



**California Department of Fish and Wildlife
Ecosystem Conservation Division
P.O. Box 944209
SACRAMENTO, CA, 94244-2090**

California Endangered Species Act
Incidental Take Permit No. 2081-2023-054-00-A1

**LONG-TERM OPERATION OF THE STATE WATER PROJECT IN THE SACRAMENTO-SAN
JOAQUIN DELTA**

I. Authority:

This California Endangered Species Act (CESA) incidental take permit (ITP) is issued by the California Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take¹ of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.² However, CDFW may authorize the take of any such species by permit pursuant to the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) (see Cal. Code Regs., tit. 14, § 783.4).

Permittee:	California Department of Water Resources
Principal Officer:	Lenny Grimaldo, State Water Project Environmental Director
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Amended ITP³ Background:

On November 4, 2024, the California Department of Fish and Wildlife (CDFW) issued Incidental Take Permit No. 2081-2023-054-00 (ITP) to the California Department of Water Resources (Permittee), authorizing take of Longfin Smelt (LFS, *Spirinchus thaleichthys*), Delta Smelt (DS, *Hypomesus transpacificus*), spring-run Chinook salmon (CHNSR, *Oncorhynchus tshawytscha*), winter-run Chinook salmon (CHNWR, *Oncorhynchus tshawytscha*), and White Sturgeon (*Acipenser transmontanus*; collectively, the Covered Species) associated with and incidental to the long-term operations of the State Water Project (SWP) in the Sacramento San Joaquin Delta (Project). The Project as described in

¹ Pursuant to Fish and Game Code section 86, “‘take’ means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” (See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 507 [for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), “‘take’ ... means to catch, capture or kill”].)

² The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

³ When this incidental take permit and attachments refer to the “ITP”, it means the “Amended ITP” unless the context dictates otherwise.

the ITP as originally issued by CDFW includes continued operation of the SWP facilities in the Sacramento-San Joaquin Delta (Delta) and Suisun Marsh.

In an application dated August 20, 2025, and subsequent addition on August 29, 2025 and September 25, 2025, Permittee requested changes to Condition of Approval 9.1.3. Delta Smelt Summer-Fall Habitat Action and the Adaptive Management Program.

II. Effective Date and Expiration Date of this ITP:

The original ITP became effective as of the date signed by CDFW, which was November 4, 2024. This remains the effective date for the original take authorization and the implementation schedule of the MMRP Table of Mitigation Measures, unless amended otherwise. This Amended ITP shall become effective upon execution by CDFW. Unless renewed by CDFW, this ITP and its authorization to take the Covered Species shall expire on November 1, 2034.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete the Permittee's Final Mitigation Report required by Condition of Approval 7.4 of this ITP.

Pursuant to Permittee's request, this ITP replaces ITP No. 2081-2019-066-00, issued to DWR on March 31, 2020. ITP No. 2081-2019-066-00 is rescinded as of CDFW's issuance of this ITP.

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III. Project Location:

The Long-term Operation of the State Water Project in the Sacramento-San Joaquin Delta (Project) is located within the following geographic area (Project Area, Figure 1):

- Sacramento River from its confluence with the Feather River downstream to the legal Delta boundary at the I Street Bridge in the City of Sacramento;
- Sacramento-San Joaquin Delta (i.e., upstream to Vernalis and downstream to Chipps Island); and
- Suisun Marsh and Bay.

Project operations will be in all fish-bearing waterways within the Project Area. The northern edge of the Project Area is located approximately 8.56 kilometers (km) northeast of Knights Landing in Yolo County at approximately 38.785281 latitude, -121.621825 longitude and extends downstream on the Sacramento River to the Sacramento-San Joaquin Delta (Delta). To the south and east, the Project Area is bounded by the legal boundary of the Delta. To the west, the Project Area is bounded by the legal Delta, Suisun Marsh, and Suisun Bay.

IV. Project Description:

This Project Description is based on information CDFW obtained from Permittee's November 2023 ITP Application and subsequent coordination with Permittee. The Conditions of Approval begin on page 40.

1. Introduction

The State Water Project (SWP) includes water, power, and conveyance systems, conveying an annual average of 2.9 million acre-feet (MAF) of water. The principal facilities of the SWP are Oroville Reservoir and related facilities, San Luis Dam and related facilities, facilities in the Delta, the Suisun Marsh Salinity Control Gates (SMSCG), the California Aqueduct including its terminal reservoirs, and the North and South Bay Aqueducts. Permittee holds contracts with 29 public agencies in northern, central, and southern California for water supplies from the SWP. Water stored in the Oroville facilities, along with water available in the Delta (consistent with applicable regulations) is captured in the Delta and conveyed through several facilities to SWP Contractors. Permittee operates the SWP to provide flood control and water for power generation, agricultural, municipal, industrial, recreational, and environmental purposes.

1.1. Description of Existing Facilities Relevant to Proposed Project Operations

The SWP and joint SWP/Central Valley Project (CVP) facilities in the Delta provide for delivery of water supply to areas within and immediately adjacent to the Delta, and to regions south of the Delta. The main SWP Delta features are Suisun Marsh and Bay facilities (including the SMSCG, Roaring River Distribution System [RRDS], Morrow Island Distribution System [MIDS], and Goodyear Slough Outfall [GYSO]), the Harvey O. Banks Pumping Plant (Banks Pumping Plant), the Clifton Court Forebay (CCF), the John E. Skinner Delta Fish Protective Facility (Skinner Fish Facility), and the Barker

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Slough Pumping Plant (BSPP). The south Delta temporary agricultural barriers, San Luis Reservoir, and Delta Mendota Canal/California Aqueduct Intertie are joint SWP/CVP facilities.

1.1.1. Harvey O. Banks Pumping Plant

The Banks Pumping Plant, located 12.87 km (8 miles) northwest of Tracy, marks the upstream end of the California Aqueduct. The plant discharges into five pipelines that convey water into a roughly 1.6-km-long (1-mile-long) canal, which in turn conveys water to Bethany Reservoir.⁴ The Banks Pumping Plant consists of 11 pumps—two rated at 375 cubic feet per second (cfs) capacity, five at 1,130 cfs capacity, and four at 1,067 cfs capacity—that provide the initial lift of water 74.37 meters (m; 244 feet) from the CCF into the California Aqueduct. The rated capacity of the Banks Pumping Plant is 10,668 cfs; however, Banks Pumping Plant's maximum daily pumping rate is controlled by a combination of the State Water Resources Control Board (State Water Board) Water Right Decision 1641 (D-1641) and permits issued by the U.S. Army Corps of Engineers (USACE) that regulate the rate of diversion of water into the CCF. D-1641 defines SWP exports as the daily inflow to CCF minus the withdrawal from CCF for Byron-Bethany Irrigation District and includes a maximum SWP export limit of 10,350 cfs on a daily average. Further, Banks Pumping Plant could pump up to 195,000 acre feet (AF) for the CVP in accordance with the 2018 amended Coordinated Operations Agreement (COA).⁵

1.1.2. John E. Skinner Delta Fish Protective Facility

The John E. Skinner Delta Fish Protective Facility (Skinner Fish Facility) is west of the CCF, about 3.22 km (2 miles) upstream from the Banks Pumping Plant. The Skinner Fish Facility guides fish away from entering the pumps that convey water into the California Aqueduct. Large fish and debris are directed away from the facility by a 118-meter-long (388-foot-long) trash boom. Smaller fish are diverted from the intake channel into bypasses by a series of metal louvers. These smaller fish pass through a secondary system of screens, louvers, and pipes into seven holding tanks, where a subsample is counted and recorded. The salvaged fish are then returned to the Delta in oxygenated tank trucks.

During normal operations, salvaged fish are transported approximately 30 km (19 miles) and released at one of six SWP and CVP release sites near the confluence of the Sacramento and San Joaquin rivers. These are the SWP Curtis Landing Release Site, SWP's Little Baja and Manzo Ranch release sites, both of which are located on Sherman Island, and U.S. Bureau of Reclamation (Reclamation) release sites at Antioch and Emmaton, which Permittee has contracted with Reclamation to use on a cooperative basis.

⁴ California Department of Water Resources and U.S. Bureau of Reclamation (2019). Technical information for parties preparing proposals for water transfer requiring Department of Water Resources or Bureau of Reclamation approval. Prepared by California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region. December 2019.

⁵ U.S. Bureau of Reclamation and California Department of Water Resources (2018). Addendum to the agreement between the United States of America and the Department of Water Resources of the State of California for coordinated operation of the Central Valley Project and the State Water Project. December 2018.

1.1.2.1. SWP Curtis Landing Release Site

The SWP Curtis Landing release site is located on the San Joaquin River side of Sherman Island, immediately upstream of the Antioch Bridge. The release facility consists of two stainless steel pipes. One pipe is 30.5 centimeter (cm) in diameter, approximately 18.3 m long, and is used for the release of fish and includes a PVC section (~3 m) with a passive integrated transponder (PIT) tag detection array. The other pipe, a water intake pipe, is 40.6 cm in diameter and houses a submersible pump which feeds flushing water at 3.5 cfs into the release pipe through a dual-inlet manifold. The water intake pipe also includes a retrievable self-cleaning cylindrical fish screen. At the mean highwater level, the end of the release pipe is submerged approximately 5.5 m into the water.

1.1.2.2. SWP Little Baja and Manzo Ranch Release Sites

The SWP Little Baja and Manzo Ranch release sites are located on the Sacramento River side of Sherman Island, approximately 0.8 km and 1.6 km upstream of the Sherman Island County Park, respectively. At the mean high-water level, the end of the release pipe is submerged approximately 4.37 m and 3.96 m into the water at Little Baja and Manzo Ranch, respectively. Both sites incorporate the same 3.5 cfs pipe flushing and overhead washdown system, fish screen, and other design elements utilized at Curtis Landing.

1.1.2.3 CVP Emmaton Release Site

The CVP Emmaton release site is located on the Sacramento River side of Sherman Island at the downstream mouth of Horseshoe Bend. It is located 0.8 km downstream of the SWP Horseshoe Bend release site. The release site consists of four pipes that extend to various depths in the channel with a catwalk and piling structure that extends to the end of the longest pipe. There is a permanent water quality station housed in a small shed at the end of the catwalk. Two of the four pipes at the release site are pump/water supply lines that provide a flushing/rinsing flow of 1.6 cfs. The remaining two pipes are the fish release pipes situated at approximately a 36% slope. The longer of the two fish release pipes extends approximately 25 m into the river and has a mean depth at the pipe outlet of about 7.3 m, while the other shorter pipe extends roughly half that length and depth and is operated in order to reduce clogging problems when high debris levels are present in the transport truck.

1.1.2.4 CVP Delta Base/Antioch Release Site

The CVP Antioch release site, colloquially known as the Delta Base site, is located on the south bank of the San Joaquin River near the Antioch Bridge in the city of Oakley. It is located in a park behind an East Bay Regional Parks maintenance yard in a fenced compound near the Antioch Fishing Pier. Reclamation refurbished the site in 2023 and the shore-side infrastructure is similar in detail to the SWP Curtis Landing, Little Baja, and Manzo Ranch release sites including the same flushing system (3.5 cfs pump with timer). However, the San Joaquin River is much shallower and wider at the Antioch site than the channel at the other fish release sites. Consequently, the release pipe is longer, has a shallower slope, and has a mean depth at the pipe outlet of approximately 4.5 m.

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1.1.3. Clifton Court Forebay

The CCF is located near the city of Byron in the south Delta. The Banks Pumping Plant pumps water diverted from the CCF via the intake channel past Skinner Fish Facility. A set of five radial gates are located at the CCF inlet near the confluence of the Grant Line Canal and West Canal. They are operated so that they can be closed during critical periods of the ebb/flood tidal cycle to maintain appropriate water levels for local agricultural water users in the south Delta. The gates are operated on the tidal cycle to reduce approach velocities, prevent scour in adjacent channels, and minimize fluctuations in water elevation in the south Delta by taking water in through the gates at times other than low tide.

Banks Pumping Plant pumping rates are constrained operationally by limits on CCF diversions from the Delta. The typical maximum daily diversion limit from the Delta into the CCF is 13,870 AF per day (6,993 cfs/day) and the maximum averaged diversion limit over any three days is 13,250 AF per day (6,680 cfs/day). In addition to these requirements, currently Permittee may increase diversions from the Delta into the CCF by one-third of the San Joaquin River flow at Vernalis from mid-December through mid-March when flows at Vernalis exceed 1,000 cfs. These limits are listed in USACE Public Notice 5820A Amended (October 13, 1981).⁶

From July through September, the maximum daily diversion limit from the Delta into the CCF may be increased from 13,870 AF per day (6,993 cfs/day) to 14,860 AF per day (7,492 cfs/day), and the maximum averaged diversion limit over any three days is increased from 13,250 AF per day (6,680 cfs/day) to 14,240 AF per day (7,180 cfs/day), an increase of 500 cfs/day. These increases are for the purpose of recovering water supply losses incurred earlier in the same year to protect fish species listed under the federal and state Endangered Species Acts.

1.1.4. Barker Slough Pumping Plant

The BSPP diverts water from Barker Slough into the North Bay Aqueduct (NBA) for delivery to Napa and Solano counties. The NBA intake is located approximately 16 km (10 miles) from the mainstem Sacramento River at the end of Barker Slough. In accordance with salmon screening criteria, each of the aqueduct's 10 pump bays are individually screened with a positive barrier fish screen consisting of a series of flat, stainless-steel, wedge-wire panels with a slot width of 0.238 cm (3/32 inch). This configuration is designed to exclude and prevent the entrainment of fish measuring approximately 2.54 cm (1 inch) or larger. The bays tied to the two smaller units have an approach velocity of about 0.2 foot per second (ft/sec). The larger units were designed for a 0.5 ft/sec approach velocity, but actual approach velocity is about 0.44 ft/sec. The screens are routinely cleaned to prevent excessive head loss, minimizing increases in localized approach velocities.

The first two bays have small pump unit (nominally 14 cfs), and seven bays have larger pump units (nominally 28 cfs). The last bay does not have a pump. The maximum pipeline capacity is 175 cfs, but

⁶ U.S. Army Corps of Engineers (1981). Public Notice No. 5820A Amended. U.S. Army Corps of Engineers, Sacramento District, Sacramento, CA. October 13, 1981.

currently the normal pumping rate is between 0 cfs and 130 cfs because the maximum pipeline capacity cannot be reached due to biofilm accumulation in the pipe. Fish screen cleaning, sediment removal, and aquatic weed removal at the BSPP is needed year-round to maintain operation of the BSPP.

1.1.4.1. Barker Slough Pumping Plant Fish Screen Cleaning

Permittee cleans the BSPP screens once a month using a truck-mounted crane to lift the screens up and a high-pressure hose sprayed from the back side of the screens. Raising and cleaning of the fish screens is necessary to prevent excessive head loss and minimize localized approach velocities.

1.1.4.2. Barker Slough Pumping Plant Sediment Removal

Sediment removal from the trap and concrete apron in front of the facility is necessary to prevent accumulation and clogging of the screens and facility. The NBA is annually taken off-line for one to two weeks for routine maintenance and repairs, and the BSPP is non-operational during this period. Removal of sediment from within the pump wells would occur as needed, year-round, subject to applicable regulatory requirements. Sediment will be tested and disposed of at a suitable location or existing landfill.

1.1.4.3. Barker Slough Pumping Plant Aquatic Weed Removal

Removal of aquatic weeds is necessary to avoid blocking flow and causing water levels to drop in the pump wells behind the screens, triggering automatic shutoffs to protect the pumps from cavitation. All weed removal work occurs immediately in front of the fish screens and on top of the concrete apron that extends out into the forebay. No weed removal activities occur outside the embayment or upstream of the floating booms. The aquatic weed removal system consists of grappling hooks attached by chains to an aluminum frame. A boom truck staged on the platform in front of the BSPP pumps lowers the grappling system into the water to retrieve the accumulated aquatic vegetation. This process is repeated in front of each of the 10 screens while the pumps are not running. The removed aquatic weeds are transported to two aggregate base spoil sites located near the BSPP. Removal of aquatic weeds from the BSPP fish screens, concrete apron and forebay occurs year-round when no larval or juvenile Delta Smelt (DS, *Hypomesus transpacificus*) or Longfin Smelt (LFS, *Spirinchus thaleichthys*) are detected nearby.

1.1.5 Suisun Marsh Operations

The Suisun Marsh Preservation Agreement (SMPA) among Permittee, Reclamation, CDFW, and Suisun Resource Conservation District contains provisions for Permittee and Reclamation to mitigate the impacts on Suisun Marsh channel water salinity from SWP and CVP operations and other upstream diversions. The SMPA requires Permittee and Reclamation to meet salinity standards in

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accordance with D-1641, sets a timeline for implementing the Plan of Protection for the Suisun Marsh,⁷ and delineates monitoring and mitigation requirements.

There are two primary physical mechanisms for meeting salinity standards set forth in D-1641 and the SMPA: (1) the implementation and operation of physical facilities in the Marsh; and (2) management of Delta outflow (i.e., facility operations are driven largely by salinity levels upstream of Montezuma Slough, and salinity levels are highly sensitive to Delta outflow). Physical facilities (described below) have been operating since the 1980s.

Physical facilities in the Suisun Marsh and Bay include the SMSCG, the RRDS, the MIDS, and the GYSO. The location and operation of these facilities are described below.

1.1.5.1 Suisun Marsh Salinity Control Gates

The SMSCG are located on Montezuma Slough about 3.22 km (2 miles) downstream from the confluence of the Sacramento and San Joaquin rivers, near Collinsville. The objective of SMSCG operation is to decrease the salinity of the water in Montezuma Slough. The gates control salinity by restricting the flow of higher-salinity water from Grizzly Bay into Montezuma Slough during incoming tides and allowing lower-salinity Sacramento River water to enter the Marsh on the ebb tide. Operation of the gates in this fashion lowers salinity in Suisun Marsh channels and results in a net movement of water from east to west through Suisun Marsh.

The SMSCG are operated during the salinity control season, which spans from October to May. Operational frequency is affected by salinity at D-1641 compliance stations, hydrologic conditions, weather, Delta outflow, tide, fishery considerations, and other factors. The boat lock portion of the gate is now held partially open during SMSCG operation to allow an opportunity for continuous salmon passage but is closed temporarily to stabilize flows to facilitate safe passage of watercraft through the facility. The SMSCG are also operated as described in Condition of Approval 9.1.3.

1.1.5.2 Roaring River Distribution System

The RRDS was constructed to provide lower-salinity water to 5,000 acres of private and 3,000 acres of CDFW-managed wetlands on Simmons, Hammond, Van Sickle, Wheeler, and Grizzly islands. The RRDS includes a 40-acre intake pond that supplies water to Roaring River Slough. Water is diverted through a bank of eight 152.4 cm (60 inch) diameter culverts equipped with fish screens into the Roaring River intake pond on high tides to raise the water surface elevation in the RRDS above the adjacent managed wetlands. The intake to the RRDS is screened to prevent entrainment of fish larger than approximately 25 millimeters (mm). After the listing of DS, RRDS diversion rates have been controlled to maintain a maximum average approach velocity of 0.2 ft/sec at the intake fish screen except during the period from September 14 through October 20, when RRDS diversion rates

⁷ California Department of Water Resources (1984). Plan of protection for the Suisun Marsh including environmental impact report. California Department of Water Resources, Central District. February 1984.

are controlled to maintain a maximum average approach velocity of 0.7 ft/sec for fall flood-up operations.

1.1.5.3 Morrow Island Distribution System

The MIDS consists of three unscreened 122-cm (48-inch) intakes that allow Permittee and Reclamation to provide fresher water to the landowners for managed wetland activities approved in local management plans. The system was constructed primarily to channel drainage water from the adjacent managed wetlands for discharge into Suisun Slough and Grizzly Bay, which increases circulation and reduces salinity in Goodyear Slough. The MIDS is used year-round, but most intensively from September through June. When managed wetlands are filling and circulating, water is tidally diverted from Goodyear Slough just south of Pierce Harbor.

1.1.5.4 Goodyear Slough Outfall

The GYSO connects the south end of Goodyear Slough to Suisun Bay. Prior to construction of the outfall, Goodyear Slough was a dead-end slough. The GYSO was designed to increase circulation and reduce salinity in Goodyear Slough to provide higher water quality to the wetland managers who flood their ponds with Goodyear Slough water. GYSO has a series of four passive intakes that drain to Suisun Bay. The outfall is equipped with slide gates on the interior of the outfall structure to allow Permittee to close the system for maintenance or repairs. The intakes and outfall of GYSO are unscreened but are equipped with trash racks to prevent damage. Because the GYSO is an open system, any fish that enter the system are able to leave via the intake or the outfall.

1.1.6 Georgiana Slough Salmonid Migratory Barrier

Permittee will install and operate a salmonid migratory barrier at Georgiana Slough annually during the juvenile salmonid migratory period to reduce the likelihood of emigrating salmonid entrainment in the central and south Delta. A salmonid migratory barrier at Georgiana Slough is expected to provide a higher probability of survival for emigrating juvenile winter-run and spring-run Chinook Salmon (*Oncorhynchus tshawytscha*, CHNWR and CHNSR) that encounter the Sacramento River-Georgiana Slough junction and reduce entrainment of emigrating juveniles into the central and south Delta. Annual installation of the barrier is covered by a separate ITP (ITP No. 2081-2021-102-03) and initial study and mitigated negative declaration under CEQA (State Clearinghouse Number 2021100009).

1.1.7 South Delta Temporary Barriers Project

Permittee's South Delta Temporary Barriers Project was initiated in 1991. The South Delta Temporary Barriers Project is designed to improve water levels, circulation patterns, and water quality in the southern Delta for local agricultural diversions. Permittee installs and removes temporary rock barriers at the following locations:

- Middle River near the Victoria Canal, about 0.8 km (0.5 mile) south of the confluence of Middle River, Trapper Slough, and the North Canal;

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- Old River near Tracy, approximately 0.8 km (0.5 mile) east of the Delta-Mendota Canal (DMC) intake; and
- Grant Line Canal, approximately 0.12 km (400 feet) east of the Tracy Boulevard Bridge.

These rock barriers are designed to act as stage control structures, trapping tidal waters behind them after a high tide. These barriers maintain water levels for local south Delta farmers and are collectively referred to as agricultural barriers.

Rock barriers at Middle River, Old River near Tracy, and the Grant Line Canal are in place no earlier than May 1. These barriers are installed annually based on local conditions (e.g., when San Joaquin River flows are below 5,000 cfs) and are not necessarily installed on May 1 every year. The Middle River and Old River at Tracy barriers are notched, and flashboards are removed at the Grant Line Canal barrier, to allow for adult salmon passage by September 15. The culvert and abutments at the Middle River barrier remain in place throughout the year. The Old River near Tracy barrier is completely removed by November 30 each year. At the Grant Line Canal barrier, the culverts and south barrier abutment, with the flashboard structure, remain throughout the year; all other components are removed by November 30 each year.

The Middle River barrier has been installed since 1987, the Old River barrier near Tracy has been installed since 1991, and the Grant Line Canal barrier has been installed since 1996 (with the exception of 1998). Full closure of the Grant Line Canal Barrier requires National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and CDFW approval and a demonstrated need for the full closure based on actual conditions and hydrodynamic modeling.

This Project includes operation of the barriers within the south Delta and does not address the construction or removal of the barriers, which is covered by ITP No. 2081-2021-079-03.

1.1.8 San Luis Reservoir

San Luis Reservoir is an off-stream storage facility located along the California Aqueduct downstream of the Banks Pumping Plant and C.W. Bill Jones Pumping Plant (Jones Pumping Plant). The SWP and CVP share San Luis Reservoir storage roughly 50/50 (SWP has 1,062 thousand acre-feet [TAF] of storage; CVP has 966 TAF of storage). San Luis Reservoir is used by both the SWP and CVP to meet deliveries to their contractors during periods when Delta pumping is insufficient to meet demands. San Luis Reservoir is also operated to supply water to the CVP San Felipe Division in San Benito and Santa Clara counties.

San Luis Reservoir operates as a regulator on the SWP/CVP system, accepting any water pumped from the Banks and Jones pumping plants that exceeds contractor demands, then releasing that water back to the aqueduct system when the pumping at the Banks and Jones pumping plants is insufficient to meet demands. The reservoir allows the SWP/CVP to meet peak-season demands that are seldom balanced by Banks and Jones pumping.

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As San Luis Reservoir is drawn down to meet contractor demands, it usually reaches its low point in late August or early September. From September through early October, demand for deliveries declines until it is less than the rate of diversions from the Delta at the Banks and Jones pumping plants. At this point, the additional diverted water is added to San Luis Reservoir, reversing its spring and summer decline and eventually filling the San Luis Reservoir—typically before April of the following year.

1.1.9 Delta Mendota Canal/California Aqueduct Intertie

The Delta-Mendota Canal/California Aqueduct Intertie (DCI) is a Reclamation facility that is co-operated by the SWP and CVP and provides the ability to move water from the DMC to the California Aqueduct. The DCI provides up to 900 cfs gravity flow from the California Aqueduct to the DMC and up to 467 cfs pumping capacity from the DMC to the California Aqueduct. Though the DCI provides the capability to convey water in both directions, the primary use has been pumping water from the DMC to the California Aqueduct. The DCI helps to offset loss of canal capacity due to subsidence on the upper DMC, which has affected the CVP's ability to utilize the full design capacity of the Jones Pumping Plant. The Jones Pumping Plant has for the most part been limited to about 3,600 cfs without the use of the DCI. Due to continued subsidence, the frequency of DCI use has increased.

1.2. Description of Existing SWP Water Service Contracts

Permittee has signed long-term contracts with 29 water agencies statewide to deliver water supplies developed from the SWP system. These contracts are with both municipal and industrial (M&I) water users and agricultural water users. The contracts specify the charges that will be made by the water agency for both (1) water conservation and (2) conveyance of water. The foundation allocation of water to each contractor is based on their respective "Table A" entitlement, which is the maximum amount of water delivered to them by the SWP on an annual basis.

Under statewide contracts, Permittee allocates Table A water as an annual supply made available for scheduled delivery throughout the year. Table A contracts total 4,173 TAF, with more than 3 MAF for San Joaquin Valley and Southern California water users.

Article 21 of the long-term SWP water supply contracts provides an interruptible water supply made available only when certain conditions exist: (1) the SWP share of San Luis Reservoir is physically full or is projected to be physically full; (2) other SWP reservoirs south of the Delta are at their storage targets or the conveyance capacity to fill these reservoirs is maximized; (3) the Delta is in excess conditions; (4) current Table A demand is being fully met; and (5) Banks Pumping Plant has export capacity beyond that which is needed to meet current Table A and other SWP operational demands.

1.3. SWP Allocation and Forecasting

At the beginning of each new water year, significant uncertainty exists regarding hydrologic conditions and water supplies that will be allocated by the SWP to its water contractors. In recognition of this uncertainty, Permittee plans the operations of the SWP by projecting monthly on

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a 12-month look-ahead cycle. The initial allocation for SWP deliveries is made by December 1 of each year with a conservative assumption of future precipitation to avoid over-allocating water before the hydrologic conditions are well defined for the year. The forecasting water supply allocation process is updated monthly and incorporates known conditions in the Central Valley watershed to date, as well as forecasts of future hydrologic conditions to provide an estimate of SWP water supplies that can be delivered to SWP Contractors as the water year progresses.

Another water supply consideration is the contractual ability of SWP Contractors to “carry over” allocated but undelivered Table A supplies from the previous year to the next if space is available in San Luis Reservoir. The carryover storage is often used to supplement an individual contractor’s current year Table A allocations if conditions are dry. Carryover supplies left in San Luis Reservoir by SWP Contractors can result in higher storage levels in San Luis Reservoir. As SWP pumping fills San Luis Reservoir, the contractors are notified to take, or lose, their carryover supplies. Carryover water not taken, after notice is given to remove it, then becomes water available for reallocation to all contractors in a given year.

Article 21 (surplus to Table A) water, which is delivered early in the calendar year, may be reclassified as Table A water later in the year depending on final allocations, hydrology, and contractor requests. Reclassification does not affect the amount of water carried over in San Luis Reservoir, nor does it alter pumping volumes or schedules.

1.4. Coordination of Daily Operations with Reclamation

After the allocations and forecasting process, Permittee and Reclamation coordinate SWP and CVP operations on a daily basis under the COA between the federal government and the State of California (authorized by Public Law 99 546). Some factors Permittee and Reclamation consider when coordinating their joint operations include required in-Delta flows, Delta outflow, water quality, schedules for the joint use facilities, pumping and wheeling arrangements, and any facility limitations. Additionally, both the SWP and CVP must meet the flood obligations of individual reservoirs. CVP operations must also consider flows at Wilkins Slough and associated pump intake elevations. Additionally, Reclamation may use existing SWP facilities via (1) direct export at Banks Pumping Plant using Joint Point of Diversion (JPOD) provisions in D-1641; or (2) through the use of the DCI and pumping water directly into the California Aqueduct for conveyance to CVP storage and water uses.

The 2018 COA Addendum defines balanced and excess water conditions as:

Balanced Water Conditions: “The COA defines balanced water conditions as periods when it is mutually agreed that releases from upstream reservoirs plus unregulated flows approximately equal the water supply needed to meet Sacramento Valley in-basin uses plus Delta exports.”

Excess Water Conditions: “Excess water conditions are periods when it is mutually agreed that releases from upstream reservoirs plus unregulated flows exceed Sacramento Valley in-basin uses plus Delta exports.”

Process to Determine Balanced vs. Excess Water Conditions: “Reclamation’s Central Valley Operations Office and DWR’s SWP Operations Control Office jointly decide when balanced or excess water conditions exist. During excess water conditions, when sufficient water is available to meet all beneficial needs, the CVP and SWP are not required to supplement the supply with additional releases from storage.”

During balanced water conditions, Permittee and Reclamation maintain a daily water accounting of SWP and CVP obligations. This accounting allows for flexible operations and avoids the need to change reservoir releases made several days in advance (due to travel time from the Delta). Therefore, adjustments can be made “after the fact,” using actual observed data rather than using predictions of reservoir inflow, storage withdrawals, and in-basin uses. This iterative process of observation and adjustment results in a continuous trueing up of the running COA account. If either the SWP or CVP is “owed” water (i.e., the project that provided more or exported less than its COA-defined share), each may request the other to adjust its operations to reduce or eliminate the accumulated account within a reasonable time.

The COA provides the mechanism for determining SWP and CVP responsibility for meeting in-basin use, but real-time conditions dictate real-time actions. Conditions in the Delta can change rapidly. For example, weather conditions combined with tidal action can quickly affect Delta salinity conditions and, therefore, the Delta outflow required to maintain joint salinity standards under D-1641.

Increasing or decreasing SWP or CVP exports can achieve changes to Delta outflow immediately. Imbalances in meeting each other’s initial shared obligations are captured by the COA accounting and balanced out later.

When more reaction time is available, reservoir release changes are used to adjust to changing in-basin conditions and are coordinated with Reclamation. Permittee’s Lake Oroville releases require about three days to reach the Delta, while water released from Reclamation’s Shasta Reservoir requires five days to travel from Keswick Reservoir to the Delta, and Folsom Reservoir water requires one day to travel to the Delta. Each occurrence is evaluated on an individual basis and appropriate action is taken based on multiple factors.

The duration of balanced water conditions varies from year to year. Balanced conditions never occur in some very wet years, while very dry years may have long continuous periods of balanced conditions, and still other years may have several periods of balanced conditions interspersed with excess water conditions. Account balances continue from one balanced water condition through the excess water condition into the next balanced water condition. When either the SWP or CVP enters into flood control operations, the accounting is zeroed out for that project.

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Permittee and Reclamation staff meet daily to discuss and coordinate SWP and CVP system operations. Several items are discussed at this daily meeting, including:

- Current reservoir conditions;
- Pumping status and current outages (for both the SWP and the CVP and how they are affecting combined operations);
- Upcoming planned outages (SWP and CVP) and what that means for future operations;
- Current reservoir releases and what changes may be planned;
- Current regulatory requirements and compliance status; and
- Delta conditions to determine if SWP and CVP pumping make use of all available water.

Permittee and Reclamation also coordinate with hydrosystem controllers and area offices to ensure that, if necessary, personnel are available to make the desired changes. Once Permittee and Reclamation each decide on a plan for that day and complete all coordination, the respective agencies issue change orders to implement the decisions, if necessary. Permittee and Reclamation are co-located in the Joint Operations Center. The California Data Exchange Center (CDEC), California-Nevada River Forecast Center, and the Permittee's Flood Management Group are also co-located in the Joint Operations Center. This enables efficient and timely communication, particularly during flood events.

1.5. Relationship of Covered Activities to the Healthy Rivers and Landscapes Program

The Healthy Rivers and Landscapes Program (HRL), previously referred to as the Voluntary Agreements, are a package of flow and non-flow measures proposed by a diverse range of interests for adoption by the State Water Board as an approach to implement the Bay-Delta Water Quality Control Plan (Bay-Delta Plan).⁸ The HRL would state commitments of water, funding, and other measures to implement Bay-Delta Plan water quality objectives related to protection of native fishes, including the Covered Species. The HRL includes a watershed-wide approach that includes flows, habitat restoration, and a governance and science program that would be deployed adaptively.

As described in Section 1.2 of this Project Description, individual SWP water agencies contract with Permittee to pay for the operation, maintenance, planning and capital costs of the SWP. As described in Sections 1.2 and 1.3 of the Project Description, the SWP Contractors depend on Permittee for water deliveries for M&I and agricultural uses. The SWP Contractors are engaged in the HRL for the purpose of facilitating Permittee's compliance with the Bay-Delta Plan.

⁸ State Water Resources Control Board (2006). Water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. State Water Resources Control Board, Division of Water Rights, Sacramento, CA. December 2006.

The HRL is subject to ongoing discussion and has neither been finalized nor adopted by the State Water Board. Adoption and implementation of HRL is not a Covered Activity of this ITP; this ITP does not provide take authorization for the HRL.

The HRL proposes to use flexible blocks of water to increase tributary flows for Delta outflow as well as for the restoration of habitat. As of issuance of this ITP, Permittee anticipates the HRL may occur and if it does, will include elements Permittee could complete, or cause to be completed with the support of its SWP Contractors, to implement the Project. As part of the HRL, the Permittee, in cooperation with the SWP contractors, has proposed to support certain Project operational changes, including a proposal that includes upstream flows that may be generated through Permittee's facilitation of fallowing and related reservoir releases, and export curtailments for spring outflow. Maintenance of spring outflow is a component of the Project, described in Section 3.3 of the Project Description, and Condition of Approval 8.12 to this ITP (Spring Delta Outflow Implementation). Condition of Approval 8.12 is included within the actions that will be reviewed pursuant to the Adaptive Management Program (Attachment 4; AMP).

