BUREAU OF RECLAMATION

Environmental Assessment/ Initial Study

Central Valley Project, California
2026–2027 North to South Water Transfers
California Great-Basin
CGB-ED-2024-025

BUREAU OF RECLAMATION

U.S. Department of the Interior
Bureau of Reclamation
Sacramento, California

San Luis & Delta-Mendota
Water Authority
Los Banos, California

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Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Section 1 Introduction

This Environmental Assessment (EA) and Initial Study (IS) for a range of potential transfers of water made available through groundwater substitution and/or stored reservoir release actions in contract years 2026 and 2027[1] was prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and the San Luis & Delta-Mendota Water Authority (SLDMWA). This joint EA/IS document satisfies (1) Reclamation's requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] §4231 et seq.) and the Department of the Interior's NEPA regulations (43 CFR Part 46)[2]; and (2) SLDMWA's obligations under the California Environmental Quality Act (CEQA) and the Guidelines for Implementation of the California Environmental Quality Act (Cal. Code Regs., tit. 14) [CEQA Guidelines]). Reclamation is the federal lead agency responsible for NEPA review, through the EA, for the potential transfers of water in contract years 2026–2027, and the SLDMWA is the California public agency serving as lead agency for CEQA review, through the IS, for the potential transfers of water in contract years 2026–2027.

This EA/IS describes the potential direct, indirect, and cumulative effects[3] of transferring water from willing Sellers, resulting from actions taken by the Sellers to make water available for transfer through groundwater substitution and/or reservoir release, to SLDMWA member agencies, Contra Costa Water District (WD), and East Bay Municipal Utility District (MUD). The Sellers hold water rights on Northern California waterways or contracts with the United States (U.S.) (for Base Supply[4] and/or Central Valley Project [CVP] Water[5] ["Project Water"]). This EA/IS also identifies potential mitigation measures to avoid or substantially reduce project-related impacts. The water transfers involving CVP facilities and transfers of Base Supply and/or CVP Project Water would require approval from Reclamation, which necessitates compliance with NEPA. Water transfers involving the use of the State Water Project (SWP) facilities for conveyance of transfer water would require approval from the California Department of Water Resources (DWR) and would also require CEQA compliance by the Buyers and Sellers.

Other water transfers not involving the SLDMWA, Contra Costa WD, and East Bay MUD could occur during the same time period. The Tehama-Colusa Canal Authority (TCCA) has prepared a draft EA/IS to analyze

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[1] A water service contract year begins on March 1 and ends February 29; the Sacramento River Settlement contract year is April 1 through October 31; SLDMWA member agencies' contract years vary (i.e., January 1 through December 31 in some cases, March 1 through February 29 in other cases).

[2] Executive Order 14154, Unleashing American Energy (Jan. 20, 2025), and a Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (Jan. 21, 2025), require the Department to strictly adhere to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq. Further, such Order and Memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The Bureau of Reclamation verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 C.F.R. Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum. The Bureau of Reclamation has also voluntarily considered the Council on Environmental Quality's rescinded regulations implementing NEPA, previously found at 40 C.F.R. Parts 1500–1508, as guidance to the extent appropriate and consistent with the requirements of NEPA and Executive Order 14154.

[3] CEQA Guidelines Section 15063(b)(1) and Appendix G require discussion of cumulatively considerable impacts.

[4] Article 1 of the Sacramento River Settlement Contracts defines Base Supply as the quantity of Surface Water established in Articles 3 and 5 which may be diverted by the Contractor from the Sacramento River each month during the period April through October of each Year without payment to the United States for such quantities diverted.

[5] Article 1 of the Sacramento River Settlement Contracts defines Project Water as all Surface Water diverted or scheduled to be diverted each month during the period April through October of each Year by the Contractor from the Sacramento River, or its Source of Supply, which is in excess of the Base Supply.

water transfers to Member Units of the TCCA in 2013, 2014, 2015, 2020, and 2021 and TCCA may participate in transfers in 2026 and 2027 as well. The range of potential transfers evaluated in this EA/IS includes some of the same water sources as those in TCCA's draft EA/IS, but the water would be transferred to different potential Buyers; that is, the Sellers have only the amounts of water listed in Chapter 2 available for transfer, but the water could be purchased by SLDMWA member agencies, Contra Costa WD, East Bay MUD, or TCCA Member Units.

1.1 Background

SLDMWA member agencies, Contra Costa WD, and East Bay MUD (collectively referred to as the Buyers) may experience water shortages in 2026 and 2027 and are soliciting willing Sellers that may transfer surface water to them. The interested Buyers would negotiate with these interested Sellers to identify potential volumes of water that could be made available for transfer and the specifics of each transfer arrangement through single-year agreements for 2026 and 2027, which, collectively, constitute the "Proposed Project" to be addressed by SLDMWA under CEQA. (Pub. Resources Code, § 21166; CEQA Guidelines, §§ 15162-15164.) The Buyers and these willing Sellers are using this EA/IS to inform decision-makers and the public of the potential environmental effects of this potential range of single-year water transfers in 2026 and 2027 and determine whether implementation of the range of potential transfers may result in significant environmental impacts that warrant the preparation of a subsequent or supplemental Environmental Impact Report (EIR) under CEQA pursuant to Public Resources Code section 21166 and CEQA Guidelines sections 15162–15164.

To facilitate the transfer of water throughout the state consistent with state and federal water management policies, Reclamation is considering whether it should approve water transfers between willing Sellers and Buyers when Base Supply and/or CVP Project Water or CVP facilities are involved. Reclamation will not take part in the transfer negotiation process, nor will Reclamation develop a "program" to connect Buyers and Sellers. Reclamation would focus on the potential approval and facilitation of individual single-year transfers from Sellers primarily upstream of the Sacramento-San Joaquin Delta (Delta) to Buyers primarily south of Delta (i.e., North to South transfers) of water involving Base Supply and/or CVP Project Water or involving CVP facilities; these potential transfers constitute the "Proposed Action" to be addressed under NEPA. Reclamation is using this EA/IS to evaluate the potential environmental effects of the Proposed Action.

Transfers of water would occur from Sellers primarily upstream of the Delta to Buyers that primarily receive water conveyed through the Delta. Most of the transfer water would be conveyed using CVP or SWP facilities under Joint Point of Diversion permitting or wheeling agreements. Water would also be conveyed using water intakes in the Delta and through the Freeport Regional Water Authority's intake on the Sacramento River. To deliver transferred water to the Buyers, CVP facilities[6] and SWP facilities[7] would be operated consistent with the 2024 Biological Opinions (BOs) or the governing BO(s), as well as, any other operating agreements, authorizing documents, or any other applicable legal obligations in place at the time a transfer is implemented. Reclamation (and potentially DWR, as necessary) would review and consider whether or not to approve, as appropriate, proposed water transfers in accordance with a Seller's Sacramento River Settlement Contract (Settlement Contract), repayment, or other water service contracts

[6] Any non-CVP water that would use CVP facilities would need a Warren Act contract, which is subject to NEPA compliance. The Warren Act of February of February 21, 1911, authorized the United States to execute contracts for the conveyance and storage of non-project water in federal facilities when excess capacity exists.

[7] Agreements with DWR may be required for use of SWP facilities to facilitate the transfer of water.

with Reclamation, the *DRAFT Technical Information for Preparing Water Transfer Proposals (Water Transfer White Paper)* (Reclamation and DWR 2019), underlying water rights[8], and local, state and federal law.

1.2 Purpose and Need for the Proposal and Project Objectives

The Proposed Action/Proposed Project is needed because hydrologic conditions and precipitation are unpredictable. Conditions as of September 30, 2024, the end of Water Year 2024, resulted in an above normal water year. The Sacramento River Region accumulated about 34.5 inches of precipitation for the water year, which is 95 percent of the historical seasonal average (DWR 2024). However, the drought from 2020 to 2022 is the driest three-year period on record, and dry conditions in Water Year 2021 resulted in statewide drawdown of reservoir storage to 60 percent of average by the end of the water year (DWR 2022). Supplies in 2026 and 2027 could be constrained if dry conditions return. This would necessitate transfers of water for irrigation contractors to have adequate supplies for their landowners to grow their crops and have sufficient supply for municipal and industrial (M&I) contractors.

Reclamation's primary purpose for this project is to review and consider whether or not to approve, in accordance with applicable federal law, policy, rules, regulations and contracts, then in effect, the voluntary transfer of water from willing Sellers located primarily upstream of the Delta, to willing Buyers located primarily south of the Delta, and in the San Francisco Bay Area. The proposed project to transfer water (North to South) is needed by water users that are at risk of experiencing water shortages and who require these supplemental water supplies to meet the level of anticipated annual existing demands.

Under CEQA, SLDMWA must identify the objectives sought by the proposed project. The following are SLDMWA's objectives for potential transfers in 2026 and 2027:

- Develop supplemental water supply for willing Buyers from willing Sellers during times of CVP shortages to meet existing demands.
- Meet the need of willing Buyers for a water supply that is immediately implementable and flexible and can respond to changes in hydrologic conditions and CVP allocations.

1.3 Document Structure

To consider environmental impacts of the Proposed Action and the Proposed Project (referred to herein as the Proposed Action) pursuant to both NEPA and CEQA, Chapter 3 includes the analyses of potential impacts associated with the implementation of the Proposed Action. The Environmental Checklist Form presented in Appendix G of the CEQA Guidelines was used to support the identification of the appropriate resources for evaluation in this environmental impact analysis. Appendix C includes a completed CEQA Guidelines Appendix G Environmental Checklist Form for all resource areas to evaluate whether the Proposed Action results in new significant impacts or substantially more severe effects than have been previously analyzed (Pub. Resources Code, § 21166; CEQA Guidelines, §§ 15162–15164).

CEQA requires a determination of significance for each impact discussed in an IS based on the significance criteria, NEPA does not require this for an EA. If the analysis in this EA supports that the effects of the Proposed Action do not significantly affect the quality of the human environment, then a Finding of No Significant Impact (FONSI) would be prepared; however, if the analysis indicates that effects of the Proposed Action significantly affect the quality of the human environment, then an Environmental Impact Statement would be prepared. The significance thresholds used in this EA/IS are used to assess the significance of the action's impacts under CEQA, while the accompanying analysis considers the effects of

[8] If water rights need to be changed to accomplish the transfer, the transferring water right holder must petition the State Water Resource Control Board for a temporary change in water rights (SWRCB 2013).

the action as required by NEPA. All uses of the term "significant" in this document apply to CEQA only. As the federal lead agency responsible for NEPA review, Reclamation is not subject to CEQA. The CEQA Checklist does not incorporate all discussions required by Department of the Interior Regulations, Executive Orders, and Reclamation guidelines when preparing environmental documentation; Chapter 5 includes these additional discussions. A list of acronyms, references and document preparers can be found in Appendix A.

Section 2 Alternatives[9]

2.1 No Action

The No Action Alternative (under NEPA) may be described as the future circumstances without the Proposed Action and can also include predictable actions by persons or entities, other than the federal agency involved in a project action, acting in accordance with current management direction or level of management intensity. The No Project Alternative (under CEQA) also describes the future without the project and may include some reasonably foreseeable changes in existing conditions and changes that would reasonably be expected to occur in the foreseeable future if the project were not approved.

For the No Action Alternative, the Buyers, during contract years 2026 and 2027, would not buy water from willing Sellers who require Reclamation approval in order to transfer water to the interested Buyers. Therefore, agricultural water users could experience shortages in contract years 2026 and 2027. If supplies are constrained, these users may take alternative water supply actions in response to shortages, including increased groundwater pumping, cropland idling, reduction of landscape irrigation or permanent crop irrigation, or water rationing. Water users may also seek to transfer water from Sellers not included in this NEPA and CEQA analysis, which may require additional NEPA or CEQA analysis. In the absence of transfers included in this analysis, many growers may not have enough water to meet demands, and some crops including permanent crops could be lost.

2.2 Proposed Action / Proposed Project

The Proposed Action includes a range of potential transfers of up to 250,000 acre-feet (AF) annually (cumulative of all transfers) from Sellers identified in Figure 2-1 to the Buyers listed in Section 2.2.2.[10] The quantities in Table 2-1 summarize the maximum potential transfer quantities from potential Sellers. This list represents those agencies with whom the Buyers may negotiate agreements for the transfer of water.

For analytical purposes, the full 250,000 AF of potential water made available for transfer is assumed to be available annually; however, it is not possible to determine which negotiations would be successful, what combination of Sellers would ultimately transfer water to the Buyers, or how much water would ultimately be transferred to the Buyers due to demand and export capacity at the CVP or SWP pumps. For this reason, modeling and environmental analysis considers the upper transfer quantities provided in Table 2-1 in order to display the impacts that would be associated with the transfer of water from each Seller. The potential water made available for transfer adds up to more than the Buyers' transfer demand of 250,000 AF, so the analysis provides a conservative description of potential environmental impacts by assessing impacts of the entire range of potential water transfers. The Buyers would only acquire a subset of the water made available for transfer. Transfers of water would only occur when the Delta is in balanced conditions (i.e., when Delta inflows are equal to Sacramento Valley in-basin needs, Delta outflows, and Delta exports). Carriage water (a portion of the transfer that is not diverted in the Delta and becomes Delta outflow) is a required component of water transfers that is used to maintain water quality in the Delta.

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[9] Pursuant to Public Resources Code section 21166 and sections 15162-15164 of the CEQA Guidelines, evaluation of alternatives to the Proposed Project is not required. While not required under CEQA, evaluation of alternatives to the Proposed Action is provided in the Initial Study for informational purposes.

[10] Historical water transfers to the Buyers are typically lower than 250,000 AF. Table K-1 in Appendix K, Cumulative Projects, shows total water transfers, including all other CVP water transfers and non-CVP water transfers, from 2009 through 2024.

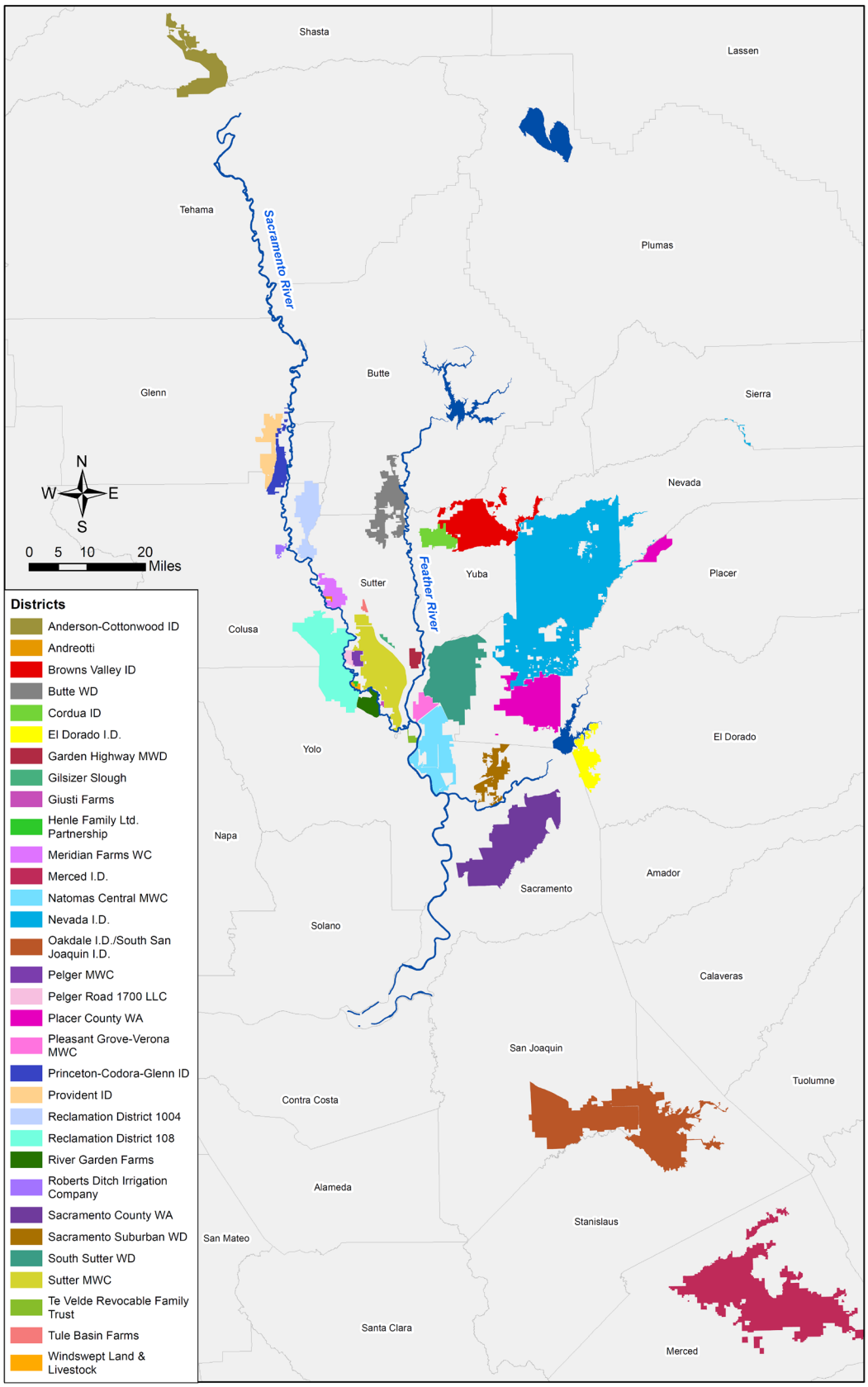

Figure 2-1. Potential Selling Entities

Table 2-1. Potential Methods of Making Water Available for Transfer by Seller (Upper Volume Limits)[1]

Potential Seller (Transferor)	Maximum Annual Potential Transfer (acre-feet)	April–June Groundwater Substitution (acre-feet)	April–June Reservoir Release (acre-feet)	July–Sep Groundwater Substitution (acre-feet)	July–Sep Reservoir Release (acre-feet)	Oct–Nov Reservoir Release (acre-feet)
Sacramento River Area of Analysis						
Anderson-Cottonwood Irrigation District	4,900	2,450		2,450		
Andreotti	2,500	1,000		1,500		
Giusti Farms	1,000	500		500		
Henle Family Ltd. Partnership	600	325		275		
Meridian Farms Water Company	6,000	3,000		3,000		
Natomas Central Mutual Water Company	30,000	10,000		20,000		
Pelger Mutual Water Company	4,750	3,151		1,599		
Pelger Road 1700 LLC	5,600	2,600		3,000		
Pleasant Grove-Verona Mutual Water Company	18,000	8,000		10,000		
Princeton-Codora-Glenn Irrigation District	8,000	3,000		5,000		
Provident Irrigation District	11,500	4,500		7,000		
Reclamation District 108	15,000	7,500		7,500		
Reclamation District 1004	7,175	3,588		3,588		
Roberts Ditch Irrigation Company	3,460	1,700		1,760		
RRG Garden Properties LLC	10,000	4,400		5,600		
Sutter Mutual Water Company	50,000	20,000		30,000		
Te Velde Revocable Family Trust	7,094	2,700		4,394		
Windswept Land and Livestock	1,775	775		1,000		
American River Area of Analysis						
El Dorado Irrigation District	8,000				8,000	8,000
Placer County Water Agency	47,000				47,000	47,000
Sacramento County Water Agency	15,000			15,000		
Sacramento Suburban Water District	30,000	15,000		15,000		

Potential Seller (Transferor)	Maximum Annual Potential Transfer (acre-feet)	April–June Groundwater Substitution (acre-feet)	April–June Reservoir Release (acre-feet)	July–Sep Groundwater Substitution (acre-feet)	July–Sep Reservoir Release (acre-feet)	Oct–Nov Reservoir Release (acre-feet)
Yuba River Area of Analysis						
Browns Valley Irrigation District	5,000				5,000	5,000
Cordua Irrigation District	12,000			12,000		
Feather River Area of Analysis						
Butte Water District	6,000	3,000		3,000		
Garden Highway Mutual Water Company	14,000	6,500		7,500		
Gilsizer Slough Ranch	3,200	1,600		1,600		
Nevada Irrigation District	15,000				15,000	15,000
South Sutter Water District	15,000				15,000	13,500
Tule Basin Farms	6,000	3,000		3,000		
Stanislaus River Area of Analysis						
Oakdale Irrigation District / South San Joaquin Irrigation District[2]	50,000				50,000	
Merced River Area of Analysis						
Merced Irrigation District	30,000				30,000	30,000
TOTAL[3]	**467,154**	**120,089**	**0**	**177,066**	**170,000**	**118,500**

Notes:

[1] The total transfers combined for the Buyers evaluated in this EA/IS, would be limited to no more than 250,000 AF in any one year. The sum of transfers in Table 2-1 equals more than this amount, but the Buyers (SLDMWA member agencies, Contra Costa WD, and East Bay MUD) would not purchase transfer water from all of these parties for the full amount.

[2] The refill agreement required for this proposed source would require amendment of their water rights settlement agreement with Reclamation (Agreement No. 8-07-20-W0714), agreement on water rights accounting, and approval by the State Water Resources Control Board (SWRCB).

[3] These totals cannot be added together. Agencies could make water available through groundwater substitution, reservoir release transfers, or a combination of the two; however, they will not make the full quantity available through both methods. Table 2-1 reflects the total upper limit for each agency.

Key: LLC= Limited Liability Company

Carriage water is calculated to reflect conveyance losses as the water moves from the point at which it is made available for transfer, to the Delta export pumps, and is conveyed from the Delta to Buyers (see Section B.2.2.3 in Appendix B). Water transfers would only be used to help meet existing demands and would not serve any new demands in the Buyers' Service Areas. The 2024 Long-Term Operation of the CVP and SWP Draft Environmental Impact Statement includes the transfer window from July through November, and maximum transfer amounts of up to 600,000 AF in critical years and dry years (following dry or critical years) and 360,000 AF in all other years (Reclamation 2024). The Proposed Action would correlate with the approach and analyses included in the 2024 Long-Term Operations of the CVP and SWP Environmental Impact Statement and BOs, if and as amended.

Reclamation would evaluate each proposal on an individual basis, as it is received, to determine if it meets the terms of the Settlement Contract or other water service or repayment contract with Reclamation, the Sellers' underlying water rights, the *Water Transfer White Paper* (Reclamation and DWR 2019), and applicable federal and state law. Water transfer proposals must include the information requirements for groundwater substitution and reservoir reoperation identified in the Water Transfers Information Checklist that is included in Reclamation and DWR's Water Transfer White Paper. [11] Reclamation has followed this process in past years when reviewing and subsequently approving the transfer of water (such as when approving the transfer of water in 2013, 2014, 2015, 2020, and 2021). Reclamation also ensures that all transfers under post-1914 water rights, including all proposed reservoir storage water transfers, obtain approval for a change in place of use and point(s) of rediversion from the State Water Resources Control Board (SWRCB) and enter into a reservoir reoperation agreement with Reclamation, which in the case of the proposed transfer in New Melones Reservoir would also require amendment of the existing water rights settlement agreement. CVP and SWP facilities would be operated consistent with the 2024 BOs or the governing BO(s), as well as, any other operating agreements, authorizing documents, or any other applicable legal obligations in place at the time a transfer is implemented to deliver water made available for transfer to potential Buyers. In addition, a Buyer or Seller would not be allowed to participate in an exchange within the CVP if that exchange results in Reclamation not meeting applicable laws, regulations, BOs, court orders, or any other applicable legal obligations in place at the time of the exchange. Any such exchange would be at the sole discretion of Reclamation. A Buyer or Seller would not be allowed to participate in an exchange within the SWP if that exchange results in DWR not meeting applicable laws, regulations, BOs and incidental take permits, court orders, or any other applicable legal obligations in place at the time of the exchange. Any such exchange would be at the sole discretion of DWR. A detailed description of the Proposed Action is included in Appendix B.

2.2.1 Seller Service Area

Figure 2-1 presents the agencies that have expressed interest in making water available through groundwater substitution and reservoir release actions in contract years 2026 and 2027. While the entity making water available may request approval to shift the volume of water made available during a particular period to a different period for transfer, the overall amount of water transferred would not exceed the maximum volumes listed in Table 2-1. Surface water made available through groundwater substitution actions would be made available for transfer between July and September and subject to

[11] At the time of development of this EA/IS, the 2019 Water Transfers White Paper (Reclamation and DWR 2019) document governs the water transfers evaluated in this EA/IS. The Water Transfers White Paper is updated by Reclamation and DWR when necessary and the version of that governing document and the Water Transfers Information Checklist it includes shall be used by Sellers to develop their water transfer proposals. See Appendix E3 for the current Water Transfers Information Checklist (Reclamation and DWR 2019).

contract limitations. If water is conveyed in October and November, the overall totals from April through November would still stay within the upper limits provided in Table 2-1.

2.2.2 Buyer Service Area

The following entities may be interested in buying water made available for transfer:

- Contra Costa Water District
- East Bay Municipal Utility District
- San Luis & Delta Mendota Water Authority Participating Members
    - Eagle Field Water District
    - Mercy Springs Water District
    - Pacheco Water District
    - Panoche Water District
    - Patterson Irrigation District
    - San Benito County Water District
    - San Luis Water District
    - Santa Clara Valley Water District
    - Westlands Water District

Not all of these potential Buyers may end up actually purchasing water from the Sellers. Purchase decisions depend on several factors, including, but not limited to, hydrology, water demands, availability of other supplies, and transfer costs. CVP and SWP facilities would be operated consistent with the 2024 BOs or the governing BO(s), as well as, any other operating agreements, authorizing documents, or any other applicable legal obligations in place at the time a transfer is implemented. Operational flexibility could be limited based on specific hydrologic conditions, biological conditions, or water quality issues. Reclamation can only accommodate water transfers and would only consider proposals that may require the reoperation of CVP when it does not adversely impact CVP operations.

2.2.3 Potential Methods of Making Water Available for Transfer

This EA/IS analyzes transfers of water made available from groundwater substitution and reservoir release actions, which are further described below. No other methods of making water available for transfer are covered by the evaluation in this EA/IS.

