be necessary to restore the fishery, including the feasibility of providing fish passage around Bradbury Dam.

The Cachuma Project contractors and downstream water right holders reached a settlement agreement that resolved actual and potential disputes that existed among the parties relative to the obligation of Reclamation to make releases from Bradbury Dam for the protection of downstream water rights and water quality. Reclamation has requested that the Board amend its Permits to be consistent with this agreement. This order amends Reclamation's Permits to be consistent with its request. The agreement assumes specific operating criteria, currently in place, will govern fish flows below Bradbury Dam. However, as already discussed above, this order requires additional releases for the protection of public trust resources. The parties may need to negotiate changes to the settlement agreement in light of the releases for steelhead required by this order. As such, this order reserves the Board's authority to make any amendments to the Permits that may be necessary based on any changes to the agreement.

2.0 FACTUAL AND PROCEDURAL BACKGROUND

2.1 The Cachuma Project

2.1.1 Project Setting

The Santa Ynez River watershed, located in central Santa Barbara County, encompasses approximately 900 square miles. The Santa Ynez River originates in the San Rafael and Santa Ynez Mountains and flows west approximately 90 miles to the Pacific Ocean. (See Appendix 1, Figure 1.) Bradbury Dam impounds water on the Santa Ynez River, forming Cachuma Reservoir. The dam is located approximately 48.7 river miles upstream from the ocean and effectively divides the watershed in half. Reclamation completed construction of the Cachuma Project in 1953.

The watershed upstream of Cachuma Reservoir is primarily undeveloped open space. Located upstream of Cachuma Reservoir in the upper reaches of the Santa Ynez River are two reservoirs: the first constructed by the City of Santa Barbara in 1920 (Gibraltar Dam and Reservoir) and the second constructed by Montecito Water District (MWD) in

1930 (Juncal Dam and Jameson Reservoir).[1] Lands downstream of Cachuma Reservoir are generally undeveloped, natural open space or in private ownership, with land uses including irrigated and non-irrigated agriculture; residential and urban areas, including the cities of Lompoc, Buellton, and Solvang; the Lompoc Federal Correctional Institution; and Vandenberg Air Force Base. (See Appendix, Figures 1 and Figure 2.)

The Santa Ynez River crosses two groundwater basins downstream of Cachuma Reservoir:

1) The Above Narrows Alluvial Groundwater Basin, located upstream of a stretch of the river called the Lompoc Narrows; and
2) The Lompoc Plain Groundwater Basin, located downstream of the Lompoc Narrows.

(See Appendix 1, Figure 3.)

The storage capacity of the Above Narrows Alluvial Groundwater Basin when full is approximately 105,000 acre-feet (af), although the usable storage is significantly less than this amount. (FEIR, Vol. II, p. 4.4-3.) The U.S. Geological Survey estimated the groundwater storage in the Lompoc Plain Groundwater Basin to be about 215,000 af. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-14.) Groundwater pumping provides most of the water supply for irrigation, municipal, and industrial uses in the lower Santa Ynez River Basin. (*Ibid.*)

The Santa Ynez River below Bradbury Dam has been divided into reaches for management purposes. The first three reaches downstream of Bradbury Dam are the Highway 154 Reach (Bradbury Dam to the Highway 154 bridge, located 3.2 miles below

[1] Jameson Reservoir, with a 14-square mile tributary watershed, has a maximum storage capacity of 5,300 acre-feet. Gibraltar Reservoir, with a 216-square mile tributary watershed, has a maximum storage capacity of 7,100 acre-feet. Water stored in Jameson Reservoir is diverted to the South Coast through the two-mile-long Doulton Tunnel. Water stored in Gibraltar Reservoir is diverted to the South Coast through the 3.7-mile-long Mission Tunnel. The Cachuma Project facilities are located in the Santa Ynez River Basin and the South Coast area, which occupy the southern half of Santa Barbara County. The South Coast area included in the project is a narrow, highly-populated coastal strip about twenty-five miles long and two to five miles wide, lying between the Santa Ynez Mountains and the Pacific Coast. In this area lies the Cities of Santa Barbara, Goleta, and Carpinteria, as well as the suburban and agricultural lands of Goleta, Summerland, Montecito, and Carpinteria. All of these lands receive water from the Cachuma Project.

Bradbury Dam); the Refugio Reach (Highway 154 bridge to the Refugio Road bridge, located 7.8 miles below Bradbury Dam); and the Alisal Reach (Refugio Road bridge to the Alisal bridge, located 10.5 miles below Bradbury Dam). (See Appendix 1, Figure 2.) Major tributaries of the Santa Ynez River located downstream of Cachuma Reservoir include Hilton Creek, Quiota Creek, Alisal Creek, Nojoqui Creek, El Jaro Creek, Salsipuedes Creek and San Miguelito Creek. As discussed below, these lower Santa Ynez River tributaries provide spawning and rearing habitat below Bradbury Dam. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-68.)

2.1.2 Cachuma Project Operations

The Cachuma Project provides water to the Member Units for irrigation, domestic, municipal, and industrial uses. The Member Units consist of the City of Santa Barbara; Goleta Water District (GWD); MWD; Carpinteria Valley Water District (CVWD); and the Santa Ynez River Water Conservation District, Improvement District No. 1 (SYRWCD, ID No. 1). Water from Cachuma Reservoir is delivered to all of the Member Units, except SYRWCD, ID No. 1.

Reclamation owns all Cachuma Project facilities and operates Bradbury Dam. In 1956, the Member Units assumed responsibility for operation and maintenance of Cachuma Project facilities other than Bradbury Dam. The Member Units formed the Cachuma Operations Management Board (COMB) to carry out this responsibility.[2]

Project deliveries to the Member Units begin with the diversion and storage of Santa Ynez River water at Lake Cachuma behind Bradbury Dam pursuant to the Permits. (DOI-1, p. 6.) Water is stored and diverted through the Tecolote Tunnel[3] to the south coast area via the South Coast Conduit, then delivered to the individual water users through

[2] COMB is a California Joint Powers Agency formed in 1956 pursuant to an agreement with Reclamation. COMB is responsible for diversion of water to the South Coast through the Tecolote Tunnel, and operation and maintenance of the South Coast Conduit pipeline, flow control valves, meters, and instrumentation at control stations, and turnouts along the South Coast Conduit and at four regulating reservoirs.

[3] Initial deliveries using the Tecolote Tunnel began in 1955. Tecolote Tunnel extends 6.4 miles through the Santa Ynez Mountains from Cachuma Lake to the headworks of the South Coast Conduit. (FEIR, Vol. II, p. 2.0-1.)

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distribution systems operated by the Member Units, with a small amount of water, an average of approximately 180 acre-feet per annum (afa), being diverted directly from the lake for the County park facilities. (*Ibid;* see Appendix 1, Figure 4.) In 1996, the original 32,000 afa safe yield of the Cachuma Project was reduced to an agreed "Sustained Annual Yield" of 25,714 afa.[4] (FEIR, Vol. II, p. 2.0-3; DOI-30, p. 6.) As part of the hearing, Reclamation submitted Cachuma Project delivery data from its Annual Water Right Progress Reports by Permittee to the State Water Board for the period 1958-1998. (DOI-1d.) During the period of record, an average of approximately 25,000 afa of Project water was delivered to the Member Units.

Since 1997, the Central Coast Water Authority (CCWA) has delivered imported State Water Project (SWP) water to Cachuma Reservoir for use by the Member Units to supplement local water supplies. The SWP water is pumped via the Santa Ynez Extension through the existing Bradbury Dam outlet works into Cachuma Reservoir. The commingled water is then delivered through Tecolote Tunnel to the Member Units. The Member Units' SWP contractual allocations are described in the Final EIR. (FEIR, Vol. II, p. 2.0-11.) SYRWCD, ID No. 1 receives its SWP allocation by direct delivery from the CCWA pipeline and exchanges its allocation of Cachuma Project water for an equal amount of SWP water that would have been delivered to the Member Units. (FEIR, Vol. II, pp. 2.0-11 to 2.0-13.)

2.1.3 Project Release Requirements

Before contract deliveries are made to the Member Units, Reclamation must meet its water right release requirements to satisfy downstream water rights pursuant to the conditions of its water right permits and must satisfy the flow requirements included in

[4] In 1949, Reclamation and Santa Barbara County Water Agency executed the Cachuma Project Master Water Service Contract (Master Contract). The 40-year master contract provided for the delivery of the entire yield of the Cachuma Project to the Santa Barbara County Water Agency on behalf of the Member Units. (DOI-7, p. 3.) The Master Contract was renewed and executed on April 14, 1996 and is effective as of May 15, 1995 through September 30, 2020 (DOI-30, p. 6.) Under the renewed Master Contract and the Member Units' individual contracts, the original entitlement to the safe yield of 32,000 af was reduced to an agreed "Sustained Annual Yield" of 25,714 afa. (FEIR, Vol. II, p. 2.0-3; DOI-30, p. 6.) The Member Units' allocations or annual deliveries based on the operational yield of 25,714 afa are: 1) CVWD (10.94%); 2) City of Santa Barbara (32.19%); 3) GWD (36.25%); 4) MWD (10.31%); and 5) SYRWCD, ID No. 1 (10.31%). (DOI-30, p. 6.)

NMFS' 2000 Biological Opinion to protect steelhead spawning, rearing, and migration in the lower Santa Ynez River. (DOI-1, p. 5, SWRCB-11.) Flows to meet downstream water right requirements and fisheries requirements are either released via the outlet works of Bradbury Dam or via the Hilton Creek Pipeline.

Reclamation makes downstream water right releases in accordance with the revised operational procedures included in State Water Board Order WR 73-37 (amended by State Water Board Orders WR 78-10, 88-2, and 89-18) (as further discussed in section 2.2). The procedures only require releases when depleted groundwater storage between Bradbury Dam and the Narrows near Lompoc exceeds 10,000 acre-feet. (DOI-1, p. 8; MU-105.) The allowable deficit provides opportunities to conserve Cachuma Project supplies by allowing tributary runoff originating below the dam to recharge the groundwater basin before Project releases are needed. (DOI-1, p. 8.)

2.1.4 Downstream Water Right Holders

The history of Santa Ynez River water use is contentious, and issues raised by water right holders downstream of the three Santa Ynez River dams have been addressed over the years in litigation, in State Water Board decisions, and by agreements reached between the parties involved. Water rights downstream of Bradbury Dam consist of appropriative and riparian rights to divert water from the Santa Ynez River, and overlying and appropriative rights to divert groundwater from groundwater basins that, under natural conditions, the river would recharge.[5]

There are two primary water supply interests concerned with Cachuma Project water use - the Santa Ynez River Water Conservation District (SYRWCD) and the City of Lompoc. The SYRWCD was formed in 1939 to protect and augment the water supplies for residents, including Cachuma Project supplies, of two non-contiguous parcels that encompass approximately 180,000 acres including most of the Santa Ynez River watershed from about three miles downstream of Bradbury Dam to the mouth of the river. The City of Lompoc supplies groundwater pumped from the Lompoc Plain Groundwater

[5] The Final Environmental Impact Report, prepared in connection with this order, lists known water right holders in Table 3-1a. (FEIR, Vol. II, p. 3.0-3.)