If the HRL is approved by the State Water Board during the term of this ITP in a manner that incorporates Permittee's proposed upstream flows that may be generated through Permittee's facilitation of fallowing and related reservoir releases, and export curtailments for spring outflow, and in any year during the term of this ITP, the SWP export reductions for spring outflow and upstream flows that may be generated through Permittee's facilitation of fallowing, and related reservoir releases are implemented pursuant to approved HRL consistently with Condition of Approval 8.12.2 (Spring Delta Outflow Via the Healthy Rivers and Landscapes Program) and Condition of Approval 8.12.3 (Planning and Reporting Implementation of Spring Delta Outflow Via the Healthy Rivers and Landscapes Program), then Permittee will rely on the HRL to satisfy the operations required by this ITP. If in any year during the term of this ITP, the HRL is not approved or are not planned to be implemented in such a manner, then Permittee will implement Condition of Approval 8.12.1 (Spring Delta Outflow Via Export Reductions).

2. Existing Regulations

2.1. U.S. Army Corps of Engineers Permits

In USACE Public Notice 5820A Amended (October 13, 1981), USACE limited the volume of daily SWP diversions from the Delta into CCF, stating that such daily diversions may not exceed 13,870 AF per day (6,993 cfs/day) and 3-day average diversions into the CCF may not exceed 13,250 AF per day (6,680 cfs/day). In addition, the SWP can increase diversions into the CCF by one-third of the San Joaquin River flow at Vernalis from mid-December to mid-March when the river's flow at Vernalis exceeds 1,000 cfs.

In 2017, USACE issued a revised Permit SPK-1999-00715 and raised the daily diversion during July through September from 13,870 AF per day (6,993 cfs/day) to 14,860 AF per day (7,492 cfs/day) and the 3-day average diversion from 13,250 AF per day (6,680 cfs/day) to 14,240 AF per day (7,180

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cfs/day). The conditions in this permit applied to SWP operations from 2017 through 2020.⁹ A subsequent modification in September of 2021 extended the permit to apply to SWP operations through September 30, 2029.¹⁰

In 2023 the project description was amended to remove Special Condition 5, which had stated that “all three temporary agricultural barriers (Middle River, Old River near Tracy, and Grant Line Canal) shall be in place and operating when SWP diversions are increased”.¹¹ The permit also required compliance with applicable terms and conditions in the Long-term Operations of the CVP and SWP Biological Opinions (2019 USFWS and NMFS BOs).^{12, 13}

2.2. State Water Resources Control Board Water Rights and D-1641

Permittee and Reclamation operate the SWP and the CVP in accordance with the joint obligations under D-1641, which provides protection for fish and wildlife, M&I water quality, agricultural water quality, and Suisun Marsh salinity. D-1641 granted Permittee and Reclamation the ability to use or exchange either SWP or CVP diversion capacity capabilities to maximize the beneficial uses of the SWP and CVP. The State Water Board conditioned the use of JPOD capabilities based on staged implementation and conditional requirements for each stage of implementation.

2.3. Federal Endangered Species Act

The 2019 USFWS and NMFS Long-term Operations of the CVP and SWP BOs, issued pursuant to Section 7 of the Federal Endangered Species Act (ESA), are the current ESA authorizations for the SWP and CVP.

The USFWS and NMFS BOs were issued on October 21, 2019, and they included incidental take statements for DS, CHNWR, CHNSR, Southern Distinct Population Segment (sDPS) of North American Green Sturgeon (*Acipenser medirostris*), and California Central Valley steelhead (*Oncorhynchus mykiss*). These BOs were formally adopted on February 19, 2020 when Reclamation signed the Record of Decision (ROD).

The 2019 USFWS and NMFS BOs and 2020 ROD were challenged in federal court.¹⁴ In those cases, the court granted voluntary remand of the 2019 USFWS and NMFS BOs and the 2020 ROD without

⁹ U.S. Army Corps of Engineers (2016). Public Notice SPK-1999-00715, Contra Costa County, CA. U.S. Army Corps of Engineers, Sacramento District, Sacramento, CA. December 16, 2016.

¹⁰ U.S. Army Corps of Engineers (2021). Department of the Army permit modification September 28, 2021. Permit No. SPK- 1999-00715. U.S. Army Corps of Engineers, Sacramento District, Sacramento, CA.

¹¹ U.S. Army Corps of Engineers (2023). Department of the Army permit modification August 7, 2023. Permit No. SPK- 1999-00715. U.S. Army Corps of Engineers, Sacramento District, Sacramento, CA.

¹² U.S. Fish and Wildlife Service (2019). Biological opinion for the reinitiation of consultation on the coordinated operations of the Central Valley Project and State Water Project. U.S. Fish and Wildlife Service, San Francisco Bay Delta Fish and Wildlife Office, Sacramento, CA. October 21, 2019.

¹³ National Marine Fisheries Service (2019). Biological opinion on long term operations of the Central Valley Project and the State Water Project. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, West Coast Region. October 21, 2019.

¹⁴ *Pacific Coast Federation of Fishermen’s Associations et al. v. Ross et al.*, Case No. 1:20-cv-00431-JLT-EPG, U.S. Dist. Court, Eastern District of California, case filed December 2, 2019; *California Natural Resources Agency et al. v. Ross et al.*, Case No. 1:20-cv-00426-JLT-EPG, U.S. Dist. Court, Eastern District of California, case filed February 20, 2020.

vacatur and approved an Interim Operations Plan for SWP and CVP operations in 2022, 2023, and 2024.¹⁵

In 2021, Reclamation, in coordination with Permittee, requested reinitiation of consultation on the long-term operation of the CVP and SWP (Proposed Action) with both the USFWS and NMFS to address the review of agency actions required by Executive Order 13990 and to voluntarily reconcile CVP operating criteria with operational requirements of the SWP under CESA. Permittee and Reclamation transmitted a final Biological Assessment to USFWS and NMFS on November 9, 2023. The new USFWS BO is anticipated on November 8, 2024 and the new NMFS BO is anticipated on December 6, 2024. They include incidental take statements for DS, LFS, CHNWR, CHNSR, sDPS of North American Green Sturgeon, and California Central Valley steelhead. These BOs are anticipated to be formally adopted on December 20, 2024 when Reclamation signs the ROD.

3. Description of the Proposed Project

3.1. Seasonal Operations

In the winter and spring, Permittee typically exports excess water. Excess water conditions occur when releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in-basin uses and exports. Actions to minimize entrainment of listed fish into the south Delta and at the Banks and Jones pumping plants limit the export of excess water. Exports during the winter and spring reduce the reliance on conveying previously stored water in the summer and fall for south-of-Delta water supply needs. In dry conditions, Permittee may need to increase releases from upstream reservoirs beyond what is needed to meet minimum flow requirements to meet water quality or outflow requirements in the Delta.

During the summer, Permittee conveys previously stored water through the Delta for export at the Banks Pumping Plant and other Delta facilities. Delta operations during the summer typically focus on maintaining salinity and meeting Delta outflow objectives while maximizing exports with the available water supply. In addition, the SWP makes upstream reservoir releases for water temperature management and instream flows, which may be available for export after outflow, salinity, and in-Delta needs have been met.

In the fall, operations are adjusted to meet salinity requirements, Delta outflow requirements, and peak demands from Central Valley Plan Improvement Act (CVPIA) wildlife refuges. Upstream and in-Delta demands typically decrease, and accretions within the system typically increase. When water is available and not required for salinity and Delta outflow requirements, late summer and fall provide an opportunity to export water and start filling San Luis Reservoir for the next water year.

¹⁵ See, *Pacific Coast Federation of Fishermen's Associations, et al. v. Raimondo, et al.*, U.S. District Court, E.D. Cal., Case No. 1:20-cv-00431-DAD-EPG, Order Granting Federal Defendants' Motion for Remand Without Vacatur (March 14, 2022); *Pacific Coast Federation of Fishermen's Associations, et al. v. Raimondo, et al.*, U.S. District Court, E.D. Cal., Case No. 1:20-cv-00431-DAD-EPG, Order Re Interim Operations Plan (Feb. 28, 2023); *Pacific Coast Federation of Fishermen's Associations, et al. v. Raimondo, et al.*, U.S. District Court, E.D. Cal., Case No. 1:20-cv-00431-DAD-EPG, Order (April 2, 2024).

When conditions are dry, there is little opportunity for exports. Releases from upstream reservoirs generally decrease to conserve water in storage for the next year. On occasion, releases to conserve flood storage or maintain inundation of salmonid redds may occur and result in additional flows into the Delta.

The Banks Pumping Plant pumps water from CCF. The CCF radial gates are closed during critical periods of the ebb and flood tidal cycle for water quality and water levels in the south Delta. See Section 1.1.1 (Harvey O. Banks Pumping Plant) for a description of allowed diversion rates.

3.2. Old and Middle River Flow Management

Old and Middle River (OMR) flow provide a surrogate indicator for how export pumping at Banks and Jones pumping plants influence hydrodynamics in the south Delta. The management of OMR flow, in combination with other environmental variables, can minimize entrainment of fish into the south Delta, the Banks Pumping Plant, and the Skinner Fish Facility. Permittee will manage OMR flow by changing exports at the Banks Pumping Plant in response to real-time operating criteria described below. Some of these real-time operating criteria require Permittee to evaluate results from real-time fish distribution monitoring, environmental data (e.g., turbidity and water temperature), hydrodynamic models, and entrainment models to inform operational criteria, that if achieved, will require changes in OMR flow management.

An OMR flow index will be used to determine export limitations, as described in the sections below, and will be calculated using the equation provided in Hutton (2008).¹⁶

3.2.1. Collaborative Real-Time Technical Teams

Permittee and CDFW technical staff, as part of the Smelt Monitoring Team (SMT), Salmon Monitoring Team (SaMT), and White Sturgeon Monitoring Team (WSMT), will meet as needed to consider survey data, salvage data, and other pertinent biological and abiotic factors as described in Section 3.14.2 of this Project Description and Conditions of Approval 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.6, 8.1.6.1, 8.1.6.2, 8.1.6.3, and 8.1.6.4. The process to elevate operations and biological information from the SMT, SaMT, and WSMT to the Water Operations Management Team (WOMT), and the Directors (if necessary) is described in Condition of Approval 8.1.5 to this ITP.

3.2.2. Old and Middle River Flow Management

Permittee, in coordination with Reclamation, will implement Conditions of Approval 8.1.7, 8.1.9, 8.2.1, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, and 8.7.

Permittee will comply with the USFWS and NMFS Biological Opinions in place for long-term operations of the SWP and CVP in accordance with federal law, in addition to state requirements. As a result of the coordinated operation of the SWP and CVP, Permittee will operate the SWP for the protection of federally listed sDPS of North American Green Sturgeon and California Central Valley

¹⁶ Hutton, P. (2008). A model to estimate combined Old & Middle river flows; Final version. Metropolitan Water District of Southern California. April 2008.

steelhead and in addition to operations for the protection of state-listed species. In some cases these operations and the Incidental Take Statement for federally listed species may result in reductions in SWP pumping in addition to the reductions that would be necessary to comply with state law.

3.2.3. Storm Flex

Permittee, in coordination with Reclamation, may operate to a more negative OMR index, but no more negative than -6,250 cfs on a daily average, to capture excess flows in the Delta, when the following Condition of Approval to this ITP has been initiated:

- Storm Flex (Condition of Approval 8.5).

3.2.4. End of Old and Middle River Flow Management

Permittee, in coordination with Reclamation, will end OMR Management by June 30 each year or earlier if criteria in the following Condition of Approval to this ITP have been met:

- End of OMR Management (Condition of Approval 8.6).

3.2.5. Minimum Export Rate

Permittee, in coordination with Reclamation, established a minimum export rate to protect human health and safety needs, critical refuge supplies, and obligations to senior water rights holders. The combined SWP and CVP export rates at Banks Pumping Plant and Jones Pumping Plant will not be required to drop below 1,500 cfs and total SWP exports will not be required to drop below 600 cfs.

3.2.6. End of Year Evaluation

Permittee, in coordination with Reclamation, SMT, SaMT, and WSMT, will conduct an annual assessment of OMR protection measures for DS, LFS, CHNWR, CHNSR, and White Sturgeon (WS, *Acipenser transmontanus*), as defined in Condition of Approval 7.2 to this ITP.

3.3. Spring Delta Outflow

Spring Delta outflows are part of the Project. The Project incorporates components of the HRL to implement spring Delta outflow as set forth below in Condition of Approval 8.12.2, Spring Outflow Via the Healthy Rivers and Landscapes Program. The Project also incorporates an alternate approach to Spring Delta Outflow as described Condition of Approval 8.12.1, Spring Outflow Via Export Curtailments.

3.4. Water Transfers

Permittee, in coordination with Reclamation, will operate the SWP to facilitate water transfers by providing water in streams for delivery to alternative diversion points, conveying water across the Delta for export, or storing water for delivery at a future time.

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Out-of-basin transfers (e.g., Long Term Water Transfer Program, North to South-of-Delta Transfers) follow the Draft Technical Information for Preparing Water Transfer Proposals, as updated in 2019.¹⁷ The actions taken by contractors to make water available for these transfers (i.e., reducing consumptive use by crop idling, contractor reservoir releases, or groundwater substitution) are not part of this Project. However, the specific timing and operations associated with the movement of the water to be transferred is a component of this Project.

Permittee, in coordination with Reclamation, will provide a transfer window across the Delta from July 1 through November 30. When pumping capacity is needed for SWP or CVP water, Permittee, in coordination with Reclamation, may restrict transfers. Maximum transfers are shown in Table 1 below.

Table 1. Annual north to south (out of basin) water transfer volume in thousand acre feet (TAF).

Water Year Type	Maximum Transfer Amount North to South (TAF)
Critical	Up to 600
Dry (following critical)	Up to 600
Dry (following dry)	Up to 600
All other years	Up to 360

Permittee and Reclamation frequently transfer project and non-project water supplies through SWP and CVP facilities, including in-basin and out of basin transfers. The quantity and timing of a specific water transfer may or may not require operational changes to both SWP and CVP reservoir releases and SWP and CVP facilities pumping.

¹⁷ California Department of Water Resources and Bureau of Reclamation (2019). Draft technical information for preparing water transfer proposals (Water transfer white paper); Information for parties preparing proposals for water transfers requiring Department of Water Resources or Bureau of Reclamation approval. December 2019.

3.5. John E. Skinner Delta Fish Protective Facility

The Skinner Fish Facility minimizes losses resulting from entrainment at Banks Pumping Plant. Permittee will operate the facility to capture fish entrained by Banks Pumping Plant. Salvage of fish occurs at the Skinner Fish Facility whenever Banks Pumping Plant is pumping. Fish are salvaged in flow-through holding tanks, monitored by a 30-minute fish count every 120 minutes, and transported by truck to release sites near the confluence of the Sacramento and San Joaquin rivers. Larval smelt sampling commences upon detection of a spent female at Tracy Fish Collection Facility or Skinner Fish Facility or when a temperature trigger of 12 degrees Celsius (°C; 53.6 degrees Fahrenheit [°F]) at nearby CDEC stations is met. Salvage and operations data necessary to calculate loss are made available daily by 10 a.m. Permittee will adhere to the John E. Skinner Delta Fish Protective Facility Standard Operating Procedures for Fish Salvage¹⁸ for the duration of this ITP to minimize adverse effects on listed species and Conditions of Approval 7.5.1, 7.5.2, and 8.13.

3.5.1. Skinner Fish Facility Maintenance and Repair

Permittee will provide CDFW, Reclamation, USFWS, and NMFS notice of salvage disruptions due to planned Skinner Fish Facility maintenance (planned outages) at least 24 hours in advance. To minimize and avoid salvage disruptions, Permittee conducts most planned outages during full shutdowns of Banks Pumping Plant, frequently in the spring. Further, the modular design of the Skinner Fish Facility in conjunction with total export capacity reductions is used to avoid salvage disruptions for maintenance and repair activities. For unplanned facility maintenance, Permittee will provide notice as soon as practicable consistent with the requirements in Condition of Approval 8.14.1. In the event of an unplanned outage (e.g., power disruption) extending beyond one hour, Permittee will stop pumping, but may continue to operate the CCF radial gates.

3.5.2. Skinner Delta Fish Protective Facility Operations Manual

Permittee, in coordination with CDFW, will develop and implement by water year 2025 a revised written training curriculum as identified in Section IV: Fish Identification, of the 2021 DWR CDFW Interagency Agreement for Fish Facilities Operation.¹⁹ Additionally, Permittee will annually review and update the revised Skinner Delta Fish Protective Facility Operations Manual, as specified in the manual. Permittee's Skinner Fish Facility staff will have access to a CDFW staff biologist for consultation to support salvage staff, research studies, and special handling of tagged fish, as described in Condition of Approval 8.13 to this ITP.

3.5.3. Skinner Delta Fish Protective Facility Improvements

Permittee will screen fish from Banks Pumping Plant with the Skinner Fish Facility. Permittee will continue refinement and improvement of the Skinner Fish Facility fish sampling procedures and

¹⁸ California Department of Water Resources (2022). John E. Skinner Delta Fish Protective Facility standard operating procedures for fish salvage, water year 2023 revision. California Department of Water Resources, Division of Operation and Maintenance, Delta Field Division. September 2022.

¹⁹ California Department of Water Resources and California Department of Fish and Wildlife (2021). Interagency Agreement for Fish Facilities Operation. Agreement No. 4600014072. Approved June 27, 2021.

infrastructure to improve the accuracy and reliability of data and fish survival by implementing the following Condition of Approval to this ITP:

- Skinner Delta Fish Protective Facility Improvement Process (Condition of Approval 7.5.2).

3.5.4. Salvage Release Site Improvements

Permittee will continue to coordinate with Reclamation to incorporate flexibility with salvage release site operations to improve fish survival.

3.6. Clifton Court Forebay Weed and Algae Management

Permittee conducts aquatic weed management year-round to prevent potential damage to SWP equipment through cavitation at the pumps and excessive weight on the fish protection louver array. Excessive weed mats entrained into the fish holding tanks and collection baskets in Skinner Fish Facility reduce the efficiency of fish salvage, affect the ability of staff to conduct fish counts, and smother fish. Dense stands of aquatic weeds additionally provide cover for predators that prey on listed species within CCF. Algal blooms degrade drinking water quality through production of taste and odor compounds or algal toxins. Permittee will apply herbicides and algaecides or will use mechanical harvesters on an as-needed basis to control aquatic weeds and algal blooms in CCF. Permittee will adhere to the Clifton Court Forebay Aquatic Weed Management Standard Operating Procedures²⁰ and Conditions of Approval 7.5.1, 8.14.2, and 8.14.3 to this ITP for the duration of this ITP to minimize adverse effects on listed species.

3.7. Barker Slough Pumping Plant

Permittee will operate the BSPP to an annual maximum diversion of 125 TAF and a maximum daily diversion rate of 175 cfs. The BSPP is a SWP screened diversion that pumps water through the NBA, through an underground pipeline, to Cordelia Forebay outside of Vallejo. The NBA serves Napa County, and the Solano County cities of Fairfield, Vacaville, Vallejo, Benicia, and Travis Air Force Base.

3.7.1. Maximum Spring Diversions

Permittee operates the BSPP to divert water from the north Delta into the NBA. Cumulative BSPP diversions for the January 1 to March 31 period, at design capacity, are limited to approximately 26 TAF.

Permittee will operate the BSPP under limited maximum spring diversions when criteria in the following Conditions of Approval to this ITP are met:

- Barker Slough Pumping Plant Larval Delta Smelt Protection (Condition of Approval 8.10.1).
- Barker Slough Pumping Plant Larval Longfin Smelt Protection (Condition of Approval 8.10.2).

²⁰ California Department of Water Resources (2023). Clifton Court Forebay aquatic weed management standard operating procedures: Environmental compliance. California Department of Water Resources, Division of Operation and Maintenance, Delta Field Division. March 2023.

3.7.2. Maintenance

Permittee conducts fish screen cleaning, sediment removal, and aquatic weed removal at BSPP year-round to maintain operation of BSPP according to NBA Fish Screen and Aquatic Weed Removal Standard Operating Procedures.²¹ Raising and cleaning of the fish screens is necessary to prevent excessive head loss and minimize localized approach velocities.

Sediment removal from the trap and concrete apron in front of the facility is necessary to prevent accumulation and clogging of the screens and facility. Removal of aquatic weeds is necessary to avoid blocking flow and causing water levels to drop in the pump wells behind the screens, triggering automatic shutoffs to protect the pumps from cavitation. Permittee will adhere to Conditions of Approval 7.6.1, 7.6.2, 7.6.3, and 7.6.4 to this ITP for the duration of this ITP to minimize adverse effects on listed species.

3.8. Suisun Marsh

Permittee will continue to operate the Suisun Marsh Facilities (SMSCG, RRDS, MIDS and GYSO) in accordance with the SMPA, which contains provisions for Permittee and Reclamation to mitigate the effects on Suisun Marsh channel water salinity from SWP and CVP operations and other upstream diversions. The SMPA requires Permittee and Reclamation to meet salinity standards in accordance with D-1641.

The SMSCG are operated on an as-needed basis to meet D-1641 and SMPA water quality standards in Montezuma Slough. The duration of SMSCG operation may range from no use to full use for the entire September through May period. Assuming no significant long-term changes in the operational data, SMSCG operations (outside of additional actions described under Condition of Approval 9.1.3 to this ITP) will continue as necessary to meet D-1641 and SMPA standards.

RRDS was constructed to provide lower-salinity water to approximately 8,000 acres of managed wetlands. RRDS diversion rates have been controlled to maintain a maximum approach velocity of 6 centimeters per second (cm/sec [0.2 ft/sec]) at the intake fish screen except for a five-week contiguous period (five-week flood-up window) when the RRDS diversion rate will be controlled to maintain a maximum approach velocity of 21.3 cm/sec (0.7 ft/sec) for fall flood-up operations. The dates of the five-week flood-up window may change annually due to waterfowl season dates changing each year and corresponding flood-up needs but will occur annually during the months of September through November.

3.9. South Delta Temporary Barriers Project

Agricultural barriers maintain water levels for south Delta agricultural diverters. Permittee has renewed the permit from USACE for the installation of three agricultural barriers in the south Delta through September 2029 (SPK-1999-00715). Permittee may install barriers as early as May 1 in

²¹ California Department of Water Resources (2023). NBA fish screen sediment and aquatic weed removal standard operating procedures: Environmental compliance. California Department of Water Resources, Division of Operation and Maintenance, Delta Field Division. March 2023.

Middle River 0.8 km (0.5 mile) upstream of the junction with Victoria Canal; in Old River near Tracy 0.8 km (0.5 mile) upstream of the Tracy Fish Collection Facility; and in Grant Line Canal about 0.12 km (400 feet) upstream of the Tracy Boulevard Bridge. The Middle River and Old River near Tracy barriers are notched, and flashboards are removed at the Grant Line Canal barrier, to allow adult salmon passage by September 15 and some elements of the barriers are removed by November 30 each year. The culverts and abutments at the Middle River barrier remain in place throughout the year. The Old River near Tracy barrier is completely removed by November 30 each year. At the Grant Line Canal barrier, the culverts and south barrier abutment, with the flashboard structure, remain throughout the year; all other components are removed by November 30 each year.

Operation of the agricultural barriers is part of the long-term operation of the SWP and CVP. Upon completion of installation, Permittee will allow the barriers to operate tidally depending on stage conditions, except for one culvert at each of the three agricultural barriers. The culvert will remain open beyond June 1 if water levels for diversion in the south Delta are not a concern and the mean daily water temperature at Mossdale is less than 22°C (71.6°F). Water levels are considered adequate if they are forecasted to be 0.0 feet Mean Sea Level (elevation of 2.0 feet North American Vertical Datum of 1988 [NAVD 88]) or greater at Old River as measured at the Old River near Tracy station (CDEC: OLD), and at Grant Line Canal as measured at Doughty Cut above Grant Line Canal station (CDEC: DGL), and 0.3 feet Mean Sea Level (elevation of 2.52 feet, NAVD 88) or greater at Middle River as measured at Middle River near the Howard Road Bridge station (CDEC: MHR). Permittee will adhere to the Temporary Barriers Project Installation and Operation Decision Tree in the South Delta Temporary Barriers Project Annual Construction and Operation Flow Chart for Calendar Years 2023-2027²² and Condition of Approval 7.7, regarding CDFW approval prior to full closure of the three agricultural barriers or weir raising at the three agricultural barriers, for the duration of this ITP. The temporary barriers project will occur throughout the duration of this permit, or until such time as permanent operable gates are constructed.

3.10. Monitoring

Monitoring funded, coordinated, and implemented by the Permittee and Reclamation through the Interagency Ecological Program (IEP) is necessary to understand baseline status and trends, understand effectiveness of minimization and mitigation measures (e.g., evaluate DS supplementation success, habitat restoration success), and is used to develop thresholds for minimization measures (e.g., juvenile production estimates), assess real-time water quality monitoring objectives (e.g., fall X2 criteria, turbidity triggers), and to inform real-time distribution of species for entrainment risk assessments.

Because the Project is continuous, monitoring the effects of Project operations must also be ongoing. Monitoring activities currently occurring are described as contemporaneous programs and

²² California Department of Water Resources (2023). South Delta Temporary Barriers Project: Annual construction and operations flow chart for calendar years 2023-2027. California Department of Water Resources, Division of Operation and Maintenance, Delta Field Division. September 2023.

take place under existing and separate ESA consultations and associated consistency determinations and ITPs for individual agencies that carry out the monitoring to support SWP long-term operations.

Permittee will continue to fund, in coordination with Reclamation, the monitoring programs identified in Table 2. Twenty monitoring programs are conducted, with Permittee responsible for implementation of two programs: Yolo Bypass Fish Monitoring and the Environmental Monitoring Program. Coordination of the full list of programs occurs through the IEP, which includes both funding and implementing agencies for monitoring programs. Descriptions of these monitoring programs are provided by the IEP 2023 annual work plan.²³

Table 2. Permittee and Reclamation coordinated monitoring programs.

Monitoring Study or Survey	Entity Implementing Study or Survey
20-mm Delta Smelt Survey	CDFW
Central Valley Juvenile Salmon and Steelhead Monitoring (Knights Landing)	CDFW
Estuarine and Marine Fish and Crab Abundance Distribution Survey (Bay Study)	CDFW
Fall Midwater Trawl Survey	CDFW
Smelt Larva Survey	CDFW
Summer Townet Survey	CDFW
Tidal Wetland Monitoring Study	CDFW
Upper Estuary Zooplankton Sampling	CDFW
Environmental Monitoring Program	Permittee
Yolo Bypass Fish Monitoring Program	Permittee
UC Davis Suisun Marsh Fish Monitoring	UC Davis
Coleman National Fish Hatchery Late-Fall Run Production Tagging	USFWS
Enhanced Delta Smelt Monitoring	USFWS
Juvenile Salmon Emigration Real Time Monitoring Program (Delta Juvenile Fish Monitoring Program,	USFWS
Juvenile Salmon Monitoring Program (DJFMP)	USFWS

²³ Interagency Ecological Program (2023). Interagency Ecological Program 2023 annual work plan. November 2022.

Monitoring Study or Survey	Entity Implementing Study or Survey
Mossdale Trawl	USFWS/CDFW
Salmon Survival Studies (DJFMP)	USFWS
Delta Flows Network	USGS
Operation of Thermographic Stations	USGS
San Francisco Bay Salinity and Temperature Monitoring	USGS

Permittee, CDFW, Reclamation, USFWS, and NMFS will develop annual work plans for on-going monitoring elements described under Table 2. These plans will be provided as the IEP annual work plan and published on - Permittee's ITP website²⁴ and on the IEP website.²⁵ Permittee and Reclamation may evaluate, review, and modify existing monitoring programs through coordinated program reviews with CDFW, USFWS, and NMFS.

The following principles would be incorporated into any future changes to monitoring programs:

- Ensure monitoring will be beneficial to long-term operation of the SWP and CVP for:
 - Minimizing and mitigating effects on listed species and habitat (e.g., informing real-time operations, understanding species status);
 - Understanding if various operational objectives are met (e.g., effectiveness and validation monitoring); and
 - Measuring if and when the reinitiation trigger associated with amount or extent of incidental take has been met;
- Confirm that data collected should meet data quality objectives and open data practices;
- Establish multi-agency collaborative approach including management structure for decision-making;
- Ensure scientific rigor of new or modified monitoring and achieving objectives of new or modified monitoring;
- Develop and test mechanisms for learning and adopting new technologies, while maintaining comparability and continuity to historical information on fish and the environment;
- Incorporate a fish, aquatic habitat, and ecosystem monitoring enterprise for the long-term operations of the SWP and CVP that should effectively measure physical conditions, water quality, primary and secondary production; abundance, distribution, and production of CESA- and ESA-listed species (natural and hatchery-origin); Delta and tributary fish assemblages; and salvage at the SWP/CVP fish collection facilities;

²⁴ Permittee's State Water Project ITP website accessed: <https://water.ca.gov/Programs/State-Water-Project/Endangered-Species-Protection>.

²⁵ Interagency Ecological Program website accessed: <https://iep.ca.gov/>.

- Establish mechanisms for close coordination with any existing or future adaptive management program; and
- Provide for robust synthesis of monitoring data to incorporate results and lessons learned.

Monitoring of the long-term operations is subject to change over time by implementing the principles above to improve monitoring where the best available scientific information indicates such change is appropriate. If Permittee and Reclamation decide changes to a given monitoring program are necessary, Reclamation will provide the supporting information to USFWS and NMFS to support subsequent Section 7 consultation as outlined in Code of Federal Regulations, Title 50, section 402.14, and Permittee will submit a request for an amendment to this ITP, or separate request for take authorization to CDFW, as appropriate.

3.10.1. Additional Monitoring Teams

3.10.1.1. Delta Monitoring Workgroup

The Permittee, in coordination with Reclamation, will convene the Delta Monitoring Workgroup (DMW) if a real time assessment is triggered. Interested parties may provide information and supporting documentation for Permittee and Reclamation to share with WOMT. If WOMT does not reach consensus on an operational outcome, interested party supporting documentation will be provided to the Directors for consideration of their final decision. Permittee, in coordination with Reclamation, will revise the existing DMW charter within six months of permit issuance.

3.11. Adaptive Management

Adaptive management is a structured, iterative process for decision making when confronted with uncertainty. It emphasizes learning through management where knowledge is incomplete and provides a process for building knowledge through monitoring and science, reducing uncertainty, and improving management over time in a goal-oriented and structured way. Key components of adaptive management are establishing clear and measurable objectives, identifying action goals, and determining management options for best achieving those desired goals.

Decision support tools can be used within the adaptive management framework to identify the uncertainties that are most influential in a decision-making process (management), which in turn can guide the scientific approaches deployed to reduce those uncertainties and allow better informed subsequent decisions. When correctly designed and executed, adaptive management provides a means to develop and evaluate the predicted outcomes of proposed management actions, to compare actual outcomes of actions to those predictions, and to make evidence-based adjustments to future actions to improve their effectiveness if warranted. The adaptive management approach can provide a transparent and documented scientific basis for continuing, modifying, or implementing an alternative action.

Permittee, CDFW, Reclamation, USFWS, and NMFS (collectively, “the Implementing Entities”) intend to utilize adaptive management to inform the long-term operations of the SWP and the CVP and

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related activities described herein. The Implementing Entities will approach adaptive management in an open, participatory framework. The Implementing Entities will establish the Adaptive Management Steering Committee (AMSC) to oversee individual Adaptive Management Teams responsible for implementing each Adaptive Management Action, utilizing decision support tools such as structured decision making.

Working through the collaborative process outlined in the AMP (Attachment 4), the Implementing Entities commit to reach consensus within the AMSC to the maximum extent possible, while still retaining individual agency discretion to make decisions (Condition of Approval 8.15). To that end, the Implementing Entities seek to use the potential flexibility provided by an adaptive management approach in a way that balances gaining knowledge to improve future management decisions while taking actions in the face of uncertainty to achieve the best outcomes possible for listed species. Permittee will adhere to the AMP in Attachment 4 of this ITP for the duration of this ITP. Attachment 4 also includes a list of actions and programs in the Project or this ITP's Conditions of Approval (listed below), and additional details regarding the timeframe of evaluation of each action and the Adaptive Management Team responsible for implementing them. Studies and adaptive management noted with an asterisk below are elements of the AMP but are not Permittee's responsibility. Permittee has partial or full responsibility for items that are not noted with an asterisk.

- Winter-run Chinook Salmon OMR Management
- Spring-run Chinook Salmon JPE and Life Cycle Model
- Larval and juvenile Delta Smelt OMR Management
- Larval and juvenile Longfin Smelt OMR Management
- Summer-Fall Habitat Action for Delta Smelt
- Tidal Habitat Restoration Effectiveness
- Tributary Habitat Restoration Effectiveness*
- Winter-Run Chinook Salmon Early Life Stage Studies*
- Shasta Spring Pulse Flow Studies*
- Delta Route Selection and Survival
- Delta Smelt Supplementation
- Longfin Smelt Science Plan Actions
- Steelhead JPE and OMR Management*
- Alternative Salmonid Loss Estimation Pilot Study

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- Georgiana Slough Migratory Barrier Effectiveness
- Spring Delta Outflow

3.12. Special Studies

Special studies address areas of scientific uncertainty on the reasonable balance among competing demands for water, including the requirements of fish and wildlife, M&I, agricultural, and power contractors. While special studies do not avoid, minimize, or mitigate adverse effects on CESA-listed species, over time they may inform the effectiveness of measures taken to avoid, minimize, or mitigate incidental take. Special studies are described in the following Conditions of Approval to this ITP:

- Longfin Smelt Science Plan* (Condition of Approval 7.8.1);
- Alternative Loss Estimation Pilot Study (Condition of Approval 7.9.1);
- Winter-run Chinook Salmon Machine Learning Model Development (Condition of Approval 7.9.2);
- Spring-run Chinook Salmon Juvenile Production Estimate* (Condition of Approval 7.9.3);
- Spring-run Chinook Salmon Life Cycle Model* (Condition of Approval 7.9.4);
- Salmon Delta Occupancy, Distribution, and Survival Studies (Condition of Approval 7.9.5).
- Georgiana Slough Salmonid Migratory Barrier Effectiveness Studies (Condition of Approval 7.9.6);
- White Sturgeon Science Program* (Condition of Approval 7.10.1);
- Install and Operate the Georgiana Slough Salmonid Migratory Barrier* (Condition of Approval 8.11.1);
- Evaluate Benefits of Salmonid Guidance Structures at Sutter and Steamboat Sloughs* (Condition of Approval 8.11.2); and
- Implementation of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project* (Condition of Approval 9.2.1).