Reclamation will only approve water transfers that are consistent with provisions of applicable state and federal law, including those that protect against injury to third parties as a result of water transfers. Additionally, the water transfer will have no significant adverse effect on the ability of the CVP to deliver CVP Project Water, the water made available for transfer will be limited to water that would have been consumptively used or irretrievably lost to beneficial use, and the water transfer will not adversely affect water supplies for fish and wildlife purposes. Also, the Sellers must transfer water consistent with the Sellers' underlying water rights. Reclamation would not approve water transfers for which these basic principles have not been met.

Groundwater Substitution

Transfer of water made available through groundwater substitution actions occur when Sellers choose to pump groundwater in lieu of diverting surface water supplies, thereby making the surface water available for transfer. Sellers making water available for transfer through groundwater substitution actions are agricultural and M&I users. Water could be made available for transfer by the agricultural users during the irrigation season of April through September (for release July through November). Some small amount of

water could be made available for transfer in October when needed. If there are issues related to water supply availability or conveyance capacity at the Delta, Sellers could shorten the window when water is made available by switching between surface water supplies and groundwater pumping for agricultural or municipal and industrial use.

Reservoir Release

Buyers could acquire water by purchasing surface water stored in reservoirs owned by non-Project entities (not part of the CVP or SWP). To ensure that purchasing this water would not affect downstream users, Reclamation would limit transferred water to that which would not have otherwise been released downstream absent the transfer.

When the willing Seller releases stored reservoir water for transfer, these reservoirs are drawn down to levels lower than they would have been without the water transfer. To refill the reservoir, a Seller must capture some flow that would have otherwise gone downstream. Sellers must refill the vacated storage at a time when downstream users would not have otherwise captured the water, either in downstream reservoirs or at the CVP and SWP (collectively "the Projects") or non-Project pumps in the Delta. Typically, refill can only occur during excess conditions in the Delta, defined by the Coordinated Operations Agreement (COA) as "periods when it is agreed that releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in basin uses, plus exports," or when any downstream reservoirs are in flood control operations. Additionally, refill cannot occur at times when the water would have been used to meet downstream flow or water quality standards. Refill of the storage vacated for a transfer may take more than one season if the above conditions are not met in the wet season following the transfer. Each reservoir release transfer would include a refill agreement between the Seller, Reclamation, and DWR to prevent impacts to downstream users following a transfer.

Some entities that could transfer water through reservoir release are upstream of CVP reservoirs and could request to store water temporarily in the CVP reservoirs (see Appendix B). These entities may have restrictions on the pattern that they could release water from their reservoirs, and the pattern may not match the availability of export capacity in the Delta. The Seller could request that Reclamation store the non-CVP water in the CVP reservoir until Delta capacity is available, which would require an excess capacity contract with Reclamation and approval by the SWRCB for any water transferred under post-1914 water rights to be re-diverted to storage in Folsom Reservoir or San Luis Reservoir if the transferred water would be held in either location for greater than 30 days. Reservoir levels would temporarily increase while water was stored. Reclamation would only release non-CVP water for transfer from CVP reservoirs when the non-CVP water is actually being made available for transfer consistent with the Seller's release pattern.

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Section 3 Environmental Impacts

This section presents an overview of the physical environment and existing conditions that could be affected by the Proposed Action, as required by 516 Departmental Manual 1- U.S. Department of the Interior Handbook of National Environmental Policy Act Implementing Procedures Section 1.2(b) and CEQA Guidelines Section 15063(d)(2). This section also presents the analyses of potential impacts associated with the implementation of the Proposed Action. The Environmental Checklist Form presented in Appendix G of the CEQA Guidelines was used to support the identification of the appropriate resources for evaluation in this environmental impact analysis. For each resource area, significance criteria were developed consistent with the CEQA Guidelines and used to assess the significance level of the impacts under CEQA. A NEPA environmental document must consider the effects that would be caused by, or result from, a project. These factors were considered when developing the significance criteria under which each resource was evaluated to develop impact conclusions. Thus, bolded determinations of significance in the EA/IS are for SLDMWA's CEQA purposes only.

The resources identified below in Table 3-1 were evaluated and were determined not to be affected by the Proposed Action because they do not exist within the study area, or the Proposed Action would have no effect on the resource. Evaluation results for these resources are not summarized in this section but are presented in Appendix C, which includes a completed CEQA Guidelines Appendix G Environmental Checklist Form for all resource areas.

Table 3-1. Resources Considered and Dismissed from Detailed Evaluation

Resource Topic	Reason for No Effect/No Impact Determination
Cultural Resources	Water transfers would occur within existing facilities and would not require construction of new facilities/or water conveyance structures. Reservoirs would not fluctuate beyond historical levels and would not drop below the conservation pool exposing potential cultural resources existing below the conservation pool. Therefore, there would be no ground-disturbing activities, changes in land use, or construction proposed that could disturb historic properties associated with the Proposed Action.
Tribal Cultural Resources	The Proposed Action would not include ground-disturbing activities, land alteration, or construction that could disturb tribal cultural resources.
Hazards & Hazardous Materials	The Proposed Action would not involve the transport or use of hazardous materials, nor change in any way, public exposure to hazards or hazardous materials.
Mineral Resources	The Proposed Action does not require construction or other activities that would result in the loss of availability of known mineral resources or mineral resource recovery sites.
Public Services	The Proposed Action would not create new demand for public services or require any existing public facilities to be altered.
Utilities	The Proposed Action would not create new demand on utilities or service systems. Water made available for transfer would be within the existing contractual entitlements and no new water supplies for the Sellers would be required. Buyers would also not require new water supplies as the transferred water would provide agricultural water in lieu of the limited surface water supplies.
Transportation/Traffic	The Proposed Action would not create new demand on transportation services.
Wildfire	The project area is near State Responsibility Areas classified as moderate, high and very high fire hazard severity zones. However, the operational changes associated with the Proposed Action would have no impact on wildfire risk in the project area.

3.1 Surface Water Supply

3.1.1 Affected Environment/Environmental Setting

The SWRCB developed a water year (WY) classification system for the Sacramento Valley and San Joaquin Valley to annually assess the amount of water originating in each basin. With most of the Seller Service Area within the Sacramento Valley, this EA/IS uses the Sacramento Valley WY Index. The index defines one "wet" year classification, two "normal" classifications (above and below normal), and two "dry" classifications (dry and critical), for a total of five WY types. The WY type is identified using a measurement of unimpaired runoff, which represents the natural water production of a river basin, unaltered by upstream diversions, storage, export of water to or import of water from other basins (State Water Resource Control Board [SWRCB] 2009).

The CVP delivers water or makes water available for diversion to 245 agencies that hold water contracts; these contracts include Repayment Contracts, Exchange Contracts, Refuge Contracts, Settlement Contracts, and Water Service Contracts. CVP water allocations for agricultural, environmental, and M&I users vary based on factors such as hydrology, water rights, reservoir storage, environmental considerations, and operational limitations. Each year Reclamation determines the amount of water that can be delivered to or made available for diversion by each district and municipality based on conditions for that year. These allocations are expressed as a percentage of the maximum contract volumes of water according to the contracts, or historical use for M&I contractors in a water short year, held between Reclamation and the various water districts, municipalities, and other entities. Reclamation and the CVP contractors recognize that delivery or diversion of full contract quantities is not likely to occur every year (and in fact, does not/will not occur in most years). Water shortages lead to severe water constraints, especially in the southern portion of the CVP. In 2021 and 2022, both critical years, south-of-Delta agricultural contractors received a "0 percent" allocation. Allocations for south-of-Delta agricultural contractors occasionally improve, with a 100 percent allocation in 2023 and 50 percent allocation in 2024 (Reclamation 2024a).

Seller Service Area

Sellers (shown in Figure 2-1) include water rights holders on the Sacramento and San Joaquin rivers or their tributaries, including the Feather, Yuba, American, Stanislaus, and Merced Rivers. The Sacramento River flows south for 447 miles through the northern Central Valley and enters the Delta from the north. Reclamation owns and operates the CVP, which has major reservoirs on the Sacramento River (Shasta Reservoir) and the American River (Folsom Reservoir). Shasta Reservoir is managed for flood control, water supply, recreation, fish and wildlife enhancement, power, and salinity control in the lower Sacramento River and the Delta (Reclamation 2024b). On the American River, Reclamation's Folsom Reservoir is managed for flood control for downstream areas, water supply, hydropower, flows for American River fisheries and helps to meet water quality needs in the Delta (Reclamation 2024c).

Lake Oroville is on the Feather River. Operated by DWR, it is the largest reservoir in the SWP and provides water to downstream contractors. Water from Lake Oroville is released to meet downstream water supply, export demands, generate power at the Hyatt Powerplant beneath Oroville Dam and at the Thermalito Powerplant and support downstream fisheries and water quality objectives (DWR 2023a).

Buyer Service Area

Transfer Buyers are in the Central Valley or the San Francisco Bay Area. These Buyers include the participating members of the SLDMWA, the Contra Costa WD, and the East Bay MUD. These areas receive water from multiple sources, including the SWP, the CVP, local surface water sources, and groundwater. With the exception of East Bay MUD, any transferred water from Sellers north of the Delta would need to be moved through the Delta to be delivered to these potential Buyers.

SLDMWA

SLDMWA is made up of 27 member agencies that manage approximately 2,100,000 acres in western San Joaquin Valley, and San Benito and Santa Clara counties. Of the 27 SLDMWA member agencies, there are nine that could receive water transfers through the Proposed Project (see Section 2.2.2). Deliveries to these districts would be diverted through the Delta through the CVP's Jones Pumping Plant or the SWP's Banks Pumping Plant. After diversion, the transfers would be delivered via the Delta-Mendota Canal, California Aqueduct, and/or San Luis Canal. Deliveries of transfers from Merced ID, Oakdale ID, and South San Joaquin ID could also be routed from the San Joaquin River through Banta Carbona ID, West Stanislaus ID, or Patterson ID.

Contra Costa WD

The Contra Costa WD is in Contra Costa County and principally relies on four Delta intakes for its water supplies. Contra Costa WD is a potential Buyer of water. Contra Costa WD receives CVP water and has its own water rights to Delta water supplies. Contra Costa WD would receive transferred water through their four intakes on the Delta.

East Bay MUD

East Bay MUD provides M&I water supplies to portions of Alameda and Contra Costa counties in the east San Francisco Bay area. East Bay MUD receives water from a variety of sources, including the Mokelumne River, a CVP contract with Reclamation for dry year supplies from the American River, and local supplies. East Bay MUD would receive transfer water through the Freeport Regional Water Authority's intake on the Sacramento River near Freeport. Due to the intake's northern location, the transfers would not be subject to the constraints on Delta pumping, however, transfers of water to East Bay MUD would only occur during the July 1 through November 30 transfer window and would only occur when the Delta is in balanced conditions.

3.1.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

Under the No Action/No Project Alternative, water would not be transferred from the Seller Service Area and there would be no changes to water supply in the Seller Service Area relative to existing conditions. **Therefore, the No Action/No Project Alternative would have no impact on water supply in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Under the No Action/No Project Alternative, water would not be available to transfer to Buyers, which could result in water supply shortfalls depending on CVP allocations. Under the No Action/No Project Alternative, water users would continue to experience shortages under certain hydrologic conditions, requiring them to use supplemental water supplies. These users may take alternative water supply actions in response to potential shortages, including increased groundwater pumping, cropland idling, reduction of landscape irrigation, water rationing, or pursuing supplemental water supplies. Impacts on surface water supplies would be the same as the existing conditions. **Therefore, the No Action/No Project Alternative would have no impact on water supply in the Buyer Service Area (CEQA Conclusion).**

Proposed Action

Seller Service Area

Under the Proposed Action, groundwater substitution may impact surface water supply in the Seller Service Area. Compared to the No Action/No Project Alternative, groundwater substitution transfers could decrease flows in neighboring surface water bodies following a transfer while groundwater basins recharge, which could decrease pumping at Jones and Banks Pumping Plants and/or require additional water releases from upstream CVP reservoirs. Groundwater substitution transfers make surface water available for transfer by reducing surface water diversions and replacing that water with groundwater pumping. Groundwater pumping may capture some groundwater that would otherwise discharge to streams as baseflow. Once pumping ceases, stream depletion continues, replacing the pumped groundwater slowly over time until the depleted storage is fully recharged. If the recharge occurs during dry periods, then the recharge would decrease river flows at times when it would affect Reclamation and DWR. Reclamation and DWR are responsible for meeting river flow and water quality standards on the Sacramento River, its tributaries, and within the Delta. If decreased river flows affect the ability to meet these standards, Reclamation and DWR would need to either decrease Delta exports or release additional flow from upstream reservoirs to meet flow or water quality standards. **The actions taken to meet these standards because of instream flow reductions due to the groundwater recharge could affect CVP and SWP water supplies.** To avoid or substantially reduce these effects, Mitigation Measure WS-1 includes a streamflow depletion factor to be incorporated into transfers to account for the potential water supply impacts to the CVP and SWP. **With the implementation of Mitigation Measure WS-1, this impact would be less than significant.**

With reservoir releases, Sellers would release water from reservoirs, resulting in lower reservoir storage levels following the transfer. A reduction in downstream water supplies could occur when the reservoirs begin to refill. In order to refill the reservoir storage vacated for the transfer, water would have to be held in the reservoirs that would otherwise have flowed downstream. To avoid impacting downstream users, the refill can only occur when all water needs downstream have been met and excess water remains in the system. Additionally, each stored reservoir release transfer would include a refill agreement which specifies that the reservoir could only be refilled when it would not adversely affect downstream water users. **Therefore, the impact of reservoir release transfers on downstream water users would be less than significant (CEQA Conclusion).**

Buyer Service Area

Under the Proposed Action, additional water supply would benefit water users who receive the transferred water. The transfer water would help provide supplemental water to Buyers that would be experiencing shortages and who require supplemental water supplies to meet anticipated existing demands. For transfers to agricultural users, water would only be delivered to lands that were previously irrigated. Water transfers to M&I users would also help relieve shortages. Any water transferred to Buyers would need to be used for beneficial uses. **Therefore, the impact of the Proposed Action on water supply in the Buyer Service Area would be beneficial (CEQA Conclusion).**

3.1.3 Environmental Commitments/Mitigation Measures

Mitigation Measure WS-1: Streamflow Depletion Factor

The purpose of Mitigation Measure WS-1 is to address potential streamflow depletion effects to CVP and SWP water supply. Reclamation will apply a streamflow depletion factor to mitigate potential water supply impacts from the additional groundwater pumping due to groundwater substitution transfers. The streamflow depletion factor equates to a percentage of the total groundwater substitution transfer that will not physically be available for transfer to the Buyer (transferee) and is intended to offset the streamflow effects of the added groundwater pumping due to transfer.

As described in the impact analysis, the magnitude of the potential water supply impact depends on hydrologic conditions surrounding the transfer period (both before and after). The exact percentage of the streamflow depletion factor will be assessed and determined on a regular basis by Reclamation and DWR, in consultation with Buyers and Sellers, based on the best technical information available at that time. The percentage will be determined based on hydrologic conditions, groundwater and surface water modeling, monitoring information, and past transfer data. Application of the streamflow depletion factor will offset potential water supply effects and reduce them to a less than significant level. The streamflow depletion factor may not change every year but will be refined as new information becomes available. Analysis relied upon for this document was based on regional modeling; and more site-specific data, analysis, and groundwater modeling may result in different, local streamflow depletion factors. The streamflow depletion factor will be not less than 20 percent. However, this factor may be adjusted, either higher or lower, based on additional information on local conditions if new information indicates a substantial difference in local conditions that warrants a change.

Reclamation and DWR require the imposition of a streamflow depletion factor to ensure transfers do not violate the no injury rule (Water Code § 1702, 1706, and 1725), and other applicable laws, regulations and policies. This process to evaluate and determine the streamflow depletion factor will help verify that the factor reduces potential impacts to avoid injury to CVP or SWP water supplies and a substantial impact or injury.

3.2 Surface Water Quality

3.2.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for surface water quality. The area of analysis includes the waterways and waterbodies that provide water to the Buyers or Sellers.

Seller Service Area

Within the Sacramento River system, several water bodies within the area of analysis have been identified as impaired by certain constituents of concern and appear on the most recent (2020–2022) 303(d) list of impaired waterways under the Clean Water Act (State Water Resources Control Board [SWRCB] 2022). Listed water bodies in the area of analysis include the Sacramento River (Red Bluff to Knights Landing), Butte Creek, Colusa Basin Drain, and the Sutter Bypass. Shasta Reservoir receives water from the Sacramento River, McCloud River, and Pit River drainages. Shasta Reservoir is listed on the 303(d) list as impaired due to heavy metal accumulations (mercury, cadmium, copper and zinc) from natural resource extraction (SWRCB 2022).

The lower Feather River extends from Lake Oroville down to its confluence with the Sacramento River. Water quality in the lower Feather River is substantially affected by agriculture and urbanization (Sacramento River Watershed Program 2024a). The lower Feather River appears on the 303(d) list of impaired water bodies for chlorpyrifos, Group A pesticides, mercury, PCBs and unknown toxicity (SWRCB 2022). Lake Oroville is listed as impaired on the 303(d) list for mercury and PCBs (SWRCB 2022).

The water quality of the lower Yuba River is generally good with some sediment and mercury from historical mining as well as recent human development, logging, and recreation (Sacramento River Watershed Program 2024b). The lower Yuba River is listed as impaired on the 303(d) list for mercury and copper. Dissolved oxygen concentrations, total dissolved solids (TDS), pH, hardness, alkalinity, and turbidity are well within acceptable or preferred ranges for salmonids and other key freshwater biota (SWRCB 2022).

Water in the Middle Fork American River is generally considered to be of good quality (USEPA 2024a). The lower American River is listed as an impaired water body because of mercury lost during gold recovery. The urbanized portions of the lower American River are also listed for unknown toxicity. Additional pollutants

impairing the lower American River include pesticides (bifenthrin and pyrethroids), indicator bacteria, PCBs, and water temperature (SWRCB 2022). Snowmelt and precipitation from the upper American River Watershed discharges water into Folsom Reservoir and Lake Natoma.

The Merced River is listed as impaired due to the following pollutants: Group A pesticides, dissolved oxygen, water temperature, toxicity, and mercury (SWRCB 2022).

Water released from New Melones Reservoir into the lower Stanislaus River provides water for water quality improvement (water temperature and instream dissolved oxygen). Upon entering the San Joaquin River, the water contributes to flow and water quality conditions at Vernalis (Reclamation 2005).

Buyer Service Area

San Luis Reservoir is an off-stream reservoir that stores excess winter and spring water from Delta. Water is delivered to the reservoir through the California Aqueduct and Delta-Mendota Canal. In the summer months, the reservoir provides a water supply for over 20 million residents and more than half a million acres of irrigated agriculture. Water levels in San Luis Reservoir vary each season because of the amount and timing of water delivered from the California Aqueduct and Delta-Mendota Canal. The San Luis Reservoir is currently listed as impaired due to pesticides (DDT and chlordane), PCBs, pH, and Mercury levels (SWRCB 2022).

3.2.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

Under the No Action/No Project Alternative, changes in reservoir storage and river flows would not affect water quality in reservoirs within the Seller Service Area. Reservoir storage and river flows would continue to fluctuate seasonally and annually based on hydrologic conditions. **Therefore, there would be no changes in water quality associated with the No Action/No Project Alternative (CEQA Conclusion).**

Buyer Service Area

The No Action/No Project Alternative could result in crop idling, which could increase sediment deposition into waterways and could degrade water quality in the Buyer Service Area. Under the No Action/No Project Alternative, significant water shortages are anticipated in the Buyer Service Area. These water shortages have the potential to lead to a decrease in agricultural water supply, therefore forcing farmers to resort to crop idling due to lack of irrigation water. Leaving fields bare would increase the potential for sediment transport via wind erosion and deposition of transported sediment onto surface water, which could affect water quality. Overall, crop idling is not expected to increase significantly from existing conditions in the Buyer Service Area, therefore potential crop idling would cause no change compared to existing conditions. In the long term, worsening drought conditions due to climate variability may result in additional crop idling and a decrease in water quality due to sedimentation. **The No Action/No Project Alternative would have no impact on water quality in the Buyer Service Area (CEQA Conclusion).**

Under the No Action/No Project Alternative, changes in reservoir storage would not affect water quality in San Luis Reservoir. Similar to the Seller Service Area, the water operations in the Buyer Service Area in the No Action/No Project Alternative would not change from existing conditions. Water quality and water temperatures in the San Luis Reservoir would exhibit the same range of constituent levels and be subject to the same environmental influences and variations that are already present. **Therefore, there would be no water quality effects and no changes from existing conditions associated with the No Action/No Project Alternative in San Luis Reservoir (CEQA Conclusion).**

Proposed Action

Seller Service Area

Under the Proposed Action, substitution transfers would use groundwater for irrigation instead of surface water. The amount of groundwater substituted for surface water under the Proposed Action would be relatively small compared to the amount of surface water used to irrigate agricultural fields in the Seller Service Area under the No Action/No Project Alternative. Extracted groundwater would mix with surface water in agricultural drainages prior to irrigation return flow reaching the rivers. Constituents of concern that may be present in the groundwater could enter the surface water as a result of mixing with irrigation return flows. Any constituents of concern, however, would be greatly diluted when mixed with the existing surface waters applied because a much higher volume of surface water is used for irrigation purposes in the Seller Service Area. Additionally, groundwater quality in the area is generally good and sufficient for municipal, agricultural, domestic, and industrial uses. Section 3.3, Groundwater Resources, provides additional discussion of groundwater quality. **The Proposed Action would have a less-than-significant impact on water quality from groundwater substitution transfers (CEQA Conclusion).**

Under the Proposed Action, CVP and SWP reservoirs within the Seller Service Area would experience small changes in storage compared to the No Action/No Project Alternative, which would not be of sufficient magnitude and frequency to result in substantive changes to water quality. Any changes to water quality would not be substantial and would not adversely affect designated beneficial uses, violate existing water quality standards, or substantially degrade water quality. **Therefore, there would be a less-than-significant impact on reservoir water quality (CEQA Conclusion).**

Under the Proposed Action, transfer water would largely flow through the Sacramento River, American River, Yuba River, Feather River, and San Joaquin River in the Seller Service Area. The largest increase in flow could be approximately 1,040 cubic feet per second (cfs) in August. For comparison, flows in the Sacramento River near the Freeport bridge from 2009 to 2024 averaged 15,265 cfs in August (DWR 2024a). Changes in flows in the Seller Service Area from water transfers (slight increases July to November) compared to the No Action/No Project Alternative would not be at a frequency and magnitude large enough to affect water quality. Predicted changes in flow are not sufficient to adversely affect designated beneficial uses, violate existing water quality standards, or substantially degrade water quality. Water transfers under the Proposed Action would move through the Delta. The movement of water through the Delta would be consistent with the operations of the CVP and SWP which sets a maximum transfer amount of 600 TAF in critical and dry years and up to 360 TAF in all other years (Reclamation 2024d). Under the Proposed Action, the maximum amount of water transferred would be limited to 250 TAF annually, which is under the maximum water transfer volume limits and would be consistent with the water quality impacts analyzed in the *Long-Term Operations of the Central Valley Project and State Water Project Final Environmental Impact Statement* (Reclamation 2024e). **Therefore, water quality impacts associated with changes in flow in the Seller Service Area are expected to be less than significant (CEQA Conclusion).**

Buyer Service Areal

Storage in San Luis Reservoir may fluctuate due to additional water storage opportunities based on regulation of the delivery schedule of transfer water. These insubstantial changes in storage are not sufficient to adversely affect designated beneficial uses, violate existing water quality standards, or substantially degrade water quality. **Therefore, potential storage-related effects on water quality would be less than significant for San Luis Reservoir (CEQA Conclusion).**

3.3 Groundwater Resources

3.3.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for groundwater resources. The area of analysis consists of the Seller Service Area covering those making water available through groundwater substitution, which is limited to the Redding Area and Sacramento Valley groundwater basins, and the Buyer Service Area, which includes the San Joaquin Valley, Santa Clara Valley, and Gilroy-Hollister Valley groundwater basins. The use of groundwater resources within these basins is governed by the California Sustainable Groundwater Management Act (SGMA) and the adopted groundwater sustainability plan (GSP) in each subbasin (DWR 2024b). DWR conducted a statewide groundwater basin assessment in 2019 in accordance with SGMA and prioritized the subbasins based on eight components identified in the California Water Code Section 10933(b), including population, number of wells, reliance on groundwater, impacts on groundwater, and adverse impacts on local habitat, and streamflows (DWR 2020). SGMA required local agencies to form groundwater sustainability agencies (GSAs) for high and medium priority basins and implement GSPs to avoid undesirable results[12] and mitigate overdraft within groundwater basins (DWR 2024b). DWR prioritized Anderson and Enterprise subbasins as medium priority and the Enterprise-Anderson GSA developed GSPs for the Anderson and Enterprise subbasins, which were reviewed and approved by DWR (DWR 2024c; DWR 2024d). Sutter and Solano subbasins were prioritized as medium priority and the Colusa, Yolo, North American, and South American subbasins were prioritized as high priority (DWR 2020). GSPs for five of the six subbasins were submitted to and approved by DWR. The GSP for the Colusa subbasin was submitted to and reviewed by DWR but remains incomplete (DWR 2023b). The management of groundwater resources across the area of analysis under SGMA is discussed further in Appendix D.

Seller Service Area

Redding Area Groundwater Basin

The Seller Service Area is in the Redding Area Groundwater Basin that includes portions of Shasta and Tehama counties. Appendix D includes groundwater elevation monitoring data in the Anderson-Cottonwood Irrigation District (ACID) area (the potential groundwater substitution selling entity in the Redding Area Groundwater Basin).

