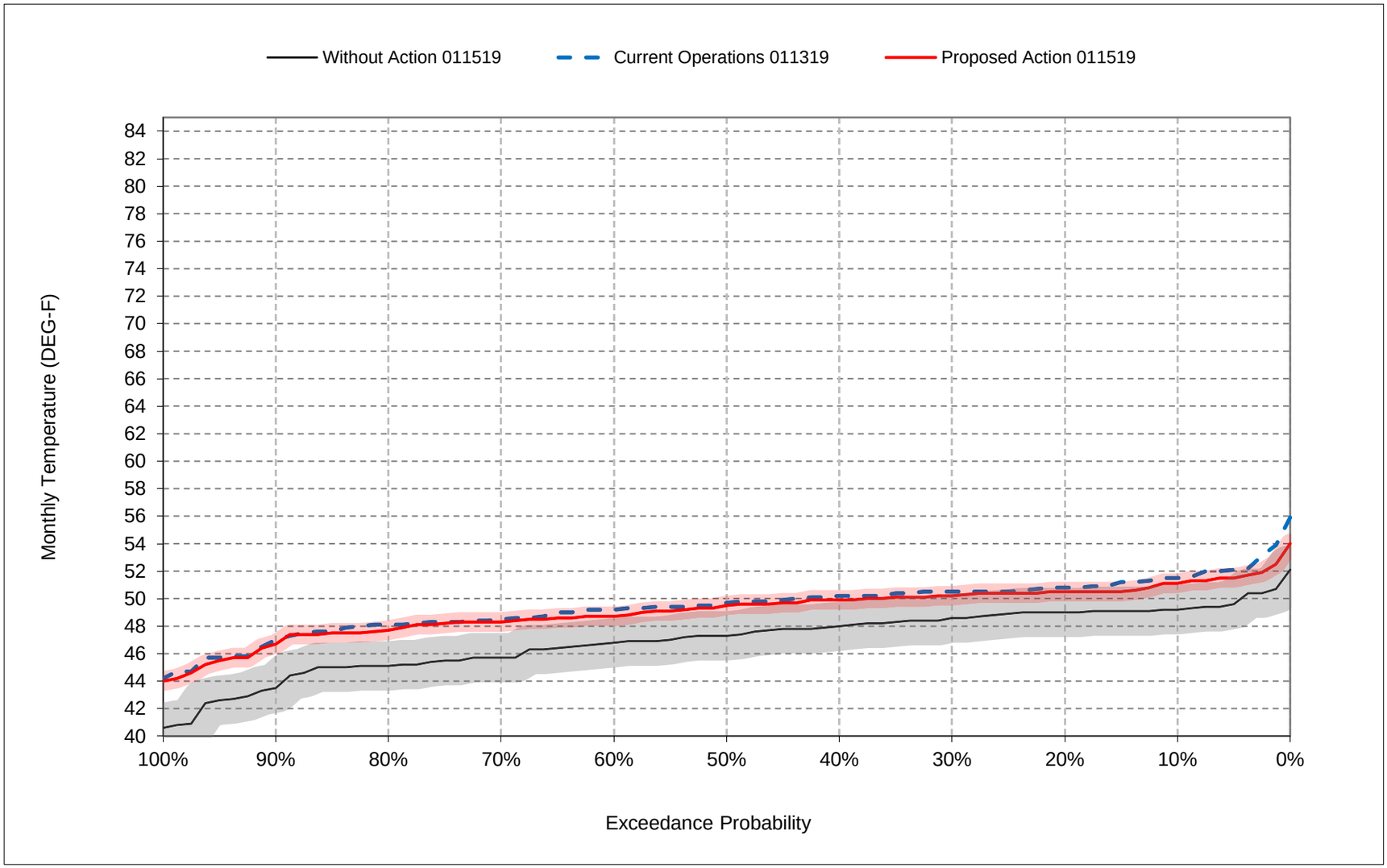
Figure 3-8. Feather River at Gridley Bridge, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

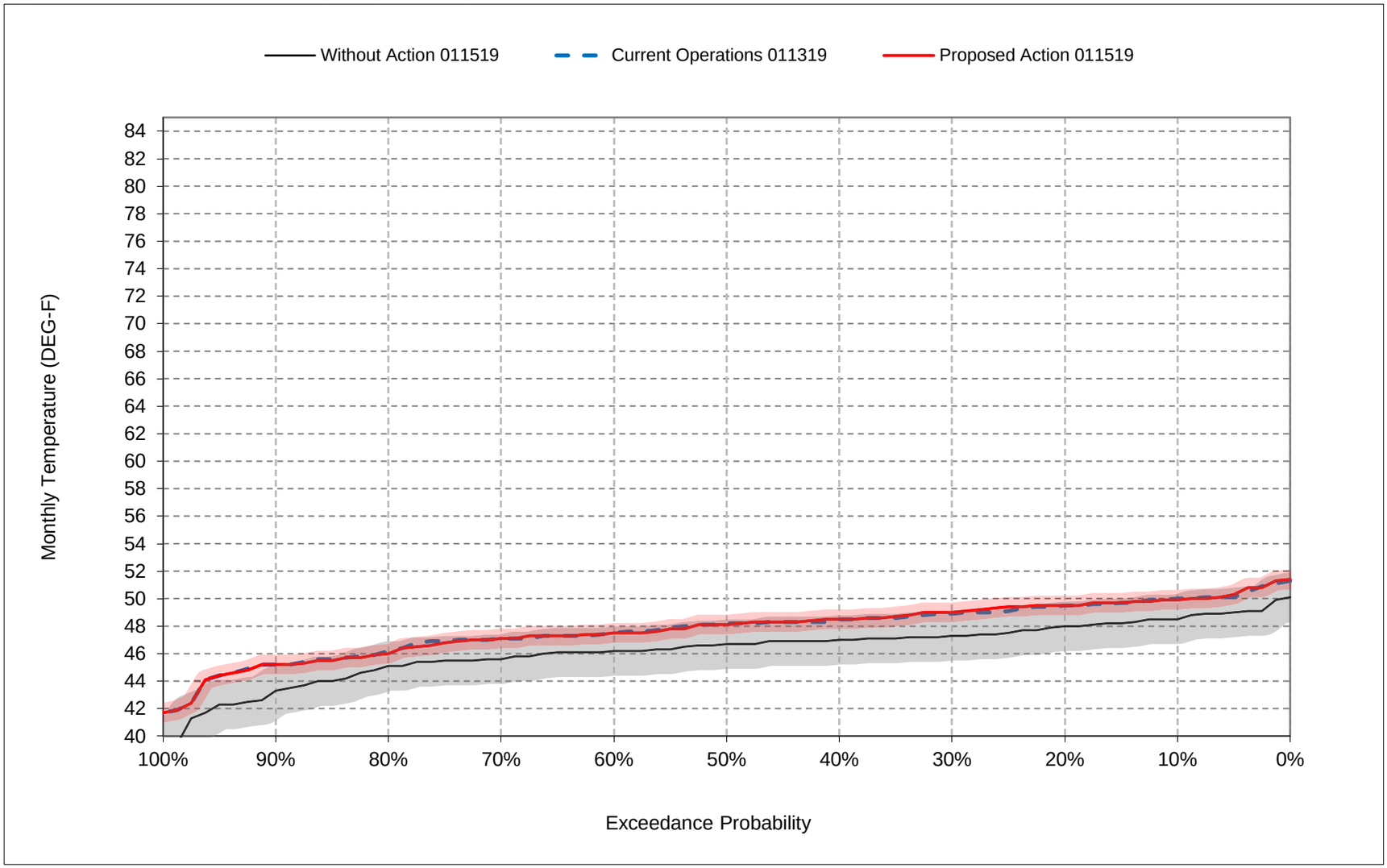
Figure 3-9. Feather River at Gridley Bridge, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

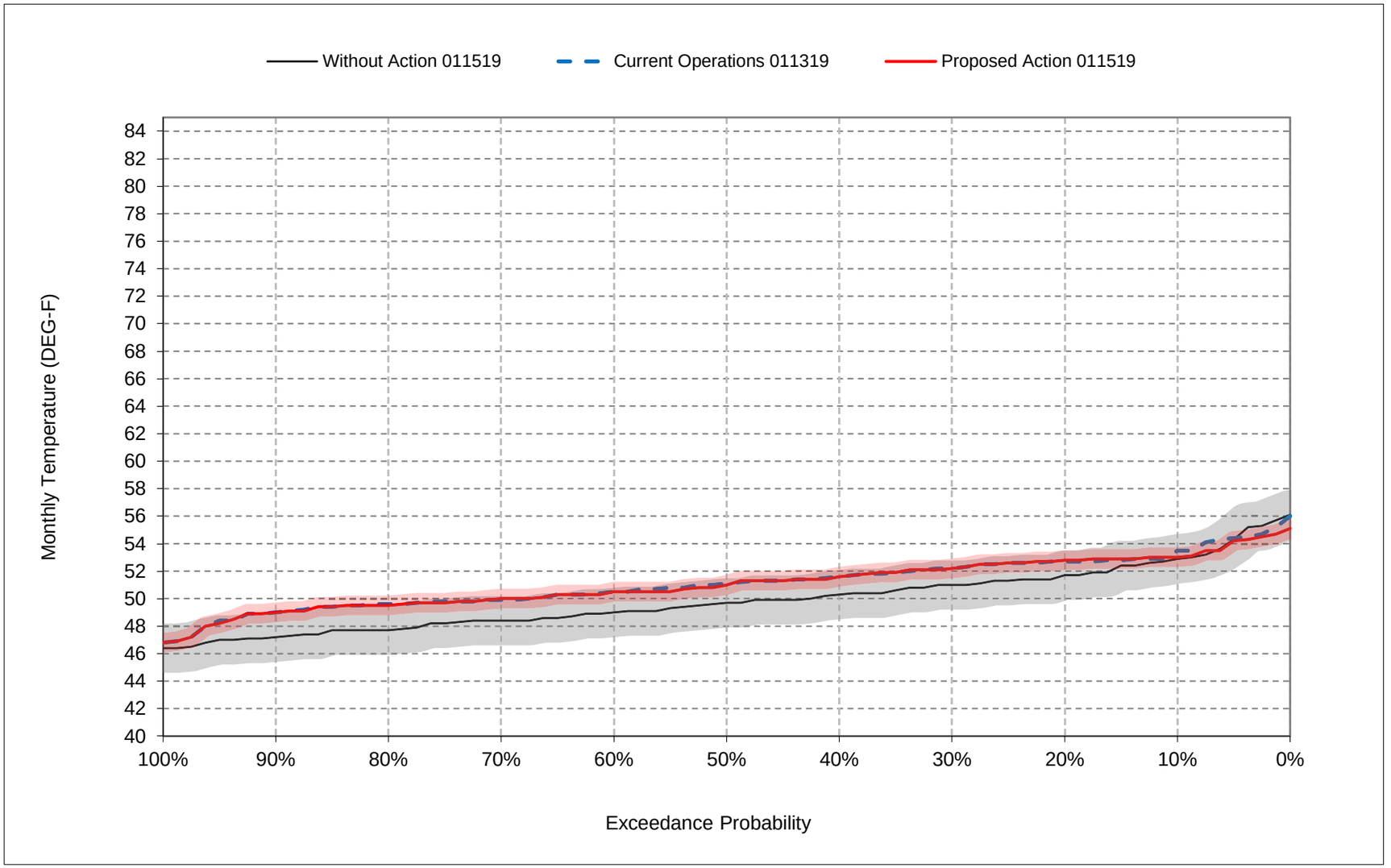
Figure 3-10. Feather River at Gridley Bridge, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

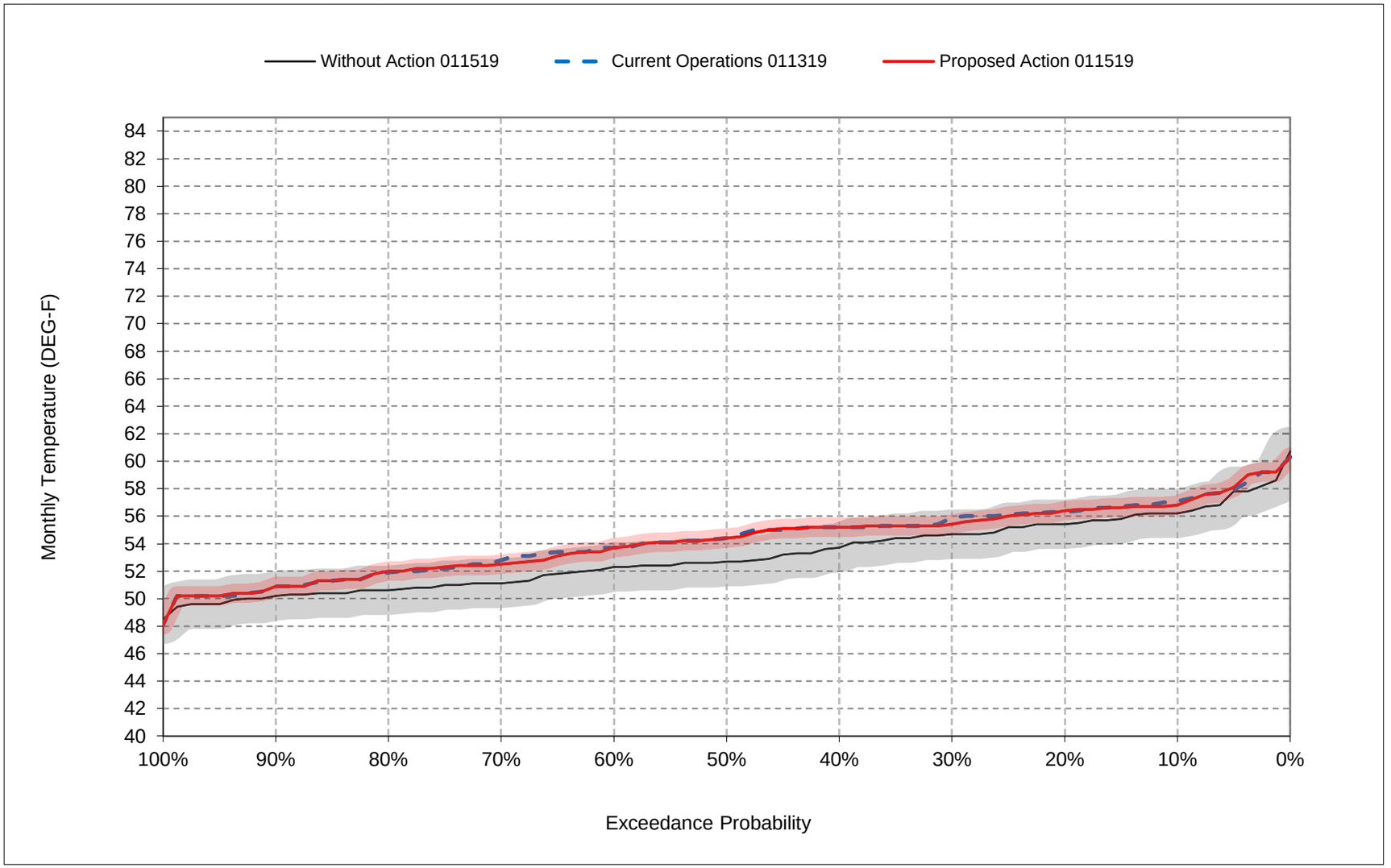
Figure 3-11. Feather River at Gridley Bridge, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

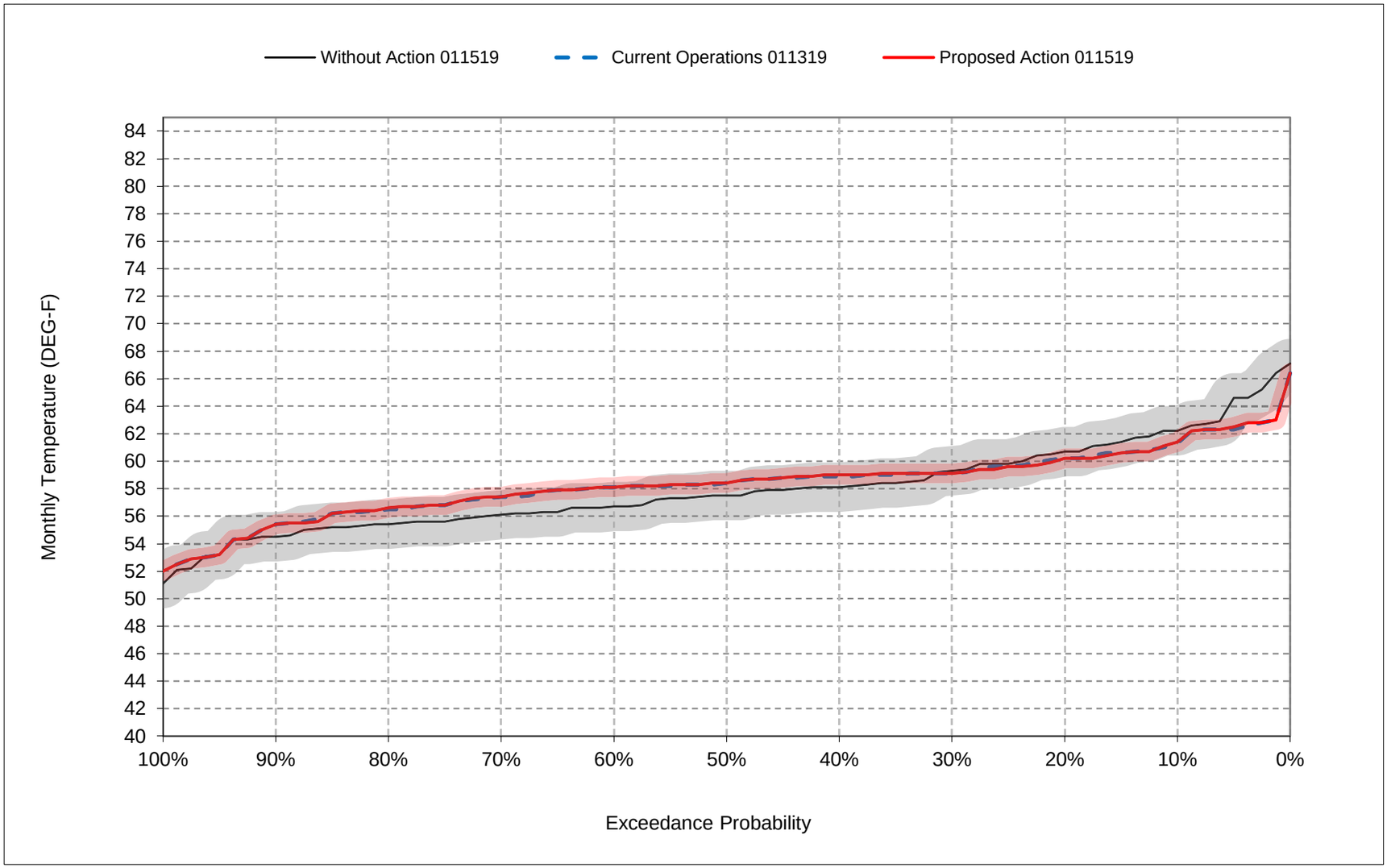
Figure 3-12. Feather River at Gridley Bridge, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

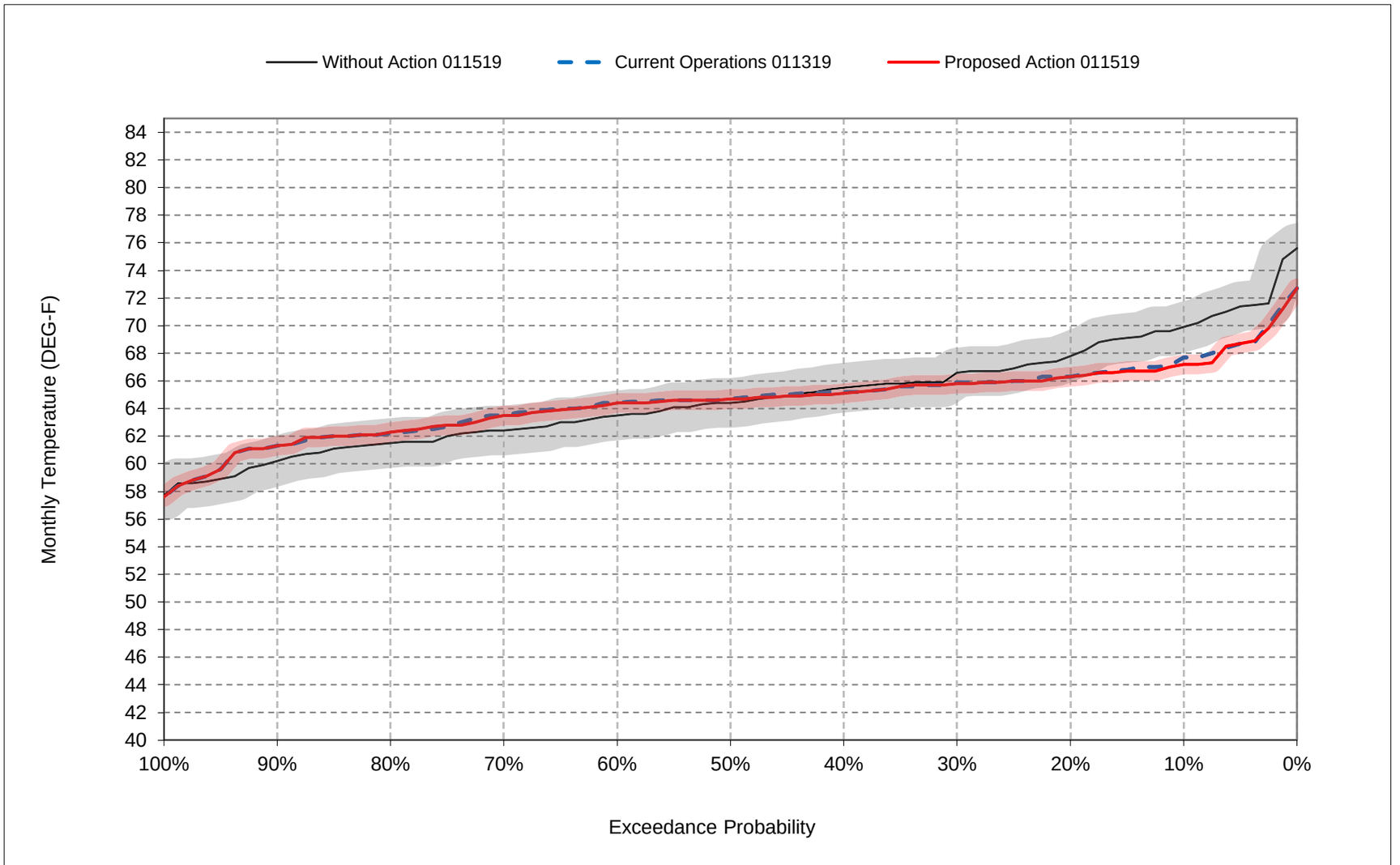
Figure 3-13. Feather River at Gridley Bridge, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

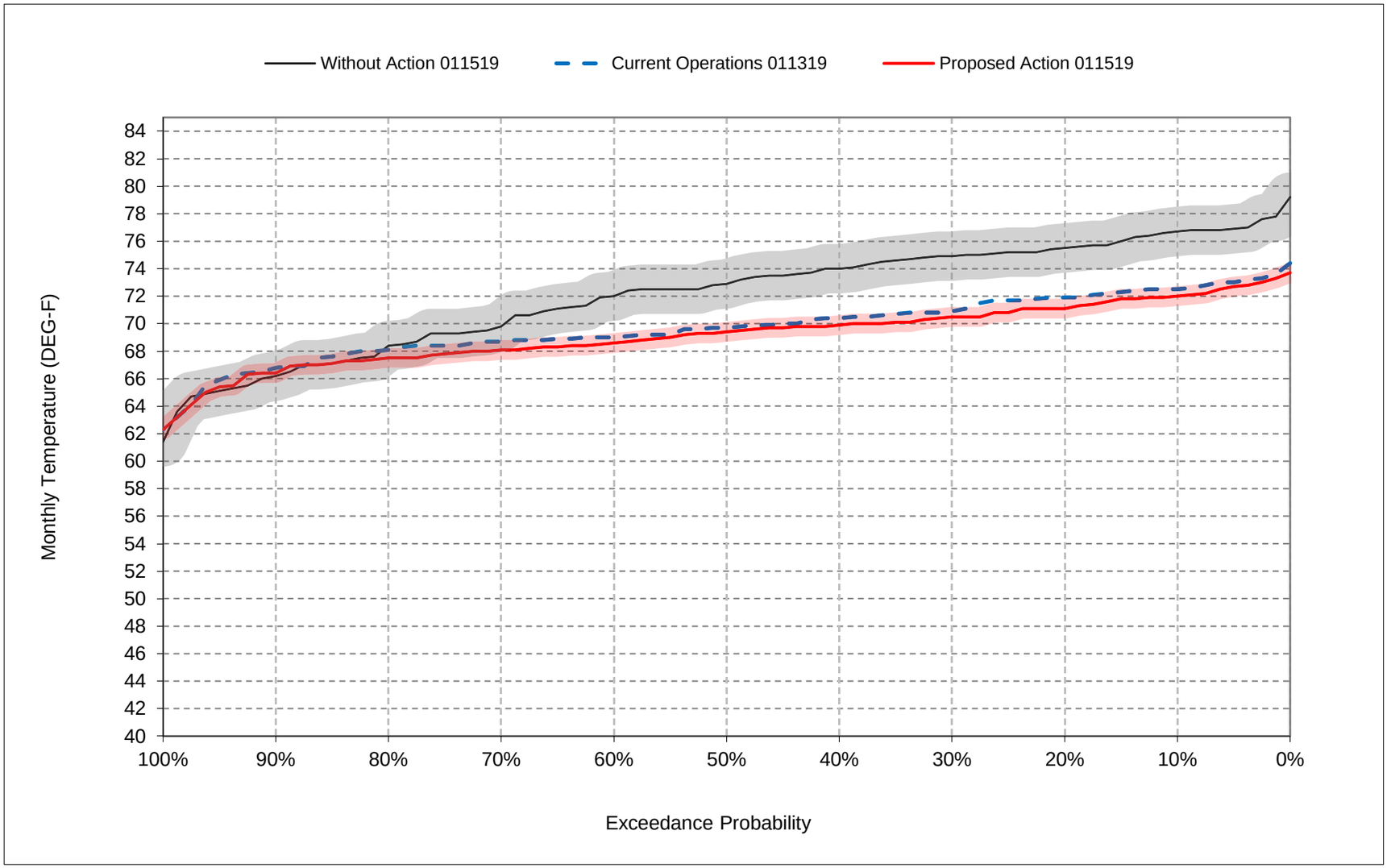
Figure 3-14. Feather River at Gridley Bridge, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

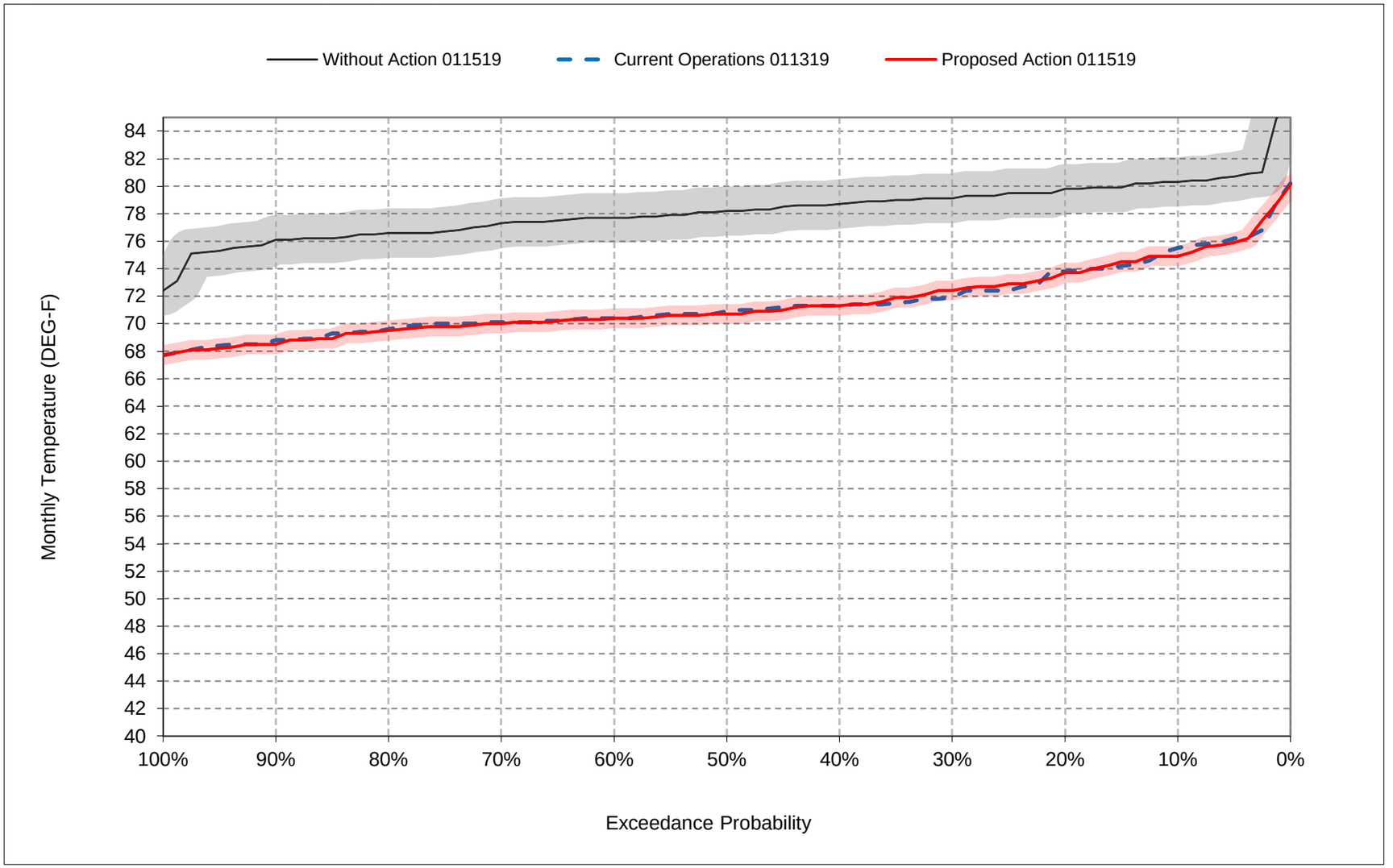
Figure 3-15. Feather River at Gridley Bridge, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

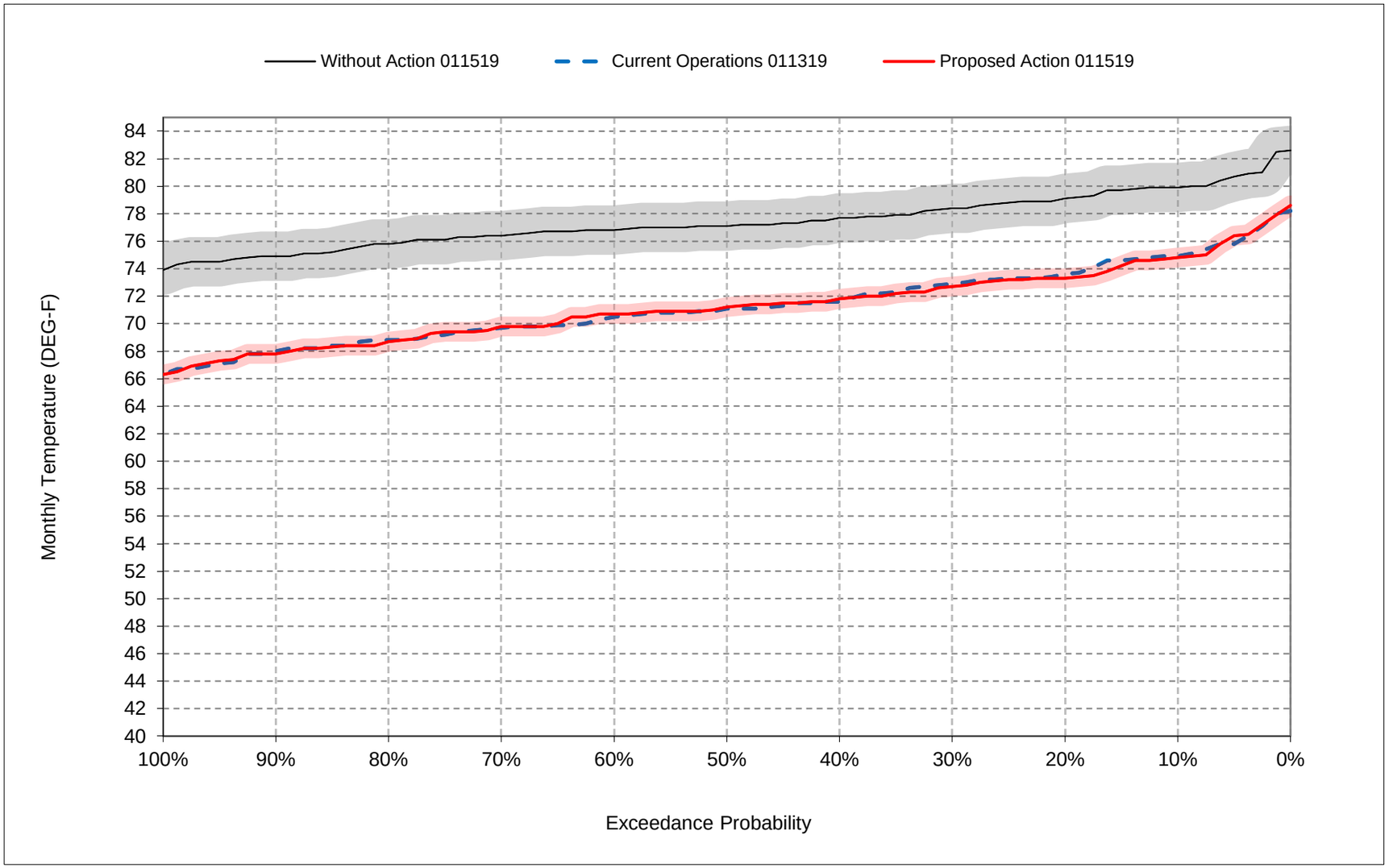
Figure 3-16. Feather River at Gridley Bridge, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

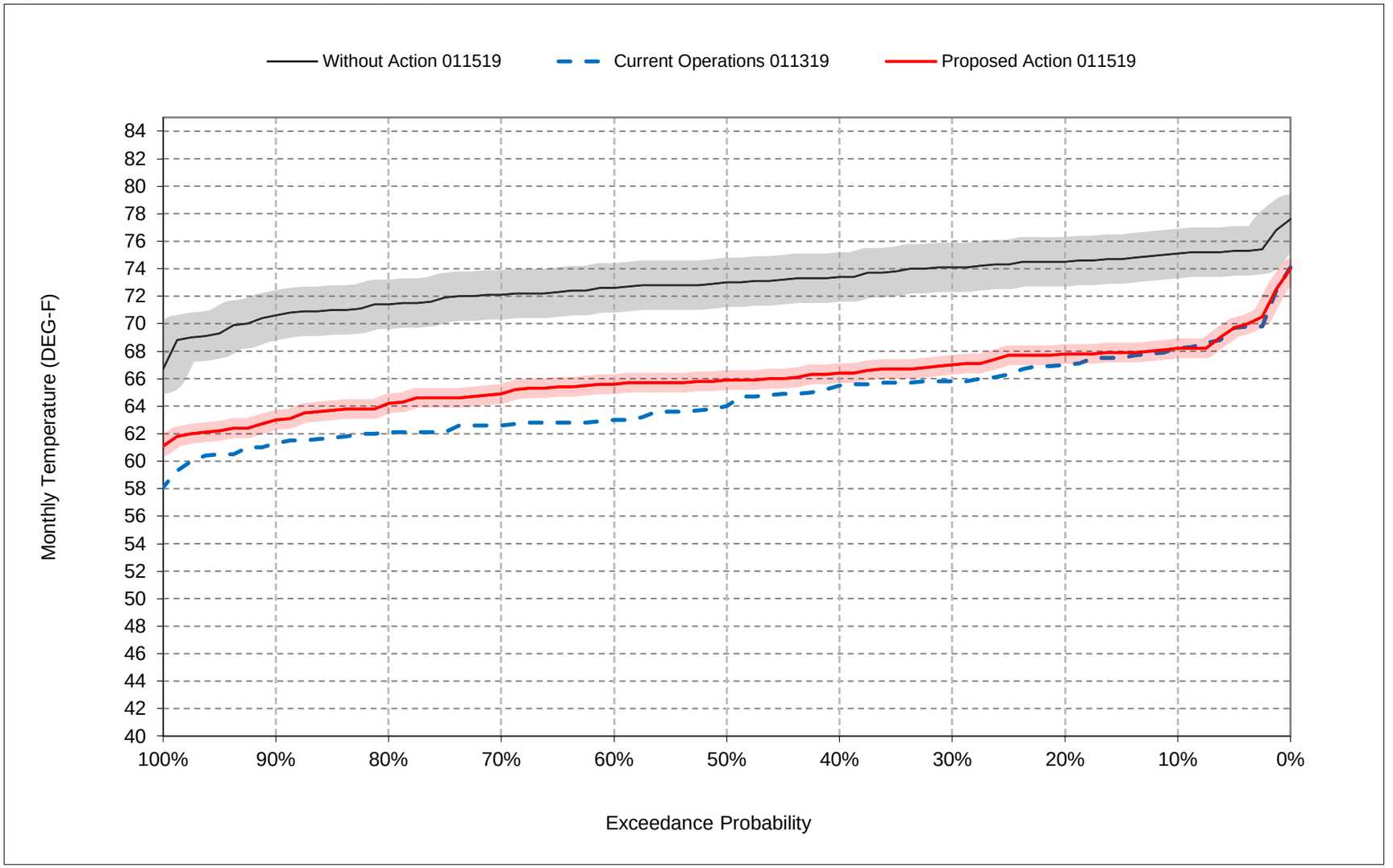
Figure 3-17. Feather River at Gridley Bridge, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Table 4-1. Feather River at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.7	56.0	48.8	48.6	52.9	57.4	65.0	71.0	77.9	81.2	79.3	74.7
20%	65.8	55.5	48.2	47.8	51.8	56.0	63.4	70.2	76.7	80.6	78.8	74.1
30%	65.0	54.8	47.9	47.5	51.1	55.6	61.7	68.9	76.3	79.8	78.3	73.7
40%	64.3	54.4	47.3	46.9	50.8	55.3	60.8	67.6	75.4	79.5	77.7	73.3
50%	63.8	53.9	46.8	46.5	50.4	54.7	60.4	67.0	74.0	78.8	77.0	72.7
60%	63.4	53.3	46.6	46.2	50.1	53.9	59.3	66.4	73.5	78.4	76.5	72.4
70%	62.9	52.9	46.0	45.6	49.8	53.5	58.8	65.3	72.1	77.7	75.8	71.8
80%	62.5	52.3	45.3	44.8	49.2	52.8	58.2	64.3	70.4	77.5	75.5	71.0
90%	61.5	51.3	43.6	44.1	48.7	52.4	57.1	63.3	69.0	76.6	74.6	70.6
Long Term												
Full Simulation Period[a]	64.0	53.8	46.7	46.3	50.6	54.7	60.7	67.4	73.9	78.9	77.1	72.7
Water Year Types[b,c]												
Wet (32%)	64.1	54.4	47.4	46.9	49.9	53.3	58.3	65.2	71.0	78.6	77.1	73.2
Above Normal (16%)	63.3	52.8	46.3	47.1	50.3	54.1	59.7	66.6	74.6	78.4	75.9	71.8
Below Normal (15%)	63.9	53.7	45.8	46.4	50.4	54.7	62.0	67.8	74.8	79.3	76.9	72.4
Dry (24%)	64.0	53.9	47.3	45.4	50.9	55.6	61.5	69.1	76.1	79.0	77.3	72.6
Critical (15%)	64.7	53.6	45.2	45.9	51.9	56.8	64.0	69.5	75.1	79.8	78.1	73.0

Current Operations 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.0	-0.3	**0.7**	**0.1**	**0.2**	**0.3**	**0.6**	**0.1**	-1.3	-3.0	-1.2	-1.1
20%	-2.1	-0.5	**0.7**	**0.3**	**0.5**	**0.9**	-0.1	-0.5	-1.0	-3.4	-1.5	-1.2
30%	-1.9	-0.4	**0.6**	**0.5**	**0.7**	**0.6**	**1.1**	**0.2**	-1.7	-3.5	-2.3	-2.0
40%	-1.7	-0.3	**0.8**	**0.5**	**0.5**	**0.3**	**1.1**	**1.0**	-1.2	-3.8	-2.2	-2.6
50%	-1.7	-0.4	**0.7**	**0.2**	**0.6**	**0.6**	**1.0**	**1.0**	-0.6	-3.5	-2.5	-2.8
60%	-1.7	-0.2	**0.5**	**0.2**	**0.5**	**0.8**	**1.5**	**1.1**	-0.9	-3.5	-2.7	-3.6
70%	-1.6	0.0	**0.7**	**0.3**	**0.4**	**0.7**	**1.0**	**0.7**	-0.2	-3.7	-3.0	-3.9
80%	-2.3	0.0	**1.0**	**0.3**	**0.7**	**0.8**	**0.2**	**0.8**	**0.7**	-3.8	-3.4	-3.8
90%	-1.7	**0.3**	**0.9**	**0.2**	**0.3**	**0.1**	**0.4**	**0.8**	**0.8**	-3.7	-3.4	-3.9
Long Term												
Full Simulation Period[a]	-1.7	-0.2	**0.8**	**0.3**	**0.5**	**0.6**	**0.8**	**0.5**	-0.6	-3.4	-2.4	-2.7
Water Year Types[b,c]												
Wet (32%)	-2.9	-0.5	**0.8**	**0.4**	**0.9**	**0.7**	**0.9**	**0.6**	**0.7**	-3.3	-3.0	-5.3
Above Normal (16%)	-2.2	-0.2	**0.6**	**0.2**	**0.7**	**1.0**	**1.5**	**1.3**	-0.8	-4.5	-3.9	-4.4
Below Normal (15%)	-1.2	-0.3	**0.7**	**0.3**	**0.3**	**0.9**	**0.5**	**0.3**	-0.5	-4.6	-3.1	-1.3
Dry (24%)	-1.1	-0.1	**0.6**	**0.4**	**0.2**	**0.4**	**0.7**	**0.2**	-1.8	-3.4	-1.4	-0.6
Critical (15%)	-0.4	**0.2**	**1.4**	**0.4**	0.0	-0.2	0.0	-0.3	-1.2	-1.2	-0.9	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 4-2. Feather River at Mouth, Monthly Temperature

Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	66.7	56.0	48.8	48.6	52.9	57.4	65.0	71.0	77.9	81.2	79.3	74.7
20%	65.8	55.5	48.2	47.8	51.8	56.0	63.4	70.2	76.7	80.6	78.8	74.1
30%	65.0	54.8	47.9	47.5	51.1	55.6	61.7	68.9	76.3	79.8	78.3	73.7
40%	64.3	54.4	47.3	46.9	50.8	55.3	60.8	67.6	75.4	79.5	77.7	73.3
50%	63.8	53.9	46.8	46.5	50.4	54.7	60.4	67.0	74.0	78.8	77.0	72.7
60%	63.4	53.3	46.6	46.2	50.1	53.9	59.3	66.4	73.5	78.4	76.5	72.4
70%	62.9	52.9	46.0	45.6	49.8	53.5	58.8	65.3	72.1	77.7	75.8	71.8
80%	62.5	52.3	45.3	44.8	49.2	52.8	58.2	64.3	70.4	77.5	75.5	71.0
90%	61.5	51.3	43.6	44.1	48.7	52.4	57.1	63.3	69.0	76.6	74.6	70.6
Long Term												
Full Simulation Period[a]	64.0	53.8	46.7	46.3	50.6	54.7	60.7	67.4	73.9	78.9	77.1	72.7
Water Year Types[b,c]												
Wet (32%)	64.1	54.4	47.4	46.9	49.9	53.3	58.3	65.2	71.0	78.6	77.1	73.2
Above Normal (16%)	63.3	52.8	46.3	47.1	50.3	54.1	59.7	66.6	74.6	78.4	75.9	71.8
Below Normal (15%)	63.9	53.7	45.8	46.4	50.4	54.7	62.0	67.8	74.8	79.3	76.9	72.4
Dry (24%)	64.0	53.9	47.3	45.4	50.9	55.6	61.5	69.1	76.1	79.0	77.3	72.6
Critical (15%)	64.7	53.6	45.2	45.9	51.9	56.8	64.0	69.5	75.1	79.8	78.1	73.0

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.0	-0.6	**0.6**	**0.1**	**0.2**	**0.3**	**0.6**	-0.2	-1.9	-3.2	-1.2	-0.3
20%	-1.9	-0.6	**0.6**	**0.4**	**0.5**	**0.9**	-0.1	-0.7	-1.5	-3.2	-1.3	-0.6
30%	-1.6	-0.7	**0.4**	**0.5**	**0.7**	**0.5**	**1.1**	-0.1	-2.1	-3.4	-1.9	-0.9
40%	-1.6	-0.6	**0.8**	**0.5**	**0.5**	**0.3**	**1.1**	**0.7**	-1.9	-3.8	-2.3	-1.1
50%	-1.7	-0.6	**0.6**	**0.2**	**0.6**	**0.6**	**1.0**	**0.9**	-1.2	-3.6	-2.6	-1.4
60%	-1.9	-0.3	**0.4**	**0.2**	**0.5**	**0.8**	**1.5**	**0.7**	-1.2	-3.6	-2.6	-1.7
70%	-1.6	-0.1	**0.6**	**0.3**	**0.4**	**0.7**	**1.0**	**0.7**	-0.2	-3.5	-3.0	-1.6
80%	-1.5	-0.2	**1.0**	**0.3**	**0.7**	**0.7**	**0.2**	**0.8**	**0.6**	-4.0	-3.4	-1.7
90%	-1.5	**0.3**	**1.0**	**0.2**	**0.3**	**0.1**	**0.4**	**0.8**	**0.6**	-3.9	-3.0	-2.0
Long Term												
Full Simulation Period[a]	-1.6	-0.4	**0.7**	**0.4**	**0.5**	**0.5**	**0.8**	**0.3**	-1.0	-3.4	-2.4	-1.2
Water Year Types[b,c]												
Wet (32%)	-2.5	-0.9	**0.5**	**0.5**	**0.9**	**0.7**	**0.9**	**0.6**	**0.6**	-3.4	-2.9	-1.2
Above Normal (16%)	-2.2	-0.3	**0.5**	**0.2**	**0.7**	**0.9**	**1.5**	**1.3**	-1.0	-4.7	-3.8	-3.0
Below Normal (15%)	-1.2	-0.3	**0.7**	**0.3**	**0.5**	**0.9**	**0.5**	**0.0**	-1.1	-5.0	-3.6	-1.2
Dry (24%)	-1.1	-0.1	**0.6**	**0.4**	**0.2**	**0.4**	**0.7**	**0.1**	-2.5	-3.1	-1.2	-0.6
Critical (15%)	-0.4	**0.2**	**1.3**	**0.4**	-0.1	-0.2	0.0	-0.4	-1.6	-1.2	-0.8	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 4-3. Feather River at Mouth, Monthly Temperature

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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.

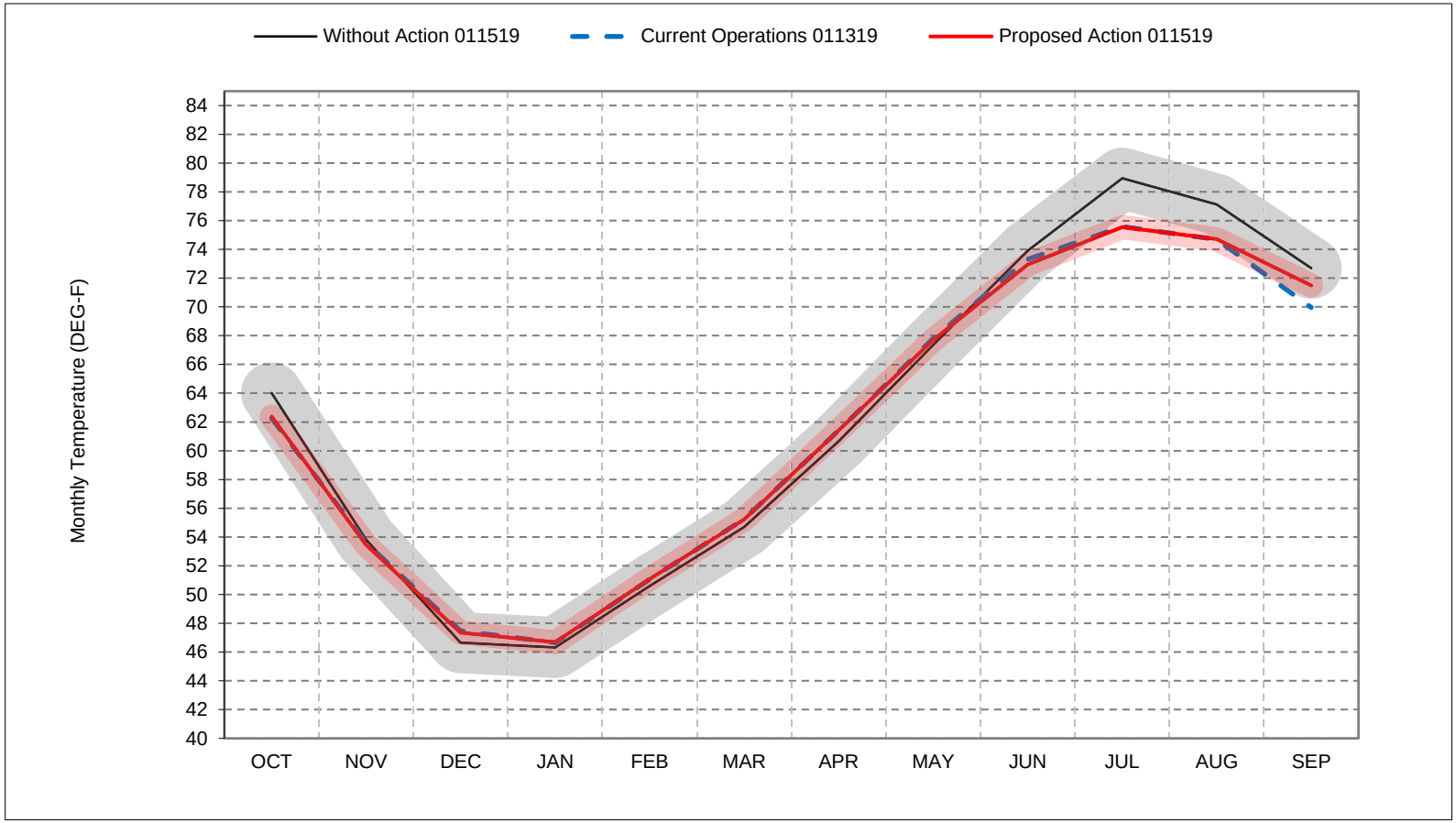
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

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.

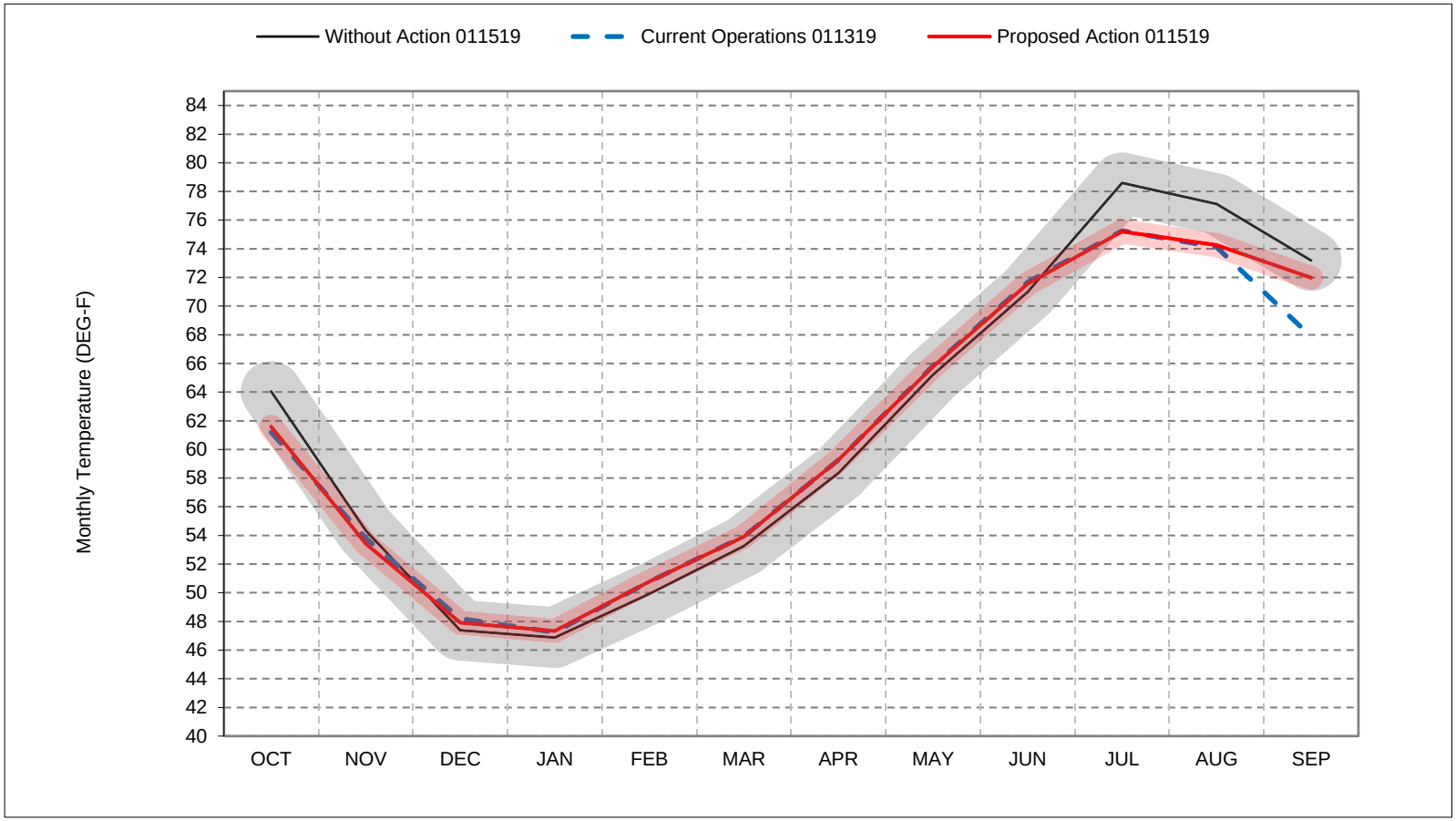
e These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-1. Feather River at Mouth, Long-Term Average Temperature



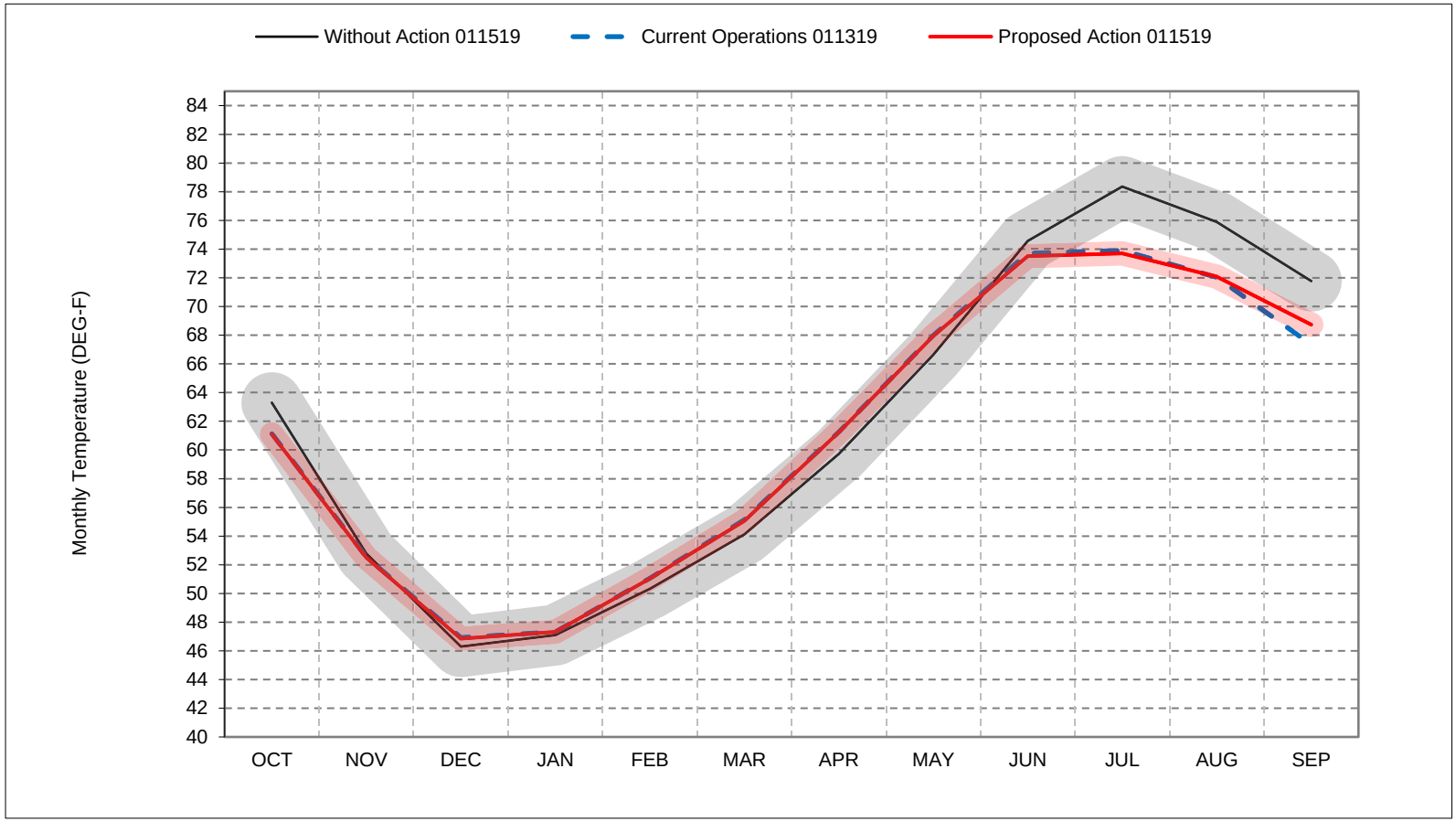
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-2. Feather River at Mouth, Wet Year Average Temperature



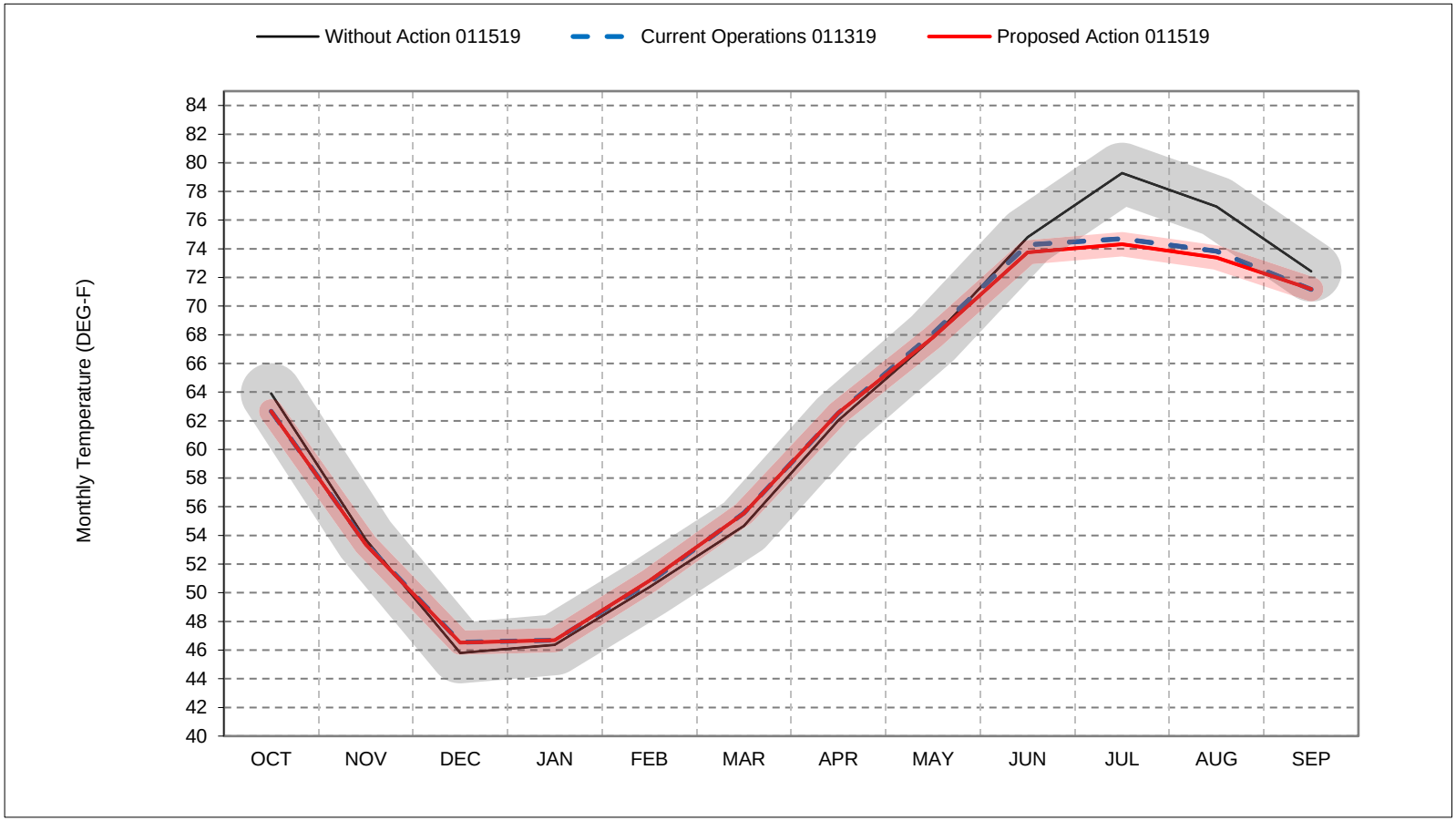
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-3. Feather River at Mouth, Above Normal Year Average Temperature



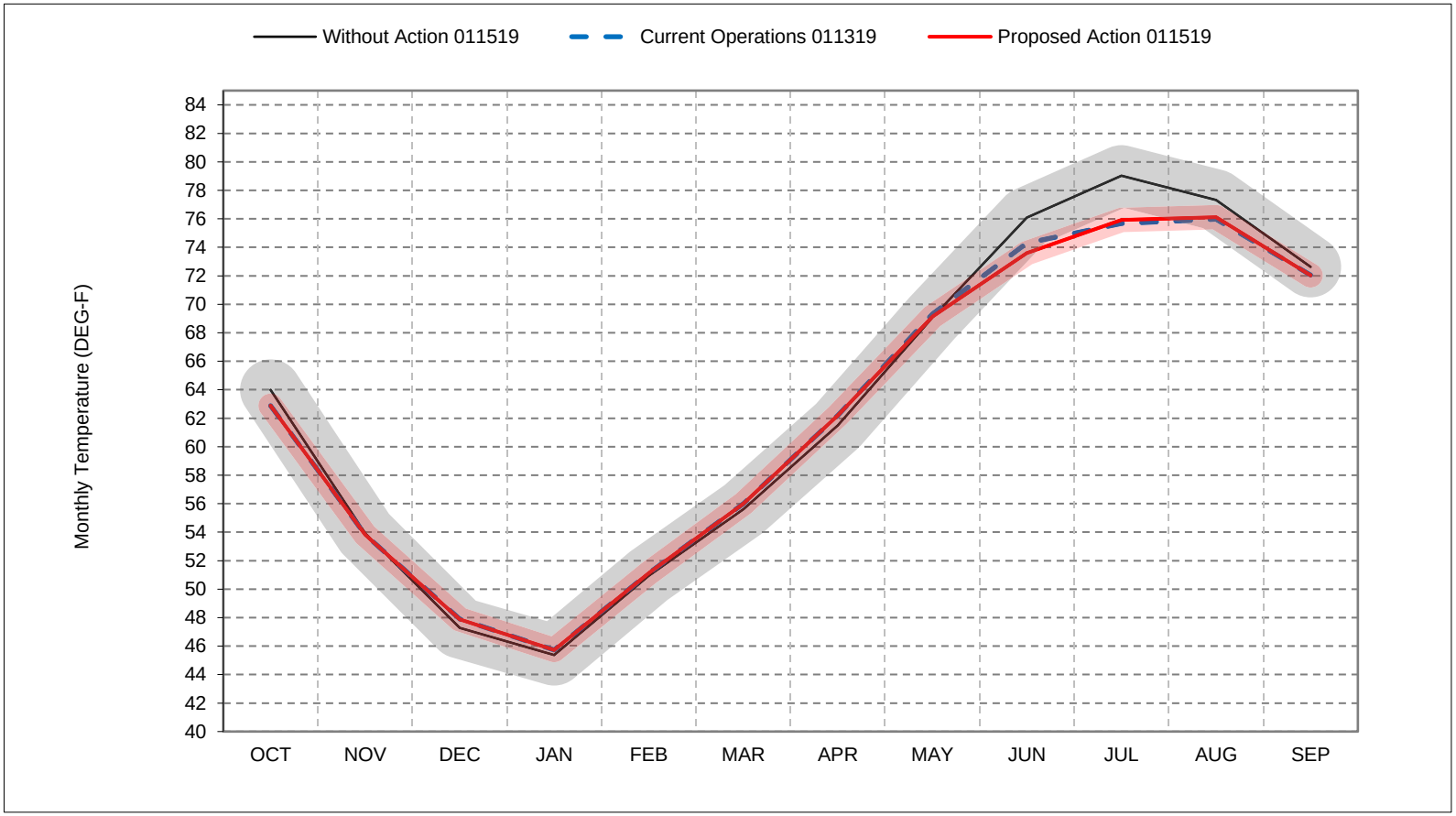
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-4. Feather River at Mouth, Below Normal Year Average Temperature



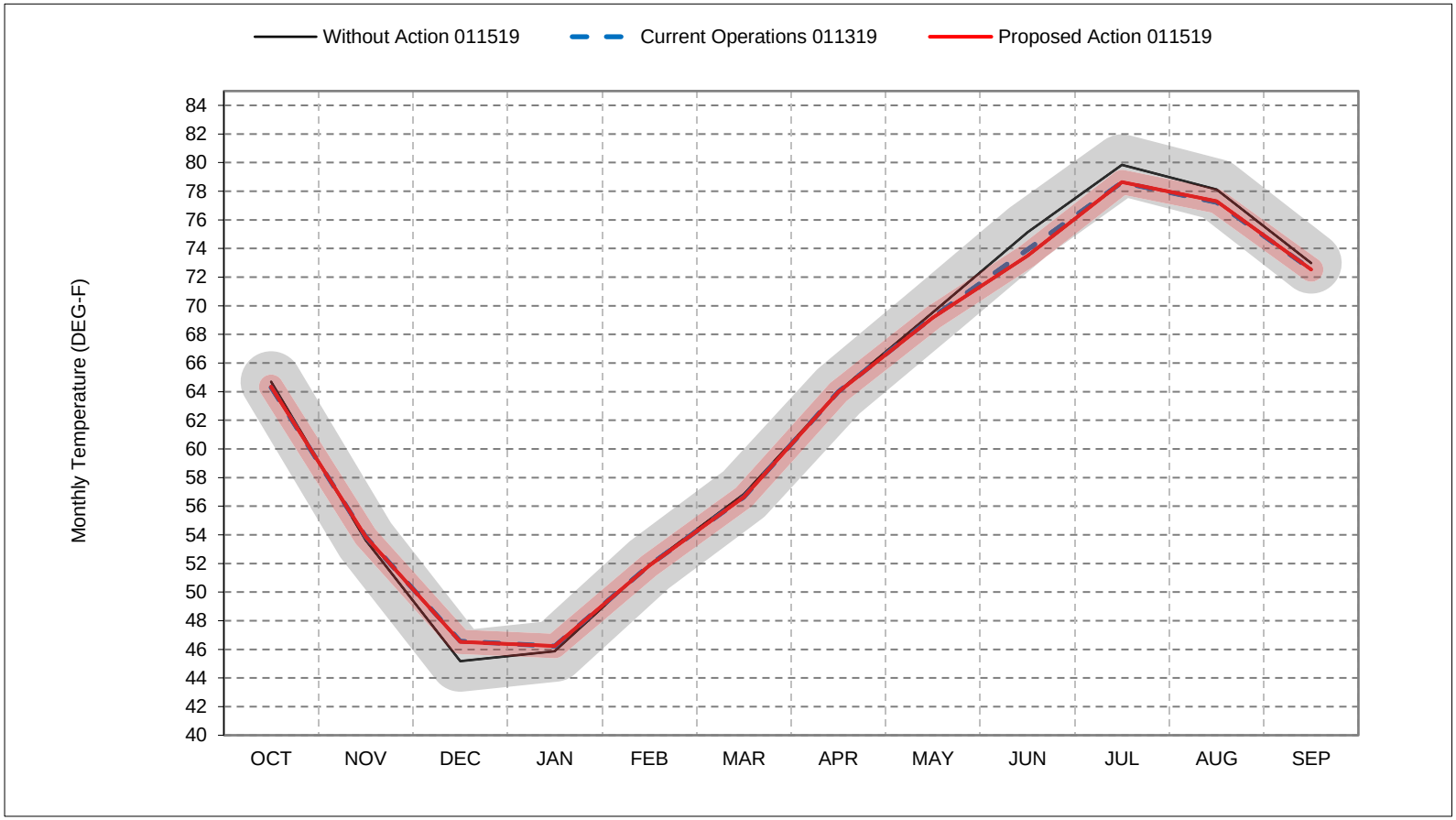
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-5. Feather River at Mouth, Dry Year Average Temperature



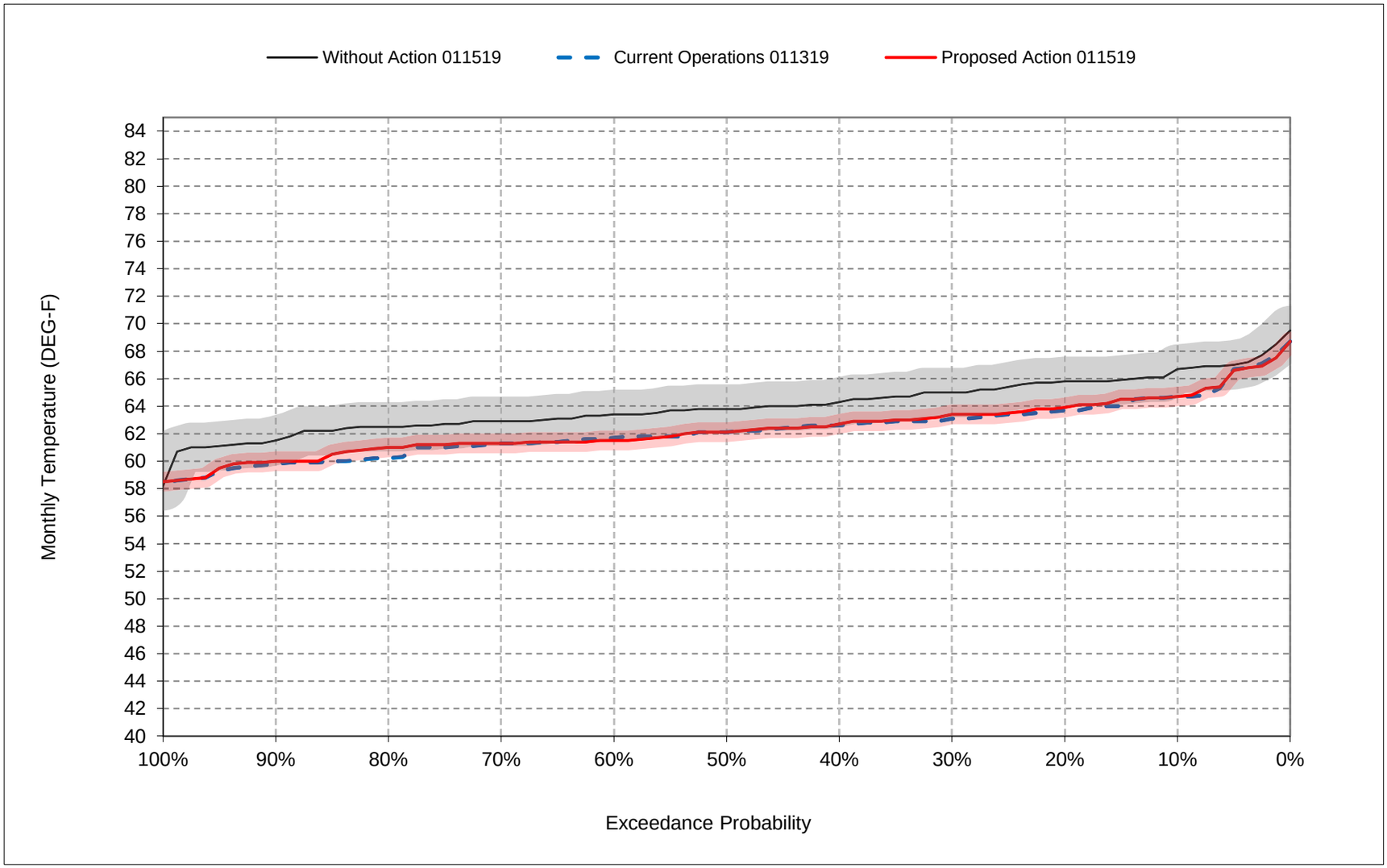
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

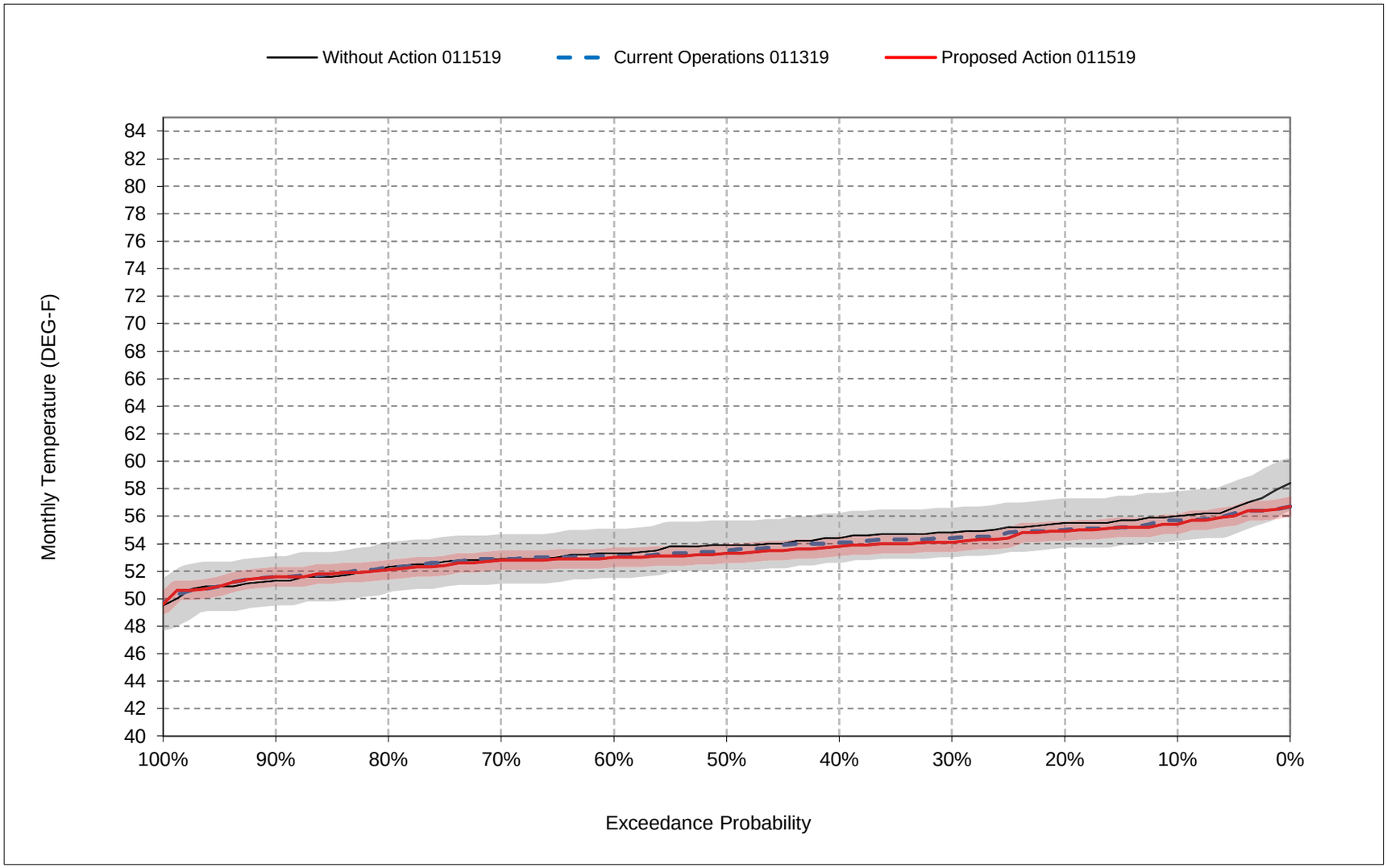
Figure 4-7. Feather River at Mouth, October



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

*These are draft results meant for qualitative analysis and are subject to revision.

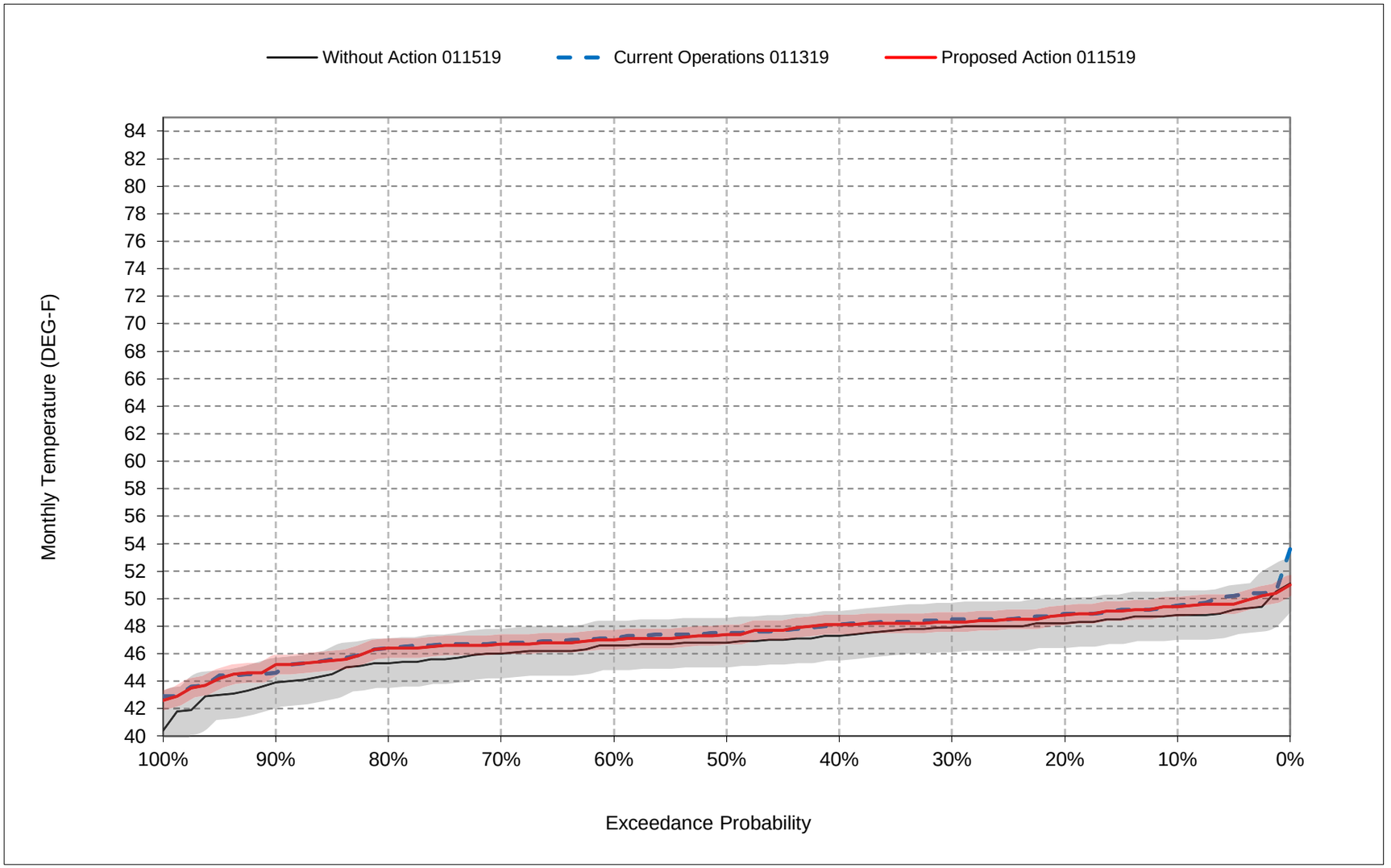
Figure 4-8. Feather River at Mouth, November



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

*These are draft results meant for qualitative analysis and are subject to revision.

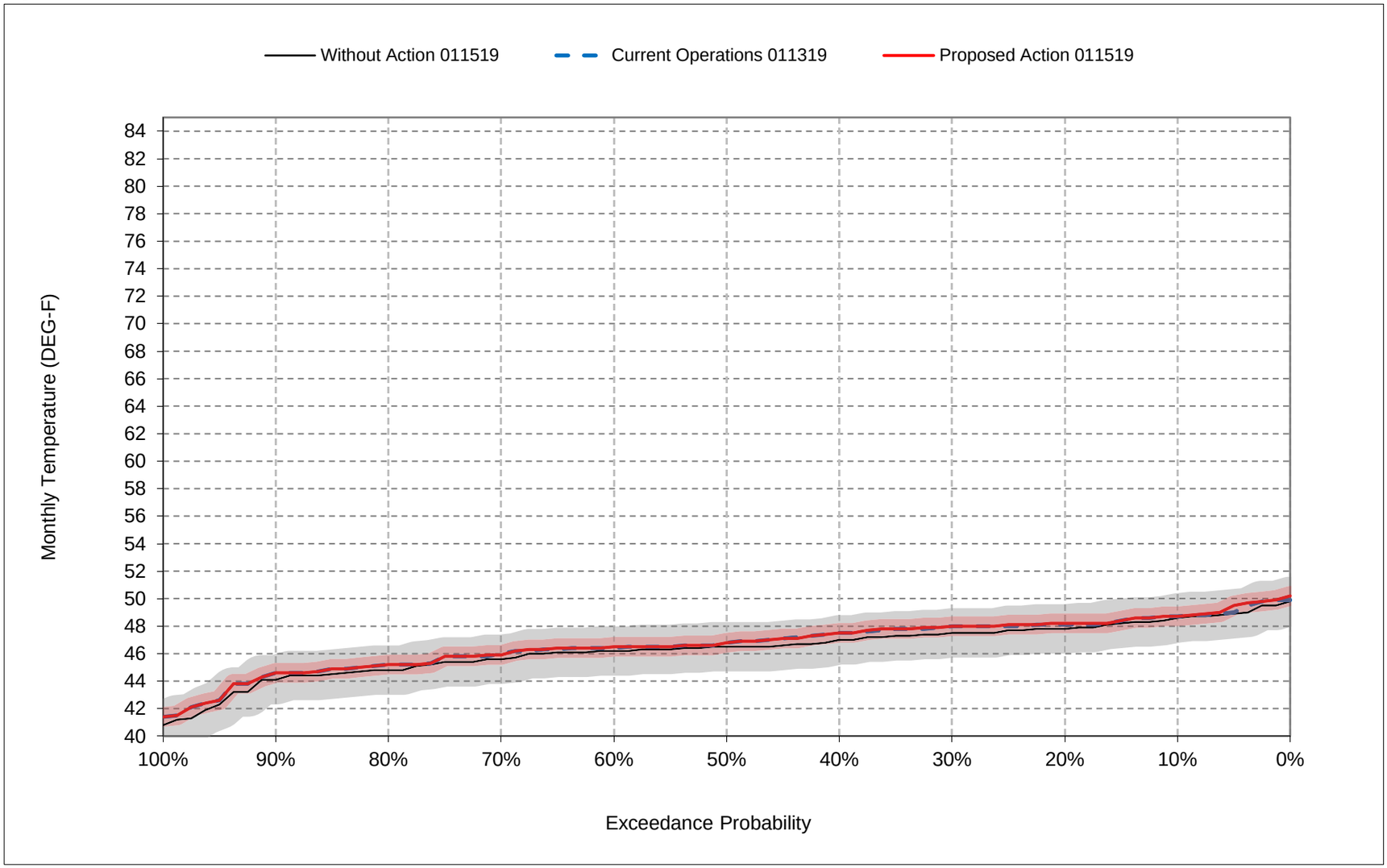
Figure 4-9. Feather River at Mouth, December



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

*These are draft results meant for qualitative analysis and are subject to revision.

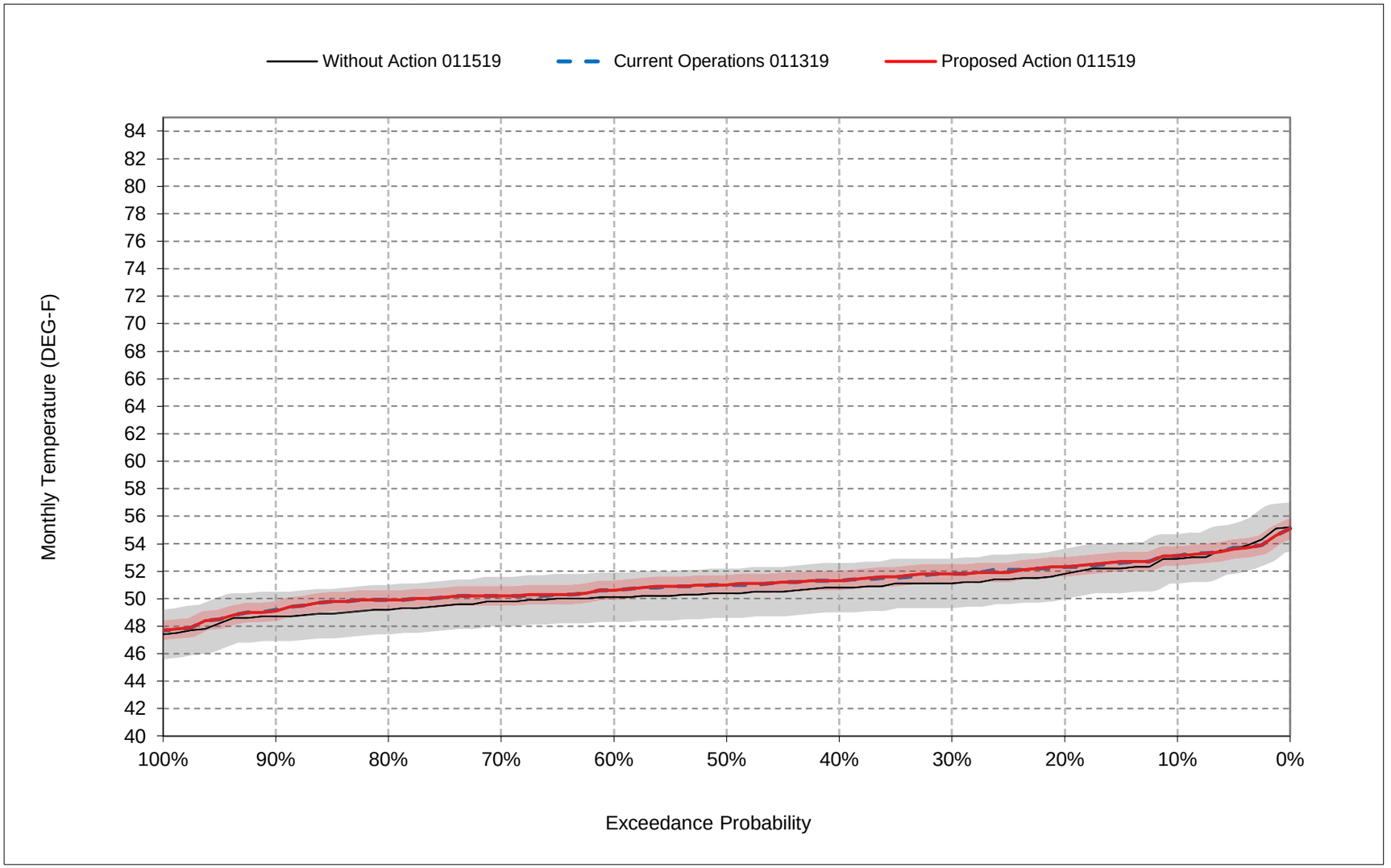
Figure 4-10. Feather River at Mouth, January



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

*These are draft results meant for qualitative analysis and are subject to revision.

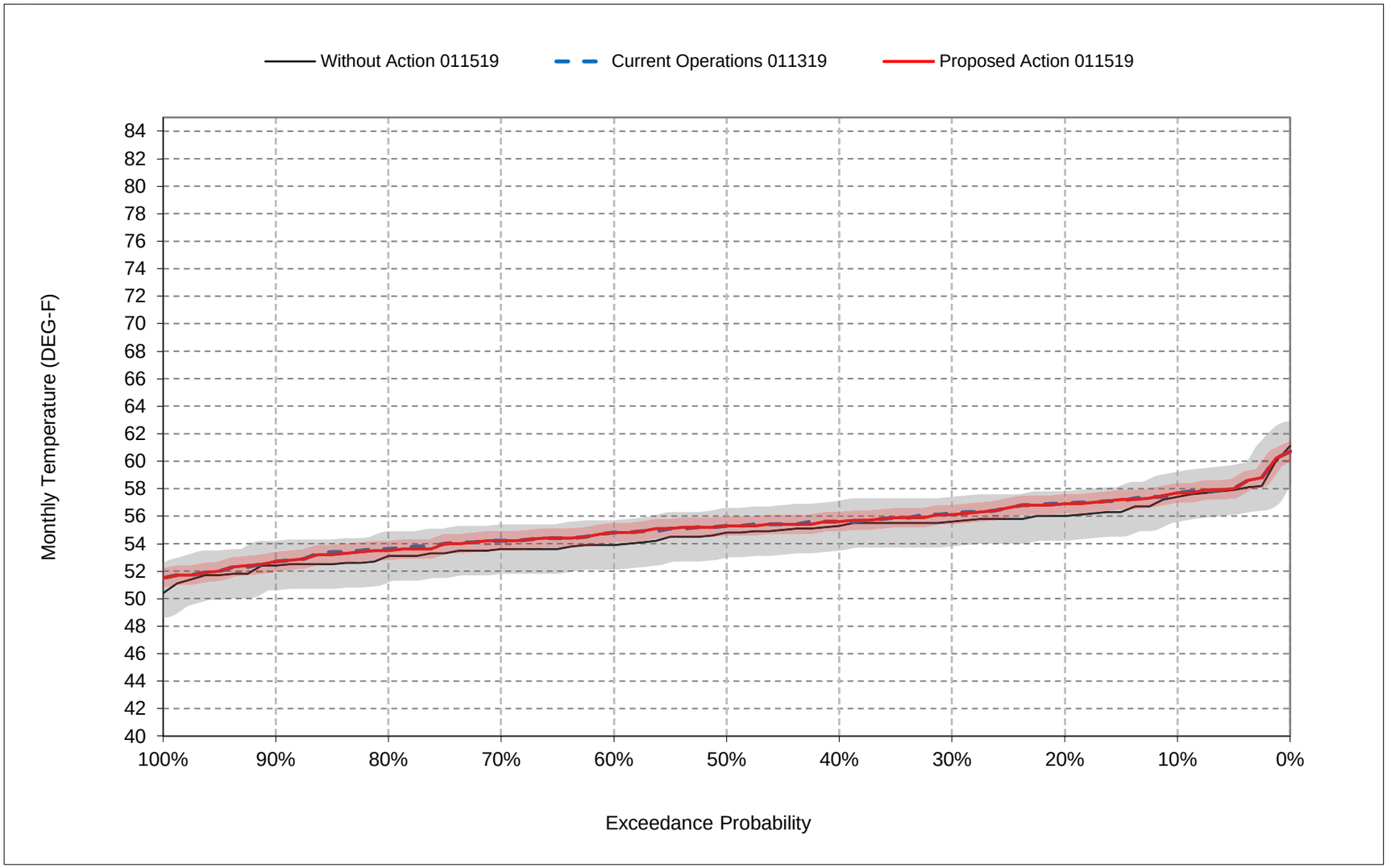
Figure 4-11. Feather River at Mouth, February



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

*These are draft results meant for qualitative analysis and are subject to revision.

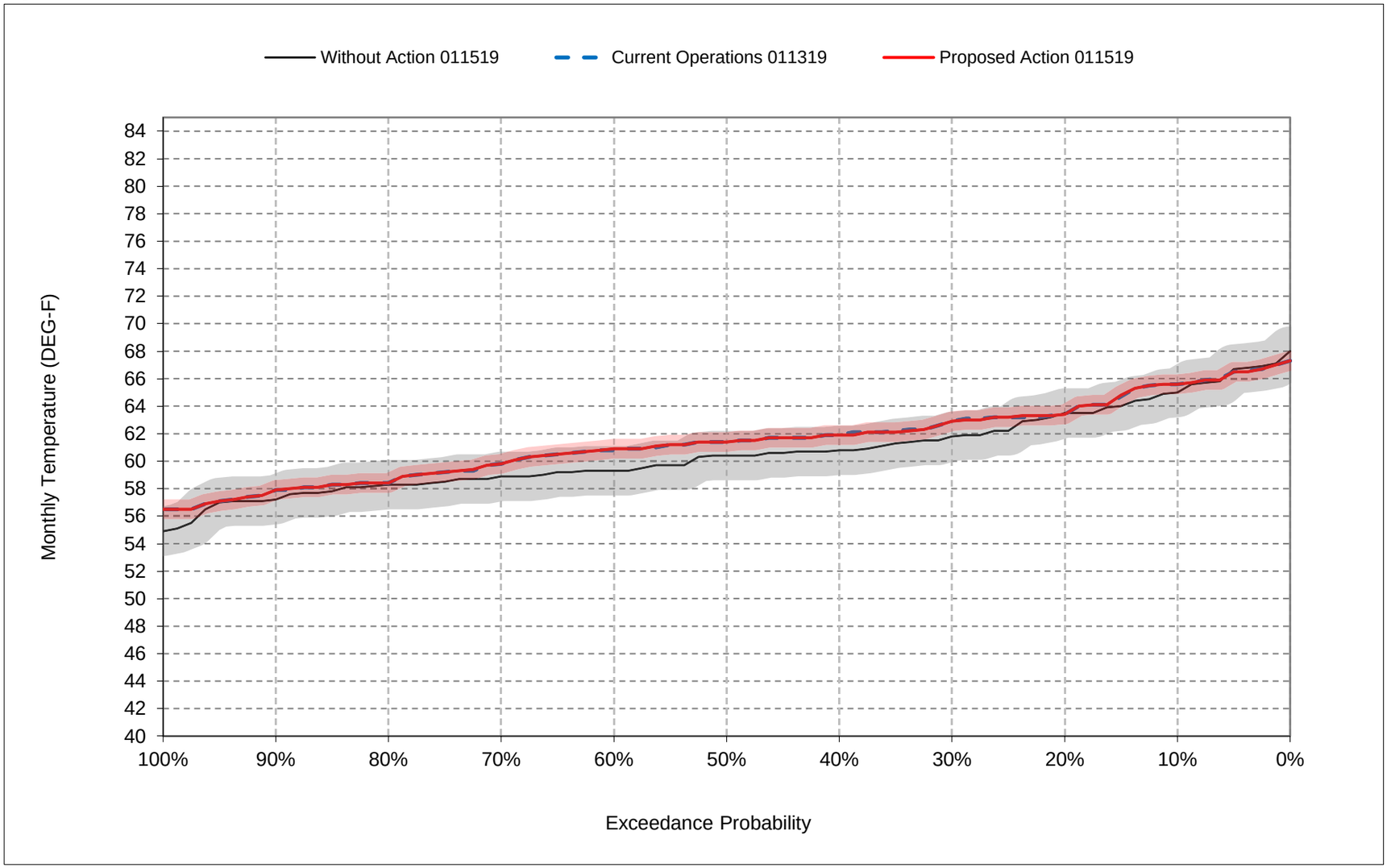
Figure 4-12. Feather River at Mouth, March



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

*These are draft results meant for qualitative analysis and are subject to revision.

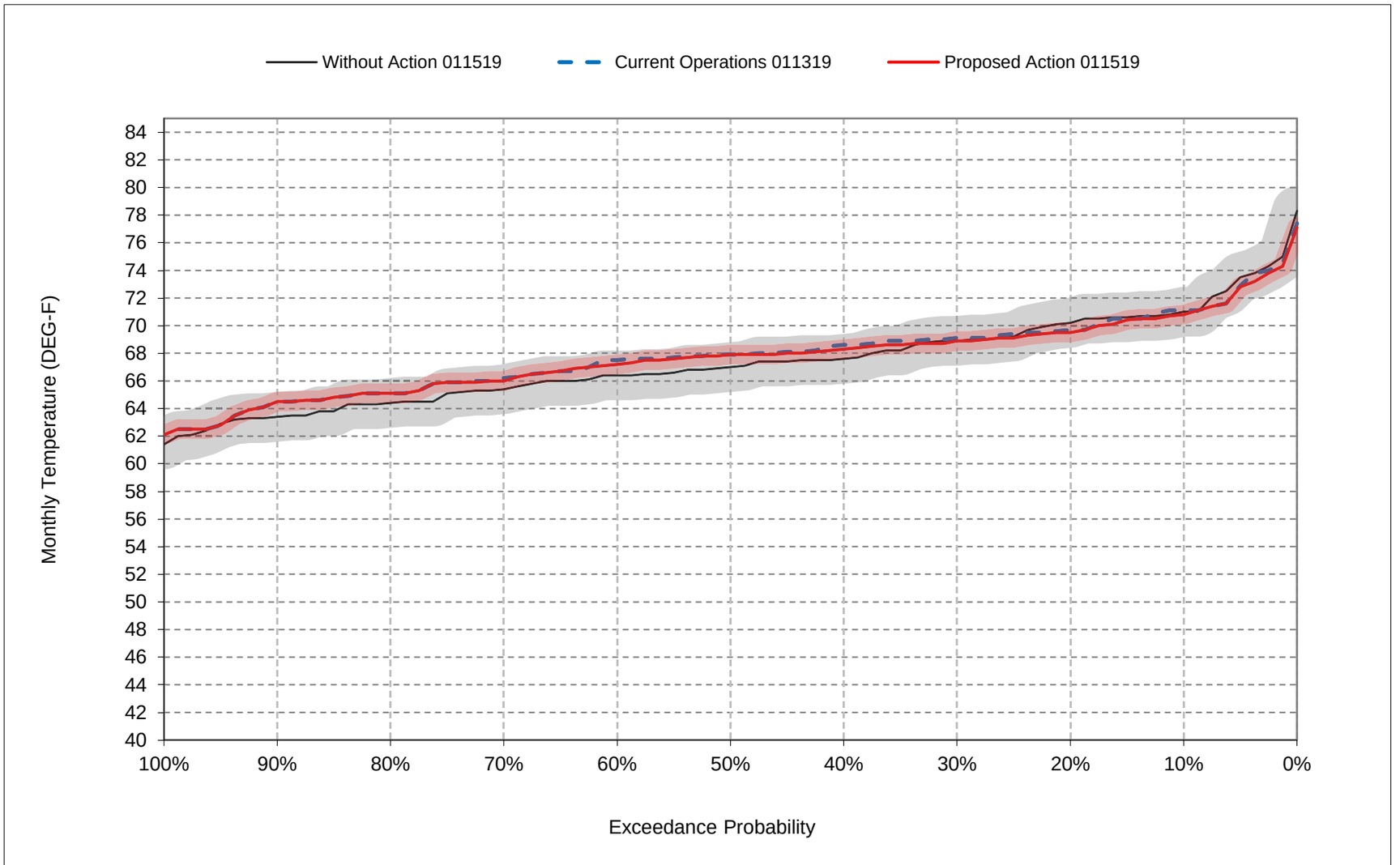
Figure 4-13. Feather River at Mouth, April



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

*These are draft results meant for qualitative analysis and are subject to revision.

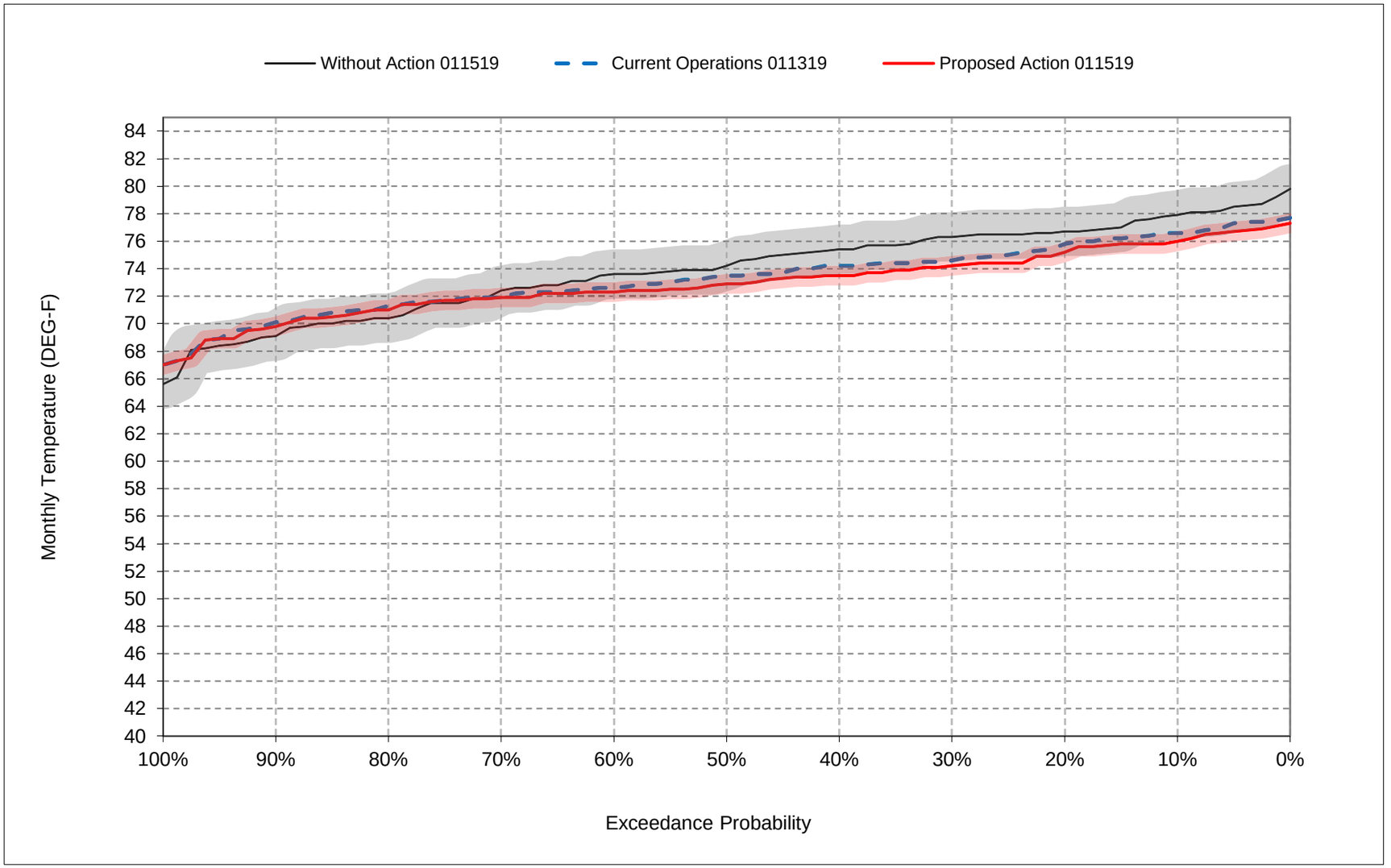
Figure 4-14. Feather River at Mouth, May



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

*These are draft results meant for qualitative analysis and are subject to revision.

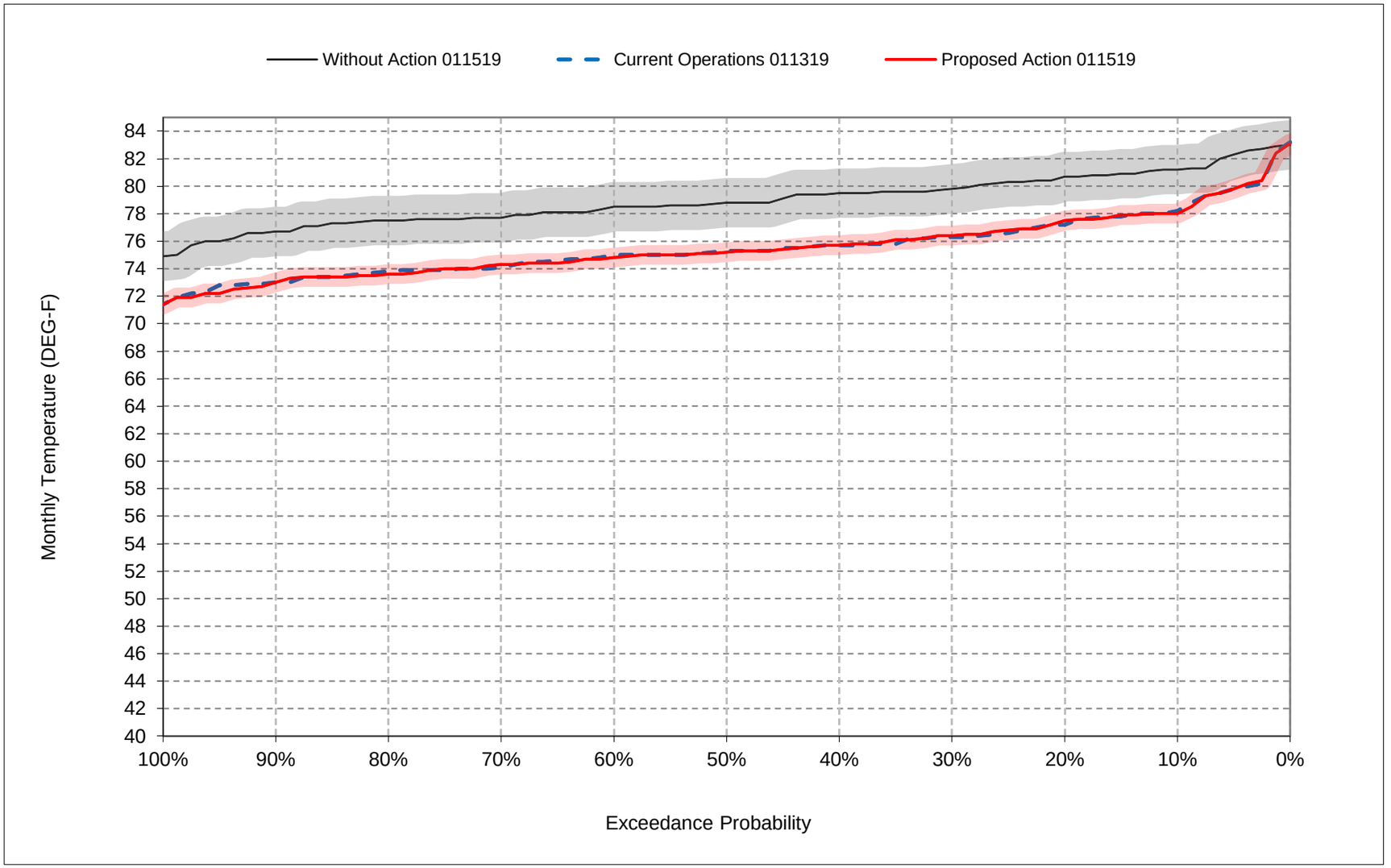
Figure 4-15. Feather River at Mouth, June



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

*These are draft results meant for qualitative analysis and are subject to revision.

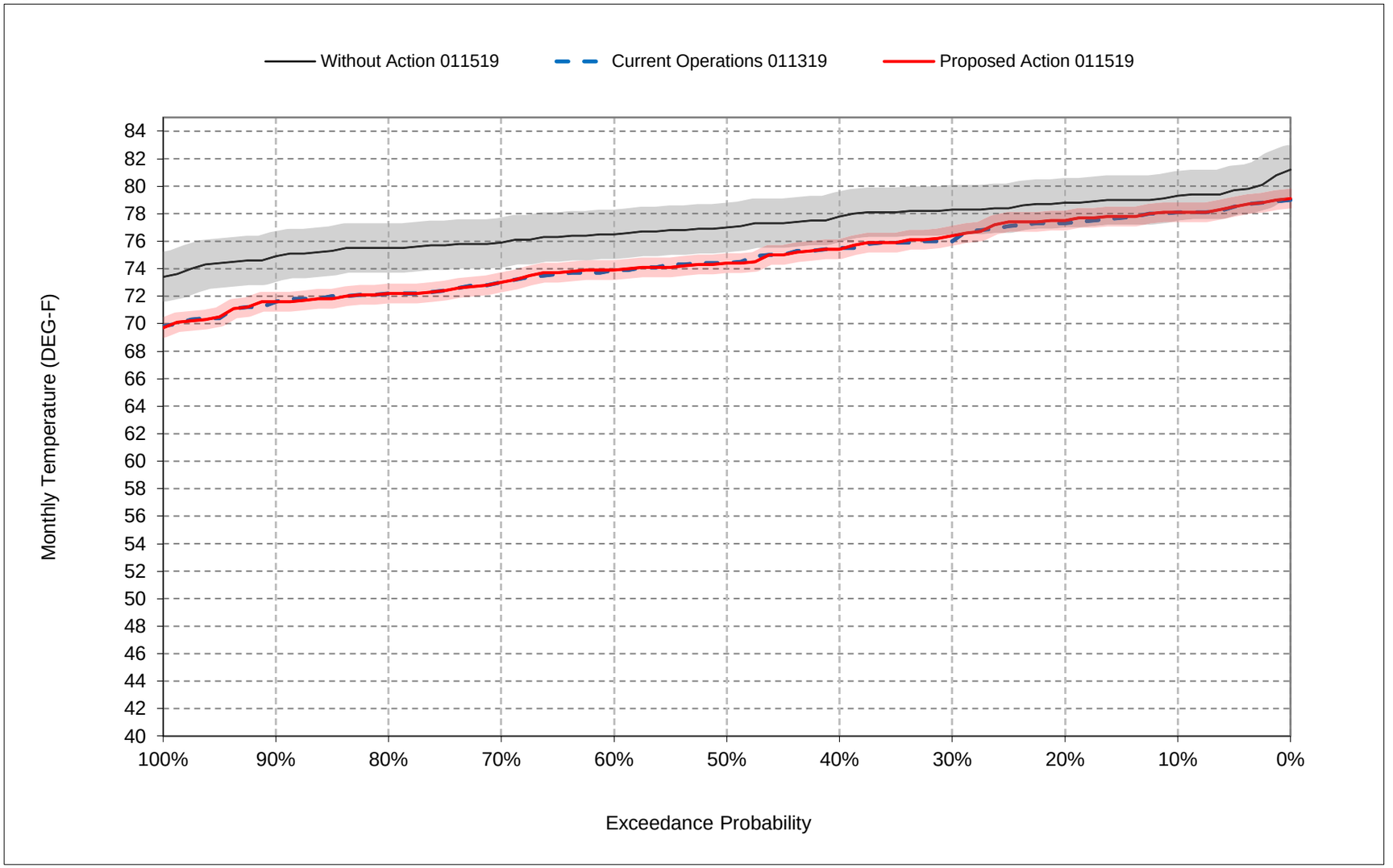
Figure 4-16. Feather River at Mouth, July



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

*These are draft results meant for qualitative analysis and are subject to revision.

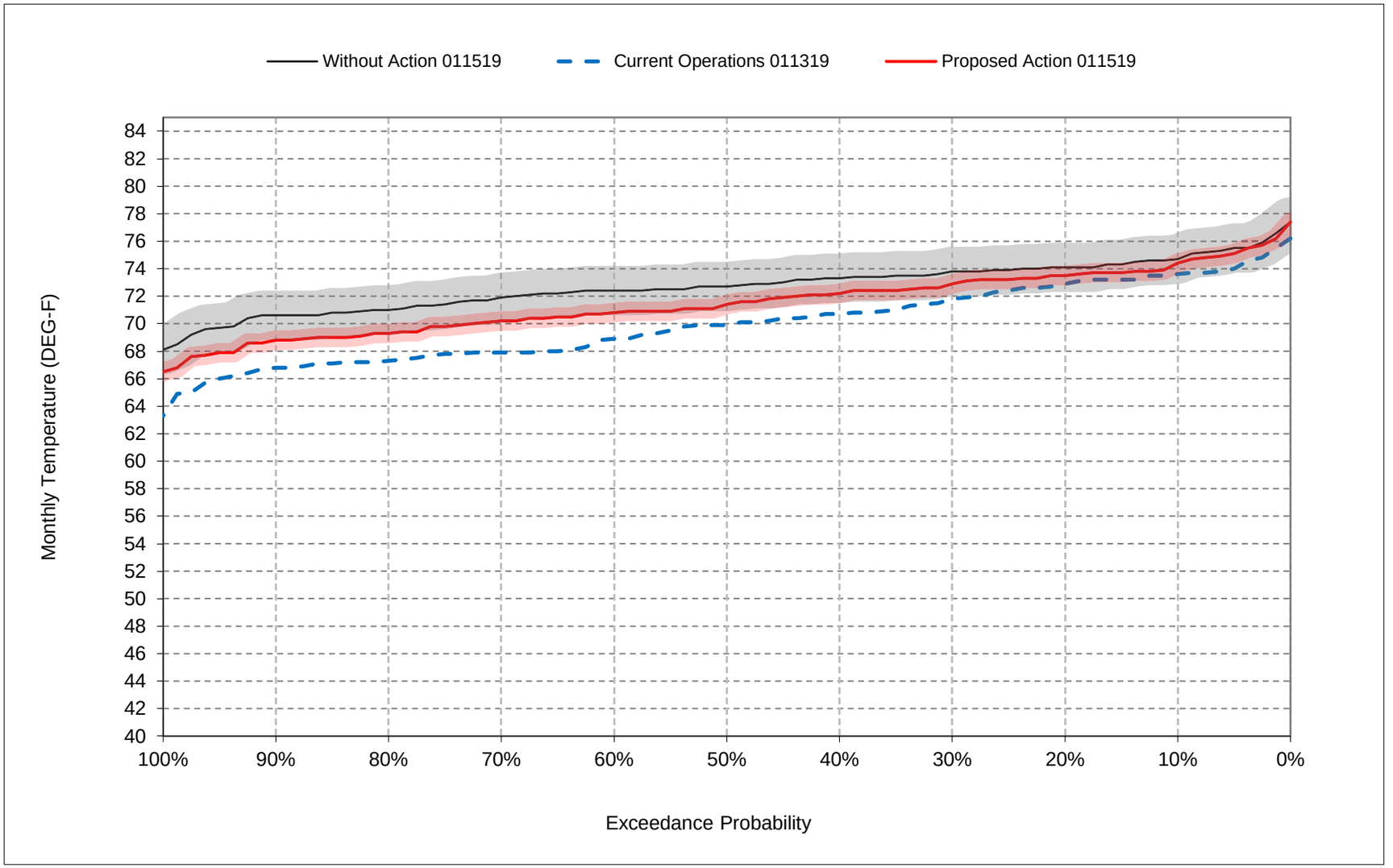
Figure 4-17. Feather River at Mouth, August



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.

*These are draft results meant for qualitative analysis and are subject to revision.

Appendix D – Modeling

Attachment 3-6 – Salinity (EC) Results (DSM2-QUAL)

The following results of the DSM2-QUAL model are included for Delta salinity conditions:

Title	Model Parameter	Table Numbers	Figure Numbers
Sacramento River downstream of Steamboat Slough Salinity	SAC_DS_STMBTSL	1-1 to 1-3	None
Cache Slough at Ryer Island Salinity	CACHE_RYER	2-1 to 2-3	None
Sacramento River downstream of Georgiana Slough Salinity	RSAC123	3-1 to 3-3	None
Sacramento River at Emmaton Salinity	RSAC092	4-1 to 4-3	4-1 to 4-18
Sacramento River at Rio Vista Salinity	RSAC101	5-1 to 5-3	5-1 to 5-18
San Joaquin River at Vernalis Salinity (40-30-30)	RSAN112	6-1 to 6-3	6-1 to 6-18
San Joaquin River at Vernalis Salinity (60-20-20)	RSAN112	6b-1 to 6b-3	6b-1 to 6b-18
San Joaquin River at Jersey Point Salinity	RSAN018	7-1 to 7-3	7-1 to 7-18
Old River at Rock Slough Salinity	ROLD024	8-1 to 8-3	8-1 to 8-18
San Joaquin River at Antioch Salinity	RSAN007	9-1 to 9-3	9-1 to 9-18
Sacramento River at Mallard Slough Salinity	RSAC075	10-1 to 10-3	10-1 to 10-18
Sacramento River at Collinsville Salinity	RSAC081	11-1 to 11-3	11-1 to 11-18
Chipps Island North Channel Salinity	CHIPS_N_437	12-1 to 12-3	12-1 to 12-18
Chipps Island South Channel Salinity	CHIPS_S_442	13-1 to 13-3	13-1 to 13-18
Sacramento River at Port Chicago Salinity	RSAC064	14-1 to 14-3	14-1 to 14-18
Jones Pumping Plant South Delta Exports Salinity	CHDMC006	15-1 to 15-3	15-1 to 15-18
Banks Pumping Plant South Delta Exports Salinity	CLIFTON_COURT	16-1 to 16-3	16-1 to 16-18
Old River at Highway 4	ROLD034	17-1 to 17-3	17-1 to 17-18
Victoria Canal	CHVCT000	18-1 to 18-3	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

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	177	176	178	179	178	176	176	177	177	177	177	176
20%	176	176	177	179	178	176	176	176	177	177	177	176
30%	176	176	177	178	177	176	176	176	177	176	176	176
40%	176	176	176	178	177	176	176	175	177	176	176	176
50%	176	176	176	178	177	176	175	175	176	176	176	176
60%	176	176	176	177	176	176	175	175	176	176	176	176
70%	176	176	176	177	176	175	175	175	176	176	176	176
80%	176	175	176	177	176	175	175	175	175	176	176	176
90%	175	175	175	176	175	175	175	175	175	176	176	176
Long Term												
Full Simulation Period[a]	176	176	176	178	177	176	176	176	176	176	176	176
Water Year Types[b]												
Wet (32%)	176	176	176	177	176	176	175	175	176	176	176	176
Above Normal (16%)	176	176	177	177	177	176	175	175	177	176	176	176
Below Normal (13%)	176	176	176	177	177	176	176	176	176	176	177	176
Dry (24%)	176	176	176	178	177	176	176	176	177	176	176	176
Critical (15%)	177	176	177	178	177	176	176	176	177	176	176	177

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	**0**	**1**	**1**	**1**	**0**	**0**	-1	-1	-1	-1	0
20%	0	0	**0**	**1**	**0**	**0**	**1**	**0**	-1	-1	-1	0
30%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	0
40%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	0
50%	0	0	**0**	**0**	**0**	**0**	**0**	**0**	0	-1	-1	0
60%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	-1
70%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	0
80%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	**0**	-1	-1	0
90%	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	-1	0
Long Term												
Full Simulation Period[a]	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	0
Water Year Types[b]												
Wet (32%)	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	0
Above Normal (16%)	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	-1
Below Normal (13%)	0	**0**	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	0
Dry (24%)	0	**0**	**0**	**1**	**0**	**0**	**0**	0	-1	-1	0	0
Critical (15%)	-1	**0**	**1**	**0**	**0**	**1**	**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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 1-2. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	177	176	178	179	178	176	176	177	177	177	177	176
20%	176	176	177	179	178	176	176	176	177	177	177	176
30%	176	176	177	178	177	176	176	176	177	176	176	176
40%	176	176	176	178	177	176	176	175	177	176	176	176
50%	176	176	176	178	177	176	175	175	176	176	176	176
60%	176	176	176	177	176	176	175	175	176	176	176	176
70%	176	176	176	177	176	175	175	175	176	176	176	176
80%	176	175	176	177	176	175	175	175	175	176	176	176
90%	175	175	175	176	175	175	175	175	175	176	176	176
Long Term												
Full Simulation Period[a]	176	176	176	178	177	176	176	176	176	176	176	176
Water Year Types[b]												
Wet (32%)	176	176	176	177	176	176	175	175	176	176	176	176
Above Normal (16%)	176	176	177	177	177	176	175	175	177	176	176	176
Below Normal (13%)	176	176	176	177	177	176	176	176	176	176	177	176
Dry (24%)	176	176	176	178	177	176	176	176	177	176	176	176
Critical (15%)	177	176	177	178	177	176	176	176	177	176	176	177

Proposed Action 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

Proposed Action 011519 minus Without Action 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	1	0	0	0	-1	-1	-1	-1	0
20%	0	0	0	1	0	0	1	0	-1	-1	-1	0
30%	0	0	0	1	0	0	0	0	-1	-1	-1	0
40%	0	0	0	0	0	0	0	0	-1	-1	-1	0
50%	0	0	0	0	0	0	0	0	-1	-1	-1	0
60%	0	0	0	1	0	0	0	0	0	-1	-1	0
70%	0	0	0	0	0	0	0	0	0	-1	-1	0
80%	0	0	0	0	0	0	0	0	0	-1	-1	0
90%	0	0	0	0	0	0	0	0	0	0	-1	0
Long Term												
Full Simulation Period[a]	0	0	0	1	0	0	0	0	-1	-1	-1	0
Water Year Types[b]												
Wet (32%)	0	0	0	0	0	0	0	0	0	-1	-1	0
Above Normal (16%)	0	0	0	0	0	0	0	0	-1	-1	-1	0
Below Normal (13%)	0	0	0	1	0	0	0	0	-1	-1	-1	0
Dry (24%)	0	0	0	1	0	0	0	0	-1	-1	-1	0
Critical (15%)	-1	0	1	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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 1-3. Sacramento River downstream of Steamboat Slough Salinity, Monthly EC

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 2-1. Cache Slough at Ryer Island Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	197	188	187	197	196	189	184	184	199	196	193	187
20%	187	186	185	194	194	186	183	183	191	190	190	184
30%	184	183	184	191	190	185	182	182	188	188	189	184
40%	183	182	183	189	188	183	181	180	187	187	187	183
50%	182	181	182	187	186	182	181	180	184	186	187	182
60%	182	181	181	186	185	182	180	179	182	185	186	182
70%	181	180	181	185	184	180	179	179	181	184	185	182
80%	180	180	180	184	182	179	179	178	179	183	184	181
90%	180	180	179	182	180	179	178	178	178	182	183	181
Long Term												
Full Simulation Period[a]	186	183	183	189	188	183	181	182	188	188	188	184
Water Year Types[b]												
Wet (32%)	181	181	182	187	184	181	180	179	180	183	185	181
Above Normal (16%)	182	181	182	189	186	181	179	179	184	186	186	182
Below Normal (13%)	183	183	183	188	188	183	181	181	184	185	188	183
Dry (24%)	188	183	183	190	191	184	181	182	190	190	191	184
Critical (15%)	200	189	186	191	193	188	185	195	210	199	192	197

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	**11**	**4**	**4**	**3**	**5**	**3**	0	-15	-11	-3	**3**
20%	**0**	**2**	**3**	**2**	**1**	**5**	**3**	**0**	-7	-9	-4	**1**
30%	**1**	**2**	**3**	**2**	**1**	**4**	**3**	**1**	-5	-7	-5	0
40%	**2**	**2**	**3**	**2**	**1**	**3**	**3**	**2**	-4	-6	-6	-1
50%	-1	0	**1**	**2**	**1**	**2**	**3**	**2**	-2	-5	-7	-3
60%	-1	-1	**1**	**2**	**1**	**2**	**2**	**2**	0	-5	-6	-3
70%	-1	-1	**0**	**2**	**1**	**2**	**3**	**2**	**1**	-4	-5	-3
80%	-1	-1	**0**	**2**	**1**	**2**	**2**	**2**	**2**	-3	-5	-3
90%	-1	-1	**0**	**1**	**0**	**2**	**2**	**1**	**1**	-3	-3	-3
Long Term												
Full Simulation Period[a]	-2	**2**	**2**	**2**	**1**	**3**	**3**	0	-5	-6	-5	-3
Water Year Types[b]												
Wet (32%)	-2	-1	**0**	**2**	**0**	**2**	**2**	**1**	**1**	-3	-5	-3
Above Normal (16%)	-2	-1	**1**	**2**	**2**	**3**	**3**	**2**	-2	-6	-7	-3
Below Normal (13%)	**2**	**1**	**2**	**3**	**1**	**5**	**3**	**1**	-1	-5	-8	-1
Dry (24%)	-3	**1**	**3**	**3**	**3**	**4**	**3**	**1**	-8	-9	-6	**0**
Critical (15%)	-2	**14**	**7**	**2**	**2**	**4**	**2**	-10	-21	-10	-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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 2-2. Cache Slough at Ryer Island Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	197	188	187	197	196	189	184	184	199	196	193	187
20%	187	186	185	194	194	186	183	183	191	190	190	184
30%	184	183	184	191	190	185	182	182	188	188	189	184
40%	183	182	183	189	188	183	181	180	187	187	187	183
50%	182	181	182	187	186	182	181	180	184	186	187	182
60%	182	181	181	186	185	182	180	179	182	185	186	182
70%	181	180	181	185	184	180	179	179	181	184	185	182
80%	180	180	180	184	182	179	179	178	179	183	184	181
90%	180	180	179	182	180	179	178	178	178	182	183	181
Long Term												
Full Simulation Period[a]	186	183	183	189	188	183	181	182	188	188	188	184
Water Year Types[b]												
Wet (32%)	181	181	182	187	184	181	180	179	180	183	185	181
Above Normal (16%)	182	181	182	189	186	181	179	179	184	186	186	182
Below Normal (13%)	183	183	183	188	188	183	181	181	184	185	188	183
Dry (24%)	188	183	183	190	191	184	181	182	190	190	191	184
Critical (15%)	200	189	186	191	193	188	185	195	210	199	192	197

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Without Action 011519

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

f These are draft results meant for qualitative analysis and are subject to revision.

Table 2-3. Cache Slough at Ryer Island Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 3-1. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	177	177	178	180	178	176	176	177	178	178	177	177
20%	177	176	177	179	178	176	176	176	178	177	177	176
30%	176	176	177	178	177	176	176	176	177	177	177	176
40%	176	176	176	178	177	176	176	176	177	177	177	176
50%	176	176	176	178	177	176	175	175	177	176	177	176
60%	176	176	176	177	176	176	175	175	176	176	177	176
70%	176	176	176	177	176	176	175	175	176	176	177	176
80%	176	175	176	177	176	175	175	175	176	176	176	176
90%	175	175	175	176	175	175	175	175	175	176	176	176
Long Term												
Full Simulation Period[a]	176	176	176	178	177	176	176	176	177	177	177	176
Water Year Types[b]												
Wet (32%)	176	176	176	178	176	176	175	175	176	176	177	176
Above Normal (16%)	176	176	177	178	177	176	175	175	177	177	177	176
Below Normal (13%)	176	176	176	177	177	176	176	176	177	177	177	176
Dry (24%)	177	176	176	178	177	176	176	176	177	177	177	176
Critical (15%)	177	176	177	178	178	176	176	177	177	177	177	177

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	**0**	**1**	**1**	**1**	**0**	**0**	-1	-2	-2	-1	0
20%	-1	0	**0**	**1**	**0**	**1**	**1**	0	-1	-1	-1	0
30%	0	0	**0**	**1**	**0**	**0**	**1**	**0**	-1	-1	-1	0
40%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	0
50%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	-1
60%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	-1
70%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	-1
80%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	**0**	-1	-1	-1
90%	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	0
Long Term												
Full Simulation Period[a]	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	0
Water Year Types[b]												
Wet (32%)	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	-1
Above Normal (16%)	0	0	**0**	**1**	**0**	**0**	**0**	**0**	-1	-1	-1	-1
Below Normal (13%)	0	0	**0**	**1**	**0**	**1**	**1**	**0**	-1	-1	-1	0
Dry (24%)	-1	**0**	**0**	**1**	**0**	**0**	**0**	0	-1	-1	-1	0
Critical (15%)	-1	**0**	**1**	**0**	**0**	**1**	**0**	-1	-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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 3-2. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	177	177	178	180	178	176	176	177	178	178	177	177
20%	177	176	177	179	178	176	176	176	178	177	177	176
30%	176	176	177	178	177	176	176	176	177	177	177	176
40%	176	176	176	178	177	176	176	176	177	177	177	176
50%	176	176	176	178	177	176	175	175	177	176	177	176
60%	176	176	176	177	176	176	175	175	176	176	177	176
70%	176	176	176	177	176	176	175	175	176	176	177	176
80%	176	175	176	177	176	175	175	175	176	176	176	176
90%	175	175	175	176	175	175	175	175	175	176	176	176
Long Term												
Full Simulation Period[a]	176	176	176	178	177	176	176	176	177	177	177	176
Water Year Types[b]												
Wet (32%)	176	176	176	178	176	176	175	175	176	176	177	176
Above Normal (16%)	176	176	177	178	177	176	175	175	177	177	177	176
Below Normal (13%)	176	176	176	177	177	176	176	176	177	177	177	176
Dry (24%)	177	176	176	178	177	176	176	176	177	177	177	176
Critical (15%)	177	176	177	178	178	176	176	177	177	177	177	177

Proposed Action 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

Proposed Action 011519 minus Without Action 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**	**1**	**0**	**0**	**0**	-1	-2	-1	-1	0
20%	-1	0	**0**	**1**	**0**	**0**	**1**	0	-2	-1	-1	0
30%	0	0	**0**	**1**	**0**	**0**	**1**	**0**	-1	-1	-1	0
40%	0	**0**	**0**	**1**	**0**	**0**	**1**	**0**	-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**	**0**	0	-1	-1	0
70%	0	0	**0**	**1**	**0**	**0**	**0**	**0**	0	-1	-1	0
80%	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	0
90%	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	0
Long Term												
Full Simulation Period[a]	0	**0**	**0**	**1**	**0**	**0**	**0**	0	-1	-1	-1	0
Water Year Types[b]												
Wet (32%)	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	-1	-1	0
Above Normal (16%)	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-1	-1	-1	0
Below Normal (13%)	0	**0**	**0**	**1**	**0**	**0**	**0**	0	-1	-1	-1	0
Dry (24%)	-1	**0**	**0**	**1**	**0**	**0**	**0**	0	-1	-1	-1	0
Critical (15%)	-1	**0**	**1**	**0**	**0**	**0**	**0**	-1	-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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 3-3. Sacramento River downstream of Georgiana Slough Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 4-1. Sacramento River at Emmaton Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,506	1,524	528	248	225	218	221	499	2,161	2,570	2,745	2,155
20%	1,523	871	291	225	213	206	201	314	1,276	2,012	2,296	1,776
30%	1,303	517	260	213	209	197	195	222	961	1,549	2,015	1,455
40%	737	375	234	209	201	192	191	202	704	977	1,728	1,186
50%	568	309	207	204	196	189	187	191	404	730	1,563	892
60%	467	275	202	201	193	186	185	188	245	650	1,359	831
70%	397	236	197	195	187	184	183	183	204	543	1,091	618
80%	294	215	192	189	185	181	181	182	189	370	717	469
90%	256	204	186	183	182	179	179	178	182	245	551	336
Long Term												
Full Simulation Period[a]	1,012	561	298	226	211	200	224	361	834	1,167	1,578	1,203
Water Year Types[b]												
Wet (32%)	358	252	211	193	185	183	182	182	218	381	743	469
Above Normal (16%)	557	319	222	198	192	184	184	187	377	629	1,311	785
Below Normal (13%)	747	579	355	208	203	197	198	249	610	885	1,752	1,146
Dry (24%)	1,275	578	341	222	210	197	197	293	1,122	1,829	2,314	1,566
Critical (15%)	2,727	1,447	446	350	298	266	428	1,155	2,385	2,606	2,288	2,689

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**1,757**	**2,825**	**2,267**	**789**	**104**	**91**	**143**	**86**	-1,278	-927	**10**	**1,405**
20%	**1,954**	**2,051**	**1,476**	**546**	**45**	**27**	**44**	**115**	-573	-965	-6	**1,237**
30%	**1,993**	**2,231**	**736**	**329**	**20**	**2**	**23**	**141**	-309	-648	**138**	**1,476**
40%	**2,416**	**1,608**	**559**	**178**	**5**	**2**	**13**	**43**	-145	-346	-402	**1,345**
50%	**1,129**	**211**	**375**	**105**	0	**1**	**10**	**24**	**61**	-250	-511	**972**
60%	**188**	**184**	**302**	**21**	-2	**2**	**6**	**18**	**131**	-287	-375	-289
70%	-86	**21**	**70**	-1	-2	-1	**5**	**13**	**97**	-209	-186	-271
80%	-12	**24**	**16**	-2	-1	**1**	**3**	**3**	**46**	-57	**80**	-141
90%	**14**	**24**	-4	-1	0	**2**	**2**	**2**	**6**	**38**	**185**	-26
Long Term												
Full Simulation Period[a]	**981**	**1,005**	**694**	**266**	**45**	**22**	**17**	-20	-237	-395	-76	**529**
Water Year Types[b]												
Wet (32%)	-79	-17	**186**	**23**	-1	**1**	**4**	**11**	**60**	-76	**97**	-154
Above Normal (16%)	**63**	**151**	**411**	**87**	**3**	**0**	**7**	**21**	**20**	-276	-470	-241
Below Normal (13%)	**2,018**	**1,473**	**992**	**289**	**45**	**27**	**40**	**43**	-64	-363	-630	**1,124**
Dry (24%)	**1,976**	**1,587**	**913**	**425**	**87**	**27**	**38**	**44**	-511	-833	-189	**1,338**
Critical (15%)	**1,660**	**2,745**	**1,462**	**702**	**123**	**80**	-2	-298	-863	-513	**674**	**947**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 4-2. Sacramento River at Emmaton Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,506	1,524	528	248	225	218	221	499	2,161	2,570	2,745	2,155
20%	1,523	871	291	225	213	206	201	314	1,276	2,012	2,296	1,776
30%	1,303	517	260	213	209	197	195	222	961	1,549	2,015	1,455
40%	737	375	234	209	201	192	191	202	704	977	1,728	1,186
50%	568	309	207	204	196	189	187	191	404	730	1,563	892
60%	467	275	202	201	193	186	185	188	245	650	1,359	831
70%	397	236	197	195	187	184	183	183	204	543	1,091	618
80%	294	215	192	189	185	181	181	182	189	370	717	469
90%	256	204	186	183	182	179	179	178	182	245	551	336
Long Term												
Full Simulation Period[a]	1,012	561	298	226	211	200	224	361	834	1,167	1,578	1,203
Water Year Types[b]												
Wet (32%)	358	252	211	193	185	183	182	182	218	381	743	469
Above Normal (16%)	557	319	222	198	192	184	184	187	377	629	1,311	785
Below Normal (13%)	747	579	355	208	203	197	198	249	610	885	1,752	1,146
Dry (24%)	1,275	578	341	222	210	197	197	293	1,122	1,829	2,314	1,566
Critical (15%)	2,727	1,447	446	350	298	266	428	1,155	2,385	2,606	2,288	2,689

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**1,784**	**2,829**	**2,279**	**910**	**144**	**107**	**191**	**101**	-1,315	-968	**142**	**1,425**
20%	**1,984**	**2,221**	**2,119**	**595**	**48**	**34**	**81**	**129**	-607	-889	**34**	**1,286**
30%	**1,993**	**2,299**	**1,375**	**345**	**23**	**2**	**34**	**147**	-331	-510	**131**	**1,507**
40%	**2,365**	**2,213**	**859**	**146**	**5**	**1**	**15**	**64**	-186	-395	-526	**1,334**
50%	**2,027**	**2,040**	**690**	**94**	-2	**0**	**8**	**50**	**40**	-245	-535	**964**
60%	**1,898**	**1,770**	**461**	**20**	-5	**0**	**3**	**26**	**127**	-282	-406	**880**
70%	**1,666**	**1,007**	**104**	-2	-3	-1	**2**	**11**	**86**	-198	-191	**1,000**
80%	**1,426**	**686**	**44**	-2	-2	**1**	**1**	-1	**46**	-64	**105**	**1,094**
90%	**659**	**239**	-1	-1	0	**2**	**1**	**1**	**5**	**38**	**186**	**1,004**
Long Term												
Full Simulation Period[a]	**1,591**	**1,618**	**897**	**286**	**52**	**28**	**25**	-3	-254	-376	-71	**1,030**
Water Year Types[b]												
Wet (32%)	**1,116**	**1,075**	**592**	**14**	-2	**1**	**4**	**16**	**52**	-73	**78**	**912**
Above Normal (16%)	**1,512**	**1,605**	**874**	**109**	**1**	**0**	**7**	**25**	-5	-276	-460	**838**
Below Normal (13%)	**1,913**	**1,563**	**981**	**332**	**59**	**37**	**46**	**74**	-73	-370	-696	**989**
Dry (24%)	**2,032**	**1,671**	**921**	**484**	**97**	**30**	**50**	**57**	-539	-804	-163	**1,367**
Critical (15%)	**1,673**	**2,772**	**1,467**	**698**	**142**	**105**	**28**	-246	-880	-431	**750**	**971**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 4-3. Sacramento River at Emmaton Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

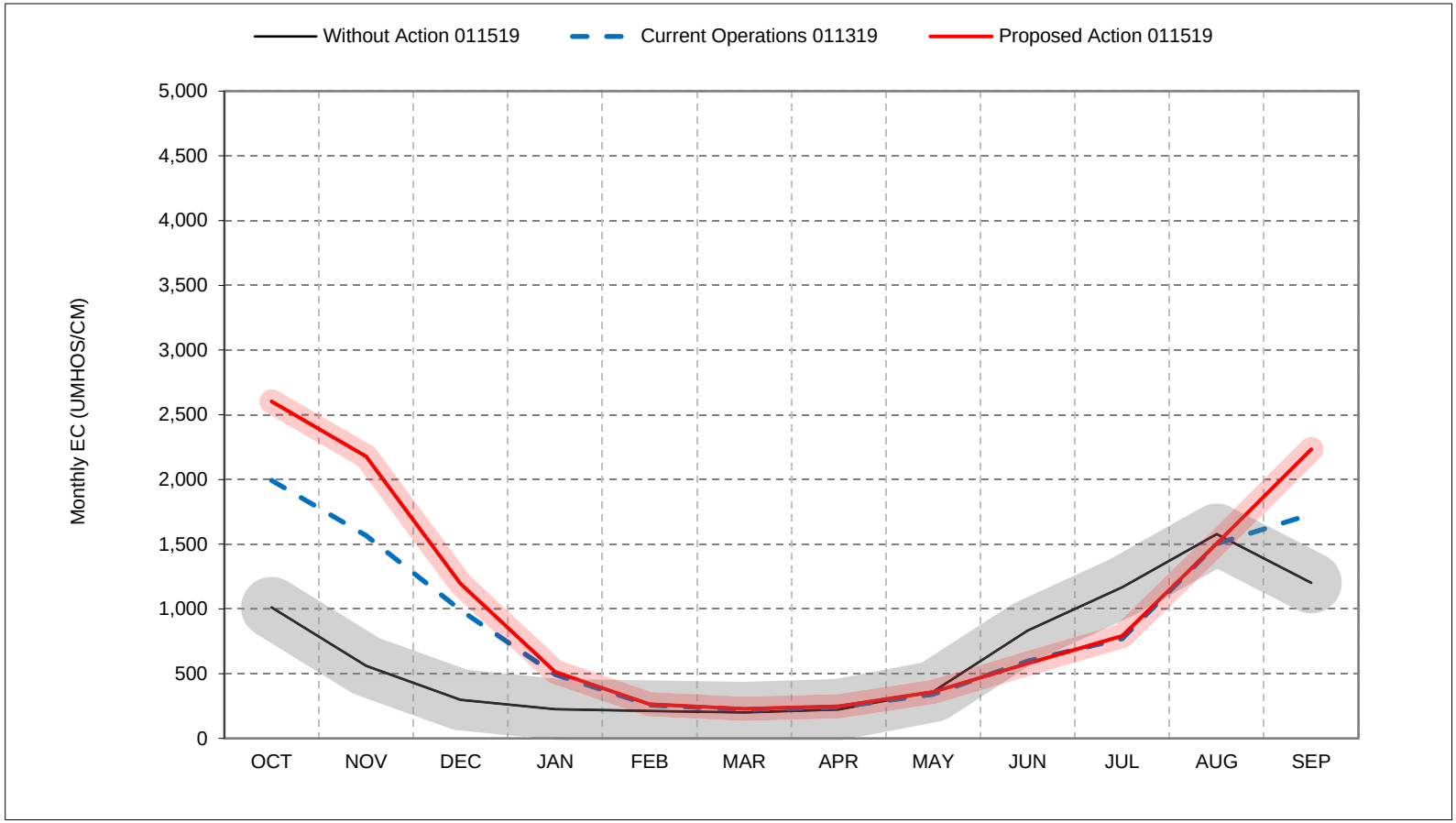
c These results are displayed with calendar year - year type sorting.

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.

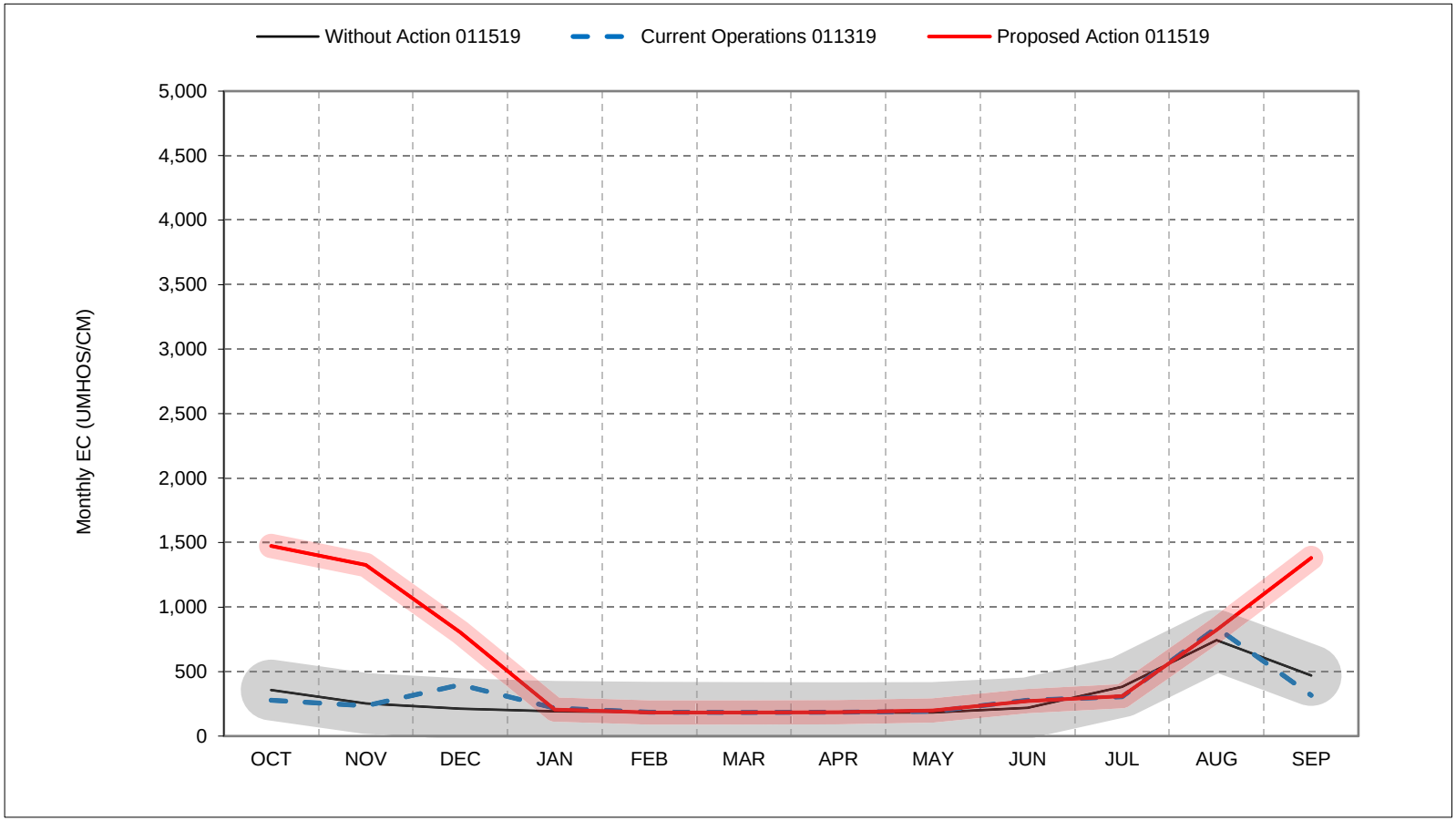
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-1. Sacramento River at Emmaton Salinity, Long-Term Average EC



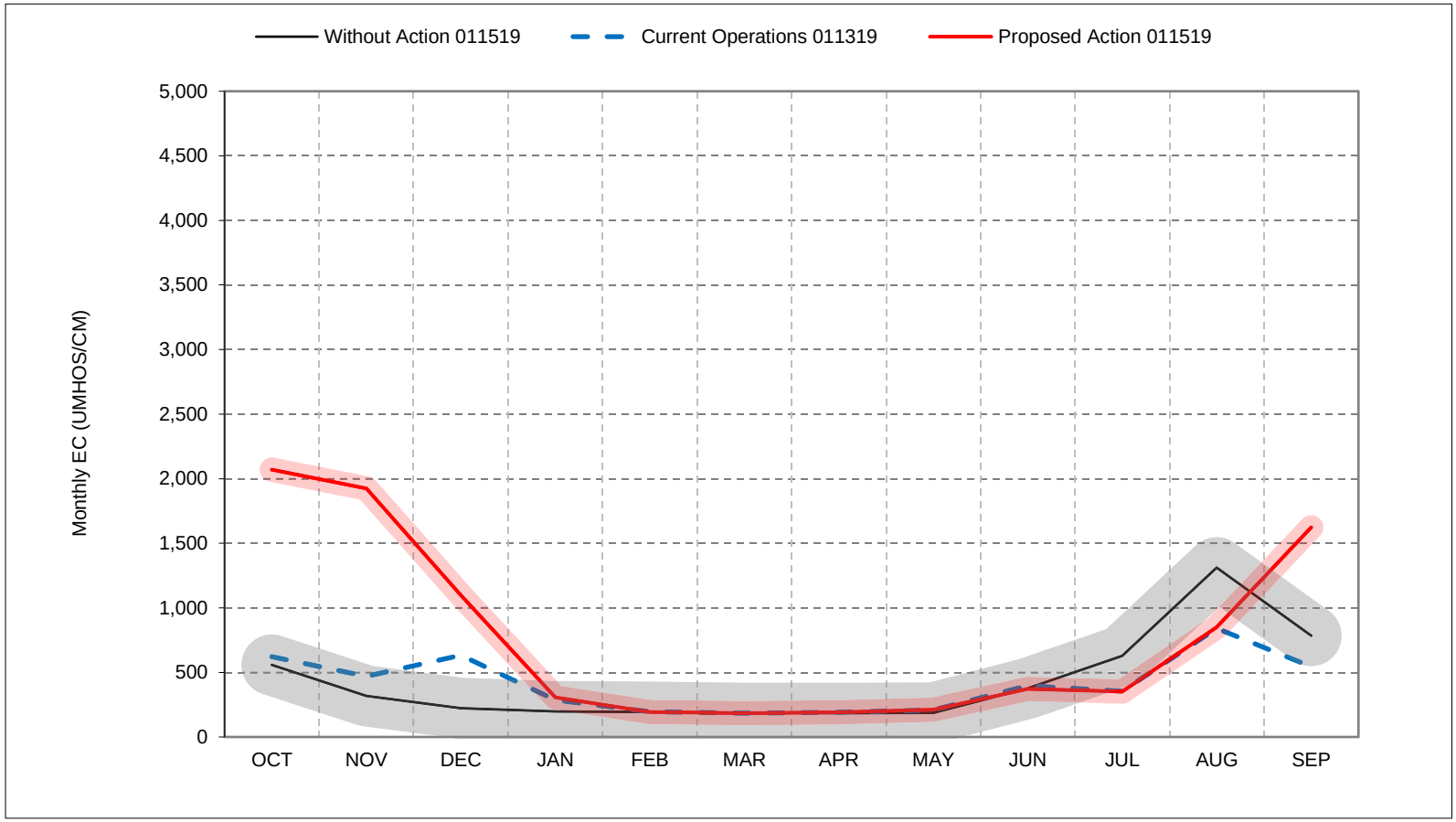
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-2. Sacramento River at Emmaton Salinity, Wet Year Average EC



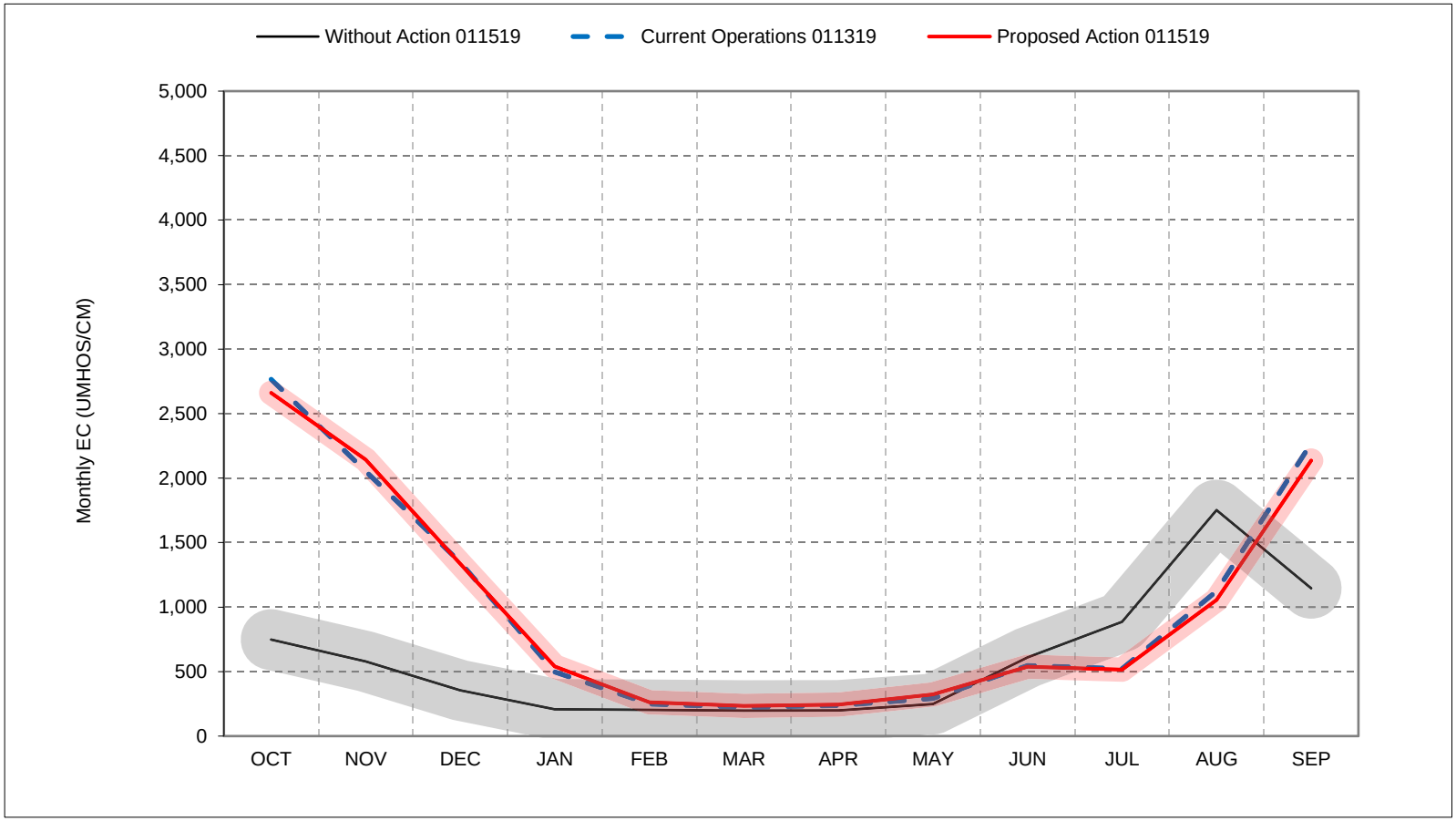
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-3. Sacramento River at Emmaton Salinity, Above Normal Year Average EC



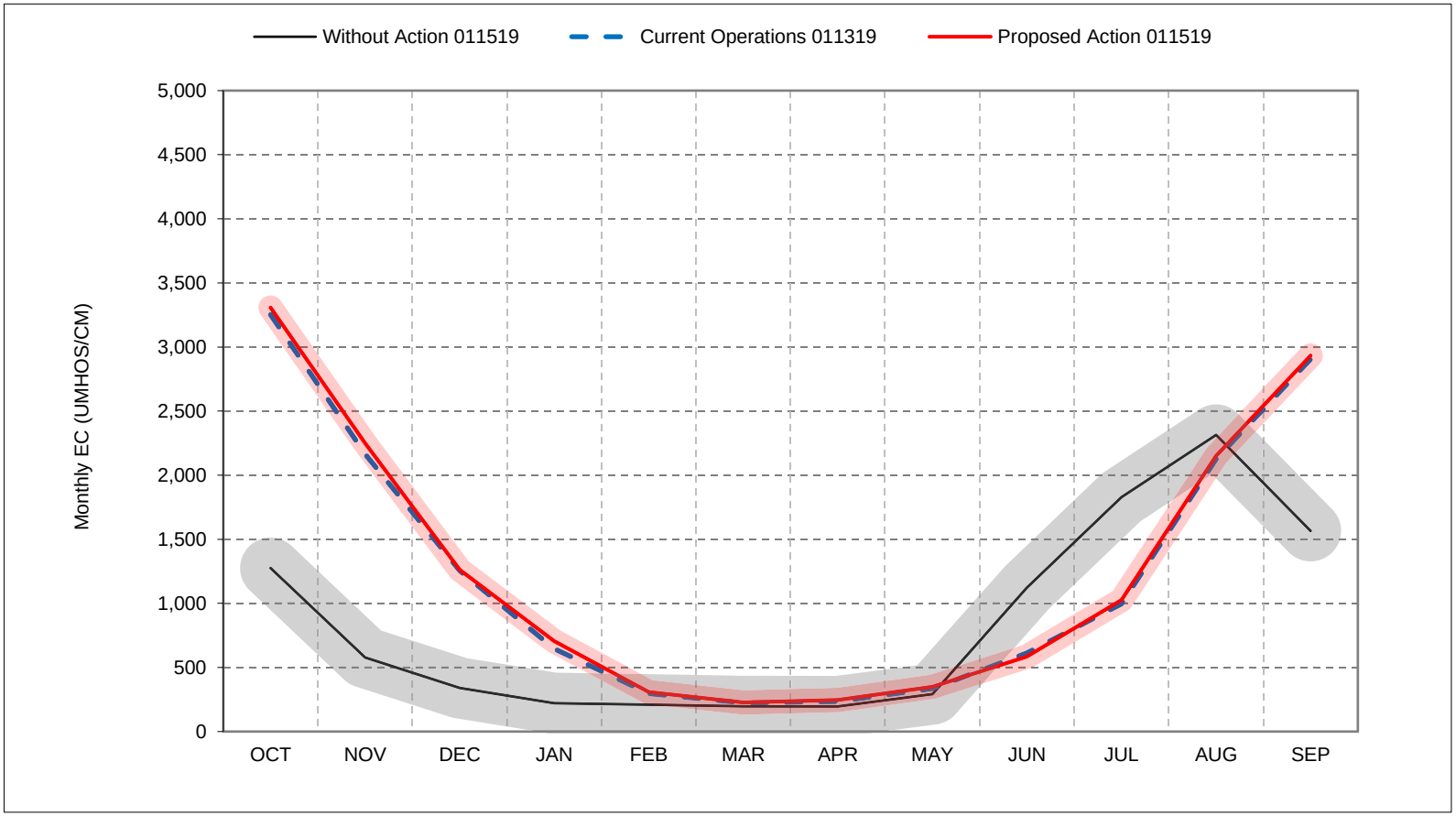
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-4. Sacramento River at Emmaton Salinity, Below Normal Year Average EC



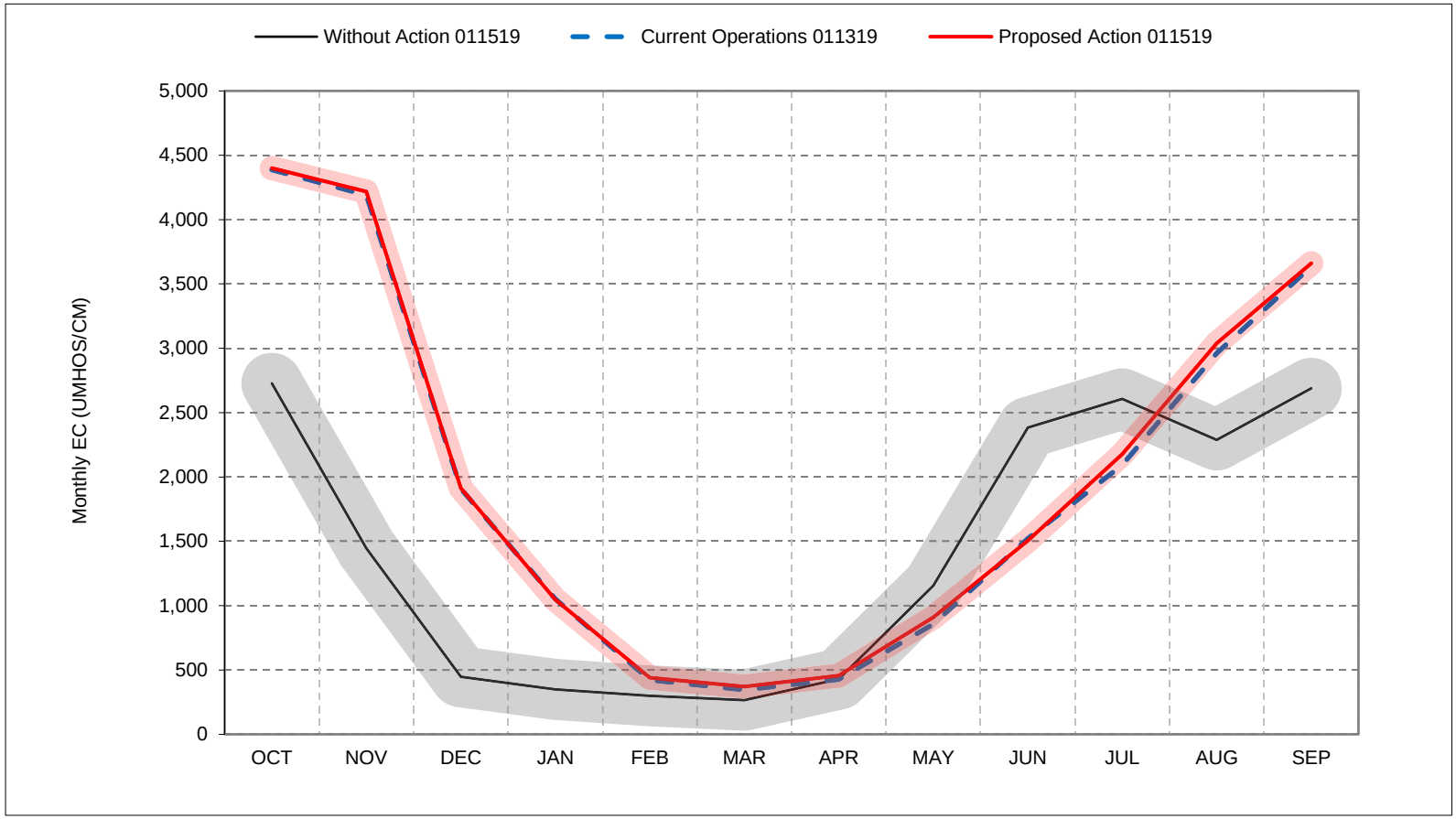
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-5. Sacramento River at Emmaton Salinity, Dry Year Average EC



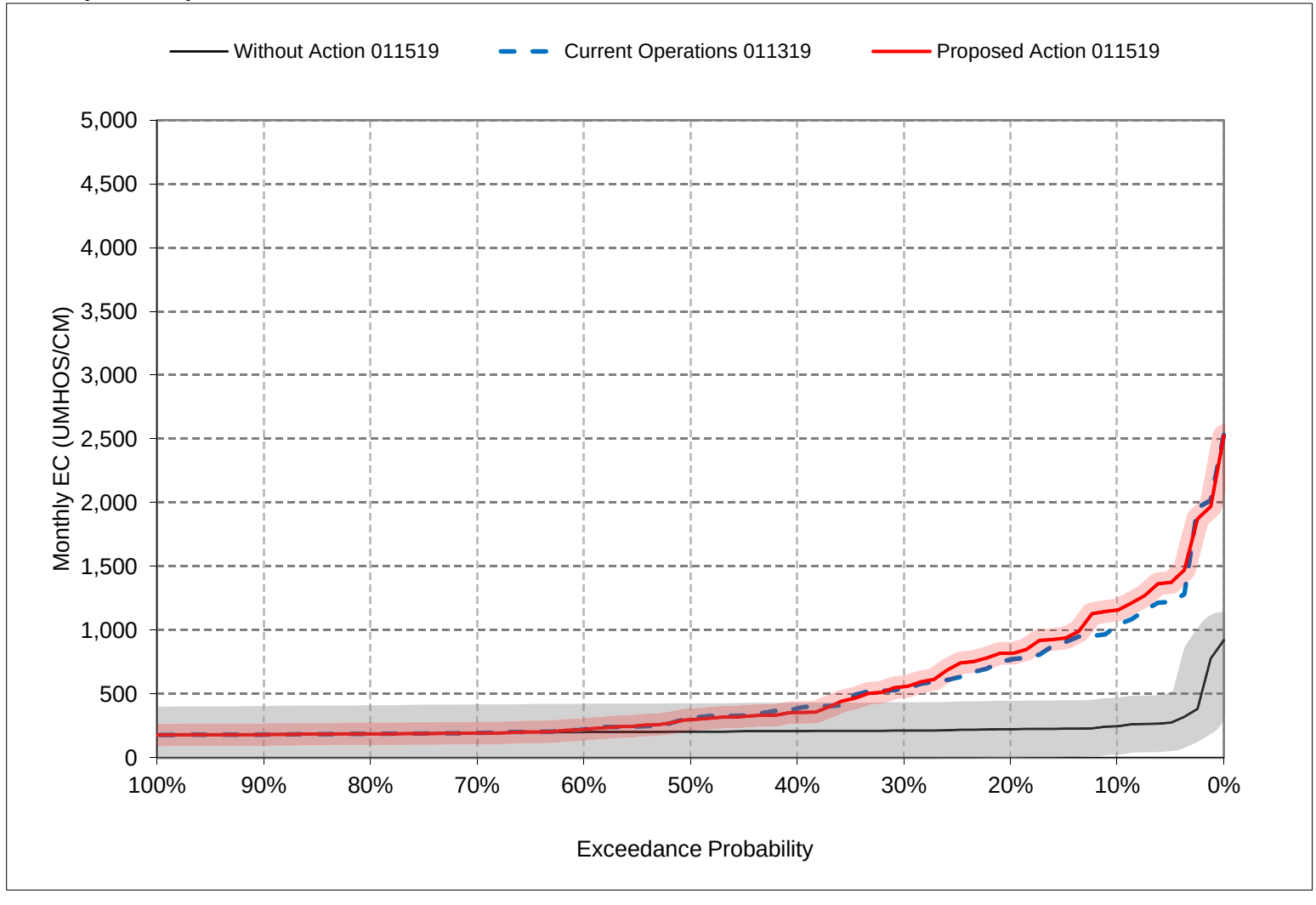
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-6. Sacramento River at Emmaton Salinity, Critical Year Average EC



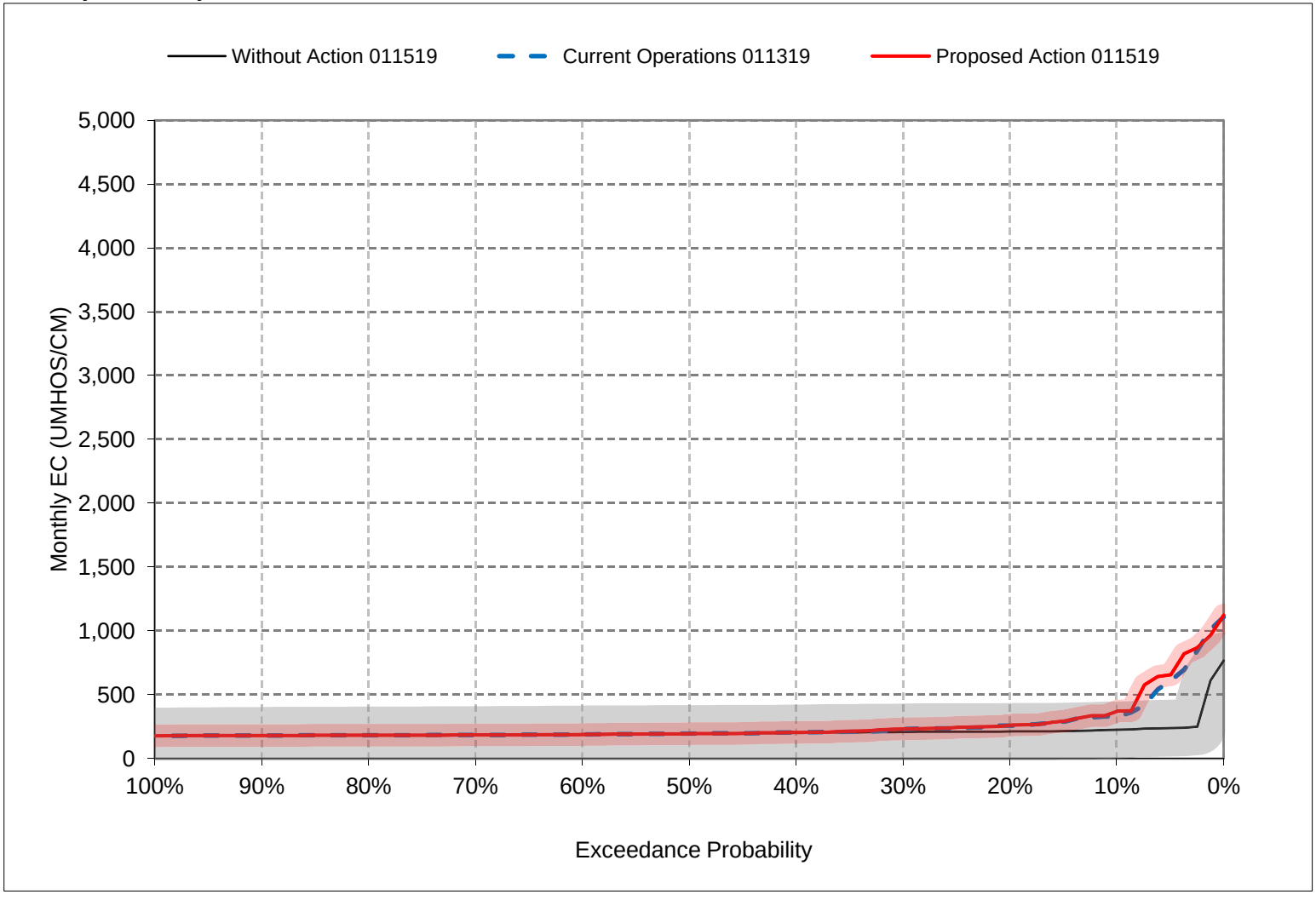
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-7. Sacramento River at Emmaton
Salinity, January EC



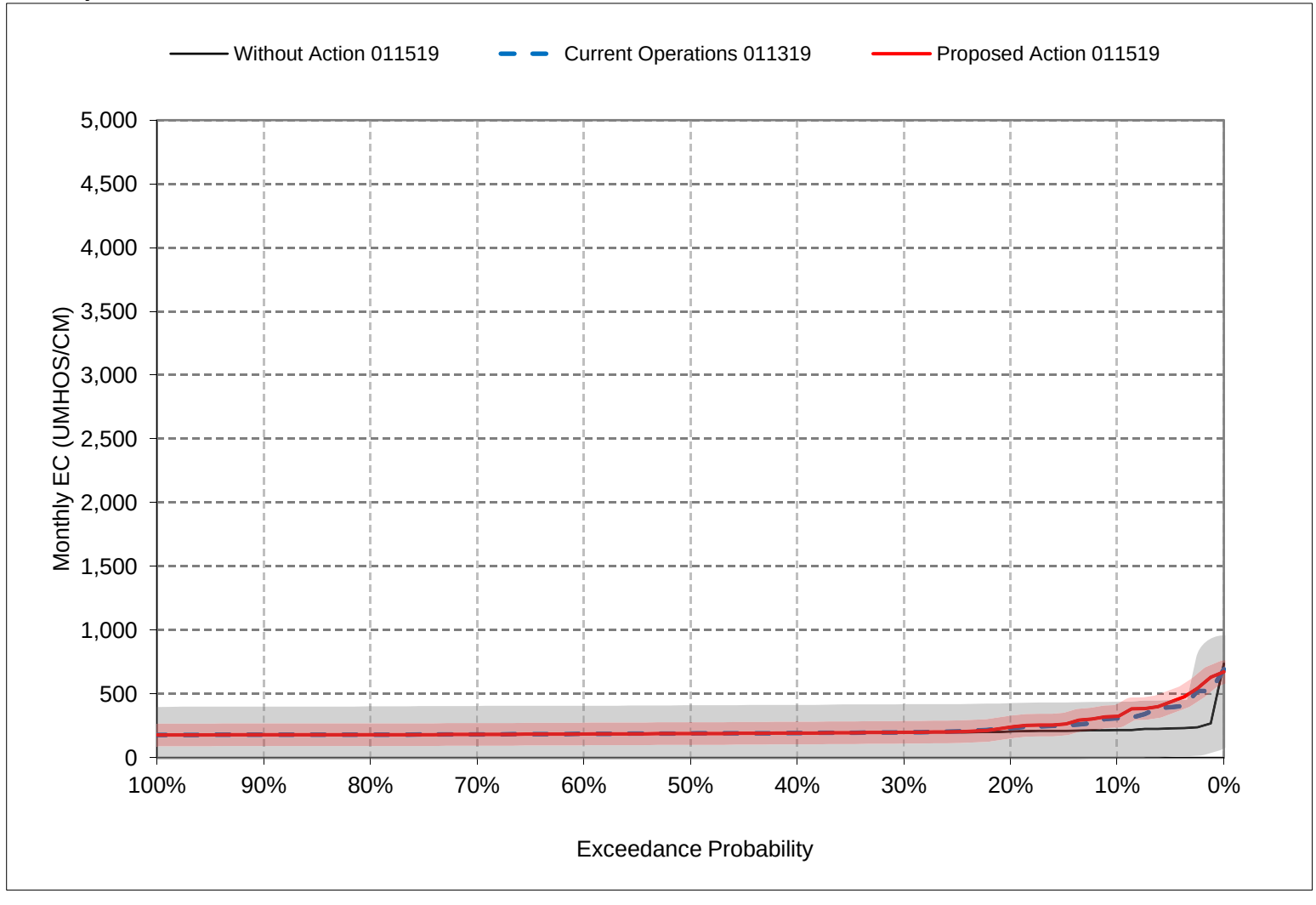
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 4-8. Sacramento River at Emmaton
Salinity, February EC