Permittee will continue to implement the special studies noted above. An asterisk denotes Conditions of Approval to this ITP that originated before or as part of the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00).

3.13. Drought

Starting each October following dry years, Permittee and Reclamation, through the Drought Relief Year (DRY) Team, will meet at least monthly to determine whether it would be appropriate to pursue actions to respond to current or anticipated drought and dry year conditions. The DRY Team

is comprised of technical staff and policy makers from Permittee, CDFW, Reclamation, USFWS, NMFS, and the State Water Board. At each meeting, Permittee and Reclamation will review the actions in the Drought Toolkit,²⁶ and determine if it would be appropriate to pursue any identified actions, and evaluate the effectiveness of those actions. The Drought Toolkit lists the minimum decisions required each month and Permittee and Reclamation expect a more focused review of the Drought Toolkit actions in times when resources to meet required operations and goals are limited. These limited resources may include, but are not limited to hydrology, current and projected reservoir storages, facility limitations, and fish conditions. These decisions will be documented monthly or more often if necessary in the WOMT notes.

Permittee and Reclamation, through the DRY Team, may update the Drought Toolkit. Permittee and Reclamation, through the DRY Team, will evaluate drought actions taken to reduce drought impacts related to SWP and CVP operations. This evaluation will provide additional information on the effectiveness of drought response so as to support updates to the Drought Toolkit. This evaluation will be included in an annual drought contingency plan (Condition of Approval 8.16).

3.14. Governance

SWP and CVP Governance identifies ongoing engagement by participating state (Permittee and CDFW) and federal (Reclamation, USFWS, and NMFS) agencies (collectively the Agencies), interested parties, and/or the public following issuance of this ITP and completion of Biological Opinions by USFWS and NMFS and issuance of the associated ROD by Reclamation. Governance describes the systemwide organization of technical groups, group membership, activities that are subject to governance, and decision-making approaches and protocols. Although SWP and CVP Governance applies to the coordinated operation of the SWP and CVP, and associated effects, Permittee will participate fully in the SWP and CVP Governance process, but Permittee will make decisions regarding SWP operations and facilities consistent with its authorities, the requirements of this ITP, and the decision-making processes identified in this document (Condition of Approval 8.1.5). In specific situations, the CDFW Director may require Permittee to implement CDFW's operational decision and Permittee will implement the decision required by CDFW (Condition of Approval 8.1.5).

The purposes of SWP and CVP Governance are to:

- Identify the roles and responsibilities of the agencies that are part of real-time operations;
- Establish that the agencies will work together in good faith;
- Identify the governance principles agreed to by the participating agencies;
- Identify operations that are subject to Governance;

²⁶ U.S. Bureau of Reclamation (2023). Drought Toolkit. U.S. Bureau of Reclamation, California-Great Basin Region, Central Valley Project, Bay-Delta Office, Sacramento, CA. Prepared in coordination with California Department of Fish and Wildlife, California Department of Water Resources, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and State Water Resources Control Board. October 2023.

- Identify the implementation teams that are part of Governance, and processes for technical collaboration and elevating issues for resolution;
- Incorporate learning and adopt new technologies from monitoring, adaptive management, and ongoing science;
- Describe relationships between technical and policy groups; and
- Describe reporting and outreach.

The Agencies are committed to communicate each organization's respective interests and recognize the intent to work together in a good-faith effort to resolve issues through the groups described in this ITP. Every member is committed to identifying potential issues and communicating these issues to the relevant technical or policy team as soon as possible. Representatives who participate on technical and policy teams are clear about their ability to represent agency decisions.

Representatives who participate on technical and policy teams are empowered to represent their agency and make decisions appropriate for that level. Each representative is representing the science, policy, and management based on the best of their ability and current knowledge.

Representatives will be aware and clear about their role with other members and come with the understanding of their authority as it relates to their agency. Representatives will either be able to make decisions on other parts of the system or have an avenue for doing that quickly.

SWP and CVP Governance is framed around the following principles:

Collaboration—The leading principle of SWP and CVP Governance is collaborative, science-based decision making. SWP and CVP Governance is structured to seek consensus across scientific, technical and policy levels, with elevation and decision-making processes in place when consensus cannot be reached.

Effectiveness—It is workable and efficient. Effectiveness considers what information is available and when. Effective SWP and CVP Governance recognizes that there is more uncertainty early in the year and that uncertainty may change as the year progresses.

Accountability—Operational, regulatory, proactive, and addresses long-term planning.

Inclusiveness—Collaborative and cooperative. The elevation and decision-making structure maintains accountability at all levels.

Transparency—The processes are not opaque. They are open for others to see and understand through implementation of a communication plan.

Communication—There is awareness and clarity about roles. If a participants identify a potential issue, they will communicate it.

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SWP and CVP Governance is structured such that a five-agency Directors Group oversees the ongoing authorities of each respective agency and serves as the final decision-making body for operational matters within the parameters established in this Project and regulatory authorizations (see Condition of Approval 8.1.5). Actions or decisions necessitating reinitiation of consultation or new or amended authorization under CESA would be handled through standard regulatory processes and are not subject to this Governance structure (see Condition of Approval 5, and Section IX., Amendment). The Directors Group directly interfaces with two management and policy level groups (Shasta Operations Team [SHOT] and WOMT), whose state and federal agency representatives discuss the actions described in the Project or Proposed Action when implementation may have biological effects, system conditions or water supply impacts, or tradeoffs. These policy groups work with numerous technical groups that coordinate, discuss, and provide input on seasonal and real-time operations for specific regions or watersheds. The AMSC will work in parallel with the SHOT and WOMT to evaluate identified Adaptive Management Actions, and potentially recommend changes to the Project or Proposed Action to the Directors Group. Attachment 4 describes the more specific governance structure for the AMP.

3.14.1. Chartering Teams

Teams and groups involved in planning and providing input regarding water operations are described in Conditions of Approval 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.5, 8.1.6, 8.1.6.1, 8.1.6.2, and 8.1.6.3. Team membership, roles, and processes will be further described in team charters (see Condition of Approval 8.1.6.4).

3.14.2. Delta Real-time Operations Teams

For Delta water operations there are four main agency coordination forums that will meet regularly to discuss seasonal and real-time operations. These include WOMT, SMT, SaMT, and WSMT. WOMT is a policy-level group that discusses the operations actions in the Delta (SWP and CVP facilities and operations), American River Division of the CVP, and Stanislaus/East Side Division of the CVP (see Condition of Approval 8.1.4). The SMT is a technical group that discusses Delta operations and DS and LFS protections (see Conditions of Approval 8.1.1 and 8.1.6.1). The SaMT is a technical group that discusses Delta operations and CHNWR, CHNSR, and steelhead protections (see Conditions of Approval 8.1.2 and 8.1.6.2). The WSMT is a technical group that discusses Delta operations and WS protections (see Conditions of Approval 8.1.3 and 8.1.6.3). WOMT will coordinate regularly with SHOT and other work groups as appropriate. Delta governance will use a collaborative approach to planning and decision-making (see Condition of Approval 8.1.5).

3.15. Components of the SWP Not Included in the Project

Activities not covered by this ITP and its take authorization include but are not limited to the following:

- Flood control;
- Oroville Dam and Feather River operations;

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- Execution of SWP contracts;
- CCF inflow expansion window between December and March;
- Any previously identified or potential future habitat restoration;
- Suisun Marsh Habitat Management Preservation Agreement and restoration;
- CVP facilities, operations, and agreements, with the exception of joint SWP/CVP facilities described above (South Delta Temporary Barriers Project, San Luis Reservoir, and Delta Mendota Canal/California Aqueduct Intertie);
- Maintenance and exterior levee repair at Suisun Marsh Facilities;
- Embankment repairs at CCF;
- Actions implemented from the Drought Toolkit;
- Longfin Smelt Science Plan (Condition of Approval 7.8.1);
- Longfin Smelt Refugial Population Establishment and Management (Condition of Approval 9.1.5);
- Alternative Loss Estimation Pilot Study (Condition of Approval 7.9.1);
- Winter-run Chinook Salmon Machine Learning Model Development (Condition of Approval 7.9.2);
- Development of the Spring-run Chinook Salmon Juvenile Production Estimate (Condition of Approval 7.9.3);
- Development of the Spring-run Chinook Salmon Life Cycle Model (Condition of Approval 7.9.4);
- Salmon Delta Occupancy, Distribution, and Survival Studies (Condition of Approval 7.9.5);
- Annual installation and effectiveness studies associated with the Georgiana Slough Salmonid Migratory Barrier (Condition of Approvals 7.9.6 and 8.11.1);
- White Sturgeon Science Program (Condition of Approval 7.10.1);
- DS summer and fall habitat improvements through food subsidies (North Delta Food Subsidy Action, managed wetland reoperation in the Suisun Marsh, Sacramento Deep Water Ship Channel Food Subsidy Action);
- DS culture activities, experimental release of cultured DS, or DS supplementation (Conditions of Approval 9.1.4 and 9.1.4.1); and
- Existing ongoing monitoring programs or modifications to existing ongoing monitoring programs.

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V. Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

<u>Name</u>	<u>CESA Status</u> ²⁷
1. Longfin Smelt (<i>Spirinchus thaleichthys</i>)	Threatened ²⁸
2. Delta Smelt (<i>Hypomesus transpacificus</i>)	Endangered ²⁹
3. Spring-run Chinook Salmon of the Sacramento River drainage (<i>Oncorhynchus tshawytscha</i>)	Threatened ³⁰
4. Winter-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Endangered ³¹
5. White Sturgeon (<i>Acipenser transmontanus</i>)	Candidate ³²

These species and only these species are the “Covered Species” for the purposes of this ITP.

VI. Impacts of the Taking on Covered Species:

Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. The activities described above expected to result in incidental take of individuals of the Covered Species include operations of the: Banks Pumping Plant (including water transfers), CCF (including herbicide and algaecide application and mechanical aquatic weed removal), Skinner Fish Facility, South Delta Temporary Barriers Project, Georgiana Slough Salmonid Migratory Barrier, BSPP (including fish screen cleaning, sediment removal, and aquatic weed removal), and Suisun Marsh Facilities that include the SMSCG, the RRDS, the MIDS, and GYSO (Covered Activities).

Incidental take of individuals of the Covered Species in the form of mortality (“kill”) may occur as a result of Covered Activities. Impacts of the authorized taking also include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation, reduction in habitat extent and quality, increased edge effects, and the Project’s incremental contribution to cumulative impacts (indirect impacts). Anticipated incidental take and impacts of the taking are described in detail in the CDFW Effects Analyses, which are incorporated by reference, in their entirety, into this ITP (Attachments 5, 6, and 7). The areas where authorized take of the Covered Species is expected to occur include: the Sacramento River downstream of the Feather River confluence, the Delta, Suisun Marsh, and Suisun Bay (collectively, the Project Area; Figure 1).

Delta Smelt (*Hypomesus transpacificus*; DS) and Longfin Smelt (*Spirinchus thaleichthys*; LFS)

²⁷ Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species.

²⁸ See Cal. Code Regs. tit. 14 § 670.5, subd. (b)(2)(E).

²⁹ See *Id.*, subd. (a)(2)(O).

³⁰ See *Id.*, subd. (b)(2)(C).

³¹ See *Id.*, subd. (a)(2)(M).

³² The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species. If there is no such designation and the species is removed from candidacy, this ITP will be amended accordingly.

The Project activities and their impacts are expected to result in the incidental take of DS and LFS. The Covered Activities that are expected to result in incidental take of DS and LFS include operations of the: Banks Pumping Plant (including water transfers), CCF (including herbicide and algaecide application and mechanical aquatic weed removal), Skinner Fish Facility, South Delta Temporary Barriers Project, Georgiana Slough Salmonid Migratory Barrier, BSPP (including fish screen cleaning, sediment removal, and aquatic weed removal), and Suisun Marsh Facilities that include the SMSCG, the RRDS, the MIDS, and the GYSO.

Banks Pumping Plant, CCF, and Skinner Fish Facility – Incidental take of DS and LFS in the form of mortality (“kill”) may occur as a result of operations of the Banks Pumping Plant and CCF by means of entrainment into CCF through the radial gates, exposure to herbicide and algaecide in CCF used to control aquatic vegetation and algal blooms, and mechanical removal of aquatic vegetation in CCF. The application of herbicides and algaecides in CCF with copper-based compounds results in injury and mortality of DS and LFS if exposed. Mechanical removal of aquatic weeds in CCF has the potential to result in take through direct physical injury. Operations of the Banks Pumping Plant will result in take of all life stages of DS and LFS beyond the egg stage, but particularly adults, larvae, and early stage juveniles. After being entrained into CCF, take may occur as a result of fish bypassing salvage operations through the louvered (behavioral) fish screens to the export pumps, and losses during the fish salvage process. South Delta export-related reverse flows in Old and Middle rivers can draw turbidity (associated with DS presence), and pre-spawn adult DS and LFS, into the interior Delta where they are subjected to higher exposure to entrainment risk at the south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant). Incidental take of larval and juvenile DS and LFS is similar to adults, except that these smaller life stages are much less likely to be effectively screened by the louvered (behavioral) screens employed at the Skinner Fish Facility, and thus tend to be transported to the export pumps. Larval and juvenile DS and LFS produced by adults that spawn in the south Delta are particularly susceptible to take at the south Delta export facilities, even at low levels of operation. Incidental take of DS and LFS may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so of individuals during the fish salvage process at the Skinner Fish Facility. The areas where authorized take of DS and LFS is expected to occur include: Banks Pumping Plant, CCF, and Skinner Fish Facility located about 12.9 km northwest of Tracy.

Impacts of the authorized taking also include adverse impacts to DS and LFS related to the Project’s incremental contribution to cumulative impacts (indirect effects). Project operations of the Banks Pumping Plant will cause hydrodynamic effects that will increase larval DS and LFS transport into the central Delta and result in impacts to DS and LFS larvae, juveniles, and adults present in the south Delta. These impacts include: entrainment of larval and juvenile DS and LFS into unfavorable southern Delta habitats through reverse flows in the Old and Middle rivers, increased exposure to entrainment at south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant) through reverse flows in Old and Middle rivers, impaired feeding opportunities, entrainment of food web resources, and vulnerability to predation within the CCF.

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South Delta Temporary Barriers Project – Incidental take of DS and LFS in the form of mortality (“kill”) may occur as a result of operations of the South Delta Temporary Barriers Project. The South Delta Temporary Barrier Project will alter hydraulics in Old and Middle rivers, resulting in short term increases in Old and Middle river reverse flows. Increases in Old and Middle river reverse flows in turn may increase the entrainment of DS and LFS (larvae, early juvenile life stages, and migrating and spawning adults) into the south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant). The areas where authorized take of DS and LFS is expected to occur include: Middle River Barrier located 0.8 km upstream of the junction with Victoria Canal, Old River Barrier located 0.8 km upstream of the Tracy Fish Collection Facility, and Grant Line Canal Barrier located 0.12 km upstream of the Tracy Boulevard Bridge.

Impacts of the authorized taking also include adverse impacts to DS and LFS related to the Project’s incremental contribution to cumulative impacts (indirect effects). These impacts include increased vulnerability to predation through creation of enhanced predatory fish habitat adjacent to barriers.

Georgiana Slough Salmonid Migratory Barrier – Impacts of the authorized taking include adverse impacts to DS and LFS related to the Project’s incremental contribution to cumulative impacts (indirect impacts). Operation of the Georgiana Slough Salmonid Migratory Barrier may result in increased vulnerability to predation through creation of enhanced predatory fish habitat adjacent to the barrier and increased migration timing for DS and LFS adults that enter Georgiana Slough from the south during upstream spawning migration. The area where authorized take of DS and LFS is expected to occur is at the confluence of the Sacramento River and Georgiana Slough located directly south of Walnut Grove.

Barker Slough Pumping Plant – Incidental take of DS and LFS in the form of mortality (“kill”) may occur as a result of operations of the BSPP by means of entrainment, impingement, and screen contact. Maintenance operations at BSPP including fish screen cleaning, sediment removal, and aquatic weed removal may negatively impact DS and LFS if they are in the vicinity. The area where authorized take of DS and LFS is expected to occur is approximately 16 km from the mainstem Sacramento River at the end of Barker Slough.

Impacts of the authorized taking also include adverse impacts to DS and LFS related to the Project’s incremental contribution to cumulative impacts (indirect impacts). These impacts include non-lethal impingement/screen contact, increased vulnerability to predation, and food web impacts.

Suisun Marsh Facilities – Incidental take of DS and LFS in the form of mortality (“kill”) may occur as a result of operations of the SMSCG and the RRDS by means of entrainment, impingement, and screen contact. Incidental take of DS and LFS in the form of mortality (“kill”) may also occur as a result of operations of the MIDS and GYSO by means of entrainment. The areas where authorized take of DS and LFS is expected to occur include: SMSCG located on Montezuma Slough about 3 km downstream from the confluence of the Sacramento and San Joaquin rivers, RRDS located at the confluence of Roaring River Slough and Montezuma Slough, MIDS located on Goodyear Slough south of Pierce Harbor, and GYSO located at the confluence of Goodyear Slough and Suisun Bay.

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Impacts of the authorized taking also include adverse impacts to DS and LFS related to the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts include non-lethal impingement/screen contact and increased vulnerability to predation for DS and LFS at the SMSCG and the RRDS. These impacts also include increased vulnerability to predation for DS and LFS at the MIDS and the GYSO.

Winter-run Chinook Salmon (CHNWR) and spring-run Chinook Salmon (CHNSR) of the Sacramento River drainage (*Oncorhynchus tshawytscha*)

The Project activities and their impacts are expected to result in the incidental take of CHNWR and CHNSR. The Covered Activities that are expected to result in incidental take of CHNWR and CHNSR include operations of the: Banks Pumping Plant (including water transfers), CCF (including herbicide and algaecide application and mechanical aquatic weed removal), Skinner Fish Facility, South Delta Temporary Barriers Project, Georgiana Slough Salmonid Migratory Barrier, BSPP (including fish screen cleaning, sediment removal, and aquatic weed removal), and Suisun Marsh Facilities that include the SMSCG, the RRDS, the MIDS, and the GYSO.

Banks Pumping Plant, CCF, and Skinner Fish Facility – Incidental take of CHNWR and CHNSR in the form of mortality ("kill") may occur as a result of operations of the Banks Pumping Plant and CCF by means of entrainment into CCF through the radial gates, exposure to herbicide and algaecide in CCF used to control aquatic vegetation and algal blooms, and mechanical removal of aquatic vegetation in CCF. The application of herbicides and algaecides in CCF with copper-based compounds results in injury and mortality of CHNWR and CHNSR if exposed. Mechanical removal of aquatic weeds in CCF has the potential to result in take through direct physical injury. Operations of the Banks Pumping Plant will result in take of juvenile and adult CHNWR and CHNSR. After being entrained into CCF, take may occur as a result of smaller-sized fish bypassing salvage operations through the louvered (behavioral) fish screens to the export pumps, and losses during the fish salvage process. South Delta export-related reverse flows in Old and Middle rivers may pull CHNWR and CHNSR into the interior Delta where they are subjected to higher exposure to entrainment risk at south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant). Incidental take of CHNWR and CHNSR may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so of individuals during the fish salvage process at the Skinner Fish Facility. The areas where authorized take of CHNWR and CHNSR is expected to occur include: Banks Pumping Plant, CCF, and Skinner Fish Facility located about 12.9 km northwest of Tracy.

Impacts of the authorized taking also include adverse impacts to CHNWR and CHNSR related to the Project's incremental contribution to cumulative impacts (indirect impacts). Project operations of the Banks Pumping Plant will cause hydrodynamic effects that will result in impacts to juvenile CHNWR and CHNSR emigrating from the Sacramento River basin and entering the interior Delta. These impacts include: increased migration time for actively migrating CHNWR and CHNSR, increased juvenile vulnerability to predation in the Delta, reduction in habitat quantity and quality for rearing juveniles, greater risk of juvenile entry into migration routes with higher mortality such as Georgiana Slough, increased exposure to entrainment at the south Delta export facilities (i.e.,

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CCF, Skinner Fish Facility, Banks Pumping Plant) through reverse flows in Old and Middle rivers, impaired feeding opportunities, entrainment of food web resources, and increased juvenile vulnerability to predation within CCF.

South Delta Temporary Barriers Project – Impacts of the authorized taking include adverse impacts to CHNWR and CHNSR related to the Project’s incremental contribution to cumulative impacts (indirect impacts). Operation of the South Delta Temporary Barriers Project will result in increased juvenile vulnerability to predation through creation of enhanced predatory fish habitat adjacent to the barriers, increased entrainment of juvenile CHNWR and CHNSR into the Middle River, Old River and/or Grant Line Canal when flap gates operate tidally resulting in reduced survival and/or routing into the south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant), and increased delays in emigration increasing vulnerability to predation and high water temperature throughout the season. The areas where authorized take of CHNWR and CHNSR is expected to occur include: Middle River Barrier located 0.8 km upstream of the junction with Victoria Canal, Old River Barrier located 0.8 km upstream of the Tracy Fish Collection Facility, and Grant Line Canal Barrier located 0.12 km upstream of the Tracy Boulevard Bridge.

Georgiana Slough Salmonid Migratory Barrier – Impacts of the authorized taking include adverse impacts to CHNWR and CHNSR related to the Project’s incremental contribution to cumulative impacts (indirect impacts). Operation of the Georgiana Slough Salmonid Migratory Barrier may result in increased juvenile vulnerability to predation through creation of enhanced predatory fish habitat adjacent to the barrier and delayed migration for adults that enter Georgiana Slough from the south during upstream spawning migration increasing the risk of pre-spawn mortality. The area where authorized take of CHNWR and CHNSR is expected to occur is at the confluence of the Sacramento River and Georgiana Slough located directly south of Walnut Grove.

Barker Slough Pumping Plant – Incidental take of juvenile CHNWR and CHNSR in the form of mortality (“kill”) may occur as a result of operations of the BSPP by means of entrainment, impingement, and screen contact. Maintenance operations at BSPP including fish screen cleaning, sediment removal, and aquatic weed removal may negatively impact juvenile CHNWR and CHNSR if they are in the vicinity. The area where authorized take of CHNWR and CHNSR is expected to occur is approximately 16 km from the mainstem Sacramento River at the end of Barker Slough.

Impacts of the authorized taking also include adverse impacts to juvenile CHNWR and CHNSR related to the Project’s incremental contribution to cumulative impacts (indirect impacts). These impacts include non-lethal impingement/screen contact, increased vulnerability to predation, and food web impacts.

Suisun Marsh Facilities – Incidental take of juvenile CHNWR and CHNSR in the form of mortality (“kill”) may occur as a result of operations of the SMSCG and the RRDS by means of entrainment, impingement, and screen contact. Incidental take of juvenile CHNWR and CHNSR in the form of mortality (“kill”) may also occur as a result of operations of the MIDS and GYSO by means of entrainment. The areas where authorized take of CHNWR and CHNSR is expected to occur include:

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SMSCG located on Montezuma Slough about 3 km downstream from the confluence of the Sacramento and San Joaquin rivers, RRDS located at the confluence of Roaring River Slough and Montezuma Slough, MIDS located on Goodyear Slough south of Pierce Harbor, and GYSO located at the confluence of Goodyear Slough and Suisun Bay.

Impacts of the authorized taking also include adverse impacts to CHNWR and CHNSR related to the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts include non-lethal impingement/screen contact, increased vulnerability to predation, and potential migration delays for adult CHNWR and CHNSR at the SMSCG and the RRDS. These impacts also include increased vulnerability to predation and potential migration delays for adult CHNWR and CHNSR at the MIDS and the GYSO.

White Sturgeon (*Acipenser transmontanus*; WS)

The Project activities and their impacts are expected to result in the incidental take of WS. The Covered Activities that are expected to result in incidental take of WS include operations of the: Banks Pumping Plant (including water transfers), CCF (including herbicide and algaecide application and mechanical aquatic weed removal), Skinner Fish Facility, South Delta Temporary Barriers Project, Georgiana Slough Salmonid Migratory Barrier, BSPP (including fish screen cleaning, sediment removal, and aquatic weed removal), and Suisun Marsh Facilities that include the SMSCG, the RRDS, the MIDS, and the GYSO.

Banks Pumping Plant, CCF, and Skinner Fish Facility – Incidental take of WS in the form of mortality ("kill") may occur as a result of operations of the Banks Pumping Plant and CCF by means of entrainment into CCF through the radial gates, exposure to herbicide and algaecide in CCF used to control aquatic vegetation and algal blooms, and mechanical removal of aquatic vegetation in CCF. The application of herbicides and algaecides in CCF with copper-based compounds results in injury and mortality of WS if exposed. Mechanical removal of aquatic weeds in CCF has the potential to result in take through direct physical injury. Operations of the Banks Pumping Plant will result in take of larvae, juvenile, and subadult WS. After being entrained into CCF, take may occur as a result of fish bypassing salvage operations through the louvered (behavioral) fish screens to the export pumps, and losses during the fish salvage process. South Delta export-related reverse flows in Old and Middle rivers may pull WS larvae and juveniles into the interior Delta where they are subjected to higher exposure to entrainment risk at the south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant) and larvae are likely too small to screen efficiently at the Skinner Fish Facility, thus more likely to be transported to the export pumps and are vulnerable to pre-screen mortality. Larval and juvenile WS produced by adults that spawn in the San Joaquin River are particularly susceptible to take at the south Delta export facilities, even at low levels of operation. Incidental take of WS may also occur from the Covered Activities in the form of pursue, catch, capture, or attempt to do so during the fish salvage process at Skinner Fish Facility. The areas where authorized take of WS is expected to occur include: Banks Pumping Plant, CCF, and Skinner Fish Facility located about 12.9 km northwest of Tracy.

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Impacts of the authorized taking also include adverse impacts to WS related to the Project's incremental contribution to cumulative impacts (indirect effects). Project operations of the Banks Pumping Plant will cause hydrodynamic effects that will result in impacts to all life stages of WS. These impacts include: increased larvae and juvenile vulnerability to predation in the Delta, reduction in habitat quantity and quality for rearing fish, increased exposure to entrainment of larval, juvenile, and subadults into unfavorable habitats through reverse flows in Old and Middle rivers as a result of Banks Pumping Plant operations, impaired feeding opportunities, entrainment of food web resources, and increased larvae and juvenile vulnerability to predation within CCF. Additionally, reduction in Delta outflow resulting from Project operation of the Banks Pumping Plant, particularly in wetter years and those immediately succeeding wetter years, reduces the frequency of conditions required for WS to have successful spawning, juvenile recruitment, and subsequent larval rearing.

South Delta Temporary Barriers Project – Impacts of the authorized taking include adverse impacts to WS related to the Project's incremental contribution to cumulative impacts (indirect effects). Operation of the South Delta Temporary Barriers Project will result in increased larval and juvenile vulnerability to predation through creation of enhanced predatory fish habitat adjacent to the barriers, increased entrainment of larval and juvenile WS into the Middle River, Old River and/or Grant Line Canal when flap gates operate tidally resulting in reduced survival and/or routing into the south Delta export facilities (i.e., CCF, Skinner Fish Facility, Banks Pumping Plant), increased delays in larval and juvenile downstream migration increasing vulnerability to predation and high water temperature throughout the season, and creates a possible impediment to adult spawning on the San Joaquin River and its tributaries. The areas where authorized take of WS is expected to occur include: Middle River Barrier located 0.8 km upstream of the junction with Victoria Canal, Old River Barrier located 0.8 km upstream of the Tracy Fish Collection Facility, and Grant Line Canal Barrier located 0.12 km upstream of the Tracy Boulevard Bridge.

Georgiana Slough Salmonid Migratory Barrier – Impacts of the authorized taking of WS are related to the Project's incremental contribution to cumulative impacts (indirect impacts). Operation of the Georgiana Slough Salmonid Migratory Barrier may result in increased vulnerability to predation through creation of enhanced predatory fish habitat adjacent to the barrier. The area where authorized take of WS is expected to occur is at the confluence of the Sacramento River and Georgiana Slough located directly south of Walnut Grove.

Barker Slough Pumping Plant – Incidental take of WS in the form of mortality ("kill") may occur as a result of operations of the BSPP by means of entrainment, impingement, and screen contact. Maintenance operations at BSPP including fish screen cleaning, sediment removal, and aquatic weed removal may negatively impact WS if they are in the vicinity. Authorized take of WS is expected to occur approximately 16 km from the mainstem Sacramento River at the end of Barker Slough.

Impacts of the authorized taking also include adverse impacts to WS related to the Project's incremental contribution to cumulative impacts (indirect effects). These impacts include non-lethal impingement/screen contact, increased vulnerability to predation, and food web impacts.

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Suisun Marsh Facilities – Incidental take of WS in the form of mortality (“kill”) may occur as a result of operations of the SMSCG and the RRDS by means of entrainment, impingement, and screen contact. Incidental take of WS in the form of mortality (“kill”) may also occur as a result of operations of the MIDS and GYSO by means of entrainment. The areas where authorized take of WS is expected to occur include: SMSCG located on Montezuma Slough about 3 km downstream from the confluence of the Sacramento and San Joaquin rivers, RRDS located at the confluence of Roaring River Slough and Montezuma Slough, MIDS located on Goodyear Slough south of Pierce Harbor, and GYSO located at the confluence of Goodyear Slough and Suisun Bay.

Impacts of the authorized taking also include adverse impacts to WS related to the Project’s incremental contribution to cumulative impacts (indirect effects). These impacts include non-lethal impingement/screen contact and increased vulnerability to predation for WS at the SMSCG and the RRDS. These impacts also include increased vulnerability to predation for WS at the MIDS and the GYSO.

VII. Incidental Take Authorization of Covered Species:

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, CDFW authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species at the Skinner Fish Facility as authorized by this ITP.

VIII. Conditions of Approval:

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including waterways and channels within the Project Area, operation of pumps, barriers and gates, operation and maintenance of the Skinner Fish Facility, pesticide application and mechanical aquatic weed removal in CCF, and fish screen cleaning, sediment removal, and aquatic weed removal at the BSPP. CDFW’s issuance of this ITP and Permittee’s authorization to take the Covered Species are subject to Permittee’s compliance with and implementation of the following Conditions of Approval:

- 1. Legal Compliance:** Permittee shall comply with all applicable federal, state, and local laws in existence on the effective date of this ITP or adopted thereafter.
- 2. CEQA Compliance:** Permittee shall implement and adhere to the measures related to the Covered Species in the Project Description and Biological Resources section of the Environmental Impact Report (SCH No.: 2023060467) certified by California Department of Water Resources on October 28, 2024 as lead agency for the Project pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). For purposes of this ITP, where the measures

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in the Environmental Impact Report are less protective of the Covered Species or otherwise conflict with this ITP, the Conditions of Approval set forth in this ITP shall control.

- 3. ESA Compliance:** Permittee shall implement and adhere to the terms and conditions related to the Covered Species in the USFWS Biological Opinion for the Reinitiation of Consultation on Long-term Operations of the Central Valley Project and State Water Project (Biological Opinion No. 08FBTD00-2019-F-0164) (2019 USFWS BO) and the NMFS Biological Opinion on Long-term Operations of the Central Valley Project and State Water Project (Biological Opinion No. WCRO-2016-00069) (2019 NMFS BO) for the Project pursuant to the ESA, as modified, and to any replacement biological opinions issued at the conclusion of the consultation reinitiated in 2021 for the long-term operations of the SWP and CVP, subject consultation pursuant to Condition of Approval 5. For purposes of this ITP, where the terms and conditions for the Covered Species in the federal authorization are less protective of the Covered Species or otherwise conflict with this ITP, the Conditions of Approval set forth in this ITP shall control.
- 4. ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP; Attachment 3).
- 5. Consultation Regarding Amendment:** This ITP may require an amendment if any one of the following conditions occur:
 - Modification, reinitiation or replacement of the 2019 USFWS BO for DS or the 2019 NMFS BO for CHNWR and CHNSR or any subsequent BO addressing the coordinated operations of the CVP and SWP;
 - Completion of the B.F. Sisk Dam Raise and Reservoir Expansion Project;
 - Modification to the Bay-Delta Plan or water rights decisions by the State Water Board affecting operations of the Project, or execution of a binding HRL adopted by the State Water Board as a means of implementing the Bay-Delta Plan that modify the context in which the Covered Activities are undertaken;
 - Completion of water rights process for the Sites Reservoir Project or the Delta Conveyance Project;
 - Modification to the Project Description, monitoring, studies, or Project operational criteria evaluated and requested through the AMP (Attachment 4);
 - Modification to the Project Description, monitoring, studies, or Project operational criteria evaluated and recommended through an independent review panel convened in response to a Condition of Approval in this ITP;
 - Change in the listing status of a Covered Species;

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- Modification to COA including the 2018 COA Addendum; or
- An unanticipated emergency condition arises that imposes a serious threat to public health or safety.

Permittee shall notify CDFW if any of the conditions listed above occurs. Permittee shall consult with CDFW if any of the conditions listed above occur to determine whether an amendment is necessary for reasons, including but not limited to an increase or decrease in the anticipated extent of the taking of Covered Species or the impacts on the Covered Species that result from the Covered Activities, or modifications to the necessary and appropriate measures to minimize and fully mitigate the impacts of the taking. Permittee shall submit an application and supporting information to CDFW if it requests an amendment, in compliance with the California Code of Regulations section 783.6, subdivision (c)(1). CDFW will follow the amendment process outlined in the California Code of Regulations section 783.6, subdivision (c) to determine whether any proposed amendment is major or minor and whether additional or modified measures are necessary. This Condition of Approval does not modify CDFW's authorities or obligations pursuant to CESA, including the obligation to amend this ITP as required by law.

6. General Provisions:

- 6.1. Designated Representative.** Within 30 days of the effective date of this ITP, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing within 30 days of the effective date of this ITP of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.
- 6.2. Designated Biologist(s) and/or Biological Monitor(s).** Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of the Designated Biologist(s) and Biological Monitor(s) within 30 days of the effective date of this ITP. Permittee shall ensure that the Designated Biologist(s) and Biological Monitor(s) are knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist(s) and Biological Monitor(s) shall be responsible for monitoring Covered Activities described in Condition of Approval 7.6 to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of the Designated Biologist(s) and Biological Monitor(s) in writing before starting Covered Activities described in Condition of Approval 7.6 and shall also obtain approval in advance, in writing, if the Designated Biologist(s) or Biological Monitor(s) must be changed.