Groundwater Levels. Recent weather conditions in the Redding Area Groundwater basin have varied, with WY 2023 classified as a wet year and WY 2017 classified as the wettest year since 1983 (DWR 2017). Dry weather conditions were present in several of the other recent years, with WY 2020 classified as a dry year and WY 2021 and WY 2022 classified as critical years (DWR 2024e). Historically, groundwater levels have remained stable within the Redding Area Groundwater Basin. Seasonal fluctuations in groundwater levels are generally less than five feet and can be up to 18 feet during drought years (ACID 2011; Mount et al. 2019). Figures D-3 through D-5 and Tables D-2, D-4, and D-6 in Appendix D show the observed changes in groundwater elevation at different groundwater monitoring wells in the Sacramento Valley, which includes the Redding Area Groundwater Basin, from Spring 2013 to Spring 2023, Spring 2018 to Spring 2023, and Spring 2022 to Spring 2023. The average groundwater elevation decreased 0.7 feet from Spring 2013 to Spring 2023 at the wells reported in Table D-2; average groundwater elevation decreased an average of 0.5 feet from Spring 2018 to Spring 2023 at the wells reported in Table D-4; and average groundwater

[12] Undesirable results are defined by SGMA in California Water Code Section 10721(x) as chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, land subsidence, water quality degradation, and depletions of interconnected surface water.

elevation increased 1.0 feet from Spring 2022 and Spring 2023 at the wells reported in Table F-6 (DWR 2024f).

Appendix D (Figures D-7 through D-14) includes groundwater-level monitoring data to further characterize groundwater levels in the Redding Area Groundwater Basin near the potential groundwater substitution selling entities. These figures show the groundwater level recorded over time (hydrograph) at specific wells near the potential groundwater substitution Sellers. Overall, from 2013 to 2023, groundwater-level declines were due to the six dry or critical years that occurred during the 10-year period. However, groundwater levels have shown some recovery during the recent wet years WY 2017, WY 2019, and WY 2023, and the below normal year WY 2018.

Land Subsidence. The portion of the Redding Area Groundwater Basin west of the Sacramento River is within the Tehama Formation, which has exhibited subsidence in Yolo County. The Tehama Formation could be susceptible to subsidence where it occurs in the Redding Area Groundwater Basin. Therefore, there is potential for subsidence in some areas of the Redding Area Groundwater Basin if groundwater levels were lowered below the historical lowest groundwater level.

DWR has measured less than 0.2 feet of subsidence between 2008 and 2017 in the Redding Area Groundwater Basin (DWR 2018). The total vertical displacement measured from June 2015 to July 2024 for the Redding Area Groundwater Basin was less than 0.5 feet (DWR 2024g).

Based on a review of the Enterprise and Anderson GSPs, subsidence within the Enterprise and Anderson subbasins is generally within the margin of error for Interferometric Synthetic Aperture Radar (InSAR) (95 percent confidence is 0.06 feet [0.71 inch]) (Enterprise-Anderson GSA 2022a; Enterprise-Anderson GSA 2022b). Between June 2015 and 2017, most of the Enterprise subbasin experienced land subsidence of 0.14 inches to 1.2 inches (Enterprise-Anderson Groundwater Sustainability Agency [GSA] 2022a). From June 2015 through October 2020, the Anderson subbasin experienced little to no land subsidence with values ranging from an increase of 0.02 inches to a decrease of 0.25 inches, except for a drop to -2.8 inches which was determined to be associated with the Anderson landfill, making it an inaccurate representation of subsidence (Enterprise-Anderson GSA 2022b).

Groundwater Quality. Groundwater in the Redding Area Groundwater Basin area of analysis is typically of good quality, as evidenced by its low TDS concentrations, with a maximum concentration of 640 milligrams per liter (mg/L) (SWRCB 2022). Areas of high salinity (i.e., poor water quality) are generally found on the western basin margins where the groundwater is in contact with marine sedimentary rock. Elevated levels of iron, manganese, nitrate, and TDS have been detected in some areas throughout the basin (SWRCB 2022). Localized high concentrations of boron have been detected in the northern portion of the basin (SWRCB 2022).

Sacramento Valley Groundwater Basin

The Seller Service Area in the Sacramento Valley Groundwater Basin includes portions of Tehama, Glenn, Butte, Yuba, Colusa, Placer, and Yolo counties. Under normal hydrologic conditions, groundwater accounts for approximately 30 percent of the annual supply used for agricultural and urban purposes within the Sacramento Valley (DWR 2021).

Groundwater Levels. Groundwater levels in the Sacramento Valley Groundwater Basin have declined over the last 10 years (Spring 2013 to Spring 2023) coinciding with the persistent dry weather conditions. Agricultural land use changes since the mid-1980s, including the crop mix shift from annual crops to permanent perennial orchards and vineyards, and the groundwater pumping associated with this change, have also contributed to the decline in groundwater levels in the Sacramento Valley Groundwater Basin, especially in areas without access to surface water on the west side of the Sacramento Valley in Colusa, Glenn, and Tehama counties (Cole et al. 2024). Figure D-3 and Table D-3 in Appendix D show the change in

groundwater elevation at groundwater monitoring wells from Spring 2013 to Spring 2023 in the Sacramento Valley Groundwater Basin. As shown in Table D-3, the average groundwater elevations have declined 4.7 feet in the shallow aquifer zones, 6.0 feet in the intermediate aquifer zones, and 10.4 feet in the deep aquifer zones from Spring 2013 to Spring 2023 in the Sacramento Valley Groundwater Basin (DWR 2024f).

Recent weather conditions have varied, with WY 2023 classified as a wet year and WY 2017 classified as the wettest year since 1983 (DWR 2017). Dry weather conditions were present in several other recent years, with WY 2020 classified as a dry year and WY 2021 and WY 2022 classified as a critical year (DWR 2024e). In general, Spring 2023 groundwater levels in the Sacramento Valley Groundwater Basin are lower in comparison to Spring 2018 levels. Figure D-4 in Appendix D shows the change in groundwater elevation at groundwater monitoring wells from Spring 2018 to Spring 2023 in the Sacramento Valley Groundwater Basin. Although from Spring 2018 to Spring 2023, groundwater elevations declined overall (Appendix D, Table D-5), wet conditions in WY 2023 resulted in increased groundwater elevations in the Sacramento Valley Groundwater Basin from Spring 2022 to Spring 2023, as was observed at the monitoring wells in the Sacramento Valley Groundwater Basin reported in Figure D-5 and Table D-7 in Appendix D (DWR 2024f).

Overall, Sacramento Valley Groundwater Basin average groundwater levels have declined since 2013, with some recovery in the past year since 2022. Past groundwater measurements suggest groundwater levels decline moderately during extended droughts and recover to pre-drought levels after subsequent wet periods (DWR 2021). A review of spring 2024 trend data shows that groundwater levels have not yet fully recovered from the past drought years, but levels began to rebound in WY 2023 and wet conditions in WY 2024 continued to help stabilize groundwater levels (DWR 2024h). In general, long-term trends show groundwater level declines along the western edge of the Sacramento Valley in the Sacramento River Hydrologic Region with notable increases in groundwater levels in the basins in the southeastern portion of the Sacramento Valley (DWR 2024h). Appendix D (Figures D-16 through D-48) includes groundwater-level monitoring data to further characterize groundwater levels in the Sacramento Valley Groundwater Basin near the potential groundwater substitution Sellers. These figures show the groundwater level recorded over time (hydrograph) at specific wells. The hydrographs typically show a drop in groundwater levels in the summer/irrigation season and an increase in the winter/wet season.

Appendices F1, F2, and F3 include monitoring data reports from the 2020, 2021, and 2022 transfer periods, respectively. Groundwater level hydrographs in Appendices F1, F2, and F3 show groundwater levels at the participating transfer pumping wells and nearby monitoring wells. Groundwater level trends during past transfer seasons (April through October) indicate substantial declines in groundwater levels during transfer periods (up to 200 feet of decline at some participating transfer pumping wells). Following transfer seasons, groundwater levels at all participating transfer wells recovered to pre-transfer levels, or showed a trend towards recovery, within one to three months following transfers and generally remained stable.

Land Subsidence. Figures D-49 through D-52 in Appendix D show the spatial distribution of subsidence in the Sacramento Valley for the last four WYs (2020-2023), indicating that subsidence is focused on the west side of the valley, and to the greatest extent in the eastern portion of Yolo County, the southern portion of Colusa County, the eastern portion of Glenn County, and western portion of Sutter County. Subsidence in these regions is generally related to excessive groundwater pumping and subsequent consolidation of sediments.

Historically, as much as four feet of land subsidence has occurred in the eastern portion of Yolo County and the southern portion of Colusa County, primarily due to groundwater extraction and the underlying geology. The area between Zamora, Knights Landing, and Woodland has been most affected. Ground surface elevation at DWR's subsidence monitoring extensometer in Zamora has declined steadily over the past two decades (Figure D-53 in Appendix D). Between 0.5 to 1.5 feet of land subsidence has been

recorded east of the town of Zamora between 2008 and 2022 (DWR 2024i) due to groundwater withdrawal over several decades. At the Conaway Ranch extensometer in Yolo County, ground surface elevation decreased sharply in 2013 and 2014, a dry period (Figure D-54 in Appendix D). There was little to no recovery of ground surface elevation in the following years. DWR measured land subsidence of approximately 0.2 foot from 2012 to 2013 and an additional 0.6 foot from 2013 to 2014 (DWR 2024j). Ground surface elevation trends at these two locations suggest inelastic (i.e., permanent) land subsidence may have occurred. In Colusa County, approximately 2.1 feet of subsidence was measured in the Arbuckle area between 2008 and 2017 (Figure D-55 in Appendix D) (DWR 2024k). The annual rate of subsidence in Colusa County for WY 2023 was between 0.2 and 0.4 foot per year (DWR 2024f).

In Glenn and Sutter counties, ground surface displacement was measured between 0.04 to 0.06 foot from 2008 through 2017 and 0.02 to 0.04 foot from 2008 through 2019; similar displacement measurements were recorded in WY 2023 for Glenn and Sutter counties (DWR 2024f). At the Sutter extensometer, ground surface elevation decreased between 2008 and 2016, a period of dry conditions (Figure D-56 in Appendix D) (DWR 2024l). The ground surface elevation at this location increased following the low elevation in 2015, during generally wetter hydrologic conditions. The trends at the Sutter extensometer suggest that at least a portion of the observed subsidence is elastic (i.e., reversible).

According to a review of GSPs for the subbasins within the Sacramento Valley Basin of the Seller Service Area, while multiple subbasins have the potential for inelastic (i.e., permanent) land subsidence, the Yolo subbasin is the only subbasin with recorded inelastic land subsidence (Yolo Subbasin GSA 2022). Subsidence in the Arbuckle area of Colusa County has been observed, but further evaluation would be needed to determine if subsidence is elastic or inelastic (Glenn Groundwater Authority GSA and Colusa Groundwater Authority GSA 2024). Similar to Colusa County, several areas within other subbasins, including the North American, South American, and Solano subbasins, have shown land subsidence with no clear determination of elastic or inelastic subsidence (County of Sutter GSA et al. 2021; County of Sacramento GSA et al. 2021; City of Vacaville GSA et al. 2020). The North American subbasin has experienced a range of subsidence, with the greatest being -0.25 feet, but most areas being less than -0.05 feet from January 2015 through October 2020 (Glenn Groundwater Authority GSA and Colusa Groundwater Authority GSA 2024). Most of the South American subbasin had land subsidence between -0.05 feet and -0.1 feet, with one area of -0.15 feet from June 2015 through October 2020 (County of Sutter GSA et al. 2021). Most monitoring sites in the Solano subbasin have shown a small amount of subsidence between -0.1 ft and -0.005 ft, with a few areas being between -0.2 ft and -0.1 ft (City of Vacaville GSA et al. 2020). The Sutter subbasin is the only subbasin that has confirmed no signs of inelastic land subsidence (City of Live Oak GSA et al. 2022).

Groundwater Quality. Groundwater quality in the Sacramento Valley Groundwater Basin is sufficient for municipal, agricultural, domestic, and industrial uses. However, some localized groundwater quality issues exist in the basin including occurrences of saltwater intrusion, elevated levels of nitrates, naturally occurring boron, and other introduced chemicals (Northern California Water Association 2022). The Groundwater Ambient Monitoring and Assessment (GAMA) Program studied water quality at 49 wells in 2017 and presented results in 2019 (U.S. Geological Survey and SWRCB 2019). Established drinking water benchmarks were utilized to provide context for evaluating the quality of groundwater. A concentration above the maximum contamination level (MCL) for a given constituent is defined as high, while moderate concentrations are less than the MCL.[13] The GAMA study found one or more inorganic constituents present at high concentrations in about ten percent of the sampled groundwater wells, with arsenic present in high concentrations and hexavalent chromium present in moderate concentrations (U.S. Geological Survey and

[13] Moderate concentrations are less than benchmark, but greater than one-half (for inorganic constituents) or one-tenth (for organic constituents) of the benchmark.

SWRCB 2019). In addition, manganese and iron were present at high concentrations in about 16 percent of the groundwater wells and about 12 percent of the sampled wells had moderate concentrations of nitrate. Organic constituents were not present in high concentrations in the groundwater resources (U.S. Geological Survey and SWRCB 2019). Groundwater quality trend monitoring was conducted in 2021 for 28 wells within the Sacramento Valley Groundwater Basin by the Sacramento Valley Water Quality Coalition. As with the GAMA study, results were contextualized using drinking water standards. One well exceeded the primary drinking water MCL of 10 mg/L for nitrate (as nitrogen) and three wells had nitrate concentrations that were near or at the MCL. Samples from four wells were between 5 and 7.5 mg/L for nitrate, while the remaining 20 network wells had nitrate concentrations of 5 mg/L or less, with 14 wells having nitrate concentrations of 2.5 mg/L or less (Luhdorff and Scalmanini, Consulting Engineers 2022).

Buyer Service Area

San Joaquin Valley Groundwater Basin

The San Joaquin Valley Groundwater Basin has been divided into 18 subbasins by DWR. Potential Buyers are located in the Merced and Westside subbasins.

Groundwater Levels. Prior to the large-scale development of irrigated agriculture, groundwater in the basin generally flowed from areas of higher elevation (i.e., the edges of the basin) toward the San Joaquin River and ultimately to the Delta. Extensive groundwater pumping and irrigation (with imported surface water) have modified local groundwater flow patterns and in some areas, groundwater depressions are evident. Similar to the Sacramento Valley, groundwater level data in the San Joaquin Valley have shown declines in recent years. In the Merced subbasin, based on data from 51 monitoring wells, from 1996 to 2015 average groundwater level decline was 1.6 feet per year (Merced GSA 2022). In the Westside subbasin, groundwater data from 2008 to 2018 show various degrees of groundwater elevation decline due to drought and temporary increases in groundwater pumping (Westlands Water District GSA and County of Fresno GSA 2022).

Land Subsidence. From the 1920s until the mid-1960s, the use of groundwater for irrigation of crops in the San Joaquin Valley increased rapidly, causing severe inelastic land subsidence throughout the west and southern portions of the valley (Ireland et al 1984). DWR has prioritized the western portion of the San Joaquin Valley (Tracy, Delta-Mendota and Westside subbasins) as having a high potential for subsidence (DWR 2020). A continuous Global Position station near Los Banos has recorded over 2.15 feet of subsidence since 2005 (DWR 2024m).

Groundwater Quality. Groundwater quality varies throughout the San Joaquin Valley Groundwater Basin. Groundwater quality in the western portion of basin (Westside subbasin) is characterized by mixed sulfates, bicarbonates and chlorides in the water. There are also localized areas of high iron, fluoride, nitrate, and boron in the subbasin (Westlands Water District GSA and County of Fresno GSA 2022).

Santa Clara Valley Groundwater Basin

The Santa Clara Valley Groundwater Basin has been divided into four subbasins by DWR. Potential Buyers are located in the Santa Clara subbasin.

Groundwater Levels. Historically, from the early 1900s through the mid-1960s groundwater level declines from groundwater pumping have induced subsidence in the Santa Clara Valley subbasin and caused degradation of the aquifer adjacent to the bay from saltwater intrusion. Groundwater levels have generally increased since 1965 as a result of increased in-stream and off-stream recharge programs and decreased pumping due to increased availability of imported surface water (Valley Water 2016). Typical seasonal fluctuations exhibit higher groundwater elevations in the spring and lower elevations in the fall.

Land Subsidence. Historically, Santa Clara County has experienced as much as 13 feet of subsidence caused by excessive pumping of groundwater. Land subsidence since the 1980s has primarily been elastic with most of the compaction occurring in the upper aquifer (upper 250 feet of sediments) and trending over seasonal and climatic cycles (Hanson 2015). Valley Water manages its groundwater use to avoid subsidence and has established subsidence thresholds equal to the current acceptable rate of 0.01 feet per year (Valley Water 2016). DWR has categorized the Santa Clara Valley subbasin as having a low potential for future land subsidence (DWR 2024l).

Groundwater Quality. Santa Clara subbasin has good to excellent groundwater quality with mineral composition that is suitable for most beneficial uses (DWR 2020). Though groundwater in the Santa Clara Valley is typically considered "hard", the groundwater meets drinking water standards at public supply wells without the use of treatment methods (Valley Water 2016).

Gilroy-Hollister Valley Groundwater Basin

The Gilroy-Hollister Valley Groundwater Basin has been divided into four subbasins by DWR. Potential Buyers are located in the Llagas subbasin.

Groundwater Levels. Groundwater levels remained relatively stable over the period of record with the exception of the declines and subsequent recoveries associated with the 1976-1977 and 1987-1992 drought periods (Valley Water 2016).

Land Subsidence. Most of the subsidence within Santa Clara County has occurred in the Santa Clara Valley subbasin. Valley Water manages its groundwater use to avoid subsidence and has established subsidence thresholds equal to the current acceptable rate of 0.01 feet per year (Valley Water 2016). DWR has categorized Llagas subbasin as having a low potential for future land subsidence (DWR 2020).

Groundwater Quality. Groundwater alkalinity in the Llagas subbasin is generally high, similar to the Santa Clara Valley subbasin. Though the water is hard, it is suitable for most uses and drinking water standards are met at public supply wells without the use of treatment methods (Valley Water 2016).

3.3.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

There would be no water made available for transfer through groundwater substitution pumping actions in the Seller Service Area under the No Action/No Project Alternative. Groundwater pumping, a common agricultural practice unrelated to this project, would be expected to continue. Past groundwater trends in the Sellers Service Area show seasonal variation with groundwater level declines during the summer months and recovery during the winter months. Long-term declines are noted during extended drought with recovery to pre-drought levels after subsequent wet periods. With the passing of SGMA and adoption of GSPs in the Seller Service Area, groundwater pumping would continue but may be limited in order to avoid undesirable results. The potential for groundwater level declines in the Seller Service Area would continue, consistent with the GSPs. **The No Action/No Project Alternative would have no impact on groundwater resources in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

The No Action/No Project Alternative would not decrease groundwater supplies or interfere substantially with groundwater recharge and would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plans in the Buyer Service Area. Under the No Action/No Project Alternative, water users in the Buyer Service Area may use groundwater pumping to meet shortages, which could result in temporary groundwater level declines. Potential Buyers have already taken

steps to address shortages that have occurred in recent years, and several potential Buyers rely heavily on groundwater to meet their water supply demands. Groundwater pumping in these areas has the potential to lower groundwater levels and affect the performance of wells near the pumping wells. However, these pumping activities in the Buyer Service Area are now subject to the limits established by GSPs adopted in these basins consistent with SGMA. Absent any other approved alternatives supporting the import of additional water supply in the Buyer Service Area, these limits on groundwater use could result in impacts to water users in the area. Given the limits on groundwater use established in the GSPs, the potential for changes in groundwater level levels in the Buyer Service Area would continue under the No Action/No Project Alternative, consistent with those plans. **The No Action/No Project Alternative would have no impact on groundwater resources on in the Buyer Service Area (CEQA Conclusion).**

Proposed Action

Seller Service Area

Under the Proposed Action, groundwater pumped in-lieu of diverting surface water could affect groundwater hydrology. Short-term declines in local groundwater levels, could result in changes in groundwater-surface water interaction and/or additional land subsidence. Potential effects to surface water quality are discussed in Section 3.2, Surface Water Quality.

Increased pumping of groundwater to make surface water available for transfers could result in temporary declines of groundwater levels compared to the No Action/No Project Alternative. Pumping could occur from April through October and the pumped groundwater would be used for crop irrigation within the Seller Service Area. Declining groundwater levels resulting from increased pumping could cause: (1) increased groundwater pumping costs owing to increased pumping depth; (2) decreased yield from groundwater wells owing to reduction in the saturated thickness of the aquifer; (3) decline of the groundwater table to a level below the vegetative root zone, which could result in environmental effects; and (4) third-party impacts to neighboring wells compared to the No Action/No Project Alternative.

Excessive groundwater extraction from unconfined and confined aquifers could lower groundwater levels and decrease pore-water pressure in the aquifer. The reduction in pore-water pressure could result in a loss of structural support within clay and silt beds in the aquifer. The loss of structural support could cause the compression of clay and silt beds resulting in a lowering of the ground surface elevation (land subsidence). The compression of fine-grained deposits, such as clay and silt, is largely permanent (i.e., inelastic). Infrastructure damage and alteration of drainage patterns are possible consequences of land subsidence.

Changes in groundwater levels and the potential change in groundwater flow directions could cause a change in groundwater quality through a number of mechanisms. One mechanism is the potential mobilization of areas of poorer quality water, drawn down from shallow zones, or drawn up into previously unaffected areas. Changes in groundwater gradients and flow directions could also cause (or speed) the lateral migration of poorer quality water.

Redding Area Groundwater Basin

Groundwater Levels. Groundwater is a major source of water supply within the Redding Area Groundwater Basin watershed. Some of the surface water made available for transfer through groundwater substitution actions would originate from the Redding Area Groundwater Basin (Anderson and Enterprise subbasins) in Shasta County through actions taken by ACID. As discussed under Mitigation Measure GW-1, the proposed transfer must be compatible with the GSP.

The proposed groundwater pumping by ACID to make surface water available would result in the withdrawal of up to 4,900 AF of groundwater from production wells (Table E-1 in Appendix E1 contains details about the number of wells and pumping capacity). Unlike other transfers of water made available

through groundwater substitution actions, ACID's proposed transfer was not simulated in the SACFEM2013 groundwater modeling because the model area does not include the Redding Area Groundwater Basin. However, ACID has tested operation of the wells proposed for groundwater substitution pumping under the Proposed Action in the past at similar production rates and has observed no substantial impacts on groundwater levels or groundwater supplies (AACID 2014). ACID used the same wells each year for groundwater substitution pumping in 2013, 2014, 2015, 2020, and 2021. In the months after the transfer of surface water occurred, groundwater monitoring conducted in the vicinity of the production wells indicates groundwater levels recovered in 2013, 2014, 2015, 2020, and 2021 to pre-transfer levels (MBK Engineers 2014, 2015, 2016, 2021, 2022). For 2020, 2021, and 2022, Appendix F1, Appendix F2, and Appendix F3 depict groundwater level hydrographs for the ACID pumping wells and nearby monitoring wells which show the drawdown during the transfer period and recovery following the transfer period. Monitoring consisted of depth to groundwater readings from production wells and monitoring wells, flowmeter readings from production wells, and water quality monitoring (temperature and electrical conductivity). **Based on the results of the monitoring data collected as part of previous transfers, while water made available for transfer through groundwater substitution pumping actions are unlikely to have significant effects on groundwater levels across all water year types, some significant impacts could still occur in dry water years when compared to the No Action/No Project Alternative.** Because of the uncertainty of how groundwater levels could change, especially during a very dry year, ACID will implement the Monitoring Program and Mitigation Plan discussed under Mitigation Measure GW-1. **With the implementation of Mitigation Measure GW-1, this impact would be less than significant (CEQA Conclusion).**

Land Subsidence. The potential for subsidence as a result of the Proposed Action given the insubstantial change in groundwater use from groundwater substitution pumping in comparison to overall groundwater pumping in the region is low. **While the potential for subsidence with the implementation of the Proposed Action is not substantial, multiple sequential dry water years could lead to potentially significant land subsidence**. As a component of Mitigation Measure GW-1, ACID will implement the Monitoring Program and Mitigation Plan, which includes groundwater-level monitoring with triggers to limit groundwater pumping to ensure that groundwater levels remain above historical low groundwater elevations. This monitoring and mitigation prevents the lowering of groundwater elevations to levels that may induce subsidence**. With the implementation of Mitigation Measure GW-1, this impact would be less than significant (CEQA Conclusion).**

Groundwater Quality. Groundwater extraction under the Proposed Action would be limited to withdrawals during April through October of the 2026 and 2027 contract years. Since groundwater would recharge in the winter months and groundwater in the Redding area is of good quality, adverse effects from the migration of reduced groundwater quality would not be substantial. **The Proposed Action would have a less-than-significant impact on groundwater quality (CEQA Conclusion).**

Sacramento Valley Groundwater Basin

Groundwater Levels. In the Sacramento Valley Groundwater Basin, past groundwater level measurements suggest groundwater levels decline during extended droughts and recover after subsequent wet periods (Appendix D). As required by Senate Bill X7-6, DWR and other monitoring entities extensively monitor groundwater levels in the basin. Some of the surface water made available for transfer through groundwater substitution actions would originate from the Sacramento Valley Groundwater Basin (shown in Figure D-1). As discussed under Mitigation Measure GW-1, the proposed transfers must be compatible with the GSPs.

Groundwater drawdown impacts associated with the groundwater substitution pumping that would occur in the Sacramento Valley Groundwater Basin under the Proposed Action were evaluated using the

SACFEM2013 groundwater model (Reclamation 2015). The model simulated the changes in groundwater levels from water transfers based on WY 1977[14] hydrologic conditions. WY 1977 was selected because it was a critically dry year and presents what could occur under very dry conditions. The effects of concurrent groundwater substitution pumping from 426 wells that are part of the Proposed Action have been modeled to estimate effects to groundwater resources. Appendices E1 and E2 summarize (1) key characteristics of the SACFEM2013 groundwater model; (2) simulated drawdown of groundwater levels under September 1977 hydrologic conditions (after the simulated groundwater substitution pumping); and (3) simulated groundwater head hydrographs at 34 selected locations and 7 simulated model layers (varying depths throughout the model) at or near the Seller Service Areas (Appendix E2). The groundwater substitution pumping was modeled to occur from May through September, but groundwater substitution pumping could also occur in October. If groundwater pumping continued into October, groundwater drawdown impacts may also extend into October. However, even if groundwater pumping was extended into October, the total amount of water transferred would be the same quantity that was modeled, and pumping would not exceed the maximum volumes listed in Table 2-1. Because the same volume of groundwater substitution pumping may occur over a longer period of time, when compared to the shorter groundwater modeling period, impacts related to groundwater levels, interaction with surface water, and land subsidence would be less than those modeled and described below. Overall, a longer duration in pumping for the same quantity that was modeled would decrease the depth of the drawdown impacts.

