



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

August 11, 2020

Scot A. Moody
General Manager
Stockton East Water District
6767 East Main St
Stockton, California 95215
(209) 948-0333

Re: Issuance of Section 10(a)(1)(B) Incidental Take Permit 23264

This Incidental Take Permit 23264, is issued to Stockton East Water District (District) under the authority of Section 10(a)(1)(B) of the Endangered Species Act. The permit authorizes the District to take threatened Central Valley (CV) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS); threatened CV spring-run Chinook salmon (*O. tshawytscha*) Evolutionarily Significant Unit (ESU); endangered Sacramento River winter-run Chinook salmon ESU and; non-ESA listed CV fall/late fall-run Chinook salmon ESU, while conducting the covered activities as described in the Calaveras River Habitat Conservation Plan.

NOAA's National Marine Fisheries Service (NMFS) requires that the individuals acting under the authority of Permit 23264 review the permit before engaging in the permitted activities. Please sign and date the last page and: (1) e-mail a PDF file of the signature page to Monica.Gutierrez@noaa.gov. Please note that you are not authorized to conduct activities under Permit 23264 until our office receives a signed copy of the signature page.

We direct your attention to Section 3, which describes the permit conditions and yearly take limits. Permit 23264 authorizes take at the levels, by the means, in the areas, and for the purposes stated in the permit application. The permit is also subject to annual authorization based on your reported annual take and compliance with the permit conditions. Annual reports are due by December 31 of each year or within 90 days after construction has been completed. NMFS shall be notified within 24 hours if the ecological surrogate or individual species take threshold is exceeded. The District shall continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting annual meetings and issuing annual reports throughout the implementation of the Habitat Conservation Plan.

If you have any questions concerning this permit, please contact Monica Gutierrez via email at Monica.Gutierrez@noaa.gov or call 916-930-3657.

Sincerely,

for
Barry A. Thom
Regional Administrator

Enclosure

Cc: To the File: ECO No.: WCRO-2020-00798 and ARN: 151422-WCR2020-SA00016



PERMIT TO INCIDENTALLY TAKE ENDANGERED/THREATENED SPECIES

Permittee: Stockton East Water District (SEWD)
6767 East Main St
Stockton, California 95215
(209) 948-0333

Permit Area: The Calaveras Habitat Conservation Plan (CHCP) plan area generally encompasses the lower Calaveras River and its adjacent riparian zone between New Hogan Dam and the confluence with the San Joaquin River, as well as New Hogan Reservoir. Figure 1 depicts the area of the lower Calaveras River watershed within the CHCP plan area.

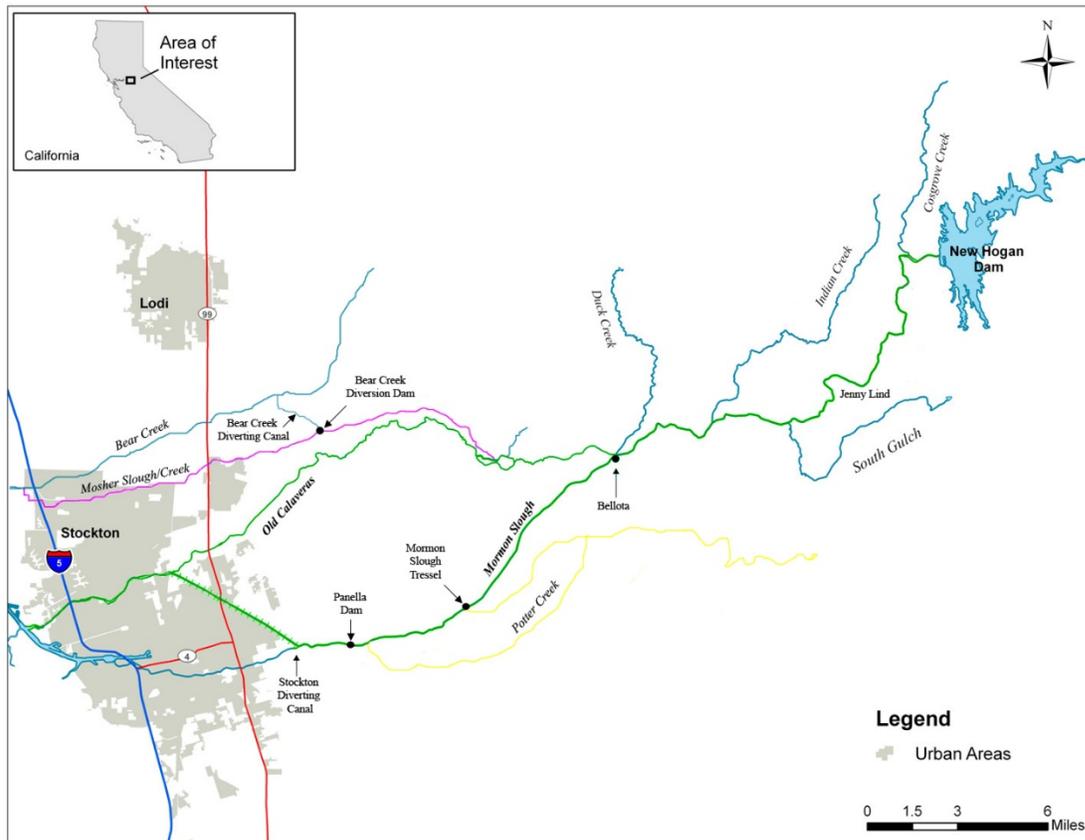


Figure 1. CHCP area.

I. AUTHORIZATION

Stockton East Water District (District or SEWD), is hereby authorized to incidentally take the endangered and threatened species specified below for 50 years, while conducting the covered activities (Table 1) as described in the Calaveras River Habitat Conservation Plan, located on the Calaveras River, in San Joaquin and Calaveras counties; in the manner specified in the Permit Holder's August 13, 2019 application and supporting documents and communications, subject to the provisions of Section 10(a)1(B) of the Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531-1543), the National Marine Fisheries Service (NMFS) regulations governing listed species permits (50 CFR Parts 222 and 223), and the conditions hereinafter set forth.

Table 1. Covered activities necessary to operate and maintain (OM) Project facilities during the Incidental Take Permit duration, categorized by activity type.

