Chapter 10
Other CEQA Discussions

The chapter is presented in its entirety from the Draft Environmental Impact Report (DEIR), with revisions to text presented as a strikethrough or underline. Text shown with a strikethrough has been deleted from the DEIR. Text that has been added is presented as single underlined.

10.1 Cumulative Impacts

10.1.1 CEQA Requirements for Cumulative Assessment

As stated in California Environmental Quality Act (CEQA) Section 21083(b)(2), a project may have a significant impact on the environment if "its effects are individually limited but cumulatively considerable." In this context, "cumulatively considerable" means that the incremental impacts of an individual project are significant when viewed in connection with the impacts of past projects, the impacts of other current projects, and the impacts of probable future projects (State CEQA Guidelines, Section 15065[a][3]). Section 15355 of the State CEQA Guidelines defines "cumulative impacts" as:

> …two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
>
> e) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> f) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Section 15064(h)(4) of the State CEQA Guidelines explains that, "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the Proposed Project's incremental impacts are cumulatively considerable."

The analysis presented in this section is consistent with statutory and regulatory requirements to assess cumulative impacts and includes:

1. A determination of whether the impacts of related past, present, and future plans and projects would cause a cumulatively significant impact; and
2. A determination as to whether the Proposed Project would have a "cumulatively considerable" contribution to any significant cumulative impact. (See Sections 15130(a), (b), Section 15355(b), Section 15064(h), and Section 15065(a)(3), (c) of the State CEQA Guidelines.)

The discussion of cumulative impacts should reflect the severity of the impacts as well as the likelihood of their occurrence; however, the discussion does not need to be as detailed as the discussion of environmental impacts attributable to the Proposed Project alone. The analysis should be guided by the standards of practicality and reasonableness, and it should focus on the cumulative impact(s) to which the other identified projects contribute, rather than to the attributes of other projects which do not contribute to the cumulative impact (CEQA Guidelines, Section 15130[b]).

10.1.2 Cumulative Context and Approach

Section 15130(b)(1) of the State CEQA Guidelines identifies two approaches to analyzing cumulative impacts. One option is a *summary approach* (also known as the plan approach), wherein the relevant projections, as contained in an adopted general plan or related planning document that evaluates regional or area-wide conditions, are summarized. The other is the *list approach*, in which a defined set of past, present, and reasonably anticipated future projects producing related or cumulative impacts is considered for analysis.

The cumulative analysis used for this ~~Draft~~ Environmental Impact Report (~~DEIR~~ EIR) uses the list approach. Table 10-1 shows known past, present, and reasonably foreseeable future projects, the impacts of which may combine with impacts from the Proposed Project to cause cumulative impacts. The projects listed in Table 10-1 serve as the foundational information for conducting the cumulative impact assessments for the resources addressed in the ~~DEIR~~ EIR .

The table identifies projects that have occurred, are occurring, or are reasonably expected to occur in the future and that may affect similar environmental resources as the proposed long-term State Water Project (SWP) operations. The table includes the name of the project, lead agency(ies), summary description of the scope of the project, and citations for the references in Chapter 12, "References," listing project source documentation.

Table 10-1 does not include possible future projects that are considered to be speculative. For this analysis, if a project is only in the preliminary planning stage, does not have a defined physical footprint and operational criteria, has not completed applicable environmental review, or has not been authorized or budgeted by sponsoring authorities, it is considered to be speculative. Accordingly, insufficient information exists to include and evaluate such projects at this time and they are not considered reasonably foreseeable future projects.

As discussed in the Initial Study (provided in Appendix 3A, "Initial Study"), the Proposed Project would have no impacts on aesthetics, agricultural resources, air quality, terrestrial biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and service systems, and wildfire; therefore, it would not contribute to potential cumulative impacts on these resource areas.

Thus, the cumulative impacts analysis in this ~~DEIR~~ EIR is limited to the potential of the Proposed Project to contribute to potentially significant cumulative impacts related to the topics of surface water hydrology, surface water quality, aquatic biological resources, tribal cultural resources, environmental justice, and climate change resiliency and adaptation.

10.1.3 Scope of Cumulative Analysis

The geographic context for cumulative impact analyses for each resource area is limited to those projects shown in Table 10-1 with potential to also cause changes to each specific resource within the same waterbodies evaluated for direct impacts potentially associated with the Proposed Project (i.e., the Sacramento River downstream from the Feather River confluence, the Sacramento–San Joaquin Delta [Delta], and Suisun Marsh and Bay). Additionally, the temporal context of each project shown in Table 10-1 was evaluated relative to the temporal context of the Proposed Project. The expected duration of the Proposed Project is 10 years. After 10 years, the California Department of Water Resources (DWR) will seek further California Endangered Species Act (CESA) compliance for continued long-term operations of the SWP. Therefore, the temporal scope of the cumulative analysis also is 10 years.

The effects of the projects listed in Table 10-1 are discussed below the table in the context of the cumulative analysis for each of the resource areas evaluated.

Table 10-1a. List of Cumulative Projects, Water Supply, Water Management, and Water Quality Projects and Actions

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Bethany Dams Improvement Project	**Yes**	No	No	DWR	To ensure the long-term safety and operations of the SWP, DWR conducted additional vegetation removal in the drainage ditches at Dams 1 and 2; removed accumulated sediment blocking the culvert in the drainage ditch at Dam 3; repaired existing rodent burrow damage on the dam faces; established a long-term, sustainable program of effective rodent control to reduce or eliminate further burrowing within the dam embankments; and performed annual maintenance to repair new rodent burrow damage at the four Bethany Reservoir Dams. Work for this project began in April 2021 and is complete. For more information please see the Bethany Dams Improvement Project website: https://water.ca.gov/About/Facilities/Bethany-Dams-Improvement-Project
B.F. Sisk Dam Raise and Reservoir Expansion Project	No	No	**Yes**	Reclamation and SLDMWA	The project will lower seismic risks and reduce downstream public safety concerns by raising the dam crest by 12 feet, adding shear-keys, and installing downstream stability dams to address bank instability during a seismic event. The Final EIS was released in August 2019, with a ROD posted in December 2019. A supplemental EIS was released in July 2021 with a Finding of No Significant Impacts and signed in August 2021. Currently, the project is undergoing facility feasibility studies and reviews, final design, and economic, environmental, and geologic assessments. The final project is projected to cost $1.1 billion. For more information please see Reclamation's website: https://www.usbr.gov/mp/sod/projects/sisk/
Central Valley Project Long-term Operation	No	No	**Yes**	Reclamation, DWR, USFWS, NMFS	Reclamation and DWR reinitiated consultation on the Coordinated Long-Term Operation of the CVP and SWP. Reclamation completed a biological assessment to support consultation under Section 7 of the ESA of 1973, as amended, that documents the potential effects of the proposed action on federally listed endangered and threatened species that have the potential to occur in the project area and critical habitat for these species. USFWS and NMFS will be issuing BiOps that may contain Reasonable and Prudent Actions that limit the operations of the CVP and SWP for protecting federally listed endangered and threatened species. For more information please see Reclamation's website: https://www.usbr.gov/mp/bdo/lto/index.html
Central Valley Project and State Water Project COA 2018 Addendum	No	**Yes**	No	Reclamation and DWR	Reclamation and DWR operate their respective facilities in accordance with the COA. The COA defines the project facilities and their water supplies, sets forth procedures for coordinating operations, and identifies formulas for sharing joint responsibilities for meeting Delta standards and other legal uses of water. The COA further identifies how unstored flow is shared, sets up a framework for exchange of water and services between the projects, and provides for periodic review of the agreement. In 2018, Reclamation and DWR amended four key elements of the COA to address changes since the COA originally was signed: (1) in-basin uses; (2) export restrictions; (3) CVP use of Banks Pumping Plant up to 195,000 af/yr; and (4) periodic review. The COA sharing percentages for meeting Sacramento Valley in-basin uses now vary from 80% responsibility of the CVP and 20% responsibility of the SWP in Wet year types to 60% responsibility of the CVP and 40% responsibility of the SWP in Critical year types. For more information please see DWR's website: https://water.ca.gov/News/News-Releases/2018/Dec-18/State-and-Federal-Government-Collaborate-to-Manage-CA-Water-Supply
Central Valley RWQCB Irrigated Lands Regulatory Program	No	**Yes**	No	Central Valley RWQCB	The Irrigated Lands Regulatory Program regulates discharges from irrigated agricultural lands. Its purpose is to prevent agricultural discharges from impairing the waters that receive the discharges. The California Water Code authorizes the State Water Board and RWQCBs to conditionally waive waste discharge requirements if this is in the public interest. On this basis, the Los Angeles, Central Coast, Central Valley, and San Diego RWQCBs have issued conditional waivers of waste discharge requirements to growers that contain conditions requiring water quality monitoring of receiving waters. In 2010, the Central Valley RWQCB proposed to expand the requirements to groundwater especially for regulation of discharges with higher concentrations of nutrients (Central Valley Regional Water Quality Control Board 2011a). Participation in the waiver program is voluntary; however, non-participant dischargers must file a permit application as an individual discharger, stop discharging, or apply for coverage by joining an established coalition group. The waivers must include corrective actions when impairments are found. For more information please see the RWQCB website: https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/
Delta Conveyance Project	No	No	**Yes**	DWR	The proposed Delta Conveyance Project is an essential climate adaptation strategy. It protects against future water supply losses caused by climate change, sea-level rise, and earthquakes. It also helps ensure that the SWP can capture, move and store water to make the most of big, but infrequent, storm events. The proposed Delta Conveyance Project consists of the construction, operation, and maintenance of new SWP water diversion and conveyance facilities in the Delta that would be operated in coordination with the existing SWP facilities. The new water conveyance facilities would divert up to a combined 6,000 cfs of water from two new north Delta intakes with state-of-the-art fish screens and convey it through a single tunnel directly to a new pumping plant and aqueduct complex in the south Delta, discharging it to the Bethany Reservoir for delivery through existing SWP export facilities. DWR released the Final EIR on December 8, 2023. For more information, please see DWR's website: https://water.ca.gov/deltaconveyance. A quantitative analysis has been prepared of the operation of the proposed DCP under conditions 35 to 65 years into the future centered around year 2070. See "CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis" available at https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DWR_DCP_2023_2070Memo_December.pdf.
Delta Water Supply Project	No	**Yes**	No	City of Stockton	The Delta Water Supply Project is a new supplemental water supply for the Stockton Metropolitan Area by diverting water from the Delta and conveying it through a pipeline to a surface water treatment plant, where it would be treated to the highest drinking water standards and distributed. The project has the capacity to treat and deliver up to 30 mgd or 33,600 af/yr of water, meeting approximately one third of Stockton's water needs. Construction of the project was completed in 2012. For more information please see: https://www.cdmsmith.com/en/Client-Solutions/Projects/Stockton-Delta-Water-Project

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Delta-Mendota Canal/California Aqueduct Intertie	No	**Yes**	No	Reclamation	The DMC/California Aqueduct Intertie consists of constructing and operating a pumping plant and pipeline connection between the DMC and the California Aqueduct. The Intertie, which is now operational, is used to achieve multiple benefits, including meeting current water supply demands, allowing the maintenance and repair of the CVP Delta export and conveyance facilities, and providing operational flexibility to respond to emergencies related to both the CVP and the SWP. The Intertie includes a 450-cfs pumping plant at the DMC that allows up to 400 cfs to be pumped from the DMC to the California Aqueduct via an underground pipeline. The additional 400 cfs allows the Jones Pumping Plant to pump to its authorized amount of 4,600 cfs. Because the California Aqueduct is approximately 50 feet higher in elevation than the DMC, up to 900 cfs flow can be conveyed from the California Aqueduct to the DMC using gravity flow. The Intertie is owned by the federal government and operated by the SLDMWA. An agreement among Reclamation, DWR, and SLDMWA identifies the responsibilities and procedures for operating the Intertie (U.S. Bureau of Reclamation and San Luis and Delta-Mendota Water Authority 2015). For more information, please see: https://www.usbr.gov/mp/mpr-news/docs/factsheets/intertie.pdf
Eastern San Joaquin Integrated Conjunctive Use Program	No	**Yes**	No	NSJCGBA	The Integrated Conjunctive Use Program is to develop approximately 140,000 to 160,000 af/yr of new surface water supply for the basin that will be used to directly and indirectly to support conjunctive use by the NSJCGBA member agencies. This amount of water would support groundwater recharge at a level consistent with the NSJCGBA's objectives for conjunctive use and the underlying groundwater basin. Within this framework, the program would implement the following categories of conjunctive use projects and actions: water conservation measures; water recycling; groundwater banking; water transfers; development of surface storage facilities; groundwater recharge; river withdrawals; and construction of pipelines and other facilities. To enable and facilitate sustainable and reliable management of San Joaquin County's water resources, NSJCGBA developed a series of Basin Management Objectives to support conjunctive use and address a variety of water resources issues, including groundwater overdraft, saline groundwater intrusion, degradation of groundwater quality, environmental quality, land subsidence, supply reliability, water demand, urban growth, recreation, agriculture, flood protection, and other issues. The purpose of the Basin Management Objectives is to ensure the long-term sustainability of water resources in the San Joaquin Region. A Final EIR for the program was released in February 2011 (Northeastern San Joaquin County Groundwater Banking Authority 2011). For more information, please see the Eastern San Joaquin Integrated Conjunctive Use Program website: https://www.esjirwm.org/IRWMP/Eastern-San-Joaquin-ICU-Program
Harvest Water (formerly called the South County Ag Program)	No	**Yes**	No	Sacramento Regional County Sanitation District	Harvest Water is being developed by Sacramento Regional County Sanitation District and could deliver up to 50,000 af/yr of safe and reliable supply of tertiary-treated water for agricultural uses to more than 16,000 acres of permanent agriculture through irrigation, as well as habitat conservation lands near the Cosumnes River and Stone Lakes Wildlife Refuge. This project has received up to $287.5 million through the Proposition 1 grant funding of the California Water Commission, WSIP. The district is currently working with local farmers and the initial planning stages of preliminary designs for transmission and distribution systems near Elk Grove in southern Sacramento County. For more information please see the Sacramento Regional County Sanitation District Website: https://www.regionalsan.com/harvest-water
Long-term and short-term water transfers	No	**Yes**	No	Biggs–West Gridley Water District	These projects provide water to municipal, agricultural, and ecosystem water users, including wildlife refuges with programs that transfer water from Northern California to the San Joaquin Valley and Southern California across the Delta. For more information, see the Biggs-West Gridley Water District website: https://www.bwgwater.com/news-information/water-transfers.
Los Vaqueros Reservoir Expansion Phase 2	No	**Yes**	No	Reclamation, CCWD, DWR	Los Vaqueros Reservoir is an off-stream reservoir in the Kellogg Creek watershed west of the Delta. The Los Vaqueros Reservoir initial construction was completed in 1997 as a 100,000-af off-stream storage reservoir owned and operated by CCWD to improve delivered water quality and emergency storage reliability to its customers. In 2012, the Los Vaqueros Reservoir was expanded to a total storage capacity of 160,000 af (Phase 1), to provide additional water quality and supply reliability benefits, and to adjust the timing of its Delta water diversions to accommodate the life cycles of Delta aquatic species, reducing species' impacts and providing a net benefit to the Delta environment. As part of the Storage Investigation Program described in the CALFED Bay-Delta Program ROD, additional expansion up to 275,000 af (Phase 2) was evaluated by CCWD, DWR, and Reclamation. The alternatives considered in the evaluation also consider methods to convey water from Los Vaqueros Reservoir to the South Bay Aqueduct, to provide water to the Zone 7 Water Agency, Alameda County Water District, and Santa Clara Valley Water District. The Final EIS/EIR was released by Reclamation and CCWD on March 15, 2010 (U.S. Bureau of Reclamation 2018a). Construction was planned to begin in fall 2023 but has not yet begun. For more information, please see the CCWD website: https://www.ccwater.com/1060/Los-Vaqueros-Reservoir-Expansion-Project
Merced Irrigation District's Merced River Hydroelectric Project	No	**Yes**	No	FERC, Merced ID	The Merced River Hydroelectric Project is on the Merced River in Mariposa County and includes both Lake McClure and McSwain Reservoir, two powerhouses (New Exchequer and McSwain), and recreation facilities. The project does not include any transmission lines, canals, or open conduits. The installed capacity of the Merced River Hydroelectric Project is 103.5 megawatts. The initial FERC license expired on February 28, 2014. The objective of the relicensing process is to continue operation and maintenance of the Merced River Hydroelectric Project facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license (Merced Irrigation District 2015). For more information, please see the State Water Board's website: https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/mercedriver_ferc2179.html
North Bay Aqueduct Alternative Intake Project	No	**Yes**	No	DWR and Solano County Water Agency	DWR issued a Notice of Preparation on December 2, 2009, to construct and operate an alternative intake on the Sacramento River, generally upstream of the Sacramento Regional Wastewater Treatment Plant, and connect it to the existing NBA system by a new segment of pipe. The proposed alternative intake would be operated in conjunction with the existing NBA intake at Barker Slough. The proposed project would be designed to improve water quality and to provide reliable deliveries of SWP supplies to its contractors, the Solano County Water Agency and the Napa County Flood Control and Water Conservation District. However, this project is currently on hold with no construction proceeding in the near term. For more information please see the Solano County Water Agency website: https://www.scwa2.com/north-bay-aqueduct/

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Pulse Flows Component of the Water Storage Investment Program Groundwater Projects	No	No	**Yes**	DWR, Inland Empire Utilities Agency, Groundwater Banking Joint Powers Authority, Rosamond Community Services District, California Water Commission, State Water Board, and CDFW	DWR issued a draft supplemental EIR for the Pulse Flows Component of the WSIP Groundwater Projects on February 16, 2024. The Draft SEIR is a supplement to three certified EIRs prepared pursuant to CEQA for three independent WSIP Groundwater Projects: (1) the Chino Basin Program, (2) the Kern Fan Groundwater Storage Project, and (3) the Willow Springs Water Bank Project. The WSIP Groundwater Projects involve groundwater storage to improve local water supply and require an exchange of water with DWR to provide ecosystem benefits through the release of pulse flows from Lake Oroville into the Low Flow Channel of the Feather River. A pulse flow release would be requested by CDFW and approved by DWR to benefit habitat for native fish species and improve conditions for spawning and migration. The Inland Empire Utilities Agency acted as CEQA lead agency in preparing and certifying the EIR for the Chino Basin Program. The Authority for the Groundwater Banking Joint Powers Authority acted as CEQA lead agency in preparing and certifying the EIR for Kern Fan. The Rosamond Community Services District acted as CEQA lead agency in preparing and certifying the EIR for Willow Springs. Pursuant to CEQA, the Inland Empire Utilities Agency, Authority for the Groundwater Banking, and Rosamond Community Services District remain the lead agencies for the Pulse Flows Component, and DWR, the State Water Board, the California Water Commission, and CDFW are responsible agencies (and a trustee agency in the case of CDFW). For more information, please see DWR's Draft SEIR on DWR's website: https://water.ca.gov/News/Public-Notices/2024/Feb-24/Draft-Supplemental-Environmental-Impact-Report-for-the-Pulse-Flows-Component.
Sacramento Regional Wastewater Treatment Plant Facility Upgrade Project (EchoWater)	**Yes**	No	No	Sacramento Regional County Sanitation District	Sacramento Regional County Sanitation District upgraded its existing facilities at the Sacramento Regional Wastewater Plant to meet new NPDES permit requirements. The project resulted in improved quality of treated effluent water for discharge to the Delta. The project upgraded existing tertiary treatment facilities to advanced unit processes, including biological nutrient removal, which is essential to the new water treatment process. The upgrade involved 22 separate construction projects, with all construction completed in spring 2023. For more information, please see the Sacramento Area Sewer District website: https://www.regionalsan.com/echowater-project
Sacramento Stormwater Quality Partnership	No	**Yes**	No	Sacramento County, Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova	The SSQP is a collaboration of public agencies that protects and improves water quality in local waterways for the benefit of the community and the environment. The partnership's main charge is to oversee compliance with the Sacramento area-wide Municipal Stormwater Permit, which is designed to comply with state and federal clean water regulations (NPDES Stormwater Permit No. CAS082597). The goals of the partnership are to: educate and inform the public about urban runoff pollution; encourage public participation in community and clean-up events; work with industries and businesses to encourage pollution prevention; require construction activities to reduce erosion and pollution; and require developing projects to include pollution controls that will continue to operate after construction is completed. Program elements include monitoring, target pollutant reduction, special studies (such as evaluating the effectiveness of BMPs), and public outreach (Sacramento Stormwater Quality Partnership 2016). For more information, please see the SSQP website: https://www.beriverfriendly.net/
Sacramento–San Joaquin Delta Estuary TMDL for Methylmercury	No	**Yes**	No	Central Valley RWQCB	The Central Valley RWQCB identified the Delta as impaired because of elevated levels of methylmercury in Delta fish that pose a risk for human and wildlife consumers. As a result, it initiated the development of a water quality attainment strategy to resolve the mercury impairment. The strategy has two components: the methylmercury TMDL for the Delta and the amendment of the WQCP for the Sacramento River and San Joaquin River Basins (the Basin Plan) to implement the TMDL program. The Basin Plan amendment requires methylmercury load and waste load allocations for dischargers in the Delta and Yolo Bypass to be met as soon as possible, but no later than 2030. The regulatory mechanism to implement the Delta Mercury Control Program for point sources would be through NPDES permits. Nonpoint sources would be regulated in conformance with the State Water Board's Nonpoint Source Implementation and Enforcement Policy. Both point and nonpoint source dischargers would be required to conduct mercury and methylmercury control studies to develop and evaluate management practices to control mercury and methylmercury discharges. The RWQCB will use the study results and other information to amend relevant portions of the Delta Mercury Control Program during the Delta Mercury Control Program Review. The Basin Plan amendment also requires proponents of new wetland and wetland restoration projects scheduled for construction after 2011 to either participate in a comprehensive study plan or implement a site-specific study plan, evaluate practices to minimize methylmercury discharges, and implement newly developed management practices as feasible. Projects would be required to include monitoring to demonstrate effectiveness of management practices. Activities, including changes to water management and storage in and upstream of the Delta, changes to salinity objectives, dredging and dredge materials disposal and reuse, and changes to flood conveyance flows, would be subject to the open water methylmercury allocations. Agencies would be required to include requirements for projects under their authority to conduct control studies and implement methylmercury reductions as necessary to comply with the allocations by 2030 (Central Valley Regional Water Quality Control Board 2010, 2011b). For more information please see the Central Valley RWQCB website: https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/
San Francisco Bay Mercury TMDL	No	**Yes**	No	SFBRWQCB	San Francisco Bay is impaired because mercury contamination is adversely affecting existing beneficial uses, including sport fishing, preservation of rare and endangered species, and wildlife habitat. On February 12, 2008, the EPA approved a Basin Plan amendment incorporating a TMDL for mercury in San Francisco Bay and an implementation plan to achieve the TMDL. The amendment was formerly adopted by the SFBRWQCB, the State Water Board, and the state Office of Administrative Law. It is now officially incorporated into the WQCP for the San Francisco Bay Basin (Basin Plan). The San Francisco Bay mercury TMDL, which includes the waters of the Delta within the San Francisco Bay region, is intended to (1) reduce mercury loads to achieve load and wasteload allocations; (2) reduce methylmercury production and consequent risk to humans and wildlife exposed to methylmercury; (3) conduct monitoring and focused studies to track progress and improve the scientific understanding of the system; and (4) encourage actions that address multiple pollutants. The implementation plan establishes requirements for dischargers to reduce or control mercury loads and identifies actions necessary to better understand and control methylmercury production. In addition, it addresses potential mercury sources and describes actions necessary to manage risks to Bay fish consumers. Load reductions are expected via the Delta Methylmercury TMDL (river source), plus urban runoff management, Guadalupe River mine remediation, municipal and industrial wastewater source controls and pretreatment, and sediment remediation (San Francisco Bay Regional Water Quality Control Board 2008). For more information please see the SFBRWQCB website: https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sfbaymercurytmdl.html

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
San Luis Reservoir Low Point Improvement	No	No	**Yes**	Reclamation, Santa Clara Valley Water District, and SLDMWA	Reclamation and DWR jointly manage San Luis Reservoir for the purpose of storing and reregulating CVP and SWP water from the Delta. San Luis Reservoir is an off-stream water storage facility that stores water for both projects. In 2000, the CALFED Programmatic ROD identified the need to resolve the low point problem to potentially increase use of water from San Luis Reservoir by up to 200,000 af. The San Luis Reservoir Low Point Project is designed to address water supply reliability issues in San Luis Reservoir that result when water levels fall below 369 feet above sea level (corresponding to a reservoir capacity of 300,000 af) and create water quality degradation that has the potential to interrupt a portion of the San Felipe Division's water supply. The term "low point" refers to a range of minimum pool elevations in San Luis Reservoir. During the late summer months if the reservoir elevation drops below 369 feet above sea level, the conditions in San Luis Reservoir promote the growth of algae in the reservoir. The water quality during the algal blooms is not suitable for agricultural water users with drip irrigation systems in San Benito County or municipal and industrial water users relying on existing water treatment facilities in Santa Clara County. The low point issue increases progressively as the reservoir continues to drop below elevation 369 feet. This creates a risk for the San Felipe Division contractors because they rely on San Luis Reservoir for receiving their CVP allocation. For more information please see Reclamation's website: https://www.usbr.gov/mp/sllpp/
Shasta Lake Water Resources Investigation	No	No	**Yes**	Reclamation	Reclamation undertook the Shasta Lake Water Resources Investigation to determine the type and extent of federal interest in a multiple purpose plan to modify Shasta Dam and Reservoir, to: increase survival of anadromous fish populations in the upper Sacramento River; increase water supplies and water supply reliability to agricultural, municipal and industrial users, and environmental purposes; and, to the extent possible through meeting these objectives, include features to benefit other identified ecosystem, flood damage reduction, and related water resources needs, consistent with the objectives of the CALFED Bay-Delta Program. The alternatives for expansion of Shasta Lake include, among other features, raising the dam from 6.5 to 18.5 feet above current elevation, which would result in additional storage capacity of 256,000 to 634,000 af, respectively (U.S. Bureau of Reclamation 2015). The increased capacity is expected to improve water supply reliability and increase the coldwater pool, which would provide improved water temperature conditions for anadromous fish in the Sacramento River downstream from the dam. The final EIS was released in 2014, and the final feasibility study was released in 2015. A final supplemental EIS was released in November 2020. No ROD has been issued. However, in March 2018, Congress appropriated $20 million for Shasta preconstruction activities. Congress has not yet authorized construction or appropriated funds for construction of the project (U.S. Bureau of Reclamation 2018b, 2020). For more information, please see Reclamation's website: https://www.usbr.gov/mp/ncao/shasta-lake.html
Sites Reservoir Project	No	No	**Yes**	Reclamation, Sites Project Authority	The Sites Reservoir Project involves construction of off-stream surface storage north of the Delta for enhanced water management flexibility in the Sacramento Valley, increased California water supply reliability, and storage and operational benefits for programs to enhance water supply reliability, both locally and statewide, benefit Delta water quality, and improve ecosystems. Secondary objectives for the project are to: (1) allow flexible hydropower generation to support integration of renewable energy sources, (2) develop additional recreation opportunities, (3) provide potential public benefits to sensitive fishes throughout the Delta watershed, and (4) provide incremental flood damage reduction opportunities (Sites Project Authority and U.S. Bureau of Reclamation 2017). The DEIR/EIS was released for public review on August 14, 2017. A Revised DEIR/Supplemental DEIS was released for public review on November 12, 2021. A final EIR was certified by the Sites Project Authority on November 17, 2023. For more information, please see the Sites Project Authority website: https://sitesproject.org/
South Delta Gates Project (SDG)	No	No	**Yes**	DWR, Reclamation	DWR is exploring the potential construction of permanent operable gates in the south Delta to replace the current temporary agricultural rock barriers (i.e., the Temporary Barriers Project [TBP]) that are constructed and removed annually at Old River, Middle River, and Grant Line Canal. The potential construction of the SDG would provide the benefits of the current TBP, helping maintain water levels for water user diversions, and would eliminate the need to annually construct and remove the rock barriers in the three south Delta channels because they would be permanent fixtures that can be opened or closed rapidly. Additionally, the SDG Project has the potential to generate environmental benefits associated with fisheries and water quality. Operations of the SDG are currently anticipated to be consistent with the TBP. If operational plans are adjusted at a future date, such adjusted operations would be subject to further environmental review.
State Water Project (SWP) Oroville Project	No	**Yes**	No	FERC, DWR	The Oroville Facilities, as part of the SWP, also are operated for flood management, power generation, water quality improvement in the Delta, recreation, and fish and wildlife enhancement. The objective of the relicensing process is to continue operation and maintenance of the Oroville facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license. The initial FERC license for the Oroville Facilities, issued on February 11, 1957, expired on January 31, 2007. The Facilities operate pursuant to the terms of an annual permit issued by FERC. DWR published the Final EIR in June 2008 and the Notice of Determination in July 2008 (California Department of Water Resources 2008). DWR is awaiting the FERC license renewal. For more information, please see DWR's website: https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/Oroville/HLPCO-Oroville-Facilities-Project-2100#:~:text=2100%2C%20or%20P%2D2100%2C,wildlife%20preservation%20and%20enhancement%20facilities.
Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project	**Yes**	No	No	DWR	The Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project was a multiple-year study of the effectiveness of elevating DO concentrations in the channel. DO concentrations drop as low as 2 to 3 mg/L during warmer and lower water flow periods in the San Joaquin River. The low DO levels can adversely affect aquatic life, including the health and migration behavior of anadromous fish (e.g., salmon). The objective of the study was to maintain DO levels above the minimum recommended levels specified in the State's WQCP for the Sacramento and San Joaquin River basins. The Basin Plan water quality objectives for DO are 6.0 mg/L in the San Joaquin River (between Turner Cut and Stockton, September 1 through November 30) and 5.0 mg/L the remainder of the year. The project's full-scale aeration system includes two 200-foot-deep u-tube aeration tubes; two vertical turbine pumps capable of pumping more than 11,000 gallons of water each; a liquid-to-gas oxygen supply system; and numerous pieces of ancillary equipment and control systems. The system has been sized to deliver approximately 10,000 pounds of oxygen per day into the Deep Water Ship Channel. The aeration system is operated only when channel DO levels are below the Basin Plan DO water quality objectives (approximately 100 days per year). The project study includes an ongoing assessment of DO levels in the channel and vicinity and a study of potential adverse effects of low DO on salmon. The final report was released in December 2010 (California Department of Water Resources 2010a). For more information, please see the Port of Stockton website: https://www.portofstockton.com/aeration-facility/
Turlock Irrigation District and Modesto	No	**Yes**	No	FERC, TID, MID	The Don Pedro Project is on the Tuolumne River in Tuolumne County. The initial license was issued for operations between 1971 and 1991, followed by requirements to evaluate fisheries water needs in the Tuolumne River.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Irrigation District Don Pedro Project					In 1987, after TID and MID applied to amend their license to add a fourth generating unit, FERC approved an amended fish study plan with possible changes in 1998. In 1996, FERC amended the license to implement amended minimum flow criteria and require fish monitoring studies for completion in 2005. In 2002, NMFS requested that FERC initiate formal consultation on the effects of the Don Pedro Project on Central Valley steelhead. FERC approved the Summary Report on fisheries in 2008. In 2009, NMFS, USFWS, CDFW, and several environmental interest groups filed requests for rehearing on the license. FERC denied portions of the request but required instream flow studies to be conducted and required NMFS to be included for consultation on any authorized changes to minimum flow release schedules. FERC also directed appointment of an administrative law judge to assist in assessing the need for and feasibility for interim measures before relicensing. A final report was completed in 2010. Following completion of the report and a monitoring plan by the affected districts, FERC approved an order modifying and approving instream flow and monitoring study plans. A final license application, including an Environmental Report, was submitted to FERC in April 2014 (Tulare Irrigation District and Modesto Irrigation District 2014). An amendment to the final license application was submitted to FERC in October 2017 (Tulare Irrigation District and Modesto Irrigation District n.d.). The license expired in 2016. The objective of the relicensing process is to continue operation and maintenance of the Don Pedro Project facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license. For more information please see the State Water Board website: https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/donpedro_ferc2299.html
Upper San Joaquin River Basin Storage Investigation	No	No	**Yes**	Reclamation, DWR	The Upper San Joaquin River Basin Storage Investigation is being conducted by Reclamation and DWR to evaluate alternative plans to increase Upper San Joaquin River Storage, to enhance the San Joaquin River restoration efforts and improve water supply reliability for agricultural, municipal and industrial, and environmental uses in the Friant Division, the San Joaquin Valley, and other regions of the state. The investigation is evaluating integration of conjunctive management and water transfer concepts into plan formulations. Additional storage also is expected to provide incidental flood damage reduction benefits (U.S. Bureau of Reclamation 2014). Reclamation is analyzing alternatives for a new dam and a 1,260,000-af reservoir along the San Joaquin River, upstream from Millerton Lake in an area known as Temperance Flat. Primary planning objectives are to: (1) increase water supply reliability, and (2) enhance flow and temperature conditions to support the San Joaquin River Restoration Program. Operation variables include reservoir carryover, new or shifting water supply beneficiaries, and alternative conveyance routes. Reclamation released a Draft Feasibility Report in February 2014 and a Draft EIS in September 2014 (U.S. Bureau of Reclamation 2017). For more information, please see Reclamation's website: https://www.usbr.gov/mp/sccao/storage/index.html
Voluntary Agreements	No	**Yes**	No	State Water Board, CNRA, Water Rights Holders	CNRA is leading an effort to negotiate voluntary agreements with water users, to support environmental objectives through a broad set of tools while protecting water supply reliability. DWR and CDFW submitted documents to the State Water Board that reflect progress to define a framework to improve conditions for fish through targeted river flows and a suite of habitat-enhancing projects, including floodplain inundation and physical improvement of spawning and rearing areas. Analysis of the agreements is ongoing to determine whether they can meet environmental objectives required by law and identified in the State Water Board update to the Bay-Delta WQCP. For more information, please see the CNRA website: https://resources.ca.gov/Initiatives/Voluntary-Agreements-Page
Water Supply Contract Extension Program	No	**Yes**	No	DWR	The State of California entered into long-term water supply contracts with water agencies in the 1960s. Under terms of the contracts, DWR provides a water service to these agencies, known as SWP Contractors, from the SWP in exchange for payments that will recoup all costs associated with providing this water service over the life of the SWP. Many of the capital costs associated with the development and maintenance of the SWP are financed using revenue bonds. These bonds have historically been sold with 30-year terms that extend to the year 2035, the year in which most of the contracts expire. The program mission is to extend the term and amend the SWP contracts by conducting negotiations between DWR and the SWP Contractors which will occur in a public forum to ensure continued water supply affordability while complying with obligations under CEQA, and the Monterey Settlement Agreement. For more information, please see the Water Supply Contract Extension Program website: https://water.ca.gov/Programs/State-Water-Project/Management/Water-Supply-Contract-Extension
Yolo County Stormwater Management Program	No	**Yes**	No	Yolo County (Public Works Division)	The Yolo County Stormwater Management Program is composed of six elements: Public Education and Outreach, Public Involvement and Participation, Illicit Discharges, Construction Activities, New Development and Redevelopment, and County Operations. The program provides education, opportunities for participation, requires permanent stormwater best management practices for major development, implements improved control measures at county facilities, and delineates responsibilities. The program was adopted by the Yolo County Board of Supervisors in 2004. For more information, please see the Yolo County Public Work Division Website: https://www.yolocounty.org/government/general-government-departments/community-services/public-works-division/storm-water-management
Yuba River Watershed Hydroelectric Projects	No	**Yes**	No	FERC, Nevada Irrigation District, PG&E	The Nevada Irrigation District is applying for a new license for the Yuba-Bear Project (FERC Project No. 2266), and PG&E is applying for the Drum-Spaulding Project (FERC Project No. 2310). The Yuba-Bear Project is on the Middle and South Yuba rivers, Bear River, and Jackson and Canyon creeks (Federal Energy Regulatory Commission 2014). Concurrently, PG&E is applying for a license renewal for the Drum-Spaulding Project on the Bear and Yuba rivers. Operations of the two projects are coordinated in many factors. The FERC relicensing processes for these two projects is underway. For more information, see the Nevada Irrigation District website: https://www.nidwater.com/yuba-bear-project and the State Water Board website: https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/drum_spaulding_ferc2310.html.
Yuba River Development Project Relicensing	No	**Yes**	No	FERC, Yuba County Water Agency	The Yuba County Water Agency is seeking to renew its 50-year FERC license for the Yuba River Development Project (FERC Project No. 2246). The Yuba River Development Project is on the Yuba River, the Middle Yuba River, and Oregon Creek in Yuba County, and consists of one reservoir (New Bullards Bar on the North Yuba River), two diversion dams (Our House Diversion Dam on the Middle Yuba River and Log Cabin Diversion Dam on Oregon Creek), three powerhouses (New Colgate, Fish Release, and Narrows No. 2), and various recreational facilities and appurtenant facilities (Yuba County Water Agency 2016). The New Bullards Bar Reservoir has a capacity of 969,600 af. The initial FERC license expired April 30, 2016, and the Yuba County Water Agency engaged in FERC's integrated licensing process to prepare an application for a new license. The Yuba County Water Agency filed a Draft Application for a New License Major Project–Existing Dam, on December 3, 2013, and a Final Application for a New License Major Project–Existing Dam, on April 28, 2014. FERC issued the Final EIS in January 2019. For more information, please see the Yuba Water Agency website: https://www.yubawater.org/217/Yuba-River-Development-Project-Relicensi.

Table 10-1b. List of Cumulative Projects, Habitat Improvement Projects and Actions

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Battle Creek Salmon and Steelhead Restoration Project	No	**Yes**	No	Reclamation and State Water Board	Construction of the Battle Creek Salmon and Steelhead Restoration Project was initiated in 2009 to reestablish approximately 42 miles of prime salmon and steelhead habitat on Battle Creek, plus an additional 6 miles on its tributaries. The species benefited by the project include Central Valley spring-run Chinook Salmon (state and federally listed as threatened), Sacramento River winter-run Chinook Salmon (state and federally listed as endangered), and Central Valley steelhead (federally listed as threatened). Restoration of Battle Creek will be accomplished primarily through the modification of the Battle Creek Hydroelectric Project (FERC Project No. 1121) facilities and operations, including instream flow releases. Facility changes include removal of five diversion dams and construction of fish ladders and fish screens at three diversion dams. PG&E is the owner and licensee of the Hydroelectric Project. Any changes to the Hydroelectric Project trigger the need for PG&E to seek a license amendment from FERC. The Restoration Project has been developed in collaboration with various resource agencies, including USFWS, NMFS, CDFW, and the Bay-Delta Authority, and in conjunction with participation from the public, including the Greater Battle Creek Watershed Working Group and the Battle Creek Watershed Conservancy. The project is currently being implemented (U.S. Bureau of Reclamation 2018c). For more information, please see the Reclamation website: https://www.usbr.gov/mp/battlecreek/
California EcoRestore	No	**Yes**	No	CNRA	California EcoRestore was an initiative by CNRA to coordinate and advance habitat restoration of aquatic and upland habitat within the Delta (California Natural Resources Agency 2015a, 2015b). Some of these programs or projects would be funded by federal and state water agencies that are required to mitigate impacts of the CVP and SWP. Other programs would be sponsored by a combination of funds from state bonds (Proposition 1 and 1E), AB 32's Greenhouse Gas Reduction Fund, federal agencies, local agencies, and private investments. The California Delta Conservancy led implementation of identified restoration projects, in collaboration with local governments and with a priority on using public lands in the Delta. For more information, please see DWR's website: https://water.ca.gov/Programs/All-Programs/EcoRestore
Decker Island Habitat Development	**Yes**	No	No	DWR	The Decker Island Habitat Development/Levee Improvement Project provides 26 acres of fish and wildlife habitat at the northern tip of Decker Island and recreates historical river habitat. Although the project has been completed, long-term maintenance and monitoring continue. For more information see https://water.ca.gov/Programs/Integrated-Regional-Water-Management/Delta-Ecosystem-Enhancement-Program/Decker-Island-Habitat-Development.
Decker Island Tidal Habitat Restoration Project	**Yes**	No	No	DWR, CDFW	Decker Island is located in the Delta along the Sacramento River. DWR is undertaking the Decker Island Tidal Habitat Restoration Project in conjunction with CDFW to enhance roughly 140 acres of established emergent wetland with muted tidal connectivity to Horseshoe Bend, and uplands to fully tidal habitat. Construction began in August 2018 and was completed by mid-November of the same year. CDFW will implement biological monitoring to ensure desired site functions are established and to inform future restoration projects. For more information please see DWR's website: https://water.ca.gov/News/Blog/2018/Nov-18/Decker-Island-Project
Delta Fish Species Conservation Hatchery	No	No	**Yes**	USFWS, Reclamation, DWR, and CDFW	Reclamation proposes to partner with DWR to construct and operate a conservation hatchery for Delta Smelt at Rio Vista by 2030. The conservation hatchery would breed and propagate a stock of fish with equivalent genetic resources of the native stock and at sufficient quantities to effectively augment the existing wild population, so that they can be returned to the wild to reproduce naturally in their habitat. Federal agencies expect to partner with the state and local agencies in conducting initial engineering design, site demolition and preparation activities, planning and environmental compliance consultation, and other activities. In addition to the conservation hatchery, DWR commits continued support of the operation and research being conducted by the University of California, Davis, Fish Conservation and Culture Laboratory at the existing facility in Byron, CA and a smaller population at the Fish Conservation and Culture Laboratory at Livingston Stone National Fish Hatchery in Shasta, CA. For more information, see the Delta Smelt Supplementation page available on the USFWS website: https://www.fws.gov/project/delta-smelt-supplementation.
Delta Islands and Levees Feasibility Study	**Yes**	No	No	USACE and DWR	The final feasibility study and EIS was released in September 2018. This report addressed flood risk management, ecosystem restoration, water quality, water supply, and several other issues. DWR's Delta Risk Management Strategy studies were used to define problems, opportunities, and specific planning objectives. The feasibility study provides the mechanism by which USACE can participate in a cost-shared solution to a variety of water resources needs under its authority. USACE and DWR share the cost of the feasibility study equally (U.S. Army Corps of Engineers 2018). For more information please see the USACE Sacramento District website: https://www.spk.usace.army.mil/Missions/Civil-Works/Sacramento-San-Joaquin-Delta/.
Dutch Slough Tidal Marsh Restoration Project	No	**Yes**	No	DWR and California Coastal Conservancy	The Dutch Slough Tidal Marsh Restoration Project, near Oakley in eastern Contra Costa County, would restore wetland and uplands, and provide public access to the 1,166-acre Dutch Slough property owned by DWR. The property is composed of three parcels, separated by narrow, human-made sloughs. The project would provide ecosystem benefits, including habitat for sensitive aquatic species. It also would be designed and implemented to maximize opportunities to assess development of those habitats and measure ecosystem responses so that future Delta restoration projects will be more successful. Construction on two of the parcels began in May 2018 and was completed in 2019, followed by revegetation planting starting in late 2019. Restoration of the third parcel, Burroughs, is to be determined (California Department of Water Resources 2019a). See https://water.ca.gov/Programs/Integrated-Regional-Water-Management/Delta-Ecosystem-Enhancement-Program/Dutch-Slough-Tidal-Restoration-Project. Two neighboring projects proposed by other agencies that are related to the Dutch Slough Tidal Marsh Restoration Project collectively contribute to meeting project objectives. These include the City of Oakley's proposed Community Park and Public Access Conceptual Master Plan, for 55 acres adjacent to the wetland restoration project and 4 miles of levee trails on the perimeter of the DWR lands. The City Community Park will provide parking and trailheads for the public access components of the Dutch Slough Restoration Project. For more information see the City of Oakley website: https://engage.oakleyca.gov/en/projects/oakley-community-regional-park-1. The Ironhouse Sanitary District is proposing the West Marsh Creek Delta Restoration Project, a restoration of a portion of the Marsh Creek delta on an adjacent 100-acre parcel it owns west of Marsh Creek. The Ironhouse Project could provide fill material for, and be linked to, the Dutch Slough Restoration lands. For more information, see the factsheet available on the DWR website: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Delta-Ecosystem-Enhancement-Program/Dutch-Slough-Tidal-Restoration-Project/Files/Dutch-Slough-Factsheet_ay11.pdf.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Ecosystem Restoration Program Conservation Strategy	No	**Yes**	No	CDFW	The ERP is a multi-agency effort aimed at improving and increasing aquatic and terrestrial habitats and ecological function in the Delta and its tributaries. The ERP Focus Area includes the Delta, Suisun Bay, the Sacramento River below Shasta Dam, the San Joaquin River below the confluence with the Merced River, and their major tributary watersheds directly connected to the Delta system below major dams and reservoirs. Principal participants overseeing the ERP are CDFW, USFWS, and NMFS. The ERP implements restoration projects through grants administered by the ERP Grants Program. The vast majority of these projects focus on fish passage issues, species assessment, ecological processes, environmental water quality, or habitat restoration. The ERP is guided by the following six strategic goals: • Recover endangered and other at-risk species and native biotic communities; • Rehabilitate ecological processes; • Maintain or enhance harvested species populations; • Protect and restore habitats; • Prevent the establishment of and reduce impacts from non-native invasive species; and • Improve or maintain water and sediment quality. For more information, please see the Conservation Strategy available on the CDFW website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31232&inline.
Folsom Lake Temperature Control Device	**Yes**	No	No	EID and Reclamation	EID, in collaboration with Reclamation, constructed facilities on the bank of Folsom Lake to withdraw water from the warm upper reaches of the lake while preserving the coldwater pool at the bottom of the lake, to protect downstream aquatic species. The facilities include a large-diameter, concrete-lined vertical shaft and five lined horizontal adits extending from the shaft. This structure, a TCD, replaced EID's five existing raw pump casings that extracted water from Folsom Lake at a rate of 19.5 mgd. The new facility is sized to accommodate a maximum extraction rate of 74 mgd over an 18-hour period, which is equivalent to 52 mgd. The temperature control device began operation in spring 2003 (U.S. Bureau of Reclamation et al. 2007). For more information please see the Environmental Assessment and Finding of No Significant Impact available on the Reclamation website: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=25268.
Fremont Landing Conservation Bank	**Yes**	No	No	CDFW	The project is the restoration, enhancement, and preservation of 100 acres of habitat for the federally and state-listed Chinook Salmon and Central Valley steelhead at the Fremont Landing Conservation Bank site. Construction of the Fremont Landing Conservation Bank was completed and the Banks successfully met performance standards for the final year of monitoring in 2018 (Wildlands 2018). The project preserves and enhances 40 acres of existing riparian and wetland habitat and restores/creates 60 acres of riparian woodland and wetland sloughs within the floodplain of the Sacramento River. Three borrow pits are connected to the Sacramento River to reduce/eliminate fish stranding. The project also includes preservation and restoration of shaded riverine aquatic habitat and placement of large woody debris along the Sacramento River. For more information, please see the Wildlands website: Fremont Landing Conservation Bank | Wildlands (wildlandsinc.com).
Goat Island at Rush Ranch Tidal Marsh Restoration	No	No	**Yes**	Solano Land Trust	This project would restore unrestricted tidal flows to Goat Island Marsh, currently a diked, muted marsh with broken tide gates. Proposed actions include excavating a breach in the levee and constructing a tidal channel, lowering the remainder of the perimeter levee, closing the levee portion of the Marsh Trail, expanding marsh ponds, and revegetating the levee excavation site and marsh-terrestrial ecotone. A boardwalk would be constructed concurrently with project implementation, to provide alternate public access (County of Solano 2015). Eighty acres of tidal marsh adjacent to Suisun Hill Restoration and Lower Spring Branch Creek Restoration adds additional land and habitat values. Construction is pending financing for construction. For more information, please see the Staff Recommendation document available on the San Francisco Bay Restoration Authority website: https://www.sfbayrestore.org/sites/default/files/2023-02/Item%2011_Staff%20Reccomendation%20for%20SLT%20Review_DF_SLT.pdf.
Hill Slough Tidal Marsh Restoration Project	**Yes**	No	No	CDFW	The Hill Slough Tidal Marsh Restoration Project restored tidal marsh and enhanced upland managed wildlife habitat. The restoration design consisted of (1) breaching eight perimeter and two internal levees, to open most of the site to tidal action from surrounding sloughs; (2) lowering some segments of existing levees to provide high marsh habitat and improving levees in other areas, to provide flood protection for the surrounding area; (3) improving some water control structures; (4) raising the elevation of Grizzly Island Road through the project site to reduce flood risks; (5) adding a loop trail and parking area for improved public access; and (6) upgrading three transmission towers and lines in areas subject to tidal inundation. The project created approximately 750 acres of restored tidal marsh and upland fish and wildlife habitat, and 200 acres of enhanced wildlife habitat. This project was implemented under California EcoRestore. Construction currently is underway (California Natural Resources Agency n.d.). For more information, see the Final Report to the Natural Resource Trustee Council Representatives available on the CDFW website; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=220280&inline.
Lower Mokelumne River Spawning Habitat Improvement Project	No	**Yes**	No	EBMUD	The Mokelumne River is tributary to the Delta and supports five species of anadromous fish. The project would initially place 2,500 to 5,000 cubic yards of suitably sized salmonid spawning gravel annually for a three-year period at two specific sites, and then provide annual supplementation of 500 to 1,000 cubic yards thereafter. Work will be conducted each year over one week in August and September. Fall-run Chinook Salmon and steelhead are the primary management focus in the river. Availability of spawning gravel in this section of the Mokelumne River has been determined to be deficient because historic gold and aggregate mining operations removed gravel annually, and upstream dams have reduced gravel transport to the area. This area was chosen because it is known to have supported fall-run Chinook Salmon and steelhead spawning in the past, and because the substrate is suitable for habitat improvement. A final IS/MND was released in August 2014 (East Bay Municipal Utility District 2014). For more information, see the EBMUD website: https://www.ebmud.com/recreation/protecting-natural-habitat/lower-mokelumne-river-spawning-and-rearing-habitat-improvement-project.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Lower Sherman Island Wildlife Area (LSIWA) Land Management Plan (LMP)	**Yes**	No	No	CDFW	LSIWA occupies roughly 3,100 acres, primarily marsh and open water, at the confluence of the Sacramento and San Joaquin rivers in the west Delta. This extensive tract of natural vegetation and Delta waters provides diverse and valuable wildlife habitats and related recreational opportunities and is integral to the functioning and human use of the Delta. The mission of CDFW is to manage California's diverse fish, wildlife, and plant resources, and the habitats on which they depend, for their ecological values and for their use and enjoyment by the public. The LMP is consistent with that mission. The purpose of the LMP is to: (1) guide management of habitats, species, and programs described in the LMP to achieve CDFW's mission to protect and enhance wildlife values; (2) serve as a guide for appropriate public uses of the LSIWA; (3) serve as descriptive inventory of fish, wildlife, and native plant habitats that occur on or use the LSIWA; (4) provide an overview of the property's operation and maintenance and of the personnel requirements associated with implementing management goals (this LMP also serves as a budget planning aid for annual regional budget preparation); and (5) present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of potential and actual environmental impacts that may occur during plan management, and identify mitigation measures to avoid or lessen these impacts. The final LMP was released in April 2007 (California Department of Fish and Game 2007). For more information, see the CDFW website: https://wildlife.ca.gov/Lands/Planning/Lower-Sherman-Island-WA.
Mayberry Farms Subsidence Reversal and Carbon Sequestration Project	No	**Yes**	No	DWR	The Mayberry Farms Subsidence Reversal and Carbon Sequestration Project created permanently flooded wetlands on a 307-acre parcel on Sherman Island that is owned by DWR. The project has restored approximately 192 acres of emergent wetlands and enhanced approximately 115 acres of seasonally flooded wetlands. Construction occurred in summer 2010. Ongoing operations and maintenance are routinely performed by DWR. The Mayberry Farms project was conceived as a demonstration project that would provide subsidence reversal benefits and develop knowledge that could be used by operators of private wetlands (including duck clubs) that manage lands for waterfowl-based recreation. By maintaining permanent water, the growth and subsequent decomposition of emergent vegetation is expected to control and reverse subsidence. The project is also anticipated to provide climate benefits by sequestering atmospheric carbon dioxide. The project is expected to provide year-round wetland habitat for waterfowl and other wildlife. For more information, see page 4 of the DWR Interim Delta Actions available on the Water Education website: https://www.watereducation.org/sites/main/files/file-attachments/brock--combined_4-30-14.pdf.
Meins Landing Restoration	No	**Yes**	No	DWR, Suisun Marsh Preservation Agreement agencies, and California Coastal Conservancy	Meins Landing is a 668-acre property in the eastern Suisun Marsh along Montezuma Slough that was purchased in 2005 as part of a multi-agency tidal restoration project. Previously a duck club, the property was purchased to restore it to tidal influence by breaching the levee. Due to the presence of three underground gas and oil pipelines with restrictive easements, the original restoration concept for the site was not able to be implemented. While DWR explored other restoration options, the property was leased to the previous owners for 10 years and was operated as a duck club until the lease ended in 2016. The property is currently being operated as a managed marsh and maintained by DWR and Suisun Resource Conservation District, with no hunting leases on the property and restricted public access. As a managed marsh, the current operation goals are: 1. Operate Meins as a managed marsh to provide productive habitat for a diverse population of waterfowl, salt marsh harvest mouse, and other wildlife. 2. Formulate and test management practices to maximize nutrient production and export into adjacent sloughs to meet objectives of the Delta Smelt Resiliency Strategy. 3. Provide research opportunities for study of primary and secondary production, waterfowl feed utilization, nutrient export, and other topics to meet objectives of the Delta Smelt Recovery Plan. 4. Explore providing public access and hunting opportunities to meet demands by BCDC for habitat restoration projects in Suisun Marsh to include public access. Managed wetlands, like Meins Landing, are potentially more effective (and cheaper) at augmenting local food production than creating intertidal wetlands while providing more diverse habitats for multiple species. Research on managed wetlands is critical to understand the management techniques best suited to boost food/nutrient production while minimizing impacts on other species (e.g., waterfowl, western pond turtle, salt marsh harvest mouse). Once BMPs are identified, they could be evaluated on other sites throughout Suisun Marsh with cooperating landowners. Research by UC Davis and California Trout is currently underway on Meins Landing to evaluate primary and secondary production and determine optimal conditions to increase the production. For more information please see California Coastal Conservancy website: https://www.scc.ca.gov/webmaster/ftp/pdf/sccbb/2004/0405/0405Board15_Meins_Landing_Acq.pdf
North Delta Flood Control and Ecosystem Restoration Project	**Yes**	No	No	DWR	The North Delta Flood Control and Ecosystem Restoration Project has been proposed by DWR at an area near the confluence of the Cosumnes and Mokelumne rivers, encompassing approximately 197 square miles. Consistent with objectives contained in the CALFED ROD, the project is intended to improve flood management and provide ecosystem benefits in the north Delta area through actions such as construction of setback levees and configuration of flood bypass areas to create quality habitat for species of concern. These actions are focused on the McCormack-Williamson Tract and Staten Island. The project would implement flood control improvements in a manner to benefit aquatic and terrestrial habitats, species, and ecological processes. Flood control improvements are needed to reduce damage to land uses, infrastructure, and the Delta ecosystem, resulting from overflows caused by insufficient channel capacities and catastrophic levee failures in the 197-square-mile project study area. The project as described in the Draft EIR (Jones & Stokes 2007) included: portions of the levee system degraded to allow controlled flow across McCormack-Williamson Tract; levee modification to mitigate hydraulic impacts; channel dredging to increase flood conveyance capacity; an off-channel detention basin on Staten Island; ecosystem restoration where floodplain forests and marshes would be developed at McCormack-Williamson Tract and the Grizzly Slough property; setback levee on Staten Island to expand the floodway conveyance; and opening up the southern portion of the McCormack-Williamson Tract to boating; improving Delta Meadows property; providing access and interpretive kiosks for wildlife viewing; and providing restroom, circulation, parking, and signage infrastructure to support such uses. For more information, see the DWR website: https://water.ca.gov/Programs/Flood-Management/Delta-Conveyance-And-Flood-Protection/North-Delta-Program.
Prospect Island Tidal Habitat Restoration Project	No	**Yes**	No	DWR and CDFW	Prospect Island is in the Cache Slough Complex in the Delta immediately east of the southern end of the Yolo Bypass. The Project goal is to convert roughly 1,609 acres of flooded uncultivated land to fully tidal habitat. Restoration activities will restore tidal action with an estimated 1,360 habitat acreage credits. For a more information see the DWR website: https://water.ca.gov/Programs/Integrated-Science-and-Engineering/Restoration-Mitigation-Compliance/Delta-Projects.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Riparian Habitat Joint Venture Project	**Yes**	No	No	California Partners in Flight	The RHJV project was initiated by California Partners in Flight in 1994. To date, 18 federal, state, and private organizations have signed the Cooperative Agreement to protect and enhance habitats for native land birds throughout California. These organizations include CDFW, DWR, California State Lands Commission, Ducks Unlimited, National Audubon Society, National Fish and Wildlife Foundation, The Nature Conservancy, The Trust for Public Land, CNRA, Reclamation, USFWS, and Wildlife Conservation Board. The RHJV, modeled after the successful joint venture projects of the North American Waterfowl Management Plan, reinforces other collaborative efforts currently underway that protect biodiversity and enhance natural resources as well as the human element they support. The vision of the RHJV is to restore, enhance, and protect a network of functioning riparian habitat across California, to support the long-term viability of land birds and other species. A wide variety of other species of plants and wildlife will benefit through the protection of forests along rivers, streams, and lakes. The RHJV mission is to provide leadership and guidance to promote the effective conservation and restoration of riparian habitats in California through the following goals: (1) identify and develop technical information based on sound science for a strategic approach to conserving and restoring riparian areas in California; (2) promote and support riparian conservation on the ground by providing guidance, technical assistance and a forum for collaboration; and (3) develop and influence riparian policies through outreach and education. In 2004, Partners in Flight prepared The Riparian Bird Conservation Plan, a guidance document that outline a strategy for conserving riparian birds, including birds using the Delta. In 2009, a California Riparian Habitat Restoration Handbook was released; it demonstrates how to approach riparian restoration design from an ecological perspective and describes the existing ecological conditions (Riparian Habitat Joint Venture 2009). For more information please see the Background section of the Riparian Restoration Handbook webpage available on the River Partners website: https://riverpartners.org/initiatives/riparian-restoration-handbook/.
Liberty Island Conservation Bank	**Yes**	No	No	Reclamation District 2093	This project received permits and approvals in 2010 to create a conservation bank on the northern tip of Liberty Island to preserve, create, restore, and enhance habitat for native Delta fish species, including Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, California Central Valley steelhead, Delta Smelt, and Central Valley fall-run and late-fall-run Chinook Salmon. The project consists of creating tidal channels, perennial marsh, riparian habitat, and occasionally flooded uplands on the site. The project also includes the breaching of the northernmost east-west levee, and preservation and restoration of shaded riverine aquatic habitat along the levee shorelines of the tidal sloughs. The island's private levees failed in the 1997 flood and were not recovered, leaving all but the upper 1,000 acres and the adjacent levees permanently flooded. These upper acres encompass the proposed bank. The lower nearly 4,000 acres will remain, at least for the near future, predominantly open water and subtidal because tidal elevations are too great for marsh or riparian habitat. For more information please see the Wildlands website: https://www.wildlandsinc.com/banks/liberty-island-conservation-bank-salm/.
Lookout Slough Tidal Habitat Restoration Project	No	**Yes**	No	DWR and Ecosystem Investment Partners	This multi-beneficial tidal restoration project is located in the Cache Slough area of the Delta northwest of Liberty Island. Project goals are to restore approximately 3,400-acre site to a tidal wetland, creating habitat and producing food for Delta Smelt and other listed fish species. In addition to the restoration of important tidal wetland habitat, the project will also provide flood protection by expanding flood conveyance and storage for the Yolo Bypass. Restoration activities will restore tidal action with an estimated 3,000 habitat acreage credits for Delta Smelt. For more information please see the DWR website: https://water.ca.gov/Programs/Integrated-Science-and-Engineering/Restoration-Mitigation-Compliance/Delta-Projects
Lower Yolo Ranch Restoration Project	No	No	**Yes**	DWR and SFCWA	The Lower Yolo Ranch Restoration Project is located near Liberty Island in the Delta. The project will restore about 1,670 acres on a site which has historically been used for pasture/cattle grazing. For more information, please see the CNRA legacy file available on the CNRA website: https://resources.ca.gov/CNRALegacyFiles/docs/ecorestore/projects/Lower_Yolo_Restoration.pdf.
Lower American River Flow Management Standard Implementation	No	**Yes**	No	Sacramento Water Forum and Reclamation	The Sacramento Water Forum developed a modified FMS for the Lower American River that was released in October 2015. The modified FMS will significantly lower water temperatures in the Lower American River during the crucial rearing season for juvenile steelhead; provide better overall habitat conditions; significantly improve water supply reliability in the American River basin by avoiding low reservoir levels; and avoid redirected impacts on Sacramento River fisheries. For more information, please see the FMS document available on the Water Forum website: https://waterforum.org/wp-content/uploads/2015/09/FMS-Technical-Report-2006.pdf.
Lower American River Temperature Reduction Modeling Project (formerly Lake Natoma Temperature Curtains Pilot Project)	No	No	**Yes**	USFWS, Anadromous Fish Restoration Program; Reclamation; Sacramento Water Forum	The objective of the Lower American River Temperature Reduction Modeling Project is to develop predictive tools that will: (1) reduce uncertainties in the performance of identified temperature control actions that could be implemented to improve the management of coldwater resources in the Folsom/Natoma Reservoir system and the Lower American River, and (2) be available for daily operations, planning, and salmon and steelhead habitat studies by other project operators and other ~~stakeholders~~ interested parties . The project adapted, calibrated, and verified existing thermodynamic and hydrologic mathematical models for application at Folsom Reservoir, Lake Natoma, and the Lower American River. The models were used to assess the effectiveness of the identified actions individually and in combination to support a recommendation as to development and implementation of one or more actions for reducing temperatures in the Lower American River. The actions identified to improve transport of cold water through Lake Natoma and reduce the temperature of the Lower American River included: a Nimbus Dam curtain, a Lake Natoma plunge zone curtain, Nimbus powerplant debris wall removal, dredging Lake Natoma, and modifying Folsom Powerplant peak loading operation. For more information see the 2002 Proposal Solicitation Package available in a downloadable PDF file from the CDFW website: https://www.bing.com/search?q=Lower+American+River+Temperature+Reduction+Modeling+Project+&qs=n&form=QBRE&sp=-1&lq=0&sm=u&pq=lower+american+river+temperature+reduction+modeling+project+&sc=1-60&sk=&cvid=F479F2A0DE404A4FBD848E68F1DE47CF&ghsh=0&ghacc=0&ghpl=.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Restoration of Eastern Delta Floodplain Habitats on Grizzly Slough in the Cosumnes River Watershed	**Yes**	No	No	CNRA	The Grizzly Slough Floodplain Restoration Project is one of two main elements of the North Delta Flood Control and Ecosystem Restoration Project that consists of flood management and habitat improvements where the Mokelumne River, Cosumnes River, Dry Creek, and Morrison Creeks converge. Flood flows and high water conditions in this area threaten levees, bridges, and roadways. The North Delta project will reduce flooding and provide contiguous aquatic and floodplain habitat along the downstream portion of the Cosumnes Preserve, by modifying levees on Grizzly Slough. Benefits to ecosystem processes, fish, and wildlife will be achieved by recreating floodplain seasonal wetlands and riparian habitat on the Grizzly Slough property. For more information see the proposal document available in a downloadable PDF file from the CDFW website: https://www.bing.com/search?q=site%3Anrm.dfg.ca.gov+Restoration+of+Eastern+Delta+Floodplain+Habitats+on+Grizzly+Slough+in+the+Cosumnes+River+Watershed&form=DLINKR&showconv=0.
San Francisco Bay Delta Action Plan	No	**Yes**	No	EPA	In 2012, EPA identified seven key activities to advance the protection and restoration of aquatic resources and ensure a reliable water supply in the San Francisco Bay-Delta Estuary watershed. EPA's Action Plan included the following actions: (1) strengthen estuarine habitat protection standards; (2) advance regional water quality monitoring and assessment; (3) accelerate water quality restoration through TMDLs; (4) strengthen selenium water quality criteria; (5) prevent pesticide pollution; (6) restore aquatic habitats while managing methylmercury; and (7) support the BDCP. For more information see the EPA website: https://www.epa.gov/sfbay-delta/san-francisco-bay-delta-action-plan.
Sherman Island Whale's Mouth Wetlands	**Yes**	No	No	DWR	The Sherman Island Whale's Mouth Wetland Restoration Project restored approximately 600 acres of palustrine emergent wetlands within an 877-acre project boundary on a nearly 975-acre parcel on Sherman Island that is owned by DWR. The property is currently managed for flood irrigated pastureland, which includes a regular and extensive disturbance regime associated with field prepping, disking, and grazing. The ultimate outcome of the restoration project was hundreds of additional acres of freshwater emergent wetlands. Other native plant restoration components included installation of native trees and shrubs compatible with their respective hydrologic regime as well as a substantial amount of upland transitional area, all of which provide a diversity of habitat structure and function. The project was completed in 2015. For more information see the Bay Delta Live website: https://baydeltalive.com/assets/e106ca2a359a122e74e33ef183a0fb4a/application/pdf/Sherman_Island-_Whales_Mouth_Wetland.pdf.
Sherman Island Whale's Belly Wetlands	No	**Yes**	No	DWR	Whale's Belly is part of the California EcoRestore Initiative to restore and protect at least 30,000 acres of habitat across the Delta. The project objectives are to reduce the effects of climate change and Delta subsidence, as well as improve habitat for millions of migrating birds along the Pacific Flyway that rely on the Delta as a crucial rest stop and safe haven. Whale's Belly is one of four projects on Sherman Island that creates managed wetlands, tidal wetlands, and setback levees to contribute toward EcoRestore's restoration targets. The Whale's Belly Wetland Restoration Project includes adding soils and materials to support protective levees and riverbanks, enabling these structures to effectively hold back high floodwaters. Construction will also involve relocation of drainage ditches, pipelines, and water pumps. Upon completion of construction activities, the island will be inundated to an approximate depth of 1–3 feet, allowing marshland growth to eliminate subsidence on this southeast section of Sherman Island. For more information see the DWR website: https://water.ca.gov/News/Blog/2020/May/Whales-Belly.
Sustainable Groundwater Management Act	No	**Yes**	No	State Water Board, California Department of Toxic Substances Control, DWR	DWR has developed a strategic plan for its SGM Program. DWR's SGM Program will implement the new and expanded responsibilities identified in the 2014 SGMA. Some of these expanded responsibilities include: (1) developing regulations to revise groundwater basin boundaries; (2) adopting regulations for evaluating and implementing GSPs and coordination agreements; (3) identifying basins subject to critical conditions of overdraft; (4) identifying water available for groundwater replenishment; and (5) publishing BMPs for the sustainable management of groundwater. More than 99% of the state's high- and medium-priority basins are now covered by groundwater sustainability agencies that now are tasked with submitting GSPs (California Natural Resources Agency 2019). For more information, see the State Water Board website: https://www.waterboards.ca.gov/water_issues/programs/gmp/about_sgma.html.
Tule Red Tidal Marsh Restoration Project	**Yes**	No	No	SFCWA and CDFW	SFCWA's Tule Red Tidal Marsh Restoration Project restored about 350 acres of tidal wetlands in the Suisun Marsh. The Tule Red Restoration was a joint effort between state and federal water contractors to reconnect land to water in the marsh to restore tidal habitat for important native fish species, namely Delta Smelt and Chinook Salmon. The project was completed and became operational in October 2019. For more information, see the SFCWA website: https://sfcwa.org/project/tule-red-restoration-project/.
Twitchell Island East End Wetland Restoration	**Yes**	No	No	DWR	The Twitchell Island East End Wetland Restoration Project restored approximately 740 acres of palustrine emergent wetlands and approximately 50 acres of upland and riparian forest habitat on Twitchell Island. This property is owned by DWR and previously managed as flood irrigated corn and alfalfa. This project was completed in 2013. For more information see the documents available on the State's CEQAnet website: https://ceqanet.opr.ca.gov/2012082090.
UC Davis Fish Conservation and Culture Lab	No	**Yes**	No	UC Davis, DWR, and Reclamation	UC Davis and DWR, working with federal agencies, operate a program to spawn and rear Delta Smelt for scientific studies, and develop and improve culture methods for Delta and Longfin Smelt. For more information, please see the UC Davis Fish Conservation and Culture Lab website: https://fccl.ucdavis.edu/.
Winter Island	No	**Yes**	No	DWR	DWR's FRP acquired approximately 589 acres on Winter Island in 2016 for tidal wetland restoration. DWR is planning to implement the Winter Island Tidal Habitat Restoration Project, which will restore tidal connectivity to the interior of Winter Island to create aquatic habitat at intertidal and shallow subtidal elevations, associated high marsh, and riparian habitats on the site to benefit native fish species. The goal of the project is to restore unrestricted tidal connectivity to the interior of Winter Island to create tidal wetland, associated high marsh, and riparian habitats on the site to benefit native fish species. Preliminary planning, conceptual design, and baseline data collection (e.g., topography and bathymetry) were conducted in 2016. DWR circulated an IS/MND for public review and comment in August 2018. Construction is complete. For more information please see the DWR website: https://water.ca.gov/Programs/Integrated-Science-and-Engineering/Restoration-Mitigation-Compliance/Delta-Projects.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project	No	**Yes**	No	Reclamation and DWR	Reclamation and DWR are partnering to reconnect floodplain habitat and improve fish passage for juvenile and adult salmon. The Yolo Bypass Salmonid Habitat Restoration Project works to reconnect the floodplain for fish during the winter season and improve connectivity within the bypass and to the Sacramento River. The project provides seasonal inundation that mimics the natural process of the Yolo Bypass floodplain. The project primarily consists of a new Fremont Weir headworks structure, a new outlet channel, and downstream channel improvements. This enables juvenile salmon to feed in a food-rich area for a longer time, allowing them to grow rapidly in size and improving their chances of survival as they travel to the ocean. Improvements will also reduce stranding and migratory delays of adult salmon and sturgeon due to passage barriers. The approximately 100-foot-wide gateway, or "big notch," will open each winter, allowing juvenile salmon to move from the Sacramento River onto the floodplain and then back into the Sacramento River at Cache Slough. The project will also allow adult salmon, steelhead, and sturgeon to more easily access the Sacramento River from the bypass. For more information, see the Reclamation website: https://www.usbr.gov/mp/bdo/yolo-bypass.html.
Yolo Bypass Wildlife Area Land Management Plan	No	**Yes**	No	CDFW	The Yolo Bypass Wildlife Area is made up of approximately 16,770 acres of managed wildlife habitat and agricultural land in the Yolo Bypass. The bypass conveys seasonal high flows from the Sacramento River to help control river stage and protect the cities of Sacramento, West Sacramento, and Davis, and other local communities, farms, and lands from flooding. Substantial environmental, social, and economic benefits are provided by the Yolo Bypass, benefiting Californians. The purposes of the Yolo Bypass Wildlife Area LMP are to: (1) guide the management of habitats, species, appropriate public use, and programs to achieve CDFW's mission; (2) direct an ecosystem approach to managing the Yolo Bypass Wildlife Area, in coordination with the objectives of the CALFED ERP; (3) identify and guide appropriate, compatible public-use opportunities in the Yolo Bypass Wildlife Area; (4) direct management of the Yolo Bypass Wildlife Area in a manner that promotes cooperative relationships with adjoining private-property owners; (5) establish a descriptive inventory of the sites and the wildlife and plant resources that occur in the Yolo Bypass Wildlife Area; (6) provide an overview of the Yolo Bypass Wildlife Area's operation, maintenance, and personnel requirements to implement management goals, and serve as a planning aid for preparation of the annual budget for the Bay-Delta Region (Region 3); and (7) present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of potential and actual environmental impacts that may occur during plan management, and identify mitigation measures to avoid or lessen these impacts. The final LMP was released in June 2008 (California Department of Fish and Game 2008). For more information, see the land management plan available on the CDFW website: https://wildlife.ca.gov/Lands/Planning/Yolo-Bypass-WA.
Yolo Flyway Farms Tidal Habitat Restoration Project	No	**Yes**	No	DWR and Reynier Fund, LLC	The Yolo Flyway Farms Tidal Habitat Restoration Project goals are to restore seasonal wetland and cattle grazing land to sub-tidal, intertidal, and seasonal wetlands to benefit native fish species. The 359-acre project involves restoring and enhancing approximately 300 acres of tidal freshwater wetlands, and an additional 30 acres of seasonal wetlands, at the southern end of the Yolo Bypass in the Cache Slough Complex area in the Delta. The proposed project seeks to partially restore historical ecological functions in the current, highly altered regional landscape. For more information, please see the DWR website: https://water.ca.gov/News/Blog/2018/Nov-18/Flyway-Farms.