The 34 modeled hydrograph locations throughout the Sacramento Valley are shown in Figures E-2 through E-8 in Appendix E1, noted with the magenta triangles. As an example, Figure 3-1 shows the decrease in groundwater head at Location 18 at varying depths to illustrate the simulated groundwater drawdown and recovery process within the Sacramento Valley Groundwater Basin. Location 18 was selected because most areas in the model exhibit similar declines to those shown in Location 18 (a simulated drawdown is shown in Figures E-2 through E-8 in Appendix E1). Location 18 is near Tule Basin Farms and is in the northwestern portion of the Sacramento Valley approximately four miles east of the Sacramento River. Approximately 60 percent of the pumping near Tule Basin Farms was concentrated in aquifer model layer 3 (approximately 150 to 240 feet below ground surface). The pumping in aquifer layer 3 resulted in approximately 6 feet of drawdown due to the Proposed Action, as compared to WY 1977 Baseline conditions. Most of the recovery near the pumping zone occurs in the year following the transfer event. Recovery at the water table was more gradual. Groundwater recovery is highly dependent on (1) hydrology of the years following the transfer; (2) proximity of a transfer well to surface water; (3) pumping in the year following the transfer; and (4) aquifer properties.

Groundwater substitution pumping under the Proposed Action could result in temporary drawdown of groundwater levels compared to the No Action/No Project Alternative. Model results show that increased groundwater pumping owing to the Proposed Action compared to WY 1977 Baseline conditions could cause localized declines of groundwater levels, or cones of depression, which in some instances extend beyond the boundaries of the Seller Service Area (simulated drawdown is shown in Figures E-3 through E-8 in Appendix E1). **Groundwater substitution pumping could result in groundwater declines in excess of seasonal variation and these effects on non-participating transfer pumping wells could be significant.** To reduce these significant effects to less than significant, Mitigation Measure GW-1 specifies that transferring agencies establish monitoring and mitigation programs for transfers of surface water made available through groundwater substitution actions. Mitigation Measure GW-1 would require monitoring of groundwater levels within the local pumping area and identifies performance criteria and triggers for

[14] Water Year 1977 extends from October 1976 through September 1977.

specific actions to ensure that effects are not significant. **With the implementation of Mitigation Measure GW-1, this impact would be less than significant (CEQA Conclusion).**

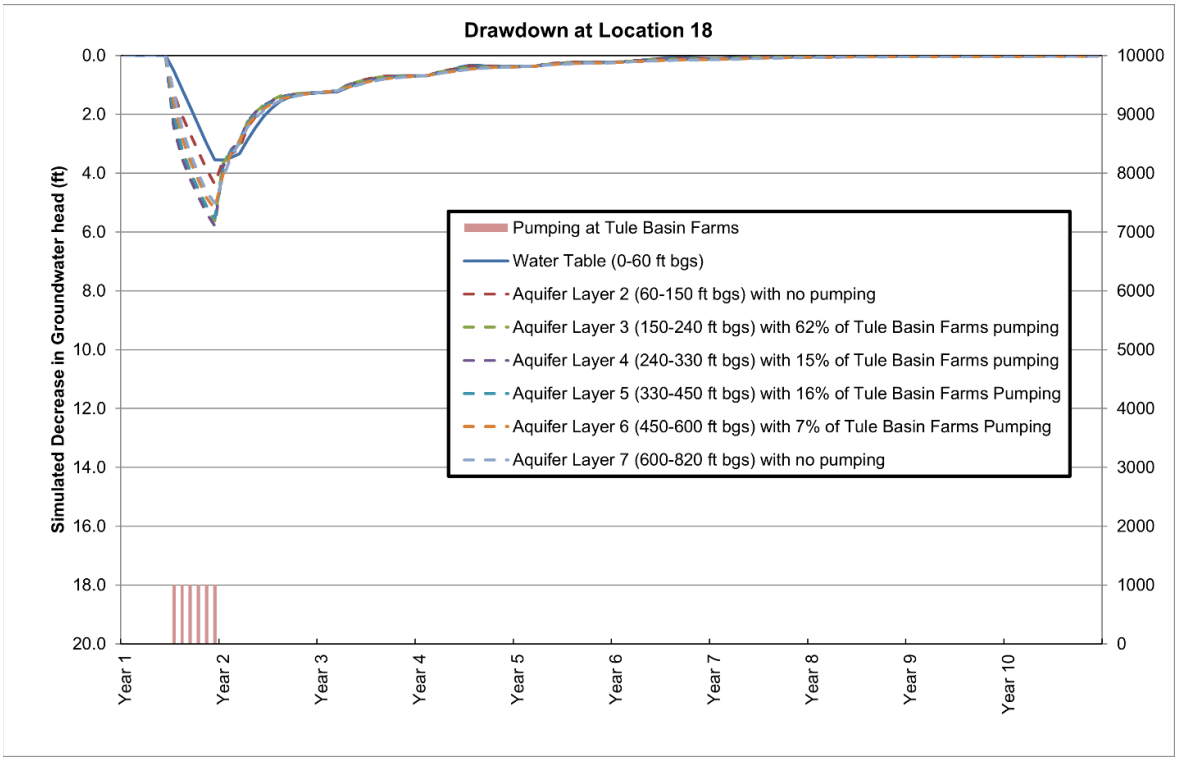

Figure 3-1. Simulated Decrease in Groundwater Head at Location 18 (Figure I-2b shows the location) under the Proposed Action

Land Subsidence. Groundwater substitution pumping within the Sacramento Valley Groundwater Basin could increase the potential for land subsidence to cause significant impacts if groundwater levels fall below historical low levels. Significant impacts would be reduced to less than significant with implementation of the performance criteria and specified actions in Mitigation Measure GW-1. **Therefore, with the implementation of Mitigation Measure GW-1, this impact would be less than significant (CEQA Conclusion).**

Groundwater Quality. Groundwater extraction under the Proposed Action would be limited to withdrawals during the irrigation season of the 2026-2027 contract years. Since groundwater would recharge in the winter months, extraction near areas of reduced groundwater quality would not be expected to result in a permanent change to groundwater quality conditions. **Consequently, effects from the migration of reduced groundwater quality would be less than significant (CEQA Conclusion).**

Buyer Service Area

Under the Proposed Action, Buyers may continue to use limited groundwater resources during periods of shortage while also supplementing available water supply with transferred water. As discussed under the No Action/No Project Alternative, groundwater pumping activities in the Buyer Service Area are subject to the limits established by GSPs adopted in these basins consistent with SGMA. Given the limits on groundwater use established in the GSPs, the potential for changes in groundwater level levels in the Buyer Service Area would continue under the Proposed Action, consistent with those plans. **Therefore, Proposed Action would have no impact on groundwater resources in the Buyer Service Area (CEQA Conclusion).**

3.3.3 Environmental Commitments/Mitigation Measures

Mitigation Measure GW-1: Monitoring Program and Mitigation Plan

The objective of Mitigation Measure GW-1 is to avoid potentially significant adverse environmental effects from groundwater-level declines such as (1) impacts to other legal users of water; (2) land subsidence; (3) adverse effects to groundwater-dependent vegetation; or (4) migration of reduced quality groundwater. The measure accomplishes this by monitoring groundwater levels in the period during which groundwater is being pumped, in-lieu of diverting surface water, to cease groundwater pumping when the groundwater level reaches the established groundwater trigger. As described in the Mitigation Plan section below, the mitigation measure also requires prompt intervention, including the cessation of groundwater pumping, if groundwater level triggers are reached during transfer-related pumping or if, in the unlikely event, that a potential impact is detected to ensure it will be reduced to less than significant. Additionally, the mitigation measure requires preventative actions if monitoring shows that identified groundwater-level triggers are reached during transfer-related pumping. Potential Sellers are required to prepare a Monitoring Program and Mitigation Plan to address the required elements of the mitigation measure for review and approval by Reclamation prior to initiation of groundwater substitution pumping.

Sellers are required to submit monitoring reports to Reclamation and Reclamation will verify that participating Sellers implement the Monitoring Program and Mitigation Plan to avoid potentially significant adverse effects of transfer-related groundwater extraction. In addition, each entity making surface water available for transfer through groundwater substitution actions must confirm that the proposed groundwater pumping will be compatible with applicable state and local regulations and county groundwater management plans, as well as GSPs. Most GSPs in the Seller Service Area have been reviewed and approved by DWR; and all of the GSAs are required to meet the sustainability objectives identified under SGMA, thus providing a regulatory backstop to prevent substantial adverse effects.

Well Review Process

Potential Sellers are required to prepare and submit a water transfer proposal to Reclamation a minimum of one month prior to the initiation of groundwater substitution pumping transfers. Potential Sellers are encouraged to electronically submit their water transfer proposal through DWR's online web application. Reclamation (in coordination with DWR) will review water transfer proposals and those groundwater substitution pumping transfers cannot start prior to Reclamation's approval. Water transfer proposals must include well data collected by potential Sellers consistent with the data requirements identified in the Water Transfers Information Checklist that is included in Reclamation and DWR's *Water Transfer White Paper*.[15]

In the water transfer proposal, potential Sellers must also include subsidence information, which is available from DWR's InSAR data, best available subsidence information from their local DWR-approved GSP(s), or other available data relative to subsidence. Sellers must demonstrate that substantial land subsidence is not occurring within the area of a proposed participating transfer pumping well[16] in accordance with minimum thresholds identified in their local DWR approved GSP(s), subject to Reclamation's verification; and if it is occurring, the participating transfer pumping well would not be allowed to participate in groundwater

[15] At the time of development of this EA/IS, the 2019 Water Transfers White Paper (Reclamation and DWR 2019) document governs the water transfers evaluated in this EA/IS. The Water Transfers White Paper is updated by Reclamation and DWR when necessary and the version of that governing document and the Water Transfers Information Checklist it includes shall be used by Sellers to develop their water transfer proposals. See Appendix E3 for the current Water Transfers Information Checklist (Reclamation and DWR 2019).

[16] A transfer pumping well is a production well used to pump groundwater as part of a groundwater substitution transfer under the Proposed Action.

substitution transfers, ensuring adverse effects of the Proposed Action would not occur in areas vulnerable to land subsidence.

Monitoring Program

Potential Sellers must complete and implement a monitoring program subject to Reclamation's approval (in coordination with DWR) that shall include, at a minimum, the following components:

Monitoring Well Network

The monitoring program, as determined by Reclamation, shall accurately characterize groundwater levels from the appropriate aquifers and their response in the area before, during, and after transfer-related substitution pumping takes place. Depending on local conditions, additional groundwater-level monitoring may be required near ecological resource areas such as areas with mapped groundwater dependent ecosystems. Sellers must identify, in the transfer proposal, suitable monitoring wells[17] that meet the requirements below for review and approval by Reclamation (in coordination with DWR). If a suitable monitoring well(s) is not identified for a participating transfer pumping well, the well will not be allowed to participate in a water transfer until a suitable monitoring well(s) is identified, ensuring adverse effects of the Proposed Action are not occurring undetected.

The monitoring well network shall include the participating transfer pumping well and a suitable groundwater-level monitoring well(s) in the vicinity of the participating transfer pumping well(s). Suitable monitoring well(s) are required to: (1) be within a radius of between 500 feet and 2 miles from a Seller's groundwater substitution well; (2) be located within the same Bulletin 118[18] subbasin as the groundwater substitution pumping well; and (3) have a screen depth(s) similar to the groundwater substitution pumping well(s). The suitable monitoring well may be established at a different radius if more well-specific data can be presented to Reclamation demonstrating a suitable monitoring well that is outside the radius established above. The request to use a different radius for the suitable monitoring well should be submitted with the water transfer proposal for review and approval by Reclamation (in coordination with DWR). If any SGMA representative monitoring sites (RMSs)[19] meet the suitable monitoring well requirements presented above, then the RMS shall be included as the suitable monitoring well. At least one suitable monitoring well must be paired with a participating transfer pumping well. More than one participating transfer pumping well may be paired with a suitable monitoring well, provided the requirements above are met. Suitable monitoring wells with short historical records could be considered, but short records could limit the transfer because the measured historical low groundwater level (described below) may not reflect persistent drier conditions. In this situation, the lowest groundwater level for the short period of record would likely be higher than the historical low during a prior drought period. A groundwater level trigger (described below) based on the lowest groundwater level for a short period of record would be more restrictive than a trigger based on a historical low because the lowest groundwater level for the short period could be reached more quickly during transfer-related groundwater substitution pumping than the historically low groundwater level.

[17] A suitable monitoring well is used to monitor effects from groundwater substitution transfer pumping. A suitable monitoring well must meet the three requirements stated in the next paragraph.

[18] Bulletin 118 is the State's official publication on the occurrence and nature of groundwater in California. DWR updated Bulletin 118 in 2020, the next update will be published in 2025.

[19] A SGMA representative monitoring site (RMS) is a well identified in a GSP under SGMA for monitoring the sustainability indicator chronic lowering of groundwater levels. RMS wells include defined quantitative thresholds: minimum threshold and measurable objective.

In addition to monitoring at the participating transfer pumping well and suitable monitoring well(s), Sellers must also identify all RMS wells within the Sellers' Service Area and within a two-mile radius of the service area boundary should be identified in their transfer proposal.

Groundwater Level Monitoring

Sellers will collect measurements of groundwater levels in the participating transfer pumping wells (those wells being used in-lieu of diverting surface water that is being made available for transfer) and the suitable monitoring well(s) in the monitoring network. Groundwater level measurements will be used to avoid both third-party impacts and inelastic (irreversible) subsidence based on the identified groundwater level triggers (described below). Measurements in the participating transfer pumping well(s) will be taken while the well is pumping in order to record the lowest levels reached. Measurements at the suitable monitoring well(s) will be static (non-pumping) groundwater levels. Groundwater-level monitoring will include measurements before, during, and after transfer-related substitution pumping. The Seller will measure groundwater levels as follows:

- Prior to transfer: Groundwater levels will be measured in all wells in the monitoring network, monthly from March in the year of the proposed transfer-related substitution pumping until the start of the transfer pumping. Monitoring will also be conducted on the day that the transfer pumping begins, prior to the pump being turned on.
- During transfer-related substitution pumping: Groundwater levels will be measured in all wells in the monitoring network, weekly throughout the pumping period unless the groundwater level threshold (described in the next subsection) is reached. Measurements will be required once every three days if a groundwater level threshold (described in the next subsection) is reached at the participating pumping well(s) or the suitable monitoring well(s).
- Post-transfer pumping: Groundwater levels will be measured in all wells in the monitoring well network, weekly for one month after the end of transfer-related pumping, after which groundwater levels will be measured monthly through March of the year following the end of the transfer pumping.

Groundwater Level Triggers and Thresholds

The primary criteria used to identify and avoid potentially significant impacts related to groundwater levels are the historical low groundwater levels for the participating transfer pumping wells and the suitable monitoring wells. Other criteria that may be used, if the RMS is selected as a suitable monitoring well and, therefore, the RMS meets the suitable monitoring well criteria presented above, are minimum thresholds for groundwater levels at RMSs set by GSAs and identified in the DWR approved GSPs. Sellers will manage groundwater levels to maintain them above the identified historical low groundwater level (trigger). Sellers will initiate the increased frequency of monitoring (discussed in a later subsection) if groundwater levels reach the threshold and will initiate the mitigation plan (discussed in a later subsection) if groundwater levels reach the trigger. Monitoring and operating to these groundwater level triggers and thresholds are the best available tools to avoid potential impacts to the environment as well as to third parties, and to avoid irreversible subsidence. The potential for irreversible subsidence would only occur when groundwater levels are below historic low levels (U.S. Geological Survey 2018); therefore, this measure would also avoid any potential irreversible (permanent) subsidence.

As part of a Seller's transfer proposal subject to Reclamation's (in coordination with DWR) review and approval, the Seller will need to identify a proposed groundwater level trigger for each pumping well and each suitable monitoring well (established through the historical low groundwater level for that well). The historical low groundwater level at a participating transfer pumping well will likely have occurred when the well was operating (e.g., pumping water level); and similarly, the historical low at a suitable monitoring well

will likely have occurred when the associated participating transfer pumping well was operating. However, the identified trigger for a suitable monitoring well cannot be from a measurement made while the suitable monitoring well was operating. Any pumping taking place at the participating transfer pumping well at the time when the historical low groundwater level is identified must represent normal operations and not periods of heavy pumping for well development or testing.

Based on the groundwater level trigger, a groundwater level threshold for each pumping well and each suitable monitoring well is established at ten feet above the trigger. When groundwater monitoring at the frequency identified above (e.g., weekly during transfer pumping) indicates the groundwater level declined to or below the threshold, the frequency of groundwater-level monitoring shall increase to once every three days for that well (participating transfer pumping well or suitable monitoring well). The groundwater level threshold may be established at a different level if a more well specific threshold can be identified based on past groundwater level trends at the participating transfer pumping well or suitable monitoring well. The groundwater level trigger and threshold for each participating transfer pumping well and each suitable monitoring well is required in the water transfer proposal submitted to Reclamation (in coordination with DWR) for review and approval.

Groundwater level declines due to pumping occur initially at the pumping well and then propagate outward from that location. The magnitude of groundwater level decline caused by pumping also decreases with increasing distance from the pumping well. Therefore, groundwater level declines caused by transfer-related substitution pumping would be observed first at the pumping well and subsequently at the suitable monitoring well. The decline would be greatest at the participating transfer pumping well and lower at the suitable monitoring well. Therefore, it is likely that groundwater levels in the participating transfer pumping well would decline to the historical low groundwater level trigger or groundwater level threshold sooner than at the suitable monitoring well(s). The groundwater level measurements at the suitable monitoring well(s) would provide information surrounding the participating transfer pumping well to avoid potential significant or cumulative impacts.

Other Monitoring

Groundwater Quality. For municipal Sellers, the comprehensive water quality testing requirements of CCR Title 22. Chapter 15. Domestic Water Quality and Monitoring Regulations (SWRCB 2024) are considered sufficient for the water transfer monitoring program. Agricultural Sellers shall measure specific conductance in samples from each participating transfer pumping well. Samples shall be collected when the Seller first initiates pumping, monthly during the pumping period, and at the termination of transfer-related pumping. Sellers shall provide details such as sample location(s), sample well depth, sample well construction information, and distance from sample location(s) to the participating transfer pumping well.

Groundwater Pumping Measurements. All wells pumping groundwater to replace surface water made available for transfer shall be configured with a permanent instantaneous and totalizing flowmeter capable of accurately measuring well discharge rates and volumes. Flowmeters will be installed and calibrated in accordance with manufacturer's recommendations and the relevant documentation will be submitted by the Seller to Reclamation. Flowmeter readings will be recorded in a similar frequency as groundwater level monitoring, as follows:

- Prior to transfer: Readings will be recorded on the day that the transfer pumping begins, prior to the pump being turned on.
- During transfer-related substitution pumping: Flowmeter readings will be recorded weekly throughout the pumping period. If the measured groundwater levels meet or decline below the groundwater level threshold (described in the subsection above), flowmeter readings shall be recorded every three days.

- Post-transfer pumping: Flowmeter readings will be recorded immediately following cessation of transfer-related pumping.

Shallow Groundwater Level Monitoring for Groundwater Dependent Ecosystems (GDEs)[20] supporting Shallow-Rooted and Deep-Rooted Vegetation. To avoid significant effects to GDEs and allow Sellers to modify actions before significant effects occur, Sellers will monitor groundwater level data to verify that significant adverse effects to GDEs with shallow-rooted or deep-rooted vegetation are avoided. This monitoring is only required in areas that have been identified as GDEs in the Nature Conservancy's Natural Communities Commonly Associated with Groundwater Dataset Version 2.0 (NCCAG 2.0) (The Nature Conservancy 2021) data set or by an approved GSP and either (1) contain shallow-rooted (i.e., groundwater dependent vegetation, such as riparian phreatophytes that have roots extending up to 30 feet deep) within a 0.5-mile radius of the participating transfer pumping well and areas where groundwater levels are less than 30 feet below ground surface prior to starting transfer-related pumping; or (2) contain deep-rooted vegetation (i.e., primarily valley oak trees that could have roots up to 80 feet deep) within a 0.5-mile radius of the participating transfer pumping well and areas where groundwater levels are less than 80 feet below ground surface prior to starting transfer-related pumping. This monitoring is not required in areas with no GDEs with shallow-rooted and/or deep-rooted vegetation within 0.5-mile of the participating transfer pumping well(s) or in areas where vegetation is located along waterways or irrigated fields that will continue to have water during the period of transfer.

In their transfer proposal, the Seller would be required to identify if monitoring for shallow-rooted and/or deep-rooted vegetation associated with a GDE is a requirement. Best available information such as the NCAAG 2.0, GDE Pulse 2.3 (https://gde.codefornature.org/#/home) or GSA[21] collected data/information could be used to identify GDEs containing shallow and/or deep rooted vegetation near the participating transfer pumping well and to determine the health and maximum rooting depth of dominant vegetation in the GDE. The proposal would require the distance between participating transfer pumping well and the GDE, as well as the dominant vegetation type (e.g., shallow-rooted vegetation such as cottonwood, willows or deep-rooted vegetation such as valley oaks), and photographs from a pre-season vegetation assessment.

If a GDE comprised of shallow-rooted and/or deep-rooted vegetation is identified near the participating transfer pumping well, a groundwater level monitoring well with the following requirements would need to be identified and monitored: (1) monitoring well is within a 0.5-mile radius of the GDE containing shallow-rooted and/or deep-rooted vegetation; and (2) monitoring well would measure shallow groundwater level changes (typically less than 80 feet below ground surface). For each GDE monitoring well, a minimum groundwater threshold would be identified by the Seller using hydrologic data and expert opinion based on the ecological function and value of the GDE, and on the maximum rooting depth of its dominant vegetation type. If monitoring data at the monitoring well indicate that groundwater levels have dropped below the groundwater threshold within the GDE, the Seller must implement actions set forth in the mitigation plan. However, if a qualified plant ecologist/arborist determines that the GDE is in relatively healthy condition, and historical data show that groundwater levels in the area have typically fluctuated by more than this amount annually during the proposed transfer period, then the transfer may be allowed to

[20] Groundwater dependent ecosystems (GDEs) are plant communities that solely or partially depend on the availability of groundwater to maintain their structure and function. Evaluation of impacts to GDEs from proposed action are discussed under Section 3.7, Biological Resources.

[21] Groundwater sustainability agencies (GSAs) are local agencies required to form as a requirement of SGMA for high and medium priority basins and implement GSPs to avoid undesirable results and mitigate overdraft within groundwater basins (DWR 2024b).

proceed without any monitoring requirements. Prior to transfer pumping, the Seller must submit to Reclamation historical data showing groundwater fluctuations in the vicinity of the GDE.

If no monitoring wells with the requirements discussed in the previous paragraph exist, monitoring would be based on visual observations by a qualified plant ecologist/certified arborist of the health of these areas of shallow- or deep-rooted vegetation until it is feasible to obtain or install shallow groundwater monitoring. Monitoring of these areas would include a pre-pumping vegetation assessment of GDEs within a 0.5-mile radius of the pumping well followed by monthly assessments during transfers and assessment near the end of the pumping season but prior to fall/autumn leaf-drop. The assessment of post-pumping impacts on deep-rooted vegetation will be conducted by a qualified plant ecologist/arborist and will take into account the existing health conditions of the vegetation prior to pumping, species present, size-class of trees, and rainfall data from the previous WYs. Photographs from the assessment must be provided to Reclamation as part of the annual transfers reports. If the qualified plant ecologist/certified arborist determines, based on site-specific circumstances, that groundwater pumping has caused any loss of the shallow-rooted or deep-rooted vegetation the Seller must implement restoration actions set forth in the mitigation plan. Findings from the pre-pumping assessment, during transfers pumping assessment and post-pumping assessment will be reported to Reclamation in monthly transfers reports.

Coordination Plan

The monitoring program will include a plan to coordinate the collection and organization of monitoring data. This plan will describe how input from third party well owners will be incorporated into the monitoring program and will include a plan for communication with Reclamation as well as other decision makers and third parties.

Additionally, Reclamation and potential Seller(s) will coordinate closely with potentially affected third parties to collect and monitor groundwater data. If a third party expects that it may be affected by a proposed transfer, that party should contact Reclamation and the Seller with its concern. The burden of collecting groundwater data will be the Seller's responsibility with oversight by Reclamation. If warranted, additional groundwater-level monitoring to address the third party's concern may be incorporated into the monitoring and mitigation plans (which may include compensatory mitigation) required by Mitigation Measure GW-1. No significant adverse impacts to third parties are anticipated from implementation of the Proposed Action as mitigated because Mitigation Measure GW-1 is designed to avoid impacts related to groundwater pumping.

Evaluation and Reporting

The monitoring program will describe the method of reporting monitoring data.

- Potential Sellers are encouraged to prepare and submit a water transfers proposal by March 1 of transfers years for Reclamation (in coordination with DWR) review and approval.
- Sellers will provide monthly spreadsheets of data collected (such as groundwater levels at a participating transfer pumping well and suitable monitoring well, flowmeter readings at the participating well, and groundwater quality monitoring data at the participating transfer pumping well) and where applicable, photographs from the shallow-rooted or deep-rooted vegetation assessment, to Reclamation during transfers.
- If the groundwater level threshold is reached at the participating transfer pumping well(s) or suitable monitoring well(s), weekly reporting would be required for the well(s). If the groundwater level threshold is reached, then increased frequency of reporting will be required and summarized in the transfer proposal and subject to Reclamation (in coordination with DWR) review and approval.

- Post-transfer reporting will continue monthly through March of the year following the transfer.