Basin to its residents for domestic use. The City of Lompoc acts to ensure that sufficient water is released from Bradbury Dam so that the Cachuma Project does not interfere with its downstream water rights nor adversely affect the quality of water recharged from the Santa Ynez River. (MU-220A, p. 2.) Both the SYRWCD and the City of Lompoc have had active roles in the previous State Water Board decision and orders discussed below.

2.2 State Water Board Decision 886 and Subsequent Orders

In 1958, the State Water Board's predecessor, the State Water Rights Board, adopted Decision 886 and issued the Permits to Reclamation for the Cachuma Project. The Permits authorize Reclamation to divert and store water from the Santa Ynez River using Cachuma Project facilities. Permit 11308 authorizes the direct diversion of 100 cubic feet per second (cfs) and the diversion to storage of 275,000 afa for purposes of domestic use, salinity control, incidental recreational use, and irrigation. Permit 11310 authorizes the direct diversion of 50 cfs and the diversion to storage of 275,000 afa for purposes of municipal, industrial, and incidental recreational uses. The combined maximum amount of water that may be diverted to storage under both Permits is 275,000 afa. Under both Permits, the authorized season of direct diversion is year-round and the authorized season of diversion to storage is from October 1 of each year to June 30 of the following year.

Decision 886 required Reclamation to release enough water to both satisfy downstream senior water right holders, and to maintain natural groundwater recharge from the Santa Ynez River. Decision 886 required Reclamation to make all releases of water past Bradbury Dam in such a manner as to maintain a live stream at all times as far below the dam as possible, consistent with the purposes of the Cachuma Project and the protection of downstream users.

Decision 886 required Reclamation to conduct various investigations and studies to determine the amount, timing, and rate of releases necessary to satisfy downstream water rights, and maintain percolation of water in the stream channel that would have been present absent Bradbury Dam. Decision 886 reserved authority over the Permits

for 15 years to make subsequent orders concerning releases of water for downstream use and groundwater recharge.

On July 5, 1973, the State Water Board issued Order WR 73-37 allowing Reclamation to store inflow in Cachuma Reservoir regardless of whether there was a live stream. The State Water Board found that approval of Reclamation's plan of operation, which would maintain groundwater storage space in the aquifer downstream of Bradbury Dam, would result in increased percolation and conservation of inflow to the Santa Ynez River downstream from the dam. (Order WR 73-37, p. 2.) Instead of the "live stream" requirement, Order WR 73-37 established two accounts – the Above Narrows Account (ANA) and the Below Narrows Account (BNA) – to provide for the replenishment of the groundwater basins above and below the Lompoc Narrows. Order WR 73-37 required water to be credited to and released from the accounts in accordance with a detailed formula set forth in the order. Order WR 73-37 also required Reclamation to monitor the impacts of the release schedule on riparian vegetation and retained continuing authority by the State Water Board over the Permits for an additional 15 years.

Order WR 78-10, adopted on July 5, 1978, changed the required methodology used to measure water releases from Cachuma Reservoir made to satisfy downstream rights, and continued the Board's reserved authority until December 31, 1989.

On September 21, 1989, the State Water Board adopted Order WR 89-18, which amended Reclamation's Permits to include new accounting, monitoring, and operating procedures proposed by Reclamation and agreed to by the users downstream of Bradbury Dam. Order WR 89-18 extended continuing authority until December 31, 1994, and extended the riparian vegetation monitoring requirement for a minimum of five years. Order WR 89-18 also addressed a complaint filed on November 13, 1987, by the California Sportfishing Protection Alliance (CSPA). CSPA's complaint alleged that the construction and operation of the Cachuma Project had severely impacted steelhead trout, and that such action constituted a misuse of water within the meaning of article X, section 2, of the California Constitution. Order WR 89-18 addressed the complaint by

directing State Water Board staff to hold a hearing on CSPA's complaint as soon as possible.

In July 1990, the State Water Board began a consolidated hearing on all outstanding issues in the Santa Ynez River watershed, including the State Water Board's reservation of authority over Reclamation's Permits and CSPA's complaint. However, the hearing was recessed in August 1990 to allow the parties to resolve technical issues outside the hearing process.

On December 20, 1990, the State Water Board Chair wrote to the parties explaining that before the Board could act on the pending matters, three documents were required:

1) An environmental impact report;
2) A determination of the availability of unappropriated water; and
3) An evaluation of the potential mitigation measures for the remnant steelhead fishery, rare and endangered species, and related habitats.

The State Water Board scheduled hearings again in 1994, but Reclamation requested that the State Water Board postpone the hearings in order to:

1) Collect additional well data;
2) Implement a riparian vegetation study required by the State Water Board; and
3) Collect data on fish in the river pursuant to a 1994 MOU between Reclamation, the CDFW,[6] U.S. Fish and Wildlife Service (USFWS), Cachuma Conservation Release Board (CCRB),[7] SYRWCD, Santa Barbara County Water Agency (SBCWA), and the City of Lompoc.

Because Order WR 89-18 only extended the reserved authority until December 31, 1994, the State Water Board issued Order WR 94-5 on November 17, 1994, continuing the reservation of authority over Reclamation's Permits until long-term permit conditions

[6] CDFW was named the California Department of Fish and Game in 1994. Effective January 1, 2013, the official name changed from California Department of Fish and Game to California Department of Fish and Wildlife.

[7] CCRB is a joint powers agency that was formed in 1973 by four of the Member Units: CVWD, the City of Santa Barbara, GWD, and MWD. CCRB was established to represent its members in protecting their interest in Cachuma Project water rights. In January 2011, CVWD withdrew its membership.

could be set to protect downstream water right holders. The order established a deadline of December 1, 2000, to commence a hearing on this issue. The order also required Reclamation to make releases from the Cachuma Project for the benefit of fish in accordance with the 1994 MOU. Additionally, Order WR 94-5 required Reclamation to conduct various studies and collect certain data for use by the State Water Board in the hearing. Order WR 94-5 required Reclamation to submit, not later than February 1, 2000:

1) Reports and data resulting from the 1994 MOU;
2) A report on the riparian vegetation monitoring program;
3) Information developed and conclusions reached during ongoing negotiations between the Member Units and the City of Lompoc; and
4) A report on the impacts of the Cachuma Project on downstream diverters.

Lastly, Order WR 94-5 required Reclamation to prepare any additional environmental documentation that the Division of Water Rights (Division) Deputy Director (Deputy Director) determined was necessary to comply with the California Environmental Quality Act (CEQA) in connection with the State Water Board's consideration of modifications to Reclamation's Permits. The Deputy Director was required to determine what, if any, additional environmental documentation was needed by March 1, 2000, and Reclamation was required to submit a draft of any required documentation to the State Water Board by July 31, 2000.

2.3 Petition to Change Permits 11308 and 11310

2.3.1 Background

The authorized place of use under Reclamation's Permits, which were issued on March 21, 1958, was designated by Map B-1P-21 (Sheets 1 and 2) for GWD, the City of Santa Barbara, MWD, the Summerland County Water District, CVWD, and SYRWCD.[8] (Staff Exhibits 1 and 2.)[9] The place of use for irrigation under Permit 11308 is 61,000 net

[8] At the time of permit issuance, GWD was known as Goleta County Water District, MWD was known as Montecito County Water District and CVWD was known as Carpinteria County Water District.
[9] State Water Board Staff Exhibits 1 and 2 consist of the application files for Application 11331 (Permit 11308) and Application 11332 (Permit 11310), which contain copies of both the permits and the map depicting the existing place of use.

irrigable acres, within a gross area of 175,000 acres along the south coastal area of Santa Barbara County. Use of water for recreational purposes is at the Cachuma Reservoir site. (*Ibid.*)

2.3.2 Reclamation's 1983 Petition for Change

On August 8, 1983, Reclamation filed with the State Water Board a petition for change in place of use and purpose of use. (DOI-2b.) Under this petition, Reclamation sought to increase the place of use under both Permits from a gross area of 175,000 acres, to a gross area of 296,697 acres, with the net irrigated area to remain at 61,000 acres. (*Ibid.*) The purpose of the proposed change was to include within the place of use for the Permits, "areas that have present or future potential for agricultural and/or subdivision development and to include changes in local district boundaries." (DOI-2b.) This change included adding the Cachuma Recreation Area and the service area of the then newly annexed SYRWCD, ID No. 1. Reclamation's petition also sought to add municipal and industrial uses and delete stock watering as a use under Permit 11308, and to add domestic and salinity control uses under Permit 11310. (*Ibid.*) The State Water Board issued public notice of Reclamation's petition on December 2, 1983. The Board re-noticed the petition on January 12, 1984, because of an inaccurate description in the original notice. (DOI-2, p. 11.) The record shows that the State Water Board did not receive any protests and the State Water Board did not take further action on the petition for an extended period of time.

As described below, Reclamation made several amendments to its petition during the period 1983 to 1997.

2.3.3 1995 Amendments to Reclamation's 1983 Petition for Change

In response to a Division inquiry dated February 28, 1995, regarding the status of Reclamation's 1983 petition, Reclamation amended the 1983 change petition to:

1) Expand the existing place of use boundary to include the current service areas of the Member Units; and

2) Consolidate the seven purposes of use under the Permits.

(DOI-2e.)

The first amendment to Reclamation's petition, if approved, would increase the existing place of use from the gross area of 175,000 acres to approximately 192,600 acres, an increase of 17,600 acres (and a reduction of 104,097 acres relative to the number of acres originally requested in the 1983 Change Petition), and reduce the net irrigable acreage from 61,000 acres to 40,250 acres.[10]

The second amendment Reclamation made to its petition, if approved, would change the Permits so that they each authorize the same seven purposes of use. This additional change would add municipal and industrial uses as purposes of use under Permit 11308 and irrigation, domestic use, salinity control, and stock watering as purposes of use under Permit 11310. Combined, the consolidated purposes of use under both Permits would allow water under Permit 11308 and Permit 11310 to be used for irrigation, municipal, industrial, domestic, salinity control, incidental recreation, and stock watering purposes. (DOI-2, p. 13.)