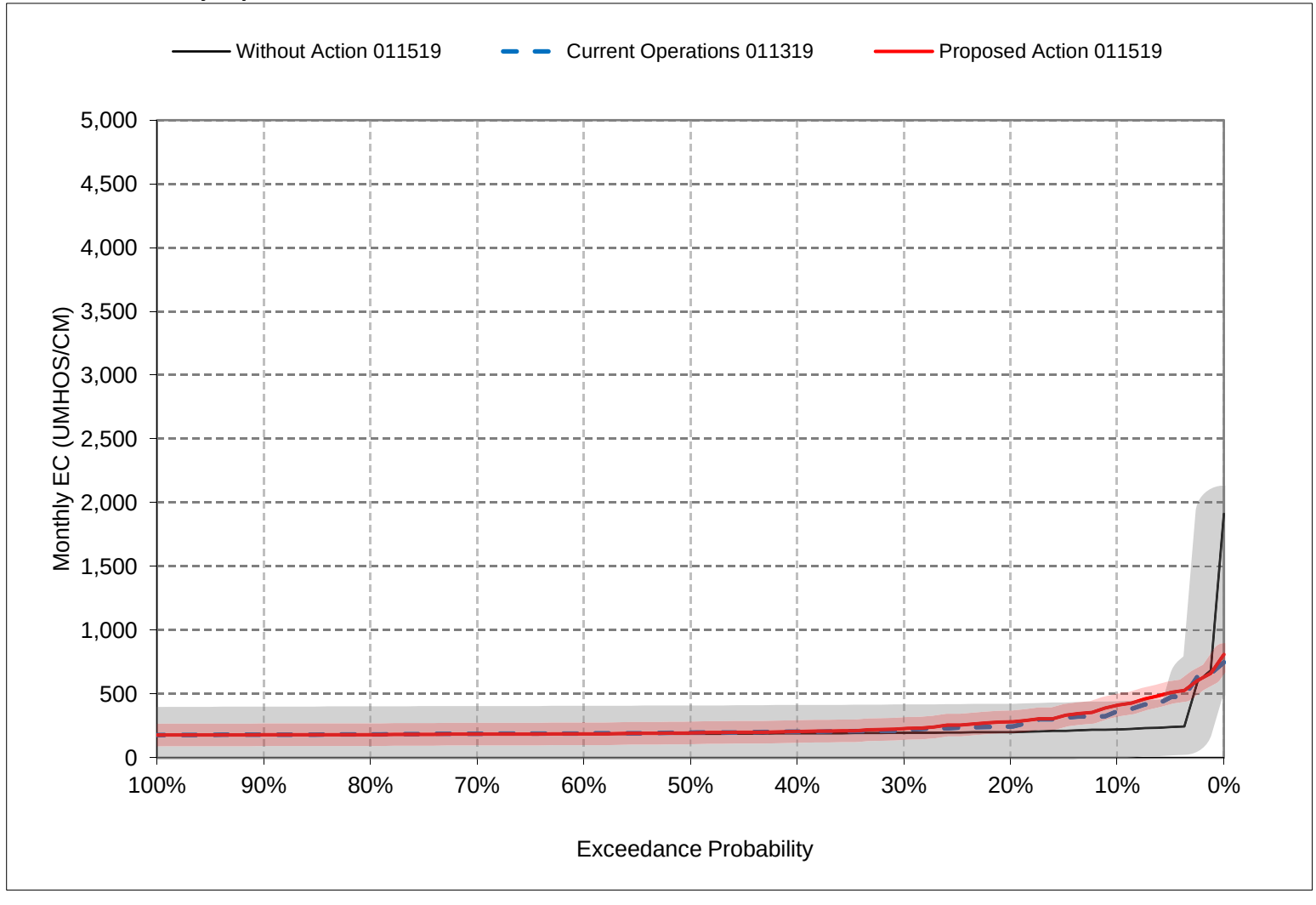
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

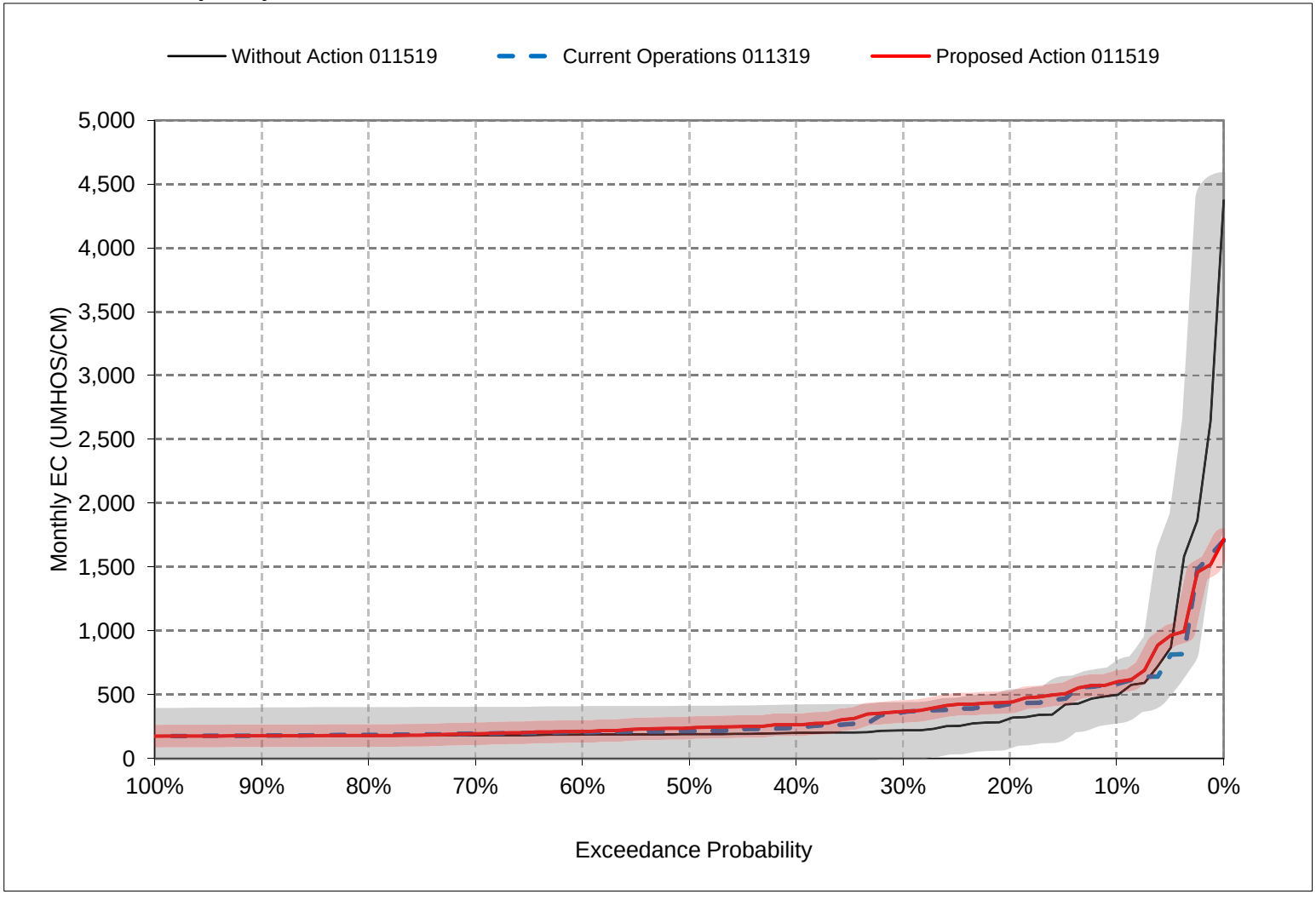
Figure 4-10. Sacramento River at Emmaton Salinity, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

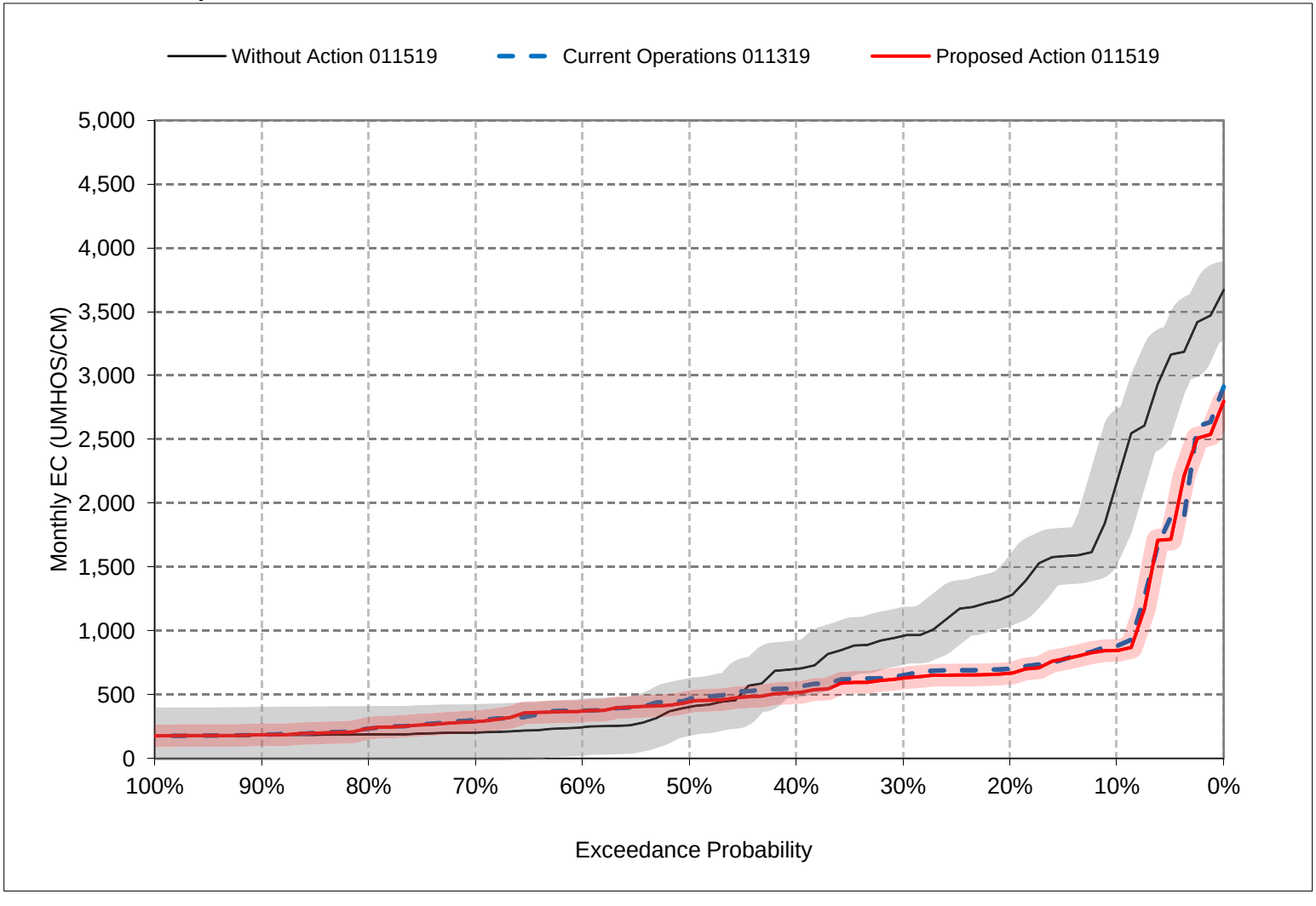
Figure 4-11. Sacramento River at Emmaton Salinity, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

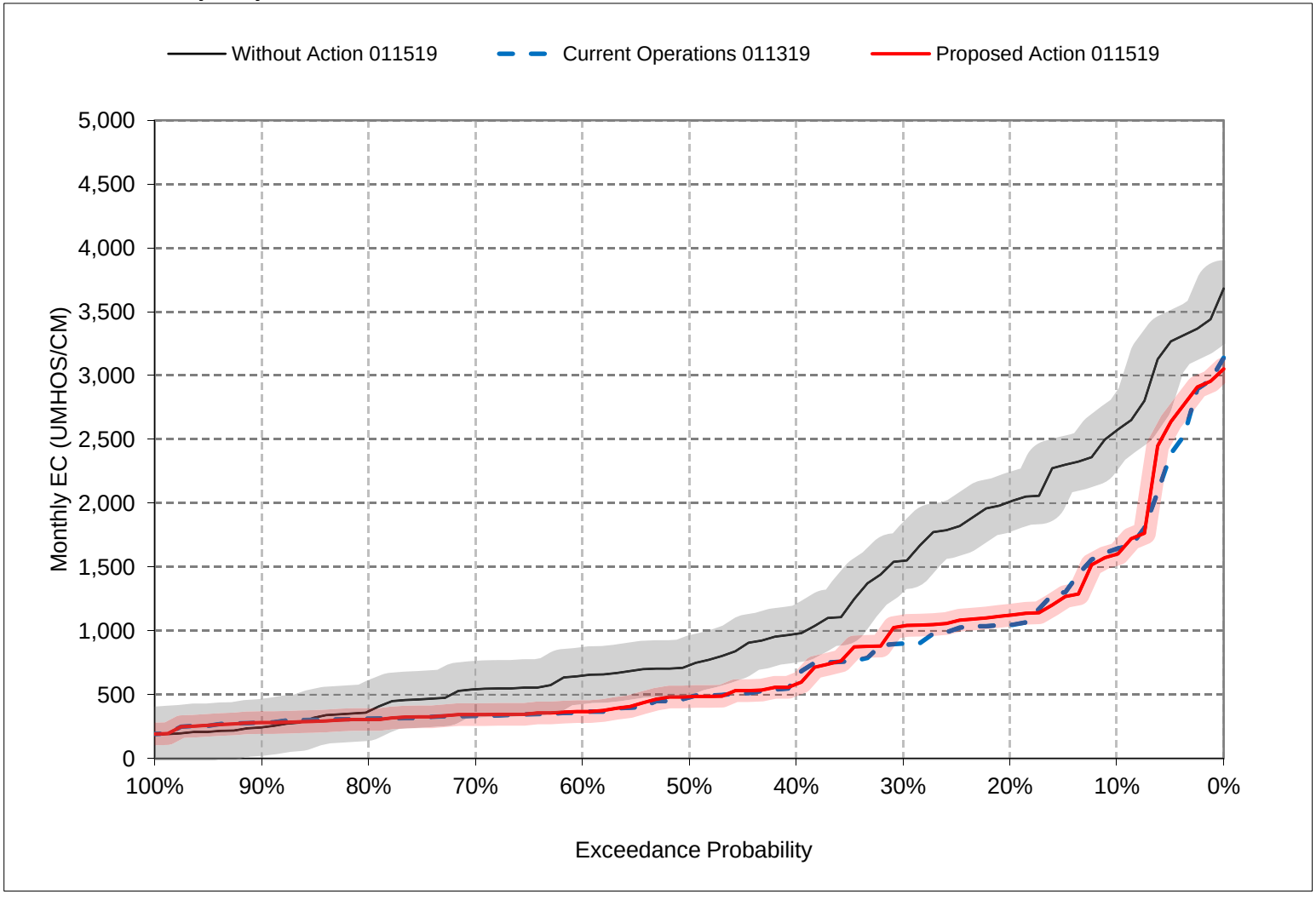
Figure 4-12. Sacramento River at Emmaton Salinity, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

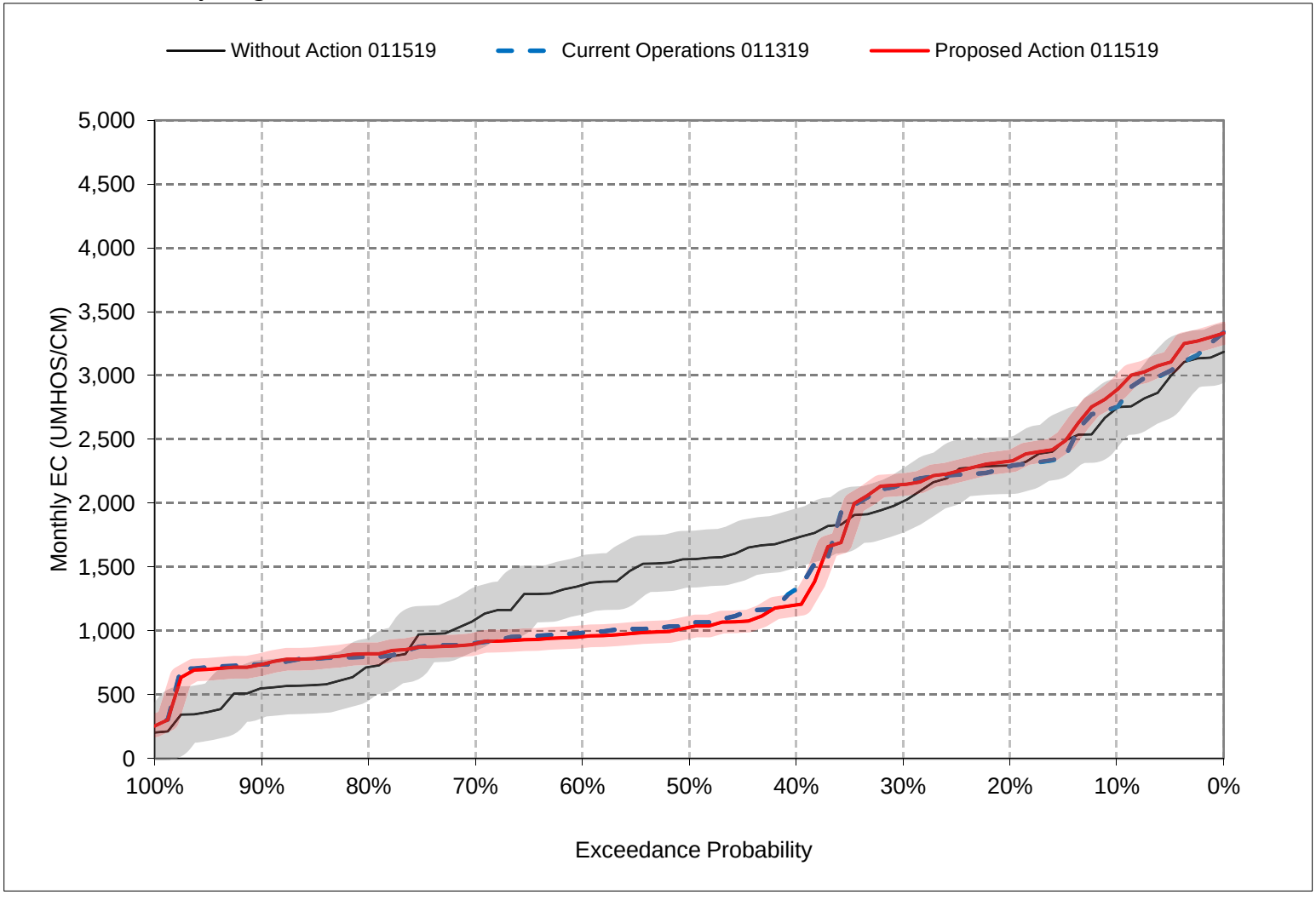
Figure 4-13. Sacramento River at Emmaton Salinity, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

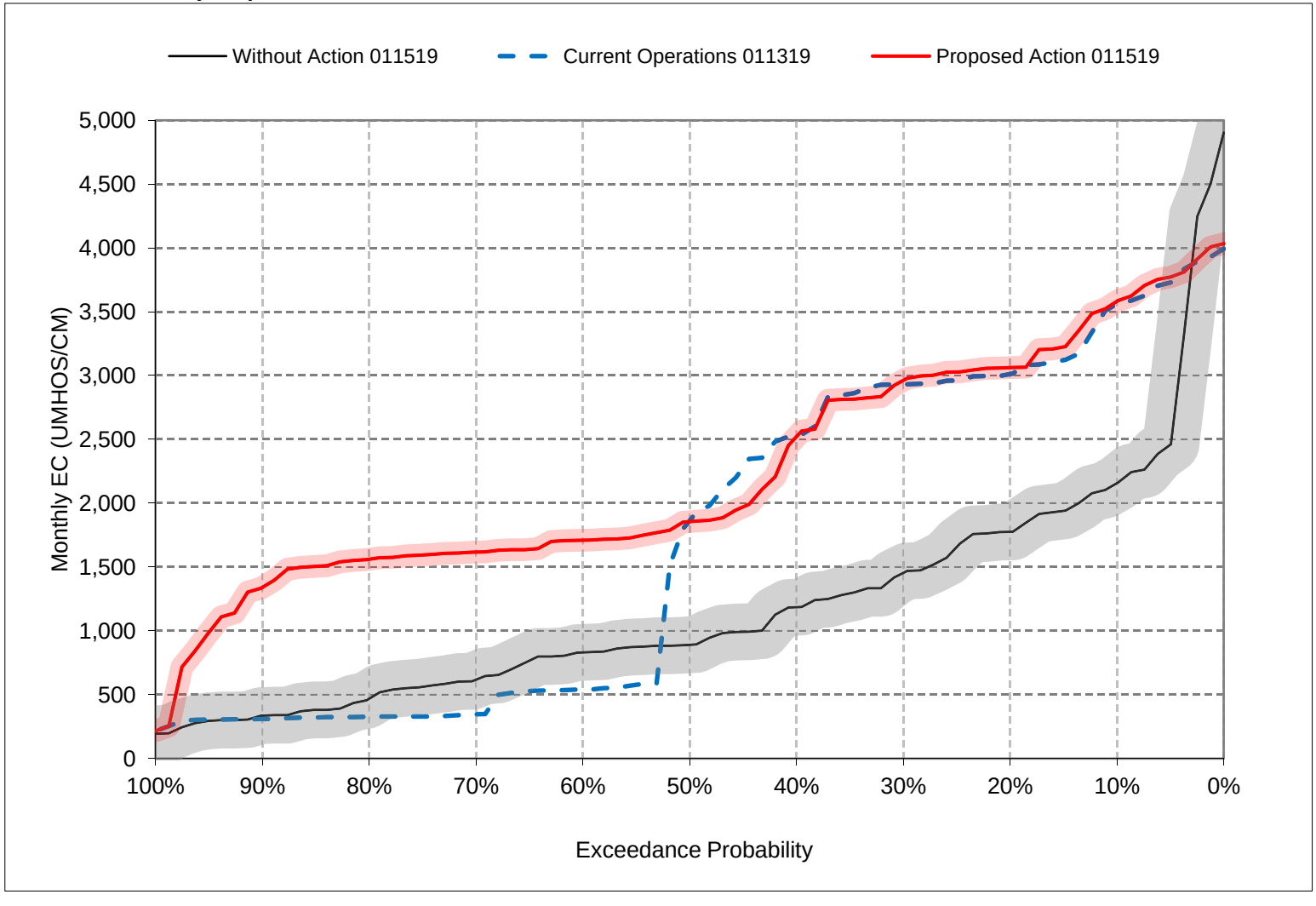
Figure 4-14. Sacramento River at Emmaton Salinity, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

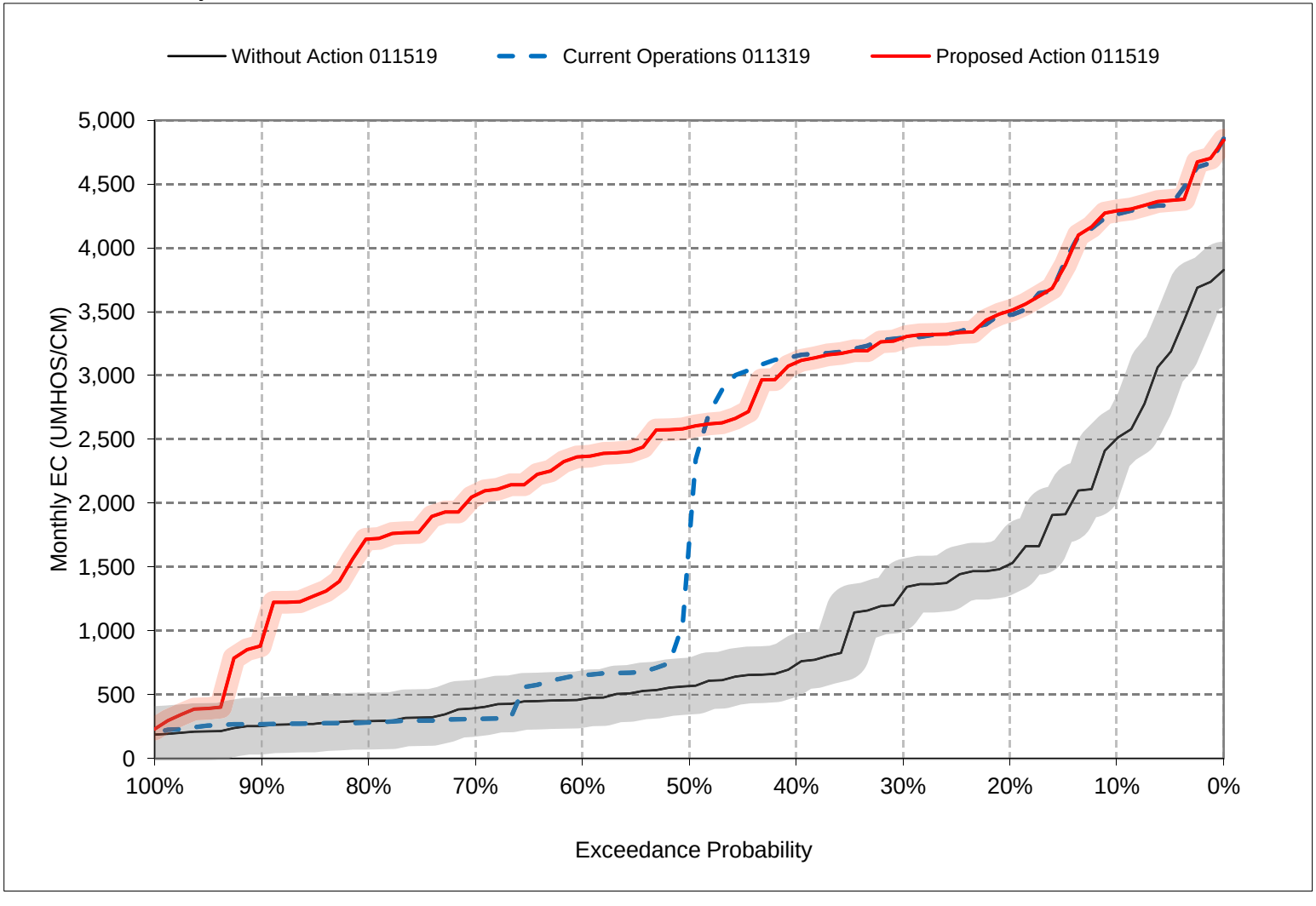
Figure 4-15. Sacramento River at Emmaton Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

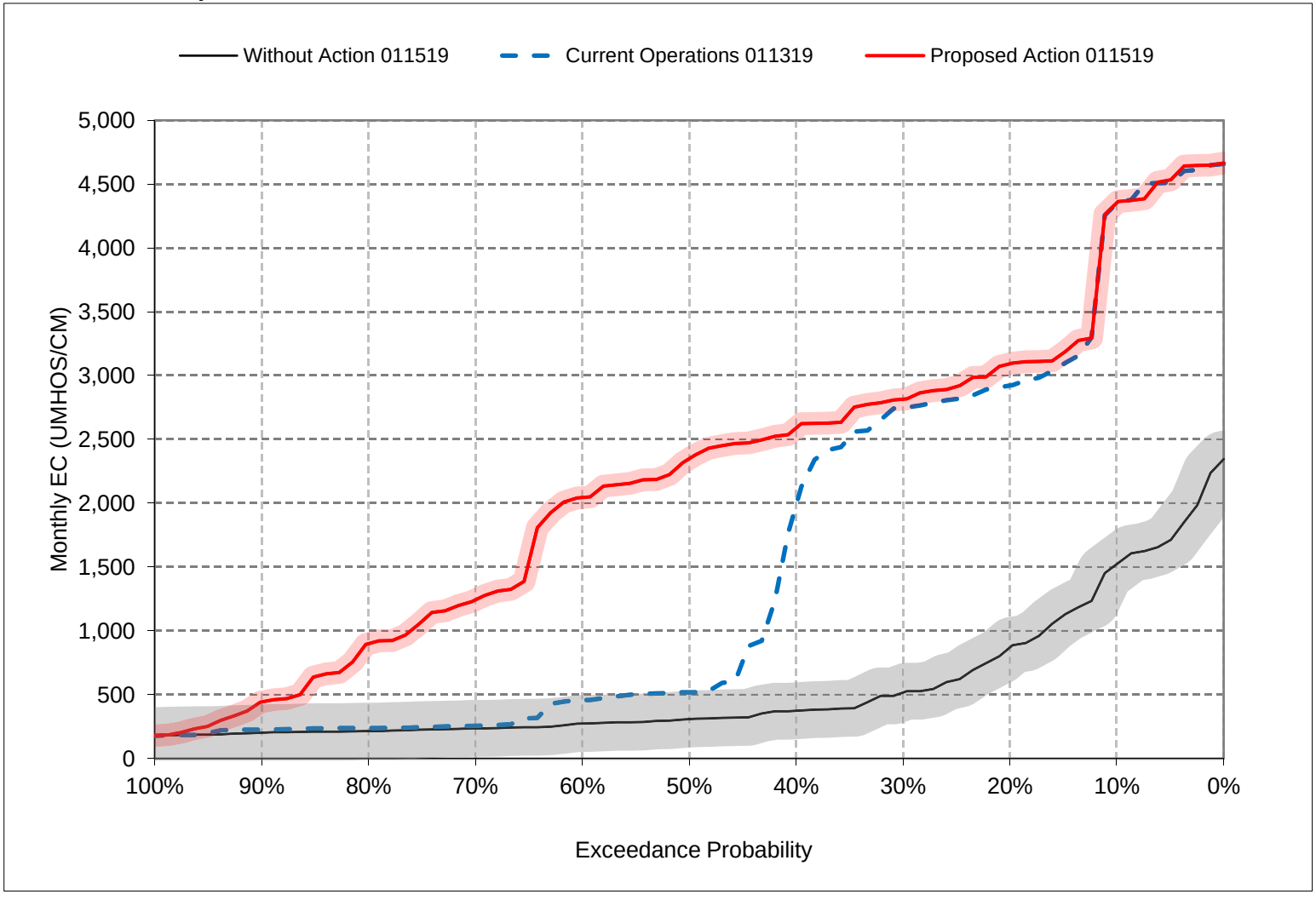
Figure 4-16. Sacramento River at Emmaton Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

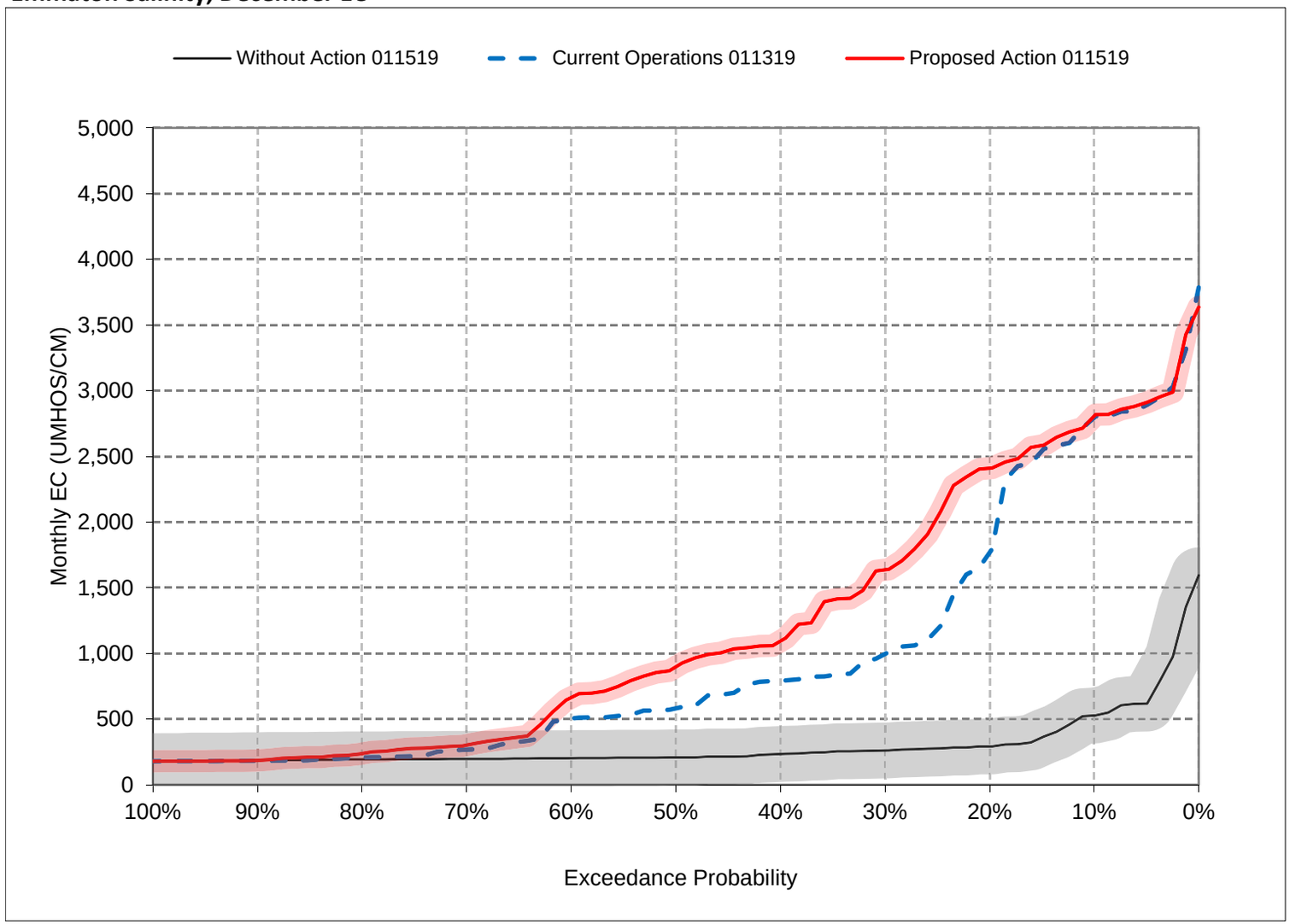
Figure 4-17. Sacramento River at Emmaton Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 5-1. Sacramento River at Rio Vista Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	437	293	207	199	194	189	187	210	418	409	437	349
20%	288	225	193	194	192	185	184	192	290	339	369	298
30%	257	201	189	192	189	183	181	185	259	293	337	265
40%	214	194	187	190	187	181	180	182	227	243	310	237
50%	203	190	185	188	185	181	179	180	202	226	287	219
60%	197	188	183	186	183	180	179	179	190	221	271	213
70%	193	186	183	185	182	179	178	178	184	209	244	201
80%	188	184	181	184	180	178	177	177	179	202	215	192
90%	185	182	179	181	179	178	177	177	178	194	207	188
Long Term												
Full Simulation Period[a]	260	213	191	190	187	182	183	202	257	276	306	263
Water Year Types[b]												
Wet (32%)	191	186	184	185	182	180	178	178	183	201	221	194
Above Normal (16%)	204	190	185	186	184	179	178	179	205	218	265	211
Below Normal (13%)	218	210	193	188	186	183	182	187	215	232	312	238
Dry (24%)	282	210	193	192	189	182	181	192	279	329	383	279
Critical (15%)	475	300	205	201	198	192	204	311	473	455	401	464

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**203**	**370**	**219**	**51**	**7**	**5**	**5**	-8	-195	-116	**1**	**160**
20%	**212**	**193**	**125**	**34**	**4**	**4**	**6**	**0**	-80	-99	**1**	**136**
30%	**207**	**183**	**51**	**23**	**4**	**5**	**6**	**4**	-55	-72	**10**	**146**
40%	**221**	**121**	**36**	**13**	**3**	**3**	**5**	**5**	-27	-39	-45	**145**
50%	**94**	**9**	**20**	**10**	**1**	**2**	**4**	**6**	-9	-33	-48	**98**
60%	**3**	**3**	**14**	**10**	**1**	**2**	**3**	**4**	0	-34	-39	-13
70%	-6	-4	**5**	**4**	**1**	**1**	**2**	**4**	**3**	-24	-18	-13
80%	-3	-3	**2**	**1**	**1**	**1**	**2**	**2**	**4**	-18	**4**	-10
90%	-2	-2	**0**	-1	**1**	**1**	**1**	**1**	**2**	-10	**8**	-7
Long Term												
Full Simulation Period[a]	**93**	**98**	**62**	**21**	**4**	**3**	**2**	-11	-47	-54	-16	**55**
Water Year Types[b]												
Wet (32%)	-7	-5	**10**	**3**	**0**	**1**	**2**	**2**	**2**	-16	-2	-12
Above Normal (16%)	-5	**3**	**28**	**8**	**2**	**2**	**4**	**4**	-13	-32	-43	-11
Below Normal (13%)	**189**	**120**	**91**	**21**	**3**	**5**	**5**	**1**	-16	-34	-68	**120**
Dry (24%)	**176**	**135**	**89**	**31**	**7**	**4**	**4**	-3	-76	-97	-33	**139**
Critical (15%)	**190**	**341**	**142**	**56**	**8**	**5**	-8	-85	-168	-102	**57**	**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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 5-2. Sacramento River at Rio Vista Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	437	293	207	199	194	189	187	210	418	409	437	349
20%	288	225	193	194	192	185	184	192	290	339	369	298
30%	257	201	189	192	189	183	181	185	259	293	337	265
40%	214	194	187	190	187	181	180	182	227	243	310	237
50%	203	190	185	188	185	181	179	180	202	226	287	219
60%	197	188	183	186	183	180	179	179	190	221	271	213
70%	193	186	183	185	182	179	178	178	184	209	244	201
80%	188	184	181	184	180	178	177	177	179	202	215	192
90%	185	182	179	181	179	178	177	177	178	194	207	188
Long Term Full Simulation Period[a]	260	213	191	190	187	182	183	202	257	276	306	263
Water Year Types[b]												
Wet (32%)	191	186	184	185	182	180	178	178	183	201	221	194
Above Normal (16%)	204	190	185	186	184	179	178	179	205	218	265	211
Below Normal (13%)	218	210	193	188	186	183	182	187	215	232	312	238
Dry (24%)	282	210	193	192	189	182	181	192	279	329	383	279
Critical (15%)	475	300	205	201	198	192	204	311	473	455	401	464

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**206**	**352**	**215**	**65**	**6**	**6**	**5**	-9	-200	-117	**22**	**161**
20%	**211**	**201**	**193**	**40**	**4**	**4**	**5**	0	-86	-95	**10**	**143**
30%	**199**	**206**	**112**	**28**	**5**	**5**	**5**	**3**	-58	-61	**8**	**152**
40%	**224**	**193**	**71**	**12**	**2**	**3**	**4**	**2**	-32	-41	-55	**148**
50%	**179**	**162**	**52**	**10**	**1**	**2**	**4**	**3**	-12	-30	-50	**94**
60%	**154**	**148**	**35**	**6**	**0**	**2**	**2**	**3**	-3	-34	-41	**83**
70%	**134**	**70**	**7**	**3**	**0**	**1**	**2**	**2**	**1**	-23	-20	**91**
80%	**103**	**39**	**3**	**0**	**1**	**1**	**1**	**1**	**3**	-17	**5**	**94**
90%	**40**	**10**	0	-1	**1**	**1**	**1**	**1**	**1**	-11	**10**	**75**
Long Term Full Simulation Period[a]	**144**	**152**	**82**	**22**	**4**	**3**	**1**	-12	-51	-51	-15	**98**
Water Year Types[b]												
Wet (32%)	**87**	**86**	**50**	**2**	**0**	**1**	**2**	**1**	**1**	-16	-3	**75**
Above Normal (16%)	**127**	**132**	**75**	**9**	**1**	**2**	**3**	**2**	-17	-32	-42	**83**
Below Normal (13%)	**179**	**133**	**87**	**25**	**4**	**5**	**3**	-1	-19	-34	-71	**110**
Dry (24%)	**182**	**146**	**88**	**37**	**7**	**4**	**4**	-4	-80	-95	-33	**144**
Critical (15%)	**194**	**345**	**143**	**55**	**8**	**5**	-7	-82	-179	-90	**69**	**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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 5-3. Sacramento River at Rio Vista Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

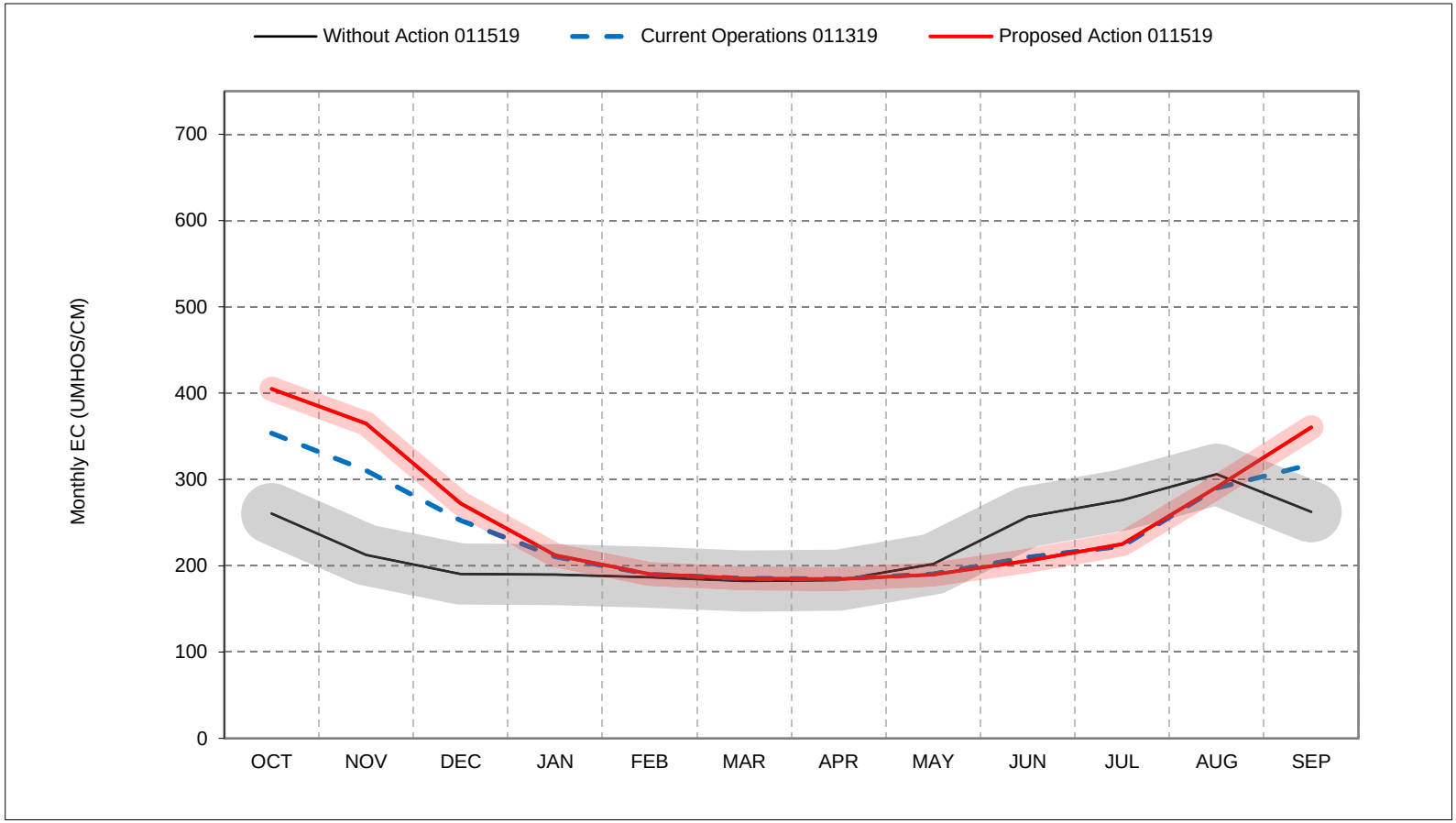
c These results are displayed with calendar year - year type sorting.

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.

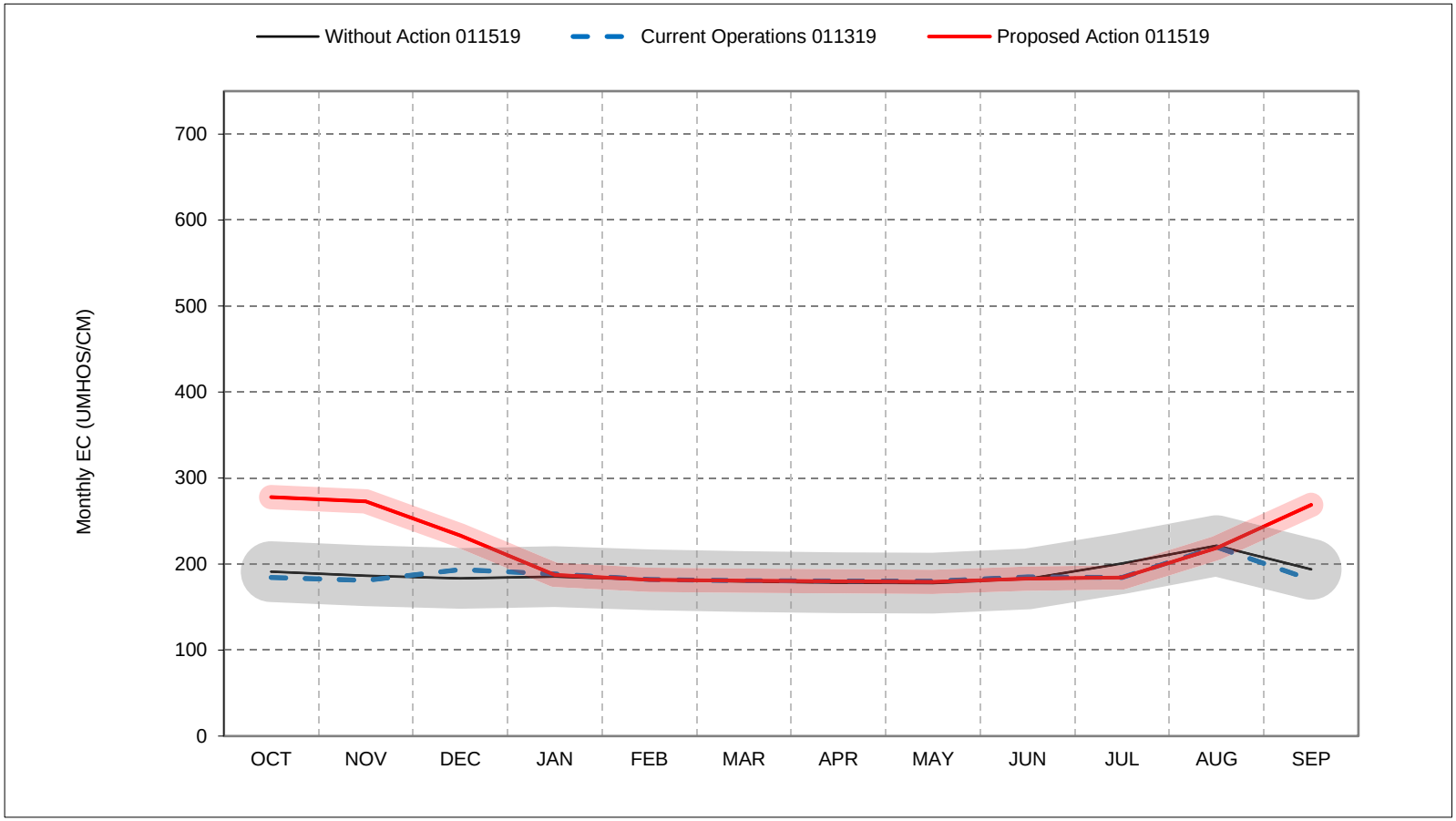
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-1. Sacramento River at Rio Vista Salinity, Long-Term Average EC



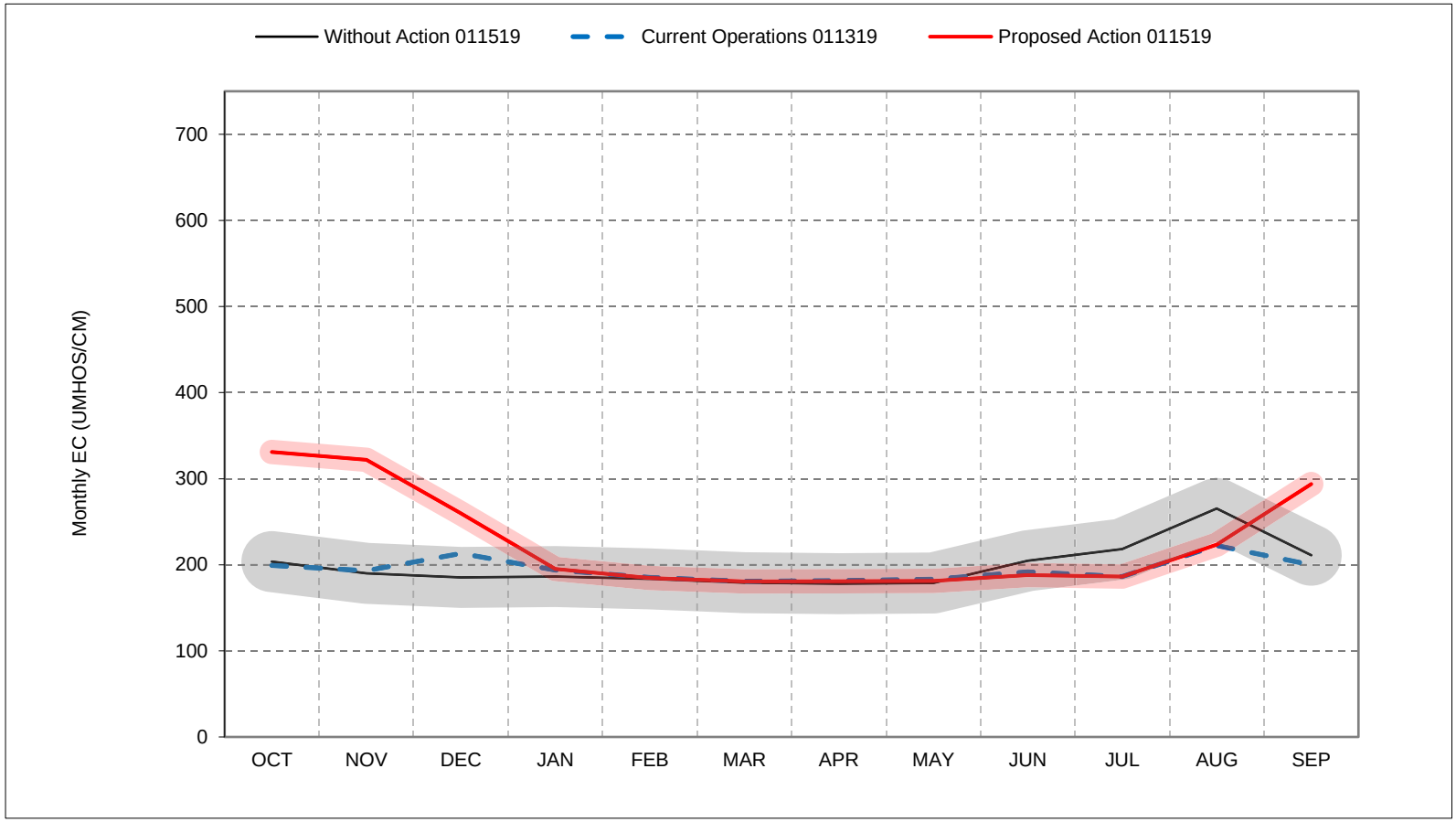
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-2. Sacramento River at Rio Vista Salinity, Wet Year Average EC



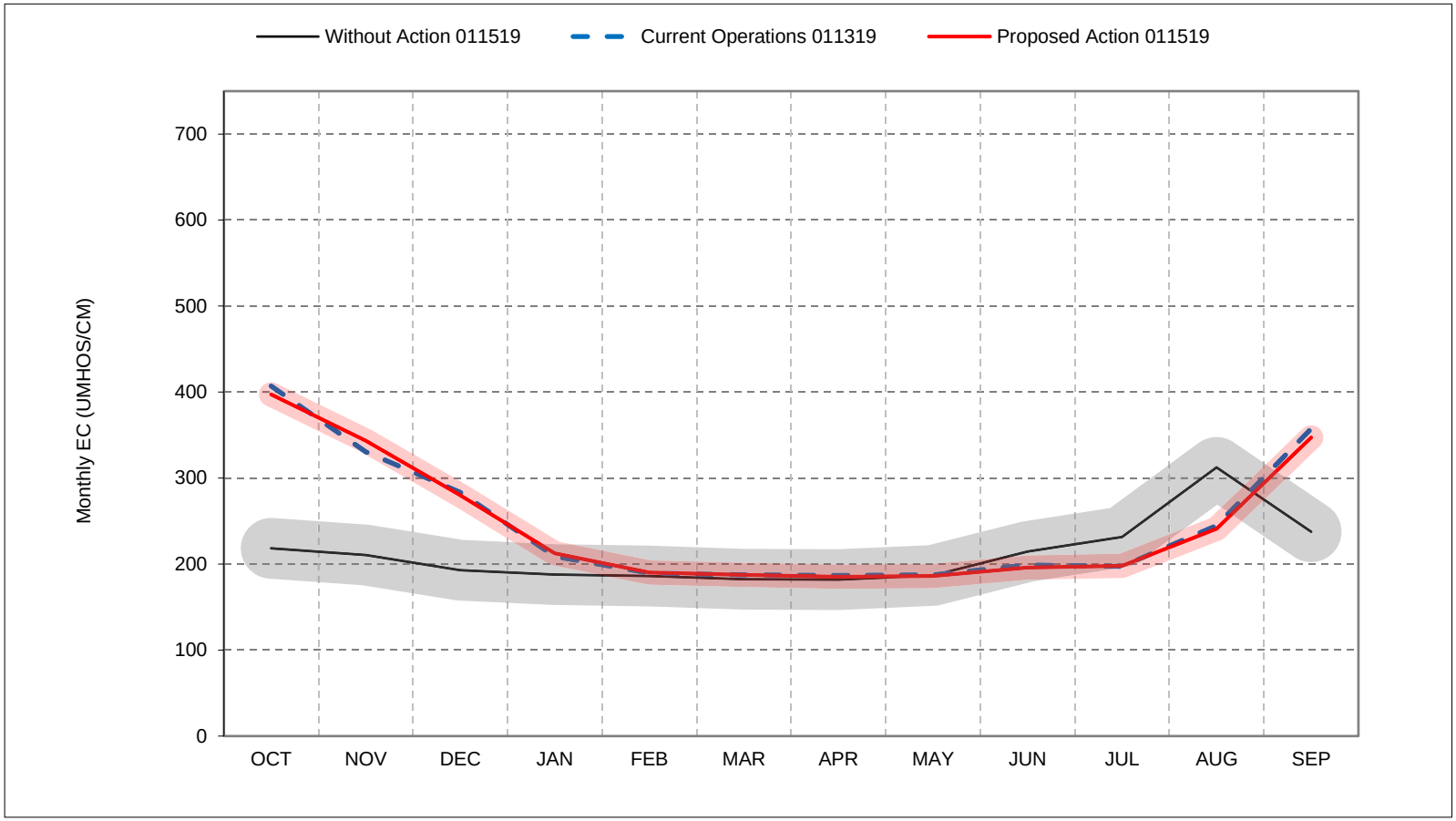
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-3. Sacramento River at Rio Vista Salinity, Above Normal Year Average EC



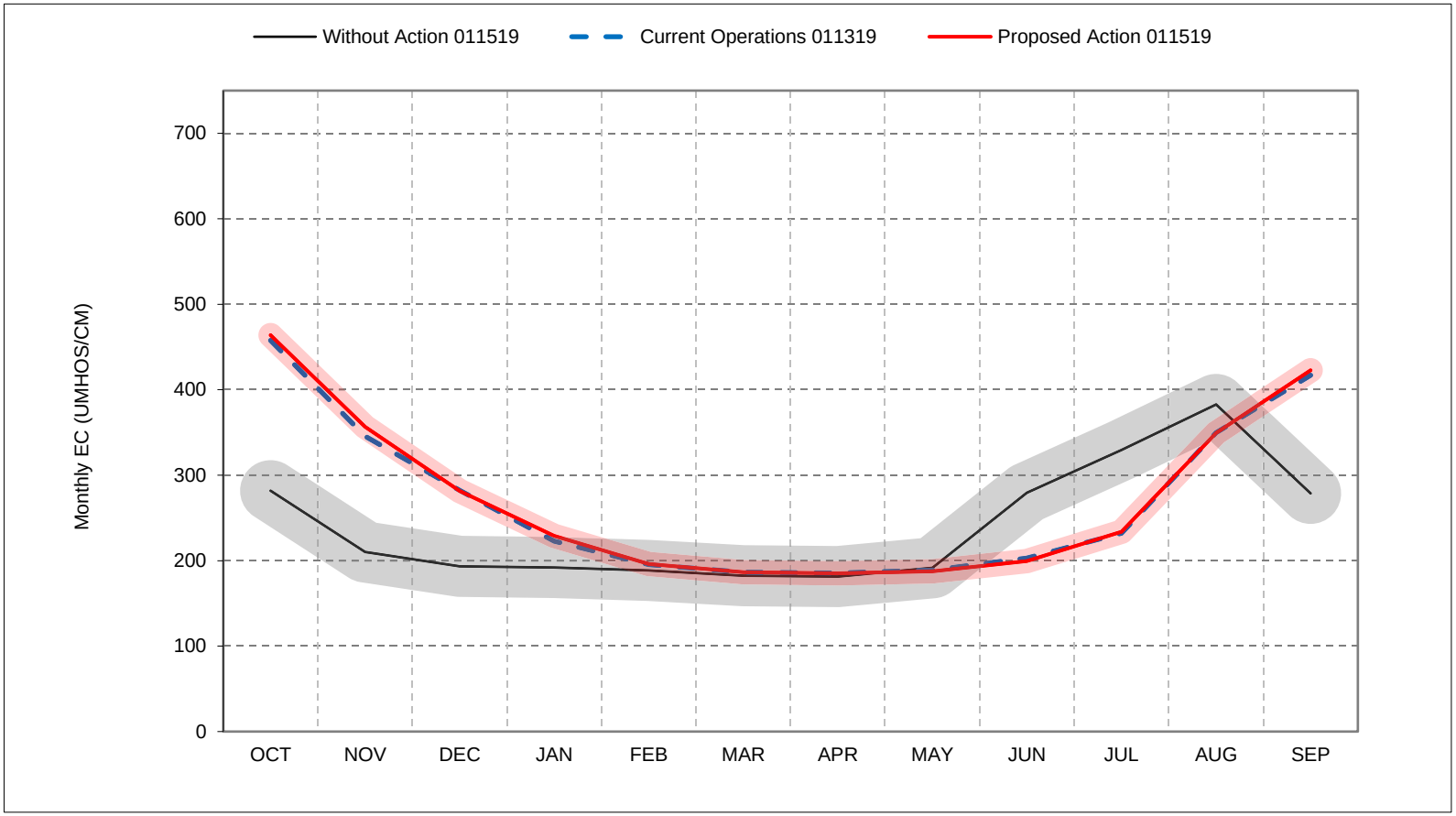
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-4. Sacramento River at Rio Vista Salinity, Below Normal Year Average EC



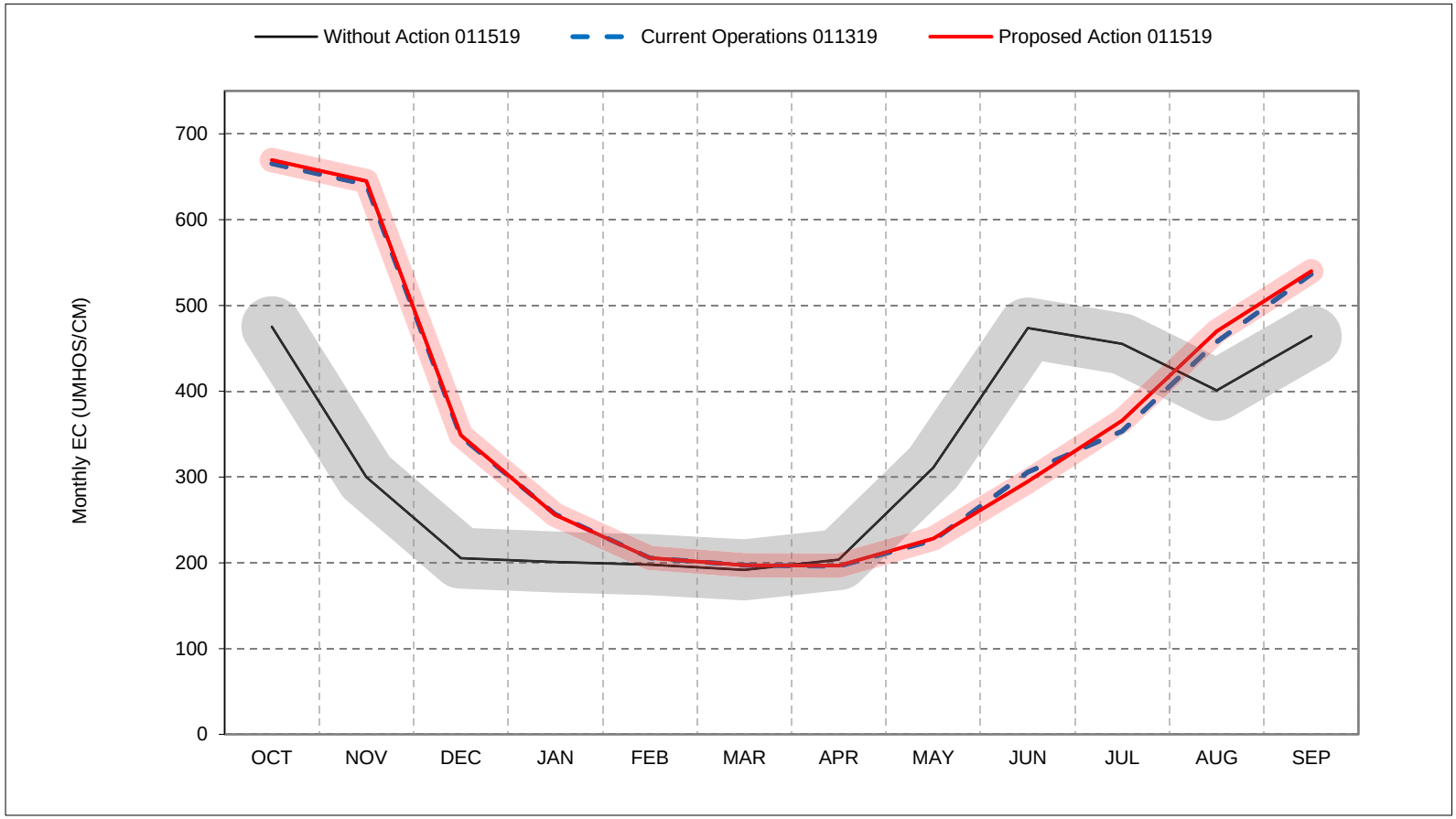
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-5. Sacramento River at Rio Vista Salinity, Dry Year Average EC



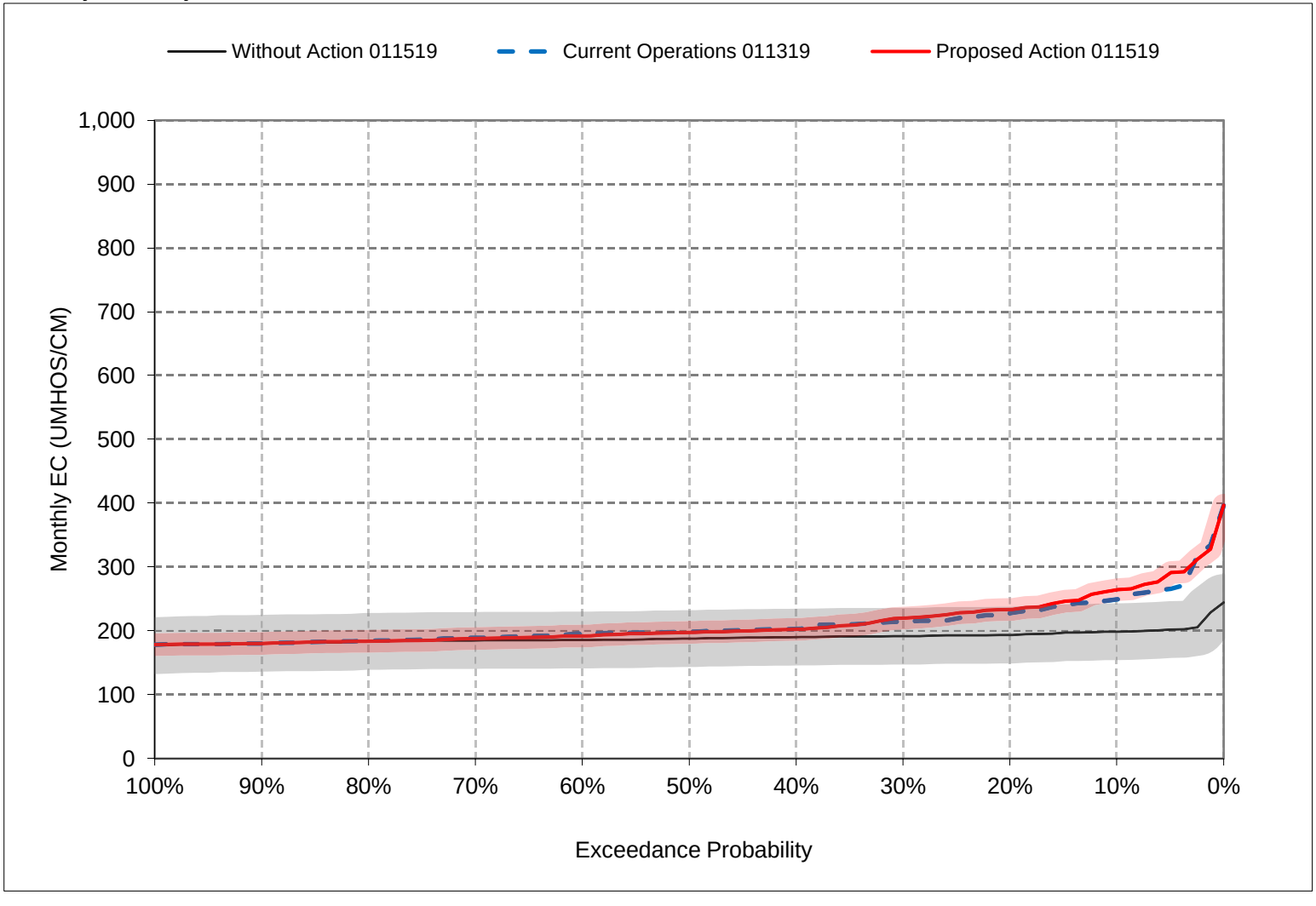
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-6. Sacramento River at Rio Vista Salinity, Critical Year Average EC



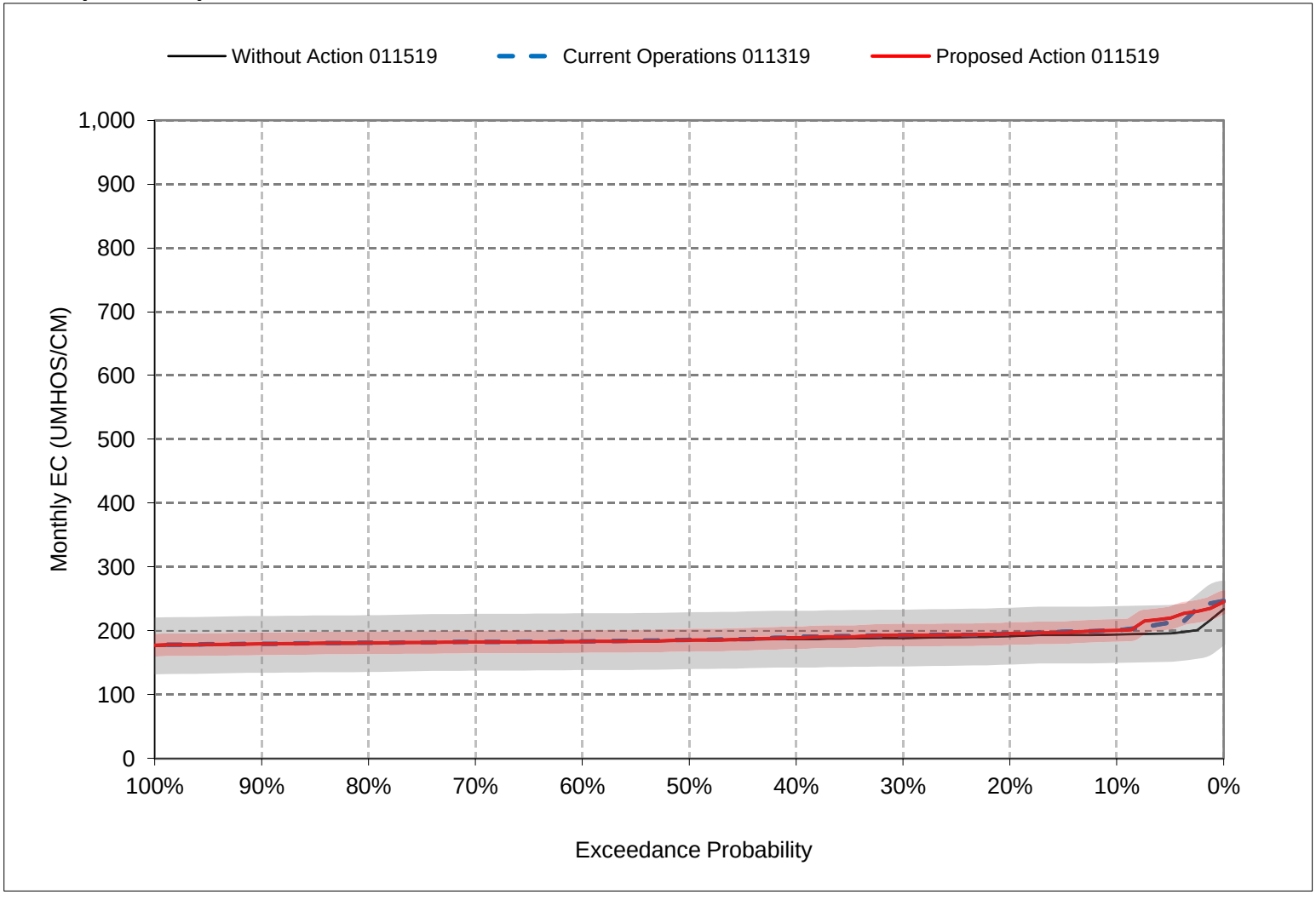
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-7. Sacramento River at Rio Vista
Salinity, January EC



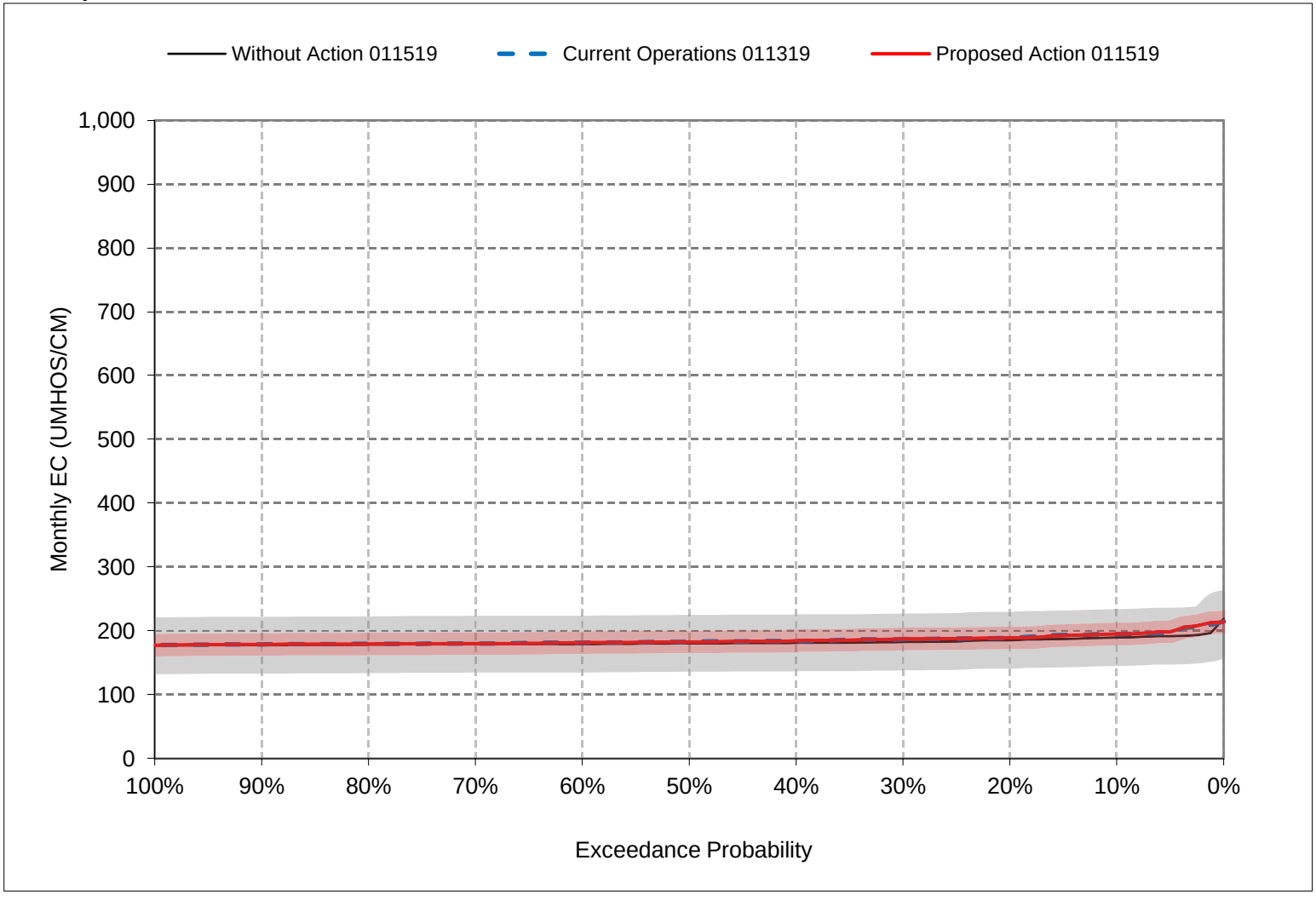
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-8. Sacramento River at Rio Vista
Salinity, February EC



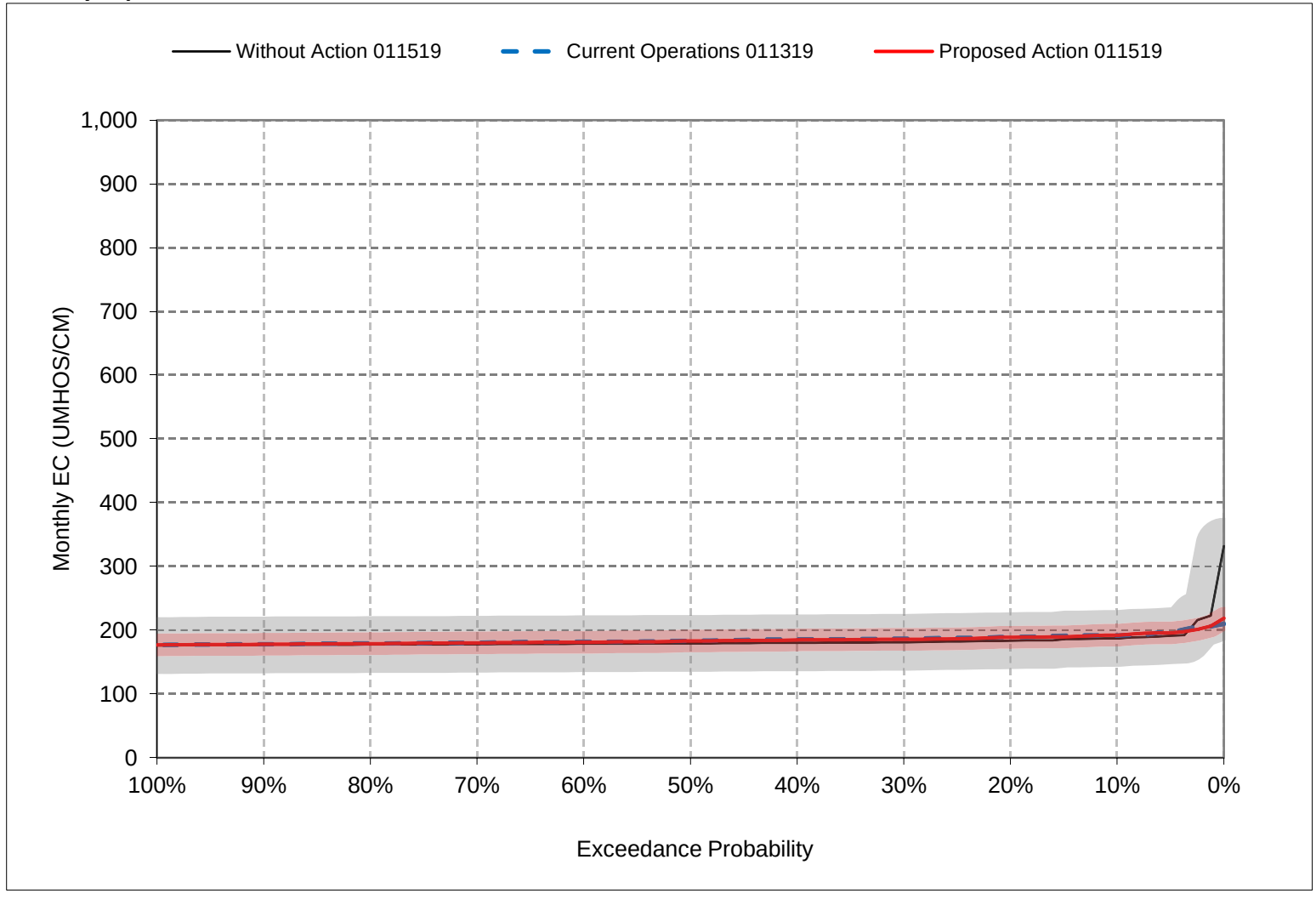
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-9. Sacramento River at Rio Vista
Salinity, March EC



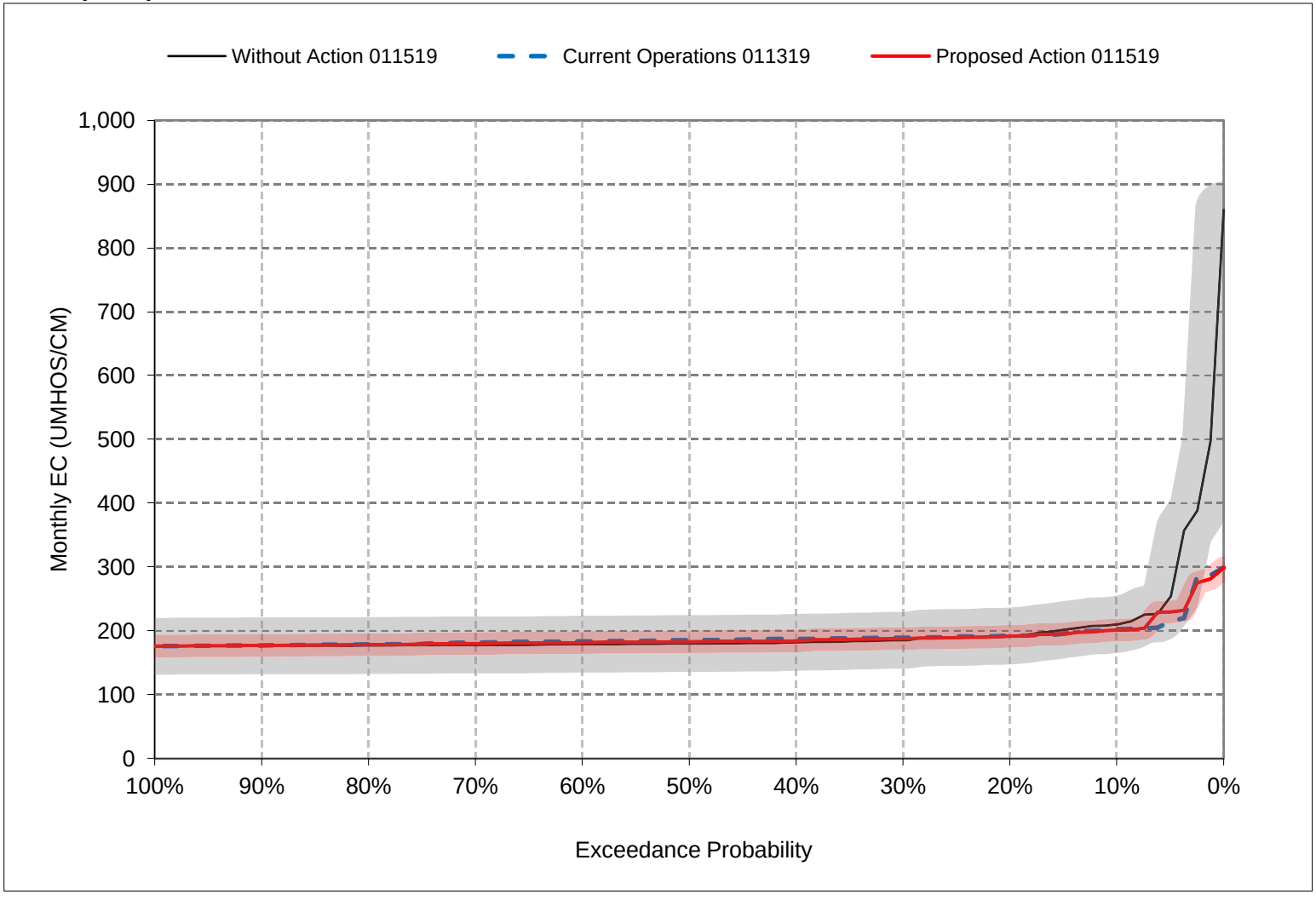
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-10. Sacramento River at Rio Vista
Salinity, April EC



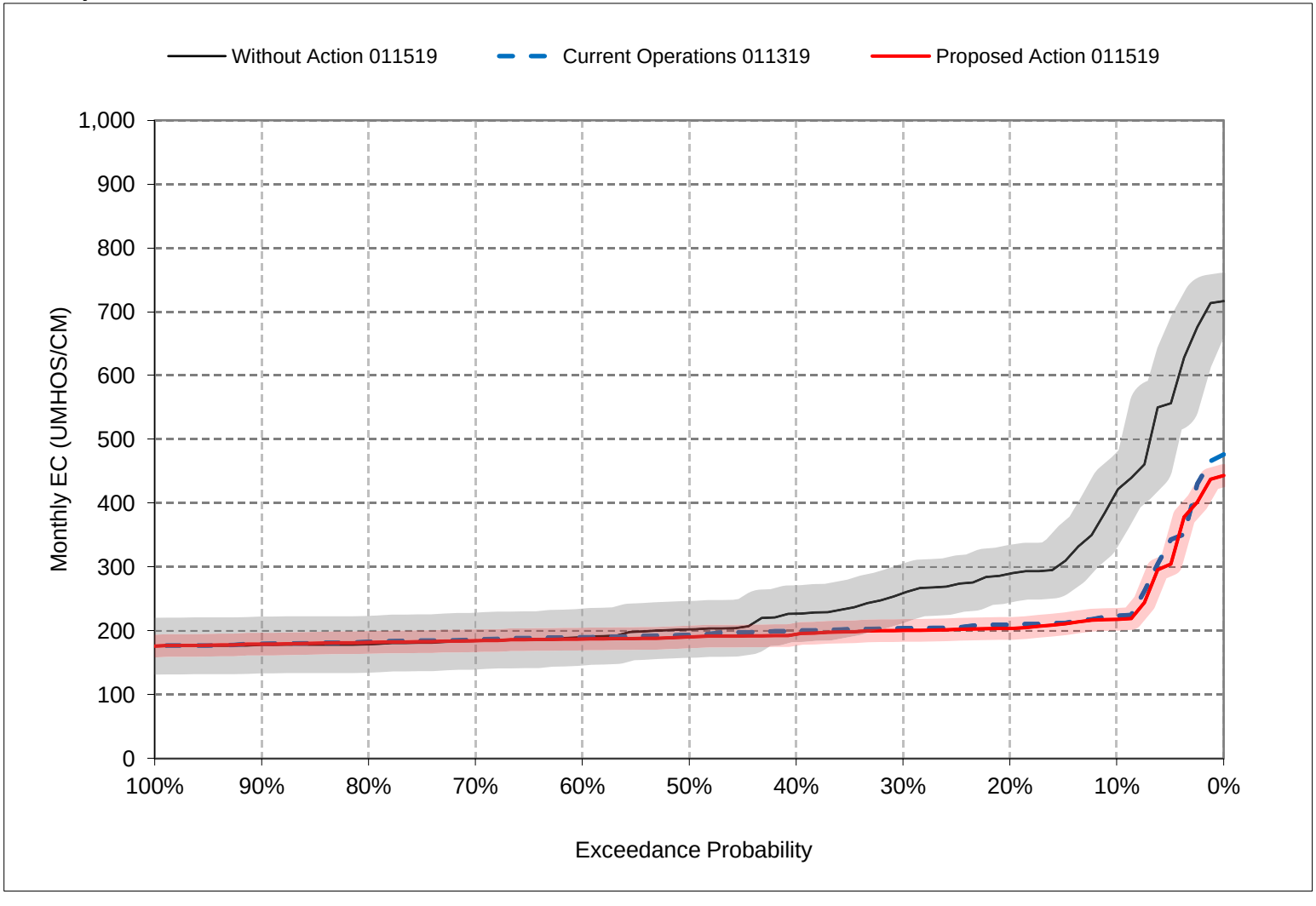
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-11. Sacramento River at Rio Vista
Salinity, May EC



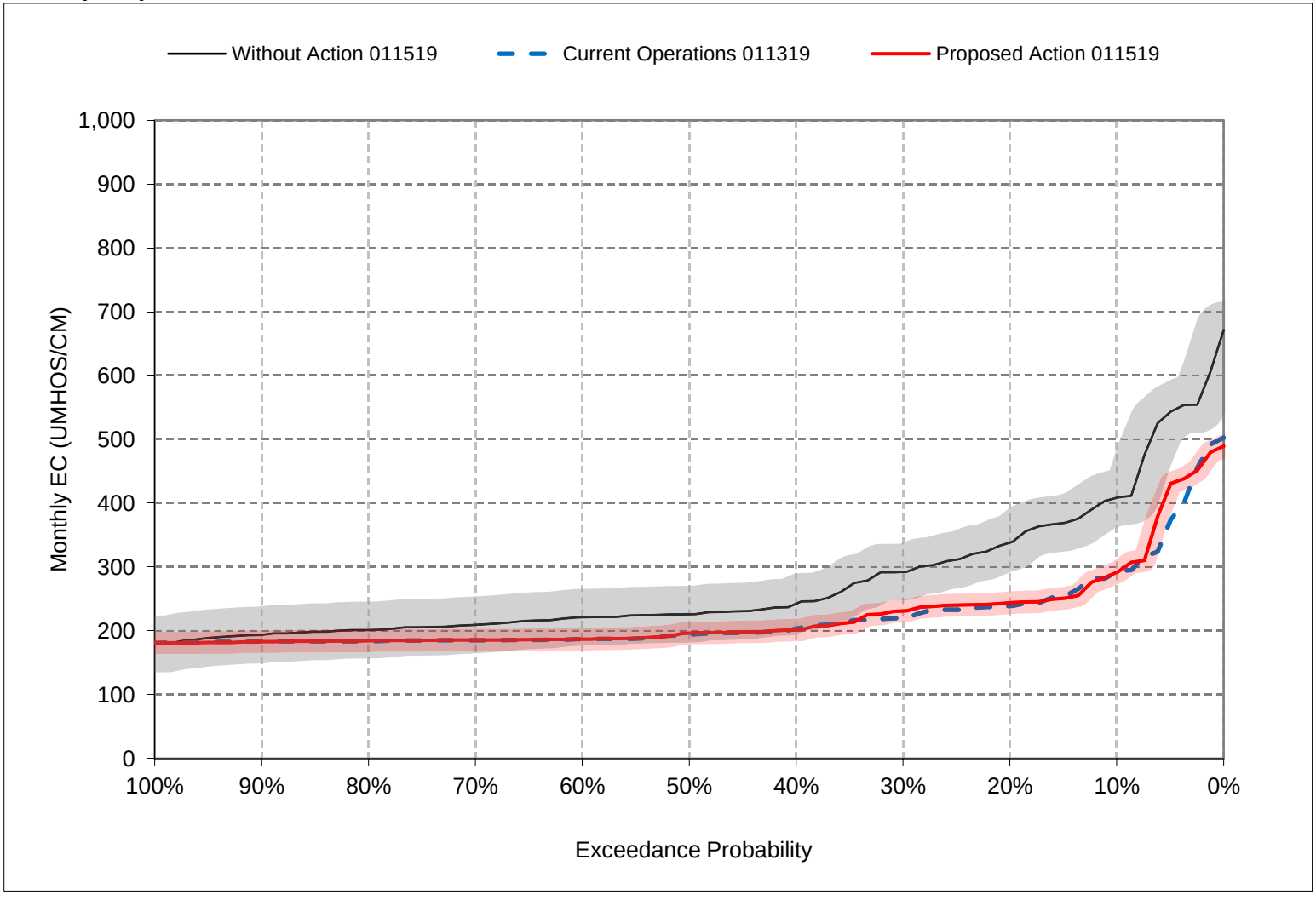
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-12. Sacramento River at Rio Vista
Salinity, June EC



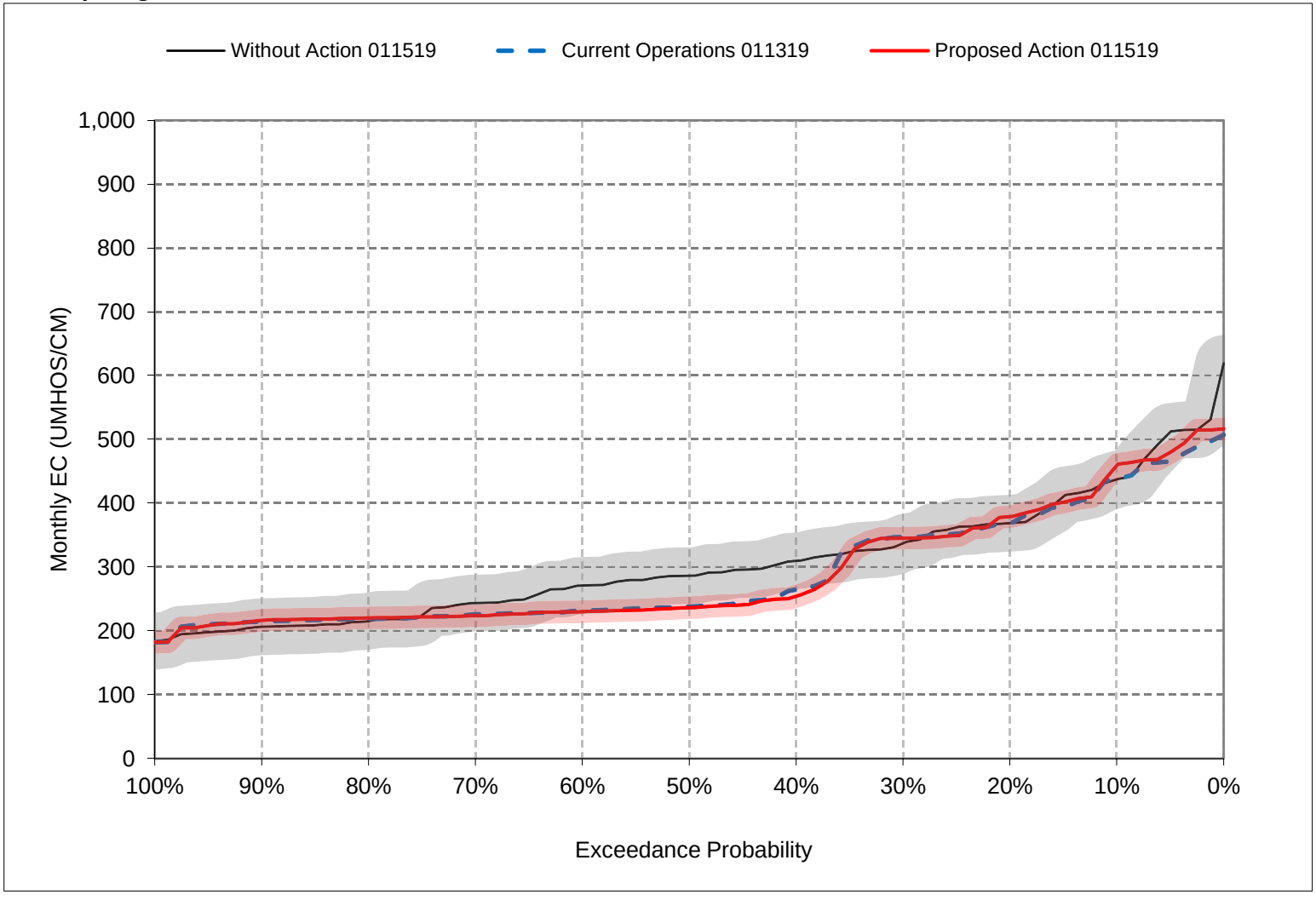
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-13. Sacramento River at Rio Vista
Salinity, July EC



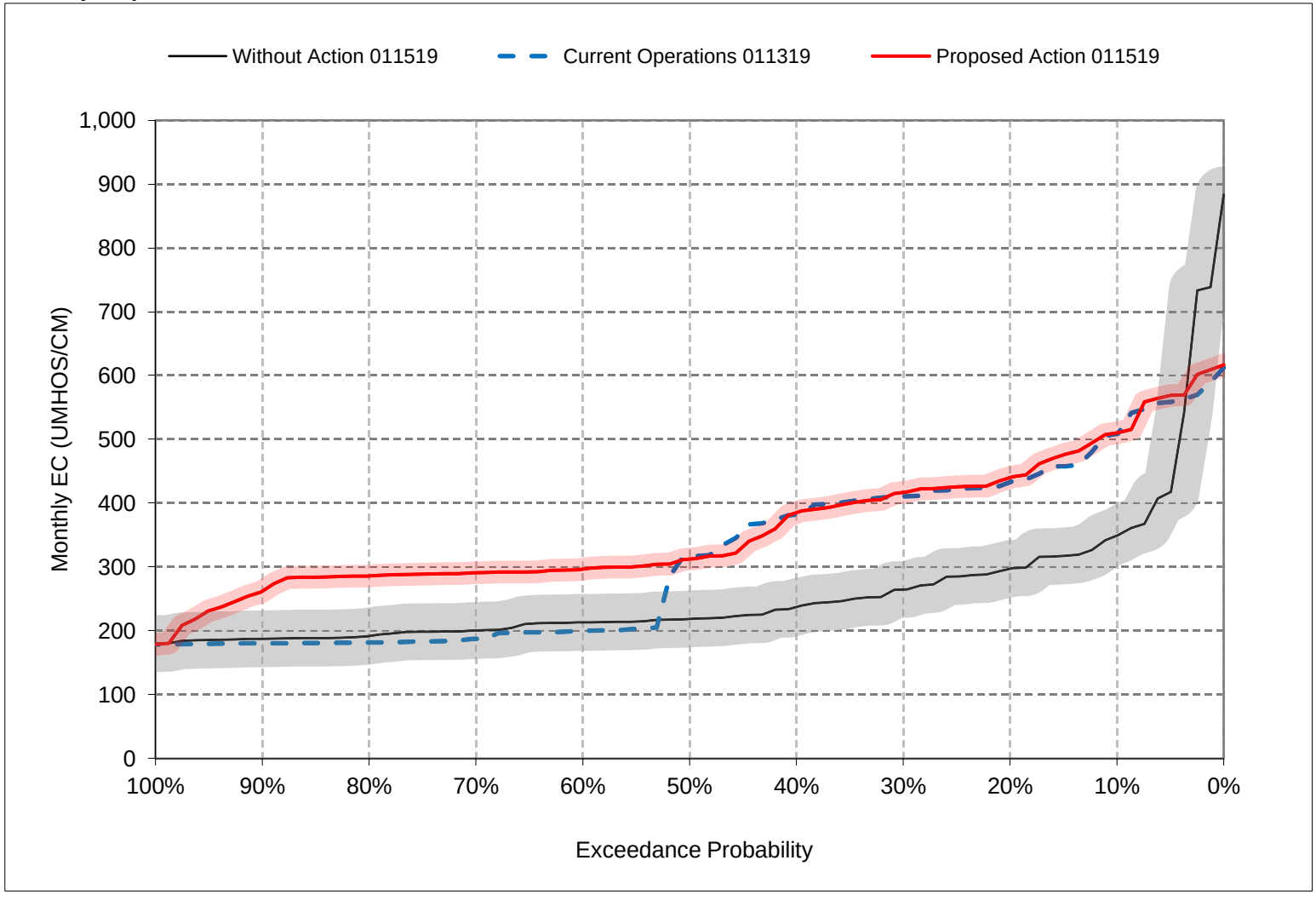
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-14. Sacramento River at Rio Vista
Salinity, August EC



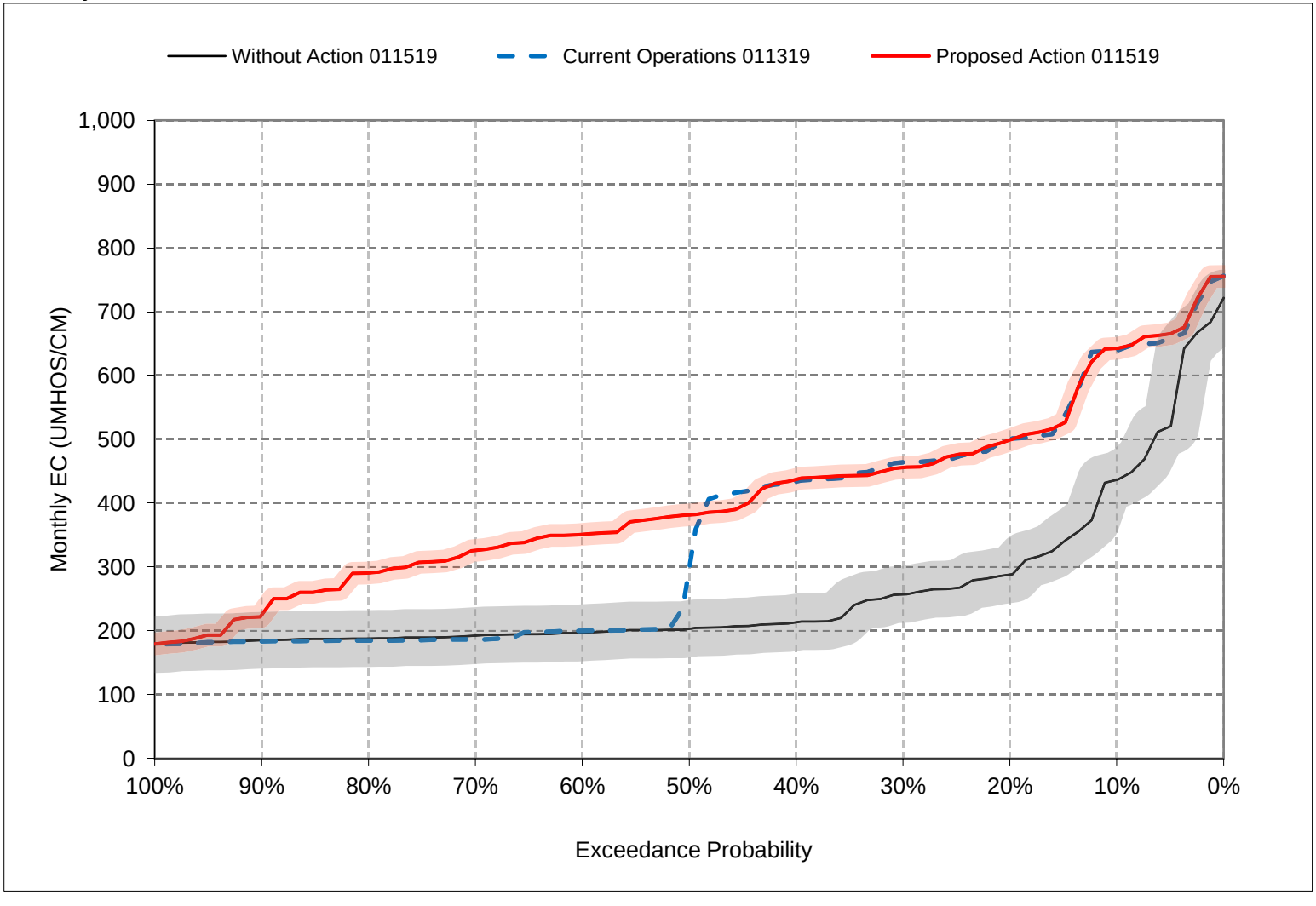
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-15. Sacramento River at Rio Vista
Salinity, September EC



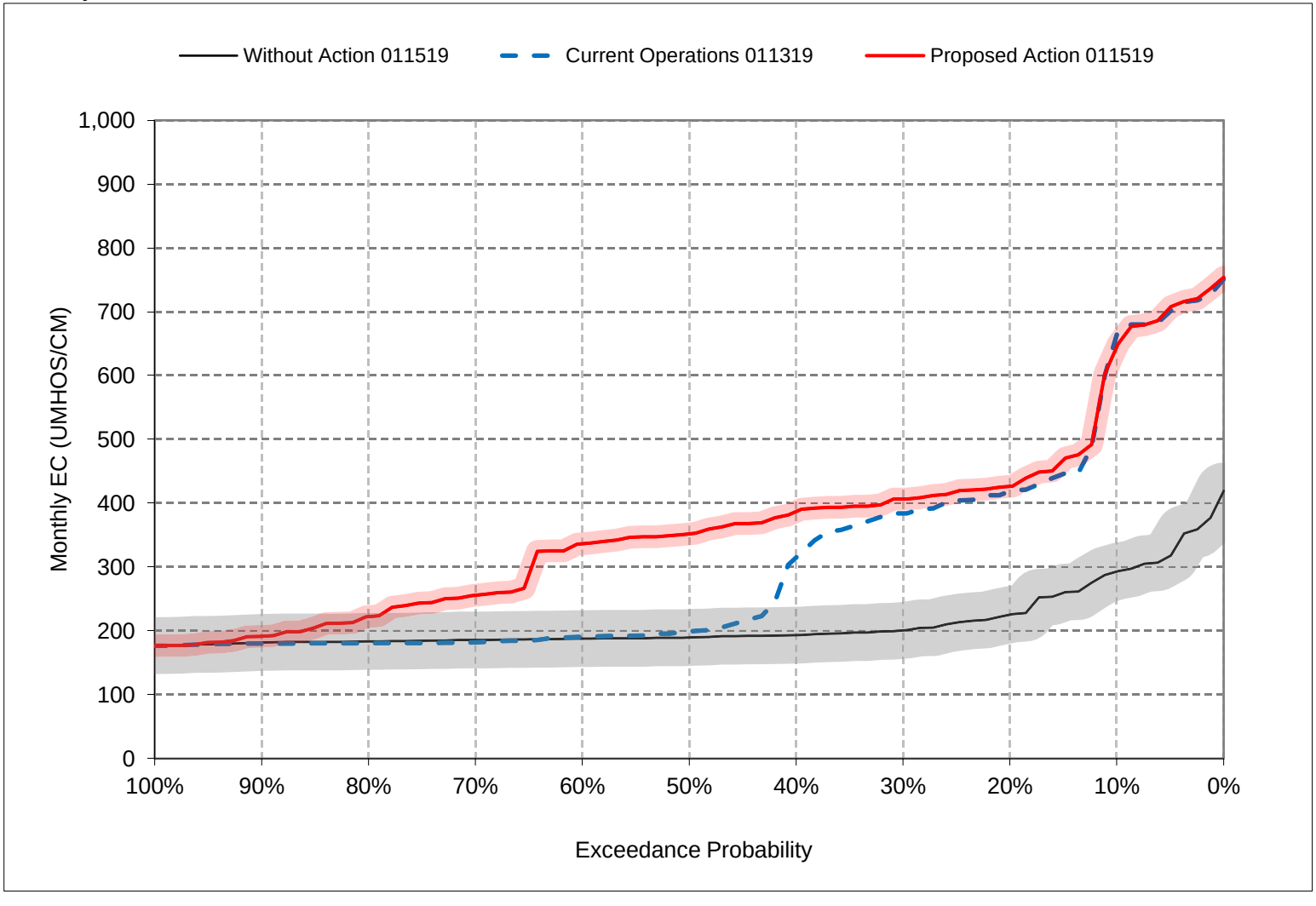
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 5-16. Sacramento River at Rio Vista
Salinity, October EC



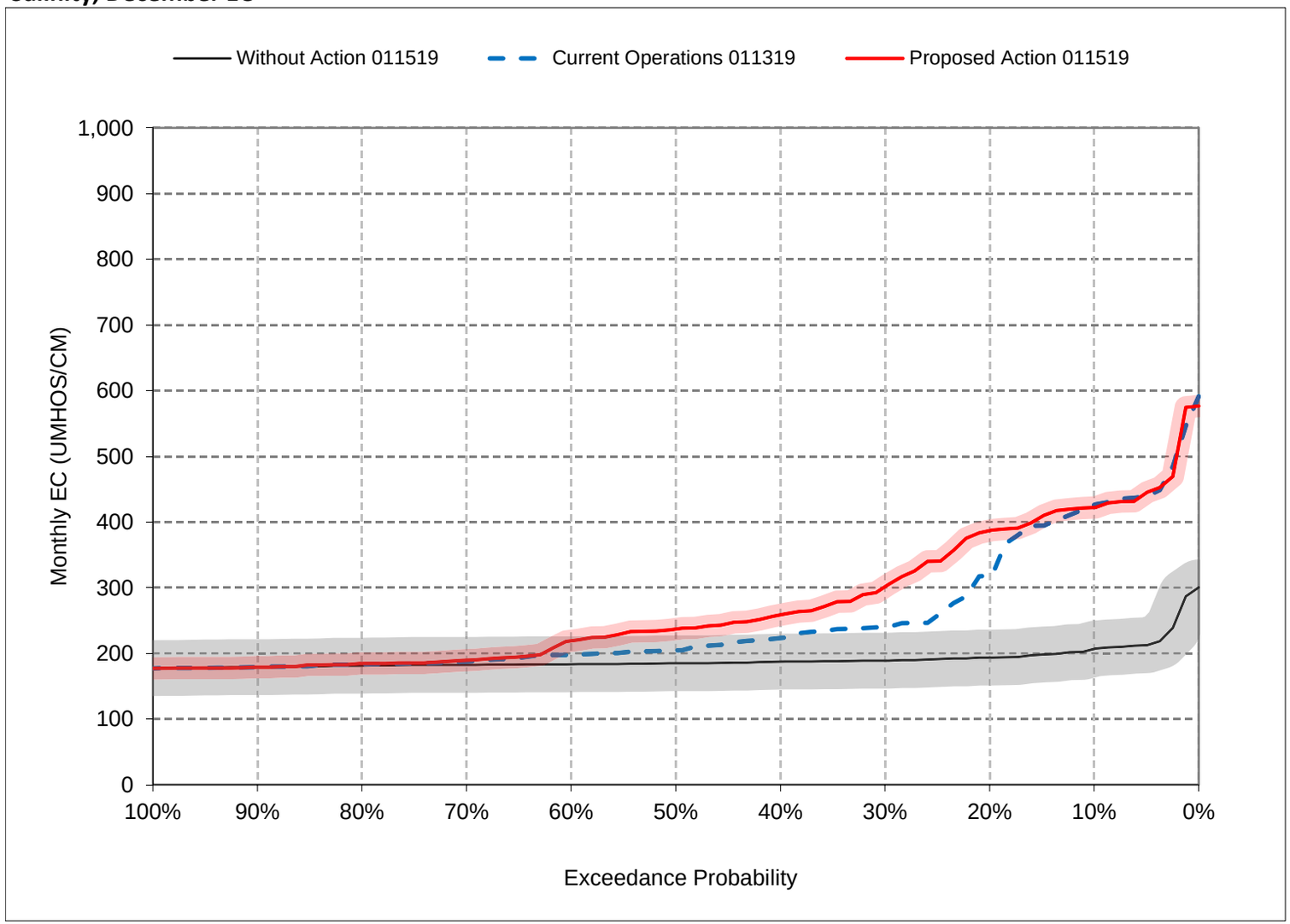
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 6-1. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	776	582	669	669	744	755	605	749	737	830	779	560
20%	715	538	622	628	590	544	511	657	672	797	731	538
30%	676	483	596	542	539	507	407	496	557	764	678	517
40%	639	472	555	516	474	453	337	407	513	714	657	501
50%	605	446	524	475	416	402	298	337	472	650	632	489
60%	572	428	502	431	365	345	279	290	386	427	598	468
70%	539	391	460	393	320	269	262	257	354	298	555	451
80%	520	365	426	366	259	226	234	218	288	255	464	438
90%	451	305	375	309	203	201	173	164	220	239	411	409
Long Term												
Full Simulation Period[a]	611	447	521	483	446	431	364	410	467	553	603	485
Water Year Types[b]												
Wet (32%)	505	374	480	359	264	257	222	232	310	389	433	422
Above Normal (16%)	582	411	504	417	364	335	282	293	360	498	599	467
Below Normal (13%)	606	467	540	517	453	430	358	433	488	539	628	472
Dry (24%)	663	449	530	572	557	528	437	511	613	651	688	511
Critical (15%)	791	619	593	643	741	755	644	735	663	819	814	608

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-201	**57**	**130**	**105**	**196**	**92**	-44	-179	-92	-182	-135	**49**
20%	-155	**71**	**162**	**130**	**308**	**259**	-12	-109	-33	-149	-121	**49**
30%	-136	**104**	**176**	**204**	**315**	**231**	**1**	-6	**59**	-118	-98	**51**
40%	-120	**107**	**212**	**222**	**329**	**243**	**31**	**28**	**75**	-77	-83	**51**
50%	-102	**119**	**238**	**251**	**281**	**221**	**26**	**41**	**83**	-25	-74	**49**
60%	-84	**125**	**254**	**278**	**271**	**114**	**19**	**70**	**113**	**187**	-54	**52**
70%	-65	**147**	**276**	**257**	**155**	**64**	**22**	**85**	**100**	**304**	-31	**38**
80%	-64	**143**	**284**	**219**	**70**	**71**	**26**	**75**	**131**	**326**	-9	**37**
90%	-21	**175**	**254**	**82**	**82**	**62**	**31**	**26**	**141**	**252**	**21**	**32**
Long Term												
Full Simulation Period[a]	-108	**107**	**201**	**177**	**201**	**133**	-4	-9	**54**	**46**	-64	**41**
Water Year Types[b]												
Wet (32%)	-66	**109**	**183**	**178**	**133**	**76**	**19**	**38**	**97**	**131**	**11**	**25**
Above Normal (16%)	-89	**131**	**231**	**239**	**246**	**167**	**31**	**64**	**154**	**123**	-60	**52**
Below Normal (13%)	-100	**105**	**201**	**192**	**247**	**165**	-9	-15	**69**	**83**	-74	**63**
Dry (24%)	-119	**143**	**201**	**155**	**257**	**188**	-4	-29	-22	-18	-102	**58**
Critical (15%)	-213	**22**	**205**	**133**	**160**	**97**	-88	-147	-35	-149	-158	**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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 6-2. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	776	582	669	669	744	755	605	749	737	830	779	560
20%	715	538	622	628	590	544	511	657	672	797	731	538
30%	676	483	596	542	539	507	407	496	557	764	678	517
40%	639	472	555	516	474	453	337	407	513	714	657	501
50%	605	446	524	475	416	402	298	337	472	650	632	489
60%	572	428	502	431	365	345	279	290	386	427	598	468
70%	539	391	460	393	320	269	262	257	354	298	555	451
80%	520	365	426	366	259	226	234	218	288	255	464	438
90%	451	305	375	309	203	201	173	164	220	239	411	409
Long Term												
Full Simulation Period[a]	611	447	521	483	446	431	364	410	467	553	603	485
Water Year Types[b]												
Wet (32%)	505	374	480	359	264	257	222	232	310	389	433	422
Above Normal (16%)	582	411	504	417	364	335	282	293	360	498	599	467
Below Normal (13%)	606	467	540	517	453	430	358	433	488	539	628	472
Dry (24%)	663	449	530	572	557	528	437	511	613	651	688	511
Critical (15%)	791	619	593	643	741	755	644	735	663	819	814	608

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-192	**57**	**130**	**107**	**201**	**92**	**7**	-88	-52	-123	-108	**61**
20%	-145	**70**	**162**	**132**	**309**	**260**	**14**	-38	-8	-99	-85	**61**
30%	-125	**105**	**176**	**205**	**317**	**231**	**38**	**47**	**76**	-88	-85	**52**
40%	-119	**107**	**212**	**223**	**329**	**244**	**29**	**44**	**97**	-73	-83	**52**
50%	-103	**119**	**238**	**252**	**282**	**221**	**11**	**35**	**91**	-21	-73	**51**
60%	-86	**125**	**254**	**281**	**271**	**118**	**15**	**66**	**115**	**189**	-50	**56**
70%	-66	**153**	**280**	**255**	**155**	**70**	**22**	**87**	**106**	**306**	-23	**40**
80%	-63	**143**	**284**	**218**	**62**	**72**	**26**	**75**	**131**	**328**	-9	**41**
90%	-17	**175**	**234**	**81**	**73**	**52**	**31**	**27**	**141**	**258**	**30**	**32**
Long Term												
Full Simulation Period[a]	-107	**108**	**200**	**177**	**204**	**138**	**9**	**17**	**70**	**64**	-54	**45**
Water Year Types[b]												
Wet (32%)	-65	**112**	**182**	**173**	**128**	**79**	**18**	**42**	**104**	**136**	**14**	**27**
Above Normal (16%)	-94	**131**	**231**	**237**	**243**	**162**	**20**	**57**	**151**	**145**	-59	**53**
Below Normal (13%)	-91	**105**	**201**	**195**	**250**	**173**	**17**	**32**	**91**	**91**	-70	**65**
Dry (24%)	-114	**143**	**201**	**159**	**263**	**188**	**24**	**16**	**1**	**11**	-79	**68**
Critical (15%)	-214	**22**	**205**	**133**	**185**	**123**	-54	-90	**6**	-115	-137	**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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 6-3. San Joaquin River at Vernalis Salinity (40-30-30), Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

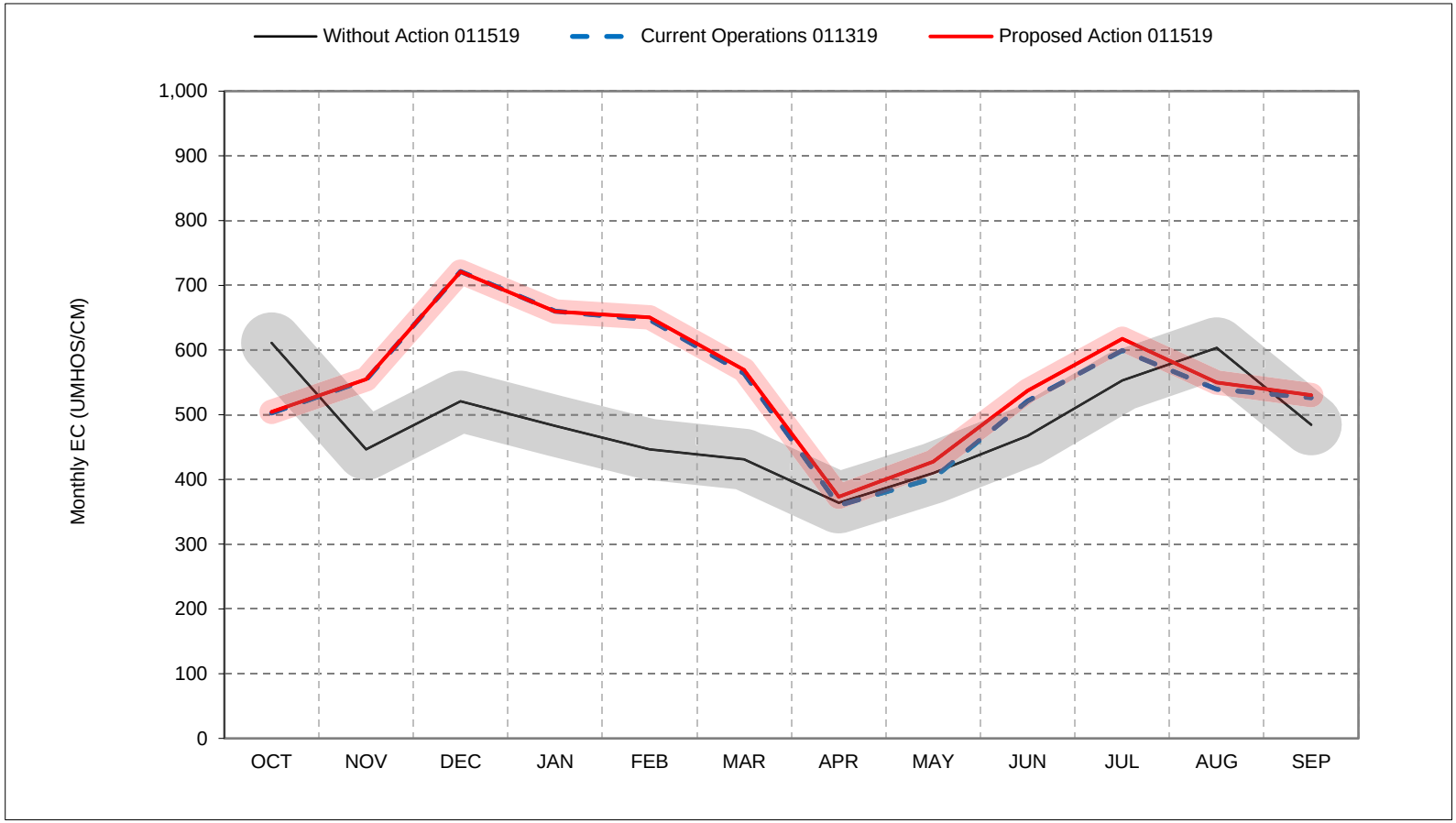
c These results are displayed with calendar year - year type sorting.

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.

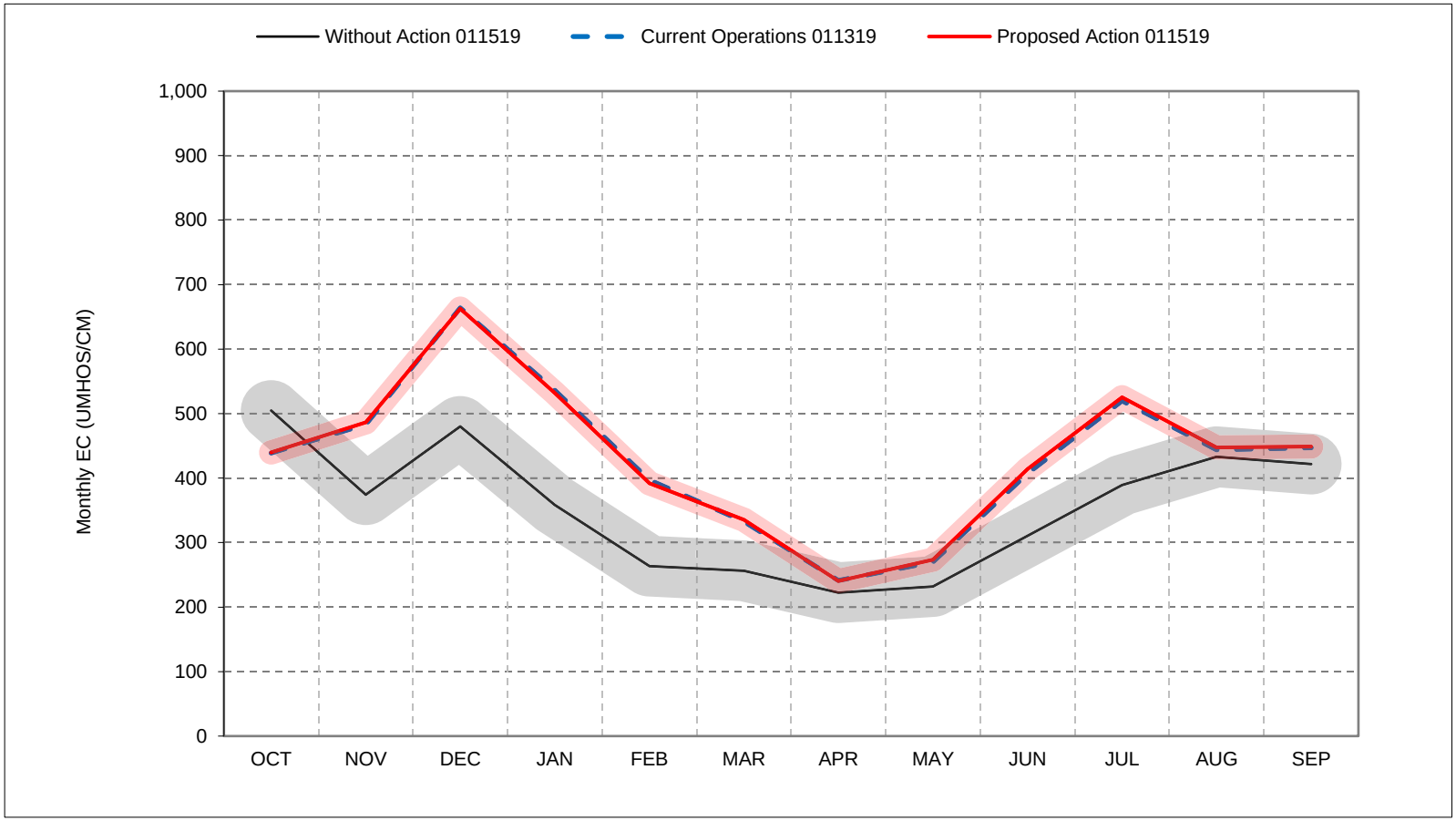
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-1. San Joaquin River at Vernalis Salinity (40-30-30), Long-Term Average EC



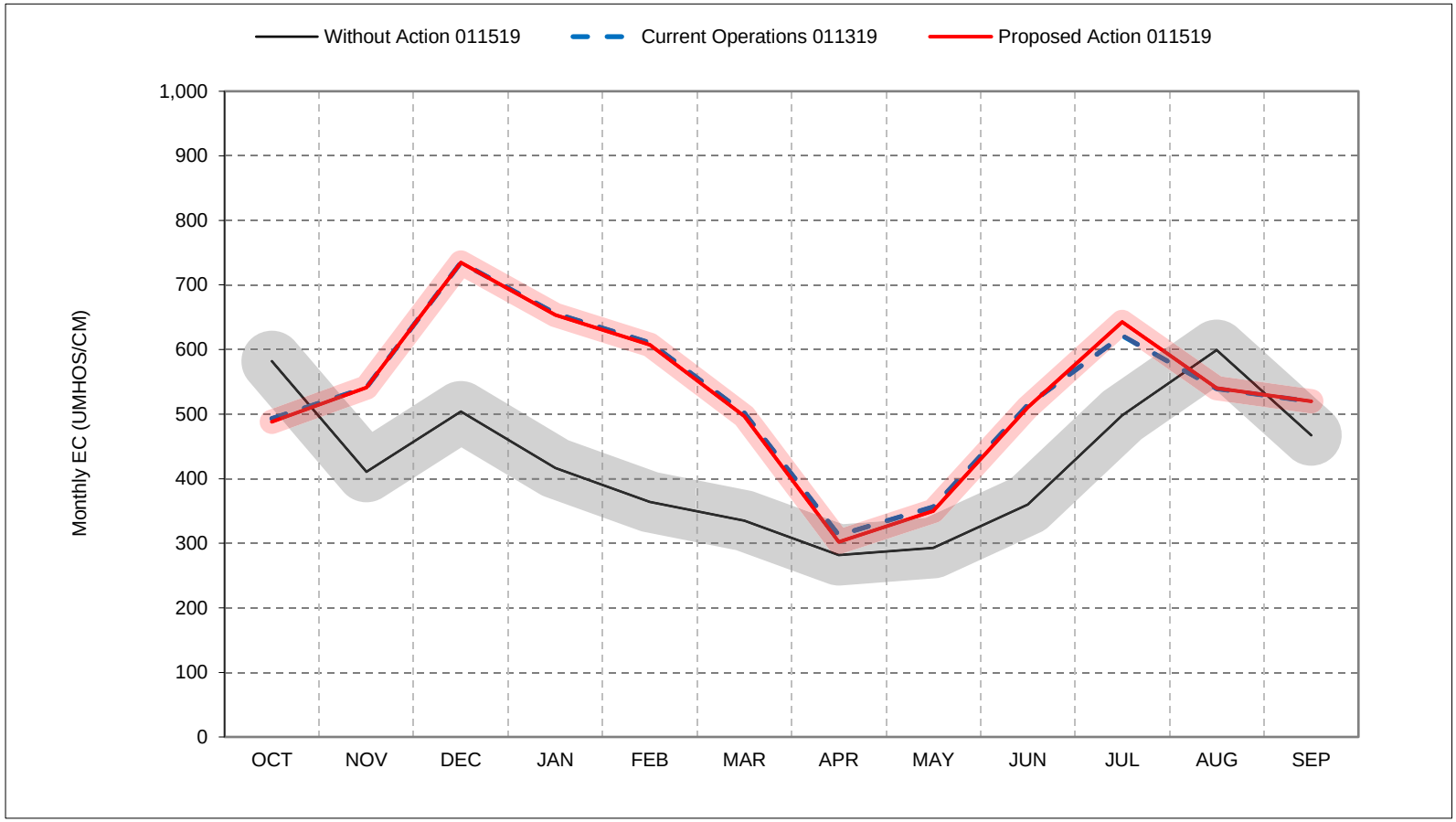
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-2. San Joaquin River at Vernalis Salinity (40-30-30), Wet Year Average EC



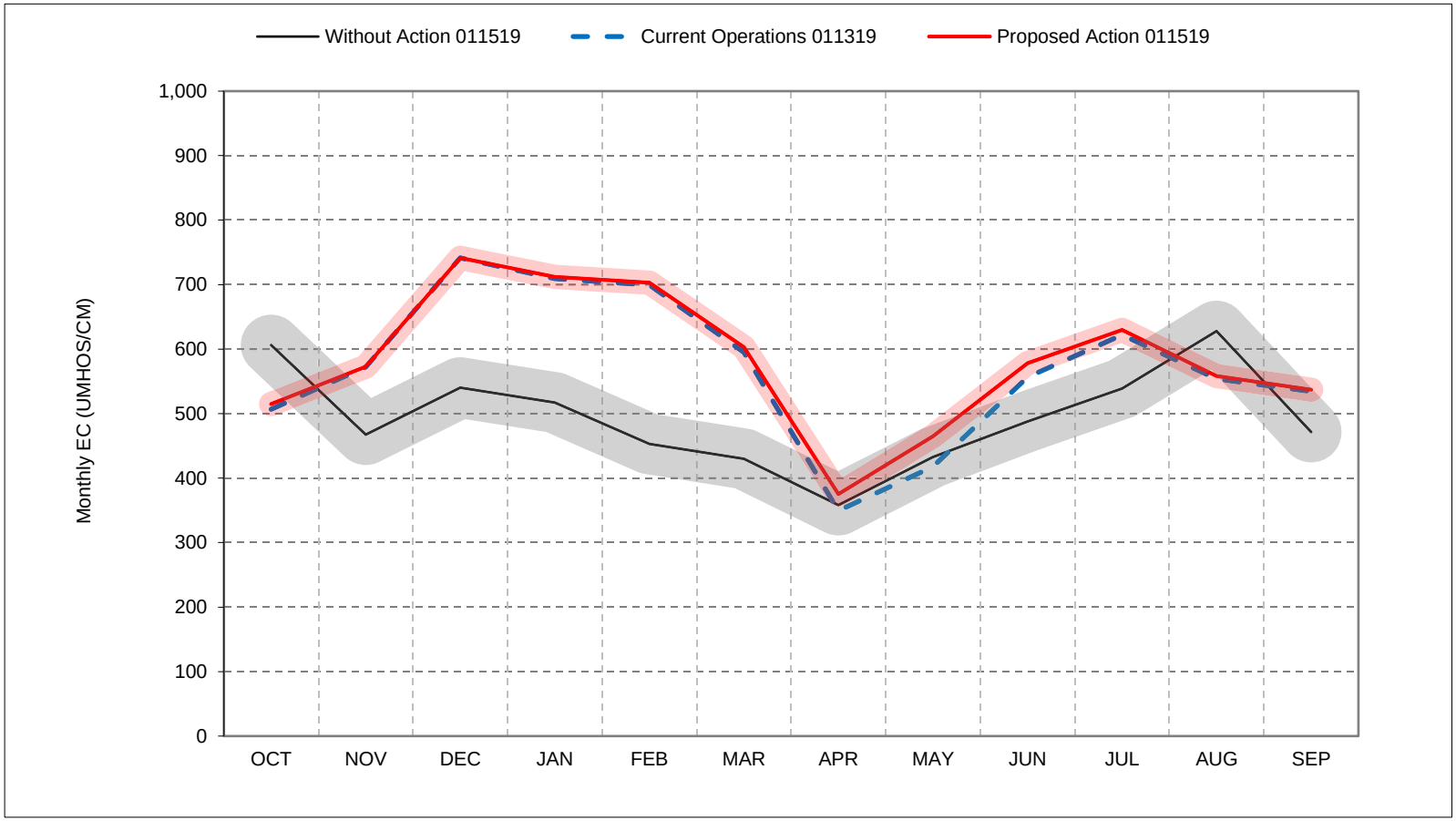
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-3. San Joaquin River at Vernalis Salinity (40-30-30), Above Normal Year Average EC



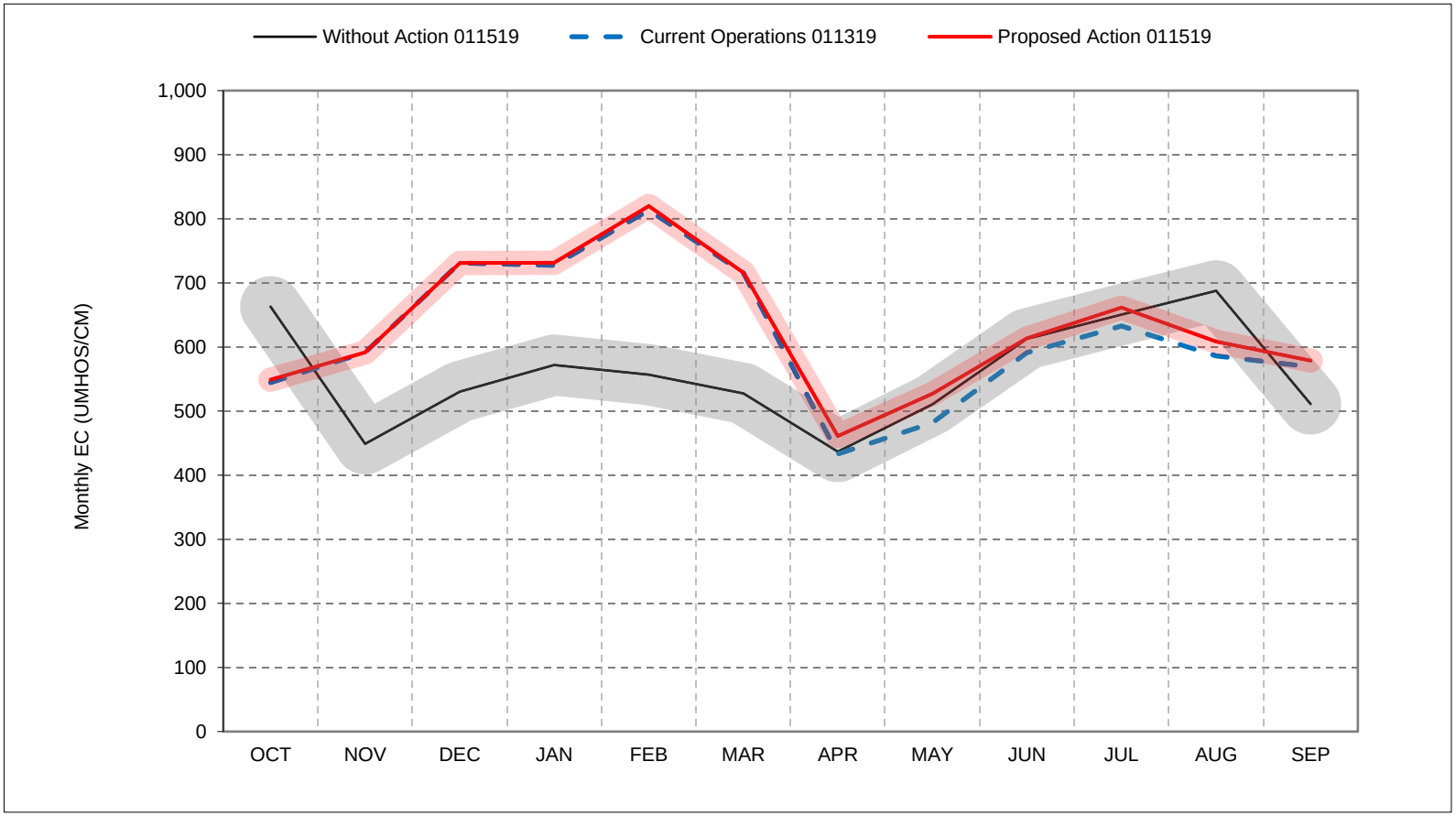
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-4. San Joaquin River at Vernalis Salinity (40-30-30), Below Normal Year Average EC



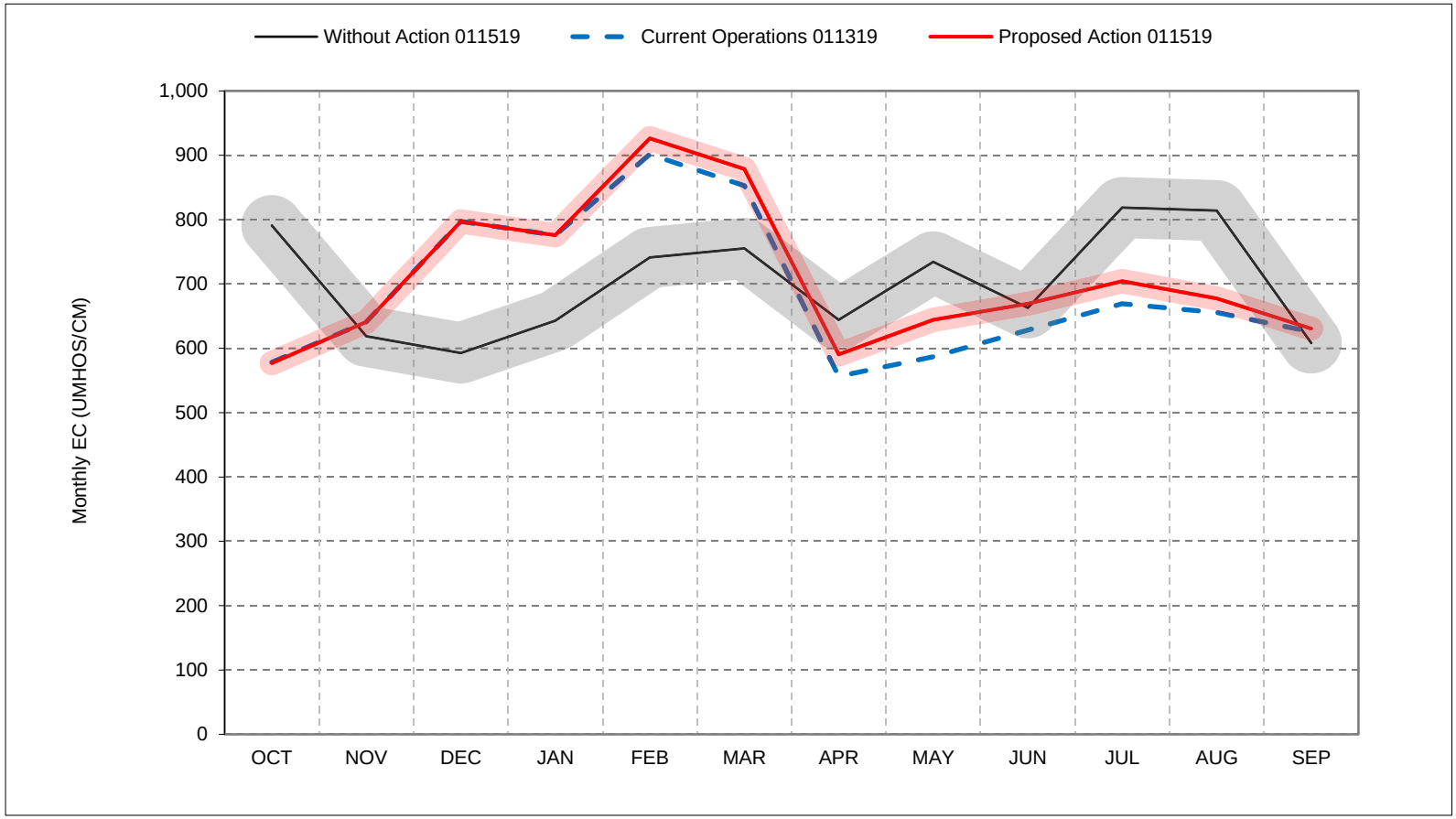
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-5. San Joaquin River at Vernalis Salinity (40-30-30), Dry Year Average EC



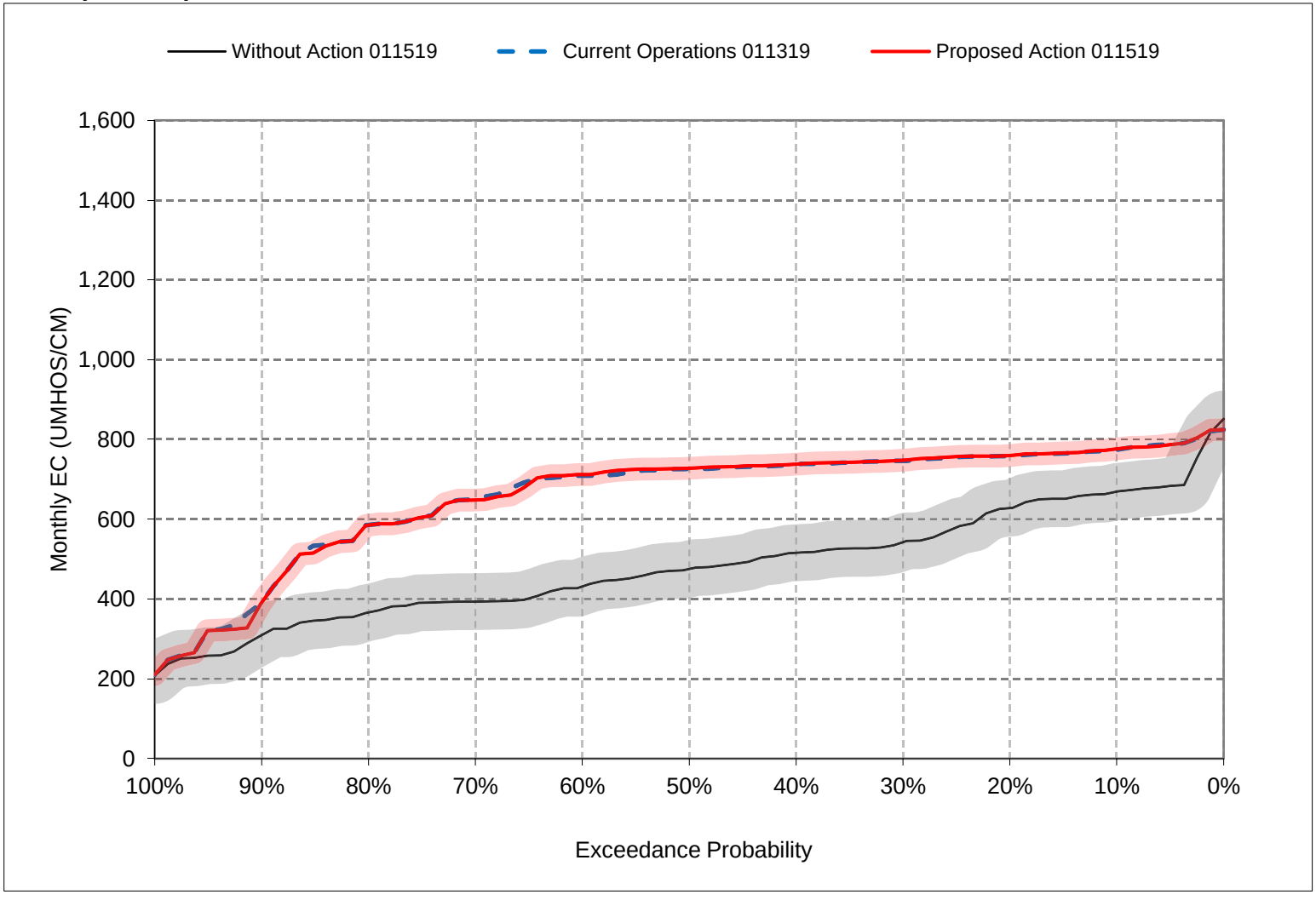
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-6. San Joaquin River at Vernalis Salinity (40-30-30), Critical Year Average EC



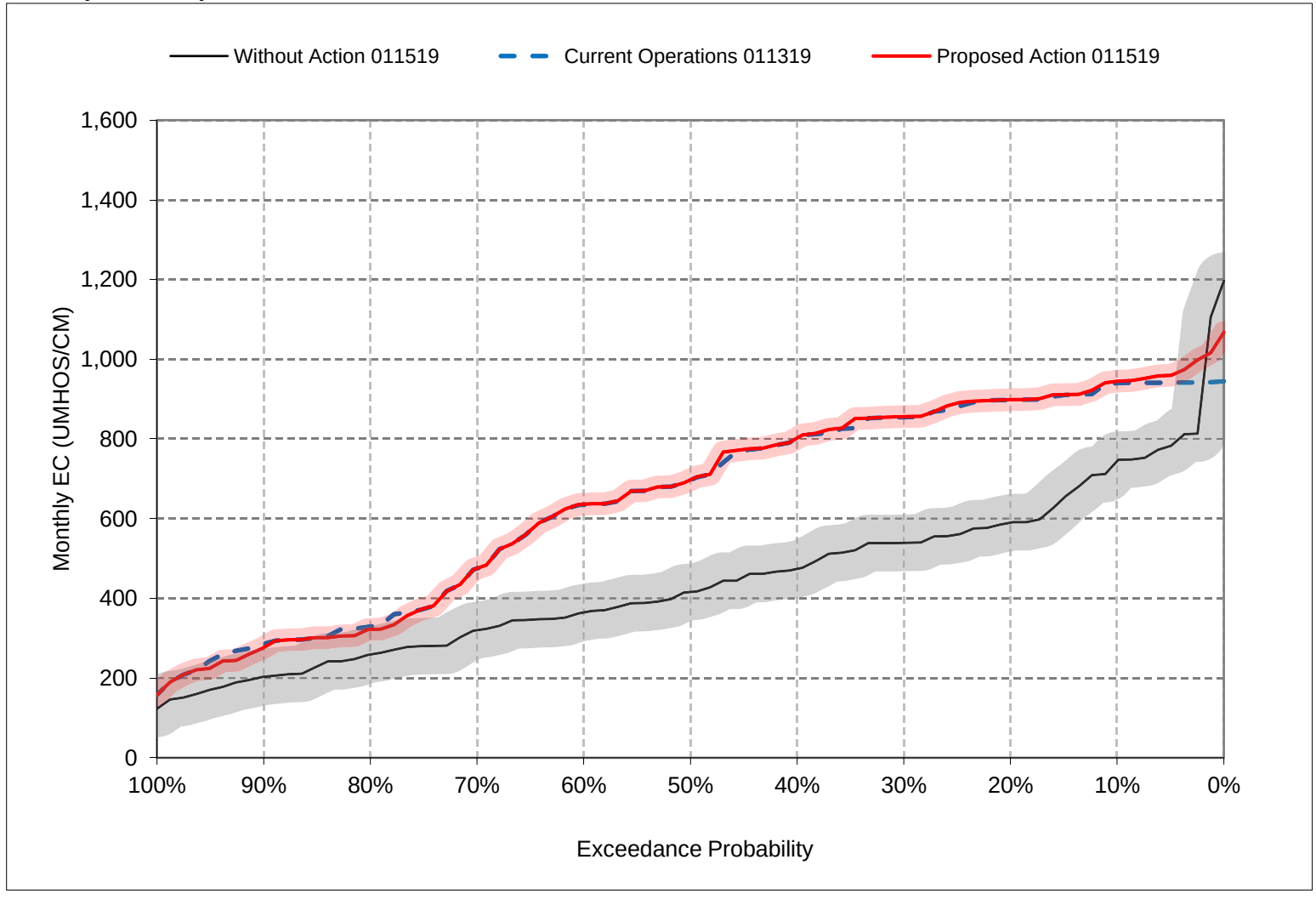
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-7. San Joaquin River at Vernalis
Salinity, January EC



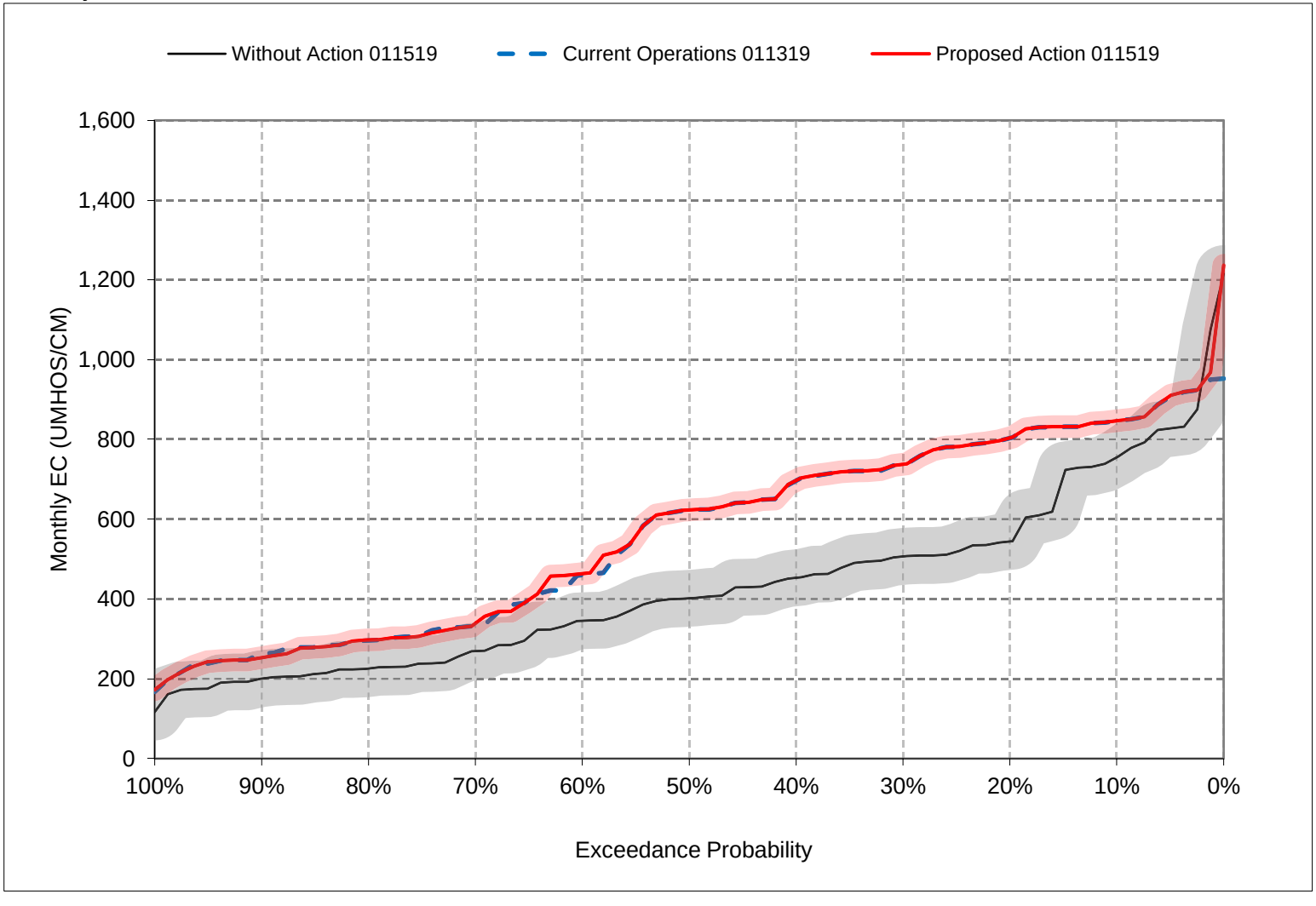
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-8. San Joaquin River at Vernalis
Salinity, February EC



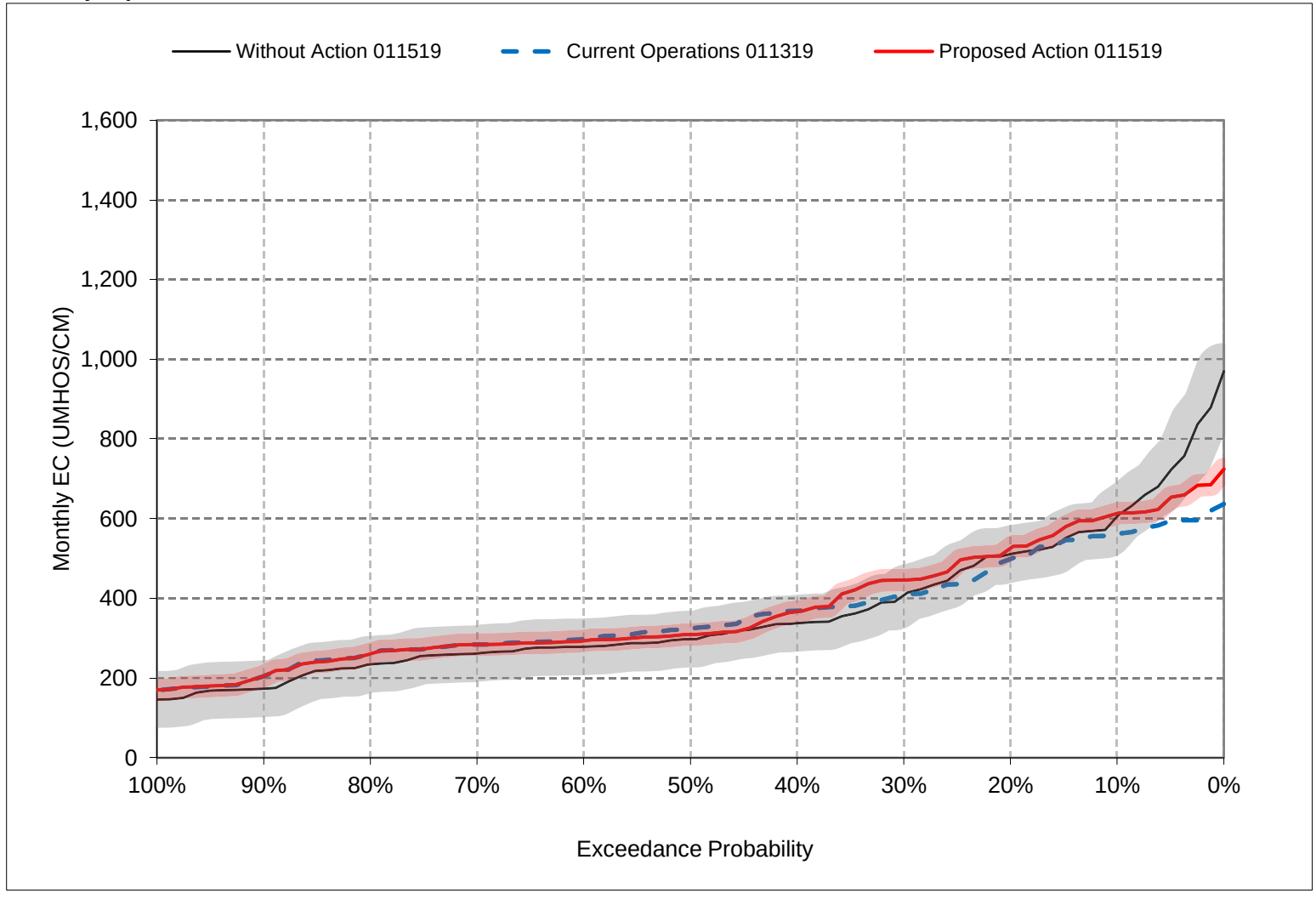
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-9. San Joaquin River at Vernalis
Salinity, March EC



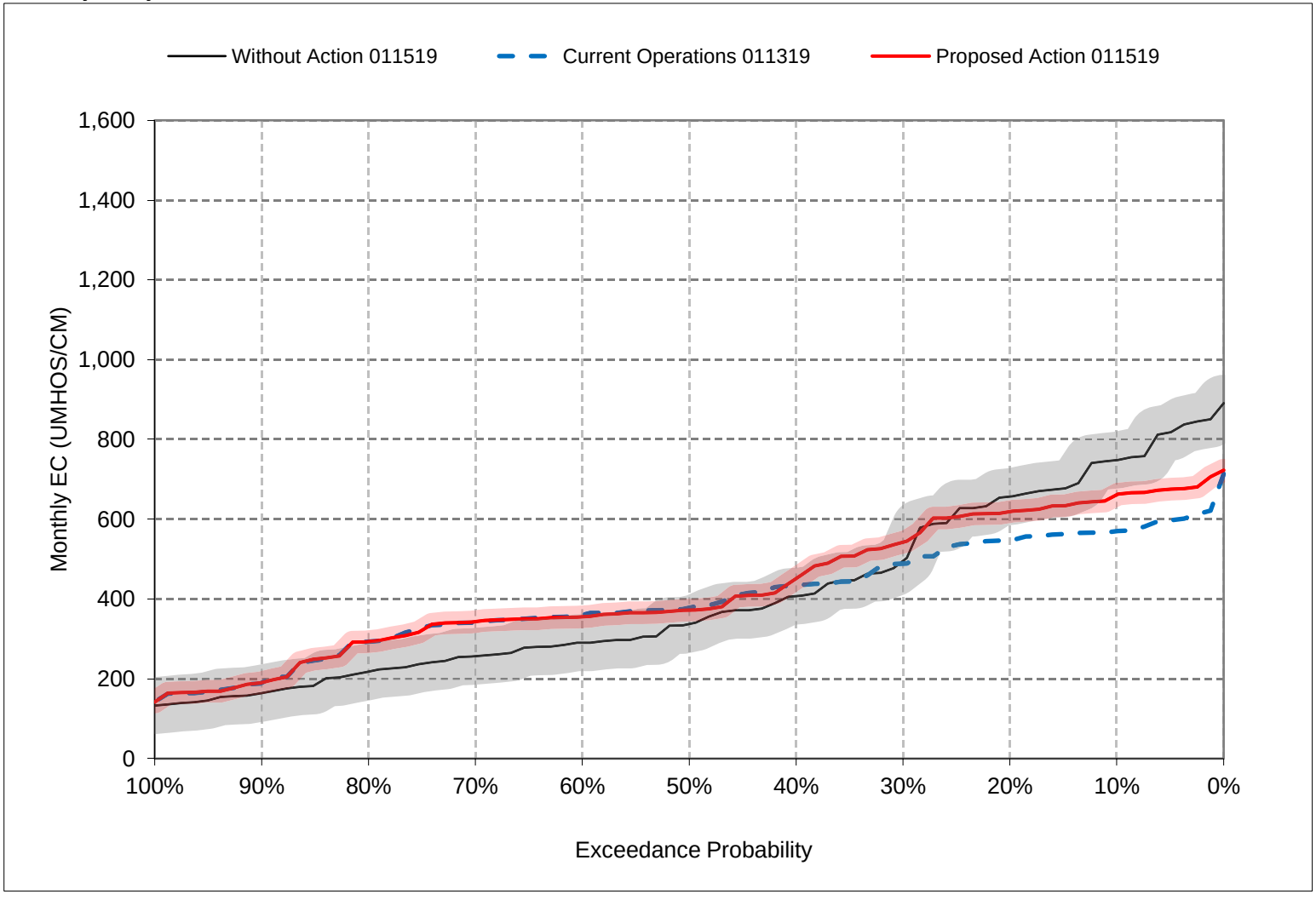
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-10. San Joaquin River at Vernalis
Salinity, April EC



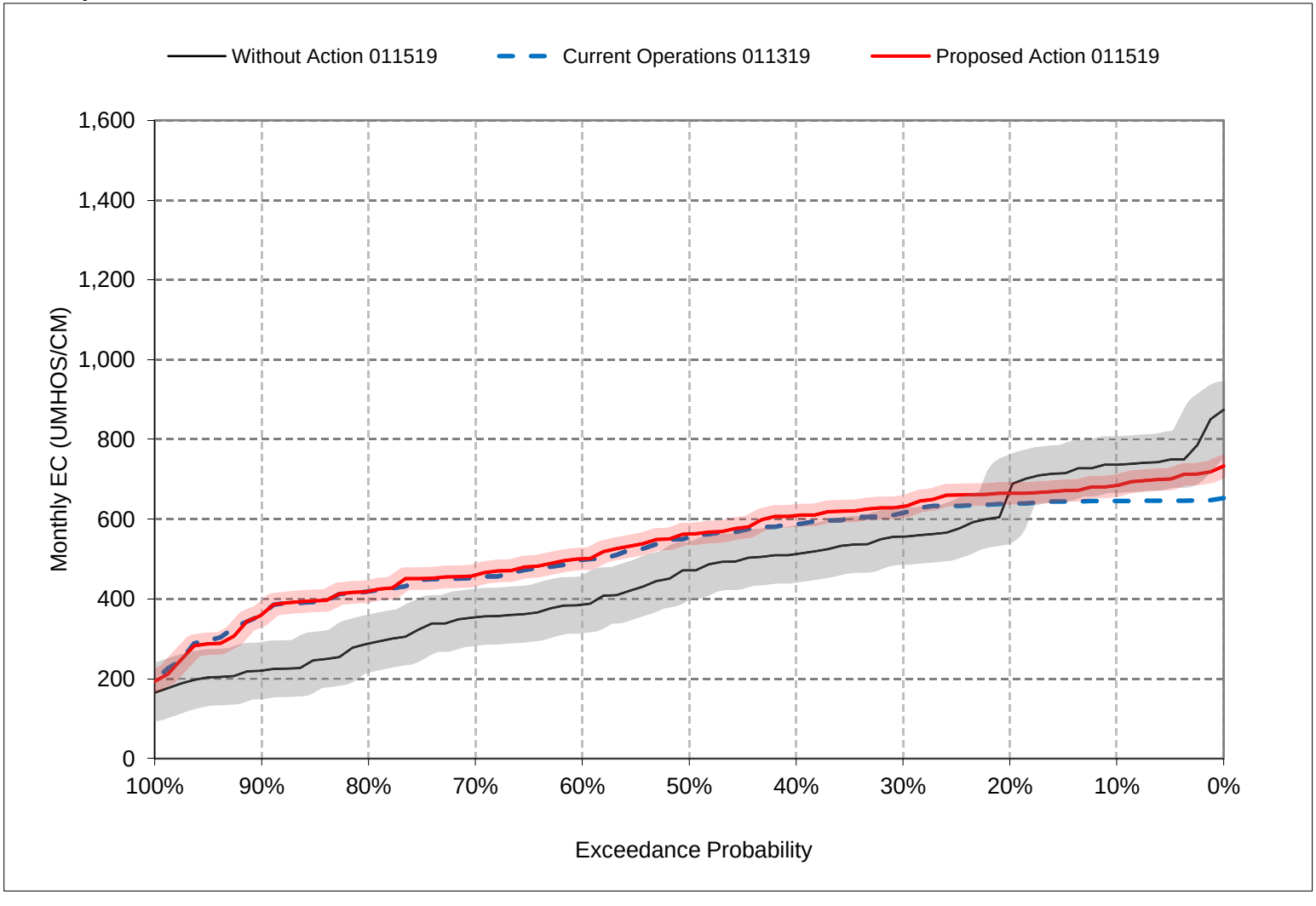
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-11. San Joaquin River at Vernalis
Salinity, May EC



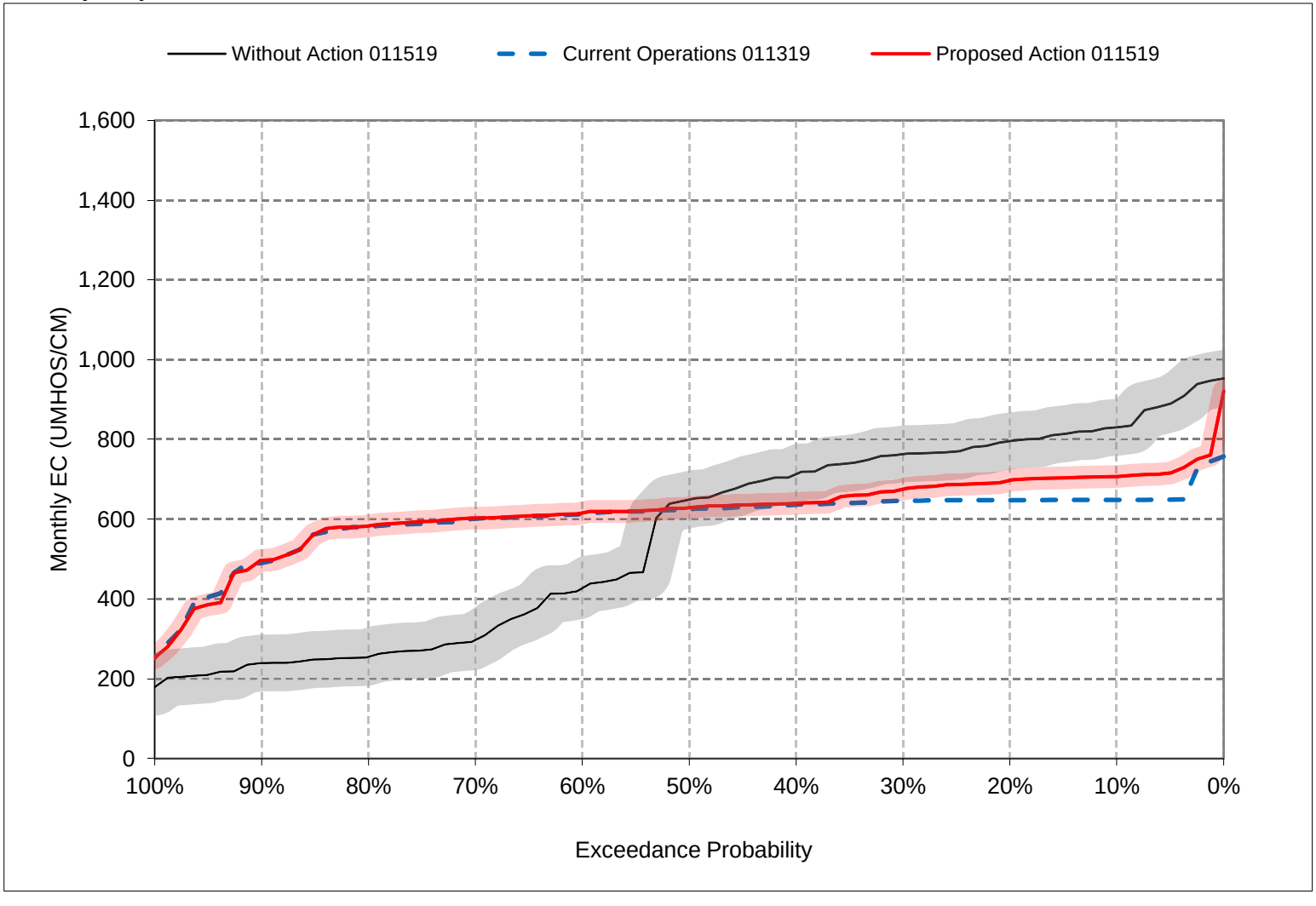
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-12. San Joaquin River at Vernalis
Salinity, June EC



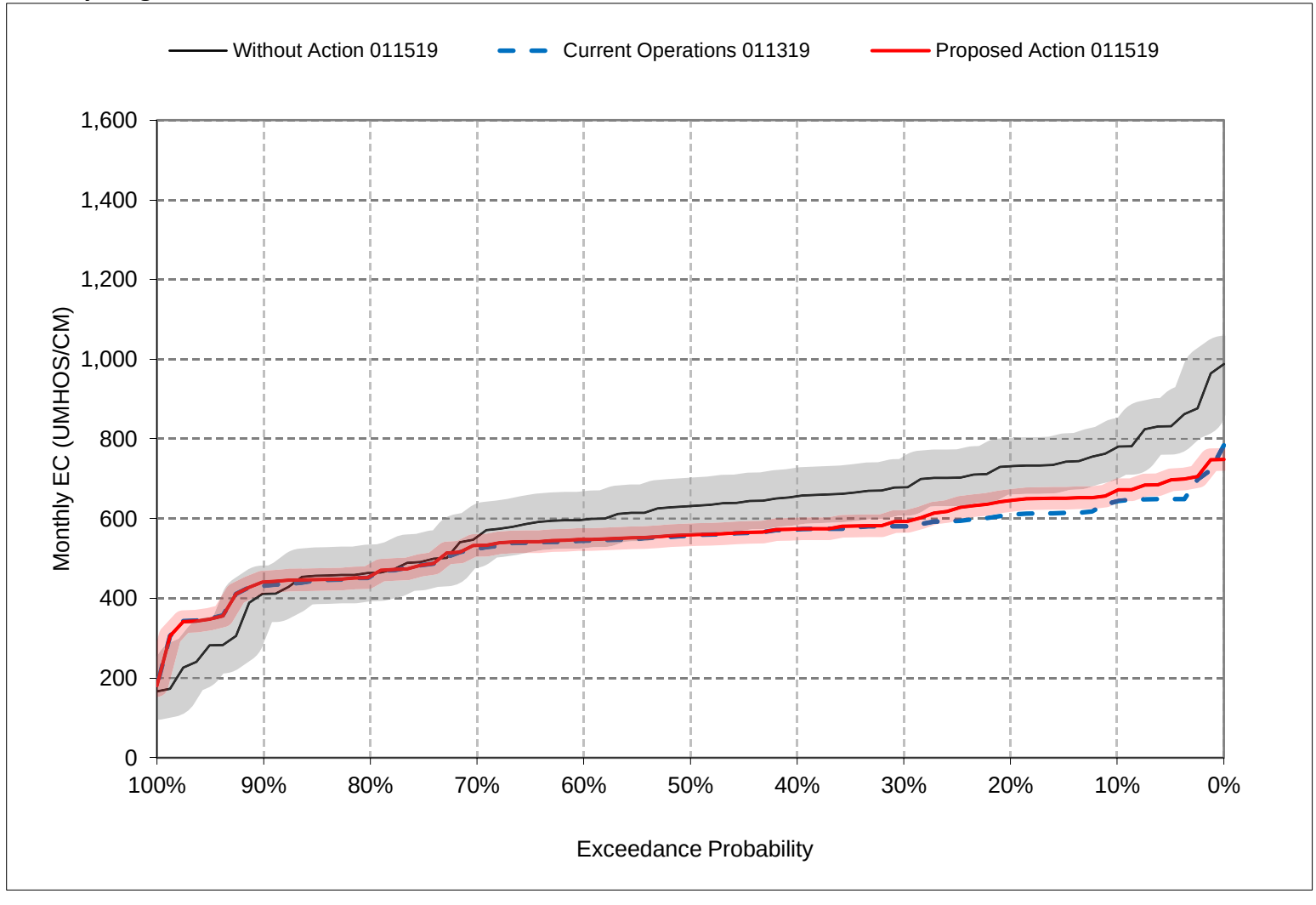
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-13. San Joaquin River at Vernalis
Salinity, July EC



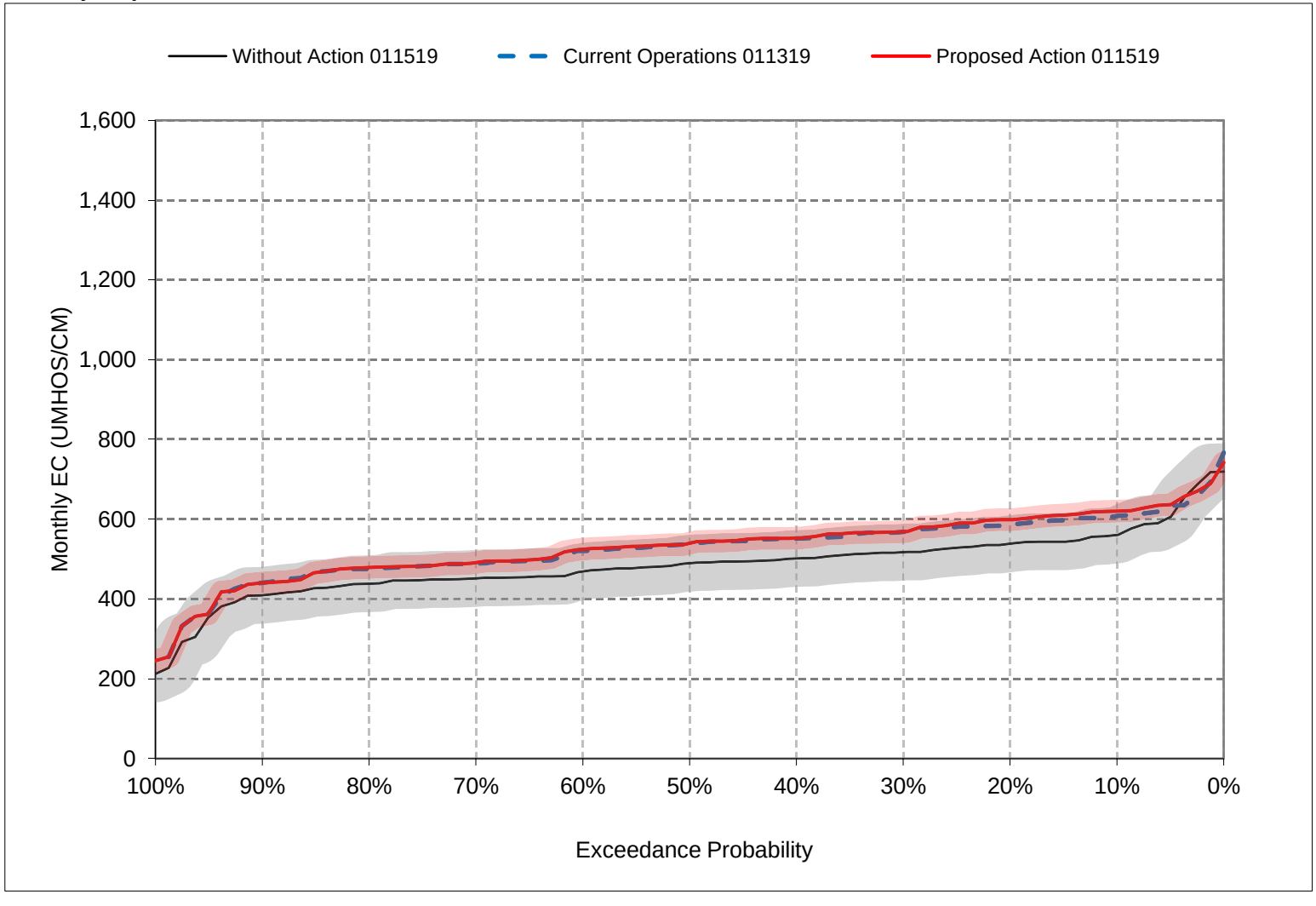
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-14. San Joaquin River at Vernalis
Salinity, August EC



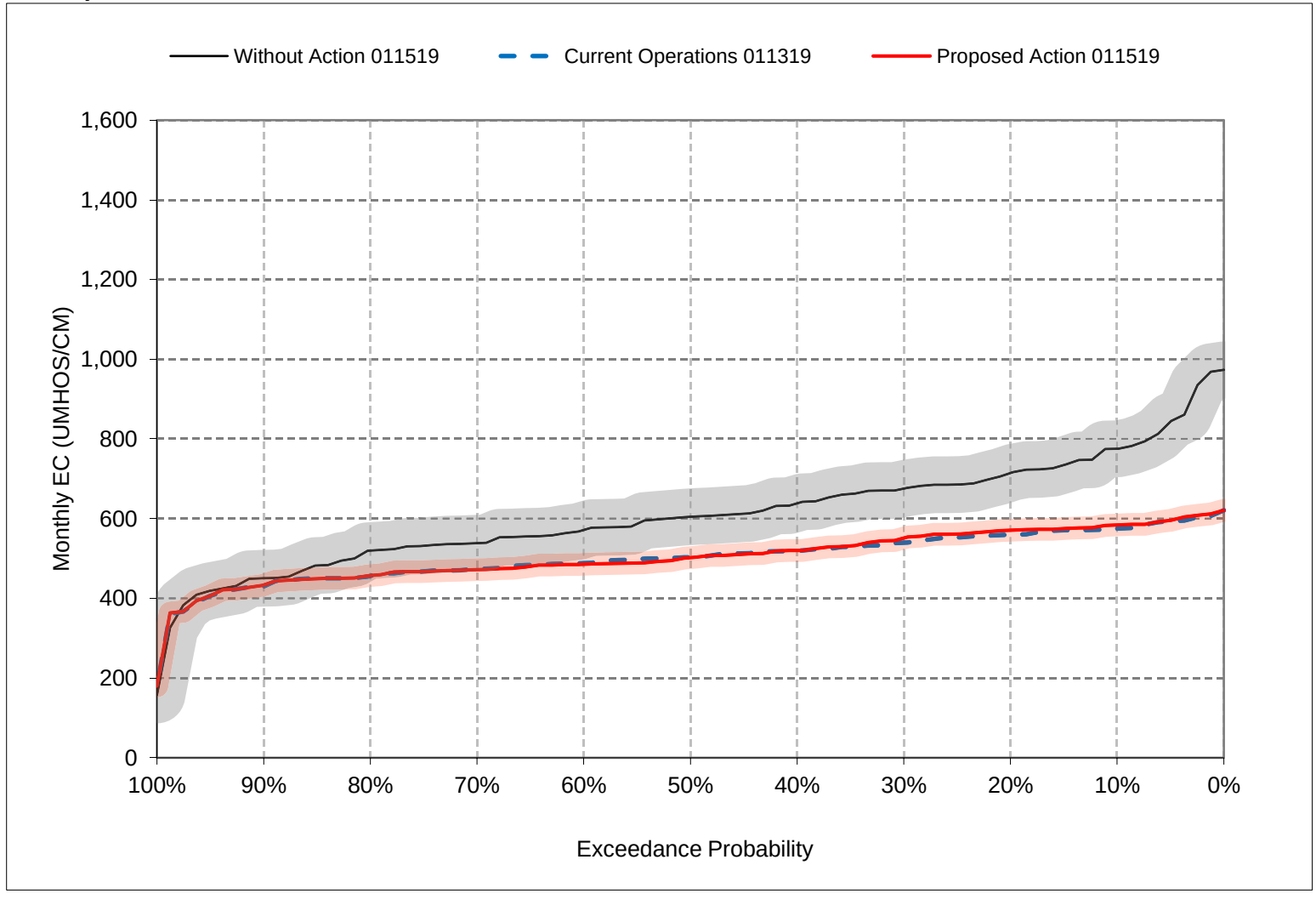
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-15. San Joaquin River at Vernalis
Salinity, September EC



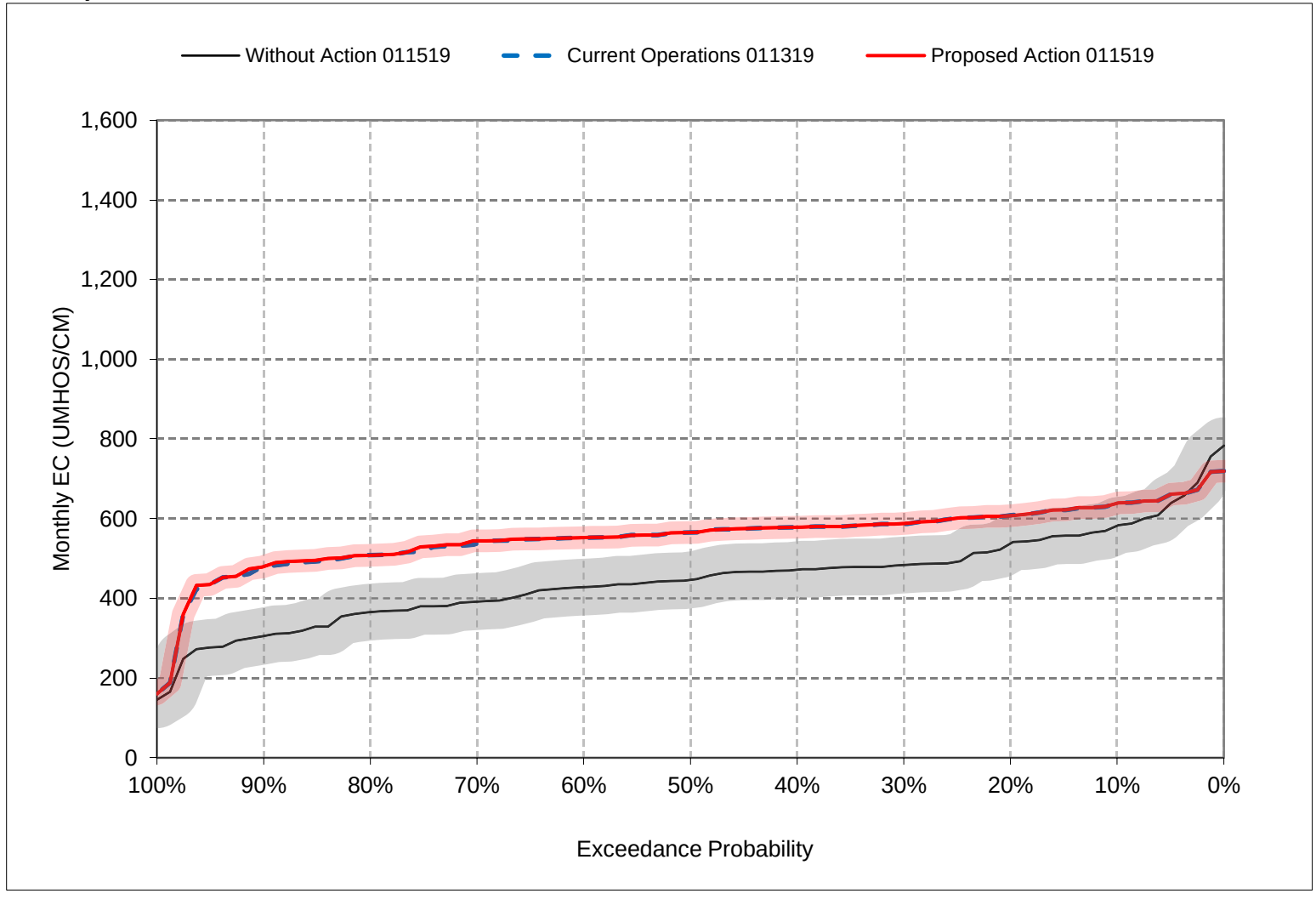
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6-16. San Joaquin River at Vernalis
Salinity, October EC



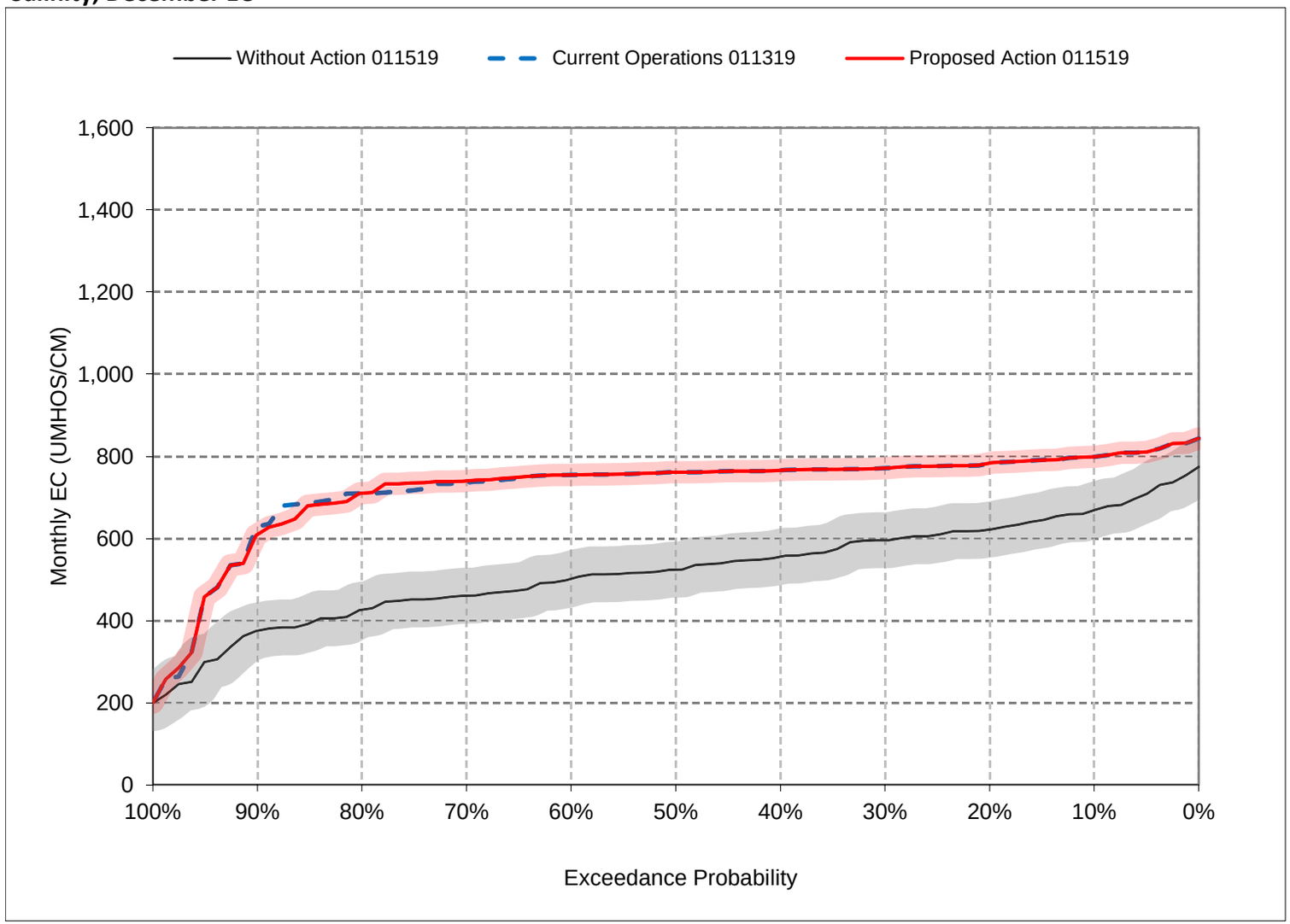
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 6b-1. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	776	582	669	669	744	755	605	749	737	830	779	560
20%	715	538	622	628	590	544	511	657	672	797	731	538
30%	676	483	596	542	539	507	407	496	557	764	678	517
40%	639	472	555	516	474	453	337	407	513	714	657	501
50%	605	446	524	475	416	402	298	337	472	650	632	489
60%	572	428	502	431	365	345	279	290	386	427	598	468
70%	539	391	460	393	320	269	262	257	354	298	555	451
80%	520	365	426	366	259	226	234	218	288	255	464	438
90%	451	305	375	309	203	201	173	164	220	239	411	409
Long Term												
Full Simulation Period[a]	611	447	521	483	446	431	364	410	467	553	603	485
Water Year Types[b]												
Wet (23%)	489	369	468	342	260	239	202	186	266	338	402	396
Above Normal (24%)	537	396	509	415	307	277	269	277	369	411	541	466
Below Normal (10%)	637	455	527	513	427	423	303	343	448	476	642	500
Dry (16%)	655	455	509	526	542	502	385	478	537	659	675	498
Critical (27%)	754	555	582	630	685	699	600	708	696	834	778	565

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-201	**57**	**130**	**105**	**196**	**92**	-44	-179	-92	-182	-135	**49**
20%	-155	**71**	**162**	**130**	**308**	**259**	-12	-109	-33	-149	-121	**49**
30%	-136	**104**	**176**	**204**	**315**	**231**	**1**	-6	**59**	-118	-98	**51**
40%	-120	**107**	**212**	**222**	**329**	**243**	**31**	**28**	**75**	-77	-83	**51**
50%	-102	**119**	**238**	**251**	**281**	**221**	**26**	**41**	**83**	-25	-74	**49**
60%	-84	**125**	**254**	**278**	**271**	**114**	**19**	**70**	**113**	**187**	-54	**52**
70%	-65	**147**	**276**	**257**	**155**	**64**	**22**	**85**	**100**	**304**	-31	**38**
80%	-64	**143**	**284**	**219**	**70**	**71**	**26**	**75**	**131**	**326**	-9	**37**
90%	-21	**175**	**254**	**82**	**82**	**62**	**31**	**26**	**141**	**252**	**21**	**32**
Long Term												
Full Simulation Period[a]	-108	**107**	**201**	**177**	**201**	**133**	-4	-9	**54**	**46**	-64	**41**
Water Year Types[b]												
Wet (23%)	-61	**96**	**166**	**186**	**109**	**58**	**20**	**41**	**105**	**152**	**14**	**23**
Above Normal (24%)	-58	**134**	**207**	**212**	**183**	**139**	**32**	**83**	**124**	**202**	-24	**41**
Below Normal (10%)	-128	**128**	**237**	**167**	**275**	**183**	**5**	**20**	**89**	**132**	-79	**52**
Dry (16%)	-122	**130**	**216**	**201**	**287**	**195**	**9**	-10	**44**	-26	-91	**62**
Critical (27%)	-183	**72**	**203**	**129**	**218**	**137**	-68	-144	-60	-176	-146	**41**

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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 6b-2. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	776	582	669	669	744	755	605	749	737	830	779	560
20%	715	538	622	628	590	544	511	657	672	797	731	538
30%	676	483	596	542	539	507	407	496	557	764	678	517
40%	639	472	555	516	474	453	337	407	513	714	657	501
50%	605	446	524	475	416	402	298	337	472	650	632	489
60%	572	428	502	431	365	345	279	290	386	427	598	468
70%	539	391	460	393	320	269	262	257	354	298	555	451
80%	520	365	426	366	259	226	234	218	288	255	464	438
90%	451	305	375	309	203	201	173	164	220	239	411	409
Long Term												
Full Simulation Period[a]	611	447	521	483	446	431	364	410	467	553	603	485
Water Year Types[b]												
Wet (23%)	489	369	468	342	260	239	202	186	266	338	402	396
Above Normal (24%)	537	396	509	415	307	277	269	277	369	411	541	466
Below Normal (10%)	637	455	527	513	427	423	303	343	448	476	642	500
Dry (16%)	655	455	509	526	542	502	385	478	537	659	675	498
Critical (27%)	754	555	582	630	685	699	600	708	696	834	778	565

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-192	**57**	**130**	**107**	**201**	**92**	**7**	-88	-52	-123	-108	**61**
20%	-145	**70**	**162**	**132**	**309**	**260**	**14**	-38	-8	-99	-85	**61**
30%	-125	**105**	**176**	**205**	**317**	**231**	**38**	**47**	**76**	-88	-85	**52**
40%	-119	**107**	**212**	**223**	**329**	**244**	**29**	**44**	**97**	-73	-83	**52**
50%	-103	**119**	**238**	**252**	**282**	**221**	**11**	**35**	**91**	-21	-73	**51**
60%	-86	**125**	**254**	**281**	**271**	**118**	**15**	**66**	**115**	**189**	-50	**56**
70%	-66	**153**	**280**	**255**	**155**	**70**	**22**	**87**	**106**	**306**	-23	**40**
80%	-63	**143**	**284**	**218**	**62**	**72**	**26**	**75**	**131**	**328**	-9	**41**
90%	-17	**175**	**234**	**81**	**73**	**52**	**31**	**27**	**141**	**258**	**30**	**32**
Long Term												
Full Simulation Period[a]	-107	**108**	**200**	**177**	**204**	**138**	**9**	**17**	**70**	**64**	-54	**45**
Water Year Types[b]												
Wet (23%)	-61	**99**	**166**	**186**	**104**	**54**	**21**	**41**	**100**	**150**	**16**	**23**
Above Normal (24%)	-64	**135**	**205**	**208**	**181**	**143**	**20**	**76**	**133**	**225**	-20	**43**
Below Normal (10%)	-132	**128**	**237**	**164**	**274**	**193**	-1	**16**	**98**	**134**	-78	**54**
Dry (16%)	-112	**130**	**216**	**204**	**291**	**195**	**27**	**32**	**59**	-15	-88	**64**
Critical (27%)	-174	**72**	**203**	**131**	**234**	**151**	-17	-65	-17	-134	-114	**53**

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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 6b-3. San Joaquin River at Vernalis Salinity (60-20-20), Monthly EC

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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).