Sellers will provide a final summary report to Reclamation evaluating the effects of the water transfer. The final report will identify transfer-related effects on groundwater and surface water (both during and after pumping), and the extent of effects, if any, on local groundwater users. It shall include hydrographs for each well in the monitoring network, showing pre-transfer groundwater levels, groundwater levels at the end of the transfer period, and recovered groundwater levels in March of the year following the transfer. The final summary report shall also identify the extent of transfer-related effects, if any, to ecological resources such as fish, wildlife, and vegetation resources. The final summary report will be subject to Reclamation (in coordination with DWR) review and approval and will determine if the Seller (or one or more of the Seller's wells) would be allowed to participate in future transfers. Reclamation will consider the potential for adverse impacts to subsidence, third-party sellers or GDEs from future transfers pumping. Reclamation will coordinate with the Seller in order to obtain, review, and analyze any additional data to assess the removal of a well from a future transfer prior to making such a determination.

Mitigation Plan

Potential Sellers must complete and implement a mitigation plan to avoid groundwater-related adverse impacts and ensure prompt intervention to avoid unanticipated adverse effects. This plan must document the intended actions if the potential arises for unanticipated impacts to groundwater resources or groundwater-dependent vegetation. This plan must be submitted to Reclamation (in coordination with DWR) for review and approval as part of the water transfer proposal, prior to initiating groundwater substitution pumping.

Groundwater Resource Mitigation

If groundwater level triggers are reached at the participating transfer pumping well(s) or the associated suitable monitoring well (s) (established through the historical low groundwater levels), transfer-related pumping would stop from the participating transfer pumping well for which the trigger was reached. Transfer-related pumping could not continue from this well (in the same year or a future year) until groundwater levels recovered to above the groundwater level trigger. Any volume of water pumped at a participating transfer pumping well while a groundwater level is at or below a trigger, for that participating transfer pumping well or associated suitable monitoring well, would not be credited in the groundwater substitution transfer. If groundwater level thresholds (i.e., ten feet above the groundwater level trigger [identified historical low groundwater level]) are reached or exceeded at the participating transfer pumping well(s) or the associated suitable monitoring well(s), the monitoring frequency would increase in order to evaluate and predict the reduction in groundwater levels, and the transfer-related pumping would stop from the participating transfer pumping when the trigger is reached. Implementation of the mitigation plan thus avoids any potentially significant groundwater impacts. Other interventions that could be used in conjunction with stopping transfer-related pumping and that could assist in avoidance of potentially significant groundwater impacts could include:

- Sellers would be responsible for reimbursement to non-transferring third parties for significant increases in their groundwater pumping costs owing to the groundwater substitution pumping action, as compared with their costs absent the transfer
- Sellers would be responsible for reimbursement to non-transferring third parties for modifications to infrastructure that may be affected
- Other appropriate actions based on local conditions as proposed by the Sellers and subject to review/approval by Reclamation (in coordination with DWR).

GDE Shallow-Rooted and Deep-Rooted Vegetation Mitigation

If shallow groundwater-level monitoring indicates that groundwater levels at a GDE have dropped below the minimum threshold that was identified taking into account the maximum rooting depth of shallow-rooted or deep-rooted vegetation, the Seller must stop transfer-related pumping at the participating transfer pumping well and cannot resume pumping until groundwater levels have recovered to levels above the root zones. However, if historical data at the location indicate shallow groundwater levels typically declined during the transfer period and remained below the root zone then the transfer may be allowed to proceed.

In areas where visual monitoring is conducted to monitor health of shallow-rooted and deep-rooted vegetation, the Seller must stop transfer-related pumping at the participating transfer pumping well if the qualified plant ecologist/arborist, determines a loss or substantial risk of loss of vegetation.

If a loss of vegetation occurs, the Seller will perform restoration activities by replanting similar vegetation at a 1:1 ratio at the location where loss occurs (for every 1-inch diameter at breast height [dbh] lost, 1-inch dbh will be planted). For example, if 12-inch dbh of oak is lost, then the Seller would have to plant twelve 15-gallon oak saplings at around 1-inch dbh each. Therefore, the Seller would plant more trees than lost. The Seller will plant, irrigate, maintain, and monitor restoration of vegetation for three years to replace the loss(es). All plantings will be fitted with exclusion cages or other suitable protection from herbivores. Plantings will be irrigated for three years or until the survival criterion is met. If 75 percent of the plants survive at the end of the three-year monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected. Annual monitoring reports, prepared by a qualified plant ecologist/arborist, will document the status of the plantings and recommendations for remediation as necessary. The monitoring reports will be provided to the Seller and Reclamation by August 31 following each year of monitoring (generally beginning July 1 through June 30 of the following year) to allow time for additional planting activities, if necessary.

Transfer-related pumping could not continue at the subject well while vegetation restoration activities consistent with the requirements above are ongoing (i.e., three years or until the survival criterion is met). Transfer-related pumping at the subject well could not resume after restoration unless the Seller provides evidence that resuming pumping will not affect GDE vegetation (such as data from the installation of a new shallow groundwater-level monitoring well within a 0.5-mile radius of the vegetation that indicates stable shallow groundwater levels at less than the rooting depth of the dominant plant species that comprises the GDE).

Effectiveness of Mitigation Measure GW-1

As described in this section, implementation of Mitigation Measure GW-1 would avoid impacts to other legal users of water; land subsidence; groundwater-dependent vegetation; and migration of reduced quality groundwater. Mitigation Measure GW-1 implements a monitoring program, through a sufficient monitoring well network that includes the participating transfer pumping well(s) and a suitable groundwater-level monitoring well(s) in the vicinity of the participating transfer pumping well(s). Groundwater level triggers (identified historical low groundwater level) and thresholds (established at ten feet above the trigger) would be established for wells in the monitoring well network. Sellers will manage groundwater levels to these triggers and initiate the mitigation plan if groundwater levels reach the threshold. When weekly groundwater monitoring during transfer pumping indicates the groundwater level has declined to or below the threshold, the frequency of groundwater-level monitoring shall increase to once every three days for that well (participating transfer pumping well or suitable monitoring well). Increasing the frequency of monitoring when the threshold is reached would allow the Sellers to closely monitor groundwater levels at the participating transfer pumping well or suitable monitoring well and stop pumping at that participating

transfer pumping well when the groundwater level trigger is reached without exceedances. Additionally, any volume of water pumped at a participating transfer pumping well while a groundwater level is at or below a trigger, for that participating transfer pumping well or associated suitable monitoring well, would not be credited in the groundwater substitution transfer (reducing the quantity of surface water subject to the transfer). Monitoring and operating to these groundwater level triggers and thresholds are the best available tools to avoid potential impacts to the environment as well as to third parties, and to avoid irreversible subsidence. The potential for irreversible subsidence would only occur when groundwater levels are below historic low levels (U.S. Geological Survey 2018); therefore, this measure would also avoid any potential irreversible (permanent) subsidence. Because the proposed action would not result in prolonged groundwater drawdown periods, as groundwater pumping would be limited to the irrigation season, migration of reduced quality groundwater is not anticipated, however, GW-1 imposes restrictions on groundwater pumping that would further reduce the likelihood of the migration of reduced quality groundwater and therefore, further reduces the potential for impacts to groundwater quality. Stopping pumping at that participating transfer pumping well would stabilize groundwater levels to above historic low levels and avoid any potentially significant impacts to other legal users of water, land subsidence, or migration of reduced quality groundwater impacts caused by transfer-related pumping. The mitigation plan under GW-1 also includes other compensatory mitigation actions such as (1) reimbursement to non-transferring third parties for significant increases in their groundwater pumping costs owing to the groundwater substitution pumping action, as compared with their costs absent the transfer; and (2) reimbursement to non-transferring third parties for modifications to infrastructure that may be affected. Therefore, implementation of Mitigation Measure GW-1 would avoid or reduce potential impacts to other legal users of water from groundwater level declines and land subsidence to less than significant.

Mitigation Measure GW-1 also implements a monitoring program, to avoid significant adverse effects to shallow-rooted or deep-rooted vegetation due to transfers pumping. If a GDE comprised of shallow-rooted and/or deep-rooted vegetation is identified near the participating transfer pumping well, a suitable monitoring well (within a 0.5-mile radius of the GDE containing shallow-rooted and/or deep-rooted vegetation and measuring shallow groundwater level changes) would be identified and monitored or visual monitoring would be conducted. GDE-specific groundwater thresholds will be developed based on ecological function for each monitoring well. If shallow groundwater level monitoring indicates groundwater levels dropping below the GDE-specific groundwater threshold or if visual monitoring shows loss or substantial risk of loss of vegetation, pumping at the participating transfer pumping well will be stopped. The mitigation plan under GW-1 also includes compensatory mitigation action if a loss of vegetation occurs, the Seller will perform restoration activities by replanting similar vegetation at a 1:1 ratio at the location where loss occurs. Implementation of Mitigation Measure GW-1 would avoid or reduce potential impacts on GDEs to less than significant.

3.4 Geology and Soils

3.4.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for geology and soils. The area of analysis for geology and soils is composed of counties in the Seller Service Area in which water transfers could originate and counties in the Buyer Service Area where transferred water would be used for agricultural purposes. Counties in the Seller Service Area include Colusa, Glenn, Sacramento, Shasta, Sutter, and Yolo counties and counties in the Buyer Service Area include Alameda, Contra Costa, Fresno, Kings, Merced, San Benito, Santa Clara, Stanislaus counties. The Central Valley consists of mostly flat terrain associated with low gradient river valleys. Clay and silt beds comprise a significant portion of the alluvial deposits in the Central Valley.

Seller Service Area

In the Seller Service Area, soils range from gravelly loams, sandy loams, and clays to silty clays, with varying erodibility and shrink-swell potentials. Western areas typically have lower erodibility and shrink-swell potentials, while eastern and central regions feature more clay-based soils with mid to high shrink-swell potentials.

Buyer Service Area

The Buyer Service Area includes diverse geology and soil types. The region features soil textures such as loam, sandy loam, clay, and silty clay, with varying levels of erodibility and shrink-swell potentials. Generally, the southwestern areas have lower erodibility and shrink-swell potentials, while eastern sections may exhibit higher shrink-swell potential due to clay content.

3.4.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

Under the No Action/No Project Alternative, there would be no changes to geology and soils in the Seller Service Area relative to existing conditions. **The No Action/No Project Alternative would have no impact on geology and soil in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

In the Buyer Service Area, increased land idling could occur under the No Action/No Project Alternative in response to CVP water shortages, which could affect soil erosion and soil stability. Farmers would continue to manage idled fields to control soil erosion impacts and protect the quality of soils for future plantings. Agricultural lands also typically undergo shrinking and swelling with a normal planting and harvesting schedule. **Therefore, the No Action/No Project Alternative would have no impact on geology and soil in the Buyer Service Area (CEQA Conclusion).**

Proposed Action

Seller Service Area

Water made available for transfer through groundwater substitution actions could reduce groundwater levels in the Seller Service Area, which could decrease pore-water pressure and result in a loss of structural support for clay and silt beds. This loss of structural support could result in lowering of the ground surface elevation (land subsidence). Groundwater-pumping-related land subsidence is analyzed in more detail in Section 3.3, Groundwater Resources. The analysis presented in that section finds that the potential for land subsidence from increased groundwater pumping (under the Proposed Action) could be significant if groundwater levels fall below historical low water levels. **Therefore, groundwater substitution pumping within the Seller Service Area could increase the potential for land subsidence to cause significant impacts when groundwater levels fall below historical low levels.** Significant impacts would be reduced to less than significant with Mitigation Measure GW-1. **With the implementation of Mitigation Measure GW-1, this impact would be less than significant (CEQA Conclusion).**

Buyer Service Area

Water transfers to agricultural users in the Buyer Service Area would reduce the amount of land idled relative to the No Action/No Project Alternative. Crop plantings would reduce the potential for soil erosion that occurs from winds blowing over bare fields. This would be a benefit of the Proposed Action. Farming practices would resume, which would cause some soil loss from discing, harvesting, and movement of farm equipment. These practices are normal on agricultural lands in the Buyer Service Area and would not result

in significant soil erosion. **Therefore, the impact of the Proposed Action on geology and soil in the Buyer Service Area would be beneficial (CEQA Conclusion).**

3.5 Air Quality

3.5.1 Affected Environment/Environmental Setting

Air quality in California is regulated by the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and locally by Air Pollution Control Districts (APCDs) or Air Quality Management Districts (AQMDs). The following air districts regulate air quality within the project study area: Colusa County APCD, Feather River AQMD, Glenn County APCD, Sacramento Metropolitan AQMD, Shasta County AQMD, and Yolo/Solano AQMD.

In portions of the Sacramento Valley Air Basin, ozone (O_3), fine particulate matter ($PM_{2.5}$), and inhalable particulate matter (PM_{10}), are pollutants of concern because ambient concentrations of these pollutants exceed the California Ambient Air Quality Standards (CAAQS). Additionally, ambient O_3 and $PM_{2.5}$ concentrations exceed the National Ambient Air Quality Standards (NAAQS), while PM_{10} concentrations that recently attained the NAAQS are designated as maintenance areas. Table 3-2 summarizes the attainment status for the counties located in the Sacramento Valley.

The Sacramento Valley Air Basin is bounded by the North Coast Ranges, on the west, and the Northern Sierra Nevada Mountains, on the east, forming a bowl-shaped valley. The Sacramento Valley has a Mediterranean climate characterized by hot dry summers and mild rainy winters.

Seller Service Area

Most of the predominant land use in the Sellers' Service Area is agricultural. Farming practices, including land preparation and harvest, contribute to pollutant emissions, primarily particulate matter. Groundwater pumping with diesel-, natural gas-, and propane-fueled engines also emits air pollutants through exhaust. The primary pollutants emitted by these pumps are nitrogen oxides (NOx), volatile organic compounds (VOC), CO, PM_{10}, and $PM_{2.5}$; NOx and VOCs are precursors to O_3 formation. Table 3-2 summarizes the attainment status for the counties located in the Seller Service Area (Sacramento Valley Air Basin).

Table 3-2. State and Federal Attainment Status

County	O_3 CAAQS	$PM_{2.5}$ CAAQS	PM_{10} CAAQS	CO CAAQS	O_3 NAAQS	$PM_{2.5}$ NAAQS	PM_{10} NAAQS	CO NAAQS
Colusa	A	A	N	U	A	A	A	A
Glenn	A	A	N	U	A	A	A	A
Sacramento	N	A	N	A	N[3,4]	N[6]	M	A[7]
Shasta	N	A	A	U	A	A	A	A
Sutter	N	N	N	A	N[2,3,4]	M[5]	A	A
Yolo	N-T[1]	U	N	A	N[3,4]	N[6]	A	A[7]
Yuba	N	N	N	U	A	M	A	A

Source: 17 California Code of Regulations §60200-60210; 40 CFR 81; CARB 2022; USEPA 2024b

Notes:

[1] Nonattainment/transitional areas are defined as those areas that during a single calendar year, the State standards were not exceeded more than three times at any monitoring location within the area.

[2] The Sacramento Metro nonattainment area for Sutter County is defined as the "portion south of a line connecting the northern border of Yolo County to the southwestern tip of Yuba County and continuing along the southern Yuba County border to Placer County" (40 CFR 81.305).

[3] 8-hour O_3 classification (2008 NAAQS) = severe.

[4] 8-hour O_3 classification (2015 NAAQS) = serious.

[5] The maintenance area is only for the Yuba City-Marysville portion of Sutter County.

[6] Designated moderate nonattainment under the 2006 $PM_{2.5}$ NAAQS.

[7] Sacramento and Yolo counties were designated maintenance for the CO NAAQS in 1998 (USEPA 2024b). Per 42 U.S.C. 7505a, states are required to have two 10-year maintenance plans that demonstrate how the state will continue to ensure continued attainment of the NAAQS. Because more than 20 years have passed since the regions were designated as attainment of the CO standard, the counties are no longer considered to be designated maintenance.

Key: A = attainment (background air quality in the region is less than (has attained) the ambient air quality standards); CO = carbon monoxide; M = maintenance (background air quality in the region is less than (has attained) the ambient air quality standards and a maintenance plan is in place); N = nonattainment (background air quality exceeds the ambient air quality standards); N-T = nonattainment/transitional (a subcategory of nonattainment where an area is close to attainment, has only two days exceeding standards, and is projected to meet standards within three years) O_3 = ozone; PM_{10} = inhalable particulate matter; $PM_{2.5}$ = fine particulate matter; U = unclassified/attainment (area does not have enough monitors to determine the background concentrations; treated the same as attainment)

Buyer Service Area

Similar to the Seller Service Area, most of the predominant land use in the Buyers' Service Area is agricultural with farming practices contributing to pollutant emissions, primarily particulate matter. Groundwater pumping with diesel-, natural gas-, and propane-fueled engines also emits air pollutants through exhaust. Table 3-3 summarizes the attainment status for the counties located in the Buyer Service Area (San Joaquin Valley, San Francisco Bay Area, and North Central Coast air basins).

Table 3-3. State and Federal Attainment Status for Buyer Service Area

County	O_3 CAAQS	$PM_{2.5}$ CAAQS	PM_{10} CAAQS	CO CAAQS	O_3 NAAQS	$PM_{2.5}$ NAAQS	PM_{10} NAAQS	CO NAAQS
Alameda	N	N	N	A	N[1,2]	N[5]	A	A[7]
Contra Costa	N	N	N	A	N[1,2]	N[5]	A	A[7]
Fresno	N	N	N	A	N[3,4]	N[6]	M	A[7]
Kings	N	N	N	U	N[3,4]	N[6]	M	A
Merced	N	N	N	U	N[3,4]	N[6]	M	A
San Benito	A	A	N	U	A	A	A	A
Santa Clara	N	N	N	A	N[1,2]	N[5]	A	A[7]
Stanislaus	N	N	N	A	N[3,4]	N[6]	M	A[7]

Source: 17 California Code of Regulations §60200-60210; 40 CFR 81; CARB 2022; USEPA 2024b

Notes:

[1] 8-hour O_3 classification (2008 NAAQS) = marginal.

[2] 8-hour O_3 classification (2015 NAAQS) = marginal.

[3] 8-hour O_3 classification (2008 NAAQS) = extreme.

[4] 8-hour O_3 classification (2015 NAAQS) = extreme.

[5] Designated moderate nonattainment under the 2006 $PM_{2.5}$ NAAQS.

[6] Designated serious nonattainment under the 2006 $PM_{2.5}$ NAAQS.

[7] Alameda, Contra Costa, Fresno, Santa Clara, and Stanislaus counties were designated maintenance for the CO NAAQS in 1997 (USEPA 2024b). Per 42 U.S.C. 7505a, states are required to have two 10-year maintenance plans that demonstrate how the state will continue to ensure continued attainment of the NAAQS. Because more than 20 years have passed since the regions were designated as attainment of the CO standard, the counties are no longer considered to be designated maintenance.

Key: A = attainment (background air quality in the region is less than (has attained) the ambient air quality standards); CO = carbon monoxide; M = maintenance (background air quality in the region is less than (has attained) the ambient air quality standards and a maintenance plan is in place); N = nonattainment (background air quality exceeds the ambient air quality standards); N-T = nonattainment/transitional (a subcategory of nonattainment where an area is close to attainment, has only two days exceeding standards, and is projected to meet standards within three years) O_3 = ozone; PM_{10} = inhalable particulate matter; $PM_{2.5}$ = fine particulate matter; U = unclassified/attainment (area does not have enough monitors to determine the background concentrations; treated the same as attainment)

3.5.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

There would be no groundwater substitution transfers originating in the Seller Service Area; therefore, the potential for criteria air pollutant emissions from engine exhaust would be the same as existing conditions. **The No Action/No Project Alternative would have no impact on air quality in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Under the No Action/No Project Alternative, agricultural water users in the Buyer Service Area would continue to face CVP shortages, similar to existing conditions. Farmers would continue to pump groundwater for irrigation, which releases emissions if diesel, natural gas, or propane pumps are used. These actions in response to CVP shortages are similar to those that occur under existing conditions. **Therefore, there would be no change to emissions under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

Air Quality Plans. The air districts associated with the counties of Shasta, Tehama, Glenn, Butte, Colusa, Sutter, and Yuba comprise the Northern Sacramento Valley Planning Area (NSVPA). The NSVPA has jointly committed to preparing and adopting triennial Air Quality Attainment Plans (AQAP) to achieve and maintain healthful air in these counties. The Sacramento Metropolitan AQMD and the Yolo/Solano AQMD have also adopted various air quality plans for the pollutants for which they are currently designated nonattainment. As part of these plans, several control measures were adopted by the various counties to attain and maintain air quality standards. These control measures are then promulgated in the rules and regulations at each air district; therefore, if a Proposed Action is consistent with the air districts' and State regulations, then the project is in compliance with the AQAP.

Under the Proposed Action, groundwater substitution pumping would use a combination of electric-, diesel-, natural gas-, and propane-driven groundwater pumps depending on the specific water agency. All diesel-fueled engines are subject to CARB's Airborne Toxic Control Measure (ATCM) for Stationary Ignition Engines (17 California Code of Regulations [CCR] 93115), which includes requirements for stationary and portable diesel-fueled engines used in agriculture. The ATCM includes mandatory emission standards that engine manufacturers are required to meet. Depending on the engine power rating (horsepower) and manufacture year, engine emission standards generally become stricter (i.e., an older "Tier 1" engine will have higher emissions than a newer "Tier 4" engine) (CARB 2024). All pumps proposed to be used by the water agencies would operate in compliance with all rules and regulations at the federal, state, and local levels, including the ATCM.

Several of the air districts within the Seller Service Area developed significance thresholds for mass daily or annual emission rates of criteria pollutants to assess whether a Proposed Action would violate air quality standards or contribute substantially to an existing or projected air quality violation. Colusa and Glenn, counties do not have published significance thresholds; therefore, the threshold used to define a "major source" in the Clean Air Act (100 tons per year) was used to evaluate significance. Table 3-4 summarizes the significance thresholds used by each air district and the general conformity *de minimis* thresholds.

Table 3-4. CEQA and General Conformity Operational Significance Thresholds

Air District	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Sacramento Metropolitan AQMD	65 lbs/day	65 lbs/day	–	–	80 lbs/day	82 lbs/day
Yolo-Solano AQMD	10 tpy	10 tpy	–	–	80 lbs/day	–
Feather River AQMD	25 lbs/day	25 lbs/day	–	–	80 lbs/day	–
Shasta County AQMD[1]	137 lbs/day	137 lbs/day	-	-	137 lbs/day	-
De Minimis Threshold (General Conformity)[2]	25 tpy	25 tpy	100 tpy	100 tpy	100 tpy	100 tpy

Source: Feather River AQMD 2010; Sacramento Metropolitan AQMD 2020; Yolo-Solano AQMD 2007, Shasta County AQMD 2003, 40 CFR 93.153(b)

Notes:

[1] If NOx or VOC emissions exceed 25 pounds per day or PM_{10} emissions exceed 80 pounds per day, then appropriate mitigation as listed in the jurisdiction's Air Quality Element to the General Plan must be implemented.

[2] The Sacramento Metro ozone nonattainment area is designated severe nonattainment under the 2008 O_3 NAAQS (25 ton per year *de minimis* threshold) and serious nonattainment for the 2015 O_3 NAAQS (50 ton per year *de minimis* threshold). Because the 2008 NAAQS has not been revoked, the lower *de minimis* threshold is used in this analysis.

Key: – = no threshold; AQMD = air quality management district; CO = carbon monoxide; lbs/day = pounds per day; NOx = nitrogen oxides; PM_{10} = inhalable particulate matter; $PM_{2.5}$ = fine particulate matter; SOx = sulfur oxides; tpy = tons per year; VOC = volatile organic compounds

Reservoir releases would not result in direct criteria pollutant emissions because no fuel combustion or other emission sources would be used to release additional water. This section analyzes impacts from groundwater substitution pumping to estimate the maximum potential emissions that could occur under the Proposed Action. Groundwater substitution pumping could increase air emissions in the Seller Service Area.

Tables G-3 through G-8 in Appendix G summarize the maximum daily emissions that would be estimated to occur in each water agency subject to a daily significance threshold. Table G-9 through Table G-14 in Appendix G summarizes the annual emissions that would occur in each water agency subject to an annual significance threshold. Significance was determined for individual water agencies because mitigation would need to be implemented by the water agencies. As shown in Table G-4, daily NOx emissions would exceed the Feather River AQMD significance criteria emissions threshold in Meridian Farms Water Company, Natomas Central Mutual Water Company, Pleasant Grove-Verona Mutual Water Company, and Sutter Mutual Water Company, and VOC emissions would exceed the Feather River AQMD significance criteria emissions threshold in Sutter Mutual Water Company. **As a result, the Proposed Action could cause a significant air quality impact in Sacramento and Sutter counties.** To reduce these significant effects to a less-than-significant level, Mitigation Measure AQ-1 specifies that selling agencies would reduce pumping at diesel and propane wells and may also replace old diesel wells with cleaner diesel pumps or electric wells to reduce emissions to below the thresholds. Specifically, Meridian Farms Water Company, Natomas Central Mutual Water Company, and Pleasant Grove-Verona Mutual Water Company would only use electric wells during pumping to meet demand. Additionally, Sutter Mutual Water Company must either reduce the requested transfer volume to 40,000 AF per year or must convert existing fossil-fuel fired pumps to electric to meet demand. Mitigated emissions for VOC and NOx are provided in Tables G-77 and G-78 of Appendix G. **With implementation of Mitigation Measure AQ-1, this impact would be less than significant (CEQA Conclusion).**

General Conformity. In addition to the CEQA significance thresholds, the federal general conformity regulations apply to a proposed federal action in a nonattainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutants caused by the Proposed Action equal or exceed certain *de minimis* amounts (40 CFR 93.153). Conformity means that such federal actions must be consistent with a state implementation plan's (SIP's) purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards. Figure G-1 in Appendix G shows the CO maintenance area; Figure G-2 in Appendix G shows the O_3 nonattainment area; Figure G-3 in Appendix G shows the PM_{10} maintenance area; and Figure G-4 in Appendix G shows the $PM_{2.5}$ nonattainment area. Table G-75 in Appendix G summarizes the general conformity applicability evaluation.