Activity	New Hogan Impoundment	New Hogan Controlled Releases	Water Withdrawal – Diversions	Activities within stream channel
OM1. New Hogan Reservoir Water Impoundment and Non-Flood Control Operations	SEWD controls volume during non-flood control season	New Hogan releases serve M&I & agricultural customers through OM2, and OM3-OM5 and provide groundwater recharge through OM3; typ. releases range Apr-Oct: 75-250cfs & Oct-May: 20-86 cfs – non-flood control reasons.		
OM2. SEWD Old Calaveras River Headworks Facility Operations		See OM1	Diversion controlled by slide gates: closed to prevent flooding; opened to provide water for agricultural customers and during periods when natural flows are available for groundwater recharge (Nov-Jun)	
OM3. SEWD Bellota Diversion Facility Operations		See OM1. Reduced several days annually, as required for flashboard dam installation/ removal.	Diversion year-round to provide water for M&I water treatment plant and to augment irrigation supply for agricultural customers and for groundwater recharge	Install & remove 8' & 2' weirs/ fish ladders - start & finish of irrigation season
OM4. Artificial Instream Structures and SEWD Small Instream Dam Operations		See OM1	Water diverted into channels (MRS/SDC, Old Calaveras River, Mosher Creek, Bear Creek, and Potter Creek) impounded by small dams and used by agricultural customers	Install and remove flashboard dams - start & finish of irrigation season
OM5. Privately Owned Diversion Facilities Operated within the District's Service Areas		See OM1	Water diverted by agricultural customers primarily downstream of Jenny Lind	
OM6. SEWD Channel Maintenance		Reduced up to 5 days annually, as required for maintenance activities concurrent with flashboard dam installation mid-April	Dewatering during rebuilding of earthen dams	Maintenance (debris removal, vegetation erosion control, control, repair of previous erosion work, riprap placement using heavy equipment)
OM7. Fisheries Monitoring Program				Check and clear all traps of fish and debris daily

Authorization of the above covered activities (Table 1) are contingent on the implementation of the conservation strategies (CS) (Table 2) which support the biological goals of the CHCP. The biological objectives addressed in Table 2 identify the various conservation measures needed to achieve the biological goals. Each one includes metrics, referred to as targets, to track progress toward achieving the particular objective and goals.

Table 2. Summary of effects addressed for each covered activity, biological objectives and targets, conservation strategies, and monitoring for California Central Valley steelhead and fall-run Chinook salmon related to each covered activity.

** Asterisk indicates non-core monitoring that may be conducted if deemed necessary through the AMP process.*

Activity	Effects Addressed	Biological Objectives	Target	Conservation Strategy	Monitoring and Compliance	Monitoring and Effectiveness
OM1. New Hogan Reservoir Water Impoundment and Non-Flood Control Operations	Flow-related spawning, incubation, and rearing habitat	Flow	F1. Guaranteed minimum flow (20 cfs) maintained at Shelton Road	CS1. Minimum Instream Flow Commitment	CM1. Maintain daily flow and operation records in an operations database	EM1. Environmental conditions monitoring EM2. Adult salmonid monitoring EM3. Juvenile salmonid monitoring EM12.* Alternative fisheries monitoring
	Flow-related migration opportunities	Flow	F2. Under high storage conditions (storage >152,000 AF on October 15), manage fall water storage to optimize migration opportunities into/out of the 18-mile spawning and rearing reach between Bellota and New Hogan Dam	CS2. Non-Dedicated Fall Storage Management Strategy	CM1	EM1, EM2, EM3, EM12*
OM2. SEWD Old Calaveras River Headworks Facility Operations	Flow-related spawning, incubation, and rearing habitat and migration opportunities	Flow	F3. During flood control season periods not covered by F2 and CS2, coordinate flood control releases with USACE to optimize salmonid migration opportunities into/out of the 18-mile spawning and rearing reach between Bellota and New Hogan Dam	CS3. Flood Control Release Coordination with, and Advisory Support to, the U.S. Army Corps of Engineers (USACE)	CM1	EM1, EM2, EM3, EM12*
	Flow-related spawning, incubation, and rearing habitat and migration opportunities	Flow	F4. Promote water conservation in the basin to help reduce the potential for water storage levels to fall to critical levels	CS4. Agriculture and Municipal Conservation Programs	CM2. Document implementation of Agriculture and Municipal Conservation Programs	NA

Activity	Effects Addressed	Biological Objectives	Target	Conservation Strategy	Monitoring and Compliance	Monitoring and Effectiveness
	Migration delays and blockage, and entrainment	Fish Passage and Avoid Entrainment	FP1 and AE1. Avoid migration delays and blockage, and entrainment within the Old Calaveras River Channel by constructing a non-entraining barrier at the Old Calaveras River Headworks Facility and at the downstream end of the channel near the confluence with the SDC within the first ten years of the ITP	CS5. Old Calaveras Headworks Facility Improvement	CM3. Document completion of the Old Calaveras Headworks Facility Improvement Project	EM4. Fish evaluation and salmonid relocation during fall flashboard dam removal operations EM12*
	Entrainment	Avoid Entrainment	AE2. Prior to a permanent solution (AE1), operate a temporary barrier to prevent downstream entrainment into the Old Calaveras River	CS6. Temporary Fish Barrier at Old Calaveras Headworks Facility	CM1	EM4, EM12*
OM3. SEWD Bellota Diversion Facility Operations	Migration delays and blockage, and Entrainment	Fish Passage and Avoid Entrainment	FP2/AE3. Construct and implement a combined crest gate/fishway/fish screen at the Bellota Diversion Facility to improve passage into/out of the 18-mile spawning and rearing reach between Bellota and New Hogan Dam and to prevent entrainment; target completion within first five years, but no later than 10 years of the ITP	CS7. Bellota Diversion Facility Improvement	CM4. Document completion of Bellota Diversion Facility Improvement Project	EM1, EM2, EM12*
	Migration delays and blockage	Fish Passage	FP3. Prior to a permanent solution (FP2), operate temporary fish ladders (typically November 1-March 31) to improve passage into/out of the 18-mile spawning and rearing reach between Bellota and New Hogan Dam at low flows	CS8. Temporary Fish Ladders at Bellota Diversion Facility	CM1	EM1, EM5. Monitor pool downstream of Bellota for salmonids during interim fish ladder operations
	Entrainment	Avoid Entrainment	AE4. Prior to a permanent solution (AE3), operate temporary fish screens at the Bellota Diversion Facility to reduce entrainment	CS9. Temporary Fish Screens at Bellota Diversion Facility	CM1	EM6. Fish screen effectiveness monitoring. EM12*