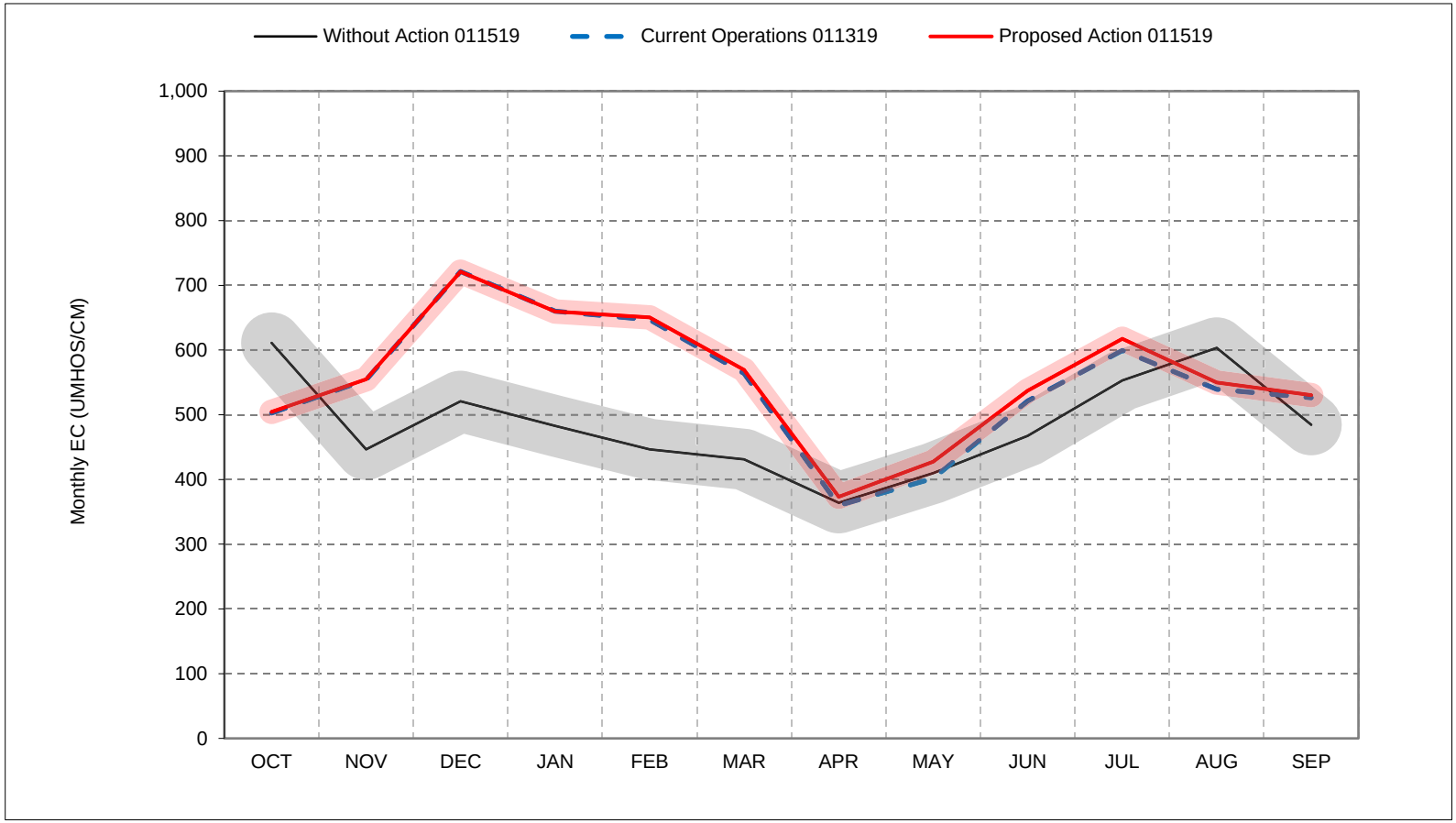
c These results are displayed with calendar year - year type sorting.

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.

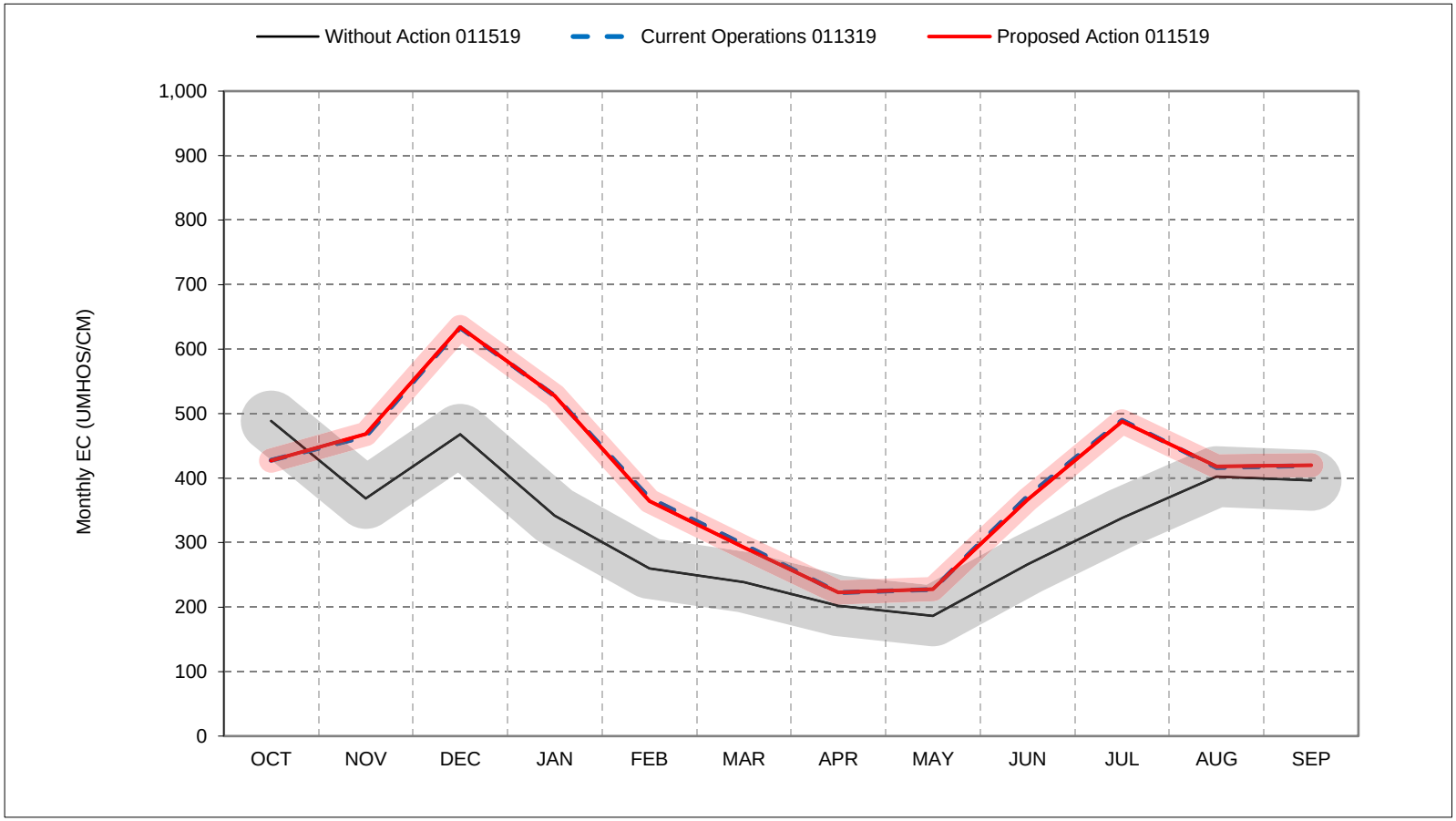
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 6b-1. San Joaquin River at Vernalis Salinity (60-20-20), Long-Term Average EC



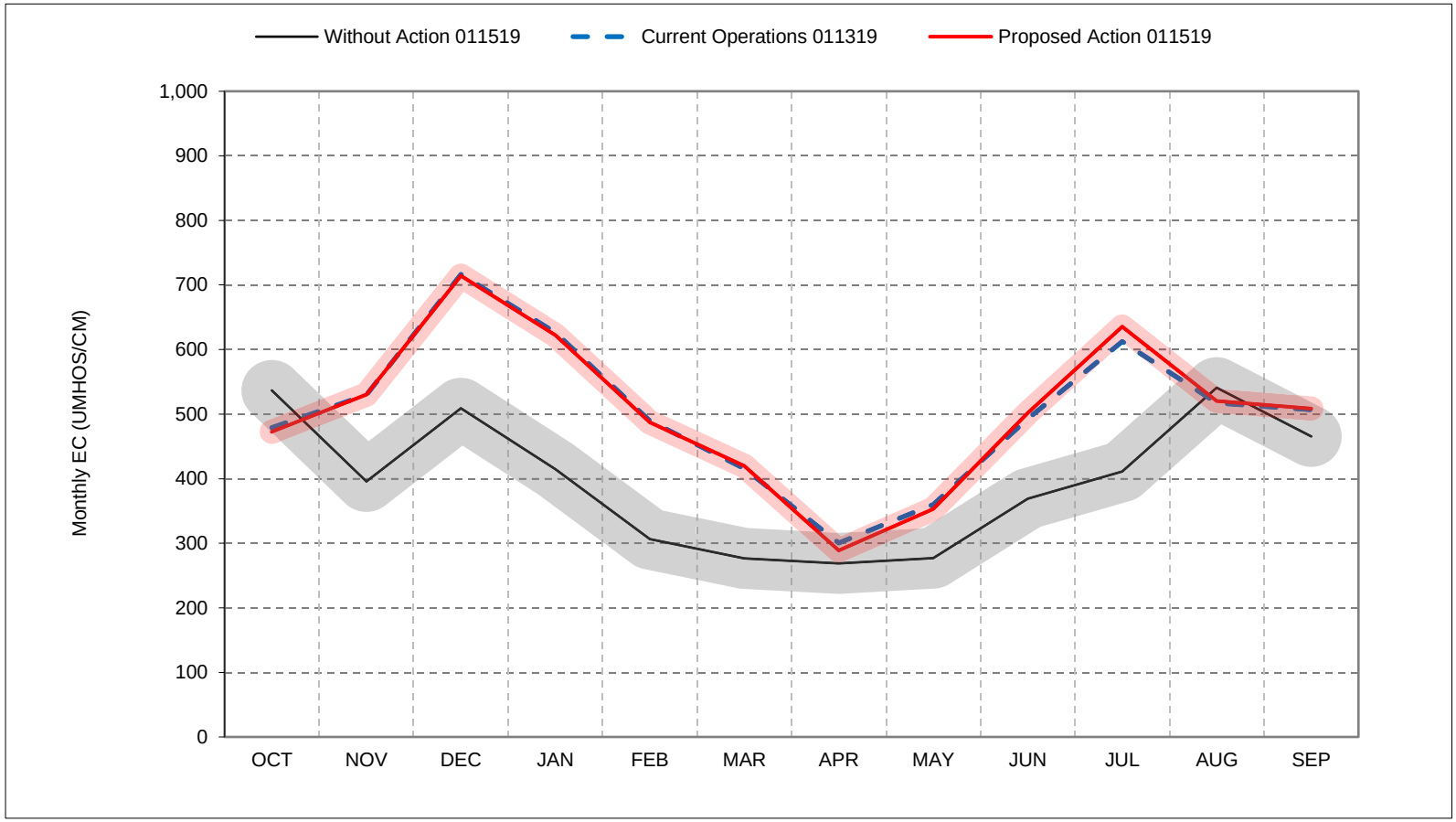
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6b-2. San Joaquin River at Vernalis Salinity (60-20-20), Wet Year Average EC



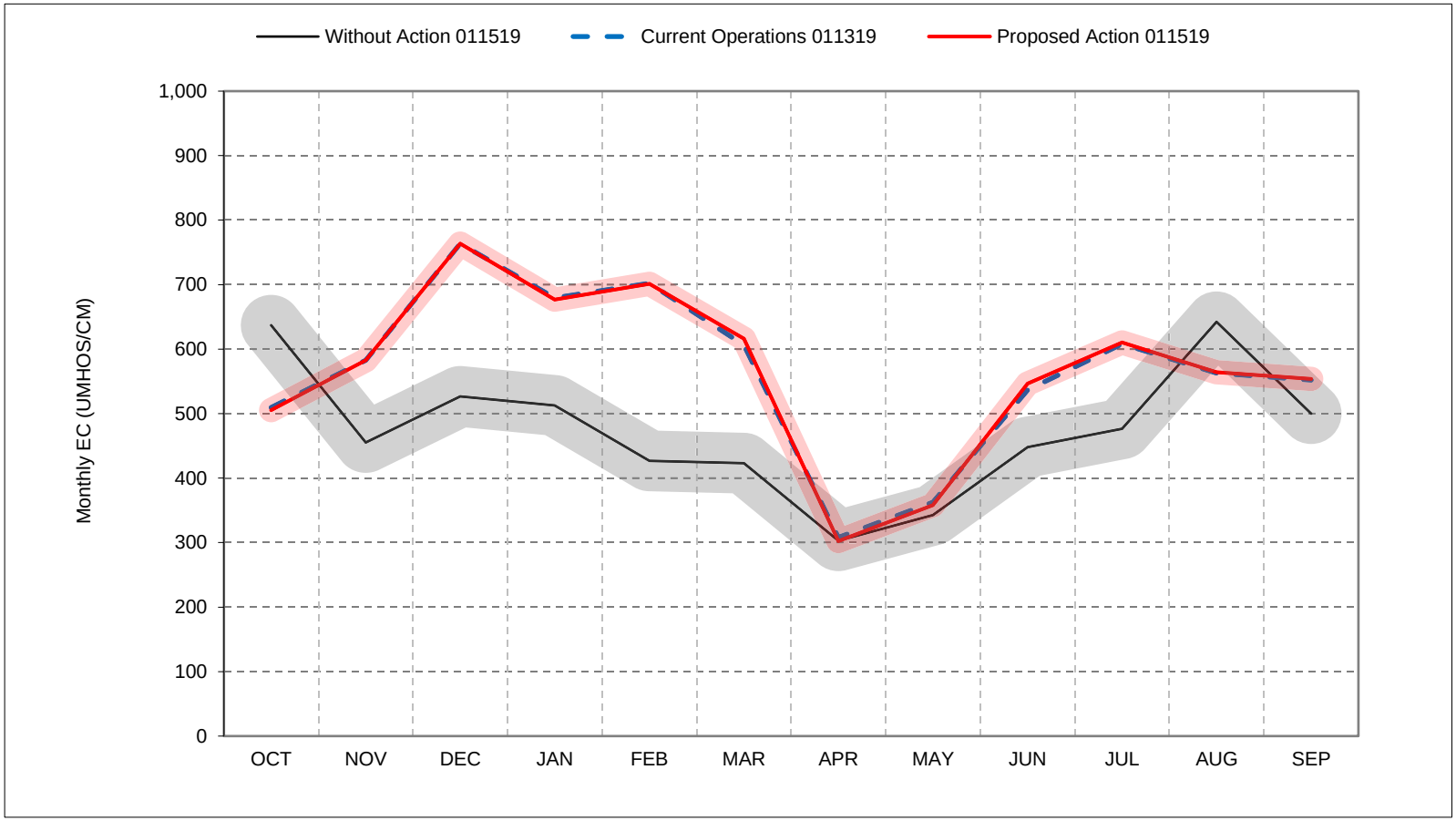
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6b-3. San Joaquin River at Vernalis Salinity (60-20-20), Above Normal Year Average EC



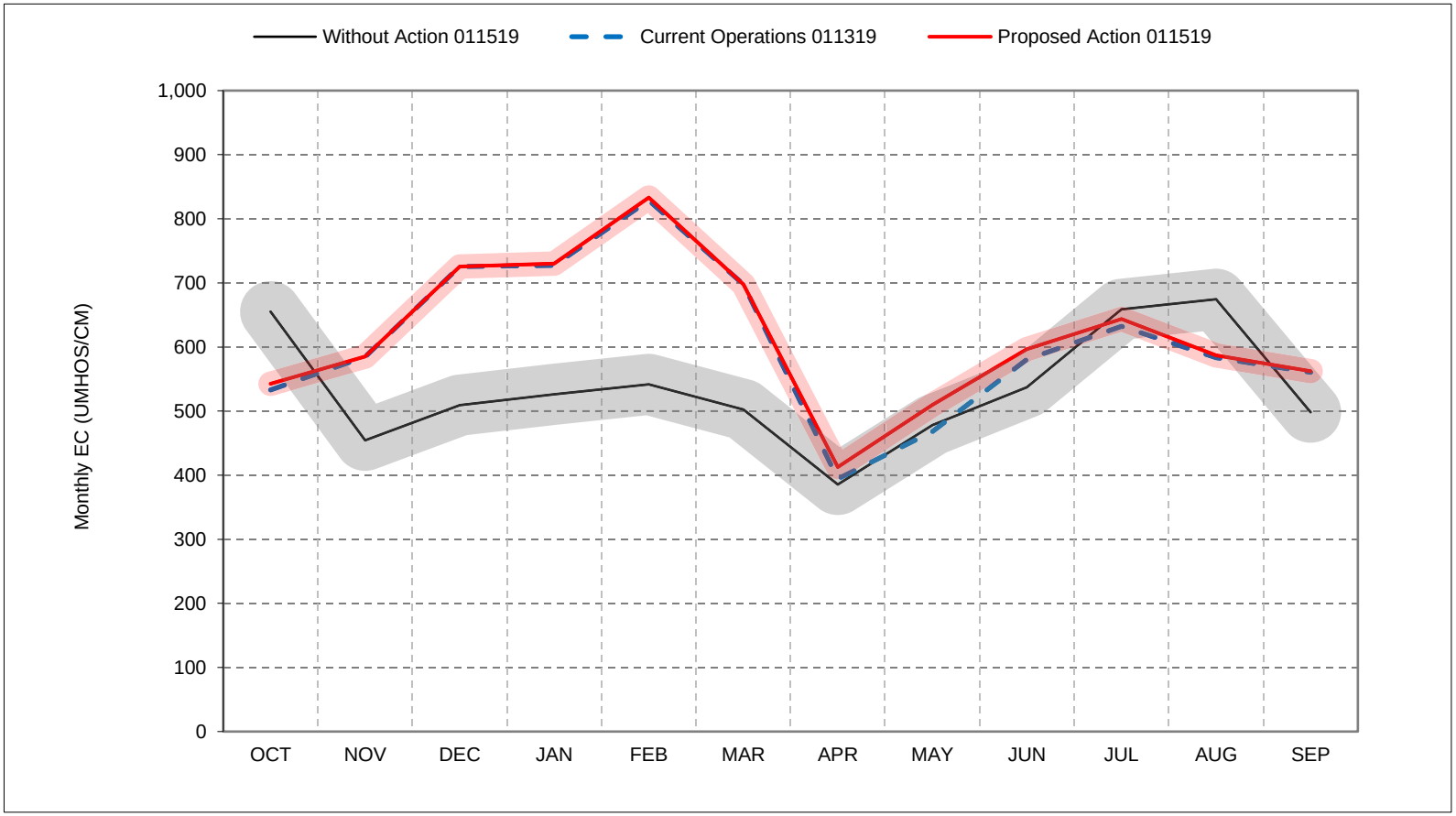
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 6b-4. San Joaquin River at Vernalis Salinity (60-20-20), Below Normal Year Average EC



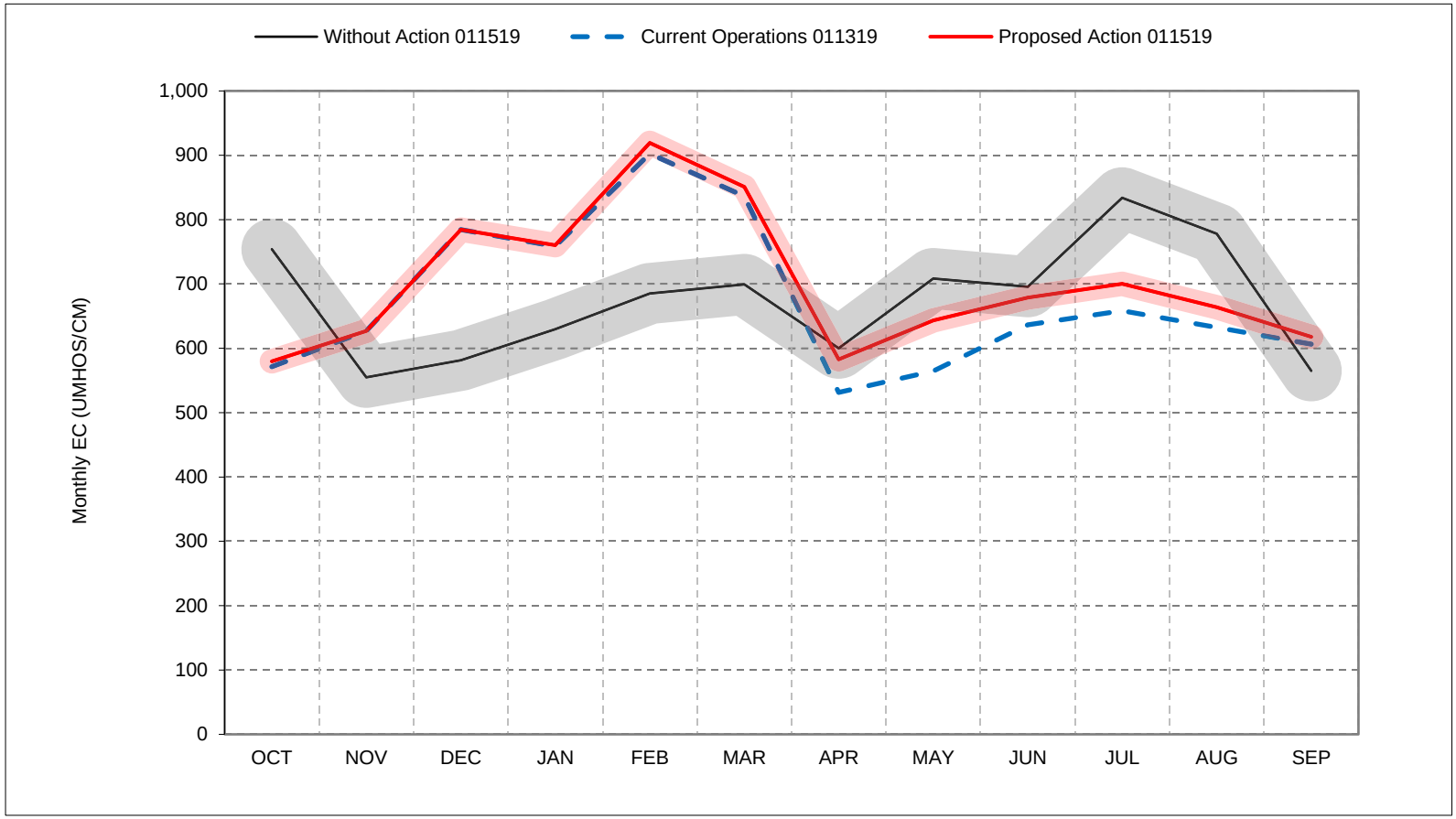
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 7-1. San Joaquin River at Jersey Point Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,261	829	435	345	346	331	306	359	1,182	2,121	1,772	1,271
20%	763	558	345	329	338	320	289	293	783	1,536	1,463	1,125
30%	635	403	309	313	327	298	281	272	554	1,098	1,297	889
40%	417	328	293	305	317	288	271	255	383	749	971	730
50%	363	310	282	300	312	280	262	242	285	442	789	610
60%	330	287	277	294	302	273	246	234	253	380	699	531
70%	296	280	268	286	291	256	227	225	234	334	564	413
80%	276	275	262	280	270	232	219	218	225	302	400	332
90%	257	266	250	269	244	217	203	185	214	259	328	271
Long Term												
Full Simulation Period[a]	581	433	317	307	305	277	266	306	566	861	950	753
Water Year Types[b]												
Wet (32%)	279	275	265	291	267	235	216	202	226	298	420	337
Above Normal (16%)	348	301	280	300	298	260	242	233	288	436	691	510
Below Normal (13%)	432	388	326	296	316	291	276	265	419	613	929	711
Dry (24%)	679	453	327	310	324	300	278	286	678	1,271	1,390	992
Critical (15%)	1,463	924	443	357	353	337	372	678	1,548	2,083	1,665	1,558

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**1,522**	**2,221**	**2,054**	**1,035**	**201**	-27	-11	**65**	-664	-724	**13**	**1,371**
20%	**1,826**	**2,120**	**1,890**	**797**	**46**	-43	-28	**31**	-312	-442	**197**	**1,362**
30%	**1,822**	**2,071**	**1,297**	**585**	-19	-47	-31	**12**	-126	-189	**208**	**1,539**
40%	**1,936**	**1,802**	**1,021**	**398**	-28	-47	-32	-6	-8	**80**	**406**	**1,567**
50%	**1,339**	**744**	**564**	**235**	-38	-51	-31	-1	**35**	**205**	**548**	**1,533**
60%	**192**	**310**	**467**	**53**	-50	-49	-18	**2**	**38**	**96**	**583**	**551**
70%	**52**	**63**	**239**	-29	-55	-38	-2	**2**	**18**	**78**	**584**	**642**
80%	**24**	**14**	**2**	-47	-52	-22	**0**	**6**	-6	**65**	**687**	**674**
90%	**22**	-15	-36	-51	-32	-16	**10**	**13**	-11	**32**	**651**	**683**
Long Term												
Full Simulation Period[a]	**914**	**1,012**	**846**	**388**	**34**	-29	-17	-14	-167	-102	**402**	**987**
Water Year Types[b]												
Wet (32%)	**13**	**7**	**254**	-4	-31	-16	**5**	**11**	**13**	**48**	**653**	**568**
Above Normal (16%)	**182**	**378**	**629**	**164**	-45	-43	-11	**3**	**20**	**9**	**452**	**546**
Below Normal (13%)	**1,872**	**1,655**	**1,219**	**428**	**18**	-45	-29	**6**	-50	**160**	**426**	**1,692**
Dry (24%)	**1,724**	**1,715**	**1,070**	**678**	**84**	-38	-35	**1**	-272	-171	**163**	**1,453**
Critical (15%)	**1,431**	**2,118**	**1,646**	**964**	**193**	-13	-29	-133	-692	-670	**183**	**947**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 7-2. San Joaquin River at Jersey Point Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,261	829	435	345	346	331	306	359	1,182	2,121	1,772	1,271
20%	763	558	345	329	338	320	289	293	783	1,536	1,463	1,125
30%	635	403	309	313	327	298	281	272	554	1,098	1,297	889
40%	417	328	293	305	317	288	271	255	383	749	971	730
50%	363	310	282	300	312	280	262	242	285	442	789	610
60%	330	287	277	294	302	273	246	234	253	380	699	531
70%	296	280	268	286	291	256	227	225	234	334	564	413
80%	276	275	262	280	270	232	219	218	225	302	400	332
90%	257	266	250	269	244	217	203	185	214	259	328	271
Long Term												
Full Simulation Period[a]	581	433	317	307	305	277	266	306	566	861	950	753
Water Year Types[b]												
Wet (32%)	279	275	265	291	267	235	216	202	226	298	420	337
Above Normal (16%)	348	301	280	300	298	260	242	233	288	436	691	510
Below Normal (13%)	432	388	326	296	316	291	276	265	419	613	929	711
Dry (24%)	679	453	327	310	324	300	278	286	678	1,271	1,390	992
Critical (15%)	1,463	924	443	357	353	337	372	678	1,548	2,083	1,665	1,558

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**1,584**	**2,261**	**2,146**	**1,306**	**296**	**14**	**54**	**107**	-592	-644	**72**	**1,370**
20%	**2,008**	**2,329**	**2,006**	**867**	**73**	-43	-38	**103**	-229	-533	**241**	**1,449**
30%	**1,984**	**2,357**	**1,879**	**701**	**2**	-49	-47	**59**	-53	-188	**258**	**1,594**
40%	**2,168**	**2,206**	**1,516**	**471**	-33	-51	-50	**3**	**25**	**102**	**495**	**1,684**
50%	**2,145**	**2,076**	**1,335**	**171**	-40	-50	-44	-13	**38**	**143**	**581**	**1,711**
60%	**2,099**	**1,930**	**931**	**50**	-48	-52	-34	-16	**23**	**113**	**554**	**1,721**
70%	**2,055**	**1,495**	**535**	-28	-57	-40	-18	-16	**5**	**102**	**576**	**1,817**
80%	**1,849**	**1,162**	**301**	-42	-50	-23	-11	-19	-16	**72**	**673**	**1,868**
90%	**1,022**	**728**	**45**	-49	-32	-13	-2	**7**	-17	**30**	**698**	**1,653**
Long Term												
Full Simulation Period[a]	**1,749**	**1,756**	**1,176**	**441**	**62**	-16	-20	**2**	-126	-102	**423**	**1,512**
Water Year Types[b]												
Wet (32%)	**1,578**	**1,502**	**1,006**	-8	-34	-16	-7	**1**	**6**	**50**	**625**	**1,529**
Above Normal (16%)	**2,055**	**1,911**	**1,218**	**257**	-35	-43	-31	-17	-2	**16**	**468**	**1,769**
Below Normal (13%)	**1,863**	**1,716**	**1,211**	**552**	**55**	-32	-35	**39**	**24**	**200**	**513**	**1,721**
Dry (24%)	**1,891**	**1,768**	**1,081**	**786**	**133**	-28	-34	**34**	-199	-220	**213**	**1,523**
Critical (15%)	**1,448**	**2,159**	**1,623**	**935**	**264**	**49**	**1**	-64	-562	-640	**203**	**985**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 7-3. San Joaquin River at Jersey Point Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

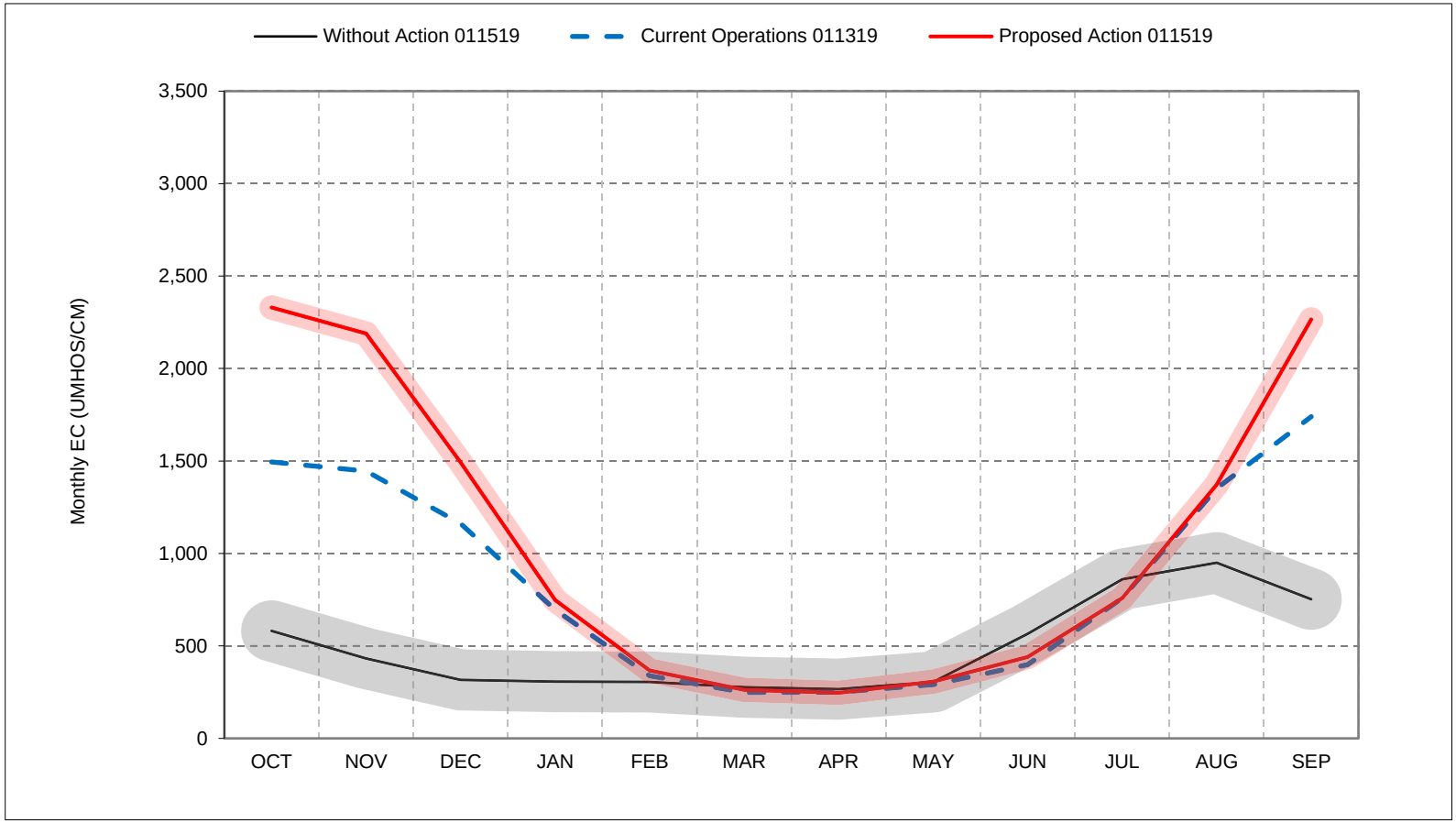
c These results are displayed with calendar year - year type sorting.

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.

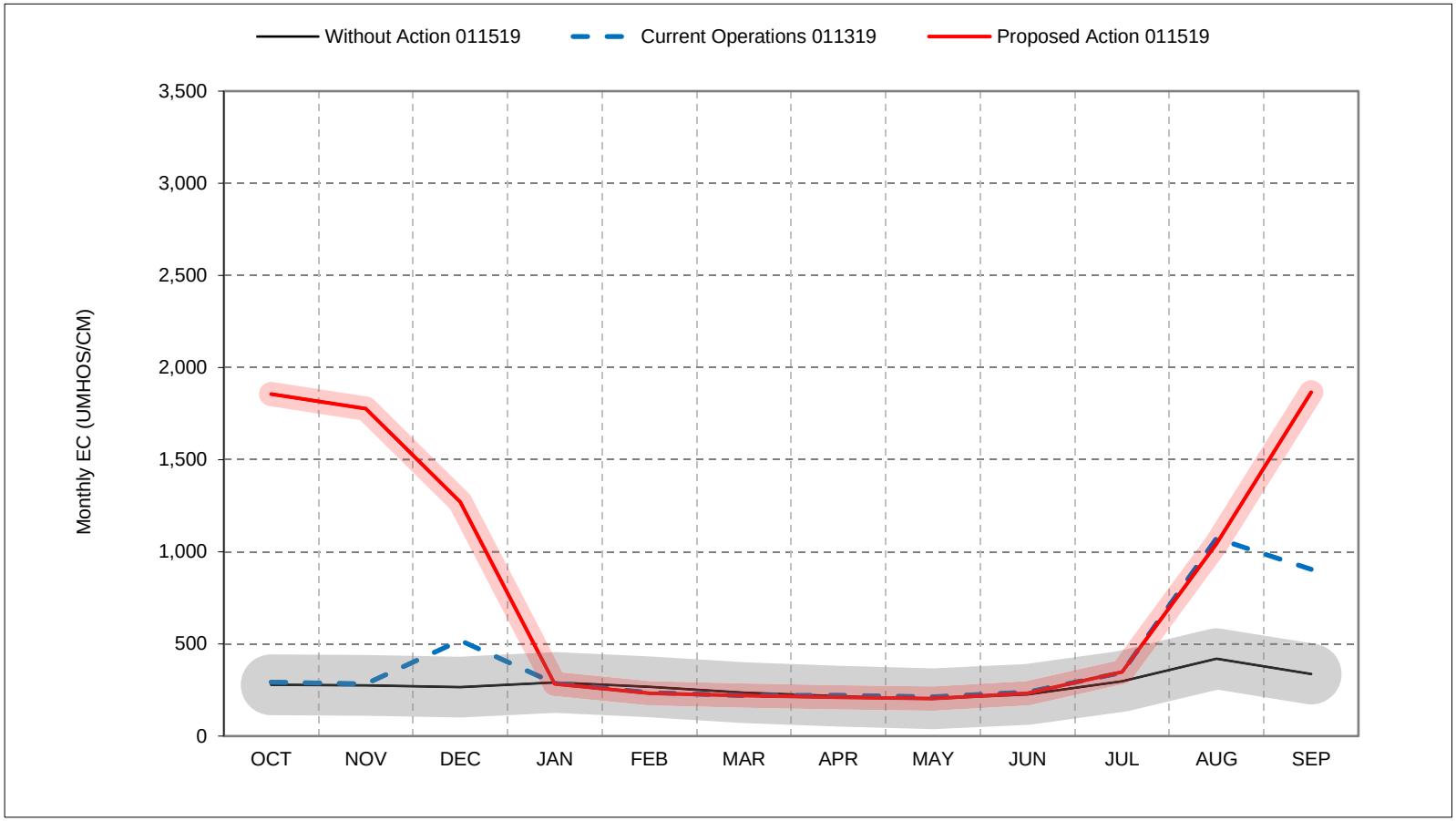
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-1. San Joaquin River at Jersey Point Salinity, Long-Term Average EC



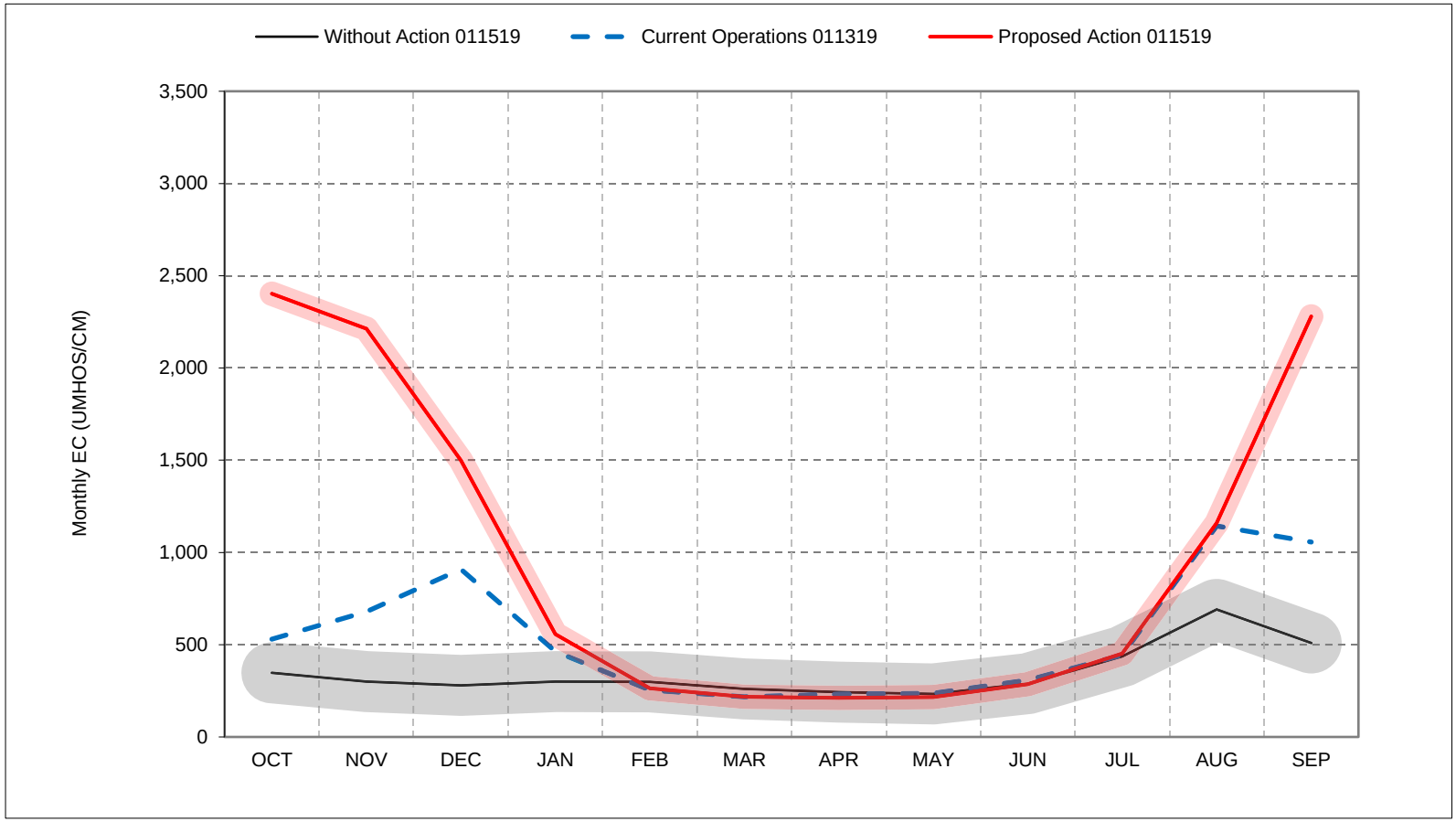
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-2. San Joaquin River at Jersey Point Salinity, Wet Year Average EC



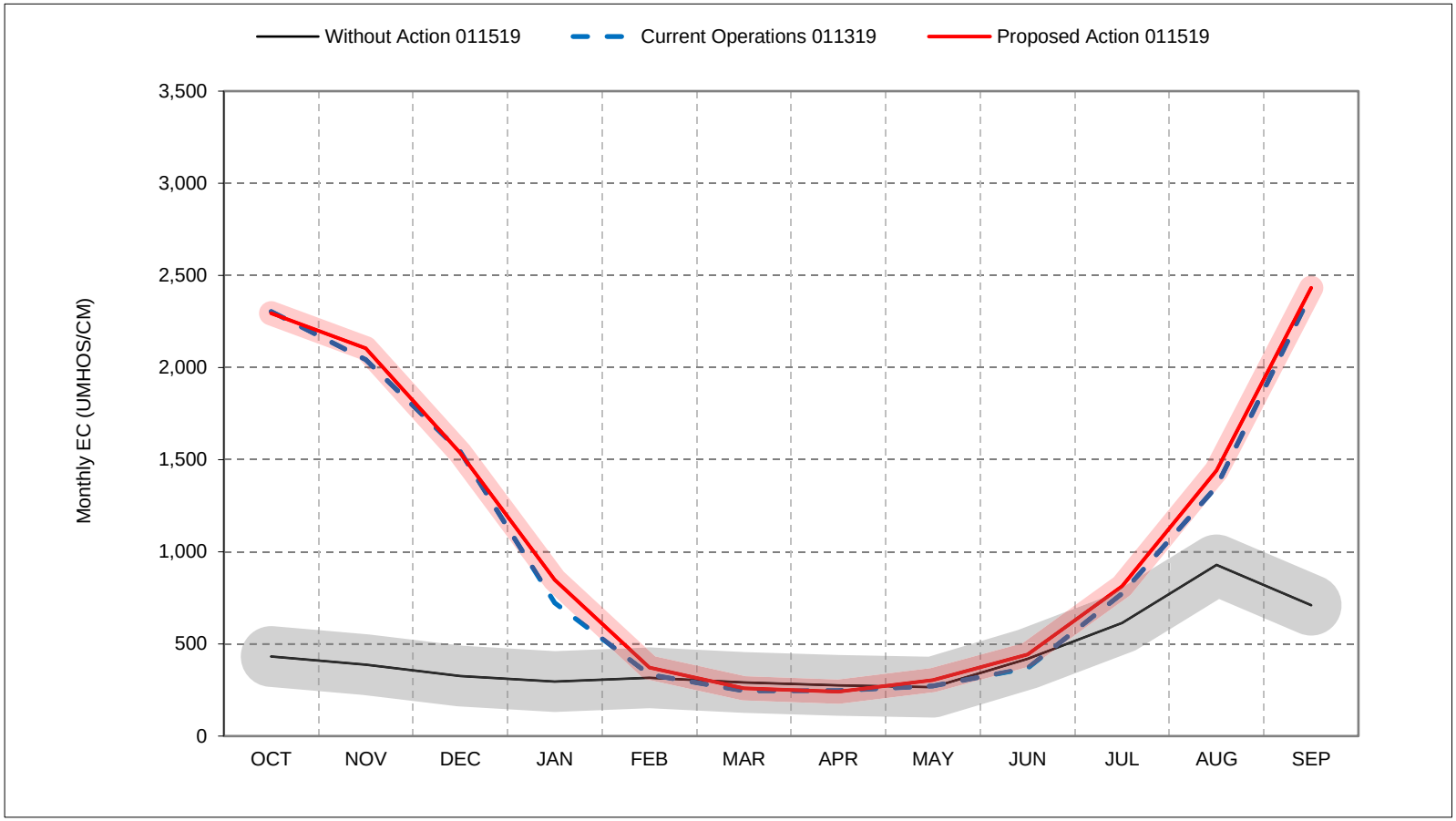
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-3. San Joaquin River at Jersey Point Salinity, Above Normal Year Average EC



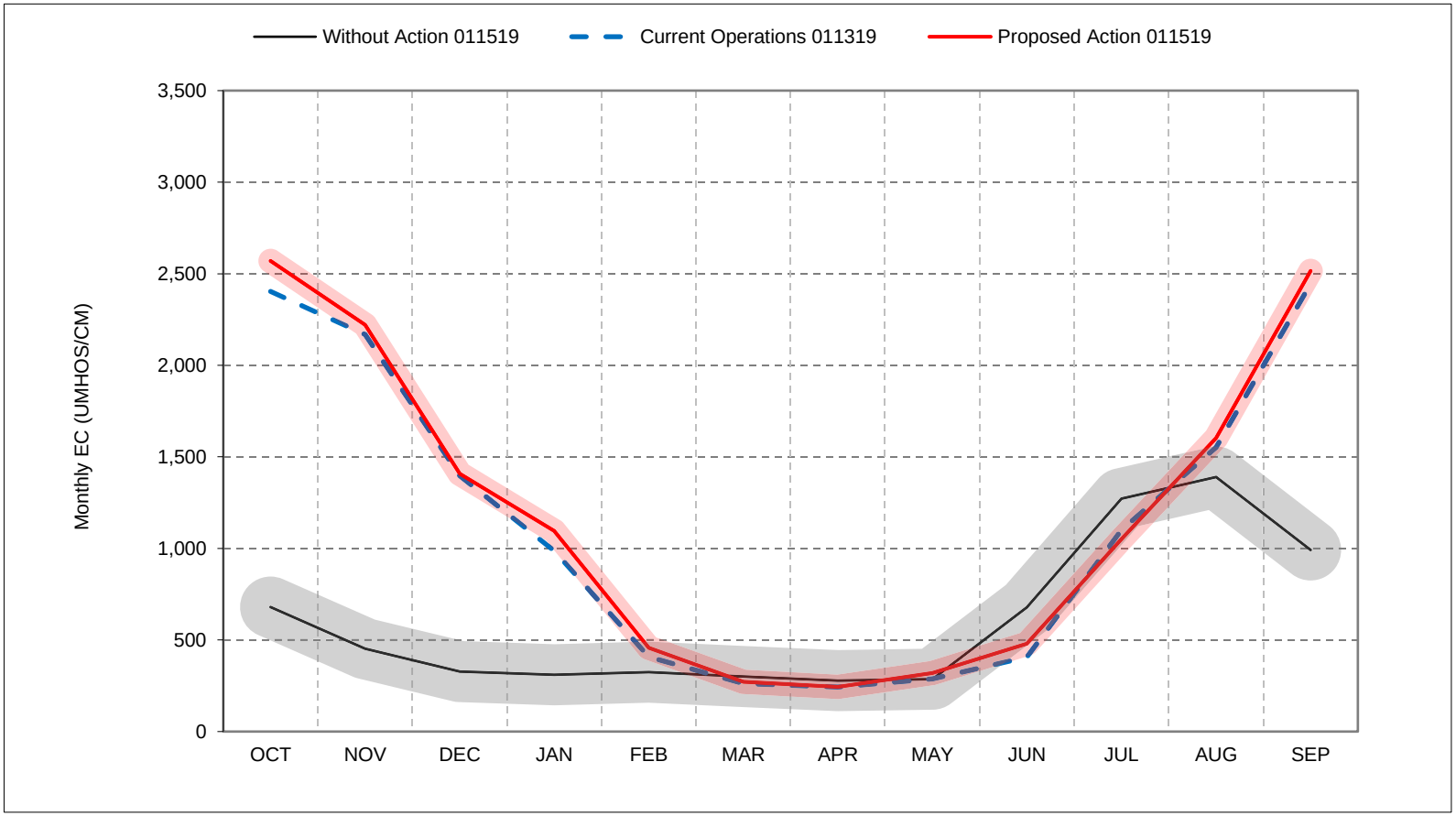
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-4. San Joaquin River at Jersey Point Salinity, Below Normal Year Average EC



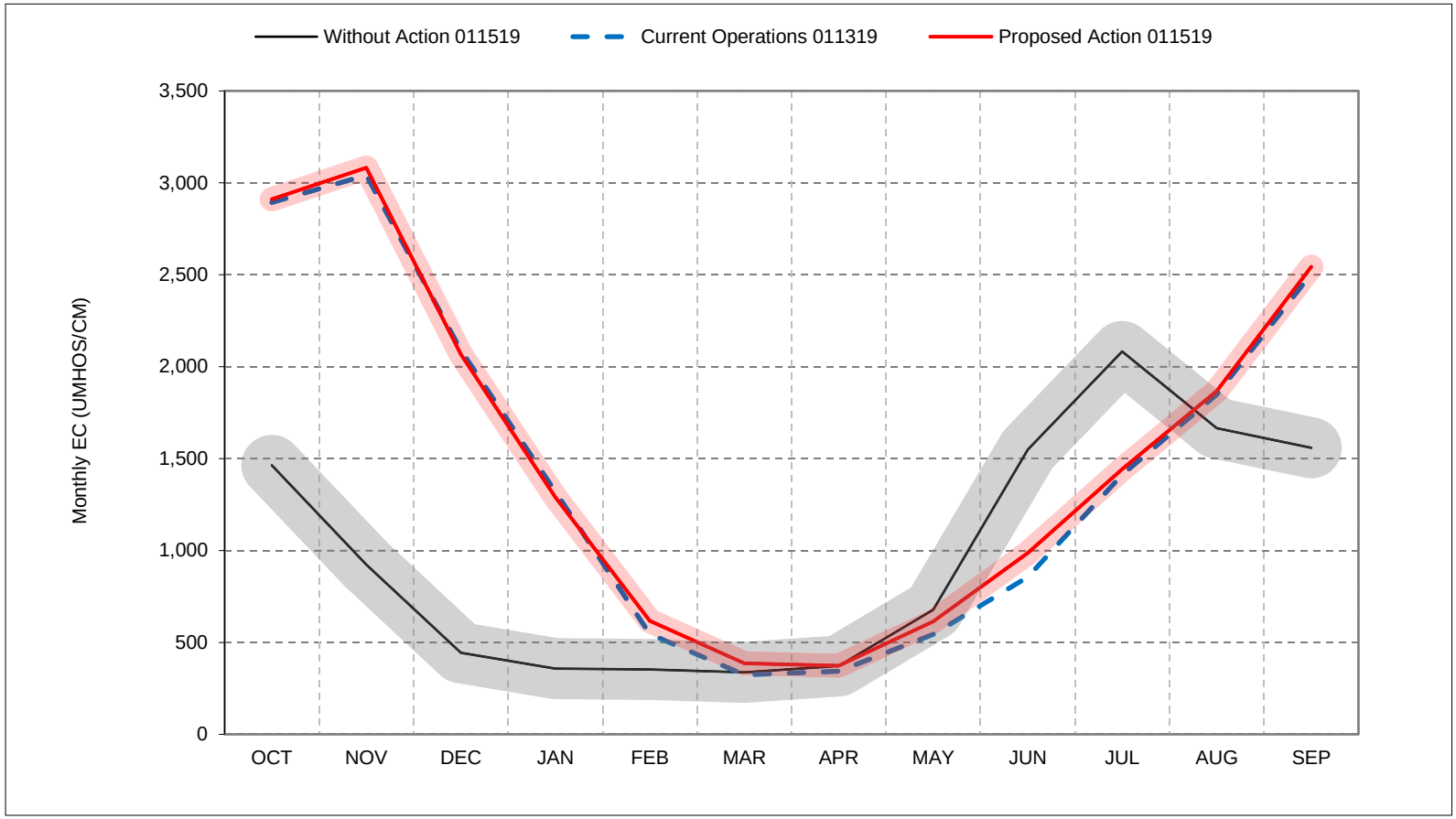
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 7-5. San Joaquin River at Jersey Point Salinity, Dry Year Average EC



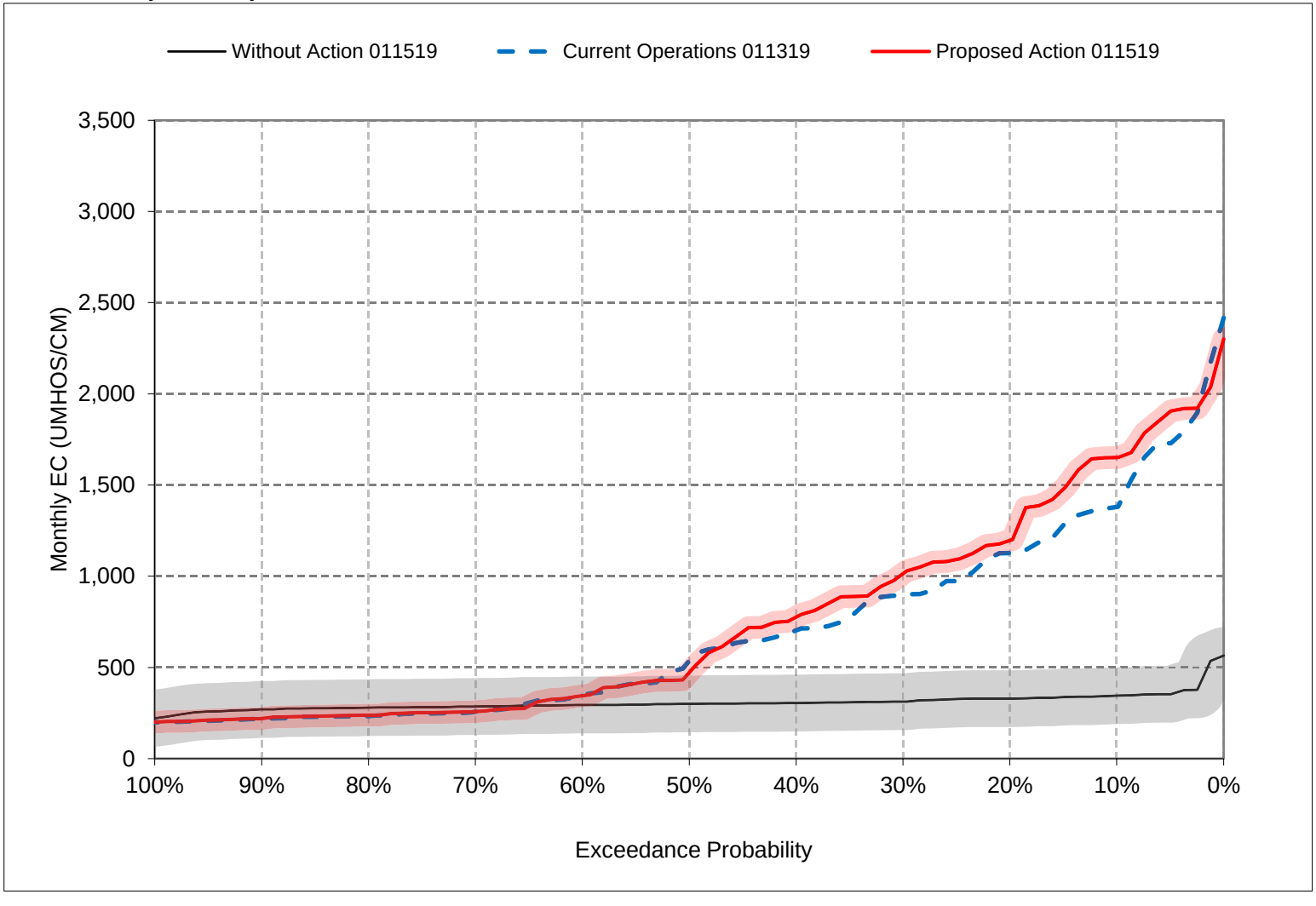
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

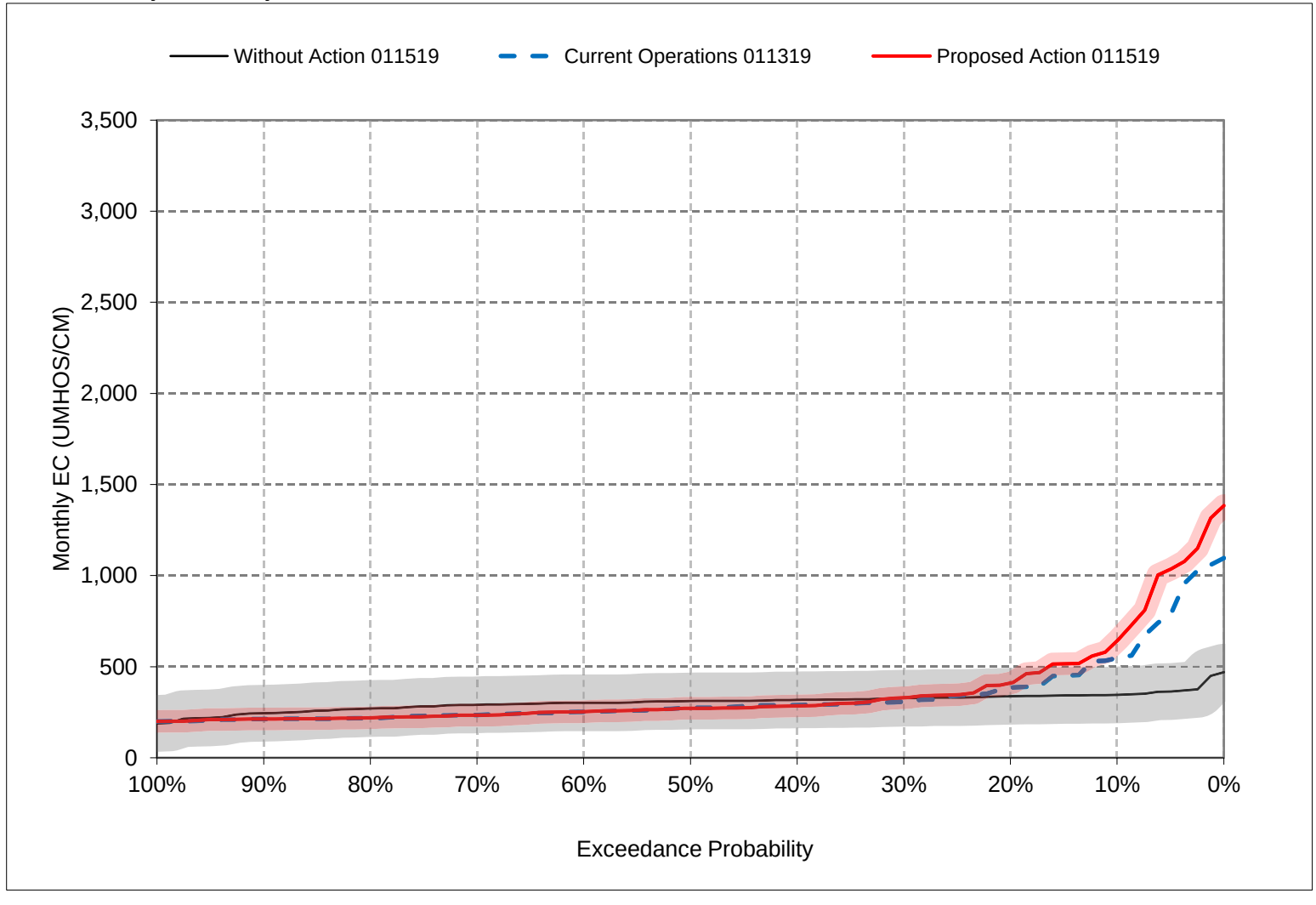
Figure 7-7. San Joaquin River at Jersey Point Salinity, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

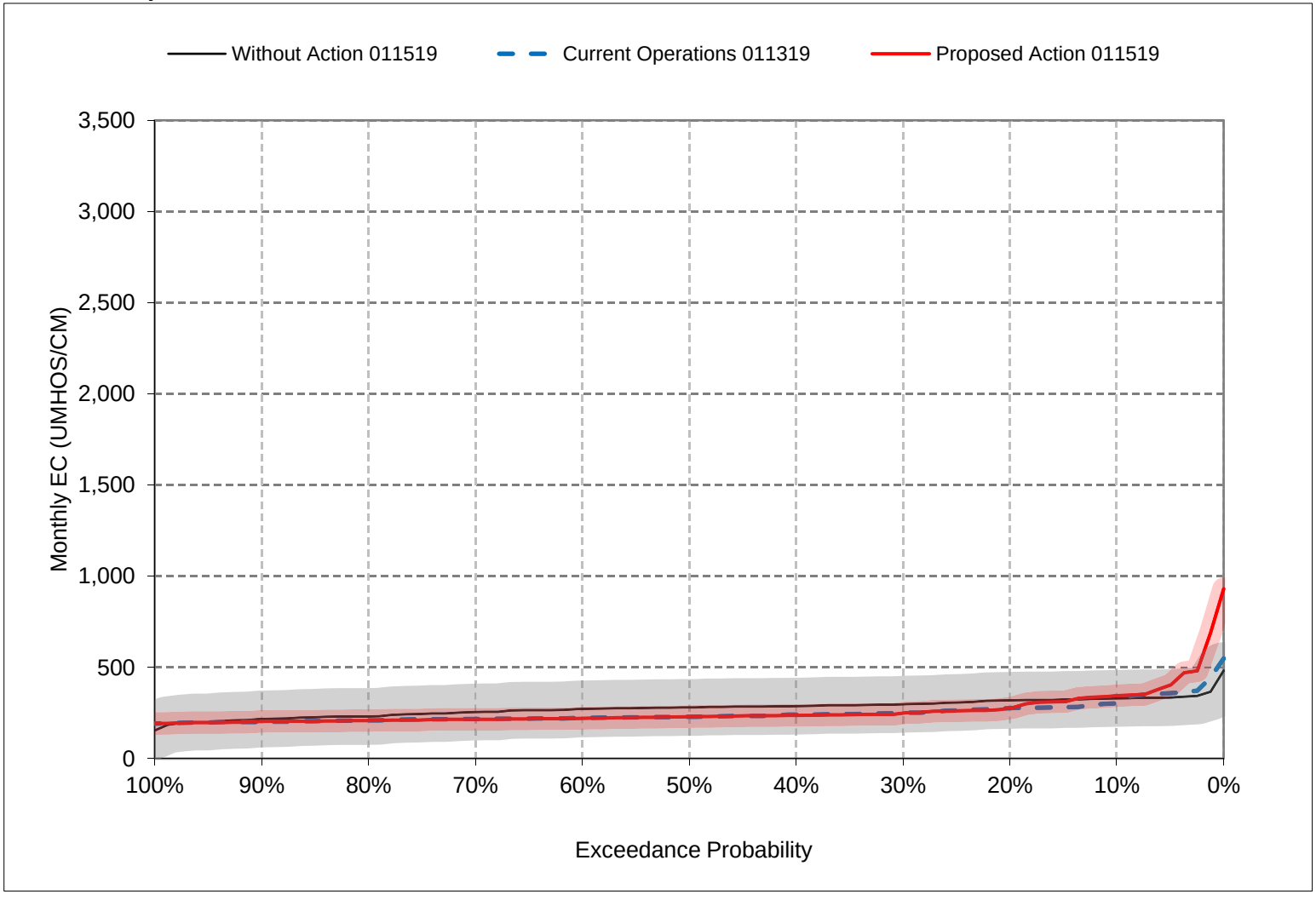
Figure 7-8. San Joaquin River at Jersey Point Salinity, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

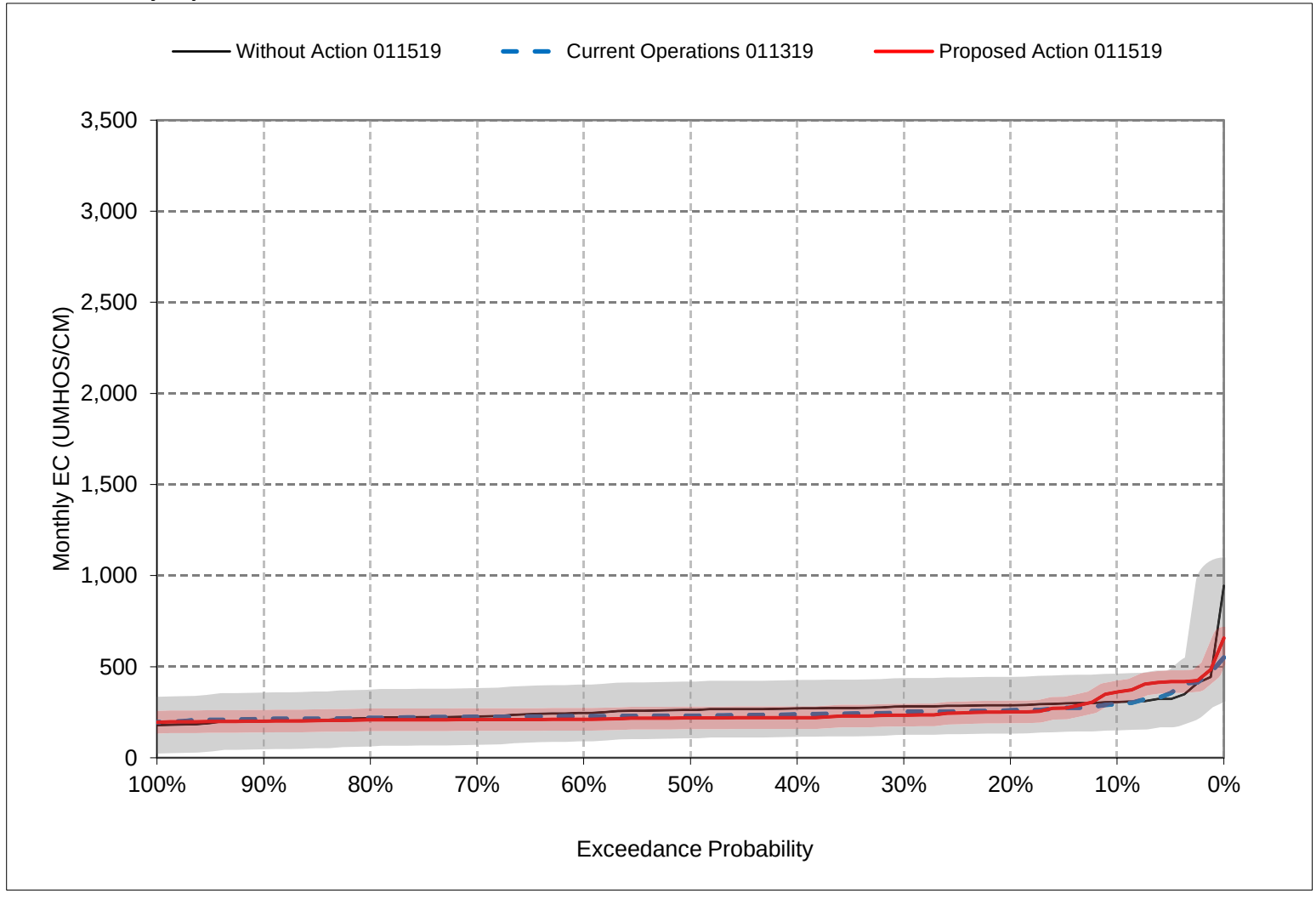
Figure 7-9. San Joaquin River at Jersey Point Salinity, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

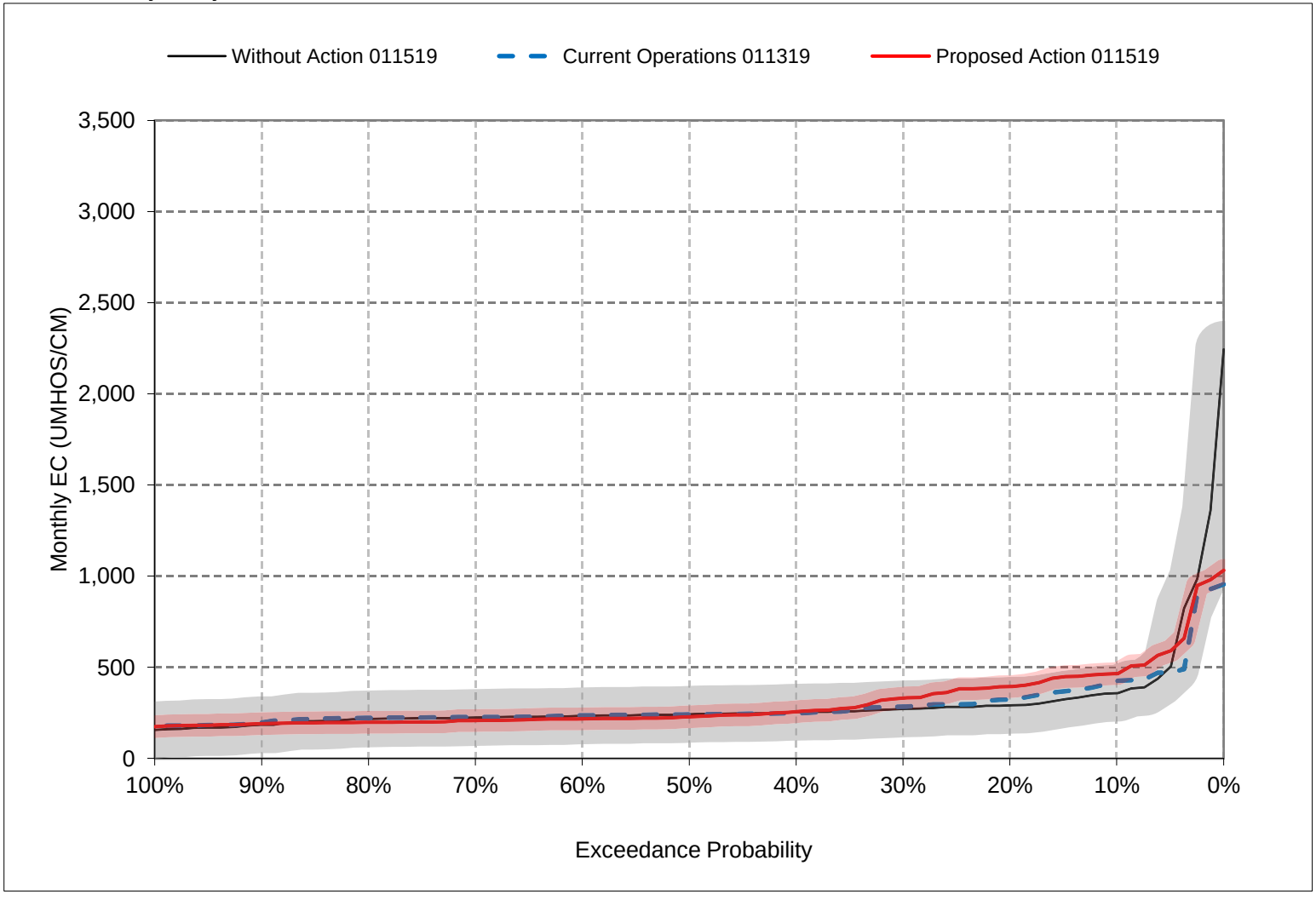
Figure 7-10. San Joaquin River at Jersey Point Salinity, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

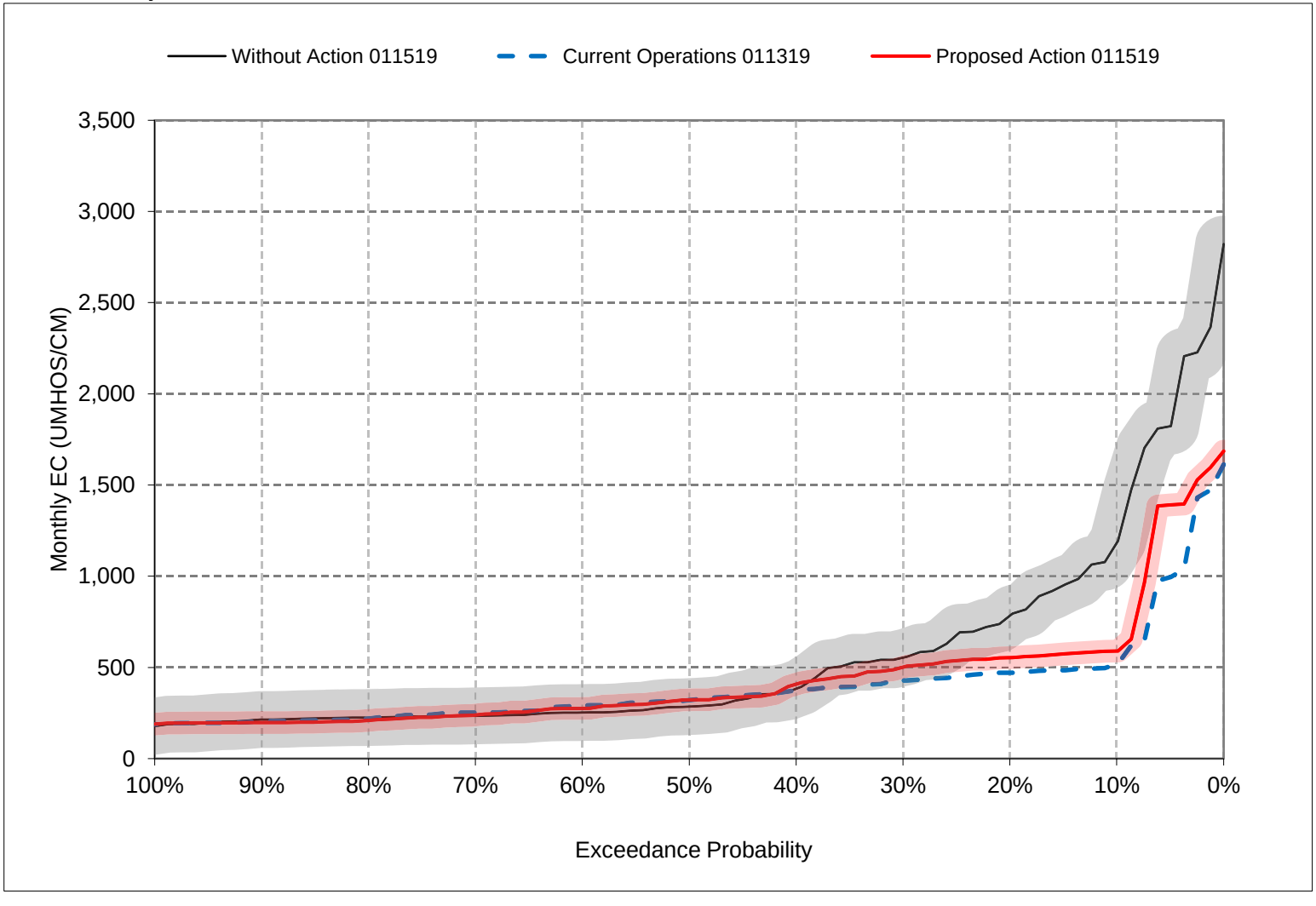
Figure 7-11. San Joaquin River at Jersey Point Salinity, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

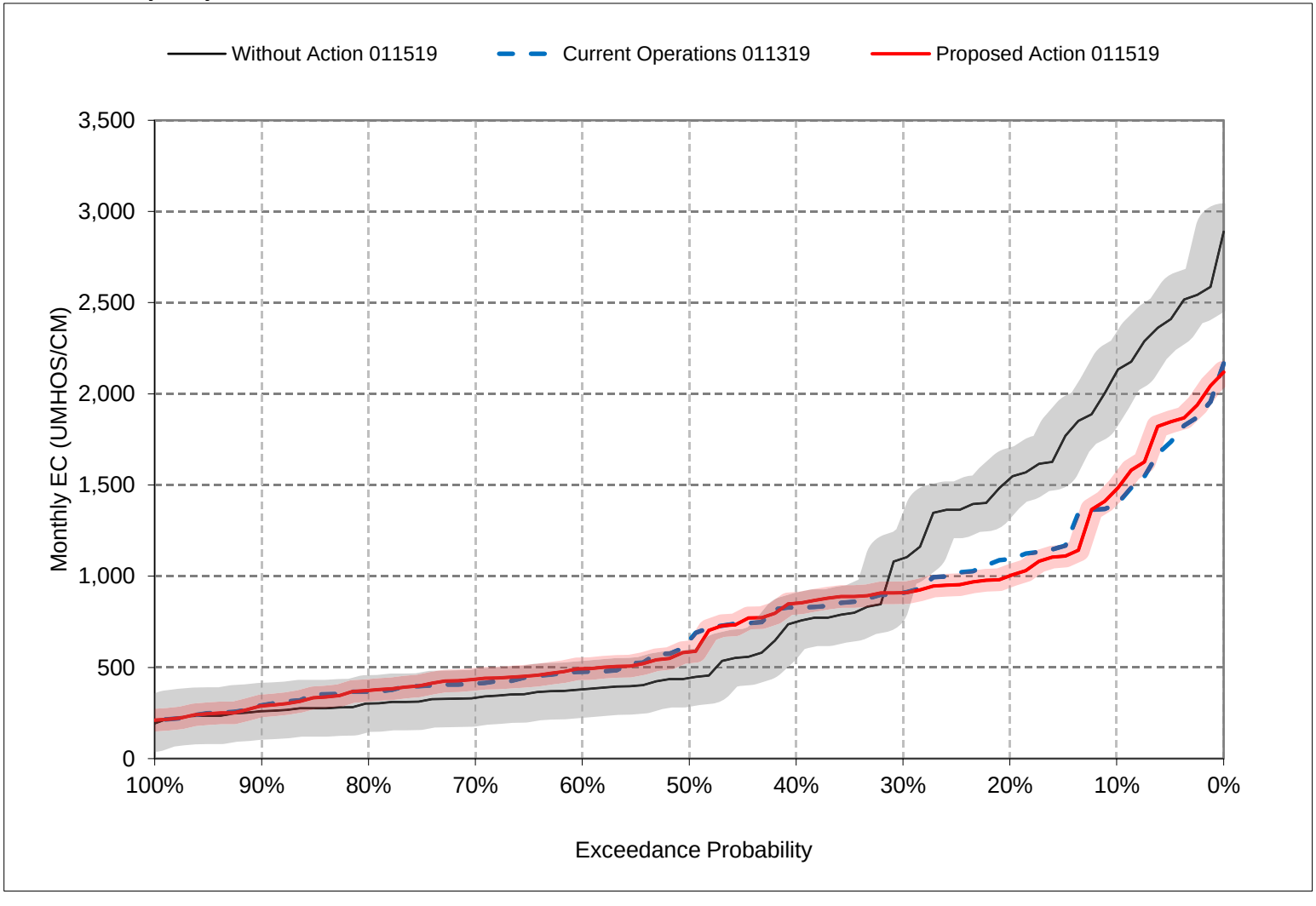
Figure 7-12. San Joaquin River at Jersey Point Salinity, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

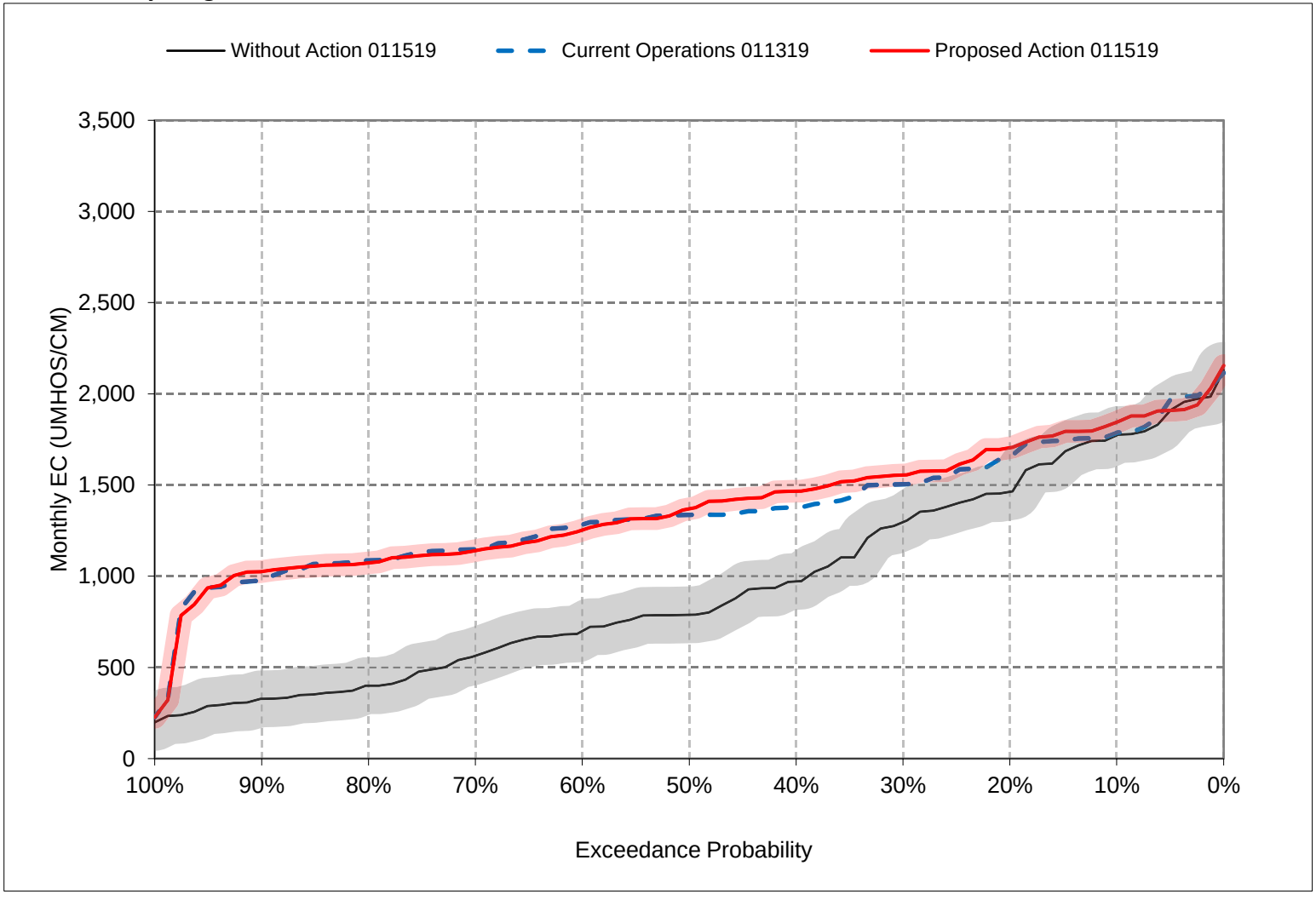
Figure 7-13. San Joaquin River at Jersey Point Salinity, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

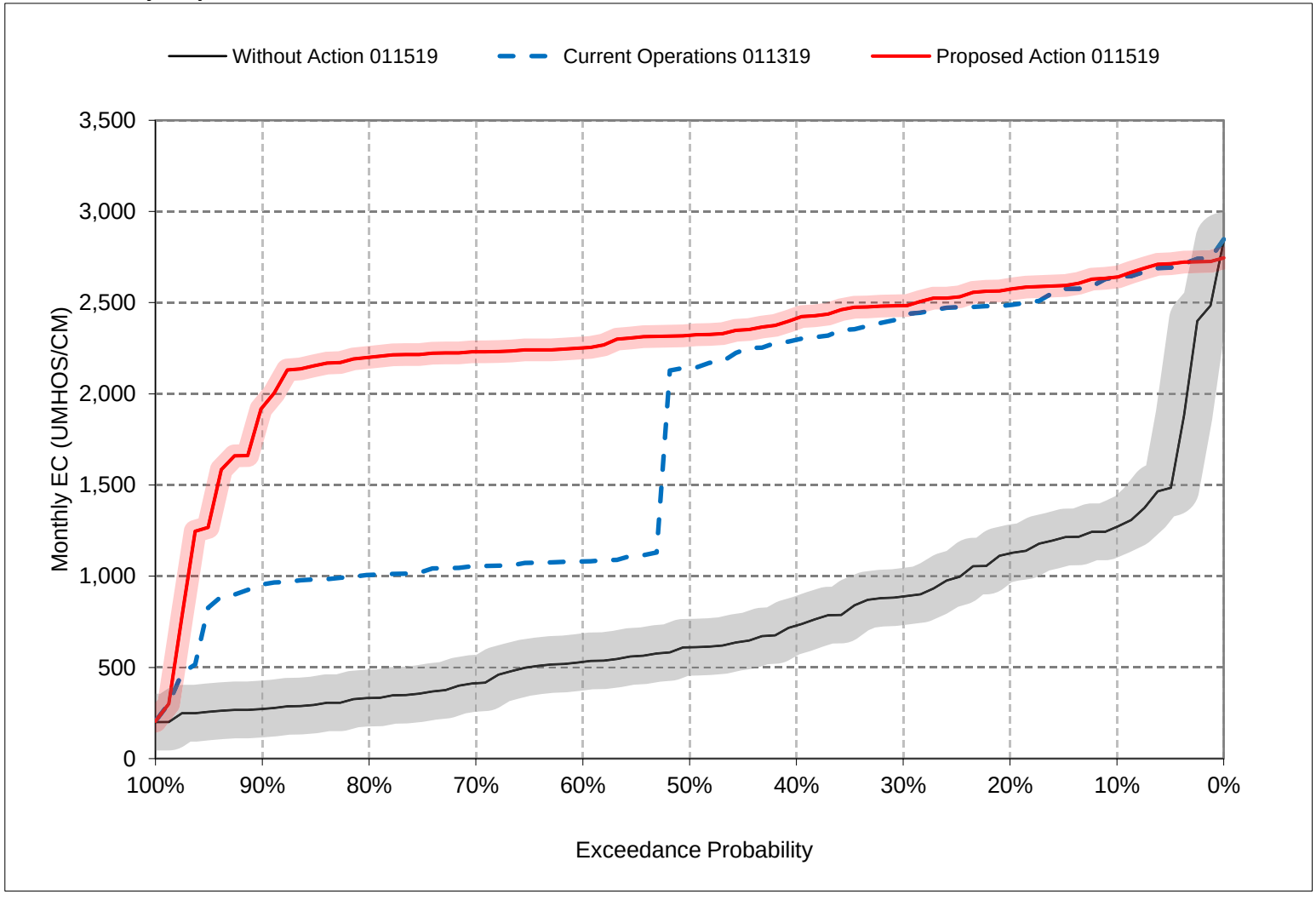
Figure 7-14. San Joaquin River at Jersey Point Salinity, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

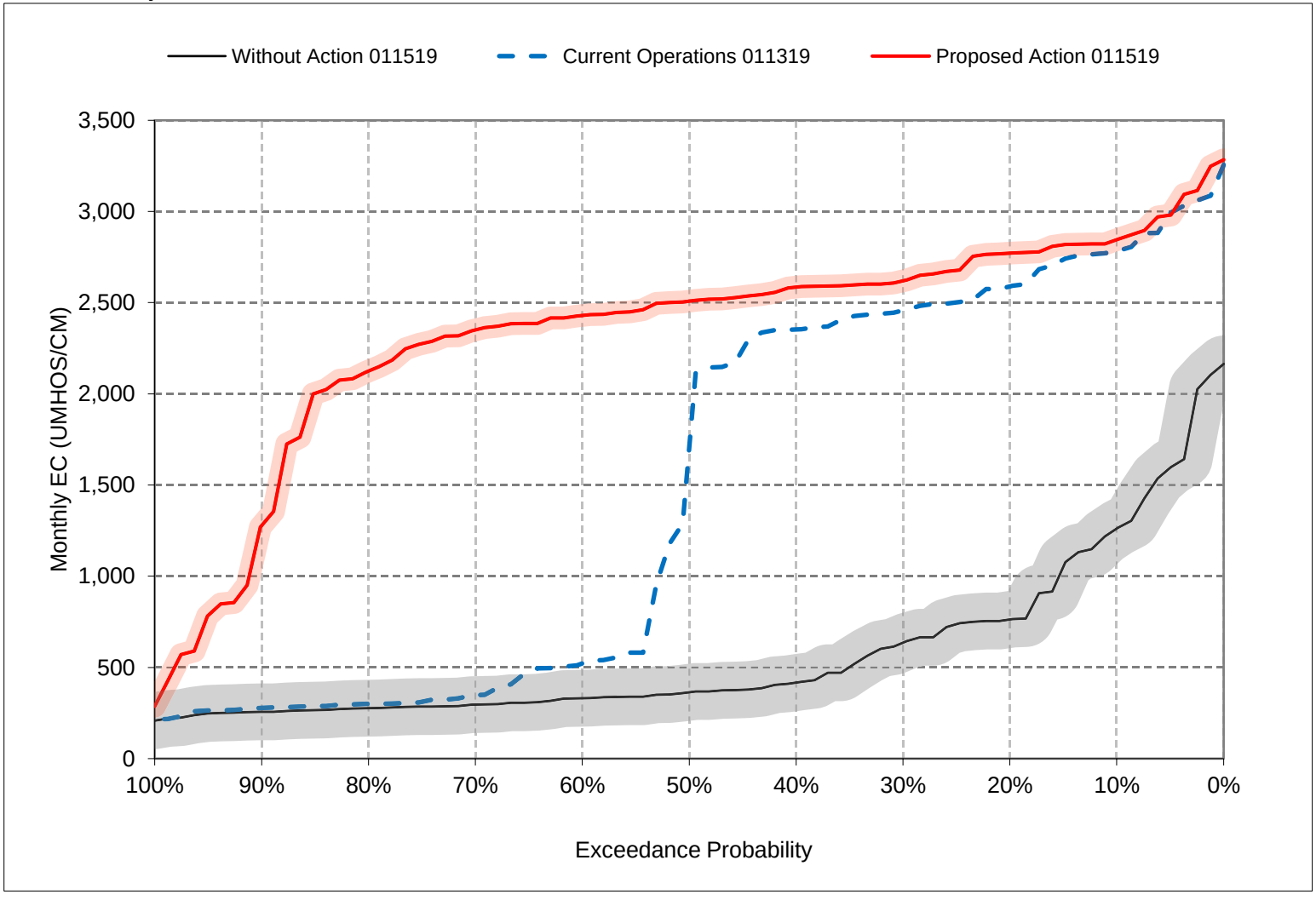
Figure 7-15. San Joaquin River at Jersey Point Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

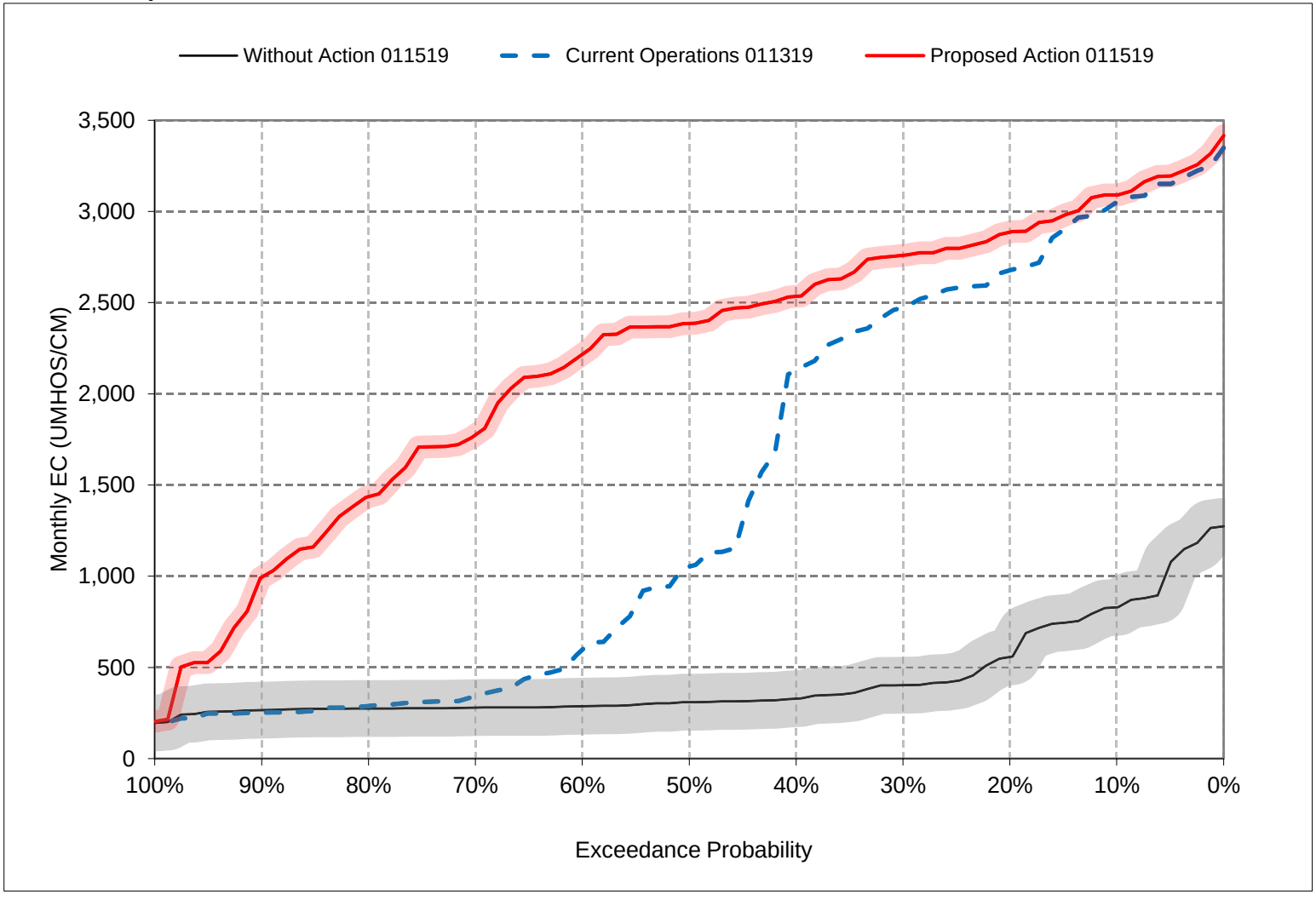
Figure 7-16. San Joaquin River at Jersey Point Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

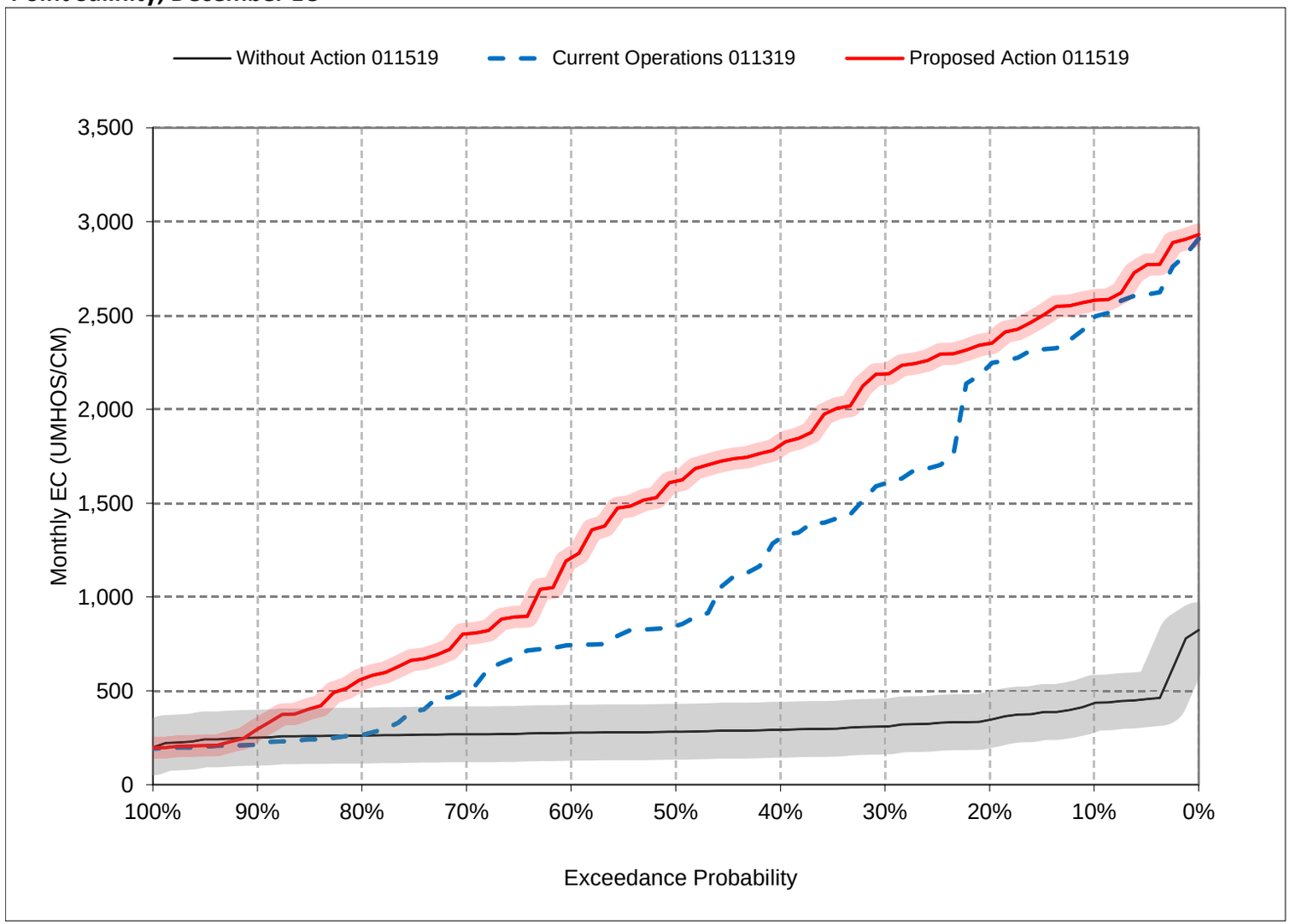
Figure 7-17. San Joaquin River at Jersey Point Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 8-1. Old River at Rock Slough Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	701	696	625	691	735	720	682	591	497	736	832	752
20%	607	636	592	663	664	648	597	509	456	540	617	641
30%	570	601	555	622	623	598	526	481	429	469	525	582
40%	540	569	540	592	577	519	454	416	406	420	453	504
50%	523	546	511	571	528	483	380	357	383	407	438	484
60%	505	529	486	550	490	394	335	326	365	392	418	473
70%	494	506	464	523	415	309	290	292	343	372	381	458
80%	481	467	446	493	344	265	250	245	287	329	345	429
90%	438	418	409	376	251	241	214	180	243	288	313	394
Long Term												
Full Simulation Period[a]	542	550	511	556	510	469	418	382	392	460	494	525
Water Year Types[b]												
Wet (32%)	459	463	450	460	341	292	254	247	298	336	365	411
Above Normal (16%)	505	520	491	527	472	400	347	322	342	364	396	472
Below Normal (13%)	518	553	521	572	535	490	447	406	395	410	423	493
Dry (24%)	578	578	511	628	627	588	525	461	419	506	562	588
Critical (15%)	724	723	657	662	699	710	650	586	600	801	830	755

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**321**	**375**	**436**	**209**	-183	-337	-294	-211	-187	-271	-168	**90**
20%	**338**	**309**	**394**	**86**	-194	-318	-236	-151	-170	-187	-72	**170**
30%	**331**	**242**	**342**	-1	-206	-285	-186	-132	-157	-133	-35	**190**
40%	**332**	**207**	**108**	-56	-194	-219	-122	-79	-138	-113	**6**	**223**
50%	**264**	**48**	-101	-84	-173	-196	-60	-30	-123	-137	-5	**165**
60%	-213	-245	-153	-105	-155	-116	-25	-10	-110	-138	-15	**138**
70%	-212	-257	-165	-178	-115	-47	**7**	**8**	-96	-128	-18	**111**
80%	-205	-232	-172	-181	-61	-20	**23**	**27**	-47	-94	-5	**80**
90%	-170	-197	-169	-97	**10**	-10	**39**	**31**	-11	-62	**3**	**78**
Long Term												
Full Simulation Period[a]	**77**	**40**	**72**	-26	-125	-170	-99	-67	-118	-145	-41	**130**
Water Year Types[b]												
Wet (32%)	-191	-232	-181	-107	-17	-16	**27**	**33**	-54	-101	-23	**123**
Above Normal (16%)	-217	-198	-89	-66	-118	-123	-6	**26**	-87	-118	-32	**18**
Below Normal (13%)	**360**	**206**	**222**	-29	-168	-203	-99	-54	-125	-96	**26**	**283**
Dry (24%)	**322**	**235**	**222**	**36**	-218	-285	-208	-155	-153	-140	-10	**162**
Critical (15%)	**308**	**405**	**405**	**95**	-172	-335	-293	-246	-223	-323	-204	**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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 8-2. Old River at Rock Slough Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	701	696	625	691	735	720	682	591	497	736	832	752
20%	607	636	592	663	664	648	597	509	456	540	617	641
30%	570	601	555	622	623	598	526	481	429	469	525	582
40%	540	569	540	592	577	519	454	416	406	420	453	504
50%	523	546	511	571	528	483	380	357	383	407	438	484
60%	505	529	486	550	490	394	335	326	365	392	418	473
70%	494	506	464	523	415	309	290	292	343	372	381	458
80%	481	467	446	493	344	265	250	245	287	329	345	429
90%	438	418	409	376	251	241	214	180	243	288	313	394
Long Term												
Full Simulation Period[a]	542	550	511	556	510	469	418	382	392	460	494	525
Water Year Types[b]												
Wet (32%)	459	463	450	460	341	292	254	247	298	336	365	411
Above Normal (16%)	505	520	491	527	472	400	347	322	342	364	396	472
Below Normal (13%)	518	553	521	572	535	490	447	406	395	410	423	493
Dry (24%)	578	578	511	628	627	588	525	461	419	506	562	588
Critical (15%)	724	723	657	662	699	710	650	586	600	801	830	755

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**342**	**441**	**459**	**281**	-191	-359	-350	-302	-201	-256	-161	**113**
20%	**379**	**417**	**424**	**212**	-222	-335	-306	-245	-181	-180	-70	**187**
30%	**376**	**384**	**419**	**169**	-222	-305	-244	-222	-173	-131	-31	**223**
40%	**377**	**364**	**364**	-39	-194	-234	-182	-168	-162	-115	**18**	**281**
50%	**374**	**332**	**330**	-72	-179	-211	-118	-114	-147	-142	**7**	**285**
60%	**382**	**309**	**271**	-124	-175	-133	-79	-88	-134	-142	-20	**285**
70%	**350**	**291**	**169**	-176	-119	-57	-42	-59	-116	-129	-15	**285**
80%	**308**	**247**	**36**	-173	-65	-24	-7	-15	-66	-95	**2**	**276**
90%	**177**	-25	-88	-100	**13**	-14	**21**	**42**	-27	-60	**6**	**213**
Long Term												
Full Simulation Period[a]	**323**	**303**	**261**	**22**	-133	-182	-146	-132	-132	-141	-40	**223**
Water Year Types[b]												
Wet (32%)	**240**	**286**	**219**	-97	-23	-7	**5**	-22	-70	-101	-27	**231**
Above Normal (16%)	**370**	**296**	**287**	**8**	-122	-126	-81	-83	-114	-121	-25	**298**
Below Normal (13%)	**373**	**246**	**222**	**47**	-164	-215	-175	-154	-149	-81	**58**	**320**
Dry (24%)	**371**	**288**	**226**	**129**	-217	-310	-256	-210	-166	-144	-27	**191**
Critical (15%)	**324**	**427**	**416**	**90**	-214	-378	-337	-278	-209	-299	-198	**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 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 8-3. Old River at Rock Slough Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

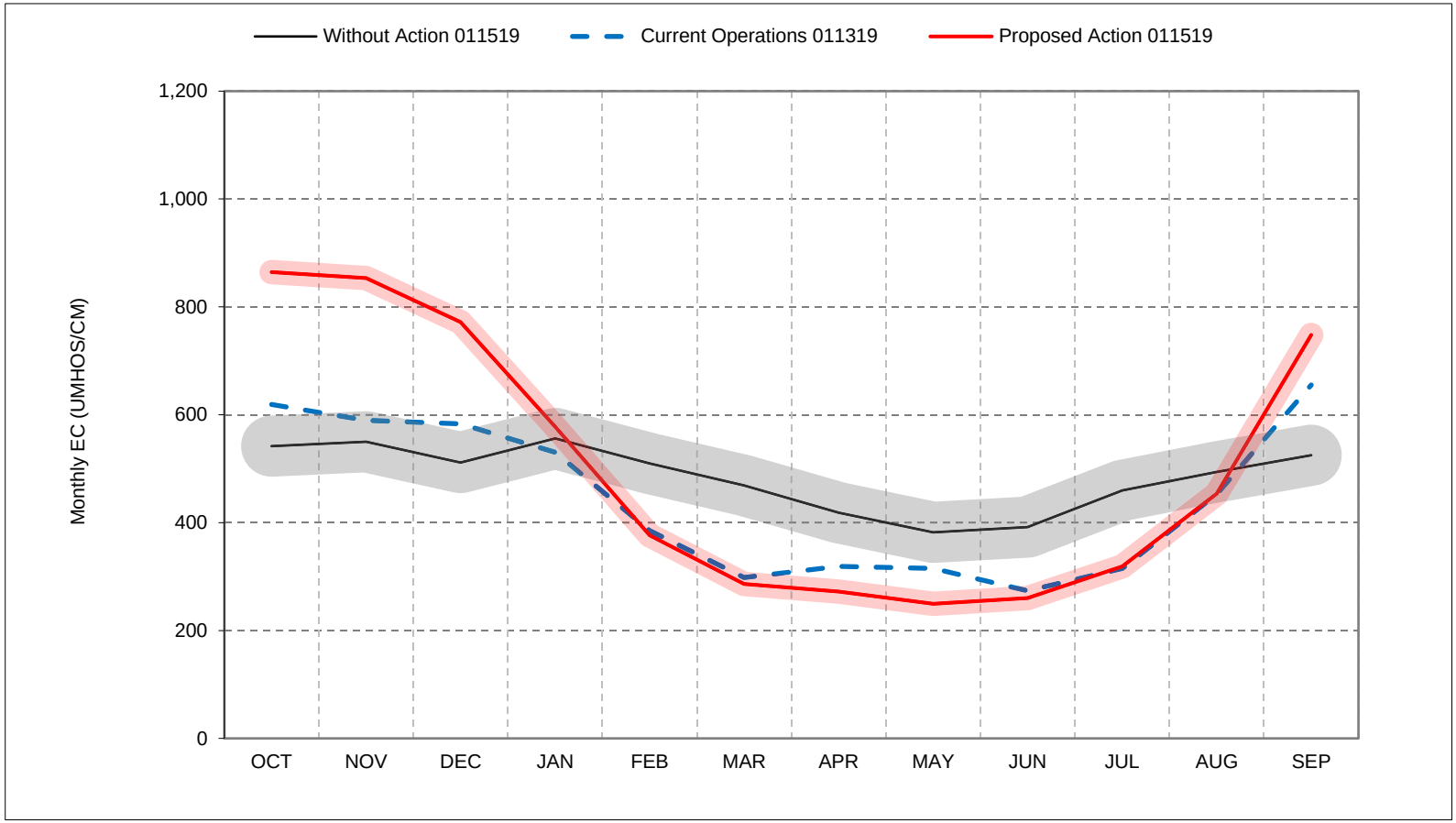
c These results are displayed with calendar year - year type sorting.

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.

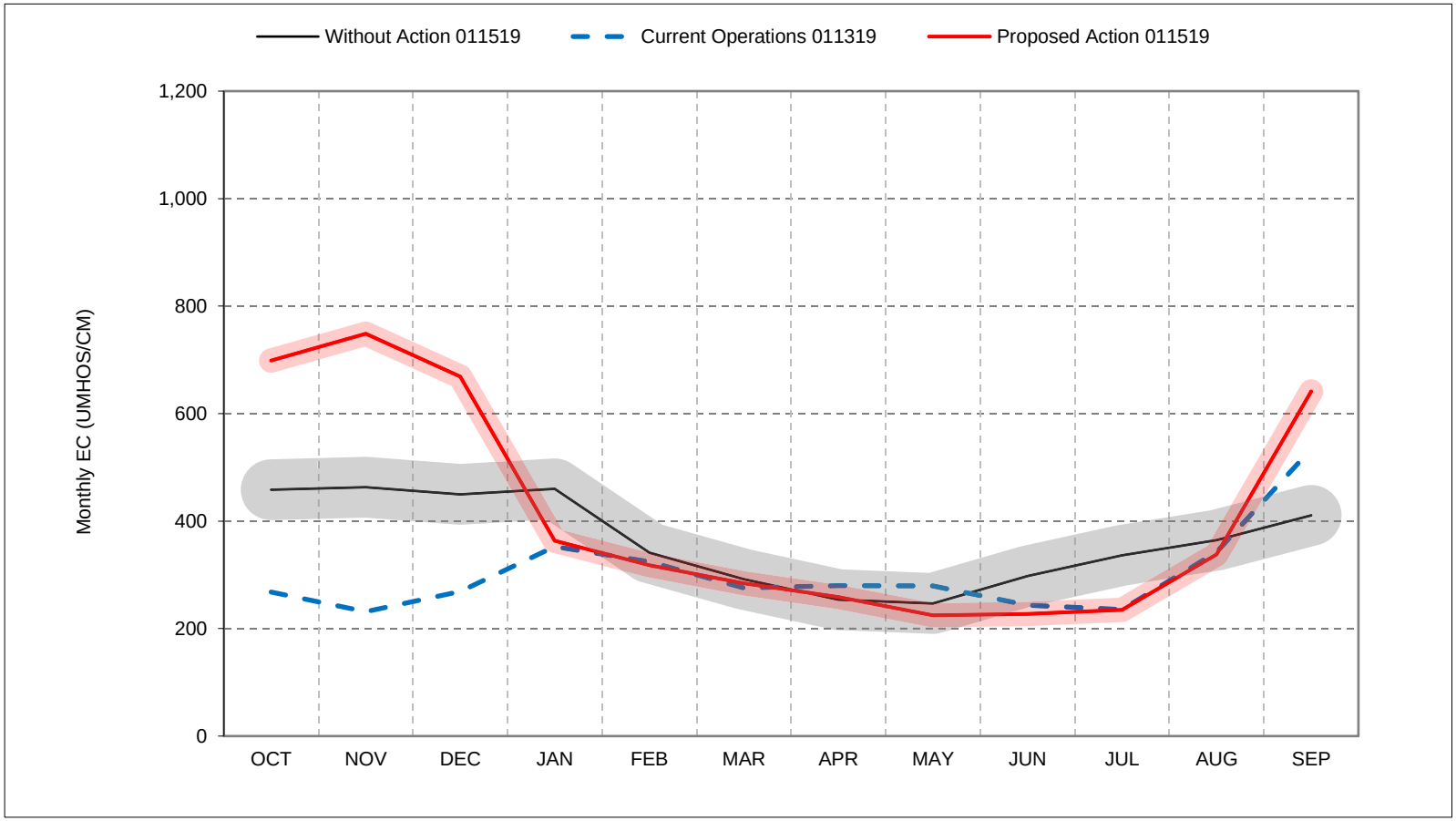
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-1. Old River at Rock Slough Salinity, Long-Term Average EC



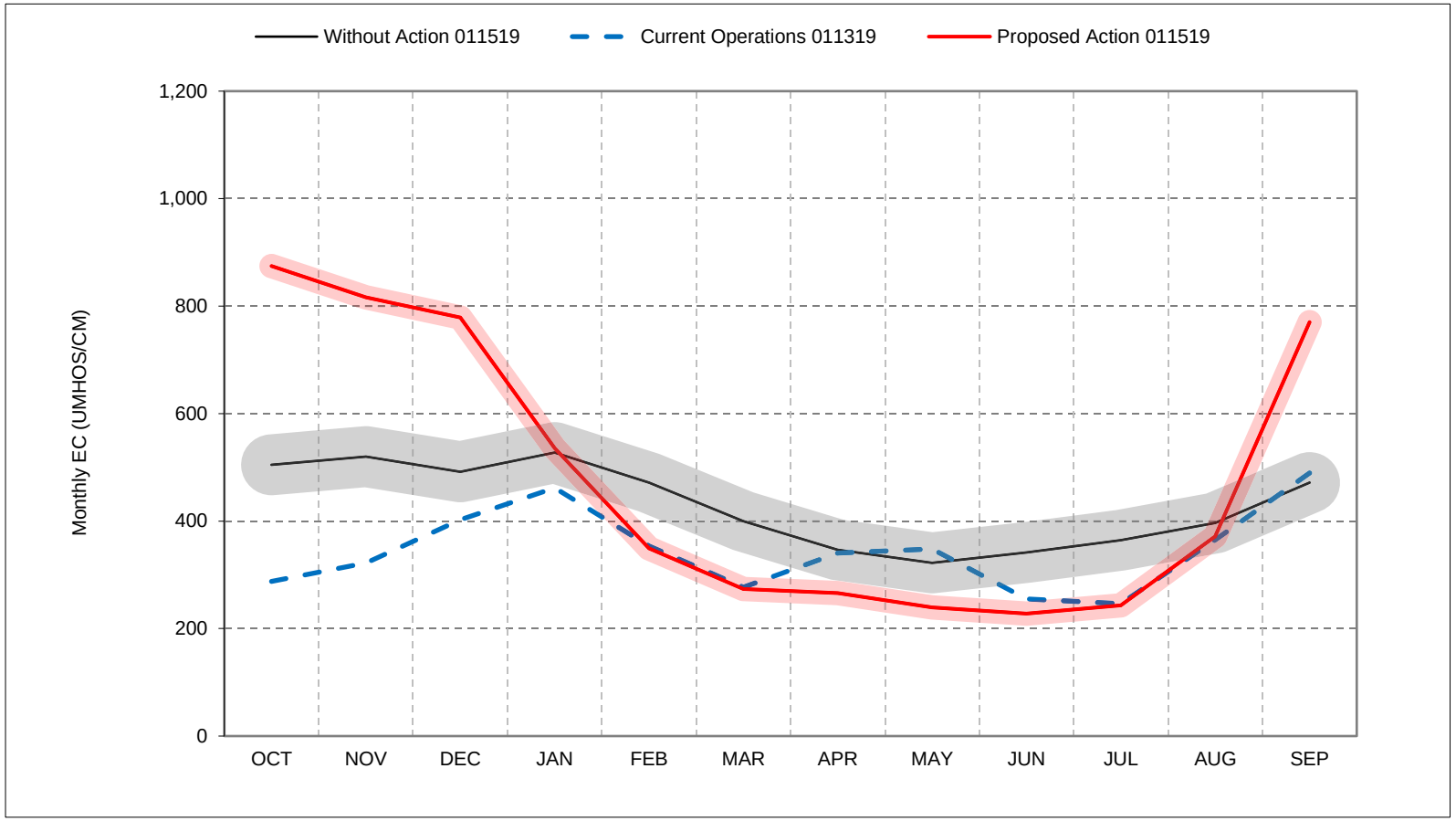
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-2. Old River at Rock Slough Salinity, Wet Year Average EC



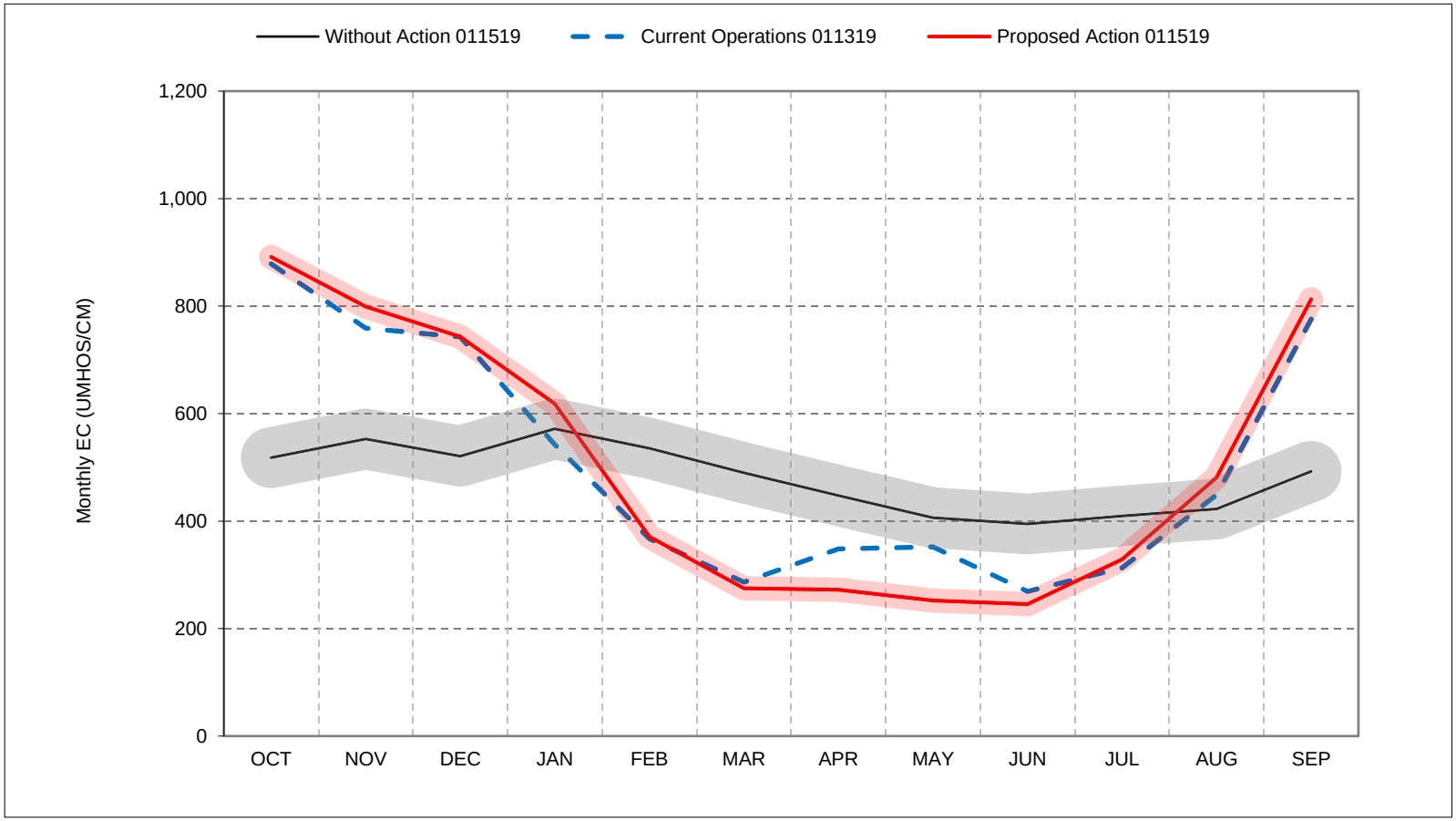
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-3. Old River at Rock Slough Salinity, Above Normal Year Average EC



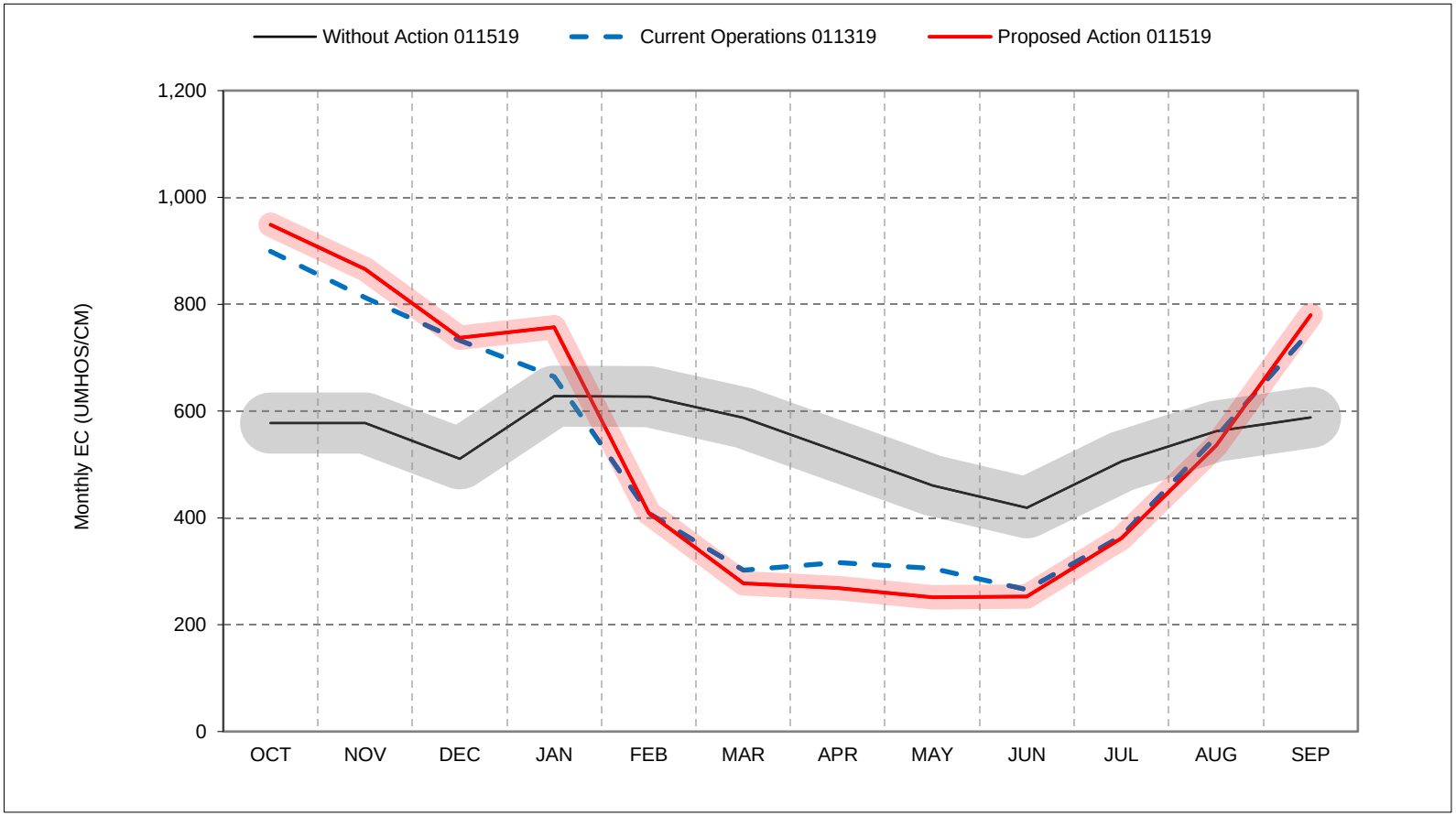
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-4. Old River at Rock Slough Salinity, Below Normal Year Average EC



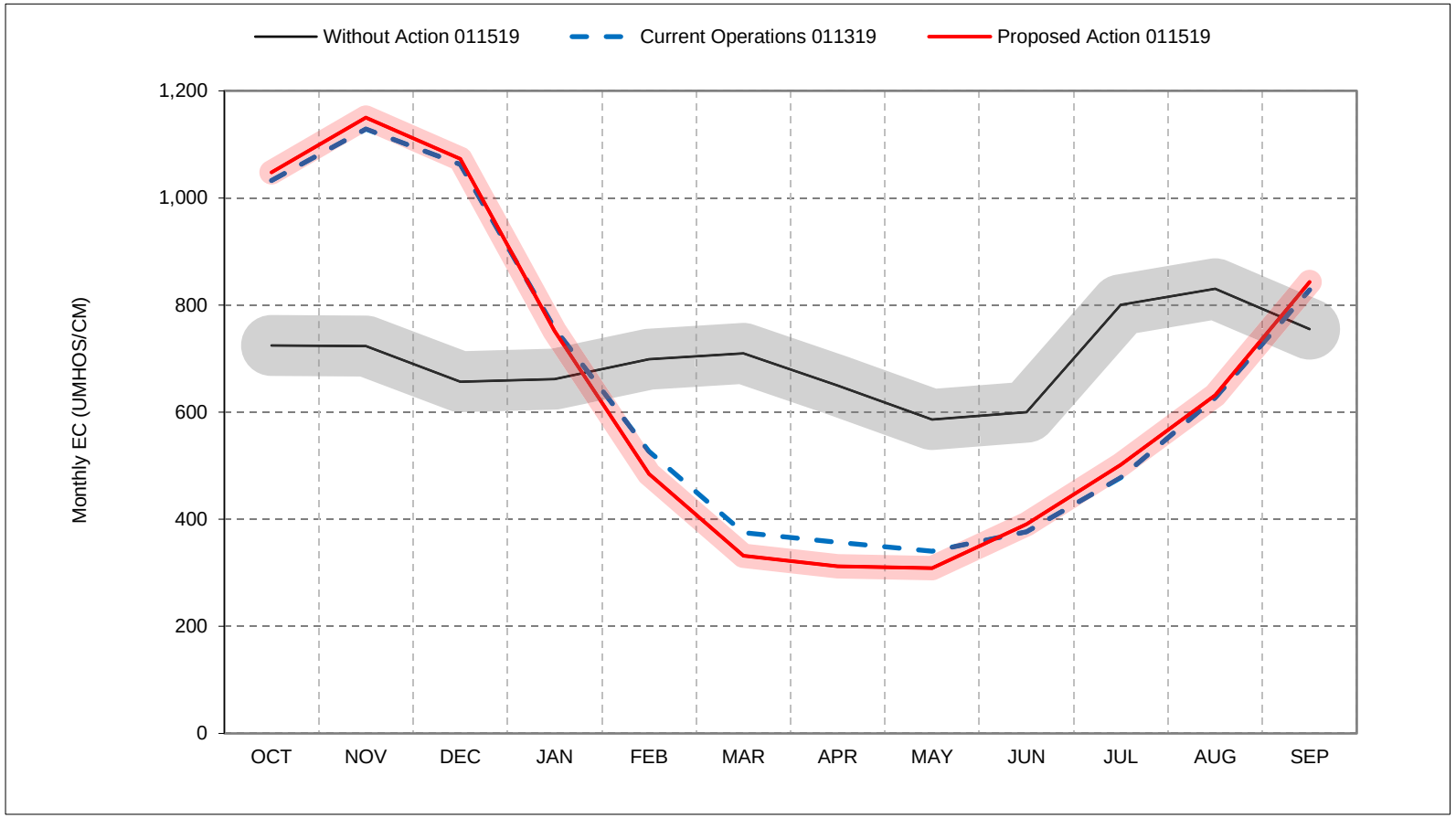
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-5. Old River at Rock Slough Salinity, Dry Year Average EC



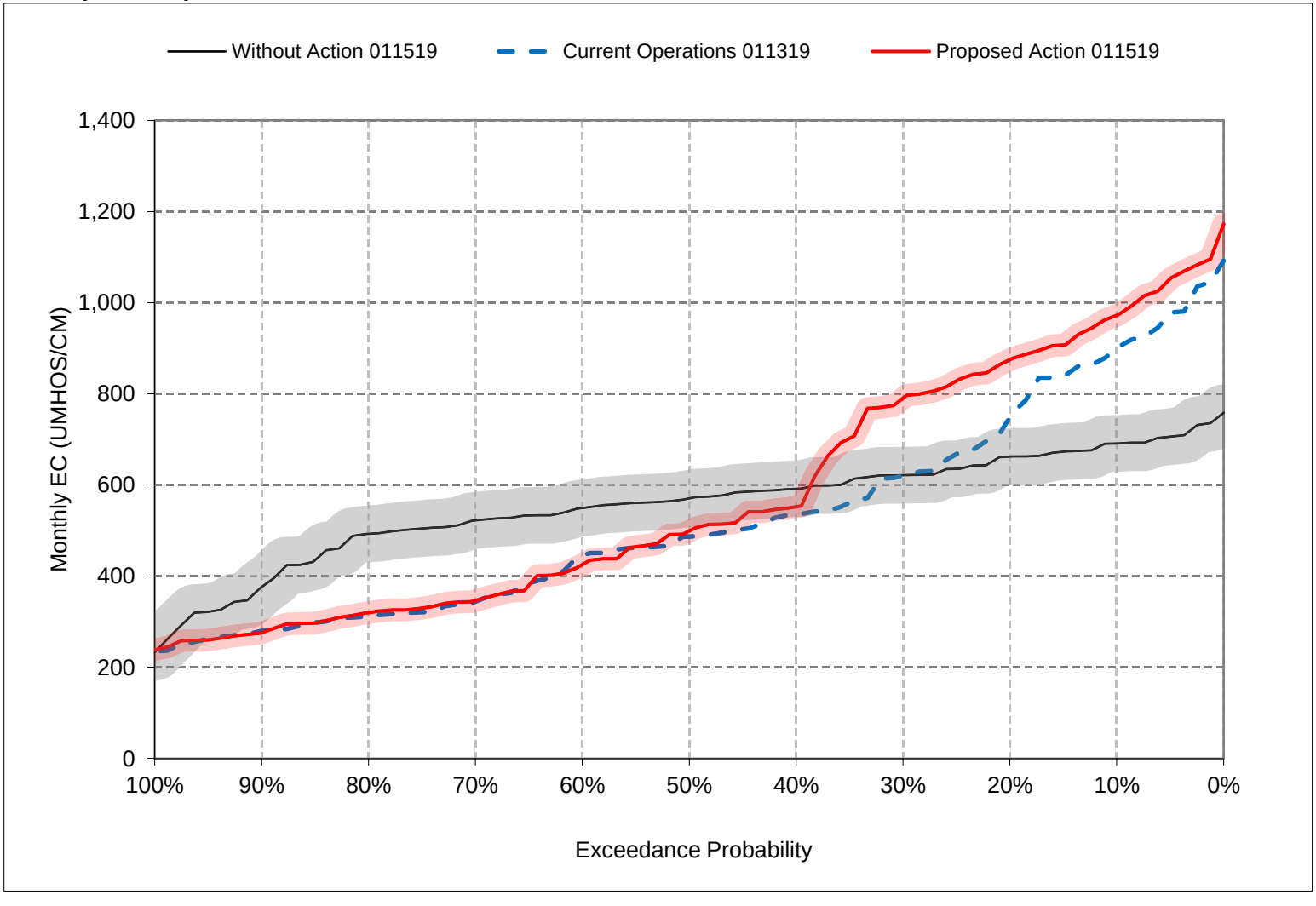
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-6. Old River at Rock Slough Salinity, Critical Year Average EC



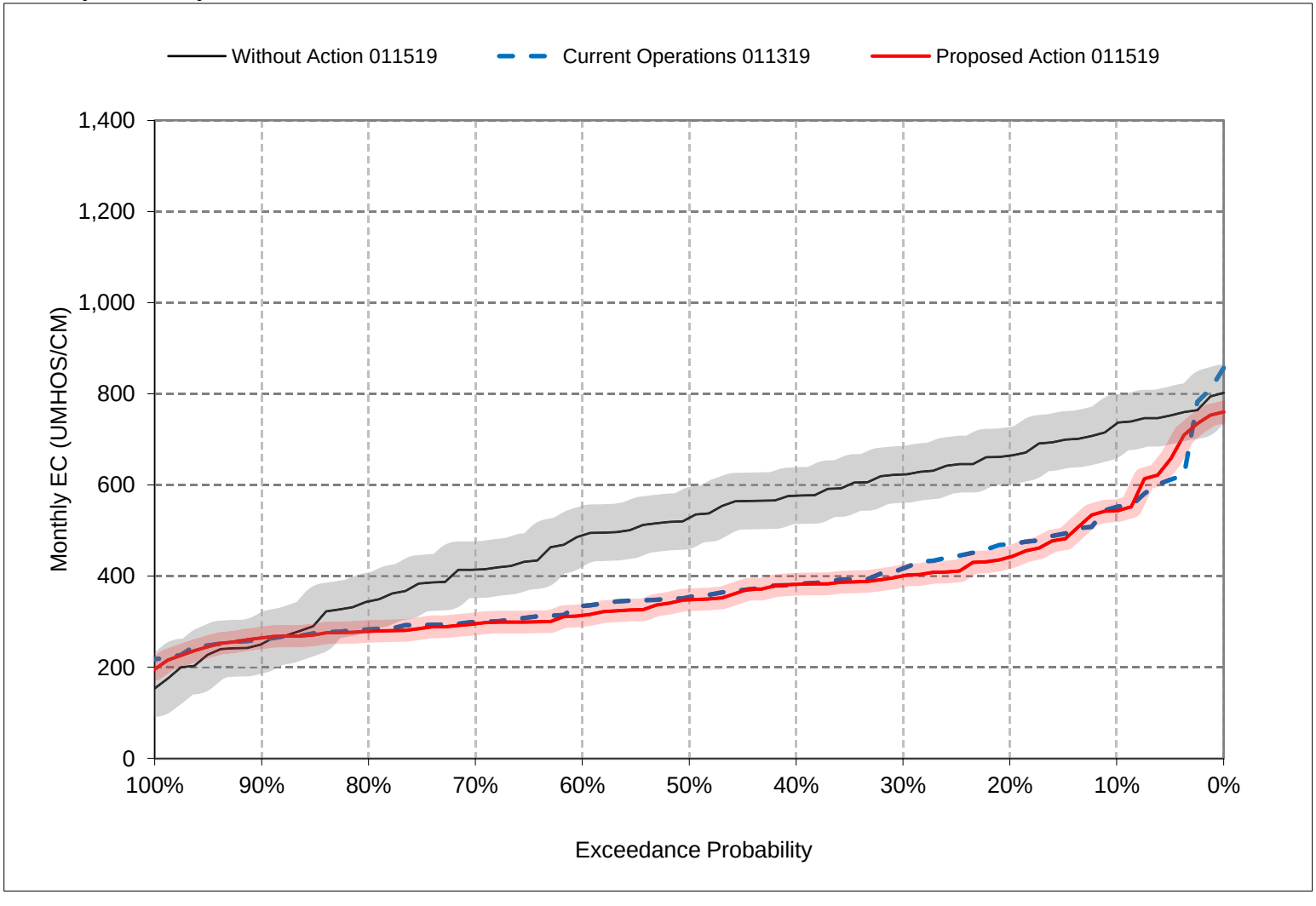
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-7. Old River at Rock Slough
Salinity, January EC



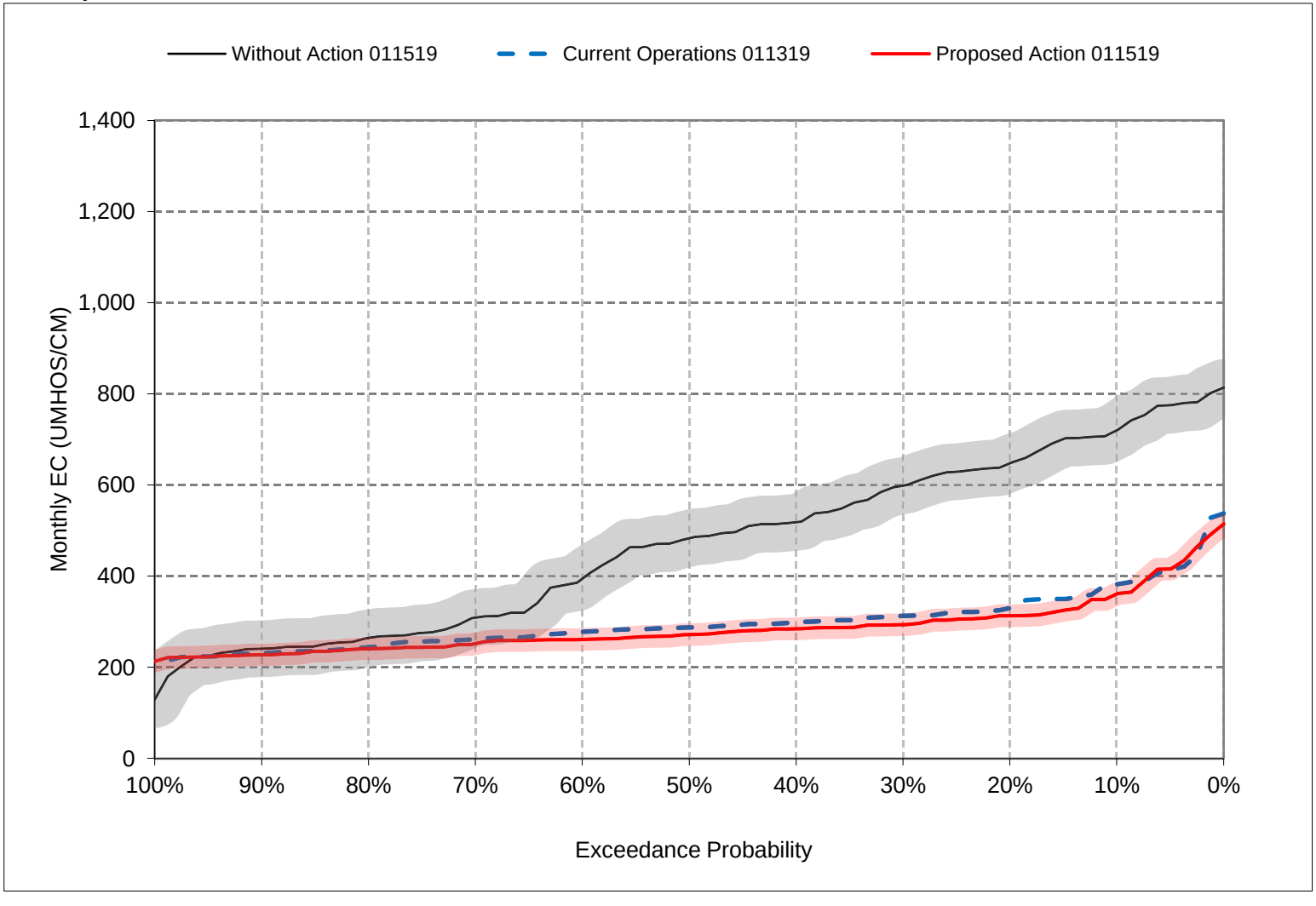
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-8. Old River at Rock Slough
Salinity, February EC



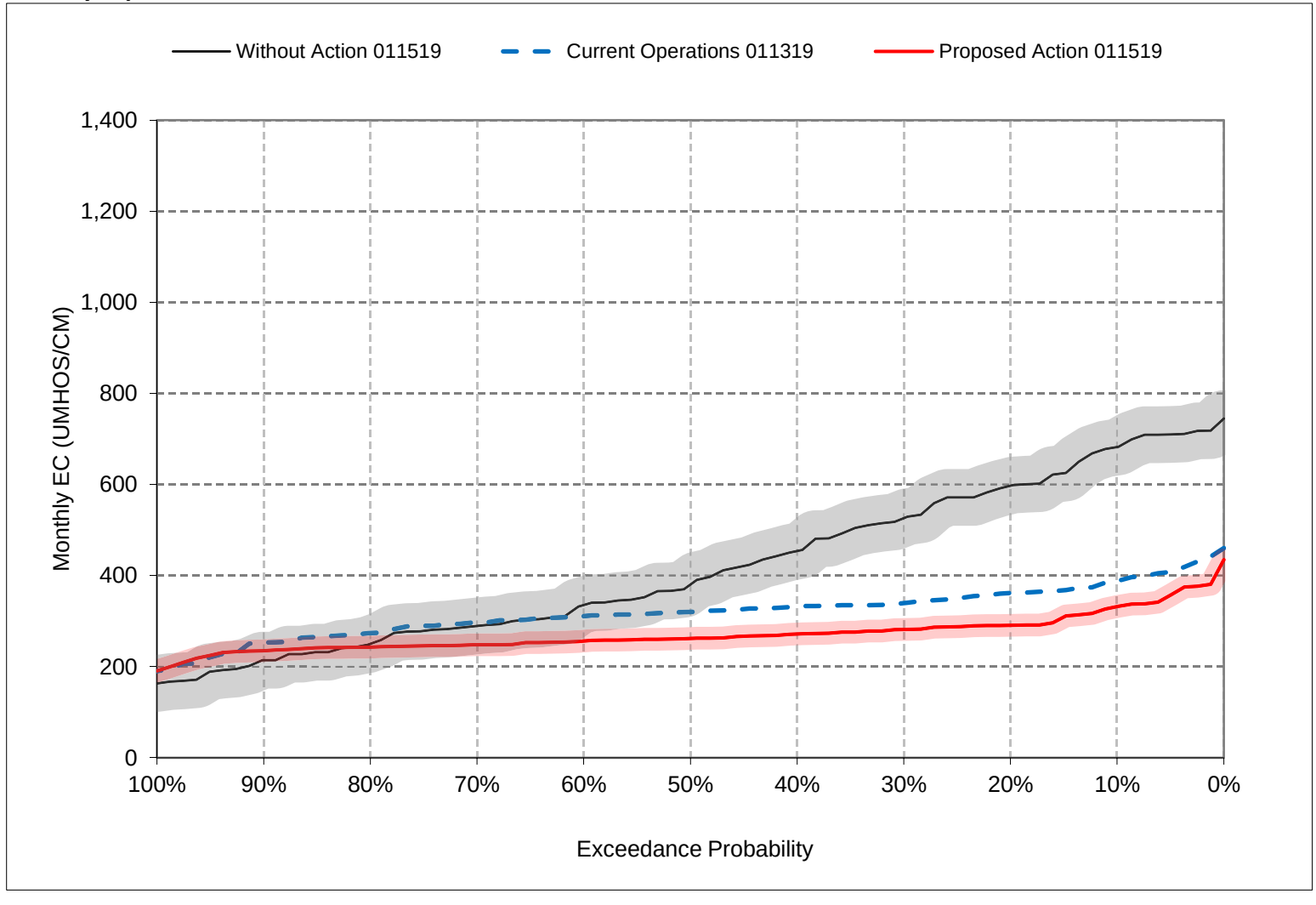
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-9. Old River at Rock Slough
Salinity, March EC



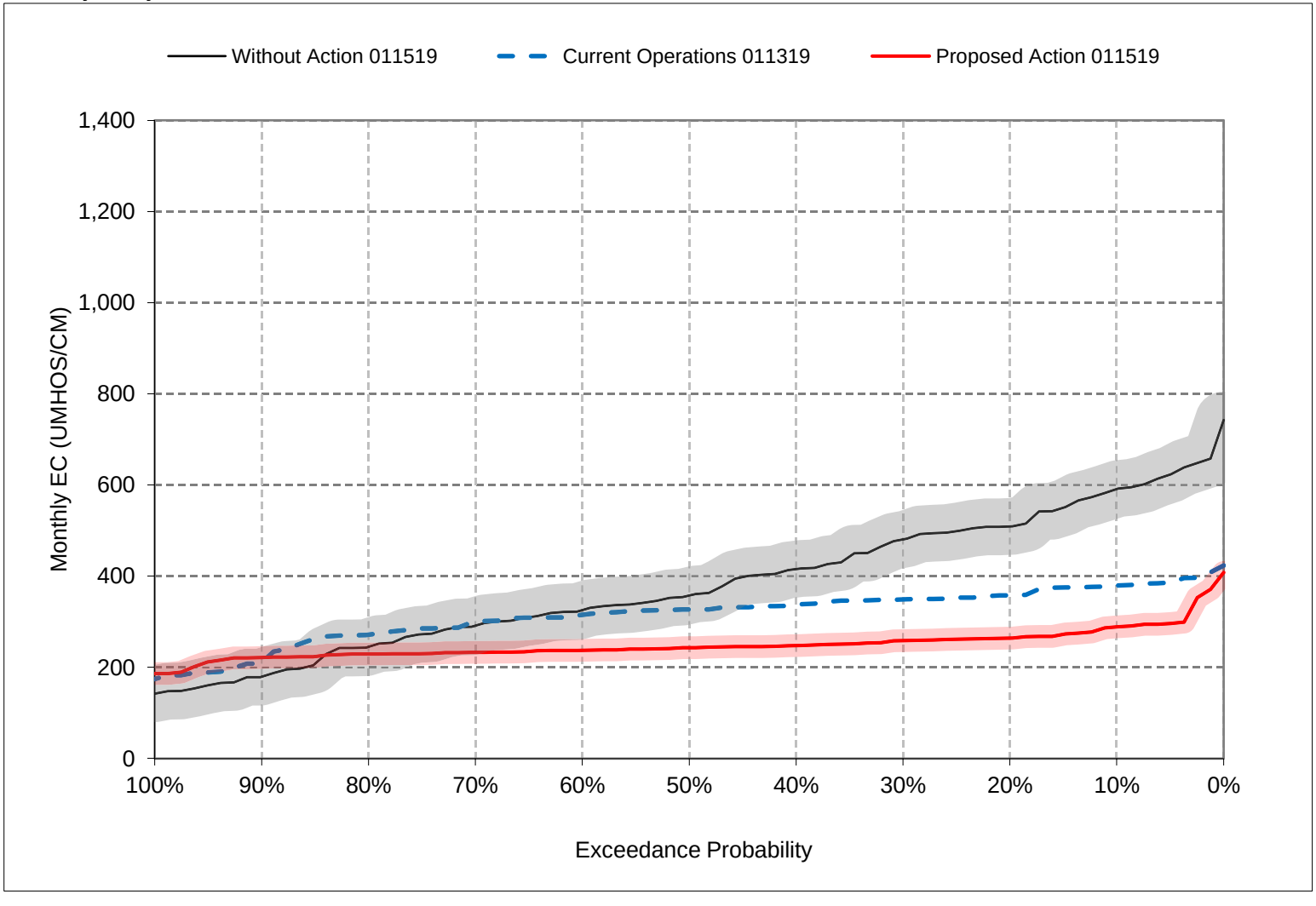
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-10. Old River at Rock Slough
Salinity, April EC



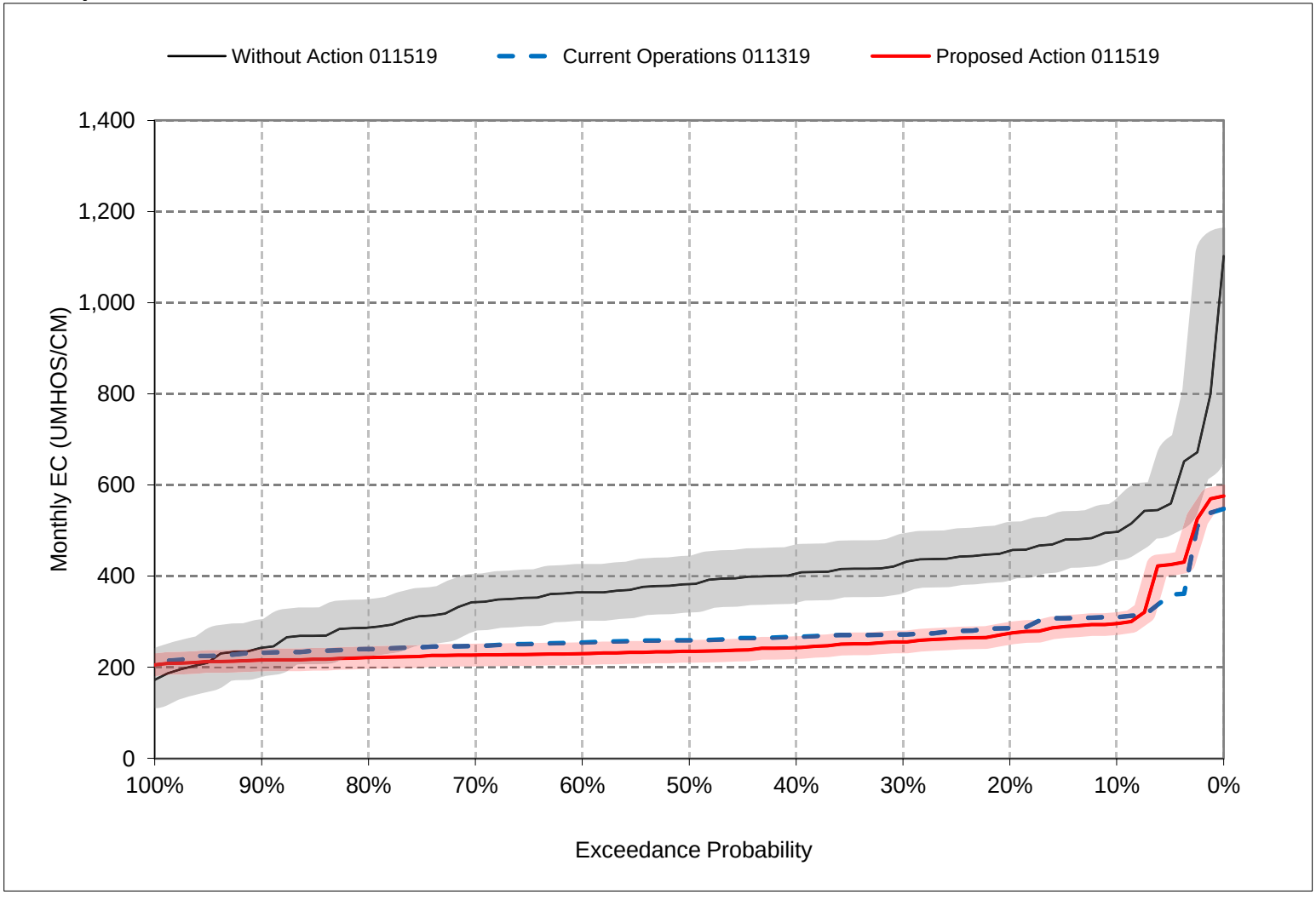
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-11. Old River at Rock Slough
Salinity, May EC



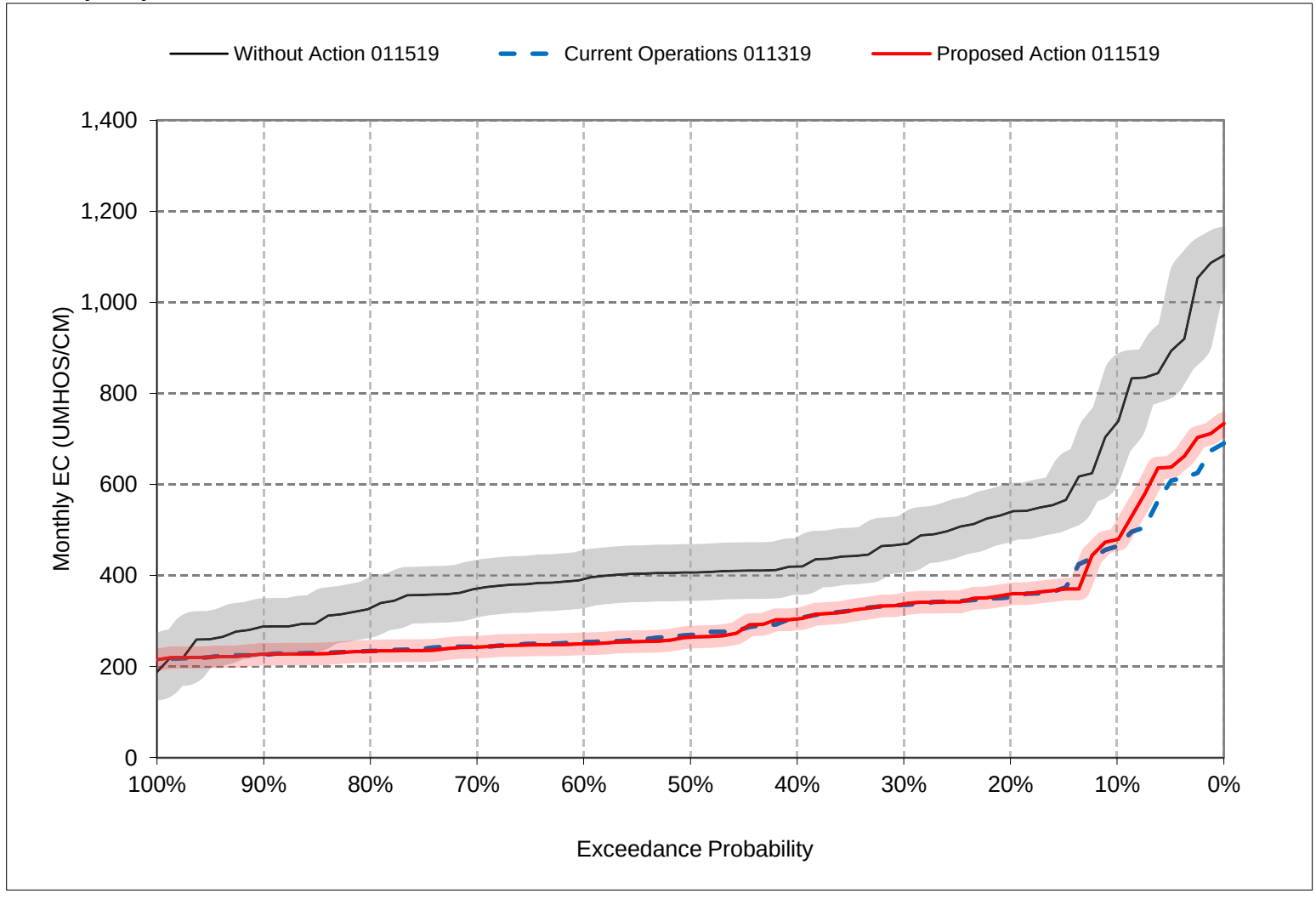
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-12. Old River at Rock Slough
Salinity, June EC