2.3.4 1996 Amendments to Reclamation's 1983 Petition for Change

On October 1, 1996, Reclamation notified the State Water Board that additional amendments to its 1983 change petition were necessary. (DOI-2g.) The primary purpose of these amendments was to remove from the proposed place of use the area of the SYRWCD (Parent District) presently within the authorized place of use and outside of the boundary for the SYRWCD, ID No. 1, a Member Unit. (DOI-2, p. 14.) Reclamation's requested amendments included supporting information that indicated that the number of acres within the authorized place of use is 187,870 acres (with SYRWCD (Parent District) included) and the number of acres proposed to be added to the Member Units' service areas authorized place of use was 17,506 (not 17,600).[11] (DOI-2g, p. 2.)

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[10] By letter dated December 7, 1995 (DOI-2f.), Reclamation submitted to the State Water Board the maps showing the permitted place of use for Permits 11308 and 11310 and the proposed place of use boundary, as amended by the June 16, 1995 amendment to the 1983 change petition. Exhibits DOI-3b, DOI-3c, and DOI-3d are copies of the maps that were submitted with Reclamation's December 7, 1995 letter: Map No. 368-208-899, "Cachuma Project—Overall;" Map No. 368-208-900, "Cachuma Project, Enlarged View of Santa Ynez River Basin;" and Map No. 368-208-901, "Cachuma Project, Enlarged View of South Coast Region."

[11] Reclamation's existing and proposed place of use acreage figures are computer-generated. (DOI-2g, p. 2.)

2.3.5 Protests to Amended Petition for Change

On May 22, 1997, the State Water Board issued notice of the amended petition to change the place of use and purpose of use for the Permits. The State Water Board received six protests in response to the notice from the City of Solvang, Mr. Steve Jordan, CSPA, CDFW, SYRWCD, and the City of Lompoc. By letters dated December 6, 1999, the Division canceled the protests submitted by the City of Solvang, Mr. Jordan, CSPA, and CDFW,[12] and dismissed the protest submitted by SYRWCD.[13] The protest filed by City of Lompoc remained unresolved. (State Water Board, Staff Exhibit-1: Application 11331 (Permit 11308 – Cat. 1, Vol. 36.)

Due to the changes to the petition described above, the State Water Board has given notice of the petition three times (12/2/83, 1/12/84, and 5/22/97). As amended, Reclamation's change petition requests to enlarge the original place of use boundary to conform with the boundaries of the current contract service areas of the Member Units, which were established pursuant to several annexations. The proposed place of use is 205,376 acres (187,870 acres + 17,506 acres = 205,376 acres). (DOI-2h; see also DOI-2g, p. 2.)

2.3.6 Reclamation's 1999 "Dos Pueblos Golf Links Project" Petition for Change

On February 17, 1999, Reclamation filed a separate change petition at the request of GWD to include an additional 130 acres (Dos Pueblos Golf Links Project site) to its place of use under the Permits. The potential impacts of the change petition for the Dos Pueblos Golf Links project were evaluated in an Addendum to the Final Environmental Impact Report for the project, prepared by GWD and the County of Santa Barbara.

In response to an inquiry from the State Water Board regarding the status of Reclamation's 1999 Petition to add the "Dos Pueblos Golf Links Project" site to

[12] The protests from the City of Solvang, Mr. Jordan, CSPA, and CDFW were canceled based on the parties' failure to provide information requested by the State Water Board within the period provided pursuant to Water Code section 1335.

[13] By letter dated October 6, 1997, Reclamation notified the State Water Board of an agreement between Reclamation, the Member Units and SYRWCD. (DOI-2h.) Pursuant to the stipulation, which was used as a basis to resolve SYRWCD's protest, Reclamation and the Cachuma Project beneficiaries agreed to allow that portion of the SYRWCD (Parent District) which is outside SYRCWD, ID No. 1, but presently within the authorized place of use, to remain within the authorized place of use. (*Ibid.*)

Reclamation's place of use under the Permits, on November 6, 2012, Reclamation submitted a letter it received from GWD. The letter indicated that the golf course was no longer being pursued, but instead two single-family homes were planned for the property. The letter further indicated that the environmental document for that project would not be considered until February 2013, which was after the hearing record closed on April 5, 2012.

As a result, on February 7, 2013, the State Water Board advised Reclamation and GWD that, because an environmental document for the single-family home project is not part of the hearing record, the State Water Board could not process Reclamation's 1999 petition as part of the current proceeding to consider amendments to the Permits.

2.4 2002 Settlement Agreement

On December 17, 2002, CCRB; SYRWCD; SYRWCD, ID No. 1; and the City of Lompoc entered into a settlement agreement (Settlement Agreement) that resolved disputes between the parties concerning Reclamation's obligation to make releases from Bradbury Dam for the protection of downstream water rights. (MU-220A.) The parties agreed that releases pursuant to State Water Board Order WR 89-18, with three technical modifications, would adequately protect downstream water rights. (*Id.*, pp. 4-5.) The Settlement Agreement is predicated on the presumption that the 2000 Biological Opinion for the Cachuma Project would continue to govern releases from Bradbury Dam for the protection of fishery resources. The parties agreed to support operation of the project in accordance with the 2000 Biological Opinion as the preferred approach to address public trust resource protection. (*Id.*, pp. 4-5, 7.) The Settlement Agreement provides for conjunctive operation of water rights releases and releases made pursuant to the 2000 Biological Opinion to reduce impacts to Cachuma Project water supply. In addition, the Settlement Agreement provides for conjunctive operation of the BNA. (*Id.,* pp. 4-5.) The Settlement Agreement states that it will not become effective unless the State Water Board adopts an order that amends Reclamation's Permits accordingly without any material changes. (*Id.*, p. 7.) Similarly, the Settlement Agreement states that any party may terminate the agreement if the Board does not adopt an order that requires water right releases in a manner consistent with the agreement. (*Id.*, pp. 7-8.)

2.5 Evidentiary Hearings

As set forth in section 2.2 above, State Water Board Order WR 94-5 established a deadline of December 1, 2000, to commence a hearing to consider what conditions should be included in the Cachuma Project Permits to protect downstream water right holders. The order also established a deadline of July 31, 2000, for Reclamation to submit a draft of any environmental documentation necessary to comply with CEQA in connection with the State Water Board's consideration of modifications to Reclamation's Permits. Because the CEQA documentation was not completed by the December 1, 2000 deadline to commence the hearing, the State Water Board held the hearing in two phases.

The State Water Board issued a notice of public hearing on September 25, 2000. Phase 1 of the hearing was held on November 6, 2000. Phase 2 was held on October 21, 22, 23, and November 12, 13, 2003. Two additional hearing days were held on March 29 and 30, 2012, to receive evidence relevant to the admission of the Final Environmental Impact Report (FEIR) into the administrative record. In an April 5, 2012 letter to the Cachuma Project Service List, the hearing officer, Board Member Tam Doduc, admitted the FEIR into the administrative record and closed the hearing record.

The State Water Board held the Phase 1 hearing to receive evidence to determine whether: 1) approval of the petitions for change in place of use and purpose of use under Reclamation's Permits would result in any changes in Cachuma Project operations and flows in the Santa Ynez River and 2) Reclamation's compliance with Order WR 94-5. The State Water Board held the Phase 2 hearing to receive evidence to determine:

1) Whether modifications in permit terms and conditions for Reclamation's Permits are necessary to protect public trust resources [upstream and downstream of Bradbury Dam including but not limited to fishery resources in the Santa Ynez River] and water right holders on the Santa Ynez River below Bradbury Dam, and

2) Whether to approve Reclamation's change petitions requesting modifications in place and purpose of use for the Permits.

2.5.1 Cachuma Hearing Phase 1

The Phase 1 key hearing issues as listed in the September 25, 2000 hearing notice are:

Key Issue 1:

> Change Petitions: Would approval of the petitions for change in purpose and place of use result in any changes in Cachuma Project operations and flows that would exist if water from the Project were delivered only to the areas within the current place of use?

Key Issue 2:

> Compliance: Has Reclamation complied with Order 94-5? If not, what enforcement or other action, if any, should the [Board] take?

During the Phase 1 hearing, Reclamation, CCRB, SYRWCD, ID No. 1, and the City of Solvang presented cases-in-chief. The City of Lompoc, SYRWCD, and the City of Santa Barbara limited their participation to policy statements, opening statements, and/or cross-examination of witnesses.

For related discussion of Key Issues 1 and 2, see section 7.0 Change Petition and section 9.0 Compliance with Order 94-5, respectively.

2.5.2 Cachuma Hearing Phase 2

The Phase 2 Key Issues, as set forth in the August 13, 2003 supplemental hearing notice[14] are:

Key Issue 3: Should Permits 11308 and 11310 be modified to protect public trust resources?

a. What flow requirements, including magnitude and duration of flows released from Bradbury Dam, are necessary to protect public trust resources, including, but not limited to, steelhead, red-legged frog, tidewater goby and wetlands, in the Santa Ynez River downstream of Bradbury Dam? What terms, conditions, or recommendations contained in the [2000] Biological Opinion, if any, should be incorporated into Reclamation's water right permits?

[14] The key hearing issues for Phase 2 of the hearing that were listed in the first hearing notice, dated September 25, 2000, were modified in the supplemental Phase 2 hearing notice dated August 13, 2003. In the May 29, 2003 letter, Hearing Officer Pete Silva stated that consistent with the hearing notice he intended to allow parties to present evidence concerning whether Reclamation's permits should be modified to address any impacts of Cachuma Project operations to public trust resources above Bradbury Dam, including evidence concerning requirements that would apply above the dam.

b. What other measures, if any, are necessary to protect public trust resources?

c. How will any proposed measures designed to protect public trust resources affect Reclamation and the entities that have water supply contracts with Reclamation?

d. What water conservation measures could be implemented in order to minimize any water supply impacts?

For related discussion of Key Issue 3, see section 5.0 Protection of Public Trust Resources.

Key Issue 4: Has any senior, legal user of water been injured due to changes in water quality resulting from operation of the Cachuma Project?

a. Has operation of the Cachuma Project affected water quality in the Lompoc Plain[ ] groundwater basin in a manner that impairs any senior water right holder's ability to beneficially use water under prior rights?

b. What permit terms, if any, should be included in Reclamation's water right permits to [protect] senior water right holders from injury due to changes in water quality?

Key Issue 5: Has operation of the Cachuma Project injured any senior water right holders through reduction in the quantity of water available to serve prior rights and, if so, to what extent?

a. Condition 5 of Permits 11308 and 11310, as modified by Order 89-18, establishes an accounting methodology to determine the quantity of water that is available to serve prior rights on the Santa Ynez River downstream of Cachuma Reservoir. Should the accounting methodology be modified to protect prior rights or take into account new water supplies?

b. What other permit terms, if any, should be included in Reclamation's water right permits to protect senior water right holders from injury due to a reduction in the quantity of water available?