Activity	Effects Addressed	Biological Objectives	Target	Conservation Strategy	Monitoring and Compliance	Monitoring and Effectiveness
OM4. Artificial Instream Structures and SEWD Small Instream Dam Operations	Migration delays and blockage	Fish Passage	FP4. Implement improvements at artificial instream structures in Mormon Slough/SDC that block or impede fish passage (DWR 2007a) in order to increase passage opportunities into/out of the 18-mile spawning and rearing reach between Bellota and New Hogan Dam; at minimum, Tier 1 structures in Mormon Slough/SDC owned and operated by Stockton East Water District (i.e., 5) will be improved	CS10. Artificial Instream Structural Improvements	CM1, CM5. Document schedules and implementation status for artificial instream structure improvement projects and flow sensors	EM1, EM2, EM7. Structural improvement monitoring EM8. Stakeholder education efforts EM12*
	Stranding	Fish Passage	FP5. Reduce potential stranding conditions during end-of-irrigation-season flashboard dam removal by sequential removal of dams in a downstream direction	CS11. Fall Flashboard Dam Removal Operations	CM6. Document annual fall flashboard dam removal operations and any associated salmonid relocation	EM4, EM12*
	Migration delays and blockage	Fish Passage	FP6. Improve juvenile downstream migration during the irrigation season by installing passage notches into otherwise impassable flashboard dams	CS12. Flashboard Dam Notches	CM7. Document annual installation of flashboard dam notches	EM9. Fyke net evaluation of flashboard dam notches EM12*
	Migration opportunities	Fish Passage	FP7. Improve identification of fish passage opportunities and increase water use efficiency through use of flow sensors at 10 potential flashboard dam locations	CS13. Supervisory Control and Flow Data Acquisition System	CM1	EM1, EM7, EM12*
OM5. Privately Owned Diversion Facilities Operated within the District's Service Areas	Entrainment	Avoid Entrainment	AE5. Through the AMP process, prioritize diversion structures within the first two years of ITP and help implement fish screens at privately owned diversions until priority list is exhausted, thereby preventing entrainment of salmonids into priority unscreened diversions	CS14. Fish Screens for Privately Owned Diversions	CM8. Document prioritization of fish screens for privately owned diversions	EM8, EM12*
	Entrainment	Avoid Entrainment	AE6. Educate stakeholders (workshop within first six months of ITP issuance; annual newsletters; regular website updates) regarding potential fish impacts from irrigation practices	CS15. Stakeholder Education Program	CM9. Document Stakeholder Education Program activities	EM8, EM12*

Activity	Effects Addressed	Biological Objectives	Target	Conservation Strategy	Monitoring and Compliance	Monitoring and Effectiveness
OM6. SEWD Channel Maintenance for Instream Structures	Direct equipment-related injury and mortality; Water quality (turbidity)	Avoid Direct Injury and Mortality; and Water Quality	AD1/WQ1. Avoid or minimize potential mortalities or injuries associated with heavy equipment and turbidity-related impacts through implementation of approved Instream Structure Maintenance BMPs	CS16. Instream Structures Maintenance Timing and Actions	CM10. Document SEWD Instream Structures maintenance	EM10. SEWD Instream Structures maintenance operations water quality monitoring and/or visual assessment
OM7. Fisheries Monitoring Program	Direct handling-related injury and mortality	Avoid Direct Injury and Mortality	AD2. Adhere to approved handling protocols to minimize handling stress and reduce injuries and mortality	CS17. Fish Handling Protocols	CM11. Document take associated with fisheries monitoring	EM11. Fisheries Monitoring take assessment

II. ABSTRACT

The District is applying to the NMFS for an incidental take permit (ITP) under the Endangered Species Act (ESA) Section 10(a)(1)(B) for a 50-year period authorizing the incidental take of the following listed and non-ESA listed species (hereinafter referred to collectively as “Covered Species”):

- threatened Central Valley (CV) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS);
- threatened CV spring-run Chinook salmon (*O. tshawytscha*) Evolutionarily Significant Unit (ESU);
- endangered Sacramento River winter-run Chinook salmon ESU and;
- non-ESA listed CV fall/late fall-run Chinook salmon ESU.

The fall/late fall-run Chinook ESU does not currently have any protective regulations against take and no Federal permit is needed to incidentally take them, but there may be a change in listing status during the permit period. The District submitted their application to NMFS on August 13, 2019. NMFS considered the application complete and on September 30, 2019, and published a notice of availability (NOA) and request for comments on the Calaveras Habitat Conservation Plan and Environmental Assessment (*Federal Register* 84 FR 51518).

III. PERMIT TERMS AND CONDITIONS

A. Incidental Take Authorization

a) Incidental Take Associated with Flow Management, Passage Barriers, and Entrainment

NMFS determined that incidental take is reasonably certain to occur as follows: take, in the form of harm or death as a result of flow management, passage barriers, and entrainment. Uncertainties associated with the amount or extent of incidental take include:

- (1) annual variations in abundance and migration timing of adult and juvenile salmon and steelhead; and individual habitat use in areas where impacts may occur;
- (2) proportion of migration delay or blockage that can be attributed to factors outside the SEWD’s control, including passage problems associated with privately owned diversion facilities, or due to flood control operations; and
- (3) amount of natural migration delay or blockage that would occur under a natural hydrologic regime (i.e., from precipitation events).

Flows and Passage Barriers

Surveys conducted from 2001 to 2012 indicate the potential number of adult and juvenile salmonids delayed or stranded downstream of Bellota due to flow fluctuations in the fall, winter, and spring. Between 2001 and 2012, the FFC conducted periodic passage surveys

and observed some juvenile and adult salmonids within Mormon Slough and the Old Calaveras River. In addition, the FFC operated fyke nets in the Old Calaveras and Mormon Slough during the first three weeks of May 2003 and in Mormon Slough during February 2007, and conducted one electrofishing survey with CDFW downstream of Bellota in early July during 2003. For passage surveys, the location and timing of adult observations indicates that adults may be falsely attracted into the river by localized runoff from storm drains in the lower Mormon Slough/SDC area. Storm runoff can occur in this lower area even when there are no corresponding freshets and/or flood control releases in the river upstream of the point of discharge. This localized runoff likely occurs due to short rain events near Stockton where impervious surfaces concentrate precipitation into storm drains emptying into the lower channel. With no natural flow connection from the upper river, migration is blocked.

Using these survey results, incidental take was estimated assuming that *O. mykiss* juveniles observed in fall/winter were Age 1+ and in spring were fry. The extent of incidental take was identified as the maximum number of individuals observed in a given year during the course of these surveys. Therefore, up to approximately 81 Age 1+, 137 YOY, and 21 adult *O. mykiss*; and 210 juvenile and 464 adult fall-run Chinook could be incidentally taken through non-flood control operations by SEWD.

Entrainment into the Old Calaveras River Channel

No direct entrainment studies have been conducted at the Old Calaveras Headworks Facilities; therefore, information regarding the potential number of fry-sized salmonids that may encounter the facility and their migration timing has been derived from Shelton Road RST data. Since 2002, *O. mykiss* YOY have annually been observed moving past Shelton Road primarily in April and May. Fall-run Chinook juveniles have only been observed in eight of 14 years since 2002 with very few in four years (i.e., one in 2008, six in 2002, 11 in 2014, and 21 in 2015) and between 449 and 5,943 in the remaining four years; in these latter four years, most juveniles were observed migrating between February and June. It is unknown whether some or all the fry-sized fish observed at Shelton Road actively migrate downstream towards the ocean or estuary and would be exposed to the Headworks Facility, or whether they just redistribute to additional rearing areas upstream of Bellota.