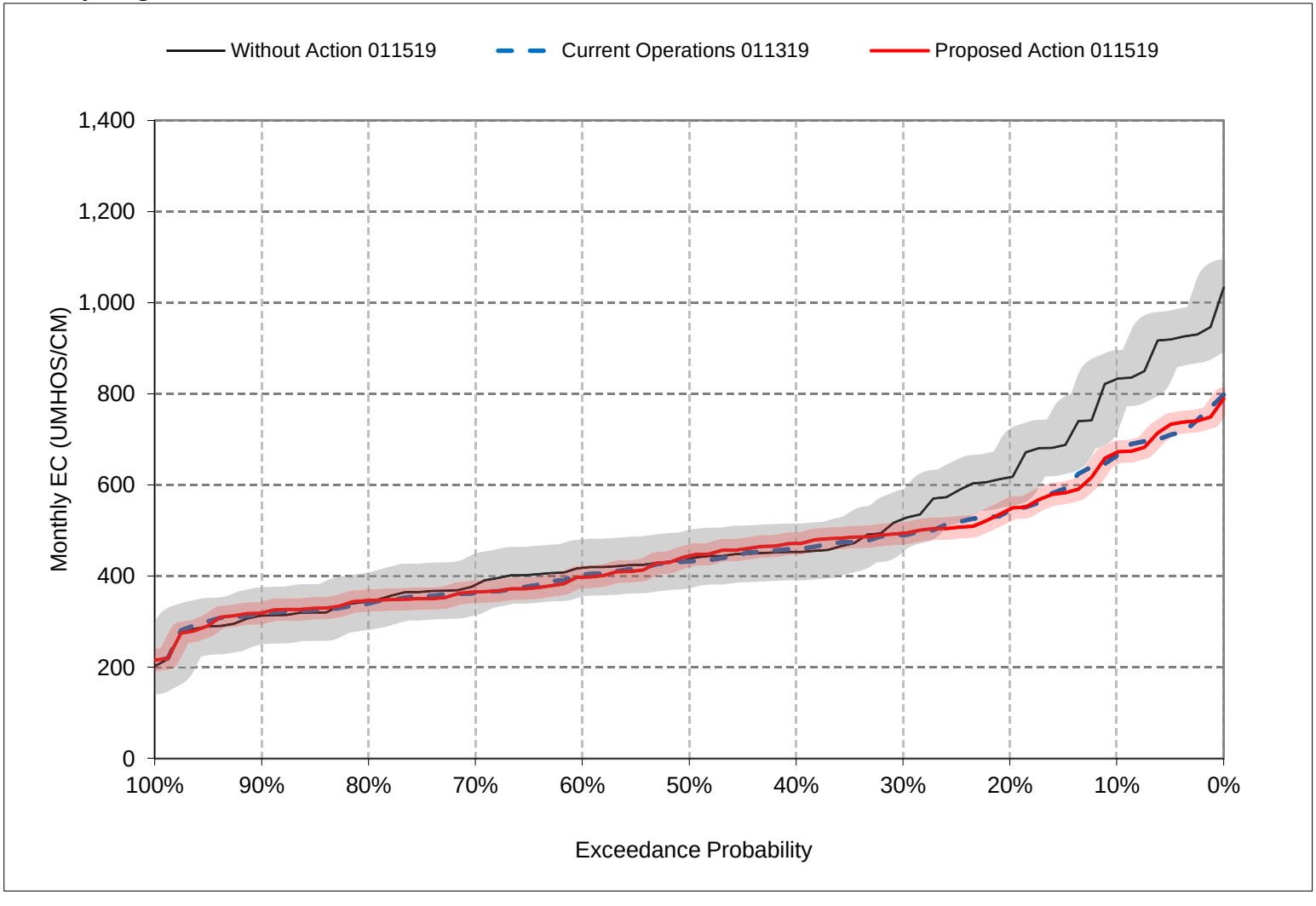
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-13. Old River at Rock Slough
Salinity, July EC



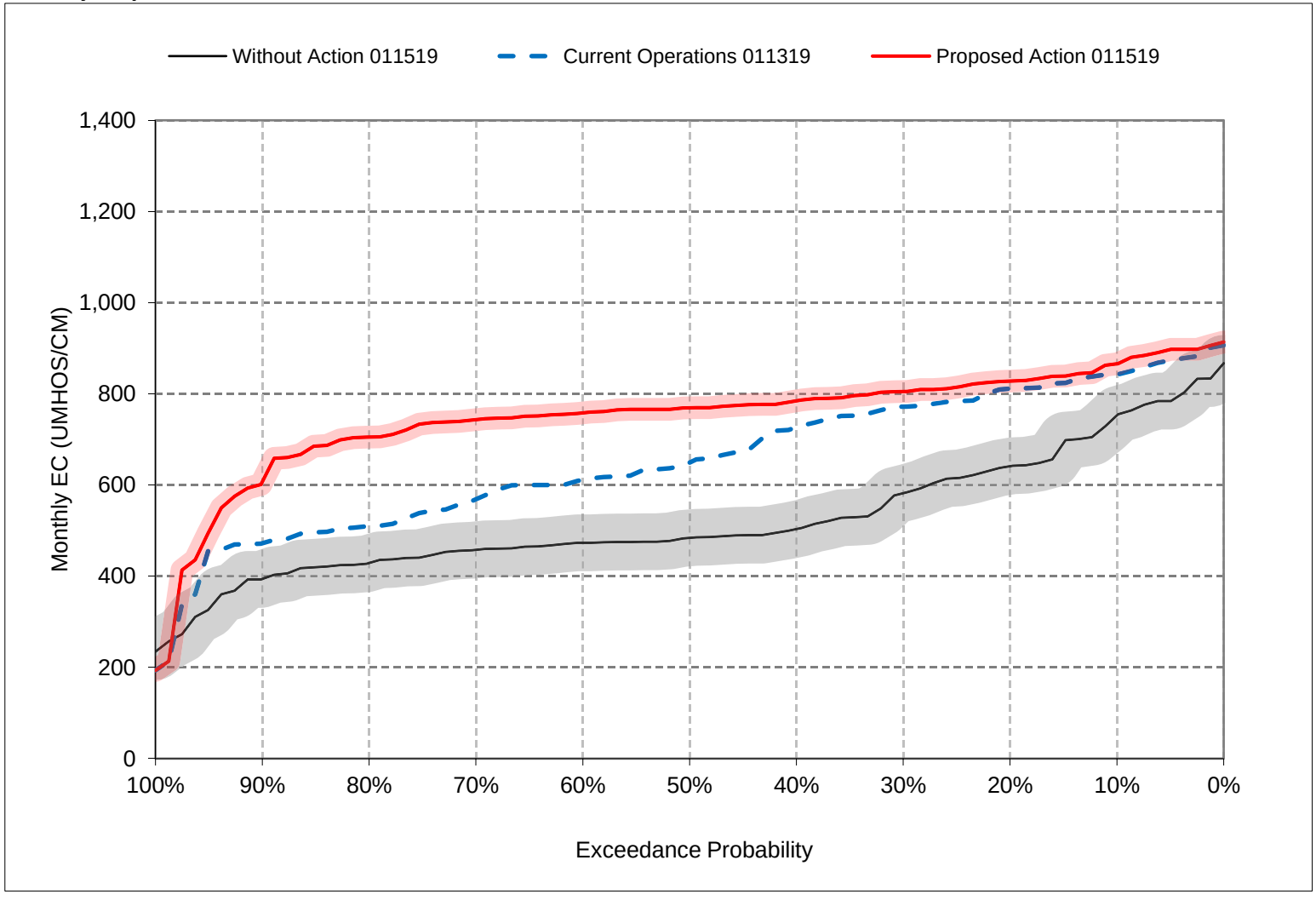
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-14. Old River at Rock Slough
Salinity, August EC



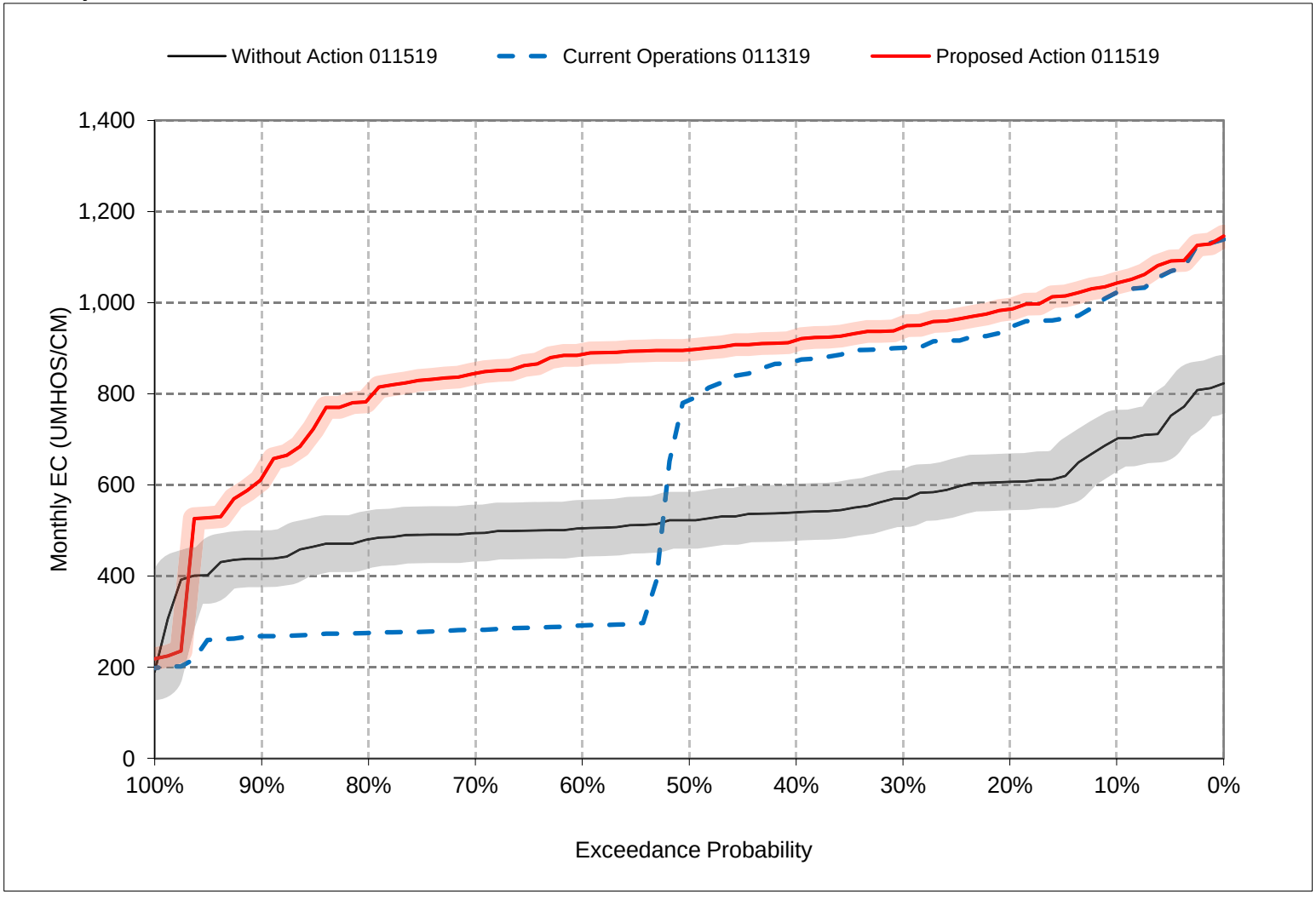
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-15. Old River at Rock Slough
Salinity, September EC



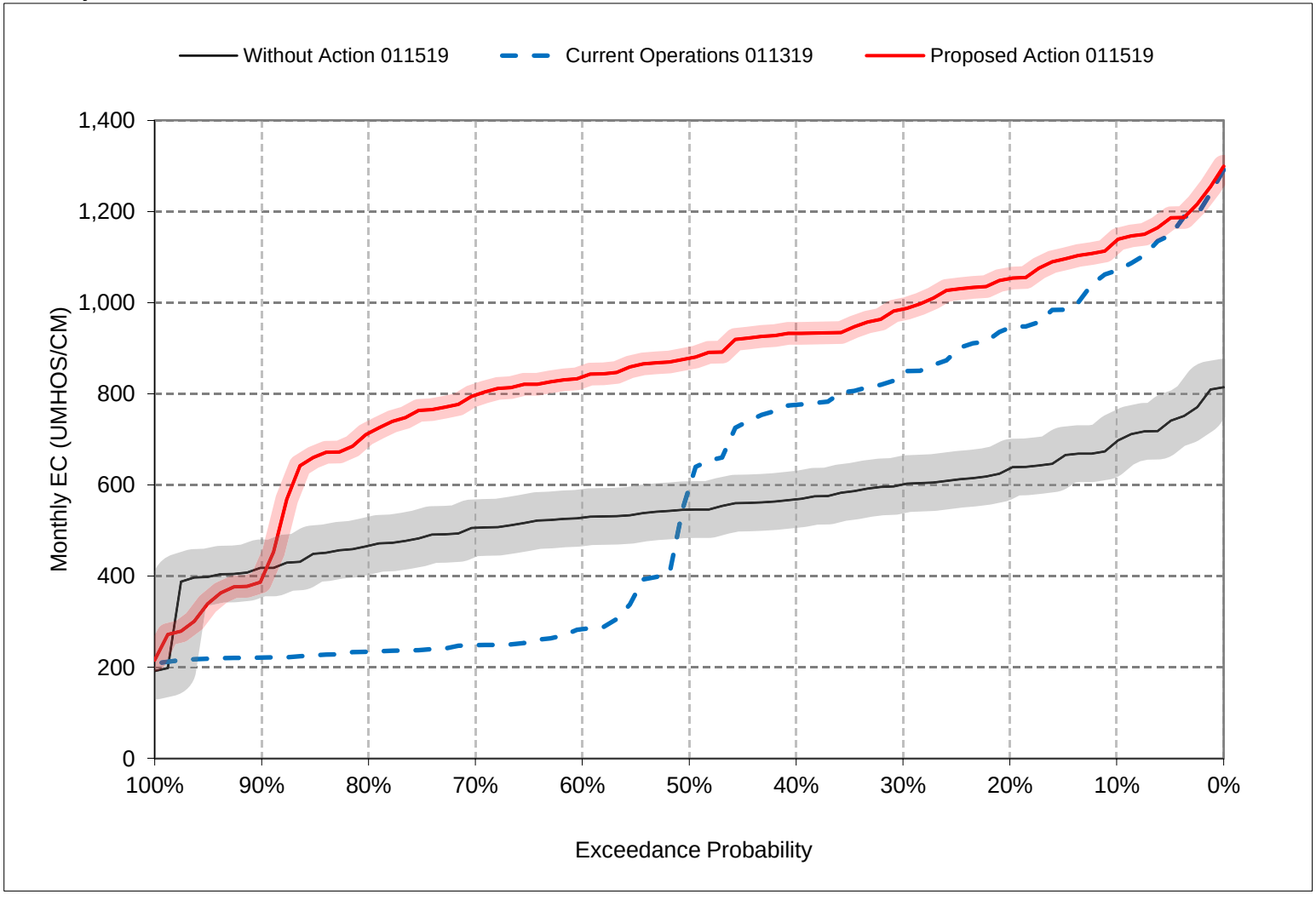
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 8-16. Old River at Rock Slough
Salinity, October EC



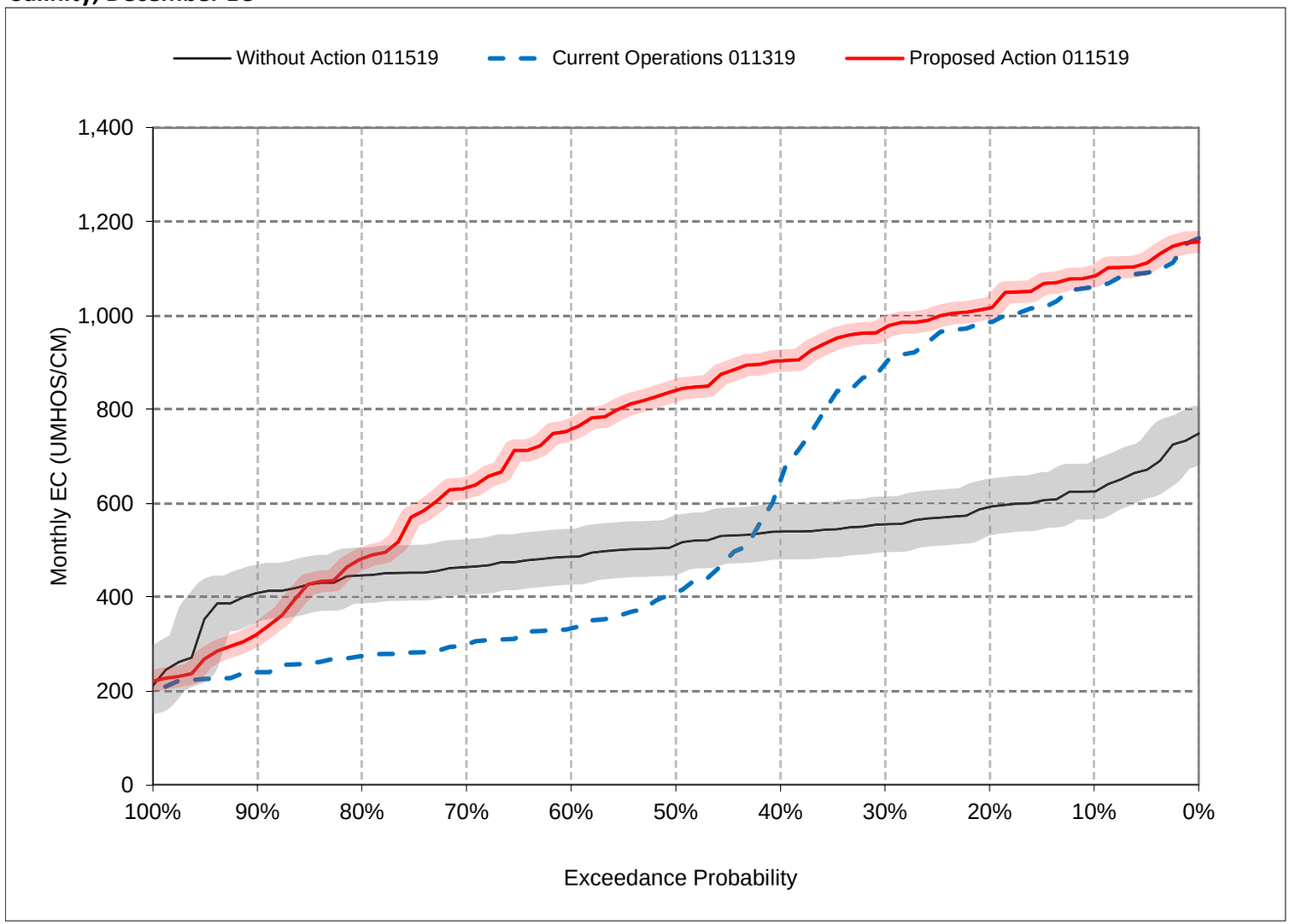
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 9-1. San Joaquin River at Antioch Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,622	3,102	1,321	421	351	315	354	1,104	4,178	6,001	5,550	4,589
20%	3,223	2,045	631	348	332	303	280	612	2,933	4,722	5,061	4,145
30%	2,809	1,250	544	325	316	287	264	337	2,087	3,913	4,535	3,425
40%	1,682	895	424	309	307	278	256	259	1,451	2,576	3,883	2,975
50%	1,399	678	327	294	297	269	249	234	816	1,716	3,382	2,428
60%	1,150	569	294	286	290	260	239	228	358	1,406	3,087	2,237
70%	946	452	267	278	276	252	224	219	264	1,120	2,538	1,700
80%	659	376	253	269	264	235	214	212	223	789	1,638	1,265
90%	526	292	244	258	247	216	203	187	204	303	1,185	792
Long Term												
Full Simulation Period[a]	2,047	1,206	579	365	329	291	325	591	1,631	2,627	3,390	2,741
Water Year Types[b]												
Wet (32%)	786	477	328	281	268	234	214	203	307	750	1,625	1,189
Above Normal (16%)	1,264	687	370	294	290	256	234	225	647	1,510	2,898	2,079
Below Normal (13%)	1,680	1,231	747	294	303	277	265	415	1,392	2,261	3,708	2,853
Dry (24%)	2,632	1,327	686	345	315	286	272	517	2,331	4,169	4,845	3,695
Critical (15%)	4,989	3,120	1,014	724	549	472	805	2,114	4,615	5,673	5,028	5,127

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,505**	**5,385**	**5,420**	**3,117**	**784**	**436**	**549**	**542**	-1,993	-2,013	**264**	**2,514**
20%	**4,221**	**5,047**	**4,852**	**2,454**	**406**	**204**	**186**	**606**	-957	-1,353	-10	**2,664**
30%	**4,413**	**5,597**	**2,777**	**1,726**	**136**	**21**	**89**	**557**	-339	-898	**338**	**3,178**
40%	**5,277**	**5,235**	**2,512**	**1,028**	**47**	-11	**21**	**203**	**46**	-372	**126**	**3,239**
50%	**3,239**	**1,364**	**1,858**	**783**	-11	-25	-3	**107**	**372**	**161**	**54**	**2,962**
60%	**764**	**1,259**	**1,518**	**161**	-29	-26	-10	**48**	**617**	-119	**178**	**4**
70%	-146	**300**	**572**	-15	-35	-29	-2	**20**	**414**	**5**	**501**	-283
80%	**69**	**299**	**129**	-35	-37	-21	**4**	**6**	**193**	**260**	**1,096**	**52**
90%	**145**	**315**	-14	-43	-36	-17	**9**	**12**	**3**	**513**	**1,364**	**420**
Long Term												
Full Simulation Period[a]	**2,269**	**2,616**	**2,212**	**1,127**	**246**	**92**	**109**	**124**	-237	-417	**487**	**1,467**
Water Year Types[b]												
Wet (32%)	-87	**157**	**897**	**100**	-26	-13	**6**	**38**	**242**	**169**	**1,164**	**42**
Above Normal (16%)	**611**	**1,100**	**1,726**	**474**	-5	-32	-4	**70**	**350**	-284	-46	**173**
Below Normal (13%)	**4,680**	**4,227**	**2,904**	**1,368**	**290**	**121**	**152**	**227**	**38**	-280	-194	**2,969**
Dry (24%)	**4,454**	**4,310**	**2,636**	**1,899**	**463**	**133**	**165**	**298**	-715	-1,017	**35**	**2,943**
Critical (15%)	**3,319**	**5,284**	**4,247**	**2,552**	**709**	**358**	**318**	-14	-1,363	-958	**975**	**2,116**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 9-2. San Joaquin River at Antioch Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,622	3,102	1,321	421	351	315	354	1,104	4,178	6,001	5,550	4,589
20%	3,223	2,045	631	348	332	303	280	612	2,933	4,722	5,061	4,145
30%	2,809	1,250	544	325	316	287	264	337	2,087	3,913	4,535	3,425
40%	1,682	895	424	309	307	278	256	259	1,451	2,576	3,883	2,975
50%	1,399	678	327	294	297	269	249	234	816	1,716	3,382	2,428
60%	1,150	569	294	286	290	260	239	228	358	1,406	3,087	2,237
70%	946	452	267	278	276	252	224	219	264	1,120	2,538	1,700
80%	659	376	253	269	264	235	214	212	223	789	1,638	1,265
90%	526	292	244	258	247	216	203	187	204	303	1,185	792
Long Term												
Full Simulation Period[a]	2,047	1,206	579	365	329	291	325	591	1,631	2,627	3,390	2,741
Water Year Types[b]												
Wet (32%)	786	477	328	281	268	234	214	203	307	750	1,625	1,189
Above Normal (16%)	1,264	687	370	294	290	256	234	225	647	1,510	2,898	2,079
Below Normal (13%)	1,680	1,231	747	294	303	277	265	415	1,392	2,261	3,708	2,853
Dry (24%)	2,632	1,327	686	345	315	286	272	517	2,331	4,169	4,845	3,695
Critical (15%)	4,989	3,120	1,014	724	549	472	805	2,114	4,615	5,673	5,028	5,127

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,577**	**5,417**	**5,487**	**3,651**	**897**	**711**	**952**	**651**	-1,837	-2,093	**403**	**2,605**
20%	**4,256**	**5,199**	**5,764**	**2,621**	**476**	**253**	**376**	**781**	-846	-1,337	**101**	**2,793**
30%	**4,428**	**5,643**	**4,680**	**1,682**	**207**	**33**	**157**	**794**	-154	-871	**453**	**3,262**
40%	**5,256**	**5,814**	**3,692**	**1,018**	**59**	-12	**73**	**433**	**119**	-424	**22**	**3,240**
50%	**5,173**	**5,795**	**3,050**	**684**	-16	-30	**16**	**267**	**433**	**180**	**8**	**2,912**
60%	**5,006**	**5,302**	**2,081**	**168**	-28	-27	-13	**165**	**679**	-83	**155**	**2,933**
70%	**4,968**	**3,828**	**926**	-14	-36	-31	-11	**49**	**472**	**85**	**393**	**3,259**
80%	**4,852**	**2,800**	**563**	-32	-41	-20	-6	-13	**198**	**240**	**1,186**	**3,610**
90%	**2,567**	**1,424**	**160**	-39	-34	-14	**1**	**4**	-3	**533**	**1,431**	**3,598**
Long Term												
Full Simulation Period[a]	**4,123**	**4,332**	**2,858**	**1,200**	**305**	**137**	**163**	**255**	-154	-404	**512**	**2,876**
Water Year Types[b]												
Wet (32%)	**3,675**	**3,575**	**2,280**	**69**	-32	-13	**10**	**88**	**251**	**179**	**1,109**	**3,090**
Above Normal (16%)	**4,529**	**4,731**	**2,991**	**572**	**1**	-28	**7**	**149**	**330**	-273	-13	**2,908**
Below Normal (13%)	**4,557**	**4,343**	**2,915**	**1,543**	**370**	**180**	**234**	**460**	**215**	-274	-219	**2,822**
Dry (24%)	**4,673**	**4,448**	**2,669**	**2,085**	**546**	**163**	**241**	**459**	-599	-1,039	**151**	**3,024**
Critical (15%)	**3,341**	**5,340**	**4,232**	**2,538**	**903**	**556**	**465**	**207**	-1,153	-867	**1,058**	**2,178**

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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 9-3. San Joaquin River at Antioch Salinity, Monthly EC

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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).

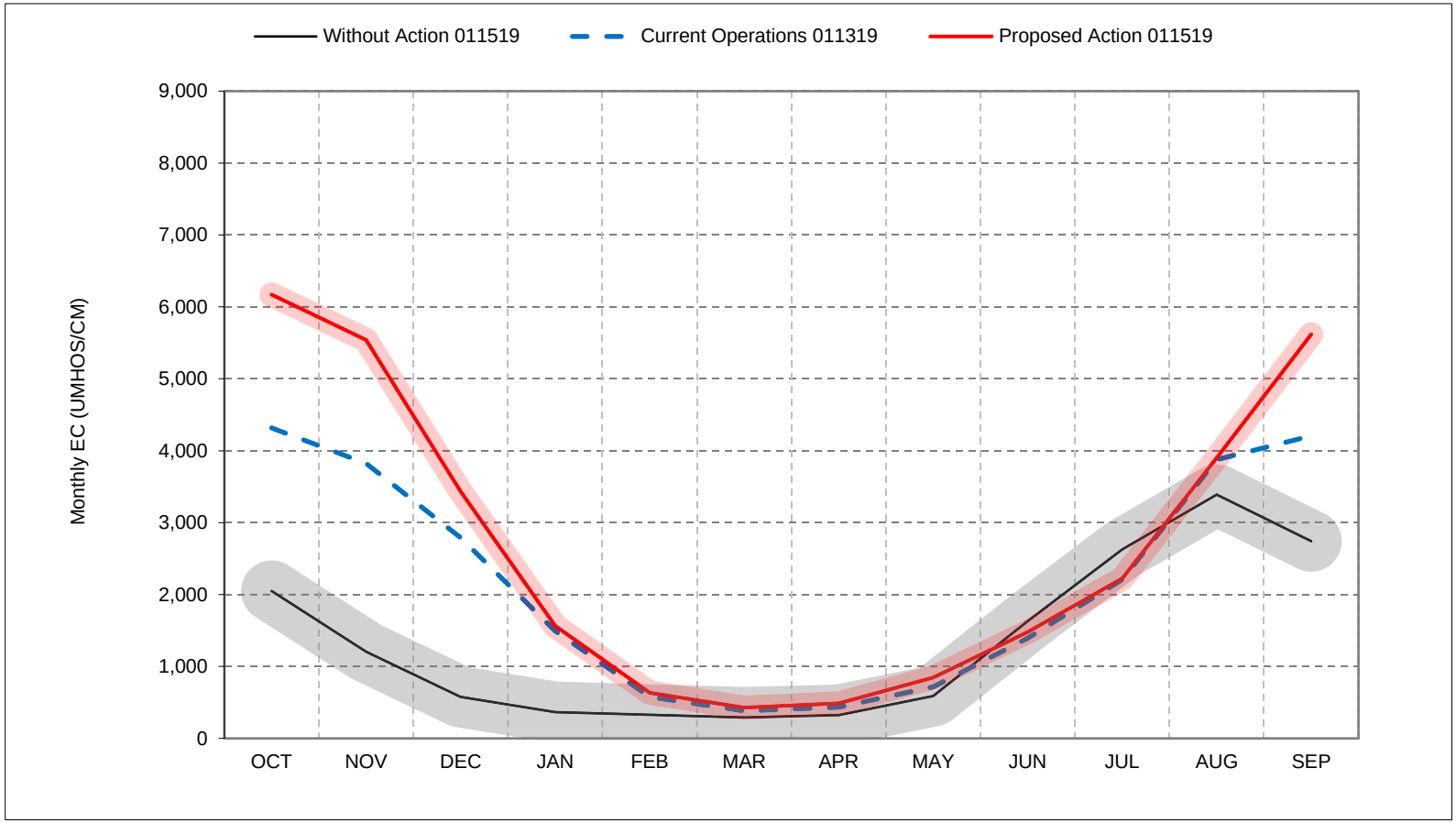
c These results are displayed with calendar year - year type sorting.

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.

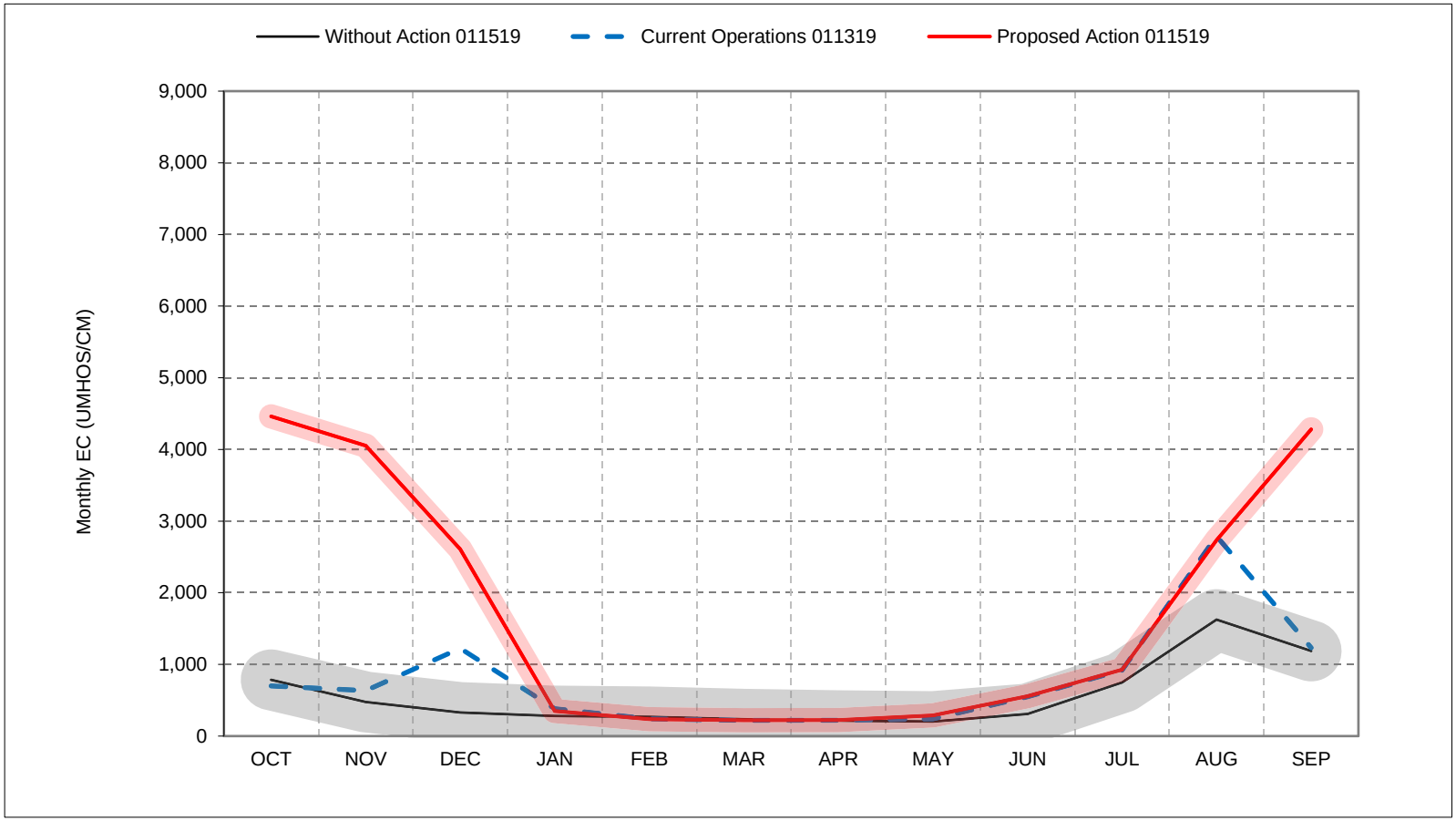
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-1. San Joaquin River at Antioch Salinity, Long-Term Average EC



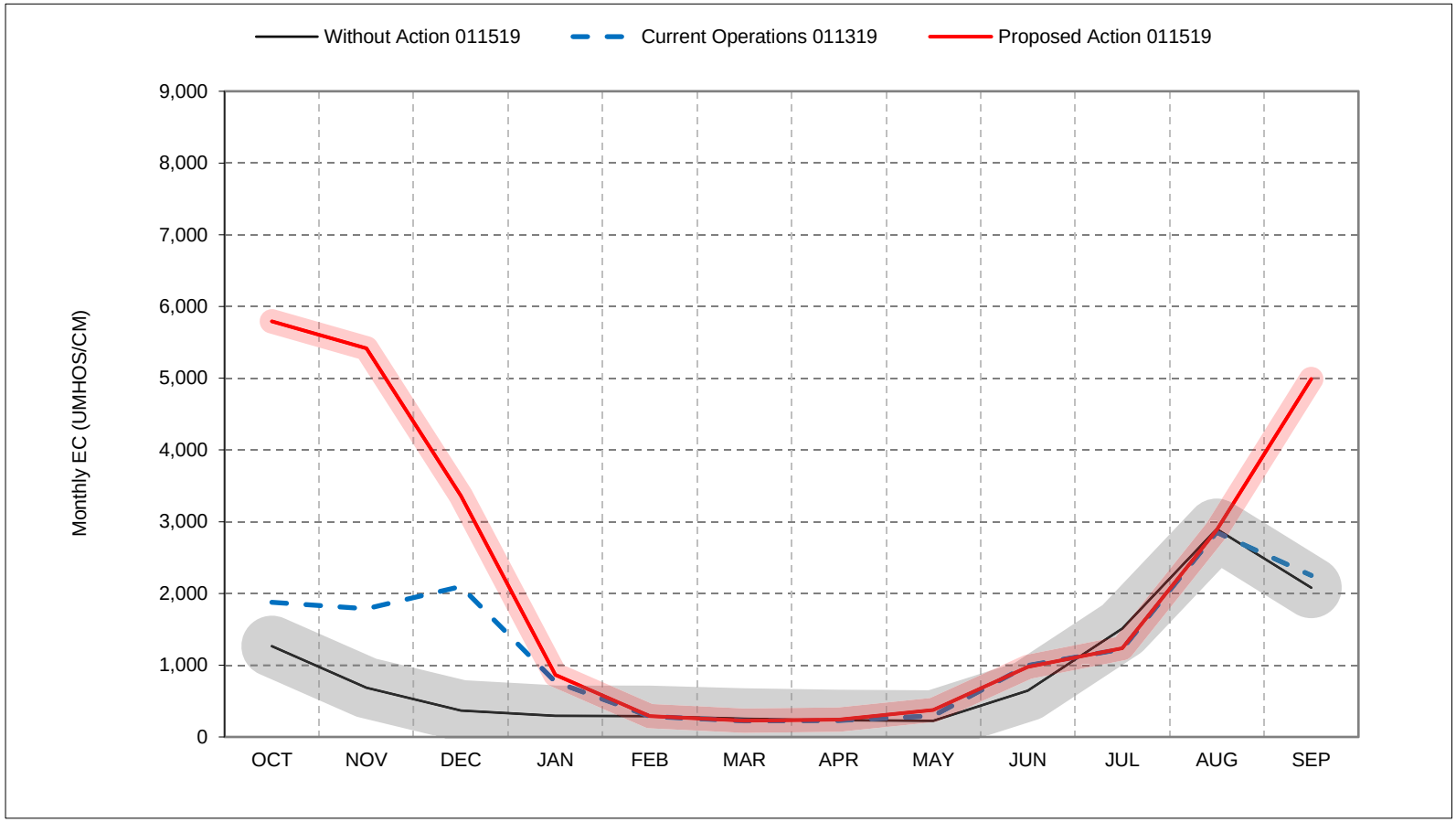
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-2. San Joaquin River at Antioch Salinity, Wet Year Average EC



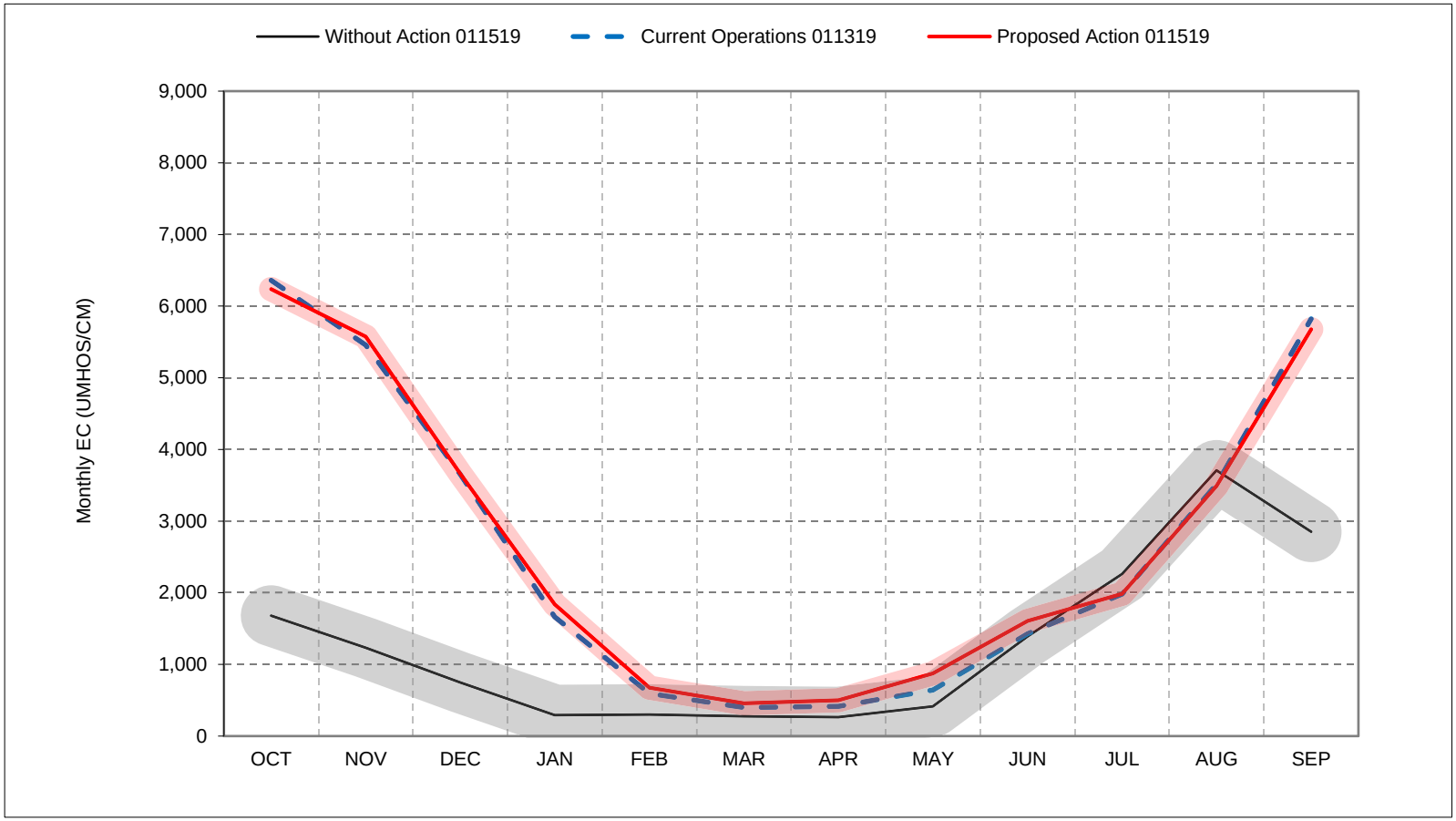
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-3. San Joaquin River at Antioch Salinity, Above Normal Year Average EC



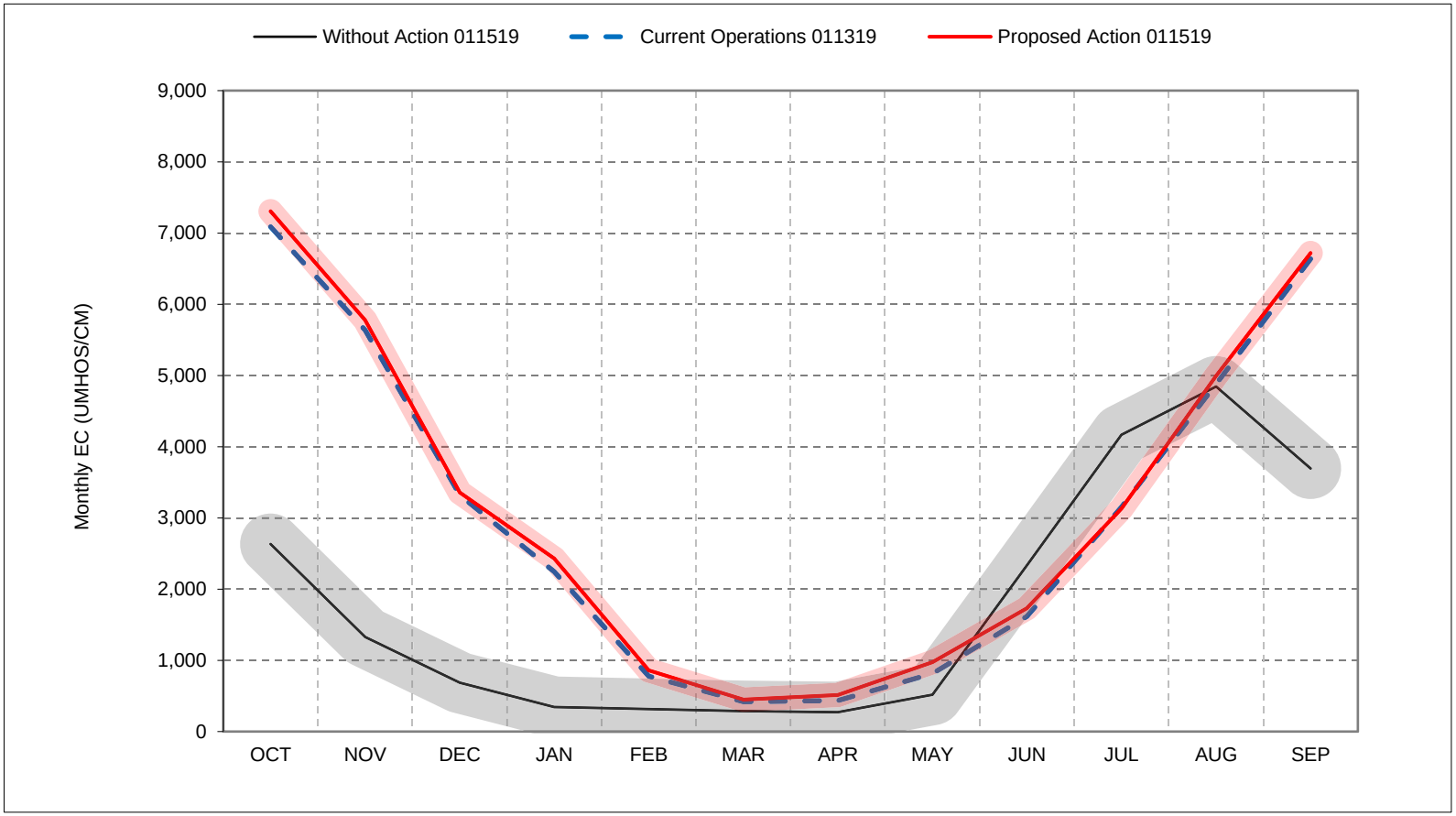
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-4. San Joaquin River at Antioch Salinity, Below Normal Year Average EC



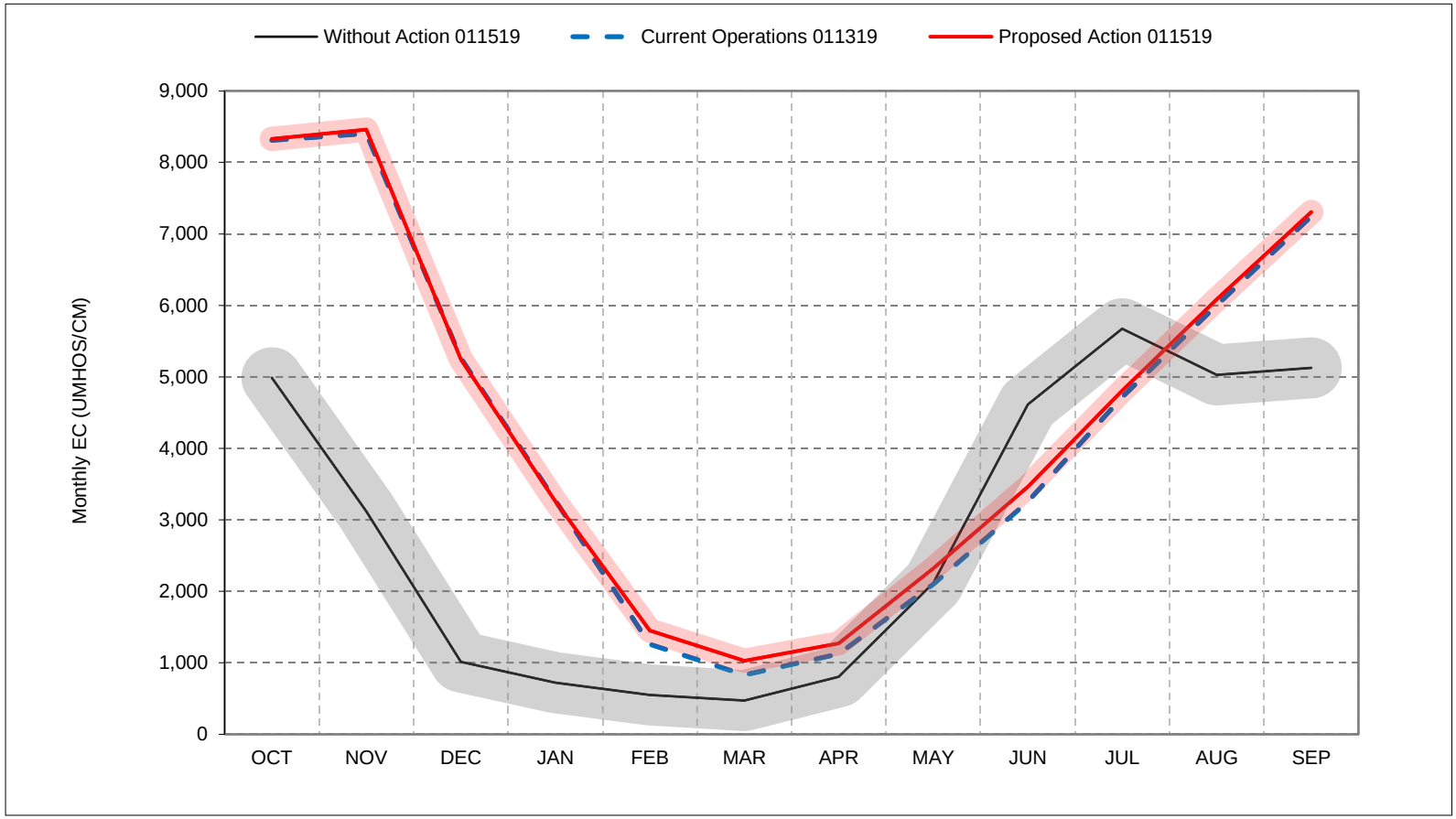
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-5. San Joaquin River at Antioch Salinity, Dry Year Average EC



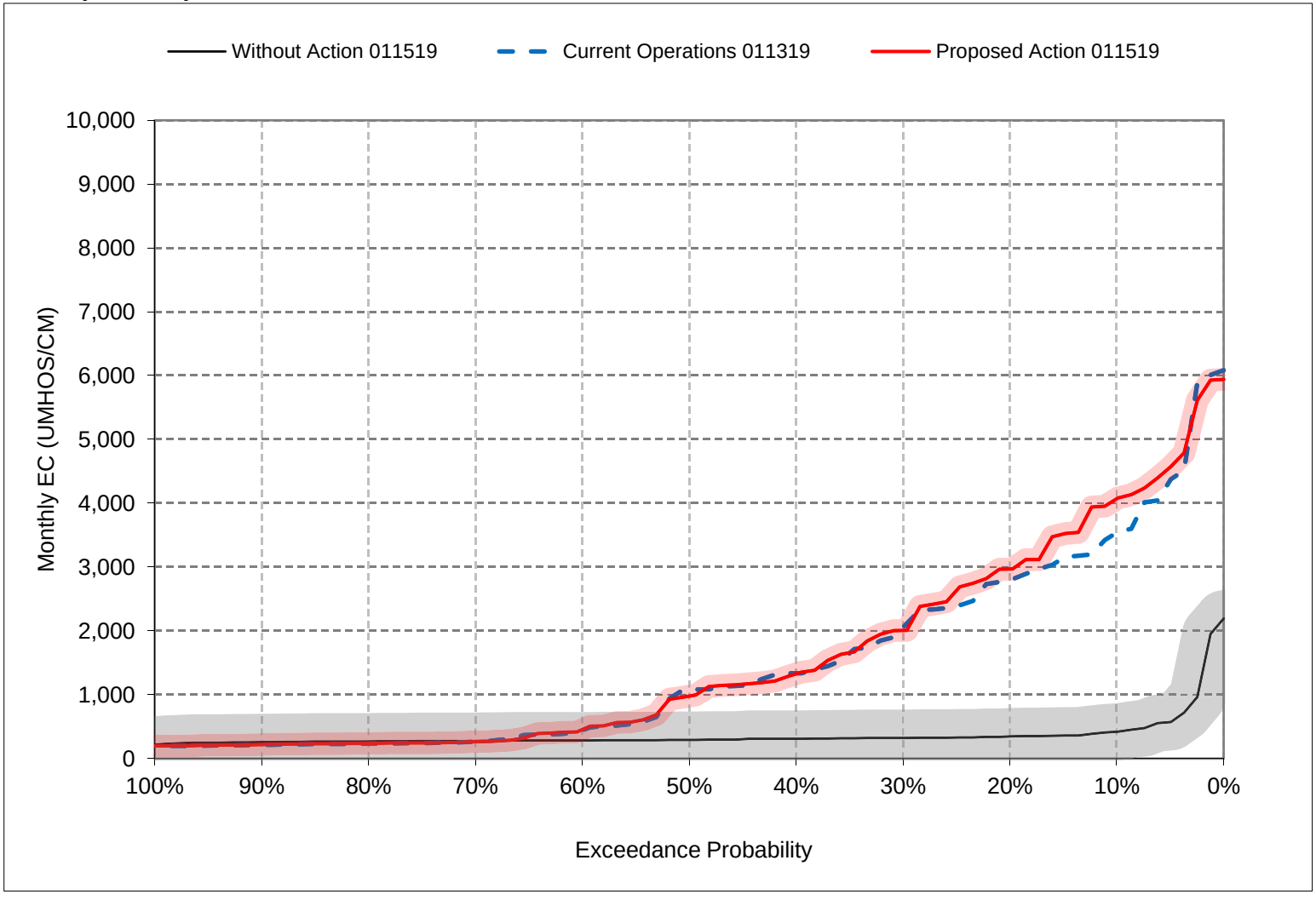
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-6. San Joaquin River at Antioch Salinity, Critical Year Average EC



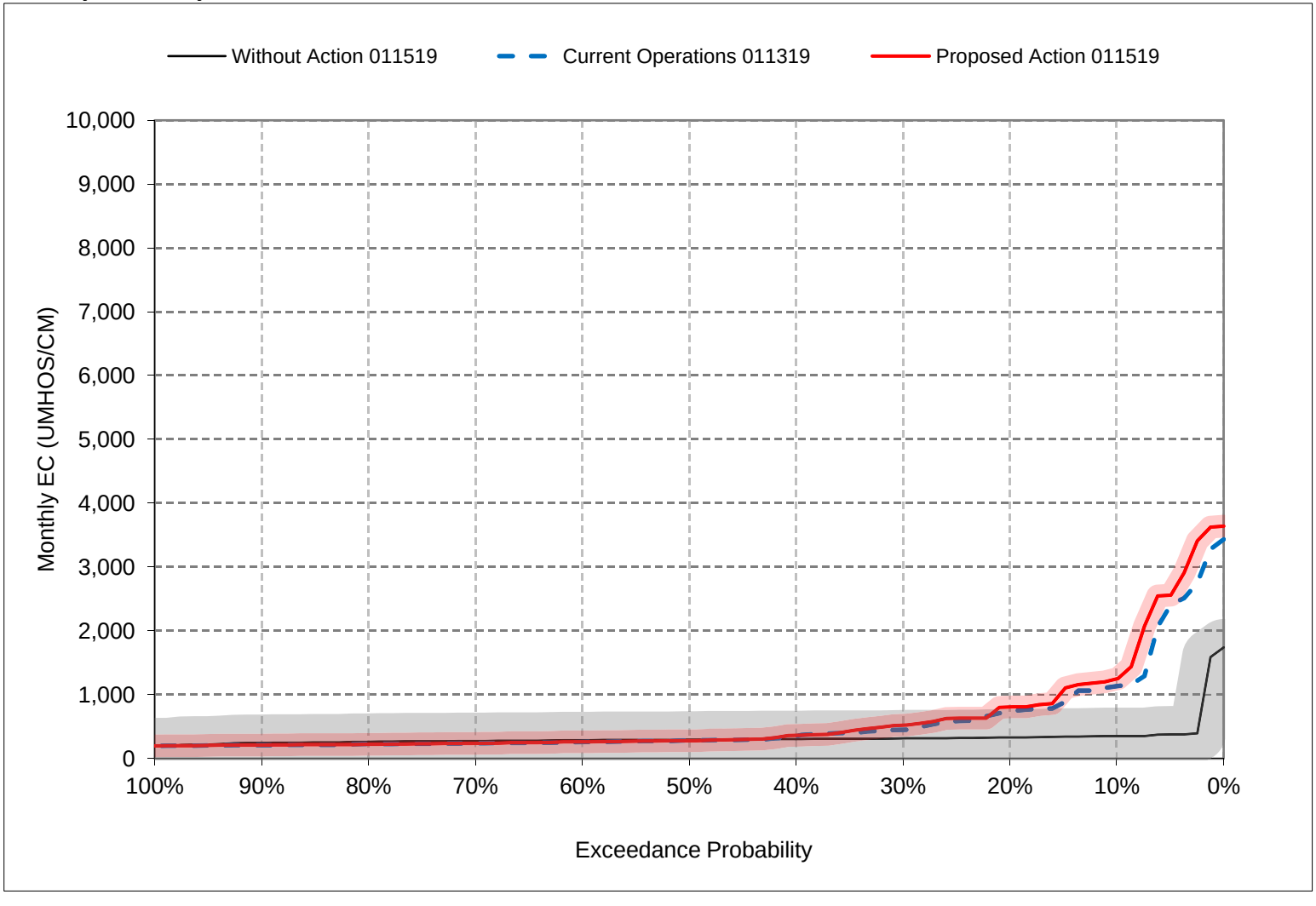
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-7. San Joaquin River at Antioch
Salinity, January EC



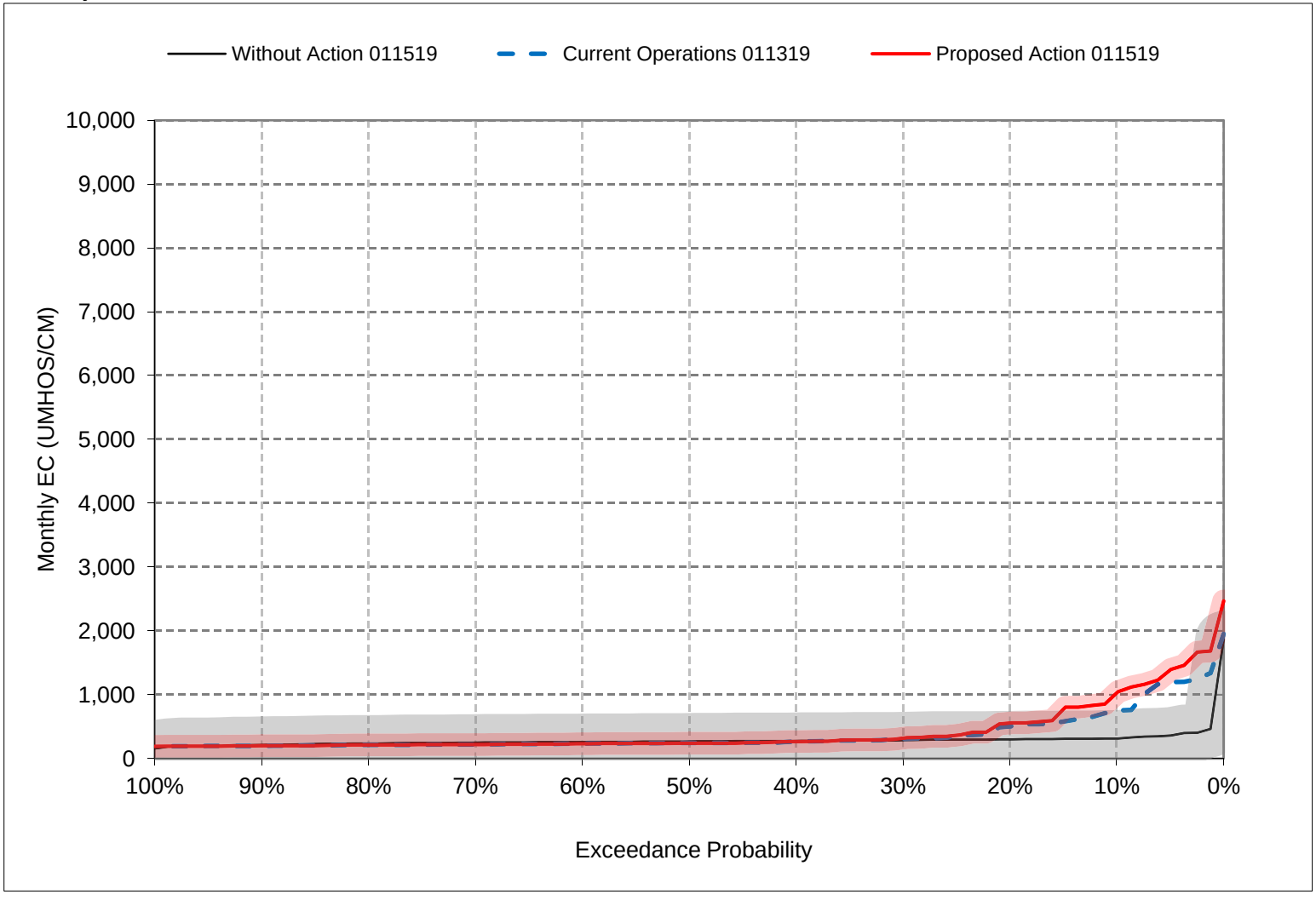
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-8. San Joaquin River at Antioch
Salinity, February EC



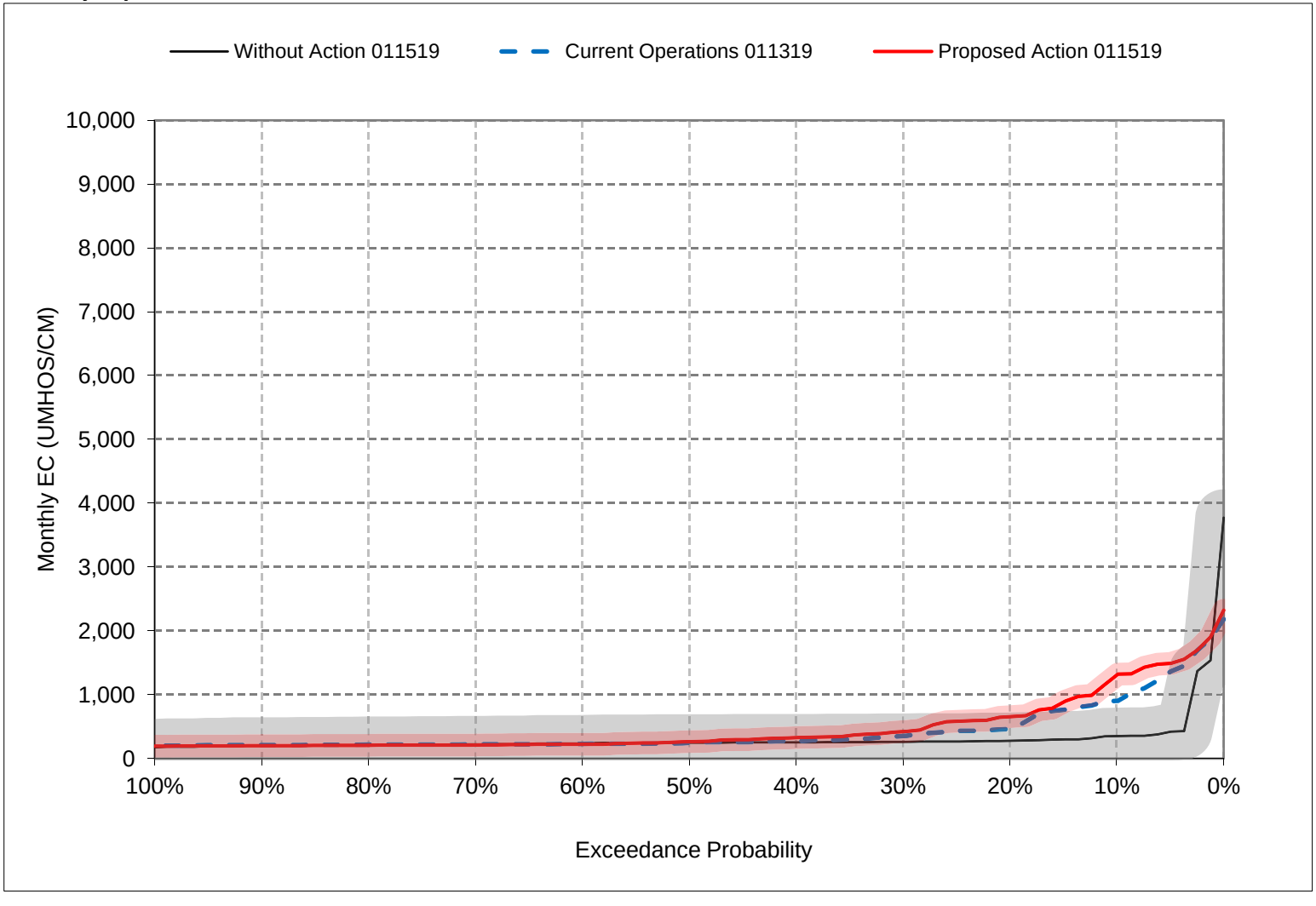
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-9. San Joaquin River at Antioch
Salinity, March EC



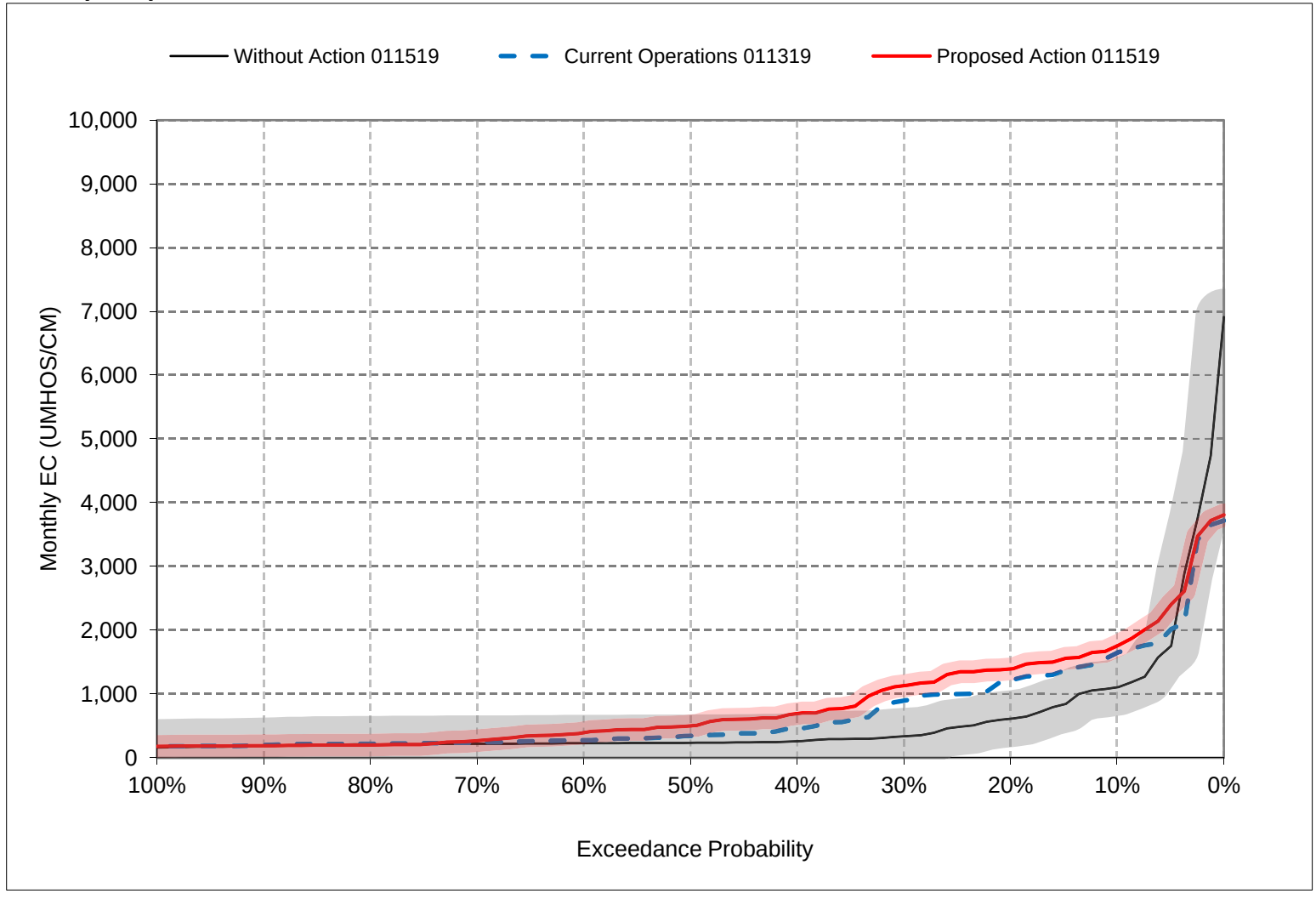
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-10. San Joaquin River at Antioch
Salinity, April EC



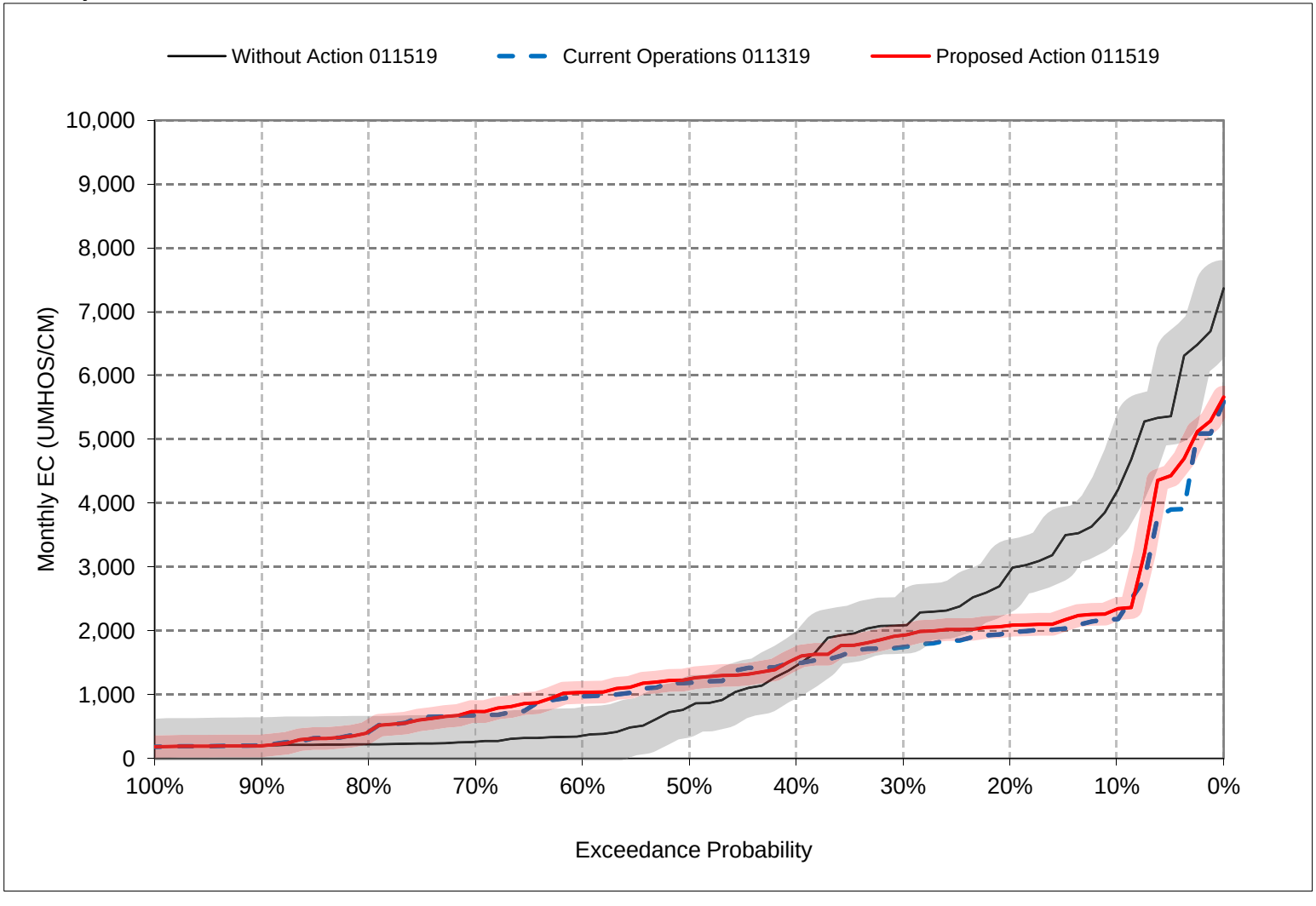
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-11. San Joaquin River at Antioch
Salinity, May EC



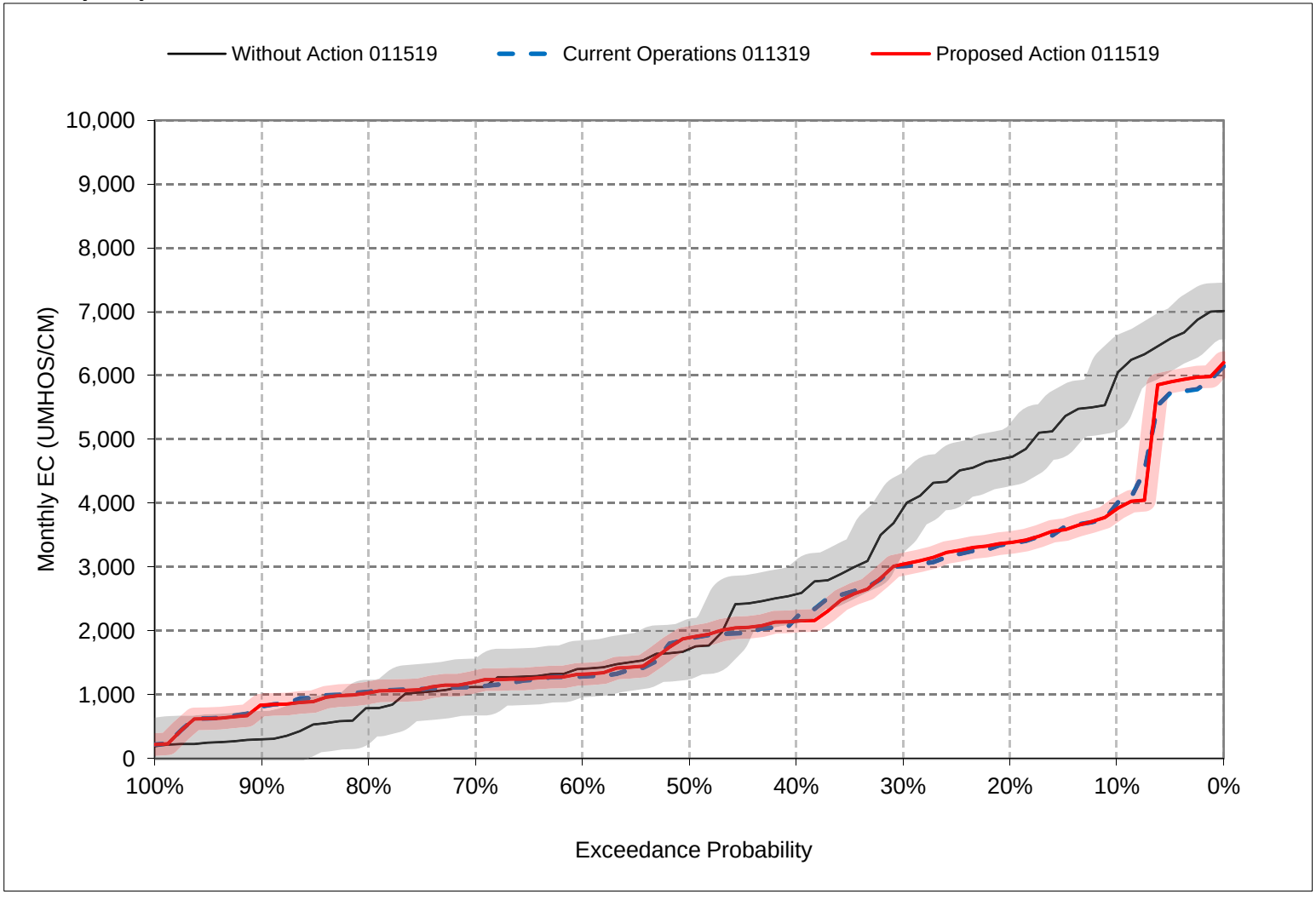
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-12. San Joaquin River at Antioch
Salinity, June EC



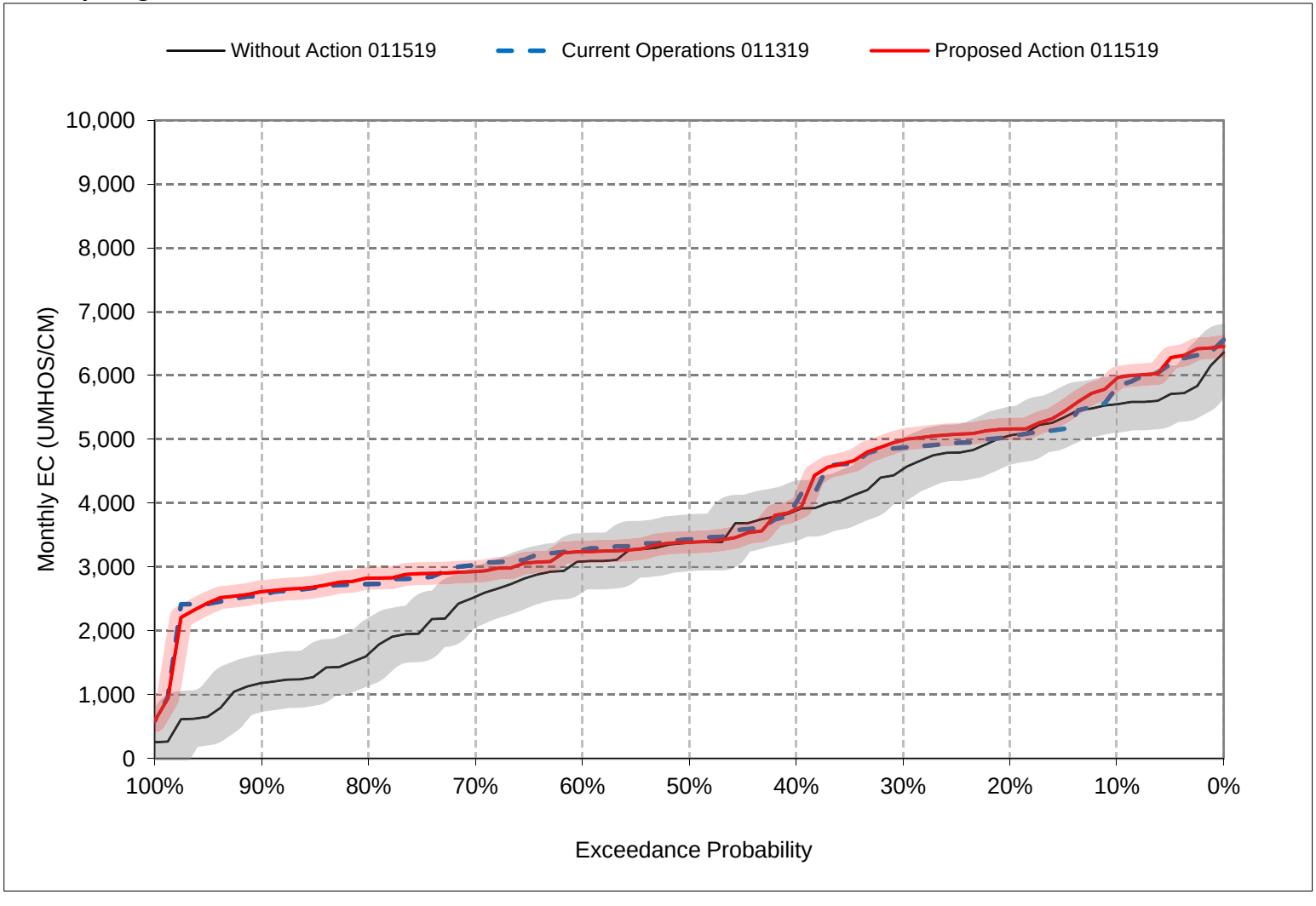
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-13. San Joaquin River at Antioch
Salinity, July EC



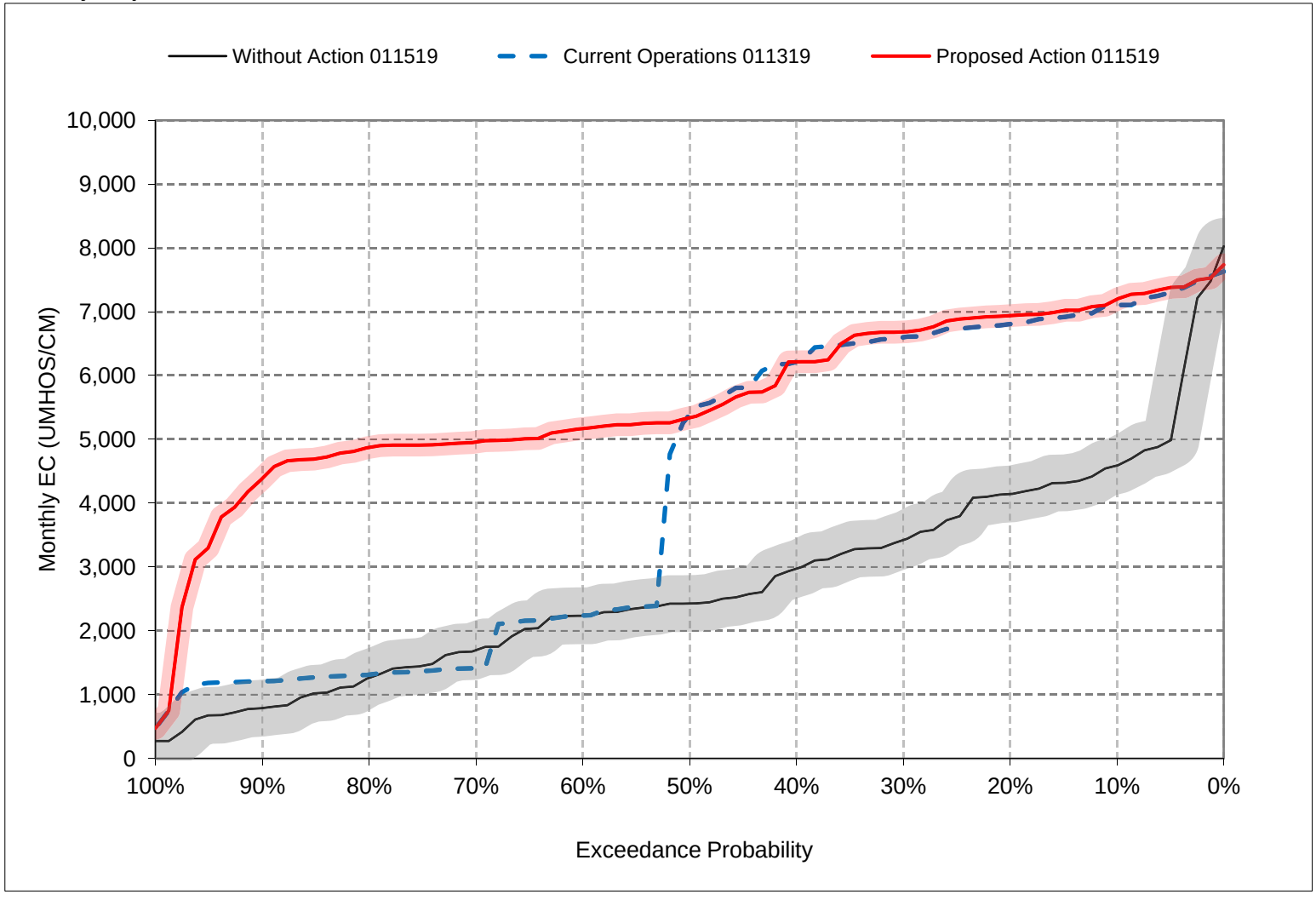
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-14. San Joaquin River at Antioch
Salinity, August EC



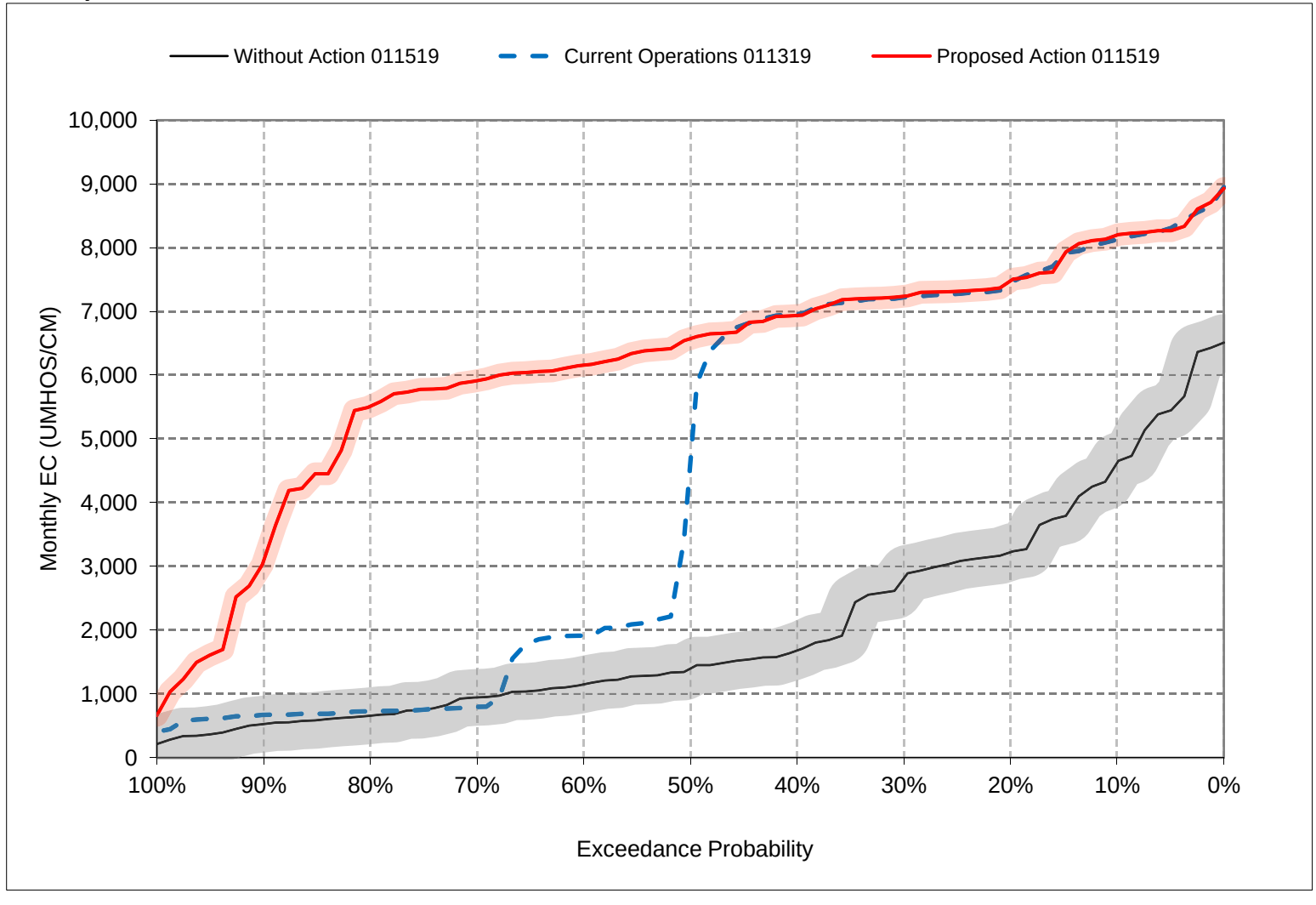
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-15. San Joaquin River at Antioch
Salinity, September EC



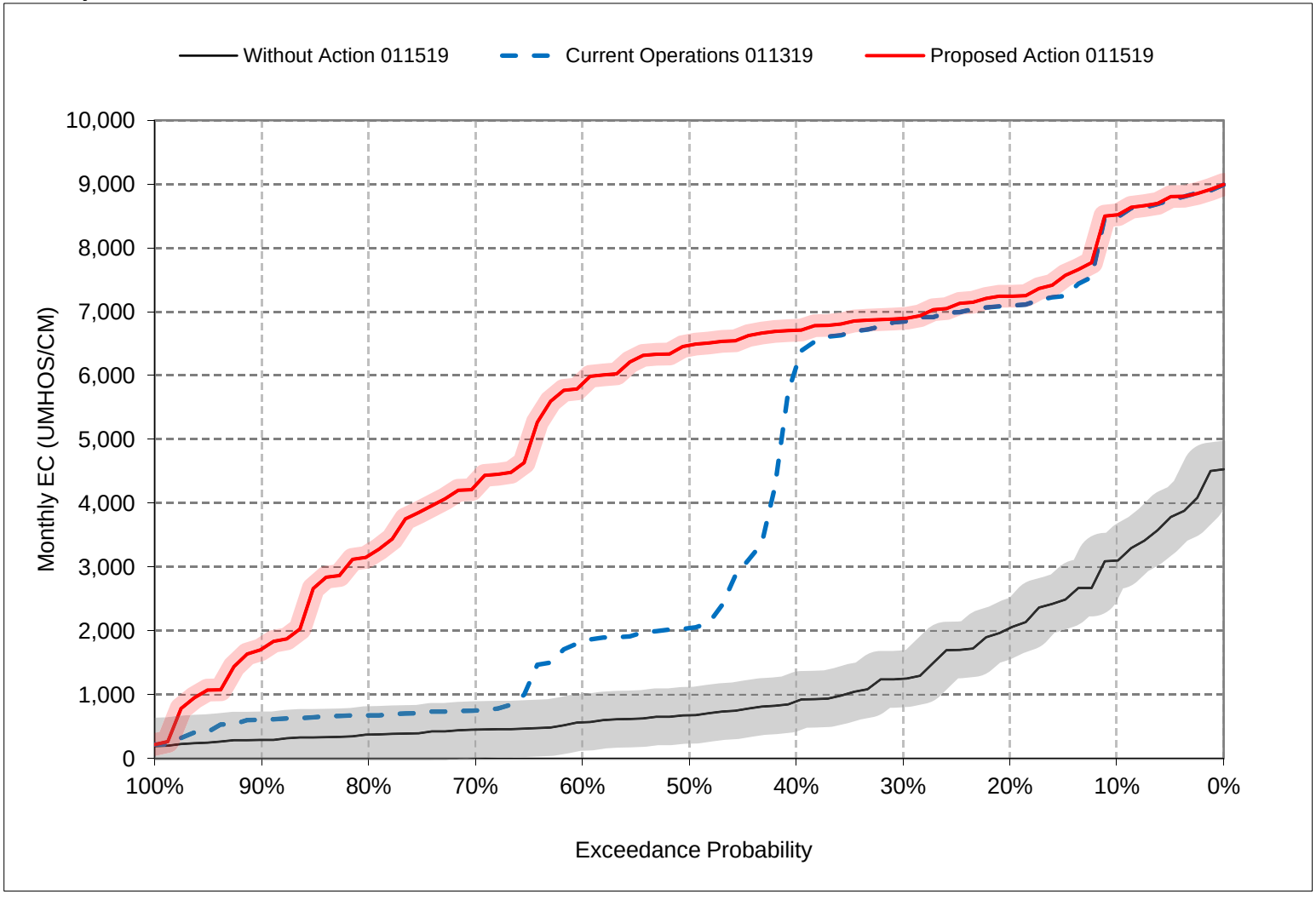
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 9-16. San Joaquin River at Antioch
Salinity, October EC



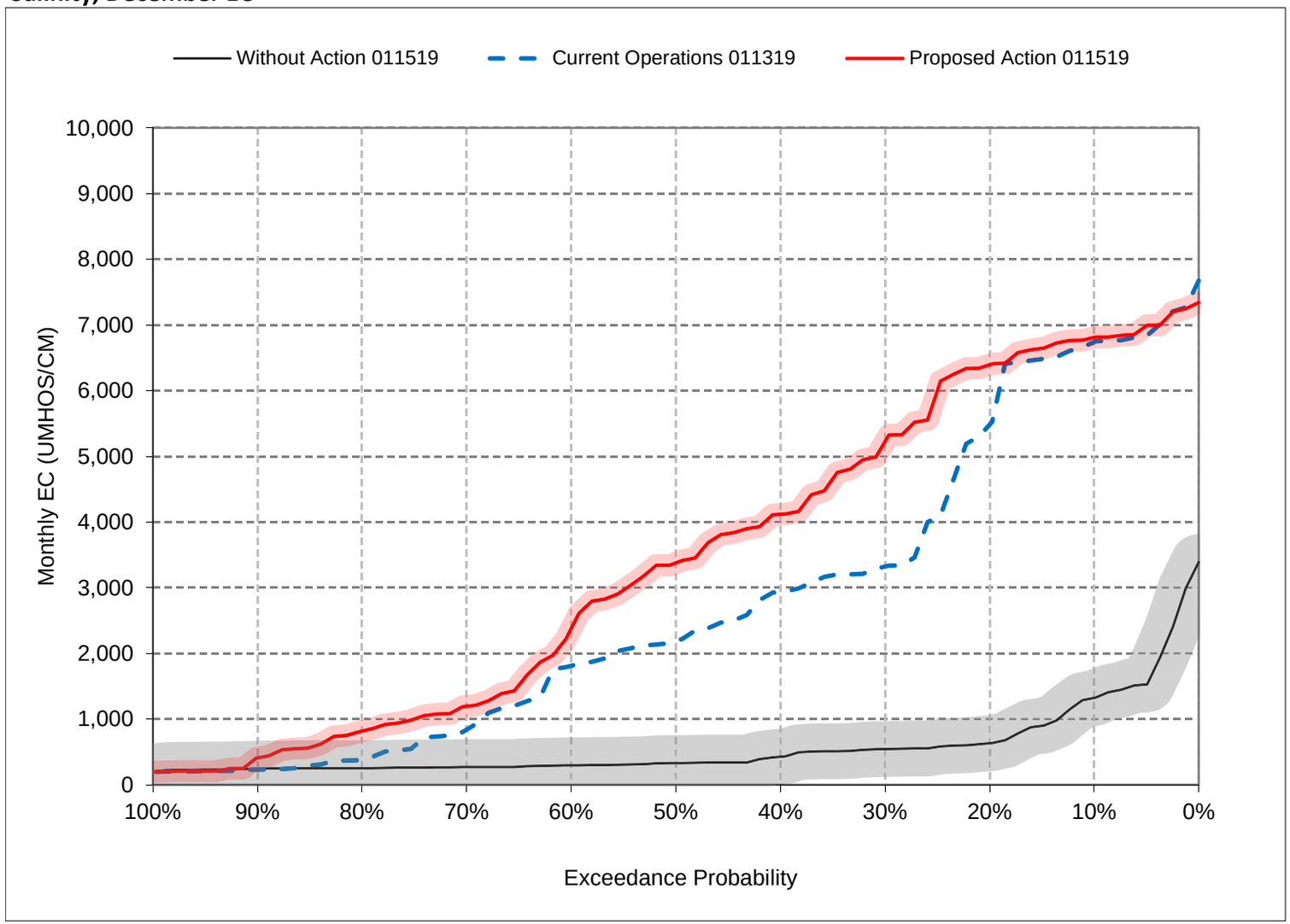
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 10-1. Sacramento River at Mallard Slough Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,137	9,199	5,445	1,894	1,024	828	1,335	4,152	9,913	12,236	11,886	10,958
20%	9,170	6,867	2,988	1,231	507	441	517	2,644	7,520	10,756	11,290	10,271
30%	8,458	5,257	2,462	899	340	270	339	1,298	6,526	9,614	10,582	9,237
40%	6,110	4,011	1,627	546	282	255	276	702	4,970	7,706	9,674	8,525
50%	5,469	3,142	1,082	381	252	222	231	361	3,231	5,809	8,976	7,535
60%	4,880	2,720	703	262	232	214	210	269	1,610	5,168	8,410	7,166
70%	4,243	2,184	464	235	223	207	205	223	991	4,429	7,611	5,944
80%	3,234	1,371	305	224	213	199	199	202	345	3,252	5,869	5,150
90%	2,670	1,096	232	208	201	191	190	185	205	1,128	4,706	3,595
Long Term												
Full Simulation Period[a]	6,283	4,080	1,953	878	530	438	633	1,582	4,205	6,661	8,578	7,603
Water Year Types[b]												
Wet (32%)	3,566	2,153	1,064	264	214	203	203	269	862	2,724	5,415	4,568
Above Normal (16%)	4,977	3,046	1,349	407	254	212	216	295	2,213	5,072	8,054	6,708
Below Normal (13%)	5,853	4,281	2,605	673	399	354	426	1,439	4,456	6,860	9,435	8,131
Dry (24%)	7,781	4,434	2,244	1,076	531	353	468	1,789	6,272	9,762	11,036	9,547
Critical (15%)	11,481	8,602	3,453	2,580	1,635	1,414	2,481	5,609	9,929	11,563	11,118	11,423

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**4,036**	**6,408**	**7,957**	**6,780**	**2,822**	**2,375**	**2,755**	**1,576**	-2,612	-2,424	**347**	**2,612**
20%	**4,949**	**6,928**	**8,729**	**6,144**	**1,996**	**1,858**	**1,799**	**2,160**	-1,034	-2,256	-259	**2,629**
30%	**5,517**	**8,345**	**5,900**	**5,054**	**961**	**771**	**1,343**	**2,651**	-520	-1,743	**230**	**3,569**
40%	**7,532**	**8,444**	**5,775**	**3,035**	**449**	**565**	**722**	**1,561**	**383**	-1,292	-383	**3,507**
50%	**5,097**	**2,971**	**5,093**	**2,137**	**218**	**254**	**455**	**1,308**	**1,218**	-83	-720	**3,410**
60%	**1,390**	**3,098**	**4,849**	**1,043**	**44**	**81**	**189**	**789**	**2,383**	-630	-437	-1,281
70%	-1,086	**941**	**1,973**	**89**	-5	**5**	**83**	**517**	**2,088**	-277	-26	-2,716
80%	-178	**1,437**	**534**	-8	-12	0	**12**	**117**	**1,555**	**623**	**1,308**	-2,152
90%	**229**	**1,594**	**85**	-14	-9	**0**	**6**	**10**	**322**	**2,107**	**2,081**	-662
Long Term												
Full Simulation Period[a]	**2,875**	**4,137**	**4,410**	**2,800**	**960**	**710**	**825**	**887**	**337**	-527	**426**	**934**
Water Year Types[b]												
Wet (32%)	-584	**514**	**2,517**	**506**	**30**	**71**	**112**	**321**	**1,166**	**720**	**1,703**	-1,594
Above Normal (16%)	**1,062**	**2,484**	**4,100**	**1,315**	**256**	**134**	**234**	**784**	**1,587**	-723	-777	-828
Below Normal (13%)	**6,471**	**6,915**	**5,049**	**3,864**	**1,343**	**1,183**	**1,311**	**1,285**	**628**	-872	-936	**3,367**
Dry (24%)	**6,014**	**6,791**	**4,660**	**4,732**	**1,661**	**979**	**1,281**	**1,495**	-712	-1,635	-265	**3,192**
Critical (15%)	**3,808**	**6,803**	**7,841**	**5,187**	**2,219**	**1,836**	**1,801**	**850**	-1,329	-853	**1,362**	**2,326**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 10-2. Sacramento River at Mallard Slough Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,137	9,199	5,445	1,894	1,024	828	1,335	4,152	9,913	12,236	11,886	10,958
20%	9,170	6,867	2,988	1,231	507	441	517	2,644	7,520	10,756	11,290	10,271
30%	8,458	5,257	2,462	899	340	270	339	1,298	6,526	9,614	10,582	9,237
40%	6,110	4,011	1,627	546	282	255	276	702	4,970	7,706	9,674	8,525
50%	5,469	3,142	1,082	381	252	222	231	361	3,231	5,809	8,976	7,535
60%	4,880	2,720	703	262	232	214	210	269	1,610	5,168	8,410	7,166
70%	4,243	2,184	464	235	223	207	205	223	991	4,429	7,611	5,944
80%	3,234	1,371	305	224	213	199	199	202	345	3,252	5,869	5,150
90%	2,670	1,096	232	208	201	191	190	185	205	1,128	4,706	3,595
Long Term												
Full Simulation Period[a]	6,283	4,080	1,953	878	530	438	633	1,582	4,205	6,661	8,578	7,603
Water Year Types[b]												
Wet (32%)	3,566	2,153	1,064	264	214	203	203	269	862	2,724	5,415	4,568
Above Normal (16%)	4,977	3,046	1,349	407	254	212	216	295	2,213	5,072	8,054	6,708
Below Normal (13%)	5,853	4,281	2,605	673	399	354	426	1,439	4,456	6,860	9,435	8,131
Dry (24%)	7,781	4,434	2,244	1,076	531	353	468	1,789	6,272	9,762	11,036	9,547
Critical (15%)	11,481	8,602	3,453	2,580	1,635	1,414	2,481	5,609	9,929	11,563	11,118	11,423

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**4,078**	**6,452**	**7,965**	**7,899**	**3,476**	**3,190**	**3,471**	**1,663**	-2,649	-2,745	**492**	**2,729**
20%	**5,021**	**7,035**	**9,842**	**6,722**	**2,035**	**1,985**	**2,550**	**2,440**	-938	-2,144	-81	**2,779**
30%	**5,540**	**8,387**	**8,724**	**5,031**	**1,210**	**814**	**1,750**	**3,202**	-370	-1,488	**327**	**3,679**
40%	**7,377**	**9,096**	**7,866**	**3,042**	**567**	**579**	**1,276**	**2,330**	**493**	-1,295	-596	**3,375**
50%	**7,227**	**9,683**	**7,238**	**2,021**	**185**	**256**	**705**	**2,021**	**1,615**	-80	-735	**3,358**
60%	**7,430**	**9,158**	**5,486**	**1,003**	**7**	**69**	**353**	**1,534**	**2,700**	-535	-522	**3,311**
70%	**7,683**	**7,827**	**2,293**	**76**	-8	**1**	**117**	**863**	**2,233**	-152	-95	**4,367**
80%	**8,170**	**6,785**	**1,052**	-11	-13	0	**10**	**174**	**1,643**	**633**	**1,386**	**4,995**
90%	**5,611**	**3,208**	**236**	-12	-8	**1**	**2**	**14**	**316**	**2,085**	**2,281**	**5,965**
Long Term												
Full Simulation Period[a]	**5,934**	**6,998**	**5,370**	**2,882**	**1,068**	**814**	**1,071**	**1,333**	**492**	-487	**452**	**3,617**
Water Year Types[b]												
Wet (32%)	**6,162**	**6,610**	**4,601**	**430**	**21**	**67**	**226**	**619**	**1,262**	**763**	**1,643**	**4,648**
Above Normal (16%)	**6,596**	**7,814**	**5,938**	**1,318**	**213**	**140**	**429**	**1,310**	**1,683**	-667	-702	**3,627**
Below Normal (13%)	**6,333**	**7,151**	**5,015**	**4,016**	**1,471**	**1,274**	**1,643**	**1,978**	**938**	-888	-1,021	**3,150**
Dry (24%)	**6,248**	**6,975**	**4,691**	**5,030**	**1,806**	**1,076**	**1,597**	**1,957**	-571	-1,635	-155	**3,263**
Critical (15%)	**3,832**	**6,855**	**7,882**	**5,270**	**2,668**	**2,303**	**2,195**	**1,275**	-1,100	-719	**1,480**	**2,388**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 10-3. Sacramento River at Mallard Slough Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

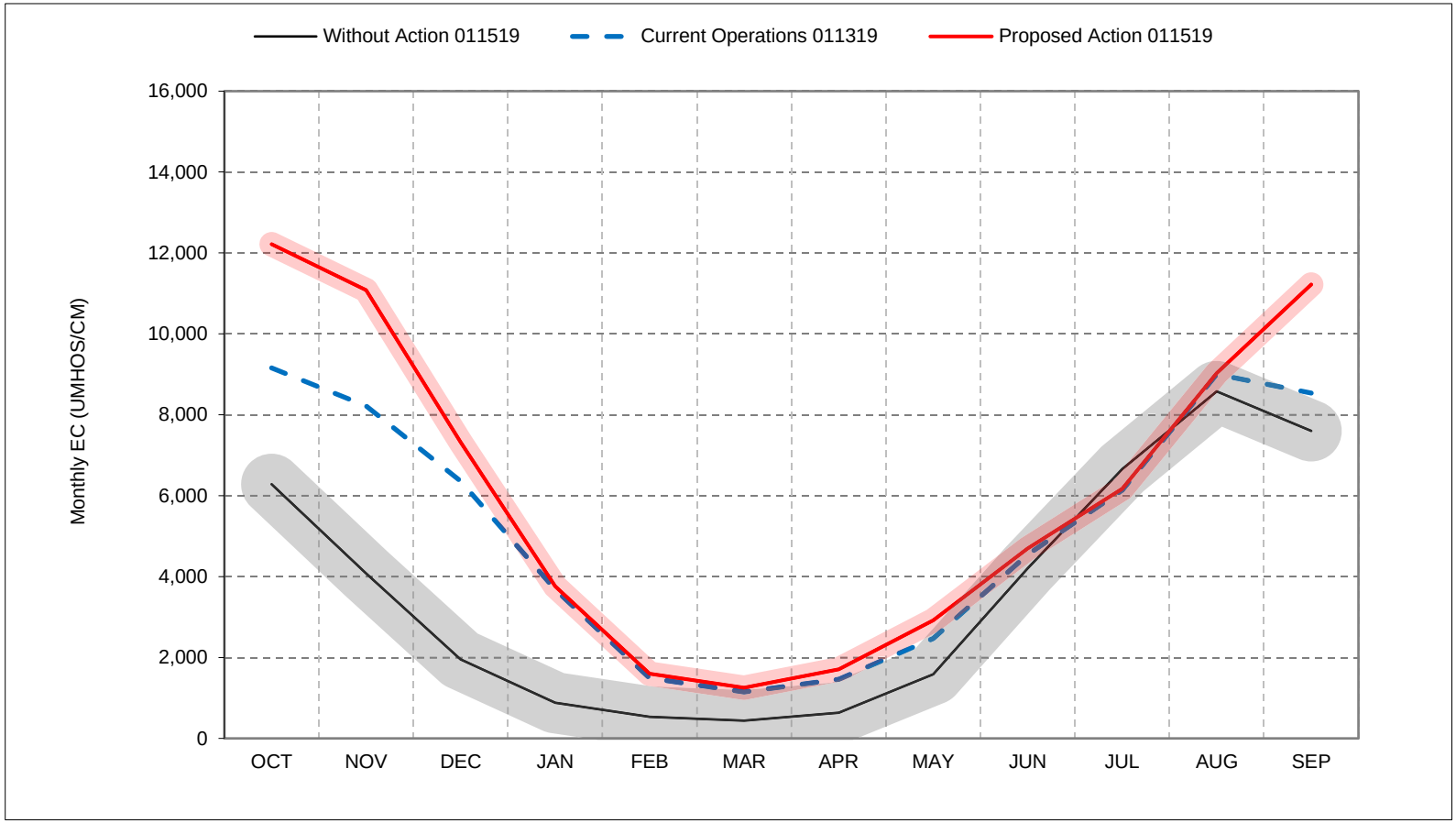
c These results are displayed with calendar year - year type sorting.

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.

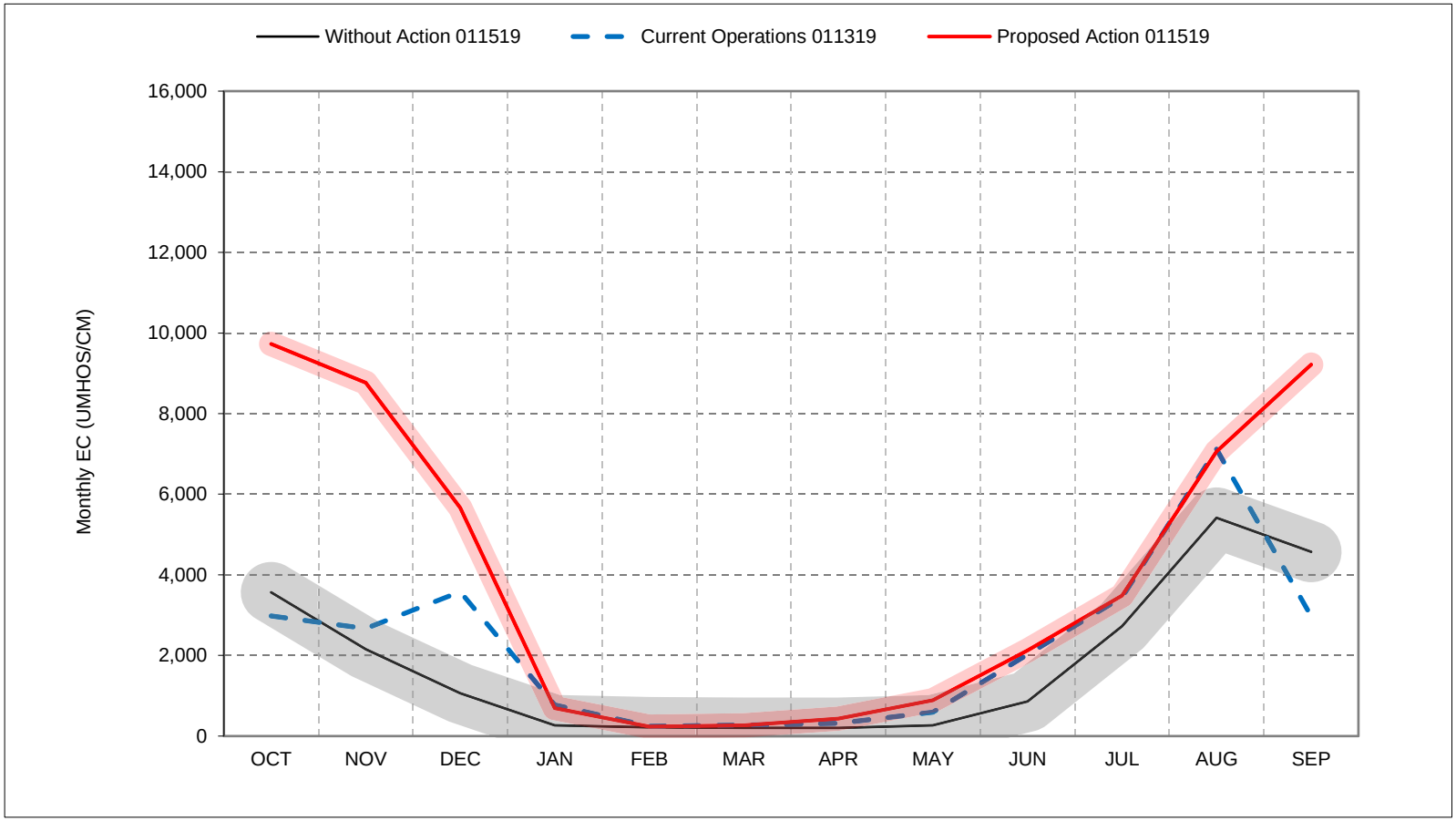
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-1. Sacramento River at Mallard Slough Salinity, Long-Term Average EC



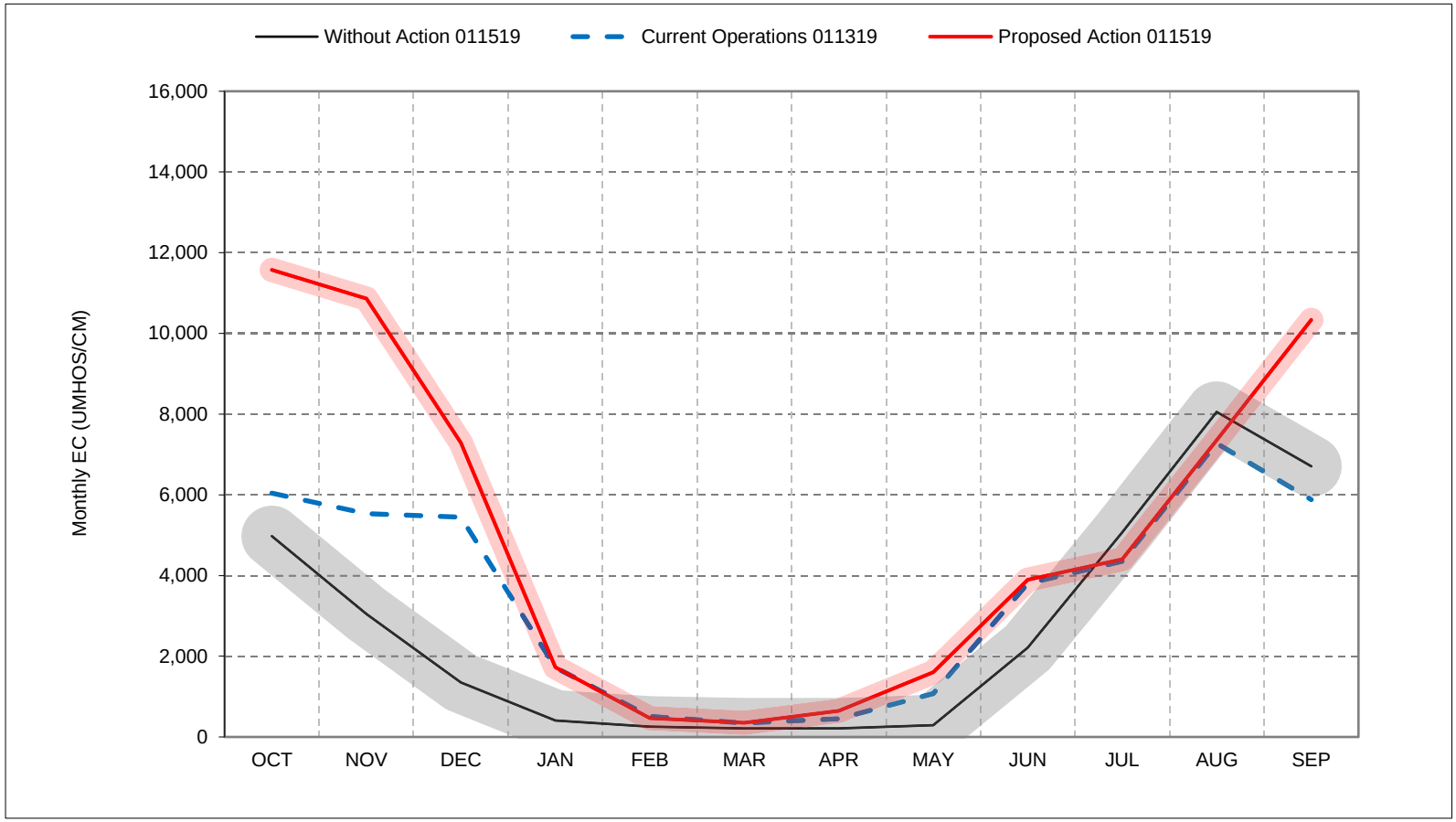
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-2. Sacramento River at Mallard Slough Salinity, Wet Year Average EC



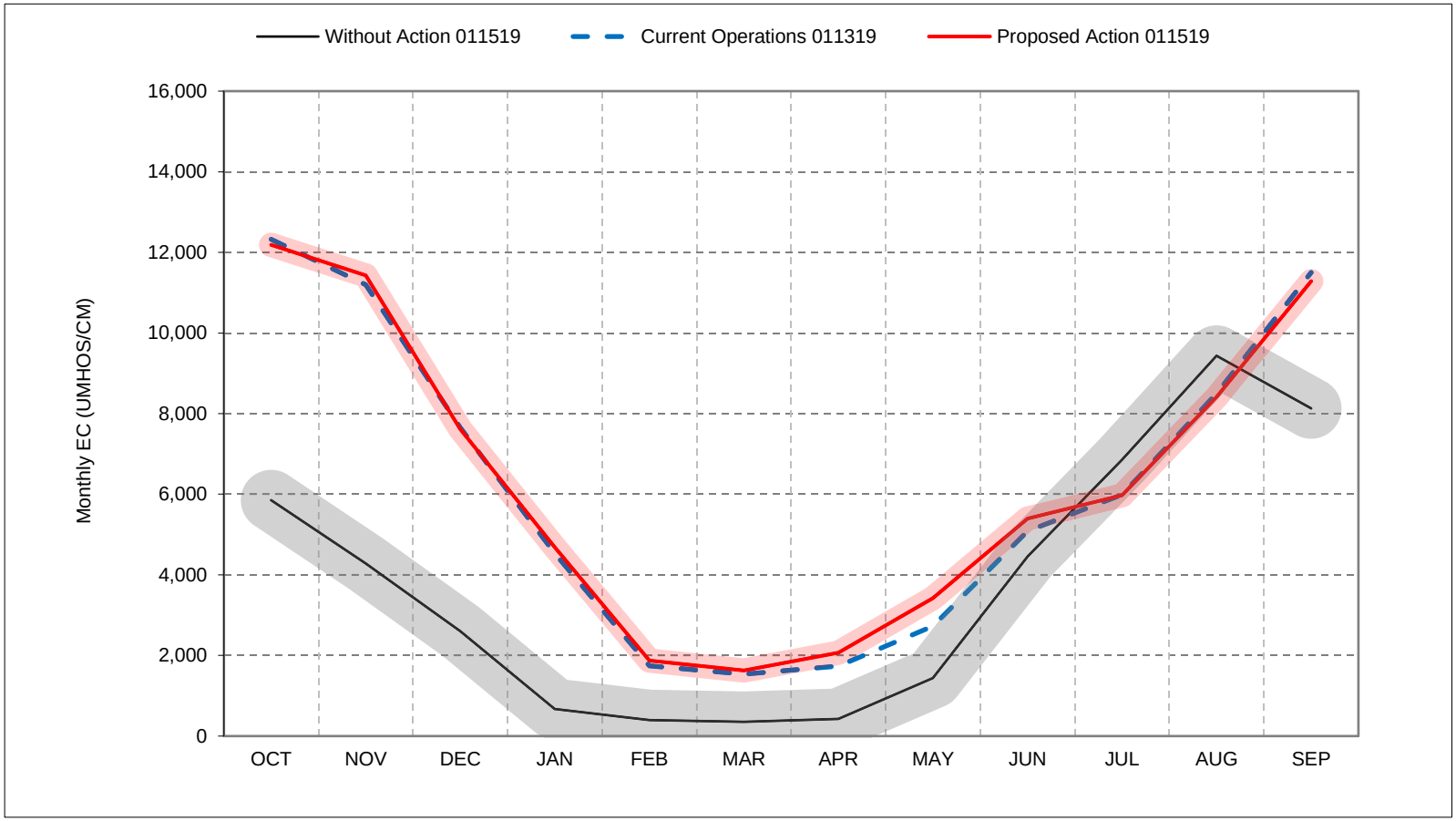
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-3. Sacramento River at Mallard Slough Salinity, Above Normal Year Average EC



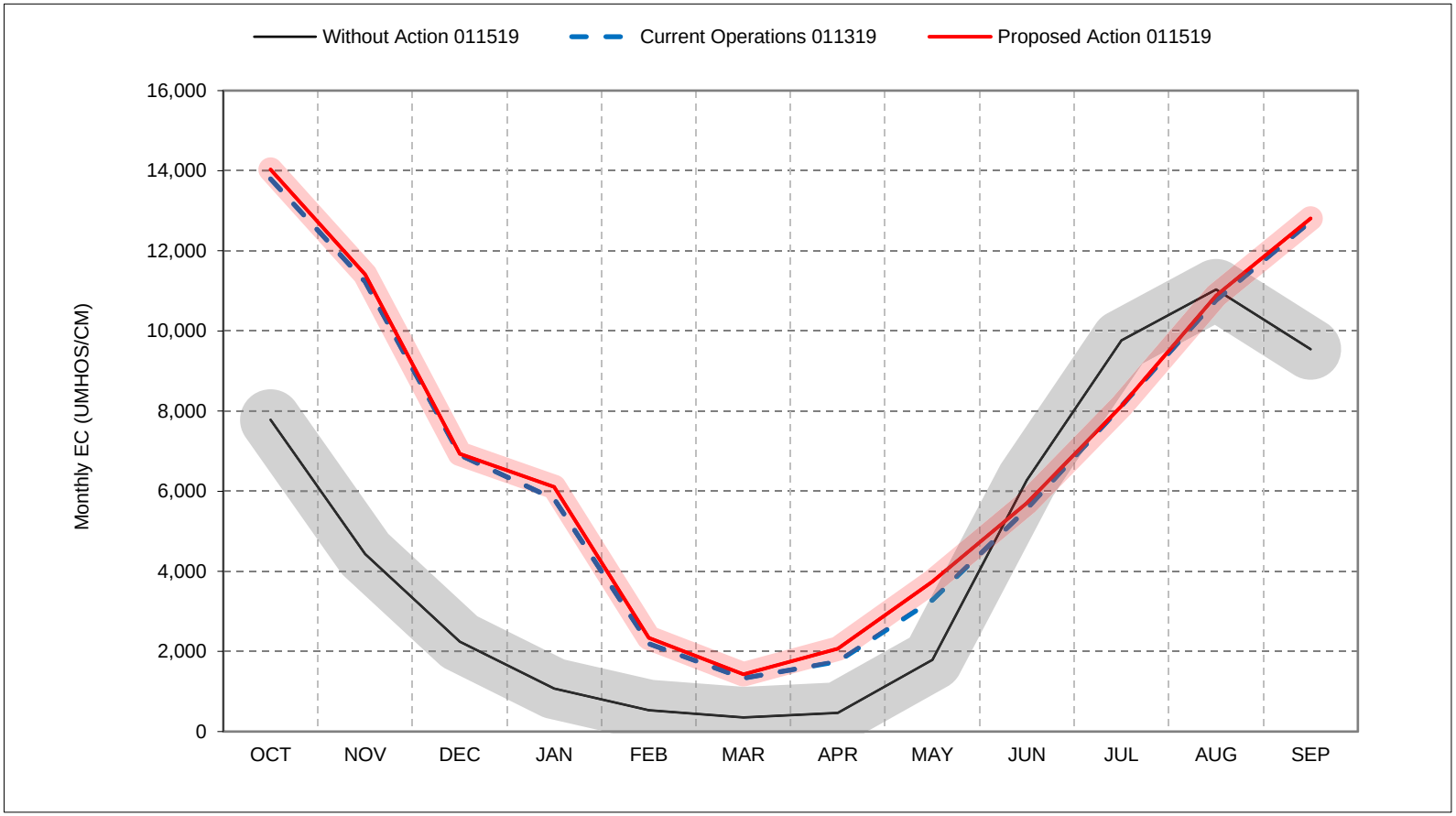
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-4. Sacramento River at Mallard Slough Salinity, Below Normal Year Average EC



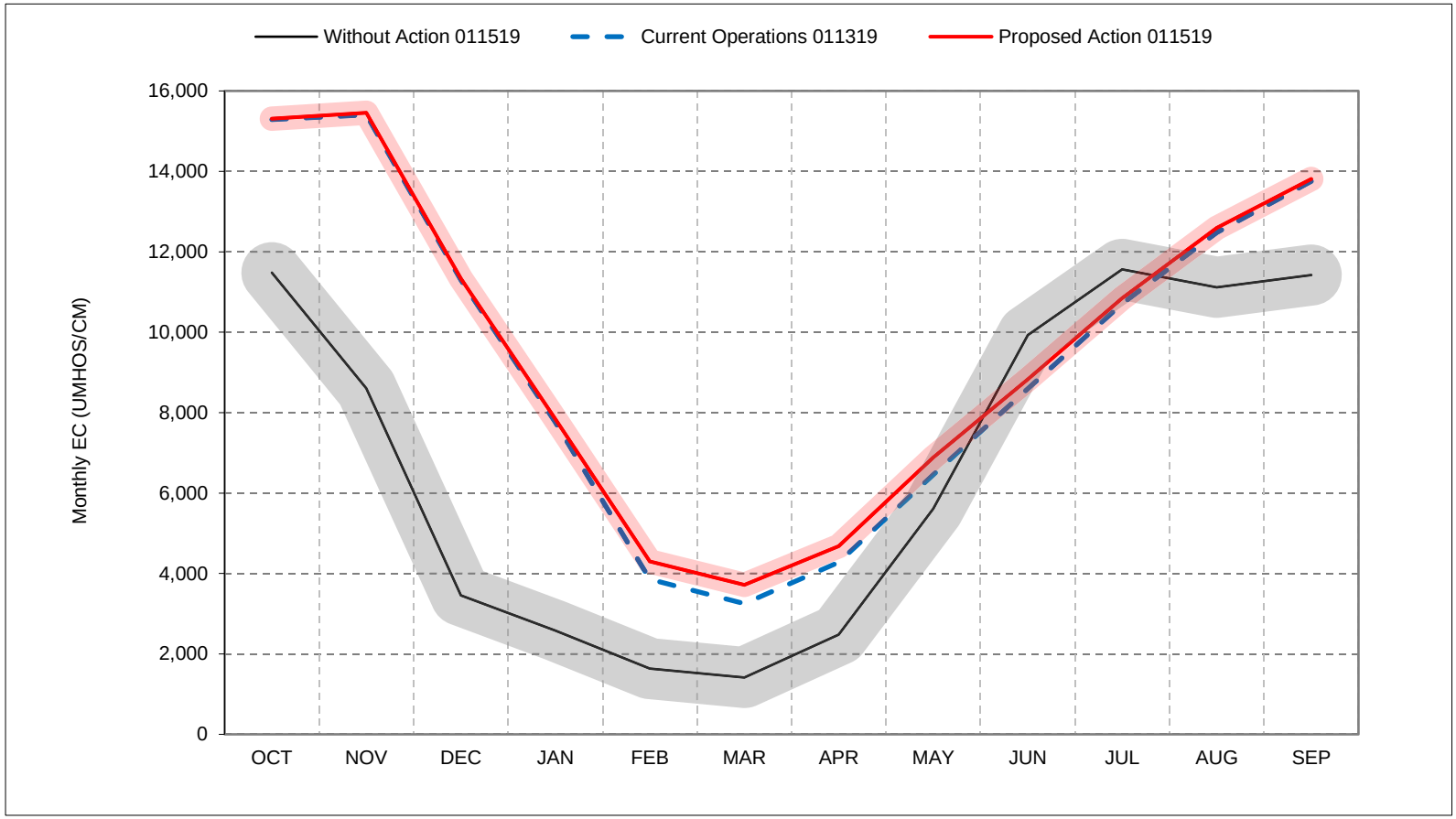
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 10-5. Sacramento River at Mallard Slough Salinity, Dry Year Average EC



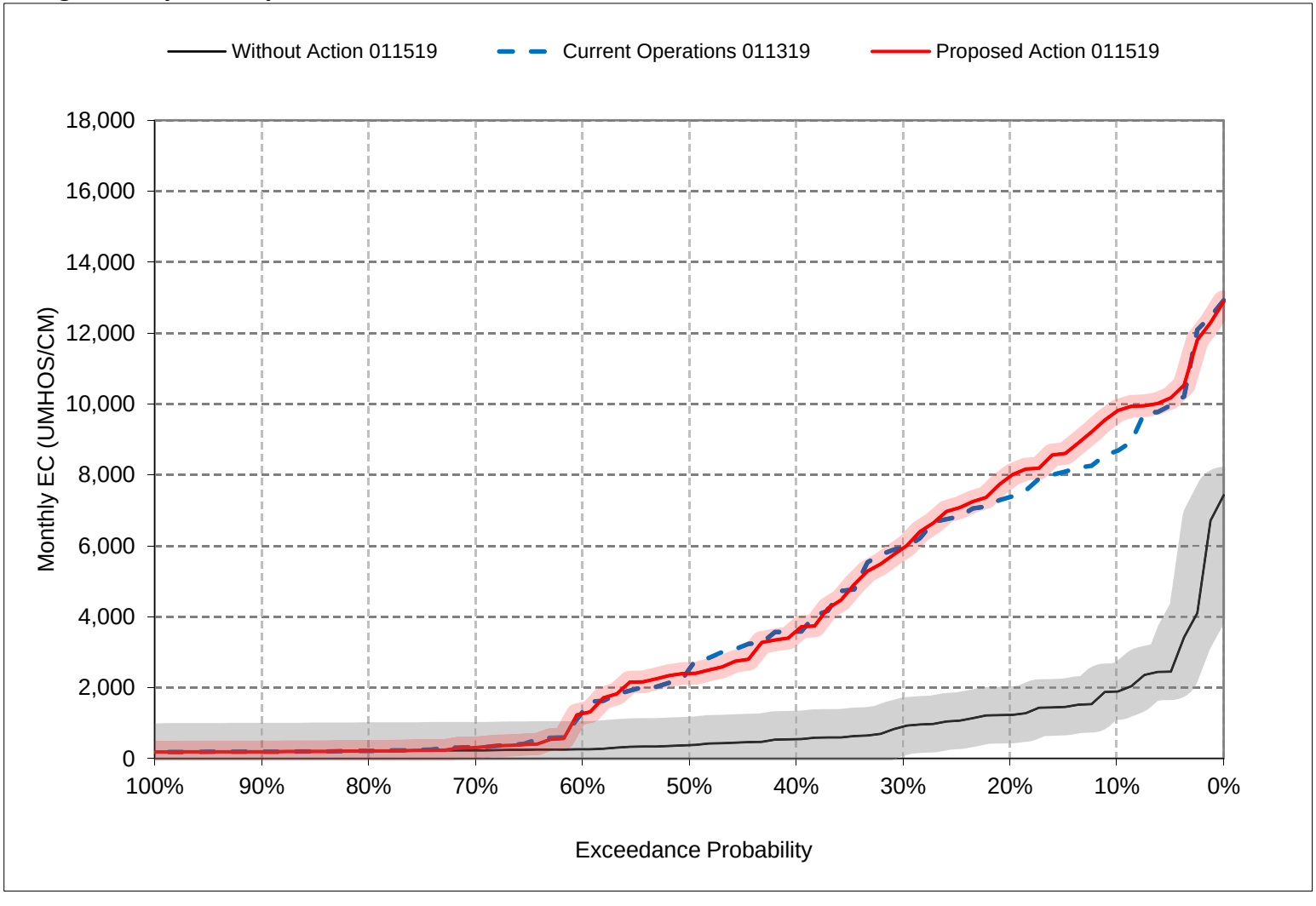
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

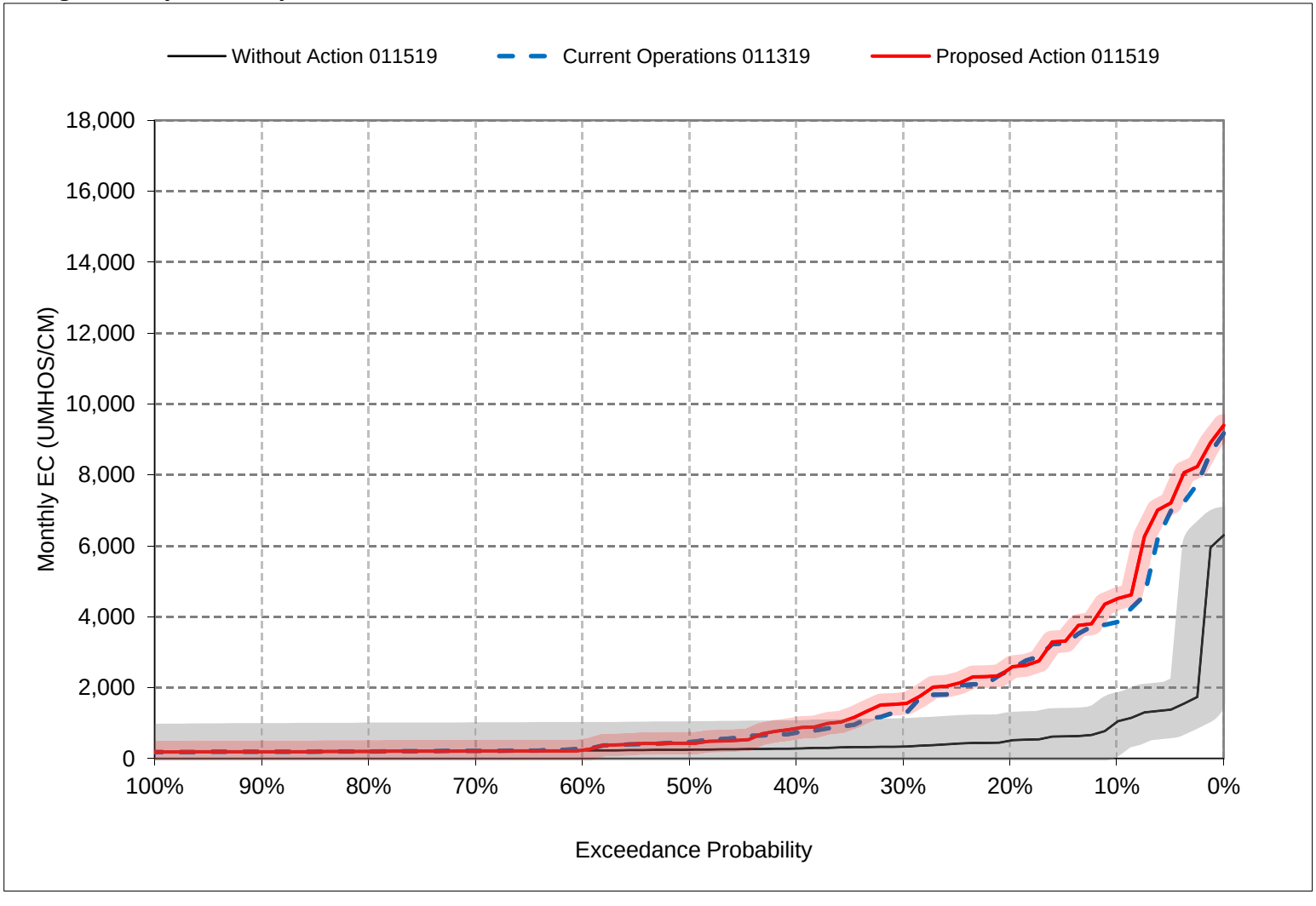
Figure 10-7. Sacramento River at Mallard Slough Salinity, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

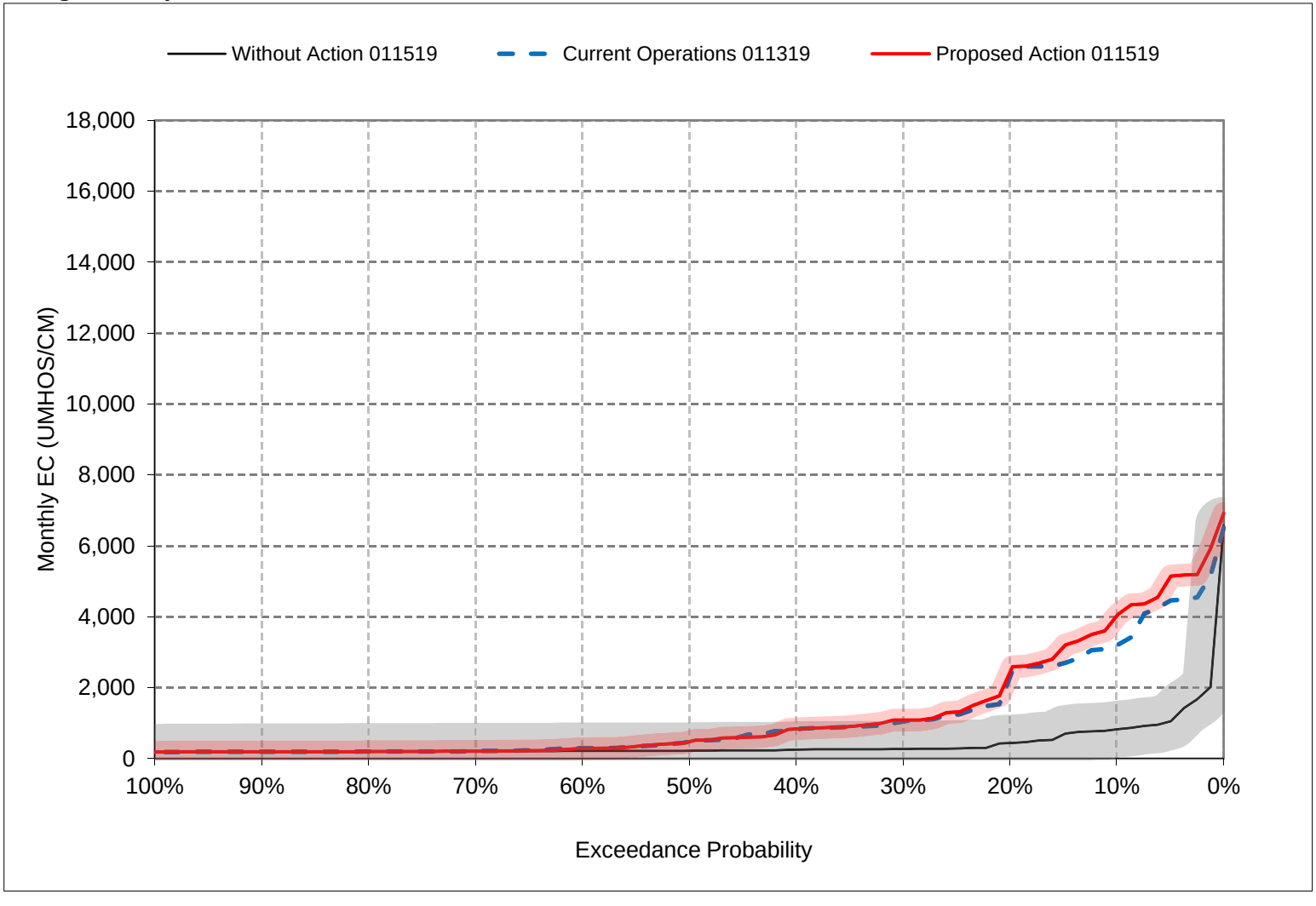
Figure 10-8. Sacramento River at Mallard Slough Salinity, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

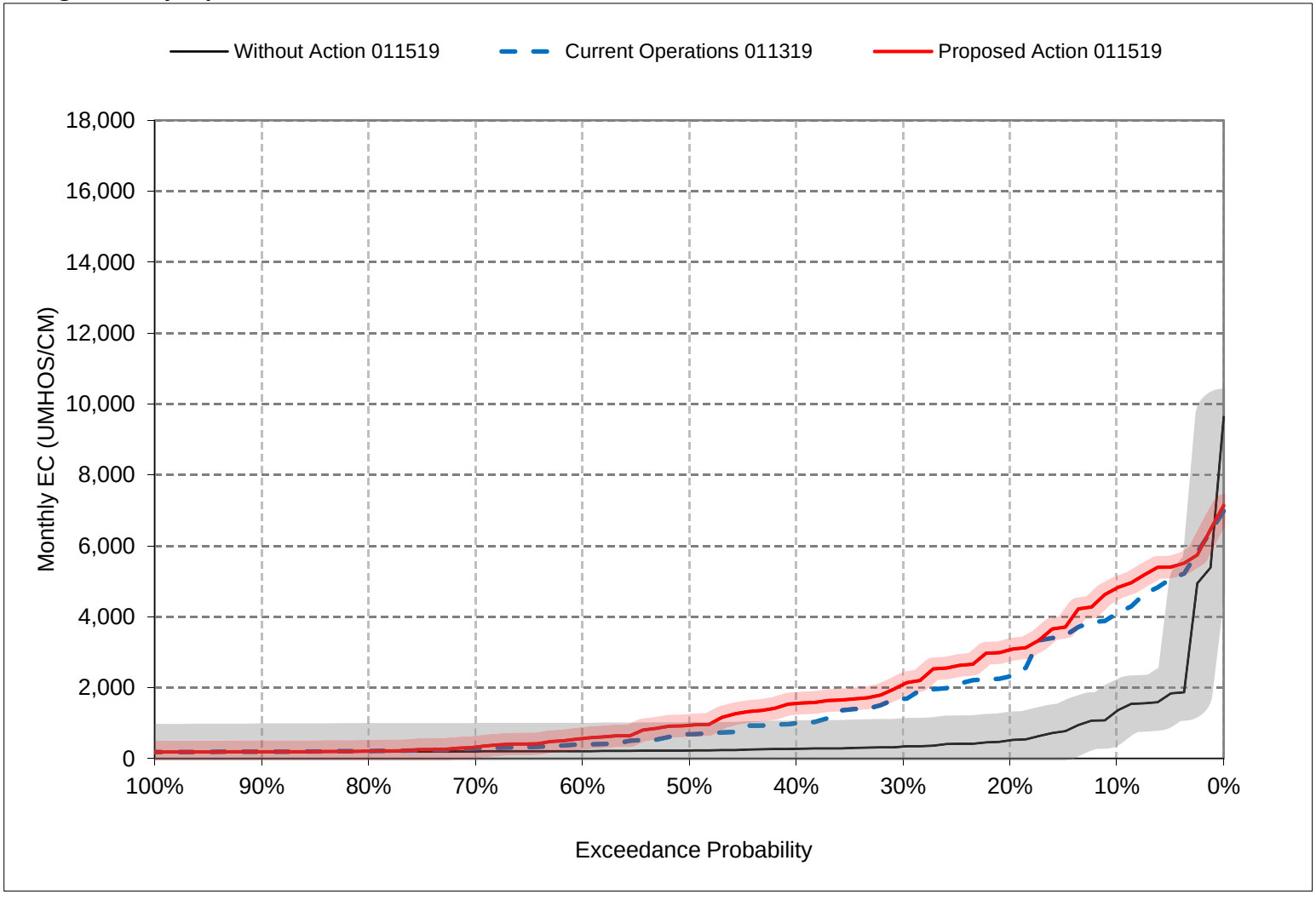
Figure 10-9. Sacramento River at Mallard Slough Salinity, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

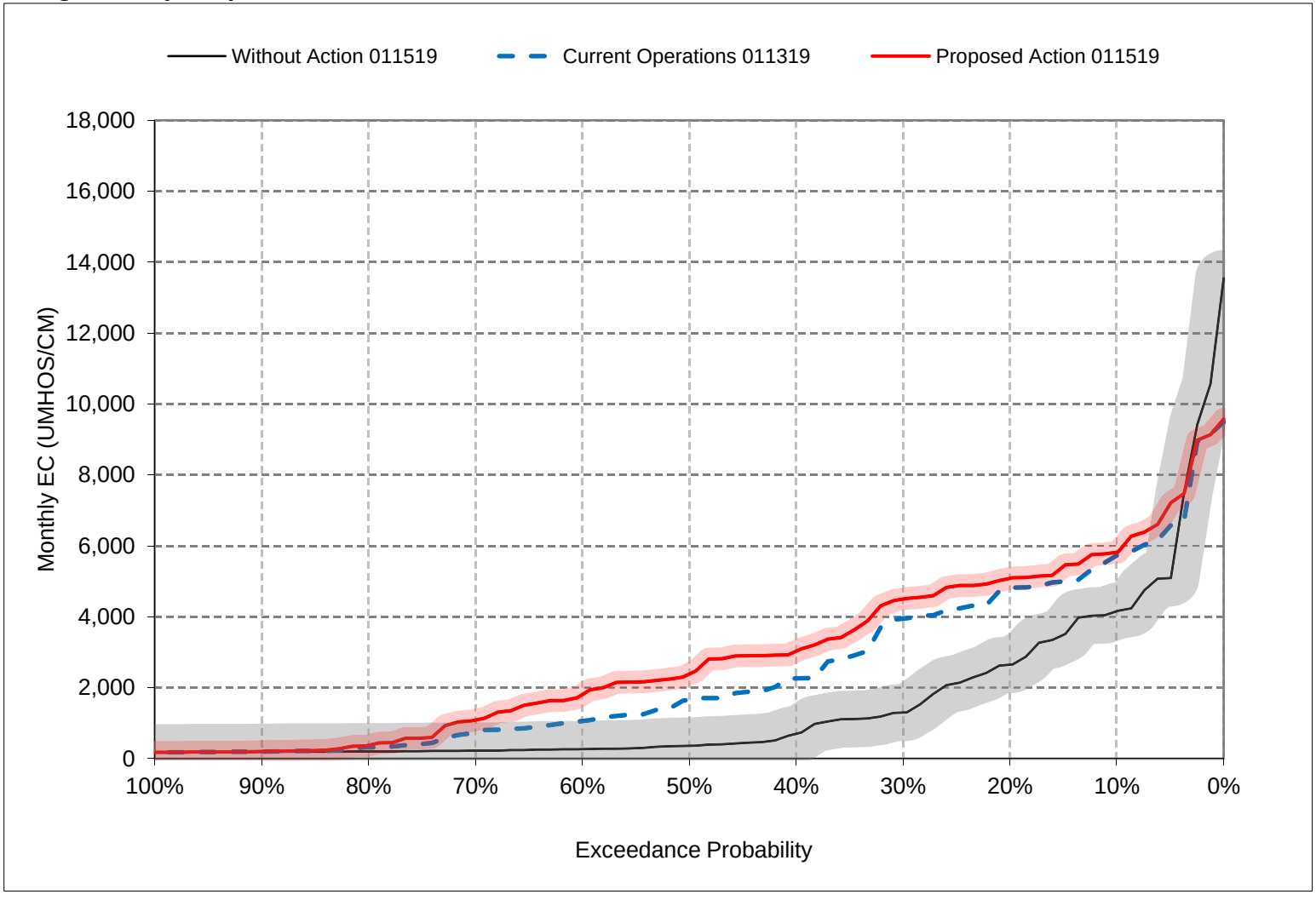
Figure 10-10. Sacramento River at Mallard Slough Salinity, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

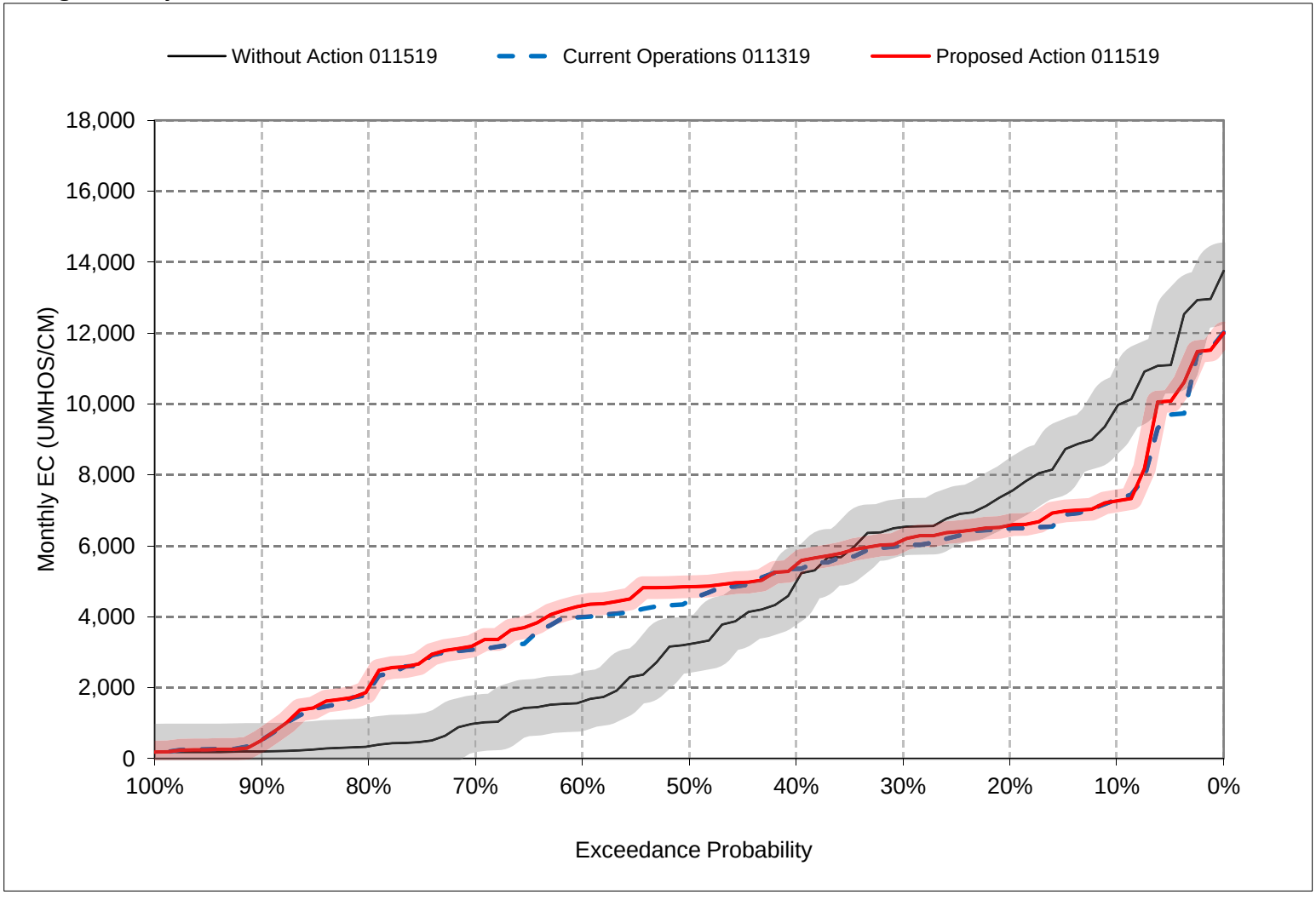
Figure 10-11. Sacramento River at Mallard Slough Salinity, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

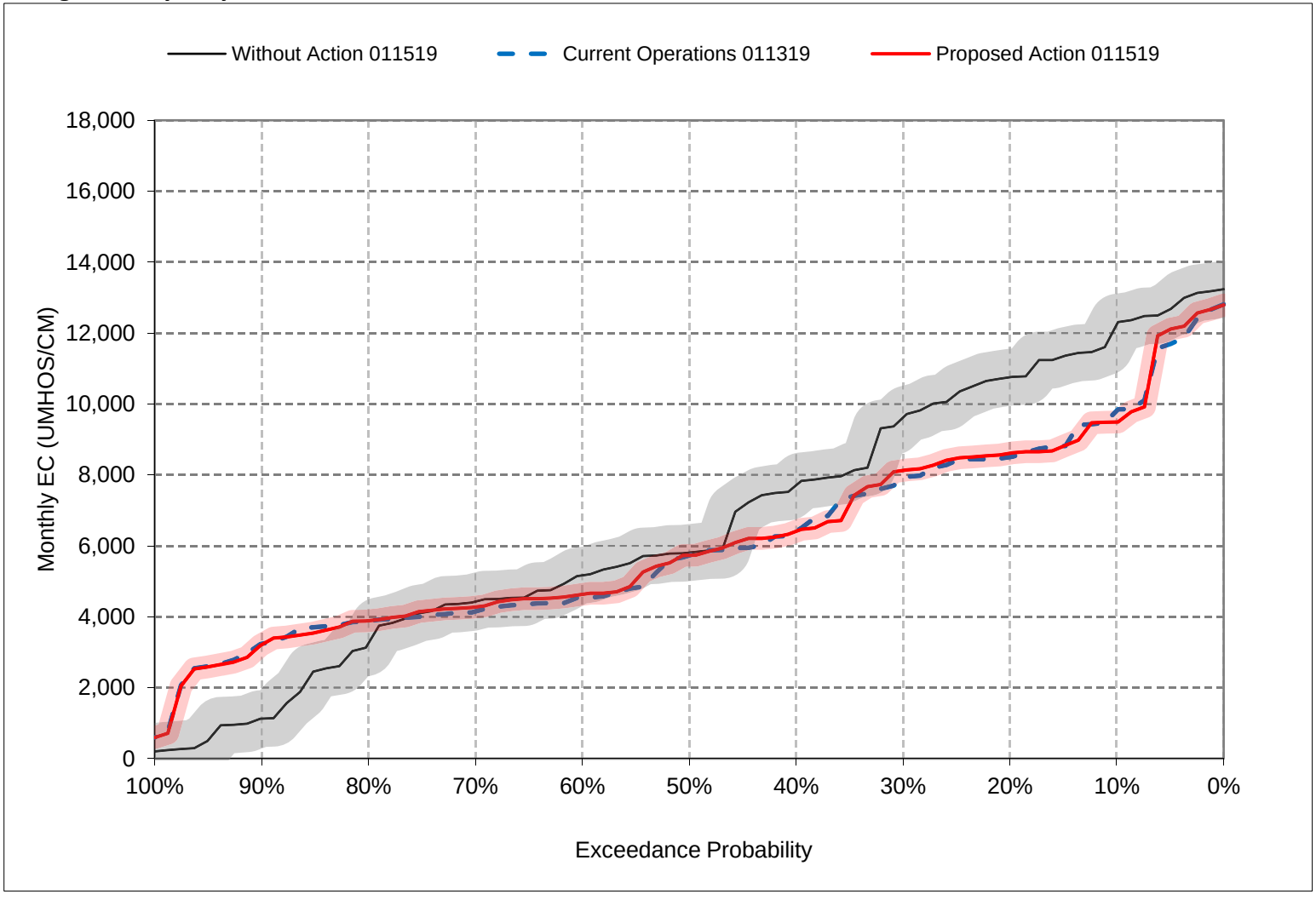
Figure 10-12. Sacramento River at Mallard Slough Salinity, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

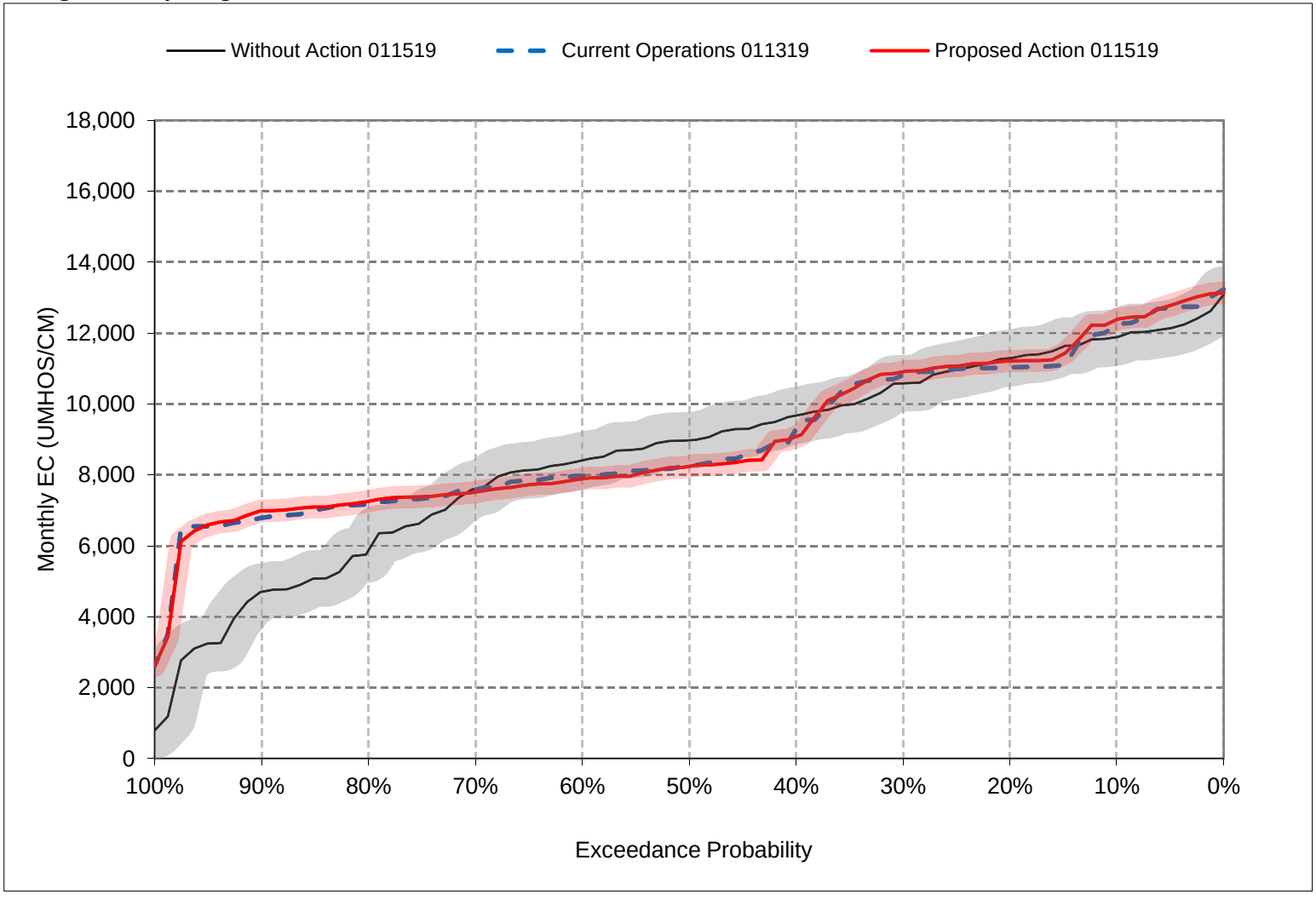
Figure 10-13. Sacramento River at Mallard Slough Salinity, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

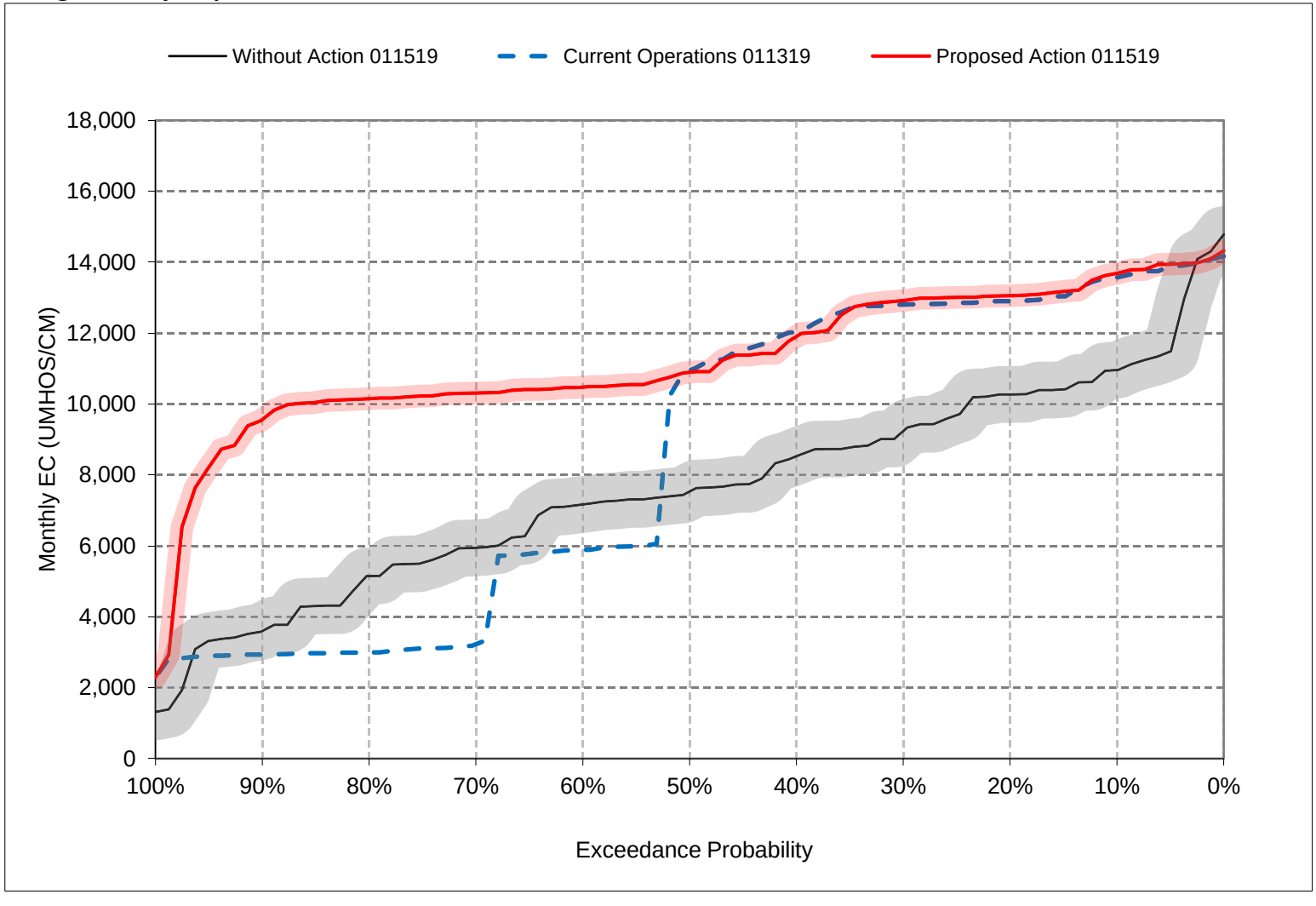
Figure 10-14. Sacramento River at Mallard Slough Salinity, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

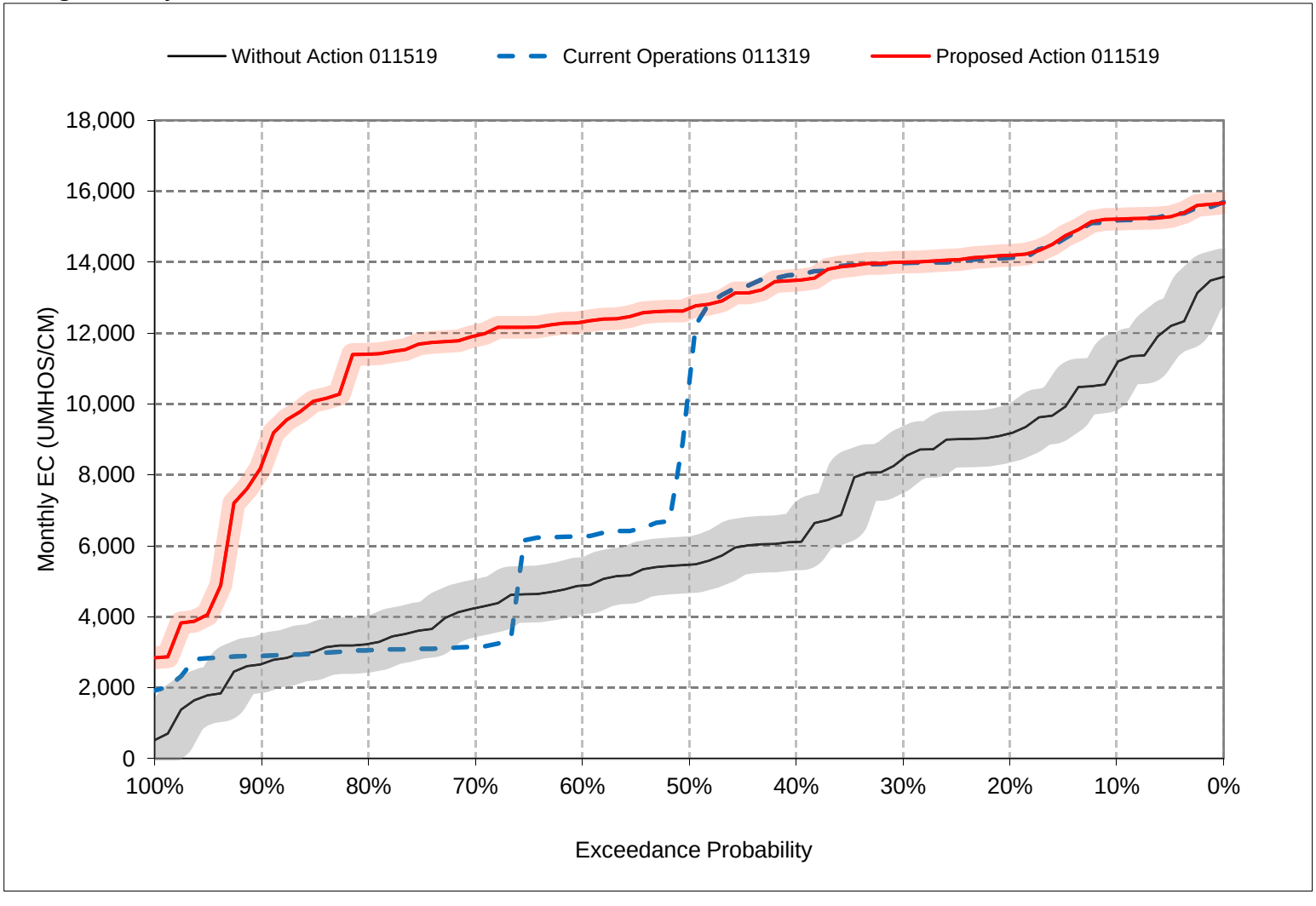
Figure 10-15. Sacramento River at Mallard Slough Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

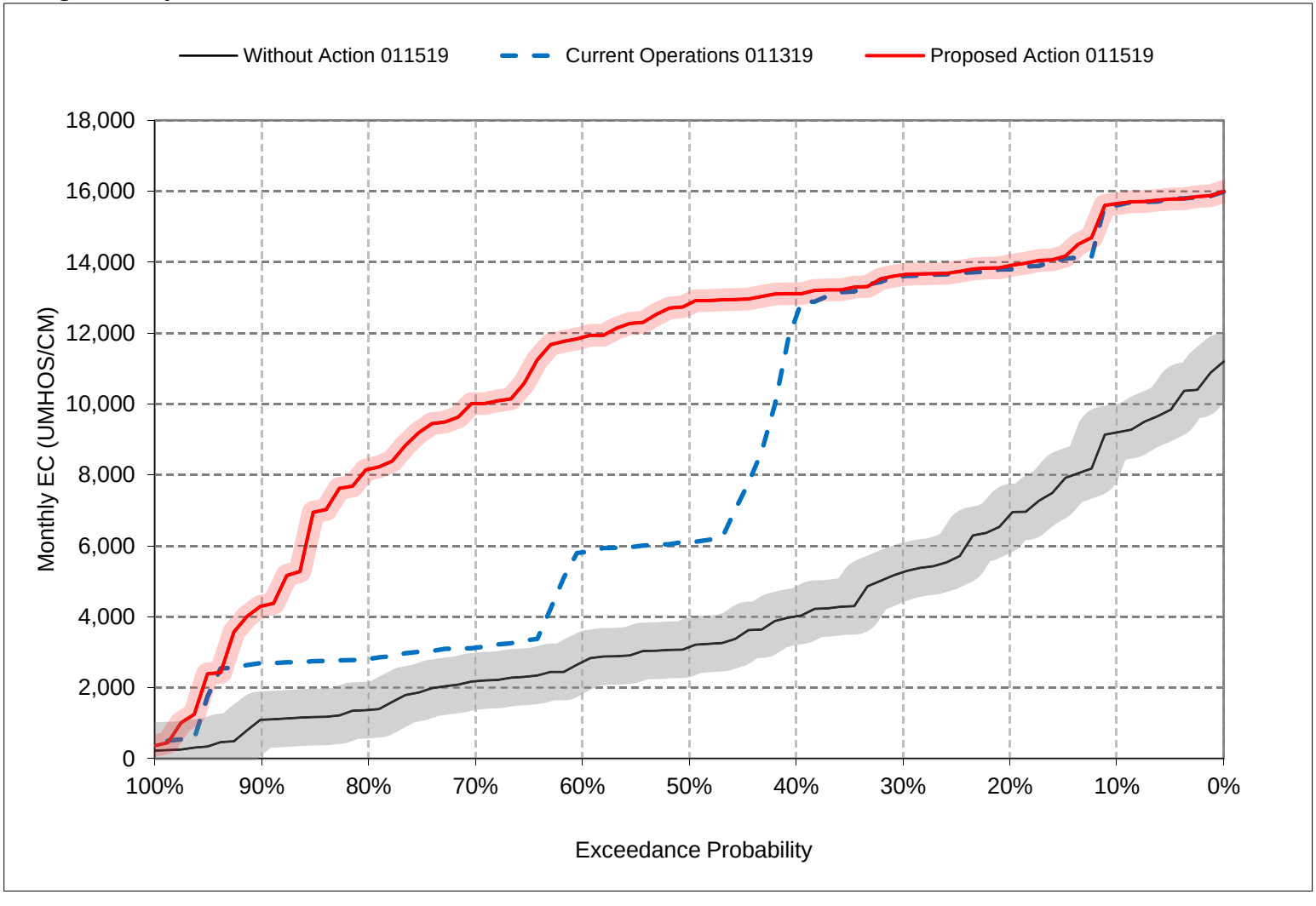
Figure 10-16. Sacramento River at Mallard Slough Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

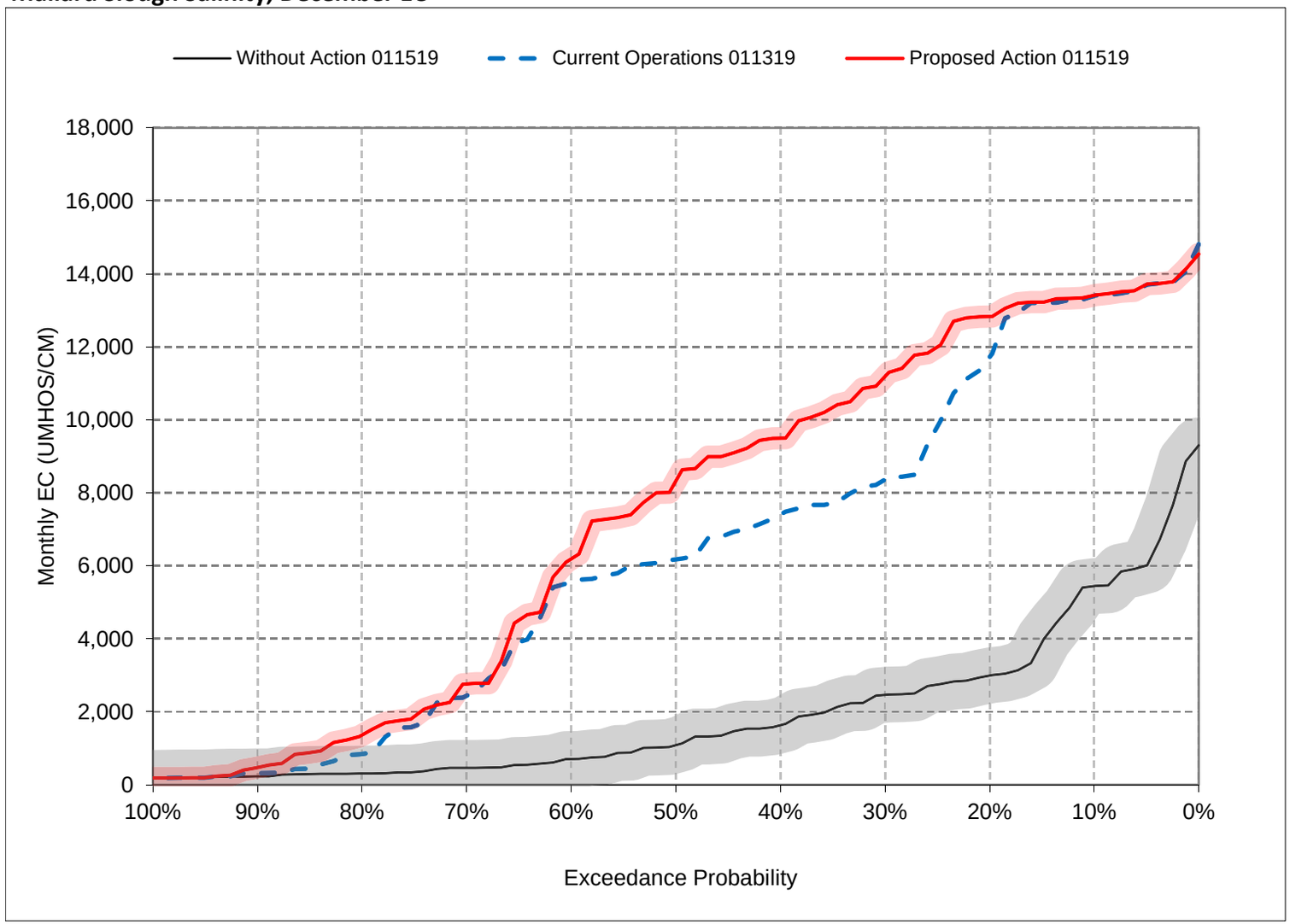
Figure 10-17. Sacramento River at Mallard Slough Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 11-1. Sacramento River at Collinsville Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	7,601	5,722	2,755	750	438	370	548	2,173	6,722	8,561	8,337	7,297
20%	5,695	3,842	1,317	501	283	268	267	1,246	4,809	7,145	7,585	6,636
30%	5,136	2,673	1,053	381	258	227	229	552	3,800	6,210	7,056	5,740
40%	3,351	1,867	701	293	241	219	218	321	2,821	4,626	6,241	5,142
50%	2,877	1,400	453	254	225	210	207	230	1,650	3,247	5,702	4,308
60%	2,404	1,150	316	235	216	206	201	210	700	2,732	5,217	4,013
70%	2,048	869	257	218	206	197	195	196	414	2,310	4,510	3,190
80%	1,430	547	231	208	200	189	192	191	225	1,607	3,235	2,561
90%	1,130	460	206	198	192	185	185	183	195	486	2,454	1,637
Long Term												
Full Simulation Period[a]	3,681	2,198	984	461	332	288	392	931	2,643	4,178	5,493	4,597
Water Year Types[b]												
Wet (32%)	1,679	934	493	218	201	193	191	205	469	1,423	3,053	2,308
Above Normal (16%)	2,586	1,408	599	262	217	200	199	213	1,186	2,790	4,982	3,747
Below Normal (13%)	3,243	2,325	1,366	333	261	242	260	708	2,518	3,976	6,098	4,861
Dry (24%)	4,700	2,408	1,190	478	307	248	276	906	3,921	6,444	7,470	6,020
Critical (15%)	7,907	5,328	1,772	1,290	850	701	1,354	3,525	6,915	8,059	7,486	7,863

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,901**	**6,204**	**6,797**	**4,529**	**1,327**	**1,065**	**1,379**	**961**	-2,507	-2,194	**200**	**2,580**
20%	**4,720**	**6,199**	**6,406**	**3,677**	**776**	**670**	**695**	**1,171**	-1,171	-2,034	-78	**2,586**
30%	**5,084**	**7,017**	**3,966**	**2,745**	**383**	**197**	**432**	**1,357**	-462	-1,605	**259**	**3,379**
40%	**6,588**	**6,566**	**3,459**	**1,487**	**131**	**131**	**205**	**633**	**75**	-1,095	-487	**3,254**
50%	**4,027**	**1,817**	**2,964**	**1,030**	**60**	**38**	**90**	**438**	**701**	-309	-750	**2,961**
60%	**1,090**	**1,804**	**2,679**	**309**	-1	**4**	**31**	**226**	**1,277**	-551	-447	-953
70%	-580	**521**	**850**	**7**	-8	-3	**16**	**131**	**1,001**	-338	-34	-1,630
80%	-37	**661**	**227**	-6	-9	0	**4**	**18**	**624**	**193**	**917**	-1,175
90%	**162**	**650**	**16**	-9	-6	**2**	**4**	**5**	**56**	**964**	**1,424**	-321
Long Term												
Full Simulation Period[a]	**2,617**	**3,264**	**3,020**	**1,646**	**454**	**284**	**330**	**358**	-96	-671	**251**	**1,056**
Water Year Types[b]												
Wet (32%)	-328	**201**	**1,458**	**231**	**3**	**13**	**28**	**113**	**554**	**207**	**1,116**	-948
Above Normal (16%)	**746**	**1,486**	**2,556**	**679**	**81**	**27**	**57**	**261**	**753**	-704	-737	-683
Below Normal (13%)	**5,610**	**5,353**	**3,698**	**2,121**	**593**	**436**	**514**	**572**	**223**	-843	-935	**2,996**
Dry (24%)	**5,350**	**5,396**	**3,382**	**2,776**	**809**	**377**	**513**	**696**	-872	-1,591	-234	**3,038**
Critical (15%)	**3,726**	**6,355**	**5,681**	**3,443**	**1,113**	**857**	**808**	**236**	-1,427	-845	**1,341**	**2,204**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 11-2. Sacramento River at Collinsville Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	7,601	5,722	2,755	750	438	370	548	2,173	6,722	8,561	8,337	7,297
20%	5,695	3,842	1,317	501	283	268	267	1,246	4,809	7,145	7,585	6,636
30%	5,136	2,673	1,053	381	258	227	229	552	3,800	6,210	7,056	5,740
40%	3,351	1,867	701	293	241	219	218	321	2,821	4,626	6,241	5,142
50%	2,877	1,400	453	254	225	210	207	230	1,650	3,247	5,702	4,308
60%	2,404	1,150	316	235	216	206	201	210	700	2,732	5,217	4,013
70%	2,048	869	257	218	206	197	195	196	414	2,310	4,510	3,190
80%	1,430	547	231	208	200	189	192	191	225	1,607	3,235	2,561
90%	1,130	460	206	198	192	185	185	183	195	486	2,454	1,637
Long Term												
Full Simulation Period[a]	3,681	2,198	984	461	332	288	392	931	2,643	4,178	5,493	4,597
Water Year Types[b]												
Wet (32%)	1,679	934	493	218	201	193	191	205	469	1,423	3,053	2,308
Above Normal (16%)	2,586	1,408	599	262	217	200	199	213	1,186	2,790	4,982	3,747
Below Normal (13%)	3,243	2,325	1,366	333	261	242	260	708	2,518	3,976	6,098	4,861
Dry (24%)	4,700	2,408	1,190	478	307	248	276	906	3,921	6,444	7,470	6,020
Critical (15%)	7,907	5,328	1,772	1,290	850	701	1,354	3,525	6,915	8,059	7,486	7,863

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,913**	**6,231**	**6,856**	**5,248**	**1,677**	**1,490**	**1,819**	**980**	-2,532	-2,460	**322**	**2,707**
20%	**4,796**	**6,269**	**7,657**	**4,131**	**787**	**724**	**1,103**	**1,335**	-1,149	-1,952	**68**	**2,751**
30%	**5,067**	**7,078**	**6,157**	**2,734**	**463**	**221**	**647**	**1,641**	-388	-1,371	**270**	**3,492**
40%	**6,433**	**7,402**	**5,040**	**1,320**	**120**	**127**	**410**	**1,050**	**110**	-1,168	-675	**3,154**
50%	**6,122**	**7,522**	**4,354**	**866**	**42**	**30**	**184**	**796**	**853**	-325	-766	**2,858**
60%	**6,182**	**6,963**	**3,120**	**313**	-4	**0**	**57**	**525**	**1,406**	-477	-528	**2,862**
70%	**6,086**	**5,344**	**932**	**3**	-11	-3	**18**	**247**	**1,105**	-246	-74	**3,481**
80%	**6,113**	**4,296**	**514**	-10	-9	-1	**1**	**21**	**659**	**154**	**973**	**3,970**
90%	**3,690**	**1,722**	**93**	-9	-5	**2**	**0**	**1**	**52**	**1,020**	**1,564**	**4,305**
Long Term												
Full Simulation Period[a]	**4,942**	**5,484**	**3,752**	**1,712**	**515**	**343**	**445**	**584**	-28	-637	**269**	**3,041**
Water Year Types[b]												
Wet (32%)	**4,611**	**4,702**	**3,009**	**178**	-2	**12**	**65**	**240**	**587**	**234**	**1,058**	**3,521**
Above Normal (16%)	**5,337**	**6,029**	**4,015**	**717**	**62**	**32**	**125**	**482**	**760**	-678	-690	**2,944**
Below Normal (13%)	**5,444**	**5,544**	**3,679**	**2,264**	**679**	**509**	**670**	**946**	**386**	-866	-1,040	**2,763**
Dry (24%)	**5,555**	**5,561**	**3,415**	**2,993**	**884**	**417**	**667**	**936**	-818	-1,568	-130	**3,100**
Critical (15%)	**3,747**	**6,408**	**5,702**	**3,474**	**1,361**	**1,120**	**1,041**	**523**	-1,278	-716	**1,461**	**2,261**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 11-3. Sacramento River at Collinsville Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

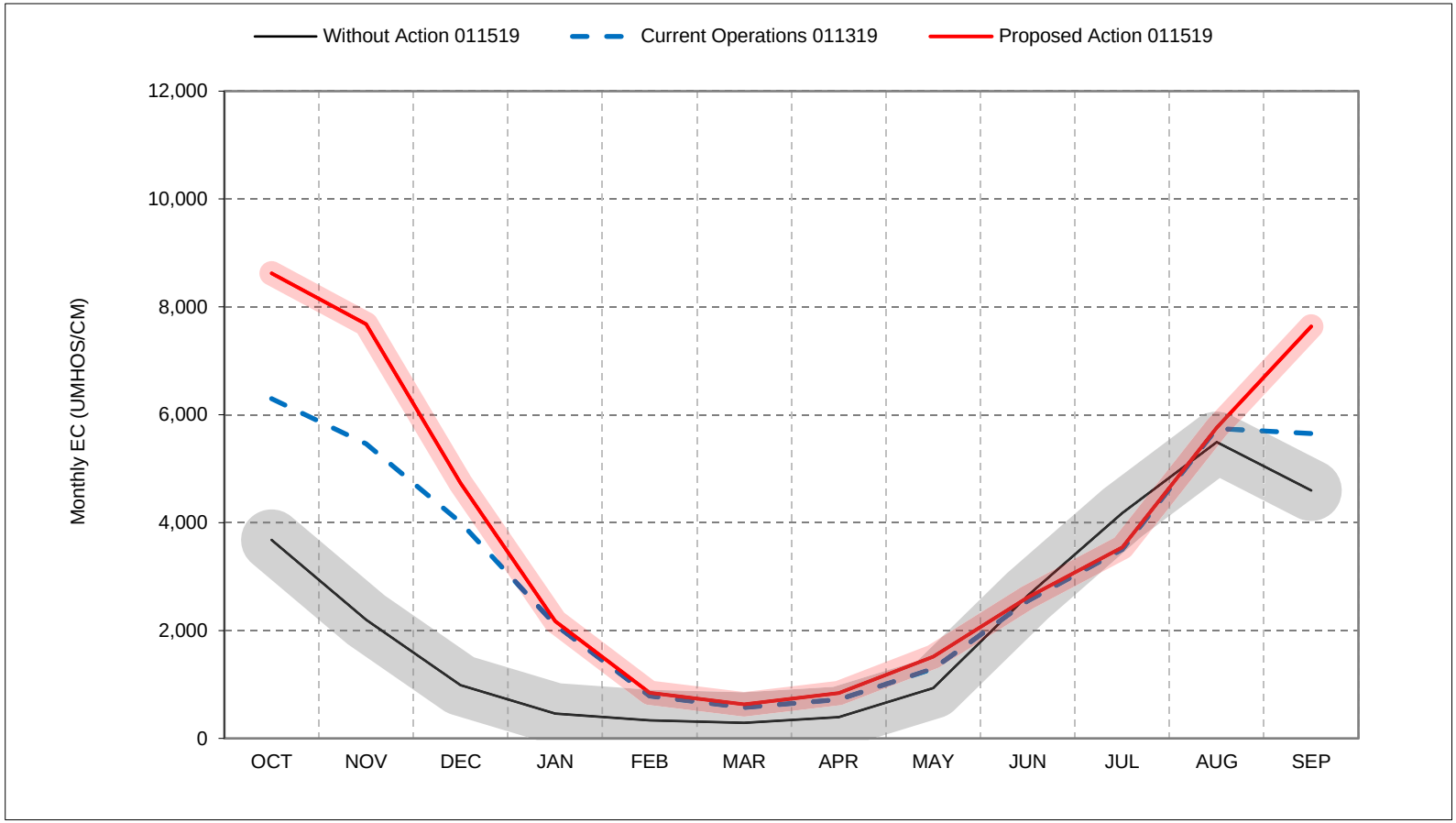
c These results are displayed with calendar year - year type sorting.