Key Issue 6: Should Reclamation's water right permits be modified in accordance with the Settlement Agreement Between Cachuma Conservation Release Board, Santa Ynez River Water Conservation District, Santa Ynez River Water Conservation District Improvement District No. 1, and the City of Lompoc Relating to the Operation of the Cachuma Project? Specifically, should Reclamation's water right permits be modified in

accordance with the two enclosures submitted to the [Board] by Reclamation under cover of letter dated February 26, 2003, entitled "Proposed Modifications to WR 73-37 as amended by WR 89-18 Pertaining to Permits 11308 and 11310 (Applications 11331 and 11332)" and "Revised USBR Exhibit 1, February 1, 2003"?

For related discussion of Key Issues 4, 5 and 6, see section 6.0 Protection of Downstream Water Rights.

Key Issue 7: Should the petitions for change in purpose and place of use be approved?

a. Will approval of the change petitions operate to the injury of any legal user of the water involved?

b. Will approval of the change petitions adversely affect fish, wildlife, or other public resources?

For related discussion of Key Issue 7, see section 7.0 Change Petition.

During the Phase 2 hearing, Reclamation; CCRB; SYRWCD, ID No. 1; SYRWCD; the City of Lompoc; the City of Solvang; the County of Santa Barbara; CDFW; NMFS; and California Trout, Incorporated (CalTrout) presented cases in chief.[15] The Santa Barbara Urban Creeks Council, San Lucas Ranch, Carpinteria Valley Association, Citizens of Goleta Valley, and the River Committee presented policy statements.

3.0 LEGAL BACKGROUND

3.1 State Water Resources Control Board's Authority

The State Water Resources Control Board has broad authority to establish minimum flows and take other measures needed to protect fisheries and other public trust resources. This authority is provided by article X, section 2 of the California Constitution, Water Code sections 100 and 275, the Public Trust Doctrine as articulated by the

[15] CSPA filed a Notice of Intent to Appear at Phases 1 and 2 of the Cachuma Project Hearing, but CSPA did not submit any exhibits or attend either phase of the hearing. Therefore, the State Water Board hereby dismisses CSPA's November 13, 1987 complaint for failure to appear. (See Cal. Code Regs., tit. 23, § 766.)

California Supreme Court in *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419 (*Audubon*), and Water Code sections 1243 and 1253.

3.1.1 The Reasonable Use Doctrine

All water rights are subject to the reasonable use doctrine set forth in article X, section 2 of the California Constitution and Water Code sections 100-101. (*Peabody v. Vallejo* (1935) 2 Cal.2d 351, 366-367.) Both article X, section 2 of the Constitution and Water Code section 100 establish the state policy that the water resources of the state should be put to beneficial use to the fullest extent possible. In addition, article X, section 2 and section 100 prohibit the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water. Water Code section 275 directs the State Water Board to take all appropriate proceedings or actions to prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion.

What constitutes an unreasonable use, method of use, or method of diversion depends on the facts and circumstances of each case, and may change if circumstances change. (*Joslin v. Marin Municipal Water Dist.* (1967) 67 Cal.2d 132, 139-140; *Tulare Irr. Dist. v. Lindsay Strathmore Irr. Dist.* (1935) 3 Cal.2d 489, 567.) Competing water demands and beneficial uses of the water must be considered in determining the reasonableness of a particular water use, method of use, or method of diversion. A particular use, method of use, or method of diversion may be unreasonable based on its impact on fish, wildlife, or other instream beneficial uses. (See *Environmental Defense Fund, Inc. v. East Bay Municipal Utility District* (1980) 26 Cal.3d 183, 191, 200.)

3.1.2 The Public Trust Doctrine

The Public Trust Doctrine protects public uses of navigable water bodies, including navigation, commerce, fishing, recreation, and the preservation of fish and wildlife habitat. (*Audubon*, *supra*, 33 Cal.3d at pp. 434-435.) In addition, title to fisheries in both navigable and non-navigable water bodies is held by the state in trust for the benefit of the public, and the state may take action to protect its interest in the fisheries from harm. (*People v. Truckee Lumber Co.* (1897) 116 Cal. 397, 400-401; *People v. Monterey Fish Products*

Co. (1925) 195 Cal. 548, 563.) This may include instream flow requirements and fish passage requirements, as appropriate.[16]

In *Audubon*, the seminal case on the California Public Trust Doctrine, the California Supreme Court held that the Public Trust Doctrine imposes upon the State Water Board a duty of continuing supervision over the appropriation and use of water. (*Audubon*, *supra*, 33 Cal.3d at pp. 446-447.) The Court held that, in addition to considering the public trust when acting on water right applications, the State Water Board has the authority to reconsider the impacts of long-standing diversions on public trust uses in light of current knowledge or needs. (*Ibid.*) Under the Public Trust Doctrine, the State Water Board must protect public trust uses, to the extent feasible and consistent with the public interest. (*Ibid.*)

Pursuant to the reasonable use and public trust doctrines, the State Water Board includes a standard term in all water right permits and licenses, confirming the State Water Board's continuing authority to impose additional requirements or limitations in permits and licenses in order to protect public trust uses or prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water. (Cal. Code Regs., tit. 23, § 780, subd. (a).) This standard term has been included in Reclamation's Permits.[17]

3.1.3 Water Code Sections 1243 and 1253

Water Code section 1243 provides:

> The use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water. In determining the amount of water available for appropriation for other beneficial uses, the board shall take into

[16] NMFS's comment letter on the draft order emphasized that fish passage is necessary to protect the highly migratory southern California steelhead. (See NMFS, December 8, 2016 comment letter, p. 4.) The record also includes significant information that supports this conclusion: R.T., October 23, 2003, p. 509:10-509:14, p. 516:4-516:14, pp. 519:22 to 520:1, pp. 526:12 to 527:1, pp. 548:8 to 549:6. R.T., November 12, 2003, pp. 645:15 to 646:7, p. 727:5-727:19, pp. 736:20 to 737:1, p. 785:5-785:17, pp. 786:20 to 787:11, p. 811:5-811-16. DFG-1, p. 6, DFG-4, p. 7, NOAA-6, pp. 3-4, and CT-30, pp. 3-4.

[17] Section 8 of the Reclamation Act of 1902, codified at 43 U.S.C. section 383, requires that Reclamation projects be operated in compliance with state water law. In *California v. United States* (1978) 438 U.S. 645, 675, the U.S. Supreme Court confirmed that this statute requires Reclamation to follow state water rights law and that California may impose conditions on permits which it grants to the United States with respect to irrigation projects.

> account, whenever it is in the public interest, the amounts of water required for recreation and the preservation and enhancement of fish and wildlife resources.

Water Code section 1253 states:

> The board shall allow the appropriation for beneficial purposes of unappropriated water under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated.

As discussed in sections 3.1.1 and 3.1.2 above, the state has continuing authority to regulate water use under the reasonable use and public trust doctrines. In addition to other applicable statutes, the legislative directives of Water Code sections 1243 and 1253 guide the State Water Board's use of its continuing authority over water diversion and use.

3.2 Fish and Game Code Section 5937

Fish and Game Code section 5937 provides in pertinent part:

> The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam.

Section 5937 is a legislative expression of the reasonable use and public trust doctrines, which the State Water Board considers when exercising its authority under those doctrines. (See *California Trout, Inc. v. State Water Resources Control Board* (1989) 207 Cal.App.3d 585, 622-625, 631; State Water Board Order WR 95-2, p. 6.) When fish below a dam are not in good condition, the reasonable use and public trust doctrines may compel further action to restore fish to good condition again. This order uses the term "restore" as a shorthand reference for the concept of keeping fish below a dam in good condition, as required by existing law, when the fish are not currently in good condition.

CDFW's December 9, 2016 comment letter recommended use of the California Coastal Salmonid Population Monitoring: Strategy, Design, and Methods (Monitoring Plan) to help determine whether fish are in good condition in the Santa Ynez River. CDFW and NMFS developed the Monitoring Plan to measure progress toward recovery of California's salmon and steelhead populations under the California Endangered Species Act (CESA)

and the ESA. The conceptual framework used in the Monitoring Plan assesses salmonid viability in terms of four key population characteristics: abundance, productivity, spatial structure, and diversity. (California Department of Fish and Wildlife, December 9, 2016 comment letter, p.3.)

3.3 Salmon, Steelhead Trout, and Anadromous Fisheries Program Act

Legislative policy with respect to protection of anadromous fisheries[18] is set forth in the Salmon, Steelhead Trout, and Anadromous Fisheries Program Act, enacted in 1988. The Act emphasizes the importance of protecting and increasing the naturally spawning salmon and steelhead trout of the State in order to provide a valuable public resource, a large statewide economic benefit, and employment opportunities not otherwise available. (Fish & Game Code, § 6901.) The Act establishes state policy to "significantly increase the natural production of salmon and steelhead trout by the end of [the twentieth] century." (*Id.*, § 6902, subd. (a).) In establishing fishery protection flows for the Santa Ynez River and ordering studies of passage around Bradbury Dam, the State Water Board is obligated to consider the Legislature's policy regarding the importance of protecting and increasing the natural production of steelhead trout.

Pursuant to the Salmon, Steelhead Trout, and Anadromous Fisheries Program Act, CDFW developed the Steelhead Restoration and Management Plan for California in 1996. (DFG-2.) Among other things, the plan recommends:

1) The establishment of a flow regime from Bradbury Dam to restore the steelhead fishery and maintain it in good condition;

2) The investigation of the feasibility of providing passage around Bradbury Dam;

3) The restoration and enhancement of spawning and rearing habitat in tributaries below Bradbury Dam; and

4) Consideration of modification to the schedule of releases from Bradbury Dam to downstream users so that the water benefits fish and wildlife.

(NOAA-11, p. 7.)

[18] Anadromous fish migrate from salt water to spawn in fresh water.

3.4 California Endangered Species Act

CESA establishes requirements and protections regarding species listed as threatened or endangered under State law. (Fish & Game Code, §§ 2050-2068.) Fish and Game Code section 2055 governs the exercise of authority by state agencies in actions involving threatened or endangered species:

> The Legislature further finds and declares that it is the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall utilize their authority in furtherance of the purposes of [CESA].

Table A shows the bird and amphibian species present in the Cachuma Project area listed as threatened or endangered under CESA. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, pp. 2-51 to 2-52, Table 2-13.)