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- 6.3. Designated Biologist Authority.** To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall immediately stop any activity that does not comply with this ITP and/or order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Permittee shall provide unfettered access to the Project Site and otherwise facilitate the Designated Biologist in the performance of his/her duties. If the Designated Biologist is unable to comply with the ITP, then the Designated Biologist shall notify the CDFW Representative immediately. Permittee shall not enter into any agreement or contract of any kind, including but not limited to non-disclosure agreements and confidentiality agreements, with its contractors and/or the Designated Biologist that prohibit or impede open communication with CDFW, including but not limited to providing CDFW staff with the results of any surveys, reports, or studies or notifying CDFW of any non-compliance or take. Failure to notify CDFW of any non-compliance or take or injury of a Covered Species as a result of such agreement or contract may result in CDFW taking actions to prevent or remedy a violation of this ITP.
- 6.4. Education Program.** Permittee shall conduct an education program for all persons employed or otherwise working at the BSPP, CCF, SMSCG, and the Skinner Fish Facility before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.
- 6.5. Covered Activities Training Documentation.** The Designated Biologist(s) and Biological Monitor(s) shall maintain training documentation on-site in either hard copy or digital format throughout the term of the ITP at the BSPP, CCF, SMSCG, and Skinner Fish Facility. Documentation shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the training documentation is available for review at each site upon request by CDFW.
- 6.6. Trash Abatement.** Permittee shall initiate a trash abatement program within six months of issuance of this ITP, and shall continue the program for the duration of the ITP. Permittee

shall ensure that trash and food items are contained in animal-proof containers and removed, ideally at daily intervals but at least once a week, to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

- 6.7. Hazardous Waste.** Permittee shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall properly contain and dispose of any unused or leftover hazardous products off-site.
- 6.8. CDFW Access.** Permittee shall provide CDFW staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.
- 6.9. Refuse Removal.** Upon completion of Covered Activities, Permittee shall remove and properly dispose of all weeds and sediment removed as a part of Project Activities.

7. Monitoring, Notification, Science, and Reporting Provisions:

- 7.1. Notification of Non-Compliance.** The Designated Representative shall immediately notify CDFW if the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall follow up within 24 hours with a written report to CDFW describing, in detail, any non-compliance with this ITP and suggested measures to remedy the situation.
- 7.2. Annual Status Report.** Permittee shall provide CDFW with an Annual Status Report (ASR) no later than December 1 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall summarize information from the prior water year October 1 through September 30 and include, at a minimum: (1) a copy of the table in the MMRP with notes showing the current implementation status of each Condition of Approval and mitigation measure; (2) a copy of all SWP and CVP salvage data collected from the prior water year; (3) reports of inspection and maintenance of fish protective equipment including equipment at Skinner Fish Facility, BSPP, and RRDS; (4) an assessment of the effectiveness of each completed or partially completed Condition of Approval in avoiding, minimizing, and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; and (6) information about other Project impacts on the Covered Species.

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- 7.3. CNDDDB Observations.** The Designated Biologist shall submit all observations of Covered Species outside of SWP salvage operations to CDFW's California Natural Diversity Database (CNDDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next ASR.
- 7.4. Final Mitigation Report.** No later than 45 days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.
- 7.4.1. Mitigation Status Report.** Ninety days prior to the expiration of this ITP, Permittee shall provide CDFW with a Mitigation Status Report. The Designated Biologist shall prepare the Mitigation Status Report which shall include, at a minimum: (1) a summary of all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information. This report may satisfy the Final Mitigation Report requirement of Condition of Approval 7.4 if all mitigation measures have been completed at the time of its submittal and approval by CDFW.
- 7.5. Skinner Fish Facility and Clifton Court Forebay Operations.**
- 7.5.1. Facility Outages and Reporting.** To ensure long-term reliability of facility operations, Permittee may conduct annual full facility outages at the Banks Pumping Plant, Skinner Fish Facility, and CCF, consisting of up to one-week, anytime between the last week of April through mid-May (Spring Maintenance and Inspection; Condition of Approval 8.14.1), a one-week outage anytime between the last week of June through the first week of July (Herbicide and Algaecide Treatment; Condition of Approval 8.14.2), and a one-week outage anytime in October (fall herbicide treatment; Condition of Approval

8.14.2). Permittee shall submit an annual schedule to CDFW for review prior to any scheduled outages and notify CDFW two weeks prior to initiating any scheduled outages at the Banks Pumping Plant, Skinner Fish Facility, and CCF. Permittee shall work collaboratively with CDFW to address comments when developing a full facility outage plan.

If Permittee needs to deviate from the annual schedule, Permittee shall provide an updated schedule to CDFW for review and consideration 30 days prior to the planned outage. Following completion of the annual schedule, Permittee shall submit to CDFW written documentation describing compliance with the final schedule (Condition of Approval 7.2).

- 7.5.2. Skinner Delta Fish Protective Facility Improvement Process. To refine the Skinner Fish Facility fish sampling procedures and infrastructure for improvements in accuracy and reliability of data and fish survival, Permittee shall submit a draft Debris Management Effectiveness Study Plan to CDFW for approval within one year of the effective date of this ITP. The Debris Management Effectiveness Study Plan shall include a timeline for study completion and shall be designed to monitor the continued implementation of fall herbicide application to CCF and to evaluate its effectiveness on debris management procedures. The Debris Management Effectiveness Study Plan shall also include a structured decision-making (SDM) process with participation from Permittee, CDFW, USFWS, and NMFS to be used for alternatives development and design criteria development to further improve sampling procedures and infrastructure at the Skinner Fish Facility. Within 60 days of receiving CDFW review of the draft plan, Permittee shall address CDFW comments and finalize the Debris Management Effectiveness Study Plan for CDFW approval and implementation.

If the outcomes from the Debris Management Effectiveness Study Plan identify feasible additional improvements for sampling procedures or infrastructure that require further development and/or prioritization, Permittee shall implement the SDM process identified in the Debris Management Effectiveness Study Plan to develop requirements for additional improvements, including design criteria and/or procedures to implement the study recommendations (e.g. alternative methods of managing fish counts during periods of heavy debris and/or large numbers of fish). At the conclusion of the SDM process, Permittee shall submit the SDM recommendations to CDFW for review and approval. Permittee shall implement SDM recommendations within two years of CDFW's approval. In the interim, the historical count length reduction procedures for managing heavy debris and/or large numbers of fish will be used.

7.6. Barker Slough Pumping Plant Maintenance.

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- 7.6.1. Biological Monitoring of Maintenance Activities. Permittee shall provide a Biological Monitor to observe and collect information on Covered Species during all maintenance Covered Activities associated with the BSPP. Biological Monitors are required for Conditions of Approval 7.6.2, 7.6.3, and 7.6.4 as further described in those conditions.

At a minimum, biological monitoring shall consist of (1) a collection of a water sample from the BSPP forebay within one day of scheduled maintenance activities (e.g., at the Barker Slough water quality station or in front of the BSPP fish screens) for later eDNA analysis, or (2) the inspection of the removed aquatic vegetation or sediment for Covered Species, or (3) both. Permittee shall provide the results of the eDNA analysis in the summary of the maintenance activities each year.

Permittee shall submit an annual summary report of data collected by the Biological Monitor(s) and shall include summaries of the maintenance activities conducted each year to CDFW in accordance with the ASR (Condition of Approval 7.2).

After the first annual reporting process, Permittee may meet with CDFW, USFWS, and NMFS to discuss continued monitoring of BSPP maintenance activities. Changes to the minimum requirements for biological monitoring shall be subject to CDFW approval.

- 7.6.2. Fish Screen Aquatic Weed Raking. Permittee may conduct aquatic weed management at the BSPP fish screens year-round using a weed rake, consisting of an aluminum frame with grappling hooks, lowered by a boom truck. Permittee shall have a CDFW approved Biological Monitor on site during weed raking activities to monitor for the presence of Covered Species when the volume of aquatic vegetation removed is more than 3 cubic yards per day and if either of the following conditions occur:

- A larval (< 25mm fork length) DS or LFS is detected in the most recent survey at 20-mm Survey station 720, or
- A juvenile Chinook Salmon or steelhead (as an indicator of Chinook Salmon presence) is collected in Yolo Bypass Fish Monitoring Program (YBFMP) sampling, specifically:
 - (November-December) Collection of juvenile Chinook Salmon or steelhead in the most recent seining at YBFMP sites BL 1-5 (located in the Lower Yolo Bypass toe drain). The YBFMP seining at sites BL 1-5 is conducted biweekly year-round;
 - (January-June) Collection of juvenile Chinook Salmon or steelhead within the past five days in the YBFMP rotary screw trap (located in the Lower Yolo Bypass toe drain). The YBFMP rotary screw trap is operated on weekdays from January 1 through June 30.

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7.6.3. Aquatic Weed Harvesting. Permittee may conduct aquatic weed management in the BSPP forebay year-round using a boat-mounted aquatic weed harvester. Permittee shall have a CDFW approved Biological Monitor on site during weed harvesting activities to monitor for the presence of Covered Species when the volume of aquatic vegetation removed is more than 3 cubic yards per day and if the following condition occurs:

- A juvenile Chinook Salmon or steelhead (as an indicator of Chinook Salmon presence) is collected in YBFMP sampling, specifically:
 - (November-December) Collection of juvenile Chinook Salmon or steelhead in the most recent seining at YBFMP sites BL 1-5 (located in the Lower Yolo Bypass toe drain). The YBFMP seining at sites BL 1-5 is conducted biweekly year-round;
 - (January-June) Collection of juvenile Chinook Salmon or steelhead within the past five days in the YBFMP rotary screw trap (located in the Lower Yolo Bypass toe drain). The YBFMP rotary screw trap is operated on weekdays from January 1 through June 30.

7.6.4. Sediment Removal. Permittee may conduct sediment removal in the trap and concrete apron in front of the BSPP fish screens and in the pump wells behind the BSPP fish screens using a suction dredge. Sediment removal from within the pump wells may occur as needed, year-round. Permittee shall have a CDFW approved Biological Monitor onsite during BSPP sediment removal activities in the trap and concrete apron to monitor for the presence of Covered Species if either of the following conditions occur:

- A larval (< 25mm fork length) DS or LFS is detected in the most recent survey at 20-mm Survey station 720, or
- A juvenile Chinook Salmon or steelhead (as an indicator of Chinook Salmon presence) is collected in YBFMP sampling, specifically:
 - (November-December) Collection of juvenile Chinook Salmon or steelhead in the most recent seining at YBFMP sites BL 1-5 (located in the Lower Yolo Bypass toe drain). The YBFMP seining at sites BL 1-5 is conducted biweekly year-round;
 - (January-June) Collection of juvenile Chinook Salmon or steelhead within the past five days in the YBFMP rotary screw trap (located in the Lower Yolo Bypass toe drain). The YBFMP rotary screw trap is operated on weekdays from January 1 through June 30.

7.7. South Delta Temporary Barriers Project Reporting. Permittee shall obtain written approval from CDFW prior to full operations of the South Delta Temporary Barriers Project each

year. Full operations commence after the last of the flap gates at either the Middle River Barrier, Old River Barrier, or Grant Line Canal Barrier is untied and all flap gates of the barrier are tidally operated. If CDFW does not approve full operations, Permittee shall maintain intermediate operations of the barriers, leaving one flap gate on each barrier tied open and not subject to tidal operation.

Permittee shall not raise the weir elevation of the Middle River, Old River, or Grant Line Canal barriers for stage maintenance by one foot on or after June 15, unless approved by CDFW.

7.8. Longfin Smelt Monitoring and Science Requirements.

- 7.8.1. Longfin Smelt Science Program. Permittee shall, in coordination with Reclamation, implement science activities identified in the 2020 LFS Science Plan (LFSSP) and this ITP through the term of this ITP; including the development of a mathematical life cycle model in addition to other identified science priorities. The LFS Technical Team will provide technical guidance regarding the LFS Science Program science activities as described in the LFSSP. Updates to the LFSSP shall be subject to CDFW approval before they are finalized and implemented.

The life cycle model will be used as a quantitative tool to characterize the effects of abiotic and biotic factors on LFS populations. Additional LFS science and monitoring informed by the life cycle modeling efforts will be implemented, as needed through the AMP (Attachment 4).

- 7.9. Winter- and Spring-run Chinook Salmon Monitoring and Science Requirements. To improve understanding of CHNWR and CHNSR population size, life history diversity, migration patterns, survival rates, habitat use, and impacts from water-operations related stressors, Permittee, as a part of the AMP (Attachment 4), shall initiate, fund, and implement new and ongoing monitoring and science. This new and ongoing monitoring and science shall include the elements identified in Conditions of Approval 7.9.1, 7.9.2, 7.9.3, 7.9.4, 7.9.5, 7.9.6, and 7.9.7 and shall be combined with existing surveys and data to: (1) continue to build knowledge regarding the biology, ecology, and life history of CHNSR and CHNWR; (2) better understand potential impacts of Project operations on CHNWR and CHNSR; (3) continue to refine the CHNWR juvenile production estimate (JPE); and (4) develop a CHNSR JPE and associated operational criteria that may be proposed to replace or augment Condition of Approval 8.4.5 as a part of the AMP (Attachment 4) and a subsequent amendment to this ITP.

- 7.9.1. Alternative Loss Estimation Pilot Study. Permittee shall, as part of the AMP (Attachment 4) and in coordination with Reclamation, further refine the parameters of the Alternative Loss Equation software tool for estimating CHNWR and CHNSR loss at the

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SWP and CVP export facilities by developing an Alternative Loss Pilot Study Implementation Plan to implement the tool in parallel with current loss estimation methods (2018 CDFW loss equation; Attachment 8)³³ and incorporate SDM principles to prioritize loss parameter studies and performance evaluation studies. The goal of the Alternative Loss Estimation Pilot Study is to provide a more accurate estimate of CHNWR and CHNSR loss, and loss parameters, at the SWP and CVP export facilities while understanding the utility of an alternative method relative to the existing method.

Within six months of the effective date of this ITP, Permittee shall, in collaboration with Reclamation, conduct a knowledge transfer and methods workshop for the Alternative Loss Equation software tool with participation from Permittee, CDFW, Reclamation, USFWS, NMFS, SWP Contractors, and CVP Contractors. Following the knowledge transfer and methods workshop, Permittee shall, in coordination with Reclamation, establish the Alternative Loss Equation Technical Team, a subteam of the Central Valley Fish Facility Review Team, including but not limited to representatives from Permittee, CDFW, Reclamation, USFWS, and NMFS.

Within six months of the knowledge transfer and methods workshop, Permittee shall, in coordination with the Alternative Loss Equation Technical Team, develop and submit a draft Alternative Loss Pilot Study Implementation Plan to the Alternative Loss Equation Technical Team for review and comment. The draft Alternative Loss Pilot Study Implementation Plan shall include: (1) pilot study design; (2) SDM process outline; (3) procedures and timelines for implementing the pilot study and SDM process; (4) target species including CHNWR and CHNSR; (5) interim, draft, and final reporting protocols and meeting schedules; and (6) an assessment of multiple parameters to account for loss including but not limited to salvage facility outages during louver cleaning or mechanical failures and post-release survival studies for salvaged fish. Within four months of receiving Alternative Loss Equation Technical Team review, Permittee shall submit the final draft Alternative Loss Pilot Study Implementation Plan to the Central Valley Fish Facility Review Team, SaMT, and CDFW for review. Within one month of receiving Central Valley Fish Facility Review Team, SaMT, and CDFW review, Permittee shall finalize the Alternative Loss Pilot Study Implementation Plan for implementation and submit to CDFW for approval.

Permittee shall, in coordination with the Alternative Loss Equation Technical Team, implement the Alternative Loss Estimation Pilot Study and complete a prioritization of the pilot study recommendations, including assessments of multiple loss parameters, through SDM procedures, for further implementation. The Alternative Loss Equation Technical Team may utilize an independent peer review to support the SDM process.

³³ California Department of Fish and Wildlife (2018). Chinook Salmon loss estimation for Skinner Delta Fish Protective Facility and Tracy Fish Collection Facility. California Department of Fish and Wildlife.

Within 18 months of CDFW approval of the final Alternative Loss Pilot Study Implementation Plan, Permittee shall, in coordination with Reclamation, implement the Alternative Estimate Pilot Study and submit the prioritized pilot study recommendations to the AMSC for approval.

Within seven years of the effective date of this ITP, Permittee shall complete the implementation of the prioritized pilot study recommendations to provide more accurate estimates of CHNWR and CHNSR loss at the SWP and CVP export facilities. Permittee shall, in coordination with Reclamation, update the loss estimation with refinements to the loss estimation parameters and obtain approval by CDFW.

- 7.9.2. Winter-run Chinook Salmon Machine Learning Model Development. Permittee shall, as part of the AMP (Attachment 4) and in coordination with Reclamation, support and fund the continued refinement of the Winter-run Chinook Salmon Machine Learning Model for use during real-time operations to inform the SaMT and implementation of this ITP. The continued refinement of the Winter-run Chinook Salmon Machine Learning Model will require the established Winter-run Chinook Machine Learning Interagency Team to incorporate genetic-based run-identification loss and monitoring data of CHNWR currently available. The Winter-run Chinook Machine Learning Interagency Team will also develop a CHNWR distribution model to explicitly predict daily juvenile CHNWR migration timing in the Delta using historical long-term monitoring data and environmental variables for SaMT to use by 2026 (Condition of Approval 8.1.2, Attachment 4).

The Winter-run Chinook Machine Learning Interagency Team shall develop a modeling framework that integrates a >10-year dataset of genetically classified CHNWR that has been compiled since the development of the Winter-run Chinook Salmon Machine Learning Model. A revised model incorporating these genetic data shall be developed based on the framework used during the development of the existing Winter-run Chinook Salmon Machine Learning Model. Specifically, a new model will be developed using biotic and abiotic variables upstream of the south Delta to predict salvage one or more weeks prior to salvage occurring.

In addition to the real-time assessment tool, the Winter-run Chinook Machine Learning Interagency Team shall also provide modeling outputs from the Winter-run Chinook Salmon Machine Learning Model and associated OMR Conversion Tool to SaMT for the implementation of Condition of Approval 8.4.4 to this ITP.

- 7.9.3. Spring-run Chinook Salmon Juvenile Production Estimate. Permittee shall, as part of the AMP (Attachment 4) and in coordination with Reclamation, support and fund the continued development of a CHNSR Juvenile Production Estimate (CHNSR JPE) framework for SWP and CVP tributaries and the Delta, and from the framework,

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propose a CHNSR JPE Plan by 2026 for implementation, including an approach for modeling a CHNSR JPE and the monitoring program to support that approach. The CHNSR JPE Plan shall incorporate independent peer review and will be the basis for consideration of any updated entrainment minimization measures described in Conditions of Approval 8.4.5 and 8.4.6 to this ITP. The process to develop the framework and CHNSR JPE Plan shall continue the ongoing effort to develop a CHNSR JPE initiated in 2020 and outlined in the CHNSR JPE Science Plan,³⁴ the CHNSR JPE Interim Monitoring Plan,³⁵ the CHNSR JPE Run Identification Research and Initial Monitoring Plan,³⁶ the CHNSR JPE Data Management Strategy,³⁷ and the CHNSR JPE Decision Charter.³⁸

In 2025, Permittee shall:

- In coordination with the CHNSR JPE Modeling Subteam and with guidance from the CHNSR JPE Core Team, develop a suite of initial CHNSR JPE models based on available CHNSR data and provide the models to the CHNSR JPE Core Team for review.
- Support the efforts of the CHNSR JPE Core Team to develop a CHNSR JPE framework, composed of the selected CHNSR JPE models and the monitoring program required to provide data to calculate an annual CHNSR JPE.
- Coordinate with the AMSC and the CHNSR JPE Core Team, to charter and convene an independent peer review panel to provide feedback on the CHNSR JPE Core Team's recommended CHNSR JPE framework.

In 2026, Permittee shall:

- Following the independent peer review, and in consideration of independent peer review feedback, prepare a draft CHNSR JPE Plan in collaboration with CDFW, USFWS, and NMFS that describes the approach to calculating a CHNSR JPE and the monitoring and special studies needed to collect the data to

³⁴ California Department of Water Resources, Delta Stewardship Council, California Department of Fish and Wildlife, and National Oceanic and Atmospheric Administration Southwest Fisheries Science Center (2020). Incidental take permit spring-run Chinook Salmon juvenile production estimate science plan 2020-2024. California Department of Water Resources, Delta Stewardship Council, and California Department of Fish and Wildlife, Sacramento, CA. National Oceanic and Atmospheric Administration Southwest Fisheries Science Center, Santa Cruz and Davis, CA. December 2020.

³⁵ Allison, A., S. Holley, M. Johnson, J. Nichols, C. Campos, J. Kindopp, et al. (2021). Interim monitoring plan for the spring-run Chinook Salmon juvenile production estimate science program. California Department of Fish and Wildlife and California Department of Water Resources, Sacramento, CA. September 2021.

³⁶ Boro, M., M. Baerwald, B. Harvey, J. Rodzen, N. Hendrix, S. Holley, et al. (2023). Spring-run Chinook Salmon JPE race identification research and initial monitoring plan: Updated November 2023. California Department of Water Resources and California Department of Fish and Wildlife, Sacramento, CA. QEDA Consulting, Seattle, WA.

³⁷ Harvey, B., P. Nelson, S. Gill, A. Vizek, and E. Cain (2022). Data management strategy for the spring-run Chinook Salmon juvenile production estimate. California Department of Water Resources and FlowWest, Sacramento, CA. October 2022.

³⁸ Horndeski, K.A. (2022). Spring-run Chinook Salmon juvenile production estimate core team decision charter. Community Consulting, LLC. July 2022.

calculate a CHNSR JPE annually. The draft CHNSR JPE Plan shall be guided by the CHNSR JPE Core Team SDM process and CHNSR JPE framework recommendation, and by the independent peer review panel's feedback on the CHNSR JPE framework.

- Submit the draft CHNSR JPE Plan to the CHNSR JPE Core Team for review and work collaboratively to incorporate CHNSR JPE Core Team comments into the final CHNSR JPE Plan.
- No later than six months after the independent peer review, Permittee shall, in coordination with Reclamation, submit the final CHNSR JPE Plan to CDFW and NMFS for review and approval.
- Convene the CHNSR JPE Core Team and subteams identified in the CHNSR JPE Science Plan to provide an annual CHNSR JPE estimate, implement the final CHNSR JPE Plan (including monitoring), and ensure all data obtained through long-term monitoring programs are stored in a publicly accessible repository.
- Support the efforts of the CHNSR JPE Core Team to evaluate the minimization provided by the Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Thresholds (Condition of Approval 8.4.5).
- Following the evaluation, Permittee, CDFW, Reclamation, and NMFS will meet to consider development of a new or modified Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Thresholds (Condition of Approval 8.4.5). Such consideration will be informed by: (1) the final CHNSR JPE Plan; (2) independent peer review panel feedback on the CHNSR JPE framework; (3) historical CHNSR monitoring data; (4) new data obtained from the monitoring and special studies needed to collect the data to calculate the CHNSR JPE; (5) CHNSR JPE Core Team review of Condition of Approval 8.4.5; and (6) other relevant information (e.g., implementation of Conditions of Approval 7.9.5 and 7.9.6).

Any new or modified CHNSR OMR minimization measure Permittee proposes shall:

- Take into account the limitations of the initial CHNSR JPE approach to calculate the CHNSR JPE;
- Be an interim approach to be refined as the CHNSR JPE approach evolves and the CHNSR Life Cycle Model (Condition of Approval 7.9.4) is completed;
- Anticipate future iterations and refinements of the CHNSR JPE approach; and

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- Rely more on monitoring data than salvage data from the SWP and CVP export facilities.

In 2027, Permittee shall:

- In coordination with Reclamation, implement changes to monitoring if recommended through the CHNSR JPE Core Team SDM process, approved by CDFW and NMFS through appropriate take authorization for monitoring activities, and informed by stakeholder participation from non-SWP or CVP tributaries.
- Support the SR JPE Modeling Subteam to continue to develop and refine the CHNSR JPE model by integrating new data once available and adjusting the modeling approach in collaboration with the CHNSR JPE Core Team and in response to SDM processes conducted by the CHNSR JPE Core Team. As changes are made to the CHNSR JPE, Permittee shall consult with CDFW regarding the potential need for an amendment to this ITP (Conditions of Approval 5 and 8.4.6).

In 2028, Permittee shall:

- Coordinate with the AMSC and the CHNSR JPE Core Team, to consider chartering and convening an independent peer review panel to provide feedback on the CHNSR JPE model.

In 2029 and 2030, if an independent peer review is convened pursuant to the AMP, Permittee shall:

- Convene the CHNSR JPE Core Team to review independent peer review panel feedback, and the CHNSR JPE Core Team will use SDM to evaluate and implement changes to the CHNSR JPE model.

7.9.4. Spring-run Chinook Salmon Life Cycle Model. Permittee shall, as part of the AMP (Attachment 4) and in coordination with Reclamation, support and fund the development of a CHNSR Life Cycle Model (CHNSR LCM) consistent with this Condition of Approval for the purpose of informing management actions to improve Central Valley CHNSR population status. Permittee shall, in coordination with Reclamation, establish an interagency management team (CHNSR LCM Management Team) including representatives from Permittee, CDFW, Reclamation, USFWS, and NMFS, to define the specific management issues and objectives to be addressed by the CHNSR LCM. The AMSC may serve in place of a distinct CHNSR LCM Management Team, if approved by CDFW and NMFS. Because of the close link between the CHNSR LCM and CHNSR JPE development through a shared use of historical and newly generated data, the CHNSR JPE Core Team will be responsible for guiding the development of the CHNSR LCM to address the management objectives. The CHNSR JPE Core Team will also be responsible

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for determining whether the required modeling can be accomplished through an update of one or more existing Central Valley Chinook Salmon modeling efforts, such as the CHNSR JPE, the NMFS CHNSR life cycle model, and the CVPIA Science Integration Team salmon life cycle models. The CHNSR JPE Core Team will use SDM principles when appropriate. The CHNSR JPE Core Team will develop and submit a CHNSR LCM Modeling Plan and timeline to the CHNSR LCM Management Team for approval, and guide implementation of the plan. To facilitate open communication between the lead life cycle modeler and agency staff, Permittee shall establish a CHNSR LCM Modeling Subteam including but not limited to representatives from Permittee, CDFW, Reclamation, USFWS, and NMFS. Throughout the process to develop the CHNSR LCM and implement the CHNSR LCM Modeling Plan, the lead life cycle modeler will collaborate with the CHNSR LCM Modeling Subteam through regular meetings to solicit feedback and integrate that feedback into model development iteratively, in a manner similar to the CHNSR JPE Modeling Subteam described in Condition of Approval 7.9.3 to this ITP.

In 2025, Permittee shall, in coordination with Reclamation, assemble the CHNSR LCM Management Team and begin coordination with the CHNSR JPE Core Team on the development of the CHNSR LCM.

In 2026, Permittee shall, in coordination with the CHNSR JPE Core Team, develop and submit a draft CHNSR LCM Modeling Plan and timeline to the CHNSR LCM Management Team for approval, and guide implementation of the final, approved CHNSR LCM Modeling Plan. Also in 2026, Permittee shall, in coordination with Reclamation, establish the CHNSR LCM Modeling Subteam for coordination between the lead life cycle modeler and the CHNSR JPE Core Team.

In 2027, the CHNSR LCM Modeling Subteam shall convene regular meetings to implement the final CHNSR LCM Modeling Plan and to solicit and incorporate feedback on model development.

In 2028, CHNSR LCM Modeling Subteam will, under the guidance of the CHNSR LCM Management Team and CHNSR JPE Core Team, recommend an initial CHNSR LCM. Also in 2028, the AMSC will, in coordination with the CHNSR JPE Core Team and the CHNSR LCM Management Team, consider chartering and convening an independent peer review panel to provide feedback on the initial CHNSR LCM.

In 2029 and 2030, if an independent peer review is convened, the CHNSR JPE Core Team and the CHNSR LCM Modeling Subteam will review independent peer review panel feedback, and the CHNSR JPE Core Team will use SDM to evaluate and implement changes to the initial CHNSR LCM.

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7.9.5. Salmon Delta Occupancy, Distribution, and Survival Studies. Enhanced monitoring of juvenile Chinook Salmon movement through the Delta, paired with environmental data, will provide a more comprehensive understanding of Delta occupancy and survival, including specific areas that may be more frequently utilized for rearing and contribute to higher survival rates. These data will inform real-time management of Project operations and will support elements of the AMP (Attachment 4), such as the development of a CHNSR LCM and a CHNWR migration model. Additionally, these data may aid in the development of habitat restoration projects focused on improving quality of and connectivity between juvenile Chinook Salmon rearing areas in the Delta.

Permittee shall continue to implement annual regional juvenile Chinook Salmon survival studies within the Delta for the duration of this ITP including the Georgiana Slough Salmonid Migratory Barrier Effectiveness Studies (Condition of Approval 7.9.6) and studies associated with the Alternative Loss Estimation Pilot Study (Condition of Approval 7.9.1). This may also include Yolo Bypass salmonid studies, Sutter and Steamboat sloughs studies, and updates to ECO-PTM. The objective of these studies is to evaluate juvenile Chinook Salmon reach-specific survival, behavior, and route entrainment within the Sacramento River and Delta (including the south Delta). To continue to successfully implement these studies, Permittee shall:

- Secure an acoustic receiver network in the Sacramento River and Delta;
- Provide real-time and retrospective modeling of the data obtained from the receiver network;
- Secure a source of natural-origin or hatchery-origin Chinook Salmon from the Sacramento River basin and acoustically tag them prior to release in the Sacramento River; and
- Convene a new working group comprised of representatives from Permittee, CDFW, Reclamation, USFWS, and NMFS to expand the acoustic receiver network and prioritize co-location of physical and biological data collection with the goal of forecasting entrainment rates, Delta occupancy timing and distribution, and reach-specific survival based on a combination of real-time acoustic telemetry data, mark-recapture survival modeling, and predictions of through-Delta survival in specific anticipated environmental conditions, consistent with Advancement 3 of Johnson et al. (2017).³⁹

³⁹ Johnson, R. C., S. Windell, P.L. Brandes, J.L. Conrad, J. Ferguson, P.A.L. Goertler, B.N. Harvey, J. Heublein, J.A. Israel, D.W. Kratville, J.E. Kirsch, R.W. Perry, J. Pisciotto, W.R. Poytress, K. Reece, and B.G. Swart (2017). Science advancements key to increasing management value of life stage monitoring networks for endangered Sacramento River winter-run Chinook Salmon in California. San Francisco Estuary & Watershed Science 15(3).

To support implementation and collaboration, the working group will:

- Collaborate with the Interagency Telemetry Advisory Group (ITAG) on the integration of new real-time acoustic receiver arrays into the current receiver network to optimize coordination of a system-wide acoustic telemetry system in the Sacramento-San Joaquin Delta; and
- Investigate other ways to improve monitoring of juvenile Chinook Salmon rearing, routing, and through-Delta survival such as increased PIT tagging and monitoring. PIT tag monitoring could be incorporated for fish too small for acoustic tagging to better understand rearing and migration of fry through the Delta.

Within one year of the effective date of this ITP, Permittee shall, in coordination with the new working group, submit a draft study plan to CDFW for review and approval. Within four months of receiving CDFW review, Permittee shall, in coordination with the new working group, finalize the draft study plan and obtain CDFW's written approval for implementation. At a minimum, Permittee shall convene the new working group quarterly every year to review and revise annual study plans, discuss study progress, and review data gathered from occupancy, distribution, and survival studies.

7.9.6. Georgiana Slough Salmonid Migratory Barrier Effectiveness Studies. Permittee shall, as part of the AMP (Attachment 4) and in coordination with the implementation of Condition of Approval 8.11.1 to this ITP, continue annual effectiveness studies through the duration of this ITP to refine the understanding of Georgiana Slough Salmonid Migratory Barrier efficiency and benefits to CHNWR and CHNSR. Permittee shall also consider the potential to gain information regarding impacts of barrier operations on adult CHNWR and CHNSR migration when designing studies. Studies shall be complimentary to, or integrated with, the WS Science Plan (Condition of Approval 7.10.1) to provide additional information regarding potential impacts to WS migration. At a minimum, Permittee shall convene the Guidance Structure Evaluation Working Group quarterly every year to continuously refine annual study plans, discuss study progress, and review data gathered from annual effectiveness studies. The Guidance Structure Evaluation Working Group shall include, but not be limited to, representatives from Permittee, CDFW, Reclamation, USFWS, and NMFS.

Within one month of the effective date of this ITP, Permittee shall provide CDFW and the Guidance Structure Evaluation Working Group the current water year annual study plan supporting the Georgiana Slough Salmonid Migratory Barrier Monitoring Plan.⁴⁰ For each subsequent water year, Permittee shall provide CDFW and the Guidance

⁴⁰ California Department of Water Resources (2022). Georgiana Slough Salmonid Migratory Barrier; Monitoring plan. California Department of Water Resources, Division of Operations and Maintenance, South Delta Branch. May 2022.

Structure Evaluation Working Group with a draft annual study plan for review by February 1. Permittee shall work with CDFW and the Guidance Structure Evaluation Working Group to incorporate comments on the draft study plan and shall submit the final study plan to CDFW for approval no later than July 1. Permittee shall implement the finalized annual study plan the following water year. All modifications to the study plan shall be approved by CDFW.

Permittee shall provide data to CDFW and the Guidance Structure Evaluation Working Group as requested during the operation of the Georgiana Slough Salmonid Migratory Barrier to support real-time operations. Permittee shall provide data through the National Oceanic Atmosphere Administration Environmental Research Division Data Access Program (NOAA ERDDAP) data server or equivalent if approved by CDFW. Permittee shall present all data collected for effectiveness studies to the Guidance Structure Evaluation Working Group for review prior to its use in informing other Conditions of Approval to this ITP or the AMP (Attachment 4).

By October 1 each year (Condition of Approval 8.11.1), Permittee shall, in coordination with the Guidance Structure Evaluation Working Group, submit to CDFW annual reports documenting Georgiana Slough Salmonid Migratory Barrier operations and effectiveness studies, including available retrospective modeling of the data.

Permittee shall, in coordination with the Guidance Structure Evaluation Working Group, submit to CDFW and the Guidance Structure Evaluation Working Group a triennial report documenting Georgiana Slough Salmonid Migratory Barrier operations and effectiveness studies, including retrospective modeling of the data over different hydrologic conditions.