Table 10-1c. List of Cumulative Projects, Fish Passage and Diversion Screening Projects and Actions

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
American Basin Fish Screen and Habitat Improvement Project	No	**Yes**	No	Reclamation, CDFW, and Natomas Mutual	Reclamation and CDFW authorized and provided funds to Natomas Mutual to construct and operate the American Basin Fish Screen and Habitat Improvement Project. The purposes of the project are to: (1) avoid or minimize potentially adverse effects on fish, particularly anadromous juvenile fish, because of water diversions from the Sacramento River and Natomas Cross Canal by Natomas Mutual and other small pumps operated by individual landowners for diversion of water into the Natomas Basin; (2) ensure reliability of Natomas Mutual's water diversion and distribution facilities for beneficial uses of its water supply within its service area; and (3) maintain important habitat in the Natomas Basin, created by operation of the Natomas Mutual's water distribution facilities. The project would result in modifications of Natomas Mutual's water diversion and distribution system adjacent to the Sacramento River and Natomas Cross Canal in Sacramento and Sutter counties. The modifications include construction and operation of one or two positive-barrier fish screen diversion facilities; decommissioning and removing the Verona Diversion Dam and lift pumps; removing five pumping plants and one small private diversion; and modifying the distribution system. The project is anticipated to be implemented in three phases. A ROD was signed on April 20, 2009 (U.S. Bureau of Reclamation 2009). For more information see the documents available on the Reclamation website: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=783.
Anadromous Fish Screening Program	No	**Yes**	No	Reclamation and USFWS	The primary objective of the AFSP is to protect juvenile Chinook Salmon (all runs), steelhead, Green and White Sturgeon, Striped Bass, and American Shad from entrainment at priority diversions throughout the Central Valley. Section 3406 (b)(21) of the CVPIA requires the Secretary of the Interior to assist the state in developing and implementing measures to avoid losses of juvenile anadromous fish resulting from unscreened or inadequately screened diversions on the Sacramento and San Joaquin rivers, their tributaries, the Delta, and Suisun Marsh. In addition, all AFSP projects must meet Goal 3 of the CALFED ERP's Draft Stage 1 Implementation Plan (U.S. Fish and Wildlife Service 2015). For more information see the 2014 Annual Work Plan available on the Reclamation website: https://www.usbr.gov/mp/cvpia/docs-reports/awp/2014/docs/2014-3406b21-anadromous-fish-screen.pdf.
Fish Screen Project at Sherman and Twitchell Islands	**Yes**	No	No	DWR	This project installed five fish screens on currently unscreened agricultural intakes used to irrigate state-owned lands on Sherman and Twitchell Islands in the Delta. These screens are in addition to more than 10 other self-cleaning screened intakes on Sherman and Twitchell Islands. The screens contribute to the protection of delta smelt and other sensitive aquatic species and the restoration of habitat in the Delta. For more information please see: https://ceqanet.opr.ca.gov/2016032007

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Red Bluff Diversion Dam Fish Passage Improvement Project	No	**Yes**	No	Reclamation and TCCA	The project modified the Red Bluff Diversion Dam to reduce or minimize impacts on migration of anadromous fish and improve the reliability of agricultural water supply in the Tehama-Colusa and Corning Canal systems. The project included a new pumping plant and fish screen with a pumping capacity of 2,500 cfs. The initial installed pumping capacity is 2,000 cfs. No increase in water diversions occurs above 2,500 cfs. The original diversion dam currently is in the decommissioning process. Construction began in spring 2010, and the facility began full operation in summer 2012 (Tehama-Colusa Canal Authority 2013). For more information, please see the Water Education Foundation website: https://www.watereducation.org/aquapedia/red-bluff-fish-passage-improvement-project-and-diversion-dam.
Riverine Habitat Restoration Program Yolo Bypass Fish Passage Projects	No	**Yes**	No	DWR and Reclamation	The Riverine Habitat Restoration Program is tasked with developing and implementing restoration actions in the Yolo Bypass that satisfy the 2009 NMFS BiOp for LTO of the SWP as described in the 2012 Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan. Six separate projects were identified in the Implementation Plan (which includes the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project) and are being evaluated and implemented to carry out the RPA Actions specific to the Yolo Bypass. There are many projects in various stages of implementation occurring in the Yolo Bypass. For a complete listing and description of restoration projects under this program see https://water.ca.gov/Programs/Environmental-Services/Restoration-Mitigation-Compliance/Yolo-Bypass-Projectsthe EcoRestore Projects available on the DWR website. For more information, see the DWR website: https://water.ca.gov/Programs/Integrated-Science-and-Engineering/Restoration-Mitigation-Compliance/Yolo-Bypass-Projects.
Sunset Pumps Removal Project	No	No	**Yes**	DWR	DWR received USFWS CVPIA funding to complete a conceptual alternatives evaluation with a project goal of improving fish passage at the Sunset Pumps diversion facility on the Feather River without affecting Sutter Extension Water District's water delivery capabilities, and completing the project as efficiently as possible. The alternatives evaluation considered improvements to the Sutter Extension Water District canal, removal of the rock diversion weir, development and assessment of other alternatives at a conceptual level, and identification of a preferred alternative that achieved the project goal at the lowest cost and the soonest. DWR has selected a preferred alternative that will remove the diversion weir and rehabilitate the channel, stabilize the riverbank, and construct a new pump station with state-of-the-art fish screens. DWR has begun designing the project and is anticipated to begin environmental compliance activities during fall 2024 with construction anticipated to begin during fall 2025.

Table 10-1d. List of Cumulative Projects, Invasive Species Control Programs and Actions

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Submersed Aquatic Vegetation Control Program	No	**Yes**	No	DBW	The SAV Control Program is part of DBW's Aquatic Pest Control Program. Cal Boating has operated the EDCP in the Delta and its tributaries since program inception in 2001. The program was developed to respond to 1997 State legislation (Rainey, AB 2193), authorizing the program. A Final EIR was published for the program in 2001. A second addendum to the 2001 EIR was published in January 2006, with a five-year program review and future operations plan. In June 2007, NMFS analyzed the potential effects of continued implementation of the EDCP on listed salmonids and Green Sturgeon and issued a BiOp continuation of the program for five years (2007–2011). DBW received the Section 7 BiOp from USFWS along with a letter of concurrence from NMFS in May 2013. Both documents were valid until 2017 (California Department of Parks and Recreation 2014). The program includes treatment with herbicides, environmental monitoring, regulatory compliance, and surveillance. In 2016, the EDCP changed to the SAV Control Program with the addition of curlyleaf pondweed (*Potamogeton crispus*). For more information see the 2018 Annual Report available on the DBW website: https://dbw.parks.ca.gov/pages/28702/files/2018%20SAV%20Annual%20Report_FINAL.pdf.
Arundo Control and Restoration Program	**Yes**	No	No	DWR	The Arundo Control and Restoration Program is part of the larger Delta Ecosystem Enhancement Program, operated by DWR. Arundo donax is an invasive species that is devastating Delta riparian habitat. The Arundo Control and Restoration Program aims to develop expertise in Arundo control, effective restoration techniques in the controlled areas, resources requirements, and landowner contacts to solicit their cooperation (California Department of Water Resources 2019b). As of 2019, the project was completed and funding was not continued for further program expansion in the Delta. For more information, see the DWR website: https://water.ca.gov/Programs/Integrated-Regional-Water-Management/Delta-Ecosystem-Enhancement-Program/Arundo-Control-and-Restoration-Program.
Water Hyacinth Control Program	No	**Yes**	No	DBW	The Water Hyacinth Control Program is part of DBW's Aquatic Pest Control Program. DBW has operated the Water Hyacinth Control Program in the Delta and its tributaries since program inception. In 1982, state legislation made DBW the lead agency for the control of water hyacinth in the Delta, its tributaries, and Suisun Marsh. The initial control plan used both short- and long-term methods that involved chemical, mechanical, and biological control measures. The primary and most successful control measure is chemical spraying. Permits for the program were obtained in 2001. DBW published a Final Programmatic EIR in 2009. The selected Programmatic EIR alternative is a continuation of the program. For more information, see the Programmatic EIR on the DBW website: https://dbw.parks.ca.gov/?page_id=29400.
Invasive Species Program	No	**Yes**	No	CDFW	The Invasive Species Program participates in efforts to prevent introduction of non-native invasive species in California, detect and respond to introductions when they occur, and prevent the spread of non-native invasive species that have become established. Program activities include development of the California Aquatic Invasive Species Management Plan, the Marine Invasive Species Monitoring Program, and informational and education activities for Quagga/Zebra Mussels, New Zealand Mudsnails, Northern Pike (in Lake Davis), and dwarf eelgrass. For more information, see the CDFW website: https://wildlife.ca.gov/Conservation/Invasives.
California Aquatic Invasive Species Management Plan	No	**Yes**	No	CDFW	The CAISMP was released in January 2008. The plan's overall goal is to identify the steps that need to be taken to minimize the harmful ecological, economic, and human health impacts of aquatic invasive species in California. This plan provides the state's first comprehensive, coordinated effort to prevent new invasions, minimize impacts from established aquatic invasive species, and establish priorities for action statewide. In addition, it proposes a process for annual plan evaluation and improvement, so that aquatic invasive species can continue to be managed in the most efficient manner in the future. Eight major objectives and 163 actions were identified in the CAISMP. For more information, see the CDFW website: https://wildlife.ca.gov/Conservation/Invasives/Plan.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Aquatic Invasive Species Draft California Rapid Response Plan	No	**Yes**	No	CDFW	The CAISMP (described above) proposes an Aquatic Invasive Species Rapid Response Plan for the state. The plan establishes a draft general procedure for rapid response following detection of a new aquatic invasive species infestation. It provides a framework for developing and implementing a rapid response plan. It is preliminary in that it describes types of information, resources, and decisions necessary to finalize the plan. To finalize, fund, and implement the draft rapid response plan, CDFW expects that cooperating agencies will assign staff to participate. CDFW Invasive Species Program staff will provide coordination for the interagency activities listed in the agreement(s). The Rapid Response Plan is included in the CAISMP as Appendix A available on the CA Water Library website: https://cawaterlibrary.net/document/california-aquatic-invasive-species-management-plan-appendices/.
Zebra Mussel Rapid Watch Program and Response Plan for California	No	**Yes**	No	CDFW	As part of the Zebra Mussel Early-Detection Monitoring and Outreach Program and the California Zebra Mussel Watch Program, this rapid response plan was developed to outline necessary actions and resources needed to respond to confirmed introductions of Zebra Mussels into the state. The plan outlines available options for eradication and/or control of Zebra Mussels (and Quagga Mussels) and provides guidance for resource managers and agency personnel. The plan includes a list of potential Zebra Mussel infestation scenarios, with possible treatment and post-treatment monitoring techniques. The Zebra Mussel Rapid Response Plan for California is a working document that requires additional information (which will be incorporated as it becomes available) regarding funding sources, permitting requirements, specific roles of agency personnel, legal information, and infestation site specific information. The draft plan will serve as the template for a statewide plan that staff from DWR will continue to develop. For more information on Quagga and Zebra Mussel Management see the CDFW website: https://wildlife.ca.gov/Conservation/Invasives/Quagga-Mussels.

Table 10-1e. List of Cumulative Projects, Area-Wide Plans and Programs

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
2019 NMFS BiOp on the Long-term Operations of the Central Valley Project and State Water Project	No	**Yes**	No	NMFS	On October 21, 2019, NMFS issued a final BiOp finding that continued operations of the CVP/SWP are not likely jeopardize several listed species, including Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, Central Valley steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Southern Resident Killer Whales. The BiOp is effective through December 31, 2030. To protect these species, the 2019 BiOp includes the actions summarized below: • Manage water temperature and water storage in Shasta Reservoir to benefit winter-run Chinook Salmon in the Sacramento River. • Provide flows and adequate water temperatures in Clear Creek to benefit spring-run Chinook Salmon. • Improve juvenile salmonids rearing habitat in the lower Sacramento River and northern Delta. • Improve survival of migrating juveniles by implementing additional gate closures at the Delta Cross Channel. • Limit the strength of reverse flows in Old and Middle Rivers to reduce entrainment of juvenile fish into the state and federal export facilities in the south Delta. • Implement facility improvements at the state and federal export facilities to increase fish survival. • Implement measures, including a fish study using acoustic tags, to improve the ability to increase survival of juvenile steelhead migrating from the San Joaquin River basin. • Implement an FMS, temperature management plan, and facility modifications to improve conditions for steelhead in the American River. • Implement a new year-round minimum flow regime that improves conditions for steelhead in the Stanislaus River. • Complete a Hatchery Genetic Management Plan to increase and stabilize the prey base for Southern Resident Killer Whales. • Provide long-term fish passage at Keswick and Shasta dams on the Sacramento River, Nimbus and Folsom dams on the American River, and New Melones Dam on the Stanislaus River. The final BiOp also identified research, monitoring, and reporting requirements. For more information, see the Reclamation website: https://www.usbr.gov/mp/bdo/lto/archive/biop.html.
2019 USFWS BiOp on the Long-Term Operations of the Central Valley Project and State Water Project	No	**Yes**	No	USFWS	On October 21, 2019, USFWS delivered its BiOp to Reclamation on the effects of the continued operation of the federal CVP and the SWP on Delta Smelt and its designated critical habitat. USFWS determined that the continued operation of these two water projects is not likely to jeopardize the continued existence of Delta Smelt and is not likely to destroy or adversely modify its critical habitat. The 2019 BiOp includes actions to reduce entrainment, provide for increased high-quality low-salinity habitat in certain year types, create additional habitat and monitor ongoing operations. For more information on the project and how to receive a copy of the BiOp, see the USFWS website: https://www.fws.gov/project/central-valley-project-and-california-state-water-project-consultation.
Bay-Delta Water Quality Control Plan Update	No	**Yes**	No	State Water Board	The State Water Board is updating the 2006 Bay-Delta WQCP in two phases (State Water Resources Control Board 2018): • Phase I: The first Plan amendment focused on San Joaquin River flows and South Delta salinity and modifies water quality objectives (i.e., establishes minimum flows) on the Lower San Joaquin River and Stanislaus, Tuolumne, and Merced rivers, to protect the beneficial use of fish and wildlife, and modifies the water quality objectives in the South Delta to protect the beneficial use of agriculture. The proposed final amendments to the Bay-Delta Plan and the Final SED for Phase I was released in July 2018, with some additional minor changes released in August 2018. On December 12, 2018, the State Water Board adopted Bay-Delta Plan amendments and a Final SED. In November, 2022, the State Water Board received a memorandum of understanding for a proposed Tuolumne River Voluntary Agreement to amend the Tuolumne River flow contributions to the Delta identified in the SED. To consider the proposed voluntary agreement, the State Water Board will need to also consider modifications to the Bay-Delta Plan and prepare a staff report to support those possible changes because the Tuolumne River Voluntary Agreement does not fully conform to the current provisions of the Bay-Delta Plan. The State Water Board issued a Notice of Preparation to prepare a staff report and SED considering the proposed Tuolumne River Voluntary Agreement on April 11, 2023.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
					• Phase II: Phase II was focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne rivers), Delta outflows, and interior Delta flows. In May 2017 then-Governor Edmund G. Brown, Jr. issued “Principles for Voluntary Agreements” with a goal of negotiating durable and enforceable Voluntary Agreements that will be approved by applicable regulatory agencies, and will represent the program of implementation for the water quality objectives for the lower San Joaquin and Sacramento Rivers and Delta. In January 2019, Governor Gavin Newsom confirmed his intention to complete the efforts to reach Voluntary Agreements. On March 1, 2019, the Directors of CDFW and DWR entered into a “Planning Agreement Proposing Project Description and Procedures for the Finalization of the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan” (Planning Agreement). On November 14, 2023, the State Water Board issued a Notice of Availability and opportunity for public comment, hearing, and staff workshops on a draft Staff Report/SED in support of possible updates to the WQCP for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary that includes the Voluntary Agreements. The public comment period extended through January 19, 2024. For more information, please see the State Water Board website: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/
California Water Plan Update 2018	**Yes**	No	No	DWR	The California Water Plan is the state’s strategic plan for sustainable management of water resources in the present and for future generations. It provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California’s water future. The California Water Plan, which is updated every five years, presents basic data and information on California’s water resources (including water supply evaluations and assessments of agricultural, urban, and environmental water uses) to quantify the gap between water supplies and uses. The California Water Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state’s water needs. For more information on the update, see the DWR website: https://water.ca.gov/Programs/California-Water-Plan/Previous-Updates/Update-2018.
Delta Fish Agreement	No	**Yes**	No	DWR and CDFW	The 1986 Delta Pumping Plant Fish Protection Agreement between DWR and CDFW provides a mechanism for offsetting adverse fishery impacts caused by the diversion of water at the Harvey O. Banks Delta Pumping Plant, a part of the SWP located at the head of the California Aqueduct. Direct losses of Chinook Salmon, steelhead, and Striped Bass are offset or mitigated through the funding and implementation of fish mitigation projects. DWR and CDFW work closely with the Fish Advisory Committee to implement the agreement and projects funded under the agreement. The Fish Advisory Committee is made up of representatives of the SWP Contractors, sport and commercial fishing groups, and environmental groups. For more information, see the CDFW website: https://wildlife.ca.gov/Conservation/Watersheds/1986-Delta-Fish-Agreement.
Delta Plan	No	**Yes**	No	Delta Stewardship Council	In November 2009, the California Legislature enacted SBX7 1, which took effect on February 3, 2010. One portion of this legislation is known as the Sacramento–San Joaquin Delta Reform Act of 2009 (the Delta Reform Act). The Delta Reform Act requires development of a legally enforceable, comprehensive, long-term management plan for the Delta, which is referred to as the Delta Plan. The Delta Reform Act also created the DSC, which is an independent state agency. One of the DSC’s primary responsibilities is to adopt the Delta Plan. The Delta Reform Act requires the DSC to adopt a Delta Plan that achieves the State’s coequal goals. The Delta Reform Act also specifies the following: (1) eight objectives that are “inherent” in the co-equal goals (see California Water Code Section 85020), (2) a related statewide policy to reduce reliance on the Delta in meeting the state’s future water supply needs through improved regional water self-reliance (California Water Code Section 85021); and (3) certain specific subjects and strategies that must be included in the Delta Plan (see California Water Code Sections 85301–85309). In September 2013, the Delta Plan was adopted by the DSC and subsequently was amended in 2016 and 2018 (Delta Stewardship Council 2018). For more information on the Delta Plan, see the DSC website: https://www.deltacouncil.ca.gov/delta-plan/.
Delta Science Plan	No	**Yes**	No	Delta Plan Interagency Implementation Committee	The 2019 Delta Science Plan is the first comprehensive update to the 2013 Delta Science Plan. As with the 2013 document, the update process took on an open, transparent, and inclusive approach involving input from a diverse range of federal and state agencies, interested parties, academia, and the public. The actions identified in this updated Plan are intended to promote more forward-looking and nimble science and management efforts. They address how to use open and transparent processes to prioritize science activities, determine how these can be carried out effectively and efficiently, and identify how the resulting information is best communicated to those who need it. For additional information please see: https://deltascienceplan.deltacouncil.ca.gov/
Delta Protection Commission Land Use and Resource Management Plan Update	No	**Yes**	No	Delta Protection Commission	The Delta Protection Commission, created with passage of the Delta Protection Act, was formed to adaptively protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment consistent with the Delta Protection Act and the Land Use and Resource Management Plan for the Primary Zone. The commission is currently updating its Land Use and Resource Management Plan, which was last adopted in 2010. The plan outlines the long-term land use requirements for the Delta and sets out findings, policies, and recommendations in the areas of environment, utilities and infrastructure, land use, agriculture, water, recreation and access, levees, and marine patrol/boater education/safety programs. The updated plan will place increased emphasis on the requirement for local government general plans to provide for consistency with the provisions of the Land Use and Resource Management Plan. The Delta Protection Commission develops priorities and timelines for tasks to be implemented each year and provides annual progress reports to the Legislature. For more information, see the Delta Protection Commission website: https://delta.ca.gov/land-use/management-plan/.
Freshwater and Estuarine Harmful Algal Bloom Program	No	**Yes**	No	State Water Board	AB 834 (Freshwater and Estuarine Harmful Algal Bloom Program), signed in September 2019, requires the State Water Board to establish a formal program to protect water quality and public health from harmful algal blooms in consultation with state and federal agencies, and California Native American Tribes. The major responsibilities under the bill include six components involving: event response, statewide assessment and monitoring, risk assessment, research, outreach and education, and reporting. For more information please see the State Water Board website: https://www.waterboards.ca.gov/water_issues/programs/swamp/freshwater_cyanobacteria.html

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Hatchery and Stocking Program	No	**Yes**	No	CDFW and USFWS	CDFW operates a statewide system of fish hatchery facilities that rear and subsequently release millions of trout, salmon, and steelhead of various age and size classes into state waters. These fish are reared and released for recreational and commercial fishing, for conservation and restoration of fish species that are native to California waters, for mitigation of habitat losses caused by construction of dams on the state's major rivers, and for mitigation of fish lost at state-operated pumping facilities in the Delta (California Department of Fish and Game and U.S. Fish and Wildlife Service 2010). CDFW's Hatchery Program includes: • Operation of 14 trout hatchery facilities owned by CDFW and the related stocking of fish; • Operation of eight salmon and steelhead hatchery facilities owned by others and the related stocking of fish; • Operation of two salmon and steelhead hatchery facilities owned by CDFW and the related stocking of fish; • Providing education staff and fish for stocking under the Fishing in the City program; • Issuing authorizations and providing fish eggs for the Classroom Aquarium Education Project; • Issuing permits for stocking public and private waters with fish reared at private aquaculture facilities; and • Implementing the fish production and native trout conservation requirements contained in California Fish and Game Code Section 13007. The fundamental objectives of CDFW's Hatchery Program are to continue rearing and stocking fish from its existing hatchery facilities for the recreational use of anglers, for mitigation of habitat loss from dam construction and blocked access to upstream spawning areas, for mitigation of fish losses caused by operation of the state-operated Delta pumps, and for conservation and species restoration. For more information on CDFW Fish Hatcheries, see the CDFW website: https://wildlife.ca.gov/Fishing/Hatcheries.
Hatchery and Stocking Program Proposed Changes	No	**Yes**	No	CDFW and USFWS	CDFW has been rearing and stocking fish in the inland waters of California since the late 1800s. CDFW currently stocks trout in high mountain lakes, low-elevation reservoirs, and various streams and creeks throughout California. Salmon have been planted mostly in rivers and direct tributaries to the Pacific Ocean, with the exception of inland Kokanee, Coho, and Chinook Salmon populations that have been planted in reservoirs for recreational fishing. In 2006, a lawsuit was filed against CDFW, claiming that CDFW's fish stocking operation did not comply with CEQA. In July 2007, CDFW was ordered by the Sacramento Superior Court to comply with CEQA regarding its fish stocking operations. CDFW completed a Final EIR to comply with the court order in July 2010 (California Department of Fish and Game and U.S. Fish and Wildlife Service 2010). USFWS served as the co-lead for the joint EIR/EIS. For more information, see the CDFW website: https://wildlife.ca.gov/Fishing/Hatcheries/EIR.
Interagency Ecological Program	No	**Yes**	No	DWR, CDFW, State Water Board, USFWS, Reclamation, U.S. Geological Survey, USACE, NMFS, and EPA	The mission of the IEP is to provide information on the factors that affect ecological resources in the Sacramento–San Joaquin Estuary to support more efficient management of the estuary. The program consists of 10 member agencies, three state (DWR, CDFW, and State Water Board), six federal (USFWS, Reclamation, U.S. Geological Survey, USACE, NMFS, and EPA), and one nongovernment organization (the San Francisco Estuarine Institute). Program partners work together to develop a better understanding of the estuary's ecology and the effects of the SWP and federal CVP operations on the physical, chemical, and biological conditions of the estuary. Activities include data collection and analysis, evaluation of the impacts of human activities on fish and wildlife, interpretation of information and development of measures to avoid or offset impacts of water project operation and other human activities on the estuary, and assistance with planning, coordination, and integration of estuarine studies by other agencies. The IEP Science Advisory Group also conducts independent scientific reviews of modeling activities and study programs in the Delta when requested. Current efforts focus on evaluation of the decline of pelagic species in the upper San Francisco Estuary. These efforts emphasize modeling and integration of results, and respond to management interests by including temperature modeling, wastewater impacts, contaminants, salvage efficiency, three-dimensional particle tracking and individual based modeling for Striped Bass and Longfin Smelt. The ammonia work includes source, fate, and transport modeling, field studies, and a review and syntheses of data and studies on the effects of ammonia on aquatic species. The temperature work is closely coordinated with the CALFED-funded Computational Assessments of Scenarios of Change for the Delta Ecosystem (CASCaDE) project and will analyze the trends of water temperature stress zones and refugia in the Delta. For more information, see the IEP website: https://iep.ca.gov/.
Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes	**Yes**	No	No	USFWS	The recovery plan addresses the recovery needs for eight fish species that occupy the Delta, including Delta Smelt, Sacramento Splittail, Longfin Smelt, Green Sturgeon, Chinook Salmon (spring run, late fall run, and San Joaquin fall run), and Sacramento Perch (believed to be extirpated). The objective of the plan is to establish self-sustaining populations of these species that will persist indefinitely. This would be accomplished by managing the estuary to provide better habitat for aquatic life in general and for the fish addressed by the plan. Recovery actions include tasks such as increasing freshwater flows; reducing entrainment losses to water diversions; reducing the effects of dredging, contaminants, and harvest; developing additional shallow-water habitat, riparian vegetation zones, and tidal marsh; reducing effects of toxic substances from urban nonpoint sources; reducing the effects of introduced species; and conducting research and monitoring. For more information, see the California Water Library website: https://cawaterlibrary.net/document/recovery-plan-for-sacramento-san-joaquin-delta-native-fishes/.
Recovery Plan for Sacramento River Winter-run Chinook Salmon, Central Valley Spring-run Chinook Salmon and Central Valley Steelhead	**Yes**	No	No	NMFS	The Recovery Plan provides a roadmap that describes the steps, strategy, and actions that should be taken to return winter-run Chinook Salmon, spring-run Chinook Salmon, and steelhead to viable status in the Central Valley. California thereby is ensuring their long-term persistence and evolutionary potential. The general near-term strategic approach to recovery includes methods to: secure all extant populations, monitor for *O. mykiss* in habitats accessible to anadromous fish, and minimize straying from hatcheries to natural spawning areas. Actions will include conducting critical research on fish passage and reintroductions with climate change and developing a recovery plan for sustainable populations that will have minimal susceptibility to catastrophic events. The recovery plan for Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, and Central Valley steelhead was released in July 2014. For more information, see the NMFS website: https://www.fisheries.noaa.gov/resource/document/recovery-plan-evolutionarily-significant-units-sacramento-river-winter-run.

Project	Past Project	Present or Ongoing	Future Project	Primary Agencies	Descriptions
Rio Vista Estuarine Research Center Station	No	No	**Yes**	USFWS and DWR	The planned DRS would consist of two facilities, a proposed Estuarine Research Station and a Fish Technology Center. Collectively, these facilities are intended to serve as an aquatic research and monitoring facility that is located in a centralized area of the Delta. The project reflects the outcome of a multiyear collaboration between DWR, USFWS, CDFW, and other agencies involved in the IEP. The DRS would consolidate ongoing IEP research and monitoring activities throughout the Delta and provide facilities for study and production of endangered Delta fishes. For more information, see the DRS section on the projects and research page available on the USFWS website: https://www.fws.gov/office/san-francisco-bay-delta-fish-and-wildlife/what-we-do/projects-research.
Sacramento Valley Salmon Resiliency Strategy	No	**Yes**	No	CNRA, CDFW, DWR, Reclamation	The Sacramento Valley Salmon Resiliency Strategy is a science-based document that has been prepared to address specific near- and long-term needs of Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, and California Central Valley steelhead. The Strategy is science-driven, focused, and designed to provide resource agencies, the public, Congress, and the California State Legislature with information critical to collaborative approaches to species resiliency. The Strategy aims to improve species viability and resiliency by promoting actions that address specific life stage stressors by implementing specific habitat restoration actions. For more information, see the resiliency strategy available on the CNRA website: https://resources.ca.gov/CNRALegacyFiles/docs/Salmon-Resiliency-Strategy.pdf.
Suisun Marsh Habitat Management, Preservation, and Restoration Plan	No	**Yes**	No	CDFW, USFWS, Reclamation, and Suisun Marsh Charter Group	The Suisun Marsh Charter Group, a collaboration of federal, state, and local agencies with primary responsibility in Suisun Marsh, prepared the Suisun Marsh Habitat Management, Preservation, and Restoration Plan. The plan balances the CALFED Program, the Suisun Marsh Preservation Agreement, and other management and restoration programs in the Suisun Marsh based upon voluntary participation by private landowners and that responds to the concerns of interested parties. Charter agencies include Reclamation, DWR, USFWS, DSC, Suisun Resource Conservation District, and NMFS. The Charter Group is charged with developing a regional plan that would outline the actions needed in Suisun Marsh to preserve and enhance managed seasonal wetlands, restore tidal marsh habitat, implement a comprehensive levee protection/improvement program, and protect ecosystem and drinking water quality. The plan would be consistent with the goals and objectives of the Bay-Delta Program and would balance those goals and objectives with the Suisun Marsh Preservation Agreement and federal and state endangered species programs within the Suisun Marsh. The Suisun Marsh Habitat Management, Preservation, and Restoration Plan also provides for simultaneous protections and enhancement of: (1) existing wildlife values in managed wetlands, (2) endangered species, (3) tidal marshes and other ecosystems, and (4) water quality, including, but not limited to, the maintenance and improvement of levees. Restoration projects that are expected to partially fulfill requirements of the Suisun Marsh Habitat Management, Preservation, and Restoration Plan include the Chipps Island Tidal Habitat Restoration Project, Arnold Slough Restoration Project, Bradmoor Island Restoration Project, Tule Red Tidal Restoration Project, and Wings Landing Tidal Habitat Restoration Project. For more information, see the Suisun Resource Conservation District website: https://suisunrcd.org/wp-content/uploads/2018/01/Suisun-Marsh-Plan.pdf.
Delta Smelt Resiliency Strategy	No	**Yes**	No	CNRA, CDFW, DWR, and DBW	The Delta Smelt Resiliency Strategy is a science-based strategy prepared to address both immediate and near-term needs of Delta Smelt, to promote their resiliency to drought conditions as well as future variations in habitat conditions. Several of the actions identified in this Strategy could also benefit other species, and coordination across various resource management agencies as appropriate may allow for benefits beyond Delta Smelt. Although the feasibility and effectiveness of each action included in the Strategy requires further exploration and study, the Strategy is an aggressive approach to implementing any actions that can be implemented in the near term, can be implemented by the state with minimal involvement of other entities, and have the potential to benefit Delta Smelt. For more information see the CNRA website: https://resources.ca.gov/CNRALegacyFiles/docs/Delta-Smelt-Resiliency-Strategy-FINAL070816.pdf.

Notes for Table 10-1a through Table 10-1e

AB	Assembly Bill
af	acre-feet
af/yr	acre-feet per year
AFSP	Anadromous Fish Screening Program
BCDC	San Francisco Bay Conservation and Development Commission
BDCP	Bay Delta Conservation Plan
BiOp	biological opinion
BMPs	best management practices
CAISMP	California Aquatic Invasive Species Management Plan
CCWD	Contra Costa Water District
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
CNRA	California Natural Resources Agency
COA	Coordinated Operations Agreement
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DBW	California Division of Boating and Waterways
DEIR	Draft Environmental Impact Report
Delta	Sacramento-San Joaquin Delta
DMC	Delta-Mendota Canal
DO	dissolved oxygen
DRS	Delta Research Station
DSC	Delta Stewardship Council
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
EchoWater	Sacramento Regional Wastewater Treatment Plant Facility Upgrade Project
EDCP	*Egeria densa* Control Program
EID	El Dorado Irrigation District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERP	Ecosystem Restoration Program
ESA	federal Endangered Species Act
FERC	Federal Energy Regulatory Commission
FMS	Flow Management Standard
FRP	Fish Restoration Program
GSPs	Groundwater Sustainability Plans
ID	Irrigation District
IEP	Interagency Ecological Program
IS	initial study
LMP	Land Management Plan
LSIWA	The Lower Sherman Island Wildlife Area
LTO	long-term operations
mg/L	milligrams per liter
mgd	million gallons per day
MID	Modesto Irrigation District
MND	mitigated negative declaration
Natomas Mutual	Natomas Central Mutual Water Company
NBA	North Bay Aqueduct
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NSJCGBA	Northeastern San Joaquin County Groundwater Banking Authority
OCAP	Operations Criteria and Plan
PG&E	Pacific Gas and Electric Company
Reclamation	U.S. Bureau of Reclamation
RHJV	Riparian Habitat Joint Venture
ROC	Reinitiation of Consultation
ROD	Record of Decision
RPA	Reasonable and Prudent Alternative
RWQCB	Regional Water Quality Control Board
SAV	submersed aquatic vegetation
SB	Senate Bill
SED	Substitute Environmental Document
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFCWA	State and Federal Contractors Water Agency
SGM	Sustainable Groundwater Management
SGMA	Sustainable Groundwater Management Act
SLDMWA	San Luis and Delta-Mendota Water Authority
SSQP	Sacramento Stormwater Quality Partnership
State Water Board	State Water Resources Control Board
SWP	State Water Project
TCCA	Tehama-Colusa Canal Authority
TCD	temperature control device
TID	Turlock Irrigation District
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WQCP	Water Quality Control Plan
WSIP	Water Storage Investment Program

10.1.4 Surface Water Hydrology

The cumulative baseline for hydrology is the environmental setting as that described for the Proposed Project in Chapter 4, "Surface Water Hydrology."

10.1.4.1 Discussion of Cumulative Impact on Hydrology

Changes in hydrology resulting from the Proposed Project and other past, present, and reasonably foreseeable future projects, by themselves, are not considered significant environmental impacts. As described in the analysis for the Proposed Project, however, such changes could have secondary impacts on surface water quality and aquatic resources. Therefore, cumulative impacts relating to hydrology are addressed in conjunction with these topics, in the following discussion.

10.1.5 Surface Water Quality

The baseline for evaluating cumulative impacts on water quality is the environmental setting as that described for the Proposed Project in Chapter 5, "Surface Water Quality."

As discussed in Chapter 5, the evaluation criteria used for analysis of impacts on surface water quality represent a combination of the applicable State CEQA Guidelines Appendix G criteria and professional judgment that consider scientific and factual data, as well as current water quality standards, as required pursuant to CEQA.

Direct and indirect impacts on surface water quality from the Proposed Project would be limited to the Delta. As discussed in Chapter 5, Section 5.3.3.3, "Suisun Marsh and Suisun Bay," the Proposed Project would have minor effects on water quality upstream of the Delta. Any minor effects of the Proposed Project on water quality in the reservoirs and rivers upstream of the Delta would not contribute considerably to any significant cumulative water quality impacts that may occur in these waterbodies. Therefore, the geographic context for the remainder of this cumulative surface water quality impacts analysis is limited to the Delta.

Impacts on surface water quality would occur over the lifetime of the proposed long-term SWP operations until such time as conditions change that would warrant further modification of future SWP operations. The temporal context for cumulative analysis of impacts on surface water quality would extend to any past, present, and future SWP operations that would affect Delta surface water quality during the lifetime of SWP operations.

The majority of past, present, and reasonably foreseeable projects that are shown in Table 10-1 could potentially have impacts on surface water quality. Specific quantifiable details regarding the surface water quality impacts of every project were not available, and therefore the analysis in this section was conducted qualitatively and in the context that the cumulative projects would be subject to a variety of laws and regulatory processes that would require avoidance or mitigation of impacts on surface water quality.

The impacts of past projects on surface water quality, including past operation of the SWP, have been included in the description of the baseline environmental conditions provided in Chapter 5. The cumulative impact of these past projects has resulted in a baseline that has altered Delta inflows, inflow quality, and outflows, and thus altered surface water quality in the Delta. Table 5-2 identifies water quality constituents listed under Clean Water Act Section 303(d) for impairment for the Delta. It follows that the cumulative impacts of all past and present projects are significant for these constituents.

Projects that contribute to these cumulative impacts that involve construction and operation of infrastructure facilities could have temporary adverse impacts on surface water quality during construction and also could result in longer-term impacts on surface water quality, should the projects alter surface water flows or quality. Projects involving invasive species management actions would have short-term adverse impacts on surface water quality through application of herbicides or pesticides, or from disturbance of streambeds from mechanical removal. Projects involving water diversions or transfers (e.g., CVP long-term operations) would affect hydrology and water flow and, therefore, would have indirect impacts on salinity levels in the Delta.

Reasonably foreseeable future projects affecting surface water quality upstream of the Delta and within the Delta may result in both positive and negative effects on currently significant cumulative Delta water quality impacts. Nevertheless, because of the existing altered surface water quality conditions in the Delta, the overall cumulative impact from past, present, and reasonably foreseeable future projects on Clean Water Act Section 303(d)-listed constituents, including salinity, is significant.

The Proposed Project would have negligible, if any, effects on most cumulatively significant Delta water quality impacts because the Proposed Project has no direct effects on their watershed origins and loads to the Delta. As such, the Proposed Project would have either no effect or less-than-considerable contributions to cumulatively significant impacts on Delta arsenic, chlordane, chlorpyriphos, dichlorodiphenyldichloroethylene (DDE)/dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, dioxins, disulfoton, furans, Group A pesticides, organophosphorus pesticides, mercury, organic enrichment/low dissolved oxygen, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, temperature, toxicity, and selenium.

The Proposed Project, through its effects on Delta inflows, outflows, and exports can have effects on Delta salinity levels. Nevertheless, all future projects in the Delta, including the proposed long-term SWP operations, would be subject to a variety of laws and regulatory processes that would require management of flows entering and existing the Delta to attain Bay-Delta Water Quality Control Plan (WQCP) water quality objectives in the Delta, via D-1641 or a subsequent water rights decision, which will limit and prevent potential impacts on beneficial uses.

10.1.5.1 Discussion of Cumulative Impact on Water Quality

DWR operates the SWP in accordance with its water rights and water quality obligations, such as D-1641. D-1641 includes water right permit terms and conditions to implement water quality objectives to protect agricultural (based on electrical conductivity [EC] objectives) and municipal and industrial (based on chloride objectives) beneficial uses in the Delta, as well as water quality objectives to protect fish and wildlife (based on EC objectives) beneficial uses in the Delta and Suisun Marsh. DWR and the U.S. Bureau of Reclamation (Reclamation) will continue to operate the SWP and CVP in compliance with its water rights and water quality obligations, which include the provisions of D-1641 and the required salinity levels corresponding to the location of X2. Under D-1641, DWR, in coordination with Reclamation, is required to meet these standards even if other projects result in changes to salinity so that the cumulative Delta water quality conditions comply with salinity objectives and protect Delta beneficial uses.

Consequently, the incremental contribution of the Proposed Project to the cumulative impact on Delta salinity **would not be cumulatively considerable.** Because the Proposed Project's contributions to cumulatively significant Delta water quality impacts would not be considerable, the Proposed Project also would not have considerable contributions to any cumulatively significant water quality impacts in Suisun Marsh or Suisun Bay.

10.1.6 Aquatic Biological Resources

The baseline for evaluating cumulative impacts on aquatic resources is the environmental setting as described for the Proposed Project in Section 6.1, "Environmental Setting," and the relevant threshold of impact significance is as follows:

a) Would the project, in combination with other past, present, or reasonably foreseeable future projects, have a substantial adverse impact (either directly, through habitat modifications, by interfering with the movement of native fish species, or by impeding use of native fish nursery/rearing sites) on any species of primary management concern, including species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, National Marine Fisheries Services, or U.S. Fish and Wildlife Service?

This threshold is based on Appendix G of the CEQA Guidelines that are applicable to aquatic biological resources. Thresholds from Appendix G relating to terrestrial biological resources are not addressed in this cumulative analysis because the Initial Study determined that the Proposed Project would have no impact on terrestrial biological resources.

As described in Section 6.4, "Impacts of the Proposed Project," the Proposed Project would result in less-than-significant impacts on the aquatic species evaluated and on habitats for these species that are influenced by SWP operations, including the Sacramento River (from its confluence with the Feather River downstream to the Delta), the Delta, and Suisun Marsh and Bay. Species evaluated include:

- Delta Smelt
- Longfin Smelt
- Winter-run Chinook Salmon
- Spring-run Chinook Salmon
- Central Valley steelhead
- Fall-/late-fall-run Chinook Salmon
- Green Sturgeon
- White Sturgeon
- Pacific Lamprey
- River Lamprey
- Native minnows (Sacramento Hitch, Sacramento Splittail, Hardhead, and Central California Roach)
- Starry Flounder
- Northern Anchovy
- Striped Bass
- American Shad
- Black bass (Largemouth Bass, Smallmouth Bass, and Spotted Bass)
- California Bay Shrimp
- Killer whale

Although the direct and indirect Project impacts on these species are limited to the Sacramento River, Delta, and Suisun Marsh and Bay, the geographic context for cumulative impact analysis of aquatic biological resources extends beyond the limits of Project-specific impacts and would vary depending on the existing range and habitat of each of the affected species.

The Delta has undergone dramatic change over the last 160 years, rendering its early nature virtually unrecognizable. Many fundamental alterations occurred within the first few decades after 1848. Waterways were leveed, wetlands drained, tidal sloughs dammed, riparian forests cut, and flows altered. Today, the many layers of change and unintended consequences and long-lasting repercussions of actions make it challenging to comprehend the natural ecosystem form, process, and function (San Francisco Estuary Institute 2012; San Francisco Estuary Institute and Delta Stewardship Council 2019).

Before the transformation of wetlands to farms and towns, distinct patterns of native habitats were expressed along the Delta's broad physical gradients. The arrangement of habitats was driven by variations in dominant physical processes. The historical Delta habitat patterns and ecological functions reflected the transition between dominant riverine processes upstream and tidal processes downstream. At the Delta mouth, the salinity gradient shifted with interannual and seasonal variability. It was also affected by the differences in the hydrologic regimes of the Sacramento and San Joaquin rivers, as well as other tributaries that feed into it. Landscape patterns were influenced by these and other interacting physical processes and organized within the context of three primary components: the subtidal channels, the intertidal and nontidal wetlands, and the elevated, infrequently flooded natural levees.

The existing Delta is one of the most anthropogenically modified deltas in the world. The most significant change in the Delta region has been the replacement of the historically large expanse of perennial wetland by an even greater expanse of agriculture and urban development. Much of the existing areas of "natural" habitat types in the Delta—patches of alkali seasonal wetlands, seasonal wetlands, grassland, or willow-lined artificial levees—has been converted from the freshwater emergent wetlands that historically occupied those locations. The remnant natural areas in the Delta today are also often not of the same quality as similar types historically, as they are significantly compromised in the ecological functions they can provide and often highly disturbed, fragmented, or disconnected from other habitat types (San Francisco Estuary Institute 2012).

In addition to the direct physical changes that have occurred in the Delta, the establishment of agriculture, urban areas, and associated infrastructure in the Central Valley has further contributed to altering conditions in the Delta by introducing agricultural runoff and urban pollutants, and modifying Delta hydrology by diverting and managing surface water at upstream locations.

The impacts of past projects, including past operation of the SWP, have been included in the description of the baseline environmental conditions provided in Chapter 6, "Aquatic Biological Resources." The cumulative impact of these past projects has resulted in a baseline consisting of a trending decline of listed-species populations in the Delta and other waterways used by anadromous fish populations in Northern California. Multiple factors have contributed to this trending decline, and it is difficult to quantify the proportion of the decline attributable to a specific project, action, or event.

Existing federal statutes and regulatory requirements on federal actions provide protective measures to avoid jeopardizing those species listed in accordance with the federal Endangered Species Act (ESA). Specifically, biological opinions (BiOps) were prepared to allow the SWP and CVP to continue operating without causing jeopardy to listed species or adverse modification to designated critical habitat. In addition, California requires authorization under CESA for the long-term operation of the SWP facilities in the Delta for the protection of state-listed species.

Despite these protections, the cumulative impact of past Delta modifications and other past and present projects has contributed to the continuing decline in Delta fish populations and habitat of protected species.

Table 10-1 lists past, present, and probable future projects capable of producing related or cumulative impacts in combination with the Proposed Project. This list does not include all historical actions or events that have contributed to the existing conditions in the Delta, as previously described. The projects listed in Table 10-1 are divided into six categories corresponding to their respective similarities, impacts on similar resources, and potential impacts on Delta fish species.

The defined categories include the following:

- Water Supply, Water Management, and Water Quality Projects and Actions
- Habitat Improvement Projects and Actions
- Fish Passage and Diversion Screening Projects and Actions
- Invasive Species Control Programs and Actions
- Area-Wide Plans and Programs

The majority of past, present, and reasonably foreseeable projects that are shown in Table 10-1 may have impacts on the same aquatic species and/or habitats as the Proposed Project. Specific quantifiable details regarding the biological impacts of every one of these projects generally were not available, and therefore this analysis is conducted in large part qualitatively. Many of these projects would be subject to the federal and state protective laws and regulatory processes that require avoidance or mitigation of impacts on listed fish addressed in this document.

Present and future projects could affect Delta conditions and Delta fish populations. Each of these projects would be subject to its own permitting analyses and, if necessary, mitigation to less-than-significant levels under CEQA and, as applicable, minimization and full mitigation to meet CESA requirements. The following discussion addresses the potential cumulative impact for each of the listed categories.

10.1.6.1 Water Supply, Water Management, and Water Quality Projects and Actions

Projects that could contribute to these cumulative impacts, which involve construction and operation of infrastructure facilities that affect Delta waterways, could have temporary adverse impacts on water quality during construction that affect aquatic species and could cause a permanent reduction in fish habitat. Operations effects could occur from projects such as long-term and short-term water transfers, the Sites Reservoir Project, and the Los Vaqueros Reservoir Expansion Project. Each of these would be subject to project-specific permitting analyses and, if necessary, mitigation to meet regulatory standards (e.g., full mitigation to meet CESA requirements for state-listed fish).

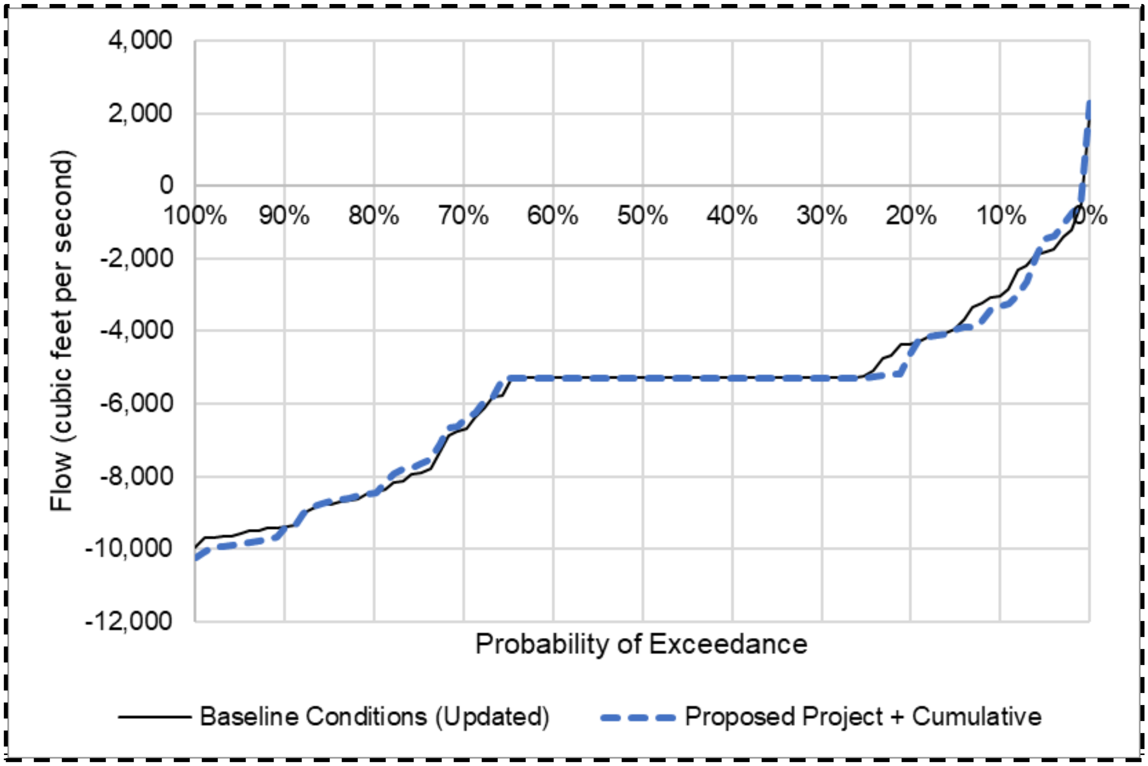
Continued operation of the CVP has the potential to cumulatively affect aquatic biological resources in conjunction with the Proposed Project. Proposed changes to CVP operations as part of the ongoing consultation on the Long-Term Operation of the CVP and SWP could result in operations effects on aquatic biological resources relative to the analyses focusing on the SWP presented in Chapter 6. Voluntary Agreements to update and implement the Bay-Delta WQCP are another cumulative project with the potential to affect aquatic biological resources. Voluntary Agreements have the potential to benefit aquatic biological resources through a combination of flow and non-flow projects.[1] Voluntary Agreements would augment Delta outflow, particularly in spring, which, cumulatively with the Proposed Project, may result in Delta outflow similar to or greater than Baseline Conditions in April and May of most water year types except Wet water years. The Voluntary Agreements have the potential to have positive cumulative effects on aquatic biological resources, for example through effects on the Delta Smelt and Longfin Smelt food web, given the statistically significant positive relationships observed between some Delta Smelt and Longfin Smelt zooplankton prey and Delta outflow. However, there is low certainty that such effects would be substantial, given the spread in potential outcomes illustrated by prediction intervals from the results of regression analyses presented in the "Food Availability" discussion in Section 6.4.1.1, "Delta SWP Facility Operations."

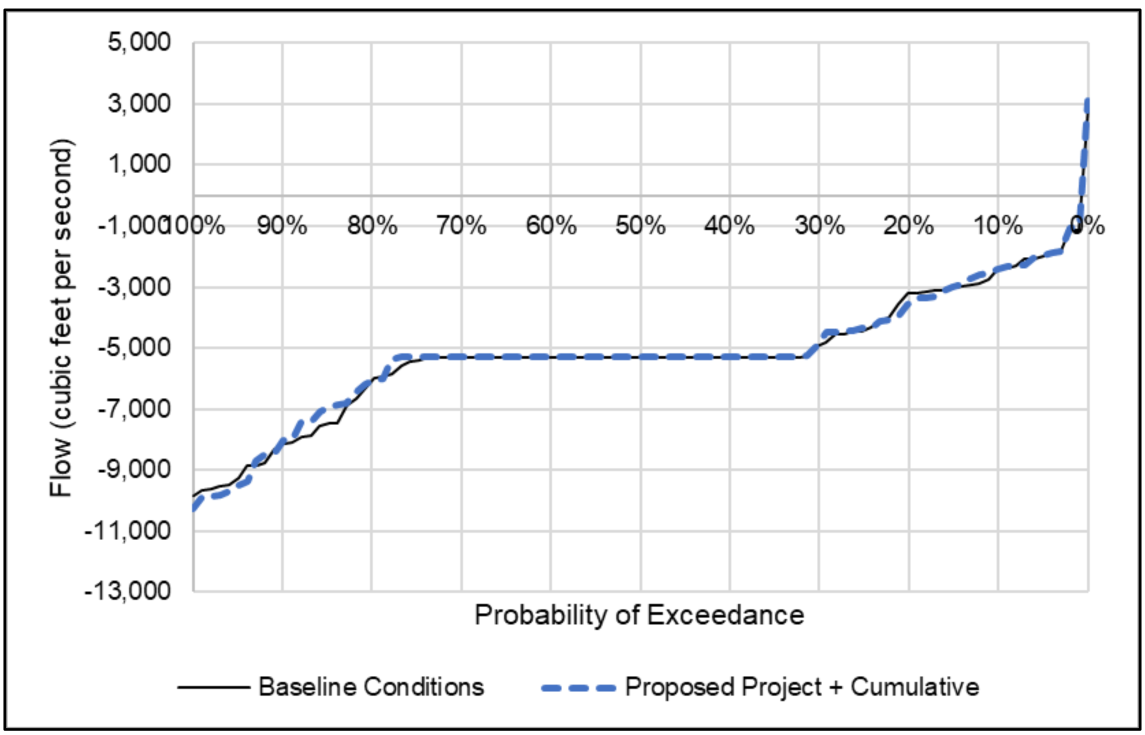
Both the CVP and Voluntary Agreements were modeled in CalSim 3, in addition to the Proposed Project, to illustrate potential cumulative effects. The CalSim 3 modeling of the Proposed Project plus Cumulative scenario includes the SWP Proposed Project, the CVP Proposed Action, and the Voluntary Agreements for the Sacramento River, Feather River, Yuba River, American River, Putah Creek, and Mokelumne River. ~~The baseline CVP operations onto which the CVP Proposed Action is applied differ from the CVP operations assumed in the Baseline Conditions CalSim 3 model. The baseline CVP operations used in the CVP Proposed Action were not available during development of the Baseline Conditions CalSim 3 model. Changes to CVP baseline include operations of Shasta Lake, CVP allocations, and the Delta Cross Channel gates. A new baseline model, Baseline Conditions (Updated), was developed to properly represent baseline CVP operations and the effects of the CVP Proposed Action in the Proposed Project plus Cumulative CalSim 3 model. The Baseline Conditions (Updated) CalSim 3 model applies these revised baseline CVP operations onto the Baseline Conditions CalSim 3 model.~~ Discussion of CalSim 3 results in this chapter compares modeled results from the Proposed Project plus Cumulative to Baseline Conditions ~~(Updated)~~. The analysis below is divided into sections for Delta Smelt, Longfin Smelt, winter-run Chinook Salmon, spring-run Chinook Salmon, and the other species considered in Chapter 6.

[1] The Voluntary Agreements propose restoring a total of 5,227.5 acres of tidal wetland and associated floodplain habitats within the North Delta Arc and Suisun Marsh regions (Voluntary Agreements Parties 2022). These restoration projects would target the creation and enhancement of a mosaic of habitats, including floodplain, tidal, and riparian, to restore ecological functions and improve fish passage, access to higher quality and quantity spawning and rearing habitat, and food production. Restoration objectives for the Delta are sited and designed to improve conditions for native species, including Delta Smelt, Longfin Smelt, Splittail, and salmonids.

Delta Smelt

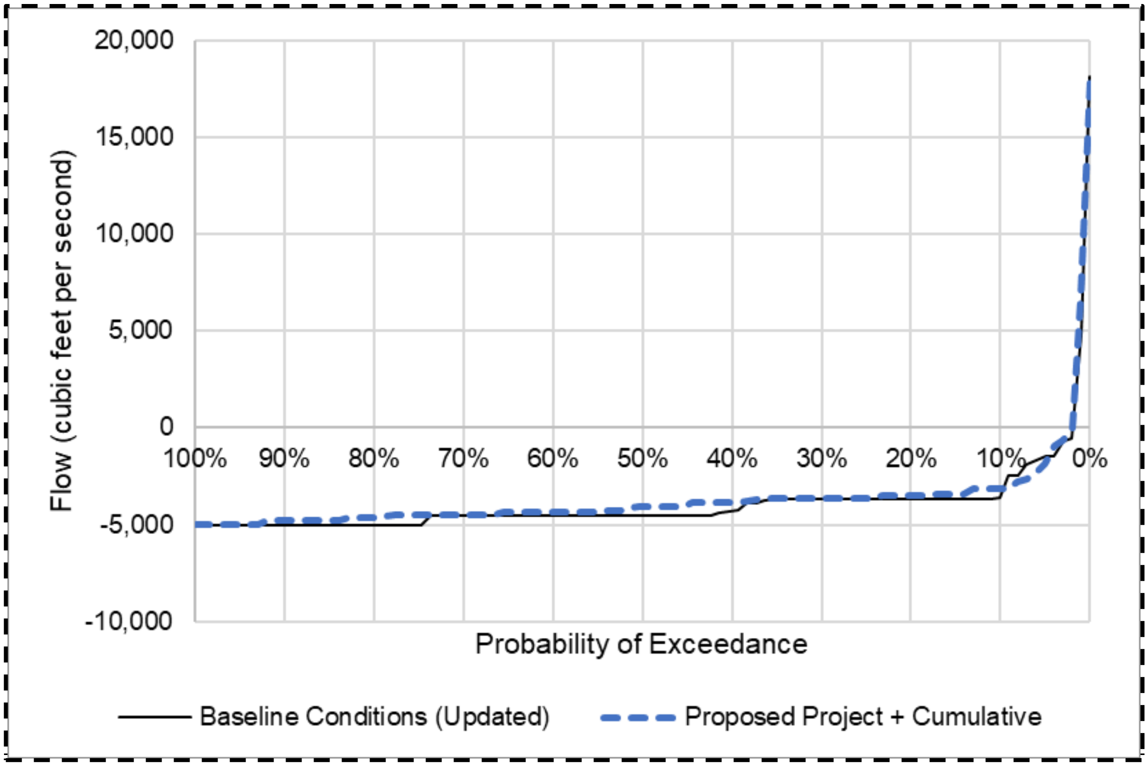
During the main period of adult entrainment risk (December–March), CalSim 3 modeling indicates the Proposed Project plus Cumulative scenario would be expected to have generally similar Old and Middle River (OMR) flows to the Baseline Conditions ~~(Updated)~~ scenario, with less negative OMR flows under the Proposed Project plus Cumulative scenario in March (Figures 10-1, 10-2, 10-3, and 10-4). This suggests adult entrainment risk would be similar under both the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ scenarios, or less in March under the Proposed Project plus Cumulative scenario, when only considering OMR flows. Both the SWP and the CVP would implement OMR management, including actions such as the Adult Delta Smelt Entrainment Protection Action (Turbidity Bridge) to protect Delta Smelt adults from entrainment, which is expected to result in low levels of entrainment. As discussed in Chapter 6, Delta Smelt supplementation will limit the potential for south Delta entrainment of released individuals because broad-scale dispersal to the vicinity of hypothesized suitable spawning areas will not be necessary as fish will be released in the North Delta Arc, with entrainment risk for any dispersing individuals limited by the OMR management actions summarized above.

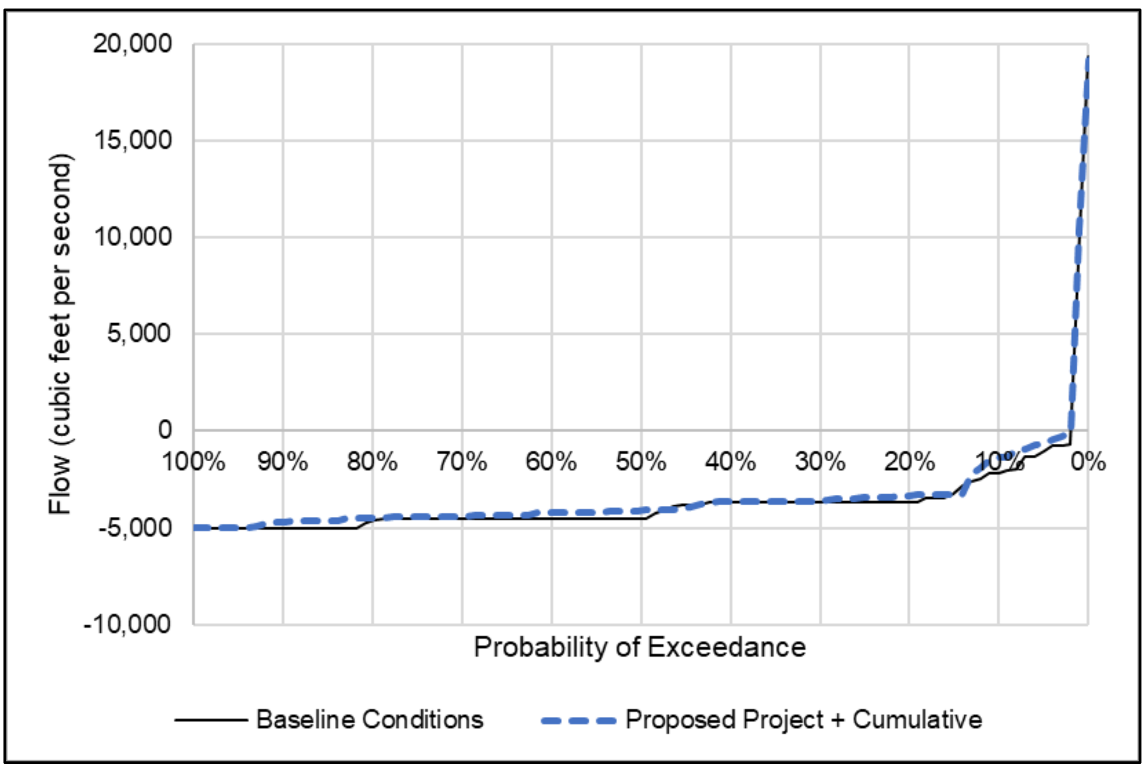




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

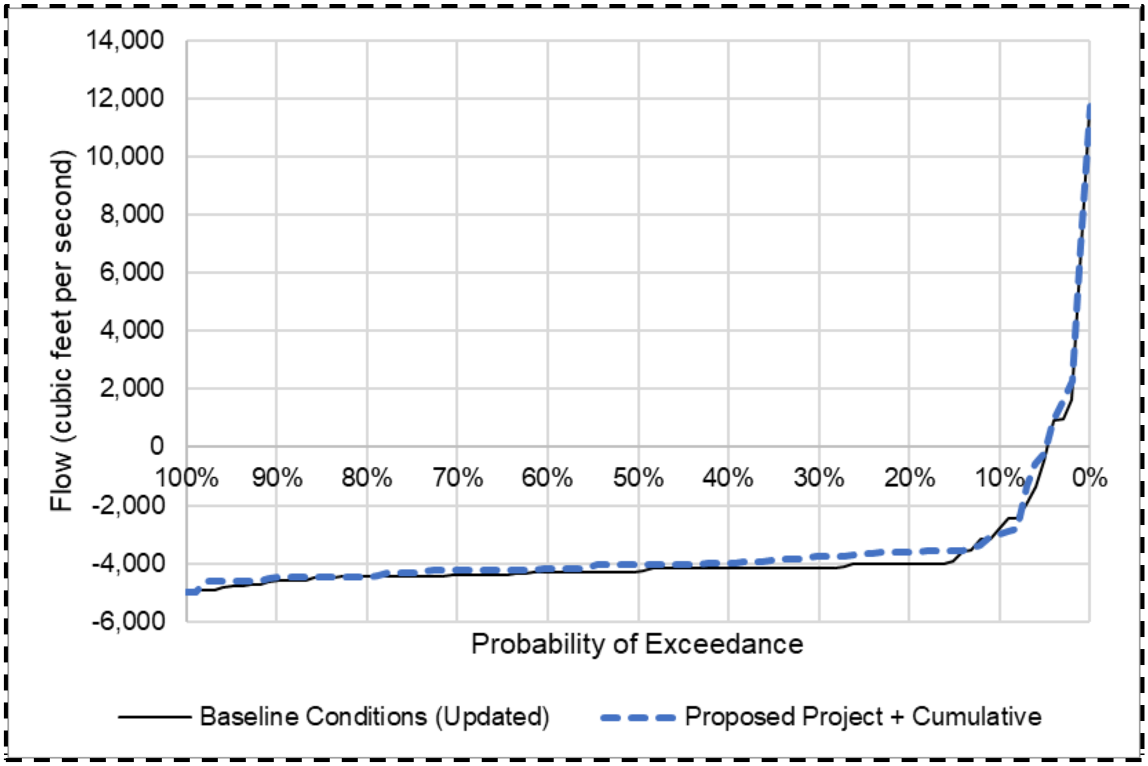
Figure 10-1. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, December

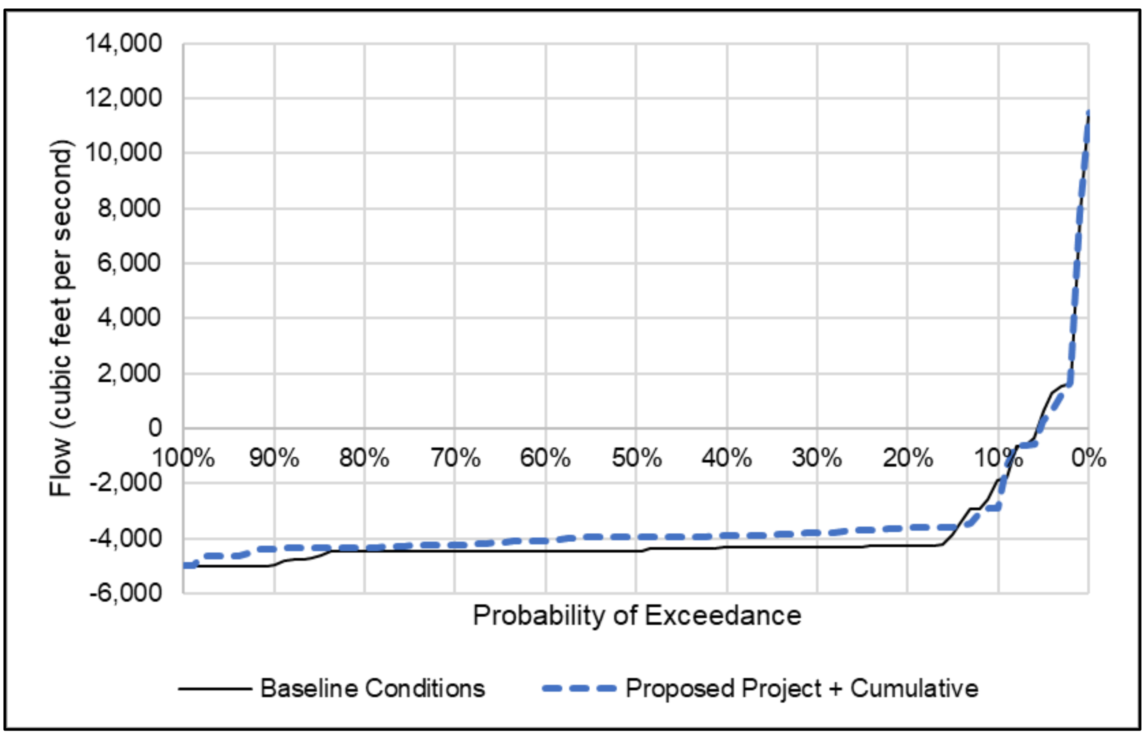




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~ <DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

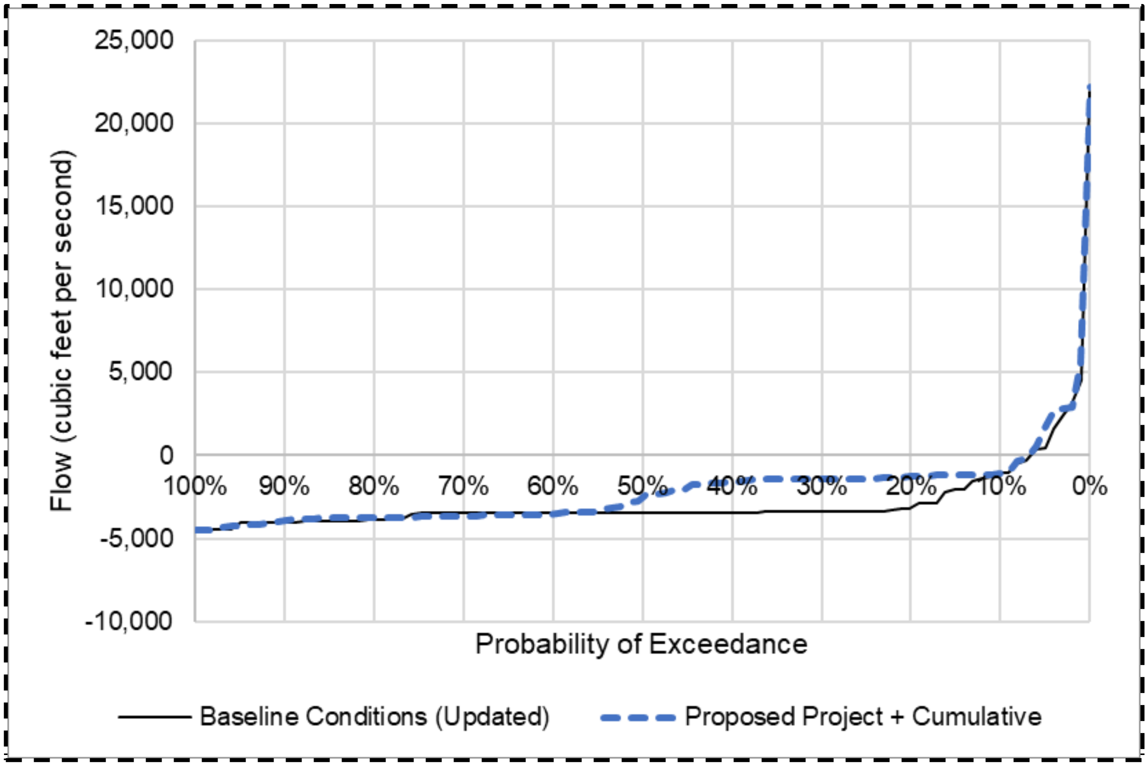
Figure 10-2. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, January