Based on these assumptions, it is estimated that up to 25% of juveniles reaching the vicinity of Bellota will migrate within the zone of potential influence of the Headworks Facility since it is located off-channel. Juveniles estimated to migrate within the zone of potential influence are estimated to be entrained at a rate directly proportional to the percent of flow diverted through the Headworks Facility. Therefore, up to approximately 218 YOY *O. mykiss* and 1,217 fall-run Chinook fry could encounter the Headworks Facility annually and potentially be entrained into the Old Calaveras River.

At the mouth of the Old Calaveras River channel, although all salmonids greater than 60 mm (i.e., juvenile fall-run Chinook migrating April-July and Age 1+ *O. mykiss*) should be prevented from entering the Old Calaveras River by the barrier net, some may pass through if the net is damaged or pushed out of position by debris or other factors. For this reason, incidental take estimates for salmonids greater than 60 mm were calculated by the method

described above for YOY as though the net barrier was not in place. Therefore, up to 169 Age 1+ *O. mykiss* and up to 1,220 fall-run Chinook parr/smolt could encounter the Headworks Facility annually and likely entrained into the Old Calaveras River. The total estimated number of *O. mykiss* juveniles is 387 (218 YOY + 169 Age +) and fall-run Chinook juveniles is 2,437 (1,217 fry + 1,220 parr/smolt).

Entrainment and Passage at Bellota Diversion Facilities

Since early 2006, temporary fish screens at the Bellota Diversion Facility have prevented parr/smolts (≥ 60 mm according to NMFS screening criteria) from being entrained. However, until a permanent screen is installed, entrainment of fry-sized *O. mykiss* or salmon may occur at the Bellota Diversion Facility whenever the facility is operating and these fish are near the diversion. No entrainment studies have been conducted at the facility; therefore, information regarding the potential number of fish that may encounter the facility and their migration timing has been derived from Shelton Road RST data as described for the Headworks Facility.

It is estimated that up to 25% of fry reaching the vicinity of Bellota will migrate within the zone of potential influence of the Bellota Diversion. Juveniles estimated to migrate within the zone of potential influence are estimated to be entrained at a rate directly proportional to the percent of flow diverted through the screens of the Bellota Diversion. Therefore, up to approximately 251 YOY *O. mykiss* and 3,650 Chinook juveniles < 60 mm could encounter the Bellota Diversion Facility and potentially be entrained into the Bellota Intake in most years. The majority of incidental take for the juvenile lifestages of the Covered Species is estimated to be from entrainment through the Headworks Facility and/or the Bellota Diversion Facilities. After implementation of the proposed conservation strategies to eliminate entrainment through these facilities, the estimated take is anticipated to be reduced to zero.

In critical water years, flashboard dams without passage notches may be installed as early as February and concurrently downstream passage past Bellota would be prevented to reduce potential impacts to juveniles greater than 60 mm (i.e., juvenile Chinook migrating April-July and Age 1+ *O. mykiss* February-July), resulting in increased exposure of YOY *O. mykiss* and Chinook juvenile migrants to the Bellota Diversion Facility. Under this critical water year scenario, up to approximately 502 YOY *O. mykiss* and 7,300 Chinook juveniles < 60 mm could encounter the Bellota Diversion Facility and likely entrained.

Spring-run, Winter-run, and Late Fall-run Chinook salmon

The presence of adult and juvenile spring-run, winter-run, and late fall-run Chinook salmon within the action area is estimated to be low to none. Therefore, up to one adult and four juvenile winter-run Chinook salmon, and four adult and 16 juveniles could be incidentally taken for spring-run and late-fall run per water year from flows, passage barriers, and entrainment effects under the proposed action. Any updates to the monitoring activities would be coordinated through the adaptive management process.

Table 3. Summary of incidental take for the Covered Species from flow management, passage barriers, and entrainment under the proposed action per year, except as noted by an asterisk where take for entrainment will end after implementation of conservation strategies.

Covered Species	Lifestage	Total Incidental Take in All Other Water Year Types	Total Incidental Take in Critical Water Year Types
CCV Steelhead	Adult	21	21
CCV Steelhead	Age 1+	250*	250*
CCV Steelhead	Juvenile (YOY)	606*	1,212*
Spring-run Chinook	Adult	4	4
Spring-run Chinook	Juvenile	16*	16*
Winter-run Chinook	Adult	1	1
Winter-run Chinook	Juvenile	4*	4*
Fall-run Chinook	Adult	464	464
Fall-run Chinook	Juvenile	6,297*	12,594*
Late Fall-run Chinook	Adult	4	4
Late Fall-run Chinook	Juvenile	16*	16*

*The majority of incidental take for these lifestages is estimated to be from entrainment through the Headworks Facility and/or the Bellota Diversion Facilities. After implementation of the proposed conservation strategies to eliminate entrainment through these facilities, which will be by year 10 of the ITP, the estimated take is anticipated to be reduced to zero.

b) Incidental Take Associated with Maintenance and Construction Activities

NMFS cannot, using the best available information, quantify and track the amount or number of individuals that are expected to be incidentally taken per species because of the variability and uncertainty associated with the population sizes of the species, annual variation in the timing of migration, and variability regarding individual habitat use of the action area. However, it is possible to express the extent of incidental take in terms of ecological surrogates for those elements of the proposed action that are expected to result in incidental take.

These ecological surrogates are measurable, and can be used to monitor the ecological surrogates to determine whether the level of anticipated incidental take described in this incidental take statement is exceeded.

In summary, the best available ecological surrogates for the amount and extent of incidental take for the proposed action is as follows:

Pile Driving – The ecological surrogate to describe the extent of incidental take in the form of harm associated with piling driving, is 150dB RMS behavioral threshold exceeded no more than 2,154 meters from the pile, 187 dB cumulative SEL threshold exceeded no more than 1597 meters from the pile, and peak 206 dB threshold exceeded no more than 18 meters from the pile.

All fish passing through or otherwise present during construction activities will be exposed to construction noise. Only the level of acoustic noise generated during the construction phases can be accurately and consistently measured, thus providing a quantifiable metric for determining incidental take of Covered Species. Therefore, the measurement of acoustic noise generated during the construction phase will serve as physically measurable surrogates for the incidental take of the Covered Species.

Incidental take in the form of harm is expected to result in fish displacement, behavior modification, stress, injury, and death. Elevated noise disturbance is also expected to elevate fish stress levels even when no observable behavior changes are made, and are expected to decrease individual's overall fitness and survival through compounding sub-lethal effects.