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.

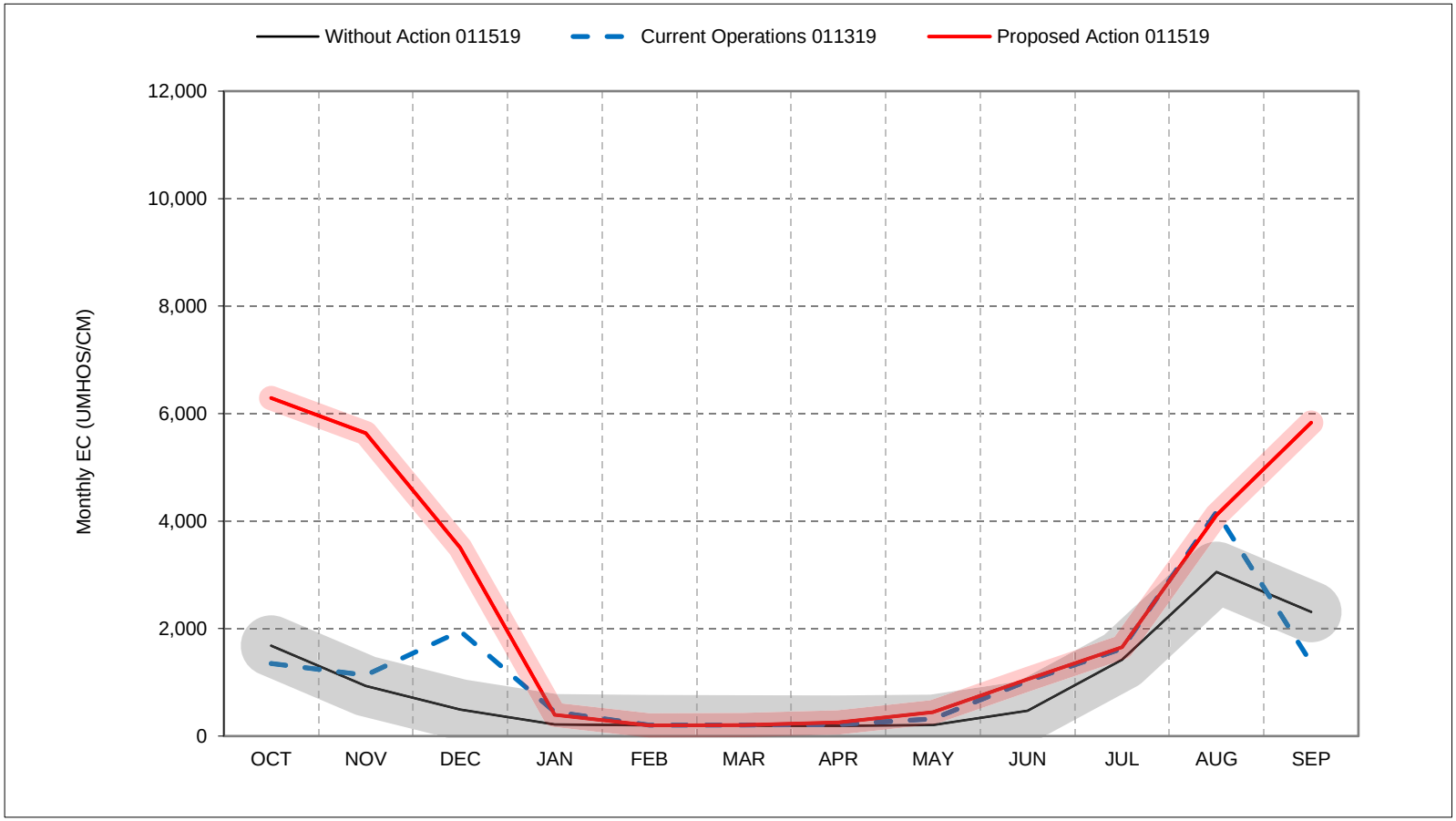
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 11-1. Sacramento River at Collinsville Salinity, Long-Term Average EC



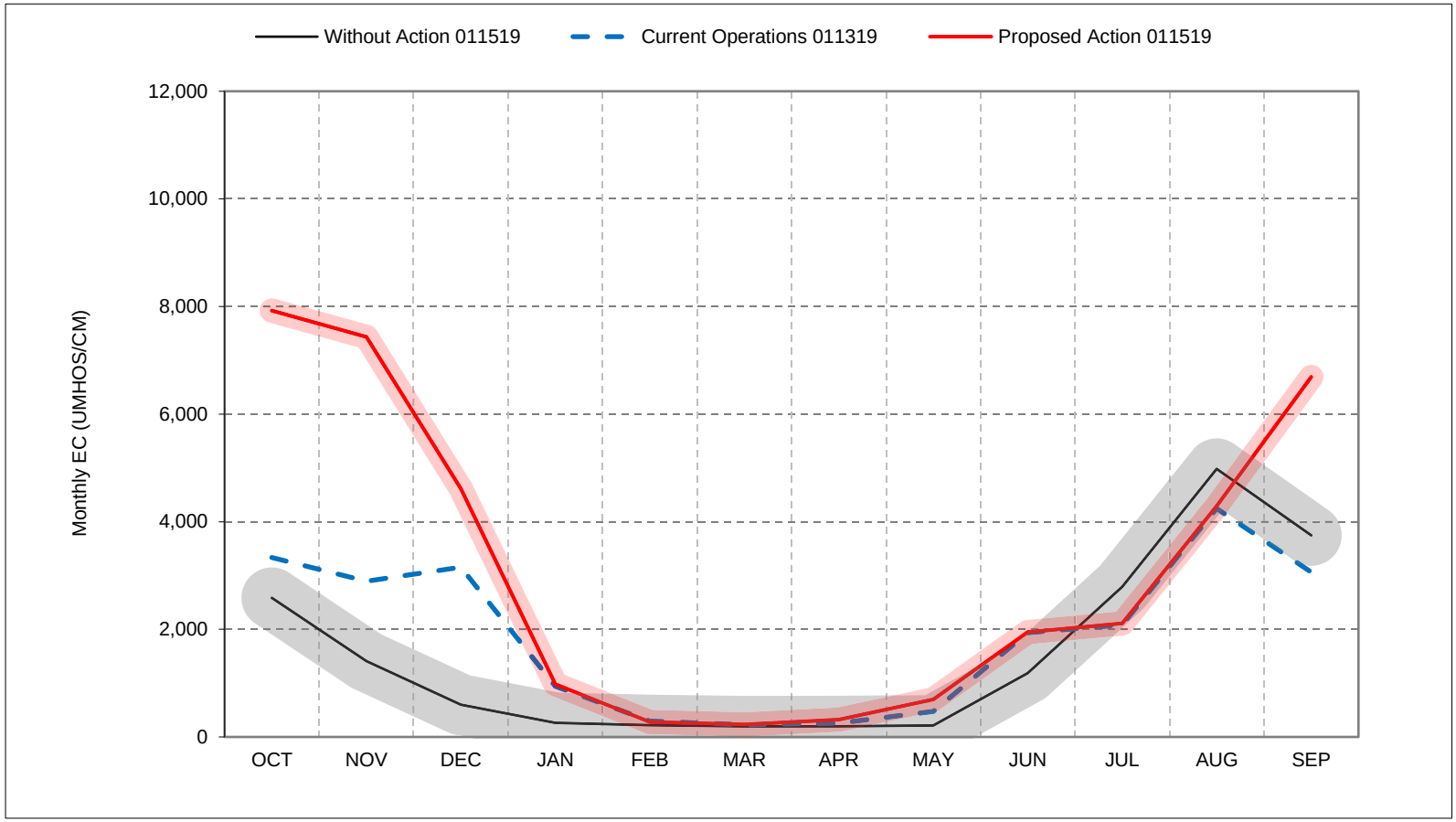
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 11-2. Sacramento River at Collinsville Salinity, Wet Year Average EC



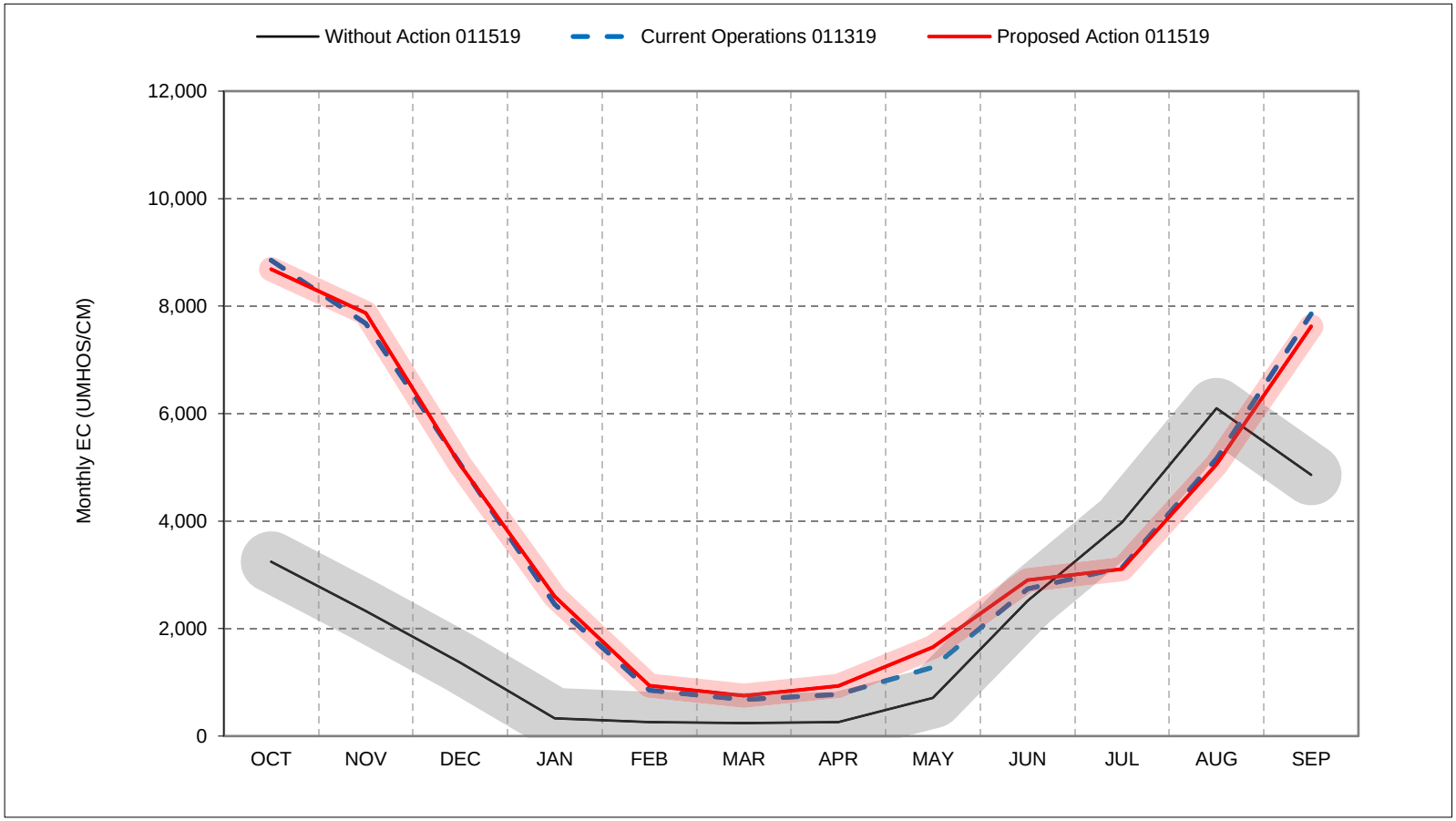
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 11-3. Sacramento River at Collinsville Salinity, Above Normal Year Average EC



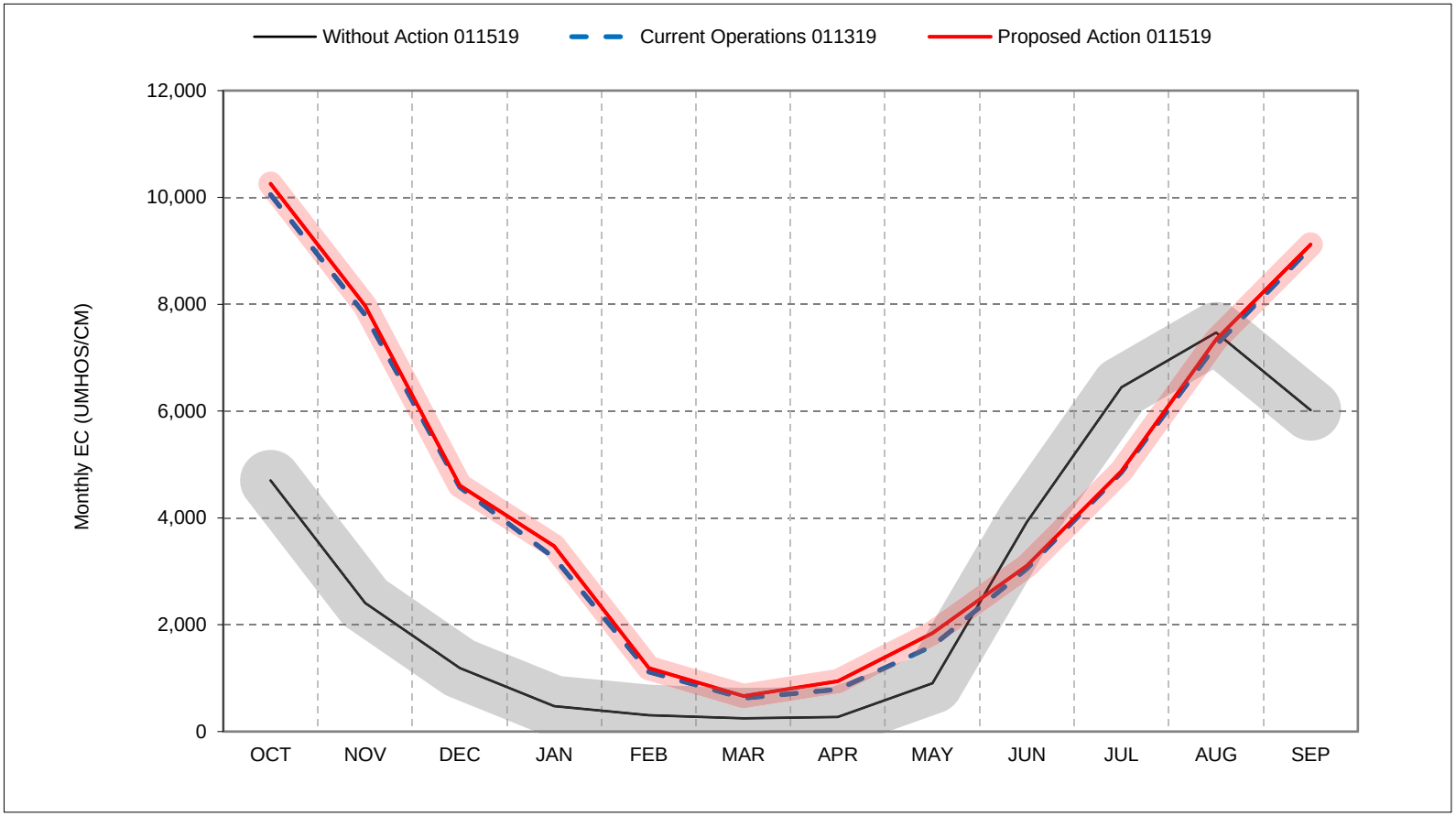
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 11-4. Sacramento River at Collinsville Salinity, Below Normal Year Average EC



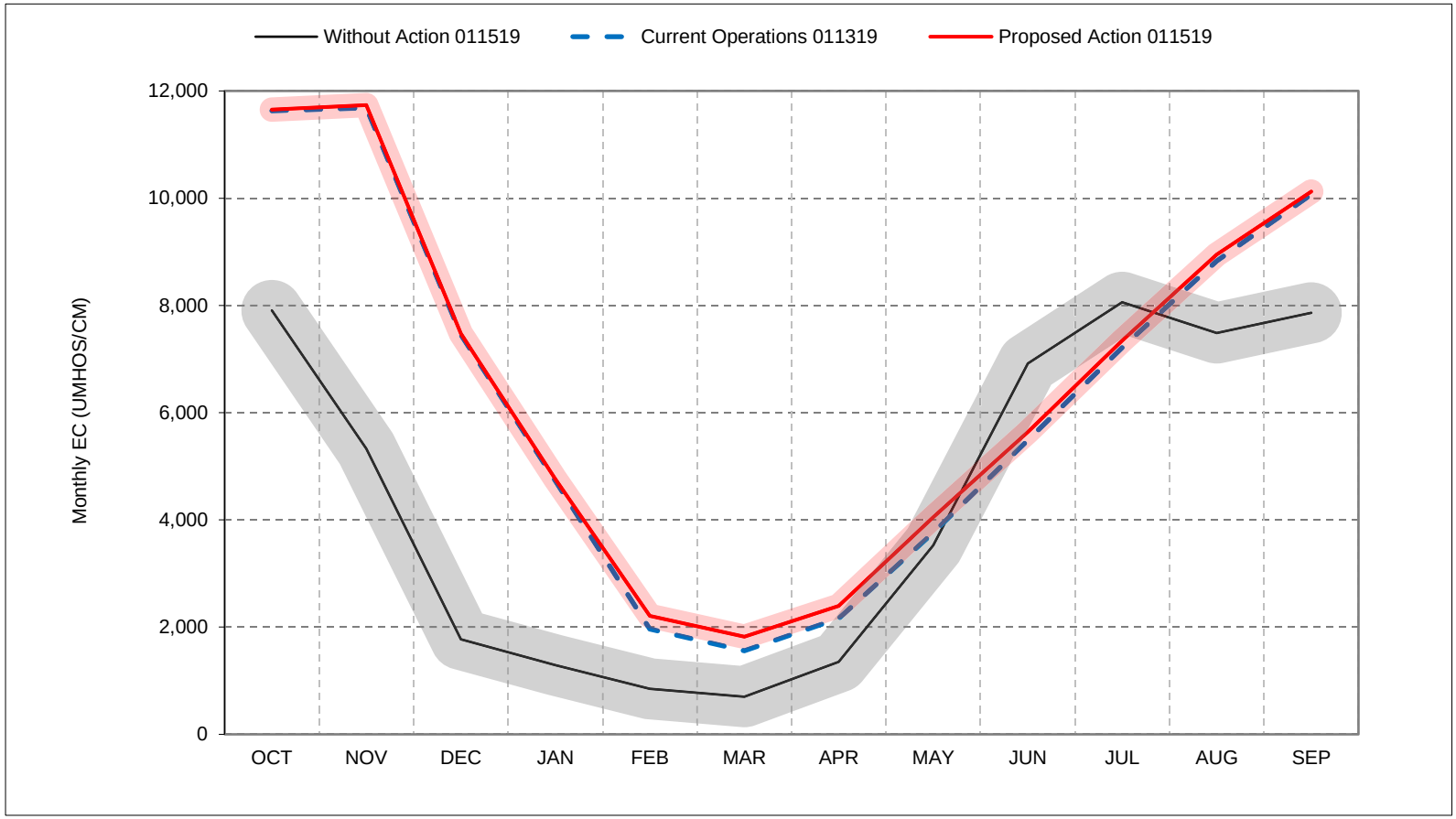
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 11-5. Sacramento River at Collinsville Salinity, Dry Year Average EC



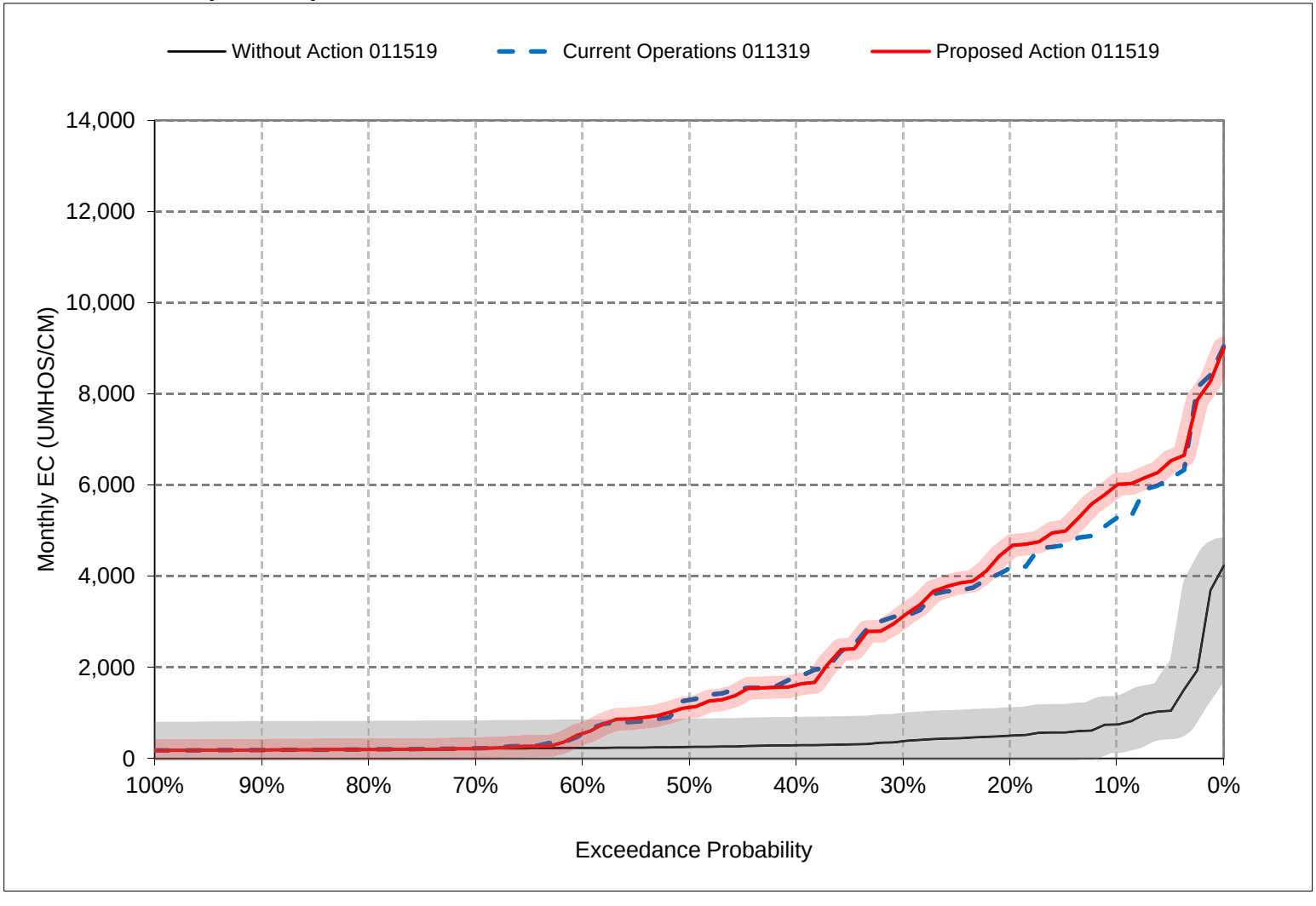
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

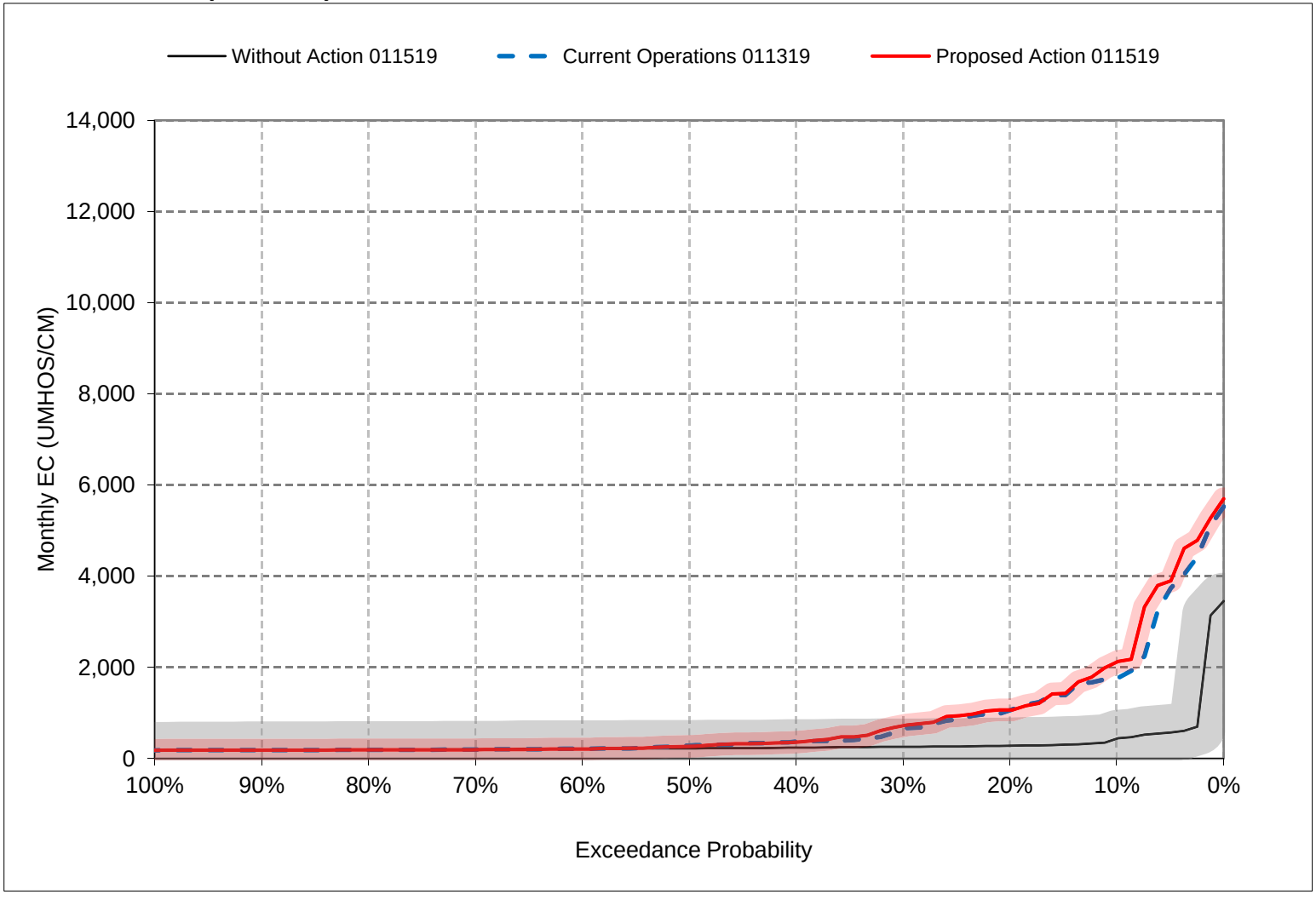
Figure 11-7. Sacramento River at Collinsville Salinity, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

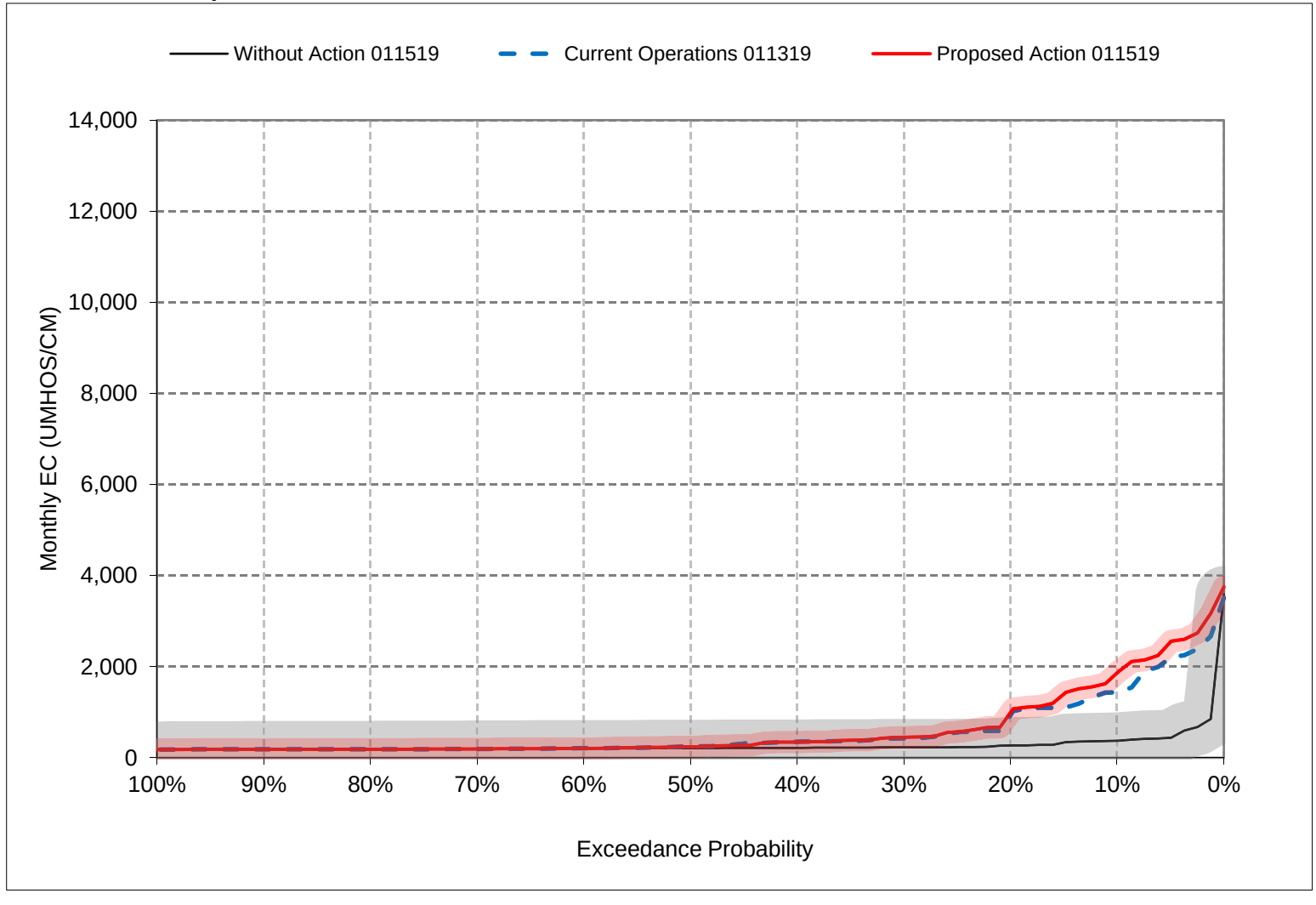
Figure 11-8. Sacramento River at Collinsville Salinity, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

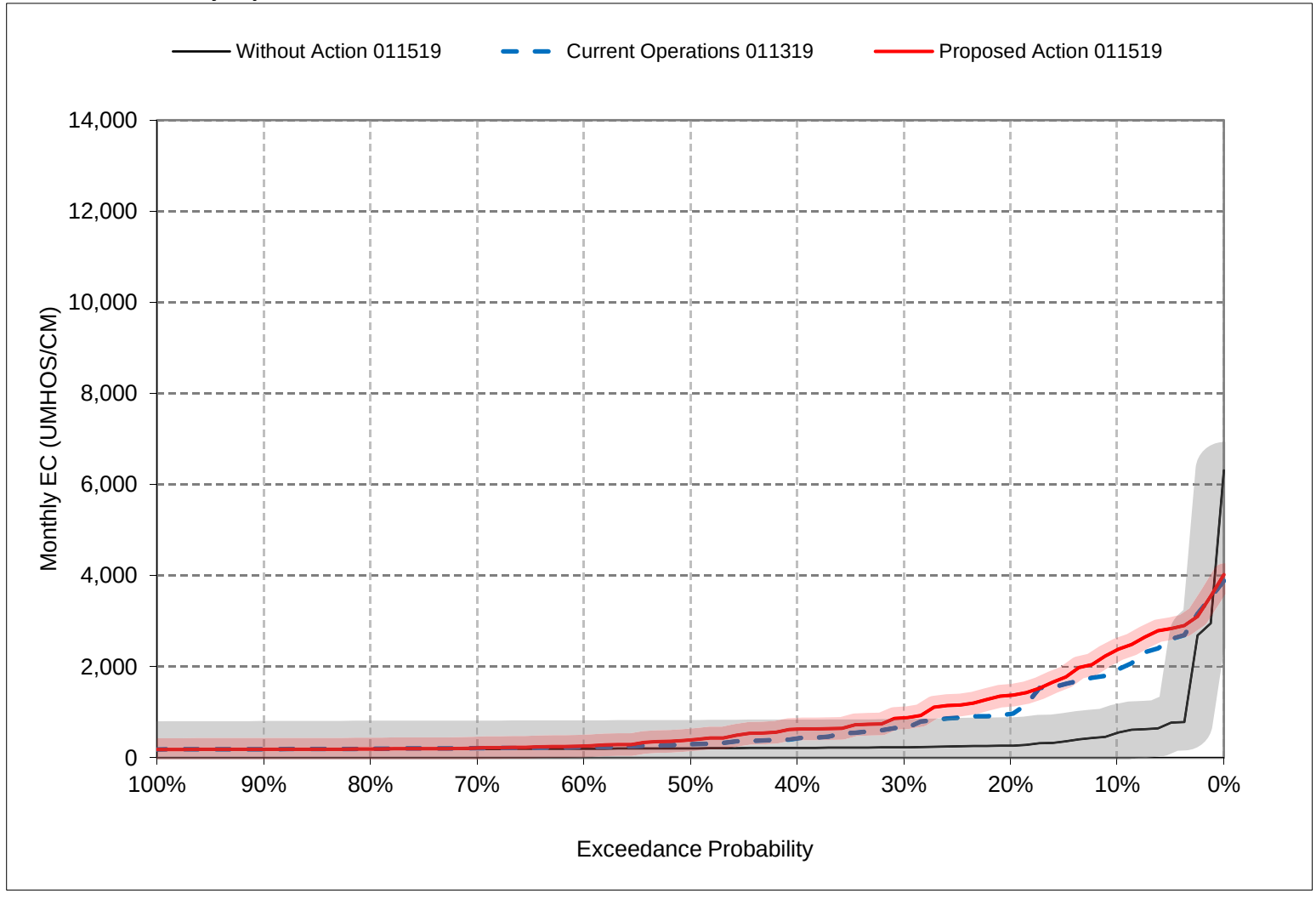
Figure 11-9. Sacramento River at Collinsville Salinity, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

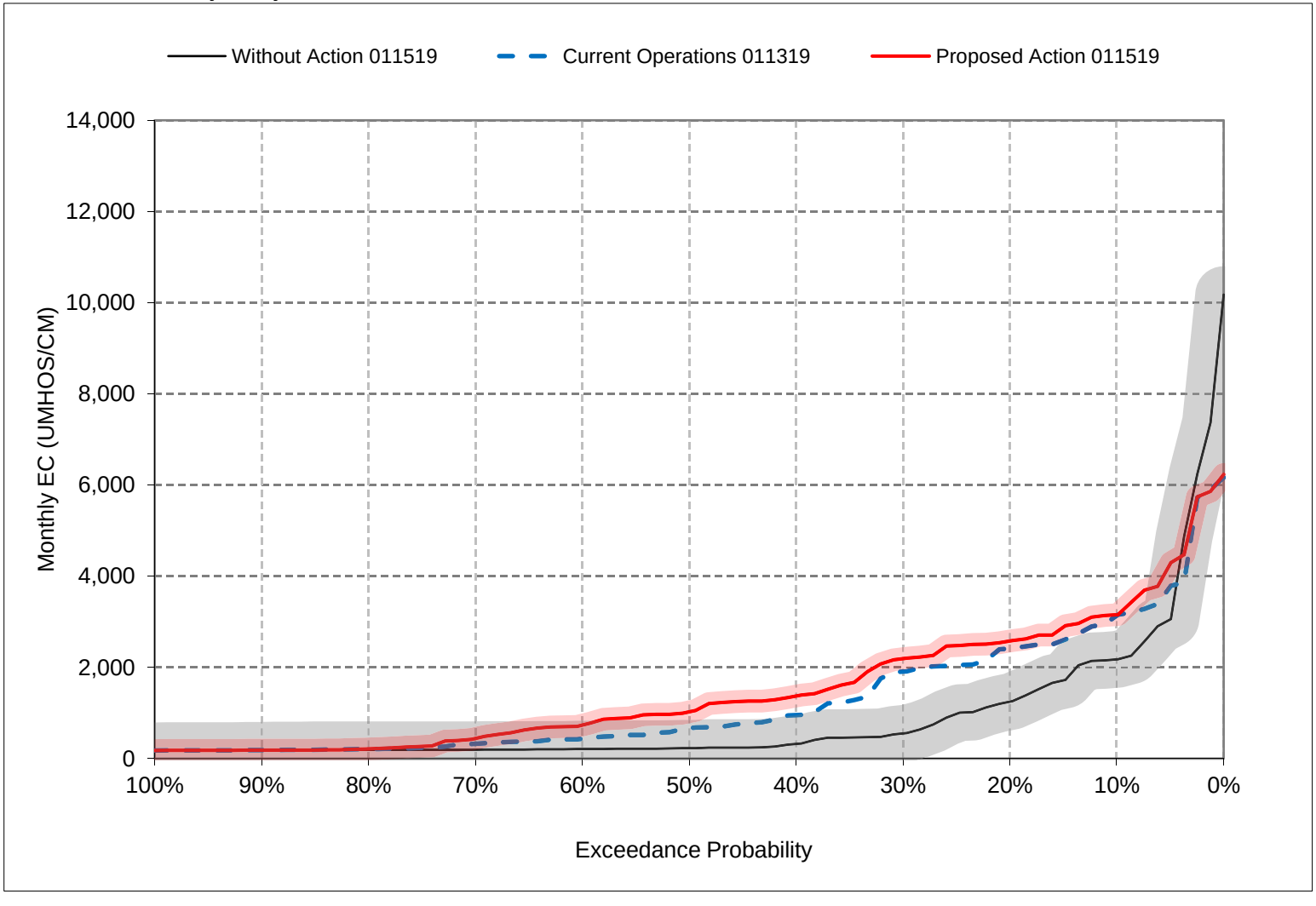
Figure 11-10. Sacramento River at Collinsville Salinity, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

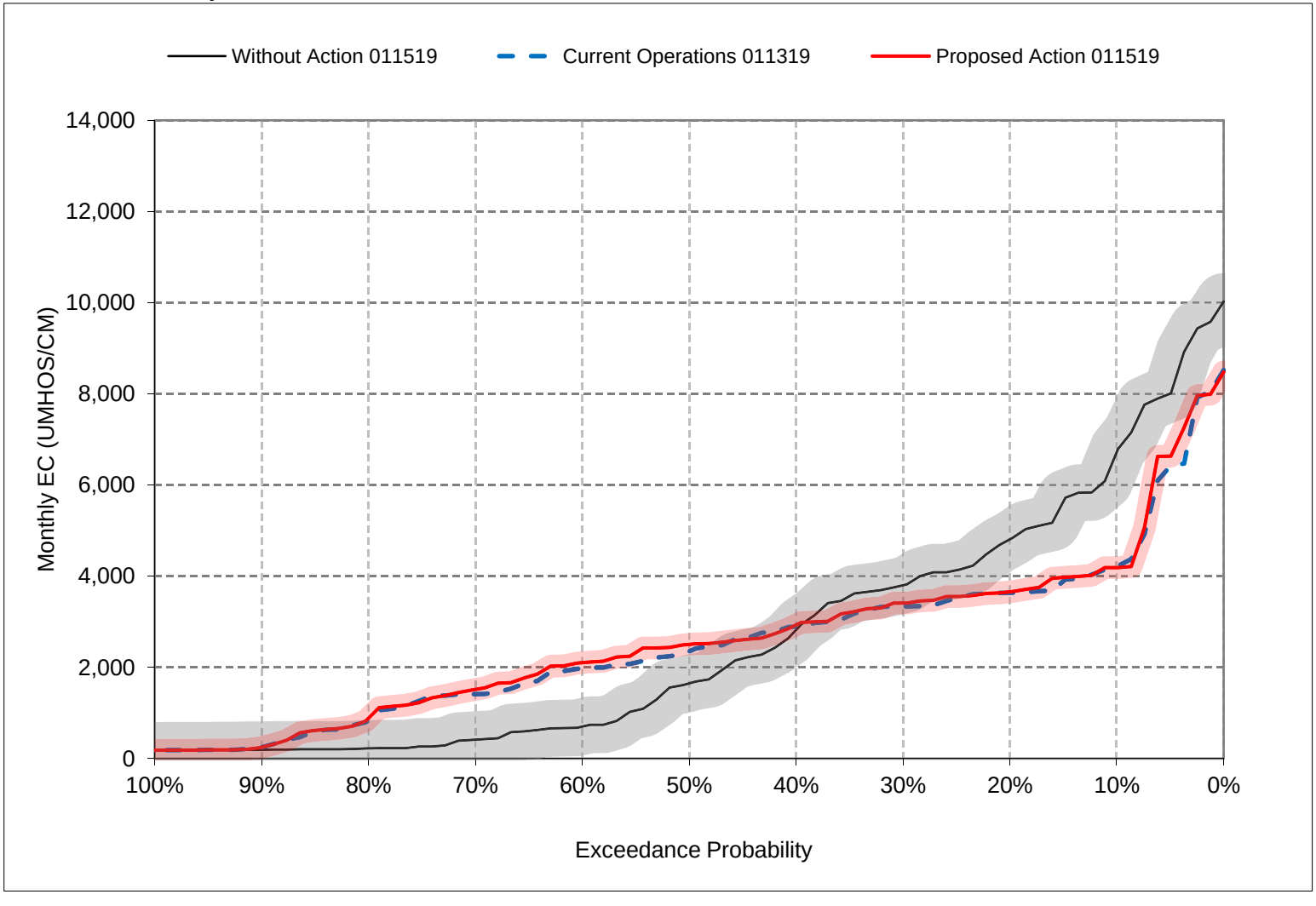
Figure 11-11. Sacramento River at Collinsville Salinity, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

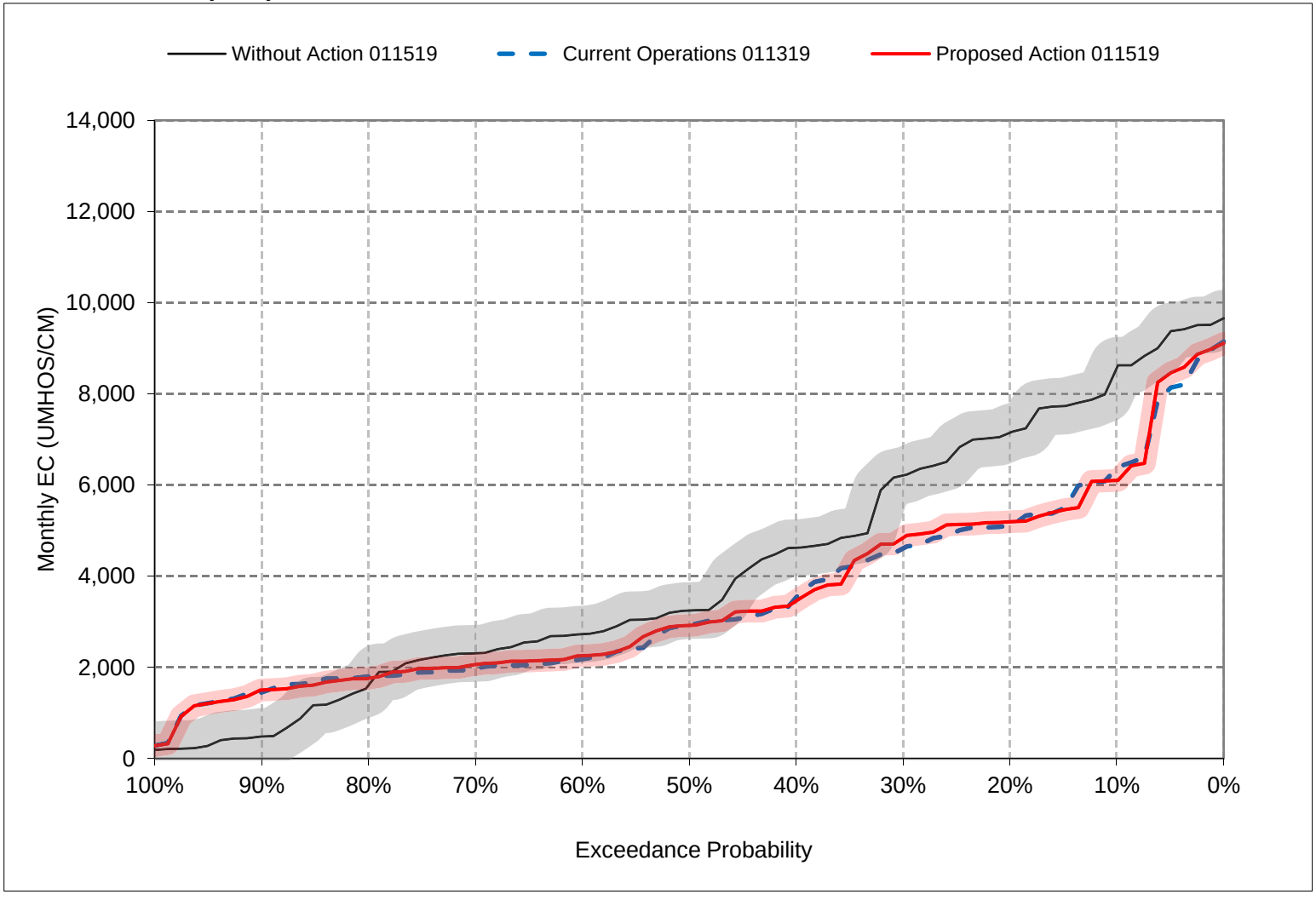
Figure 11-12. Sacramento River at Collinsville Salinity, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

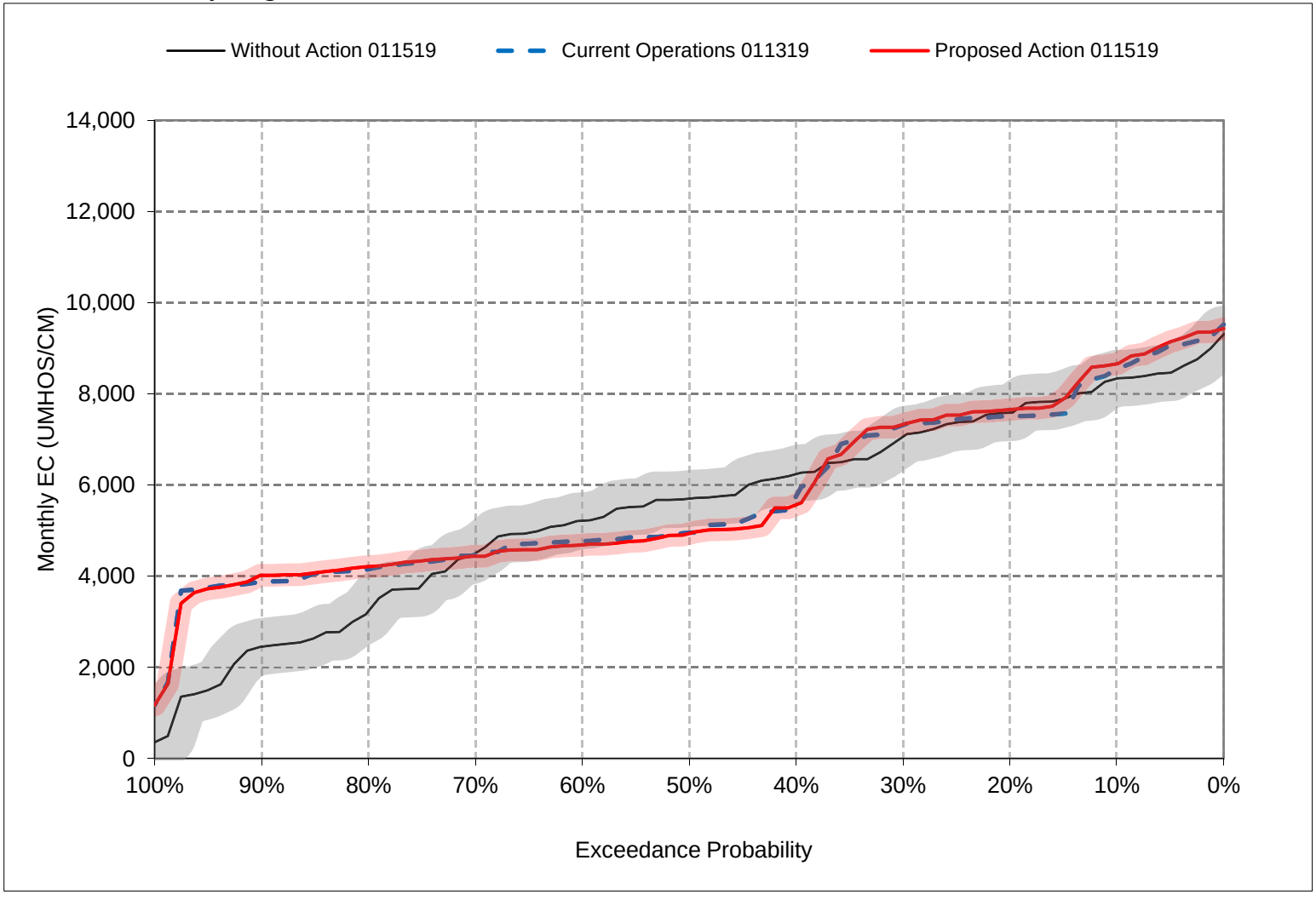
Figure 11-13. Sacramento River at Collinsville Salinity, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

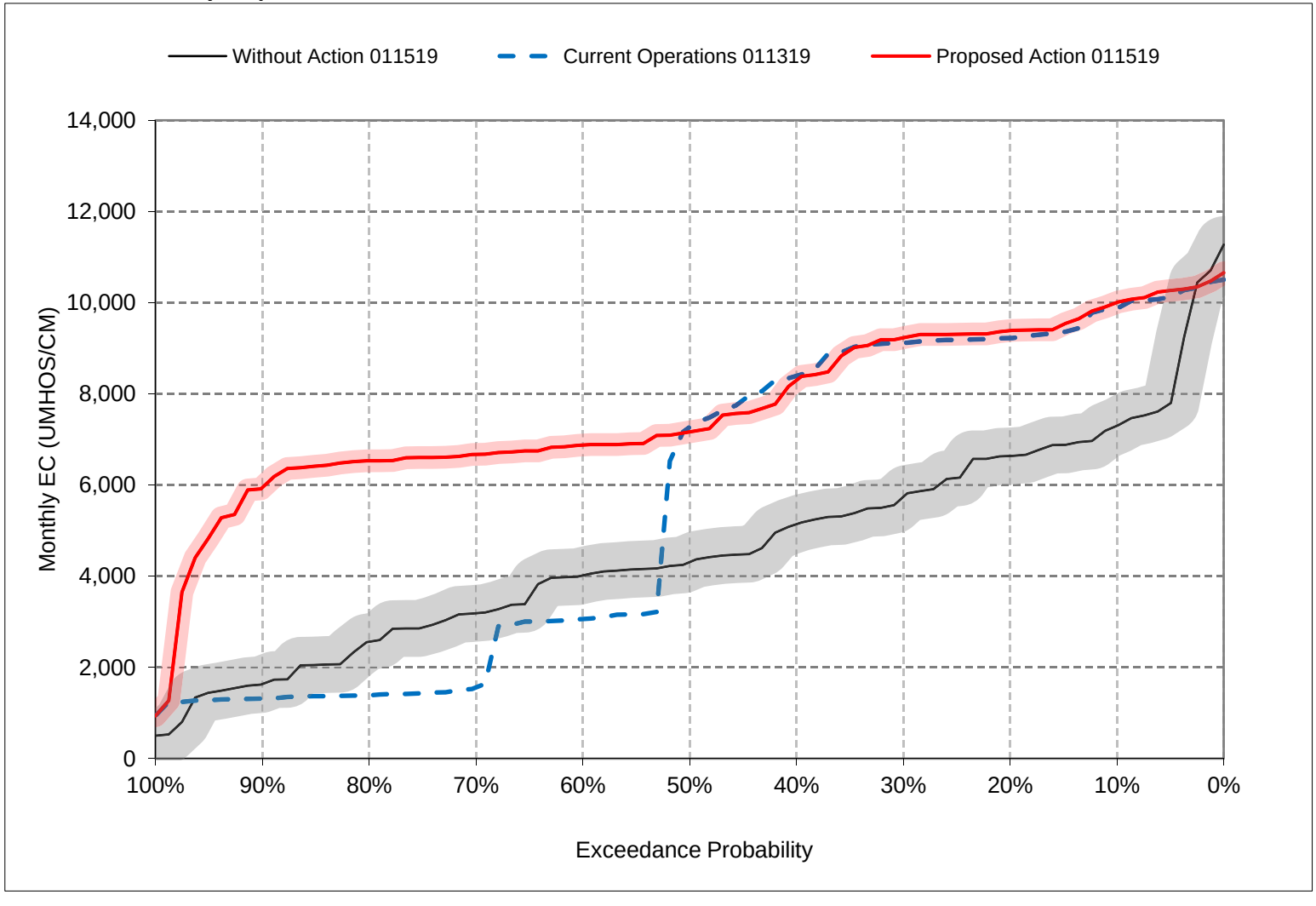
Figure 11-14. Sacramento River at Collinsville Salinity, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

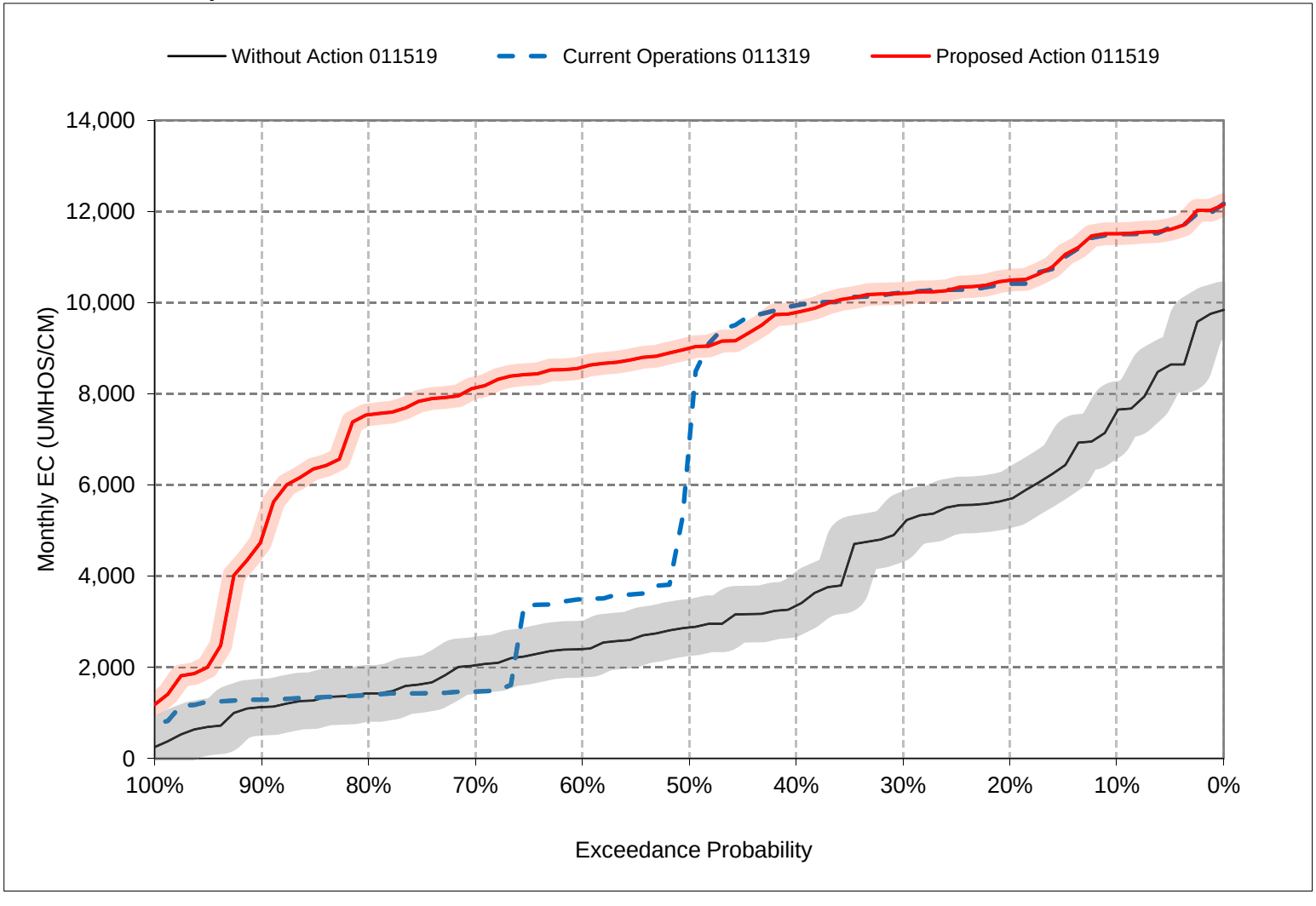
Figure 11-15. Sacramento River at Collinsville Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

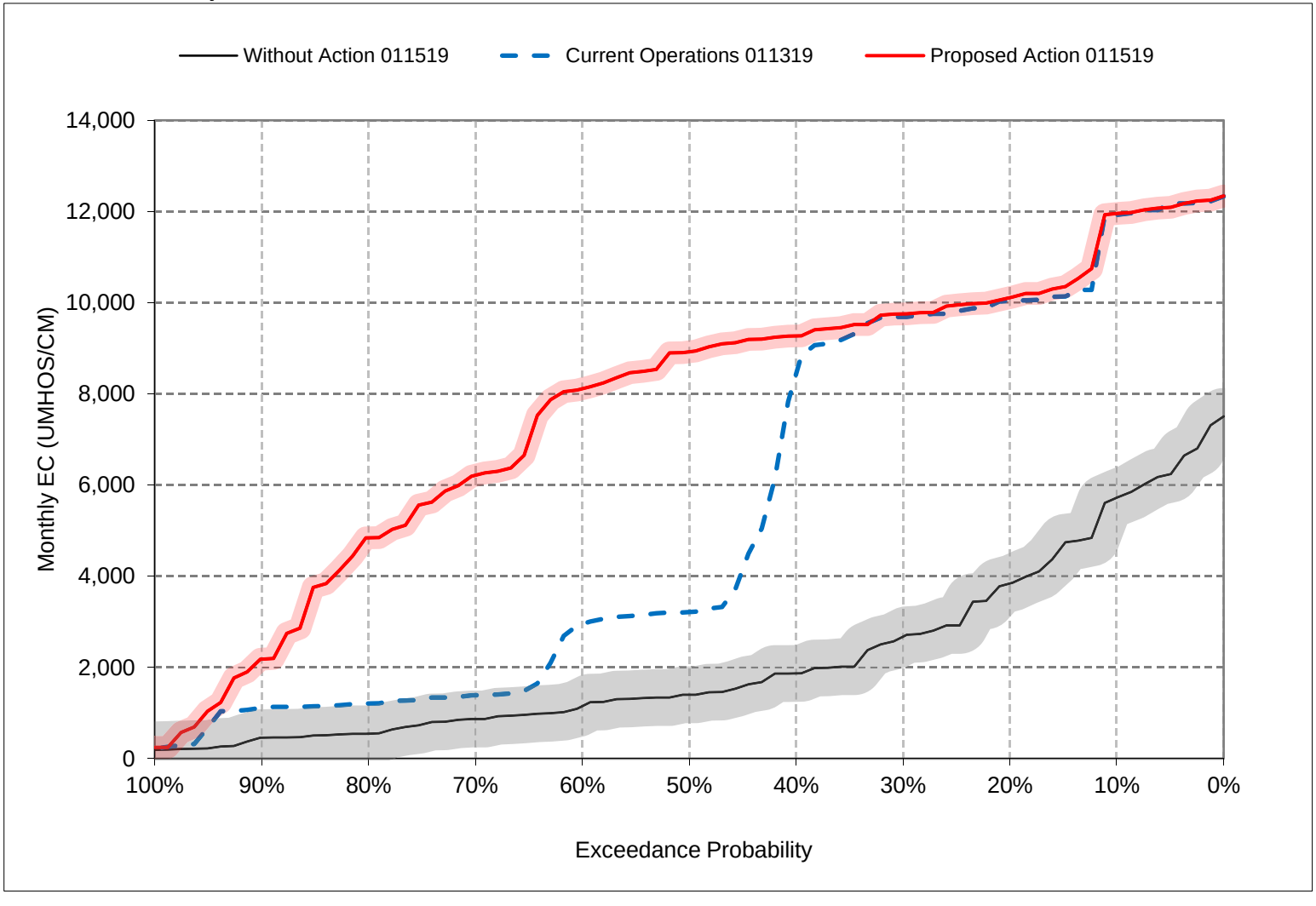
Figure 11-16. Sacramento River at Collinsville Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

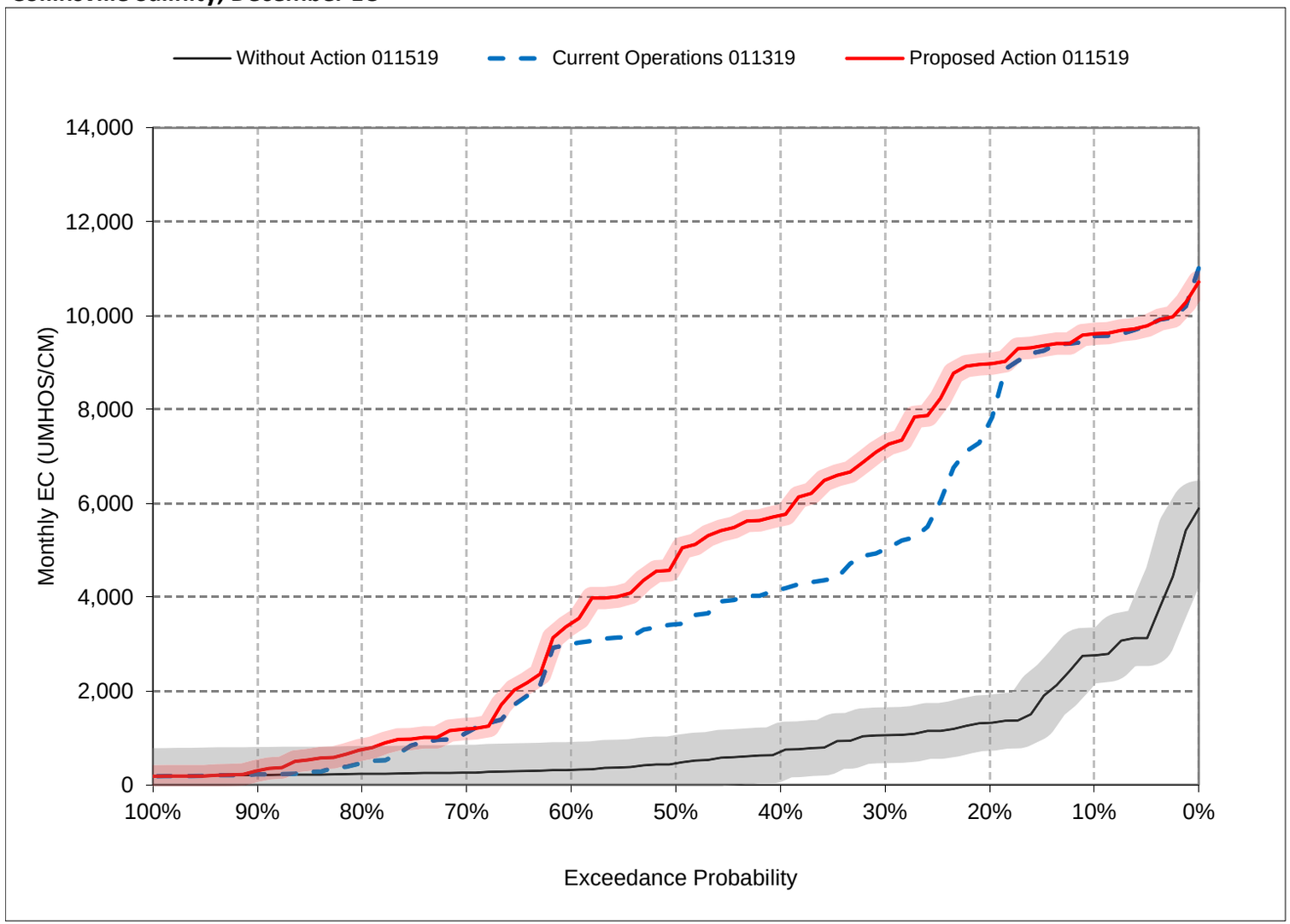
Figure 11-17. Sacramento River at Collinsville Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 12-1. Chipps Island North Channel Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,099	10,203	6,307	2,385	1,300	1,049	1,668	4,797	10,775	13,149	12,837	11,986
20%	10,179	7,756	3,586	1,560	634	535	646	3,143	8,306	11,696	12,300	11,302
30%	9,433	6,095	3,003	1,143	393	303	404	1,617	7,233	10,555	11,537	10,262
40%	6,975	4,746	2,016	685	317	273	318	880	5,614	8,627	10,606	9,519
50%	6,294	3,760	1,367	456	267	228	248	439	3,738	6,571	9,902	8,523
60%	5,702	3,296	893	283	234	216	218	308	1,949	5,922	9,318	8,143
70%	4,977	2,704	570	238	224	207	208	244	1,238	5,126	8,523	6,840
80%	3,888	1,739	354	223	213	199	199	209	411	3,825	6,684	6,023
90%	3,248	1,361	241	207	200	193	190	187	216	1,381	5,415	4,311
Long Term												
Full Simulation Period[a]	7,094	4,710	2,305	1,048	612	503	728	1,803	4,667	7,378	9,454	8,512
Water Year Types[b]												
Wet (32%)	4,224	2,615	1,295	283	214	206	210	301	1,005	3,152	6,144	5,326
Above Normal (16%)	5,758	3,633	1,650	474	270	216	226	342	2,560	5,774	8,937	7,630
Below Normal (13%)	6,671	4,924	3,025	836	469	415	510	1,707	5,049	7,709	10,365	9,110
Dry (24%)	8,708	5,100	2,604	1,335	637	406	560	2,101	6,945	10,666	12,000	10,565
Critical (15%)	12,458	9,571	4,049	3,043	1,932	1,697	2,873	6,229	10,734	12,489	12,109	12,398

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,949**	**6,265**	**8,035**	**7,201**	**3,267**	**2,788**	**3,155**	**1,684**	-2,569	-2,426	**343**	**2,566**
20%	**4,845**	**6,946**	**9,127**	**6,731**	**2,404**	**2,280**	**2,181**	**2,380**	-968	-2,259	-329	**2,552**
30%	**5,455**	**8,431**	**6,198**	**5,672**	**1,225**	**994**	**1,686**	**3,022**	-415	-1,751	**217**	**3,495**
40%	**7,580**	**8,663**	**6,359**	**3,580**	**593**	**777**	**931**	**1,837**	**461**	-1,359	-354	**3,470**
50%	**5,258**	**3,215**	**5,590**	**2,469**	**288**	**364**	**614**	**1,628**	**1,375**	**31**	-698	**3,405**
60%	**1,395**	**3,384**	**5,398**	**1,318**	**83**	**129**	**276**	**1,020**	**2,711**	-626	-455	-1,346
70%	-1,248	**1,033**	**2,393**	**151**	-6	**15**	**123**	**688**	**2,416**	-254	-43	-2,997
80%	-273	**1,659**	**661**	**1**	-9	**1**	**26**	**178**	**1,861**	**782**	**1,360**	-2,412
90%	**213**	**1,853**	**127**	-11	-8	-1	**5**	**13**	**444**	**2,423**	**2,201**	-760
Long Term												
Full Simulation Period[a]	**2,838**	**4,263**	**4,708**	**3,111**	**1,128**	**865**	**1,000**	**1,065**	**489**	-457	**451**	**863**
Water Year Types[b]												
Wet (32%)	-679	**597**	**2,772**	**599**	**48**	**101**	**153**	**403**	**1,362**	**896**	**1,817**	-1,744
Above Normal (16%)	**1,083**	**2,688**	**4,445**	**1,516**	**329**	**187**	**317**	**984**	**1,836**	-679	-797	-845
Below Normal (13%)	**6,522**	**7,163**	**5,326**	**4,358**	**1,592**	**1,460**	**1,599**	**1,520**	**756**	-852	-933	**3,350**
Dry (24%)	**6,009**	**6,992**	**4,930**	**5,244**	**1,937**	**1,206**	**1,554**	**1,747**	-620	-1,620	-278	**3,131**
Critical (15%)	**3,700**	**6,705**	**8,252**	**5,582**	**2,558**	**2,143**	**2,104**	**1,030**	-1,255	-847	**1,329**	**2,302**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 12-2. Chipps Island North Channel Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,099	10,203	6,307	2,385	1,300	1,049	1,668	4,797	10,775	13,149	12,837	11,986
20%	10,179	7,756	3,586	1,560	634	535	646	3,143	8,306	11,696	12,300	11,302
30%	9,433	6,095	3,003	1,143	393	303	404	1,617	7,233	10,555	11,537	10,262
40%	6,975	4,746	2,016	685	317	273	318	880	5,614	8,627	10,606	9,519
50%	6,294	3,760	1,367	456	267	228	248	439	3,738	6,571	9,902	8,523
60%	5,702	3,296	893	283	234	216	218	308	1,949	5,922	9,318	8,143
70%	4,977	2,704	570	238	224	207	208	244	1,238	5,126	8,523	6,840
80%	3,888	1,739	354	223	213	199	199	209	411	3,825	6,684	6,023
90%	3,248	1,361	241	207	200	193	190	187	216	1,381	5,415	4,311
Long Term												
Full Simulation Period[a]	7,094	4,710	2,305	1,048	612	503	728	1,803	4,667	7,378	9,454	8,512
Water Year Types[b]												
Wet (32%)	4,224	2,615	1,295	283	214	206	210	301	1,005	3,152	6,144	5,326
Above Normal (16%)	5,758	3,633	1,650	474	270	216	226	342	2,560	5,774	8,937	7,630
Below Normal (13%)	6,671	4,924	3,025	836	469	415	510	1,707	5,049	7,709	10,365	9,110
Dry (24%)	8,708	5,100	2,604	1,335	637	406	560	2,101	6,945	10,666	12,000	10,565
Critical (15%)	12,458	9,571	4,049	3,043	1,932	1,697	2,873	6,229	10,734	12,489	12,109	12,398

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,982**	**6,309**	**8,032**	**8,442**	**4,009**	**3,721**	**3,929**	**1,830**	-2,602	-2,727	**523**	**2,667**
20%	**4,924**	**7,048**	**10,190**	**7,299**	**2,431**	**2,434**	**3,009**	**2,680**	-864	-2,146	-146	**2,699**
30%	**5,488**	**8,474**	**9,233**	**5,627**	**1,547**	**1,045**	**2,133**	**3,625**	-254	-1,509	**313**	**3,614**
40%	**7,418**	**9,326**	**8,500**	**3,590**	**767**	**793**	**1,600**	**2,740**	**627**	-1,367	-559	**3,320**
50%	**7,330**	**9,975**	**7,938**	**2,445**	**282**	**369**	**947**	**2,429**	**1,845**	**20**	-729	**3,344**
60%	**7,532**	**9,497**	**6,120**	**1,290**	**27**	**116**	**505**	**1,910**	**3,060**	-521	-535	**3,314**
70%	**7,898**	**8,300**	**2,776**	**132**	-7	**7**	**176**	**1,121**	**2,545**	-107	-120	**4,465**
80%	**8,514**	**7,325**	**1,222**	-6	-10	**1**	**25**	**257**	**1,967**	**772**	**1,440**	**5,108**
90%	**6,034**	**3,651**	**286**	-11	-7	0	**3**	**25**	**438**	**2,388**	**2,426**	**6,250**
Long Term												
Full Simulation Period[a]	**6,028**	**7,225**	**5,716**	**3,195**	**1,247**	**981**	**1,287**	**1,574**	**671**	-416	**479**	**3,666**
Water Year Types[b]												
Wet (32%)	**6,418**	**6,975**	**4,967**	**519**	**37**	**96**	**295**	**757**	**1,479**	**942**	**1,759**	**4,833**
Above Normal (16%)	**6,737**	**8,080**	**6,362**	**1,506**	**279**	**190**	**556**	**1,606**	**1,966**	-618	-713	**3,688**
Below Normal (13%)	**6,395**	**7,403**	**5,290**	**4,504**	**1,726**	**1,548**	**1,985**	**2,298**	**1,107**	-865	-1,011	**3,142**
Dry (24%)	**6,241**	**7,177**	**4,958**	**5,561**	**2,103**	**1,323**	**1,918**	**2,269**	-454	-1,625	-171	**3,204**
Critical (15%)	**3,725**	**6,756**	**8,297**	**5,679**	**3,054**	**2,665**	**2,540**	**1,486**	-1,010	-713	**1,444**	**2,364**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 12-3. Chipps Island North Channel Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

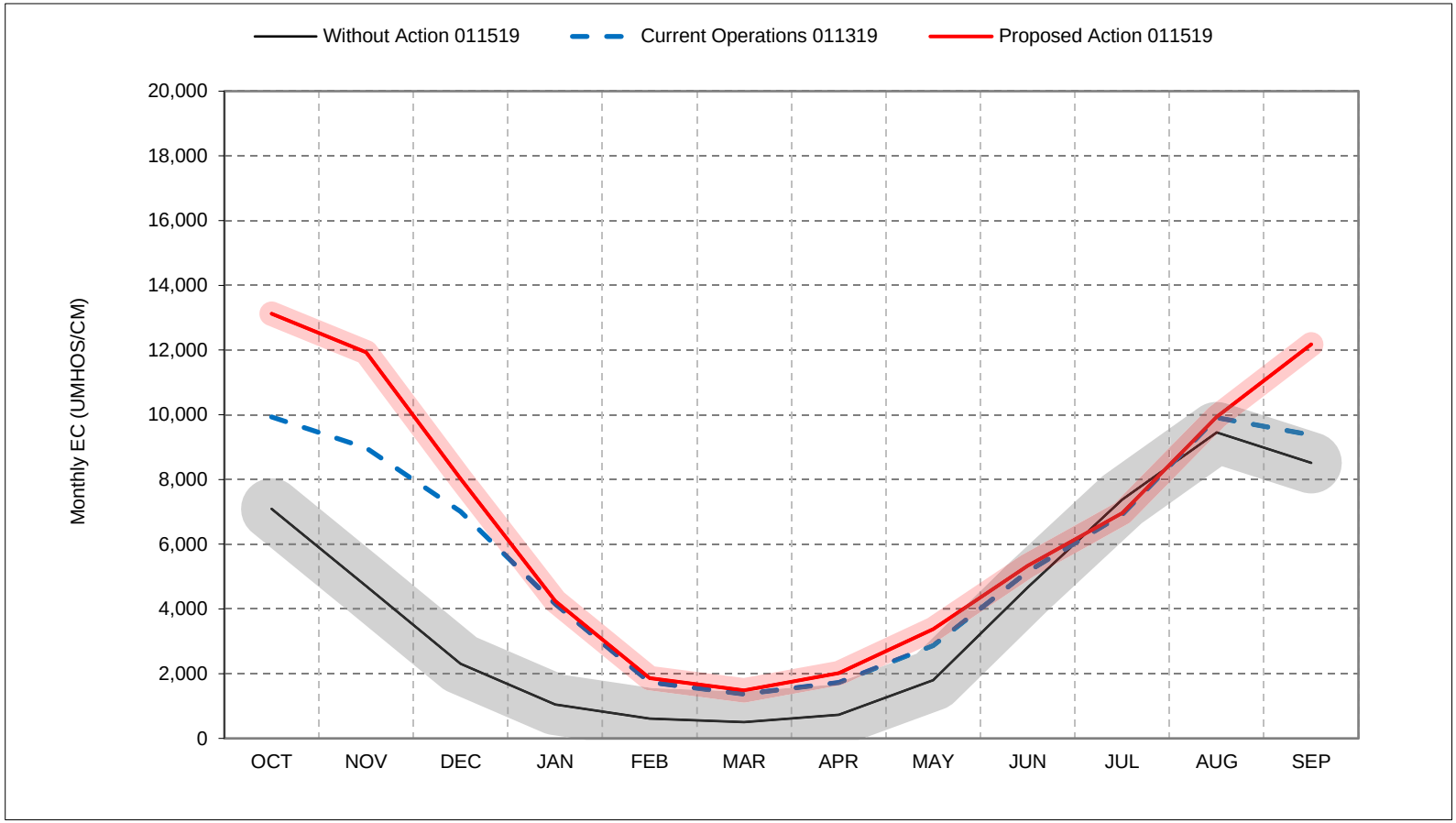
c These results are displayed with calendar year - year type sorting.

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.

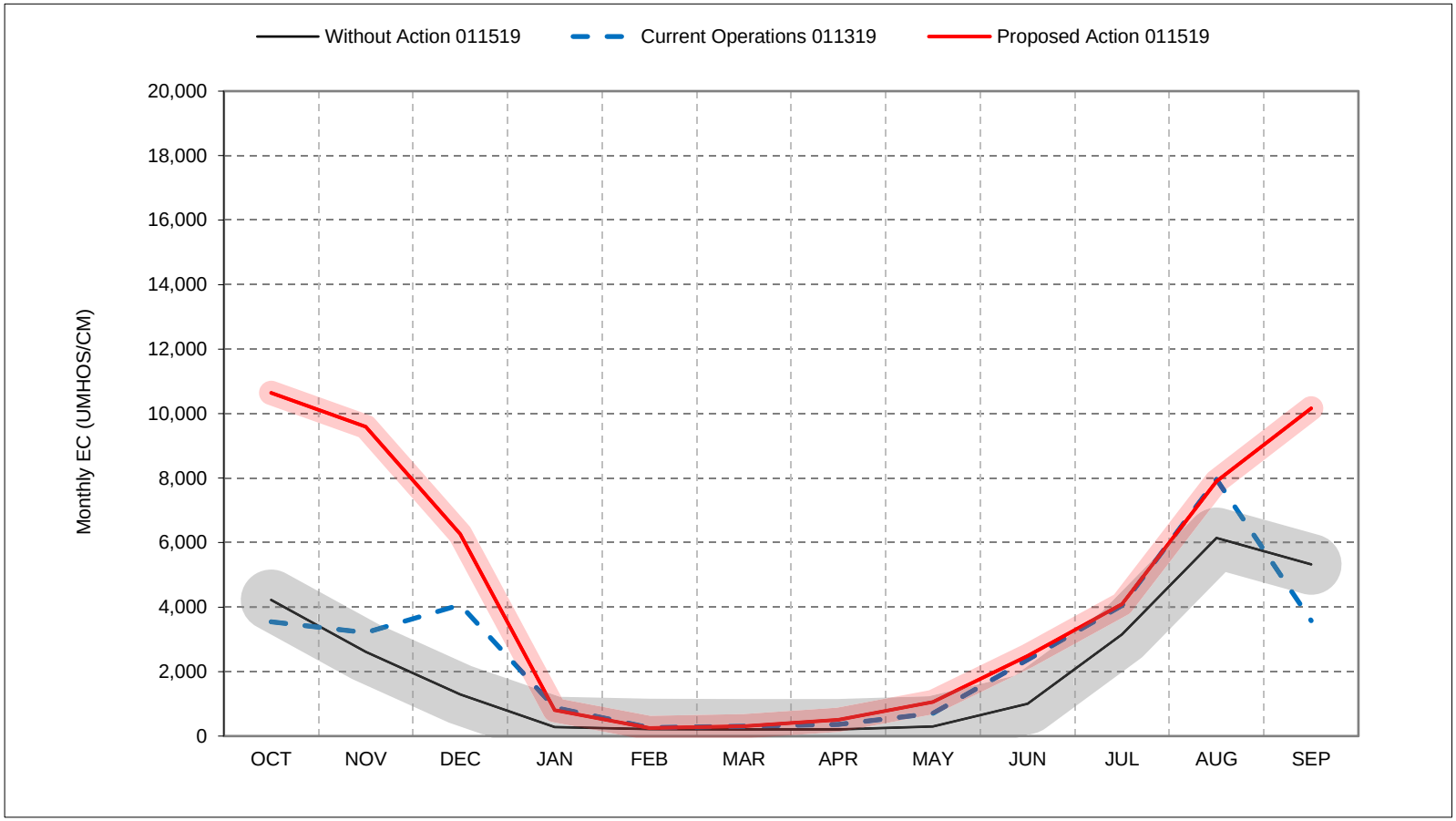
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-1. Chipps Island North Channel Salinity, Long-Term Average EC



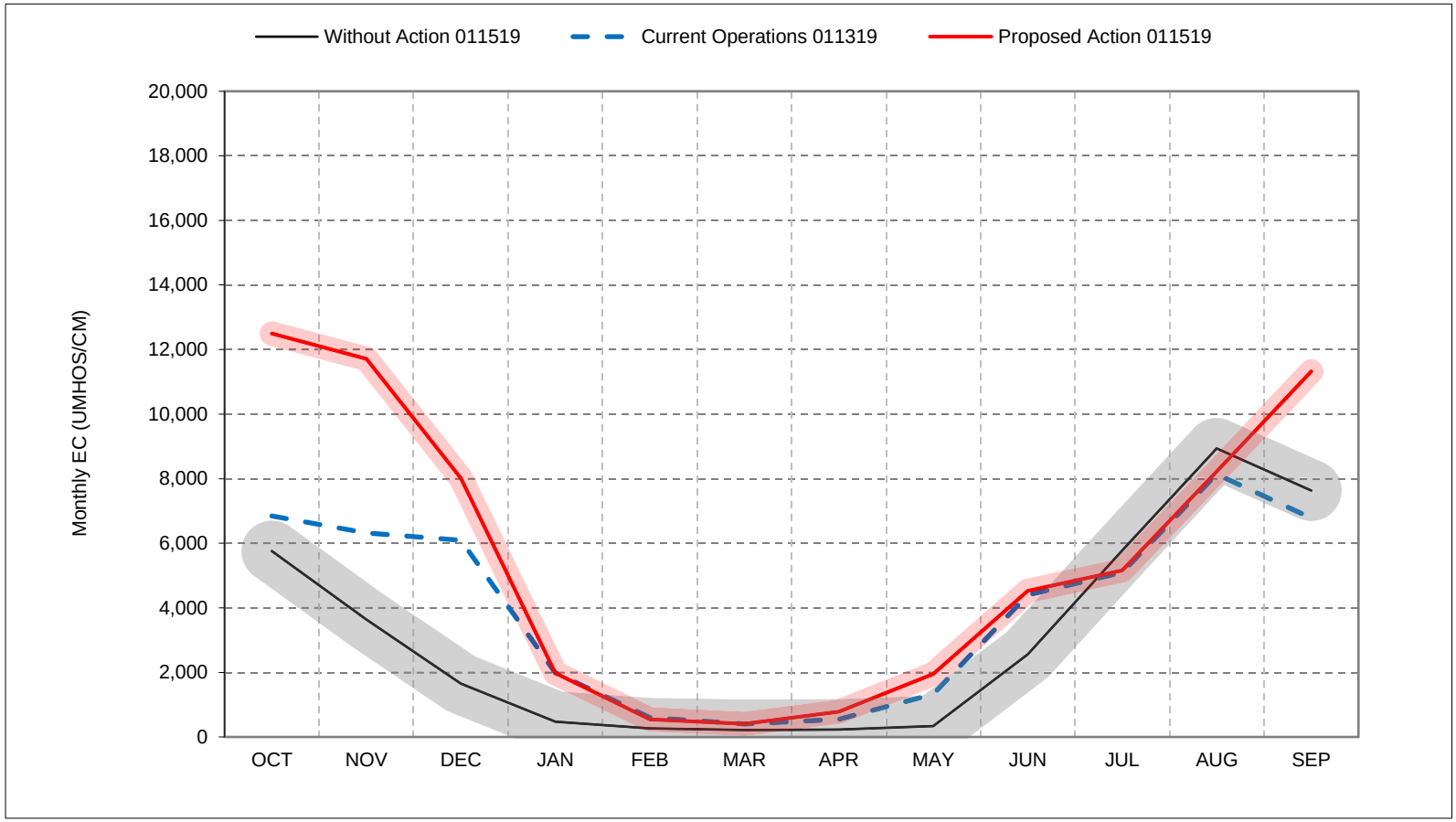
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-2. Chipps Island North Channel Salinity, Wet Year Average EC



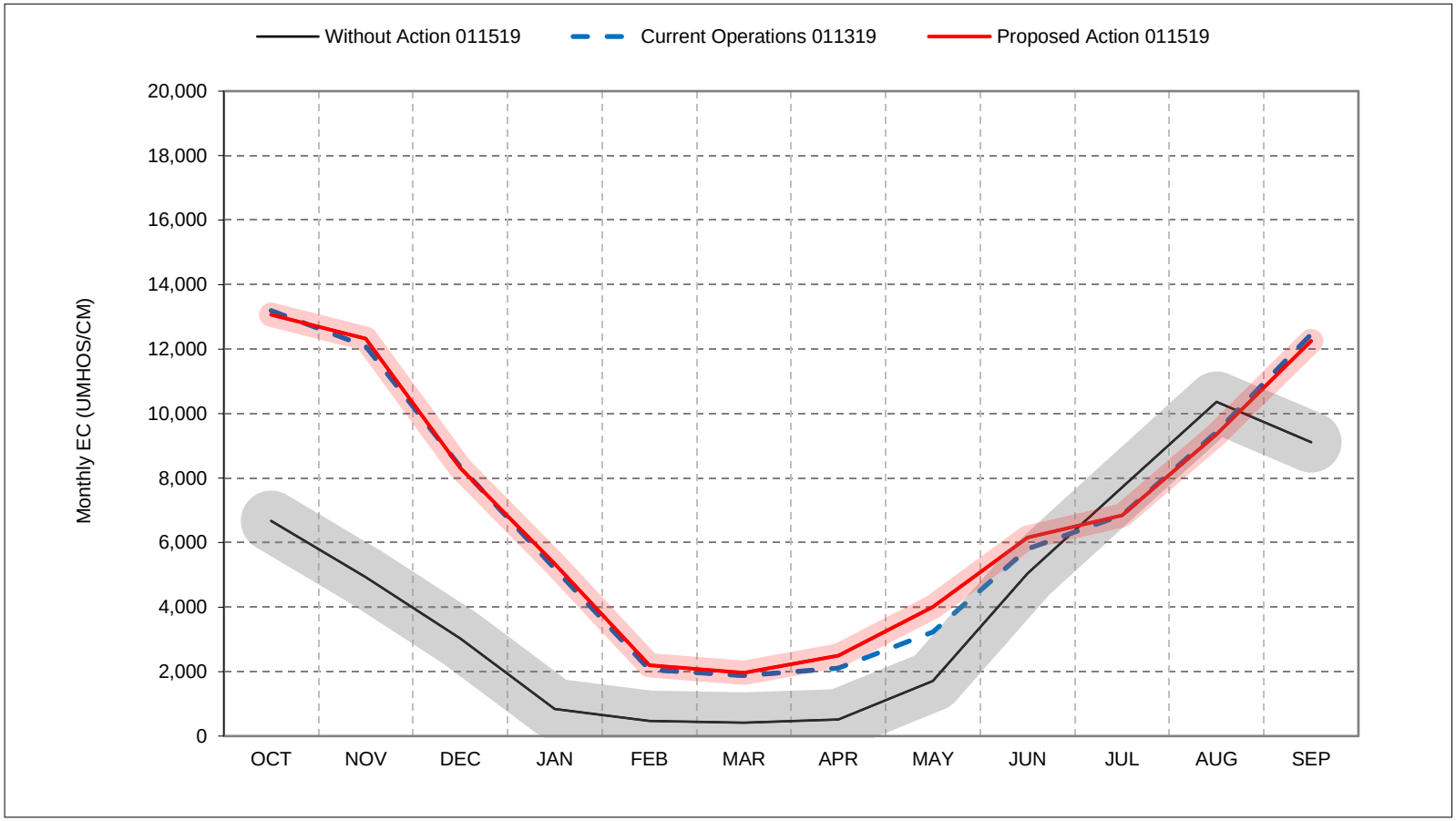
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-3. Chipps Island North Channel Salinity, Above Normal Year Average EC



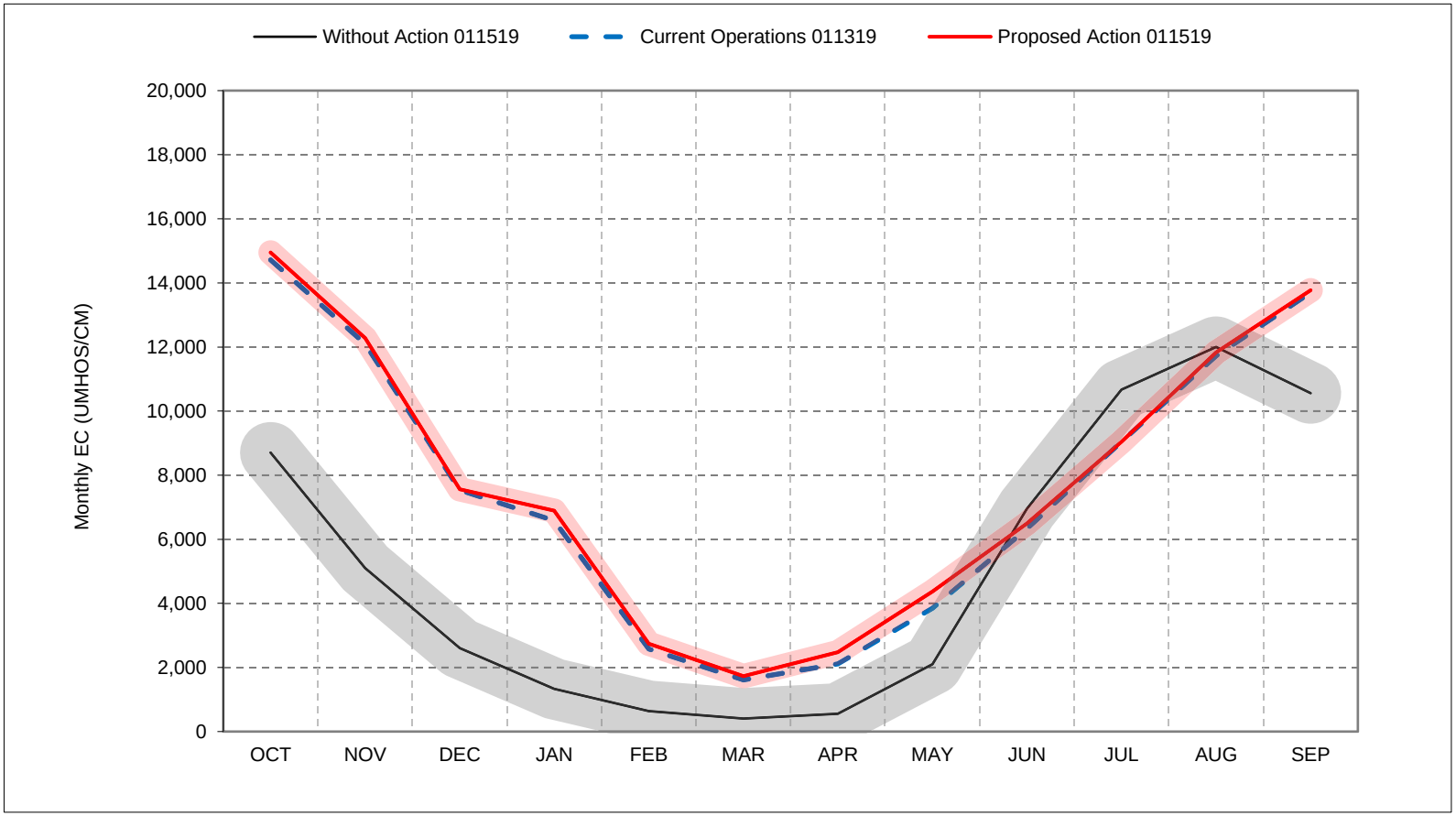
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-4. Chipps Island North Channel Salinity, Below Normal Year Average EC



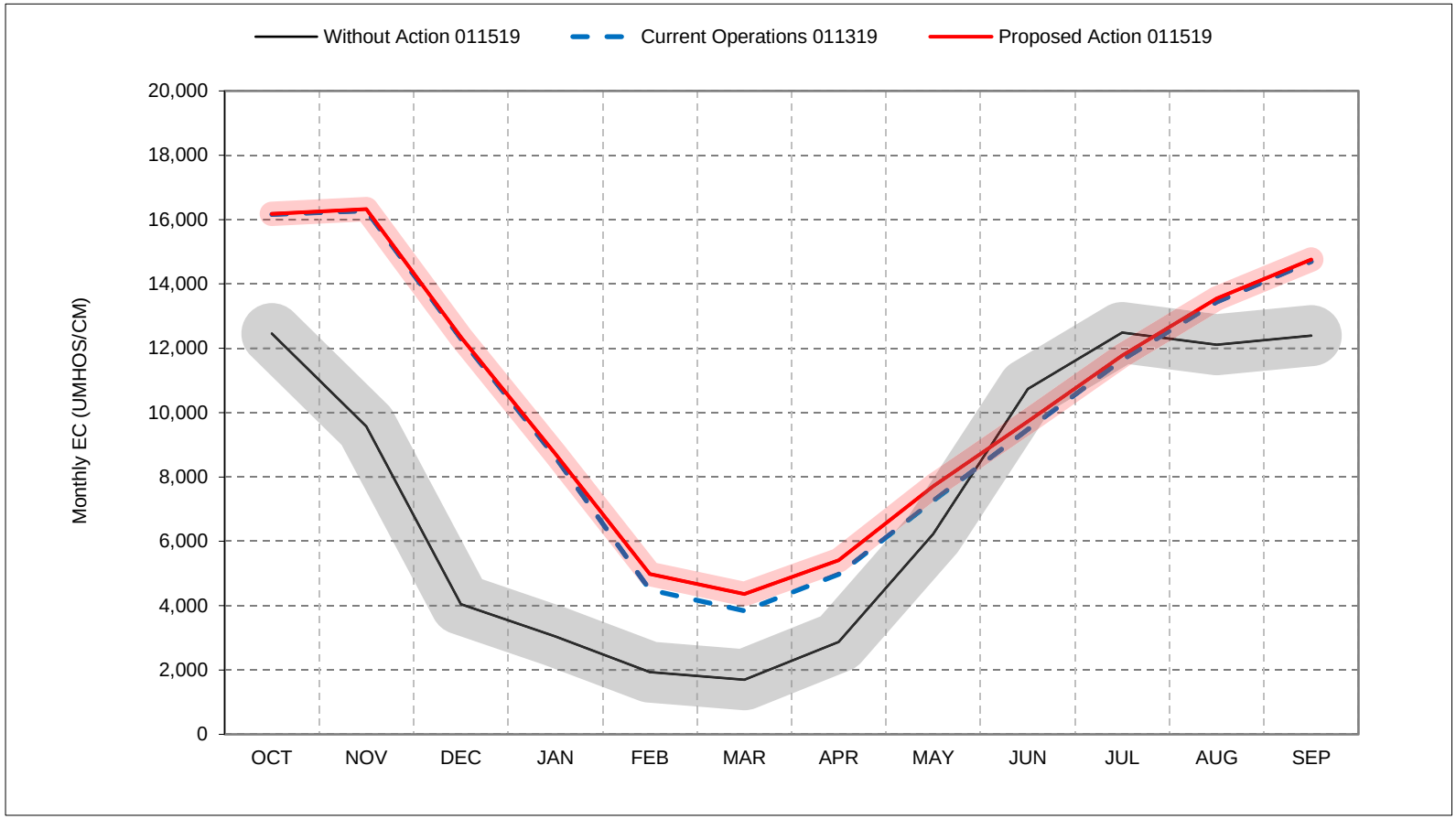
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-5. Chipps Island North Channel Salinity, Dry Year Average EC



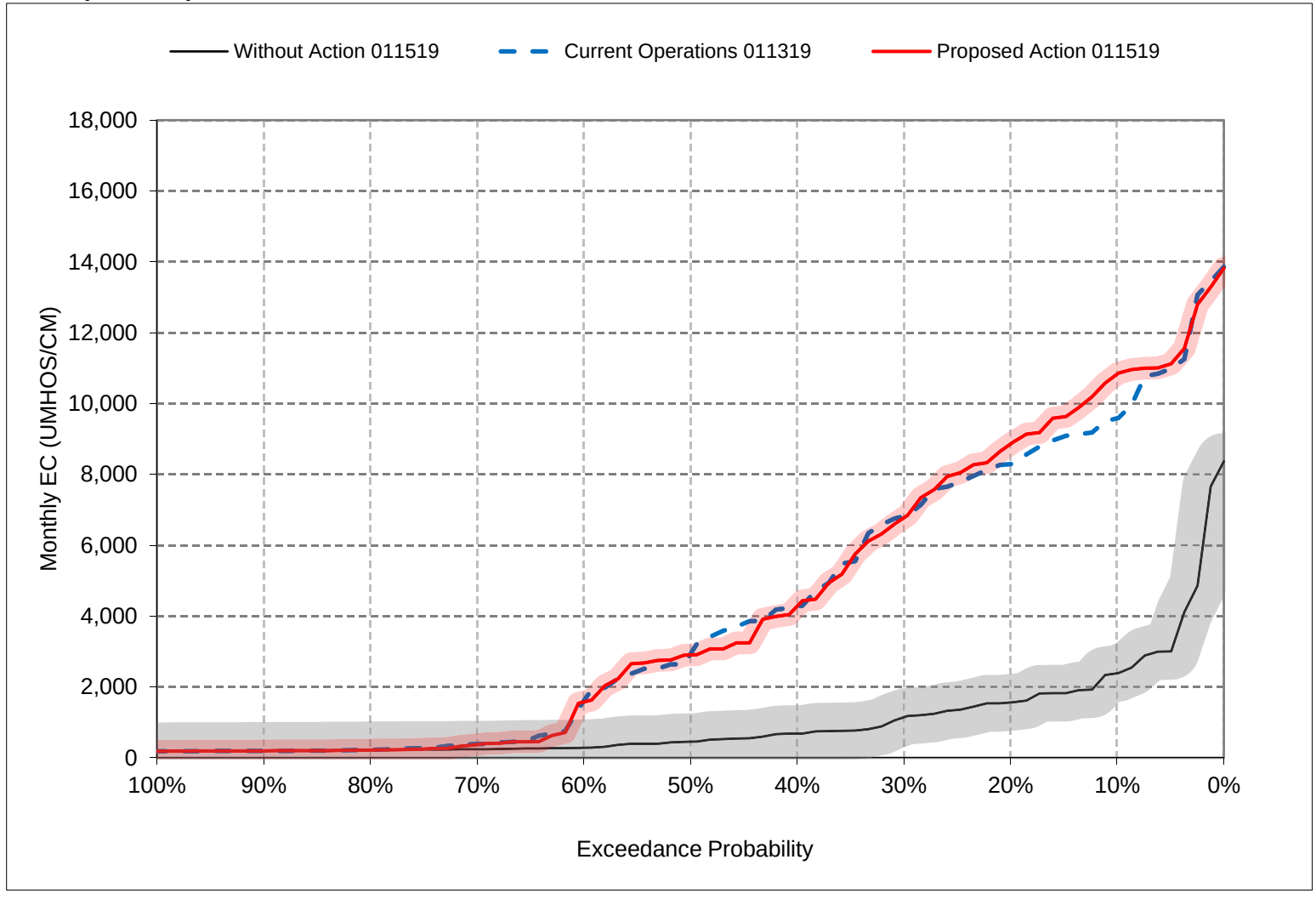
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-6. Chipps Island North Channel Salinity, Critical Year Average EC



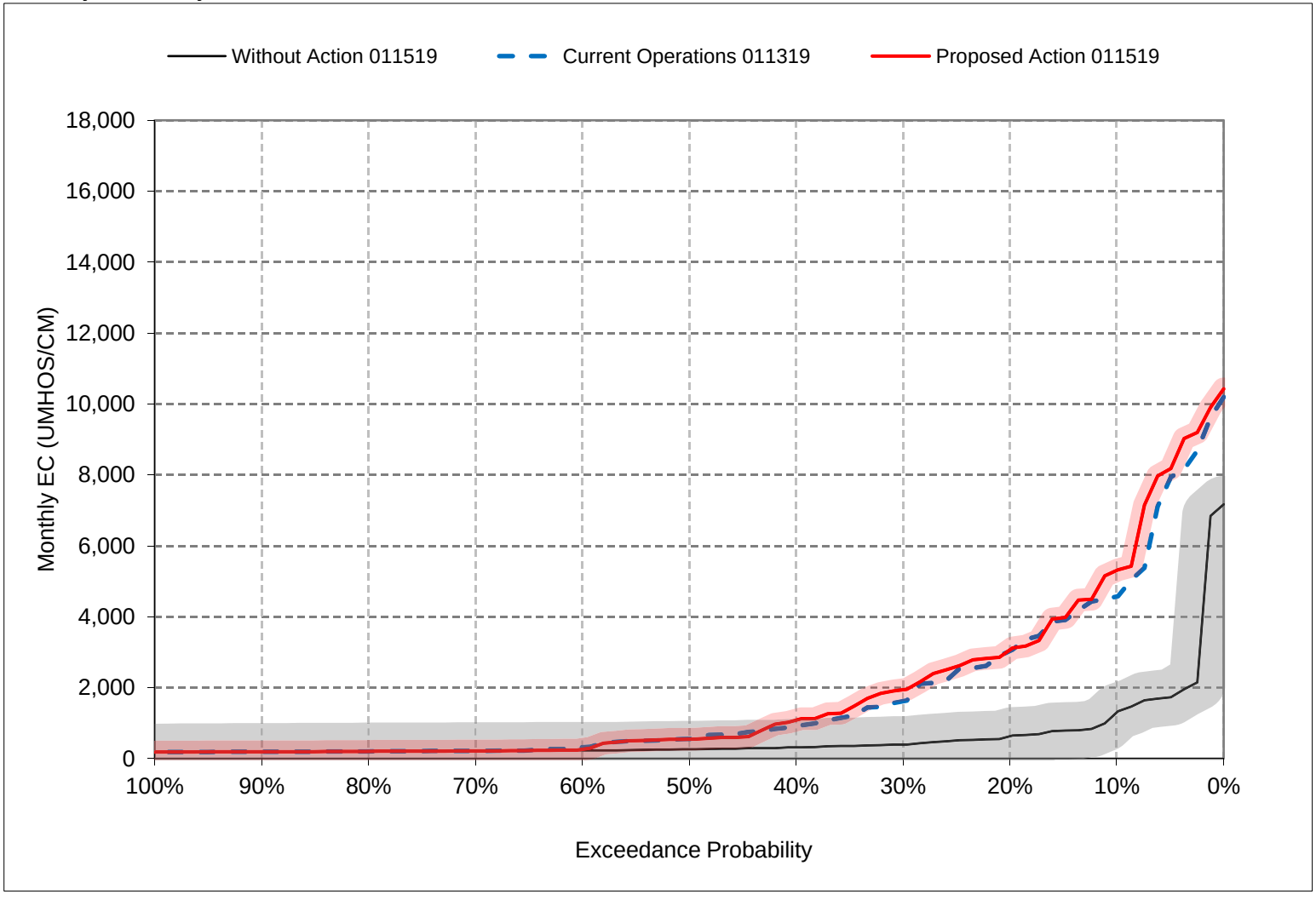
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-7. Chipps Island North Channel
Salinity, January EC



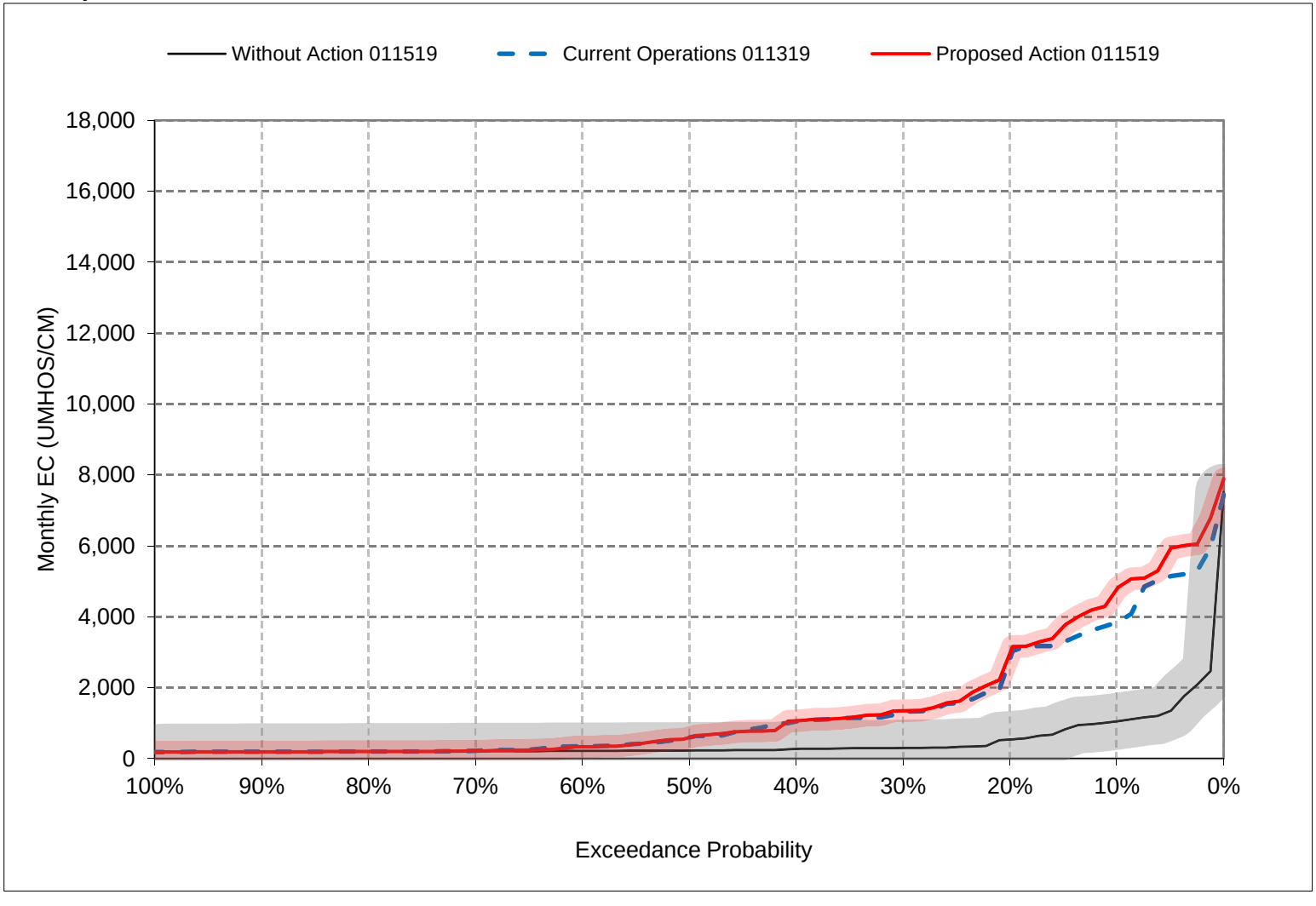
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-8. Chipps Island North Channel
Salinity, February EC



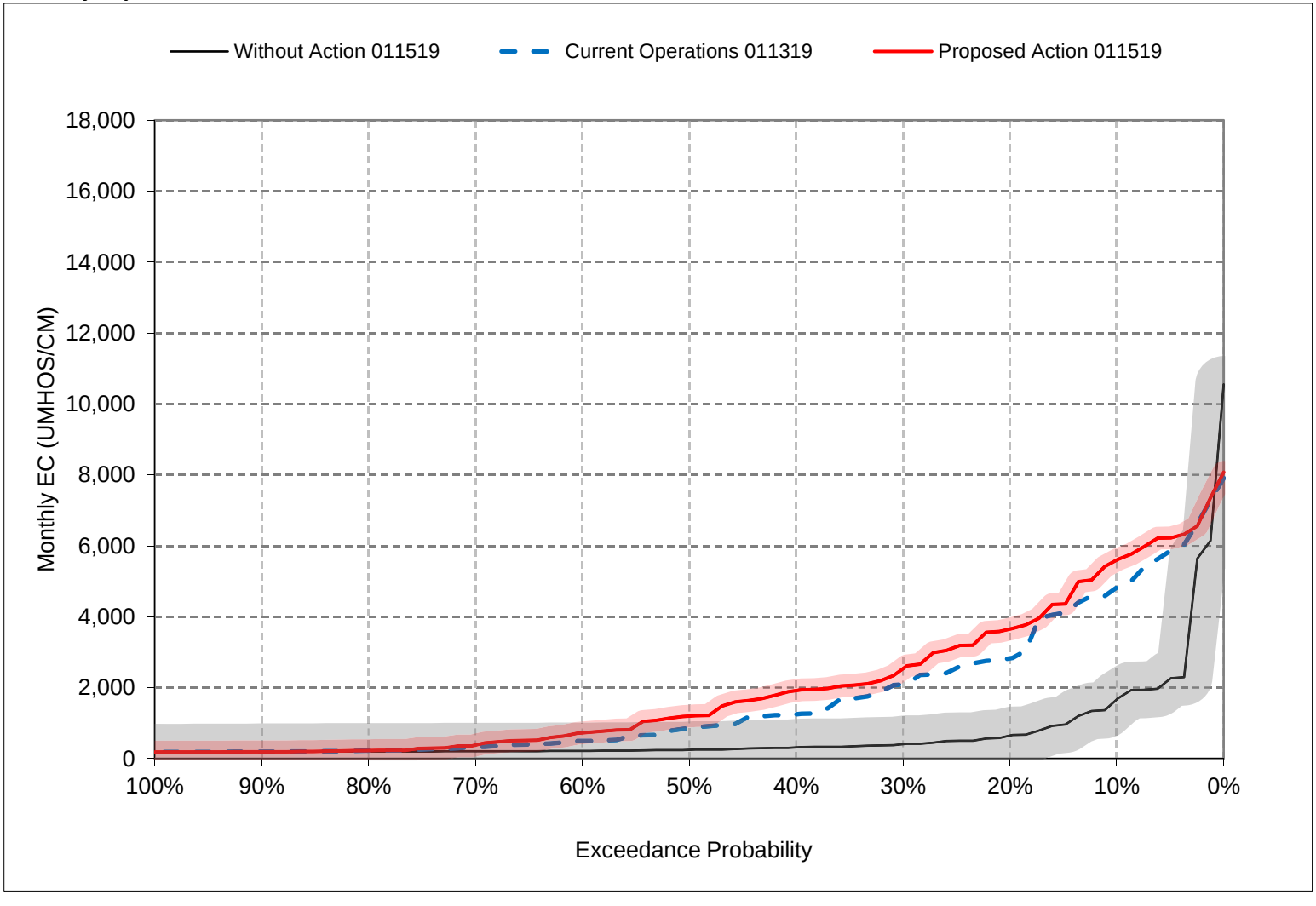
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-9. Chipps Island North Channel
Salinity, March EC



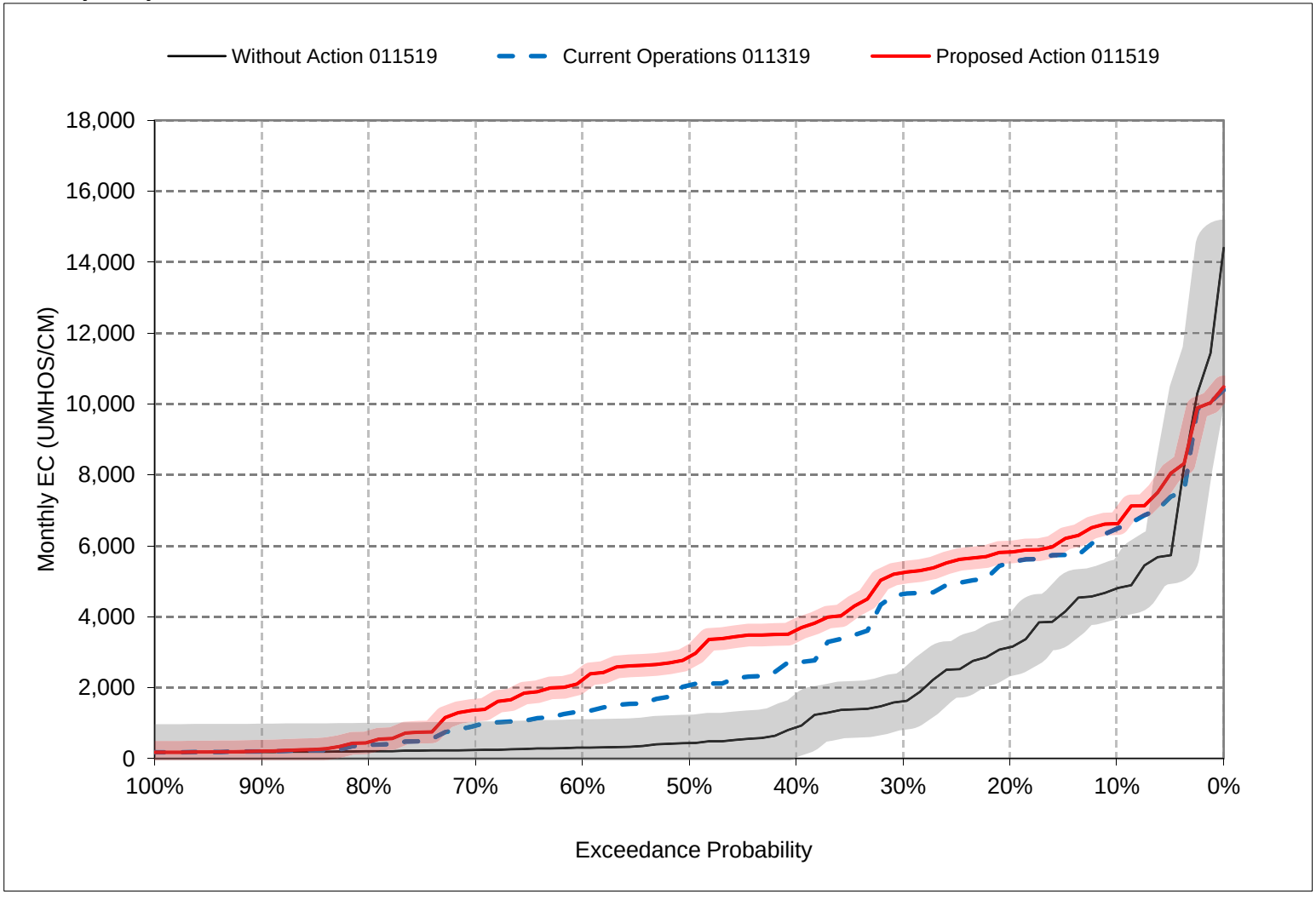
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-10. Chipps Island North Channel
Salinity, April EC



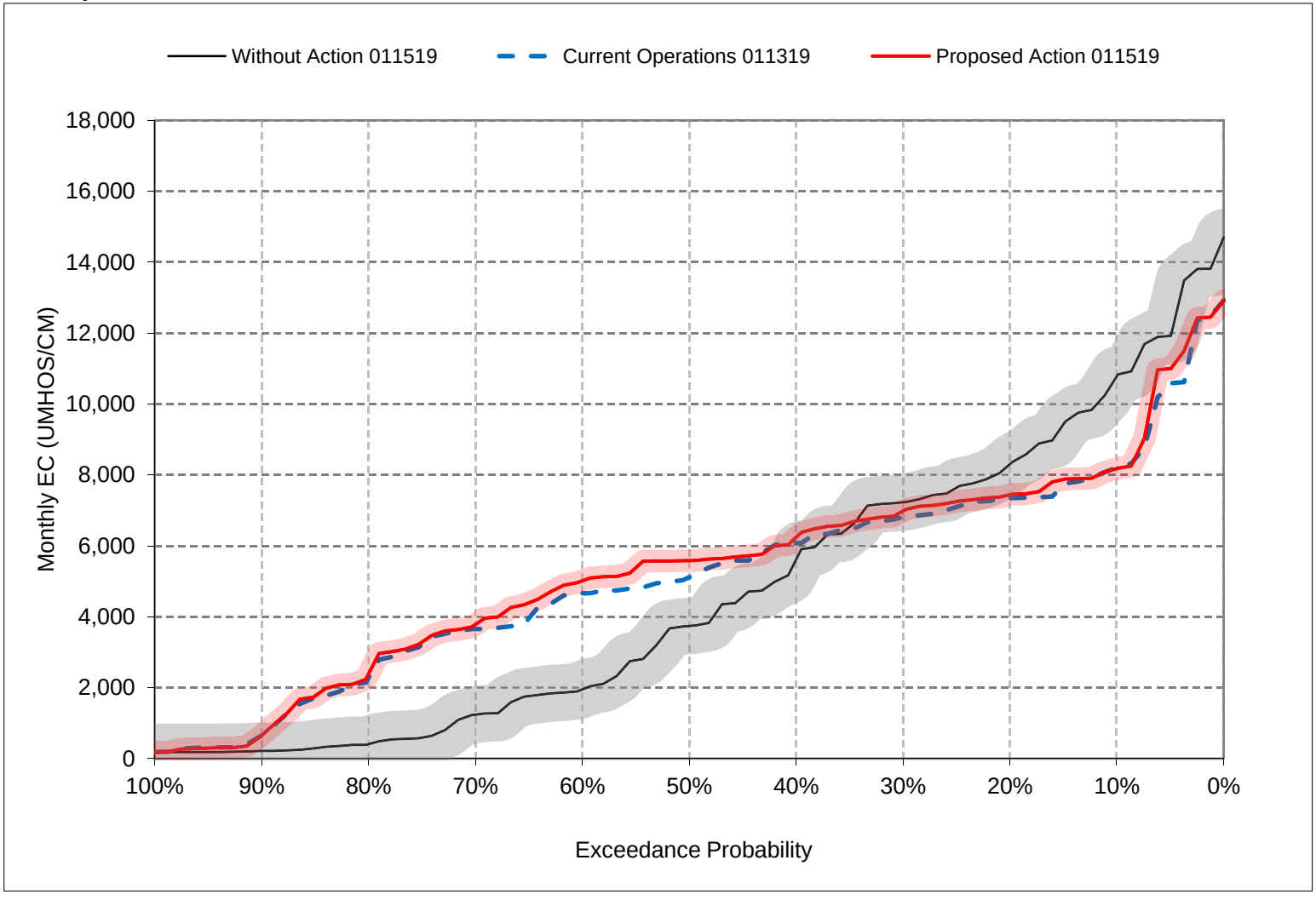
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-11. Chipps Island North Channel
Salinity, May EC



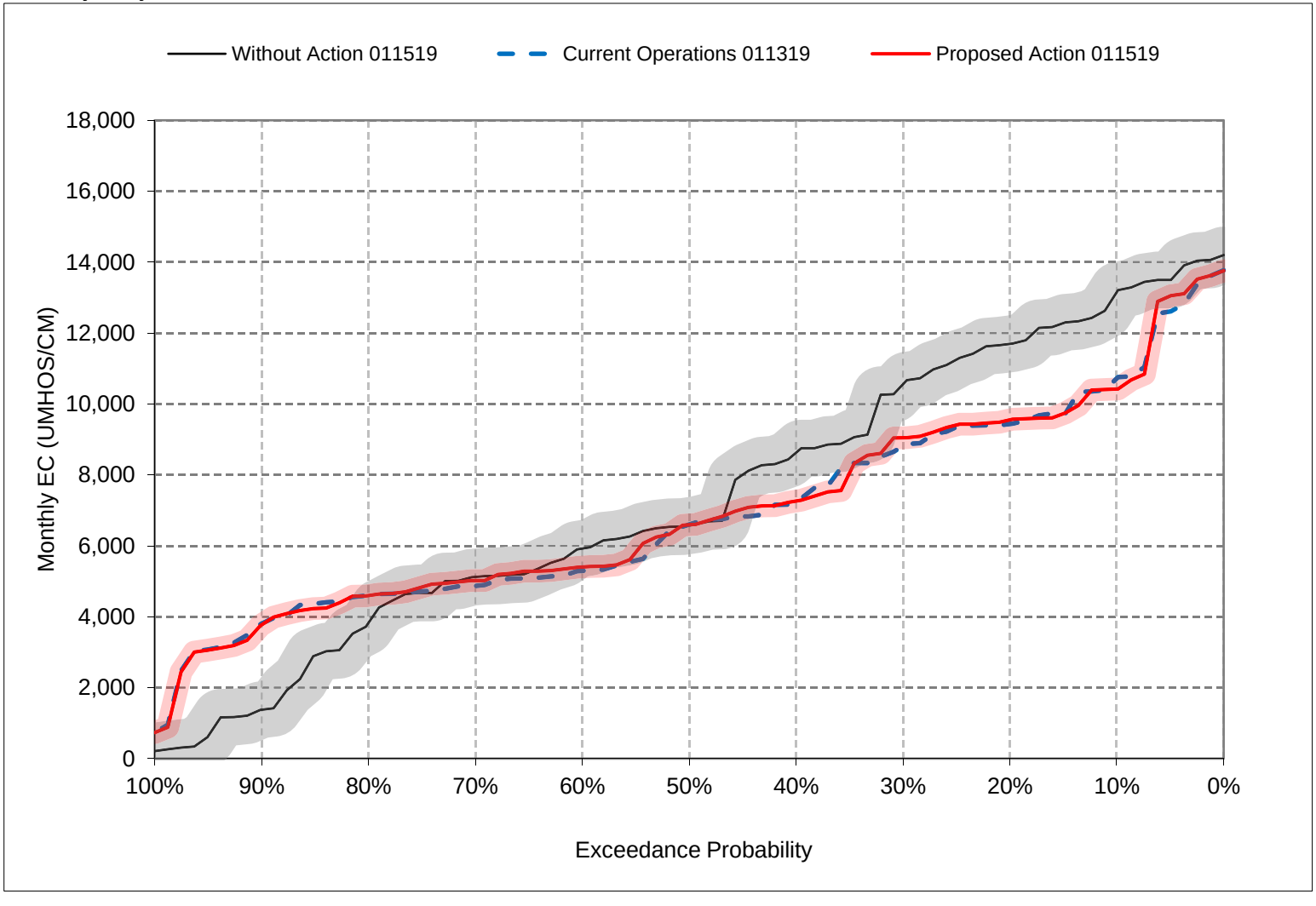
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-12. Chipps Island North Channel
Salinity, June EC



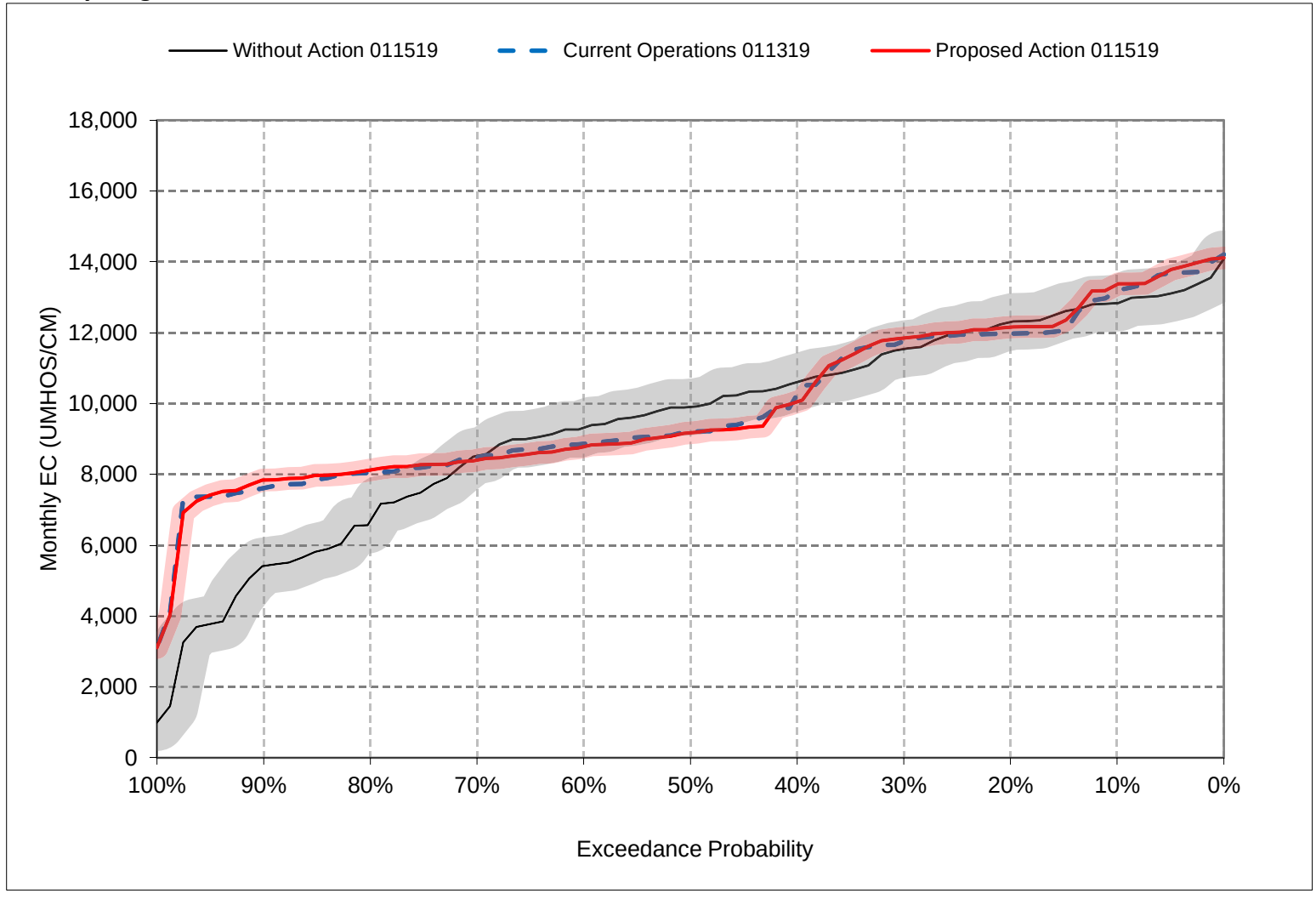
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-13. Chipps Island North Channel
Salinity, July EC



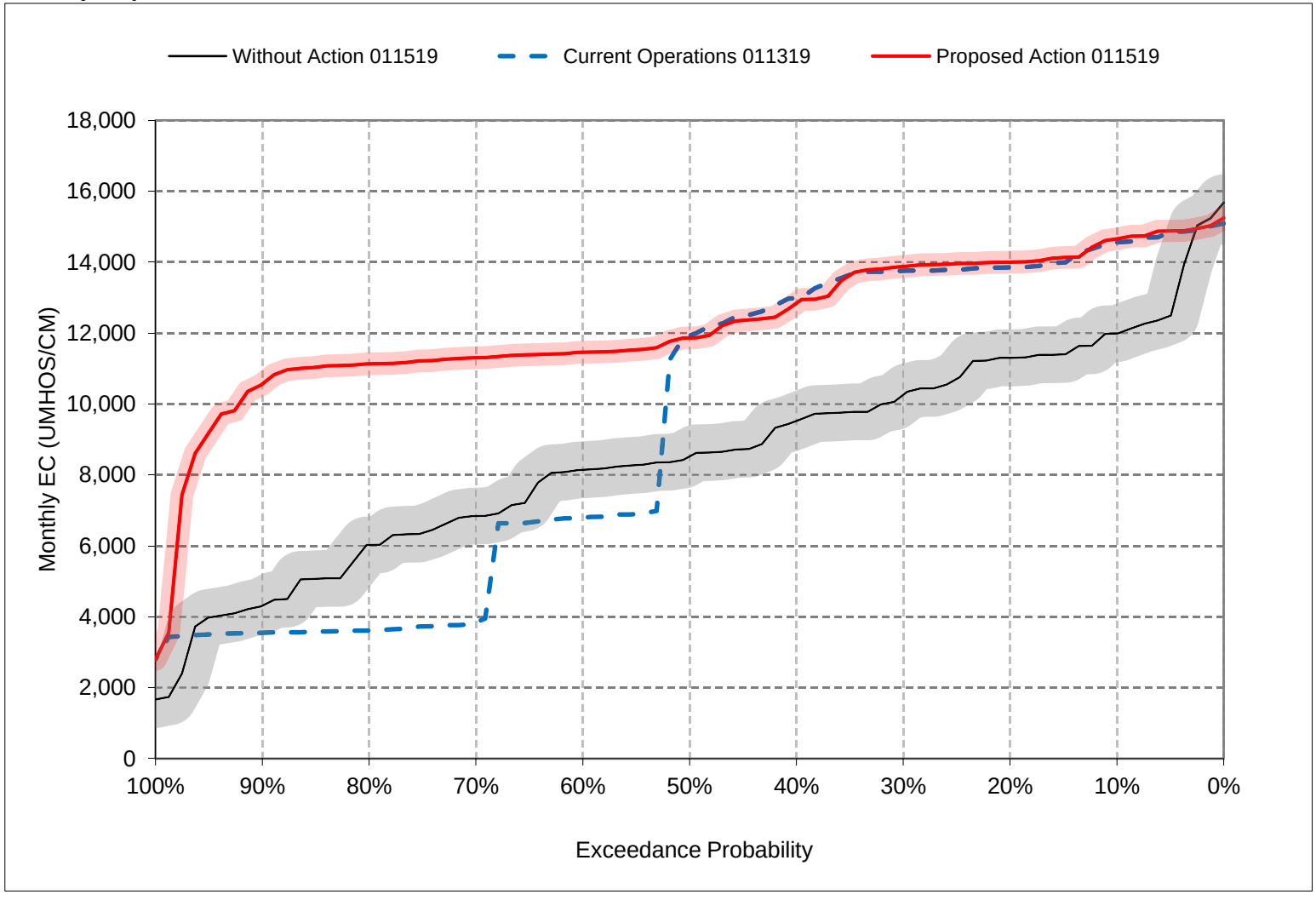
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-14. Chipps Island North Channel
Salinity, August EC



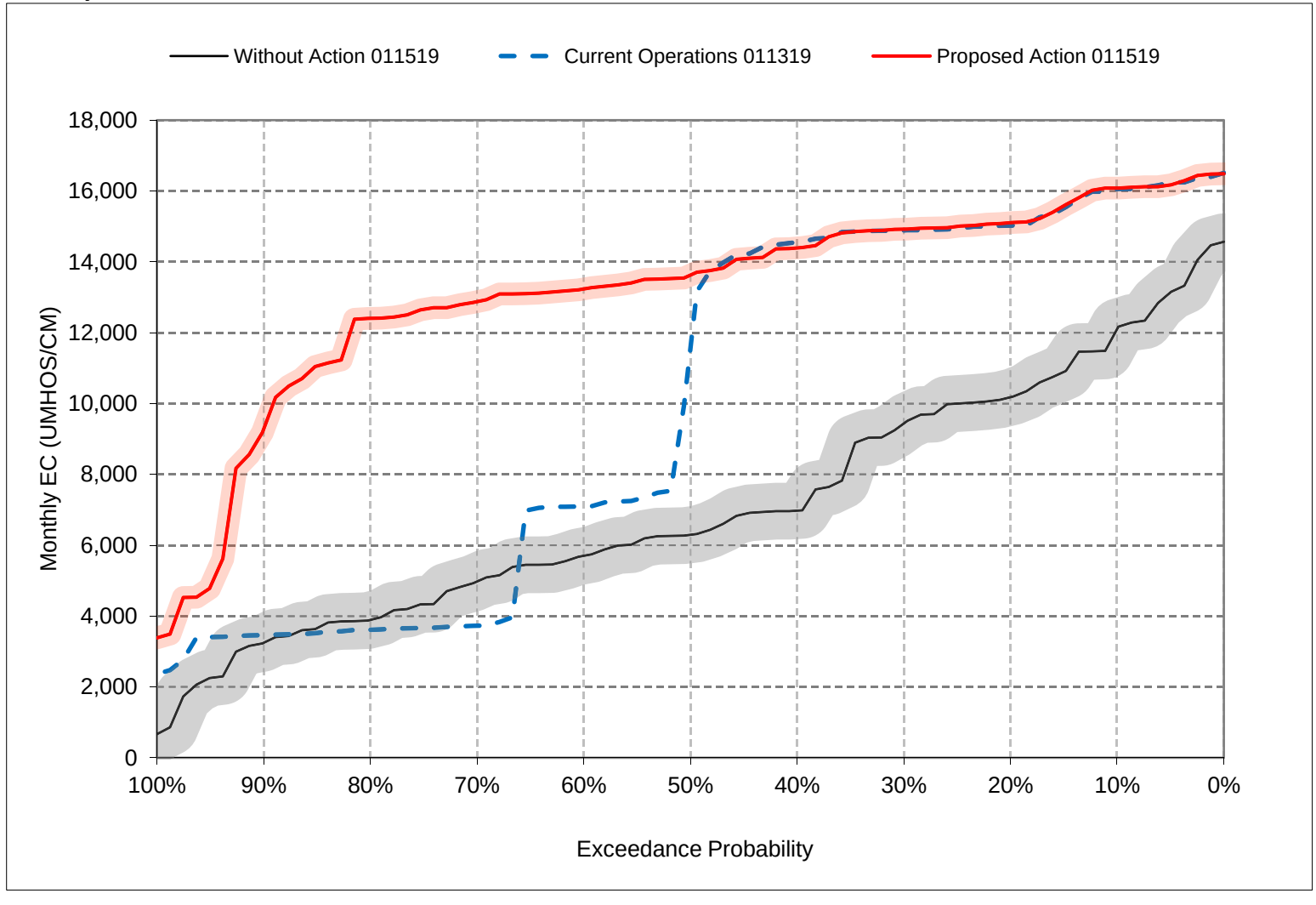
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-15. Chipps Island North Channel
Salinity, September EC



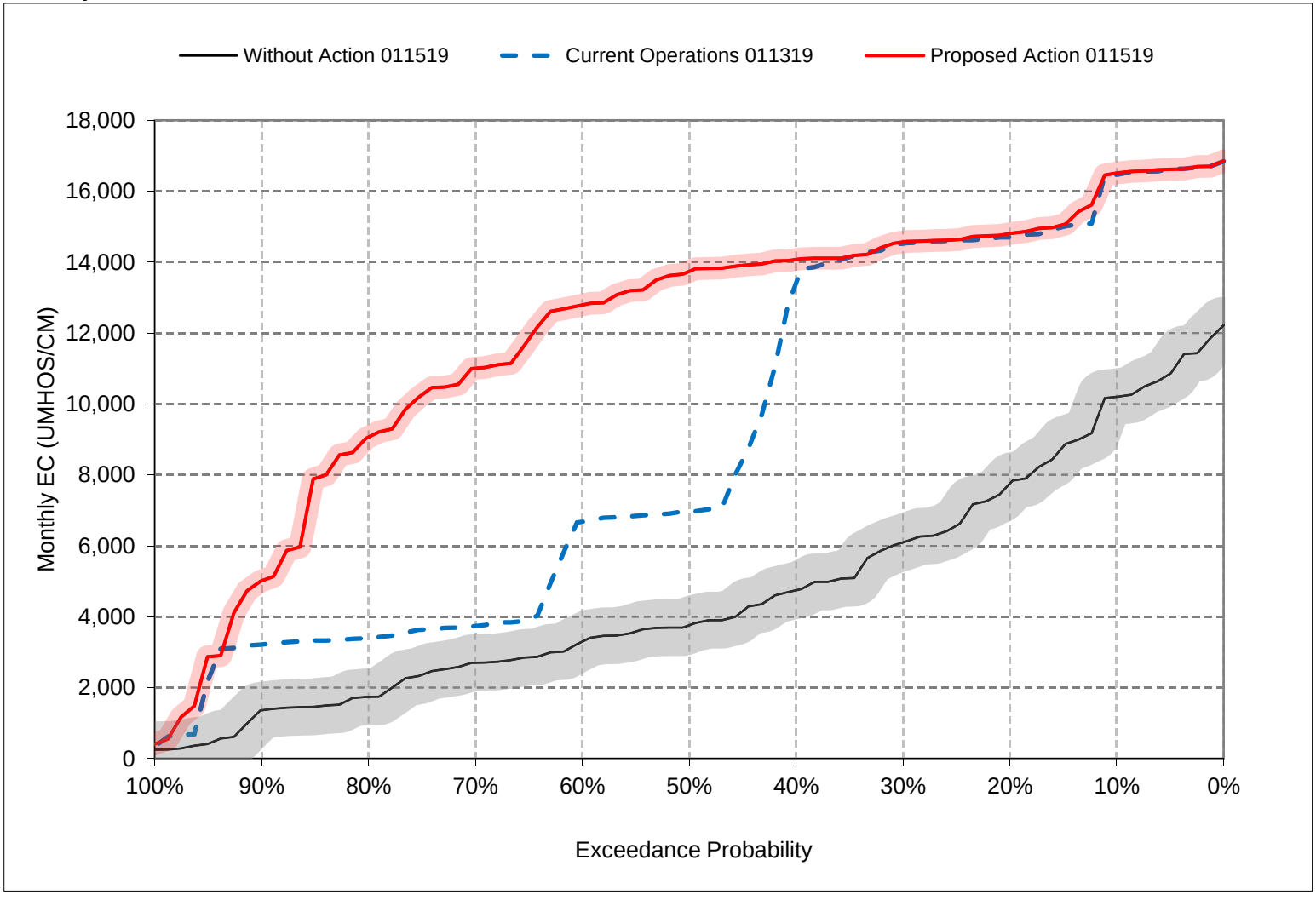
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 12-16. Chipps Island North Channel
Salinity, October EC



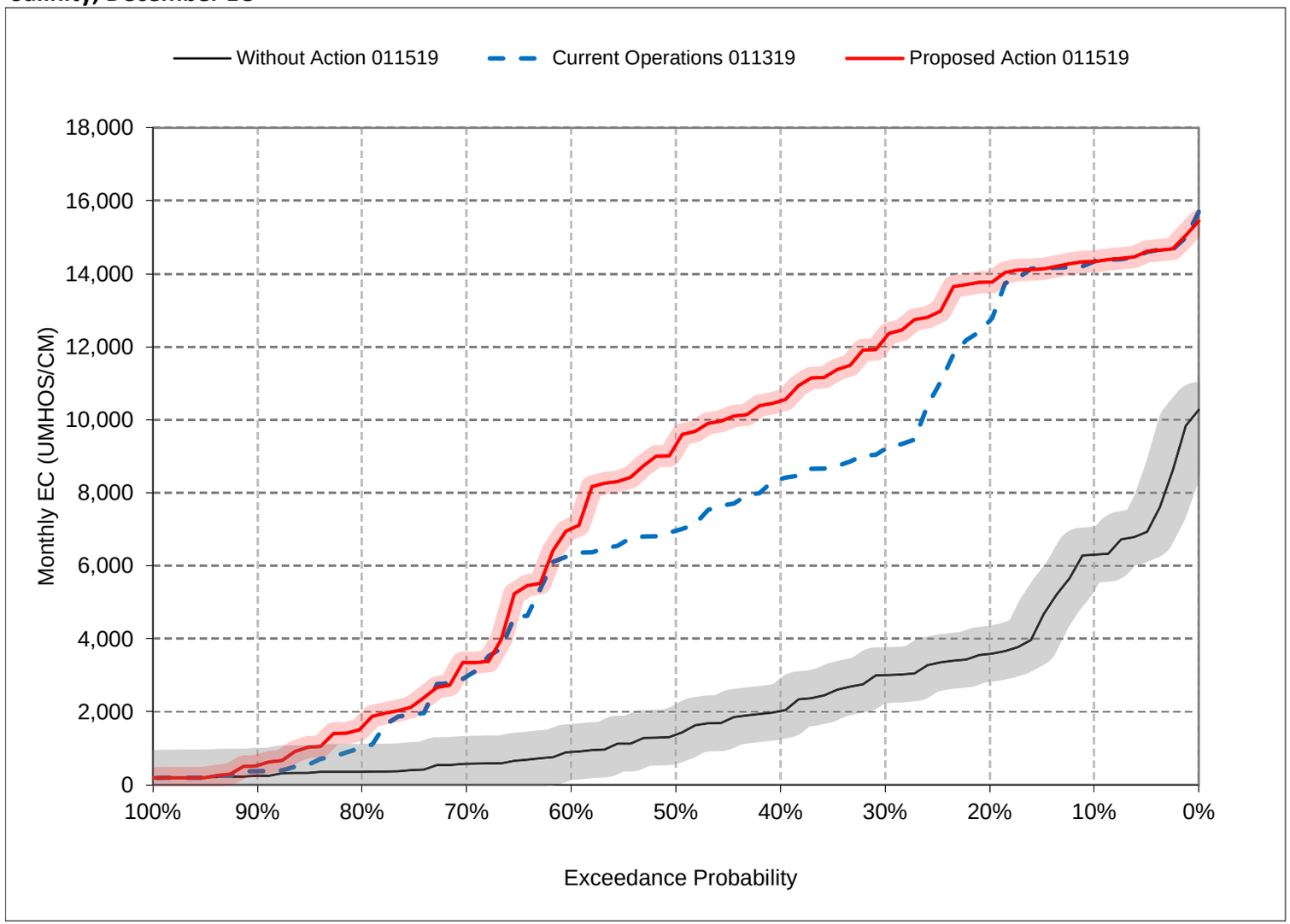
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 13-1. Chipps Island South Channel Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,735	8,672	4,998	1,640	863	735	1,077	3,677	9,243	11,680	11,431	10,653
20%	8,808	6,459	2,653	989	450	376	422	2,287	6,891	10,287	10,841	9,948
30%	8,105	4,869	2,153	774	325	261	288	1,051	5,867	9,155	10,137	8,908
40%	5,779	3,667	1,454	479	276	242	248	550	4,401	7,198	9,163	8,265
50%	5,109	2,868	951	350	245	218	216	299	2,744	5,291	8,560	7,207
60%	4,559	2,308	579	257	233	212	207	235	1,295	4,642	7,876	6,836
70%	3,893	1,923	407	231	222	206	200	205	772	3,951	7,115	5,722
80%	2,924	1,194	293	217	212	199	197	198	284	2,839	5,438	4,863
90%	2,453	963	242	207	200	191	188	185	197	869	4,259	3,331
Long Term												
Full Simulation Period[a]	5,931	3,795	1,760	785	485	403	568	1,400	3,824	6,220	8,137	7,304
Water Year Types[b]												
Wet (32%)	3,249	1,912	918	250	214	201	198	242	731	2,394	5,000	4,312
Above Normal (16%)	4,623	2,760	1,178	378	243	209	208	256	1,880	4,585	7,592	6,417
Below Normal (13%)	5,508	3,963	2,387	577	356	316	366	1,216	3,974	6,347	8,939	7,838
Dry (24%)	7,405	4,178	2,041	925	469	323	404	1,521	5,703	9,266	10,600	9,237
Critical (15%)	11,086	8,206	3,172	2,342	1,476	1,265	2,216	5,120	9,360	11,089	10,686	11,034

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**4,154**	**6,599**	**7,986**	**6,630**	**2,708**	**2,132**	**2,651**	**1,498**	-2,630	-2,522	**329**	**2,579**
20%	**4,999**	**7,014**	**8,623**	**6,052**	**1,755**	**1,621**	**1,534**	**1,997**	-955	-2,343	-288	**2,591**
30%	**5,566**	**8,354**	**5,628**	**4,834**	**1,039**	**615**	**1,117**	**2,412**	-459	-1,819	**211**	**3,486**
40%	**7,581**	**8,376**	**5,549**	**2,959**	**473**	**457**	**572**	**1,313**	**372**	-1,339	-406	**3,344**
50%	**5,077**	**2,880**	**4,659**	**2,205**	**256**	**174**	**348**	**1,027**	**1,153**	-44	-834	**3,318**
60%	**1,323**	**3,082**	**4,423**	**825**	**62**	**46**	**127**	**607**	**2,146**	-610	-393	-1,222
70%	-1,118	**895**	**1,918**	**71**	-6	-4	**62**	**371**	**1,857**	-179	-27	-2,541
80%	-208	**1,302**	**596**	-4	-12	-2	**9**	**69**	**1,280**	**690**	**1,159**	-1,973
90%	**100**	**1,440**	**105**	-13	-9	**0**	**5**	**7**	**213**	**1,940**	**1,986**	-509
Long Term												
Full Simulation Period[a]	**2,896**	**4,118**	**4,296**	**2,717**	**918**	**626**	**722**	**774**	**258**	-578	**370**	**951**
Water Year Types[b]												
Wet (32%)	-619	**461**	**2,323**	**477**	**33**	**51**	**81**	**255**	**1,008**	**644**	**1,608**	-1,459
Above Normal (16%)	**1,010**	**2,419**	**3,915**	**1,296**	**225**	**102**	**174**	**623**	**1,421**	-685	-837	-816
Below Normal (13%)	**6,534**	**6,902**	**4,990**	**3,698**	**1,279**	**1,031**	**1,148**	**1,143**	**578**	-884	-975	**3,253**
Dry (24%)	**6,095**	**6,784**	**4,645**	**4,594**	**1,586**	**866**	**1,119**	**1,348**	-694	-1,715	-303	**3,127**
Critical (15%)	**3,887**	**6,887**	**7,764**	**5,083**	**2,142**	**1,667**	**1,655**	**772**	-1,335	-938	**1,354**	**2,349**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 13-2. Chipps Island South Channel Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,735	8,672	4,998	1,640	863	735	1,077	3,677	9,243	11,680	11,431	10,653
20%	8,808	6,459	2,653	989	450	376	422	2,287	6,891	10,287	10,841	9,948
30%	8,105	4,869	2,153	774	325	261	288	1,051	5,867	9,155	10,137	8,908
40%	5,779	3,667	1,454	479	276	242	248	550	4,401	7,198	9,163	8,265
50%	5,109	2,868	951	350	245	218	216	299	2,744	5,291	8,560	7,207
60%	4,559	2,308	579	257	233	212	207	235	1,295	4,642	7,876	6,836
70%	3,893	1,923	407	231	222	206	200	205	772	3,951	7,115	5,722
80%	2,924	1,194	293	217	212	199	197	198	284	2,839	5,438	4,863
90%	2,453	963	242	207	200	191	188	185	197	869	4,259	3,331
Long Term												
Full Simulation Period[a]	5,931	3,795	1,760	785	485	403	568	1,400	3,824	6,220	8,137	7,304
Water Year Types[b]												
Wet (32%)	3,249	1,912	918	250	214	201	198	242	731	2,394	5,000	4,312
Above Normal (16%)	4,623	2,760	1,178	378	243	209	208	256	1,880	4,585	7,592	6,417
Below Normal (13%)	5,508	3,963	2,387	577	356	316	366	1,216	3,974	6,347	8,939	7,838
Dry (24%)	7,405	4,178	2,041	925	469	323	404	1,521	5,703	9,266	10,600	9,237
Critical (15%)	11,086	8,206	3,172	2,342	1,476	1,265	2,216	5,120	9,360	11,089	10,686	11,034

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**4,165**	**6,642**	**8,032**	**7,776**	**3,340**	**2,891**	**3,358**	**1,549**	-2,601	-2,816	**522**	**2,740**
20%	**5,087**	**7,114**	**9,826**	**6,520**	**1,773**	**1,700**	**2,272**	**2,234**	-928	-2,304	-132	**2,748**
30%	**5,621**	**8,381**	**8,719**	**4,749**	**1,166**	**643**	**1,439**	**2,917**	-234	-1,570	**294**	**3,631**
40%	**7,409**	**9,104**	**7,738**	**2,804**	**453**	**445**	**1,007**	**2,083**	**445**	-1,324	-592	**3,235**
50%	**7,281**	**9,607**	**6,996**	**1,942**	**222**	**175**	**589**	**1,705**	**1,542**	-76	-870	**3,313**
60%	**7,441**	**9,142**	**5,231**	**857**	**40**	**35**	**265**	**1,279**	**2,454**	-482	-488	**3,246**
70%	**7,639**	**7,790**	**2,044**	**56**	-10	-3	**80**	**635**	**1,970**	-54	-108	**4,211**
80%	**8,114**	**6,496**	**1,171**	-6	-13	-2	**7**	**105**	**1,358**	**558**	**1,329**	**4,899**
90%	**5,593**	**3,172**	**365**	-11	-9	0	**3**	**7**	**208**	**1,912**	**2,146**	**5,915**
Long Term												
Full Simulation Period[a]	**5,972**	**6,980**	**5,319**	**2,804**	**1,019**	**727**	**940**	**1,180**	**414**	-542	**398**	**3,541**
Water Year Types[b]												
Wet (32%)	**6,145**	**6,529**	**4,526**	**397**	**20**	**48**	**172**	**510**	**1,103**	**679**	**1,545**	**4,542**
Above Normal (16%)	**6,633**	**7,793**	**5,878**	**1,321**	**187**	**108**	**336**	**1,084**	**1,518**	-643	-760	**3,525**
Below Normal (13%)	**6,385**	**7,126**	**4,969**	**3,863**	**1,404**	**1,128**	**1,443**	**1,787**	**889**	-902	-1,057	**3,035**
Dry (24%)	**6,328**	**6,983**	**4,687**	**4,902**	**1,721**	**955**	**1,403**	**1,775**	-552	-1,710	-185	**3,206**
Critical (15%)	**3,912**	**6,939**	**7,805**	**5,158**	**2,559**	**2,118**	**2,026**	**1,185**	-1,103	-803	**1,476**	**2,414**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 13-3. Chipps Island South Channel Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

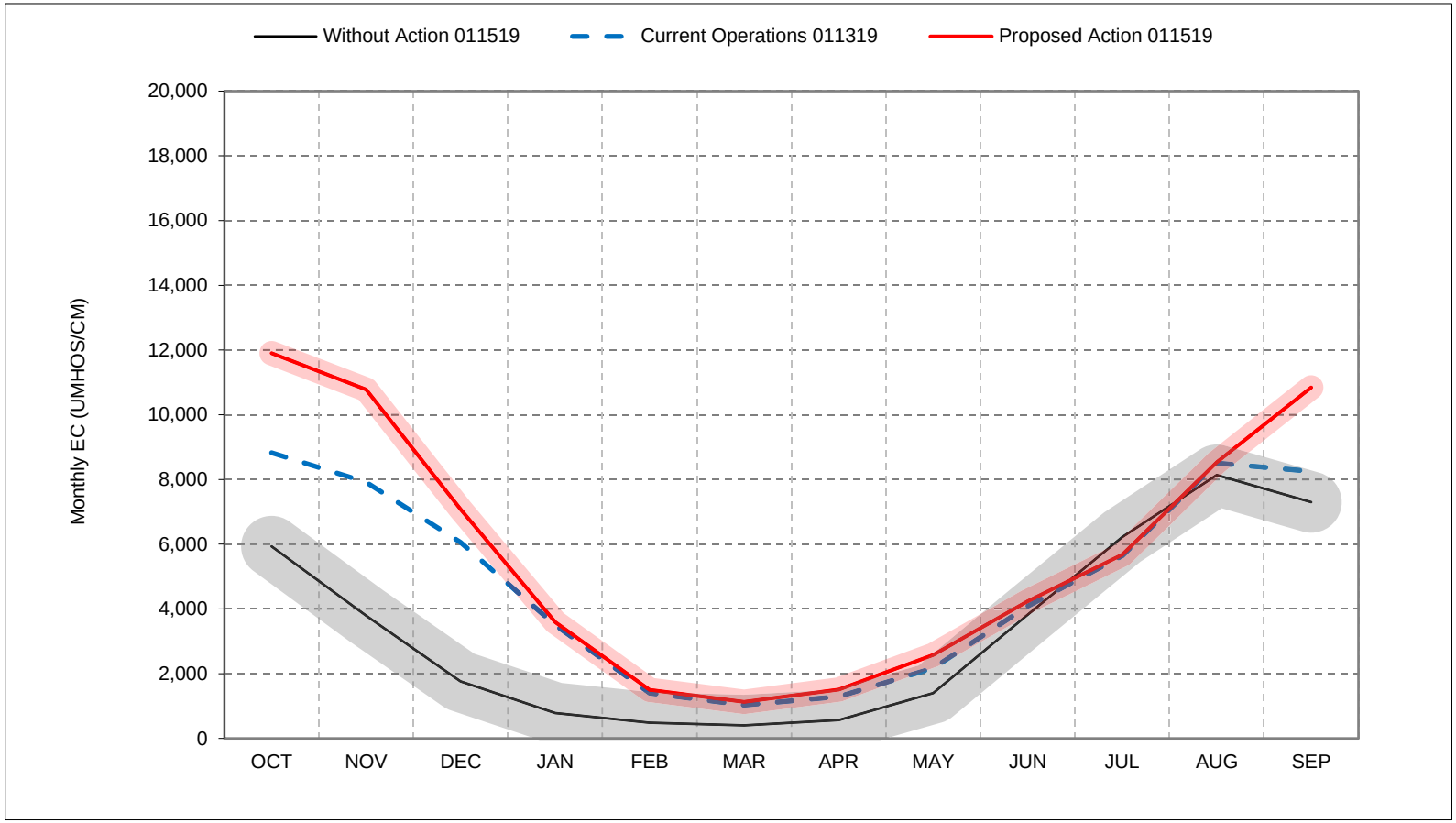
c These results are displayed with calendar year - year type sorting.

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.