7.9.7. Rapid Genetics Support. Permittee shall fully fund one new CDFW Research Scientist 3 position and one half of an existing CDFW Environmental Scientist position to support genetic monitoring and science associated with SWP operations including:

- Continued collaboration on collection, interpretation, and application of genetic data to help inform the new CHNSR JPE and application of the CHNSR JPE;
- Verification of results obtained from laboratories conducting real-time salvage identifications;
- Collaboratively develop methods for identification of San Joaquin River Restoration Program Chinook Salmon juveniles collected at salvage facilities or in Bay-Delta monitoring programs;
- Genetic identification of Chinook Salmon across the diversity spectrum in the Central Valley and the development of collaborative strategies to protect life history diversity;
- Applications of parentage/kinship analysis for detection of unmarked, unfed hatchery-origin juvenile Chinook Salmon;

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- Standardization of genetic methods across laboratories conducting Central Valley Chinook Salmon studies;
- Coordinate the collection, archiving, and dissemination of salmonid tissue samples; and
- Design studies, collect, and analyze data to assess population attributes of CHNSR.

This work will support implementation of real-time OMR minimization measures (Conditions of Approval 8.2.1, 8.4.3, 8.4.4, and 8.4.5) and CHNSR monitoring and science measures (Conditions of Approval 7.9.3 and 7.9.4). Funding for these positions shall be available no later than July 1 subsequent to the effective date of this ITP. Rapid genetic analyses for CHNWR currently rely primarily on GT-seq,⁴¹ however as science advances during the term of this ITP a new method may be used instead of GT-seq, if approved by CDFW.

7.10. White Sturgeon Monitoring and Science Requirements.

7.10.1. White Sturgeon Science Program. Permittee shall continue to convene the WS Science Program. The WS Science Program shall include representatives from Permittee and CDFW and allow for participation by USFWS, NMFS, Reclamation, and SWP Contractors. A primary goal of this effort is to inform management of WS and to identify potential additional management actions that could improve its status. Permittee shall prepare a draft WS Science Plan, in collaboration with CDFW, that describes new science needed to improve the understanding of WS ecology, stressors, and impacts as a result of SWP operations and submit to CDFW for review by July 12, 2025. The WS Science Plan shall include, but is not limited to, the following science priorities:

- A schedule for implementation including deadlines for draft and final reports for each study required;
- A plan for development of a mathematical life cycle model for WS, verified with field data collection, as a quantitative tool to characterize the effects of abiotic and biotic factors on WS abundance and distribution, including major mortality events due to harmful algal blooms;
- New and ongoing monitoring that:
 - Characterizes the distribution and abundance of adult, sub-adult, juvenile, and larval life stages;
 - Collects necessary data to develop a future life cycle model including somatic growth as well as estimates of survival probabilities among life stages;

⁴¹ Campbell, N.R., S.A. Harmon, and S.R. Narum (2014). Genotyping-in-thousands by sequencing (GT-seq): A cost effective SNP genotyping method based on custom amplicon sequencing. *Molecular Ecology Resources* **15**: 855-867.

- Characterizes changes in abundance and distribution of life stages across a range of hydrologic conditions, including varying ranges of X2 and water year types;
- Considers revisions to existing IEP monitoring programs to expand the spatiotemporal distribution of sampling; and
- Addresses factors that influence WS catchability and gear efficiency;
- Improved understanding of WS spawning, egg development, and rearing habitat distribution and use in the spawning rivers, Delta, and Suisun Marsh;
- An entrainment and residency program to quantify WS entrainment and residency in CCF and to better understand factors that may contribute to WS entrainment and residency in CCF;
- A WS salvage prediction tool for generating a near-term forecast of the probability of future salvage designed to inform real-time operations; and
- Quantification of the lethal and sublethal impacts of harmful algal blooms on WS to support the WS life cycle model development.

The WS Science Plan may also include the following actions:

- Development of a genetic management plan to support the use of cultured WS fish for research purposes;
- Improved understanding of the genetic diversity within California WS; and
- WS-specific studies of fish screen efficiency at Skinner Fish Facility and loss within CCF.

Permittee shall work collaboratively with the WS Science Program and consider edits and comments on the draft WS Science Plan while preparing the final plan. The final WS Science Plan shall be submitted to CDFW within one year following submission of the draft plan, for approval by CDFW. After the final plan is approved in writing by CDFW, Permittee shall fund and implement required monitoring and science according to the timelines specified in the final WS Science Plan. The final WS Science Plan may be periodically updated by Permittee or CDFW to reflect updated science priorities or new information, and the updated plan will be submitted to CDFW for approval. Permittee, in coordination with CDFW, will develop an annual funding plan for implementing science plan elements. At a minimum, Permittee shall convene the WS Science Program quarterly every year following initiation of the final WS Science Plan to:

- Review data obtained from new and ongoing monitoring programs;
- Review methods used to implement monitoring and recommend adjustments as they deem appropriate; and
- Review draft results from new and ongoing science.

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Permittee shall make all raw data and modeling acquired as a part of the WS Science Plan available to members of the WS Science Program on a mutually agreeable timeline.

7.10.2. Larval White Sturgeon Salvage Monitoring and Reporting. Permittee shall implement larval WS monitoring in salvage at the Skinner Fish Facility to identify the presence of WS larvae > 20 mm. Larval WS salvage monitoring data shall be provided to CDFW according to existing methods of salvage data transmission for all other Covered Species.

7.11. Notification of Take or Injury/Damage of White Sturgeon. Permittee shall immediately notify the Designated Biologist if a WS is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to CDFW by contacting the CDFW Bay-Delta Region Stockton Office at (209) 234-3420. The initial notification to CDFW shall include information regarding the location, species, and number of WS found dead or injured and the ITP Number. Immediately following notification to CDFW, Permittee shall coordinate with Tracy Fish Collection Facility staff to explore the possibility of relocating the injured WS and rehabilitating it at the CVP facility. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the WS or carcass, and if possible, provide a photograph, explanation as to cause of death or injury, and any other pertinent information.

7.12. Data Accessibility. Permittee shall provide CDFW with access to all raw data and associated analyses and reports for all monitoring required in Conditions of Approval 7, 8 and 9 of this ITP and described in the Project Description within 60 days of collection of data, processing of samples, or completion of analyses and reports, and otherwise upon request.

7.13. Independent Review Panels. In the event that an independent review panel is convened to review aspects of the Project or AMP (Attachment 4), Permittee shall provide drafts of (1) the list of potential panel participants, (2) the panel charges and associated review questions, and (3) the panel report and findings to CDFW for review at least 20 days before they are scheduled to be finalized. Permittee shall incorporate CDFW comments into the panel selection and panel charge before they are finalized.

8. Minimization Measures: The following requirements are intended to ensure the minimization of incidental take of Covered Species and related impacts of the taking in the Project Area during Covered Activities. Permittee shall implement and adhere to the following Conditions of Approval to minimize take of, and impacts of the taking on, Covered Species:

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8.1. Real-time Operations, Monitoring, and Technical Teams. Permittee shall monitor and manage Project operations in response to risk assessments conducted by collaborative real-time operations monitoring teams that include representatives from Permittee, CDFW, Reclamation, USFWS, NMFS, and the State Water Board.

8.1.1. Smelt Monitoring Team. The purpose of SMT is to meet and review hydrologic, SWP and CVP operational, fishery, and water quality data, and provide opportunities for engagement and discussion among biologists and operators on relevant information and issues associated with the Project and risk assessments. SMT shall include representatives from Permittee, CDFW, Reclamation, USFWS, NMFS, and the State Water Board. Permittee shall make all raw data and modeling utilized as part of SMT available to CDFW within ten days of a request.

8.1.2. Salmon Monitoring Team. The purpose of SaMT is to meet and review hydrologic, SWP and CVP operational, fishery, and water quality data, and provide opportunities for engagement and discussion among biologists and operators on relevant information and issues associated with the Project and risk assessments. SaMT shall include representatives from Permittee, CDFW, Reclamation, USFWS, NMFS, and the State Water Board. Permittee shall make all raw data and modeling utilized as part of SaMT available to CDFW within ten days of a request.

8.1.3. White Sturgeon Monitoring Team. The purpose of WSMT is to meet and review hydrologic, SWP and CVP operational, fishery, and water quality data, and provide opportunities for engagement and discussion among biologists and operators on relevant information and issues associated with the Project and risk assessments. WSMT shall include representatives from Permittee and CDFW. Permittee shall make all raw data and modeling utilized as part of WSMT available to CDFW within ten days of a request.

8.1.4. Water Operations Management Team. WOMT will coordinate on overall SWP and CVP operations to oversee the implementation of various real-time provisions for the Project. The purpose of WOMT is to discuss and resolve SWP and CVP operational questions and technical issues, as requested or elevated from technical teams, and to elevate unresolved operational issues to the Directors of Permittee, Reclamation, CDFW, USFWS, and NMFS. WOMT will develop a charter to describe membership and process. WOMT will coordinate with SHOT as needed on operational issues and decisions that have implications for both of their respective purviews, including but not limited to Drought Toolkit implementation and the HRL asset management.

WOMT will meet weekly during the OMR flow management season (October–June), and otherwise as needed. Any agency can request a WOMT meeting outside of the OMR season for discussion or elevation items. For OMR Management, Permittee shall,

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in coordination with Reclamation, provide SWP and CVP operational outlooks and assessments on a weekly basis to WOMT, SMT, SaMT, and WSMT. Permittee shall provide WOMT the opportunity to review and discuss any applicable drought and dry year actions from the Drought Toolkit or other relevant drought planning documents. For all other assessments or elevation issues, supporting materials will be provided to WOMT by designated representatives of the applicable technical teams.

- 8.1.5. Collaborative Approach to Real-time Decision Making. Beginning no later than October 1 through the end of OMR Management (Condition of Approval 8.6), SMT, SaMT, and WSMT shall meet as described in Conditions of Approval 8.3.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, and 8.5 or more often as required, to consider survey data, salvage data, and other pertinent biotic and abiotic factors and provide input on risk assessments as described in Conditions of Approval 8.1.6.1, 8.1.6.2, and 8.1.6.3.

SMT, SaMT, and WSMT shall share and discuss all available biological, abiotic, and operational information to inform discussions in the WOMT as required by Conditions of Approval 8.3.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, and 8.5. SMT, SaMT, and WSMT shall communicate the information shared and perspectives to WOMT as described in Conditions of Approval 8.3.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, and 8.5. Permittee and CDFW SMT, SaMT, and WSMT staff may conclude different operations are warranted, in which case the difference shall be noted and elevated as described in this Condition of Approval and Condition of Approval 8.1.6. WOMT shall then confer and attempt to reach a resolution and agreed-upon Project operations. If a resolution is reached, Permittee shall operate consistent with the decision regarding Project operations from WOMT.

If WOMT does not reach a resolution, the Director of DWR, in coordination with the Regional Director of Reclamation as appropriate (proposing agency or agencies), shall confer with CDFW, USFWS, and NMFS Directors/Regional Administrators to determine if there is an alternative action that will be mutually agreeable. If consensus is reached, Permittee shall implement the alternative action. If the Directors do not reach a resolution on operations, Permittee shall meet and confer with Reclamation to prioritize alignment between the SWP and CVP operations, in consideration of operational and regulatory constraints affecting either project, and shall identify their recommended action within two days, providing a written explanation of the nature of the dispute. Any Director may request a follow-up Directors' meeting if necessary. Within two days after receiving the recommended action for SWP from Permittee, the CDFW Director may disagree with the action requested by DWR and require Permittee to implement an operational decision provided by CDFW in writing. Permittee shall implement CDFW's operational decision.

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Once a decision has been resolved following any of the procedures described above, Permittee shall designate a representative or representatives to communicate the decision to regulatory and operating agencies, as well as other interested parties that have expressed interest in the decision.

8.1.6. Real-time Information Sharing Process. Permittee shall provide scheduling, SWP and CVP operations forecast, and relevant hydrologic monitoring and modeling information on Monday of each week to SMT, SaMT, and WSMT agency staff. SMT, SaMT, and WSMT shall convene as required by Conditions of Approval 8.3.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, and 8.5, or as needed, for technical conversation prior to WOMT meeting and shall discuss all relevant data, including data that becomes available after the Monday distribution. All information intended for discussions in WOMT shall be provided and discussed in SMT, SaMT, and WSMT prior to discussion in WOMT.

8.1.6.1. Smelt Monitoring Team Role. Agency team leads: (1) notify their agency's WOMT representative(s) if a Reclamation Proposed Action or ITP identified threshold or protective action is or will be met; (2) provide input on any risk assessment prepared by Reclamation and Permittee as required by Conditions of Approval 8.3.1, 8.4.2, and 8.5; and (3) discuss and document differing perspectives (i.e., non-consensus) on the relevant assessments and Conditions of Approval. If there is an operational issue that SMT cannot resolve, the agency representatives will compose an email to WOMT summarizing the elevation topic and any supporting information and recommendations. Each of the agency representatives are individually responsible for communicating the issues and any background information to their WOMT representative.

8.1.6.2. Salmon Monitoring Team Role. Agency team leads: (1) notify their agency's WOMT representative(s) if a Reclamation Proposed Action or ITP identified threshold or protective action is or will be met; (2) provide input on any risk assessment prepared by Reclamation and Permittee as required by Conditions of Approval 8.4.3, 8.4.4, 8.4.5, and 8.5; and (3) discuss and document differing perspectives (i.e., non-consensus) on the relevant assessments and Conditions of Approval. If there is an operational issue that SaMT cannot resolve, the agency representatives will compose an email to WOMT summarizing the elevation topic and any supporting information and recommendations. Each of the agency representatives are individually responsible for communicating the issues and any background information to their WOMT representative.

8.1.6.3. White Sturgeon Monitoring Team Role. Agency team leads: (1) notify their agency's WOMT representative(s) if a trigger in Condition of Approval 8.4.7 is or will be met; (2) provide input on the risk assessment and advice developed

to document the technical discussion; and (3) discuss and document differing perspectives (i.e., non-consensus). If there is an operational issue that WSMT cannot resolve, the agency representatives will compose an email to WOMT summarizing the elevation topic and any supporting information and recommendations as required by Condition of Approval 8.4.7. Each of the agency representatives are individually responsible for communicating the issues and any background information to their WOMT representative.

- 8.1.6.4. Chartering Real-Time Operations Teams. Permittee shall, in collaboration with Reclamation, develop charters for the SMT, SaMT, WSMT, and WOMT. Team membership, roles, and processes shall be described in team charters.

Some teams may already have charters in place which will continue to be followed until they are reviewed and replaced in the future. These charters may be supplemented by guidance documents which further elaborate roles, responsibilities, and processes for the SMT, SaMT, WSMT, and WOMT. Permittee shall update these guidance documents as needed by mutual agreement. Drafts of all team charters and guidance documents shall be submitted to CDFW for review. After CDFW comments are incorporated, final team charters and guidance documents shall be subject to CDFW approval.

- 8.1.7. OMR Action Response Timing. Unless a more immediate response is required by a Condition of Approval in this ITP, Permittee shall adjust exports within three days of an event that requires an OMR index, to enable efficient power scheduling. Once an OMR action is triggered as a result of Conditions of Approval of this ITP, Permittee shall not increase exports, except as has been scheduled prior to the trigger's occurrence and with prior notice to WOMT, in a manner that would make projected OMR more negative. Permittee shall conduct export reductions to meet the requirements of the Conditions of Approval using the normal scheduling procedure. Combined projected exports, export scheduling, and OMR will be discussed at WOMT each week. The intent of this Condition of Approval is that combined project south Delta exports will not increase the risk to protected fish species after an OMR trigger is met.

- 8.1.8. OMR Index Calculation. Permittee shall calculate the OMR flow index that will be used to determine export limitations, as described in the sections below, using the equation provided in Hutton (2008).⁴² Permittee shall provide CDFW with the variables used to calculate OMR index changes as related to implementing Conditions of Approval of this ITP upon the request of CDFW.

⁴² Hutton, P. (2008). A model to estimate combined Old & Middle river flows; Final version. Metropolitan Water District of Southern California. April 2008.

8.1.9. OMR Averaging Period. Permittee shall ensure the required average of the OMR Index is met by the last day of the averaging period included in any Condition of Approval that requires an action for a specified number of days, after initiating operational changes in response to the OMR trigger.

8.2. Early OMR Management.

8.2.1. Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds. To minimize entrainment and loss of early-migrating natural-origin CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days, when the genetically verified 7-day rolling sum of CHNWR loss, calculated daily, exceeds the following thresholds (see calculation details and survival variables in Attachments 2 and 6):

- From November 1 through November 30: Product of November Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total at the end of the second biweekly period in October, whereby the November Multiplier is:

$$\text{November Multiplier} = 0.0011 \times 0.25 \times \text{Survival}_{\text{Fry-to-Smolt}} \times \text{Survival}_{\text{Smolt}}$$

- From December 1 through December 31: Product of December Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total estimated at the end of the second biweekly period in November, whereby the December Multiplier is:

$$\text{December Multiplier} = 0.0021 \times 0.25 \times \text{Survival}_{\text{Fry-to-Smolt}} \times \text{Survival}_{\text{Smolt}}$$

If the 7-day rolling sum of CHNWR loss, calculated daily, is exceeded during a period of reduced exports, Permittee shall, in coordination with Reclamation, continue to adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs, until seven days after the most recent exceedance. Loss shall be calculated for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8).⁴³

Permittee shall, in coordination with Reclamation, initially adjust exports in response to meeting the thresholds above based on length-at-date identification of natural-origin older juvenile Chinook Salmon.^{44, 45} If genetic analysis of natural-origin juvenile Chinook

⁴³ California Department of Fish and Wildlife (2018). Chinook Salmon loss estimation for Skinner Delta Fish Protective Facility and Tracy Fish Collection Facility. California Department of Fish and Wildlife.

⁴⁴ Older juvenile Chinook Salmon is defined as any Chinook Salmon measured above the minimum length for CHNWR, according to the Delta Model length-at-date criteria used to assign individuals to run (USFWS 1997).

⁴⁵ U.S. Fish and Wildlife Service (1997). Juvenile length ranges of the four runs of Central Valley Chinook substituting the "Delta Model" winter-run Chinook length ranges for the "Fisher Model" winter Chinook length ranges. U.S. Fish and Wildlife Service. April 7, 1997.

Salmon observed in salvage at the SWP or CVP subsequently indicates that any given Chinook Salmon is not a genetically confirmed CHNWR, that fish will not count toward the loss threshold exceedance, and continued export adjustments pursuant to the OMR limit may not be required. While a new, more rapid genetic method, SHERLOCK,⁴⁶ undergoes field testing, both it and the current genetic method, GT-seq,⁴⁷ shall be used to determine the final identification. In the event that SHERLOCK and GT-seq provide different run assignments, the results from the GT-seq method shall be used to determine the final run assignment for the purposes of implementing Condition of Approval 8.2.1. If a fish is not genetically identifiable or if genetic identification is pending, then the Delta model length-at-date criteria⁴⁸ shall be used to classify the race of the juvenile Chinook Salmon in salvage for the purposes of implementing Condition of Approval 8.2.1.

8.3. Onset of OMR Management. The OMR Management season starts: (1) any time after December 1 after an Adult Longfin Smelt Entrainment Protection Action is implemented (Condition of Approval 8.3.3), (2) if Condition of Approval 8.3.1 is triggered (i.e., immediately following completion of the First Flush Action), or (3) any time after December 20 if the turbidity threshold in Condition of Approval 8.3.2 is reached. If neither Condition of Approval 8.3.1, nor Condition of Approval 8.3.2, nor Condition of Approval 8.3.3 initiates OMR Management season, the OMR Management season starts automatically on January 1. From the onset of OMR Management Permittee shall, in coordination with Reclamation, adjust south Delta exports to maintain the OMR index on a 14-day running average no more negative than -5,000 cfs until the end of the OMR Management (Condition of Approval 8.6) except during Storm Flex operations (Condition of Approval 8.5), or if a more positive OMR index or different averaging period is required.

8.3.1. First Flush Action. To minimize SWP and CVP influence on the movement of DS and subsequent entrainment and salvage of adult DS, Permittee shall, in coordination with Reclamation, adjust south Delta exports for 14 consecutive days, anytime between December 1 and the last day of February, to maintain a 14-day average of the OMR index no more negative than -2,000 cfs within three days of when the following criteria are met:

- Three-day running average of daily flow at Freeport is $\geq 25,000$ cfs, and

⁴⁶ Baerwald, M.R., E.C. Funk, A.M. Goodbla, M.A. Campbell, T. Thompson, M.H. Meek, and A.D. Schreier (2023). Rapid CRISPR-Cas13a genetic identification enables new opportunities for listed Chinook Salmon management. *Molecular Ecology Resources*: 1-13.

⁴⁷ Campbell, N.R., S.A. Harmon, and S.R. Narum (2014). Genotyping-in-thousands by sequencing (GT-seq): A cost effective SNP genotyping method based on custom amplicon sequencing. *Molecular Ecology Resources* **15**: 855-867.

⁴⁸ U.S. Fish and Wildlife Service (1997). Juvenile length ranges of the four runs of Central Valley Chinook substituting the "Delta Model" winter run Chinook length ranges for the "Fisher Model" winter Chinook length ranges. U.S. Fish and Wildlife Service. April 7, 1997.

- Three-day running average of daily turbidity at Freeport is ≥ 50 Formazin Nephelometric Units (FNU).

These criteria shall use data from the CDEC Sacramento River at Freeport station (FPT). The First Flush Action may only be initiated once each water year. The First Flush Action is exempt from the High Flow Offramp as described in Condition of Approval 8.3.2.

Permittee and Reclamation, through WOMT, may prepare an assessment to initiate the First Flush Action early if real-time monitoring of abiotic and biotic factors and salvage prediction models indicate the First Flush Action is likely to be triggered (i.e., within two to three days) and DS salvage is possible.

Readings at individual turbidity sensors or localized groups of turbidity sensors can generate spurious results in real time. To avoid triggering an OMR flow action during a sensor error or a localized turbidity spike that might be caused by local flows or a wind-driven event, Permittee and Reclamation will consider and review data from other locations. In the event that the 3-day running average of daily turbidity at Freeport is ≥ 50 FNU, and Permittee and Reclamation believe that a First Flush Action is not warranted based on additional data sources, Permittee may, in coordination with Reclamation, provide the additional data to SMT and request they convene to confirm criteria will be met because of increased precipitation rather than sensor error or localized turbidity spike. If it is determined through WOMT that there is a sensor error or a localized turbidity spike, Permittee may, in coordination with Reclamation, take no additional action with CDFW approval and provide the supporting information to CDFW and USFWS within 24 hours.

- 8.3.2. Adult Delta Smelt Entrainment Protection Action. If, after a First Flush Action (Condition of Approval 8.3.1) or after December 20, whichever occurs first, the daily average turbidity remains at or becomes elevated to 12 FNU or higher at each of three turbidity sensors in the OMR corridor, creating a continuous bridge of turbidity from the lower San Joaquin River to the SWP and CVP export facilities, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 5-day average of the OMR index that is no more negative than -3,500 cfs until the daily average turbidity in at least one of the three turbidity sensors is less than 12 FNU for two consecutive days, thereby indicating a break in the continuous bridge of turbidity. The three turbidity sensors applicable to this Condition of Approval are Old River at Franks Tract near Terminous (OSJ), Holland Cut (HOL), and Old River at Bacon Island (OBI).

If the three turbidity sensors remain over 12 FNU at the end of a High Flow Offramp (below) or any time after five consecutive days, then Permittee and Reclamation, through WOMT, may prepare an assessment to determine if another Adult Delta Smelt Entrainment Protection Action is warranted based on continued entrainment risk

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following the period of elevated flows and whether DS distribution has shifted downstream, as informed by available quantitative tools and real-time data.

The Adult Delta Smelt Entrainment Protection Action may be offramped when the daily average San Joaquin River flows at Vernalis are greater than 10,000 cfs. While offramped, the OMR index will be managed to no more negative than -5,000 cfs on a 14-day average. The Adult Delta Smelt Entrainment Protection Action shall be immediately reinstated when the daily average San Joaquin River flows at Vernalis drop below 8,000 cfs.

If the three turbidity sensors remain over 12 FNU at the end of a High Flow Offramp or any time after five consecutive days, then Permittee may, in coordination with Reclamation, through WOMT, prepare an assessment to determine if another Adult Delta Smelt Entrainment Protection Action is warranted. Any evaluation shall be based on continued entrainment risk following the period of elevated flows and whether DS distribution has shifted downstream, as informed by available quantitative tools and real-time data.

The Adult Delta Smelt Entrainment Protection Action ends when the 3-day continuous average water temperatures at Jersey Point or Rio Vista reach 53.6°F.

- 8.3.3. Adult Longfin Smelt Entrainment Protection Action. To minimize entrainment and salvage of adult LFS, Permittee shall, in coordination with Reclamation, adjust south Delta exports if cumulative water year salvage of LFS with fork length ≥ 60 mm at the SWP and CVP salvage facilities exceeds the salvage threshold calculated using the following formula:

$$\text{Salvage threshold} = (\text{Age 1} + \text{LFS Index}/20) + 1$$

The Age 1 + LFS Index is calculated using age 1+ fish captured in the midwater trawl from the full San Francisco Bay Study sampling area.⁴⁹ The Age 1 + LFS Index is additive for the months of August, September, October, November, and December. If December data are not available at the start of this action period, then the August to November threshold shall be used until the December data are available and the complete Age 1 + LFS Index is calculated.

If the above salvage threshold is exceeded between December 1 and the end of February, then Permittee, in coordination with Reclamation, shall adjust south Delta exports to achieve one of the following requirements depending on when the salvage threshold was exceeded:

⁴⁹ Baxter, R. D. (1999). Osmeridae. Report on the 1980-1995 fish, shrimp and crab sampling in the San Francisco Estuary. J. Orsi, Interagency Ecological Program for the Sacramento-San Joaquin Estuary **63**: 179-216.

- From December 1 to the start of the OMR Management season, Permittee, in coordination with Reclamation, shall adjust south Delta exports to achieve an OMR index no more negative than -5,000 cfs on a 7-day average for seven consecutive days and then, initiate OMR Management season. During the 7-day period, Permittee may request that WOMT convene and determine if initiation of OMR Management season is warranted. If WOMT determines initiating OMR Management season is not warranted, OMR Management season does not begin at the conclusion of the 7-day period. If salvage of LFS $\geq$ 60 mm continues following the 7-day period when the OMR index is no more negative than -5,000 cfs, then Permittee and Reclamation, through WOMT, may prepare an assessment to determine if additional Longfin Smelt Entrainment Protection Action is warranted based on continued entrainment risk, as informed by available quantitative tools and real-time data. WOMT may determine if OMR Management season should be initiated. If WOMT does not meet, then Permittee shall, in coordination with Reclamation, initiate OMR Management season.
- From the start of the OMR Management season to the end of February, if OMR Management was initiated by a different Condition of Approval, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve an OMR index no more negative than -3,500 cfs on a 7-day average for seven consecutive days. If there is additional salvage of LFS $\geq$ 60 mm following the 7-day period when the OMR index is no more negative than -3,500 cfs, then Permittee shall, in coordination with Reclamation, through WOMT, prepare an assessment to determine if additional Longfin Smelt Entrainment Protection Action is warranted based on continued entrainment risk, as informed by available quantitative tools and real-time data.

8.4. Additional Real-time OMR Management.

- 8.4.1. Larval and Juvenile Delta Smelt Protection Action. To minimize entrainment and salvage of larval and juvenile DS, the Larval and Juvenile Delta Smelt Protection Action starts upon the end of the Adult Delta Smelt Entrainment Protection Action (Condition of Approval 8.3.2). Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs when the average Secchi disk depth in the most recent survey is > 1 meter. The Secchi disk depth shall be calculated as the average measurement from all sampled stations on the San Joaquin River upstream of Jersey Point and stations south of the lower San Joaquin River. If the average Secchi disk depth in the most recent survey is < 1 meter, Permittee shall, in coordination with Reclamation, adjust south Delta exports to

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achieve a 7-day average of the OMR index no more negative than -3,500 cfs until the average Secchi disk depth has increased to > 1 meter.

Permittee shall, in coordination with Reclamation, operate to the appropriate OMR index given the latest average Secchi disk depth until the end of OMR Management (Condition of Approval 8.6).

When the daily average Sacramento River flows at Rio Vista^{50, 51} are > 55,000 cfs, or the daily average San Joaquin River flows at Vernalis are > 8,000 cfs, then the Larval and Juvenile Delta Smelt Protection Action is offramped. While offramped, Permittee shall, in coordination with Reclamation, manage south Delta exports to achieve an OMR index no more negative than -5,000 cfs on a 14-day average. Permittee shall, in coordination with Reclamation, immediately reinstate the Larval and Juvenile Delta Smelt Protection Action when either the daily average Sacramento River flows at Rio Vista is < 40,000 cfs or the daily average San Joaquin River flows at Vernalis is < 5,000 cfs.

8.4.2. Larval and Juvenile Longfin Smelt Protection Action. From January 1 through the end of OMR Management (Condition of Approval 8.6), if:

- The seven-day average QWEST^{52, 53} is < +1,500 cfs, and
- Larval and juvenile LFS catch in the most recent Smelt Larval Survey (SLS) or 20-mm Survey at stations 809 and 812 exceeds the catch threshold set by the age 1+ LFS Index (see Table 3 for catch thresholds)

Permittee, in coordination with Reclamation, shall adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven days to minimize entrainment and salvage of larval and juvenile LFS. Permittee, in coordination with Reclamation, through WOMT, may prepare an assessment to determine if the 7-day action can be adjusted or offramped based on larval and juvenile LFS entrainment risk, as informed by available quantitative tools and real-time data. If offramped, the Larval and Juvenile Longfin Smelt Protection Action shall later be retriggered if conditions warrant.

⁵⁰ Rio Vista flows shall be calculated using DWR (2019; Dayflow) and reported in the daily Delta Hydrologic Conditions Report provided by Permittee via email.

⁵¹ California Department of Water Resources (2019). Dayflow: An estimate of daily average Delta outflow; Dayflow documentation 1997 through present. California Department of Water Resources, Sacramento, CA. August 2019.

⁵² QWEST shall be calculated using DWR (2019; Dayflow) and reported in the daily Delta Hydrologic Conditions Report provided by Permittee via email.

⁵³ California Department of Water Resources (2019). Dayflow: An estimate of daily average Delta outflow; Dayflow documentation 1997 through present. California Department of Water Resources, Sacramento, CA. August 2019.

When the daily average Sacramento River flows at Rio Vista^{54, 55} are > 55,000 cfs, or the daily average San Joaquin River flows at Vernalis are > 8,000 cfs, then the Larval and Juvenile Longfin Smelt Protection Action is offramped. While offramped, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve an OMR index no more negative than -5,000 cfs on a 14-day average. Permittee shall, in coordination with Reclamation, immediately reinstate the Larval and Juvenile Longfin Smelt Protection Action when either the daily average Sacramento River flows at Rio Vista is < 40,000 cfs or the daily average San Joaquin River flows at Vernalis is < 5,000 cfs.

If the water year cumulative juvenile LFS salvage at the SWP and CVP salvage facilities exceeds 50% of the average annual salvage observed from 2009 through the water year preceding the current water year, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index of -3,500 cfs for 14 days.

If the water year cumulative juvenile LFS salvage at the SWP and CVP salvage facilities exceeds 75% of the average annual salvage observed from 2009 through the water year preceding the current water year, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index of -2,500 cfs for 14 days. If salvage of larval and juvenile LFS continues following the 14-day period where the OMR index is no more negative than -2,500 cfs, then WOMT may request Permittee and Reclamation to prepare a risk assessment through the SMT on an appropriate OMR index through the end of OMR Management (Condition of Approval 8.6). Consideration of the inclusion of LFS abundance metrics in these salvage triggers will be addressed under the AMP (Attachment 4).

Table 3. Age 1+ LFS Index and associated catch threshold.

Age 1+ LFS Index	Catch Threshold at Stations 809 and 812
0-149	10
150-299	20
300-499	30

⁵⁴ Rio Vista flows shall be calculated using DWR (2019; Dayflow) and reported in the daily Delta Hydrologic Conditions Report provided by Permittee via email.

⁵⁵ California Department of Water Resources (2019). Dayflow: An estimate of daily average Delta outflow; Dayflow documentation 1997 through present. California Department of Water Resources, Sacramento, CA. August 2019.

Age 1+ LFS Index	Catch Threshold at Stations 809 and 812
500-999	40
≥1000	50

8.4.3. Winter-run Chinook Salmon Annual Loss Thresholds. To minimize entrainment and loss of juvenile CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to manage the OMR index to avoid exceeding the following annual loss thresholds:

- Natural-origin CHNWR Loss Threshold: 0.5% of JPE
- Hatchery-origin CHNWR Loss Threshold: 0.12% of JPE

JPEs and annual loss thresholds will be calculated for natural-origin CHNWR, for hatchery-origin CHNWR from Livingston Stone National Fish Hatchery (LSNFH) released into the Sacramento River near Redding, and for LSNFH hatchery-origin CHNWR released into Battle Creek.

The JPE for natural and hatchery-origin CHNWR is calculated by the JPE Subteam annually, consistent with Attachment 2, and is described in the yearly recommendation letter produced by the JPE Subteam and transmitted to NMFS and CDFW. NMFS and CDFW issues an Annual JPE Letter, with the JPE Subteam recommendation included as an enclosure to the letter, to Permittee and Reclamation. Hatchery releases of CHNWR are tracked individually, and Permittee shall sum cumulative loss, confirmed by coded wire tag (CWT), across release groups with the same JPE and annual loss threshold. Permittee shall calculate loss for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8).

Permittee shall count annual loss of natural and hatchery-origin CHNWR at the SWP and CVP salvage facilities for each brood year, starting July 1 of the calendar year through June 30 of the following calendar year. If cumulative loss of either natural or hatchery-origin CHNWR in a brood year exceeds 50% of the annual loss thresholds, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven consecutive days. If a CHNWR is salvaged during the 7-day action, the action will be extended for another seven days. At the conclusion of the action, Permittee, in coordination with Reclamation shall revert to the weekly distributed loss threshold until the 75% threshold is reached or throughout the end of the OMR Management season (Condition of Approval 8.6).