Vibratory pile driving is expected to produce underwater pressure levels over 150 dBRMS out to 2,154 meters from the location of the pile driving sites. Though underwater sound levels are not expected to injure or kill fish directly, since the sounds will be above the effective quiet threshold, they are expected to cause disruption of normal habitat utilization, stress, and elicit temporary behavioral effects in any Covered Species that are present. Any behavioral alterations in juvenile fish are expected to decrease their fitness and ultimate survival by decreasing feeding opportunities, which will decrease their growth and by causing area avoidance that will delay their downstream migration and increase their predation risk. Beyond 2,154 meters, underwater sound is expected to attenuate down to effective quiet underwater sound levels, or 150 dB RMS or less, and therefore 2,154 meters from the pile being driven is considered the limit of this ecological surrogate. The behavioral surrogate will be limited in general to 2,154 meters from the boundary of the construction footprint and any cofferdam placement, and exceeding 150 dB RMS beyond 2,154 meters from the construction site boundary will be considered exceeding expected incidental take levels for this surrogate.

Impact pile driving is also expected to produce underwater pressure waves that are expected to injure or kill any Covered Species within 18 meters of the pile being driven. The largest size of pile is estimated to produce a maximum of 210 dB peak sound. Risk to fishes will be present as long as impact pile driving is occurring. Beyond 18 meters, cumulative SELs are expected to injure fish that remain in the area during in-water pile driving activities. Injuries to fish are expected to occur out to 1,597 meters from the driven pile. Beyond these distance thresholds, underwater pressure waves are expected to decrease below lethal and sub-lethal levels.

Construction-related turbidity – The ecological surrogate for incidental take in the form of harm is measurements of turbidity increases (in NTU) less than 50 NTUs higher than NTU background levels measured upstream of the project, within 1000-feet.

Incidental take in the form of harm is expected to result in fish disturbance and sub-lethal effects associated with elevated in-river turbidity plumes is an increase in downstream in-river turbidity generated by construction and maintenance activities. Additionally, harm will result through elevated stress levels and disruption of normal habitat use. These

temporary responses are linked to decreased growth, survivorship, and overall reduced fitness as described for underwater noise avoidance.

The ecological take surrogate for turbidity is based on salmonids sensitivity to raised turbidity levels. Fifty NTUs is above the range at which salmonids experience reduced growth rates, but below the range salmonids would only be expected to actively avoid the area. Therefore, the ecological surrogate for turbidity increase no more than 50 NTUs higher than NTU background levels measured upstream of the construction or maintenance site. Turbidity would be measured immediately downstream of the boundary established for the construction or maintenance site. Within the already established 1000-foot disturbance surrogate, turbidity should be no more than 50 NTUs above the turbidity measurements in upstream measurements. Since in-river values can change daily, the upstream and downstream turbidity measurements must be taken daily in order to compare them. Exceeding 50 NTUs within 1000 feet will be considered as exceeding the expected incidental take levels.

Capture of juvenile fish during in-water work area isolation - NMFS expects that during dewatering activities of a cofferdam, there is a possibility that fish can become entrained behind the cofferdam and fish handling and relocation would be required. Dewatering of this enclosed area is expected to result in take in the form of harm, injury or death to stranded fish, as well as to handling of captured and relocated fish. Because of the variability and uncertainty associated with the population sizes of the species, annual variation in the timing of migration, and variability regarding individual habitat use of the action area, the actual number of individuals that are expected to be incidentally taken per species is not known, though expected to be low during construction of the cofferdam. However, it is possible to estimate the extent of incidental take in terms of an ecological surrogate, based on the size of the cofferdam area and fixed wall. During fish capture/handling/relocation process, total immediate mortality is expected to be equal to or less than 3% of the total number of all relocated fishes. If this overall mortality level or size of the cofferdam is exceeded, the proposed action will be considered to have exceeded anticipated take levels.

c) Take Associated with Monitoring Activities

CCV Steelhead, Spring-run, and Fall-run Chinook salmon

Take will occur during trapping and handling, and incidental mortality is expected to be less than 5% of fish captured and released. Take estimates, which are summarized in Tables 4 - 7, are based on the most recent 4(d) permit (i.e., 2020) for anadromous fish monitoring in the Calaveras River, that were issued to SEWD's fishery biologist consultants, FISHBIO. Total estimated take for fall-run Chinook salmon is based on past RST studies and past spawning and redd surveys upstream of Bellota.

No intentional lethal take will occur, but incidental mortality may result from capture, handling, or marking fish. Based on previous experience capturing and photonicly marking juvenile fall-run Chinook salmon in the Stanislaus River and capturing juvenile *O. mykiss* in the Calaveras River, low incidental mortality is expected as a result of

capturing and marking fish (i.e., < 5%). PIT tagging is not expected to result in any additional incidental mortality since mortality rates reported by researchers that conduct PIT tag procedures are similar to experiences by SEWD fishery biologists with photonic marking and PIT tagging (i.e., less than 5%).

If incidental mortality does occur, SEWD's fishery biologist will contact NMFS and CDFW immediately and will coordinate with CDFW for turning carcass(es) over. Since sampling will not be conducted continuously (i.e., generally 3-5 days per week) and not all fish passing the trap during sampling will be captured, the number of fish potentially captured and tagged likely represents a small proportion of the actual population and varies annually.

Winter-run, and Late Fall-run Chinook salmon

The presence of adult and juvenile winter-run, and late fall-run Chinook salmon within the action area is estimated to be low to none. Estimates of take are based on information provided in the CHCP and in the 2020 4(d) permit (refer to Tables 4 – 7).

Table 4. Take for rotary screw trapping in the Calaveras River basin (trap located near Shelton Road at approximately river mile 28) under the Fisheries Monitoring Program for each year during the 50-year ITP.

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
1	California Central Valley steelhead	Natural	Adult	Male and Female	1	0	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tag, PIT; Tissue Sample Scale	
2	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	1	0	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tag, PIT; Tissue Sample Scale	
3	California Central Valley steelhead	Natural	Juvenile	Male and Female	425	9	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Dye Injection (tattoo, photonic)	Marked for Efficiency Trials
4	California Central Valley steelhead	Natural	Juvenile	Male and Female	1,520	30	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tag, PIT; Tissue Sample Scale	
5	California Central Valley steelhead	Natural	Juvenile	Male and Female	400	8	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	
6	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	40	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	

¹ Authorized Indirect Mortality is a part of the Authorized Take.