Table A: CESA Listed Threatened and Endangered Bird and Amphibian Species Present in the Cachuma Project Area

Species	Threatened	Endangered
Bald Eagle *Haliaeetus leucocephalus*		X
Belding's savannah sparrow *Passerculus sandwichensis beldingii*		X
California least tern *Sternula antillarum browni*		X
California tiger salamander – Santa Barbara County Distinct Population Segment *Ambystoma californiense*	X	
Least Bell's vireo *Vireo bellii arizonae*		X
Southwestern willow flycatcher *Empidonax traillii extimus*		X
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*		X

3.5 Federal Endangered Species Act

The purposes of the federal Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544) are to conserve endangered and threatened species and their habitat and to achieve the purposes of certain treaties and conventions. (16 U.S.C. § 1531(b).) The USFWS and

NMFS share responsibility for implementing the ESA. The ESA charges NMFS with protection of marine species, including steelhead.

3.5.1 Sections 4 and 9 of the ESA

Section 4 of the ESA (16 U.S.C. § 1533) provides for the listing of endangered or threatened species and the designation of critical habitat. The ESA defines an endangered species as any species that is in danger of extinction throughout all or a significant portion of its range. (*Id.*, § 1532(6).) Critical habitat is defined as:

1) Specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection; and

2) Specific areas outside the geographical area occupied by the species at the time of listing that are essential for the conservation of the species.

(*Id.*, § 1532(5)(A).)

Section 4 of the ESA also provides for the development and implementation of recovery plans for the conservation and survival of endangered and threatened species. (*Id.*, § 1533(f).)

With certain exceptions, section 9 of the ESA (16 U.S.C. § 1538) prohibits the take of endangered species. As authorized by the ESA, USFWS and NMFS have by regulation extended the prohibition against the take of endangered species to most threatened species. (See 50 C.F.R., chapter I, subchapter B, part 17 and chapter II, subchapter C, part 223.) "The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect...." (16 U.S.C. § 1532(19).) The term "harm" means an act that kills or injures fish or wildlife, including significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. (50 C.F.R. §§ 17.3, 222.102.) NMFS has interpreted this law to mean that, "because steelhead are a highly migratory fish that migrate between feeding, sheltering, and breeding areas, impediments to their migration disrupt and in some cases can prevent the successful completion of their life cycle, leading to the reduction and possible extirpation of individual

populations, and potentially of the entire species." (NMFS, December 8, 2016 comment letter, Attachment A, p. 5.)

3.5.2 Section 7 of the ESA

Section 7 of the ESA (16 U.S.C. § 1536) directs federal agencies to ensure, in consultation with USFWS or NMFS, that any action that they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. USFWS and NMFS have promulgated regulations that govern the section 7 consultation process. The regulations define the phrase "jeopardize the continued existence of" to mean "engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." (50 C.F.R. § 402.02.)

In most cases, a biological opinion issued by USFWS or NMFS documents the consultation process. (50 C.F.R. § 402.14(a) & (g)(4).) If USFWS or NMFS determines that a federal action is likely to result in jeopardy, then the biological opinion must include any reasonable and prudent alternatives to the proposed action that will avoid jeopardy. (16 U.S.C. § 1536(b)(3)(A).) If USFWS or NMFS determines that a federal action is not likely to result in jeopardy, but the action may result in the incidental take of a listed species, then the biological opinion must include an incidental take statement. (*Id.*, § 1536(b)(4).) The incidental take statement must:

1) Specify the impact of the incidental taking on the species;
2) Specify reasonable and prudent measures necessary or appropriate to minimize the impact; and
3) Set forth terms and conditions that the federal agency must comply with to implement the reasonable and prudent measures.

(*Ibid.*)

Section 9 of the ESA allows any taking that complies with the terms and conditions specified in the incidental take statement. (*Id.*, § 1536(o)(2).) In addition to mandatory

terms and conditions, a biological opinion may include advisory conservation recommendations. (50 C.F.R. § 402.14(j).)

A federal agency that has consulted with USFWS or NMFS and obtained a biological opinion must reinitiate consultation if:

1) The amount or extent of incidental take specified in the biological opinion is exceeded;
2) New information reveals that the action will affect listed species or critical habitat in a manner not previously considered;
3) Modifications to the action will affect listed species or critical habitat in a manner that was not previously considered; or
4) A new species is listed or critical habitat designated that may be affected by the action.

(50 C.F.R. § 402.16.)

3.5.3 Listing of the Southern California Steelhead Evolutionarily Significant Unit

In 1997, NMFS listed the Southern California steelhead Evolutionarily Significant Unit (ESU), which includes steelhead in the Santa Ynez River, as endangered under the federal ESA. (62 Fed. Reg. 43937 (Aug. 18, 1997).)[19] NMFS modified the original listing in 2002 with the extension of the geographic range of the listed species south from the Santa Monica Mountains to the United States-Mexico border. (See 67 Fed. Reg. 21586 et seq. (May 1, 2002.) NMFS has identified extensive habitat loss due to water development, land use practices, and urbanization as one of the primary reasons for the decline of the species. (*Id.* p. 43942; FEIR, Vol. III, Appendix D, p. 18.) On February 16, 2000, after considering public comments and reviewing additional scientific information, NMFS designated the lower Santa Ynez River as critical steelhead habitat. Critical habitat includes all waters and substrates below naturally impassable barriers and several

[19] NMFS provided evidence that the present estimated total run size for six streams—Santa Ynez River, Gaviota Creek, Ventura River, Matilija Creek, Santa Clara River, Malibu Creek—in the Southern California ESU are each less than 200 adults. (NOAA-6, p. 1.)

dams that block steelhead from using historical habitat areas. (FEIR, Vol. III, Appendix D, p. 16.)

3.5.4 Section 7 Consultation for the Cachuma Project – Biological Assessment

After the Southern California steelhead ESU was listed as endangered, Reclamation requested consultation with NMFS concerning the proposed operation of the Cachuma Project pursuant to section 7 of the ESA. In support of its request, Reclamation prepared the "Biological Assessment for Cachuma Project Operations and the Lower Santa Ynez River, April 7, 1999" (1999 Biological Assessment), which proposed various modifications to Cachuma Project operations and conservation measures to improve the availability and quality of habitat for steelhead below Bradbury Dam. (DOI-12.)[20] The major elements of the 1999 Biological Assessment included:

Surcharging

The 1999 Biological Assessment proposed to increase the storage capacity in Lake Cachuma by surcharging the reservoir. Surcharging is accomplished by adding flashboards to the reservoir, thereby allowing additional water to be stored for downstream environmental purposes in the dry, summer months. Pursuant to the 2000 Revised Biological Assessment, the surcharge water is allocated into three accounts: Fish Reserve[21], Fish Passage, and Adaptive Management Accounts (discussed below). (FEIR Vol. III, Appendix C, 2000 Revised Biological Assessment, pp. 3-09 to 3-18, 3-24 to 3-31.) In 2005, Reclamation installed the flashboards necessary to implement the

[20] On June 13, 2000, Reclamation issued *Revised Section 3 (Proposed Project) of the 1999 Biological Assessment for Cachuma Project Operations and The Lower Santa Ynez River (*2000 Revised Biological Assessment). (DOI-13.)

[21] The Fish Reserve Account was effectively superseded by the Biological Opinion. Instead, "surcharging" the reservoir in spill years provides about 9200 af of water, which is wholly dedicated to the downstream fishery, with 3200 af reserved for passage supplementation, 500 af reserved for adaptive management actions, and the balance to meet target rearing flows, flow rates for which were established under various hydrological conditions. The target flows must be met regardless, so when the surcharge water is depleted, target flows are provided from project yield. (FEIR, Vol. II, p. 2.0-17.)

3.0-foot surcharge, which allows additional water to be stored in the reservoir for the three accounts when there is sufficient reservoir inflow.[22]

Rearing flow releases

The 1999 Biological Assessment proposed to establish interim mainstem rearing target flows at Highway 154 (3.2 miles below Bradbury Dam) and long-term mainstem rearing target flows[23] at Highway 154 and Alisal Bridge (10.5 miles below Bradbury Dam). The interim flows would be implemented when a surcharge of 0.75 and 1.8 foot were reached and the long-term flows would be implemented when a surcharge of 3.0 feet was reached. The interim flows are no longer proposed[24] because Reclamation has implemented a 3.0-foot surcharge.

The mainstem rearing flows are set forth in Table 1 below. The amount and location of the rearing flows depend on the amount of reservoir storage and spill. More water is required for rearing in years of higher flows when the mouth of the estuary opens and steelhead are able to migrate up the mainstem. In years of lower flows when the mouth may not open and migration up the mainstem may not be possible, flows are required to support fish holding over from previous years. By having variable mainstem rearing flows, more water is available when it will support the most steelhead. (FEIR, Vol. III, Appendix C, 2000 Revised Biological Assessment, p. 3-11.)

There are several challenges with the measuring station for Highway 154: the station is on private land and access to the station has been denied by the landowner, there are no suitable measuring locations within the bridge easement, and there is a depositional area

[22] Surcharge is a term used to describe the amount of water stored above the elevation 750 feet in Cachuma Reservoir. Bradbury Dam's spillway crest is at elevation 720 feet. Four 30-foot by 50-foot radial gates, with a concrete lined chute and stilling basin, control the spillway. The gate opening is 30 vertical feet. When closed, the top of the gates is at elevation 753 feet with a flashboard for a 3.0-foot surcharge. In 2009, Reclamation was able to implement a 3.0-foot surcharge. The 3.0-foot surcharge increased the reservoir capacity by only 8,942 af, due to sedimentation (total capacity of 195,578 af). (FEIR, Vol. II, pp. 2.0-1, 4.2-5, 4.7-23 to 4.7-24.)

[23] The term "Target Flows," used in the 1999 Biological Assessment, Biological Opinion, and the FEIR, is not used further in this order to make clear that the long-term mainstem flows described in the order are requirements that shall be met, not simply targets.

[24] The interim mainstem rearing flows have been replaced by the long-term mainstem rearing flows. As a result, there is no longer a need to differentiate between the different flow regimes. The long-term mainstem rearing flows are subsequently referred to in this order simply as "mainstem rearing flows."

upstream of the Highway 154 bridge that affects surface flows. (R.T., October 22, 2003, p. 301:12–301:22.) According to Ms. Jean Baldrige, a fisheries biologist and witness for the Member Units, there is no way to measure or verify flows, however, the Bureau is over releasing water to ensure there is sufficient water in that reach. (*Id.*, p. 395:11.) In light of the requirement to accurately measure the 2000 Biological Opinion flows, this order requires Reclamation to ~~develop~~use a ~~proposal for installation~~gauge or other methodology satisfactory to CDFW and ~~maintenance~~NMFS and approved by the Deputy Director to maintain a continuous record of ~~a measuring station~~the daily instream flows in the Santa Ynez River at Highway 154.