Mitigation measures to avoid significant air quality impacts under CEQA would be legally enforceable and required project elements. Enforceability will be tracked as part of the Mitigation Monitoring and Reporting Program, which will be developed by Reclamation (in coordination with DWR). Therefore, these mitigated emissions were compared to the general conformity *de minimis* thresholds to determine general conformity applicability. **With the implementation of the Mitigation Measure, AQ-1, emissions would be less than the general conformity *de minimis* thresholds and no further evaluation is required under general conformity (CEQA Conclusion).**

Cumulatively Considerable Impacts. The majority of counties affected by the Proposed Action are located in areas designated nonattainment for the PM_{10} CAAQS. Additionally, Sacramento, Shasta, Sutter, and Yuba Counties are designated nonattainment for the O_3 CAAQS, while Yolo County is designated nonattainment-transitional for the O_3 CAAQS. Sutter and Yuba Counties are designated nonattainment for the $PM_{2.5}$ CAAQS. Nonattainment status represents a cumulatively significant impact within the area. O_3 is a

secondary pollutant, meaning that it is formed in the atmosphere from reactions of precursor compounds under certain conditions. Primary precursor compounds that lead to O_3 formation include VOCs and NOx; therefore, the significance thresholds established by the air districts for VOC and NOx are intended to maintain or attain the O_3 CAAQS and NAAQS.

The general conformity regulations apply to nonattainment and maintenance areas and are intended to demonstrate that a federal action would comply with the SIP and would not cause the air quality in the region to be degraded. Therefore, if the total of direct and indirect emissions is less than the general conformity *de minimis* thresholds, then the project would not be cumulatively considerable because the ambient air quality standards would continue to be maintained. As shown in Appendix G, Table G-75, emissions that would occur in the nonattainment and maintenance areas in the region are less than the general conformity *de minimis* thresholds. The impact would be less than significant with the implementation of Mitigation Measure AQ-1.

Emissions would also occur in air districts that are in attainment of the NAAQS and CAAQS. Therefore, the cumulative impact of the engines operating within the individual air districts was compared to a significance threshold of 100 tons per year. This threshold was selected because it is the threshold at which a permitted source would be categorized as a major source. The threshold is therefore considered to be sufficient to evaluate if the total emissions from a project could cause the air quality standards to be exceeded.

As shown in Table 3-5, total mitigated criteria pollutant emissions would not exceed the cumulative emissions threshold in either the Colusa County or Glenn County APCDs. In addition, only electric engines are proposed to be operated in the Shasta County AQMD. Emissions with required mitigated measures from nonattainment and maintenance areas would be less than the general conformity *de minimis* thresholds and emissions from attainment areas would be less than the major source threshold; therefore, no further action would be required under general conformity. Because emissions would neither exceed the general conformity *de minimis* threshold in nonattainment or maintenance areas, nor the major source threshold in attainment areas, criteria pollutant emissions from the project would not be cumulatively considerable. **The Proposed Action would have a less-than-significant impact on cumulative impacts to air quality.**

Table 3-5. Cumulative Mitigated Emissions in Attainment Areas

Air District	VOC (tpy)	NOx (tpy)	CO (tpy)	SOx (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Colusa County APCD	5	42	14	3	3	3
Feather River AQMD[1]	2	4	7	<1	<1	<1
Glenn County APCD	4	44	11	3	3	3
Yolo/Solano AQMD	1	9	3	1	<1	<1

Notes:

[1] Sutter County, which is located within the Feather River AQMD, is partially located in the Sacramento Metro O_3 nonattainment region and partially located within an O_3 attainment area. Andreotti, Garden Highway Mutual Water Company, Meridian Farms Water Company, Pelger Mutual Water Company, Sutter Mutual Water Company, and Tule Basin Farms are the only water agencies with non-electric engines located in the attainment portion of Sutter County. However, because Sutter Mutual Water Company has engines located in both the attainment and nonattainment portions of Sutter County, all of its emissions were evaluated under general conformity to be conservative. Therefore, this table only summarizes emissions from the aforementioned water agencies except Sutter Mutual Water Company because all other agencies with engines in Sutter County are subject to the general conformity regulations.

Key: APCD = air pollution control district; CO = carbon monoxide; NOx = nitrogen oxides; PM_{10} = inhalable particulate matter; $PM_{2.5}$ = fine particulate matter; SOx = sulfur oxides; tpy = tons per year; VOC = volatile organic compounds

*Sensitive Receptors***.** Under the Proposed Action, the proposed engines would either be located in rural areas or would be located on existing agricultural land. The engines would not be located within one-quarter mile of a sensitive receptor. Additionally, emissions from individual engines would not exceed any district's significance criteria. Therefore, air quality impacts would be less than significant. **The Proposed Action would have a less-than-significant impact on sensitive receptors from air quality (CEQA Conclusion).**

Odors. Under the Proposed Action, the use of diesel engines to pump groundwater to make surface water available for transfer may generate near-field odors. Diesel equipment emits a distinctive odor that may be considered offensive to certain individuals. The local air districts have rules (e.g., Sacramento Metropolitan AQMD Rule 402) that prohibit emissions that could cause nuisance or annoyance to a considerable number of people. All water agencies would operate their engines in compliance with the local rules and regulations. In addition, the proposed engines would be in rural areas or existing agricultural land away from residential areas. Therefore, the proposed operation of any diesel-fueled engines would have a less-than-significant impact associated with the creation of objectionable odors affecting a substantial number of people. **The Proposed Action would have less-than-significant impact from odors (CEQA Conclusion).**

Buyer Service Area

Use of water from transfers on agricultural fields in the Buyer Service Area could reduce windblown dust. Crop plantings would reduce the potential for fugitive dust emissions that occur from winds blowing over bare fields. **The air quality impacts in the Buyer Service Area would be beneficial (CEQA Conclusion).**

3.5.3 Environmental Commitments/Mitigation Measures

Mitigation Measure AQ-1: Reduced Pumping

Selling agency would reduce pumping at diesel and propane wells to reduce emissions to below the thresholds. Agencies may also decide to replace old diesel wells with cleaner (i.e., higher emission tier) diesel pumps or electric wells to reduce emissions to below the thresholds.

Any selling agency with potentially significant emissions, as determined by this EA/IS, will be required to submit information in the water transfer proposal, prior to making water available for transfer through groundwater substitution actions, that documents the wells that would be utilized to support those groundwater substitution actions to stay below the thresholds. The selling agency must also maintain recordkeeping logs that document the specific engine to be used for making water available for transfer through groundwater substitution actions, the power rating (hp), and applicable emission factors. Calculations for daily emissions will be completed for comparison to the significance thresholds determined for each selling agency. In the annual report, the selling agencies will be required to submit documentation specifying that the wells would only be pumped in accordance with the transfer proposals.

3.6 Greenhouse Gas Emissions

3.6.1 Affected Environment/Environmental Setting

The greenhouse gas (GHG) analysis focuses on the following three pollutants: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The other two pollutant groups commonly evaluated in various GHG reporting protocols, hydrofluorocarbons and perfluorocarbons, are not expected to be emitted in large quantities because of the Proposed Action and are not discussed further in this section.

Agricultural emissions represented approximately 8.1 percent of California's GHG emissions in 2021, mainly from methane and nitrous oxide (CARB 2023). Agricultural emissions represent the sum of emissions from agricultural energy use (from pumping and farm equipment), agricultural residue burning, agricultural soil management (the practice of using fertilizers, soil amendments, and irrigation to optimize crop yield),

enteric fermentation (fermentation that takes place in the digestive system of animals), histosols (soils that are composed mainly of organic matter) cultivation, manure management, and rice cultivation.

3.6.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

There would be no groundwater substitution transfers originating in the Seller Service Area; therefore, the potential for GHG emissions from engine exhaust would be the same as existing conditions. **The No Action/No Project Alternative would have no impact on GHG emissions in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Groundwater pumping in the Buyer Service Area as a result of CVP water shortages could increase emissions. Under the No Action/No Project Alternative, agricultural water users in the Buyer Service Area would continue to face CVP shortages, similar to existing conditions. Farmers would continue to pump groundwater for irrigation, which releases emissions if diesel, natural gas, or propane pumps are used. These actions in response to CVP shortages are similar to those that occur under existing conditions. Additionally, there would be no groundwater substitution transfers originating in the Seller Service Area; **therefore, there would be no change to GHG emissions under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

This analysis estimates emissions using available emissions data and information on fuel type, engine size (hp), and annual transfer amounts included in the Proposed Action. Existing emissions data used in the analysis of the Proposed Action includes:

- Diesel, natural gas, and propane fuel emission factors from The Climate Registry (TCR 2024)
- Electric utility CO_2 emission factors from TCR (2024)
- Emissions & Generation Resource Integrated Database (Emissions & Generation Resource Integrated Database 2022) CH_4 and N_2O emission factors from USEPA (USEPA 2024c)

Each GHG contributes to climate variability differently, as expressed by its global warming potential (GWP). GHG emissions are discussed in terms of CO_2 equivalent (CO_2e) emissions, which express, for a given mixture of GHG, the amount of CO_2 that would have the same GWP over a specific timescale. CO_2e is determined by multiplying the mass of each GHG by its GWP. This analysis uses the GWP from the Intergovernmental Panel and Climate Change Sixth Assessment Report (TCR 2024) for a 100-year period to estimate CO_2e. This approach uses the most recently published GWPs and reflects the current state of science. The GWPs used in this analysis are 27 for CH_4 and 273 for N_2O.

Individual air districts within the study area have CEQA significance thresholds for GHG emissions that vary based on factors such as population density, industrial activity, and local environmental concerns. However, in regions that encompass multiple counties and air districts, the cap-and-trade threshold serves as a consistent and effective method for reducing emissions across a broader area. Since the cap-and-trade regulation aims to reduce GHG emissions statewide, CARB's threshold of 25,000 metric tons CO2e per year for including facilities in its cap-and-trade regulation (17 CCR 95800-96023) was used to determine significance.

Table H-1 in Appendix H summarizes the GHG emissions associated with the Proposed Action. Appendix H, Climate Variability Analysis Emission Calculations also provides detailed GHG Emission calculations.

Emissions from groundwater substitution would be up to 14,746 metric tons CO_2e per year (detailed calculations are provided in Appendix H), which is lower than the CARB cap-and-trade threshold of 25,000 metric tons CO_2e per year. **As a result, the Proposed Action would not conflict with any plan, policy, or regulation adopted for the purpose of reducing GHG emissions and impacts would be less than significant (CEQA Conclusion).**

While climate variability has the potential to impact transfers by altering transfer supply or demand, the Proposed Action considers the potential for transfers over two-year period (2026 and 2027). Additionally, the analysis assumes the full 250,000 AF of potential water made available for transfer is assumed to be available in 2026 and 2027, which includes the uncertainty of potential future climatic conditions. **Therefore, climate variability would have no impact on the Proposed Action (CEQA Conclusion).**

3.7 Biological Resources

3.7.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for biological resources. The area of analysis includes potential Seller and Buyer lands within the Sacramento River and San Joaquin watersheds and other downstream areas. Biological resources within the area of analysis include the natural communities of fish, wildlife and plants supported by the reservoirs, riverine habitats, and GDEs that could be affected by the Proposed Action.

Seller Service Area

The Seller Service Area includes major and minor watersheds within the Sacramento River Basin, including reservoirs, rivers and creeks, and GDEs.

Reservoirs

Within the Seller Service Area, the area of analysis includes the following reservoirs because water could be made available for transfers from these reservoirs: Weber Reservoir, Silver Lake, Caples Lake, French Meadows Reservoir, Hell Hole Reservoir, Merle Collins Reservoir, Rollins Reservoir, Camp Far West Reservoir, New Melones Reservoir, and Lake McClure. The water could be stored temporarily or moved through Shasta, Keswick, Lake Oroville, Oxbow Reservoir, New Bullards Bar, Folsom Lake, and Lake Natoma.

These reservoirs are generally filled during periods of high runoff during the winter and spring and emptied during the drier times of year to provide water for human, agricultural, and environmental needs. Depending on hydrologic conditions and downstream water needs, these reservoirs may not reach either their maximum storage elevation or be drawn down to their lowest allowed operating elevation (minimum pool) every year. A large proportion of the reservoirs' volume is filled and drained each year, resulting in large changes in water surface elevation of tens to over a hundred feet between the spring and fall of a single year.

Most of the reservoirs in the area of analysis are in the foothills just upstream of the valley floor, within the elevations typically associated with the pikeminnow-hardhead-sucker fish assemblage. Reservoirs located at higher elevations (above 4,000 feet) are in the elevation of rainbow trout assemblage. Reservoirs located at lower elevations including Shasta, Keswick, Lake Oroville, Folsom, Natoma, New Bullards Bar, Camp Far West, Lake McClure, Merle Collins, Rollins, and New Melones often support warmwater fishes in the surface waters and around the edges of the reservoirs, and coldwater fishes in the deeper, cooler portions of the reservoir. Reservoirs are generally stocked with trout to support recreational fisheries. Bass (*Micropterus* spp.), sunfish (*Lepomis* spp.), catfish (*Ictalurus punctatus*), carp (*Cyprinus carpio*), and other species that were

introduced to create recreational fisheries generally dominate these reservoirs. Native species may include Sacramento sucker (*Catostomus occidentalis),* Sacramento pikeminnow (*Ptychocheilus grandis*), hardhead (*Mylopharodon conocephalus)*, hitch (*Lavinia exilicauda*), and Tui chub (*Gila bicolor*). The populations of these native species have been greatly reduced or extirpated by the non-native fish in many reservoirs. Most of these reservoirs are operated in part to support special-status fish species in the downstream rivers and the Delta.

Reservoirs at lower elevations provide habitat for a variety of terrestrial wildlife, including special-status species. A wide variety of birds, mammals, reptiles and amphibians use the margins of reservoirs for reproduction, food, water, and cover resources. Fish-eating terns, grebes, cormorants, herons, waterfowl, beaver (*Castor canadensis*), river otter (*Lontra canadensis),* and muskrat (*Ondatra zibethicus*) are some of the resident species. Special-status species that may use habitats in these reservoirs include the northwestern pond turtle (*Actinemys marmorata*) and various nesting birds.

Hell Hole, French Meadows, Weber, Silver, Caples, Collins, Jackson Meadows, French, and Bowman reservoirs, which are at higher elevation than the other reservoirs, support populations of rainbow trout (*Oncorhynchus mykiss irideus*), brown trout (*Salmo trutta*), lake trout (*Salvelinus namaycush*), Tui chub, and Sacramento sucker. None of the reservoirs support listed fish species or anadromous fish, as downstream dams create impassible barriers to the migration of these species. Occurrences of special-status wildlife species, including the Sierra Nevada yellow-legged frog (*Rana sierrae*) and the southern long-toed salamander (*Ambystoma macrodactyllum sigillatum*) have been documented in Silver Lake, and the Sierra Nevada yellow-legged frog also may occur in Caples Lake and the South Yuba River (California Department of Fish and Wildlife [CDFW] 2024).

Due to the fluctuations in water levels these reservoirs do not provide a reliable supply of water near their maximum elevations, natural communities around reservoirs typically consist of upland vegetation types that are not dependent on the reservoir for water. Species and natural communities requiring more substantial amounts of water, including GDEs, may become established along riparian corridors tributary to the reservoirs or in areas along the margins of the reservoirs where water is retained when the reservoir water levels decline. Wildlife that utilizes reservoir habitats would typically use the nearshore areas on both the aquatic and terrestrial side of the water line.

Rivers and Creeks

The Seller Service Area includes the following rivers and creeks within the Sacramento River Basin:

- Sacramento River from Shasta Reservoir to the Delta;
- Feather River, including and downstream of Lake Oroville; the Middle Yuba River including and downstream of Jackson Meadows Reservoir; the South Yuba River, including and downstream of Bowman Lake; Lake Spaulding; Canyon Creek; and the Bear River, including and downstream of Rollins Reservoir;
- American River including and downstream of Folsom Reservoir and Lake Natoma;
- Middle Fork American River downstream of Hell Hole and French Meadows Reservoirs; South Fork American River downstream of Silver Lake and Caples Lake; and
- Numerous small tributaries to the Sacramento River, Feather River, Yuba River, and Bear River.

Within the San Joaquin River watershed, potentially affected water bodies in the Seller Service Area include:

- San Joaquin River downstream of the Merced River; and
- Merced River including and downstream of Lake McClure.
- Stanislaus River below New Melones Reservoir.

The San Joaquin River watershed would only be impacted by reservoir release transfers and would not include groundwater substitution transfers. Therefore, the San Joaquin River watershed was not included in the groundwater modeling. Reservoir release transfers would result in more water being released from reservoirs to rivers and tributaries within the San Joaquin River watershed from July to November, compared to the No Action/No Project Alternative, and could result in more or less water being released from reservoirs at different times of year, compared to the No Action. Under the Proposed Action, all reservoirs would continue to function under their existing operating requirements, including meeting downstream flow, temperature, and other water quality requirements. Therefore, while the reoperation of reservoirs from reservoir release transfers could impact San Joaquin River watershed flows, operations and releases would not fluctuate beyond historical or seasonal releases, consistent with typical operations, and would not have a significant impact on biological resources in the San Joaquin River watershed.

Water transfers made under the Proposed Action would move through the Delta, therefore biological resources within the Delta could be affected. Dozens of fish species use the Delta during some portions of their life, and six of these species are listed under federal or state Endangered Species Acts. These include winter-run and spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*O. mykiss*), and green sturgeon (*Acipenser medirostris*), all of which migrate through the Delta on their way to upstream spawning and rearing habitats, and when their offspring migrate to the ocean from these upstream habitats. Most of these species may rear for some period of time in the Delta on their way to the ocean, with this duration depending on the species and conditions in the Delta. Delta smelt (*Hypomesus transpacificus*) are endemic (they are not found anywhere else) to the Delta and spend their entire lives in the Delta or Suisun Bay. The longfin smelt (*Spirinchus thaleichthys*) is state-listed as a threatened and federally-listed as an endangered fish species that spawns in the Delta and rears in Suisun, San Pablo and San Francisco bays and nearshore marine ecosystems. Other special-status fish that occur in the Seller Service Area include fall-/late fall-run Chinook salmon, and Sacramento splittail (*Pogonichthys macrolepidotus*). Some rivers and creeks within the Seller Service Area provide habitat for special status amphibians and reptiles including the foothill yellow-legged frog (*Rana boylii*), northwestern pond turtle, and giant garter snake.

Natural communities that provide habitat for terrestrial plant and wildlife species occur along the rivers and creeks within the area of analysis. Seasonal wetlands can be found scattered along the Sacramento and American Rivers, typically in areas with slow-moving backwaters. Substantial portions of these natural communities occur at the Colusa, Sutter, and Tisdale Bypasses, the Butte Sink, and at the Fremont Weir. A variety of shorebirds and waterfowl utilize natural seasonal wetlands. This natural community also supports large mammals as well as several species of reptiles and amphibians. Many special-status plant and wildlife species, including vernal pool species, are associated with seasonal wetlands.

Valley/foothill riparian and montane riparian natural communities generally occur along river and stream corridors on the east side of the Sacramento Valley and are found in narrow bands within the upper reach of the San Joaquin River. Riparian vegetation is also scattered throughout the Delta on islands, along levees, in backwater areas and sloughs, and in thin bands along river channels. Riparian habitat supports a myriad of invertebrates, reptiles and amphibians, wintering and breeding raptors and passerines, and small and large mammals. Riparian areas serve as significant corridors for wildlife movement.

Groundwater Dependent Ecosystems

GDEs are plant and animal communities that solely or partially depend on the availability of groundwater to maintain their structure and function. Species in GDEs depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. GDEs function to purify water, provide recreational opportunities, regulate climate, support pollinators, and provide habitat for endangered species (The Nature Conservancy 2024).

Types of GDEs within the area of analysis include seeps and springs, wetlands, rivers, streams, and terrestrial vegetation. GDEs include vegetation that is connected to groundwater, with varying rooting depths depending on plant species and local conditions. Most groundwater-dependent plant species within the area of analysis are relatively shallow-rooted and have a maximum rooting depth of less than 30 feet (The Nature Conservancy 2021). However, deep-rooted groundwater-dependent plants also occur within the area of analysis and can access groundwater at greater depths. Mature valley oaks (*Quercus lobata*), for example, can attain rooting depths of up to 80 feet within fractured rock formations (Lewis and Burgy 1964). GDEs comprised of shallow-rooted and deep-rooted vegetation occur within the area of analysis.

Terrestrial plants that use groundwater for their water supply are often located in wetlands or along streams (riparian plants). While these plants also may rely on soil water that is recharged by precipitation, or by surface waters at different times of the year, they are still considered groundwater-dependent because groundwater provides a portion of their water needs (The Nature Conservancy 2024). These riparian vegetation GDEs are located along streams and other waterways and are described under the Rivers and Creeks section.

Non-tidal fresh emergent wetlands are scattered along the Sacramento River, typically in areas with slow-moving backwaters. Substantial portions of this natural community occur at the Colusa, Sutter, and Tisdale Bypasses, the Butte Sink, and at the Fremont Weir. Non-tidal fresh emergent wetland also occurs on the landward side of levees in the Delta, often in constructed waterways and ponds within agricultural lands. This natural community often occurs where soils are inundated or saturated for all or most of the growing season, such as around backwater areas. Many plant and wildlife species depend on non-tidal fresh emergent wetlands year-round, and they are seasonally important to many migratory species. Birds typically found in non-tidal fresh emergent wetlands include herons, egrets, bitterns, mergansers, ducks, and warblers. Emergent wetlands are used by amphibians including frogs and toads for breeding and are important for reptiles including snake and turtle species for cover and foraging habitat.

Buyer Service Area

The area of analysis includes potential Buyer lands within the San Joaquin River watershed. The Buyer Service Area includes portions of Contra Costa County, northwestern Alameda County, Santa Clara County, northwestern San Benito County, a small area of San Joaquin and Stanislaus counties, a small portion of western Merced County, and extends through western Fresno County into northwest Kings County. Water diversions from the Delta through the Banks and Jones Pumping Plants would be subject to the existing BOs on the Long-Term Operation of the CVP and SWP, which include transfers in excess of the size considered in this EA/IS.

San Luis Reservoir is the only water body in the Buyer Service Area that could be affected by the water transfers. San Luis Reservoir is an artificial environment and does not support a naturally evolved aquatic community. Fish species in San Luis Reservoir have either been directly introduced or transported into the reservoir via the California Aqueduct or Delta-Mendota Canal. It does not support primary populations of special-status fish species, nor does it support these species in downstream areas.

For Contra Costa WD and East Bay MUD, diversions would be subject to the BOs associated with their pumping stations and diversions. Water would be moved through existing conveyance facilities and would not affect natural water bodies.

As the project would not affect natural water bodies within the Buyer Service Area, rivers, creeks and GDEs within the Buyer Service Area are not included in the area of analysis for fisheries and terrestrial wildlife resources.

3.7.2 Environmental Consequences/Environmental Impacts

This section summarizes the effects of the Proposed Action on biological resources. Impacts on fisheries and terrestrial wildlife resources are discussed in this section, including special-status fish species and some species of amphibians, reptiles which are highly dependent on aquatic habitats, since they could be affected by water transfers and groundwater substitution actions. Special-status fish and wildlife species with the potential to occur in the area of analysis are listed in Appendix I. Special-status plant species with the potential to occur the area of analysis are summarized in Appendix J.

No Action/No Project Alternative

Seller Service Area

Reservoirs

The No Action/No Project Alternative would not affect reservoir storage and reservoir surface area in the Seller Service Area. Under the No Action/No Project Alternative, storage volumes, reservoir surface area, and downstream releases from reservoirs would be the same as under existing conditions. The No Action/No Project Alternative would have no impact on fisheries or terrestrial wildlife resources in reservoirs, as conditions would be the same as under existing conditions.

Rivers and Creeks

The No Action/No Project Alternative would not cause flows of rivers and creeks within the Seller Service Area to be lower than under existing conditions. Under the No Action/No Project Alternative, the rate and timing of flows in rivers and creeks in the Sacramento and San Joaquin River watersheds would be similar to existing conditions. The No Action/No Project Alternative would have no impact on fisheries or terrestrial wildlife resources in rivers and creeks, as conditions would be the same as under existing conditions.

Groundwater Dependent Ecosystems

The No Action/No Project Alternative would not affect GDEs in the Seller Service Area. Under the No Action/No Project Alternative, flow rates and groundwater levels that could affect GDEs would be the same as under existing conditions.

Buyer Service Area

Reservoirs

The No Action/No Project Alternative would not affect reservoir storage and reservoir surface area in the Buyer Service Area. Under the No Action/No Project Alternative, storage volumes, reservoir surface area, and downstream releases from reservoirs would be the same as under existing conditions. The No Action/No Project Alternative would have no impact on fisheries or terrestrial wildlife resources in reservoirs, as conditions would be the same as under existing conditions.

Rivers and Creeks

The No Action/No Project Alternative would not cause flows of rivers and within the Buyer Service Area to be lower than under existing conditions. Under the No Action/No Project Alternative, the rate and timing of flows in rivers and creeks in the Sacramento and San Joaquin River watersheds would be similar to existing conditions. The No Action/No Project Alternative would have no impact on fisheries or terrestrial wildlife resources in rivers and creeks, as conditions would be the same as under existing conditions.

Groundwater Dependent Ecosystems

The No Action/No Project Alternative would not affect GDEs in the Buyer Service Area. Under the No Action/No Project Alternative, flow rates and groundwater levels that could affect GDEs would be the same as under existing conditions.

Proposed Action

The following sections describe the effects of the Proposed Action (reservoir releases and groundwater substitution) on fisheries and terrestrial wildlife resources in reservoirs, riverine habitat and GDEs.