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
7	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	40	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	
8	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	6,000	600	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	
9	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	1,000	100	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Dye Injection (tattoo, photonic)	Marked for Efficiency Trials
10	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	40	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	
11	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Trap, Screw	Anesthetize; Tissue Sample Scale	

Table 5. Take for carcass surveys in the Calaveras River basin (in reaches between the Stockton Diverting Canal and New Hogan Dam within Mormon Slough only) under the Fisheries Monitoring Program for each year during the 50-year ITP.

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Take Action	Observe/Collect Method	Procedures
1	Central Valley spring-run Chinook salmon	Natural	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
2	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
3	California Central Valley steelhead	Natural	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
4	California Central Valley steelhead	Listed Hatchery Adipose Clip	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
5	Central Valley fall-run Chinook salmon	Natural	Spawned Adult/ Carcass	Male and Female	200	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
6	Central Valley fall-run Chinook salmon	Listed Hatchery Adipose Clip	Spawned Adult/ Carcass	Male and Female	200	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
7	Central Valley late fall-run Chinook salmon	Natural	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Take Action	Observe/Collect Method	Procedures
8	Central Valley late fall-run Chinook salmon	Listed Hatchery Adipose Clip	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
9	Sacramento River winter-run Chinook salmon	Natural	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	Tissue Sample Fin or Opercle; Tissue Sample Otolith; Tissue Sample Scale
10	Sacramento River winter-run Chinook salmon	Listed Hatchery Adipose Clip	Spawned Adult/ Carcass	Male and Female	20	Observe/ Sample Tissue Dead Animal	Fish or a stream survey (where fish information is collected)	..

Table 6. Take for observational methods in the Calaveras River Basin under the Fisheries Monitoring Program for each year during the 50-year ITP. The proposed monitoring would occur in the Calaveras River (HUC 18040004) at multiple locations between RM 42 (New Hogan Dam) and the confluence with the San Joaquin River.

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method
1	Central Valley spring-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Fish or a stream survey (where fish information is collected)
2	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Fish or a stream survey (where fish information is collected)
3	California Central Valley steelhead	Natural	Adult	Male and Female	5	0	Observe/ Harass	Fish or a stream survey (where fish information is collected)
4	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Fish or a stream survey (where fish information is collected)
5	Central Valley spring-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
6	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
7	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	20	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
8	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	20	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method
9	California Central Valley steelhead	Natural	Adult	Male and Female	10	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
10	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	10	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
11	California Central Valley steelhead	Natural	Juvenile	Male and Female	50	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
12	Central Valley spring-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys
13	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys
14	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	40	0	Observe/ Harass	Snorkel/ Dive surveys
15	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	40	0	Observe/ Harass	Snorkel/ Dive surveys
16	California Central Valley steelhead	Natural	Adult	Male and Female	300	0	Observe/ Harass	Snorkel/ Dive surveys
17	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	100	0	Observe/ Harass	Snorkel/ Dive surveys

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method
18	California Central Valley steelhead	Natural	Juvenile	Male and Female	2,500	0	Observe/ Harass	Snorkel/ Dive surveys
19	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	6,000	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
20	Central Valley fall-run Chinook salmon	Natural	Adult	Male and Female	200	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
21	Central Valley fall-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	200	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
22	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	6,000	0	Observe/ Harass	Snorkel/ Dive surveys
23	Central Valley fall-run Chinook salmon	Natural	Adult	Male and Female	200	0	Observe/ Harass	Snorkel/ Dive surveys
24	Central Valley fall-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	200	0	Observe/ Harass	Snorkel/ Dive surveys
25	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	50	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
26	Central Valley late fall-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
27	Central Valley late fall-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
28	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	50	0	Observe/ Harass	Snorkel/ Dive surveys
29	Central Valley late fall-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys

Row Number	Species	Production/ Origin	Lifestage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method
30	Central Valley late fall-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys
31	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
32	Sacramento River winter-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
33	Sacramento River winter-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Observations at weirs, fish ladders, dams where no trapping occurs
34	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Observe/ Harass	Snorkel/ Dive surveys
35	Sacramento River winter-run Chinook salmon	Natural	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys
36	Sacramento River winter-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	5	0	Observe/ Harass	Snorkel/ Dive surveys

Table 7. Take for other methods that may be utilized depending on data needs under the Fisheries Monitoring Program for each year during the 50-year ITP. The proposed monitoring methods would occur in the Calaveras River (HUC 18040004) at multiple locations between RM 42 (New Hogan Dam) and the confluence with the San Joaquin River. PIT tag antennas may be deployed at RM 25. Note: Electrofishing will not be conducted in spawning areas.

Row Number	Species	Production/Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/Collect Method	Procedures	Details
1	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
2	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
3	California Central Valley steelhead	Natural	Juvenile	Male and Female	500	10	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
4	Central Valley spring-run Chinook salmon	Natural	Adult	Male and Female	5	1	Capture/Handle/Release Fish	Seine, Beach		Seining: December-May; up to bi-weekly; June-November
5	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	3	1	Capture/Handle/Release Fish	Seine, Beach		Seining: December-May; up to bi-weekly; June-November

Row Number	Species	Production/ Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
6	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	40	1	Capture/ Handle/ Release Fish	Seine, Beach	Anesthetize	Seining: December-May; up to bi-weekly; June-November
7	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	40	1	Capture/ Handle/ Release Fish	Seine, Beach	Anesthetize	Seining: December-May; up to bi-weekly; June-November
8	California Central Valley steelhead	Natural	Adult	Male and Female	50	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Seine, Beach	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Seining: December-May; up to bi-weekly; June-November
9	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	10	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Seine, Beach	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Seining: December-May; up to bi-weekly; June-November
10	California Central Valley steelhead	Natural	Juvenile	Male and Female	500	10	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Seine, Beach	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Seining: December-May; up to bi-weekly; June-November

Row Number	Species	Production/ Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
11	Central Valley spring-run Chinook salmon	Natural	Adult	Male and Female	5	1	Capture/ Handle/ Release Fish	Hook and line/ angler/ rod and reel		
12	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	3	1	Capture/ Handle/ Release Fish	Hook and line/ angler/ rod and reel		
13	California Central Valley steelhead	Natural	Adult	Male and Female	50	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Hook and line/ angler/ rod and reel	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	
14	California Central Valley steelhead	Listed Hatchery Adipose Clip	Adult	Male and Female	10	1	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Hook and line/ angler/ rod and reel	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	
15	California Central Valley steelhead	Natural	Juvenile	Male and Female	500	10	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Hook and line/ angler/ rod and reel	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	

Row Number	Species	Production/ Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
16	Central Valley spring-run Chinook salmon	Natural	Juvenile	Male and Female	40	1	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize	
17	Central Valley spring-run Chinook salmon	Listed Hatchery Adipose Clip	Juvenile	Male and Female	40	1	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize	
18	California Central Valley steelhead	Natural	Adult	Male and Female	25	1	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	
19	California Central Valley steelhead	Natural	Juvenile	Male and Female	250	5	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	
20	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	500	10	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
21	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	500	10	Capture/ Handle/ Release Fish	Seine, Beach	Anesthetize	Seining: December-May; up to bi-weekly; June-November