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If:

- The cumulative loss of either natural or hatchery-origin CHNWR in a brood year exceeds 75% of the annual loss thresholds, and
- The Winter-Run Chinook Salmon Machine Learning Model and associated OMR Conversion Tool predict that a change in the OMR index to -2,500 cfs will shift the model output to a classification of CHNWR absence with a minimum probability of absence prediction of 0.559 for 1 of 30 sub-models for any of the seven most recent prediction days. These prediction values are calculated based on historical detections of length-at-date CHNWR and will be updated once genetic analysis of CHNWR is fully adopted (Condition of Approval 7.9.2).

Then, Permittee shall, in coordination with Reclamation, adjust south Delta exports to maintain a 7-day average of the OMR index no more negative than the -2,500 cfs for seven consecutive days.

Once 75% of the annual loss threshold is exceeded, each CHNWR observed in salvage shall trigger another operation to a 7-day average OMR index no more negative than -2,500 cfs for seven consecutive days, if the Winter-Run Chinook Salmon Machine Learning Model and associated OMR Conversion Tool predict that a change in the OMR index to -2,500 cfs will shift the model output to a classification of CHNWR absence with a minimum probability of absence prediction of 0.559 for 1 of 30 sub-models for any of the seven most recent prediction days.

After May 1, Permittee, in coordination with Reclamation, through WOMT, may prepare an assessment to determine if the action is still warranted pending relevant biological and hydrological information.

If the cumulative loss of either natural or hatchery-origin CHNWR in a brood year exceeds 100% of the annual loss thresholds, then Permittee shall, in coordination with Reclamation, immediately convene SaMT to review recent fish distribution information and operations and provide advice regarding future planned SWP and CVP operations to minimize subsequent loss during that year. The SaMT shall report the results of this review and advice to WOMT (Condition of Approval 8.1.4). Operational decisions shall be made following the process described in Condition of Approval 8.1.5.

If either annual loss threshold is exceeded, Permittee shall, in coordination with Reclamation, also convene an independent panel to review SWP and CVP operations and the annual loss thresholds prior to November 1. The purpose of the independent panel is to review the actions and decisions contributing to the loss trajectory that led to an exceedance of an annual loss threshold, and make recommendations on modifications to SWP and CVP operations, or additional actions to be conducted to stay within the annual loss thresholds in subsequent years. Permittee shall convene such a

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panel within six months of the issuance of this ITP to review actions and conditions in water year 2024.

Permittee shall, in coordination with Reclamation, restrict south Delta exports in response to meeting the above thresholds based on the initial length-at-date identification of natural-origin older juvenile Chinook Salmon and the thresholds described above. If genetic analysis of natural-origin older juvenile Chinook Salmon observed in salvage at the SWP or CVP subsequently confirms that any given Chinook Salmon is not genetically identified as a CHNWR, that fish will not count towards the loss threshold exceedance, and continued export restrictions pursuant to the OMR index limit may not be required. While the new rapid genetic method, SHERLOCK, undergoes field testing, both it and the current GT-seq method shall be used to determine the final identification. In the event that SHERLOCK and GT-seq provide different run assignments, the results from the GT-seq method shall be used to determine the final run assignment for the purposes of implementing Condition of Approval 8.4.3. If a fish is not genetically identifiable or if genetic identification is pending, then the Delta model length-at-date criteria shall be used to classify the race of the juvenile Chinook Salmon in salvage for the purposes of implementing Condition of Approval 8.4.3.

- 8.4.4. Natural-origin Winter-run Chinook Salmon Weekly Distributed Loss Thresholds. To minimize the potential for a disproportionate impact of entrainment and loss on any single week of natural-origin juvenile CHNWR present in the Delta, Permittee shall, in coordination with Reclamation, manage the OMR index based on a natural-origin CHNWR weekly distributed loss threshold. The natural-origin CHNWR weekly loss threshold is a product of the weekly percentage of natural-origin CHNWR present in the Delta, scaled to 100% (Table 4, Column E), and 50% of the natural-origin CHNWR annual loss threshold (Condition of Approval 8.4.3).

If the weekly distributed loss threshold is exceeded on any single day by the 7-day rolling sum of natural-origin CHNWR loss, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven consecutive days until seven days after the most recent exceedance. Permittee shall calculate loss for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8).

If the natural-origin CHNWR JPE is not available at the start of OMR Management season (Condition of Approval 8.3), then the Red Bluff Diversion Dam brood year total from the most recent bi-weekly period shall be used and applied as described for early season management (Condition of Approval 8.2.1) to the annual loss threshold until the final natural-origin CHNWR JPE is available. The CHNWR JPE surrogate is calculated using the following formula:

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Natural-origin CHNWR JPE Surrogate = Red Bluff Diversion Dam juvenile CHNWR brood year passage total estimated from the most recent biweekly period x Survival_{Fry-to-Smolt} x Survival_{Smolt}

Permittee shall, in coordination with Reclamation, adjust south Delta exports in response to meeting the below natural-origin CHNWR weekly thresholds based on the initial length-at-date identification of natural-origin older juvenile Chinook Salmon and the thresholds described below. If genetic analysis of natural-origin older juvenile Chinook Salmon observed in salvage at the SWP or CVP subsequently confirms that any given Chinook Salmon is not genetically identified as a CHNWR, that fish will not count towards the loss threshold exceedance, and continued export restrictions pursuant to the OMR index limit may not be required. While the new rapid genetic method, SHERLOCK, undergoes field testing, both it and the current GT-seq method shall be used to determine the final identification. In the event that SHERLOCK and GT-seq provide different run assignments, the results from the GT-seq method shall be used to determine the final run assignment for purposes of implementing Condition of Approval 8.4.4. If a fish is not genetically identifiable or if genetic identification is pending, then the length-at-date identification shall be used to classify the race of the juvenile Chinook Salmon in salvage for the purposes of implementing Condition of Approval 8.4.4.

Weekly thresholds shall be based on historical distribution (Table 4, Column E) of genetically identified CHNWR from water years 2017 through 2021 and will change every week (e.g., January 1-7, January 8-15). After the conclusion of the OMR Management season each summer, Permittee and Reclamation, through SaMT, shall compare weekly Delta entry and exit information to determine if the presence data were distributed similarly to the historical distribution data. The results of this review will be utilized as a part of the AMP to implement the Winter-run Old and Middle River Flows Management Adaptive Management Action (Attachment 4 and Condition of Approval 7.9.2).

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Table 4. Historical (Water Years 2017 – 2021) presence of natural-origin CHNWR entering the Delta (Column B), exiting the Delta (Column C), present in the Delta (Column D = Column B - Column C), and present in the Delta scaled to 100% (Column E) for each week of OMR Management (Column A).

Week (Dates)	Historical Cumulative Percent Entering the Delta (Sherwood Harbor)	Historical Cumulative Percent Exiting the Delta (Chippis Island)	Historical Percent Present in the Delta	Historical Percent Present in the Delta (Scaled to 100%)
(A)	(B)	(C)	(D)	(E)
Week 1 (1/1-1/7)	2.47%	1.65%	0.82%	0.32%
Week 2 (1/8-1/14)	2.47%	1.65%	0.82%	0.32%
Week 3 (1/15-1/21)	4.94%	1.65%	3.29%	1.30%
Week 4 (1/22-1/28)	4.94%	1.65%	3.29%	1.30%
Week 5 (1/29-2/4)	19.75%	2.20%	17.55%	6.91%
Week 6 (2/5-2/11)	38.27%	4.95%	33.32%	13.13%
Week 7 (2/12-2/18)	43.21%	5.49%	37.72%	14.86%
Week 8 (2/19-2/25)	46.91%	9.89%	37.02%	14.59%
Week 9 (2/26-3/4) ^a	50.62%	18.13%	32.49%	12.80%
Week 10 (3/5-3/11)	55.56%	30.77%	24.79%	9.77%
Week 11 (3/12-3/18)	77.78%	38.46%	39.32%	15.49%
Week 12 (3/19-3/25)	85.19%	64.84%	20.35%	8.02%
Week 13 (3/26-4/1)	93.83%	90.11%	3.72%	1.47%
Week 14 (4/2-4/8)	98.77%	99.45%	0.00%	0.00%
Week 15 through end of OMR Management (4/9-6/30)	100.00%	100.00%	0.00%	0.00%

^a Week 9 (2/26-3/4) includes eight days in leap years.

Notes: Data from genetically identified natural-origin CHNWR entering the Delta (Sherwood Harbor Trawl) and exiting the Delta (Chippis Island Trawl) are used to estimate the percentage of natural-origin CHNWR present in the Delta each week. Presence prior to January 1 each year is included in the first week of presence.

- 8.4.5. Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Thresholds. To minimize entrainment and loss of juvenile CHNSR, Permittee shall, in coordination with Reclamation, restrict exports based on the presence of hatchery-origin CHNSR and associated yearling late fall-run and young-of-year fall-run Chinook Salmon surrogate groups at the SWP and CVP salvage facilities. Permittee shall, in coordination with CDFW, Reclamation, USFWS, and NMFS through the SaMT, select CHNSR yearling and young-of-year surrogate groups. Yearling CHNSR surrogates shall be selected from late-

fall Chinook Salmon in-river release groups from the Coleman National Fish Hatchery. Young-of-year CHNSR and associated surrogate groups shall be selected from fall- and spring-run Chinook Salmon in-river release groups from the Feather River Fish Hatchery and Coleman National Fish Hatchery.

From November 1 through the end of OMR Management (Condition of Approval 8.6) each water year:

- (1) If a cumulative loss threshold for a surrogate release group is exceeded in November or December, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days; and
- (2) If a cumulative loss threshold for a surrogate release group is exceeded after the onset of OMR Management (Condition of Approval 8.3), or on or after January 1 through the end of OMR Management or June 30, whichever comes first, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven consecutive days.

The cumulative loss threshold for CWT CHNSR surrogate groups at the SWP and CVP salvage facilities is greater than 0.25% for each release group:

- Yearling CHNSR surrogates: WOMT, with input from SaMT, shall select three in-river releases of late fall-run Chinook Salmon from Coleman National Fish Hatchery from November through February to use as yearling CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If three in-river releases appropriately distributed from November through February are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin yearling CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.
- Young-of-year CHNSR surrogates: WOMT, with input from SaMT, shall select six in-river releases comprised of CHNSR and fall-run Chinook Salmon from the Feather River Fish Hatchery and fall-run Chinook Salmon from the Coleman National Fish Hatchery from March through May to use as young-of-year CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If six in-river releases appropriately distributed from March through May are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin young-of-year CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.

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Loss shall be calculated for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8). The surrogate methods are intended to be an interim measure that may be replaced with a measure as described in Condition of Approval 7.9.3 and the AMP (Attachment 4) for natural-origin and hatchery-origin CHNSR.

Permittee shall, in coordination with Reclamation and SaMT, use real-time monitoring data, relevant tools, and new science gained through ongoing efforts to develop a CHNSR JPE and LCM to inform weekly risk assessments (October through June) for natural-origin juvenile CHNSR. If the risk assessment or WOMT representatives identifies a more positive OMR flow may be needed to minimize take of natural-origin juvenile CHNSR, WOMT may consider a more positive OMR flow requirement.

- 8.4.6. Improve Salmon Entrainment Forecasting During Real-time OMR Management. By 2028, Permittee shall, in coordination with CDFW, Reclamation, and NMFS, use best available science and information gained from the application of the Winter-run Chinook Salmon Machine Learning Model (Condition of Approval 7.9.2), new data (e.g., SR JPE monitoring, Winter-run Action Plan), population information, non-physical barrier effectiveness, and other tools to develop a CHNWR minimization measure for SWP and CVP export facilities that relies on improved forecasts of entrainment risk, while providing the same or better levels of protection as Conditions of Approval 8.2.1, 8.4.3, and 8.4.4 of this ITP. Permittee shall consult with CDFW regarding the need for an amendment to the ITP (Condition of Approval 5) to modify or replace Conditions of Approval 8.2.1, 8.4.3, and 8.4.4 with CHNWR minimization actions that do not solely rely on salvage, based on results from this effort and the AMP (Attachment 4).

In 2026, consistent with Condition of Approval 7.9.3 to this ITP, Permittee shall, in coordination with CDFW, Reclamation, and NMFS, use best available science and information gained from the development of the initial CHNSR JPE to develop a new minimization measure for SWP and CVP export facilities that relies on improved forecasts of entrainment risk, while providing the same level of protection as Condition of Approval 8.4.5 of this ITP. Permittee shall consult with CDFW regarding the need for an amendment to the ITP (Condition of Approval 5) to modify or replace Condition of Approval 8.4.5 with CHNSR minimization actions that do not solely rely on salvage, based on results from this effort and the AMP (Attachment 4).

- 8.4.7. White Sturgeon Entrainment Protection Action. To minimize entrainment and salvage of WS, Permittee shall convene WSMT the following business day if the following conditions are observed:

- Young of year WS have been detected in at least one of the following north or central Delta survey stations in the last 90 days: 20-mm Survey stations 705, 707, 711, or 716, or Bay Study Survey stations 751, 760, or 761; and

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- The mean total exports over the last 90 days are greater than, or equal to, the exports defined by the following equation:

$$Exports_{90\text{-day average}} = 14,296.76 + -0.41Vernalis\ Flow_{90\text{-day average}}$$

Upon convening, WSMT will review all available information to develop an assessment of the risk of further entrainment and salvage of WS including:

- Data from new and ongoing science and monitoring;
- Biological modeling and data analysis;
- Hydrologic data, SWP and CVP exports and operations, and hydrologic model outputs; and
- Available information to estimate residence time in CCF.

Within WSMT, Permittee and CDFW shall jointly develop the risk assessment and supporting documentation to inform discussions and considerations of operational actions in WOMT. Input from all Permittee and CDFW WSMT members shall be included in the risk assessment, and any potential differences shall be noted and elevated as described in Conditions of Approval 8.1.3, 8.1.4, 8.1.5, and 8.1.6.3. If a risk assessment conducted by the WSMT, or Permittee or CDFW WOMT representatives, determines that an action is needed to minimize take of WS, operational decisions shall be made following the process described in Condition of Approval 8.1.5. The WSMT shall convene as necessary throughout the water year.

8.4.8. Evaluate and Develop Alternative White Sturgeon Entrainment Minimization During Real-time OMR Management. By 2027, Permittee shall, in coordination with CDFW, use best available science and information gained from the WS Science Program (Condition of Approval 7.10.1) to develop an alternative approach to minimizing WS entrainment and salvage at the SWP and CVP export facilities that refines Condition of Approval 8.4.7 based on new knowledge and understanding of WS. This alternative approach shall incorporate estimates of WS loss in CCF as informed by the WS Science Plan (Condition of Approval 7.10.1). Permittee shall consult with CDFW regarding the need for an amendment to the ITP (Condition of Approval 5) to modify or replace Condition of Approval 8.4.7 with WS minimization actions that do not solely rely on salvage, based on results from the WS Science Plan (Condition of Approval 7.10.1) and the AMP (Attachment 4).

8.5. Storm Flex. During OMR Management, Permittee may, in coordination with Reclamation, through WOMT, prepare an assessment to evaluate operating to a daily average OMR index no more negative than -6,250 cfs, to capture peak flows during storm-related events. Such operations may be requested to occur between the start of OMR Management, and either the Larval and Juvenile Delta Smelt Protection Action onramp

(Condition of Approval 8.4.1) or the last day of February, whichever occurs first, to capture peak flows during storm-related events when:

1. The Delta is in excess conditions as defined in the COA; and
2. QWEST^{56, 57} is greater than +1,500 cfs; and
3. X2 is < 81 km; and
4. The daily average turbidity at OSJ, HOL, and OBI sensors are < 12 FNU at each station; and
5. A measurable precipitation event has occurred in the Central Valley; and
6. Permittee, in coordination with Reclamation, determines that the net Delta outflow index indicates a higher level of outflow available for diversion due to peak storm flows; and
7. None of the following Conditions or Approval are controlling SWP and CVP operations: Conditions of Approval 8.2.1, 8.3.1, 8.3.2, 8.3.3, 8.4.2, 8.4.3, 8.4.4, 8.4.5, and 8.4.7; and
8. Cumulative loss at the SWP and CVP export facilities of yearling Coleman National Fish Hatchery late fall-run Chinook Salmon (as yearling CHNSR surrogates under Condition of Approval 8.4.5) is less than 0.5% within any of the release groups.

If the criteria above are met, WOMT shall decide whether to request that Permittee and Reclamation use estimates of the real-time distribution of Covered Species from SMT, SaMT, and WSMT, as well as particle tracking modeling and prediction tool outputs to assess potential Covered Species entrainment risk differences under OMR index scenarios of -5,000 and -6,250 cfs. If the assessment indicates that no additional Conditions of Approval for the upcoming week are likely to be triggered, Permittee may, in coordination with Reclamation, bring a request back to WOMT for approval to operate to an OMR index no more negative than -6,250 cfs. Permittee, in coordination with Reclamation, shall update the assessment no less than weekly.

If, during approved operations of Storm Flex, conditions indicate a Condition of Approval is likely to be triggered, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 14-day average of the OMR index no more negative than -5,000 cfs, unless a further reduction in exports is required by another Condition of Approval. If a Condition of Approval is triggered, Permittee shall, in coordination with Reclamation, cease Storm Flex operations and implement the controlling Condition of Approval within 48 hours. WOMT shall re-evaluate Storm Flex decisions weekly.

⁵⁶ QWEST shall be calculated using DWR (2019; Dayflow) and reported in the daily Delta Hydrologic Conditions Report provided by Permittee via email.

⁵⁷ California Department of Water Resources (2019). Dayflow: An estimate of daily average Delta outflow; Dayflow documentation 1997 through present. California Department of Water Resources, Sacramento, CA. August 2019.

8.6. End of OMR Management. Permittee shall, in coordination with Reclamation, meet the requirements included in Conditions of Approval 8.2.1, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, and 8.4.7 to ensure that entrainment and take of Covered Species is minimized during OMR Management through June 30, or until the following species-specific thresholds occur:

- DS and LFS:
 - Daily mean water temperature at CCF (CDEC station CLC) is $\geq 25^{\circ}\text{C}$ for three consecutive days.
- CHNWR and CHNSR:
 - Daily mean water temperature at Mossdale (CDEC station MSD) is $> 22.2^{\circ}\text{C}$ for seven days (does not have to be consecutive) in June; and
 - Daily mean water temperature at Prisoner's Point (CDEC station PPT) is $> 22.2^{\circ}\text{C}$ for seven days (does not have to be consecutive) in June.

8.7. SWP Proportional Share. Due to the historically coordinated operations of the SWP and CVP, joint operational criteria related to OMR flows and south Delta export restrictions have been developed for SWP and CVP that assume coordinated implementation by Permittee and Reclamation. Conditions of Approval 8.2.1, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.5, and 8.6 set out such operational criteria that assume coordination by Permittee and Reclamation to meet the criteria and that are subject to the process set out in this Condition of Approval.

During the term of this ITP there may be instances when operational requirements stated in or determined by the Conditions of Approval listed above or Conditions of Approval 8.4.7 and 8.12 are different from operational requirements of the applicable ESA authorizations, which govern operations at the CVP as well as the SWP. If an operational restriction required by this ITP, pursuant to one or more of the Conditions of Approval listed above including Conditions of Approval 8.4.7 and 8.12, is more restrictive than the then-controlling operations required by the applicable ESA authorizations, Permittee shall take the following steps to meet its proportional share of the operational criteria stated or determined by the Condition of Approval(s) at issue:

- 1) Permittee is legally bound, both statutorily and through agreements with Reclamation, not to utilize state facilities (including the CCF, Banks Pumping Plant, the California Aqueduct, and the SWP share of San Luis Reservoir) or allow third parties (including the CVP) to use state facilities in a manner that would result in a violation of law, including the operational criteria stated in or determined by Conditions of Approval 8.2.1, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.4.7, 8.5, 8.6, and 8.12 of this ITP.

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2) If prohibiting the use of state facilities for CVP purposes will not result in conditions that meet the operational criteria stated in or determined by the Condition(s) of Approval at issue, Permittee shall provide CDFW with a written estimate of the total allowed exports at both the SWP and CVP facilities that would be required to meet the operational criteria stated in or determined by the Condition(s) of Approval at issue.

3) Under Excess Conditions: Based on the written estimate prepared under paragraph 2 of this condition, Permittee shall reduce exports at the Banks Pumping Plant to 40% of the estimated total allowed exports that would be allowed if both the SWP and CVP were operating to meet the requirement stated in or determined by the Condition(s) of Approval at issue.

Under Balanced Conditions: Based on the written estimate prepared under paragraph 2 of this condition, Permittee shall reduce exports at the Banks Pumping Plant to 35% of the estimated total allowed exports that would be allowed if both the SWP and CVP were operating to meet the requirement stated in or determined by the Condition(s) of Approval at issue.

Excess and balanced conditions are defined in Section 1.4 of the Project Description. The SWP shares of allowable exports are defined based on the SWP share of exports during excess and balanced conditions described in the 2018 COA Addendum. This Condition of Approval in combination with other Conditions of Approval required by this ITP are intended to further satisfy Permittee's obligations pursuant to CESA. If the 1986 COA as amended in 2018 is revised after the effective date of this ITP, Permittee shall notify CDFW per Condition of Approval 5.

Permittee shall not be required to reduce exports below the SWP COA share of combined SWP and CVP exports of 1,500 cfs, the minimum required to meet health and safety standards. Based on the 2018 COA addendum Permittee identified its minimum exports as 600 cfs.

8.8. Water Year Type Definition. All references to water year type in this ITP shall be defined based on the Sacramento Valley "40-30-30" water year hydrologic classification index as defined in the Bay-Delta Plan,⁵⁸ unless otherwise noted.

8.9. Ongoing Comparison of OMR Index to Tidally Filtered OMR. The United States Geological Survey (USGS) Tidally Filtered Method to calculate OMR flow is defined in the 2009 NMFS Biological Opinion and Conference Opinion Long-term Operations of the Central Valley

⁵⁸ State Water Resources Control Board (2006). Water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. State Water Resources Control Board, Division of Water Rights, Sacramento, CA. December 2006.

Project and State Water Project⁵⁹ and uses values reported by the USGS for the Old River at Bacon Island and Middle River at Middle River monitoring stations. Permittee shall continue to calculate and report OMR as estimated using the USGS Tidally Filtered Method in all reports as a part of SMT, SaMT, and WSMT and reported to WOMT, in addition to OMR flows as calculated using the OMR Index. Permittee shall provide CDFW raw data for the daily OMR Index and USGS Tidally Filtered OMR and a report comparing the estimates over the prior water year annually as a part of the ASR (Condition of Approval 7.2).

Permittee shall, in coordination with CDFW, convene a technical team, including but not limited to representatives from Permittee, CDFW, Reclamation, USFWS, NMFS, and the State Water Board to review both the USGS Tidally Filtered Method and the OMR Index calculation to determine if improvements are needed to better quantify OMR flow. If Permittee and CDFW agree on an improved method for calculating OMR flow, Permittee may request an amendment to the ITP to modify or replace the existing OMR Index used in real-time OMR Management.

8.10. Barker Slough Pumping Plant Delta Smelt and Longfin Smelt Protections.

8.10.1. Barker Slough Pumping Plant Larval Delta Smelt Protection. Permittee shall operate the BSPP to protect larval DS from March 1 to June 30 of dry and critical water years according to the details below. If the water year type changes after March 1 to below normal, above normal, or wet, this Condition of Approval will no longer be in effect. If the water year type changes after March 1 to dry or critical, Permittee shall operate according to this Condition of Approval.

From March 1 to April 30 of dry and critical water years, if catch of larval DS (<25 mm fork length) in the 20-mm Survey at station 718 exceeds 14% of the total catch of larval DS across the Cache Slough area of the north Delta (20-mm Survey stations 716, 718, 719, 720, 723, 724, and 726), then Permittee shall operate to a maximum 7-day average diversion rate at BSPP less than 60 cfs.

From May 1 to June 30 of dry and critical water years, if catch of larval DS (<25 mm fork length) in the 20-mm Survey at station 716 exceeds 5% of the total catch of larval DS across the Cache Slough area of the north Delta (20-mm Survey stations 716, 718, 719, 720, 723, 724, and 726), then Permittee shall operate to a maximum 7-day average diversion rate at BSPP less than 100 cfs.

⁵⁹ National Marine Fisheries Service (2009). Endangered Species Act Section 7 consultation biological opinion and conference opinion on the long-term operation of the Central Valley Project and the State Water Project. 2008/09022. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region. June 4, 2009.

8.10.2. Barker Slough Pumping Plant Larval Longfin Smelt Protection. Permittee shall operate the BSPP to a maximum 7-day average diversion rate at BSPP less than 100 cfs to minimize entrainment of larval LFS from January 1 to March 31 of dry and critical water years. If the water year type changes after January 1 to below normal, above normal, or wet, this Condition of Approval will no longer be in effect. If the water year type changes after January 1 to dry or critical, Permittee shall operate according to this Condition of Approval.

8.11. Minimization of Winter- and Spring-run Migration into the Interior and South Delta.

8.11.1. Install and Operate the Georgiana Slough Salmonid Migratory Barrier. Permittee shall continue the annual installation and operation the Georgiana Slough Salmonid Migratory Barrier at Georgiana Slough in accordance with this Condition of Approval, the CDFW approved Georgiana Slough Salmonid Migratory Barrier Operations Plan,⁶⁰ the AMP (Attachment 4), and 2022 ITP for the Georgiana Slough Salmonid Migratory Barrier Project (ITP No. 2081-2021-102-03)⁶¹ for the duration of this ITP. A salmonid migratory barrier at Georgiana Slough is expected to provide a higher probability of survival for emigrating juvenile CHNWR and CHNSR that encounter the Sacramento River-Georgiana Slough junction and reduce entrainment of emigrating CHNWR and CHNSR into the interior and south Delta.

From November 1 through November 15, Permittee shall conduct testing and commissioning of the Georgiana Slough Salmonid Migratory Barrier. If in a given year Permittee provides requests to not conduct testing and commissioning of the barrier from November 1 through November 15 to preserve the integrity of the barrier, Permittee shall submit a justification to CDFW by October 31, for CDFW's written approval.

From November 16 through November 30, Permittee shall operate the Georgiana Slough Salmonid Migratory Barrier annually when the daily Knights landing Catch Index⁶² or Sacramento Catch Index⁶³ is greater than or equal to 3.0 older juvenile

⁶⁰ California Department of Water Resources (2022). Georgiana Slough Salmonid Migratory Barrier; Operations plan. California Department of Water Resources, Division of Operations and Maintenance, South Delta Branch. May 2022.

⁶¹ ITP No. 2081-2021-102-03 expires on June 30, 2027. Permittee shall seek incidental take authorization association with the construction of the barrier through 2030 through coordination under the existing ITP No. 2081-2021-102-03.

⁶² The Knights Landing Catch Index is based on reported catch of older juvenile Chinook Salmon at the Knights Landing rotary screw trapping location and is calculated as the total catch of older juveniles (adjusted, as necessary, for partial cone operations) divided by the number of "trap days" (adjusted, as necessary, for downtime resulting from, for example, debris removal) since the last sampling event. This calculation for older juveniles/trap-day is implemented as $[(\text{total number of older juveniles} / \% \text{ cone sampling effort}) / (\text{total hours fished})] * (24 \text{ hours fished/trap day})$.

⁶³ The Sacramento Catch Index is based on reported catch of older juvenile Chinook Salmon in the Sacramento trawl (at Sherwood Harbor) and the Sacramento seining, with a separate index for the trawl data and a separate index for the seine data. The trawl version of the catch index is standardized to 10 tows; therefore, the index is calculated as: $(\text{total number of older juveniles captured} / \# \text{ tows}) * 10$. The seine version of the catch index is standardized to eight hauls; therefore, the index is calculated as: $(\text{total number of older juveniles captured} / \# \text{ hauls}) * 8$. The eight haul sites include: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend.

Chinook Salmon.⁶⁴ Permittee may suspend operations after three days of operation if the daily catch index at both the Knights Landing and Sacramento monitoring sites is less than 3.0 older juvenile Chinook Salmon for two consecutive days.

From December 1 through April 30, Permittee shall operate the Georgiana Slough Salmonid Migratory Barrier.

From May 1 through May 31, Permittee shall operate the Georgiana Slough Salmonid Migratory Barrier, unless Permittee provides annual justification for not operating the barrier given juvenile CHNWR and CHNSR outmigration timing patterns and CDFW approves in writing.

During annual operations, Permittee may interrupt operations temporarily for maintenance or monitoring studies if approved in writing by CDFW. During annual operations, if an unplanned outage occurs Permittee shall submit a notification and schedule for resolution of the outage in writing to CDFW within 24 hours of the outage. Permittee shall submit any modifications to the Georgiana Slough Salmonid Migratory Barrier Operations Plan to CDFW for review and written approval.

8.11.2. Evaluate Benefits of Salmonid Guidance Structures at Sutter and Steamboat Sloughs.

Permittee, in collaboration with the Guidance Structure Evaluation Working Group, conducted a preliminary evaluation of the potential benefits of salmonid guidance structures at Sutter and Steamboat sloughs to improve through-Delta survival as a requirement of the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00). Under Condition of Approval 7.9.5 to this ITP, Permittee shall implement regional survival studies within the Delta to evaluate Chinook Salmon survival, behavior, and route entrainment. Permittee shall use information gained from Condition of Approval 7.9.5 to this ITP and feedback from the Guidance Structure Evaluation Working Group to continue developing tools to assess further actions to improve Chinook Salmon through-Delta survival.

Within six months of the effective date of this ITP, Permittee shall re-convene the Guidance Structure Evaluation Working Group, including representatives from Permittee, CDFW, Reclamation, USFWS, NMFS, and SWP Contractors. With support from the Guidance Structure Evaluation Working Group, Permittee shall address CDFW's comments and initiate and complete sensitivity analyses defined by CDFW in its comments to the draft Sutter and Steamboat Slough Guidance Structure Evaluation Report.⁶⁵

⁶⁴ Older juvenile Chinook Salmon is defined as any Chinook Salmon measured above the minimum length for CHNWR, according to the Delta Model length-at-date criteria used to assign individuals to run (USFWS 1997).

⁶⁵ California Department of Fish and Wildlife (2024). Agency comments on "California Department of Water Resources (2023). Draft State Water Project Incidental Take Permit Condition of Approval 8.9.2; Sutter and Steamboat sloughs guidance structure evaluation report. March 2023."

Within two years of the effective date of this ITP, Permittee shall submit an updated draft Sutter and Steamboat Slough Guidance Structure Evaluation Report to CDFW for review. Within four months of receiving CDFW's review, Permittee shall update the evaluation report and submit the final Sutter and Steamboat Slough Guidance Structure Evaluation Report to CDFW for approval.

Within one year of finalizing the evaluation report, Permittee shall reassess actions to improve Chinook Salmon through-Delta survival (potentially through increased routing into Steamboat Slough) using tools developed and refined through the Sutter and Steamboat sloughs evaluation effort and propose actions for CDFW's approval. Consideration shall be given to actions that will complement the Georgiana Slough Salmonid Migratory Barrier, including flexibility in utilizing the Georgiana Slough barrier at upstream locations dependent on hydrologic conditions.

8.12. Spring Delta Outflow Implementation. This condition of Approval is intended to augment Delta outflow during a critical time in the life history of all five Covered Species. When March, April, and May Delta outflow is augmented, salinity in Suisun Bay is reduced and central Delta productivity is dispersed westward, improving habitat for both DS and LFS. At the upper end of managed flows when X2 is in San Pablo Bay, reservoir releases and export curtailments help maintain this favorable location and sustain food web productivity and other conditions for improved LFS recruitment in San Pablo Bay. Reductions in outflow during such conditions could restrict LFS nursery habitat upstream to less favorable habitat in Carquinez Strait. Augmenting spring Delta outflow through a combination of increased releases from reservoirs and export curtailments improves migratory conditions for CHNWR, CHNSR, and WS by reducing Covered Activities' impacts on routing and through-Delta survival. Reducing exports during this time period to maintain a higher Delta outflow will also provide a proactive approach to entrainment minimization that is expected to reduce CHNWR, CHNSR, and WS routing into the central and south Delta and minimize loss of all Covered Species at the SWP export facility. Additionally, increases in spring Delta outflow are associated with increased food web transport to, and productivity in, Suisun Bay.

Permittee shall provide spring Delta outflow to minimize impacts to Covered Species as a result of Project operations. Permittee shall implement Condition of Approval 8.12.1 as a continuation of the existing spring export curtailment as accounted for in the ratio of Vernalis flows (cfs) to combined SWP and CVP south Delta exports (cfs) during water years when the HRL is not implemented. Permittee shall implement Conditions of Approval 8.12.2 and 8.12.3 during water years when the HRL is implemented consistent

with those Conditions of Approval.⁶⁶ If the State Water Board adopts a final HRL, Permittee and CDFW will immediately meet and confer to review the Project in light of the final form of the HRL (Condition of Approval 5).

8.12.1. Spring Delta Outflow Via Export Curtailments. The following shall be implemented by Permittee during any water year in which SWP export reductions and flow purchases pursuant to the HRL are not identified and conducted as described in Condition of Approval 8.12.2. Permittee shall operate the Project during the spring each year to restrict SWP exports and enhance Delta outflow.

Permittee shall reduce exports from April 1 to May 31 each year to achieve the SWP proportional share (Condition of Approval 8.7) of export reductions established by the ratio of Vernalis flow (cfs) to combined SWP and CVP exports, scaled by water year type, to provide incidental spring outflow. In a critical year, the ratio of Vernalis flow to SWP and CVP combined exports shall be 1 to 1. In a dry year, the ratio of Vernalis flow to SWP and CVP combined exports shall be 2 to 1. In a below normal year, the ratio of Vernalis flow to SWP and CVP combined exports shall be 3 to 1. In an above normal or wet year, the ratio of Vernalis flow to SWP and CVP combined exports shall be 4 to 1.⁶⁷ In wet years SWP export curtailments required by this Condition of Approval for spring outflow in April and May are limited to 150 TAF. The ratio of Vernalis flows to export reductions is intended to serve as an operational mechanism to achieve the Delta outflow required by this Condition of Approval for minimization of the Covered Activities' impacts to Covered Species.

For purposes of this Condition of Approval only, the San Joaquin Valley "60-20-20" water year hydrologic classification index as defined in the Bay-Delta Plan⁶⁸ is used.

Permittee shall not be required to restrict operations as described above under either of the following circumstances:

- If the 3-day average Delta outflow is greater than 44,500 cfs, then Project operations shall not be controlled by this Condition of Approval until the flows drop below 44,500 cfs on a 3-day average.
- Permittee shall not be required by this Condition of Approval to restrict exports at the Banks Pumping Plant below its minimum health and safety exports of 600 cfs.