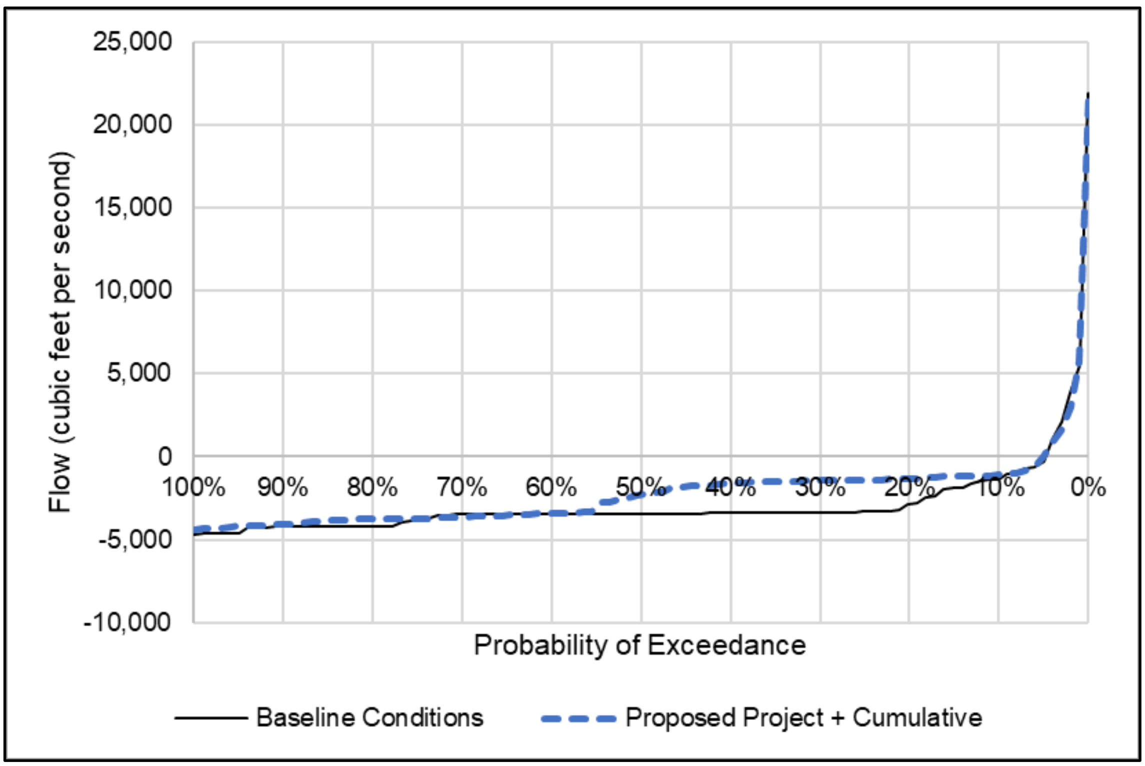




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-3. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, February

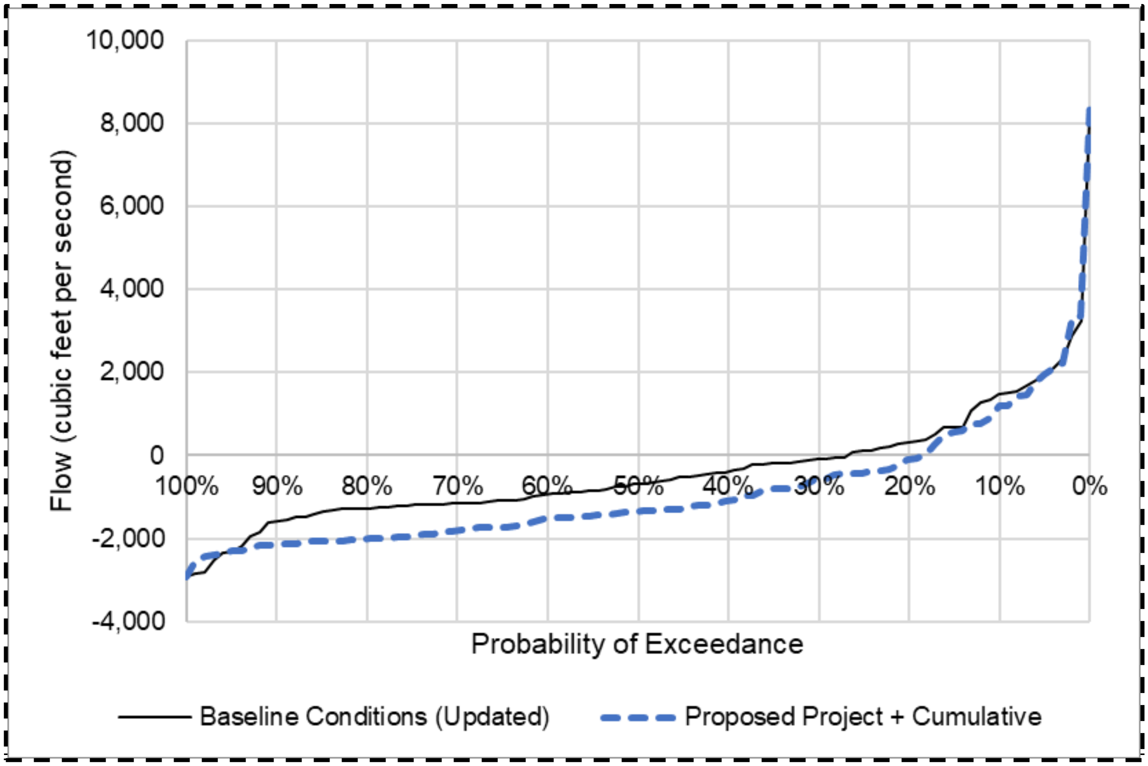


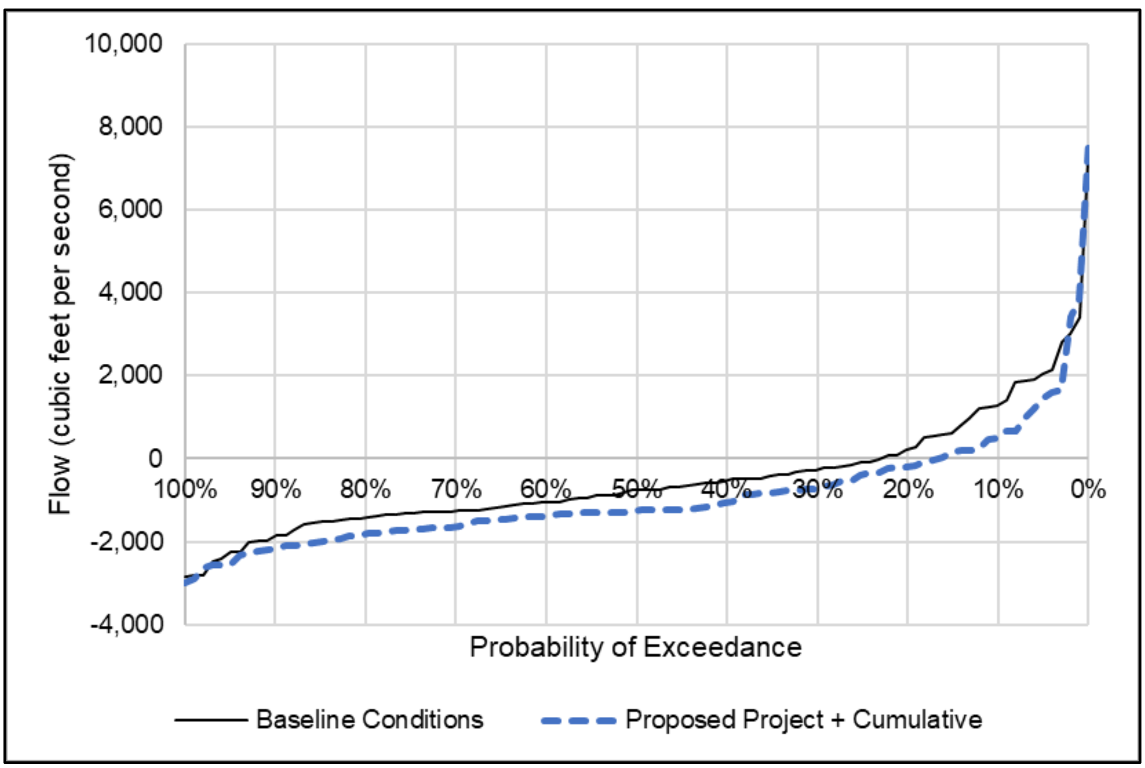


Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-4. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March

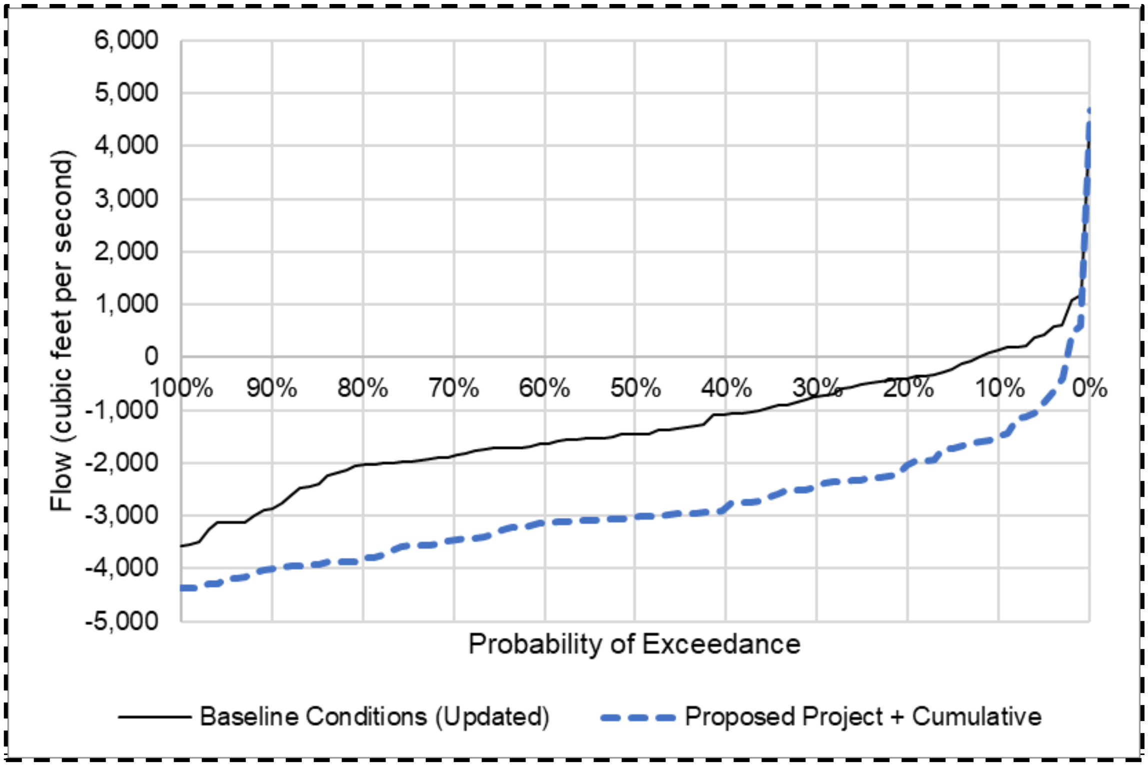
During the March–June period of concern for larval/juvenile Delta Smelt entrainment risk, OMR flows would tend to be more negative under the Proposed Project plus Cumulative scenario, compared to the Baseline Conditions ~~(Updated)~~ scenario in May, but relatively similar in the other months (Figures 10-4, 10-5, 10-6, and 10-7). Both the SWP Proposed Project and the CVP Proposed Action include OMR flow management (Larval and Juvenile Delta Smelt Protection) to minimize entrainment risk, and OMR flows under both the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ scenarios would be above the -5,000 cubic feet per second inflection point at which entrainment tends to sharply increase. As discussed further in Chapter 6, conditions in March providing greater outflow and therefore less entrainment into the south Delta may lead to lower entrainment risk during subsequent months.

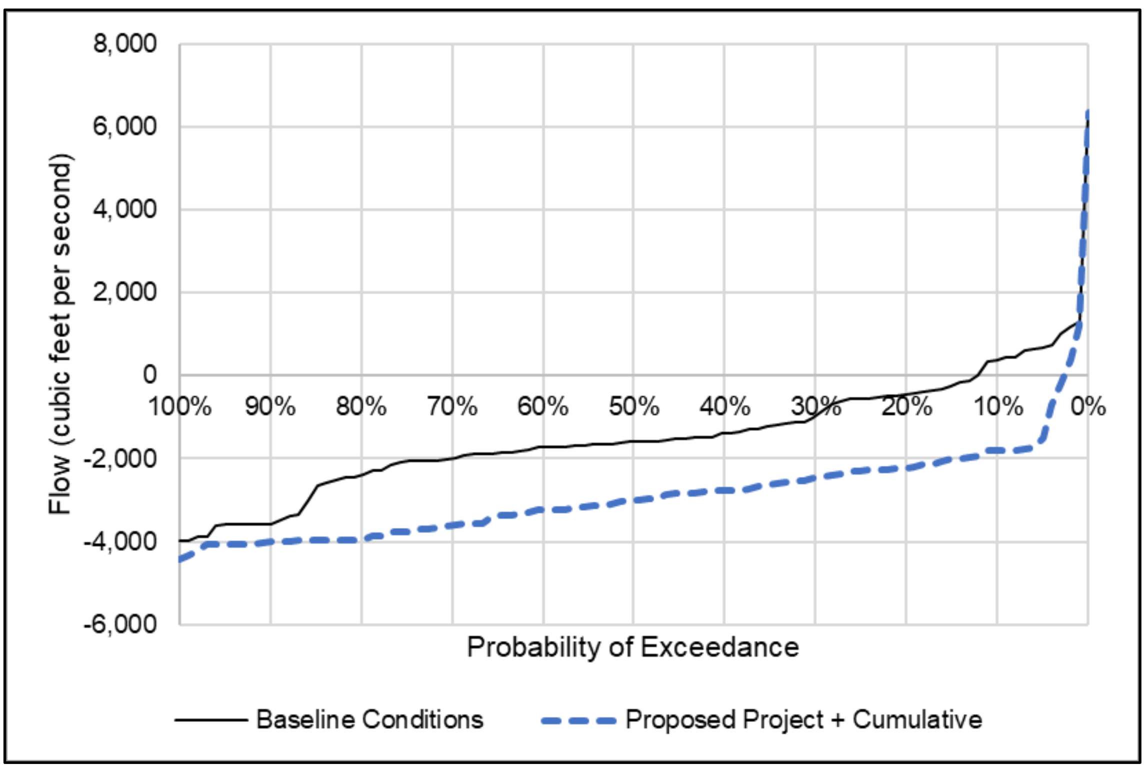




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

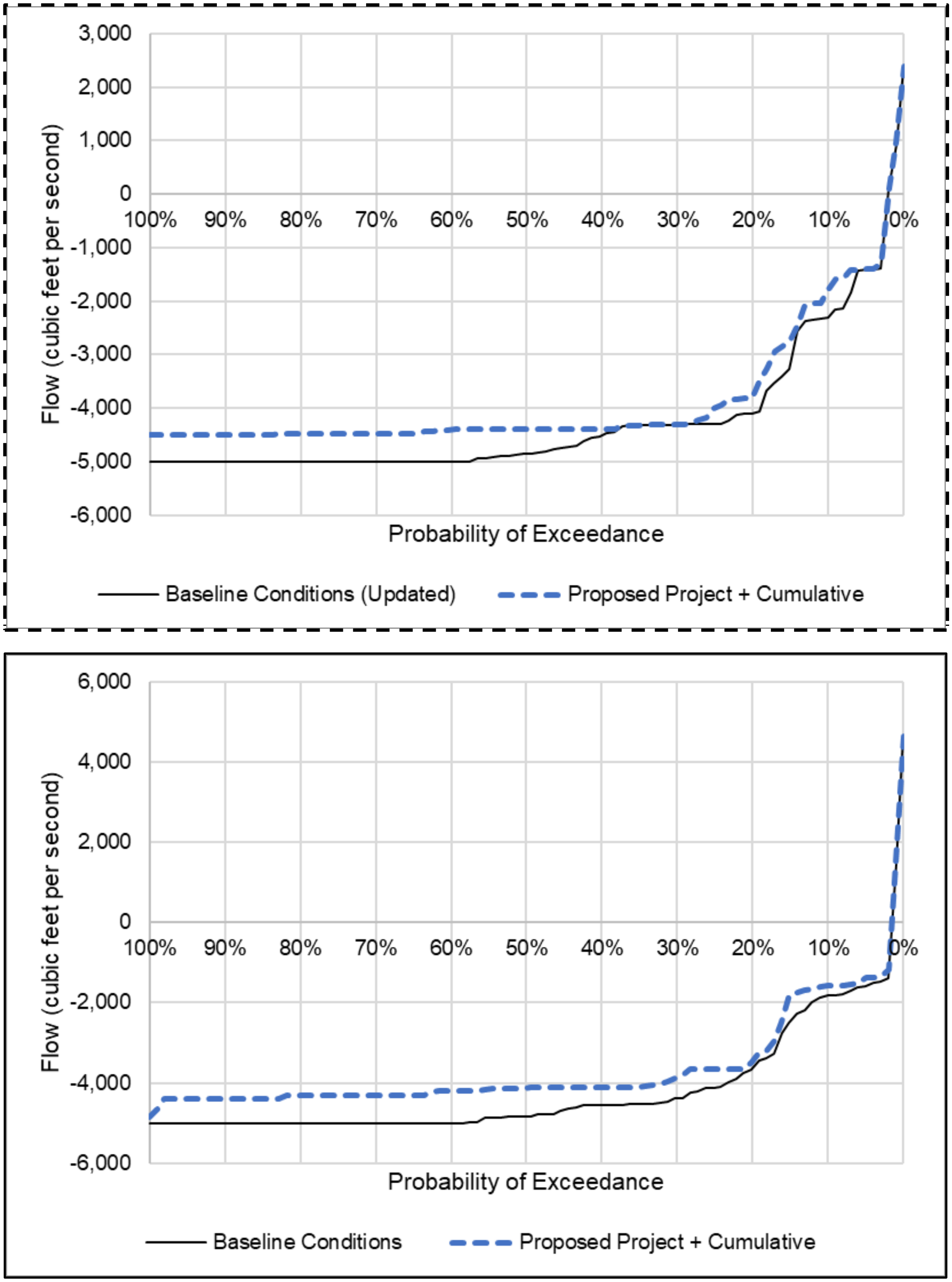
Figure 10-5. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April





Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

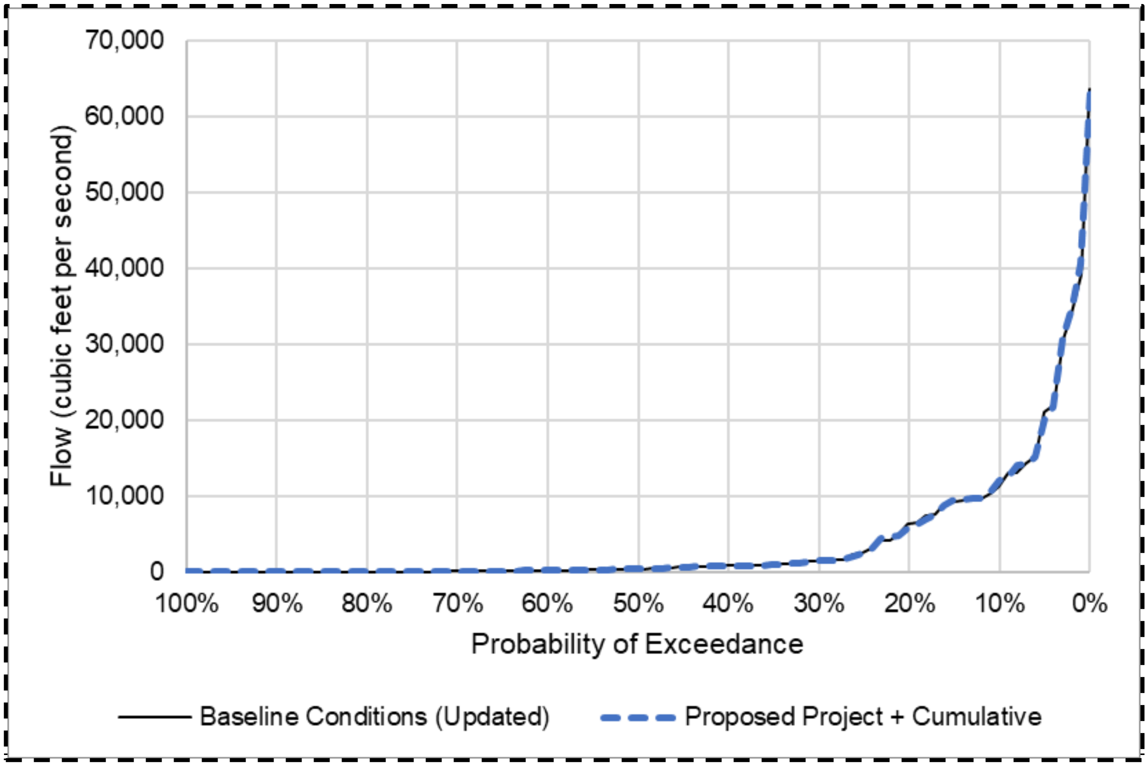
Figure 10-6. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May

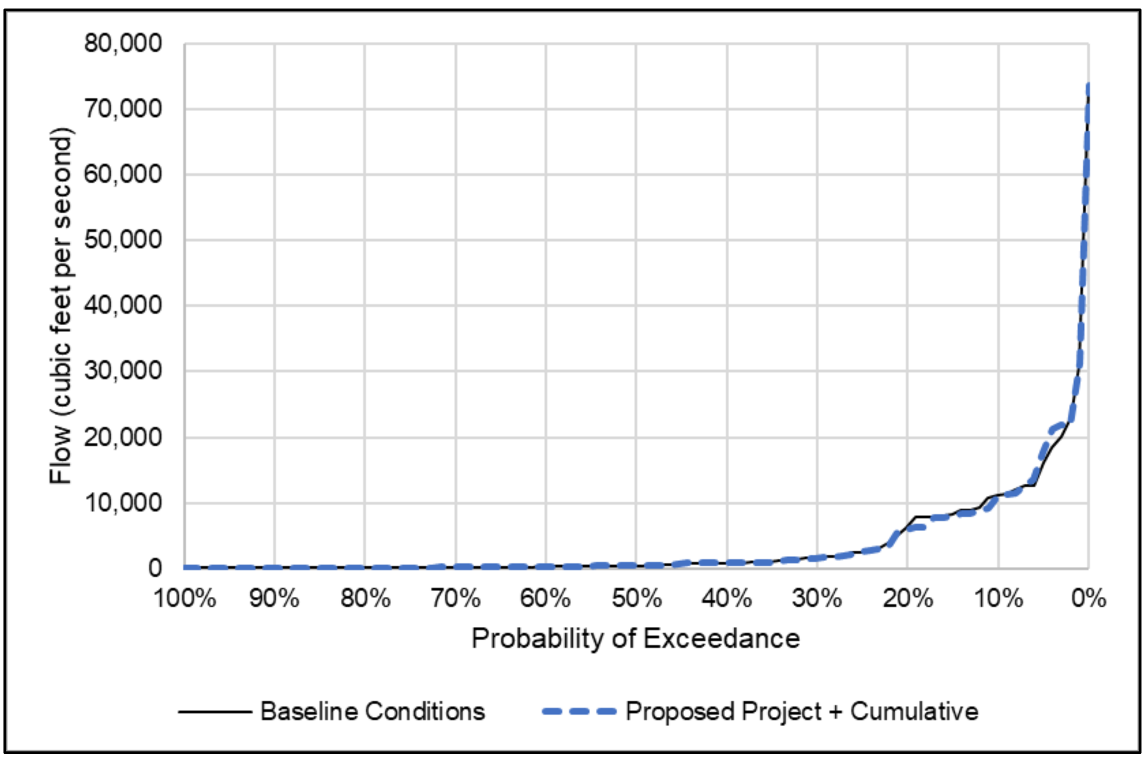


Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-7. Mean Modeled Old and Middle River Flow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June

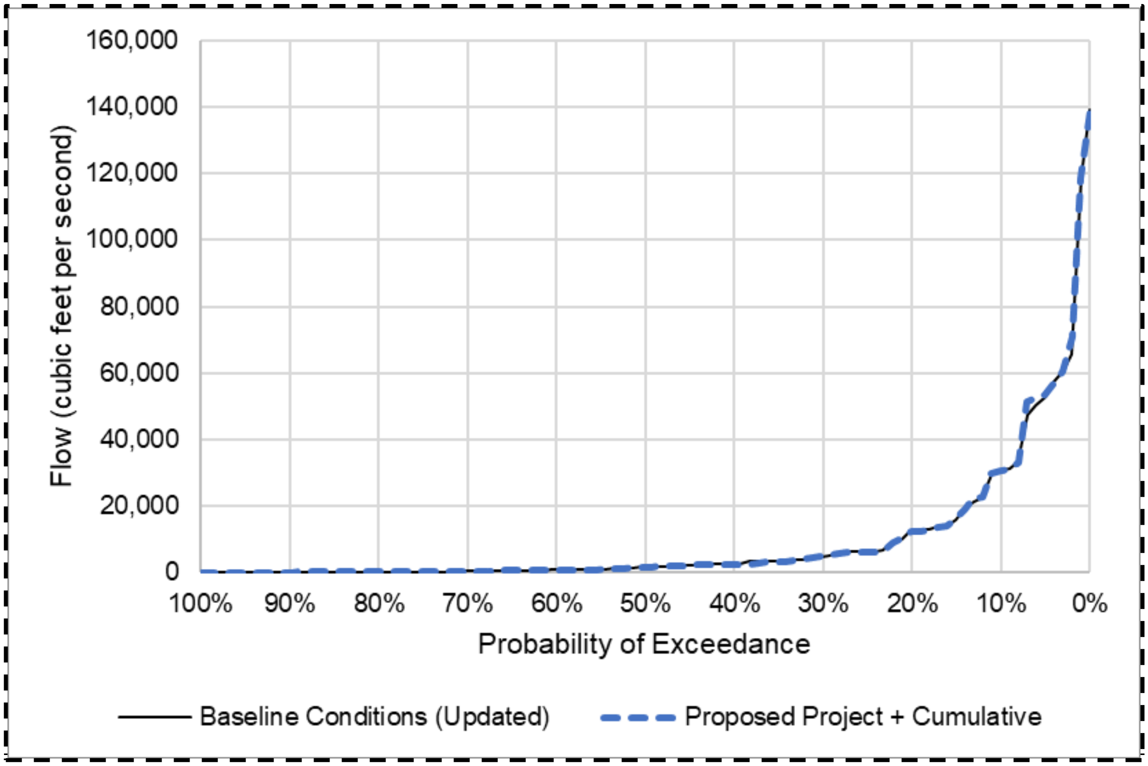
The CalSim 3 modeling indicates that Delta Smelt prey-related effects of operations of the Proposed Project plus Cumulative scenario generally would be similar to Baseline Conditions ~~(Updated)~~, considering flows through Yolo Bypass (Figures 10-8 through 10-13) and Delta outflow during spring, summer, and fall (Figures 10-14 through 10-24). As noted above, greater spring Delta outflow under the Proposed Project plus Cumulative scenario has the potential to positively affect food availability relative to Baseline Conditions ~~(Updated)~~, albeit with low statistical certainty.

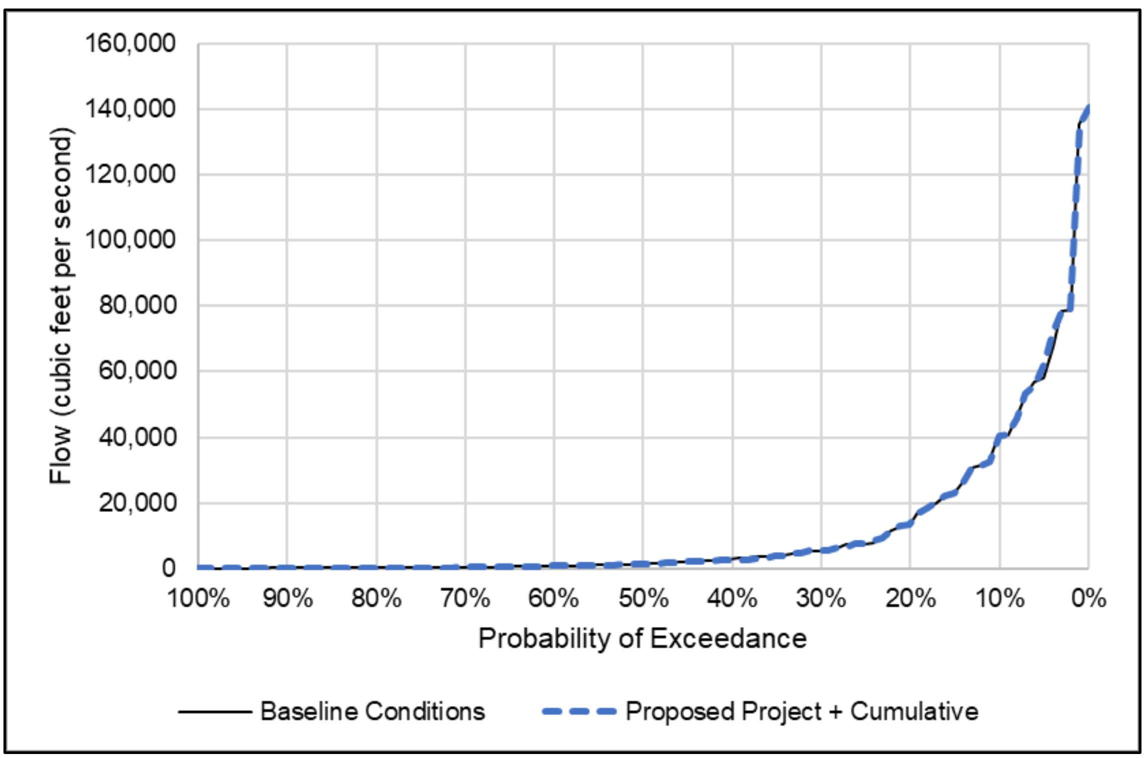




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

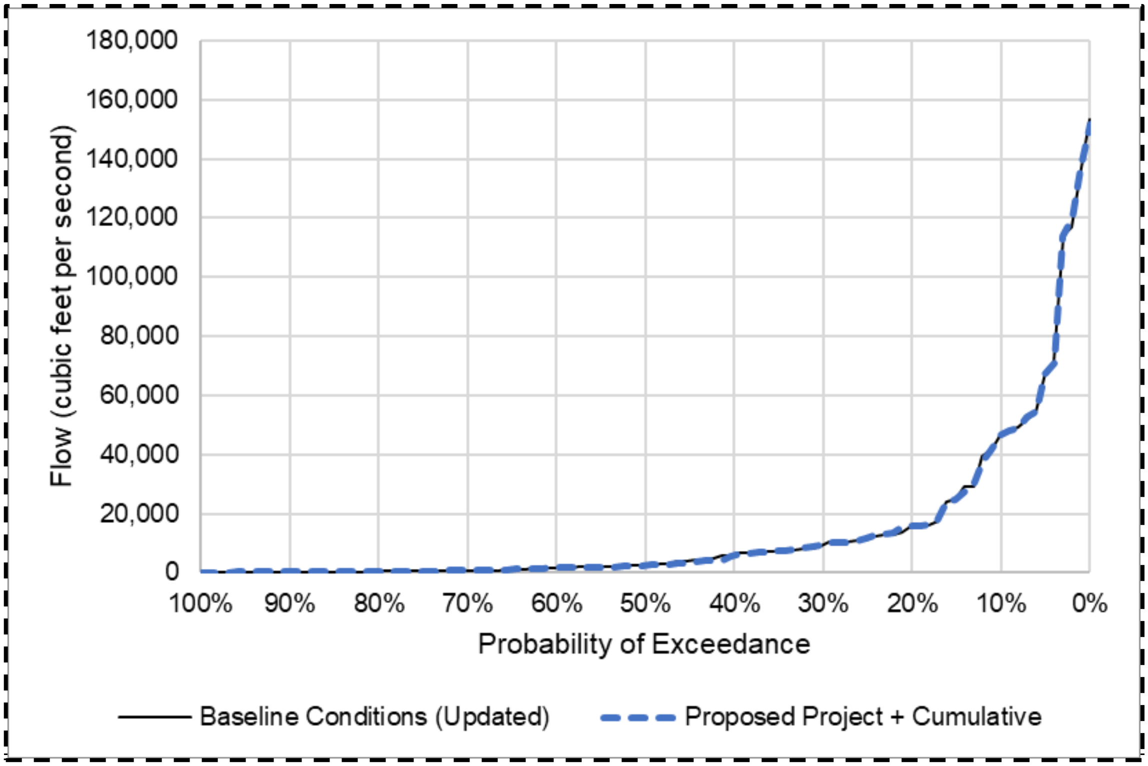
Figure 10-8. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, December

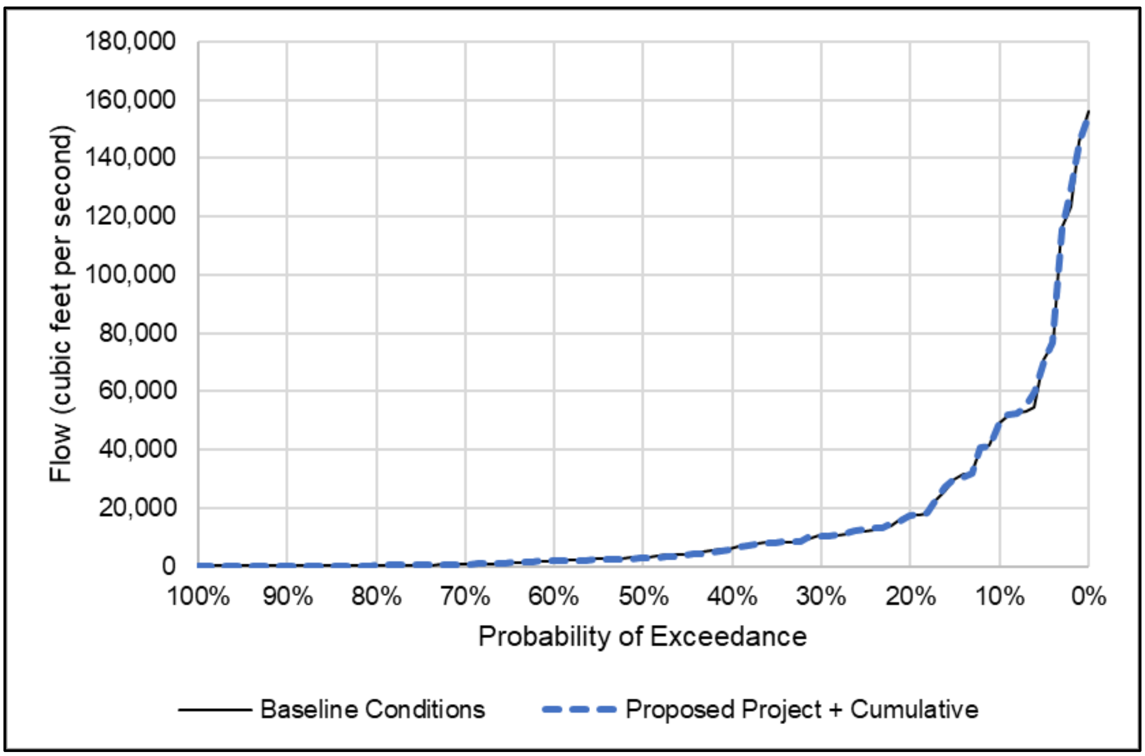




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

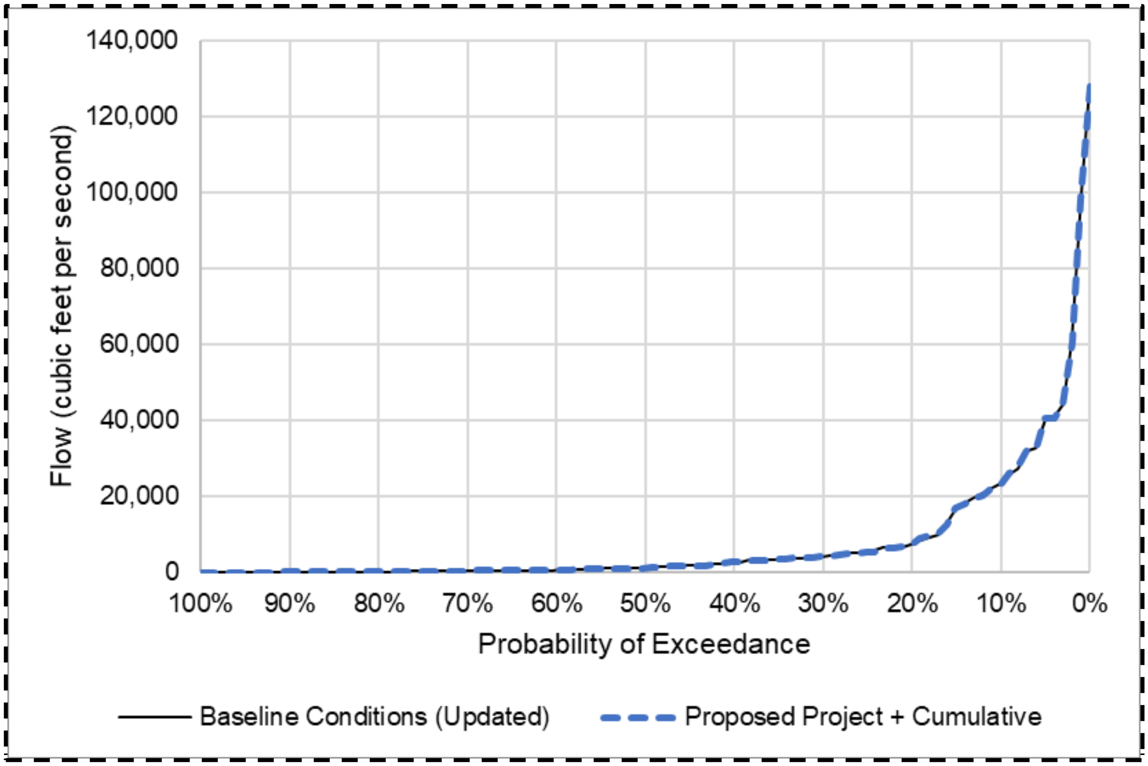
Figure 10-9. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, January

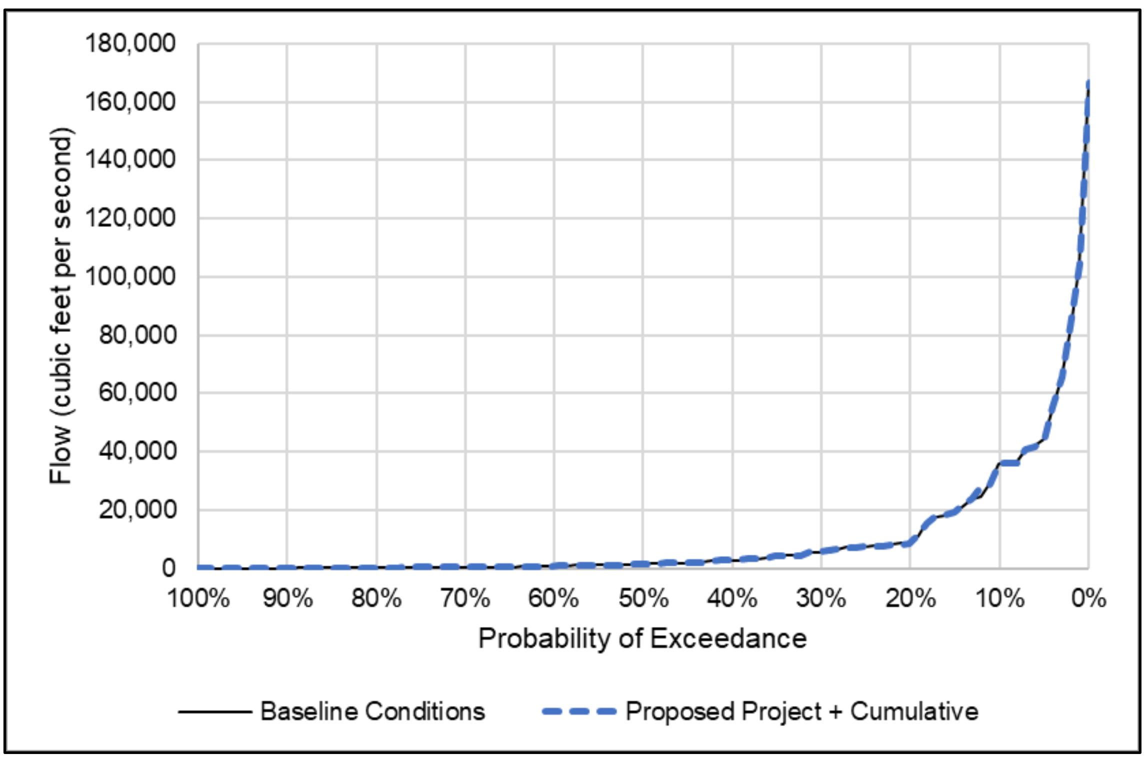




Source: ~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

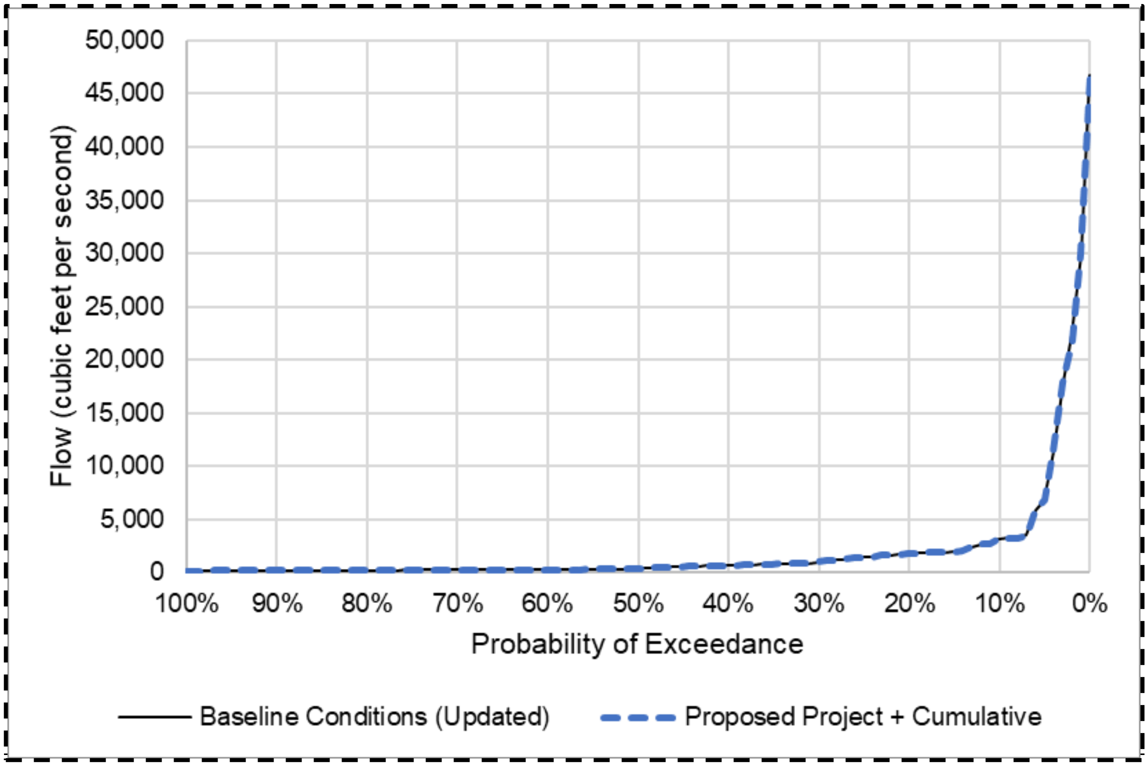
Figure 10-10. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, February

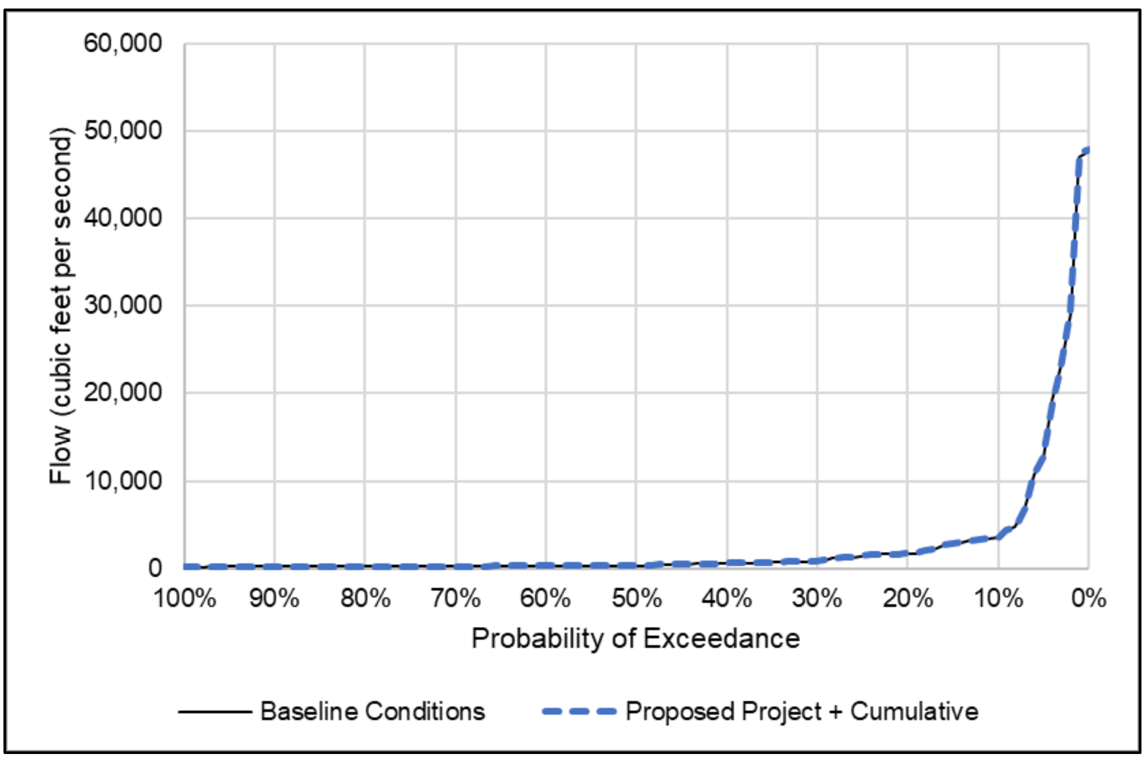




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

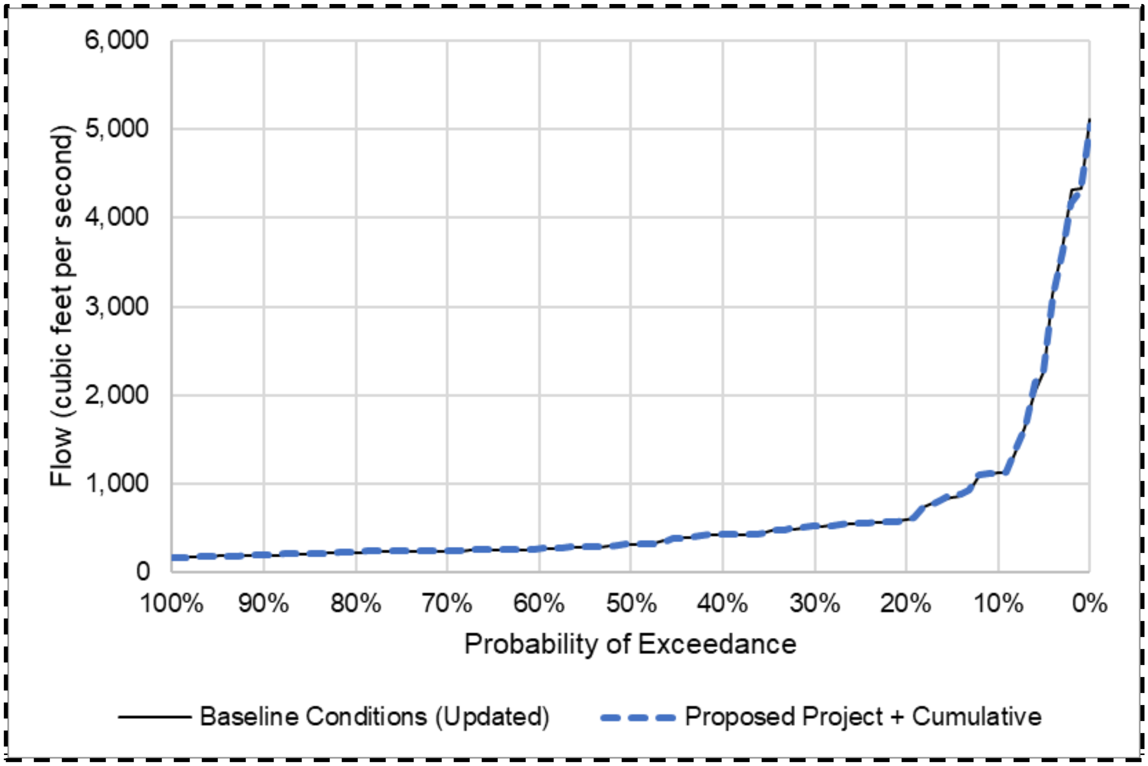
Figure 10-11. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March

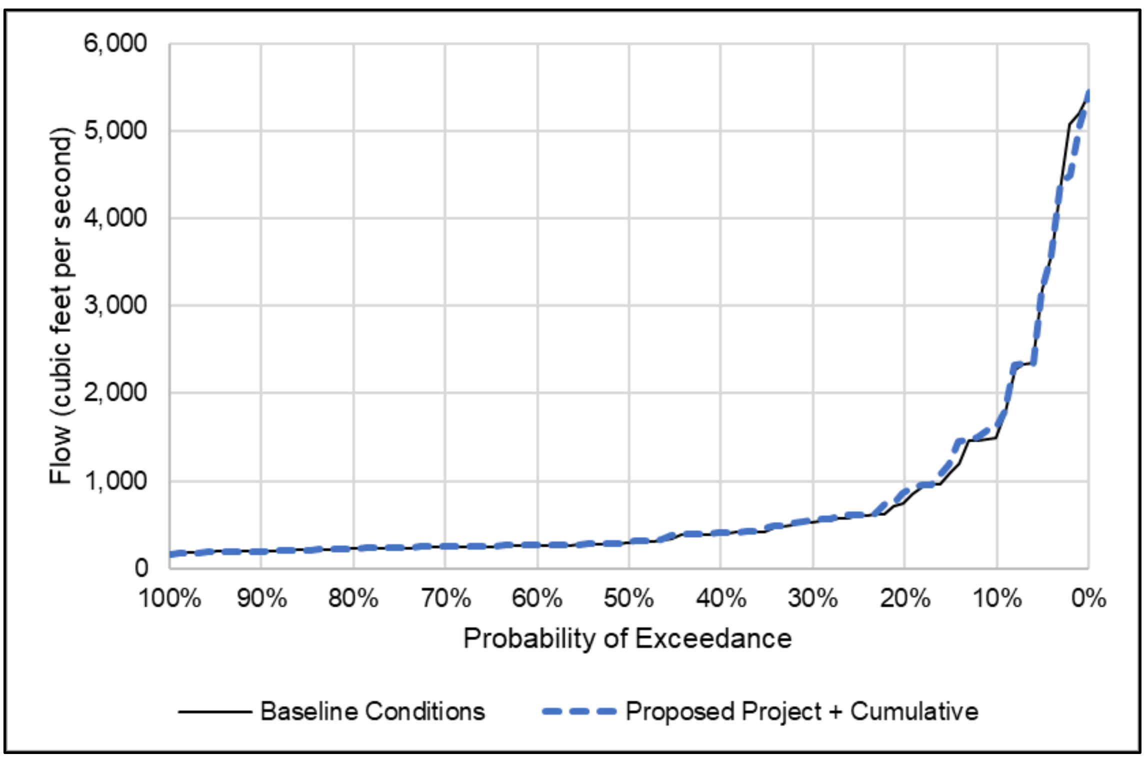




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

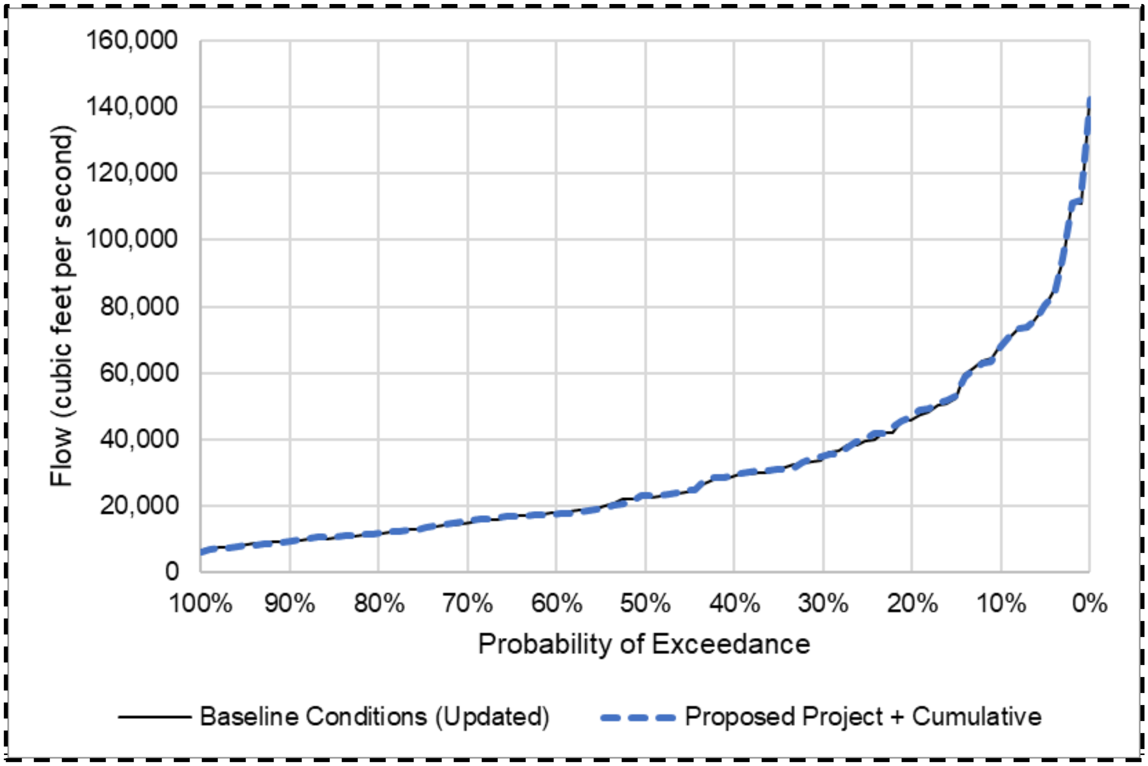
Figure 10-12. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April

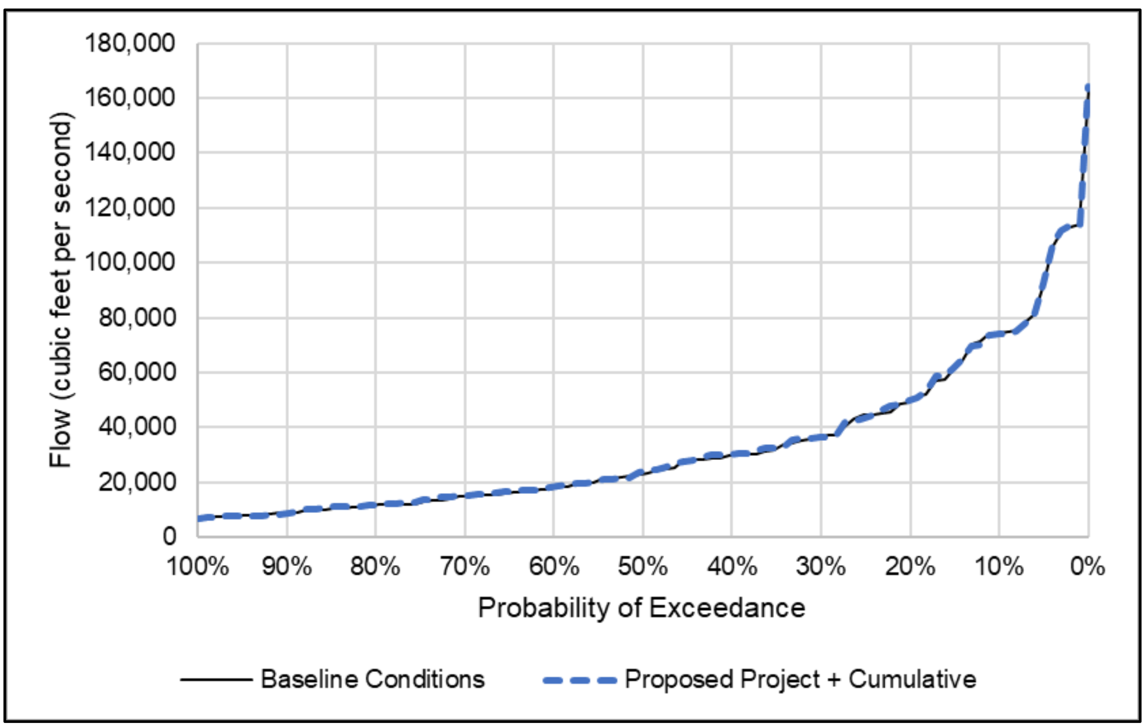




Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm~~> ~~and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

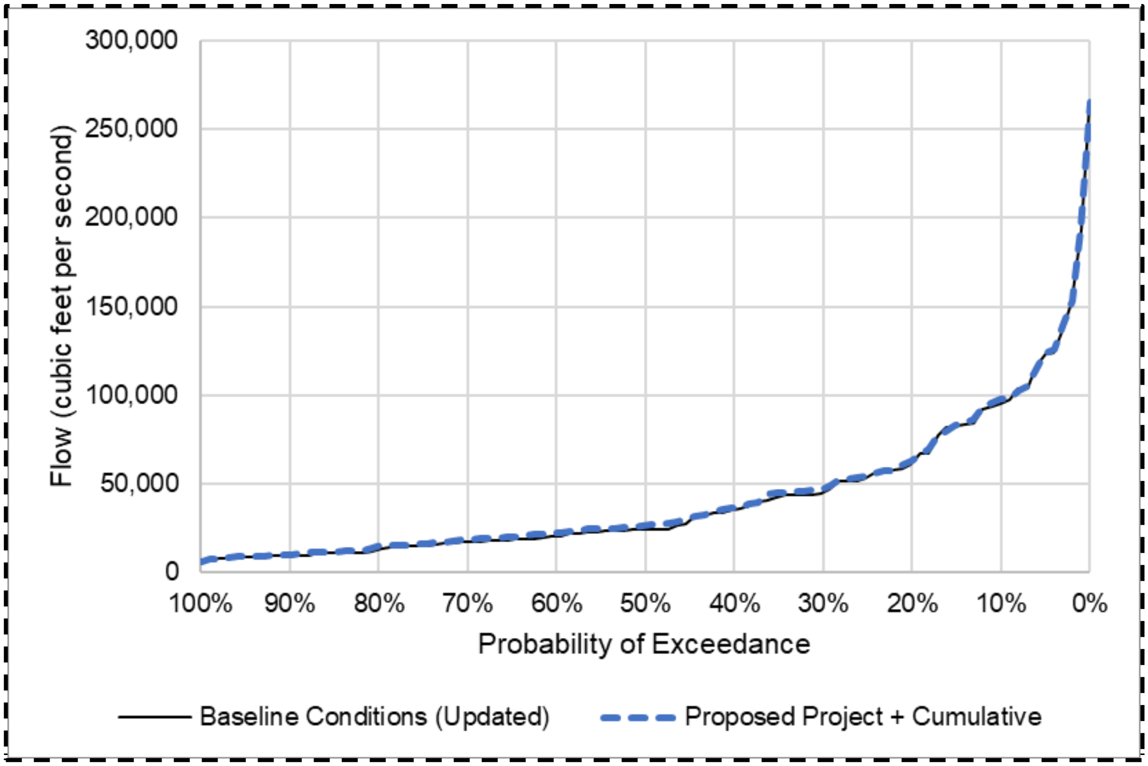
Figure 10-13. Mean Modeled Flow Through Yolo Bypass for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May

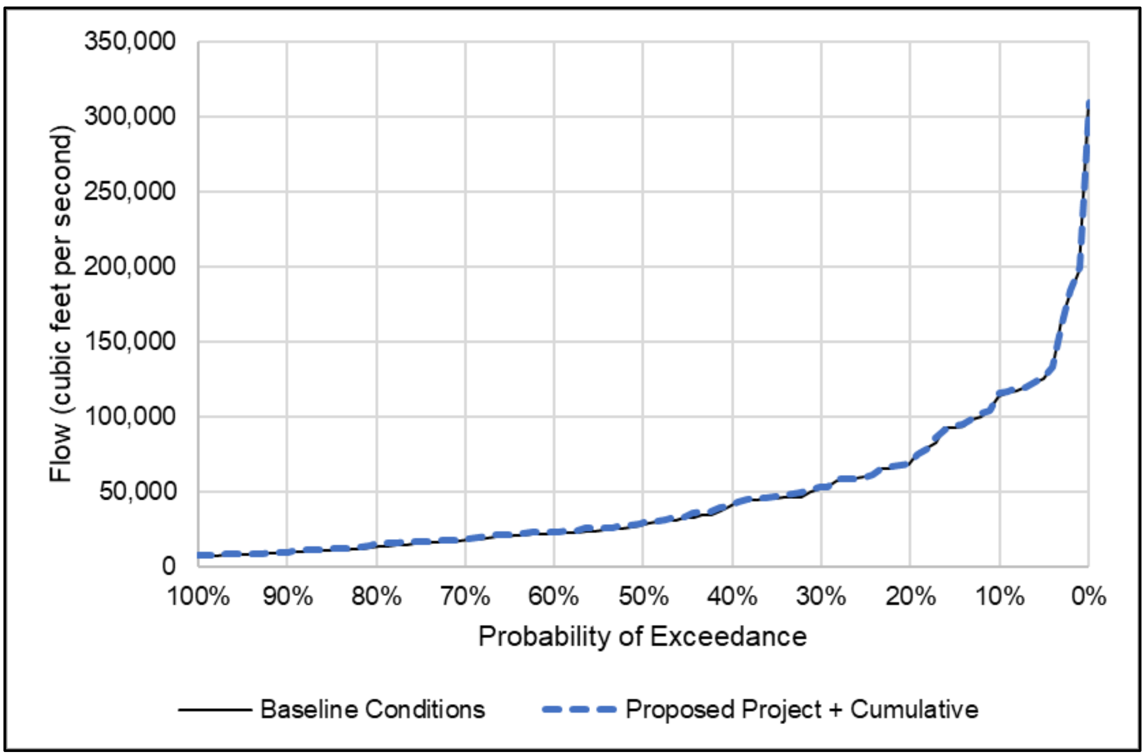




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

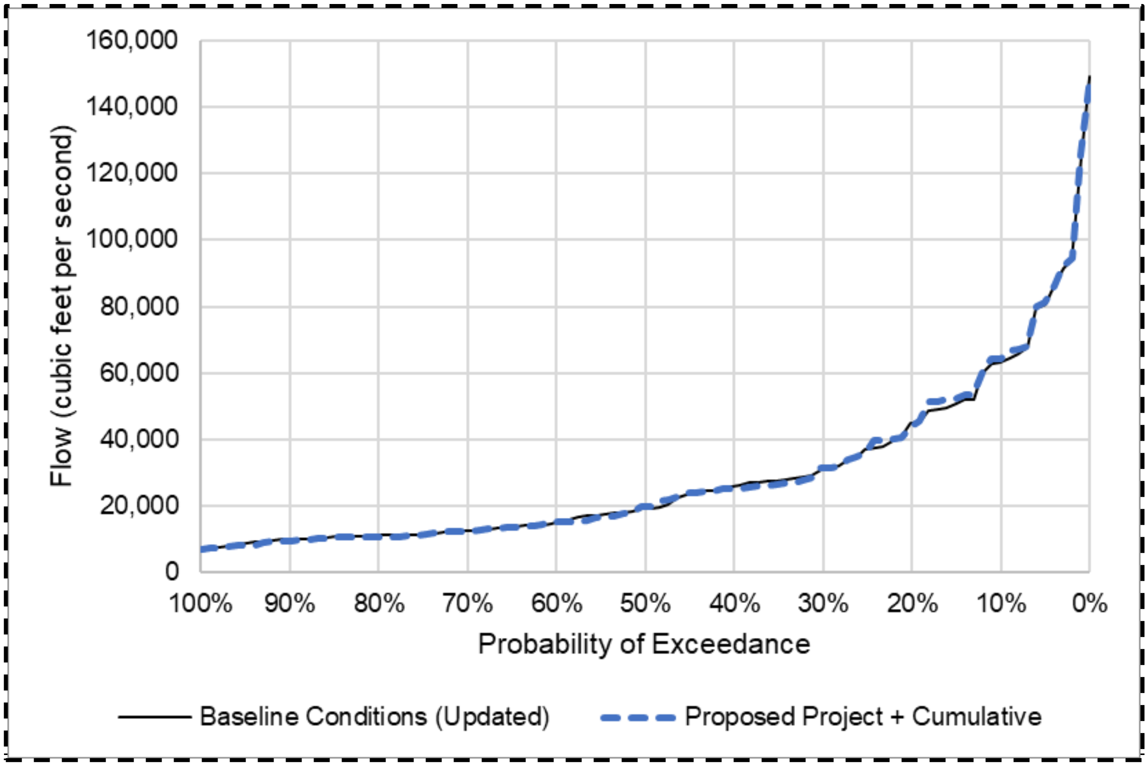
Figure 10-14. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March–May

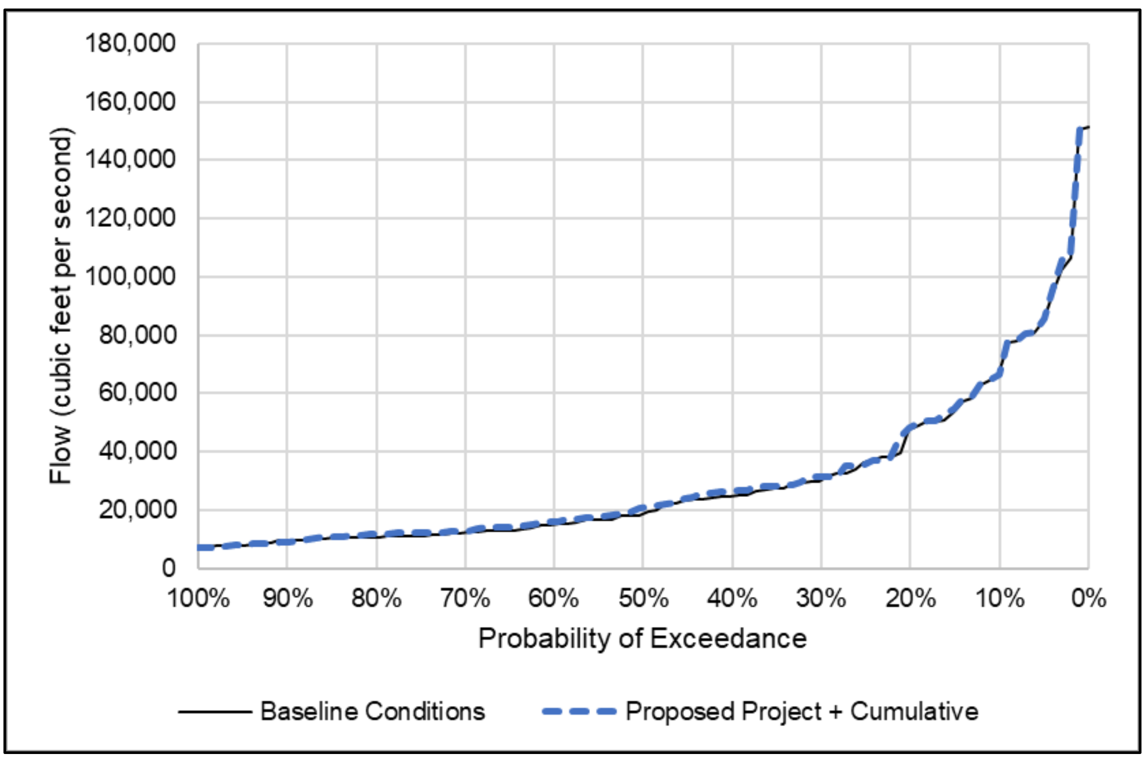




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

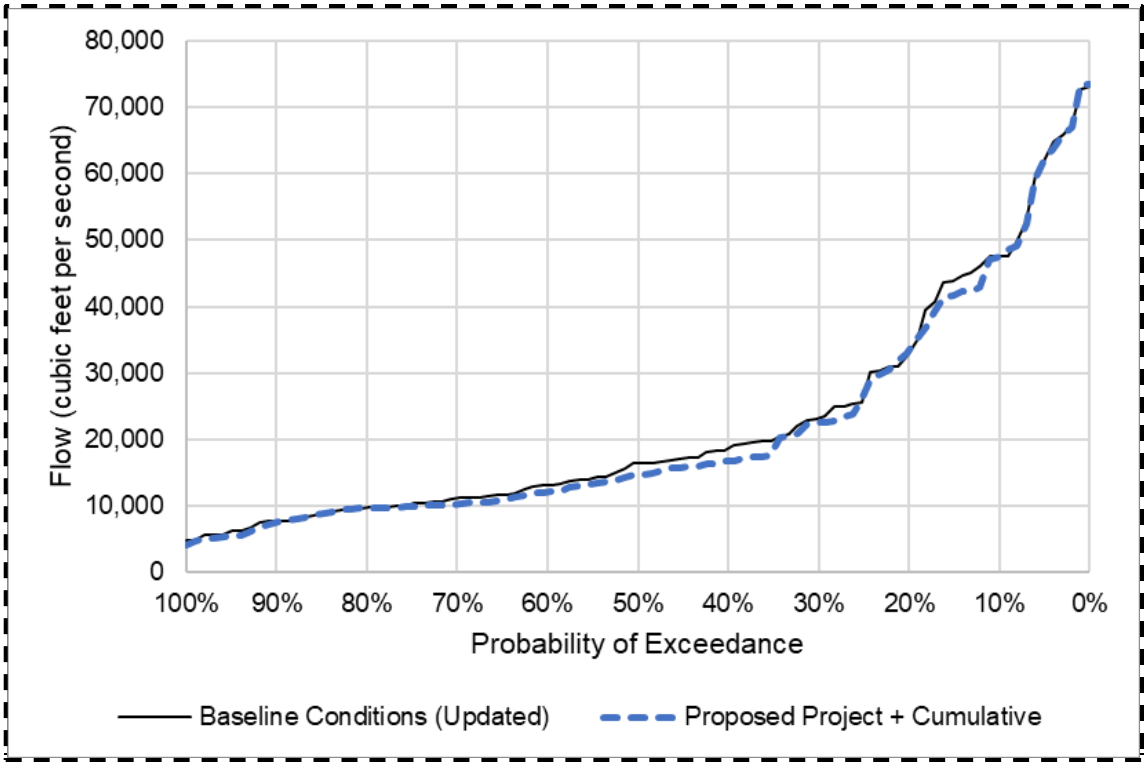
Figure 10-15. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March