Row Number	Species	Production/ Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/ Collect Method	Procedures	Details
22	Central Valley fall-run Chinook salmon	Natural	Juvenile	Male and Female	500	10	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	
23	Central Valley fall-run Chinook salmon	Natural	Adult	Male and Female	50	1	Capture/ Handle/ Release Fish	Hook and line/ angler/ rod and reel		
24	Central Valley fall-run Chinook salmon	Listed Hatchery Adipose Clip	Adult	Male and Female	50	1	Capture/ Handle/ Release Fish	Hook and line/ angler/ rod and reel		
25	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	50	10	Capture/ Mark, Tag, Sample Tissue/ Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
26	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	50	10	Capture/ Handle/ Release Fish	Seine, Beach	Anesthetize	Seining: December-May; up to bi-weekly; June-November
27	Central Valley late fall-run Chinook salmon	Natural	Juvenile	Male and Female	50	10	Capture/ Handle/ Release Fish	Net, Fyke	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	

Row Number	Species	Production/Origin	Life-stage	Sex	Authorized Take	Authorized Indirect Mortality ¹	Take Action	Observe/Collect Method	Procedures	Details
28	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Backpack Electrofishing: January-May; up to bi-weekly; June-October; up to monthly
29	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Capture/Handle/Release Fish	Seine, Beach	Anesthetize	Seining: December-May; up to bi-weekly; June-November
30	Sacramento River winter-run Chinook salmon	Natural	Juvenile	Male and Female	16	0	Capture/Handle/Release Fish	Net, Fyke	Anesthetize; Tissue Sample Fin or Opercle; Tissue Sample Scale	

B. Avoidance and Mitigation Measures

- a) Stockton East Water District shall implement all the conservation strategies, and associated compliance and effectiveness monitoring for each conservation strategy, as described in Chapter 7 of the Calaveras Habitat Conservation Plan, in coordination with NMFS.
- b) Stockton East Water District shall implement the Adaptive Management Strategy as described in the HCP to inform success of the conservation strategies at meeting the biological goals and objectives, in coordination with NMFS.
- c) Stockton East Water District shall coordinate with NMFS during all phases of fish passage and screen design development associated with the conservation strategies in the HCP, to ensure that conservation measures are incorporated and ecological benefits are maximized, to the extent practicable or feasible.
- d) A qualified biologist shall use a held-hand turbidity monitor to conduct water quality monitoring during all in-water activities to ensure the turbidity control measures are functioning as intended. If an in-river turbidity plume is created and conditions within the plume exceed take limits (50 NTUs above ambient) for Covered Species, Stockton East Water District, or its consultant, shall coordinate with NMFS within 24 hours after an event that exceeds the given water turbidity surrogate, to discuss ways to reduce turbidity back down to acceptable levels.
- e) During the in-water work window of July 15th – October 15th, (or to November 1st, dependent on the water year type, in coordination with NMFS), when water temperatures are below 75°F, the daily work schedule shall be limited to between one hour after sunrise to one hour before sunset, to avoid peak fish migration times and to allow for cumulative Sound Exposure Level (SEL) impacts to reset daily.
- f) When local water temperatures are below 75°F, the number of impact strikes per day shall be limited to 1,000 to reduce potential injuries to the Covered Species through cumulative SEL.
- g) Piles shall be driven into place using a vibratory hammer first, and effort shall be made to gradually build up to the maximum impact force, to give fish in the area opportunity to vacate under normal swimming effort and avoid injury or death. Impact pile driving shall only be utilized after vibratory hammering was initially applied, and greater force or load testing is required for the particular pile.
- h) When local water temperatures are below 75°F, attenuation measures shall be used during impact pile driving to control and dampen underwater pressure wave propagation. Effective attenuation measures include:
 - i. Pile driving within a dewatered cofferdam or caisson.
 - ii. Use of a bubble curtain.
 - iii. Use of a cushion block.

- i) Underwater sound monitoring shall be conducted during impact pile driving when water temperatures are below 75°F, to ensure incidental take limits are not exceeded according to the ecological surrogates assigned.
 - i. No more than 150 dB RMS beyond 2,154 meters from the boundary of the construction footprint/cofferdam placement.
 - ii. No more than 187 dB SEL cumulative beyond 1,597 meters from the construction site boundary per day.
 - iii. No more than 206 dB peak beyond an 18-meter radius from each pile driven with an impact hammer.
- j) During dewatering or fish rescue activities, a qualified fish biologist shall be present onsite to make observations, and capture/relocate fish if they become entrapped in the dewatered area.
- k) Only fish biologists trained in salmonid capture and relocation shall remove and relocate fish during dewatering activities.
- l) Best Management Practices shall be implemented to reduce or eliminate the potential for hazardous contaminants to enter the water or stream channel.
- m) Best Management Practices shall be implemented to minimize water quality impacts during operations and maintenance of the small instream diversions.
- n) Measures shall be taken to monitor instream flow requirement at Shelton Road are being met year-round.
- o) Stockton East Water District shall ensure that the planting of native vegetation will occur at a 3:1 ratio as described in any construction implementation plans. All plantings must be provided with the appropriate amount of water to ensure successful establishment.

C. Reporting and Monitoring

- a) NMFS shall be notified within 24 hours if the ecological take threshold is exceeded.
- b) Stockton East Water District shall notify and coordinate with NMFS if a work-window variance from CDFW is requested pursuant to the Routine Maintenance Agreement.
- c) A fish relocation plan will be submitted to NMFS for approval prior to commencing activities.
- d) Stockton East Water District shall provide a report of project activities to NMFS by December 31 of each year construction takes place or within 90 days after construction has been completed.
- e) The report shall include a summary description of in-water construction activities, incidental take avoidance and minimization measures taken, and any observed take incidents, including number and species captured and relocated during dewatering.

- f) Stockton East Water District shall continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting annual meetings and issuing annual reports throughout the construction period.