⁶⁶ Permittee provided updated documentation related to the HRL on October 21, 2024, which included: (1) Draft accounting protocols, including for Delta Exports and Feather; (2) the Draft Funding Plan; and (3) the Draft Strategic Plan. On November 1, 2024, DWR provided further correspondence related to Delta and Feather River flow flexibility brackets.

⁶⁷ Ratio adjustments for multi-year droughts as outlined in the 2009 NMFS Central Valley Operations Biological Opinion would apply.

⁶⁸ State Water Resources Control Board (2006). Water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. State Water Resources Control Board, Division of Water Rights, Sacramento, CA. December 2006.

The ratios used to establish export restrictions by water year type are a tool that incorporates San Joaquin River inflows while also allowing for a High Outflow Offramp of 44,500 cfs, which is expected to be driven by inflow from the Sacramento River.

If HRL is approved by the State Water Board during the term of this ITP in a manner that is consistent with the requirements described in Condition of Approval 8.12.2, Permittee is not required to implement Condition of Approval 8.12.1 in critical or wet years while HRL is being implemented.

8.12.2. Spring Delta Outflow Via the Healthy Rivers and Landscapes Program. As described in Sections 1.5 and 3.3 of the Project Description, Permittee and its SWP Contractors propose a reduction in SWP south Delta exports to protect and augment Delta outflows between March through May of dry, below normal, and above normal water year types. Additionally, Permittee shall provide 50 TAF of Delta inflow that is dedicated to Delta outflow in March of dry, below normal, and above normal water years. Permittee shall make these flows available, which Permittee may facilitate through upstream land fallowing, and resulting reservoir releases to be passed through for Delta outflow. Permittee may provide flows in April or May, if approved by CDFW. Permittee shall also provide SWP south Delta foregone exports in April and May of dry, below normal, and above normal water years. Water volume requirements are described in Table 5 below. Permittee may deploy a portion of the export reduction flows in March or June if approved by CDFW.

For purposes of implementation of this Condition of Approval, Permittee shall adhere to the 90% exceedance forecast in March, the 75% exceedance forecast in April, and the 50% exceedance forecast in May of the Sacramento Valley “40-30-30” water year hydrologic classification index as defined in the Bay-Delta Plan⁶⁹ to determine the water year type and associated flow volume requirements (Table 5). SWP exports at Banks Pumping Plant are not required to be reduced below 600 cfs to implement this Condition of Approval. If Permittee has operated consistent with the CDFW approved Delta Operation Plan (Condition of Approval 8.12.3) and has not fully deployed the foregone export Delta outflow by May 31, Permittee shall continue to reduce SWP south Delta exports, to forego exports of any remaining unstored flows, to the maximum extent practicable on a daily basis to deploy the remaining Delta outflows by the end of June.

Table 5. Water made available by the State Water Project (SWP) through the Healthy Rivers and Landscapes Program (HRL) during each water year type. Water volumes shown in thousands of acre feet (TAF).

⁶⁹ State Water Resources Control Board (2006). Water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. State Water Resources Control Board, Division of Water Rights, Sacramento, CA. December 2006.

Source	Critical	Dry	Below Normal	Above Normal	Wet
SWP foregone exports of unstored flows	0	62.5	62.5	87.5	0
Flow purchases acquired through SWP diversion fees (implemented through foregone exports)	0	30	30	30	0
Flow purchases acquired through SWP diversion fees (implemented through land fallowing)	0	50	50	50	0
Total outflow volumes	0	142.5	142.5	167.5	0

8.12.3. Planning and Reporting Implementation of Spring Delta Outflow Via the Healthy Rivers and Landscapes Program. Condition of Approval 8.12.2 describes blocks of water that shall be made available to supplement spring Delta outflow as a part of the HRL, with seasonal timing at the discretion of CDFW, during years when the HRL is implemented. Each year the HRL is implemented, to facilitate the planning, accounting, and reporting of Condition of Approval 8.12.2, Permittee shall:

1) Develop and operate to a Spring Delta Outflow Operations Plan:

- Beginning no later than January 15, work collaboratively with CDFW to develop a draft Delta Outflow Operations Plan that describes:
 - The timing and volume of water to be made available on a daily basis between March 1 and May 31 associated with the blocks of water in Table 5 (Condition of Approval 8.12.2).
 - Anticipated Project operational actions (e.g. export restrictions and water made available through land fallowing and reservoir releases) that would be taken to ensure the available blocks of water supplement Delta outflow.
 - An accounting of how and when each available block of water would be used to supplement Delta outflow in addition to water required to operate to other controlling operational criteria.⁷⁰

⁷⁰ On October 21, 2024, Permittee provided a draft accounting protocol for deployment of HRL flows through foregone exports and flow purchases acquired through SWP diversion fees for the Feather River. If either accounting protocol(s) is modified from that proposal, Permittee shall consult with CDFW regarding the modified protocol, and obtain CDFW's written approval of any modification for purposes of implementation of this ITP.

- Ongoing coordination with CDFW and the WOMT throughout deployment of the available blocks of water to evaluate operations relative to the requirements described in the Final Delta Operations Plan.
 - Permittee shall work collaboratively with CDFW on an ongoing basis after January 15 to develop and update the draft Delta Outflow Operations Plan based on refinements in understanding of Covered Species status and distribution, Project operations, and hydrologic and temperature forecasts.
 - Permittee shall submit the draft Delta Outflow Operations Plan to CDFW no less than 15 days prior to the start date of operational requirements described in the plan and incorporate CDFW comments and edits into the final plan no less than five days prior to the start of operational requirements described in the plan.
 - Operate the Project consistent with the final CDFW-approved Delta Outflow Operations Plan.
 - Upon implementation of the CDFW-approved Spring Delta Operations Outflow Plan, each week DWR will provide a 7-day forecast of the daily volume of water that will contribute to the blocks of water defined in Condition of Approval 8.12.2. The actual volumes from the previous week's forecast will be trued up the following week.
- 2) By October 31, submit to CDFW a draft Delta Outflow Operations Report that includes the following daily information throughout the duration of the implementation of the Delta Outflow Operations Plan that year:
- Delta outflow
 - Total exports at Banks Pumping Plant
 - Total exports at Jones Pumping Plant
 - OMR index
 - USGS Tidally Filtered OMR flow
 - San Joaquin inflow
 - Flow at Freeport
 - Flow on the Feather River immediately below Thermalito
 - State and federal share stored in San Luis Reservoir
 - Releases from the following reservoirs:
 - Nimbus
 - Keswick
 - Oroville
 - Whiskeytown
 - Jersey Point salinity
 - Salinity at Belden's Landing
 - Flow as measured at Lisbon Weir

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- Delta outflow controlling factor each day and associated allowable SWP exports
- Minimum required Delta outflow that would be required to meet applicable controlling standards
- Documentation of the volume and timing of the blocks of water required to be deployed in Table 5.
- Documentation of the reference operation including a depiction of operations that would have occurred during the timeframe outlined in the Delta Outflow Operations Plan for that water year if the available blocks of water had not been implemented. This depiction shall include estimates of all required hydrologic data points used to quantify actual operations during the same time period.

3) Incorporate CDFW comments and edits into the draft Delta Outflow Operations Report and submit it to CDFW for approval before December 1.

8.12.4. Consultation Regarding Deployment of Spring Outflow Via the Healthy Rivers and Landscapes Program. Permittee shall meet with CDFW at the beginning of each month (March, April, May, and June) to determine if HRL volume commitments met through export reductions and/or upstream releases match targets established in the Delta Outflow Operations Plan. In the event that actual flow deployments are under or above planned targets, CDFW will determine if the Delta Outflow Operations Plan may be adjusted in real-time to meet outflow volumes in Table 5.

Deployment of HRL Delta outflow via foregone exports of unstored flows in the spring shall occur between March and June each year. Initiating deployment of foregone exports of unstored flows in April results in conditions most consistent with baseline, however this approach has a risk of not fully deploying flows by the end of June each year. Initiating deployment of foregone exports of unstored flows in March is expected to create conditions in May different from baseline, but results in a reduce risk of not fully deploying flows by the end of May each year. Recognizing these tradeoffs, Conditions of Approval 8.12.2, 8.12.3, and 8.12.4 include requirements to conduct initial planning for flow deployment, and regular check ins throughout the spring season. In the event that flows required by Condition of Approval 8.12.2 are not deployed in full within the March – June time period Permittee shall meet and confer with CDFW before September 30 to develop a schedule for the deployment of remaining flows in the subsequent water year, or in the next water year with the same Sacramento Valley Index water year type as the year in which flows were not fully deployed. Permittee shall submit the draft schedule to CDFW for review and approval. Permittee shall implement the CDFW-approved schedule.

Before Condition of Approval 8.12.2 is implemented, CDFW and Permittee shall develop a plan and potential alternative approach, for CDFW approval, to address situations when the water year type is not identified for flows in HRL in March and

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April, then shifts to a water year type identified in HRL in May or June, and flow volumes required are not deployed in full. The plan shall consider 1) the reasons for the shortfall and 2) a comparison of HRL flow deployment to flow deployment that would have occurred under Condition of Approval 8.12.1 that spring. In developing the plan, Permittee may propose alternative actions to subsequent deployment of remaining flows that achieve equivalent, or better, biological value to Covered Species after CDFW and Permittee meet and confer, for CDFW approval.

In addition to within-season and annual coordination with CDFW, Permittee shall meet and confer with CDFW every three years that Condition of Approval 8.12.2 is implemented to evaluate the deployment of the flow volume commitments in Table 5 above and compare them to the volumes of Delta outflow that would have been achieved by operating to Condition of Approval 8.12.1. If CDFW determines that the flow volumes achieved through deployment of Condition of Approval 8.12.2 are not equivalent to flow volumes that would have been generated through implementation of Condition of Approval 8.12.1, on average, Permittee will meet and confer with CDFW as described above to determine additional actions needed to compensate for associated impacts.

8.13. Skinner Fish Facility CDFW Staff. To support implementation of this ITP, Permittee shall continue to fully fund two existing CDFW Environmental Scientist positions and one existing CDFW Senior Environmental Scientist Specialist position to work collaboratively with DWR Skinner Fish Facility staff through the duration of this ITP. Permittee shall work collaboratively with these CDFW staff to ensure that they have the access and information needed to perform their duties and discuss roles and responsibilities relative to existing DWR facility staff. Permittee shall work cooperatively with CDFW to ensure CDFW staff has access and information to perform duties including but not limited to the following:

- Receive daily salvage data from the SWP and CVP fish salvage facilities,
- Conduct salvage data and database QA/QC,
- Monitor Skinner Fish Facility operations,
- Train DWR Skinner Fish Facility staff on fish identification,
- Work collaboratively with Permittee to develop and implement a revised written training curriculum for DWR Skinner Fish Facility staff,
- Work collaboratively with Permittee to annually review and update the revised Skinner Fish Facility Operations Manual (Section 3.5.2 of the Project Description),
- Review annual salvage reports from the SWP and CVP fish salvage facilities,
- Receive notifications and provide technical assistance regarding inspections or maintenance of fish protective equipment,

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- Work collaboratively with Permittee to develop a new protocol which describes the decision-making process prior to reducing sampling times at Skinner Fish Facility,
- Engage in real-time decision making to determine whether reduce count times are needed and measures to ensure adequate detection of Covered Species during reducing count times at Skinner Fish Facility,
- Provide technical assistance at Permittee's request with heavy fish and/or debris load management at Skinner Fish Facility,
- Participate in the development and implementation of the Debris Management Effectiveness Study Plan to refine the Skinner Fish Facility fish sampling procedures and infrastructure for improvements in accuracy and reliability of data and fish survival (Condition of Approval 7.5.2), and
- Participate in the development and implementation of the Alternative Loss Pilot Study Implementation Plan to refine the parameters of the Alternative Loss Equation software tool for estimating CHNWR and CHNSR loss at the SWP and CVP export facilities (Condition of Approval 7.9.1).

Permittee shall provide reasonable access to the Skinner Fish Facility for the three CDFW staff identified in this Condition of Approval.

8.14. Clifton Court Forebay Maintenance, Outages, and Inspection Procedures.

8.14.1. Spring Maintenance and Inspection. During spring maintenance and inspection, Permittee shall lower the water level in CCF by closing the radial gates and operating both the Banks Pumping Plant and the Skinner Fish Facility prior to the outage to salvage as many fish as practicable currently present in CCF. Permittee shall initiate the outage at both the Banks Pumping Plant and the Skinner Fish Facility once the minimum operating water level is achieved. During the outage, Permittee shall inspect the CCF cement liner and conduct all planned maintenance at the facilities. Once the CCF cement liner inspection is completed, Permittee shall raise the water level in CCF to the normal operating level by allowing allotments of water into CCF within the constraints of OMR requirements as described in Conditions of Approval in this ITP. Once the Banks Pumping Plant and the Skinner Fish Facility maintenance activities are complete and the CCF returns to the normal operating water level, Permittee shall resume normal Banks Pumping Plant and the Skinner Fish Facility operations.

8.14.2. Herbicide and Algaecide Treatment. Permittee may conduct aquatic weed and algal bloom management in CCF by applying herbicide and algaecide treatments to CCF consisting of peroxide-based aquatic algaecides applied year-round and Aquathol K and copper-based aquatic compounds applied from June 28 through October 31.

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Permittee may apply Aquathol K and copper-based aquatic compounds, if necessary, prior to June 28 or after October 31 if the average daily water temperature within the CCF is greater than or equal to 25°C, and if Covered Species are not at additional risk from the treatment, as confirmed by CDFW, USFWS, and NMFS. Before applying Aquathol K or copper-based aquatic compounds outside of the June 28 to October 31 time frame, Permittee shall notify and confer with CDFW, USFWS, and NMFS to determine whether ESA- or CESA-listed fish species are present and at risk from the proposed treatment.

Prior to herbicide or algaecide treatment, Permittee shall monitor the salvage of Covered Species at the Skinner Fish Facility. If salvage of Covered Species occurs, Permittee shall confer with CDFW prior to initiating herbicide or algaecide treatment. During herbicide or algaecide treatment, Permittee shall close the CCF radial gates for at least 24 hours prior to treatment to allow fish currently present in CCF to move out of the targeted treatment areas and towards the salvage facility and to minimize the possibility of aquatic herbicide or algaecide diffusing into the Delta.

Following herbicide or algaecide treatment using peroxide-based aquatic algaecides, Permittee may reopen the CCF radial gates immediately after treatment.

Following herbicide or algaecide treatment using Aquathol K and copper-based aquatic compounds, Permittee shall keep the CCF radial gates closed for a minimum of 12 and up to 75 hours after treatment to allow for the product-recommended duration of contact time between the aquatic herbicide or algaecide and the treated vegetation or cyanobacteria in CCF, and to reduce residual endothall concentration for drinking water compliance purposes. Permittee may open the CCF radial gates after a minimum of 36 hours (24 hours pre-treatment closure followed by a minimum of 12 hours post-treatment closure).

Permittee shall adhere to the following conditions for herbicide or algaecide treatment in CCF:

- Ensure that herbicide or algaecide treatments will be made by a licensed applicator under the supervision of a California Certified Pest Control Advisor and will follow label restrictions;
- Ensure herbicides and algaecides will be applied in a manner consistent with the label instructions, with a target concentration dependent upon target species and biomass, water volume and the depth of the CCF not to exceed the following concentrations:
 - Peroxide-based aquatic algaecides applied up to 10.2 parts per million (ppm) hydrogen peroxide;
 - Aquathol K applied up to 3 ppm; and
 - Copper-based aquatic compounds applied up to 1 ppm;

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- Restrict treatments to the smallest area possible (no more than 50% of the CCF at one time) that provides relief to SWP operations or water quality;
- Apply treatments by boat or aircraft;
- Apply treatments by boat using a subsurface injection system for liquid formulations and a boat-mounted hopper dispensing system or a helicopter for granular formulations. Applications shall start at the shoreline and move systematically farther offshore, enabling fish to move out of the treatment area;
- Apply treatments by aircraft only during times when wind speeds are less than 15 miles per hour (mph) to prevent spray drift;
- Collect water quality samples before, during and after treatment to ensure concentrations do not exceed the application limit, per National Pollutant Discharge Elimination System (NPDES) permit required procedures; and
- Develop and implement a spill prevention plan in the event of an accidental spill.

8.15. Clifton Court Forebay Aquatic Weed Harvesting. Permittee may conduct aquatic weed management in CCF year-round using a boat-mounted aquatic weed harvester. Prior to weed harvesting, Permittee shall ensure that all personnel on site participate in environmental awareness training for special-status species with the potential to occur in the project area. If any wildlife is observed within the aquatic weed removal and disposal areas, Permittee shall halt work immediately, and the wildlife are allowed to move out of the area on their own. Following weed harvesting, Permittee shall stockpile all harvested aquatic weeds on land for transport to a commercial green waste facility or similar facility.

8.16. Relationship Between the Adaptive Management Plan and this ITP. The AMP (Attachment 4) shall be used to consider and address scientific uncertainty regarding the Bay-Delta ecosystem, Covered Species ecology, and to inform the understanding of minimization of take and impacts of the taking associated with the operational criteria in this ITP. The AMP may result in recommendations regarding operational components described in Conditions of Approval to this ITP, and consequently Permittee may request amendment of this ITP based on new information developed through new science and monitoring (Condition of Approval 5) and according to the amendment standards and processes identified in CESA's implementing regulations. The AMP shall be used to build scientific understanding of Covered Species, evaluate potential changes in the Conditions of Approval in this ITP, and build a knowledge base for future permitting processes. The AMP (Attachment 4) describes this structure and steps associated with adaptive management in more detail.

The AMP does not govern real-time operations. Recommendations of the AMP shall not commit Permittee or CDFW to a definite course of action related to ITP amendments. The

AMP shall not modify CDFW's discretionary decision-making as set out in the Conditions of Approval, CESA, or CESA's implementing regulations.

Condition of Approval 5 describes circumstances when CDFW anticipates that Permittee may request an amendment to this ITP in the future, including amendments that may be requested in response to recommendations from the AMP.

8.17. Drought Contingency Planning. In addition to the DRY Team coordination as described in Section 3.13 of the Project Description, on October 1, if the prior water year was dry or critical, Permittee, in coordination with Reclamation, shall meet and confer with CDFW, USFWS, NMFS, and the State Water Board, to develop a drought contingency plan to be implemented if dry conditions continue into the following year. On February 1 if dry conditions continue, Permittee shall submit the drought contingency plan to CDFW and shall update the plan monthly based on current and forecasted hydrologic conditions. If dry conditions continue, Permittee shall regularly convene this group to evaluate hydrologic conditions and the potential for continued dry conditions that necessitate implementation of measures identified in the drought contingency plan for the current water year. By February 1 of each year following the development of a drought contingency plan, Permittee shall submit a report to CDFW on the measures employed during the previous year, including an assessment of their effectiveness.

8.18. 2024 Early Season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold.

From the effective date of this ITP through December 20, 2024 Permittee shall, in coordination with Reclamation, adhere to the following criteria to minimize take of early migrating CHNWR.

To minimize entrainment, salvage, and take of early-migrating natural CHNWR, Permittee shall restrict south Delta exports for five consecutive days to achieve a five-day average OMR index no more negative than -5,000 cfs when daily loss of older juveniles (natural older juvenile Chinook salmon⁷¹ and yearling CHNSR used as a surrogate for CHNWR) at the SWP and CVP salvage facilities exceeds the following thresholds:

- From November 1 – November 30: 6 older juvenile Chinook Salmon
- From December 1 – December 31: 26 older juvenile Chinook Salmon

All natural older juvenile Chinook salmon juveniles shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the equation provided in CDFW 2018 (Attachment 8).

⁷¹ Older juvenile Chinook Salmon is defined as any Chinook Salmon measured above the minimum length for CHNWR, according to the Delta Model length-at-date criteria used to assign individuals to run (USFWS 1997).

From the effective date of this ITP through December 20, 2024, or finalization of a new ROD, whichever occurs first, Permittee shall not be required to implement Condition of Approval 8.2.1 (Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds).

This Condition of Approval carries forward Condition of Approval 8.6.2 from the 2020 ITP for Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00) and is applicable only for the time period described in this Condition of Approval.

- 9. Compensatory Mitigation:** CDFW has determined that permanent protection and perpetual management of compensatory habitat and additional mitigation actions are necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result from implementation of the Covered Activities (Attachments 5, 6, and 7). This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, changes in the Project's anticipated take, related impacts of the taking, and minimization measures from the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00), the duration of authorized Covered Activities, and CDFW's estimate of the protected acreage and additional actions required to provide for adequate compensation.

To meet this requirement, Permittee shall either purchase Covered Species credits from a CDFW-approved mitigation or conservation bank to achieve the acreage requirements described in Condition of Approval 9.1, or shall provide for the permanent protection, restoration, and initial and long-term management and monitoring of Habitat Management (HM) lands described in Condition of Approval 9.1. HM land protection, restoration, monitoring, and management shall be conducted pursuant to procedures and timelines set forth in Condition of Approval 9.1 below and the calculation of the management funds pursuant to Condition of Approval 9.4 below.

Permittee shall include in its ASR, pursuant to Condition of Approval 7.2, documentation demonstrating cumulative HM lands permanently protected (and restored where required) for each Covered Species to date.

Permanent protection, restoration, and funding for perpetual monitoring and management of compensatory habitat must be complete before starting Covered Activities, or, if Security is provided pursuant to Condition of Approval 10 below for all uncompleted obligations, after the effective date of this ITP.

Permittee's implementation of the protection, restoration or perpetual management of HM lands may require separate CEQA evaluation. Because no take authorization is provided through this permit for the HM lands activities, Permittee shall obtain CESA authorization as necessary to implement HM land requirements. All individual protection and restoration projects proposed to

achieve the compensatory mitigation required in this Condition of Approval shall be subject to CDFW approval in writing.

9.1. Compensatory Mitigation for Delta Smelt and Longfin Smelt.

9.1.1. Tidal Wetland Habitat Restoration for Delta Smelt. Within 1.5 years of the effective date of this ITP, Permittee shall complete siting, design, and restoration of 8,396.3 acres of DS tidal wetland habitat as compensatory mitigation to expand the diversity, quantity, and quality of DS rearing and refuge habitat in the tidal portions of the Delta and Suisun Marsh. These required acres represent a combined total of tidal wetland restoration acres carried forward from two existing compensatory mitigation requirements:

- The requirement to restore and conserve 8,000 acres of DS tidal wetland habitat is carried forward from the compensatory mitigation obligation, originally established in the 2008 USFWS Biological Opinion⁷² and associated CDFW Consistency Determination (CD No. 2080-2009-007-00).
- The requirement to restore and conserve 396.3 acres of DS tidal wetland habitat is carried forward from the compensatory mitigation obligation for take of DS due to increased diversions at the BSSP, originally established in the 2020 ITP for Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00).

Permittee shall coordinate with CDFW and USFWS during the process of site selection and restoration design for HM lands intended to serve as compensatory mitigation for impacts to DS habitat. All DS tidal wetland habitat restoration shall be subject to approval by CDFW.

9.1.2. Mesohaline and Tidal Habitat Restoration for Longfin Smelt. Within 1.5 years of the effective date of this ITP, Permittee shall complete siting, design, and restoration of 209.46 acres of LFS mesohaline habitat and 396.3 acres of LFS tidal wetland habitat as compensatory mitigation to expand the diversity, quantity, and quality of LFS rearing and refuge habitat in the tidal portions of the Delta and Suisun Marsh. The requirement to restore and conserve 209.46 acres of LFS mesohaline habitat is the remainder carried forward from two compensatory mitigation requirements:

⁷² U.S. Fish and Wildlife Service (2008). Formal Endangered Species Act consultation on the proposed coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, CA.

- The requirement to acquire, restore, conserve and provide for perpetual management and monitoring of 800 acres of LFS mesohaline habitat take of LFS originally established in the 2009 ITP for California SWP Delta Facilities and Operations (ITP No. 2081-2009-001-03), 590.54 acres of which has been satisfied.
- The requirement to restore and conserve 396.3 acres of tidal wetland habitat is carried forward from the compensatory mitigation obligation for take of LFS originally established in the 2020 ITP for Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00).

Permittee shall coordinate with CDFW and USFWS during the process of site selection and restoration design for HM lands intended to serve as compensatory mitigation for impacts to LFS habitat. All LFS mesohaline habitat restoration shall be subject to approval by CDFW.

- 9.1.3. Delta Smelt Summer-Fall Habitat Action. The Delta Smelt Summer-Fall Habitat Action (Summer-Fall Habitat Action) is intended to benefit DS food supply and habitat, thereby contributing to the recruitment, growth, and survival of DS. The FLASH conceptual model⁷³ states that DS habitat should include low-salinity conditions of 0 to 6 parts per thousand (ppt), turbidity of approximately 12 NTU, temperatures below 25°C (77°F), food availability, and littoral or open water physical habitats. The highest-quality habitat in Suisun Marsh and Grizzly Bay includes areas with complex bathymetry, in deep channels close to shoals and shallows, and in proximity to extensive tidal or freshwater marshlands and other wetlands. The Summer-Fall Habitat Action will provide the aforementioned habitat components in the Suisun Marsh and Grizzly Bay through a range of actions by water year type to improve water quality and food supplies.

Each year Permittee shall develop a plan in collaboration with Reclamation, and subject to written approval by CDFW, to operate the Project to achieve operational requirements described in the bullets below in this Condition of Approval, and implement additional actions, as available, including monitoring, science, and food enhancement actions to enhance DS habitat (Summer-Fall Action Plan). As an outcome of this annual planning and implementation process, reports documenting Summer-Fall Habitat Action operations and results from monitoring and scientific investigations shall be used as part of the AMP (Attachment 4) to better understand DS habitat during the

⁷³ Brown, L.R., R. Baxter, G. Castillo, L. Conrad, S. Culberson, G. Erickson, F. Feyrer, S. Fong, K. Gehrts, L. Grimaldo, B. Herbold, J. Kirsch, A. Mueller-Solger, S. Slater, K. Souza, and E. Van Nieuwenhuysen (2014). Synthesis of studies in the fall low-salinity zone of the San Francisco Estuary, September–December 2011: U.S. Geological Survey Scientific Investigations Report 2014–5041. U.S. Geological Survey, Reston, VA.

summer-fall time period and investigate the way in which SWP and CVP operations interact with the full range of components of DS habitat. Permittee shall submit drafts of all reports documenting Summer-Fall Habitat Action operations and results to CDFW for review, incorporate CDFW input, and send final draft reports to CDFW for approval prior to finalization.

Permittee shall submit a final draft Summer-Fall Action Plan to CDFW by May 15 in each year a Summer Fall Habitat Action is required for written approval prior to implementation of this Condition of Approval. The Summer-Fall Action Plan shall describe the planned implementation of the actions required in this Condition of Approval and the expected hydrologic and biological benefits. The Summer-Fall Habitat Action shall be implemented between June 1 and September 30 of each water year and through October 31 of the following water year.

Permittee shall include in the Summer-Fall Action Plan and adhere to the following minimum requirements:

- **Improve Fall Low-Salinity Habitat (Fall X2):** To increase the amount of low-salinity zone habitat for DS in wet and above normal hydrologic year types, Permittee shall, in coordination with Reclamation, maintain a 30-day average $X2 \leq 80$ km from September 1 through October 31.
- **Operate Suisun Marsh Salinity Control Gates:** To address effects on habitat for juvenile DS and increase habitat and food access for DS in summer and fall (June through October) in Suisun Marsh and Grizzly Bay during above normal and below normal years, and dry years following wet or above normal years, Permittee shall operate SMSCG for 60 days, to maximize the number of days that Belden's Landing 3-day average salinity is equal to, or less than, 4 practical salinity units (psu), to maximize the spatial and temporal extent of DS low salinity zone habitat in Suisun Marsh and Grizzly Bay. Operation of the SMSCG shall occur between June 1 and October 31 in years which operation of the SMSCG is required. In dry years following below normal years, Permittee shall operate SMSCG for 30 days to maximize the number of days Belden's Landing 3-day salinity is equal to, or less than 6 psu to maximize the spatial and temporal extent of DS low salinity zone habitat in Suisun Marsh and Grizzly Bay. Permittee shall implement SMSCG operations consistent with the CDFW-approved Summer-Fall Action Plan in each year in which an action is required.

Permittee shall implement a modified Summer-Fall Action for Water Year 2025 that adheres to the following minimum requirements:

- Permittee shall operate to meet the requirements of D-1641 in September 2025 and October 2025 and is not required to meet a monthly average X2 of ≤ 80 km during this time.
- Permittee shall operate the SMSCG for 60 days as required for an above normal water year type. In addition, Permittee shall extend the required SMSCG operations for three (3) consecutive days starting from August 23, 2025, and operate the SMSCG on a daily basis starting from September 5, 2025, for an additional seven (7) consecutive days to expand the spatial extent of Delta Smelt low salinity zone habitat in Suisun Marsh.

9.1.3.1. Delta Coordination Group. The DCG is comprised of two representatives each from Permittee, CDFW, Reclamation, USFWS, and NMFS, and one representative each from the SWP water contractors and CVP water contractors. The DCG may approve conditional attendance by technical representatives when appropriate in a non-voting role. The DCG, may prepare an assessment to propose a gate operation if modeling of hydrological and/or existing D-1641 conditions indicate the action can achieve the same habitat benefits in an equal or better manner within the range of effects analyzed. Subsequently, Permittee, in coordination with Reclamation, may propose operations of the SMSCG for WOMT to consider prior to May 15 of each year a SMSCG action will be required. Permittee shall, in coordination with Reclamation and through the DCG, develop an annual monitoring plan that responds to uncertainties in the performance metrics to evaluate action performance based on a schedule determined by the AMSC. Permittee shall, in coordination with Reclamation, also produce a report that summarizes monitoring findings and assess action performance based on a schedule determined by the AMSC. The Summer-Fall Habitat Action shall be included in independent reviews under the AMP (Attachment 4).

9.1.3.2. One-Time Water Commitment for Delta Outflow. Permittee shall deploy a 100 TAF block of water to supplement Delta Outflow in water year 2025 during the summer-fall period, from June through September, to improve DS habitat conditions. The 100 TAF shall be stored in Oroville Reservoir and is subject to spill from Oroville Reservoir if water year 2025 is wet or above normal as determined by the final 50% exceedance forecast on May 10. Beginning on February 15, 2025 Permittee shall coordinate with CDFW to develop a plan for the deployment of the 100 TAF in water year 2025 that is consistent with the biological goals described for the Summer-Fall Action (Condition of Approval 9.1.3). Upon mutual agreement Permittee and CDFW may seek input from the DCG regarding potential planning and deployment of the 100 TAF. Permittee

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shall submit a draft plan for deployment of the 100 TAF to CDFW by May 15. The final plan shall be subject to CDFW approval.

9.1.3.3. Delta Smelt Food and Habitat Enhancement Action. Permittee shall develop and implement a DS Food and Habitat Enhancement Program (Program) to maximize DS habitat suitability and to subsidize food resources for DS within the Suisun Marsh region in 2026, 2027, and 2028. Permittee in collaboration with CDFW shall prepare a Program including specific implementable actions to be taken in each year (2026, 2027, 2028) to both subsidize food resources and improve DS suitable habitat. The Program shall identify site-specific actions, research questions, and monitoring metrics to promote enhanced food resources, habitat suitability and condition, and to assess the efficacy of the localized food and habitat actions. Permittee shall submit the draft Program to CDFW for approval by December 31, 2025. Permittee shall start implementing the CDFW approved final Program no later than June 2026. Updates to the Program for site-specific components to be implemented in 2027 and 2028 shall be submitted to CDFW for approval no later than May 15 in each year they are to be implemented. The Program shall ensure that at least 6,000 kg of Delta Smelt food resources are provided, as demonstrated through an analysis approved in writing by CDFW, within the Suisun Marsh region in each year (2026, 2027, 2028) and include, but not be limited to, the following food web and habitat enhancement components:

- Supplementation of cultured zooplankton between June and October within the Suisun Marsh region.
 - Measuring the efficacy of food supplementation in supporting DS growth and survival compared to surrounding areas.
 - Identifying the best strategies to release food resources from culture facilities into the Suisun Marsh region, while minimizing effects from loss in water quality and increased predation risk.
 - Quantifying the spatial and temporal influence of the released food resources.
- Removal of invasive species annually within the North Delta Arc region sufficient to achieve a measurable change in food web resources and/or habitat quality to DS in the immediate vicinity of the action, in conjunction with site-specific monitoring pre- and post-removal. Consideration shall be given to the removal of Arundo, Phragmites, golden mussel, and invasive clam species (*Potamocorbula amurensis* and *Corbicula fluminea*).
- Site-specific monitoring shall be used to identify the following factors, depending on the species targeted for removal:

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- The effect of Arundo and Phragmites removal on local turbidity levels.
- The effect of Arundo removal and use of inundated shallow areas for spawning.
- How the presence of invasive competitors limits DS access to food.

It is estimated to cost \$1 million dollars annually (\$3 million total) to implement the CDFW approved Program starting 2026 and continuing through the summer and fall of 2027 and 2028 to meet food resource targets identified above, improve habitat conditions for DS, and answer identified research questions. Permittee may fund an alternative action to the Program in a given year (up to \$1 million) to benefit DS food resources and habitat conditions, if approved by CDFW by May 15 in the given year for which an alternative action would be funded and implemented, if CDFW determines the alternative action would have an equivalent or greater biological benefit than Program implementation in that year. Permittee shall submit a draft report summarizing the findings of the 3-year DS Food and Habitat Enhancement Program efforts to CDFW by May 1, 2029, for approval.

9.1.3.4 Summer Fall Planning Group. The Summer Fall Planning Group (SFPG) is comprised of two representatives, each from Permittee and CDFW, and one representative from the SWP Contractors. The SFPG may approve attendance by additional technical representatives when appropriate in a non-voting role. Permittee shall convene the SFPG beginning no later than January 2026 to initiate a structured decision making (SDM) planning process to develop a research plan for testing key mechanisms underlying the findings of the USFWS Delta Smelt Life Cycle Model and findings resulting from prior Summer-Fall Habitat Action reports. The goal of this SDM effort will be to identify key research questions that will be prioritized and implemented starting in water year 2026. Results of this research will be communicated to the DCG and used to support the development of the Summer-Fall Action Plan each year, starting in water year 2026.