Seller Service Area

Reservoir Release Transfers

Under the Proposed Action, water made available for transfer as a result of reoperating these reservoirs (Reservoir Release Transfers) would result in decreasing their storage and associated elevation and surface area, compared to the No Action/No Project Alternative, during the period when water is transferred (July through November) until the reservoirs are refilled. Reservoir Release Transfers would result in more water being released from these reservoirs from July to November compared to the No Action/No Project Alternative and could result in more or less water being released from these reservoirs at different times of year, compared to the No Action/No Project Alternative. Under the Proposed Action, all reservoirs would continue to function under their existing operating requirements, including reservoir drawdown to targeted storage levels, and in meeting downstream flow, temperature, and other water quality requirements. Consequently, any impacts of water transfers on conditions in the reservoirs described above would not affect fish or wildlife species.

The approach to evaluating impacts as the result of changes in reservoir operations under the Proposed Action on habitats downstream of reservoirs, including riverine habitats and GDEs, is described in the next sections. Water made available for transfer as a result of reservoir reoperation, could result in increases in downstream flows during the transfer period of July to November. However, operating requirements for all of the mainstem rivers would meet existing or future regulatory flow and temperature requirements as specified by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) BOs for the Long-Term Operation of the CVP and SWP. Overall, under the Proposed Action, downstream reservoirs and rivers would continue to be operated according to their existing requirements and within their historical range of operations.

Reservoirs do not provide primary habitat for candidate, sensitive, or special-status species fish species. Some reservoirs provide habitat for special-status terrestrial wildlife species including the Sierra Nevada yellow-legged frog, the southern long-toed salamander, and the northwestern pond turtle that require aquatic habitat during one or more of their life stages. Special-status bird species including the bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), and osprey (*Pandion haliaetus*) may nest or forage in or around reservoirs within the Seller Service Area.

Under the Proposed Action, storage volumes, reservoir elevations and surface areas would change, but all reservoirs would continue to be operated according to their existing requirements and within their current range of operations. Transfers would be made under the terms and conditions of operating licenses, which include measures to protect natural resources within the reservoirs and in downstream rivers. Water elevations and storage levels during transfers would occur within the normal range of operations of these reservoirs under existing conditions. Therefore, transfer releases are not expected to result in impacts to special-status terrestrial wildlife species compared to the No Action/No Project Alternative.

Overall, water transfer actions under the Proposed Action would have a less-than-significant impact on fish and wildlife species associated with reservoirs because all reservoirs would continue to be operated according to their existing requirements and the changes caused would be within their normal range of operations. Existing stream flow requirements (flow magnitude and timing, temperature, and other water quality parameters) would continue to be met for downstream areas that would convey release flows. **Therefore, changes in reservoir elevations and surface areas in the Seller Service Area resulting from the Proposed Action would not substantially affect biological resources (CEQA Conclusion).**

Groundwater Substitution Transfers

Water made available through groundwater substitution actions under the Proposed Action could reduce groundwater levels and could potentially deplete surface water flows in affected rivers and creeks compared to the No Action/No Project Alternative. Streamflow depletion could result in effects to the biological resources described in Section 3.7.1. Streamflow depletion was assessed based on Sacramento Valley Groundwater Model (SACFEM2013) model simulations for the Proposed Action (i.e., groundwater substitution locations and volumes) and the No Action/No Project Alternative (i.e., no groundwater substitution). The streamflow depletions were identified by comparing average streamflows under the Proposed Action to the No Action/No Project by month and water year. The Proposed Action could have the potential to affect biological resources if resultant flow reductions were to substantially affect riverine or riparian habitat conditions, hinder fish or wildlife movement, or limit access to spawning areas compared to the modeled changes in flows under the No Action/No Project Alternative. For the purposes of the analysis, the threshold for the potential for flow-related effects was identified as both a minimum decrease in mean (average) monthly flow of one cfs as compared to the modeled flows under the No Action/No Project Alternative and a ten percent decrease in modeled Proposed Action flows compared to the No Action/No Project flows. These thresholds were used because the streamflow depletion results from SACFEM2013 are reported in a monthly timestep and in cubic meters per day, consequently, one cfs flow reduction is within model precision and beyond the model's ability to measure actual changes. The ten percent threshold was based on margin of error of the SACFEM2013 model based on model calibration.

The thresholds were applied stepwise. If the difference between the modeled mean monthly flow reductions of the Proposed Action and No Action/No Project Alternative were less than one cfs and less than ten percent, then additional effects analysis was not conducted because the reductions would be within the margin of error of the model and are not substantial enough to conclude they are in fact different from the No Action Alternative. If the difference between the modeled mean monthly flow reductions of the Proposed Action and No Action/No Project Alternative were greater than one cfs and greater than ten percent, then the further effects analysis was completed for that waterbody. The additional effects analysis considered both physical and biological factors, including presence and timing of life stages of fish and wildlife species, size of the waterway, timing of flow changes, and water year type. In addition, the analysis also included a comparison of the modeled flow reductions under the Proposed Action to historical streamflow information, where available (typically gathered from U.S. Geological Survey or DWR stream flow gauges), and evaluated if these comparisons show a reduction in streamflow greater than ten percent of the historical streamflow. The ten percent threshold was used to determine measurable flow changes based on several major environmental documents completed in the Central Valley related to fisheries (Trinity River Mainstem Fishery Restoration Record of Decision, December 19, 2000; San Joaquin River Agreement Record of Decision in March 1999; Freeport Regional Water Project Record of Decision, January 4, 2005; Lower Yuba Accord EIR/EIS). In these documents, there is consensus that differences in modeled flows of less than ten percent would be within the noise of the model outputs and beyond the ability to measure actual changes.

Not every water body in the area of analysis could be simulated in the SACFEM2013 groundwater model. For locations where historical flow data were unavailable, a quantitative analysis was not possible; thus, a qualitative discussion of potential impacts is included for these locations. In the qualitative analyses, smaller water bodies adjacent to those modeled are assumed to respond in a similar way, with similar changes in flow magnitude and timing. Similarly, the potential for impacts to biological resources in adjacent, unmodeled waterbodies would be similar to those of the modeled streams.

Modeling for Proposed Action

Under the Proposed Action, the stream flow analysis was completed for the Seller Service Area only because groundwater substitution actions would only occur in the Seller Service Area. The modeled volume of water made available by groundwater substitution transfer under the Proposed Action was 297,155 AF (upper groundwater substitution quantities provided in Table 2-1). The modeled volume of water available by groundwater substitution transfer adds up to more than the Buyers' transfer demand of 250,000 AF, so the analysis provides a conservative analysis of potential environmental impacts by assessing impacts of the entire range of potential water transfers in any one year. The modeling also used the driest period of record available during the SACFEM2013 simulation period (WY 1970 to WY 2003). Potential water transfers were simulated under WY 1977 hydrologic conditions, a critically dry water year that followed a critically dry water year (WY1976). Additionally, the groundwater model is unconstrained (i.e., it does not consider the stopping of transfer-related pumping when the Mitigation Measure GW-1 trigger is reached). Therefore, the modeling presents a conservative streamflow depletion analysis of potential impacts of water transfers under very dry and unmitigated conditions.

Based on the method described above, groundwater modeling data was used to determine the rivers and creeks in which both the modeled flow reductions under the Proposed Action were greater than one cfs and ten percent during any month of any of the water years compared to the No Action/No Project Alternative. The results of this analysis are summarized in Table 3-6. Surface water depletions in the mainstem rivers such as Sacramento, Feather, Yuba, and American rivers resulting from groundwater substitution actions would not be substantial and, therefore, are not included in the analysis. Additionally, flows in these rivers are expected to increase where water would have been diverted by the Seller absent the transfer (i.e., under the No Action/No Project Alternative). Overall, changes in flows in mainstem rivers would not be of sufficient magnitude to affect fish or wildlife species.

Further Analysis

Further biological effects analysis was completed for waterbodies where the modeled reduction in flow resulted in both a reduction greater than one cfs and ten percent of average monthly flows between the Proposed Action and the No Action/No Project Alternative. These waterbodies include Lower Sycamore Slough, Colusa Basin Drain, and Eastside/Cross Canal (Table 3-6). Appendix E4 includes the streamflow modeling results for Lower Sycamore Slough, Colusa Basin Drain, and Eastside/Cross Canal.

Table 3-6. Summary of Modeled Flow Reduction in Seller Service Area Creek under Proposed Action in Comparison to No Action/No Project Alternative (No Action)

Waterbody	>1cfs depletion compared to the modeled No Action Streamflow threshold exceeded?	>10% average monthly flow reduction compared to the modeled No Action Streamflow threshold exceeded?	Summary of Effects
Antelope Creek, Auburn Ravine, Walker Creek, North Fork Walker Creek, French Creek, South Fork Willow Creek, Funks Creek, Lurline Creek, Sand Creek, Honcut Creek, North Honcut Creek, South Honcut Creek, and Dry Creek (tributary of Bear River), Bear River, Consumnes River, Deer Creek, Elder Creek, Freshwater Creek, Mill Creek, Big Chico Creek, Stoney Creek, Stone Corral Creek, Putah Creek, Paynes Creek, Sevenmile Creek, Spring Valley Creek, Thomes Creek, Wilson Creek, Upper Sycamore Creek (Colusa County), Salt Creek, Cache Creek, and Butte Creek	No	No	The modeled reduction in average monthly flows is not of sufficient magnitude to affect fish or wildlife species in these creeks, including special status species.
Willow Creek, Coon Creek, and Cortina Creek	Yes	No	Although modeled reductions are slightly greater than one cfs in these creeks, average monthly flow reductions would be less than ten percent of the monthly averages and within the margin of error of the model outputs. Therefore, the range of flows modeled under the Proposed Action are within the range of flows under the No Action/No Project Alternative. Consequently, flow changes are not of sufficient magnitude to affect fish or wildlife species.

Waterbody	>1cfs depletion compared to the modeled No Action Streamflow threshold exceeded?	>10% average monthly flow reduction compared to the modeled No Action Streamflow threshold exceeded?	Summary of Effects
Little Chico Creek, Wilkins Slough Canal, and Spring Valley Creek	No	Yes	Although modeled reductions are greater than ten percent of the monthly averages under the Proposed Action in comparison to the No Action/No Project Alternative, these changes are less than one cfs which is within the model precision and beyond the model's ability to measure actual changes. Therefore, the range of flows modeled under the Proposed Action are within the range of flows under the No Action/No Project Alternative. Consequently, flow changes are not of sufficient magnitude to affect fish or wildlife species.
Lower Sycamore Slough, Colusa Basin Drain, and Eastside/Cross Canal	Yes	Yes	Based on groundwater modeling, there would be flow reductions greater than one cfs and ten percent in Colusa Basin Drain, Lower Sycamore Slough and Eastside/Cross Canal. Further analysis of effects to biological resources below.

Lower Sycamore Slough

The modeled difference in monthly flow reductions between the Proposed Action and the No Action/No Project Alternative in Lower Sycamore Slough exceeded one cfs and ten percent intermittently from May through September. The exceedance started during the modeled transfer year, which was a critically dry year. Exceedances occurred January, February, March, May, June, July, August, September, November, and December, with flows gradually stabilizing over the exceedance period. The largest modeled reduction was a 7.47 cfs reduction in January with the slough going dry in March under the Proposed Action compared to the modeled reduction in flows under the No Action/No Project Alternative. The modeled reductions in flows would not occur frequently as they are limited to instances when a transfer year is a critically dry year that followed a critically dry year. In addition, Sycamore Slough is a channel used for flood control and irrigation in the Colusa Basin, with flows controlled through the operation of the Sycamore Slough Pump Station (SWRCB 2023). The pumps are used during rain events to drain floodwaters from Sycamore Slough into the Sacramento River as well as pump water back into Sycamore Slough for irrigation (Colusa County 2024; Reclamation District 108 2022). Therefore, flows in Sycamore Slough are subject to fluctuation depending on the need for flood control and irrigation. While terrestrial and aquatic biological resources may be present in or near Lower Sycamore Slough and could experience reductions in flow, given

streamflow depletions were modeled conservatively (i.e., transfers was simulated to occur under very dry conditions) and the slough is subject to fluctuating flows due to its use for flood control and irrigation, substantial impacts to riverine or riparian habitat conditions, fish or wildlife movement, or access to spawning areas are not anticipated.

Colusa Basin Drain

In Colusa Basin Drain, the difference in the modeled monthly decrease in flows between the Proposed Action and the No Action/No Project Alternative was greater than one cfs and exceeded ten percent in April following transfers under very dry conditions. Based on historical flow data, flows in the Colusa Basin Drain are the lowest in April, May, and June, with the average April monthly flow of 432.74 cfs. Based on a comparison of the Proposed Action's groundwater modeling results and historical flow data, modeled reductions in streamflow in Colusa Basin Drain in April would be 0.9 percent of the monthly average historical flow in Colusa Basin Drain (i.e., less than ten percent). Given streamflow depletions were modeled conservatively and the modeled reductions would be infrequent, limited to April following transfers under very dry conditions, and the modeled flow reductions would be less than ten percent when compared to historic flow, therefore, flow reductions are not expected to cause substantial impacts to riverine or riparian habitat conditions, hinder fish or wildlife movement, or limit access to spawning areas and are not anticipated to substantially impact biological resources.

East Side Canal/Cross Canal

In East Side Canal or Cross Canal, groundwater modeling indicates that there would be a decrease in flow of greater than one cfs and ten percent following transfers of water made available through groundwater substitution actions. Historical flow data were not available for the East Side Canal or Cross Canal, which serve as flood management structures. The Cross Canal is the outlet channel for all flows from the watersheds intercepted by the East Side Canal and those from the south, including Curry Creek, and Pleasant Grove Creek (County of Placer 2002). A major levee on the west side of the East Side Canal intercepts all of the flow from the watersheds north of the community of Pleasant Grove in Sutter County, including Coon Creek, Markham Ravine, and Auburn Ravine. The East Side Canal collects flood waters, natural flows, and agricultural return flows and has a design capacity of up to 16,000 cfs (DWR 2010). Riparian vegetation is generally absent because of the periodic levee maintenance and herbicide applications on the adjacent farmlands. However, the channel does contain a variety of rooted aquatic vegetation, such as cattails and riparian shrubs, including willows. The Cross Canal discharges into the Sacramento River near Verona and has a design capacity of up to 22,000 cfs (DWR 2010). The Cross Canal is lined with high levees on both sides. However, the channel between the levees is wide enough to accommodate flood flows and, as a result, a small, confined floodplain supporting associated riparian vegetation is present (County of Placer 2002).

The difference in the modeled monthly decrease in flows between the Proposed Action and the No Action/No Project Alternative were greater than one cfs and ten percent from January through May and August and September. These exceedances started during the modeled transfer year, which was a critically dry year and continued two years after the simulated transfer year. The largest difference between Proposed Action and the No Action alternatives was 16.05 cfs reduction which occurred in January one year after simulated transfer conditions. Limited flow measurements were taken in the Cross Canal in January 2021, during a critically dry year, which ranged from 111 to 303 cfs (Cramer Fish Sciences and MBK Engineers 2024). Based on the average monthly flows within Cross Canal in January 2021 (i.e., 225 cfs), a reduction of 16.05 cfs resulting from the Proposed Action would be 7.1 percent (i.e., less than ten percent of historic flows) in the Cross Canal and within the range of flow fluctuations at the Cross Canal under historic flow data. Based on historical flow data and given streamflow depletions were modeled conservatively, the number of waterbodies that drain into East Side Canal and Cross Canal, and the large design capacity of the

canals, the modeled flow reductions are not anticipated to result in substantial impacts to riverine or riparian habitat conditions, hinder fish or wildlife movement, or limit access to spawning areas in the canal.

Special Status Species

This section provides an analysis of potential effects of groundwater transfers to special status species that may be present in the following rivers and streams in which both the thresholds for the potential for flow-related effects were exceeded: Lower Sycamore Slough, Colusa Basin Drain, and East Side/Cross Canal. Giant garter snake and northwestern pond turtle may be present in all three affected waterbodies, while steelhead may be present in Eastside/Cross Canal during spawning season and juvenile outmigration.

Giant Garter Snake

Giant garter snakes (*Thamnophis gigas*) have been observed in Colusa Basin Drain and Lower Sycamore Slough, and may be present in Lower Sycamore Slough and East Side/Cross Canal. During its inactive season (November through mid-March), Giant garter snakes overwinter in small mammal burrows and other underground retreats above the waterline and would not be affected by any changes in flows during these months. As described in the preceding sections, flow reductions may occur during the giant garter snake active season (mid-late March through October). These potential reductions in flow are expected to be short term, infrequent, and relatively low intensity changes. The relatively small reductions in flow will not affect the giant garter snake's ability to feed, breed, shelter, or migrate within the sloughs and canals.

Northwestern Pond Turtle

Northwestern pond turtles (*Actinemys marmorata*) have been observed in lower Sycamore Slough and Colusa Basin Drain (inaturalist) and about 1.5 miles south of Eastside/Cross Canal (CNDDB). The northwestern pond turtle requires both terrestrial and aquatic habitats. Aquatic habitats include a variety of aquatic habitats including rivers, streams, lakes, ponds, marshes, and irrigation ditches. The turtle overwinters from mid-October or November through March or April during which time its physiological activity reduces or it become periodically inactive (Hays et al. 1999). During this time, the turtle typically moves onto land for nesting and overwintering (Rosenberg et al. 2009) or, less frequently, overwinter in aquatic habitat (SSA, 2023). As described in the preceding sections, flow reductions may occur during the turtle's active season (March or April through mid-October). These short term, infrequent, and relatively low intensity changes in flow are not expected to cause substantial impacts to the northwestern pond turtle because it is an aquatic generalist that readily utilizes both lotic and lentic aquatic habitats. If a northwestern pond turtle were present in any of these three water bodies at the time of streamflow depletion, the relatively minor reduction in flow would not substantially affect the northwestern pond turtle's ability to feed, breed, shelter, or migrate within the sloughs and canals.

Steelhead

Steelhead (*Oncorhynchus mykiss*) are considered present in the East Side and Cross Canals, but spawning has not been confirmed in the canals or in the Coon Creek and Auburn Ravine watersheds upstream (NMFS 2014). Due to the lack of confirmed species presence and spawning, steelhead are unlikely to occur in Eastside and Cross Canals. If steelhead were present in the Eastside and Cross Canals, they would use it as a migratory corridor to suitable spawning habitat in Coon Creek and Auburn Ravine since there is no suitable spawning habitat within the canals. This magnitude of reduction in streamflow would not affect steelhead migration or emigration. In the event the species is present, the short-term, infrequent, and low intensity reductions in flow would not substantially impact the ability of steelhead to access upstream habitat or juveniles to emigrate through the canals to the Sacramento River.

Impacts on Rivers and Creeks

As described in the preceding sections, the effect of groundwater substitution under the Proposed Action, as simulated by the groundwater model, would generally be less than one cfs and ten percent in most rivers and creeks in the Seller Service Area; the exceptions are Lower Sycamore Slough, Colusa Basin Drain, and the Eastside/Cross Canal. However, as described in the Further Analysis section, modeled reductions in flows are small when compared to historic flow data (if available) and would be infrequent, limited to certain months in critically dry years following a water transfer year. Therefore, substantial impacts to riverine or riparian habitat conditions that would hinder fish or wildlife movement or limit access to spawning areas are not expected. **Based on the analysis presented in this section, effects of groundwater pumping substitution on biological resources, including special status species, occurring in and around rivers and creeks within the Sellers Service Area would be less than significant (CEQA).**

Groundwater Dependent Ecosystems

GDEs, including riparian/wetland communities occurring directly adjacent to waters may be affected by fluctuations in groundwater levels associated with proposed groundwater substitution and water releases. Water made available for transfer through groundwater substitution actions could result in streamflow depletion in rivers and creeks, which could directly impact shallow-rooted or deep-rooted vegetation comprising GDEs and other natural communities by changing groundwater levels and the timing and volume of streamflow. GDEs including valley/foothill riparian and managed and natural seasonal wetlands could be affected. Vernal pools and similarly isolated wetlands that both lack hydraulic connections with rivers and creeks and that receive inputs solely from precipitation or surface water would not be affected by groundwater substitution actions.

As described in the preceding sections, the effect of groundwater substitution under the Proposed Action, as predicted by the groundwater model, would generally be less than ten percent. The Proposed Action has the potential to cause flow reductions of greater than ten percent in Cache Creek, and Eastside/Cross Canal, and in other small creeks where no data are available on existing stream flows to be able to determine this.

Many plant and wildlife species depend on riparian/wetland communities year-round, and they are seasonally important to many migratory species. Special-status wildlife species—including riparian brush rabbit (*Sylvilagus bachmani riparius)*, riparian woodrat (*Neotoma fuscipes riparia)*, least Bell's vireo (*Vireo bellii pusillus)*, yellow-billed cuckoo (*Coccyzus americanus)*, Purple martin (*Progne subis*), tricolored blackbird (*Agelaius tricolor*), white-faced ibis (*Plegadis chihi*), yellow-headed blackbird (*Xanthocephalus Xanthocephalus*), northwestern pond turtle, and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) may inhabit riparian areas and associated wetland habitats that could be impacted by groundwater substitution actions. Special-status perennial plant species that require riparian or non-tidal freshwater emergent wetland habitats could also be impacted by groundwater substitution actions. However, the impacts of groundwater substitution on flows in small streams and associated GDEs would be mitigated by implementation of Mitigation Measure GW-1 (see Section 3.3, Groundwater Resources). This measure requires monitoring of wells to ensure that groundwater levels do not drop below target thresholds, and the implementation of a mitigation plan if the Seller's monitoring efforts indicate that the operation of the wells for groundwater substitution pumping is causing substantial adverse impacts. The mitigation plan would include curtailment of pumping until natural recharge corrects the environmental impact. **With implementation of Mitigation Measure GW-1, potentially significant impacts from groundwater substitution pumping on GDEs within the Sellers Service Area would be reduced to a less-than-significant level (CEQA Conclusion).**

The Proposed Action would not conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat

conservation plan. Water transfers under the Proposed Action would have a less-than-significant impact on the natural communities that are covered in the following HCP/NCCPs within the Sellers Service Area:

- East Contra Costa County HCP/NCCP
- Natomas Basin HCP
- Placer County Conservation Program
- San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
- Santa Clara Valley HCP/NCCP
- Solano Multispecies HCP
- South Sacramento HCP
- Yolo HCP/NCCP

As discussed above, transfers actions are not expected to impact riparian/GDEs and special-status species in these habitats and no impacts to natural communities covered under these plans are expected. Mitigation Measure GW-1 also requires Sellers to prevent significant third-party impacts from groundwater substitution pumping, which would include any impacts to conservation banks or preserves for giant garter snake. **The Proposed Action would not conflict with any adopted HCP and NCCP provisions. Impacts would be less than significant (CEQA Conclusion).**

Buyer Service Area

Under the Proposed Action, Buyers would receive water made available through the range of potential water transfers identified in the Proposed Action. The amount of water available for purchase, the way in which water could be used, and the effects of using this water on natural resources would be within the range of existing activities under each CVP contract and associated BOs. **Based on this, the Proposed Action would have no impact on natural communities or special-status species in the Buyer Service Area (CEQA Conclusion).**

Reservoirs

The Proposed Action could alter surface water elevation and reservoir storage at San Luis Reservoir relative to existing conditions and the No Action/No Project Alternative. Because decreases in storage would remain within the normal range of operation for the reservoir, they would not have a substantial effect on biological resources. The most substantial changes would occur during dry and critically dry years, when the reservoir would already be at low water surface elevations.

Rivers and Creeks

Buyers would use the transferred water for agricultural or municipal and industrial purposes. This water would not interact with vegetation communities and special-status wildlife species; therefore, water made available for transfer under the Proposed Action would have no impact on special-status species within the Buyer Service Area.

Groundwater Dependent Ecosystems

The Proposed Action would not impact GDEs within the Buyer Service Area. At San Luis Reservoir, riparian habitat is limited to scattered patches of mule fat and occasional willows (Reclamation and DWR 2004). The water sources for riparian vegetation are dependent upon stream flows in the tributaries and would not be affected by water transfers; therefore, there would be no impacts to this habitat type. Similarly, other natural communities including freshwater emergent vegetation, upland scrub, and non-native grasslands that surround San Luis Reservoir are not dependent of the reservoir for water and would not be affected by

water transfers. Therefore, the Proposed Action would have no impact on GDEs and special-status species associated with GDEs in the Buyer Service Area.

3.8 Noise

3.8.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for noise impacts. Noise is generally measured in decibels (dB), which are measured on a logarithmic scale so that each increase in 10 dB equals a doubling of loudness. The letter "A" is added to the abbreviation (dBA) to indicate an "A-weighted" scale, which filters out very low and very high frequencies that cannot be heard by the human ear. A Community Noise Survey conducted in Glenn County indicated that noise levels in noise sensitive areas, including schools and parks, fall in the range of 48 dBA to 58 dBA Leq[22] (Glenn County 2020). These noise levels would be similar to conditions in the other counties.

The Buyers' and Sellers' Service Areas are primarily agricultural; major noise sources include traffic, railroad operations, airports, industrial operations, farming operations, and fixed noise sources. Typical noise levels created by a range of farm equipment are presented in Table 3-7.

Table 3-7. Typical Noise Levels Associated with Farm Equipment

Equipment	Distance (feet)	Sound Level (dB)
Diesel Wheel Tractor		
- with Disc	150	72–75
- with Furrow	50	69–79
Weed Sprayer (1-cylinder)	50	74–75
Aero Fan 391 Speed Sprayer	200	74–76
Diesel Engine	50	75–85

Source: Brown-Buntin Associates, Inc. in Glenn County 1993
Key: dB = decibel

3.8.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

The No Action/No Project Alternative would not change noise levels, nor would it conflict with noise ordinances. Noise from the operation of wells for groundwater pumping in the Seller and Buyer Service Areas, a common practice unrelated to this project, would be expected to continue. **Therefore, there would be no impacts on noise under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

The Proposed Action would result in increased groundwater pumping in the Seller Service Area and the temporary operation of existing electric-, diesel-, and propane-driven wells that would result in temporary increases in noise levels. All the wells would be located in rural areas, which are generally in a farm setting with typical noise from agricultural operations. The wells would be operated by a willing landowner; therefore, any localized noise levels would be approved by the landowner. **The Proposed Action would have a less-than-significant impact on noise from increased groundwater well operation in the Seller Service Area (CEQA Conclusion).**

[22] The hourly average sound level (Leq) is the average noise level, expressed in decibels, over a 24-hour period.