D. General Permit Conditions

- a) NMFS may suspend or revoke the permit that it issued for cause in accordance with applicable laws and regulations (See 5 U.S.C. § 558; 50 C.F.R. § 222.306; 15 C.F.R. § 904.). Such suspension or revocation may apply to an entire permit, or only to specified Covered Species, Permit Areas, or covered activities.
- b) The Permit Holder may not transfer or assign this permit to any other person(s), as person is defined in Section 3(12) of the ESA. This permit is not in force or effective if transferred or assigned to any other person.
- c) Upon request by the Regional Administrator of the West Coast Region (WCR), the Permit Holder must permit any employee(s) of NMFS, or any other person(s) duly designated by the Director, to inspect the Permit Holder's records and facilities if such records and facilities pertain to activities for which a take of ESA-listed species is authorized by this permit, relate to ESA listed species covered by this permit, or pertain to the Director's responsibilities under the ESA.
- d) The provisions of this permit may be amended upon reasonable notice by the Regional Administrator of WCR, in accordance with applicable law.
- e) In the event any ESA-listed species not authorized by this or another incidental take permit is killed, injured, or collected during the course of activities in the restricted area, the Permit Holder must notify the NMFS OPR Chief of the Endangered Species Conservation Division as soon as possible, but not later than two days after the event. If the individual is killed, it must be retained for scientific analysis. The Permit Holder must then submit a written report to the Chief of the Endangered Species Division describing the circumstances of the unauthorized take. Pending review of these circumstances, NMFS may suspend or amend this permit.
- f) The Permit Holder is responsible for the activities of any individual who is operating under the authority of this permit. Such activities include capturing, handling, releasing, transporting, maintaining, and caring for any animal authorized to be taken by this permit.
- g) Under the terms of the ESA regulations, a violation of any of the terms and conditions of this permit will subject the Permit Holder, and/or any individual who is operating under the authority of this permit, to penalties as provided for in the ESA.
- h) NMFS OPR will annually review this permit and determine whether it needs to be suspended or amended. Yearly evaluation of this permit by NMFS OPR will include reanalyses of all data and a reassessment of the take levels.
- i) 50 CFR Section 222.23(d)(8) provides for a reasonable fee to be charged to cover the costs of issuance of permits under the ESA. The fee for this permit has been waived.

- j) The Permit Holder is required to adequately fund the Habitat Conservation Plan. Upon request by NMFS OPR, the Permittee shall provide documentation that the Habitat Conservation Plan is receiving adequate funding. If NMFS OPR reasonably believes that the Habitat Conservation Plan is not being inadequately funded, then NMFS OPR may require the Permit Holder to produce an annual budget for the Habitat Conservation Plan, which will be subject to review and approval by NMFS OPR.
- k) The Permit Holder shall strictly adhere to the Habitat Conservation Plan and the conditions of this Permit. If the Permit Holder is not implementing or adhering to the Habitat Conservation Plan or the conditions of this Permit, then the take authorization provided by this Permit shall not apply.
- l) This permit does not relieve the Permittee from compliance with other applicable foreign, state, local, or other federal law.
- m) The Permit Holder must ensure that listed species are taken only at the levels, by the means, in the areas and for the purposes stated in the permit application, and according to the conditions in this permit.
- n) The Permit Holder must not intentionally kill or cause to be killed any listed species unless the permit specifically allows intentional lethal take.
- o) The Permit Holder must handle listed fish with extreme care and keep them in cold water to the maximum extent possible during sampling and processing procedures. Usually, researchers must stop capturing and handling listed fish if the water temperature exceeds 21 degrees Celsius at the capture site. Because capture of these could likely be rescuing the fish from a false migratory pathway, this condition is relaxed to allow capture up to 24 degrees Celsius. Under these conditions, listed fish may only be identified, counted and transported. In addition, electrofishing is not permitted if water temperatures exceed 18 degrees Celsius.
- p) The Permit Holder must use a sterilized needle, or other sterilized surgical implement, for each individual injection when PIT tags are inserted into listed fish.
- q) The permit holder must exercise care during spawning ground surveys to avoid disturbing listed adult salmonids when they are spawning. Researchers must avoid walking in salmon streams whenever possible, especially where listed salmonids are likely to spawn. Visual observation must be used instead of intrusive sampling methods, especially when just determining fish presence.
- r) The Permit Holder using backpack electrofishing equipment must comply with NMFS's Backpack Electrofishing Guidelines (June 2000) available at http://www.westcoast.fisheries.noaa.gov/publications/reference_documents/esa_refs/section4d/electro2000.pdf.
- s) The Permit Holder must obtain approval from NMFS before changing sampling locations or research protocols.

- t) The Permit Holder must notify NMFS as soon as possible but no later than two days after any authorized level of take is exceeded or if such an event is likely. The permit holder must submit a written report detailing why the authorized take level was exceeded or is likely to be exceeded.
- u) The Permit Holder is responsible for any biological samples collected from listed species as long as they are used for research purposes. The permit holder may not transfer biological samples to anyone not listed in the application without prior written approval from NMFS.
- v) The person(s) actually doing the research must carry a copy of this permit while conducting the authorized activities.
- w) The Permit Holder must allow any NMFS employee or representative to accompany field personnel while they conduct the research activities.
- x) The Permit Holder must allow any NMFS employee or representative to inspect any records or facilities related to the permit activities.
- y) The Permit Holder may not transfer or assign this permit to any other person as defined in Section 3(12) of the ESA.
- z) NMFS may amend the provisions of this permit after giving the permit holder reasonable notice of the amendment.
- aa) The Permit Holder must obtain all other Federal, state, and local permits/authorizations needed for the research activities.
- bb) On or before January 31 of every year, the Permit Holder must submit to NMFS a post-season report in the prescribed form describing the research activities, the number of listed fish taken and the location, the type of take, the number of fish intentionally killed and unintentionally killed, the take dates, and a brief summary of the research results. The report must be submitted electronically on our permit website, and the forms can be found at <https://apps.nmfs.noaa.gov/>. Falsifying annual reports or permit records is a violation of this permit.
- cc) If the Permit Holder violates any permit condition, they will be subject to any and all penalties provided by the ESA. NMFS may revoke this permit if the authorized activities are not conducted in compliance with the permit and the requirements of the ESA or if NMFS determines that its ESA section 10(d) findings are no longer valid.
- dd) In the event that marine mammals are encountered, the researcher shall not deploy any sampling gear. If a marine mammal is encountered after gear has been deployed, the researcher shall immediately retrieve the gear. If, despite these measures, a marine mammal is inadvertently captured, it will immediately be released and the researcher will inform NMFS's West Coast Region as soon as possible.

E. Penalties and Permit Sanctions

1. Any person who violates any provision of this permit is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the ESA and 15 CFR part 904 [Civil Procedures].
2. All permits are subject to suspension, revocation, modification, and denial in accordance with the provisions of subpart D [Permit Sanctions and Denials] of 15 CFR part 904.

for A. Catharine Mancinwage

Barry A. Thom
Regional Administrator, West Coast Region
National Marine Fisheries Service

August 11, 2020

Date

Acceptance of the permit serves as evidence that the permittee agrees to abide by all conditions stated.

Scot A. Moody
Scot A. Moody
General Manager
Stockton East Water District

8/12/20
Date