Table 1 Flows
Mainstem Rearing Flows

Reservoir Spill[a] (af)	Lake Storage[b] (af)	Flow (cfs) Requirements at:		
		Highway 154	*Alisal Road*	*Stilling Basin & Long Pool*
≥ 20,000	NA	10	1.5[c]	-
< 20,000	≥ 120,000	5	1.5[d]	-
	≥ 30,000 and < 120,000	2.5	1.5[d]	-
	< 30,000	-	-	30 af/mo[e]

NA - not applicable
[a] Reservoir spill is calculated cumulatively over the course of the water year (FEIR, Vol. IV, Appendix F, Draft Technical Memorandum No. 5, p. 6), which begins October 1 (FEIR, Vol. IV, Appendix F, Draft Technical Memorandum No. 5, p. 8).
[b] Lake storage is measured on the first day of each month. (FEIR, Vol. IV, Appendix E, Technical Memorandum No. 1, p. 5.)
[c] The specified flow applies only when steelhead are present.
[d] The specified flow applies only if there was reservoir spill greater than or equal to 20,000 af in the prior water year and steelhead are present in the Alisal Reach.
[e] When there is less than 30,000 af of total water stored in the reservoir, regardless of origin, Reclamation shall provide periodic releases of 30 af per month to refresh the Stilling Basin and Long Pool directly downstream of the dam to provide for steelhead rearing in these areas. Less than 30 af per month may be released upon determination by the fishery agencies and the State Water Board that less water is necessary to refresh the Stilling Basin and Long Pool directly downstream of the dam for steelhead in these areas.

Fish passage supplementation

The 1999 Biological Assessment proposed to create a Fish Passage Account for the purpose of supplementing passage flows to increase the number of days that migration would be possible in the mainstem of the river for steelhead to reach tributaries near

Bradbury Dam. The Fish Passage Account would be filled in years when the reservoir surcharges and released in subsequent years to enhance passage opportunities by augmenting the storm hydrographs. Reclamation proposed to dedicate up to 3,200 af of water to the Fish Passage Account.

Adaptive management account (AMA)

The 1999 Biological Assessment proposed to establish an AMA to be used when small amounts of additional water could create benefits to steelhead and their habitat. When the reservoir surcharges to the 3.0-foot level, 500 af of the water would be dedicated to the AMA. The AMA would be used at the discretion of an Adaptive Management Committee to increase releases for mainstem rearing, provide additional water for passage flow supplementation, or provide additional flows to Hilton Creek, a tributary that intersects the Santa Ynez River immediately below Bradbury Dam. (See Appendix 1, Figure 2.)

Ramping rates

The 1999 Biological Assessment proposed to establish a schedule for ramping releases to eliminate possible stranding of steelhead or rainbow trout as Bradbury Dam releases are returned to the rearing flows at Highway 154 at the completion of releases to satisfy downstream water rights.

Habitat improvement projects

The 1999 Biological Assessment determined habitat conditions are suitable (e.g., perennial flow, acceptable water temperature, etc.) for steelhead spawning and/or rearing within several tributaries to the lower Santa Ynez River including Salsipuedes and El Jaro creeks. The 1999 Biological Assessment proposed to implement a number of habitat improvement projects, including removal of 11 passage impediments along the following tributaries: Hilton Creek (one on federal land and one under Highway 154); Salsipuedes Creek (Highway 1 bridge); Quiota Creek (six road crossings); El Jaro Creek (one road crossing); and Nojoqui Creek (one road crossing). Section 5.3.3.1.3 discusses the status of the Habitat Improvement Projects.

The 1999 Biological Assessment also proposed a monitoring program, which the Santa Ynez Technical Advisory Committee (SYRTAC) developed.[25] The monitoring program included monitoring of Order WR 89-18 releases, water quality, tributary enhancement projects, and flow compliance as well as fish surveys. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, pp. 3-51 to 3-61.)

3.5.5 2000 Biological Opinion for the Cachuma Project

Reclamation completed consultation with NMFS under section 7 of the ESA in September 2000, when NMFS issued a Biological Opinion. In the 2000 Biological Opinion, NMFS evaluated the effect of the ongoing operation and maintenance of the Cachuma Project, including the changes in operations and conservation measures proposed by Reclamation in the 1999 Biological Assessment for the benefit of the steelhead population on the lower Santa Ynez River. (FEIR, Vol. II, p. 2.0-18.) NMFS determined that the operation of the project as proposed, together with implementation of the proposed conservation measures, would not jeopardize the continued existence of steelhead or destroy or adversely modify critical habitat. The 2000 Biological Opinion contains 15 reasonable and prudent measures to minimize incidental take of steelhead, and mandatory terms and conditions required to implement the reasonable and prudent measures. In essence, the 2000 Biological Opinion requires implementation of most of the operational changes and conservation measures described in the 1999 Biological Assessment above, along with additional operational, reporting, and monitoring requirements for steelhead. One of the reasonable and prudent measures contained in the 2000 Biological Opinion is the requirement that Reclamation reinitiate consultation if the tributary passage impediment and barrier fixes that Reclamation had proposed to implement were not completed by 2005.

[25] SYRTAC was composed of CDFW; NMFS; Reclamation; U.S. Forest Service; Natural Resource Conservation Service; CalTrout; Santa Barbara Urban Creeks Council; Central Coast Regional Water Quality Control Board; CCWA; Santa Barbara County Fish and Game Commission; California Coastal Commission; USFWS; CCRB; SYRWCD; SYRWCD, ID No. 1; SBCWA; and the City of Lompoc. (FEIR, Vol. II, p. 2.0-16.) The SYRTAC remained active until the Biological Opinion and the Fish Management Plan established the Adaptive Management Committee in 2000. The Adaptive Management Committee effectively replaced the SYRTAC. (*Id.*, p. 2.0-17.)

In 2005, NMFS revisited critical habitat designations and confirmed that the critical habitat for steelhead in the Santa Ynez River extends upstream from the lagoon, which is located within Vandenberg Air Force Base, to Bradbury Dam, including the main tributaries. (50 C.F.R. § 226.211(j)(2)(i-iv).) In 2006, the District Population Segment (DPS) policy, an alternative approach of delineating species under the ESA, superseded the policy of using Evolutionarily Significant Units to delineate species of steelhead.[26] (71 Fed. Reg. 834 (Jan. 5, 2006).) This policy recognizes that within discrete steelhead populations, resident and anadromous life forms remain "markedly different" from other populations because of physical, physiological, ecological, and behavioral factors. The Santa Ynez River steelhead population is part of the Southern California DPS.[27] Using these criteria, all naturally spawned steelhead that originated in freshwater habitat below impassible barriers and which exhibit an anadromous life history are considered part of the DPS. Individuals originating in freshwater above impassible barriers that exhibit an anadromous life history are also considered part of the DPS when they are within waters below the barriers. (FEIR, Vol. II, p. 2.0-19.)

3.5.6 Reinitiation of ESA Section 7 Consultation for the Cachuma Project

In December 2005, Reclamation submitted a request to NMFS to reinitiate consultation as required by the 2000 Biological Opinion. Mr. Darren Brumback, a NMFS fisheries biologist, testified on the reasons reinitiation of consultation under the ESA was required for the Cachuma Project. First, Reclamation exceeded the amount of incidental take specified in the 2000 Biological Opinion for the annual monitoring program (i.e. trapping).[28] Second, Reclamation failed to meet rearing flows at Alisal Bridge in 2007, which resulted in unauthorized take. Third, Reclamation did not complete all restoration actions by 2005 as required by the 2000 Biological Opinion. As described in sections

[26] In the remainder of this order, DPS will be used for any references to ESU.
[27] The Southern California Steelhead DPS encompasses all naturally spawned anadromous steelhead between the Santa Maria River and the U.S.-Mexico border.
[28] The 2000 Biological Opinion contains two categories of numerical take associated with the monitoring program: 1) capture/handling and 2) trapping mortalities. The 2000 Biological Opinion allows the monitoring program to result in the capture and release of 110 juveniles and 150 adults with the unintentional mortality of 4 juveniles and 1 adult due to trapping. (FEIR, Vol. III, Appendix D, p. 66.) Ms. Baldrige, a witness for the Member Units, presented evidence that the take exceedances for the years 2001 – 2011 were: 2317 juveniles and 1 adult during capture/handling, and 0 juveniles and 3 adults lost as trapping mortalities. (MU-290, p. 6.)

3.5.4 and 3.5.5, the 2000 Biological Opinion required Reclamation to complete 11 tributary improvement projects by 2005. The anticipated completion date of a revised biological opinion was unknown at the time of the hearing. (R.T., March 29, 2012, p. 232:10-232:12.)

3.5.7 Southern California Steelhead Recovery Plan

Section 4(f) of the ESA directs NMFS to develop and implement recovery plans for the conservation and survival of listed threatened and endangered species, including the southern California steelhead. Recovery plans must, to the maximum extent practicable, incorporate:

1) Site-specific management actions necessary to achieve the goals of the recovery plans for the conservation and survival of the species;

2) Objective, measurable criteria for the recovery of species that would allow determinations that the species were recovered and therefore eligible for removal from the list of endangered or threatened species; and

3) Estimates of the time and costs required to carry out measures needed to achieve the plans' goals, as well as intermediate steps toward those goals.

To meet this requirement, NMFS convened a Technical Recovery Team in 2001 that produced a series of scientifically peer reviewed Technical Memoranda that formed the basis of the Southern California Steelhead Recovery Plan. (NMFS Dec. 8, 2016 comment letter, pp. 5-6.) In July 2009, NMFS released the Draft Southern California Steelhead Recovery Plan and adopted the Final Southern California Steelhead Recovery Plan in 2012. (FEIR, Vol. II, 2.0-42; NMFS Dec. 8, 2016 comment letter, p. 1.) This Recovery Plan identifies watershed specific threats and recovery actions, including those for the Santa Ynez River watershed, as well as population and DPS-wide viability criteria. (NMFS December 8, 2016 comment letter, pp. 5-6.)[29] The Final Southern California

[29] NMFS's 2009 Draft and 2012 Final Southern California Steelhead Recovery Plans are not in the administrative record. On November 13, 2003, after accepting testimony and evidence for Phase 2 of the hearing into the record, the hearing officer left the hearing record open pending the submittal of the FEIR. Two additional hearing days were held on March 29 and 30, 2012, to determine whether the FEIR should be entered into the administrative record. In a March 14, 2012 letter, the hearing officer ruled "in accordance with the limited scope of the upcoming hearing, NMFS will not be permitted to present testimony on… the steelhead recovery planning process, or the contents of the steelhead recovery plan,

Steelhead Recovery Plan is not part of the administrative record but is a source of information that could be used to inform submittals required by this order.