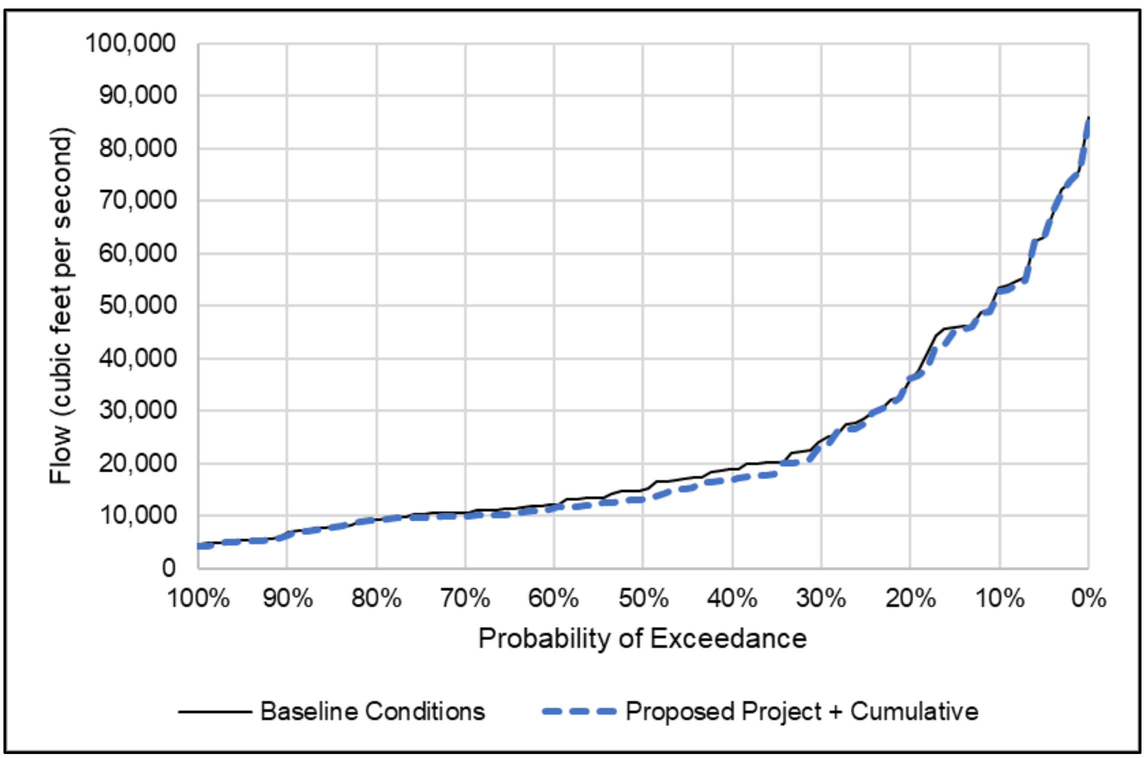




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

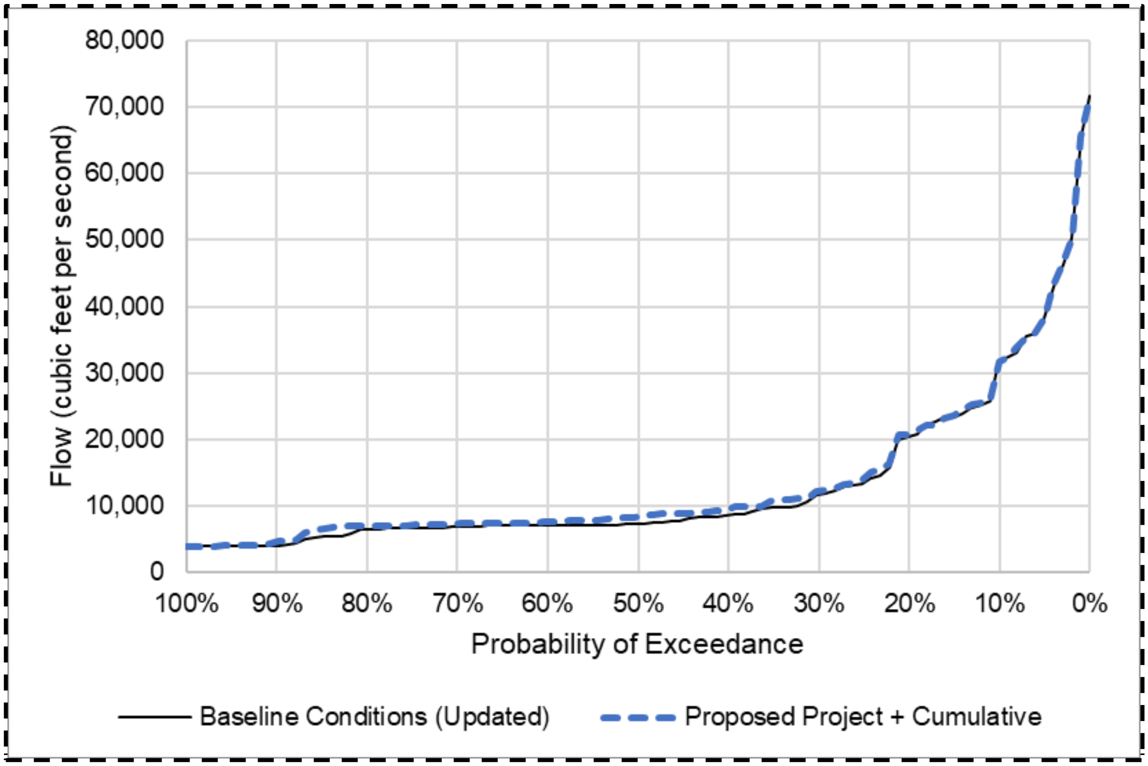
Figure 10-16. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April

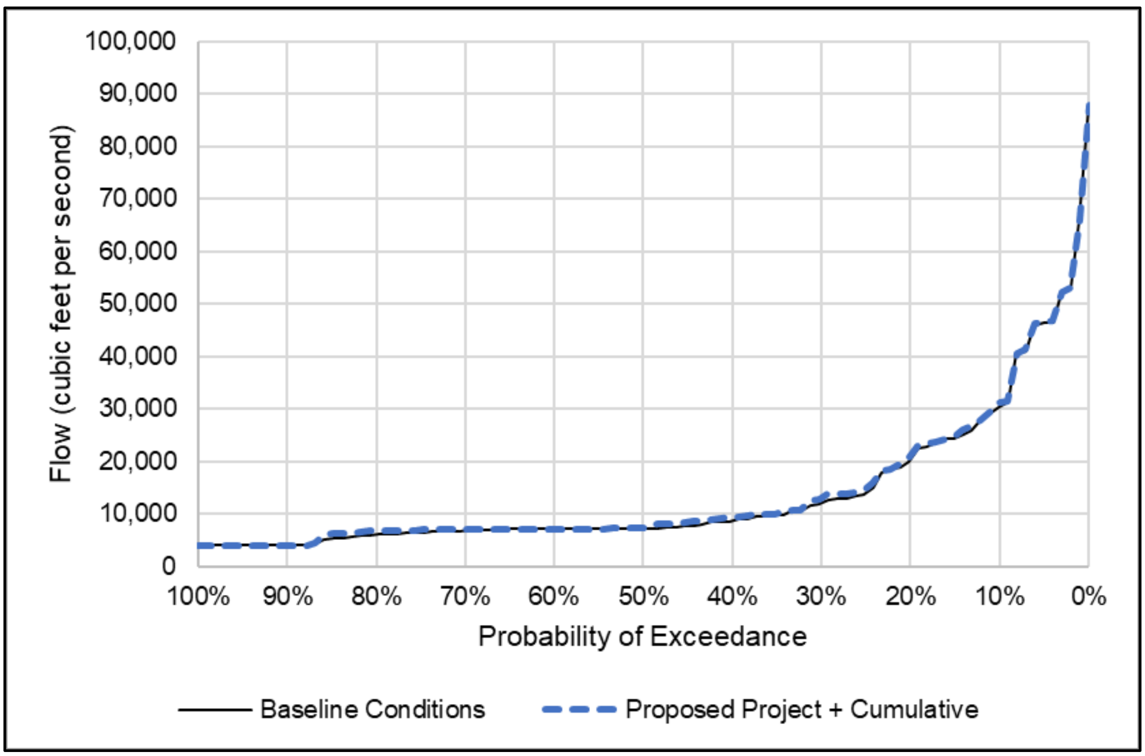




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

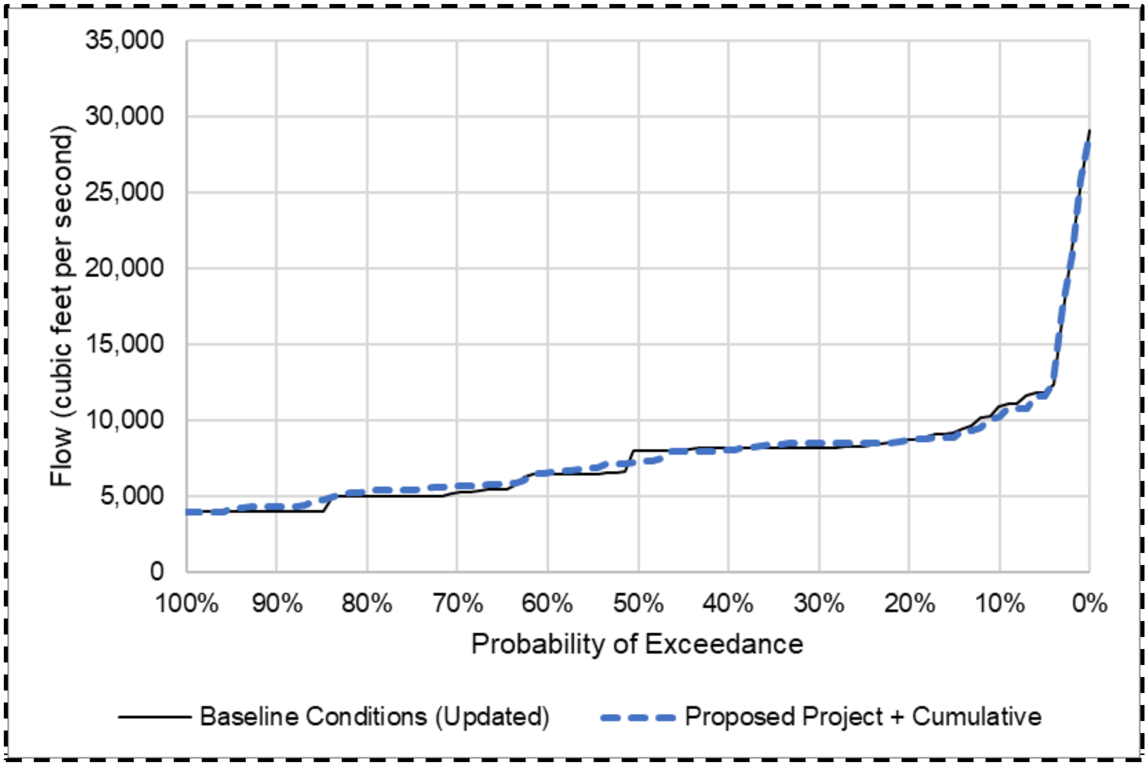
Figure 10-17. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May

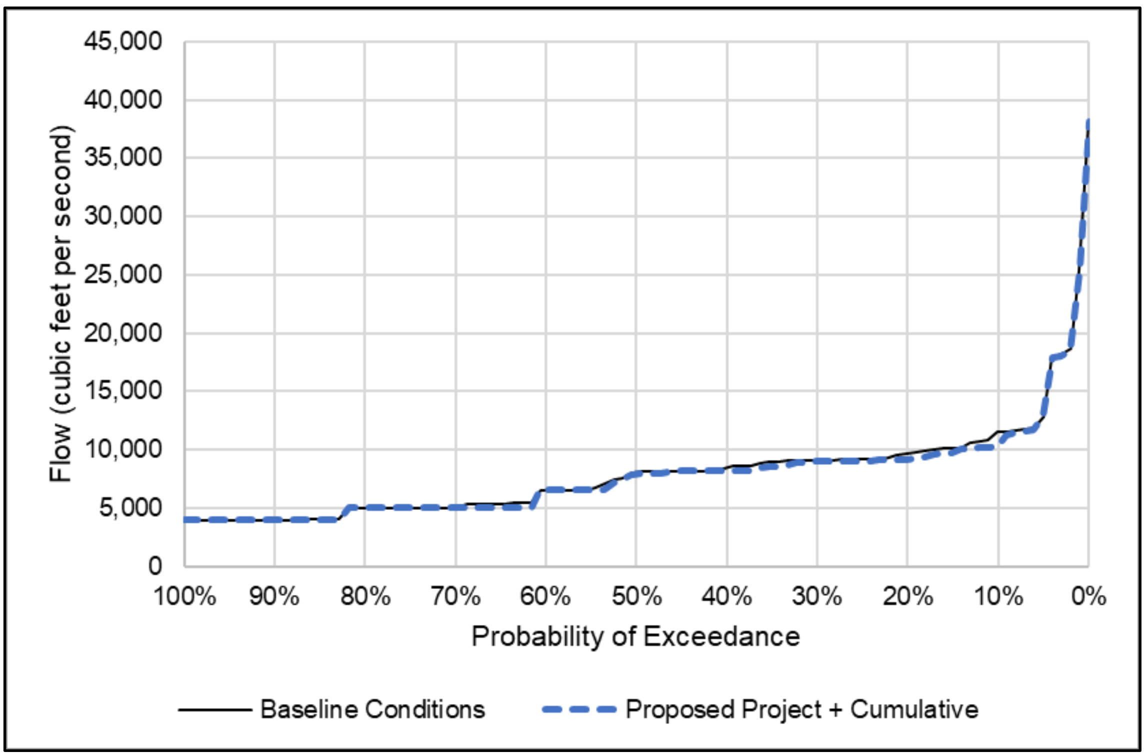




Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

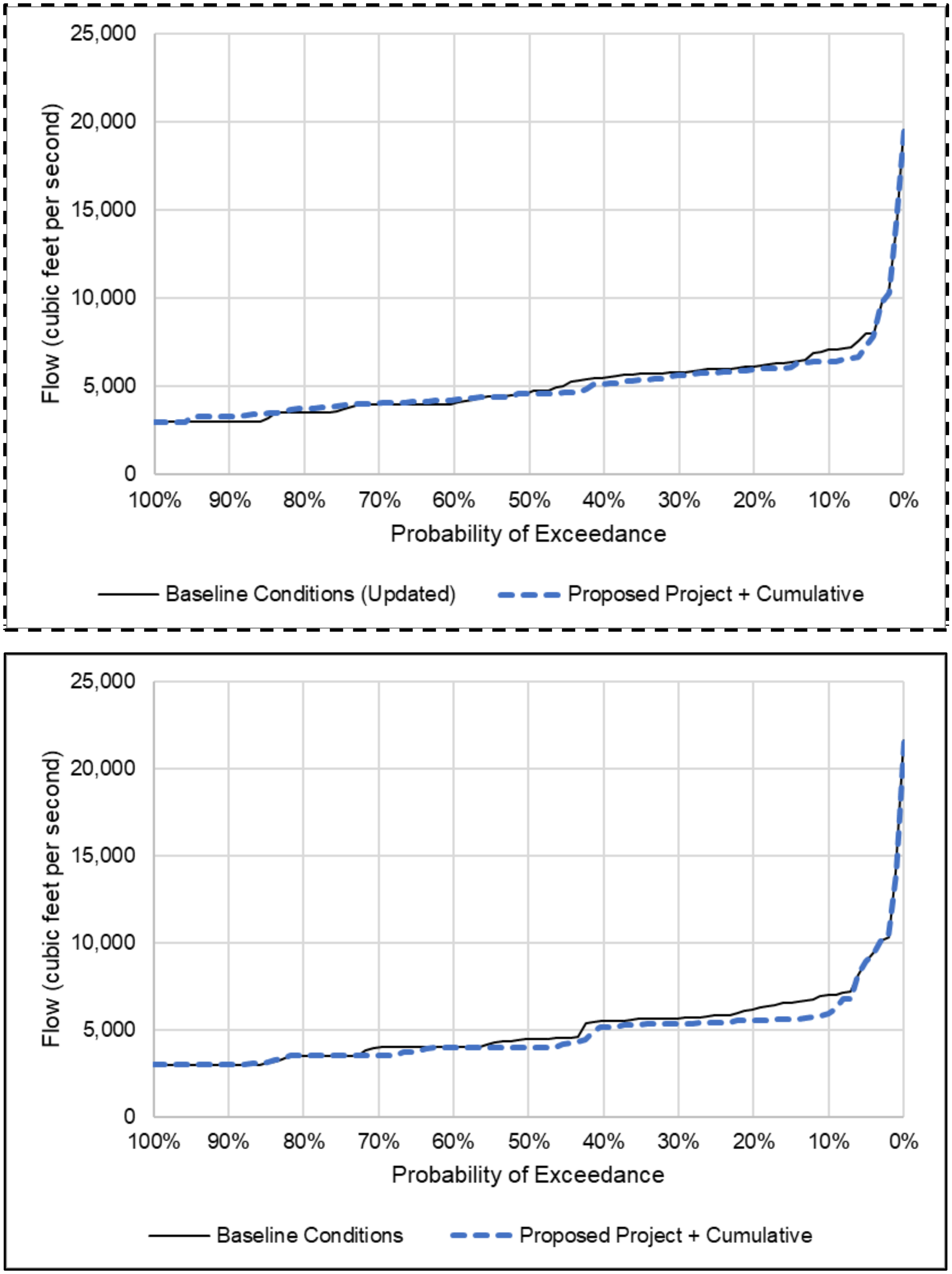
Figure 10-18. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June





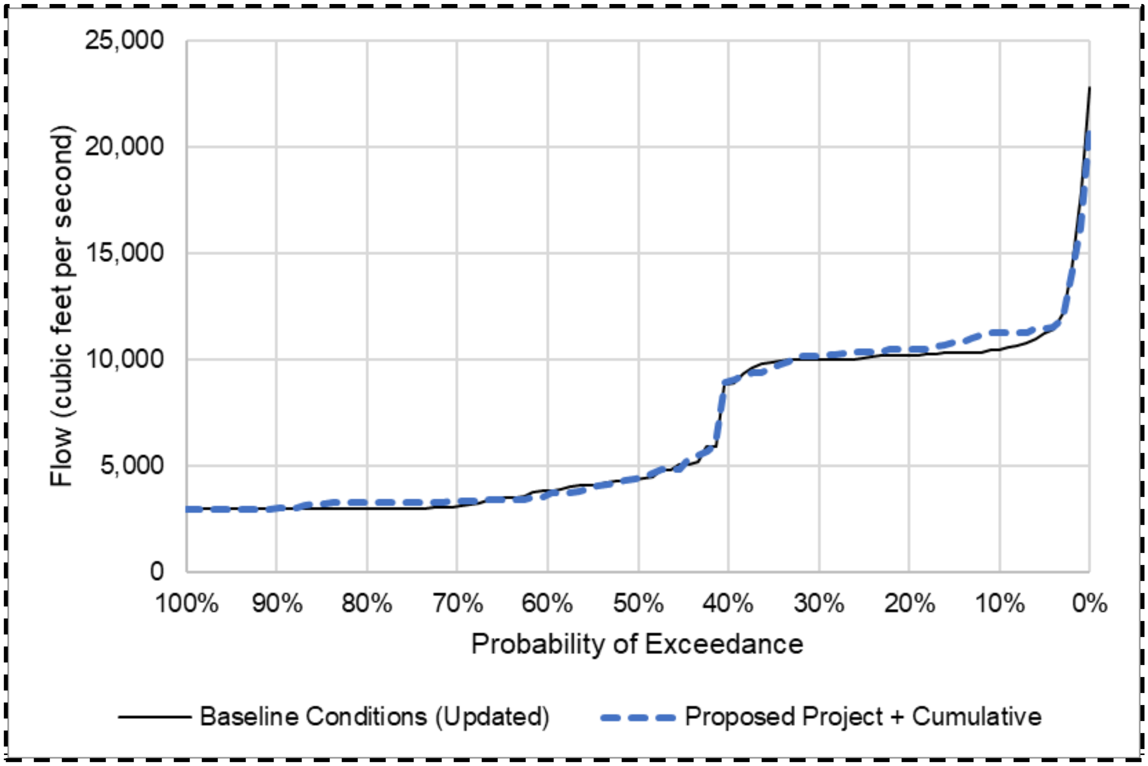
Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

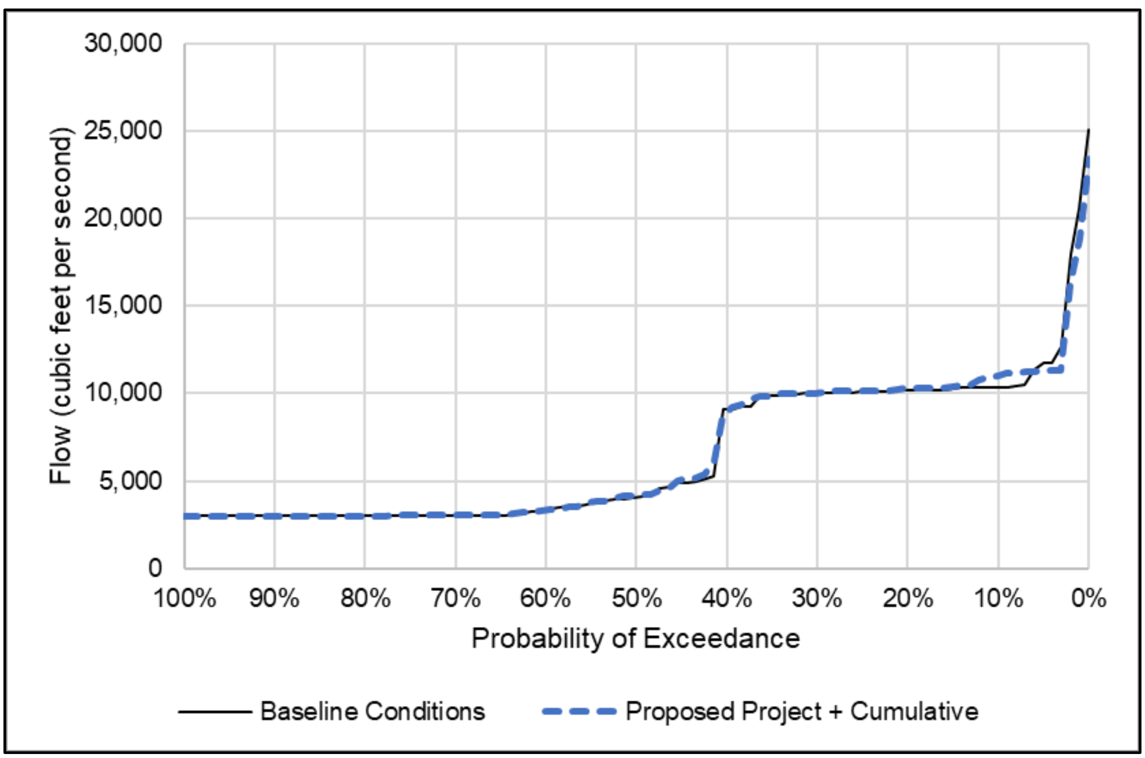
Figure 10-19. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, July



Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

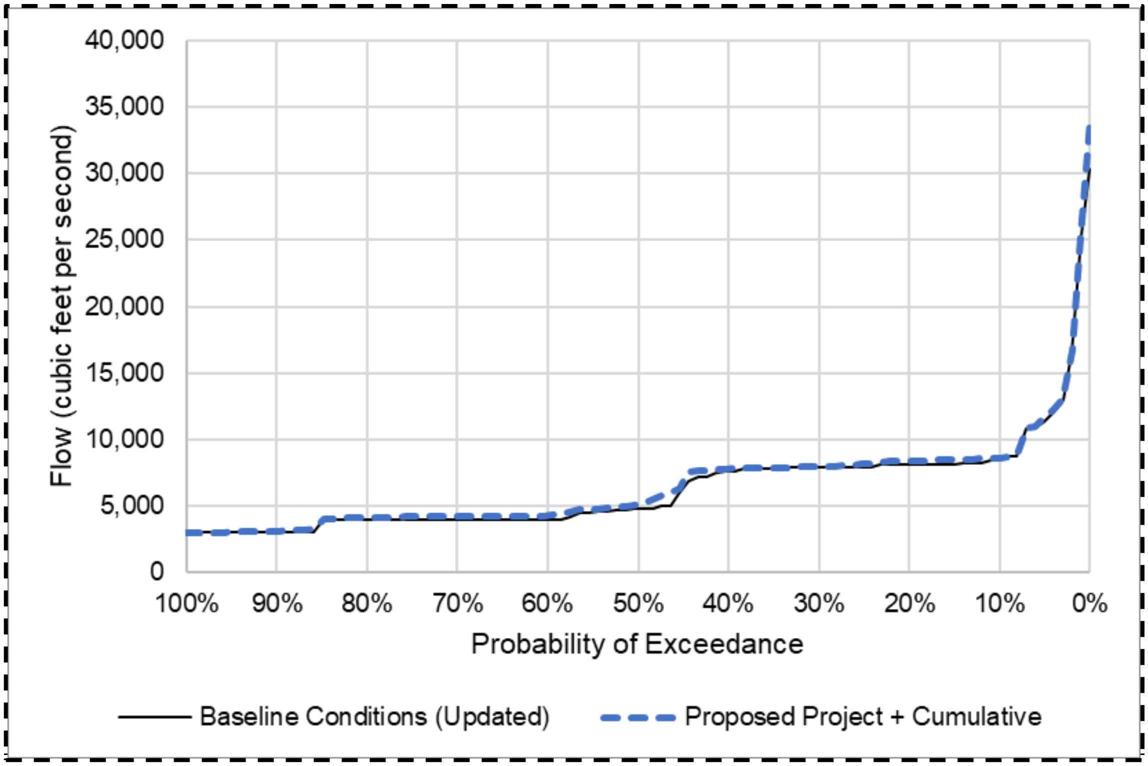
Figure 10-20. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, August

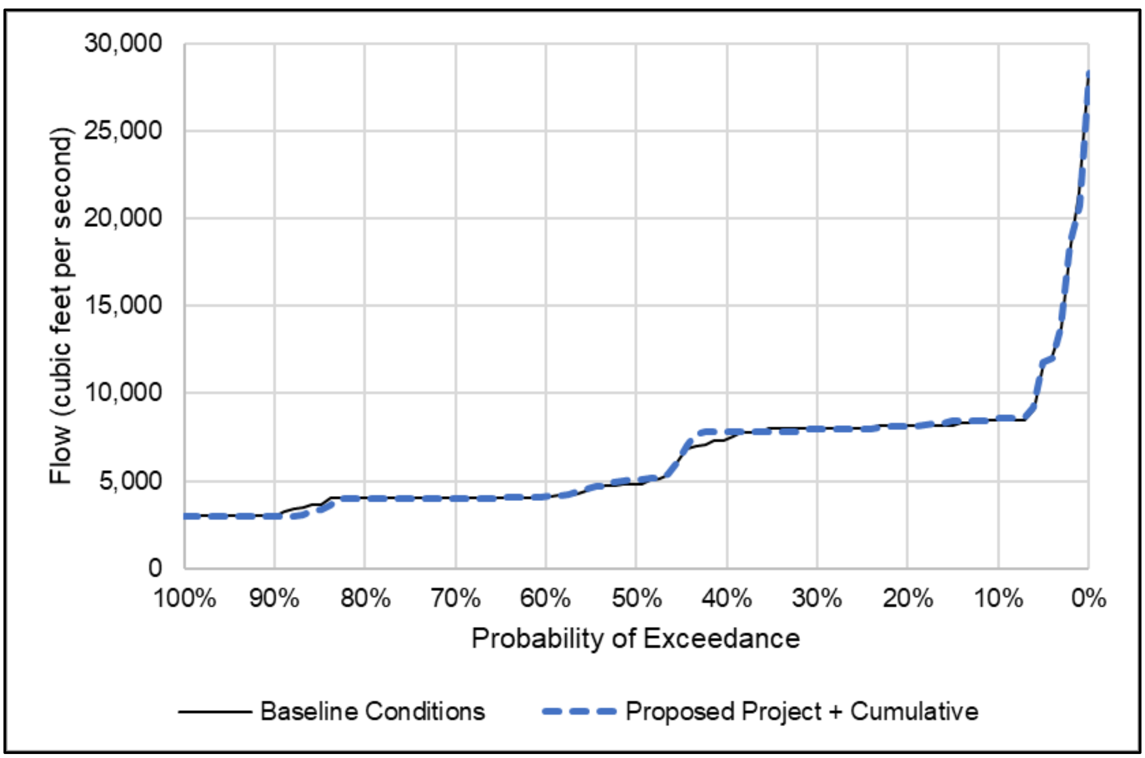




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

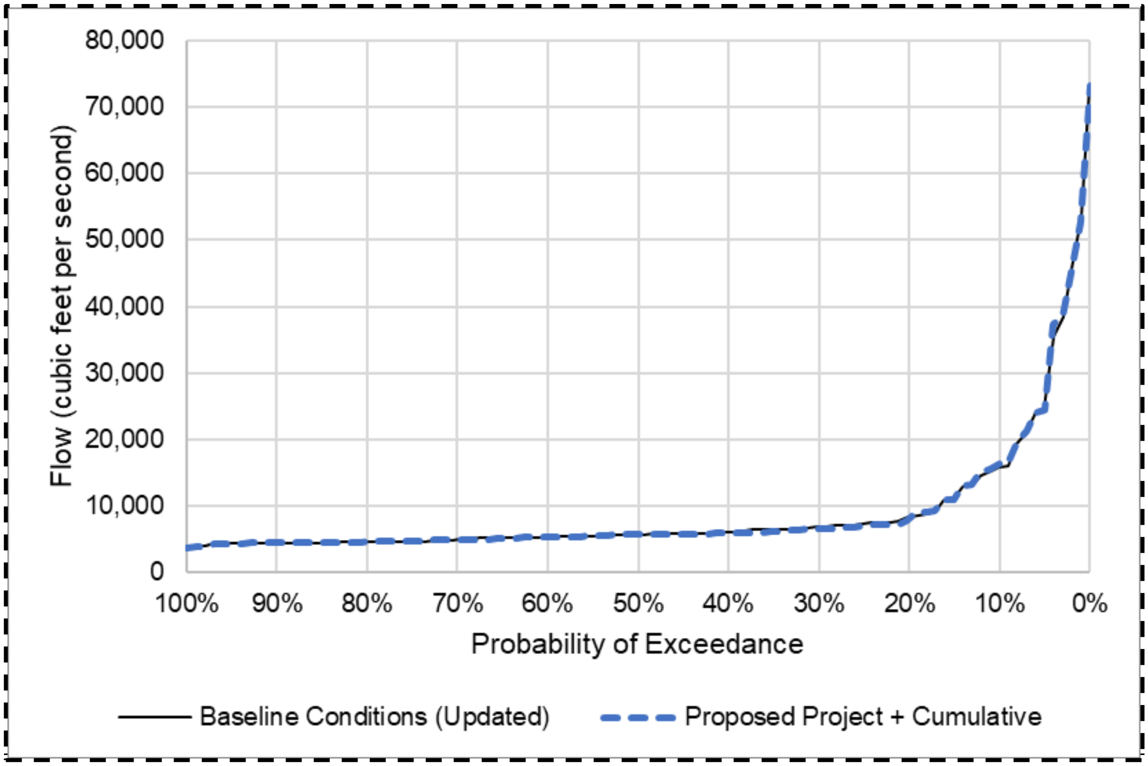
Figure 10-21. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, September

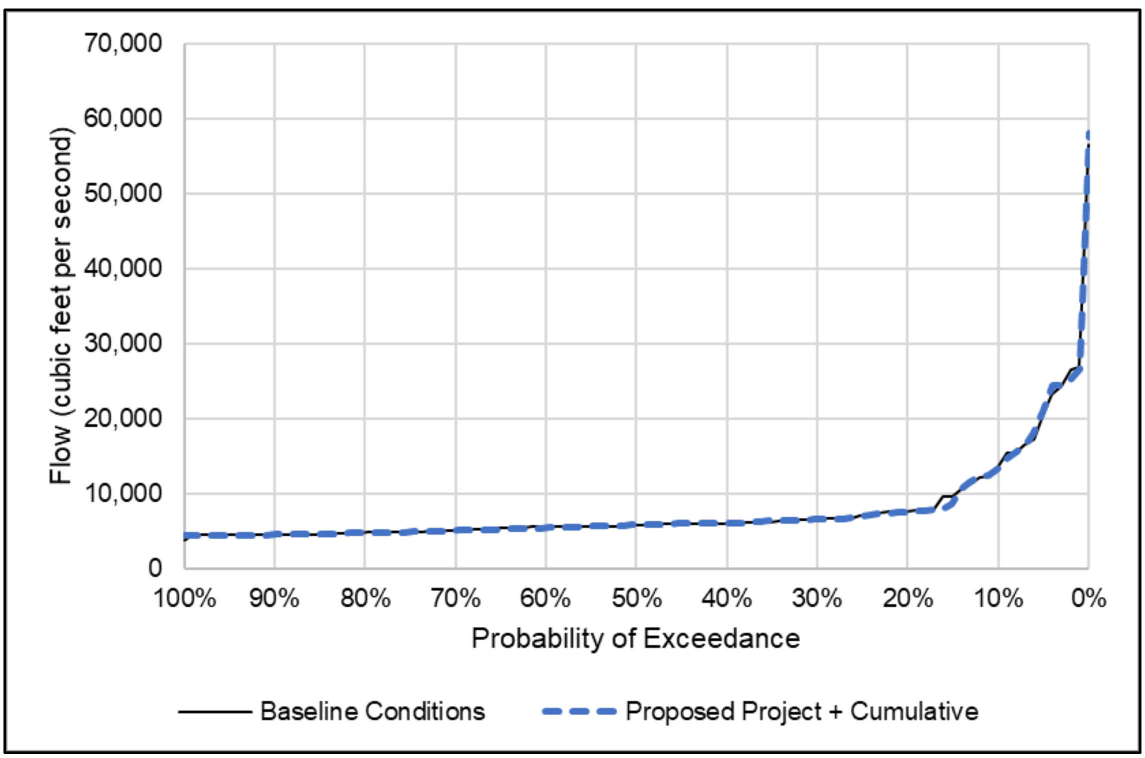




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

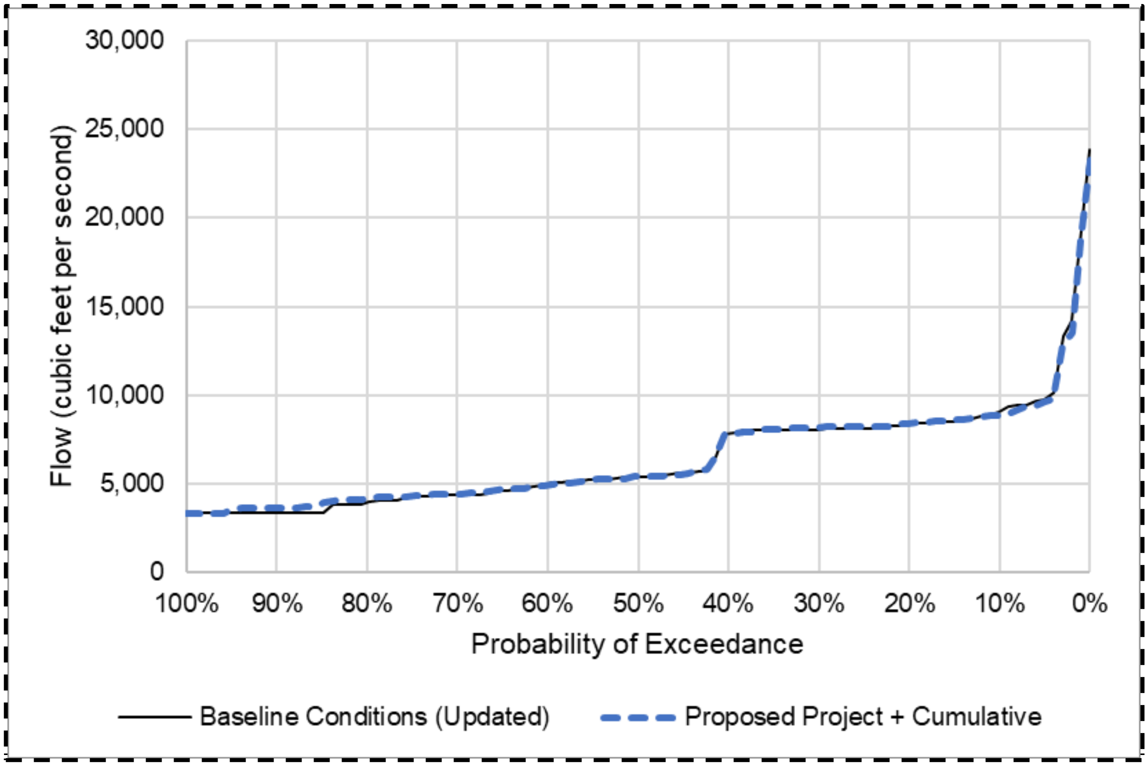
Figure 10-22. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, October

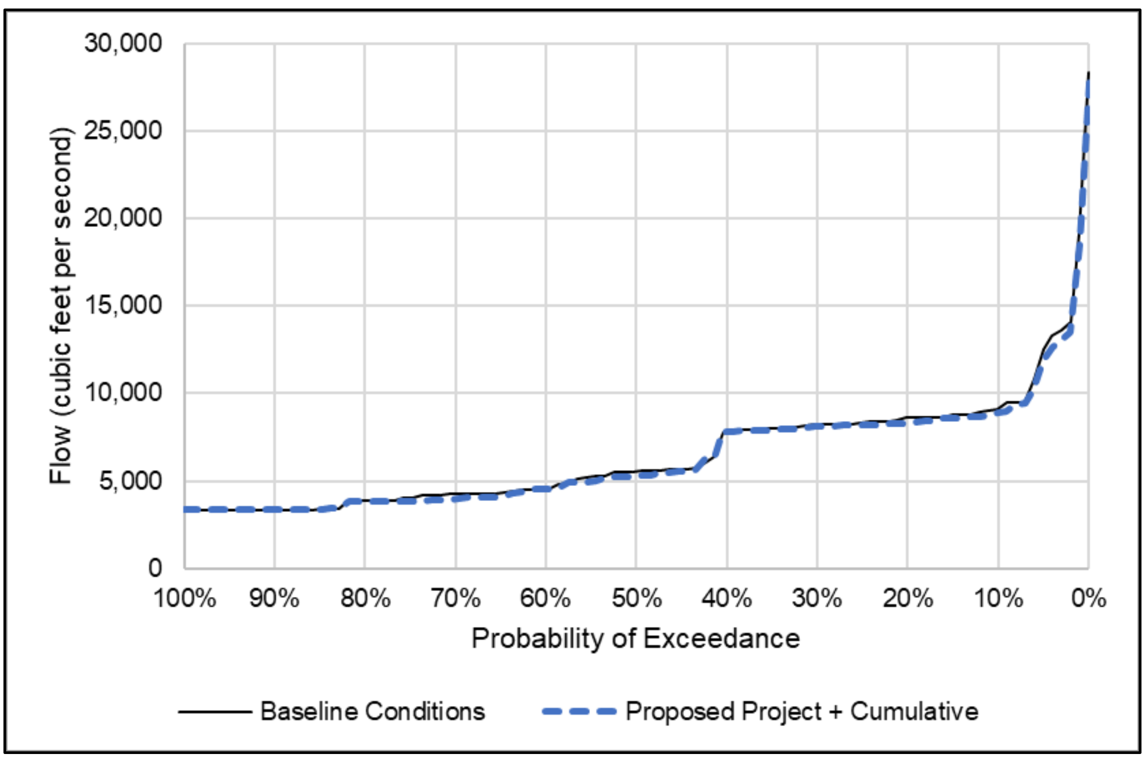




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-23. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, November

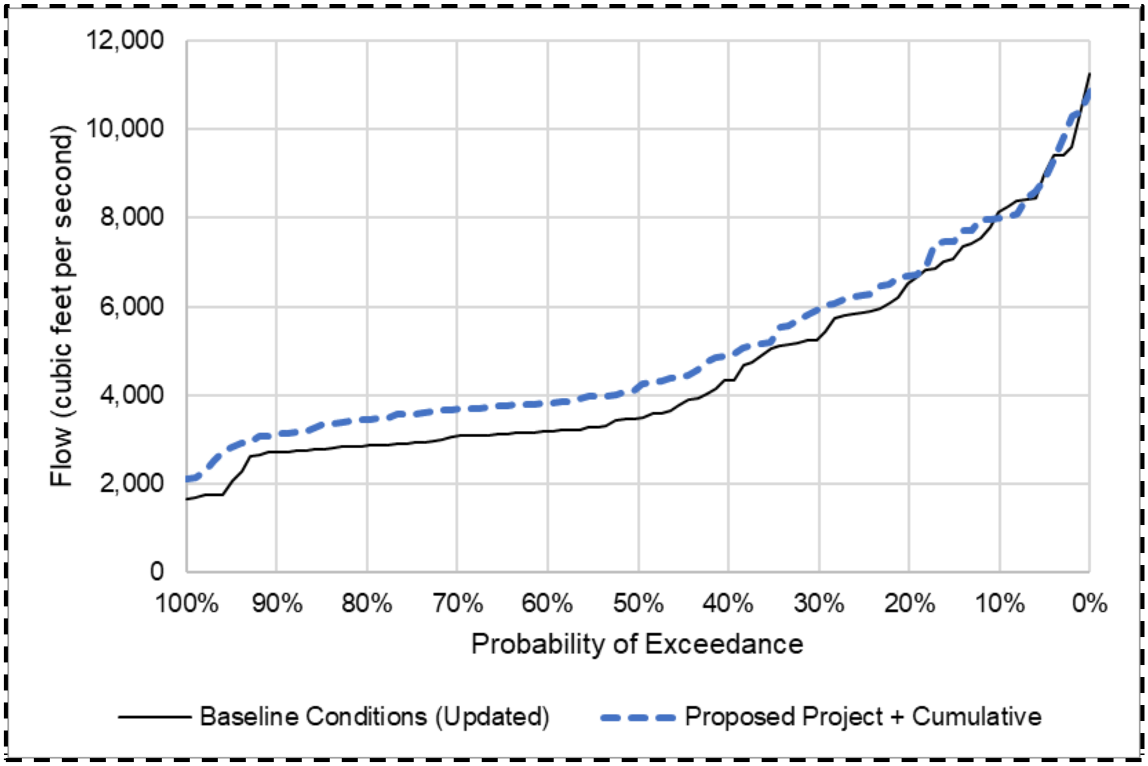


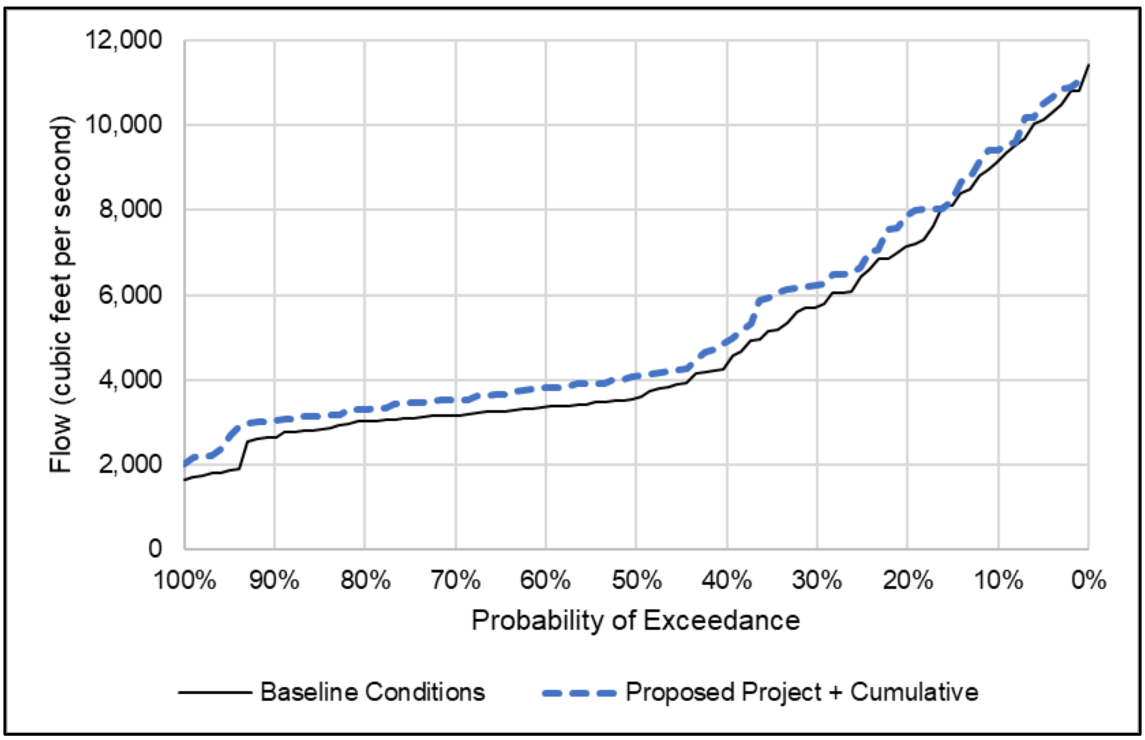


Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm~~> ~~and~~
<~~DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx~~>
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-24. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, July–September

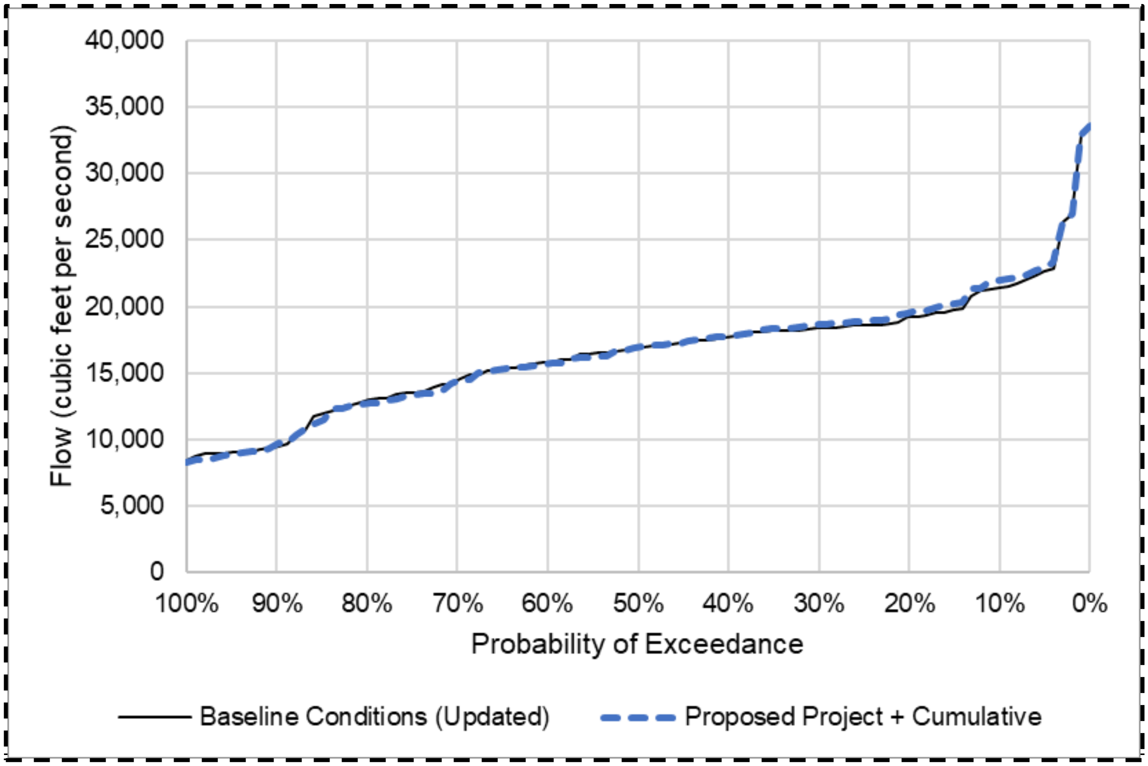
None of the indicators of potential predation effects discussed in Chapter 6 suggested that the Proposed Project plus Cumulative scenario would result in greater predation effects than Baseline Conditions ~~(Updated)~~. Relative to Baseline Conditions ~~(Updated)~~, March–May south Delta exports were higher under the Proposed Project plus Cumulative (Figure 10-25) and Sacramento River flow (as an indicator of inflow) was similar (Figure 10-26), suggesting that factors correlated with abundance of silverside predators of larval Delta Smelt would not be better under the Proposed Project plus Cumulative scenario. As discussed further in the "Winter-Run Chinook Salmon" section, Freeport flows (as an indicator of turbidity entering the Delta) would be similar for Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ scenarios.

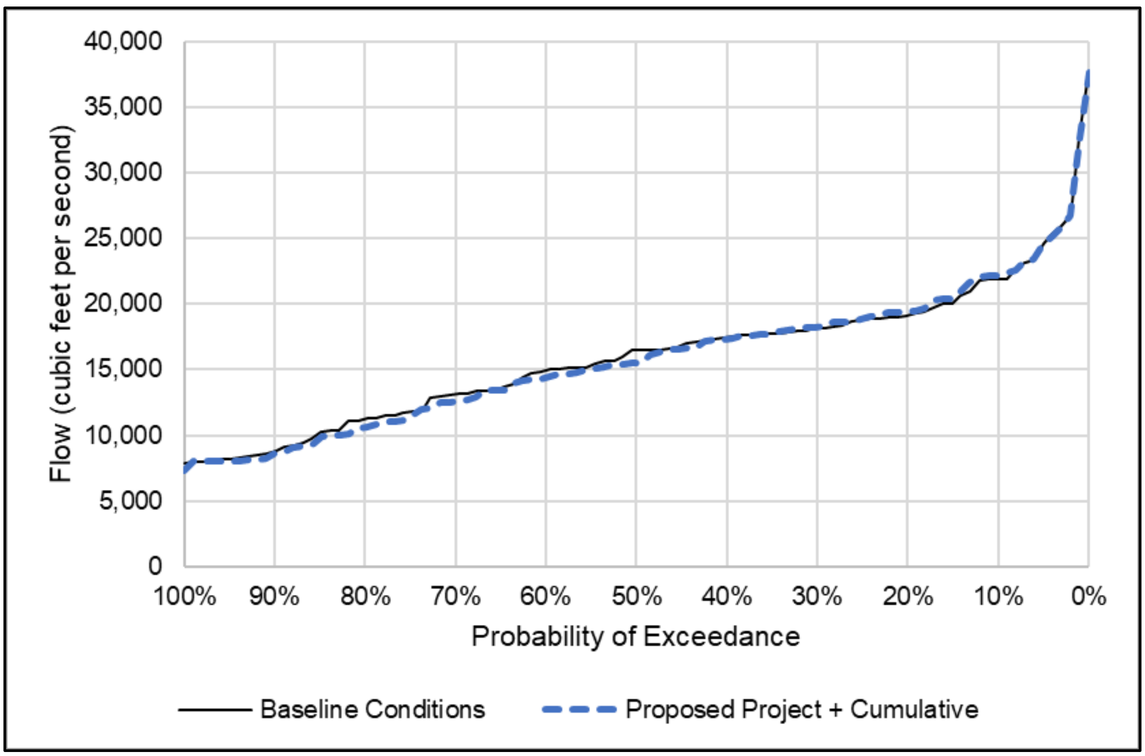




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-25. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March–May





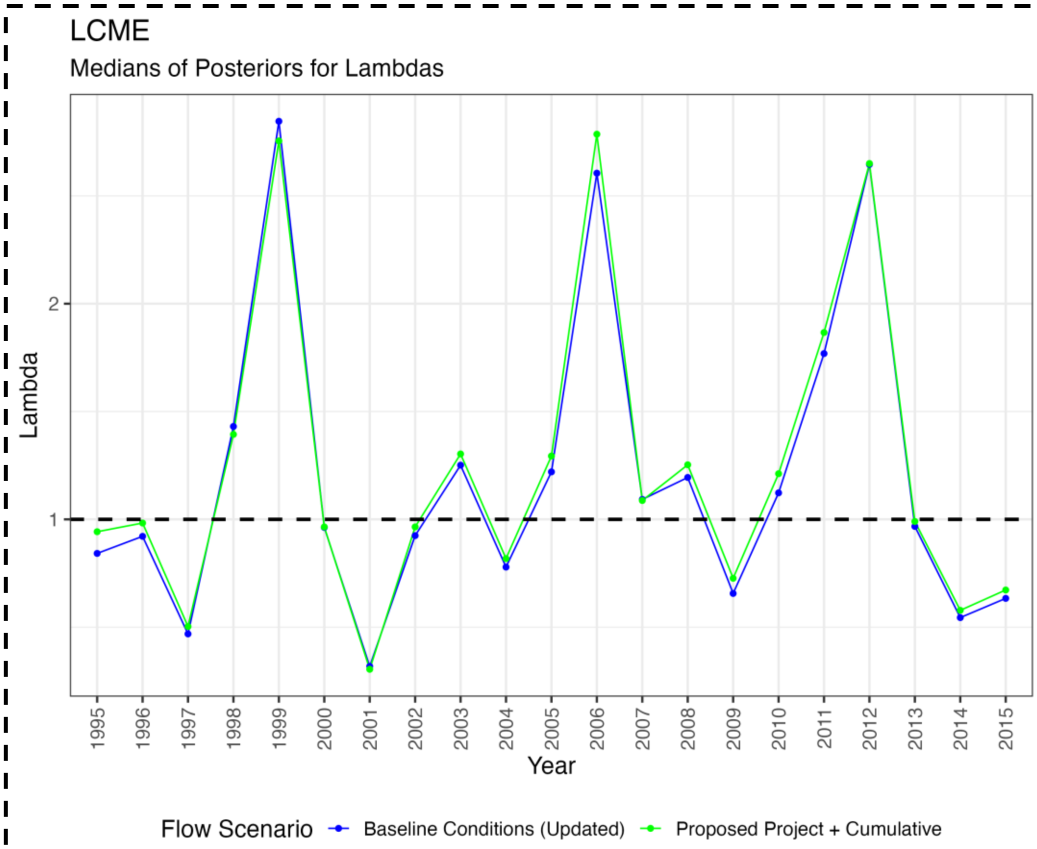
Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

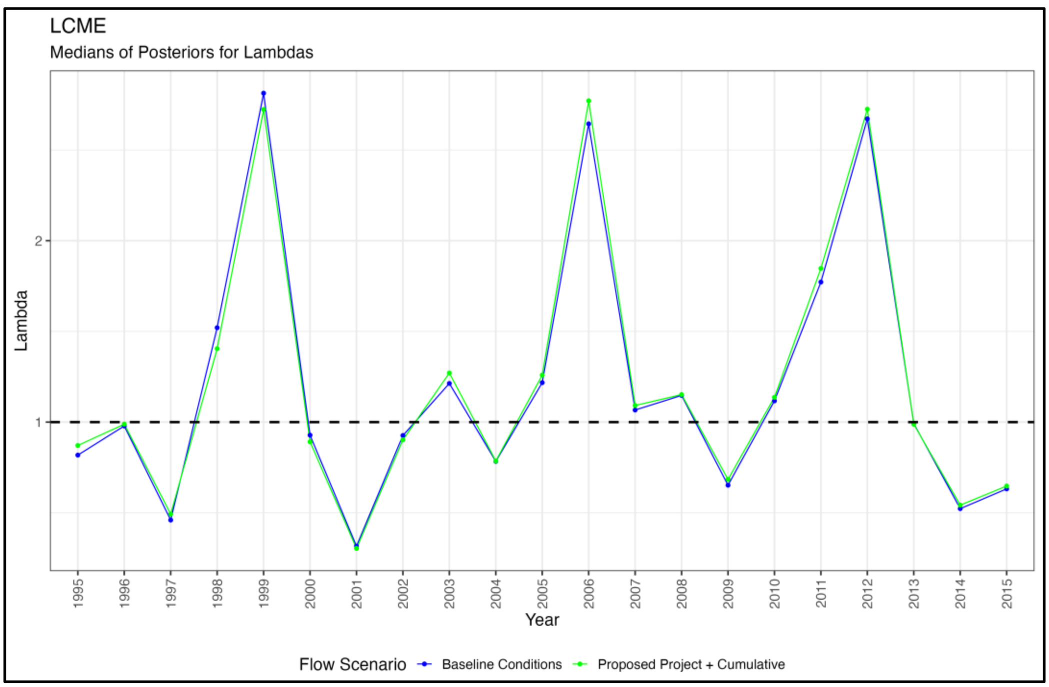
Figure 10-26. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June–September

The Delta Smelt Life Cycle Model with Entrainment (LCME) model (see discussion in Chapter 6 and methods in Appendix 6B, "Biological Modeling Methods and Selected Results") was used to illustrate the potential effects of the Proposed Project plus Cumulative scenario relative to Baseline Conditions ~~(Updated)~~ on Delta Smelt population growth rate. The results of the LCME modeling showed median population growth rate during 1995–2015 ranged from ~~3~~ 8 percent lower to ~~12~~ 7 percent higher under the Proposed Project plus Cumulative scenario compared to Baseline Conditions ~~(Updated)~~ (Figure 10-27, Table 10-2). The proportion of the Proposed Project plus Cumulative scenario population growth rate posterior distribution that was lower than Baseline Conditions ~~(Updated)~~ was generally close to 0.500, ranging from ~~0.478~~ 0.488 in 1995 and 2006 to ~~0.505~~ 0.513 in ~~two years~~ 1998 (Table 10-2). In the years following 2008,[2] differences between the scenarios ranged from 0 to ~~11~~ 5 percent and the proportion of posterior distribution lower under the Proposed Project plus Cumulative scenario ranged from ~~0.483~~ 0.492 to ~~0.500~~ 0.502 (Table 10-2). Overall, the results suggest that population growth rate under the Proposed Project plus Cumulative scenario generally would be similar to Baseline Conditions ~~(Updated), but that there is statistically uncertain possibility of greater population growth rate under the Proposed Project plus Cumulative scenario in some years~~. These ~~higher~~ similar growth rates under the Proposed Project plus Cumulative scenario ~~are driven by somewhat higher~~ reflect similar Delta outflow in June–August ~~of drier years~~ (Figure 10-28). ~~3~~

[2] As described in Chapter 6, the model authors suggested during coordination on use of the LCME that particular focus be placed on the years following implementation of the 2009 BiOp, during which OMR flow management and other factors changed.

~~[3] The differences shown in Figure 10-27 are visually subtle, but include 10–12 percent more outflow under Proposed Project plus Cumulative in 2008–2009 and 11 percent more outflow in 2013, for example.~~



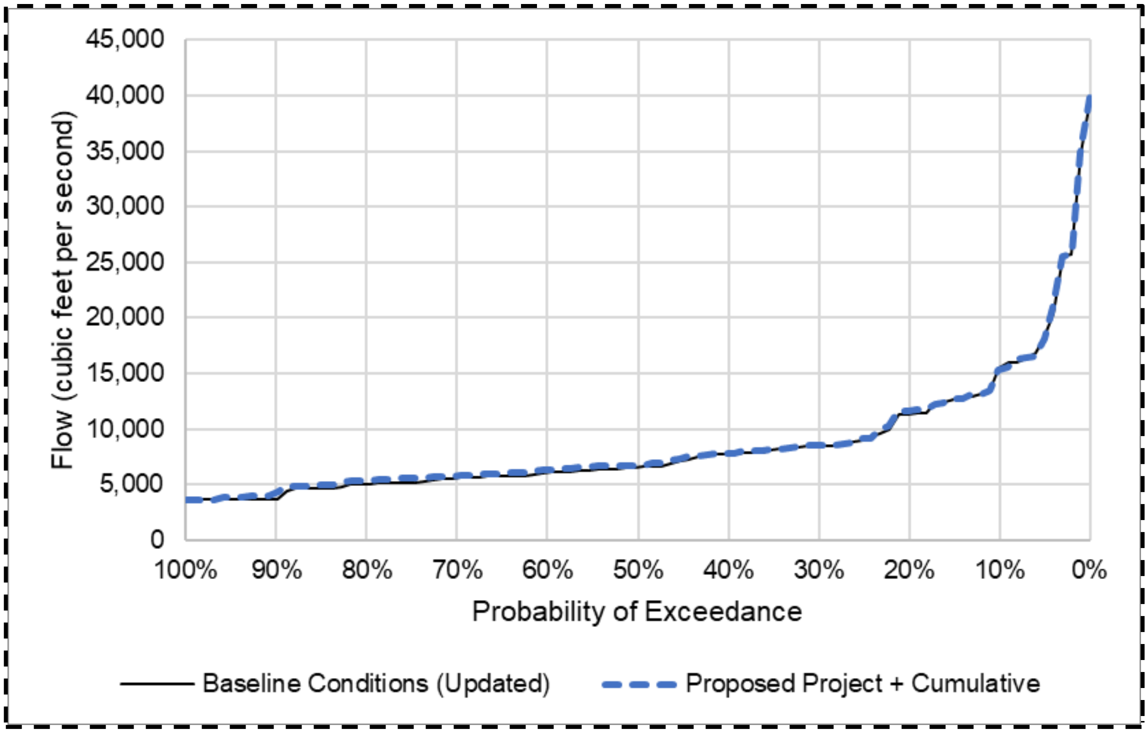


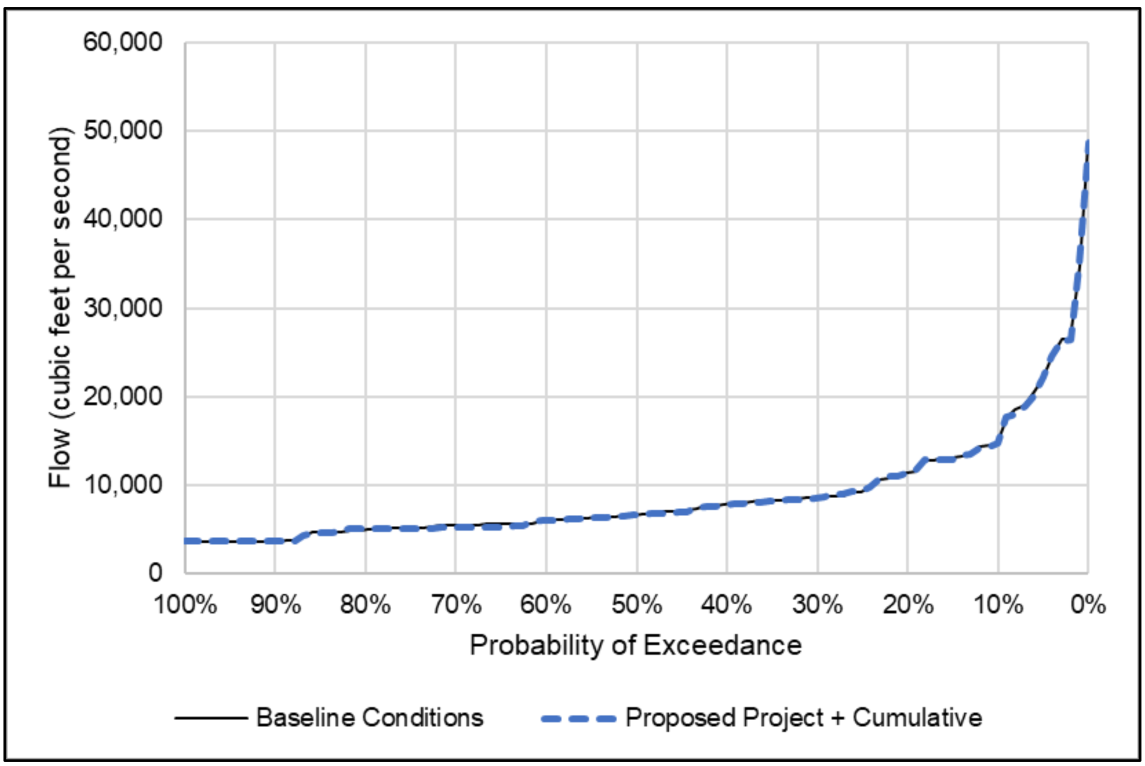
Note: BC ~~(Updated)~~ = Baseline Conditions ~~(Updated)~~; PP + Cum = Proposed Project plus Cumulative; median is 50th percentile of posterior distribution by year. Broken line indicates lambda = 1, i.e., the population replacement rate.

Figure 10-27. Median Population Growth Rate (Lambda) from Delta Smelt LCME Modeling for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios

Table 10-2. Median, Percentage Difference (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~), and Proportion of Posterior Distribution with Proposed Project plus Cumulative Less than Baseline Conditions ~~(Updated)~~ in Population Growth Rate from Delta Smelt LCME Modeling

Cohort Year	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Proportion of Posterior Distribution Less Under Proposed Project plus Cumulative
1995	~~0.842~~ 0.818	~~0.943 (12%)~~ 0.871 (6%)	~~0.478~~ 0.488
1996	~~0.921~~ 0.979	~~0.983 (7%)~~ 0.989 (1%)	~~0.488~~ 0.497
1997	~~0.469~~ 0.460	~~0.503~~ 0.493 (7%)	~~0.489~~ 0.490
1998	~~1.431~~ 1.520	~~1.394 (-3%)~~ 1.405 (-8%)	~~0.505~~ 0.513
1999	~~2.846~~ 2.813	~~2.755~~ 2.723 (-3%)	0.505
2000	~~0.962~~ 0.928	~~0.965 (0%)~~ 0.892 (-4%)	~~0.502~~ 0.510
2001	~~0.318~~ 0.316	~~0.305~~ 0.304 (-4%)	~~0.508~~ 0.507
2002	~~0.925~~ 0.926	~~0.965 (4%)~~ 0.903 (-3%)	~~0.491~~ 0.503
2003	~~1.251~~ 1.213	~~1.303 (4%)~~ 1.271 (5%)	0.493
2004	~~0.779~~ 0.784	~~0.818 (5%)~~ 0.786 (0%)	~~0.493~~ 0.501
2005	~~1.220~~ 1.218	~~1.294 (6%)~~ 1.259 (3%)	~~0.487~~ 0.492
2006	~~2.605~~ 2.644	~~2.786 (7%)~~ 2.771 (5%)	~~0.484~~ 0.488
2007	~~1.092~~ 1.067	~~1.087 (0%)~~ 1.092 (2%)	~~0.501~~ 0.495
2008	~~1.194~~ 1.147	~~1.253 (5%)~~ 1.152 (0%)	~~0.492~~ 0.501
2009	~~0.656~~ 0.652	~~0.727 (11%)~~ 0.685 (5%)	~~0.483~~ 0.492
2010	~~1.123~~ 1.117	~~1.212 (8%)~~ 1.137 (2%)	~~0.486~~ 0.495
2011	~~1.769~~ 1.772	~~1.866 (6%)~~ 1.847 (4%)	~~0.490~~ 0.493
2012	~~2.646~~ 2.672	~~2.650 (0%)~~ 2.725 (2%)	~~0.500~~ 0.495
2013	~~0.967~~ 0.992	~~0.990 (2%)~~ 0.988 (0%)	~~0.497~~ 0.502
2014	~~0.544~~ 0.523	~~0.578 (6%)~~ 0.543 (4%)	~~0.491~~ 0.495
2015	~~0.634~~ 0.632	~~0.672 (6%)~~ 0.648 (2%)	~~0.491~~ 0.496

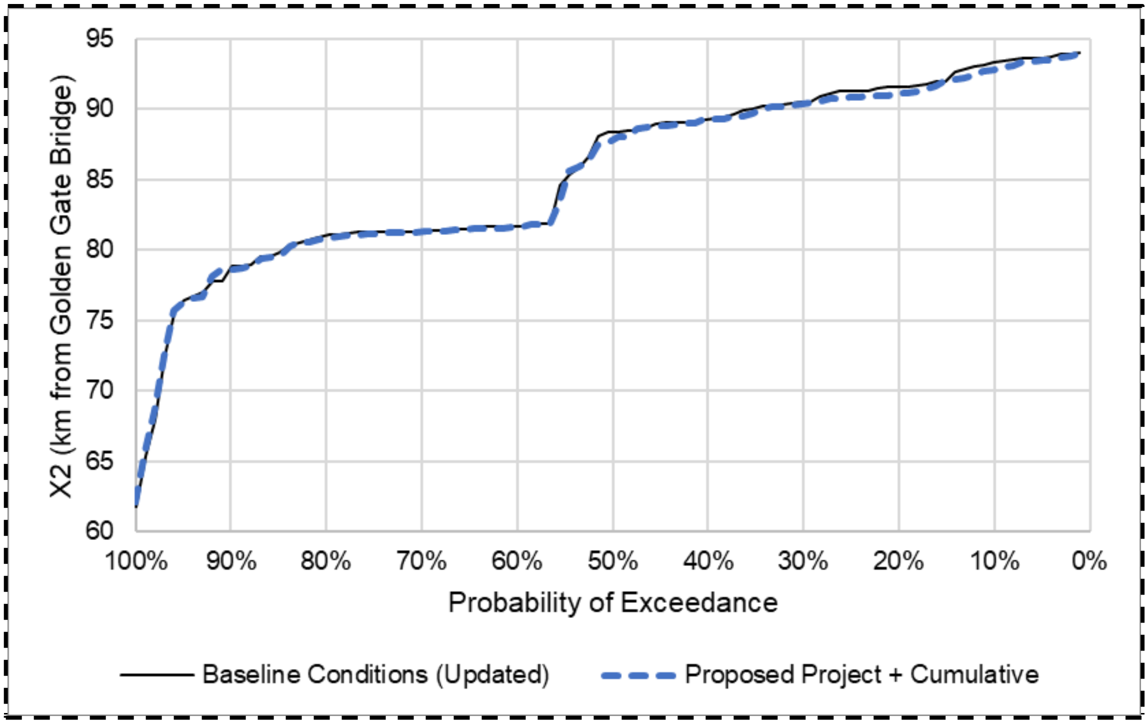


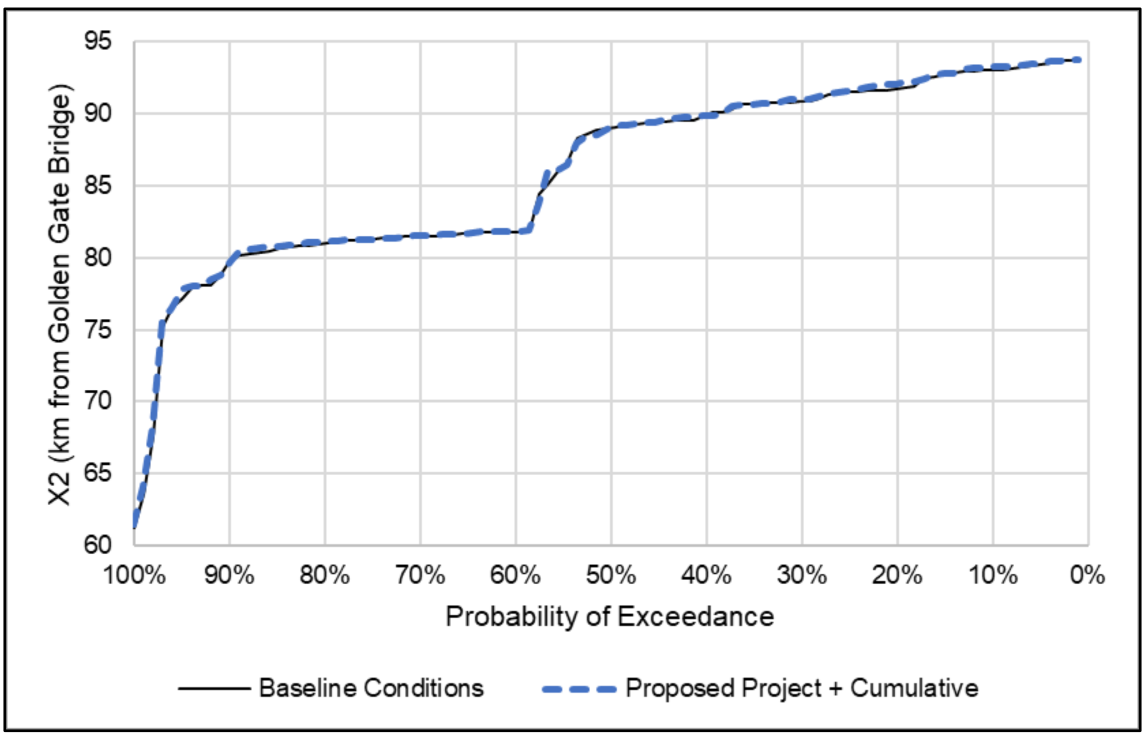


Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-28. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June–August

With respect to summer-fall habitat as discussed in Chapter 6, September–November X2 was generally similar between the scenarios (Figure 10-29) and the percentage of years with X2 < 85 kilometers (low-salinity zone within Honker Bay) was similar or greater under the Proposed Project plus Cumulative scenario relative to Baseline Conditions ~~(Updated)~~ (Table 10-3). This indicates that the Proposed Project plus Cumulative scenario would not have negative effects on these aspects of Delta Smelt habitat relative to Baseline Conditions ~~(Updated)~~. As noted in Chapter 6, the Proposed Project and Baseline Conditions include Suisun Marsh Salinity Control Gate summer-fall operations for Delta Smelt habitat.





Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-29. Mean X2 for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, September–November

Table 10-3. Percentage of Years with X2 Less than 85 km (Low-Salinity Zone within Honker Bay) or Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June–December

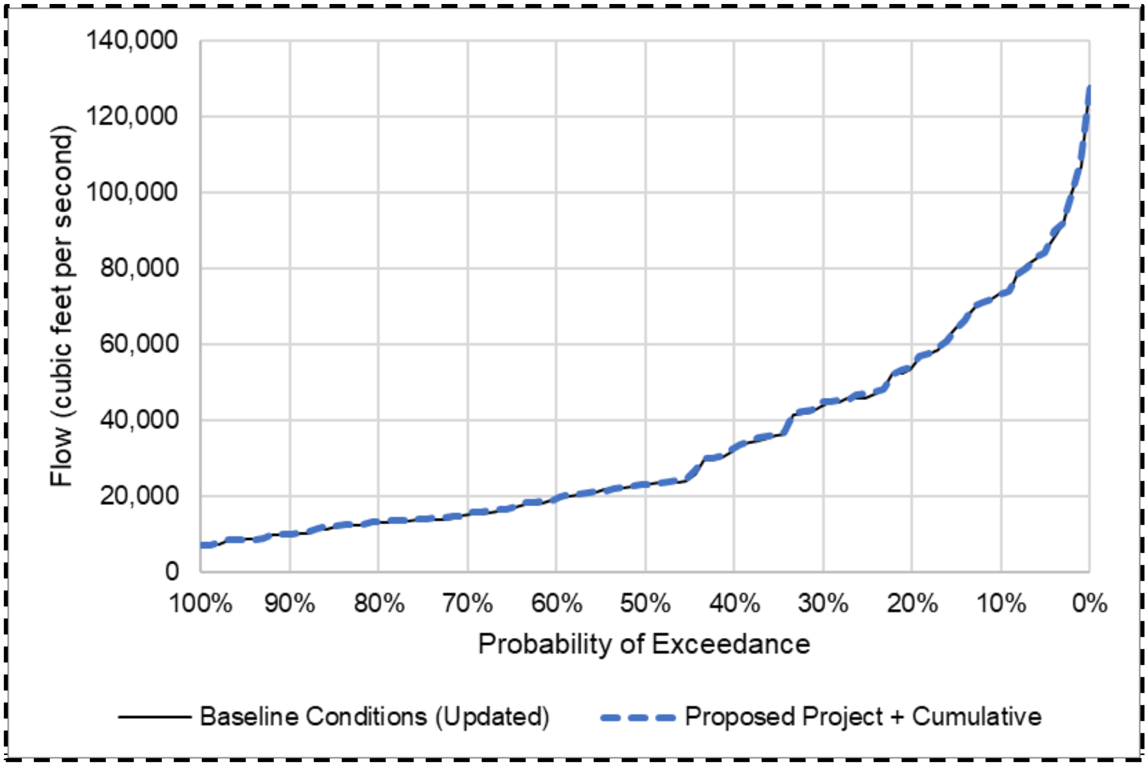
Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
June	~~89.0%~~ 87.0%	~~89.0%~~ 87.0% (0.0%)
July	~~69.0%~~ 67.0%	~~80.0% (15.9%)~~ 69.0% (3.0%)
August	~~42.0%~~ 43.0%	~~49.0% (16.7%)~~ 46.0% (7.0%)
September	41.4%	41.4% (0.0%)
October	44.0%	~~44.0% (0.0%)~~ 43.0% (-2.3%)
November	~~39.0%~~ 37.0%	~~40.0% (2.6%)~~ 39.0% (5.4%)
December	~~51.0%~~ 54.0%	~~52.0% (2.0%)~~ 52.0% (-3.7%)

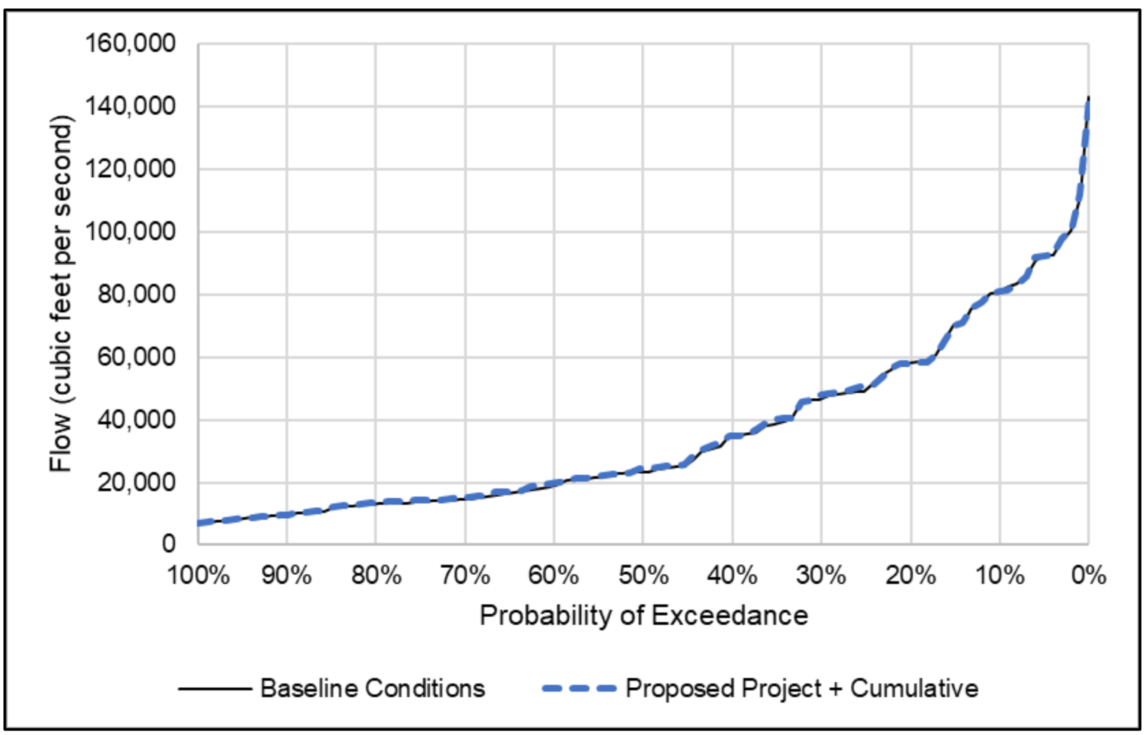
Note: Percentage values in parentheses indicate differences of alternatives compared to existing conditions (these are percentage point differences as opposed to absolute percentage differences). Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

In consideration of the analyses presented above, the Proposed Project plus Cumulative scenario would not have significant effects on entrainment risk, OMR flows, predation potential, population growth rates, and summer-fall habitat relative to the Baseline Conditions ~~(Updated)~~ scenario.

Longfin Smelt

The CalSim 3 modeling indicated that Delta outflow under the Proposed Project plus Cumulative scenario overall generally would be similar to or greater than Baseline Conditions ~~(Updated)~~ in December–May (Figure 10-30; Table 10-4) and March–May (see Figure 10-14 in the discussion of Delta Smelt) as a result of the Voluntary Agreements that are largely focused on achieving greater spring outflow. This has the potential to positively affect Longfin Smelt, as illustrated with the results from application of Delta outflow-abundance index relationships to the CalSim 3-modeled outputs, but as noted in Chapter 6, the differences between scenarios are relatively small compared to the variability in the estimates reflected in the 95 percent posterior probability distributions and the probability of abundance indices being less under the Proposed Project plus Cumulative is not greatly below 0.50 (Figures 10-31, 10-32, and 10-33; Tables 10-5, 10-6, 10-7, 10-8, 10-9, and 10-10).



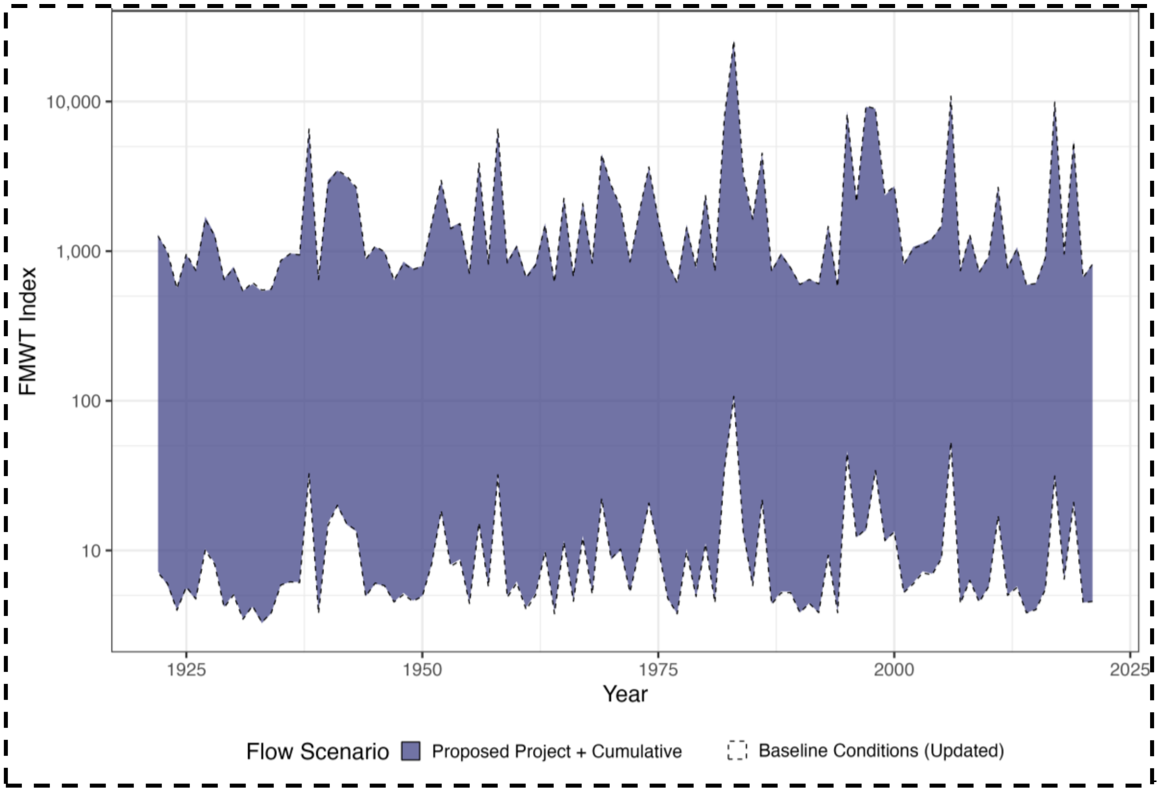


Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-30. Mean Modeled Delta Outflow for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, December–May

Table 10-4. Mean Modeled December–May Delta Outflow (Cubic Feet per Second) under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Month	Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
December	Wet	~~47,417~~ 39,990	~~47,904~~ 40,531 (1%)
December	Above Normal	~~14,467~~ 16,470	~~14,107 (-2%)~~ 16,584 (1%)
December	Below Normal	~~12,401~~ 12,969	~~12,567~~ 13,051 (1%)
December	Dry	~~10,915~~ 12,536	~~11,187 (2%)~~ 12,696 (1%)
December	Critically Dry	~~8,760~~ 8,318	~~8,881 (1%)~~ 8,756 (5%)
January	Wet	~~80,674~~ 89,212	~~81,451 (1%)~~ 89,617 (0%)
January	Above Normal	~~50,398~~ 51,796	~~51,018 (1%)~~ 51,967 (0%)
January	Below Normal	~~21,387~~ 22,072	~~21,839~~ 22,444 (2%)
January	Dry	~~13,504~~ 13,473	~~13,890 (3%)~~ 13,994 (4%)
January	Critically Dry	~~11,339~~ 11,023	~~11,600 (2%)~~ 11,707 (6%)
February	Wet	~~101,611~~ 105,597	~~101,397 (0%)~~ 106,205 (1%)
February	Above Normal	~~59,250~~ 54,040	~~60,451 (2%)~~ 54,616 (1%)
February	Below Normal	~~32,858~~ 35,101	~~33,327 (1%)~~ 35,897 (2%)
February	Dry	~~21,708~~ 22,336	~~21,961 (1%)~~ 22,913 (3%)
February	Critically Dry	~~13,942~~ 13,594	~~15,382 (10%)~~ 14,210 (5%)
March	Wet	~~81,776~~ 93,358	~~82,158~~ 93,611 (0%)
March	Above Normal	~~55,211~~ 53,952	~~56,983~~ 55,476 (3%)
March	Below Normal	~~28,315~~ 31,308	~~30,369 (7%)~~ 33,001 (5%)
March	Dry	~~19,078~~ 19,338	~~20,540~~ 20,799 (8%)
March	Critically Dry	~~11,927~~ 11,564	~~12,086 (1%)~~ 11,785 (2%)
April	Wet	~~55,355~~ 58,766	~~56,074 (1%)~~ 58,966 (0%)
April	Above Normal	~~30,859~~ 29,011	~~31,980 (4%)~~ 31,932 (10%)
April	Below Normal	~~22,461~~ 22,225	~~21,717 (-3%)~~ 23,294 (5%)
April	Dry	~~14,063~~ 13,514	~~13,986 (-1%)~~ 14,835 (10%)
April	Critically Dry	~~9,717~~ 9,606	~~9,214 (-5%)~~ 9,279 (-3%)
May	Wet	~~39,927~~ 41,598	~~38,709 (-3%)~~ 40,682 (-2%)
May	Above Normal	~~23,540~~ 24,476	~~23,793 (1%)~~ 24,560 (0%)
May	Below Normal	~~18,719~~ 18,703	~~17,198 (-8%)~~ 17,051 (-9%)
May	Dry	~~11,689~~ 11,380	~~11,440 (-2%)~~ 10,683 (-6%)
May	Critically Dry	~~7,269~~ 6,725	~~6,686 (-8%)~~ 6,226 (-7%)



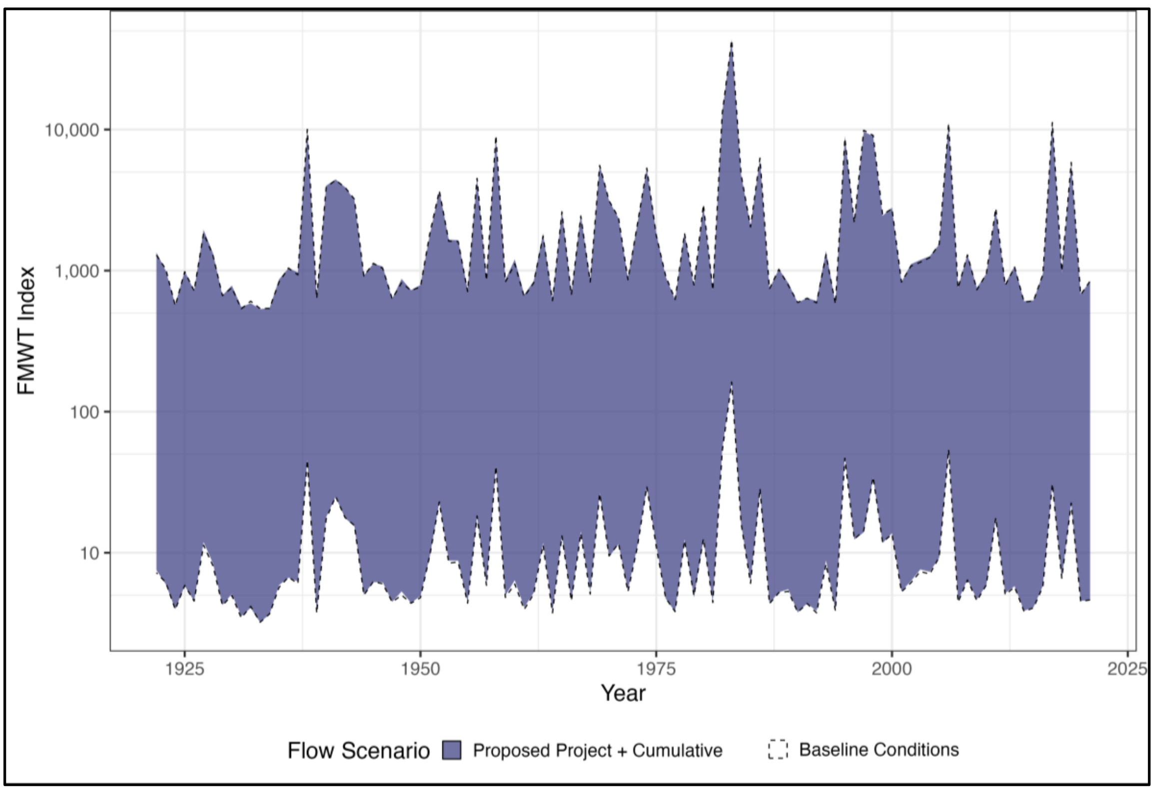
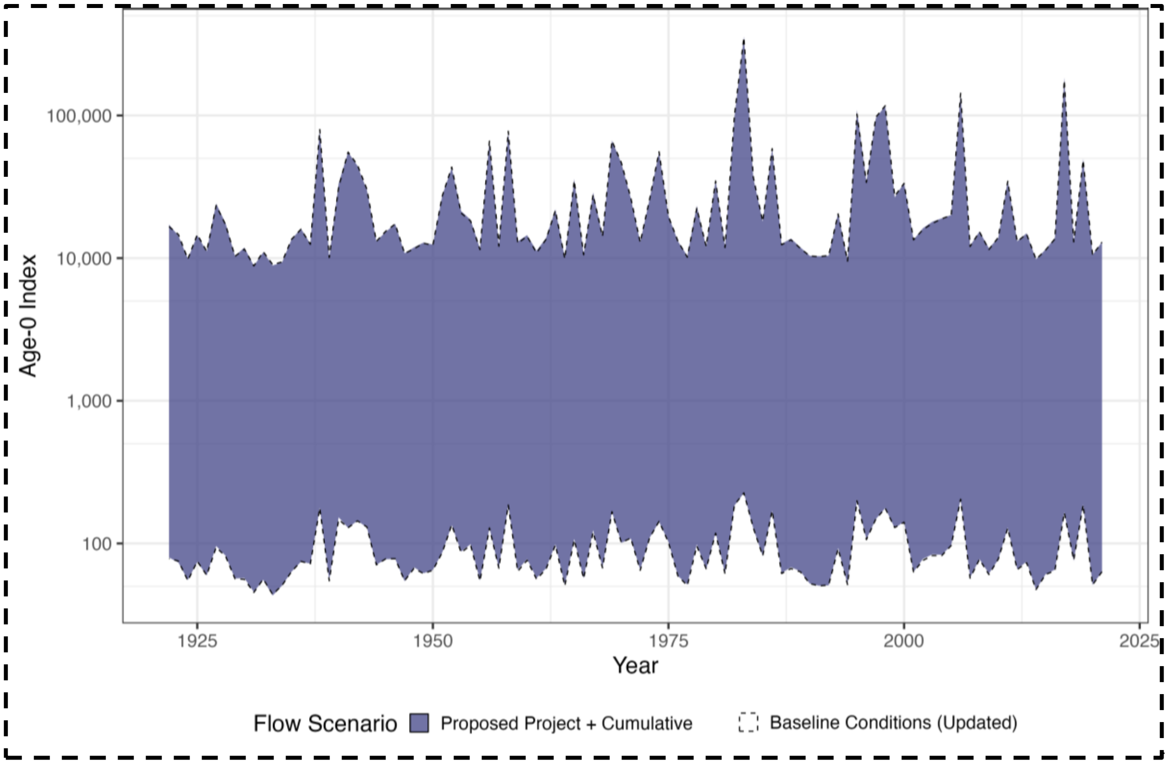


Figure 10-31. Time Series Plot of 95% Posterior Distribution of the Longfin Smelt Fall Midwater Trawl Index from Application of the Delta Outflow-Abundance Index Method for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios



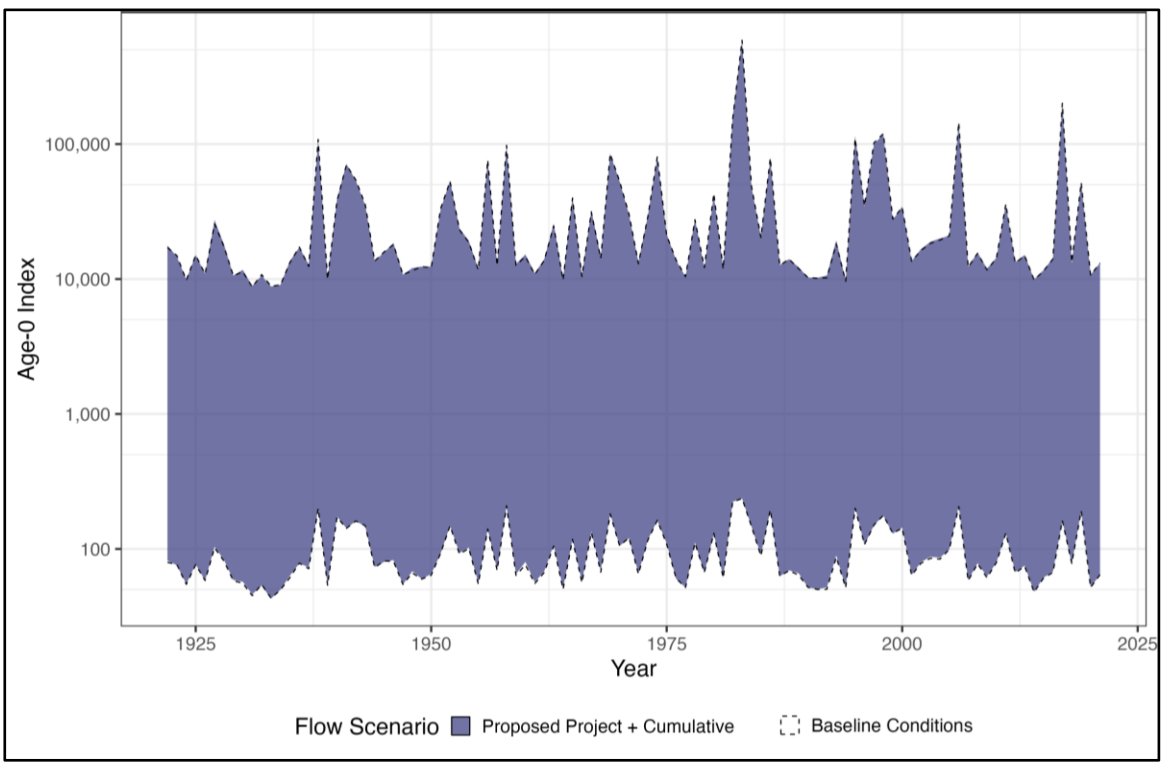
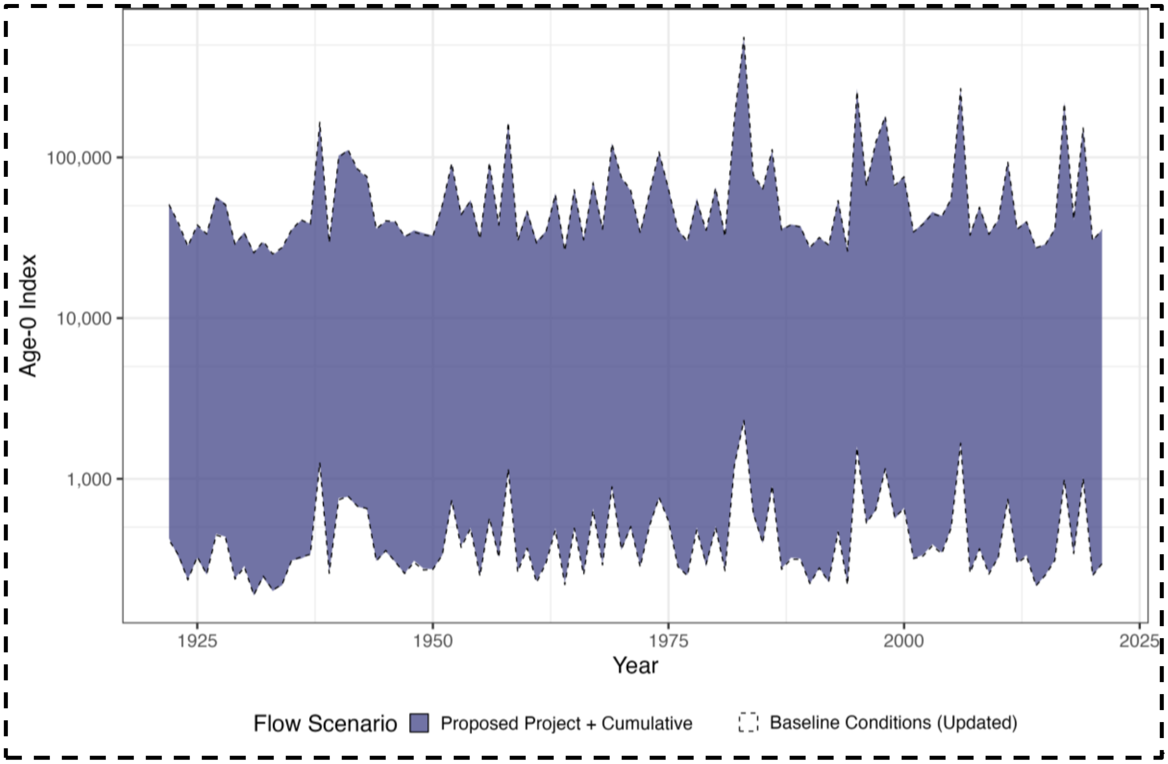


Figure 10-32. Time Series Plot of 95% Posterior Distribution of the Longfin Smelt Bay Midwater Trawl Age-0 Index from Application of the Delta Outflow-Abundance Index Method for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios



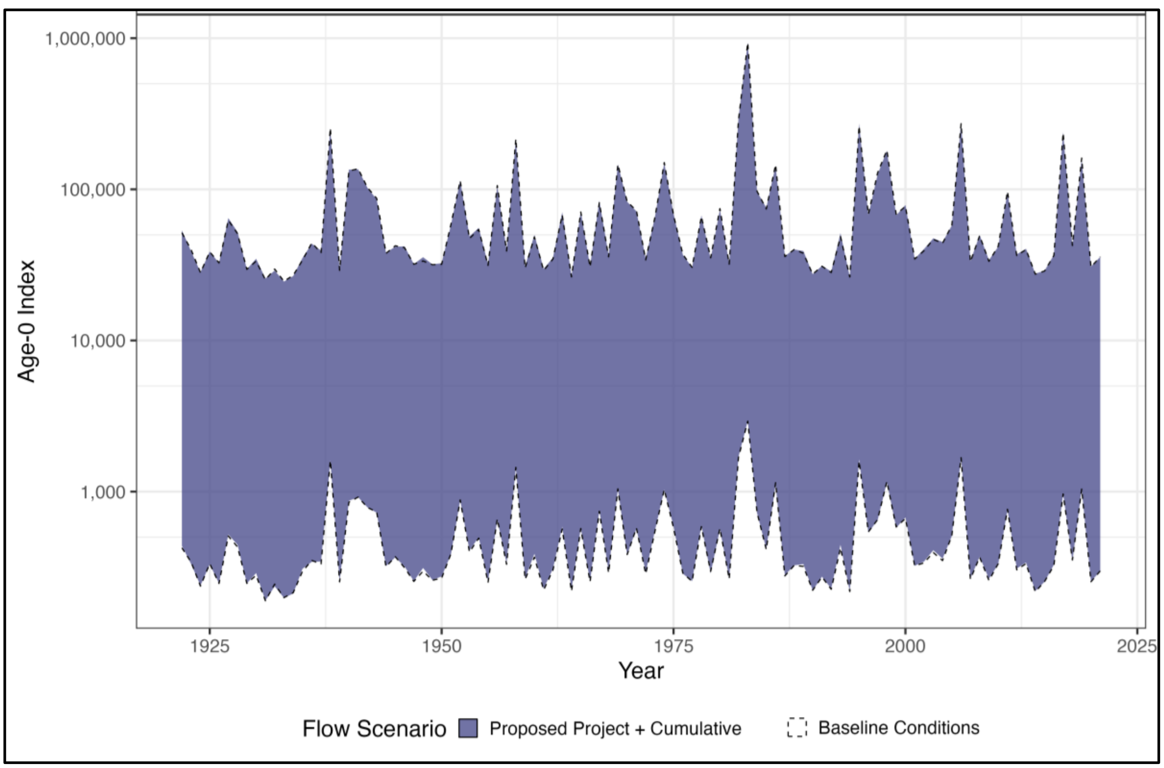


Figure 10-33. Time Series Plot of 95% Posterior Distribution of the Longfin Smelt Bay Otter Trawl Age-0 Index from Application of the Delta Outflow-Abundance Index Method for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios

Table 10-5. Mean Predicted Longfin Smelt Fall Midwater Trawl Index under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~330.7~~ 393.0	~~332.3 (0.5%)~~ 392.0 (-0.2%)
Above Normal	~~119.8~~ 116.8	~~122.5 (2.3%)~~ 119.1 (1.9%)
Below Normal	~~72.6~~ 74.1	~~72.9 (0.5%)~~ 74.6 (0.8%)
Dry	~~59.7~~ 61.2	~~60.4 (1.1%)~~ 62.1 (1.3%)
Critically Dry	52.6	~~53.0 (0.7%)~~ 52.9 (0.4%)

Note: Table only includes mean responses and does not consider model uncertainty (see Figure 10-31 for 95% posterior distribution)

Table 10-6. Mean Predicted Longfin Smelt Bay Midwater Trawl Age-0 Index under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~12,345.4~~ 14,236.1	~~12,511.8~~ 14,414.9 (1.3%)
Above Normal	~~5,126.3~~ 5,010.8	~~5,261.2 (2.6%)~~ 5,150.8 (2.8%)
Below Normal	~~3,275.1~~ 3,329.7	~~3,305.2 (0.9%)~~ 3,381.7 (1.6%)
Dry	~~2,714.0~~ 2,774.7	~~2,750.9 (1.4%)~~ 2,827.8 (1.9%)
Critically Dry	~~2,422.4~~ 2,419.6	~~2,444.8 (0.9%)~~ 2,445.2 (1.1%)

Note: Table only includes mean responses and does not consider model uncertainty (see Figure 10-32 for 95% posterior distribution)

Table 10-7. Mean Predicted Longfin Smelt Bay Otter Trawl Age-0 Index under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~13,175.1~~ 15,093.7	~~13,293.7 (0.9%)~~ 15,209.1 (0.8%)
Above Normal	~~5,701.9~~ 5,590.4	~~5,836.6 (2.4%)~~ 5,731.7 (2.5%)
Below Normal	~~3,803.3~~ 3,872.1	~~3,836.4 (0.9%)~~ 3,927.5 (1.4%)
Dry	~~3,235.4~~ 3,290.1	~~3,277.8 (1.3%)~~ 3,350.3 (1.8%)
Critically Dry	~~2,917.5~~ 2,913.1	~~2,943.4 (0.9%)~~ 2,943.0 (1.0%)

Note: Table only includes mean responses and does not consider model uncertainty (see Figure 10-33 for 95% posterior distribution)

Table 10-8. Mean Probability of Lower Longfin Smelt Fall Midwater Trawl Index under the Proposed Project plus Cumulative Modeling Scenario than under the Baseline Conditions ~~(Updated)~~ Modeling Scenario, Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.495~~ 0.501
Above Normal	~~0.474~~ 0.478
Below Normal	~~0.494~~ 0.491
Dry	~~0.491~~ 0.486
Critically Dry	~~0.497~~ 0.494

Note: Probability of 0.500 indicates equal probability of Fall Midwater Trawl index under the Proposed Project plus Cumulative being smaller or larger than under Baseline Conditions ~~(Updated)~~.

Table 10-9. Mean Probability of Lower Longfin Smelt Bay Midwater Trawl Age-0 Index under the Proposed Project plus Cumulative Modeling Scenario than under the Baseline Conditions ~~(Updated)~~ Modeling Scenario, Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.493~~ 0.492
Above Normal	~~0.480~~ 0.477
Below Normal	~~0.494~~ 0.488
Dry	~~0.490~~ 0.485
Critically Dry	~~0.492~~ 0.491

Note: Probability of 0.500 indicates equal probability of Bay Midwater Trawl index under the Proposed Project plus Cumulative being smaller or larger than under Baseline Conditions ~~(Updated)~~.

Table 10-10. Mean Probability of Lower Longfin Smelt Bay Otter Trawl Age-0 Index under the Proposed Project plus Cumulative Modeling Scenario than under the Baseline Conditions ~~(Updated)~~ Modeling Scenario, Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.489~~ 0.488
Above Normal	~~0.475~~ 0.472
Below Normal	~~0.488~~ 0.482
Dry	~~0.484~~ 0.480
Critically Dry	~~0.489~~ 0.488

Note: Probability of 0.500 indicates equal probability of Bay Otter Trawl index under the Proposed Project plus Cumulative being smaller or larger than under Baseline Conditions ~~(Updated)~~.

As described for Delta Smelt in the "Delta Smelt" section, OMR flows generally would be similar between the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ scenarios in December–March (Figures 10-1, 10-2, 10-3, and 10-4), with similar or lower OMR flows under the Proposed Project plus Cumulative scenario in April and May (Figures 10-5 and 10-6). Adult, larval, and juvenile Longfin Smelt would have entrainment risk minimized under SWP and CVP operations through protection actions. Delta outflow conditions preceding April–May generally would be conducive to a lower proportion of juveniles potentially being in the south Delta and susceptible to entrainment following the larval stage under the Proposed Project plus Cumulative relative to Baseline Conditions ~~(Updated)~~.[4]

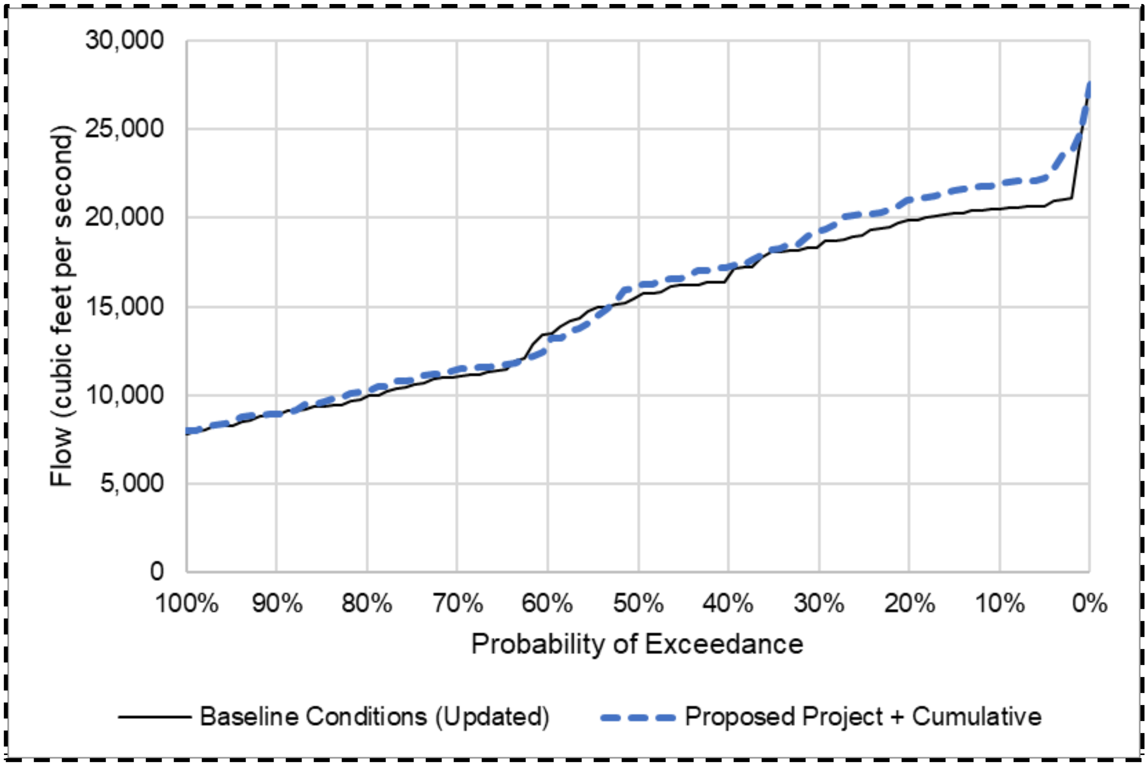
In consideration of the analyses presented above, the Proposed Project plus Cumulative scenario would not have significant effects on Delta outflow, entrainment risk, OMR flows, and Longfin Smelt abundance based on Delta outflow-abundance index relationships, relative to the Baseline Conditions ~~(Updated)~~ scenario.

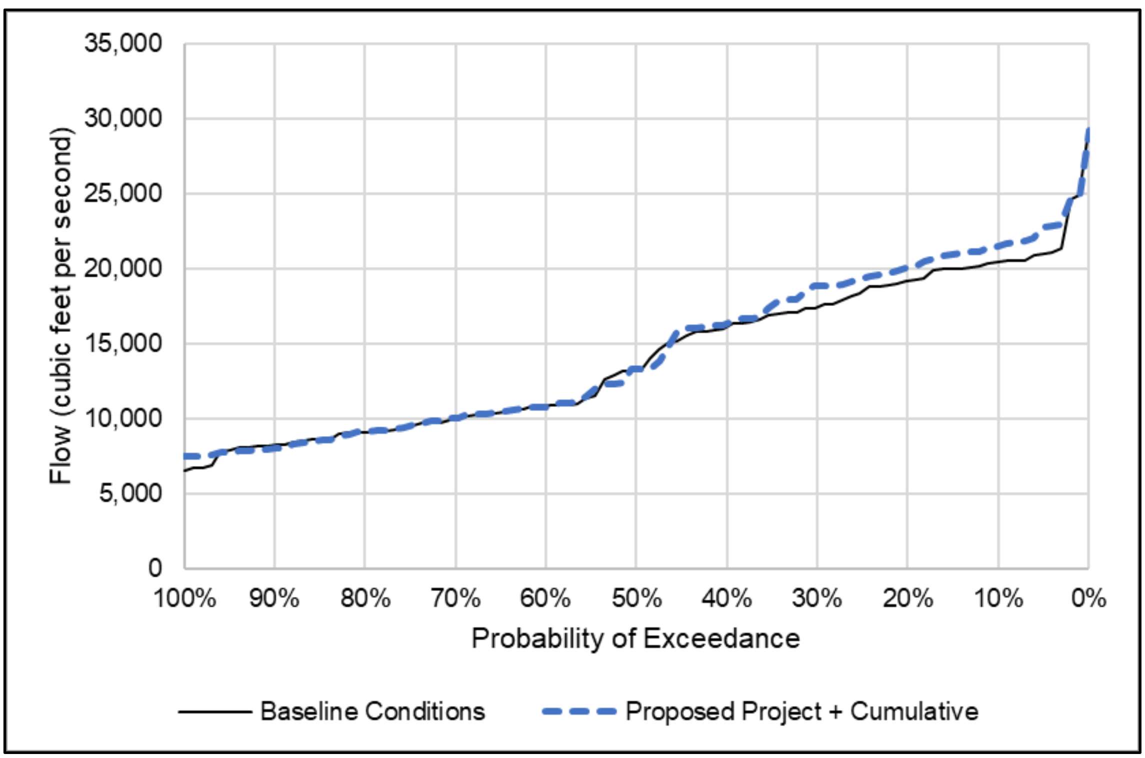
Winter-Run Chinook Salmon

The CalSim 3 modeling indicates that the Proposed Project plus Cumulative scenario generally would have similar or greater (April/May) Freeport flows relative to Baseline Conditions ~~(Updated)~~ during September–June (Figures 10-34 through 10-43). These outputs are reflected in the results from the STARS modeling[5] (Tables 10-11 through 10-30), indicating that there would not be expected to be negative through-Delta survival effects related to Sacramento River inflow during the broader Chinook Salmon juvenile migration and in particular the main December–April winter-run migration period. In April, greater Sacramento River flow has the potential to result in greater through-Delta survival under the Proposed Project plus Cumulative scenario (Table 10-18), albeit with relatively low statistical probability (Table 10-28). The Freeport flow outputs also indicate that operations would not result in negative effects on adult winter-run Chinook Salmon (e.g., straying) given the factors discussed in Chapter 6 for winter-run Chinook Salmon.

[4] As described in Chapter 2, prior to Voluntary Agreement Implementation (as reflected in CalSim 3 modeling), Early Voluntary Agreement Implementation includes provision of more Delta outflow through either export curtailment consistent with CDFW's 2020 ITP Condition of Approval 8.17 or other actions, which also would be expected to minimize entrainment risk.

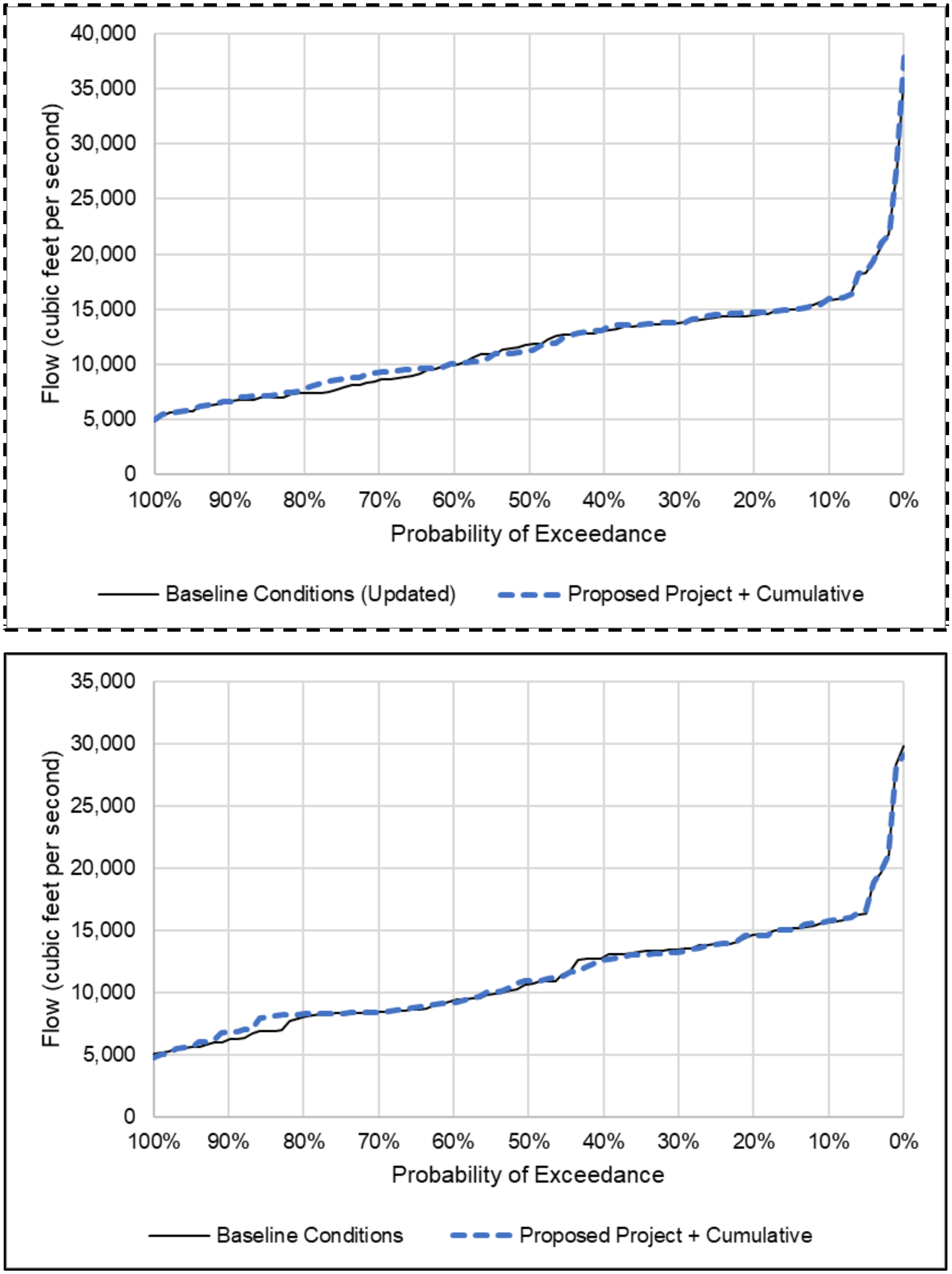
[5] STARS modeling was undertaken assuming monthly CalSim 3 flows were the same on each day of a given month, with a daily pattern of Delta Cross Channel opening also applied. Delta Passage Model and ECO-PTM require DSM2-HYDRO inputs; DSM2-HYDRO modeling was not undertaken for Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ models because the CalSim 3 modeling was sufficient to discern the main patterns for the cumulative effects analysis.





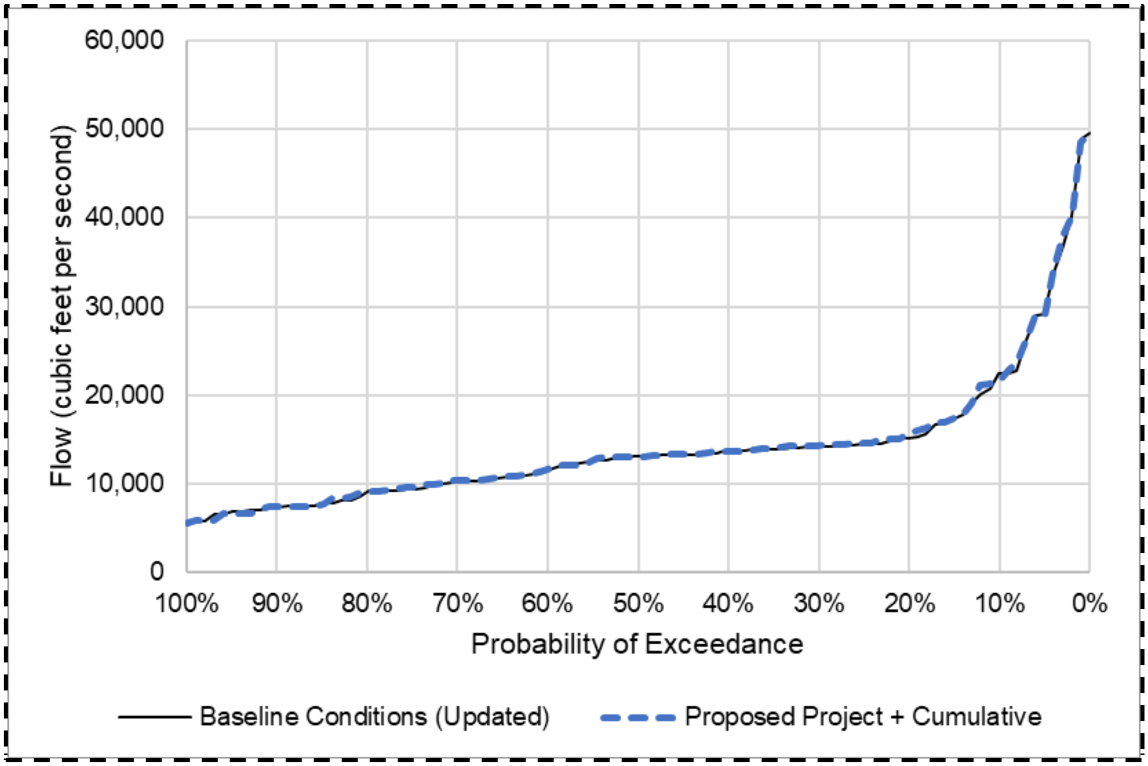
Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

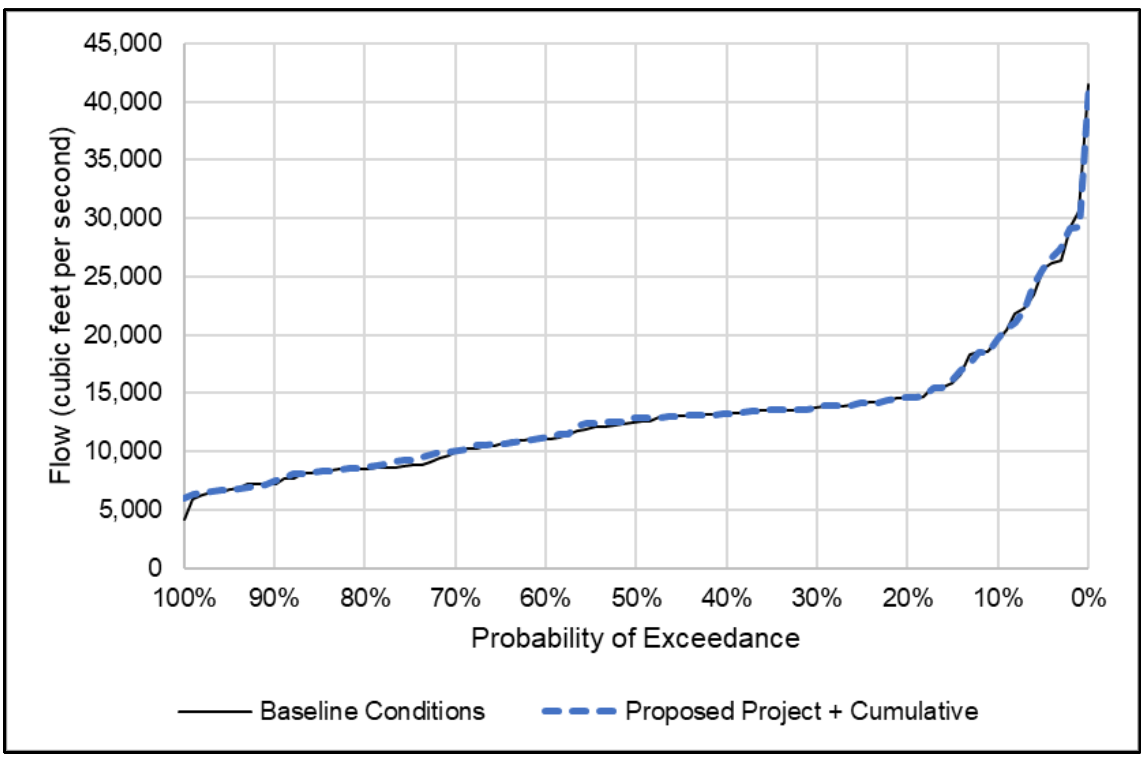
Figure 10-34. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, September



Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

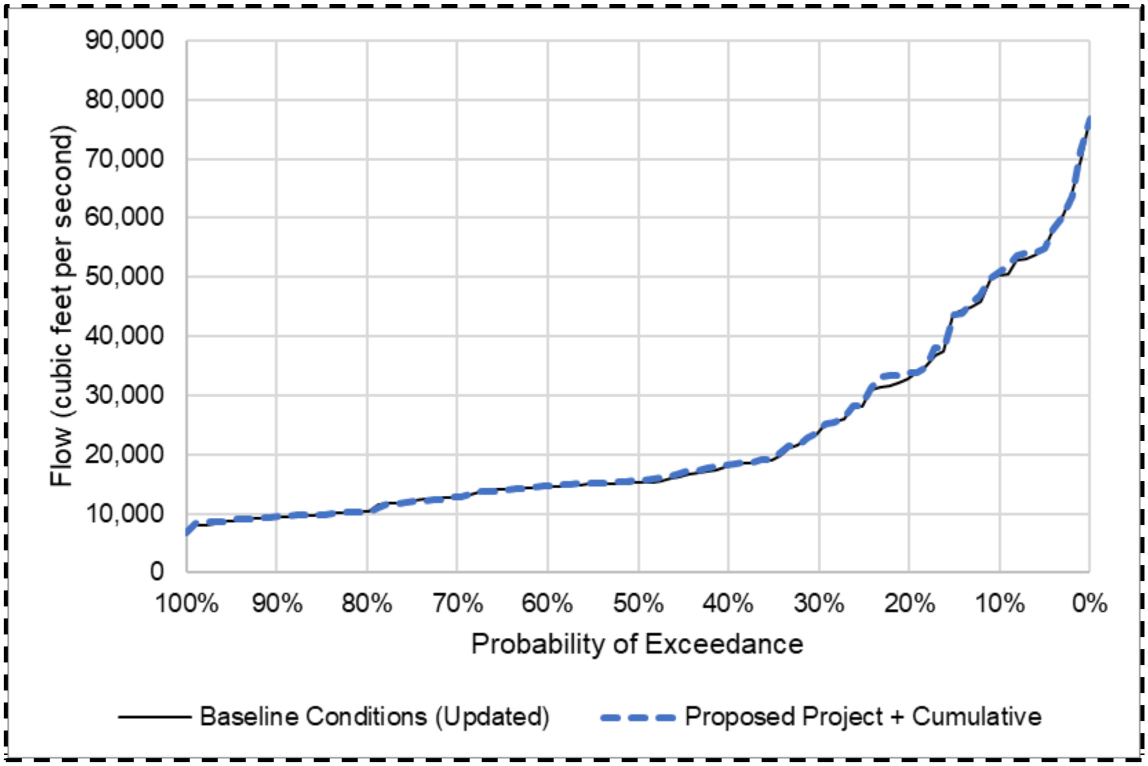
Figure 10-35. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, October

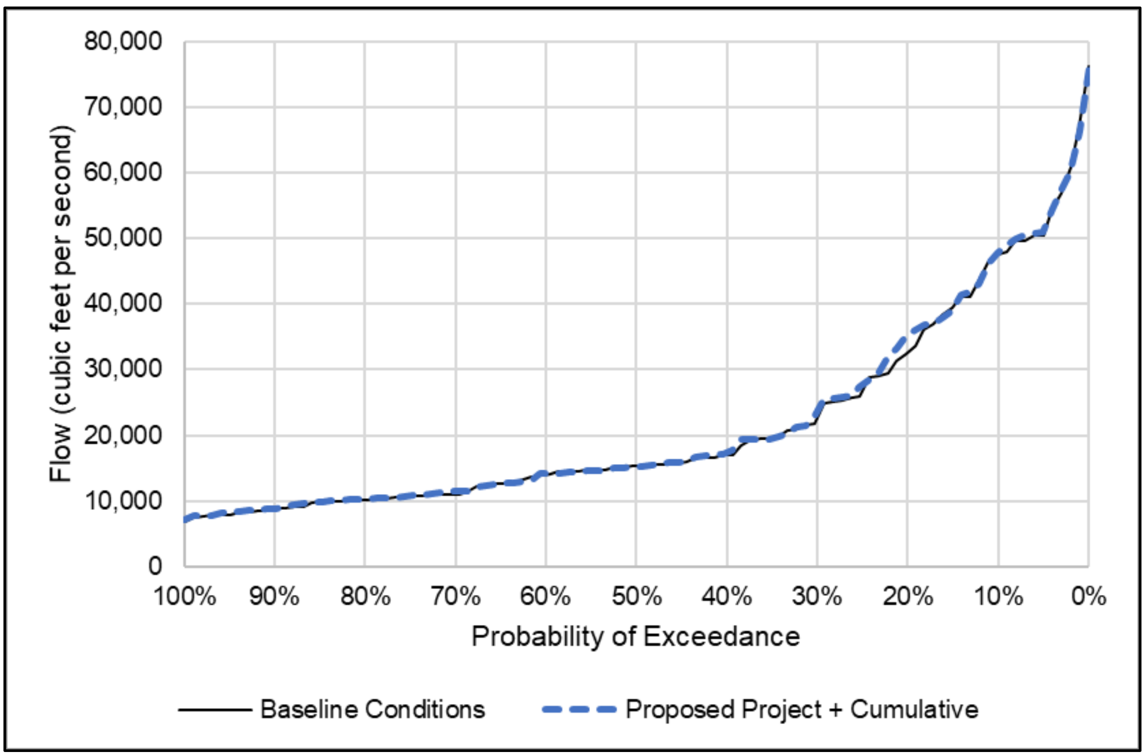




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

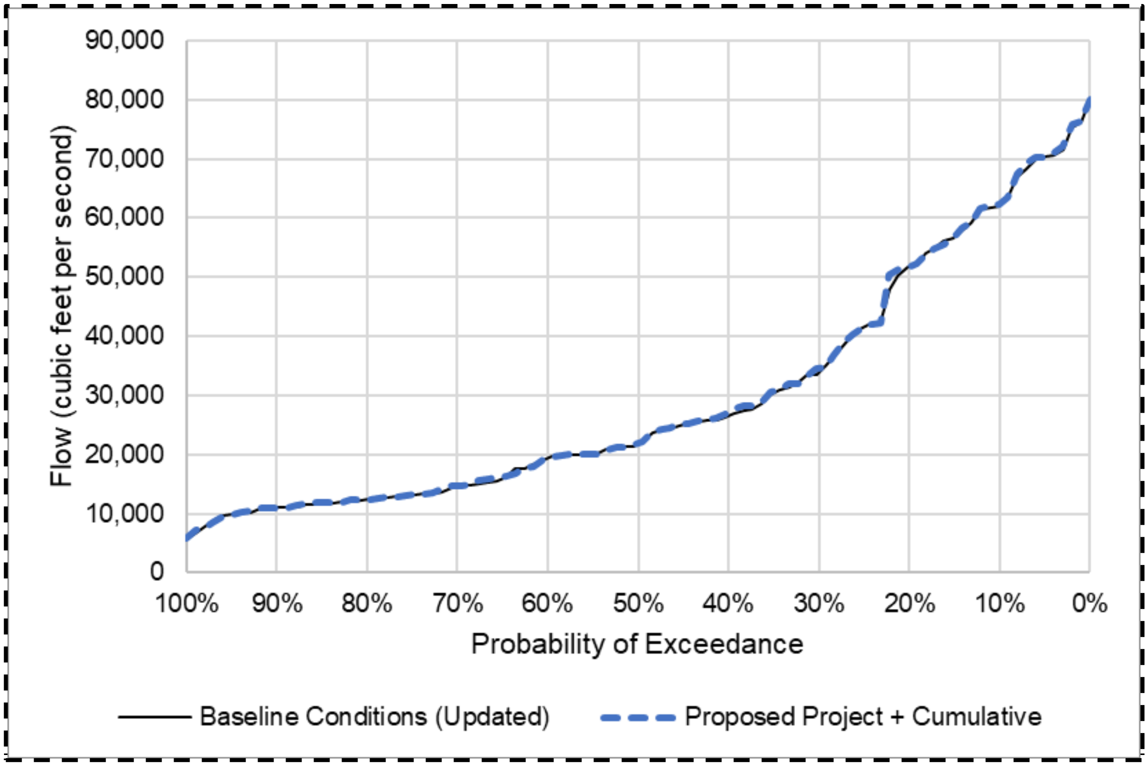
Figure 10-36. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, November

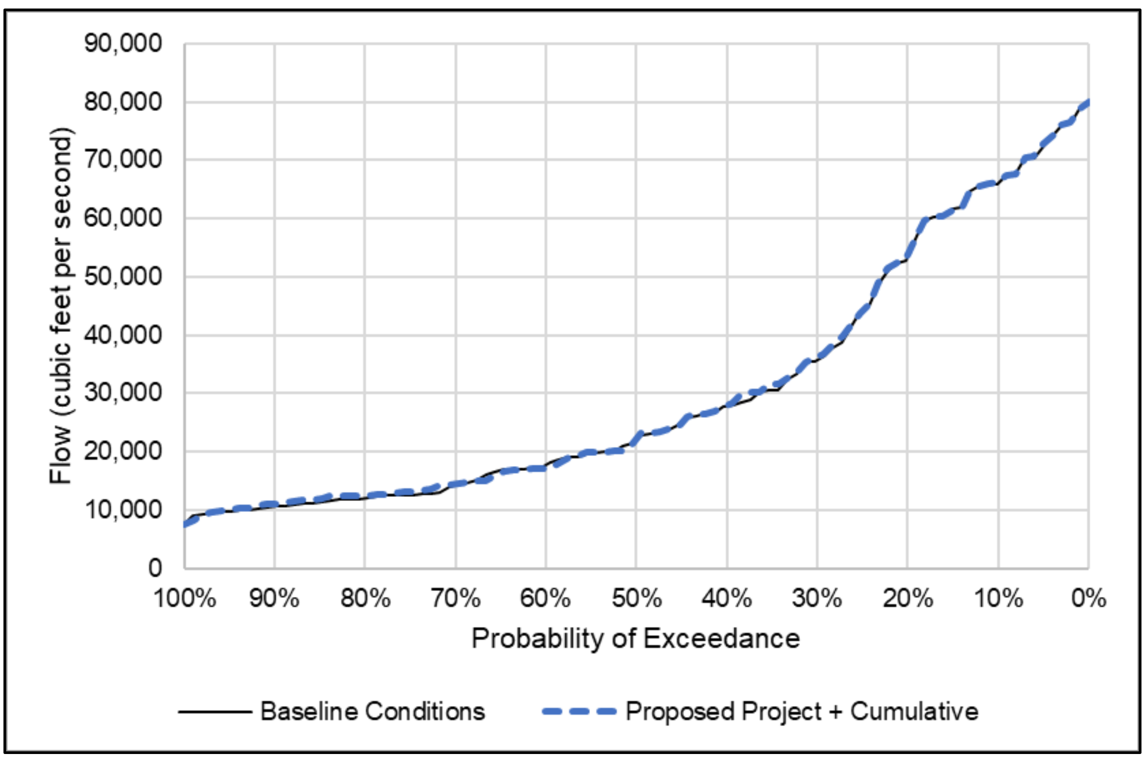




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

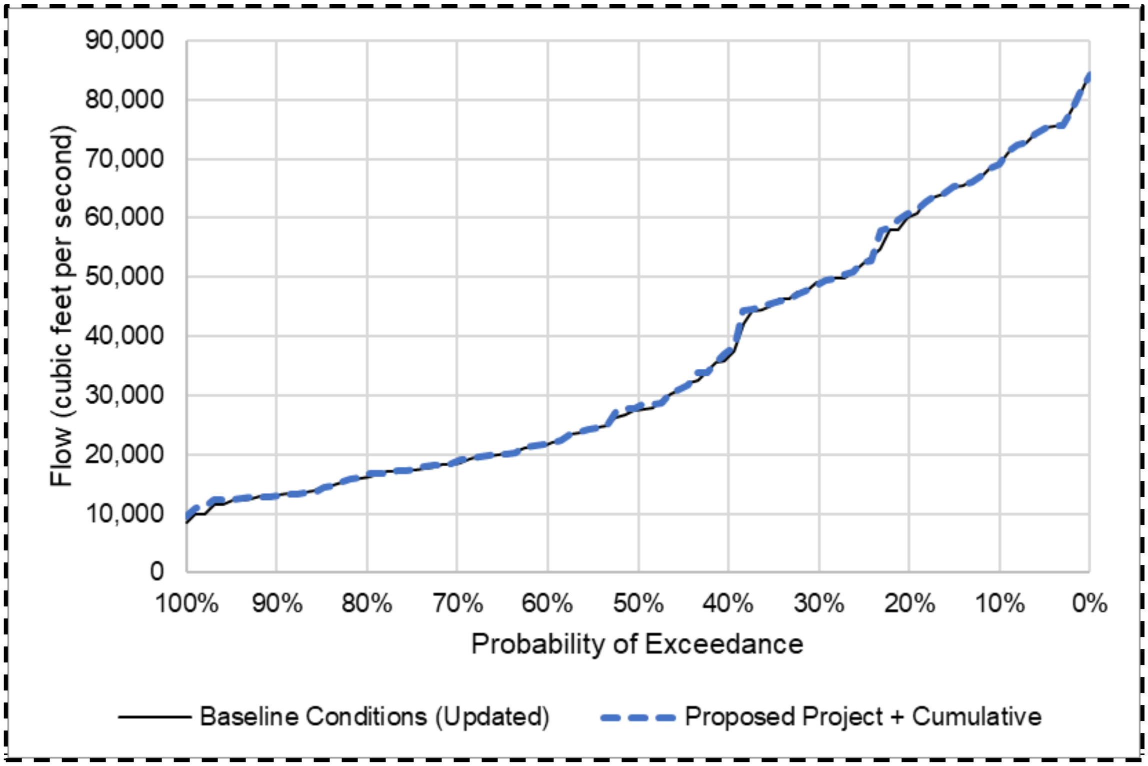
Figure 10-37. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, December

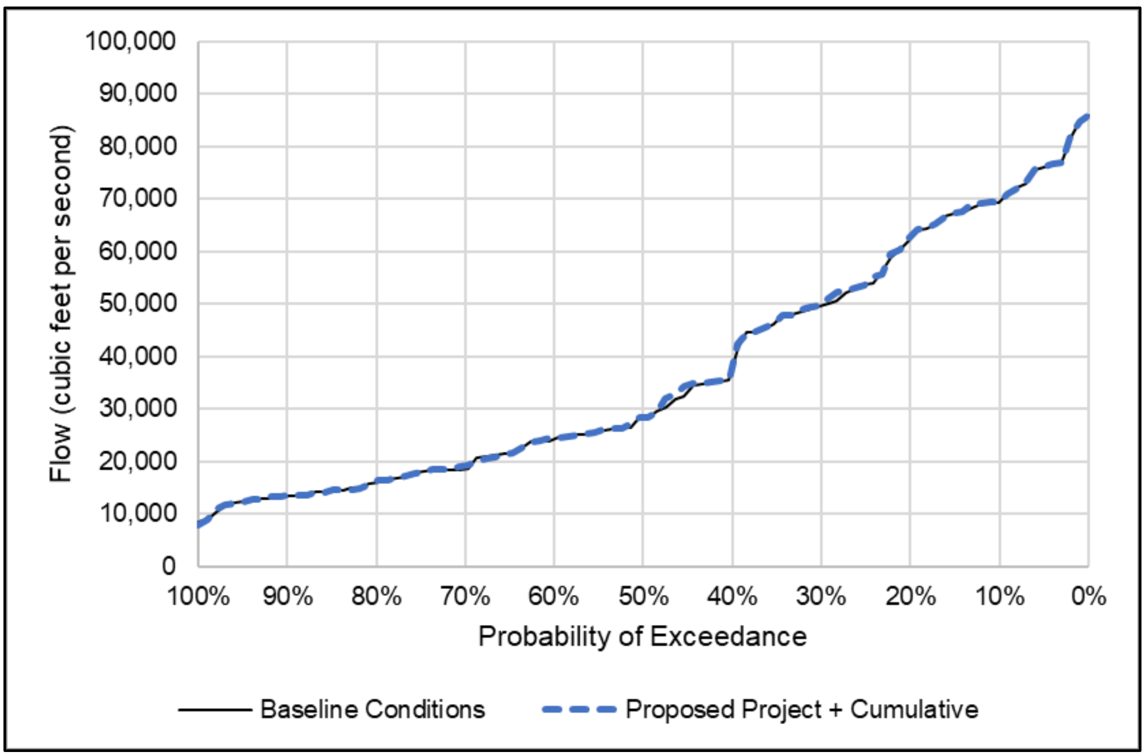




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

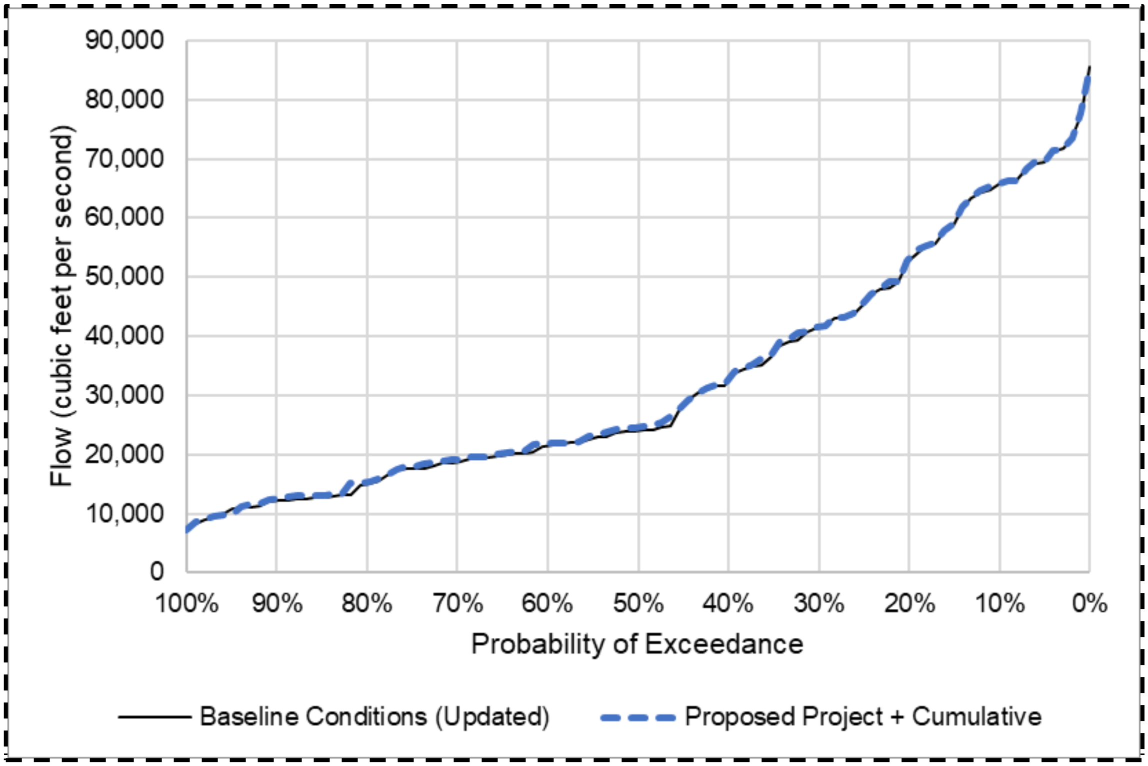
Figure 10-38. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, January