Buyer Service Area

The Proposed Action may result in reduced use of groundwater resources during periods of shortage by supplementing available water supply with transferred water. This reduction in groundwater use in the Buyer Service Area would reduce the operation of existing electric-, diesel-, and propane-driven wells that would result in temporary reductions in noise levels. **Therefore, the impact of the Proposed Action on noise in the Buyer Service Area would be beneficial (CEQA Conclusion).**

3.9 Agricultural Land Use

3.9.1 Affected Environment/Environmental Setting

This section summarizes the affected environment for agricultural land use. The Central Valley of California is primarily agricultural fields, with a mix of orchard and row crop types, fallow fields, rice, and other irrigated crops and dry fields. The loss of the farmland in California has occurred over the years due to population growth and urban development. The California Department of Conservation maps farmland throughout California with most recent data reported in the Farmland Conversion Report 2016-2018. During the period of 2016-2018, irrigated farmland in California decreased by 56,186 net acres. The highest-quality farmland, known as Prime Farmland, decreased by 38,683 net acres, coupled with a Farmland of Statewide Importance decrease of 30,052 net acres (California Department of Conservation 2023).

3.9.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

Under the No Action/No Project Alternative, there would be no changes to agricultural land use in the Seller Service Area relative to existing conditions. **The No Action/No Project Alternative would have no impact on agricultural land use in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Under the No Action/No Project Alternative, CVP water supply shortages to agricultural users could result in increased land idling in the Buyer Service Area. Depending on the extent of shortages and the number of years a particular field is idled consecutively, there could be reductions in the amount of land classified as Important Farmland. Prolonged water shortages could also result in permanent conversions of agricultural land if farmers choose to sell land to developers because of lack of irrigation water. **There would be no impact on agricultural land use compared to existing conditions under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

Water made available via groundwater substitution and stored reservoir release actions would have no impact on agricultural land use in the Seller Service Area. **The Proposed Action would have no impact on agricultural land use in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Water transfers to the Buyer Service Area under the Proposed Action could bring lands back into agricultural production that were previously idle because of reductions in available water supply. These agricultural fields could include Prime Farmland, Farmland of Statewide Importance, or Unique Farmland

under the Farmland Mapping and Monitoring Program. **Therefore, the Proposed Action's impacts on agricultural land use in the Buyer Service Area would be beneficial (CEQA Conclusion).**

3.10 Visual Resources

3.10.1 Affected Environment/Environmental Setting

The Central Valley of California is primarily agricultural in nature, with Interstate-5 running from north to south along the valley floor. Views in the region from most major roadways and scenic routes are of agricultural fields or urban landscapes. The mix of orchard and row crop types, fallow fields, rice, and other irrigated crops and dry fields create the visual character for most of the project area. Urban centers, such as Sacramento and Redding, break up the farmland that dominates the views in the Central Valley, creating some major nighttime light sources near the city centers. The rivers and reservoirs in the Central Valley offer scenic resources that contrast with the agricultural and urban landscapes. These water bodies provide natural vistas and recreational opportunities, enhancing the visual diversity of the region.

Key visual resources are classified into scenic attractiveness categories (A, B, and C), with agricultural lands, riparian areas, and forests creating distinct scenic experiences along roads and waterways. Scenic attractiveness classifications categorize landscapes into three classes: Class A (Distinctive) for areas with outstanding scenic qualities, Class B (Typical) for areas with common but positive scenic attributes, and Class C (Indistinctive) for areas with low scenic quality. While Class A and B landscapes often include parks, recreational, or wilderness areas, Class C landscapes, such as agricultural lands, are evaluated for their impact on landscape character but not scenic attractiveness.

Seller Service Area

The Seller Service Area is bordered on the east by the Sierra Nevada, on the northwest by the Coast Ranges, and on the south by the Sacramento-San Joaquin Delta. Agriculture in the Sacramento Valley, forests in the upper watersheds, and grasslands and woodlands in the foothills characterize the region visually. Other low-elevation characteristics include occasional wetlands, vernal pools, and riparian areas. Much of the upper watershed on the east side of the Central Valley is forested, which limits views for motorists traveling through the area. Reservoirs in the region increase the level of scenic attractiveness at their maximum operating levels. Most of the areas surrounding the reservoirs and rivers throughout the Seller Service Area are considered Class A and B visual resources.

Buyer Service Area

The Buyer Service Area is visually characterized by San Luis Reservoir and extensive agricultural lands. San Luis Reservoir, located in the western San Joaquin Valley along the scenic Pacheco Pass State Route (SR) 152, is part of the San Luis Reservoir State Recreation Area. Surrounded by open spaces, rolling hills, and the Diablo Range, the area offers Class A and B visual resources, including springtime wildflower displays. The majority of the Buyer Service Area consists of agricultural lands, including tree and row crops, hay, and pasture, which are typically classified as Class C visual resources, with fallow fields common in the landscape.

3.10.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Seller Service Area

Under the No Action/No Project Alternative, water transfers would not be implemented. Any effects on visual resources in the Seller Service Area relating to lowered reservoir levels and decreased river flows would be the same as existing project operations. **The No Action/No Project Alternative would have no impact on visual resources in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

During dry years, under the No Action/No Project Alternative, the Buyer Service Area could experience increased amounts of cropland idling because of decreased water supplies. Therefore, the No Action/No Project Alternative may impact the aesthetics of agricultural scenic vistas in the Buyer Service Area due to the continued presence of empty fields. Agricultural land is generally considered a Class C visual resource and by definition, would not have an impact on Class A and B visual resources. There would be no change in visual resources compared to existing conditions under the No Action/No Project Alternative. **The No Action/No Project Alternative would have no impact on visual resources in the Buyer Service Area (CEQA Conclusion).**

Proposed Action

Seller Service Area

Water made available for transfer through stored reservoir release water transfer under the Proposed Action would result in reservoir drawdown during the transfer window. These fluctuations in river and reservoir water levels would not be beyond the historical or seasonal water levels at these water bodies. This impact would be less than significant as there would be no substantial changes or degradation to the visual character or quality of the sites and their surroundings. **The Proposed Action would have a less-than-significant impact on visual resources in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

The conveyance of transfer water through existing conveyance channels in the Buyers Service Area could be visible from adjacent land, vantage points, and roadways. Flows would be similar to what is normally flowing in these channels. The Proposed Project would improve the aesthetics of agricultural scenic vistas in the Project Area because additional agricultural water supply would be available from the proposed water transfers. Since there would be no changes beyond historical or seasonal fluctuations in water levels, the agricultural areas and San Luis Reservoir in the Buyer Service Area would not experience any visual impacts. **The Proposed Action would have no impact on visual resources in the Buyer Service Area (CEQA Conclusion).**

3.11 Recreation

3.11.1 Affected Environment/Environmental Setting

Recreational facilities, including parks and boat launch sites, can be found throughout the Central Valley of California, including along the Sacramento River, American River, Yuba River, Feather River, Merced River, San Joaquin River, and at the various associated reservoirs.

Seller Service Area

The existing areas of recreational opportunity in the Seller Service Area include rivers, reservoirs, waterfront parks, and other recreational amenities that would be affect by changes in the associated river flow and/or reservoir levels as a result of the Proposed Action. The Sacramento River, American River, Yuba River, Feather River, Merced River, San Joaquin River, and various associated reservoirs all provide a variety of recreational opportunities including fishing, picnicking, rafting, canoeing, kayaking, swimming, and power boating. Most reservoirs are generally stocked with trout to support recreational fisheries.

Buyer Service Area

In the Buyer Service Area, the San Luis Reservoir State Recreation Area is open year-round. Activities such as boating, fishing, camping, and picnicking are available to recreationists.

3.11.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Under the No Action/No Project Alternative, recreational opportunities in the Seller and Buyer Service Areas would not be affected by water transfers. **Therefore, there would be no impact on recreation under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

The Proposed Action would change the timing of when water would be released, which would have no impact on downstream water-related recreation opportunities. However, the release of water from reservoirs would result in lower reservoir water levels, which could reduce some recreational opportunities and cause recreationalists to go elsewhere. These conditions could decrease use of existing reservoir recreational facilities and increase the use of facilities at other parks. However, these changes associated with reservoir release transfers would be similar to historical and seasonal water level fluctuations under existing conditions and would not cause or accelerate the deterioration of any recreational facilities. **Therefore, effects under the Proposed Action to recreation at these reservoirs would be less than significant (CEQA Conclusion).**

Buyer Service Area

Under the Proposed Action, transfer water could be temporarily stored in San Luis Reservoir. These slight changes would have no substantial effect on any water related activity and would not affect land-based recreation. These changes would have no impact to the recreational setting or visitor attendance at the San Luis Reservoir San Luis Reservoir State Recreation Area. **Therefore, no impact on recreation would be anticipated in the Buyer Service Area (CEQA Conclusion).**

3.12 Energy

3.12.1 Affected Environment/Environmental Setting

Water storage within the service area of the potential Sellers is extensively developed for hydroelectric generation and the release of water from reservoirs is coordinated to optimize power generation along with other reservoir operational considerations (e.g., flood, temperature, or flow management). In the area of analysis, hydropower is generated by several of the willing Sellers or Sellers receive their water from the CVP/SWP storage facilities that generate power. Water transfers have the potential to alter the elevation of the hydroelectric power reservoirs, and this resulting head change can affect hydroelectric power generation efficiency.

Seller Service Area

The CVP has nine hydroelectric plants in the Seller Service Area. Of these, the Shasta Powerplant, Keswick Powerplant, Folsom Powerplant, and Nimbus Powerplant are located on a river system that would potentially be affected by the Proposed Action. Other facilities in the Seller Service Area include Lake Oroville, part of the SWP, which generates power at Edward Hyatt Pumping-Generating Plant, Thermalito Diversion Dam Powerplant, and Thermalito Pumping-Generating Plant. Placer County Water Agency operates the Hell Hole and French Meadows reservoirs on the Middle Fork American River for water supply and power generation. South Sutter WD operates Camp Far West Reservoir and Merced ID operates the Merced River Hydroelectric Project.

Buyer Service Area

Most pumping plants in the Buyer Service Area do not have complementary power generation facilities and would therefore not affect hydroelectric power generation. The Buyer Service Area does contain the San Luis Reservoir, which serves as a pump-storage reservoir for both the CVP and the SWP, using the Gianelli and O'Neill pumping-generating plants to fill San Luis Reservoir. The two plants provide the dual functions of generating electricity and pumping water.

3.12.2 Environmental Consequences/Environmental Impacts

No Action/No Project Alternative

Under the No Action/No Project Alternative, changes in hydrologic conditions in the Seller and Buyer Service Areas could affect the annual generation of power. These changes, however, would be the same as those that occur under existing conditions. **Therefore, there would be no impacts on energy under the No Action/No Project Alternative (CEQA Conclusion).**

Proposed Action

Seller Service Area

Under the Proposed Action, the release of water from reservoirs to make water available for transfer would generate additional hydroelectric power during the period when water is released in the Seller Service Area. However, after the water is released, less power would be generated while the reservoir refills during subsequent wet seasons. These reservoir releases would primarily change the timing of the power generation. **The Proposed Action would not substantially reduce power supplies, and these impacts would be less than significant (CEQA Conclusion).**

Under the Proposed Action, making water available for transfer through groundwater substitution actions would involve increased energy use for the groundwater pumps in the Seller Service Area. This increased pumping would not be a wasteful use of energy and would be necessary to achieve the project objectives. **The Proposed Action would have a less-than-significant impact on energy from groundwater pumping in the Seller Service Area (CEQA Conclusion).**

Buyer Service Area

Under the Proposed Action, transfer water could be temporarily stored in San Luis Reservoir. These slight changes would have no substantial effect related to power used and generated during storage. **Therefore, no impact on energy would be anticipated in the Buyer Service Area (CEQA Conclusion).**

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Section 4 Cumulative Impacts

The cumulative impacts analysis provided in this EA/IS identifies past, present, and reasonably foreseeable future projects with the potential to contribute to cumulative effects, when combined with the Proposed Action. Appendix K summarizes the cumulative projects analyzed in this EA/IS, which include other potential water transfers, the Healthy Rivers and Landscapes Program, the Coordinated Operations Agreement, the Lower Yuba River Accord, the Central Valley Salinity Alternatives for Long-term Sustainability, and the Water Reduction Program Agreement. The conditions with these projects, including the Proposed Action, are referred to as the cumulative condition.

The Proposed Action would not have cumulatively considerable impacts on geology and soils, greenhouse gas emissions, noise, agricultural land use, visual resources, recreation, or energy. The impacts on these resources would be less than significant under the Proposed Action and the cumulative project considered would also not have a significant impact on these resources and, therefore, would not result in a cumulatively considerable impact. The Proposed Action has the potential to make a cumulatively considerable contribution to impacts related to surface water supply, surface water quality, groundwater resources, air quality, and biological resources, which are discussed further below.

4.1 Surface Water Supply

As discussed in Section 3.1, Surface Water Supply, groundwater pumping may capture some groundwater that would otherwise discharge to streams as baseflow and may decrease river flows during dry conditions. If decreased river flows affect the ability of Reclamation and DWR to meet river flow and water quality standards, the actions taken to meet these standards could affect CVP and SWP water supplies. To reduce these effects, Mitigation Measure WS-1 includes a streamflow depletion factor to be incorporated into transfers to account for the potential water supply impacts to the CVP and SWP. As discussed in Appendix K, there is potential for other CVP and non-CVP water transfers to occur in addition to the Proposed Action. Other groundwater substitution transfers considered for approval by Reclamation and DWR using federal and state facilities would be required to have measures similar to Mitigation Measure WS-1 to protect river flows and, therefore, would not result in a cumulatively considerable impact.

4.2 Surface Water Quality

As discussed in Section 3.2, Surface Water Quality, the movement of water under the Proposed Action through the Delta would be consistent with the operations of the CVP and SWP (Reclamation 2024d) and impacts are expected to be less than significant. As discussed in Appendix K, there is potential for other CVP and non-CVP water transfers to occur in addition to the Proposed Action. As described in Section K.1.1. and summarized in Table K-1, cumulative water transfers are well below the 600,000 AF maximum transfer amount in critical and dry years and typically below the 360,000 AF maximum transfer amount for all other years, with the largest transfer in 2015 of 344,000 AF. Therefore, the movement of water through the Delta would remain consistent with the operations of the CVP and SWP and would not result in a cumulatively considerable impact.

4.3 Groundwater Resources

The reduction in recharge owing to the decrease in precipitation and runoff in the past drought years, in addition to the increase in the quantity of water made available for transfer through groundwater substitution actions would lower groundwater levels. The groundwater modeling for the Proposed Action indicates that groundwater substitution pumping associated with the Proposed Action could result in significant effects to groundwater resources. Implementation of Mitigation Measure GW-1, however, will

avoid any potentially significant effects on groundwater resources, and reduce impacts from transfer-related pumping to less than significant.

As discussed in Appendix K, there is potential for other CVP and non-CVP water transfers to occur and for the implementation of Voluntary Agreements in addition to the Proposed Action. Other groundwater substitution transfers considered for approval by Reclamation and DWR using federal and state facilities would be required to have measures similar to Mitigation Measure GW-1 to protect groundwater resources. Monitoring and mitigation programs would avoid or substantially reduce cumulative groundwater effects to less than significant. Reclamation will verify that monitoring and mitigation are appropriately implemented and significant effects related to groundwater do not occur. Coordination of groundwater programs in the Sacramento Valley would also minimize and avoid the potential for cumulative effects to groundwater resources. DWR is involved in multiple groundwater programs in the Sacramento Valley, including monitoring programs. Reclamation will work with DWR to track activities, collect and combine data, and assess potential groundwater effects. With implementation of Mitigation Measure GW-1 under the Proposed Action and the required groundwater monitoring and mitigation for transfer approval and agency coordination, the Proposed Action's incremental contribution to groundwater resources impacts is insubstantial and would not result in a cumulatively considerable contribution to effects on groundwater.

Groundwater extraction under the Proposed Action would be limited to withdrawals during April through October of the 2026 and 2027 contract years. Since groundwater would recharge in the winter months, adverse effects from the migration of reduced groundwater quality would not be substantial. Also discussed in Appendix K, the Central Valley Salinity Alternatives for Long-term Sustainability proposes the implementation of policies and tools to improve the management of salt and nitrate and improve groundwater quality. Overall, the Central Valley Salinity Alternatives for Long-term Sustainability would have a beneficial impact on groundwater quality and the Proposed Action's incremental contribution to groundwater quality impacts is insubstantial and would not result in a cumulatively considerable impact.

The Water Reduction Program Agreement, discussed in Appendix K, would also occur during the same time as the Proposed Action and includes the Sacramento River Settlement Contractor service area which overlaps with the Proposed Action project area. Under the Water Reduction Program Agreement, the Sacramento River Settlement Contractors would enter into an Agreement with Reclamation to forego a larger percentage of their contracted supply in certain drought years under two phases: from 2025 to 2035 and from 2036 to 2045 (Glenn-Colusa Irrigation District 2024). Water reduction activities would be implemented in response to the water reductions, including groundwater substitution pumping, cropland idling, cropland shifting, and conservation, as well as the implementation of drought-resiliency projects. It is anticipated an additional 167,100 AF of groundwater would be pumped under Phase 1 and 33,420 AF of groundwater would be pumped during Phase 2 (Glenn-Colusa Irrigation District 2024). As part of the Agreement, there would be an increased use of groundwater to irrigate crops, which could potentially result in reduced groundwater levels in the vicinity of the groundwater pumps. The EIR prepared for the Agreement includes Mitigation Measure HYD-2, which requires all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs, or where there are no GSPs, in accordance with SGMA. The EIR concluded that operation of groundwater wells in accordance with applicable GSA-managed GSPs and SGMA would reduce groundwater impacts to less than significant with mitigation. With implementation of Mitigation Measure GW-1 under the Proposed Action and the operation of groundwater wells in accordance with applicable GSA-managed GSPs and SGMA under the Agreement, the Proposed Action's incremental contribution to groundwater resources impacts is insubstantial and would not result in a cumulatively considerable contribution to effects on groundwater.

4.4 Geology and Soils

As discussed in Section 3.4, Geology and Soils, the Proposed Action could reduce groundwater levels, which could result in land subsidence. As discussed in the cumulative analysis in Section 4.3, Groundwater Resources, with the implementation of Mitigation Measure GW-1, the Proposed Action's incremental contribution to groundwater resources impacts would not result in cumulatively considerable effects on groundwater, including land subsidence.

4.5 Air Quality

As discussed in Section 3.5, Air Quality, the general conformity regulations apply to nonattainment and maintenance areas and are intended to demonstrate that a federal action would comply with the SIP and would not cause the air quality in the region to be degraded. Therefore, if the total of direct and indirect emissions is less than the general conformity *de minimis* thresholds, then the project would not be cumulatively considerable because the ambient air quality standards would continue to be maintained. Furthermore, if total emissions in attainment areas are less than 100 tons per year, the threshold for a "major source" in the state's New Source Review regulations, then emissions would not be cumulatively considerable.

As discussed in Section 3.5, Air Quality, total emissions would not exceed the general conformity *de minimis* thresholds in nonattainment and maintenance areas or the major source threshold in attainment areas. Therefore, air quality impacts would not be cumulatively considerable.

4.6 Greenhouse Gas Emissions

As discussed in Section 3.6, Greenhouse Gas Emissions, emissions from groundwater substitution would be up to 17,705 metric tons CO2e per year, which is lower than the CARB cap-and-trade threshold of 25,000 metric tons CO2e per year. GHG emissions that would occur under the Proposed Action are less than the threshold of significance and would not result in a cumulatively considerable impact.

4.7 Biological Resources

Reservoir release transfers under the Proposed Action would result in changes to storage volumes, reservoir elevations and surface areas, however all reservoirs would continue to be operated according to their existing requirements and within their current range of operations. Transfers under the Proposed Action, other potential cumulative transfers and other water releases from participating Seller reservoirs would be made under the terms and conditions of operating licenses, which include measures to protect natural resources within the reservoirs and in downstream rivers. Water elevations and storage levels during transfers would occur within the normal range of operations of these reservoirs under existing conditions. Therefore, reservoir release transfers under the Proposed Action would not result in a cumulatively considerable contribution to effects on biological resources.

Transfers under the Proposed Action and other cumulative transfers would result in increased flows downstream of the Sellers' point of diversion to the Delta in July through November. However, all cumulative water operations affecting Delta exports would be required to meet Delta water quality standards (D-1641 requirements) and existing or future regulatory flow requirements as specified by the NMFS and USFWS BOs for the Long-Term Operation of the CVP and SWP. Because all standards must continue to be met, the cumulative projects would not worsen conditions in the Delta for Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, Central Valley steelhead, southern distinct population segment green sturgeon, or delta smelt in the Delta.

Water made available through groundwater substitution actions under the Proposed Action would reduce groundwater levels and surface water flows in affected rivers and creeks. These streamflow depletions from groundwater substitution pumping under the cumulative condition could potentially affect flows for fish and natural communities. The transfers included in Table K-1 in Appendix K are generally spread throughout the Sacramento Valley and would not substantially increase streamflow depletion in any one area. Furthermore, implementation of Mitigation Measure GW-1 avoids or substantially reduces potential effects to existing natural communities to ensure impacts are less than significant. Other water transfers considered for approval by Reclamation and DWR using federal and state facilities would be required to have similar conservation measures in place to protect special-status species, as shown in the *Water Transfer White Paper* (Reclamation and DWR 2019). As a result, any losses in stream flows would be insubstantial and effects to fisheries or natural communities would be less than significant under the cumulative condition.

4.8 Noise

As discussed in Section 3.8, Noise, the Proposed Action would result in temporary increases in noise levels from the operation of wells. Other water transfers could also result in the temporary increase in noise levels from the operation of other wells. However, similar to the Proposed Action, these wells would also be located in rural areas and operated by willing landowners; therefore, any localized cumulative noise levels would be approved by the landowners and noise impacts would not be cumulatively considerable.

4.9 Agricultural Land Use

As discussed in Section 3.9, Agricultural Land Use, the Proposed Action would have no impact on agricultural land use in the Seller Service Area and have a beneficial impact on agricultural land use in the Buyer Service Area. Therefore, land use impacts would not be cumulatively considerable.

4.10 Visual Resources

As discussed in Section 3.10, Visual Resources, fluctuations in river and reservoir water levels under the Proposed Action would not be beyond the historical or seasonal water levels at these water bodies. All changes to reservoirs and rivers from the cumulative projects would remain within established water flow, water quality, and reservoir level standards. Therefore, impacts related to visual resources would not be cumulatively considerable.

4.11 Recreation

As discussed in Section 3.11, Recreation, changes associated with reservoir release transfers under the Proposed Action would be similar to historical and seasonal water level fluctuations under existing conditions and would not impact recreation. Other changes to reservoir operation from the cumulative project would remain consistent with typical operation and would not alter recreational opportunities. Therefore, impacts related to recreation would not be cumulatively considerable.

4.12 Energy

As discussed in Section 3.12, Energy, under the Proposed Action, increased pumping would not be a wasteful use of energy and would be necessary to achieve the project objectives. Any additional pumping from the cumulative project would also be necessary to achieve the project objectives. Therefore, impacts related to energy would not be cumulatively considerable.

Section 5 Other Reclamation Environmental Compliance Requirements

In addition to resources analyzed in Section 3, Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of the following additional items when preparing environmental documentation.

5.1 Indian Trust Assets

Indian Trust Assets (ITAs) are defined as legal interests in property held in trust by the U.S. government for Indian tribes or individuals, or property protected under U.S. law for federally recognized Indian tribes or individuals. ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and in-stream flows associated with a reservation or Rancheria. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the U.S. The following ITAs overlay the boundaries of the Sacramento Valley Groundwater Basin: Auburn Rancheria, Chico Rancheria, Colusa Rancheria, Cortina Rancheria, Paskenta Rancheria, and Rumsey Rancheria.

Groundwater substitution is the only method of making water available, under the Proposed Action, that could affect ITAs. Auburn Rancheria, Cortina Rancheria, and Rumsey Rancheria lie on the border of the basin where groundwater levels would be less affected by proposed groundwater substitution pumping. Groundwater modeling in the Sacramento Valley Groundwater Basin shows that there would be essentially no effect to groundwater elevations from groundwater substitution pumping near the Chico Rancheria and Paskenta Rancheria sites (Figure E-9 in Appendix E1). The Colusa Rancheria is near an area of potential drawdown; however, the changes in groundwater levels near the Colusa Rancheria would be negligible and would not affect groundwater pumping within Colusa Rancheria (Figure E-9 in Appendix E1).

The Redding Rancheria falls within the Redding Area Groundwater Basin, the area from which ACID would be making surface water available for transfer through groundwater substitution actions. The groundwater evaluation concludes that, although there would not be significant effects to groundwater elevations in the Redding Area Groundwater Basin based on past pump tests, ACID would develop and implement a Monitoring Program and Mitigation Plan because of the uncertainty of changes in groundwater levels in a Critical Year. As a result, there would be no effects to the Redding Rancheria.

Because groundwater substitution pumping would not significantly affect groundwater elevations near the ITA sites, the Proposed Action would not affect ITAs.

5.2 Indian Sacred Sites

As defined by Executive Order 13007: Indian Sacred Sites, a sacred site "means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The affected environment for the Proposed Action does not include Federal land; therefore, there is no potential for Indian Sacred Sites to be affected by the Proposed Action.

5.3 Consultation and Coordination

Reclamation and SLDMWA consulted with the following local, Federal, and State agencies in preparing this EA/IS.

5.3.1 Agencies and Persons Consulted

Reclamation and SLDMWA coordinated with Buyers and Sellers to define transfer types and quantities and discuss potential impacts and proposed mitigation measures. A list of Sellers can be found in Table 2-1 and a list of Buyers is presented in Section 2.2.2. Reclamation and SLDMWA also coordinated with DWR, SWRCB, and CDFW on the proposed mitigation measures.