4.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT COMPLIANCE

The California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (CEQA) applies to discretionary projects public agencies propose to carry out, fund, or approve, unless an exemption applies. (Pub. Resources Code, § 21080.) The purposes of CEQA are to:

1) Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities;

2) Identify ways that environmental damage can be avoided or significantly reduced;

3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and

4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

(Cal. Code Regs., tit. 14, § 15002, subd. (a)(1-4).)

An environmental impact report (EIR) must be prepared if a project is not exempt and there is substantial evidence that the project may have a significant effect on the environment. (Pub. Resources Code, § 21080, subd. (d).) If there is not substantial evidence that the project may have a significant effect on the environment, a negative declaration must be prepared. (*Id.*, § 21080, subd. (c).) In situations where more than one public agency will carry out or approve a project, the agency with principal responsibility for carrying out or approving the project serves as the lead agency, and is

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unless NMFS can demonstrate that the testimony bears directly on the validity of a specific factual statement, analysis, or determination contained in the FEIR." NMFS did not attempt to demonstrate to the State Water Board how testimony related to the steelhead recovery plan bears directly on the FEIR. Subsequently, NMFS's Final Southern California Steelhead Recovery Plan (Exhibit CT-130) was not admitted into evidence by the hearing officer. (See generally R.T., March 29, 2012, pp. 236:1 to 238:16.)

responsible for preparing the EIR or negative declaration. (Cal. Code Regs., tit. 14, § 15050, subd. (a).)

4.1 Environmental Impact Report Prepared for the Proposed Project

As CEQA lead agency, the State Water Board prepared an EIR in connection with the Board's consideration of modifications to Reclamation's Permits for the Cachuma Project in order to protect public trust resources and downstream water rights. The Board issued a Draft EIR for public review and comment on August 8, 2003. The Board issued a Revised Draft EIR on July 31, 2007 (2007 RDEIR), and a Second Revised Draft EIR on April 1, 2011. The Board issued a FEIR in December 2011. The FEIR is comprised of seven volumes. Volume I consists of responses to public comments received on the three draft EIR's. Volume II is an edited version of the 2011 Second Revised Draft EIR. Volumes III and IV contain the appendices to the Second Revised Draft EIR. Finally, Volumes V, VI, and VII consist of the 2003 Draft EIR, the 2007 RDEIR, and the 2011 Second Revised Draft EIR, respectively.

The proposed project analyzed in the EIR is described in general terms as potential modifications to Reclamation's Permits for the Cachuma Project in order to provide appropriate protection of public trust resources and downstream water rights of the Santa Ynez River. The purpose of the EIR was to support the State Water Board's decision whether and how to modify Reclamation's Permits after holding an evidentiary hearing. It was not possible to describe the proposed project in greater detail, and specify whether and how Reclamation's Permits would be modified, without prejudging the outcome of the hearing. Instead, the EIR evaluated a range of alternatives consistent with the range of possible modifications to the Permits that were under consideration.

The FEIR evaluated the potential environmental impacts of the No Project Alternative and five additional alternatives: 3B, 3C, 4B, 5B, and 5C. Section 3.2.2 of the Final EIR contains a detailed description of the alternatives. In summary, Alternatives 3B, 3C, and 4B assume that the Board modifies Reclamation's Permits for the Cachuma Project to require releases from Bradbury Dam for purposes of protecting fishery resources in accordance with the 2000 Biological Opinion. Alternatives 5B and 5C also assume

compliance with the 2000 Biological Opinion flows in all years except wet and above normal year types. In wet and above normal year types, Alternatives 5B and 5C include higher instream flow requirements proposed by CalTrout, also known as Alternative 3A2.[30] These flows are set forth in Table 2, below, and this order, hereafter, refers to these flows as Table 2 Flows.

Table 2 Flows[31]

Minimum Release Requirement*	Period of Release	Purpose of Release
48 cfs	02/15 to 04/14	Spawning
20 cfs	04/15 to 06/01	Incubation and Rearing
25 cfs	06/02 to 06/09	Emigration
Ramp to 10 cfs by 06/30		
10 cfs	06/30 to 10/01	Rearing and Resident Fish Maintenance
5 cfs	10/01 to 02/15	Resident Fish

*The flows in the table above would be required to be maintained at both San Lucas and Alisal bridges.

Alternatives 3B and 5B assume that Reclamation surcharges Cachuma Reservoir by 1.8 feet, whereas Alternatives 3C, 4B and 5C, assume that Reclamation surcharges the reservoir by 3.0 feet. Since the time when the alternatives were developed, Reclamation has implemented a 3.0-foot surcharge, essentially rendering Alternatives 3B and 5B obsolete.

Under all of the alternatives, releases to satisfy downstream water rights would be made in accordance with State Water Board Order WR 89-18, except that the release requirements would be modified under Alternatives 3C and 4B. Under Alternative 3C, the Board would modify release requirements in accordance with the Settlement Agreement. Under Alternative 4B, releases from Bradbury Dam to recharge the Lompoc Plain

[30] Alternative 3A2 was one of the alternatives evaluated in a 1995 Environmental Impact Report/Environmental Impact Statement (EIS/EIR) prepared by Reclamation and Cachuma Project water supply contractors in connection with the renewal of the water supply contract for the Cachuma Project. (SWRCB-5, pp. 4-32 to 4-33.)
[31] See FEIR, Vol. II, pp. 3.0-19 to 3.0-20.

Groundwater Basin would be exchanged for SWP water discharged into the Santa Ynez River in the vicinity of the Lompoc Forebay.[32] The City of Lompoc has taken the position that Alternative 4B is infeasible because city residents have rejected SWP water as a new water supply.

The environmental analysis evaluated the potential environmental impacts of the alternatives using Alternative 2 as the baseline. Alternative 2 represents the environmental conditions that existed in September 2000, a relatively short time after the State Water Board began its environmental review of the proposed project. Alternative 2 remains an appropriate environmental baseline, even though Reclamation has implemented a number of operational and other changes since 2000, including the 3.0-foot surcharge, to comply with the 2000 Biological Opinion. Normally, the environmental conditions that exist at the time a lead agency issues a notice of preparation of an EIR constitute baseline conditions for purposes of the impacts analysis, even if conditions change during the environmental review process. (Cal. Code Regs., tit. 14, § 15125, subd. (a).) In addition, the use of Alternative 2 as the baseline, as opposed to existing conditions, resulted in a conservative estimate of the potential environmental impacts of the alternatives. For example, Alternative 2 assumes a 0.75-foot surcharge. Accordingly, comparing the other alternatives, which assume either a 1.8- or 3.0-foot surcharge, to Alternative 2 results in the full disclosure of the potential environmental impacts of surcharging Cachuma Lake from 0.75 to 3.0 feet, even though some of those impacts already have occurred. By contrast, if the analysis used current conditions as the baseline, including a 3.0-foot surcharge, the impacts associated with increasing the surcharge from 0.75-foot to 3.0 feet would not be disclosed. (FEIR, Vol. II, pp. 3.0-13 to 3.0-14.)

4.2 Negative Declaration Prepared for Change Petition

The Member Units prepared a Negative Declaration for the petition to add 17,506 acres to the permitted place of use and to consolidate the purposes of use for the Cachuma Project. (Staff Exhibit 3.) The Negative Declaration reflects the fact that the majority of

[32] Recharge from the Santa Ynez River occurs primarily from the Narrows to H Street Bridge (called the Lompoc Forebay). (FEIR, Vol. V, p. 4-63.)

the land annexations described in the petition occurred prior to the effective date of CEQA. The document analyzes whether all of the Cachuma Project water could have been utilized in the permitted place of use, and concludes that all of the project water could have been used in the authorized place of use. The Negative Declaration does not identify mitigation measures. COMB adopted the Negative Declaration on November 2, 1998, and filed a Notice of Determination with the State Clearing House. (*Ibid.*)

5.0 PROTECTION OF PUBLIC TRUST RESOURCES

One of the primary objectives of this proceeding is to ensure the protection of public trust resources upstream and downstream of Bradbury Dam, including but not limited to fishery resources in the Santa Ynez River. Public interest considerations for this project include, but are not limited to:

1) The water supply impacts of measures designed to protect public trust resources, and
2) The extent to which any water supply impacts can be minimized through the implementation of water conservation measures.

(FEIR, Vol. II, p. ES-2.)

Sections 5.1 through 5.3 consider the impacts of the Cachuma Project on sensitive plant species and lakeshore vegetation, aquatic (non-fishery) and terrestrial wildlife, and fishery resources.

5.1 Evaluation of Sensitive Plant Species and Lakeshore Vegetation

Six sensitive plant species have historically been known to occur in the vicinity of Cachuma Reservoir or along the river below Bradbury Dam. (FEIR, Vol. II, pp. 4.8-8 to 4.8-9.) Sensitive species consist of state and federally listed, proposed, and candidate plants; state "species of special concern" identified by CDFW; and species considered rare and endangered by the California Native Plant Society. There was no testimony at the Cachuma hearing regarding these plant species.

None of the six sensitive plant species presently occur at the margins of Cachuma Reservoir or in the lower Santa Ynez River between Bradbury Dam and the ocean; the

plant species either have been extirpated or occur in the dunes away from the effects of the river. (FEIR, Vol. II, pp. 4.8-8 to 4.8-9, 4.8-16.) Accordingly, this order does not address measures for the protection of these species.

5.2 Evaluation of Aquatic (Non-Fish) and Terrestrial Wildlife Resources

Riparian habitat along the lower Santa Ynez River supports a great diversity of aquatic and terrestrial wildlife species. Streams and pools provide habitat for aquatic and semi-aquatic species such as Pacific chorus frog, western toad, Pacific tree frog, and the introduced bullfrog. In addition to these common species, various sensitive aquatic and wildlife species occur along the lower Santa Ynez River from Bradbury Dam to the ocean, and at Cachuma Reservoir. Sensitive species include those listed as threatened or endangered under CESA or the federal ESA, or designated as a "species of special concern" by CDFW. (FEIR, Vol. II, p. 4.9-1.) The California red-legged frog (*Rana draytonii*), a federally listed threatened species, has occurred in the past along the Santa Ynez River and in its tributaries. (*Id.*, p. 4.9-2.) Much of the Santa Ynez River above Alisal Road becomes dry by summer, and is, therefore, unlikely to support red-legged frogs due to lack of permanent water. (*Ibid.*) Downstream from Buellton, predators such as bullfrogs limit the frog's use of available habitat. (*Ibid.*) When USFWS designated critical habitat for this species in 2001, the lower Santa Ynez River and any lower tributaries were not included. (*Id.*, pp. 4.9-2 to 4.9-3.)