9.1.4. Delta Smelt Supplementation Program. A Delta Smelt Supplementation Program (DS Supplementation Program) is intended to work in conjunction with water management strategies, habitat restoration, and food web productivity enhancements, to support the persistence of DS in the wild. Permittee shall, in coordination with Reclamation, support the development, refinement and implementation of a DS Supplementation Strategy which shall establish the framework, objectives, and timelines for the DS Supplementation Program to bolster the current population of DS and increase the likelihood of achieving a

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self-sustaining status. Permittee shall fund DS Supplementation Program CDFW staff according to Condition of Approval 9.1.4.1.

Permittee shall, in coordination with Reclamation, work through the Culture and Supplementation of Smelt Steering Committee (CASS SC), to continue to collaborate with CDFW and USFWS on the development of the DS Supplementation Program and the DS Supplementation Strategy. The CASS group was created in 2019 and is comprised of participants from Reclamation, DWR, CDFW, and USFWS. This body provides oversight in advancing science-based management activities to secure and stabilize the DS population through a coordinated propagation and supplementation program. The CASS SC shall continue to provide guidance to its three working groups: 1) Captive Propagation Working Group, 2) Research Working Group, and 3) Regulatory Working Group.

An update to the DS Supplementation Strategy is expected to be approved by CDFW and USFWS in 2025. Permittee shall, in coordination with Reclamation, CDFW, and USFWS, and subject to necessary state and federal permitting, support implementation of the DS Supplementation Program through a collective management structure consistent with the updated DS Supplementation Strategy and the AMP (Attachment 4). DS Supplementation Program governance will consist of the CASS SC and collaborative technical teams charged with implementation of all aspects of supplementation (Captive Propagation Working Group, Research Working Group, and Regulatory Working Group).

DWR shall, in coordination with Reclamation, ensure production ramps up to a minimum of 125,000 fish by water year 2024, a minimum of 150,000 fish by water year 2025, a minimum of 250,000 fish by water year 2029, and a minimum of 500,000 fish by water year 2034 that are at least 200 days post-hatch (dph) or equivalent as informed by CDFW and USFWS. In the event that current DS production estimates indicate a risk that minimum production will not be met in the subsequent year for reasons outside Permittee's control, Permittee shall meet and confer with CDFW to develop a plan to maximize production for supplementation. USFWS and CDFW, in coordination with Reclamation and DWR, will update the Supplementation Strategy to incorporate new findings from the program and update performance metrics used to guide production targets and methods development.

A process to evaluate production targets to support supplementation will be developed and implemented no less than annually via the CASS SC. Outcomes of the review may include but are not limited to revisions of annual production numbers, timeline, release methods, monitoring, and genetic management

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strategies. These findings will be incorporated into the DS Supplementation Strategy and will serve as guidance for the program.

The DS Supplementation Strategy will also evaluate and address any need for additional facilities and infrastructure improvements to existing facilities and evaluate the benefit of new approaches to maintaining the refugial population of DS while also supporting the updated DS Supplementation Strategy and DS Supplementation Program. Permittee shall, in coordination with Reclamation, collaborate with CDFW and USFWS on the development of additional facility needs, their construction and operation, to meet a production capability of 500,000 DS that are at least 200 days post-hatch, within 10 years of the effective date of this ITP. Such facilities and infrastructure improvements are not Covered Activities of this ITP and could require separate processes for compliance under CESA and CEQA for their construction and eventual operation.

To support CDFW's role in the DS Supplementation Program, Permittee shall fund a full-time biologist position (Condition of Approval 9.1.4.1).

9.1.4.1. Delta Smelt Supplementation Program CDFW Staff. To support implementation of Condition of Approval 9.1.4, Permittee shall fully fund one new CDFW Environmental Program Manager 1 Managerial position to actively engage in scientific research, technical teams, and management teams tasked with implementation of DS Supplementation in collaboration with Permittee, Reclamation, and USFWS, in addition to other agency and non-agency collaborators. This CDFW staff duties will include, but not be limited to, the following:

- Conducting scientific research to inform DS Supplementation in coordination with Permittee, Reclamation, USFWS, and interested party scientists;
- Providing technical assistance and expertise to plan and implement releases of cultured DS and oversee CDFW staff engaged in releases of cultured DS;
- Actively engaging in the design and development of expanded facilities to support DS Supplementation;
- Participating in interagency technical teams involved in the implementation of DS Supplementation and Adaptive Management Teams involved in implementation of the long-term operations of the CVP and SWP Biological Opinions and long-term operations of the SWP ITP;
- Engaging in the CASS working groups and steering committee (as needed); and
- Work collaboratively with Permittee, Reclamation, and USFWS on updating and implementing the DS Supplementation Strategy.

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9.1.5. Longfin Smelt Refugial Population Establishment and Management. Permittee shall establish a Longfin Smelt Culture Program that will create and maintain a robust, genetically managed captive refugial population for LFS within 10 years of the effective date of this permit. The Longfin Smelt Culture Program shall have two primary goals:

- (1) Buffer against extinction and;
- (2) Provide a source of fish for research.

The Longfin Smelt Culture Program shall expand upon the efforts initiated within the LFSSP and continue to be guided by the LFS Science Program (Condition of Approval 7.8.1). The governance of the Longfin Smelt Culture Program will be implemented by Permittee and CDFW, in coordination with Reclamation and USFWS, while the Longfin Smelt Technical Team, as part of LFS Science Program, will continue to provide technical guidance and expertise to support advancements in LFS captive propagation.

Permittee shall fund the Longfin Smelt Culture Program to continue the effort to fully close the LFS life cycle in captivity. Permittee shall also fund the development of a genetic management strategy and plan to implement once the refuge population is established in captivity. Permittee shall then continue to fund and support the genetically managed refugial population, in a manner that will allow for the production of fish for research, as coordinated with the LFSSP, without compromising the genetic integrity of the refuge population.

Permittee shall ensure that the Longfin Smelt Culture Program has sufficient facilities and facility infrastructure to allow for varying levels of salinity during propagation and to support sufficient brood stock collection.

9.2. Compensatory Mitigation for Winter-run and Spring-run Chinook Salmon.

9.2.1. Implementation of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project. By 2026, Permittee shall complete the implementation of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project. This requirement to implement the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project is carried forward from the compensatory mitigation obligation for take of CHNWR and CHNSR originally established in the 2009 NMFS Biological Opinion⁷⁴ and associated Consistency Determination (CD No. 2080-2009-011-00), and the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00). The objective of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project is to enhance floodplain rearing habitat and fish passage in the Yolo Bypass by

⁷⁴ National Marine Fisheries Service (2009). Endangered Species Act Section 7 consultation biological opinion and conference opinion on the long-term operation of the Central Valley Project and the State Water Project. 2008/09022. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region. June 4, 2009.

implementing the project as described in Alternative 1 of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project Final EIR/EIS and subsequent addendums.⁷⁵ This project will benefit CHNWR, CHNSR, California Central Valley steelhead, the sDPS of North American Green Sturgeon, and WS.

The first objective of the project is to increase the availability of floodplain rearing habitat for juvenile CHNWR, CHNSR, and California Central Valley steelhead. The project can also improve conditions for Sacramento Splittail and Central Valley fall-run Chinook Salmon. Specific biological goals include:

- Improve access to seasonal habitat through volitional entry,
- Increase access to and acreage of seasonal floodplain fisheries rearing habitat,
- Reduce stranding and presence of migration barriers, and
- Increase aquatic primary and secondary biotic production to provide food through an ecosystem approach.

The second objective of the project is to reduce migratory delays and loss of fish at Fremont Weir and other structures in the Yolo Bypass. Specific biological goals include:

- Improve connectivity within the Yolo Bypass for passage of salmonids and sturgeon, and
- Improve connectivity between the Sacramento River and the Yolo Bypass to provide safe and timely passage for:
 - Adult CHNWR between mid-November and mid-March when water surface elevations in the Sacramento River are amenable to fish passage,
 - Adult CHNSR between January and mid-March when water surface elevations in the Sacramento River are amenable to fish passage,
 - Adult California Central Valley steelhead in the event their presence overlaps with the defined seasonal window for other target species when water surface elevations in the Sacramento River are amenable to fish passage,
 - Adult sDPS of North American Green Sturgeon between February and mid-March when water surface elevations in the Sacramento River are amenable to fish passage, and
 - Adult WS between February and mid-March when water surface elevations in the Sacramento River are amenable to fish passage.

The project includes the construction of a new gated notch in Fremont Weir located in the northern Yolo Bypass and channel that parallels the existing east levee of the Yolo Bypass. The gated notch and channel have the ability to convey flows up to 6,000 cfs,

⁷⁵ California Department of Water Resources and U.S. Bureau of Reclamation (2019). Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project. Final Environmental Impact Statement/Environmental Impact Report. State Clearinghouse No. 2013032004. May 2019.

depending on the Sacramento River, to provide open channel flow for adult fish passage, juvenile fish emigration, and floodplain inundation. This alternative also includes a supplemental fish passage facility on the west side of Fremont Weir and improvements to allow fish to pass through Agricultural Road Crossing 1 and the channel north of Agricultural Road Crossing 1.

Permittee shall implement the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project in accordance with its adaptive management and monitoring plan,⁷⁶ and any subsequent revisions.

- 9.2.2. Feather River Fish Passage and Hatchery Improvements. By July 2025, Permittee shall fund \$1 million toward the Sunset Weir and Pumps Project on the Feather River. The objective of the Sunset Pumps Project is to improve fish passage by removing the existing boulder weir, a known migratory barrier to CHNSR, fall-run Chinook Salmon, California Central Valley steelhead, WS, and the sDPS of North American Green Sturgeon, and installing CDFW approved fish-protective screens for the Sunset division and upstream neighboring private diversions to reduce entrainment risk into currently unscreened diversions.

By 2026, Permittee shall commit an additional \$14 million toward the Sunset Weir and Pumps Project and \$4.9 million toward a disinfection system at the Feather River Fish Hatchery. The disinfection system is intended to reduce or remove pathogen contamination for hatchery reared CHNSR, fall-run Chinook Salmon, and California Central Valley steelhead. This requirement to fund \$19.9 million in CHNWR and CHNSR compensatory mitigation is carried forward from the compensatory mitigation obligation originally established in the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00).

- 9.2.3. Spring-run and Winter-run Chinook Salmon Climate Change Support. In addition to the mitigation originally established in the 2020 ITP for the Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00) Permittee shall provide \$900,000 each year to support projects that address stressors on CHNWR and CHNSR associated with climate change, including drought. Projects that may be considered as a part of this annual process include, but are not limited to:

- Broodstock collection, and holding of CHNWR or CHNSR to preserve genetic diversity of the population;
- Further improvements to the Feather River Fish Hatchery;
- Habitat restoration, or improvements to existing habitat; and

⁷⁶ California Department of Water Resources (2021). Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project: Draft adaptive management and monitoring plan. California Department of Water Resources, Division of Integrated Science and Monitoring, West Sacramento, CA. November 2021.

- Improve fish passage.

To implement this Condition of Approval, Permittee and CDFW will meet annually no later than December 1 each water year beginning in 2025 to discuss projects that could receive funding and prepare a list of high priority projects for consideration. Permittee shall submit the list of agreed-upon projects for review by CDFW no later than January 30. Permittee shall provide funds and support implementation of the project approved for implementation by CDFW in that water year. In any given water year CDFW may decide to carry funds over to the subsequent water year(s) to enable larger investments later, or detract from future years funding to support larger projects in the near term to better focus the funding on climate change stressors of highest priority. Unless otherwise approved in writing by CDFW, projects involving the acquisition, restoration, and perpetual management of compensatory mitigation lands shall be subject to the requirements of Condition of Approval 9.5 of this ITP.

9.3. Compensatory Mitigation for White Sturgeon. Permittee shall, in collaboration with CDFW, continue to convene and fund \$150,000 to support the evaluation of potential habitat restoration project(s) within the Sacramento and San Joaquin rivers for WS. The evaluation shall include but not be limited to the scoping of potential restoration projects within the Sacramento and San Joaquin rivers. Permittee shall submit a draft report documenting the results of the scoping process, including associated restoration project recommendations to CDFW by April 12, 2025. Permittee shall work with CDFW to incorporate comments on the draft document and shall submit a final report to CDFW within one year of April 12, 2025 for written approval by CDFW.

Permittee shall subsequently develop a plan for additional habitat restoration to offset impacts of Project operations on WS, in collaboration with CDFW. This plan shall rely on the evaluation of habitat restoration projects required by this Condition of Approval, be informed by the WS Life Cycle Model developed as a part of the WS Science Program (Condition of Approval 7.10.1), and include a budget and timeline for restoration implementation. Permittee shall submit a draft plan to CDFW for review by April 12, 2030. Permittee shall work with CDFW to incorporate comments on the draft plan and shall submit a final plan to CDFW by October 12, 2030 for written approval by CDFW. Following CDFW approval, Permittee shall provide \$1,900,000 to implement the final plan. Unless otherwise approved in writing by CDFW, projects involving the acquisition, restoration, and perpetual management of compensatory mitigation lands shall be subject to the requirements of Condition of Approval 9.5 of this ITP.

As a part of the process to develop and finalize a plan for additional habitat restoration to offset impacts of Project operations on WS Permittee and CDFW shall collaboratively use the WS Life Cycle Model to re-evaluate Project impacts on WS as compared to the

analyses used to support this ITP. Permittee, in collaboration with CDFW, may propose adjustments to this funding obligation for WS mitigation based on this updated evaluation of the magnitude and scope of impacts of Project operations on the species, which adjustments may decrease or increase the obligation, with CDFW approval and determination that funding will provide sufficient restoration to continue to meet the full mitigation standard under CESA for this WS. The restoration plan required by this Condition of Approval, shall ensure full mitigation for Project impacts during the time period when the species is a Covered Species under this ITP, which shall include the period in which it is a candidate species.

CDFW acknowledges that planning, environmental review, and permitting may be necessary for restoration project implementation and funding under this Condition of Approval may be used for these project development activities. In some cases, implementation may be in the form of funding a restoration project in whole or in part to supplement restoration projects being implemented by others, when appropriate and approved by CDFW and when CDFW determines that funding under this Condition of Approval will ensure additive benefits to WS that would not occur in the absence of Permittee's contribution. However, under no circumstances shall any funds under this Condition of Approval be used to fund any other regulatory permitting requirement other than those established in this ITP. Final allocation of this funding shall be subject to CDFW approval.

9.4. Cost Estimates. Permittee has estimated the cost of acquisition, protection, restoration, and perpetual management of the HM lands required by Conditions of Approval 9.1.1 and 9.1.2, as shown in Table 6. The methods used to determine these costs are described in Section 8.1 of the ITP application.

9.4.1. Acquisition Costs, Start-Up Costs, and Transaction Fees. Land acquisition costs for HM lands identified in Conditions of Approval 9.1.1 and 9.1.2 are based on local fair market current value for lands with habitat values meeting mitigation requirements plus a ten percent contingency. Start-up costs for HM lands include initial site protection, enhancement, and restoration costs as described in Conditions of Approval 9.5.1 and 9.5.5 below. Transaction fees include but are not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW as described in Condition of Approval 9.5. Total acquisition costs, start-up costs, and transaction fees are estimated to be \$37,827/creditable acre and are included in the total cost estimates shown in Table 6. This includes costs of restoration and enhancement.

- 9.4.2. Interim Management Period. Interim management period funding as described in Condition of Approval 9.5.6 below, is estimated to be \$402,655/year and is included in the total cost estimates shown in Table 6 by habitat type. This cost includes post-restoration or enhancement monitoring and management actions.
- 9.4.3. Long-term Management. Long-term management funding as described in Condition of Approval 9.5.7 below, was estimated at \$284,299/year to ensure implementation of HM lands management.

Table 6. Estimated habitat mitigation lands cost for existing obligations from 2008 USFWS Biological Opinion,⁷⁷ 2009 NMFS Biological Opinion,⁷⁸ 2009 LFS ITP,⁷⁹ and 2020 ITP.⁸⁰

Species	Cost Item	Habitat	Land (acres)	Total Cost Over 10 Years	Average Annual Cost
DS	Habitat restoration required by 2009 USFWS BO and 2020 ITP	Tidal perennial aquatic habitat	8,000	\$302,616,000	\$30,261,600
LFS	Habitat restoration required by 2009 LFS ITP and 2020 ITP	Mesohaline habitat	209.46	\$7,923,000	\$792,300
DS and LFS	Habitat restoration required by 2020 ITP	Tidal wetland habitat	396.3	\$14,990,000	\$1,499,00
CHNWR and CHNSR	Yolo Bypass restoration required by 2009 NMFS BO and 2020 ITP	Juvenile rearing habitat		\$118,000,000	

9.5. Habitat Acquisition and Protection. Permittee shall either purchase Covered Species credits from a CDFW-approved mitigation or conservation bank prior to initiating Covered Activities impacting Covered Species habitat, or provide for the acquisition and perpetual protection and management of the HM lands consistent with Condition of Approval 9 above, and pursuant to Conditions of Approval 9.5.1 to 9.5.10. To provide for the acquisition and perpetual protection of the HM lands, Permittee shall adhere to requirements in Conditions of Approval 9.5.1 to 9.5.10.

⁷⁷ U.S. Fish and Wildlife Service (2008). Formal Endangered Species Act consultation on the proposed coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, CA.

⁷⁸ National Marine Fisheries Service (2009). Endangered Species Act Section 7 consultation biological opinion and conference opinion on the long-term operation of the Central Valley Project and the State Water Project. 2008/09022. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region. June 4, 2009.

⁷⁹ ITP No. 2081-2009-001-03

⁸⁰ ITP No. 2081-2019-066-00.

If the Permittee elects to purchase Covered Species credits to complete compensatory mitigation obligations, then Permittee shall purchase Covered Species credits to satisfy the DS and LFS acreage requirements from a CDFW-approved mitigation or conservation bank prior to initiating Covered Activities, or no later than 18 months from the issuance of this ITP if Security is provided pursuant to Condition of Approval 10 below. Prior to purchase of Covered Species credits, Permittee shall obtain CDFW approval to ensure the mitigation or conservation bank is appropriate to compensate for the impacts of the Project. Permittee shall submit to CDFW a copy of the Bill of Sale(s) and Payment Receipt prior to initiating Covered Activities or within 18 months from issuance of this ITP if Security is provided.

If Permittee elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, Permittee shall:

- 9.5.1. Fee Title/Conservation Easement. Transfer fee title to the HM lands to CDFW pursuant to terms approved in writing by CDFW. Alternatively, CDFW, in its sole discretion, may authorize a governmental entity, special district, non-profit organization, for-profit entity, person, or another entity to hold title to and manage the property provided that the district, organization, entity, or person meets the requirements of Government Code sections 65965-65968, as amended. If CDFW does not hold fee title to the HM lands, CDFW shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If CDFW elects not to be named as the grantee for the conservation easement, CDFW shall be expressly named in the conservation easement as a third-party beneficiary. Permittee shall obtain CDFW written approval of any conservation easement before its execution or recordation. No conservation easement shall be approved by CDFW unless it complies with Civil Code sections 815-816, as amended, Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e).
- 9.5.2. HM Lands Approval. Obtain CDFW written approval of the HM lands before acquisition and/or transfer of the land by submitting, at least three months before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the Project's impacts on Covered Species. HM lands may be proposed and approved in segments or subsets.

- 9.5.3. HM Lands Documentation. Provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CDFW for document list). All documents conveying the HM lands and all conditions of title are subject to the approval of CDFW, and if applicable, the Wildlife Conservation Board and the Department of General Services.
- 9.5.4. Land Manager. Designate both an interim and long-term land manager approved by CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. Documents related to land management shall identify both the interim and long-term land managers. Permittee shall notify CDFW of any subsequent changes in the land manager within 30 days of the change. If CDFW will hold fee title to the mitigation land, CDFW will also act as both the interim and long-term land manager unless otherwise specified. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of CDFW in its sole discretion.
- 9.5.5. Start-Up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by CDFW. Start-up activities include, at a minimum: (1) Preparation of restoration or enhancement plan as necessary; (2) preparing necessary CEQA documents and obtaining necessary permits, including take authorization under CESA; (3) preparing a final management plan for CDFW approval (see <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=137386&inline>); (4) implementing habitat restoration or enhancement, if applicable; (5) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (6) developing and transferring Geographic Information Systems (GIS) data if applicable; (7) initial site management including installing fencing and site improvements as necessary; (8) site maintenance; and (9) installing signage. Permittee shall provide for these start-up activities until the final management plan is approved and all restoration or enhancement actions are completed.
- 9.5.6. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. Permittee shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include site maintenance, site monitoring, and vegetation and invasive species management. Permittee shall provide funding for interim management of the HM lands by using revenues derived

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from the SWP charges to the SWP Contractors under long-term water supply contracts, and any subsequent agreements.

- 9.5.7. In-Perpetuity Management Funding. Permittee shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this ITP, the conservation easement, and the final management plan approved by CDFW. After obtaining CDFW approval of the HM lands, Permittee shall provide long-term management funding for the perpetual management of the HM lands. As shall be specified in written terms acceptable to CDFW for individual HM lands projects, Permittee shall provide long-term funding for the perpetual management of the HM lands by using revenues derived from the SWP charges to the SWP Contractors under long-term water supply contracts, and any subsequent agreements, to fund long-term management activities in perpetuity annually in the amount identified initially in a CDFW approved Property Analysis Record (PAR) or PAR-equivalent analysis (hereinafter "PAR") addressing the specific long-term management costs for individual HM lands sites. Actual annual funding shall be adjusted for inflation and may be adjusted to address actual costs of management over time, as approved by CDFW.

After the interim management period, Permittee shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, and the final management plan. Such activities shall be funded as described above or in the event a conservation or mitigation bank is used to meet HM land requirements the long-term manager will be responsible for funding in perpetuity management through the endowment for the bank.

If funding is no longer available from SWP charges to the SWP Contractors, Permittee shall annually fund in-perpetuity management activities through another funding source until Permittee has established and fully funded an endowment. If another funding source is required, it shall be established within six months of identifying that the previous funding source will no longer be available. If SWP charges to the SWP Contractors are no longer available as funding, Permittee shall establish a long-term management fund (Endowment). The Endowment is a sum of money, held in a CDFW-approved fund, that that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with this ITP, the conservation easement, and the management plan(s) required by Condition of Approval 9.5.5, and based on funding requirements established through the PAR(s) prepared for the HM lands pursuant to Condition of Approval 9.5.9. If the HM lands have been managed pursuant

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to a final management plan approved by CDFW for at least five years, the PAR and Endowment shall be based on the actual costs of managing the HM lands. Permittee shall fund the Endowment by contributing a minimum of ten percent of the amount required by the PAR (adjusted for present value) annually, commencing the fiscal year that SWP charges to the SWP Contractors are no longer an available funding source, to a mutually agreed upon account, until the Endowment is fully funded, after which time the activities under the management plan(s) will be funded from interest generated from the Endowment principal. Endowment as referred to in this ITP shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this ITP, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

- 9.5.8. Identify an Endowment Manager. In the event an Endowment is required (Condition of Approval 9.5.7), the Endowment shall be held by the Endowment Manager, which shall be either CDFW or another entity qualified pursuant to Government Code sections 65965-65968, as amended.

Permittee shall submit to CDFW a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

Within thirty days of CDFW's receipt of Permittee's written proposal, CDFW shall inform Permittee in writing if it determines the proposal does not satisfy the requirements of Fish and Game Code section 2081(b)(4) and, if so, shall provide Permittee with a written explanation of the reasons for its determination. If CDFW does not provide Permittee with a written determination within the 30-day period, the proposal shall be deemed consistent with Section 2081(b)(3).

- 9.5.9. Calculate the Endowment Funds Deposit. In the event that an Endowment is required (Condition of Approval 9.5.7), after obtaining CDFW written approval of the HM lands, or a subset of them, long-term management plan, and Endowment Manager, Permittee shall prepare PAR (equivalent to an endowment assessment) to calculate the amount of funding necessary to ensure the long-term management of the HM lands or identified subset (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. If at the time an

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Endowment becomes necessary, the HM lands have been managed pursuant to an approved final management plan for at least five years, Permittee shall use the actual costs of managing the HM lands to prepare the PAR. The Permittee shall submit to CDFW for review and approval the results of the PAR before transferring funds to the Endowment Manager.

9.5.9.1. Capitalization Rate and Fees. Permittee shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the PAR and adjust for any additional administrative, periodic, or annual fees.

9.5.9.2. Endowment Buffers/Assumptions. Permittee shall include in PAR assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment:

9.5.9.2.1. Ten Percent Contingency. A 10% contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

9.5.9.2.2. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

9.5.9.2.3. Non-Annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and CDFW.

9.5.10. Transfer Long-Term Endowment Funds. In the event that an Endowment is required (Condition of Approval 9.5.7), Permittee shall fund the Endowment Deposit Amount over a 10-year period, in annual amounts of 10% of the total Endowment Deposit Amount, adjusted for inflation, as approved by CDFW in writing.

9.5.11. Management of the Endowment. In the event that an Endowment is required (Condition of Approval 9.5.7), the approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of the Covered Species, but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this ITP, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

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No agreement governing the management and expenditure of the Endowment, if established, shall be executed prior to obtaining written approval of CDFW. Consistent with Probate Code sections 18503-18504, which allow the instrument creating an endowment to establish practices that differ from certain default provisions in those sections, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the Endowment without the prior written approval of CDFW in its sole discretion. Permittee shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

Consistent with Probate Code sections 18503-18504, which allow the instrument creating an endowment to establish practices that differ from certain default provisions in those sections, if CDFW determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the Mitigation Property, the Endowment Manager, shall process that expenditure in accordance with directions from CDFW. The Endowment Manager shall not be liable for any shortfall in the Endowment resulting from CDFW's decision to make such an expenditure.

9.6. Reimburse CDFW. Permittee shall reimburse CDFW for all reasonable expenses incurred by CDFW related to issuance and monitoring of this ITP, including, but not limited to transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW.

10. Security: The Permittee may proceed with Covered Activities based on the Security as described below. Permittee is a party to a long-term water supply contract with each of its 29 water supply customers, who are generally referred to as "SWP Contractors." SWP Contractors contract with Permittee to pay for the operation, maintenance, planning, and capital costs of the SWP. Under Water Code section 11651, "any agency which contracts to purchase from the department any water, use of water, water storage, electric power, or other service shall provide for the punctual payment to the department of all amounts which become due under the contract." In accordance with a statutory requirement, each water supply contract between Permittee and a SWP Contractor requires that if that SWP Contractor fails or is unable to raise sufficient funds by other means, the SWP Contractor must levy upon all taxable property in the SWP Contractor's service area a tax or assessment sufficient (with other available moneys) to provide for all payments under the water supply contract. If the SWP Contractor defaults in payment, Permittee may, and under certain conditions is required to, upon six months' notice, suspend water deliveries during the period of default.

Permittee will treat the costs of ITP implementation as components of the Project and address such costs to fulfill those requirements as part of overall Project costs. Costs, such as routine

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operation, maintenance, and power (e.g., monitoring of mitigation sites) are not financed, but are instead paid in monthly installments in the calendar year, incurred based upon estimates developed by Permittee and delivered to the SWP Contractors in July of the preceding year.

Permittee shall assure performance as follows:

- 10.1. Security Amount.** Estimated costs to implement acquisition, protection, restoration and perpetual management of the HM lands as shown in Table 6 of this ITP and Conditions of Approval 9.1.1, 9.1.2, 9.2.1, and 9.1.3.3 total \$446,529,000. Total costs for mitigation associated with Conditions of Approval 9.2.2, 9.2.3 and 9.3 are \$30,800,000.

Total costs to maintain the required long-term monitoring described in Section 3.10 of the Project Description are \$120,000,000. Estimated costs throughout the term of this ITP to implement studies and monitoring required in Conditions of Approval 6 through 9 and to support the Adaptive Management Program required by this ITP (Attachment 4) are estimated to total \$13,750,000 per year.

10.2. Security Form.

- 10.2.1. Mitigation Implementation and Monitoring.** Payment of the costs of mitigation projects, is assured by Permittee's long-term water supply contracts and applicable state law. All costs of the Project, including the costs of mitigation and monitoring activities required by this ITP shall be paid by Permittee and charged to SWP Contractors.

Permittee shall prepare and submit to CDFW within one year of the effective date of this ITP an initial CESA mitigation funding strategy for review and approval. The strategy shall include detailed cost estimates regarding, as applicable: (1) purchase of mitigation or conservation bank credits; (2) HM lands acquisition and start-up costs and interim management period costs; (3) restoration costs including design, environmental review, permitting, construction, and interim management period costs; and (4) long-term management costs for all HM lands. The strategy shall include detailed funding and commitments for the duration of the ITP (2024 – 2034).

Permittee shall submit annual updates to the strategy to CDFW for review and approval. These updates shall include extension of the detailed funding strategy for five years post submission date, and shall include a description of expenditures to date for compliance with Conditions of Approval 9.1.1, 9.1.2, 9.1.4, 9.2.1, 9.2.2, and 9.3. To the degree that annual charges to SWP Contractors are relied upon, the funding strategy shall demonstrate that those funds have been or will be charged to SWP Contractors and received by Permittee consistent with SWP Contractor billing practices.

10.2.2. Monitoring, Science, and Adaptive Management Program. Permittee shall prepare and submit to CDFW within one year of the effective date of this ITP an initial Monitoring, Science, and Adaptive Management Program funding strategy for review and approval. Permittee shall develop a funding strategy that clearly identifies responsible parties and levels of annual and total program funding consistent with the funding amounts identified in Condition of Approval 10.1 for implementation of the Monitoring, Science, and Adaptive Management Program starting in 2024, and shall identify the anticipated costs associated with funding all additional monitoring and science requirements for the Conditions of Approval of this ITP, and funding sources that will be relied upon. The strategy shall include detailed funding and commitments for the duration of the ITP (2024 – 2034).

Permittee shall submit annual updates to the strategy to CDFW for review and approval. To the degree that annual charges to SWP Contractors are relied upon, the funding strategy shall demonstrate that those funds have been or will be charged to the SWP Contractors and received by Permittee consistent with SWP Contractor billing practices.

10.3. Demonstration of Performance. Permittee shall demonstrate to CDFW that Covered Species' requirements have been satisfied, as evidenced by:

- Within one year of the effective date of this ITP, submission of an initial CESA mitigation funding strategy for concurrence by CDFW;
- Within one year the effective date of this ITP submission of an initial Monitoring, Science, and Adaptive Management Program funding strategy for concurrence by CDFW; and
- Receipt by CDFW of documentation, acceptable to CDFW, demonstrating that Permittee will treat the mitigation obligations of this ITP as components of the Project and will fulfill those requirements as a part of the overall Project costs.

During the ITP term, Permittee shall demonstrate to CDFW that Covered Species' requirements have been satisfied on an ongoing basis, as evidenced by:

- Written documentation of the acquisition of HM lands as required in Condition of Approval 9;
- Copies of all executed and recorded conservation easements for HM lands acquired;
- Final CDFW approved management plans for all HM lands;
- Documentation of completion of habitat restoration or enhancement to mitigate adverse effects to Covered Species from Covered Activities;
- Written confirmation from the approved Endowment Manager of its receipt of the full Endowment if required;

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- Execution of funding agreements documenting funding of CDFW staff positions or Covered Species restoration actions as required by Conditions of Approval of this ITP.
- Timely submission of all required reports.

CDFW may require the Permittee to provide additional HM lands and/or additional funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if Permittee does not complete these requirements within the specified timeframe.

IX. Amendment:

This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if CDFW determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

X. Stop-Work Order:

If CDFW determines the Permittee has violated any term or condition of this ITP or has engaged in unlawful take, CDFW may issue Permittee a written stop-work order instructing the Permittee to suspend any Covered Activity for an initial period of up to 30 days or risk suspension or revocation of this ITP. CDFW can issue a stop-work order to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species, regardless of whether that species is a Covered Species under this ITP. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 30 additional days.

If Permittee fails to remedy the violation or to comply with a stop-work order, CDFW may proceed with suspension and revocation of this ITP. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and any other applicable law. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

XI. Compliance with Other Laws:

This ITP sets forth CDFW's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local law.

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XII. Notices:

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by email or registered first class mail at the following address, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP No. 2081-2023-054-00 in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Brooke Jacobs, Water Branch Chief
California Department of Fish and Wildlife
Post Office Box 944209
Sacramento, CA 94244-2090
Telephone (916) 903-6426
Brooke.Jacobs@wildlife.ca.gov

and a copy to:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
Attention: CESA Permitting Program
Post Office Box 944209
Sacramento, CA 94244-2090
CESA@wildlife.ca.gov

Unless Permittee is notified otherwise, CDFW's Department Representative for purposes of addressing issues that arise during implementation of this ITP is:

Brooke Jacobs
Post Office Box 944209
Sacramento, CA 94244-2090
Telephone (916) 903-6426
Brooke.Jacobs@wildlife.ca.gov

XIII. Compliance with the California Environmental Quality Act:

CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, DWR. (see generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in the Environmental Impact Report for the Long-term Operation of the State Water Project, (SCH No.: 2023060467) dated October 2024 that DWR certified for the Project on October 28, 2024. At the time the lead agency certified the EIR and approved the Project it also

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adopted various avoidance measures and Project components for the Covered Species as conditions of Project approval.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's EIR for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). CDFW finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

XIV. Findings Pursuant to CESA:

CESA and CDFW's related implementing regulations require CDFW to prepare and adopt specific findings under CESA prior to and in connection with the issuance of this ITP. (See, e.g. Fish & G. Code § 2081, subds. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds. (a)-(b), 783.5, subd. (c)(2).) CDFW's CESA findings for this ITP and the related CDW Effects Analyses, as specifically incorporated by reference into this ITP, are set forth in separate documents as adopted by CDFW.

Attachments:

FIGURE 1	Map of Project (November 2024)
ATTACHMENT 1	List of Acronyms and Terms (November 2024)
ATTACHMENT 2	Winter-run Chinook Salmon Juvenile Production Estimates (November 2023)
ATTACHMENT 3	Mitigation Monitoring and Reporting Program (September 2025)
ATTACHMENT 4	Adaptive Management Program (September 2025)
ATTACHMENT 5	CDFW Smelt Effects Analysis (CDFW, November 2024)
ATTACHMENT 6	CDFW Salmon Effects Analysis (CDFW, November 2024)
ATTACHMENT 7	CDFW White Sturgeon Effects Analysis (CDFW, November 2024)
ATTACHMENT 8	Definition of Loss Equation (CDFW 2018)
ATTACHMENT 9	Amendments (September 2025)

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**AMMENDMENT No. 1 ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON
September 29, 2025.**

DocuSigned by:

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Joshua Grover, Deputy Director
Ecosystem Conservation Division
California Department of Fish and Wildlife

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