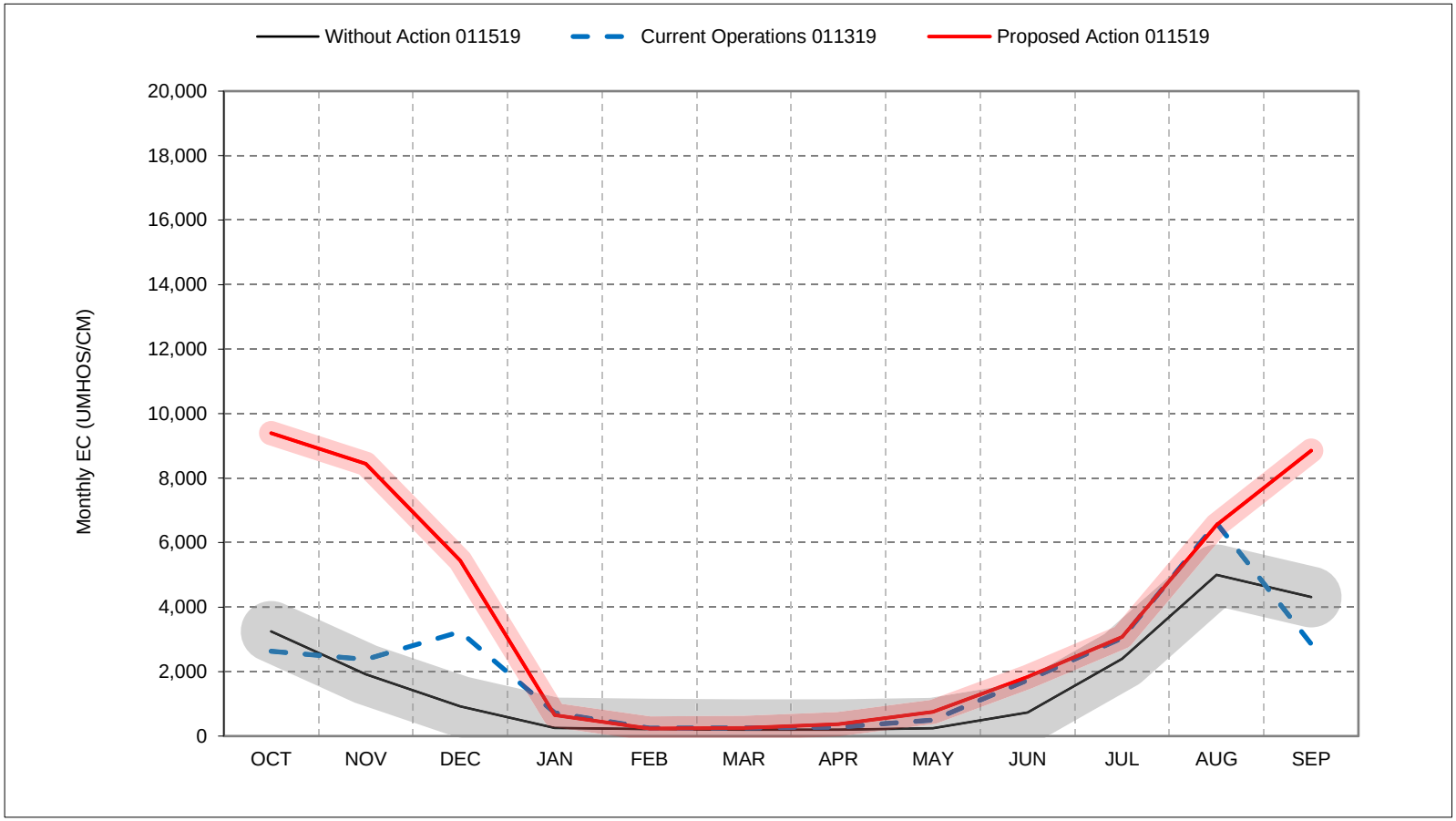
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-1. Chipps Island South Channel Salinity, Long-Term Average EC



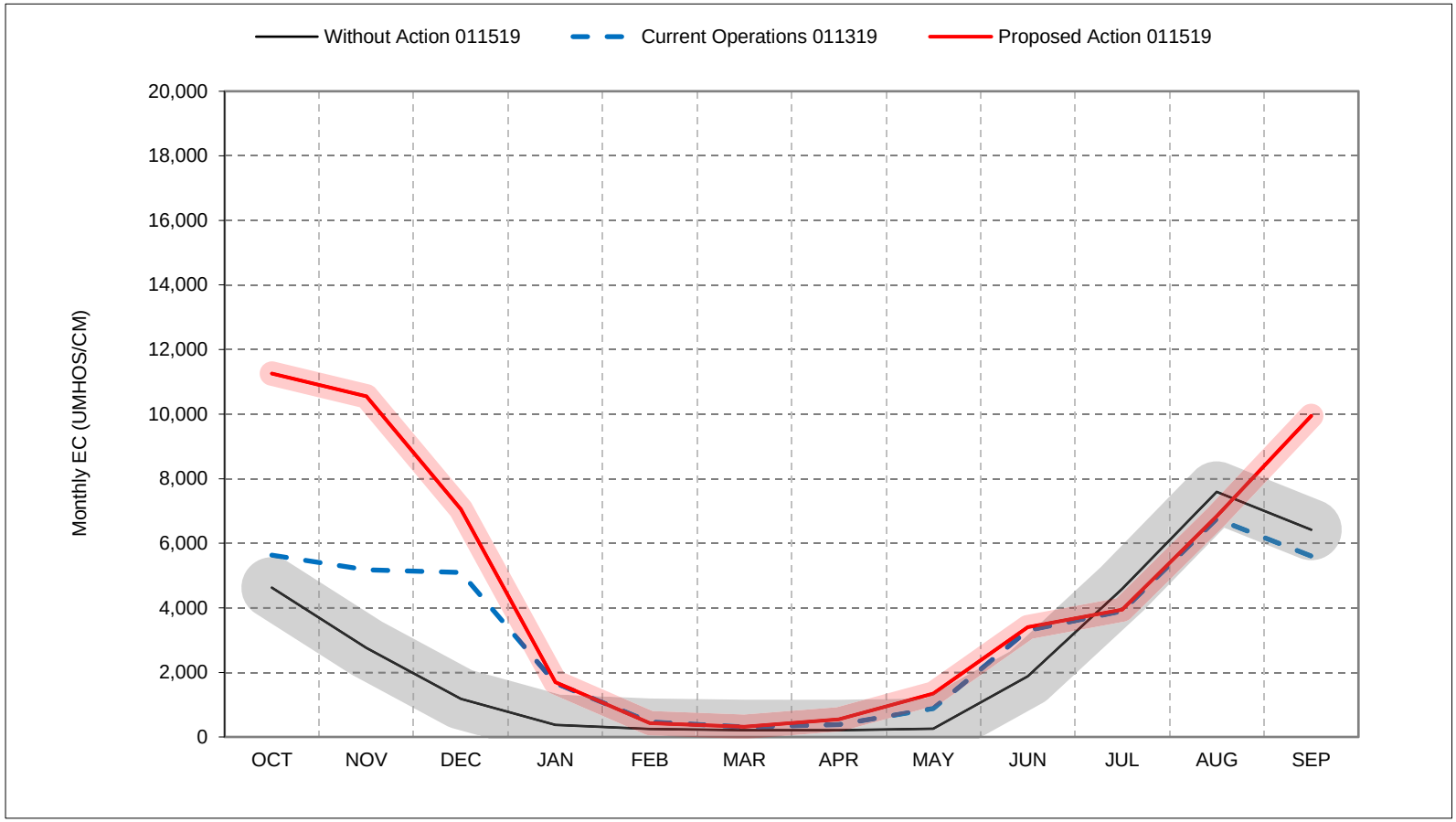
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-2. Chipps Island South Channel Salinity, Wet Year Average EC



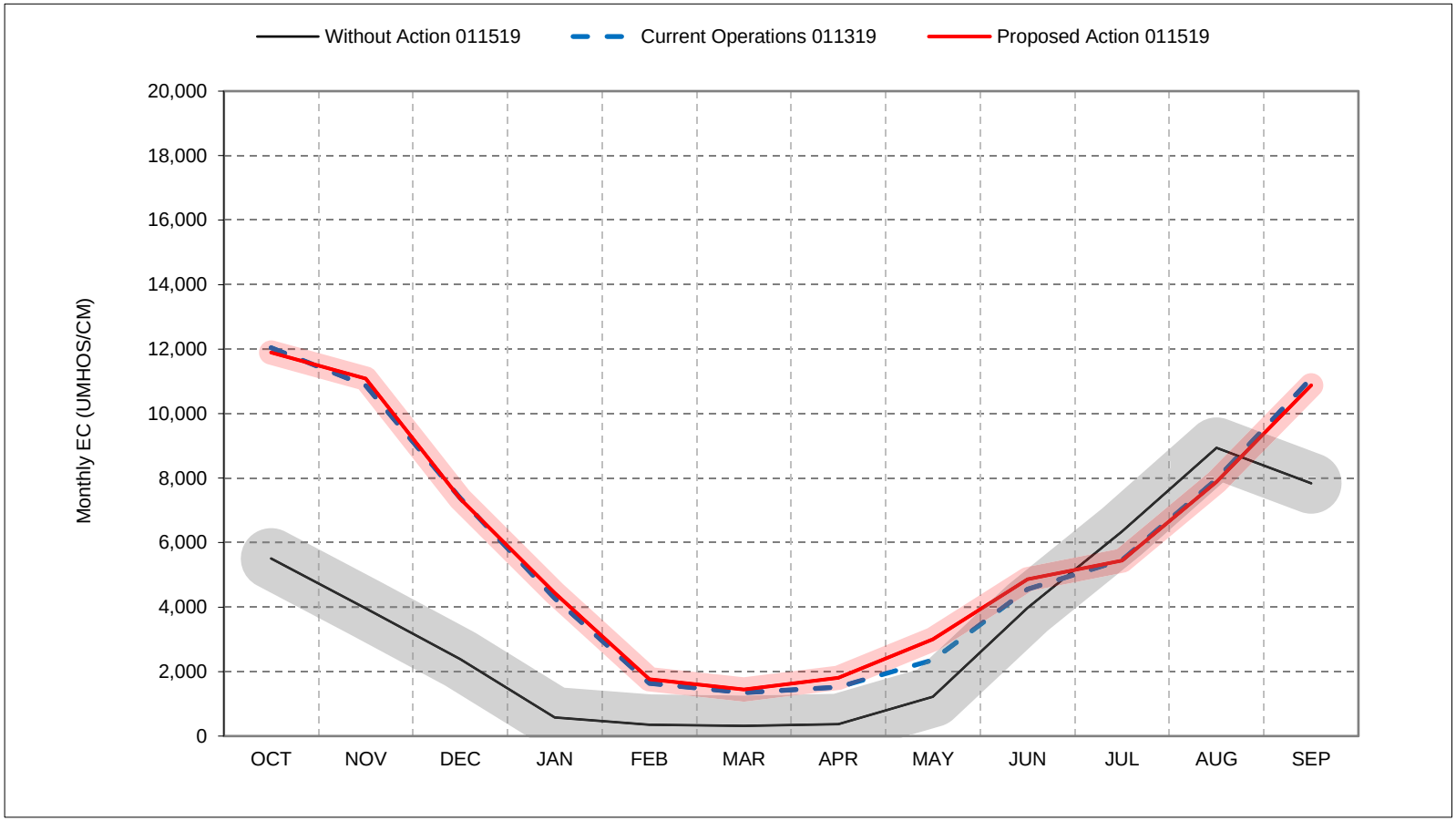
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-3. Chipps Island South Channel Salinity, Above Normal Year Average EC



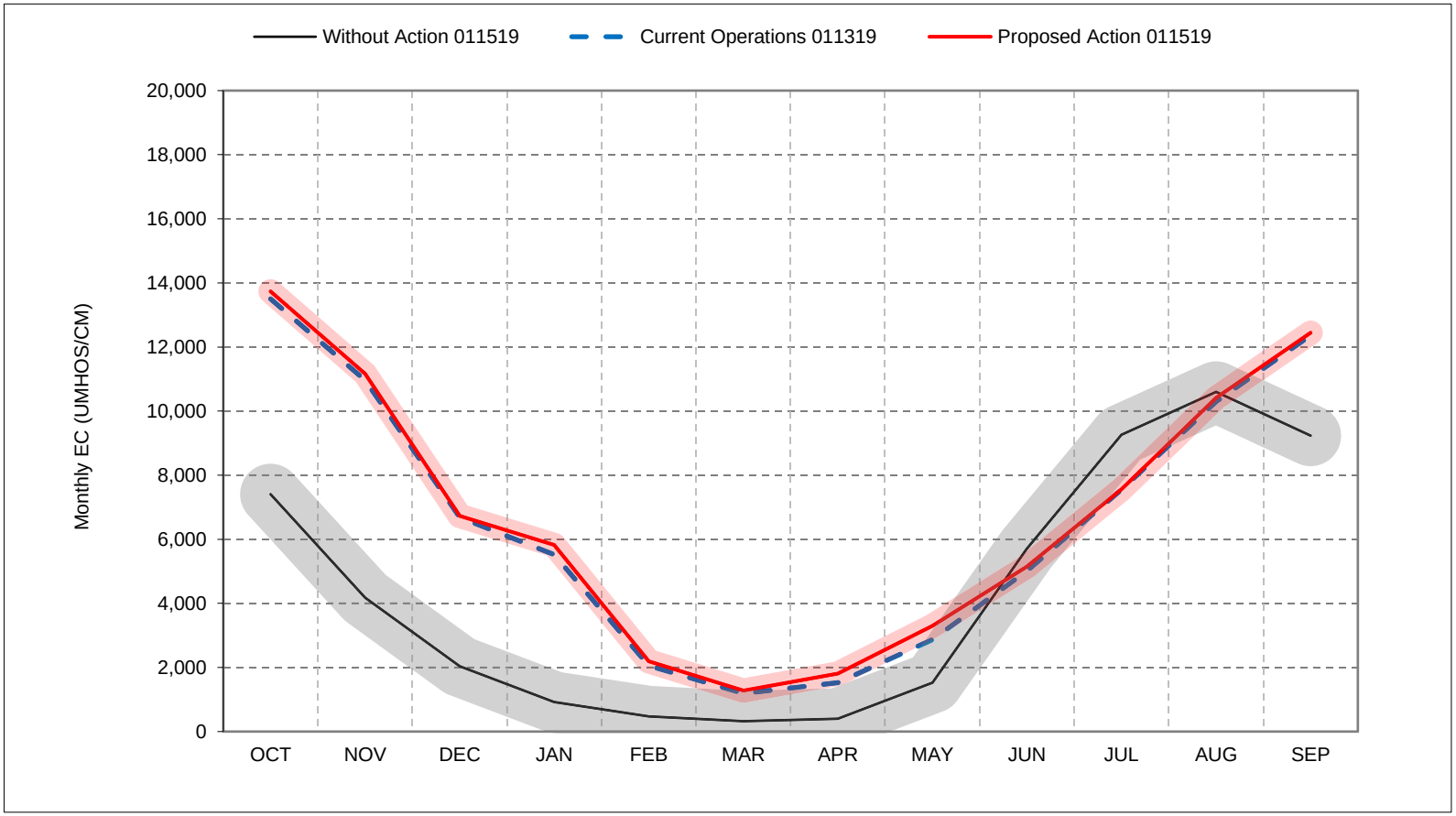
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-4. Chipps Island South Channel Salinity, Below Normal Year Average EC



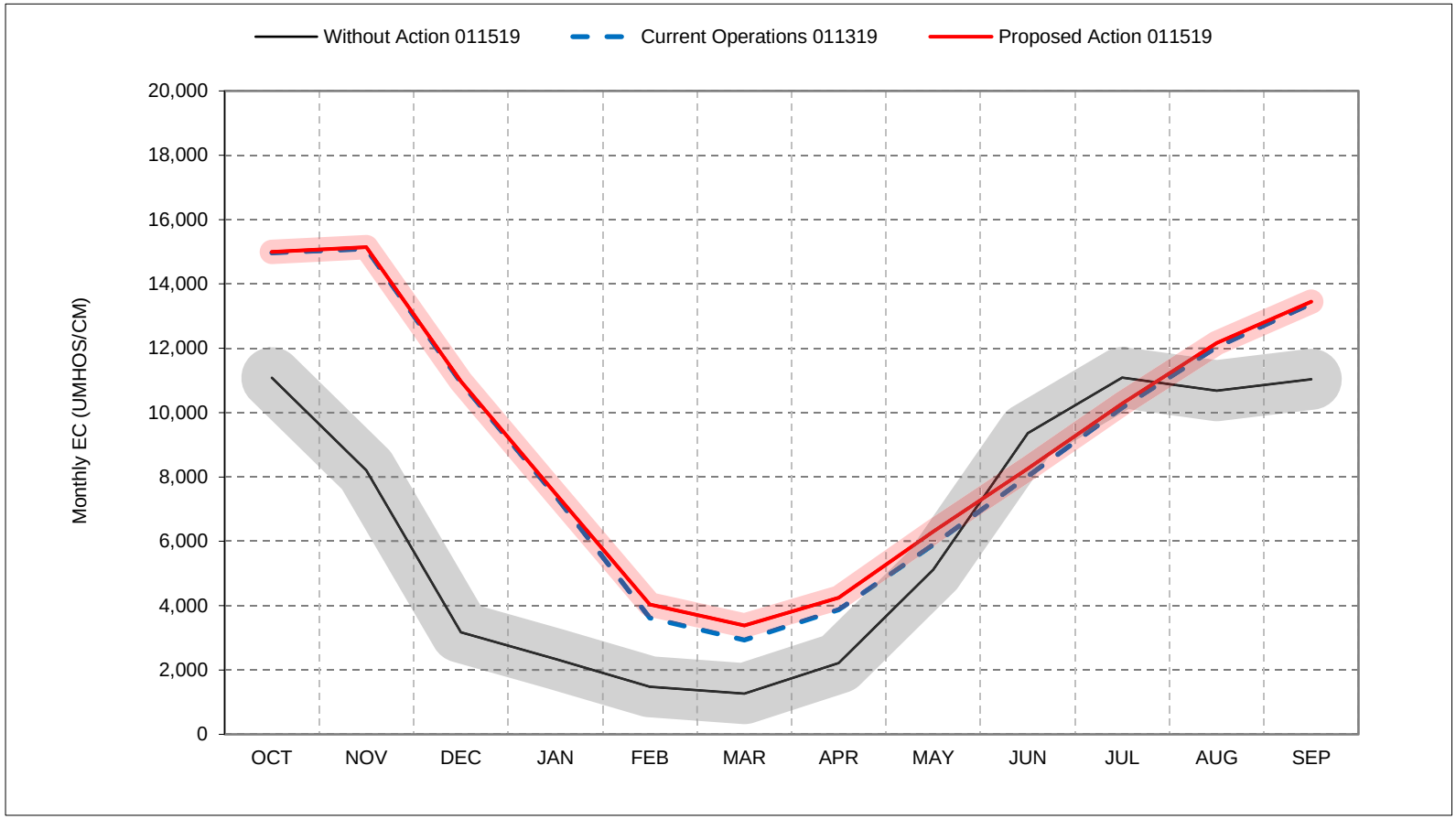
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-5. Chipps Island South Channel Salinity, Dry Year Average EC



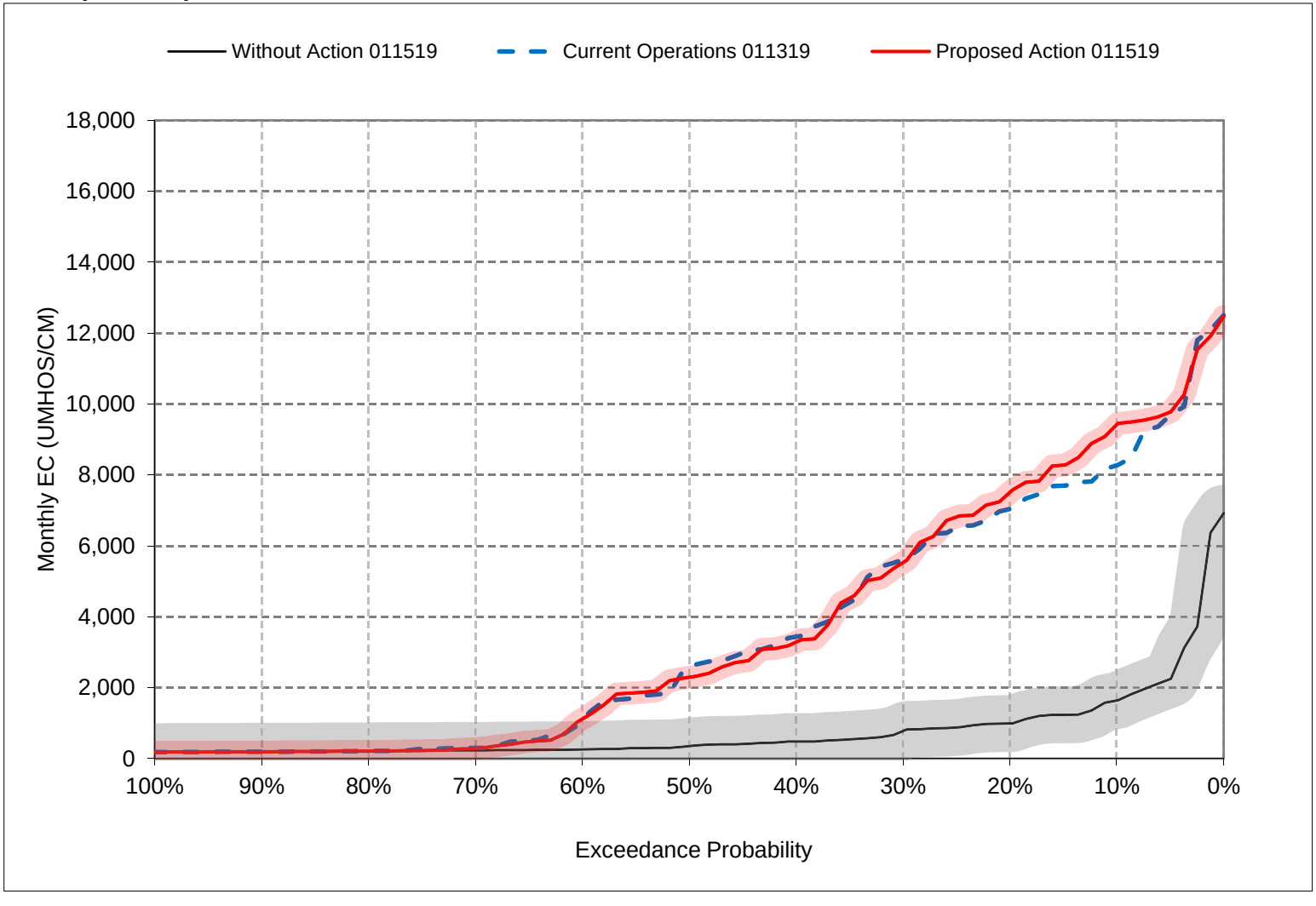
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-6. Chipps Island South Channel Salinity, Critical Year Average EC



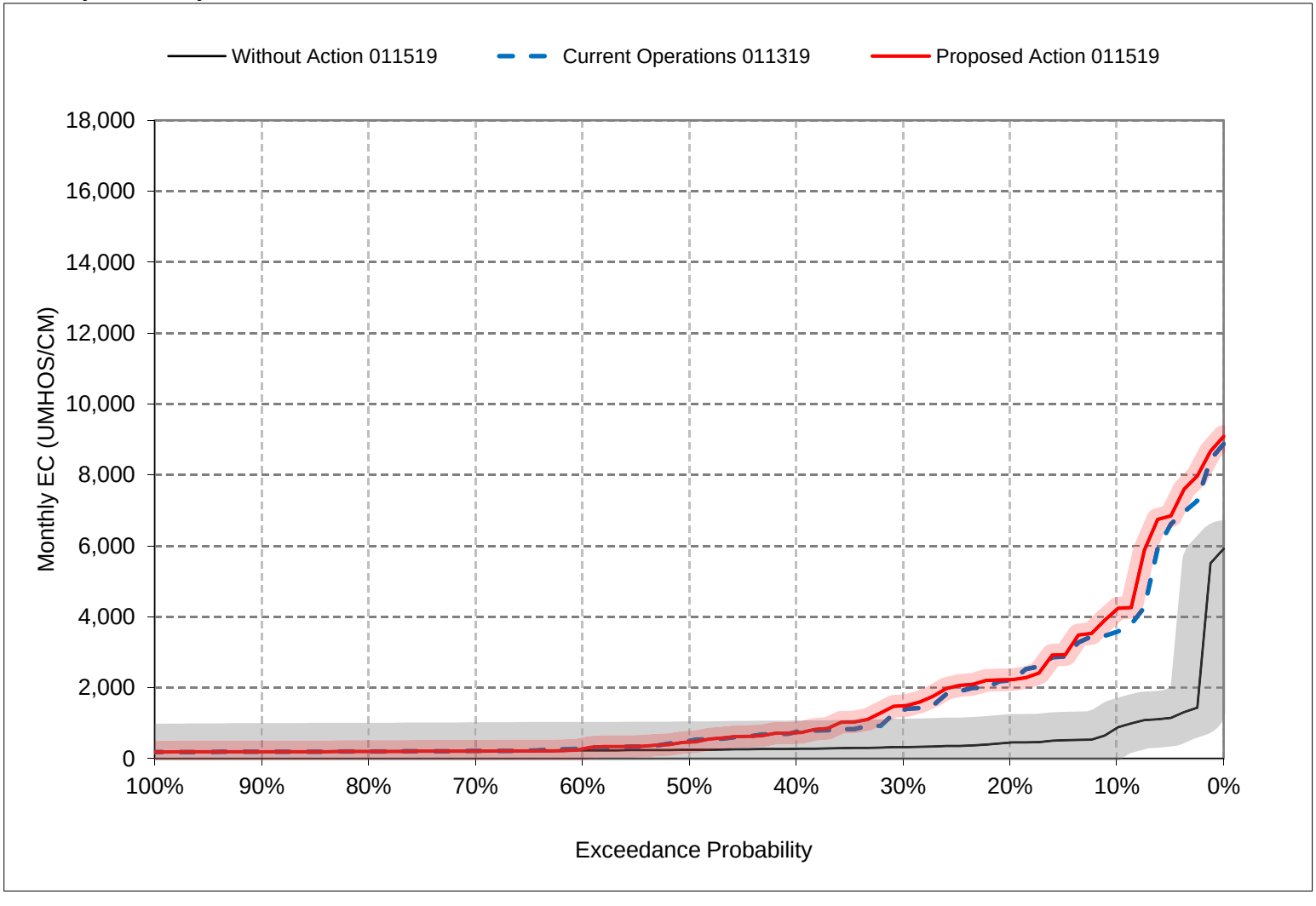
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-7. Chipps Island South Channel
Salinity, January EC



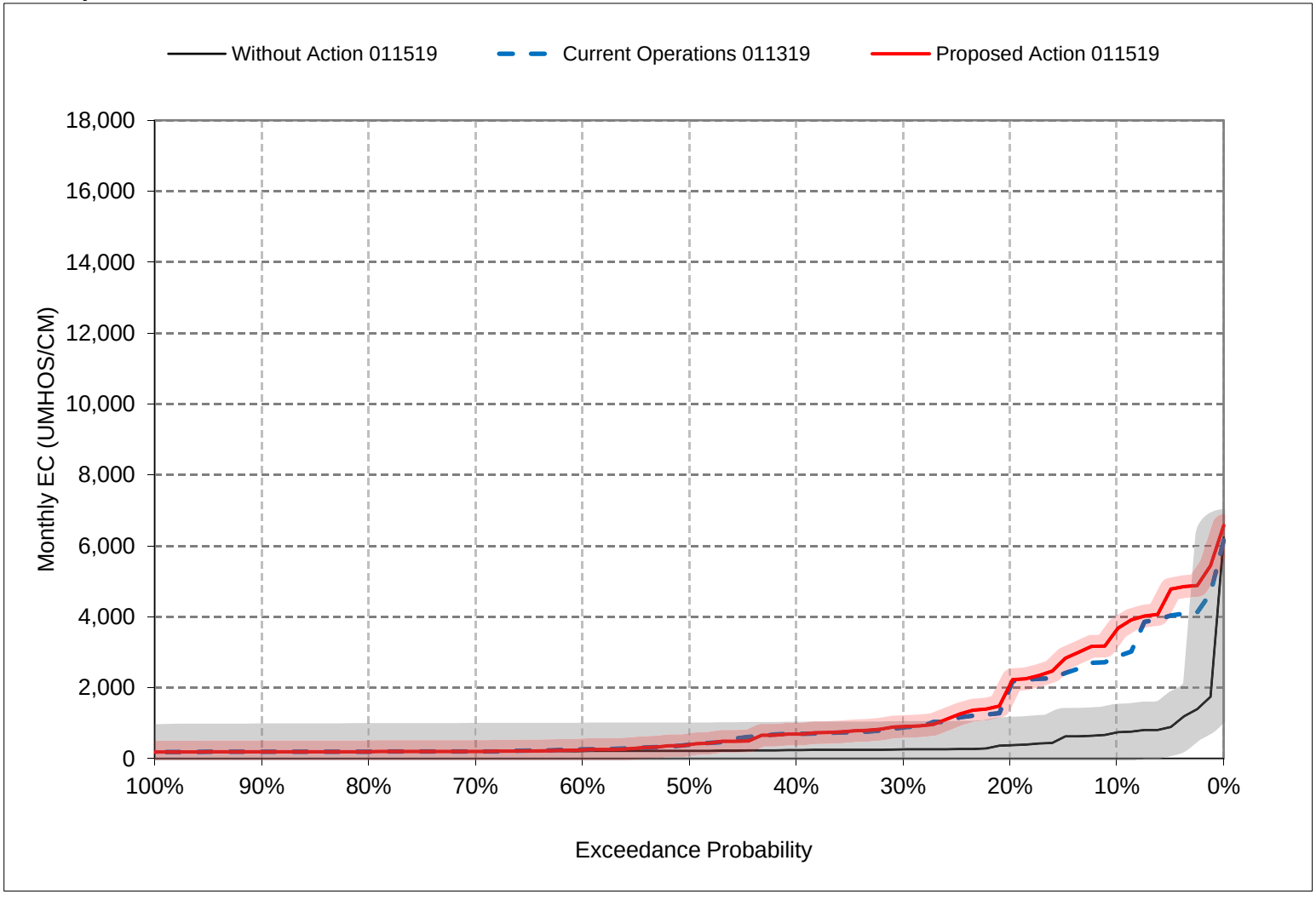
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-8. Chipps Island South Channel
Salinity, February EC



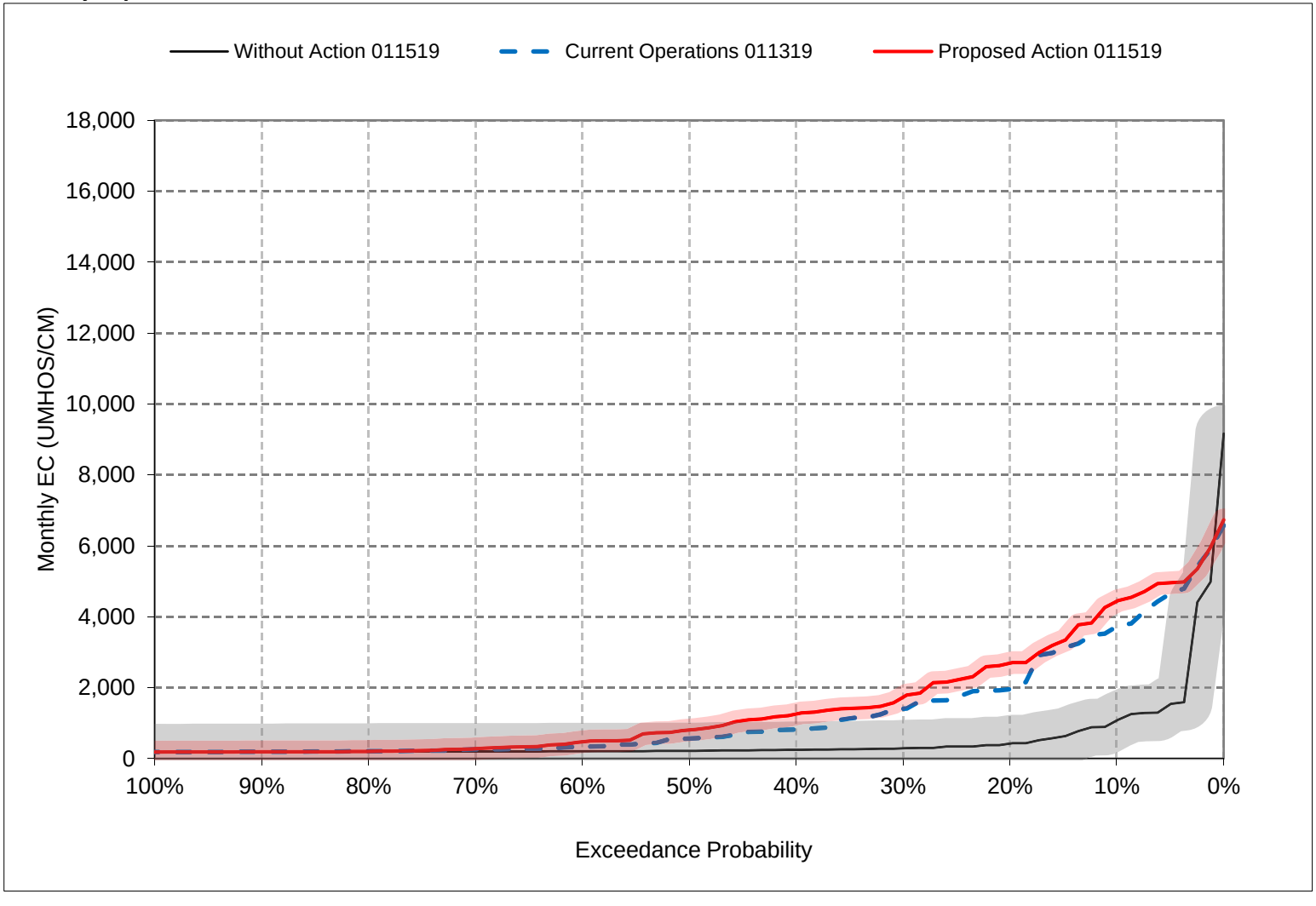
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-9. Chipps Island South Channel
Salinity, March EC



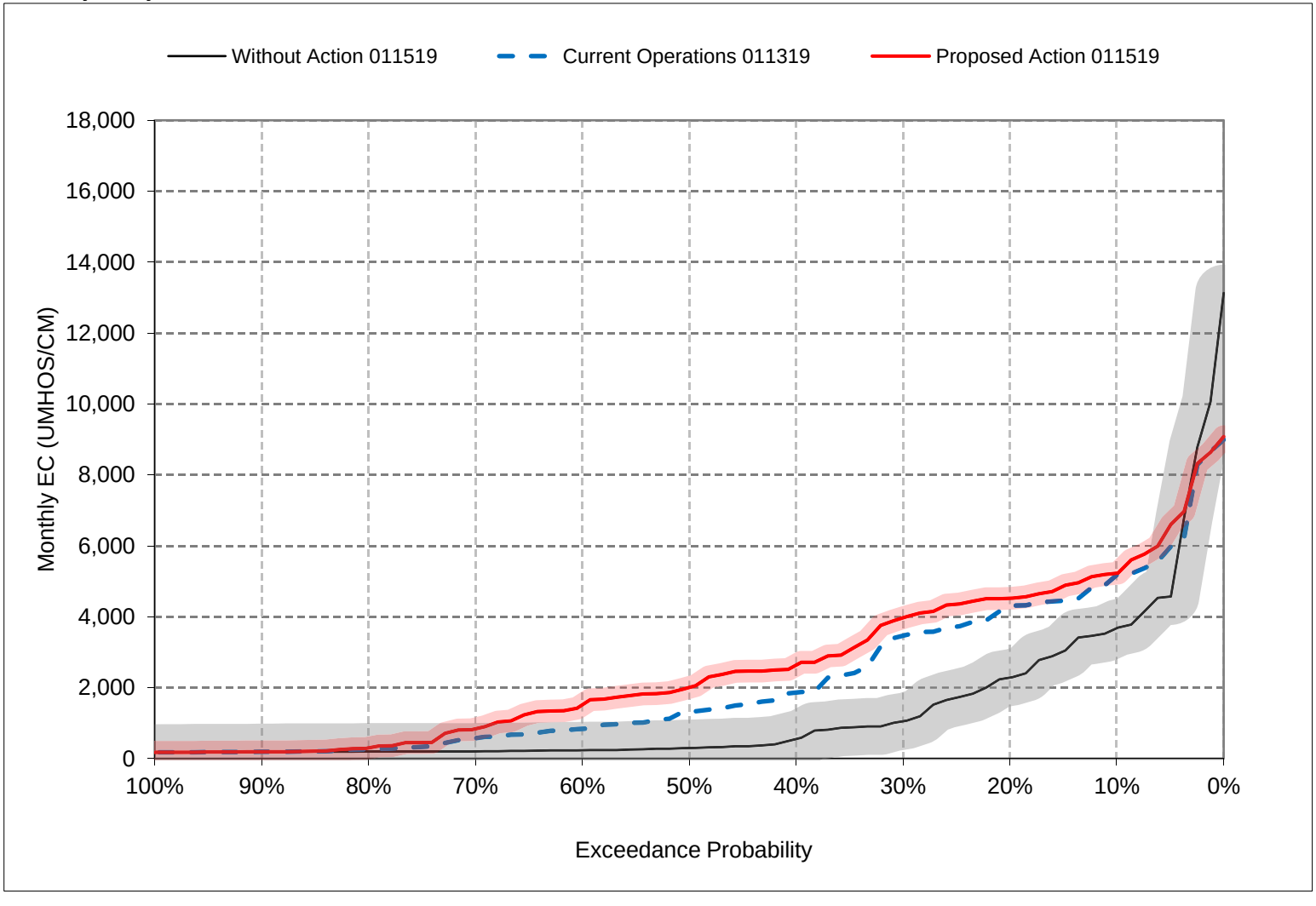
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-10. Chipps Island South Channel
Salinity, April EC



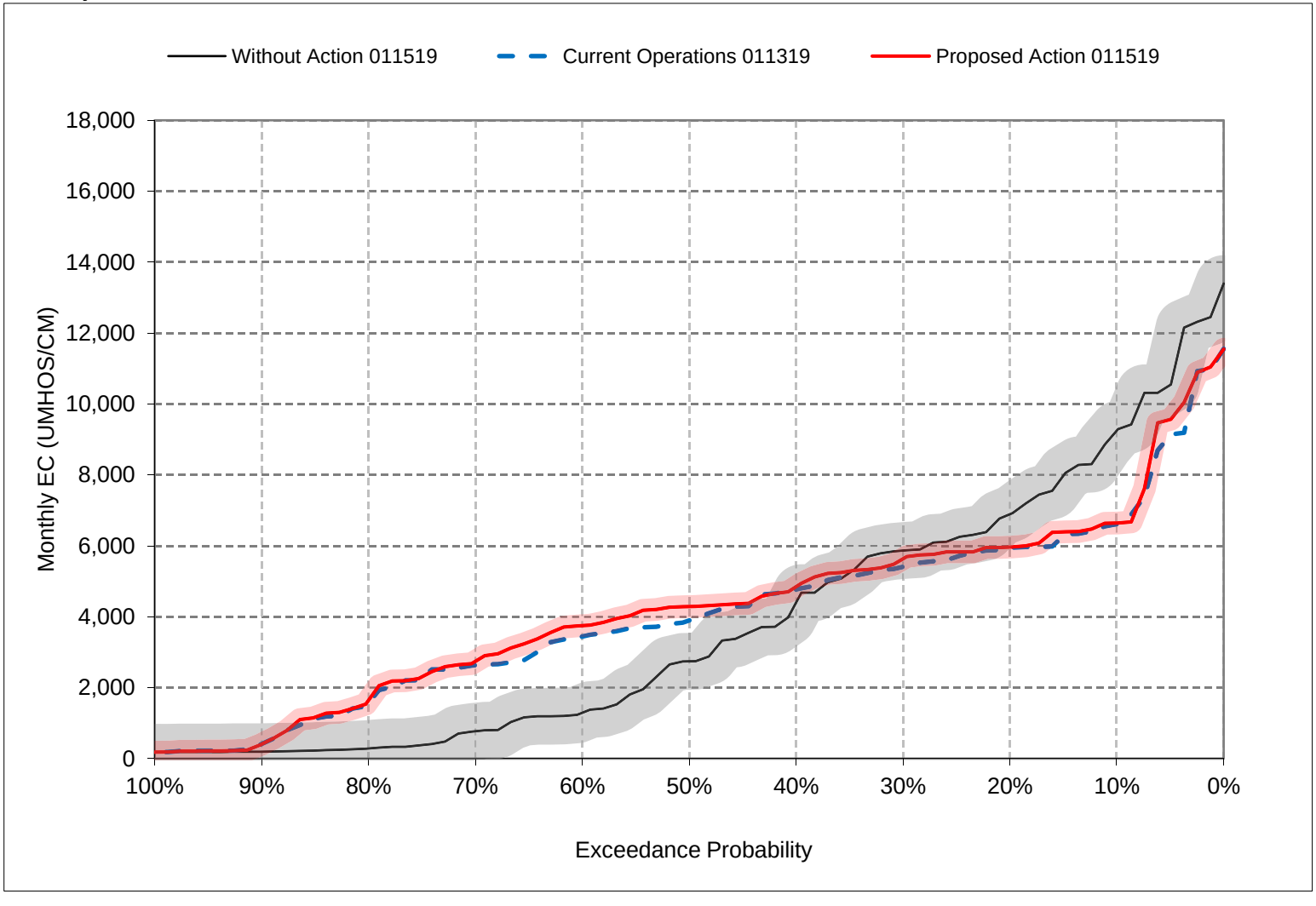
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-11. Chipps Island South Channel
Salinity, May EC



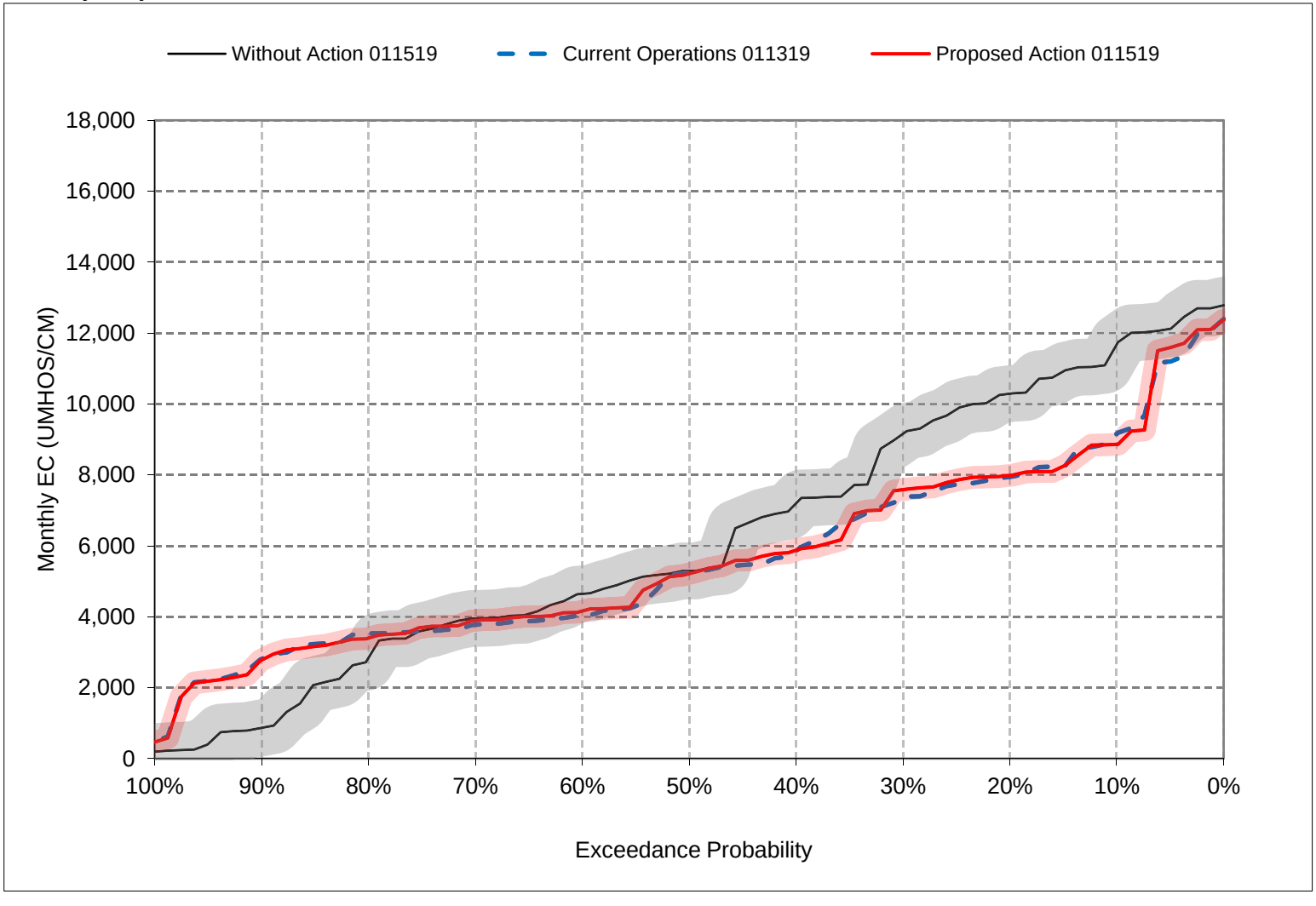
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-12. Chipps Island South Channel
Salinity, June EC



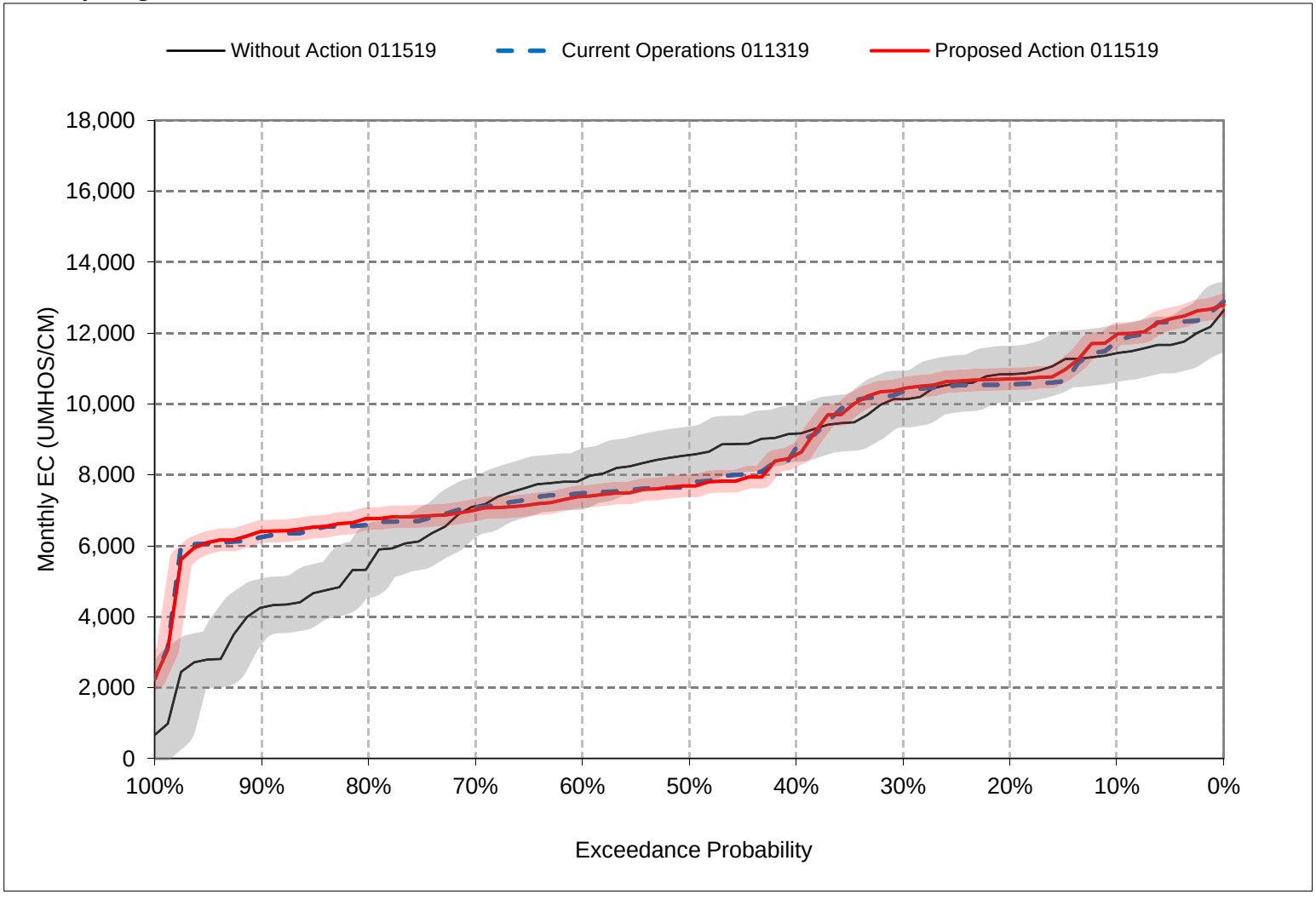
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-13. Chipps Island South Channel
Salinity, July EC



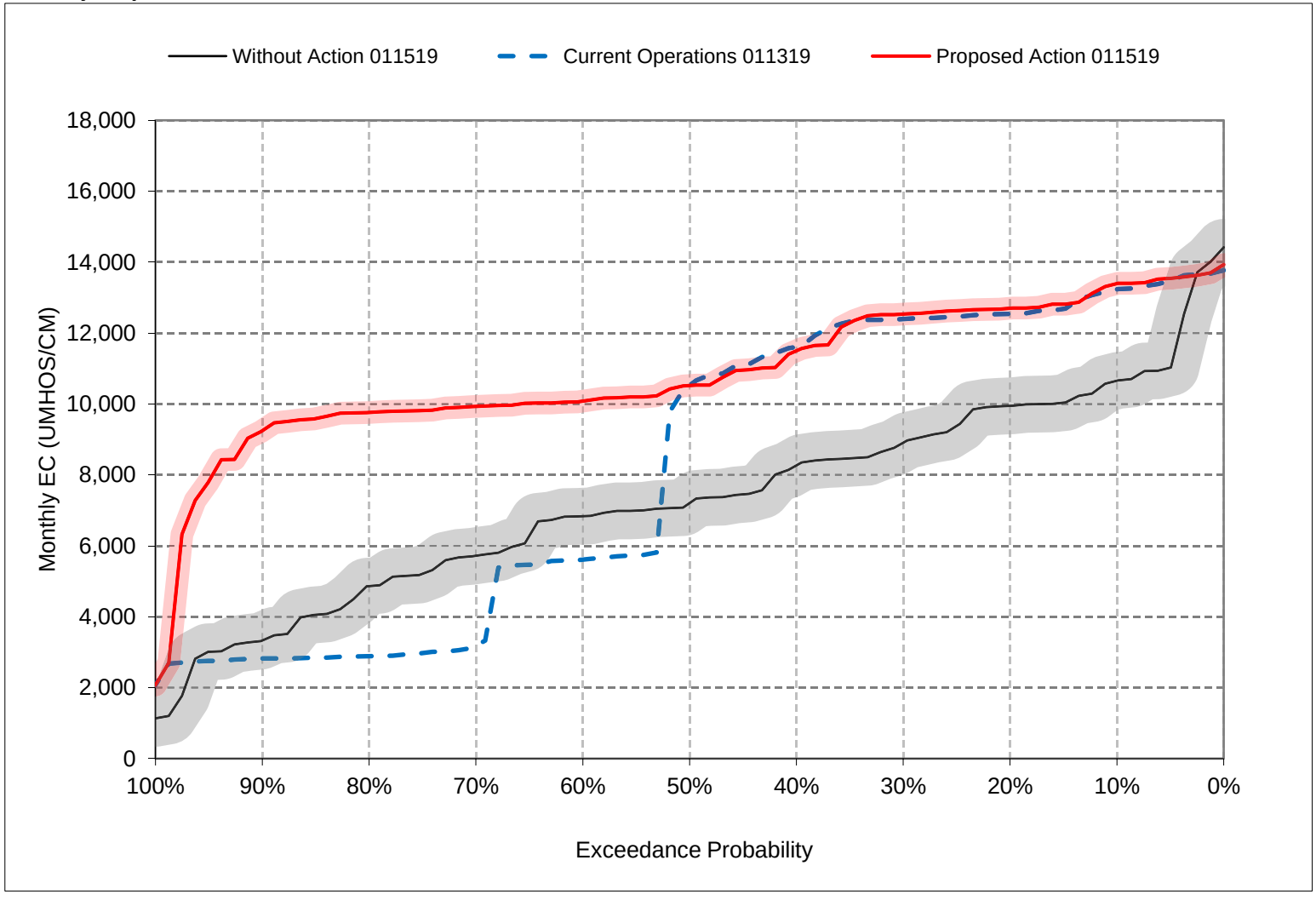
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-14. Chipps Island South Channel
Salinity, August EC



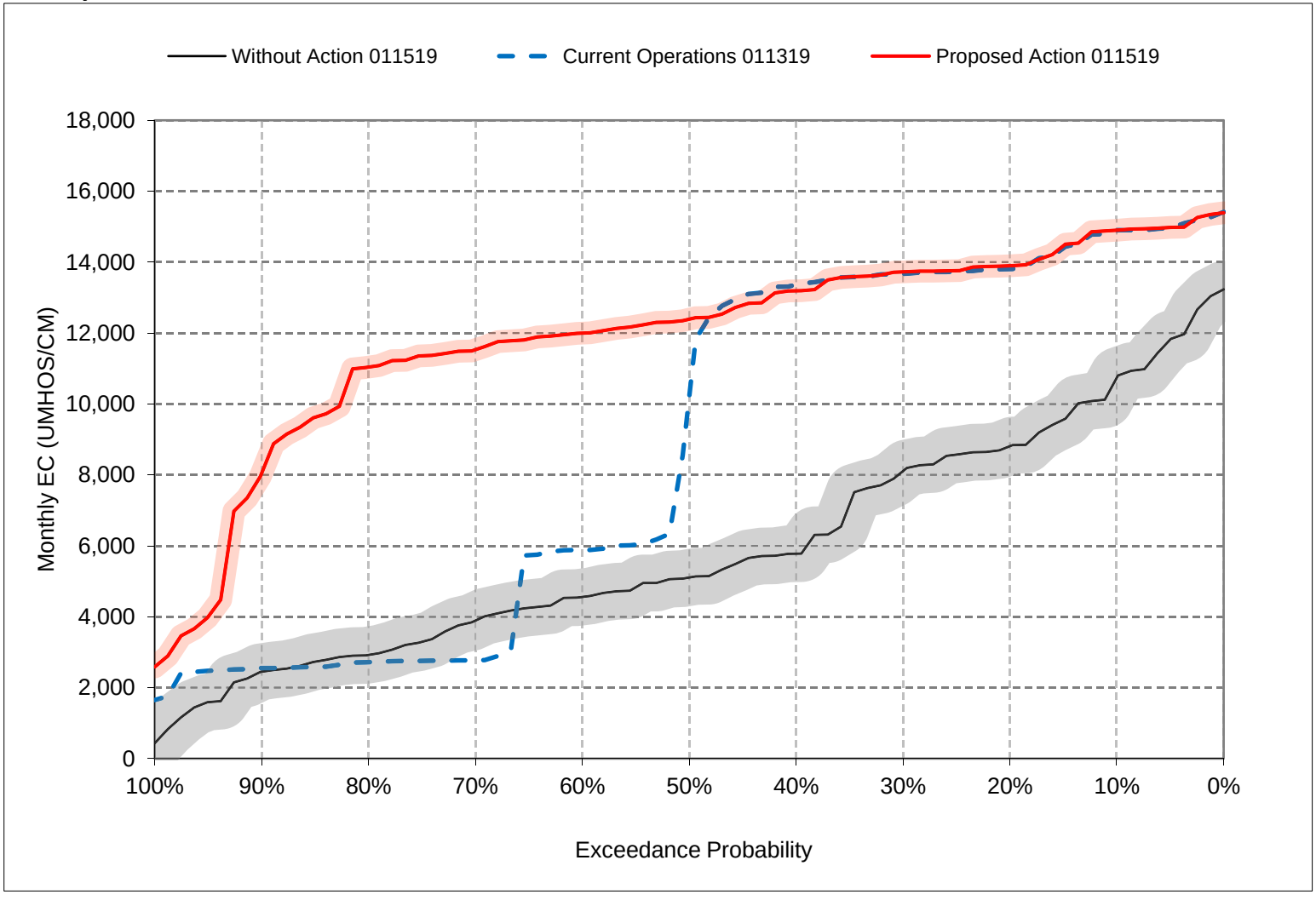
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-15. Chipps Island South Channel
Salinity, September EC



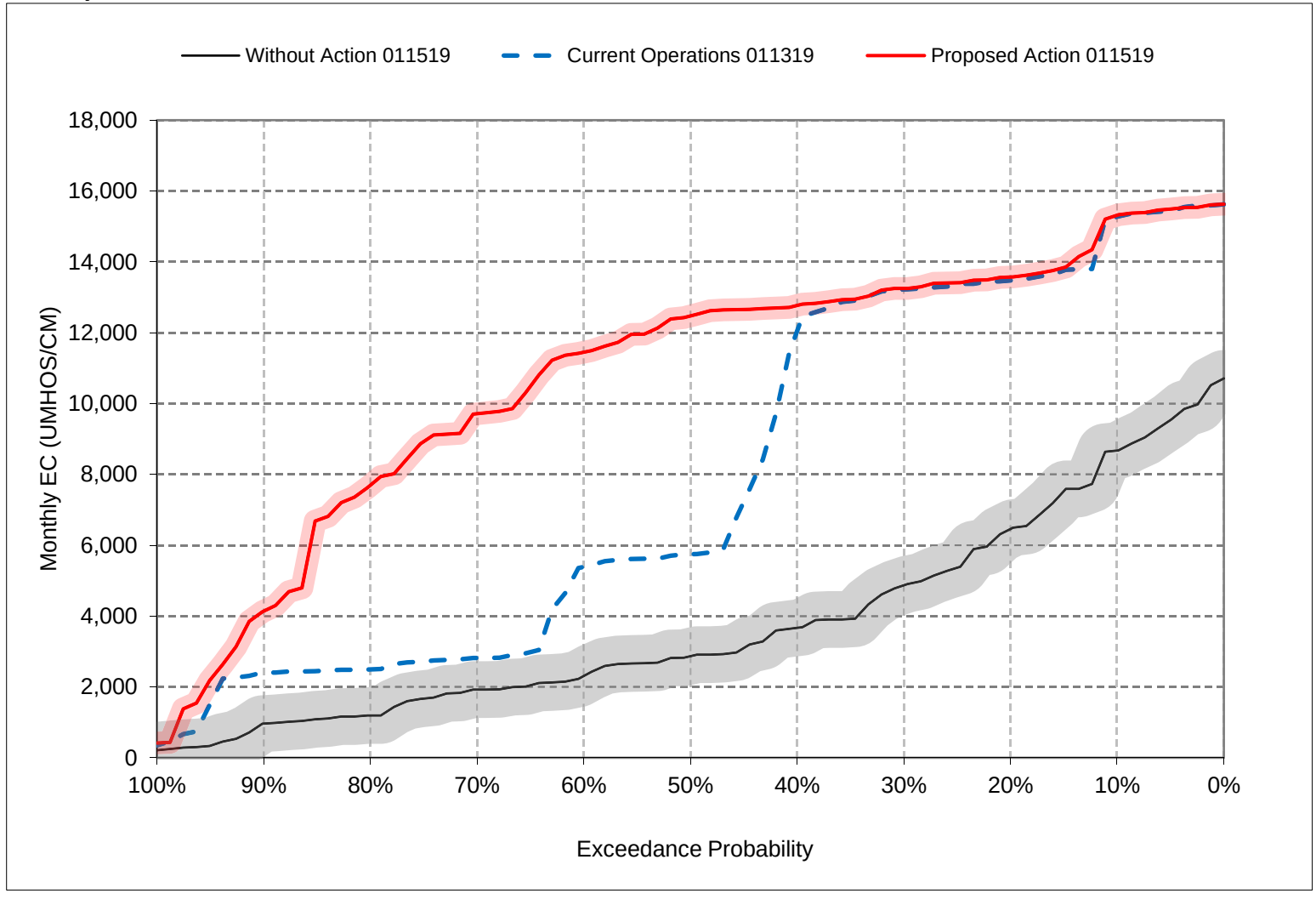
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 13-16. Chipps Island South Channel
Salinity, October EC



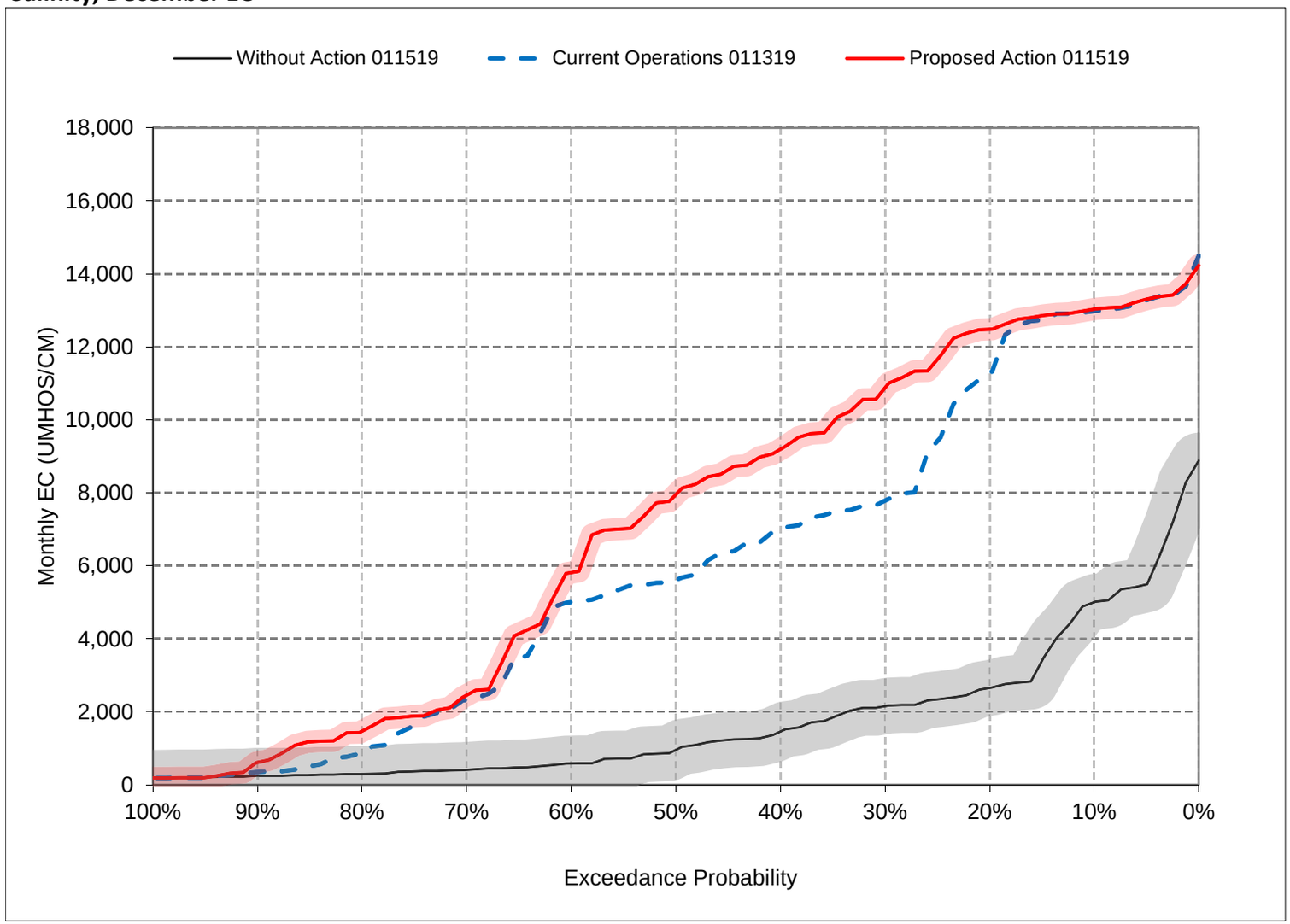
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 14-1. Sacramento River at Port Chicago Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	16,566	15,125	11,314	6,146	4,035	3,518	4,737	8,979	15,100	17,451	17,471	16,743
20%	15,093	12,563	7,712	4,588	2,328	1,986	2,330	6,824	12,795	16,399	16,921	16,019
30%	14,306	10,994	6,962	3,558	1,426	994	1,574	4,530	11,705	15,306	16,214	15,208
40%	11,965	9,346	5,323	2,379	993	746	1,189	2,929	9,834	13,482	15,422	14,395
50%	11,181	8,002	4,064	1,545	559	455	758	1,741	7,519	11,330	14,673	13,505
60%	10,507	7,429	2,951	908	352	342	560	1,161	5,021	10,575	14,189	13,184
70%	9,495	6,421	1,829	349	265	277	379	788	3,719	9,356	13,313	11,655
80%	8,354	4,840	1,203	286	237	228	299	512	1,625	7,876	11,480	10,878
90%	7,351	3,788	445	230	215	204	219	271	568	3,926	9,907	8,849
Long Term												
Full Simulation Period[a]	11,651	8,637	4,907	2,573	1,479	1,244	1,731	3,611	7,708	11,492	14,050	13,230
Water Year Types[b]												
Wet (32%)	8,529	6,023	3,340	605	270	323	420	800	2,394	6,322	10,545	9,862
Above Normal (16%)	10,408	7,576	4,146	1,251	584	370	544	1,198	5,403	10,183	13,645	12,507
Below Normal (13%)	11,241	8,926	5,829	2,636	1,431	1,325	1,710	4,032	8,931	12,477	15,112	14,006
Dry (24%)	13,538	9,088	5,069	3,713	1,905	1,206	1,741	4,708	11,083	15,247	16,621	15,420
Critical (15%)	16,993	14,433	8,010	6,312	4,401	4,175	5,862	10,105	14,972	16,948	16,822	16,950

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,155**	**4,962**	**7,129**	**7,953**	**5,107**	**4,673**	**4,650**	**2,134**	-1,963	-2,050	**89**	**2,035**
20%	**3,838**	**6,120**	**9,528**	**8,651**	**4,580**	**4,730**	**4,335**	**3,182**	-752	-1,999	-353	**2,121**
30%	**4,517**	**7,480**	**6,761**	**7,963**	**2,961**	**2,761**	**3,955**	**4,385**	-278	-1,519	**175**	**2,864**
40%	**6,556**	**8,297**	**7,899**	**6,324**	**2,060**	**2,625**	**2,691**	**3,353**	**864**	-1,238	-331	**2,999**
50%	**4,947**	**3,661**	**7,325**	**4,859**	**1,096**	**1,467**	**2,238**	**3,661**	**1,973**	**268**	-622	**3,073**
60%	**1,262**	**3,944**	**7,747**	**3,191**	**622**	**979**	**1,342**	**2,852**	**3,999**	-522	-504	-1,424
70%	-1,641	**1,384**	**5,015**	**706**	**107**	**281**	**832**	**2,350**	**3,935**	**218**	-55	-3,616
80%	-803	**2,580**	**1,580**	**173**	**5**	**61**	**244**	**992**	**3,830**	**1,339**	**1,366**	-3,106
90%	**65**	**3,307**	**480**	**27**	-1	**30**	**46**	**235**	**1,902**	**3,933**	**2,518**	-1,204
Long Term												
Full Simulation Period[a]	**2,287**	**4,273**	**5,605**	**4,344**	**2,037**	**1,944**	**2,163**	**2,123**	**1,349**	**26**	**556**	**515**
Water Year Types[b]												
Wet (32%)	-1,017	**949**	**3,854**	**1,151**	**270**	**472**	**623**	**1,117**	**2,671**	**1,866**	**2,144**	-2,158
Above Normal (16%)	**974**	**3,092**	**5,608**	**2,534**	**875**	**754**	**1,218**	**2,513**	**3,067**	-388	-716	-748
Below Normal (13%)	**5,860**	**7,310**	**6,124**	**6,435**	**2,881**	**3,337**	**3,417**	**2,805**	**1,325**	-634	-778	**2,959**
Dry (24%)	**5,130**	**6,965**	**5,642**	**7,079**	**3,394**	**2,836**	**3,316**	**3,031**	-159	-1,311	-255	**2,607**
Critical (15%)	**2,855**	**5,483**	**8,857**	**6,746**	**4,085**	**3,659**	**3,455**	**1,743**	-843	-681	**1,066**	**1,949**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 14-2. Sacramento River at Port Chicago Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	16,566	15,125	11,314	6,146	4,035	3,518	4,737	8,979	15,100	17,451	17,471	16,743
20%	15,093	12,563	7,712	4,588	2,328	1,986	2,330	6,824	12,795	16,399	16,921	16,019
30%	14,306	10,994	6,962	3,558	1,426	994	1,574	4,530	11,705	15,306	16,214	15,208
40%	11,965	9,346	5,323	2,379	993	746	1,189	2,929	9,834	13,482	15,422	14,395
50%	11,181	8,002	4,064	1,545	559	455	758	1,741	7,519	11,330	14,673	13,505
60%	10,507	7,429	2,951	908	352	342	560	1,161	5,021	10,575	14,189	13,184
70%	9,495	6,421	1,829	349	265	277	379	788	3,719	9,356	13,313	11,655
80%	8,354	4,840	1,203	286	237	228	299	512	1,625	7,876	11,480	10,878
90%	7,351	3,788	445	230	215	204	219	271	568	3,926	9,907	8,849
Long Term												
Full Simulation Period[a]	11,651	8,637	4,907	2,573	1,479	1,244	1,731	3,611	7,708	11,492	14,050	13,230
Water Year Types[b]												
Wet (32%)	8,529	6,023	3,340	605	270	323	420	800	2,394	6,322	10,545	9,862
Above Normal (16%)	10,408	7,576	4,146	1,251	584	370	544	1,198	5,403	10,183	13,645	12,507
Below Normal (13%)	11,241	8,926	5,829	2,636	1,431	1,325	1,710	4,032	8,931	12,477	15,112	14,006
Dry (24%)	13,538	9,088	5,069	3,713	1,905	1,206	1,741	4,708	11,083	15,247	16,621	15,420
Critical (15%)	16,993	14,433	8,010	6,312	4,401	4,175	5,862	10,105	14,972	16,948	16,822	16,950

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3,232**	**4,972**	**7,151**	**9,369**	**5,973**	**5,894**	**5,484**	**2,482**	-2,015	-2,203	**255**	**2,102**
20%	**3,916**	**6,164**	**10,203**	**8,917**	**4,421**	**5,031**	**5,437**	**3,670**	-526	-1,973	-210	**2,268**
30%	**4,546**	**7,518**	**9,964**	**7,905**	**3,565**	**2,897**	**4,553**	**5,275**	**5**	-1,357	**282**	**2,964**
40%	**6,424**	**8,769**	**9,928**	**6,244**	**2,454**	**2,762**	**3,842**	**4,743**	**1,144**	-1,288	-445	**2,811**
50%	**6,600**	**9,784**	**10,079**	**5,006**	**1,034**	**1,525**	**3,020**	**4,819**	**2,686**	**306**	-609	**3,000**
60%	**6,935**	**9,550**	**8,689**	**3,376**	**350**	**945**	**2,055**	**4,403**	**4,505**	-443	-566	**2,903**
70%	**7,726**	**9,107**	**5,333**	**571**	**104**	**257**	**1,117**	**3,268**	**4,286**	**416**	-113	**4,362**
80%	**8,440**	**8,801**	**2,398**	**136**	**2**	**59**	**313**	**1,382**	**4,139**	**1,334**	**1,425**	**4,932**
90%	**6,703**	**5,601**	**654**	**23**	-3	**28**	**66**	**364**	**1,915**	**3,863**	**2,667**	**6,538**
Long Term												
Full Simulation Period[a]	**5,570**	**7,265**	**6,621**	**4,423**	**2,195**	**2,088**	**2,672**	**2,930**	**1,614**	**66**	**584**	**3,447**
Water Year Types[b]												
Wet (32%)	**6,515**	**7,634**	**6,113**	**1,049**	**248**	**452**	**973**	**1,816**	**2,868**	**1,912**	**2,100**	**4,958**
Above Normal (16%)	**6,324**	**8,083**	**7,489**	**2,466**	**789**	**701**	**1,739**	**3,628**	**3,323**	-307	-617	**3,495**
Below Normal (13%)	**5,807**	**7,556**	**6,091**	**6,506**	**2,959**	**3,343**	**4,073**	**3,910**	**1,783**	-633	-830	**2,801**
Dry (24%)	**5,333**	**7,139**	**5,638**	**7,449**	**3,688**	**3,067**	**3,910**	**3,784**	**87**	-1,331	-172	**2,673**
Critical (15%)	**2,880**	**5,524**	**8,908**	**6,898**	**4,753**	**4,354**	**4,017**	**2,269**	-565	-561	**1,155**	**2,002**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 14-3. Sacramento River at Port Chicago Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

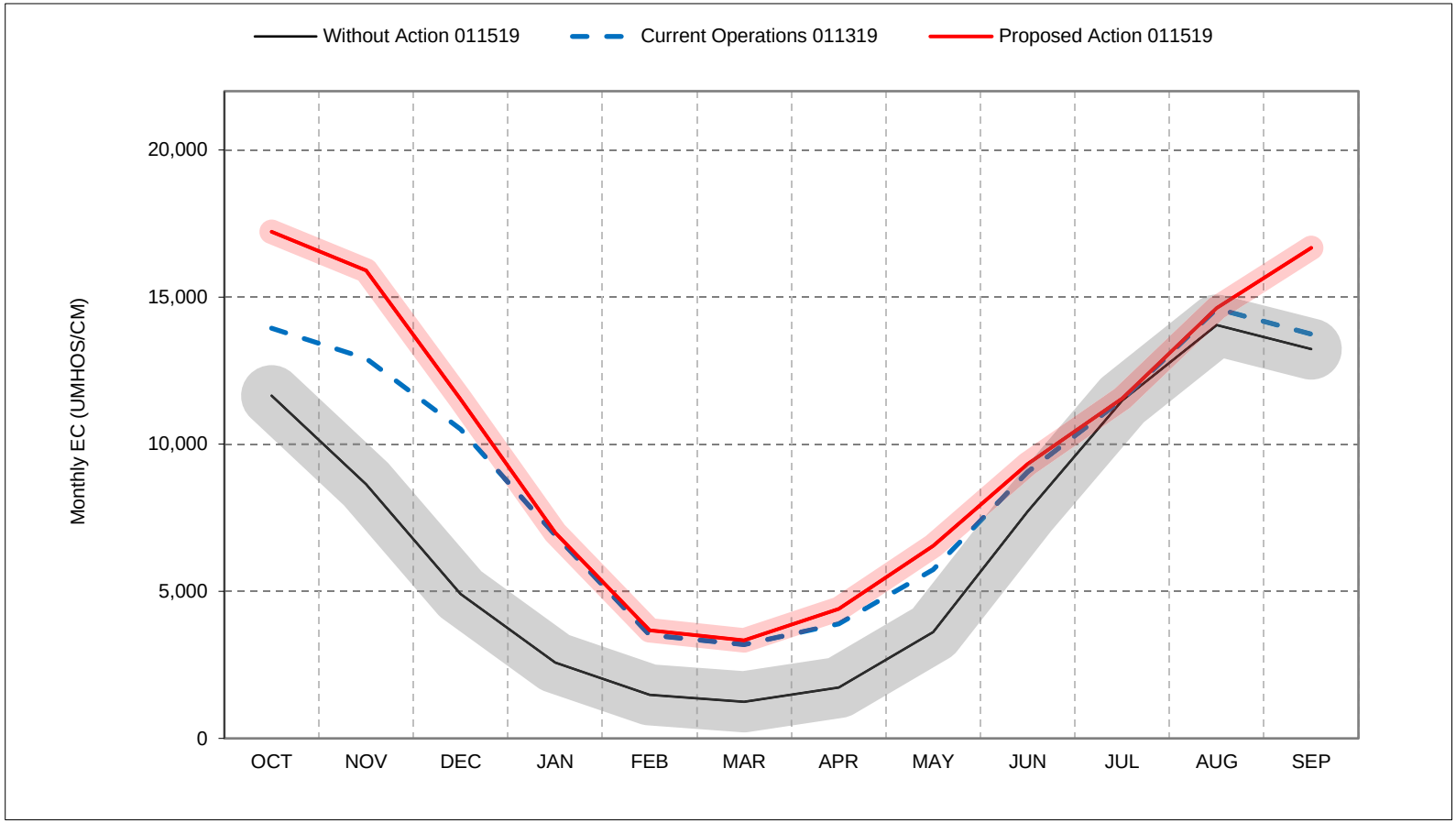
c These results are displayed with calendar year - year type sorting.

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.

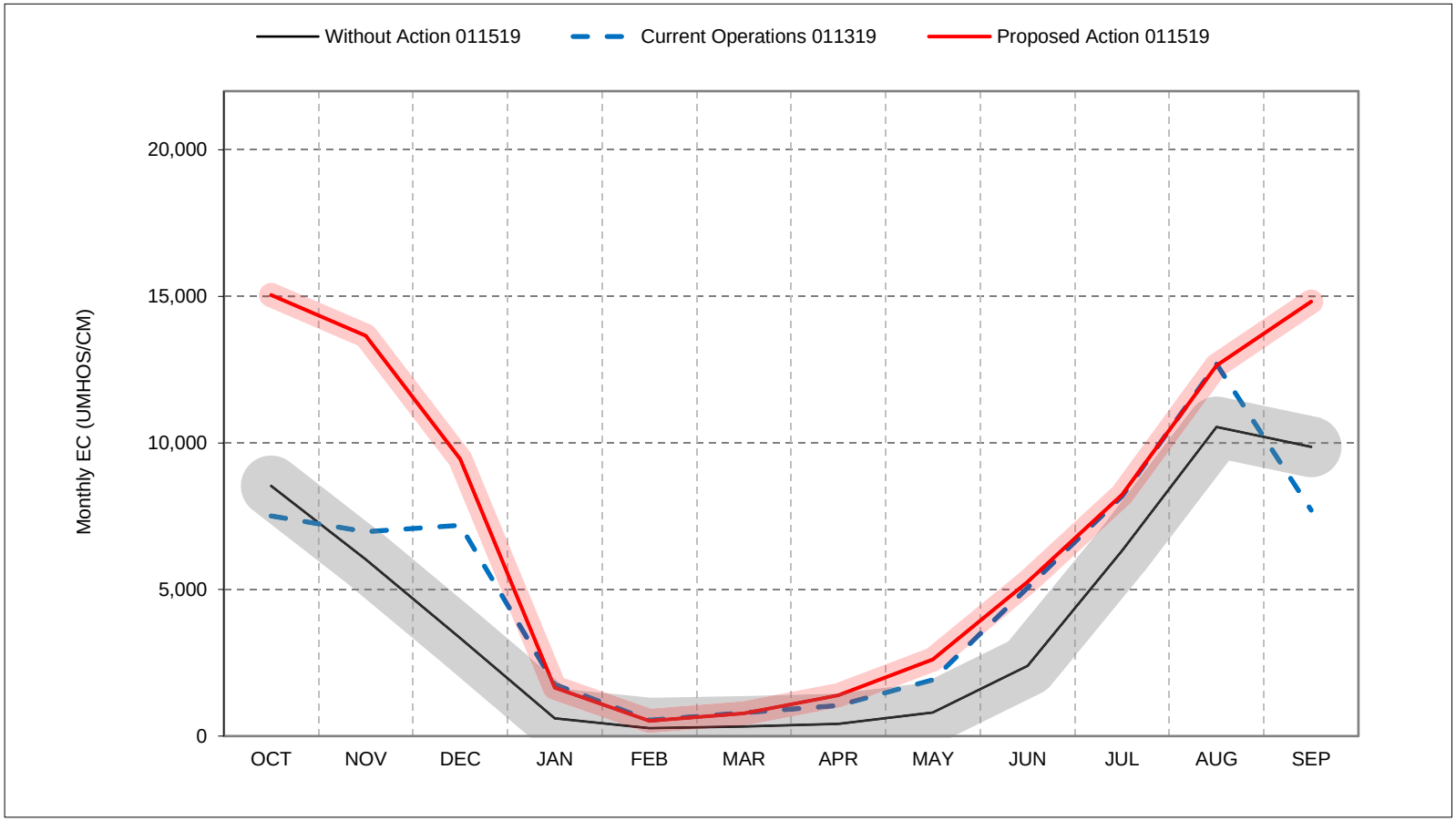
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-1. Sacramento River at Port Chicago Salinity, Long-Term Average EC



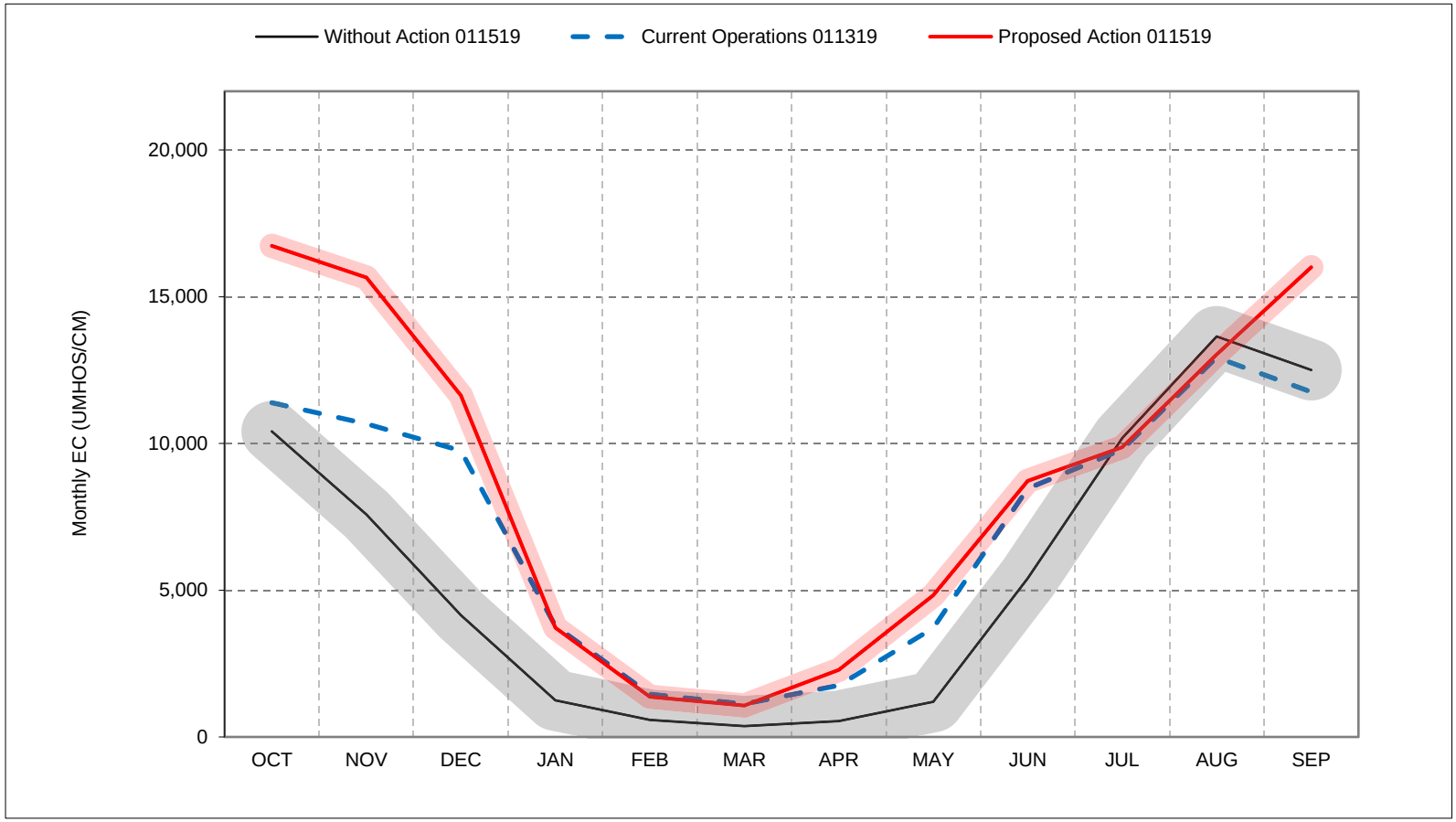
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-2. Sacramento River at Port Chicago Salinity, Wet Year Average EC



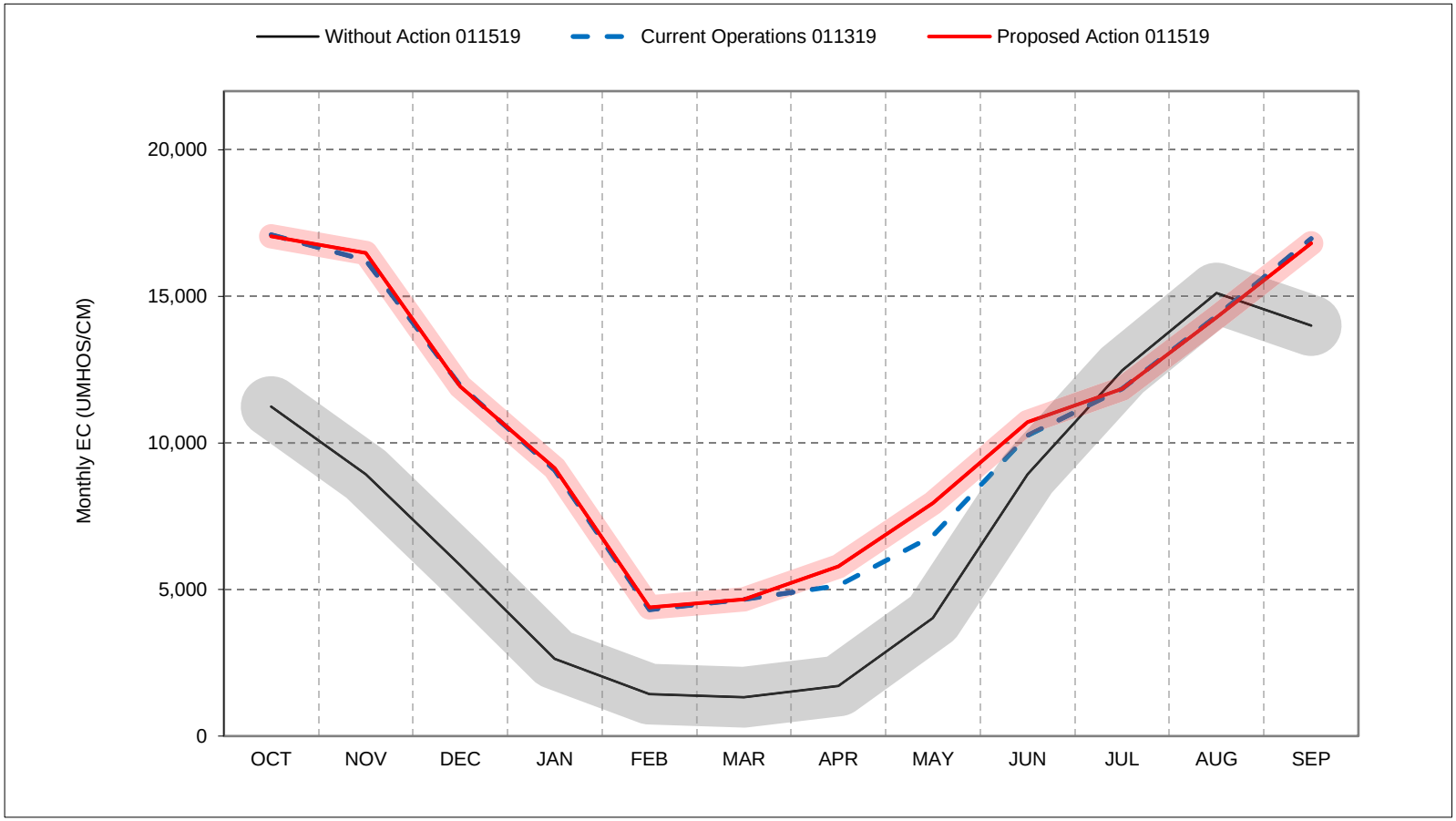
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-3. Sacramento River at Port Chicago Salinity, Above Normal Year Average EC



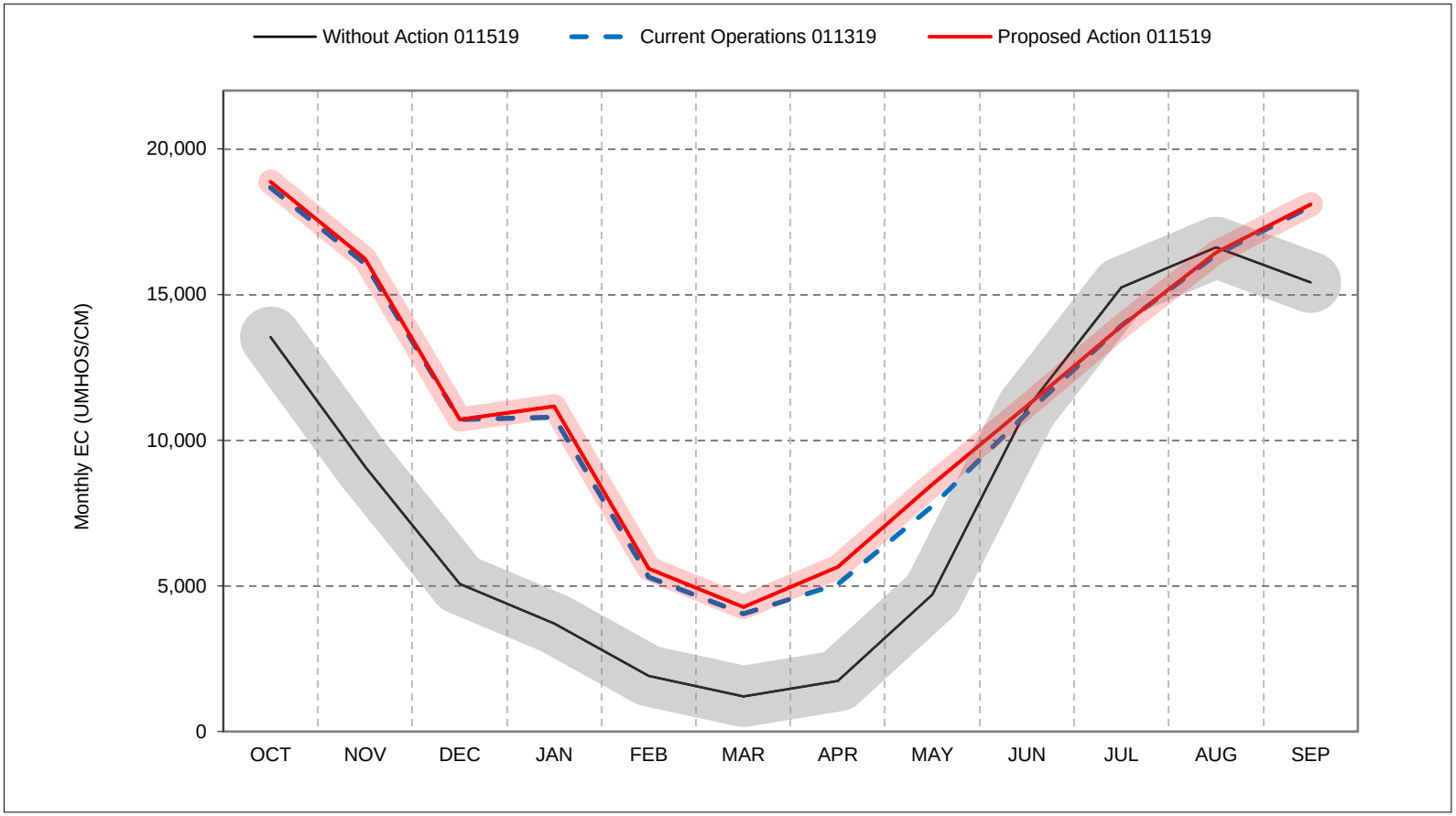
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-4. Sacramento River at Port Chicago Salinity, Below Normal Year Average EC



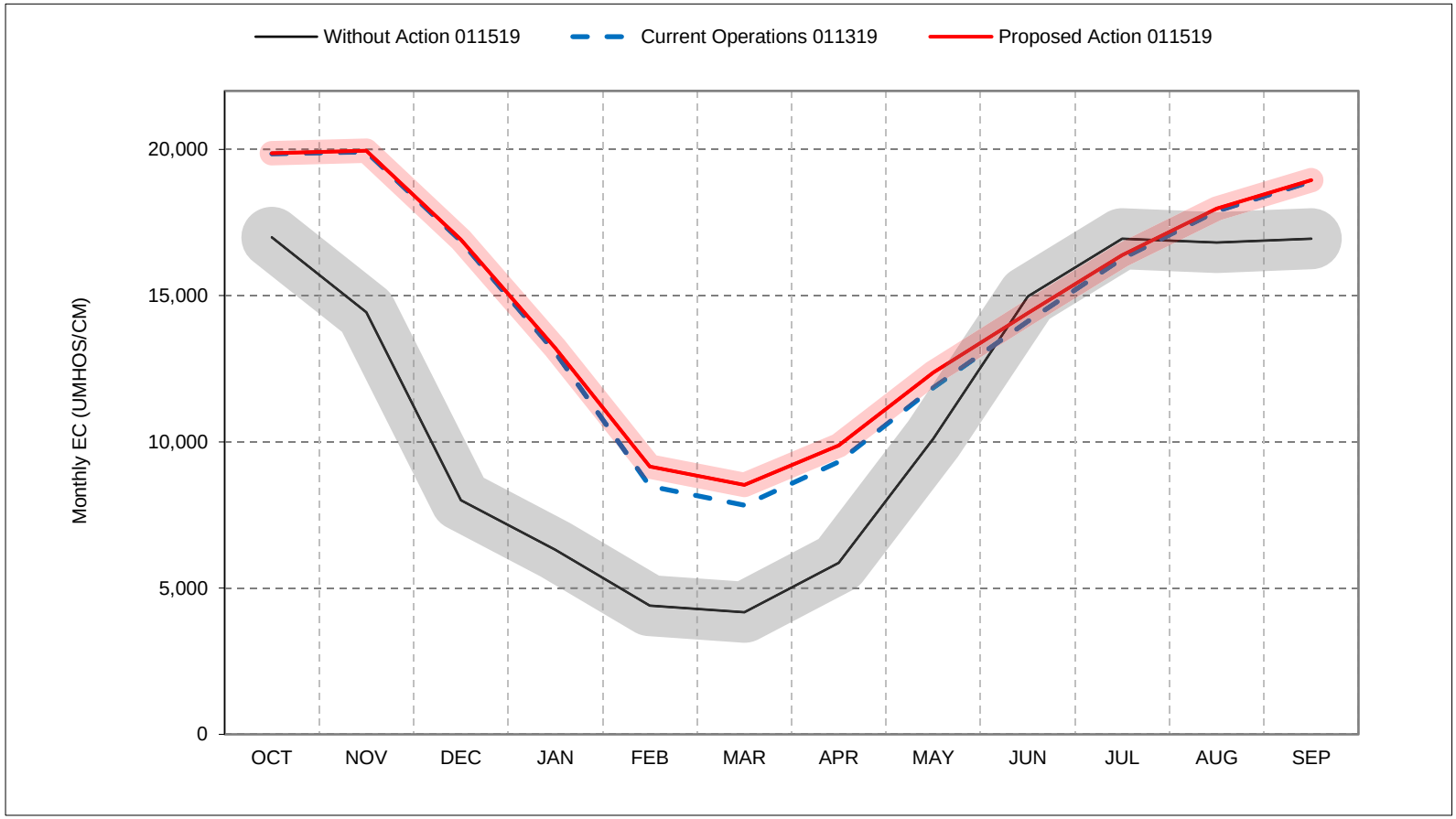
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 14-5. Sacramento River at Port Chicago Salinity, Dry Year Average EC



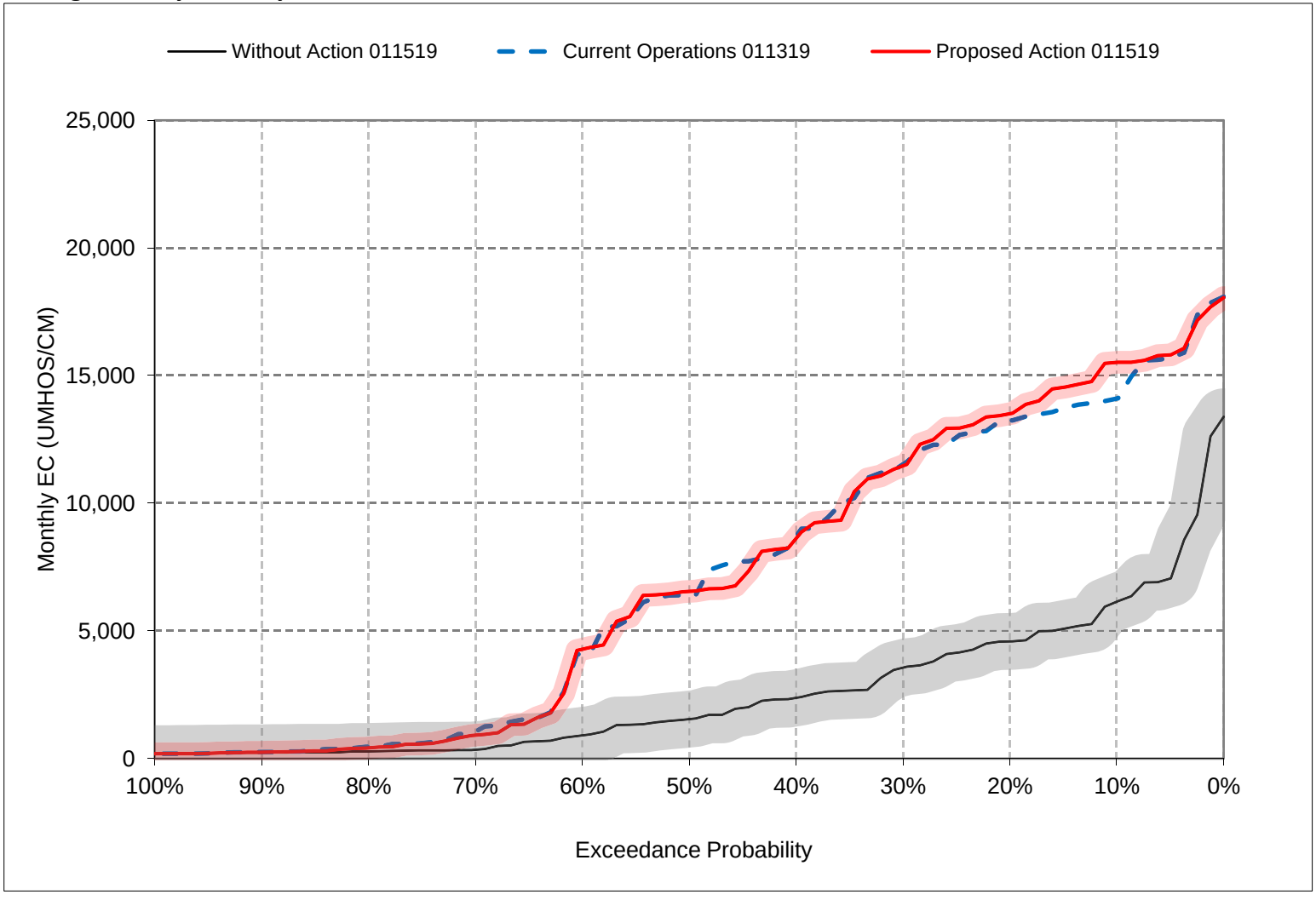
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

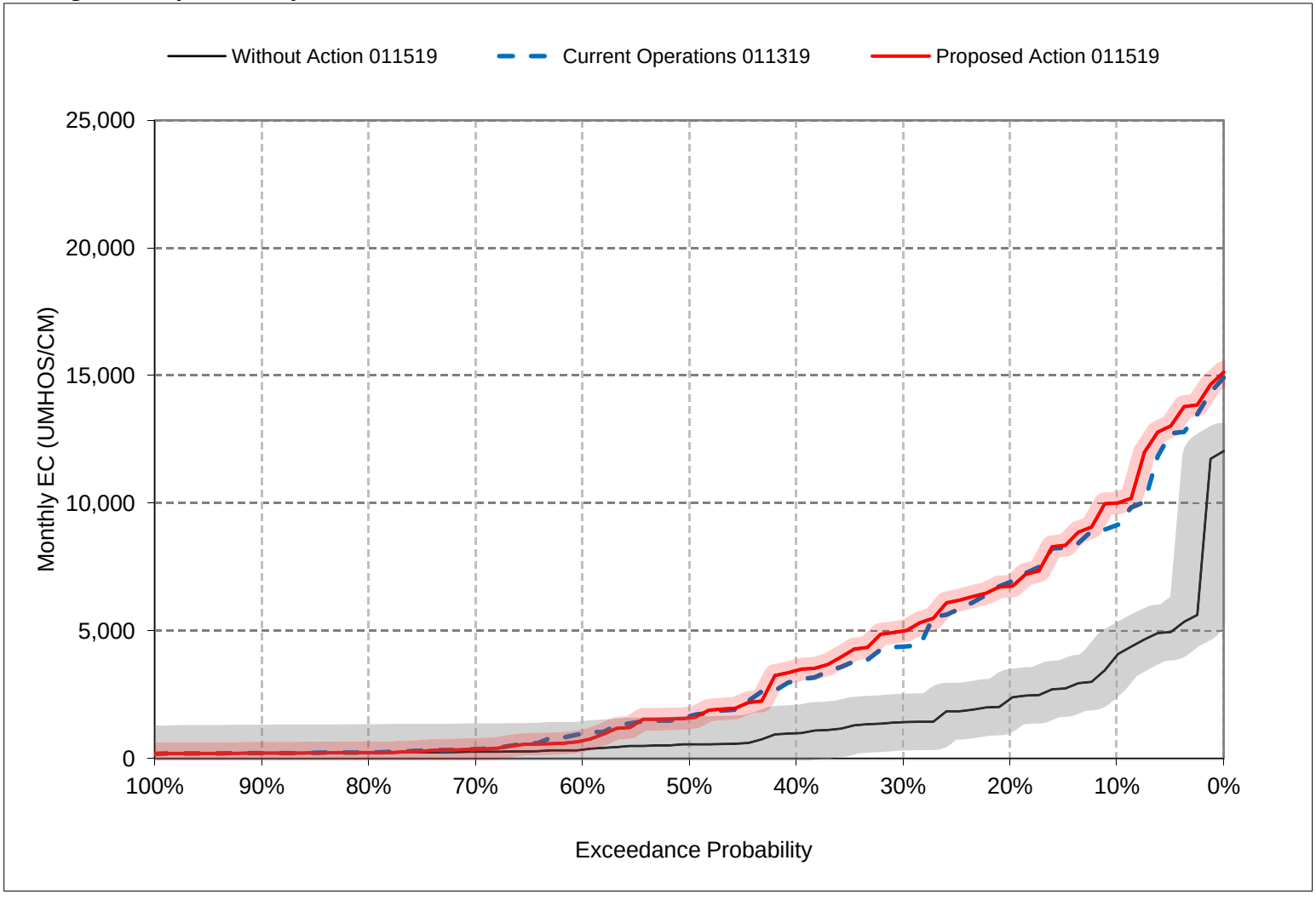
Figure 14-7. Sacramento River at Port Chicago Salinity, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

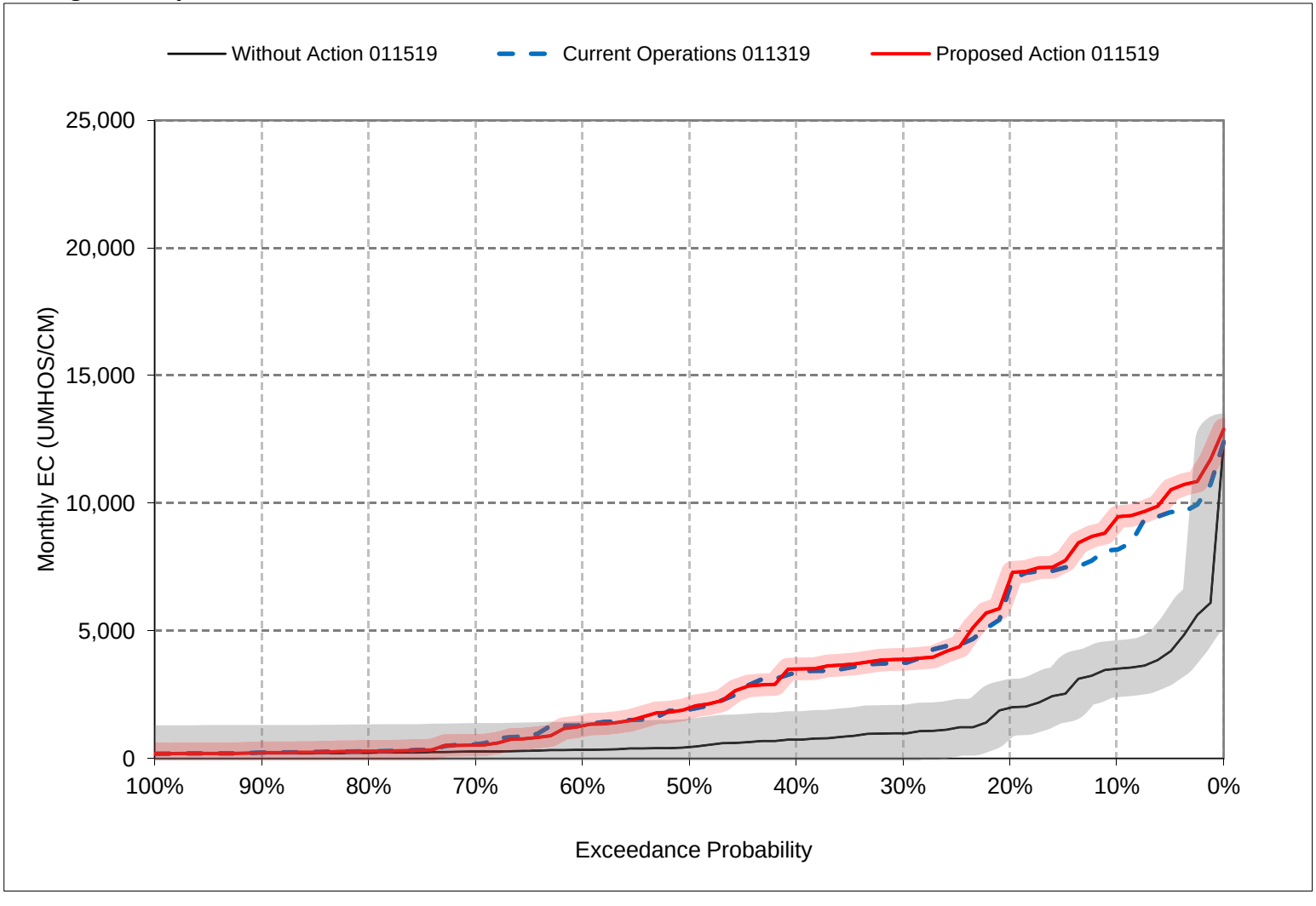
Figure 14-8. Sacramento River at Port Chicago Salinity, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

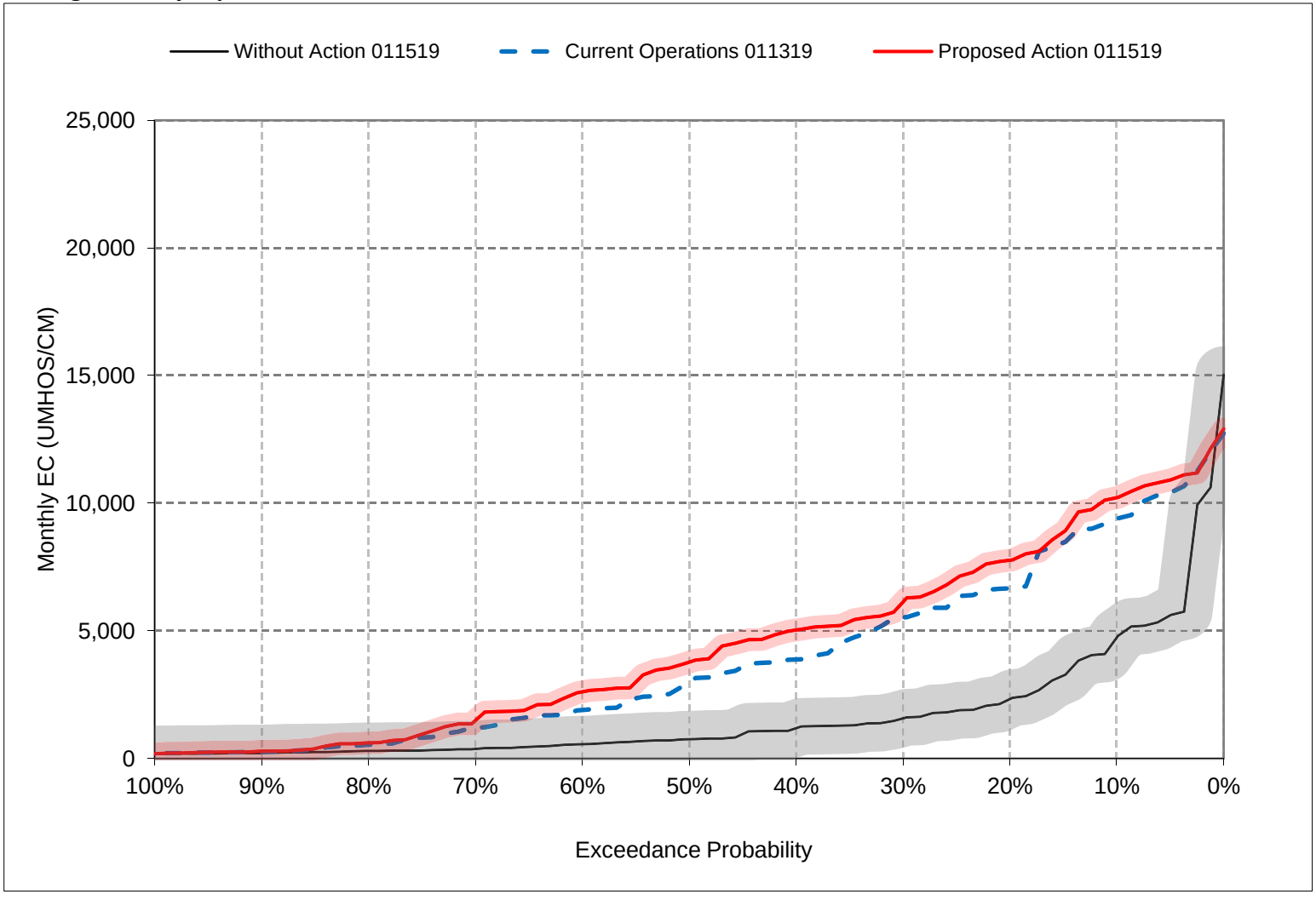
Figure 14-9. Sacramento River at Port Chicago Salinity, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

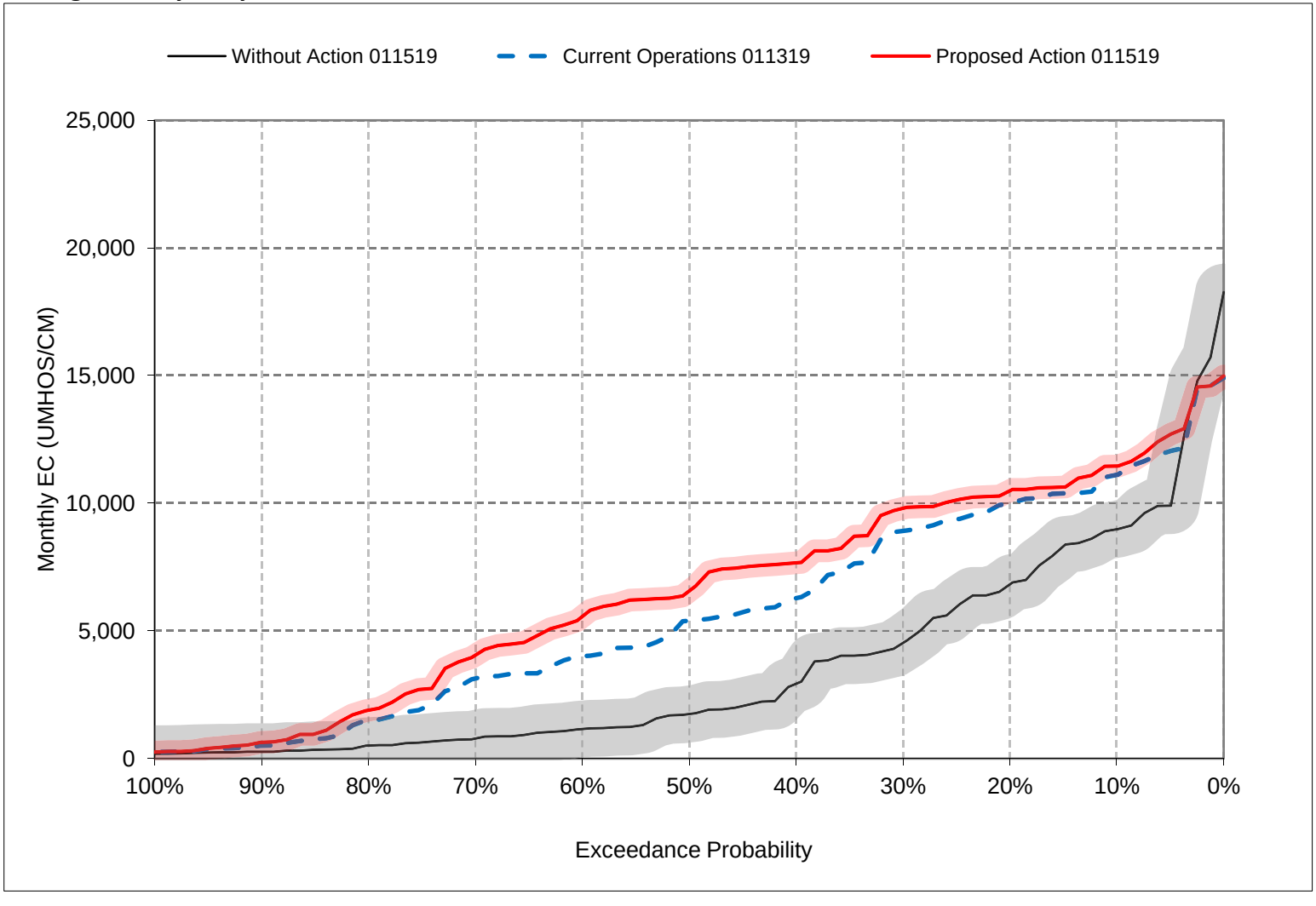
Figure 14-10. Sacramento River at Port Chicago Salinity, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

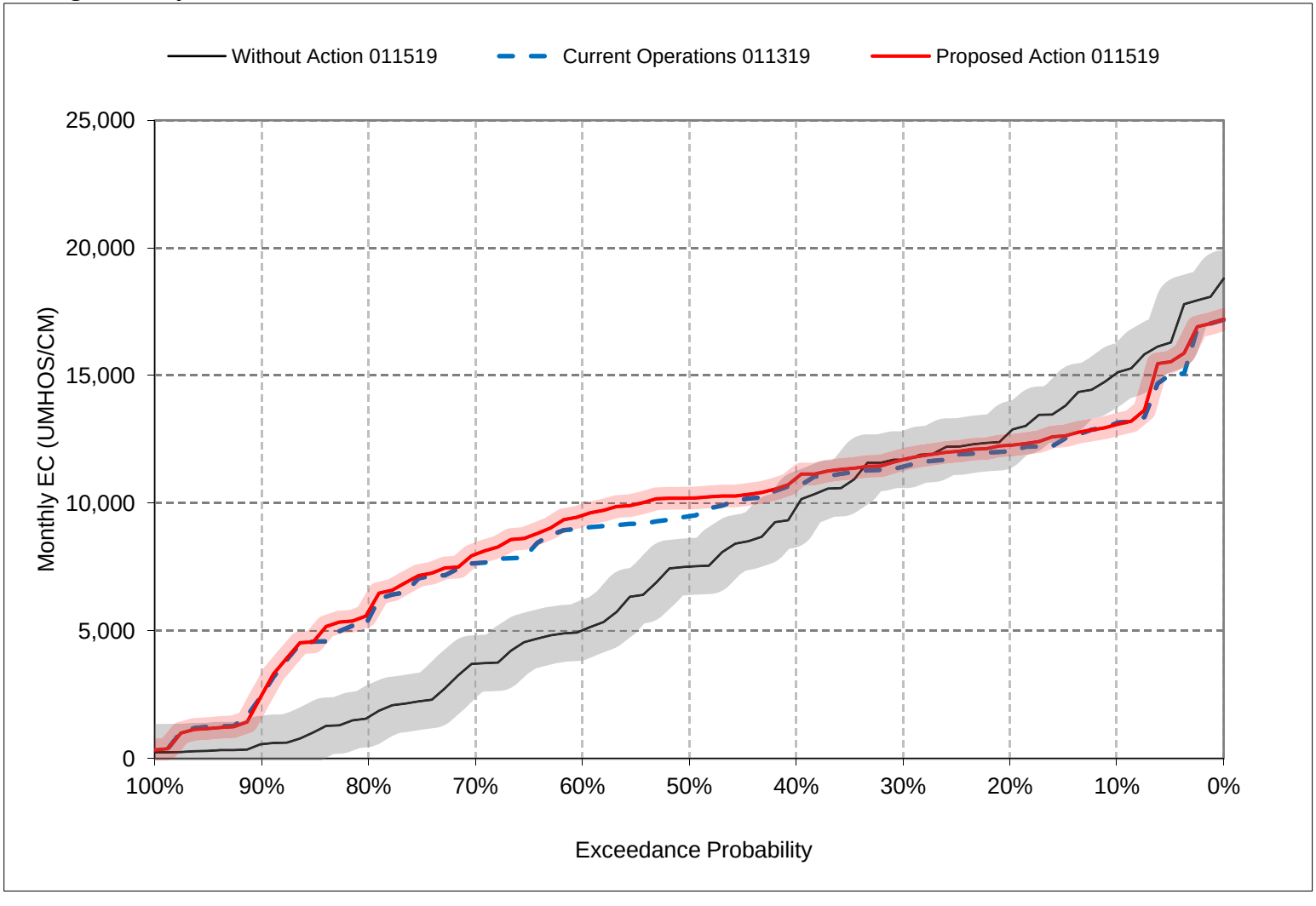
Figure 14-11. Sacramento River at Port Chicago Salinity, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

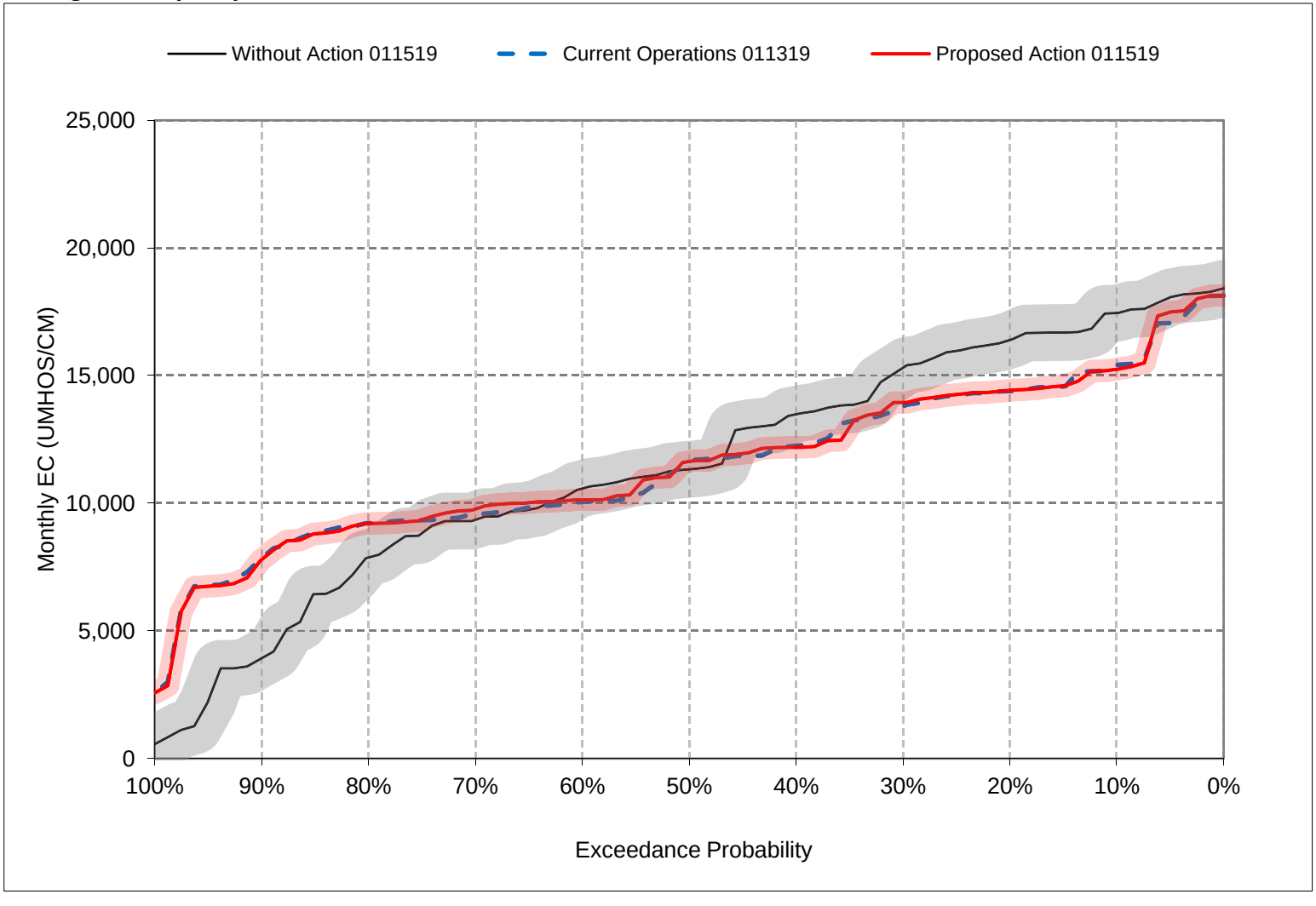
Figure 14-12. Sacramento River at Port Chicago Salinity, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

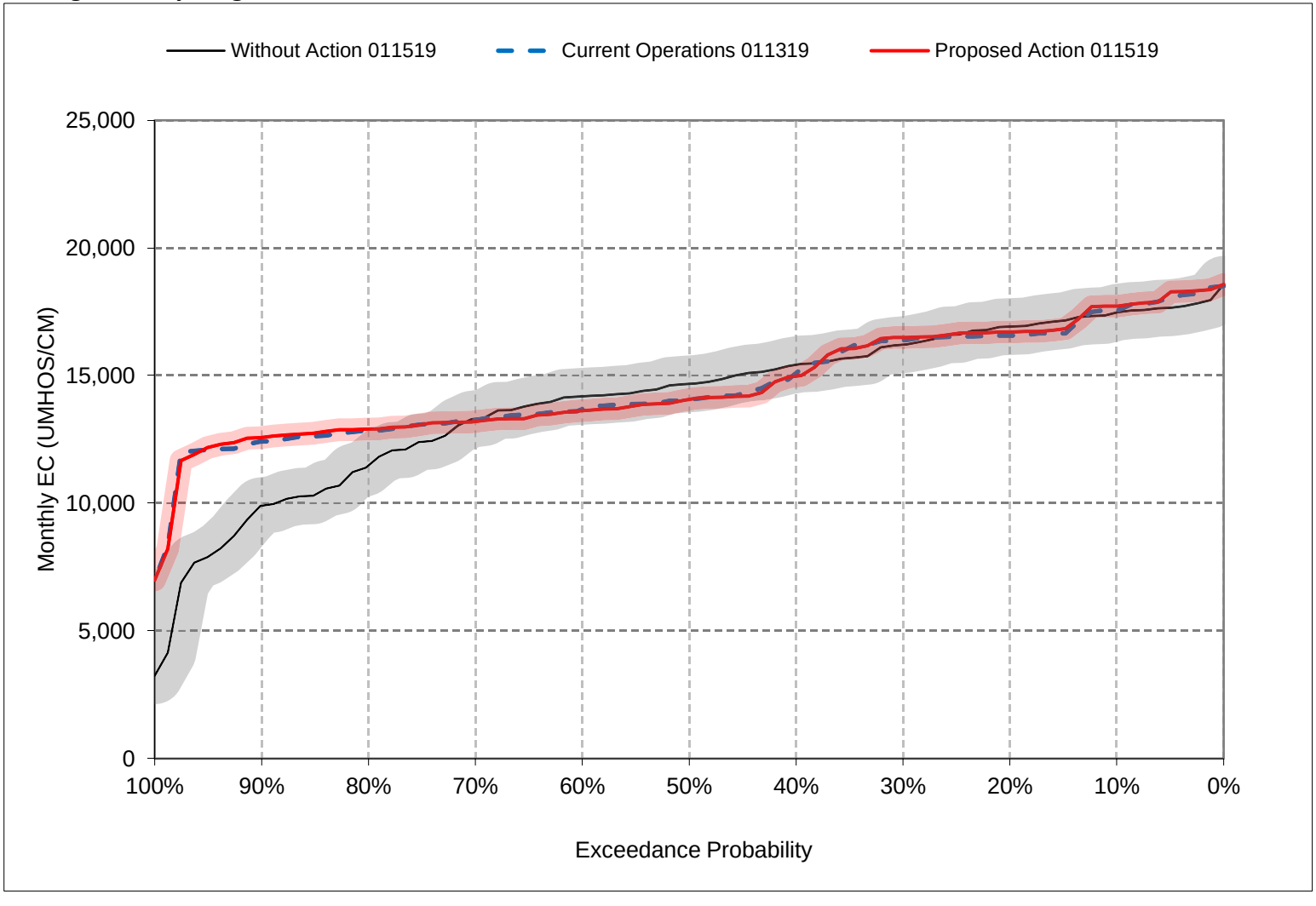
Figure 14-13. Sacramento River at Port Chicago Salinity, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

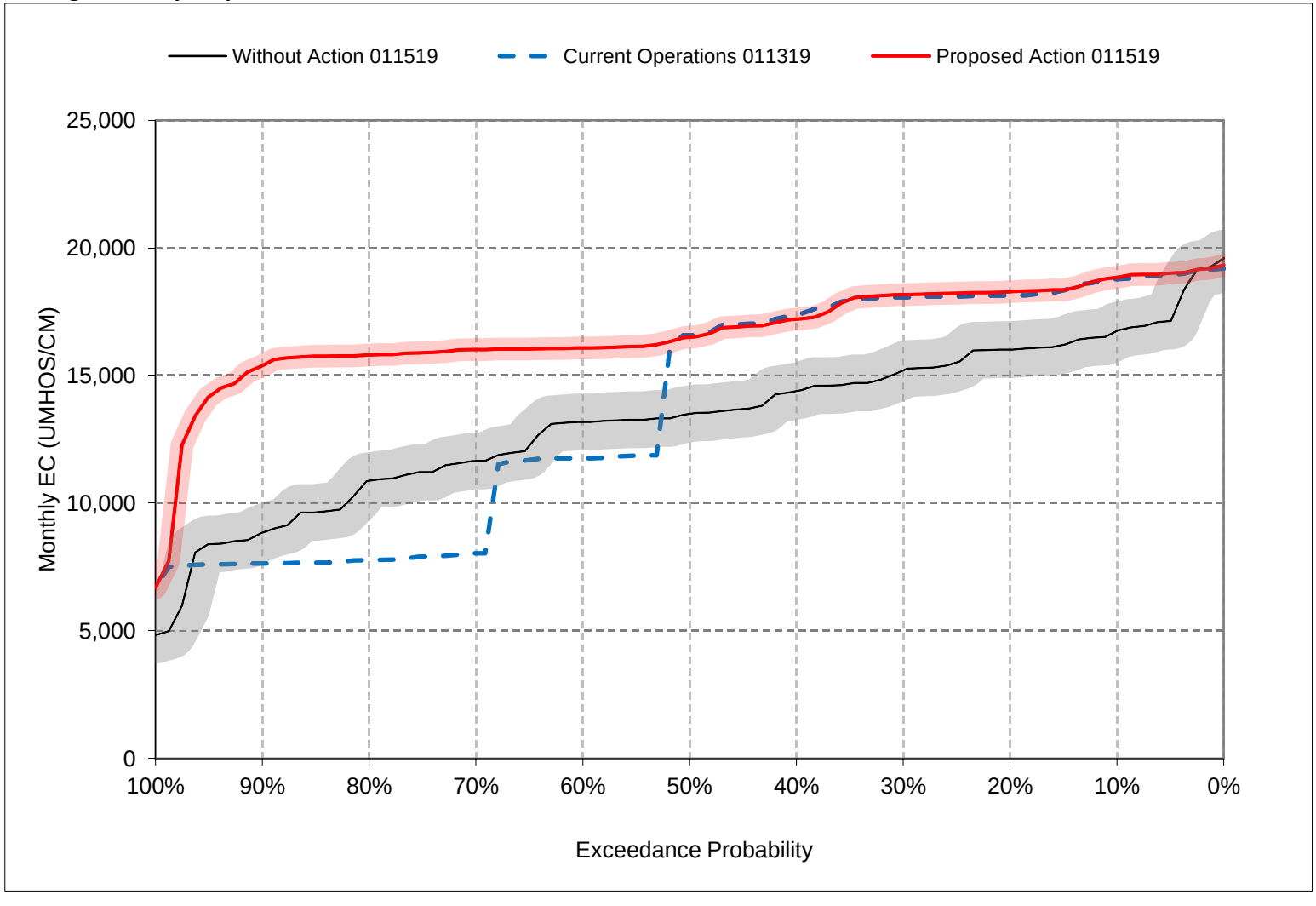
Figure 14-14. Sacramento River at Port Chicago Salinity, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

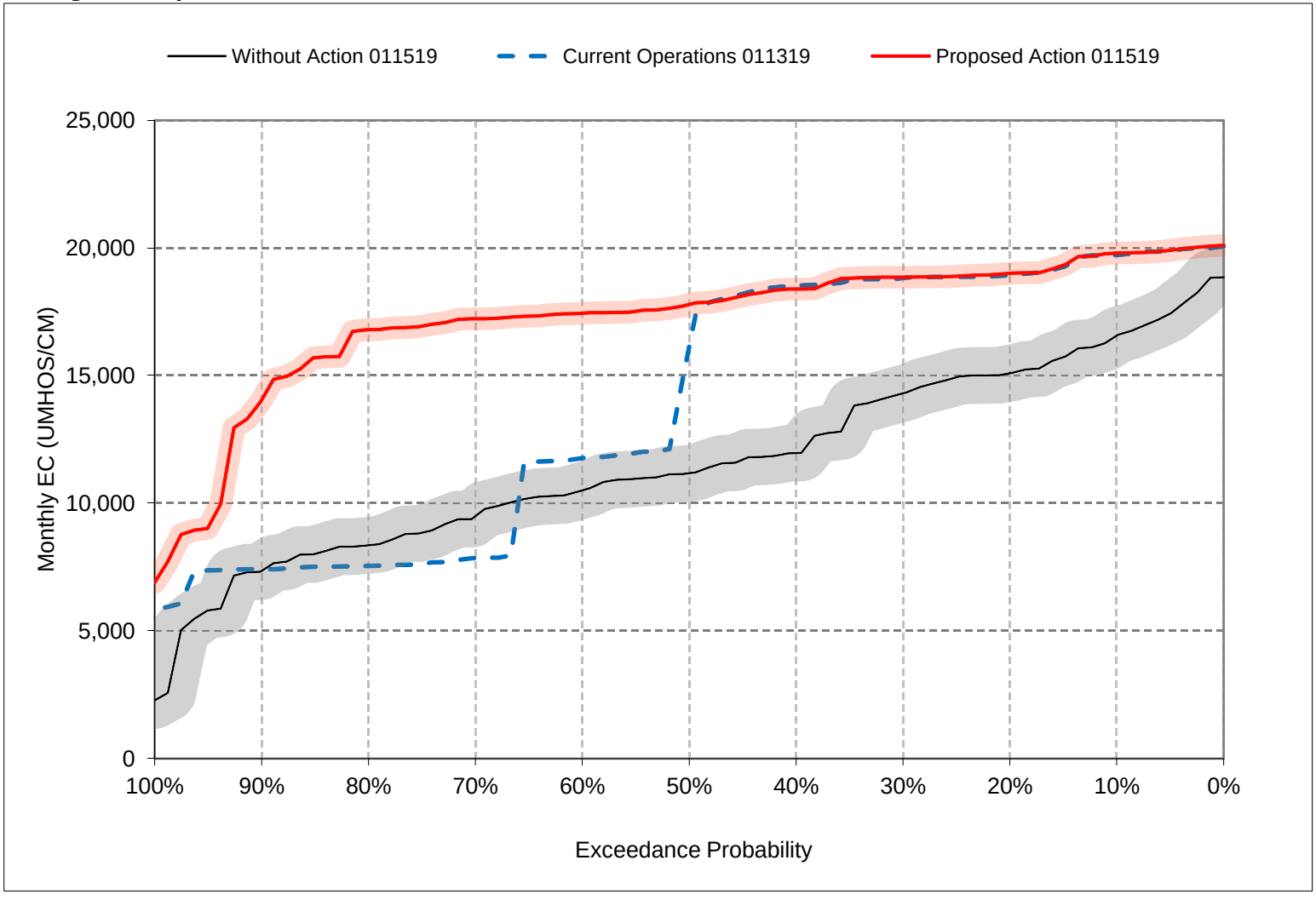
Figure 14-15. Sacramento River at Port Chicago Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

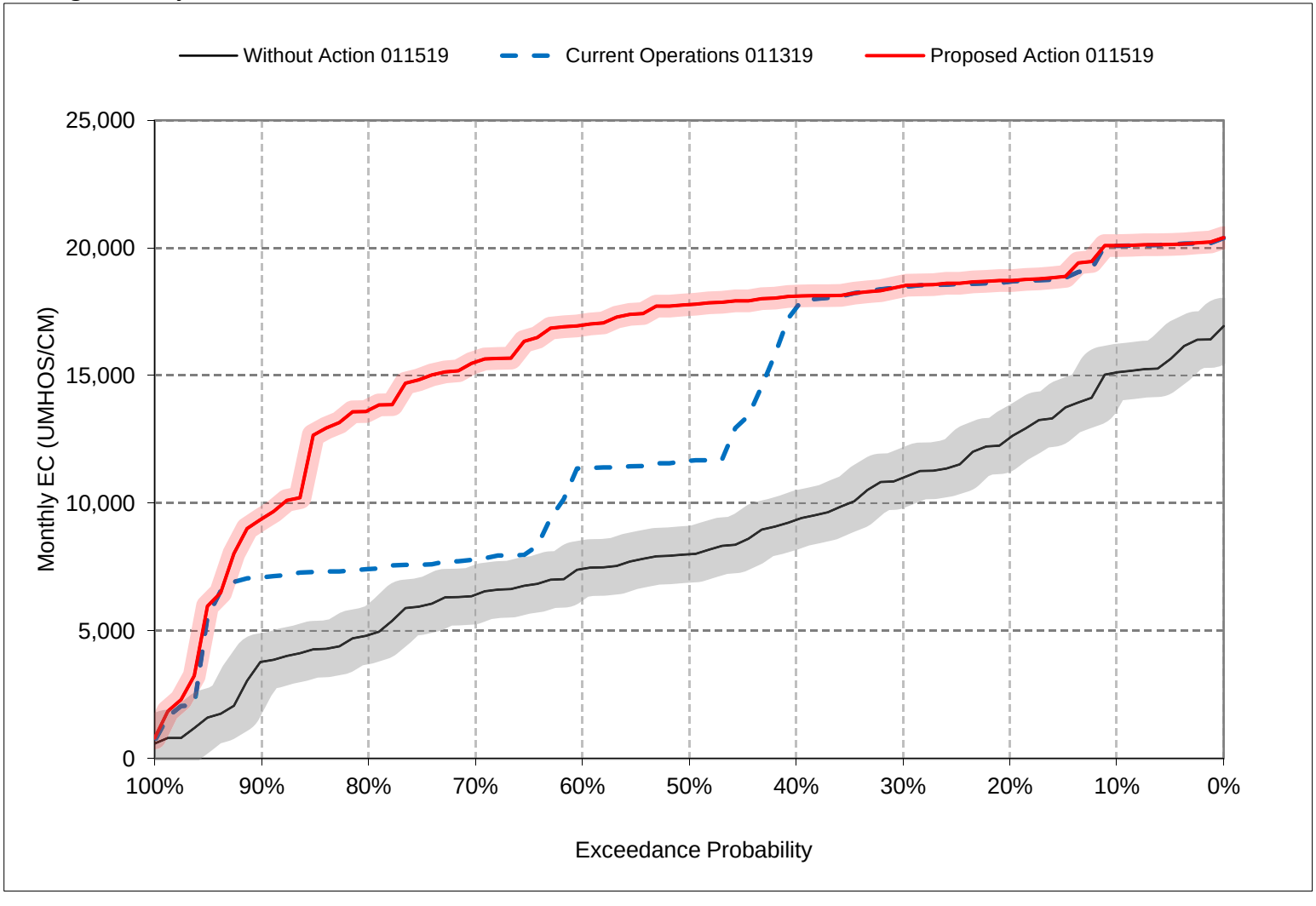
Figure 14-16. Sacramento River at Port Chicago Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

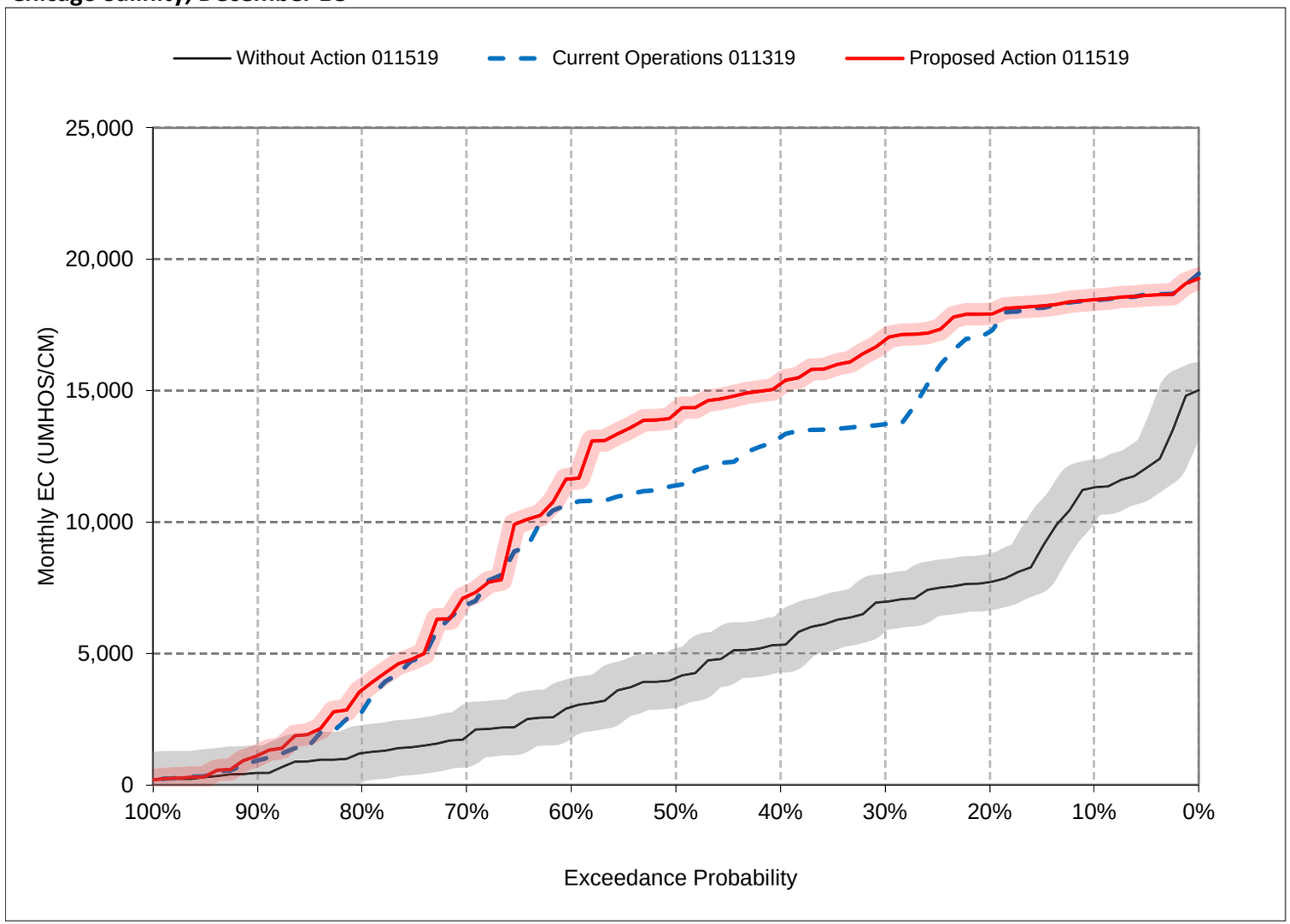
Figure 14-17. Sacramento River at Port Chicago Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 15-1. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

Without Action 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

Current Operations 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

Current Operations 011319 minus Without Action 011519

	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**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 15-2. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) 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**

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 15-3. Jones Pumping Plant South Delta Exports Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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).

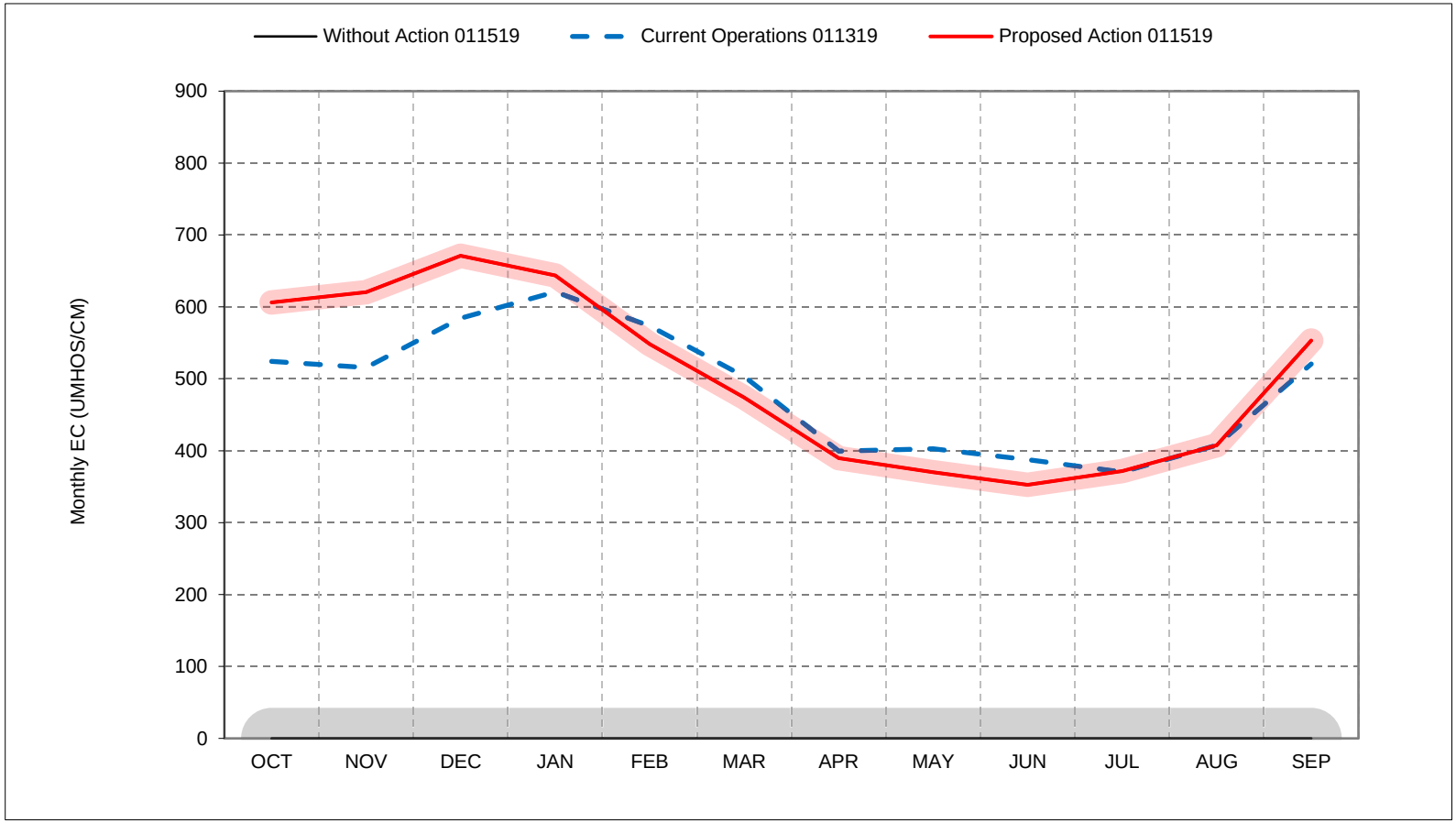
c These results are displayed with calendar year - year type sorting.

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.

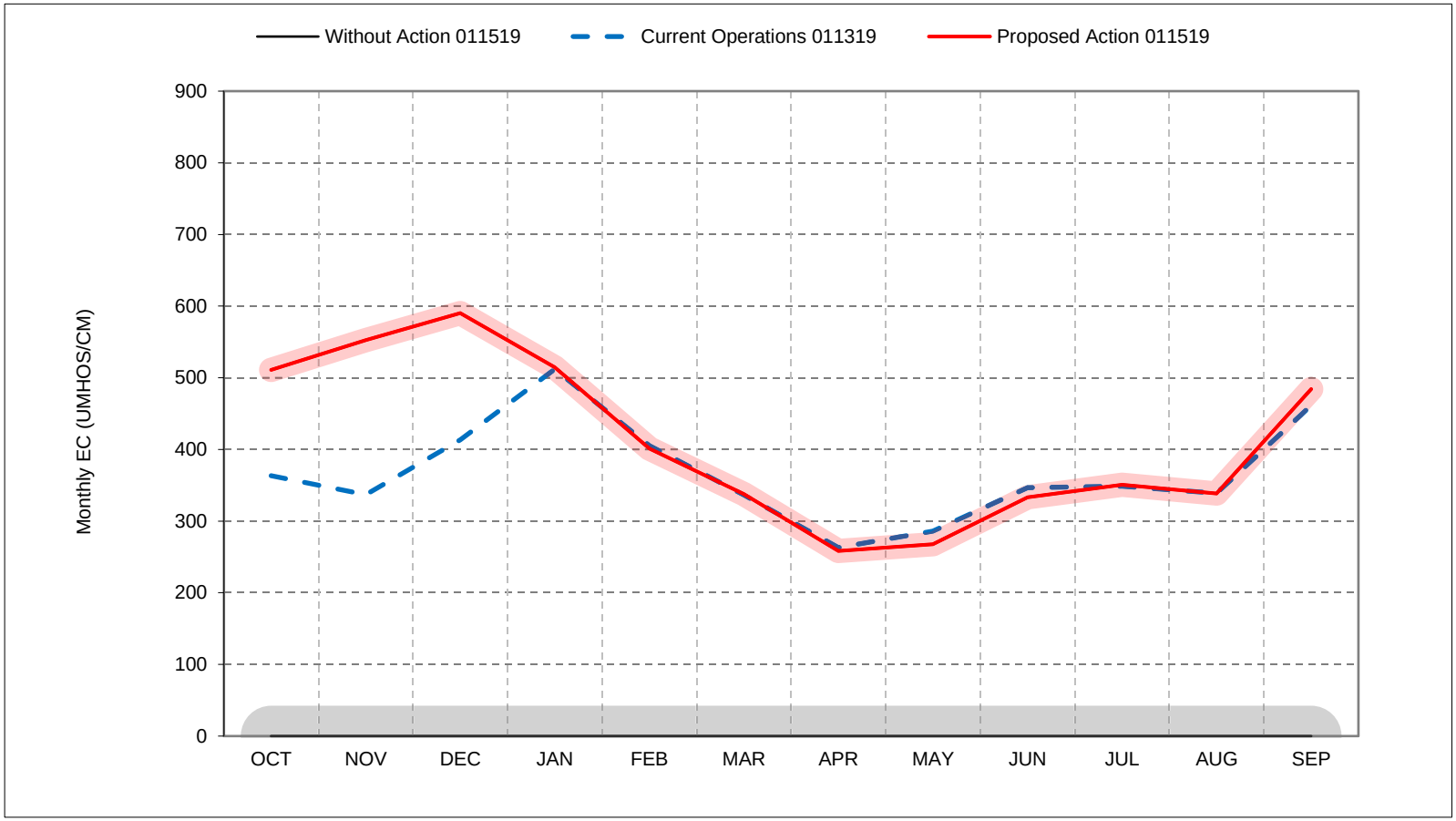
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-1. Jones Pumping Plant South Delta Exports Salinity, Long-Term Average EC



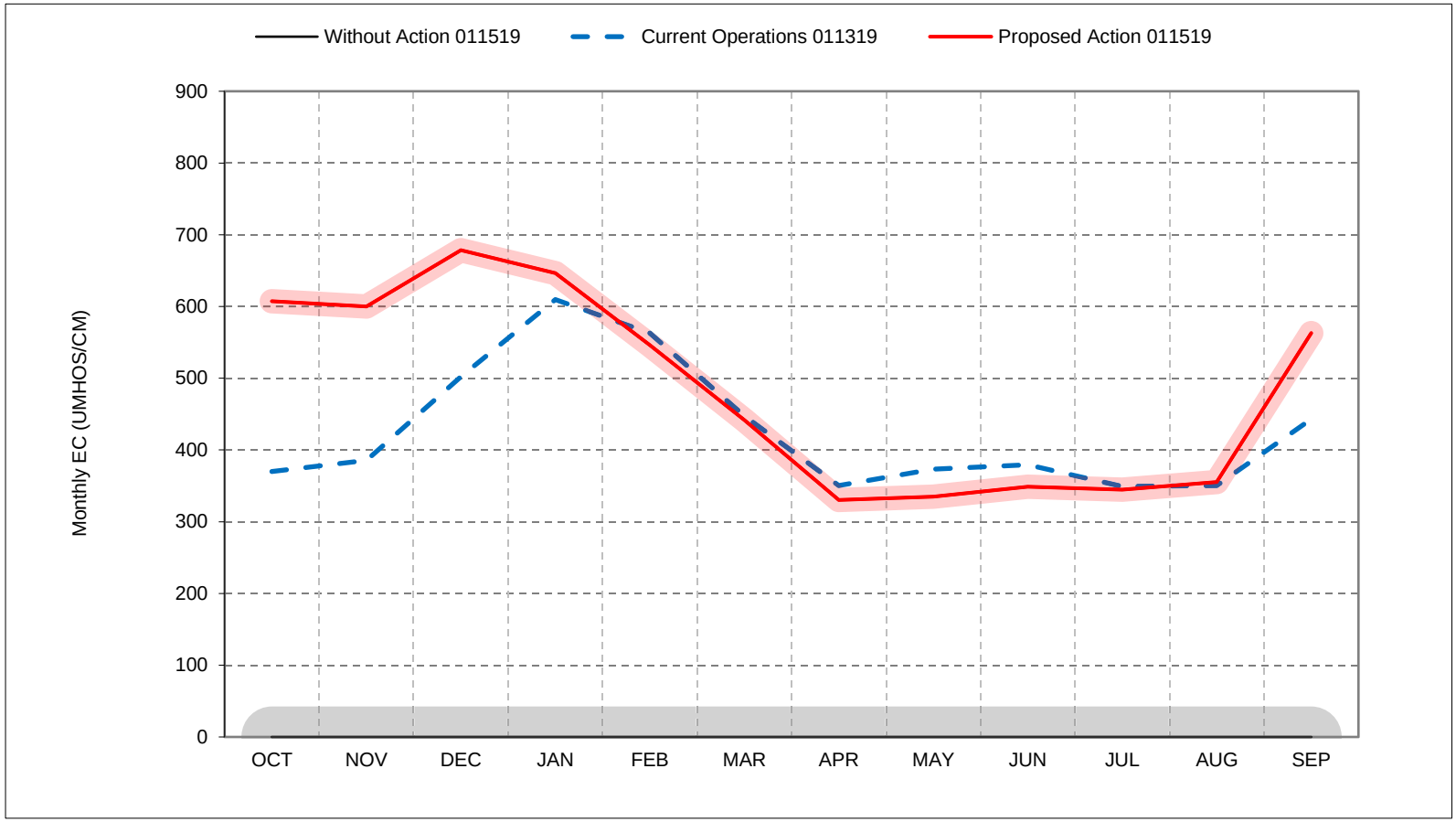
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-2. Jones Pumping Plant South Delta Exports Salinity, Wet Year Average EC



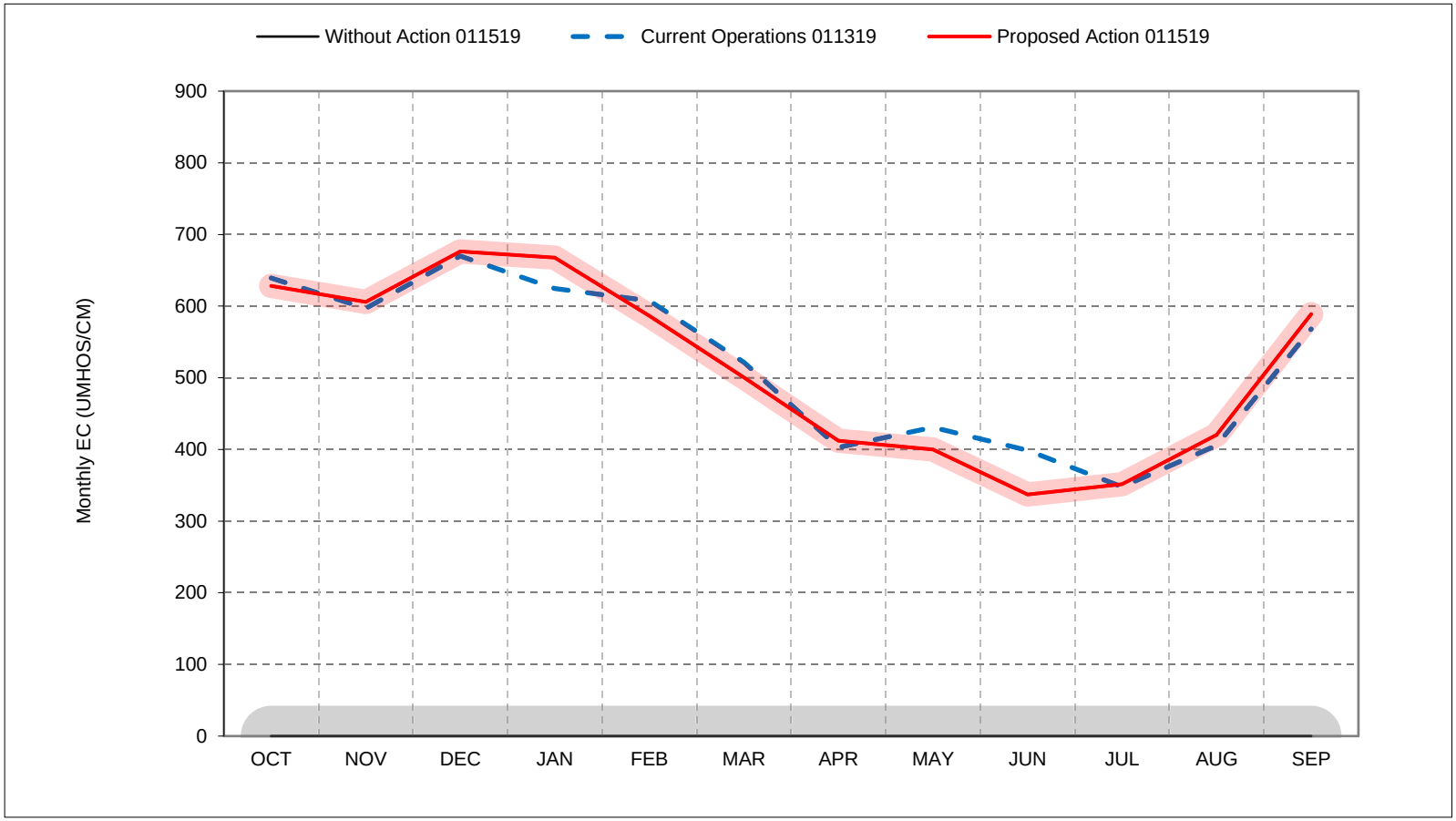
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-3. Jones Pumping Plant South Delta Exports Salinity, Above Normal Year Average EC



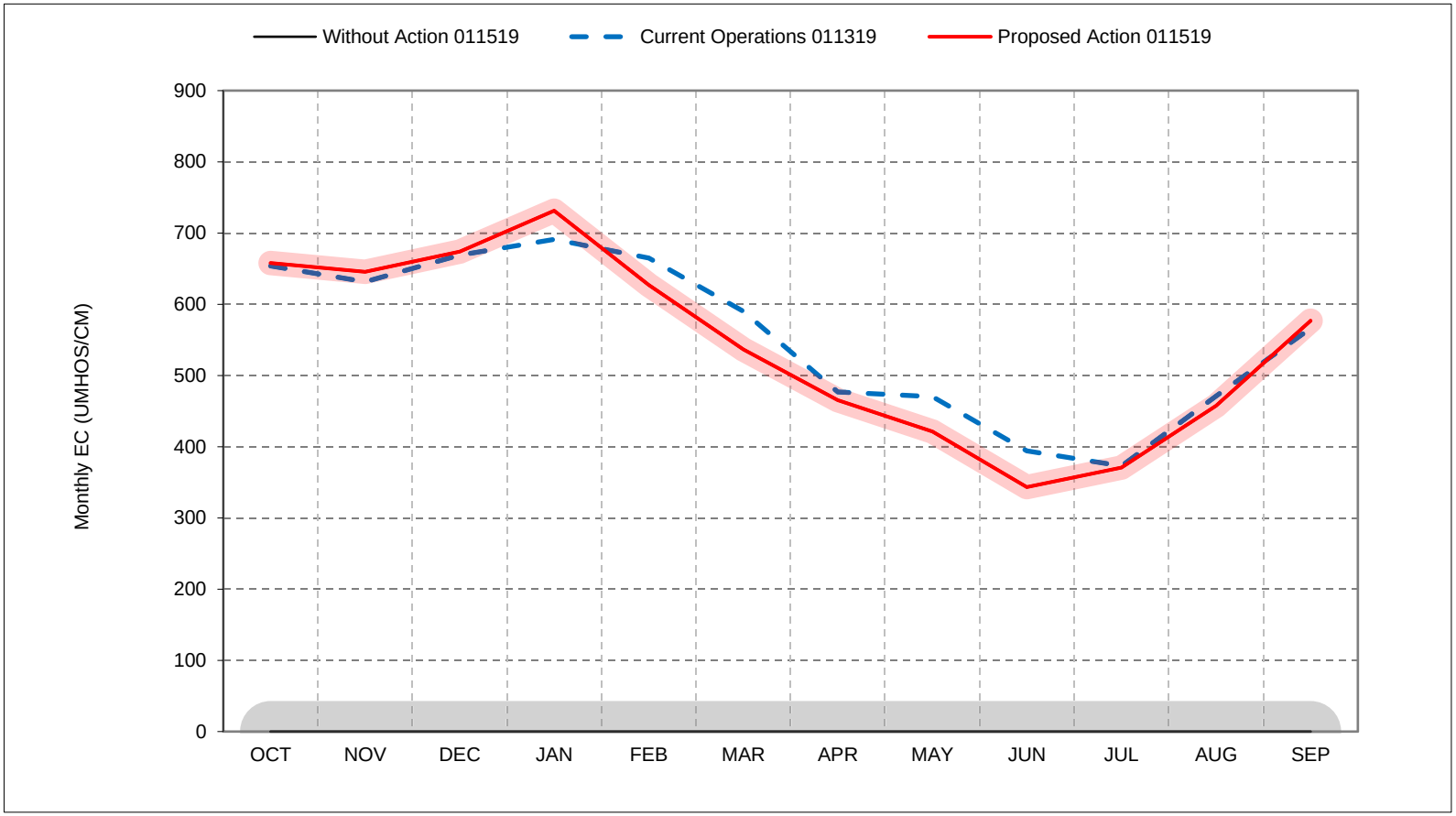
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-4. Jones Pumping Plant South Delta Exports Salinity, Below Normal Year Average EC



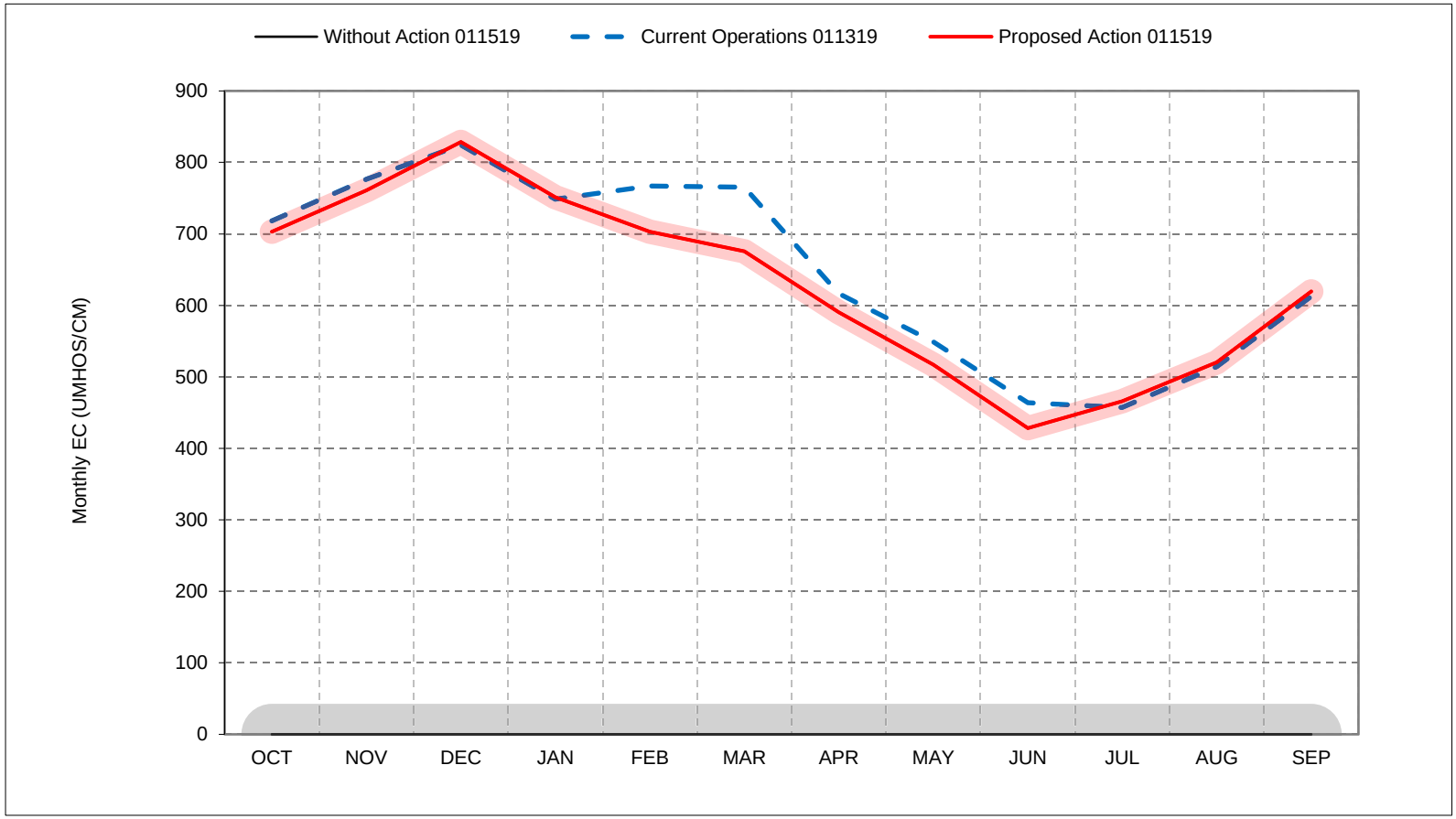
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-5. Jones Pumping Plant South Delta Exports Salinity, Dry Year Average EC



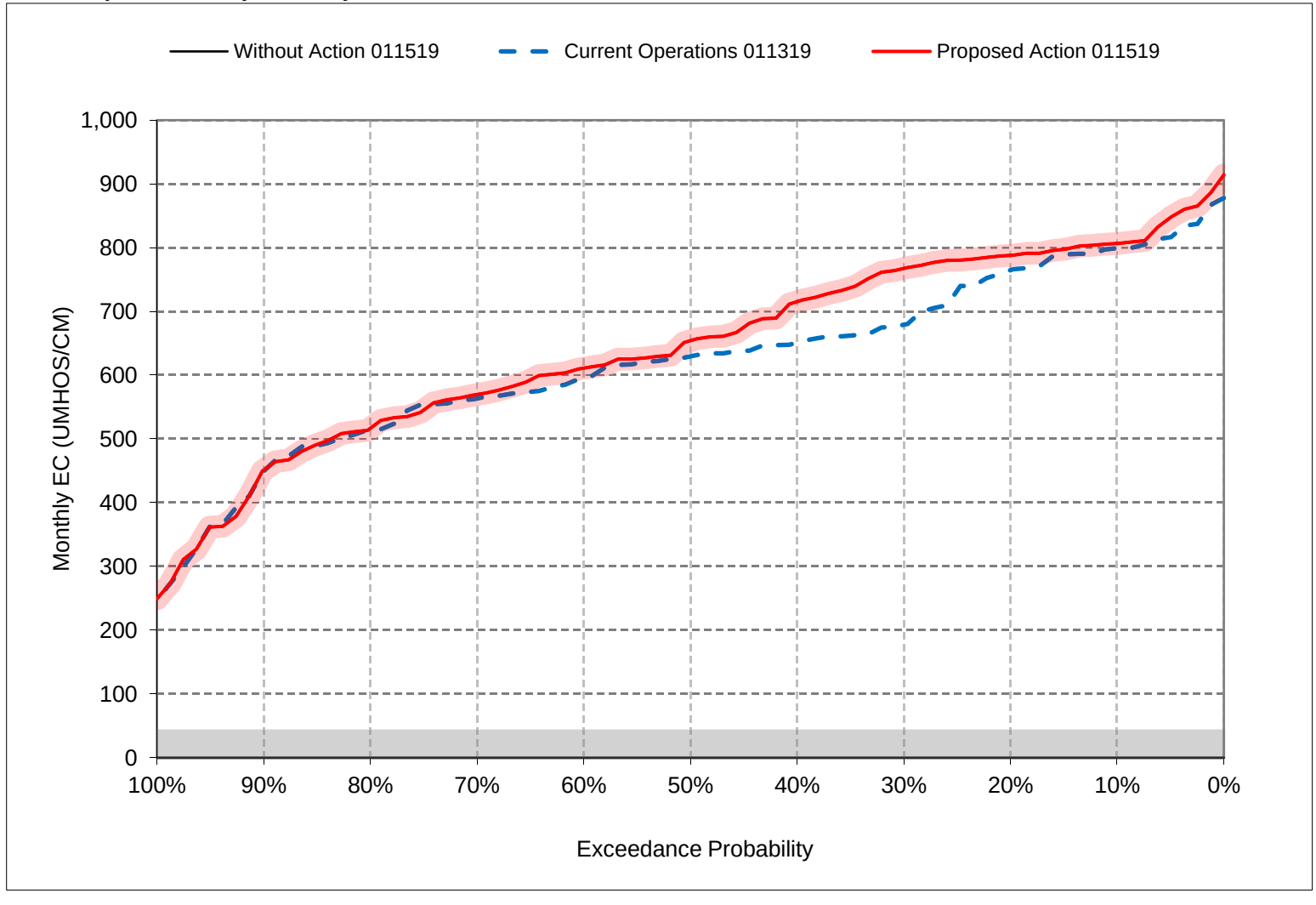
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

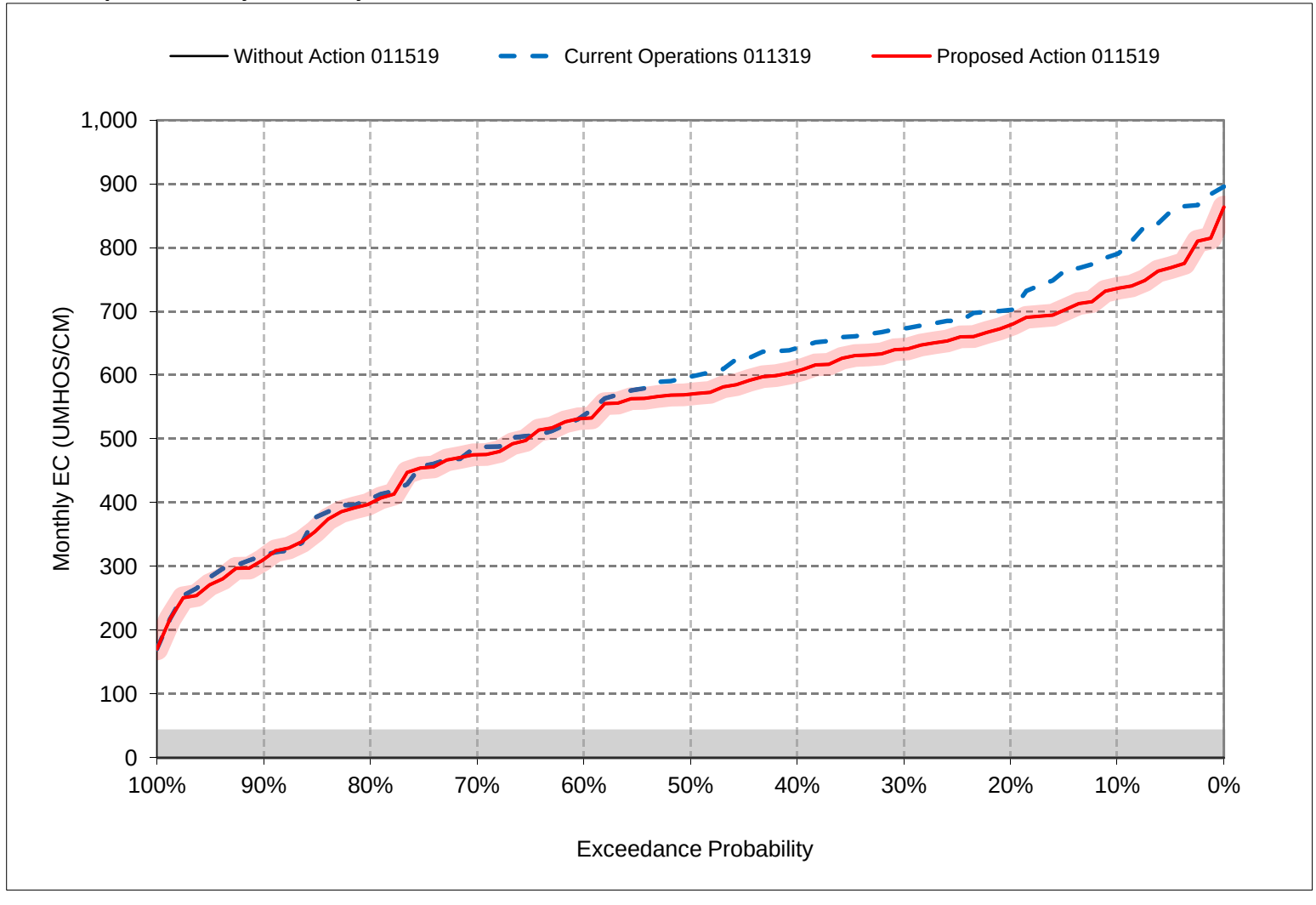
Figure 15-7. Jones Pumping Plant South Delta Exports Salinity, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

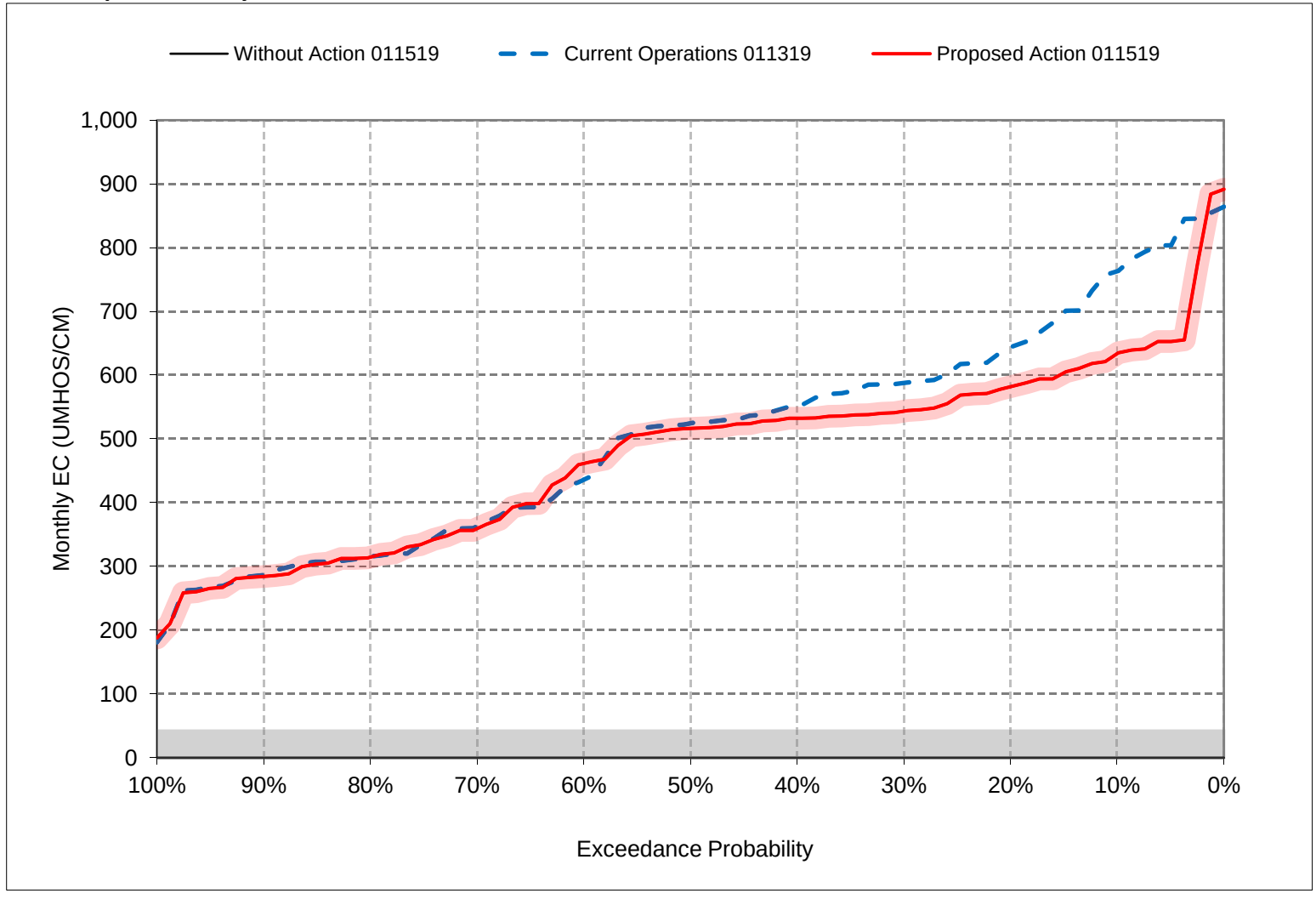
Figure 15-8. Jones Pumping Plant South Delta Exports Salinity, February EC