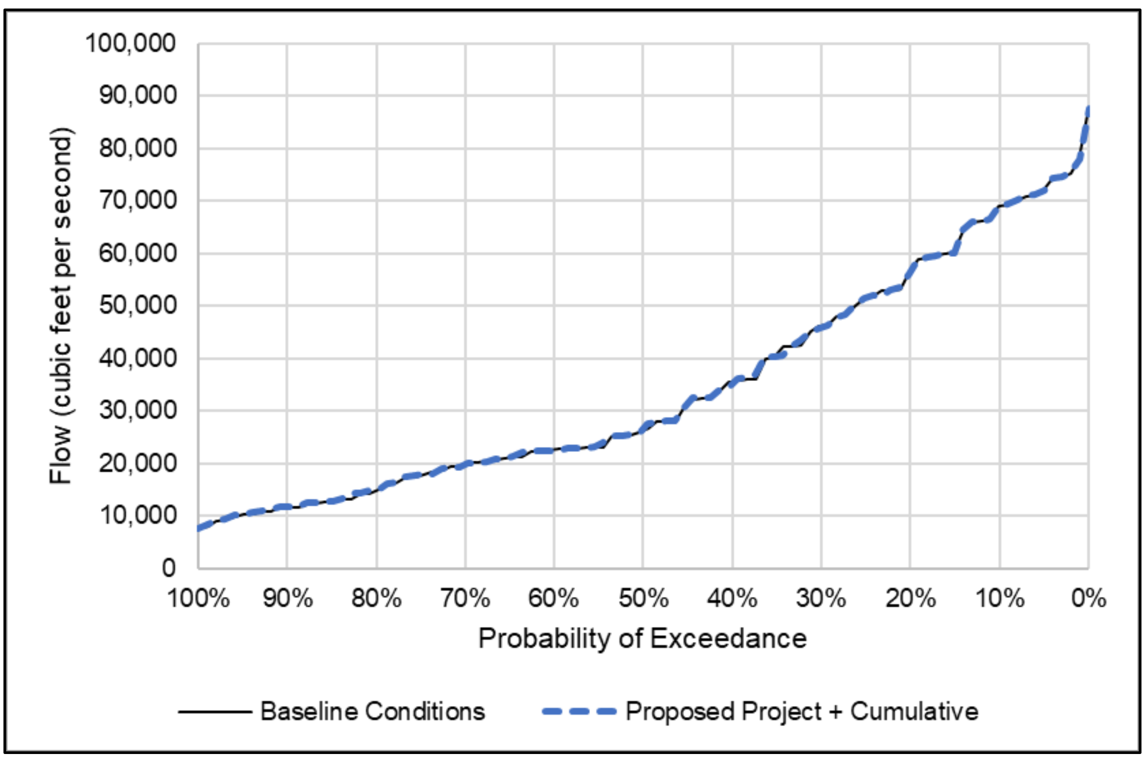




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

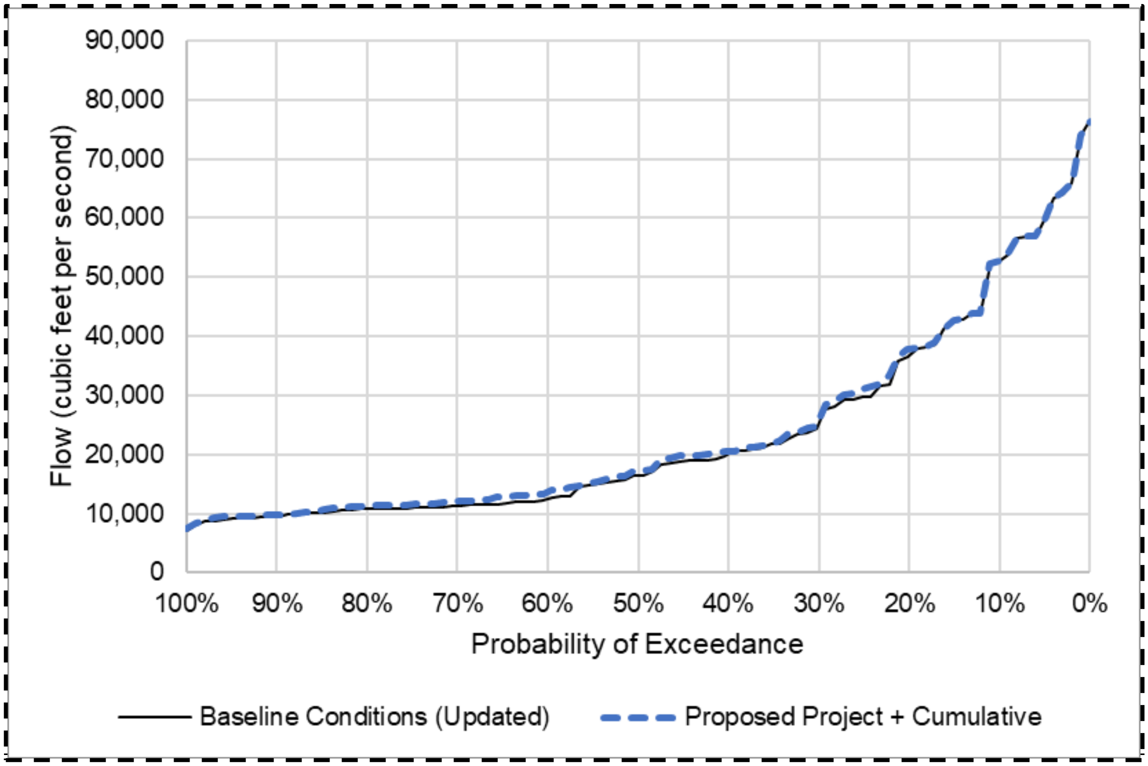
Figure 10-39. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, February

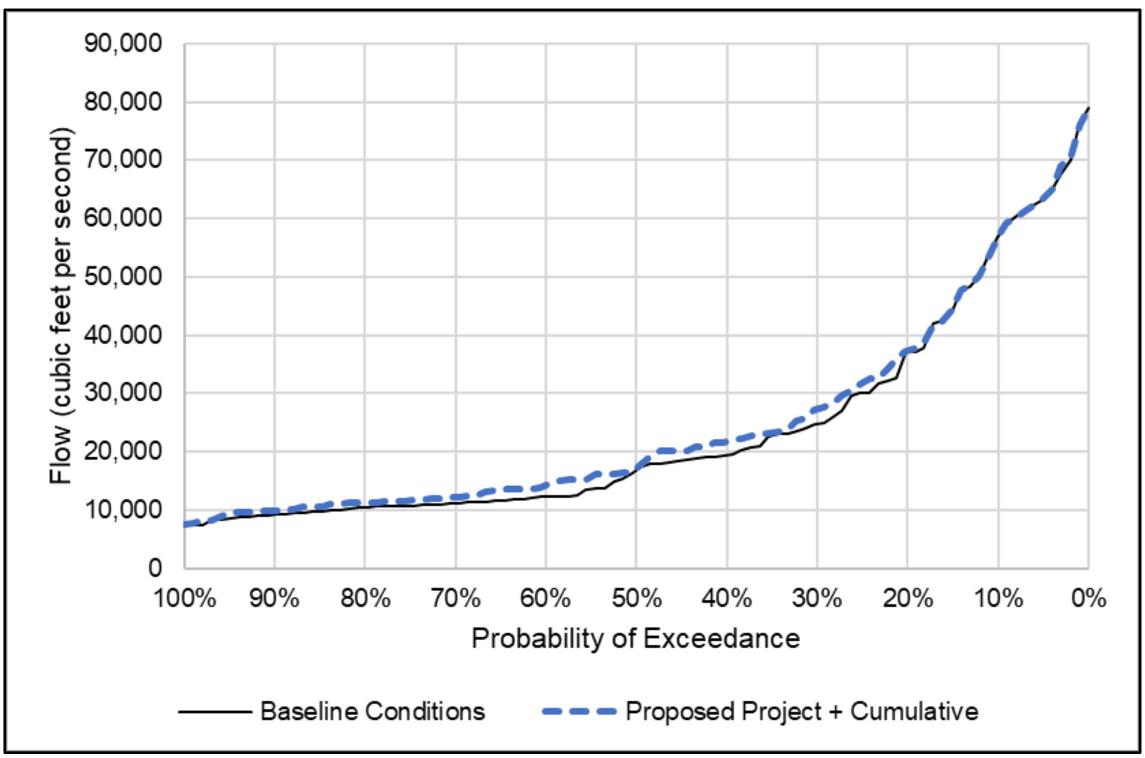




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

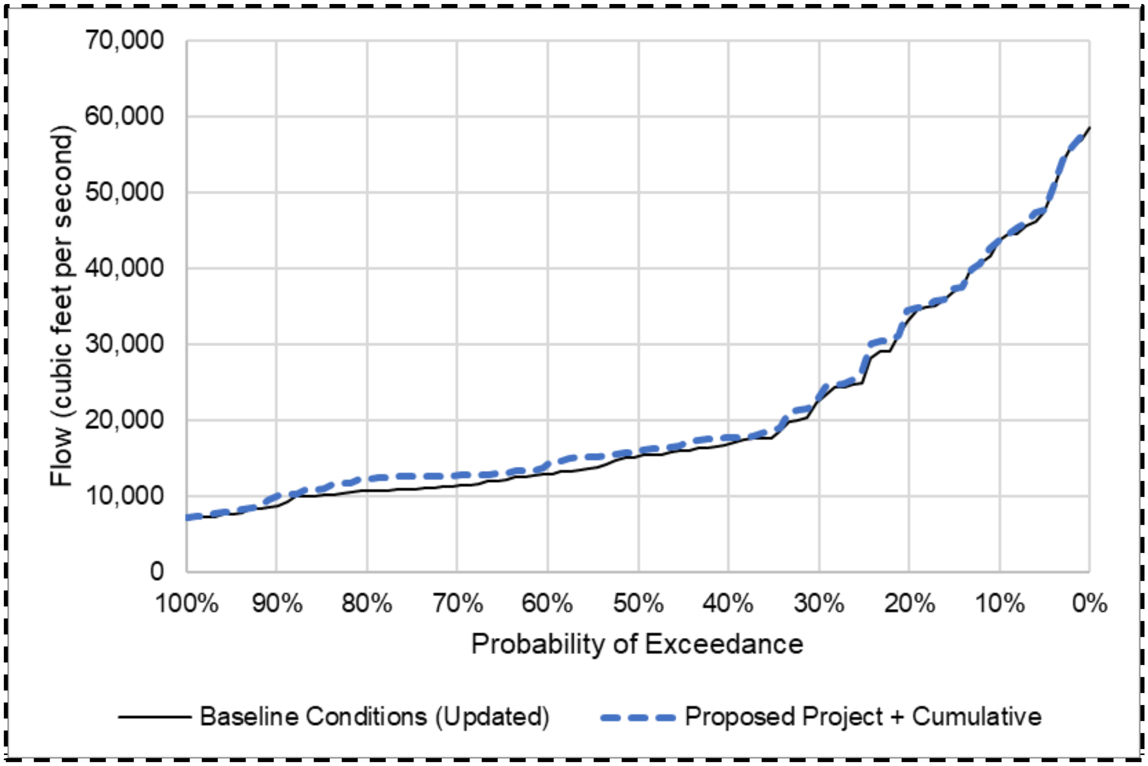
Figure 10-40. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March

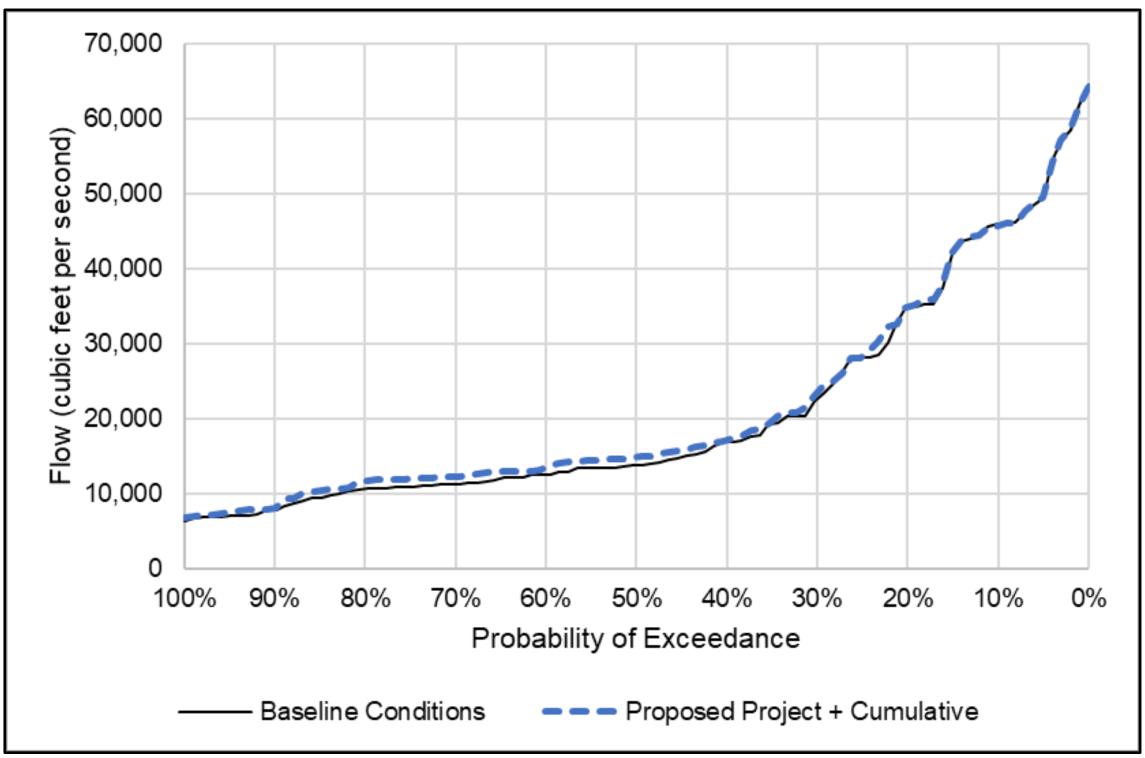




Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

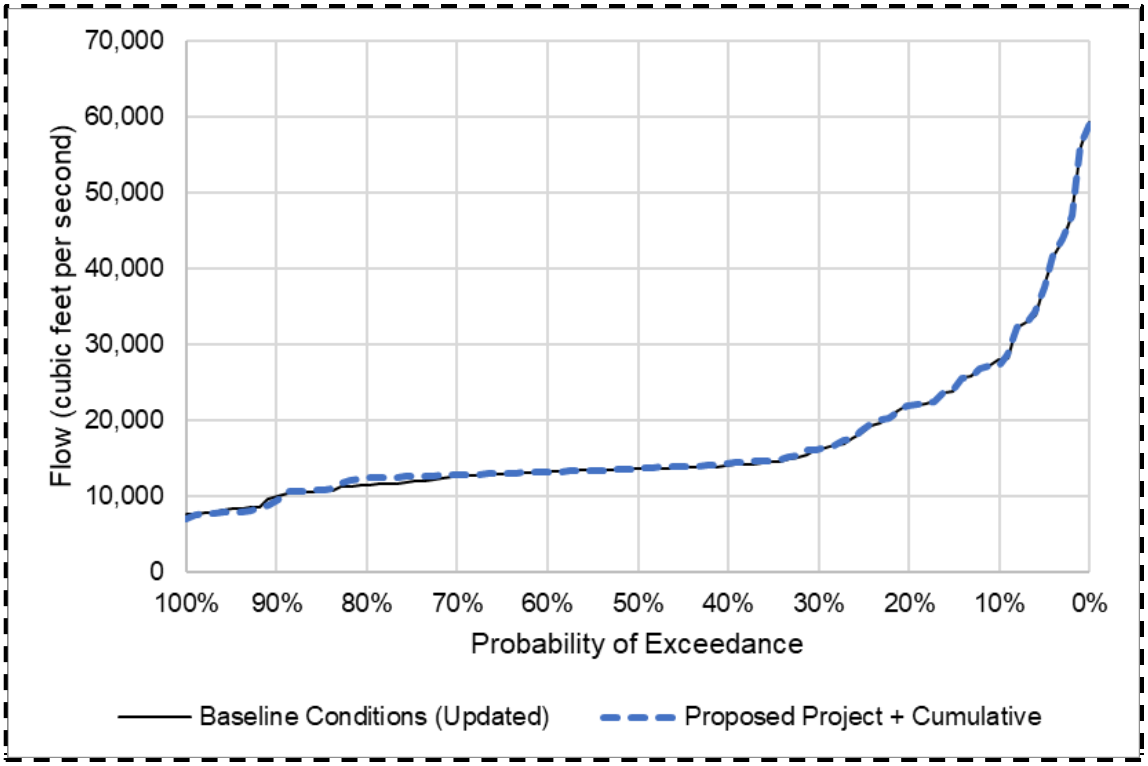
Figure 10-41. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April

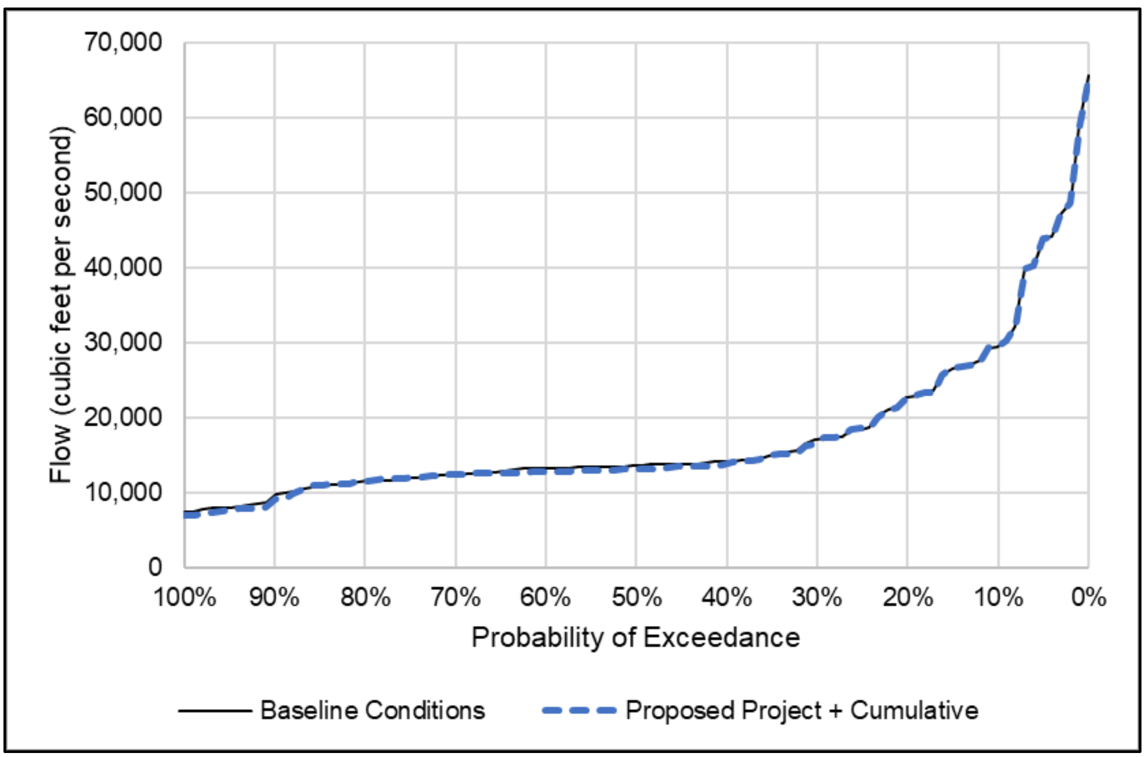




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~ <DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-42. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May





Source: <~~DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-43. Mean Modeled Sacramento River Flow at Freeport for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June

Table 10-11. STARS: Mean September Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0.37	0.38 ~~(2.2%)~~ (1.8%)
Above Normal	~~0.36~~ 0.35	~~0.37 (3.2%)~~ 0.36 (4.1%)
Below Normal	~~0.32~~ 0.31	~~0.32 (-0.4%)~~ 0.30 (-0.9%)
Dry	~~0.28~~ 0.27	~~0.29 (1.5%)~~ 0.27 (0.4%)
Critically Dry	~~0.26~~ 0.27	~~0.26 (0.6%)~~ 0.25 (-6.1%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-12. STARS: Mean October Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.36~~ 0.34	~~0.36 (-1.3%)~~ 0.33 (-1.6%)
Above Normal	0.32	~~0.32 (2.8%)~~ 0.31 (-0.7%)
Below Normal	~~0.33~~ 0.32	~~0.33 (0.0%)~~ 0.32 (0.2%)
Dry	~~0.33~~ 0.30	~~0.33 (0.3%)~~ 0.30 (-1.5%)
Critically Dry	~~0.31~~ 0.29	~~0.30 (-2.9%)~~ 0.29 (-2.5%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-13. STARS: Mean November Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.43~~ 0.41	~~0.43 (1.4%)~~ 0.41 (-0.3%)	~~0.43~~ 0.41	~~0.44 (1.5%)~~ 0.41 (-0.3%)
Above Normal	~~0.40~~ 0.38	~~0.39 (-0.2%)~~ 0.37 (-1.1%)	~~0.40~~ 0.39	~~0.40 (-0.3%)~~ 0.38 (-1.2%)
Below Normal	~~0.38~~ 0.36	~~0.39 (1.8%)~~ 0.36 (0.3%)	~~0.39~~ 0.36	~~0.39 (1.9%)~~ 0.36 (0.2%)
Dry	~~0.35~~ 0.36	0.36 ~~(1.9%)~~ (0.7%)	~~0.36~~ 0.37	0.37 ~~(2.0%)~~ (0.6%)
Critically Dry	~~0.34~~ 0.33	~~0.35 (2.0%)~~ 0.32 (-2.3%)	~~0.35~~ 0.34	~~0.36 (2.0%)~~ 0.33 (-2.3%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-14. STARS: Mean December Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.60~~ 0.58	~~0.60 (0.4%)~~ 0.58 (0.5%)	~~0.61~~ 0.59	~~0.62 (0.3%)~~ 0.60 (0.4%)
Above Normal	~~0.51~~ 0.52	0.51 ~~(0.3%)~~ (-1.0%)	~~0.52~~ 0.53	~~0.53 (0.3%)~~ 0.52 (-1.1%)
Below Normal	~~0.49~~ 0.47	~~0.49 (0.7%)~~ 0.47 (0.6%)	~~0.50~~ 0.48	~~0.51~~ 0.49 (0.7%)
Dry	~~0.48~~ 0.47	~~0.48 (0.0%)~~ 0.47 (-0.5%)	~~0.50~~ 0.49	~~0.50 (0.0%)~~ 0.48 (-0.6%)
Critically Dry	~~0.45~~ 0.42	~~0.45 (-0.4%)~~ 0.42 (0.2%)	~~0.47~~ 0.43	~~0.47 (-0.5%)~~ 0.43 (0.1%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-15. STARS: Mean January Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.63~~ 0.64	~~0.63~~ 0.64 (0.1%)	~~0.64~~ 0.65	~~0.64 (0.1%)~~ 0.65 (0.0%)
Above Normal	0.61	0.61 ~~(0.2%)~~ (0.0%)	0.62	0.62 ~~(0.2%)~~ (0.0%)
Below Normal	0.54	0.54 ~~(0.2%)~~ (-0.2%)	0.55	0.55 ~~(0.3%)~~ (-0.2%)
Dry	~~0.49~~ 0.48	0.49 ~~(0.2%)~~ (0.6%)	0.50	0.50 ~~(0.2%)~~ (0.6%)
Critically Dry	0.46	0.46 ~~(0.2%)~~ (1.4%)	~~0.48~~ 0.47	0.48 ~~(0.2%)~~ (1.2%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-16. STARS: Mean February Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0.66	0.66 (0.0%)	0.67	0.67 (0.0%)
Above Normal	~~0.63~~ 0.62	0.63 ~~(0.4%)~~ (0.1%)	0.64	0.64 ~~(0.3%)~~ (0.1%)
Below Normal	~~0.56~~ 0.57	~~0.56 (-0.2%)~~ 0.57 (0.3%)	~~0.57~~ 0.58	~~0.57 (-0.1%)~~ 0.59 (0.3%)
Dry	~~0.53~~ 0.54	~~0.53 (-0.4%)~~ 0.54 (-0.2%)	0.55	~~0.54 (-0.4%)~~ 0.55 (-0.2%)
Critically Dry	0.49	~~0.50 (2.0%)~~ 0.49 (0.1%)	0.50	~~0.51 (1.9%)~~ 0.50 (0.1%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-17. STARS: Mean March Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.64~~ 0.65	~~0.64~~ 0.65 (0.0%)	~~0.65~~ 0.66	~~0.65~~ 0.66 (0.0%)
Above Normal	0.63	0.63 ~~(0.1%)~~ (0.0%)	0.64	0.64 ~~(0.2%)~~ (0.0%)
Below Normal	~~0.57~~ 0.58	~~0.57 (0.5%)~~ 0.58 (0.1%)	~~0.58~~ 0.59	~~0.58 (0.4%)~~ 0.59 (0.1%)
Dry	0.52	0.52 ~~(1.0%)~~ (0.3%)	~~0.53~~ 0.54	0.54 ~~(0.9%)~~ (0.3%)
Critically Dry	0.46	0.46 ~~(0.4%)~~ (0.5%)	0.48	0.48 ~~(0.4%)~~ (0.3%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-18. STARS: Mean April Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

	BAFF Reducing Georgiana Slough Entry by 50%		BAFF Reducing Georgiana Slough Entry by 67%	
Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0.61	0.61 ~~(0.0%)~~ (0.1%)	0.62	~~0.62 (0.0%)~~ 0.63 (0.1%)
Above Normal	~~0.57~~ 0.56	0.57 ~~(0.7%)~~ (2.4%)	~~0.58~~ 0.57	0.58 ~~(0.7%)~~ (2.4%)
Below Normal	0.50	~~0.51 (2.1%)~~ 0.52 (4.4%)	~~0.52~~ 0.51	0.53 ~~(2.0%)~~ (4.2%)
Dry	~~0.46~~ 0.45	0.47 ~~(1.6%)~~ (3.6%)	~~0.47~~ 0.47	0.48 ~~(1.5%)~~ (3.3%)
Critically Dry	~~0.43~~ 0.42	0.43 ~~(0.8%)~~ (1.1%)	0.44	0.45 ~~(0.7%)~~ (0.9%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-19. STARS: Mean May Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0.56	0.56 ~~(0.2%)~~ (0.0%)
Above Normal	0.50	0.51 ~~(1.8%)~~ (1.6%)
Below Normal	0.45	0.46 (2.7%)
Dry	~~0.41~~ 0.40	~~0.42 (4.2%)~~ 0.41 (3.5%)
Critically Dry	0.36	~~0.37 (1.6%)~~ 0.36 (1.8%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-20. STARS: Mean June Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ Modeling Scenarios, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence Operation Assumption

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~0.45~~ 0.46	~~0.45 (0.1%)~~ 0.46 (-0.1%)
Above Normal	0.39	~~0.40 (0.4%)~~ 0.39 (-0.6%)
Below Normal	~~0.33~~ 0.32	~~0.33 (1.4%)~~ 0.32 (-0.2%)
Dry	0.32	0.32 ~~(0.3%)~~ (-1.5%)
Critically Dry	0.28	~~0.28 (-1.6%)~~ 0.27 (-1.5%)

Note: Table only includes mean responses and does not consider model uncertainty.

Table 10-21. STARS: Mean September Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.473~~ 0.477
Above Normal	~~0.462~~ 0.452
Below Normal	~~0.506~~ 0.511
Dry	~~0.484~~ 0.496
Critically Dry	~~0.494~~ 0.555

Table 10-22. STARS: Mean October Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.517~~ 0.520
Above Normal	~~0.473~~ 0.507
Below Normal	~~0.500~~ 0.499
Dry	~~0.497~~ 0.514
Critically Dry	~~0.529~~ 0.525

Table 10-23. STARS: Mean November Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	50%	67%
Wet	~~0.482~~ 0.503	~~0.481~~ 0.504
Above Normal	~~0.505~~ 0.513	~~0.506~~ 0.515
Below Normal	~~0.479~~ 0.496	~~0.478~~ 0.497
Dry	~~0.480~~ 0.491	~~0.481~~ 0.493
Critically Dry	~~0.481~~ 0.524	~~0.481~~ 0.523

Table 10-24. STARS: Mean December Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	50%	67%
Wet	~~0.493~~ 0.490	~~0.493~~ 0.491
Above Normal	~~0.495~~ 0.511	~~0.495~~ 0.514
Below Normal	~~0.488~~ 0.491	~~0.488~~ 0.492
Dry	~~0.500~~ 0.507	~~0.501~~ 0.508
Critically Dry	~~0.507~~ 0.496	~~0.507~~ 0.497

Table 10-25. STARS: Mean January Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	**50%**	**67%**
Wet	~~0.497~~ 0.499	0.499
Above Normal	~~0.496~~ 0.499	~~0.494~~ 0.499
Below Normal	~~0.495~~ 0.503	~~0.496~~ 0.503
Dry	~~0.496~~ 0.490	~~0.498~~ 0.491
Critically Dry	~~0.497~~ 0.480	~~0.498~~ 0.481

Table 10-26. STARS: Mean February Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	**50%**	**67%**
Wet	~~0.500~~ 0.499	0.500
Above Normal	~~0.492~~ 0.497	~~0.493~~ 0.499
Below Normal	~~0.502~~ 0.493	~~0.501~~ 0.494
Dry	~~0.508~~ 0.504	~~0.506~~ 0.503
Critically Dry	~~0.468~~ 0.499	~~0.470~~ 0.498

Table 10-27. STARS: Mean March Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~ , Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	**50%**	**67%**
Wet	~~0.500~~ 0.499	0.499
Above Normal	~~0.497~~ 0.500	~~0.497~~ 0.500
Below Normal	~~0.490~~ 0.498	~~0.490~~ 0.499
Dry	~~0.482~~ 0.494	~~0.483~~ 0.494
Critically Dry	~~0.495~~ 0.493	~~0.494~~ 0.495

Table 10-28. STARS: Mean April Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~, Grouped by Water Year Type and Georgiana Slough Salmonid Migratory Barrier BioAcoustic Fish Fence (BAFF) Operation Assumption

	BAFF Reducing Georgiana Slough Entry Assumption	
Water Year Type	50%	67%
Wet	~~0.499~~ 0.498	~~0.500~~ 0.498
Above Normal	~~0.488~~ 0.454	~~0.486~~ 0.455
Below Normal	~~0.464~~ 0.425	~~0.465~~ 0.429
Dry	~~0.475~~ 0.446	~~0.476~~ 0.450
Critically Dry	~~0.489~~ 0.485	~~0.490~~ 0.487

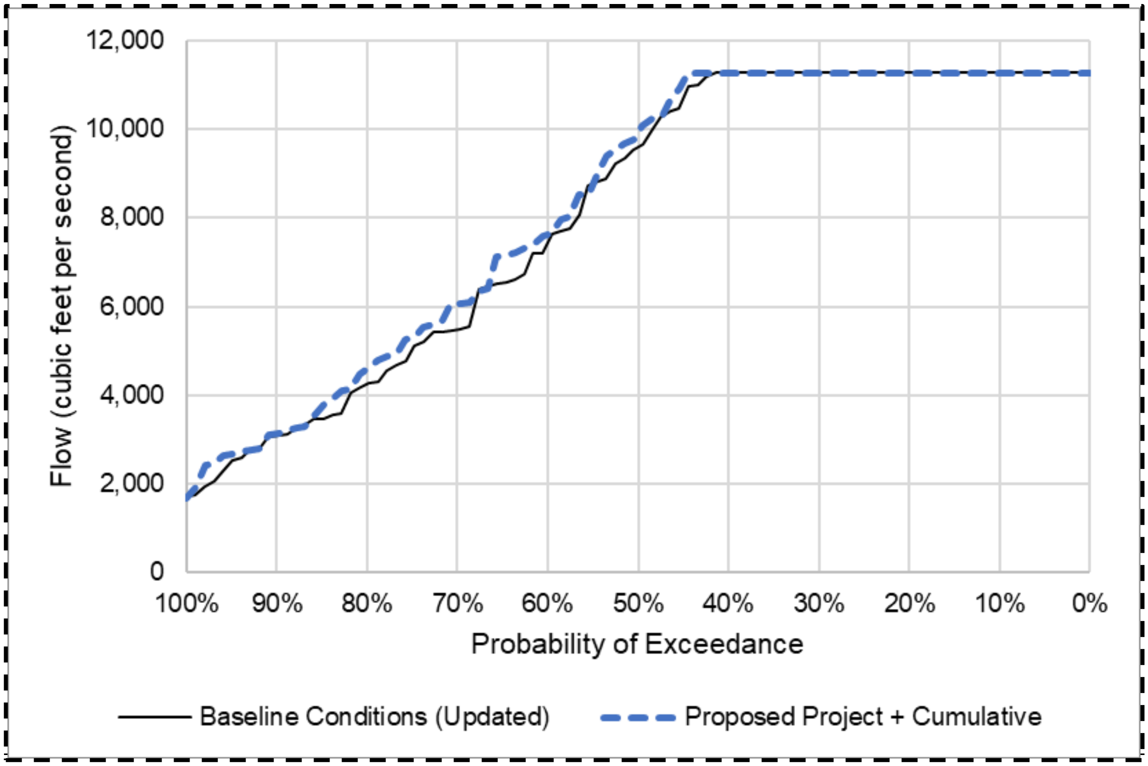
Table 10-29. STARS: Mean May Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~, Grouped by Water Year Type

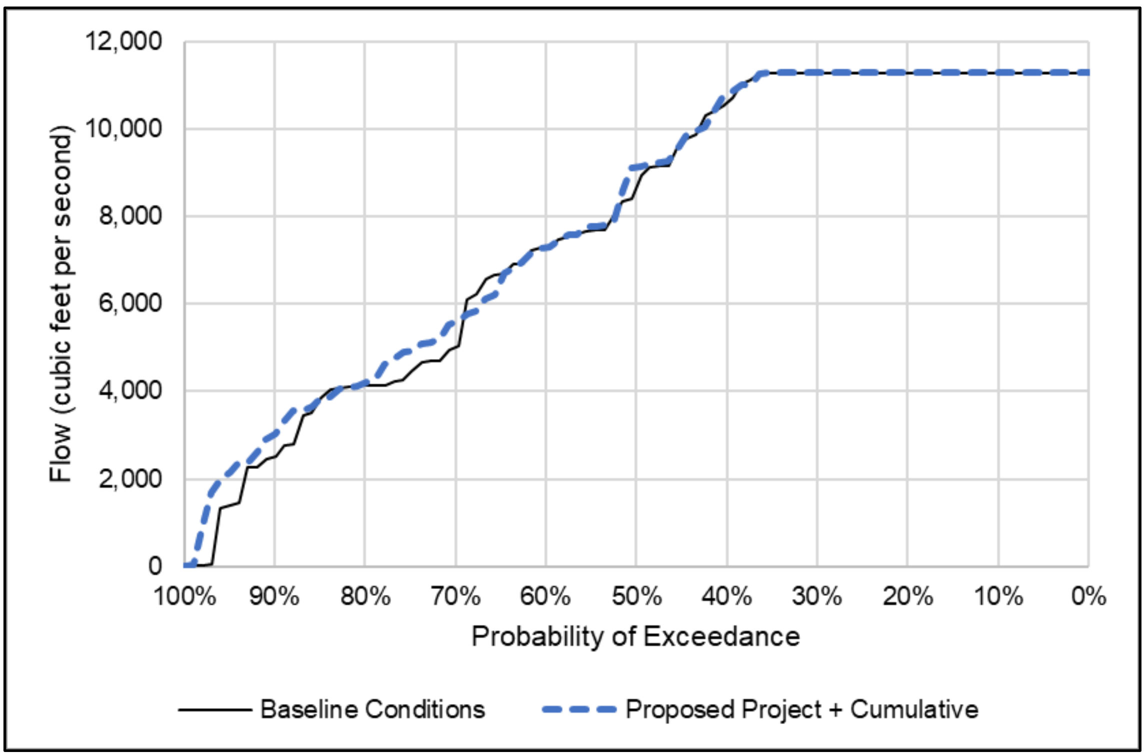
Water Year Type	Probability
Wet	~~0.496~~ 0.499
Above Normal	~~0.467~~ 0.471
Below Normal	~~0.456~~ 0.457
Dry	~~0.439~~ 0.449
Critically Dry	~~0.480~~ 0.477

Table 10-30. STARS: Mean June Probability of Chinook Salmon Smolt Survival Through the Delta under the Proposed Project plus Cumulative Being Less Than Baseline Conditions ~~(Updated)~~, Grouped by Water Year Type

Water Year Type	Probability
Wet	~~0.497~~ 0.501
Above Normal	~~0.494~~ 0.509
Below Normal	~~0.483~~ 0.502
Dry	~~0.495~~ 0.517
Critically Dry	~~0.518~~ 0.517

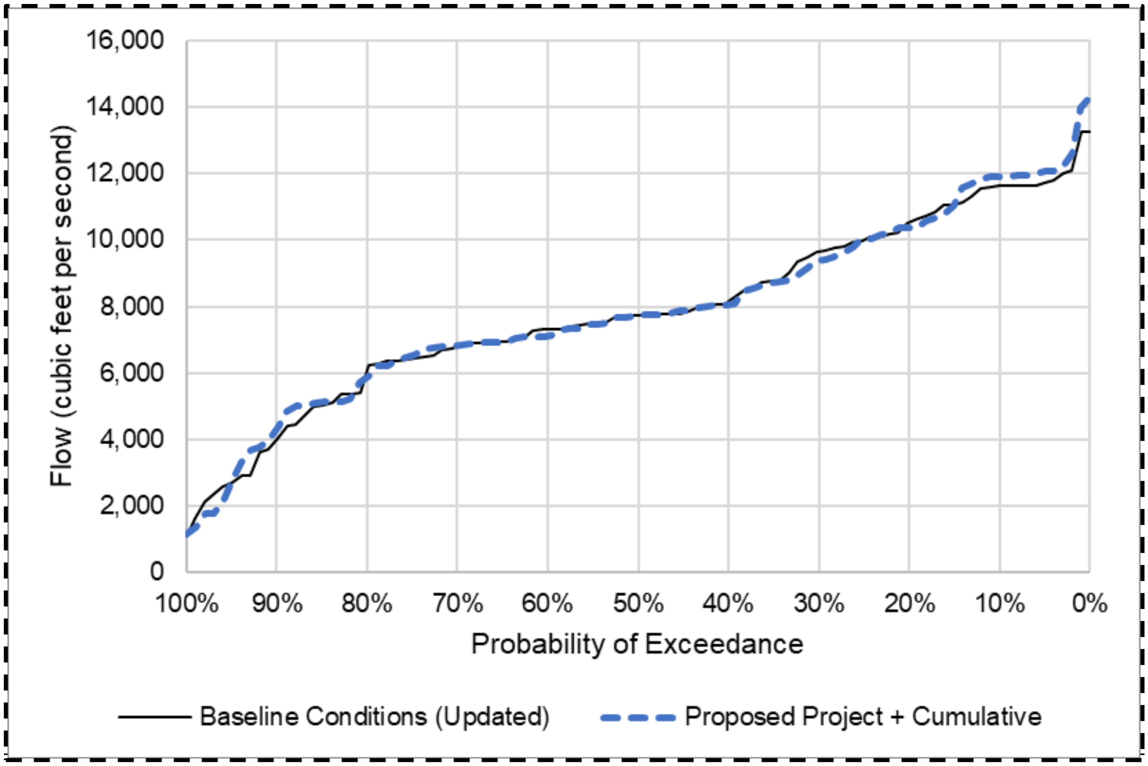
As discussed in Chapter 6, adult winter-Chinook Salmon have a November–June period of potential occurrence in the Delta, with January–March being the main period of occurrence. Based on south Delta exports during November–June (Figures 10-44 through 10-51), January–March entrainment risk under the Proposed Project plus Cumulative scenario would be similar to (January/February) or lower than (March) Baseline Conditions ~~(Updated)~~, whereas entrainment risk would be greater in May, marginally greater in November, and similar in the other months. As described in Chapter 6, given the low numbers of adult Chinook Salmon salvaged historically, any positive or negative differences in entrainment loss between the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ would be limited in terms of the numbers of fish involved (i.e., likely single digits). The results of application of the salvage-density method indicated that south Delta entrainment risk for juvenile winter-run Chinook Salmon under the Proposed Project plus Cumulative scenario would be similar to or lower than Baseline Conditions ~~(Updated)~~ at both the SWP (including Banks SWP and Banks CVP exports) and the CVP (Tables 10-31 through ~~10-34~~ 10-38). Both SWP and CVP operations would include criteria such as loss thresholds to minimize entrainment risk, as described in Chapter 2 and outlined further below for the CVP.

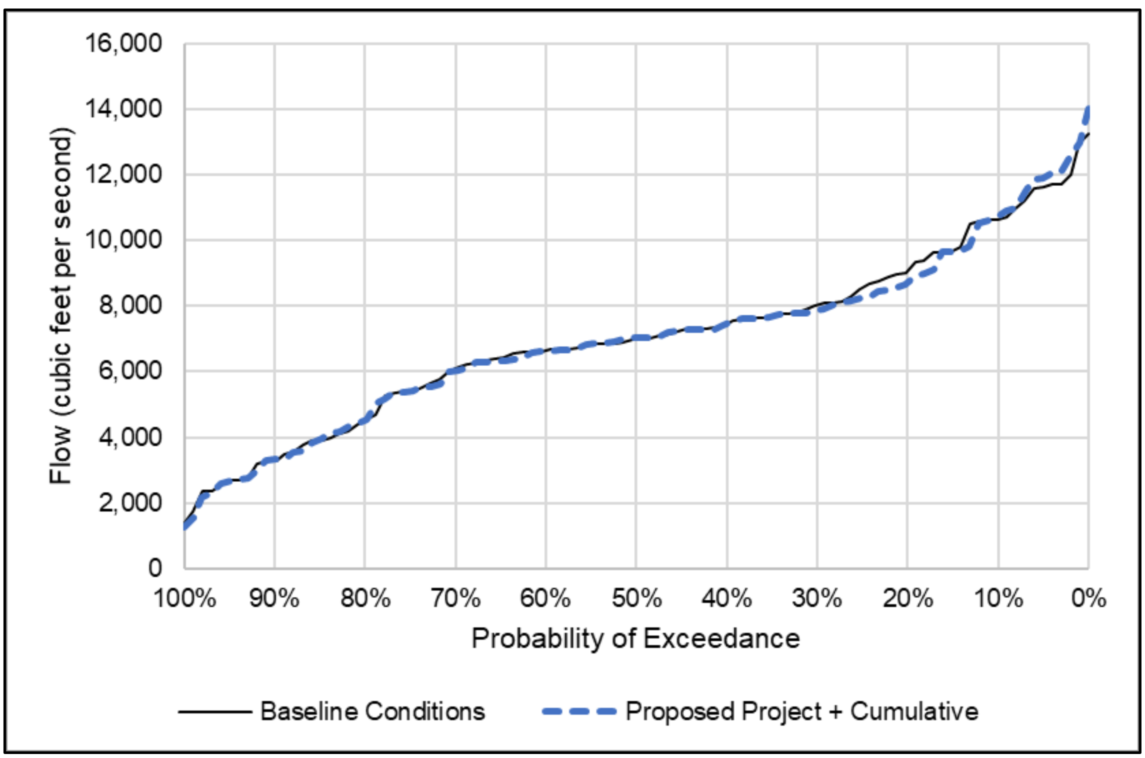




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

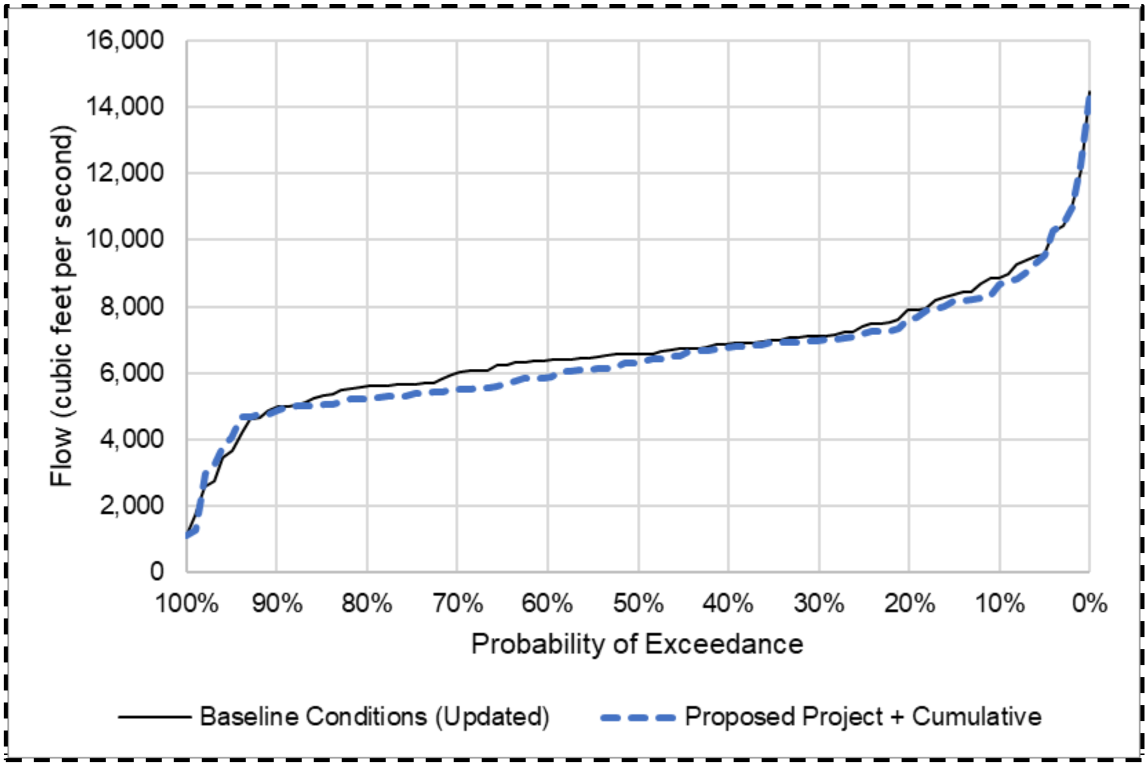
Figure 10-44. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, November

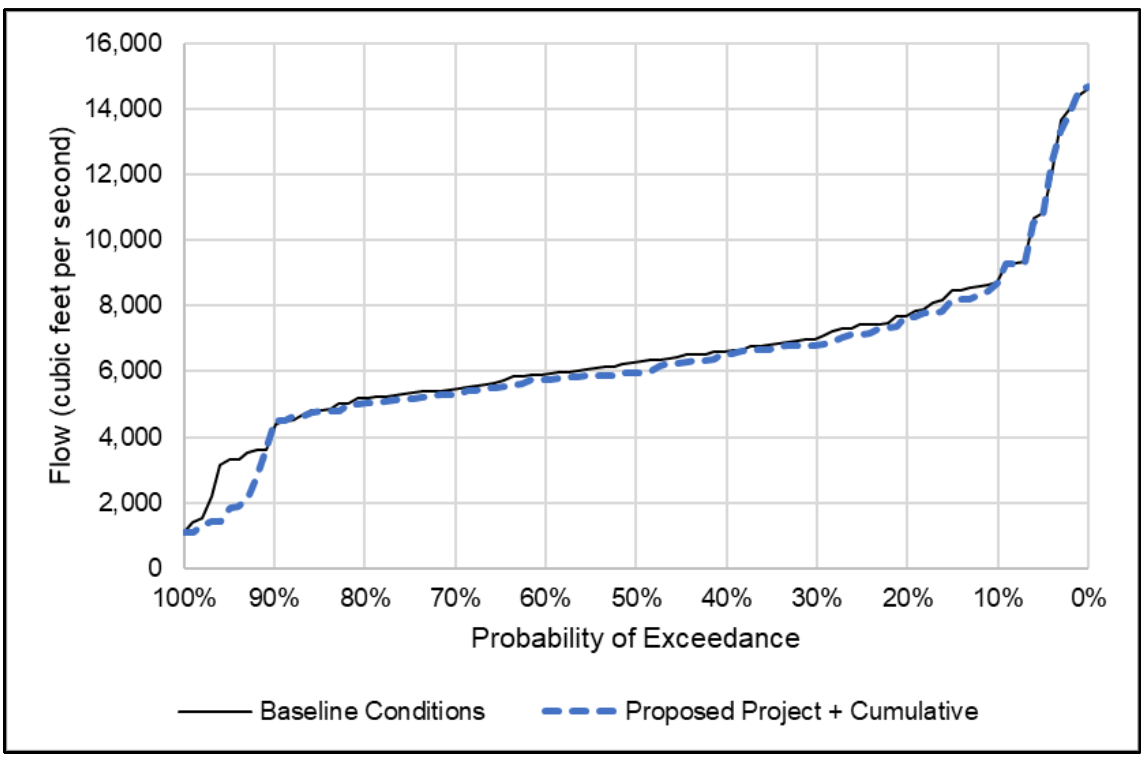




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

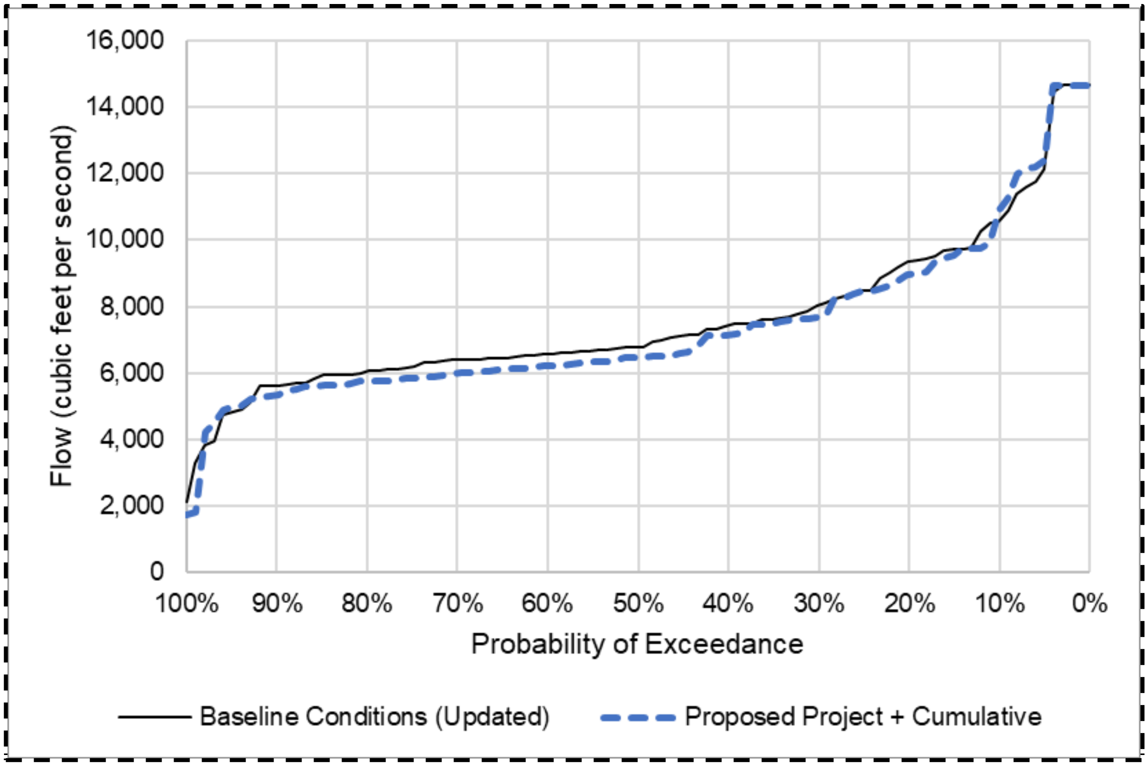
Figure 10-45. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, December

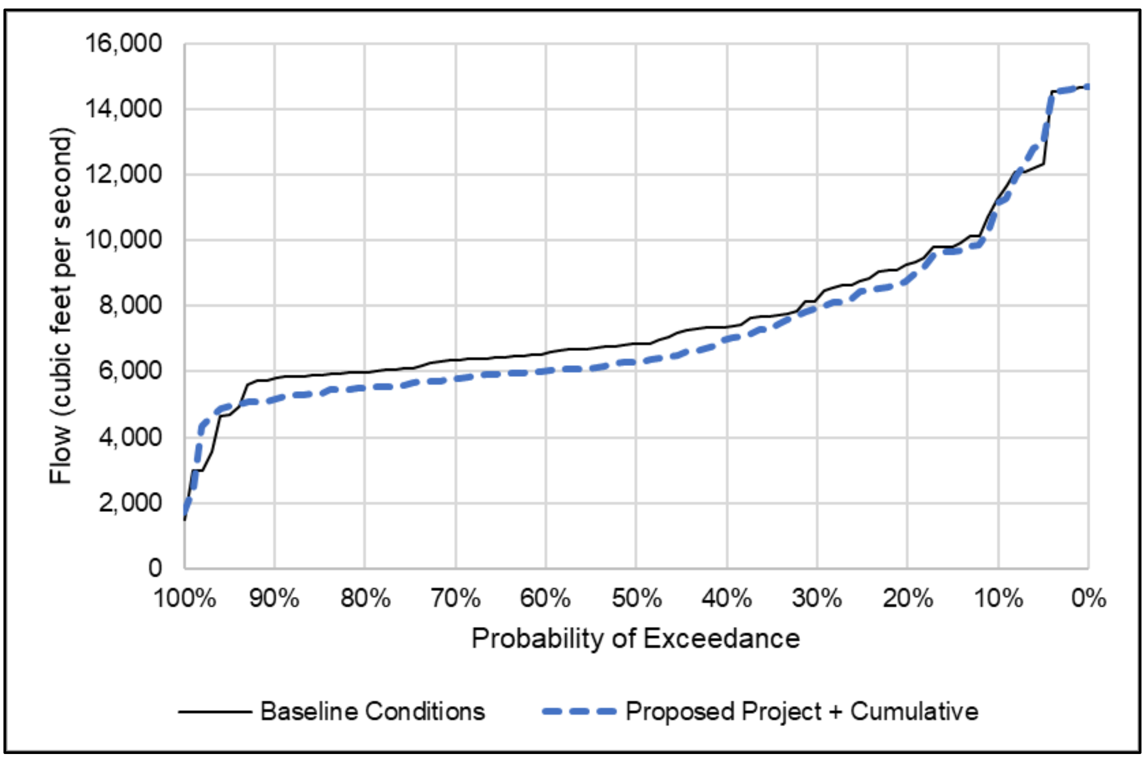




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

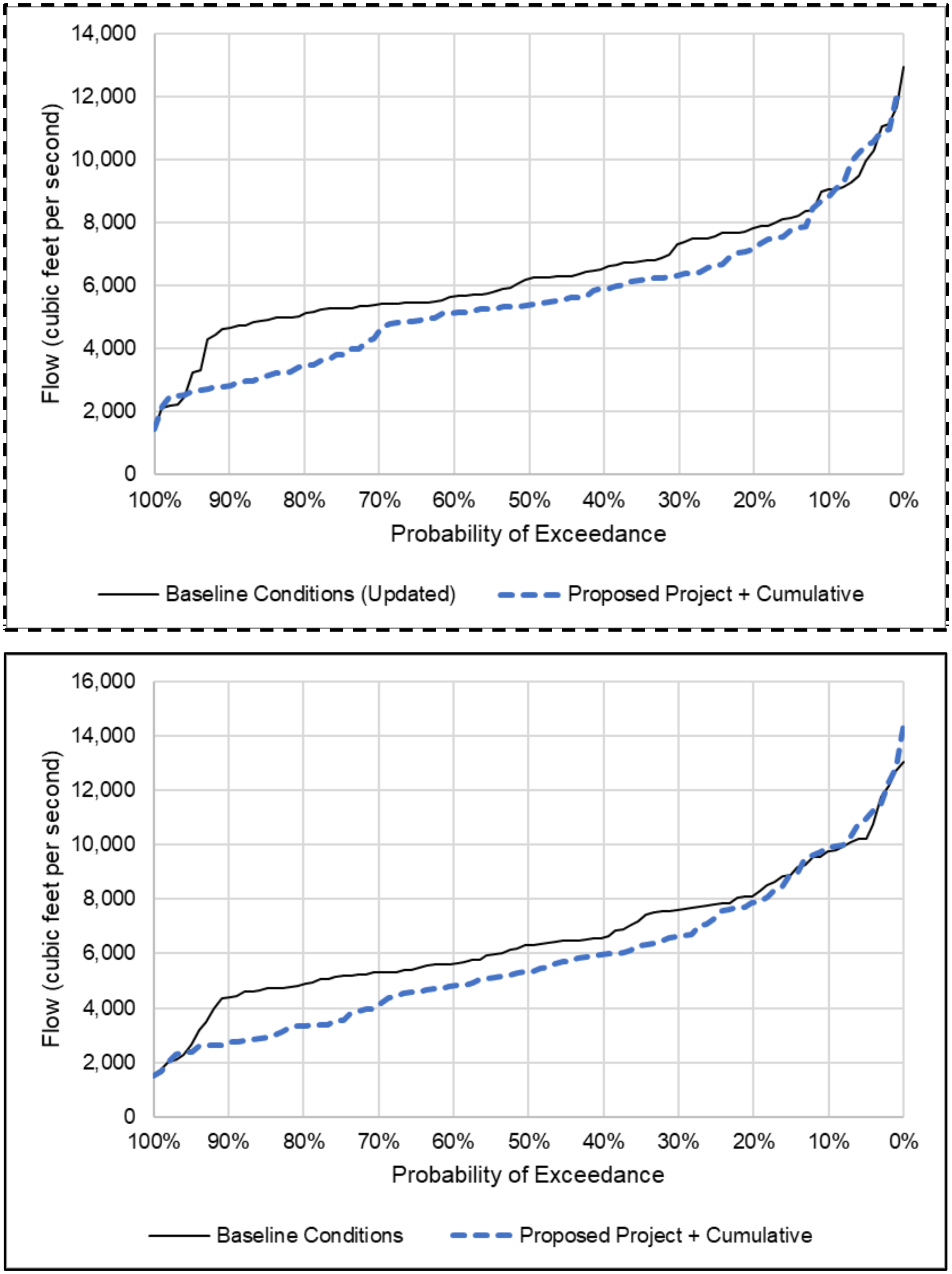
Figure 10-46. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, January





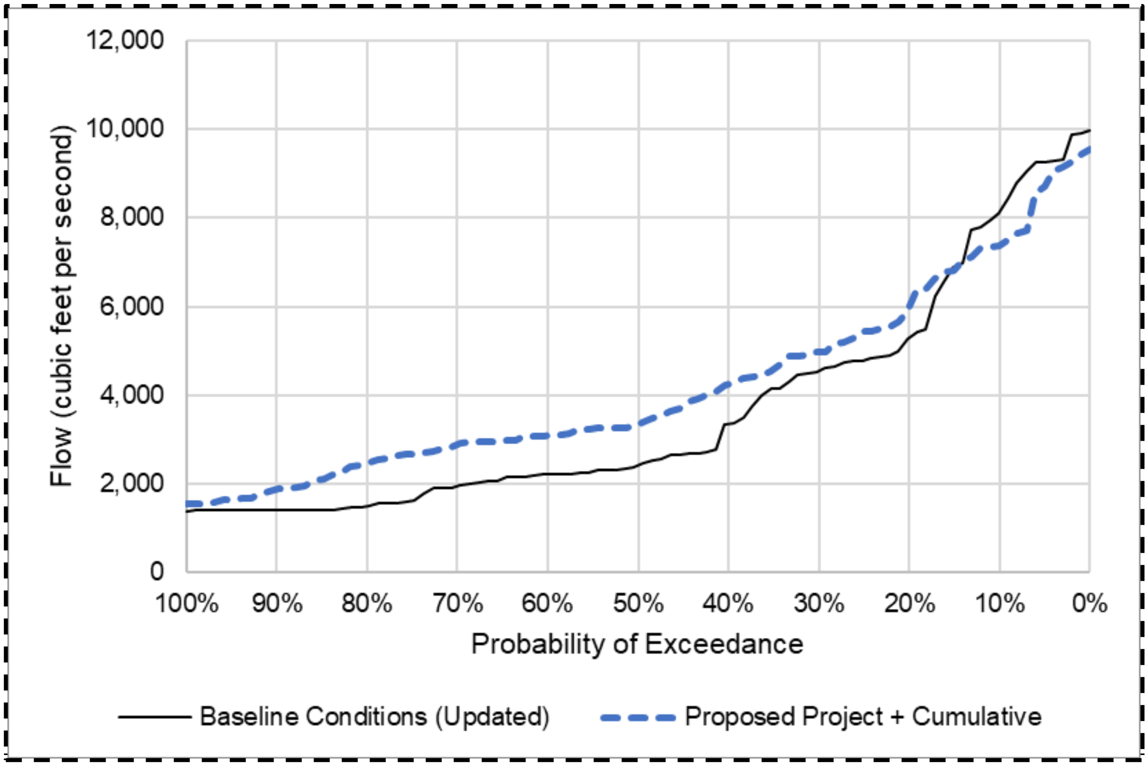
Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

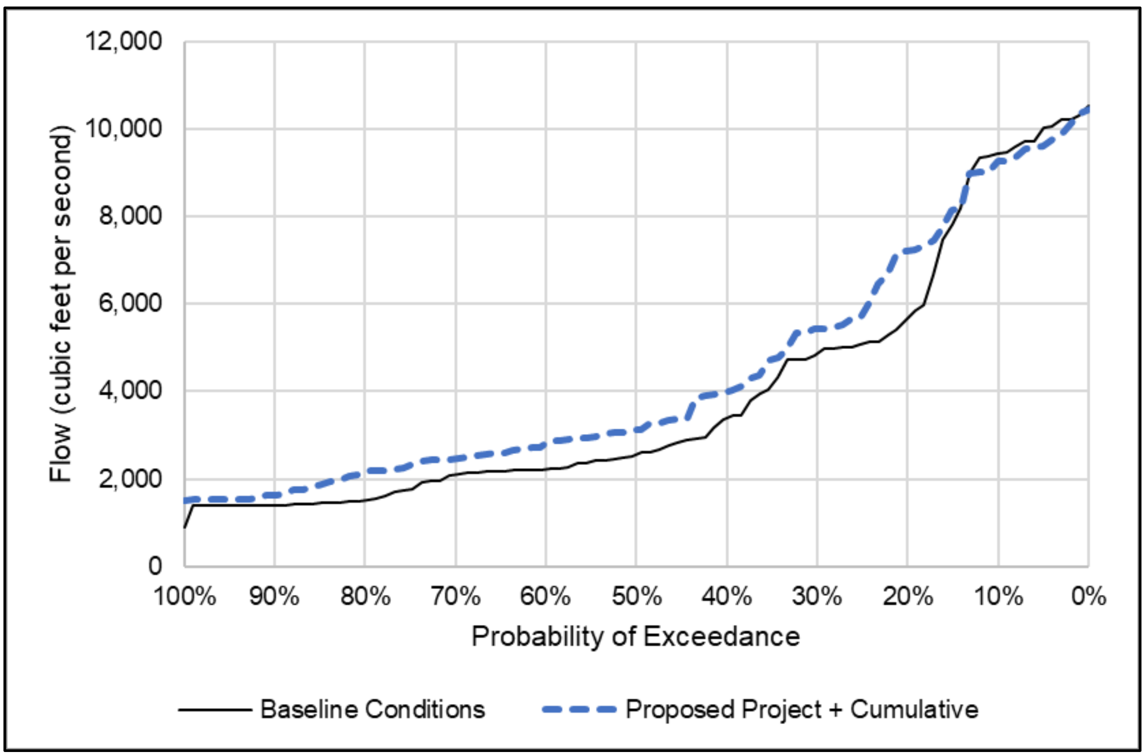
Figure 10-47. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, February



Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~ <DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

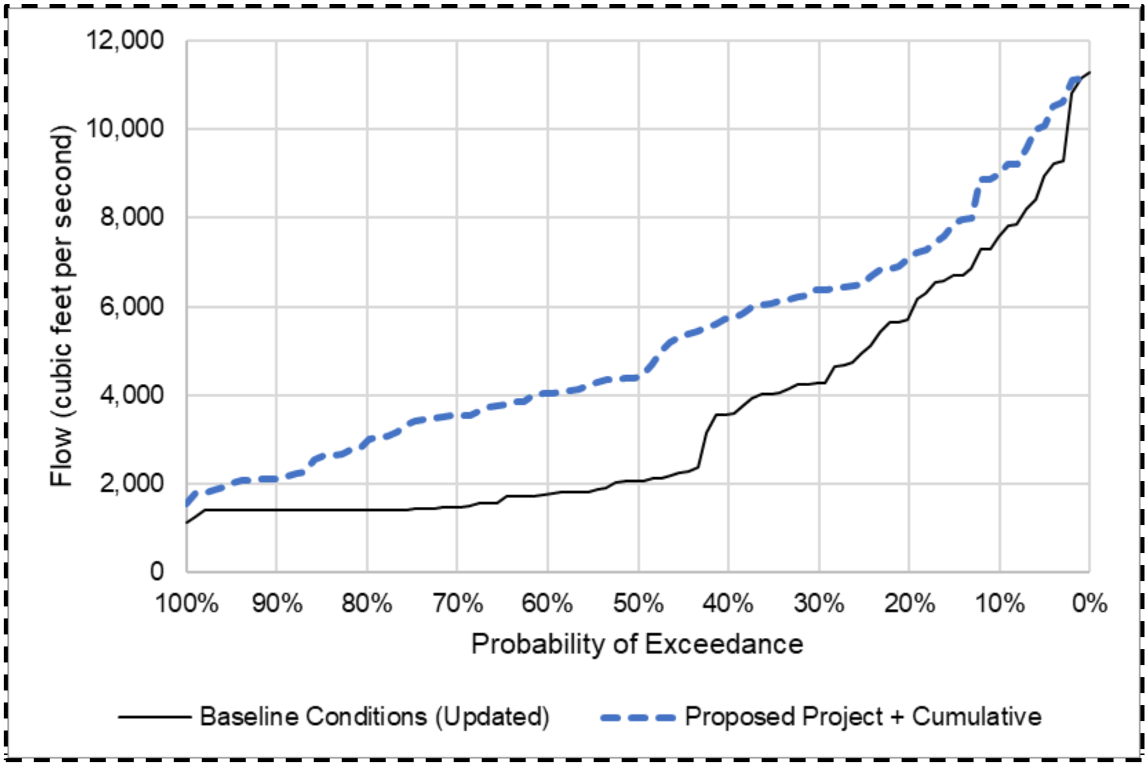
Figure 10-48. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March

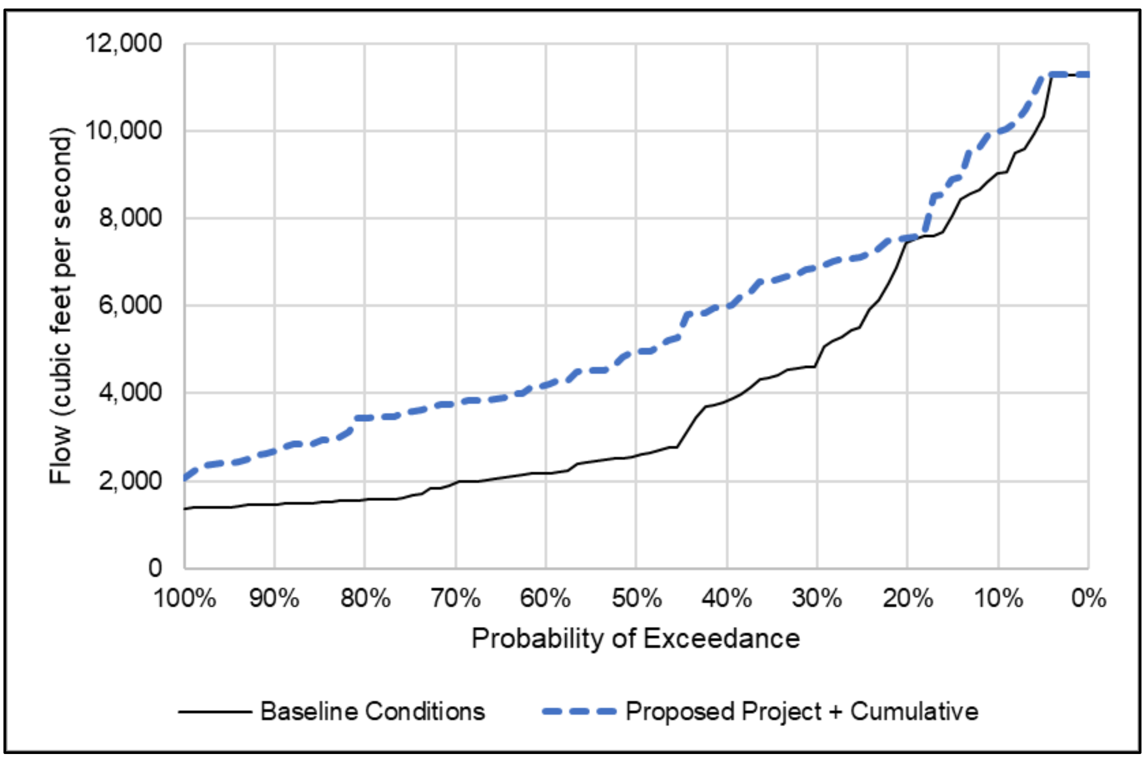




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

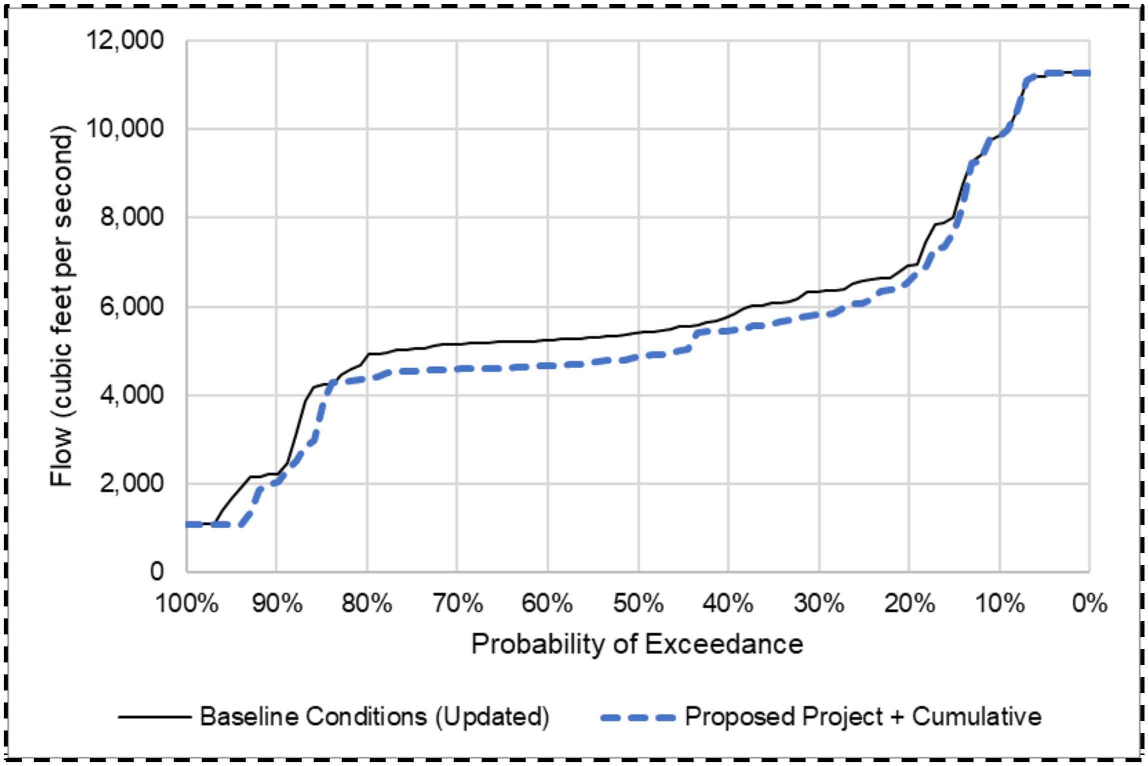
Figure 10-49. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April

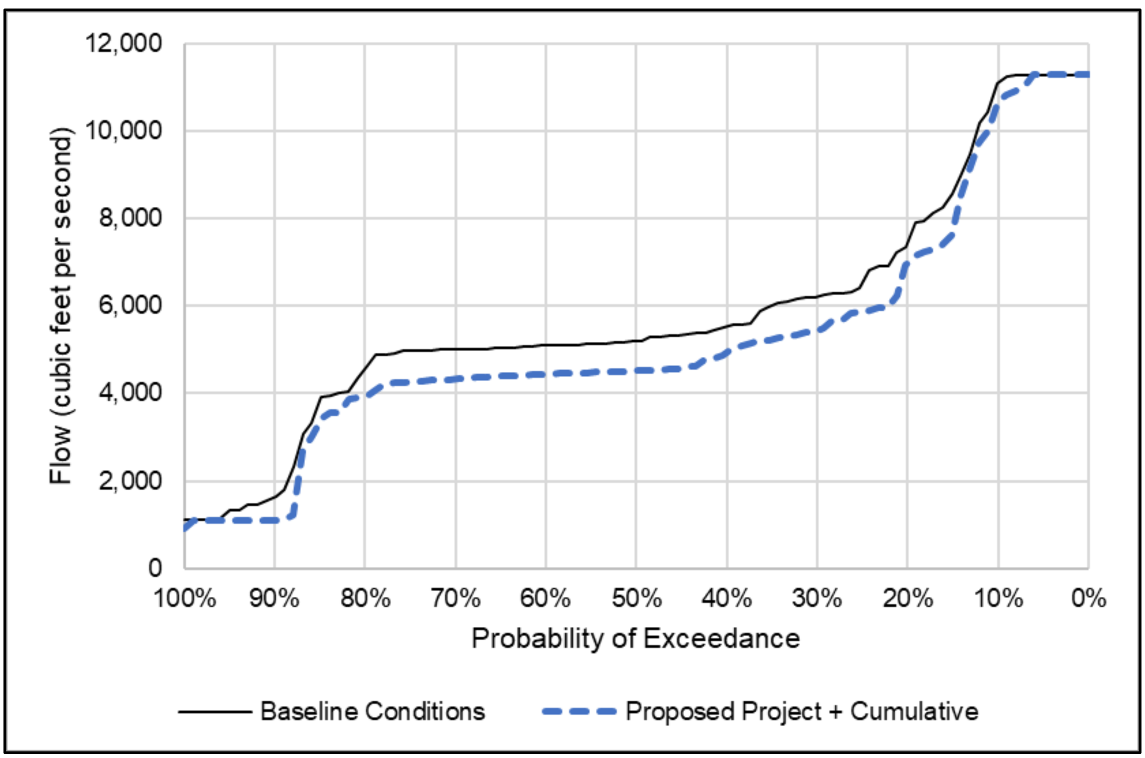




Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-50. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May





Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-51. Mean Modeled South Delta Exports for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June

Table 10-31. Mean Number of Genetically Identified Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~784~~ 838	~~808~~ 863 (3%)
Above Normal	N/A	~~(-8%)~~ (-6%)
Below Normal	~~587~~ 596	~~519 (-12%)~~ 539 (-10%)
Dry	~~103~~ 108	~~88 (-15%)~~ 91 (-16%)
Critically Dry	~~10~~ 9	~~11 (14%)~~ 10 (10%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-32~~ 10-33 .