Common reptiles and amphibians include the ensatina, western fence lizard, common kingsnake, gopher snake, and common garter snake. Small mammals use the riparian vegetation for cover, movement corridors, and foraging. At the hearing, no evidence or testimony was received regarding the Cachuma Project's impact on the special status terrestrial species as a result of the construction of Bradbury Dam. Accordingly, these species are not discussed further in this order.

5.3 Evaluation of Fishery Resources

Twenty-six species of fish inhabit the Santa Ynez River watershed, including 11 native species. All native species reported in the 1940's are still present. Steelhead/rainbow trout, prickly sculpin, partially armored threespine stickleback, and Pacific lamprey are

native to the Santa Ynez River. Seven additional native species are found only in the lagoon: tidewater goby, Pacific herring, topsmelt, shiner perch, starry flounder, staghorn sculpin, and striped mullet. Fifteen fish species have been introduced to the watershed, including the arroyo chub, non-native large- and smallmouth bass, sunfishes, and catfish. (FEIR, Vol. II, p. 4.7-1.)

5.3.1 Endangered Species or Species of Concern

Two federally listed endangered fish species are found in the Santa Ynez River watershed and one California species of concern:

- Arroyo chub (*Gila orcutti*) – California species of concern;
- Tidewater goby (*Eucyclogobius newberryi*) – Federally-listed endangered species; and
- Southern California DPS of steelhead trout *(O. mykiss)* – Federally-listed endangered species.

5.3.1.1 Arroyo Chub

The arroyo chub is a relatively small, chunky minnow, typically less than 5 inches in length. Arroyo chub are native to the Los Angeles, San Gabriel, San Luis Rey, Santa Margarita, and Santa Ana River systems, as well as San Juan Creek. Arroyo chub were introduced into the Santa Ynez River drainage during the early 1930s and are currently found throughout the Santa Ynez River Watershed. (FEIR, Vol. II, p. 4.7-6.) The EIR states that arroyo chub are adapted to surviving common climatic conditions on the Santa Ynez River such as periodic high flows and widely fluctuating water temperature and oxygen levels with observations at oxygen levels as low as 1.6 parts per million (ppm). (FEIR, Vol. II, p. 4.7-5.) Arroyo chub prefer slow-moving sections of rivers with a sand or mud substrate, or standing waters in reservoirs. In 1993, SYRTAC found arroyo chub along the river below Bradbury Dam in abundant numbers in shallow pools. However, they were not observed in pools inhabited by large predators (bass and sunfish), and they were relatively scarce in riffle and run habitats. (FEIR, Vol. II, pp. 4.7-5 to 4.7-6.)

No testimony was received during the Cachuma Project hearing related to the arroyo chub. Based on the lack of information in the hearing record on any needed measures

to protect the arroyo chub, this order does not include any such requirements. However, measures included to protect steelhead are expected to benefit the arroyo chub. (FEIR, Vol. II, pp. 4.7-51 to 4.7-53.)

5.3.1.2 Tidewater Goby

The tidewater goby is a small estuarine fish, rarely exceeding 2 inches in length, which inhabits lagoons and the tidally influenced region of rivers from San Diego County to Del Norte County, California. They are typically found in the upper ends of lagoons in brackish water. Tidewater gobies remain common in the Santa Ynez River lagoon, and both young-of-the-year (first year) and adults have been collected. (FEIR, Vol. II, p. 4.7-5.)

No testimony was received during the Cachuma Project hearing related to the tidewater goby. Based on the lack of information in the hearing record on any needed measures to protect the tidewater goby, this order does not include any such requirements. However, measures included to protect steelhead are expected to benefit the tidewater goby. (FEIR, Vol. II, p. 4.7-53.)

5.3.1.3 Southern California Evolutionary Significant Unit of Steelhead Trout

The federal ESA lists the anadromous southern steelhead as endangered and designates the Santa Ynez River downstream of Bradbury Dam and its tributaries as critical habitat for the Southern California DPS species. The Santa Ynez River lagoon is not designated as critical habitat for either steelhead or the tidewater goby, as it is located within Vandenberg Air Force Base and is therefore exempt.[33] (FEIR, Vol. II, p. 4.7-1.)

5.3.1.3.1 Steelhead Lifecycle and Habitat

The species *O. mykiss* includes both rainbow trout and steelhead. Fish that exhibit a non-anadromous resident life history are referred to as rainbow trout and fish that exhibit an anadromous migratory life history are referred to as steelhead. *O. mykiss* that are native to the Santa Ynez River exhibit three life strategies: 1) resident; 2) lagoon

[33] Vandenberg Air Force Base is subject to an Integrated Natural Resources Management Plan prepared under the Sikes' Act and therefore the Base does not have critical habitat designations for ESA-listed species.

anadromous; and 3) fluvial anadromous. (FEIR, Vol. II, p. 4.7-3.) Resident rainbow trout live their entire lives in fresh water. (*Ibid.*) Anadromous steelhead are born and rear for one to two years as juveniles in freshwater before smolting,[34] emigrating to the ocean to grow to maturity, and returning to fresh water to spawn. (*Ibid.*) Lagoon anadromous steelhead rear as juveniles in the lagoon of their natal creek. (*Ibid.*) Fluvial anadromous steelhead rear as juveniles in a riverine environment. (*Ibid.*) Populations of *O. mykiss* can exhibit both resident and anadromous life history strategies within the same river system and individuals exhibiting one life history strategy can produce offspring that exhibit the other strategy. (DOI-1f, Vol. 1, p. 2-24.)

Anadromous steelhead exhibit the following lifecycle phases: egg, fry, juvenile, smolt, and adult. (MU-224, pp. 2-3.) The quantity and quality of available physical habitat plays an important role in determining the potential of that habitat to support each phase of the steelhead lifecycle. Physical habitat is defined by parameters such as the amount of space available, water depth, water velocity, substrate, availability of shelter, food resources, and water quality. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, pp. 2-16 to 2-17.)

Differences in water velocity and depth generally characterize the four distinct categories of steelhead physical habitat: riffles, runs, pools, and glides. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-16.) Steelhead use these types of habitat at different lifecycle phases. (*Ibid.*) The habitat types have different potentials for supporting populations of steelhead because of their differing hydraulic characteristics and because life stages of steelhead vary in their preference for those characteristics. (*Ibid.*) Riffles are high gradient areas with shallow depths, relatively fast water velocities, and turbulent flow patterns. Runs have lower gradients than riffles and are generally deeper. They have relatively uniform water velocities across the channel width, and minimal surface turbulence. Pools have low gradients, low water velocities and are generally deeper than riffles and runs. Glides have uniform channel bottom, low to moderate flow velocities, and little or no turbulent flow. (FEIR, Vol. II, Appendix C, 2000 Revised Biological

[34] Smolting is the physiological changes that adapt young steelhead to a life in saltwater. (MU-224, p. 3.)

Assessment, p. 3-60.) Available habitat types associated with different life stages must be linked to support successful completion of the steelhead life cycle. (MU-226, p. 5.) So, connectivity of habitat for key life stages is an important factor in maintaining steelhead populations in good condition. (R.T., November 12, 2003, p. 856:2-856:25.)

Other important habitat characteristics include substrate, instream vegetation, and riparian canopy. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-16.) Substrate can influence the abundance and distribution of steelhead, with different life-stages having different substrate requirements from gravels to boulders. (*Ibid.*) Substrate size influences food production with highest food production zones expected where the river is dominated by cobble. (CT-12, p. 13.) Riparian vegetation can provide cover for smaller steelhead, decrease water temperature by moderating thermal gain from solar radiation, and provide an important source of nutrients in aquatic food chains for steelhead. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-16.) Large woody debris that fall into the stream further increase cover and create areas of scour that increase water depth. (*Id.*, 2000 Revised Biological Assessment, p. 3-46.) Riparian vegetation can also reduce water velocities and create refuge areas of relatively low velocity during storm flows. (*Ibid.*)

Water quality conditions, particularly water temperature and dissolved oxygen concentrations below Bradbury Dam, directly influence the quality and availability of habitat for steelhead. Water temperature is influenced by seasonal air temperature, solar radiation, river shading, instream flow, temperature of water released from Bradbury Dam, water depth and in some areas, groundwater upwelling. Much of the literature regarding temperature tolerances of steelhead is based on data collected in the Pacific Northwest and/or on resident rainbow trout populations. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-60.) Southern California steelhead are often presumed to be more tolerant of warm water than steelhead from more northerly stocks because they evolved at the southern limit of steelhead distribution in North America. (*Id.*, p. 2-61.)

Temperature tolerances and preferences for steelhead vary among life stages. At temperatures greater than 21.1 degrees Celsius (°C), steelhead have difficulty obtaining

sufficient oxygen from the water. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-60.) The preferred temperature range is reportedly 12.8 to 15.6°C. (*Ibid.*) Steelhead metabolic rate increases in warmer waters, resulting in increased energy demands for oxygen and food until the upper, lethal limit is reached. (*Ibid.*) High water temperatures, which reduce oxygen solubility, compound the stress on fish caused by marginal oxygen concentrations. (*Id.*, p. 2-31.)

Dissolved oxygen concentrations are influenced by water turbulence and mixing, instream flows, water temperature, photosynthetic activity during the daytime, and metabolism by algae at night. Extensive aquatic growth may lead to depressed levels of dissolved oxygen during the night or late in the season (late summer through fall) as the algae die and decompose. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, pp. 2-16 to 2-17.) Dissolved oxygen affects steelhead habitat quality and use, physiological stress, and mortality. (*Id.*, p. 2-62.) Optimum dissolved oxygen concentrations for steelhead are 6 to 8 milligrams per liter (mg/l) and greater. Concentrations of 4 mg/l or less have been found to cause severe distress with concentrations below 3mg/l leading to possible mortality. (*Id.*, pp. 2-31 to 2-33.)

Food resources, an important factor in the steelhead lifecycle, can also be affected by habitat characteristics. Temperature extremes, siltation, and loss of riparian vegetation can lead to a reduction in the aquatic food base and overall health and survival. (CT-12, p. 12.) A premature loss of flow during the peak period of spring productivity can also affect insect production and food supplies for fish. (*Ibid.*)

The anadromous steelhead life cycle starts in the winter with the return of mature adults from the ocean. (FEIR, Vol. III, Appendix C, 1999 Biological Assessment, p. 2-53.) In many southern California streams, including the Santa Ynez River, a sandbar that forms across the mouth of the river during the summer blocks access to the river. Upstream migration from the ocean to spawning grounds requires sufficient stream flow to breach the sandbar at the river mouth and to allow passage up the river. In the Santa Ynez River system, anadromous adult steelhead migrate and spawn in the wettest months, generally January through March. (MU-224, p 2.) The migration seldom begins earlier than