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

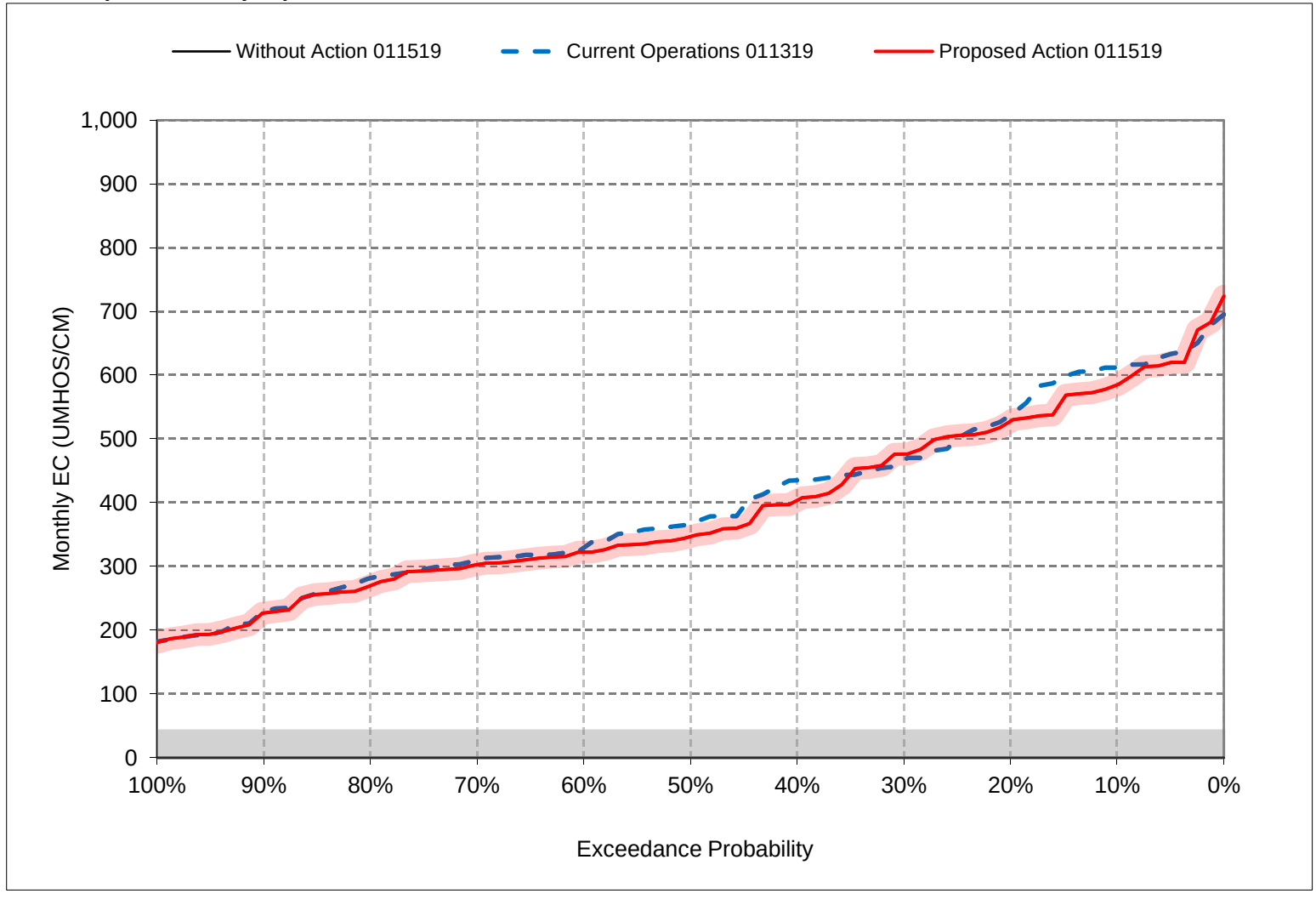
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-9. Jones Pumping Plant South
Delta Exports Salinity, March EC



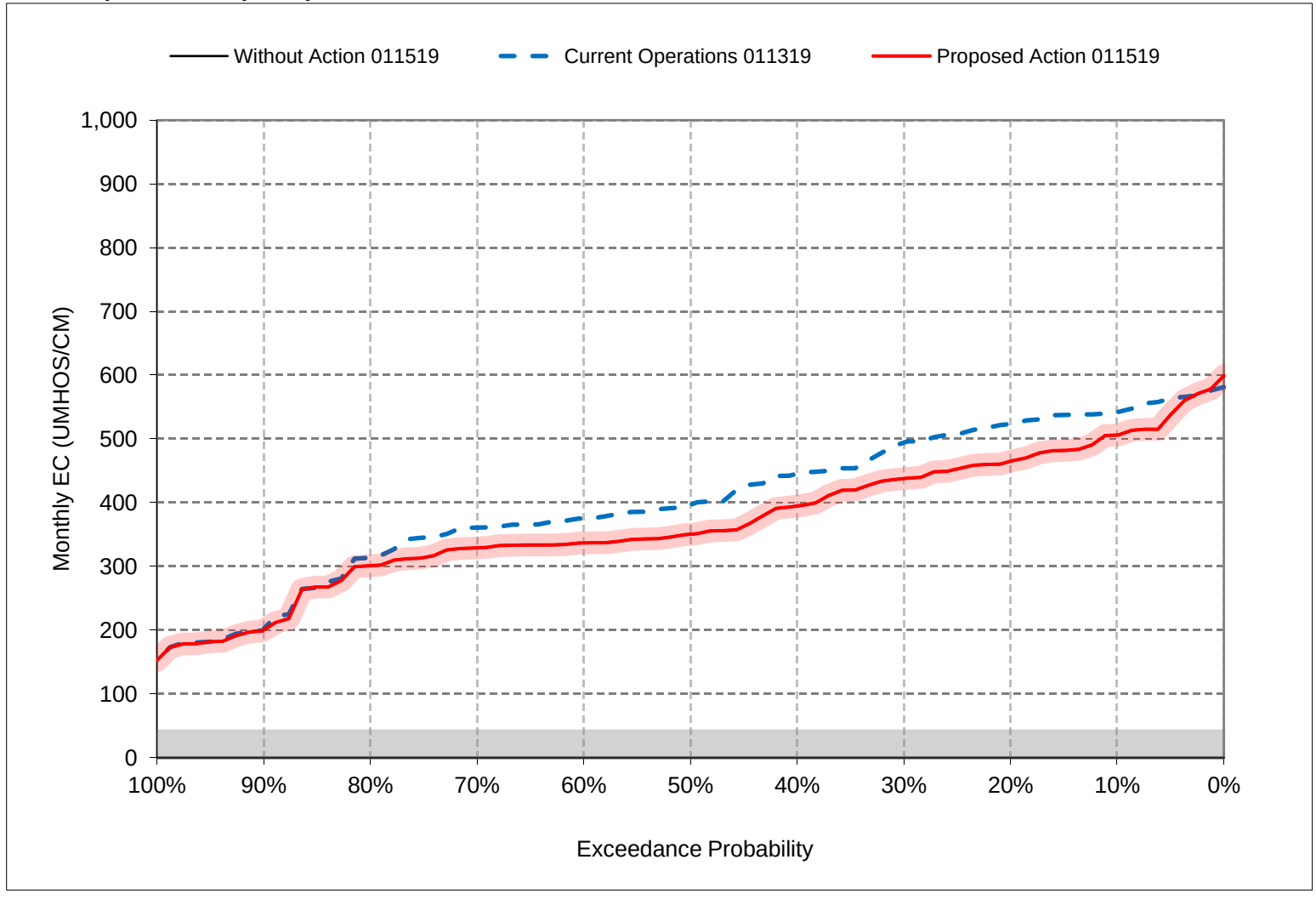
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-10. Jones Pumping Plant South
Delta Exports Salinity, April EC



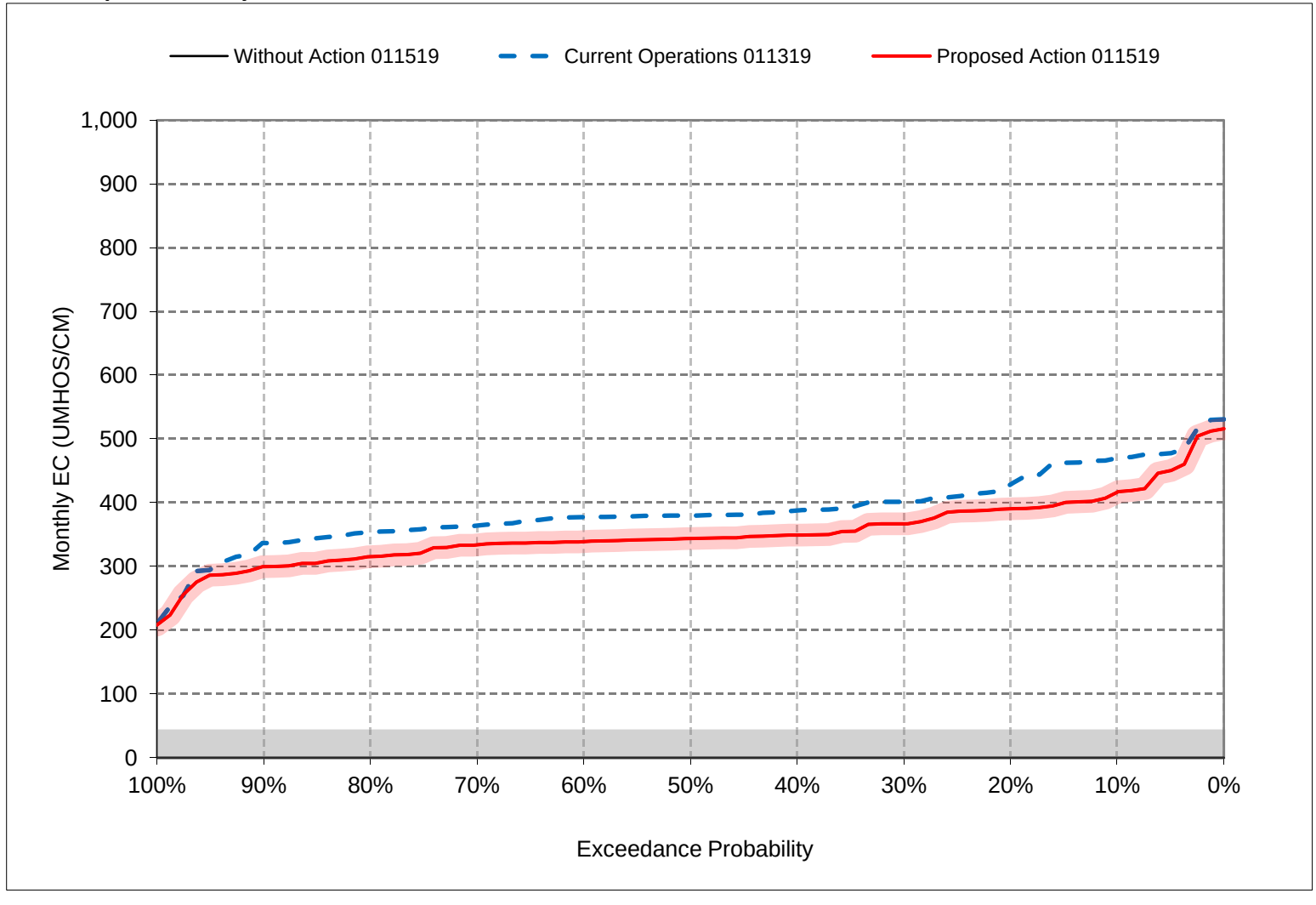
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-11. Jones Pumping Plant South
Delta Exports Salinity, May EC



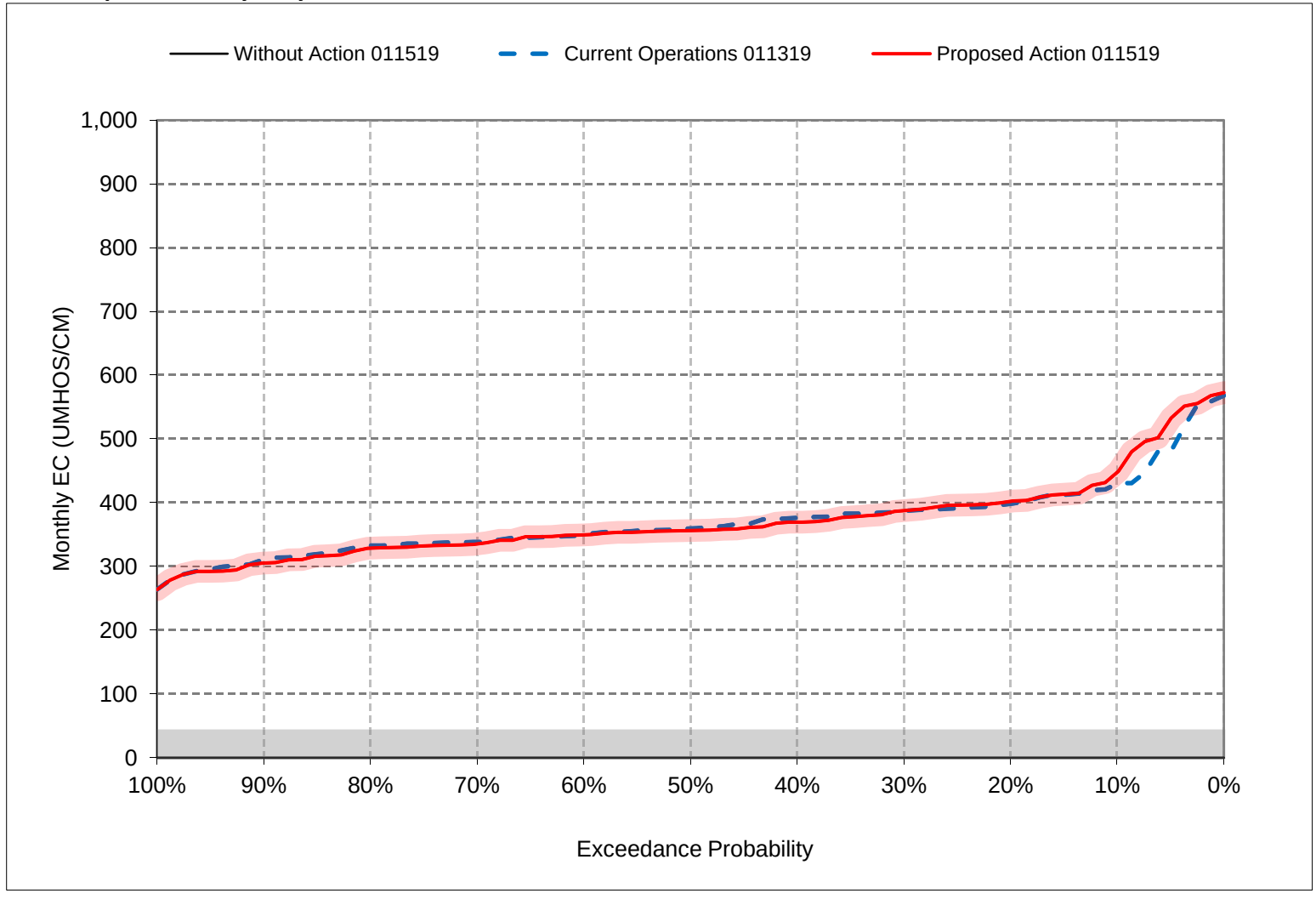
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-12. Jones Pumping Plant South
Delta Exports Salinity, June EC



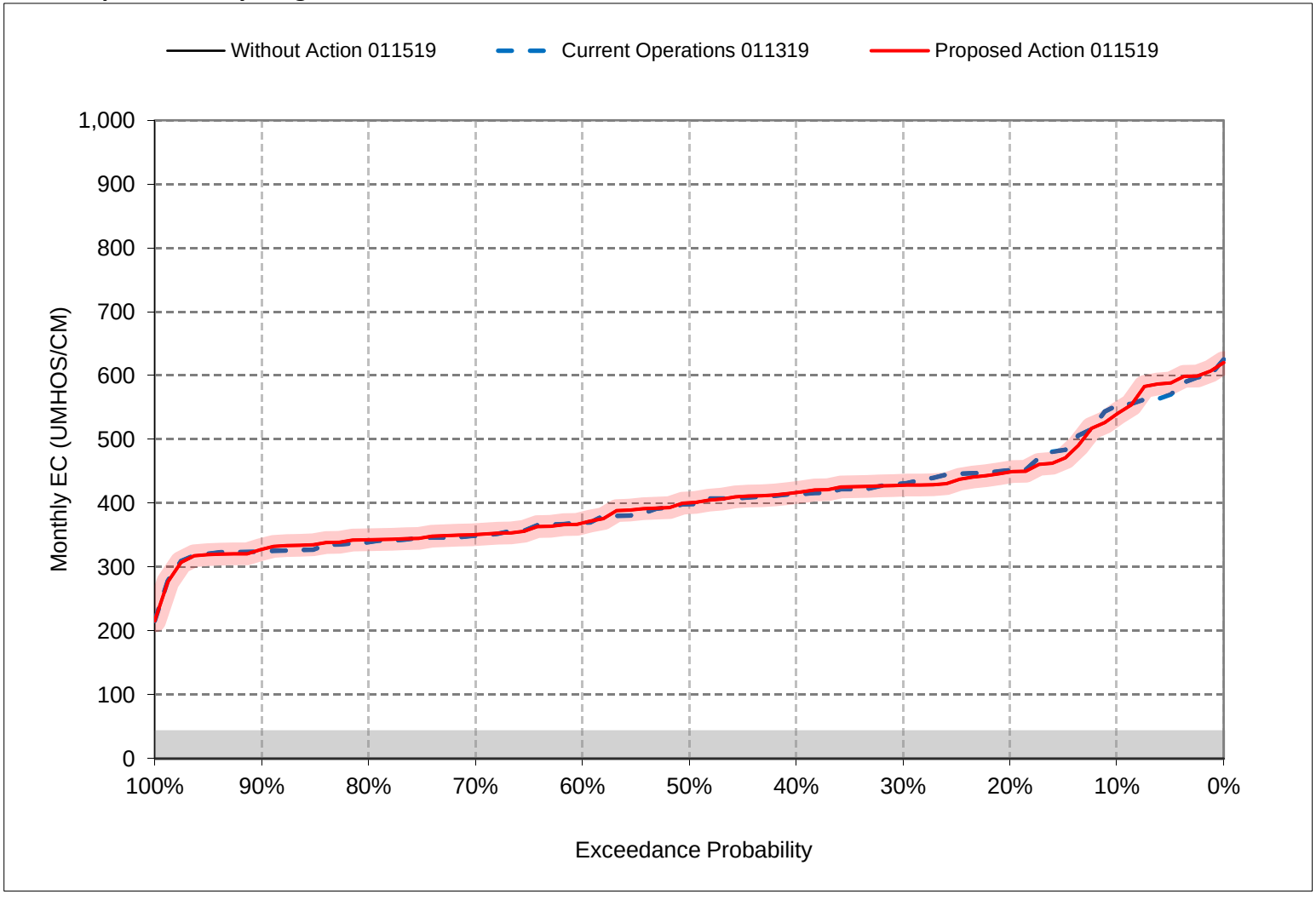
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 15-13. Jones Pumping Plant South
Delta Exports Salinity, July EC



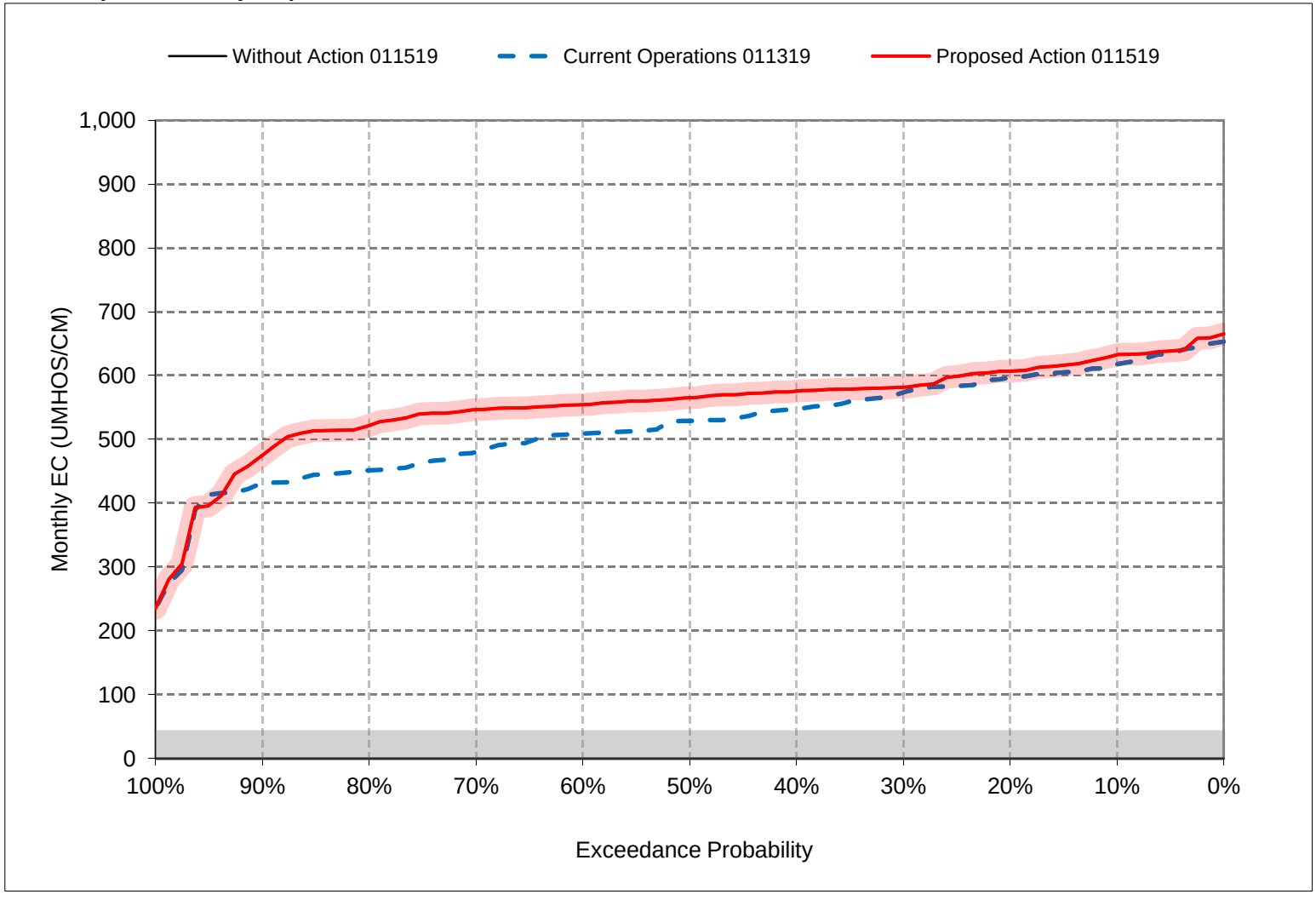
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

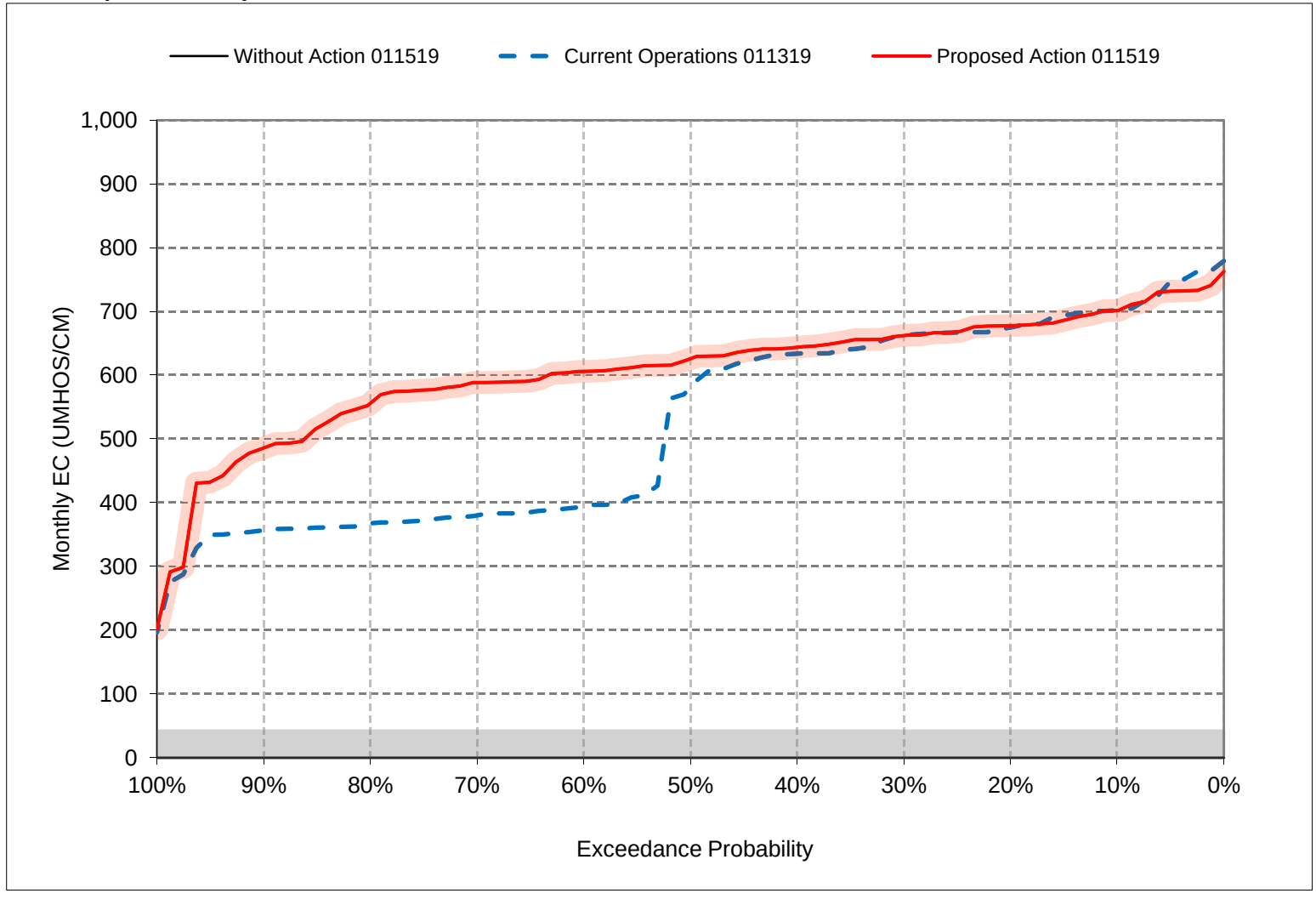
Figure 15-15. Jones Pumping Plant South Delta Exports Salinity, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

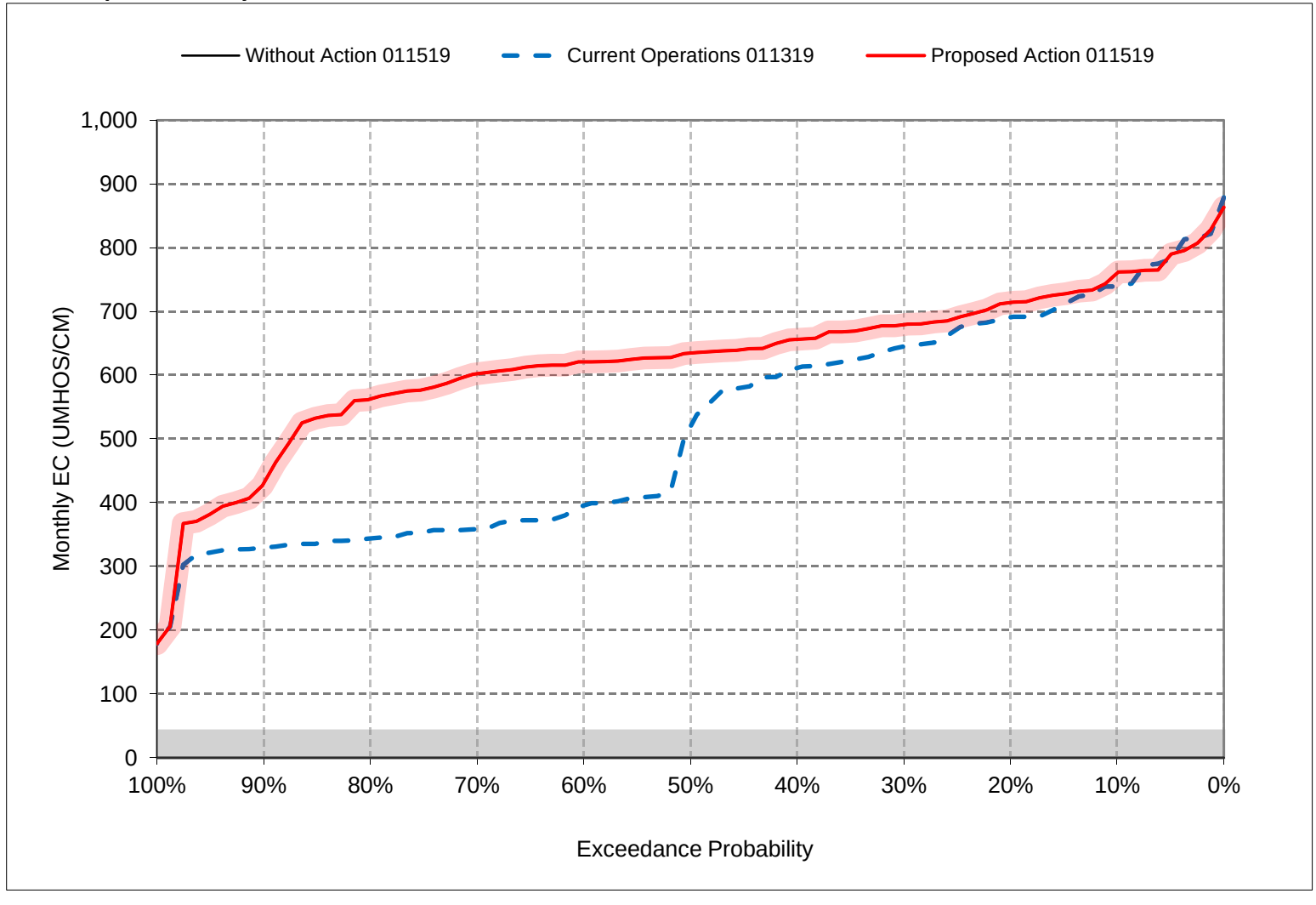
Figure 15-16. Jones Pumping Plant South Delta Exports Salinity, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

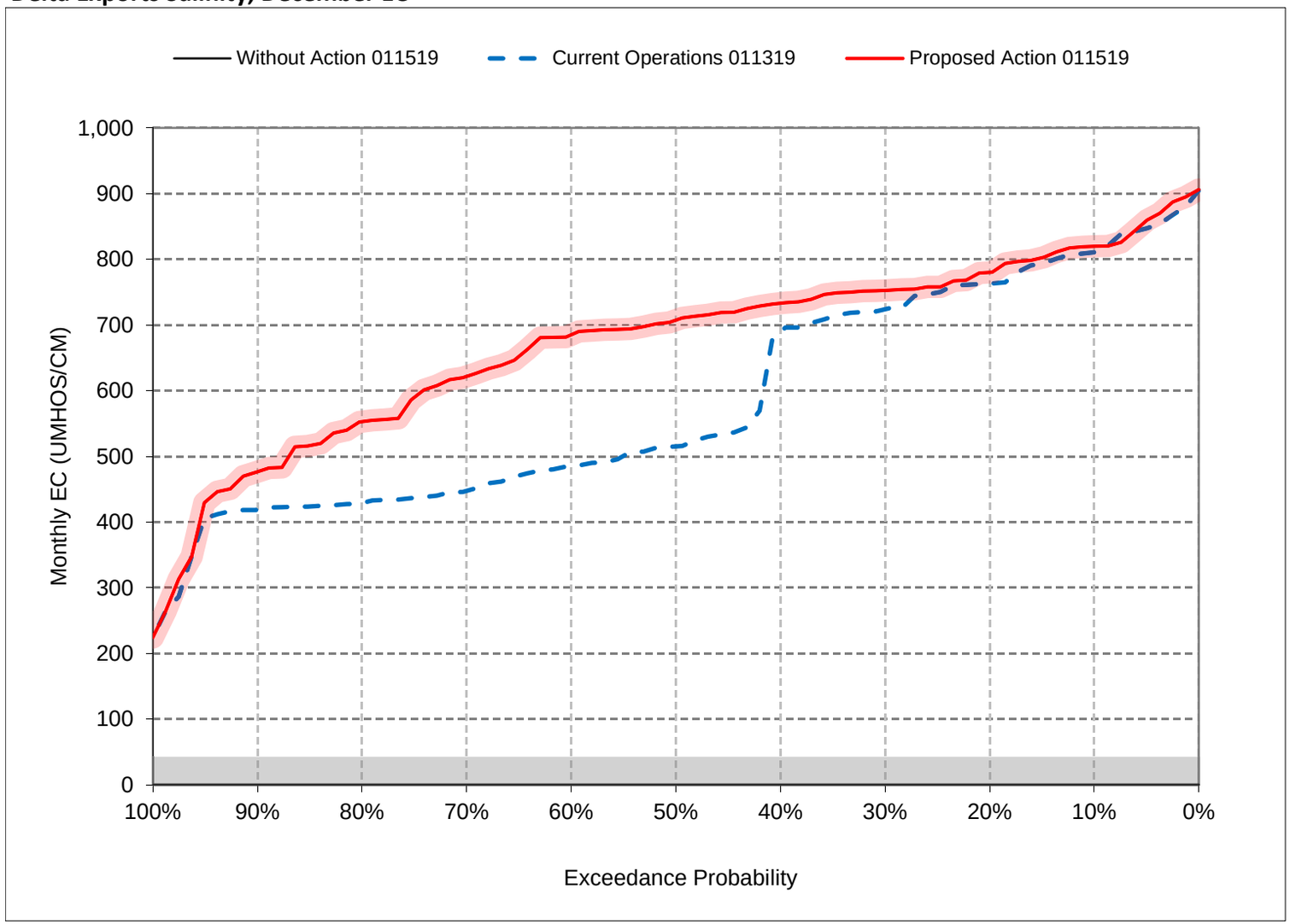
Figure 15-17. Jones Pumping Plant South Delta Exports Salinity, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 16-1. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	676	683	639	685	726	752	725	687	696	639	655	668
20%	637	637	587	642	634	623	582	607	630	585	609	633
30%	608	598	555	591	586	570	491	486	540	548	586	607
40%	578	567	532	562	549	492	424	408	455	512	563	581
50%	556	537	504	534	482	445	353	354	413	472	525	539
60%	524	517	476	504	443	365	316	312	381	416	467	509
70%	509	489	455	470	391	293	279	280	349	370	401	486
80%	487	436	428	431	343	252	239	240	276	319	363	463
90%	454	399	396	354	262	229	214	178	236	279	334	406
Long Term												
Full Simulation Period[a]	559	540	505	529	490	458	420	408	449	463	505	546
Water Year Types[b]												
Wet (32%)	476	449	447	422	330	280	248	243	301	357	402	439
Above Normal (16%)	535	507	481	488	433	376	328	312	351	401	480	531
Below Normal (13%)	550	551	521	551	509	466	424	419	482	474	498	542
Dry (24%)	598	567	506	606	599	566	513	498	538	523	547	594
Critical (15%)	711	718	638	654	702	745	738	711	695	653	691	719

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**51**	**86**	**221**	**131**	-44	-158	-165	-157	-209	-214	-127	-69
20%	**60**	**69**	**184**	**119**	-33	-92	-90	-137	-184	-209	-197	-57
30%	**67**	**55**	**159**	**42**	-29	-83	-46	-37	-144	-218	-195	-52
40%	**67**	**57**	**126**	**23**	-15	-43	-12	**13**	-77	-190	-197	-52
50%	**51**	-16	-82	-1	**13**	-34	**38**	**23**	-51	-158	-165	-29
60%	-149	-182	-107	-3	**34**	**28**	**31**	**39**	-30	-117	-136	-12
70%	-151	-167	-128	-23	**40**	**64**	**34**	**50**	-7	-77	-88	-14
80%	-148	-130	-125	-16	**27**	**79**	**53**	**66**	**46**	-40	-66	-20
90%	-130	-100	-102	**29**	**81**	**70**	**33**	**23**	**46**	-11	-56	**7**
Long Term												
Full Simulation Period[a]	-38	-33	**22**	**38**	**14**	-25	-27	-25	-72	-132	-134	-40
Water Year Types[b]												
Wet (32%)	-130	-149	-147	**16**	**60**	**48**	**27**	**26**	**7**	-65	-99	**23**
Above Normal (16%)	-203	-163	-89	**51**	**63**	**27**	**31**	**45**	**3**	-116	-177	-101
Below Normal (13%)	**122**	**60**	**121**	**13**	**8**	-16	-5	**3**	-83	-162	-134	**12**
Dry (24%)	**76**	**78**	**140**	**51**	-37	-91	-65	-64	-145	-184	-113	-51
Critical (15%)	**3**	**88**	**220**	**71**	-48	-134	-161	-171	-189	-179	-202	-143

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 16-2. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	676	683	639	685	726	752	725	687	696	639	655	668
20%	637	637	587	642	634	623	582	607	630	585	609	633
30%	608	598	555	591	586	570	491	486	540	548	586	607
40%	578	567	532	562	549	492	424	408	455	512	563	581
50%	556	537	504	534	482	445	353	354	413	472	525	539
60%	524	517	476	504	443	365	316	312	381	416	467	509
70%	509	489	455	470	391	293	279	280	349	370	401	486
80%	487	436	428	431	343	252	239	240	276	319	363	463
90%	454	399	396	354	262	229	214	178	236	279	334	406
Long Term												
Full Simulation Period[a]	559	540	505	529	490	458	420	408	449	463	505	546
Water Year Types[b]												
Wet (32%)	476	449	447	422	330	280	248	243	301	357	402	439
Above Normal (16%)	535	507	481	488	433	376	328	312	351	401	480	531
Below Normal (13%)	550	551	521	551	509	466	424	419	482	474	498	542
Dry (24%)	598	567	506	606	599	566	513	498	538	523	547	594
Critical (15%)	711	718	638	654	702	745	738	711	695	653	691	719

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**65**	**117**	**220**	**178**	-50	-235	-257	-266	-305	-241	-135	-53
20%	**84**	**124**	**227**	**176**	-23	-146	-157	-215	-295	-236	-207	-45
30%	**88**	**127**	**207**	**202**	-45	-131	-89	-108	-218	-226	-198	-33
40%	**105**	**128**	**195**	**138**	-31	-80	-36	-54	-138	-197	-196	-16
50%	**112**	**125**	**188**	**61**	**4**	-48	**11**	-32	-101	-163	-172	**10**
60%	**133**	**133**	**179**	**31**	-7	**14**	**29**	0	-77	-121	-135	**32**
70%	**130**	**151**	**145**	**17**	**35**	**69**	**30**	**21**	-53	-84	-92	**39**
80%	**131**	**157**	**53**	**0**	**28**	**68**	**46**	**52**	**13**	-48	-65	**44**
90%	**63**	**1**	-20	**31**	**61**	**72**	**39**	**44**	**40**	-21	-49	**55**
Long Term												
Full Simulation Period[a]	**86**	**116**	**154**	**91**	**2**	-56	-59	-74	-127	-142	-137	-7
Water Year Types[b]												
Wet (32%)	**69**	**138**	**120**	**40**	**53**	**45**	**26**	**12**	-16	-68	-100	**45**
Above Normal (16%)	**128**	**120**	**177**	**136**	**59**	**19**	**18**	**3**	-46	-126	-172	**28**
Below Normal (13%)	**135**	**79**	**132**	**96**	**7**	-38	-28	-61	-168	-170	-117	**42**
Dry (24%)	**100**	**114**	**149**	**132**	-48	-143	-119	-133	-221	-196	-132	-43
Critical (15%)	**12**	**98**	**233**	**83**	-92	-231	-257	-255	-263	-204	-204	-139

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 16-3. Banks Pumping Plant South Delta Exports Salinity, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM) 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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM) 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).

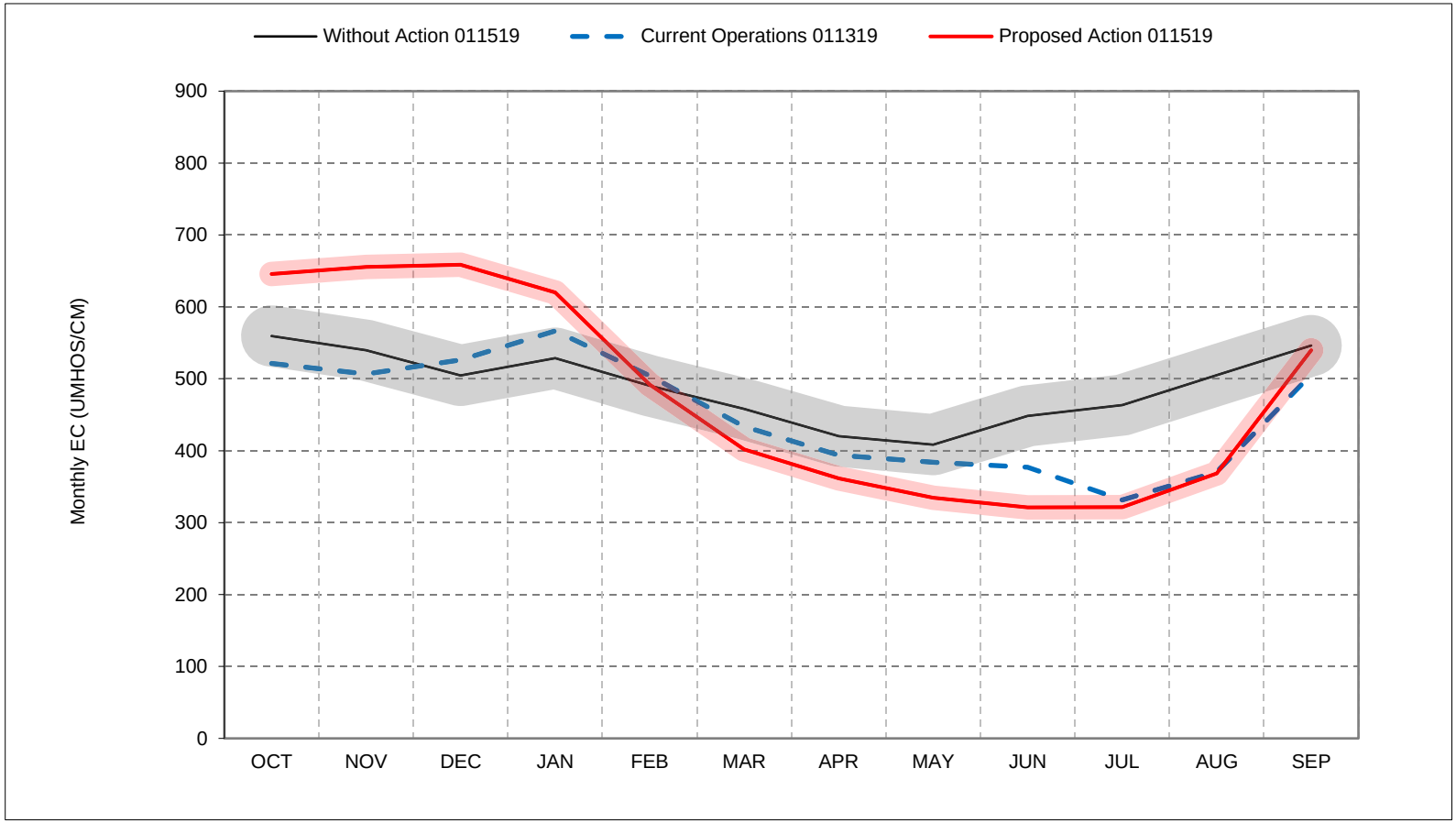
c These results are displayed with calendar year - year type sorting.

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.

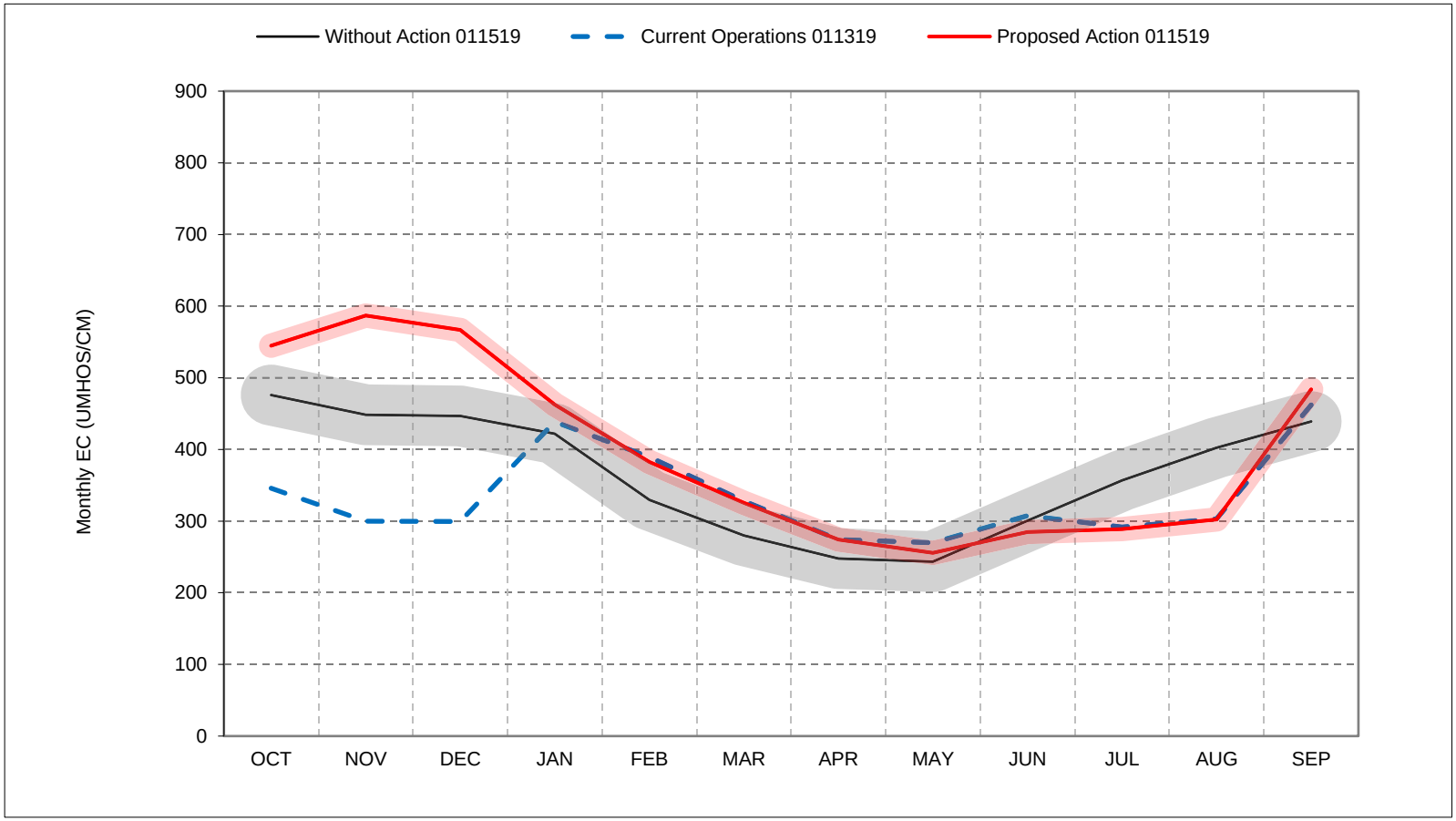
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-1. Banks Pumping Plant South Delta Exports Salinity, Long-Term Average EC



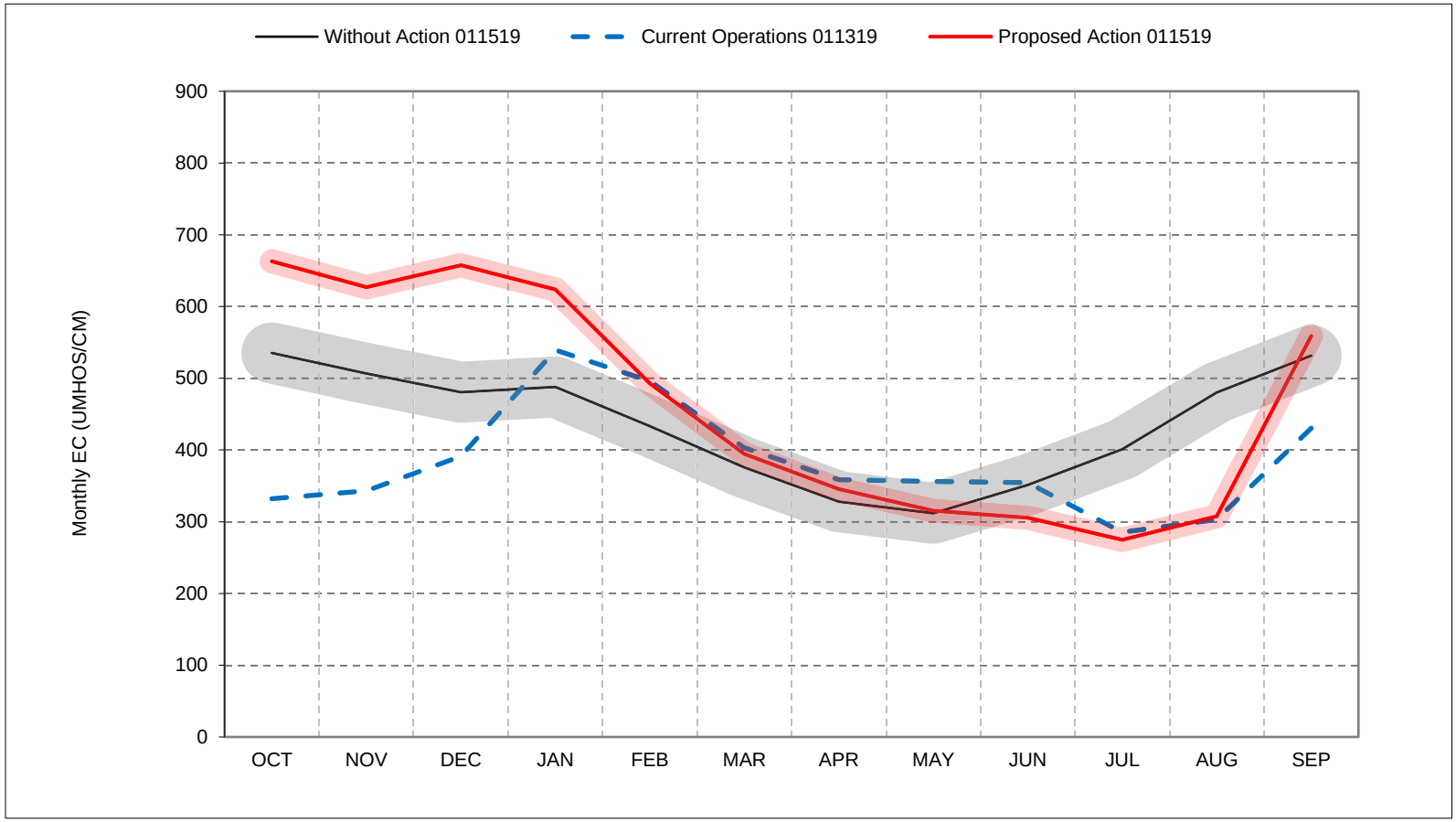
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-2. Banks Pumping Plant South Delta Exports Salinity, Wet Year Average EC



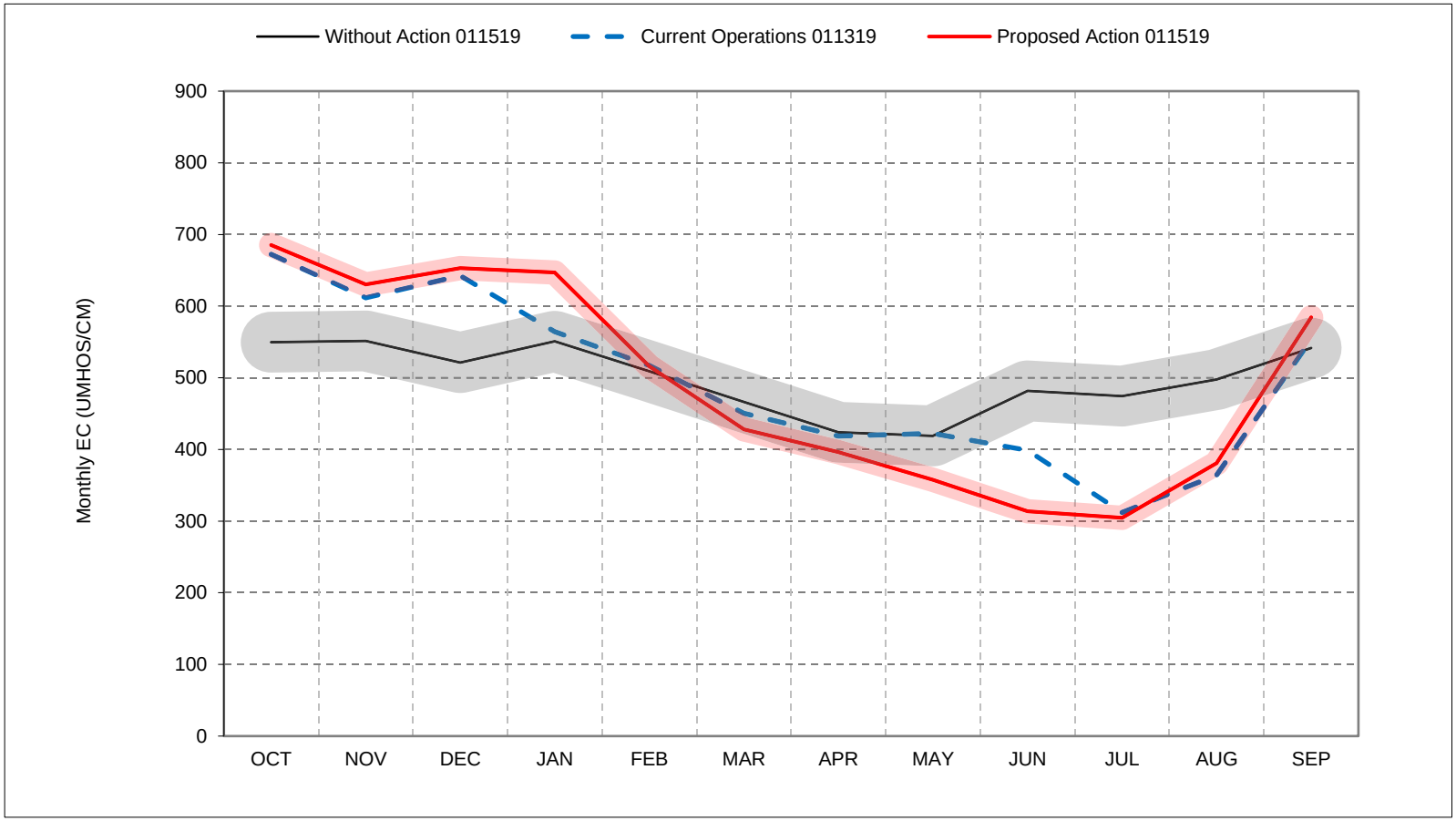
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-3. Banks Pumping Plant South Delta Exports Salinity, Above Normal Year Average EC



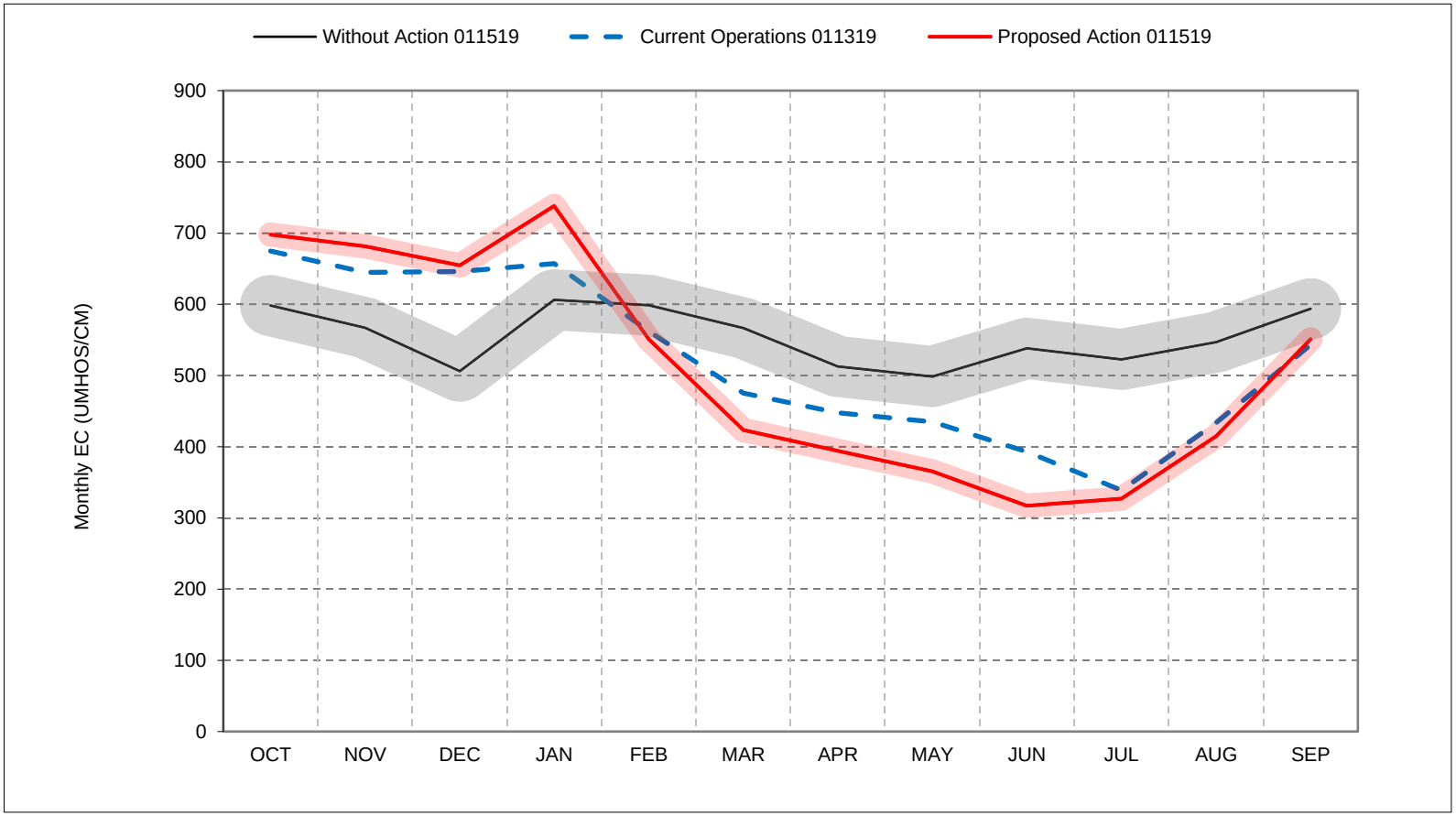
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-4. Banks Pumping Plant South Delta Exports Salinity, Below Normal Year Average EC



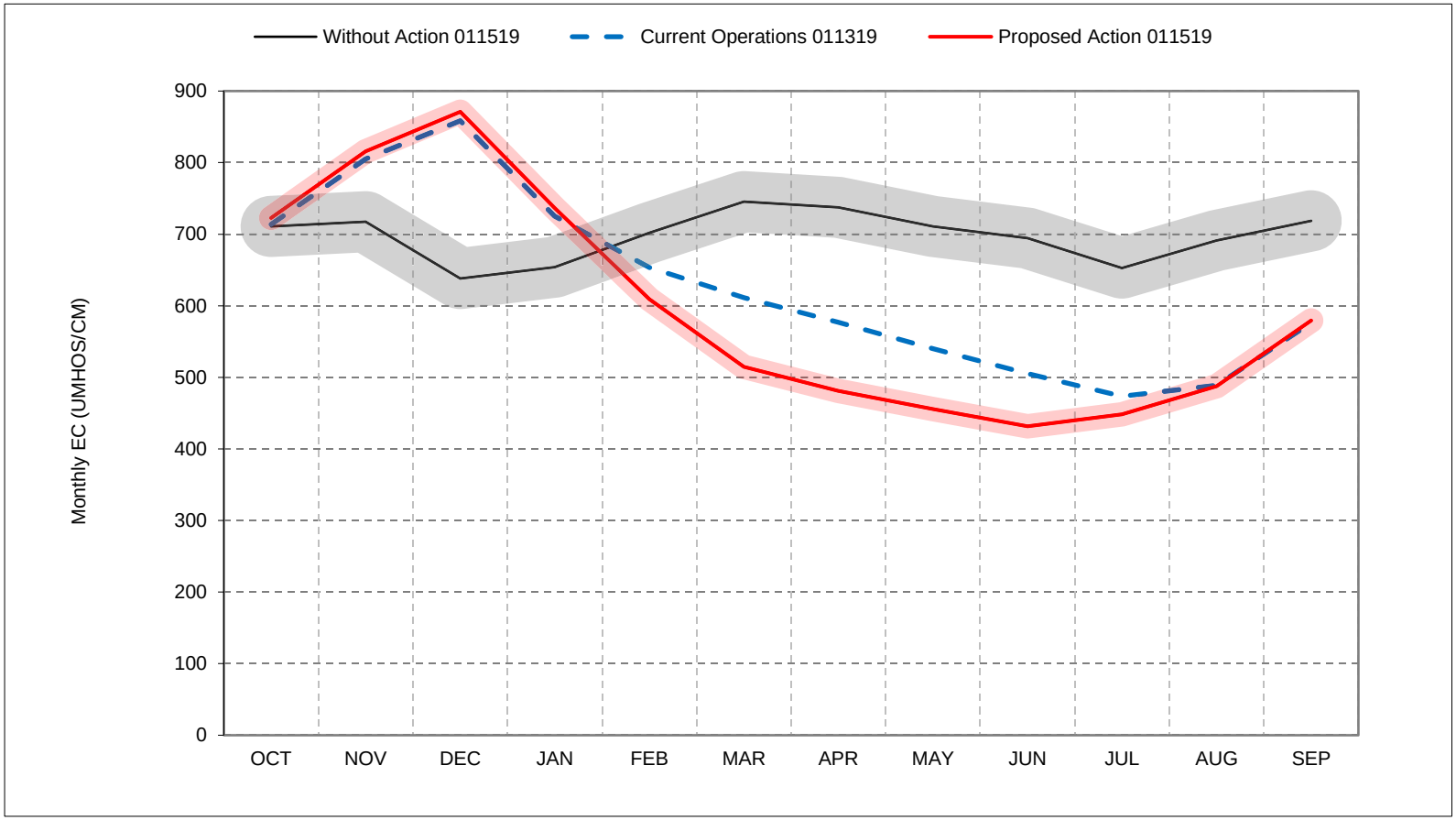
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-5. Banks Pumping Plant South Delta Exports Salinity, Dry Year Average EC



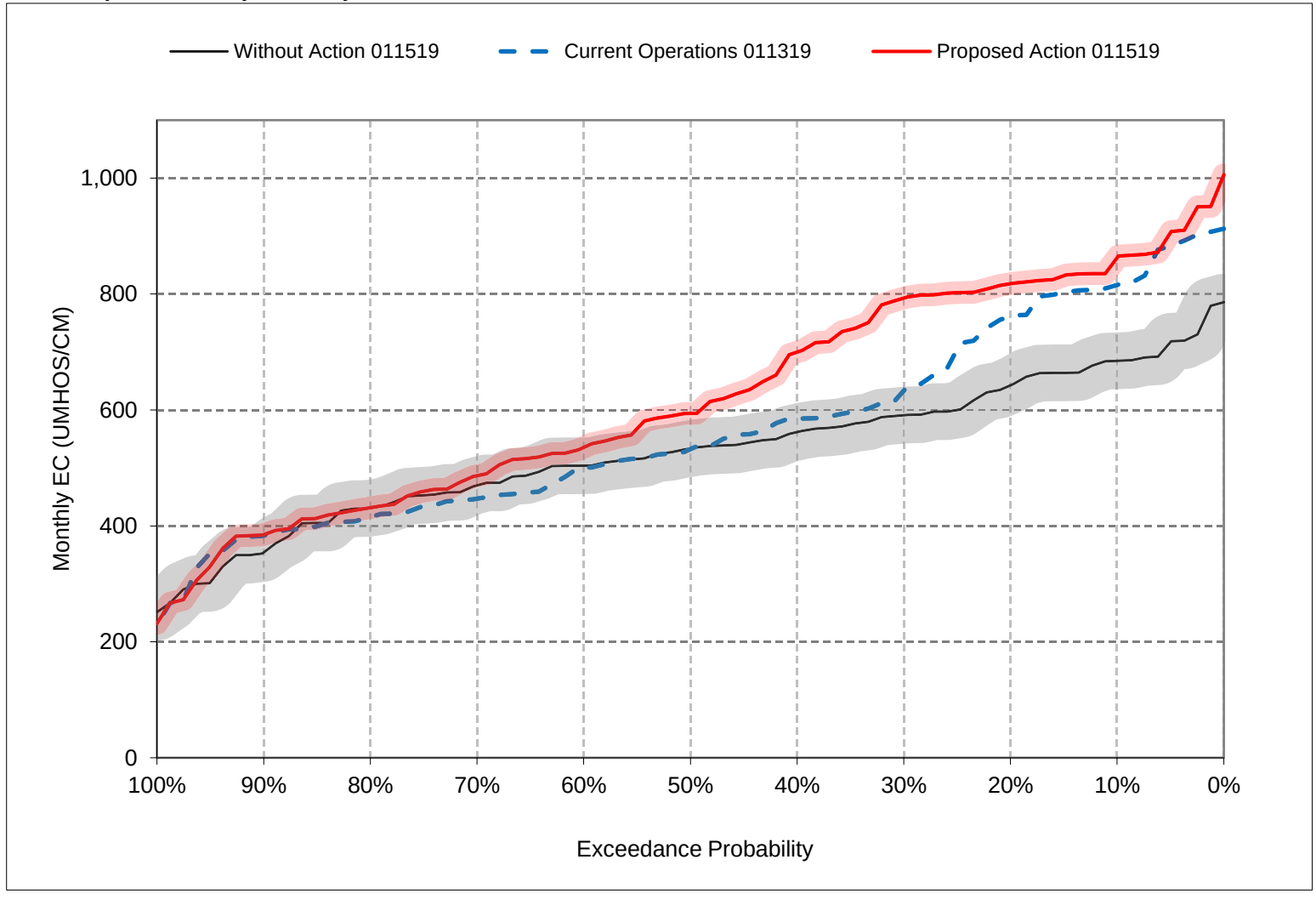
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-6. Banks Pumping Plant South Delta Exports Salinity, Critical Year Average EC



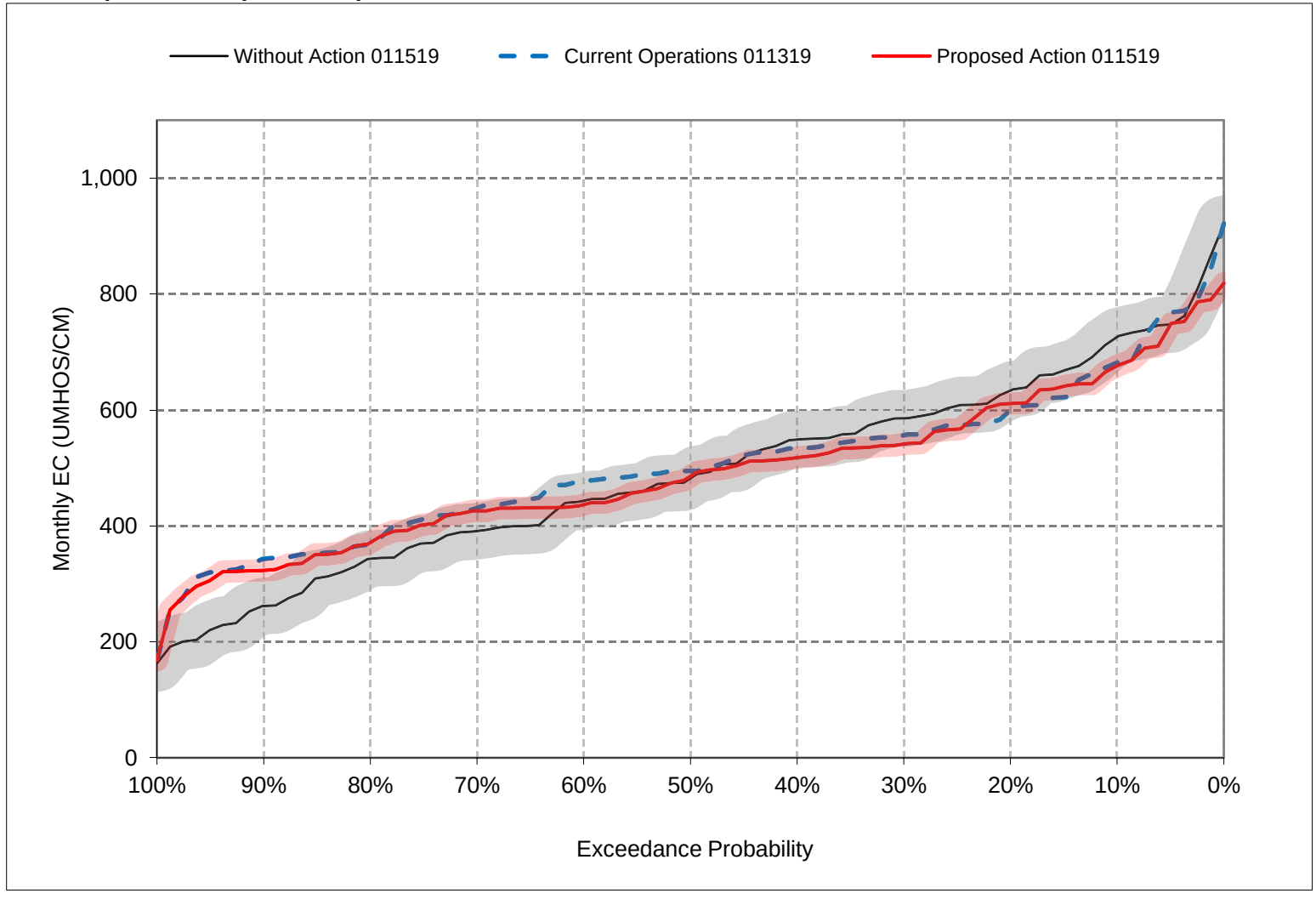
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-7. Banks Pumping Plant South
Delta Exports Salinity, January EC



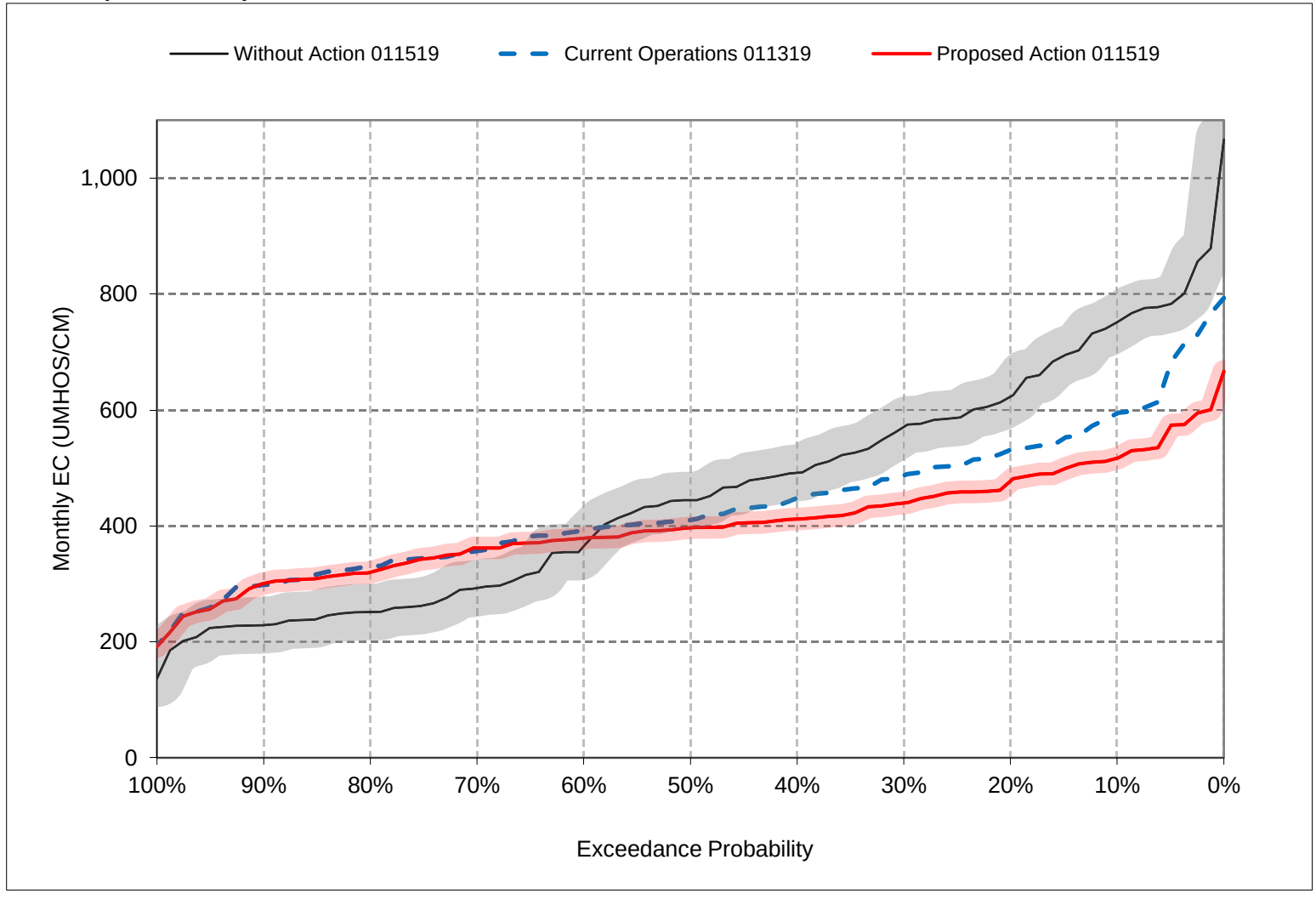
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-8. Banks Pumping Plant South
Delta Exports Salinity, February EC



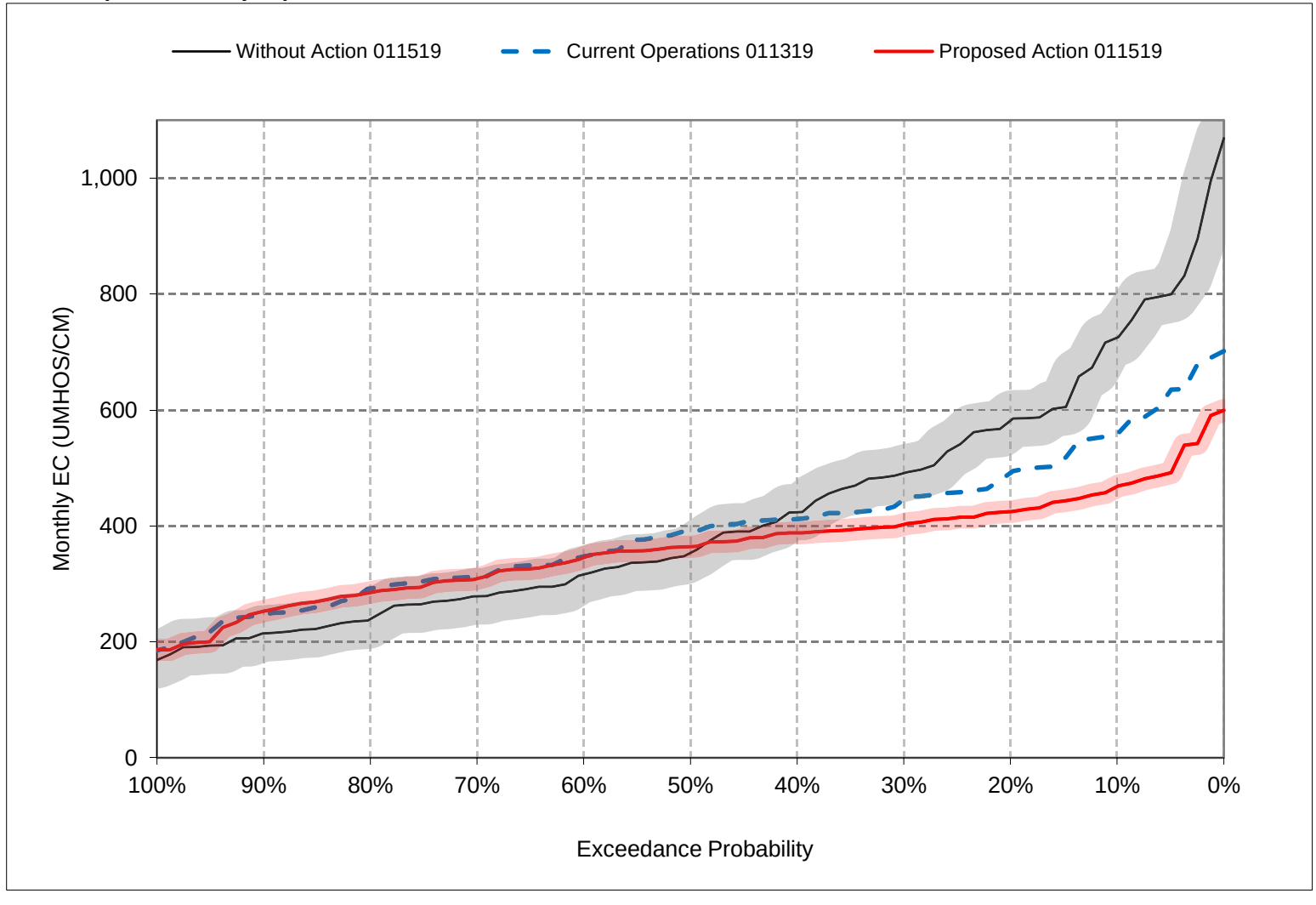
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-9. Banks Pumping Plant South
Delta Exports Salinity, March EC



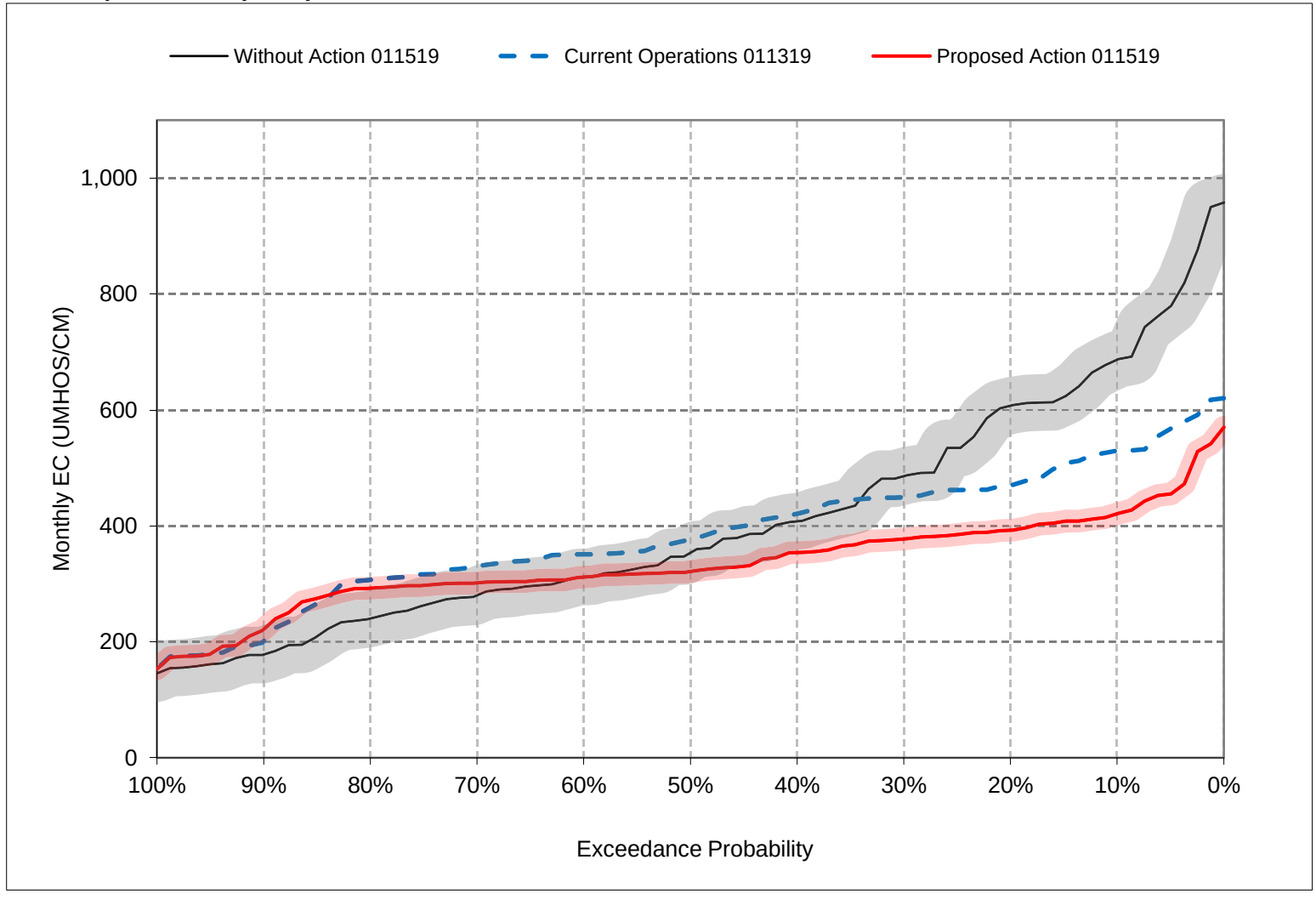
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-10. Banks Pumping Plant South
Delta Exports Salinity, April EC



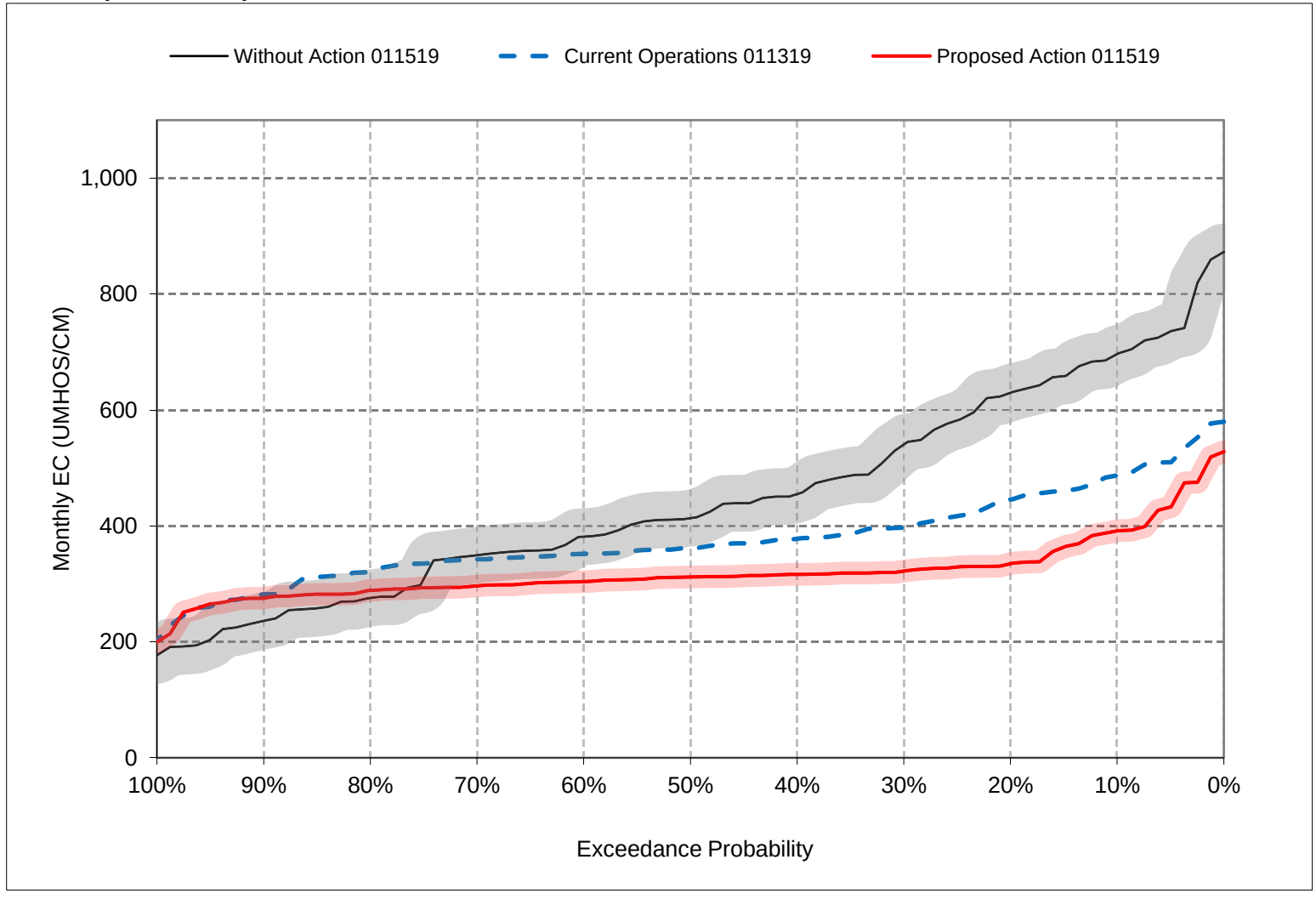
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-11. Banks Pumping Plant South
Delta Exports Salinity, May EC



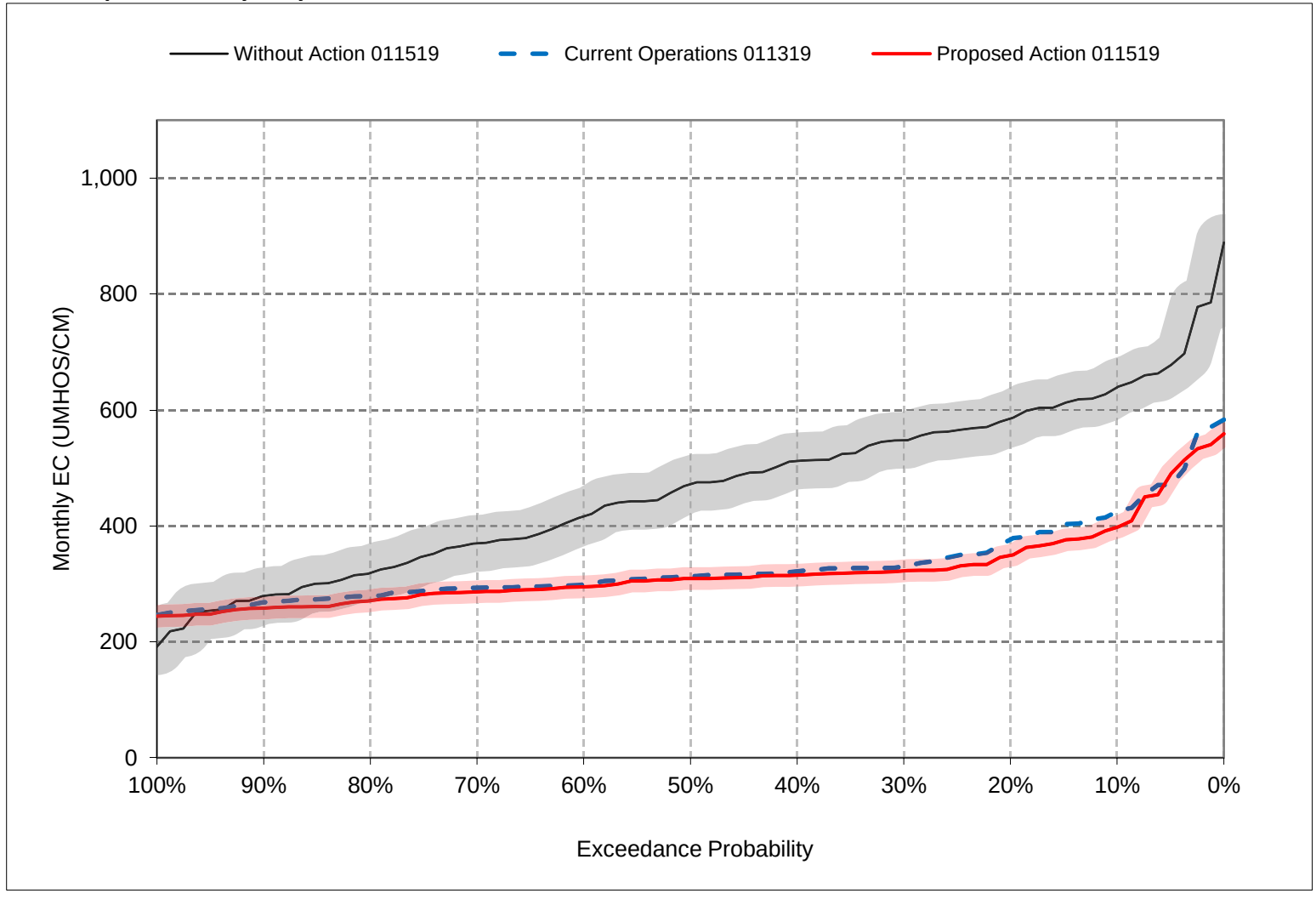
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-12. Banks Pumping Plant South
Delta Exports Salinity, June EC



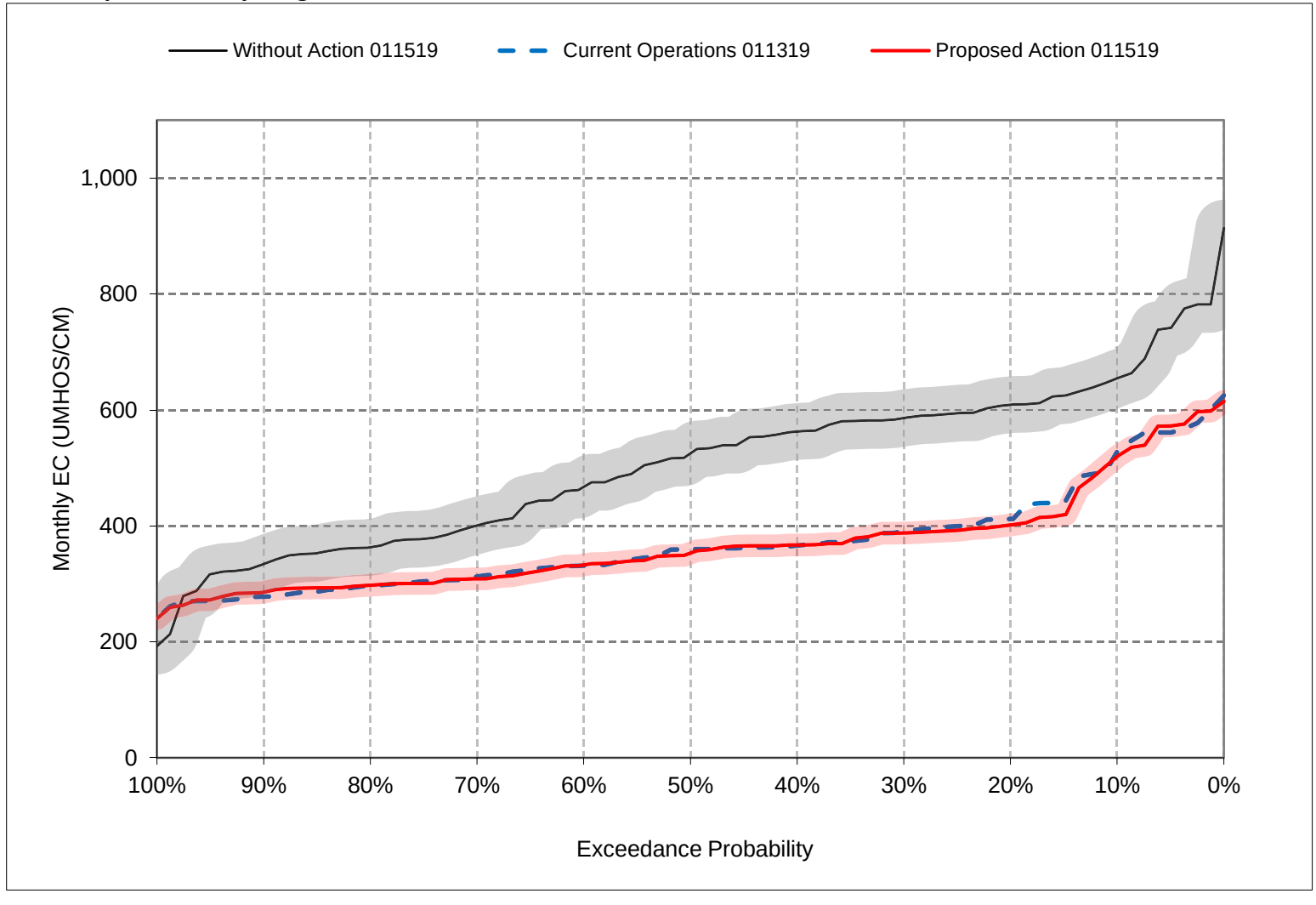
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-13. Banks Pumping Plant South
Delta Exports Salinity, July EC



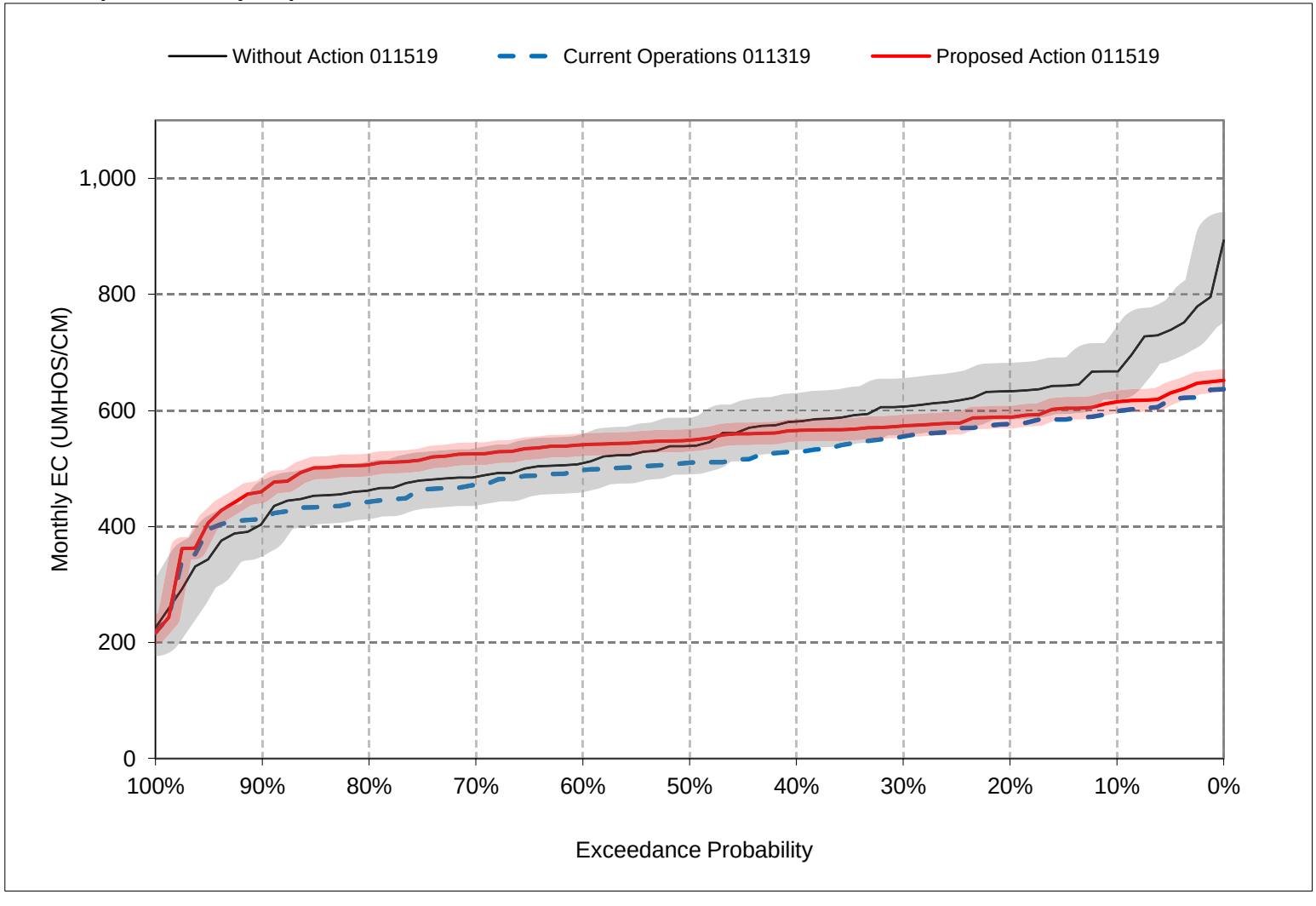
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-14. Banks Pumping Plant South
Delta Exports Salinity, August EC



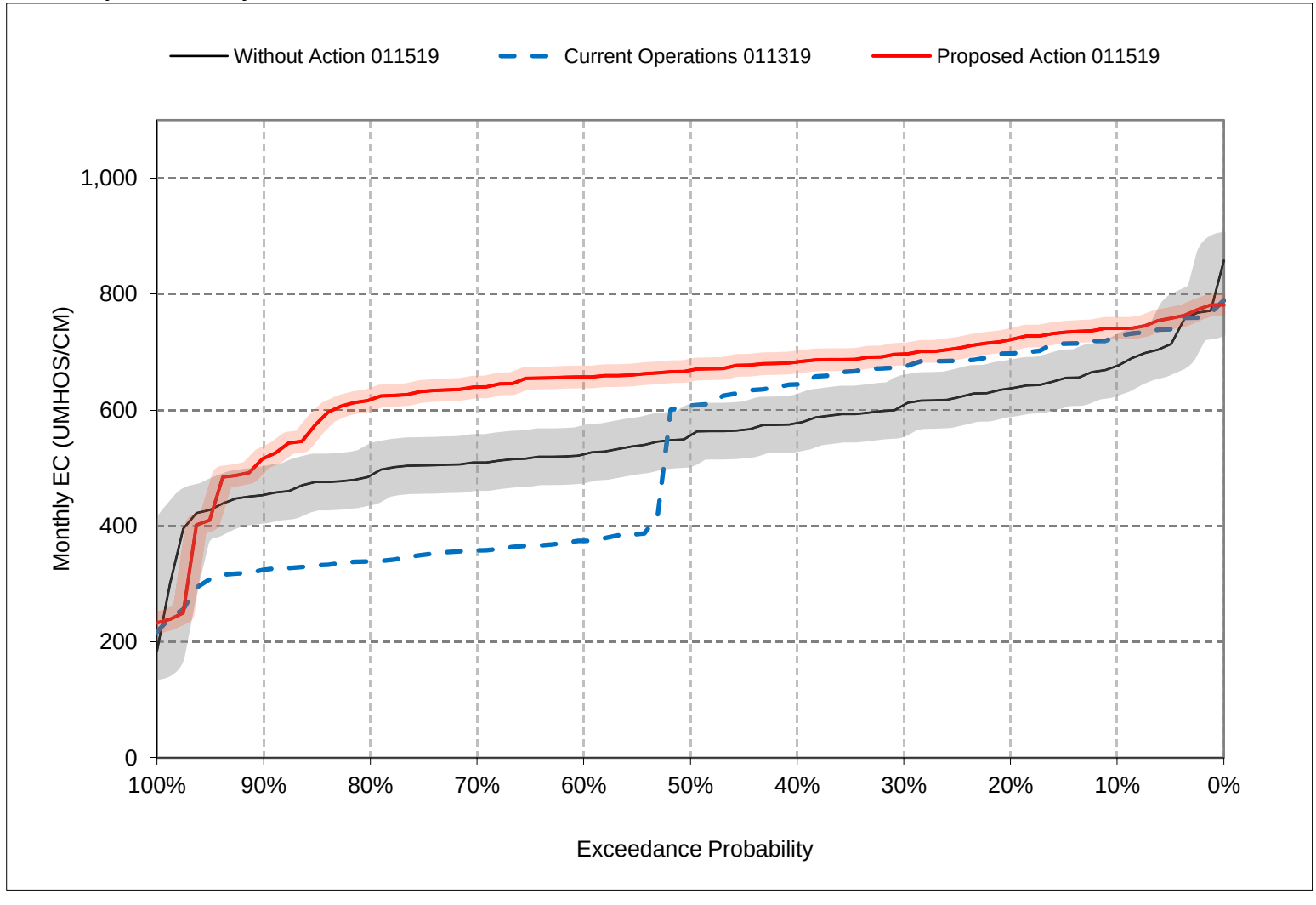
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-15. Banks Pumping Plant South
Delta Exports Salinity, September EC



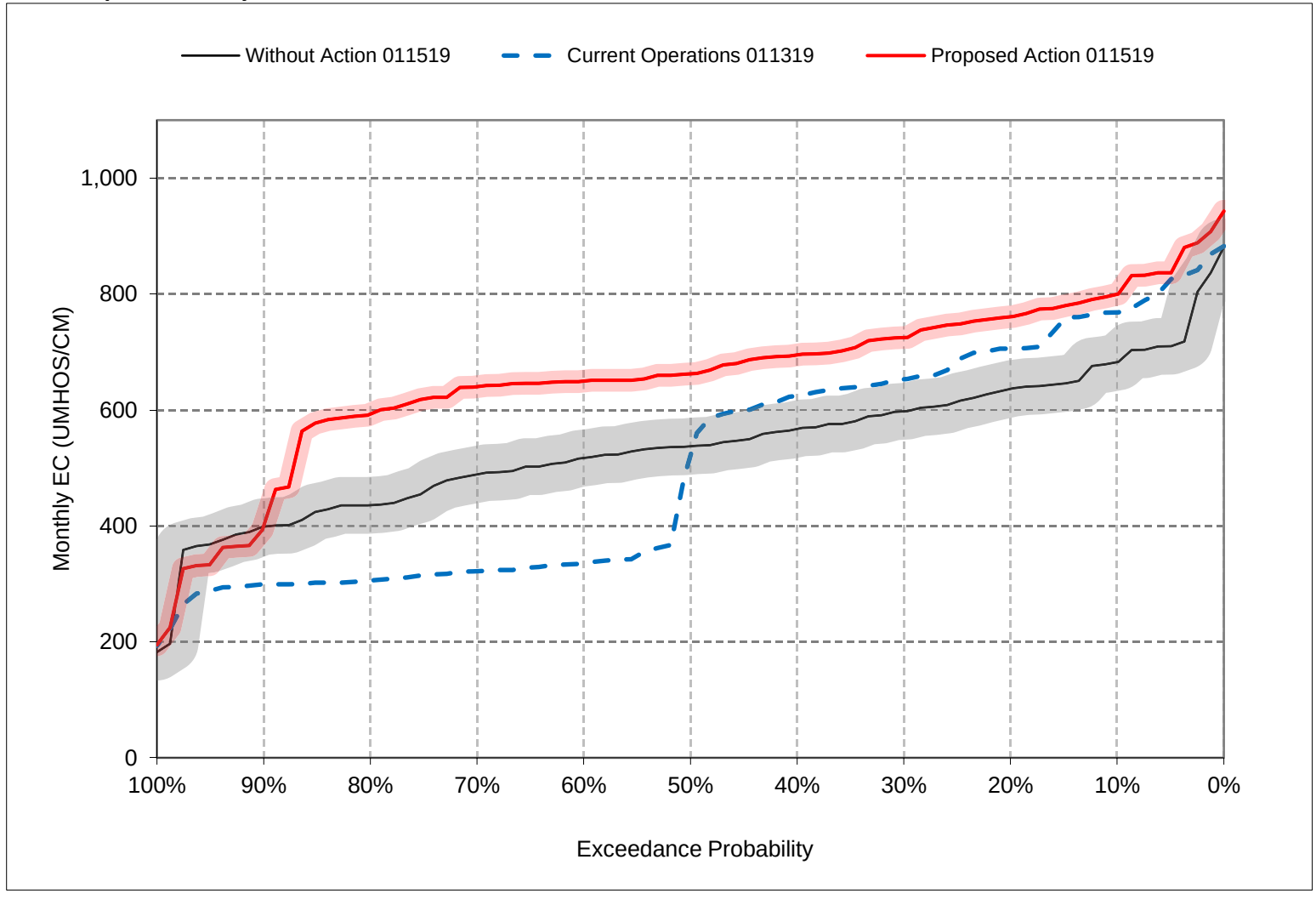
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 16-16. Banks Pumping Plant South
Delta Exports Salinity, October EC



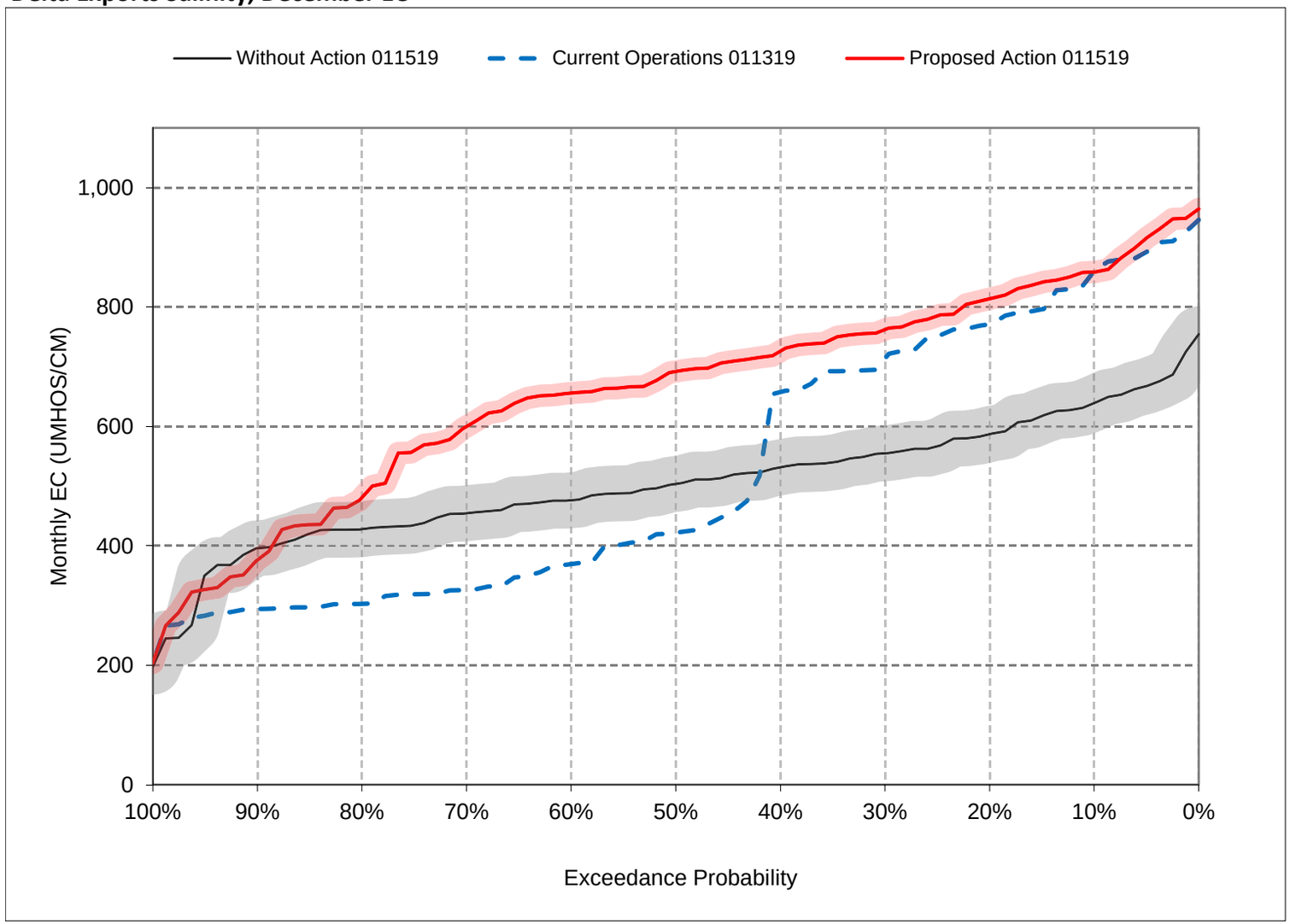
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 17-1. Old River at Highway 4, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	684	687	647	699	739	752	736	687	629	585	690	693
20%	638	636	595	666	637	631	594	612	590	549	596	633
30%	611	599	562	600	594	576	499	497	523	516	563	602
40%	581	566	539	578	553	497	414	414	463	491	532	570
50%	561	538	509	535	477	442	341	359	419	473	508	541
60%	529	518	489	512	442	368	303	311	393	428	458	507
70%	516	491	463	480	378	281	282	279	360	369	401	488
80%	489	427	442	443	318	242	243	237	288	316	364	469
90%	455	389	380	360	239	222	199	176	236	271	329	407
Long Term												
Full Simulation Period[a]	563	538	512	537	486	457	416	407	437	452	499	545
Water Year Types[b]												
Wet (32%)	480	445	456	425	312	277	241	242	308	356	397	440
Above Normal (16%)	538	505	490	492	431	372	322	312	357	401	464	526
Below Normal (13%)	552	553	526	561	506	467	420	423	475	446	476	534
Dry (24%)	601	564	512	619	603	568	513	500	512	493	536	591
Critical (15%)	715	719	644	669	710	744	728	695	645	653	716	728

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**165**	**208**	**286**	**166**	-134	-243	-227	-216	-222	-174	-101	**17**
20%	**163**	**174**	**266**	**112**	-71	-189	-149	-163	-234	-205	-124	**51**
30%	**165**	**137**	**233**	**35**	-87	-164	-77	-67	-191	-187	-126	**51**
40%	**163**	**120**	**135**	-8	-88	-117	-14	-17	-140	-172	-122	**38**
50%	**129**	**19**	-113	**2**	-22	-82	**19**	**23**	-106	-182	-118	**32**
60%	-187	-212	-124	-25	-18	-25	**21**	**60**	-83	-150	-95	**46**
70%	-194	-206	-152	-54	**8**	**51**	**26**	**77**	-57	-99	-69	**36**
80%	-177	-152	-156	-53	**34**	**67**	**35**	**75**	-1	-52	-47	**3**
90%	-156	-124	-102	-12	**81**	**54**	**27**	**20**	**30**	-15	-35	**34**
Long Term												
Full Simulation Period[a]	**1**	**4**	**38**	**29**	-20	-74	-51	-36	-111	-134	-93	**29**
Water Year Types[b]												
Wet (32%)	-170	-173	-171	**4**	**63**	**42**	**19**	**41**	-25	-89	-77	**56**
Above Normal (16%)	-223	-170	-95	**32**	**28**	-24	**20**	**65**	-48	-134	-133	-67
Below Normal (13%)	**212**	**123**	**159**	0	-45	-85	-12	**12**	-137	-137	-74	**123**
Dry (24%)	**171**	**154**	**172**	**49**	-99	-162	-103	-104	-184	-147	-49	**47**
Critical (15%)	**137**	**219**	**304**	**73**	-98	-224	-229	-242	-221	-203	-179	-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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 17-2. Old River at Highway 4, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	684	687	647	699	739	752	736	687	629	585	690	693
20%	638	636	595	666	637	631	594	612	590	549	596	633
30%	611	599	562	600	594	576	499	497	523	516	563	602
40%	581	566	539	578	553	497	414	414	463	491	532	570
50%	561	538	509	535	477	442	341	359	419	473	508	541
60%	529	518	489	512	442	368	303	311	393	428	458	507
70%	516	491	463	480	378	281	282	279	360	369	401	488
80%	489	427	442	443	318	242	243	237	288	316	364	469
90%	455	389	380	360	239	222	199	176	236	271	329	407
Long Term												
Full Simulation Period[a]	563	538	512	537	486	457	416	407	437	452	499	545
Water Year Types[b]												
Wet (32%)	480	445	456	425	312	277	241	242	308	356	397	440
Above Normal (16%)	538	505	490	492	431	372	322	312	357	401	464	526
Below Normal (13%)	552	553	526	561	506	467	420	423	475	446	476	534
Dry (24%)	601	564	512	619	603	568	513	500	512	493	536	591
Critical (15%)	715	719	644	669	710	744	728	695	645	653	716	728

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**180**	**254**	**307**	**205**	-121	-311	-319	-329	-282	-162	-102	**27**
20%	**196**	**249**	**312**	**172**	-102	-221	-212	-277	-286	-207	-132	**67**
30%	**193**	**247**	**288**	**200**	-111	-206	-132	-175	-231	-183	-131	**75**
40%	**205**	**236**	**267**	**68**	-91	-144	-65	-107	-181	-189	-113	**93**
50%	**212**	**217**	**255**	**25**	-55	-98	-3	-66	-140	-184	-115	**114**
60%	**229**	**217**	**222**	-9	-51	-30	**22**	-28	-120	-151	-93	**132**
70%	**215**	**215**	**168**	-35	-11	**36**	**30**	-1	-93	-104	-72	**144**
80%	**211**	**218**	**58**	-46	**37**	**62**	**53**	**36**	-30	-57	-47	**129**
90%	**108**	-4	-12	-6	**89**	**62**	**74**	**86**	**16**	-20	-26	**127**
Long Term												
Full Simulation Period[a]	**179**	**204**	**201**	**75**	-39	-101	-77	-106	-145	-133	-94	**90**
Water Year Types[b]												
Wet (32%)	**135**	**218**	**166**	**17**	**59**	**47**	**43**	**10**	-45	-91	-79	**116**
Above Normal (16%)	**222**	**209**	**227**	**105**	**12**	-27	**9**	-23	-85	-141	-127	**130**
Below Normal (13%)	**223**	**151**	**165**	**74**	-54	-108	-65	-112	-195	-130	-50	**156**
Dry (24%)	**204**	**196**	**179**	**132**	-117	-210	-156	-184	-228	-151	-66	**66**
Critical (15%)	**144**	**231**	**315**	**74**	-162	-317	-308	-310	-242	-190	-175	-32

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 17-3. Old River at Highway 4, Monthly EC

Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly EC (UMHOS/CM)											
	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).

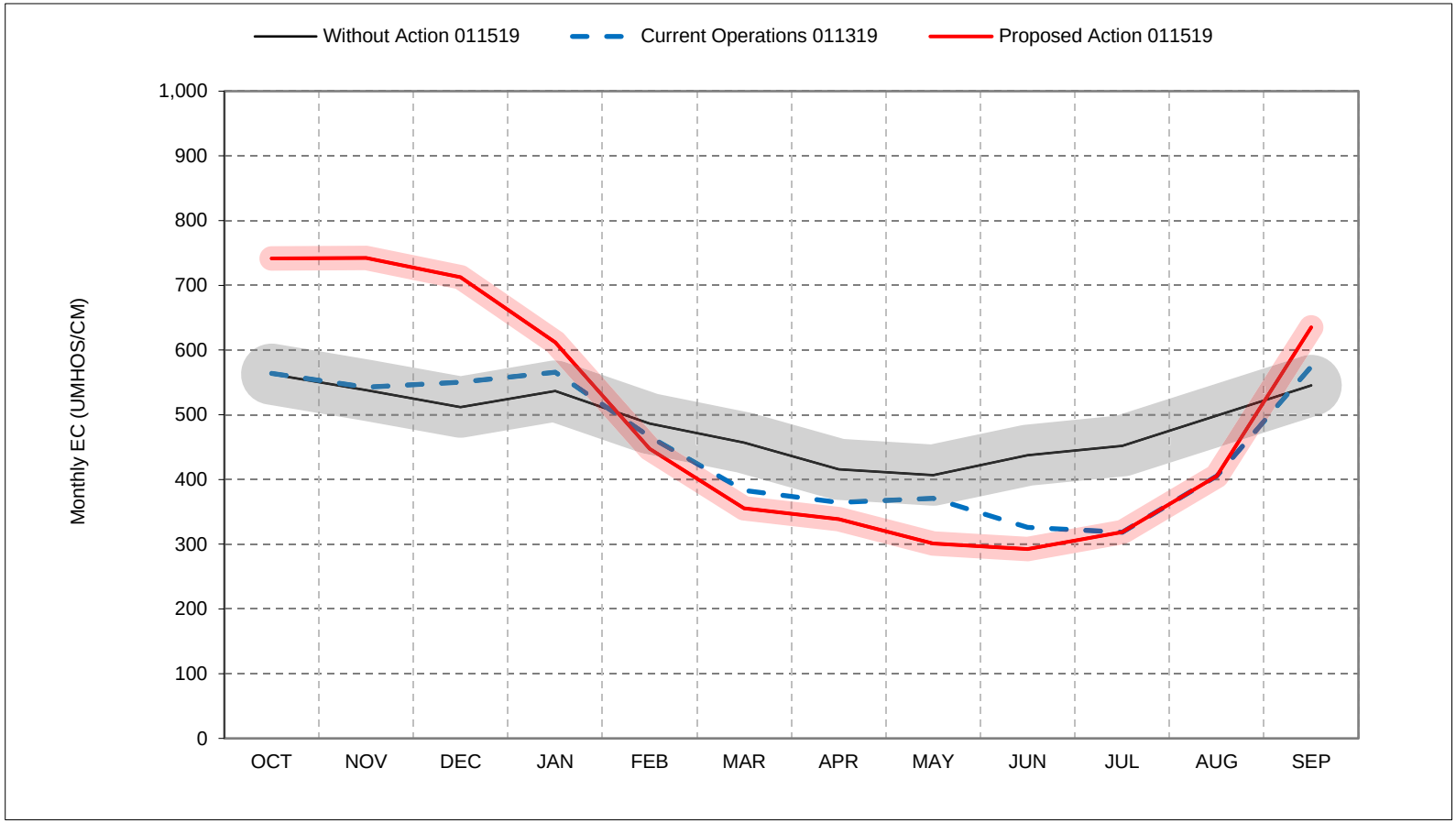
c These results are displayed with calendar year - year type sorting.

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.

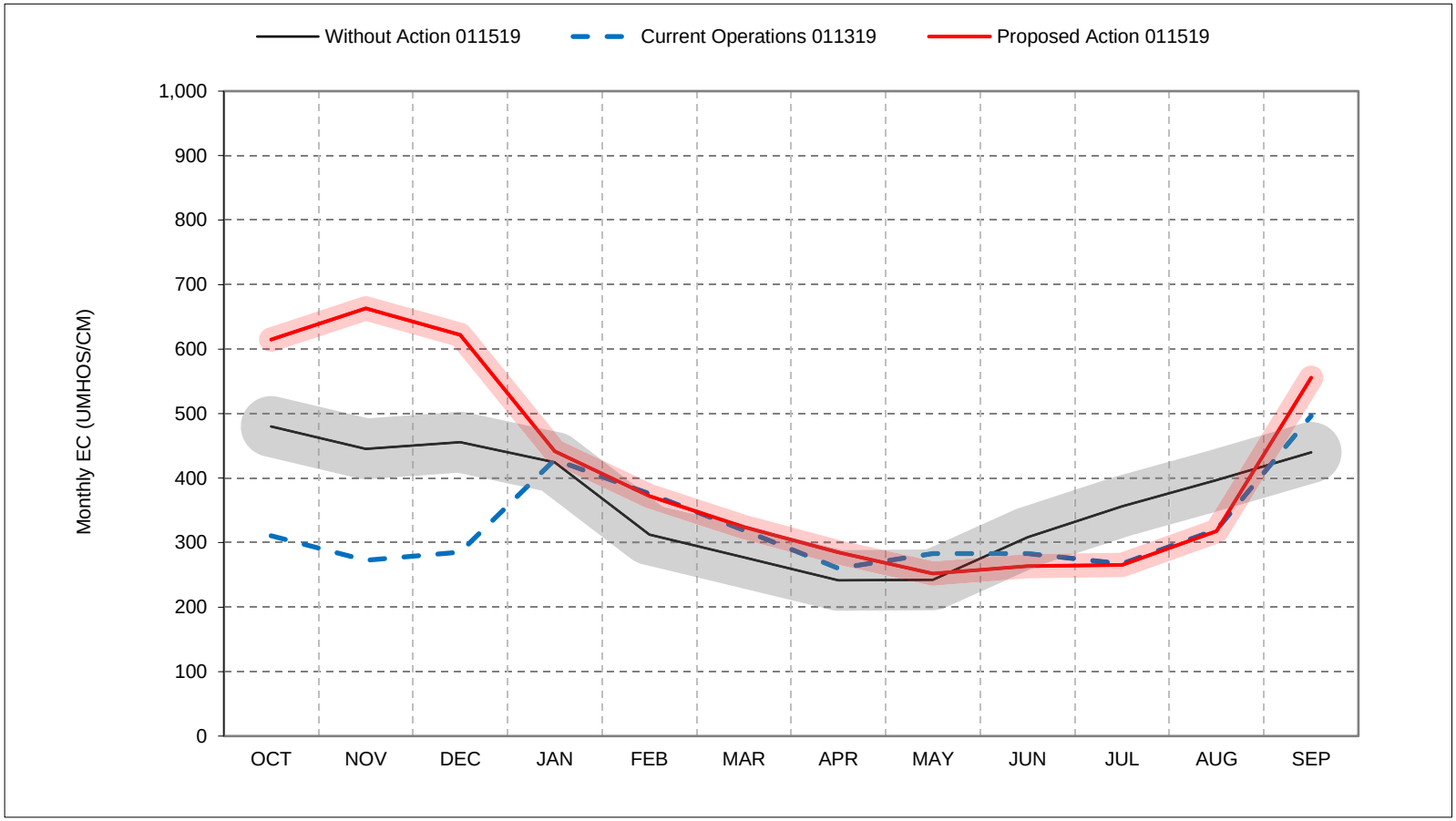
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-1. Old River at Highway 4, Long-Term Average EC



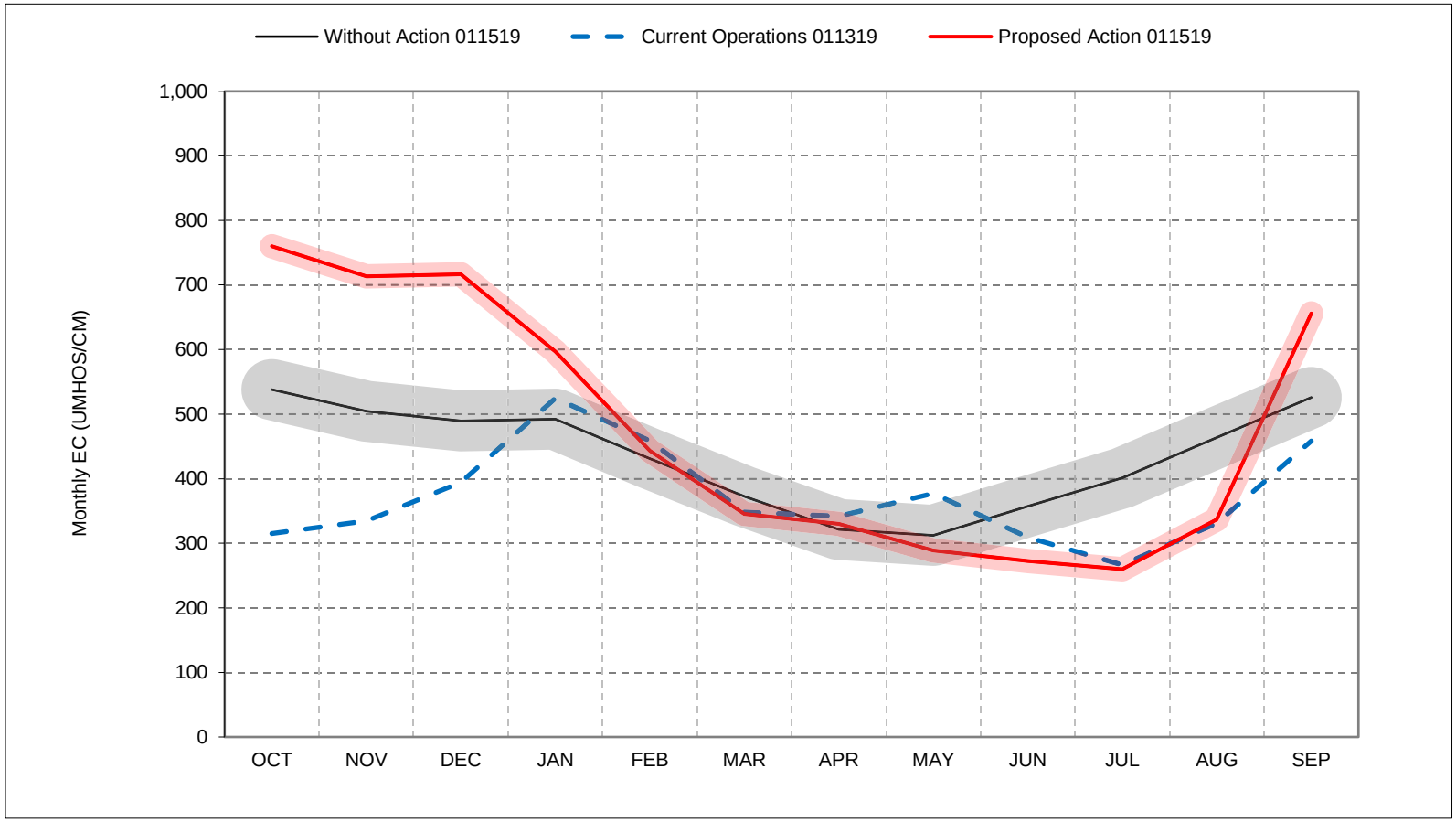
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-2. Old River at Highway 4, Wet Year Average EC



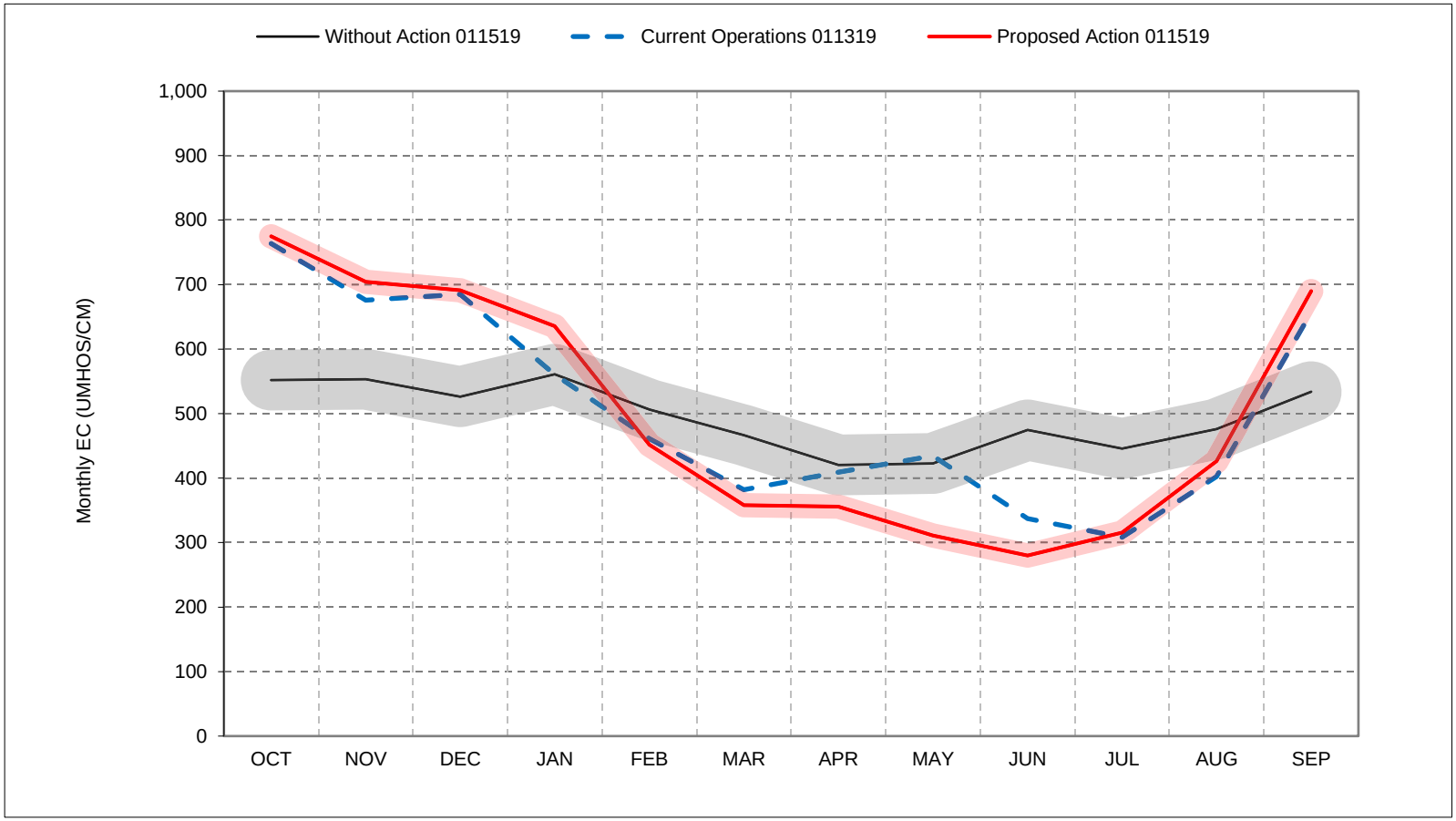
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-3. Old River at Highway 4, Above Normal Year Average EC



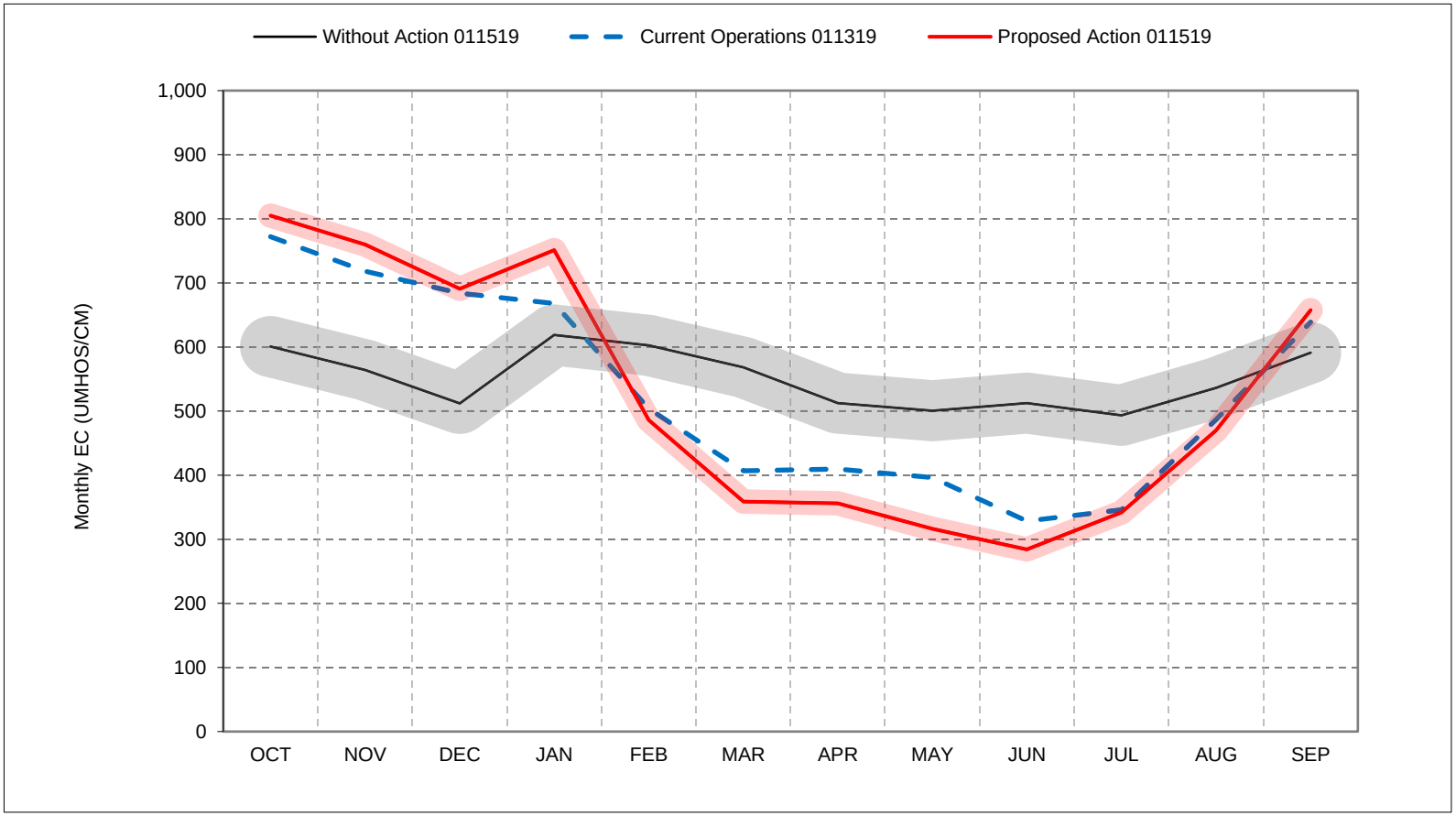
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-4. Old River at Highway 4, Below Normal Year Average EC



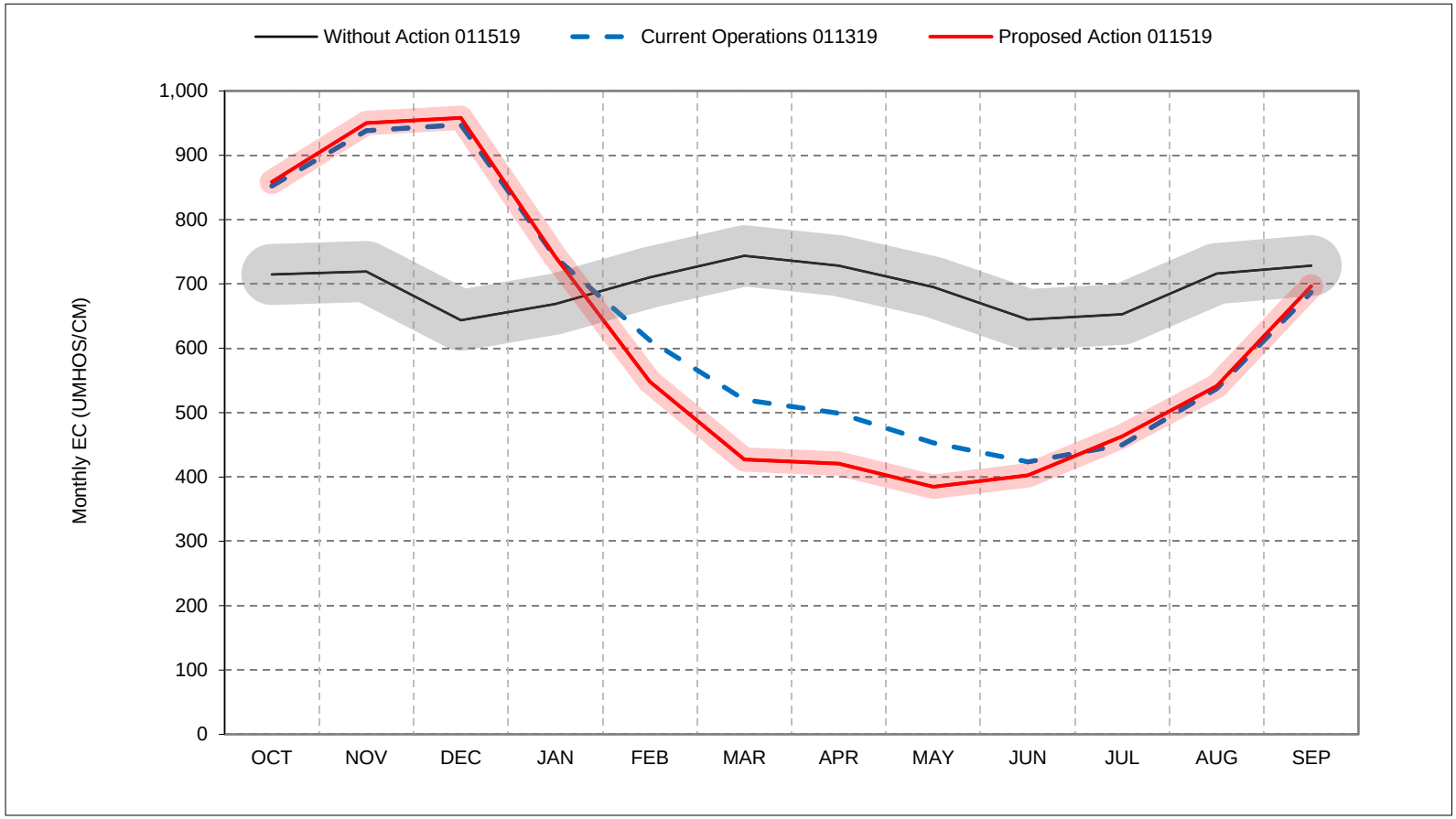
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-5. Old River at Highway 4, Dry Year Average EC



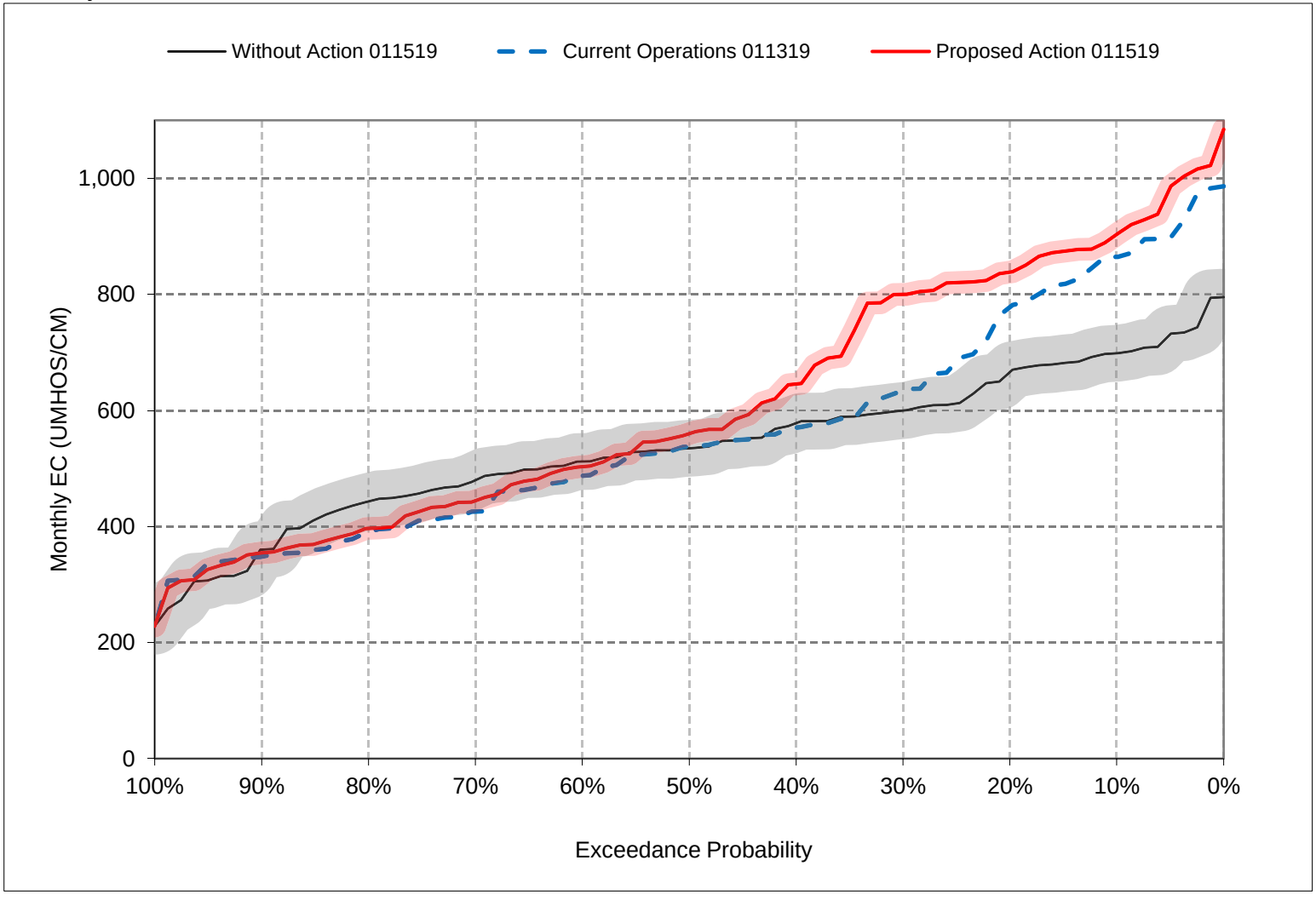
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

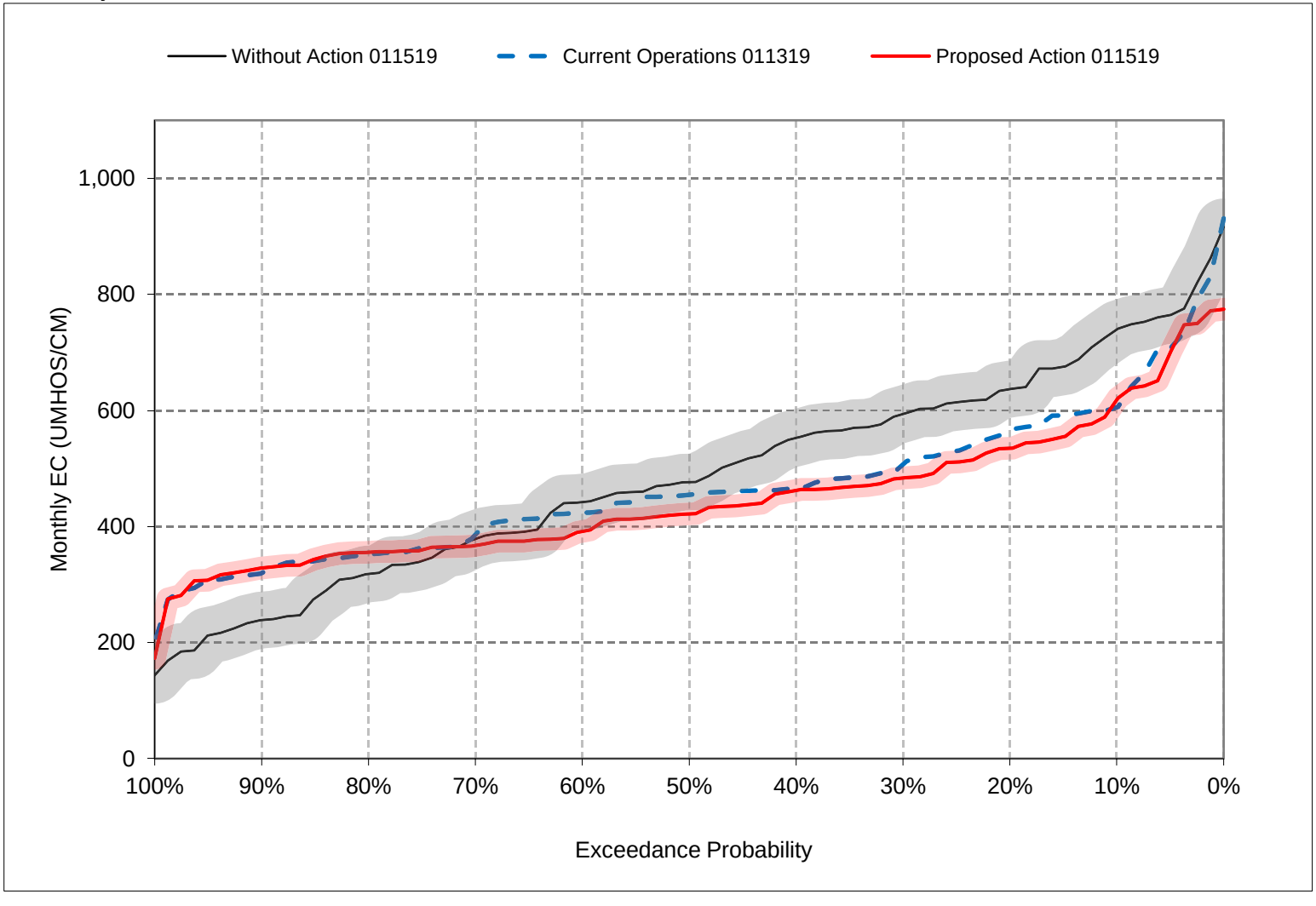
Figure 17-7. Old River at Highway 4, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

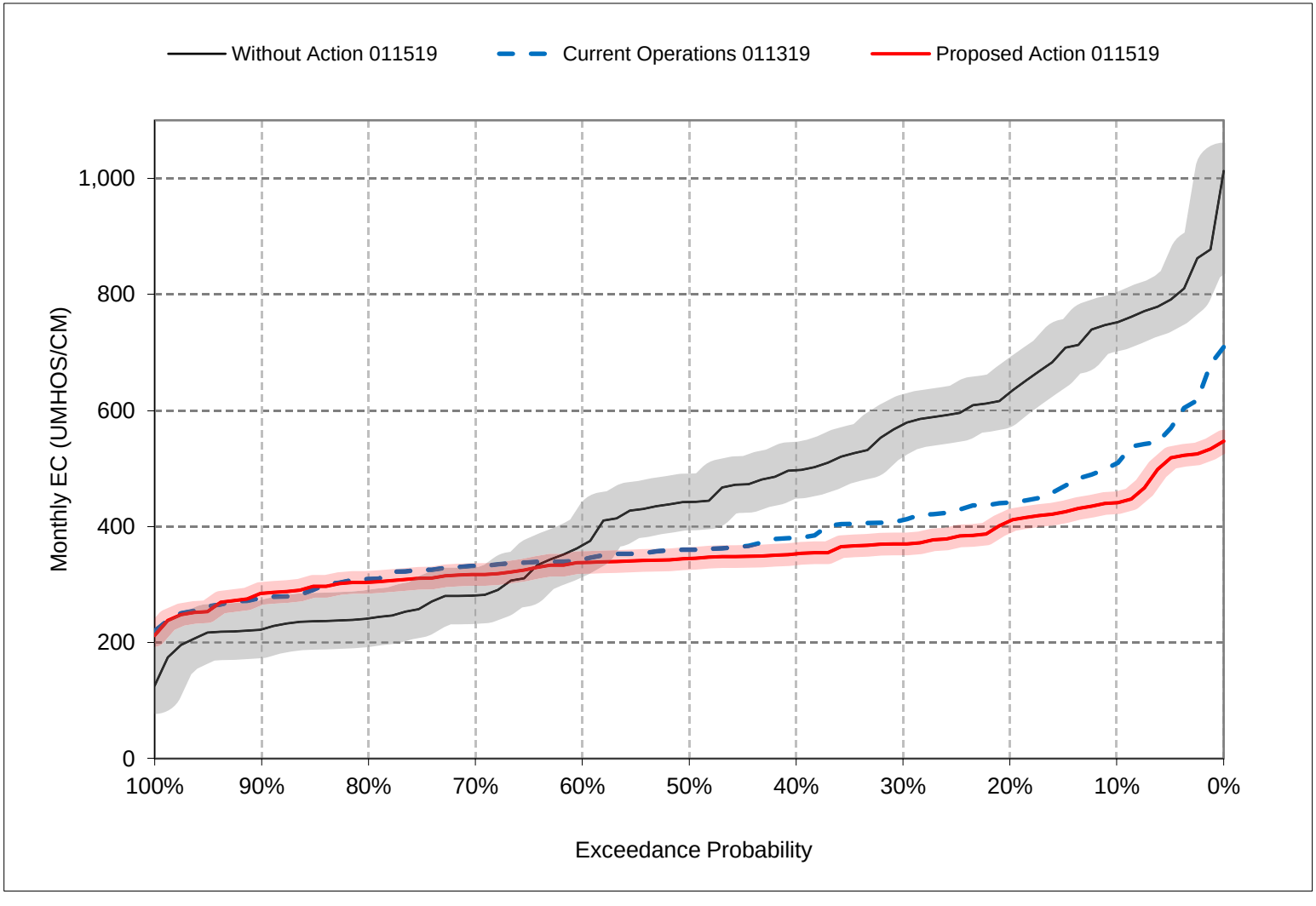
Figure 17-8. Old River at Highway 4, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

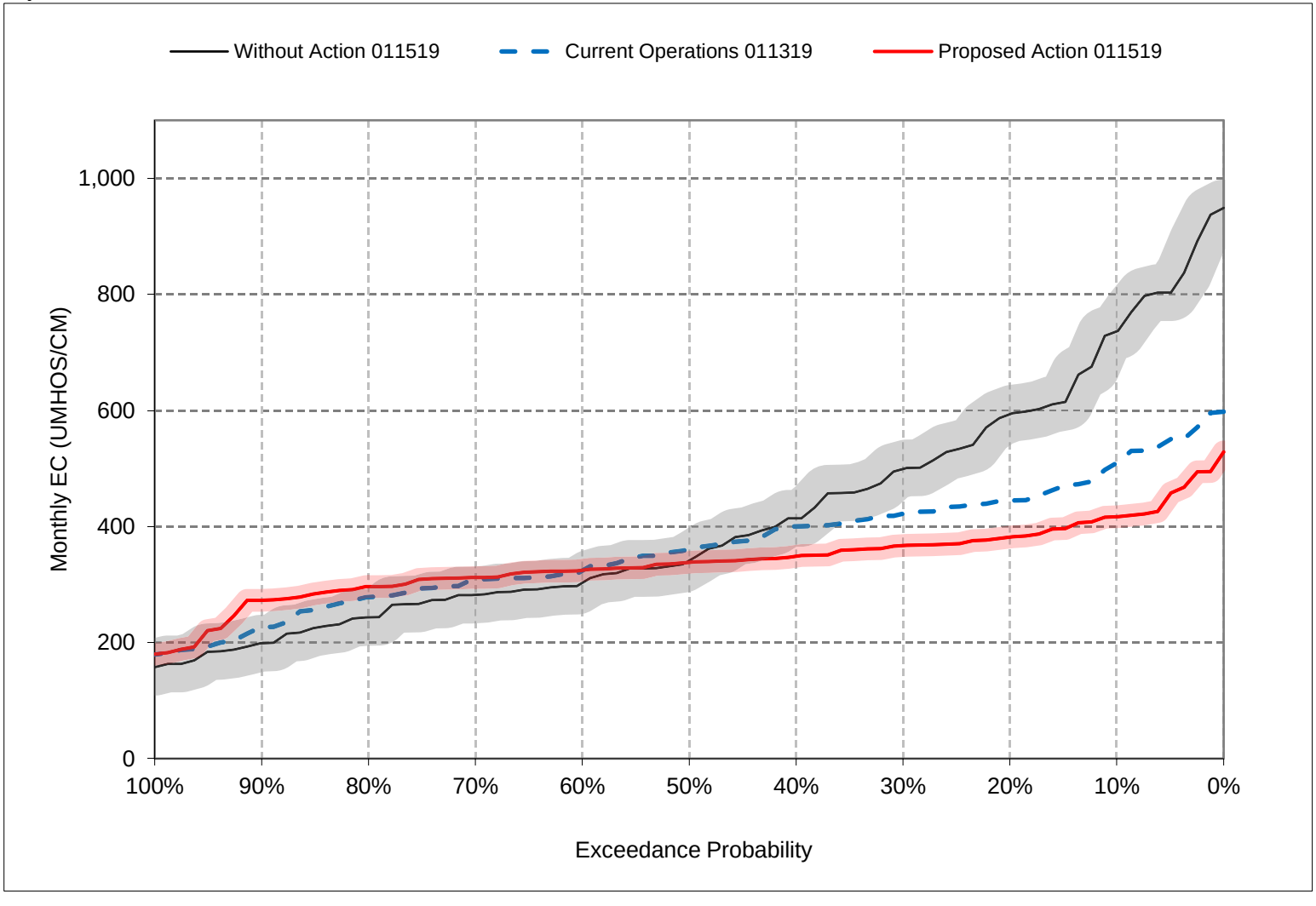
Figure 17-9. Old River at Highway 4, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

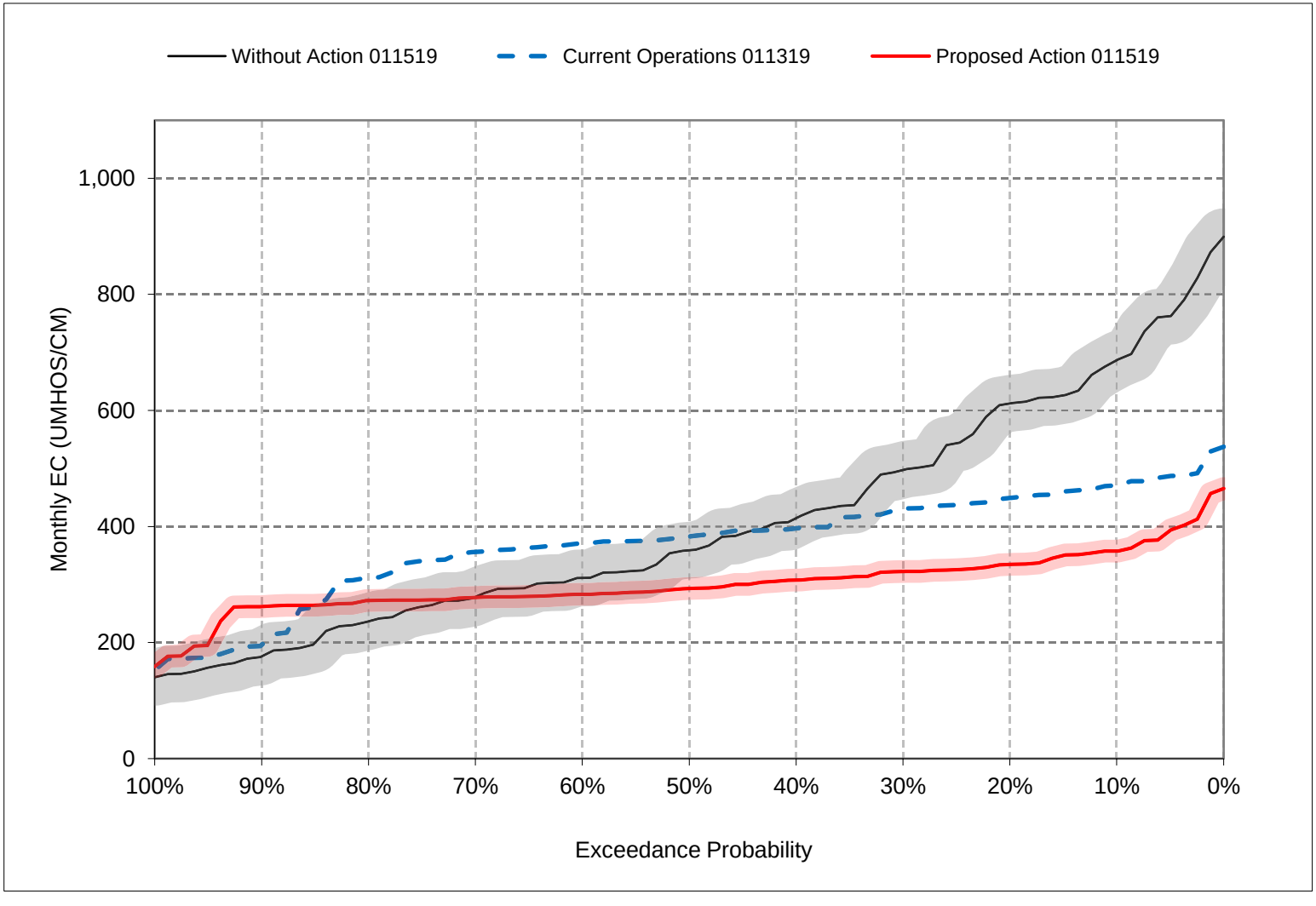
Figure 17-10. Old River at Highway 4, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

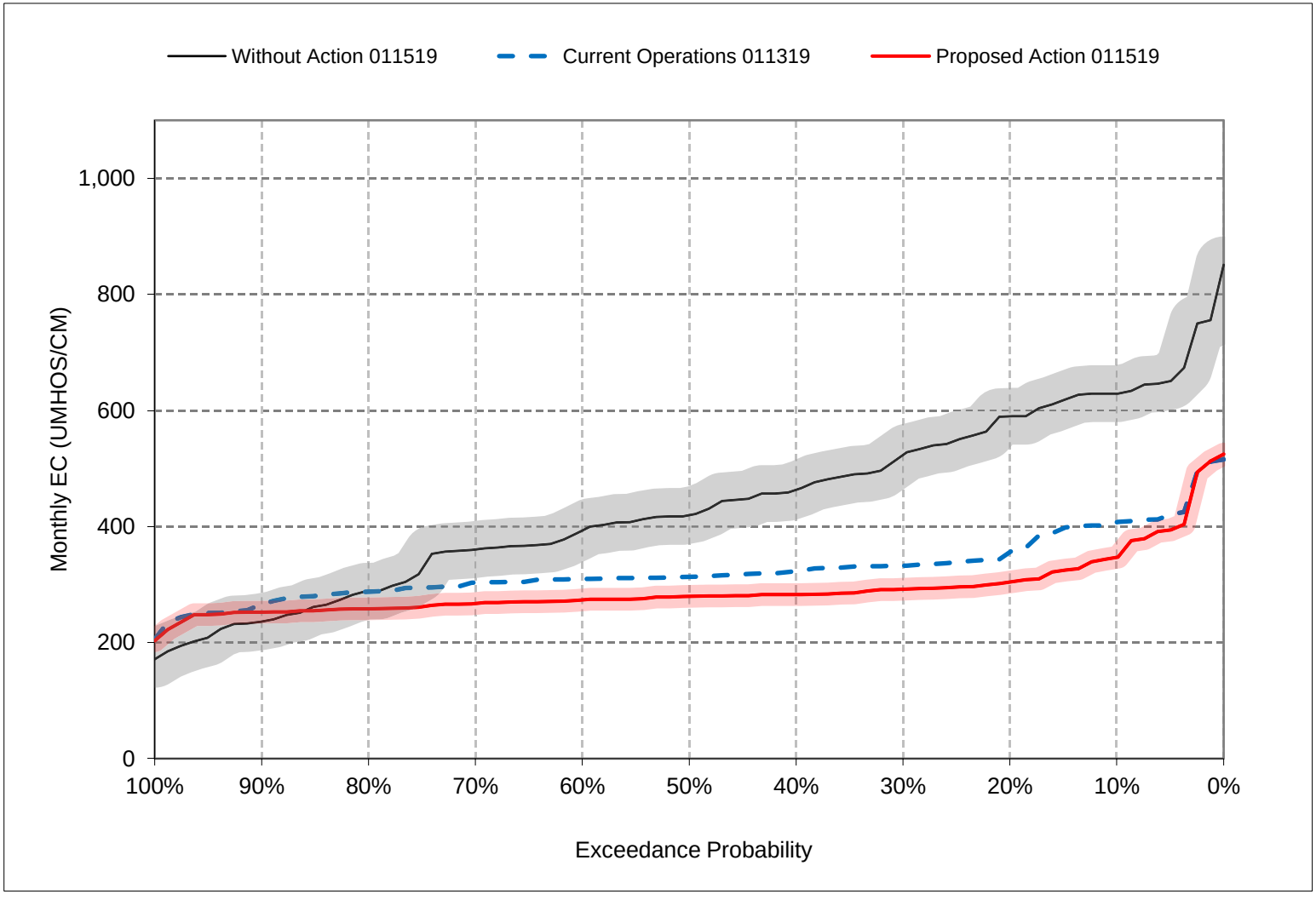
Figure 17-11. Old River at Highway 4, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

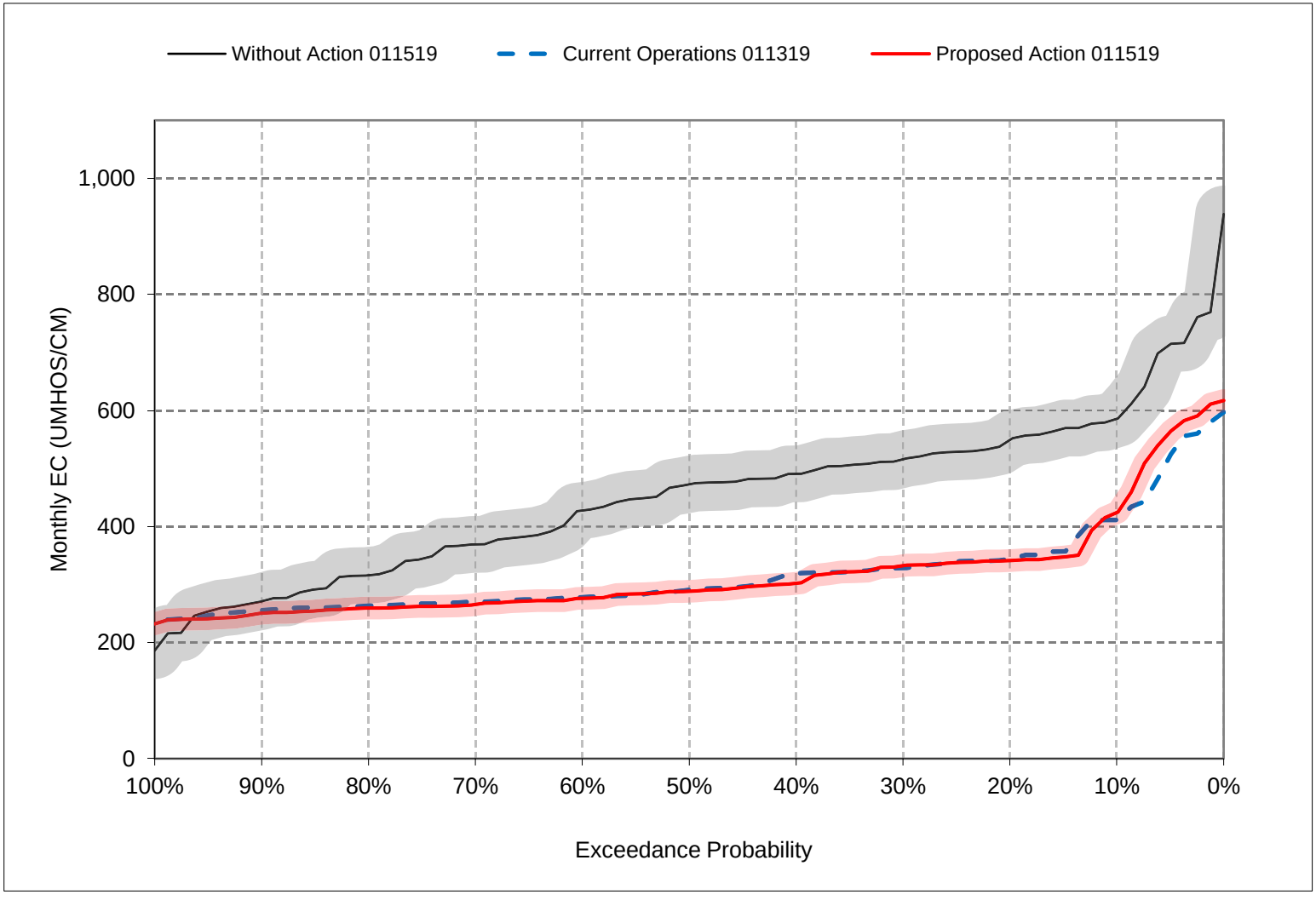
Figure 17-12. Old River at Highway 4, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

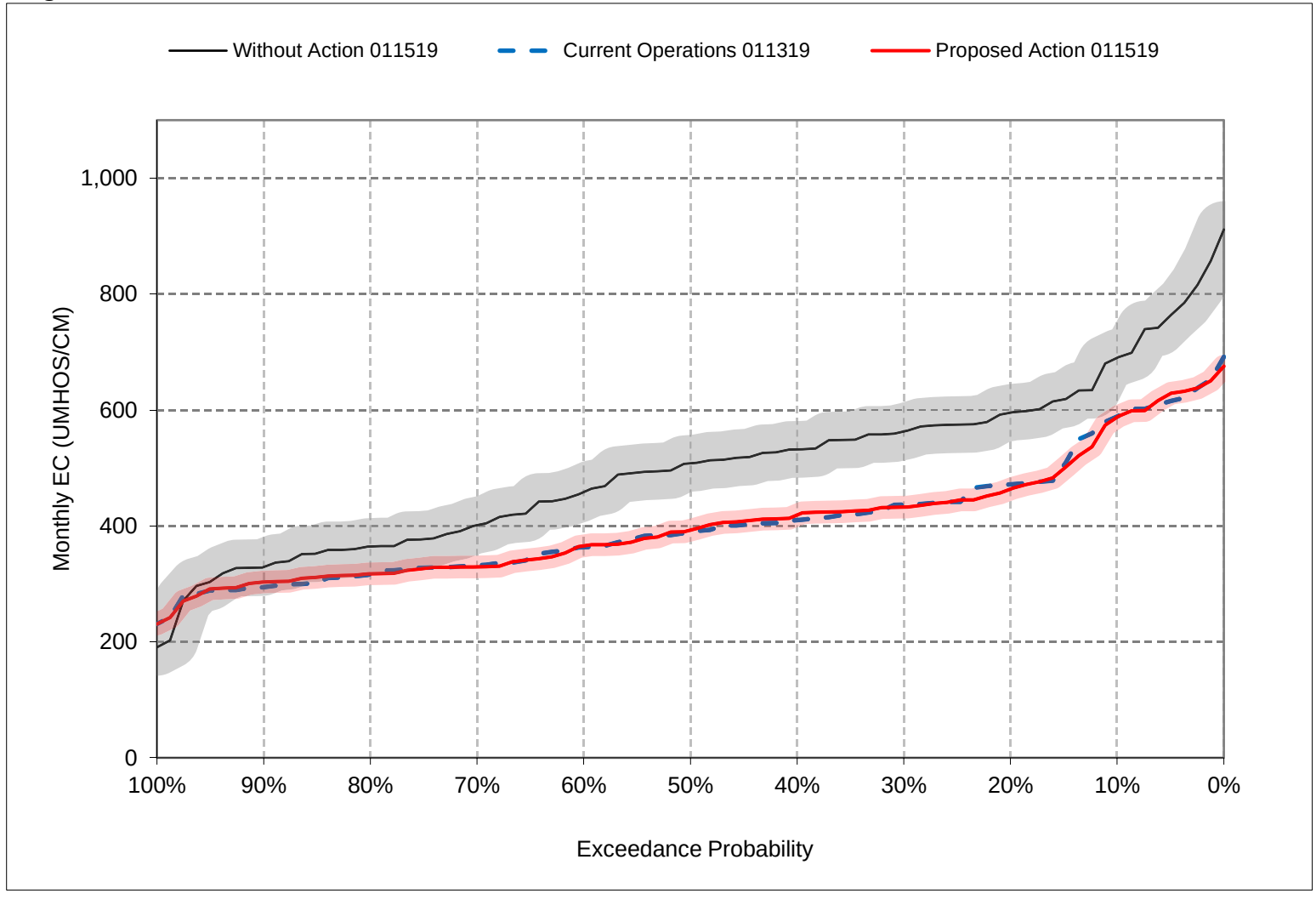
Figure 17-13. Old River at Highway 4, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

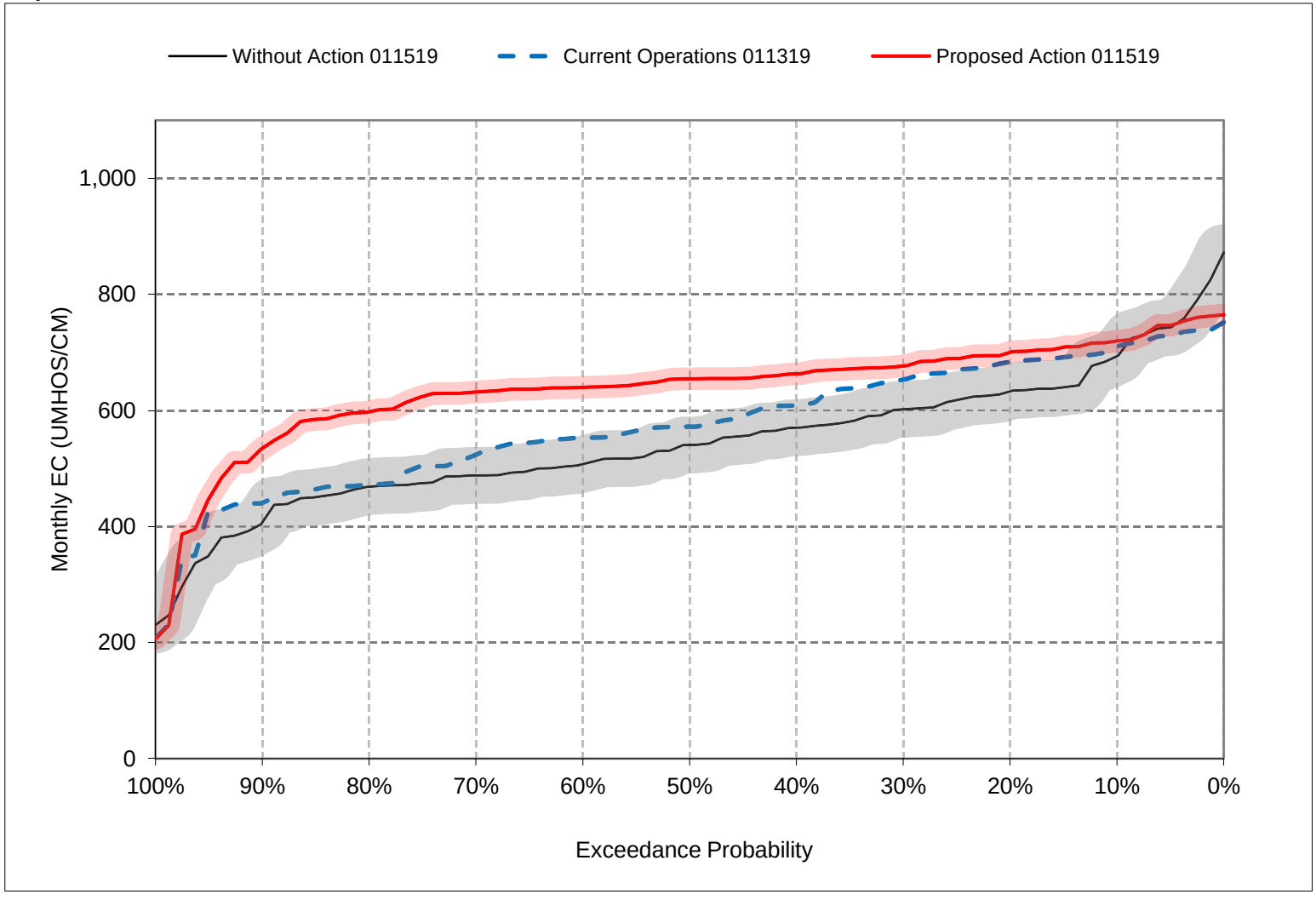
Figure 17-14. Old River at Highway 4, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

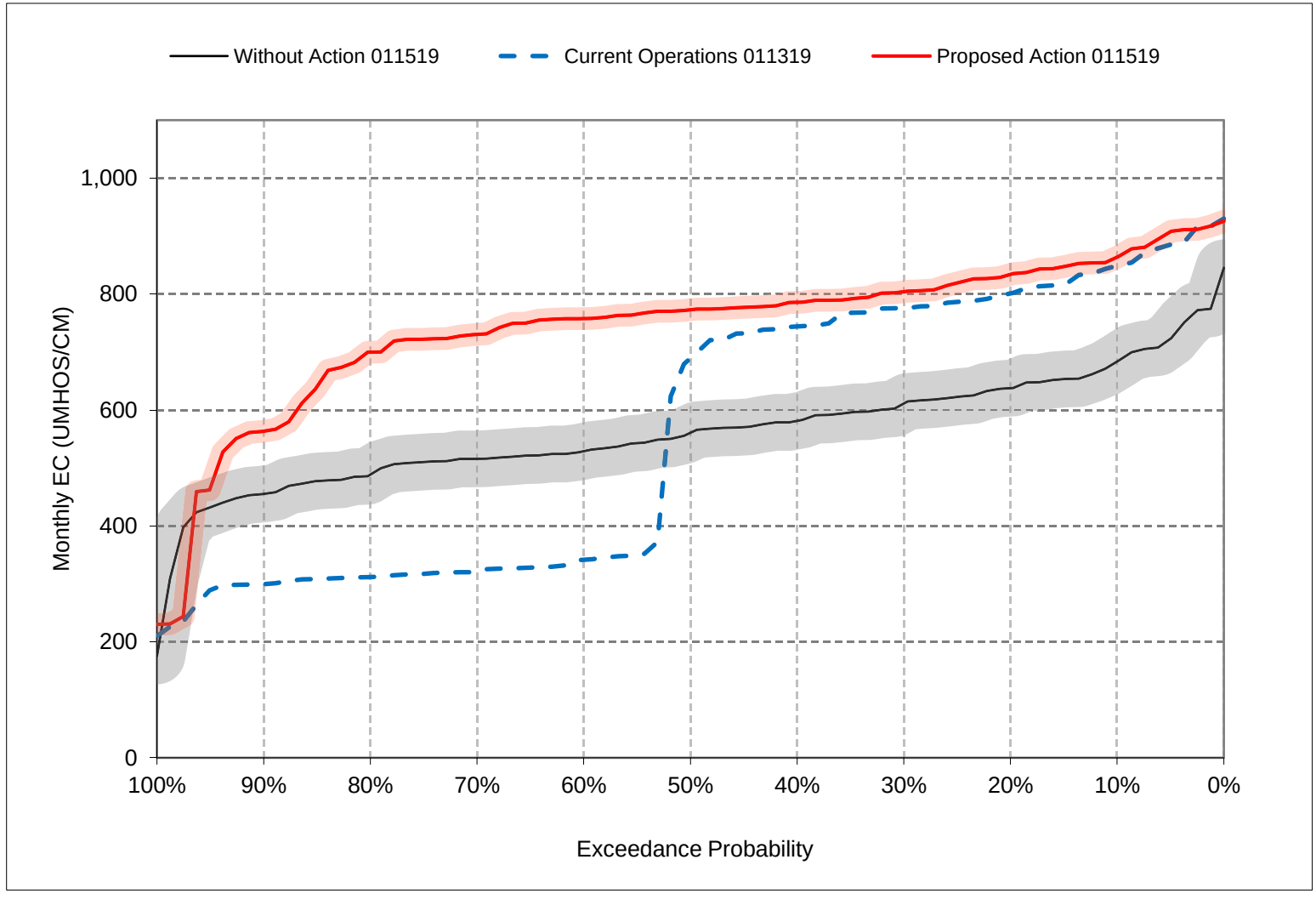
Figure 17-15. Old River at Highway 4, September EC



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

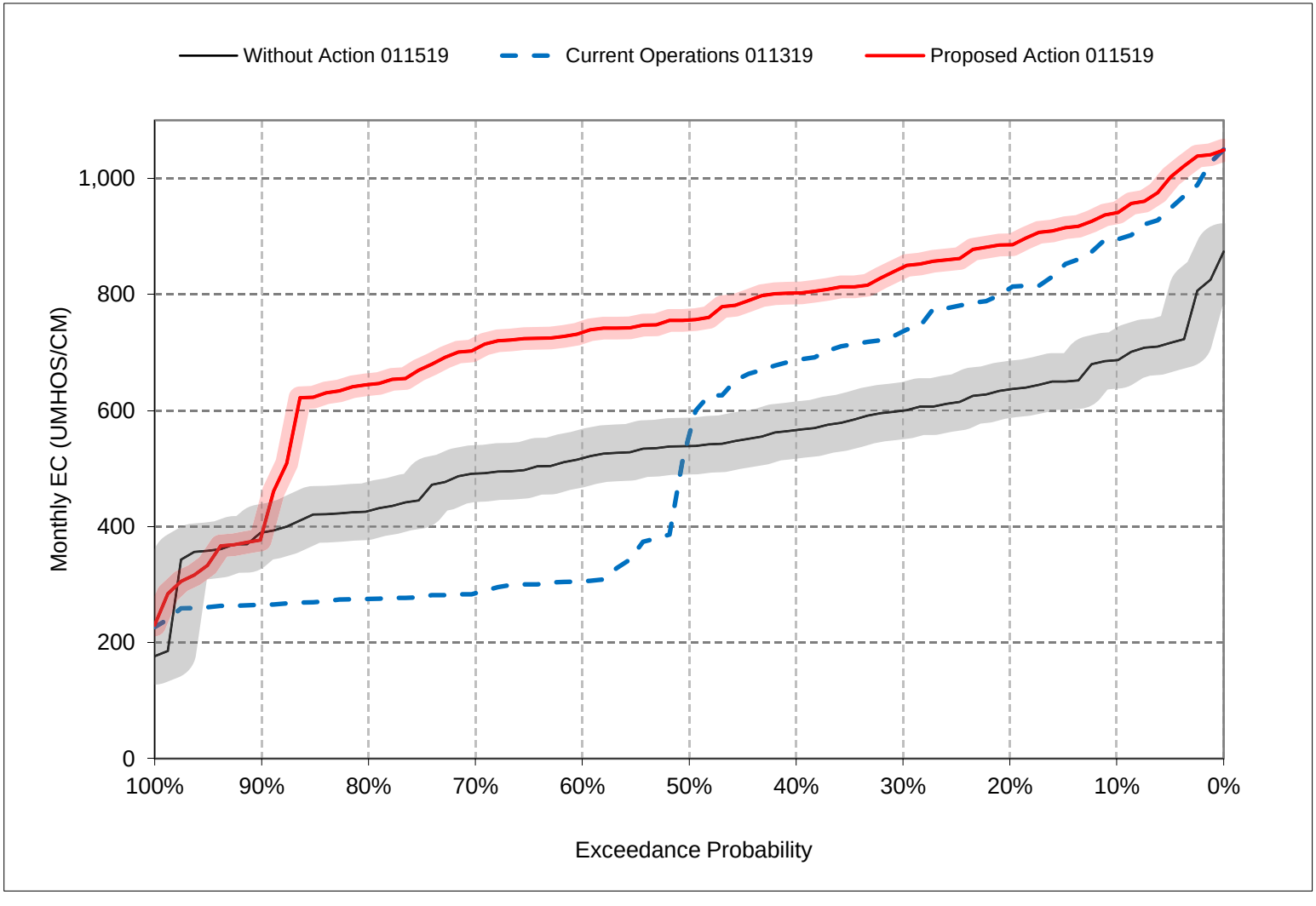
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 17-16. Old River at Highway 4, October EC



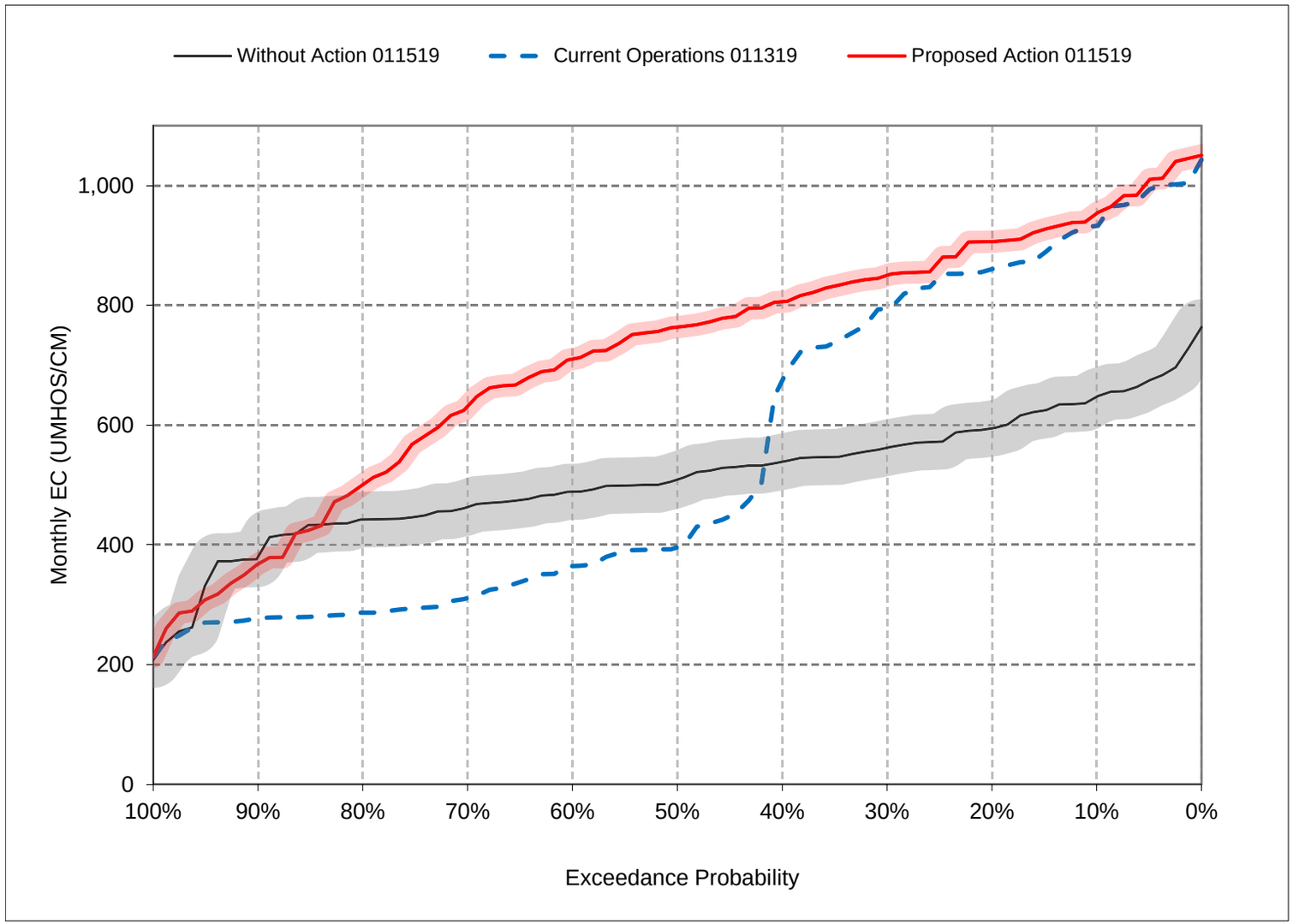
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Table 18-1. Victoria Canal, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	679	682	642	701	737	746	731	681	616	566	679	699
20%	635	631	591	667	633	625	585	608	566	525	577	622
30%	609	595	558	596	590	570	490	490	508	499	550	594
40%	579	562	534	571	545	493	410	409	458	478	516	563
50%	558	534	505	532	473	438	337	355	417	464	495	536
60%	527	512	486	508	434	362	300	309	388	425	455	505
70%	512	486	459	473	375	279	279	276	356	364	395	485
80%	486	422	431	435	315	241	239	234	286	311	359	463
90%	454	386	375	352	237	220	197	175	234	268	327	404
Long Term												
Full Simulation Period[a]	560	534	507	534	482	453	410	402	429	439	490	541
Water Year Types[b]												
Wet (32%)	478	441	452	419	309	274	239	240	306	353	393	437
Above Normal (16%)	536	500	484	488	425	368	318	309	353	397	457	521
Below Normal (13%)	549	549	522	560	502	462	415	418	469	433	465	528
Dry (24%)	597	560	506	618	599	564	507	495	503	473	522	585
Critical (15%)	711	715	637	670	708	738	717	684	620	618	706	727

Current Operations 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-131	-104	**50**	**20**	-75	-164	-166	-199	-193	-193	-244	-233
20%	-113	-99	**31**	**14**	-21	-68	-79	-143	-173	-171	-214	-173
30%	-98	-91	**20**	-4	-14	-43	-15	-43	-135	-169	-198	-155
40%	-89	-88	-16	-14	**6**	**7**	**44**	**21**	-93	-166	-189	-140
50%	-97	-102	-100	**2**	**55**	**32**	**77**	**35**	-57	-164	-190	-118
60%	-145	-150	-123	-7	**71**	**72**	**36**	**55**	-33	-135	-153	-96
70%	-143	-135	-115	**4**	**104**	**119**	**26**	**72**	-8	-79	-106	-90
80%	-136	-77	-113	**9**	**110**	**105**	**33**	**71**	**52**	-36	-89	-104
90%	-118	-49	-83	**65**	**122**	**88**	**27**	**18**	**78**	-5	-70	-63
Long Term												
Full Simulation Period[a]	-121	-98	-46	**14**	**39**	**6**	-18	-25	-67	-124	-164	-132
Water Year Types[b]												
Wet (32%)	-121	-105	-141	**59**	**117**	**76**	**21**	**37**	**19**	-42	-111	-50
Above Normal (16%)	-194	-143	-113	**50**	**101**	**70**	**39**	**62**	**5**	-109	-186	-170
Below Normal (13%)	-56	-79	**8**	-25	**36**	**35**	**31**	**18**	-94	-150	-158	-110
Dry (24%)	-92	-61	**36**	-21	-34	-49	-37	-73	-136	-172	-151	-155
Critical (15%)	-150	-111	**45**	-27	-74	-149	-176	-210	-191	-219	-282	-248

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 18-2. Victoria Canal, Monthly EC

Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	679	682	642	701	737	746	731	681	616	566	679	699
20%	635	631	591	667	633	625	585	608	566	525	577	622
30%	609	595	558	596	590	570	490	490	508	499	550	594
40%	579	562	534	571	545	493	410	409	458	478	516	563
50%	558	534	505	532	473	438	337	355	417	464	495	536
60%	527	512	486	508	434	362	300	309	388	425	455	505
70%	512	486	459	473	375	279	279	276	356	364	395	485
80%	486	422	431	435	315	241	239	234	286	311	359	463
90%	454	386	375	352	237	220	197	175	234	268	327	404
Long Term												
Full Simulation Period[a]	560	534	507	534	482	453	410	402	429	439	490	541
Water Year Types[b]												
Wet (32%)	478	441	452	419	309	274	239	240	306	353	393	437
Above Normal (16%)	536	500	484	488	425	368	318	309	353	397	457	521
Below Normal (13%)	549	549	522	560	502	462	415	418	469	433	465	528
Dry (24%)	597	560	506	618	599	564	507	495	503	473	522	585
Critical (15%)	711	715	637	670	708	738	717	684	620	618	706	727

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-116	-66	**55**	**33**	-98	-200	-247	-271	-250	-196	-258	-225
20%	-94	-67	**59**	**29**	-38	-122	-130	-221	-216	-173	-216	-163
30%	-82	-60	**38**	**88**	-15	-83	-53	-117	-175	-175	-213	-155
40%	-65	-48	**39**	**76**	-6	-31	**8**	-55	-134	-173	-193	-137
50%	-66	-35	**29**	**47**	**37**	**8**	**67**	-25	-96	-173	-185	-115
60%	-54	-30	**22**	**27**	**47**	**62**	**71**	**11**	-75	-144	-154	-87
70%	-45	-17	**31**	**36**	**83**	**120**	**42**	**34**	-49	-88	-104	-79
80%	-33	**23**	**0**	**41**	**113**	**100**	**60**	**69**	**12**	-45	-89	-66
90%	-44	-14	-12	**71**	**124**	**88**	**70**	**58**	**53**	-17	-66	-38
Long Term												
Full Simulation Period[a]	-74	-37	**30**	**48**	**24**	-21	-28	-69	-106	-130	-165	-122
Water Year Types[b]												
Wet (32%)	-63	**1**	**9**	**65**	**114**	**75**	**50**	**24**	**1**	-46	-111	-67
Above Normal (16%)	-55	-36	**42**	**106**	**98**	**61**	**53**	**14**	-30	-121	-184	-107
Below Normal (13%)	-44	-62	**15**	**28**	**27**	**11**	**12**	-60	-153	-157	-151	-91
Dry (24%)	-78	-38	**42**	**36**	-52	-95	-77	-130	-192	-178	-164	-150
Critical (15%)	-142	-100	**58**	-18	-124	-225	-244	-267	-230	-220	-275	-242

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 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.

f These are draft results meant for qualitative analysis and are subject to revision.