Table 10-32. Mean Number of Coded Wire Tagged Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	21	20 (-5%)
Dry	4	3 (-16%)
Critically Dry	2	2 (-11%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table 10-34.

Table ~~10-32~~ 10-33 . Mean Number of Genetically Identified Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~7~~ 8	~~7 (-2%)~~ 8 (-3%)
Wet	Feb	~~197~~ 202	~~200 (2%)~~ 199 (-2%)
Wet	Mar	~~515~~ 560	~~534~~ 581 (4%)
Wet	Apr	~~58~~ 62	~~61 (5%)~~ 69 (11%)
Wet	May	1	1 ~~(50%)~~ (28%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	~~5~~ 4	~~5~~ 4 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	10	9 ~~(-4%)~~ (-8%)
Below Normal	Feb	~~136~~ 139	~~130 (-4%)~~ 129 (-7%)
Below Normal	Mar	~~438~~ 444	~~373 (-15%)~~ 395 (-11%)
Below Normal	Apr	4	6 ~~(66%)~~ (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	~~96~~ 101	~~80~~ 85 (-16%)
Dry	Apr	7	~~8 (5%)~~ 6 (-16%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	4	4 ~~(4%)~~ (-1%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Critically Dry	Apr	~~6~~ 5	~~7 (20%)~~ 6 (18%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table 10-34. Mean Number of Coded Wire Tagged Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	19	17 (-11%)
Below Normal	Apr	2	3 (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	4	3 (-16%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	2	2 (-11%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-33~~ 10-35. Mean Number of Genetically Identified Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~80~~ 81	~~72 (-10%)~~ 75 (-7%)
Above Normal	N/A	~~(-19%)~~ (-22%)
Below Normal	~~132~~ 128	~~120 (-9%)~~ 104 (-19%)
Dry	~~42~~ 40	~~37 (-11%)~~ 31 (-22%)
Critically Dry	~~11~~ 10	~~11 (-1%)~~ 10 (1%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-34~~ 10-37.

Table 10-36. Mean Number of Coded Wire Tagged Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	17	14 (-20%)
Dry	0	0 (0%)
Critically Dry	2	2 (1%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table 10-38.

Table ~~10-34~~ 10-37. Mean Number of Genetically Identified Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	4	4 ~~(-3%)~~ (-1%)
Wet	Feb	20	20 ~~(0%)~~ (-1%)
Wet	Mar	~~51~~ 52	~~43 (-15%)~~ 47 (-11%)
Wet	Apr	1	1 ~~(-21%)~~ (-12%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	4	4 ~~(-1%)~~ (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	35	~~33 (-8%)~~ 31 (-11%)
Below Normal	Mar	~~94~~ 90	~~83 (-12%)~~ 70 (-23%)
Below Normal	Apr	2	3 ~~(64%)~~ (33%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	1	1 ~~(0%)~~ (-1%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	~~40~~ 38	~~35 (-12%)~~ 30 (-23%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	2	2 ~~(0%)~~ (-1%)
Critically Dry	Jan	1	1 ~~(-5%)~~ (1%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	10	10 ~~(-1%)~~ (1%)
Critically Dry	Apr	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table 10-38. Mean Number of Coded Wire Tagged Winter-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Metho d

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	4	4 (-11%)
Below Normal	Mar	13	10 (-23%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	2	2 (1%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

The Proposed Action for the Long-Term Operation of the CVP and SWP includes criteria to limit the potential for south Delta entrainment of winter-run Chinook Salmon consistent with the Proposed Project, limiting likely combined entrainment loss by SWP and CVP to levels similar to recent years (i.e., considerably less than ESA-authorized take, ~1 percent of genetic winter-run Chinook Salmon juveniles entering the Delta; Islam et al. 2020, 2021, 2022). The Proposed Action for the Long-Term Operation of the CVP and SWP includes a number of measures beyond those described for the Proposed Project with the potential to affect winter-run Chinook Salmon:

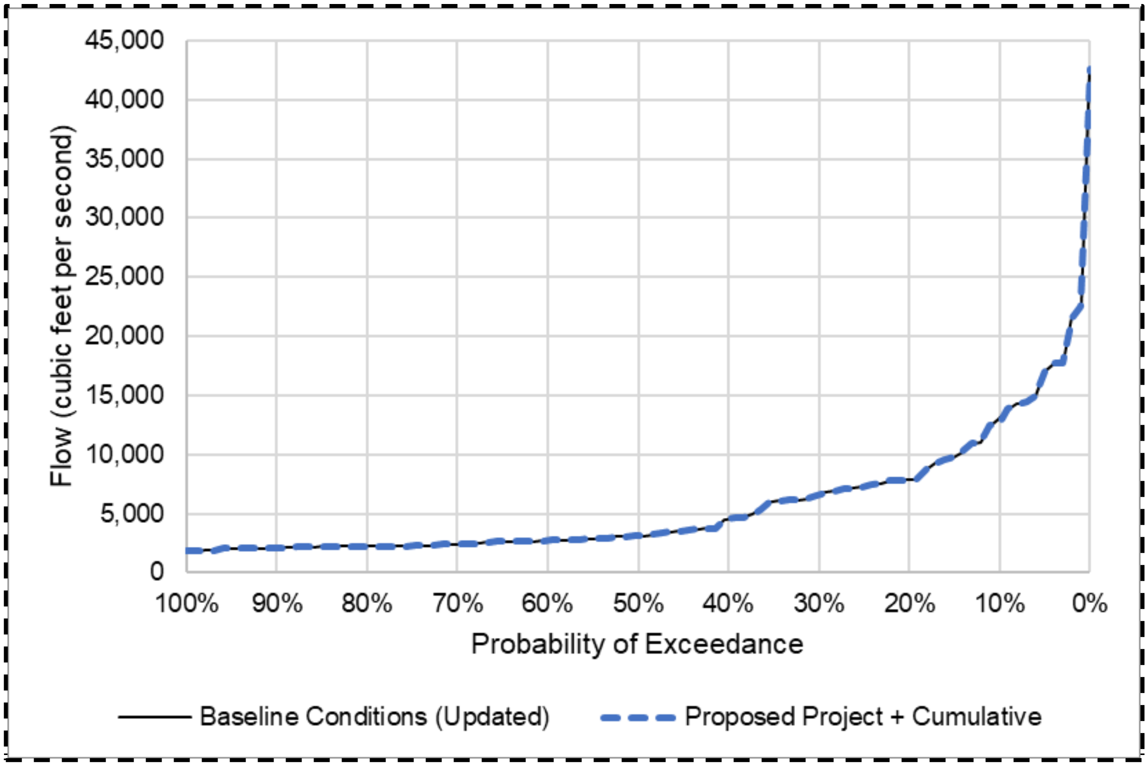
- Sacramento River water temperature and storage management
- Sacramento River ramping rates
- Sacramento River minimum instream flows
- Sacramento River spring pulse flows
- Sacramento River fall and winter instream flows
- Sacramento River rice decomposition smoothing
- Sacramento River spawning and rearing habitat restoration
- Sacramento River habitat restoration and facility improvements
- Battle Creek Salmon and Steelhead Restoration Project and Battle Creek Winter-run Reintroduction Plan
- Winter-run Chinook Salmon Conservation Hatchery Intervention
- Small screen program
- Delta Cross Channel gates closures
- Tracy Fish Collection Facility salvage operations

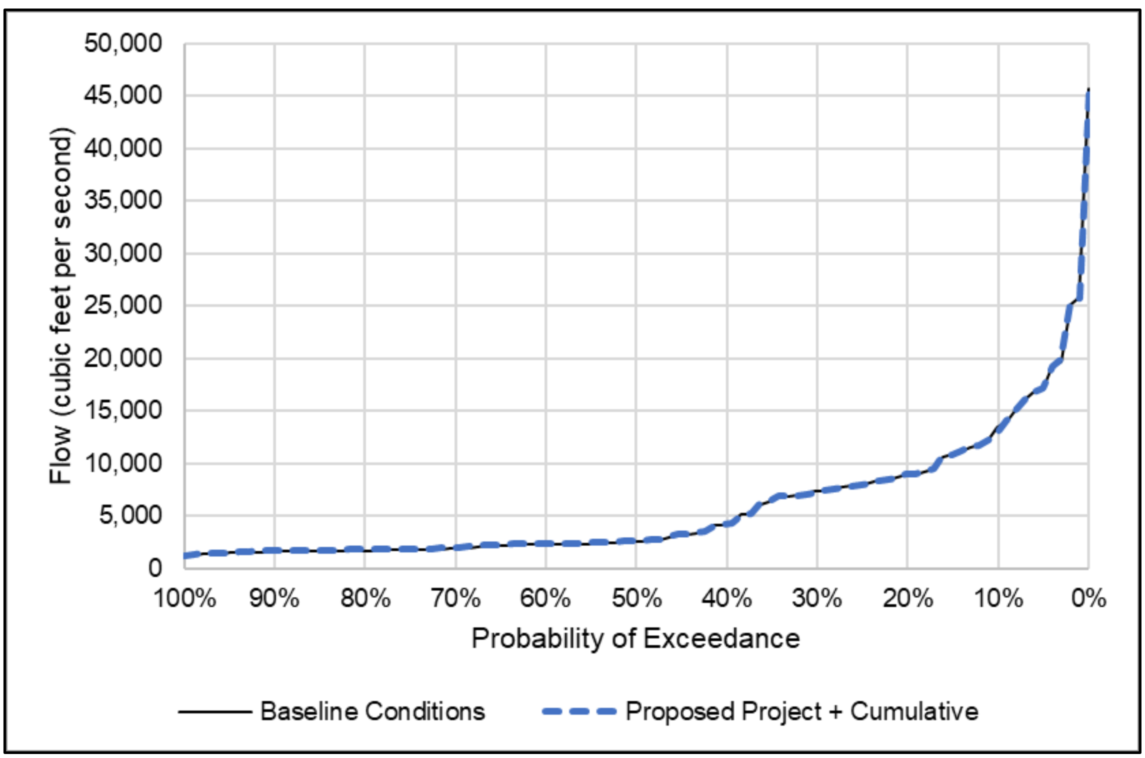
Winter-run Chinook Salmon life cycle modeling analyses for the Proposed Action for the Long-Term Operation of the CVP and SWP have illustrated generally limited effects.[6] In consideration of the analyses presented above the Proposed Project plus Cumulative scenario would not have significant effects on through-Delta survival and entrainment risk, relative to the Baseline Conditions ~~(Updated)~~ scenario.

[6] The modeled scenario called ALT2v3_woTUCP (also known as Alt2woTUCP AllVA) provides the most relevant scenario in the context of the cumulative effects of the Proposed Project, with results of the Sacramento River Winter-Run Life Cycle Model (Hendrix et al. 2024) showing generally positive effects of that scenario relative to the No Action Alternative (NAA) (e.g., Tables 1, 2, and 3 in Appendix 10A, "Winter-Run Chinook Salmon Life Cycle Model Results for Proposed Action for the Long-Term Operation of the Central Valley Project and State Water Project"). The results of the IOS and OBAN life cycle models for the same scenario also showed potential positive effects of this scenario relative to the NAA, for example greater spawner abundance (U.S. Bureau of Reclamation 2024:O-280) and greater female escapement (U.S. Bureau of Reclamation 2024:F.5-64).

Spring-Run Chinook Salmon

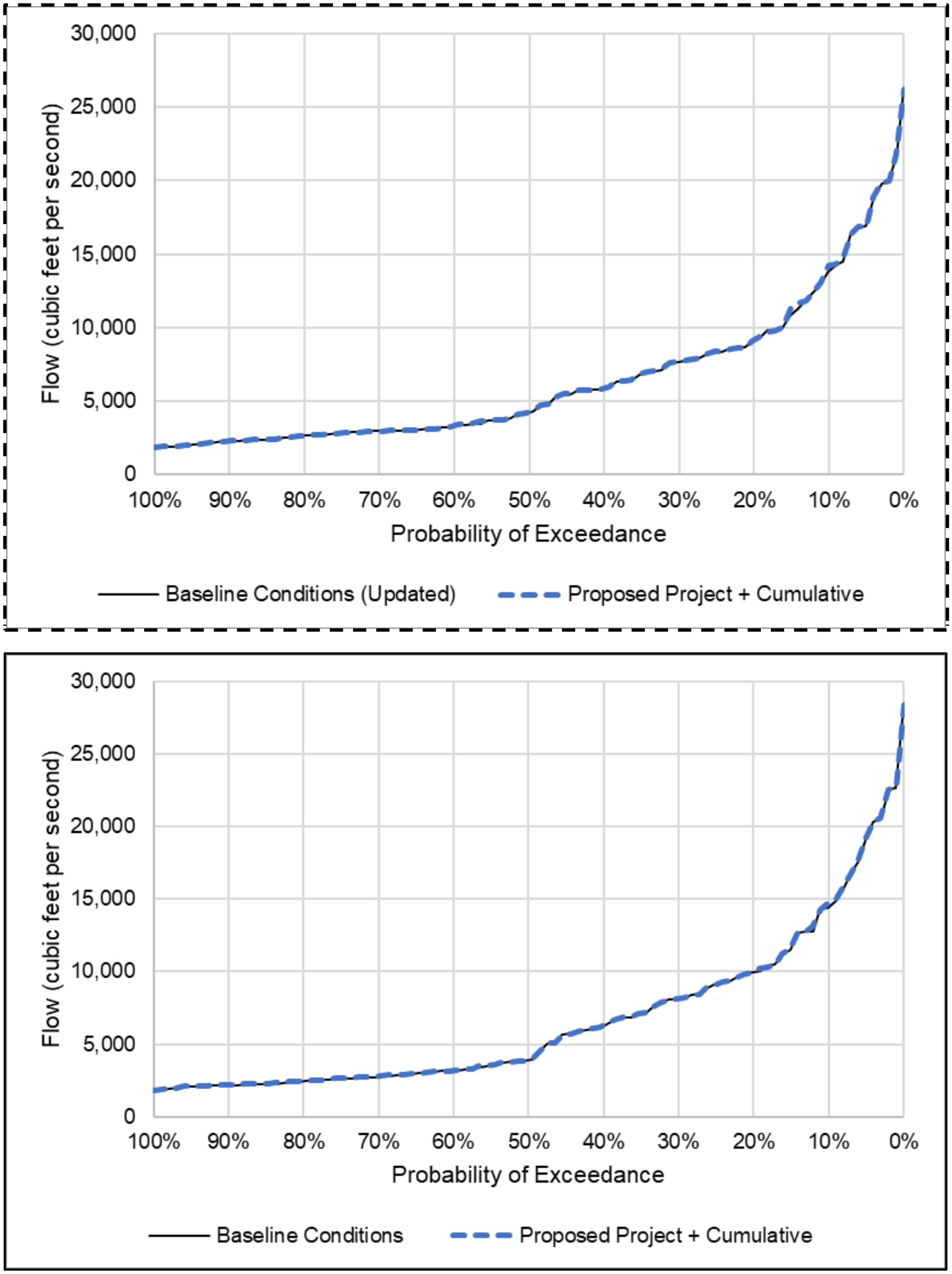
Differences in spring-run Chinook Salmon juvenile through-Delta survival between the Proposed Project plus Cumulative scenario and Baseline Conditions ~~(Updated)~~ scenarios would be limited, based on the STARS model during the ~October–May/June period (considering yearling and young-of-the-year) (see Tables 10-12 through 10-20 and Tables 10-22 through 10-30 in the winter-run Chinook Salmon analysis). Higher spring Sacramento River flow under the Proposed Project plus Cumulative scenario has the potential to positively affect spring-run Chinook Salmon outmigrants from the Sacramento River basin (Tables 10-18 and 10-19), albeit with relatively low statistical probability (Tables 10-28 and 10-29). Through-Delta survival under the Proposed Project plus Cumulative scenario would be similar to Baseline Conditions ~~(Updated)~~ for spring-run Chinook Salmon from the San Joaquin River Basin based on similar spring flows at Vernalis (Figures 10-52 through 10-55). Migration conditions would not greatly differ between scenarios for adult immigration, consistent with the discussion for spring-run Chinook Salmon provided in Chapter 6 (see also Freeport flow figures in the winter-run Chinook Salmon analysis above).





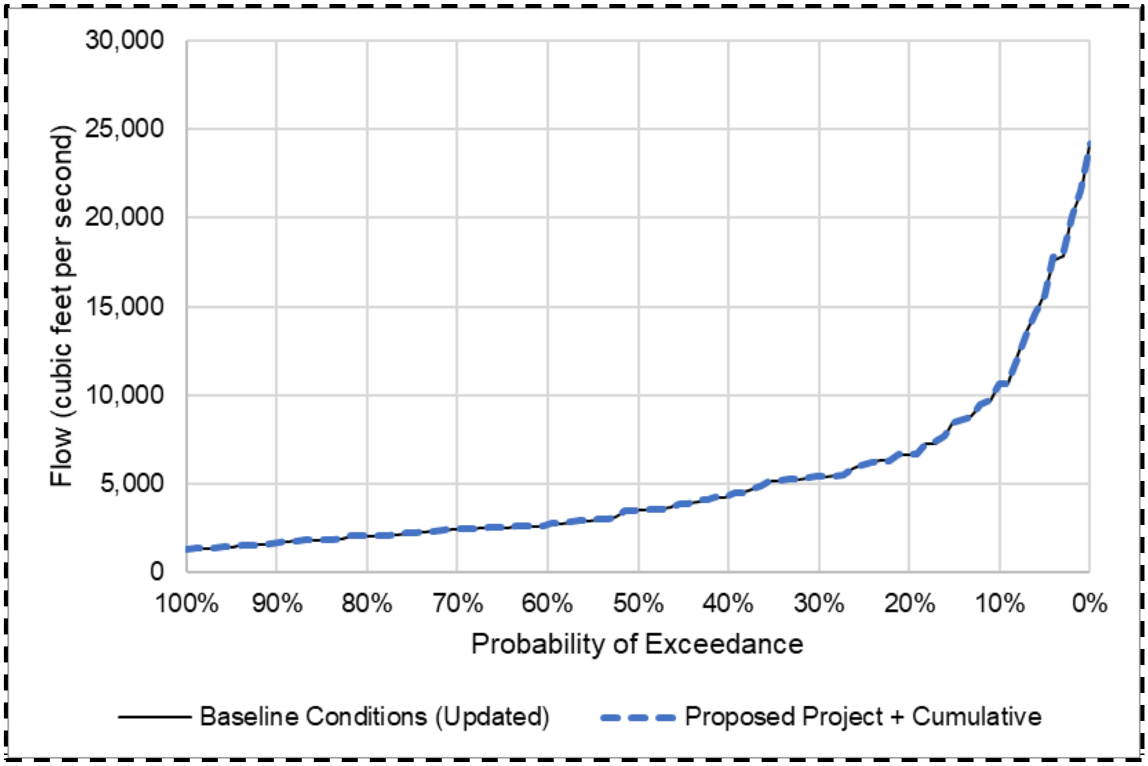
Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

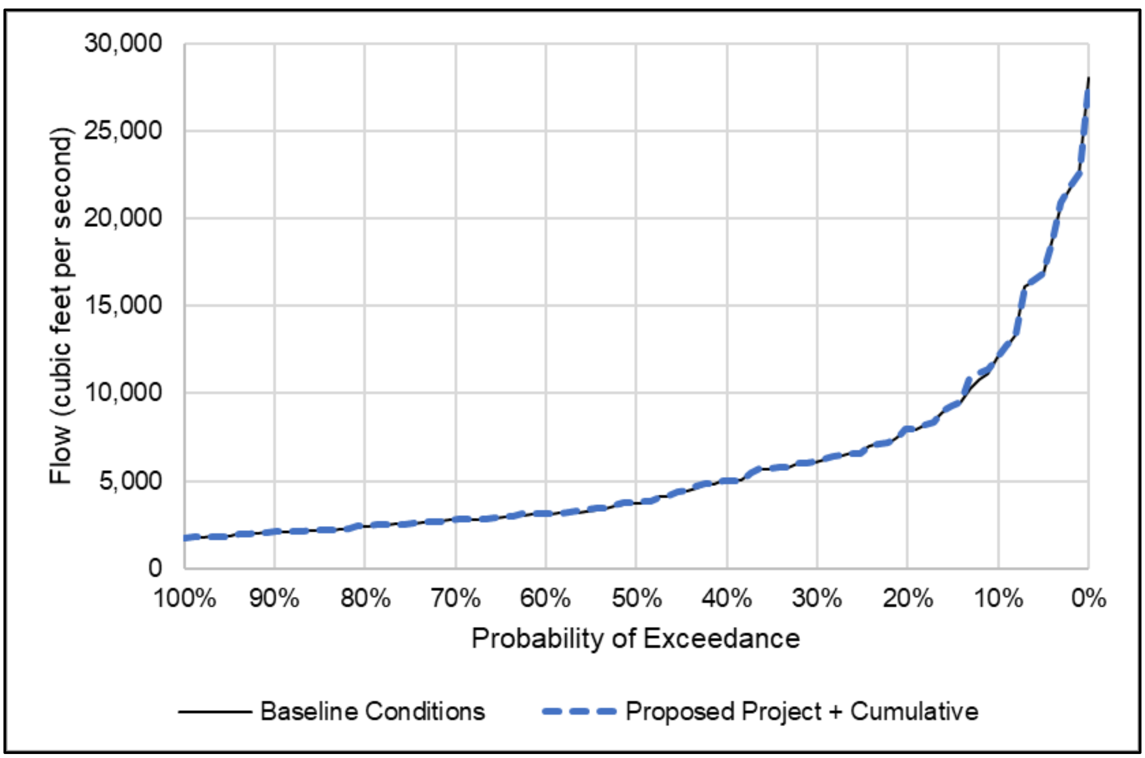
Figure 10-52. Mean Modeled San Joaquin River Flow at Vernalis for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, March



Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

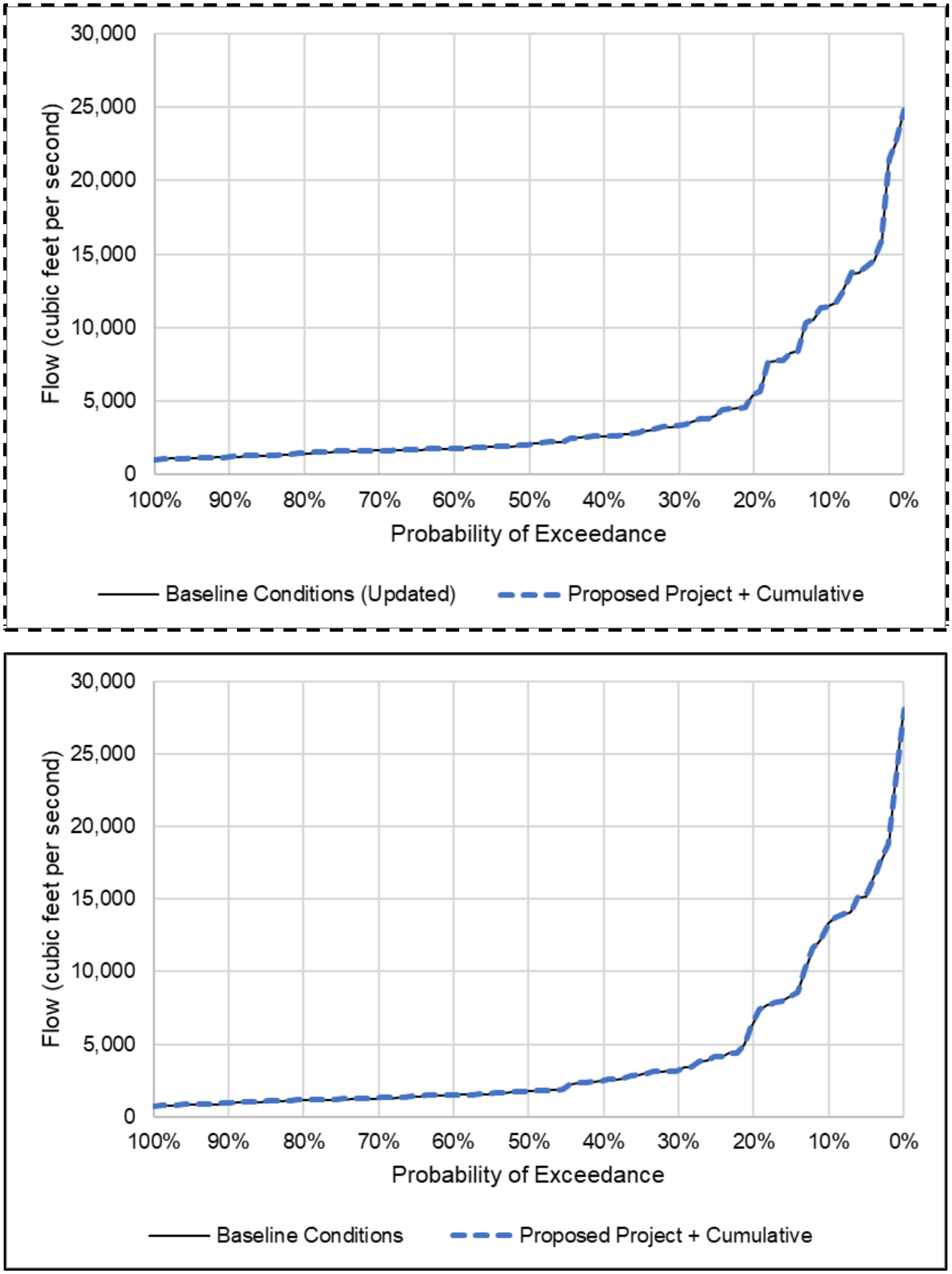
Figure 10-53. Mean Modeled San Joaquin River Flow at Vernalis for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, April





Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and <DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~ <DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-54. Mean Modeled San Joaquin River Flow at Vernalis for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, May



Source: ~~<DRAFT_TrendReport_MultiCalSim_rev10_LTOa.xlsm> and~~
~~<DRAFT_TrendReport_MultiCalSim_10v2_12av2_NoMacro_20240312.xlsx>~~
<DRAFT_TrendReport_MultiCalSim_rev12_DEIR_FEIR_1u_12av2_7.23.1.xlsx>

Figure 10-55. Mean Modeled San Joaquin River Flow at Vernalis for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios, June

The salvage-density method indicated that SWP and CVP exports during the main period of juvenile spring-run Chinook Salmon loss at the SWP and CVP south Delta export facilities generally would be appreciably greater under the Proposed Project plus Cumulative scenario relative to Baseline Conditions ~~(Updated)~~ (Tables ~~10-35 through 10-38~~ 10-39 through 10-46). This reflects greater spring exports under the Proposed Project plus Cumulative scenario relative to Baseline Conditions ~~(Updated)~~ and indicates the potential for greater entrainment of juvenile spring-run Chinook Salmon under the Proposed Project plus Cumulative scenario relative to Baseline Conditions ~~(Updated)~~. Entrainment risk to spring-run Chinook Salmon juveniles at both the SWP and CVP facilities would be limited by OMR management and other actions described in Chapter 2, "Project Description," and outlined further below for the CVP. Adult spring-run Chinook Salmon entrainment risk during the main March–May period of occurrence in the Delta would be similar to or higher under the Proposed Project plus Cumulative scenario, reflecting south Delta exports (see Figures 10-48, 10-49, and 10-50 in the winter-run Chinook Salmon analysis). As discussed in Chapter 6, "Aquatic Biological Resources," any differences in entrainment loss between the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ would be limited in terms of the numbers of fish involved (i.e., likely single digits).

Table ~~10-35~~ 10-39. Mean Number of Genetically Identified Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~66~~ 80	~~91 (39%)~~ 99 (23%)
Above Normal	N/A	~~(49%)~~ (62%)
Below Normal	~~54~~ 57	~~70 (31%)~~ 71 (25%)
Dry	~~23~~ 24	~~24 (5%)~~ 20 (-16%)
Critically Dry	10	~~13 (28%)~~ 12 (29%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2017–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-36~~ 10-41.

Table 10-40. Mean Number of Coded Wire Tagged Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	0 (0%)
Below Normal	1	1 (51%)
Dry	1	1 (-16%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table 10-42.

Table ~~10-36~~ 10-41. Mean Number of Genetically Identified Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	2	2 ~~(-2%)~~ (-3%)
Wet	Feb	5	5 ~~(2%)~~ (-2%)
Wet	Mar	9	~~9~~ 10 (4%)
Wet	Apr	0	0 (0%)
Wet	May	~~51~~ 64	~~76 (50%)~~ 82 (28%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	~~23~~ 24	~~20 (-15%)~~ 21 (-11%)
Below Normal	Apr	~~30~~ 33	50 ~~(66%)~~ (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)
Dry	Apr	~~23~~ 24	~~24 (5%)~~ 20 (-16%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	~~6~~ 5	~~7 (20%)~~ 6 (18%)
Critically Dry	May	4	~~5~~ 6 (41%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: Note: N/A indicates there were no Above Normal years in the historical record for the 2017–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table 10-42. Mean Number of Coded Wire Tagged Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	1	1 (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)
Dry	Apr	1	1 (-16%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-37~~ 10-43. Mean Number of Genetically Identified Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~56~~ 59	~~50 (-11%)~~ 55 (-8%)
Above Normal	N/A	~~(-17%)~~ (-22%)
Below Normal	~~11~~ 12	20 ~~(82%)~~ (68%)
Dry	4	~~6 (64%)~~ 5 (33%)
Critically Dry	~~9~~ 10	14 ~~(58%)~~ (49%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2017–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-38~~ 10-45.

Table 10-44. Mean Number of Coded Wire Tagged Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	0	0 (33%)
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table 10-46.

Table ~~10-38~~ 10-45. Mean Number of Genetically Identified Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~1~~ 2	~~1~~ 2 (-3%)
Wet	Feb	~~0~~ 5	~~0 (0%)~~ 5 (-2%)
Wet	Mar	~~8~~ 9	~~7 (-15%)~~ 10 (4%)
Wet	Apr	~~24~~ 0	~~18 (-21%)~~ 0 (0%)
Wet	May	~~13~~ 64	~~14 (3%)~~ 82 (28%)
Wet	Jun	~~10~~ 0	~~9 (-4%)~~ 0 (0%)
Wet	Jul	~~1~~ 0	~~1~~ 0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(0%)~~ (-5%)
Above Normal	Mar	N/A	~~(-29%)~~ (-9%)
Above Normal	Apr	N/A	~~(-28%)~~ (0%)
Above Normal	May	N/A	~~(0%)~~ (90%)
Above Normal	Jun	N/A	~~(-5%)~~ (0%)
Above Normal	Jul	N/A	~~(5%)~~ (0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	~~3~~ 24	~~2 (-12%)~~ 21 (-11%)
Below Normal	Apr	~~4~~ 33	~~6 (64%)~~ 50 (51%)
Below Normal	May	~~5~~ 0	~~12 (147%)~~ 0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)
Dry	Apr	~~4~~ 24	~~6 (64%)~~ 20 (-16%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	~~1~~ 0	~~1 (-5%)~~ 0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	~~4~~ 5	6 ~~(52%)~~ (18%)
Critically Dry	May	~~3~~ 4	6 ~~(82%)~~ (41%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: Note: N/A indicates there were no Above Normal years in the historical record for the 2017–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table 10-46. Mean Number of Coded Wire Tagged Spring-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Densit y

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	1	1 (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)
Dry	Apr	1	1 (-16%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)

Water Year Type	Month	Baseline Conditions	Proposed Project plus Cumulative
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: Note: N/A indicates there were no Above Normal years in the historical record for the 2010–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

The Proposed Action for the Long-Term Operation of the CVP and SWP includes criteria to limit the potential for south Delta entrainment of spring-run Chinook Salmon consistent with the Proposed Project, specifically Spring-Run Chinook Salmon and Surrogate Thresholds that include adjustment of OMR flows based on loss thresholds for Feather River Fish Hatchery spring-run Chinook Salmon juvenile and yearling late-fall-run Chinook Salmon surrogate juvenile loss. The Proposed Action for the Long-Term Operation of the CVP and SWP includes a number of measures beyond those described for the Proposed Project with the potential to affect spring-run Chinook Salmon.

- Sacramento River water temperature and storage management
- Sacramento River ramping rates
- Sacramento River minimum instream flows
- Sacramento River spring pulse flows
- Sacramento River fall and winter instream flows
- Sacramento River rice decomposition smoothing
- Sacramento River spawning and rearing habitat restoration
- Sacramento River habitat restoration and facility improvements
- Clear Creek seasonal operations
- Clear Creek ramping rates
- Clear Creek minimum instream flows
- Clear Creek water temperature management
- Clear Creek Spring Creek debris dam
- Clear Creek segregation weir
- Battle Creek Salmon and Steelhead Restoration Project
- Small screen program

- Delta Cross Channel gate closures
- Tracy Fish Collection Facility salvage operations

In consideration of the analyses presented above the Proposed Project plus Cumulative scenario would not have significant effects on through-Delta survival and entrainment. Entrainment could be higher under the Proposed Project plus Cumulative scenario, but population-level effects would be limited of operational criteria and because very few genetically identified spring-run Chinook Salmon likely would be entrained.

Other Species

Steelhead and Green Sturgeon are federally listed and the CVP Proposed Action includes protective criteria and would operate to take limits once the NMFS BiOp is issued for the CVP Proposed Action, limiting the potential effects on these species. The results from the salvage-density method indicated generally similar patterns to the analysis of the Proposed Project provided in Chapter 6 (Tables ~~10-39 through 10-106~~ 10-47 through 10-114). The salvage-density method suggested that species such as fall-run Chinook Salmon that have temporal overlap with the spring period of greater SWP and CVP south Delta exports would have greater entrainment risk under the Proposed Project plus Cumulative scenario than under Baseline Conditions ~~(Updated)~~ . However, such species would receive ancillary protection from listed fish entrainment protections for the Proposed Project and the CVP Proposed Action. The results of the STARS model previously discussed in the "Winter-Run Chinook Salmon" section indicate the potential for positive effects on fall-run Chinook Salmon emigrating from the Sacramento River basin as a result of Voluntary Agreement flows (albeit with low statistical probability). For species with spring outflow-abundance relationships discussed in Chapter 6 (i.e., White Sturgeon, Starry Flounder, Striped Bass, and American Shad), the Voluntary Agreements have the potential to increase abundance, albeit with the same uncertainties as discussed in Chapter 6.

Table ~~10-39~~ 10-47 . Mean Number of Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~22,353~~ 25,304	~~26,673 (19%)~~ 27,838 (10%)
Above Normal	N/A	~~(20%)~~ (26%)
Below Normal	~~3,689~~ 4,394	~~6,927 (88%)~~ 8,073 (84%)
Dry	~~4,095~~ 4,310	~~4,896 (20%)~~ 4,868 (13%)
Critically Dry	~~547~~ 553	~~714~~ 725 (31%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-40~~ 10-48 .

Table ~~10-40~~ 10-48. Mean Number of Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~1,105~~ 1,230	~~1,082 (-2%)~~ 1,197 (-3%)
Wet	Feb	~~2,939~~ 3,010	~~2,983 (2%)~~ 2,961 (-2%)
Wet	Mar	~~337~~ 367	~~349~~ 380 (4%)
Wet	Apr	~~456~~ 486	~~477 (5%)~~ 542 (11%)
Wet	May	~~9,030~~ 11,398	~~13,511 (50%)~~ 14,628 (28%)
Wet	Jun	~~8,405~~ 8,740	~~8,190 (-3%)~~ 8,056 (-8%)
Wet	Jul	12	~~12 (0%)~~ 11 (-1%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	~~69~~ 63	~~69~~ 63 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	8	8 ~~(-4%)~~ (-7%)
Below Normal	Mar	~~97~~ 98	~~83 (-15%)~~ 88 (-11%)
Below Normal	Apr	~~665~~ 722	~~1,100 (66%)~~ 1,092 (51%)
Below Normal	May	~~2,589~~ 3,229	~~5,432 (110%)~~ 6,579 (104%)
Below Normal	Jun	~~318~~ 325	~~292 (-8%)~~ 296 (-9%)
Below Normal	Jul	~~5~~ 4	5 ~~(0%)~~ (3%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	~~7~~ 6	~~7 (3%)~~ 6 (2%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Jan	0	0 (0%)
Dry	Feb	7	6 ~~(-5%)~~ (-7%)
Dry	Mar	~~83~~ 88	~~70 (-16%)~~ 74 (-16%)
Dry	Apr	~~1,832~~ 1,888	~~1,931 (5%)~~ 1,580 (-16%)
Dry	May	~~1,757~~ 1,972	~~2,483 (41%)~~ 2,857 (45%)
Dry	Jun	~~20~~ 22	23 ~~(13%)~~ (1%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~395~~ 334	~~383 (-3%)~~ 328 (-2%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	6	6 ~~(4%)~~ (-1%)
Critically Dry	Apr	~~246~~ 221	~~295 (20%)~~ 262 (18%)
Critically Dry	May	~~287~~ 319	~~405~~ 451 (41%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	7	7 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-41~~ 10-49. Mean Number of Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~9,282~~ 9,548	~~9,256 (0%)~~ 9,320 (-2%)
Above Normal	N/A	~~(-3%)~~ (-7%)
Below Normal	~~1,446~~ 1,582	~~2,676 (85%)~~ 2,750 (74%)
Dry	~~1,816~~ 1,979	~~3,453 (90%)~~ 3,384 (71%)
Critically Dry	~~333~~ 371	~~524 (57%)~~ 548 (48%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-42~~ 10-50.

Table ~~10-42~~ 10-50. Mean Number of Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~712~~ 687	~~693 (-3%)~~ 683 (-1%)
Wet	Feb	~~688~~ 701	~~687 (0%)~~ 697 (-1%)
Wet	Mar	~~171~~ 175	~~145 (-15%)~~ 156 (-11%)
Wet	Apr	~~82~~ 88	~~65 (-21%)~~ 78 (-12%)
Wet	May	~~4,730~~ 5,005	~~4,875 (3%)~~ 4,990 (0%)
Wet	Jun	~~2,845~~ 2,840	~~2,737 (-4%)~~ 2,664 (-6%)
Wet	Jul	~~35~~ 34	~~35 (0%)~~ 34 (2%)
Wet	Aug	2	2 ~~(0%)~~ (1%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	1	1 ~~(4%)~~ (2%)
Wet	Dec	~~16~~ 15	~~16 (-1%)~~ 15 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~7~~ 6	6 ~~(-7%)~~ (3%)
Below Normal	Feb	17	15 ~~(-8%)~~ (-11%)
Below Normal	Mar	~~133~~ 127	~~117 (-12%)~~ 98 (-23%)
Below Normal	Apr	~~417~~ 429	~~682 (64%)~~ 569 (33%)
Below Normal	May	~~694~~ 840	~~1,716 (147%)~~ 1,935 (130%)
Below Normal	Jun	~~177~~ 161	~~137 (-23%)~~ 125 (-22%)
Below Normal	Jul	2	1 (-19%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	5	5 ~~(-7%)~~ (3%)
Dry	Feb	15	~~14 (-8%)~~ 13 (-11%)
Dry	Mar	~~28~~ 27	~~24 (-12%)~~ 21 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~1,002~~ 1,032	~~1,640 (64%)~~ 1,367 (33%)
Dry	May	~~690~~ 834	~~1,704 (147%)~~ 1,922 (130%)
Dry	Jun	~~49~~ 44	~~38 (-23%)~~ 35 (-22%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~27~~ 22	~~27 (0%)~~ 22 (-1%)
Critically Dry	Jan	~~7~~ 6	~~7 (-5%)~~ 6 (1%)
Critically Dry	Feb	~~18~~ 17	~~17 (-2%)~~ 16 (-5%)
Critically Dry	Mar	8	8 ~~(-1%)~~ (1%)
Critically Dry	Apr	~~157~~ 164	~~239 (52%)~~ 241 (47%)
Critically Dry	May	~~136~~ 170	~~246 (82%)~~ 271 (59%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	~~7~~ 6	~~7~~ 6 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-43~~ 10-51. Mean Number of Late-Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~1,456~~ 1,468	1,448 (-1%)
Above Normal	N/A	~~(3%)~~ (-3%)
Below Normal	~~430~~ 417	~~418 (-3%)~~ 394 (-5%)
Dry	~~867~~ 736	~~841 (-3%)~~ 721 (-2%)
Critically Dry	~~491~~ 459	~~473 (-4%)~~ 430 (-6%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-44~~ 10-52.

Table ~~10-44~~ 10-52. Mean Number of Late-Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~599~~ 667	~~586 (-2%)~~ 649 (-3%)
Wet	Feb	~~95~~ 97	96 ~~(2%)~~ (-2%)
Wet	Mar	~~9~~ 10	~~9~~ 10 (4%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	~~753~~ 695	~~757~~ 693 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	171	~~163 (-4%)~~ 157 (-8%)
Below Normal	Feb	~~120~~ 123	~~115 (-4%)~~ 114 (-7%)
Below Normal	Mar	22	~~18 (-15%)~~ 20 (-11%)
Below Normal	Apr	0	1 ~~(66%)~~ (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	~~118~~ 101	~~121 (3%)~~ 103 (2%)
Dry	Jan	25	~~25 (-2%)~~ 22 (-13%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~842~~ 711	~~816 (-3%)~~ 699 (-2%)
Critically Dry	Jan	~~115~~ 102	~~114 (-2%)~~ 89 (-13%)
Critically Dry	Feb	~~91~~ 88	~~79 (-13%)~~ 78 (-11%)
Critically Dry	Mar	10	~~11 (4%)~~ 10 (-1%)
Critically Dry	Apr	~~15~~ 14	~~18 (20%)~~ 16 (18%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	~~259~~ 245	~~251~~ 237 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-45~~ 10-53 . Mean Number of Late-Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~288~~ 269	~~285 (-1%)~~ 272 (1%)
Above Normal	N/A	~~(5%)~~ (0%)
Below Normal	~~66~~ 60	~~62 (-6%)~~ 60 (0%)
Dry	~~109~~ 90	~~108 (-1%)~~ 90 (0%)
Critically Dry	~~131~~ 112	~~125 (-4%)~~ 111 (-1%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-46~~ 10-54 .

Table ~~10-46~~ 10-54. Mean Number of Late-Fall-run Chinook Salmon Juveniles Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~69~~ 67	~~68 (-3%)~~ 67 (-1%)
Wet	Feb	2	2 ~~(0%)~~ (-1%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	1	1 ~~(3%)~~ (6%)
Wet	Nov	1	1 ~~(4%)~~ (2%)
Wet	Dec	~~215~~ 198	~~214 (-1%)~~ 202 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~49~~ 44	45 ~~(-7%)~~ (3%)
Below Normal	Feb	8	~~8 (-8%)~~ 7 (-11%)
Below Normal	Mar	2	1 ~~(-12%)~~ (-23%)
Below Normal	Apr	0	0 ~~(64%)~~ (33%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	~~7~~ 6	~~7 (0%)~~ 6 (-1%)
Dry	Jan	~~16~~ 14	~~15 (-7%)~~ 14 (3%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~93~~ 76	~~93 (0%)~~ 76 (-1%)
Critically Dry	Jan	~~73~~ 59	~~69 (-5%)~~ 60 (1%)
Critically Dry	Feb	~~12~~ 11	~~12 (-2%)~~ 11 (-5%)
Critically Dry	Mar	6	6 ~~(-1%)~~ (1%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	~~40~~ 36	~~38~~ 35 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-47~~ 10-55. Mean Number of Steelhead Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~5,452~~ 5,830	~~5,787 (6%)~~ 6,112 (5%)
Above Normal	N/A	~~(5%)~~ (8%)
Below Normal	~~3,992~~ 4,124	~~4,087~~ 4,219 (2%)
Dry	~~2,092~~ 2,177	~~2,014 (-4%)~~ 1,971 (-9%)
Critically Dry	~~819~~ 774	~~863 (5%)~~ 800 (3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-48~~ 10-56.

Table ~~10-48~~ 10-56. Mean Number of Steelhead Lost (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~283~~ 315	~~277 (-2%)~~ 307 (-3%)
Wet	Feb	~~2,225~~ 2,278	~~2,258 (2%)~~ 2,241 (-2%)
Wet	Mar	~~985~~ 1,071	~~1,021~~ 1,111 (4%)
Wet	Apr	~~1,229~~ 1,310	~~1,287 (5%)~~ 1,461 (11%)
Wet	May	~~442~~ 558	~~661 (50%)~~ 716 (28%)
Wet	Jun	~~265~~ 275	~~258 (-3%)~~ 254 (-8%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	6	~~8 (20%)~~ 7 (22%)
Wet	Oct	4	4 ~~(-3%)~~ (-1%)
Wet	Nov	5	5 ~~(2%)~~ (-1%)
Wet	Dec	7	~~8~~ 7 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	289	~~277 (-4%)~~ 266 (-8%)
Below Normal	Feb	~~1,485~~ 1,524	~~1,424 (-4%)~~ 1,415 (-7%)
Below Normal	Mar	~~1,623~~ 1,645	~~1,384 (-15%)~~ 1,466 (-11%)
Below Normal	Apr	~~347~~ 377	~~574 (66%)~~ 570 (51%)
Below Normal	May	~~168~~ 210	~~353 (110%)~~ 428 (104%)
Below Normal	Jun	~~65~~ 66	~~59 (-8%)~~ 60 (-9%)
Below Normal	Jul	7	7 ~~(0%)~~ (3%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	~~8~~ 7	~~8 (3%)~~ 7 (2%)
Dry	Jan	95	~~94 (-2%)~~ 83 (-13%)
Dry	Feb	~~315~~ 318	~~299 (-5%)~~ 295 (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~938~~ 990	~~786~~ 832 (-16%)
Dry	Apr	~~516~~ 532	~~544 (5%)~~ 445 (-16%)
Dry	May	~~144~~ 161	~~203 (41%)~~ 234 (45%)
Dry	Jun	~~38~~ 42	~~44 (13%)~~ 43 (1%)
Dry	Jul	~~14~~ 11	~~14 (-1%)~~ 12 (4%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	6	6 (0%)
Dry	Dec	~~25~~ 21	~~24 (-3%)~~ 21 (-2%)
Critically Dry	Jan	~~62~~ 55	~~61 (-2%)~~ 48 (-13%)
Critically Dry	Feb	~~225~~ 218	~~196 (-13%)~~ 193 (-11%)
Critically Dry	Mar	~~216~~ 207	~~225 (4%)~~ 205 (-1%)
Critically Dry	Apr	~~241~~ 217	~~290 (20%)~~ 257 (18%)
Critically Dry	May	~~43~~ 48	~~61 (41%)~~ 68 (41%)
Critically Dry	Jun	~~7~~ 5	6 ~~(-15%)~~ (16%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	~~3~~ 4	~~3 (0%)~~ 4 (-1%)
Critically Dry	Dec	~~22~~ 20	~~21 (-3%)~~ 20 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-49~~ 10-57. Mean Number of Steelhead Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~313~~ 317	~~303~~ 309 (-3%)
Above Normal	N/A	~~(-5%)~~ (-10%)
Below Normal	~~904~~ 892	~~903 (0%)~~ 833 (-7%)
Dry	~~515~~ 508	~~558 (8%)~~ 502 (-1%)
Critically Dry	~~244~~ 239	~~278 (14%)~~ 271 (13%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-50~~ 10-58.

Table ~~10-50~~ 10-58. Mean Number of Steelhead Lost (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~47~~ 46	~~46 (-3%)~~ 45 (-1%)
Wet	Feb	~~145~~ 148	~~145 (0%)~~ 147 (-1%)
Wet	Mar	~~39~~ 40	~~33 (-15%)~~ 36 (-11%)
Wet	Apr	~~12~~ 13	~~10 (-21%)~~ 12 (-12%)
Wet	May	~~35~~ 37	~~36 (3%)~~ 37 (0%)
Wet	Jun	31	~~30 (-4%)~~ 29 (-6%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	1	1 ~~(0%)~~ (-1%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	2	2 ~~(-1%)~~ (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~45~~ 40	42 ~~(-7%)~~ (3%)
Below Normal	Feb	~~483~~ 481	~~445 (-8%)~~ 426 (-11%)
Below Normal	Mar	~~279~~ 268	~~247 (-12%)~~ 207 (-23%)
Below Normal	Apr	~~62~~ 64	~~101 (64%)~~ 84 (33%)
Below Normal	May	~~24~~ 29	~~58 (147%)~~ 66 (130%)
Below Normal	Jun	~~11~~ 10	8 ~~(-23%)~~ (-22%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	~~20~~ 18	18 ~~(-7%)~~ (3%)
Dry	Feb	112	~~104 (-8%)~~ 99 (-11%)
Dry	Mar	~~266~~ 256	~~235 (-12%)~~ 198 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~73~~ 76	~~120 (64%)~~ 100 (33%)
Dry	May	~~26~~ 32	~~65 (147%)~~ 73 (130%)
Dry	Jun	~~8~~ 7	6 ~~(-23%)~~ (-22%)
Dry	Jul	1	1 (-19%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	3	3 (3%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~5~~ 4	~~5 (0%)~~ 4 (-1%)
Critically Dry	Jan	~~16~~ 13	~~15 (-5%)~~ 13 (1%)
Critically Dry	Feb	~~89~~ 84	~~87 (-2%)~~ 80 (-5%)
Critically Dry	Mar	~~72~~ 69	~~71 (-1%)~~ 70 (1%)
Critically Dry	Apr	~~47~~ 49	~~71 (52%)~~ 72 (47%)
Critically Dry	May	~~16~~ 20	~~29 (82%)~~ 32 (59%)
Critically Dry	Jun	0	0 ~~(-23%)~~ (-28%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	1	1 ~~(3%)~~ (8%)
Critically Dry	Nov	0	0 ~~(-4%)~~ (7%)
Critically Dry	Dec	3	3 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide loss density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-51~~ 10-59. Mean Number of Green Sturgeon Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	1	1 (4%)
Above Normal	N/A	~~(-12%)~~ (-9%)
Below Normal	1	1 ~~(-4%)~~ (-8%)
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-52~~ 10-60.

Table ~~10-52~~ 10-60. Mean Number of Green Sturgeon Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	1	1 (4%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	1	1 ~~(-4%)~~ (-8%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-53~~ 10-61 . Mean Number of Green Sturgeon Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	7	7 ~~(-4%)~~ (-6%)
Above Normal	N/A	~~(-5%)~~ (-10%)
Below Normal	0	0 (0%)
Dry	3	2 (-21%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-54~~ 10-62 .

Table ~~10-54~~ 10-62. Mean Number of Green Sturgeon Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	7	7 ~~(-4%)~~ (-6%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	~~2~~ 1	1 ~~(-23%)~~ (-22%)
Dry	Jul	1	1 (-19%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-55~~ 10-63. Mean Number of White Sturgeon Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~19~~ 21	~~20 (4%)~~ 21 (2%)
Above Normal	N/A	~~(1%)~~ (2%)
Below Normal	~~12~~ 11	~~12 (-3%)~~ 11 (-4%)
Dry	4	4 ~~(16%)~~ (12%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-56~~ 10-64.

Table ~~10-56~~ 10-64. Mean Number of White Sturgeon Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~5~~ 6	~~5 (-2%)~~ 6 (-3%)
Wet	Feb	1	1 ~~(2%)~~ (-2%)
Wet	Mar	3	3 (4%)
Wet	Apr	0	0 (0%)
Wet	May	~~1~~ 2	2 ~~(50%)~~ (28%)
Wet	Jun	3	~~3 (-3%)~~ 2 (-8%)
Wet	Jul	4	4 ~~(0%)~~ (-1%)
Wet	Aug	3	3 (5%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	1	1 ~~(-15%)~~ (-11%)
Below Normal	Apr	0	0 ~~(66%)~~ (51%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	5	4 ~~(-8%)~~ (-9%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	2	2 ~~(1%)~~ (-1%)
Below Normal	Dec	3	3 ~~(3%)~~ (2%)
Dry	Jan	2	2 ~~(-2%)~~ (-13%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	~~1~~ 2	2 ~~(41%)~~ (45%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-57~~ 10-65. Mean Number of White Sturgeon Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~85~~ 84	~~84~~ 83 (-1%)
Above Normal	N/A	~~(-3%)~~ (0%)
Below Normal	18	~~20~~ 19 (6%)
Dry	1	1 ~~(7%)~~ (5%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-58~~ 10-66.

Table ~~10-58~~ 10-66 . Mean Number of White Sturgeon Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	6	6 ~~(3%)~~ (0%)
Wet	Jun	~~25~~ 24	~~24 (-4%)~~ 23 (-6%)
Wet	Jul	~~16~~ 15	~~16 (0%)~~ 15 (2%)
Wet	Aug	22	22 ~~(0%)~~ (1%)
Wet	Sep	13	13 ~~(0%)~~ (-1%)
Wet	Oct	1	1 ~~(3%)~~ (6%)
Wet	Nov	3	3 ~~(4%)~~ (2%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	2	1 ~~(-8%)~~ (-11%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	1	1 ~~(147%)~~ (130%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	14	~~15~~ 14 (3%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	2	2 ~~(0%)~~ (-1%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	1	1 ~~(7%)~~ (5%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-59~~ 10-67. Mean Number of Lamprey Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~883~~ 961	~~882 (0%)~~ 944 (-2%)
Above Normal	N/A	(-2%)
Below Normal	~~171~~ 174	~~169~~ 171 (-2%)
Dry	~~124~~ 121	~~123 (-1%)~~ 112 (-7%)
Critically Dry	~~128~~ 123	~~147 (14%)~~ 142 (15%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-60~~ 10-68.

Table ~~10-60~~ 10-68. Mean Number of Lamprey Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~573~~ 637	~~560 (-2%)~~ 620 (-3%)
Wet	Feb	~~118~~ 120	~~119 (2%)~~ 119 (-2%)
Wet	Mar	~~20~~ 21	~~20~~ 22 (4%)
Wet	Apr	7	~~7 (5%)~~ 8 (11%)
Wet	May	~~22~~ 28	~~33 (50%)~~ 36 (28%)
Wet	Jun	~~102~~ 106	~~100 (-3%)~~ 98 (-8%)
Wet	Jul	23	23 ~~(0%)~~ (-1%)
Wet	Aug	8	9 (5%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	10	10 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	55	~~52 (-4%)~~ 50 (-8%)
Below Normal	Feb	1	1 ~~(-4%)~~ (-7%)
Below Normal	Mar	30	~~25 (-15%)~~ 27 (-11%)
Below Normal	Apr	4 5	7 ~~(66%)~~ (51%)
Below Normal	May	~~5~~ 7	~~11 (110%)~~ 14 (104%)
Below Normal	Jun	~~58~~ 59	~~53 (-8%)~~ 54 (-9%)
Below Normal	Jul	18	18 ~~(0%)~~ (3%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	14	13 ~~(-5%)~~ (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~25~~ 26	~~21~~ 22 (-16%)
Dry	Apr	~~33~~ 34	~~34 (5%)~~ 28 (-16%)
Dry	May	~~5~~ 6	~~7 (41%)~~ 8 (45%)
Dry	Jun	5	5 ~~(13%)~~ (1%)
Dry	Jul	~~7~~ 5	~~7 (-1%)~~ 6 (4%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	~~37~~ 31	~~36 (-3%)~~ 31 (-2%)
Critically Dry	Jan	4	~~4 (-2%)~~ 3 (-13%)
Critically Dry	Feb	~~23~~ 22	20 ~~(-13%)~~ (-11%)
Critically Dry	Mar	22	~~23 (4%)~~ 21 (-1%)
Critically Dry	Apr	~~33~~ 30	~~40 (20%)~~ 35 (18%)
Critically Dry	May	~~36~~ 39	~~50~~ 56 (41%)
Critically Dry	Jun	~~5~~ 4	4 ~~(-15%)~~ (16%)
Critically Dry	Jul	~~3~~ 1	~~3 (8%)~~ 1 (-2%)
Critically Dry	Aug	~~1~~ 0	~~1 (0%)~~ 0 (-1%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	2	2 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-61~~ 10-69. Mean Number of Lamprey Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~7,093~~ 6,974	~~6,884 (-3%)~~ 6,878 (-1%)
Above Normal	N/A	~~(-4%)~~ (-6%)
Below Normal	~~1,473~~ 1,336	~~1,378 (-6%)~~ 1,326 (-1%)
Dry	~~1,834~~ 1,608	~~1,896 (3%)~~ 1,624 (1%)
Critically Dry	~~1,359~~ 1,238	~~1,334~~ 1,216 (-2%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-62~~ 10-70.

Table ~~10-62~~ 10-70. Mean Number of Lamprey Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~4,683~~ 4,519	~~4,561 (-3%)~~ 4,496 (-1%)
Wet	Feb	~~1,716~~ 1,750	~~1,714 (0%)~~ 1,740 (-1%)
Wet	Mar	~~505~~ 516	~~428 (-15%)~~ 462 (-11%)
Wet	Apr	~~20~~ 21	~~16 (-21%)~~ 19 (-12%)
Wet	May	~~17~~ 18	18 ~~(3%)~~ (0%)
Wet	Jun	98	~~94 (-4%)~~ 92 (-6%)
Wet	Jul	~~15~~ 14	15 ~~(0%)~~ (2%)
Wet	Aug	~~9~~ 8	~~9 (0%)~~ 8 (1%)
Wet	Sep	1	1 ~~(0%)~~ (-1%)
Wet	Oct	1	1 ~~(3%)~~ (6%)
Wet	Nov	0	0 (0%)
Wet	Dec	~~28~~ 26	~~28 (-1%)~~ 26 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~1,166~~ 1,038	~~1,078 (-7%)~~ 1,069 (3%)
Below Normal	Feb	32	~~29 (-8%)~~ 28 (-11%)
Below Normal	Mar	~~224~~ 216	~~199 (-12%)~~ 167 (-23%)
Below Normal	Apr	~~32~~ 33	~~53 (64%)~~ 44 (33%)
Below Normal	May	2	5 ~~(147%)~~ (130%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	~~15~~ 14	~~12~~ 11 (-19%)
Below Normal	Aug	1	1 ~~(-18%)~~ (-19%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	~~123~~ 109	~~114 (-7%)~~ 113 (3%)
Dry	Feb	129	~~119 (-8%)~~ 114 (-11%)
Dry	Mar	~~185~~ 177	~~163 (-12%)~~ 137 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~106~~ 110	~~174 (64%)~~ 145 (33%)
Dry	May	~~39~~ 47	~~96 (147%)~~ 108 (130%)
Dry	Jun	~~85~~ 77	~~66 (-23%)~~ 60 (-22%)
Dry	Jul	~~10~~ 9	~~8~~ 7 (-19%)
Dry	Aug	2	~~2 (-18%)~~ 1 (-19%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	5	~~6 (7%)~~ 5 (5%)
Dry	Dec	~~1,150~~ 943	~~1,149 (0%)~~ 933 (-1%)
Critically Dry	Jan	~~377~~ 307	~~359 (-5%)~~ 311 (1%)
Critically Dry	Feb	~~851~~ 805	~~832 (-2%)~~ 766 (-5%)
Critically Dry	Mar	~~46~~ 44	~~45 (-1%)~~ 44 (1%)
Critically Dry	Apr	~~29~~ 30	~~44 (52%)~~ 45 (47%)
Critically Dry	May	~~1~~ 2	~~2 (82%)~~ 3 (59%)
Critically Dry	Jun	5	~~4 (-23%)~~ 3 (-28%)
Critically Dry	Jul	2	1 ~~(-24%)~~ (-30%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	2	2 ~~(3%)~~ (8%)
Critically Dry	Nov	1	1 ~~(-4%)~~ (7%)
Critically Dry	Dec	~~45~~ 41	~~43~~ 39 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-63~~ 10-71. Mean Number of Sacramento Hitch Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	1	~~1 (5%)~~ 2 (11%)
Above Normal	N/A	~~(83%)~~ (73%)
Below Normal	~~8~~ 7	7 ~~(-1%)~~ (1%)
Dry	1	1 ~~(3%)~~ (8%)
Critically Dry	~~1~~ 0	~~1 (5%)~~ 0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-64~~ 10-72.

Table ~~10-64~~ 10-72 . Mean Number of Sacramento Hitch Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	1	~~1 (5%)~~ 2 (11%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 ~~(-15%)~~ (-11%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	1	1 ~~(-8%)~~ (-9%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	4 3	4 ~~(2%)~~ (7%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	2	2 ~~(1%)~~ (-1%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	1	1 ~~(3%)~~ <u>(8%)</u>
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-65~~ <u>10-73</u>. Mean Number of Sacramento Hitch Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	3	~~2 (-21%)~~ <u>3 (-12%)</u>
Above Normal	N/A	~~(-28%)~~ <u>(-34%)</u>
Below Normal	1	1 ~~(-10%)~~ <u>(-16%)</u>
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-66~~ <u>10-74</u>.

Table ~~10-66~~ 10-74. Mean Number of Sacramento Hitch Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	3	~~2 (-21%)~~ 3 (-12%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 ~~(-7%)~~ (3%)
Below Normal	Feb	0	0 ~~(-8%)~~ (-11%)
Below Normal	Mar	1	1 ~~(-12%)~~ (-23%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-67~~ <u>10-75</u> . Mean Number of Sacramento Splittail Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~648,925~~ <u>766,645</u>	~~855,008 (32%)~~ <u>904,683 (18%)</u>
Above Normal	N/A	~~(39%)~~ <u>(48%)</u>
Below Normal	~~6,735~~ <u>6,782</u>	~~6,752 (0%)~~ <u>6,840 (1%)</u>
Dry	~~577~~ <u>594</u>	~~614 (6%)~~ <u>596 (0%)</u>
Critically Dry	~~257~~ <u>237</u>	~~247 (-4%)~~ <u>231 (-2%)</u>

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-68~~ <u>10-76</u> .

Table ~~10-68~~ 10-76. Mean Number of Sacramento Splittail Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~498~~ 555	~~488 (-2%)~~ 540 (-3%)
Wet	Feb	~~727~~ 744	~~738 (2%)~~ 732 (-2%)
Wet	Mar	~~257~~ 279	~~266~~ 290 (4%)
Wet	Apr	~~1,927~~ 2,053	~~2,017 (5%)~~ 2,289 (11%)
Wet	May	~~422,516~~ 533,278	~~632,142 (50%)~~ 684,417 (28%)
Wet	Jun	~~163,952~~ 170,485	~~159,770 (-3%)~~ 157,148 (-8%)
Wet	Jul	~~53,441~~ 53,671	~~53,680 (0%)~~ 53,367 (-1%)
Wet	Aug	~~5,308~~ 5,304	~~5,566~~ 5,579 (5%)
Wet	Sep	~~223~~ 204	~~267 (20%)~~ 250 (22%)
Wet	Oct	11	11 ~~(-3%)~~ (-1%)
Wet	Nov	~~10~~ 9	~~10 (2%)~~ 9 (-1%)
Wet	Dec	~~54~~ 50	~~54~~ 50 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	37	~~36 (-4%)~~ 34 (-8%)
Below Normal	Feb	~~94~~ 96	~~90 (-4%)~~ 89 (-7%)
Below Normal	Mar	~~146~~ 148	~~124 (-15%)~~ 132 (-11%)
Below Normal	Apr	~~62~~ 68	~~103 (66%)~~ 102 (51%)
Below Normal	May	~~304~~ 380	~~638 (110%)~~ 773 (104%)
Below Normal	Jun	~~4,016~~ 4,095	~~3,681 (-8%)~~ 3,730 (-9%)
Below Normal	Jul	~~1,012~~ 981	~~1,012 (0%)~~ 1,010 (3%)
Below Normal	Aug	~~48~~ 40	~~49 (2%)~~ 43 (7%)
Below Normal	Sep	~~13~~ 10	~~13 (-1%)~~ 9 (-8%)
Below Normal	Oct	~~154~~ 145	~~149~~ 141 (-3%)
Below Normal	Nov	~~767~~ 712	~~773 (1%)~~ 706 (-1%)
Below Normal	Dec	~~81~~ 70	~~83 (3%)~~ 71 (2%)
Dry	Jan	2	~~2 (-2%)~~ 1 (-13%)
Dry	Feb	~~30~~ 31	~~29 (-5%)~~ 28 (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~122~~ 129	~~102~~ 108 (-16%)
Dry	Apr	~~147~~ 151	~~155 (5%)~~ 127 (-16%)
Dry	May	~~95~~ 107	~~134 (41%)~~ 154 (45%)
Dry	Jun	~~86~~ 95	~~98 (13%)~~ 96 (1%)
Dry	Jul	~~43~~ 34	~~43 (-1%)~~ 36 (4%)
Dry	Aug	~~1~~ 0	~~1 (12%)~~ 0 (25%)
Dry	Sep	~~5~~ 4	~~5 (10%)~~ 4 (5%)
Dry	Oct	1	1 ~~(3%)~~ (8%)
Dry	Nov	~~29~~ 28	~~29~~ 28 (0%)
Dry	Dec	~~16~~ 13	~~15 (-3%)~~ 13 (-2%)
Critically Dry	Jan	~~32~~ 29	~~32 (-2%)~~ 25 (-13%)
Critically Dry	Feb	~~63~~ 61	~~55 (-13%)~~ 54 (-11%)
Critically Dry	Mar	14	~~15 (4%)~~ 14 (-1%)
Critically Dry	Apr	~~8~~ 7	~~10 (20%)~~ 9 (18%)
Critically Dry	May	~~6~~ 7	~~8~~ 9 (41%)
Critically Dry	Jun	~~29~~ 22	~~24 (-15%)~~ 25 (16%)
Critically Dry	Jul	~~5~~ 2	~~5 (8%)~~ 2 (-2%)
Critically Dry	Aug	4 1	~~4 (0%)~~ 1 (-1%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	6	~~6 (2%)~~ 7 (10%)
Critically Dry	Nov	~~13~~ 15	~~13 (0%)~~ 14 (-1%)
Critically Dry	Dec	~~77~~ 73	~~75~~ 71 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-69~~ 10-77. Mean Number of Sacramento Splittail Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~7,597,689~~ 7,975,961	~~7,762,078 (2%)~~ 7,895,718 (-1%)
Above Normal	N/A	~~(-1%)~~ (-6%)
Below Normal	~~35,360~~ 39,397	~~68,559 (94%)~~ 75,437 (91%)
Dry	~~1,719~~ 1,566	~~1,427 (-17%)~~ 1,317 (-16%)
Critically Dry	24	~~25 (7%)~~ 26 (10%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-70~~ 10-78.