Table 18-3. Victoria Canal, Monthly EC

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations 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).

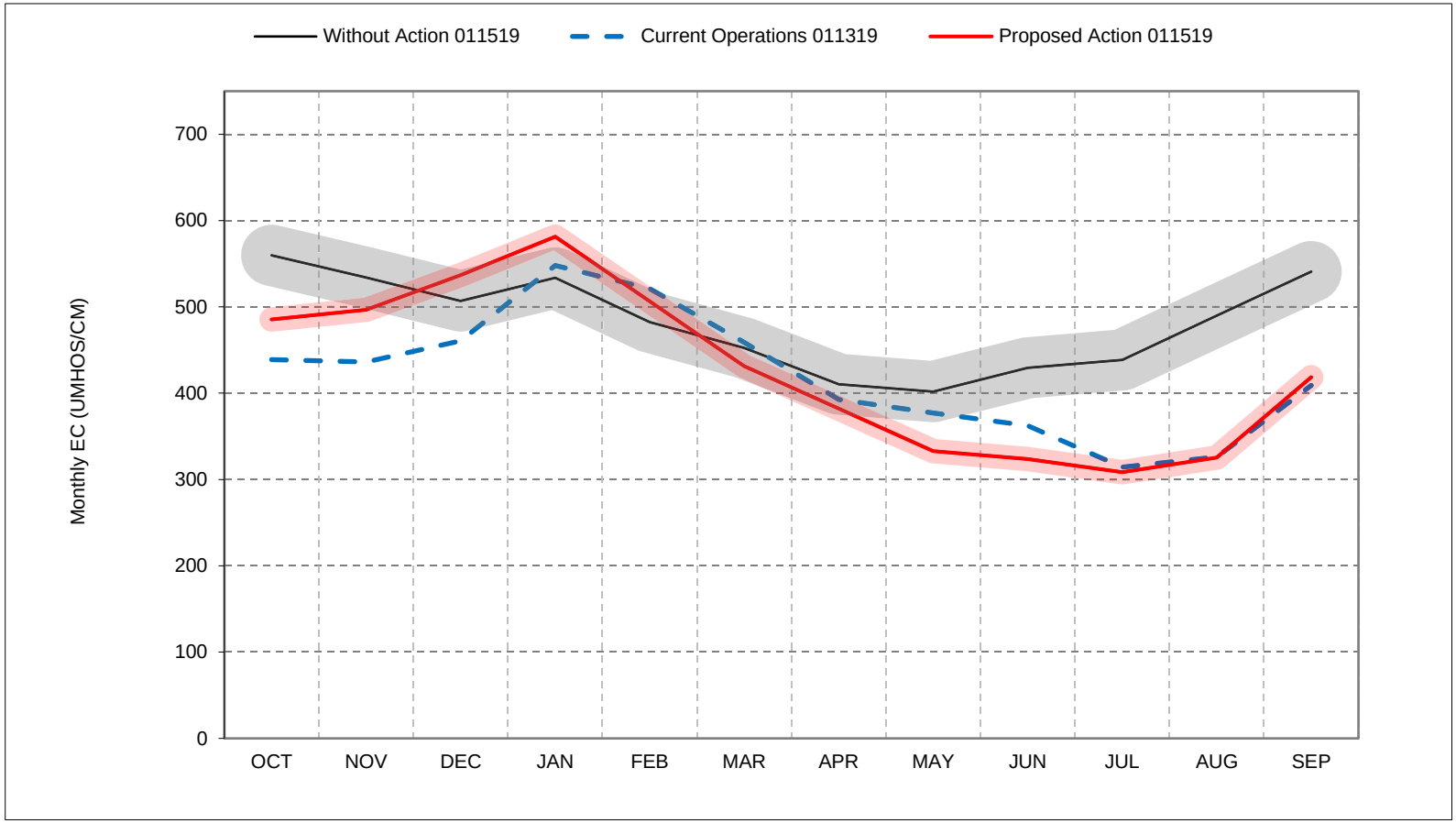
c These results are displayed with calendar year - year type sorting.

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.

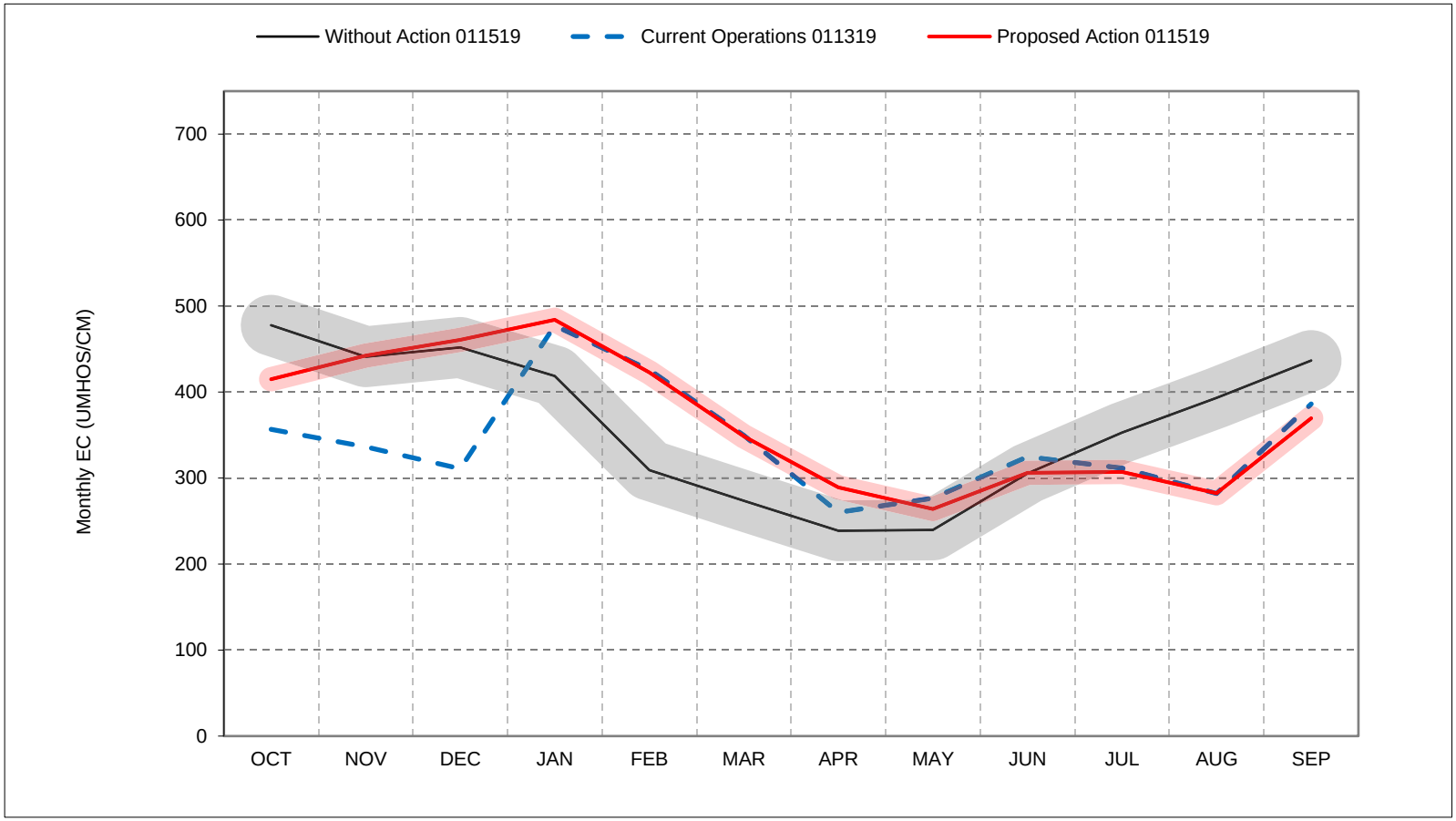
f These are draft results meant for qualitative analysis and are subject to revision.

Figure 18-1. Victoria Canal, Long-Term Average EC



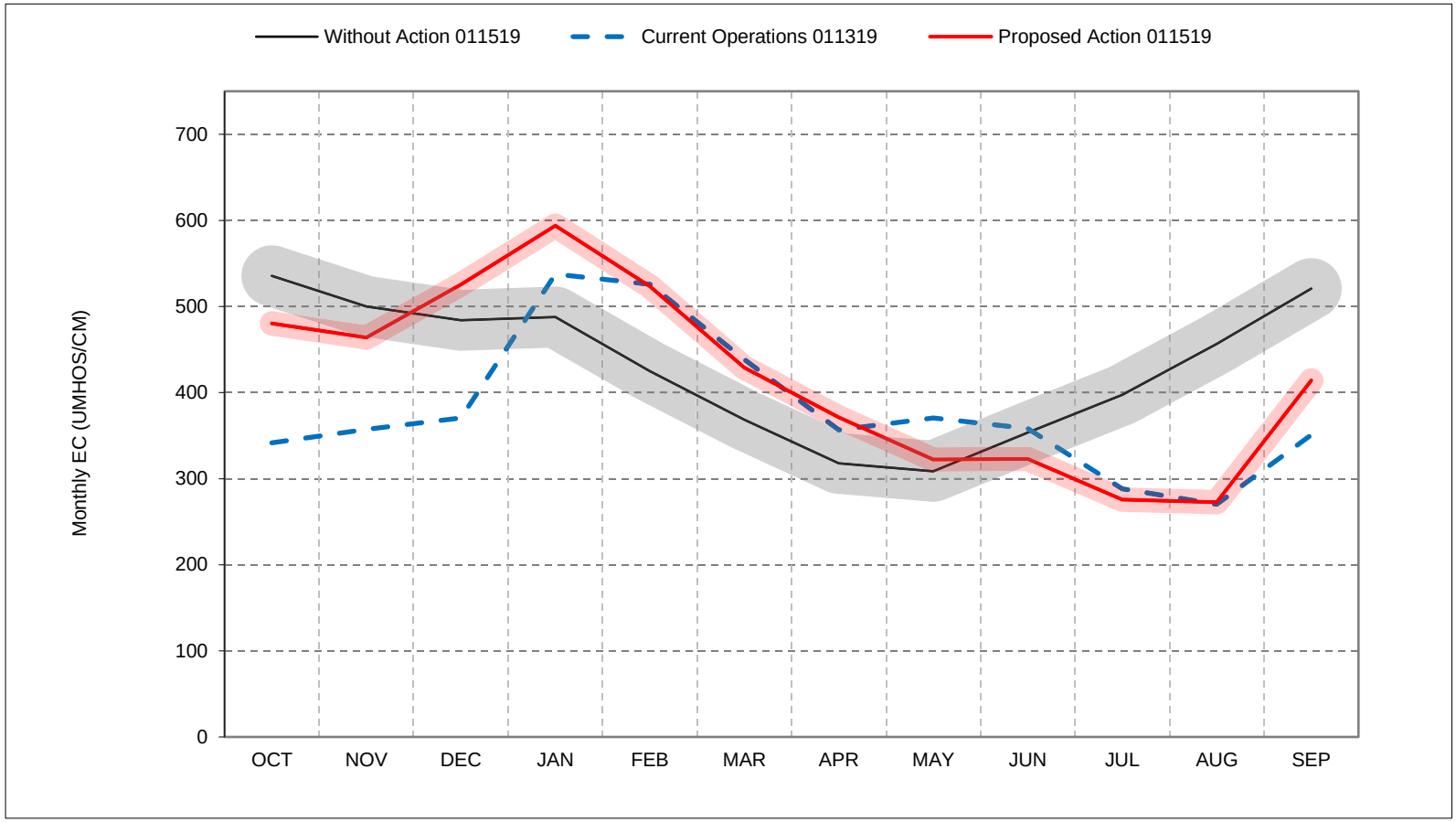
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 18-2. Victoria Canal, Wet Year Average EC



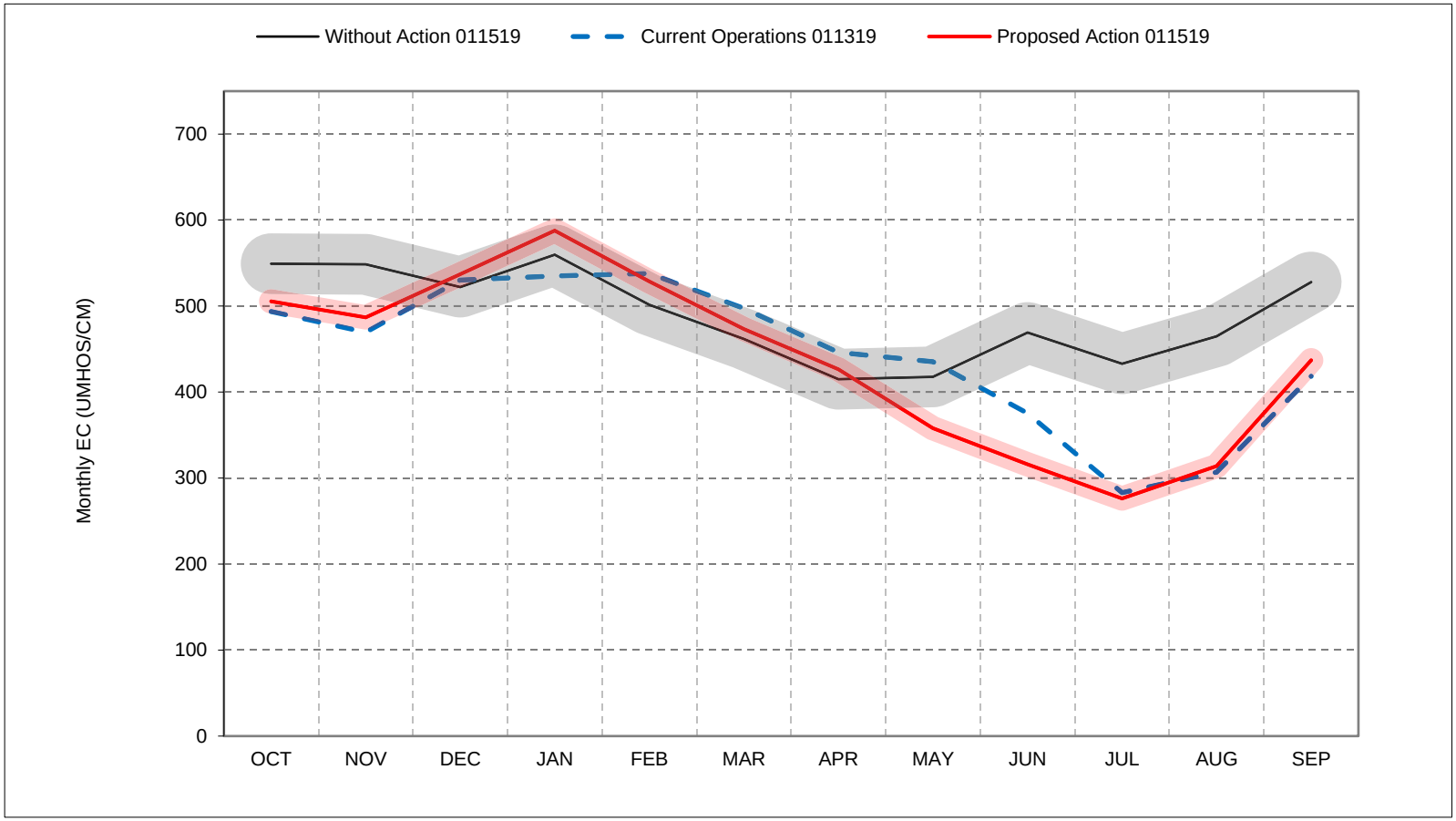
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 18-3. Victoria Canal, Above Normal Year Average EC



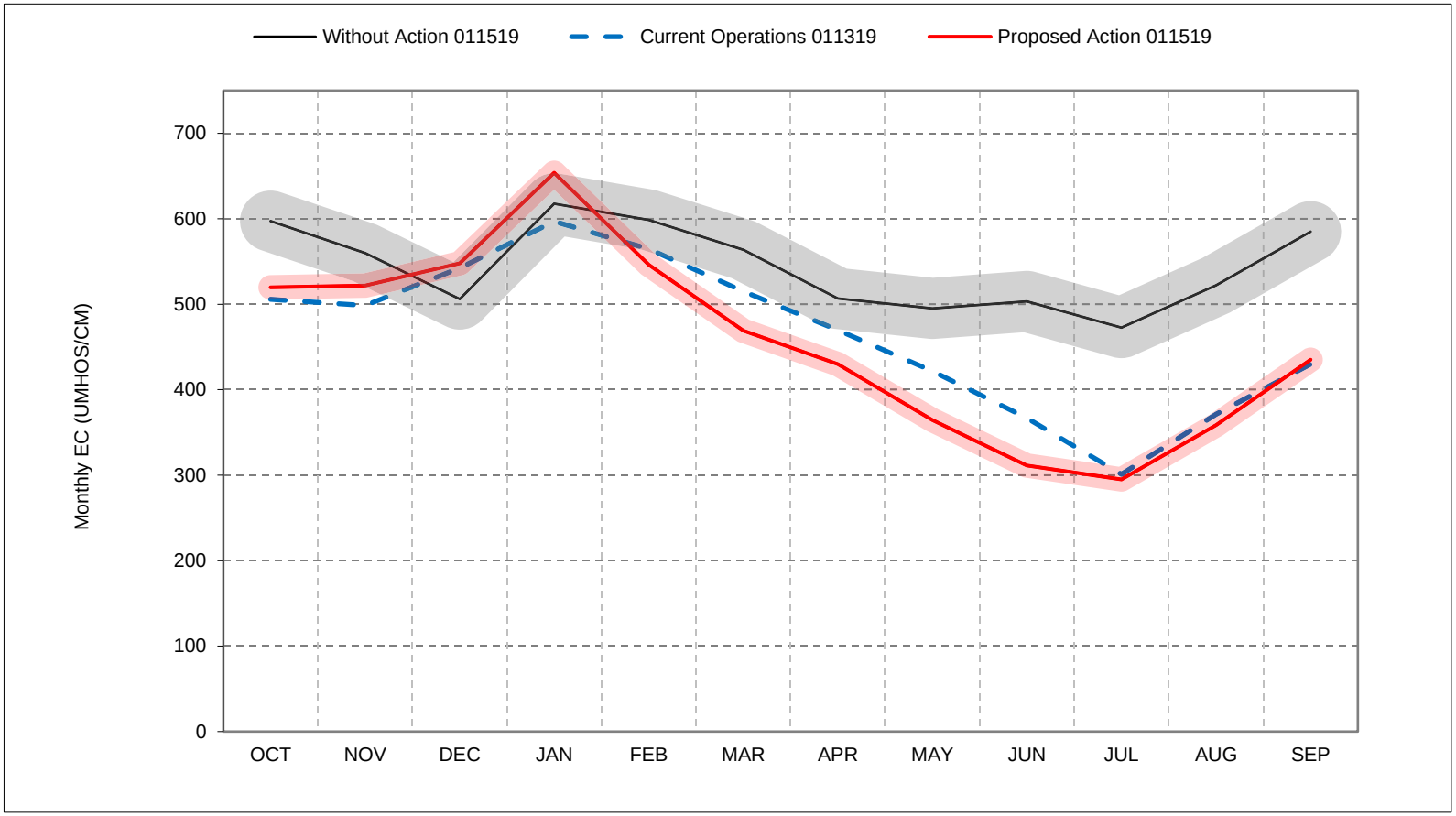
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 18-4. Victoria Canal, Below Normal Year Average EC



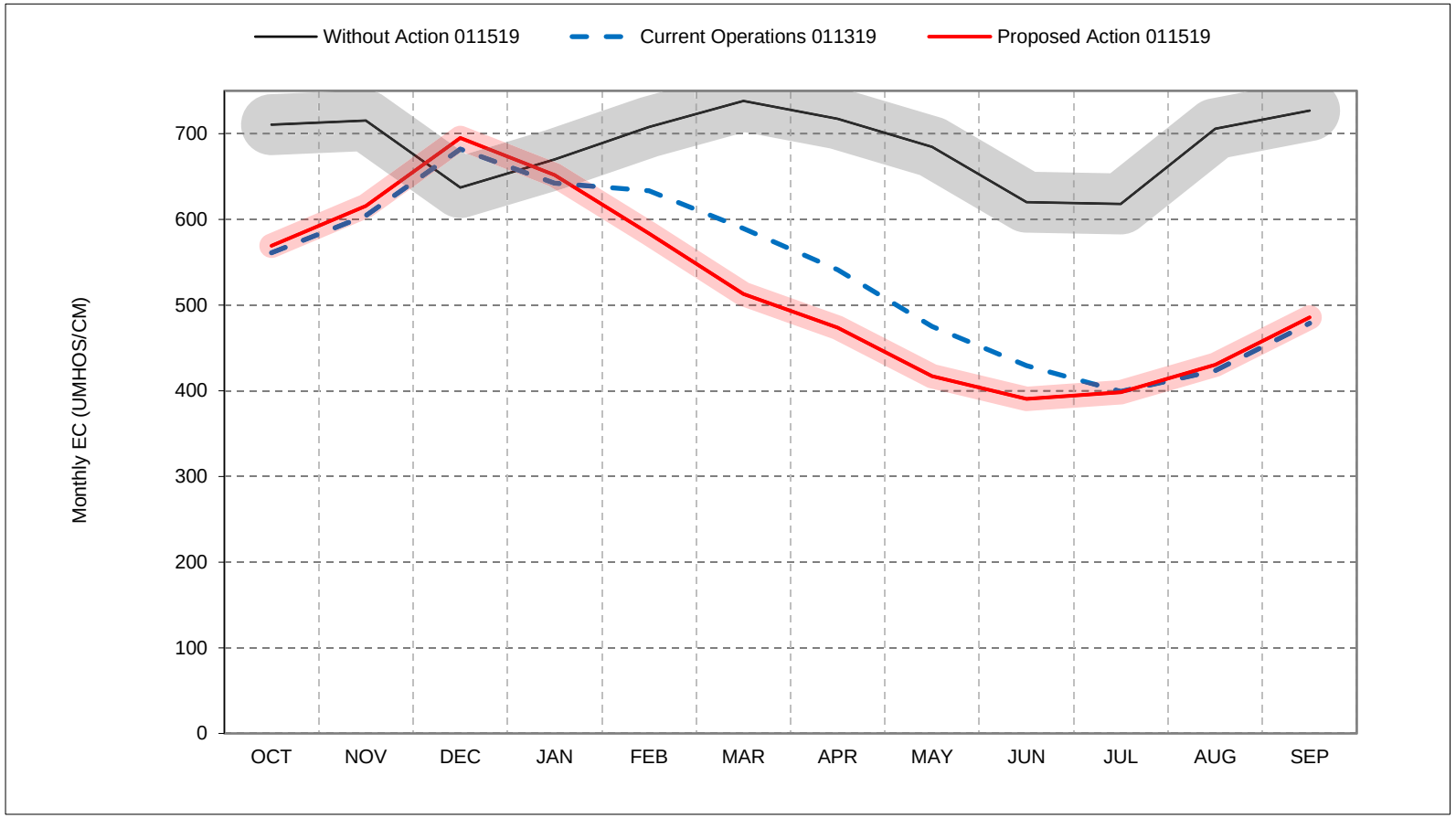
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

Figure 18-5. Victoria Canal, Dry Year Average EC



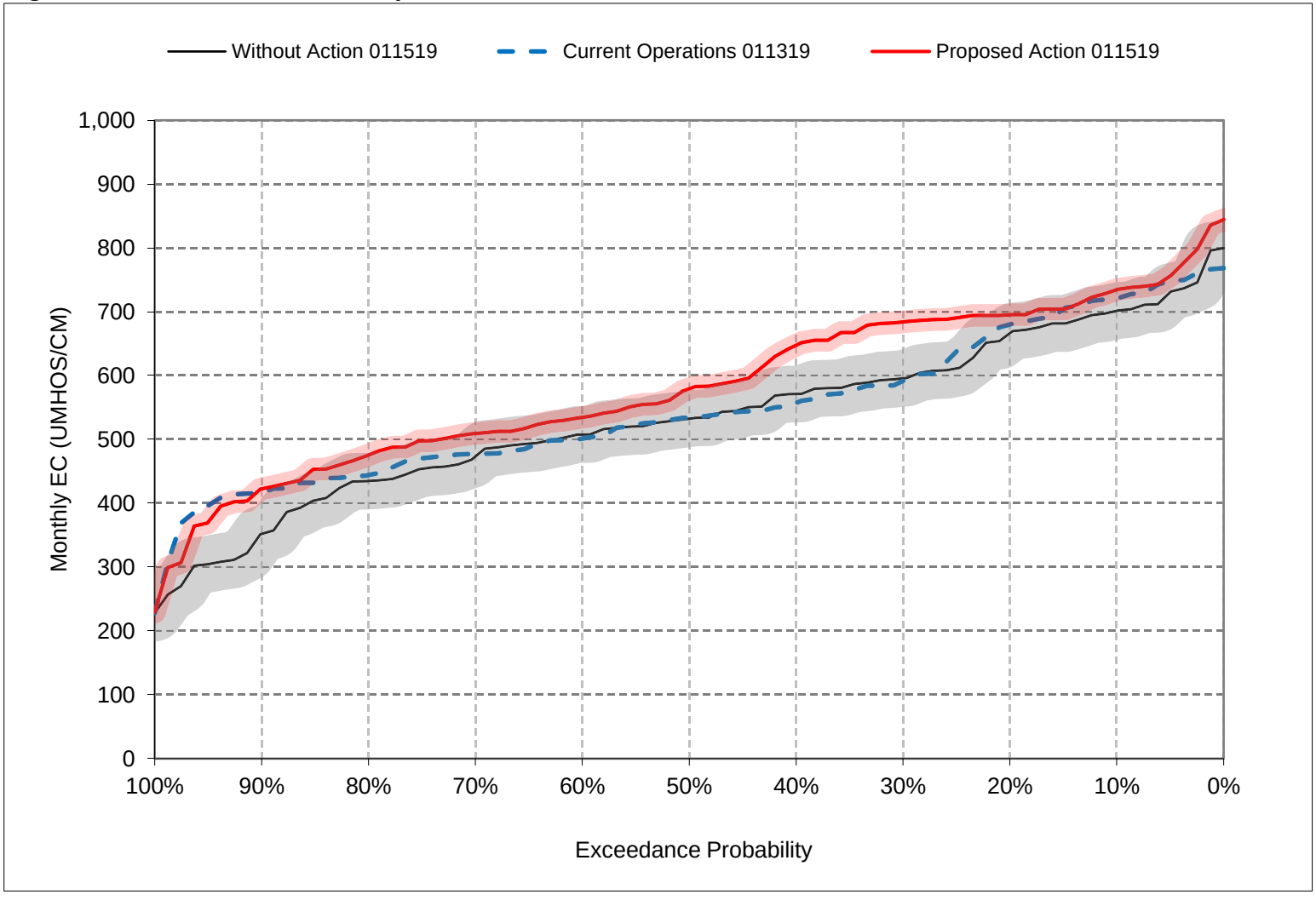
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

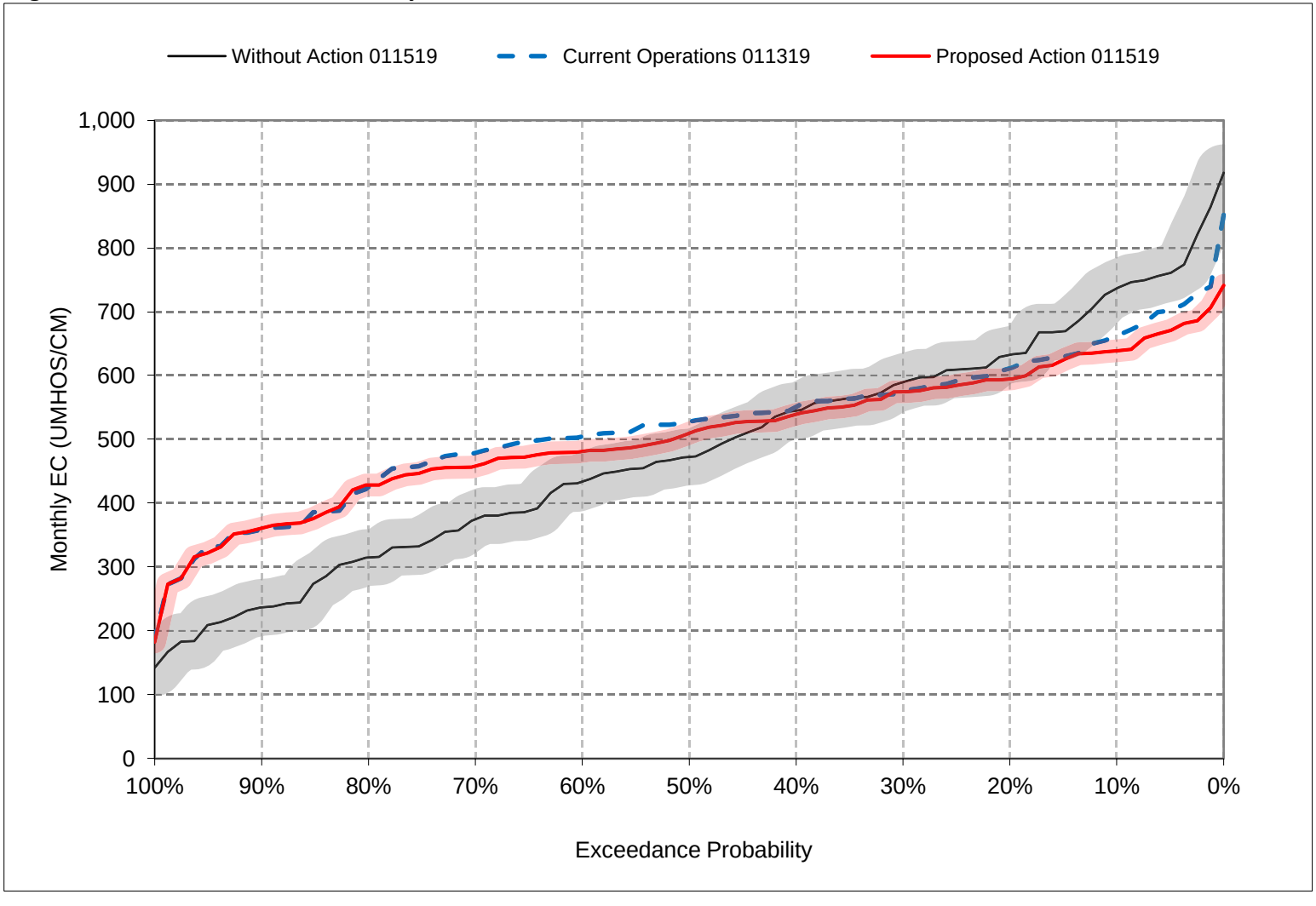
Figure 18-7. Victoria Canal, January EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

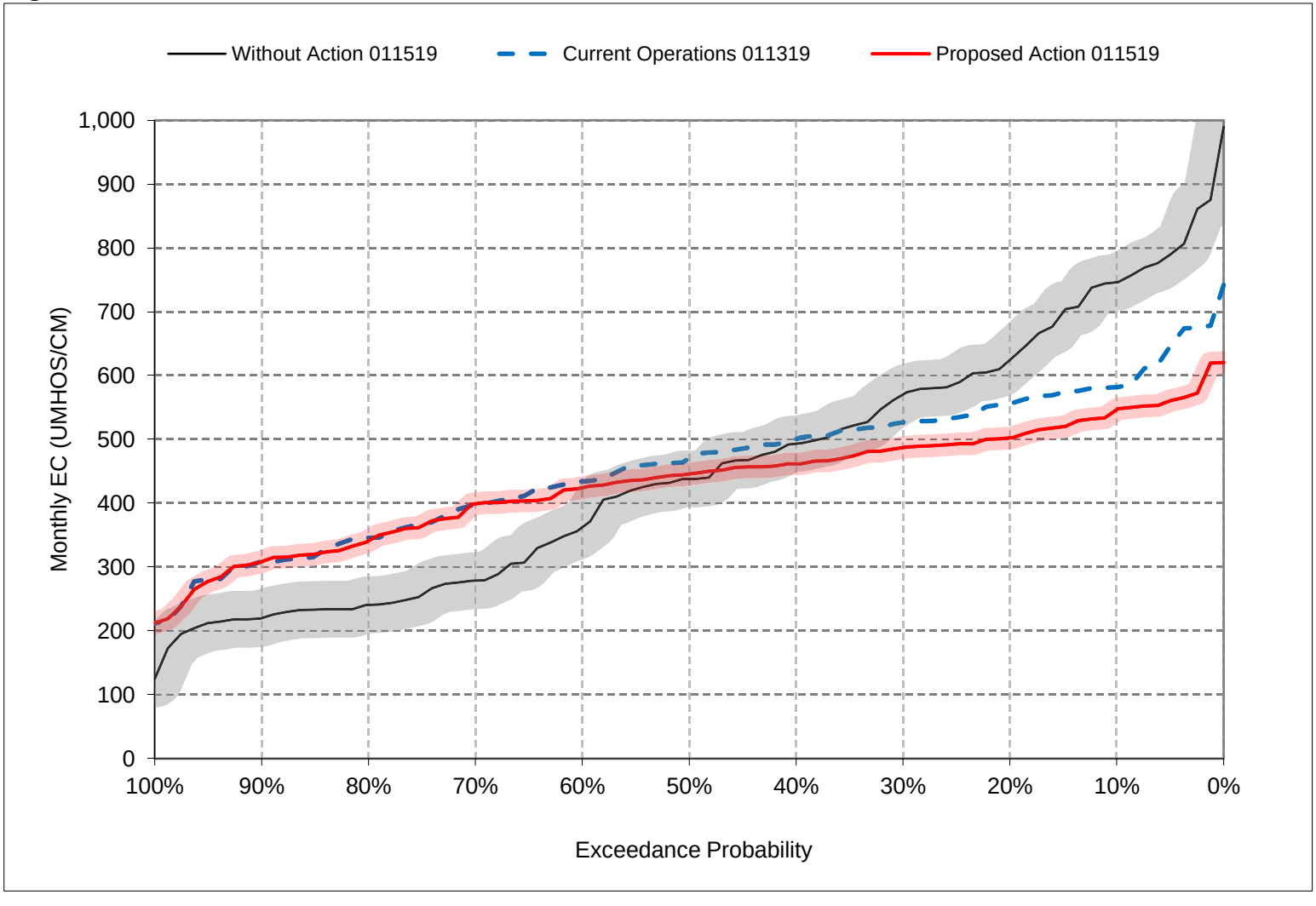
Figure 18-8. Victoria Canal, February EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

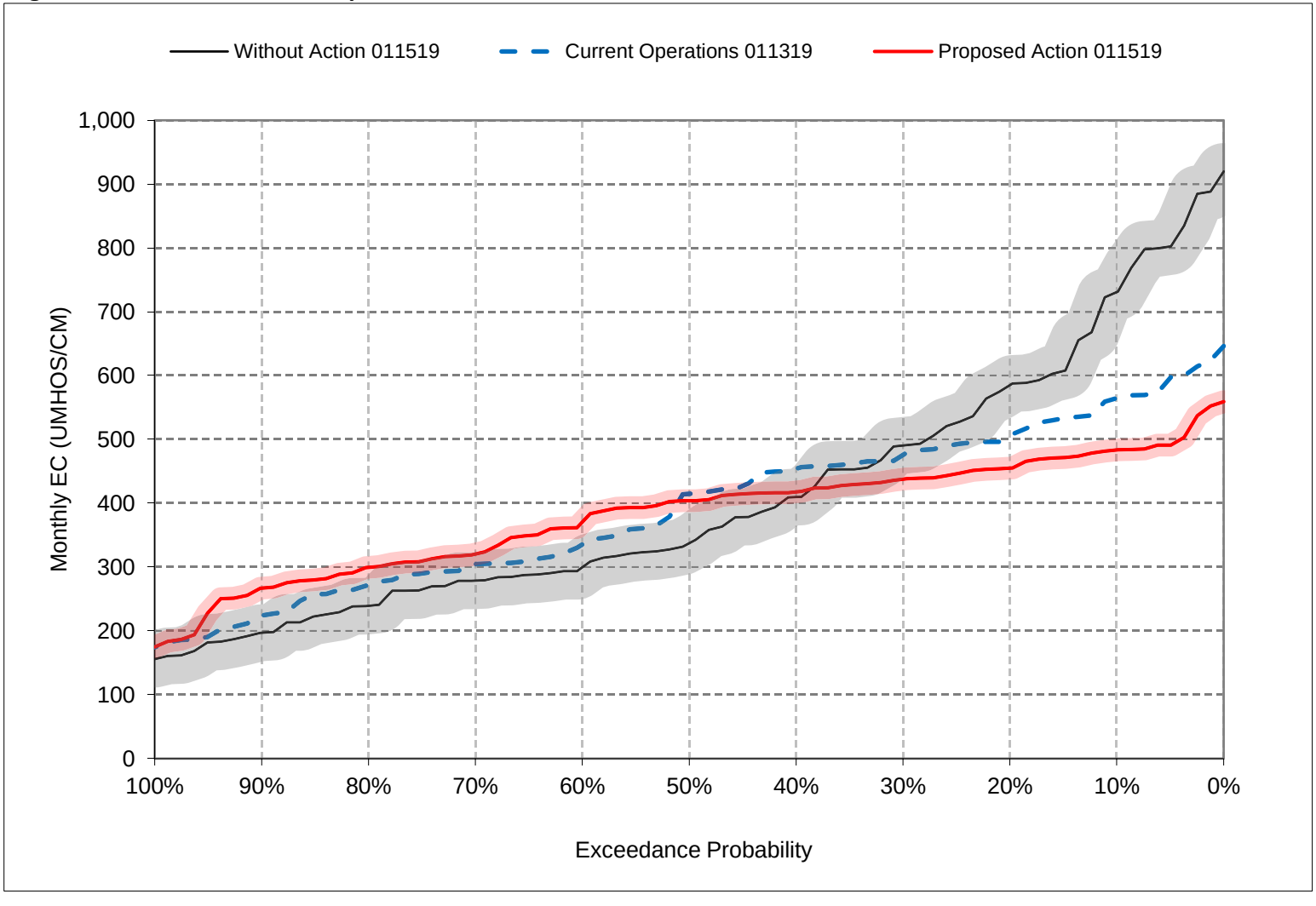
Figure 18-9. Victoria Canal, March EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

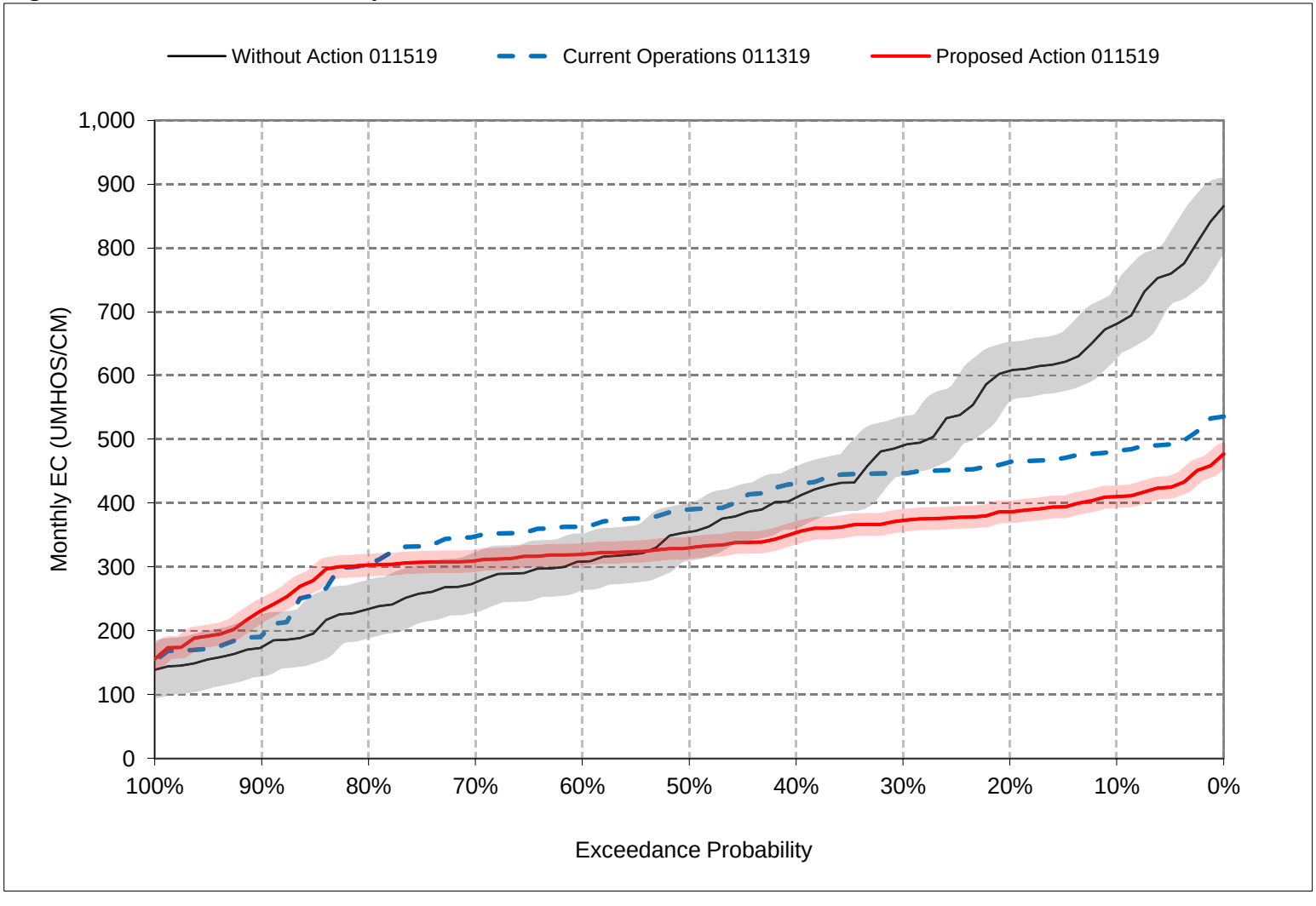
Figure 18-10. Victoria Canal, April EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

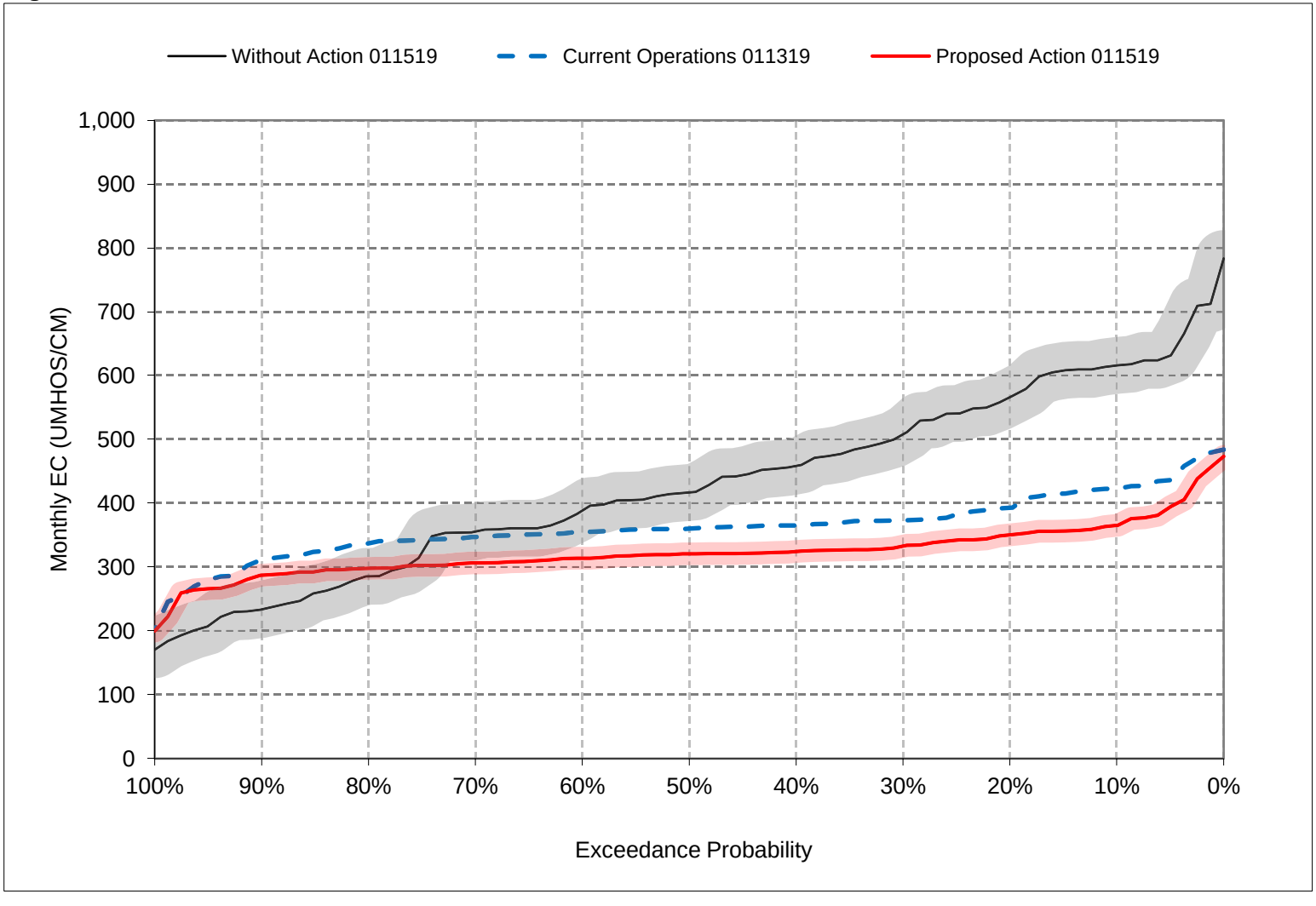
Figure 18-11. Victoria Canal, May EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

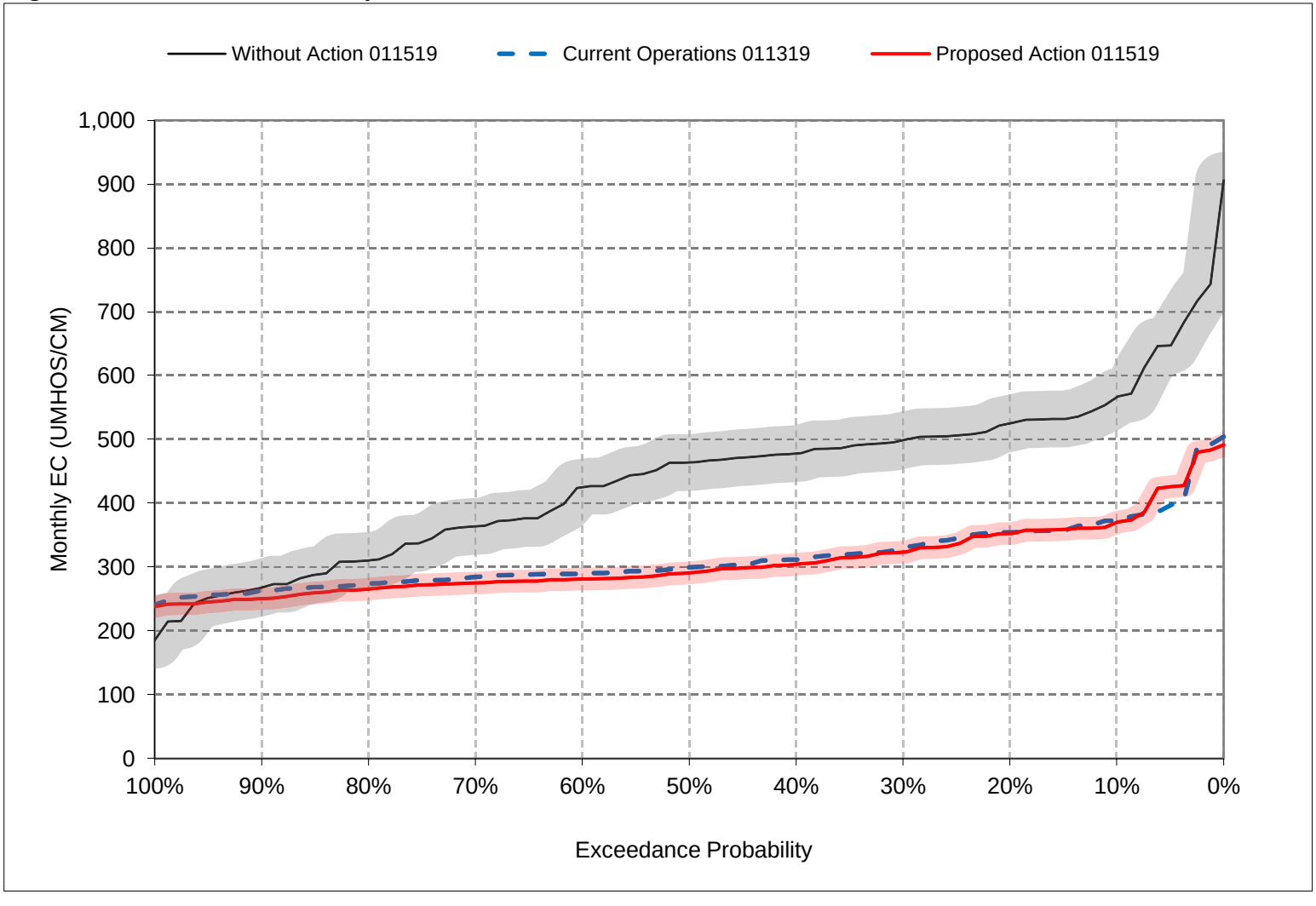
Figure 18-12. Victoria Canal, June EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

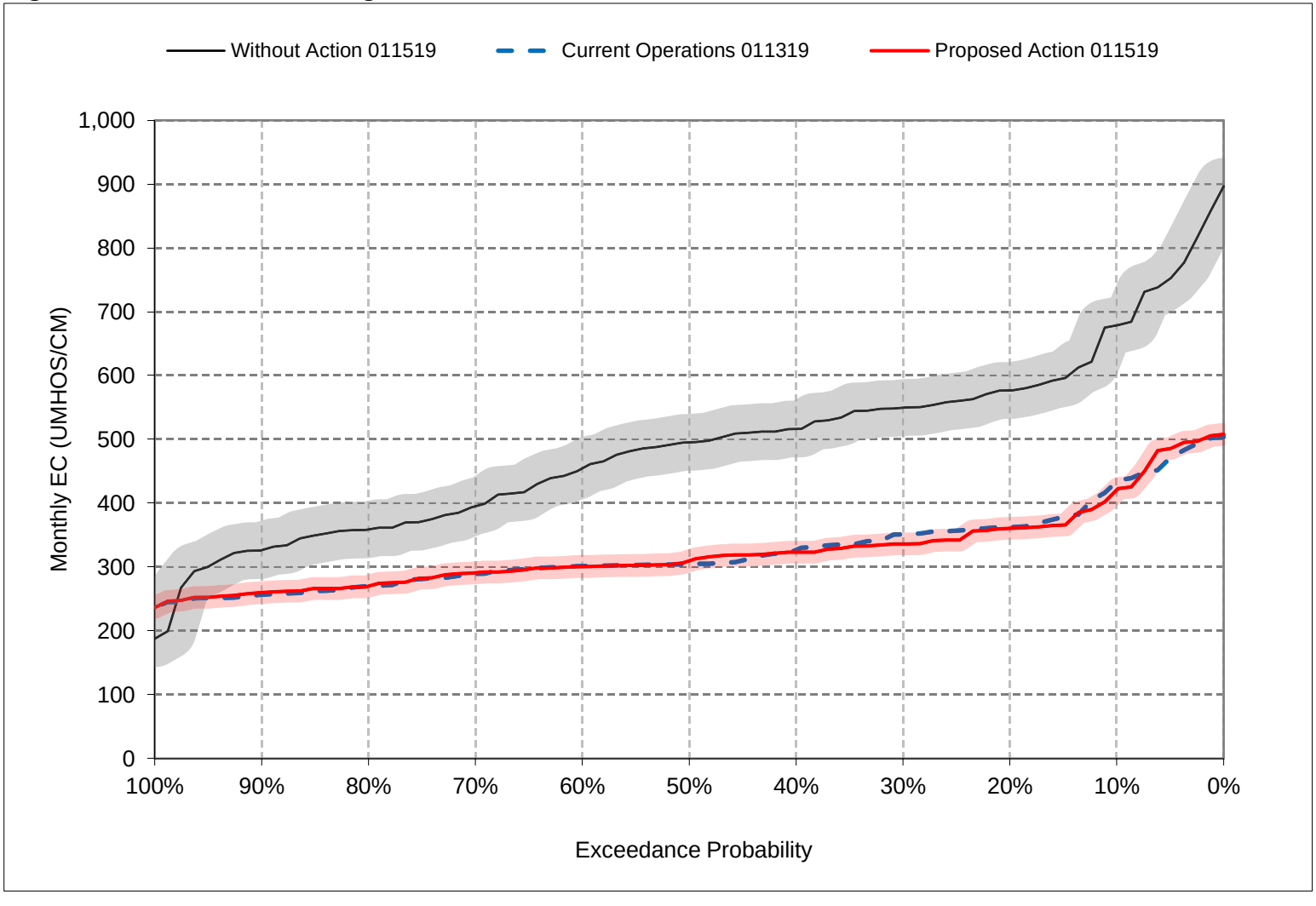
Figure 18-13. Victoria Canal, July EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

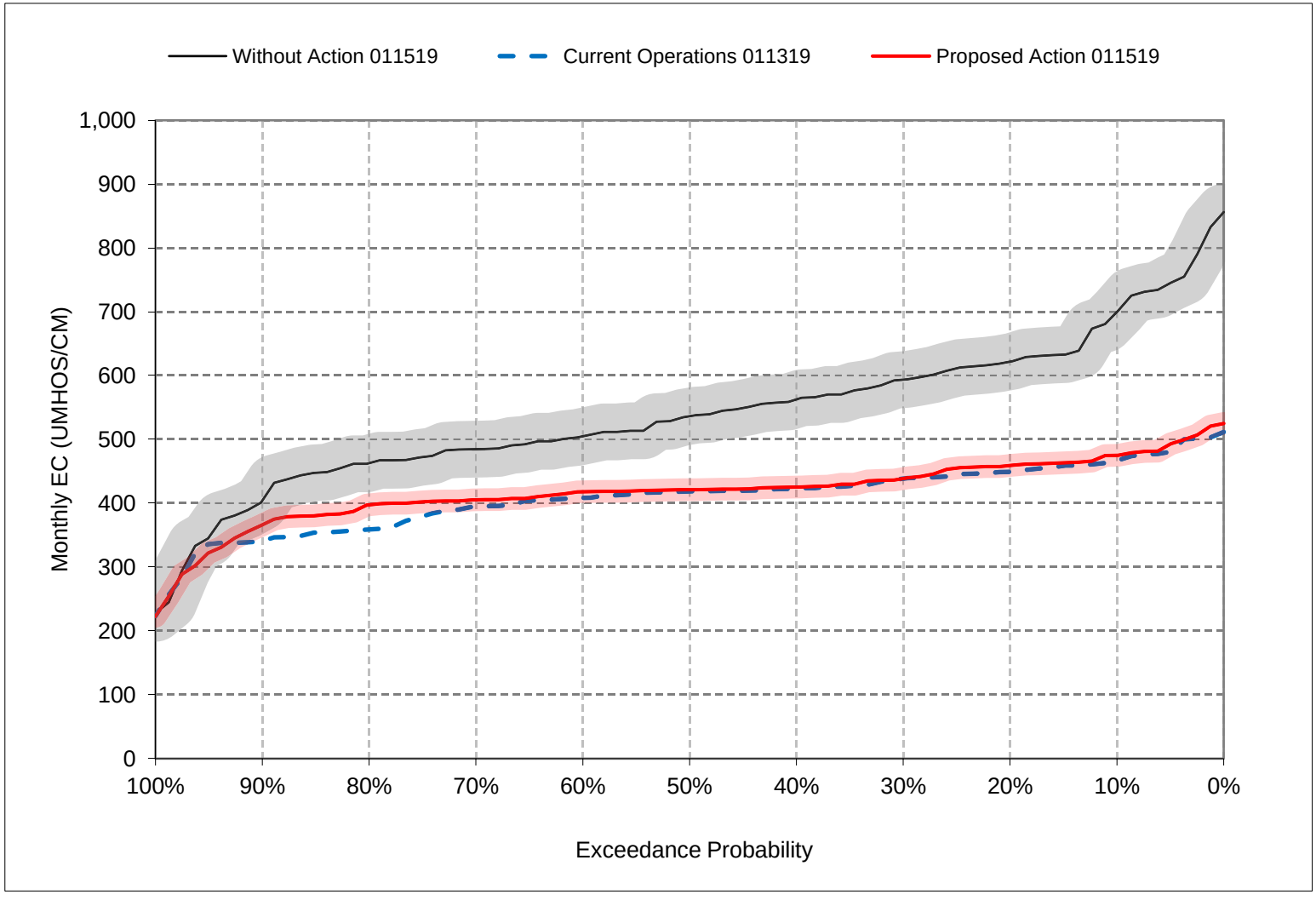
Figure 18-14. Victoria Canal, August EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

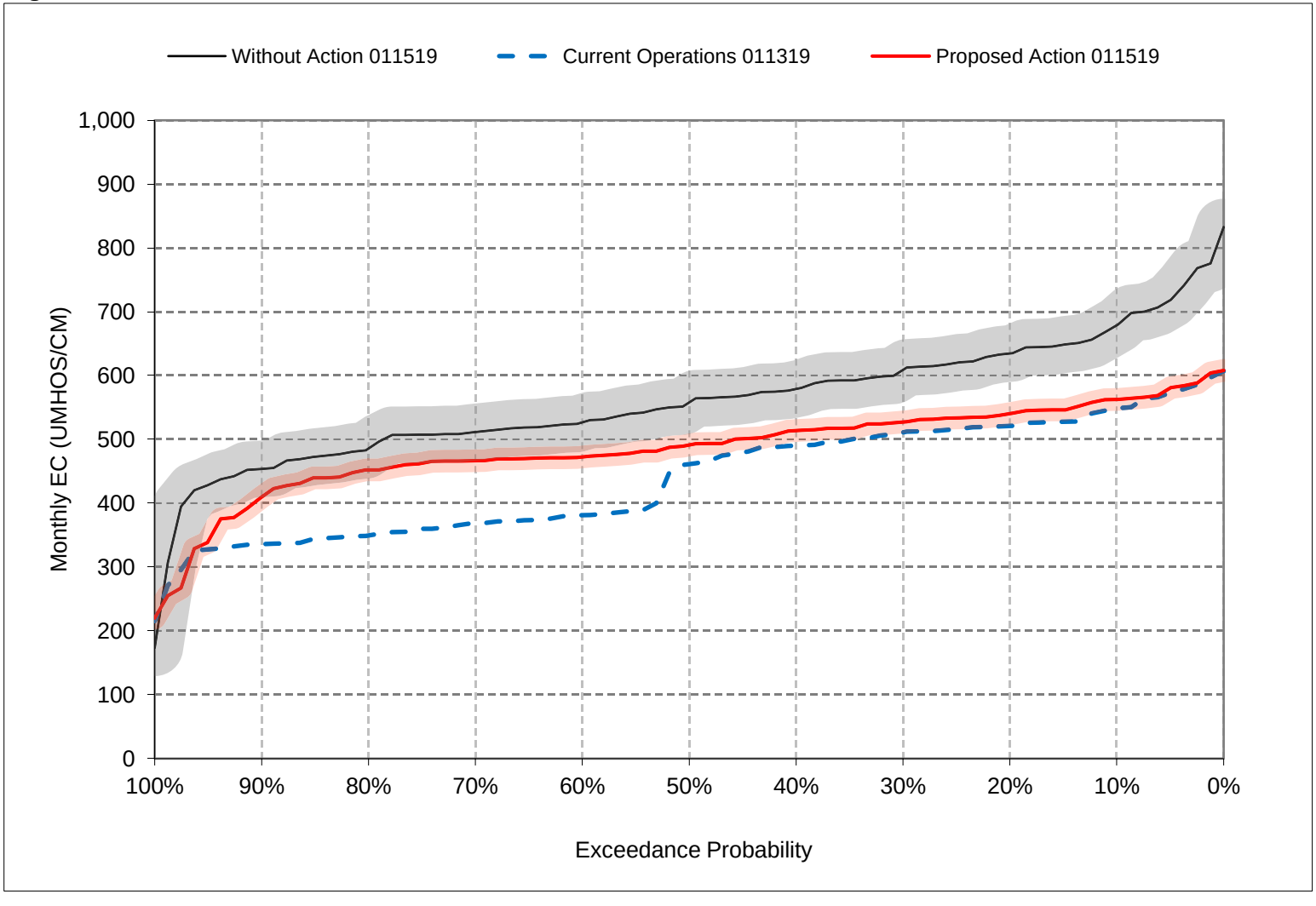
Figure 18-15. Victoria Canal, September EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

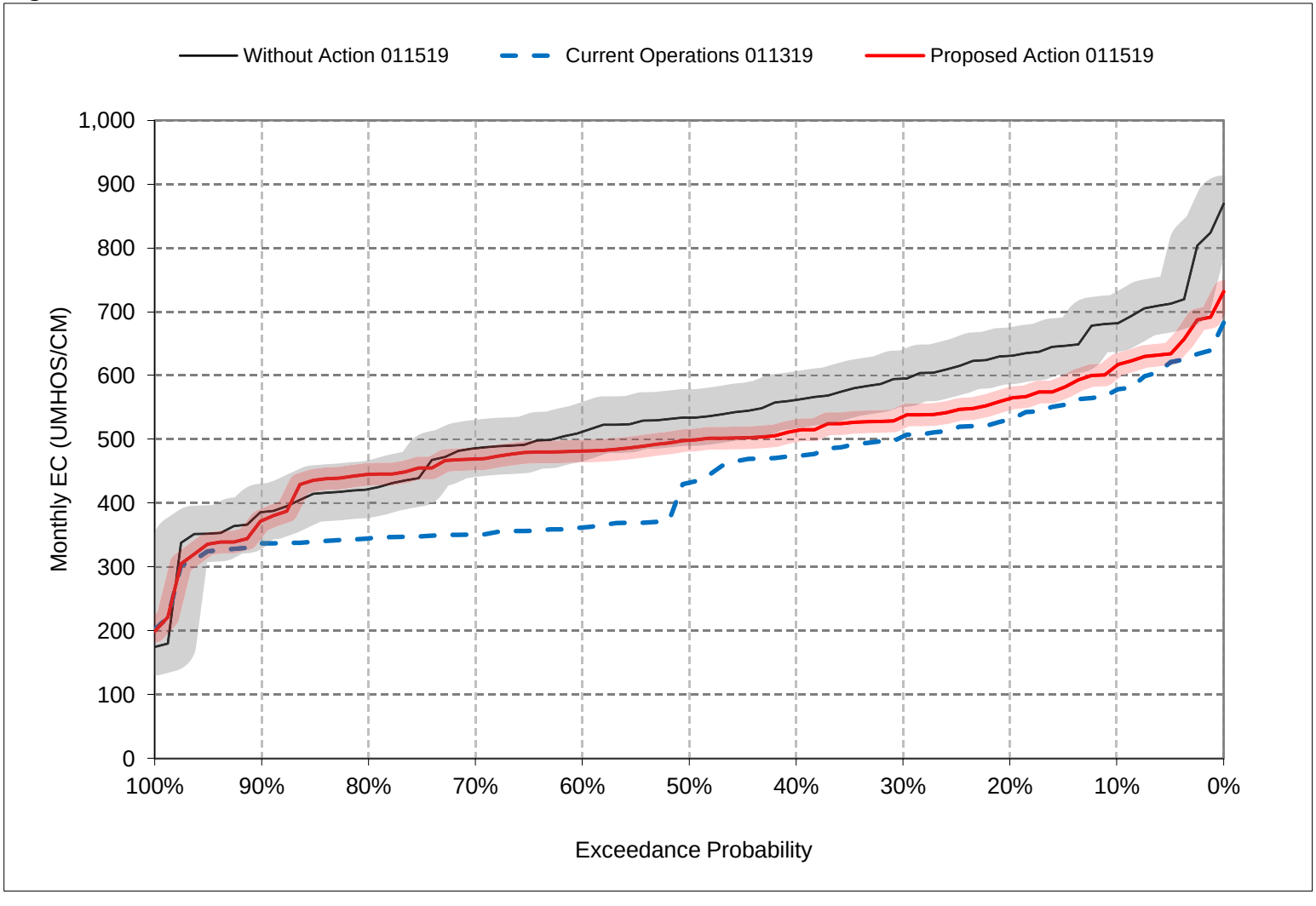
Figure 18-16. Victoria Canal, October EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

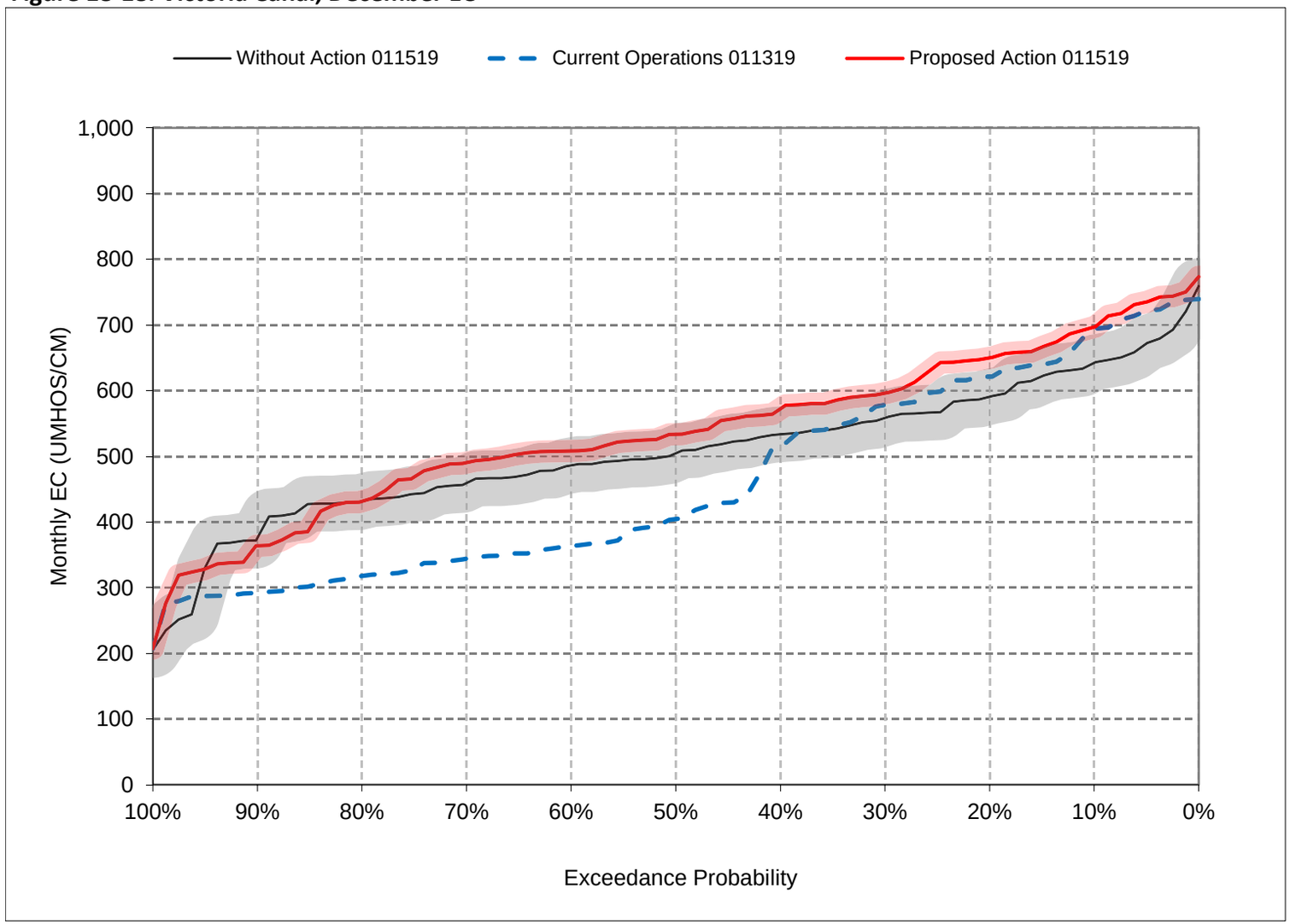
Figure 18-17. Victoria Canal, November EC



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

*These are draft results meant for qualitative analysis and are subject to revision.

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.
*These are draft results meant for qualitative analysis and are subject to revision.

Appendix D – Modeling

Attachment 3-7 – X2 Position Results (DSM2-QUAL)

The following results of the DSM2-QUAL model are included for Delta X2 conditions:

Title	Model Parameter	Table Numbers	Figure Numbers
X2	X2_PRV	45-1 to 45-3	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

Without Action 011519

Statistic	Monthly Position (0) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	93.0	89.6	82.4	73.0	68.5	67.5	70.0	80.2	91.3	92.9	93.5	92.0
20%	89.5	85.1	77.2	69.6	64.3	63.0	64.3	75.7	87.4	91.6	92.3	90.7
30%	88.5	81.5	74.5	67.1	61.1	59.4	61.8	69.8	85.2	89.9	91.3	89.4
40%	84.3	79.9	71.2	64.5	58.8	57.3	59.8	66.0	81.8	87.1	90.4	88.1
50%	82.9	77.4	68.4	61.4	55.5	54.9	57.4	62.3	77.1	83.8	89.7	86.2
60%	81.6	75.5	65.8	58.1	54.6	54.0	55.6	59.9	71.1	82.3	88.5	85.4
70%	80.3	73.6	62.0	54.5	54.0	54.0	54.1	57.4	67.4	80.7	87.0	83.5
80%	78.0	70.3	59.6	54.0	54.0	54.0	54.0	55.1	61.6	78.0	84.0	82.0
90%	76.1	67.1	54.9	54.0	54.0	54.0	54.0	54.0	55.8	67.7	81.5	78.6
Long Term												
Full Simulation Period[a]	83.6	77.3	68.7	62.5	59.0	58.3	59.9	65.4	75.3	83.1	88.1	86.0
Water Year Types[b,c]												
Wet (32%)	78.1	72.5	65.4	55.8	54.2	54.5	55.0	56.8	62.1	73.1	82.2	80.4
Above Normal (16%)	81.4	75.6	67.6	58.3	55.9	54.8	55.7	59.3	71.5	81.5	88.0	84.7
Below Normal (13%)	82.5	78.0	70.4	64.3	59.6	59.4	61.4	67.8	79.2	85.4	90.3	87.2
Dry (24%)	86.9	77.7	68.4	66.9	61.6	58.9	61.0	69.5	83.8	90.2	92.2	89.5
Critical (15%)	93.1	87.9	75.9	72.3	68.3	68.0	72.2	81.9	90.4	92.2	91.8	92.8

Current Operations 011319

Statistic	Monthly Position (0) 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

Current Operations 011319 minus Without Action 011519

Statistic	Monthly Position (0) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3.2**	**6.6**	**11.0**	**14.4**	**10.9**	**10.4**	**10.1**	**3.3**	-5.2	-2.6	**0.0**	**3.0**
20%	**5.2**	**8.6**	**13.5**	**15.5**	**10.8**	**11.7**	**10.5**	**5.9**	-2.7	-3.9	**0.0**	**3.3**
30%	**5.9**	**11.8**	**12.5**	**15.8**	**8.0**	**8.5**	**10.2**	**10.0**	-1.2	-3.1	**0.6**	**4.5**
40%	**9.9**	**11.3**	**14.0**	**13.4**	**7.1**	**9.3**	**8.4**	**8.3**	**1.0**	-2.8	-1.5	**4.8**
50%	**7.1**	**6.0**	**15.1**	**12.2**	**5.9**	**7.7**	**8.5**	**9.5**	**3.6**	-0.9	-2.4	**5.0**
60%	**2.7**	**6.9**	**16.6**	**9.0**	**3.2**	**6.5**	**7.1**	**8.7**	**8.7**	-1.4	-1.5	-2.3
70%	-2.7	**3.8**	**13.1**	**3.6**	**0.5**	**2.3**	**5.7**	**8.8**	**9.7**	-0.6	-0.6	-6.9
80%	-0.9	**6.3**	**4.9**	**0.9**	**0.0**	0.0	**1.5**	**5.9**	**10.6**	**1.4**	**1.5**	-6.6
90%	**0.7**	**8.9**	**1.7**	**0.0**	0.0	0.0	0.0	**1.3**	**8.7**	**9.5**	**3.4**	-3.5
Long Term												
Full Simulation Period[a]	**3.4**	**7.3**	**10.4**	**9.0**	**5.2**	**6.0**	**6.4**	**5.7**	**3.5**	**0.1**	**0.5**	**0.2**
Water Year Types[b,c]												
Wet	-1.2	**2.8**	**8.7**	**3.2**	**1.4**	**2.3**	**2.9**	**4.0**	**7.9**	**4.4**	**3.3**	-5.0
Above Normal	**2.1**	**5.7**	**11.2**	**6.2**	**2.7**	**3.1**	**5.2**	**8.0**	**7.1**	-1.1	-2.2	-1.6
Below Normal	**9.3**	**11.9**	**11.0**	**13.8**	**7.3**	**9.9**	**9.6**	**7.0**	**2.5**	-2.1	-2.5	**5.0**
Dry	**7.3**	**11.1**	**9.8**	**13.8**	**8.5**	**8.8**	**9.3**	**7.2**	-0.9	-3.1	-0.4	**4.2**
Critical	**3.2**	**8.0**	**14.0**	**12.0**	**8.8**	**8.7**	**7.5**	**2.7**	-2.0	-0.8	**2.1**	**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.

e These are draft results meant for qualitative analysis and are subject to revision.

f Results are monthly averaged from DSM2.

Table 45-2. X2, Monthly Position

Without Action 011519

Statistic	Monthly Position (0) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	93.0	89.6	82.4	73.0	68.5	67.5	70.0	80.2	91.3	92.9	93.5	92.0
20%	89.5	85.1	77.2	69.6	64.3	63.0	64.3	75.7	87.4	91.6	92.3	90.7
30%	88.5	81.5	74.5	67.1	61.1	59.4	61.8	69.8	85.2	89.9	91.3	89.4
40%	84.3	79.9	71.2	64.5	58.8	57.3	59.8	66.0	81.8	87.1	90.4	88.1
50%	82.9	77.4	68.4	61.4	55.5	54.9	57.4	62.3	77.1	83.8	89.7	86.2
60%	81.6	75.5	65.8	58.1	54.6	54.0	55.6	59.9	71.1	82.3	88.5	85.4
70%	80.3	73.6	62.0	54.5	54.0	54.0	54.1	57.4	67.4	80.7	87.0	83.5
80%	78.0	70.3	59.6	54.0	54.0	54.0	54.0	55.1	61.6	78.0	84.0	82.0
90%	76.1	67.1	54.9	54.0	54.0	54.0	54.0	54.0	55.8	67.7	81.5	78.6
Long Term												
Full Simulation Period[a]	83.6	77.3	68.7	62.5	59.0	58.3	59.9	65.4	75.3	83.1	88.1	86.0
Water Year Types[b,c]												
Wet (32%)	78.1	72.5	65.4	55.8	54.2	54.5	55.0	56.8	62.1	73.1	82.2	80.4
Above Normal (16%)	81.4	75.6	67.6	58.3	55.9	54.8	55.7	59.3	71.5	81.5	88.0	84.7
Below Normal (13%)	82.5	78.0	70.4	64.3	59.6	59.4	61.4	67.8	79.2	85.4	90.3	87.2
Dry (24%)	86.9	77.7	68.4	66.9	61.6	58.9	61.0	69.5	83.8	90.2	92.2	89.5
Critical (15%)	93.1	87.9	75.9	72.3	68.3	68.0	72.2	81.9	90.4	92.2	91.8	92.8

Proposed Action 011519

Statistic	Monthly Position (0) 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

Proposed Action 011519 minus Without Action 011519

Statistic	Monthly Position (0) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	**3.2**	**6.6**	**11.1**	**15.4**	**12.0**	**12.5**	**11.5**	**3.4**	-5.4	-2.9	**0.3**	**3.0**
20%	**5.2**	**8.9**	**15.4**	**16.6**	**10.8**	**12.2**	**12.9**	**6.4**	-2.7	-3.6	**0.1**	**3.4**
30%	**5.9**	**12.0**	**15.4**	**15.9**	**9.2**	**8.7**	**11.8**	**11.2**	-1.0	-2.5	**0.6**	**4.5**
40%	**9.8**	**13.0**	**16.7**	**13.2**	**8.1**	**9.7**	**11.2**	**11.5**	**1.1**	-3.0	-1.9	**4.8**
50%	**10.2**	**15.0**	**17.8**	**12.0**	**5.9**	**7.7**	**10.4**	**12.7**	**4.7**	-1.0	-2.4	**4.9**
60%	**10.9**	**16.2**	**17.6**	**9.5**	**2.2**	**6.1**	**9.1**	**12.6**	**9.5**	-1.1	-1.7	**5.2**
70%	**11.4**	**15.1**	**12.9**	**2.6**	**0.4**	**2.0**	**7.0**	**11.0**	**10.4**	-0.4	-0.7	**6.9**
80%	**12.7**	**15.8**	**5.9**	**0.9**	**0.0**	0.0	**2.2**	**7.5**	**10.9**	**1.6**	**1.7**	**8.1**
90%	**10.6**	**10.8**	**1.9**	0.0	0.0	0.0	0.0	**2.5**	**8.8**	**9.4**	**3.8**	**10.7**
Long Term												
Full Simulation Period[a]	**8.4**	**11.8**	**11.6**	**8.9**	**5.5**	**6.2**	**7.7**	**7.6**	**3.8**	**0.2**	**0.5**	**5.5**
Water Year Types[b,c]												
Wet	**10.3**	**13.0**	**11.4**	**2.9**	**1.3**	**2.2**	**3.9**	**6.1**	**8.3**	**4.5**	**3.1**	**8.2**
Above Normal	**9.7**	**13.0**	**13.2**	**5.8**	**2.5**	**2.7**	**6.7**	**11.0**	**7.5**	-1.0	-2.1	**5.6**
Below Normal	**9.3**	**12.4**	**11.0**	**13.5**	**6.9**	**9.8**	**11.2**	**9.3**	**3.1**	-2.2	-2.8	**4.6**
Dry	**7.5**	**11.5**	**9.7**	**14.2**	**9.1**	**9.3**	**10.7**	**8.8**	-0.8	-2.9	-0.3	**4.3**
Critical	**3.2**	**8.0**	**14.1**	**12.3**	**10.2**	**9.9**	**8.5**	**3.6**	-1.8	-0.5	**2.2**	**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.

e These are draft results meant for qualitative analysis and are subject to revision.

f Results are monthly averaged from DSM2.

Table 45-3. X2, Monthly Position

Current Operations 011319

Statistic	Monthly Position (0) 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

Proposed Action 011519

Statistic	Monthly Position (0) 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

Proposed Action 011519 minus Current Operations 011319

Statistic	Monthly Position (0) 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).

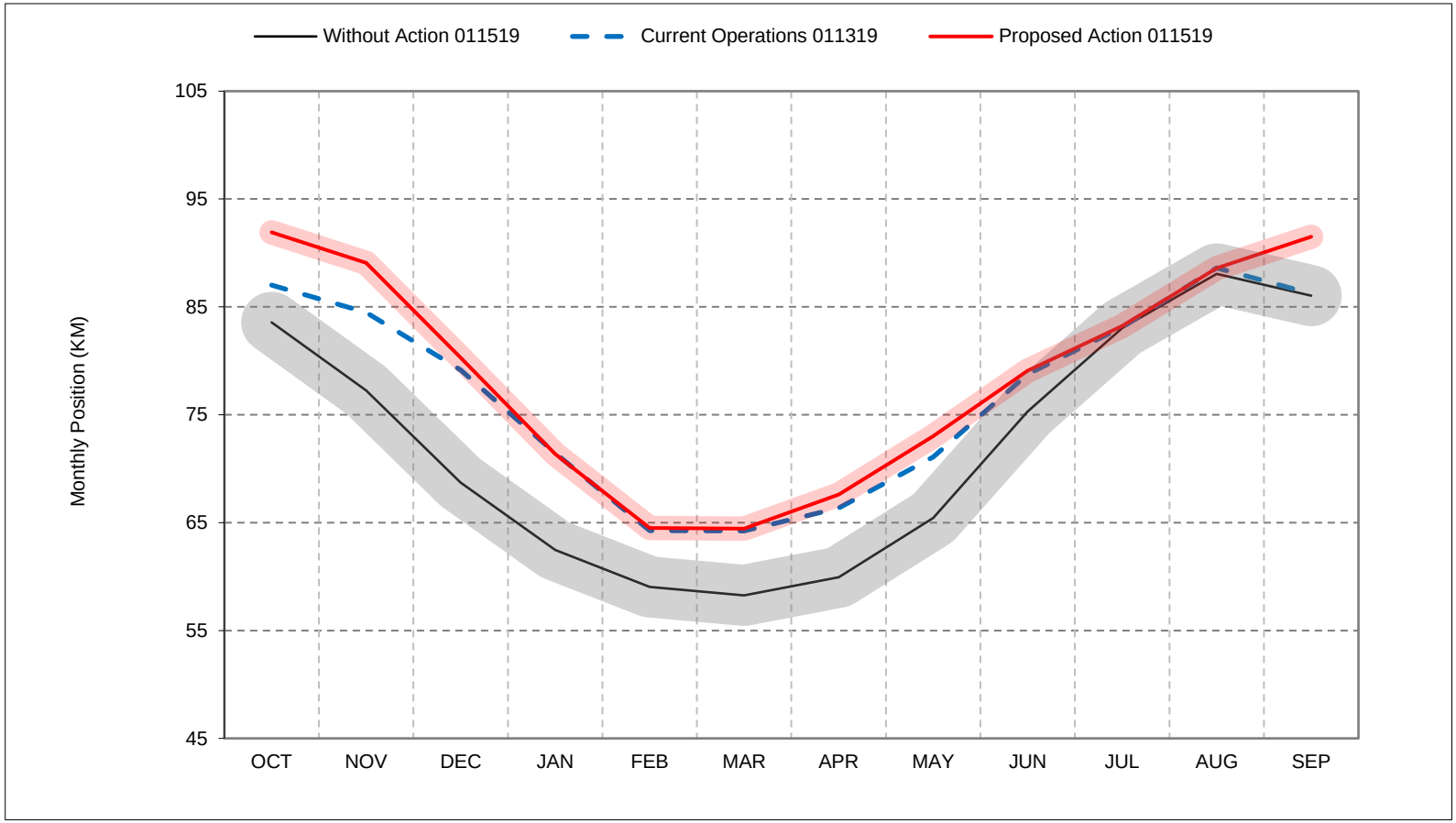
c These results are displayed with calendar year - year type sorting.

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

e These are draft results meant for qualitative analysis and are subject to revision.

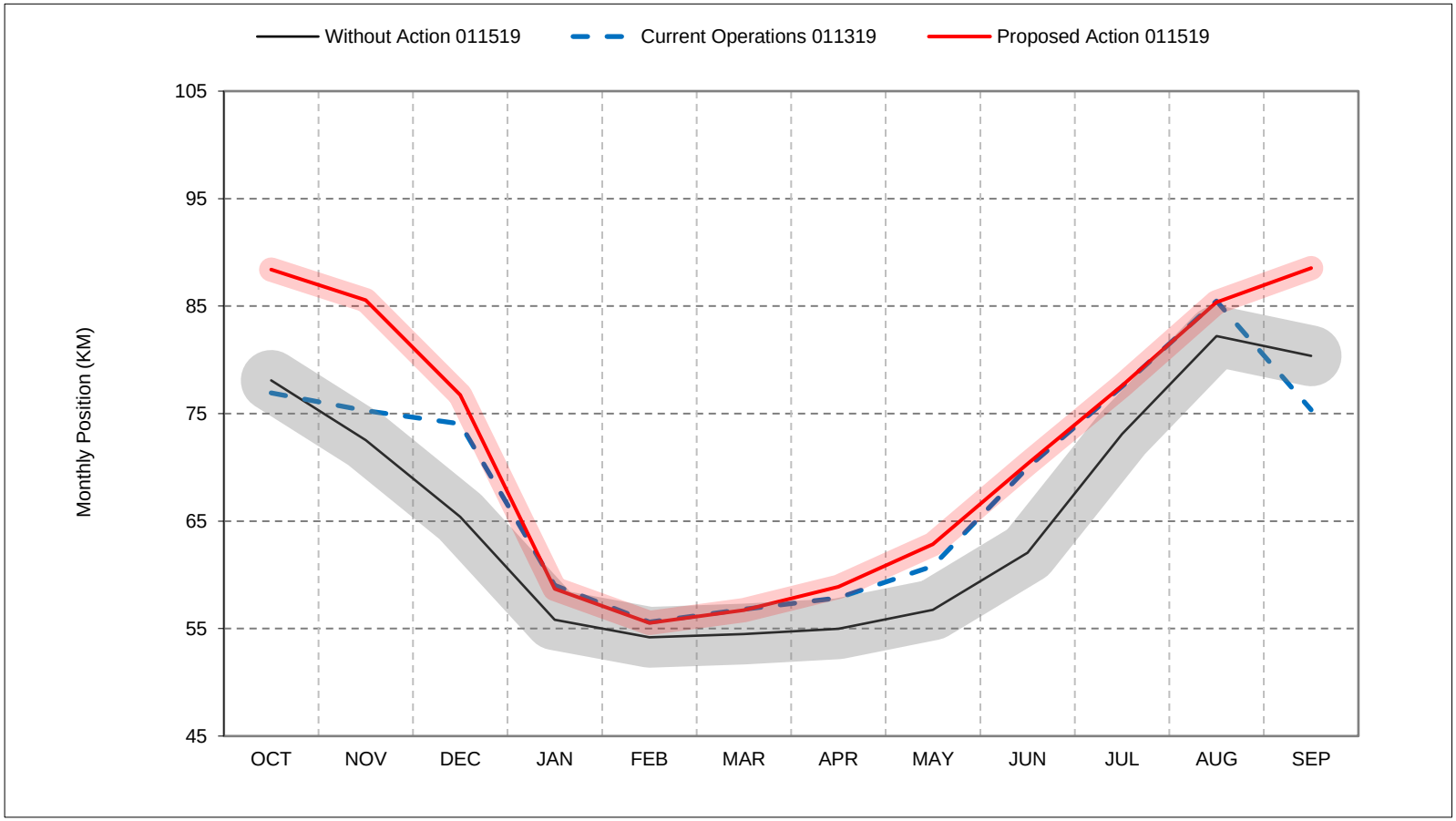
f Results are monthly averaged from DSM2.

Figure 45-1. X2, Long-Term Average Position



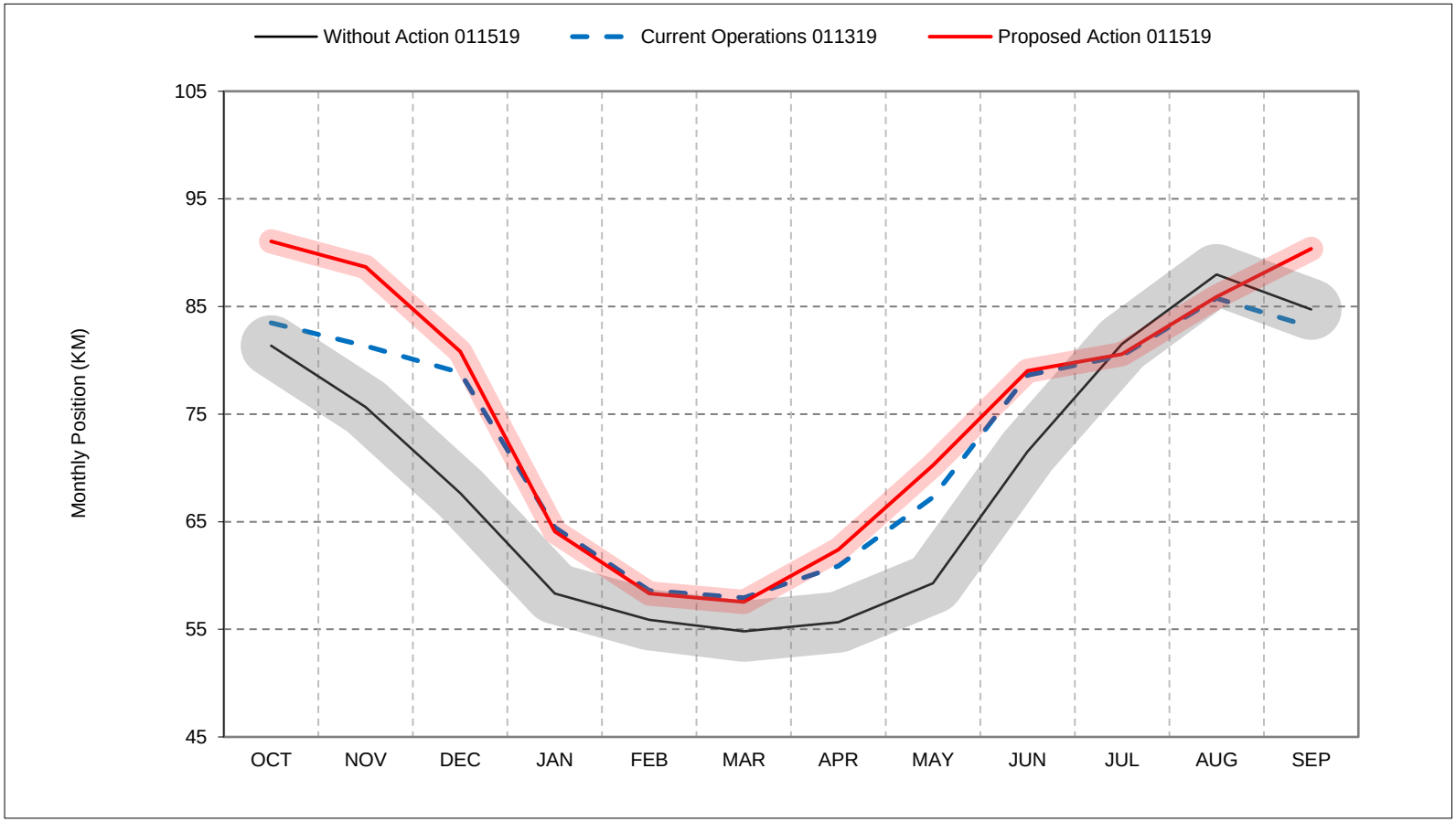
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-2. X2, Wet Year Average Position



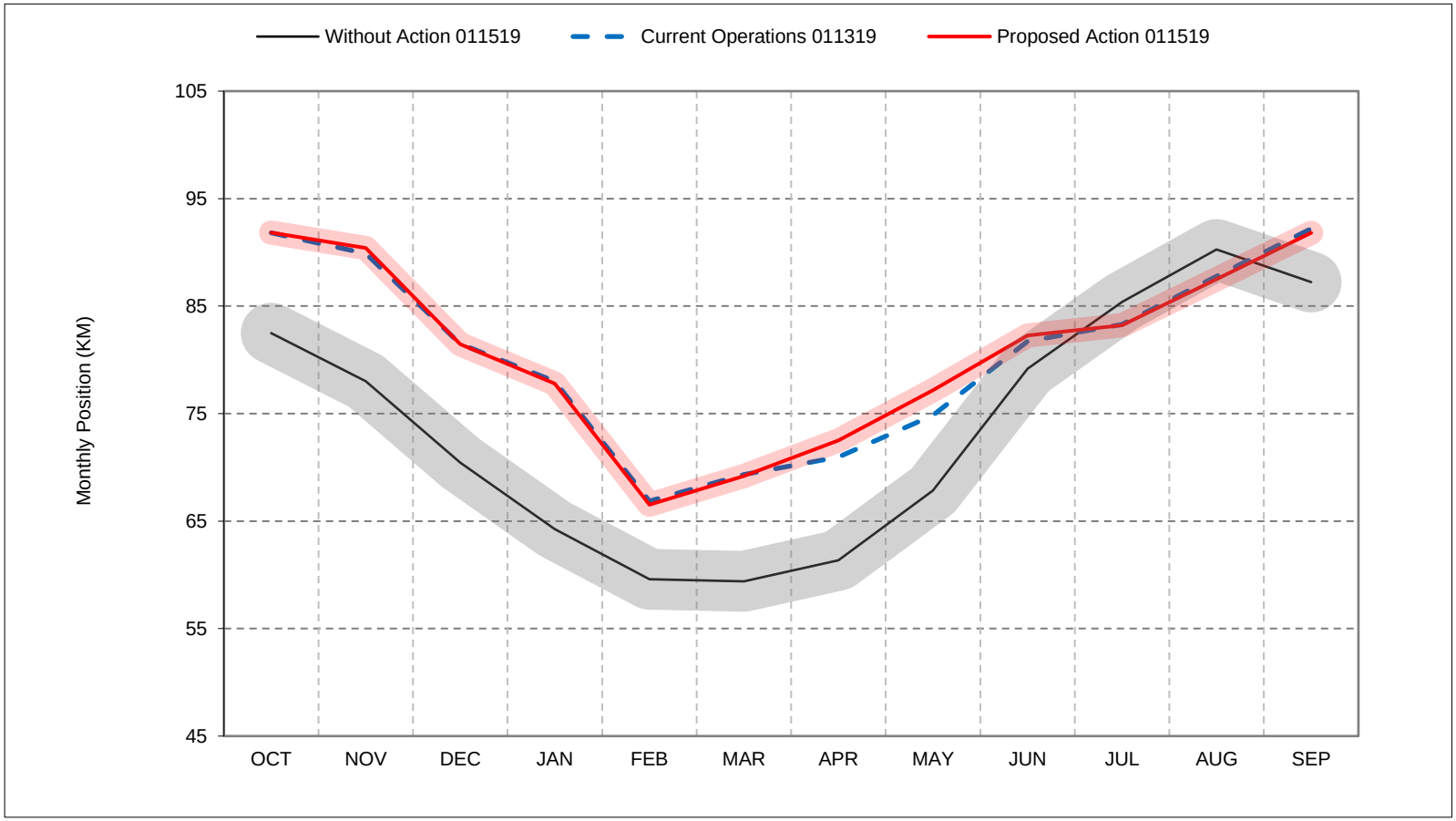
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-3. X2, Above Normal Year Average Position



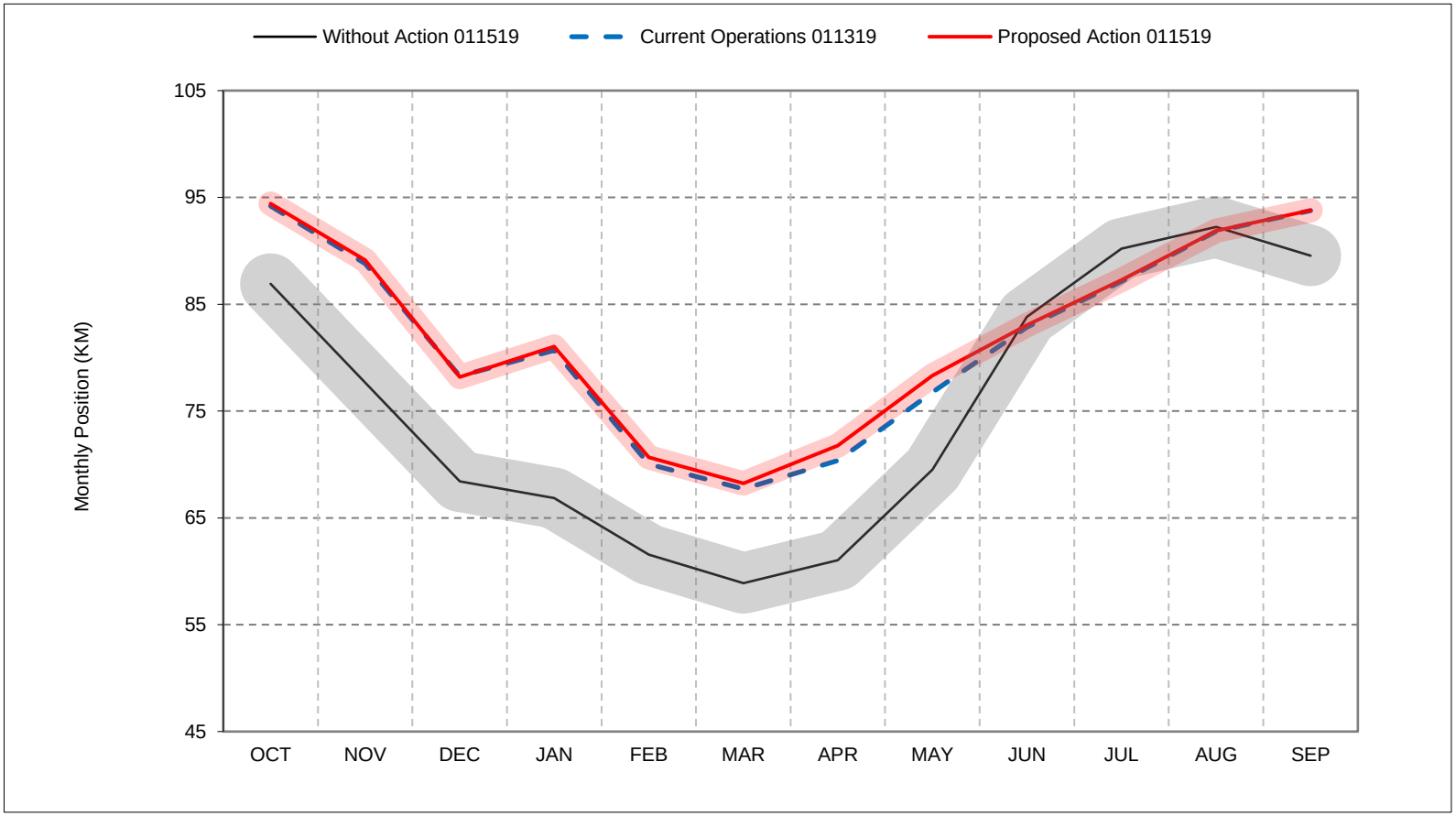
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-4. X2, Below Normal Year Average Position



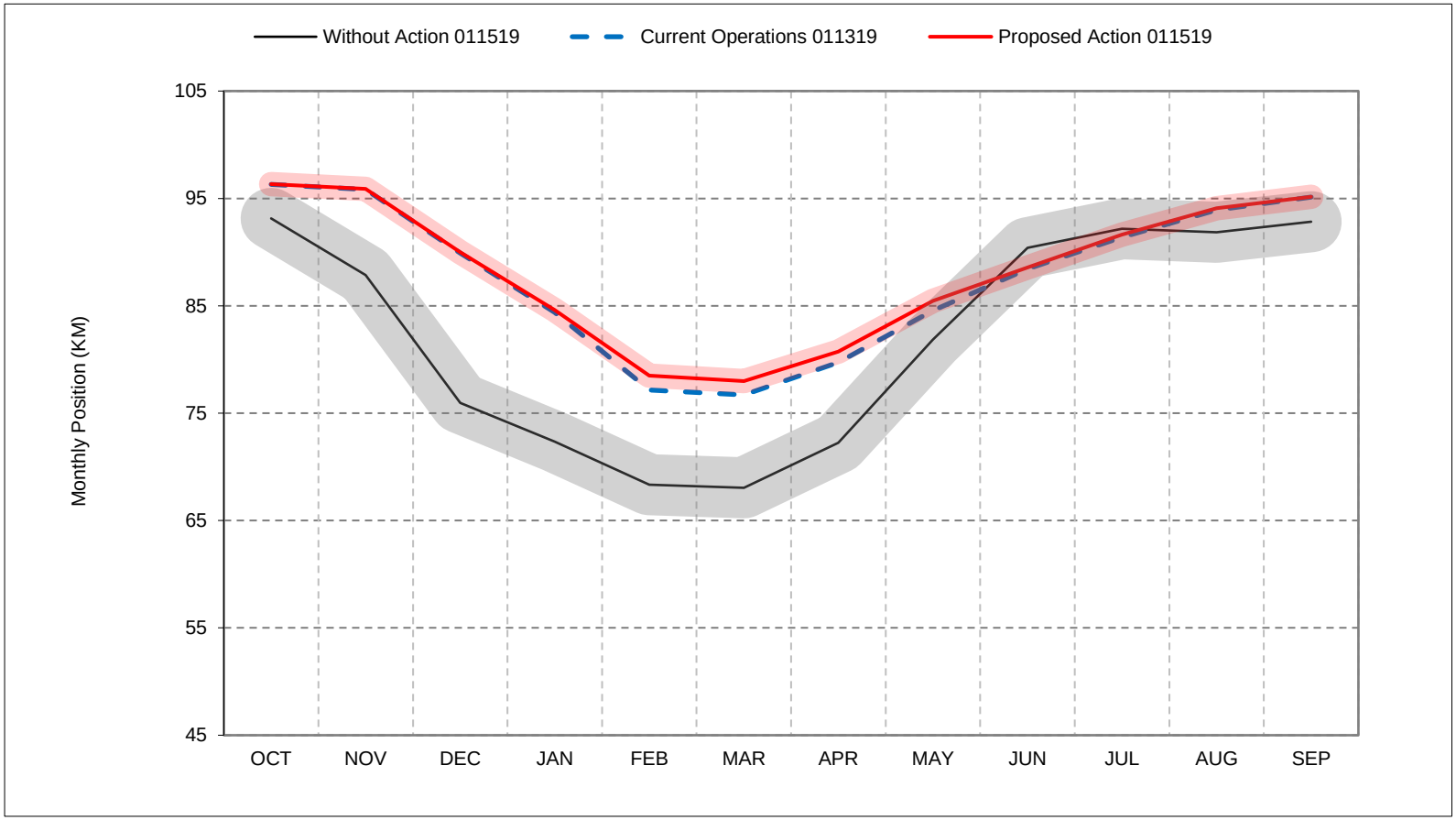
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-5. X2, Dry Year Average Position



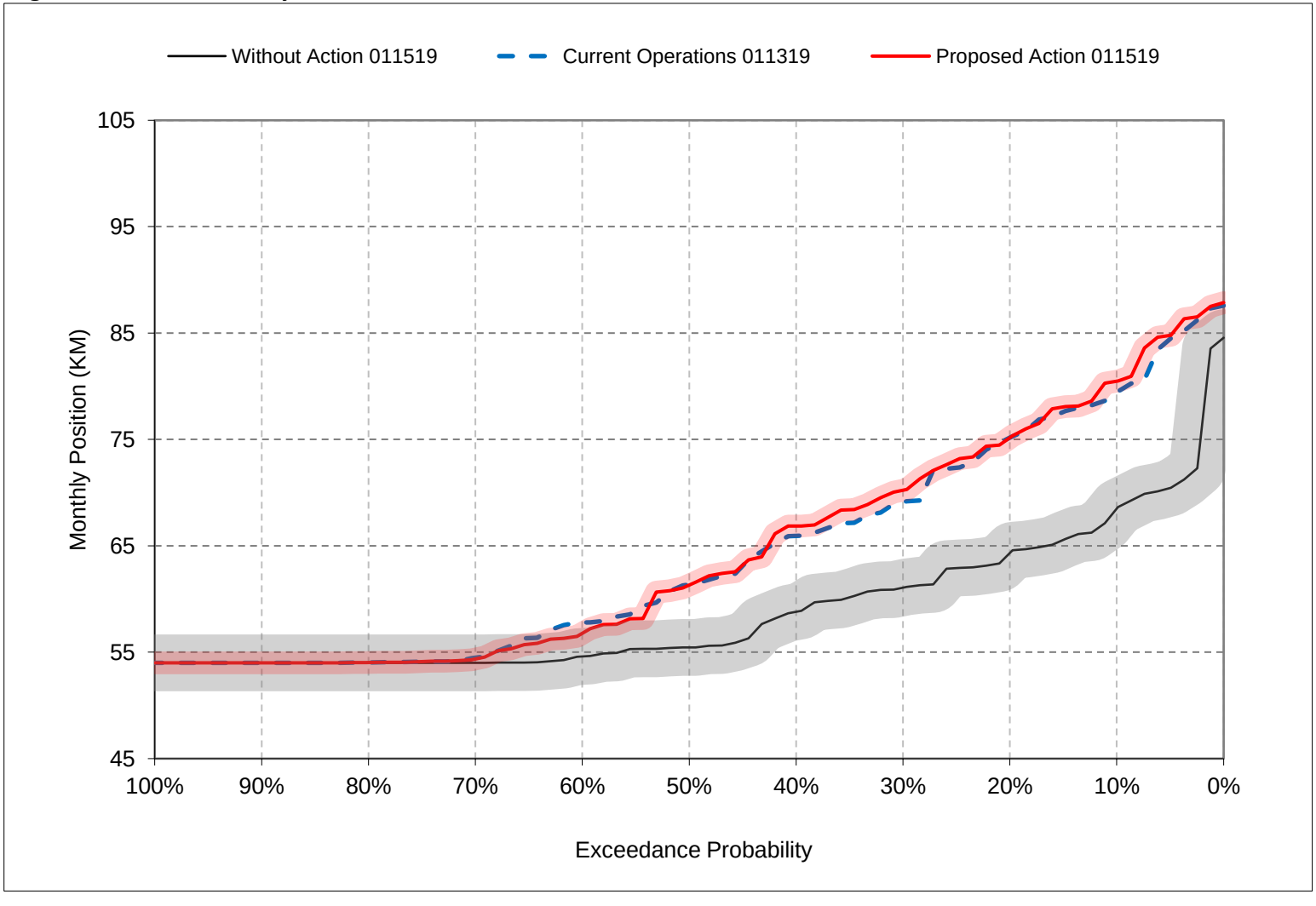
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-6. X2, Critical Year Average Position



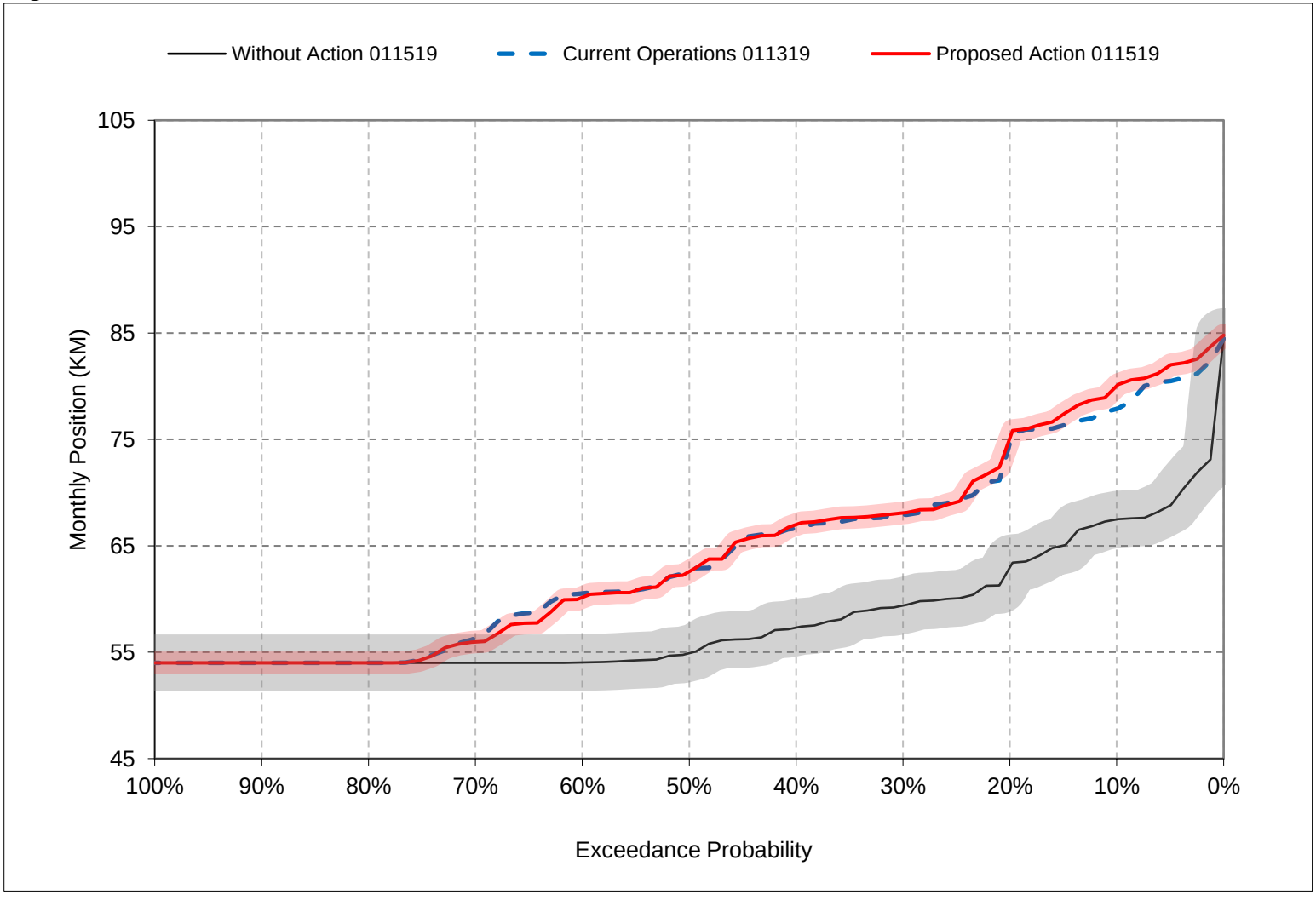
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
* Results are monthly averaged from DSM2.

Figure 45-7. X2, February Position



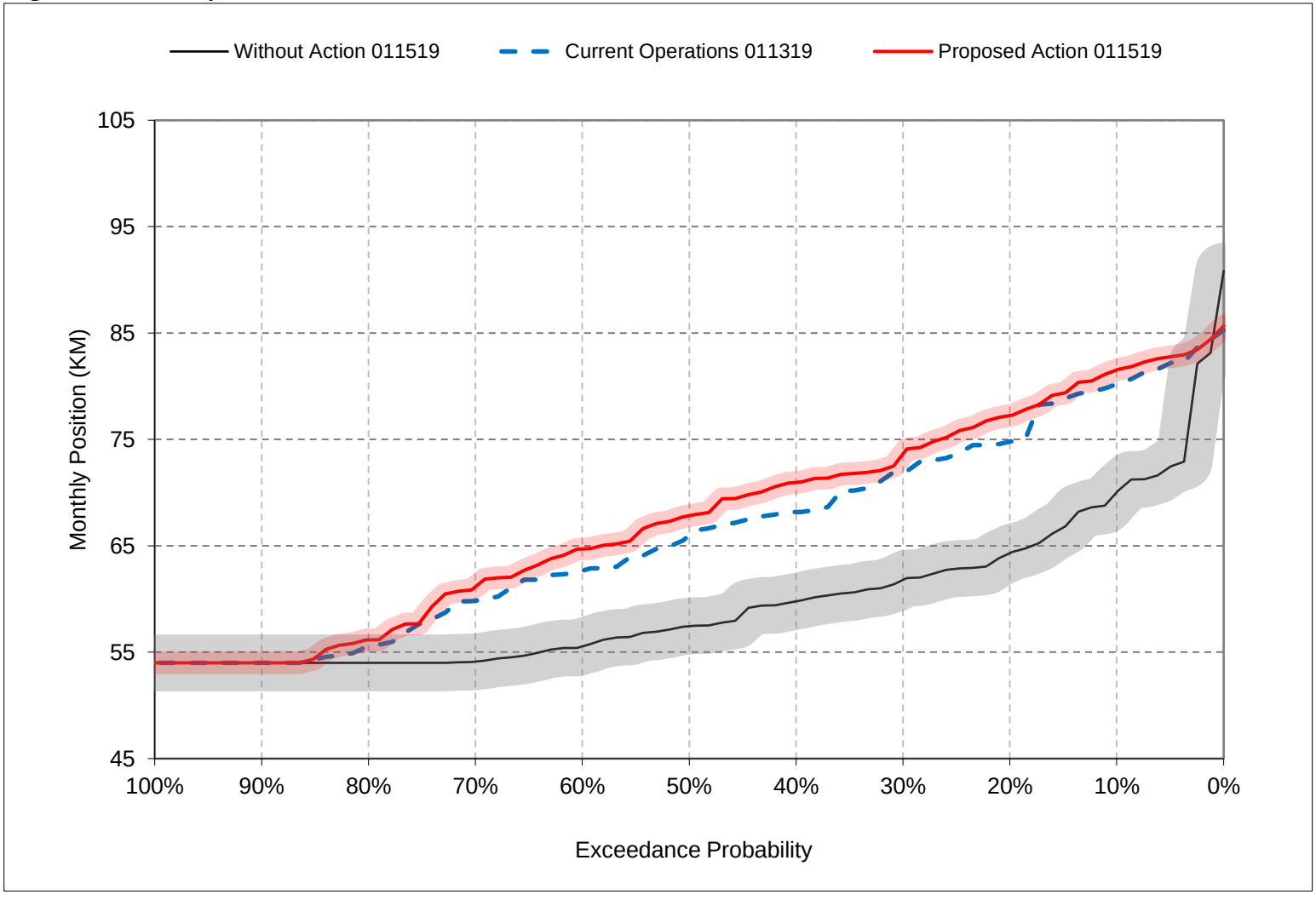
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-8. X2, March Position



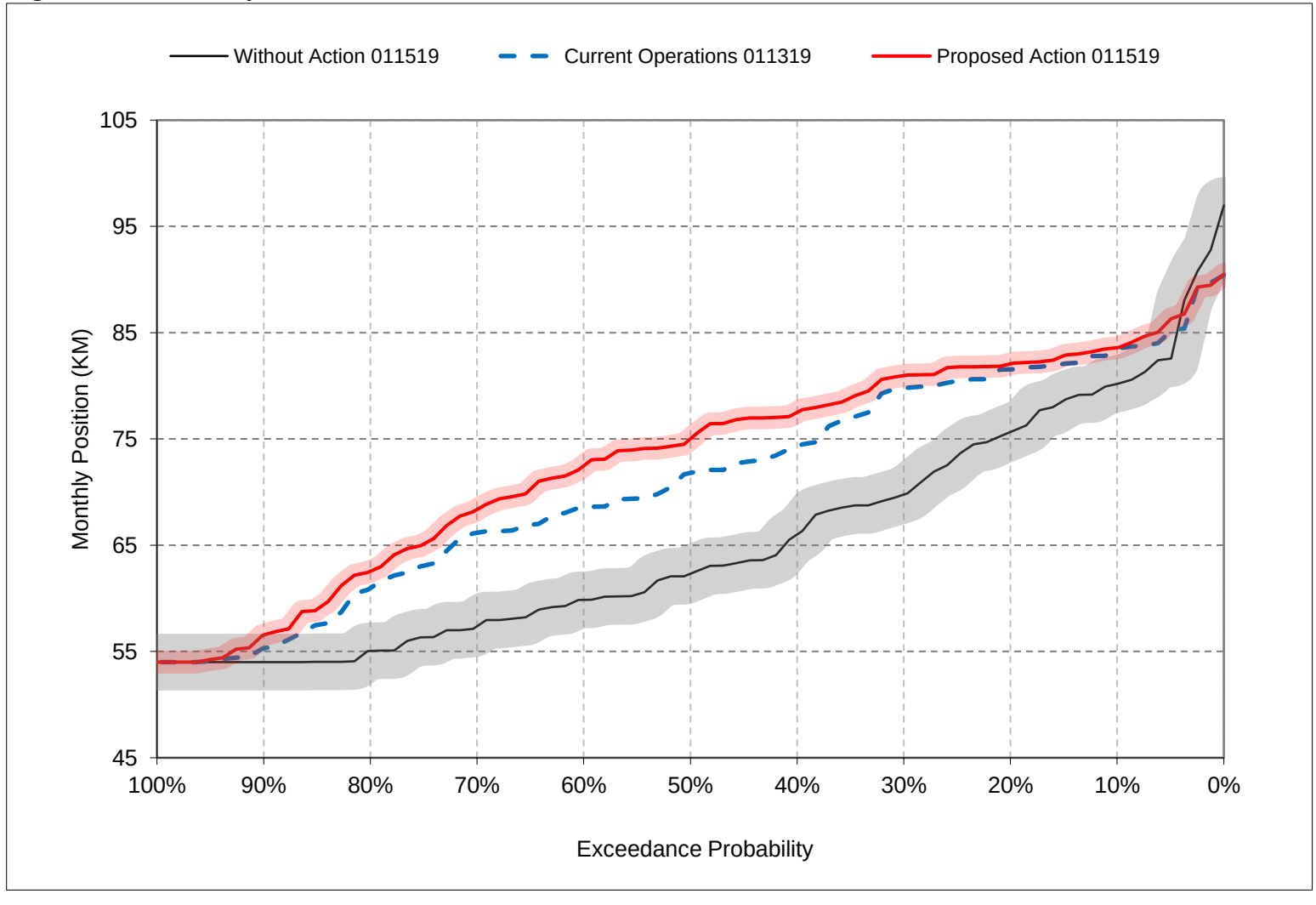
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-9. X2, April Position



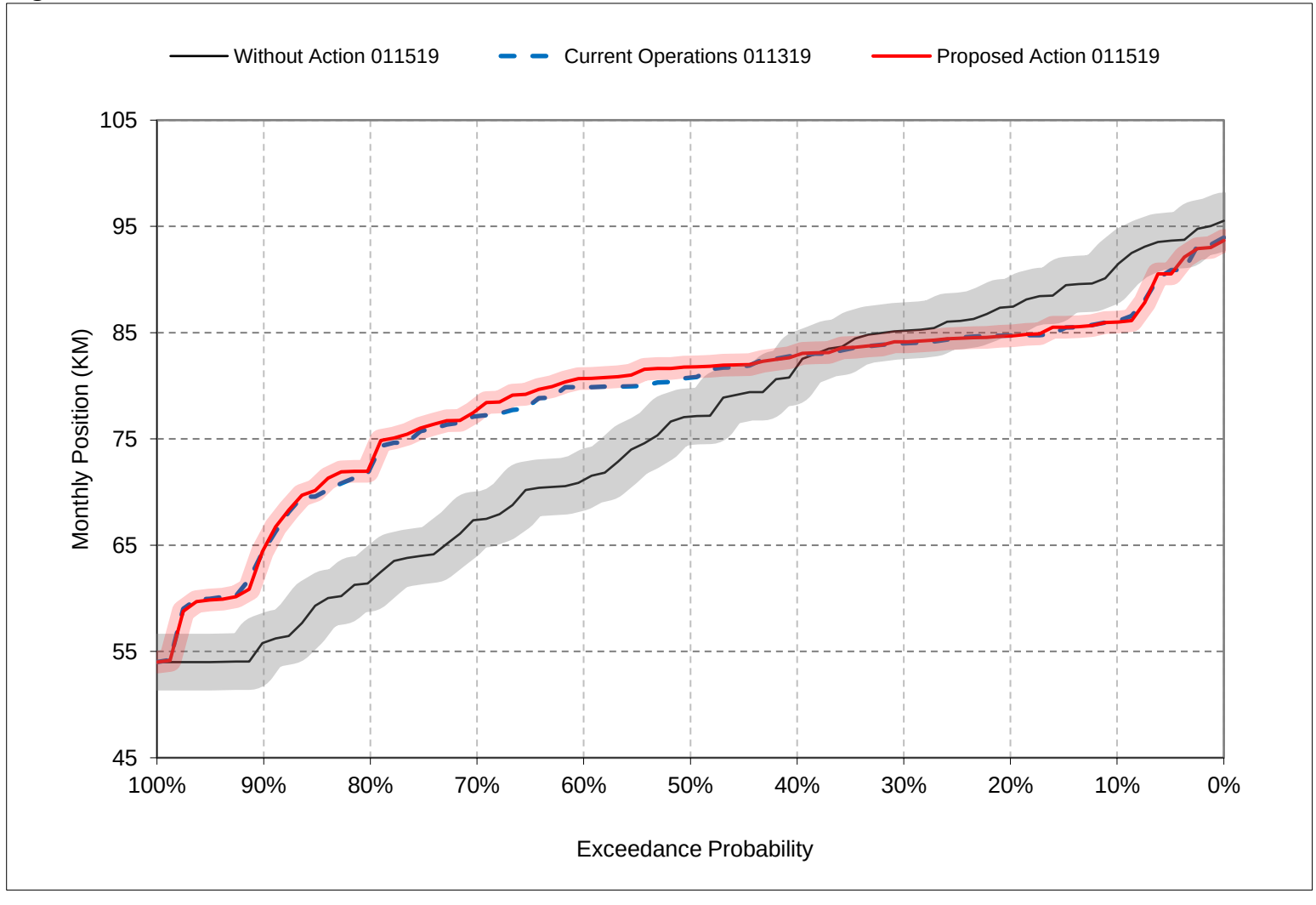
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-10. X2, May Position



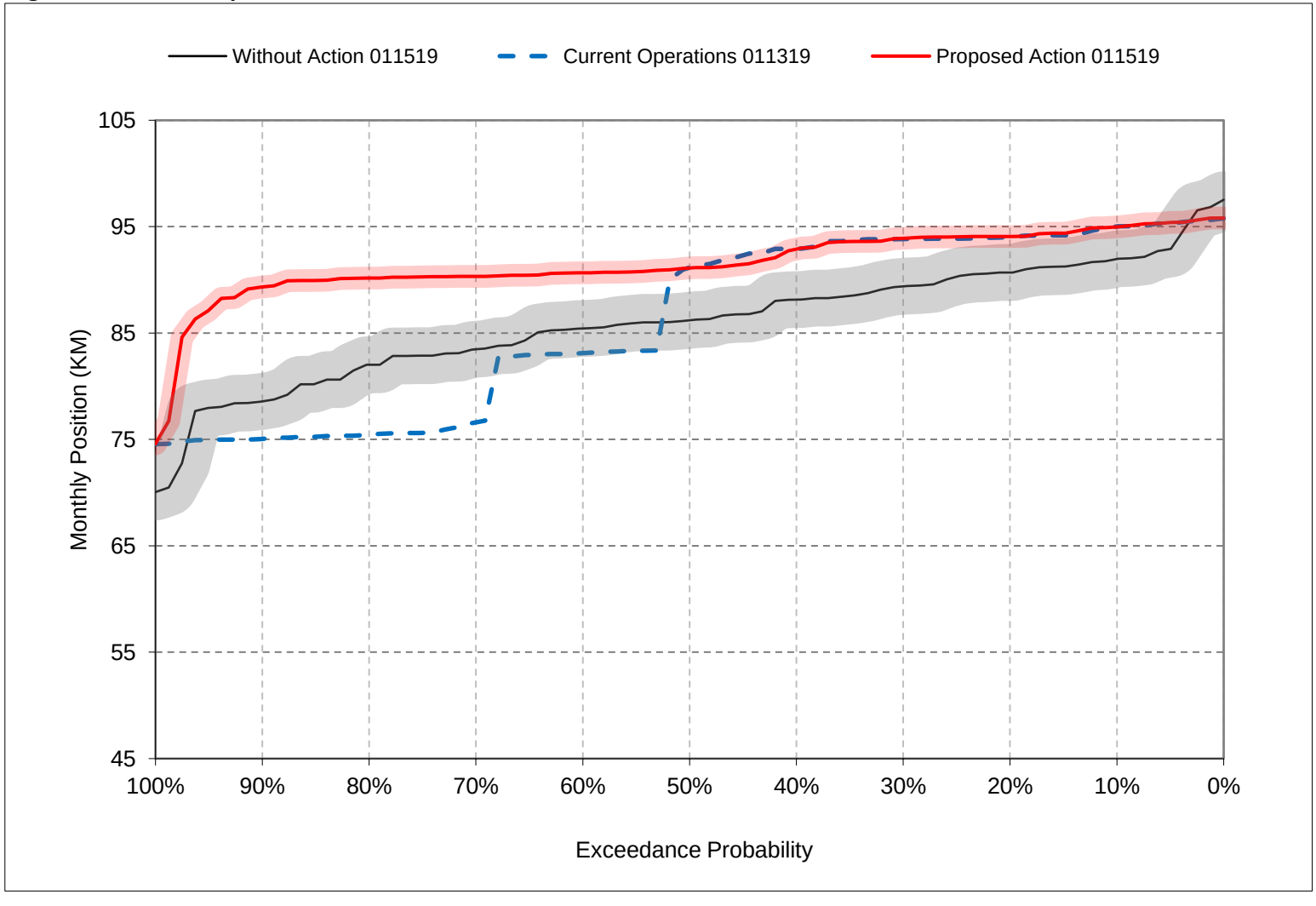
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-11. X2, June Position



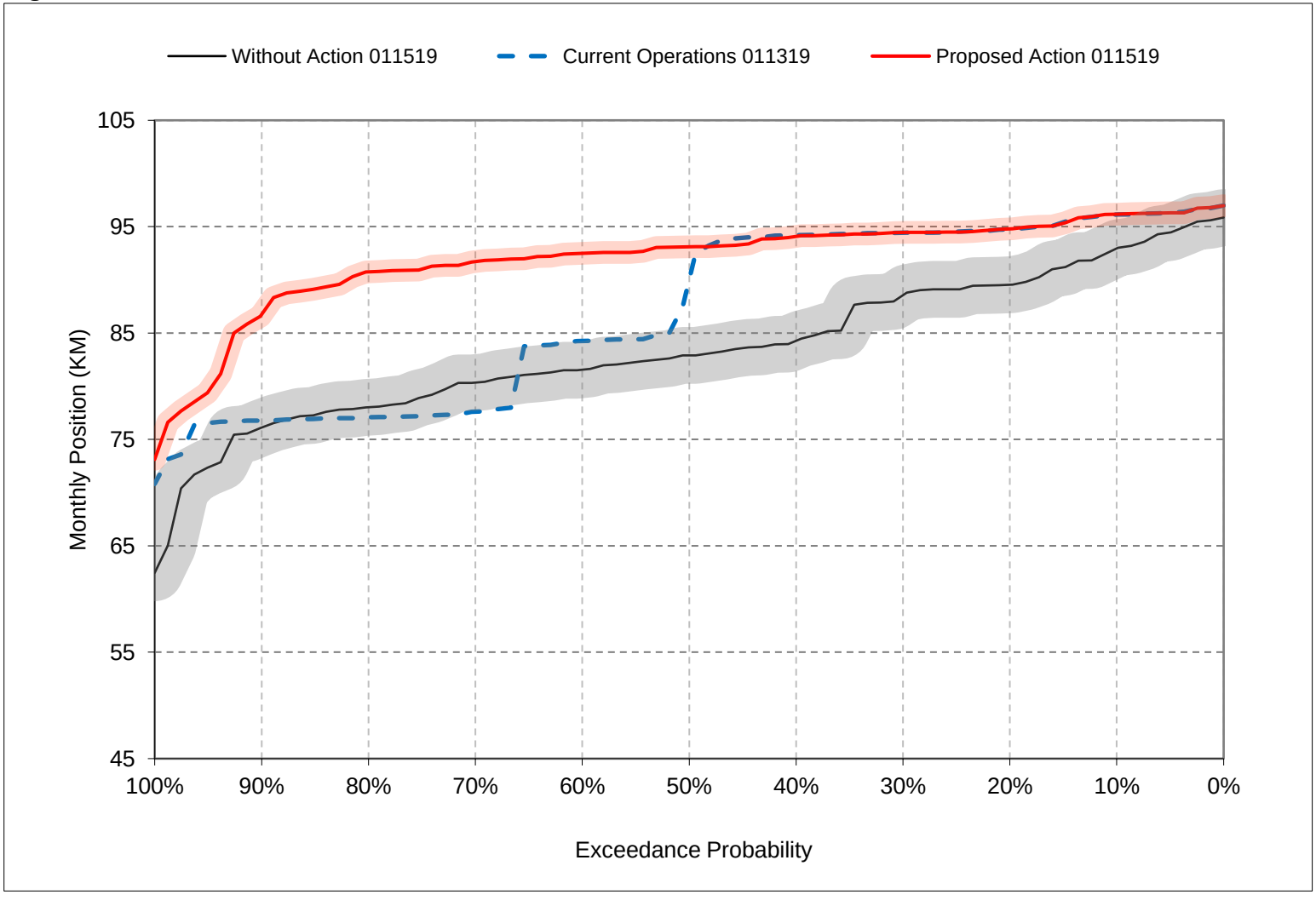
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-12. X2, September Position



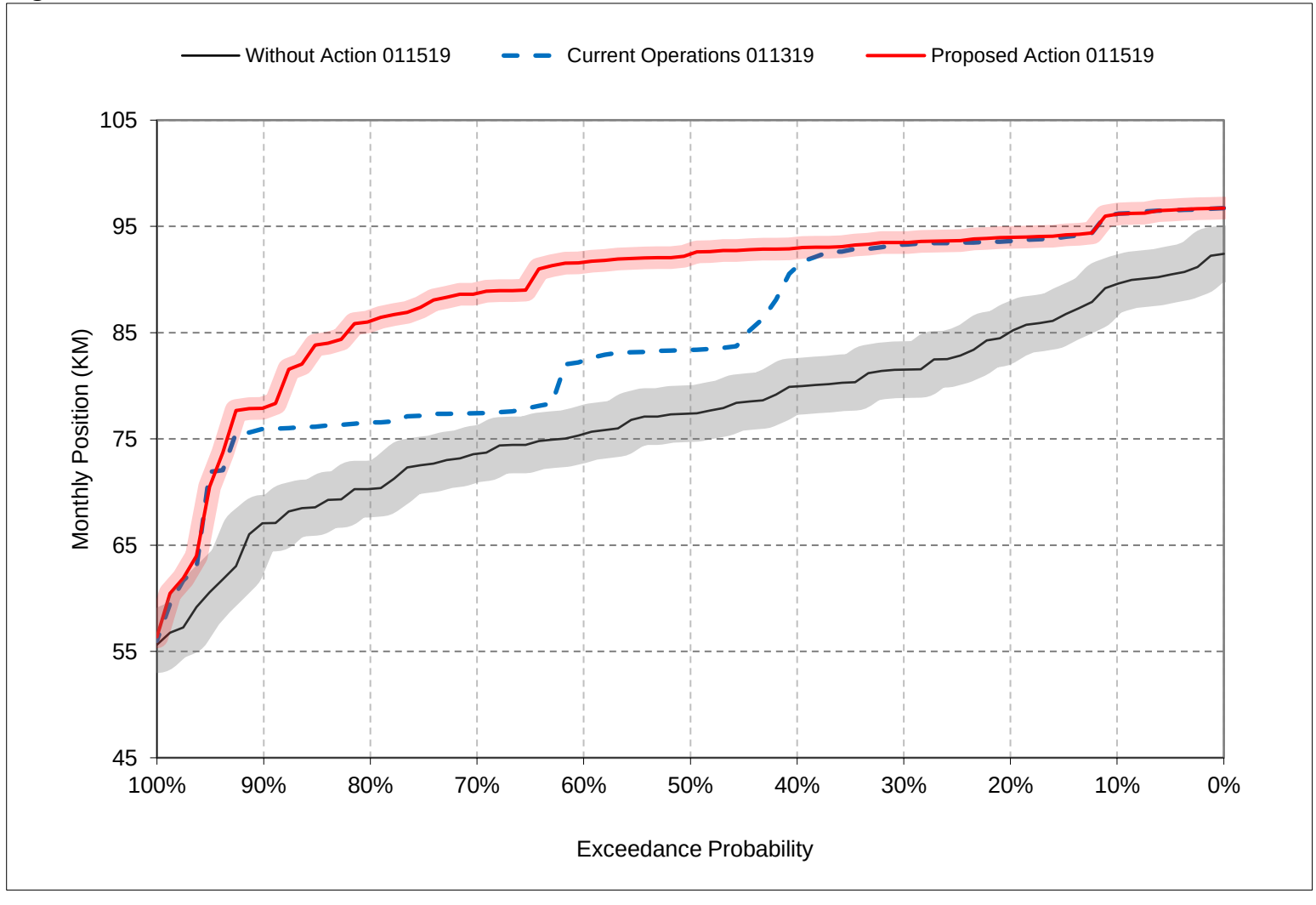
*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-13. X2, October Position



*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Figure 45-14. X2, November Position



*All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.
*These are draft results meant for qualitative analysis and are subject to revision.
*Results are monthly averaged from DSM2.

Appendix D – Modeling

Attachment 3-8 – Winter Run Chinook Temperature Dependent Egg Mortality Results (Martin and Anderson Models)

The following results of the Martin and Anderson are included for temperature-dependent mortality fraction:

Title	Parameter	Table Numbers	Figure Numbers
Upper Sacramento Winter Run Chinook Temperature-Dependent Egg Mortality Fraction	N/A	1-1 to 1-3	1-1 to 1-6

Report formats

- Exceedance charts (long-term and by water year type) including all scenarios

Table 1-1. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

Without Action 011519

	Annual Mortality	
Statistic	Martin	Anderson
Probability of Exceedance		
10%	1.00	1.00
20%	1.00	1.00
30%	1.00	1.00
40%	1.00	1.00
50%	1.00	1.00
60%	1.00	1.00
70%	1.00	1.00
80%	1.00	1.00
90%	1.00	1.00
Long Term		
Full Simulation Period[a]	1.00	1.00
Water Year Types[b,c]		
Wet (32%)	1.00	1.00
Above Normal (16%)	0.92	0.92
Below Normal (13%)	1.00	1.00
Dry (24%)	1.00	1.00
Critical (15%)	1.00	1.00

Current Operations 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

Current Operations 011319 minus Without Action 011519

	Annual Mortality	
Statistic	Martin	Anderson
Probability of Exceedance[a]		
10%	-0.33	-0.17
20%	-0.50	-0.37
30%	-0.69	-0.68
40%	-0.92	-0.95
50%	-0.94	-0.97
60%	-0.96	-0.98
70%	-0.96	-0.99
80%	-0.97	-0.99
90%	-0.98	-0.99
Long Term		
Full Simulation Period[a]	-0.78	-0.76
Water Year Types[b,c]		
Wet (32%)	-0.95	-0.98
Above Normal (16%)	-0.89	-0.91
Below Normal (13%)	-0.83	-0.83
Dry (24%)	-0.72	-0.68
Critical (15%)	-0.25	-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.

e These are draft results meant for qualitative analysis and are subject to revision.

Table 1-2. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

Without Action 011519

	Annual Mortality	
Statistic	Martin	Anderson
Probability of Exceedance		
10%	1.00	1.00
20%	1.00	1.00
30%	1.00	1.00
40%	1.00	1.00
50%	1.00	1.00
60%	1.00	1.00
70%	1.00	1.00
80%	1.00	1.00
90%	1.00	1.00
Long Term		
Full Simulation Period[a]	1.00	1.00
Water Year Types[b,c]		
Wet (32%)	1.00	1.00
Above Normal (16%)	0.92	0.92
Below Normal (13%)	1.00	1.00
Dry (24%)	1.00	1.00
Critical (15%)	1.00	1.00

Proposed Action 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

Proposed Action 011519 minus Without Action 011519

	Annual Mortality	
Statistic	Martin	Anderson
Probability of Exceedance[a]		
10%	-0.55	-0.54
20%	-0.72	-0.84
30%	-0.89	-0.92
40%	-0.94	-0.95
50%	-0.97	-0.97
60%	-0.98	-0.98
70%	-0.99	-0.99
80%	-0.99	-0.99
90%	-0.99	-0.99
Long Term		
Full Simulation Period[a]	-0.85	-0.87
Water Year Types[b,c]		
Wet (32%)	-0.95	-0.96
Above Normal (16%)	-0.89	-0.90
Below Normal (13%)	-0.89	-0.94
Dry (24%)	-0.90	-0.91
Critical (15%)	-0.39	-0.44

a Based on the 82-year simulation period.

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

c These results are displayed with calendar year - 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 These are draft results meant for qualitative analysis and are subject to revision.

Table 1-3. Annual Temperature-Dependent Winter-Run Chinook Salmon Mortalities

Current Operations 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

Proposed Action 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

Proposed Action 011519 minus Current Operations

	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.

e These are draft results meant for qualitative analysis and are subject to revision.

Figure 1-1. Simulated egg mortality results, 1922-2002

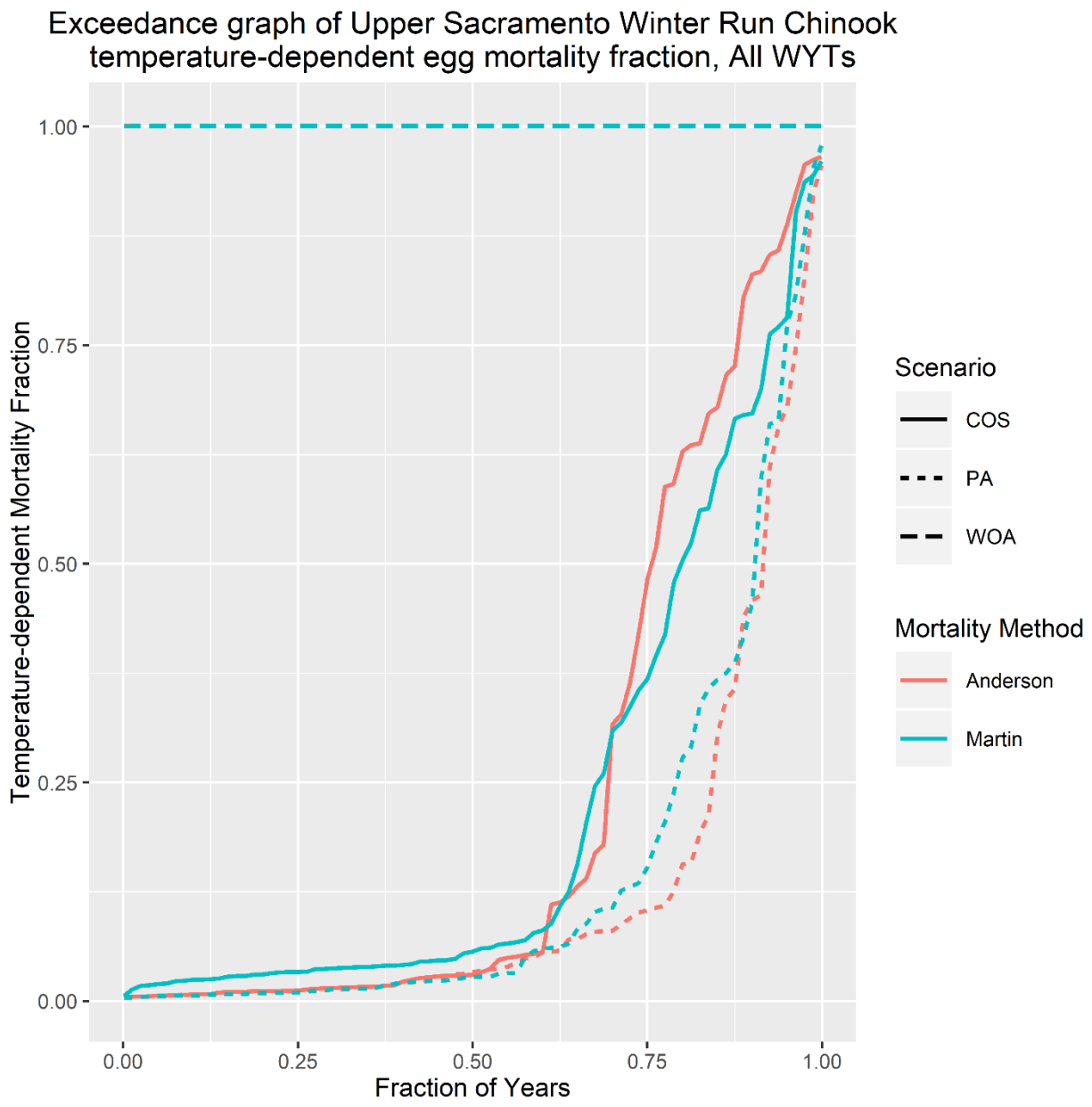


Figure 1-2. Simulated egg mortality results in Wet water years, 1922-2002

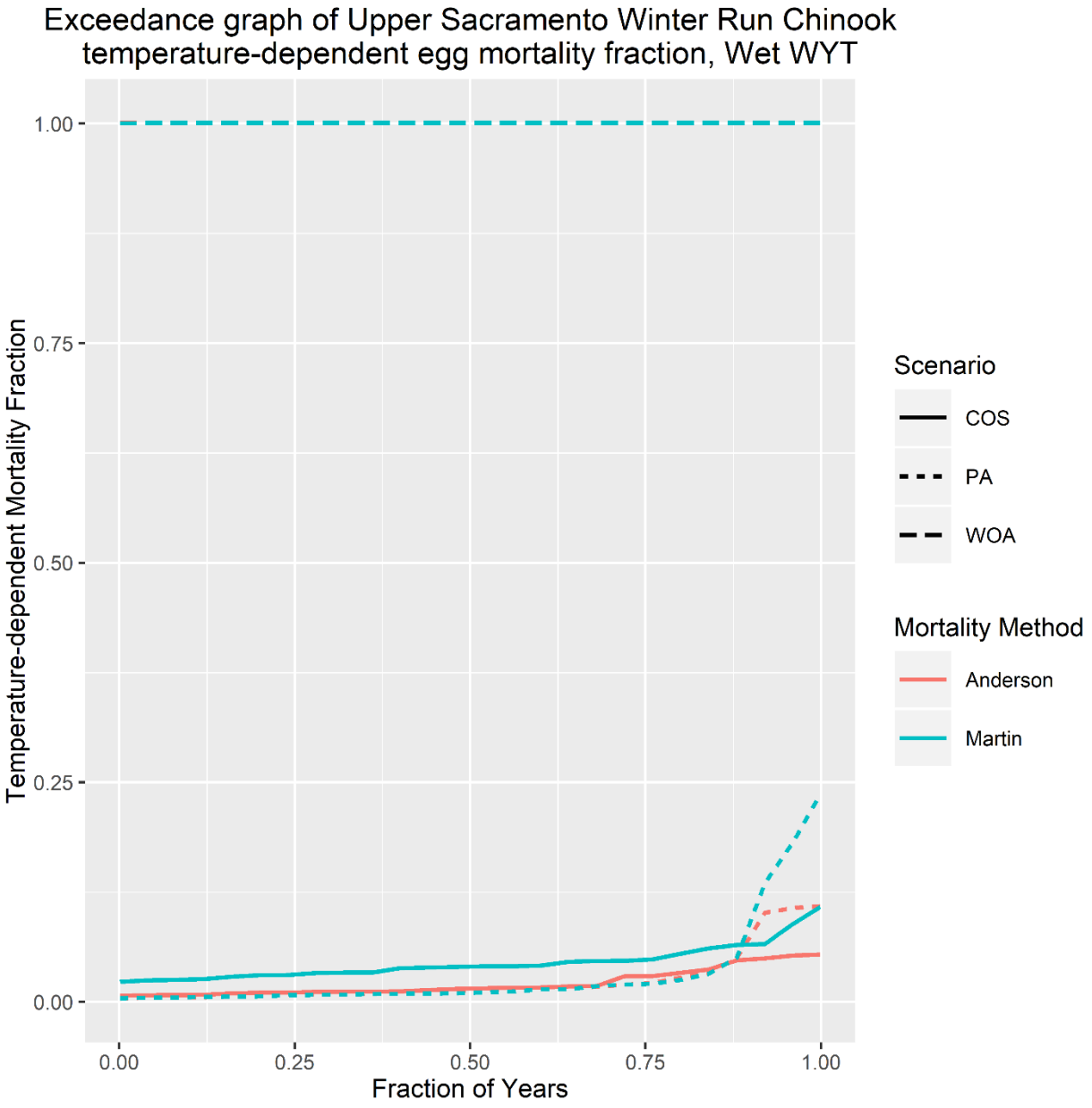


Figure 1-3. Simulated egg mortality results in Above Normal water years, 1922-2002

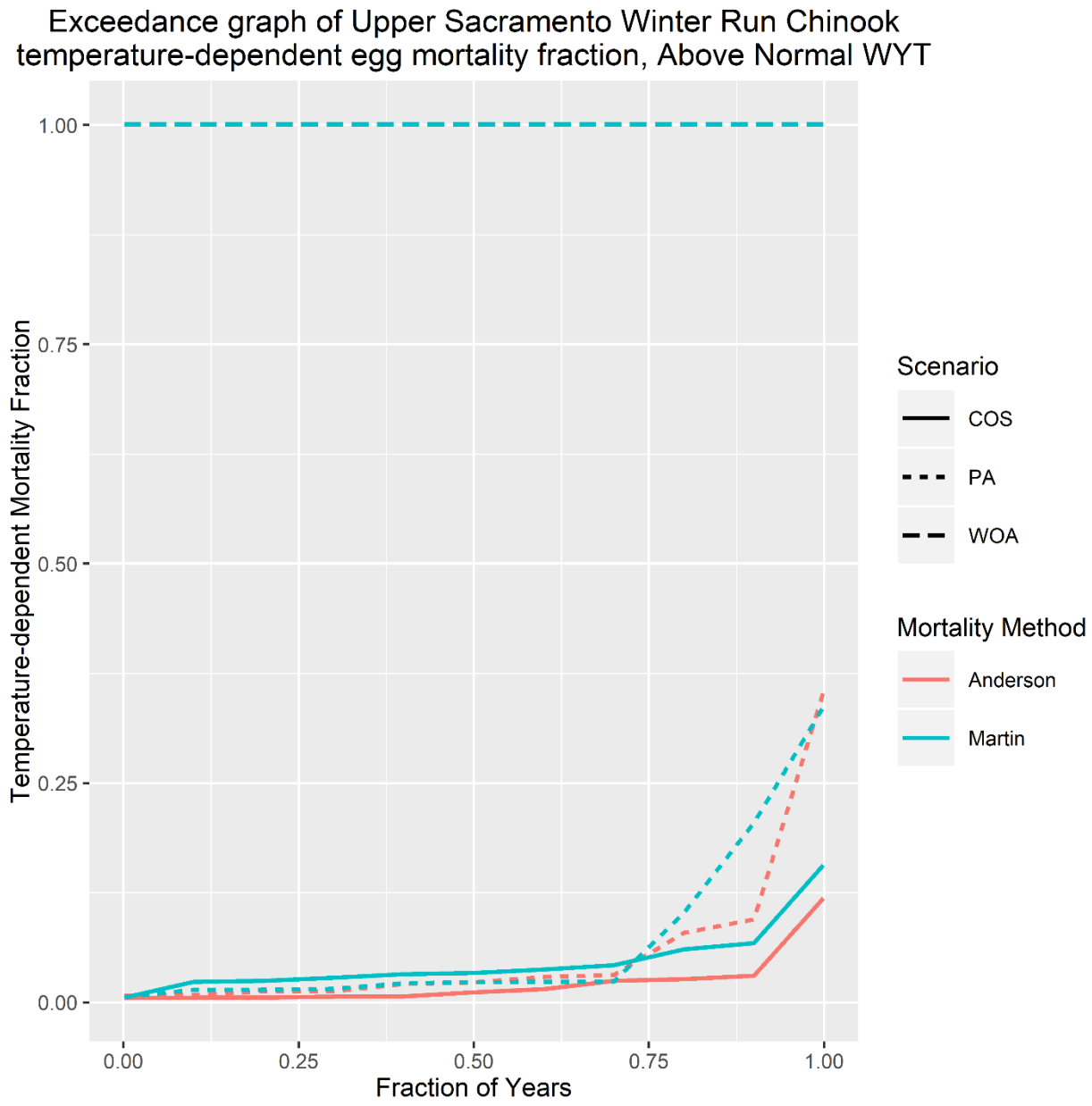


Figure 1-4. Simulated egg mortality results in Below Normal water years, 1922-2002

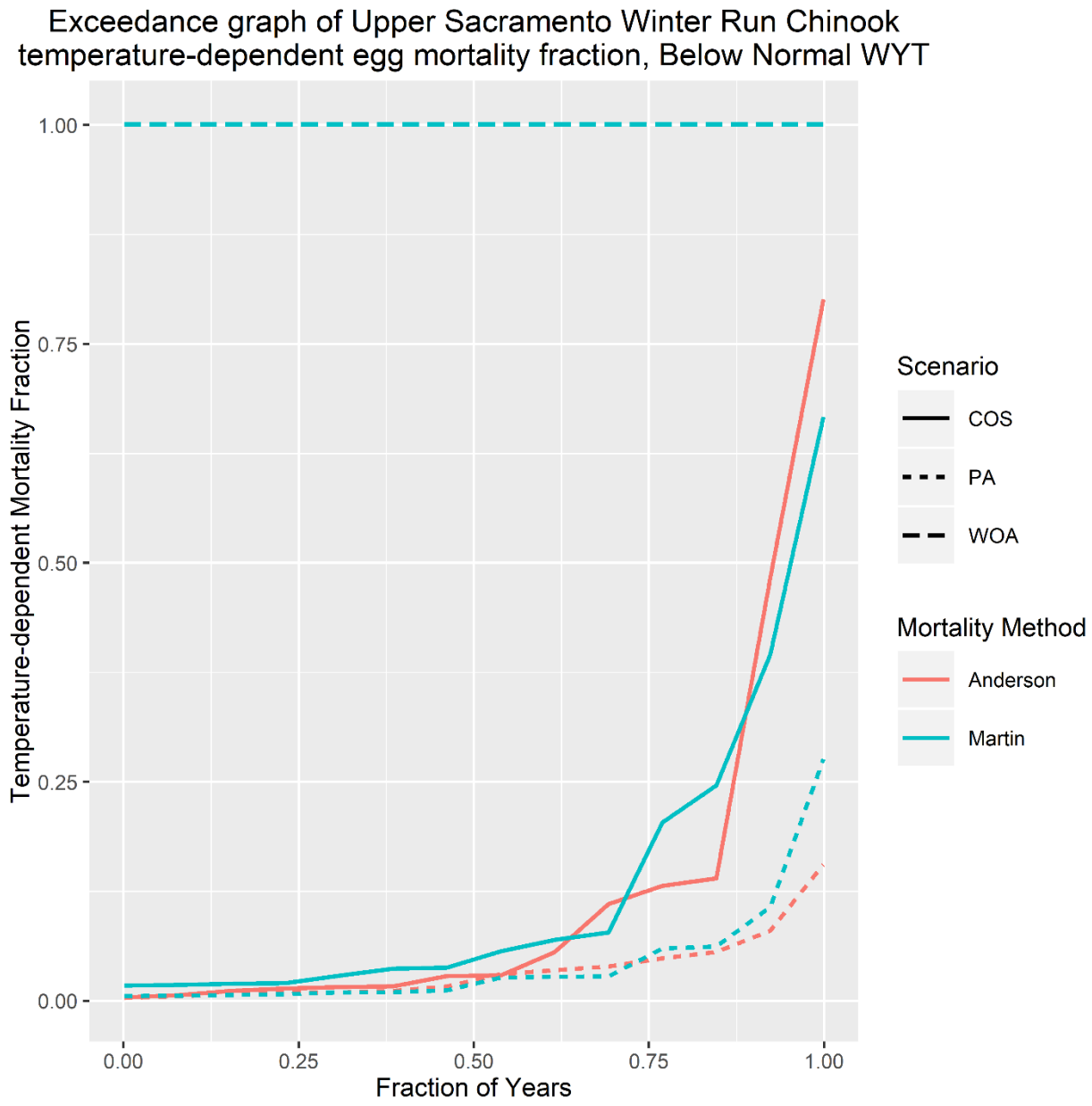


Figure 1-5. Simulated egg mortality results in Dry water years, 1922-2002

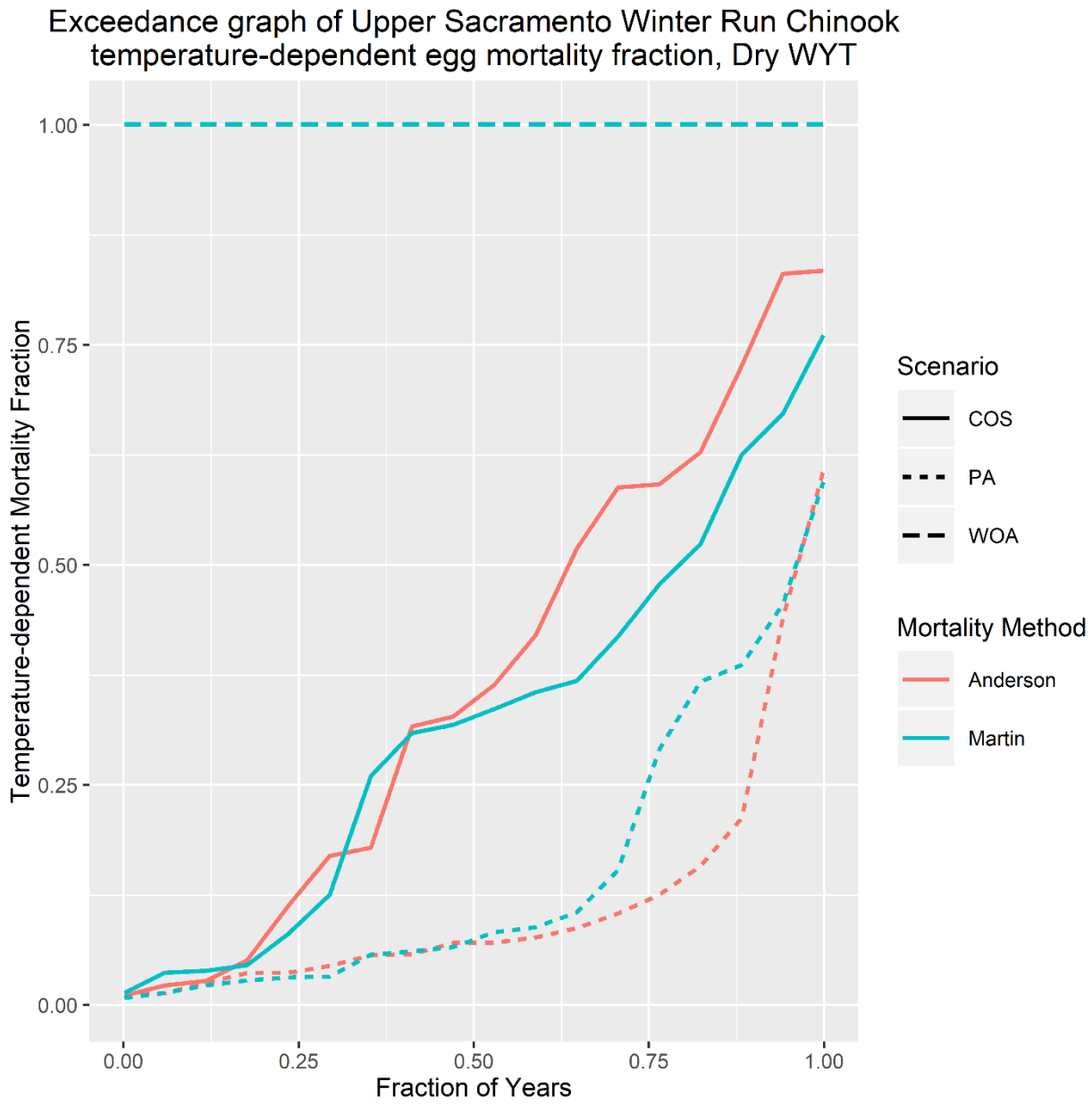


Figure 1-6. Simulated egg mortality results in Critical Dry water years, 1922-2002