Table ~~10-70~~ 10-78. Mean Number of Sacramento Splittail Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~29~~ 28	28 ~~(-3%)~~ (-1%)
Wet	Feb	20	20 ~~(0%)~~ (-1%)
Wet	Mar	26	~~22 (-15%)~~ 24 (-11%)
Wet	Apr	~~6,333~~ 6,801	~~4,978 (-21%)~~ 6,000 (-12%)
Wet	May	~~6,563,892~~ 6,945,670	~~6,765,957 (3%)~~ 6,924,496 (0%)
Wet	Jun	~~959,415~~ 957,717	~~922,929 (-4%)~~ 898,162 (-6%)
Wet	Jul	~~65,104~~ 62,875	~~65,275 (0%)~~ 64,140 (2%)
Wet	Aug	~~2,567~~ 2,527	~~2,565 (0%)~~ 2,551 (1%)
Wet	Sep	~~260~~ 258	~~259 (0%)~~ 256 (-1%)
Wet	Oct	~~16~~ 15	~~17 (3%)~~ 16 (6%)
Wet	Nov	~~5~~ 4	~~5 (4%)~~ 5 (2%)
Wet	Dec	~~23~~ 21	~~23 (-1%)~~ 21 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~39~~ 35	~~37 (-7%)~~ 36 (3%)
Below Normal	Feb	~~45~~ 44	~~41 (-8%)~~ 39 (-11%)
Below Normal	Mar	~~93~~ 89	~~82 (-12%)~~ 69 (-23%)
Below Normal	Apr	10	~~16 (64%)~~ 13 (33%)
Below Normal	May	~~24,230~~ 29,311	~~59,875 (147%)~~ 67,517 (130%)
Below Normal	Jun	~~10,153~~ 9,202	~~7,852 (-23%)~~ 7,178 (-22%)
Below Normal	Jul	~~709~~ 629	~~575~~ 509 (-19%)
Below Normal	Aug	~~17~~ 14	~~13 (-18%)~~ 11 (-19%)
Below Normal	Sep	~~18~~ 17	~~19 (3%)~~ 17 (0%)
Below Normal	Oct	36	~~38~~ 37 (3%)
Below Normal	Nov	8	~~9 (7%)~~ 8 (5%)
Below Normal	Dec	~~3~~ 2	~~3 (0%)~~ 2 (-1%)
Dry	Jan	1	1 ~~(-7%)~~ (3%)
Dry	Feb	1	1 ~~(-8%)~~ (-11%)
Dry	Mar	~~19~~ 18	~~17 (-12%)~~ 14 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	8	~~12 (64%)~~ 10 (33%)
Dry	May	~~42~~ 51	~~104 (147%)~~ 117 (130%)
Dry	Jun	~~1,288~~ 1,167	~~996 (-23%)~~ 911 (-22%)
Dry	Jul	~~337~~ 299	~~273~~ 242 (-19%)
Dry	Aug	4	~~4 (-18%)~~ 3 (-19%)
Dry	Sep	2	~~2 (3%)~~ 2 (0%)
Dry	Oct	2	2 (3%)
Dry	Nov	10	10 ~~(7%)~~ (5%)
Dry	Dec	~~5~~ 4	~~5 (0%)~~ 4 (-1%)
Critically Dry	Jan	~~9~~ 7	~~9 (-5%)~~ 7 (1%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	1	1 ~~(-1%)~~ (1%)
Critically Dry	Apr	0	0 ~~(52%)~~ (47%)
Critically Dry	May	3	5 ~~(82%)~~ (59%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	2	1 ~~(-24%)~~ (-30%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	9	~~9 (3%)~~ 10 (8%)
Critically Dry	Nov	1	1 ~~(-4%)~~ (7%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-71~~ 10-79. Mean Number of Hardhead Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	1	1 ~~(5%)~~ (11%)
Above Normal	N/A	~~(83%)~~ (73%)
Below Normal	0	0 (0%)
Dry	0	0 (0%)
Critically Dry	~~3~~ 2	3 ~~(8%)~~ (12%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-72~~ 10-80.

Table ~~10-72~~ 10-80. Mean Number of Hardhead Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	1	1 ~~(5%)~~ (11%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	~~3~~ 2	3 ~~(8%)~~ (12%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-73~~ 10-81 . Mean Number of Hardhead Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	0 (0%)
Below Normal	0	0 (0%)
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-74~~ 10-82 .

Table ~~10-74~~ 10-82 . Mean Number of Hardhead Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-75~~ 10-83. Mean Number of Central California Roach Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	0	0 (0%)
Dry	0	0 (0%)
Critically Dry	0	0 ~~(-13%)~~ (-11%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-76~~ 10-84.

Table ~~10-76~~ 10-84. Mean Number of Central California Roach Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 ~~(-13%)~~ (-11%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-77~~ 10-85. Mean Number of Central California Roach Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	0	0 (0%)
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-78~~ 10-86.

Table ~~10-78~~ 10-86. Mean Number of Central California Roach Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 (0%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-79~~ 10-87. Mean Number of Starry Flounder Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~68~~ 73	~~73 (8%)~~ 76 (4%)
Above Normal	N/A	~~(8%)~~ (9%)
Below Normal	~~139~~ 144	~~160 (15%)~~ 169 (17%)
Dry	~~18~~ 17	~~20 (13%)~~ 18 (9%)
Critically Dry	1	1 ~~(2%)~~ (10%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-80~~ 10-88.

Table ~~10-80~~ 10-88. Mean Number of Starry Flounder Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	2	2 ~~(-2%)~~ (-3%)
Wet	Feb	1	1 ~~(2%)~~ (-2%)
Wet	Mar	~~9~~ 10	~~9~~ 10 (4%)
Wet	Apr	8	~~8 (5%)~~ 9 (11%)
Wet	May	~~10~~ 13	~~16 (50%)~~ 17 (28%)
Wet	Jun	21	20 ~~(-3%)~~ (-8%)
Wet	Jul	15	15 ~~(0%)~~ (-1%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	~~3~~ 2	~~3~~ 2 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	3	3 ~~(-4%)~~ (-7%)
Below Normal	Mar	1	1 ~~(-15%)~~ (-11%)
Below Normal	Apr	4 5	7 ~~(66%)~~ (51%)
Below Normal	May	~~23~~ 28	~~48 (110%)~~ 58 (104%)
Below Normal	Jun	~~84~~ 86	~~77 (-8%)~~ 78 (-9%)
Below Normal	Jul	4	4 ~~(0%)~~ (3%)
Below Normal	Aug	~~19~~ 16	~~20 (2%)~~ 17 (7%)
Below Normal	Sep	0	0 ~~(-1%)~~ (-8%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	1	1 (-16%)
Dry	Apr	6	~~6 (5%)~~ 5 (-16%)
Dry	May	5	~~7 (41%)~~ 8 (45%)
Dry	Jun	0	0 (0%)
Dry	Jul	3	3 ~~(-1%)~~ (4%)
Dry	Aug	~~1~~ 0	~~2 (12%)~~ 1 (25%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	1	1 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	1	1 ~~(2%)~~ (10%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-81~~ 10-89. Mean Number of Starry Flounder Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	15	~~15~~ 14 (-1%)
Above Normal	N/A	~~(-4%)~~ (-2%)
Below Normal	~~23~~ 21	~~24 (7%)~~ 23 (6%)
Dry	~~6~~ 7	~~10 (60%)~~ 11 (59%)
Critically Dry	4	4 ~~(-4%)~~ (2%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-82~~ 10-90.

Table ~~10-82~~ 10-90. Mean Number of Starry Flounder Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	5	5 ~~(-4%)~~ (-6%)
Wet	Jul	3	3 ~~(0%)~~ (2%)
Wet	Aug	3	3 ~~(0%)~~ (1%)
Wet	Sep	3	3 ~~(0%)~~ (-1%)
Wet	Oct	1	1 ~~(3%)~~ (6%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	4	3 ~~(-12%)~~ (-23%)
Below Normal	Apr	2	2 ~~(64%)~~ (33%)
Below Normal	May	3	7 ~~(147%)~~ (130%)
Below Normal	Jun	~~7~~ 6	5 ~~(-23%)~~ (-22%)
Below Normal	Jul	3	2 (-19%)
Below Normal	Aug	~~5~~ 4	~~4 (-18%)~~ 3 (-19%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	~~2~~ 3	~~6 (147%)~~ 7 (130%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	4	4 ~~(7%)~~ (5%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	3	3 ~~(-5%)~~ (1%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	1	1 ~~(-2%)~~ (5%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-83~~ 10-91. Mean Number of Striped Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~337,170~~ 339,709	~~340,743 (1%)~~ 338,744 (0%)
Above Normal	N/A	(1%)
Below Normal	~~370,891~~ 364,962	~~381,986 (3%)~~ 381,824 (5%)
Dry	~~120,492~~ 113,140	~~125,808 (4%)~~ 115,365 (2%)
Critically Dry	~~36,028~~ 34,251	~~36,253 (1%)~~ 36,179 (6%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-84~~ 10-92.

Table ~~10-84~~ 10-92. Mean Number of Striped Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~14,598~~ 16,243	~~14,288 (-2%)~~ 15,813 (-3%)
Wet	Feb	~~14,342~~ 14,686	~~14,558 (2%)~~ 14,447 (-2%)
Wet	Mar	~~13,414~~ 14,587	~~13,899~~ 15,131 (4%)
Wet	Apr	~~2,135~~ 2,275	~~2,235 (5%)~~ 2,537 (11%)
Wet	May	~~878~~ 1,108	~~1,313 (50%)~~ 1,422 (28%)
Wet	Jun	~~31,144~~ 32,385	~~30,349 (-3%)~~ 29,851 (-8%)
Wet	Jul	~~185,944~~ 186,743	~~186,773 (0%)~~ 185,684 (-1%)
Wet	Aug	~~30,415~~ 30,389	~~31,888~~ 31,967 (5%)
Wet	Sep	~~3,796~~ 3,482	~~4,553 (20%)~~ 4,261 (22%)
Wet	Oct	~~1,070~~ 1,060	~~1,032 (-3%)~~ 1,046 (-1%)
Wet	Nov	~~22,271~~ 20,907	~~22,611 (2%)~~ 20,780 (-1%)
Wet	Dec	~~17,166~~ 15,844	~~17,245~~ 15,805 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	2,388	~~2,289 (-4%)~~ 2,196 (-8%)
Below Normal	Feb	~~3,789~~ 3,889	~~3,635 (-4%)~~ 3,611 (-7%)
Below Normal	Mar	~~3,835~~ 3,886	~~3,269 (-15%)~~ 3,463 (-11%)
Below Normal	Apr	~~199~~ 217	~~330 (66%)~~ 328 (51%)
Below Normal	May	~~19,482~~ 24,300	~~40,877 (110%)~~ 49,504 (104%)
Below Normal	Jun	~~122,255~~ 124,665	~~112,039 (-8%)~~ 113,538 (-9%)
Below Normal	Jul	~~117,965~~ 114,346	~~118,002 (0%)~~ 117,712 (3%)
Below Normal	Aug	~~18,814~~ 15,842	~~19,256 (2%)~~ 16,880 (7%)
Below Normal	Sep	~~1,675~~ 1,287	~~1,656 (-1%)~~ 1,180 (-8%)
Below Normal	Oct	~~17,383~~ 16,412	~~16,803~~ 15,904 (-3%)
Below Normal	Nov	~~51,163~~ 47,478	~~51,576 (1%)~~ 47,049 (-1%)
Below Normal	Dec	~~11,942~~ 10,251	~~12,253 (3%)~~ 10,458 (2%)
Dry	Jan	~~8,840~~ 8,802	~~8,691 (-2%)~~ 7,701 (-13%)
Dry	Feb	~~1,556~~ 1,572	~~1,478 (-5%)~~ 1,458 (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~883~~ 931	~~740~~ 783 (-16%)
Dry	Apr	~~439~~ 452	~~463 (5%)~~ 379 (-16%)
Dry	May	~~5,248~~ 5,890	~~7,417 (41%)~~ 8,534 (45%)
Dry	Jun	~~32,636~~ 35,919	~~36,993 (13%)~~ 36,205 (1%)
Dry	Jul	~~23,413~~ 18,558	~~23,129 (-1%)~~ 19,332 (4%)
Dry	Aug	~~1,326~~ 437	~~1,480 (12%)~~ 546 (25%)
Dry	Sep	~~225~~ 171	~~248 (10%)~~ 180 (5%)
Dry	Oct	~~2,805~~ 2,491	~~2,877 (3%)~~ 2,682 (8%)
Dry	Nov	~~14,976~~ 14,155	~~15,029~~ 14,193 (0%)
Dry	Dec	~~28,144~~ 23,762	~~27,265 (-3%)~~ 23,371 (-2%)
Critically Dry	Jan	~~2,240~~ 1,984	~~2,202 (-2%)~~ 1,735 (-13%)
Critically Dry	Feb	~~5,133~~ 4,975	~~4,477 (-13%)~~ 4,404 (-11%)
Critically Dry	Mar	~~667~~ 640	~~695 (4%)~~ 632 (-1%)
Critically Dry	Apr	~~252~~ 226	~~302 (20%)~~ 268 (18%)
Critically Dry	May	~~4,268~~ 4,736	~~6,016~~ 6,690 (41%)
Critically Dry	Jun	~~5,515~~ 4,204	~~4,669 (-15%)~~ 4,856 (16%)
Critically Dry	Jul	~~1,421~~ 658	~~1,538 (8%)~~ 642 (-2%)
Critically Dry	Aug	~~273~~ 77	~~272 (0%)~~ 76 (-1%)
Critically Dry	Sep	~~91~~ 72	~~99 (8%)~~ 81 (12%)
Critically Dry	Oct	~~3,971~~ 4,238	~~4,050 (2%)~~ 4,647 (10%)
Critically Dry	Nov	~~4,333~~ 5,000	~~4,311 (0%)~~ 4,947 (-1%)
Critically Dry	Dec	~~7,865~~ 7,441	~~7,623~~ 7,200 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-85~~ 10-93. Mean Number of Striped Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~64,097~~ 62,731	~~63,284 (-1%)~~ 62,626 (0%)
Above Normal	N/A	~~(-1%)~~ (3%)
Below Normal	~~104,030~~ 95,663	~~90,895 (-13%)~~ 84,215 (-12%)
Dry	~~147,503~~ 136,156	~~133,497 (-9%)~~ 126,071 (-7%)
Critically Dry	~~39,590~~ 41,784	~~42,308 (7%)~~ 42,537 (2%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-86~~ 10-94.

Table ~~10-86~~ 10-94. Mean Number of Striped Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~6,156~~ 5,941	~~5,995 (-3%)~~ 5,910 (-1%)
Wet	Feb	~~1,873~~ 1,910	~~1,871 (0%)~~ 1,898 (-1%)
Wet	Mar	~~1,059~~ 1,081	~~896 (-15%)~~ 967 (-11%)
Wet	Apr	~~1,379~~ 1,481	~~1,084 (-21%)~~ 1,307 (-12%)
Wet	May	~~84~~ 88	~~86 (3%)~~ 88 (0%)
Wet	Jun	~~7,004~~ 6,992	~~6,738 (-4%)~~ 6,557 (-6%)
Wet	Jul	~~22,748~~ 21,969	~~22,807 (0%)~~ 22,411 (2%)
Wet	Aug	~~18,038~~ 17,754	~~18,024 (0%)~~ 17,925 (1%)
Wet	Sep	~~2,696~~ 2,672	~~2,688 (0%)~~ 2,651 (-1%)
Wet	Oct	~~570~~ 517	~~588 (3%)~~ 546 (6%)
Wet	Nov	~~639~~ 619	~~667 (4%)~~ 633 (2%)
Wet	Dec	~~1,852~~ 1,706	~~1,841 (-1%)~~ 1,734 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~4,238~~ 3,774	~~3,921 (-7%)~~ 3,888 (3%)
Below Normal	Feb	~~4,710~~ 4,693	~~4,344 (-8%)~~ 4,155 (-11%)
Below Normal	Mar	~~6,993~~ 6,719	~~6,187 (-12%)~~ 5,190 (-23%)
Below Normal	Apr	~~431~~ 443	~~705 (64%)~~ 587 (33%)
Below Normal	May	~~3,404~~ 4,118	~~8,412 (147%)~~ 9,486 (130%)
Below Normal	Jun	~~53,578~~ 48,556	~~41,433 (-23%)~~ 37,879 (-22%)
Below Normal	Jul	~~23,013~~ 20,418	~~18,669~~ 16,524 (-19%)
Below Normal	Aug	~~3,431~~ 2,925	~~2,804 (-18%)~~ 2,370 (-19%)
Below Normal	Sep	~~502~~ 468	~~517 (3%)~~ 467 (0%)
Below Normal	Oct	~~828~~ 813	~~856~~ 837 (3%)
Below Normal	Nov	~~2,079~~ 2,059	~~2,224 (7%)~~ 2,164 (5%)
Below Normal	Dec	~~824~~ 676	~~823 (0%)~~ 668 (-1%)
Dry	Jan	~~435~~ 387	~~402 (-7%)~~ 399 (3%)
Dry	Feb	~~808~~ 805	~~745 (-8%)~~ 713 (-11%)
Dry	Mar	~~2,294~~ 2,204	~~2,030 (-12%)~~ 1,703 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~259~~ 266	~~423 (64%)~~ 353 (33%)
Dry	May	~~9,542~~ 11,543	~~23,580 (147%)~~ 26,589 (130%)
Dry	Jun	~~98,426~~ 89,200	~~76,116 (-23%)~~ 69,586 (-22%)
Dry	Jul	~~28,716~~ 25,479	~~23,297~~ 20,620 (-19%)
Dry	Aug	~~1,472~~ 1,255	~~1,203 (-18%)~~ 1,017 (-19%)
Dry	Sep	~~632~~ 589	~~650 (3%)~~ 588 (0%)
Dry	Oct	~~796~~ 781	~~823~~ 804 (3%)
Dry	Nov	~~1,549~~ 1,535	~~1,657 (7%)~~ 1,613 (5%)
Dry	Dec	~~2,573~~ 2,110	~~2,570 (0%)~~ 2,087 (-1%)
Critically Dry	Jan	~~705~~ 573	~~671 (-5%)~~ 581 (1%)
Critically Dry	Feb	~~468~~ 443	~~458 (-2%)~~ 422 (-5%)
Critically Dry	Mar	~~313~~ 301	~~310 (-1%)~~ 303 (1%)
Critically Dry	Apr	~~156~~ 162	~~237 (52%)~~ 239 (47%)
Critically Dry	May	~~10,568~~ 13,237	~~19,188 (82%)~~ 21,077 (59%)
Critically Dry	Jun	~~22,308~~ 22,146	~~17,208 (-23%)~~ 15,931 (-28%)
Critically Dry	Jul	~~2,985~~ 3,065	~~2,260 (-24%)~~ 2,143 (-30%)
Critically Dry	Aug	~~227~~ 179	~~186 (-18%)~~ 154 (-14%)
Critically Dry	Sep	~~329~~ 264	~~321 (-2%)~~ 278 (5%)
Critically Dry	Oct	~~141~~ 156	~~145 (3%)~~ 169 (8%)
Critically Dry	Nov	~~396~~ 357	~~381 (-4%)~~ 383 (7%)
Critically Dry	Dec	~~992~~ 901	~~944~~ 857 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-87~~ 10-95. Mean Number of American Shad Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~345,217~~ 346,156	~~354,589 (3%)~~ 352,487 (2%)
Above Normal	N/A	~~(2%)~~ (3%)
Below Normal	~~269,982~~ 247,390	~~272,618 (1%)~~ 253,156 (2%)
Dry	~~125,696~~ 98,942	~~126,631~~ 99,936 (1%)
Critically Dry	~~18,469~~ 18,570	~~18,151 (-2%)~~ 18,057 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-88~~ 10-96.

Table ~~10-88~~ 10-96. Mean Number of American Shad Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~22,012~~ 24,492	~~21,544 (-2%)~~ 23,843 (-3%)
Wet	Feb	~~12,131~~ 12,422	~~12,314 (2%)~~ 12,220 (-2%)
Wet	Mar	~~1,215~~ 1,321	~~1,259~~ 1,370 (4%)
Wet	Apr	~~279~~ 298	~~293 (5%)~~ 332 (11%)
Wet	May	~~2,039~~ 2,573	~~3,051 (50%)~~ 3,303 (28%)
Wet	Jun	~~16,180~~ 16,825	~~15,767 (-3%)~~ 15,508 (-8%)
Wet	Jul	~~139,307~~ 139,906	~~139,928 (0%)~~ 139,112 (-1%)
Wet	Aug	~~102,732~~ 102,646	~~107,707~~ 107,977 (5%)
Wet	Sep	~~15,948~~ 14,632	~~19,129 (20%)~~ 17,902 (22%)
Wet	Oct	~~1,060~~ 1,050	~~1,023 (-3%)~~ 1,037 (-1%)
Wet	Nov	~~10,513~~ 9,869	~~10,673 (2%)~~ 9,809 (-1%)
Wet	Dec	~~21,802~~ 20,123	~~21,903~~ 20,074 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	7,174	~~6,875 (-4%)~~ 6,597 (-8%)
Below Normal	Feb	~~3,236~~ 3,321	~~3,105 (-4%)~~ 3,084 (-7%)
Below Normal	Mar	~~470~~ 476	~~401 (-15%)~~ 425 (-11%)
Below Normal	Apr	~~35~~ 38	~~58 (66%)~~ 57 (51%)
Below Normal	May	~~2,023~~ 2,523	~~4,245 (110%)~~ 5,141 (104%)
Below Normal	Jun	~~5,775~~ 5,888	~~5,292 (-8%)~~ 5,363 (-9%)
Below Normal	Jul	~~81,391~~ 78,894	~~81,416 (0%)~~ 81,216 (3%)
Below Normal	Aug	~~65,643~~ 55,272	~~67,185 (2%)~~ 58,895 (7%)
Below Normal	Sep	~~10,153~~ 7,806	~~10,040 (-1%)~~ 7,157 (-8%)
Below Normal	Oct	~~31,668~~ 29,900	~~30,612~~ 28,973 (-3%)
Below Normal	Nov	~~36,216~~ 33,607	~~36,508 (1%)~~ 33,303 (-1%)
Below Normal	Dec	~~26,199~~ 22,490	~~26,882 (3%)~~ 22,945 (2%)
Dry	Jan	~~8,106~~ 8,071	~~7,969 (-2%)~~ 7,062 (-13%)
Dry	Feb	~~1,757~~ 1,776	~~1,669 (-5%)~~ 1,647 (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~363~~ 383	~~304~~ 322 (-16%)
Dry	Apr	~~277~~ 286	~~292 (5%)~~ 239 (-16%)
Dry	May	~~119~~ 134	~~169 (41%)~~ 194 (45%)
Dry	Jun	~~299~~ 329	~~338 (13%)~~ 331 (1%)
Dry	Jul	~~21,036~~ 16,674	~~20,781 (-1%)~~ 17,370 (4%)
Dry	Aug	~~19,803~~ 6,523	~~22,096 (12%)~~ 8,158 (25%)
Dry	Sep	~~2,507~~ 1,904	~~2,753 (10%)~~ 2,003 (5%)
Dry	Oct	~~4,311~~ 3,828	~~4,422 (3%)~~ 4,122 (8%)
Dry	Nov	~~23,474~~ 22,188	~~23,557~~ 22,248 (0%)
Dry	Dec	~~43,643~~ 36,847	~~42,280 (-3%)~~ 36,242 (-2%)
Critically Dry	Jan	~~3,418~~ 3,028	~~3,360 (-2%)~~ 2,647 (-13%)
Critically Dry	Feb	~~1,800~~ 1,744	~~1,570 (-13%)~~ 1,544 (-11%)
Critically Dry	Mar	~~307~~ 295	~~320 (4%)~~ 291 (-1%)
Critically Dry	Apr	~~78~~ 70	~~93 (20%)~~ 83 (18%)
Critically Dry	May	~~128~~ 143	~~181~~ 201 (41%)
Critically Dry	Jun	~~11~~ 8	9 ~~(-15%)~~ (16%)
Critically Dry	Jul	~~267~~ 124	~~290 (8%)~~ 121 (-2%)
Critically Dry	Aug	~~62~~ 17	~~61 (0%)~~ 17 (-1%)
Critically Dry	Sep	~~9~~ 7	~~9 (8%)~~ 8 (12%)
Critically Dry	Oct	~~2,074~~ 2,214	~~2,115 (2%)~~ 2,427 (10%)
Critically Dry	Nov	~~5,591~~ 6,451	~~5,563 (0%)~~ 6,383 (-1%)
Critically Dry	Dec	~~4,725~~ 4,470	~~4,579~~ 4,325 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-89~~ 10-97. Mean Number of American Shad Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~251,867~~ 244,852	~~251,766 (0%)~~ 247,622 (1%)
Above Normal	N/A	~~(0%)~~ (7%)
Below Normal	~~70,824~~ 64,437	~~65,616 (-7%)~~ 59,565 (-8%)
Dry	~~98,144~~ 86,197	~~88,173~~ 77,601 (-10%)
Critically Dry	~~6,878~~ 6,069	~~6,593 (-4%)~~ 6,199 (2%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-90~~ 10-98.

Table ~~10-90~~ 10-98. Mean Number of American Shad Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~14,551~~ 14,043	~~14,171 (-3%)~~ 13,971 (-1%)
Wet	Feb	~~2,498~~ 2,548	~~2,495 (0%)~~ 2,532 (-1%)
Wet	Mar	~~228~~ 233	~~193 (-15%)~~ 208 (-11%)
Wet	Apr	~~22~~ 24	~~17 (-21%)~~ 21 (-12%)
Wet	May	~~18~~ 19	19 ~~(3%)~~ (0%)
Wet	Jun	~~1,772~~ 1,769	~~1,704 (-4%)~~ 1,659 (-6%)
Wet	Jul	~~64,290~~ 62,089	~~64,459 (0%)~~ 63,338 (2%)
Wet	Aug	~~122,676~~ 120,745	~~122,577 (0%)~~ 121,905 (1%)
Wet	Sep	~~11,010~~ 10,913	~~10,975 (0%)~~ 10,826 (-1%)
Wet	Oct	~~2,659~~ 2,413	~~2,744 (3%)~~ 2,547 (6%)
Wet	Nov	~~9,457~~ 9,165	~~9,869 (4%)~~ 9,366 (2%)
Wet	Dec	~~22,685~~ 20,891	~~22,541 (-1%)~~ 21,231 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~3,180~~ 2,832	~~2,942 (-7%)~~ 2,917 (3%)
Below Normal	Feb	~~3,719~~ 3,705	~~3,430 (-8%)~~ 3,280 (-11%)
Below Normal	Mar	~~285~~ 274	~~252 (-12%)~~ 211 (-23%)
Below Normal	Apr	~~85~~ 88	~~140 (64%)~~ 116 (33%)
Below Normal	May	~~21~~ 26	~~53 (147%)~~ 59 (130%)
Below Normal	Jun	~~1,595~~ 1,446	~~1,234 (-23%)~~ 1,128 (-22%)
Below Normal	Jul	~~17,827~~ 15,818	~~14,463~~ 12,801 (-19%)
Below Normal	Aug	~~12,504~~ 10,661	~~10,219 (-18%)~~ 8,638 (-19%)
Below Normal	Sep	~~2,115~~ 1,971	~~2,175 (3%)~~ 1,967 (0%)
Below Normal	Oct	~~5,527~~ 5,424	~~5,714~~ 5,584 (3%)
Below Normal	Nov	~~14,882~~ 14,742	~~15,921 (7%)~~ 15,495 (5%)
Below Normal	Dec	~~9,082~~ 7,450	~~9,075 (0%)~~ 7,368 (-1%)
Dry	Jan	~~8,366~~ 7,451	~~7,740 (-7%)~~ 7,675 (3%)
Dry	Feb	~~1,487~~ 1,481	~~1,371 (-8%)~~ 1,311 (-11%)
Dry	Mar	~~301~~ 289	~~267 (-12%)~~ 224 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~38~~ 39	~~63 (64%)~~ 52 (33%)
Dry	May	~~5~~ 6	~~13 (147%)~~ 15 (130%)
Dry	Jun	~~1,348~~ 1,222	~~1,042 (-23%)~~ 953 (-22%)
Dry	Jul	~~33,532~~ 29,752	~~27,203~~ 24,077 (-19%)
Dry	Aug	~~17,750~~ 15,134	~~14,505 (-18%)~~ 12,261 (-19%)
Dry	Sep	~~3,165~~ 2,950	~~3,255 (3%)~~ 2,943 (0%)
Dry	Oct	~~996~~ 977	~~1,030~~ 1,006 (3%)
Dry	Nov	~~7,865~~ 7,791	~~8,414 (7%)~~ 8,189 (5%)
Dry	Dec	~~23,290~~ 19,103	~~23,270 (0%)~~ 18,894 (-1%)
Critically Dry	Jan	~~2,392~~ 1,944	~~2,279 (-5%)~~ 1,973 (1%)
Critically Dry	Feb	~~124~~ 117	~~121 (-2%)~~ 112 (-5%)
Critically Dry	Mar	5	5 ~~(-1%)~~ (1%)
Critically Dry	Apr	1	2 ~~(52%)~~ (47%)
Critically Dry	May	~~11~~ 14	~~21 (82%)~~ 23 (59%)
Critically Dry	Jun	~~117~~ 116	~~90 (-23%)~~ 84 (-28%)
Critically Dry	Jul	~~25~~ 26	~~19 (-24%)~~ 18 (-30%)
Critically Dry	Aug	~~206~~ 162	~~169 (-18%)~~ 140 (-14%)
Critically Dry	Sep	~~664~~ 533	~~649 (-2%)~~ 562 (5%)
Critically Dry	Oct	~~685~~ 757	~~705 (3%)~~ 818 (8%)
Critically Dry	Nov	~~1,728~~ 1,558	~~1,658 (-4%)~~ 1,669 (7%)
Critically Dry	Dec	~~919~~ 834	~~874~~ 794 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-91~~ 10-99. Mean Number of Threadfin Shad Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~520,515~~ 519,890	~~537,476~~ 534,082 (3%)
Above Normal	N/A	~~(3%)~~ (4%)
Below Normal	~~1,493,526~~ 1,396,696	~~1,492,330 (0%)~~ 1,427,175 (2%)
Dry	~~1,082,308~~ 803,333	~~1,099,614 (2%)~~ 845,107 (5%)
Critically Dry	~~226,745~~ 173,446	~~231,466 (2%)~~ 180,831 (4%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-92~~ 10-100.

Table ~~10-92~~ 10-100. Mean Number of Threadfin Shad Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~3,132~~ 3,485	~~3,065 (-2%)~~ 3,392 (-3%)
Wet	Feb	~~1,517~~ 1,553	~~1,540 (2%)~~ 1,528 (-2%)
Wet	Mar	~~215~~ 233	~~222~~ 242 (4%)
Wet	Apr	~~222~~ 236	~~232 (5%)~~ 264 (11%)
Wet	May	~~912~~ 1,151	~~1,365 (50%)~~ 1,478 (28%)
Wet	Jun	~~23,146~~ 24,069	~~22,556 (-3%)~~ 22,186 (-8%)
Wet	Jul	~~225,146~~ 226,114	~~226,150 (0%)~~ 224,831 (-1%)
Wet	Aug	~~220,971~~ 220,784	~~231,670~~ 232,251 (5%)
Wet	Sep	~~28,236~~ 25,907	~~33,867 (20%)~~ 31,695 (22%)
Wet	Oct	~~8,551~~ 8,472	~~8,254 (-3%)~~ 8,364 (-1%)
Wet	Nov	~~4,412~~ 4,142	~~4,480 (2%)~~ 4,117 (-1%)
Wet	Dec	~~4,056~~ 3,744	~~4,075~~ 3,735 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	384	~~368 (-4%)~~ 353 (-8%)
Below Normal	Feb	~~673~~ 691	~~646 (-4%)~~ 641 (-7%)
Below Normal	Mar	~~206~~ 209	~~176 (-15%)~~ 186 (-11%)
Below Normal	Apr	~~38~~ 41	~~62 (66%)~~ 62 (51%)
Below Normal	May	~~3,715~~ 4,633	~~7,794 (110%)~~ 9,439 (104%)
Below Normal	Jun	~~81,388~~ 82,992	~~74,587 (-8%)~~ 75,585 (-9%)
Below Normal	Jul	~~850,801~~ 824,699	~~851,068 (0%)~~ 848,977 (3%)
Below Normal	Aug	~~315,141~~ 265,353	~~322,547 (2%)~~ 282,745 (7%)
Below Normal	Sep	~~54,280~~ 41,731	~~53,677 (-1%)~~ 38,264 (-8%)
Below Normal	Oct	~~170,626~~ 161,101	~~164,937~~ 156,109 (-3%)
Below Normal	Nov	~~12,808~~ 11,885	~~12,911 (1%)~~ 11,778 (-1%)
Below Normal	Dec	~~3,467~~ 2,976	~~3,557 (3%)~~ 3,036 (2%)
Dry	Jan	~~2,826~~ 2,814	~~2,779 (-2%)~~ 2,462 (-13%)
Dry	Feb	41	~~39 (-5%)~~ 38 (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	~~26~~ 28	~~22~~ 23 (-16%)
Dry	Apr	~~73~~ 75	~~77 (5%)~~ 63 (-16%)
Dry	May	~~613~~ 688	~~866 (41%)~~ 996 (45%)
Dry	Jun	~~45,117~~ 49,654	~~51,138 (13%)~~ 50,049 (1%)
Dry	Jul	~~820,173~~ 650,078	~~810,228 (-1%)~~ 677,213 (4%)
Dry	Aug	~~153,692~~ 50,626	~~171,495 (12%)~~ 63,316 (25%)
Dry	Sep	~~33,057~~ 25,113	~~36,301 (10%)~~ 26,407 (5%)
Dry	Oct	~~5,596~~ 4,969	~~5,740 (3%)~~ 5,350 (8%)
Dry	Nov	~~14,256~~ 13,474	~~14,306~~ 13,511 (0%)
Dry	Dec	~~6,837~~ 5,773	~~6,624 (-3%)~~ 5,678 (-2%)
Critically Dry	Jan	~~662~~ 586	~~651 (-2%)~~ 513 (-13%)
Critically Dry	Feb	~~384~~ 373	~~335 (-13%)~~ 330 (-11%)
Critically Dry	Mar	~~68~~ 66	~~71 (4%)~~ 65 (-1%)
Critically Dry	Apr	~~31~~ 28	~~37 (20%)~~ 33 (18%)
Critically Dry	May	~~408~~ 453	~~575~~ 640 (41%)
Critically Dry	Jun	~~9,310~~ 7,097	~~7,880 (-15%)~~ 8,197 (16%)
Critically Dry	Jul	~~32,189~~ 14,904	~~34,853 (8%)~~ 14,557 (-2%)
Critically Dry	Aug	~~49,455~~ 13,893	~~49,259 (0%)~~ 13,707 (-1%)
Critically Dry	Sep	~~40,687~~ 32,332	~~43,947 (8%)~~ 36,106 (12%)
Critically Dry	Oct	~~36,502~~ 38,959	~~37,226 (2%)~~ 42,717 (10%)
Critically Dry	Nov	~~51,891~~ 59,876	~~51,633 (0%)~~ 59,246 (-1%)
Critically Dry	Dec	~~5,157~~ 4,879	~~4,998~~ 4,721 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-93~~ 10-101. Mean Number of Threadfin Shad Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~779,426~~ 758,444	~~782,352 (0%)~~ 766,379 (1%)
Above Normal	N/A	~~(-1%)~~ (5%)
Below Normal	~~1,025,268~~ 912,186	~~891,213 (-13%)~~ 788,274 (-14%)
Dry	~~2,566,155~~ 2,394,423	~~2,385,698~~ 2,228,372 (-7%)
Critically Dry	~~426,872~~ 394,666	~~354,472 (-17%)~~ 322,536 (-18%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-94~~ 10-102.

Table ~~10-94~~ 10-102. Mean Number of Threadfin Shad Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~18,862~~ 18,203	~~18,370 (-3%)~~ 18,110 (-1%)
Wet	Feb	~~3,730~~ 3,804	~~3,726 (0%)~~ 3,782 (-1%)
Wet	Mar	~~739~~ 755	~~626 (-15%)~~ 675 (-11%)
Wet	Apr	~~959~~ 1,029	~~753 (-21%)~~ 908 (-12%)
Wet	May	~~655~~ 693	~~675 (3%)~~ 691 (0%)
Wet	Jun	~~24,964~~ 24,920	~~24,015 (-4%)~~ 23,370 (-6%)
Wet	Jul	~~188,651~~ 182,193	~~189,146 (0%)~~ 185,858 (2%)
Wet	Aug	~~284,399~~ 279,923	~~284,170 (0%)~~ 282,611 (1%)
Wet	Sep	~~105,315~~ 104,388	~~104,976 (0%)~~ 103,548 (-1%)
Wet	Oct	~~42,803~~ 38,844	~~44,182 (3%)~~ 41,001 (6%)
Wet	Nov	~~81,175~~ 78,666	~~84,710 (4%)~~ 80,394 (2%)
Wet	Dec	~~27,174~~ 25,024	~~27,001 (-1%)~~ 25,431 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~6,715~~ 5,980	~~6,212 (-7%)~~ 6,160 (3%)
Below Normal	Feb	~~4,917~~ 4,899	~~4,535 (-8%)~~ 4,338 (-11%)
Below Normal	Mar	~~2,309~~ 2,218	~~2,043 (-12%)~~ 1,714 (-23%)
Below Normal	Apr	~~157~~ 161	~~256 (64%)~~ 214 (33%)
Below Normal	May	~~119~~ 143	~~293 (147%)~~ 330 (130%)
Below Normal	Jun	~~42,875~~ 38,856	~~33,156 (-23%)~~ 30,312 (-22%)
Below Normal	Jul	~~305,562~~ 271,117	~~247,891~~ 219,408 (-19%)
Below Normal	Aug	~~414,582~~ 353,481	~~338,804 (-18%)~~ 286,388 (-19%)
Below Normal	Sep	~~138,368~~ 128,955	~~142,290 (3%)~~ 128,657 (0%)
Below Normal	Oct	~~20,174~~ 19,800	~~20,858~~ 20,382 (3%)
Below Normal	Nov	~~77,306~~ 76,578	~~82,699 (7%)~~ 80,486 (5%)
Below Normal	Dec	~~12,185~~ 9,995	~~12,175 (0%)~~ 9,885 (-1%)
Dry	Jan	~~7,521~~ 6,699	~~6,958 (-7%)~~ 6,900 (3%)
Dry	Feb	~~1,729~~ 1,723	~~1,595 (-8%)~~ 1,525 (-11%)
Dry	Mar	~~551~~ 529	~~487 (-12%)~~ 409 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~406~~ 418	~~665 (64%)~~ 554 (33%)
Dry	May	~~79~~ 95	~~195 (147%)~~ 220 (130%)
Dry	Jun	~~41,587~~ 37,689	~~32,160 (-23%)~~ 29,401 (-22%)
Dry	Jul	~~1,041,582~~ 924,168	~~844,997~~ 747,904 (-19%)
Dry	Aug	~~126,638~~ 107,975	~~103,491 (-18%)~~ 87,480 (-19%)
Dry	Sep	~~58,613~~ 54,626	~~60,275 (3%)~~ 54,500 (0%)
Dry	Oct	~~1,129,282~~ 1,108,387	~~1,167,566~~ 1,140,962 (3%)
Dry	Nov	~~131,386~~ 130,150	~~140,553 (7%)~~ 136,792 (5%)
Dry	Dec	~~26,779~~ 21,965	~~26,757 (0%)~~ 21,725 (-1%)
Critically Dry	Jan	~~1,636~~ 1,330	~~1,559 (-5%)~~ 1,350 (1%)
Critically Dry	Feb	~~430~~ 407	~~421 (-2%)~~ 387 (-5%)
Critically Dry	Mar	~~78~~ 75	~~77 (-1%)~~ 76 (1%)
Critically Dry	Apr	~~73~~ 76	~~110 (52%)~~ 111 (47%)
Critically Dry	May	~~63~~ 78	~~114 (82%)~~ 125 (59%)
Critically Dry	Jun	~~30,481~~ 30,260	~~23,512 (-23%)~~ 21,767 (-28%)
Critically Dry	Jul	~~188,004~~ 193,016	~~142,313 (-24%)~~ 134,946 (-30%)
Critically Dry	Aug	~~98,152~~ 77,180	~~80,416 (-18%)~~ 66,447 (-14%)
Critically Dry	Sep	~~81,046~~ 65,066	~~79,175 (-2%)~~ 68,556 (5%)
Critically Dry	Oct	~~14,139~~ 15,633	~~14,555 (3%)~~ 16,903 (8%)
Critically Dry	Nov	~~8,192~~ 7,387	~~7,863 (-4%)~~ 7,914 (7%)
Critically Dry	Dec	~~4,577~~ 4,157	~~4,356~~ 3,954 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-95~~ 10-103. Mean Number of Largemouth Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~21,543~~ 21,864	~~21,602 (0%)~~ 21,438 (-2%)
Above Normal	N/A	~~(0%)~~ (-1%)
Below Normal	~~17,045~~ 17,265	~~20,117 (18%)~~ 21,185 (23%)
Dry	~~15,385~~ 13,340	~~16,448~~ 14,320 (7%)
Critically Dry	~~25,870~~ 12,891	~~26,932 (4%)~~ 13,165 (2%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-96~~ 10-104.

Table ~~10-96~~ 10-104. Mean Number of Largemouth Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~64~~ 72	~~63 (-2%)~~ 70 (-3%)
Wet	Feb	~~38~~ 39	~~39 (2%)~~ 38 (-2%)
Wet	Mar	~~22~~ 23	~~22~~ 24 (4%)
Wet	Apr	~~52~~ 56	~~55 (5%)~~ 62 (11%)
Wet	May	~~81~~ 103	~~122 (50%)~~ 132 (28%)
Wet	Jun	~~6,333~~ 6,586	~~6,172 (-3%)~~ 6,070 (-8%)
Wet	Jul	~~12,688~~ 12,742	~~12,744 (0%)~~ 12,670 (-1%)
Wet	Aug	~~1,956~~ 1,955	~~2,051~~ 2,056 (5%)
Wet	Sep	~~135~~ 124	~~162 (20%)~~ 151 (22%)
Wet	Oct	~~63~~ 62	~~60 (-3%)~~ 61 (-1%)
Wet	Nov	~~65~~ 61	~~66 (2%)~~ 60 (-1%)
Wet	Dec	~~46~~ 42	~~46~~ 42 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	~~(-12%)~~ (-9%)
Above Normal	Apr	N/A	~~(83%)~~ (73%)
Above Normal	May	N/A	~~(75%)~~ (90%)
Above Normal	Jun	N/A	~~(-8%)~~ (-13%)
Above Normal	Jul	N/A	(2%)
Above Normal	Aug	N/A	~~(2%)~~ (4%)
Above Normal	Sep	N/A	~~(23%)~~ (32%)
Above Normal	Oct	N/A	~~(-10%)~~ (-3%)
Above Normal	Nov	N/A	~~(-1%)~~ (2%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	42	~~40 (-4%)~~ 39 (-8%)
Below Normal	Feb	9	8 ~~(-4%)~~ (-7%)
Below Normal	Mar	11	~~9 (-15%)~~ 10 (-11%)
Below Normal	Apr	~~7~~ 8	11 ~~(66%)~~ (51%)
Below Normal	May	~~2,972~~ 3,707	~~6,236 (110%)~~ 7,552 (104%)
Below Normal	Jun	~~2,491~~ 2,540	~~2,283 (-8%)~~ 2,313 (-9%)
Below Normal	Jul	~~9,554~~ 9,261	~~9,557 (0%)~~ 9,534 (3%)
Below Normal	Aug	~~1,045~~ 880	~~1,070 (2%)~~ 938 (7%)
Below Normal	Sep	~~254~~ 196	~~252 (-1%)~~ 179 (-8%)
Below Normal	Oct	~~390~~ 368	~~377~~ 356 (-3%)
Below Normal	Nov	~~180~~ 167	~~181 (1%)~~ 165 (-1%)
Below Normal	Dec	~~90~~ 77	~~93 (3%)~~ 79 (2%)
Dry	Jan	35	~~34 (-2%)~~ 31 (-13%)
Dry	Feb	13	12 ~~(-5%)~~ (-7%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	6	5 (-16%)
Dry	Apr	~~13~~ 14	~~14 (5%)~~ 12 (-16%)
Dry	May	~~1,069~~ 1,200	~~1,511 (41%)~~ 1,739 (45%)
Dry	Jun	~~3,945~~ 4,342	~~4,472 (13%)~~ 4,377 (1%)
Dry	Jul	~~7,254~~ 5,749	~~7,166 (-1%)~~ 5,989 (4%)
Dry	Aug	~~1,303~~ 429	~~1,453 (12%)~~ 537 (25%)
Dry	Sep	~~141~~ 107	~~155 (10%)~~ 113 (5%)
Dry	Oct	~~927~~ 823	~~950 (3%)~~ 886 (8%)
Dry	Nov	~~479~~ 452	~~480~~ 454 (0%)
Dry	Dec	~~200~~ 169	~~194 (-3%)~~ 166 (-2%)
Critically Dry	Jan	~~130~~ 115	~~127 (-2%)~~ 100 (-13%)
Critically Dry	Feb	~~94~~ 91	~~82 (-13%)~~ 81 (-11%)
Critically Dry	Mar	~~12~~ 11	~~12 (4%)~~ 11 (-1%)
Critically Dry	Apr	~~16~~ 15	~~20 (20%)~~ 17 (18%)
Critically Dry	May	~~216~~ 239	~~304~~ 338 (41%)
Critically Dry	Jun	~~2,765~~ 2,108	~~2,340 (-15%)~~ 2,435 (16%)
Critically Dry	Jul	~~16,887~~ 7,819	~~18,284 (8%)~~ 7,637 (-2%)
Critically Dry	Aug	~~4,552~~ 1,279	~~4,534 (0%)~~ 1,262 (-1%)
Critically Dry	Sep	~~304~~ 242	~~329 (8%)~~ 270 (12%)
Critically Dry	Oct	~~470~~ 501	~~479 (2%)~~ 550 (10%)
Critically Dry	Nov	~~336~~ 388	~~334 (0%)~~ 383 (-1%)
Critically Dry	Dec	~~89~~ 84	~~86~~ 81 (-3%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-97~~ 10-105. Mean Number of Largemouth Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	~~51,119~~ 50,291	~~50,389 (-1%)~~ 49,473 (-2%)
Above Normal	N/A	(-1%)
Below Normal	~~68,795~~ 62,977	~~59,722 (-13%)~~ 55,744 (-11%)
Dry	~~95,844~~ 88,863	~~88,209 (-8%)~~ 83,941 (-6%)
Critically Dry	~~47,814~~ 48,124	~~43,784 (-8%)~~ 42,239 (-12%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-98~~ 10-106.

Table ~~10-98~~ 10-106. Mean Number of Largemouth Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	~~2,161~~ 2,086	~~2,105 (-3%)~~ 2,075 (-1%)
Wet	Feb	~~856~~ 873	~~855 (0%)~~ 868 (-1%)
Wet	Mar	~~417~~ 426	~~353 (-15%)~~ 380 (-11%)
Wet	Apr	~~245~~ 263	~~193 (-21%)~~ 232 (-12%)
Wet	May	~~2,413~~ 2,553	~~2,487 (3%)~~ 2,546 (0%)
Wet	Jun	~~18,642~~ 18,609	~~17,933 (-4%)~~ 17,452 (-6%)
Wet	Jul	~~16,480~~ 15,916	~~16,524 (0%)~~ 16,236 (2%)
Wet	Aug	~~5,271~~ 5,188	~~5,267 (0%)~~ 5,238 (1%)
Wet	Sep	~~984~~ 976	~~981 (0%)~~ 968 (-1%)
Wet	Oct	~~444~~ 403	~~458 (3%)~~ 425 (6%)
Wet	Nov	~~978~~ 948	~~1,021 (4%)~~ 969 (2%)
Wet	Dec	~~2,227~~ 2,051	~~2,213 (-1%)~~ 2,084 (2%)
Above Normal	Jan	N/A	~~(-2%)~~ (-3%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	~~(-29%)~~ (-31%)
Above Normal	Apr	N/A	~~(-28%)~~ (-34%)
Above Normal	May	N/A	~~(0%)~~ (-5%)
Above Normal	Jun	N/A	~~(-5%)~~ (-10%)
Above Normal	Jul	N/A	~~(5%)~~ (8%)
Above Normal	Aug	N/A	~~(-3%)~~ (12%)
Above Normal	Sep	N/A	~~(-10%)~~ (-8%)
Above Normal	Oct	N/A	~~(-1%)~~ (-4%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	~~1,450~~ 1,291	~~1,341 (-7%)~~ 1,330 (3%)
Below Normal	Feb	~~462~~ 460	~~426 (-8%)~~ 408 (-11%)
Below Normal	Mar	~~233~~ 224	~~206 (-12%)~~ 173 (-23%)
Below Normal	Apr	~~79~~ 81	~~129 (64%)~~ 108 (33%)
Below Normal	May	~~2,685~~ 3,248	~~6,635 (147%)~~ 7,482 (130%)
Below Normal	Jun	~~46,046~~ 41,730	~~35,608 (-23%)~~ 32,554 (-22%)
Below Normal	Jul	~~12,431~~ 11,029	~~10,084~~ 8,926 (-19%)
Below Normal	Aug	~~1,469~~ 1,252	~~1,200 (-18%)~~ 1,014 (-19%)
Below Normal	Sep	~~460~~ 429	~~473 (3%)~~ 428 (0%)
Below Normal	Oct	~~519~~ 510	~~537~~ 525 (3%)
Below Normal	Nov	~~1,716~~ 1,700	~~1,836 (7%)~~ 1,787 (5%)
Below Normal	Dec	~~1,246~~ 1,022	~~1,245 (0%)~~ 1,011 (-1%)
Dry	Jan	~~1,070~~ 953	~~990 (-7%)~~ 981 (3%)
Dry	Feb	~~1,301~~ 1,297	~~1,200 (-8%)~~ 1,148 (-11%)
Dry	Mar	~~601~~ 577	~~531 (-12%)~~ 446 (-23%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	~~83~~ 85	~~135 (64%)~~ 113 (33%)
Dry	May	~~6,825~~ 8,256	~~16,865 (147%)~~ 19,017 (130%)
Dry	Jun	~~62,683~~ 56,808	~~48,475 (-23%)~~ 44,316 (-22%)
Dry	Jul	~~16,709~~ 14,826	~~13,556~~ 11,998 (-19%)
Dry	Aug	~~1,578~~ 1,345	~~1,289 (-18%)~~ 1,090 (-19%)
Dry	Sep	~~431~~ 402	~~443 (3%)~~ 401 (0%)
Dry	Oct	~~2,270~~ 2,228	~~2,347~~ 2,293 (3%)
Dry	Nov	~~1,206~~ 1,194	~~1,290 (7%)~~ 1,255 (5%)
Dry	Dec	~~1,089~~ 893	~~1,088 (0%)~~ 884 (-1%)
Critically Dry	Jan	~~1,915~~ 1,556	~~1,824 (-5%)~~ 1,579 (1%)
Critically Dry	Feb	~~2,011~~ 1,902	~~1,967 (-2%)~~ 1,810 (-5%)
Critically Dry	Mar	~~382~~ 367	~~378 (-1%)~~ 370 (1%)
Critically Dry	Apr	~~176~~ 183	~~267 (52%)~~ 270 (47%)
Critically Dry	May	~~5,116~~ 6,408	~~9,288 (82%)~~ 10,203 (59%)
Critically Dry	Jun	~~29,031~~ 28,821	~~22,394 (-23%)~~ 20,732 (-28%)
Critically Dry	Jul	~~5,330~~ 5,472	~~4,035 (-24%)~~ 3,826 (-30%)
Critically Dry	Aug	~~745~~ 586	~~610 (-18%)~~ 504 (-14%)
Critically Dry	Sep	~~714~~ 573	~~697 (-2%)~~ 604 (5%)
Critically Dry	Oct	~~450~~ 498	~~463 (3%)~~ 538 (8%)
Critically Dry	Nov	~~1,202~~ 1,084	~~1,154 (-4%)~~ 1,161 (7%)
Critically Dry	Dec	~~742~~ 674	~~707~~ 641 (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-99~~ 10-107. Mean Number of Smallmouth Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	7	7 ~~(1%)~~ (-2%)
Above Normal	N/A	~~(-5%)~~ (-4%)
Below Normal	8	~~8~~ 7 (-4%)
Dry	~~9~~ 8	9 ~~(3%)~~ (8%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-100~~ 10-108.

Table ~~10-100~~ 10-108. Mean Number of Smallmouth Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	1	1 ~~(-2%)~~ (-3%)
Wet	Feb	5	5 ~~(2%)~~ (-2%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	1	1 (0%)
Above Normal	Jan	N/A	(-3%)
Above Normal	Feb	N/A	~~(-9%)~~ (-5%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	~~(7%)~~ (-3%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	0	0 ~~(-15%)~~ (-11%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	~~8~~ 7	7 (-3%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	~~9~~ 8	9 ~~(3%)~~ (8%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-101~~ 10-109. Mean Number of Smallmouth Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	~~6~~ 7	~~9 (49%)~~ 10 (48%)
Dry	0	0 (0%)
Critically Dry	1	1 ~~(-2%)~~ (-5%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-102~~ 10-110.

Table ~~10-102~~ 10-110. Mean Number of Smallmouth Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	1	1 ~~(-7%)~~ (3%)
Below Normal	Feb	1	1 ~~(-8%)~~ (-11%)
Below Normal	Mar	2	~~2 (-12%)~~ 1 (-23%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	~~2~~ 3	~~6 (147%)~~ 7 (130%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	1	1 ~~(-2%)~~ (-5%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-103~~ 10-111. Mean Number of Spotted Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	0	0 (0%)
Above Normal	N/A	(0%)
Below Normal	2	2 ~~(-13%)~~ (-11%)
Dry	0	0 (0%)
Critically Dry	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-104~~ 10-112.

Table ~~10-104~~ 10-112. Mean Number of Spotted Bass Salvaged (Fish Per Year) at the State Water Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method (Includes Banks SWP and Banks CVP Exports)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	0	0 (0%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	0	0 (0%)
Wet	Dec	0	0 (0%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	(0%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	(0%)
Above Normal	Dec	N/A	(0%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	2	~~1 (-15%)~~ 2 (-11%)
Below Normal	Apr	0	0 (0%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 ~~(-1%)~~ (-8%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	0	0 (0%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Mar	0	0 (0%)
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	0	0 (0%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	0	0 (0%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	0	0 (0%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

Table ~~10-105~~ 10-113. Mean Number of Spotted Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	5	5 (1%)
Above Normal	N/A	~~(3%)~~ (-1%)
Below Normal	~~6~~ 5	~~6 (9%)~~ 5 (-1%)
Dry	7	~~8 (7%)~~ 7 (5%)
Critically Dry	~~3~~ 2	2 ~~(-14%)~~ (-9%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Values by month are presented in Table ~~10-106~~ 10-114.

Table ~~10-106~~ 10-114 . Mean Number of Spotted Bass Salvaged (Fish Per Year) at the Central Valley Project South Delta Export Facility for Baseline Conditions ~~(Updated)~~ and Proposed Project plus Cumulative Scenarios Grouped by Water Year Type and Month, and Differences between the Scenarios (Proposed Project plus Cumulative minus Baseline Conditions ~~(Updated)~~) Expressed as a Percentage Difference (parentheses), Based on the Salvage-Density Method

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Wet	Jan	0	0 (0%)
Wet	Feb	2	2 ~~(0%)~~ (-1%)
Wet	Mar	0	0 (0%)
Wet	Apr	0	0 (0%)
Wet	May	0	0 (0%)
Wet	Jun	0	0 (0%)
Wet	Jul	0	0 (0%)
Wet	Aug	0	0 (0%)
Wet	Sep	0	0 (0%)
Wet	Oct	0	0 (0%)
Wet	Nov	2	2 ~~(4%)~~ (2%)
Wet	Dec	1	1 ~~(-1%)~~ (2%)
Above Normal	Jan	N/A	(0%)
Above Normal	Feb	N/A	~~(1%)~~ (-6%)
Above Normal	Mar	N/A	(0%)
Above Normal	Apr	N/A	(0%)
Above Normal	May	N/A	(0%)
Above Normal	Jun	N/A	(0%)
Above Normal	Jul	N/A	(0%)
Above Normal	Aug	N/A	(0%)
Above Normal	Sep	N/A	(0%)
Above Normal	Oct	N/A	(0%)
Above Normal	Nov	N/A	~~(3%)~~ (5%)
Above Normal	Dec	N/A	~~(8%)~~ (1%)
Below Normal	Jan	0	0 (0%)
Below Normal	Feb	0	0 (0%)
Below Normal	Mar	2	~~2 (-12%)~~ 1 (-23%)
Below Normal	Apr	1	2 ~~(64%)~~ (33%)
Below Normal	May	0	0 (0%)
Below Normal	Jun	0	0 (0%)
Below Normal	Jul	0	0 (0%)
Below Normal	Aug	0	0 (0%)
Below Normal	Sep	0	0 (0%)
Below Normal	Oct	0	0 (0%)
Below Normal	Nov	0	0 (0%)
Below Normal	Dec	~~3~~ 2	~~3 (0%)~~ 2 (-1%)
Dry	Jan	0	0 (0%)
Dry	Feb	0	0 (0%)
Dry	Mar	0	0 (0%)

Water Year Type	Month	Baseline Conditions ~~(Updated)~~	Proposed Project plus Cumulative
Dry	Apr	0	0 (0%)
Dry	May	0	0 (0%)
Dry	Jun	0	0 (0%)
Dry	Jul	0	0 (0%)
Dry	Aug	0	0 (0%)
Dry	Sep	0	0 (0%)
Dry	Oct	0	0 (0%)
Dry	Nov	7	~~8 (7%)~~ 7 (5%)
Dry	Dec	0	0 (0%)
Critically Dry	Jan	1	1 ~~(-5%)~~ (1%)
Critically Dry	Feb	0	0 (0%)
Critically Dry	Mar	0	0 (0%)
Critically Dry	Apr	0	0 (0%)
Critically Dry	May	0	0 (0%)
Critically Dry	Jun	0	0 (0%)
Critically Dry	Jul	0	0 (0%)
Critically Dry	Aug	~~2~~ 1	1 ~~(-18%)~~ (-14%)
Critically Dry	Sep	0	0 (0%)
Critically Dry	Oct	0	0 (0%)
Critically Dry	Nov	0	0 (0%)
Critically Dry	Dec	0	0 (0%)

Note: N/A indicates there were no Above Normal years in the historical record for the 2009–2022 period used to provide salvage density data for the analysis; for Above Normal years, the Wet year pattern was used, with only the percentage difference shown. Absolute and percentage values are rounded; as a result, differences between absolutes and differences between percentages may not always appear consistent.

10.1.6.2 Habitat Improvement Projects and Actions

Habitat restoration projects could also have temporary adverse impacts on aquatic species through effects such as short-term diminishment of water quality but would have beneficial long-term impacts through restoration of habitat areas. Many of the numerous habitat restoration projects that have been, are being, or are planned to be implemented, such as the Lookout Slough Tidal Habitat Restoration Project and the Prospect Island Tidal Habitat Restoration Project, are expected to increase the area of subtidal and intertidal habitat that would directly benefit Delta fish species. Other habitat restoration projects being developed by California EcoRestore have the potential to increase aquatic species habitat to benefit region-wide fish populations.

10.1.6.3 Fish Passage and Diversion Screening Projects and Actions

The projects included in this category consist of replacing and improving existing water diversion intakes to minimize loss of fish and improving passage of migrating anadromous fish while improving the reliability of agricultural water supplies. These projects have the potential to contribute to reducing anadromous fish loss at various intake locations on the Sacramento and San Joaquin rivers, in the Delta, and in Suisun Marsh and Bay.

These projects would have a beneficial impact on fish populations and would contribute to improving environmental conditions that act in a cumulative manner with other projects listed in Table 10-1.

10.1.6.4 Invasive Species Control Programs and Actions

Projects involving invasive species management actions, such as the Invasive Species Program and the Zebra Mussel Rapid Watch Program and Response Plan for California, would have beneficial impacts on the listed aquatic species by reducing the presence of competing or predating invasive aquatic species, minimizing their extent and potential impact on water quality and food sources for Delta fish, and/or improving fish habitat by removing invasive plant species. However, localized short-term adverse impacts could occur depending on the type of management action.

10.1.6.5 Area-Wide Plans and Programs

The plans and program identified in Table 10-1 address a wide range of actions. Several plans, such as the Bay-Delta WQCP Update and the California Stewardship Delta Plan, consist of area-wide plans specifically addressing Delta water quality and other Delta resources. These plans include provisions for maintaining water quality objectives; protecting and restoring the Delta ecosystem; protecting unique cultural, recreational, natural resources, and agricultural values; and establishing a more reliable water supply for California.

These plans have acted to limit adverse impacts on respective environmental resources and values for which the plans were developed. In this manner, these plans have acted to protect environmental values in the Delta from continued decline associated with past and present activities.

10.1.6.6 Discussion of Cumulative Impact on Aquatic Biological Resources

The incremental contribution of the Proposed Project to the cumulative impact on aquatic resources would not be cumulatively considerable because water operations effects generally would not be greatly different under the Proposed Project plus Cumulative and Baseline Conditions ~~(Updated)~~ scenarios. Additionally, the proposed SWP operations are subject to the same regulatory framework promulgated by the federal and state resource agencies, and include measures specifically expected to offset, reduce, or otherwise limit potential impacts on aquatic species. These requirements would reduce the Proposed Project's contribution to the cumulative impact to **less than cumulatively considerable**. The cumulative impact of the Proposed Project would, therefore, be **less than significant**.

10.1.7 Tribal Cultural Resources

As discussed in Chapter 7, "Tribal Cultural Resources," DWR consulted with numerous Tribal groups, including United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, Mooretown Rancheria of Maidu Indians, the Confederated Villages of Lisjan, and the Yocha Dehe Wintun Nation, to determine if Tribal cultural resources (TCRs) would be adversely affected by the Proposed Project.

The Proposed Project was determined to have no impact on TCRs. Therefore, the contribution of the Proposed Project to impacts on TCRs in the Project area **would not be cumulatively considerable.**

10.1.8 Environmental Justice

The cumulative baseline for environmental justice is the environmental setting as that described for the Proposed Project in Chapter 8, "Environmental Justice." This analysis determines whether the Proposed Project, when combined with the past, present, and reasonably foreseeable future projects identified in Table 10-1, would result in a significant cumulative impact on environmental justice or minority and low-income populations.

As described in Chapter 8, an environmental justice analysis is based on a review of relevant demographic data to define the relative proportion of minority and low-income populations within the Project area, to determine whether the Proposed Project, along with other projects listed in Table 10-1, would result in environmental justice effects on the relevant populations. Thus, environmental justice impacts are inherently cumulative, and the analysis in Chapter 8, is inclusive of cumulative impacts on environmental justice or minority and low-income populations. The Proposed Project would not involve construction of new facilities or modification of existing facilities or changes in land use and no impacts would occur on the minority and low-income communities in the Project area. For these reasons, the Proposed Project's contribution to cumulative impacts related to environmental justice **would not be cumulatively considerable**.

10.1.9 Climate Change Resiliency and Adaptation

The cumulative baseline for climate change resiliency and adaptation is the environmental setting as that described for the Proposed Project in Chapter 9, "Climate Change Resiliency and Adaptation."

10.1.9.1 Discussion of Cumulative Impact on Climate Change Resiliency and Adaptation

Changes in climate change resiliency and adaptation resulting from the Proposed Project and other past, present and reasonably foreseeable future projects, by themselves, are not considered significant environmental impacts. However, such changes could have secondary impacts on the environment, including on surface water quality and aquatic resources. Therefore, cumulative impacts relating to climate change resilience are addressed in conjunction with these topics, in the discussions above.

10.2 Growth-Inducing Impacts

Section 15126.2(e) of the State CEQA Guidelines requires that an EIR discuss the ways in which a Proposed Project could foster economic or population growth, or construction of additional housing, either directly or indirectly, in the surrounding environment. In addition, an EIR should discuss whether the characteristics of a project may encourage and facilitate other activities that could significantly affect the environment. It must not be assumed that growth is beneficial, detrimental, or of little significance to the environment.

10.2.1 Direct Impacts of the Proposed Project

The Proposed Project would not include any of the following:

- New construction of water facilities, infrastructure, or other land disturbance
- Expansion of the SWP service area
- Economic or population growth due to construction-related activities in the vicinity of the existing SWP facilities in the Delta or other portions of the SWP service area
- Construction of new facilities or modification to existing facilities that could increase the capacity of the SWP
- Modification or increase to the maximum volume of existing contracted water supplies with the 29 public water agencies receiving SWP supplies

As described in Chapter 2, "Project Description," SWP exports have generally decreased from the historically higher deliveries that occurred from 2005 through 2011. Therefore, the volume of SWP water deliveries has historically been greater than the volume under existing conditions and has been subject to declines resulting from a combination of drier hydrologic conditions and regulatory restrictions.

The Proposed Project would enable improved management of pumping facilities in response to real-time monitoring. This level of monitoring would enable the SWP to manage facility operations in the Delta to minimize potential impacts on special-status aquatic species when the risk of impact is higher and to relax operational constraints when the risk of impact is lower.

The increased precision of information to manage the SWP would result in improved fish protection and increase SWP water deliveries during periods when pumping would have less impact on special-status aquatic species. As discussed in Chapter 4, the Proposed Project scenario would potentially increase annual SWP deliveries by 52 thousand acre-feet (taf) (2 percent) compared to the Existing Conditions scenario. SWP deliveries would increase in Wet and Above Normal water years. In Below Normal, Dry, and Critical water years, proposed long-term average annual SWP deliveries would decrease compared to the Existing Conditions scenario. Actual SWP historical water deliveries between 1996 and 2018 have ranged from less than 500 taf to more than 3,500 taf in 2005 and 2006. CalSim model results prepared for the Proposed Project indicate that deliveries would increase with the proposed long-term SWP operations. However, in many years, SWP deliveries would continue to be limited by drier hydrologic conditions and continuing regulatory restrictions.

The total south-of-Delta SWP deliveries would not exceed the contracted maximum water volume of the individual public water agencies, resulting in no direct growth inducement impacts. In addition, under the Proposed Project, deliveries are projected to remain within the range of historical deliveries.

10.2.2 Potential of the Proposed Project to Induce Growth

To determine direct growth-inducement potential, the Proposed Project was evaluated to verify whether an increase in population or employment, or the construction of new housing would occur as a direct or indirect result of the long-term SWP operations. If either of these scenarios occurred, the Proposed Project could result in direct growth-inducement within the Public Water Agency (PWA) service areas.

The potential increase in future project deliveries is the only Proposed Project element that might be linked to future growth because the other Project elements have only localized impacts. Increased water deliveries would be spread across 24 contracted PWA service areas south of the Delta. These service areas include both agricultural uses as well as municipal and industrial uses. Additional water deliveries could be used for urban growth in areas dependent on this water supply, but these deliveries would not be the single impetus behind such growth. Other important factors influencing growth include:

- Financial factors, such as the cost of housing
- Economic factors, such as employment opportunities
- Capacity of public services and infrastructure, such as available services, including wastewater, public schools, and roadways
- Local land use policies
- Use constraints, such as floodplains, sensitive habitat areas, and seismic risk zones

Cities and counties have primary authority over land use decisions, and water suppliers (such as the PWAs) are expected and usually required to provide water service if water supply is available. Approval or denial of development proposals is the responsibility of the cities and counties in the study area, and not DWR. Availability of water is only one of the many factors that land use planning agencies consider when making decisions about growth.

While the Proposed Project would increase the potential delivery of water from the Delta, the amount of water available to the individual PWAs would be small relative to the portfolio of water available and would not be enough to indirectly support population growth. The Metropolitan Water District (MWD) is the largest contractor on the SWP system. MWD is a regional water wholesaler that provides water for 26 member public agencies to deliver, either directly or through their sub-agencies, to nearly 19 million people living in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties—an area that supports approximately a $1 trillion-per-year economy. Throughout MWD's service area, approximately 250 retail agencies supply water to the public. MWD imports water via the SWP and from the Colorado River via its Colorado River Aqueduct. About 45 percent of Southern California's water supply comes from these two sources. Southern California relies on various local sources to make up the difference. MWD receives about 50 percent of SWP's exports, roughly 1.2 million acre-feet (maf) in an average year (Metropolitan Water District 2015, 2016a, 2016b). The modeled increase in exports received by MWD, approximately 26 taf (i.e., 50 percent of total exports) on average, would represent less than 3 percent of MWD's annual water portfolio of approximately 2 to 2.4 maf in an average year, and MWD's imported supplies from the SWP and Colorado River Aqueduct are only 45 percent of Southern California's supplies. This illustrates why the potential increase in water delivery is not expected to have a direct or indirect effect on future growth in the PWA service areas.

From 2006 through 2018, average water deliveries from the SWP have generally been lower than they were in the previous decade due to changes in regulatory requirements and Below Normal water years. Despite reductions in water delivery, urban growth within the service areas of the 24 water contractors that receive water from Delta continues to expand.

Steady population growth within the 24 south-of-Delta water contractors service areas has not been appreciably affected by the annual changes in SWP deliveries described in Section 10.2.1, "Direct Impacts of the Proposed Project." This indicates that changes in the supply of water would have had little, if any, impact on population growth in the south-of-Delta service areas. Based on the absence of a discernable link between water delivery from the SWP and population growth based on historic data, the Proposed Project is not likely to result in a direct or indirect increase in population or employment. Therefore, the Proposed Project is not growth-inducing and would not induce secondary impacts of growth.